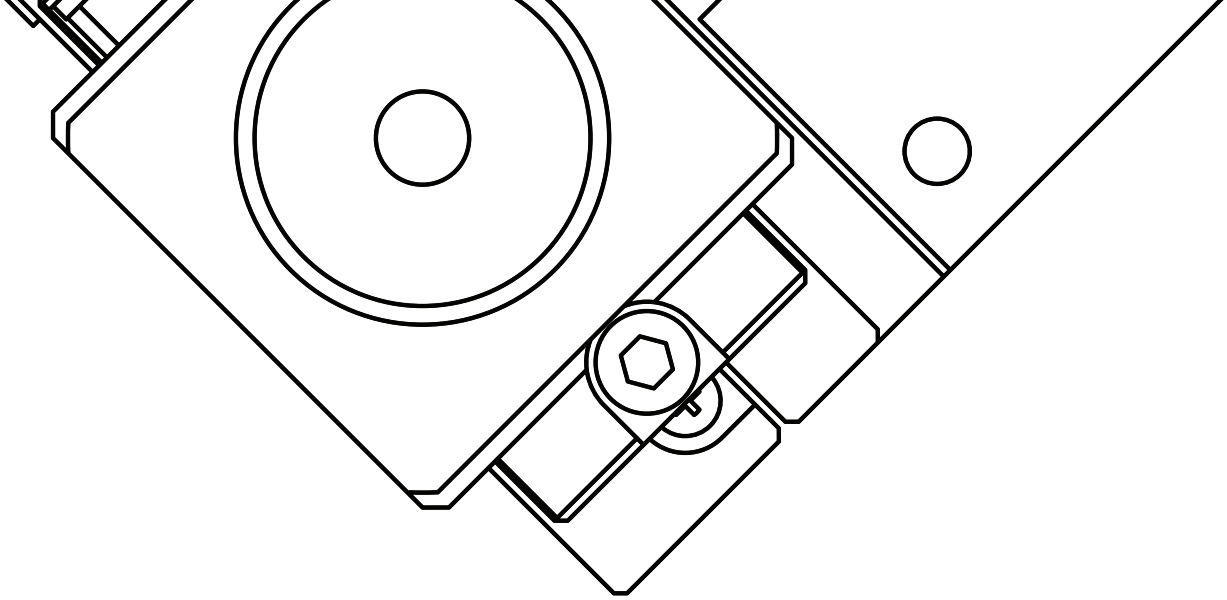
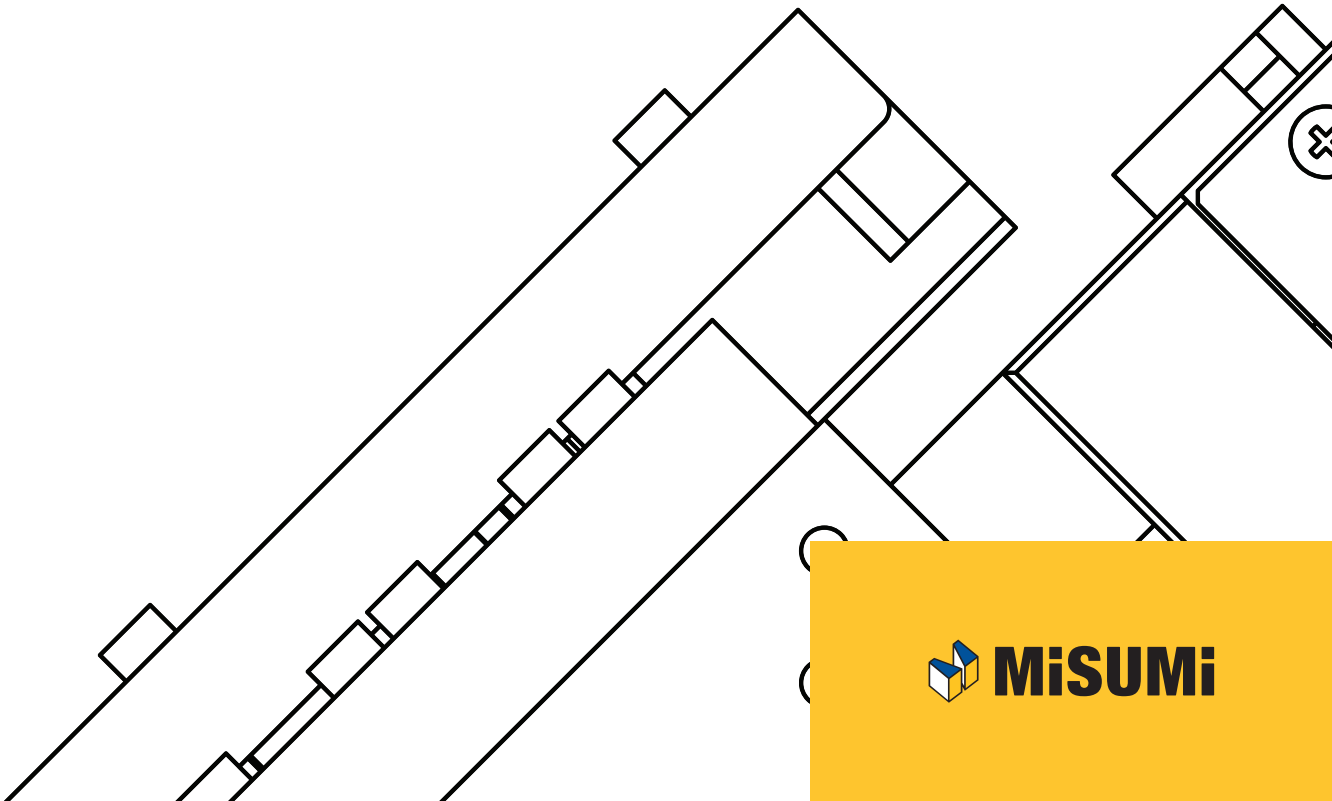


1ST EDITION

MOTION SYSTEMS PRODUCT CATALOG

STANDARD & HIGH PRECISION SOLUTIONS



MiSUMi

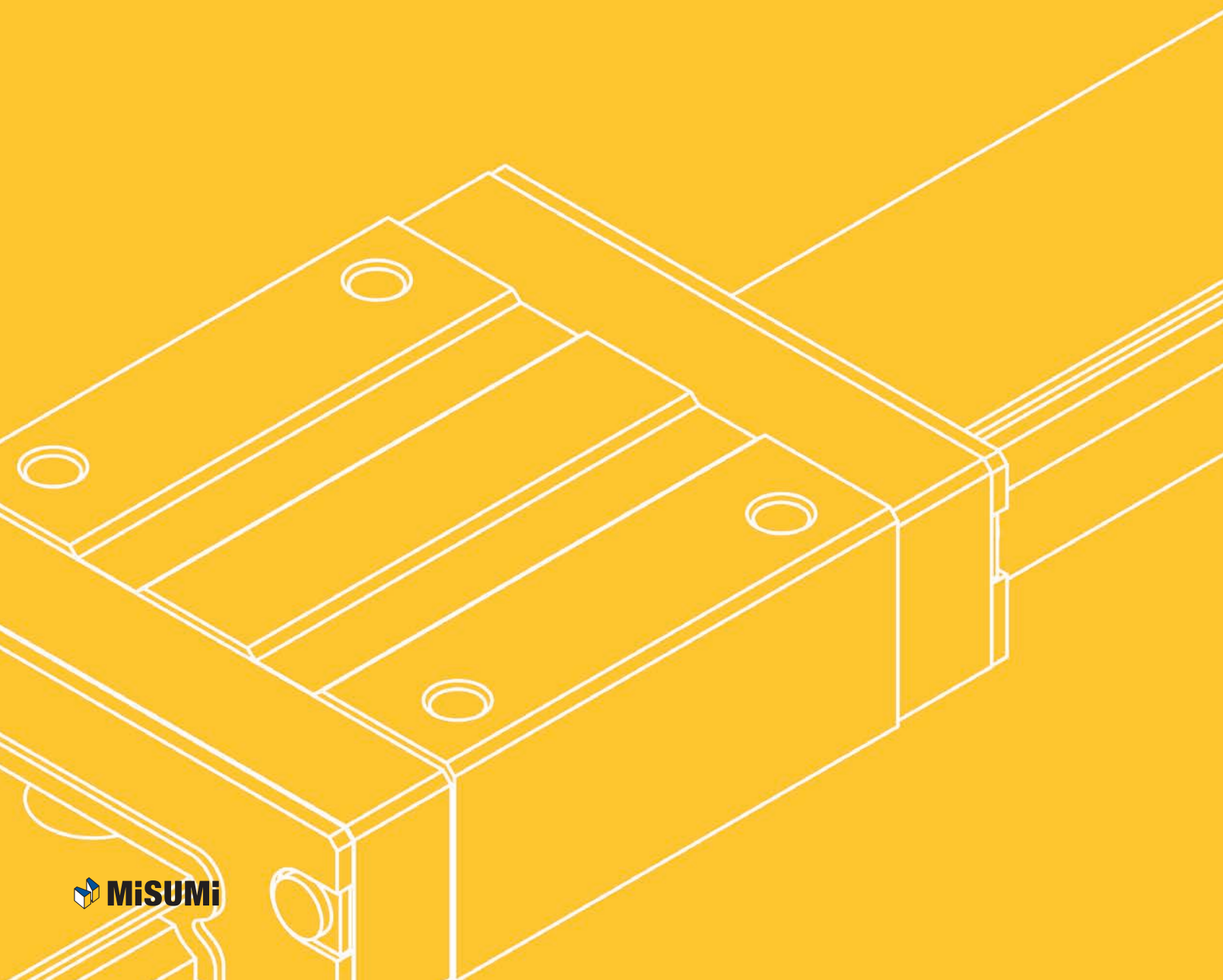
misumiusa.com

MiSUMi

WHY MISUMI?

Our mission is to provide innovative configurable products that fulfill our customers' needs for high quality, competitive prices and short delivery times. MISUMI currently serves over 150,000 customers worldwide. MISUMI's products can be utilized in a diverse range of industries including automotive, medical, semiconductor, packaging and 3D Printing.

MISUMI USA has more than 9 million configurable components from which to choose, in as fine as 0.01mm. There are no minimum orders, no set up charges, free CAD downloads, and same day shipping on stock components.



MiSUMi

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NEW NEW PRODUCT
★ BEST SELLER
TYPICALLY IN STOCK
$ COST EFFICIENT

Linear Guides

#REB
With Low Temperature Black Chrome Plating

#SEB
Standard Block, Light Preload

#SEBN
Standard Block with Dowel Holes

#SELB
Long Blocks

#SEL1
Long Block with Dowel Holes

#SEBS
Short Block

#SEB1
Short Block with Dowel Holes

#SEBM
Wide Block

#SELM
Wide Long Block

#SECB
Extra Long Block, Light Preload

#SEBW
Wide Rails, Standard Blocks, Light Preload

#SEB3
Wide Rails, Standard Block with Dowel Holes

#SEB2
Wide Rails, Wide Block

#SELW
Wide Rails, Long Blocks, Light Preload

#SEL3
Wide Rails, Long Block with Dowel Holes

#SEL2
Wide Rails, Long Wide Block

#SVR
For Medium Load (Max Height 33mm)

#SRZL
For Medium Load, with Resin Retainers (Max Height 42mm)

#SXR
For Heavy Load (Max Height 33mm)

#SXRB
For Heavy Load with Resin Retainers (Max Height 42mm)

#SHRB
For Ultra Heavy Load with Resin Retainers (Max Height 42mm)

#SERB
For Super Heavy Load with Resin Retainers (Max Height 42mm)

#SSVR
For Medium and Heavy Load, Stainless Steel

#SSRZ
For Medium Load, Stainless Steel with Resin Retainer

#SSXR
For Heavy Load, Stainless Steel with Resin Retainer

#SSHR
For Ultra Heavy Load, Stainless Steel with Resin Retainer

#SVRN
For Medium Load, Dowel Hole

#SSEB
Heat Resistant

#SEBD
Dust Resistant Standard Blocks, Light Preload, Advanced Selectable L

#SVRD
For Medium Load, Dust Resistant

#SXRD
For Heavy Load, Dust Resistant

#SECK
Clamps for Miniature Linear Guides

#SVCK
Clamping Units for Medium/Heavy Load Linear Guides

#LGBE
Height Adjusting Blocks for Linear Guide, Economy

NEW NEW PRODUCT
★ BEST SELLER
✓ TYPICALLY IN STOCK
$ COST EFFICIENT

#BETA
Height Adjusting Blocks for Linear Guides

#GETA
Height Adjusting Blocks for Miniature Linear Guides

#SBLT
Stopper Bolts for Linear Guides

#SVP
Linear Guide Block Stopper Plates

#PSGL
Slide Guide Mounting Hole Caps (Pack)

#SGU
Linear Guide Lock Units

#LLT
Linear Locks

#LLTA
Simplified Linear Locks

#LLPU
Linear Guide Lock Plates, Threaded

#LLPL
Linear Guide Lock Plates, Grooved

#LLTG
Linear Lock Lock Units

#LLKA
Linear Guide Lock Plates, Counterbored

NEW $

#CSV
Medium Load, Normal Clearance

NEW $

#CSX
Heavy Load, Normal Clearance

NEW $

#CSH
Super Heavy Load, Normal Clearance

NEW $

#CSR
Extra Super Heavy Load, Normal Clearance

New Linear Guide Sizing Software Coming in Dec 2015!

http://us.misumi-ec.com/maker/misumi/mech/tech/calculationsoftware/

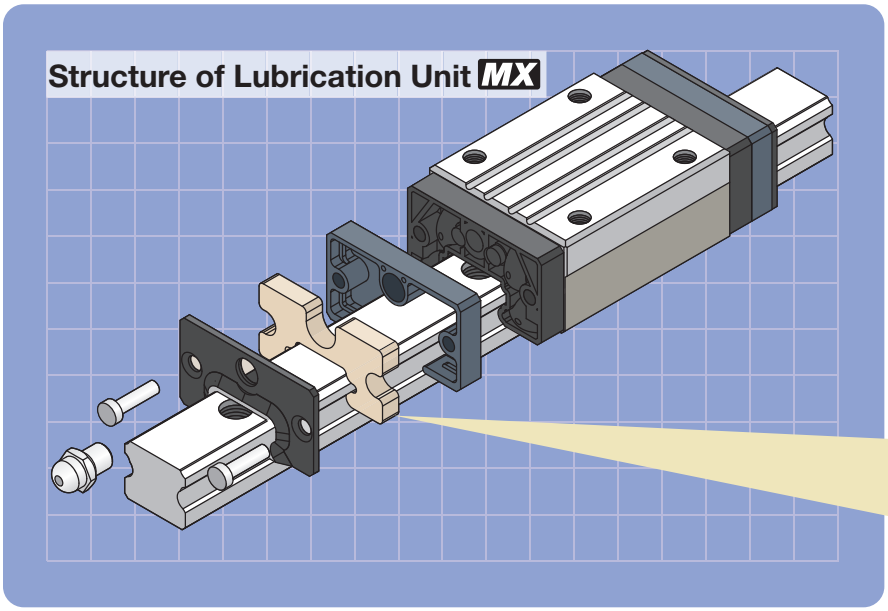
Our goal is to empower the future of manufacturing with our one of a kind configurable business model.

Misumi's Linear Guides and Miniature Linear Guides are produced by Suruga Seiki CO., LTD (a division of Misumi). Suruga Seiki was established in 1964 and has a long history of producing factory automation products.

Currently, Suruga Seiki has operations in the United States, Vietnam, Korea, China, and Thailand.

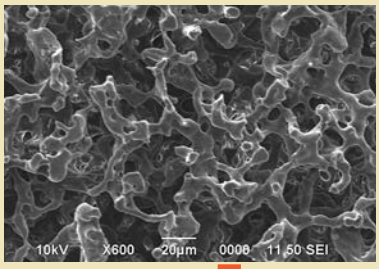
**Note: Not all Linear Guide products listed in this catalog are produced by Misumi/Suruga.*

■ **Newly available Lubrication Units MX provides long term maintenance-free condition!**

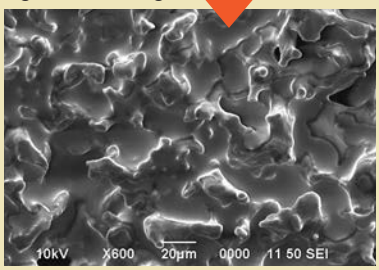


Enlarged Picture of Special Polyurethane

- **Before grease soaking**



- **After grease soaking**



Special Polyurethane has interconnected microspores with excellent water absorption capabilities and allows for the proper distribution of grease.

Features

Feature 1: Long Term Maintenance-Free Condition
Special polyurethane in Lubrication Unit MX distributes grease, and its micropore structure supplies optimal amount of grease on the track surface. Oil film is constantly formed between steel balls and the track, which enables long term maintenance-free condition.

Feature 2: Cost Advantage
Extended lubrication intervals result in reduction of maintenance cost.

Feature 3: Short Lead Time
Ship time is the same as that of standard products.

Test Result

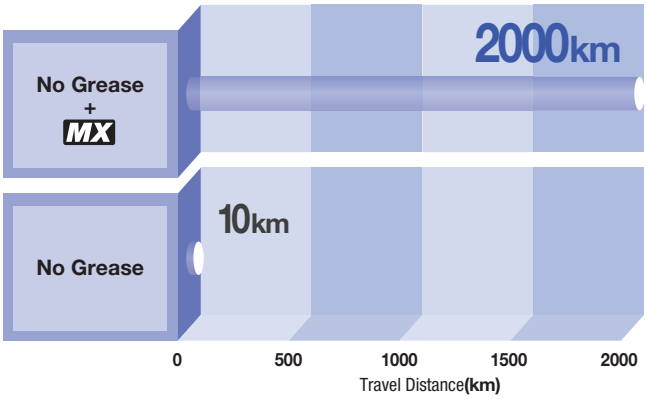
Linear guides with Lubrication Unit MX achieved 2,000km travel, which is much more than standard units with no grease.

■ Test Conditions

Sample	SXR24 Type
Load	2.87kN
Travel Speed	750mm/sec

– No grease: degreased linear guide
– No grease+MX: degreased linear guide equipped with MX only
– MX is filled with Alvania Grease S2 by Showa Shell Sekiyu K.K.

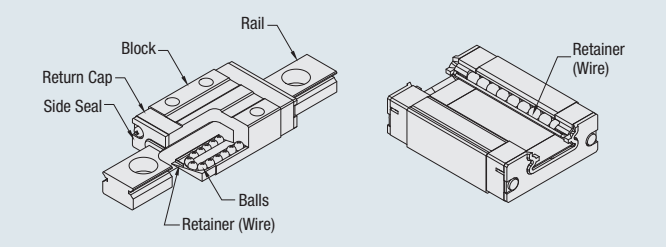
Test results are for reference only, not guaranteed.



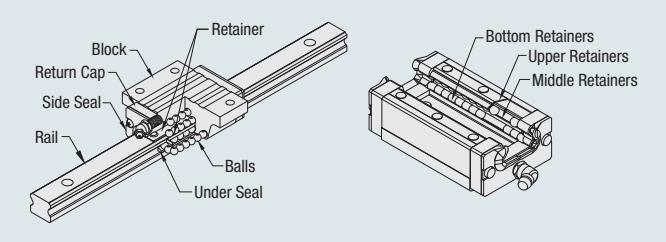
Structure and Precision of Linear Guides

■ Linear Guide Structure and Features

Miniature Type



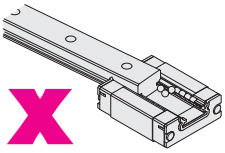
Medium and Heavy Load Type



- Linear guides utilize steel balls rolling on precisely ground raceways, and the balls are recirculated by plastic return caps.
- End seals prevent foreign objects from intruding into the blocks.
- Miniature Type has two rows of contacting steel balls in a 4-point raceway contact design.
- Medium and Heavy Load Types have four rows of contacting steel balls in a 2-point raceway contact design.
- Load ratings are the same for all four directions (radial, reverse-radial, and lateral directions). Can be used in any orientation.

CAUTIONS

However, the balls may fall out by rapidly removing blocks from the rail or inserting the rail into the block at a slant. Remove and install the blocks with caution.



■ Precision

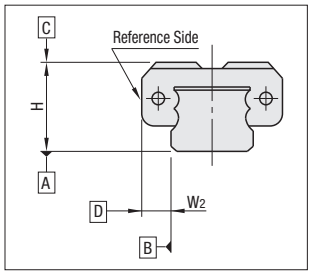
– Dimensional Accuracies

Unit: μm

Type	Grades		Precision Grade	High Grade	Standard Grade
Miniature Type	Height H Tolerance		±10	±20	±20
	Height H Pair Variation		7	15	40
	Width W_2 Tolerance		±15	±25	±25(20)
	Width W_2 Pair Variation		10	20	40
Medium and Heavy Load Type	Accuracy Standards		High Grade	Interchangeable	Standard Grade
	Height H Tolerance		±40	±20	±100
	Height H Pair Variation		15	15	20
	Width W_2 Tolerance		±20	±30	±100
	Width W_2 Pair Variation	24, 28	15	25	20
		33, 42	15	25	30
		30, 36, 40, 42	–	25	–

[Pair Variation of Height H]
Difference between the min./max. values of Height (H) Dimension for a number of blocks combined on one rail.

[Pair Variation of Width W_2]
Difference between the min./max. values of Width (W) Dimension for a number of blocks combined on one rail.
– Pair variation value shown in table below is for the products on **P.22**



– Running Parallelism

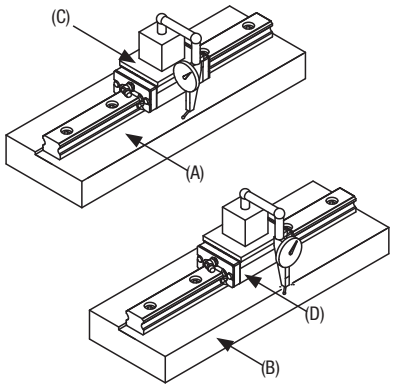
Unit: μm

Rail Length (mm)		Miniature			Medium and Heavy Load		
Over	Or Less	Precision Grade	High Grade	Standard Grade	High Grade	Interchangeable	Standard Grade
—	50	2	3	13	7	6	7
50	80	2	3	13	7	6	7
80	125	3	7	15	7	6.5	7
125	200	3	7	15	7	7	7
200	250	3.5	9	17	7	8	7
250	315	4	11	18	8	9	12
315	400	5	11	18	8	11	12
400	500	5	12	19	9	12	14
500	630	6	13.5	21	11	14	18
630	800	6	14	21.5	13	16	21
800	1000	—			14.5	18	23
1000	1250	—			16	20	25
1250	1600	—			19	23	27
1600	2000	—			21	26	28.5

[Running Parallelism]
Measured while the rail is bolted firmly to a standard reference surface base.
A relative variation of block's top surface C against the rail's bottom surface A, and a relative variation of block's datum surface D against the rail's datum surface B are measured, as the block is run from end to end on the rail.

– Running parallelism of surface C against surface A

– Running parallelism of surface D against surface B



Linear Guide Preload and Allowable Load

■ Selection of Radial Clearance (Preload)

Type	Preload	Sizes (Height H Dimension)	Radial Clearance (μm)
Miniature	Light Preload	6~20	-3~0
	Interchangeable–Slight Clearance		0~15
Medium and Heavy Load	Normal Clearance	24	-4~+2
		28	-5~+2
		33	-6~+3
	Interchangeable, Light Preload	24, 28	-4~0
		30, 36, 40, 42	-5~0
		*42	-7~0

* Marked size is for Extra Heavy Load and Extra Super Heavy Load

– Clearance and preload of MISUMI Linear Guides are controlled with minute ball size adjustments.
– Increased rigidity and reduced elastic deformation will result by preloading (negative clearance).
– Generally, selecting some preloads would cause favorable effects on accuracy and life of Linear Guides.

■ Friction Force (Required Thrust Force)

Linear Guide friction force (required thrust) varies depending on load, speed and lubricant property. Especially when moment load is applied, Preload Type friction force increases. Although seal resistance varies according to seal lip press-fit allowance and lubrication conditions, it is not proportionate to load and keeps a constant value. Friction force is obtained by the following formula.

$$F = \mu \cdot W + f$$

F : Friction (N)
μ : Dynamic Friction Coefficient
W : Applied Load
f : Seal Resistance (2N ~ 5N)

Table-1 Dynamic Friction Coefficient

Types	Dynamic Friction Coefficient (μ)
Miniature Linear Guides	0.004~0.006
Medium Load Linear Guides	0.002~0.003

■ Allowable Load

– Basic Dynamic Load Rating (C)
Basic dynamic load rating is defined as: A constant load applied in a constant direction and ran under equal condition on a group of linear guide specimen where 90% of specimen will reach 50 x 103m without experiencing any damages due to rolling fatigues.

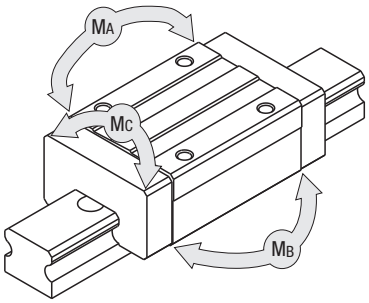
– Basic Static Load Rating (Co)
Basic static load rating is defined as: A load applied on non-moving linear guides where a sum of rolling element plastic deformation amount and rolling surface plastic deformation amount becomes equal to 0.0001 times that of the diameter of the rolling element (balls).

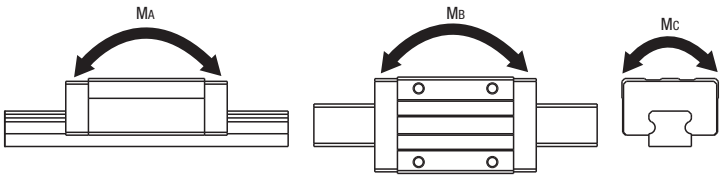
– Allowable Static Moment (M_A / M_B / M_C)
Allowable static moment is a critical static moment load defined by permanent deformation value similar to basic static load rating Co.

Allowable Load (N) ≤ Co/f_S

Allowable Moment (N • m) ≤ $(M_A, M_B, M_C)/f_S$

f_S : Statistic Safety Factor
Co : Basic Static Load Rating (N)
M_A, M_B, M_C : Static Allowable Moment (N • m)





Pitch Direction Yaw Direction Roll Direction

– Static Safety Factor (f_S)
Basic Static Load Rating Co, in the static state or in low speed, is divided by Static Safety Factor f_S in Table-2 depending on operating conditions.

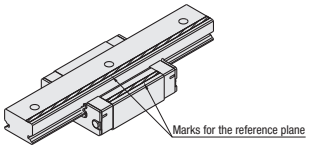
Table-2 Static Safety Factor (f_S lower limit)

Condition of Use	Lower Limits of f_S
For normal operating condition	1~2
When smooth running performance is required	2~4
When vibrations and impacts exist	3~5

Installation and Maintenance of Linear Guides

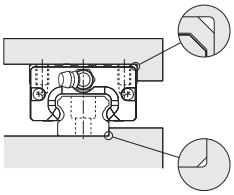
■ Installation Method of Linear Guides

MISUMI Linear Guides have a datum surface (a surface with a straight groove) on both the rail and block. (Refer to the figure on right)
When installing Linear Guides, correctly align the datum of the guides and installation bases.



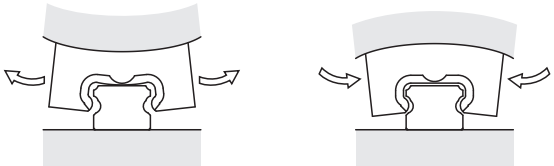
■ Mounting Surface Shape

Linear Guides are designed to obtain accuracies when mounted on base plates. Generally, the datum plane is placed against the shoulder on the mounting surface. In that case, corners should have reliefs or corner radius should be machined smaller than chamfering of rails and blocks. See each product page for chamfering dimensions of products.



■ Block Mounting Surface Flatness

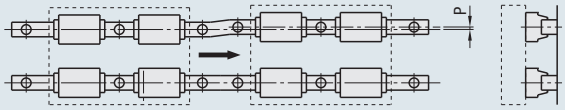
Blocks may be deformed depending on the mounting surface flatness. Block deformation may cause clearance, which might give less/more preload and cause sliding defects. Securing 5μ mounting surface flatness is recommended.



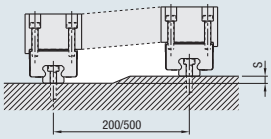
■ Installation Error Tolerance

Installation Error Tolerance is the value which does not influence operating life under common usage.

Running Parallelism Error Tolerance



Height Error Tolerance



Installation Error Tolerance

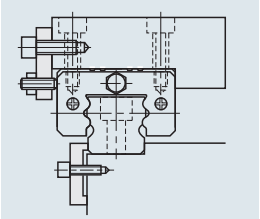
Type	Radial Clearance	Parallelism Error Tolerance of 2 Axis (P)	Height Error Tolerance of 2 Axis
Miniature Type	Light Preload	6μm or less	15μm or less / 200mm
	Interchangeable–Slight Clearance	10μm or less	30μm or less / 200mm
Medium and Heavy Load Type	Light Preload/ Normal Clearance	20μm or less	330μm or less / 500mm

■ Rail Installation

When datum provided on installation bases

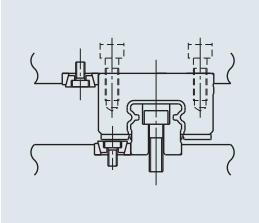
(1) Remove burrs and dusts on the mating surfaces before installation.
(2) Place a rail on the installation side of the base gently, and tighten the screws temporarily while pushing the rail against the datum shoulder.
(3) Installation methods Figure 1–3 are recommended when using linear guides where shocks, vibrations and heavy loads may exist, and high precision is required.
(4) Fully tighten the rail mounting screws to specified torque with a torque wrench. (See Table 1 for torque standards)

Fig. 1: Push plate method



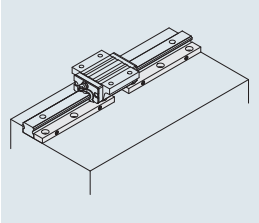
Refer to **P.41**

Fig. 2: Taper gib method



Refer to **P.41**

Fig. 3: Push screw method



Refer to **P.39**

When datum not provided on installation bases

Straight Gauge
(1) Place a rail on the installation side of the base gently, and highly tighten the screws.
(2) Place a straightedge parallel to the temporarily tightened rail.
(3) Use the straightedge as a reference, tighten the screws while measuring the parallelism of the rail with a dial indicator as shown in Fig.4.
(4) Fully tighten the rail mounting screws to specified torque with a torque wrench.
(5) The secondary rail can be installed in the same straight edge method as the primary master rail, or by using the primary rail as a datum reference. In either method, use a dial indicator to measure the parallelism while the rail is being fastened down.

Fig. 4: Straight edge method

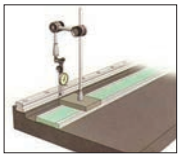


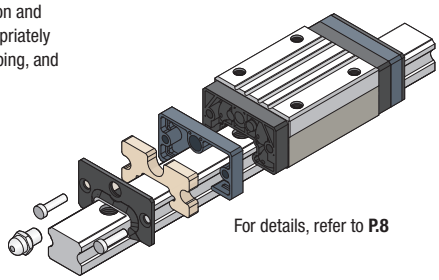
Fig. 5: Secondary rail mounting method

Table 1: Screw Tightening Torque (For SCM Material)

Type	Screw	Recommended Torque (N・m)
Miniature Type	M2	0.4
	M2.5	0.6
	M3	1.0
	M4	2.5
Medium and Heavy Load Type	M3	2.0
	M5	8.8
	M6	12.7
	M8	29.4

■ Maintenance (Grease Application)

– Grease forms lubricating film between steel balls and rolling surface of linear guides. This reduces friction and prevents burns. Grease loss and deterioration will cause shorter life of linear guides. Apply grease appropriately depending on your condition of use. Grease listed below is applied to MISUMI Linear Guides before shipping, and the products can be used out of box.
– Miniature Type: Filled with Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.).
– Medium / Heavy Load type: Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.)
– Recommended Lubrication Intervals: Every 6 months. Every 3 months when travel distance is extensive, or every 1000km. ∗*Recommended above is the grease application interval based on travel distance. If grease deterioration and contamination is severe in your operating condition, grease application intervals should be shortened.*



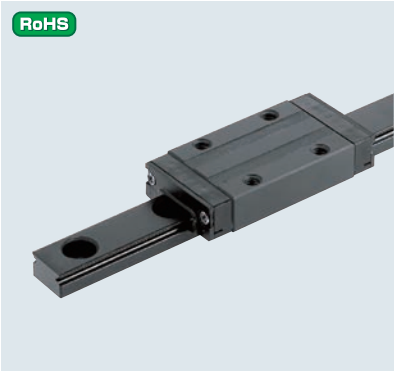
For details, refer to **P.8**

■ About Special Greases

The standard grease used in the linear guides can be changed to the following types.

Part Number	Product Name	Main Features
L Type	ET-100K (Made by Kyodo Yushi)	Excels in heat resistance, oxidation stability, adhesion and adhesive power. In addition, splash / leakage is minimal.
G Type	LG2 (Made by NSK Ltd.)	Special grease for linear guides, ball screws and etc. for clean-room use.

Product Name	Page	Grease Selectable
Miniature Linear Guides Not applicable to Heat Resisting Type or Lubrication Unit Type	14–20	L, G
Medium and Heavy Load Linear Guides Not applicable to Plastic Retainer Type	24–31	



■ Features: Low Temperature Black Chrome Plated Linear Guides

Low temperature black chrome plating on linear guides is 5μm of fluoropolymer layer chemically deposited as black film on rails and blocks, and it has long-lasting rust prevention effect. The coating layer is immune to cracking from tight radii strike-folding and does not flake under repeated bending.

Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity.

NOTE: Surface treatment will not be applied to mounting holes of rails and blocks of low temperature black chrome plated linear guides.

■ Explanation of Low Temperature Black Chrome Plated Model Types

For low temperature black chrome plated products, change the first letter of part numbers "S" to "R".

Order Example

Part Number	–	L	
SEBL10L	–	270	(L Type Greased)
SEBL10G	–	270	(G Type Greased)

Please add L, or G after part number of regular type when placing an order.

Alterations

Part Number	–	L
SEBL10L	–	270

Confirm the details of alterations on the page numbers shown in the table on the left.

	[Standard]		[Low Temperature Black Chrome Plated Products]
(Ex.)	SEB10-115	→	REB10-115
	SSEB16-270	→	RSEB16-270
	SXR24-520	→	RXR24-520
	SSVR33-700	→	RSVR33-700

■ (Number of Mounting Holes) and G Dimensions on L Dim. Configurable Type

For Rail Length Configurable Type, rail length is cut (1mm increment) and shipped. In that case, number of rail mounting holes and F dimensions are as below.

Miniature Linear Guide – Standard Rail –

H	6, 8	10	13	16	20	No. of Mounting Holes M
L	—	36~47	46~57	71~87	101~139	2
	41~50	48~67	58~82	88~127	140~199	3
	51~65	68~87	83~107	128~167	200~259	4
	66~80	88~107	108~132	168~207	260~319	5
	81~95	108~127	133~157	208~247	320~379	6
	96~110	128~147	158~182	248~287	380~439	7
	111~125	148~167	183~207	288~327	440~499	8
	126~129	168~187	208~232	328~367	500~559	9
	—	188~207	233~257	368~407	560~619	10
	—	208~227	258~282	408~447	620~679	11
	—	228~247	283~307	448~487	680~699	12
	—	248~267	308~332	488~527	—	13
	—	268~274	333~357	528~567	—	14
	—	—	358~382	568~607	—	15
	—	—	383~407	608~647	—	16
	—	—	408~432	648~669	—	17
	—	—	433~457	—	—	18
	—	—	458~469	—	—	19
F	F=15	F=20	F=25	F=40	F=60	

Miniature Linear Guide – Wide Rail –

H	6.5	9	12	14	16	No. of Mounting Holes M
L	—	51~67	51~67	71~89	71~89	2
	51~67	68~97	68~97	90~129	90~129	3
	68~87	98~127	98~127	130~169	130~169	4
	88~107	128~157	128~157	170~209	170~209	5
	108~127	158~187	158~187	210~249	210~249	6
	128~129	188~217	188~217	250~289	250~289	7
	—	218~247	218~247	290~329	290~329	8
	—	248~277	248~277	330~369	330~369	9
	—	278~289	278~289	370~409	370~409	10
	—	—	—	410~449	410~449	11
	—	—	—	450~469	450~489	12
	—	—	—	—	490~529	13
	—	—	—	—	530~569	14
	—	—	—	—	570~609	15
	—	—	—	—	610~649	16
	—	—	—	—	650~669	17
F	F=20	F=30		F=40		

M (# of mounting holes) for H16 type will be M x 2 since there are two rows of mounting holes.

Medium and Heavy Load Type

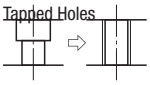
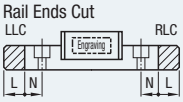
H	24	28, 30	33, 36, 40	42	No. of Mounting Holes M
L	101~131	—	—	—	2
	132~191	161~199	161~201	201~279	3
	192~251	200~259	202~261	281~343	4
	252~311	260~319	262~321	344~423	5
	312~371	320~379	322~381	424~503	6
	372~431	380~439	382~441	504~583	7
	432~491	440~499	442~501	584~663	8
	492~551	500~559	502~561	664~743	9
	552~611	560~619	562~621	744~823	10
	612~671	620~679	622~681	824~903	11
	672~731	680~739	682~741	904~983	12
	732~791	740~799	742~801	984~1063	13
	792~851	800~859	802~861	1064~1143	14
	852~911	860~919	862~921	1144~1223	15
	912~971	920~979	922~981	1224~1303	16
	972~1031	980~1039	982~1041	1304~1383	17
	1032~1091	1040~1099	1042~1101	1384~1463	18
	1092~1151	1100~1159	1102~1161	1464~1543	19
	1152~1211	1160~1219	1162~1221	1544~1623	20
	1212~1271	1220~1279	1222~1281	1624~1703	21
	1272~1331	1280~1339	1282~1341	1704~1783	22
	1332~1391	1340~1399	1342~1401	1784~1863	23
	1392~1451	1400~1459	1402~1461	1864~1943	24
	1452~1479	1460~1519	1462~1521	1944~1959	25
	—	1520~1579	1522~1581	—	26
	—	1580~1639	1582~1641	—	27
	—	1640~1699	1642~1701	—	28
	—	1700~1759	1702~1761	—	29
	—	1760~1819	1762~1821	—	30
	—	1820~1879	1822~1881	—	31
	—	1880~1939	1882~1941	—	32
	—	1940~1959	1942~1959	—	33
F	F=60			F=80	

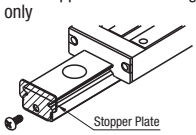
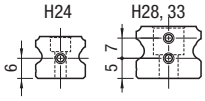
About G Dimensions

		G
Miniature Type	Standard Rails Wide Rails	
Medium and Heavy Load Type		$G=\frac{L-(M-1)xF}{2}$

Linear Guide Alteration & Notes

LLC	RLC	MC	WC	TMS/TMC
All	All except applicable to selectable type only; Not applicable to H6, H6.5, H8, H10, H13, L45, H24, L100, H35; Not applicable to L dimension 70mm or less	All Miniature Linear Guides on **P.14–21**	Precision and High Grade Miniature Linear Guides Without Dowel Holes on **P.15**	Dust Resistant Linear Guides on **P.24**
			Carbon Steel Linear Guides without Dowel Holes on **P.25**	Carbon Steel Linear Guides and Linear Guides with Dowel Holes on **P.25**
			Carbon Steel Linear Guides without Dowel Holes on **P.27**	Linear Guides on **P.27**

Alterations	Code	Spec.
Tapped Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. (H / MC: 6 / M2.6; 8 / M3; 10 / M4; 13 / M4; 16 / M5; 20 / M6)
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut **LLC** / Right End Cut **RLC**	Cuts rail ends. Ordering Code LLC. (H / L Cut / N: 10 / 2.5; 13 / 5; 16 / 10; 20 / 15; N = 5) ⓘ Applicable to Selectable Type only. ⓘ Overall length will be shorter by cutting. ⊗ Not applicable to H6 and H8.

Alterations	Code	Spec.
TMS: Tapped Hole Matching +2 Stopper Plates TMC: Tapped Hole Matching only 	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3 x P0.5 Depth 5 Tapped Hole. Stopper Plates Details **P.39** ⓘ Applicable to Carbon Steel Type only.

Parallel Use of 2 Rails	WC	Pair variation of Height H between 2 rails is set within 15m. Rails are shipped in pairs. ⓘ Specify the actual rail quanity (even number) to order, not "pairs." ⓘ Applicable to High Grade Type only. ⊗ Not applicable to low temperature chrome plated products.
3-Block Specifications	B3	Adds 2-blocks to the 1-block product. ⓘ There are restrictions for the L dimensions length. See "Selectable Shortest Rail Length" for details. Selection Example: SELBW12-260-B3
4-Block Specifications	B4	Adds 3-blocks to the 1-block product. ⓘ There are restrictions for the L dimensions length. See "Selectable Shortest Rail Length" for details. Selection Example: SSELBW9-290-B4

■ Selectable Shortest Rail Length

Wide Rail, Long Block With/Without Dowel Holes

H	B3	B4
9	170	200
12	200	260
14	230	310
16	270	350

Wide Long Block

H	B3	B4
8	115	—
10	155	195
13	170	220
16	230	270
20	280	340

Wide Rail, Standard Block

H	B3	B4
6	90	110
9	140	170
12	140	220
14	190	230
16	230	270

Standard Rail, Standard Block With/Without Dowel Holes

H	B3	B4
6	85	100
8	85	115
10	115	155
13	145	170
16	190	230
20	220	280

Standard/Wide Rails, Wide Block

H	B3	B4
8	100	130
9	140	170
10	115	155
12	140	200
13	145	195
14	190	230
16	230	270
20	220	280

Standard Rail, Long Block With/Without Dowel Holes

H	B3	B4
6	85	—
8	115	—
10	155	195
13	170	220
16	230	270
20	280	340

Standard Rail, Short Block With/Without Dowel Holes

H	B3	B4
8	85	100
10	95	135
13	120	145
16	150	190

Wide Rails, Standard Block with Dowel Holes

H	B3	B4
9	140	170
12	140	200
14	190	230
16	230	270

Linear Guides for Medium/ Heavy Load With/Without Dowel Hole

	Medium Load		Heavy Load	
H	B3	B4	B3	B4
24	280	340	340	400
28	340	400	400	460
33	340	400	400	520

Miniature Linear Guides Dust Proof Standard Blocks

H	Block	B3	B4
13	Standard	145	195
	Wide	—	—
14	Standard	—	—
	Wide	190	230
16	Standard	190	230
	Wide	230	270
20	Standard	220	280
	Wide	—	—

Slight clearance type has gap between rails and blocks. If precision/rigidity is required, select light preload type.

Miniature Linear Guide – Heat Resistant Type

H	Block	B3	B4
8	Short	85	100
	Standard	85	115
	Long	—	—
10	Short	95	115
	Standard	115	155
	Long	155	195
13	Short	120	145
	Standard	145	170
	Long	170	220
16	Short	150	190
	Standard	190	230
	Long	230	270

ⓘ Blocks and rails are not sold as separate items unless otherwise indicated
ⓘ Heat resistant temperature is -20~80ºC unless otherwise indicated
ⓘ Preload accuracies and clearances only guaranteed for sets unless otherwise indicated

■ Precautions for Use

ⓘ Blocks are equipped with retainers (wire) to prevent balls from falling out.
ⓘ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
ⓘ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
ⓘ Rails cannot be connected end to end.
ⓘ Running parallelism is the value measured after the rail is mounted.

■ Accessories

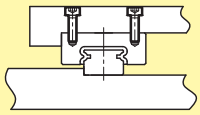
– H6 comes with No. 0, Class 1 Phillips button head screws (M2 x 6)
– H6.5 comes with No. 0, Class 1 Phillips button head screws (M2.5 x 7)
– H8 comes with cap screws (M2 x 6)

■ Others

– For the lubrication unit for Miniature Linear Guides with Lubrication Units on **P. 22**: supplies fresh lubrication oil to the track surfaces continuously from porous plastic material containing a high proportion of lubricant, providing long term maintenance-free operation.
– For the linear guides on P. 24–27 Grease Fittings: Straight type for H24 and angled type for H28, H33, H42.
– Filled with lithium soap based grease (Multtemp Grease PS2 by Kyodo Yushi Co. Ltd.)

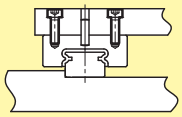
– Installation Example –

Conventional Type



Positioning on the basis of plate end face

With Dowel Holes



Positioning using a dowel hole

Order Example

Part Number	–	L	
SELB10	–	275	
RELB10	–	75	(Low Temperature Black Chome Plating)
SELB10L	–	75	(L Type Greased)
SELB10G	–	75	(G Type Greased)

G=clean room grease L=heat resisant grease No Letter=standared lithium based grease

Alterations

Part Number	–	L	–	Alterations
SEL2BL16	–	450	–	MC

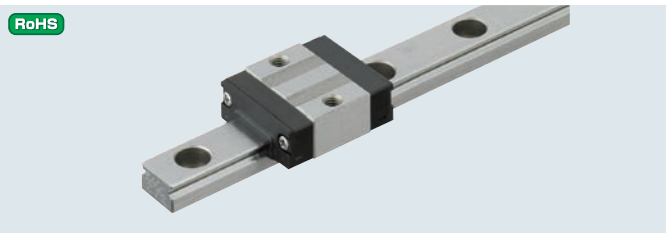
All purchases are final and there are no returns for miniature linear guides, linear guides, and accessories.

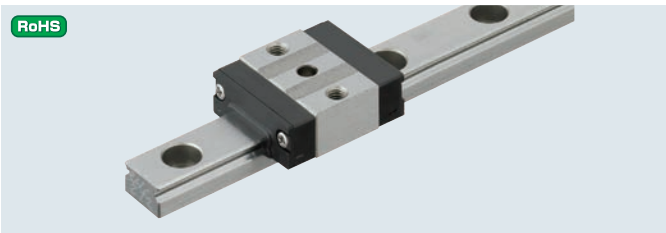
Miniature Linear Guides

– Short Blocks (with Dowel Holes) –

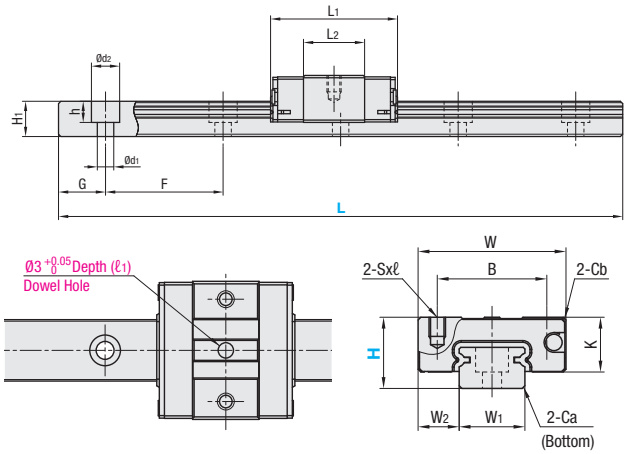
■ Features

Short block type of industry-standard spec. 20% more compact than standard blocks.





Material Hardness	Type: Light Preload / High Grade / Without Dowel Holes	Type: Light Preload / High Grade / With Dowel Holes	Type: Slight Clearance / Standard Grade / Without Dowel Holes	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SEBS ✔	SEBSN	SEBSZ	Selectable	1
	SE2BS	SE2BSN	SE2BSZ		2
	SEBSL	SEBSNL	SEBSLZ	Configurable	1
	SE2BSL	SE2BSNL	SE2BSLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSEBS ✔	SSEBSN	SSEBSZ ✔	Selectable	1
	SSE2BS	SSE2BSN	SSE2BSZ		2
	SSEBSL	SSEBSNL	SSEBSLZ	Configurable	1
	SSE2BSL ★	SSE2BSNL	SSE2BSLZ		2



Order Example

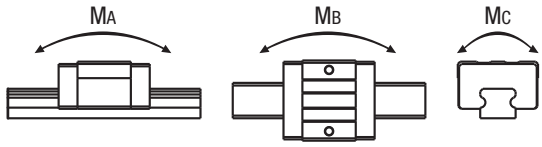
Type	–	H	–	Grease Type	–	Length	–	Alterations
SEBS	–	8	–	G	–	40	–	MC

Grease type and alternations (if applicable) available on **P. 12–13**

Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	S x ℓ	L_2	K	Cb	Dowel Hole Dimensions: N	($ℓ_1$)	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
8	40–130 (in 15 mm increments)	41~129	17	19.6	12	M2 x 2.5	9.6	6.5	0.3	8.5	2	5	4.7	0.3	15	5	15	5
10	35–275 (in 20 mm increments)	36~274	20	22.9	15	M3 x 3	11.9	7.8	0.3	10	2.5	5.5	5.5	0.3	20	7.5	20	7.5
13	45–470 (in 25 mm increments)	46~469	27	27	20	M3 x 3.5	13	10	0.5	13.5	3	7.5	7.5	0.5	25	10	25	10
16	70–670 (in 40 mm increments)	71~669	32	32.7	25	M3 x 4	17.7	12	0.5	16	4	8.5	9.5	0.5	40	15	40	15

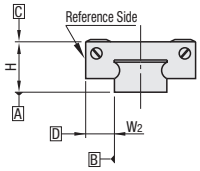
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N・m	Allowable Static Moment: M_B N・m	Allowable Static Moment: M_C N・m	Mass: Blocks kg	Mass: Guide Rails kg/m
8	0.79	1.27	1.9	1.6	4.6	0.008	0.19
10	1.16	1.68	3.1	2.6	7.9	0.015	0.31
13	1.63	2.38	5.2	4.4	14.8	0.025	0.61
16	3.08	4.23	12.3	10.3	32.6	0.05	1.02



Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W_2 Tolerance	±25	±25
Width W_2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**	
Running Parallelism of surf. D against surf. B		

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

Miniature Linear Guides

– Standard Blocks (with Dowel Holes) –

■ Features

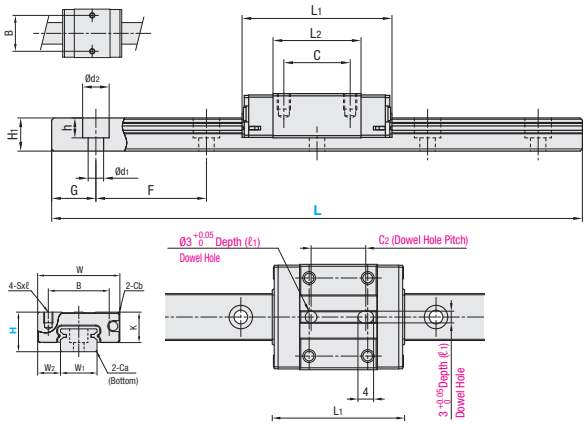
Material Hardness	Type: Precision Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, With Dowel Holes	Standard Grade, Slight Clearance, Without Dowel Holes	Standard Grade, Slight Clearance, With Dowel Holes	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SEBV ✓	SEB ★ ✓	SEBN ✓	SEBZ ✓	SEBNZ	Selectable	1
	SE2BV	SE2B ★ ✓	SE2BN	SE2BZ ★ ✓	SE2BNZ		2
	SEBLV	SEBL	SEBNL	SEBLZ	SEBNLZ	Configurable	1
	SE2BLV	SE2BL	SE2BNL	SE2BLZ	SE2BNLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSEBV ✓	SSEB ★ ✓	SSEBN ✓	SSEBZ ★ ✓	SSEBNZ	Selectable	1
	SSE2BV ★ ✓	SSE2B ✓	SSE2BN	SSE2BZ ✓	SSE2BNZ		2
	SSEBLV	SSEBL ★	SSEBNL ★	SSEBLZ	SSEBNLZ	Configurable	1
	SSE2BLV	SSE2BL	SSE2BNL ★	SSE2BLZ	SSE2BNLZ		2

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SEBV	–	10			–	55		

Grease type and alternations (if applicable) available on **P. 12–13**

H6 Type

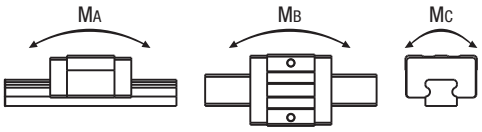


Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	C	S x ℓ	L_2	K	Cb	Dowel Hole Dimensions: N	C_2	(ℓ_1)	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
6	25–100 (in 15 mm increments)	26~99	12	17.4	8	—	M2 x 1.5	9.7	4.5	0.3	—	—	—	5	3.5	4	0.3	2.4 x 3.5 x 1	15	5
8	40–130 (in 15 mm increments)	41~129	17	23.6	12	8	M2 x 2.5	13.6	6.5	0.3	8.5	8	2	7	5	4.7	0.3	2.4 x 4.2 x 2.3	15	5
10	35–275 (in 20 mm increments)	36~274	20	30	15	10	M3 x 3	19	7.8	0.3	10	10	2.5	9	5.5	5.5	0.3	3.5 x 6 x 3.5	20	7.5
13	45–470 (in 25 mm increments)	46~469	27	33.9	20	15	M3 x 3.5	19.9	10	0.5	13.5	14	3	12	7.5	7.5	0.5	3.5 x 6 x 4.5	25	10
16	70–670 (in 40 mm increments)	71~669	32	42.4	25	20	M3 x 4	27.4	12	0.5	16	20	4	15	8.5	9.5	0.5	3.5 x 6 x 4.5	40	15
20	100–700 (in 60 mm increments)	101~699	40	50	30	25	M4 x 6	34.6	15	0.5	20	25	4	20	10	11	0.5	6 x 9.5 x 5.5	60	20

*H6 in High Grade, no Dowel Holes Only **Stainless steel only for H6

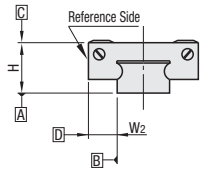
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N・m	M_B N・m	M_C N・m	Mass: Blocks kg	Guide Rails kg/m
6	0.3	0.6	0.8	0.8	1.5	0.004	0.13
8	0.9	1.5	4.1	4.1	5.2	0.01	0.19
10	1.5	2.5	5.1	5.1	10.2	0.02	0.31
13	2.2	3.3	8.8	9.5	16.1	0.04	0.61
16	3.6	5.4	21.6	23.4	39.6	0.06	1.02
20	5.2	8.5	48.4	48.4	86.4	0.12	1.65



Dimension Precision (μm)	Precision Grade	High Grade	Standard Grade
Height H Tolerance	±20	±20	±20
Height H Pair Variation	40	7	40
Width W_2 Tolerance	±25	±15	±25
Width W_2 Pair Variation	40	10	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**		
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

Miniature Linear Guides

– Wide (Long) Standard Blocks –

■ Features

Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

RoHS

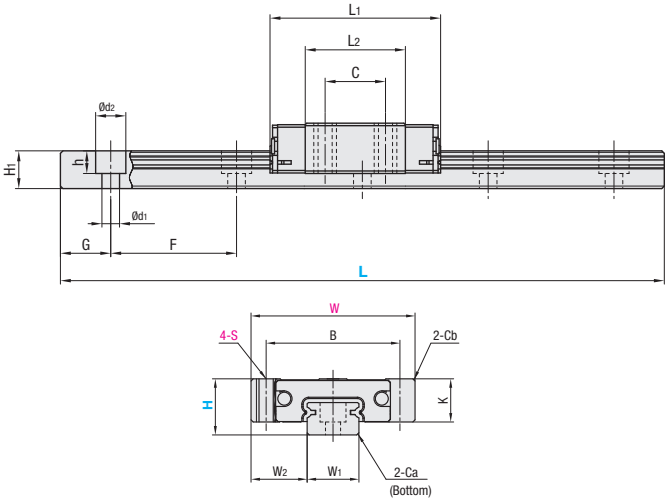
RoHS

Material Hardness	Type: Light Preload / High Grade / Wide Long Block	Type: Light Preload / High Grade / Wide Standard Block	Type: Slight Clearance / Standard Grade	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SELBM ✓	SEBM ✓	SEBMZ	Selectable	1
	SEL2BM	SE2BM	SE2BMZ		2
	SELBML	SEBML	SEBMLZ	Configurable	1
	SEL2BML	SE2BML	SE2BMLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSELBM	SSEBM	SSEBMZ	Selectable	1
	SSEL2BM	SSE2BM	SSE2BMZ		2
	SSELBML	SSEBML	SSEBMLZ	Configurable	1
	SSEL2BML	SSE2BML	SSE2BMLZ		2

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SELBM	–	13	–	L	–	120		

Grease type and alternations (if applicable) available on **P. 12–13**

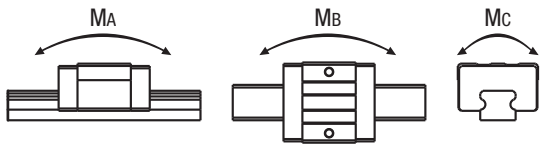


Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	C	S	L_2	K	Cb	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
8	40–130 (in 15 mm increments)	41~129	24	23.6 **32**	19	8 **13**	M3	13.6 **22**	6.5	0.3	7	8.5	4.7	0.3	2.4 x 4.2 x 2.3	15	5
10	35–275 (in 20 mm increments)	36~274	31	30.0 **40**	24	10 **16**	M4	19.0 **29**	7.8	0.3	9	11	5.5	0.3	3.5 x 6 x 3.5	20	7.5
13	45–470 (in 25 mm increments)	46~469	38	33.9 **45.8**	31	12 **20**	M4	19.9 **31.8**	10	0.5	12	13	7.5	0.5	3.5 x 6 x 4.5	25	10
16	70–670 (in 40 mm increments)	71~669	44	42.4 **58.3**	36	16 **25**	M4	27.4 **43.3**	12	0.5	15	14.5	9.5	0.5	3.5 x 6 x 4.5	40	15
20	100–700 (in 60 mm increments)	101~699	54	50.0 **67.7**	46	25 **30**	M5	34.6 **52.3**	15	0.5	20	17	11	0.5	6 x 9.5 x 5.5	60	20

Wide Long Block Dimensions in Bold

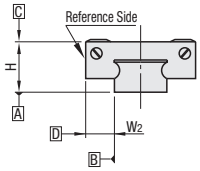
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N·m	M_B N·m	M_C N·m	Mass: Blocks kg	Mass: Guide Rails kg/m
8	0.9 **1.6**	1.5 **2.4**	4.1 **7.5**	4.1 **7.5**	5.2 **9.0**	0.015 **0.016**	0.19
10	1.5 **2.2**	2.5 **3.7**	5.1 **12.3**	5.1 **12.3**	10.2 **13.0**	0.03	0.31
13	2.2 **3.5**	3.3 **5.3**	8.8 **24.5**	8.8 **24.5**	16.1 **32.3**	0.05 **0.06**	0.61
16	3.6 **5.8**	5.4 **8.7**	21.6 **57.8**	21.6 **57.8**	39.6 **67.6**	0.09 **0.10**	1.02
20	5.2 **7.2**	8.5 **13.5**	48.4 **80.7**	48.4 **80.7**	86.4 **138.2**	0.17 **0.18**	1.65



Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W_2 Tolerance	±25	±25
Width W_2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**	
Running Parallelism of surf. D against surf. B		

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

★ BEST SELLER (SELECT PART NUMBERS)
TYPICALLY IN STOCK (SELECT PART NUMBERS)

Miniature Linear Guides

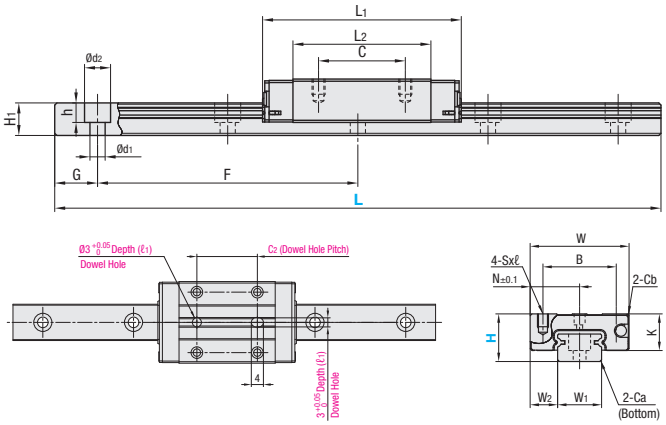
– Long Blocks (with Dowel Holes) –

■ Features

Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.

Standard Grade and Dowel Holes not available in H6

Material Hardness	Type: Precision Grade, Light Preload, Without Dowel Holes	Type: High Grade, Light Preload, Without Dowel Holes	Type: High Grade, Light Preload, With Dowel Holes	Type: Standard Grade, Slight Clearance, Without Dowel Holes	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SELBV	SELB ✔	SELBN ★	SELBZ	Selectable	1
	SEL2BV	SEL2B	SEL2BN	SEL2BZ		2
	SELBLV	SELBL	SELBNL	SELBLZ	Configurable	1
	SEL2BLV	SEL2BL	SEL2BNL	SEL2BLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSELBV	SSELB ✔	SSELBN	SSELBZ	Selectable	1
	SSEL2BV ★	SSEL2B	SSEL2BN	SSEL2BZ		2
	SSELBLV ★	SSELBL	SSELBNL	SSELBLZ	Configurable	1
	SSEL2BLV	SSEL2BL	SSEL2BNL	SSEL2BLZ		2



Order Example

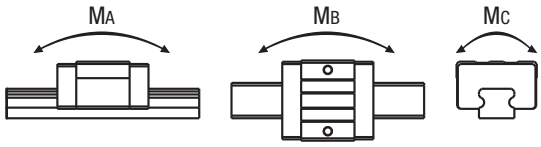
Type	–	H	–	Grease Type	–	Length	–	Alterations
SELBV	–	16			–	150		

Grease type and alternations (if applicable) available on **P. 12–13**

Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	C	S x ℓ	L_2	K	Cb	Dowel Hole Dimensions: N	C_2	($ℓ_1$)	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
6	40–100 (in 15 mm increments)	41~99	12	21	8	—	M2 x 1.5	13.3	4.5	0.3	—	—	—	5	3.5	4	0.3	2.4 x 3.5 x 1	15	5
8	40–130 (in 15 mm increments)	41~129	17	32	12	13	M2 x 2.5	22	6.5	0.3	8.5	13	2	7	5	4.7	0.3	2.4 x 4.2 x 2.3	15	5
10	55–275 (in 20 mm increments)	56~274	20	40	15	16	M3 x 3	29	7.8	0.3	10	16	2.5	9	5.5	5.5	0.3	3.5 x 6 x 3.5	20	7.5
13	70–470 (in 25 mm increments)	71~469	27	45.8	20	20	M3 x 3.5	31.8	10	0.5	13.5	20	3	12	7.5	7.5	0.5	3.5 x 6 x 4.5	25	10
16	110–670 (in 40 mm increments)	111~669	32	58.3	25	25	M3 x 4	43.3	12	0.5	16	25	4	15	8.5	9.5	0.5	3.5 x 6 x 4.5	40	15
20	160–700 (in 60 mm increments)	161~699	40	67.7	30	30	M4 x 6	52.3	15	0.5	20	30	4	20	10	11	0.5	6 x 9.5 x 5.5	60	20

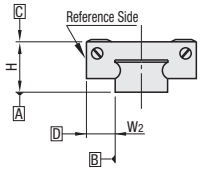
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N · m	M_B N · m	M_C N · m	Mass: Blocks kg	Mass: Guide Rails kg/m
6	0.6	1.0	1.8	1.8	2.3	0.005	0.13
8	1.6	2.4	7.5	7.5	9.0	0.016	0.19
10	2.2	3.7	12.3	12.3	13.0	0.03	0.31
13	3.5	5.3	24.5	26.4	32.3	0.06	0.61
16	5.8	8.7	57.8	62.6	67.6	0.10	1.02
20	7.2	13.5	80.7	80.7	138.2	0.18	1.65



Dimension Precision (μm)	Precision Grade	High Grade	Standard Grade
Height H Tolerance	±10	±20	±20
Height H Pair Variation	7	15	40
Width W_2 Tolerance	±15	±25	±25
Width W_2 Pair Variation	10	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**		
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

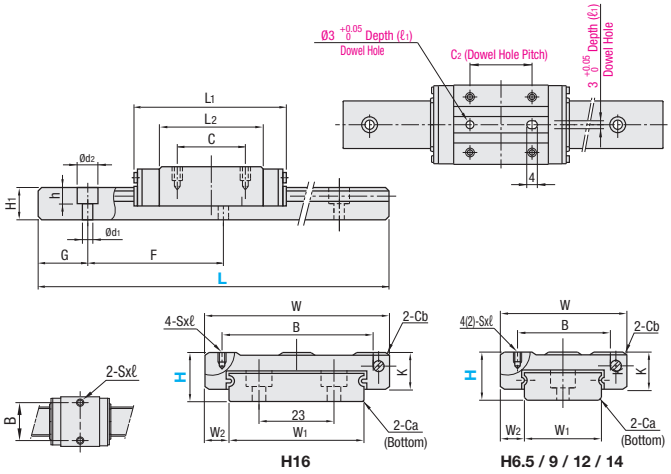
Miniature Linear Guides – Wide Rails –

– Standard Block (with Dowel Holes) –

■ Features

Wide Rail Standard Block Type of industry standard specifications.

Material Hardness	Type: Precision Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, With Dowel Holes	Standard Grade, Slight Clearance, Without Dowel Holes	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SEBWV ✔	SEBW ★ ✔	SEBWN ✔	SEBWZ	Selectable	1
	SE2BWV	SE2BW ★ ✔	SE2BWN	SE2BWZ		2
	SEBWLV	SEBWL	SEBWNL	SEBWLZ	Configurable	1
	SE2BWLV	SE2BWL	SE2BWNL ★	SE2BWLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSEBWV ★	SSEBW ★ ✔	SSEBWN	SSEBWZ ✔	Selectable	1
	SSE2BWV	SSE2BW ★ ✔	SSE2BWN	SSE2BWZ		2
	SSEBWLV	SSEBWL	SSEBWNL	SSEBWLZ	Configurable	1
	SSE2BWLV	SSE2BWL	SSE2BWNL ★	SSE2BWLZ		2



Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SEBWV	–	9	–	G	–	260		

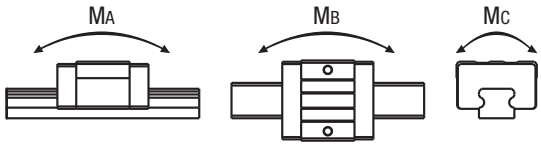
Grease type and alternations (if applicable) available on **P. 12–13**

Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	W +/- 0.05	L_1	B	C	S x ℓ	L_2	K	Cb	N	C_2	($ℓ_1$)	W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
6.5	50–130 (70) (in 20 mm increments)	51~129	17	21	13	—	M2.5 x 1.5	13.3	5	0.3	—	—	—	10	3.5	4	0.3	3 x 5 x 1.6	20	5
9	50–290 (110) (in 30 mm increments)	51~289 (98)	25	31.1	18	12	M2.6 x 2.5	20.1	7	0.3	12.5	12	2.5	14	5.5	5.2	0.5	3.5 x 6 x 3.2	30	10
12	50–290 (110) (in 30 mm increments)	51~289 (98)	30	38	21	12	M2.6 x 3	27	9	0.3	15	12	2.5	18	6	7.5	0.5	3.5 x 6 x 4.5	30	10
14	70–470 (150) (in 40 mm increments)	71~469 (130)	40	44.3	28	15	M3 x 3.5	30.1	11	0.5	20	15	3.5	24	8	8	0.5	4.5 x 8 x 4.5	40	15
16	70–670 (190) (in 40 mm increments)	71~669 (170)	60	55	45	20	M4 x 4.5	40	13	0.5	30	20	4	42	9	9.5	0.5	4.5 x 8 x 4.5	40	15

Dimensions of L in ( ) are shortest lengths possible for 2 block type.
H6.5 only available in High Grade without dowel holes.

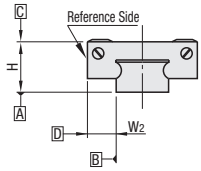
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N • m	Allowable Static Moment: M_B N • m	Allowable Static Moment: M_C N • m	Mass: Blocks kg	Mass: Guide Rails kg/m
6.5	0.5	0.9	2.0	2.0	4.0	0.006	0.28
9	1.4	2.2	7.8	7.8	15.5	0.02	0.50
12	2.3	3.7	13.7	16.3	30.4	0.04	0.96
14	3.5	5.3	20.6	22.3	52.1	0.08	1.40
16	5.8	8.5	40.2	43.6	148	0.15	2.95



Dimension Precision (μm)	Precision Grade	High Grade	Standard Grade
Height H Tolerance	±10	±20	±20
Height H Pair Variation	7	15	40
Width W_2 Tolerance	±15	±25	±25
Width W_2 Pair Variation	10	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**		
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

★ BEST SELLER (SELECT PART NUMBERS)
TYPICALLY IN STOCK (SELECT PART NUMBERS)

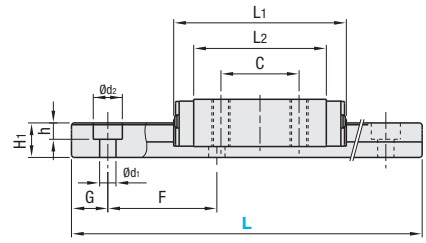
Miniature Linear Guides – Wide Rails –

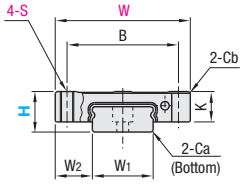
– Wide (Long) Blocks –

■ Features

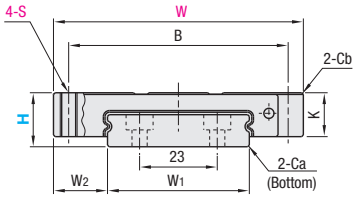
Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

Material Hardness	Type: Light Preload / High Grade / Wide Long Block	Light Preload / High Grade / Wide Standard Block	Slight Clearance / Standard Grade	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SELBWM	SEBWM	SEBWMZ	Selectable	1
	SEL2BWM	SE2BWM	SE2BWMZ		2
	SELBWML	SEBWML	SEBWMLZ	Configurable	1
	SEL2BWML	SE2BWML	SE2BWMLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSELBWM	SSEBWM	SSEBWMZ	Selectable	1
	SSEL2BWM	SSE2BWM ★	SSE2BWMZ		2
	SSELBWML	SSEBWML	SSEBWMLZ	Configurable	1
	SSEL2BWML	SSE2BWML	SSE2BWMLZ		2





H9 / 12 / 14



H16

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SEBWM	–	12	–	L	–	230		

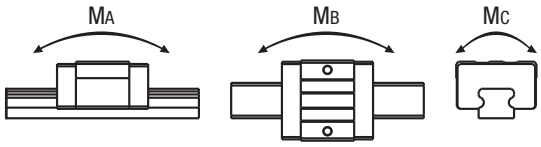
Grease type and alternations (if applicable) available on **P. 12–13**

Part Number: H	Length (L): Wide Block Selectable	Wide Block Configurable (in 1 mm increments)	Wide Long Block Selectable	Wide Long Block Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	C	S	L_2	K	Cb	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
9	50–290 (110) (in 30 mm increments)	51~289	80–290 (in 30 mm increments)	81~289	36	31.1 **43.5**	29	12 **19**	M4	20.1 **32.5**	7	0.3	14	11	5.2	0.5	3.5 x 6 x 3.2	30	10
12	50–290 (110) (in 30 mm increments)	51~289	80–290 (in 30 mm increments)	81~289	40	38.0 **51.6**	33	12 **24**	M4	27.0 **40.6**	9	0.3	18	11	7.5	0.5	3.5 x 6 x 4.5	30	10
14	70–470 (150) (in 40 mm increments)	71~469	110–470 (in 40 mm increments)	111~469	51	44.3 **61.6**	44	15 **28**	M4	30.1 **47.4**	11	0.5	24	13.5	8	0.5	4.5 x 8 x 4.5	40	15
16	70–670 (190) (in 40 mm increments)	71~669	110–670 (in 40 mm increments)	111~669	74	55.0 **74.9**	65	20 **35**	M5	40.0 **59.9**	13	0.5	42	16	9.5	0.5	4.5 x 8 x 4.5	40	15

Dimensions of L in ( ) are shortest lengths possible for 2 block type.
Wide Long Block Dimensions in Bold

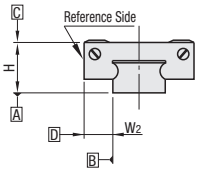
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N・m	M_B N・m	M_C N・m	Mass: Blocks kg	Guide Rails kg/m
9	1.4 **1.7**	2.2 **4.0**	7.8 **12.1**	7.8 **12.1**	15.5 **28.8**	0.035 **0.05**	0.50
12	2.3 **2.6**	3.7 **5.3**	13.7 **20.2**	16.3 **20.2**	30.4 **49.5**	0.06 **0.09**	0.96
14	3.5 **3.9**	5.3 **8.5**	20.6 **38.6**	22.3 **38.6**	52.1 **108.6**	0.11 **0.16**	1.40
16	5.8 **7.2**	8.5 **14.3**	40.2 **86**	43.6 **86**	148.0 **305.2**	0.2 **0.30**	2.95



Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W_2 Tolerance	±25	±25
Width W_2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**	
Running Parallelism of surf. D against surf. B		

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

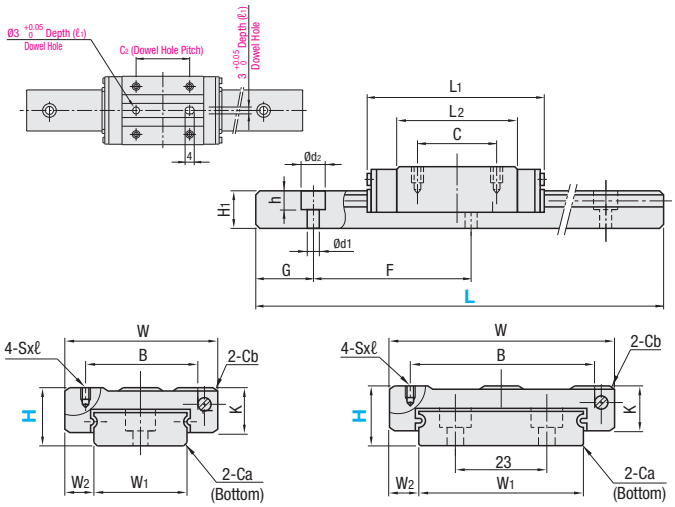
Miniature Linear Guides – Wide Rails –

– Long Blocks (with Dowel Holes) –

■ Features

Wide Rail, Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.

Material Hardness	Type: Precision Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, Without Dowel Holes	High Grade, Light Preload, With Dowel Holes	Standard Grade, Slight Clearance, Without Dowel Holes	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	SELBWV	SELBW	SELBWN ✔	SELBWZ	Selectable	1
	SEL2BWV	SEL2BW	SEL2BWN	SEL2BWZ		2
	SELBWLV	SELBWL	SELBWNL	SELBWLZ	Configurable	1
	SEL2BWLV	SEL2BWL	SEL2BWNL	SEL2BWLZ		2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSELBWV	SSELBW	SSELBWN ✔	SSELBWZ	Selectable	1
	SSEL2BWV	SSEL2BW	SSEL2BWN	SSEL2BWZ		2
	SSELBWLV ★ ✔	SSELBWL	SSELBWNL	SSELBWLZ	Configurable	1
	SSEL2BWLV	SSEL2BWL	SSEL2BWNL	SSEL2BWLZ		2



H9 , 12 , 14 H16

Order Example

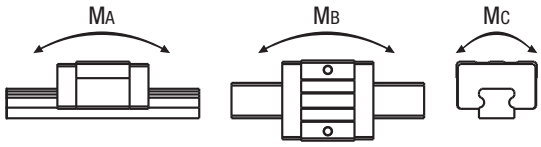
Type	–	H	–	Grease Type	–	Length	–	Alterations
SELBWV	–	14			–	390		

Grease type and alternations (if applicable) available on **P. 12–13**

Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W +/- 0.05	L_1	B	C	S x ℓ	L_2	K	Cb	Dowel Hole Dimensions: N	C_2	(ℓ_1)	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
9	80–290 (in 30 mm increments)	81~289	25	43.5	19	19	M3 x 3	32.5	7	0.3	12.5	19	2.5	14	5.5	5.2	0.5	3.5 x 6 x 3.2	30	10
12	80–290 (in 30 mm increments)	81~289	30	51.6	23	24	M3 x 3	40.6	9	0.3	15	24	2.5	18	6	7.5	0.5	3.5 x 6 x 4.5	30	10
14	110–470 (in 40 mm increments)	111~469	40	61.6	28	28	M3 x 3.5	47.4	11	0.5	20	28	3.5	24	8	8	0.5	4.5 x 8 x 4.5	40	15
16	110–670 (in 40 mm increments)	111~669	60	74.9	45	35	M4 x 4.5	59.9	13	0.5	30	35	4	42	9	9.5	0.5	4.5 x 8 x 4.5	40	15

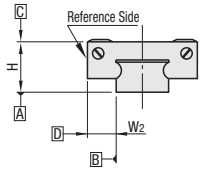
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N・m	M_B N・m	M_C N・m	Mass: Blocks kg	Guide Rails kg/m
9	1.7	4.0	12.1	12.1	28.8	0.035	0.50
12	2.6	5.3	20.2	20.2	49.5	0.06	0.96
14	3.9	8.5	38.6	38.6	104.6	0.12	1.40
16	7.2	14.3	86.0	86.0	305.2	0.23	2.95



Dimension Precision (μm)	Precision Grade	High Grade	Standard Grade
Height H Tolerance	±10	±20	±20
Height H Pair Variation	7	15	40
Width W_2 Tolerance	±15	±25	±25
Width W_2 Pair Variation	10	20	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**		
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



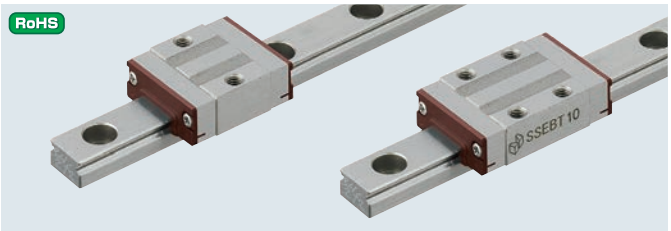
Radial Clearance (μm)	
Light Preload	-3~0
Slight Clearance	0~15

Miniature Linear Guides – Heat Resistant –

– Short, Standard, Long Blocks –

■ Features

Usable at up to 150°C of operating temperature since heat-resisting parts and grease are employed.



Heat Resistant Temperature: -20~150°C

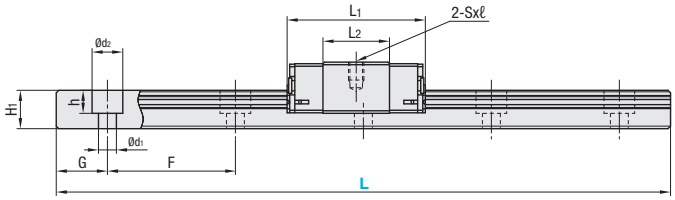
Material Hardness	Type: High Grade, Light Preload: Short Block	Standard Block	Long Block	L Dimension	Number of Blocks
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSEBST	SSEBT	SSELBT	Selectable	1
	SSE2BST	SSE2BT	SSEL2BT		2
	SSEBSLT	SSEBLT	SSELBLT	Configurable	1
	SSE2BSLT	SSE2BLT	SSEL2BLT		2

Order Example

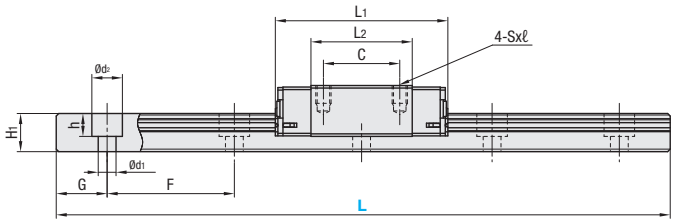
Type	–	H	–	Grease Type	–	Length	–	Alterations
SSEBST	–	13			–	70		

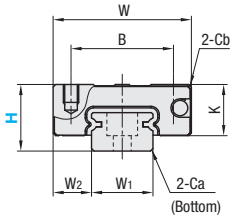
Grease type and alternations (if applicable) available on **P. 12–13**

Short Blocks



Standard, Long Blocks



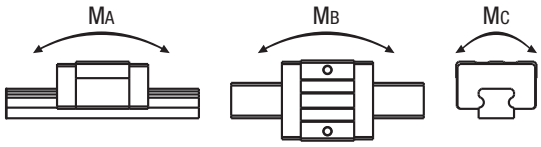


Part Number: H	Length (L): Selectable	Configurable (in 1 mm increments)	Block Shape	Block Dimensions: W +/- 0.05	L_1	B	C	S x ℓ	L_2	K	Cb	Guide Rail Dimensions: W_1 +/- 0.005	W_2	H_1	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
8	40–130 (70) (in 15 mm increments)	41~129	Short	17	19.6	12	—	M2 x 2.5	9.6	6.5	0.3	4.7	7	5	0.3	2.4 x 4.2 x 2.3	15	5
			Standard		23.6		8		13.6									
			Long		32		13		22									
10	35–275 (95) (in 20 mm increments)	36~274	Short	20	22.9	15	—	M3 x 3	11.9	7.8	0.3	5.5	9	5.5	0.3	3.5 x 6 x 3.5	20	7.5
			Standard		30		10		19									
			Long		40		16		29									
13	45–470 (120) (in 25 mm increments)	46~469	Short	27	27	20	—	M3 x 3.5	13	10	0.5	7.5	12	7.5	0.5	3.5 x 6 x 4.5	25	10
			Standard		33.9		15		19.9									
			Long		45.8		20		31.8									
16	70–670 (150) (in 40 mm increments)	71~669	Short	32	32.7	25	—	M3 x 4	17.7	12	0.5	9.5	15	8.5	0.5	3.5 x 6 x 4.5	40	15
			Standard		42.4		20		27.4									
			Long		58.3		25		43.3									

Dimensions of L in ( ) are shortest lengths possible for 2 block type.

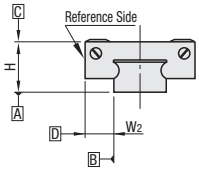
kgf=Nx0.101972

H	Blocks Shape	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N • m	M_B N • m	M_C N • m	Mass: Blocks kg	Guide Rails kg/m
8	Short	0.79	1.27	1.9	1.6	4.6	0.008	0.19
	Standard	0.9	1.5	4.1	4.1	5.2	0.01	
	Long	1.6	2.4	7.5	7.5	9	0.02	
10	Short	1.16	1.68	3.1	2.6	7.9	0.015	0.31
	Standard	1.5	2.5	5.1	5.1	10.2	0.02	
	Long	2.2	3.7	12.3	12.3	13	0.03	
13	Short	1.63	2.38	5.2	4.4	14.8	0.025	0.61
	Standard	2.2	3.3	8.8	9.5	16.1	0.04	
	Long	3.5	5.3	24.5	26.4	32.3	0.06	
16	Short	3.08	4.23	12.3	10.3	32.6	0.05	1.02
	Standard	3.6	5.4	21.6	23.4	39.6	0.06	
	Long	5.8	8.7	57.8	62.6	67.6	0.1	



Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±25
Width W_2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Miniature Linear Guides – Lubrication Units –

– Standard Block / Interchangeable –

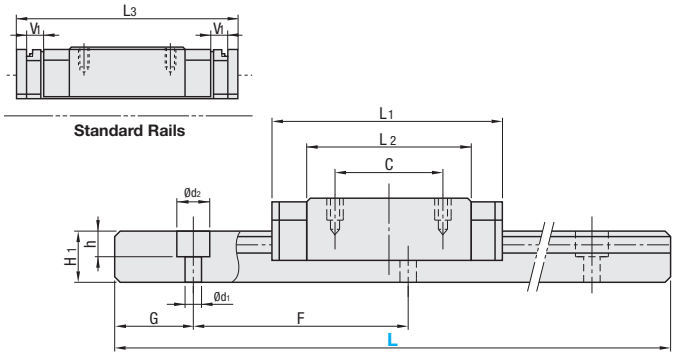
■ Features

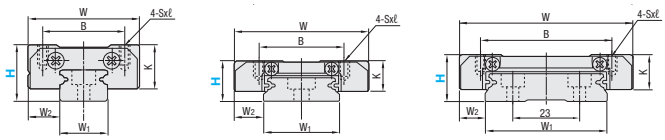
Blocks with Lubrication Units provide long term maintenance-free operation.

Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.
Heat Resistant Temperature: -20~150°C

Material Hardness	Rail Width	Type: Standard Grade / Slight Clearance — Sets	Blocks	Rails	L Dimension	Number of Blocks
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	Standard	SAUS	SAU	SAUL	Selectable	—
		SAUPS	SAUP			With Lubrication Unit
		SAUSL	SAU	SAULF	Configurable	—
		SAUPSL	SAUP			With Lubrication Unit
	Wide	SAWS	SAW	SAWL	Selectable	—
		SAWPS	SAWP			With Lubrication Unit
		SAWSL	SAW	SAWLF	Configurable	—
		SAWPSL	SAWP			With Lubrication Unit

(Block dimensions with lubrication units)





Order Example

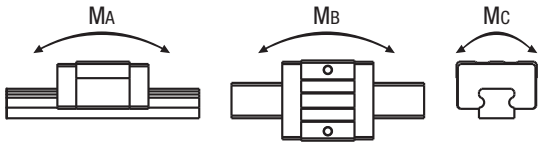
Type	–	H	–	Grease Type	–	Length	–	Alterations
SAUS	–	10			–	55		

Grease type and alternations (if applicable) available on **P. 12–13**

Rail Width	Part Number: H	Length (L): Selectable	Configurable (in 1 mm increments)	Block Dimensions: W	L_1	B	C	S x ℓ	L_2	L_3	V_1	K	Guide Rail Dimensions: H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	10	55–275 (in 20 mm increments)	56~274	20	30	15	10	M3 x 3	20	36.4	3.2	7.8	5.5	9	5.5	3.5 x 6 x 4.5	20	7.5
	13	120–470 (in 50 mm increments)	121~469	27	35.2	20	15	M3 x 3.5	21.8	42.2	3.5	10	7.5	12	7.5	3.5 x 6 x 4.5	25	10
	16	150–670 (in 80 mm increments)	151~669	32	43.6	25	20	M3 x 4	27	51.8	4.1	12	9.5	15	8.5	3.5 x 6 x 4.5	40	15
Wide	12	80–380 (in 30 mm increments)	81~379	30	39.8	21	12	M3 x 3	27.6	46.8	3.5	8	7.5	18	6	3.5 x 6 x 4.5	30	10
	14	110–790 (in 40 mm increments)	111~789	40	45	28	15	M3 x 4	31	53	4	10	8.5	24	8	4.5 x 8 x 4.5	40	15
	16	150–990 (in 80 mm increments)	151~989	60	56.6	45	20	M4 x 4.5	38.4	66.2	4.8	12	9.5	42	9	4.5 x 8 x 4.5	40	15

kgf=Nx0.101972

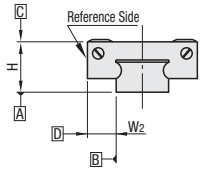
H		Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N • m	M_B N • m	M_C N • m	Mass: Blocks kg	Guide Rails kg/m
Standard Rails	10	1.49	2.15	6.1	9.9	0.02	0.35	0.19
	13	2.83	3.50	11.0	21.0	0.04	0.65	
	16	5.55	6.60	26.0	49.0	0.07	1.05	
Wide Rails	12	3.00	4.50	17.0	36.0	0.04	0.95	0.31
	14	4.35	6.35	29.0	71.0	0.08	1.40	
	16	7.60	10.40	59.0	207.0	0.15	2.75	



Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W_2 Tolerance	±20
Width W_2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Miniature Linear Guides – Dust Resistant –

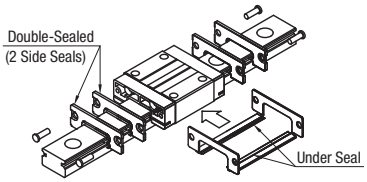
– Standard Block / Light Preload –

■ Features

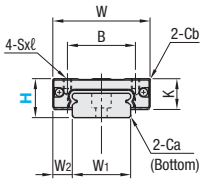
Dust Resistant Miniature Linear Guide usable where dust and machining chips exist.

– Intrusion of foreign substances into the blocks can be prevented by enhanced sealing effects with two-ply side seal and under seals.
– Can be used where dust and machining chips exist.
– Do not use in areas with high temperature dusts such as weld spatter.

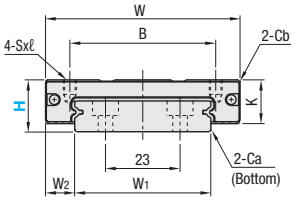
■ Dust Resistant Type Structure



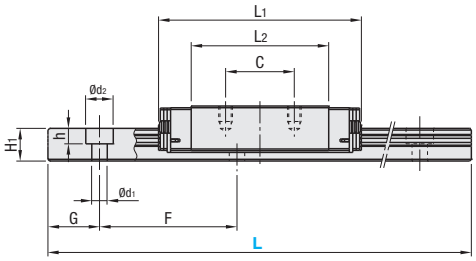
Material Hardness	Type: Standard Rails	Type: Wide Rails	L Dimension	Number of Blocks
	Light Preload			
	High Grade			
Carbon Steel (Allow Steel Including SCM) 58HRC~	SEBD	SEBWD	Selectable	1
	SE2BD	SE2BWD		2
	SEBDL	SEBWDL	Configurable	1
	SE2BDL	SE2BWDL		2



Standard Rail H13 / 16 / 20
Wide Rail H14



Wide Rail H16



Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SEBD	–	13			–	420		

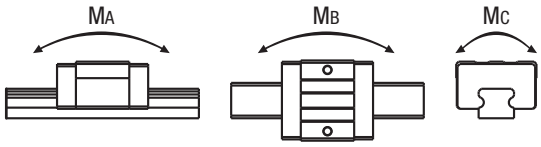
Grease type and alternations (if applicable) available on **P. 12–13**

Rail Width	Part Number: H	Length (L): Selectables	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W	L_1	B	C	S x ℓ	L_2	L_3	V_1	K	Guide Rail Dimensions: H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	13	45-470 (in 25 mm increments)	46~469	27	36.9	20	15	M3 x 3.5	19.9	11	0.5	7.5	12	7.5	0.5	3.5 x 6 x 4.5	25	10
	16	70-670 (in 40 mm increments)	71~669	32	45.4	25	20	M3 x 4	27.4	13	0.5	9.5	15	8.5	0.5	3.5 x 6 x 4.5	40	15
	20	100-700 (in 60 mm increments)	101~699	40	53	30	25	M4 x 6	34.6	16	0.5	11	20	10	0.5	6 x 9.5 x 5.5	60	20
Wide	14	70-470 (in 40 mm increments)	71~469 (130)	40	47.3	28	15	M3 x 3.5	30.1	12	0.5	8	24	8	0.5	4.5 x 8 x 4.5	40	15
	16	70-670 (in 40 mm increments)	71~669 (170)	60	58	45	20	M4 x 4.5	40	14	0.5	9.5	42	9	0.5	4.5 x 8 x 4.5	40	15

Dimensions of L in ( ) are shortest lengths possible for 2 block type.

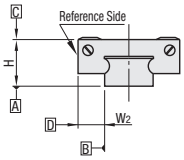
kgf=Nx0.101972

H		Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N・m	M_B N・m	M_C N・m	Mass: Blocks kg	Mass: Guide Rails kg/m
Standard Rails	13	2.2	3.3	8.8	9.5	16.1	0.045	0.61
	16	3.6	5.4	21.6	23.4	39.6	0.065	1.02
	20	5.2	8.5	48.4	48.4	86.4	0.13	1.65
Wide Rails	14	3.5	5.3	20.6	22.3	52.1	0.085	1.40
	16	5.8	8.5	40.2	43.6	148	0.16	2.95



Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±25
Width W_2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

■ Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

■ Seal Resistance (N)

Rail Width	Height (H)	Standard	Dust Resistant
Standard	13	0.7	1.0
	16	0.8	1.1
	20	1.2	1.5
Wide	14	1.0	1.3
	16	1.2	1.5

Data above are reference values.

Linear Guides for Medium & Heavy Load – Dust Resistant –

– With Double Seals and Metal Scrapers / Normal Clearance –

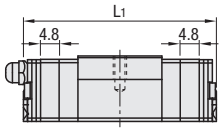
■ Features

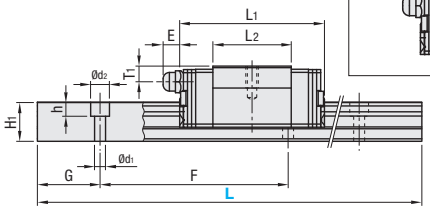
Dust Resistant Miniature Linear Guide usable where dust and machining chips exist.

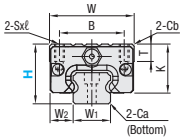
Lubrication Units MX New

Provides long term maintenance-free operation.

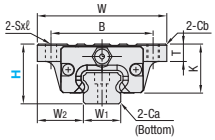
■ Dimension Diagram of Blocks with MX (Lubrication Units)







Standard Block



Wide Block

Material Hardness	Block Type	Type: Double-Sealed	Type: W/Metal Scrapers	MX Lubrication Unit	L Dimension	Number of Blocks
		Normal Clearance				
		Standard Grade				
Carbon Steel (Allow Steel Including SCM) 58HRC~	Standard	SVRD **SXRD**	SVRK **SXRK**	Blank: None	Selectable	1
		SV2RD **SX2RD**	SV2RK **SX2RK**			2
		SVRDL **SXRDL** ★	SVRKL **SXRKL**		Configurable	1
		SV2RDL **SX2RDL**	SV2RKL **SX2RKL**	MX: Provided		2
	Wide	SVWD **SXWD**	SVWK **SXWK**		Selectable	1
		SV2WD **SX2WD**	SV2WK **SX2WK**			2
		SVWDL **SXWDL**	SVWKL **SXWKL**		Configurable	1
		SV2WDL **SX2WDL**	SV2WKL **SX2WKL**			2

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SVRD	–	24	–	L	–	160		

Grease type and alternations (if applicable) available on **P. 12–13**

Rail Width	H	Part Number: Length (L) Selectables	Part Number: Length (L) Configurable (in 1 mm increments)	W +/- 0.05	L_1 Standard	L_1 MX	B	C	S x ℓ	L_2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T_1	H_1	W_1	W_2	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	24	160–1480 (220) (in 60 mm increments)	161~1479 (192)	34	46 **62** (42.6) **(58.6)**	55.6 **71.6** (52.2) **(68.2)**	26	**26**	M4 x 7	25.0 **41.0**	20	7	0.85	M5 x P0.8	6	5	12.5	15	9.5	0.5	3.5 x 6 x 4.5	60	20
	28	220–1960 (in 60 mm increments)	221~1959 (262)	42	53.4 **73.4** (49) **(69)**	63 **83** (58.6) **(78.6)**	32	**32**	M5 x 8	27.6 **47.6**	22.5	7.5	1	M6 x P0.75	13	6	15.5	20	11	0.6	6 x 9.5 x 8.5	60	20
	33	220–1960 (280) (in 60 mm increments)	221~1959	48	66 **90** (61.4) **(85.4)**	75.6 **99.6** (71) **(95)**	35	**35**	M6 x 9	37.0 **61.0**	26.5	8	1	M6 x P0.75	13	6.8	18	23	12.5	0.8	7 x 11 x 9	60	20
Wide	24	160–1480 (220) (in 60 mm increments)	161~1479 (192)	52	46 **62** (42.6) **(58.6)**	55.6 **71.6** (52.2) **(68.2)**	41	**26**	4.5	25.0 **41.0**	20	7	0.5	M5 x P0.8	6	5	12.5	15	18.5	0.5	3.5 x 6 x 4.5	60	20
	28	220–1960 (in 60 mm increments)	221~1959	59	53.4 **73.4** (49) **(69)**	63 **83** (58.6) **(78.6)**	49	**32**	5.5	27.6 **47.6**	22.5	9	1	M6 x P0.75	13	6	15.5	20	19.5	0.6	6 x 9.5 x 8.5	60	20
	33	220–1960(280) (in 60 mm increments)	221~1959 (262)	73	66 **90** (61.4) **(85.4)**	75.6 **99.6** (71) **(95)**	60	**35**	7	37.0 **61.0**	26.5	10	1	M6 x P0.75	13	6.8	18	23	25	0.8	7 x 11 x 9	60	20

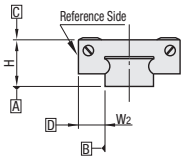
Medium Load **Heavy Load in Bold** ( ) for Metal Scraper Type Dimensions of L in ( ) are shortest lengths possible for 2 block type.

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A / M_B N・m	Allowable Static Moment: M_C N・m	Mass Block kg: Double-Sealed Standard	Double-Sealed Wide	W/Metal Scrapers Standard	W/Metal Scrapers Wide	Guide Rails kg/m
24	5.0	8.23	33	57	0.16	0.21	0.16	0.21	1.5
28	7.2	12.1	58	135	0.22	0.27	0.22	0.27	2.4
33	11.7	19.6	109	225	0.33	0.43	0.34	0.44	3.4

Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W_2 Tolerance		±100
Width W_2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to **P. 9**
Running Parallelism of surf. D against surf. B		

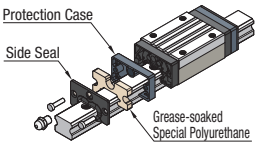
■ Preload and Accuracy Standards

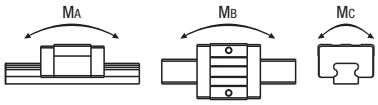


Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

■ Lubrication Units MX





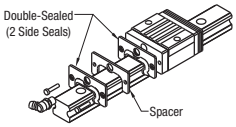
Advantages of Lubrication Unit MX

– Provides long term maintenance-free operation.

– Reduces maintenance costs.

– Most suitable where the design does not allow lubrication. For details, refer to **P.8**

■ Double-Sealed

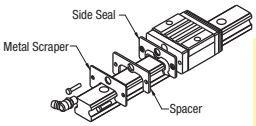


– The double seal scheme with two layers of side seals enhances the sealing effect and prevents intrusion of foreign substances into the block.

– Can be used where dust and machining chips exist.

ⓘ Sliding resistance is higher than the standard type.

■ With Metal Scrapers



– Larger foreign substances adhered to the rail can be removed by attaching metal scrapers on the external side of the side seals.

– Can be used in areas with high temperature dusts such as weld spatter.

★ BEST SELLER (SELECT PART NUMBERS)
TYPICALLY IN STOCK (SELECT PART NUMBERS)

Linear Guides for Medium and Heavy Load

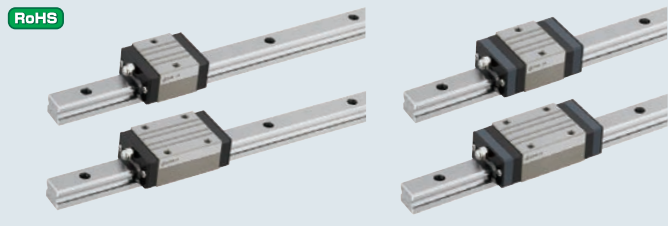
– (With Dowel Hole) / Normal Clearance –

For cost effiecient model, see **P.33**

■ Features

Linear Guides for Medium and Heavy Load excellent in corrosion resistance. The most basic type among all industry standard specifications. MISUMI original specifications with dowel holes.

RoHS



RoHS

Material Hardness	Block Type	Type: Medium Load, No Dowel Holes, Normal Clearance, Standard Grade	Type: Heavy Load, No Dowel Holes, Normal Clearance, Standard Grade	MX Lubrication Unit	L Dimension	Number of Blocks
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	Standard	SSVR	SSXR	Blank: None MX: Provided	Selectable	1
		SSV2R ★	SSX2R ★			2
		SSVRL	SSXRL		Configurable	1
		SSV2RL	SSX2RL			2
	Wide	SSVW	SSXW		Selectable	1
		SSV2W	SSX2W ★			2
		SSVWL	SSXWL		Configurable	1
		SSV2WL	SSX2WL			2

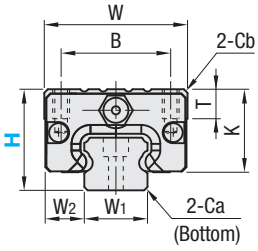
Material Hardness	Block Type		Type: Heavy Load, Standard Grade, No Dowel Holes, Normal Clearance	Type: Heavy Load, Standard Grade, Dowel Holes, Normal Clearance	Type: Heavy Load, High Grade, No Dowel Holes, Normal Clearance	MX Lubrication Unit	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	Standard		SXR ★ ✔	SXRN	SXRJ	Blank: None MX: Provided	Selectable	1
			SX2R	SX2RN	SX2RJ			2
			SXRL	SXRNL	SXRLJ		Configurable	1
			SX2RL	SX2RNL	SX2RLJ			2
	Wide	Through Holes	SXW	—	—		Selectable	1
			SX2W					2
			SXWL				Configurable	1
			SX2WL					2
		Tapped Holes	SXWT ✔				Selectable	1
			SX2WT					2
			SXWTL				Configurable	1
			SX2WTL					2

Order Example

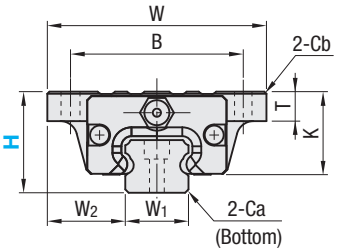
Type	–	H	–	Grease Type	–	Length	–	Alterations
SSVR	–	24			–	100		

Grease type and alternations (if applicable) available on **P. 12–13**

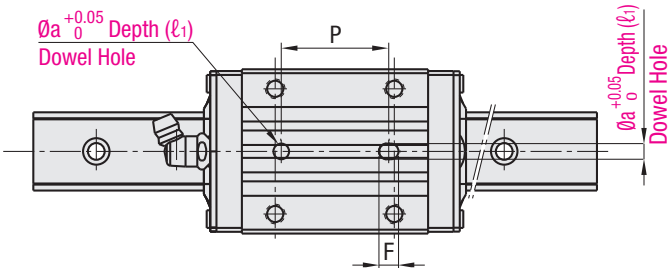
Medium and Heavy Load



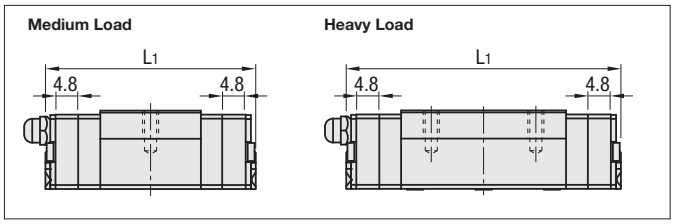
Standard Block



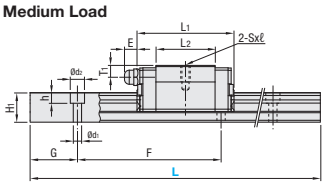
Wide Block



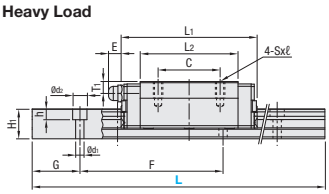
■ Dimension Diagram of Blocks with MX (Lubrication Units)



Medium Load



Heavy Load



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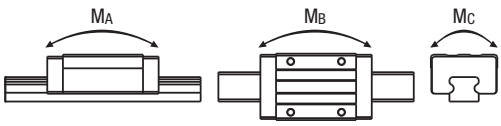
Blocks	H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A / M_B N・m	Allowable Static Moment: M_C N・m	Mass: Block kg, Double-Sealed, Standard	Mass: Block kg, Double-Sealed, Wide	Mass: Guide Rails kg/m
Medium Load	24	5.0	8.23	33	57	0.15	0.20	1.5
	28	7.2	12.1	58	135	0.20	0.25	2.4
	33	11.7	19.6	109	225	0.30	0.40	3.4
Heavy Load	24	8.6	14.2	69	98	0.20	0.25	1.5
	28	12.5	21.3	155	232	0.30	0.35	2.4
	33	20.2	34.5	275	393	0.45	0.60	3.4



Linear Guides for Medium and Heavy Load – Stainless Steel –

– (With Dowel Hole) / Normal Clearance –

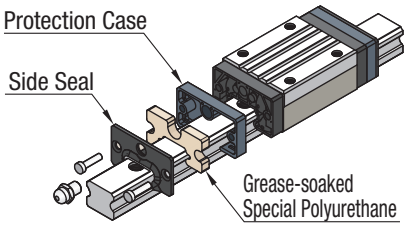
Material	Load	Part Number: H	Length (L): Selectables	Length (L): Configurable (in 1 mm increments)	W +/- 0.05	L_1 Standard	L_1 MX	B	C	S x ℓ	L_2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T_1	H_1	W1 ±0.005	W_2	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
Stainless Steel	Medium	24	100–700 (160) (in 60 mm increments)	101~699	34 **52**	41	50.6	26 **41**	—	M4 x 7 **4.5**	25	20	7 **7**	0.85	M5 x P0.8	6	5	12.5	15	9.5 **18.5**	0.5	3.5 x 6 x 4.5	60	20
		28	160–700 (220) (in 60 mm increments)	161~699	42 **59**	47	56.6	32 **49**	—	M5 x 8 **5.5**	27.6	22.5	7.5 **9**	1	M6 x P0.75	13	6	15.5	20	11 **19.5**	0.6	6 x 9.5 x 8.5	60	20
		33	160–700 (220) (in 60 mm increments)	161~699	48 **73**	59	68.6	35 **60**	—	M6 x 9 **7**	37	26.5	8 **10**	1	M6 x P0.75	13	6.8	18	23	12.5 **25**	0.8	7 x 11 x 9	60	20
	Heavy	24	100–700 (220) (in 60 mm increments)	101~699 192	34 **52**	57	66.6	26 **41**	26	M4 x 7 **4.5**	41	20	7 **7**	0.5	M5 x P0.8	6	5	12.5	15	9.5 **18.5**	0.5	3.5 x 6 x 4.5	60	20
		28	160–700 (220) (in 60 mm increments)	161~699	42 **59**	67	76.6	32 **49**	32	M5 x 8 **5.5**	47.6	22.5	7.5 **9**	1	M6 x P0.75	13	6	15.5	20	11 **19.5**	0.6	6 x 9.5 x 8.5	60	20
		33	160–700 (280) (in 60 mm increments)	161~699 262	48 **73**	83	92.6	35 **60**	35	M6 x 9 **7**	61	26.5	8 **10**	1	M6 x P0.75	13	6.8	18	23	12.5 **25**	0.8	7 x 11 x 9	60	20

L dimensions in ( ) are shortest lengths possible for 2 block type
Dimensions in bold are for wide block type

Material	Load	Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	W +/- 0.05	L_1 Standard	L_1 MX	B	C	S x ℓ	L_2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T_1	Dowel Hole Dimensions: N	Dowel Hole Dimensions: Øa	Dowel Hole Dimensions: F	Dowel Hole Dimensions: P	Dowel Hole Dimensions: I_1	Dowel Hole Dimensions: H_1	W_1 ±0.005	W_2	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
Carbon Steel	Standard	24	100-1480 160 220 (in 60 mm increments): *1120, *1480	101~1479: *1001~1479	34	57	66.6	26	26	M4 x 7	41	20	7	0.85	M5 x P0.8	6	5	17	3	4	24	4	12.5	15	9.5	0.5	3.5 x 6 x 4.5	60	20
		28	160-1960 220 220 (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	42	67	76.6	32	32	M5 x 7.5	47.6	22.5	7.5	1	M6 x P0.75	13	6	21	4	5	28	5	15.5	20	11	0.6	6 x 9.5 x 8.5	60	20
		33	160-1960 220 220 (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	48	83	92.6	35	35	M6 x 9	61	26.5	8	1	M6 x P0.75	13	6.8	24	4	5	35	5	18	23	12.5	0.8	7 x 11 x 9	60	20
	Wide	24	100-1480 160 (in 60 mm increments): *1120, *1480	101~1479: *1001~1479	52	57	66.6	41	26	4.5 (M5)	41	20	7	0.5	M5 x P0.8	6	5	—	—	—	—	—	12.5	15	18.5	0.5	3.5 x 6 x 4.5	60	20
			160-1960 220 (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	59	67	76.6	49	32	5.5 (M6)	47.6	22.5	9	1	M6 x P0.75	13	6	—	—	—	—	—	15.5	20	19.5	0.6	6 x 9.5 x 8.5	60	20
		33	160-1960 220 (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	73	83	92.6	60	35	7 (M8)	61	26.5	10	1	M6 x P0.75	13	6.8	—	—	—	—	—	18	23	25	0.8	7 x 11 x 9	60	20

( ) Wide Block Type Tapped Hole L dimensions in ( ) are shortest lengths possible for 2 block type with dowel holes
*Not available for High Grade Type and Low Temperature Black Chrome Plated Type L dimensions in bold are shortest lengths possible for 2 block type in carbon steel without dowel holes
L dimension in bold is for carbon steel without dowel holes

■ Lubrication Units MX

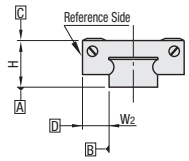


Advantages of Lubrication Unit MX

– Provides long term maintenance-free operation.
– Reduces maintenance costs.
– Most suitable where the design does not allow lubrication. For details, refer to **P.8**

Dimension Precision (µm)		Standard Grade	High Grade
Height H Tolerance		±100	±40
Height H Pair Variation		20	15
Width W_2 Tolerance		±100	±20
Width W_2 Pair Variation	H24, 28	20	15
	H33	30	
Running Parallelism of surf. C against surf. A		Refer to **P. 9**	
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



Normal Clearance Type

Radial Clearance (µm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Linear Guides for Medium Load

– (With Dowel Hole) / Normal Clearance –

Lubrication Units MX New

Provides long term maintenance-free operation.

For cost effiecient model, see **P.32**

■ Features

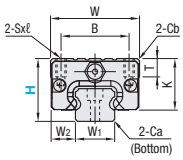
The most basic type among all industry standard specifications.
MISUMI original specifications with dowel holes.

Order Example

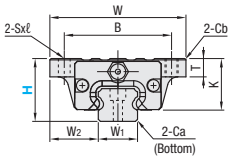
Type	–	H	–	Grease Type	–	Length	–	Alterations
SVR	–	24	–	G	–	220		

Grease type and alternations (if applicable) available on **P. 12–13**

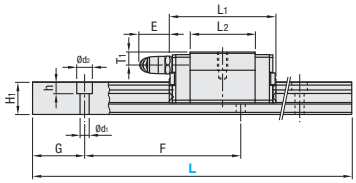
Material Hardness	Block Type	Type: Standard Grade, No Dowel Holes (Normal Clearance)	Type: Standard Grade, Dowel Holes (Normal Clearance)	Type: High Grade, No Dowel Holes (Normal Clearance)	MX Lubrication Unit	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	Standard	SVR	SVRN	SVRJ	Blank: None MX: Provided	Selectable	1
		SV2R	SV2RN	SV2RJ			2
		SVRL	SVRNL	SVRLJ		Configurable	1
		SV2RL	SV2RNL	SV2RLJ			2
	Wide – Through Holes	SVW	—	—		Selectable	1
		SV2W					2
		SVWL				Configurable	1
		SV2WL					2
	Wide – Tapped Holes	SVWT				Selectable	1
		SV2WT					2
		SVWTL				Configurable	1
		SV2WTL					2



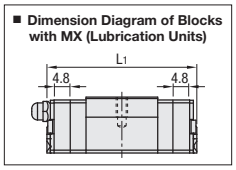
Standard Block

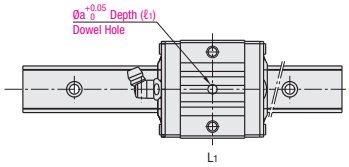


Wide Block



■ **Dimension Diagram of Blocks with MX (Lubrication Units)**



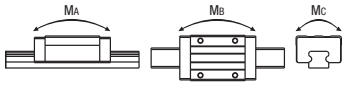


Load	H	Part Number: Length (L) Selectable	Part Number: Length (L) Configurable (in 1 mm increments)	W +/- 0.05	L_1 Standard	L_1 MX	B	S x ℓ	L_2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T_1	Dowel Hole Dimensions: N	Dowel Hole Dimensions: Øa	Dowel Hole Dimensions: l_1	H_1	W_1 ±0.005	W_2	Ca	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	24	100–1480 (160) (in 60 mm increments): *1120, *1480	101~1479: *1001~1479	34	41	50.6	26	M4 x 7 **7.5**	25	20	7	0.85	M5 x P0.8	6	5	17	3	4	12.5	15	9.5	0.5	3.5 x 6 x 4.5	60	20
	28	160–1960 (220) (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	42	47	56.6	32	M5 x 8	27.6	22.5	7.5	1	M6 x P0.75	13	6	21	4	5	15.5	20	11	0.6	6 x 9.5 x 8.5	60	20
	33	160–1960 (220) (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	48	59	68.6	35	M6 x 9	37	26.5	8	1	M6 x P0.75	13	6.8	24	4	5	18	23	12.5	0.8	7 x 11 x 9	60	20
Wide	24	100–1480 (160) (in 60 mm increments): *1120, *1480	101~1479: *1001~1479	52	41	50.6	41	4.5 (M5)	25	20	7	0.5	M5 x P0.8	6	5	—	—	—	12.5	15	18.5	0.5	3.5 x 6 x 4.5	60	20
	28	160–1960 (220) (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	59	47	56.6	49	5.5 (M6)	27.6	22.5	9	1	M6 x P0.75	13	6	—	—	—	15.5	20	19.5	0.6	6 x 9.5 x 8.5	60	20
	33	160–1960 (220) (in 60 mm increments): *1360, *1960	161~1959: *1241~1959	73	59	68.6	60	7 (M8)	37	26.5	10	1	M6 x P0.75	13	6.8	—	—	—	18	23	25	0.8	7 x 11 x 9	60	20

( ) Wide Block Type Tapped Hole *not available for High Grade Type and Low Temperature Black Chrome Plated Type L dimensions in bold for dowel hole type L dimensions in ( ) are shortest lengths possible for 2 block type

kgf=Nx0.101972

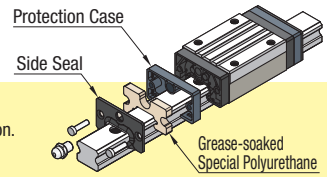
H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N・m	Allowable Static Moment: M_B N・m	Allowable Static Moment: M_C N・m	Mass: Blocks kg	Mass: Guide Rails kg/m
24	5.0	8.23	33	57	0.15	0.20	1.5
28	7.2	12.1	58	135	0.20	0.25	2.4
33	11.7	19.6	109	225	0.30	0.40	3.4



■ Lubrication Units MX

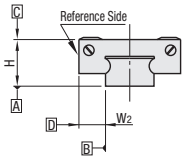
Advantages of Lubrication Unit MX

– Provides long term maintenance-free operation.
– Reduces maintenance costs.
– Most suitable where the design does not allow lubrication. For details, refer to **P.8**



Dimension Precision (μm)		Standard Grade	High Grade
Height H Tolerance		±100	±40
Height H Pair Variation		20	15
Width W_2 Tolerance		±100	±20
Width W_2 Pair Variation	H24, 28	20	15
	H33	30	
Running Parallelism of surf. C against surf. A		Refer to **P. 9**	
Running Parallelism of surf. D against surf. B			

■ Preload and Accuracy Standards



Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Linear Guides for Medium Load

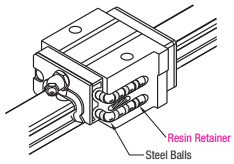
– With Plastic Retainers / Interchangeable, Light Preload –

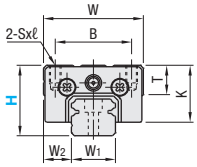
For cost effiecient model, see **P.32**

■ Features

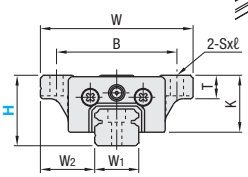
Linear Guides with Plastic Retainers prevent contact between balls and result in low noise levels under high-speed operation.

Heat Resistant Temperature: 0~50°C

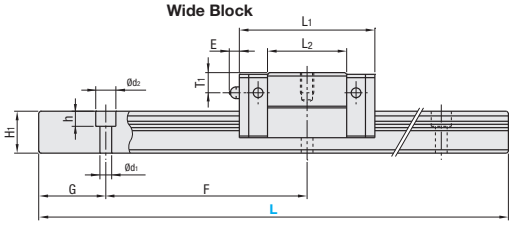




Standard Block



Wide Block



Material Hardness	Block Type		Type: Light Preload	Blocks	Rails	L Dimension	Number of Blocks
Carbon Steel (Allow Steel Including SCM) 58HRC~	Standard		SVRZ	SVRB	SRZL	Selectable	1
			SV2RZ ✔				2
			SVRLZ		SRZLF	Configurable	1
			SV2RLZ				2
	Wide	Through Holes	SVWZ	SVWB	SRZL	Selectable	1
			SV2WZ				2
			SVWLZ		SRZLF	Configurable	1
			SV2WLZ				2
		Tapped Holes	SVWTZ	SVWTB	SRZL	Selectable	1
			SV2WTZ				2
			SVWTLZ		SRZLF	Configurable	1
			SV2WTLZ				2
Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	Standard		SSVRZ	SSVRB	SSRZL	Selectable	1
			SSV2RZ				2
			SSVRLZ		SSRZLF	Configurable	1
			SSV2RLZ				2

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SVRZ	–	24			–	1240		

Grease type and alternations (if applicable) available on **P. 12–13**

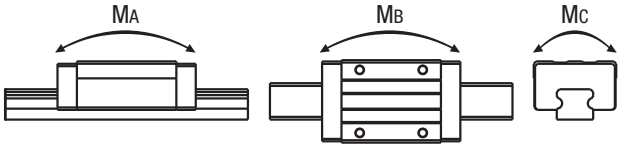
Rail Width	Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W	L_1	B	S x ℓ	L_2	K	T	Grease Fittings: Mounting Holes	E	T_1	Guide Rail Dimensions: H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	24	100–1480 (160) (in 60 mm increments)	101~1479	34	40.4	26	M4 x 6	23.6	19.4 **19**	10	Ø3	3	6	12.5	15	9.5	3.5 x 6 x 4.5	60	20
	28	160–1480 (220) (in 60 mm increments)	161~1479	42	47.2	32	M5 x 7	30	22	12	M6 x P0.75	11	5.5	15.5	20	11	6 x 9.5 x 8.5	60	20
	33	160–1480 (220) (in 60 mm increments)	161~1479	48	59.6	35	M6 x 9	38	26	12	M6 x P0.75	11	7	18	23	12.5	7 x 11 x 9	60	20
	42	200–1960 (220) (in 80 mm increments)	201~1959	60	67.4	40	M8 x 12	42	33	13	M6 x P0.75	11	8	23	28	16	7 x 11 x 9	80	20
Wide	24	100–1480 (160) (in 60 mm increments)	101~1479	52	40.4	41	4.5 (M5)	23.6	19	8	Ø3	3	6	12.5	15	18.5	3.5 x 6 x 4.5	60	20
	28	160–1480 (220) (in 60 mm increments)	161~1479	59	47.2	49	5.5 (M6)	30	22	10	M6 x P0.75	11	5.5	15.5	20	19.5	6 x 9.5 x 8.5	60	20
	33	160–1480 (220) (in 60 mm increments)	161~1479	73	59.6	60	7 (M8)	38	26	11	M6 x P0.75	11	7	18	23	25	7 x 11 x 9	60	20
	42	200–1960 (220) (in 80 mm increments)	201~1959	90	67.4	72	9 (M10)	42	33	11	M6 x P0.75	11	8	23	28	31	7 x 11 x 9	80	20

L dimensions in ( ) are shortest lengths possible for 2 block type

H42 not applicable for stainless steel

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N • m	M_B N • m	M_C N • m	Mass: Block kg Standard	Block kg Wide	Guide Rails kg/m
24	4.9	7.8	21	18	39	0.14	0.17	1.4
28	7.25	11.8	40	34	80	0.19	0.24	2.3
33	12.7	20.8	96	81	164	0.34	0.44	3.1
42	18.7	29.6	153	128	282	0.58	0.76	4.8



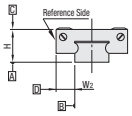
Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±30
Width W_2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

Standard Class (Slight Clearance) meets the above values even after the block is replaced.

Interchangeable, Light Preload Type

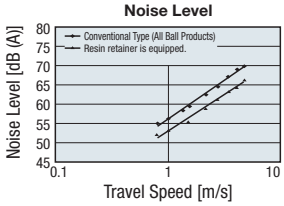
Radial Clearance (μm)	
H24, 28	-4~0
H33, 42	-5~0

■ Preload and Accuracy Standards



■ Features of Plastic Retainers

Noise Level



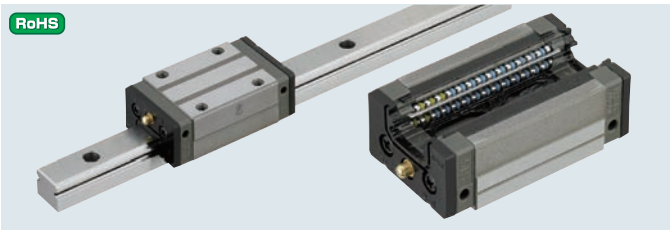
– Since there is no mutual contact abrasion between the balls, particle generation is less than those of conventional products.

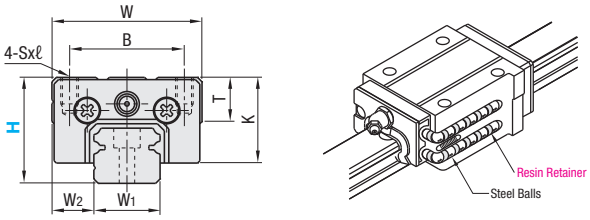
Linear Guides Heavy and Ultra Heavy Load – Stainless Steel –

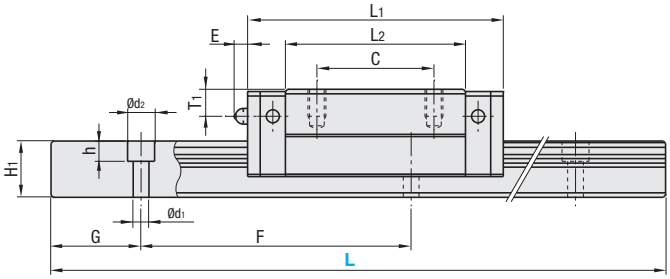
– With Plastic Retainers / Interchangeable, Light Preload –

■ Features

Linear Guides with Plastic Retainers prevent contact between balls and result in low noise levels under high-speed operation.







Load	Material Hardness	Type Light Preload	Blocks	Rails	L Dimension	Number of Blocks
Heavy Load	Stainless Steel (440C Stainless Steel Equivalent Material) 56HRC~	SSXRZ ★	SSXRB	SSRZL	Selectable	1
		SSX2RZ				2
		SSXRLZ		SSRZLF	Configurable	1
		SSX2RLZ				2
Ultra Heavy Load		SSHRZ	SSHRB	SSHZL	Selectable	1
		SSH2RZ				2
		SSHRLZ		SSHZLF	Configurable	1
		SSH2RLZ				2

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SSXRZ	–	33			–	640		

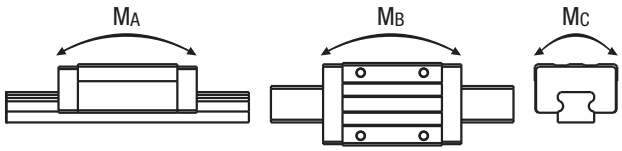
Grease type and alternations (if applicable) available on **P. 12–13**

Load	Part Number			Block Dimensions											Guide Rail Dimensions					
	H	Length (L) Selectable	Length (L) Configurable (in 1 mm increments)	W	L_1	B	C	S x ℓ	L_2	K	T	Grease Fittings Mounting Holes	Grease Fittings E	Grease Fittings T_1	H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Heavy Load	24	100–1480 (160) (in 60 mm increments)	101~1479	34	56.8	26	26	M4 x 6	40	19.4	10	Ø3	3	6	12.5	15	9.5	3.5 x 6 x 4.5	60	20
	28	160–1480 (220) (in 60 mm incrments)	161~1479	42	65.2	32	32	M5 x 7	48	22	12	M6 x P0.75	11	5.5	15.5	20	11	6 x 9.5 x 8.5	60	20
	33	160–1480 (220) (in 60 mm increments)	161~1479	48	81.6	35	35	M6 x 9	60	26	12	M6 x P0.75	11	7	18	23	12.5	7 x 11 x 9	60	20
Ultra Heavy Load	30	220–1480 (in 60 mm increments)	221~1479	44	69.8	32	36	M5 x 6	50	25	12	M6 x P0.75	11	5	18	20	12	6 x 9.5 x 8.5	60	20
	40	220–1480 (in 60 mm increments)	221~1479	48	79	35	35	M6 x 9	58	33	12	M6 x P0.75	11	10	22	23	12.5	7 x 11 x 9	60	20

L dimensions in ( ) are shortest lengths possible for 2 block type

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment M_A N・m	Allowable Static Moment M_B N・m	Allowable Static Moment M_C N・m	Mass Blocks kg	Mass Guide Rails kg/m
24	7.9	15.6	74	62	78	0.20	1.4
28	11.1	21.8	124	104	149	0.28	2.3
30	16.3	29.6	167	141	199	0.33	2.6
33	17.9	33.5	242	203	266	0.51	3.1
40	22.4	37.5	246	207	295	0.55	3.6



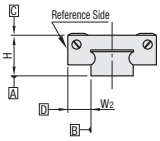
Dimension Precision (µm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±30
Width W_2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

Interchangeable, Light Preload Type

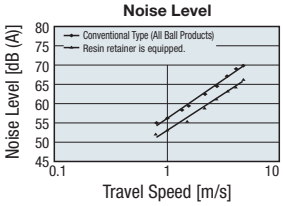
Radial Clearance (µm)	
H24, 28	-4~0
H30, 33, 40	-5~0

■ Preload and Accuracy Standards



■ Features of Plastic Retainers

Noise Level



– Since there is no mutual contact abrasion between the balls, particle generation is less than those of conventional products.

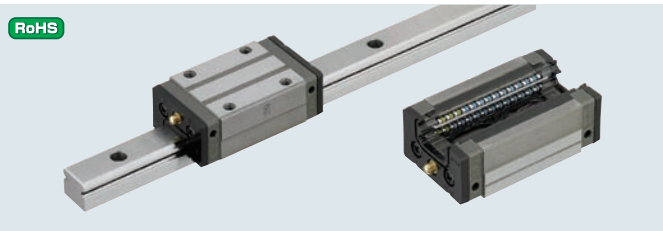
Linear Guides – Heavy Load –

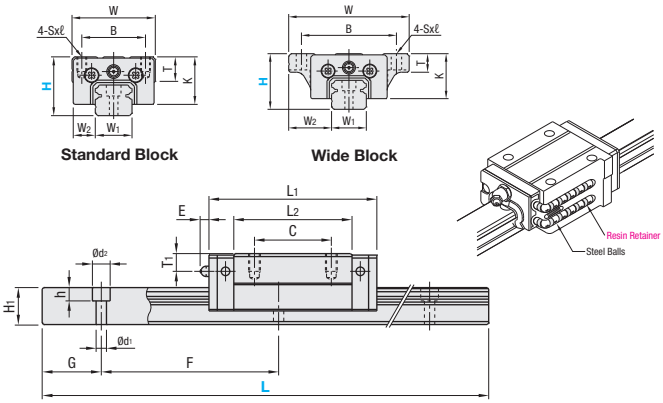
– With Plastic Retainers / Interchangeable, Light Preload –

For cost effiecient model, see **P.33**

■ Features

Linear Guides with Plastic Retainers prevent contact between balls and result in low noise levels under high-speed operation.





Material Hardness	Block Type	Type / Light Preload	Blocks	Rails	L Dimension	Number of Blocks
Carbon Steel 58HRC~	Standard	SXRZ	SXRB	SRZL	Selectable	1
		SX2RZ ★ ✓				2
		SXRLZ		SRZLF	Configurable	1
		SX2RLZ				2
	Wide with Through Holes	SXWZ	SXWB	SRZL	Selectable	1
		SX2WZ				2
		SXWLZ		SRZLF	Configurable	1
		SX2WLZ				2
	Wide with Tapped Holes	SXWTZ	SXWTB	SRZL	Selectable	1
		SX2WTZ				2
		SXWTLZ		SRZLF	Configurable	1
		SX2WTLZ				2

Order Example

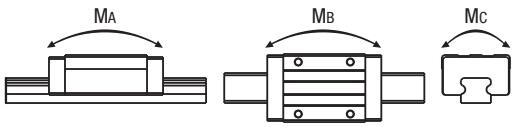
Type	–	H	–	Grease Type	–	Length	–	Alterations
SSXRZ	–	33			–	640		

Grease type and alternations (if applicable) available on **P. 12–13**

Block Type	Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	W	L_1	B	C	S x ℓ	L_2	K	T	Grease Fittings: Mounting Holes	E	T_1	H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	24	100–1480 (in 60 mm increments)	101~1479	34	56.8	26	26	M4 x 6	40	19.4	10	Ø3	3	6	12.5	15	9.5	3.5 x 6 x 4.5	60	20
	28	160–1960 (in 60 mm increments)	161~1959	42	65.2	32	32	M5 x 7	48	22	12	M6 x P0.75	11	5.5	15.5	20	11	6 x 9.5 x 8.5	60	20
	33	160–1960 (in 60 mm increments)	161~1959	48	81.6	35	35	M6 x 9	60	26	12	M6 x P0.75	11	7	18	23	12.5	7 x 11 x 9	60	20
	42	200–1960 (in 80 mm increments)	201~1959	60	96.4	40	40	M8 x 12	71	33	13	M6 x P0.75	11	8	23	28	16	7 x 11 x 9	60	20
Wide	24	100–1480 (in 60 mm increments)	101~1479	52	56.8	41	26	4.5 (M5)	40	19.4	8	Ø3	3	6	12.5	15	18.5	3.5 x 6 x 4.5	60	20
	28	160–1960 (in 60 mm increments)	161~1959	59	65.2	49	32	5.5 (M6)	48	22	10	M6 x P0.75	11	5.5	15.5	20	19.5	6 x 9.5 x 8.5	60	20
	33	160–1960 (in 60 mm increments)	161~1959	73	81.6	60	35	7 (M8)	60	26	11	M6 x P0.75	11	7	18	23	25	7 x 11 x 9	60	20
	42	200–1960 (in 80 mm increments)	201~1959	90	96.4	72	40	9 (M10)	71	33	11	M6 x P0.75	11	8	23	28	31	7 x 11 x 9	60	20

kgf=Nx0.101972

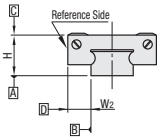
H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: M_A N • m	Allowable Static Moment: M_B N • m	Allowable Static Moment: M_C N • m	Mass: Block kg Standard	Mass: Block kg Wide	Mass: Guide Rails kg/m
24	7.9	15.6	74	62	78	0.2	0.26	1.4
28	11.1	21.8	124	104	149	0.28	0.35	2.3
33	17.9	33.5	242	203	266	0.51	0.66	3.1
42	27.3	50.5	415	350	480	0.85	1.20	4.8



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±30
Width W_2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

■ Preload and Accuracy Standards



Interchangeable, Light Preload Type

Radial Clearance (μm)	
H24, 28	-4~0
H33, 42	-5~0

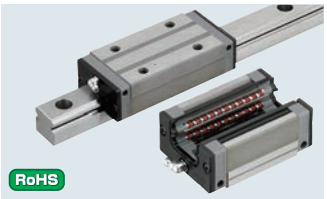
Linear Guides – Ultra Heavy and Extra Super Heavy Load –

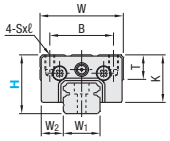
– With Plastic Retainers / Interchangeable, Light Preload –

For cost effiecient model, see **P.33**

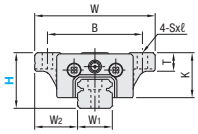
■ Features

Linear Guides with Plastic Retainers prevent contact between balls and result in low noise levels under high-speed operation.

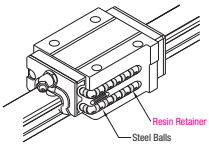


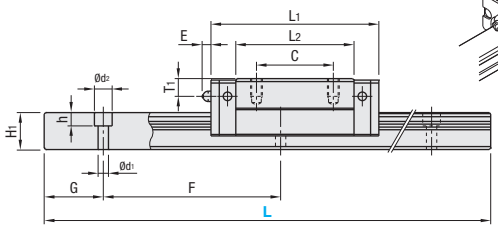


Standard Block



Wide Block





Material Hardness	Block Type	Type / Light Preload	Blocks	Rails	L Dimension	Number of Blocks
Carbon Steel 58HRC~	Standard	SHRZ	SHRB	SHZL	Selectable	1
		SH2RZ				2
		SHRLZ		SHZLF	Configurable	1
		SH2RLZ				2
		SERZ	SERB	SHZL	Selectable	1
		SE2RZ				2
		SERLZ		SHZLF	Configurable	1
		SE2RLZ				2
	Wide with Through Holes	SHWZ	SHWB	SHZL	Selectable	1
		SH2WZ				2
		SHWLZ		SHZLF	Configurable	1
		SH2WLZ				2
		SEWZ	SEWB	SHZL	Selectable	1
		SE2WZ				2
		SEWLZ		SHZLF	Configurable	1
		SE2WLZ				2
	Wide with Tapped Holes	SHWTZ	SHWPB	SHZL	Selectable	1
		SH2WTZ ★				2
		SHWTLZ		SHZLF	Configurable	1
		SH2WTLZ				2
		SEWTZ	SEWTB	SHZL	Selectable	1
		SE2WTZ				2
		SEWTLZ		SHZLF	Configurable	1
		SE2WTLZ				2

Ultra Heavy Load Extra Super Heavy Load

Order Example

Type	–	H	–	Grease Type	–	Length	–	Alterations
SSXRZ	–	33			–	640		

Grease type and alternations (if applicable) available on **P. 12–13**

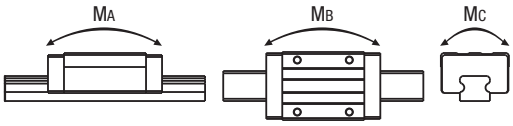
Block Type	Part Number: H	Length (L): Selectable	Length (L): Configurable (in 1 mm increments)	Block Dimensions: W	L_1	B	C	S x ℓ	L_2	K	T	Grease Fittings: Mounting Holes	E	T_1	Guide Rail Dimensions: H_1	W_1	W_2	Counter-bored Holes (d_1 x d_2 x h)	F	G
Standard	30	220–1960 (in 60 mm increments)	221~1959	44	69.8 91.8	32	36 50	M5 x 6	50 72	25	12	M6 x P0.75	11	5	18	20	12	6 x 9.5 x 8.5	60	20
	36	220–1960 (in 60 mm increments)	221~1959	48	79 107	35	35 50	M6 x 6	58 86	29	12	M6 x P0.75	11	6	22	23	12.5	7 x 11 x 9	60	20
	42	280–1960 (in 80 mm increments)	281~1959	60	85.6 124.6	40	40 60	M8 x 8	59 98	33	1010	M6 x P0.75	11	7	26	28	16	9 x 14 x 12	80	20
Wide	30	220–1960 (in 60 mm increments)	221~1959	63	69.8 91.8	53	40	6 (M6)	50 72	25	10	M6 x P0.75	11	5	18	20	21.5	6 x 9.5 x 8.5	60	20
	36	220–1960 (in 60 mm increments)	221~1959	70	79 107	57	45	7 (M8)	58 86	29	11	M6 x P0.75	11	6	22	23	23.5	7 x 11 x 9	60	20
	42	280–1960 (in 80 mm increments)	281~1959	90	98.6 124.6	72	52	9 (M10)	72 98	33	11	M6 x P0.75	11	7	26	28	31	9 x 14 x 12	80	20

Ultra Heavy Load Extra Super Heavy Load

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N • m	M_B N • m	M_C N • m	Mass: Block kg Standard	Wide	Guide Rails kg/m
30	16.3 21.6	29.6 44.5	167 360	141 305	199 298	0.33 0.48	0.45 0.65	2.6
36	22.4 32	37.5 62.5	246 615	207 515	295 490	0.46 0.69	0.63 0.93	3.6
42	31.0 (35.5) 46	51.5 (63.0) 91.5	356 (540) 1060	305 (450) 885	490 (600) 870	0.69 (1.2) 1.16	1.2 1.60	5.2

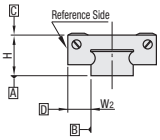
Values in ( ) are for Wide Block (Through Holes and Tapped Holes) Type.



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±30
Width W_2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to **P. 9**
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

■ Preload and Accuracy Standards



Interchangeable, Light Preload Type

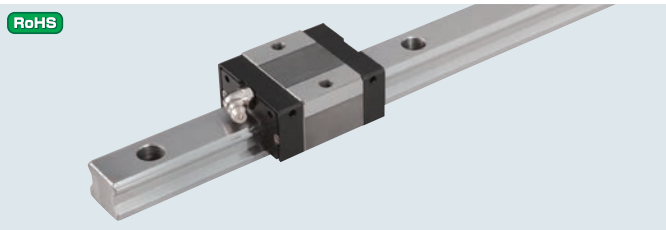
Radial Clearance (μm)	
H30, 36	-5~0
H42	-7~0

NEW Linear Guides for Medium Load

Normal Clearance

Similar Products Comparison Points Select Cost Efficient for medium-accuracy positioning, medium/low load, and medium-to-low frequency drive applications. When you consider using Cost Efficient Products, select an appropriate model after comparing the specifications with those of the existing products. P.27–28

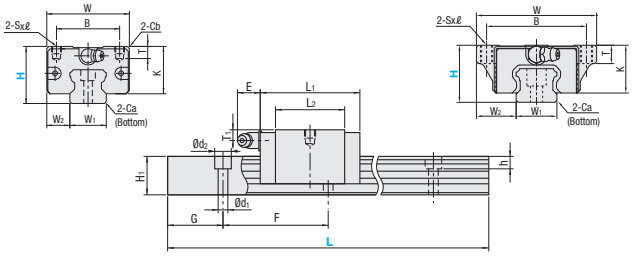
RoHS



The mounting dimensions are same for the existing and Cost Efficient Products.

	Type		L Dimension	Material Hardness
	1 Block	2 Blocks		
	Standard Grade	Standard Grade		
Standard Block	C-SVR	C-SV2R	Selectable	Rails / Blocks: Carbon Steel 58HRC~62HRC
	C-SVRL	C-SV2RL	Configurable	
Wide Block Tapped Hole	C-SVWT	C-SV2WT	Selectable	
	C-SVWTL	C-SV2WTL	Configurable	

Heat Resistant Temperature: -20~80°C Configurable lengths available in 10mm increments.



For L Configurable, G dimensions differ from those shown in the table below.

Order Example

Type	–	L
C-SVR28	–	880
C-SVWT28	–	880

Alterations

Type	–	L	–	(B3)
C-SVR28	–	640	–	B3

Alterations	Code	Spec.
3-Block Specifications	B3	Add 2 blocks to 1-block product to ship as 3-block separate item. Selection Example: C-SVR24-400-B3
4-Block Specifications	B4	Add 3 blocks to 1-block product to ship as 4-block separate item. Selection Example: C-SVR24-400-B4

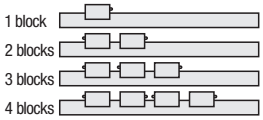
■ Precautions for Use

- This product is All Ball Type. Blocks are equipped with retainers to prevent balls from derailing. For how to handle the blocks, see **P.9**.
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Thick grooves are provided on the datum planes of blocks and rails. Be sure to match the datum planes when using.
- Rails cannot be connected end to end.
- Running parallelism is the value measured after the rail is mounted. (It is not the value measured before the rails are fastened with screws.)
- The accuracy of Linear Guides is guaranteed after mounting the rail (after fastening screws on the rail and pushing it onto the datum plane).
- Minor bending of the rail will be adjusted after being mounted and will not affect the performance.

■ Others

– Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
– Grease Fittings: Straight Type for H24 and Angled Type for H28 and H33.
– Grease Fitting is screw-in type, and thus, can be repositioned.
– For installation and maintenance of Linear Guides, see **P.11**.

■ Position of Grease Fitting (Reference plane on the front side)



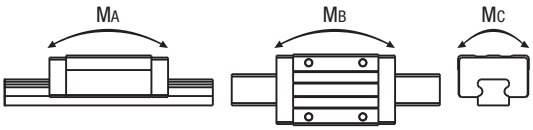
■ Selectable Shortest Rail Length for B3/B4

H	B3 (3-Block)	B4 (4-Block)
24	340	400
28	400	460
33	400	520
42	440	520

H	Type		H	Length (L)	Block Dimension											Guide Rail Dimension						
	1 Block	2 Blocks			W	L_1	B	S x L	L_2	K	T	Cb	Grease Fitting			H_1	W_1	W_2	Ca	Counterbored Hole	F	G
													Mounting Hole	E	T_1					d_1 x d_2 x h		
Standard Block	C-SVR	C-SV2R	24	100~1480 (160)	34	39.3	26	M4 x 5	22.9	20.8	6.2	0.5	M4 x 0.7	6	5.5	13	15	9.5	0.5	4.5 x 7.5 x 6	60	20
	C-SVRL	C-SV2RL	28	160~1960 (220)	42	47.8	32	M5 x 5	27.8	23.4	7.2	0.5	M6 x 1	12	4.5	16.5	20	11	0.5	6 x 9.5 x 8.5	60	20
			33	160~1960 (220)	48	56.2	35	M6 x 6	35.2	27.2	8.15	1	M6 x 1	12	4.5	20	23	12.5	0.9	7 x 11 x 9	60	20
Wide Block	C-SVWT	C-SV2WT	24	100~1480 (160)	52	39.3	41	M5 x 7	22.9	20.8	7	—	M4 x 0.7	7	5.5	13	15	18.5	0.5	4.5 x 7.5 x 6	60	20
	C-SVWTL	C-SV2WTL	28	160~1960 (220)	59	47.8	49	M6 x 9	27.8	23.4	9	—	M6 x 1	14	4.5	16.5	20	19.5	0.5	6 x 9.5 x 8.5	60	20

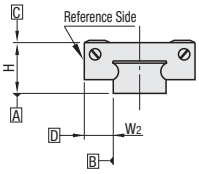
kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass		
	C (Dynamic) kN	Co (Static) kN	M_A N・m	M_B N・m	M_C N・m	Blocks kg Standard	Blocks kg Wide	Guide Rails kg/m
24	3.2	5.2	13.3	13.3	40.8	0.07	0.098	1.32
28	4.7	7.4	18.6	18.6	75.2	0.11	0.15	2.28
33	6.9	10.6	38.0	38.0	129.7	0.18	0.26	3.17



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±120
Variation of Height H	40
Width W_2 Tolerance	±120
Variation of Width W_2	40
Running Parallelism of Plane C against Plane A	Refer to **P. 9**
Running Parallelism of Plane D against Plane B	

■ Preload and Accuracy Standards

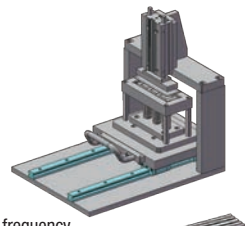


Interchangeable, Light Preload Type

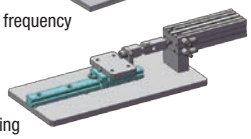
Radial Clearance (μm)	
H24	-4~+4
H28	-5~+5
H33	-6~+6

Example **Cost Efficient Products App. Example**

- Medium-Accuracy Positioning
- Medium/Low Load
- Used for Medium-to-Low Frequency Drive



<Manual Press Fitting Machine>
Used for manual operation with low frequency



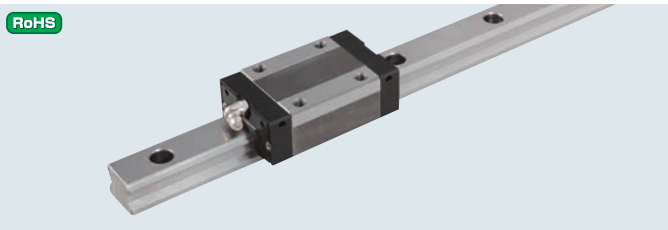
<Air Cylinder Drive Section>
Used for medium-accuracy positioning

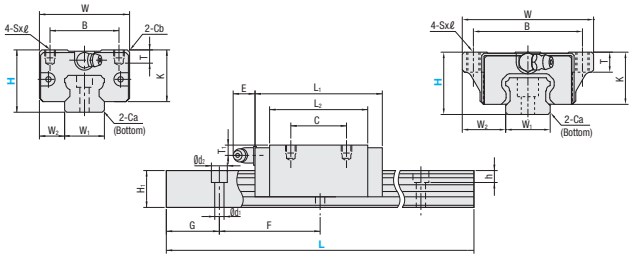
NEW Linear Guides for Heavy Load

Normal Clearance

Similar Products Comparison Points Select Cost Efficient Products for medium-accuracy positioning, medium/low load, and medium-to-low frequency drive applications. When you consider using Cost Efficient Products, select an appropriate model after comparing the specifications with those of the existing products. P.25 & 30

RoHS





The mounting dimensions are same for the existing and Cost Efficient Products.

For L Configurable, G dimensions differ from those shown in the table below.

	Type		L Dimension	Material Hardness
	1 Block	2 Blocks		
	Standard Grade	Standard Grade		
Standard Block	C-SXR	C-SX2R	Selectable	Rails / Blocks: Carbon Steel 58HRC~62HRC
	C-SXRL	C-SX2RL	Configurable	
Wide Block Tapped Hole	C-SXWT	C-SX2WT	Selectable	
	C-SXWTL	C-SX2WTL	Configurable	

Heat Resistant Temperature: -20~80°C Configurable lengths available in 10mm increments.

Order Example

Type	–	L
C-SXR28	–	880
C-SXWT28	–	880

Alterations

Type	–	L	–	(B3)
C-SXR28	–	640	–	B3

Alterations	Code	Spec.
3-Block Specifications	B3	Add 2 blocks to 1-block product to ship as 3-block separate item. Selection Example: C-SVR24-400-B3
4-Block Specifications	B4	Add 3 blocks to 1-block product to ship as 4-block separate item. Selection Example: C-SVR24-400-B4

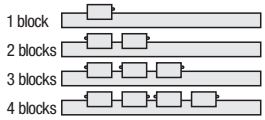
■ Precautions for Use

- This product is All Ball Type. Blocks are equipped with retainers to prevent balls from derailing. For how to handle the blocks, see P.9.
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Thick grooves are provided on the datum planes of blocks and rails. Be sure to match the datum planes when using.
- Rails cannot be connected end to end.
- The accuracy of Linear Guides is guaranteed after mounting the rail (after fastening screws on the rail and pushing it onto the datum plane). Minor bending of the rail will be adjusted after being mounted and will not affect the performance.

■ Others

– Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
– Grease Fittings: Straight Type for H24 and Angled Type for H28 and H33.
– Grease Fitting is screw-in type, and thus, can be repositioned.
– For installation and maintenance of Linear Guides, see P.11.

■ Position of Grease Fitting (Reference plane on the front side)



■ Selectable Shortest Rail Length for B3/B4

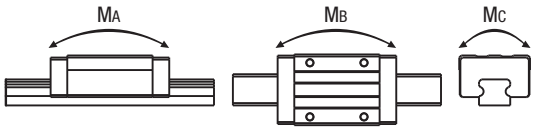
H	B3 (3-Block)	B4 (4-Block)
24	340	400
28	400	460
33	400	520
42	440	520

H	Type		H	Length (L)	Block Dimension											Guide Rail Dimension						
					W	L_1	B	S x L	L_2	K	T	Cb	Grease Fitting			H_1	W_1	W_2	Ca	Counterbored Hole	F	G
	1 Block	2 Blocks											Mounting Hole	E	T_1					d_1 x d_2 x h		
Standard Block	C-SXR	C-SX2R	24	100~1480 (160)	34	39.3	26	M4 x 5	22.9	20.8	6.2	0.5	M4 x 0.7	6	5.5	13	15	9.5	0.5	4.5 x 7.5 x 6	60	20
	C-SXRL	C-SX2RL	28	160~1960 (220)	42	47.8	32	M5 x 5	27.8	23.4	7.2	0.5	M6 x 1	12	4.5	16.5	20	11	0.5	6 x 9.5 x 8.5	60	20
			33	160~1960 (220)	48	56.2	35	M6 x 6	35.2	27.2	8.15	1	M6 x 1	12	4.5	20	23	12.5	0.9	7 x 11 x 9	60	20
Wide Block	C-SXWT	C-SX2WT	24	100~1480 (160)	52	39.3	41	M5 x 7	22.9	20.8	7	—	M4 x 0.7	7	5.5	13	15	18.5	0.5	4.5 x 7.5 x 6	60	20
	C-SXWTL	C-SX2WTL	28	160~1960 (220)	59	47.8	49	M6 x 9	27.8	23.4	9	—	M6 x 1	14	4.5	16.5	20	19.5	0.5	6 x 9.5 x 8.5	60	20
			33	160~1960 (220)	73	80	60	M8 x 10	59	27.2	10	—	M6 x 1	14	4.5	20	23	25	0.9	7 x 11 x 9	60	20

L Dimension: Dimensions in ( ) are for 2-Block Type.

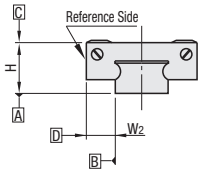
kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass		
	C (Dynamic) kN	Co kN	M_A N・m	M_B N・m	M_C N・m	Blocks kg Standard	Blocks kg Wide	Guide Rails kg/m
24	4.9	9.7	48.4	48.4	75.7	0.13	0.17	1.32
28	7.7	14.1	81.9	81.9	150.4	0.18	0.24	2.28
33	10.6	19.7	141.2	141.2	240.8	0.3	0.44	3.17



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±120
Variation of Height H	40
Width W_2 Tolerance	±120
Variation of Width W_2	40
Running Parallelism of Plane C against Plane A	Refer to P. 9
Running Parallelism of Plane D against Plane B	

■ Preload and Accuracy Standards

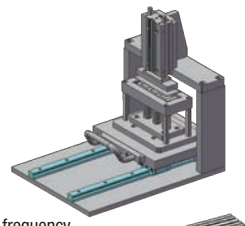


Interchangeable, Light Preload Type

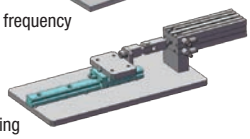
Radial Clearance (μm)	
H24	-4~+4
H28	-5~+5
H33	-6~+6

Example Cost Efficient Products App. Example

- Medium-Accuracy Positioning
- Medium/Low Load
- Used for Medium-to-Low Frequency Drive



<Manual Press Fitting Machine>
Used for manual operation with low frequency

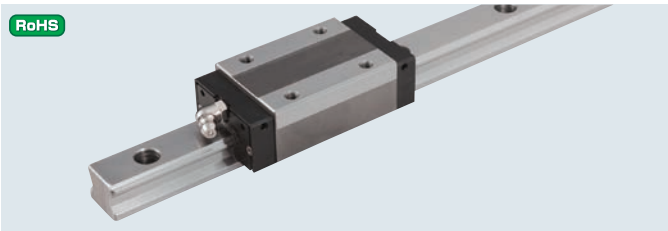


<Air Cylinder Drive Section>
Used for medium-accuracy positioning

NEW Linear Guides for Super Heavy Load

Normal Clearance

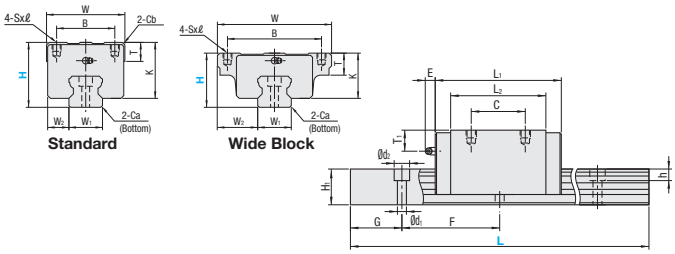
Similar Products Comparison Points I Select Cost Efficient Products for medium-accuracy positioning, medium/low load, and medium-to-low frequency drive applications. When you consider using Cost Efficient Products, select an appropriate model after comparing the specifications with those of the existing products. **P.31**



The mounting dimensions are same for the existing and Cost Efficient Products.

	Type		L Dimension	Material Hardness
	1 Block	2 Blocks		
	Standard Grade	Standard Grade		
Standard Block	C-SHR	C-SH2R	Selectable	Rails / Blocks: Carbon Steel 58HRC~62HRC
	C-SHRL	C-SH2RL	Configurable	
Wide Block Tapped Hole	C-SHWT	C-SH2WT	Selectable	
	C-SHWTL	C-SH2WTL	Configurable	

Heat Resistant Temperature: -20~80°C Configurable lengths available in 10mm increments.



For L Configurable, G dimensions differ from those shown in the table below.

Order Example

Type	–	L
C-SHR28	–	880
C-SHWT24	–	880

Alterations

Type	–	L	–	(B3)
C-SHR30	–	820	–	B3

Alterations	Code	Spec.
3-Block Specifications	B3	Add 2 blocks to 1-block product to ship as 3-block separate item. Selection Example: C-SVR24-400-B3
4-Block Specifications	B4	Add 3 blocks to 1-block product to ship as 4-block separate item. Selection Example: C-SVR24-400-B4

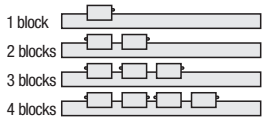
■ Precautions for Use

- This product is All Ball Type. Blocks are equipped with retainers to prevent balls from derailing. For how to handle the blocks, see **P.9**.
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Thick grooves are provided on the datum planes of blocks and rails. Be sure to match the datum planes when using.
- Rails cannot be connected end to end.
- The accuracy of Linear Guides is guaranteed after mounting the rail (after fastening screws on the rail and pushing it onto the datum plane).
- Minor bending of the rail will be adjusted after being mounted and will not affect the performance.

■ Others

– Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
– Grease Fittings: Straight Type for H24 and H28 and Angled Type for H30, H36, H40, H42 and H45.
– Grease Fitting is screw-in type, and thus, can be repositioned.
– For installation and maintenance of Linear Guides, see **P.11**.

■ Position of Grease Fitting (Reference plane on the front side)



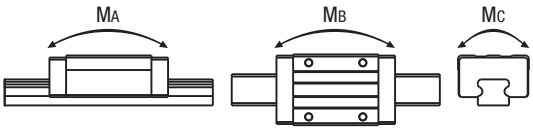
■ Selectable Shortest Rail Length for B3/B4

H	B3 (3-Block)	B4 (4-Block)
24, 28	340	400
30	400	460
36, 40	400	520
42, 45	440	520

	Part Number Type 1 block	Part Number Type 2 blocks	H	Length (L)	Block Dimension W	L_1	B	C	S x ℓ	L_2	K	T	Cb	Grease Fitting Mounting Hole	E	T_1	Guide Rail Dimension H_1	W_1	W_2	Ca	Counterbored Hole d1 x d2 x h	F	G
Standard	C-SHR C-SHRL	C-SH2R C-SH2RL	28	220~1960	34	55.9	26	26	M4 x 5	39.5	24.8	10.2	0.5	M4 x 0.7	7	9.5	13	15	9.5	0.5	4.5 x 7.5 x 6	60	20
			30	220~1960	44	74	32	36	M5 x 5	54	25.4	8.2	0.5	M6 x 1	14	6.5	16.5	20	12	0.5	6 x 9.5 x 8.5	60	20
			40	220~1960	48	80	35	35	M6 x 6.5	59	34.2	12.15	1.0	M6 x 1	14	11.5	20	23	12.5	0.9	7 x 11 x 9	60	20
			45	280~1960	60	95.3	40	40	M8 x 10	69.3	38	11	1.0	M6 x 1	14	11	23	28	16	1.0	9 x 14 x 12	80	20
Wide Block	C-SHWT C-SHWTL	C-SH2WT C-SH2WTL	24	220~1960	47	55.9	38	30	M5 x 8	39.5	20.8	8	—	M4 x 0.7	7	5.5	13	15	16	0.5	4.5 x 7.5 x 6	60	20
			30	220~1960	63	74	53	40	M6 x 10	54	25.4	10	—	M6 x 1	14	6.5	16.5	20	21.5	0.5	6 x 9.5 x 8.5	60	20
			36	220~1960	70	80	57	45	M8 x 12	59	30.2	12	—	M6 x 1	14	7.5	20	23	23.5	0.9	7 x 11 x 9	60	20
			42	280~1960	90	95.3	72	52	M10 x 15	69.3	35	15	—	M6 x 1	14	8	23	28	31	1.0	9 x 14 x 12	80	20

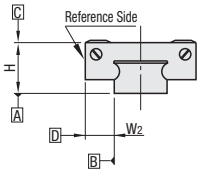
kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment M_A N・m	M_B N・m	M_C N・m	Mass Blocks kg Standard	Blocks kg Wide	Guide Rails kg/m
24	3.2	5.2	13.3	13.3	40.8	0.07	0.098	1.32
28	4.7	7.4	18.6	18.6	75.2	0.11	0.15	2.28
33	6.9	10.6	38.0	38.0	129.7	0.18	0.26	3.17



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±120
Variation of Height H	40
Width W_2 Tolerance	±120
Variation of Width W_2	40
Running Parallelism of Plane C against Plane A	Refer to **P. 9**
Running Parallelism of Plane D against Plane B	

■ Preload and Accuracy Standards

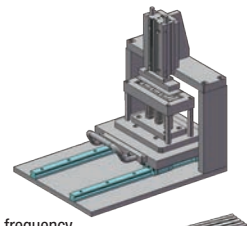


Interchangeable, Light Preload Type

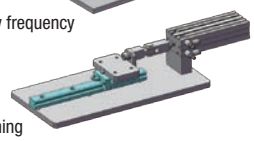
Radial Clearance (μm)	
H24, H28	-4~+4
H30	-5~+5
H36, H40	-6~+6
H42, H45	-7~+7

Example **Cost Efficient Products App. Example**

- Medium-Accuracy Positioning
- Medium/Low Load
- Used for Medium-to-Low Frequency Drive



<Manual Press Fitting Machine>
Used for manual operation with low frequency



<Air Cylinder Drive Section>
Used for medium-accuracy positioning

NEW Linear Guides for Extra Super Heavy Load

Normal Clearance

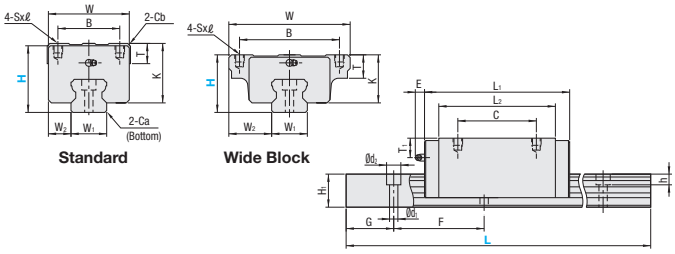
Similar Products Comparison Points I Select Cost Efficient Products for medium-accuracy positioning, medium/low load, and medium-to-low frequency drive applications. When you consider using Cost Efficient Products, select an appropriate model after comparing the specifications with those of the existing products. P.31

RoHS

The mounting dimensions are same for the existing and Cost Efficient Products.

	Type		L Dimension	Material Hardness
	1 Block Standard Grade	2 Blocks Standard Grade		
Standard Block	C-SER	C-SE2R	Selectable	Rails / Blocks: Carbon Steel 58HRC~62HRC
	C-SERL	C-SE2RL	Configurable	
Wide Block Tapped Hole	C-SEWT	C-SE2WT	Selectable	
	C-SEWTL	C-SE2WTL	Configurable	

Heat Resistant Temperature: -20~80°C Configurable lengths available in 10mm increments.



For L Configurable, G dimensions differ from those shown in the table below.

Order Example

Type	–	L
C-SER30	–	880
C-SET30	–	880

Alterations

Type	–	L	–	(B3)
C-SER30	–	1840	–	B3

Alterations	Code	Spec.
3-Block Specifications	B3	Add 2 blocks to 1-block product to ship as 3-block separate item. Selection Example: C-SVR24-400-B3
4-Block Specifications	B4	Add 3 blocks to 1-block product to ship as 4-block separate item. Selection Example: C-SVR24-400-B4

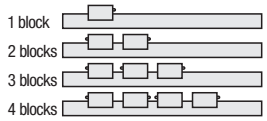
■ Precautions for Use

- This product is All Ball Type. Blocks are equipped with retainers to prevent balls from derailing. For how to handle the blocks, see P.9.
- For Interchangeable, Light Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected end to end.
- The accuracy of Linear Guides is guaranteed after mounting the rail (after fastening screws on the rail and pushing it onto the datum plane).
- Minor bending of the rail will be adjusted after being mounted and will not affect the performance.

■ Others

– Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
– Grease Fittings: Straight Type for H24 and Angled Type for products whose H is other than 24.
– Grease Fitting is screw-in type, and thus, can be repositioned.
– For installation and maintenance of Linear Guides, see P.11.

■ Position of Grease Fitting (Reference plane on the front side)



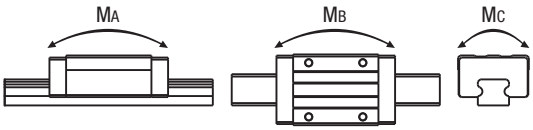
■ Selectable Shortest Rail Length for B3/B4

H	B3 (3-Block)	B4 (4-Block)
30	400	460
36, 40	460	580
42, 45	520	600

	Part Number Type 1 Block	Part Number Type 2 Blocks	H	Length (L)	W	L_1	B	C	S x L	L_2	K	T	Cb	Grease Fitting Mounting Hole	E	T_1	H_1	W_1	W_2	Ca	Counterbored Hole d_1 x d_2 x h	F	G
Standard	C-SER C-SERL	C-SE2R C-SE2RL	30	220~1960	44	98	32	50	M5 x 5	78	25.4	8.2	0.5	M4 x 0.7	14	6.5	16.5	20	12	0.5	6 x 9.5 x 8.5	60	20
			40	220~1960	48	109	35	50	M6 x 6.5	88	34.2	12.15	1.0	M6 x 1	14	11.5	20	23	12.5	0.9	7 x 11 x 9	60	20
			45	280~1960	60	131	40	60	M8 x 10	105	38	11	1.0	M6 x 1	14	11	23	28	16	1.0	9 x 14 x 12	80	20
Wide Block	C-SEWT C-SEWTL	C-SE2WT C-SE2WTL	30	220~1960	63	98	53	40	M6 x 10	78	25.4	10	—	M6 x 1	14	6.5	16.5	20	21.5	0.5	6 x 9.5 x 8.5	60	20
			36	220~1960	70	109	57	45	M8 x 12	88	30.2	12	—	M6 x 1	14	7.5	20	23	23.5	0.9	7 x 11 x 9	60	20
			42	280~1960	90	131	72	52	M10 x 15	105	35	15	—	M6 x 1	14	8	23	28	31	1.0	9 x 14 x 12	80	20

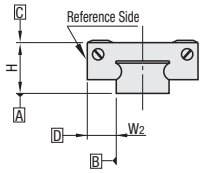
kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment M_A N・m	M_B N・m	M_C N・m	Mass Blocks kg Standard	Blocks kg Wide	Guide Rails kg/m
30	11.3	24.8	260.7	260.7	263.3	0.38	0.53	2.28
36, 40	14.8	31.9	380.2	380.2	388.9	0.68	0.78	3.17
42, 45	21.8	45.7	654.1	654.1	672.9	1.12	1.77	4.54



Dimension Precision (μm)	Interchangeable
Height H Tolerance	±120
Variation of Height H	40
Width W_2 Tolerance	±120
Variation of Width W_2	40
Running Parallelism of Plane C against Plane A	Refer to P. 9
Running Parallelism of Plane D against Plane B	

■ Preload and Accuracy Standards

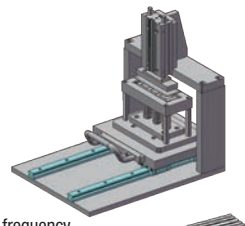


Interchangeable, Light Preload Type

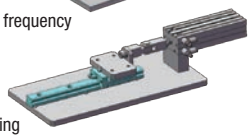
	Radial Clearance (μm)
H24, H30	-5~+5
H36, H40	-6~+6
H42, H45	-7~+7

Example **Cost Efficient Products App. Example**

- Medium-Accuracy Positioning
- Medium/Low Load
- Used for Medium-to-Low Frequency Drive



<Manual Press Fitting Machine>
Used for manual operation with low frequency

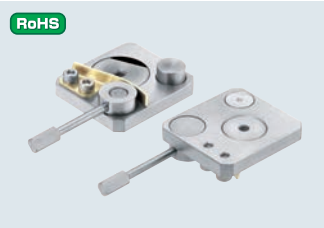


<Air Cylinder Drive Section>
Used for medium-accuracy positioning

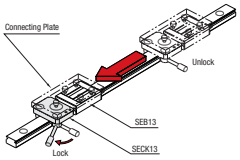
Linear Guide Clamps

– Miniature Linear Guides –

Retaining Force (Reference): 70N~105N



Example



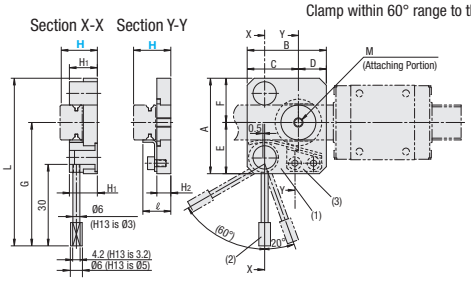
■ Characteristics of Linear Guide Clampers

Rotating lever will lock the linear guide block.
Convenient for simple position retaining utility.

* When using the Linear Guide Clampers in inclined or vertical applications, provide external means to prevent the slider from falling.

■ Lever Tightening Force (Reference) 40N or more (Lever End)

Release at 20° to the right.
Clamp within 60° range to the left.



Type	Part		Material
SECK SECWK	(1)	Main Body	304 Stainless Steel
	(2)	Lever	304 Stainless Steel
	(3)	Contacts	C28000 Brass

Part Number Type	H	A	B	C	D	E	F	M	H_1	H_2	ℓ	L	G	Retaining Force (Reference)
SECK	13	38	34	22	12	20.5	17.5	M4	10	5	10	64	46.5	70N
	16	41	34	22	12	22	19		12	6	12	67	48	95N
SECWK	14	50	34	22	12	26.5	23.5	M5	11	5	11	76	52.5	75N
	16	68	34	20.5	13.5	35.5	32.5		13	6	13	94	61.5	105N

- Linear guide clamp must be mounted to a connecting plate with miniature linear guide first, then attach to the rail.
- Connecting plate is to be supplied by user.
- Mounting point rotates. Tighten the screw by holding the back side.
- SECK Type should match with H dimension of Miniature Linear Guides.
- SECWK Type should match with H dimension of Miniature Linear Guides Wide Type.
- The lever (2) can be screwed off.

Order Example

Part Number
SECK13

Linear Guide Clamps

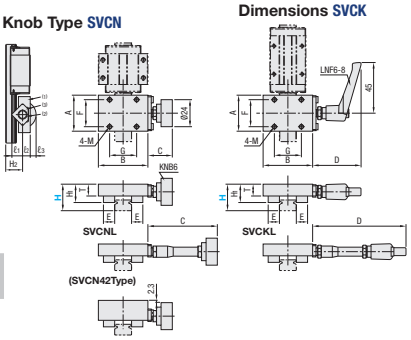
– Medium / Heavy Load Linear Guides –

Retaining Force (Reference): 1200N

■ Fitting Dimensions

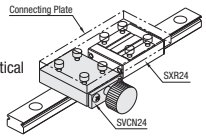
Knob Type SVCN

Assembled Dimensions SVCK



Ex.

* Do not use for vertical position retaining.



■ Tightening Torque (Reference) 7N・m or more (Retaining Force 1200N)

Opening Ranges of Contacts

H24...10~22mm	H36...17~36mm
H28...14~28mm	H42...21~56mm
H30...15~30mm	H42G...21~56mm
H33...16~40mm	

- Linear guide clamp must be fixed to the joint plate for miniature linear guide first, then attach it to the rail.
- Connecting plate is to be supplied by user.
- Match with the H dimension of Medium / Heavy Load Linear Guides.
- H42G should be used with matching H dimension 42 of Extra Heavy/Extra Super Heavy Load Linear Guides.

Type Knob Type	Type Clamp Type		Part	Material	Surface Treatment
SVCN SVCNL (Long Type)	SVCK SVCKL (Long Type)	(1)	Main Body	1045 Carbon Steel	Electroless Nickel Plating
		(2)	Right and Left Hand Thread	4137 Alloy Steel	Iron Oxide Black Film
		(3)	Contacts	1045 Carbon Steel	—

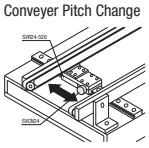
Part Number Type	H	A	B	F	G	C SVCN	C SVCNL	D SVCK	D SVCKL	E	T	H_1	H_2	$ℓ_1$	$ℓ_2$	$ℓ_3$	M (Coarse Thread)
SVCN SVCNL SVCK SVCKL	24	32	44	24	24	21.7	61.7	43	83	10	10.5	16.3	17.2	9.5	6.8	5.2	M4
	28	35	50	25	25	21.7	61.7	43	83	10	11.5	17.3	20.2	9.5	7.8	4.2	M5
	30	38	54	28	28	21.7	61.7	43	83	11	11.0	18.3	22.7	11.0	7.3	4.7	M5
	33	38	62	26	26	21.7	61.7	43	83	10	14.0	19.8	22.7	9.5	10.3	1.7	M6
	36	42	60	30	30	21.7	61.7	43	83	11	13.0	20.3	26.7	11.0	9.3	2.7	M6
	42	46	80	32	32	21.7	61.7	43	83	11	18.0	25.3	27.7	11.0	14.3	—	M8
	42G	46	80	32	32	21.7	61.7	43	83	11	15.0	22.3	30.7	11.0	11.3	0.7	M8

Order Example

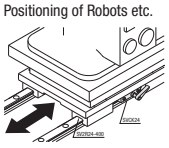
Part Number
SVCN24

Example

Conveyer Pitch Change



Positioning of Robots etc.

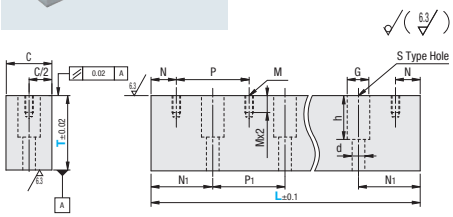


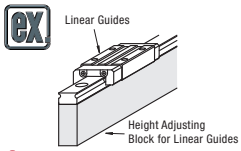
Height Adjusting Blocks for Linear Guides

– Economy Type –

■ Up to 50% savings without the width tolerance of the High Precision Type. Height accuracy and parallelism after installation are the same as those of High Precision Type.

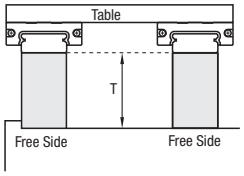
Type		Material	Surface Treatment
1 pc	Set of 2 pcs Ganged Machining Charge*		
LGBE	LG2BE	1018 Carbon Steel	Electroless Nickel Plating
ALGBE	ALG2BE	5052 Aluminum Alloy	Clear Anodize





Bending might occur due to the product characteristics. Fix the block by using all the mounting holes.

*Set of Gang Machined 2 pcs



Set of gang machined 2 pcs are simultaneously milled with less than 0.01mm or less differences of T dimension. Height accuracy after screw connecting the base plate is guaranteed.

■ Number of Holes

No.	L	M Number of Holes	S Number of Holes
24	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
28	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
33	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8

Order Example

Part Number	–	L	–	T
LGBE24	–	400	–	30
ALG2BE28	–	520	–	32

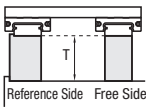
Part Number		L Dimension Selection	T (1 mm Increment)	C	N	P	N_1	P_1	Tapped Holes M	S Through + Counterbored Hole			
Type	(Linear Guide H Dimension) No.									d	G	h	
(1 pc) LGBE ALGBE (Set of Gang Machined 2 pcs) LG2BE ALG2BE	24	160 220 280 340 400 460 520	10~60	16	20	60	50	60	M3	5.5	9.5	6 (T≤20)	T-14 (T>20)
	28	220 280 340 400 460 520	15~60	22					M5	6.5	11	7 (T≤25)	T-18 (T>25)
	33	220 280 340 400 460 520	20~60	25					M6	9	14	9 (T≤30)	T-21 (T>30)

Height Adjusting Blocks for Linear Guides

– High Precision Type –

Type / Shape					Material	Surface Treatment
1 pc		*Set of Gang Machined 2 pcs				
Datum Side	Free Side	Datum Side + Datum Side	Datum Side + Free Side	Free Side + Free Side		
BETA	BETE	BE2KK (BETA + BETA)	BE2KF (BETA + BETE)	BE2FF (BETE + BETE)	1045 Carbon Steel	Electroless Nickel Plating
ABETA	ABETE	ABE2KK (ABETA + ABETA)	ABE2KF (ABETA + ABETE)	ABE2FF (ABETE + ABETE)	5052 Aluminum Alloy	Clear Anodize
		+	+	+	—	—

*Set of 2 pcs

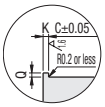


Set of gang machined 2 pcs are simultaneously milled with less than 0.01mm or less differences of T dimension. Height accuracy after screw connecting the base plate is guaranteed.

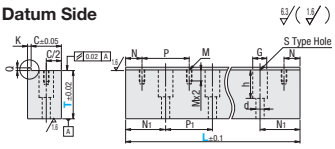
■ Number of Holes

No.	L	M Number of Holes	S Number of Holes
24	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
28	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
33	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
42	280	4	3
	360	5	4
	440	6	5
	520	7	6
	600	8	7
	680	9	8
	760	10	9
	840	11	10
	920	12	11

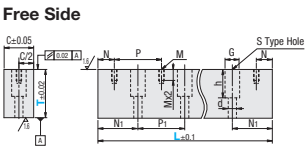
Details of Part

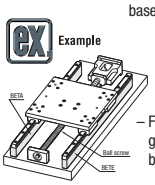


Datum Side



Free Side





– For raising the linear guide height to mount ball screws etc.

Part Number		L Dimension Selection	T (1mm Increment)	C	K	Q	N	P	N_1	P_1	Tapped Holes M	S Through + Counterbored Hole			
Type	(Linear Guide H Dimension) No.											d	G	h	
(1 pc) BETA BETE ABETA ABETE (Set of Gang Machined 2 pcs) (Datum Side + Datum Side) BE2KK ABE2KK (Datum Side + Free Side) BE2KF ABE2KF (Free Side + Free Side) BE2FF ABE2FF	24	160 220 280 340 400 460 520 580 640 700 760 820 880 940	10~60	15	3	3	20	60	50	60	M3	5.5	9.5	6 (T≤20)	T-14 (T>20)
	28	220 280 340 400 460 520 580 640 700 760 820 880 940	15~60	20							M5	6.5	11	7 (T≤25)	T-18 (T>25)
	33	220 280 340 400 460 520 580 640 700 760 820 880 940	20~60	23				80	60	80	M6	9	14	9 (T≤30)	T-21 (T>30)
	42	280 360 440 520 600 680 760 840 920		28								11	17.5	11 (T≤35)	T-24 (T>35)

When T=15 or less, the pilot holes M3 and M5 for tapping goes through.
When T=20, the pilot holes M6 for tapping goes through.

Order Example

Part Number	–	L	–	T
BETA24	–	400	–	32
BE2KF24	–	700	–	30

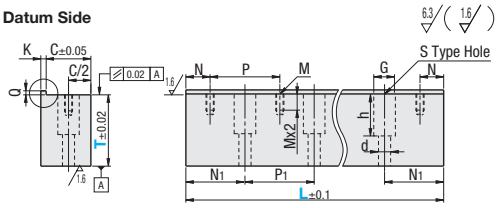
Height Adjusting Blocks for Miniature Linear Guides

– Standard Rail Type –

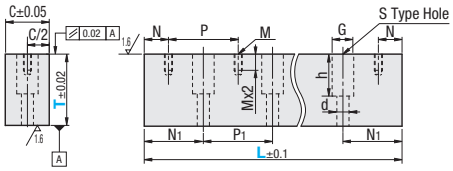
RoHS

Type		Material	Surface Treatment
Datum Side	Free Side		
GETA	GETE	1045 Carbon Steel	Electroless Nickel Plating
AGETA	AGETE	5052 Aluminum Alloy	Clear Anodize

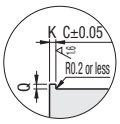
Datum Side

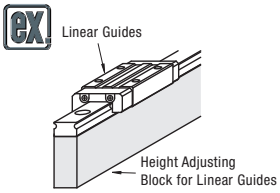


Free Side



Details of ○ Part





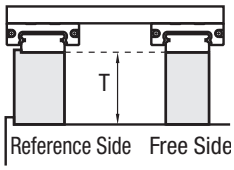
Part Number		L Dimension Selection	T (1 mm Increment)	C	K	Q	N	P	N_1	P_1	Tapped Holes M	S Through + Counterbored Hole		
Type	(Linear Guide H Dimension) No.											d	G	h
GETA AGETA GETE AGETE	8	40 55 70 85 100 115 130	10~60	7	2	1	5	15	12.5	15	M2	3.5	6	3.5
	10	55 75 95 115 135 155 175 195 215 235 255 275		9	3	1.5	7.5	20	17.5	20	M3	4.5	8	4.5
	13	70 95 120 145 170 195 220 245 270 295 320 345 370 395		12	3	2	10	25	22.5	25	M3	4.5	8	4.5
	16	110 150 190 230 270 310 350 390 430 470		15	3	3	15	40	35	40	M3	5.5	9.5	5.5
	20	160 220 280 340 400 460		20	3	4	20	60	50	60	M5	6.5	11	6.5

When T≤Mx4, the pilot holes for tapping go through.

Order Example

Part Number	–	L	–	T
GETA10	–	115	–	20

Example



■ Applicable Linear Guides

Compatible with Miniature Linear Guides L Selectable Types

Not applicable to
- L420 or more for H13.
- H16 is not applicable to L=510 or more.
- L520 or more for H20.

■ Number of Holes

No.	Length (L)	M Number of Holes	S Number of Holes
8	40	3	2
	55	4	3
	70	5	4
	85	6	5
	100	7	6
	115	8	7
	130	9	8
10	55	3	2
	75	4	3
	95	5	4
	115	6	5
	135	7	6
	155	8	7
	175	9	8
	195	10	9
	215	11	10
	235	12	11
	255	13	12
	275	14	13
13	70	3	2
	95	4	3
	120	5	4
	145	6	5
	170	7	6
	195	8	7
	220	9	8
	245	10	9
	270	11	10
	295	12	11
	320	13	12
	345	14	13
	370	15	14
	395	16	15

No.	Length (L)	M Number of Holes	S Number of Holes
16	110	3	2
	150	4	3
	190	5	4
	230	6	5
	270	7	6
	310	8	7
	350	9	8
	390	10	9
	430	11	10
	470	12	11
20	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7

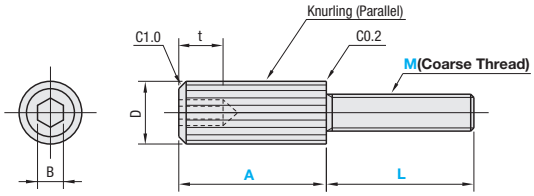
Linear Guide Stopper Bolts / Linear Guide Block Stopper Plates Rail Mounting Hole Caps / Linear Guide Adjustment Units

■ For Linear Guides Stopper Bolts

RoHS

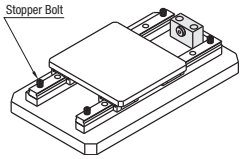
Type	Material	
SBLT	303 Stainless Steel	
SBLTJ	Knurled Head	Urethane (Shore A90)
	Threaded Section	304 Stainless Steel

* SBLTJ is a hexagon socket set screw with a heat bonded urethane head.



Part Number		L	A	D	B		t	
Type	M (Coarse Thread)				SBLT	SBLTJ	SBLT	SBLTJ
SBLT SBLTJ	3	8 10 12	6 8 10	5.5	2.5	1.5	3	2
	4	10	8	7	3	2	3.5	2.5
	5	16	18	8.5	4	2.5	4	3
	6	18	20	10	5	3	5	3.5

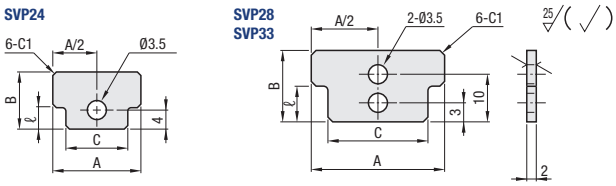
Example



■ For Linear Guides Linear Guide Block Stopper Plates

TYPICALLY IN STOCK

RoHS

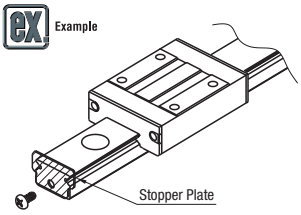


Rail ends require tapping alterations.
Applicable to Medium, Heavy Load and Carbon Steel Type only.

Material: 304 Stainless Steel

Part Number		A	B	C	ℓ
Type	No.				
SVP	24	19	12	14	4.5
	28	26	15	19	6
	33	29	19	22	7

Example

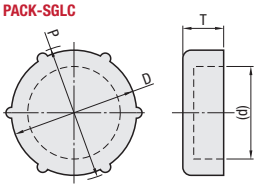


■ Rail Mounting Hole Caps (Package)

TYPICALLY IN STOCK

RoHS

PACK-SGLC

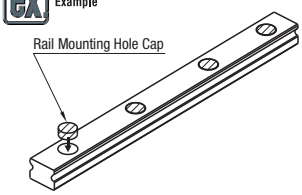


Material: Polyacetal (Black)

Part Number		D	P	T	(d)
Type	M (Applicable Bolt Hole)				
PACK-SGLC	3	5.8	6.2	1.5	4.2
	5	9.3	9.7	3	7.3
	6	10.8	11.2	3	8.8

PACK-SGLC3 has 4 protrusions.
Prevents foreign objects such as cutting chips from intruding into mounting holes.

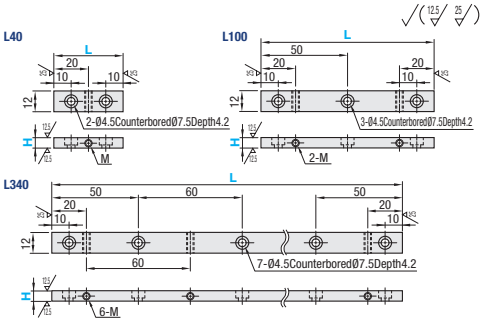
Example



■ Linear GuidesAdjustment Units

RoHS

Type		Part	Material	Surface Treatment
SGU	(1)	Main Body	1045 Carbon Steel	Electroless Nickel Plating
	(2)	Screws	304 Stainless Steel	—

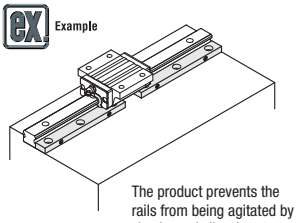


Part Number		Length (L)	Tapped Holes M	Included Screws Sizes
Type	H	Selectable		
SGU	5	40	3	M3-12
		100		M3-12
		340		M3-12
	6	40	4	M4-12
		100		M4-12
		340		M4-12

Order Example

Part Number	–	L	–	T
SBLT3	–	10	–	8
SVP24				
PACK-SGLC3				
SGU5	–	100		

Example



The product prevents the rails from being agitated by shocks and vibrations.

- Installed in parallel with linear guide rails and can be used to press the rails against datum shoulders or pins with included set screws.
- Applicable to H28, H33, H36 and H42 Linear Guides.

Linear Lock / Simplified Linear Lock

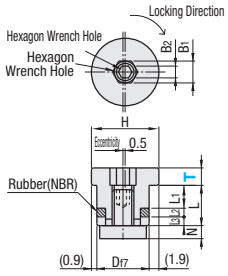
■ This linear lock presses the rail strongly onto the datum plane to correct bending and avoid misalignment by external force. See below for installation examples and diagrams.
Press the rail onto the datum plane.

■ Linear Locks

RoHS

Type	Material	Surface Treatment
LLT	1045 Carbon Steel (Thermal Refined)	Electroless Nickel Plating
LLTR		Low Temperature Black Chrome Plating
LLTS	420 Stainless Steel	—

<How to Mount>
After turning B_1 clockwise, turn B_2 (inner screw) clockwise.



Part Number Type	T	H	Df7		L	N	L_1	L_2	L_3	B_1	B_2	Mounting Hole Dimensions D_1	F (min)	W	(Recommendation) Tightening Torque Ncm	(Recommendation) Clamp Power KN	Mass (g)
LLT LLTR LLTS	1.4	12.8	10	-0.013 -0.028	8	2.5	5	1.4	1.6	5	2.5	10	11	6.5	90	1.8	7
	1.8														120	2.5	7
	3.5														190	3.9	8
	5	14.8	12	-0.016 -0.034	9		6					12	12	7.5	270	5.5	14

■ This linear lock comes with mounting screws to be inserted. See below for installation examples and diagrams.

Applicable Linear Guides (Recommendation)

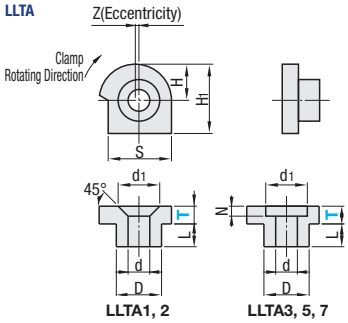
Type	H	T1.4	T1.8	T3.5	T5
Miniature Standard Rails	6	Good	—	—	—
	8	Good	—	—	—
	10	—	Good	—	—
	13	—	Good	—	—
	16	—	—	Good	—
	20	—	—	Good	—
Miniature Wide Rails	6.5	Good	—	—	—
	9	—	Good	—	—
	12	—	Good	—	—
	14	—	Good	—	—
	16	—	Good	—	—
Medium and Heavy Load	24	—	—	Good	—
	28	—	—	—	Good
	30	—	—	Good	—
	33	—	—	—	Good
	36	—	—	—	Good
	42	—	—	—	Good

■ Simplified Linear Locks

TYPICALLY IN STOCK

RoHS

Material: 1045 Carbon Steel (Thermal Refined)
Surface Treatment: CA Coating
Accessory: Mounting Screw



Part Number Type	T	Length (L)	D -0.01 -0.06	H	H_1	S	Z	d	d_1	N	Mounting Hole Dimensions D_1	W	F	M	G (min)	Mass (g)	Mounting Screws	(Recommendation) Clamp Power kN
LLTA	1	2.8	5	4	8	7	0.4	2.4	4.6	—	5	4	3	M2	5	0.6	Phillips Head Countersunk Screws M2 x 8	1
	2															1		1.2
	3	3.8	7	6	12	11	0.5	3.4	6.2	2	7	6	4	M3	6	3	Hexagon Socket Low Head Cap Screws M3 x 10	2.4
	5	4.8	9	7	14	13	0.5	4.5	8	3	9	7	5	M4	6	6	Hexagon Socket Low Head Cap Screws M4 x 12	3.8
	7	5.8	11	8	18	14	0.5	5.5	9.5	4	11	8	6	M5	8	13	Hexagon Socket Low Head Cap Screws M5 x 16	5.8

Applicable Linear Guides (Recommendation)

Type	H	T1.4	T1.8	T3.5	T5
Miniature Standard Rails	6	Good	—	—	—
	8	Good	—	—	—
	10	—	Good	—	—
	13	—	Good	—	—
	16	—	—	Good	—
	20	—	—	Good	—
Miniature Wide Rails	6.5	Good	—	—	—
	9	—	Good	—	—
	12	—	Good	—	—
	14	—	Good	—	—
	16	—	Good	—	—
Medium and Heavy Load	24	—	—	Good	—
	28	—	—	—	Good
	30	—	—	Good	—
	33	—	—	—	Good
	36	—	—	—	Good
	42	—	—	—	Good

Example

Order Example

Part Number
LLT5
LLTA7

■ LLTA (Simplified Linear Locks) Mounting Procedures

(1) Drill holes for mounting linear locks on the base. (Refer to Mounting Hole Dimensions)

(2) Temporarily tighten the rail screws.

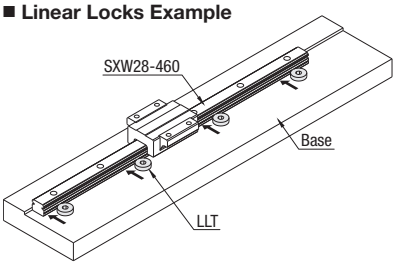
(3) Insert the mounting screws in LLTA and temporarily tighten. (Fig. 1)

(4) Turn the LLTA shoulder clockwise with a wrench and press the rail onto the datum plane. (Fig. 2)

(5) Fully tighten the rail screws.

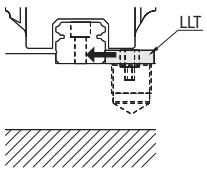
(6) Fully tighten the LLTA mounting screws.

■ Linear Locks Example

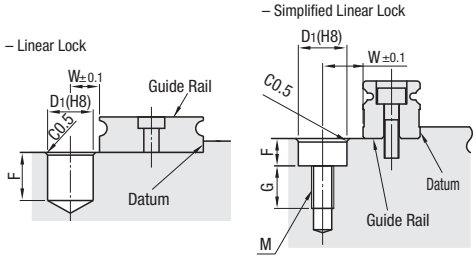


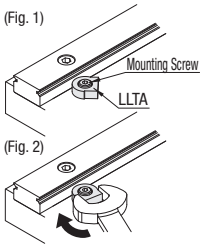
– Press the rail onto the datum plane by turning the linear locks.

■ Enlarged View



■ Mounting Hole Dimensions (Reference)

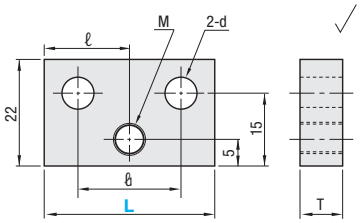


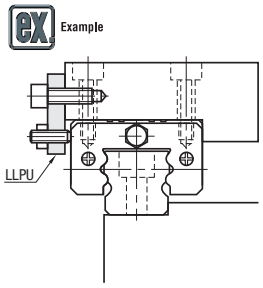


Linear Guide Locking Plate / Linear Guide Lock Unit / Linear Guide Taper Lock

■ Linear Lock Plates

Type	Material	Surface Treatment
LLPU	1045 Carbon Steel	Electroless Nickel Plating



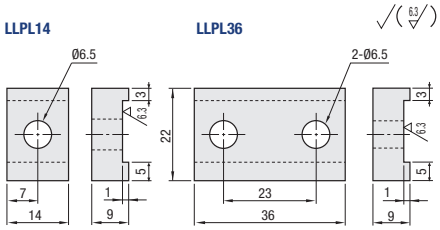


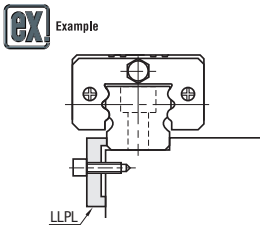
Part Number		T	ℓ	$ℓ_1$	d	M
Type	Length (L)					
LLPU	23	6	11.5	11	5.5	5
	28		14.0	15	6.5	
	33		16.5	20		
	43	9	21.5	30		

■ Linear Lock Plates

Type	Material	Surface Treatment
LLPL	1045 Carbon Steel	Electroless Nickel Plating

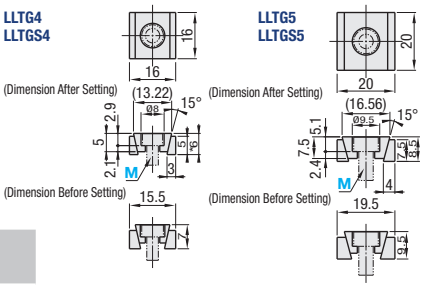
Part Number	
Type	Nominal
LLPL	14
	36



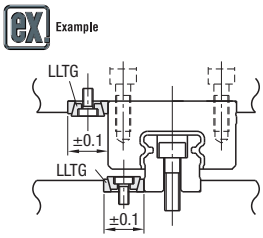


■ Linear Guides Lock Unit

Type	Material	Surface Treatment
LLTG	1045 Carbon Steel	Electroless Nickel Plating
LLTGS	304 Stainless Steel	—



*6 is the dimension when using low head cap screw. The dimension is 7.1 when using a standard hexagon socket head cap screw.

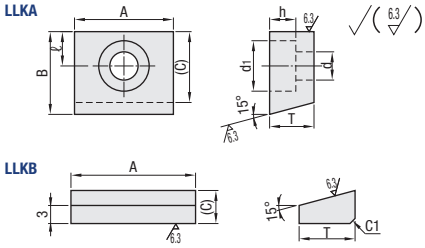


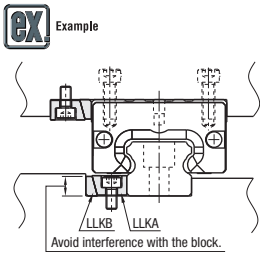
Part Number		(Recommendation) Tightening Torque (N · m)	Rail Clamp Force (kN)
Type	Length (L)		
LLTG	4	2	3.2
LLTGS	5	8	9

LLTG components are held together by elastic adhesive. Install as shipped.

■ Linear Guide Taper Locks

Type	Material	Surface Treatment
LLKA	1045 Carbon Steel	Electroless Nickel Plating
LLKB		





Part Number		A	B	T	(C)	ℓ	d	d_1	h
Type	No.								
LLKA	5	20	16	9	13.6	7	5.5	9.5	5.5
	6	22	18	11	15.1	7.5	6.5	11	6.5
LLKB	5	20	—	9	5.41	—	—	—	—
	6	22	—	11	5.95	—	—	—	—

Order Example

Part Number
LLPU23
LLTG4
LLKA6

Cross Roller Tables

– With Counterbored Holes / Tapped Holes –

Part numbers are changed since the 2009 catalog. Products with old part numbers are still available online.

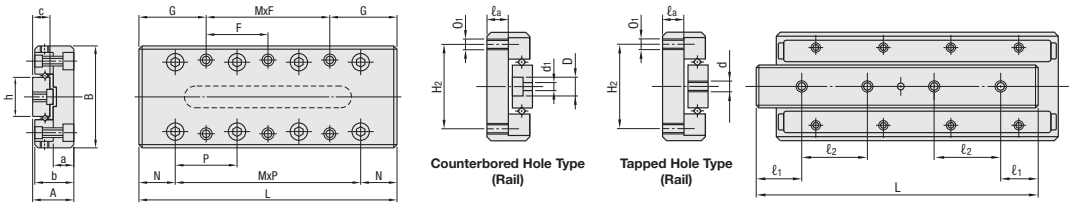
■ Counterbored Hole Type

Specifications	Type	Table		Heat Resistant Temperature	Rails
		Material	Surface Treatment		
Counterbored Holes Type	CRTD	1045 Carbon Steel	Iron Oxide Black Film	-20~110°C	CRV (P.43)
	CRTSD	SUS Material	—	-20~140°C	CRVS (P.43)
Tapped Holes Type	CRT	1045 Carbon Steel	Iron Oxide Black Film	-20~110°C	CRV (P.43)
	CRTS	SUS Material	—	-20~140°C	CRVS (P.43)
—	CRU	1045 Carbon Steel	Iron Oxide Black Film	-20~110°C	CRV (P.43)

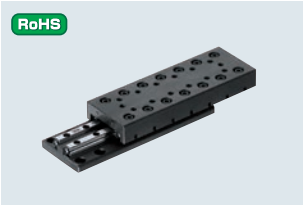
■ Part Number Conversion

Old Part Number	New Part Number
SYTD	CRTD
SYTSD	CRTSD
SYT	CRT
SYTS	CRTS
SVT	CRU

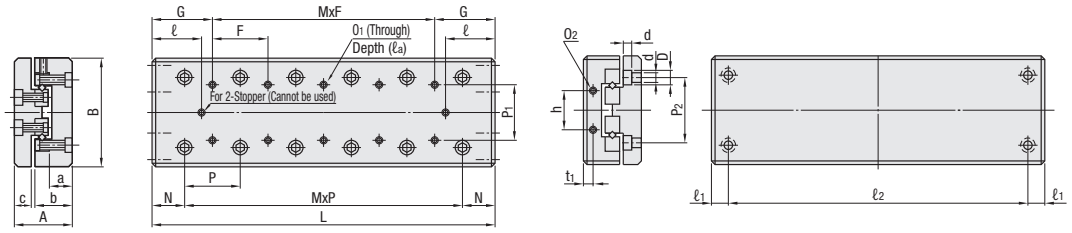
■ Tapped Hole Type



Part Number		Outline Dimensions				Table Mounting Hole Dimensions						Table Top Dimensions			Side Dimensions				Rail Mounting Hole Dimensions								
																			CRTD CRTSD					CRT CRTS			
Type	No.	Stroke (Reciprocating Motion)	A	B	L	G	F	M x F	H_2	O_1	ℓ_a	N	P	M x P	a	b	c	h	d_1	D	ℓ_1	ℓ_2	No. of Mounting Holes	d	ℓ_1	ℓ_2	No. of Mounting Holes
Counterbored Hole Type	1025	12	8±0.1	20±0.1	25	3.5	18	1 x 18	14	M2.6	3	7.5	10	1 x 10	3.5	7.5	4	6.6	2.5	4.1	3.5	—	2	M2.6	5	7.5	3
	1035	18			35		28	1 x 28						2 x 10							5	—	2		7.5	10	3
CRTD	1045	25			45	12.5	20	1 x 20						3 x 10							3.5	6.5	4				4
CRTSD	2035	18	12±0.1	30±0.1	35	3.5	28	1 x 28	22	M3	5	10	15	1 x 15	5.5	11.5	6	12	3.5	6	5	—	2	M3	7.5	20	2
Tapped Hole Type	2050	30			50		43	1 x 43						2 x 15							7.5	—	2		10	15	3
	2065	40			65	17.5	30	1 x 30						3 x 15							5	11	4				4
CRT	*3055	30	16±0.1	40±0.1	55	7.5	40	1 x 40	30	M4	7	15	25	1 x 25	7.5	15.5	8	16	4.5	7.5	7.5	—	2	M4	10	35	2
CRTS	*3080	45			80		65	1 x 65						2 x 25							6	12.5	4		15	25	3



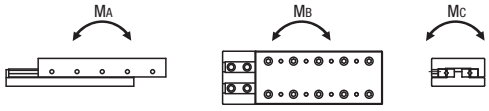
Specifications such as installation dimensions and accuracies are the same as those of products with old part numbers.



Part Number		Outline Dimensions				Table Mounting Hole Dimensions						Table Top Dimensions				Side Dimensions						Rail Mounting Hole Dimensions				
Type	No.	Stroke (Reciprocating Motion)	A	B	L	G	M x F	P_1	O_1	ℓ_a	N	P	M x P	ℓ	a	b	c	h	t_1	O_2	P_2	d	D	ℓ_1	ℓ_2
CRU	1025	12	17±0.1	30 $^{-0.2}_{-0.4}$	25	12.5	—	10	M2	4	7.5	10	1 x 10	2.5	7	11	5.5	12	2.5	M2	22	2.5	4.5	3.5	18
	1035	18			35		1 x 10						2 x 10	4.5											28
	1045	25			45		2 x 10						3 x 10	6											38
	2035	18	21±0.1	40 $^{-0.2}_{-0.4}$	35	17.5	—	15	M3	6	10	15	1 x 15	3	8	14	6.5	16	3.4	M2	30	3.5	6.5	5	25
	2050	30			50		1 x 15						2 x 15	4.5											40
	2065	40			65		2 x 15						3 x 15	7											55
	3055	30	28±0.1	60±0.1	55	27.5	—	25	M4	8	15	25	1 x 25	5.5	10.5	18.5	9	40	5.5	M3	40	4.5	8	10	35
	3080	45			80		1 x 25						2 x 25	10.5											60

kgf=Nx0.101972

No.	Allowable Static Moment			Basic Load Rating	
	MA N・m	MB N・m	MC N・m	C (Dynamic) N	Co (Static) N
1025	1.79	1.79	1.79	465	478
1035	4.18	4.18	3.59	807	956
1045	5.38	5.38	4.48	962	1195
2035	7.04	7.04	7.63	1101	1174
2050	11.7	11.74	11.4	1521	1761
2065	16.4	16.4	15.3	1908	2348
3055	33.8	33.8	35.3	3617	4062
3080	60.9	60.9	58.9	5409	6770



Order Example

Part Number
CRT3055

Cross Roller Guides

– 1000, 2000, 3000 Series –

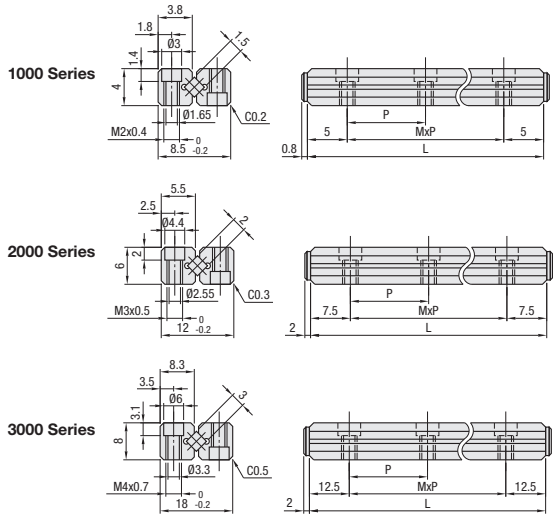
Part numbers are changed since the 2009 catalog. Products with old part numbers are still available online.

Type	Material	Hardness	Heat Resistant Temperature
CRV	52100 Bearing Steel	60HRC~	-20~110°C
CRVS	440C Stainless Steel Equivalent	58HRC~	-20~140°C

1 Set: Track Rails 4 pcs, Cages 2 pcs, End Stops 8 pcs

■ Part Number Conversion

Old Part Number	New Part Number
SV	CRV
SVS	CRVS



kgf=Nx0.101972

Series	Part Number Type	Part Number No.	Stroke (Reciprocating Motion)	L	M x P	No. of Rollers per Roller Cage	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N
1000	CRV	1020	12	20	1 x 10	5	465	478
		1030	20	30	2 x 10	7	643	717
		1040	27	40	3 x 10	10	962	1195
2000		2030	18	30	1 x 15	5	1101	1174
	CRVS (Stainless Steel)	2045	24	45	2 x 15	8	1908	2348
		2060	30	60	3 x 15	11	2274	2935
3000		3050	28	50	1 x 25	7	3617	4062
		3075	48	75	2 x 25	10	5409	6770

Order Example

Part Number
CRT3050

Ball Slide Guides

– With Counterbored Holes / Tapped Holes –

■ Counterbored Hole Type

Type: Counterbored Holes	Type: Tapped Holes	Type: With Dowel Holes: Counterbored Holes	Type: With Dowel Holes: Tapped Holes	Material: Main Body Rails	Material: Retainers	Hardness: Main Body Rails
BSG	BSGM	BSGP	BSGMP	Stainless Steel	304 Stainless Steel	56HRC~

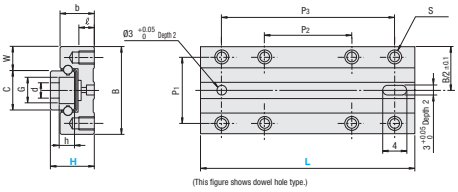
Heat Resistant Temperature: -20~80°C

Included rail mounting screws.
: H6 comes with Class 1 Phillips button head screws (M2×6).
: H8 Counterbored Type comes with cap screws (M2x6).

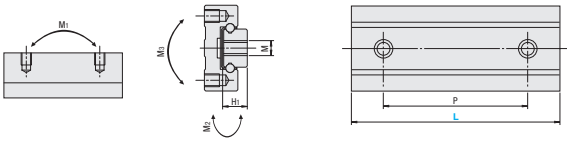
Filled with Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.).

■ Tapped Hole Type

■ Counterbored Hole Type (Rail)



■ Tapped Hole Type (Rail)



Order Example

Part Number	–	L
BSG8	–	40

kgf=Nx0.101972

Part Number Type	H	Selectable L	Max. Stroke (Reciprocating Motion)	W	Block Dimensions B	P_1	P_2	P_3	S	ℓ	b	Guide Rail Dimensions C	H_1	d x G x h	M	P	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment M_1 N・m	M_2 N・m	M_3 N・m	Mass (g)
Counterbored Hole Type BSG BSGP	6	25	14	3.55	12	8	15	—	M2	1.5	4.5	4.9	4	2.4 x 3.5 x 1	M2.6	15	390	847	1.5	1.5	2.2	10
		40	19				15	30								30	603	1573	2.9	2.9	4.2	16
	8	25	14	5.1	17	12	15	—	M2.5	3	6.5	6.8	4.7	2.4 x 4.2 x 2.3	M3	15	628	1270	2.5	2.5	4.6	20
		40	20				15	30								30	962	2329	5.1	5.1	8.5	33
Tapped Hole Type BSGM BSGMP	10	*35	22	5.55	20	15	20	—	M3	3.5	7.8	8.9	5.5	3.5 x 6 x 3.5	M4	20	1038	2016	5.4	5.4	9.5	40
		*55	28				20	40								40	1886	4032	11.1	11.1	19.0	65
	13	*45	26	7.6	27	20	25	—	M4	5	10	11.8	7.5	3.5 x 6 x 4.5	M4	25	1627	3334	10.6	10.6	20.7	93
		*70	36				25	50								50	2519	6192	20.0	20.0	38.4	146

Only * marked sizes are available for with Dowel Hole Type.

NEW NEW PRODUCT
★ BEST SELLER
TYPICALLY IN STOCK
$ COST EFFICIENT

Product Name	Linear Bushings	Linear Guides
Page	pgs. 45–73	pgs. 6–43
Usage/Picture		
Typical Usage	Provides smooth linear motion. Runs at higher speed than plain bushings. Used with hardened shafts.	Used for smooth and high accuracy motion under heavy loads and moment loads.
Motion Type	Linear*	Linear
Size	Ø3–50 mm	Height 6–42 mm
Materials	– Steel – Stainless Steel	– Steel – Stainless Steel
Available Coatings	– Electroless Nickel – Low Temperature Black Chrome	– Low Temperature Black Chrome
Load Capacity	Medium	High
Operating Temp.	-20 to 120 °C	Standard (-10 to 120 °C) Heat Resistant (-100 to 150 °C)
Accuracy	Medium	Medium–High
Cost $	$$	$$$$

Unit Conversions: °F = (°C * 1.8) + 32 (Example: °F = (100°C * 1.8) + 32 = 212°F)
*Stroke bushings can handle rotary motion

Linear Bushings

#LHFC
Flanged Linear Bushings – Single

#LHFW
Flanged Linear Bushings – Double

#LHIF
Flanged Linear Bushings with Pilot – Single

#LHIW
Flanged Linear Bushings with Pilot – Double

#LHMW
Flanged Linear Bushings – Center Flange

#LHRK
Compact, Single

#LHFD
Flanged Linear Bushings – Medium Lg.

#LHIC
Flanged Linear Bushings with Pilot – Medium Lg.

#LHMC
Flanged Linear Bushings – Medium Lg., Center Flanged

#LHKC
Flanged Linear Bushings – Long Lg.

#LHKM
Flanged Linear Bushings with Long Pilot – Long Lg.

#LMU
Linear Bushings – Standard, Single

#LMUW
Linear Bushings – Standard, Double

#LMUT
Linear Bushings – Short

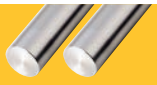
#LMUD
Linear Bushings – Medium

#LMK
Linear Bushings – Compact, Single

#LHBB
Wide Pillow Block Bushings

#LHBBW
Long and Wide Pillow Block Bushings

#LHSS
Pillow Block Bushings

RC Related Components

Precision Linear Shafts #SFJ

Shaft Support #ATHC

#LHSW
Pillow Block Bushings, Double

#LHSD
Pillow Block Bushings, Tall Block

#LHGS
Pillow Block Bushings, Wide Mount

#LHSL
Pillow Block Bushings with Clamp

#LHBBC
Wide Pillow Block Bushings with Clamp

#LHRC
Flanged Linear Bushings with Clamp Lever

#LMUM
Linear Bushings with MX Unit

#LHFX
Flanged Linear Bushings with MX Unit

#LHFM
Flanged Linear Bushings – Double with MX Unit

#LHMM
Flanged Linear Bushings with MX Unit – Center Flange

#LHIM
Flanged Linear Bushings with MX Unit with Pilot

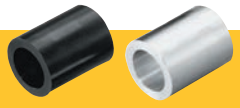
#LHIX
Flanged Linear Bushings with MX Unit-Double Bushing with Pilot

#LHSM
Pillow Block with MX Unit

#LHBM
Wide Pillow Block with MX Unit

#LBUS
Linear Rotary Stroke Bushings

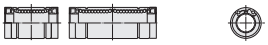
#LBHR
Flanged Linear Rotary Stroke Bushings



Linear Bushings Overview

■ Linear Bushings Selection Table by Shape and Material

Linear Bushings with Lubrication Unit MX Features: Built-in lubrication unit constantly supplies proper amounts of lubricant as needed, prolonging system life and maintenance-free operation.

Type				Diagram	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: –	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: Electroless Nickel Plating	Page Listed
Shape		Length	Outer Dia.		Material of Retainer: Plastic	Material of Retainer: Plastic	
Straight		Single Double	Standard		•	—	50
Standard Flange		Single Double	Standard		•	•	50–51
Pilot Flanged Type		Single Double	Standard		•	—	51
Center Flanged Type		Double	Standard		•	—	51
Linear Bishings with Pillow Blocks Tall Blocks		Single Double	Standard		•	—	52
Linear Bishings with Pillow Blocks Wide Blocks		Single Double	Standard		•	—	52

Type				Diagram	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: –		Material of Bushing Outer Cylinder: 440C Stainless Steel Equivalent; Surface Treatment of Bushing: –		Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: Electroless Nickel Plating		Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: Low Temperature Black Chrome Plating	Page Listed
Shape		Length	Outer Dia.		Material of Retainer: Plastic	SS	Plastic	SS	Plastic	SS	Plastic	
Straight		Short	Standard		•	—	•	—	—	—	—	52
		Single	Compact		•	—	—	—	—	—	—	54
			Standard		•	•	•	•	•	•	•	53
		Medium	Standard		•	—	—	—	•	—	—	55
		Double	Compact		•	—	—	—	—	—	—	54
			Standard		•	•	•	•	•	•	•	53
Standard Flange		Single	Compact		•	—	—	—	•	—	—	57
			Standard		•	•	•	•	•	•	•	57
		Medium	Standard		•	—	—	—	•	—	—	55
		Double	Compact		•	—	—	—	•	—	—	58
			Standard		•	•	•	•	•	•	•	58
		Long	Standard		•	•	•	•	•	•	—	61
Pilot Flanged Type		Single	Standard		•	•	•	•	•	•	—	59
		Medium	Standard		•	—	—	—	—	—	—	56
		Double	Standard		•	•	•	•	•	•	—	60
		Long	Standard		•	•	•	•	•	•	—	61
		Long with Pilot	Standard		•	•	•	•	•	•	—	61
Center Flanged Type		Medium	Standard		•	—	—	—	—	—	—	56
		Double	Standard		•	•	•	•	•	•	—	60

Linear Bushings Overview

Type: Shape		Type: Length	Type: Outer Dia.	Type: Dowel Hole	Diagram	Block Material , Surface Treatment: Aluminum Alloy , Clear Anodizing; Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: Plastic	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: SS	Material of Bushing Outer Cylinder: 440C Stainless Steel Equivalent; Surface Treatment of Bushing: Plastic	Material of Bushing Outer Cylinder: 440C Stainless Steel Equivalent; Surface Treatment of Bushing: SS	Page Listed
Linear Bushings with Pillow Blocks Tall		Single	Compact	—		•	—	—	—	62
			Standard	—		•	•	•	•	62
				With Dowel Hole		•	—	—	—	66
		Medium	Standard	—		•	—	—	—	64
		Double	Compact	—		•	—	—	—	63
			Standard	—		•	•	•	•	63
				With Dowel Hole		•	—	—	—	66
		Medium Long	Standard	—		•	—	—	—	64
		Long	Standard	—		•	—	—	—	64
				With Dowel Hole		•	—	—	—	66
Linear Bushings with Pillow Blocks Wide		Single	Standard	—		•	•	•	•	68
				With Dowel Hole		•	—	—	—	67
		Medium	Standard	—		•	—	—	—	68
						•	—	—	—	
		Double	Standard	—		•	•	•	•	69
				With Dowel Hole		•	—	—	—	67
		Medium Long	Standard	—		•	—	—	—	69
		Long	Standard	—		•	—	—	—	69
				With Dowel Hole		•	—	—	—	67
Shaft—Sliding Housing Unit Type		Single	Standard	—		•	—	—	—	65
		Double	Standard	—		•	—	—	—	65

■ **Linear Bushings with Clamp Lever Features:** Ability to clamp at desired adjusted position enables reduction of machine parts count and part manufacturing work loads.

Type: Shape		Type: Length	Type: Outer Dia.	Diagram	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: —	Material of Bushing Outer Cylinder: 52100 Bearing Steel; Surface Treatment of Bushing: Electroless Nickel Plating	Page Listed
					Material of Retainer: Plastic		
Standard Flange		Single	Standard		•	•	72
		Double	Standard		•	•	72
Linear Bushings with Pillow Blocks Tall		Single	Standard		•	—	70
		Double	Standard		•	—	70
Linear Bushings with Pillow Blocks Wide		Single	Standard		•	—	71
		Double	Standard		•	—	71

■ **Linear Rotary Stroke Bushings and Flanged Linear Rotary Stroke Bushings Features:** Rolling ball bearings enable both linear and rotary motions.

Type: Shape		Type: Length	Type: Outer Dia.	Diagram	Surface Treatment of Bushing: 52100 Bearing Steel; Material of Bushing Outer Cylinder: 52100 Bearing Steel; Material of Retainer: 5052 Aluminum Alloy	Surface Treatment of Bushing: 440C Stainless Steel Equivalent; Material of Bushing Outer Cylinder: 440C Stainless Steel Equivalent; Material of Retainer: 5052 Aluminum Alloy	Page Listed
Linear Rotary Stroke Bushings		Single Double	Standard		•	•	73
Flanged Linear Rotary Stroke Bushings		Single Double	Standard		•	—	73

Linear Bushings

– Features / Antirust Performance Comparison Test / Various Grease Application Services –

■ Features

When these linear bushings are used in combination with linear shafts, the linear system can infinitely reproduce linear motion created by the rolling movement of the ball. By enabling linear motion with low friction and high accuracy, this system is widely applicable to semiconductor processing equipment, electrical device manufacturing equipment, food packaging machines and others.

■ Lubrication

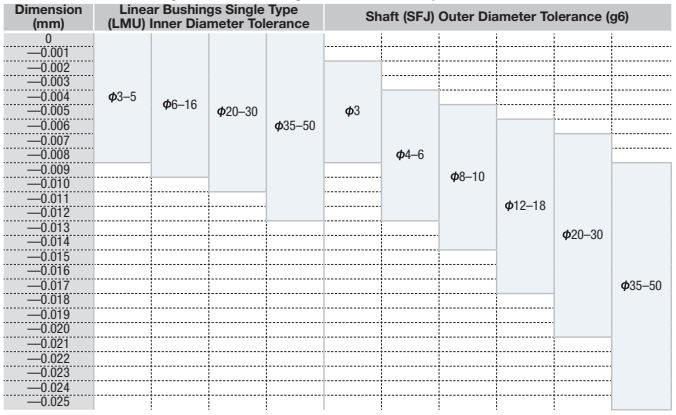
At the time of delivery, MISUMI linear bushings, except for Lubrication Unit MX type, are coated with rust protection oil. Although, the rust protection oil hardly affect the performance of lubricant such as grease, it is recommended to grease after cleaning and drying. Before initial use, apply grease to the rows of balls on inner surface of linear bushing and re-apply accordingly. In addition to Lubrication Unit MX type, MISUMI provides Filled Grease type with L, G and H grease.

■ Fitting

For MISUMI linear bushings, use in combination with MISUMI shafts (hardened with g6 tolerance) is recommended (Normal clearance fit).

*Shaft **#SFJ**

Reference: Tolerance range of linear bushing and shafts made by MISUMI



■ Antirust Performance Comparison Test (Reference)

<Testing Method>

Salt water spray testing method conforms to JIS H8502. (Spray 35°C, 5%NaCl Solution)

<Testing Sample>

Round Flanged Linear Bushings – Single Type –

■ Various Grease Application Services

MISUMI linear bushings, except for Lubrication Unit MX type, are coated with rust protection oil, but not greased. By selecting from the following greases, you can order pre-greased type. Selecting **L** or **G** type enables great reduction of particle generation by grease dispersion in operation (See comparison of particle generation amount below). Additionally, the **H** type (NSFH-1 Attestation) can be used in the situation which has the possibility of inadvertent contacts with foods. Safety is assured even if grease contacts the foods.

Type	Product Name	Main Features
L Type	ET–100K (Made by Kyodo Yushi)	High heat resistance and oxidation stability. Also high adhesion and cohesion with limited splash or leakage.
G Type	LG2 (Made by NSK Ltd.)	Suitable for clean environment due to low particle generation grease. Highly resistant to corrosion.
H Type	FGL (Lubriplate®)	Formulated to meet increased demands of the food, beverage and pharmaceutical industries. (NSF H–1 Registration No.043534)

■ Allowable Load

– Basic Dynamic Load Rating (C)

Basic Dynamic Load rating is a constant load applied in a constant direction and ran under equal condition on a group of linear system specimen where 90% of specimen will reach 50 x 103m without experiencing any flaking of rolling surfaces due to rolling fatigues.

– Basic Static Load Rating (Co)

Basic static load rating is the static load exerted on contacting parts under maximum stress, at which the sum of the permanent deformation in the rolling element and rolling contact surface equals 0.0001 times the diameter of the rolling element.

■ Life Span

Rated Life can be obtained from the Basic Dynamic Load Rating and the actual load applied on the linear bushings, as shown below.

$$L=\left(\frac{fH \cdot fT \cdot fC}{f_w} \cdot \frac{C}{P}\right)^3 \cdot 50$$

fw : Load Factor
fH : Hardness Factor
fT : Temperature Factor
fC : Contact Factor

L : Rated Life (km)
C : Basic Dynamic Load Rating (N)
P : Applied Load (N)

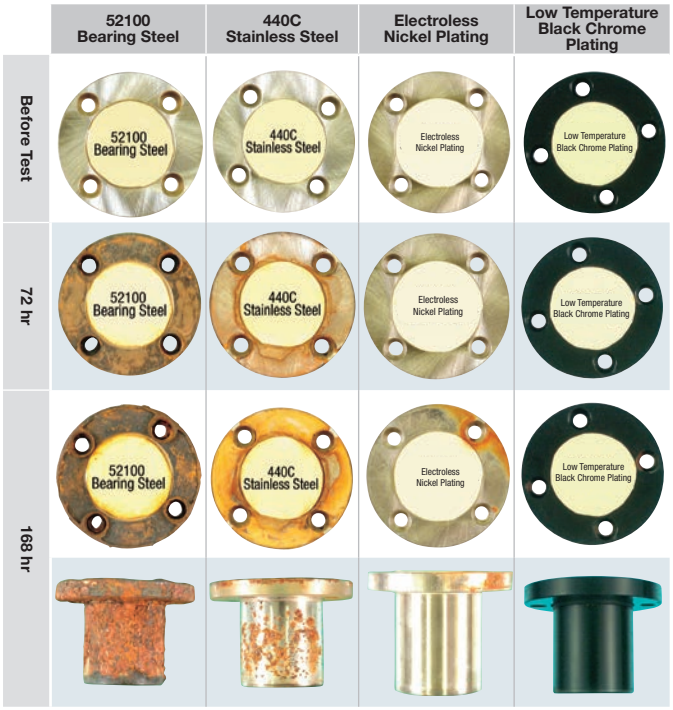
Life span in hours can be obtained by calculating travel distance per hour. When stroke length and stroke cycles are fixed, see the equation below.

*See our Life Span Calculator, P.49

$$Lh=\frac{L \cdot 10^3}{2 \cdot \ell s \cdot n_1 \cdot 60}$$

Lh: Life span in hours (hr) ℓ_s: Stroke Length (m) L: Rated Life (km)
N_1: Reciprocating cycles per Minute (cpm)

Appearance of test piece 72 hr, 168 hr before test



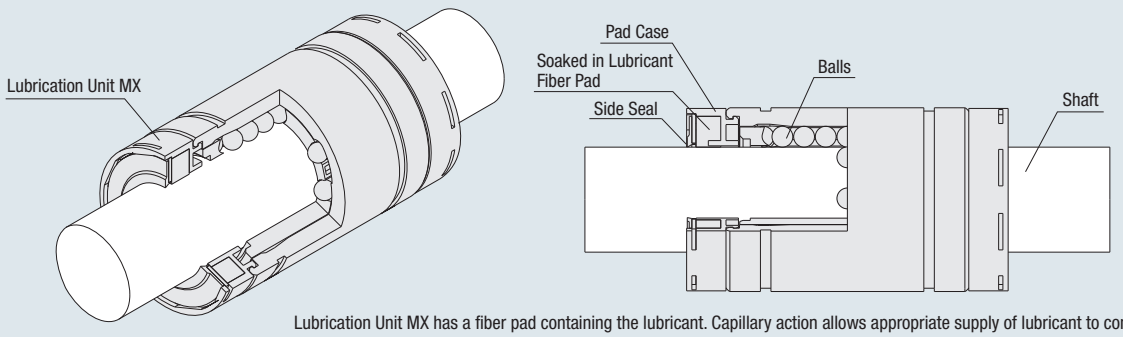
■ Grease Performance

	Item	Conditions	Unit	Measurement Method	L Type	G Type	H Type
Grease Performance	Thickener	—	—	—	Aromatic Diurea	Lithium Type	Aluminum Complex Soap
	Base Oil	—	—	—	Ether Synthetic Oil	Mineral Oil+Synthetic Hydrocarbon Oil	USP White Oil
	Base Oil Kinetic Viscosity	40°C	mm^2/s	JIS K2220 5.19	103	30	105
		100°C			12.8	—	11.5
	Miscible Consistency	—	—	JIS K2220 5.3	280	207	310
	Dropping Point	—	°C	JIS K2220 5.4	<260	200	238
	Evaporation Amount	99°Cx22hr	wt%	—	0.15%	1.40%	0.27% (ASTMD-972)
	Oil Separation	100°Cx24hr	wt%	JIS K2220 514	1.2%	0.8%	2.1% (ASTMD-1742)
	Operating Temp.	In Air	°C	—	-40~200	-10~80	-12~170

Lubrication MX Unit Series

Patent Pending

■ Structure of Lubrication Unit MX



Lubrication Unit MX has a fiber pad containing the lubricant. Capillary action allows appropriate supply of lubricant to contact surfaces. Therefore oil film is always formed between balls and shaft so that service intervals is extended significantly.

■ Features

– Extended maintenance period

Long durability of lubrication performance have resulted in significant reduction of maintenance work especially with machines and equipment environments where applying grease is not easy.

– Environmentally friendly system

Proper amount of lubricant to ball rolling surface at right time makes the system environment-friendly.

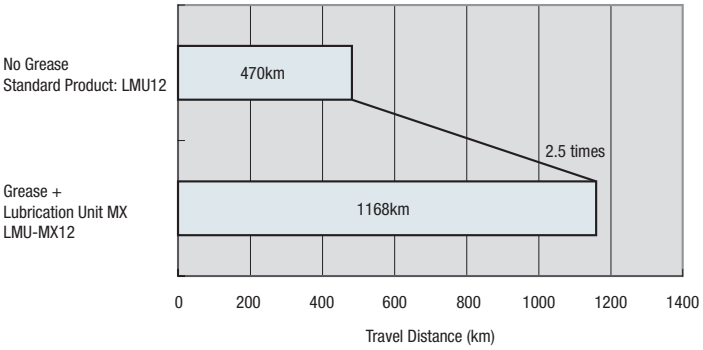
– Cost advantage

Contributes to reduction of maintenance costs and product troubles caused by failing to lubricate.

– Reduced procedural steps

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

■ Endurance Test Result



<Test Condition>

Sample: Linear Bushings before removing rust protection oil
LMU12
Linear Bushings with Lubrication Unit MX
LMU-MX12

Applied Load: 206N (50% against Basic Dynamic Load Rating 412N)

Average Speed: 42m/min (0.7m/sec)

Stroke: 100mm

Lubricant: Grease, initial filling only (LMU–MX12 only)

Shaft Material: 52100 Bearing Steel 58HRC

24 hours, continuously operated

With 50% of basic load rating applied for testing, the Lubrication Unit MX Type has shown a 2.5 times higher durability performance compared to the one without the MX lubrication unit.

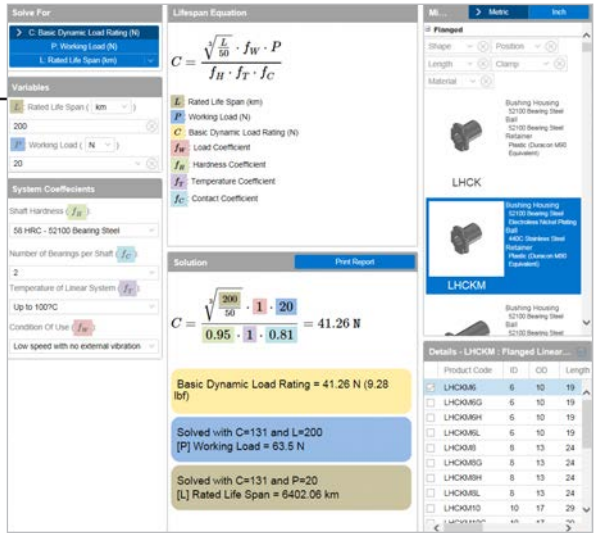
*The data above are for reference only, and not a guarantee by the manufacturer.

The data was revised to the above since the 2007 catalog after the safety margin was confirmed by increased test data points.

New Linear Bushings Lifespan Calculator!

http://us.misumi-ec.com/maker/misumi/mech/tech/calculationsoftware/

■ Software used to calculate Working Load, Rated Life Span, and find the perfect Linear Bushing for any application.



Linear Bushings with Lubrication Unit MX

– Single / Double / Flanged Single –

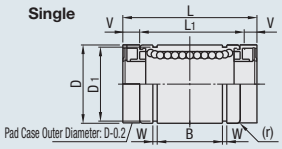
■ Details of Lubrication Unit MX **P.49**

■ **Straight Single / Double**

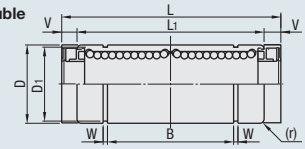
RoHS

Type		Outer Cylinder			Steel balls	Pad Case / Retainer	Operating Environment Temperature	Accessory
Single	Double	Material	Hardness	Surface Treatment	Material	Material		
LMU-MX ✓	LMUW-MX ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 equivalent)	-20~80°C	Seals Material Nitrile Rubber

Single



Double



No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

– For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

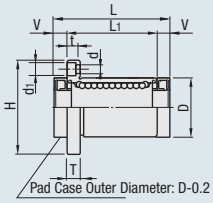
Part Number Type	dr	Tolerance	D	Tolerance	L	L_1	Tolerance	V	B	Tolerance	W	D_1	(r)	Eccentricity (Max.)	Steel Balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass (g)
Single Type LMU-MX	10	0 -0.009	19	0 -0.013	39	29	0 -0.2	5	19.4	0 -0.4	1.3	18	0.4	0.012	4	372	549	35
	12		21		41	30		5.5	20.4			20	0.8			412	598	45
	16		28		49	37		6	23.3		1.6	27				775	1180	80
	20	0 -0.010	32	0 -0.016	56	42		7	27.3			30.5		0.015	5	882	1370	109
	25		40		77	59	0 -0.3	9	37.3	0 -0.5	1.85	38	1.5		6	980	1570	255
	30		45		84	64		10	40.8			43				1570	2740	286
	35	0 -0.012	52	0 -0.019	92	70		11	45.3		2.1	49		0.020		1670	3140	453
	40		60		104	80		12	56.3			57				2160	4020	687
	50		80		128	100		14	68.8		2.6	76.5				3820	7940	1763

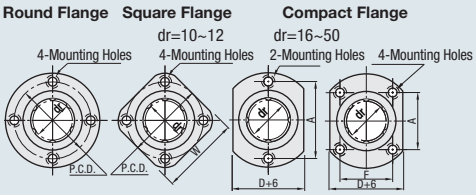
Part Number Type	dr	Tolerance	D	Tolerance	L	L_1	Tolerance	V	B	Tolerance	W	D_1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (MoNm)	Mass (g)
Double Type LMUW-MX	10	0 -0.010	19	0 -0.016	65	55	0 -0.3	5	41.4	0 -0.5	1.3	18	0.4	0.015	4	588	1100	7.24	66
	12		21		68	57		5.5	43.4			20	0.8			657	1200	10.9	84
	16		28		82	70		6	49.8		1.6	27				1230	2350	19.7	152
	20	0 -0.012	32	0 -0.019	94	80		7	57.8	0 -0.6		30.5		0.020	5	1400	2740	26.8	191
	25		40		130	112	0 -0.4	9	78.3		1.85	38	1.5		6	1560	3140	43.4	459
	30		45		143	123		10	85.3			43				2490	5490	82.8	504
	35	0 -0.015	52	0 -0.022	157	135		11	94.8		2.1	49		0.025		2650	6270	110	823
	40		60		175	151		12	116.8			57				3430	8040	147	1203
	50		80		220	192		14	142.8		2.6	76.5				6080	15900	397	3163

■ **Flanged Single Type**

RoHS

Type			Outer Cylinder			Steel Balls	Pad Case / Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHFR-MX ✓	LHFS-MX ✓	LHFC-MX ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber
LHFRM-MX	LHFSM-MX	LHFCM-MX ✓			Electroless Nickel Plating	440C Stainless Steel Equivalent			





See "Straight Single / Double" above for ball row specifications.

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

– Details of Lubrication Unit MX **P.49** – Flange Type Height-Adjusting Spacers can be selected from **#LCSC**

Part Number Type	dr	Tolerance	D Tolerance	No Surface Treatment	Surface Treatment	L	L_1	Tolerance	V	H	T	d	d_1	t	P.C.D.	W	F	A	Eccen-tricity	*Perpendi-cularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass(g) Round Flange	Square Flange	Compact Flange
LHFR-MX LHFS-MX LHFC-MX LHFRM-MX LHFSM-MX LHFCM-MX	10	0 -0.009	19	0 -0.016	0 -0.021	39	29	±0.3	5	40	6	4.5	7.5	4.1	29	30	—	29	0.012	0.012	372	549	76	56	68
	12		21			41	30		5.5	42					32	32	—	32			412	598	80	61	72
	16		28			49	37		6	48					38	37	22	31			775	1180	127	111	119
	20	0 -0.010	32	0 -0.019	0 -0.025	56	42		7	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	191	156	178
	25		40			77	59		9	62					51	50	32	40			980	1570	359	319	344
	30		45			84	64		10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	494	399	412
	35	0 -0.012	52	0 -0.022	0 -0.030	92	70		11	82					67	64	38	55	0.020	0.020	1670	3140	678	588	603
	40		60			104	80		12	96	13	9	14	8.1	78	75	45	64			2160	4020	1093	913	946
	50		80			128	100		14	116					98	92	56	80			3820	7940	2263	2063	2100

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

*Perpendicularity of D part to flange mounting surface

Order Example

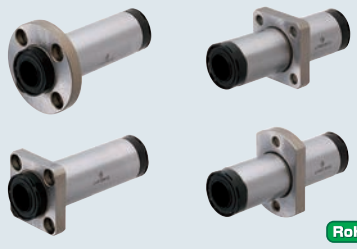
Part Number
LMU-MX16, LHFR-MX12

Various Grease Application Services are not appplicable.

Linear Bushings with Lubrication Unit MX

– Flanged Double / Center Flanged Double – & – Flanged Single with Pilot / Double with Pilot –

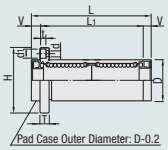
■ Flanged Double ■ Center Flanged Double



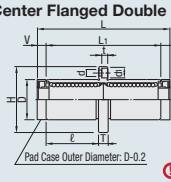
RoHS

	Type			Outer Cylinder			Steel Balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
	Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
Flange Double	LHFRW-MX	LHFSW-MX	LHFCW-MX ✔	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber
	LHFRWM-MX	LHFSWM-MX	LHFCWM-MX ✔			Electroless Nickel Plating	440C Stainless Steel Equivalent			
Center Flange Double	LHMRW-MX ✔	LHMSW-MX	LHMCW-MX ✔			—	52100 Bearing Steel			

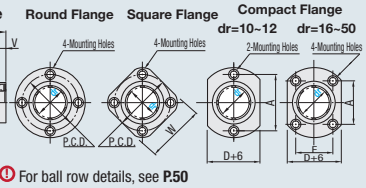
Flanged Double



Center Flanged Double



Round Flange Square Flange Compact Flange dr=10~12 dr=16~50



No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

– Details of Lubrication Unit MX **P.49**
– Flange Type Height-Adjusting Spacers can be selected from **#LCSC**

(!) For ball row details, see **P.50**

kgf=Nx0.101972

Part Number Type	dr	Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L_1	L_1 Tolerance	V	ℓ	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (MoNm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Flanged Double	10	0 -0.010	19	0 -0.016	0 -0.021	65	55	±0.3	5	24.5	40	6	4.5	7.5	4.1	29	30	—	29	0.015	0.015	588	1100	7.24	102	82	94
LHFRW-MX	12		21			68	57		5.5	25.5	42					32	32	—	32			657	1200	10.9	114	94	106
LHFSW-MX	16		28			82	70		6	32	48					38	37	22	31			1230	2350	19.7	197	172	189
LHFCW-MX	20	0 -0.012	32	0 -0.019	0 -0.025	94	80		7	36	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	271	236	258
LHFRWM-MX	25		40			130	112		9	52	62					51	50	32	40			1560	3140	43.4	559	519	544
LHFSWM-MX	30		45			143	123		10	56.5	74					60	58	35	49			2490	5490	82.8	704	614	669
LHFCWM-MX	35	0 -0.015 (for Center Flanged Double 0 -0.014)	52	0 -0.022	0 -0.030	157	135		11	62.5	82	10	6.6	11	6.1	67	64	38	55	0.025	0.025	2650	6270	110	1048	958	973
Center Flanged Double	40		60			175	151		12	69	96	13	9	14	8.1	78	75	45	64			3430	8040	147	1603	1413	1456
LHMRW-MX	50		80			220	192		14	89.5	116					98	92	56	80			6080	15900	397	3663	3463	3500
LHMSW-MX																											
LHMCW-MX																											

(!) For linear bushings, hardened shafts with g6 tolerance are recommended. **#SFJ**
* Perpendicularity of D part to flange mounting surface

Order Example

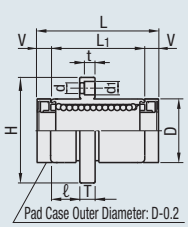
Part Number
LHFRW-MX16
LHMSW-MX20

⊗ Various Grease Application Services are not appplicable.

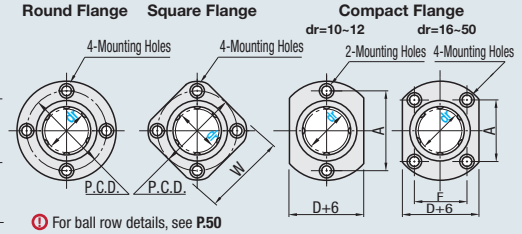
■ Flanged Single with Pilot ■ Flanged Double with Pilot

RoHS

	Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
	Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
	LHIFR-MX ✔	LHIFS-MX	LHIFC-MX ✔	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber
	LHIRW-MX ✔	LHISW-MX	LHICW-MX ★ ✔							



Round Flange Square Flange Compact Flange dr=10~12 dr=16~50



(!) For ball row details, see **P.50**

■ No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

– Details of Lubrication Unit MX **P.49** – Flange Type Height-Adjusting Spacers can be selected from **#LCSC**

Part Number Type	dr	Tolerance	D	D Tolerance	L	L_1	L_1 Tolerance	V	ℓ	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Flanged Single with Pilot	10	0 -0.009	19	0 -0.016	39	29	±0.3	5	6	40	6	4.5	7.5	4.1	29	30	—	29	0.012	0.012	372	549	76	56	68
LHIFR-MX	12		21		41	30		5.5		42					32	32	—	32			412	598	80	61	72
LHIFS-MX	16		28		49	37		6		48					38	37	22	31			775	1180	127	111	119
LHIFC-MX	20	0 -0.010	32	0 -0.019	56	42		7	8	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	191	156	178
	25		40		77	59		9		62					51	50	32	40			980	1570	359	319	344
	30		45		84	64		10	10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	494	399	412
	35	0 -0.012	52	0 -0.022	92	70		11		82					67	64	38	55	0.020	0.020	1670	3140	678	588	603
	40		60		104	80		12	13	96	13	9	14	8.1	78	75	45	64			2160	4020	1093	913	946
	50		80		128	100		14		116					98	92	56	80			3820	7940	2263	2063	2100

Part Number Type	dr	Tolerance	D	D Tolerance	L	L_1	L_1 Tolerance	V	ℓ	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Mo Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Flanged Double with Pilot	10	0 -0.010	19	0 -0.016	65	55	±0.3	5	6	40	6	4.5	7.5	4.1	29	30	—	29	0.015	0.015	588	1100	7.24	102	82	94
LHIRW-MX	12		21		68	57		5.5		42					32	32	—	32			657	1200	10.9	114	94	106
LHISW-MX	16		28		82	70		6		48					38	37	22	31			1230	2350	19.7	197	172	189
LHICW-MX	20	0 -0.012	32	0 -0.019	94	80		7	8	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	271	236	258
	25		40		130	112		9		62					51	50	32	40			1560	3140	43.4	559	519	544
	30		45		143	123		10	10	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	704	614	669
	35	0 -0.015	52	0 -0.022	157	135		11		82					67	64	38	55	0.025	0.025	2650	6270	110	1048	958	973
	40		60		175	151		12	13	96	13	9	14	8.1	78	75	45	64			3430	8040	147	1603	1413	1456
	50		80		220	192		14		116					98	92	56	80			6080	15900	397	3663	3463	3500

Order Example

Part Number
LHIFS-MX25
LHIRW-MX16

⊗ Various Grease Application Services are not appplicable.

Linear Bushings with Pillow Block with Lubrication Unit MX

– Tall Block / Wide Block Type –

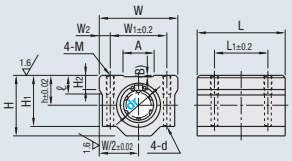
■ Linear Bushings with Wide Blocks RoHS

■ Linear Bushings with Tall Blocks RoHS

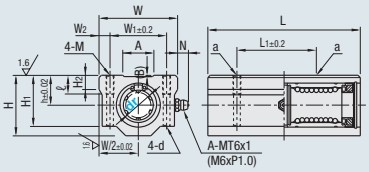
Details of Lubrication Unit MX **P.49**

Type		Linear Bushings (P.50)	Housing		Ambient Operating Temp.
Single	Double		Material	Surface Treatment	
LHBB-MX	LHBBW-MX	LMU-MX	Aluminum Alloy	Clear Anodizing	-20~80°C
LHSS-MX	LHSSW-MX				

Single Type

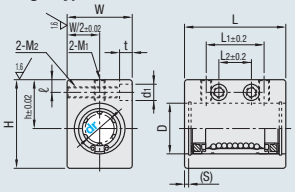


Double Type

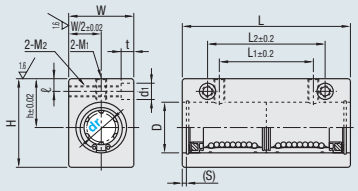


6.3 (1.6)
(Blocks)

Single Type



Double Type



- No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.
- There will be dowel holes on "a" locations for dr50.
- For ball row details, see **P.53**

■ Linear Bushings with Wide Blocks

Part Number Type	dr	Tolerance Single	Tolerance Double	L Single	L Double	L_1 Single	L_1 Double	h	H	H_1	H_2	W	W_1	W_2	M	d	ℓ	A	(B)	N	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	Co (Static) N Single	Co (Static) N Double	Mass(g) Single	Mass(g) Double
LHBB-MX LHBBW-MX	10	0 -0.009	0 -0.010	45	78	21	46	13	26	21	8	40	28	6	M5	4.3	12	15.5	0.4	7.5	372	588	549	1100	114	206
	12			47	81	26	50	15	28	24		42	30.5	5.75				17.5		7	412	657	598	1200	125	233
	16			56	97	34	60	19	38.5	32.5	9	50	36	7				19.8	0.85	6.5	775	1230	1180	2350	268	450
	20	0 -0.010	0 -0.012	64	110	40	70	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	882	1400	1370	2740	310	647
	25			85	148	50	100	26	51.5	42	12	76	54	11	M8	7	18	36	1	4.5	980	1560	1570	3140	717	1339
	30			92	160	58	110	30	59.5	49	15	78	58	10				39.9	0.75	5.5	1570	2490	2740	5490	891	1665
	35	0 -0.012	0 -0.015	102	177	60	120	34	68	54	18	90	70					53	1.5	6	1670	2650	3140	6270	1314	2448
	40			114	199		140	40	78	62	20	102	80	11	M10	8.7	25	61		5.5	2160	3430	4020	8040	1873	3526
	50			138	243	80	160	52	102	80	25	122	100					81			3820	6080	7940	15900	3821	7256

For linear bushings, hardened shafts with g6 tolerance are recommended. **#SFJ**

■ Linear Bushings with Tall Blocks

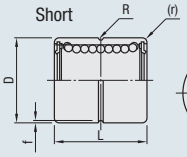
Part Number Type	dr	Tolerance Single	Tolerance Double	D	(S)	L Single	L Double	L_1 Single	L_1 Double	L_2 Single	L_2 Double	h	W	H	ℓ	M1	M2	d_1 x t	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	Co (Static) N Single	Co (Static) N Double	Mass(g) Single	Mass(g) Double
LHSS-MX LHSSW-MX	10	0 -0.009	0 -0.010	19	2.0	45	74	27	36	15	50	19	26	32	6	M6	M5	8x6 (For M4 Screws)	372	588	549	1100	92	166
	12			21		47	77					20	28	34					412	657	598	1200	103	185
	16			28	2.3	56	93	32	52	18	65	27	36	49	7		M6	9x7 (For M5 Bolt)	775	1230	1180	2350	237	423
	20	0 -0.010	0 -0.012	32	2.8	64	106	36	58		70	31	42	54	8	M8	M8	11x8 (For M6 screws)	882	1400	1370	2740	324	584
	25			40	2.2	85	144	42	80	22	100	37	52	65	9	M10	M10	14x10 (For M8 Screws)	980	1560	1570	3140	672	1239
	30			45		92	156	44	90		110	40	58	71					1570	2490	2740	5490	843	1545

For linear bushings, hardened shafts with g6 tolerance are recommended. **#SFJ**

Linear Bushings

– Short Type –

■ Short Type RoHS



(With Seal)

Type Short	Outer Cylinder Material	Hardness	Surface Treatment	Steel Balls Material	Retainer Material	Ambient Operating Temp.	Accessory
LMUT	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material: Nitrile Rubber (-20 ~120°C)
SLMUT	440C Stainless Steel Equivalent	56HRC~		440C Stainless Steel Equivalent			

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	R	f	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass (g)
LMUT SLMUT	6	0 -0.009	12	0 -0.011	16	0 -0.2	1	0.3	0.4	0.012	4	113	155	6.6
	8		15		20							155	226	14.7
	10		19	0 -0.013	25		1.2	0.4				254	359	26.1
	12		21									317	407	28.6
	13		23						0.8			320	413	36.3
	16		28		30		1.5	0.5				582	724	60.0
	20	0 -0.010	32	0 -0.016	35					0.015	5	777	1034	81.6

For short type linear bushings, hardened shafts with h5 tolerance are recommended. **#SFJ**

Order Example

Part Number
LHSS-MX16
LHBBW-MX25

Various Grease Application Services are not appplicable.

Part Number	
LMUT10	
LMUT10L	(L Type Greased)
LMUT10G	(G Type Greased)
LMUT10H	(H Type Greased)

★ BEST SELLER
(SELECT PART NUMBERS)
✔ TYPICALLY IN STOCK
(SELECT PART NUMBERS)

Linear Bushing Standard Type

– Single / Double –

– Spacers and Stoppers for linear bushings can be selected from: Enter web code **#LBS** and **#LMST**.

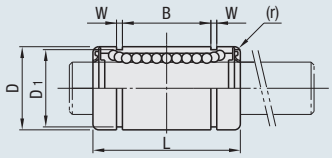
■ Single

RoHS

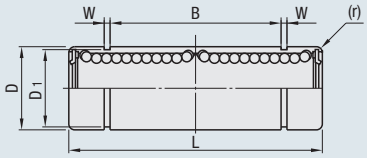
■ Double

Type		Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Single	Double	Material	Hardness	Surface Treatment	Material	Material		
LMU-N ✔	LMUW-N ✔	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	*Seals Material Nitrile Rubber (-20~120°C)
LMU ★ ✔	LMUW ✔					440C Stainless Steel	-20~110°C	
LMUF-N ✔	LMUWF ✔							
LMUF ★ ✔								
LMUR ★ ✔	LMUWR			Low Temperature Black Chrome Plating	440C Stainless Steel Equivalent	Plastic (Duracon M90 Equivalent)	-20~80°C	
LMUM ✔	LMUWM ★ ✔			Electroless Nickel Plating				
LMUMF ✔	LMUWMF ✔					440C Stainless Steel	-20~110°C	
SLMU	SLMUW	440C Stainless Steel Equivalent	56HRC~	—		Plastic (Duracon M90 Equivalent)	-20~80°C	
SLMUS	SLMUWS					440C Stainless Steel	-20~120°C	

Single Type



Double Type



*(With Seal)

No seal for dr=3 and 4, LMU-N, LMUF-N and LMUW-N.

■ Single For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

kgf=Nx0.101972

Part Number Type	dr	Tolerance	D	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D_1	(r)	Eccentricity (Max.)	Steel Balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass (g)
LMU-N (No Seal) LMU LMUF-N (No Seal) LMUF LMUR LMUM LMUMF SLMU SLMUS	3	0 -0.008	7	0 -0.009	0 -0.015	10	0 -0.12	—	—	—	—	0.3	0.008	4	69	105	1.4
	4		8			12		—		—	—				88	127	2.0
	5		10			15		8	0 -0.4	1.1	9.6	0.4			167	206	4.0
	6	0 -0.009	12	0 -0.011	0 -0.018	19	0 -0.2	11.3			11.5		0.012		206	265	8.5
	8		15			24		15.3			14.3				265	380	17
	10		19	0 -0.013	0 -0.021	29		19.4		1.3	18				372	549	31
	12		21			30		20.4			20	0.8			412	598	41
	13		23			32					22				510	784	46
	16		28			37		23.3		1.6	27				775	1180	73
	20	0 -0.010	32	0 -0.016	0 -0.025	42		27.3			30.5		0.015	5	882	1370	98
	25		40			59	0 -0.3	37.3	0 -0.5	1.85	38	1.5		6	980	1570	236
	30		45			64		40.8			43				1570	2740	262
LMU LMUM	35	0 -0.012	52	0 -0.019	0 -0.030	70		45.3		2.1	49		0.020		1670	3140	425
	40		60			80		56.3			57				2160	4020	654
	50		80			100		68.8		2.6	76.5				3820	7940	1700

■ Double For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

kgf=Nx0.101972

Part Number Type	dr	Tolerance	D	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D_1	(r)	Eccentricity (Max.)	Steel Balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass (g)
LMUW-N (No Seal) LMUW LMUWF LMUWR LMUWM LMUWMF SLMUW SLMUWS	3	0 -0.010	7	0 -0.011	0 -0.015	19	0 -0.3	—	—	—	—	0.3	0.010	4	138	210	0.51	3.2
	4		8			23		—		—	—				176	254	0.63	4.8
	5		10			28		18.2	0 -0.5	1.1	9.6	0.4			263	412	1.38	11
	6		12	0 -0.013	0 -0.018	35		24.8			11.5		0.015		324	529	2.18	16
	8		15			45		32.8			14.3				431	784	4.31	31
	10		19	0 -0.016	0 -0.021	55		41.4		1.3	18				588	1100	7.24	62
	12		21			57		43.4			20	0.8			657	1200	10.9	80
	13		23			61					22				813	1570	11.6	90
	16		28			70		49.8		1.6	27				1230	2350	19.7	145
	20	0 -0.012	32	0 -0.019	0 -0.025	80		57.8	0 -0.6		30.5		0.020	5	1400	2740	26.8	180
	25		40			112	0 -0.4	78.3		1.85	38	1.5		6	1560	3140	43.4	440
	30		45			123		85.3			43				2490	5490	82.8	480
LMUW LMUWM	35	0 -0.015	52	0 -0.022	0 -0.030	135		94.8		2.1	49		0.025		2650	6270	110	795
	40		60			151		116.8			57				3430	8040	147	1170
	50		80			192		142.8		2.6	76.5				6080	15900	397	3100

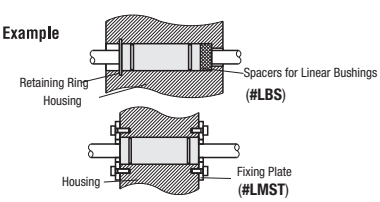
No-Seal Type has lower sliding resistance (0.4~1.2N).

Order Example

Part Number	
LMUR20	
LMU-N20	(No Seal)
LMUR20L	(L Type Greased)
LMUR20G	(G Type Greased)
LMUR20H	(H Type Greased)

Alternative grease types available.

Example



Linear Bushing Compact Type

– Single / Double –

■ **Features:** 2 mm smaller in outer diameter (D dimension) than Standard Type

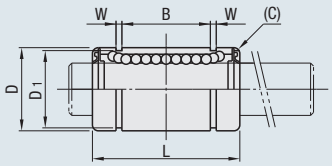
■ **Single**

■ **Double**

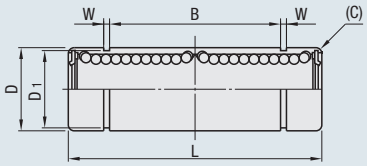
RoHS

Type		Outer Cylinder		Steel B	Retainer	Ambient Operating Temp.	Accessory
Single	Double	Material	Hardness	Material	Material		
LMK	LMKW	52100 Bearing Steel	58HRC~	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-20 ~120°C)

Single Type



Double Type



Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance	W	D_1	(C)	Eccentricity (Max.)	Steel Balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass (g)
Single LMK	6	0 -0.009	10	0 -0.009	19	0 -0.2	11.3	0 -0.4	1.15	9.6	0.1	0.012	6	131	155	6
	8		13	0 -0.011	24		15.3			12.4	0.2			235	277	12
	10		17		29		19.4			16.2				368	433	26
	12		19	0 -0.013	30		20.4		1.35	18				381	449	32
	16		26		37		23.3			24.9	0.3			608	716	58

kgf=Nx0.101972

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance	W	D_1	(C)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (N•m)	Mass (g)
Double LMKW	6	0 -0.010	10	0 -0.009	35	0 -0.3	24.8	0 -0.5	1.15	9.6	0.1	0.015	6	206	309	2.46	12
	8		13	0 -0.011	45		32.8			12.4	0.2			383	555	5.76	24
	10		17		55		41.4			16.2				585	867	10.99	52
	12		19	0 -0.013	57		43.4		1.35	18				608	899	11.85	64
	16		26		70		49.8			24.9	0.3			965	1431	23.48	116

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

Order Example

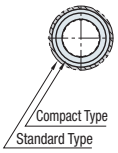
Part Number	
LMK12	
LMKW12	
LMK12L	(L Type Greased)
LMK12G	(G Type Greased)
LMK12H	(H Type Greased)

Alternative grease types available.

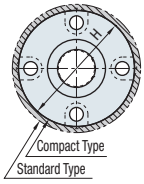
■ **Standard and Compact Comparison**

dr	Straight / Flanged Outer Dia. (D) Compact	Standard	Difference	Flanged Type Flange Dia. (H) Compact	Standard	Difference	Linear Bushings with Pillow Blocks Width (W) Compact	Standard	Difference	Height (H) Compact	Standard	Difference	Rows of Balls Compact	Standard
6	10	12	-2	25	28	-3	14	16	-2	20	22	-2	6	4
8	13	15	-2	28	32	-4	17	20	-3	24	26	-2	6	4
10	17	19	-2	35	40	-5	23	26	-3	30	32	-2	6	4
12	19	21	-2	38	42	-4	25	28	-3	32	34	-2	6	4
16	26	28	-2	44	48	-4	33	36	-3	43	49	-6	6	4

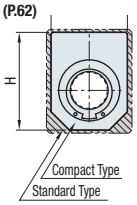
■ **Linear Bushings Straight**
(P.53)



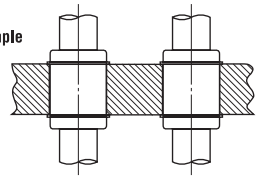
■ **Flanged Type**
(P.57)



■ **Type with Block**
(P.62)



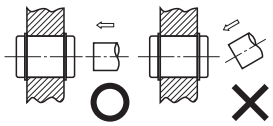
Example



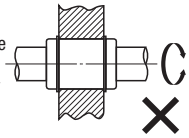
For 2 linear bushings of Compact type, their mounting plate is 4mm smaller than that for Standard Type.

■ **Cautions for Linear Bushing Usage**

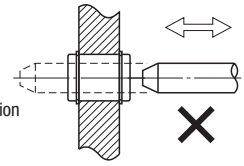
(1) When assembling with linear shafts, forcing the shaft into the bushing with angular misalignment may cause the ball retainers to deform and balls to fall out. Be sure to align the centers and insert the shaft gently.



(2) Linear bushing is structurally unsuitable for rotary motion. Forcing to rotate may cause failures.



(3) Linear Bushing is not suitable for uses that need repetitive insertion and extraction from shafts.

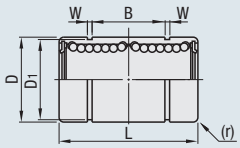


Linear Bushings / Flanged Linear Bushings
– Medium Type –

For features of Medium Type, see below.

RoHS

Type	Outer Cylinder			Steel Balls	Retainer	Operating Environment Temperature	Accessory
Linear Bushings Straight	Material	Hardness	Surface Treatment	Material	Material		
LMUD	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber
LMUDM			Electroless Nickel Plating	440C Stainless Steel Equivalent			



Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

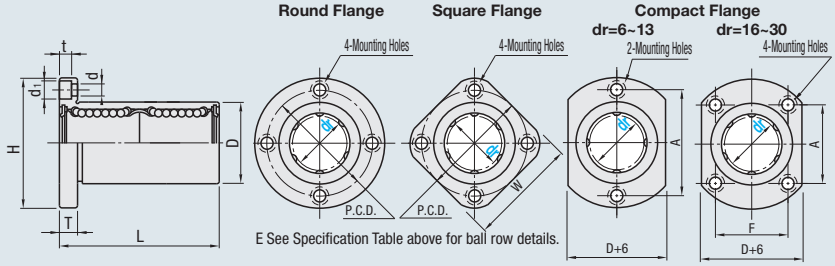
Part Number Type	dr	Tolerance		D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D_1	(r)	Eccentricity (Max.)	Steel Balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass (g)
LMUD LMUDM	6	0 -0.010	12	0 -0.013	0 -0.018	29	0 -0.3	20	0 -0.5	1.1	11.5	0.4	0.015	4	226	310	1.42	12
	8		15			37		25			14.3				310	452	2.12	27
	10		19	0 -0.016	0 -0.021	47		30		1.3	18				508	718	4.37	49
	12		21								20	0.8			634	814	6.2	54
	13		23								22				640	826	6.2	69
	16		28			56		35		1.6	27				1164	1448	13.1	112
	20	0 -0.012	32	0 -0.019	0 -0.025	65		40	0 -0.6		30.5		0.02	5	1554	2068	18.3	152
	25		40			83		55		1.85	38	2.0		6	1725	3068	25.3	332
	30		45			90		71.3			42.5				2440	3974	42.7	422

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

– Flange Type Height-Adjusting Spacers can be selected from **#LCSC**

RoHS

Type			Outer Cylinder			Steel Balls	Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHFRD	LHFSD	LHFCD	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber
LHFRDM	LHFSDM	LHFCDM			Electroless Nickel Plating	440C Stainless Steel Equivalent			



E See Specification Table above for ball row details.

Part Number Type	dr	Tolerance		D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tolerance	H	T	d	d_1	t	P.C.D.	W	F	A	Eccen-tricity (Max)	*Perpendi-cularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
LHFRD LHFSD LHFCD LHFRDM LHFSDM LHFCDM	6	0 -0.010	12	0 -0.013	0 -0.018	29	±0.3	28	5	3.5	6	3.1	20	22	—	20	0.015	0.015	226	310	1.42	27	21	24
	8		15			37		32					24	25	—	24			310	452	2.12	47	39	43
	10		19	0 -0.016	0 -0.021	47		40	6	4.5	7.5	4.1	29	30	—	29			508	718	4.37	85	65	77
	12		21					42					32	32	—	32			634	814	6.2	89	69	81
	13		23					43					33	34	—	33			640	826	6.2	109	87	102
	16		28			56		48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	0 -0.025	65		54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40			83		62					51	50	32	40			1725	3068	25.3	479	440	450
	30		45			90		74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	559	481	492

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.* Perpendicularity of D part to flange mounting surface

■ Allowable Load Comparison

Type	Basic Dynamic Load Rating	Basic Static Load Rating	Allowable Static Moment
Short	0.7	0.6	Approx. 0.6
Single	1	1	1
Middle	1.4	1.3	Approx. 4.3
Double	1.6	2	Approx. 6
Medium Long	1.6	1.6	Approx. 10
Long	1.6	2	Approx. 21

*1 represent Single Type for comparison.

Order Example

Part Number
LMUD8
LMFRD10
LMFSDM12L (L Type Greased)
LMFSDM12G (G Type Greased)
LMFSDM12H (H Type Greased)

Alternative grease types available.

Flanged Linear Bushings

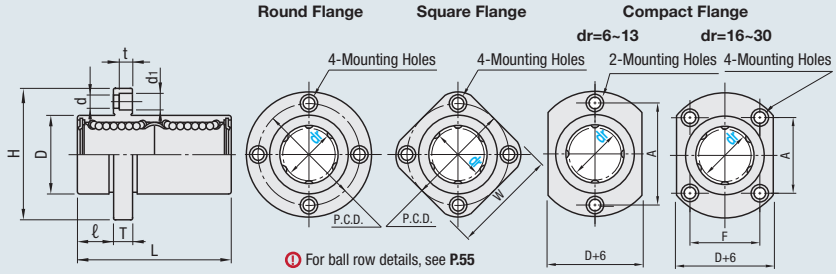
– Medium Type with Pilot / Center Flanged –

For features of Medium Type, see below.

■ Medium Length with Pilot

RoHS

Type			Outer Cylinder			Steel Balls	Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHIRD ✓	LHISD ✓	LHICD ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seal Material Nitrile Rubber (-20 ~120°C)



For ball row details, see **P.55**

Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

– Flange Type Height-Adjusting Spacers can be selected from **#LCSC**

kgf=Nx0.101972

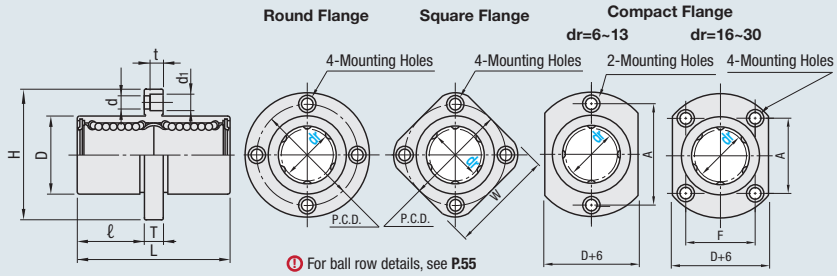
Part Number Type	dr	Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tolerance	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity (Max)	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
LHIRD LHISD LHICD	6	0 -0.010	12	0 -0.013	29	±0.3	5	28	5	3.5	6	3.1	20	22	—	20	0.015	0.015	226	310	1.42	27	21	24
	8		15		37			32					24	25	—	24			310	452	2.12	47	39	43
	10		19	0 -0.016	47		6	40	6	4.5	7.5	4.1	29	30	—	29			508	718	4.37	85	65	77
	12		21					42					32	32	—	32			634	814	6.2	89	69	81
	13		23					43					33	34	—	33			640	826	6.2	109	87	102
	16		28		56			48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	65		8	54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40		83			62					51	50	32	40			1725	3068	25.3	481	442	452
	30		45		90		10	74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	560	482	494

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

■ Medium Type Center Flanged

RoHS

Type			Outer Cylinder			Steel Balls	Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHMRD ✓	LHMSD ✓	LHMCD ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seal Material Nitrile Rubber (-20 ~120°C)



For ball row details, see **P.55**

– Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

kgf=Nx0.101972

Part Number Type	dr	Tolerance	D	D Tolerance	L	L Tolerance	ℓ	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity (Max)	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
LHMRD LHMSD LHMCD	6	0 -0.010	12	0 -0.013	29	±0.3	12	28	5	3.5	6	3.1	20	22	—	20	0.015	0.015	226	310	1.42	27	21	24
	8		15		37		16	32					24	25	—	24			310	452	2.12	47	39	43
	10		19	0 -0.016	47		20.5	40	6	4.5	7.5	4.1	29	30	—	29			508	718	4.37	85	65	77
	12		21					42					32	32	—	32			634	814	6.2	89	69	81
	13		23					43					33	34	—	33			640	826	6.2	109	87	102
	16		28		56		25	48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	65		28.5	54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40		83		37.5	62					51	50	32	40			1725	3068	25.3	481	442	452
	30		45		90		40	74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	560	482	494

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

■ Features of Medium Type Bushings

– Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. Suitable where there is no enough space for double type. (See Allowable Load Comparisons)

– B dimension (distance between retaining ring grooves) of the Straight Type is designed to match MISUMI's standard plate thickness to help reduce machining steps and costs.

■ Allowable Load Comparison

Type	Basic Dynamic Load Rating	Basic Static Load Rating	Allowable Static Moment
Short	0.7	0.6	Approx. 0.6
Single	1	1	1
Middle	1.4	1.3	Approx. 4.3
Double	1.6	2	Approx. 6
Medium Long	1.6	1.6	Approx. 10
Long	1.6	2	Approx. 21

*1 represent Single Type for comparison.

Order Example

Part Number	
LHIRD12	
LHMCD16	
LHIRD12L	(L Type Greased)
LHMCD16G	(G Type Greased)
LHMSD20H	(H Type Greased)

Alternative grease types available.

★ BEST SELLER
(SELECT PART NUMBERS)
✔ TYPICALLY IN STOCK
(SELECT PART NUMBERS)

Flanged Linear Bushings Standard and Compact Type

– Single / Opposite Counterbored Hole –

– Flange Type Height-Adjusting Spacers can be select from **#LCSC**

■ Standard Type

RoHS

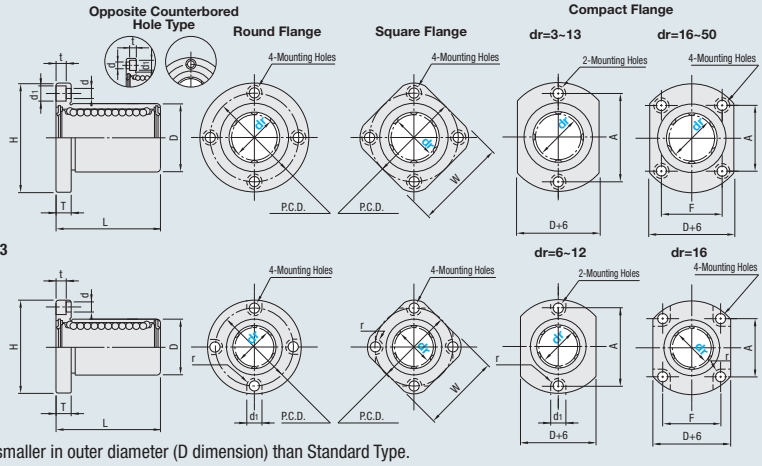
■ Compact Type

RoHS

Counterbored Holes	Type: Round Flange	Type: Square Flange	Type: Compact Flange	Outer Cylinder: Material	Outer Cylinder: Hardness	Outer Cylinder: Surface Treatment	Steel Balls: Material	Retainer: Material	Operating Environment Temperature	Accessory
Opposite Counterbored Hole	LHZR ✔	LHZS ✔	LHZC	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-120 ~120°C)
Standard	LHFR-N ✔ No Seal	LHFS-N No Seal	LHFC-N ✔ No Seal							
	LHFR ✔	LHFS ★ ✔	LHFC ✔							
	LHFRF ✔	LHFSF ✔	LHFCF ✔					440C Stainless Steel	-20~110°C	
	LHFRR ✔	LHFSR	LHFCR			Low Temperature Black Chrome Plating	440C Stainless Steel Equivalent	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHFRM ✔	LHFSM ✔	LHFCM ✔			Electroless Nickel Plating		440C Stainless Steel	-20~110°C	
	LHFRMF ✔	LHFSMF	LHFCMF ✔							
	SLHFR	SLHFS	SLHFC	440C Stainless Steel Equivalent	56HRC~	—		Plastic (Duracon M90 Equivalent)	-20~80°C	
	SLHFRS	SLHFSS	SLHFCS					440C Stainless Steel	-20~120°C	
Compact	LHRK	LHSK	LHCK ✔	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHRKM	LHSKM	LHCKM ✔			Electroless Nickel Plating	440C Stainless Steel Equivalent			

ⓘ No seal for dr=3 and 4, LHFR-N, LHFS-N and LHFC-N.

ⓘ For ball row details, see **P.53**



– Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type.

– Standard and Compact Comparison **P.54**

kgf=Nx0.101972

Type	dr	Tolerance	D	D Tolerance: Surface Treatment No	D Tolerance: Surface Treatment Yes	L	Tolerance	H	T	d	d_1	t	r	P.C.D.	W	F	A	Eccen-tricity	*Perpendi-cularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
Standard	3	0 -0.008	7	0 -0.011	0 -0.015	10	±0.3	19	3.5	2.5	4.5	2.1	—	13	15	—	13	0.008	0.008	69	105	7	5.1	6
	4		8			12		20					—	14	16	—	14			88	127	8	6.2	7
	5		10			15		25					—	17	20	—	17			167	206	17	13	14
	6	0 -0.009	12	0 -0.013	0 -0.018	19		28	5	3.5	6	3.1	—	20	22	—	20	0.012	0.012	206	265	24	18	21
	8		15			24		32					—	24	25	—	24			265	380	37	29	33
	10		19	0 -0.016	0 -0.021	29		40	6	4.5	7.5	4.1	—	29	30	—	29			372	549	72	52	64
	12		21			30		42					—	32	32	—	32			412	598	76	57	68
	13		23			32		43					—	33	34	—	33			510	784	88	72	81
	16		28			37		48					—	38	37	22	31			775	1180	120	104	112
	20	0 -0.010	32	0 -0.019	0 -0.025	42		54	8	5.5	9	5.1	—	43	42	24	36	0.015	0.015	882	1370	180	145	167
	25		40			59		62					—	51	50	32	40			980	1570	340	300	325
	30		45			64		74	10	6.6	11	6.1	—	60	58	35	49			1570	2740	470	375	388
	35	0 -0.012	52	0 -0.022	0 -0.030	70		82					—	67	64	38	55	0.020	0.020	1670	3140	650	560	575
	40		60			80		96	13	9	14	8.1	—	78	75	45	64			2160	4020	1060	880	913
	50		80			100		116					—	98	92	56	80			3820	7940	2200	2000	2037
Compact	6	0 -0.009	10	0 -0.011	0 -0.015	19	±0.3	25	5	3.5	6	3.1	3	19	20	—	19	0.012	0.012	131	155	14	15	15
	8		13	0 -0.013	0 -0.018	24		28						22	23	—	22			235	277	22	24	24
	10		17			29		35	6	4.5	7.5	4.1	3.75	27	27	—	27			368	433	41	46	46
	12		19	0 -0.016	0 -0.021	30		38						30	29	—	30			381	449	50	55	55
	16		26			37		44						36	34	24	27			608	716	77	83	83

ⓘ For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

Order Example

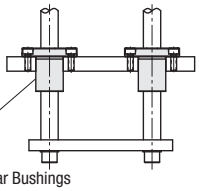
Part Number	
LHRK12	
LHRK12L	(L Type Greased)
LHRK12G	(G Type Greased)
LHRK12H	(H Type Greased)

⊗ Alternative grease types available.

Part Number	
LHFCR8	
LHFC-N10	(No Seal)
LHFCR10L	(L Type Greased)
LHFCR10G	(G Type Greased)
LHFCR10H	(H Type Greased)

Example

For 2 linear bushings of Compact type, their mounting plate is 6 to 10 mm smaller than that for Standard Type.



Flanged Linear Bushings Compact Type

Flanged Linear Bushings Standard and Compact Type

– Double Type / Opposite Counterbored Hole –

■ Flange Type Height-Adjusting Spacers can be select from **#LCSC**

■ Standard Type

RoHS

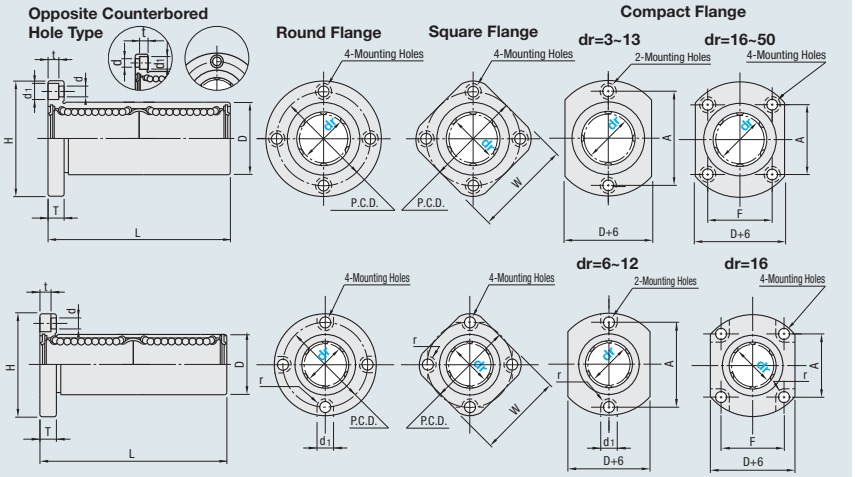
■ Compact Type

RoHS

Counterbored Holes	Type: Round Flange	Type: Square Flange	Type: Compact Flange	Outer Cylinder: Material	Outer Cylinder: Hardness	Outer Cylinder: Surface Treatment	Steel Balls: Material	Retainer: Material	Operating Environment Temperature	Accessory
Opposite Counterbored Hole	LHZRW	LHZSW	LHZCW ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-120 ~120°C)
Standard	LHFRW-N ✓ No Seal	LHFSW-N ✓ No Seal	LHFCW-N ✓ No Seal							
	LHFRW ✓	LHFSW ✓	LHFCW ✓							
	LHFRWF ✓	LHFSWF ✓	LHFCWF ✓					440C Stainless Steel	-20~110°C	
	LHFRWR	LHFSWR	LHFCWR			Low Temperature Black Chrome Plating	440C Stainless Steel Equivalent	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHFRWM ✓	LHFSWM ✓	LHFCWM ✓			Electroless Nickel Plating				
	LHFRWMF ✓	LHFSWMF ✓	LHFCWMF ✓					440C Stainless Steel	-20~110°C	
	SLHFRW	SLHFSW	SLHFCW	440C Stainless Steel Equivalent	56HRC~	—		Plastic (Duracon M90 Equivalent)	-20~80°C	
	SLHFRWS	SLHFSWS	SLHFCWS					440C Stainless Steel	-20~120°C	
Compact	LHRKW	LHSKW	LHCKW ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHRKWM	LHSKWM ✓	LHCKWM			Electroless Nickel Plating	440C Stainless Steel Equivalent			

No seal for dr=3 and 4, LHFRW-N, LHFSW-N and LHFCW-N

For ball row details, see **P.53**



– Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type.

– Standard and Compact Comparison **P.54**

kgf=Nx0.101972

Type	dr	dr Tolerance	D	D Tolerance: Surface Treatment No	D Tolerance: Surface Treatment Yes	L	L Tolerance	H	T	d	d_1	t	r	P.C.D.	W	F	A	Eccen-tricity	*Perpendi-cularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment Mo Nm	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Standard	3	0 -0.010	7	0 -0.011	0 -0.015	19	±0.3	19	3.5	2.5	4.5	2.1	—	13	15	—	13	0.010	0.010	138	210	0.51	8.7	7	7.7
	4		8			23		20					—	14	16	—	14			176	254	0.63	11	9	10
	5		10			28		25	5	3.5	6	3.1	—	17	20	—	17			263	412	1.38	24	20	21
	6		12	0 -0.013	0 -0.018	35		28					—	20	22	—	20	0.015	0.015	324	529	2.18	31	25	28
	8		15			45		32					—	24	25	—	24			431	784	4.31	51	43	47
	10		19	0 -0.016	0 -0.021	55		40	6	4.5	7.5	4.1	—	29	30	—	29			588	1100	7.24	98	78	90
	12		21			57		42					—	32	32	—	32			657	1200	10.9	110	90	102
	13		23			61		43					—	33	34	—	33			813	1570	11.6	130	108	123
	16		28			70		48					—	38	37	22	31			1230	2350	19.7	190	165	182
	20	0 -0.012	32	0 -0.019	0 -0.025	80		54	8	5.5	9	5.1	—	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
	25		40			112		62					—	51	50	32	40			1560	3140	43.4	540	500	525
	30		45			123		74	10	6.6	11	6.1	—	60	58	35	49			2490	5490	82.8	680	590	645
	35	0 -0.015	52	0 -0.022	0 -0.030	135		82					—	67	64	38	55	0.025	0.025	2650	6270	110	1020	930	945
	40		60			151		96	13	9	14	8.1	—	78	75	45	64			3430	8040	147	1570	1380	1423
	50		80			192		116					—	98	92	56	80			6080	15900	397	3600	3400	3437
Compact	6	0 -0.01	10	0 -0.011	0 -0.015	35	±0.3	25	5	3.5	6	3.1	3	19	20	—	19	0.015	0.015	206	309	2.46	24	20	21
	8		13	0 -0.013	0 -0.018	45		28						22	23	—	22			383	555	5.76	38	34	35
	10		17			55		35	6	4.5	7.5	4.1	3.75	27	27	—	27			585	867	10.99	79	68	73
	12		19	0 -0.016	0 -0.021	57		38						30	29	—	30			608	899	11.85	95	82	87
	16		26			70		44						36	34	24	27			965	1431	23.48	154	135	141

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

Order Example

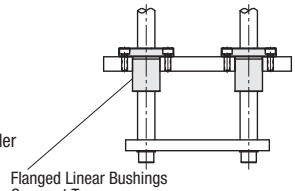
Part Number	
LHRKW12	
LHRKW12L	(L Type Greased)
LHRKW12G	(G Type Greased)
LHRKW12H	(H Type Greased)

Alternative grease types available.

Part Number	
LHFCW-N12	(No Seal)
LHFCWR10	
LHFCWR10L	(L Type Greased)
LHFCWR10G	(G Type Greased)
LHFCWR10H	(H Type Greased)

Example

For 2 linear bushings of Compact type, their mounting plate is 6 to 10mm smaller than that for Standard Type.



Flanged Linear Bushings Compact Type

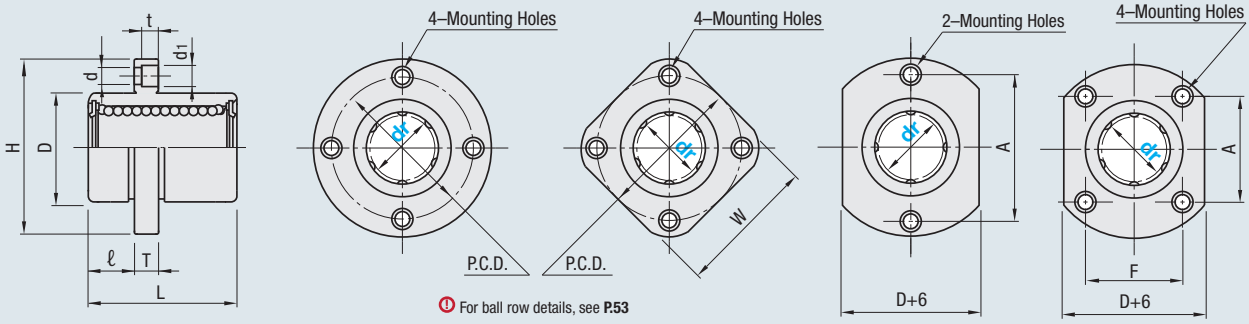
Flanged Linear Bushing Standard Type

– Single with Pilot –

■ Flange Type Height-Adjusting Spacers can be select from **#LCSC**

RoHS

Type			Outer Cylinder			Steel Balls	Retainer	Ambient Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHIFR	LHIFS	LHIFC	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-20 ~120°C)
LHIFRF	LHIFSF	LHIFCF					440C Stainless Steel	-20~110°C	
LHIFRM	LHIFSM	LHIFCM			Electroless Nickel Plating	440C Stainless Steel Equivalent	Plastic (Duracon M90 Equivalent)	-20~80°C	
LHIFRMF	LHIFSMF	LHIFCMF					440C Stainless Steel	-20~110°C	
SLHIFR	SLHIFS	SLHIFC	440C Stainless Steel Equivalent	56HRC~	—		Plastic (Duracon M90 Equivalent)	-20~80°C	
SLHIFRS	SLHIFSS	SLHIFCS					440C Stainless Steel	-20~120°C	



For ball row details, see **P.53**

kgf=Nx0.101972

dr	Tolerance	D	D Tolerance: Surface Treatment No	D Tolerance: Surface Treatment Yes	L	L Tolerance	ℓ	H	T	d	d_1	t	P.C.D.	W	F	A	Eccen-tricity	*Perpendi-cularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
6	0 -0.009	12	0 -0.013	0 -0.018	19	±0.3	5	28	5	3.5	6	3.1	20	22	—	20	0.012	0.012	206	265	24	18	21
8		15			24			32					24	25	—	24			265	380	37	29	33
10		19	0 -0.016	0 -0.021	29		6	40	6	4.5	7.5	4.1	29	30	—	29			372	549	72	52	64
12		21			30			42					32	32	—	32			412	598	76	57	68
13		23			32			43					33	34	—	33			510	784	88	72	81
16		28			37			48					38	37	22	31			775	1180	120	104	112
20	0 -0.010	32	0 -0.019	0 -0.025	42		8	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	180	145	167
25		40			59			62					51	50	32	40			980	1570	340	300	325
30		45			64		10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	470	375	388
35	0 -0.012	52	0 -0.022	0 -0.030	70			82					67	64	38	55	0.020	0.020	1670	3140	650	560	575
40		60			80		13	96	13	9	14	8.1	78	75	45	64			2160	4020	1060	880	913
50		80			100			116					98	92	56	80			3820	7940	2200	2000	2037

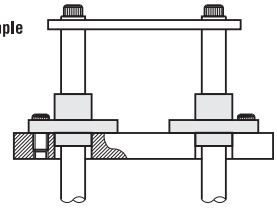
For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

Order Example

Part Number	
LHIFR20	
LHIFR20L	(L Type Greased)
LHIFR20G	(G Type Greased)
LHIFR20H	(H Type Greased)

Alternative grease types available.

Example



Flanged Linear Bushing Standard Type

– Double with Pilot / Center Flanged Double –

■ Flange Type Height-adjusting Spacers can be select from **#LCSC**

■ Double with Pilot

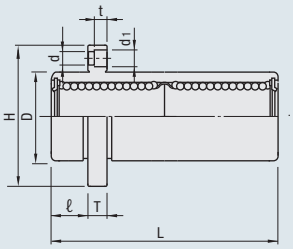
RoHS

■ Center Flanged Double

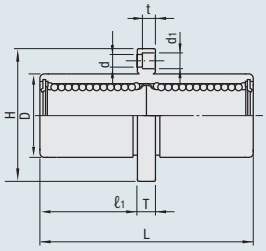
RoHS

Pilot Type			Center Flanged Type			Outer Cylinder			Steel Balls	Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material	Material		
LHIRW ✓	LHISW ✓	LHICW ✓	LHMRW ✓	LHMSW ✓	LHMCW ✓	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-20~120°C)
LHIRWF ✓	LHISWF ✓	LHICWF ✓	LHMRWF ✓	LHMSWF ✓	LHMCWF ✓					440C Stainless Steel	-20~110°C	
LHIRWM ✓	LHISWM ★ ✓	LHICWM ✓	LHMRWM ✓	LHMSWM ✓	LHMCWM ★ ✓			Electroless Nickel Plating	440C Stainless Steel Equivalent	Plastic (Duracon M90 Equivalent)	-20~80°C	
LHIRWMF	LHISWMF ✓	LHICWMF ✓	LHMRWMF	LHMSWMF	LHMCWMF ✓					440C Stainless Steel	-20~110°C	
SLHIRW	SLHISW	SLHICW	SLHMRW	SLHMSW	SLHMCW	440C Stainless Steel Equivalent	56HRC~	—		Plastic (Duracon M90 Equivalent)	-20~80°C	
SLHIRWS	SLHISWS	SLHICWS	SLHMRWS	LSHMSWS	SLMCWS					440C Stainless Steel	-20~120°C	

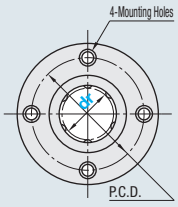
Pilot



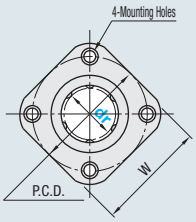
Center Flange



Round Flange

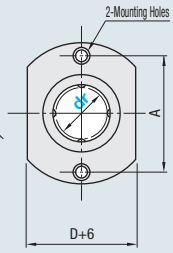


Square Flange

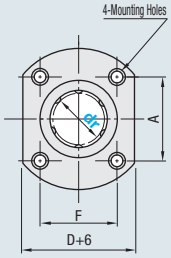


Compact Flange

dr=6~13



dr=16~50



For ball row details, see **P.53**

kgf=Nx0.101972

	dr		D Tolerance		L		ℓ	$ℓ_1$	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating		Allowable Static Moment (Nm)	Mass(g)		
	Tolerance		Surface Treatment No	Surface Treatment Yes		Tolerance														C (Dynamic) N	Co (Static) N		Round Flange	Square Flange	Compact Flange
6	0 -0.010	12	0 -0.013	0 -0.018	35	±0.3	5	15	28	5	3.5	6	3.1	20	22	—	20	0.015	0.015	324	529	2.18	31	25	28
8		15			45			20	32					24	25	—	24			431	784	4.31	51	43	47
10		19	0 -0.016	0 -0.021	55		6	24.5	40	6	4.5	7.5	4.1	29	30	—	29			588	1100	7.24	98	78	90
12		21			57			25.5	42					32	32	—	32			657	1200	10.9	110	90	102
13		23			61			27.5	43					33	34	—	33			813	1570	11.6	130	108	123
16		28			70			32	48					38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	0 -0.025	80		8	36	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40			112			52	62					51	50	32	40			1560	3140	43.4	540	500	525
30		45			123		10	56.5	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	680	590	645
35	0 -0.015	52	0 -0.022	0 -0.030	135		13	62.5	82	13	9	14	8.1	67	64	38	55	0.025	0.025	2650	6270	110	1020	930	945
40		60			151			69	96					78	75	45	64			3430	8040	147	1570	1380	1423
50		80			192			89.5	116					98	92	56	80			6080	15900	397	3600	3400	3437

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
*Perpendicularity of D part to flange mounting surface

Order Example

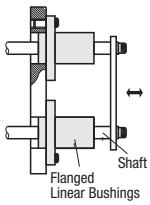
Part Number	
LHIRW8	
LHIRW8L	(L Type Greased)
LHIRW8G	(G Type Greased)
LHIRW8H	(H Type Greased)

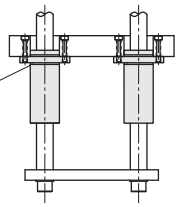
Alternative grease types available.

Part Number	
LHIRKW12	
LHIRKW12L	(L Type Greased)
LHIRKW12G	(G Type Greased)
LHIRKW12H	(H Type Greased)

Example

Use the Pilot Type when some loads are to apply on linear bushings.





Flanged Linear Bushings

– Long / Long with Pilot / with Long Pilot –

■ Long

RoHS

■ Long with Pilot

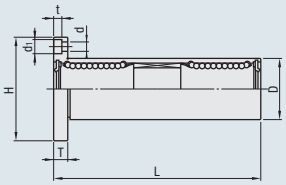
RoHS

■ Long with Long Pilot

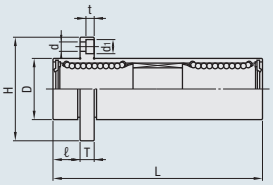
RoHS

	Type			Outer Cylinder			Retainer	Ambient Environment Temperature	Accessory
	Round Flange	Square Flange	Compact Flange	Material	Hardness	Surface Treatment	Material		
Long	LHKRNL ✓	LHKSNL	LHKCNL ✓	52100 Bearing Steel	58HRC~	—	Plastic (Duracon M90 Equivalent)	-20~80°C	Seals Material Nitrile Rubber (-20 ~120°C)
	LHKRNLF ✓	LHKSNLF ✓	—				440C Stainless Steel	-20~110°C	
	LHKRL ✓	LHKSL ✓	LHKCL			Electroless Nickel Plating	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHKRLF ✓	LHKSLF ✓	—				440C Stainless Steel	-20~110°C	
	SLHKRLFS	SLHKSLFS	—	440C Stainless Steel Equivalent	56HRC~	—	440C Stainless Steel	-20~120°C	
Long w/ Pilot	LHKIRNL ✓	LHKISNL	LHKICNL ✓	52100 Bearing Steel	58HRC~	—	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHKIRNLF	LHKISNLF ✓	—				440C Stainless Steel	-20~110°C	
	LHKIRL ✓	LHKISL ✓	LHKICL ✓			Electroless Nickel Plating	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHKIRLF	LHKISLF ✓	—				440C Stainless Steel	-20~110°C	
	SLHKIRLFS	SLHKISLFS	—	440C Stainless Steel Equivalent	56HRC~	—	440C Stainless Steel	-20~120°C	
Long w/ Long Pilot	LHKMRNL ✓	LHKMSNL ✓	LHKMCNL ✓	52100 Bearing Steel	58HRC~	—	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHKMRNLF ✓	LHKMSNLF	—				440C Stainless Steel	-20~110°C	
	LHKMRL	LHKMSL ✓	LHKMCL ✓			Electroless Nickel Plating	Plastic (Duracon M90 Equivalent)	-20~80°C	
	LHKMRLF	LHKMSLF ✓	—				440C Stainless Stainless Steel	-20~110°C	
	SLHKMRLFS	SLHKMSLFS	—	440C Stainless Steel Equivalent	56HRC~	—	440C Stainless Steel	-20~120°C	

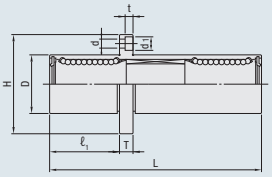
Long



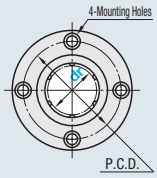
Long with Pilot



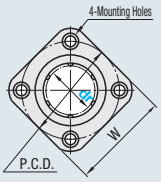
Long with Long Pilot



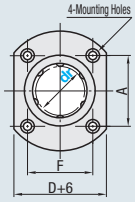
Round Flange



Square Flange



Compact Flange
dr=16~40



! Mounting hole of long type is of opposite direction.

! For ball row details, see **P.53**

kgf=Nx0.101972

	dr Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tolerance	ℓ	ℓ1	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment Mo Nm	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.012	15	0 -0.013	0 -0.018	49	±0.3	5	17	32	5	3.5	6	3.1	24	25	—	—	0.020	0.020	324	529	8.2	66	58	—
8		19	0 -0.016	0 -0.021	68		6	22	40	6	4.5	7.5	4.1	29	30	—	—			431	784	16.0	135	117	—
10		23			82			27	43					33	34	—	—			588	1100	27.0	205	189	—
12	0 -0.015	26			86			28	46					36	35	—	—			657	1200	40.1	248	228	—
13		28			92			30	48					38	37	—	—			813	1570	42.9	308	286	—
16		32	0 -0.019	0 -0.025	105		8	35	54	8	5.5	9	5.1	43	42	24	36	0.025	0.025	1230	2350	73.5	412	376	386
20	0 -0.018	40			120			40	62					51	50	32	40			1400	2740	98.0	752	714	724
25		45			167		10	55	74	10	6.6	11	6.1	60	58	35	49			1560	3140	157	1244	1163	1178
30		52	0 -0.022	0 -0.030	184			61	82					67	64	38	55			2490	5490	297	1636	1543	1567
35	0 -0.021	60	—		200		13	57	96	13	9	14	8.1	78	75	45	64	0.030	0.030	2650	6270	373	2580	2400	2433
40		65			230			77	101					83	80	48	68			3430	8040	553	2950	2510	2798

! For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

* Perpendicularity of D part to flange mounting surface

Order Example

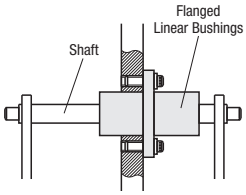
Part Number	
LHKRL8	
LHKRL8L	(L Type Greased)
LHKRL8G	(G Type Greased)
LHKRL8H	(H Type Greased)

⊗ Alternative grease types available.

Part Number	
LHKMSLF6	
LHKMSLF6L	(L Type Greased)
LHKMSLF6G	(G Type Greased)
LHKMSLF6H	(H Type Greased)

Example

When a long stroke distance is required, use of longer bushings is recommended.



Linear Bushings Housing Unit Standard / Compact

– Tall Block Single –

■ Standard and Compact Comparison **P.54**

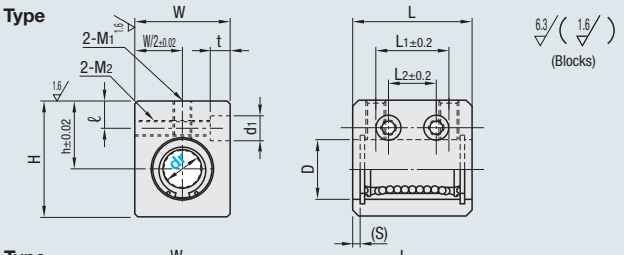
■ Standard Type

RoHS

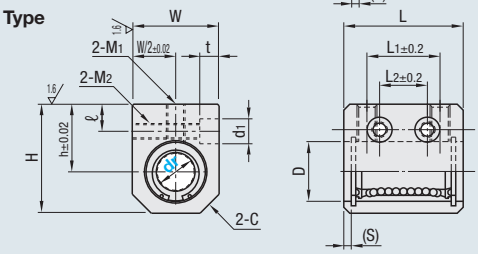
Type		Outer Cylinder		Housing		Ambient Environment Temperature
		P.53	P.54			
Standard	Compact	Material	Surface Treatment	Material	Surface Treatment	
LHSS ★ ✓	LHSSK ✓	LMU	LMK	Aluminum Alloy	Clear Anodizing	-20~80°C
LHSSF ✓	–	LMUF	—			-20~110°C
SLHSS	–	SLMU	—			-20~80°C
SLHSSF	–	SLMUS	—			-20~110°C

■ Compact Type

Standard Type



Compact Type



For ball row details, see **P.53**

Standard Type dr4 has one M1 mounting hole only.

The datum surface is located on the other side of product ID label.

dr	Tolerance	D Standard	D Compact	(S)	L	L_1	L_2	h Standard	h Compact	W Standard	W Compact	H Standard	H Compact	ℓ Standard	ℓ Compact	M_1 (Effective length) Standard	M_1 Compact	M_2 (Effective length) Standard	M_2 Compact	C	d_1 x t
4	0 -0.008	8	—	1.1	15	—	10	10	—	12	—	16	—	3	—	M3 (6)	—	M3 (10.5)	—	—	4.2 x 1.5 (For M2 Screws)
5		10	—	4.0	25	16	7	13	—	15	—	20	—	5	—	M4 (8)		M4 (10)	—	—	6 x 5 (For M3 Screws)
(6)	0 -0.009	12	10	3.0	27	18	9	14	13	16	14	22	20		4		M4 (8)	M4 (11)	M4 (9)	4	
(8)		15	13		32	20	10	16	15	20	17	26	24		5	M5 (8.5)	M5 (8.5)	M4 (15)	M4 (12)	5	
(10)		19	17	4.0	39	27	15	19	18	26	23	32	30	6	6	M6 (9.5)	M6 (9.5)	M5 (20)	M5 (17)	6	8 x 6 (For M4 Screws)
(12)		21	19		40			20	19	28	25	34	32					M5 (22)	M5 (19)		
13		23	—		42	28	16	25	—	30	—	43	—	7	—	M6 (13)	—	M6 (23)	—	—	9 x 7 (For M5 Bolt)
(16)		28	26	3.8	47	32	18	27	26	36	33	49	43		7		M6 (13)	M6 (29)	M6 (26)	8	
20	0 -0.010	32	—		52	36		31	—	42	—	54	—	8	—	M8 (15)	—	M8 (34)	—	—	11 x 8 (For M6 screws)
25		40	—	3.2	69	42	22	37	—	52	—	65	—	9	—	M10 (17)		M10 (42)		—	14 x 10 (For M8 Screws)
30		45	—		74	44		40	—	58	—	71	—		—	M10 (17.5)		M10 (48)		—	

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

Only dr dimensions in ( ) are available for Compact Type.

Make certain that the screws do not interfere with the bushing as M_1 are through holes.

dr	Basic Load Rating C (Dynamic) N Standard	C (Dynamic) N Compact	Co (Static) N Standard	Co (Static) N Compact	Mass(g) Standard	Mass(g) Compact
4	88	—	127	—	8	—
5	167	—	206	—	18	—
6	206	131	265	155	22	17
8	265	235	380	277	40	32
10	372	368	549	433	80	67
12	412	381	598	449	90	80
13	510	—	608	—	132	—
16	775	608	1180	716	204	155
20	882	—	1370	—	272	—
25	980	—	1570	—	574	—
30	1570	—	2740	—	710	—

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Order Example

Part Number	
LHSS12	
LHSS12L	(L Type Greased)
LHSS12G	(G Type Greased)
LHSS12H	(H Type Greased)

Alternative grease types available.

Linear Bushings Housing Unit Standard / Compact

– Tall Block Double –

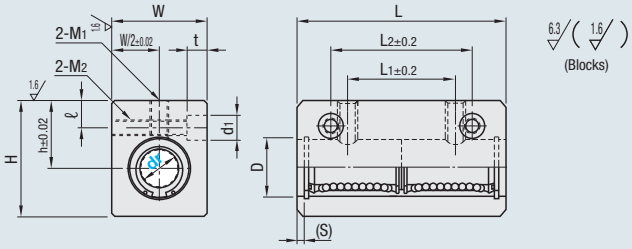
■ Standard and Compact Comparison **P.54**

■ Standard Type

RoHS

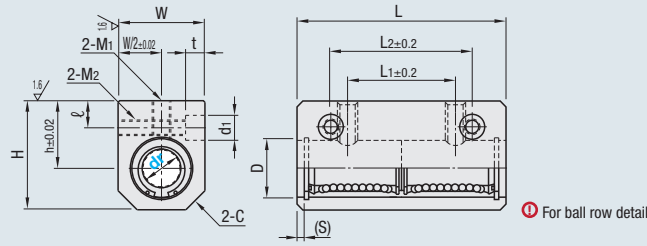
Type		Outer Cylinder		Housing		Ambient Environment Temperature
		P.53	P.54			
Standard	Compact	Material	Surface Treatment	Material	Surface Treatment	
LHSSW	LHSSKW	LMU	LMK	Aluminum Alloy	Clear Anodizing	-20~80°C
LHSSWF	—	LMUF	—			-20~110°C
SLHSSW	—	SLMU	—			-20~80°C
SLHSSWF	—	SLMUS	—			-20~110°C

Standard Type



■ Compact Type

Compact Type



For ball row details, see **P.53**

The datum surface is located on the other side of product ID label.

Allowable Static Moments: See **P.53**

dr	Tolerance	D Standard	D Compact	(S)	L	L_1	L_2	h Standard	h Compact	W Standard	W Compact	H Standard	H Compact	ℓ Standard	ℓ Compact	M_1 (Effective length) Standard	M_1 (Effective length) Compact	M_2 (Effective length) Standard	M_2 (Effective length) Compact	C	d_1 x t
4	0 -0.008	8	—	1.1	27	14	22	10	—	12	—	16	—	3	—	M3 (6)	—	M3 (10.5)	—	—	4.2 x 1.5 (For M2 Screws)
5		10	—	4.0	40	18	28	13	—	15	—	20	—	5	—	M4 (8)		M4 (10)	—	—	6 x 5 (For M3 Screws)
(6)	0 -0.010	12	10	3.0	46	20	30	14	13	16	14	22	20		4		M4 (8)	M4 (11)	M4 (9)	4	
(8)		15	13		56	30	42	16	15	20	17	26	24		5	M5 (8.5)	M5 (8.5)	M4 (15)	M4 (12)	5	
(10)		19	17	4.0	68	36	50	19	18	26	23	32	30	6	6	M6 (9.5)	M6 (9.5)	M5 (20)	M5 (17)	6	8 x 6 (For M4 Screws)
(12)		21	19		70			20	19	28	25	34	32					M5 (22)	M5 (19)		
13		23	—		74	42	55	25	—	30	—	43	—	7	—	M6 (13)	—	M6 (23)	—	—	9 x 7 (For M5 Bolt)
(16)		28	26	3.8	84	52	65	27	26	36	33	49	43		7		M6 (13)	M6 (29)	M6 (26)	8	
20	0 -0.012	32	—		94	58	70	31	—	42	—	54	—	8	—	M8 (15)	—	M8 (34)	—	—	11 x 8 (For M6 screws)
25		40	—	3.2	128	80	100	37	—	52	—	65	—	9	—	M10 (17)		M10 (42)		—	14 x 10 (For M8 Screws)
30		45	—		138	90	110	40	—	58	—	71	—		—	M10 (17.5)		M10 (48)		—	

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

Only dr dimensions in ( ) are available for Compact Type.

Make certain that the screws do not interfere with the bushing as M_1 are through holes.

dr	Basic Load Rating C (Dynamic) N Standard	C (Dynamic) N Compact	Co (Static) N Standard	Co (Static) N Compact	Mass(g) Standard	Mass(g) Compact
4	176	—	254	—	14	—
5	263	—	412	—	35	—
6	324	206	529	309	40	34
8	431	383	784	555	75	60
10	588	585	1100	867	150	126
12	657	608	1200	899	168	150
13	813	—	1570	—	248	—
16	1230	965	2350	1431	383	296
20	1400	—	2740	—	520	—
25	1560	—	3140	—	1120	—
30	2490	—	5490	—	1384	—

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Order Example

Part Number	
LHSSW12	
LHSSW12L	(L Type Greased)
LHSSW12G	(G Type Greased)
LHSSW12H	(H Type Greased)

Alternative grease types available.

Linear Bushing with Pillow Blocks

– Tall Block Medium / Medium Long / Long –

■ Standard and Compact Comparison **P.54**

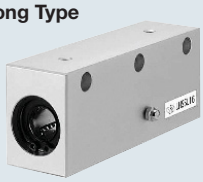
■ Medium Type

RoHS

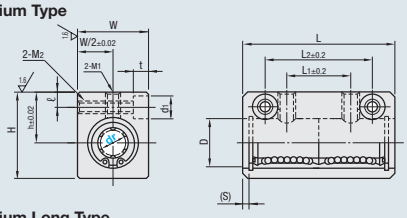
Type			Outer Cylinder			Housing		Ambient Environment Temperature
			P.55	P.53	P.53			
Medium	Medium Long	Long	Medium	Medium Long	Long	Material	Surface Treatment	
LHSSD	LHSSS	LHSSL	LMUD	LMU	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

■ Medium Long Type

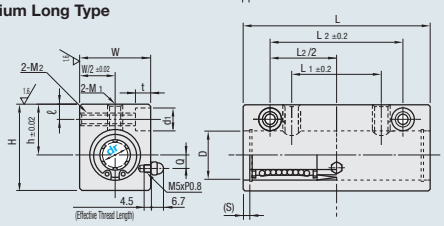
■ Long Type



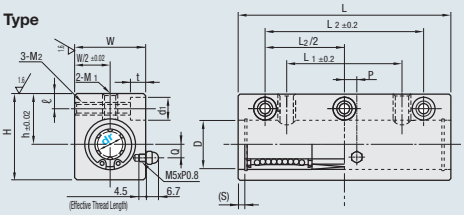
Medium Type



Medium Long Type



Long Type



6.3 (1.6) (Blocks)

■ Features of Medium Type Bushings

Body length is approximately 1.4 times of single type and allowable moment is approximately 4.3 times; suitable where no space for double type is available.

■ Features of Medium Long Type

Body length is approximately 2.2 times of single type and allowable moment is approximately 10 times; suitable where no space for long type is available.

■ Features of Long Type

Body length is approximately 2.5 times of single type. Allowable moment is approximately 21 times.

- For ball row details, see **P.56**
- The datum surface is located on the other side of product ID label.
- Allowable Static Moments: See **P.56**

Part Number					D	(S)	L			L_1			L_2			h	W	H	ℓ	Q	P	M_1 (Effective length)	M_2 (Effective length)	d_1 x t
Type	dr	Tolerance																						
		Medium	Medium Long	Long			Medium	Medium Long	Long	Medium	Medium Long	Long	Medium	Medium Long	Long									
(Medium Type) LHSSD (Medium Long Type) LHSSS (Long Type) LHSSL	(6)	0 -0.01	—	—	12	3	37	—	—	14	—	—	24	—	—	14	16	22	5	—	—	M4 (8)	M4 (11)	6 x 5 (For M3 Screws)
	8			0 -0.012	15		45		80	20		48	32		60	16	20	26				M5 (8.5)	M4 (15)	
	10				19	4	57		97	25		58	40		72	19	26	32	6	7	7	M6 (9.5)	M5 (20)	8 x 6 (For M4 Screws)
	*12		0 -0.015	0 -0.015	21			85	100		48	62		62	76	20	28	34					M5 (22)	
	13				23			—	106		—	64		—	80	25	30	43	7	7.5		M6 (13)	M6 (23)	9 x 7 (For M5 Bolt)
	*16				28	3.8	66	100	121	30	62	74	46	78	90	27	36	49		7			M6 (29)	
	*20	0 -0.012	0 -0.018	0 -0.018	32		75	115	136	34	68	82	52	88	102	31	42	54	8	0	8	M8 (15)	M8 (34)	11 x 8 (For M6 Screws)
	*25				40	3.2	93	160	187	42	96	116	66	120	140	37	52	65	9		9	M10 (17)	M10 (42)	14 x 10 (For M8 Screws)
	*30				45		100	170	202	42	106	128	66	130	152	40	58	71				M10 (17.5)	M10 (48)	

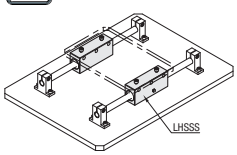
- For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
- Grease fitting not available on Long Type dr8.
- dr ( ) is only available in Medium Type, only sizes with * are available for Medium Long Type.
- Make certain that the screws do not interfere with the bushing as M_1 are through holes.

Order Example

Part Number	
LHSSD16	
LHSSL12L	(L Type Greased)
LHSSD16G	(G Type Greased)
LHSSD20H	(H Type Greased)

Alternative grease types available.

Example



Centering process and assembly labor cost can be reduced by using 1 long type or 1 medium long type, instead of 2 single types.

dr	Basic Load Rating						Mass(g)		
	C (Dynamic) N			Co (Static) N					
	Medium	Medium Long	Long	Medium	Medium Long	Long	Medium	Medium Long	Long
6	226	—	—	310	—	—	31	—	—
8	310	—	431	452	—	784	60	—	126
10	508	—	588	718	—	1100	121	—	233
12	634	657	657	814	1200	1200	124	232	278
13	640	—	813	826	—	1570	186	—	376
16	1164	1230	1230	1448	2350	2350	296	472	569
20	1554	1400	1400	2068	2740	2740	403	671	788
25	1725	1560	1560	3068	3140	3140	843	1443	1653
30	2440	2490	2490	3974	5490	5490	979	1748	2041

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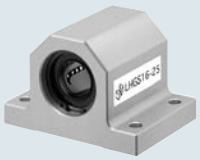
Shaft-Sliding Linear Bushings with Pillow Blocks

– Single / Double –

■ For features of Shaft-Sliding Linear Bushings with Pillow Blocks, see below.

■ Single Type

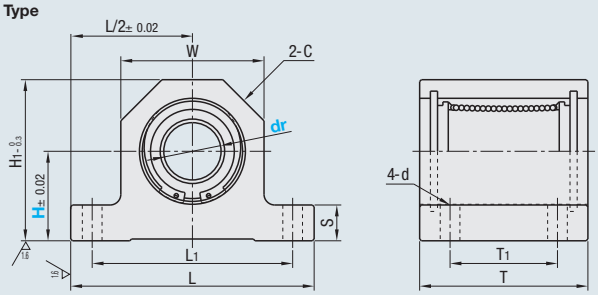
RoHS



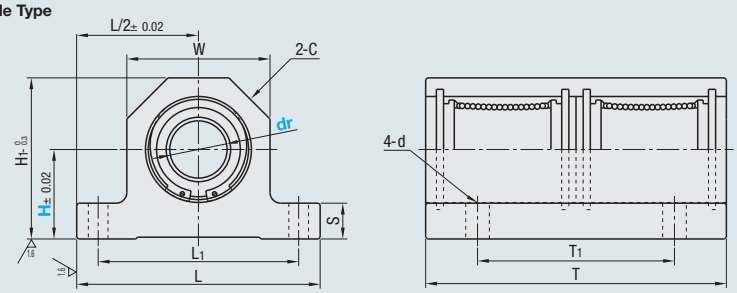
Type		Linear Bushing	Housing		Ambient Environment Temperature
Single	Double	P.53	Material	Surface Treatment	
LHGS	LHGW	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

■ Double Type

Single Type



Double Type



- For ball row details, see **P.53**
- The datum surface is located on The other side of product ID label.
- Allowable Static Moments: See **P.53**

Part Number		H						L	H_1	T		T_1		S	W	C	L_1	d
Type	dr	Selectable								Single	Double	Single	Double					
(Single) LHGS (Double) LHGW	12	15	20	25				58	H+15	40	70	25	50	8	30	8.5	46	5.5
	16		20	25	30			68	H+20	47	84	30	55	10	40	11.5	56	5.5
	20		20	25	30			72	H+22	52	94	35	60	12	44	12.5	60	5.5
	25			25	30	40		90	H+27.5	69	128	50	90	15	55	16	75	6.6
	30				30	40	50	105	H+32.5	74	138	55	100	20	65	18	85	9

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

■ Features of Shaft-sliding Linear Bushings with Pillow Blocks

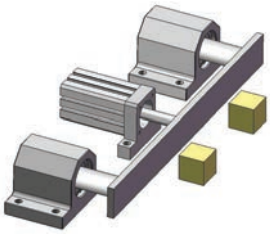
– As the height is selectable, there is no need to use Height Adjusting Spacers.
– As Spacers are not required, parts count and cost can be reduced.
– Can be easily screw mounted from above, suitable for shaft-sliding mechanisms.
– Compact specifications for space saving.

Order Example

Part Number	–	H	
LHGS16	–	30	
LHGW20	–	25	
LHGS12L	–	15	(L Type Greased)
LHGW30G	–	30	(G Type Greased)
LHGW20H	–	25	(H Type Greased)

Alternative grease types available.

Example ■ Guide of cylinders for moving work piece



Linear Bushings and Block with Dowel Holes

— Tall Block Type Single / Double / Long Bushing Length —

■ For features of dowel hole type, see below.

■ Single Type

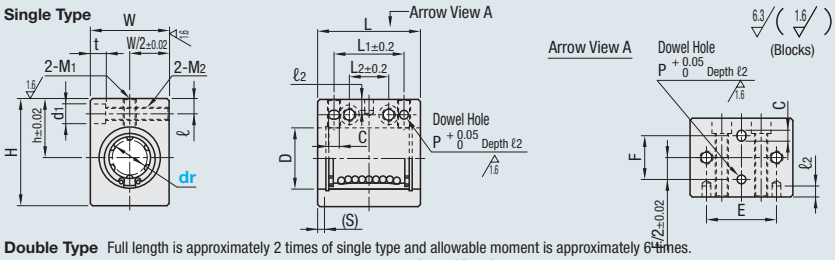
RoHS

■ Double Type

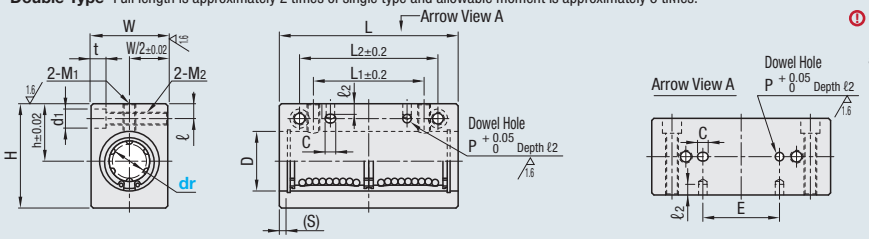
■ Long Type

Type			Linear Bushings	Housing		Ambient Environment Temperature
Medium	Medium Long	Long	P.53	Material	Surface Treatment	
LHSSN	LHSSWN	LHSSLN	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

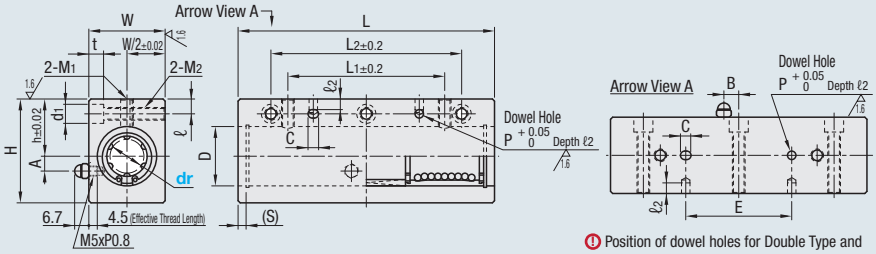
Single Type



Double Type Full length is approximately 2 times of single type and allowable moment is approximately 6 times.



Long Type Full length is approximately 2.5 times of single type and allowable moment is approximately 21 times.



Position of dowel holes for Double Type and Long Type is ± 0.02 from the center of dr.

Inner surfaces of dowel holes are not anodized.

For ball row details, see P.53

The datum surface is located on the other side of product ID label.

Allowable Static Moments: see P.53, P.61

Dowel Pins MS / MSC, enter web code **#MS**, are recommended.

Part Number Type	dr	Tolerance Single	Tolerance Double	Tolerance Long	D	(S)	L Single	L Double	L Long	L_1 Single	L_1 Double	L_1 Long	L_2 Single	L_2 Double	L_2 Long	h	W	H	ℓ	A	B	M1 (Effective Length)	M2 (Effective Length)	d_1 x t
LHSSN LHSSWN LHSSLN	8	0 -0.009	0 -0.010	—	15	3.0	32	56	—	20	30	—	10	42	—	16	20	26	5	—	—	M5 (8.5)	M4 (15)	6 x 5 (For M3 Screws)
	10				19	4.0	39	68	—	27	36	—	15	50	—	19	26	32	6			M6 (9.5)	M5 (20)	8 x 6 (For M4 Screws)
	12				21		40	70	—			—			—	20	28	34					M5 (22)	
	13				23		42	74	—	28	42	—	16	55	—	25	30	43	7			M6 (13)	M6 (23)	9 x 7 (For M5 Bolt)
	(16)			0 -0.015	28	3.8	47	84	121	32	52	74	18	65	90	27	36	49		7	7		M6 (29)	
	(20)	0 -0.010	0 -0.012	0 -0.018	32		52	94	136	36	58	82		70	102	31	42	54	8	0	8	M8 (15)	M8 (34)	11 x 8 (For M6 Screws)
	(25)				40	3.2	69	128	187	42	80	116	22	100	140	37	52	65	9		9	M10 (17)	M10 (42)	14 x 10 (For M8 Screws)
	(30)				45		74	138	202	44	90	128		110	152	40	58	71				M10 (17.5)	M10 (48)	

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. Long Type is available in dr dimensions in ( ) only.

Make certain that the screws do not interfere with the bushing as M_1 are through holes.

dr	Dowel Hole Dimensions P	C	ℓ_2	E Single	E Double	E Long	F	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	C (Dynamic) N Long	Co (Static) N Single	Co (Static) N Double	Co (Static) N Long	Mass(g) Single	Mass(g) Double	Mass(g) Long
8	2.5	3.5	3	22	16	—	12	265	431	—	380	784	—	40	75	—
10	4	5	5	29	20	—	16	372	588	—	549	1100	—	80	150	—
12						—	18	412	657	—	598	1200	—	90	168	—
13				30	26	—	20	510	813	—	784	1570	—	132	248	—
16				32	36	50		775	1230	1230	1180	2350	2350	204	383	569
20	5	6	6	36	38	60		882	1400	1400	1370	2740	2740	272	520	788
25				42	58	90	26	980	1560	1560	1570	3140	3140	574	1120	1653
30				44	68	100	30	1570	2490	2490	2740	5490	5490	710	1384	2041

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■ Features of Dowel Hole Type

– By the dowel holes provided on the mounting interface surface, locating work using the side surface as datum can be eliminated. (See example on right)
– Machining work can be reduced for the top plate to be mounted on the block.

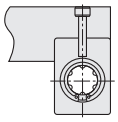
Order Example

Part Number
LHSSN16
LHSSWL20L (L Type Greased)
LHSSN16G (G Type Greased)
LHSSWN20H (H Type Greased)

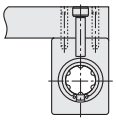
Alternative grease types available.

– Installation Example –

Conventional Type



Dowel Hole Type



★ BEST SELLER
(SELECT PART NUMBERS)
TYPICALLY IN STOCK
(SELECT PART NUMBERS)

Linear Bushings and Block with Dowel Holes

– Wide Block Type Single / Double / Long Bushing Length –

■ For features of dowel hole type, see below.

Type			Linear Bushings	Housing		Ambient Environment Temperature
Medium	Medium Long	Long	P.53	Material	Surface Treatment	
LHBBN	LHBBWN ★	LHBBLN	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

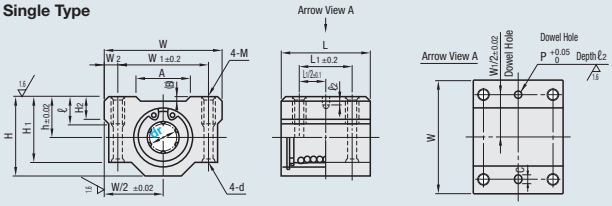
RoHS

■ Single Type

■ Double Type

■ Long Type

Single Type



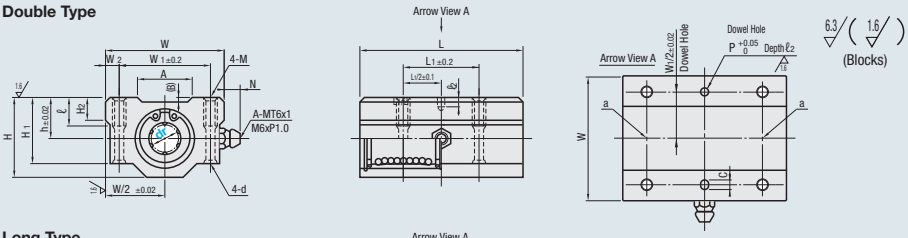
■ Features of Double Type

Body length is approximately 2 times of single type and allowable moment is approximately 6 times.

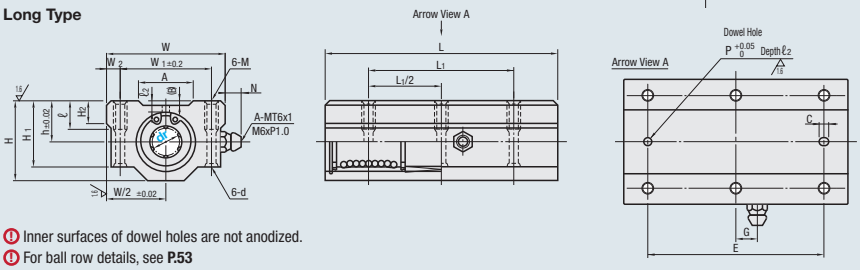
■ Features of Long Type

Body length is approximately 2.5 times of single type. Allowable moment is approximately 21 times.

Double Type



Long Type



- Inner surfaces of dowel holes are not anodized.
- For ball row details, see **P.53**
- The datum surface is located on the other side of product ID label.
- Allowable Static Moments: see **P.53**, **P.61**
- Dowel Pins MS / MSC, enter web code **#MS**, are recommended.

- Position of dowel holes for Double Type and Long Type is ± 0.02 from the center of dr.

dr	Tolerance Single	Tolerance Double	Tolerance Long	L Single	L Double	L Long	L_1 Single	L_1 Double	L_1 Long	h	H	H_1	H_2	W	W_1	W_2	M	d	ℓ	A	(B)	N	G
10	0 -0.009	0 -0.010	—	35	68	—	21	46	—	13	26	21	8	40	28	6	M5	4.3	12	15.5	0.4	7.5	—
12				36	70		26	50		15	28	24		42	30.5	5.75				17.5		7	
13				39	75						30	24.5		44	33	5.5				19	0.85		
(16)			0 -0.015	44	85	118	34	60	88	19	38.5	32.5	9	50	36	7				19.8		6.5	7
(20)	0 -0.010	0 -0.012	0 -0.018	50	96	134	40	70	100	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	8
(25)				67	130	185	50	100	138	26	51.5	42	12	76	54	11	M8	7	18	36	1	4.5	9
(30)				72	140	200	58	110	150	30	59.5	49	15	78	58	10				39.9	0.75	5.5	
(35)	0 -0.012	0 -0.015	0 -0.021	80	155	220	60	120	170	34	68	54	18	90	70					53	1.5	6	10
(40)				90	175	250	60	140	190	40	78	62	20	102	80	11	M10	8.7	25	61		5.5	12
(50)				110	215	310	80	160	230	52	102	80	25	122	100					81			

- For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
- Long Type is available in dr dimensions in ( ) only.

■ Features of Dowel Hole Type

– By the dowel holes provided on the mounting interface surface, locating work using the side surface as datum can be eliminated. (See example on right)
– Machining work can be reduced for the top plate to be mounted on the block.

dr	Dowel Hole Dimensions P	ℓ_2	C	E	Basic Load Rating C (Dynamic) N Single	Double	Long	Co (Static) N Single	Double	Long	Mass(g) Single	Double	Long
10	4	5	5	—	372	588	—	549	1100	—	92	180	—
12				—	412	657	—	598	1200	—	102	205	—
13				—	510	813	—	784	1570	—	120	240	—
16				88	775	1230	1230	1180	2350	2350	220	400	527
20	5	(5)	6	100	882	1400	1400	1370	2740	2740	255	570	682
25		6		138	980	1560	1560	1570	3140	3140	600	1200	1586
30				150	1570	2490	2490	2740	5490	5490	735	1480	1960
35				170	1670	2650	2650	3140	6270	6270	1100	2200	2974
40	6	7	7	190	2160	3430	3430	4020	8040	8040	1590	3200	4285
50				230	3820	6080	6080	7940	15900	15900	3340	6700	8620

- ℓ2 of LHBBLN20 is 5.

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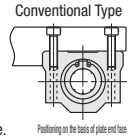
Order Example

Part Number
LHBBN10
LHBBWN20
LHBBWN20L (L Type Greased)
LHBBWN20G (G Type Greased)
LHBBWN20H (H Type Greased)

Alternative grease types available.

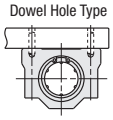
– Installation Example –

Conventional Type



Positioning on the basis of plate end face

Dowel Hole Type



Positioning with Dowel Hole

Linear Bushing with Pillow Blocks

— Wide Block, Single / Medium Type —

■ For features of dowel hole type, see below.

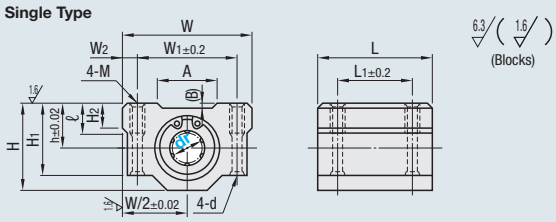
■ Single Type

RoHS

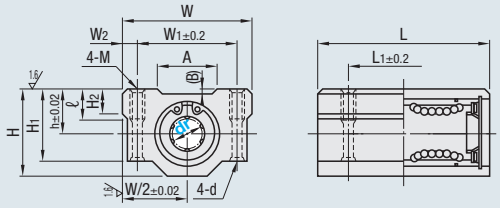
■ Medium Type

Type		Linear Bushings		Housing		Ambient Operating Temp.
Single	Medium	P.53	P.55	Material	Surface Treatment	
		Single	Middle			
LHBB ★ ✓	LHBBD ✓	LMU	LMUD	Aluminum Alloy	Clear Anodizing	-20~80°C
LHBBF ✓	—	LMUF	—			-20~110°C
SLHBB	—	SLMU	—			-20~80°C
SLHBBF	—	SLMUS	—			-20~110°C

Single Type



Medium Type



■ Features of Medium Type

Body length is approximately 1.4 times of single type. Allowable moment is approximately 4.3 times. Suitable where there is no enough space for double type.

ⓘ For ball row details, see **P.53**

ⓘ The datum surface is located on the other side of product ID label.

ⓘ Allowable Static Moments: see **P.53**, **P.55**

dr	Tolerance		L		L_1		h	H	H_1	H_2	W	W_1	W_2	M	d	ℓ	A	(B)
	Single	Middle	Single	Middle	Single	Middle												
(5)	0 -0.008	—	18	—	12	—	7	14	11	—	22	16	3	M3	—	—	—	—
6	0 -0.009	0 -0.010	25	35	15	24	9	18	15	6	30	20	5	M4	3.4	8	12	0.4
8			30	43	18	28	11	22	18		34	24					16	
10			35	53	21	34	13	26	21	8	40	28	6	M5	4.3	12	15.5	
12			36		26	38	15	28	24		42	30.5	5.75				17.5	
13			39	54				30	24.5		44	33	5.5				19	0.85
16			44	63	34	48	19	38.5	32.5	9	50	36	7				19.8	
20	0 -0.010	0 -0.012	50	73	40	56	21	41	35	11	54	40		M6	5.2		21	0.5
25			67	93	50	66	26	51.5	42	12	76	54	11	M8	7	18	36	1
30			72	100	58	70	30	59.5	49	15	78	58	10				39.9	0.75
(35)	0 -0.012	—	80	—	60	—	34	68	54	18	90	70					53	1.5
(40)			90		60		40	78	62	20	102	80	11	M10	8.7	25	61	
(50)			110		80		52	102	80	25	122	100					81	

ⓘ For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
ⓘ dr5 appearance will be different from the drawings above.
ⓘ dr( ) are available in Single Type only.

dr	Basic Load Rating				Mass(g)	
	C (Dynamic) N		Co (Static) N			
	Single	Middle	Single	Middle	Single	Middle
5	167	—	206	—	14	—
6	206	226	265	310	34	48
8	265	310	380	452	52	78
10	372	508	549	718	92	142
12	412	634	598	814	102	144
13	510	640	784	826	120	172
16	775	1164	1180	1448	220	323
20	882	1554	1370	2068	255	382
25	980	1725	1570	3068	600	866
30	1570	2440	2740	3974	735	1061
35	1670	—	3140	—	1100	—
40	2160	—	4020	—	1590	—
50	3820	—	7940	—	3340	—

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Order Example

Part Number	
LHBB12	
LHBBD16	
LHBB12L	(L Type Greased)
LHBBD16G	(G Type Greased)
LHBBD20H	(H Type Greased)

⊗ Alternative grease types available.

Linear Bushing with Pillow Blocks

– Wide Block Double / Medium Long / Long –

■ For features of dowel hole type, see below.

■ Double Type

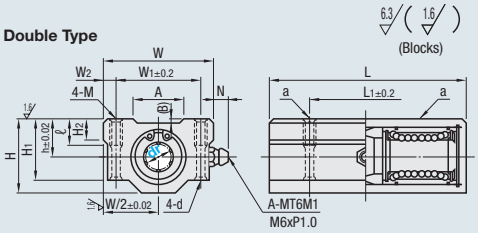
RoHS

■ Medium Long Type

■ Long Type

Type			Linear Bushings	Housing		Ambient Operating Temp.
Single	Medium Long	Long	P.53	Material	Surface Treatment	
LHBBW ★ ✓	LHBBS	LHBBL ★ ✓	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C
LHBBWF ✓	—	—	LMUF			-20~110°C
SLHBBW	—	—	SLMU			-20~80°C
SLHBBWF	—	—	SLMUS			-20~110°C

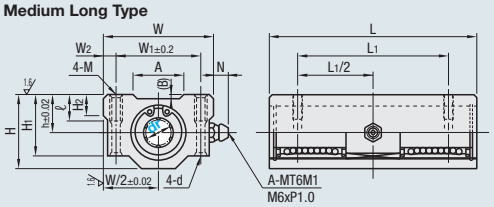
Double Type



■ Features of Double Type

Body length is approximately 1.9 times of the type. Allowable moment is approximately 6 times.

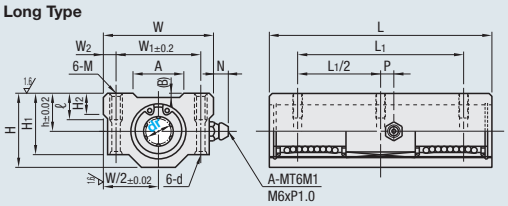
Medium Long Type



■ Features of Medium Long Type

Body length is approximately 2.2 times of the single type. Allowable moment is approximately 10 times. Suitable where there is not enough space for a long type.

Long Type



■ Features of Long Type

Body length is approximately 2.7 times of the single type. Allowable moment is approximately 21 times.

- For ball row details, see **P.53**
- The datum surface is located on the other side of product ID label.
- Allowable Static Moments: see **P.53**, **P.61**
- There will be dowel holes on "a" locations for dr50.

dr	Tolerance Double	Tolerance Medium Long	Tolerance Long	L Double	L Medium Long	L Long	L1 Double	L1 Medium Long	L1 Long	h	H	H1	H2	W	W1	W2	M	d	ℓ	A	(B)	N	P
(5)	0 -0.008	—	—	33	—	—	25	—	—	7	14	11	—	22	16	3	M3	—	—	—	—	—	—
(6)	0 -0.010			48			36			9	18	15	6	30	20	5	M4	3.4	8	12	0.4	7.5	
(8)				58			42			11	22	18		34	24					16			
10			0 -0.012	68		93	46		70	13	26	21	8	40	28	6	M5	4.3	12	15.5			7
12			0 -0.015	70		96	50		72	15	28	24		42	30.5	5.75				17.5		7	
13				75		103			78		30	24.5		44	33	5.5				19			
*16		0 -0.015		85	100	118	60	74	88	19	38.5	32.5	9	50	36	7				19.8	0.85	6.5	
*20	0 -0.012	0 -0.018	0 -0.018	96	115	134	70	84	100	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	8
*25				130	160	185	100	118	138	26	51.5	42	12	76	54	11	M8	7	18	36	1	4.5	9
*30				140	170	200	110	130	150	30	59.5	49	15	78	58	10				39.9	0.75	5.5	
(35)	0 -0.015	—	—	155	—	—	120	—	—	34	68	54	18	90	70					53	1.5	6	—
(40)				175			140			40	78	62	20	102	80	11	M10	8.7	25	61		5.5	
(50)				215			160			52	102	80	25	122	100					81			

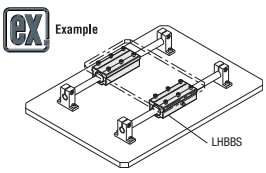
- For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
- dr () is only available in Double Type, only sizes with * are available for Medium Long Type.

Order Example

Part Number	
LHBBW12	
LHBBL16	
LHBBW12L	(L Type Greased)
LHBBW16G	(G Type Greased)
LHBBL20H	(H Type Greased)

Alternative grease types available.

Example



Centering process and assembly labor cost can be reduced by using 1 long type or 1 medium long type, instead of 2 single types.

dr	Basic Load Rating C (Dynamic) N Double	C Medium Long	C Long	Co (Static) N Double	Co Medium Long	Co Long	Mass(g) Double	Mass Medium Long	Mass Long
5	263	—	—	412	—	—	27	—	—
6	324	—	—	529	—	—	63	—	—
8	431	—	—	784	—	—	102	—	—
10	588	—	588	1100	—	1100	180	—	241
12	657	—	657	1200	—	1200	205	—	289
13	813	—	813	1570	—	1570	240	—	324
16	1230	1230	1230	2350	2350	2350	400	447	527
20	1400	1400	1400	2740	2740	2740	570	588	682
25	1560	1560	1560	3140	3140	3140	1200	1397	1586
30	2490	2490	2490	5490	5490	5490	1480	1693	1960
35	2650	—	—	6270	—	—	2200	—	—
40	3430	—	—	8040	—	—	3200	—	—
50	6080	—	—	15900	—	—	6700	—	—

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Linear Bushings and Block with Clamp Lever

— Tall Block Single / Double with Right / Left Clamp Lever —

■ For features of the clamp lever type, see below.

■ **Single**

RoHS

– Right Lever Type

– Left Lever Type

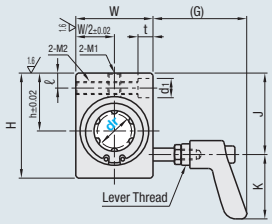
■ **Double**

– Right Lever Type

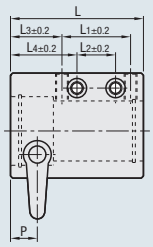
– Left Lever Type

Type				Linear Bushings	Housing		Collar / Thread	Clamp Used Lever	Lever		Lever Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type			Material	Surface Treatment	Material		Material	Surface Treatment	Material	
Single	Double	Single	Double	P.53								
LHSSC	LHSSWC	LHSLC	LHSLWC	LMU	Aluminum Alloy	Clear Anodizing	304 Stainless Steel	CLFSC	Zinc Diecast	Baked Paint Finish	303 Stainless Steel	-20~80°C

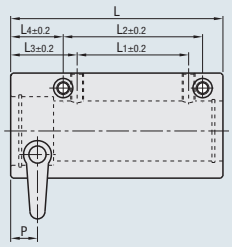
Right Lever Type



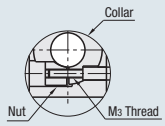
Single



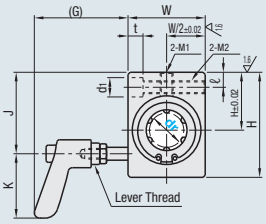
Double



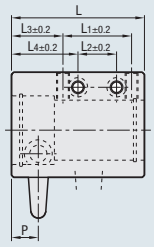
6.3 (1.6)
(Blocks)



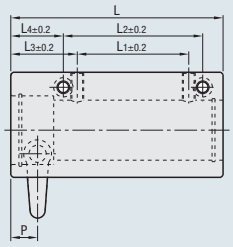
Left Lever Type

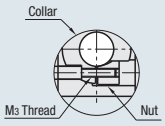


Single



Double





The Linear Shaft is clamped by the internal nut as the lever is rotated.

For ball row details, see **P.53**

The datum surface is located on the other side of product ID label.

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Part Number				L		L_1		L_2		L_3		L_4		h	W	H	(G)	J	K	P	ℓ	M_1 (Effective Length)	M_2 (Effective Length)	M_3	$d_1$xt	Basic Load Rating				Mass(g)	
Type	dr	Tolerance		Single	Double	Single	Double	Single	Double	Single	Double	Single	Double													C (Dynamic) N		Co (Static) N		Single	Double
		Single	Double																							Single	Double	Single	Double		
LHSSC LHSLC LHSSWC LHSLWC	16	0 -0.009	0 -0.010	62	99	32	52	18	65	24	31	31	24.5	27	36	49	43.7	38	30	12.5	7	M6 (13)	M6 (29)	M4	9x7 (For M5 Bolt)	775	1230	1180	2350	347	526
	20	0 -0.010	0 -0.012	67	109	36	58		70	23	33	32	27	31	42	54	40.7	44	30		8	M8 (15)	M8 (34)		11x8 (For M6 Screws)	882	1400	1370	2740	438	686
	25			86	145	42	80	22	100	30.5	41	40.5	31	37	52	65	45.7	53.5	30	13.5	9	M10 (17)	M10 (42)	M5	14x10	980	1560	1570	3140	841	1387
	30			91	155	44	90		110	32		43		40	58	71	42.7	59	30			M10 (17.5)	M10 (48)		(For M8 Screws)	1570	2490	2740	5490	1015	1689

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

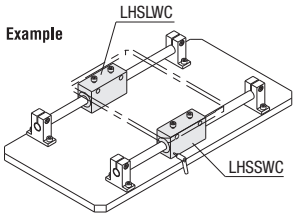
Make certain that the screws do not interfere with the bushing as M_1 are through holes.

Order Example

Part Number	
LHSSC16	
LHSSC16L	(L Type Greased)
LHSSC16G	(G Type Greased)
LHSSC16H	(H Type Greased)

Alternative grease types available.

Example



■ **Features of Clamp Lever Type**

– Can be clamped easily at any desired position.

– Can reduce parts count and assembly steps, and costs.

■ **Maximum Thrust Load P.72**

■ **Precautions for Use**

– For installation, loosen the lever until the nut does not interfere with the shaft, then insert the shaft.

– Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.

– Do not use as safety stoppers.

Linear Bushings and Block with Clamp Lever

— Wide Block Single / Double with Right / Left Clamp Lever —

■ For features of the clamp lever type, see below.

■ **Single**

RoHS

– Right Lever Type

– Left Lever Type

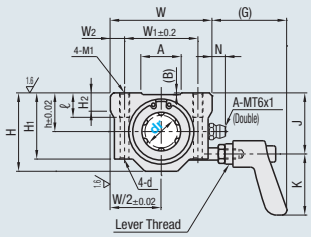
■ **Double**

– Right Lever Type

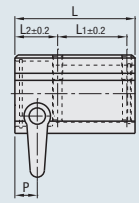
– Left Lever Type

Type				Linear Bushings	Housing		Collar / Thread	Clamp Used Lever	Lever		Lever Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type										
Single	Double	Single	Double	P.53	Material	Surface Treatment	Material		Material	Surface Treatment	Material	
LHBBC	LHBBWC	LHBLC	LHBLWC	LMU	Aluminum Alloy	Clear Anodizing	304 Stainless Steel	CLFSC	Zinc Diecast	Baked Paint Finish	303 Stainless Steel	-20~80°C

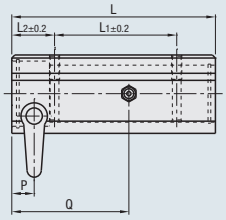
Right Lever Type



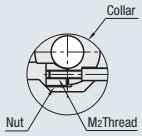
Single



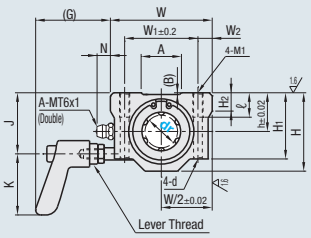
Double



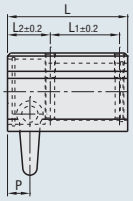
6.3 (1.6)
(Blocks)



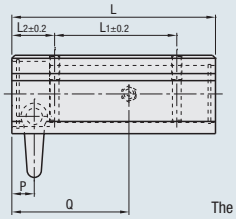
Left Lever Type

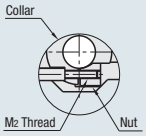


Single



Double





The Linear Shaft is clamped by the internal nut as the lever is rotated.

For ball row details, see **P.53**

The datum surface is located on the other side of product ID label.

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Part Number				L		L_1		L_2		h	H	H_1	H_2	W	W_1	W_2	M_1	M_2	d	ℓ	A	(B)	(G)	J	K	P	N*	Q*	Basic Load Rating				Mass(g)	
Type	dr	Tolerance																											C (Dynamic) N		Co (Static) N			
		Single	Double	Single	Double	Single	Double	Single	Double																				Single	Double	Single	Double	Single	Double
LHBBC LHBLC LHBWC LHBLWC	16	0 -0.009	0 -0.010	59	100	34	60	21	21	19	38.5	32.5	9	50	36	7	M5	M4	4.3	12	19.8	0.85	36.7	30	30	11	6.5	57.5	775	1230	1180	2350	358	538
	20	0 -0.010	0 -0.012	69	111	40	70	24	23	21	41	35	11	54	40		M6		5.2		21	0.5	34.7	34		11.5	7.5	63	882	1400	1370	2740	420	725
	25			85	148	50	100	26.5	27	26	51.5	42	12	76	54	11	M8	M5	7	18	36	1	33.7	42.5		13.5	4.5	83	980	1560	1570	3140	865	1465
	30			90	158	58	110	25	27	30	59.5	49	15	78	58	10					39.9	0.75	32.7	49			5.5	88	1570	2490	2740	5490	1039	1784

* Only available in Double Type.

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.

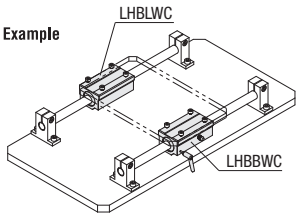
Make certain that the screws do not interfere with the bushing as M_1 are through holes.

Order Example

Part Number	
LHBBC16	
LHBLC20L	(L Type Greased)
LHBBC16G	(G Type Greased)

Alternative grease types available.

Example



■ **Features of Clamp Lever Type**

– Can be clamped easily at any desired position.

– Can reduce parts count and assembly steps, and costs.

■ **Maximum Thrust Load P.72**

■ **Precautions for Use**

– For installation, loosen the lever until the nut does not interfere with the shaft, then insert the shaft.

– Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.

– Do not use as safety stoppers.

Flanged Linear Bushing with Clamp Lever

– Flanged Single / Double with Right / Left Clamp Lever –

■ For features of the clamp lever type, see below.

RoHS

Type				Outer Cylinder			Steel Balls	Retainer	Collar Holder		Collar / Lever Screw		Lever		Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type		Material	Hardness	Surface Treatment	Material	Material	Material	Surface Treatment	Material	Surface Treatment	Material	Surface Treatment	Material	
Single	Double	Single	Double													
LHRC	LHRCW	LHRLC	LHRLCW	52100 Bearing Steel	58HRC~	—	52100 Bearing Steel	Plastic (Duracon M90 Equivalent)	Aluminum Alloy	Clear Anodized	1045 Carbon Steel	Electroless Nickel Plating	Zinc Diecast	Baked Paint Finish	304 Stainless Steel	-20~80℃
LHRCM	LHRCWM	LHRLCM	LHRLCWM			Electroless Nickel Plating	440C Stainless Steel Equivalent									

■ **Single**

– Right Lever Type

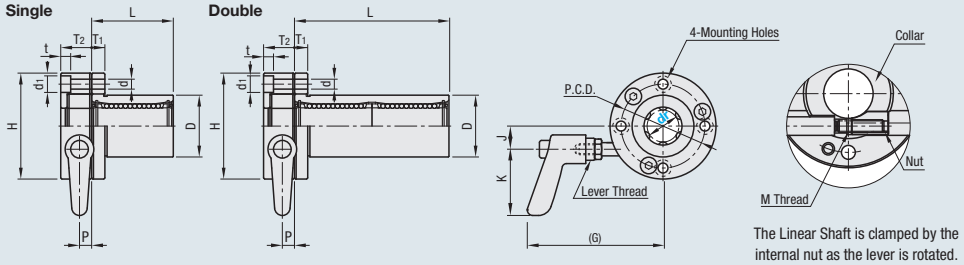
– Left Lever Type

■ **Double**

– Right Lever Type

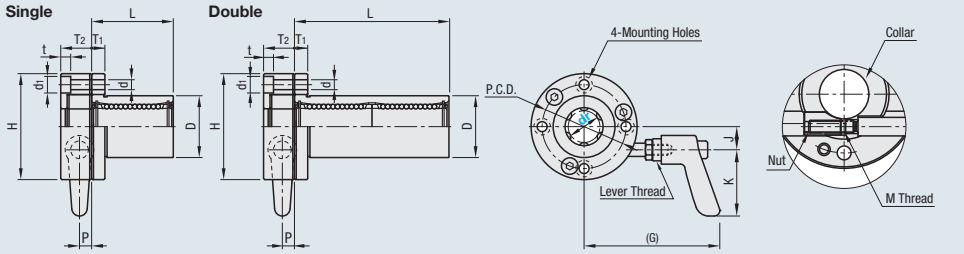
– Left Lever Type

Right Lever Type



The Linear Shaft is clamped by the internal nut as the lever is rotated.

Left Lever Type



For ball row details, see **P.53**

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Part Number				D Tolerance			L				H	T1	T2	d	d1	t	P.C.D.	(G)	J	K	P	M	Eccentricity		*Perpendicularity	
Type	dr	Tolerance			Surface Treatment No	Surface Treatment Yes	Single		Double																	
		Single	Double					Tolerance		Tolerance													Single	Double	Single	Double
Single Double (Right Lever Type) LHRC LHRCW LHRCM LHRCWM (Left Lever Type) LHRLC LHRLCW LHRLCM LHRLCWM	16	0 -0.009	0 -0.010	28	0 -0.016	0 -0.021	37	±0.3	70	±0.3	48	6	14	4.5	7.5	4.5	38	(62)	10.5	30	5.5	4	0.012	0.015	0.012	0.015
	20	0 -0.010	0 -0.012	32	0 -0.019	0 -0.025	42		80		54	8		5.5	9	5.5	43	(63.2)	12.5				0.015	0.020	0.015	0.020
	25			40			59		112		62			6.6	11	6.1	51	(70.7)	16			5				
	30			45			64		123		74	10					60	(73.5)	18.5							

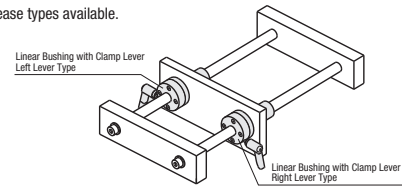
For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**.
* Perpendicularity of D part to flange mounting surface

Order Example

Part Number	
LHRC16	
LHRC16L	(L Type Greased)
LHRC16G	(G Type Greased)
LHRC16H	(H Type Greased)

Alternative grease types available.

Example



■ Features of Clamp Lever Type

– Can be clamped easily at any desired position.

– Can reduce parts count and assembly steps, and costs.

■ Precautions for Use

– For installation, loosen the lever until the nut does not interfere with the shaft, then insert the shaft.

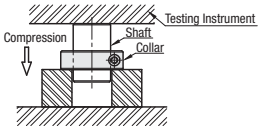
– Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.

– Do not use as safety stoppers.

■ Max. Thrust Load Test Method

– The collar is tightened to torque value(s) shown in the chart, then compressive load is applied with the tester. The compressive load where the shaft begins to move is defined as the Max. Thrust Load.

*Max. thrust load of greased linear bushings was tested.



dr	Max. Thrust Load N		Basic Load Rating				Mass(g)	
	Greased		Single		Double		Single	Double
		Tightening Torque (Nm)	C (Dynamic) N	Co (Static) N	C (Dynamic) N	Co (Static) N		
16	250	1.5	775	1180	1230	2350	217	289
20	250	1.5	882	1370	1400	2740	324	406
25	250	3	980	1570	1560	3140	553	757
30	500	3	1570	2740	2490	5490	683	901

Maximum thrust load is a reference.

Linear Rotary Stroke Bushings / Flanged Linear Rotary Stroke Bushings

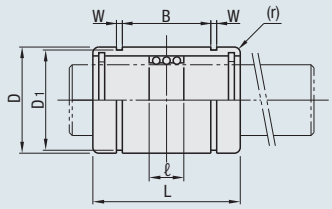
– Single / Double –

■ Linear Rotary Stroke Bushings

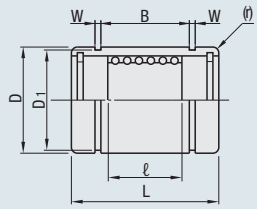
RoHS

Type	Type	Outer Cylinder Material	Outer Cylinder Hardness	Steel Balls Material	Retainer Material	Ambient Operating Temp
Single	LBUS	52100 Bearing Steel	58HRC~	52100 Bearing Steel	5052 Aluminum Alloy	-20~110°C
Double	LBUW					
Single	SLBUS	440C Stainless Steel Equivalent	56HRC~	440C Stainless Steel Equivalent		-20~120°C
Double	SLBUW					

Single



Double



*Retaining Rings

LBUS / LBUW

Material: W1-8 Tool Steel
Surface Treatment: Black Oxide

SLBUS / SLBUW

Material: 301 Stainless Steel

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Part Number Type	dr	Tolerance	Maximum Stroke Single	Maximum Stroke Double	of Ball Rows Single	of Ball Rows Double	ℓ Single	ℓ Double	D	D Tolerance	L	L Tolerance	B	B Tolerance	W	D_1	(r)	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	Co (Static) N Single	Co (Static) N Double	Mass(g) Single	Mass(g) Double
Single LBUS SLBUS Double LBUW SLBUW	5	0 -0.008	13	6	3	6	5.9	9.4	10	0 -0.009	15	0 -0.12	8	0 -0.4	1.1	9.6	0.4	131	209	106	212	4	5
	6	0 -0.009	15	7			8.3	12.3	12	0 -0.011	19	0 -0.2	11.3			11.5		210	333	164	328	8	8
	8		24	8			8.8	16.8	15		24		15.3			14.3		323	512	278	556	15	17
	10		30	8			10.8	21.8	19		29		19.4		1.3	18		499	793	408	815	30	33
	12		32	8			10.4	22.4	21	0 -0.013	30		20.4			20	0.8	722	1146	579	1157	32	36
	13		34	10			11.4	23.4	23		32		20.4			22		773	1226	634	1268	45	49
	16		40	16			12.8	24.8	28		37		23.3		1.6	27		1330	2112	1029	2058	72	79
	20	0 -0.010	46	28			14.8	23.8	32	0 -0.016	42		27.3			30.5		1609	2554	1517	3035	94	102

For linear bushings, hardened shafts with g6 tolerance are recommended. Enter web code **#SFJ**. * Perpendicularity of D part to flange mounting surface

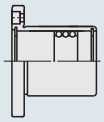
■ Flange Type Height-Adjusting Spacers can be select from **#LCSC**

■ Flanged Linear Rotary Stroke Bushings

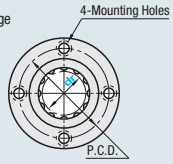
RoHS

Type	Round Flange	Square Flange	Compact Flange	Outer Cylinder Material	Outer Cylinder Hardness	Steel balls Material	Retainer Material	Ambient Operating Temp
Single	LBHR	LBHS	LBHC	52100 Bearing Steel	58HRC~	52100 Bearing Steel	5052 Aluminum Alloy	-20~110°C
Double	LBHRW	LBHSW	LBHCW					

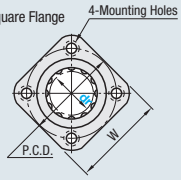
Single Type



Round Flange



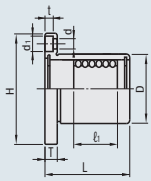
Square Flange



*Retaining Rings

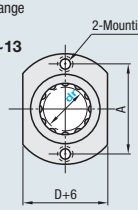
Material: W1-8 Tool Steel
Surface Treatment: Black Oxide

Double Type

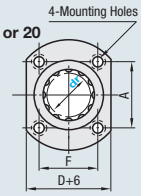


Compact Flange

dr=6~13



dr=16 or 20



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dr	Tolerance	Maximum Stroke Single	Maximum Stroke Double	of Ball Rows Single	of Ball Rows Double	ℓ_1 Single	ℓ_1 Double	D	D Tolerance	L	L Tolerance	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	Co (Static) N Single	Co (Static) N Double
6	0 -0.009	15	7	3	6	8.3	12.3	12	0 -0.013	19	±0.3	28	5	3.5	6	3.1	20	22	—	20	0.012	0.012	210	333	164	328
8		24	8			8.8	16.8	15		24		32					24	25		24			323	512	278	556
10		30	8			10.8	21.8	19	0 -0.016	29		40	6	4.5	7.5	4.1	29	30		29			499	793	408	815
12		32	8			10.4	22.4	21		30		42					32	32		32			722	1146	579	1157
13		34	10			11.4	23.4	23		32		43					33	34		33			773	1226	634	1268
16		40	16			12.8	24.8	28		37		48					38	37	22	31			1330	2112	1029	2058
20	0 -0.010	46	28			14.8	23.8	32	0 -0.019	42		54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	1609	2554	1517	3035

* Perpendicularity of D part to flange mounting surface

■ Single

Part Number Type	dr	Mass(g) Round	Mass(g) Square	Mass(g) Compact
LBHR LBHS LBHC	6	23	17	20
	8	41	33	37
	10	71	51	63
	12	67	48	59
	13	87	71	80
	16	119	103	111
	20	176	141	163

■ Double

Part Number Type	dr	Mass(g) Round	Mass(g) Square	Mass(g) Compact
LBHRW LBHSW LBHCW	6	24	18	21
	8	43	35	39
	10	74	54	66
	12	71	52	63
	13	91	75	84
	16	126	110	118
	20	184	149	171

■ Features

– Motion mechanism utilizing rolling balls, capable of linear and rotary motion.
– The bearing balls and the rolling surface are in point contact relationship enabling low friction rolling motion.
– Compatible with linear bushings, and load is evenly distributed.
– O.D. tolerance g6 shafts can be used with the linear ball bushings. **#SFJ** When using preloaded, O.D. tolerance h5 shafts are recommended.

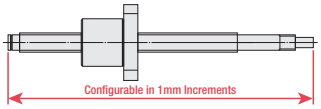
■ Precautions for Use

– Since the balls do not recirculate, its stroke capability is finite.

Order Example

Part Number
LBHR10

Screw Shaft Length	Screw Shaft Machined	Support Units



Screw Shaft Dia. (mm)		6	8			10			12				14	15			20			25				28	32	
Lead (mm)		1	1	2	4	2	4	10	2	4	5	10	5	5	10	20	5	10	20	5	10	20	25	6	10	32
Max. Length (mm)		205	255	400	380	585	600	585	445	800	450	800	800	1200			2000			2000		1500	2000	2000	2000	
Rolled Ball Screw				•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•		•	•	•	•
Precision Ground Ball Screw		•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•			
Accuracy Grade (C3,C5,C7,C10)		C3	C3	ALL	C10	C3 C5	C5 C7 C10	C10	C3 C5 C7	C5 C7 C10	ALL	C5 C7 C10	C10	ALL	C5 C7 C10		C5 C7 C10			C5 C7 C10			C10	C10	C10	
Support Unit (size)	Rolled Ball Screw	—	6			8, 8S			10,10S					12			15			20				20	25	
	Precision Ground Screw	6	8			8, 8S	10S	10	8 (10 for C3)	10S (8 for C3)			—	12			15			20				—	—	

EX: Accuracy vs. Price

Type	Ball Screw Size (mm)	Max. Length Available (mm)	Accuracy Grade	Axial Clearance (mm)	Price Level
Rolled	15 x 5	1200	C7	0.03 or Less	$
		1200	C10	0.10 or Less	$
Precision Ground	15 x 5	590	C3	0 (Preload)	$$$$
		1095	C5	0.005 or Less	$$$
		1095	C7	0.030 or Less	$$$

Ball Screws

#BC08
Rolled Ball Screw – Compact Nuts, Shaft Dia. 8, Lead 2

#BR08
Rolled Ball Screws – Shaft Dia. 8, Lead 2 or 4

#BC10
Rolled Ball Screw – Compact Nut, Shaft Dia. 10, Lead 4

#BR10
Rolled Ball Screw – Shaft Dia. 10, Lead 2, 4 or 10

#BC12
Rolled Ball Screw – Compact Nut, Shaft Dia. 12, Lead 4

#BR12
Rolled Ball Screw – Shaft Dia. 12 or 14, Lead 4, 5 or 10

#BC15
Rolled Ball Screw – Compact Nut, Shaft Dia. 15, Lead 5, 10

#BR15
Rolled Ball Screw – Shaft Dia. 15, Lead 5, 10 or 20

#BC20 ★
Rolled Ball Screw – Compact Nut, Shaft Dia. 20, Lead 5, 10

#BR20
Rolled Ball Screw – Shaft Dia. 20, Lead 5, 10 or 20

#BC25
Rolled Ball Screw – Compact Nut, Shaft Dia. 25, Lead 5

#BR25
Rolled Ball Screws – Shaft Dia. 25, Lead 5, 10 or 25, C7 or C10

#BR28
Rolled Ball Screw – Shaft Dia. 28 or 32, Lead 6, 10 or 32

#BSBR
Rolled Ball Screw – Shaft Dia. 15, 20 or 25, Lead 5 or 10

#FBSS
Rolled Ball Screws – Shaft Ends Configurable, Standard Nuts

#BSS0
Precision Ball Screws – Shaft Dia. 6 or 8, Lead 1 or 2

#BS10
Precision Ball Screws – Shaft Dia. 10, Lead 2, 4 or 10

#BS12
Precision Ball Screws – Shaft Dia. 12, Lead 2, 4, 5 or 10

#BS15 ★
Precision Ball Screws – Shaft Dia. 15, Lead 5, 10, 20 or 40

#BS20
Precision Ball Screws – Shaft Dia. 20, Lead 5, 10, 20

#BS25
Precision Ball Screws – Shaft Dia. 25, Lead 5, 10, 20

#BNFA ★
Ball Screw Nut Brackets

NEW $
#CC08
Shaft Dia. 8, Lead 2

NEW $
#CC12
Shaft Dia. 12, Lead 5/10
DIN69051 Compliant

NEW $
#CC15
Shaft Dia. 15, Lead 5/10/20
DIN69051 Compliant

NEW $
#CC20
Shaft Dia. 20, Lead 5/10/20
DIN69051 Compliant

NEW $
#CC25
Shaft Dia. 25, Lead 5/10/25
DIN69051 Compliant

NEW $
#CS08
Shaft Dia. 8, Lead 2

NEW $
#CS12
Shaft Dia. 12, Lead 2/5/10
DIN69051 Compliant

NEW $
#CS15
Shaft Dia. 15, Lead 5/10/20
DIN69051 Compliant

NEW $
#CS20
Shaft Dia. 20, Lead 5/10/20
DIN69051 Compliant

NEW $
#CS25
Shaft Dia. 25, Lead 5/10/25
DIN69051 Compliant

NEW $
#CBS
Square, Fixed Side Standard

NEW $
#CBU
Square, Support Side Standard

NEW $
#CBN
Square, Support Side, Mounting Hole Narrow Pitch

NEW $
#CBR
Round, Fixed Side Standard

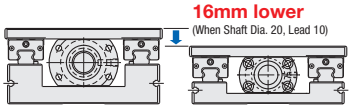
NEW $
#CB2
Round, Support Side Standard

Rolled Ball Screws / Precision Ball Screws

– Features –

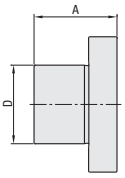
■ Features of MISUMI Ball Screws

Compact Ball Nuts are reduced in volume up to 40%



Lower profile linear units can be designed

■ Nut Size Comparison

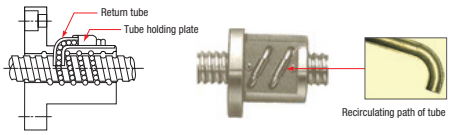


Screw Shaft Outer Diameter	Lead	D Dimensions		A Dimensions	
		Standard Ball Nut	Compact Ball Nut	Standard Ball Nut	Compact Ball Nut
8	2	20	16	28	22.5
10	4	26	22	34	31
12	4	30	24	35	31
15	5	34	31	40	33
	10	34	31	52	48
20	5	40	36	40	38
	10	52	36	57	58.5
25	5	43	42	40	35

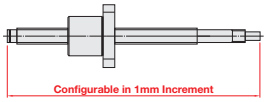
Type	Shape	Features
Standard Nut		Most common type
Compact Nut		Smaller by up to 40% than conventional Nuts
Block Nut		No need for a Nut Bracket for mounting the table directly

■ Number of Circuits

This term refers to the recirculation system of the ball screw. The term "No. of Turns" is actually a "turn" in a ball nut, which is equal to 1 line (or one circuit). That is one complete rotation around the ball screw (from the end of their load-carrying path back to the beginning to complete the circuit). Ball nuts may have one or more lines (the more lines the higher rigidity of the design). In the example BSSR0802-270, this is a 3.5 turn, 1 line. This means it takes one ball 3.5 turns in the chamber to complete 1 line (or circuit).

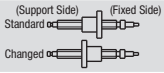


■ The Screw Shaft Length is Configurable in 1mm Increments



■ Alterations for Shaft Ends are Available

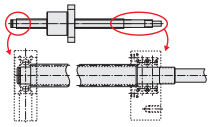
<Alterations on Support Side Shaft End>

Alterations		Code
No Machining on Support Side Shaft End		NC
Ball Nut Orientation Reversed		RLC
No Retaining Ring Groove on Support Side Shaft End		RNC
Change Support Side Shaft End Machining		GC
Change Support Side Shaft End Length		FC

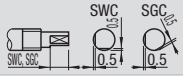
*For machining details, refer to each product page.

■ Machined Shaft Ends

Both support and fixed sides are machined and delivered so that the screw-end dimensions are fit to the suitable Support Units.



<Alterations on Fixed Side Shaft End>

Alterations		Code
Wrench Flats on Fixed Side		SZC
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.16**		KC
Keyway on Fixed Side Shaft End		KLC
Flat Machined on Fixed Side Shaft End		SC
2 Flats on Fixed Side Shaft End		SWC SGC

■ Various rolled and precision products are available for various purposes

— Rolled Ball Screws Lineup —

Type	Example	Shaft Diameter	Lead	Axial Clearance (mm)	Shaft Length (mm) MIN	Shaft Length (mm) MAX
Standard Nut Accuracy Grade C7	BSST	8	2	0.03 or Less	100	380
		10	4		150	585
		12	4		150	795
		15	5		150	1200
			10		200	1200
			20		200	1200
		20	5		200	1200
			10	0.05 or Less	250	2000
			20	0.03 or Less	250	2000
		25	5		200	2000
			10	0.07 or Less	300	2000
Standard Nut Accuracy Grade C10	BSSZ BSSR	8	2	0.05 or Less	100	400
			4		100	380
		10	2		150	585
			4		150	600
			10		150	585
		12	4		150	800
			10	0.10 or Less	150	800
		14	5		150	800
		15	5		150	1200
			10		200	1200
			20		200	1200
		20	5		200	2000
			10	0.15 or Less	250	2000
			20	0.10 or Less	250	2000
		25	5		200	2000
			10	0.20 or Less	300	2000
			25	0.12 or Less	300	2000
		28	6	0.10 or Less	250	2000
		32	10	0.20 or Less	300	2000
			32	0.15 or Less	300	2000
Compact Nut Accuracy Grade C10	BSSC	8	2	0.05 or Less	100	400
		10	4		150	600
		12	4		150	800
		15	5		150	1200
			10	0.10 or Less	200	1200
		20	5		200	2000
			10	0.15 or Less	250	2000
		25	5	0.10 or Less	200	2000
Block Nut Accuracy Grade C10	BSBR	15	5	0.10 or Less	150	1200
		20			200	1200
		25			200	1500
		15	10	0.15 or Less	150	1200
		20			200	1200
		25		0.20 or Less	200	1500

— Precision Ball Screws Lineup —

Type	Example	Shaft Diameter	Lead	Axial Clearance (mm)	Shaft Length (mm) MIN	Shaft Length (mm) MAX
Standard Nut Accuracy Grade C3	BSX	6	1	0 (Preloaded)	80	205
		8	1		80	255
			2		100	240
		10	2		100	310
		12	2		150	390
			5		150	440
		15	5		150	590
Standard Nut Accuracy Grade C5	BSS BSL	8	2	0.005 or Less	100	210
		10	2		100	315
			4		150	380
			10		150	450
		12	2		150	445
			4		150	400
			5		150	450
			10		200	600
		15	5		150	1095
			10		200	1095 (895)
			20		230	1095
			40	0.010 or Less	300	1095
		20	5		200	1000
			10		250	1500
			20		250	1500
			40	0.005 or Less	300	1495
		25	5		300	995
			10		300	1500
			20		300	1500
Standard Nut Accuracy Grade C7	BSSE	8	2	0.030 or Less	100	210
		10	2		100	315
			4		150	380
		12	2		150	445
			5		150	450
			10		200	600
		15	5		150	1095
			10		200	1095
			20		230	1095
		20	5		200	1000
			10		250	1500
			20		250	1500
		25	10		300	1500
			20		300	1500

The value in ( ) is for BSL

Rolled Ball Screws / Precision Ball Screws

– Features –

■ Available Greases

Grease type can be changed from the standard type to the following types.
Selecting L or G type allows great reduction of the grease particle dispersion caused by operation.

Part Number	Product Name	Principal Features
L Type	ET-100 (Made by Kyodo Yushi)	Excels in heat resistance, oxidation stability, adhesion and adhesive power. In addition, splash or leakage is little.
G Type	LG2 (Made by NSK Ltd.)	Special grease for linear guides, ball screws and etc. for clean-room use.

Item		Condition	Unit	Measurement Method	L Type	G Type
Grease Performance	Thickener	—	—	—	Aromatic Diurea	Lithium Type
	Base Oil	—	—	—	Ether Synthetic Oil	Mineral Oil + Synthetic Hydrocarbon Oil
	Base Oil Viscosity	40°C	mm^2/s	JIS K2220 5.19	103	30
		100°C			12.8	—
	Worked Penetration	—	—	JIS K2220 5.3	280	207
	Dropping Point	—	°C	JIS K2220 5.4	<260	200
	Evaporation Amount	99°C x 22h	wt%	—	0.15%	1.40%
	Oil Separation Rate	100°C x 24h	wt%	JIS K2220 514	1.2%	0.8%
	Operating Temp.	In Air	°C	—	-40~200	-10~80

■ Available Ball Screws and Grease Types

Type	Precision Grade	Type
Precision Ball Screws	C 5	BSS / BSL
	C 7	BSSE
	C 7	BSST
Rolled Ball Screws	C10	BSSR BSSZ
		BSSRK BSSZK
		BSBR BSBRK

⊗ Not applicable to Precision Ball Screws Precision Grade C3

Order Example

Part Number	–	L	
BSS2010L	–	700	(L Type Greased)
BSS2010G	–	700	(G Type Greased)

ⓘ Please add L, G after the part number of Standard Type when placing an order.

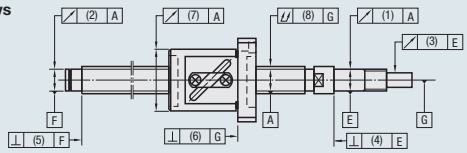
Alterations

Part Number	–	L	–	(FC, MC...etc.)
BSS2010L	–	700	–	RNC

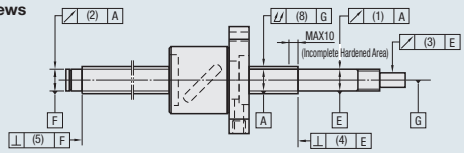
ⓘ Confirm the details of alterations from each page.

■ Mounting Interface Accuracies

Precision Ball Screws



Rolled Ball Screws



Unit: mm

Part Number Type	Screw Shaft Diameter	(1)(2) Runout Tolerance (Max.)	(3) Runout Tolerance (Max.)	(4)(5) Perpendicularity Tolerance(Max.)	(6) Perpendicularity Tolerance(Max.)	(7) Runout Tolerance (Max.)
BSX	6	0.008	0.008	0.004	0.008	0.008
	8					
	10					0.010
	12					
	15	0.009	0.009			0.012
BSS BSL	8	0.011	0.011	0.005	0.010	0.012
	10					
	12					
	15	0.012	0.012		0.011	0.015
	20					
	25	0.013	0.013		0.013	0.019
BSSE BSST	8	0.014	0.014	0.007	0.014	0.020
	10					
	12				0.018	0.030
	15					
	20					
	25	0.020	0.020			
BSSR_ BSSZ_ BSSC_ FBS_ _	8	0.040	0.040	0.010	—	—
	10					
	12					
	14					
	15					
	20					
	25	0.060	0.060			
	28	0.060	0.060	0.010	—	—
	32					
BSBR_	15	0.040	0.040	0.010	—	—
	20					
	25	0.060	0.060			

(1), (2) Radial runout of the thread surface against the shaft support axis. These parameters are affected by "(8) Shaft's total radial runouts" and may be subject to compensation.

(3) Radial runout of drive component interface surface in relation to screw shaft support axis.

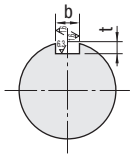
(4), (5) Perpendicularity of shaft's bearing shoulders in relation to screw shaft support axis.

(6) Perpendicularity of ball nut mounting flange surface (datum) in relation to screw shaft axis.

(7) Radial runout of ball nut body outer circumference in relation to screw shaft axis.

(8) Shaft's total radial runouts.

■ Keyway dimension details located at P on fixed side shaft end



Shaft Diameter	b Reference Dim.	b Tolerance (N9)	t Reference Dim.	t Tolerance
6~ 7	2	-0.004 -0.029	1.2	+0.1 0
8~10	3		1.8	
11~12	4	0 -0.03	2.5	
13~17	5		3.0	
18~20	6		3.5	

Unit: mm

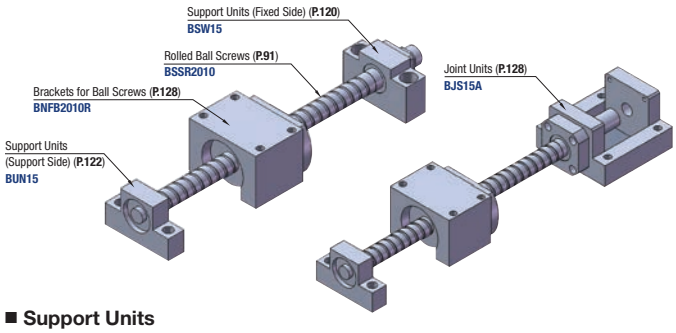
Part Number Type	Screw Shaft Diameter	(8) Runout Tolerance (Max.) Screw Shaft Length ~125	126~200	201~315	316~400	401~500	501~630	631~800	801~1000	1001~1250	1251~1600	1601~2000
BSX	6	0.025	0.035	0.050	—	—	—	—	—	—	—	—
	8											
	10			0.040	0.050	0.065	—	—	—	—	—	—
	12											
	15	—	0.025	0.030	0.040	0.050	0.055	—	—	—	—	—
BSS BSL	8	0.035	0.050	0.065	—	—	—	—	—	—	—	—
	10		0.040	0.055	0.065	0.080	0.090	—	—	—	—	—
	12											
	15	—		0.045	0.055	0.060	0.075	0.090	0.120	0.150	0.190	—
	20											
	25	—	—	0.040	0.045	0.050	0.060	0.070	0.085	0.100	0.130	—
BSSE BSST	8	0.060	0.075	0.100	—	—	—	—	—	—	—	—
	10	0.055	0.065	0.080	0.100	0.120	0.150	—	—	—	—	—
	12											
	15	—	0.060	0.070	0.080	0.095	0.110	0.140	0.170	0.210	0.270	—
	20											
	25	—	—	0.060	0.070	0.080	0.090	0.100	0.130	0.150	0.190	—
BSSR_ BSSZ_ BSSC_ FBS_ _ BSBR_	8	0.100	0.140	0.210	(0.270)	—	—	—	—	—	—	—
	10	—	0.120	0.160	0.210	0.270	0.350	—	—	—	—	—
	12											
	14	—	0.110	0.130	0.160	0.200	0.250	—	—	—	—	—
	15	—	0.110	0.130	0.160	0.200	0.250	0.320	0.420	0.550	0.730	—
	20											
	25	—	—	0.110	0.130	0.160	0.190	0.230	0.300	0.380	0.500	0.690
	28	—	—	0.110	0.130	0.160	0.190	0.230	0.300	0.380	0.500	0.690
	32											

Rolled Ball Screws / Precision Ball Screws

– Features –

■ Combination with Peripherals

– Support Units / Nut Brackets / Joint Units are designed for MISUMI Ball Screws.



d	Standard Type		Economy Type		Raidal Bearing Type		Cost Efficient	
	Allowable Axial Load (N)	Bearing	Allowable Axial Load (N)	Bearing	Allowable Axial Load (N)	Bearing	Allowable Axial Load (N)	Bearing
8	1450	70M8DF/ GMP5	—	—	1300	608ZZCNM	1010	70M8DF/P5
10	2730	7000DF/ GMP5	2730	7000DF/ Standard Class	2300	6000ZZCNM	1910	7000DF/P5
12	3040	7001DF/ GMP5	3040	7001DF/ Standard Class	2600	6001ZZCNM	2120	7001DF/P5
15	3370	7002DF/ GMP5	3370	7002DF/ Standard Class	2900	6002ZZCNM	2350	7002DF/P5
20	8260	7204DF/ GMP5	8260	7204DF/ Standard Class	8100	6204ZZCNM	5780	7204DF/P5
25	9960	7205DF/ GMP5	9960	7205DF/ Standard Class	—	—	—	—

■ Support Units

– Designed for the shaft ends sizes of MISUMI Ball Screws.
– Widest variety of items and prices available in the industry.

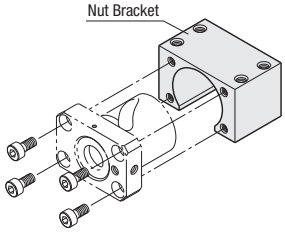
Type		Standard			Compact			Economy			Radial Bearing		
		Type		Features	Type		Features	Type		Features	Type		Features
Fixed Side	Square	Square Standard	BSW BSWN BSWR	Standard Type Angular Contact Bearing Class 5 (P.120)	Square Compact	BSQ BSQM	Angular Contact Bearing Class 0 (P.124) Most compact of Square Type	Square Economy	BSWE BSWEM BSWER	Angular Contact Bearing, Class 0 (P.120) 20% more economical than Standard Type	Square Radial Bearing	BSWZ BSWZM	Radial Bearing used (P.121) 30% more economical than Standard Type
		Square Standard with Dowel Holes	BSWG BSWGN BSWGR	Angular Contact Bearing Class 5 Dowel holes added to Standard Type (P.121)	Square Low Profile	BSV BSVM	Angular Contact Bearing Class 5 (P.124) Lowest height of all Square Types	—			—		
		Square Standard with Damper	BSWD	Angular Contact Bearing Class 5 Urethane damper is glued to Standard Type (P.123)	Square, Narrow Mounting Hole Pitch	BSA BSAM	Angular Contact Bearing Class 5 (P.124) Most compact in width of Square Type	—			—		
	Round	Round Standard	BRW BRWN BRWR	Standard Type Angular Contact Bearing Class 5 (P.122)	—			Round Economy	BRWE BRWEM BRWER	Angular Contact Bearing, Class 0 (P.127) 20% more economical than Standard Type	Round Radial Bearing	BRWZ BRWZM	Radial Bearing used (P.127) 30% more economical than Standard Type
Support Side	Square	Square Standard	BUN BUNM BUNR	Standard Type (P.122)	Square Compact	BUQ BUQM	Most compact of Square Type (P.125)	Square Standard with Retaining Ring	BTN BTNM	Retaining Ring Type (P.122) Prevents the Ball Screw Bearing from falling out			
		—			Square Low Profile	BUV BUVM	Lowest height of all Square Types (P.125)	—					
		Square Standard with Damper	BUND	Urethane damper is glued to Standard Type (P.123)	Square, Narrow Mounting Hole Pitch	BUA BUAM	Most compact in width of Square Type (P.125)	—					
	Round	Round Standard	BUR BURM BURR	Standard Type (P.126)	—			Round Standard with Retaining Ring	BTR BTRM	Retaining Ring Type (P.126) Prevents the Ball Screw Bearing from falling out			

When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with Support Units Fixed Side (**BRW12**) Support Units Support Side (**BUR12**)

*For details of mounting method of a Ball Screw and a Support Unit,refer to **P.76**. *For details of combination of Ball Screws and Support Units, refer to the Ball Screws Product Page.

■ Nut Brackets

– Various sizes are available for the nut sizes of MISUMI Ball Screws.

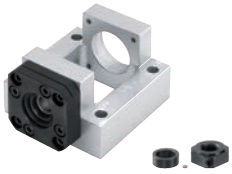


When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with the Nut Bracket (**BNFB1510R**)

*For specification details, refer to **P.128**

■ Joint Units

– The Support Unit and motor locating feature are all-in-one, therefore, the precise shaft centering is possible.
– Many flanges provided by motor manufactures can be used.



When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with the Joint Unit (**BJS12A**)

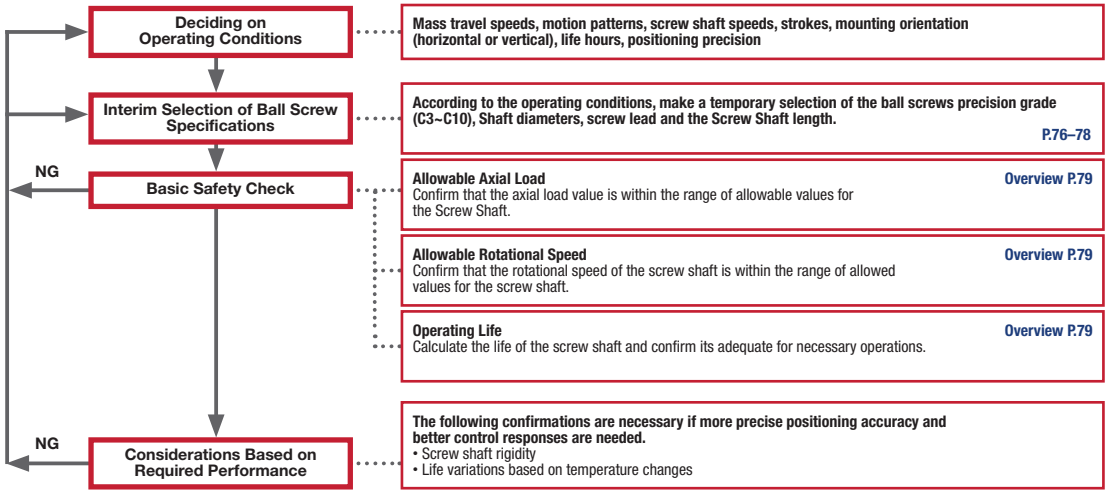
*For specification details, refer to **P.128**

Rolled Ball Screws / Precision Ball Screws

– Selection Process –

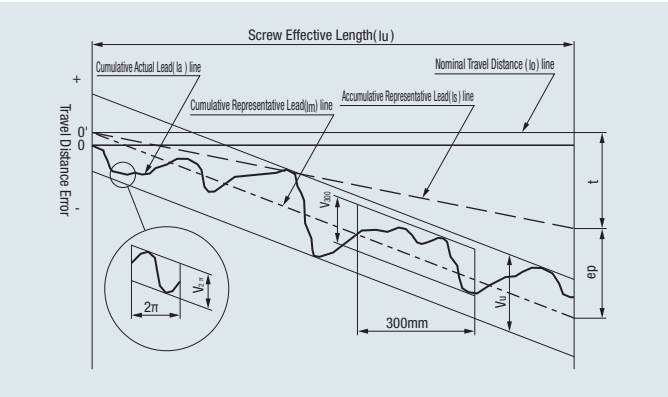
■ Selection of Ball Screws

Refer to the following for the standard Ball Screws selection procedures.



■ Lead Accuracy of Ball Screws

The lead accuracy of the Ball Screws is defined by the JIS Standard Characteristics (ep, Vu, V_{300} and $V_{2\pi}$) In general, confirm the Actual Mean Travel Error for the Ball Screws is within the range of necessary positioning precision. Then select the precision grade for the Ball Screws to be used. Following are definitions and allowable values for each characteristic.



Term	Symbol	Meaning
Actual Mean Travel Error	ep	Difference between Actual Mean Travel and Specified Travel.
Variation	Vu V_{300} $V_{2\pi}$	Maximum difference of the actual travel contained between two lines drawn parallel to the actual mean travel. Defined by the following three parameters: Vu: Maximum value for the effective thread length. V_{300}: Variation for a 300mm span arbitrarily taken from the effective thread length. $V_{2\pi}$: Variation for an arbitrary 1 revolution ($_{2\pi}$rad).
Specified Travel	ls	While the Nominal Travel indicates the nominal travel distance, this is the amount of axial travel distance after compensating possible axis expansion and contraction caused by thermal rise and loads.
Specified Travel Target Value	t	Difference between Specified Travel and Nominal Travel over the effective thread length. This value is predetermined by compensating for possible expansion and contraction caused by thermal conditions and external loads. This is determined by experimental data or experiences.
Actual Travel	la	Actually measured travel distance.
Actual Mean Travel	lm	Straight line representing the trend of actual travel. Straight line obtained by least squares method or other simplified and optimal approximation method from the curve that indicates the actual travel distance.

■ Allowable Value

– Allowable value of Actual Mean Travel Error (±ep) and Variation (Vu) for Positioning Screws (C series)

Unit: μm

Effective Screw Length (mm)		Precision Grade			
		C3		C5	
More than	or Less	Actual Mean Travel Lead Error	Variation	Actual Mean Travel Lead Error	Variation
	315	12	8	23	18
315	400	13	10	25	20
400	500	15	10	27	20
500	630	16	12	30	23
630	800	18	13	35	25
800	1000	21	15	40	27
1000	1250	24	16	46	30
1250	1600	29	18	54	35

– Standard values for variations within 300mm of effective thread length (V_{300}) and in one revolution ($V_{2\pi}$) for Positioning Screws (JIS B 1192-1997, C accuracy grade series)

Precision Grade	C3		C5	
Item	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$
Standard Value	8	6	18	8

– Standard values for variations within 300mm of effective thread length (V_{300}) for Transfer Screws (JIS B 1192-1997, Ct accuracy grade series)

Precision Grade	Ct7	Ct10
V_{300}	50	210

Actual Mean Travel Error (ep) for Transfer Screws (JIS B 1192-1997, Ct accuracy grade series) is obtained by ep=2 Lu/300 · V300.

Rolled Ball Screws / Precision Ball Screws

– Selection Process –

■ Allowable axial load of Ball Screws

The allowable axial load represents a maximum load, including a safety margin, that causes shaft buckling. The max. axial load to the Screw Shaft must be equal to or less than the allowable axial load value.

(1) Calculation of the Allowable Axial Load

Use the following 3 factors to find the value from the Allowable Axial Load Curve (Fig.2)

– Screw Shaft Diameter (Ø)
– Method of Mount Support (See Fig. 3)
– Distance between Load Acting Points (Refer to Fig. 3)
*Use a formula to find more accurate Allowable Axial Load.

(2) Calculation of Maximum Axial Loads

Use the following formulas for calculating each axial load at acceleration, constant speed and deceleration (at horizontal installation). The largest load is regarded as the Maximum Axial Load.

– Constant speed ··· Axial Load (Pb)=μWg
– Acceleration ··· Axial Load (Pa)=Wα + μWg
– Deceleration ··· Axial Load (Pc)=Wα - μWg
*When vertical mounting, omit "μ" from the calculation.

μ: Linear Guide Friction Constant (0.02 for the Linear Guides)
W: Mass of Works
g: Gravitational Acceleration 9.8m/s^2
α: Acceleration (*)

(*) Acceleration (α)=(Vmax/t) x 10^{-3}
Vmax: Fast-feed Velocity
t: Acceleration / Deceleration Time

(3) Safety Check

Check the Allowable Axial Load Curve (Fig. 2) to confirm the maximum axial load value is equal to or less than the allowable axial load values.

■ Allowable Rotational Speed

The rotational speed of Ball Screws is figured out by the necessary travel speed and the Ball Screw lead. The frequency must be equal to or less than the allowable rotational speed. The allowable rotational speed is examined by using the critical speed on the Rotary Shafts and the DmN value, which is the Rotary Speed limit of the ball circulating in the nuts.

(1) Allowable Rotational Speed

(1) Calculation of Allowable Rotational Speed
Use the following 3 factors to find the value from the Allowable Rotational Speed Curve (Fig.4)
– Screw Shaft Diameter (Ø)
– Method of Mount Support (See Fig. 3)
– Distance between Load Acting Points (Refer to Fig. 3)
*Use a formula to find more accurate Allowable Rotational Speed.

(2) Safety Check
Use the Allowable Rotational Speed (Fig. 4) to confirm the Screw shaft rotational speed is equal to or less than the allowable rotational speed values.

(2) DmN value

(1) Calculation of DmN
DmN = (Dm + A) X Nmax
Dm: Screw Shaft Diameter
A: Factor determined by the Ball Dia. (Refer to Fig. 5)
Nmax: Screw Shaft Max. revolutions

(2) Confirm the DmN value satisfies the following conditions.
Precision Ball Screws ···DmN≤70000
Rolled Ball Screws ··· DmN≤50000

Fig. 5 Value A

Ball Dia.	Value A
1.5875	0.3
2.3812	0.6
3.175	0.8
4.7625	1.0
6.35	1.8

■ Operating Life Calculation

Use the following formula for calculating the operating hours of the Ball Screws.

$$\text{Life Hours} = \frac{10^6}{60Nm}\left(\frac{C}{Pm \cdot fw}\right)^3$$

C : Basic Dynamic Load Rating (N)
Pm : Allowable Axial Average Load (N)
Nm : Average Revolutions (min-1)
fw : Operation Factor

Steady operation without impact	fw=1.0~1.2
Normal operation	fw=1.2~1.5
Operation with impact	fw=1.5~2.0

C : Basic Dynamic Load Rating Definition

When a certain group of the same Ball Screws are operated with a certain Axial Load and 90% of the Screws achieve 1 million revolutions (106) without flaking in its operating life, the Axial Load is defined as the Basic Dynamic Load Rating.

Calculation of Allowable Axial Average Load and Average Revolutions

It is required to calculate according to the operation patterns. Refer to the table below. Though it seems very difficult to calculate each condition such as the operation pattern and load, however, the Ball Screws' operating life is always inversely proportional by factor of 3 to the load. Therefore, the more exact calculation, the wider choice of Ball Screws will become available.

– Operating Pattern Examples – ($t_1+t_2+t_3$=100%)

Operating Pattern	Allowable Axial Load	Revolutions	Hrs. Rate
A	P_1N	N1min^{-1}	t_1%
B	P_2N	N2min^{-1}	t_2%
C	P_3N	N3min^{-1}	t_3%

– Formula –

$$Pm=\left(\frac{P1^3N1t1+P2^3N2t2+P3^3N3t3}{N1t1+N2t2+N3t3}\right)^{\frac{1}{3}} \quad (N)$$

$$Nm=\frac{N1t1+N2t2+N3t3}{t1+t2+t3} \quad (min^{-1})$$

Fig. 2 Allowable Axial Load Chart

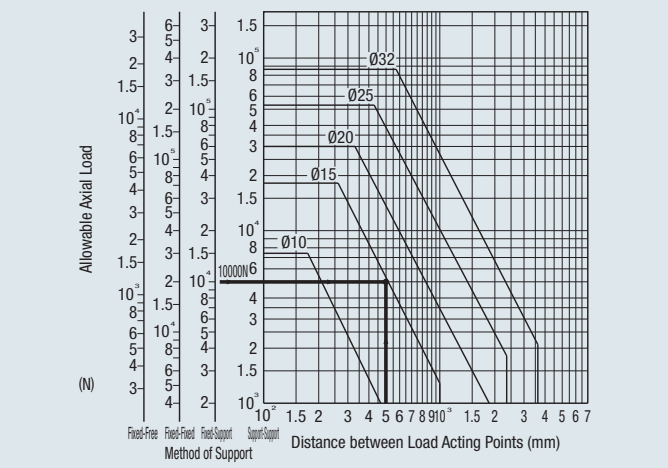


Fig. 3 Mount Support Orientation

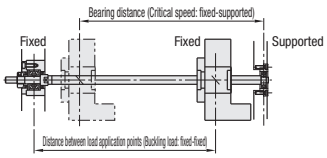
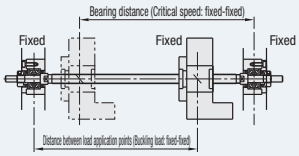
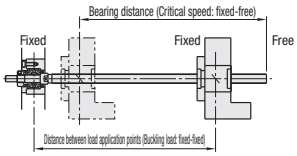
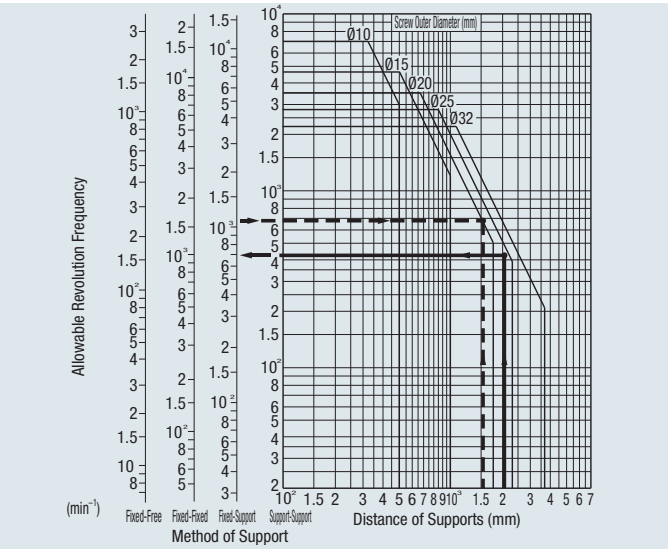
Installation Methods	Characteristics
	– Typically selected installation method – Intermediate ~ High speed applications – Medium ~ High accuracy – For the Support Unit, Standard Type BRW and BUR were selected
	– Intermediate speed applications – High accuracy – For the Support Unit, Standard Type BRW was selected
	– Low speed applications – For short shaft length – Medium accuracy – For the Support Unit, Economy Type BRWE

Fig. 4 Allowable Rotational Speed Chart



Rolled Ball Screws – Shaft Diameter 8, Lead 2, 4 –

– Accuracy Grade C7, C10 –

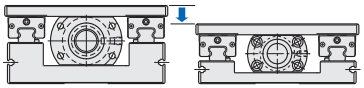
For cost efficient model see **P.82**.

RoHS

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Screw Shaft: Surface Treatment	Ball Nut: Material	Ball Nut: Hardness	Ball Nut: Surface Treatment
Standard Nut	BSST	—	C7	8	2	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	Phosphate Conversion Coating
Standard Nut	BSSR ✔	BSSRK	C10		2 / 4			Phosphate Conversion Coating	JIS-SCM420		Phosphate Conversion Coating
Standard Nut	BSSZ ★	BSSZK			2			—			
Compact Nut	BSSC	BSSCK			2				JIS-SCM420H		—

■ Compact Nut Features

- Compact outer diameters
- Lower profile Sliders can be used
- Longer strokes



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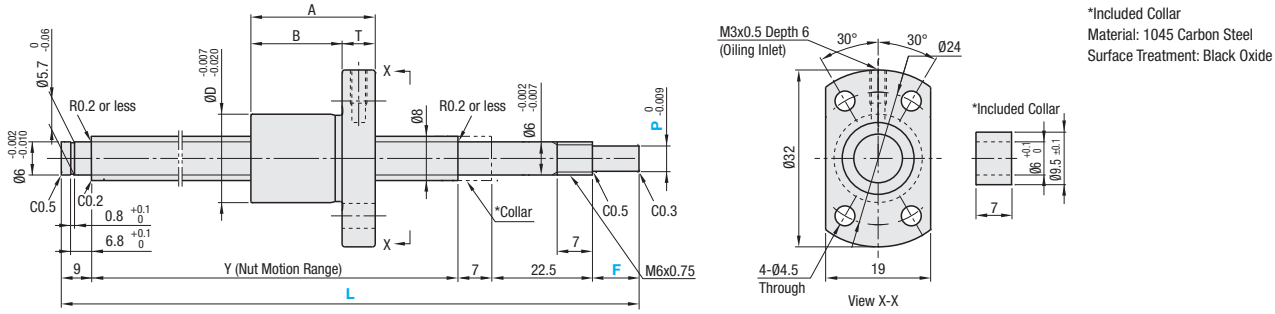
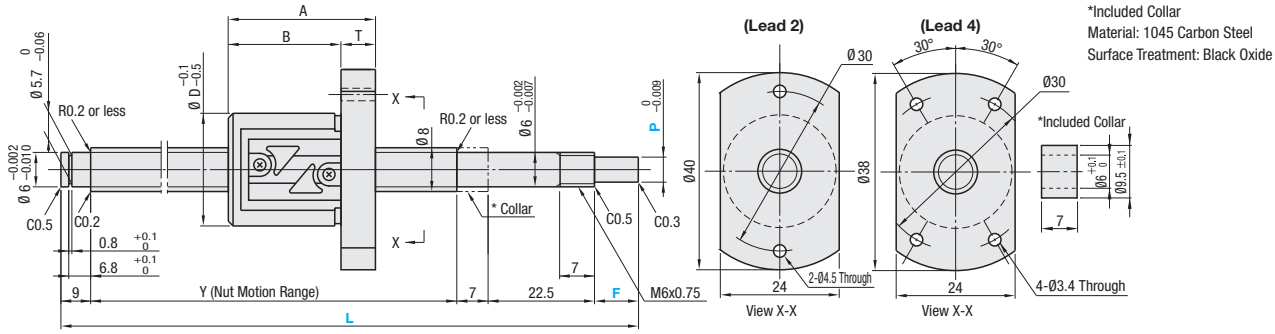
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment: L	1mm Increment: *F	1mm Increment: *P	Y	D	A	B	T	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	08	02	100~380	7.5	4.5	L-46	20	28	22	6	1.5875	8.3	(6.6)	3.5 turns, 1 row	1.8	3.2	0.03 or Less	Right
	C10	BSSR BSSZ			100~400														0.05 or Less	
		BSSRK BSSZK				8~13	4 / 4.5	L-(38.5+F)												
Compact Ball Nut		BSSC				7.5	4.5	L-46	16	22.5	16.5	6	1.2	8.15	(7)	4 turns, 1 row	1.17	2.1		
		BSSCK				8~13	4 / 4.5	L-(38.5+F)												
Standard Ball Nut	C10	BSSR		04	100~380	7.5	4.5	L-46	23	28	23	5	2	8.4	(6.3)	2.5 turns, 1 row	1.9	3.1		
		BSSRK				8~13	4 / 4.5	L-(38.5+F)												

*F and P are configurable for BSSRK, BSSZK and BSSCK only. F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 0802**



– Standard Nuts – **BSST / BSSR (K) / BSSZ (K) 0802, 0804**



Rolled Ball Screws – Shaft Diameter 8, Lead 2, 4 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number		Shape	Fixed Side	Support Side	Page
			Type	No.				
BSSC	08	02 04	BSV	6	Square, Low Profile	Good		124
			BUV	6			Good	125
BSST BSSR BSSZ			BRW	6	Round	Good		126
			BUR	6			Good	126
			BSW	6	Square	Good		120
			BUN	6			Good	122

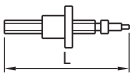
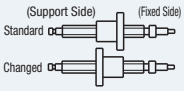
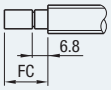
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

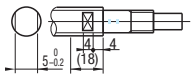
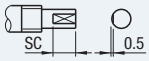
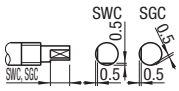
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number		BS Support Page
			Type	No.	
BSSC	08	02	BNFB BNFM BNFR BNFA	802C	128
BSST BSSR BSSZ		02		802R	128
		04		804R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End  	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed  	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Length  	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 E10≤FC≤20 Y dimension is shortened

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats
Flat Machined on Fixed Side Shaft End  	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC5 5≤SC≤12 SC≤F-1
2 Flats on Fixed Side Shaft End  	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC6 5≤SWC,SGC≤12 SWC,SGC≤F-1

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. ⊗ BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P
BSSC0802	–	270				
BSSZK0802	–	270	–	F10	–	P4
BSSZ0802L	–	400	(L Type Greased)			
BSSZ0802G	–	400	(G Type Greased)			

Alternative grease types available.

Alterations

Part Number	–	L	–	F	–	P	–	(FC, SC...etc.)
BSSR0802	–	270					–	SC5

NEW Rolled Ball Screws Standard Nut – Shaft Diameter 8, Lead 2 – – Accuracy Grade C10 –

For higher accuracy and load ratings see **P.80**.

Ball Nut Type	Type		Precision	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable	Class			Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Standard Nut	C-BSSC	C-BSSCK	C10	8	2	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	—	EN 1.7242 Equiv.	Carburized 58~62HRC	—

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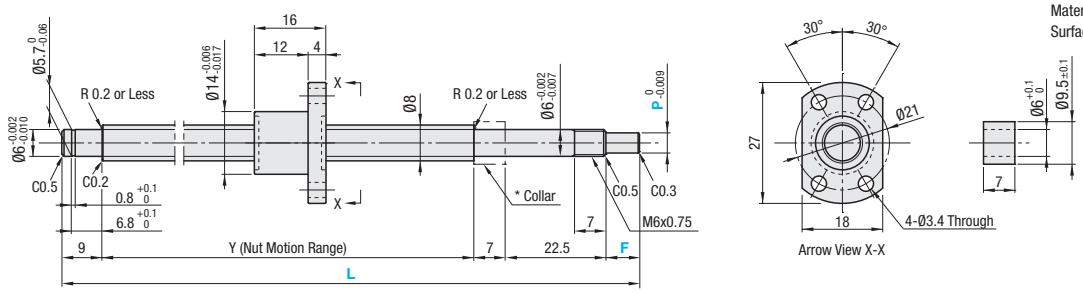
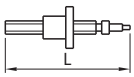
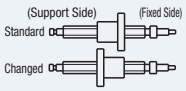
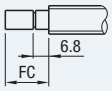
Ball Nut Type	Precision	Part Number			1mm Increment			Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating		Allowable Axial Play	Twisting Direction
	Class	Type	Screw Shaft Dia.	Lead	L	*F	*P						C (Dynamic) kN	Co (Static) kN		
Standard Nut	C10	C-BSSC	08	02	100~400	7.5	4.5	L-46	1.2	8.41	(7.21)	1 turn, 3 rows	1.2	2.1	0.05 or Less	Right
		C-BSSCK				8~13	4, 4.5	L- (38.5+F)								

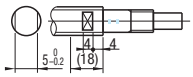
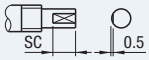
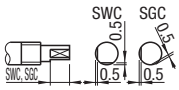
*F and P are configurable for C-BSSCK only. ⓘ F≤Px3

– Standard Nuts – **C-BSSC (K) 0802**

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 10≤FC≤20 ⓘ Y dimension is shortened

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓘ Ball bearings will fall out if the ball nut crosses the wrench flats.
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC5 ⓘ 5≤SC≤12 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC6 ⓘ 5≤SWC, SGC≤12 SWC, SGC≤F-1

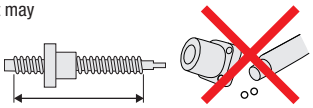
■ Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSSC	08	02	C-BSW	6	Square	Good		129
			C-BW	6			Good	129
			C-BRW	6	Round	Good		130
			C-BUR	6			Good	130

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Use the "* collar" position in the diagram for the accessory collar. Use one of the support unit accessory collars on the fastening nut side.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.


<Do not let a nut overrun> <Do not take a nut off>

Order Example

Part Number	–	L	–	F	–	P
C-BSSC0802	–	200				
C-BSSCK0802	–	200	–	FS	–	P4

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
C-BSSC0802	–	280					–	SC5

★ BEST SELLER
(SELECT PART NUMBERS)
✔ TYPICALLY IN STOCK
(SELECT PART NUMBERS)

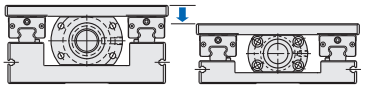
Rolled Ball Screws – Shaft Diameter 10, Lead 2, 4, 10 –

– Accuracy Grade C7, C10 –

RoHS

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Screw Shaft Surface Treatment	Ball Nut Material	Ball Nut Hardness	Ball Nut Surface Treatment
Standard Nut	BSST	—	C7	10	2	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	! Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		2 / 4 / 10			Phosphate Conversion Coating	JIS-SCM420		Phosphate Conversion Coating
Standard Nut	BSSZ	BSSZK ★ ✔			4			—			
Compact Nut	BSSC	BSSCK			4				JIS-SCM420H		—

■ **Compact Nut Features**
- Compact outer diameters
- Lower profile Sliders can be used
- Longer strokes



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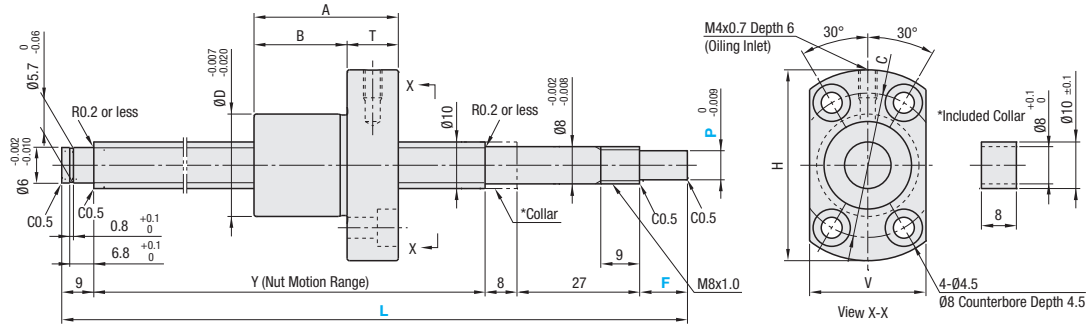
Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	H	C	V	Ball Dia.	Ball Center Dia.	Screw Root Dia.	#of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C10	BSSR	10	02	150~585	10	6	L-54	23	28	22	6	43	33	27	1.5875	10.3	-8.4	2.5 turns 1 row	1.7	3.0	0.05 or Less	Right
		BSSRK				10~18	5 / 6	L- (44+F)															
	C7	BSST		04	150~600	10	6	L-54	26	34	26	8	46	36	28	2.3812	10.6	-7.8		2.3	4.8	0.03 or Less	
	C10	BSSR BSSZ																				0.05 or Less	
		BSSRK BSSZK				10~18	5 / 6	L- (44+F)															
Compact Ball Nut		BSSC				10	6	L-54	22	31	20	11	41	31	25	2	10.25	-8.4	3 turns, 1 row	1.87	3.0		
		BSSCK				10~18	5 / 6	L- (44+F)															
Standard Ball Nut		BSSR		10	150~585	10	6	L-54	28	34	26	8	47	36	30	2.3812	10.6	-7.8	1.5 turns 1 row	1.85	3.2		
		BSSRK				10~18	5 / 6	L- (44+F)															

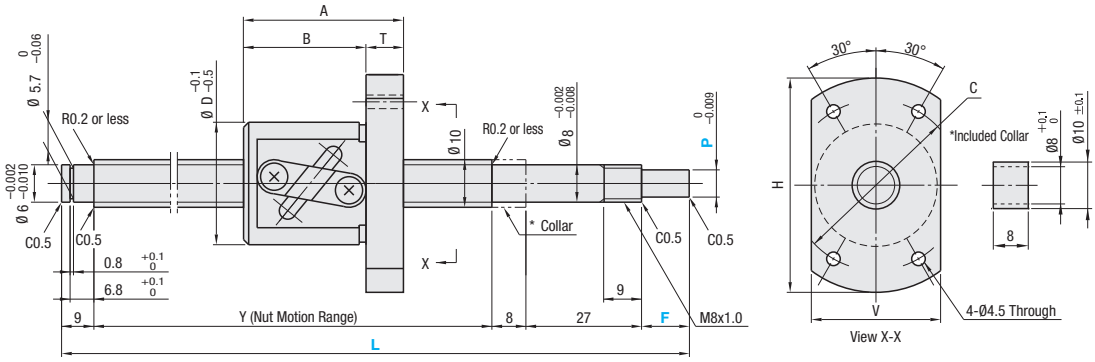
*F and P are configurable for BSSRK, BSSZK and BSSCK only. ! F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 1004**



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

– Standard Nuts – **BSST / BSSR (K) / BSSZ (K)1002, 1004, 1010**



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Rolled Ball Screws – Shaft Diameter 10, Lead 2, 4, 10 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	10	02 04 10	BSV	8S	Square, Low Profile	Good		124
			BUV	8			Good	125
BSST BSSR BSSZ			BRW	8S	Round	Good		126
			BUR	8			Good	126
			BSW	8S	Square	Good		120
			BUN	8			Good	122

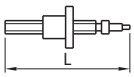
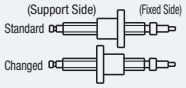
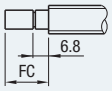
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

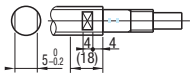
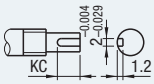
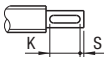
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	BS Support Page
BSSC	10	04	BNFB BNFM BNFR BNFA	1004C	128
BSST BSSR BSSZ		02		1002R	128
		04		1004R	128
		10		1010R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 10≤FC≤20 Y dimension is shortened

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End 	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC5 2≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K5-S2 3≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC5 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC7 5≤SWC,SGC≤Px3 SWC,SGC≤F-1

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. ⊗ BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P
BSSC1004	–	270				
BSSZK1004	–	300	–	F15	–	P6
BSSZ1004L	–	550	(L Type Greased)			
BSSZ1004G	–	550	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
BSSR1004	–	270					–	SC7

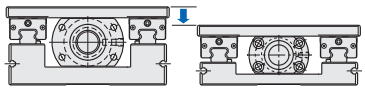
Rolled Ball Screws – Shaft Diameter 12 / 14, Lead 4, 5, 10 –

– Accuracy Grade C7, C10 –

For cost efficient model see **P.87**.

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Screw Shaft Surface Treatment	Ball Nut Material	Ball Nut Hardness	Ball Nut Surface Treatment
Standard Nut	BSST	—	C7	12	4	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	ⓘ Phosphate Conversion Coating
Standard Nut	BSSR ★	BSSRK	C10	12 / 14	4 / 5 / 10			Phosphate Conversion Coating	JIS-SCM420		Phosphate Conversion Coating
Standard Nut	BSSZ	BSSZK ★						—			
Compact Nut	BSSC	BSSCK		12	4				JIS-SCM420H		—

■ **Compact Nut Features**
- Compact outer diameters
- Lower profile Sliders can be used
- Longer strokes



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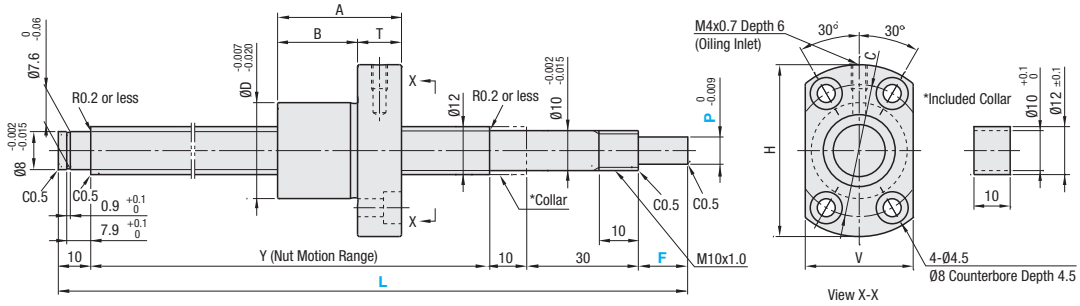
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead	1mm Increment: L	1mm Increment: *F	1mm Increment: *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	12	04	150~795	15	8	L-65	30	35	27	8	50	40	30	4.5	2.3812	12.6	(10)	2.5 turns, 1 row	2.6	5.8	0.03 or Less	Right
	C10	BSSR BSSZ			150~800																		0.05 or Less	
		BSSRK BSSZK				15~24	5~8	L-(50+F)																
Compact Ball Nut		BSSC				15	8	L-65	24	31	20	11	43	33	27	—	2	12.25	(10.4)	4 turns, 1 row	2.79	5.27		
		BSSCK				15~24	5~8	L-(50+F)																
Standard Ball Nut		BSSR BSSZ		10	150~800	15	8	L-65	30	44	32	12	54	41	32	5.5	3.175	12.8	(9.6)	1.5 turns, 1 row	2.85	4.95	0.10 or Less	
		BSSRK BSSZK				15~24	5~8	L-(50+F)																
		BSSR BSSZ	14	05	150~800	15	8	L-65		40	30	10	50	40	34	4.5		14.5	(11.2)	2.5 turns, 1 row	4.4	7.3		
		BSSRK BSSZK				15~24	5~8	L-(50+F)																

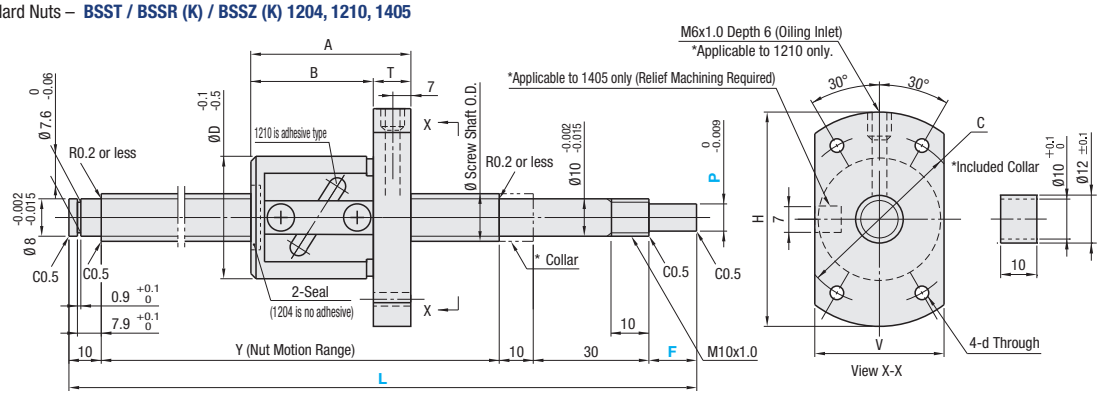
*F and P are configurable for BSSRK, BSSZK and BSSCK only. ⓘ F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 1004**



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

– Standard Nuts – **BSST / BSSR (K) / BSSZ (K) 1204, 1210, 1405**



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Rolled Ball Screws – Shaft Diameter 12 / 14, Lead 4, 5, 10 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

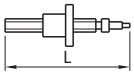
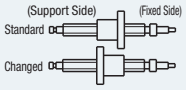
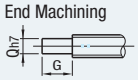
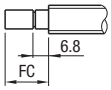
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	12	04	BSV	10S	Square, Low Profile	Good		124
			BUV	10S			Good	125
BSST BSSR BSSZ		04 10	BRW	10S	Round	Good		126
			BUR	10S			Good	126
			BSW	10S	Square	Good		120
			BUN	10S			Good	122
BSSR BSSZ	14	05	BRW	10	Round	Good		126
			BUR	10			Good	126
			BSW	10	Square	Good		120
			BUN	10			Good	122

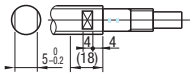
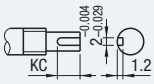
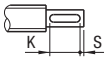
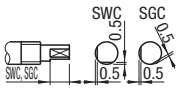
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	BS Support Page
BSSC	12	04	BNFB BNFM BNFR BNFA	1204C	128
BSST BSSR BSSZ		04		1202R	128
		10		1210S	128
	14	05		1405R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. For the screw shaft 12, Q is selectable from 6, 8. For the screw shaft 14, Q is selectable from 6, 8, 10. G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 10≤FC≤20 Y dimension is shortened

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats. Shaft Diameter / A / B / (C): 12 / 8 / 5 / 20; 14 / 10 / 7 / 22
Keyway on Fixed Side Shaft End 	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC10 2≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K5-S2 3≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC7 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P
BSSC1204	–	270	–	F15	–	P6
BSSZK1204	–	270				
BSSR1204L	–	300	(L Type Greased)			
BSSR1204G	–	300	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
BSSR1204	–	270					–	SC7

NEW Rolled Ball Screws Standard Nut – Shaft Diameter 12, Lead 5, 10 – – Accuracy Grade C10 –

For higher accuracy and load ratings see **P.85**.

RoHS

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Screw Shaft Surface Treatment	Ball Nut Material	Ball Nut Hardness	Ball Nut Surface Treatment
Standard Nut	C-BSSC	C-BSSCK	C10	12	5 10	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	—	EN 1.7242 Equiv.	Carburized 58~62HRC	—

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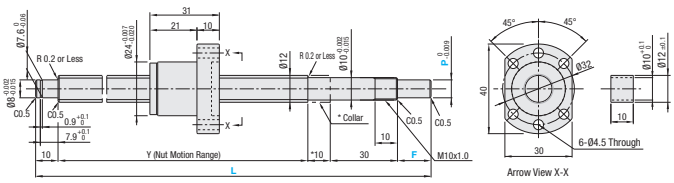
Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Nut	C10	C-BSSC	12	05	150~800	15	8	L-65	2.5	12.3	(9.8)	2.8 turns, 1 row	1.8	4.1	0.05 or Less	Right
		C-BSSCK				15~24	5~8	L- (50+F)								
		C-BSSC		10		15	8	L-65					2	3.5	0.10 or Less	
		C-BSSCK				15~24	5~8	L- (50+F)								

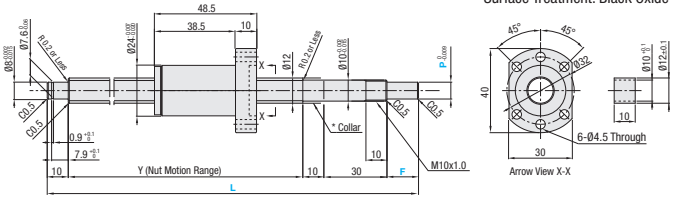
*F and P are configurable for C-BSSCK only. ⓘ F≤Px3

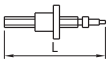
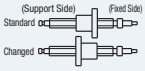
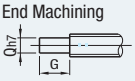
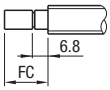
– Standard Nuts – **C-BSSC (K) 1205**

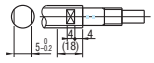
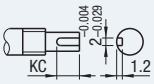
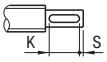
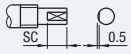
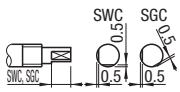


– Standard Nuts – **C-BSSC (K) 1210**

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 6 or 8. G=1mm Increment Ordering Code GC-Q8-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 11≤FC≤20 ⓘ Y dimension is shortened

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓘ Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End 	KC	Adds a keyway on the fixed side shaft end. ⊗ P=5 is not applicable KC=1mm Increment Ordering Code KC10 ⓘ 3≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) ⊗ P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K5-S2 ⓘ 4≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ⓘ 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC7 ⓘ 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSSC	12	05 10	C-BSW	10S	Square	Good		129
			C-BUN	10			Good	129
			C-BRW	10S	Round	Good		130
			C-BUR	10			Good	130

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Use the "* collar" position in the diagram for the accessory collar. Use one of the support unit accessory collars on the fastening nut side.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.

Order Example

Part Number	–	L	–	F	–	P
C-BSSC1205	–	600				
C-BSSCK1205	–	1284	–	F20	–	P8

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
C-BSSC1205	–	270					–	SC7

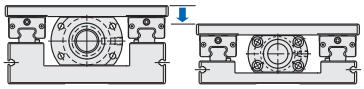
Rolled Ball Screws – Shaft Diameter 15, Lead 5, 10, 20 –

– Accuracy Grade C7, C10 –

For cost efficient model see **P.90**.

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Screw Shaft: Surface Treatment	Ball Nut: Material	Ball Nut: Hardness	Ball Nut: Surface Treatment
Standard Nut	BSST	—	C7	15	5 / 10 / 20	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 / 10 / 20			Phosphate Conversion Coating	JIS-SCM420		Phosphate Conversion Coating
Standard Nut	BSSZ	BSSZK						—			
Compact Nut	BSSC	BSSCK			5 / 10				JIS-SCM420H		—

■ **Compact Nut Features**
- Compact outer diameters
- Lower profile Sliders can be used
- Longer strokes



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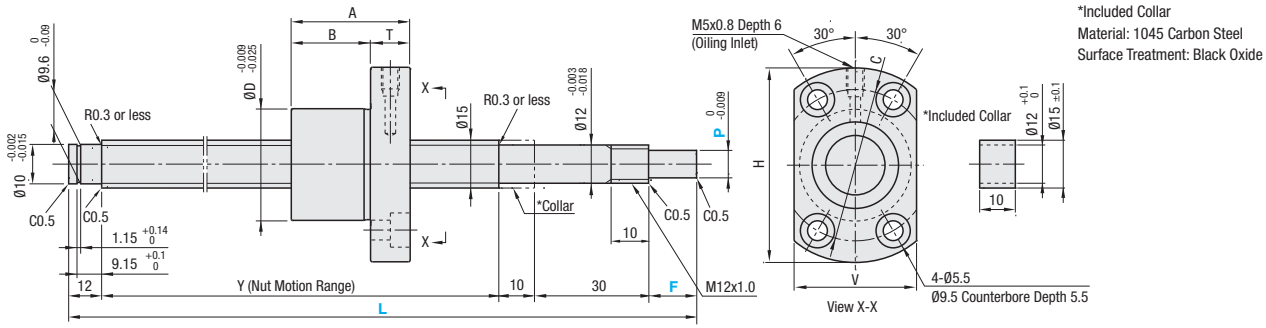
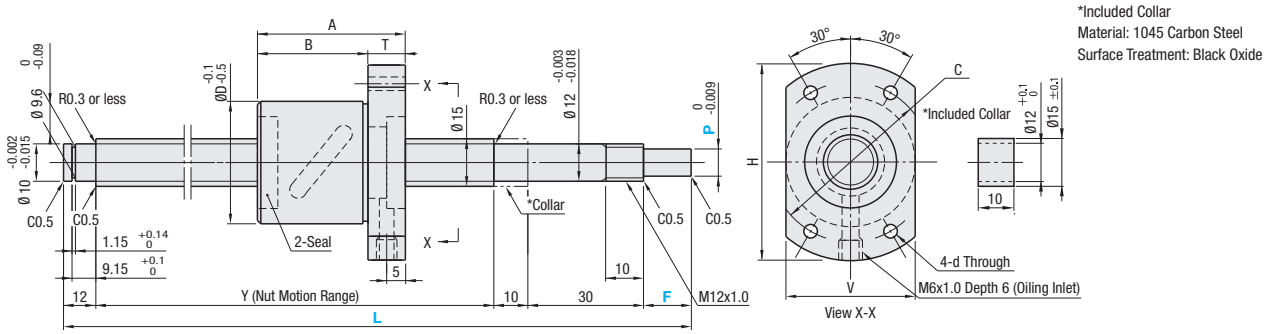
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia	Part Number: Lead	1mm Increment: L	1mm Increment: *F	1mm Increment: *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	15	05	150~1200	15	10	L-67	34	40	30	10	54	44		4.5		15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.03 or Less	Right
	C10	BSSR BSSZ																						
		BSSRK BSSZK				15~30	6~10	L-(52+F)															0.10 or Less	
Compact Ball Nut		BSSC				15	10	L-67	31	33	22	11	54	42		—		15.5	(12.25)	3 turns, 1 row	4.14	7.06		
		BSSCK				15~30	6~10	L-(52+F)																
Standard Ball Nut	C7	BSST		10	200~1200	15	10	L-67	34	52	42	10	57	45	34	5.5	3.175	15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.03 or Less	
	C10	BSSR BSSZ																						
		BSSRK BSSZK				15~30	6~10	L-(52+F)															0.10 or Less	
Compact Ball Nut		BSSC				15	10	L-67	31	48	37	11	54	42		—		15.5	(12.25)	3 turns, 1 row	4.25	7.45		
		BSSCK				15~30	6~10	L-(52+F)																
Standard Ball Nut	C7	BSST		20	200~1200	15	10	L-67	34	59	49	10	57	45		5.5		15.8	(12.5)	1.5 turn, 2 line	5.8	13.3	0.03 or Less	
	C10	BSSR BSSZ																						
		BSSRK BSSZK				15~30	6~10	L-(52+F)															0.10 or Less	

*F and P are configurable for BSSRK, BSSZK and BSSCK only. F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 1505 / 1510**



– Standard Nuts – **BSST / BSSR (K) / BSSZ (K) 1505, 1510, 1520**



Rolled Ball Screws – Shaft Diameter 15, Lead 5, 10, 20 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

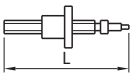
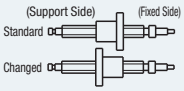
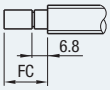
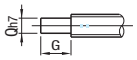
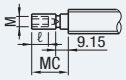
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number		Shape	Fixed Side	Support Side	Page
			Type	No.				
BSSC	15	05 10 20	BSV	12	Square, Low Profile	Good		124
			BUV	12			Good	125
BSST BSSR BSSZ			BRW	12	Round	Good		126
			BUR	12			Good	126
			BSW	12	Square	Good		120
			BUN	12			Good	122

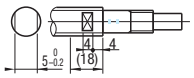
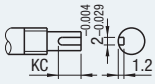
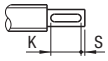
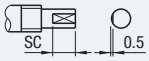
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number		BS Support Page
			Type	No.	
BSSC	15	05	BNFB BNFM BNFR BNFA	1505C	128
BSST BSSR BSSZ		10		1510C	128
		05		1505R	128
		10		1510R	128
		20		1520S	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End  	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed  	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Length  	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤20 Y dimension is shortened
Change Support Side Shaft End Machining  	GC	Changes the machining on the support side. Q: Selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened
Tapped Hole on Support Side Shaft End  	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 18≤MC≤30 Y dimension is shortened M: M5x0.8 ℓ: 12

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End  	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC10 2≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End  	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K5-S3 3≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End  	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC10 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤SWC,SGC≤Px3 SWC,SGC≤F-1

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. ⊗ BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P	
BSSC1505	–	350					
BSSZK1505	–	400	–	F210	–	P8	
BSSR1520L	–	1000					(L Type Greased)
BSSR1520G	–	400					(G Type Greased)

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
BSSR1505	–	350					–	K10

NEW Rolled Ball Screws Standard Nut – Shaft Diameter 15, Lead 5, 10, 20 – – Accuracy Grade C10 –

For higher accuracy and load ratings see **P.88**.

RoHS

Ball Nut Type	Type		Precision	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable	Class			Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Standard Nut	C-BSSC	C-BSSCK	C10	15	5, 10, 20	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	—	EN 1.7242 Equiv.	Carburized 58~62HRC	—

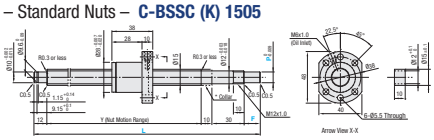
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Nut	C10	C-BSSC	15	05	150~1200	15	10	L-67	2.778	15.672	(12.894)	3.8 turns, 1 row	3.6	7.4	0.10 or Less	Right
		C-BSSCK				15~30	6~10	L- (52+F)								
		C-BSSC		10	200~1200	15	10	L-67				2.8 turns, 1 row				
		C-BSSCK				15~30	6~10	L- (52+F)								
		C-BSSC		20	200~1200	15	10	L-67				1.8 turns, 1 row	4.1	9.3		
		C-BSSCK				15~30	6~10	L- (52+F)								

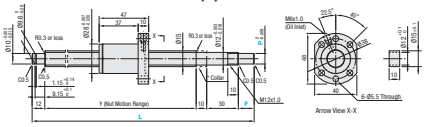
*F and P are configurable for C-BSSCK only. ⓘ F≤Px3

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

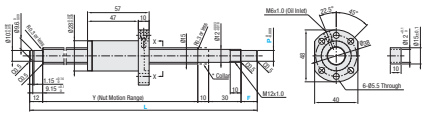
– Standard Nuts – **C-BSSC (K) 1505**

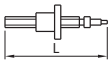
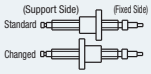


– Standard Nuts – **C-BSSC (K) 1510**

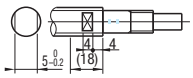
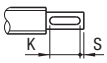
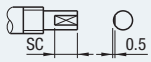


– Standard Nuts – **C-BSSC (K) 1520**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 13≤FC≤30 ⓘ Y dimension is shortened
Tapped Hole on Support Side Shaft End – BS__2806 – – BS__3210, 3232 –	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 ⓘ 18≤MC≤30

M	ℓ
M5x0.8	12

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓘ Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 ⓘ 3≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S3 ⓘ 4≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC10 ⓘ 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 ⓘ 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSSC	15	05	C-BSW	12	Square	Good		129
		10	C-BUN				Good	129
		20	C-BRW		Round	Good		130
			C-BUR				Good	130

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Use the "* collar" position in the diagram for the accessory collar. Use one of the support unit accessory collars on the fastening nut side.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.

Order Example

Part Number	–	L	–	F	–	P
C-BSSC1520	–	500				
C-BSSCK1505	–	1084	–	F15	–	P6

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
C-BSSC1505	–	350					–	KC10

Rolled Ball Screws – Shaft Diameter 20, Lead 5, 10, 20 –

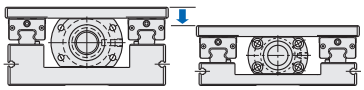
– Accuracy Grade C7, C10 –

For cost efficient model see **P.93**.

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Screw Shaft: Surface Treatment	Ball Nut: Material	Ball Nut: Hardness	Ball Nut: Surface Treatment
Standard Nut	BSST	—	C7	20	5 / 10 / 20	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	ⓘ Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 / 10 / 20			Phosphate Conversion Coating	JIS-SCM420		Low Temp Black Chrome Plating
Standard Nut	BSSZ	BSSZK						—			
Compact Nut	BSSC	BSSCK			5 / 10				JIS-SCM420H		—

■ Compact Nut Features

- – Compact outer diameters
- – Lower profile Sliders can be used
- – Longer strokes



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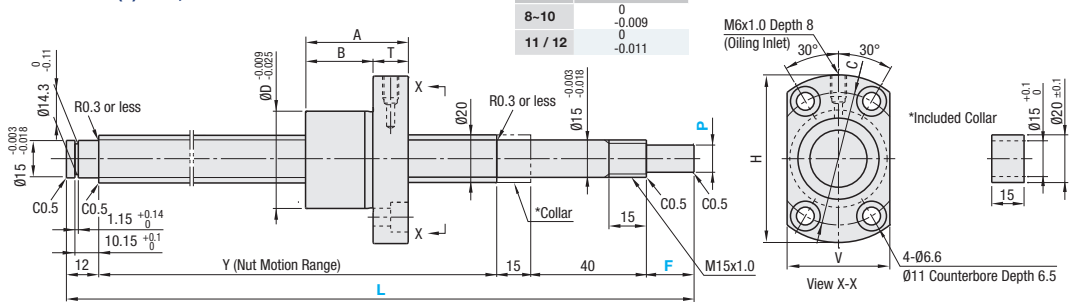
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment: L	1mm Increment: *F	1mm Increment: *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	20	05	200~1200	20	12	L-87	40	40	30	10	60	50	40	4.5	3.175	20.8	(17.5)	2.5 turns 1 row	6.2	14.7	0.03 or Less	Right
	C10	BSSR BSSZ			200~2000	20~36	8~12	L–(67+F)															0.10 or Less	
Compact Ball Nut		BSSC				20	12	L-87	36	38	25	13	62	49	38	—		20.5	(17.25)	4 turns, 1 row	6.6	14.05		
		BSSCK				20~36	8~12	L–(67+F)																
Standard Ball Nut	C7	BSST		10	250~2000	20	12	L-87	52	57	45	12	82	67	52	6.5	4.7625	21	(16.3)	2.5 turns 1 row	10.6	22.7	0.05 or Less	
	C10	BSSR BSSZ																					0.15 or Less	
		BSSRK BSSZK				20~36	8~12	L–(67+F)																
Compact Ball Nut		BSSC				20	12	L-87	36	58.5	45.5	13	62	49	38	—		20.5	(17.25)	4 turns, 1 row	6.53	13.93		
		BSSCK				20~36	8~12	L–(67+F)																
Standard Ball Nut	C7	BSST		20	250~2000	20	12	L-87	39	78	68	10	62	50	39	5.5	3.175	20.8	(17.5)	2.5 turns 1 row	6.2	14.7	0.03 or Less	
	C10	BSSR BSSZ																					0.10 or Less	
		BSSRK BSSZK				20~36	8~12	L–(67+F)																

*F and P are configurable for BSSRK, BSSZK and BSSCK only. ⓘ F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 2005, 2010**

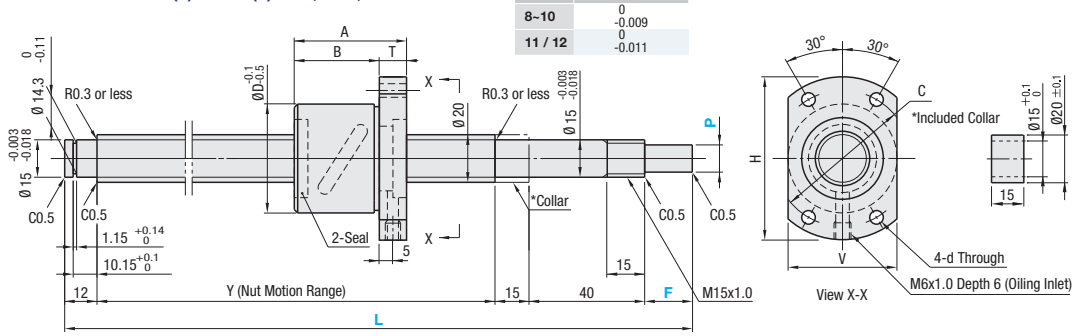
P	Tolerance
8~10	0 / -0.009
11 / 12	0 / -0.011



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

– Standard Nuts – **BSST / BSSR (K) / BSSZ (K) 2005, 2010, 2020**

P	Tolerance
8~10	0 / -0.009
11 / 12	0 / -0.011



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Rolled Ball Screws – Shaft Diameter 20, Lead 5, 10, 20 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

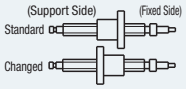
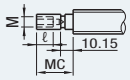
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	20	05	BSV	15	Square, Low Profile	Good		124
		10	BUV	15			Good	125
BSST BSSR BSSZ		05 10 20	BRW	15	Round	Good		126
			BUR	15			Good	126
			BSW	15	Square	Good		120
			BUN	15			Good	122

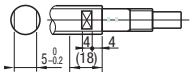
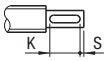
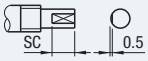
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	BS Support Page
BSSC	20	05	BNFB BNFM BNFR BNFA	2005C	128
BSST BSSR BSSZ		10		2010C	128
		05		2005R	128
		10		2010R	128
		20		2020R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 18≤MC≤30 Y dimension is shortened M: M6x1.0; ℓ: 15

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC15 2≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K7-S2 3≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

Order Example

Part Number	–	L	–	F	–	P
BSSC2005	–	400				
BSSZK2020	–	320	–	F30	–	P12
BSST2010L	–	500	(L Type Greased)			
BSSR2010G	–	400	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
BSSR2005	–	350					–	KC10

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. ⊗ BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

NEW Rolled Ball Screws Standard Nut – Shaft Diameter 20, Lead 5, 10, 20 – – Accuracy Grade C10 –

For higher accuracy and load ratings see **P.91**.

RoHS

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Screw Shaft Surface Treatment	Ball Nut Material	Ball Nut Hardness	Ball Nut Surface Treatment
Standard Nut	C-BSSC	C-BSSCK	C10	20	5, 10, 20	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	—	EN 1.7242 Equiv.	Carburized 58~62HRC	—

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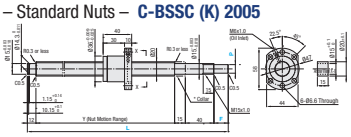
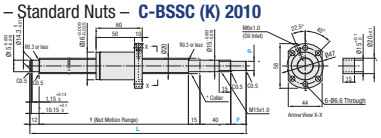
Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Nut	C10	C-BSSC	20	05	200~1200	20	12	L-87	3.175	21.08	(17.905)	3.8 turns, 1 row	4.3	10.3	0.10 or Less	Right
		C-BSSCK				20~36	8~12	L- (67+F)								
		C-BSSC		10	250~1200	20	12	L-87					7.4	15.9	0.15 or Less	
		C-BSSCK				20~36	8~12	L- (67+F)								
		C-BSSC		20		20	12	L-87		20.75	(17.575)	1.8 turns, 1 row	4.3	10.3	0.10 or Less	
		C-BSSCK				20~36	8~12	L- (67+F)								

*F and P are configurable for C-BSSCK only. ⓘ F≤Px3

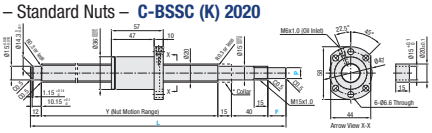
– Standard Nuts – C-BSSC (K) 2005



– Standard Nuts – C-BSSC (K) 2010

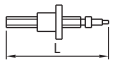
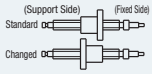
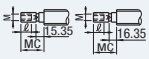


– Standard Nuts – C-BSSC (K) 2020

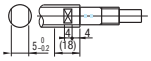
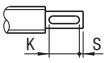


P	Tolerance
10	0 -0.011
11~15	0 -0.011

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Ordering Code GC-Q8-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 13≤FC≤30 ⓘ Y dimension is shortened
Tapped Hole on Support Side Shaft End – BS__2806 – – BS__3210, 3232 – 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC25 ⓘ 21≤MC≤30

M	ℓ
M6x1.0	15

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓘ Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC15 ⓘ 4≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K7-S2 ⓘ 5≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ⓘ 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 ⓘ 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Combination with Support Units

Ball Screw Part Number Type	Ball Screw Part Number Screw Shaft Outer Dia.	Ball Screw Part Number Lead	Recommended Support Units Part Number Type	Recommended Support Units Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSSC	20	05 10 20	C-BSW	15	Square	Good		129
			C-BUN				Good	129
			C-BRW		Round	Good		130
			C-BUR				Good	130

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Use the "* collar" position in the diagram for the accessory collar. Use one of the support unit accessory collars on the fastening nut side.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.

Order Example

Part Number	–	L	–	F	–	P
C-BSSC2005	–	500				
C-BSSCK2010	–	1284	–	F21	–	P10

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
C-BSSC2005	–	245					–	KC10

Rolled Ball Screws – Shaft Diameter 25, Lead 5, 10, 25 –

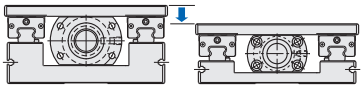
– Accuracy Grade C7, C10 –

For cost efficient model see **P.96**.

Ball Nut Type	Type: Standard	Type: F, P Configurable	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Screw Shaft: Surface Treatment	Ball Nut: Material	Ball Nut: Hardness	Ball Nut: Surface Treatment
Standard Nut	BSST	—	C7	25	5 / 10	1055 Carbon Steel	Induction Hardened 56~62HRC	—	JIS-SCM420	Carburized 58~62HRC	Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 / 10 / 25			Phosphate Conversion Coating	JIS-SCM420		Low Temp Black Chrome Plating
Standard Nut	BSSZ	BSSZK									
Compact Nut	BSSC	BSSCK			5			—	JIS-SCM420H		—

■ Compact Nut Features

- – Compact outer diameters
- – Lower profile Sliders can be used
- – Longer strokes



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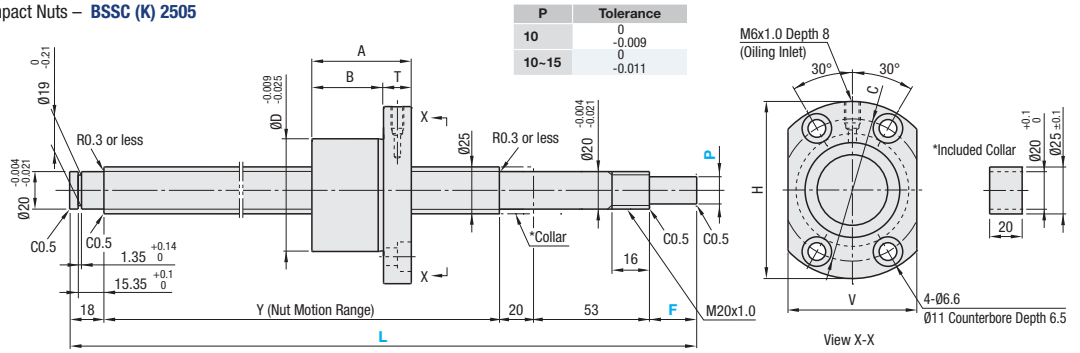
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment: L	*F	*P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	25	05	200~2000	27	15	L-118	43	40	30	10	67	55	43	5.5	3.175	25.8	(21.8)	2.5 turns, 1 row	6.6	18.7	0.03 or Less	Right
Standard Ball Nut	C10	BSSR BSSZ																					0.10 or Less	
Standard Ball Nut	C10	BSSRK BSSZK				27~45	10~15	L-(91+F)																
Compact Ball Nut	C10	BSSC				27	15	L-118	42	35	22	13	66	53	48	—		25.5	(22.25)	3 turns, 1 row	5.47	12.52		
Compact Ball Nut	C10	BSSCK				27~45	10~15	L-(91+F)																
Standard Ball Nut	C7	BSST		10	300~2000	27	15	L-118	60	92	77	15	96	78	60	9	6.35	26.8	(20.3)	2.5 turn, 2 line	27.5	76.3	0.07 or Less	
Standard Ball Nut	C10	BSSR BSSZ																					0.20 or Less	
Standard Ball Nut	C10	BSSRK BSSZK				27~45	10~15	L-(91+F)																
Standard Ball Nut	C10	BSSR BSSZ		25	300~2000	27	15	L-118	47	96	84	12	74	60	47	6.6	3.969	25.8	(21.5)	2.5 turns, 1 row	9.3	22.7	0.12 or Less	
Standard Ball Nut	C10	BSSRK BSSZK				27~45	10~15	L-(91+F)																

*F and P are configurable for BSSRK, BSSZK and BSSCK only. ⓘ F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSC (K) 2505**

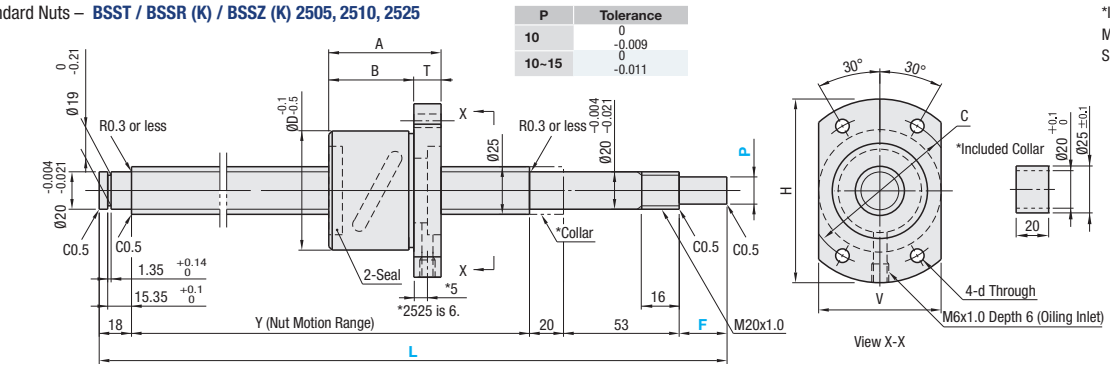
P	Tolerance
10	0 / -0.009
10~15	0 / -0.011



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

– Standard Nuts – **BSST / BSSR (K) / BSSZ (K) 2505, 2510, 2525**

P	Tolerance
10	0 / -0.009
10~15	0 / -0.011



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Rolled Ball Screws – Shaft Diameter 25, Lead 5, 10, 25 –

– Accuracy Grade C7, C10 –

■ Combination with Support Units

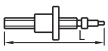
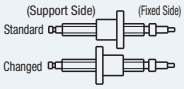
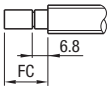
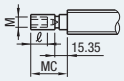
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number		Shape	Fixed Side	Support Side	Page
			Type	No.				
BSSC	25	05	BSV	20	Square, Low Profile	Good		124
			BUV	20			Good	125
BSST BSSR BSSZ		05 10 25	BRW	20	Round	Good		126
			BUR	20			Good	126
			BSW	20	Square	Good		120
			BUN	20			Good	120

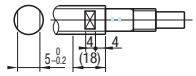
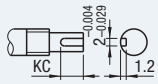
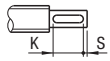
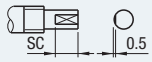
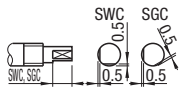
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number		BS Support Page
			Type	No.	
BSSC	25	05	BNFB BNFM BNFR BNFA	1505C	128
BSST BSSR BSSZ		05		1510C	128
		10		1505R	128
		25		1510R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15, 20 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤20 Y dimension is shortened
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 28≤MC≤60 Y dimension is shortened M: M8x1.125, ℓ: 20

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC20 5≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

Order Example

Part Number	–	L	–	F	–	P
BSSC2505	–	200	–		–	
BSSZK2505	–	1200	–	F27	–	P12
BSSZ2525L	–	2000	(L Type Greased)			
BSSR2510G	–	400	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, MC...etc.)
BSSR2505	–	700					–	RLC

■ Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

NEW $ Rolled Ball Screws Standard Nut – Shaft Diameter 25, Lead 5, 10, 25 – – Accuracy Grade C10 –

For higher accuracy and load ratings see **P.94**.

RoHS

Ball Nut Type	Type		Precision	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable	Class			Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Standard Nut	C-BSSC	C-BSSCK	C10	25	5, 10, 25	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	—	EN 1.7242 Equiv.	Carburized 58~62HRC	—

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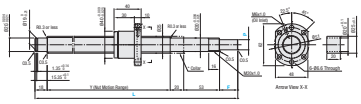
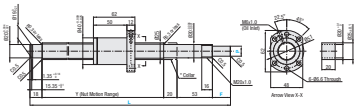
Ball Nut Type	Precision Class	Part Number Type	Screw Shaft Dia.	Lead	1mm Increment L	*F	*P	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Nut	C10	C-BSSC	25	05	200~1200	27	15	L-118	3.175	26.08	(22.905)	3.8 turns, 1 row	4.6	13.1	0.10 or Less	Right
		C-BSSCK				27~45	10~15	L- (91+F)					16.1	45.4	0.20 or Less	
		C-BSSC		10	300~1200	27	15	L-118								
		C-BSSCK				27~45	10~15	L- (91+F)								
		C-BSSC		25		27	15	L-118				1.8 turns, 1 row	6.5	15.9	0.12 or Less	
		C-BSSCK				27~45	10~15	L- (91+F)								

*F and P are configurable for C-BSSCK only. ⓘ F≤Px3

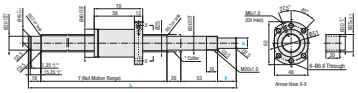
– Standard Nuts – **C-BSSC (K) 2505**



– Standard Nuts – **C-BSSC (K) 2510**

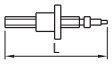
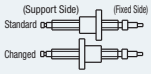
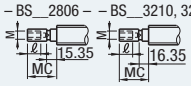


– Standard Nuts – **C-BSSC (K) 2525**

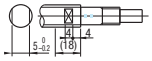
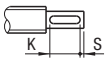
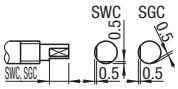


P	Tolerance
10	0 -0.011
11~15	0 -0.011

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15, 20 G=1mm Increment Ordering Code GC-Q10-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 19≤FC≤60 ⓘ Y dimension is shortened
Tapped Hole on Support Side Shaft End – BS__2806 – – BS__3210, 3232 – 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 ⓘ 28≤MC≤60

M	ℓ
M8x1.25	20

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓘ Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 ⓘ 5≤KC≤Px3 KC≤F-1
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 ⓘ 6≤K+S≤Px3 K+S≤F-1
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 ⓘ 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 ⓘ 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	No.	Shape	Fixed Side	Support Side	Page
C-BSSC	25	05	C-BSW	20	Square	Good		129
			C-BUN				Good	129
		10	C-BRW		Round	Good		130
		25	C-BUR				Good	130

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Use the "* collar" position in the diagram for the accessory collar. Use one of the support unit accessory collars on the fastening nut side.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.

Order Example

Part Number	–	L	–	F	–	P
C-BSSC2505	–	400				
C-BSSCK2510	–	860	–	F30	–	P12

Alterations

Part Number	–	L	–	F	–	P	–	(FC, KC...etc.)
C-BSSC2505	–	680					–	KC10

Rolled Ball Screws – Shaft Diameter 28 / 32, Lead 6, 10, 32 –

– Accuracy Grade C10 –

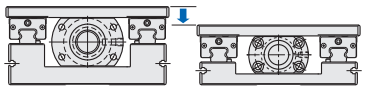
Ball Nut Type	Type		Precision	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable	Class			Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Standard Nut	BSSR	BSSR	C10	28 / 32	6 / 10 / 32	1055 Carbon Steel	Induction Hardened 56~62HRC	Phosphate Conversion Coating	JIS-SCM420	Carburized 58~62HRC	Low Temp Black Chrome Plating
	BSSZ	BSSZK						—			

■ **Compact Nut Features**

– Compact outer diameters

– Lower profile Sliders can be used

– Longer strokes



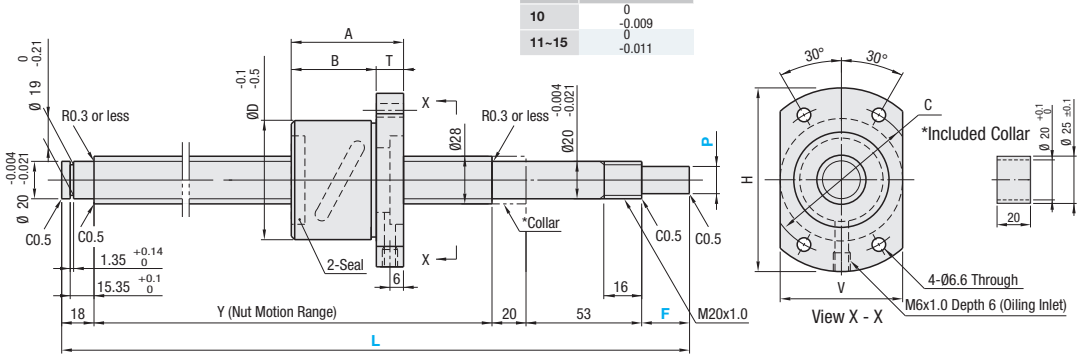
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C10	BSSR BSSZ	28	06	250~2000	27	15	L-118	50	65	53	12	80	65	50	6.6	3.175	28.8	(25.6)	2.5 turn, 2 line	12.1	42.3	0.10 or Less	Right
		BSSRK BSSZK				27~45	10~15	L-(91+F)																
		BSSR BSSZ	32	10	300~2000	33	20	L-140	67	92	77	15	103	85	67	9	6.35	33.8	(27.2)	2.5 turn, 2 line	32.8	86.7	0.20 or Less	
		BSSRK BSSZK				33~60	11~20	L-(107+F)																
		BSSR BSSZ		32		33	20	L-140	58	86	71	15	92	74	58	9	4.7625	33.0	(27.8)	1.5 turn, 2 line	14.6	38.9	0.15 or Less	
		BSSRK BSSZK				33~60	11~20	L-(107+F)																

*F and P are configurable for BSSRK and BSSZK only. ⓘ F≤Px3 [1]See **P.75** for details.

– Compact Nuts – **BSSR (K) / BSSZ (K) 2806**

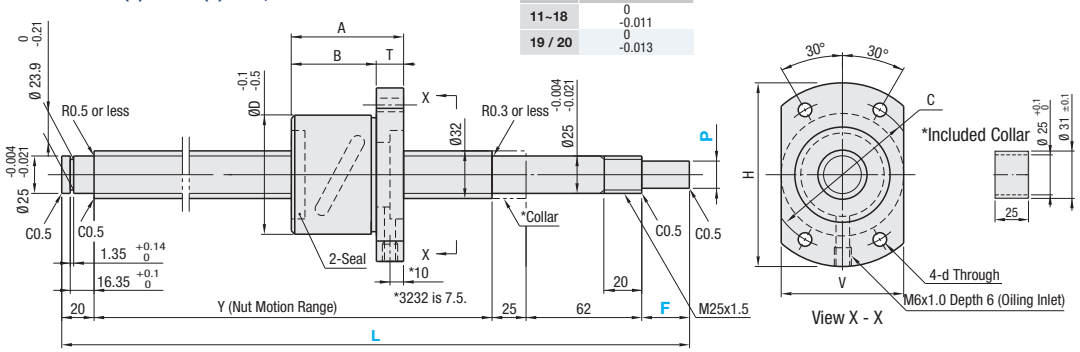
P	Tolerance
10	0 / -0.009
11~15	0 / -0.011



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

– Standard Nuts – **BSSR (K) / BSSZ (K) 3210, 3232**

P	Tolerance
11~18	0 / -0.011
19 / 20	0 / -0.013



*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

Rolled Ball Screws – Shaft Diameter 28 / 32, Lead 6, 10, 32 –

– Accuracy Grade C10 –

■ Combination with Support Units

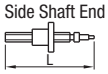
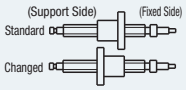
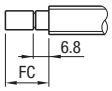
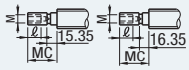
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSR BSSZ	28	06	BRW	20	Round	Good		126
			BUR	20			Good	126
			BSW	20	Round	Good		120
			BUN	20			Good	120
	32	10 32	BRW	25	Square	Good		126
			BUR	25			Good	126
			BSW	25	Square	Good		120
			BUN	25			Good	120

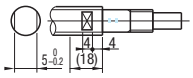
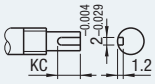
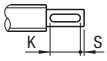
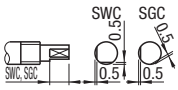
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSSR BSSZ	28	06	BNFB BNFM BNFR BNFA	2806R	128
	32	10		3210R	128
		32		3232R	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15, 20, 25 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 19≤FC≤60 (BS__2806) 21≤FC≤60 (BS__3210, 3232) Y dimension is shortened
Tapped Hole on Support Side Shaft End – BS__2806 – – BS__3210, 3232 – 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 28≤MC≤60 Y dimension is shortened M: M8x1.125, ℓ: 20

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area BS__2806: A 27 0 -0.35, B 11, C 8, D (29) BS__3210, BS__3232: A 27 0 -0.35, B 13, C 9, D (32)	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC20 5≤KC≤PX3 KC≤F-1 (BS__2806) 6≤KC≤PX3 KC≤F-1 (BS_ _3210, 3232)
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤PX3 K+S≤F-1 (BS__2806) 7≤K+S≤PX3 K+S≤F-1 (BS_ _3210, 3232)
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P
BSSR2806	–	270	–		–	
BSSZK3232	–	270	–	F40	–	P15
BSSR3210L	–	370	(L Type Greased)			
BSSR3232G	–	370	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, MC...etc.)
BSSZ2806	–	700					–	RLC

Rolled Ball Screws – Shaft Diameter 15 / 20 / 25, Lead 5, 10 –

– Block Style Ball Nut – Accuracy Grade C10 –

RoHS

Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable				Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Block Nut	BSBR	BSBRK	C10	15 / 20 / 25	5 / 10	1055 Carbon Steel	Induction Hardened 56~62HRC	Phosphate Conversion Coating	JIS-SCM420	Carburized 58~62HRC	Phosphate Conversion Coating

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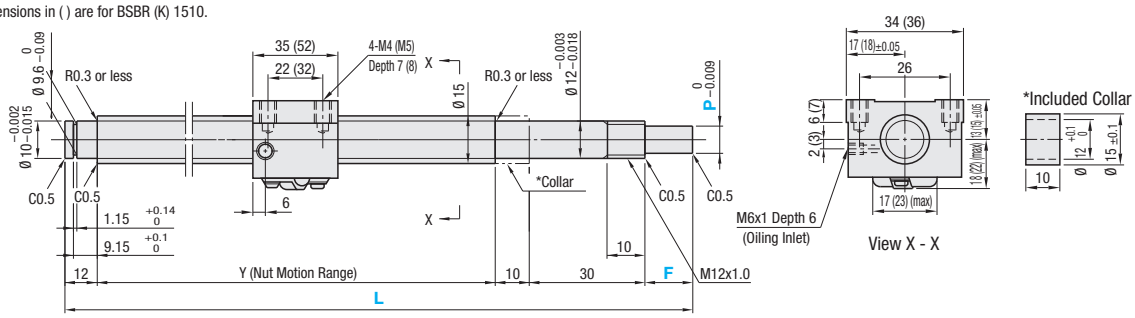
Ball Nut Type	Precision Class	Part Number			1mm Increment			Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating		Allowable Axial Play	Twisting Direction
		Type	Screw Shaft Dia.	Lead	L	*F	*P						C (Dynamic) kN	Co (Static) kN		
Block Ball Nut	C10	BSBR	15	05	150~1200	15	10	L-67	3.175	15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.10 or Less	Right
		BSBRK				15~30	6~10	L-(52+F)								
		BSBR		10		15	10	L-67								
		BSBRK				15~30	6~10	L-(52+F)								
		BSBR	20	05	200~1200	20	12	L-87		20.8	(17.5)		6.2	14.7		
		BSBRK				20~36	8~12	L–(67+F)								
		BSBR		10		20	12	L-87	4.7625	21	(16.3)		10.6	22.7	0.15 or Less	
		BSBRK				20~36	8~12	L–(67+F)								
		BSBR	25	05	200~1500	27	15	L-118	3.175	25.8	(21.8)		6.6	18.7	0.10 or Less	
		BSBRK				27~45	10~15	L-(91+F)								
		BSBR		10		27	15	L-118	6.35	26.8	(20.3)	2.5 turn, 2 line	27.5	76.3	0.20 or Less	
		BSBRK				27~45	10~15	L-(91+F)								

*F and P are configurable for BSBRK only. ⓘ F≤Px3 [1]See **P.75** for details.

– Block Nut – BSBR (K) 1505 / 1510

*The dimensions in ( ) are for BSBR (K) 1510.

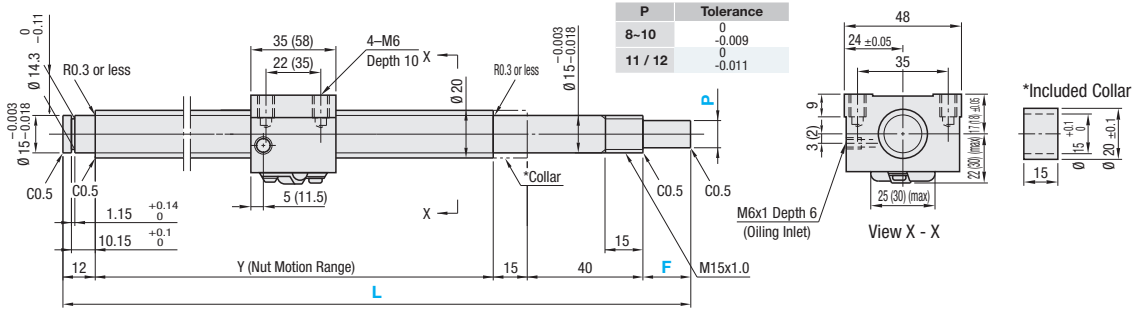
*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide



– Block Nut – BSBR (K) 2005 / 2010

*The dimensions in ( ) are for BSBR (K) 2010.

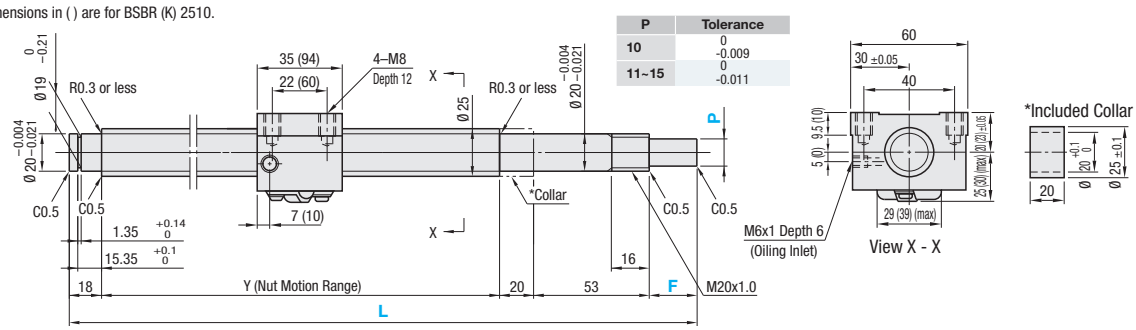
P	Tolerance
8~10	0 -0.009
11 / 12	0 -0.011



– Block Nut – BSBR (K) 2505, 2510

*The dimensions in ( ) are for BSBR (K) 2510.

P	Tolerance
10	0 -0.009
11~15	0 -0.011



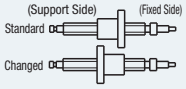
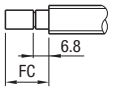
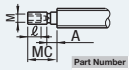
Rolled Ball Screws – Shaft Diameter 15 / 20 / 25, Lead 5, 10 –

– Block Style Ball Nut – Accuracy Grade C10 –

■ Combination with Support Units

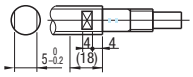
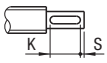
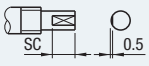
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSBR	15	05 10	BRW	12	Round	Good		126
			BUR	12			Good	126
			BSW	12	Square	Good		120
			BUN	12			Good	120
	20	05 10	BRW	15	Round	Good		126
			BUR	15			Good	126
			BSW	15	Square	Good		120
			BUN	15			Good	120
	25	05 10	BRW	15	Round	Good		126
			BUR	15			Good	126
			BSW	15	Square	Good		120
			BUN	15			Good	120

Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 (BSBR15_ _, 20_ _) 19≤FC≤60 (BSBR25_ _) Y dimension is shortened
Tapped Hole on Support Side Shaft End – BS__2806 – – BS__3210, 3232 – 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 18≤MC≤30 (BSBR15_ _) 21≤MC≤30 (BSBR20_ _) 28≤MC≤60 (BSBR25_ _) Y dimension is shortened

Part Number	A
BSBR15_ _	9.15
BSBR20_ _	10.15
BSBR25_ _	15.35

Part Number	A	M	ℓ
BSBR15_ _	9.15	M5x0.8	12
BSBR20_ _	10.15	M6x1.0	15
BSBR25_ _	15.35	M8x1.25	20

Alterations	Code	Spec.
Wrench Flats on Fixed Side  Incomplete Hardened Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. P=5 is not applicable KC=1mm Increment Ordering Code KC20 3≤KC≤PX3 KC≤F-1 (BSBR15_ _) 4≤KC≤PX3 KC≤F-1 (BSBR20_ _) 5≤KC≤PX3 KC≤F-1 (BSBR25_ _)
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) P=5 is not applicable K,S=1mm Increment Ordering Code KLC-K20-S3 4≤K+S≤PX3 K+S≤F-1 (BSBR15_ _) 5≤K+S≤PX3 K+S≤F-1 (BSBR20_ _) 6≤K+S≤PX3 K+S≤F-1 (BSBR25_ _)
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤Px3 SC≤F-1
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 5≤SWC, SGC≤Px3 SWC, SGC≤F-1

Incomplete Hardened Area	A	B	C	D
BSBR15_ _	10 $^{0}_{-0.2}$	7	5	(22)
BSBR20_ _	16 $^{0}_{-0.25}$	9	6	(25)
BSBR25_ _	18 $^{0}_{-0.25}$	10	7	(27)

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P
BSBR1505	–	200	–		–	
BSBRK2510	–	370	–	F40	–	P15
BSBR2505L	–	370	(L Type Greased)			
BSBR2005G	–	370	(G Type Greased)			

Alterations

Part Number	–	L	–	F	–	P	–	(FC, MC...etc.)
BSBR2505	–	700					–	RLC

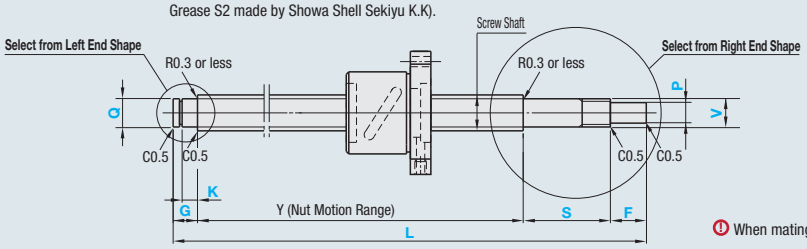
Rolled Ball Screws

– Shaft Ends Configurable — Accuracy Grade C10 –

RoHS

Nut Type	Type	Screw Shaft			Ball Nut		
		Material	Hardness	Surface Treatment	Material	Hardness	Surface Treatment
Standard Ball Nut	FBSSR	1055 Carbon Steel	Induction Hardened 56~62HRC	Phosphate Conversion Coating	JIS-SCM420	Carburized 58~62HRC	Low Temperature Black Chrome Plating (Screw Shaft 8 and 10 are applied with Phosphate conversion coating)
	FBSSZ			—			

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).

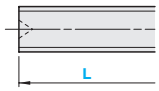


V	Tolerance
6	-0.002 -0.007
8	-0.002 -0.008
10	-0.002 -0.015
12 / 15	-0.003 -0.018
20 / 25	-0.004 -0.021

When mating with support units, please insert a collar.

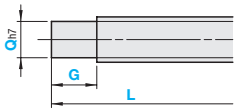
Left (Support Side) Shaft End Shape

A No Machining on the Shaft End

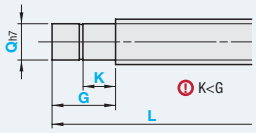


With a Centering Hole

B Stepped Machining

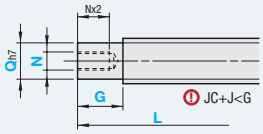


C Single Stepped – Retaining Ring Groove



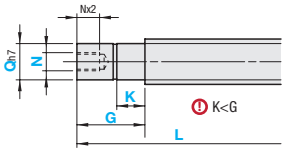
K<G

D Single Stepped – Tapped Hole on End



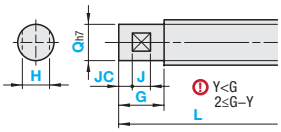
JC+J<G

E Single Stepped – Retaining Ring Groove – Tapped Hole on End



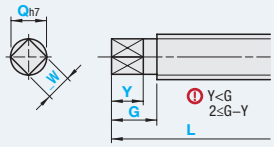
K<G

F Single Stepped – 2 Width Specified Flats Machined



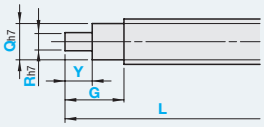
Y<G
2≤G–Y

G Single Stepped – Square End Machining



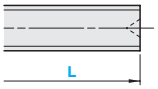
Y<G
2≤G–Y

H Double Stepped End Machining



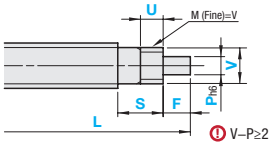
Right (Support Side) Shaft End Shape

A No Machining on the Shaft End



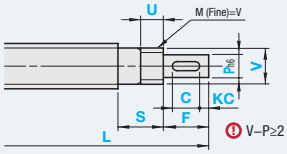
With a Centering Hole

J Double Stepped End Machining



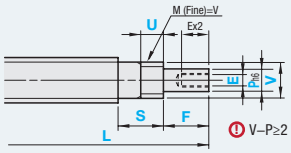
V–P≥2

K Double Stepped – Keyway



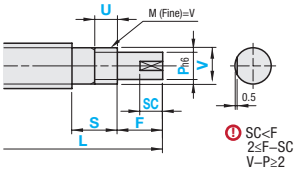
V–P≥2

M Double Stepped – Tapped Hole on End



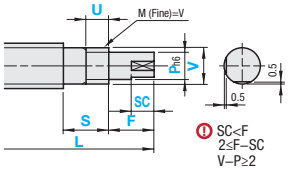
V–P≥2

N Double Stepped – One Flat



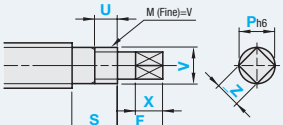
SC<F
2≤F–SC
V–P≥2

P Double Stepped – 90° Flats



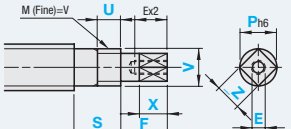
SC<F
2≤F–SC
V–P≥2

R Double Stepped – Square End Machining



X<F
2≤F–X
V–P≥2

S Double Stepped – Tapped Hole – Square End Machining



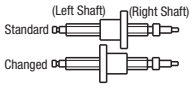
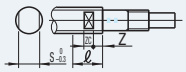
X<F
2≤F–X
V–P≥2

For each ball nut dimensions and specifications, please refer to the page where each product is listed. Shaft Diameter 8 **P.80–82**, 10 **P.83–84**, 12 **P.85–87**, 15 **P.88–90**, 20 **P.91–93**, 25 **P.94–96**, 28 **P.97–98**

When combining the left end shape F, G and the right end shape K, N, P, R, S, there is no angular phase relationship.

Rolled Ball Screws

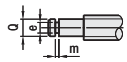
– Shaft Ends Configurable — Accuracy Grade C10 –

Alterations	Code	Spec.
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
Wrench Flats on Fixed Side 	SZC	Adds wrench flats on the shaft right end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.

Shaft Diameter	Z	ZC	S	ℓ
8	4	4	5	18
10	5	5	8	20
12	5	5	8	20
14	5	7	10	22
15	5	7	10	22
20	6	9	16	25
25	7	10	18	27
28	8	11	21	29
32	9	13	27	32

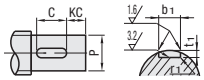
ℓ indicates incomplete hardened area

■ Retaining Ring Groove Details



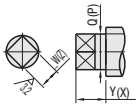
Q	e Tolerance		m+0.14 0
6	5.7	0 -0.06	0.8
8	7.6		0.9
10	9.6	0 -0.09	1.15
12	11.5	0 -0.11	
15	14.3		
20	19	0 -0.21	1.35
25	23.9		

■ Keyway Details



Applicable Shaft • Hole Diameter P	Key Groove Dimension				
	b_1		t_1		r_1
	Reference Dim.	Tolerance	Reference Dim.	Tolerance	
6 • 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11 / 12	4	0 -0.030	2.5		
13~17	5		3.0		0.16 ~0.25
18~22	6		3.5		
23	8	0 -0.036	4.0	+0.2 0	

■ Square Machining Details



Q (P)	W(Z)1mm Increment
6~10	5~ 8
11~14	8~10
15~19	10~14
20~25	14~20

Q (P)/2 √2≤W (Z)
Chamfering may not be available depending on the relationship between Q (P) and W(Z).

■ V (Fine Thread) Details

M	Pitch
6	0.75
8	1.0
10	1.0
12	1.0
15	1.0
20	1.0
25	1.5

Precision Class	Part Number					1mm Increment	1mm Increment									Selection		1mm Increment								Selection	
	Type	Left End Support Side	Right End Fixed Side	Screw Shaft Outer Dia.	Lead	L	F	P	S	U	C	KC	SC	X	Z	V	E (Coarse)	G	K	J	JC	H	Y	R	W	Q	N (Coarse)
C10	FBSSR FBSSZ	A B C D E F G H	A J K M N P R S	08	02	100~ 400	5≤F≤Px3 5≤S≤Vx4 V≤U≤Vx2 b1<C≤60 F–C–KC≥2 KC=0 or KC≥2 5≤SC≤Px3 SC≤F-2 5≤X≤20 P≥4 P≥V/2 When V=6, P=4 When V≥8, P≤V–2									6	4 5 6 8 10	5≤G≤Qx3 5≤K≤Qx3 3≤J≤20 H≥Q–2 5≤Y≤20 R≤Q–2								6	—
				08	04	100~ 380																				6	
				10	02	150~ 585										8										6	—
				10	04	150~ 600																				6	
				10	10	150~ 585																				6	
				12	04	150~ 800										8 10										6 8	4
				12	10	150~ 800										8 10											
				14	05	150~ 800										8 10										6 8 10	4 5 6
				15	05	150~1200										10 12										8 10 12	5 6 8
				15	10	200~1200																					
				15	20																						
				20	05	200~2000										10 12 15										8 10 12 15	5 6 8 10
				20	10	250~2000																					
				20	20																						
				25	05	200~2000										15 20										10 12 15 20	6 8 10
				25	10	300~2000																					
				25	25																						
				28	06	200~2000										15 20										10 12 15 20	6 8 10
				32	10	300~2000										20 25										10 12 15 20 25	6 8 10
				32	32																						

For FBSSZ type, sizes 0804, 1002 and 1010 are not available. E≤P–4EN≤Q–4

Caution: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.

For Rolled Ball Screws accuracy, refer to **P.76–78**

For the Support Unit, **P.120–130**

For Nut Brackets, refer to **P.120–130**

Order Example

Part Number	–	L	–	F	–	P	–	S	–	V	–	U	–	C	–	KC	–	E	–	SC	–	X	–	Z	–	G	–	Q	–	K	–	N	–	J	–	JC	–	H	–	Y	–	W	–	R
FBSSRAA1004	–	450																																										
FBSSZDJ2010	–	1200	–	F36	–	P12	–	S60	–	V15	–	U15														G20	–	Q15			–	N10												

Alterations

Part Number	–	L	–	F	–	P	–	S	–	V	–	U	–	C	–	KC	–	E	–	SC	–	X	–	Z	–	G	–	Q	–	K	–	N	–	J	–	JC	–	H	–	Y	–	W	–	R	–	(RLC / SZC)
FBSSZDJ2010	–	1200	–	F36	–	P12	–	S60	–	V15	–	U15														G20	–	Q15			–	N10												RLC

Precision Ball Screws – Shaft Diameter 6, 8 Lead 1, 2 –

– Accuracy Grade C3, C5, C7 –

For cost efficient model see **P.105**.

RoHS

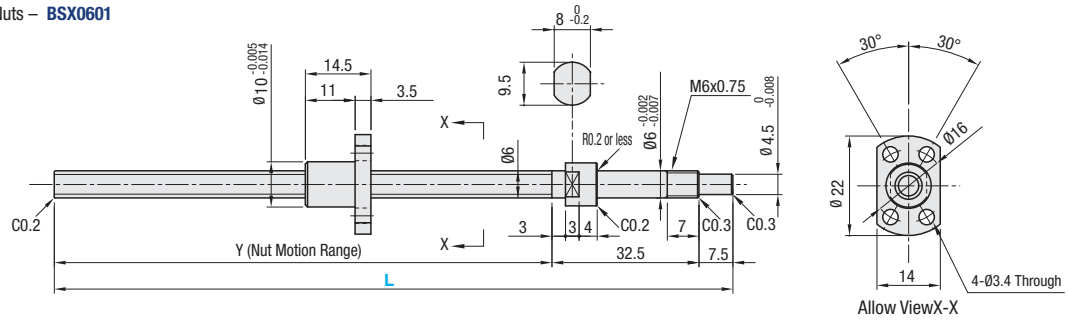
Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Compact Nut	BSX	–	C3	6 / 8	1 / 2	JIS-SCM415	Carburized 58~62HRC	JIS-SCM420	Carburized 58~62HRC
Standard Nut	BSX	–	C3	8	2				
	BSS	BSL	C5						
	BSSE	–	C7						

kgf=Nx0.101972

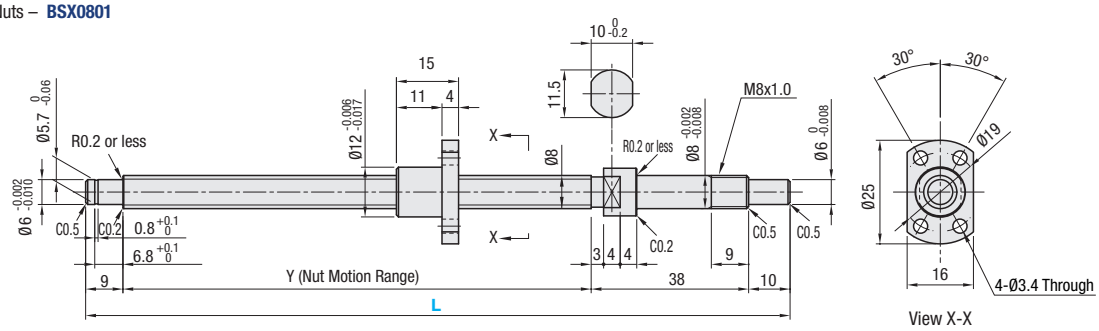
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Compact Ball Nut	C3	BSX	06	01	80~205	L-40	0.800	6.24	(5.3)	1 turn, 3 rows	0.55	1.15	0 (Preloaded)	1.3 or Less	Right
			08	01	80~255	L-57		8.24	(7.3)		0.65	1.6		1.8 or Less	
Standard Ball Nut			08	02	100~240		1.5875	8.3	(6.6)	2.5 turns, 1 row	1.22	1.3		0.3~2.6	
	C5	BSS			100~210						1.95	2.6	0.005 or Less	0.5 or Less	
	C7	BSSE											0.030 or Less	—	
	C5	BSL											0.005 or Less	0.5 or Less	Left

[1]See **P.75** for details.

– Compact Nuts – **BSX0601**

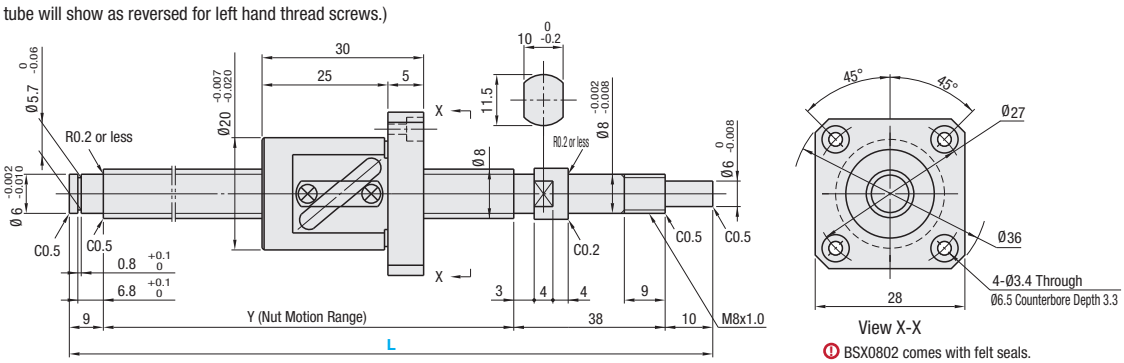


– Compact Nuts – **BSX0801**



– Standard Nut – **BSX · BSS · BSSE · BSL0802**

(Recirculation tube will show as reversed for left hand thread screws.)



BSX0802 comes with felt seals.

Precision Ball Screws – Shaft Diameter 6, 8 Lead 1, 2 –

– Accuracy Grade C3, C5, C7 –

■ Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX BSS BSSE BSL	06	01	BRW	6	Round	Good		126
			BSW	6	Square	Good		120
	08	01 02	BRW	8	Round	Good		126
			BUR	8			Good	126
			BSW	8	Square	Good		120
			BUN	8			Good	120

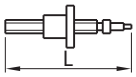
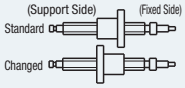
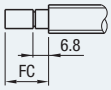
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

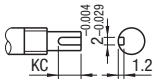
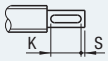
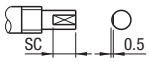
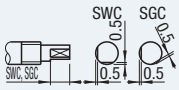
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSX BSS BSSE BSL	06	01	—	—	—
	08	01	BNFB BNFM BNFR BNFA	801X	128
		02		802S	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available BSX0601 is not applicable
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 10≤FC≤20 Y dimension is shortened BSX0601 and 0801 are not applicable

Alterations	Code	Spec.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC6 3≤KC≤9 BSX0601 is not applicable
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 4≤K+S≤9 BSX0601 is not applicable
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤6 (BSX0601) 5≤SC≤9 (BS_ _0801, 0802)
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC6 5≤SWC, SGC≤6 SWC (BSX0601) 5≤SWC, SGC≤9 SWC (BS_ _0801, 0802)

■ Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K). (BSX is filled with Multemp Grease PS2 made by Kyodo Yushi Co., Ltd.)

Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.

Various grease options are available. BSX is not applicable.

For accuracy of Ball Screws, refer to **P.76–78**

For Support Units details, refer to **P.120–130**

Order Example

Part Number	–	L	
BSX0601	–	185	
BSL0802	–	200	
BSS0802L	–	210	(L Type Greased)
BSS0802G	–	210	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSS0802	–	190	–	KC3

NEW Precision Ball Screws Standard Nut – Shaft Diameter 8, Lead 2 – – Accuracy Grade C5 –

For higher accuracy and load ratings see **P.103**.

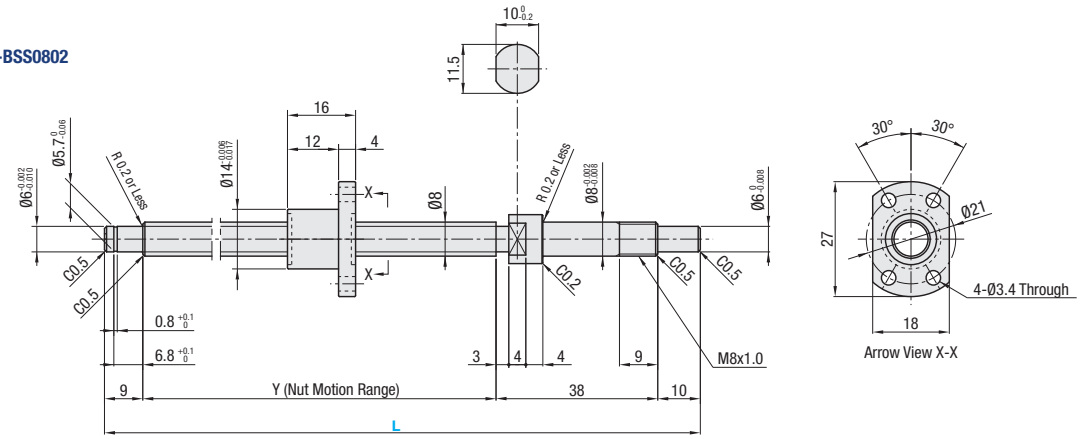
RoHS

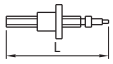
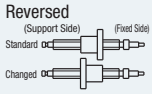
Ball Nut Type	Type	Accuracy Grade	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	C-BSS	C5	8	2	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	EN 1.7242 Equiv.	Carburized 58~62HRC

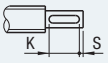
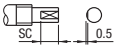
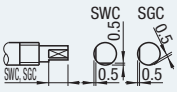
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N • cm	Twisting Direction
Standard Nut	C5	C-BSS	08	02	100~210	L-57	1.2	8.41	(7.21)	1 turn, 3 rows	1.4	1.8	0.008 or Less	0.5 or Less	Right

– Standard Nuts – **C-BSS0802**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ! Combination with FC is not available
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ! 10≤FC≤20 ! Y dimension is shortened

Alterations	Code	Spec.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC6 ! 3≤KC≤9
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 ! 4≤K+S≤9
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ! 5≤SC≤9
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC6 ! 5≤SWC, SGC≤9

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSS	08	02	C-BSW	8	Square	Good		129
			C-BUN				Good	129
			C-BRW		Round	Good		130
			C-BUR				Good	130

! Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

Order Example

Part Number	–	L
C-BSS08002	–	150

■ Note

! Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
! For accuracy of Ball Screws, refer to **P.76–78**
! For details support units, refer to **P.120–130**
! Use one of the support unit accessory collars on the fastening nut side.
! Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
! Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.

Alterations

Part Number	–	L	–	(FC, KC...etc.)
C-BSS0802	–	182	–	KC3

Precision Ball Screws – Shaft Diameter 10, Lead 2, 4, 10 –

– Accuracy Grade C3, C5, C7 –

RoHS

Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	BSX	–	C3	10	2	*AISI4150	*Induction Hardened 58~62HRC	JIS-SCM420	Carburized 58~62HRC
	BSS	BSL	C5		2 / 4 / 10				
	BSSE	–	C7						

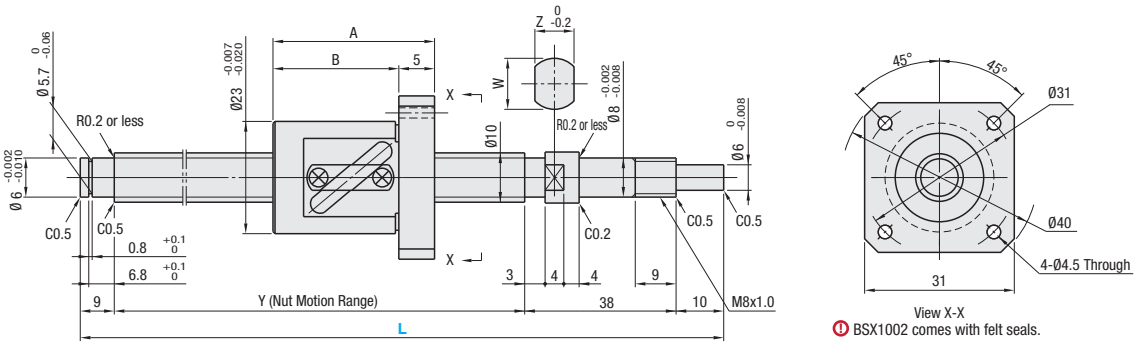
*For 1002, shaft material SCM415 Alloy Steel is carburized.

kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment L	Y	A	B	Z	W	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C3	BSX	10	02	100~310	L-57	30	25	10	11.5	1.5875	10.3	-8.6	2.5 turns, 1 row	1.41	1.65	0 (Preloaded)	0.3~2.5	Right
	C5	BSS			100~315		27	22	8	10					2.25	3.3	0.005 or Less	0.5 or Less	
	C7	BSSE															0.030 or Less	—	
	C5	BSS		04	150~380	L-70	—	—	—	—	2.3812	10.6	-8.1		3.35	5.9	0.005 or Less	1.0 or Less	Left
		BSL																	
	C7	BSSE															0.030 or Less	—	Right
	C5	BSS		10	150~450	L-73								1.5 turns, 1 row	2.2	3.5	0.005 or Less	1.0 or Less	

[1]See **P.75** for details.

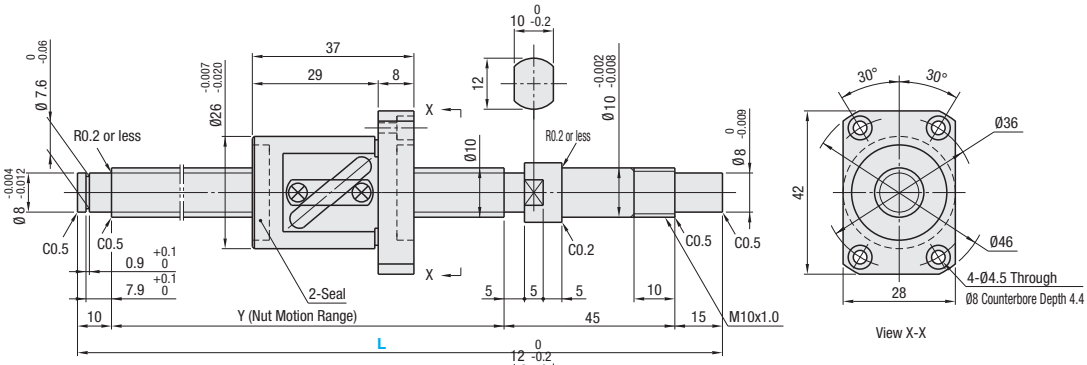
– Standard Nuts –
BSX / BSS / BSSE1002



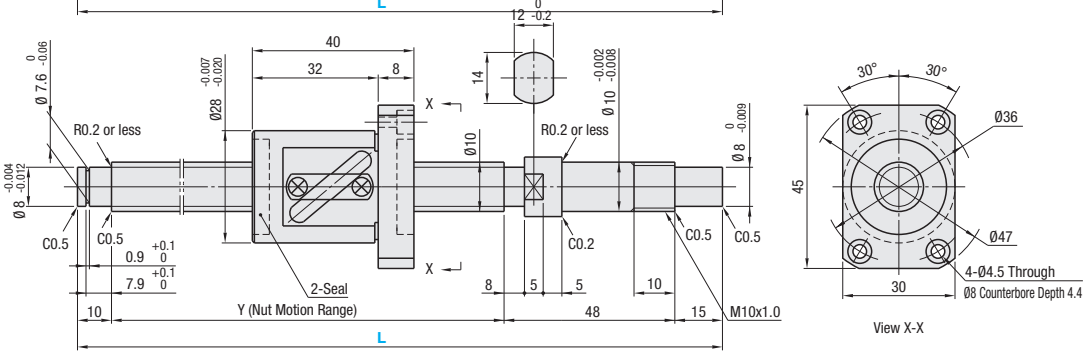
Recirculation tube will show as reversed for left hand thread screws.

BSX1002 comes with felt seals.

– Standard Nuts –
BSS / BSL / BSSE1004



– Standard Nuts –
BSS1010



Precision Ball Screws – Shaft Diameter 10, Lead 2, 4, 10 –

– Accuracy Grade C3, C5, C7 –

■ Combination with Support Units

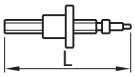
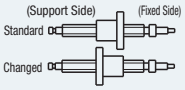
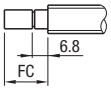
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX	10	02	BRW	8	Round	Good		126
			BUR	8			Good	126
			BSW	8	Square	Good		120
			BUN	8			Good	120
BSS BSSE		02	BRW	8S	Round	Good		126
			BUR	8S			Good	126
			BSW	8S	Square	Good		120
			BUN	8S			Good	120
BSS BSSE BSL		04	BRW	10S	Round	Good		126
			BUR	10S			Good	126
			BSW	10S	Square	Good		120
			BUN	10S			Good	120
BSS		10	BRW	10	Round	Good		126
			BUR	10			Good	126
			BSW	10	Square	Good		120
			BUN	10			Good	120

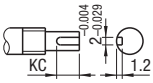
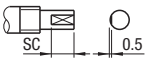
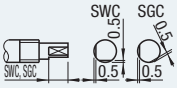
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSX	10	02	BNFB BNFM BNFR BNFA	1002X	128
BSS BSSE BSL				1002S	128
		04		1004X	128
		10		1010S	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Y dimension is shortened Ordering Code GC-Q8-G20 5≤G≤Qx3 Not applicable to 1002
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 Size / ℓ / FC Range: 1002 / 6.8 / 10≤FC≤20; 1004, 1010 / 7.9 / 11≤FC≤20 Y dimension is shortened

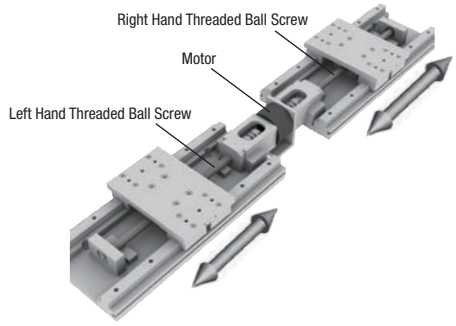
Alterations	Code	Spec.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC6 3≤KC≤14 (9)
Keyway on Fixed Side Shaft End	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 3≤KC≤14 (9)
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 3≤KC≤14 (9)
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 3≤KC≤14 (9)

Dimensions in ( ) are for 1002.

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSX is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For Support Units details, refer to **P.120–130**

Example



Order Example

Part Number	–	L	
BSX1002	–	200	
BSS1004L	–	320	(L Type Greased)
BSSE1004G	–	150	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSS1004	–	270	–	SC10

Precision Ball Screws – Shaft Diameter 12, Lead 2, 4, 5, 10 –

– Accuracy Grade C3, C5, C7 –

For cost efficient model see **P.110**.

RoHS

Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	BSX	–	C3	12	2 / 5	*AISI4150	*Induction Hardened 58~62HRC	JIS-SCM420	Carburized 58~62HRC
	BSS	BSL	C5		2 / 4 / 5 / 10				
	BSSE	–	C7						

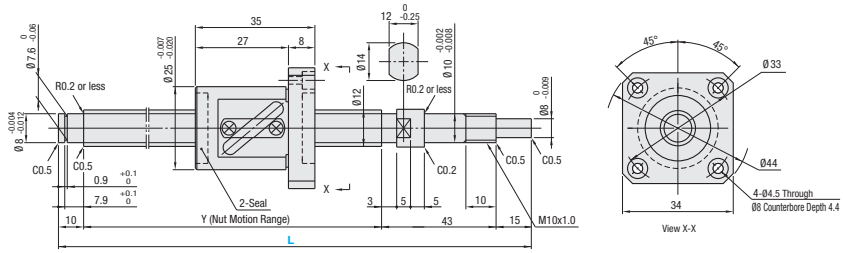
*For 1202, screw shaft material JIS-SCM415 Alloy Steel is carburized.

kgf=Nx0.101972

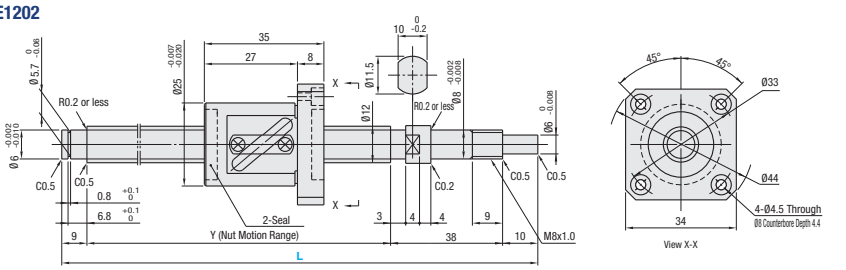
Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment L	Y	A	B	T	Z	W	H	R	C	d	d_1	h	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N-cm	Twisting Direction
Standard Ball Nut	C3	BSX	12	02	150~390	L-68	—											1.5875	12.3	(10.6)	2.5 turns 1 row	1.54	2.05	0 (Preloaded)	0.4~3.2	Right
	C5	BSS			150~445	L-57																2.45	4.1	0.005 or Less	1.0 or Less	
	C7	BSSE																						0.030 or Less	—	
	C5	BSS		04	150~400	L-70												2.3812	12.6	(10.1)		3.6	6.75	0.005 or Less	1.0 or Less	
	C3	BSX		05	150~440	L-70	44	34	10	12	14	45	50	40	4.5	8	4.4	3.175	12.8	(9.5)		3.74	4.9	0 (Preloaded)	1.5~5.0	Right
	C5	BSS			150~450																	5.95	9.8	0.005 or Less	1.0 or Less	
		BSL								10	12															Left
	C7	BSSE																						0.030 or Less	—	
	C5	BSS		10	200~600	L-70	49	37	12			48	54	41	5.5	9.5	5.4				1.5 turns 1 row	3.85	5.9	0.005 or Less	2.0 or Less	Right
	C7	BSSE																						0.030 or Less	—	

[1]See **P.75** for details.

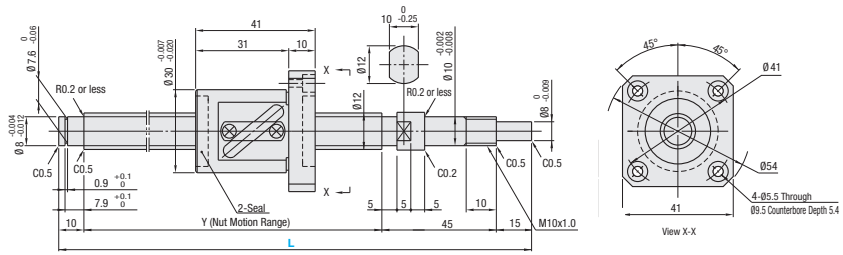
– Standard Nuts – **BSX1202**



– Standard Nuts – **BSS / BSSE1202**

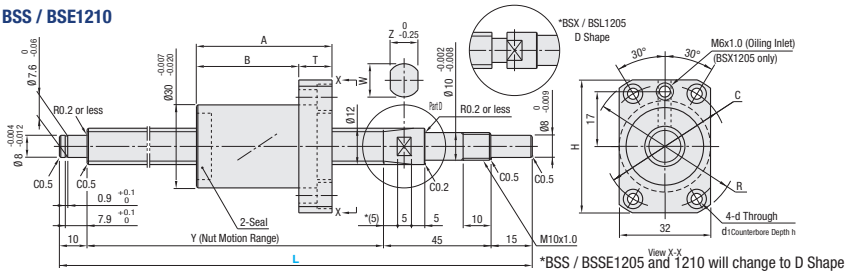


– Standard Nuts – **BSS1204**



– Standard Nuts –
BSX / BSS / BSL / BSSE1205 BSS / BSE1210

Recirculation tube will show as reversed for left hand thread screws.



*BSS / BSSE1205 and 1210 will change to D Shape at anytime without notice. For details, refer to **P.111**.

Precision Ball Screws – Shaft Diameter 12, Lead 2, 4, 5, 10 –

– Accuracy Grade C3, C5, C7 –

■ Combination with Support Units

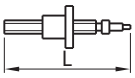
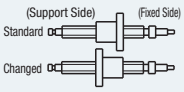
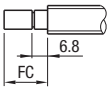
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX	12	02	BRW	10	Round	Good		126
			BUR	10			Good	126
			BSW	10	Square	Good		120
			BUN	10			Good	120
		05	BRW	10	Round	Good		126
			BUR	10			Good	126
			BSW	10	Square	Good		120
			BUN	10			Good	120
BSS BSSE		02	BRW	8	Round	Good		126
			BUR	8			Good	126
			BSW	8	Square	Good		120
			BUN	8			Good	120
		04 05 10	BRW	10S	Round	Good		126
			BUR	10S			Good	126
			BSW	10S	Square	Good		120
			BUN	10S			Good	120

Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

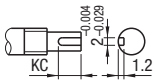
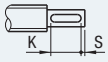
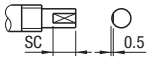
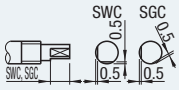
Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSX BSS BSSE	12	02	BNFB BNFM BNFR BNFA	1202S	128
		04		1204S	
		05		1205S	128
		10		12010S	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Not applicable to 1202 of C5 and C7
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20

Size	ℓ	FC Range
1202	6.8	10≤FC≤20
1204	7.9	11≤FC≤20
1205		
1210		

Y dimension is shortened

Alterations	Code	Spec.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 3≤KC≤14 (9)
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 3≤KC≤14 (9)
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 3≤KC≤14 (9)
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 3≤KC≤14 (9)

Dimensions in ( ) are for 1002.

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. BSX is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**
- For Support Units details, refer to **P.120–130**

Order Example

Part Number	–	L	
BSX1202	–	300	
BSSE1210L	–	420	(L Type Greased)
BSSE1210G	–	420	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSX1202	–	300	–	SWC13

NEW $ Precision Ball Screws Standard Nut – Shaft Diameter 12, Lead 2, 5, 10 – – Accuracy Grade C5 –

For higher accuracy and load ratings see **P.108**.

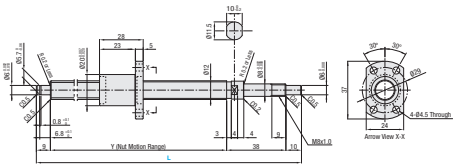
RoHS

Ball Nut Type	Type	Accuracy Grade	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	C-BSS	C5	12	2, 5, 10	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	EN 1.7242 Equiv.	Carburized 58~62HRC

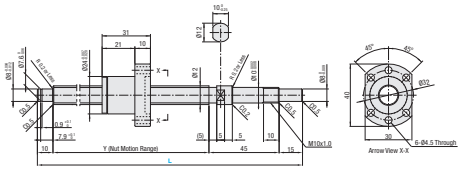
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload torque N • cm	Twisting Direction
Standard Nut	C5	C-BSS	12	02	150~445	L-57	1.2	12.41	(11.21)	1 turn, 4 rows	1.7	2.9	0.008 or Less	1.0 or Less	Right
				05	150~450	L-70	2.5	12.3	(9.8)	2.8 turns, 1 row	4.2	6.9			
				10	200~600						2.7	4.1		2.0 or Less	

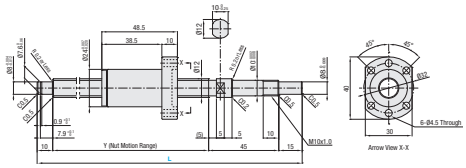
– Standard Nuts – **C-BSS1202**

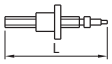
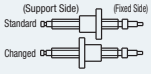
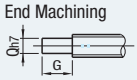


– Standard Nuts – **C-BSS1205**



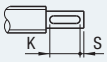
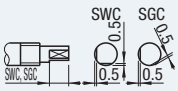
– Standard Nuts – **C-BSS1210**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 6 or 8 G=1mm Increment Ordering Code GC-Q8-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened ⊗ Not applicable to 1202
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv.

Size	ℓ	FC Range
1202	6.8	10≤FC≤20
1205	7.9	11≤FC≤20
1210		

ⓘ Y dimension is shortened

Alterations	Code	Spec.
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 ⓘ 3≤KC≤14(9)
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 ⓘ 4≤K+S≤14(9)
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ⓘ 4≤K+S≤14(9)
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 ⓘ 5≤SWC, SGC≤14(9)

ⓘ Dimensions in ( ) are for 1202.

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSS	12	02	C-BRW	8	Round	Good		130
			C-BUR	6			Good	130
			C-BSW	8	Square	Good		129
		05 10	C-BRW	10S	Round	Good		130
			C-BUR	10			Good	130
			C-BSW	10S	Square	Good		129

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.
- ⓘ Use one of the support unit accessory collars on the fastening nut side.

Order Example

Part Number	–	L
C-BSS1205	–	200

Alterations

Part Number	–	L	–	(FC, KC...etc.)
C-BSS1202	–	386	–	SWC13

Precision Ball Screws – Shaft Diameter 15, Lead 5, 10, 20, 40 –

– Accuracy Grade C3, C5, C7 –

For cost efficient model see **P.113**.

RoHS

Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	BSX	–	C3	15	5	AISI4150	Induction Hardened 58~62HRC	JIS-SCM420	Carburized 58~62HRC
	BSS ★ ✓	BSL	C5		5 / 10 / 20 / 40				
	BSSE	–	C7						

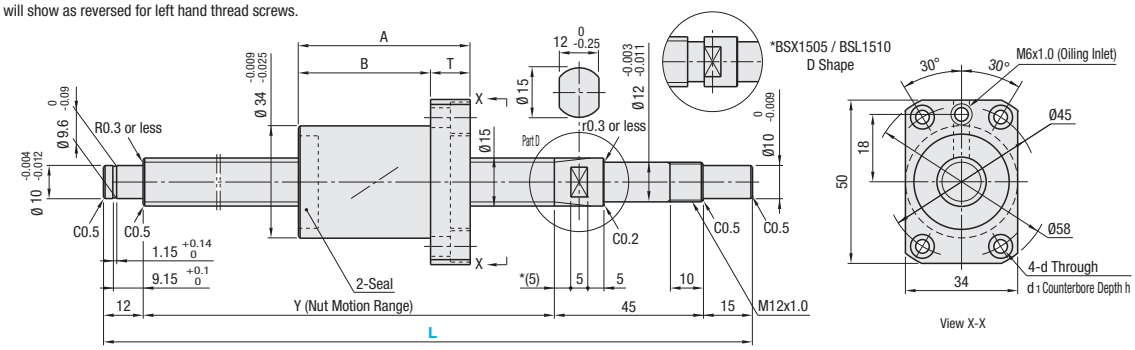
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Dia.	Part Number: Lead	1mm Increment: L	Y	A	B	T	d	d_1	h	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C3	BSX	15	05	150~ 590	L-72	44	34	10	5.5	9.5	5.4	3.175	15.8	(12.5)	2.5 turns, 1 row	4.34	6.25	0 (Preloaded)	1.5~6.0	Right
	C5	BSS			150~1095												6.9	12.5	0.005 or Less	2.0 or Less	
	C7	BSSE																	0.030 or Less	—	
	C5	BSS		10	200~1095	L-72	52	40	12	6		6				1.5 turns, 1 row	4.4	7.9	0.005 or Less	3.0 or Less	Left
		BSL			200~895																
	C7	BSSE			200~1095														0.030 or Less	—	Right
	C5	BSS		20	230~1095	L-72	62	50											0.005 or Less	3.0 or Less	
	C7	BSSE																	0.030 or Less	—	
	C5	BSS		40	300~1095	L-82	—									0.67 turn, 3 line	5.6	8.6	0.010 or Less	—	

[1]See **P.75** for details.

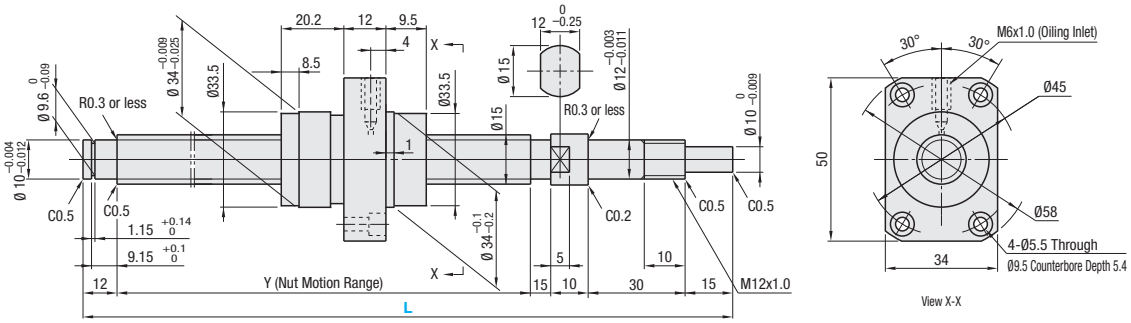
– Standard Nuts – **BSX / BSS / BSSE1505 BSS / BSSE / BSL1510 BSS / BSSE1520**

Recirculation tube will show as reversed for left hand thread screws.

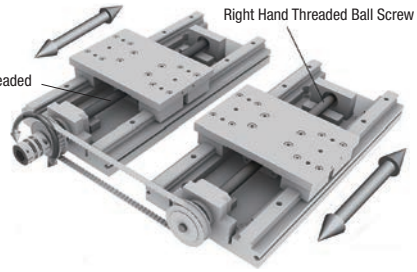


*BSS / BSSE1505, 1510 and 1520 will change to D Shape at anytime without notice.

– Standard Nuts – **BSS1540**



Example



*Precaution for use of Ball Screws

The products shown in the Table 1 still have threads on their parts A. However, this is outside of the motion range, therefore, do not advance the nut into the A area.

Do not let the nuts overrun or remove the nuts from the screw shafts, as ball fall-outs and damages will occur.

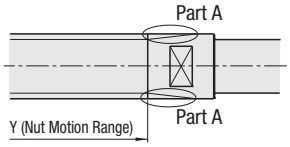


Table 1

Part Number: Type	Screw Shaft Dia.	Lead	Part Number: Type	Screw Shaft Dia.	Lead
BSS	12	05	BSSE	12	05
		10			10
	15	05		15	05
		10			10
		20			20
	20	05		20	05
		10			10
		20			20
	25	10		25	10

Precision Ball Screws – Shaft Diameter 15, Lead 5, 10, 20, 40 –

– Accuracy Grade C3, C5, C7 –

■ Combination with Support Units

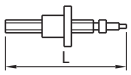
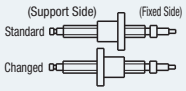
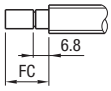
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX BSS BSSE BSL	15	05 10 20 40	BRW	12	Round	Good		126
			BUR	12			Good	126
			BSW	12	Square	Good		120
			BUN	12			Good	120

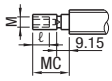
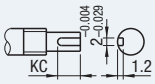
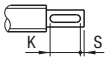
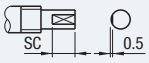
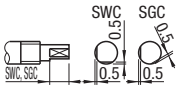
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSX BSS BSSE BSL	15	05	BNFB BNFM BNFR BNFA	1505S	128
		10		1510S	
		20		1520S	128
		40			128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End  	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed  	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened Not applicable to BSS1540
Change Support Side Shaft End Length  	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End  	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 M: M5x0.8, ℓ: 12 18≤MC≤30 Y dimension is shortened.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 3≤KC≤14
Keyway on Fixed Side Shaft End  	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S3 4≤K+S≤14
Flat Machined on Fixed Side Shaft End  	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤14
2 Flats on Fixed Side Shaft End  	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤SWC, SGC≤14

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. ⊗ BSX is not applicable.
- For accuracy of Ball Screws, refer to **P.76–78**

Order Example

Part Number	–	L	
BSX1505	–	300	
BSSE1510L	–	420	(L Type Greased)
BSSE1510G	–	420	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSS1505	–	350	–	KC10

NEW Precision Ball Screws Standard Nut – Shaft Diameter 15, Lead 5, 10, 20 – – Accuracy Grade C5 –

For higher accuracy and load ratings see **P.111**.

RoHS

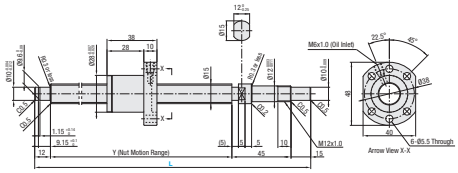
Ball Nut Type	Type	Accuracy Grade	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	C-BSS	C5	15	5, 10, 20	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	EN 1.7242 Equiv.	Carburized 58~62HRC

kgf=Nx0.101972

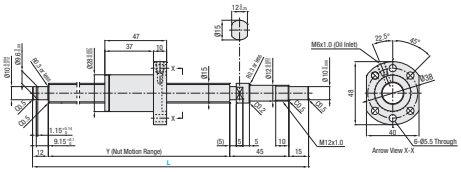
Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload torque N • cm	Twisting Direction
Standard Nut	C5	C-BSS	15	05	150~1095	L-72	2.778	15.672	(12.984)	3.8 turns, 1 row	4.8	8.8	0.015 or Less	2.0 or Less	Right
				10	200~1095					2.8 turns, 1 row	3.9	6.9		3.0 or Less	
				20	230~1095					1.8 turns, 1 row	3.1	5.5			

*Included Collar
Material: 1045 Carbon Steel
Surface Treatment: Black Oxide

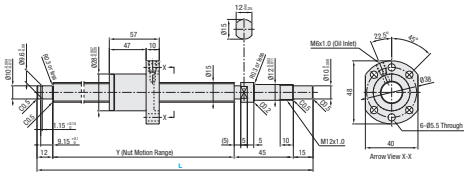
– Standard Nuts – **C-BSS1505**

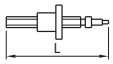
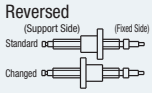
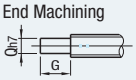


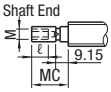
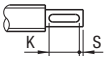
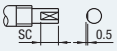
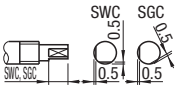
– Standard Nuts – **C-BSS1510**



– Standard Nuts – **C-BSS1520**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. 5≤G≤Qx3 Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 M: M5x.08, ℓ: 12 18≤MC≤30 Y dimension is shortened
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 3≤KC≤14
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S3 4≤K+S≤14
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤14
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤SWC, SGC≤14

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSS	15	05 10 20	C-BRW	12	Round	Good	Good	130
			C-BUR					130
			C-BSW		Square	Good		129
			C-BUN				Good	129

Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

Order Example

Part Number	–	L
C-BSS1505	–	300

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**
- Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.
- Use one of the support unit accessory collars on the fastening nut side.

Alterations

Part Number	–	L	–	(FC, KC...etc.)
C-BSS1505	–	1000	–	KC10

Precision Ball Screws – Shaft Diameter 20, Lead 5, 10, 20, 40 –

– Accuracy Grade C5, C7 –

For cost efficient model see **P.116**.

RoHS

Ball Nut Type	Type	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	BSS	C5	20	5 / 10 / 20 / 40	AISI4150	Induction Hardened 58~62HRC	JIS-SCM420	Carburized 58~62HRC
	BSSE ★	C7		5 / 10 / 20				

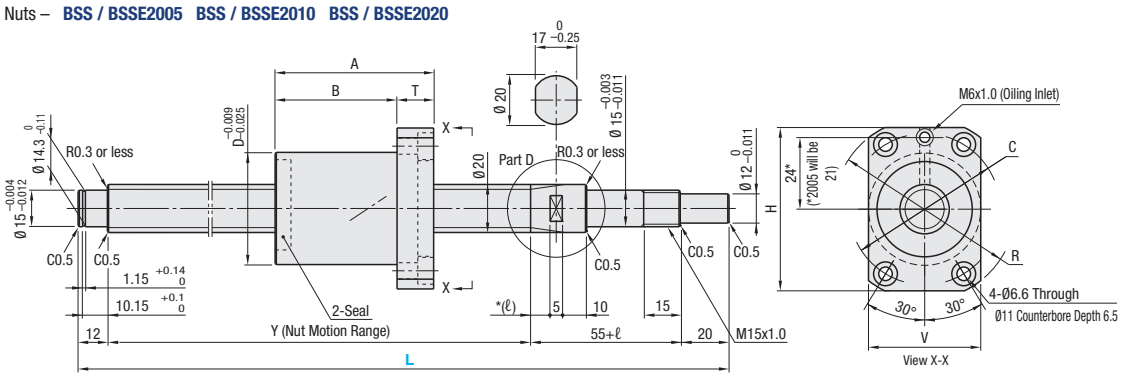
(!) Ball bearings will fall out if the ball nut crosses the wrench flats.

kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	D	A	B	T	(ℓ)	H	V	R	C	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C5	BSS	20	05	200~1000	L-92	40	48	36	12	5	60	40	68	53	3.175	20.8	(17.5)	2.5 turns, 1 row	8.35	17.5	0.005 or Less	3.0 or Less	Right
	C7	BSSE																				0.030 or Less	—	
	C5	BSS		10	250~1500	L-95	46	65	50	15	8	66	46	74	59	4.7625	21	(16)		13.5	25.1	0.005 or Less	4.0 or Less	
	C7	BSSE																				0.030 or Less	—	
	C5	BSS		20	250~1500	L-95		70	55									(15.9)	1.5 turns, 1 row	9.2	16.2	0.005 or Less	4.0 or Less	
	C7	BSSE																				0.030 or Less	—	
	C5	BSS		40	300~1495	L-102	—									3.175	20.8	(17.5)	0.67 turn, 3 rows	6.8	12.1	0.005 or Less	—	

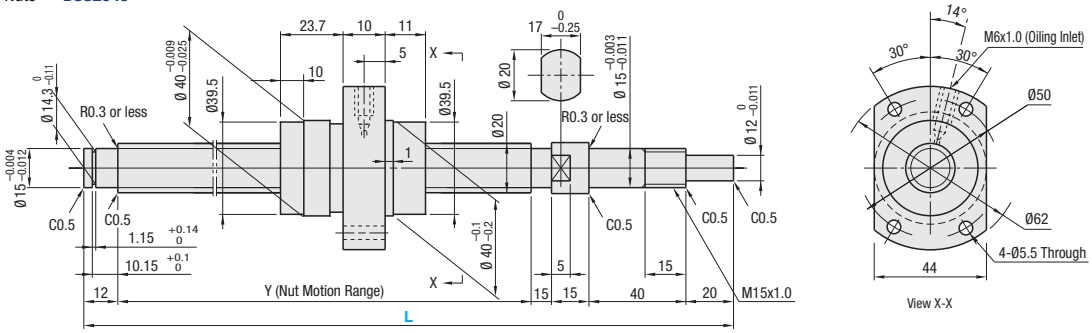
[1]See **P.75** for details.

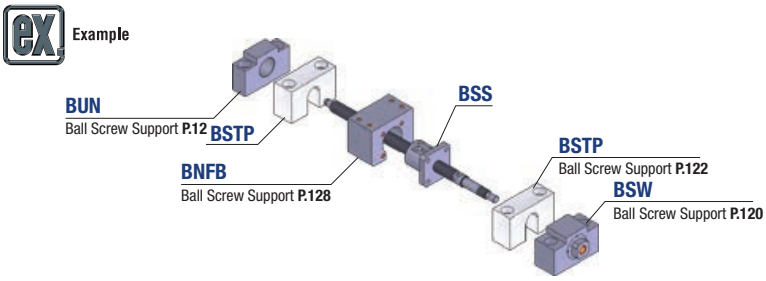
– Standard Nuts – **BSS / BSSE2005 BSS / BSSE2010 BSS / BSSE2020**



*BSS / BSSE2005, 2010 and 2020 will change to D Shape at anytime without notice. For details, refer to **P.111**.

– Standard Nuts – **BSS2040**

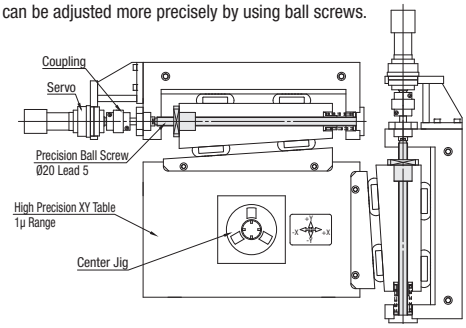




– Combination example of a Ball Screw, Support Units, Ball Nut Brackets, and etc.

■ Wedge Unit X-Y can be adjusted more precisely by using ball screws.

XY Table



Precision Ball Screws – Shaft Diameter 20, Lead 5, 10, 20, 40 –
– Accuracy Grade C5, C7 –

■ Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSS BSSE	20	05 10 20 40	BRW	15	Round	Good		126
			BUR	15			Good	126
			BSW	15	Square	Good		120
			BUN	15			Good	120

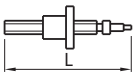
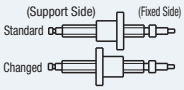
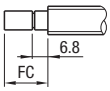
Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

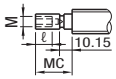
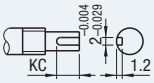
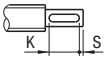
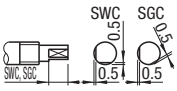
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number Type	Part Number No.	BS Support Page
BSS BSSE	20	05	BNFB BNFM BNFR BNFA	2005S	128
		10		2010S	128
		20		2020S	128
		40		2040S	128

Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Not applicable to 1202 of C5 and C7
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC25 M: M6x1.0, ℓ: 15 21≤MC≤30 Y dimension is shortened.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC15 4≤KC≤19
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K7-S2 5≤K+S≤19
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤19
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 5≤SWC, SGC≤19

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available.
- For accuracy of Ball Screws, refer to **P.76–78**
- For Support Units details, refer to **P.120–130**

Order Example

Part Number	–	L	
BSS2005	–	820	
BSSE2010L	–	1000	(L Type Greased)
BSSE2010G	–	1000	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSS2020	–	350	–	KC10

NEW $ Precision Ball Screws Standard Nut – Shaft Diameter 20, Lead 5, 10, 20 – – Accuracy Grade C5 –

For higher accuracy and load ratings see **P.114**.

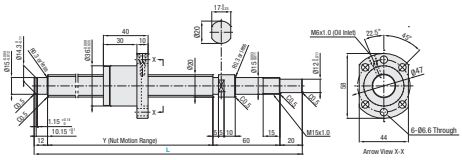
RoHS

Ball Nut Type	Type	Accuracy Grade	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	C-BSS	C5	20	5, 10, 20	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	EN 1.7242 Equiv.	Carburized 58~62HRC

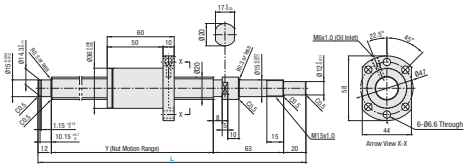
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload torque N • cm	Twisting Direction
Standard Nut	C5	C-BSS	20	05	200~1000	L-92	3.175	21.08	(17.905)	3.8 turns, 1 row	7.1	14.5	0.015 or Less	3.0 or Less	Right
				10	250~1500	L-95		20.75	(17.575)		9.5	17.6		4.0 or Less	
				20						1.8 turns, 1 row	6.4	11.3			

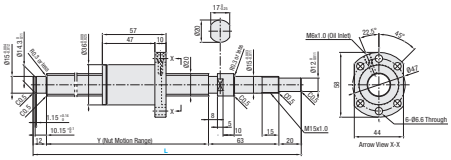
– Standard Nuts – **C-BSS2005**

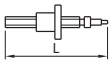
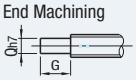


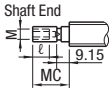
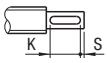
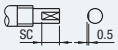
– Standard Nuts – **C-BSS2010**



– Standard Nuts – **C-BSS2020**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard Changed	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC ⓘ Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Ordering Code GC-Q10-G20 ⓘ 5≤G≤Qx3 ⓘ Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. ⓘ 13≤FC≤30 ⓘ Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment (M: M6x1.0, ℓ: 15) Ordering Code MC25 ⓘ 21≤MC≤30 ⓘ Y dimension is shortened
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC15 ⓘ 4≤KC≤19
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K7-S2 ⓘ 5≤K+S≤19
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ⓘ 5≤SC≤19
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 ⓘ 5≤SWC, SGC≤19

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSS	20	05 10 20	C-BRW	15	Round	Good	Good	130
			C-BUR					130
			C-BSW		Square	Good	Good	129
			C-BUN					129

ⓘ Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

Order Example

Part Number	–	L
C-BSS2005	–	820

■ Note

- ⓘ Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- ⓘ For accuracy of Ball Screws, refer to **P.76–78**
- ⓘ For details support units, refer to **P.120–130**
- ⓘ Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- ⓘ Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.
- ⓘ Use one of the support unit accessory collars on the fastening nut side.

Alterations

Part Number	–	L	–	(FC, KC...etc.)
C-BSS2010	–	365	–	KC10

Precision Ball Screws – Shaft Diameter 25, Lead 5, 10, 20 –

– Accuracy Grade C5, C7 –

RoHS

Ball Nut Type	Type	Precision Class	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	BSS	C5	25	5 / 10 / 20	AISI4150	Induction Hardened 58~62HRC	JIS-SCM420	Carburized 58~62HRC
	BSSE	C7		10 / 20				

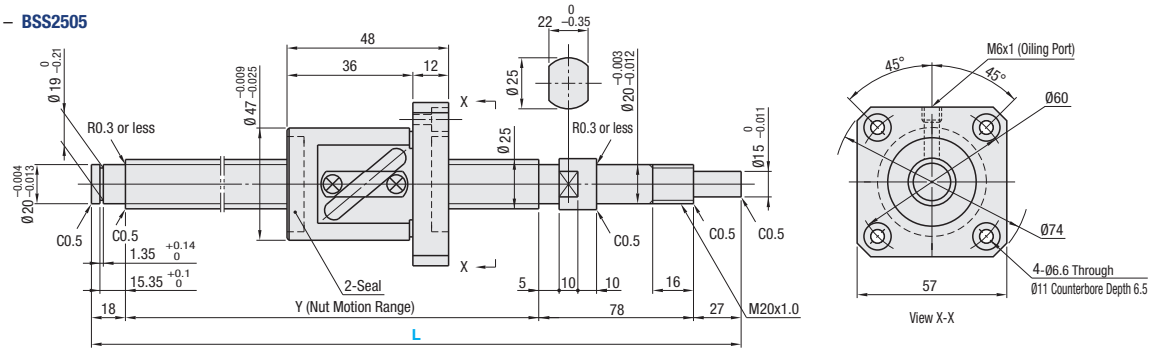
Ball bearings will fall out if the ball nut crosses the wrench flats.

kgf=Nx0.101972

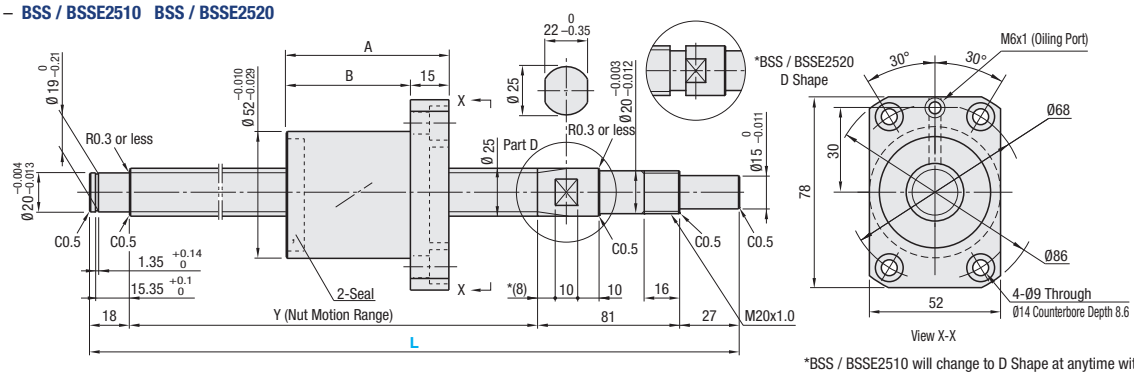
Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	A	B	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits[1]	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C5	BSS	25	05	300~995	L-123	—	—	3.175	25.8	(22.5)	2.5 turns 1 row	9.4	22.2	0.005 or Less	6.0 or Less	Right
	C5	BSS		10	300~1500	L-126	65	50	4.7625	26	(21)		16.1	33.4	0.005 or Less	6.0 or Less	
	C7	BSSE													0.030 or Less	—	
	C5	BSS		20	300~1500	L-126	70	55			(21)	1.5 turns 1 row	10.4	20.1	0.005 or Less	6.0 or Less	
	C7	BSSE													0.030 or Less	—	

[1]See **P.75** for details.

– Standard Nuts – **BSS2505**



– Standard Nuts – **BSS / BSSE2510 BSS / BSSE2520**

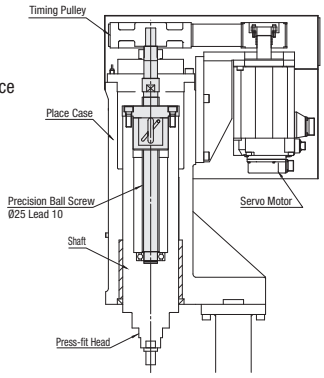


*BSS / BSSE2510 will change to D Shape at anytime without notice.
For details, refer to **P.111**.

Example

Rod-Style Push Type Actuator

In comparison to air / hydraulic cylinders, finer force control is made possible with a use of ball screw.



Precision Ball Screws – Shaft Diameter 25, Lead 5, 10, 20 –
– Accuracy Grade C5, C7 –

■ Combination with Support Units

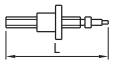
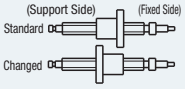
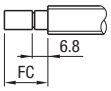
Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Dia.	Lead	Part Number		Shape	Fixed Side	Support Side	Page
			Type	No.				
BSS BSSE	25	05 10 20	BRW	20	Round	Good		126
			BUR	20			Good	126
			BSW	20	Square	Good		120
			BUN	20			Good	120

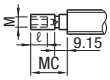
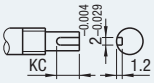
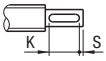
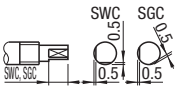
- Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**
- Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

■ Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Dia.	Lead	Part Number		BS Support Page
			Type	No.	
BSS BSSE	25	05	BNFB BNFM BNFR BNFA	2505S	128
		10		2510S	128
		20		2520S	128

- Variety of materials and surface treatments for Nut Brackets are available. **(P.120–130)**

Alterations	Code	Spec.
No Machining on Support Side Shaft End  	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed  	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length  	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 19≤FC≤60 Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End  	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC25 M: M8x1.25, ℓ: 20 28≤MC≤60 Y dimension is shortened.
Keyway on Fixed Side Shaft End  Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 5≤KC≤26
Keyway on Fixed Side Shaft End  	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤26
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤26
2 Flats on Fixed Side Shaft End  	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 5≤SWC, SGC≤26

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available.
- For accuracy of Ball Screws, refer to **P.76–78**
- For Support Units details, refer to **P.120–130**

Order Example

Part Number	–	L	
BSS2510	–	700	
BSSE2510L	–	420	(L Type Greased)
BSSE2510G	–	420	(G Type Greased)

Alterations

Part Number	–	L	–	(FC, KC...etc.)
BSS2505	–	700	–	RLC

NEW Precision Ball Screws Standard Nut – Shaft Diameter 25, Lead 5, 10, 25 – – Accuracy Grade C5 –

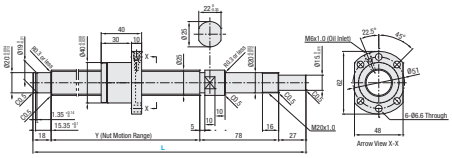
RoHS

Ball Nut Type	Type	Accuracy Grade	Shaft Diameter	Lead	Screw Shaft Material	Screw Shaft Hardness	Ball Nut Material	Ball Nut Hardness
Standard Nut	C-BSS	C5	25	5, 10, 25	EN 1.1203 Equiv.	Induction Hardened 58~62HRC	EN 1.7242 Equiv.	Carburized 58~62HRC

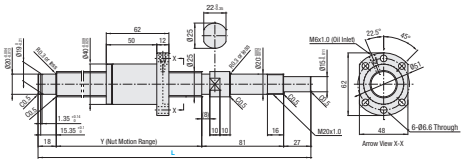
kgf=Nx0.101972

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Dia.	Part Number Lead	1mm Increment L	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload torque N • cm	Twisting Direction
Standard Nut	C5	C-BSS	25	05	300~ 995	L-123	3.175	26.08	(22.905)	3.8 turns, 1 row	7.8	18.2	0.015 or Less	6.0 or Less	Right
				10	300~1500	L-126					11.3	23.4			
				25						1.8 turns, 1 row	7.3	14.1			

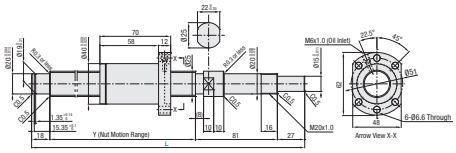
– Standard Nuts – **C-BSS2505**

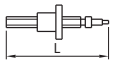
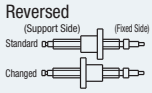
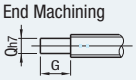


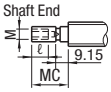
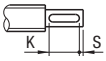
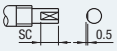
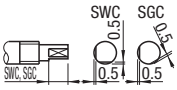
– Standard Nuts – **C-BSS2510**



– Standard Nuts – **C-BSS2525**



Alterations	Code	Spec.
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15, 20 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code EN-JL 1030 Equiv. 19≤FC≤60 Y dimension is shortened

Alterations	Code	Spec.
Tapped Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 M: M5x1.25, ℓ: 20 28≤MC≤60 Y dimension is shortened
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions **P.76**	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 5≤KC≤26
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤26
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤26
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC20 5≤SWC, SGC≤26

■ Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Dia.	Lead	Recommended Support Units Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
C-BSS	25	05 10 25	C-BRW	20	Round	Good		130
			C-BUR				Good	130
			C-BSW		Square	Good		129
			C-BUN				Good	129

Other part numbers, variety of shapes and surface treatments for Support Units are available. **(P.120–130)**

Order Example

Part Number	–	L
C-BSS2510	–	720

■ Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- For accuracy of Ball Screws, refer to **P.76–78**
- For details support units, refer to **P.120–130**
- Cautions: Do not let the nuts overrun or remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Do not tilt the ball screw assembly since the nut may spin off from the shaft due to its own weight.
- Use one of the support unit accessory collars on the fastening nut side.

Alterations

Part Number	–	L	–	(FC, KC...etc.)
C-BSS2505	–	789	–	RLC

Support Units – Square

– Fixed Side Standard Type / Fixed Side Economy Type –

■ The Standard Type uses the preloaded JIS 5 class Angular Contact Bearings. It is preferable to use for high-accuracy and high-speed precision applications.

■ Support Units Fixed Side Standard Type

RoHS

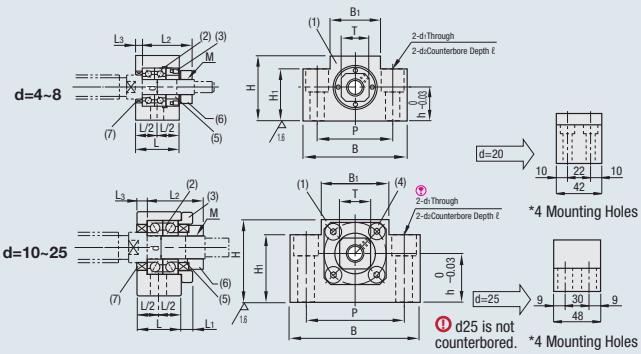
(Industry Standard, for High Speed Applications)

- Oil seal (7) is not included when d=6.
- d=4, 5, 8 come with one oil seal (7) only.
- Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
- BSWR bearing is filled with low particulate generation grease. *Screws (4) for BSWR and BSWN are stainless steel type.
- For No.8S and 10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.

Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSW	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSWN			Electroless Nickel Plating
BSWR			Low Temperature Black Chrome Plating

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (with Set Piece)	1
(7)	Oil Seal	2



Part Number Type	Part Number No.	d	L	L_1	L_2	L_3	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSW BSWN BSWR	4	4	15	—	18	3	34	19	10	18	7	26	4.5	—	—	M4 x 0.5	10	6
	5	5	16.5	—	19	3.5	36	21	11	20	8	28				M5 x 0.5	11	8
	6	6	20	—	22.5	3.5	42	25	13	18	20	30	5.5	9.5	11	M6 x 0.75	12	—
	8S	8	23	—	26	4	52	32	17	25	26	38	6.6	11		M8 x 1.0	14	10
	8																	11.5
	1022	10	24	6	29.5	6	70	40	22	36	32	52	9	14		M10 x 1.0	17	14
	10S							43	25		35							12
	10																	14
	1223	12						41	23		33					M12 x 1.0	19	15
	12							43	25		35							
	1526	15	25	6	38	5	80	46	26	41	36	60	11	17	15	M15 x 1.0	22	20
	1528							48	28		38							
	15							50	30		40							
	20	20	42	10	52	10	95	58		56	45	75				M20 x 1.0	30	25
	25	25	48	13	59	14	105	68	35	66	25	85	11	—	—	M25 x 1.5	35	31

■ Support Units Fixed Side Economy

RoHS

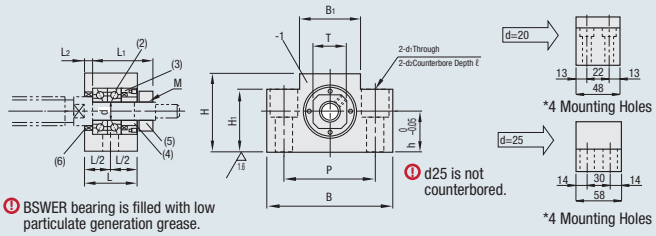
(Economical, for intermediate and low speed applications)

- Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
- For No.10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.

Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BSWE	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSWEN			Electroless Nickel Plating
BSWER			Low Temperature Black Chrome Plating

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 0	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (with Set Piece)	1
(6)	Oil Seal	2



- BSWER bearing is filled with low particulate generation grease.

Part Number Type	Part Number No.	d	L	L_1	L_2	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSWE BSWEM BSWER	1022	10	27	29.5	6	70	40	22	36	32	52	9	14	11	M10 x 1.0	17	14
	10S						43	25		35							12
	10																14
	1223	12					41	23		33					M12 x 1.0	19	15
	12						43	25		35							
	1526	15	29	38	5	80	*48	26	41	36	60	11	17	15	M15 x 1.0	22	20
	1528						*50	28		38							
	15						*52	30		40							
	20	20	48	52	10	95	58		56	45	75				M20 x 1.0	30	25
	25	25	58	59	14	105	68	35	66	25	85	11	—	—	M25 x 1.5	35	31

- *When No.=15_ _, H dimension is taller than Standard Type in 2mm.

- **MISUMI Original Economy Type** uses the angular contact bearing class 0. For features **P.77**
- For details of Support Units Mounting Interface Accuracies and bearings, refer to **P.76–77**
- Low Temperature Black Chrome Plating products are filled with Low Particulate Grease for cleanrooms.

Order Example

Part Number
BSW15
BSWE20

Support Units – Square

– Fixed Side Standard Type with Dowel Holes / Fixed Side Radial Bearing Type –

■ MISUMI original Standard Type with Dowel Holes achieves more accurate positioning than conventional products and repeatability. For features, **P.76–77**

■ Support Units Fixed Side Standard with Dowel Holes

RoHS

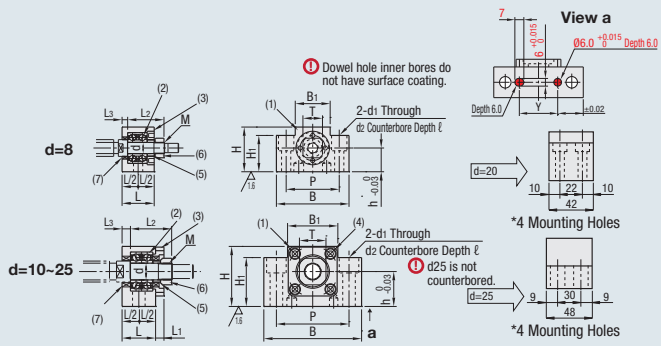
(Industry Standard, for High Speed Applications)

- d=8 comes with one oil seal (7) only.
- Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
- BSWGR bearing is filled with low particulate generation grease. *Screws (4) for BSWGR and BSWGN are stainless steel type.
- For No.8S and 10S, the inner diameter of oil seal is smaller than the previous year No.8S and 10S versions.

Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSWG	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSWGN			Electroless Nickel Plating
BSWGR			Low Temperature Black Chrome Plating

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (with Set Piece)	1
(7)	Oil Seal	2



Part Number Type	Part Number No.	d	L	L_1	L_2	L_3	B	H	h	B_1	H_1	P	Y	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSWG BSWGN BSWGR	8S	8	23	—	26	4	52	32	17	25	26	38	20	6.6	11	11	M8 x 1.0	14	10
	8																		11.5
	1022	10	24	6	29.5	6	70	40	22	36	32	52	30	9	14		M10 x 1.0	17	14
	10S							43	25		35								12
	10																		14
	1223	12						41	23		33						M12 x 1.0	19	15
	12							43	25		35								
	1526	15	25	6	38	5	80	46	26	41	36	60	36	11	17	15	M15 x 1.0	22	20
	1528							48	28		38								
	15							50	30		40								
	20	20	42	10	52	10	95	58		56	45	75	50				M20 x 1.0	30	25
	25	25	48	13	59	14	105	68	35	66	25	85	60	11	—	—	M25 x 1.5	35	31

■ Fixed Side – Radial Bearing

RoHS

(Economical, for low speed applications)

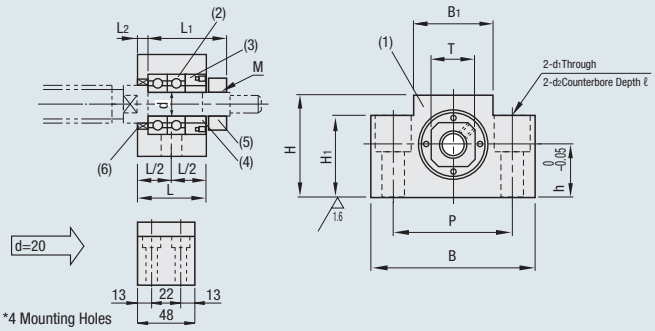
- Oil seal (6) is not included when d=6.
- Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
- For No.8S and 10S, the inner diameter of oil seal is smaller than the previous year No.8S and 10S versions.

Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BSWZ	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSWZM			Electroless Nickel Plating

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 0	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (with Set Piece)	1
(6)	Oil Seal	2

- It is preloaded to bear the Thrust Load. Keep radial bearing rotational speeds to under 3,000rpm.



Part Number Type	Part Number No.	d	L	L_1	L_2	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSWZ BSWZM	6	6	20	22.5	3.5	42	25	13	18	20	30	5.5	9.5	11	M6 x 0.75	12	—
	8S	8	23	26	4	52	32	17	25	26	38	6.6	11		M8 x 1.0	14	10
	8																11.5
	1022	10	27	29.5	6	70	40	22	36	32	52	9	14		M10 x 1.0	17	14
	10S						43	25		35							12
	10																14
	1223	12					41	23		33					M12 x 1.0	19	15
	12						43	25		35							
	1526	15	29	38	5	80	*48	26	41	36	60	11	17	15	M15 x 1.0	22	20
	1528						*50	28		38							
	15						*52	30		40							
	20	20	48	52	10	95	58		56	45	75				M20 x 1.0	30	25

- *When No.=15_ _, H dimension is taller than Standard Type in 2mm.

Order Example

Part Number
BSWG15
BSWZ20

- For details of Support Units Mounting Interface Accuracies and bearings, refer to **P.76–77**
- Low Temperature Black Chrome Plating products are filled with Low Particulate Grease for cleanrooms.

Support Units / Stoppers for Ball Screws

– Support Side Type –

■ Support Units Support Side

RoHS

Type		Material	Surface Treatment
Standard	With Retaining Ring		
BUN	BTN	1045 Carbon Steel	Black Oxide
BUNM	BTNM		Electroless Nickel Plating
BUNR	—		Low Temperature Black Chrome Plating

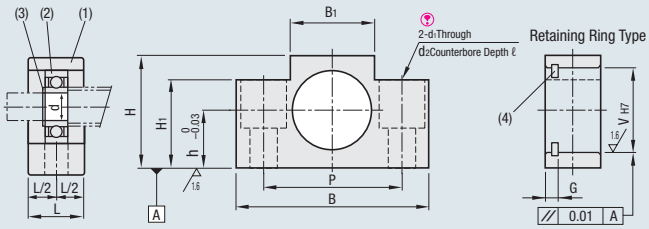
BUNR bearing is stainless steel type filled with low particle generation grease.

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Radial Housing	1
(3) (4)	Retaining Ring*	1

*Retaining ring (3), (4) of BUNR and BUNM are stainless steel type.

No.1022~25 is not counterbored.

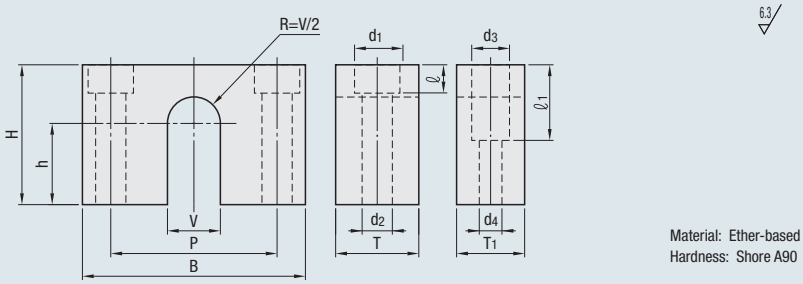


Part Number Type	No.	d	L	B	H	h	B_1	H_1	P	V	d_1	d_2	ℓ	Retaining Ring Type G	Retaining Ring	Bearings Type	Retaining Ring
BUN BUNM BUNR BTN BTNM	6	6	12	42	25	13	18	20	30	17	5.5	9.5	11	3	RTWN / S17	B606ZZ	STWN / S6
	8		15	52	32	17	25	26	38		6.6	11					
	1022	8	20	70	40	22	36	21	52	22	9	—	—	3	RTWN / S22	B608ZZ	STWN / S8
	10				43	25		24									
	1223	10			41	23		22		26				3	RTWN / S26	B6000ZZ	STWN / S10
	12				43	25		24									
	1526	15		80	46	26	41	21	60	32	11			4	RTWN / S32	B6002ZZ	STWN / S15
	1528				48	28		23									
	15				50	30		25									
	20	20	26	95	58		56	30	75	47				4.5	RTWN / S47	B6204ZZ	STWN / S20
	25	25	30	105	68	35	66	25	85	52					RTWN / S52	B6205ZZ	STWN / S25

■ Stoppers for Ball Screws

RoHS

BSTP
BSTS (Thin Wall Type)



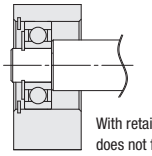
Material: Ether-based Polyurethane
Hardness: Shore A90

Part Number Type	No.	B	H	h	P	V	BSTP T	BSTP d_1	BSTP d_2	BSTP ℓ	BSTS T_1	BSTS d_3	BSTS d_4	BSTS $ℓ_1$
BSTP BSTS (Thin Wall Type)	6	42	25	13	30	12	20	9.5	5.5	5.5	13	8	4.5	15
	8	52	32	17	38	14		11	6.5	6.5	15	9.5	5.5	17
	1022	70	40	22	52	16	25	14	9	9	18	11	6.5	23
	10		43	25										
	1223		41	23		18								
	12		43	25										
	1526	80	46	26	60	22	30	17	11	11	20	14	9	30
	1528		48	28										
	15		50	30										
	20	95	58		75	28								33
	25	105	68	35	85	35								38

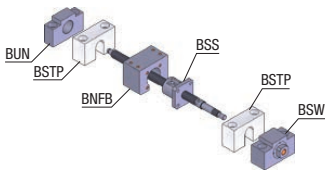
Order Example

Part Number
BUN15
BSTP15

Example



With retaining ring type, the bearing does not fall off from support unit.



Low Temperature Black Chrome Plating products are filled with Low Particulate Grease for cleanrooms.

Support Units – Square

– Fixed Side With Damper / Support Side With Damper –

■ Support Units Fixed Side with Damper

RoHS

(Industry Standard, for High Speed Applications)

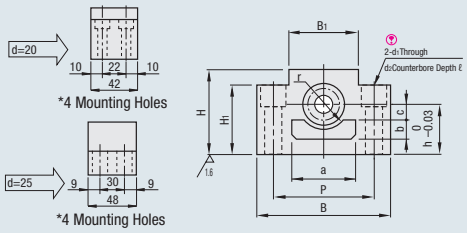
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.

(7) is adhesive bonded to housing.

Type	Material (1)(3)(4)(5)	Surface Treatment (1)(3)(4)(5)
BSWD	1045 Carbon Steel	Black Oxide

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	2
(7)	Urethane Damper (Shore A70)	1



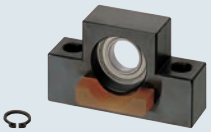
d25 is not counterbored.

For No. 10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.

Part Number Type	No.	d	L	L_1	L_2	L_3	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	Oil Seal Applicable Shaft Dia.	Damper Dimensions a	b	c	r	t
BSWD	1022	10	24	6	29.5	6	70	40	22	36	32	52	9	14	11	M10 x 1.0	14	34	10	6	12	10
	10S							43	25		35						12					
	10																14					
	1223	12						41	23		33					M12 x 1.0	15					
	12							43	25		35											
	1526	15	25	6	38	5	80	46	26	41	36	60	11	17	15	M15 x 1.0	20	46	12	7	15.5	
	1528							48	28		38											
	15							50	30		40											
	20	20	42	10	52	10	95	58		56	45	75				M20 x 1.0	25	50	15	10	18	
	25	25	48	13	59	14	105	68	35	66	25	85	11	—	—	M25 x 1.5	31	60	19	10	25	

■ Fixed Side Support Side with Damper

RoHS

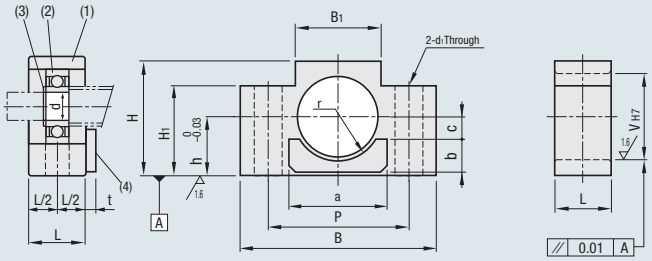


Type	Material	Surface Treatment
BUND	1045 Carbon Steel	Black Oxide

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Radial Bearing	1
(3)	Retaining Ring	1
(4)	Urethane Damper (Shore A70)	1

(4) is adhesive bonded to housing.

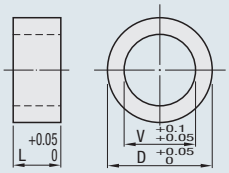


Part Number Type	No.	d	L	B	H	h	B_1	H_1	P	V	d_1	Damper Dimensions a	b	c	r	t	Bearings Type	Retaining Ring
BUND	1022	8	20	70	40	22	36	21	52	22	9	34	10	6	12	10	B608ZZ	STWN8
	10				43	25		24										
	1223	10			41	23		22		26		46	12	7	15.5		B6000ZZ	STWN10
	12				43	25		24										
	1526	15		80	46	26	41	21	60	32	11	50	15	10	18		B6002ZZ	STWN15
	1528				48	28		23										
	15				50	30		25										
	20	20	26	95	58		56	30	75	47		60	19	10	25		B6204ZZ	STWN20
	25	25	30	105	68	35	66	25	85	52		80	19	15	28		B6205ZZ	STWN25

■ Precision Collars for Support Units

RoHS

BUSC As BUSC is slightly larger than the included collar in outer diameter, it is effective in bearing oil retention.The low temp. black chrome plating used helps for low particle generation.



Material: 1018 Carbon Steel
Surface Treatment: Low Temperature Black Chrome plating

Part Number Type	No.	D	V	L
BUSC	10	14.5	10	5.5
	12	15.4	12	5.5
	15	20.4	15	10
	20	25.4	20	11
	25	31.3	25	14

Order Example

Part Number
BSWD15
BUND15
BUSC15

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.76–77

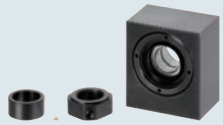
Support Units – Square

– Fixed Side Compact Type / Fixed Side Low Profile Type / Fixed Side Mounting Hole Narrow Pitch –

As compact in the height and width comparing to the standard Support Units, it easily fits in limited space and is best for small devices.

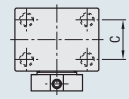
■ Support Units – Fixed Side – Compact

RoHS



Type	Material (1) (3)	Material (5) (6)	Surface Treatment (1) (3) (5) (6)
BSQ	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSQM			Electroless Nickel Plating

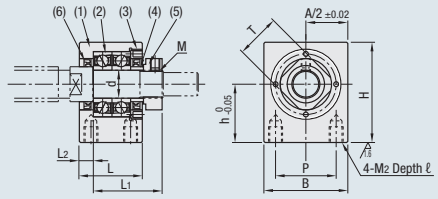
Most compact in size.



Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
For d=8,only one oil seal (6) is provided.
*Angular contact bearing class 5 is used for No.8.
*For No.10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 0	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (with Set Piece)	1
(6)	Oil Seal	2



Part Number Type	No.	d	L	L_1	L_2	B	H	h	P	M_2	ℓ	C	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSQ BSQM	8	8	23	26	4	32	32	17	23	5	6	14	M8 x 1.0	14	11.5
	10S	10	27	29.5	6	36	43	25	26	6	10	17	M10 x 1.0	17	12
	10														14
	12	12	27	29.5	6	36	43	25	26	6		17	M12 x 1.0	19	15
	15	15	29	38	5	46	52	30	34	6	12	19	M15 x 1.0	22	20

■ Support Units – Fixed Side – Low Profile

RoHS

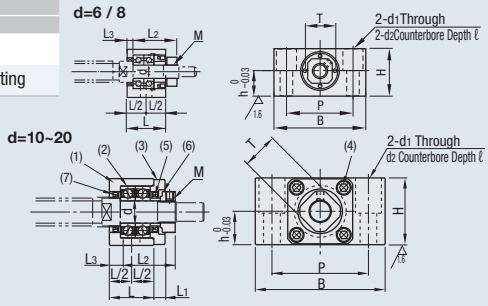
Type	Material (1) (3)	Material (5) (6)	Surface Treatment (1) (3) (5) (6)
BSV	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSVM			Electroless Nickel Plating

Lowest profile type.

Oil seal (7) is not included when d=6.
d=8 comes with one oil seal (7) only.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit. Screws (4) for BSVM are Stainless Steel Type.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (with Set Piece)	1
(7)	Oil Seal	2



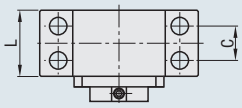
Part Number Type	No.	d	L	L_1	L_2	L_3	B	H	h	P	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSV BSVM	6	6	20	—	22.5	3.5	42	22	11	30	5.5	9.5	12	M6 x 0.75	12	—
	8S	8	23	—	26	4	52	28	14	38	6.6	11	15	M8 x 1.0	14	10
	10S	10	24	6	29.5	6	70	36	18	52	9	14	19	M10 x 1.0	17	12
	10															14
	12	12	24	6	29.5	6	70	36	18	52	9	14	19	M12 x 1.0	19	15
	15	15	25	6	38	5	80	41	21	60	11	17	21	M15 x 1.0	22	20
	20	20	42	10	52	10	95	56	28	75	11	17	29	M20 x 1.0	30	25

■ Support Units – Fixed Side – Mounting Hole Narrow Pitch

RoHS

Type	Material (1) (3)	Material (5) (6)	Surface Treatment (1) (3) (5) (6)
BSA	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BSAM			Electroless Nickel Plating

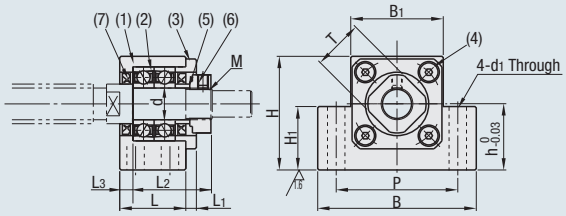
Compact width design.



Do not disassemble (1), (2) and (3), as they must remain as an assembled unit. *Screws (4) for BSAM are stainless steel type.
For No.10S, the inner diameter of oil seal is smaller than the previous year No.10S versions.
(4)The screw head (4) protrudes 2mm from the cover.

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (with Set Piece)	1
(7)	Oil Seal	2



Part Number Type	No.	d	L	L_1	L_2	L_3	B	H	h	B_1	H_1	P	C	d_1	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BSA BSAM	10S	10	25	4	29.5	5	60	39	22	34	21	46	13	6.6	M10 x 1.0	17	12
	10																14
	12	12	25	4	29.5	5	60	43	25	35	24	46	13		M12 x 1.0	19	15
	15	15	27	6	38	6	70	48	28	40	27	54	15		M15 x 1.0	22	20

Order Example

Part Number
BSQM8
BSV10S
BSA12

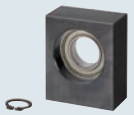
For details of Support Units Mounting Interface Accuracies and bearings, refer to P.76–77

Support Units – Square

– Support Side Compact Type / Support Side Low Profile Type / Support Side Mounting Hole Narrow Pitch –

Same dimensions to the fixed side Support Units but compact in the height and width. Use the fixed side Support Units together.

■ Support Units – Support Side – Compact



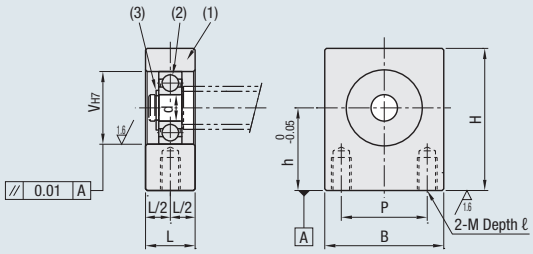
RoHS

Type	Material	Surface Treatment
BUQ	1045 Carbon Steel	Black Oxide
BUQM		Electroless Nickel Plating

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Rings*	1

*Retaining ring (3) of BUQM is stainless steel type.



Part Number Type	No.	d	L	B	H	h	P	V	M	ℓ	Bearings Type	Retaining Ring
BUQ BUQM	8	6	15	32	32	17	23	17	5	6	B606ZZ	STWN / S6
	10	8	20	36	43	25	26	22	6	10	B608ZZ	STWN / S8
	12	10						26		10	B6000ZZ	STWN / S10
	15	15		46	52	30	34	32		12	B6002ZZ	STWN / S15

■ Support Units – Support Side - Low Profile

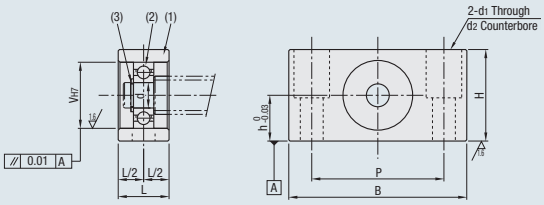
RoHS

Type	Material	Surface Treatment
BUV	1045 Carbon Steel	Black Oxide
BUVM		Electroless Nickel Plating

■ Component Details

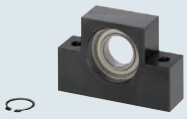
No.	Part Name	Qty
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Rings*	1

*Retaining ring (3) of BUVM is stainless steel type.



Part Number Type	No.	d	L	B	H	h	P	V	d_1	d_2	ℓ	Bearings Type	Retaining Ring
BUV BUVM	6	6	12	42	22	11	30	17	5.5	9.5	12	B606ZZ	STWN / S6
	8	6	15	52	28	14	38	17	6.6	11	15	B606ZZ	STWN / S6
	10	8	20	70	36	18	52	22	9	14	19	B608ZZ	STWN / S8
	12	10						26				B6000ZZ	STWN / S10
	15	15	20	80	41	21	60	32	11	17	21	B6002ZZ	STWN / S15
	20	20	26	95	56	28	75	47	11	17	29	B6204ZZ	STWN / S20

■ Support Units – Support Side – Mounting Hole Narrow Pitch



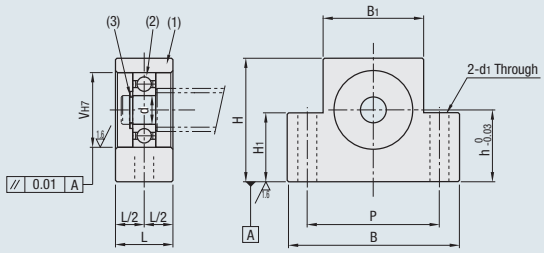
RoHS

Type	Material	Surface Treatment
BUA	1045 Carbon Steel	Black Oxide
BUAM		Electroless Nickel Plating

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Rings*	1

*Retaining ring (3) of BUAM is stainless steel type.



Part Number Type	No.	d	L	B	H	h	B_1	H_1	P	V	d_1	Bearings Type	Retaining Ring
BUA BUAM	10	8	20	60	39	22	34	21	46	22	6.6	B608ZZ	STWN / S8
	12	10			43	25	35	24		26		B6000ZZ	STWN / S10
	15	15	20	70	48	28	40	27	54	32		B6002ZZ	STWN / S15

Order Example

Part Number
BUQ8
BUV10
BUAM12

Support Units – Round

– Fixed Side Standard Type / Support Side Type –

The Standard Type uses the preloaded JIS 5 class Angular Contact Bearings. It is preferable to use for high-accuracy and high-speed precision applications.

■ Support Units – Fixed Side – Standard Type

RoHS

(Industry Standard, for High Speed Applications)

- Oil seal (7) is not included for No. 6.
- No.4, 5, 6L, 8S and 8 come with one oil seal.
- Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
- BSWR bearing is filled with low particulate generation grease. *Screws (4) for BRWR and BRWN are stainless steel type.
- BRW housing pilot section will change to surface coated version at anytime without notice.

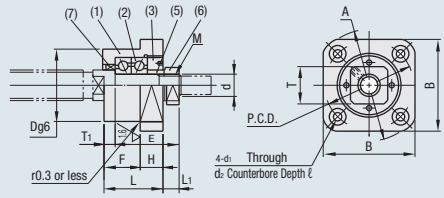
Type	Material (1) (3)	Material (5) (6)	Surface Treatment (1) (3) (5) (6)
BRW	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BRWN			Electroless Nickel Plating
BRWR			Low Temperature Black Chrome plating

For No.8S and 10S, the inner diameter of oil seal is smaller than the previous No.8S and 10S versions.

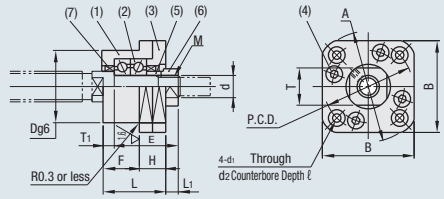
■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (with Set Piece)	1
(7)	Oil Seal	2

d=4~8



d=10~25



Part Number Type	Part Number No.	d	L	H	F	E	D	A	P.C.D.	B	L_1	T_1	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BRW BRWN BRWR	4	4	15	6	9	18	18	32	24	25	6	3	3.4	6.5	4	M4 x 0.5	10	6
	5	5	16.5	6	10.5	19	20	34	26	26		3.5	3.4	6.5	4	M5 x 0.5	11	8
	6L	6	20	7	13	22.5	22	36	28	28		3.5	3.4	6.5	4	M6 x 0.75	12	10
	6							35					2.9	5.5	3.5		12	—
	8S	8	23	9	14	26	28	43	35	35	7	4	3.4	6.5	4	M8 x 1.0	14	10
	8																	11.5
	10S	10	29	13	16	29.5	34	52	42	42	5.5	5	4.5	8	6	M10 x 1.0	17	12
	10																	14
	12	12					36	54	44	44						M12 x 1.0	19	15
	15	15	32	15	17	38	40	63	50	52	12	6	5.5	9.5		M15 x 1.0	22	20
	20	20	52	22	30	52	57	85	70	68	10	10	6.6	11	10	M20 x 1.0	30	25
	25	25	57	27	30	59	63	98	80	79	12	10	9	15	13	M25 x 1.5	35	31

■ Support Units – Fixed Side

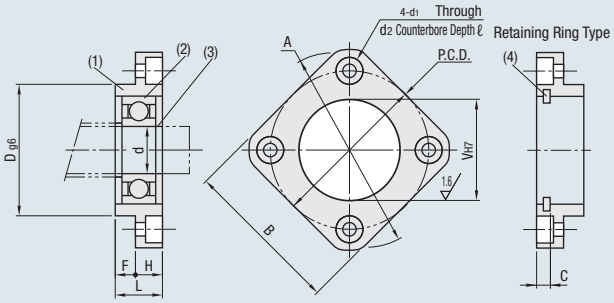
RoHS

- BURR bearing is stainless steel type filled with low particle generation grease.
  *Retaining ring (3), (4) of BURR, BURM and BTRM are stainless steel type.

Type: Standard	Type: With Retaining Ring	Material	Surface Treatment
BUR	BTR	1045 Carbon Steel	Black Oxide
BURM	BTRM		Electroless Nickel Plating
BURR	—		Low Temperature Black Chrome plating

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Radial Bearing	1
(3)(4)	Retaining Ring*	1



Part Number Type	Part Number No.	d	L	H	F	D	A	P.C.D.	B	V	d_1	d_2	ℓ	Retaining Ring Type C	Retaining Ring Type Retaining Ring	Bearings Type	Retaining Ring
BUR BURM BURR	BTR BTRM 6	6	10	6	4	22	36	28	28	17	3.4	6.5		3	RTWN / S17	B606ZZ	STWN / S6
	10	8	12	7	5	28	43	35	35	22	3.4	6.5	4	3	RTWN / S22	B608ZZ	STWN / S8
	12	10	15	7	8	34	52	42	42	26	4.5	8		3	RTWN / S26	B6000ZZ	STWN / S10
	15	15	17	9	8	40	63	50	52	32	5.5	9.5	5.5	4	RTWN / S32	B6002ZZ	STWN / S15
	20	20	20	11	9	57	85	70	68	47	6.6	11	6.5	4.5	RTWN / S47	B6204ZZ	STWN / S20
	25	25	24	14	10	63	98	80	79	52	9	14	8.5	4.5	RTWN / S52	B6205ZZ	STWN / S25

Order Example

Part Number
BRW15
BUR15

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.76–77

Support Units – Round

– Fixed Side Economy Type / Fixed Side Radial Bearing Type –

MISUMI Original Economy Type uses the angular contact bearing class 0. For features **P.76–77**

■ Support Units – Fixed Side – Economy

RoHS

(Economical, for intermediate and low speed applications)

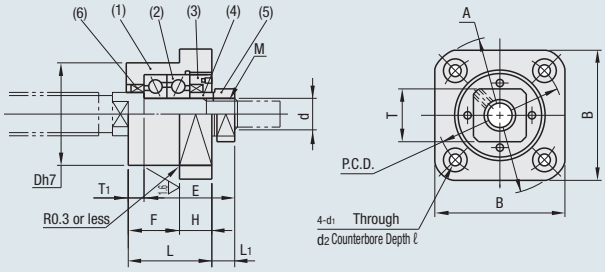
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
BRWER bearing is filled with low particulate generation grease.

Type	Material (1) (3)	Material (4) (5)	Surface Treatment (1) (3) (4) (5)
BRWE	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BRWEM			Electroless Nickel Plating
BRWER			Low Temperature Black Chrome Plating

For No.10S, the inner diameter of oil seal is smaller than the previous No.10S versions.

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 0	1 Set
(3)	Cover	1
(4)	Collar	4
(5)	Clamping Nut (with Set Piece)	1
(6)	Oil Seal	2



Part Number Type	Part Number No.	d	L	H	F	E	D	A	P.C.D.	B	L_1	T_1	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BRWE BRWEM BRWER	10S	10	26	10	16	29.5	34	52	42	42	8.5	5	4.5	8	4.5	M10 x 1.0	17	12
	10																	14
	12	12					36	54	44	44						M12 x 1.0	19	15
	15	15	30	13	17	38	40	63	50	52	14	6	5.5	9.5	5.5	M15 x 1.0	22	20
	20	20	48	18	30	52	57	85	70	68		10	6.6	11	6.5	M20 x 1.0	30	25
	25	25	54	24	30	59	63	98	80	79	15	10	9	15	8.5	M25 x 1.5	35	31

■ Support Units – Fixed Side – Radial Bearing

RoHS

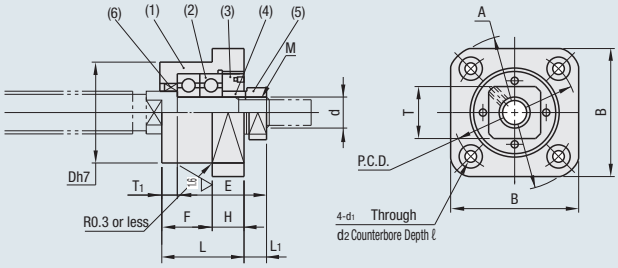
(Economical, for low speed applications)

Oil seal (6) is not included when d=6.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous No.8S and 10S versions.
It is preloaded to bear the Thrust Load. Keep radial bearing rotational speeds to under 3,000rpm.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.

Type	Material (1) (3)	Material (4) (5)	Surface Treatment (1) (3) (4) (5)
BRWZ	1045 Carbon Steel	1018 Carbon Steel	Black Oxide
BRWZM			Electroless Nickel Plating

■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 0	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (with Set Piece)	1
(6)	Oil Seal	1



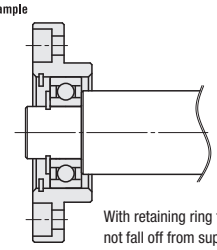
Part Number Type	Part Number No.	d	L	H	F	E	D	A	P.C.D.	B	L_1	T_1	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
BRWZ BRWZM	6	6	20	7	13	22.5	22	35	28	28	6	3.5	2.9	5.5	3.5	M6 x 0.75	12	—
	8S	8	23	9	14	26	28	43	35	35	7	4	3.4	6.5	4	M8 x 1.0	14	10
	8																	11.5
	10S	10	26	10	16	29.5	34	52	42	42	8.5	5	4.5	8	4.5	M10 x 1.0	17	12
	10																	14
	12	12					36	54	44	44						M12 x 1.0	19	15
	15	15	30	13	17	38	40	63	50	52	14	6	5.5	9.5	5.5	M15 x 1.0	22	20
	20	20	48	18	30	52	57	85	70	68		10	6.6	11	6.5	M20 x 1.0	30	25

For details of Support Units Mounting Interface Accuracies and bearings, refer to **P.76–77**
Low Temperature Black Chrome Plating products are filled with Low Particulate Grease for cleanrooms.

Order Example

Part Number
BRWE15
BRWZ15

Example



With retaining ring type, the bearing does not fall off from support unit.

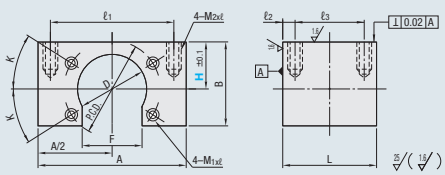
Brackets for Ball Screws

– Block Type –

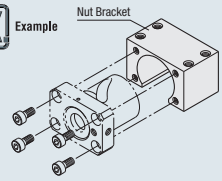
RoHS

Order Example: Part Number - H
BNFB802S - 20

Type	Material	Surface Treatment
BNFB	1045 Carbon Steel	Black Oxide
BNFM		Electroless Nickel Plating
BNFR		Low Temperature Black Chrome plating
BNFA	5052 Aluminum Alloy	Anodized (Clear)



Example



Part Number Type	No.	H	A	B	P.C.D.	K	M1xℓ	D	ℓ1	F	L	ℓ2	ℓ3	M2xℓ	MISUMI Ball Screws BSX(C3)	BSS(C5) BSSE(C7)	BS___ (C10)
BNFB BNFM BNFR BNFA	801X	10 20	30	H+8	19	30	M3x5	12.4	24	8	16	3	10	M3x5	0801	—	—
	802S	18 20 23 25	40	H+13	27	45		20.4	30	14	28	8	12	M4x 8	0802	0802	—
	802C	17 20 23 25		H+10	24	30	M4x7	16.4		12	24	6			—	—	0802
	802R	17 20 23 25 28 30	43	H+12	30	0		20.4	34	17					—	—	0802
	804R	17 20 23 25 28 30				30	M3x 5								—	—	0804
	1002R	17 20 23 25 28 30	50	H+13.5	33		M4x 7	23.4	42	16					—	—	1002
	1002X	17 20 23 25 28 30	43	H+15.5	31	45			34		26	7			1002	—	—
	1002S	17 20 23 25 28 30 35 40									24	6			—	1002	—
	1004S	20 23 25 28 30 35 40	52	H+14	36	30		26.4	42	22	32	10	16	M5x10	—	1004	—
	1004C	17 20 23 25 28 30 35 40	50	H+13	31			22.4	40	18	27	6	15		—		1004
	1004R	17 20 23 25 28 30 35 40	52	H+14	36			26.4	42	22					—	—	1004
	1010R	17 20 23 25 28 30 35 40		H+15				28.4		23					—	—	1010
	1010S	17 20 23 25 28 30 35 40									34	7	20		—	1010	—
	1202S	20 23 25 28 30 35 40	50	H+17	33	45		25.4	40	15	28	8	14		1202	1202	—
	1204S	23 25 28 30 35 40		H+20.5	41		M5x 7	30.4		20	34	7	20		—	1204	—
	1204C	20 23 25 28 30 35 40	52	H+14	33	30	M4x 7	24.4	42		27	6	15		—	—	1204
	1204R	20 23 25 28 30 35 40	60	H+15	40			30.4	50	24	29	7			—	—	1204
	1205S	20 23 25 28 30 35 40		H+16							36	8	20		1205	1205	—
	1210S	20 23 25 28 30 35 40			41		M5x 7				40	10			—	1210	1210
	1405R	20 23 25 28 30 35 40			40		M4x 7								—	—	1405
	1505C	20 23 25 28 30 35 40 45		H+17	42		M5x 7	31.4			34	7		M6x12	—	—	1505
	1505R	20 23 25 28 30 35 40 45	62		44		M4x 7	34.4	52	28					—	—	1505
	1505S	20 23 25 28 30 35 40 45			45		M5x 7				36	8			1505	1505	—
	1510S	20 23 25 28 30 35 40 45									42	11			—	1510	—
	1510C	20 23 25 28 30 35 40 45			42			31.4		24	38	7	24		—	—	1510
	1510R	20 23 25 28 30 35 40 45			45			34.4		28	44		30		—	—	1510
	1520S	23 25 28 30 35 40 45									50	10			—	1520/1540	1520
	2005C	25 28 30 35 40 45	72	H+19	49		M6x10	36.4	60	26	40		20	M8x16	—	—	2005
	2010C	25 28 30 35 40 45									50		30		—	—	2010
	2005S	25 28 30 35 40 45	76	H+20	53		M6x10	40.4	64	34	55		35		—	2005	—
	2005R	25 28 30 35 40 45	68		50		M4x 7		56		40		20			—	2005
	2020R	25 28 30 35 40 45		H+19.5			M5x 7			32	70	15	40			—	2020
	2040S	25 28 30 35 40 45		H+20							40		20			2040	—
	2505C	28 30 35 40 45 55	76	H+24	53		M6x10	42.4	64							—	2505
	2505R	28 30 35 40 45 55		H+21	55		M5x 7	43.4	62	38	60		40	M10x20		—	2505
	2010S	28 30 35 40 45 55	82	H+23	59		M6x10	46.4	70	40	55		35	M8x16		2010/2020	—
	2525R	28 30 35 40 45 55			60			47.4			90		70			—	2525
	2505S	30 35 40 45 55	76	H+28.5		45			64	32	40	10	20			2505	—
	2010R	35 40 45 55	84	H+26	67	30		52.4	72	46	60		40			—	2010
	2510S	35 40 45 55	94		68		M8x12		80	44	55		35	M10x20		2510/2520	—
	2510R	35 40 45 55	100	H+30	78			60.4	86	54	60		40			—	2510
	2806R	35 40 45 55	87	H+26	65		M6x10	50.4	75	42				M8x16		—	2806
	3232R	35 40 45 55	106	H+30	74		M8x12	58.4	86	50	75		55	M10x20		—	3232
	3210R	40 45 55	116	H+33	85			67.4	96	58	80		60			—	3210

No.802R has 2 holes. No.____C are for C10 Rolled Ball Screws Compact Type.

Joint Units

– For AC Servo Motors –

RoHS

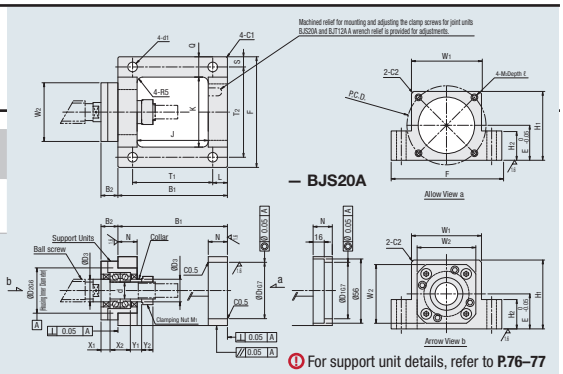
Order Example: Part Number
BJS8A

Type	Material: Main Body	Material: Support Units	Surface Treatment: Main Body	Surface Treatment: Support Units	Accessory	Applicable Motor
BJS	A5052P	1045 Carbon Steel	Clear Anodize	Black Oxide	Collar 1 pc Clamping Nut 1 pc (Inc. 1 set piece)	AC Servo Motors
BJSM				Electroless Nickel Plating		

■ Features

– Simplification of assembly: With a support bearing unit already pre-installed, mounting and aligning a motor becomes simple with a build-in pilot.

– Accurate shaft centering: Unitized construction of the ball screw and motor mounts reduces shaft misalignments.



— BJS20A

For support unit details, refer to P.76–77

Part Number Type	No.	d	B_1	B_2	D_1	D_2	D_3	E	F	H_1	H_2	J	K	L	N	Q	S	T_1	T_2	W_1	W_2	X_1	X_2	Y_1	Y_2	P.C.D.	M_1 (Fine)	M_2 (Coarse)	d_1	ℓ	Support Units BJS	BJSM
BJS BJSM	* 8A	8	67	9	30	28	11.5	21	64	41	19	43	40	10	12	12	6	47	52	40	35	5	14	5.5	6.5	45	M8x1.0	M3	5.5	8	BRW8	—
	* 8B																									46		M4		10		
	*10A	10	74	13	30	34	14	25	70	46	23	46	42	10	14	14	7	54	56	42	42	8	16	5.5	8	45	M10x1.0	M3	6.5	8	BRW10	BRWN10
	10B																									46		M4		10		
	*12A	12	74	13	30	36	15	25	72	47	23	46	44	10	14	14	7	54	58	44	44	8	16	5.5	8	45	M12x1.0	M3	6.5	8	BRW12	BRWN12
	12B																									46		M4		10		
	12C		84		50			31	98	62	26	56	62	13		18	9	58	80	62						70		M5	8.5	Through		
	15A	15	97	15	50	40	20	31	98	61	26	63	62	13	17	18	9	71	80	62	52	8	18	10	10	70	M15x1.0	M5	8.5	13	BRW15	BRWN15
	15B		106		70			41	128	82	36	72	82	16		23	11	74	106	70						90		M6	10.5	15		
	20A	20	117	22	50	57	25	35	116	70	30	69	70	20	24	23	11	77	94	70	68	14	28	11	13	70	M20x1.0	M5	10.5	13	BRW20	BRWN20
	20B		127		70			41	128	82	36	79	82					87	106	82	68					90		M6		15		

* marked sizes are for BJS

■ Motor Compatibility Chart

Part Number	Motor: Flange Size	Motor: Manufacturer	Motor: Output (W)
BJS8A BJS10A BJS12A	_38	Panasonic	30
			50
			100
BJS8B BJS(M)10B BJS(M)12B	_40	Yaskawa Electric Corporation	30
			50
			100
		Mitsubishi Electric Corporation	50
			100
		Sanyo Denki Co.,Ltd.	30
			50
			100
		Omron Corporation	30
			50
			100

Part Number	Motor: Flange Size	Motor: Manufacturer	Motor: Output (W)
BJS(M)12C BJS(M)15A BJS(M)20A	_60	Yaskawa Electric Corporation	200
			400
		Mitsubishi Electric Corporation	200
			400
		Sanyo Denki Co.,Ltd.	200
			400
		Omron Corporation	200
			400
BJS(M)15B BJS(M)20B	_80	Yaskawa Electric Corporation	750
		Mitsubishi Electric Corporation	750
		Sanyo Denki Co.,Ltd.	750
		Omron Corporation	750

- Motor part numbers and specifications are subject to change. Refer to motor manufacturers' specifications.
- Selection of motors, ball screws and couplings should be made upon confirming user's application specific criteria.
- Other motors and couplings not listed in the chart above can also be used. Consult with mounting dimensions and specifications of each product.

NEW Support Units – Fixed / Support Side, Square

– Standard –

Cost efficient parts' load rating are different from similar parts. (For details, see **P.77**)
When considering cost efficient parts, choose by comparing the specifications against similar parts. **P.120–130**

■ Support Units – Fixed Side, Square – Standard

RoHS

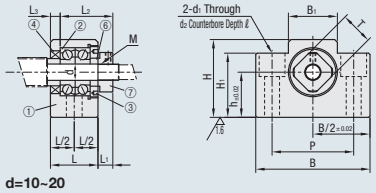
Type		Material		Surface Treatment
Fixed Side Only	Fixed Side and Support Side SET	(1) (3)	(6) (7)	(1) (3) (6) (7)
C-BSW	C-BSW-SET	EN 1.1191 Equiv.	EN 1.0038 Equiv.	Black Oxide

■ Component Details

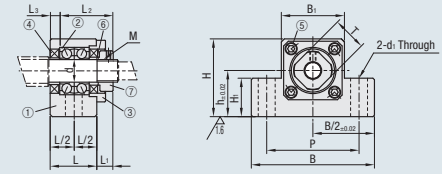
No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Oversea Manufactured Angular Contact Bearing Grade 5	1 Set
(3)	Cover	1
(4)	Oil Seal	2
(5)	Hex Socket Head Cap Screw	4
(6)	Collar	2
(7)	Bearing Nut (with Set Piece)	1

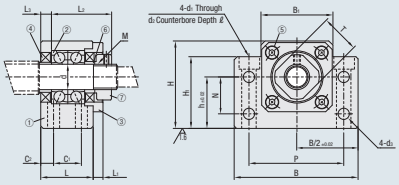
d=6 and 8 come with one Oil Seal (4).
Do not disassemble (1), (2), (3), (4) and (5), as they must remain assembled.
When used together with a MISUMI ball screw, there is one support unit accessory collar spare.

d=6~8



d=10~20





Part Number Type	Part Number No.	Support Side SET	d	L_1	L_2	L_3	L_4	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.
C-BSW	6	-SET (Only when purchasing in Sets)	2	20	5.5	22	3.5	42	25	13	18	20	30	5.5	9.5	11	M6x0.75	12	9.5
	8S		8	23	7	26	4	52	32	17	25	26	38	6.6	11	11	M8x1.0	14	10
	8																		11.5
	10S		10	24	6	29.5	6	70	43	25	36	24	52	9	—	—	M10x1.0	16	12
	10																		14
	12		12														M12x1.0	19	15
	15S		15	25		36	5	80	49	30	41	25	60	11			M15x1.0	22	19.5
	15																		20
	20		20	42	10	50	10	95	58		56	25	75				M20x1.0	30	25

■ Support Units – Support Side, Square – Standard

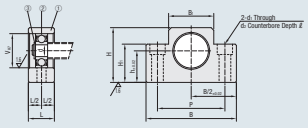
RoHS

Type	Material	Surface Treatment
C-BUN	EN 1.1191 Equiv.	Black Oxide

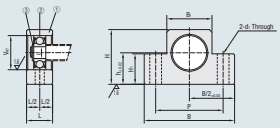
■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Oversea Manufactured Radial Bearing	1
(3)	Retaining Ring (STWN, S)	1

d=6~8



d=10~20



Part Number Type	Part Number No.	d	L	B	H	h	B_1	H_1	P	V	d_1	d_2	ℓ	Bearing	Retaining Ring
C-BUN	6	6	12	42	25	13	18	20	30	17	5.5	9.5	11	B606ZZ	STWN, S6
	8		14	52	32	17	25	26	38		6.6	11	11		
	10	8	20	70	43	25	36	24	52	22	9	—	—	B608ZZ	STWN, S8
	12	10								26				B6000ZZ	STWN, S10
	15	15		80	49	30	41	25	60	32				B6002ZZ	STWN, S15
	20	20	26	95	58		56	25	75	47	11			B6204ZZ	STWN, S20

■ SET part overview

– For customers using in conjunction with fi xed side and support side
– We recommend a SET, which allows the fi xed side and support side to be ordered as one set.
– 5% price reduction when ordering in SETs

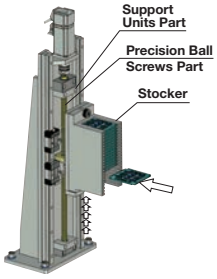
<SET Parts>

SET Part Number	SET Parts	
	Fixed Side Part Number	Support Side Part Number
C-BSW6-SET	C-BSW6	C-BUN6
C-BSW8S-SET	C-BSW8S	C-BUN8
C-BSW8-SET	C-BSW8	C-BUN8
C-BSW10S-SET	C-BSW10S	C-BUN10
C-BSW10-SET	C-BSW10	C-BUN10
C-BSW12-SET	C-BSW12	C-BUN12
C-BSW15S-SET	C-BSW15S	C-BUN15
C-BSW15-SET	C-BSW15	C-BUN15
C-BSW20-SET	C-BSW20	C-BUN20

Example

<Elevator Device>

– Stocker elevator device
– Lift in stepped increments for every work insertion
– Medium precision/low frequency positioning



Order Example

Part Number	
C-BSW15	(Fixed-side single type)
C-BSW15-SET	(SET part type)
C-BUN15	(Support side, separate item)

For details of Bearings in addition to mounting interface accuracies of Support Units, Included Collar and Bearing Nut, see **P.76–77**

Store Accessories with care since they are required when assembling.

NEW Support Units – Fixed / Support Side, Square / Round
– Standard –

- Cost efficient parts' load rating are different from similar parts. (For details, see **P.77**)
- When considering cost efficient parts, choose by comparing the specifications against similar parts. **P.120–130**

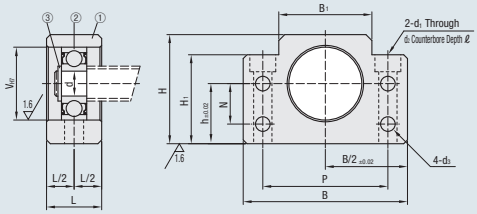
■ Support Units – Support Side, Square – Standard

RoHS

Type	Material	Surface Treatment
C-BUFN	EN 1.1191 Equiv.	Black Oxide

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Oversea Manufactured Radial Bearing	1
(3)	Retaining Ring (STWN, S)	1



Part Number Type	Part Number No.	d	L	B	H	h	B_1	H_1	P	V	d_1	d_2	ℓ	Bearing	Retaining Ring
C-BUFN	6	6	12	42	25	13	18	20	30	17	5.5	9.5	11	B606ZZ	STWN, S6
	8		14	52	32	17	25	26	38		6.6	11	11		
	10	8	20	70	43	25	36	24	52	22	9	—	—	B608ZZ	STWN, S8
	12	10								26				B6000ZZ	STWN, S10
	15	15		80	49	30	41	25	60	32				B6002ZZ	STWN, S15
	20	20	26	95	58		56	25	75	47	11			B6204ZZ	STWN, S20

- The Standard Type uses Preload Adjusted JIS 5 Class Angular Contact Bearing. It is suitable for high-accuracy and high-speed precision applications.

■ Support Units – Fixed Side, Round – Standard

RoHS

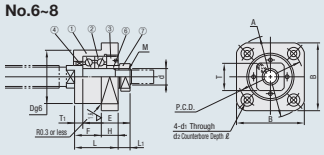
- d=6 and 8 come with one Oil Seal (4).
- Do not disassemble (1), (2), (3), (4) and (5), as they must remain assembled.
- When used together with a MISUMI ball screw, there is one support unit accessory collar spare.

Type: Fixed Side Only	Type: Fixed Side and Support Side SET	Material (1) (3)	Material (6) (7)	Surface Treatment (1) (3) (6) (7)
C-BRW	C-BRW-SET	EN 1.1191 Equiv.	EN 1.0038 Equiv.	Black Oxide

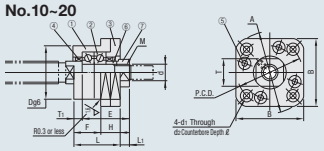
■ Component Details

No.	Part Name	Qty
(1)	Bearing Housing	1
(2)	Oversea Manufactured Angular Contact Bearing Grade 5	1 Set
(3)	Cover	1
(4)	Oil Seal	2
(5)	Hex Socket Head Cap Screw	4
(6)	Collar	2
(7)	Bearing Nut (with Set Piece)	1

No.6~8



No.10~20



Part Number Type	Part Number No.	Support Side SET	d	L	H	F	E	D	A	P.C.D.	B	L_1	T_1	d_1	d_2	ℓ	M (Fine Thread)	T	Oil Seal Applicable Shaft Dia.
C-BRW	6	–SET (Only when purchased in Sets)	6	20	7	13	22	22	35	28	28	5.5	3.5	2.9	5.5	3.5	M6x0.75	12	9.5
	8S		8	23	9	14	26	28	43	35	35	7	4	3.4	6.5	4	M8x1.0	14	10
	8																		11.5
	10S		10	27	10	17	29.5	34	52	42	42	7.5	5	4.5	8	4	M10x1.0	16	12
	10																		14
	12		12					36	54	44	44						M12x1.0	19	15
	15S		15	32	15		36	40	63	50	52	10	6	5.5	9.5	6	M15x1.0	22	19.5
	15																		20
	20		20	52	22	30	50	57	85	70	68	8	10	6.6	11	10	M20x1.0	30	25

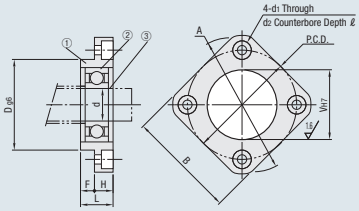
■ Support Units – Support Side, Round – Standard

RoHS

Type	Material	Surface Treatment
C-BUR	EN 1.1191 Equiv.	Black Oxide

■ Component Details

No.	Part Name	Qty
(1)	Housing	1
(2)	Oversea Manufactured Radial Bearing	1
(3)	Retaining Ring (STWN, S)	1



Part Number Type	Part Number No.	d	L	B	H	h	B_1	H_1	P	V	d_1	d_2	ℓ	Bearing	Retaining Ring
C-BUR	6	6	12	42	25	13	18	20	30	17	5.5	9.5	11	B606ZZ	STWN, S6
	8		14	52	32	17	25	26	38		6.6	11	11		
	10	8	20	70	43	25	36	24	52	22	9	—	—	B608ZZ	STWN, S8
	12	10								26				B6000ZZ	STWN, S10
	15	15		80	49	30	41	25	60	32				B6002ZZ	STWN, S15
	20	20	26	95	58		56	25	75	47	11			B6204ZZ	STWN, S20

<SET Parts>

SET Part Number	SET Parts: Fixed Side Part Number	SET Parts: Support Side Part Number
C-BSW6-SET	C-BSW6	C-BUN6
C-BSW8S-SET	C-BSW8S	C-BUN8
C-BSW8-SET	C-BSW8	C-BUN8
C-BSW10S-SET	C-BSW10S	C-BUN10
C-BSW10-SET	C-BSW10	C-BUN10
C-BSW12-SET	C-BSW12	C-BUN12
C-BSW15S-SET	C-BSW15S	C-BUN15
C-BSW15-SET	C-BSW15	C-BUN15
C-BSW20-SET	C-BSW20	C-BUN20

Order Example

Part Number	
C-BUN15	(Support side, separate item)
C-BRW15	(Fixed-side single type)
C-BRW15-SET	(SET part type)
C-BUR15	(Support Side Separate Item Model Number)

- For details of Bearings in addition to mounting interface accuracies of Support Units, Included Collar and Bearing Nut, see **P.76–77**
- Store Accessories with care since they are required when assembling.

Product Name	Slide Screws	Lead Screws	Ball Screws
Page	pgs. 143–144	pgs. 137–142	pgs. 80–119
Usage/Picture			
Max . Available Size (Dia x Length) (mm)	12 x 550 mm	50 x 1200 mm	32 x 2000 mm
Accuracy	Medium	Medium	High
Allowable Rotational Speed	Low Speed	Medium Speed	High Speed
Max Allowable Axial Load (Ref. Only)	540 N	30,000 N	9,960 N
Efficiency	0.7	0.8	0.95
Friction	High	High	Low
Grease	Not Required	Not Required	Required
Noise Level	Low	Low/Medium	High
Cost $	$$	$	$$$$

Lead Screws / Slide Screws

#MTWK
Lead Screw, Ends Fit Support Units

#MTWZ
Lead Screws – Fixed Side Support Units

#MTUZ
Lead Screws – Support Side Support Units

NEW

#MRWZ
Round Support Units – Fixed Side

NEW

#MRUZ
Lead Screw Support Units – Round, Support Side

#MTSC
Compact Flanged Lead Screw Nuts

#MTS5
Flanged Lead Screw Nuts with Pilot, Right-Hand Thread

#MTSJ
Flanged Lead Screw Nuts – Slotted Holes, Right-Hand Thread

#MTRF
Flanged Lead Screw Nuts – Fine Pitch

#MTSE
Flanged Lead Screw Nuts – with Tapped Holes, Right-Hand Thread

#MTBL
Lead Screw Nuts – Anti-Backlash

#MTSM
Oil-Free Lead Screw Nuts – Flanged

#MTSS
Lead Screw Nuts – Straight

★

#MTS3
Resin Lead Screw Nuts – Heavy Load

#MTSF
Resin Lead Screw Nuts

#MTSN
Block Style Lead Screw Nuts

#MTSH
Wide Block Lead Screw Nuts

#DNBA
Lead Screw Nut Brackets

#MTKL
Spacers for Wide Block

#MTS1
Lead Screws – Multi-Pitch, Both Ends Stepped

#MTS4
Lead Screws – Right and Left-Hand Thread, Center h7, Both Ends Stepped

#MTSK
Lead Screws – One End Stepped, One End Double Stepped

#MTSA
Lead Screws – Right and Left-Hand Thread, Center h7, One End Stepped, One End Double Stepped

#MTSRA
Lead Screws – One End Stepped

#MTS2
Lead Screws – One End Double Stepped

#MTSX
Lead Screws – Both Ends Double Stepped

#MTSR
Lead Screws – Straight

#MTSW
Lead Screws – Straight, Right and Left-Hand Thread

#DPLL
Large Digital Positioning Indicators – Standard

#DPRL
Large Digital Positioning Indicators – Front

#DPZL
Large Digital Positioning Indicators – Vertical

#DPNL
Digital Positioning Indicators

#DPML
Digital Positioning Indicators – Front Display

#DPTL
Digital Positioning Indicators – Vertical Spindle

#DPQK
Clamp Plates for Large Positioning Indicators with Lever

#DPQB
Clamp Plates for Large Positioning Indicators with Lever and Bearing

#DPNK
Clamp Plates for Compact Positioning Indicator with Lever

#DPNB
Clamp Plates for Compact Positioning Indicator with Lever and Bearing

#MTQD
Stop Plate For Lead Screws

#MTQA
Stop Plates for Lead Screws – Round, Flanged

#MTSWB
Stop Plate Sets for Lead Screw – Two Screw Mount

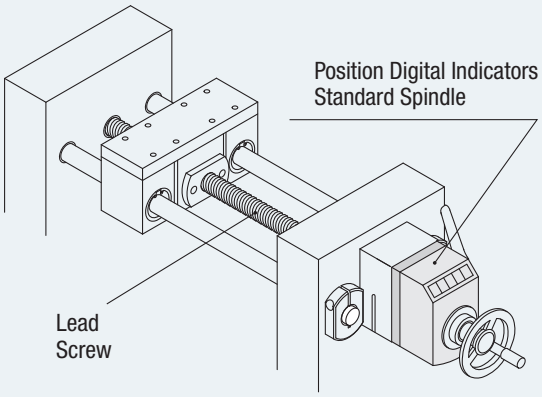
#MTSB
Stop Plates for Lead Screws – Square

#MSSA
Miniature Slide Screws with Nuts – One End Stepped

#MSSR
Miniature Lead Screws with Nuts – Straight

#MSSW
Miniature Slide Screws with Nuts – Both Ends Stepped

Example



Lead Screws

– Lead Screw Characteristics / Lead Screw Selection Flow / Lead Screw Application Examples –

■ Features of Each Screw Type

Type	Slide Screws	Lead Screws	Rolled Ball Screws	Precision Ball Screws
Shape				
Features	– Simple feed and adjust mechanisms, etc. – Made up of Stainless Steel Shaft and a Resin Nut. – No-grease operation is possible. **App. Example** – Stoppers In/Out – Transfer pitch changeover	– In cases where thrust loads and high loads exist. **App. Example** – Transfer pitch changeover – Jacks – Feed screw for lathes	– Can be applied at reasonable costs when precision ball screw accuracies are not required. **App. Example** – Transfer Line	– High positioning and velocity accuracy are required. **App. Example** – Measurement Instruments
Allowable Rotational Speed	Low Speed	Medium Speed	High Speed	High Speed
Accuracy	• •	• •	• • • •	• • • • •
Efficiency	Acceptable – Efficiency 0.7	Good – Efficiency 0.8	Excellent – Efficiency 0.95	Excellent – Efficiency 0.95
Allowable Axial Load ( ) is for reference	Acceptable (max. 540N)	Excellent (max. 30000N)	Good (max. 9960N)	Good (max. 9960N)
Price	$$$$	$$$$$	$$$	$$

■ Lead Screw Selection Flow

Screw Selection
Select By Characteristics of Each Type

↓

Shaft Dia. / Shaft Length (Stroke)
Screw Pitch Selection

*Please also see Easy Pattern Designing.

↓

Nut Selection (Config/Material)

OK ↓

Screw Shaft Selection
(Materials/Surface Treatments)

↓

Shaft End Config Selection

↓

Re-confirming Lead Screw
Technical Calculations

(3) Contact surface pressure, sliding speed calculated **P.135**

↓

Lead Screw Model Selection

Lead Screws — **Slide Screws** **P.143–144** — **Ball Screw** Ball Screw Selection Procedure **P.78**

(1) Lead Screw Selection Chart **P.135**

(2) Calculating Contact Pressure and Sliding Velocity **P.135**

NG → **Confirming Lead Screw Technical Calculations**

■ Lead Screw Nut Selection Chart

Material: Brass, round flange group is selected as a foundation.

Photo	Type	Part Number	Purpose	Page
	Standard Type	MTS__	Regularly used nut type. The round flange group is selected initially, then a sub-type is selected based on mounting space constraints.	145
	Compact	MTSP_ _	Outer diameter and overall length are smaller than the Standard Type nuts. Can be used in space limited applications.	
	Piloted Type	MTSJR	The Standard Nut with a pilot feature built-in. The pilot is inserted into bores to locate in Z axis applications, etc.	
	Tapped Hole	MTSER	Mounting holes are tapped to mount from the reverse side with screws.	
	Slotted Hole	MTSQR	The standard mounting holes are replaced with slotted holes. Can be used for fine position adjustments in mounting.	
	RoHS Compliant Type	MTRFR MTXFR	The Standard Type that is RoHS compliant. Suitable when environmental concerns are of importance.	146
	Anti-Backlash Type	MTBLR	Reduced axial play type. Has better repeatability than the Standard Type.	
	Oil Free	MTSM_ _	Standard Type with embedded solid lubricant. Reduces lubrication maintenance requirements.	147
	Resin	MTSR_ _ MTSF_ _	A resin type dimension compatible with the Standard Type. Reduces lubrication maintenance cycles.	148

Lead screw shaft end configuration standards **P.137**

Both Ends Stepped Config. **P.138**
One End Stepped / One End Double Stepped Config. **P.139**
One End Stepped – One End Double Stepped Config. **P.140**
Both Ends Double Stepped Config. **P.141**

■ Easy Pattern Designing

A complete lead screw unit can easily be designed by sequentially selecting the components from Easy Pattern Designing program.

Step 1

Lead Screws
P.137

+

Step 2

Fixed Side Support Unit
P.150

+

Step 3

Support Side Support Unit
P.151

+

Step 4

Lead Screw Nuts
– Flanged Type –
P.145

+

Step 5

Lead Screw Nut Brackets
P.152

+

Step 6

Position Indicators
P.153–154

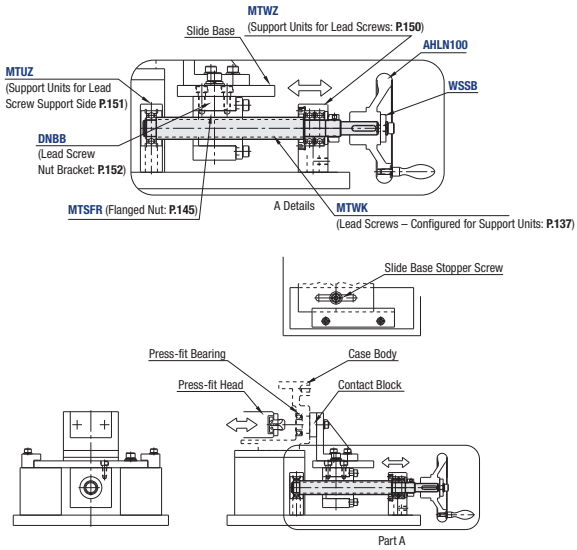
Lead Screws

– Lead Screw Characteristics / Lead Screw Selection Flow / Lead Screw Application Examples –

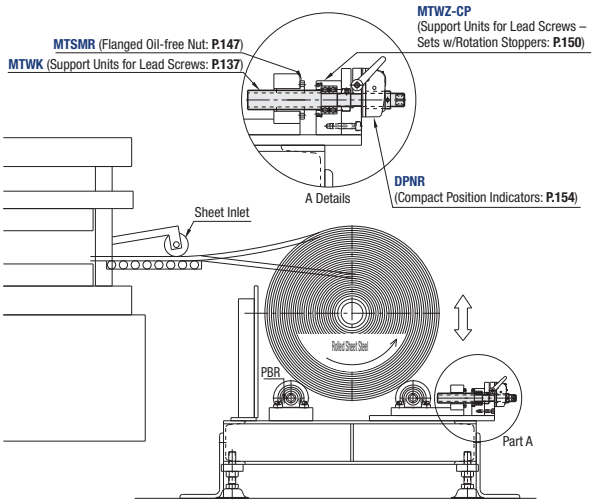
■ Lead Screw Application Examples

■ App. Machine Name

Example 1 Reference Shoulder Adjusting Mechanism



Example 2: Machine Name Sheet Steel Roll Base

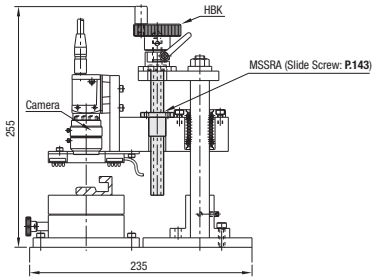


■ Slide Screw Application Example

A screw feed axis with a stainless steel shaft and a resin nut can be used without grease which is suitable for clean environments. Slide screws are economical and offer smooth motion.

■ App. Example 1

Machine Name
Camera Inspection Unit



Configuration comprised of: Shaft Support Unit for Lead Screws, Lead Screw Shaft, and a Position Indicator.

Applications and Purposes

Used for transfer feeding, locating stoppers, and guiding of various work.
Adjustments are relatively small, but shock loads in axial direction are anticipated.
Additionally, the lead screw scheme is chosen for its economy.

Selection Criteria

Lead Screw Shaft
A lead screw shaft configured specifically for MISUMI Shaft Supports with a Keyway is selected. The configuration supports each end of the shaft with a bearing.

Shaft Support Unit for Lead Screws
A Shaft Support Unit for Lead Screws is selected for the fixed end. Selected support unit has two radial bearings in preloaded arrangement and can bear axial and thrust loads.

Shaft Support Unit for Lead Screws
A Shaft Support Unit for Lead Screws is selected for the shaft support side. Comes with a radial bearing in the set, and used as is.

Lead Screw Nut
Commonly used Round Flanged Lead Screw Nut is selected.

Nut Brackets
A Nut Bracket compatible with a lead screw nut is selected.

Use Condition

(1) Applied Load	200N Material Mass: 300N
(2) Setup change-over frequency	Once / Day for Rod changes, etc
(3) Positioning Accuracy	±0.5mm
(4) Stroke	150mm

Applications and Purposes

Sheet steel roll's remaining O.D. is measured at set intervals, and the roll is raised accordingly with a lead screw. The lead screw feed amount is measured by a position indicator, instead of using a conversion table.

Selection Criteria

Leas Screw Shaft
A lead screw shaft configured specifically for MISUMI Shaft Supports with no R machining on the support side (Alteration RC) is selected.

Shaft Sport Unit for Lead Screws
Shaft Sport Unit for Lead Screws is selected for the fixed side of the shaft. Selected since axial loads can be supported, and a Compact Position Indicator can be directly mounted.

Lead Screw Nut
Round Flanged Oil-less Lead Screw Nut is selected. Selected because the lubrication maintenance can be reduced to only once a year.

Position Indicators
A compact position indicator is selected for lead screw feed amount measurements.

Use Condition

(1) Applied Load	20kN
(2) Maintenance	Once / Year
(3) Positioning Accuracy	1~2mm
(4) Stroke	150mm

A slide screw is utilized as the Z axis.

Applications and Purposes

A slide screw is chosen for fine adjustability, and should be used with as little re-lubrications as possible.

Selection Criteria

Slide Screw Shaft
One end stepped type in 304 Stainless Steel material is selected. Nut Tribological resin nut is selected for zero grease requirement and good corrosion resistance.

Use Condition

(1) Applied Load	50N
(2) Setup change-over frequency	Once a day for Rod changes, etc.
(3) Positioning Accuracy	±0.5mm
(4) Stroke	100mm

Lead Screws

– Screw Shaft Specifications / Technical Calculations –

■ Lead Screw Specifications

Shaft Diameter	Pitch	Screw Shaft Effective Diameter	Screw Shaft Minor Diameter (MIN.)	Screw Shaft Lead Angle	Lead Screw Nut Materials / Types					
					Brass/ Oil-less Brass	PPS Resin with Sliding Property	Polyacetal Resin	Brass		Brass/ Oil-less Brass
					Flanged			Compact Flanged	Anti-Bbacklash Type	Block Nnut Type
					P.145–147	P.148	P.148	P.145	P.146	P.149
					Allowable Dynamic Thrust (N)					
8	1.5	7.25	(5.9)	3°46'	1470	—	—	—	—	—
10	2	9	(7.2)	4°03'	2550	278	255	2020	2600	2550
12	2	11	(9.2)	3°19'	3920	428	392	3140	3390	3920
14	3	12.5	(10.1)	4°22'	4900	536	490	3920	—	4900
16	2	15	(13.18)	2°25'	6780	—	—	—	—	—
	3	14.5	(12.1)	3°46'	6670	686	628	5340	6290	6670
18	4	16	(13.1)	4°33'	8720	960	873	—	—	8720
20	2	19	(17.18)	1°55'	10100	—	—	—	—	—
	4	18	(15.1)	4°03'	9810	1071	980	7850	9320	9810
22	5	19.5	(16.1)	4°40'	12360	—	—	9890	—	12360
25	5	22.5	(19)	4°03'	14220	—	1412	11380	—	14220
28	5	25.5	(22)	3°34'	17950	—	1765	14420	—	17950 (20050)
32	6	29	(24.5)	3°46'	21080	—	2050	16940	—	21080 (22810)
36	6	33	(28.5)	3°19'	25780	—	—	—	—	—
40	6	37	(32.5)	2°57'	33830	—	—	—	—	—
50	8	46	(40.4)	3°10'	40310	—	—	—	—	—

( ) dimension is for Tall Block Nut type.

■ Lead Screw Technical Calculations

1. Selection of Nut Material

Select the nut material which doesn't cause abnormal abrasion.

(1) Contact Pressure P (N/mm^2)

$$P=\frac{Fs}{Fo}\times\alpha$$

Fs: Axial Load (N)
Fo: Allowable Dynamic Thrust (N)
α: α = 9.8(Brass), 0.98(Resin)

(Allowable Dynamic Thrust: The thrust when the contact pressure acting on the screw shaft and nuts is α N/mm^2

(2) Speed V (m/min)

$$V=\frac{\pi\cdot d_2\cdot n}{\cos(d)}\times10^{-3}$$

d_2: Pitch Dia. Of Screw Shaft (mm)
n: Screw Shaft Revolution Frequency per Minute (min^{-1})
d: Screw Shaft Lead Angle (Degree)

2. Screw Efficiency and Load Torque

(1) Screw Efficiency η

$$\eta=\frac{1-\mu\tan(d)}{1+\mu/\tan(d)}$$

μ: Dynamic Friction Coefficient
d: Screw Shaft Lead Angle (Degree)

(2) Load Torque T (Ncm)

$$T=\frac{F_s\cdot R}{2\pi\cdot\eta}$$

Fs: Axial Load (N)
η: Screw Efficiency
R: Lead (cm)

Calculation Example

In case of using MTSRW16 shaft, pitch 3 and MTSFR16 brass flanged nut when the axial load is 300N as rotational speed at 500min^{-1}

(1) Contact Pressure P (N/mm^2)

$$P=\frac{Fs}{Fo}\times\alpha=\frac{300}{6670}\times9.8=0.44(N/mm^2)$$

(2) Speed V (m/min)

$$V=\frac{\pi\cdot d_2\cdot n}{\cos(d)}\times10^{-3}=\frac{\pi\times14.5\times500}{\cos(3°46')}\times10^{-3}=22.8(m/min)$$

When the PV Graph is viewed based on the calculated P and V values, the cross point V=22.8(m/min) when P=0.44(N/mm^2) is located inside the line, thus it can be stated that no abnormal wear will occur.

Calculation Example

Required torque when using: screw shaft MTSRW16, pitch 3, nut MTSFR16 (flanged brass)

(1) Screw Efficiency η

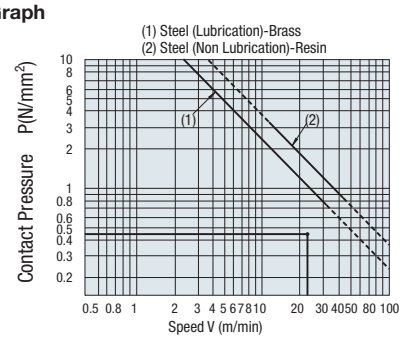
$$\eta=\frac{1-\mu\tan(d)}{1+\mu/\tan(d)}=\frac{1-0.21\times\tan(3°46')}{1+0.21/\tan(3°46')}=0.24$$

Also, a case of calculating for the Load Torque T (Ncm) when the axial load is 300N.

(2) Load Torque T (Ncm)

$$T=\frac{F_s\cdot R}{2\pi\cdot\eta}=\frac{300\times0.3}{2\pi\times0.24}=59.7(N\text{-}cm)$$

■ PV Value Graph

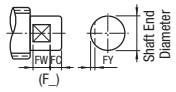
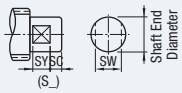
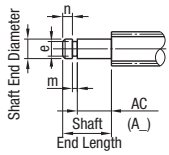
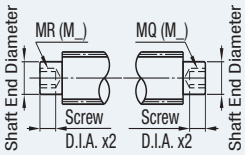
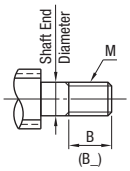
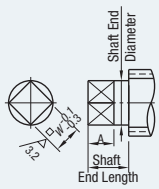
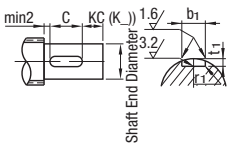


■ Reference Value

Screw Shaft	Nut	Dynamic Friction Coefficient μ
Steel (Lubrication)	Brass	0.21
Steel (Non Lubrication)	Polyacetal/PPS Resin with Sliding Property	0.13

Overview of Lead Screw Shaft End Machining

Orders can be placed without drawings by adding the Alteration Specifications listed below to the standard Lead Screw product part numbers.

Alterations	Alterations	Code	Spec.
Flat Machining		FV FQ FR FE FC	Adds a flat on shaft end. When shaft end diameter ≤25, FY≤1.0 Ordering Code: FC5-FW10-FY1 0.5mm Increment When shaft end diameter ≥26, FY≤2.0 Use Purpose: Used for a set screw flat when mounting a handle Only one end of the shaft is machined
2 Flats Machining		SC SQ SE SR SV	2 flats (Width Across Flats) are machined on one end of the shaft Ordering Code: SC5-SW10-SY8 1mm Increment Use Purpose: For wrench use Only one end of the shaft is machined When Shaft End Dia. <15, SW≥ Shaft End Dia. -2 When 15≤ Shaft End Dia. ≤25, SW ≥ Shaft End Dia. -3 When 30≤ Shaft End Dia, SW≥ Shaft End Dia. -5 3≤SY≤20
Retaining Ring Groove		AC AQ AR AE	Adds a retaining ring groove on one end. Ordering Code: AC13.3 Specify in 0.1mm increment Use Purpose: For bearing mounting, etc. AC (AQ, AR, AE) will be smaller than "End length-m-n"
Coarse Tap		MC MQ MR ME MV	Adds a coarse threaded tapped hole on a shaft end. Ordering Code: MC24 Select from table on right Use Purpose: Used for threaded item (knobs, etc.) mounting Not applicable for 4mm dia. shafts
Threaded for Bearing Nuts		BV BC BQ BR	Cuts a thread on a shaft end Ordering Code: BC20 Select from table on right Use Purpose: For locking bearing nuts see website Not applicable to shaft end diameters 7, 9, 16. Tap length ≤ M x3 Tap length ≥ Pitch x3 Tap length ≤ Shaft End Length – Pitch x3
Square Chamfering		ZC ZQ ZE ZR ZV	Adds square chamfering to one end Ordering Code: ZC12-W10-A8 Specify ZC (Z_) as same as the end diameter W=Select from the table on right, or specify in 1mm increment A = 1mm Increment Use Purpose: For mounting handles, etc. 5≤A≤20 Only one end of the shaft is machined
Keyway		KC KQ KV KE KR	Adds a keyway on one end Ordering Code: KC8-C10 KC (K_) and C: Specify in 1m increment Use Purpose: For handle mounting keyway use Only one end of the shaft is machined C≤60 2mm min. required between the keyway and shaft shoulder KC(K_)≥2 When KC (K_)=0, there will be no keyway radius on the end side

Shaft End Dia. / e Tolerance / m+0.14 0 / n Machining Limits / Used Retaining Ring

Shaft End Dia.	e	Tolerance	m+0.14 0	n Machining Limits	Used Retaining Ring
6	4	+0.075 0	0.7	n ≥ 1.2	E shaped retaining ring
7					
8	5				
9	6		0.9		
10	9.6	0 -0.09	1.15	n ≥ 1.5	C shaped retaining ring
12	11.5	0 -0.11			
14	13.4				
15	14.3				
16	15.2				
17	16.2				
20	19	0 -0.21	1.35		
25	23.9				
30	28.6		1.65		
35	33				
40	38	0 -0.25	1.9	n ≥ 2	

Shaft End Dia. / MC (M_) Selection Range

Shaft End Dia.	MC (M_) Selection Range
5	3
6	3
7, 8	3, 4
9, 10	3, 4, 5
11, 12	3, 4, 5, 6
13~15	3, 4, 5, 6, 8
16~18	3, 4, 5, 6, 8, 10
19~24	3, 4, 5, 6, 8, 10, 12
25~30	3, 4, 5, 6, 8, 10, 12, 16
31~39	3, 4, 5, 6, 8, 10, 12, 16, 20
40, 50	3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30

Shaft End Dia. / M x Pitch

Shaft End Dia.	M x Pitch
6	M6 x 0.75
8	M8 x 1.0
10	M10 x 1.0
12	M12 x 1.0
14	M14 x 1.0
15	M15 x 1.0
17	M17 x 1.0
20	M20 x 1.0
25	M25 x 1.5
30	M30 x 1.5
35	M35 x 1.5
40	M40 x 1.5

Shaft End Dia. / W 1mm Increment

Shaft End Dia.	W 1mm Increment
6, 7	5
8	6
9	7
10	8
12	9 10
14, 15	10 11 12
16	11 12 13
17	12 13 14
20	14 15 16
25	17~20
30	21~24
35	25~28
40	29~30

Shaft End Dia.	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

Applicable Shaft End Dia. / Keyway Dimension

Applicable Shaft End Dia.	b_1 Reference Dimension	b_1 Tolerance (N9)	t_1 Reference Dimension	t_1 Tolerance	r_1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		
13~17	5		3		0.16 ~0.25
18~22	6		3.5		
23~30	8	0 -0.036	4	+0.2 0	
31~38	10		5		0.25 ~0.40
39, 40	12	0 -0.043	5		

■ Notes on selections Alterations

- When flat machining, width across flats, square chamfering and keyway alterations are combined with each other, their orientations are random.
- When two or more features are specified on a shaft, their orientations will be random.
- When adding multiple alterations, there must be 2mm or more between each feature.

■ Applies to Lead Screws with Alterations for Combination of Square Machining and Tapping. P.137–141

Square Chamfering		Coarse Tap
Shaft End Dia.	Square Machining	Tap Diameter
6~10	5~8	3
11~14	8~10	3, 4
15~19	10~14	3, 4, 5
20~25	14~20	3, 4, 5, 6, 8
26~30	19~24	3, 4, 5, 6, 8, 10
31~35	22~28	3, 4, 5, 6, 8, 10, 12
36~40	26~30	3, 4, 5, 6, 8, 10, 12, 16

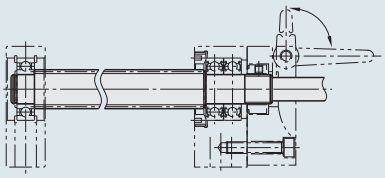
Lead Screws

– Lead Screws for Support Units –

A dedicated lead screw configured for bearings, stopper clamp, position indicator, and a handle. Ordering can be completed only with specifying D, L, and S dimensions.

RoHS

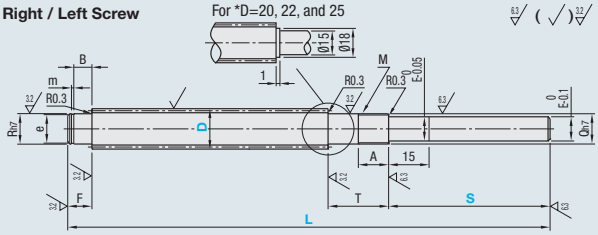
Type: Right-Hand Thread	Type: Left-Hand Screw	Material	Surface Treatment
MTWK	MTWLK	1045 Carbon Steel	—
MTWBK	MTWBLK	1045 Carbon Steel	Black Oxide
RMTWK	RMTWLK	1045 Carbon Steel	Low Temperature Black Chrome Plating
MTSWK	MTSWLK	303 Stainless Steel	—



R	e	Tolerance	m+0.14 0
8	5	+0.075 0	0.7
10	9.6	0 -0.09	1.15
12	11.5	0 -0.11	
15	14.3		

Right / Left Screw

For *D=20, 22, and 25



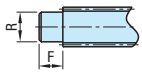
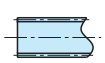
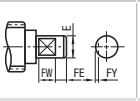
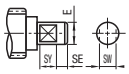
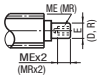
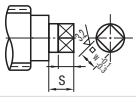
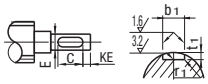
Part Number Type: (Right-Hand Thread)	Part Number Type: (Left-Hand Screw)	D	1mm Increment L	1mm Increment S	F	R	B	T	Q	A	M x Pitch	E	D	Pitch P
MTWK, MTWBK, RMTWK	MTWLK, MTWBLK, RMTWLK	12	80~1000	2≤S≤80	10	8	7	26	8	11	8 x 1.0	6	12	2
		14			12	10	8	29	10	12	10 x 1.0	8	14	3
		16	100~1200	2≤S≤95	12	12	8	29	12	12	12 x 1.0	10	16	3
		18			12	12	8	29	12	12	12 x 1.0	10	18	4
		20	150~1200	2≤S≤100	12	15	9	34	15	14	15 x 1.0	12	20	4
Low Temperature Black Chrome Plated Products MTSWK	L≤1000 MTSWLK	22			12	15	9	34	15	14	15 x 1.0	12	22	5
D dimension 22 is not available for MTSWK; D dimensions 22 or 25 are not available for MTSWLK		25			12	15	9	34	15	14	15 x 1.0	12	25	5

Order Example

Part Number	–	L	–	S
MTWK20	–	800	–	S90

Alterations

Part Number	–	L	–	S	–	(NAR, RC, FE, SE, ME, MR, ZE, KE)	–	
MTWK20	–	800	–	S90	–	KE0	–	C30

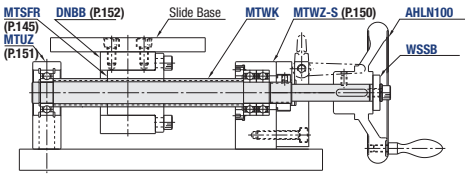
Alterations	No Retaining Ring Groove on Support Side Shaft End	No Machining on Support Side	Flat Machining	Width Across Flats	Tapping	Square Chamfering	Keyway
							
Code	NAR (R Part)	RC (R Part)	FE (E Part)	SE (E Part)	ME (E Part) MR (Left Side)	ZE (E Part)	KE (E Part)
Spec.	No retaining ring machining performed on the R part for the support end. Ordering Code NAR	No machining performed on the R part for the support end. Ordering Code RC. Possible to combine with MR	FE, FW, FY=Specify in 0.5mm Increment. Applied on FE (E). Ordering Code E5-FW10-FY1. FY≤1.0	SE, SW, SY=Specify in 1mm Increment. Applied on SE=E part. Ordering Code SE3-SW10-SY7. SW≥E–2. 3≤SY≤20	Applied on ME=E part. MR=Applied on the R section and Left End Face. Ordering Code ME6	A=1mm Increment. Applied on ZE=E part. Ordering Code ZE12-W10-A8. Can be combined with Tapped Hole machining only on a same shaft. For machining conditions, see below. 5≤A≤20. ZE=E Specified	KE, C=Specify in 1mm increments. C≤60EKE≥2. S-C-KE≥2. When KE=0, there will be no keyway radius on the shaft end side. Machining on KE=E part. Ordering Code KE8-C10. Applicable to D dimension 16 or more. When applying a Keyway machining, the E O.D. tolerance will all be 0 -0.05

E, R, D	ME – MR (Selection Range)
6	3
8	3, 4
10	3, 4, 5
12	3, 4, 5, 6
14, 15	3, 4, 5, 6, 8
16, 18	5, 6, 8, 10
20~25	5, 6, 8, 10, 12

ZE=E	W Selection
6	5
8	6
10	8
12	9, 10

Applicable Shaft Dia. E	Keyway Dimension b_1 Reference Dimension	b_1 Tolerance (N9)	t_1 Reference Dimension	t_1 Tolerance	r_1
10	3	-0.004 -0.029	1.8	+0.1 0	0.08 ~0.16
12	4	0 -0.030	2.5		

Example



■ Features

A custom unit with manual lead screw rotation.

A dedicated lead screw, bearing unit and stopper clamp are combined in a set. **P.150**

The unit can support radial and axial loads, and can be constructed more economically in a compact manner.

Lead Screws

– Both Ends Stepped Type –

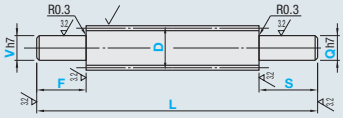
RoHS

Type						Material	Surface Treatment
Right-Hand Thread	With a Keyway Right-Hand Thread	Fine Pitch Right-Hand Thread	Left-Hand Screw	Right and Left-Hand Screw	Precision Right and Left-Hand Screw		
MTSRW	MTSRV	MTXRW	MTSLW	MTSWW	MTSYW	1045 Carbon Steel	—
MTSBRW	MTSBRV	MTXBRW	MTSBLW	MTSBWW	MTSBYW		Black Oxide
RMTSRW	RMTSRV	—	RMTSLW	RMTSWW	—		Low Temperature Black Chrome Plating
MTSTRW ✓	—	—	MTSTLW	—	—	303 Stainless Steel	—

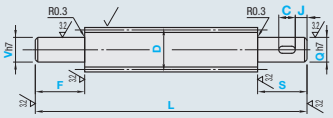
Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

6.3/ √ (3.2/ √)

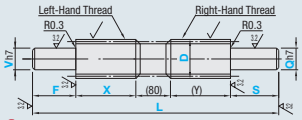
Right-Hand Screw / Left-Hand Screw / Fine Thread Right-Hand Screw



Right-Hand Screw with Keyway

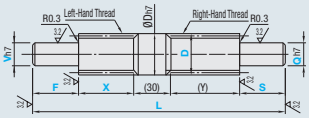


Right and Left-Hand Screw



Incomplete threaded portion near the center (80mm) is not usable.

Precision Right and Left-Hand Thread



ØDh7–30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

Keyway machining details conform to Shaft Keyway Dimensions shown below.

■ Right-Hand Screw / Left-Hand Screw / Right and Left-Hand Screw / Precision Right and Left-Hand Screw

Part Number Type		D	1mm Increment L	F / S	V / Q	Left-Right Screw / Precision Left / Right Screw X 1mm Increment	D	Pitch P
(Right-Hand Thread) MTSRW MTSBRW RMTSRW MTSTRW	D≤32, L≤1000 (Stainless Steel)	*8	50~500	2≤F≤Vx7 2≤S≤Qx7 ! When V and Q are 6~9, 2≤F≤Vx5 2≤S≤Qx5	6	When D=10~14 50≤X≤460<485>-F (Y)=L-80<30>-F-S-X (Y)≤500-S-40<15>	8	1.5
(Left-Hand Screw) MTSLW MTSBLW RMTSLW MTSTLW		10	80~1000		6 7		10	2
		12			6 7 8 9		12	
		14			8 9 10		14	3
		16	100~1200		9 10 12		16	
		18	150~1200		9 10 12		18	4
(Right and Left-Hand Screw) MTSWW MTSBWW RMTSWW	D≤32, L≤1000 (Stainless Steel)	20			10 12 14 15	When D=16~50 50≤X≤560<585>-F (Y)=L-80<30>-F-S-X (Y)≤600-S-40<15>	20	
		22			10 12 14 15		22	
		25			12 14 15 16 17		25	5
		28			14 15 16 17 20		28	
(Precision Right and Left-Hand Screw) MTSYW MTSBYW	D≤32, L≤1000	32	200~1200		14 15 16 17 20 25		32	
		36			17 20 25		36	6
		40			20 25 30	! Dimensions in < > are for Precision Right and Left Hand Screw.	40	
(! D8 is applicable for MTSRW, MTSBRW, RMTSRW only)		50			25 30 35 40		50	8

! For Precision Right and Left-Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. ! When using with position indicators, the standard Q diameters are 8~20. P.154

! D dimension 22, 36, 40 and 50 are not available in Stainless Steel. D dimension 25, 28 and 32 are available for Right-Hand Screw only.

■ Right-Hand Screw with Keyway

Part Number Type		D	1mm Increment L	F / S	V / Q	1mm Increment C	J	D	Pitch P
MTSRV MTSBRV RMTSRV	D≤32, L≤1000	12	80~1000	2≤F≤Vx7 2≤S≤Qx7 ! When Q,V≤9, F,S are five or less times of Q, V.	7 8 9	C≤60 S-C-J≥2	J≥2 or J=0 ! When J=0, keyway will be open.	12	2
		14			8 9 10			14	3
		16	100~1200		9 10 12			16	
		18	150~1200		9 10 12			18	4
		20			10 12 14 15			20	
		22			10 12 14 15			22	
		25			12 14 15 16 17			25	5
		28			14 15 16 17 20			28	
		32	200~1200		14 15 16 17 20 25			32	
		36			17 20 25			36	6
		40			20 25 30			40	
		50			25 30 35 40			50	8

! When using with position indicators, the standard Q diameters are 8~20. P.154

■ Fine Pitch Right-Hand Screw

Part Number Type	D	1mm Increment L	F / S	V / Q	D	Pitch P
MTXRW MTXBRW	16	100~1000	2≤F≤Vx7 2≤S≤Qx7.0 ! When Q and V≤9, F and S will be less than 5x of Q and V.	9 10 12	16	2
	20	150~1000		10 12 14 15	20	2

! For fine pitch right-hand screw nuts, see P.146

! When using with position indicators, the standard Q diameters are 8~20. P.154

Order Example

Part Number	L	F	V	S	Q	C	J
MTSRW16	282	F16	V10	S14	Q10		
MTSRV16	282	F16	V10	S14	Q10	C10	J2

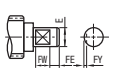
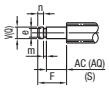
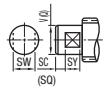
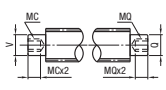
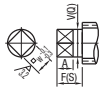
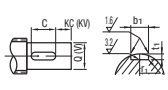
Part Number	L	F	V	S	Q	X
MTSWW20	583	F20	V15	S30	Q15	X100

Alterations

Part Number – L – F – V – S – Q – (AC, SC, MC…etc.)
MTSRW16 – 282 – F16 – V10 – S14 – Q10 – AC13.3

! Only AC, SC, MC, MQ and ZC are applicable to Right-Hand Screw with Keyway

Alterations

	Flat Machining	Retaining Ring Groove	Width Across Flats	Tapping	Threaded	Square Chamfering	Keyway
					For Bearing nuts		
Code	FV (V Part) FQ (Q Part)	AC (V Part) AQ (Q Part)	SC (V Part) SQ (Q Part)	MC (V Part) MQ (Q Part)	BV (V Part) BC (Q Part)	ZC (V Part) ZQ (Q Part)	KV (V Part) KC (Q Part)
Spec.	FV, FQ, FW, FY= 0.5mm Increment FV=Machined on V area FQ=Machined on Q area ! Applies to only one of either V or Q Ordering Code FV5-FW10-FY1 ! When V (Q)≤25 FY≤1.0 ! When V (Q)≥26 FY≤2.0	AC, AQ=0.1mm Increment AC, AQ≤F(S)-m-n Machining Limit Value Ordering Code AC13.3 AC=Machine on V and AQ=Q	SC, SQ, SW, SY=1mm Increment SC=Machining on V SQ=Machining on Q ! Applies to only one of either V or Q Ordering Code SC5-SW10-SY8 ! When Q(V)<15 SW≥Q(V)–2 ! When 15≤Q(V)≤25 SW≥Q(V)–3 ! When 30≤Q(V) SW≥Q(V)-5 ! 3≤SY≤20	MC=Machining on V MQ=Machining on Q Ordering Code MC24	EBV, BC≤Mx3 EBV, BC≥Pitch x 3 EBV, BC≤F, S–Pitch x 3 Ordering Code BC20 BV=Machining on V BC=Machining on Q	W, A=1mm Increment ZC=Machining on V ZQ=Machining on Q ! Applicable to either V or Q. Ordering Code ZC10-W8-A8 ! Can be combined with Tapped Hole machining only on a same shaft. For machining conditions, see below ! 5≤A≤20 EZC=V, ZQ=Q Specified	KC,KV,C = 1 mm Increment Ordering Code KC8-C10 KV=Machining on V KC=Machining on Q ! Applies to only one of either V or Q

AC (V Part) AQ (Q Part)

V, Q	e	Tolerance	m+0.14 0	n Machining Limits
6	4	+0.075 0	0.7	n≥1.2
7				
8	5			
9	6		0.9	
10	9.6	0 -0.09	1.15	n≥1.5
12	11.5	0 -0.11		
14	13.4			
15	14.3			
16	15.2			
17	16.2			
20	19	0 -0.21	1.35	
25	23.9			
30	28.6		1.65	
35	33			
40	38	0 -0.25	1.9	n≥2

MC – MQ (Selection Range)

V, Q	
6	3
7, 8	3, 4
9, 10	3, 4, 5
12	3, 4, 5, 6
14, 15	3, 4, 5, 6, 8
16, 17	3, 4, 5, 6, 8, 10
20	3, 4, 5, 6, 8, 10, 12
25, 30	3, 4, 5, 6, 8, 10, 12, 16
35	3, 4, 5, 6, 8, 10, 12, 16, 20
40	3, 4, 5, 6, 8, 10, 12, 16, 20, 24

M x Pitch

V, Q	
6	M6 x 0.75
8	M8 x 1.0
10	M10 x 1.0
12	M12 x 1.0
14	M14 x 1.0
15	M15 x 1.0
17	M17 x 1.0
20	M20 x 1.0
25	M25 x 1.5
30	M30 x 1.5
35	M35 x 1.5
40	M40 x 1.5

Not applicable when V, Q=7, 9, 16

ZC=V, ZQ=Q / W 1mm Increment

6, 7	5
8	6
9	7
10	8
12	9 10
14, 15	10 11 12
16	11 12 13
17	12 13 14
20	14 15 16
25	17~20
30	21~24
35	25~28
40	29~30

! When width across flats, square chamfering and Keyway alterations are combined with each other, their orientation is random.

Lead Screws

– One End Stepped – One End Double Stepped –

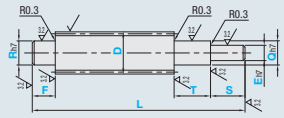
RoHS

Type				Material	Surface Treatment
Right-Hand Thread	Left-Hand Screw	Right and Left-Hand Screw	Precision Right and Left-Hand Screw		
MTSRK	MTSLK	MTSWKA/B	MTSYKA/B	1045 Carbon Steel	—
MTSBRK ★ ✔	MTSBLK	MTSBWKA/B	MTSBYKA/B		Black Oxide
RMTSRK	RMTSLK	RMTSWKA/B	—		Low Temperature Black Chrome Plating
MTSTRK	MTSTLK	—	—	303 Stainless Steel	—

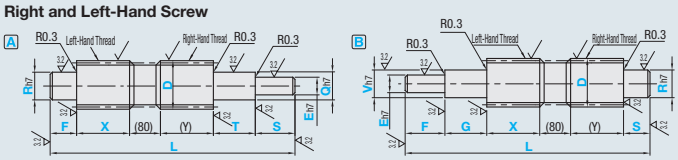
Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

(!) Type A or B are available for Right and Left-hand Screw and Precision Right and Left Hand Screw

Right / Left Screw

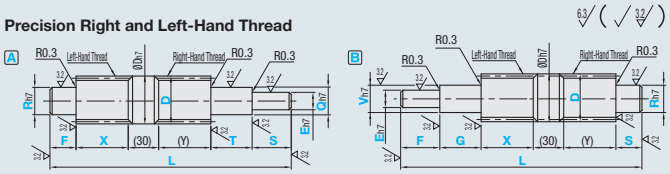


Right and Left-Hand Screw



(!) Incomplete threaded portion near the center (80mm) is not usable.

Precision Right and Left-Hand Thread



(!) ØDh7 – 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

■ Right-Hand Screw / Left-Hand Screw / Right and Left-Hand Screw / Precision Right and Left-Hand Screw

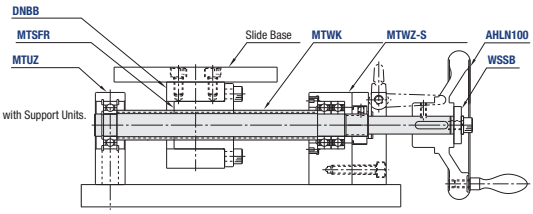
Part Number Type		D	1mm Increment L	1mm Increment F, G, T, S	V, Q, R	E 1mm Increment	Left-Right Screw / Precision Left / Right Screw X 1mm Increment	D	Pitch P
(Right-Hand Thread) MTSRK MTSBRK RMTSRK MTSTRK	D≤32, L≤1000 (Stainless Steel)	12	80~1000	2≤F≤E, Rx7 2≤G≤Vx7 2≤S≤E, Rx7 2≤T≤Qx7	7 8 9	Q/2≤E≤Q−1 V/2≤E≤V−1	When D=12, 14 50≤X≤460<485>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤500-S-T-40<15>	12	2
		14			8 9 10			14	3
		16	100~1200		9 10 12			16	
(Left-Hand Screw) MTSLK MTSBLK RMTSLK MTSTLK	D≤32, L≤1000 (Stainless Steel)	18	150~1200		9 10 12			18	4
		20			10 12 14 15			20	
		22			10 12 14 15		When D=16~50 50≤X≤560<585>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤600-S-T-40<15>	22	5
		25			12 14 15 16 17			25	
(Right and Left-Hand Screw) MTSWKA/B MTSBWKA/B RMTSWKA/B		28		(!) When Q, V, R, and E≤9, F, G, T, S will be 5x or less of Q, V, R, E.	14 15 16 17 20			28	
		32	200~1200		14 15 16 17 20 25			32	6
		36			17 20 25			36	
(Precision Right and Left-Hand Screw) MTSYKA/B MTSBYKA/B	D≤32, L≤1000	40			20 25 30			40	
		50			25 30 35 40		(!) Dimensions in < > are for Precision Right and Left Hand Screw.	50	

(!) For Precision Right and Left Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. (!) When combining with the position indicators, Q and V standard dimensions will be 8~20. P.154

(!) D dimension 22, 36, 40 and 50 are not available in Stainless Steel. D dimension 25, 28 and 32 are available for Right-hand Screw only.

Example

Combined application example with Support Units.



Order Example

Part Number	L	F	R	T	Q	S	E	X
MTSRK16	456	F39	R10	T20	Q12	S10	E9	
MTSWKA16	456	F39	R10	T20	Q12	S10	E9	X150

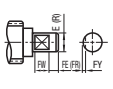
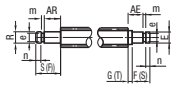
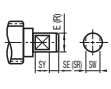
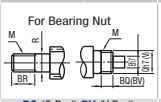
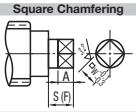
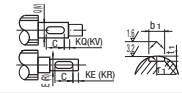
Part Number	L	F	E	G	V	S	R	X
MTSWKB20	582	F10	E10	G15	V12	S25	R15	X200

Alterations

Part Number – L – F – V – T – Q – S – E – (AR, SE, MR...etc.)
MTSRK16 – 456 – F37 – R10 – T20 – Q12 – S10 – E9 – MR4

(!) Only AC, SC, MC, MQ and ZC are applicable to Right-Hand Screw with Keyway

Alterations

Flat Machining	Retaining Ring Groove	Width Across Flats	Tapping	Threaded	Square Chamfering	Keyway
						
				For Bearing Nut		
Code						
FE (E Part) FR (R Part)	AR (R Part) AE (E Part)	SE (E Part) SR (R Part)	MR (R Part) ME (E Part)	BQ (Q Part) BV (V Part) BR (R Part)	ZE (E Part) ZR (R Part)	KQ (Q Part) KV (V Part) KE (E Part) KR (R Part)
Spec.						
FE,FR,FW,FY= 0.5mm Increment FE=Machining on E FR=Machining on R	AR, AE=0.1mm Increment AR(AE)≤S(F)+T(G)−m−n Machining Limits	SE, SW, SY= 1mm Increment SE=Machining on E SR=Machining on R	MR=Machining on R ME=Machining on E	EBQ, BV, BR≤Mx3 EBQ, BV, BR≥Pitchx3 EBQ, BV, BR≤F,S,T,G−Pitchx3	W, A=1mm Increment ZE=Machining on E ZR=Machining on R	KQ,KV,KE,KR,C= 1mm Increment KQ=Machining on Q KV=Machining on V KE=Machining on E KR=Machining on R
Ordering Code	Ordering Code AE13.3	Ordering Code	Ordering Code MC24	Ordering Code BR20	Ordering Code	Ordering Code KQ8-C10
FR5-FW10-FY1	AR=Machining on R AE=Machining on E	SE3-SW10-SY7		BQ=Machining on Q BV=Machining on V BR=Machining on R	ZE12-W10-A8	(!) C≤60
(!) Applies to only one of either E or R		(!) When E(R)<15, SW≥E(R)−2			(!) Applies to only one of either E or R	(!) T(G)-C-KQ(KV)≥2
(!) When E (R)≤25 FY≤1.0		(!) When 15E≤(R)≤25, SW≥E(R)-3			(!) Can be combined with Tapped Hole machining only on a same shaft. For machining conditions, see below	(!) S(F)-C-KE(KR)≥2
(!) When E (R)≥26 FY≤2.0		(!) When 30≤E(R), SW≥E(R)-5			(!) 5≤A≤20	(!) KQ(KV,KE,KR)≥2
		(!) 3≤SY≤20			(!) ZR=R Specified, ZR>W	(!) When KQ(KV, KE, KR)=0, there will be no keyway radius on the end.
					(!) ZE=E Specified, ZE>W	
					(!) Applies to only one of Q, V, E, or E	

AR (R Part) AE (E Part)

R, E	e	Tolerance	m+0.14 0	n Machining Limits
7	4	+0.075 0	0.7	n≥1.2
8	5			
9	6		0.9	
10	9.6	0 -0.09	1.15	n≥1.5
12	11.5			
14	13.4	0 -0.11		
15	14.3			
16	15.2			
17	16.2			
20	19		1.35	
25	23.9	0 -0.21		
30	28.6		1.65	
35	33			
40	38	0 -0.25	1.9	n≥2

MR (R Part) ME (E Part)

R, E	ME - MR (Selection Range)
5, 6	3
7, 8	3, 4
9, 10	3, 4, 5
11, 12	3, 4, 5, 6
13~15	3, 4, 5, 6, 8
16~24	3, 4, 5, 6, 8, 10
25~30	3, 4, 5, 6, 8, 10, 12, 16
31~39	3, 4, 5, 6, 8, 10, 12, 16, 20
40	3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30

(⊗) Not applicable when R−E=4.

BQ (Q Part) BV (V Part) BR (R Part)

Q, V, R	MxPitch
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

(⊗) Cannot be applied to Q, V, and R= 7, 9, or 16.

ZE (E Part) ZR (R Part)

ZE=E , ZR=R	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

(E x R/2) √2≤W
May not be manufacturability depending on E, R, and W relationships.

KQ (Q Part) KV (V Part) KE (E Part) KR (R Part)

Keyway Dimension

Applicable Shaft Dia. Q, V, E, R	b_1 Ref. Dim.	b_1 Tolerance (N9)	t_1 Ref. Dim.	t_1 Tolerance	r_1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		
13~17	5		3.0		0.16 ~0.25
18~22	6		3.5		
23~30	8	0 -0.036	4.0	+0.2 0	
31~38	10		5.0		0.25 ~0.40
39, 40	12	0 -0.043	5.0		

(!) When width across flats, square chamfering and Keyway alterations are combined with each other, their orientation is random.

Lead Screws

– One End Stepped / One End Double Stepped –

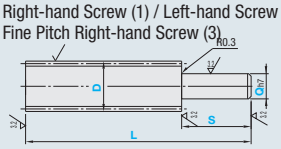
RoHS

Type								Material	Surface Treatment
One End Stepped				One End Double Stepped					
(1) Right-Hand Thread	(2) With a Keyway Right-Hand Thread	(3) Fine Pitch Right-Hand Thread	(4) Left-Hand Screw	(5) Right-Hand Thread	(6) With a Keyway Right-Hand Thread	(7) Fine Pitch Right-Hand Thread	(8) Left-Hand Screw		
MTSRA	MTSRB	MTXRA	MTSLA	MTSRC	MTSRD	MTXRC	MTSLC	1045 Carbon Steel	—
MTSBRA	MTSBRB	MTXBRA	MTSBLA	MTSBRC	MTSBRD	MTXBRC	MTSBLC		Black Oxide
RMTSRA	RMTSRB	—	RMTSLA	RMTSRC	RMTSRD	—	RMTSLC		Low Temperature Black Chrome Plating
MTSTRA	—	—	MTSTLA	MTSTRC	—	—	MTSTLC	303 Stainless Steel	—

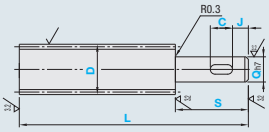
Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

6.3/ √(3.2/ √)

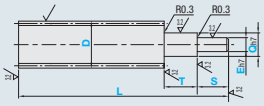
One End Stepped
Right-hand Screw (1) / Left-hand Screw (4) / Fine Pitch Right-hand Screw (3)



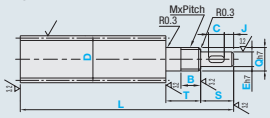
Right-handed Screw with a Keyway (2)



One End Double Stepped
Right-handed Screw (5) / Left-handed Screw (8) / Fine Pitch Right-handed Screw (7)



Right-handed Screw with a Keyway (7)



(!) ØDh7–30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

(!) Keyway machining details conform to Shaft Keyway Dimensions shown below.

■ Right / Left Screw

Part Number Type		D	L	T, S	Q	E 1mm Increment	D	Pitch P
(1) One End Stepped Right-hand Screw	(5) One End Double Stepped Right-hand Screw	*8	50~500	2≤S≤Q,Ex7 2≤T≤Qx7 (!) When Q,E≤9, T,S are five or less times of Q, E.	6	—	8	1.5
MTSRA	MTSRC	10			6 7		10	2
MTSBRA	MTSBRC	12	80~1000		6 7 8 9	Q/2≤E≤Q−1	12	
RMTSRA	RMTSRC	14			8 9 10		14	3
D≤32,L≤1000		16	100~1200		9 10 12		16	
MTSTRA	MTSTRC	18			9 10 12		18	4
		20			10 12 14 15		20	
(4) One End Stepped Left-hand Screw	(8) One End Double Stepped Left-hand Screw	22	150~1200		10 12 14 15		22	
MTSLA	MTSLC	25			12 14 15 16 17		25	5
MTSBLA	MTSBLC	28			14 15 16 17 20		28	
RMTSLA	RMTSLC	32			14 15 16 17 20 25		32	
D≤32,L≤1000		36	200~1200		17 20 25		36	6
MTSTLA	MTSTLC	40			20 25 30		40	
(!) D8 is available for MTSRA, MTSBRA and RMTSRA only.)		50			25 30 35 40		50	8

(!) For One End Double Stepped Type, Q dimension 6 cannot be selected when D dimension is 12. (!) When using with position indicators, the standard Q diameters are 8~20. P.154

(!) D dimension 22, 36, 40 and 50 are not available in Stainless Steel. D dimension 25, 28 and 32 are available for Right-hand Screw only.

■ Right-Hand Screw with Keyway

Part Number Type	D	L	T, S	Q	E	C	J	B	M x Pitch	D	Pitch P
	12	80~1000	2≤S≤Q,EX7 2≤T≤Qx7 (!) When Q,E≤9, T,S are five or less times of Q,E.	7 8 9	E≥6 Q/2≤E≤Q-2 When the pitch is 1.5 Q/2≤E≤Q-3	C≤60 S-C-J≥2	J≥2 Or J=0 (!) When J=0, keyway R is straight.	B=0 Or B≤Mx3 B≥Pitchx3 B≤T-Pitchx3	(!) Q=M M8x1.0 M10x1.0 M12x1.0 M14x1.0 M15x1.0 M17x1.0 M20x1.0 M25x1.5 M30x1.5 M35x1.5 M40x1.5 (✗) Not applicable to 7, 9, 16.	12	2
	14			8 9 10						14	3
(2) One End Stepped Type	16	100~1200		9 10 12						16	
MTSRB	18	150~1200		9 10 12						18	4
MTSBRB	20			10 12 14 15						20	
RMTSRB D≤32,L≤1000	22			10 12 14 15						22	5
	25			12 14 15 16 17						25	
(6) One End Double Stepped Type	28			14 15 16 17 20						28	
MTSRD	32			14 15 16 17 20 25						32	
MTSBRD	36			17 20 25						36	6
RMTSRD D≤32,L≤1000	40	200~1200		20 25 30						40	
	50			25 30 35 40						50	8

(!) When using with position indicators, the standard Q diameters are 8~20. P.154

■ Fine Pitch Right-Hand Screw

Fine Pitch Right-hand Threads have finer pitches than the conventional type.

Part Number Type	D	L	T / S	V / Q	E 1mm Increment	D	Pitch P
(3) One End Stepped Type MTXRA MTXBRA	16	100~1000	2≤S≤Q, Ex7 2≤T≤Qx7 (!) When Q and E≤9, T, S are five or less times of Q, E.	9 10 12	Q/2≤E≤Q−1	16	2
(7)One End Double Stepped Type MTXRC MTXBRC	20	150~1000		10 12 14 15		20	2

(!) For fine pitch right-hand screw nuts, see P.146

(!) When using with position indicators, the standard Q diameters are 8~20. P.154

Order Example

Part Number	–	L	–	S	–	Q	–	C	–	J
MTSRA16	–	456	–	S49	–	Q10				
MTSRB16	–	456	–	S10	–	Q12	–	C5	–	J0

Part Number	–	L	–	T	–	Q	–	S	–	E	–	X	–	C	–	J	–	B
MTSRC16	–	456	–	T20	–	Q12	–	S10	–	E9								
MTSRD16	–	456	–	T20	–	Q12	–	S10	–	E8			–	C5	–	J0	–	B10

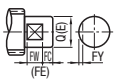
Alterations

Part Number	–	L	–	S	–	Q	–	C	–	J	–	(MC, MQ...etc.)
MTSRB16	–	456	–	S10	–	Q12	–	C5	–	J0	–	MC8

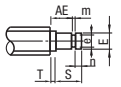
(!) Only MC, MQ and ME are applicable to Right-hand Screw with Keyway

Alterations

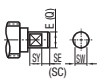
Flat Machining



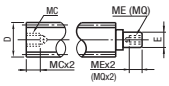
Retaining Ring Groove



Width Across Flats

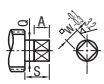


Tapping

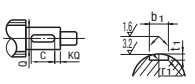


Threaded

Square Chamfering



Keyway



Code	FC (Q Part) FE (E Part)	AE (E Part)	SC (Q Part) SE (E Part)	MC (Left End) MQ (Q Part) ME (E Part)	BQ (Q Part)	ZQ (Q Part) ZE (E Part)	KQ (Q Part)
Spec.	FC,FE,FW,FY= 0.5mm Increment FC=Machining applied to Q part FE=Machining on E (✗) FC not applicable to One end Stepped Type Ordering Code FC5-FW10-FY1 (!) When Q (E)≤25 FY≤1.0 (!) When (E)≥26 FY≤2.0	AE=0.1mm Increment AE≤S+T−m−n Machining Limits Ordering Code AE13.3 AE=Machining on E E: 7, 8, 9, 10, 12, 14, 15, 16, 17, 20, 25, 30, 35, 40 e Tolerance: 4, 5, 6: +0.075 0; 9.6, 11.5, 13.4, 14.3, 15.2, 16.2, 19, 23.9, 28.6, 33, 38: 0 -0.09; 0 -0.11; 0 -0.21; 0 -0.25 m+0.14 0: 0.7, 0.9, 1.15, 1.35, 1.65, 1.9 n Machining Limits: n≥1.2, n≥1.5, n≥2	SC,SE,SW,SY= 1mm Increment SC=Machining applied to Q part SE=Applied on E X FC not applicable to One end Stepped Type SC not applicable Ordering Code SC3-SW10-SY7 (!) When Q(E)<15, then SW≥Q and E-2 (!) When 15≤Q and E≤25 SW≥Q,E-3 (!) When 30≤Q and E SW≥Q,E-5 E3≤SY≤20	MC: machined on the left end MQ=Machining on Q ME=Applied on E Ordering Code MQ24 D, Q, E / MC, MQ, ME (Selection Range): 5, 6: 3; 7, 8: 3, 4; 9, 10: 3, 4, 5; 11, 12: 3, 4, 5, 6; 13~15: 3, 4, 5, 6, 8; 16~24: 3, 4, 5, 6, 8, 10; 25~30: 3, 4, 5, 6, 8, 10, 12, 16; 31~39: 3, 4, 5, 6, 8, 10, 12, 16, 20; 40, 50: 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30 See below for Right-hand Screw with Keyway Q, E / MQ (Selection Range): 9: 3; 10, 11: 3, 4; 12, 13: 3~5; 14, 15: 3~6; 16~18: 3~8; 19, 20: 3~10; 21~25: 3~12; 26~31: 3~16; 32~40: 3~20 (✗) E=3, 4 not applicable (✗) E≤8 is not applicable to Right-hand Screw with Keyway	EBQ≤Mx3 EBQ≥Pitchx3 EBQ≤S,T-Pitchx3 Ordering Code BQ20 BQ=Machining on Q Q: 6, 8, 10, 12, 14, 15, 17, 20, 25, 30, 35, 40 MxPitch: M6x0.75, M8x1.0, M10x1.0, M12x1.0, M14x1.0, M15x1.0, M17x1.0, M20x1.0, M25x1.5, M30x1.5, M35x1.5, M40x1.5	W, A=1mm Increment ZQ=Machining applied to Q ZE=Machining applied to E Ordering Code ZQ15-W10-A10 (!) Only tapping alteration is available on the same shaft. (See below for machining conditions.) (!) 5≤A≤20 (!) Specify ZQ=Q Specify ZE=E ZQ=Q: 6, 7, 8, 9, 10, 12, 14, 15, 16, 17, 20, 25, 30, 35, 40; W 1mm Increment: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17–20, 21–24, 26–28, 29–30 ZE=E: 6~10, 11~14, 15~19, 20~25, 26~30, 31~35, 36~40; W 1mm Increment: 5~8, 8~10, 10~14, 14~20, 19~24, 22~28, 26~30 (E/2)√2≤WEZE>W May not be manufacturable due to the relation between E and W. XZQ not applicable to One End Double Stepped Type	Specify KQ and C in 1mm Increment KQ=Machining on Q Ordering Code KQ8-C10 (!) C≤60 (!) T-C-KQ≥2 (!) KQ≥2 (!) When KQ=0, there will be no keyway radius on the end. Applicable Shaft Dia. Q: 6, 7; 8~10; 12; 14~17; 20; 25, 30; 35; 40 Keyway Dimension: b1 Ref. Dim.: 2, 3, 4, 5, 6, 8, 10, 12; b1 Tolerance (N9): -0.004 -0.029; 0 -0.030; 0 -0.036; 0 -0.043; t1 Ref. Dim.: 1.2, 1.8, 2.5, 3.0, 3.5, 4.0, 5.0, 5.0; t1 Tolerance: +0.1 0; +0.2 0; r1: 0.08~0.16; 0.16~0.25; 0.25~0.40

(!) When flat machining, width across flats, square chamfering and keyway alterations are combined with each other, their orientation is random.

Lead Screws

– Both Ends Double Stepped –

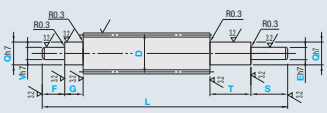
RoHS

Type						Material	Surface Treatment
Right-Hand Thread	With a Keyway Right-Hand Thread	Fine Pitch Right-Hand Thread	Left-Hand Screw	Right and Left-Hand Screw	Precision Right and Left-Hand Screw		
MTSRX	MTSRZ	MTXRX	MTSLX	MTSWX	MTSYX	1045 Carbon Steel	—
MTSBRX	MTSBRZ	MTXBRX	MTSBLX	MTSBWX	MTSBYX		Black Oxide
RMTSRX	RMTSRZ	—	RMTSLX	RMTSWX	—		Low Temperature Black Chrome Plating
MTSTRX	—	—	MTSTLX	—	—	303 Stainless Steel	—

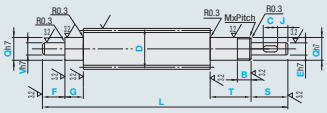
Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

6.3/ √(3.2/)

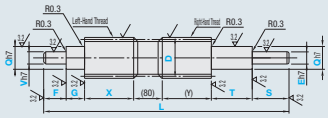
Right-hand Screw / Left-hand Screw / Fine Thread Right-hand Screw



Right-hand Screw with Keyway

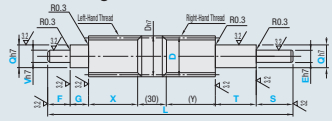


Right and Left-hand Screw



Incomplete threaded portion near the center (80mm) is not usable.

Precision Right and Left Hand Thread



ØDh7–30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

Keyway machining details conform to Shaft Keyway Dimensions shown below.

■ Right / Left Screw

Part Number Type		D	1mm Increment L	F, G, T, S	V / Q	E 1mm Increment	Left/Right Screw / Precision Left/Right Screw X 1mm Increment	D	Pitch P
(Right-hand Thread) MTSRX MTSBRX RMTSRX MTSTRX (Left-hand Screw) MTSLX MTSBLX RMTSLX MTSTLX (Right and Left Hand Screw) MTSWX MTSBWX RMTSWX (Precision Right and Left Hand Screw) MTSYX MTSBYX	D≤32, L≤1000 (Stainless Steel)	12	80~1000	2≤F≤Vx7 2≤G≤Qx7 2≤S≤Ex7 2≤T≤Qx7	7 8 9	Q/2≤E≤Q−1	When D=12, 14 50≤X≤460<485>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤500-S-T-40<15>	12	2
		14			8 9 10			14	3
		16	100~1200		9 10 12			16	
		18	150~1200		9 10 12			18	4
		20			10 12 14 15			20	
	D≤32, L≤1000 (Stainless Steel)	22			10 12 14 15		When D=16~50 50≤X≤560<585>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤600-S-T-40<15>	22	5
		25		When Q,V,E≤9, F,G,T,S are five or less times of Q,V,E.	12 14 15 16 17			25	
		28			14 15 16 17 20			28	
		32	200~1200		14 15 16 17 20 25			32	
	D≤32, L≤1000	36			17 20 25		Dimensions in < > are for Precision Right and Left Hand Thread.	36	6
		40			20 25 30			40	
		50			25 30 35 40			50	8

For Precision Right and Left Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. When using with position indicators, the standard Q diameters are 8~20. P.154

D dimension 22, 36, 40 and 50 are not available in Stainless Steel. D dimension 25, 28 and 32 are available for Right-hand Screw only.

■ Right-Hand Screw with Keyway

Part Number Type		D	1mm Increment L	F, G, T, S	V / Q	1mm Increment E	C	J	B	M x Pitch	D	Pitch P
MTSRZ MTSBRZ RMTSRZ	D≤32, L≤1000	12	80~1000	2≤F≤Vx7 2≤G≤Qx7 2≤T≤Qx7 2≤S≤Ex7 When Q, V, E≤9, F, G, T, and S will be 5x or less of Q, V, and E.	7 8 9	E≥6 Q/2≤E≤Q−2 When the pitch is 1.5 Q/2≤E≤Q−3	C≤60 S-C-J≥2	J≥2 J≥2 or J=0 When J=0, keyway R will be eliminated.	B=0 Or B≤Mx3 B≥Pitchx3 B≥T-Pitchx3	M8 x1.0	12	2
		14			8 9 10					M10x1.0	14	3
		16	100~1200		9 10 12					M12x1.0	16	
		18	150~1200		9 10 12					M14x1.0	18	4
		20			10 12 14 15					M15x1.0	20	
		22			10 12 14 15					M17x1.0	22	
		25			12 14 15 16 17					M20x1.0	25	5
		28			14 15 16 17 20					M25x1.5	28	
		32	200~1200		14 15 16 17 20 25					M30x1.5	32	
		36			17 20 25					M35x1.5	36	6
		40			20 25 30					M40x1.5	40	
		50			25 30 35 40					Not applicable to 7, 9, 16	50	8

When B=0, no machining of male thread Q. When using with position indicators, the standard Q diameters are 8~20. P.154

■ Fine Pitch Right-Hand Screw

Part Number Type	D	1mm Increment L	F, G, T, S	V / Q	E 1mm Increment	D	Pitch P
MTXRX MTXBRX	16	100~1000	2≤F≤Vx7 2≤G≤Qx7 2≤T≤Qx7 2≤S≤Ex7 When Q,V,E≤9, F,G,T,S are five or less times of Q,V,E.	9 10 12	Q/2≤E≤Q−1	16	2
	20	150~1000		10 12 14 15		20	2

For Both Ends Double Stepped, when F=0 V=0, no machining. Nuts for Fine Pitch Right-hand Screw P.146

When combining with the position indicators, Q and V standard dimensions will be 9~14. P.154

Order Example

Part Number	–	L	–	F	–	V	–	T	–	G	–	Q	–	S	–	E	–	C	–	J	–	B
MTSRX16	–	456	–	F37	–	V10	–	T47	–	G60	–	Q12	–	S49	–	E8						
MTSRZ20	–	583	–	F48	–	V12	–	T58	–	G70	–	Q15	–	S63	–	E10	–	C30	–	J0	–	B15
Part Number	–	L	–	F	–	V	–	T	–	G	–	Q	–	S	–	E	–	X				
MTSWX20	–	582	–	F48	–	V12	–	T58	–	G70	–	Q15	–	S63	–	E10	–	X120				

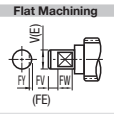
Alterations

Part Number	–	L	–	F	–	V	–	T	–	G	–	Q	–	S	–	E	–	C	–	J	–	B	–	(AC - SV - MV...etc.)
MTSRZ20	–	583	–	F48	–	V12	–	T58	–	G70	–	Q15	–	S63	–	E10	–	C30	–	J0	–	B15	–	AC12.0

Only AC, SV, MV, ME and ZV are applicable to Right-hand Screw with Keyway

Alterations

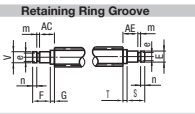
Flat Machining



Code: FV (V Part) FE (E Part)

Spec.: FV,FE,FW,FY= 0.5mm Increment
FV=Machined on V area
FE=Machining on E
Applicable to either V or E.
Ordering Code
FV5-FW10-FY1
When V (E)≤25 FY≤1.0
When V (E)≥26 FY≤2.0

Retaining Ring Groove



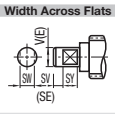
Code: AC (V Part) AE (E Part)

Spec.: AC(AE)=0.1mm Increment
AC(AE)≤F(S)+G(T)−m−n Machining Limits
AC=Machining on V
AE=Machining on E
Ordering Code AC13.3

E	e Tolerance		m+0.14 0	n Machining Limits
7	4	+0.075 0	0.7	n≥1.2
8	5			
9	6		0.9	
10	9.6	0 -0.09	1.15	n≥1.5
12	11.5	0 -0.11		
14	13.4			
15	14.3			
16	15.2			
17	16.2			
20	19			
25	23.9	0 -0.21	1.35	
30	28.6		1.65	
35	33			
40	38	0 -0.25	1.9	n≥2

Not applicable to One End Stepped Type

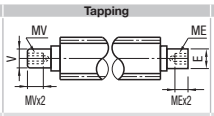
Width Across Flats



Code: SV (V Part) SE (E Part)

Spec.: SV,SE,SW,SY= 1mm Increment
SV=Machining on V part
SE=Applied on E part
Applicable to either V or E.
Ordering Code
SV3-SW10-SY7
When V(E)<15 SW≥V(E)−2
When 15≤V(E)≤25 SW≥V(E)−3
When 30≤V(E) SW≥V(E)−5
3≤SY≤20

Tapping



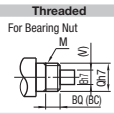
Code: MV (V Part) ME (E Part)

Spec.: MV=Machining on V part
ME=Machining on E part
Ordering Code MV24

D, Q, E	MC, MQ, ME (Selection Range)
5, 6	3
7, 8	3, 4
9, 10	3, 4, 5
11, 12	3, 4, 5, 6
13~15	3, 4, 5, 6, 8
16~24	3, 4, 5, 6, 8, 10
25~30	3, 4, 5, 6, 8, 10, 12, 16
31~39	3, 4, 5, 6, 8, 10, 12, 16, 20
40, 50	3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30

E=4 not applicable
E≤8 is not applicable to Right-hand Screw with Keyway

Threaded



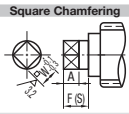
Code: BC (V Part) BQ (E Part)

Spec.: EBQ≤Mx3
EBQ≥Pitchx3
EBQ≤S,T-Pitchx3
Ordering Code BQ20
BQ=Machining on Q

Q	MxPitch
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

Not applicable when Q=7, 9, 16

Square Chamfering



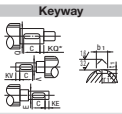
Code: ZV (V Part) ZE (E Part)

Spec.: W, A=1mm Increment
ZV=Machining on V part
ZE=Applied on E part
Applies to only one of either V or E
Ordering Code ZV12-W10-A8
Can be combined with Tapped Hole machining only on a same shaft. For machining conditions, see below.
5≤A≤20EZV,ZE>W
ZV=V, ZE=E Specified

ZV=V / ZE=E	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

(V(E)/2)√2≤W
May not be manufacturable depending on V (E), and W relationship.

Keyway



Code: KQ (Q Part) KV (V Part) KE (E Part)

Spec.: KQ,KV,KE,C=1mm Increment
KQ=Machining on Q
KV=Machining on V
KE=Machining on E
Ordering Code KQ8-C10
One of Q, V, or R
C≤60
T-C-KQ≥2
S(F)-C-KE(KV)≥2
KQ(KE,KV)≥2
When KQ, KE, KV=0, the thread end's Keyway R is straight.

Applicable Shaft Dia. Q	Keyway Dimension b₁ Ref. Dim.	b₁ Tolerance (N9)	t₁ Ref. Dim.	t₁ Tolerance	r₁
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		0.16 ~0.25
13~17	5		3.0		
22~22	6		3.5		
23~30	8	0 -0.036	4.0	+0.2 0	0.25 ~0.40
31~38	10		5.0		
39, 40	12	0 -0.043	5.0		

See the table below for Right-hand Screw with Keyway ME.

E	ME (Selection Range)	E	ME (Selection Range)
9	3	19, 20	3~10
10, 11	3, 4	21~25	3~12
12, 13	3~5	26~31	3~16
14, 15	3~6	32~39	3~20
16~18	3~8		

When flat machining, width across flats, square chamfering and keyway alterations are combined with each other, their orientation is random.

Lead Screws

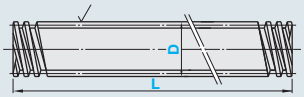
– Straight –

RoHS

Type					Material	Surface Treatment
Right-Hand Thread	Fine Pitch Right-Hand Thread	Left-Hand Screw	Right and Left-Hand Screw	Precision Right and Left-Hand Screw		
MTSR	MTXR	MTSL	MTSW ✓	MTSY	1045 Carbon Steel	—
MTSBR	MTXBR	MTSBL	MTSBW	MTSBY		Black Oxide
RMTSR	—	RMTSL	RMTSW	—		
MTSRL (Long Size)	—	MTSLL (Long Size)	—	—		Low Temperature Black Chrome Plating
MTSTR ★ ✓	—	MTSTL	—	—	303 Stainless Steel	—

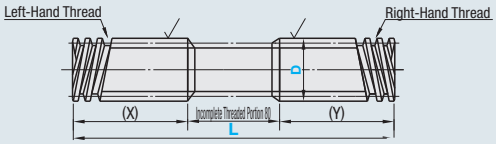
Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

Right-Hand Screw / Left-Hand Screw / Fine Thread Right-Hand Screw



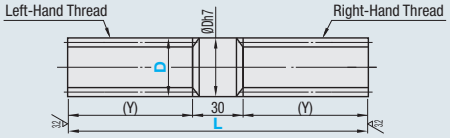
! L Dimension Tolerance of MTSRL–MTSLL: 0~+5
! X=Y for Right and Left Hand Threads and Precision Right and Left Hand Threads.

Right and Left-Hand Screw



! Incomplete threaded portion near the center (80mm) is not usable.

Precision Right and Left-Hand Thread



! ØDh7–30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

■ Right-Hand Screw / Left-Hand Screw

Part Number Type		D	MTS_, MTST_, MTSB_, RMTS_ L 1mm Increment	MTSRL / MTSLL L 100mm Increment	D	Pitch P
(Right-Hand Thread) MTSR, MTSBR, RMTSR, MTSRL, MTSTR	D≤32, L≤1000 (Long Size) (Stainless Steel)	*8	50~500	—	8	1.5
		10	80~1000	—	10	2
		12			12	
		14			14	3
		16	100~1200	800~2000	16	
(Left-Hand Screw) MTSL, MTSBL, RMTSL, MTSLL, MTSTL	D≤32, L≤1000 (Long Size) (Stainless Steel)	18	150~1200	800~2000	18	4
		20			20	
		22			22	5
		25			25	
		28			28	
		32	200~1200	800~2000	32	6
		36			36	
		40			40	
(! D8 available for MTSR and MTSBR and RMTSR only)		50		—	50	8

! D dimension 22, 36, 40 and 50 are not available in Stainless Steel. D dimension 25, 28 and 32 are available for Right-hand Screw only.
! The both ends of MTSRL and MTSLL have not been processed. For use, additional machining (chamfering, processing of the shaft ends, etc.) is required.

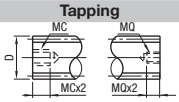
■ Left/Right Screw / Precision Left/Right Screw

Part Number Type	D	L 1mm Increment	(X)(Y)	D	Pitch P
(Right and Left Hand Screw) MTSW, MTSBW, RMTSW D≤32, L≤1000	10	80~1000	When D=10~14 50≤(X)≤460(485)	10	2
	12			12	
	*14			14	3
	*16	100~1200	When D=16~50 50≤(X)≤560(585)	16	
(Precision Right and Left Hand Screw) MTSY, MTSBY	18	150~1200		18	4
	*20			20	
	22		(X)=(Y) (X)=(L-80<30>)/2 (Y)=(L-80<30>)/2	22	5
	*25			25	
	*28			28	
	*32	200~1200	! Dimensions in < > are for Precision Right and Left Hand Thread.	32	6
	36			36	
(! Precision Right and Left Hand Screws are available only in * marked sizes.)	40			40	
	50			50	8

■ Fine Pitch Right-Hand Screw

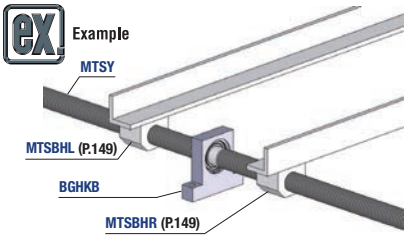
Part Number Type	D	L 1mm Increment	D	Pitch P
MTXR (Right-Hand Thread)	16	100~1000	16	2
MTXBR (Right-Hand Thread)	20	150~1000	20	2

! For Fine Pitch Right-hand Screw nuts, please see Nut listing pages. P.146

Alterations	Tapping
	
Code	MC (Left End) MQ (Right End)
Spec.	Ordering Code MC24 MC: machined on the left end MQ: machined on the right end

D	MC - MQ Selection Range
8	3, 4
10	3, 4, 5
12, 14	3, 4, 5, 6
16	3, 4, 5, 6, 8
18	3, 4, 5, 6, 8, 10
20, 22	3, 4, 5, 6, 8, 10, 12
25, 28	3, 4, 5, 6, 8, 10, 12, 16
32	3, 4, 5, 6, 8, 10, 12, 16, 20
36, 40, 50	3, 4, 5, 6, 8, 10, 12, 16, 20, 24

⊗ Not applicable to MTSRL, MTSLL



Order Example

Part Number	–	L
MTSL25	–	480
MTSRL32	–	1800

Alterations

Part Number	–	L	–	(MC, MQ)
MTSR20	–	456	–	MC8

Miniature Slide Screws

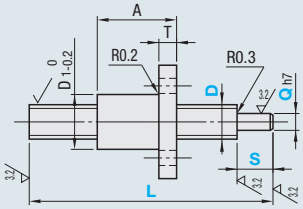
– One End Stepped / Both Ends Stepped –

RoHS

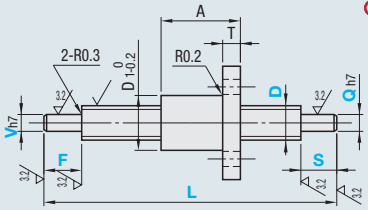
Type		Material	
		Shafts	Nut
MSSRA	Right-Hand Thread	304 Stainless Steel	Special Resin

Type		Material	
		Shafts	Nut
MSSRW	Right-Hand Thread	304 Stainless Steel	Special Resin

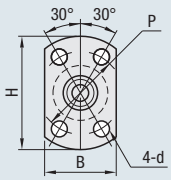
One End Stepped



Both Ends Stepped



Set includes a shaft and a nut.



Part Number			1mm Increment				Resin Nut Dimension									
Type	D	Lead	L	F / S	V / Q	No. of Starts	D_1	H	A	T	B	P	d	Allowable Axial Load N (reference)	Allowable Rotational Speed rpm (Reference)	Tightening Torque Nmm
MSSRA MSSRW	4	01	30~150	2≤F≤Vx3 2≤S≤Qx3	2.5	1	10	23	11.5	3.5	15	15	2.9	50	2500	180
		02				2								60		
	6	01	30~250		3 4	1	12	26	14.5	3.5	17	18	3.4	120	2000	400
		02												60		
		09				4								90		
		18												110		
	8	01	40~250		4 5	1	14	29	18	4	18	21	3.4	200	2000	400
		02												290		
		12	40~350	*2≤F≤Vx4 2≤S≤Qx4		4								210		
		24			4 5 6	6								210		
	10	02	50~250	2≤F≤Vx5 2≤S≤Qx5	5 6 7	1	16	33	22	5	21	24	4.5	460	1500	500
		15	50~500			4								410		
		30				6								440		
	12	02	50~250		6 7 8 9	1	18	35	25	5	22	26	4.5	660	1000	500
		18	50~550			6								750		
		36												540		

There may be a centering hole on machined shaft end. * When V and Q=4, F and S will be less than 3x of V and Q.
The tightening torque applies to the screw for mounting the Resin Nut.
Note that positioning repeatability changes when nut is exchanged for maintenance.

Order Example

Part Number	–	L	–	S	–	Q
MSSRA812	–	300	–	S10	–	Q5

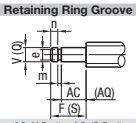
Part Number	–	L	–	F	–	V	–	S	–	Q
MSSRW1202	–	250	–	F20	–	V6	–	S8	–	Q6

Alterations

Part Number	–	L	–	S	–	Q	–	(AC - SC...etc.)
MSSRA812	–	250	–	S10	–	Q5	–	AQ13.3

Alterations

Retaining Ring Groove



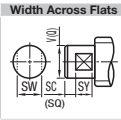
Code: AC (V Part) AQ (Q Part)

Spec.:
AC - AQ=0.1mm Increment
AC - AQ≤F(S)−m−n Machining Limits

Ordering Code AC13.3
AC=Machining on V part
AQ=Machining on Q part

V, Q	e Tolerance		m+0.14 0	n Machining Limits
2.5	2	+0.06 0	0.5	n≥1.2
3				
4	2.5			
5	3		0.7	
6	4	+0.075 0		
7				
8	5			
9	6		0.9	

Width Across Flats



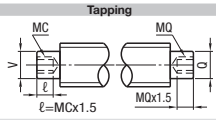
Code: SC (Q Part) SQ (Q Part)

Spec.:
SC,SQ,SW,SY=
1mm Increment
SC=Machining on V part
SQ=Machining on Q part
Applies to only one of either V or Q

Ordering Code
SC5-SW5-SY5

Applicable when V(Q)≥6
SW≥Q(V)−2
3≤SY≤20

Tapping



Code: MC (Left End) MQ (Q Part)

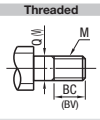
Spec.:
MC=Machining on V part
MQ=Machining on Q part

Ordering Code MC5

V, Q	MQ (Selection Range)
6	3
7, 8	3, 4
9	3, 4, 5

Applicable when V(Q) ≥6

Threaded



Code: BV (V Part) BC (Q Part)

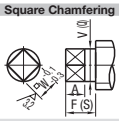
Spec.:
BC(BV)≤S(F)−(Screw Pitchx2)
BV, BC ≤ M x 3

Ordering Code BC10
BV=Machining on V part
BC=Machining on Q part

V, Q	M x Pitch
2.5	M2.5 x 0.45
3	M3 x 0.5
4	M4 x 0.5
5	M5 x 0.5
6	M6 x 0.75
8	M8 x 1.0

V (Q)=9 not applicable

Square Chamfering



Code: ZC (V Part) ZQ (Q Part)

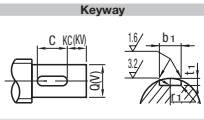
Spec.:
A=1mm Increment
ZC=Machining on V part
ZQ=Machining on Q part
Applies to only one of either V or Q

Ordering Code ZC6-W5-A8
Other alteration may be combined on the same screw shaft

ZC (ZQ)	W
6, 7	5
8	6
9	7

Applicable when V-Q≥6
5≤A≤20
V(Q)=ZC(ZQ)

Keyway



Code: KV (V Part) KC (Q Part)

Spec.:
KC, KV, C=1mm Increment

Ordering Code KC8-C10
KV=Machining on V part
KC=Machining on Q part

C≤S (F)/2
C+KC (KV)<S (F)
KC (KV)≥2
When KC(KV)=0

F(S)-C-KC(KV)≥2

Applicable Shaft Dia. V, Q	Keyway Dimension				
	b_1		t_1		r_1
	Ref. Dim.	Tolerance (N9)	Ref. Dim.	Tolerance	
6, 7	2	-0.004	1.2	+0.1	0.08
8, 9	3	-0.029	1.8	0	~0.16

Applicable to either V or Q.

When flat machining, width across flats, square chamfering and keyway alterations are combined with each other, their orientation is random.

Miniature Slide Screws / Nuts / Nut Brackets

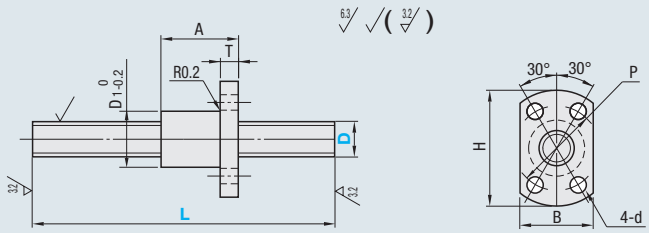
– Straight –

■ Miniature Slide Screws/Nuts

RoHS

Type		Material	
		Shafts	Nut
MSSR	Right-Hand Thread	304 Stainless Steel	Special Resin
MSSRN		—	

MSSR includes a shaft and a nut, MSSRN includes a nut only.



Part Number Type	D	Lead	L 1mm Increment	No. of Starts	Resin Nut Dimension D_1	H	A	T	B	P	d	Allowable Axial Load N (reference)	Allowable Rotational Speed rpm (reference)	Tightening Torque Nmm	Mass (Reference) g/100mm
MSSR MSSRN (Nut)	4	01	30~150	1	10	23	11.5	3.5	15	15	2.9	50	2500	180	11 (3)
		02		2								60			11 (3)
	6	01	30~250	1	12	26	14.5	3.5	17	18	3.4	120	2000	400	23 (3)
		02										60			25 (3)
		09		4								90			25 (3)
		18										110			25 (3)
	8	01	40~250	1	14	29	18	4	18	21	3.4	200	2000	400	42 (5)
		02										290			38 (5)
		12	40~350	4								210			40 (5)
		24		6								210			41 (4)
	10	02	50~250	1	16	33	22	5	21	24	4.5	460	1500	500	59 (6)
		15	50~500	4								410			58 (6)
		30		6								440			56 (6)
	12	02	50~250	1	18	35	25	5	22	26	4.5	660	1000	500	86 (8)
		18	50~550	6								750			86 (8)
		36										540			87 (7)

The tightening torque applies to the screw for mounting the Resin Nut. Note that positioning repeatability changes when nut is exchanged for maintenance. The dimension in ( ) of mass table is nut mass.

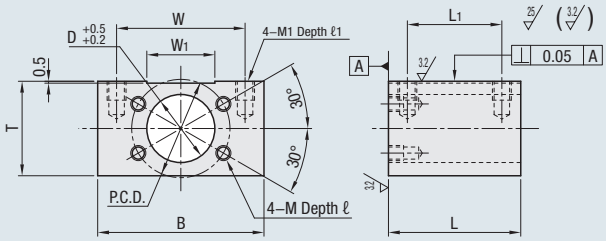
■ Nut Bracket

RoHS

Type	Material	Surface Treatment
MSSRH	1045 Carbon Steel	Electroless Nickel Plating

Order Example

Part Number	–	L
MSSR812	–	300
MSSRN812		



Part Number Type	No.	D	T	B	L	L_1	W	W_1	M	ℓ	M_1	$ℓ_1$	P.C.D.
MSSRH	6	12	19	36	20	10	26	12	3	6	4	8	18
	8	14	20	38	25	15	28	14	3	6	4	8	21
	10	16	23	42	30	20	32	16	4	8	5	10	24
	12	18	25	44	35	25	34	18	4	8	5	10	26

■ Features

Slide screw's nut is made of special resin composed of PPS as base material and solid lubricant (fluorine, for example) filled to increase sliding properties.

The material is superior in polypropylene, nylon, and polyacetal in tribological properties, heat resistance, and moisture absorbing characteristics. Quieter in comparison to ball screws, and lighter in motion with lower torque compared to lead screws.

■ Material Properties of Nuts

Item	Testing Method	Unit	Values
Base Material	—	—	PPS
Specific Gravity	ASTM D792	—	1.53
Tensile Strength	ASTM D638	MPa	51
Hardness	—	Rockwell R	110
Elongation	ASTM D638	%	3
Water Absorption Ratio	ASTM D570	%	0.05
Application Limit Temperature	—	°C	230

■ Caution

(1) Positioning repeatability is changed by wear due to usage and exchange of parts during maintenance.

(2) Do not use molybdenum and silicone based greases due to its negative impact to the nuts.

(3) Sliding properties are based on 25°C. It may vary depending on temperature.

(4) The nuts are made of PPS base material; they may be "cracked" or "deformed" due to shocks or excessive tightening.

■ Friction Data (Reference Values)

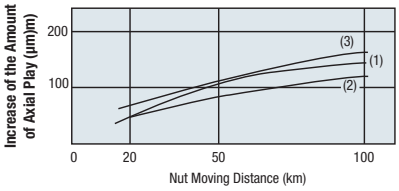
Test 1: MSSR812 was Used

(1): Dry and Axial Load 50N, The number of revolutions 500 rpm

(2): Dry and Axial Load 100N, The number of revolutions 500 rpm

(3): Dry and Axial Load 200N, The number of revolutions 500 rpm

Test 2: MSSR824 was Used



(1): Dry and Axial Load 200N, The number of revolutions 500 rpm

(2): Dry and Axial Load 200N, The number of revolutions 1000 rpm

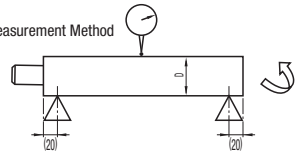
(3): Dry and Axial Load 200N, The number of revolutions 2000 rpm

■ Screw Accuracies

– Initial Accumulative Lead Error ±0.21/300mm (Reference Temperature 25°C)

– Bending Accuracy 0.16 or Less

Bend Measurement Method



The screw shaft is supported on both ends with V-blocks and the measurements are taken with a dial indicator at arbitrary points while the shaft is rotated.

■ Leads

Lead is the travel distance of one revolution.

Lead 01C Travel Distance: 1 mm

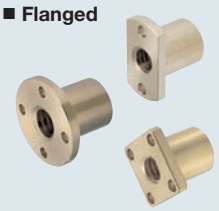
Lead 24C Travel Distance: 24 mm

Nuts for Lead Screws

– Flanged / Compact Flanged / with Pilot – Tapped Holes – Slotted Holes –

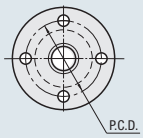
Selectable from Round Flange, 2-hole Compact Flange, 4-hole Compact Flange, or 4-hole Square Flange.

■ Flanged

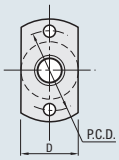


Material: Brass

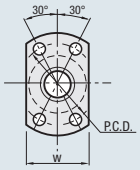
Round Flanged
MTSFR (Right-Hand Thread)
MTSFL (Left-Hand Screw)



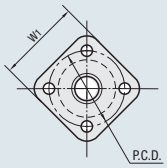
Compact Flange, 2-Hole
MTSNR (Right-Hand Thread)
MTSNL (Left-Hand Screw)

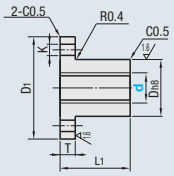


Compact Flange, 4-Hole
MTSGR (Right-Hand Thread)
MTSGL (Left-Hand Screw)



Square Flange
MTSCR (Right-Hand Thread)



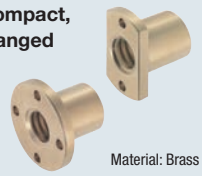


Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	W	W_1	Allowable Dynamic Thrust (kN)	Mass (g) MTSFR MTSFL	MTSNR MTSNL	MTSGR MTSGL	MTSCR
Round Flanged MTSFR MTSFL Compact Flange, 2-Hole MTSNR MTSNL Compact Flange, 4-Hole MTSGR MTSGL Square Flange MTSCR	(8)	1.5	15	20	30	5	22	4.3	—	—	1.47	41	33	—	—
	10	2	20	24	36		26		22	—	2.55	80	66	67	—
	12		22	30	44		31	5.4	24	—	3.92	120	95	96	—
	*14	3								33	4.90	110	85	86	91
	*16		28	35	51	6	38	6.6	30	38	6.67	200	169	172	169
	18	4	32	40	56		42		34	—	8.72	260	219	220	—
	*20									42	9.81	260	219	220	224
	*22	5	36	50	61	7	47		40	47	12.36	410	357	364	366
	*25										14.22	350	290	297	306
	*28		44	56	76	8	58	9	48	58	17.95	630	538	546	548
	*32	6									21.08	580	490	498	498
	36		52	60	84		66		56	—	25.78	820	719	728	—
	40		58	70	98	10	76	11	62	—	33.83	1250	1034	1044	—
	50	8	68	80	109		85		72	—	40.31	1631	1350	1362	—

Only * marked sizes are available for Square Flange Type.
d8 is applicable to MTSFR and MTSNR only.

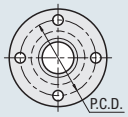
Compact in both the length and diameter. Short mounting hole pitch contributes to space savings

■ Compact, Flanged

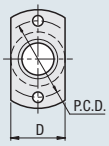


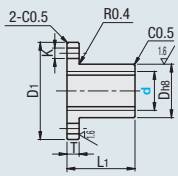
Material: Brass

Compact, Round Flanged
MTSPFR (Right-Hand Thread)
MTSPFL (Left-Hand Screw)



Compact, Compact Flanged, 2-Hole
MTSPNR (Right-Hand Thread)





Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	Allowable Dynamic Thrust (kN) MTSPFR(L) MTSPNR	Mass (g) MTSPFR	MTSPFL	MTSPNR
Round Flanged MTSPFR MTSPFL Compact Flange, 2-Hole MTSPNR	*10	2	16	19	32	4	24	3.3	2.02	39		—
	*12		18	24	36	5	27	4.3	3.14	59		—
	14	3	20		38		29		3.92	73		57
	16		22	28	40		31		5.34	89		73
	20	4	26	32	44		35		7.85	112		94
	22	5	28	40	50	6	39	5.4	9.89	174		143
	25		31		53		42		11.38	174		143
	28		34	45	58	7	46	6.6	14.42	213		170
	32	6	38		62		50		16.94	272		227

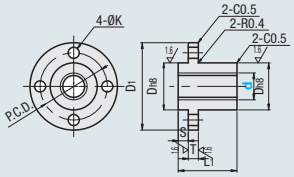
* marked sizes are available for MTSPFR only.

The pilotted type and tapped type are effective when used vertically on plates. The slotted hole type can be used to perform fine adjustments during installation.

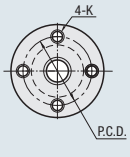
■ With Pilot, Tapped Hole, Slotted Hole

Material: Brass

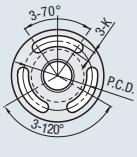
Round Flanged with Pilot
MTSJR (Right-Hand Thread)

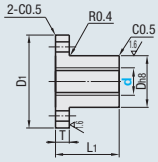


Round Flanged, Tapped Hole
MTSER (Right-Hand Thread)



Round Flanged, Slotted Hole
MTSQR (Right-Hand Thread)





Order Example

Part Number
MTSGR16
MTSPFL25

Part Number Type	d	Pitch P	D	L_1	D_1 MTSJR	D_1 MTSER MTSQR	T	S	P.C.D. MTSJR	P.C.D. MTSER MTSQR	K MTSJR MTSQR	K MTSER	Allowable Dynamic Force (kN)	Mass (g) MTSJR	MTSER	MTSQR
With Pilot MTSJR (Only * marked sizes are available.) Tapped Hole MTSER Slotted Hole MTSQR	*14	3	22	30	44	44	5	5	33	31	5.4	M4	4.90	110	112	98
	*16		28	35	52	51	6	6	40	38	6.6	M5	6.67	204	204	178
	*20	4	32	40	56	56			44	42			9.81	260	264	236
	*22	5	36	50	60	61	7		48	47			12.36	404	414	378
	*25												14.22	344	354	318
	28		44	56	—	76	8	—	—	58	9	M6	17.95	—	645	570
	32	6											21.08	—	595	520

Nuts for Lead Screws, Compliant with RoHS

– Flanged / Fine Pitch / Anti-backlash –

RoHS compliant Flanged Lead Screw Nut. Delivered in the shortest lead-time.

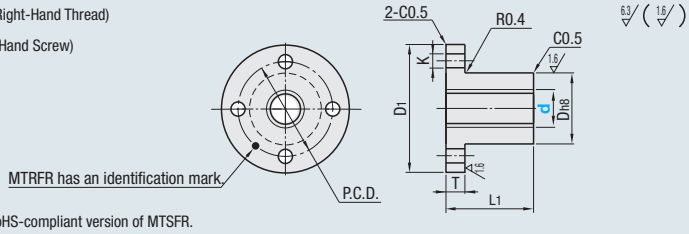
■ Flanged

RoHS

Material: Brass

MTRFR (Right-Hand Thread)

MTXFR (Left-Hand Screw)



MTRFR is a RoHS-compliant version of MTSFR.

Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	Allowable Dynamic Thrust (kN)	Mass (g)
MTRFR	10	2	20	24	36	5	26	4.3	2.55	80
	12		22	30	44		31	5.4	3.92	120
	14	3							4.90	110
	16		28	35	51	6	38	6.6	6.67	200
	20	4	32	40	56		42		9.81	260
	25	5	36	50	61	7	47		14.22	350
	28		44	56	76	8	58	9	17.95	630
	32	6							21.08	580
MTXFR	16	2	28	35	51	6	38	6.6	6.78	190
	20		32	40	56		42		10.1	250

For Fine Pitch Right-hand Screw shafts, please see MTX_ _ **(P.138, 140–142)**

■ Anti-Backlash Type

RoHS

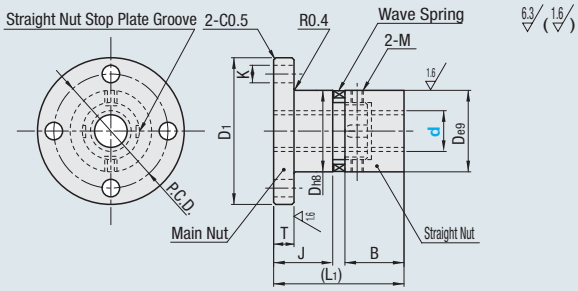
MTBLR (Right-Hand Screw)

Main nut has 4 marks for confirmation of groove positioning.

■ Components

Part Name	Material	Quantity
Main Nut	Brass	1
Straight Nut	Brass	1
Wave Spring	SWRH72B	1
Set Screw	4137 Alloy Steel	2

Material: Brass



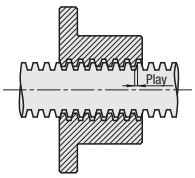
Part Number Type	d	Pitch P	D	D_1	T	(L_1)	J	B	P.C.D.	K	M	Allowable Dynamic Thrust (kN)	Mass (g)
Round Flanged MTBLR	10	2	20	36	5	34	13	15	26	4.3	3	2.60	100
	12		22	44		36.5	16.5	16	31	5.4		3.39	130
	16	3	28	51	6	45	21	20	38	6.6	4	6.29	230
	20	4	32	56		52	24	25	42			9.32	310

Order Example

Part Number
MTBLR20

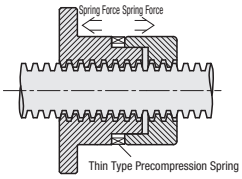
■ Features of Anti-Backlash Type

Regular Type



Regular type has axial play of shaft and nut, and this causes backlash on reverse driving direction.

Anti-Backlash Type



Anti-Backlash Type can eliminate play between shaft and nut by spring force of thin type pre-compression spring installed between main nut and accessory nut. Even if there is abrasion, spring force controls backlash.

(Notes) The effects will vary based on applied conditions (Load and Direction).

■ Installation of Anti-backlash Type

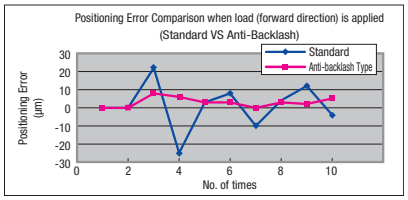
(1) Remove the sticker that is temporarily fixing the main and accessory nuts.
In this condition, the main and accessory nuts are fixed by 2 set screws.

(2) While the set screw is fixed, turn the screw shaft of lead screw as it is inserted.

(3) After insertion of accessory nut, set screw is rotated approximately 45° to 90° to loosen.
The tightening of main and accessory nuts is released and activates spring.

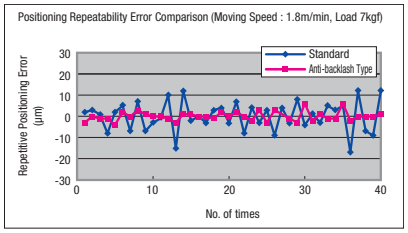
(Caution) The mounted set screw must not protrude out from external diameter of accessory nut. In order to prevent dropout of set screw due to vibration and the like, insert up to accessory nut part of housing.

(1) Positioning Error Comparison (Reference Value)



Controls the deterioration in precision of positioning caused by Moment of Inertia during shut down of motion and driving fluctuation effect.

(2) Positioning Repeatability Error Comparison (Reference Value)



– Anti-backlash design improves the system repeatability.
Test Conditions: Sample Nut: MTBLR16 Axis: MTSRG16-270
Travel Distance: 75mm

★ BEST SELLER
(SELECT PART NUMBERS)
TYPICALLY IN STOCK
(SELECT PART NUMBERS)

Nuts for Lead Screws

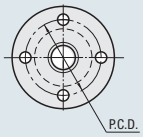
– Oil-free Flanged / Straight Type –

Oil free type reduces the amount and number of times grease needs to be applied in comparison to the standard type. Initial greasing is recommended for effective use.

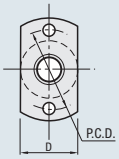
■ Oil Free Flanged

Material: Brass (Solid lubricant embedded)

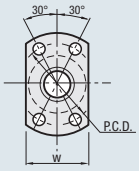
Round Flanged
MTSMR (Right-Hand Thread)
MTSML (Left-Hand Screw)

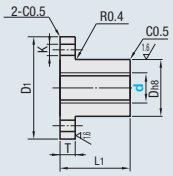


Compact Flange, 2-Hole
MTSMNR (Right-Hand Thread)
MTSMNL (Left-Hand Screw)



Compact Flange, 4-Hole
MTSMGR ★ (Right-Hand Thread)
MTSMGL (Left-Hand Screw)



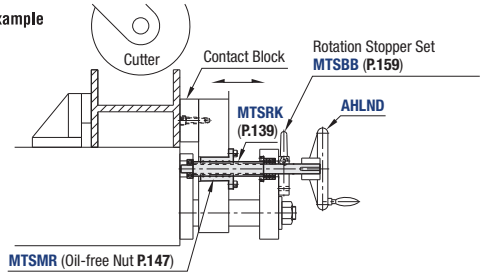


Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	W	Allowable Dynamic Thrust (kN)	Mass (g) MTSMR MTSML	MTSMNR MTSMNL	MTSMGR MTSMGL
Round Flanged MTSMR (Right-Hand Thread) MTSML (Left-Hand Screw)	10	2	20	24	36	5	26	4.3	22	2.55	80	66	67
	12		22	30	44		31	5.4	24	3.92	120	95	95
	14	3								4.90	110	85	86
Compact Flange, 2-Hole MTSMNR (Right-Hand Thread) MTSMNL (Left-Hand Screw)	16		28	35	51	6	38	6.6	30	6.67	200	169	172
	20	4	32	40	56		42		34	9.81	260	219	220
	22	5	36	50	61	7	47		40	12.36	410	357	364
Compact Flange, 4-Hole MTSMGR (Right-Hand Thread) MTSMGL (Left-Hand Screw)	25									14.22	350	290	297
	*28		44	56	76	8	58	9	—	17.95	630	—	—
	*32	6							—	21.08	580	—	—
	*36		52	60	84		66		—	25.78	820	—	—
(* marked sizes are for MTSMR only.)	*40		58	70	98	10	76	11	—	33.83	1250	—	—

Order Example

Part Number
MTSMNL16

Example

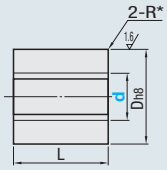


Requires to be mounted to a nut, and a rotation preventing measure is needed.

■ Straight

Material: CAC406C

Straight
MTSSR (Right-Hand Thread)
MTSSL (Left-Hand Screw)



*d8:R0.5
d10~25:R1.0
d28~50:R1.5

Part Number Type	d	Pitch P	D	L	Allowable Dynamic Thrust (kN)	Mass (g) MTSSR MTSSL
Straight MTSSR MTSSL (d8 applicable to MTSSR only)	(8)	1.5	15	20	1.47	22
	10	2	20		2.06	40
	12		22	22	2.84	50
	14	3			3.63	50
	16		28	26	4.90	100
	18	4	32	31	6.86	160
	20				7.65	150
	22	5	36	40	9.90	240
	25				11.38	210
	28		44	45	14.42	390
	32	6			17.06	320
	36		52	49	21.18	530
	40		58	57	27.46	720
	50	8	68	67	40.11	1126

Order Example

Part Number
MTSSR16

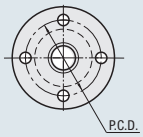
Nuts for Lead Screws

– High Strength Resin Type / Resin Type –

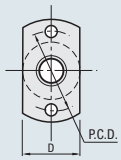
The resin nuts have good mechanical properties and requires no lubrication. Can be used in clean greaseless applications by combining with stainless steel lead screws.

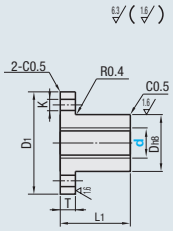
■ High Strength Flanged Resin Type

Round Flanged
MTSRR ★ ✓ (Right-Hand Thread)



Compact Flange
MTSRN ✓ (Right-Hand Thread)





RoHS Material: Tribological PPS Rein (PTFE+GF30%)

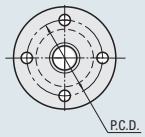
Higher allowable force than the conventional resin types.

Operating Temperature: –45°C~200°C

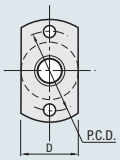
Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	Allowable Dynamic Force (kN) Force (n)	Mass (g) MTSRR	Mass (g) MTSRN
Round Flanged MTSRR (Right-Hand Thread) / Compact Flanged MTSRN (Right-Hand Thread)	10	2	20	24	36	5	26	4.3	278	19	16
	12		22	30	44		31	5.4	428	30	24
	14	3							536	27	21
	16		28	35	51	6	38	6.6	686	46	39
	18	4	32	40	56		42		954	64	54
	20								1071	61	51

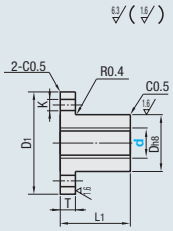
■ Resin

Round Flanged
MTSFJR ✓ (Right-Hand Thread)
MTSFJL ✓ (Left-Hand Thread)



Compact Flange
MTSNJR (Right-Hand Thread)





RoHS Material: Polyacetal

Part Number Type	d	Pitch P	D	L_1	D_1	T	P.C.D.	K	Allowable Dynamic Force (kN) Force (n) MTSFJ MTSNJR	Mass (g) MTSFJR MTSFJL	Mass (g) MTSNJR
Round Flanged MTSFJR (Right-Hand Thread) MTSFJL (Left-Hand Thread) / Compact Flanged MTSNJR (Right-Hand Thread)	10	2	20	24	36	5	26	4.3	255	16	13
	12		22	30	44		31	5.4	392	25	20
	14	3							490	23	18
	16		28	35	51	6	38	6.6	628	39	33
	18	4	32	40	56		42		873	54	45
	20								980	51	43
	*25	5	36	50	61	7	47	6.6	1412	69	—
	*28		44	56	76	8	58	9	1765	124	—
	*32	6							2050	112	—

Order Example

Part Number
MTSRR20

■ Material Properties (Listed values are not guaranteed)

Material		Test Method (ASTM)	Unit	PPS Resin with Sliding Property (PTFE+GF30%)	Polyacetal
Characteristics				Values	
Specific Gravity		D792	—	1.68	1.41
Water Absorption Ratio (At 23°C in water x 24h)		D570	%	0.02	0.22
Combustibility		UL94	—	V-0	HB
Mechanical Properties	Tensile Strength	D638	MPa	135	61
	Elongation	D638	%	2.9	40
	Bending Strength	D790	MPa	180	89
	Flexural Modulus	D790	GPa	10	2.59
	Shear Load Strength	D732	MPa	60	55
	Izot Impact Strength	D256	J/m	130	74
Chemical Resistance	Oil	—		Excellent	Good
	Acid	—		Excellent	Acceptable-Poor
	Alkali	—		Excellent	Good
	Organic Solvent	—		Excellent	Good

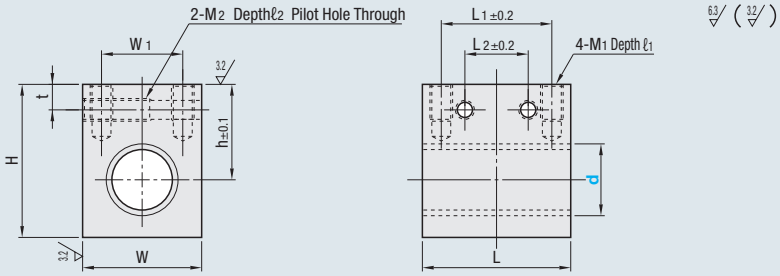
Block Nuts for Lead Screws

– Tall Block / Wide Block / Oil-free Type –

■ Tall Block

MTSBNR (Right-Hand Thread)
MTSBNL (Left-Hand Thread)

Material: Brass



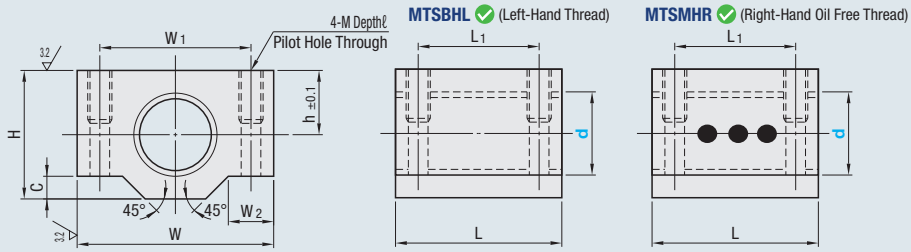
Part Number Type	d	Pitch P	h	W	H	L	L_1	L_2	W_1	M_1	ℓ_1	M_2	ℓ_2	t	Allowable Dynamic Thrust (kN)	Mass (g)
MTSBNR (Right-hand Thread) / MTSBNL (Left-hand Screw)	10	2	20	20	30	24	16	—	12	M4	8	—	—	6	2.55	100
	12		23	22	34	30	21	9	13	M5	10	M5	15		3.92	150
	14	3													4.90	140
	16		27	28	41	35	25	11	18	M6	12	M6	18	7	6.67	260
	18	4	29	32	45	40	30	16	22						8.72	380
	20														9.81	360
	22	5	30	36	48	50	40	20	26						12.36	580
	25														14.22	540
	28		38	44	60	62	50	25	32	M8	16	M8	22	8	20.05	1050
	32	6													22.81	970

Order Example

Part Number
MTSBNR28

■ Wide Block
■ Oil Free

MTSBHR (Right-Hand Thread)
MTSBHL (Left-Hand Thread)
MTSMHR (Right-Hand Oil Free Thread)



Material: Brass (Solid lubricant embedded for MTSMHR)

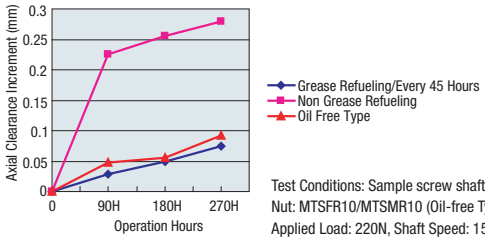
Part Number Type	d	Pitch P	h	W	H	L	L1	W1	W2	C	M	ℓ	Allowable Dynamic Thrust (kN)	Mass (g)
MTSBHR (Right-Hand Thread) / MTSBHL (Left-Hand Screw) / MTSMHR (Right-Hand Oil Free Thread)	*10	2	10	30	20	24	16	20	8	4	M4	8	2.55	87
	*12		11	38	22	30	20	26	10	5	M5	10	3.92	147
	*14	3											4.90	140
	*16		14	44	28	35	24	32					6.67	267
	18	4	16	48	32	40	28	36	11	6	M6	12	8.72	375
	*20												9.81	357
	22	5	20	62	38	50	34	46	14	10	M8	16	12.36	670
	*25												14.22	629
	28		25	68	47	56	40	52					17.95	1041
	*32	6											21.08	970

Only * marked sizes are available for MTSMHR.

Order Example

Part Number
MTSMHR20

■ Lead Screw Nut Abrasion Test (Original Specification)

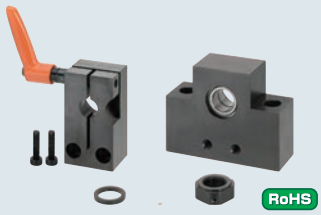


Test Conditions: Sample screw shaft: MTSRW10-270,
Nut: MTSFR10/MTSMR10 (Oil-free Type)
Applied Load: 220N, Shaft Speed: 1500rpm

Lead Screw Support Units

– Fixed Side Radial Bearing Type –

Dedicated bearing units for Lead Screws. They can support radial and axial loads.

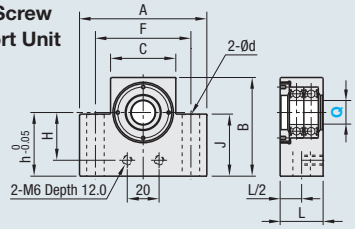


Type				Material				Surface Treatment	Accessory
Support Unit Main Body	Support Unit Set with Lock	Compact Indicator Mount Set	Large Position Indictor Mount Set	(1) Main Body	(2) Rotation Stopper Set	(3) Collar	(4) Bearing Nut		
MTWZ	MTWZ-S	MTWZ-CP	MTWZ-LP	1045 Carbon Steel	1018 Carbon Steel	1018 Carbon Steel	1018 Carbon Steel	Black Oxide	Clamp Lever

Uses two preload adjusted JIS Class 0 radial bearings.

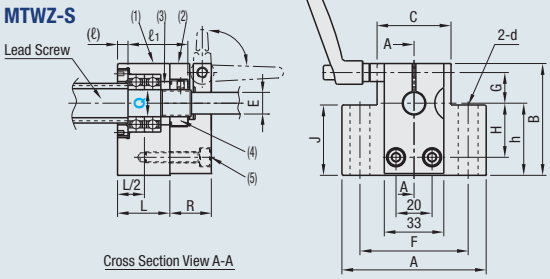
RoHS

■ Lead Screw Support Unit MTWZ

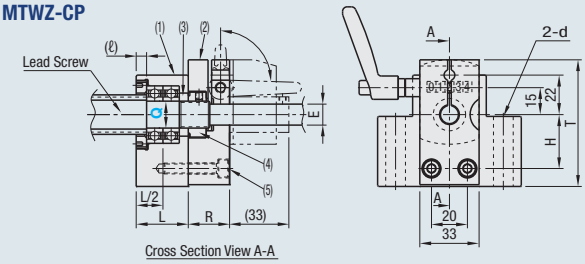


Number	Part Name	Quantity
(1)	Support Unit	1
(2)	Stop Plate Sets	1
(3)	Collar	1
(4)	Bearing Nut (w/ a Thread Protector)	1
(5)	Hex Socket Screw	2

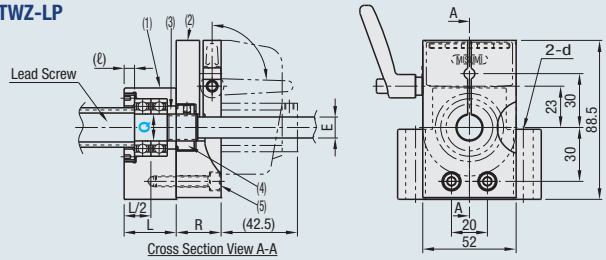
■ Lock Set MTWZ-S



■ Compact Position Indicator Mount Set with Lock MTWZ-CP

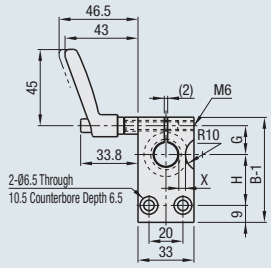


■ Large Position Indicator Mount Set With Lock MTWZ-LP

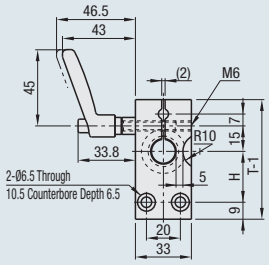


Stop Plate Sets

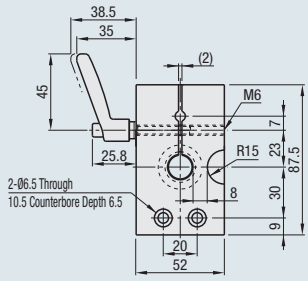
– Standard Type –



– Compact Position Indicator Mount Type –



– Large Position Indicator Mount Type –



A collar for the clamp lever is not included with Q8. The clamp lever mounting dimensions will be the same as the Large type.
Do not use without inserting the screw shaft (empty tightening). It may deform, causing it to be unusable.

Part Number Type	Q	A	B	C	F	h	J	H	G	T	L	R	(ℓ)	X	d	E	ℓ1	Bearing Nut	Clamp Lever
MTWZ MTWZ-S MTWZ-CP MTWZ-LP	8	52	48	25	38	30	35	20		60.5	22				6.6	6	24	BNR8	CLDM6-32-M
	10	70	53	36	52	35	34	25	13	65.5	24	22	5	4.5	9	8	27	BNR10	CLDM6-40-M
	12		58			40	39	30		70.5						10		BNR12	
	15	80	62	41	60				17		27	25	6	5.5	11	12	31	BNR15	

Order Example

Part Number
MTWZ15

TYPICALLY IN STOCK
(SELECT PART NUMBERS)

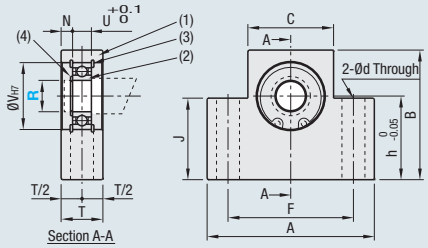
Lead Screw Support Units

– Support Side Type –

RoHS

Type	Material	Surface Treatment
MTUZ	1045 Carbon Steel	Black Oxide

Number	Part Name	Quantity
(1)	Housing	1
(2)	Radial Bearing	1
(3)	Retaining Ring for Bore (Installed)	2
(4)	Retaining Ring for Shaft (Included)	1



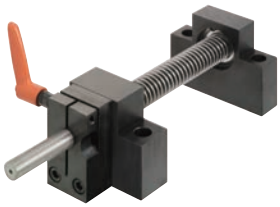
Part Number Type	Part Number R	A	B	C	F	h	J	V	T	d	U	N	Bearing Type	Retaining Ring for Bore	Retaining Ring for Shaft
MTUZ	8	52	48	25	38	30	35	22	20	6.6	7	6.5	B608ZZ	RTWN22	NETW5
	10	70	53	36	52	35	34	26		9	8	6	B6000ZZ	RTWN26	STWN10
	12		58			40	39	28					B6001ZZ	RTWN28	STWN12
	15	80	62	41	60			32		11	9	5.5	B6002ZZ	RTWN32	STWN15

Order Example

Part Number
MTUZ15

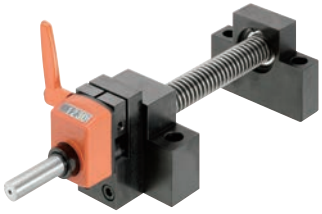
Example

■ Lock Set Type



– For Position Indicators, see **P.154**

■ Compact Position Indicator Mount Type

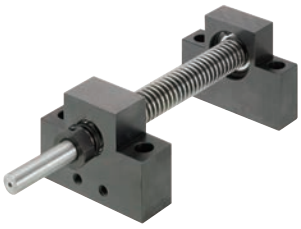


■ Large Position Indicator Mount Type

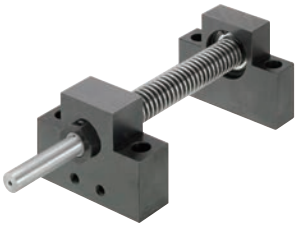
Q	E	Applicable Position Indicators			
		Type	Compact 4-Digit Type	Compact 5-Digit Type	Large 5-Digit Type
8	6	Standard	DPN_2-CSE6	DPNF_2-CSE6	—
		Front	DPM_2-CSE6	DPMF_2-CSE6	
		Vertical	DPT_2-CSE6	DPTF_2-CSE6	
10	8	Standard	DPN_3-CSE8	DPNF_3-CSE8	—
		Front	DPM_3-CSE8	DPMF_3-CSE8	
		Vertical	DPT_3-CSE8	DPTF_3-CSE8	
12	10	Standard	DPN_3, 4-CSE10	DPNF_3, 4-CSE10	DPL_3, 4-CSE10
		Front	DPM_3, 4-CSE10	DPMF_3, 4-CSE10	DPR_3, 4-CSE10
		Vertical	DTM_3, 4-CSE10	DPTF_3, 4-CSE10	DPZ_3, 4-CSE10
15	12	Standard	DPN_4, 5-CSE12	DPNF_4, 5-CSE12	DPL_3, 4-CSE12
		Front	DPM_4, 5-CSE12	DPMF_4, 5-CSE12	DPR_3, 4-CSE12
		Vertical	DPT_4, 5-CSE12	DPTF_4, 5-CSE12	DPZ_3, 4-CSE12

For silver covers, order with DP__ changed to DS__.

■ Support Unit Mounting Procedure



(1) Insert the lead screw shaft into the fixed side support unit.
(2) After slipping a collar on, thread the included bearing nut on and temporarily tighten at 1/3 of the specified tightening torque. Mount the support side unit on the support end of the shaft and mount.



(3) While rotating the screw shaft, gradually tighten the bearing nut to obtain smooth motion from end to end.
(4) When smooth motion is obtained, tighten to full tightening torque to finish.

■ Support Unit Bearing Type

Q	Bearing Type	Allowable Axial Load (N)
8	608ZZCNM	1300
10	6000ZZCNM	2300
12	6001ZZCNM	2600
15	6002ZZCNM	2900

Use the position indicators within allowed maximum speed ranges.

M	Nut Tightening Torque (Ncm)
8	490
10	930
12	1370
15	2350

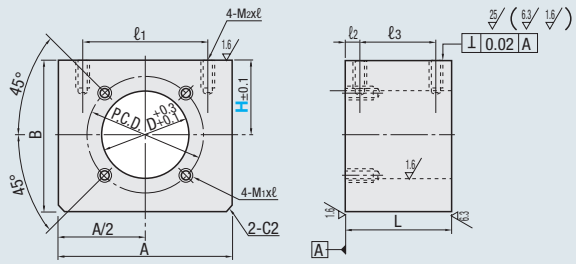
Value is for reference only.

Brackets for Lead Screws / Spacers for Wide Block

■ Brackets for Lead Screws

Type	Material	Surface Treatment
DNBB	1045 Carbon Steel	Black Oxide
DNBM		Electroless Nickel Plating
DNBA	5052 Aluminum Alloy	Clear Anodize

RoHS



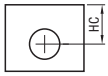
Part Number Type	No.	H	A	B	P.C.D.	M_1 x ℓ	D	$ℓ_1$	L	$ℓ_2$	$ℓ_3$	M_2 x ℓ	Applicable Nuts MTS_R, MTSFL
DNBB DNBM DNBA	264	20 25 30 40	40	H+20	26	M4x7	20	30	24	6	12	M4x8	10
	315	23 25 30 40	50	H+23	31	M5x7	22	35	30	8	14	M5x10	12, 14
	386	27 30 35 50	60	H+27	38	M6x10	28	45	34		18	M6x12	16
	426	29 30 35 40 50	65	H+29	42		32	50	39		23		18, 20
	476	32 35 40 50	70	H+32	47		36	50	46		30		22, 25
	588	40 45 50 60	80	H+40	58	M8x12	44	60	48		32	M8x16	28, 32
	668	43 45 50 60	86	H+43	66		52	65	52		36		36
	7610	50 55 60 70	100	H+50	76	M10x14	58	75	60	10	40	M10x20	40
	8510	58 60 70	116	H+58	85		68	85	70		50		50

Order Example

Part Number	–	H
DNBB315	–	30

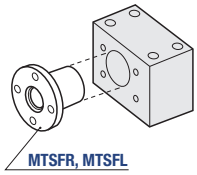
Alterations

Part Number	–	H	–	(HC)
DNBB264	–	25	–	HC22.5

Alteration	Code	Spec.
	HC	H Dimension Specify in 0.1mm increment Ordering Code HC22.5

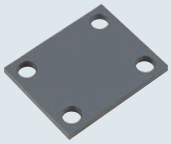
No.	H
264	20.0~40.0
315	23.0~40.0
386	27.0~50.0
426	29.0~50.0
476	32.0~50.0
588	40.0~60.0
668	43.0~60.0
7610	50.0~70.0
8510	58.0~70.0

Example



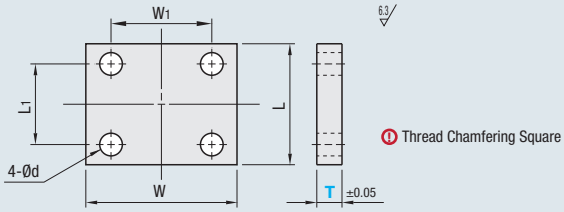
■ Spacer Plates for Wide Block Type Nuts

Type	Material	Surface Treatment
MTKL	1018 Carbon Steel	Black Oxide



RoHS

Height-Adjusting Spacer for Wide Block

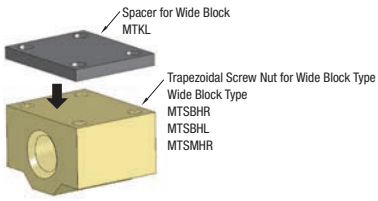


Part Number Type	No.	T 0.1mm increment	Applicable Lead Screw Nuts Type	Inner Diameter d	W	L	W_1	L_1	d
MTKL	1	2.5~9.0	MTSBHR MTSBHL MTSMHR	10	30	24	20	16	4.5
	2			12, 14	38	30	26	20	5.5
	3			16	44	35	32	24	
	4			18, 20	48	40	36	28	6.5
	5			22, 25	62	50	46	34	9
	6			28, 32	68	56	52	40	

Order Example

Part Number	–	T
MTKL2	–	3.5

Example

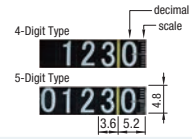
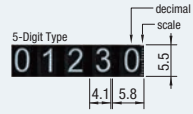


Position Digital Indicators Guide

■ Features

– Various Lineup

MISUMI Digital Position Indicators are designed to use in combination with our Lead Screws. Two sizes of display, three mounting types, two colors are available. 4-Digit and 5-Digit indication and With Counter Reset are available.

	Standard Spindle	Front Spindle	Vertical Spindle	Counter Indication
Mounting Position	Suitable for mounting at lower than the operator's eye-level.	Suitable for mounting at operator's eye-level.	Suitable for mounting on vertically configured screw feed mechanisms.	
Compact				
Large (With Counter Reset)				– The left most position is blank on the 4-digit counter. 

■ Compact

Color		Display Digit		Feed Screw Pitch (Display Number per Revolution)
Orange	Silver	4-Digit	5-Digit	2 3 4 5 6

– 4-Digit Type and 5-Digit Type are available for the same size.
– Applicable to Mounting Shaft End Dia. 6, 8, 10, 12 and 14.
*When used with a lead screw with the same pitch, display number and pitch number will be the same.

■ Large

Color		Display Digit	Feed Screw Pitch (Display Number per Revolution)
Orange	Silver	5-Digit	3 4 5 6

– With Counter Reset
– Applicable to Mounting Shaft End Dia.12, 14, 15, 16, 17 and 20.
*When used with a lead screw with the same pitch, display number and pitch number will be the same.

■ Color

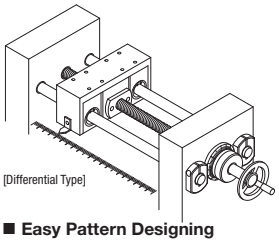
Orange

Color used to make the counter more noticeable when installed.

Silver

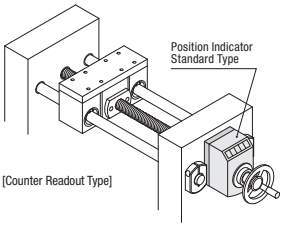
Color used to make the counter not noticeable when installed.

Conventional Method:
Reading errors occur.



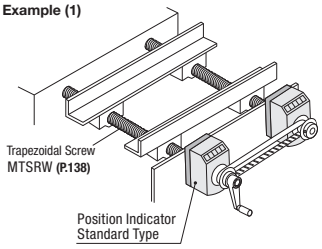
[Differential Type]

When indicator is used:
Digital indication reduces the reading errors.

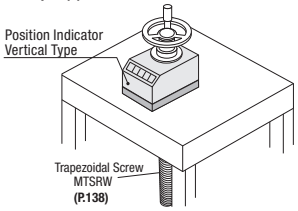


[Counter Readout Type]

Example (1)

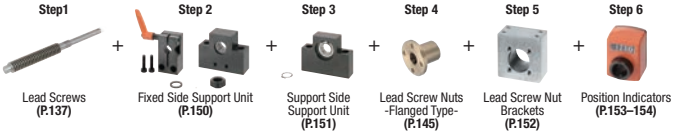


Example (2)



■ Easy Pattern Designing

A complete lead screw unit can easily be designed by sequentially selecting the components from Easy Pattern Designing program.



■ Feature of "Zero Set Function" (Only for Large Type)

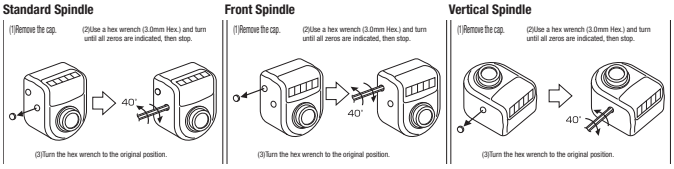
For the conventional type, the counter needed to set at "0" before mounting on the screw shaft. However, With Counter Reset Type, the counter can be set after mounting. Therefore, precise adjustment is easy. Resetting the counter upon position moving is also easy.

■ Zero Setting Procedures (Only for Large Type)

(1) Take off the caps of side holes. (See the figure below for the position of holes.)
(2) Insert a hex wrench (3mm hex), and turn in either direction within 40º.
(3) Stop turning the wrench when the counter indicates all zeros. Then turn the wrench back to the original position.

ⓘ Caution

Turn the wrench slowly. Turning the wrench more than necessary may cause damages on the unit. Please note that there should be space for hexagonal wrench.



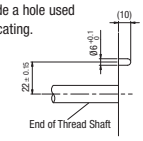
ⓘ If the hexagonal wrench is turned too much or too strong, unit will be damaged.

■ Notes

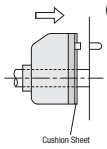
– The count goes up depending on turning distance, as the screw shaft (trapezoidal screw, slide screw, etc.) is turned clockwise. The count goes down as the screw shaft is turned counterclockwise.
– The rotary speed at the start-up should not exceed 1/3 of maximum rotary speed (rpm).
– Must not be abruptly accelerated or decelerated.
– Do not use a motorized driver. It will cause the breakage.
– Do not use when shafts move to the thrust (shaft) direction.

■ Compact: How to Mount

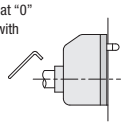
(1) Provide a hole used for locating.



(2) Mount the cushion sheet and pass it through the screw shaft.



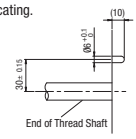
(3) Set the indicator at "0" and then affix it with the attached set screws.



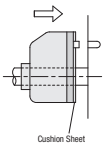
(Not necessary if a clamp plate is used.)

■ Large: How to Mount

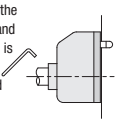
(1) Provide a hole used for locating.



(2) Mount the cushion sheet and pass it through the screw shaft.



(3) Make sure that the screw shaft is in the correct position and that the indicator is set at 0, affix it with the attached set screw.



(Not necessary if a clamp plate is used.)

Compact Digital Position Indicators

– Standard – Front / Vertical Types –

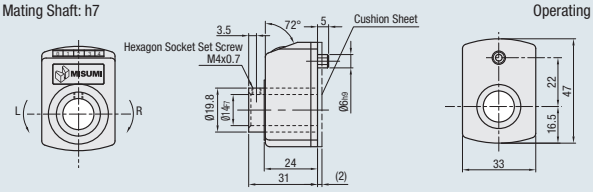
Compact units can be installed in small spaces. Four and five digit types are available.

■ Standard Spindle Compact

Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPNR, DPNL DSNR, DSNL	DPNFR, DPNFL DSNFR, DSNFL	Nylon	Orange Silver	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)

Recommended Tolerance of Mating Shaft: h7

Operating Environment Temp : -10ºC~60ºC

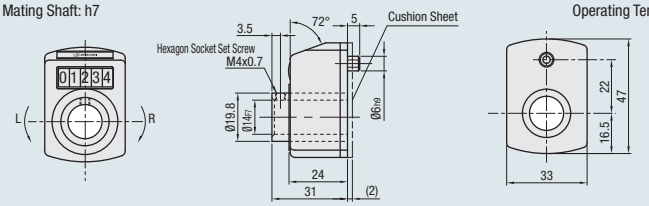


■ Front Spindle Compact

Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPMR, DPML DSMR, DSML	DPMFR, DPMFL DSMFR, DSMFL	Nylon	Orange Silver	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)

Recommended Tolerance of Mating Shaft: h7

Operating Temperature: -10ºC~60ºC

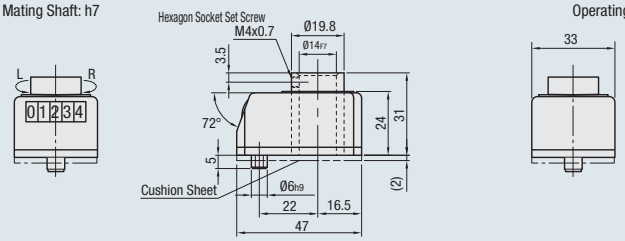


■ Vertical Spindle Compact

Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPTR, DPTL DSTR, DSTL	DPTFR, DPTFL —	Nylon	Orange Silver	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)

Recommended Tolerance of Mating Shaft: h7

Operating Temperature: -10ºC~60ºC



Part Number							
Type							
Color		Digit No., Rotating Direction	Spindle Pitch	Count Increment per Revolution 4-Digit	Count Increment per Revolution 5-Digit	Maximum Revolution Frequency (rpm)	Mass (g)
(Orange) DPN DPM DPT	(Silver) DSN DSM DST	R (4-Digit – Right Turn) L (4-Digit – Left Turn) FR (5-Digit – Right Turn) FL (5-Digit – Left Turn)	2	002.0	0002.0	150	44
			3	003.0	0003.0	100	
			4	004.0	0004.0	75	
			5	005.0	0005.0	60	
			6	006.0	0006.0	50	

Order Example

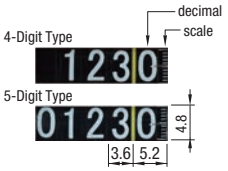
Part Number
DPNFR4
DSML5
DPTR2

Alterations

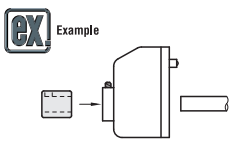
Part Number	–	(CSE)
DPNR2	–	CSE8

■ Features

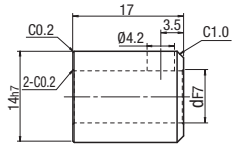
Enables screw shafts other than 14mm diameter (lead screws and slide screws, etc.) to be adapted to the indicators.



The left most position is blank on the 4-digit counter.



Screw shafts (Lead Screws/Slide Screws) can be selected from: P.137–144

Alteration	Code	Spec.
Includes an Adapter Collar in the set – Indicator Collar Details  Material: 1045 Carbon Steel Surface Treatment Black Oxide d / Mass (g): 6 / 16; 8 / 14; 10 / 9; 12 / 5	CSE	Use a collar on screw shafts less than 14 mm diameter. Please select a collar with an I.D. of required shaft diameter, and order as an alteration. Ordering Code DPNR2-CSE 8 Add the needed collar "d" after the Indicator model number. Collar dimension 6 ….-CSE6 Collar dimension 8 ….-CSE8 Collar dimension 10….-CSE10 Collar dimension 12….-CSE12

Large Digital Position Indicators

– Standard – Front / Vertical Zero Setting Types –

Large counters are easy to see even with handles mounted, and the Zero Set function resets the zero instantly.

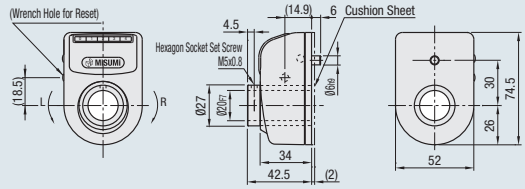
■ Standard Spindle Large

RoHS

Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPLR, DPLL	Nylon	Orange	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)
DSLR, DSLL		Silver					

Recommended Tolerance of Mating Shaft: h7

Operating Environment Temp : -10ºC~60ºC



To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

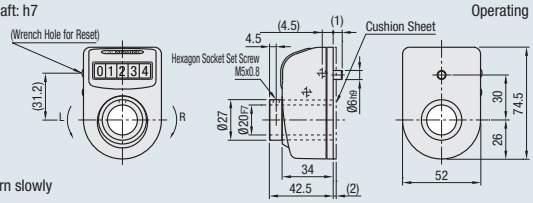
■ Front Spindle Large

RoHS

Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPRR, DPRL	Nylon	Orange	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)
DSRR, DSRL		Silver					

Recommended Tolerance of Mating Shaft: h7

Operating Environment Temp : -10ºC~60ºC



To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

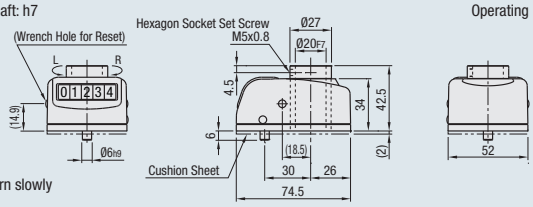
■ Vertical Spindle Large

RoHS

Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPZR, DPZL	Nylon	Orange	Polyphenylene Ether	1215	Black Oxide	Set Screws (Black) (4137 Alloy Steel)	Cushion Sheets (Black) (Polyetylene Foam)
DSZR, DSZL		Silver					

Recommended Tolerance of Mating Shaft: h7

Operating Environment Temp : -10ºC~60ºC



To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

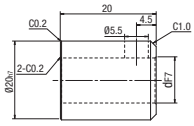
Part Number			Count Increment per Revolution	Maximum Revolution Frequency (rpm)	Mass (g)
Type					
Color	Digit No., Rotating Direction	Spindle Pitch	5-Digit		
(Orange) DPL, DPR, DPX	(Silver) DSL, DSR, DSZ	3	0003.0	100	100
	R (5-Digit – Right Turn)	4	0004.0	75	
	L (5-Digit – Left Turn)	5	0005.0	60	
		6	0006.0	50	

Order Example

Part Number
DPLR4
DSRL5
DPZR2

Alterations

Part Number	–	(CSE)
DPLR5	–	CSE15

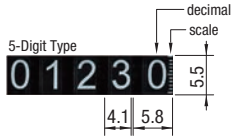
Alteration	Code	Spec.
Includes an Adapter Collar in the set – Indicator Collar Details  Material: 1045 Carbon Steel Surface Treatment Black Oxide	CSE	Shafts less than 20mm O.D. are used with a collar attached. Please select a collar with an I.D. of required shaft diameter, and order as an alteration. Ordering Code DPLR3-CSE 14 Add the needed collar "d" after the Indicator model number.

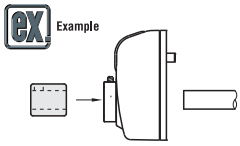
d	Mass (g)
10	37
12	31
14	25
15	21
16	17
17	15

Collar dimension 10….-CSE10
Collar dimension 12….-CSE12
Collar dimension 14….-CSE14
Collar dimension 15….-CSE15
Collar dimension 16….-CSE16
Collar dimension 17….-CSE17

■ Features

Enables screw shafts other than 20mm diameter (lead screws and slide screws, etc.) to be adapted to the indicators.





Screw shafts (Lead Screws/Slide Screws) can be selected from: P.137–144

■ For Zero Setting procedures, please see P.153

Clamp Plates for Compact Position Indicator

– Standard – Miniature Lever Type / Bearing with Housing Type –

■ Standard Lever
■ Miniature Lever

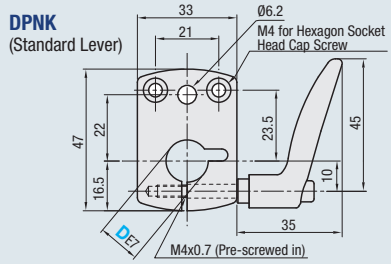
Type	Main Body		Clamp Lever	
	Material	Surface Treatment	Material	Surface Treatment
DPNK DPNKM	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

Do not use without inserting the screw shaft (empty tightening).
It might cause deformation making it unusable.

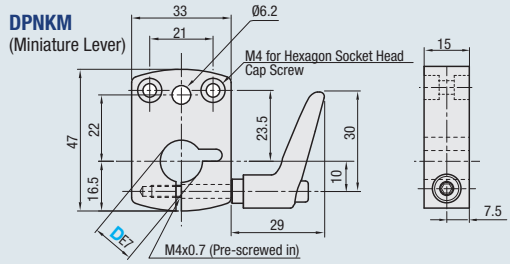
RoHS

■ Features

– Prevents rotations of the spindle due to machine vibrations.
– The screw shaft (lead screw, slide screw, etc.) can be securely locked for a long period. Both mounting surfaces are counterbored to enable mounting from either side.



Clamp Levers: CLDF (Tapped Type)



Miniature Clamp Levers: CLDFC (Tapped)

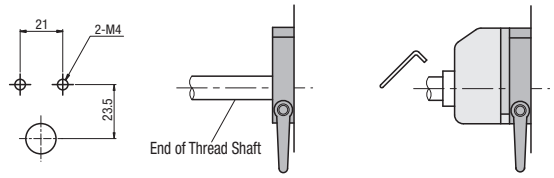
Part Number		Mass (g)	
Type	D	Standard	Miniature
Standard Lever DPNK Miniature Lever DPNKM	8	86	77
	10	85	76
	12	83	74
	14	81	72

Order Example

Part Number
DPNK12
DPNKM10

■ How to Mount

(1) Drill a screw hole for mounting the clamp plate on the mating plate.
(2) Mount the clamp plate using the hexagon socket bolt.
(3) Make sure that the screw shaft is in the correct position and that the memory of the indicator is set at 0, affix it with the set screw, an accessory for the indicator.



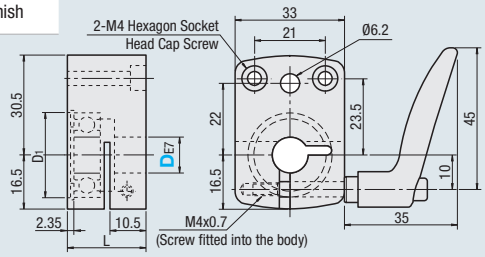
■ Bearing with Housing

Type	Main Body		Clamp Lever	
	Material	Surface Treatment	Material	Surface Treatment
DPNKB	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

RoHS

Do not use without inserting the screw shaft (empty tightening).
It might cause deformation making it unusable.

Bearing Accuracy JIS B 1514 Class 0 (ABEC 1)
Clamp Levers: CLDF (Tapped Type)
Retaining Ring: RTWN

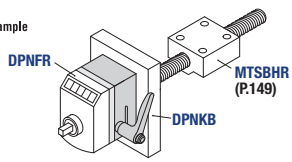


Part Number		L	D_1	Mass (g)	Bearing Used	Retaining Ring
Type	D					
DPNKB	8	23	22	130	608ZZ	RTWN22
	10	24	26	133	6000ZZ	RTWN26
	12		28	132	6001ZZ	RTWN28

Order Example

Part Number
DPNKB12

Example



■ Components Selectable List for Compact Position Indicator

Compact Position Indicators (P.154)				Clamp Plates		Lead Screws (P.131–159)					
Type			Spindle Pitch	Type	D	Type		D	Shaft End Dia.		Pitch
Color		Digit No. Rotating Direction							V, Q, R	(1mm Increment)	
(Orange) DPN DPM DPT	(Silver) DSN DSM DST	R (4-Digit – Right Turn) L (4-Digit – Left Turn) FR (5-Digit – Right Turn) FL (5-Digit – Left Turn)	2	DPNK DPNKM DPNKB	8	(Right-Hand Thread)	(Left-Hand Screw)	12	6, 8	Q/2≤E≤Q–1 V/2≤E≤V–1	2
			3		8, 10	MTSR_	MTSL_	14	8, 10		3
					10, 12			16	10, 12		
			4		10, 12	MTSBR_	MTSBL_	18	10, 12		4
			5		10, 12, 14	MTSTR_	MTSTL_	20	10, 12, 14		
					10, 12, 14			22	10, 12, 14		
					12, 14	(Right and Left-Hand Screw)	(Right and Left-Hand Thread Machining)	25	12, 14		5
					14			28	14		
			6		14	MTSW_ MTSBW_	MTSY_ MTSBY_	32	14		6

For shaft end dia. 14 of Lead Screws, collar is not necessary.ED dimension of DPNKB is 8, 10 and 12 only.
For Shaft End Dia. V/Q/R of Lead Screws are applicable only to One End Stepped and Both Ends Stepped.
for Shaft End Dia. is applicable to only following types: One End Double Stepped, One End Stepped – One End Double Stepped, Both Ends Double Stepped.

Clamp Plates for Large Position Indicator

– Standard Lever Type / Bearing with Housing Type –

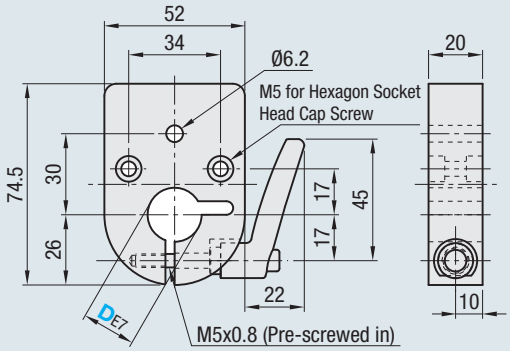
■ Standard Lever

RoHS

Type	Main Body		Clamp Lever	
	Material	Surface Treatment	Material	Surface Treatment
DPQK	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

Do not use without inserting the screw shaft (empty tightening).
It might cause deformation making it unusable.

Clamp Levers: CLDF (Tapped Type)



■ Features

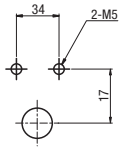
– Prevents rotations of the spindle due to machine vibrations.
– The screw shaft (lead screw, slide screw, etc.) can be securely locked for a long period. Both mounting surfaces are counterbored to enable mounting from either side.

Part Number		Mass (g)
Type	D	
DPQK	12	202
	14	200
	15	198
	16	197
	17	196
	20	191

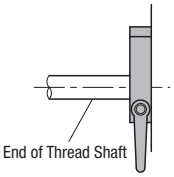
Order Example | Part Number: DPQK12

■ How to Mount

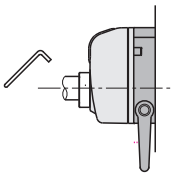
(1) Drill a screw hole for mounting the clamp plate on the mating plate.



(2) Mount the clamp plate using the hexagon socket bolt.



(3) Make sure that the screw shaft is in the correct position and that the memory of the indicator is set at 0, affix it with the set screw, an accessory for the indicator.



■ Bearing with Housing

RoHS

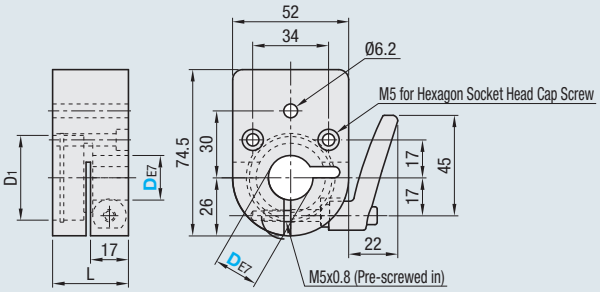
Type	Main Body		Clamp Lever	
	Material	Surface Treatment	Material	Surface Treatment
DPQKB	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

Do not use without inserting the screw shaft (empty tightening).
It might cause deformation making it unusable.

Bearing Accuracy JIS B 1514 Class 0 (ABEC 1)

Clamp Levers: CLDF (Tapped Type)

Retaining Ring: RTWN



Part Number		L	D_1	Mass (g)	Bearing Used	Bearing Used Retaining Ring
Type	D					
DPQKB	12	31	28	308	6001ZZ	RTWN28
	15	33	32	312	6002ZZ	RTWN32
	17	34	35	318	6003ZZ	RTWN35
	20	34	37	312	6904ZZ	RTWN37

Order Example | Part Number: DPQKB12

■ Components Selectable List for Large Position Indicators

Large Position Indicators (P.155)				Clamp Plates		Lead Screws (P.131–159)					
Type			Spindle Pitch	Type	D	Type		D	Shaft End Dia.		Pitch
Color		Digit No. Rotating Direction							V, Q, R	(1mm Increment)	
(Orange) DPL DPR DPZ	(Silver) DSL DSR DSZ	R (5-Digit – Right Turn) L (5-Digit – Left Turn)	3	DPQK DPQKB	12	(Right-hand Thread) MTSR_ MTSBR_ MTSTR_ (Right and Left Hand Screw) MTSW_ MTSBW_	(Left-hand Screw) MTSL_ MTSBL_ MTSTL_ (Precision Right and Left Hand Screw) MTSY_ MTSBY_	16	10, 12	Q/2≤E≤Q−1 V/2≤E≤V−1	3
			4		12			18	10, 12		4
					12, 14, 15			20	10, 12, 14, 15		
			5		12, 14, 15			22	10, 12, 14, 15		5
					12, 14, 15, 16, 17			25	12, 14, 15, 16, 17		
					14, 15, 16, 17, 20			28	14, 15, 16, 17, 20		
					14, 15, 16, 17, 20			32	14, 15, 16, 17, 20		
			6		17, 20			36	17, 20		6
					20			40	20		

For shaft end dia. 20 of Lead Screws, collar is not necessary.
D dimension of DPQKB is 12, 15, 17 and 20 only.

Stop Plate Sets for Lead Screws

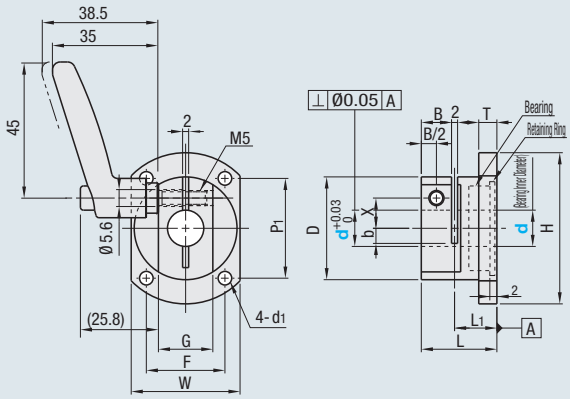
-Bearing Type-

■ Stop Plate Sets Flanged, Bearing

RoHS

Type	Material	Surface Treatment	Bearing
MTQDB	1018 Carbon Steel	Black Oxide	Radial Bearing
MTQDM		Electroless Nickel Plating	

- Do not use without inserting the screw shaft (empty tightening). It might cause deformation making it unusable.
- Clamp Lever: CLDM5W
- Radial Bearing: JIS B 15140 Class 0 (ABEC 1)



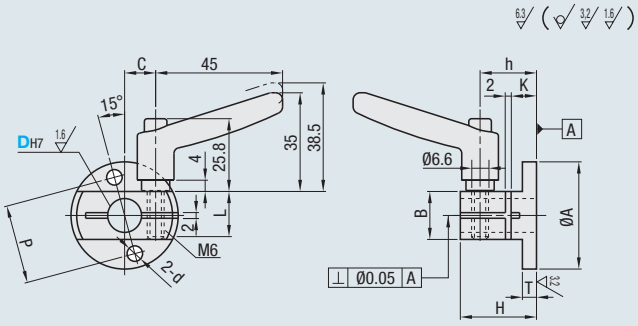
Part Number Type	d	L	L_1	D	H	T	B	d_1	X	b	W	P_1	F	G	Clamp Lever	Bearing No.
MTQDB MTQDM	10	25	14	30	48	5	10	4.5	9	4	32	33	23	16	CLDM5-16-M	6900ZZ
	12	25	14	32	50	6	10	4.5	10	5	34	35	25	18	CLDM5-16-M	6901ZZ
	15	28	17	35	56	6	10	5.5	11.5	6	37	37	27	21	CLDM5-20-M	6902ZZ
	20	28	17	40	64	8	10	6.6	14	8	42	43	30	27	CLDM5-25-M	6804ZZ

■ Stop Plate Sets Round Flanged

RoHS

Type	Material	Surface Treatment	Accessory
MTQAB	1018 Carbon Steel	Black Oxide	Clamp Lever
MTQAM		Electroless Nickel Plating	

- Do not use without inserting the screw shaft (empty tightening). It might cause deformation making it unusable.



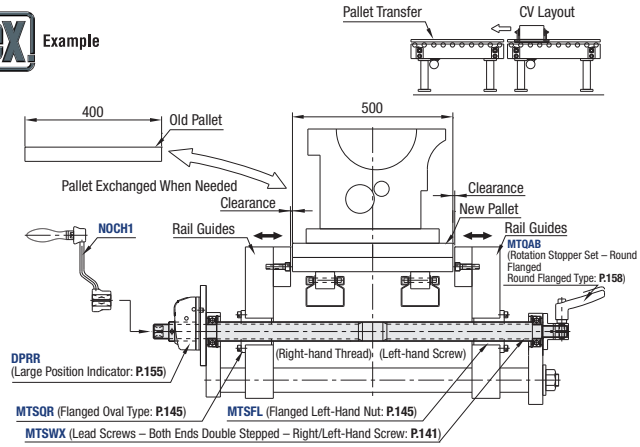
Part Number Type	D_{H7}		A	B	C	H	h	P	d	T	L	K	Clamp Lever
MTQAB MTQAM	8	+0.015	32	13	9	24	18	23	4.5	4	12	9	CLDM6-12-M
	10	0	36	15	10	25	18	26	4.5	4	16	9	CLDM6-16-M
	12	+0.018	38	17	11	27	20	28	5.5	5	16	11	CLDM6-16-M
	15	0	41	21	12	29	21	32	5.5	6	20	12	CLDM6-20-M
	20	+0.021 0	50	26	15	34	25	39	6.6	8	25	16	CLDM6-25-M

- DH7 tolerance is measured before slit machining.

Order Example

Part Number
MTQDB12

Example



Stop Plate Sets for Lead Screws

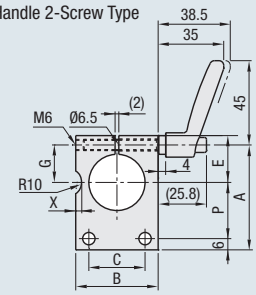
■ Stop Plate Sets 2-Screw Mount Type

RoHS

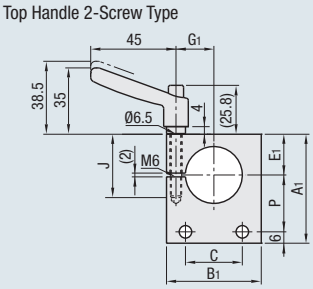
Type		Material	Surface Treatment	Accessory
Side Handle 2-Scrcew Type	Top Handle 2-Screw Type			
MTSWB	MTTBB	1018 Carbon Steel	Black Oxide	Clamp Lever
MTSWM	MTTBM		Electroless Nickel Plating	

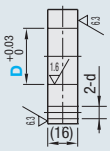
Do not use without inserting the screw shaft (empty tightening). It might cause deformation making it unusable.

Side Handle 2-Screw Type



Top Handle 2-Screw Type





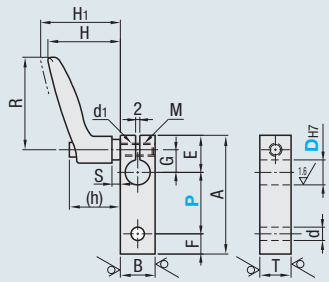
Part Number Type	D		P	Side Handle 2-Screw Type A	B	C	E	G	X	Top Handle 2-Screw Type A_1	B_1	C	E_1	G_1	J	d	Side Handle 2-Screw Type Levers	Top Handle 2-Screw Type Levers
Side Handle 2-Screw Type MTSWB MTSWM / Top Handle 2-Screw Type MTTBB MTTBM	8	+0.03 0	20	43	25	14	17	12	5	33	32	14	7	11	16	5.5	CLDM6-25-M	CLDM6-16-M
	10								4	34			8		20	6.5		CLDM6-20-M
	12								3	35			9					
	15			44	32	20	18	13	4.7	37	38	20	11	13			CLDM6-32-M	CLDM6-25-M
	20		30	56	38	26	20	15	4.6	50	44	26	14	15	25			
	25			59		28	23	18	1.3	54	50	28	18	18	32			CLDM6-32-M
	30			61	44	30	25	20	1.2	57		30	21	20			CLDM6-40-M	

■ Stop Plate Sets

RoHS

Type	Material	Surface Treatment	Accessory
MTSBB	1018 Carbon Steel	Black Oxide	Clamp Lever
MTSBM		Electroless Nickel Plating	

Do not use without inserting the screw shaft (empty tightening). It might cause deformation making it unusable.



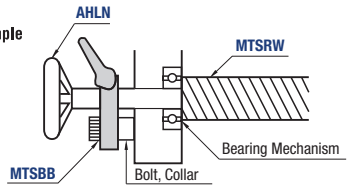
Part Number Type	DH7		P			A	B	d	E	F	G	T	d_1	M	H	H_1	R	(h)	S	Levers
Surface Contact MTSBB MTSBM (Ⓘ * marked sizes are for MTSBB only)	8	+0.015 0	20	30	40	P+26	12	6.5	16	10	9	16	6.5	M6	35	38.5	45	25.8	4	CLDM6-12-M
	10					P+27	16		17		10									CLDM6-16-M
	12	+0.018 0	30	40	50	P+28			18		11									
	15					P+29	22		19		12									CLDM6-20-M
	17					P+30			20		13									
	20	+0.021 0				P+37	25	9.0	25	12	16	19	9.0	M8	45.5	49	63	32.3	7	CLDM8-25-M
	25					P+39	32		27		18									CLDM8-32-M
	30					P+42	38		30		21									
	*35	+0.025 0				P+44	44		32		23									CLDM8-40-M
	*40					P+47			35		26									

DH7 tolerance is measured before slit machining.

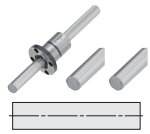
Order Example

Part Number	P
MTSWB15	30
MTSBB9	

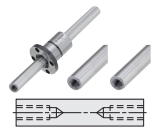
Example



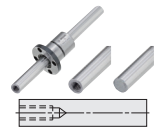
Ball Splines



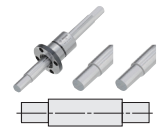
#BHSM
Ball Splines – Standard



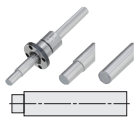
#BSHM
Ball Splines – Both Ends Tapped



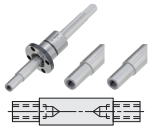
#BSFM
Ball Splines – One End Tapped



#BSJM
Ball Splines – Both Ends Stepped

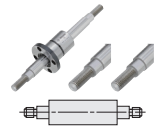


#BSDM
Ball Splines – One End Stepped

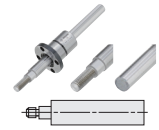


#BSLM
Ball Splines – Both Ends Stepped and Tapped

#BSBM
Ball Splines-One End Stepped and Threaded, One End Tapped



#BSYM
Ball Splines – Both Ends Stepped and Threaded



#BSKM
Ball Splines – One End Stepped and Threaded

#RGPF
Needle Bearing Guide Sets

Ball Splines Overview

Guideline for Products

– Specified in 1 mm increments, short lead time
– A wide variety of shaft end configurations

Structure

– Ball spline is a linear motion mechanism with a nut on a spline shaft that travels linearly.
– It can bear radial loads and rotational torque simultaneously.

Features

1 Capable of Highly Accurate Linear Motion
Applying preload makes ball splines capable of highly accurate linear motion.

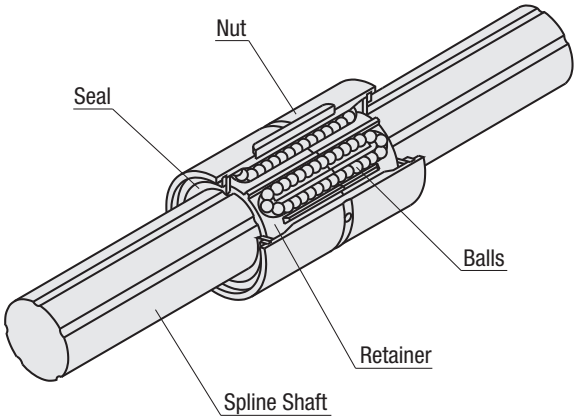
2 Capable of Transmission of Torque
Rotary motion of balls on grooves of spline shaft makes ball spline capable of linear motion while transmitting torque.

3 Capable of Compact Design
Ability to transmit torque makes ball spline capable of guiding by single shaft.

4 High Load Capability and Long Life
High load capacity and long running life due to presence of grooves of splines on the surface where loads are applied.

■ Construction Diagram

Balls do not fall out even if the spline shaft is pulled out.



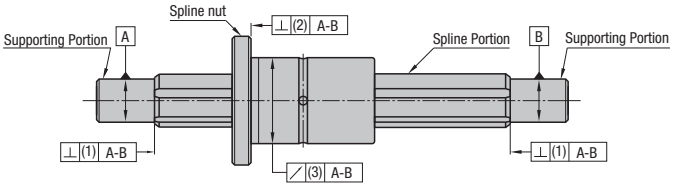
Comparison of Characteristics with Other Linear Motion Mechanism

Ball splines are used in many machine applications requiring linear motion and rotary motion for space saving, cost, and weight advantages.

Linear Motion Mechanism	Ball Splines	Linear Bushings	Linear Guides
Radial Load	Good	Acceptable	Excellent
Rotational Torque	Good	Poor	Poor
Cost	Good	Excellent	Acceptable
Mass	Excellent	Excellent	Acceptable

Ball Splines Overview

Accuracy



Reference: Supporting portion is the part to mount the bearing and support the spline shaft.

■ Spline Shaft: Raceway Twist Tolerance (Max.)

Unit: μm

Material	Tolerance
52100 Bearing Steel	13
440C Stainless Steel	33

Spline groove twist is measured at an arbitrary 100mm section of the effective shaft length. If the length to be evaluated is longer or shorter than 100mm, proportionally add or subtract from the standard values in the table.

■ Rotational Clearance

Unit: μm

No.	Standard Preload 52100 Bearing Steel	Standard Preload 440C Stainless Steel
6	-2~+1	-1~+4
8		
10	-3~+1	-2~+5
13		
16		
20	-4~+2	—
25		
30		

■ Tolerance (Max) of Accuracies Against Spline Shaft Supporting Portions

Unit: μm

No.	(1) Spline Portion Perpendicularity of End Face of the Shafts	(2) Flange face Perpendicularity
6	9	11
8		
10	11	13
13		
16		
20	13	16
25		
30		

Spline Shaft Full Length	(3) Max. radial runout of spline nut outer surface against spline shaft supporting axis. No. 6 • 8	No. 10	No. 13 • 16	No. 20 • 25 • 30
~ 200	46 (72)	36 (59)	34 (56)	32
201~ 315	89	54 (83)	45 (71)	39
316~ 400	126	68 (103)	53 (83)	44
401~ 500	163	82	62	50
501~ 630	—	102	75	57
631~ 800	—	—	—	68
801~1000	—	—	—	83
1001~1150	—	—	—	102

ⓘ Values in ( ) are for 440C Stainless Steel.

Calculation of Life Span

Running Life

– Radial Load

$$L = \left(\frac{ft \cdot fh \cdot fp}{fw} \cdot \frac{Cr}{F}\right)^3$$

– Torque Load

$$L = \left(\frac{ft \cdot fh}{fw} \cdot \frac{Ct}{T}\right)^3 \cdot L_0$$

L: Running Life (km)
Cr: Basic Dynamic Radial Load Rating (N)
CT: Basic Dynamic Torque (Nm)
F: Applied Radial Load (N)
T: Applied Torque (Nm)
Lo: Rated Life (50km)

ⓘ For values and factors, see below.

Life Hours

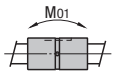
$$Lh = \frac{10^6 \cdot L}{120 \cdot St \cdot n}$$

Lh: Running Time (hr)
L: Running Life (km)
St: Stroke Length (mm)
n: Reciprocating cycles per Minute (cpm)

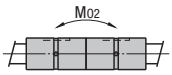
■ Load Rating

No.	Basic Rated Torque Dynamic C_t Nm	Basic Rated Torque Static C_{ot} Nm	Basic Load Rating Dynamic C kN	Basic Load Rating Static C_0 kN	Allowable Static Moment M_{01} Nm	Allowable Static Moment M_{02} Nm
6	3.8	7	1.2	2.1	5	36
8	4.8	8.7	1.2	2.1	5	36
10	19	34	3.8	6.9	26	181
13	28	52	4.6	8.3	36	251
16	51	93	6.2	11.1	56	386
20	85	154	8.5	15.3	83	611
25	193	348	15.4	27.7	173	1248
30	272	490	18.5	33.3	212	1581

ⓘ Allowable static moment M01, M02

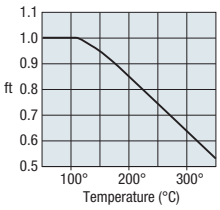


When 1 nut is used in a tight fit

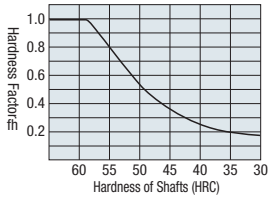


When 2 nuts are used in a tight fit

■ Temperature Factor (ft)



■ Hardness Factor (fh)



■ Load Factor (fw)

Conditions of Use	Load Factor (fw)
Minimal vibrations / shocks, Low speed 15m/min. or less	1.0~1.2
Some vibrations / shocks, Medium speed 60m/min. or less	1.2~2.0
Significant vibrations / shocks, High speed over 60m/min.	2.0~3.5

Installation Precautions

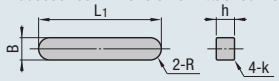
■ Shaft Fits

An H7 tolerance is recommended for mating bores for the spline nuts.

■ Dimension of Key (Included)

No.	B	Tolerance μm	h	Tolerance μm	L_1	R
6	2.5	+16 +6	2.5	0 -25	10.5	1.25
8					10.5	
10	3		3		17 (14)	1.5
13					17 (14)	
16	3.5	+24 +12	3.5	0 -30	18 (18)	1.75
20	4		4		29	2
25					33	2.0
30				0 -36	42	3.5

Accessories: Dimension of Attached Key



ⓘ Values in ( ) are for 440C Stainless Steel.

Operating Environment

■ Lubrication

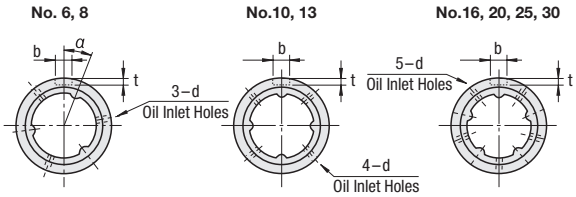
Ball splines are shipped greased.
Administer lubrication as needed.

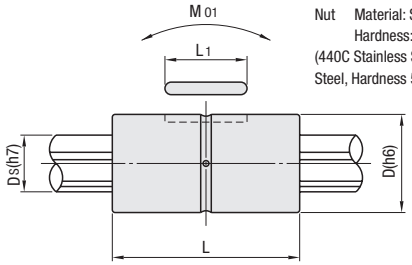
■ Operating Temp.

Plastic components are used in ball spline assemblies.
Avoid usage in high temperature environments, keep below 80°C.

Ball Spline Nuts / Alteration Guide

■ Straight Nuts





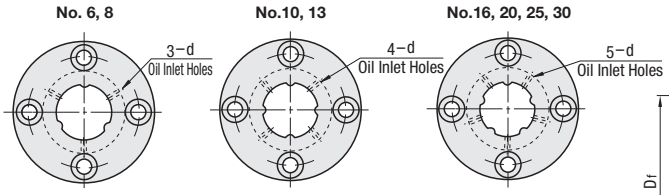
Nut Material: SCM415 Alloy Steel equivalent Hardness: 60HRC~
(440C Stainless Steel equivalent for Stainless Steel, Hardness 55HRC~)

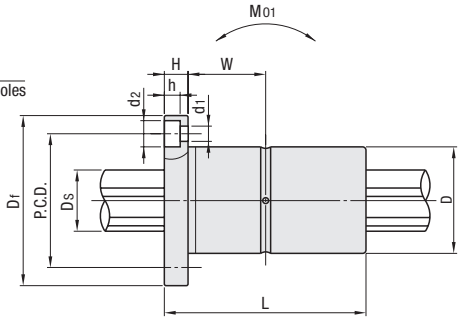
No.	D (h6)	L	b	Tolerance µm	t+0.05 0	L_1	d	Ds (h7)	α	Cross Sectional Moment of Inertia mm^4	Mass (Reference) Nut kg	Mass (Reference) Shaft kg/m
6	14	25	2.5	+14 0	1.2	10.5	1.5	6	15°	6.2×10	0.23	0.23
8	16							8	25°	1.97×10^2	0.39	0.39
10	21	40	3		1.5	17 (14)		10.4	—	5.57×10^2	0.06	0.65
13	24	44						13.4		1.55×10^3	0.07	1.11
16	31	50	3.5	+18 0	2	18		16.6		3.61×10^3	0.15	1.65
20	35	63	4		2.5	29	2	20.6		8.74×10^3	0.20	2.57
25	42	71				33		25.8		2.13×10^4	0.29	4.04
30	47	80				42	2.5	30.8		4.373×10^4	0.37	5.85

Purple letters denote dimensions changed from the previous products.

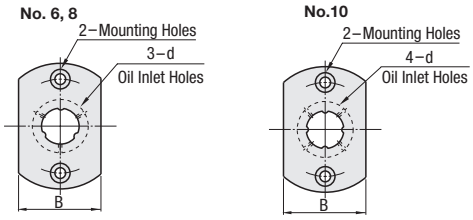
■ Flanged Nuts

– Round Flange





– Compact Flange



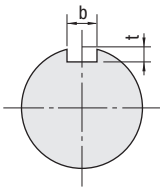
Nut Material: SCM415 Alloy Steel equivalent Hardness: 60HRC~
(440C Stainless Steel for Stainless Steel, Hardness 55HRC~)

No.	D (h6)	L	Df	H	P.C.D.	d_1	d_2	h	W	d	B	Ds (h7)	Cross Sectional Moment of Inertia mm^4	Mass (Reference) Nut kg	Mass (Reference) Shaft kg/m
6	14	25	30	6	22	3.5	6	3.1	6.5	1.5	18	6	6.2×10	0.03	0.23
8	16		32		24						21	8	1.97×10^2	0.04	0.39
10	21	40	42 (41)		32 (30)	4.5	8	4.4 (5.3)	14 (8.5)		25	10.4	5.57×10^2	0.09	0.65
13	24	44	44 (45)	7 (8)	33 (34)				15 (10)		—	13.4	1.55×10^3	0.11	1.11
16	31	50	51	7	40			4.4	18			16.6	3.61×10^3	0.20	1.65
20	35	63	58	9	45	5.5	9.5	5.4	22.5	2		20.6	8.74×10^3	0.30	2.57
25	42	71	65		52				26.5			25.8	2.13×10^4	0.40	4.04
30	47	80	75	10	60	6.6	11	6.5	30	2.5		30.8	4.373×10^4	0.57	5.85

Purple letters denote dimensions changed from the previous products.

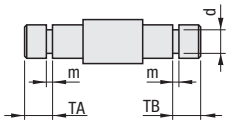
■ Alteration Guide

■ Dimensions of key grooves on shaft ends (P / Q)



P and Q	b	Tolerance (N9)	t	Tolerance
8 or 10	3	-0.004 -0.029	1.8	+0.1 0
12	4	0 -0.030	2.5	
13~16	5		3.0	
20	6		3.5	
25	8	0 -0.036	4.0	+0.2 0

■ Dimensions of the retaining ring groove on shaft ends (P and Q)



	P / Q Tolerance	m	Tolerance	d	Tolerance	Applicable Retaining Ring
6	0 -0.012	0.7	+0.1 0	5.05	+0.075 0	JIS E Type 5
8	0 -0.015	0.9		6.05		JIS E Type 6
10		1.15	+0.14 0	9.6	0 -0.09	JIS C Type 10
12	0 -0.018			11.5	0 -0.11	JIS C Type 12
13				12.4		JIS C Type 13
15				14.3		JIS C Type 15
16				15.2		JIS C Type 16
20	0 -0.021	1.35		19	0 -0.21	JIS C Type 20
25				23.9		JIS C Type 25

★ BEST SELLER
(SELECT PART NUMBERS)

Ball Splines

– Standard Type / Both End Stepped Type / One End Stepped Type –

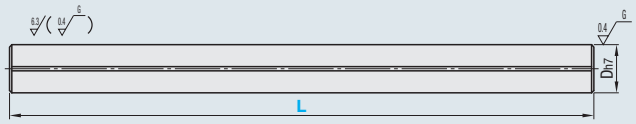
■ Some product specifications and model numbers have been revised and re-introduced.

■ Standard

RoHS

Standard Type	Spline Shaft Material 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~				440C Stainless Steel or Equivalent Hardness: 55HRC~	
	Nut 1 pc		Nut 2 pcs		Nut 1 pc	
	L Dimension Selectable		L Dimension Selectable		L Dimension Selectable	
With Straight Nut	BSSS	BHSS	BSS2S	BHS2S	BESKSS	BASKSS
With Round Flange Nut	BSSM	BHSM	BSS2M	BHS2M	BESKFS	BASKFS
With Compact Flange Nut	BSSN	BHSN	BSS2N	BHS2N	—	—

Accuracy P.161
Dimension details of included nut P.162



■ Standard L Dimension Selectable

Part Number Type	No.	L	D
BSSS BSSM	*6	150* 200* 300 400	6
	*8	150* 200* 300 400	8
BSSN	*10	150 200* 300* 400 500 600	10.4
BSS2S	13	150 200* 300* 400 500 600	13.4
BSS2M	16	150 200* 300* 400 500 600	16.6
BSS2N	20	150 200 300 400 500 600 700	20.6
BESKSS	25	150 200 300 400 500 600 700 800 900	25.8
BESKFS	30	150 200 300 400 500 600 700 800 900 1000 1150	30.8

Only * marked sizes are available for BHSN and BHSS2N.
Only * marked sizes are available for BESKSS and BESKFS.

Part Number Type	No.	L 1mm Increment 1-Nut Type	L 1mm Increment 2-Nut Type	D
BHSS BHSM	*6	60~ 400 (200)	60~ 400	6
	*8	60~ 400 (200)	60~ 400	8
BHSN	*10	60~ 600 (350)	90~ 600	10.4
BHS2S	13	60~ 600 (350)	100~ 600	13.4
BHS2M	16	70~ 600 (350)	110~ 600	16.6
BHS2N	20	80~ 700	130~ 700	20.6
BASKSS	25	90~ 900	150~ 900	25.8
BASKFS	30	100~1150	170~1150	30.8

Only * marked sizes are available for BHSN and BHS2N.
Max. L dimension of BASKSS and BASKFS is in ( ).

Order Example

Part Number	–	L
BSSS8	–	300
BHS2M10	–	555

■ Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

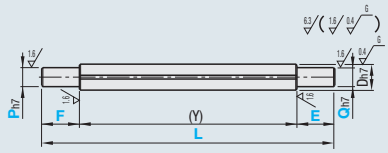
– Both Ends Stepped

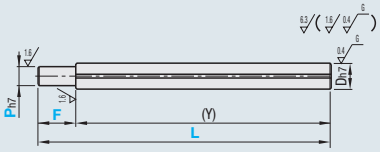
RoHS

Both Ends Stepped Type	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~
	Nut 1 pc
With Straight Nut	BSJS
With Round Flange Nut	BSJM
With Compact Flange Nut	BSJN

One End Stepped Type	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~	
	Nut 1 pc	Nut 2 pcs
With Straight Nut	BSDS	BSD2S
With Round Flange Nut	BSDM	BSD2M
With Compact Flange Nut	BSDN	BSD2N

– One End Stepped





Accuracy P.2 Dimension details of included nut P.3 Annealed range P.6

Part Number Both Ends Stepped Type			No.	1mm Increment L 1-Nut Type	F / E	P / Q	D	(Y) 1-Nut Type min~max
BSJS BSJM BSJN BSYS BSYM BSYN	BSKS BSKM BSKN BSHS BSHM BSHN	BSH2S BSH2M BSH2N BASBFS	*8	60~ 400	2≤F≤Px4 2≤E≤Qx4	5 6	8	56~ 396
			*10	60~ 600		5 6 8	10.4	56~ 596
			13	60~ 600		5 6 8 10	13.4	56~ 596
			16	70~ 600		5 6 8 10 12 13	16.6	66~ 596
			20	80~ 700		8 10 12 13 15 16	20.6	76~ 696
			25	90~ 900		8 10 12 13 15 16 20	25.8	86~ 896
			30	100~1150		10 12 13 15 16 20 25	30.8	96~1146

Only * marked sizes are available for BSJN.

Part Number One Ends Stepped Type			No.	1mm Increment L 1-Nut Type	L 2-Nut Type	F	P	D	(Y) 1-Nut Type min~max	(Y) 2-Nut Type min~max
BSDS BSDM BSDN BSD2S BSD2M BSD2N	BSLS BSLM BSBS BSBM BSBN	BSB2S BSB2M BSB2N BSFS BSFM BSFN ★	*8	60~ 400	60~ 400	2≤F≤Px4	5 6	8	58~ 398	58~ 398
			*10	60~ 600	90~ 600		5 6 8	10.4	58~ 598	88~ 598
			13	60~ 600	100~ 600		5 6 8 10	13.4	58~ 598	98~ 598
			16	70~ 600	110~ 600		5 6 8 10 12 13	16.6	68~ 598	108~ 598
			20	80~ 700	130~ 700		8 10 12 13 15 16	20.6	78~ 698	128~ 698
			25	90~ 900	150~ 900		8 10 12 13 15 16 20	25.8	88~ 898	148~ 898
			30	100~1150	170~1150		10 12 13 15 16 20 25	30.8	98~1148	168~1148

Only * marked sizes are available for BHDN and BSD2N.

Alterations

Part Number	–	L	–	F	–	E	–	P	–	Q	–	(FC, SC…etc.)
BSJS8	–	250	–	F20	–	E20	–	P5	–	Q5	–	SC15

Ball Splines

– Both Ends Tapped Type / One End Tapped Type –

■ Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

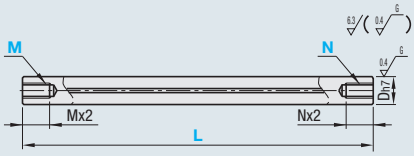
– Both Ends Stepped

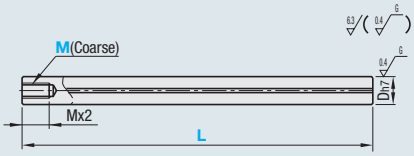
RoHS

– One End Stepped

Both End Stepped Type	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~		440C Stainless Steel or Equivalent Hardness: 55HRC~
	Nut 1 pc	Nut 2 pcs	Nut 1 pc
With Straight Nut	BSHS	BSH2S	—
With Round Flange Nut	BSHM	BSH2M	BASBFS
With Compact Flange Nut	BSHN	BSH2N	—

One End Stepped Type	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~
	Nut 1 pc
With Straight Nut	BSFS
With Round Flange Nut	BSFM
With Compact Flange Nut	BSFN





- Accuracy P.161
- Dimension details of included nut P.162
- Annealed range P.164

■ Both Ends Stepped

Part Number Type	No.	1mm Increment L 1-Nut Type	L 2-Nut Type	P	D
BSHS BSHM BSHN BSH2S BSH2M BSH2N BASBFS	*8	60~ 400	60~ 400	3 4	8
	*10	60~ 600	90~ 600	3 4 5	10.4
	13	60~ 600 (350)	100~ 600	5 6	13.4
	16	70~ 600 (350)	110~ 600	6 8	16.6
	20	80~ 700	130~ 700	6 8 10	20.6
	25	90~ 900	150~ 900	6 8 10 12	25.8
	30	100~1150	170~1150	8 10 12	30.8

- BASBFS is applicable to only No.13 and 16, and max. of L dimension is ( ).
- Only * marked sizes are available for BSHN and BSH2N.

■ One End Stepped

Part Number Type	No.	1mm Increment L 1-Nut Type	P	D
BSFS BSFM BSFN ★	*8	60~ 400	3 4	8
	*10	60~ 600	3 4 5	10.4
	13	60~ 600	5 6	13.4
	16	70~ 600	6 8	16.6
	20	80~ 700	6 8 10	20.6
	25	90~ 900	6 8 10 12	25.8
	30	100~1150	8 10 12	30.8

- Only * marked sizes are available for BSFN.

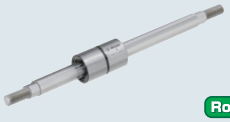
Alterations

Part Number	–	L	–	M	–	N	–	(SC / FC / NTW)
BSHN10	–	270	–	M5	–	N5	–	SC15

– Both Ends Stepped and Threaded / Both Ends Stepped and Tapped –

■ Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

– Both Ends Stepped and Threaded

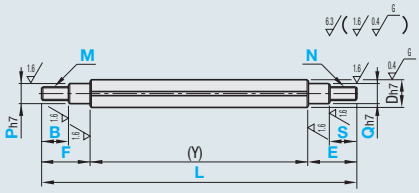


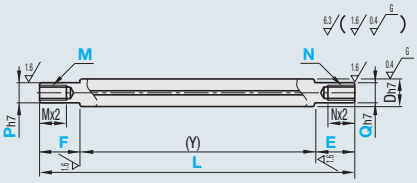
RoHS

– Both Ends Stepped and Tapped

Both Ends Stepped Threaded	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~
	Nut 1 pc
With Straight Nut	BSYS
With Round Flange Nut	BSYM
With Compact Flange Nut	BSYN

Both Ends Stepped Tapped	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~
	Nut 1 pc
With Straight Nut	BSLS
With Round Flange Nut	BSLM
With Compact Flange Nut	—





- Accuracy P.161
- Dimension details of included nut P.162
- Annealed range P.164

Both Ends Stepped and Threaded Type	Part Number No.	1mm Increment L 1-Nut Type	F / E	B / S	P / Q	M (Coarse).N (Coarse) (M≤P, N≤Q)	D	(Y) 1-Nut Type min~max
BSYS BSYM BSYN	*8	60~400	2≤F≤Px4 2≤E≤Qx4	When P, Q≤6, B, S≤F, E-2	5 6	5 6	8	56~ 396
	*10	60~600			5 6 8	5 6 8	10.4	56~ 596
	13	60~600		When P, Q=8, 10, B, S≤F, E-3	5 6 8 10	5 6 8 10	13.4	56~ 596
	16	70~600			5 6 8 10 12 13	6 8 10 12	16.6	66~ 596
	20	80~700		When P, Q≥12, B, S≤F, E-5	8 10 12 13 15 16	6 8 10 12 16	20.6	76~ 696
	25	90~900			8 10 12 13 15 16 20	6 8 10 12 16 20	25.8	86~ 896
	30	100~1150		B and S≥Pitchx3 B, S≤M, Nx3	10 12 13 15 16 20 25	8 10 12 16 20 24	30.8	96~1146

- Only * marked sizes are available for BSYN.

Both Ends Stepped and Tapped	Part Number No.	1mm Increment L 1-Nut Type	F / E	P / Q	M (Coarse).N (Coarse) (M+3≤P, N+3≤Q)	D	(Y) 1-Nut Type min~max
BSLS BSLM	13	60~ 600	2≤F≤Px4 2≤E≤Qx4	6 8 10	3 4 5 6	13.4	56~ 596
	16	70~ 600		6 8 10 12 13	3 4 5 6 8 10	16.6	66~ 596
	20	80~ 700		8 10 12 13 15 16	4 5 6 8 10 12	20.6	76~ 696
	25	90~ 900		8 10 12 13 15 16 20	4 5 6 8 10 12 16	25.8	86~ 896
	30	100~1150		10 12 13 15 16 20 25	4 5 6 8 10 12 16 20	30.8	96~1146

Alterations

Part Number	–	L	–	F	–	E	–	B	–	S	–	P	–	Q	–	M	–	N	–	(SC / FC / NTW)
BSYS8	–	250	–	F26	–	E20	–	B8	–	S8	–	P6	–	Q6	–	M6	–	N6	–	SC15

Ball Splines

– One End Threaded / One End Stepped and Threaded / One End Tapped –

■ Some product specifications and model numbers have been revised, and re-introduced in order to achieve price reductions.

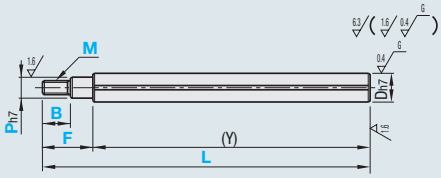
– One End Stepped and Threaded

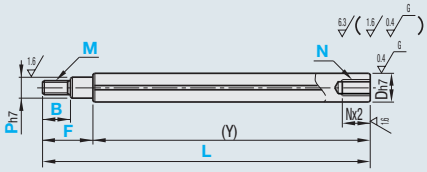
RoHS

One End Stepped Threaded	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~
	Nut 1 pc
With Straight Nut	BSKS
With Round Flange Nut	BSKM
With Compact Flange Nut	BSKN

– One End Threaded and Stepped / One End Tapped

One End Stepped and Threaded One End Tapped	Spline Shaft 52100 Bearing Steel or Equivalent Nuts SCM415 Alloy Steel or Equivalent Hardness: 58HRC~	
	Nut 1 pc	Nut 2 pcs
With Straight Nut	BSBS	BSB2S
With Round Flange Nut	BSBM	BSB2M
With Compact Flange Nut	BSBN	BSB2N





- Accuracy P.161
- Dimension details of included nut P.162
- Annealed range P.164

Part Number One End Stepped and Threaded Type	No.	1mm Increment L 1-Nut Type	F	B	P	M (Coarse Thread)	D	(Y) 1-Nut Type min~max
BSKS BSKM BSKN	*8	60~ 400	2≤F≤Px4	When P≤6 B≤F-2	5 6	5 6	8	58~ 398
	*10	60~ 600			5 6 8	5 6 8	10.4	58~ 598
	13	60~ 600		When P=8 or 10, B≤F-3	5 6 8 10	5 6 8 10	13.4	58~ 598
	16	70~ 600			6 8 10 12 13	6 8 10 12	16.6	68~ 598
	20	80~ 700		When P≥12 B≤F-5	8 10 12 13 15 16 20	6 8 10 12 16	18.2	78~ 698
	25	90~ 900			8 10 12 13 15 16 20	6 8 10 12 16 20	23	88~ 898
	30	100~1150		B≥Pitchx3 B≤Mx3	10 12 13 15 16 20 25	8 10 12 16 20 24	28	98~1148

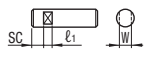
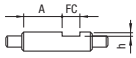
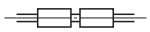
Only * marked sizes are available for BSCN.

Part Number One End Threaded and Stepped / One End Tapped Type	No.	1mm Increment L 1-Nut Type	L 2-Nut Type	F / E	B / S	P	M (Coarse Thread)	N (Coarse Thread)	D	(Y) 1-Nut Type min~max	(Y) 2-Nut Type min~max
BSBS BSBM BSBN BSB2S BSB2M BSB2N	*8	60~ 400	60~ 400	2≤F≤Px4	When P≤6, B≤F-2	5 6	5 6	3 4	8	58~ 398	58~ 398
	*10	60~ 600	76~ 600			5 6 8	5 6 8	3 4 5	10.4	58~ 598	58~ 598
	13	60~ 600	82~ 600		When P=8 or 10, B≤F-3	5 6 8 10	5 6 8 10	4 5 6	13.4	58~ 598	58~ 598
	16	70~ 600	110~ 600			6 8 10 12 13	6 8 10 12	4 5 6 8	16.6	68~ 598	68~ 598
	20	80~ 700	130~ 700		When P≥12, B≤F-5	8 10 12 13 15 16 20	6 8 10 12 16	4 5 6 8 10	18.2	78~ 698	78~ 698
	25	90~ 900	150~ 900			8 10 12 13 15 16 20	6 8 10 12 16 20	4 5 6 8 10 12	23	88~ 898	88~ 898
	30	100~1150	170~1150		B≥Pitchx3 B≤Mx3	10 12 13 15 16 20 25	8 10 12 16 20 24	4 5 6 8 10 12 16	28	98~1148	98~1148

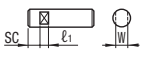
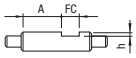
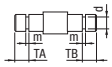
Only * marked sizes are available for BSBN and BSB2N.

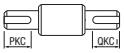
Alterations

Part Number	–	L	–	F	–	B	–	P	–	M	–	N	–	(SC / FC / NTW)
BSKS8	–	250	–	F20	–	B15	–	P6	–	M5			–	SC15

Alterations	Wrench Flats	Set Screw Flat	Additional Spline Nuts
			
Code	SC	FC	NTW
Spec.	Adds a wrench flat. SC = 1mm Increment SC+ℓ1≤Y SC=0 or SC≥1 No. / W / ℓ1: 8 / 7 / 8; 10 / 8; 13 / 11; 16 / 14 / 10; 20 / 17; 25 / 22 / 15; 30 / 27	Adds a set screw flat. Ordering Code FC10-48 Specify FC and A in 1mm increments FC≤3xD When 1.5xD<FC, FC≤Y/2 A = 0 or A≥2 No. / h: 8, 10, 13, 16, 20 / 1; 25, 30 / 2	Additional nuts (from one to two) BSKS • BSKM Available for BSKN only

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

Alterations	Wrench Flats	Set Screw Flat	Retaining Ring Groove
			
Code	SC	FC	TA / TB
Spec.	Adds a wrench flat. SC = 1mm Increment SC+ℓ1≤Y SC=0 or SC≥1 No. / W / ℓ1: 8 / 7 / 8; 10 / 8; 13 / 11; 16 / 14 / 10; 20 / 17; 25 / 22 / 15; 30 / 27	Adds a set screw flat. Ordering Code FC10-48 Specify FC and A in 1mm increments FC≤3xD When 1.5xD<FC, FC≤Y/2 A = 0 or A≥2 No. / h: 8, 10, 13, 16, 20 / 1; 25, 30 / 2	Adds retaining ring grooves. Ordering Code TA10-TB10 TA, TB= 1mm Increment P, Q≥6 4≤TA, TB<F / E /2

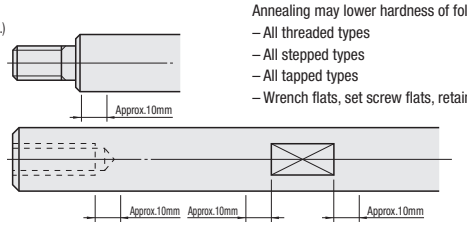
Alterations	Keyway on Shaft End	Tapping	Additional Spline Nuts
			
Code	PKC / QKC	MC	NTW
Spec.	Adds a keyway on the shaft end P (Q) Ordering Code PKC10 (QKC10) P, Q≥8 EPKC / QKC=1mm Increment PKC, QKC≤Px3 PKC (QKC)≤F (T)-1	Machines tapped hole on the right end face One End Stepped Type Applicable to one end stepped type only No. / M: 8 / 3, 4; 10 / 3, 4, 5; 13 / 5, 6; 16 / 6, 8; 20 / 6, 8, 10; 25 / 6, 8, 10, 12; 30 / 8, 10, 12	Additional nuts (from one to two) BSJS.BSJM Available for BSJN only

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

■ Reduced hardness around machined areas

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

(Ex.)



Annealing may lower hardness of following parts:
- All threaded types
- All stepped types
- All tapped types
- Wrench flats, set screw flats, retaining ring grooves, tap alteration

HIGH ← PRECISION → LOW
LOW ← SPEED → HIGH

Product Name	Motorized Stages	LX Actuator	KU Actuator	RS Actuator	MSA Belt-Driven Actuator	LS Actuator
Usage, Picture						
Typical Usage	Ideal for short positioning motions where high accuracy and repeatability are key.	High precision, compact linear motion unit.	High moment load, precision linear motion unit.	Fully integrated system with motor and controller.	Ideal for long stroke, fast motion and high acceleration.	Medium precision, compact linear motion unit.
Integrated Motor	Yes	Optional	Optional	Yes	Optional	Optional
Drive Mechanism	– Precision Ball Screw – Worm Gear	– Precision Ball Screw	– Rolled/ Precision Ball Screw	– Rolled/ Precision Ball Screw – Belt	– Belt	– Rolled Screw
Pneumatic Options	No	No	Yes	No	No	No
Specifications: Positioning Repeatability	0.5 microns	3–5 microns	5–8 microns	10–40 microns	25 microns	20 microns
Specifications: Stroke Range	13–50 mm	17–530 mm	130–610 mm	50–1,050 mm (Screw) 150–3,050 mm (Belt)	184–5,992 mm	60–1,000 mm
Specifications: Max. Speed	10 mm/sec	1,040 mm/sec	1,550 mm/sec	1,800 mm/sec	15,000 mm/sec	972 mm/sec
Specifications: Actual Load/ Basic Load Ratings	Up to 10kg (Horizontal) Up to 5kg (Vertical)	Check Online for Sizing Software http://us.misumi-ed.com/maker/misumi/mech/tech/calculationsoftware/			Up to 1,130kg (Horizontal) Up to 567kg (Vertical)	Check Online for Sizing Software http://us.misumi-ed.com/maker/misumi/mech/tech/calculationsoftware/

*NEMA/Metric Standard motor plates for LX, KU, LS, and MSA, can be specified to match your motor.

Linear Actuator Sizing Software Available

http://us.misumi-ec.com/maker/misumi/mech/tech/calculationsoftware/

Linear Actuators

★

#ACLX
High Precision Ball Screw Actuators & Accessories

★

#ACRS
RS Actuators

NEW

#MSA
Belt Driven Actuators

NEW

NEW

#ACKU
High Moment Load Ball Screw Actuators

#MSG
Motorized Stages

#SV
Servo Motors & Drivers

#ST
Stepper Motors & Drives

RC Related Component

Linear Guides
pgs. 6–43

Single Axis Robot / Actuator Product List

LX Series

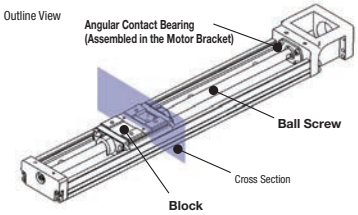
High Rigidity / High Precision / Compactness

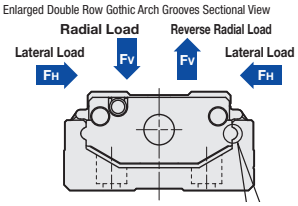
■ Features

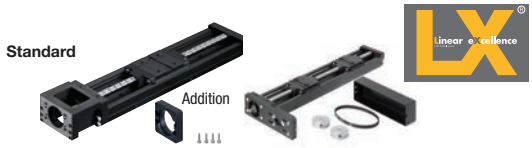
- High rigidity steel base and rust resistant low temp. black chrome plating
- Precision ground ball screws and preload enable low noise and high precision performance.
- Positioning repeatability is ±5μm. (Precision Grade ±3μm)
- Large Lead Type and Low Particulate Generation Grease compatible product variations
- Precision Certificates are enclosed with precision grade products.

Load Directions

The Rails employ Double Row Gothic Arch Grooves, and are compact and low-profile.







■ Specifications

Type	Lead (mm)	Screw Shaft Dia.	Maximum Effective Stroke (mm)
LX20	1/5	Ø6	236.5
LX26	2/5	Ø8	317
LX30	5/10	Ø10	529.5
LX45	10/20	Ø15	497.9

With Motor

- Rail
  Equal basic load rating in all four directions: radial, reverse radial and lateral directions. For values refer to the "Load Rating" in the table below.
- Ball Screw
  Preload is applied to precision (ground) ball screw. Integrating structure of the block and ball screw nut allows axial loads to be applied. For Basic Load Rating in axial directions, please see "Load Rating" Table below.
- Bearing (fixed side)
  Angular bearings are integrated in the motor bracket allowing loads in the axial direction to be applied. For values of the basic load rating in the axial direction refer to the "Load Rating" in the table below.

Load Ratings

Values are indicated by sections.

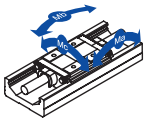
	Type	LX2001	LX2005	LX2602	LX2605	LX3005-B	LX3010-B	LX3005-S	LX3010-S	LX4510-B	LX4520-B	LX4510-S	LX4520-S
	Block	Long		Long		Long		Short		Long		Short	
Rails	Basic Dynamic Load Ratings C (N)	3277		6522		9732		6305		18450		11826	
	Basic Static Load Ratings C_0 (N)	6199		11871		17218		9271		32441		17175	
	Radial Clearance (μm)	-3~0		-4~0		-4~0		-4~0		-6~0		-6~0	
Ball Screws	Basic Dynamic Load Ratings Ca (N)	482	822	1712	1600	1831	1129	1831	1129	4167	2499	4167	2499
	Basic Static Load Ratings C_0a (N)	642	1026	2251	2097	2389	1386	2389	1386	5945	3381	5945	3381
	Shaft Diameter (mm)	6	6	8	8	10	10	10	10	15	15	15	15
	Lead (mm)	1	5	2	5	5	10	5	10	10	20	10	20
	Root Diameter	5.3	4.918	6.4	6.46	8.2	8.2	8.2	8.2	11.7	11.7	11.7	11.7
	Ball Center Diameter (mm)	6.15	6.3	8.3	8.3	10.3	10.3	10.3	10.3	15.5	15.75	15.5	15.75
Bearing (fixed side) Axial Direction	Basic Dynamic Load Ratings Ca (N)	730		1637		2702		2702		4355		4355	
	Allowable Static Load P_0a (N)	461		1205		2197		2197		4106		4106	

*Rail load ratings are indicated per block. *For actual life calculations, please use our Technical Calculation Software.

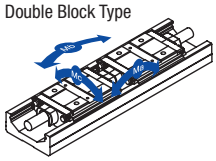
Allowable Moment

Moment loads can be applied in all three directions.

Single Block Type



Double Block Type



Ma: Pitch Moment

Mb: Yaw Moment
Mc: Roll Moment

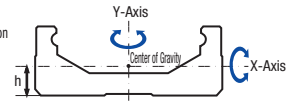
Type	Block Qty	Block Types	Allowable Static Moment (N · m) Ma	Mb	Mc
LX20	1	Long	27	27	93
	2		353	353	186
LX26	1	Long	70	70	225
	2		902	902	450
LX30	1	Long	126	126	387
	2		1515	1515	774
	1	Short	63	63	208
	2		579	579	417
LX45	1	Long	291	291	972
	2		3945	3945	1944
	1	Short	145	145	515
	2		1444	1444	1029

*Double Block Type values are those when two blocks in contact with each other. The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software.

Rail Rigidity

Rails with Lower
Center of Gravity and High Rigidity

Rail Cross Section



Type	Cross Sectional Moment of Inertia (mm^4) I_x	I_y	Center of Gravity (mm) h	Mass (kg/100mm) W
LX20	$3.2x10^3$	$5.2x10^4$	4.4	0.22
LX26	$1.0x10^4$	$1.4x10^5$	6.1	0.37
LX30	$2.5x10^4$	$3.1x10^5$	7.8	0.60
LX45	$8.8x10^4$	$10.4x10^5$	11.0	1.10

IX: Cross Sectional Moment of Inertia around X-axis IY: Cross Sectional Moment of Inertia around Y-axis

Structures and Features

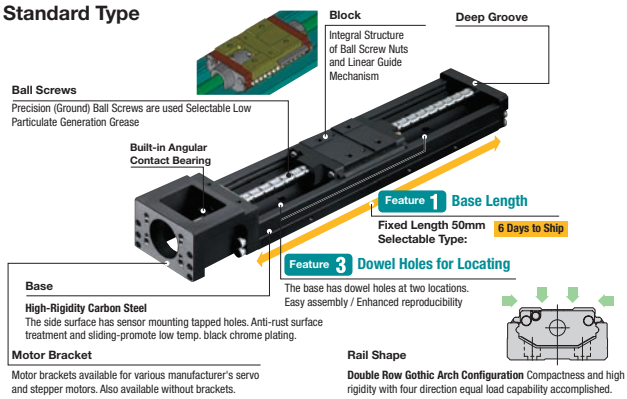
Feature 1 Base Length variations that allow flexible designs

Feature 2 Space saving low-profile stage

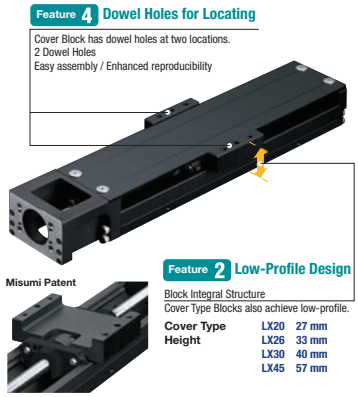
Feature 3 Locating dowel holes on the base

Feature 4 Locating dowel holes on blocks (Cover Type)

Standard Type



Cover Type



Single Axis Actuator LX Maximum Travel Speed / Accuracy Standards

Maximum Travel Speed

■ Max. Velocity (mm/s)

Type	Lead (mm)	Rail Length L (mm)												
		80	100	125	150	200	250	300	350	400	450	500	550	600
LX20	1	190	190	—	190	190	—	—	—	—	—	—	—	—
	5	—	694	—	694	694	694	633	—	—	—	—	—	—
LX26	2	—	290	—	290	290	290	290	—	—	—	—	—	—
	5	—	—	—	521	521	521	521	521	446	—	—	—	—
LX30	5	—	—	410	410	410	410	410	410	410	410	370	300	250
	10	—	—	—	830	830	830	830	830	830	830	740	600	500

Type	Lead (mm)	Rail Length L (mm)					
		340	390	440	490	540	590
LX45	10	550	550	550	550	550	550
	20	1110	1110	1110	1110	1110	1110

*Values in the table are calculated on basis of critical speed and DN value of ball screws.
Note that these are not guarantee data considering motor rotational speed, operating conditions, etc.

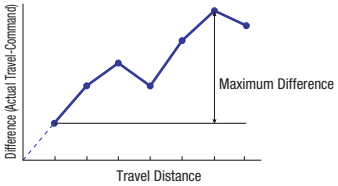
■ Accuracy Standards

Accuracy Standard Items	LX20		LX26		LX30 (L=400 or less)		LX30 (L=exceeding 400)		LX45	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02	0.06	0.02	0.06	0.02	0.1	0.025	0.1	0.025
Positioning Repeatability (mm)	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003
Backlash (mm)	0.01	0.003	0.01	0.003	0.02	0.003	0.02	0.003	0.02	0.003
Parallelism (mm)	0.025	0.01	0.025	0.01	0.025	0.01	0.035	0.015	0.035	0.015
Starting Torque (N•cm)	1.2		2		4		4		10	

Accuracy Standards

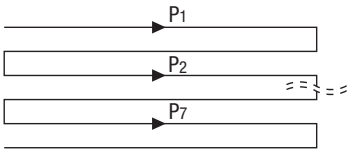
■ Positioning Accuracy

Positioning is performed from a reference position incrementally in one direction, and measured.
Measurement values are the maximum difference between actual travel distance and commanded distance.
For standard values, please see "Accuracy Standards Table".



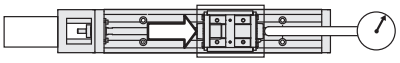
■ Positioning Repeatability

Repeat positioning and measurement seven times at the same point in a specified direction.
1/2 of the maximum difference with "±" in front is defined as the measurement value.
For standard values, please see "Accuracy Standards Table".



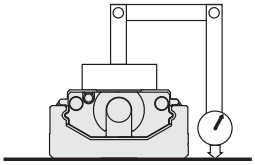
■ Backlash

Loads are applied to the block from the reference position, and then released.
The difference between the reference position and returned value is the measurement value.
For standard values, please see "Accuracy Standards Table".



■ Running Parallelism

A dial indicator is installed from the block to the reference surface. Measurements are taken while travelling.
The maximum difference taken by the measurement is the measurement value.
For standard values, please see "Accuracy Standards Table".



Notes for Using Single-Axis Actuator LX / Low Particle Generation Grease

■ Maintenance

Routine Inspections:

– Recommended inspection frequency is once per 3 to 6 months.
– Please check for proper lubrication conditions, clean-up and grease refill.
– Check on mounting screws for looseness.

Lubrication:

– The recommended lubricants are shown as below.
– LX20, LX26 and LX30 Series => Showa Shell Sekiyu-made Alvania Grease S No.2
– LX45 Series => Showa Shell Sekiyu-made Cartridge Grease EP2
– Low Particle Generation Type => NSK LG2
– Recommended greasing cycle is per 6 months or 1,000km under normal operating conditions.
* Lubrication intervals, however, depend on usage conditions and environments.

⓵ Cautions for Operating Environments:

– Ensure that it is used at an ambient temperature of 50°C or below. It is recommended to provide mechanical stoppers to prevent overrun.

■ Allowable Rotational Speed

Size—specific allowable rotational speed is indicated below.

Part Number	Lead	Rail Length	Allowable Rotational Speed (min^{-1})
LX20	1	80~300	6000
	5		
LX26	2	100~400	6000
	5	100~350	6000
		400	5350
LX45	10	340~590	3300
	20	340~590	3330

Part Number	Lead	Rail Length	Allowable Rotational Speed (min^{-1})
LX30	5	150~450	4,920
		500	4,440
		550	3,600
		600	3,000
	10	150~450	4,980
		500	4,440
		550	3,600
		600	3,000

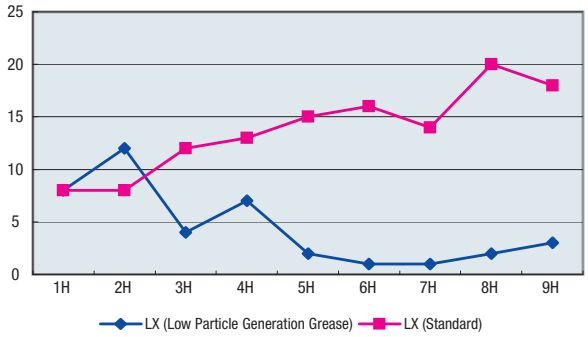
■ About Single—axis Actuator LX Low Particle Grease

– The products are shipped with low particle generation grease applied for clean room environments.
– LG2 (Made by NSK Ltd.) generates less particles and exhibits excellent corrosion resistance.
– For part number selections, please see each product page.

■ Low Particulate Generation Grease Performance Table

Items		Conditions	Unit	Measurement Method	LG2 (Made by NSK Ltd.)
Grease Performance	Thickener	—	—	—	Lithium Type
	Base Oil	—	—	—	Mineral Oil + Synthetic Hydrocarbon Oil
	Base Oil Kinetic Viscosity	40°C	mm^2/s	JIS K2220 5.19	30
	Worked Penetration	—	—	JIS K2220 5.3	207
	Dropping Point	—	°C	JIS K2220 5.4	200
	Evaporation	99°C x 22hr	wt%	—	1.40%
	Oil Separation	100°C x 24hr	wt%	JIS K2220 514	0.80%
	Operating Temp.	In Air	°C	—	-10~80

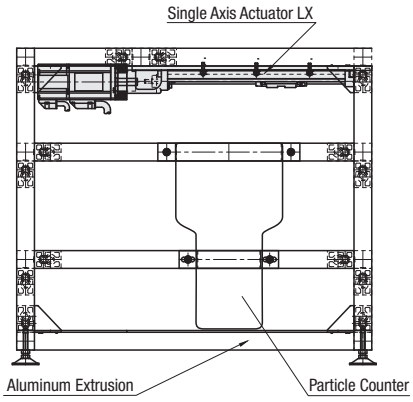
■ Particulate Generation Comparison



0.3μm or larger particle count (m^3)

Measuring Time	1H	2H	3H	4H	5H	6H	7H	8H	9H
LX (Low Particulate Generation Grease)	8	12	4	7	2	1	1	2	3
LX (Standard)	8	8	12	13	15	16	14	20	18

■ Particle Generation Test Evaluation Equipment Outline



<Evaluation Conditions>

Clean Room Class 100 (in a clean room)
Room Temperature 24°C±2°C Humidity 45%±5%
(Particle Counter Name)
Hand-Held Particle Counter KR-12A (Rion Co., Ltd.)
Tested Actuator: LX2001-B1-A2040-200
Motor Speed: 3000rpm

Clean Room Class 100/ISO Class 5
The measurement results meet the conditions above.
(* These are not guaranteed values but reference values. Values considerably varies depending on operating environment)

Actuator LX / Application Examples

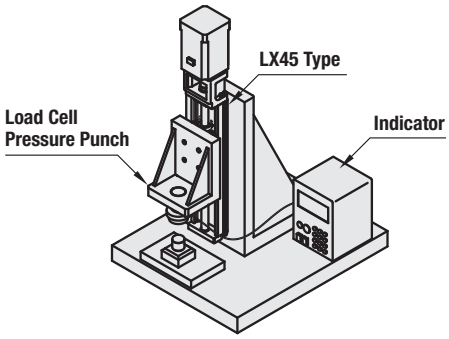
High Precision Positioning Type and High Speed and Heavy Load Capacity Type are available.
Standard lead type is for precise positioning, high lead type for high-speed operation.
Suruga Seiki Co. Ltd., reputable XY Stage producer, manufactures these actuators.
– Please see **P.168** to **P.203** for product details.

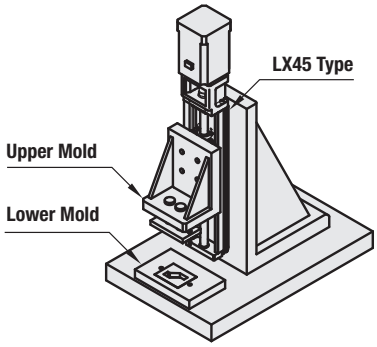
■ **Servo Press Machine**

Use as pressure axis for servo press machine.

– Reliable high rigid frame

– Standardized dowel holes on case plate for operation with heavy load. (Dowel Pins are not only for setting a position but support Shear Load.)



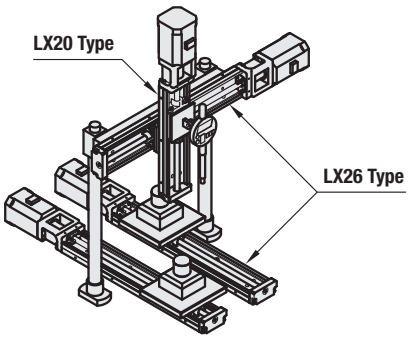


■ **Measurement Unit**

Use in combination with Servo Motor for measuring process.

– Possible only with our high precision actuators.

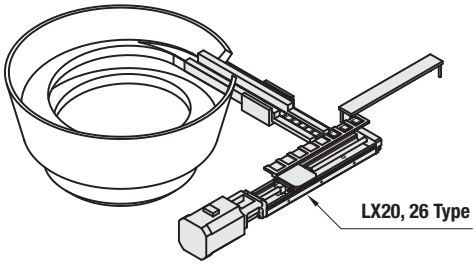
– Compatible with various products due to its compactness.



■ **Precision Conveyance**

Best suited for high precision conveyance

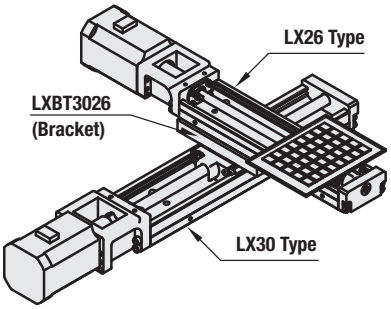
– Advanced precision will guarantee operation.



■ **Part Supply Table**

Part supply by connecting two axes

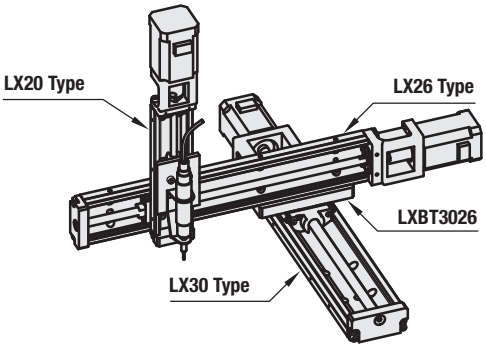
– Mounting Bracket will be included.



■ **Painting Unit**

Painting Unit by connecting three axes.

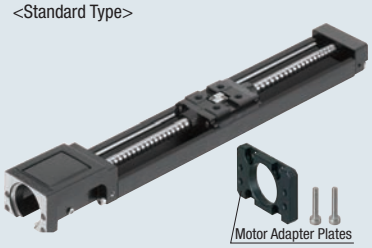
– Bracket is included.



Single Axis Actuators LX15 Standard / Cover Type

For cost efficient model, see **P.273**.

<Standard Type>



<Cover Type>

Specifications	
LX15	
Standard / Cover	
Screw Shaft Dia. (mm)	5
Lead (mm)	2
Accuracy	High Grade / Precision Grade

Accessories

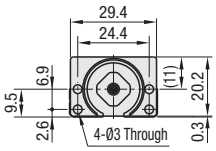
[1]Motor Adapter Plate
5052 Aluminum Alloy Black Anodize
[2]Adapter Plate Screw 2 pcs 302HQ Stainless Steel

For Materials Table, see website.

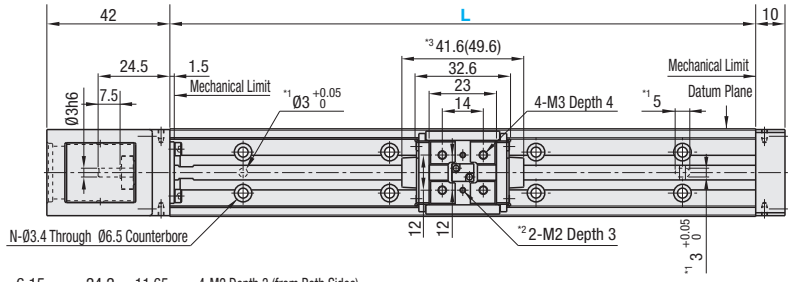
Part Number	Standard Grease		Low Particle Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Lead 2	LX1502 (C)	LX1502 (C) P	LX1502 (C) G	LX1502 (C) PG	LX1502 (C) -MX	LX1502 (C) P-MX

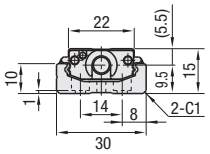
(C) is for Cover Type. Low Particle Grease Information **P.169** Lubrication Unit MX Information **P.8**

Standard Type

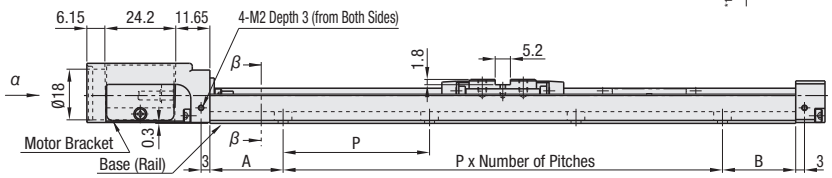


αArrow View

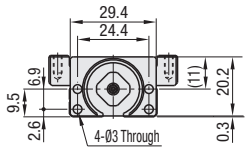




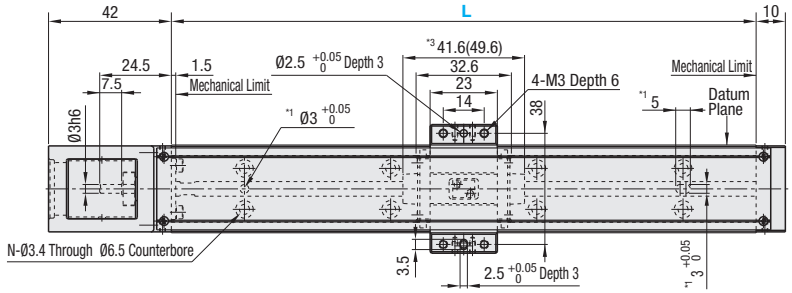
β-βCross Section View

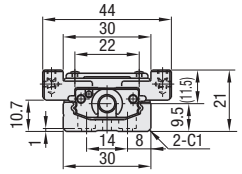


Cover Type

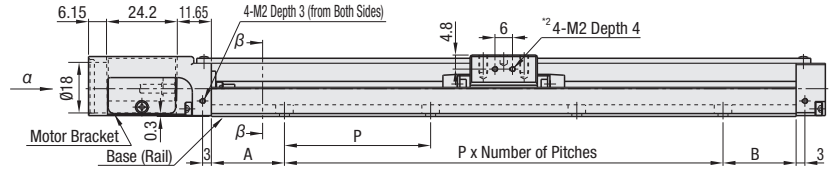


αArrow View





β-βCross Section View



Effective stroke is the value with 2.5mm margin on each side from mechanical limits, i.e., 5mm in total.

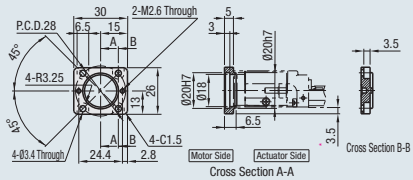
*1: Dowel Holes for Base Positioning
*2: Tapped Holes for Sensor Flag Mount
*3: Value in ( ) is for Lubrication Unit MX-equipped Type.

Part Number		Block Qty	Motor Adapter Plates	Base Length (L)	*Effective Stroke		Total Mass (kg)		Mounting Hole Dimensions				
High Grade	*Precision Grade				B_1	MX-Equipped (B_1)	Standard	Cover	A	P	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX1502(C) (Low Particle Grease) LX1502(C)G (Lubrication Unit MX-Equipped, Standard Grease) LX1502(C)-MX	(Standard Grease) LX1502(C)P (Low Particle Grease) LX1502(C)PG (Lubrication Unit MX-Equipped, Standard Grease) LX1502(C)P-MX	(1 pc) B1	(Servo Motor) A1525 A1528 (Stepping Motor) T1528 ST1528 UT1542 ST1542 *(Without Attachment) N	75	26.9	—	0.13	0.18	12.5	50	12.5	1	4
				100	51.9	43.9	0.17	0.22	25	50	25	1	4
				125	76.9	68.9	0.22	0.28	12.5	50	12.5	2	6
				150	101.9	93.9	0.29	0.35	25	50	25	2	6
				175	126.9	118.9	0.35	0.41	12.5	50	12.5	3	8
				200	151.9	143.9	0.38	0.45	25	50	25	3	8

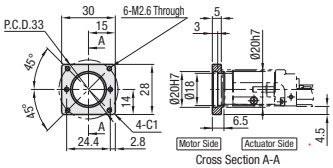
*Precision Certificate is enclosed with precision grade products. *Motor adapter plate and mounting screws are not included with No Adapter Plate Type.
*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends. *(C) is for Cover Type. *MX-equipped types are +0.002kg.

Single Axis Actuators LX15 Standard / Cover Type

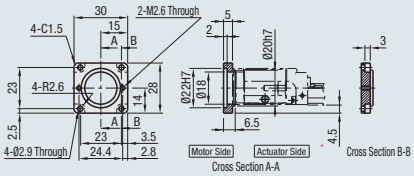
A1525
Servo Stepping 25 sq.



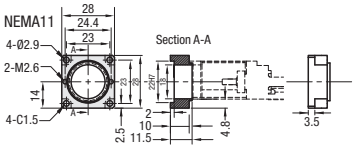
A1528
Servo Stepping 28 sq.



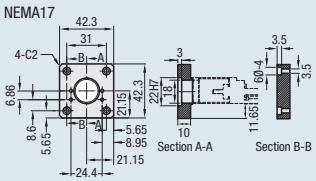
T1528
Stepping 28 sq.



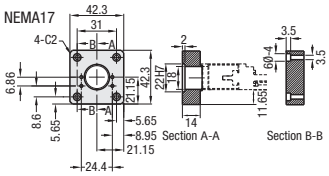
ST1528
Stepping 28 sq.



UT1542
Stepping 42 sq.



ST1542
Stepping 42 sq.



Note: The Motor Adapter protrudes beyond the rail at * marked area.

■ Accuracy Standards

Accuracy Standards	High Grade	Precision Grade
Positioning (mm)	0.04	0.02
Backlash (mm)	0.01	0.002
Positioning Repeatability (mm)	±0.004	±0.003
Running Parallelism (mm)	0.02	0.01
Starting Torque (N·cm)	0.8	0.8

See P.168 for Maximum Velocity.
See P.167 for Moment of Inertia.

LX Related Information Specifications
P.166–170

Please use our Techincal Calculation Software

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A1525	25 sq.	Yasukawa Electric Corporation	SGMM-A1	10W	MCGLC13 (see catalog)
			SGMM-A2	20W	XBW-15C2 (Made by Nabeya Bi-tech)
A1528	28 sq.	Mitsubishi Electric Corporation	HC-AQ013	10W	RCLA13C (Made by ISEL)
			HC-AQ023	20W	

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T1528	28 sq.	Oriental Motor	CSK52	5-phase	MCGLC13 (see catalog)
			ASC3	∝Step	XBW-15C2 (Made by Nabeya Bi-tech) RCLA13C (Made by ISEL)
ST1528 (NEMA11)	28 sq.	AMP	HT11-013	2-phase	MCGLC13
UT1542 (NEMA17)	42 sq.		HT17-275		
ST1542 (NEMA17)			STM17S-3*	Integrated	

Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LX1502C-MX	–	B1	–	A1525	–	100

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX1502-B1-_	Servo Stepping (No Adapter)	1	5	2
LX1502C-B1-_	Servo Stepping (No Adapter)	1	5	2

Alterations

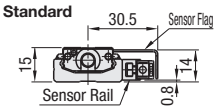
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(Code)
LX1502	–	B1	–	A1525	–	100	–	XW1

■ Set of Proximity Sensor (SUNX) – Set Part Specification

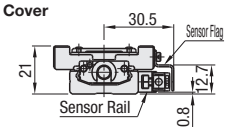
LX Part Number	Code (_ is Sensor Qty) *Up to 3 Sensors	Sensor Qty: GX-F8A (ON when near)	Sensor Qty: GX-F8B (ON when away)	Sensor Rail: Rail (1 pc)	Sensor Rail: Mounting Screw (Pitch +1 pc)	Sensor (*Qty per Sensor Included): Sensor Mounting Screw (1 pc)	Sensor Flag: Sensor Flag (1 pc)	Sensor Flag: Sensor Flag Mounting Screw
LX1502	XA_	_ pc (s)	—	Original	Cross Recessed Flat Head Screw M2-4 (2 pcs)	CSST3-8	Original	Pan Head Screw M2-3 (1 pc)
	XB_	—	_ pc (s)					
LX1502C	FA_	_ pc (s)	—					Hex Socket Head Cap Screw M2-4 (2 pcs)
	FB_	—	_ pc (s)					
LX1502	XW1	1 pc	1 pc					Pan Head Screw M2-3 (1 pc)
	XW2		2 pcs					
	XW3	2 pcs	1 pc					
LX1502C	FW1	1 pc	1 pc					Hex Socket Hea Cap Screw M2-4 (2 pcs)
	FW2		2 pcs					
	FW3	2 pcs	1 pc					

■ Proximity Sensor Installation Drawing

Standard



Cover

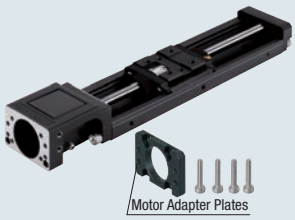


★ Single Axis Actuators LX20 Standard / Cover Type

For cost efficient model, see **P.275**.

Convenient Sensor Sets are also available. **P.176**

<Standard Type>



<Cover Type>

<Standard No Motor Bracket Type>

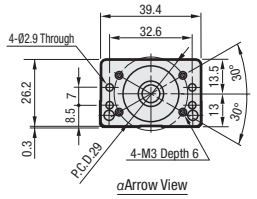
Specifications	
LX20	
Standard / Cover	
Screw Shaft Dia. (mm)	6
Lead (mm)	1, 5
Accuracy	High Grade / Precision Grade
Accessories	
[1]Motor Adapter Plate	
5052 Aluminum Alloy Black Anodize	
[2]Adapter Plate Screw 4 pcs 302HQ Stainless Steel	
ⓘ No accessory is included for No Motor Bracket Type.	

ⓘ For Materials Table, see website.

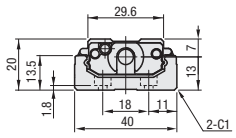
Part Number	Standard Grease		Low Particle Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Lead 1	LX2001 (C)	LX2001 (C) P	LX2001 (C) G	LX2001 (C) PG	LX2001 (C) -MX	LX2001 (C) P-MX
Lead 5	LX2005 (C)	LX2005 (C) P	LX2005 (C) G	LX2005 (C) PG	LX2005 (C) -MX	LX2005 (C) P-MX

ⓘ (C) is for Cover Type. ⓘ Low Particle Grease Information **P.169** ⓘ Lubrication Unit MX Information **P.8**

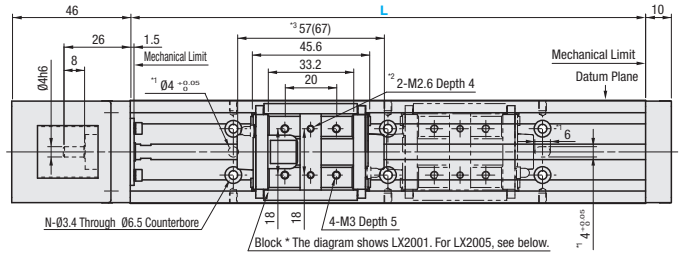
Standard Type



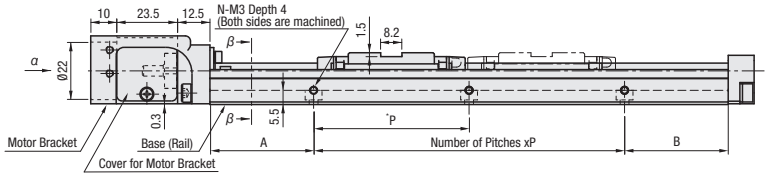
αArrow View



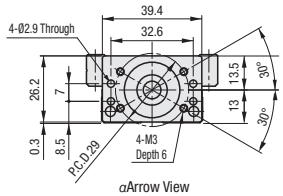
β-βCross Section View



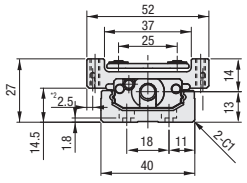
*Only for 80 mm base overall length, the sensor rail mounting hole pitch is 50mm. Base mounting hole pitches are all P=60.



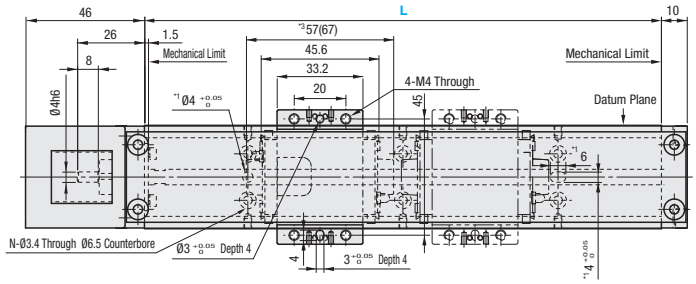
Cover Type



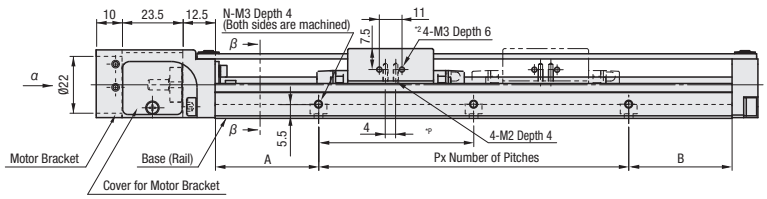
αArrow View



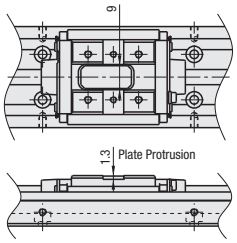
β-βCross Section View



*Only for 80 mm base overall length, the sensor rail mounting hole pitch is 50mm. Base mounting hole pitches are all P=60.



Block Details of LX2005 (Standard)



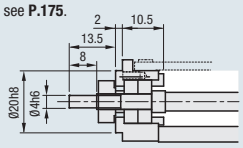
*1: Dowel Holes for Base Positioning
*2: Tapped Holes for Sensor Flag Mount
*3: Value in ( ) is for Lubrication Unit MX-equipped Type.

ⓘ Effective stroke is the value with 2.5mm margin on each side from mechanical limits, i.e., 5mm in total.
ⓘ For Double Block Type, effective strokes are the values when two blocks contact with each other.

ⓘ For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

No Motor Bracket Type

*For details of the mounting parts, see **P.175**.



★ Single Axis Actuators LX20 Standard / Cover Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

Part Number		Block Qty	Motor Adapter Plates	Base Length (L)	*Effective Stroke			Total Mass (kg)				Mounting Hole Dimensions				
								Standard		Cover						
High Grade	*Precision Grade				B1	B2	MX-Equipped (B1)	B1	B2	B1	B2	A	P	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX2001 (C) LX2005 (C) (Low Particle Grease) LX2001 (C) G LX2005 (C) G (Lubrication Unit MX-Equipped, Standard Grease) LX2001 (C) -MX LX2005 (C) -MX	(Standard Grease) LX2001 (C) P LX2005 (C) P (Low Particle Grease) LX2001 (C) PG LX2005 (C) PG (Lubrication Unit MX-Equipped, Standard Grease) LX2001 (C) P-MX LX2005 (C) P-MX	(1 pc) B1 *Lubrication Units MX-equipped types are available in B1 only (2 pcs) B2	(Servo Motor) A2025 A2028 A2038 A2040 E2040 (Stepping Motor) T2028 T2042 T2056.4 *(Without Attachment) N (Without Motor Bracket) F	80	16.5	—	—	0.40	—	0.51	—	10	60	10	1	4
				100	36.5	—	—	0.45	—	0.56	—	20	60	20	1	4
				150	86.5	—	76.5	0.58	—	0.69	—	15	60	15	2	6
				200	136.5	79.5	126.5	0.71	0.79	0.81	0.97	40	60	40	2	6
				250	186.5	129.5	176.5	0.83	0.92	0.94	1.10	35	60	35	3	8
				300	236.5	179.5	226.5	0.96	1.05	1.07	1.23	30	60	30	4	10

*Precision Certificate is enclosed with precision grade products.
*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.
*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
*(C) is for Cover Type.
See P.168 for Maximum Velocity.
See P.167 for Moment of Inertia.

MX-equipped types are +0.004kg.

■ Accuracy Standards

Accuracy Standards	High Grade	Precision Grade
Positioning (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism (mm)	0.025	0.01
Starting Torque (N·cm)	1.2	1.2

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2025	25 sq.	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCPW16 (see catalog)
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2028	28 sq.	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2038	38 sq.	Panasonic	MSMD-5A	50W	CPDT19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2040	40 sq.	SIEMENS	1FK7011-5	50W	CPDW19 (see catalog)
			1FK7015-5	100W	

Part Number	Flange Size	Manufacturer	Motor Part Number	Wattage	Recommended Coupling
A2040	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	SCPW16 CPDT19 (see catalog)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
		Keyence Corporation	MV-M05	50W	
			SV-M005	50W	

Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T2028 (NEMA11)	28 sq.	Oriental Motor	CSK22	2-phase	SCPW16
			CSK52	5-phase	
			ASC3*	∝Step	
T2042 (NEMA17)	42 sq.		UMK24*,PK24*	2-phase	
			CSK24	2-phase	
			RK54	5-phase	
			UPK54*,PK54*	5-phase	
			AS46,ASC46,AR46	∝Step	
T2056.4 (NEMA23)	56.4 sq.	AMP	HT23-601	Uni-phase	CPDW19
			STM23X-3RX	Integrated	

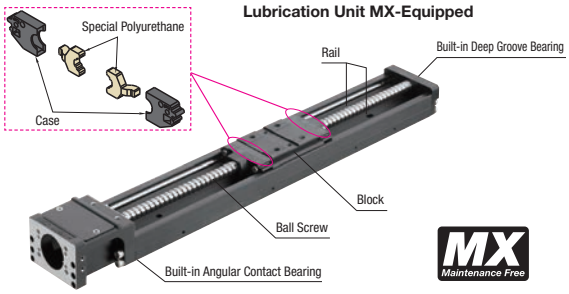
Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LX2001C	–	B1	–	A2025	–	200
LX2005-MX	–	B1	–	A2028	–	150

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX20_ _-B1-_	Servo Stepping (No Adapter)	1	6	1
LX20_ _-B2-_		2		
LX20_ _-B1-F	No Bracket	1		5
LX20_ _-B2-F		2		
LX20_ _C-B1-_	Servo Stepping (No Adapter)	1	6	1
LX20_ _C-B2-_		2		
LX20_ _C-B1-F	No Bracket	1		5
LX20_ _C-B2-F		2		

LX20_ _(C) Series sensor set can be specified as an alteration. Alteration Details P.176

Lubrication Unit MX-Equipped

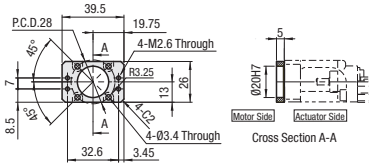


Provides long term maintenance-free operation. For details, P.8

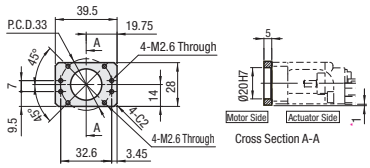
Motor Adapter Plates / Motor Adapter Centering Tools for Single Axis Actuators LX20

Note: The Motor Adapter protrudes beyond the rail at * marked area.

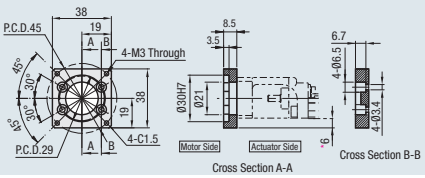
A2025
Servo Stepping 25 sq.



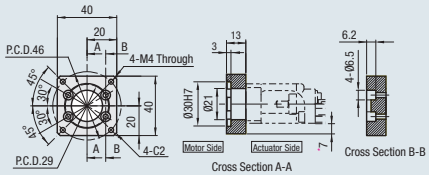
A2028
Servo Stepping 28 sq.



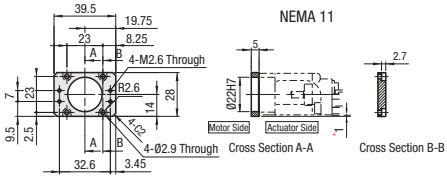
A2038
Servo Stepping 38 sq.



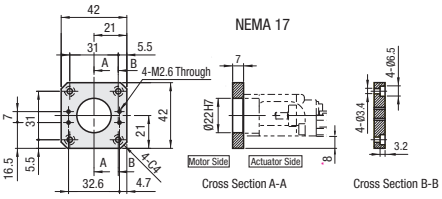
A2040
Servo Stepping 40 sq.



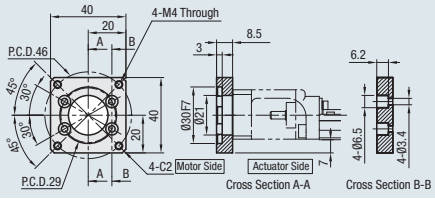
T2028
Stepping 28 sq.



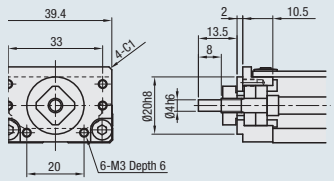
T2042
Stepping 42 sq.



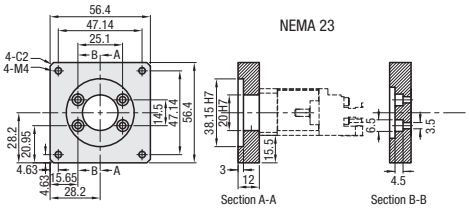
E2040
Servo Stepping 40 sq.



F
No Motor Bracket Type



T2056.4
Stepping 56.4 sq.



■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2025	25 sq.	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCPW16
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2028	28 sq.	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2038	38 sq.	Panasonic	MSMD-5A	50W	CPDT19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2040	40 sq.	SIEMENS	1FK7011-5	50W	CPDW19 (see catalog)
			1FK7015-5	100W	
A2040	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	SCPW16 CPDT19 (see catalog)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
		Keyence Corporation	MV-M05	50W	
			SV-M005	50W	

Product numbers and specifications of motors are subject to change. Please check the manufacture's information.

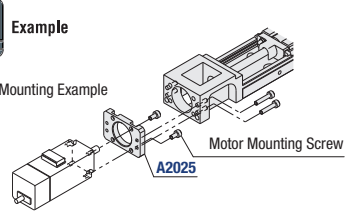
Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T2028 (NEMA11)	28 sq.	Oriental Motor	CSK22	2-phase	SCPW16
			CSK52	5-phase	
			ASC3*	∝Step	
T2042 (NEMA17)	42 sq.		UMK24*, PK24*	2-phase	
			CSK24	2-phase	
			RK54	5-phase	
			UPK54*, PK54*	5-phase	
			AS46, ASC46, AR46	∝Step	
T2056.4 (NEMA23)	56.4 sq.	AMP	HT23-601	Uni-phase	CPDW19
			STM23X-3RX	Integrated	

Example

■ Motor Mounting Example

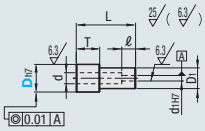


Secure included Motor Adapter to the motor.

Motor, coupling and motor mounting screws are not included.

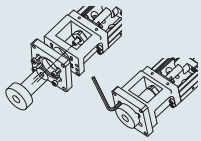
■ Motor Adapter Centering Tools

RoHS



5056 Aluminum Alloy
Clear Anodize

Please use for centering of Motor Adapter Plates.



Part Number	D	Applicable Adapter Plate	d	D_1	d_1	L	T	L
JIGLX20	20	A2028	8	15	4	43	17	10
	30	A2038/A2040	8	15	4	47	13	10

Order Example

Part Number	–	D
JIGLX20	–	20

Sensor Sets for Single Axis Actuators LX20 (Alterations)

■ Proximity Sensor (SUNX) – Set Part Specification

LX Part Number	Code (_ is Sensor Qty) *Up to 3 Sensors	Sensor Type/Qty		Sensor Rail		Sensor (*Qty per Sensor Included)		Sensor Flag	
		GX-F8A (ON when Near)	GX-F8B (ON when Away)	Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Mounting Screw (1 pc)	Fixing Nut (1 pc)	Sensor Flag (1 pc)	Sensor Flag Mounting Screw
LX20_ _	XA_	_ pc(s)	—	SENAT3_H	SCB3-6	CBSST3-8	LBNR3	Original	Flat Head Screw M2.6-4 (1 pc)
	XB_	—	_ pc(s)						
LX20_ _C	FA_	_ pc(s)	—						SCB3-6 (2 pcs)
	FB_	—	_ pc(s)						
LX20_ _	XW1	1 pc	1 pc						Flat Head Screw M2.6-4 (1 pc)
	XW2		2 pcs						
	XW3	2 pcs	1 pc						
LX20_ _C	FW1	1 pc	1 pc						SCB3-6 (2 pcs)
	FW2		2 pcs						
	FW3	2 pcs	1 pc						

■ Photo Sensor (SUNX) – Set Part Specification

LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX20_ _	PM-L24	SENAT3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB2-6 (2 pcs)	M2 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	SP_
LX20_ _C					LBNR3 (2 pcs)		M2 Spring Washer (2 pcs)		SCB3-6 (2 pcs)	MP_

■ Photo Sensor (Omron) – Set Part Specification

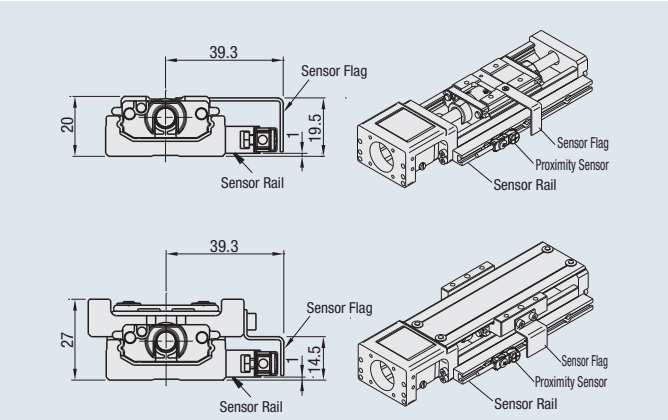
LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc.)	Sensor Flag Mounting Screw	
LX20_ _	EE-SX911-R 1M	SENAT3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB3-6 (2 pcs)	M3 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	OP_
LX20_ _C					LBNR3 (2 pcs)				SCB3-6 (2 pcs)	EP_

*Sensors are not sold separately.

Alterations

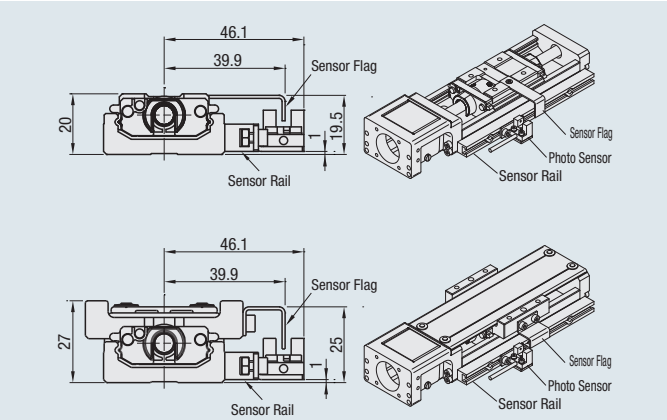
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(Code)
LX2001	–	B1	–	A2025	–	300	–	XW1
LX2005C	–	B1	–	A2028	–	200	–	EP3

■ Proximity Sensor Type Installation Drawings – SUNX



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Photo Sensor Type Installation Drawings – SUNX / Omron



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Cautions

– Sensor set is shipped with LX Actuator. Assembly required.

– Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

SUNX and Omron photo sensors are the same in outside dimensions.

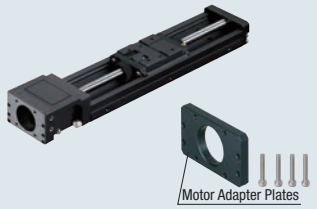
Please access each sensor manufacture's website for the specifications of sensors in use.

★ Single Axis Actuators LX26 Standard / Cover Type

For cost efficient model, see **P.273** and **P.275**.

Convenient Sensor Sets are also available. **P.184**

<Standard Type>



<Cover Type>

<Standard No Motor Bracket Type>

Specifications	
LX26	
Standard / Cover	
Screw Shaft Dia. (mm)	8
Lead (mm)	2, 5, 10
Accuracy	High Grade / Precision Grade
Accessories	
[1]Motor Adapter Plate	
5052 Aluminum Alloy	Black Anodize
[2]Adapter Plate Screw 4 pcs	302HQ Stainless Steel

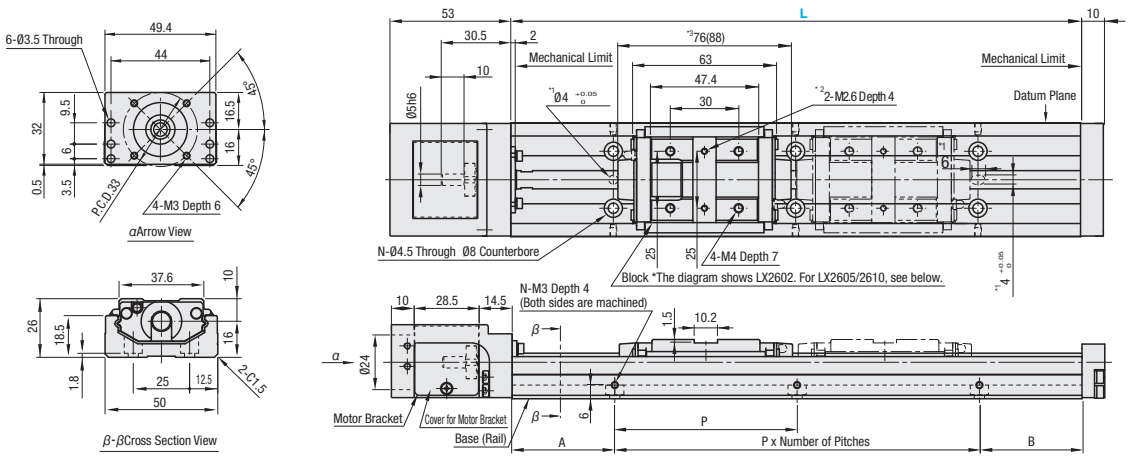
No accessory is included for No Motor Bracket Type.

For Materials Table, see website.

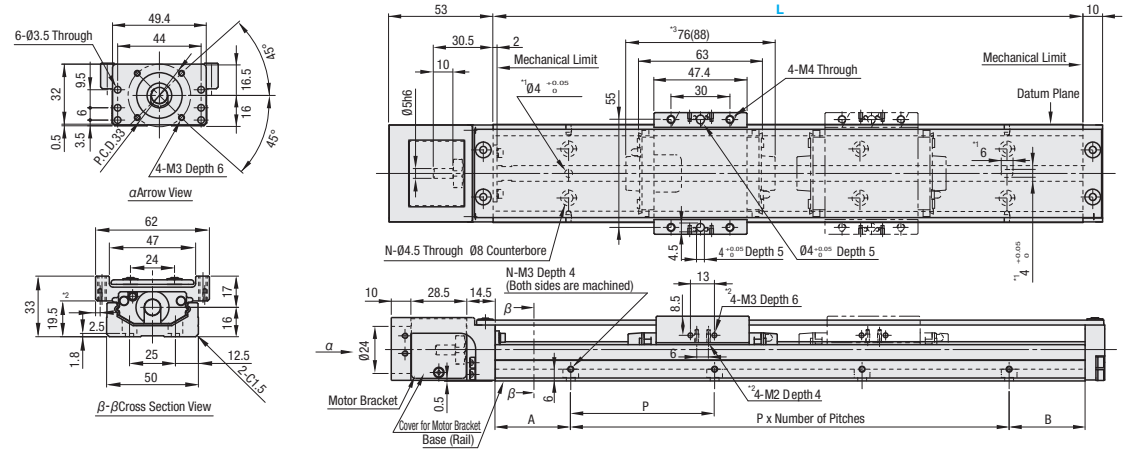
Part Number	Standard Grease		Low Particle Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Lead 2	LX2602 (C)	LX2602 (C) P	LX2602 (C) G	LX2602 (C) PG	LX2602 (C) -MX	LX2602 (C) P-MX
Lead 5	LX2605 (C)	LX2605 (C) P	LX2605 (C) G	LX2605 (C) PG	LX2605 (C) -MX	LX2605 (C) P-MX
Lead 10	LX2610 (C)	LX2610 (C) P	LX2610 (C) G	LX2610 (C) PG	LX2610 (C) -MX	LX2610 (C) P-MX

(C) is for Cover Type. Low Particle Grease Information **P.169** Lubrication Unit MX Information **P.8**

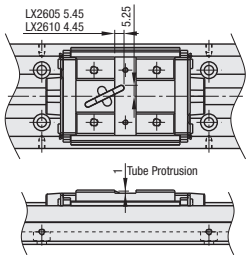
Standard Type



Cover Type



Block Details of
LX2605/2610 Standard



*1: Dowel Holes for Base Positioning
*2: Tapped Holes for Sensor Flag Mount
*3: Value in ( ) is for Lubrication Unit MX-equipped Type.

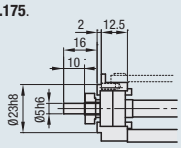
Effective stroke is the value with 2.5mm margin on each side from mechanical limits, i.e., 5mm in total.

For Double Block Type, effective strokes are the values when two blocks contact with each other.

For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

No Motor Bracket Type

*For details of the mounting parts, see **P.175**.



★ Single Axis Actuators LX26 Standard / Cover Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

Part Number		Block Qty	Motor Adapter Plates	Base Length (L)	*Effective Stroke			Total Mass (kg)				Mounting Hole Dimensions				
								Standard		Cover						
High Grade	*Precision Grade				B1	B2	MX-Equipped (B1)	B1	B2	B1	B2	A	P	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX2602 (C) LX2605 (C) LX2610 (C)	(Standard Grease) LX2602 (C) P LX2605 (C) P LX2610 (C) P	(1 pc) B1 *Lubrication Units MX-equipped types and Lead 10 are available in B1 only (2 pcs) B2	(Servo Motor) A2625 A2628 A2638 A2640 E2640 (Stepping Motor) T2628 T2642 T2656.4 *(Without Attachment) N (Without Motor Bracket) F	100	17	—	—	0.87	—	1.07	—	10	80	10	1	4
(Low Particle Grease) LX2602 (C) G LX2605 (C) G LX2610 (C) G	(Low Particle Grease) LX2602 (C) PG LX2605 (C) PG LX2610 (C) PG			150	67	—	—	0.95	—	1.15	—	35	80	35	1	4
(Lubrication Unit MX-Equipped, Standard Grease) LX2602 (C)-MXLX2605 (C)-MXLX2610 (C) -MX	(Lubrication Unit MX-Equipped, Standard Grease) LX2602 (C) P-MX LX2605 (C) P-MX LX2610 (C) P-MX			200	117	—	105	1.16	—	1.36	—	20	80	20	2	6
				250	167	91	155	1.37	1.57	1.57	1.89	45	80	45	2	6
				300	217	141	205	1.58	1.78	1.78	2.10	30	80	30	3	8
				350	267	191	255	1.79	1.99	1.99	2.31	15	80	15	4	10
				400	317	241	305	2.00	2.20	2.20	2.52	40	80	40	4	10

*Precision Certificate is enclosed with precision grade products.
*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.
*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
*(C) is for Cover Type.
See P.168 for Maximum Velocity.
See P.167 for Moment of Inertia.

MX-equipped types are +0.007kg.

■ Accuracy Standards

Accuracy Standards	High Grade	Precision Grade
Positioning (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism (mm)	0.025	0.01
Starting Torque (N·cm)	1.2	1.2

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2625	25 sq.	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 SCPW21 CPDW19 (see catalog)
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2628	28 sq.	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2638	38 sq.	Panasonic	MSMD-5A	50W	SCXW21 SCPW21 CPDW19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2640	40 sq.	SIEMENS	1FK7011-5	50W	CPDW19 (see catalog)
			1FK7015-5	100W	

Part Number	Flange Size	Manufacturer	Motor Part Number	Wattage	Recommended Coupling
A2640	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	SCXW21 SCPW21 CPDW19 (see catalog)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
		Keyence Corporation	MV-M05	50W	
			SV-M005	50W	

Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
Shaft insert depth in coupling will be 0.5mm shorter on each side when used with Siemens motor.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T2628 (NEMA11)	28 sq.	Oriental Motor	CSK22	2-phase	SCXW21 SCPW21 CPDW19
			CSK52	5-phase	
			ASC3*	∝Step	
T2642 (NEMA17)	42 sq.		UMK24*,PK24*	2-phase	
			CSK24	2-phase	
			RK54	5-phase	
			UPK54*,PK54*	5-phase	
			AS46,ASC46,AR46	∝Step	
T2656.4 (NEMA23)	56.4 sq.	AMP	HT23-601	Uni-phase	CPDW19
			STM23X-3RX	Integrated	

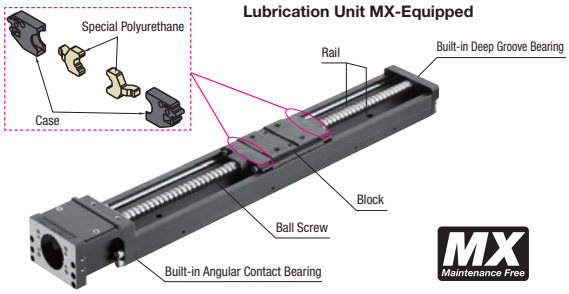
Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LX2602C	–	B1	–	A2640	–	300
LX2605-MX	–	B1	–	A2638	–	200

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX26_ _-B1-_	Servo	1	8	2 5 10
LX26_ _-B2-_	Stepping (No Adapter)	2		
LX26_ _-B1-F	No Bracket	1		
LX26_ _-B2-F		2		
LX26_ _C-B1-_	Servo	1	8	2 5 10
LX26_ _C-B2-_	Stepping (No Adapter)	2		
LX26_ _C-B1-F	No Bracket	1		
LX26_ _C-B2-F		2		

LX26_ _(C) Series sensor set can be specified as an alteration. Alteration Details P.176

Lubrication Unit MX-Equipped



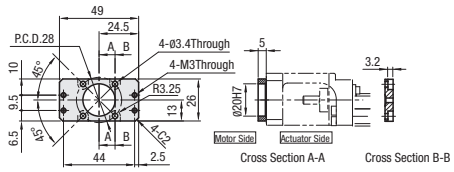
MX Maintenance Free

Provides long term maintenance-free operation. For details, P.8

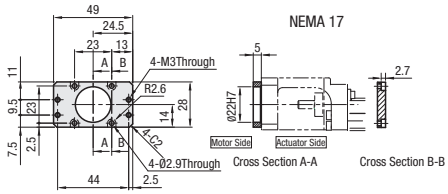
Motor Adapter Plates / Motor Adapter Centering Tools for LX26 Actuator

Note: The Motor Adapter protrudes beyond the rail at * marked area.

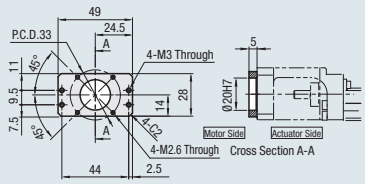
A2625
Servo Stepping 25 sq.



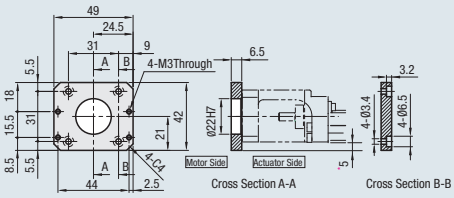
T2628
Servo Stepping 28 sq.



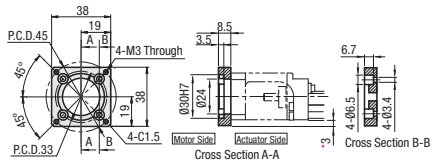
A2628
Servo Stepping 28 sq.



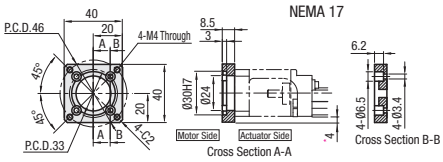
T2642
Servo Stepping 42 sq.



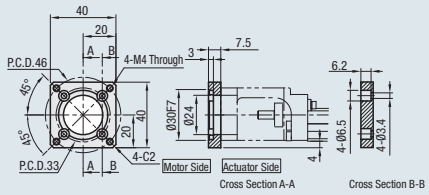
A2638
Stepping 38 sq.



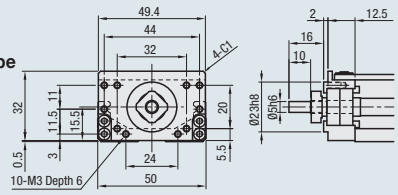
A2640
Stepping 40 sq.



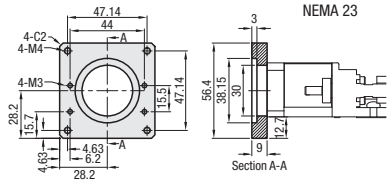
E2640
Servo Stepping 38 sq.



F
No Motor Bracket Type



T2656.4
Stepping 56.4 sq.



■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2625	25 sq.	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 SCPW21 CPDW19
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2628	28 sq.	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2638	38 sq.	Panasonic	MSMD-5A	50W	SCXW21 SCPW21 CPDW19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2640	40 sq.	SIEMENS	1FK7011-5	50W	CPDW19 (see catalog)
			1FK7015-5	100W	
A2640	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	SCXW21 SCPW21 CPDW19 (see catalog)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
		Keyence Corporation	MV-M05	50W	
			SV-M005	50W	

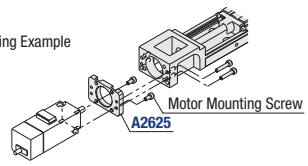
- Product numbers and specifications of motors are subject to change. Please check the manufacture's information.
- Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
- Shaft insert depth in coupling will be 0.5mm shorter on each side when used with Siemens motor.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T2628 (NEMA11)	28 sq.	Oriental Motor	CSK22	2-phase	SXW21 SCPW21 CPDW19
			CSK52	5-phase	
			ASC3*	∝Step	
T2642 (NEMA17)	42 sq.		UMK24*, PK24*	2-phase	
			CSK24	2-phase	
			RK54	5-phase	
			UPK54*, PK54*	5-phase	
			AS46, ASC46, AR46	∝Step	
T2656.4 (NEMA23)	56.4 sq.	AMP	HT23-601	Uni-phase	CPDW19
			STM23X-3RX	Integrated	

Example

■ Motor Mounting Example

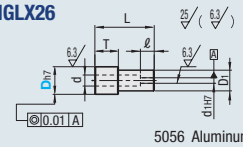


Secure included Motor Adapter to the motor.
Motor, coupling and motor mounting screws are not included.

■ Motor Adapter Centering Tools

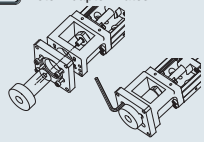
RoHS

JIGLX26



5056 Aluminum Alloy
Clear Anodize

Please use for centering of Motor Adapter Plates.



Part Number	D	Applicable Adapter Plate	d	D_1	d_1	L	T	L
JIGLX26	20	A2628	8	15	5	47.5	17	12
	30	A2638/A2640	8	15	5	49.5	13	11

Order Example

Part Number	–	D
JIGLX26	–	20

Sensor Sets for Single Axis Actuators LX26 (Alterations)

■ Proximity Sensor (SUNX) – Set Part Specification

LX Part Number	Code (_ is Sensor Qty) *Up to 3 Sensors	Sensor Type/Qty		Sensor Rail		Sensor (*Qty per Sensor Included)		Sensor Flag	
		GX-F8A (ON when Near)	GX-F8B (ON when Away)	Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Mounting Screw (1 pc)	Fixing Nut (1 pc)	Sensor Flag (1 pc)	Sensor Flag Mounting Screw
LX26_ _	XA_	_ pc(s)	—	SENAT3_H	SCB3-6	CBSST3-8	LBNR3	Original	Flat Head Screw M2.6-4 (1 pc)
	XB_	—	_ pc(s)						
LX26_ _C	FA_	_ pc(s)	—						SCB3-6 (2 pcs)
	FB_	—	_ pc(s)						
LX26_ _	XW1	1 pc	1 pc						Flat Head Screw M2.6-4 (1 pc)
	XW2		2 pcs						
	XW3	2 pcs	1 pc						
LX26_ _C	FW1	1 pc	1 pc						SCB3-6 (2 pcs)
	FW2		2 pcs						
	FW3	2 pcs	1 pc						

■ Photo Sensor (SUNX) – Set Part Specification

LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX26_ _	PM-L24	SENAT3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB2-6 (2 pcs)	M2 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	SP_
LX26_ _C					LBNR3 (2 pcs)		M2 Spring Washer (2 pcs)		SCB3-6 (2 pcs)	MP_

■ Photo Sensor (Omron) – Set Part Specification

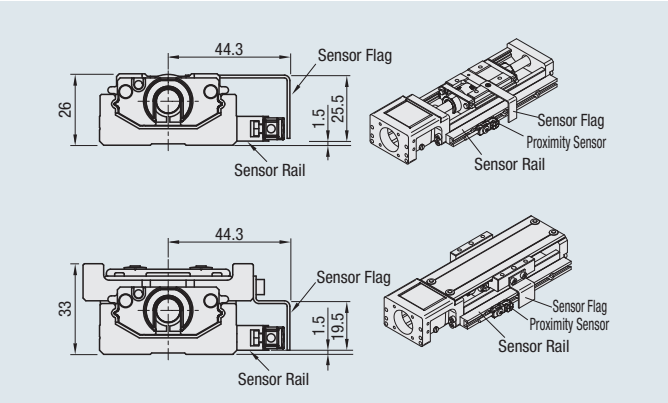
LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX26_ _	EE-SX911-R 1M	SENAT3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB3-6 (2 pcs)	M3 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	OP_
LX26_ _C					LBNR3 (2 pcs)				SCB3-6 (2 pcs)	EP_

*Sensors are not sold separately.

Alterations

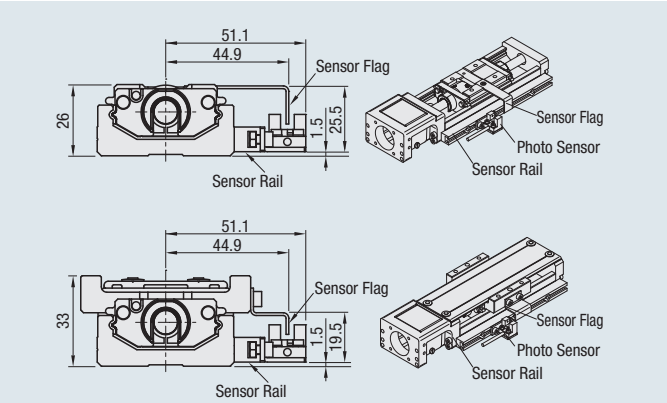
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(Code)
LX2602	–	B1	–	A2628	–	400	–	XW1
LX2605C	–	B1	–	A2638	–	200	–	MP2

■ Proximity Sensor Type Installation Drawings – SUNX



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Photo Sensor Type Installation Drawings – SUNX / Omron



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

SUNX and Omron photo sensors are the same in outside dimensions.
Please access each sensor manufacture's website for the specifications of sensors in use.

■ Cautions

– Sensor set is shipped with LX Actuator. Assembly required.

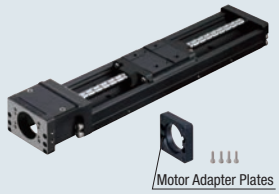
– Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

★ BEST SELLER

★ Single Axis Actuators LX30 Standard / Cover Type

Convenient Sensor Sets are also available. **P.184**

<Standard Long Block Type>



<Long Blocks with Cover>

<Standard No Motor Bracket Type>

Specifications	
LX30	
Standard / Cover	
Screw Shaft Dia. (mm)	10
Lead (mm)	5, 10
Accuracy	High Grade / Precision Grade

Accessories

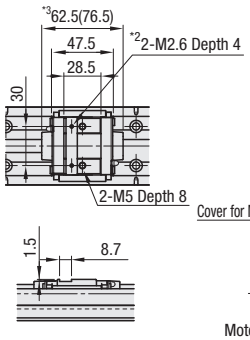
[1]Motor Adapter Plate
5052 Aluminum Alloy Black Anodize
[2]Adapter Plate Screw 4 pcs 302HQ Stainless Steel
No accessory is included for No Motor Bracket Type.

For Materials Table, see website.

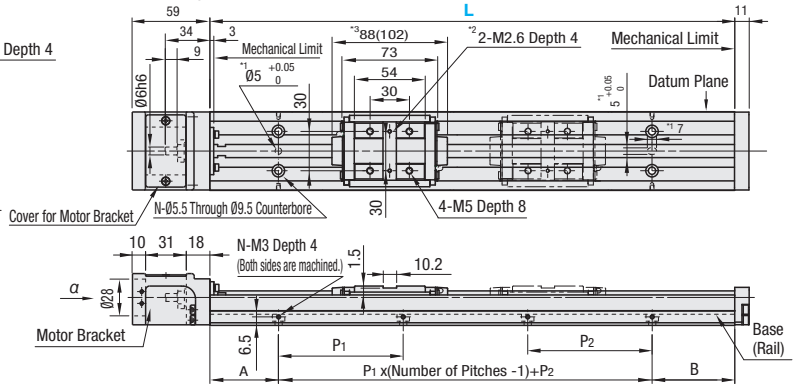
Part Number	Standard Grease		Low Particle Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Lead 5	LX3005 (C)	LX3005 (C) P	LX3005 (C) G	LX3005 (C) PG	LX3005 (C) -MX	LX3005 (C) P-MX
Lead 10	LX3010 (C)	LX3010 (C) P	LX3010 (C) G	LX3010 (C) PG	LX3010 (C) -MX	LX3010 (C) P-MX

(C) is for Cover Type. Low Particle Grease Information **P.169** Lubrication Unit MX Information **P.8**

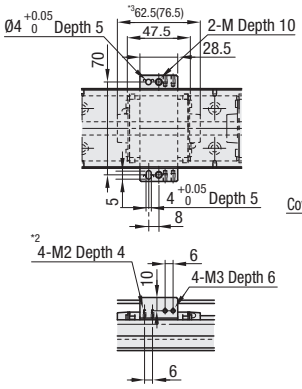
Standard Short Block Type



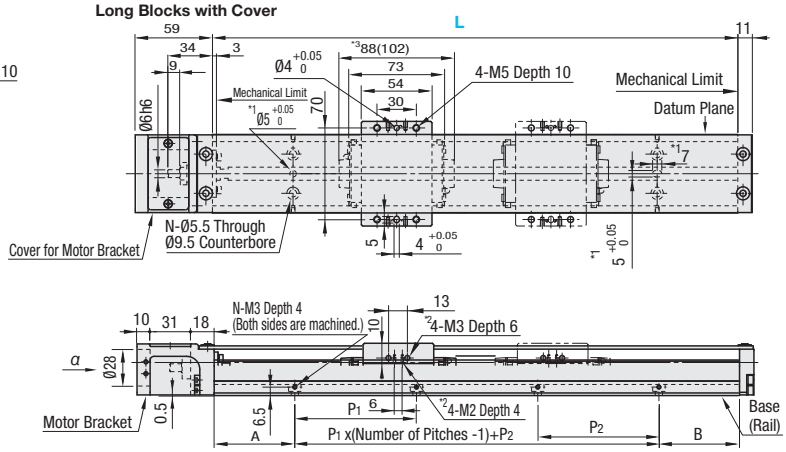
Standard Long Block Type



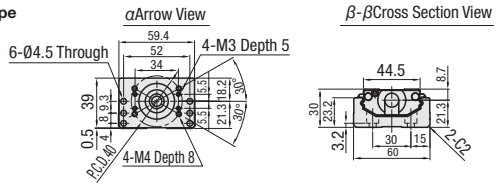
Short Blocks with Cover



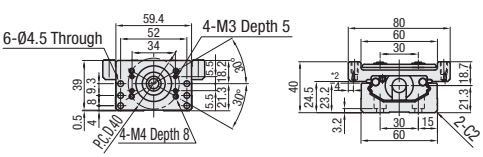
Long Blocks with Cover



Standard Type



Cover Type

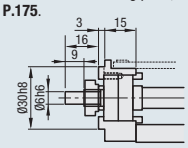


*1: Dowel Holes for Base Positioning
*2: Tapped Holes for Sensor Flag Mount
*3: Value in ( ) is for Lubrication Unit MX-equipped Type.

Effective stroke is the value with 2.5mm margin on each side from mechanical limits, i.e., 5mm in total.
For Double Block Type, double-dashed lined blocks are not connected with the ball screw.
For Double Block Type, effective strokes are the values when two blocks contact with each other.

No Motor Bracket Type

*For details of the mounting parts, see **P.175**.



★ Single Axis Actuators LX30 Standard / Cover Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

Part Number: High Grade	Part Number: *Precision Grade	Block Qty	Motor Adapter Plates	Base Length (L)	Mounting Hole Dimensions: A	P_1	P_2	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX3005 (C) LX3010 (C) (Low Particle Grease) LX3005 (C) G LX3010 (C) G (Lubrication Unit MX-Equipped, Standard Grease) LX3005 (C) -MX LX3010 (C) -MX	(Standard Grease) LX3005 (C) P LX3010 (C) P (Low Particle Grease) LX3005 (C) PG LX3010 (C) PG (Lubrication Unit MX-Equipped, Standard Grease) LX3005 (C) P-MX LX3010 (C) P-MX	Long Blocks (1 pc) B1 (2 pcs) B2 EF or B2, L≥300 Short Blocks (1 pc) S1 (2 pcs) S2 *Lubrication Units MX-equipped types are available in B1/S1 only	(Servo) A3038 A3040 E3040 (Stepping) T3042 T3056.4 T3060 *(No Adapter Plate) N (Without Motor Bracket) F	125	12.5	—	100	12.5	1	4
				150	25	—	100	25	1	4
				200	50	—	100	50	1	4
				250	50	100	50	50	2	6
				300	50	100	100	50	2	6
				350	50	100	50	50	3	8
				400	50	100	100	50	3	8
				450	50	100	50	50	4	10
				500	50	100	100	50	4	10
				550	50	100	50	50	5	12
				600	50	100	100	50	5	12

*Precision Certificate is enclosed with precision grade products. *(C) is for Cover Type.
*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.

MX-equipped types are +0.011kg.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A3038	38 sq.	Panasonic	MSMD-5A	50W	SCXW21 SCPW21 CPDW19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A3040	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05/SV-M005	50W	
			MV-M10/SV-M010	100W	
E3040	40 sq.	ESIEMENS	1FK7011-5	50W	CPDW25 (see catalog)
			1FK7015-5	100W	

Shaft length in coupling will be 0.5mm shorter on each side when used with Siemens motor.

■ Accuracy Standards

Accuracy Standards	L=400 or Less: High Grade	L=400 or Less: Precision Grade	L=400 or More: High Grade	L=400 or More: Precision Grade
Positioning (mm)	0.06	0.02	0.1	0.025
Backlash (mm)	0.02	0.003	0.02	0.003
Positioning Repeatability (mm)	±0.005	±0.003	±0.005	±0.003
Running Parallelism(mm)	0.025	0.01	0.035	0.015
Starting Torque (N·cm)	4			

See P.168 for Maximum Velocity.
See P.167 for Moment of Inertia.

■ Effective Stroke / Total Mass

Base Length (L)	*Effective Stroke: MX-unequipped B1	B2	S1	S2	MX-equipped B1	S1	Total Mass (kg): Standard B1	B2	S1	S2	Cover B1	B2	S1	S2
125	29	—	54.5	—	—	—	1.30	—	1.18	—	1.75	—	1.50	—
150	54	—	79.5	17	—	65.5	1.47	—	1.35	1.53	1.92	—	1.67	1.98
200	104	—	129.5	67	90	115.5	1.81	—	1.68	1.86	2.25	—	2	2.32
250	154	—	179.5	117	140	165.5	2.14	—	2.02	2.2	2.59	—	2.34	2.66
300	204	116	229.5	167	190	215.5	2.48	2.79	2.35	2.53	2.92	3.49	2.67	2.99
350	254	166	279.5	217	240	265.5	2.81	3.12	2.69	2.87	3.26	3.83	3.01	3.33
400	304	216	329.5	267	290	315.5	3.15	3.46	3.02	3.21	3.6	4.16	3.35	3.66
450	354	266	379.5	317	340	365.5	3.49	3.79	3.36	3.54	3.93	4.5	3.68	4
500	404	316	429.5	367	390	415.5	3.82	4.13	3.7	3.88	4.27	4.83	4.02	4.33
550	454	366	479.5	417	440	465.5	4.16	4.47	4.03	4.21	4.6	5.17	4.35	4.67
600	504	416	529.5	467	490	515.5	4.49	4.8	4.37	4.55	4.94	5.51	4.69	5.01

*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T3042 (NEMA17)	42 sq.	Oriental Motor	UMK24* / PK24*	2-phase	SCXW21 SCPW21 CPDW19 (see catalog)
			UPK54* / PK54*	5-phase	
			AS46, ASC46, AR46	∝Step	
T3056.4 (NEMA23)	56.4 sq.		UMK26* / PK26*	2-phase	
T3060	60 sq.		UPK56* / PK56*	5-phase	
			AS6*, ASC66, AR66	∝Step	

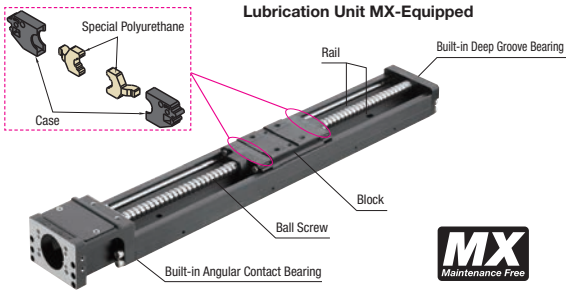
Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LX3010C	–	B1	–	A3040	–	600
LX3010-MX	–	B1	–	A3040	–	600

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX30_ _-B1-_	Servo	1	8	2 5 10
LX30_ _-B2-_	Stepping (No Adapter)	2		
LX30_ _-B1-F	No Bracket	1		
LX30_ _-B2-F		2		
LX30_ _C-B1-_	Servo	1	10	5 10
LX30_ _C-B2-_	Stepping (No Adapter)	2		
LX30_ _C-B1-F	No Bracket	1		
LX30_ _C-B2-F		2		

LX3 0_ _(C) Series sensor set can be specified as an alteration. Alteration Details P.184

Lubrication Unit MX-Equipped

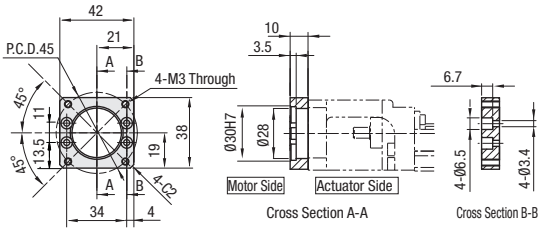


Provides long term maintenance-free operation. For details, P.8

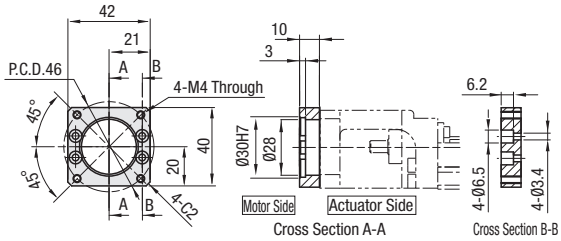
Motor Adapter Plates for Single Axis Actuator LX30 / Motor Adapter Centering Tools

Note: Note that the Motor Adapter protrudes beyond the rail at * marked area.

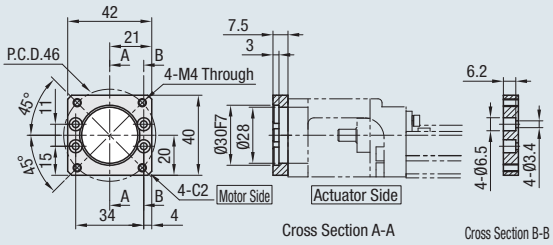
A3038
Servo Stepping 38 sq.



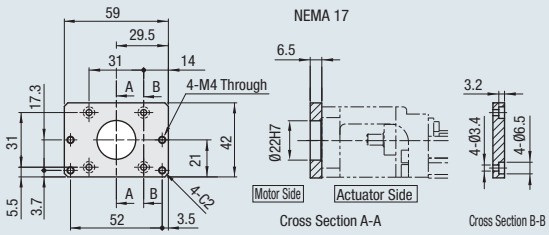
A3040
Servo Stepping 40 sq.



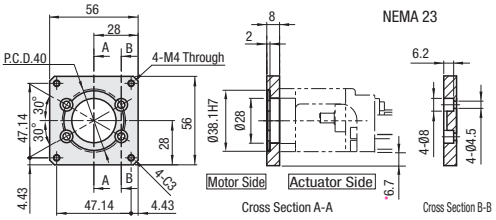
E3040
Servo Stepping 40 sq.



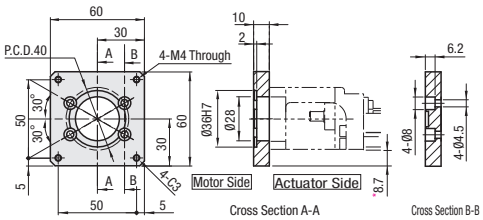
T3042
Stepping 42 sq.



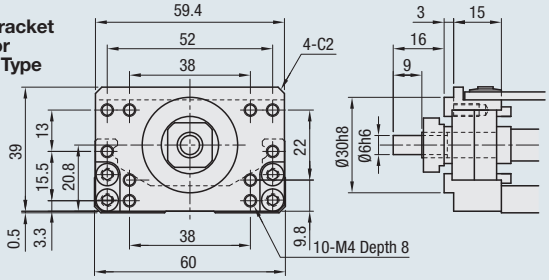
T3056.4
Stepping 56.4 sq.



T3060
Stepping 60 sq.



F
Motor Bracket No Motor Bracket Type



■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T3042 (NEMA17)	42 sq.	Oriental Motor	UMK24* / PK24*	2-phase	SXW21 SCPW21 CPDW19 (see catalog)
			UPK54* / PK54*	5-phase	
			ASC3*	∝Step	
T3056.4 (NEMA23)	56.4 sq.		AS46, ASC46, AR46	2-phase	
T3060	60 sq.		UPK56* / PK56*	5-phase	
			AS6*, ASC66, AR66	∝Step	

■ Servo Motor Application Table

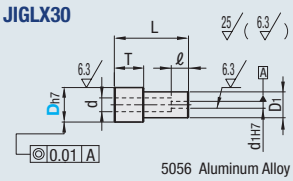
Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A3038	38 sq.	Panasonic	MSMD-5A	50W	SXW21 SCPW21 CPDW19 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A3040	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05/SV-M005	50W	
			MV-M10/SV-M010	100W	
E3040	40 sq.	ESIEMENS	1FK7011-5	50W	CPDW19 (see catalog)
			1FK7015-5	100W	

- Product numbers and specifications of motors are subject to change. Please check the manufacture's information.
- Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
- Shaft insert depth in coupling will be 0.5mm shorter on each side when used with Siemens motor.

■ Motor Adapter Centering Tools

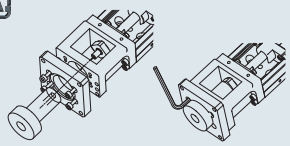
RoHS

JIGLX30

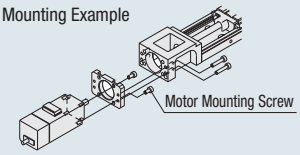


5056 Aluminum Alloy
Clear Anodize

ex Please use for centering of Motor Adapter Plates.



■ Motor Mounting Example



Secure included Motor Adapter to the motor.
Motor, coupling and motor mounting screws are not included.

Part Number	D	Applicable Adapter Plate	d	D_1	d_1	L	T	L
JIGLX30	30	A3038 / A3040	10	20	6	52.5	13	10
	38.1	T3056.4	10	20	6	51	12	10
	36	T3060	10	20	6	53	12	10

Ordering Example

Part Number	–	D
JIGLX30	–	30

Sensor Sets for Single Axis Actuators LX30 (Alterations)

■ Proximity Sensor (SUNX) – Set Part Specification

LX Part Number	Code (_ is Sensor Qty) *Up to 3 Sensors	Sensor Type/Qty		Sensor Rail		Sensor (*Qty per Sensor Included)		Sensor Flag	
		GX-F8A (ON when Near)	GX-F8B (ON when Away)	Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Mounting Screw (1 pc)	Fixing Nut (1 pc)	Sensor Flag (1 pc)	Sensor Flag Mounting Screw
LX30_ _-B_	XA_	_ pc (s)	—	SENC3_H	SCB3-6	CBSST3-8	LBNR3	Original	Flat Head Screw M2.6-4 (1 pc)
	XB_	—	_ pc (s)						
LX30_ _-S_	XAS_	_ pc (s)	—						
	XBS_	—	_ pc (s)						
LX30_ _C-B_	FA_	_ pc (s)	—	SENAT3_H					SCB3-6 (2 pcs)
	FB_	—	_ pc (s)						
LX30_ _C-S_	FAS_	_ pc (s)	—						
	FBS_	—	_ pc (s)						
LX30_ _-B_	XW1	1 pc	1 pc	SENC3_H					Flat Head Screw M2.6-4 (1 pc)
	XW2		2 pcs						
	XW3	2 pcs	1 pc						
LX30_ _-S_	XWS1	1 pc	1 pc						
	XWS2		2 pcs						
	XWS3	2 pcs	1 pc						
LX30_ _C-B_	FW1	1 pc	1 pc	SENAT3_H					SCB3-6 (2 pcs)
	FW2		2 pcs						
	FW3	2 pcs	1 pc						
LX30_ _C-S_	FWS1	1 pc	1 pc						
	FWS2		2 pcs						
	FWS3	2 pcs	1 pc						

■ Photo Sensor (SUNX) – Set Part Specification

LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX30_ _-B_	PM-L24	SENC3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB2-6 (2 pcs)	M2 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	SP_
LX30_ _-S_										SPS_
LX30_ _C-B_		SENAT3_H			LBNR3 (2 pcs)		M2 Spring Washer (2 pcs)		SCB3-6 (2 pcs)	MP_
LX30_ _C-S_										MPS_

When L=250, 350, 450 or 550, mounting orientations are as the drawing below.

■ Photo Sensor (Omron) – Set Part Specification

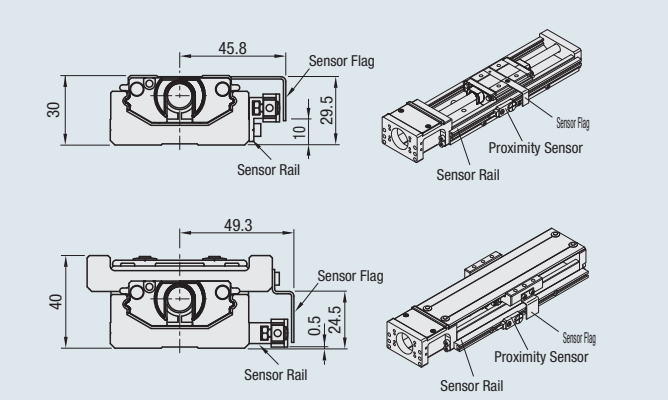
LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX30_ _-B_	EE-SX911-R 1M	SENC3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB3-6 (2 pcs)	M3 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	OP_
LX30_ _-S_										OPS_
LX30_ _C-B_		SENAT3_H			LBNR3 (2 pcs)				SCB3-6 (2 pcs)	EP_
LX30_ _C-S_										EPS_

When L=250, 350, 450 or 550, mounting orientations are as the drawing below. *Sensors are not sold separately.

Alterations

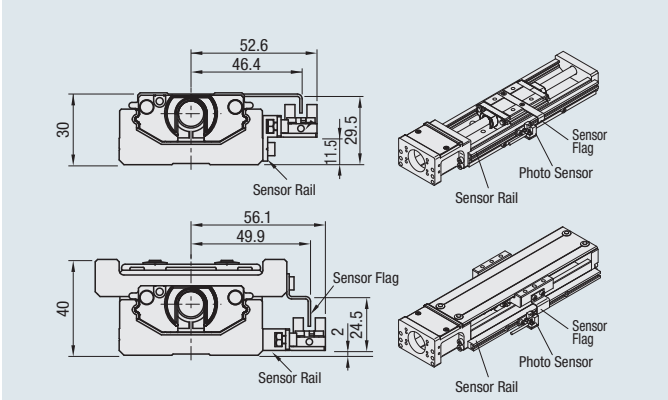
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(Code)
LX3010	–	B1	–	A3040	–	600	–	XW1
LX3005	–	B1	–	A3040	–	600	–	SPS3

■ Proximity Sensor Type Installation Drawings – SUNX



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Photo Sensor Type Installation Drawings – SUNX / Omron



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Cautions

– Sensor set is shipped with LX Actuator. Assembly required.

– Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

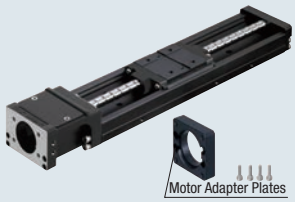
SUNX and Omron photo sensors are the same in outside dimensions.

Please access each sensor manufacture's website for the specifications of sensors in use.

Single Axis Actuators LX45 Standard / Cover Type

Convenient Sensor Sets are also available. **P.188**

<Standard Long Block Type>



<Long Blocks with Cover>

<No Motor Bracket Type>

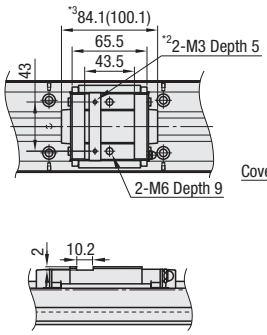
Specifications	
LX45	
Standard / Cover	
Screw Shaft Dia. (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade / Precision Grade
Accessories	
[1]Motor Adapter Plate	
5052 Aluminum Alloy Black Anodize	
[2]Adapter Plate Screw 4 pcs 302HQ Stainless Steel	
ⓘ No accessory is included for No Motor Bracket Type.	

ⓘ For Materials Table, see website.

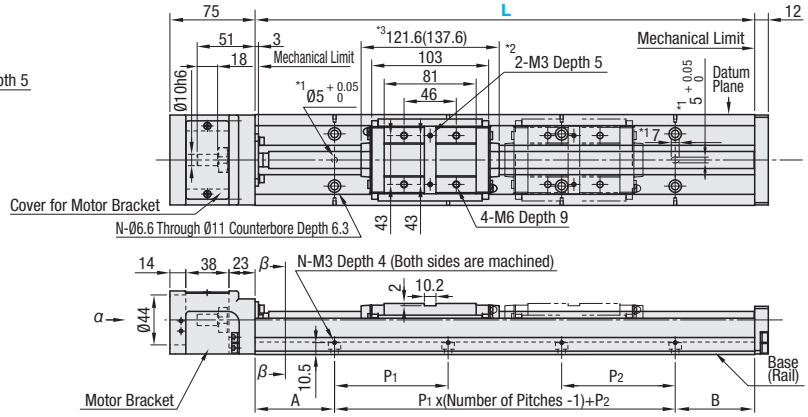
Part Number	Standard Grease		Low Particle Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Lead 10	LX4510 (C)	LX4510 (C) P	LX4510 (C) G	LX4510 (C) PG	LX4510 (C) -MX	LX4510 (C) P-MX
Lead 20	LX4520 (C)	LX4520 (C) P	LX4520 (C) G	LX4520 (C) PG	LX4520 (C) -MX	LX4520 (C) P-MX

ⓘ (C) is for Cover Type. ⓘ Low Particle Grease Information **P.169** ⓘ Lubrication Unit MX Information **P.8**

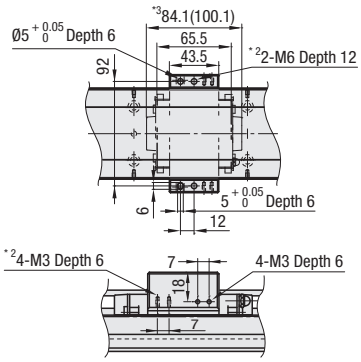
Standard Short Block Type



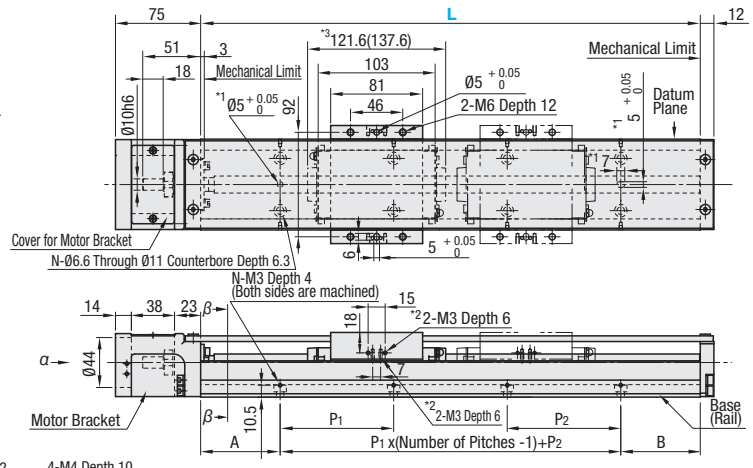
Standard Long Block Type



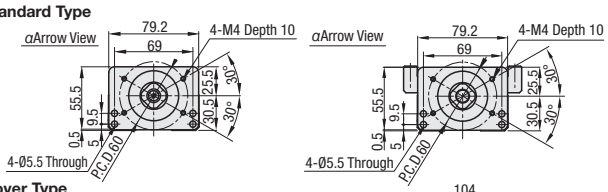
Short Blocks with Cover



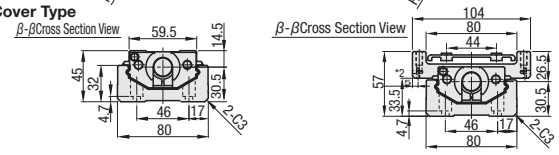
Long Blocks with Cover



Standard Type



Cover Type

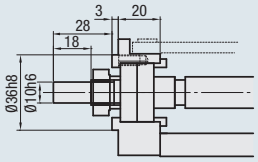


*1: Dowel Holes for Base Positioning
*2: Tapped Holes for Sensor Flag Mount
*3: Value in ( ) is for Lubrication Unit MX-equipped Type.

ⓘ Effective stroke is the value with 2.5mm margin on each side from mechanical limits, i.e., 5mm in total.
ⓘ For Double Block Type, double-dashed lined blocks are not connected with the ball screw.
ⓘ For Double Block Type, effective strokes are the values when two blocks contact with each other.

No Motor Bracket Type

*For details of the mounting parts, see **P.175**.



Single Axis Actuators LX45 Standard / Cover Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

Part Number: High Grade	Part Number: *Precision Grade	Block Qty	Motor Adapter Plates	Base Length (L)	Mounting Hole Dimensions: A	P_1	P_2	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX4510 (C) LX4520 (C) (Low Particle Grease) LX4510 (C) G LX4520 (C) G (Lubrication Unit MX-Equipped, Standard Grease) LX4510 (C) -MX LX4520 (C) -MX	(Standard Grease) LX4510 (C) P LX4520 (C) P (Low Particle Grease) LX4510 (C) PG LX4520 (C) PG (Lubrication Unit MX-Equipped, Standard Grease) LX4510 (C) P-MX LX4520 (C) P-MX	Long Blocks (1 pc) B1 (2 pcs) B2 Short Blocks (1 pc) S1 (2 pcs) S2 *Lubrication Units MX-equipped types are available in B1/S1 only	(Servo) A4538 A4540 MA4560 A4560 E4540 E4555 (Stepping) T4560 T4556.4 T4585 *(No Adapter Plate) N (Without Motor Bracket) F	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
				440	70	100	100	70	3	8
				490	70	100	50	70	4	10
				540	70	100	100	70	4	10
				590	70	100	50	70	5	12

*Precision Certificate is enclosed with precision grade products. *(C) is for Cover Type.
*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.

MX-equipped types are +0.011kg.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A4538	38 sq.	Panasonic	MSMD-5A	50W	SCXW28 SCPW28 CPDW25 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A4540	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05/SV-M005	50W	
			MV-M10/SV-M010	100W	
MA4560	60 sq.	Panasonic	MQMA-01	100W	
			MQMA-02	200W	
			MQMA-03	300W	
E4540	40 sq.	SIEMENS	1FK7011-5	50W	SCXW34 SCPW34 CPDW32 (see catalog)
			1FK7015-5	100W	
E4555	55 sq.	SIEMENS	1FK7022-5	380W	

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A4560	60 sq.	Yasukawa Electric Corporation	SGMJV-02	200W	SCXW34 SCPW34 CPDW32 (see catalog)
			SGMJV-04	400W	
		Mitsubishi Electric Corporation	HC-MFS 23	200W	
			HC-KFS 23		
			HC-MFS 43	400W	
			HC-KFS 43		
		Sanyo Denki Co., Ltd.	Q1AA06020D	200W	
			Q1AA06040D	400W	
		Omron Corporation	R88M-W20030	200W	
			R88M-W40030	400W	
		Keyence Corporation	MV-M20/SV-M020	200W	
			MV-M40/SV-M040	400W	

Shaft length in coupling will be 0.5mm shorter on each side when used with Siemens motor.

■ Accuracy Standards

Accuracy Standards	High Grade	Precision Grade
Positioning (mm)	0.1	0.025
Backlash (mm)	0.02	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism(mm)	0.035	0.015
Starting Torque (N·cm)	10	

See P.168 for Maximum Velocity.
See P.167 for Moment of Inertia.

■ Effective Stroke / Total Mass

Base Length (L)	*Effective Stroke: MX-unequipped B1	B2	S1	S2	MX-equipped B1	S1	Total Mass (kg): Standard B1	B2	S1	S2	Cover B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	194.4	231.9	5.77	6.69	5.37	5.91	6.59	8.09	5.94	6.78
390	260.4	138.8	297.9	213.8	244.4	281.9	6.37	7.29	5.98	6.51	7.23	8.73	6.57	7.41
440	310.4	188.8	347.9	263.8	294.4	331.9	6.97	7.9	6.58	7.11	7.86	9.36	7.2	8.04
490	360.4	238.8	397.9	313.8	344.4	381.9	7.57	8.5	7.18	7.71	8.49	9.99	7.84	8.68
540	410.4	288.8	447.9	363.8	394.4	431.9	8.18	9.1	7.78	8.31	9.13	10.63	8.47	9.31
590	460.4	338.8	497.9	413.8	444.4	481.9	8.78	9.7	8.39	8.92	9.76	11.26	9.1	9.94

*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
*MX-equipped types are +0.024kg.

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T4560	60 sq.	Oriental Motor	UPK56, PK56 AS6*, ASC66, AR66 HT23-601	5-phase ∝Step Uni-phase	SCXW28, SCPW28 CPDW25
T4556.4 (NEMA23)	56.4 sq.	AMP	STM23X-3RX	Integrated	CPDW25
T4585 (NEMA17)	69.6 sq.	AMP	UPK56* / PK56*	Uni-phase	CPDW32

Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX45_ _-B1/S1-_	Servo	1	15	10 20
LX45_ _-B2/S2-_	Stepping (No Adapter)	2		
LX45_ _-B1/S1-F	No Bracket	1		
LX45_ _-B2/S2-F		2		
LX45_ _C-B1/S1-_	Servo	1	15	10 20
LX45_ _C-B2/S2-_	Stepping (No Adapter)	2		
LX45_ _C-B1/S1-F	No Bracket	1		
LX45_ _C-B2/S2-F		2		

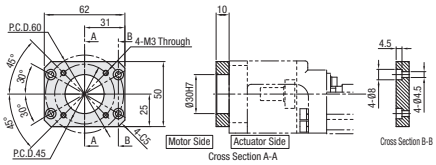
LX45_ _(C) Series sensor set can be specified as an alteration. Alteration Details P.188

Order Example

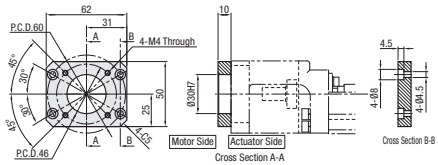
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LX4510C	–	B1	–	A4540	–	540
LX4520-MX	–	B1	–	A4560	–	390

Motor Adapter Plates for Single Axis Actuator LX45 / Motor Adapter Centering Tools

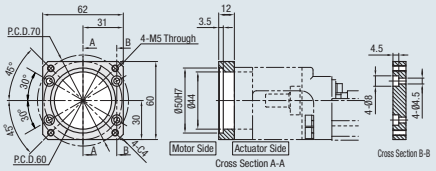
A4538
Servo
Stepping
38 sq.



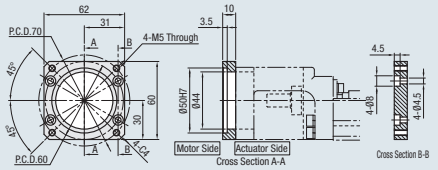
A4540
Servo
Stepping
40 sq.



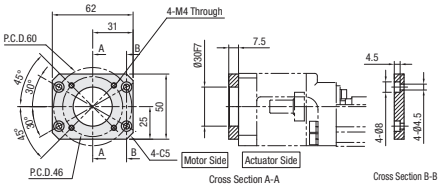
MA4560
Servo
Stepping
60 sq.



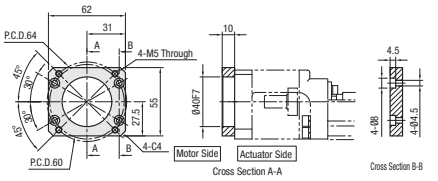
A4560
Servo
Stepping
60 sq.



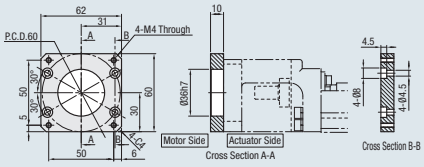
E4540
Servo
Stepping
40 sq.



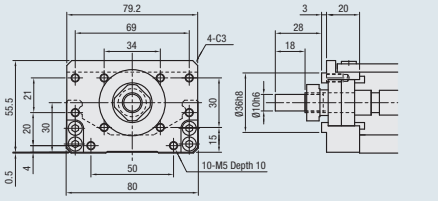
E4555
Servo
Stepping
55 sq.



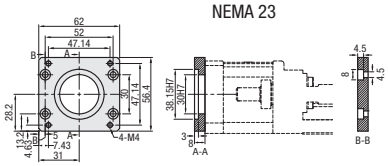
T4560
Stepping
60 sq.



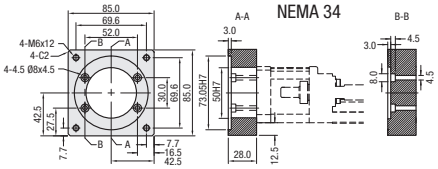
F
No Motor
Bracket Type



T4556.4



T4585



■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A4538	38 sq.	Panasonic	MSMD-5A	50W	SCXW28 SCPW28 CPDW25 (see catalog)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A4540	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
			SGMPH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co., Ltd.	01AA04003D	30W	
			01AA04005D	50W	
			01AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05/SV-M005	50W	
			MV-M10/SV-M010	100W	
MA4560	60 sq.	Panasonic	MQMA-01	100W	
			MQMA-02	200W	
			MQMA-03	300W	
E4540	40 sq.	SIEMENS	1FK7011-5	50W	SCXW34 SCPW34 CPDW32 (see catalog)
			1FK7015-5	100W	
E4555	55 sq.	SIEMENS	1FK7022-5	380W	
A4560	60 sq.	Yasukawa Electric Corporation	SGMJV-02	200W	
			SGMJV-04	400W	
		Mitsubishi Electric Corporation	HC-MFS 23	200W	
			HC-KFS 23		
			HC-MFS 43	400W	
			HC-KFS 43		
		Sanyo Denki Co., Ltd.	01AA06020D	200W	
			01AA06040D	400W	
		Omron Corporation	R88M-W20030	200W	
			R88M-W40030	400W	
		Keyence Corporation	MV-M20/SV-M020	200W	
			MV-M40/SV-M040	400W	

- Product numbers and specifications of motors are subject to change. Please check the manufacture's information.
- Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

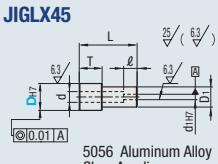
■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T4560	60 sq.	Oriental Motor	UPK56, PK56	5-phase	SCXW28, SCPW28 CPDW25
			AS6*, ASC66, AR66	∝Step	
T4556.4 (NEMA 23)	56.4 sq.	AMP	HT23-601	Uni-phase	CPDW25
			STM23X-3RX	Integrated	
T4585 (NEMA 34)	69.6 sq.	AMP	HT34-505	Uni-phase	CPDW32

■ Motor Adapter Centering Tools

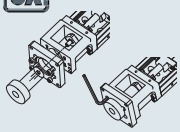
RoHS

JIGLX45



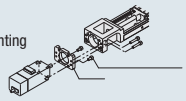
5056 Aluminum Alloy
Clear Anodize

Please use for centering of Motor Adapter Plates.



Example

■ Motor Mounting Example



Secure included Motor Adapter to the motor.
Motor, coupling and motor mounting screws are not included.

Part Number	D	Applicable Adapter Plate	d	D_1	d_1	L	T	L
JIGLX45	30	A4538 / A4540	15	25	10	62	22	20
	50	A4560 / MA4560	15	25	10	61.5	13.5	20
	36	T4560	15	25	10	62	22	20

Ordering Example

Part Number	–	D
JIGLX45	–	30

Sensor Sets for Single Axis Actuators LX45 (Alterations)

■ Proximity Sensor (SUNX) – Set Part Specification

LX Part Number	Code (_ is Sensor Qty) *Up to 3 Sensors	Sensor Type/Qty		Sensor Rail		Sensor (*Qty per Sensor Included)		Sensor Flag	
		GX-F8A (ON when Near)	GX-F8B (ON when Away)	Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Mounting Screw (1 pc)	Fixing Nut (1 pc)	Sensor Flag (1 pc)	Sensor Flag Mounting Screw
LX45_ _-B_	XA_	_ pc (s)	—	SENC3_H	SCB3-6	CBSST3-8	LBNR3	Original	Flat Head Screw M3-5 (1 pc)
	XB_	—	_ pc (s)						
LX45_ _-S_	XAS_	_ pc (s)	—						
	XBS_	—	_ pc (s)						
LX45_ _C-B_	FA_	_ pc (s)	—						SCB3-6 (2 pcs)
	FB_	—	_ pc (s)						
LX45_ _C-S_	FAS_	_ pc (s)	—						
	FBS_	—	_ pc (s)						
LX45_ _-B_	XW1	1 pc	1 pc						Flat Head Screw M3-5 (1 pc)
	XW2		2 pcs						
	XW3	2 pcs	1 pc						
LX45_ _-S_	XWS1	1 pc	1 pc						
	XWS2		2 pcs						
	XWS3	2 pcs	1 pc						
LX45_ _C-B_	FW1	1 pc	1 pc						SCB3-6 (2 pcs)
	FW2		2 pcs						
	FW3	2 pcs	1 pc						
LX45_ _C-S_	FWS1	1 pc	1 pc						
	FWS2		2 pcs						
	FWS3	2 pcs	1 pc						

■ Photo Sensor (SUNX) – Set Part Specification

LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX45_ _-B_	PM-L24	SENC3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB2-6 (2 pcs)	M2 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	SP_
LX45_ _-S_										
LX45_ _C-B_					LBNR3 (2 pcs)		M2 Spring Washer (2 pcs)		SCB3-6 (2 pcs)	MP_
LX45_ _C-S_										MPS_

When L=390, 490 or 590, mounting orientations are as the drawing below.

■ Photo Sensor (Omron) – Set Part Specification

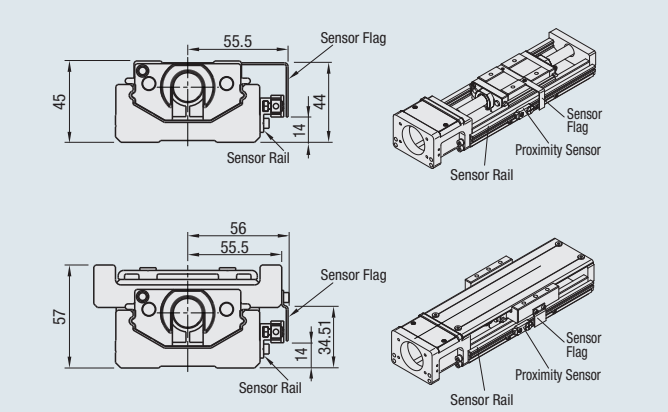
LX Part Number	Photo Sensor	Sensor Rail		Sensor (*Qty per Sensor Included)				Sensor Flag		Code (_ is the number of Sensors) *Up to 3 Sensors
		Rail (1 pc)	Mounting Screw (Pitch +1 pc)	Sensor Bracket	Bracket Mounting Screw Nut	Sensor Mounting Screw	Sensor Mounting Washer	Sensor Flag (1 pc)	Sensor Flag Mounting Screw	
LX45_ _-B_	EE-SX911-R 1M	SENC3_H	SCB3-6	Original	SCB3-6 (2 pcs)	SCB3-6 (2 pcs)	M3 Small Flat Washer (2 pcs)	Original	Flat Head Screw M2.6-4 (1 pc)	OP_
LX45_ _-B_										
LX45_ _C-B_					LBNR3 (2 pcs)				SCB3-6 (2 pcs)	EP_
LX45_ _C-S_										EPS_

When L=390, 490 or 590, mounting orientations are as the drawing below. *Sensors are not sold separately.

Alterations

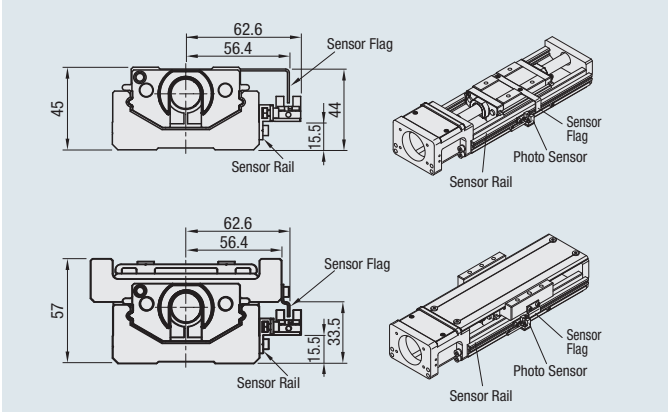
Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(Code)
LX4510	–	B1	–	A4540	–	590	–	XW1
LX4520C	–	B1	–	A4560	–	340	–	EP2

■ Proximity Sensor Type Installation Drawings – SUNX



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

■ Photo Sensor Type Installation Drawings – SUNX / Omron



Sensor Flag Material: 304 Stainless Steel
Plate Thickness: 1mm

SUNX and Omron photo sensors are the same in outside dimensions.
Please access each sensor manufacture's website for the specifications of sensors in use.

■ Cautions

– Sensor set is shipped with LX Actuator. Assembly required.

– Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

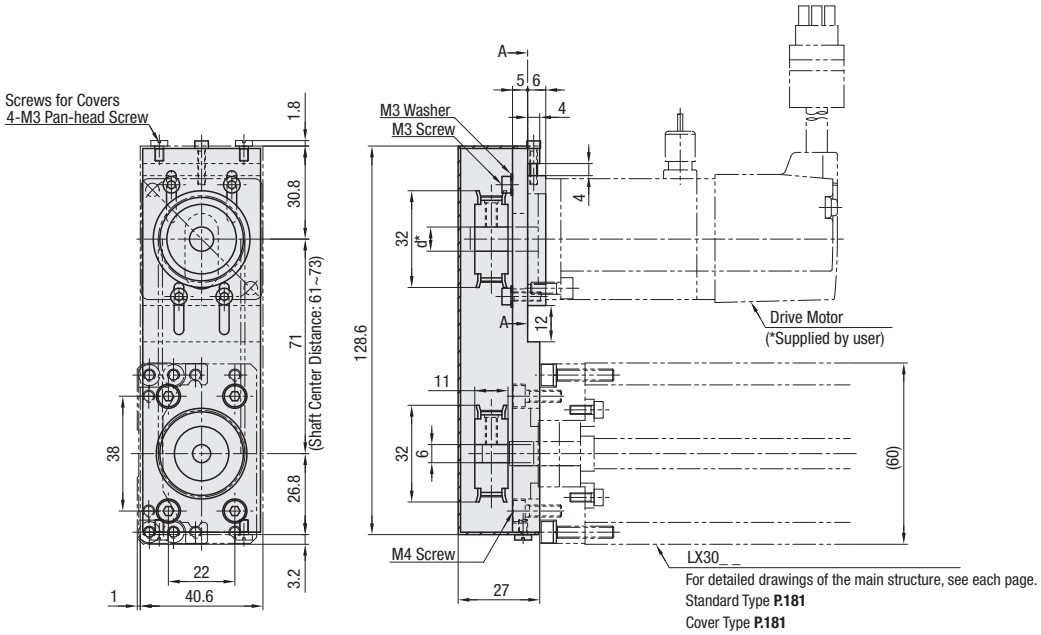
Single Axis Actuators LX30 Motor Wrap Type

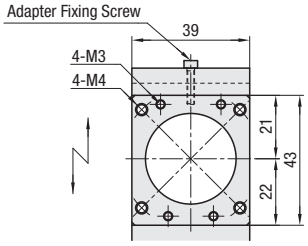
Convenient Sensor Sets are also available. **P.184**

Specifications	
LX30	
Standard / Cover	
Screw Shaft Dia. (mm)	10
Lead (mm)	5, 10
Accuracy	High Grade
Accessories	
[1]Motor Adapter Plate	
Steel	Low Temperature Black Chrome Plating
[2]Adapter Plate Screw 4 pcs	302HQ Stainless Steel
[3]High Torque Timing Pulley Part Number: HTPA44S2M060	
[4]High Torque Timing Belt Part Number: HTBN230S2M-60	

Part Number	Standard Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 5	LXR3005	LXR3005C	LXR3005-MX	LXR3005C-MX
Lead 10	LXR3010	LXR3010C	LXR3010-MX	LXR3010C-MX

Components	Base (Rail)	Block	Motor Bracket	Support Side Bearing with Housing	Cover	Stopper	Precision Ball Screw (Ground)
Material	Carbon Steel	SCM Material	5052 Aluminum Alloy	5052 Aluminum Alloy	6063 Aluminum Alloy	NBR Nitrile Rubber	SCM415 Alloy Steel (JIS)
Surface Treatment	Low Temperature Black Chrome Plating	Low Temperature Black Chrome Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	—	—
Hardness	Induction Hardened HRC58~64	HRC58~62	—	—	—	—	HRC58~62





Arrow View A-A
<Motor Adapter Plates>
*For details of motor adapter plate dimensions, see the right-hand page.

Recommended belt tension
When the shaft center distance is 71mm and the center of the belt is pressed with less than 1N, the deflection is 1.1mm.

Single Axis Actuators LX30 Motor Wrap Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

Part Number: High Grade	Part Number: *Precision Grade	Block Qty	Motor Adapter Plates	Base Length (L)	Mounting Hole Dimensions: A	P_1	P_2	B	Number of Pitches	Number of Holes (N)
(Standard Grease) LX4510 (C) LX4520 (C) (Low Particle Grease) LX4510 (C) G LX4520 (C) G (Lubrication Unit MX-Equipped, Standard Grease) LX4510 (C) -MX LX4520 (C) -MX	(Standard Grease) LX4510 (C) P LX4520 (C) P (Low Particle Grease) LX4510 (C) PG LX4520 (C) PG (Lubrication Unit MX-Equipped, Standard Grease) LX4510 (C) P-MX LX4520 (C) P-MX	Long Blocks (1 pc) B1 (2 pcs) B2 Short Blocks (1 pc) S1 (2 pcs) S2 *Lubrication Units MX-equipped types are available in B1/S1 only	(Servo) A4538 A4540 MA4560 A4560 E4540 E4555 (Stepping) T4560 T4556.4 T4585 *(No Adapter Plate) N (Without Motor Bracket) F	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
				440	70	100	100	70	3	8
				490	70	100	50	70	4	10
				540	70	100	100	70	4	10
				590	70	100	50	70	5	12

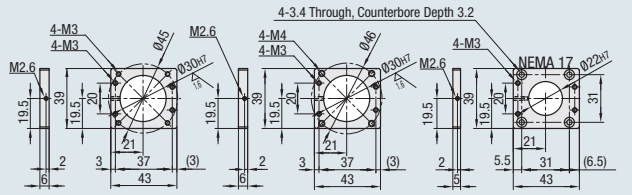
*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.

MX-equipped types are +0.011kg.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
RA3038	38 sq.	Panasonic	MSMD-5A	50W	Ø8
			MSMA-3A	30W	
			MSMA-01	100W	
RA3040	40 sq.	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co., Ltd.	Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W10030	100W	
		Keyence Corporation	MV-M05	50W	
			SV-M005	50W	
			MV-M10	100W	
			SV-M010	100W	

Motor Adapter Plate Dimensional Drawing



Adapter Plate Part Number: RA3038 Adapter Plate Part Number: RA3040 Adapter Plate Part Number: RT3042

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
RT3042	42 sq.	Oriental Motor	UMK24* / PK24*	2-phase	Ø5
			UPK54* / PK54*	5-phase	
			AS46 / ASC46	∝ Step	

Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LXR3010C	–	B1	–	RA3040	–	600
LXR3005-MX	–	B1	–	RA3040	–	600

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(NBP)
LXR3010C	–	B1	–	RA3040	–	600	–	NBP

Alterations

Alteration	Code	Spec.
No Belt / No Pulley	NBP	Excluded from the set

Sensor Set P.184

■ Allowable Static Load / Moment

Block Qty		Static Load Capacity (N)	Allowable Static Moment (N·m): Ma	Mb	Mc
Long Block	B1	17218	126	126	387
	B2	34436	1515	1515	774
Short Block	S1	9271	63	63	208
	S2	18542	579	579	417

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, see P.167

■ Maximum Velocity

Max. Velocity (mm/s)	L125~L450	L500	L550	L600
LXR3005_ _	410	370	300	250
LXR3010_ _	830	740	600	500

The maximum velocity is reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

■ Accuracy Standards

Accuracy Standards	High Grade	Precision Grade
Positioning (mm)	0.6	0.1
Backlash (mm)	0.02	0.02
Positioning Repeatability (mm)	±0.005	±0.005
Running Parallelism(mm)	0.025	0.035
Starting Torque (N·cm)	4	

■ Effective Stroke / Total Mass

Base Length (L)	*Effective Stroke: MX-unequipped B1	B2	S1	S2	MX-equipped B1	S1	Total Mass (kg): LXR30_ _ B1	B2	S1	S2	LXR30_ _C B1	B2	S1	S2
125	29	—	54.5	—	—	—	1.55	—	1.43	—	2.01	—	1.75	—
150	54	—	79.5	17	—	65.5	1.72	—	1.60	1.78	2.17	—	1.92	2.23
200	104	—	129.5	67	90	115.5	2.06	—	1.93	2.11	2.50	—	2.25	2.57
250	154	—	179.5	117	140	165.5	2.39	—	2.27	2.45	2.84	—	2.59	2.91
300	204	116	229.5	167	190	215.5	2.73	3.04	2.60	2.78	3.17	3.74	2.92	3.24
350	254	166	279.5	217	240	265.5	3.06	3.37	2.94	3.12	3.51	4.08	3.26	3.58
400	304	216	329.5	267	290	315.5	3.40	3.71	3.27	3.46	3.85	4.41	3.60	3.91
450	354	266	379.5	317	340	365.5	3.74	4.04	3.61	3.79	4.18	4.75	3.93	4.25
500	404	316	429.5	367	390	415.5	4.07	4.38	3.95	4.13	4.52	5.08	4.27	4.58
550	454	366	479.5	417	440	465.5	4.41	4.72	4.28	4.46	4.85	5.42	4.60	4.92
600	504	416	529.5	467	490	515.5	4.74	5.05	4.62	4.80	5.19	5.76	4.94	5.26

*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX30_ _-B1/S1-_	Servo Stepping (No Adapter)	1	10	5 10
LX30_ _-B2/S2-_		2		
LX30_ _C-B1/S1-_		1		
LX30_ _C-B2/S2-_		2		

Single Axis Actuators LX45 Motor Wrap Type

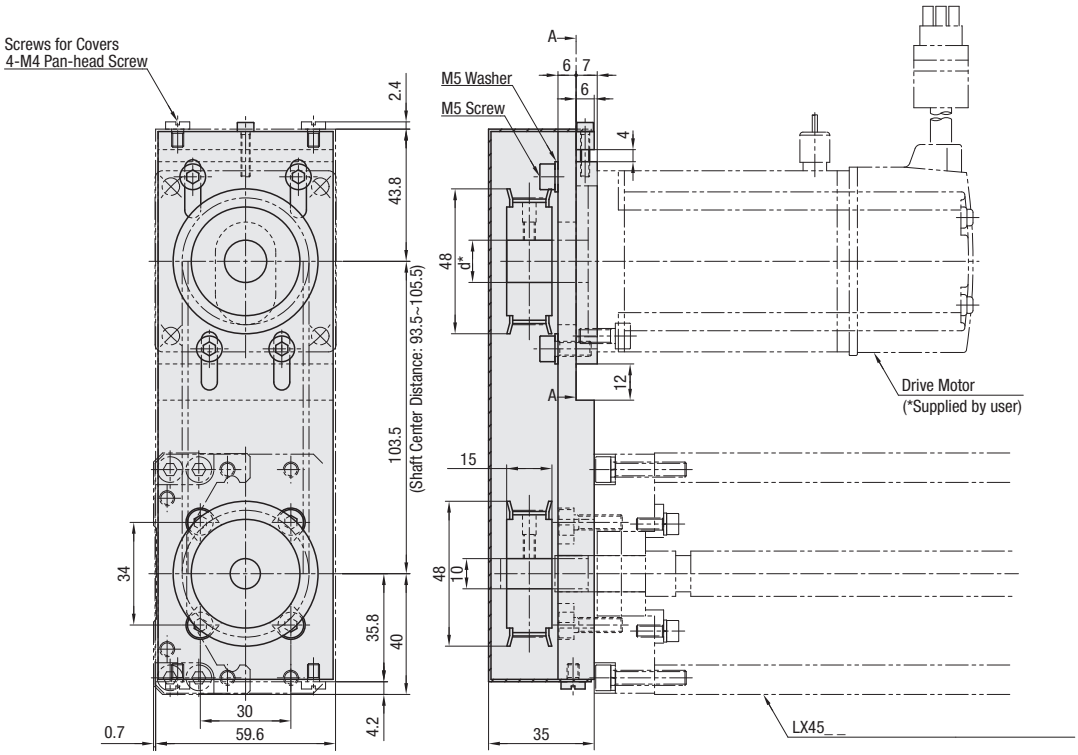
Convenient Sensor Sets are also available. **P.188**

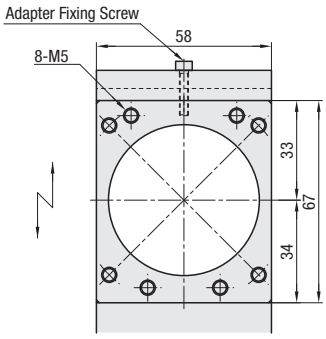
RoHS

Specifications	
LX45	
Standard / Cover	
Screw Shaft Dia. (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade
Accessories	
[1]Motor Adapter Plate	
Steel	Low Temperature Black Chrome Plating
[2]Adapter Plate Screw 4 pcs	302HQ Stainless Steel
[3]High Torque Timing Pulley Part Number: HTPA44S3M100	
[4]High Torque Timing Belt Part Number: HTBN339S3M-100	

Part Number	Standard Grease		Lubrication Unit MX-Equipped (Standard Grease)	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 10	LXR4510	LXR4510C	LXR4510-MX	LXR4510C-MX
Lead 20	LXR4520	LXR4520C	LXR4520-MX	LXR4520C-MX

Components	Base (Rail)	Block	Motor Bracket	Support Side Bearing with Housing	Cover	Stopper	Precision Ball Screw (Ground)
Material	Carbon Steel	SCM Material	5052 Aluminum Alloy	5052 Aluminum Alloy	6063 Aluminum Alloy	NBR Nitrile Rubber	SCM415 Alloy Steel (JIS)
Surface Treatment	Low Temperature Black Chrome Plating	Low Temperature Black Chrome Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	—	—
Hardness	Induction Hardened HRC58~64	HRC58~62	—	—	—	—	HRC58~62





Arrow View A-A
<Motor Adapter Plates>
*For details of motor adapter plate dimensions, see the right-hand page.

For detailed drawings of the main structure, see each page.
Standard Type **P.185**
Cover Type **P.185**

*d is Pulley Inner Dia.
Ø14 for Servo Motor Type and Ø8 for Stepping Motor Type. Selectable for No Adapter Plate Type.

Recommended belt tension
When the shaft center distance is 103.5mm and the center of the belt is pressed with less than 3N, the deflection is 1.7mm.

Single Axis Actuators LX45 Motor Wrap Type

LX Related Information Specifications P.166–170

Please use our Techincal Calculation Software

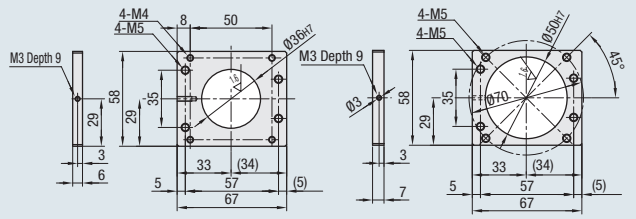
Part Number		Block Qty	Motor Adapter Plates	Base Length (L)	Mounting Hole Dimensions					
High Grade	*Precision Grade				A	P_1	P_2	B	Number of Pitches	Number of Holes (N)
(High Grade Standard) LXR4510 LXR4520 (Lubrication Unit MX Standard) LXR4510-MX LXR4520-MX	(Standard Grease) LXR4510C LXR4520C (Lubrication Unit MX with Cover) LXR4510C-MX LXR4520C-MX	Long Blocks (1 pc) B1 (2 pcs) B2 Short Blocks (1 pc) S1 (2 pcs) S2 *Lubrication Units MX-equipped types are available in B1/S1 only	(Servo) RA4560 (Stepping) RT4560 *(No Adapter Plate) N8 (Pulley Inner Dia. Ø8) (Without Motor Bracket) N14 (Pulley Inner Dia. Ø14)	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
				440	70	100	100	70	3	8
				490	70	100	50	70	4	10
				540	70	100	100	70	4	10
				590	70	100	50	70	5	12

*Motor adapter plate and mounting screws are not included with No Adapter Plate Type.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
RA4560	60 sq.	Yasukawa Electric Corporation	SGMJV-02	200W	Ø14
			SGMJV-04	400W	
		Mitsubishi Electric Corporation	HC-MFS23	200W	
			HC-KFS23	200W	
			HC-MFS43	400W	
			HC-KFS43	400W	
		Sanyo Denki Co., Ltd.	Q1AA06020D	200W	
			Q1AA06040D	400W	
		Omron Corporation	R88M-W20030	200W	
			R88M-W40030	400W	
		Keyence Corporation	MV-M20	200W	
			SV-M020	200W	
			MV-M40	400W	
			SV-M040	400W	

Motor Adapter Plate Dimensional Drawing



Adapter Plate Part Number: RT4560 Adapter Plate Part Number: RA4560

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
RT4560	60 sq.	Oriental Motor	UPK56* / PK56*	5-phase	Ø8
			AS6* / ASC66 / AR66	∝Step	

Order Example

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)
LXR4510	–	B1	–	RA4560	–	540
LXR4510C-MX	–	B1	–	RA4560	–	540

Part Number	–	Block Qty	–	Motor Adapter Plates	–	Base Length (L)	–	(NBP)
LXR4510	–	B1	–	RA4560	–	540	–	NBP

Alterations

Alteration	Code	Spec.
No Belt / No Pulley	NBP	Excluded from the set

Sensor Set P.188

■ Allowable Static Load / Moment

Block Qty		Static Load Capacity (N)	Allowable Static Moment (N·m)		
			M_a	M_b	M_c
Long Block	B1	32441	291	291	972
	B2	64882	3945	3945	1944
Short Block	S1	17175	145	145	515
	S2	34350	1444	1444	1029

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, see P.167

■ Maximum Velocity

Max. Velocity (mm/s)	
LXR4510_ _	550
LXR4520_ _	1110

The maximum velocity is reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

■ Accuracy Standards

Accuracy Standards	High Grade
Positioning (mm)	0.1
Backlash (mm)	0.02
Positioning Repeatability (mm)	±0.005
Running Parallelism(mm)	0.035
Starting Torque (N·cm)	10

■ Effective Stroke / Total Mass

Base Length (L)	*Effective Stroke						Total Mass (kg)							
	MX-Unequipped				MX-Equipped		LXR45_ _				LXR45_ _C			
	B1	B2	S1	S2	B1	S1	B1	B2	S1	S2	B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	194.4	231.9	6.42	7.34	6.02	6.56	7.24	8.74	6.59	7.43
390	260.4	138.8	297.9	213.8	244.4	281.9	7.02	7.94	6.63	7.16	7.88	9.38	7.22	8.06
440	310.4	188.8	347.9	263.8	294.4	331.9	7.62	8.55	7.23	7.76	8.51	10.01	7.85	8.69
490	360.4	238.8	397.9	313.8	344.4	381.9	8.22	9.15	7.83	8.36	9.14	10.64	8.49	9.33
540	410.4	288.8	447.9	363.8	394.4	431.9	8.83	9.75	8.43	8.96	9.78	11.28	9.12	9.96
590	460.4	338.8	497.9	413.8	444.4	481.9	9.43	10.35	9.04	9.57	10.41	11.91	9.75	10.59

*Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
MX-equipped types are +0.024kg.

Part Number	Motor Adapter Plates	Block Qty	Screw Shaft Dia.	Lead
LX45_ _-B1/S1-_	Servo Stepping (No Adapter)	1	15	10 20
LX45_ _-B2/S2-_		2		
LX45_ _C-B1/S1-_		1		
LX45_ _C-B2/S2-_		2		

Motor Driven Single Axis Actuators LX — Overview

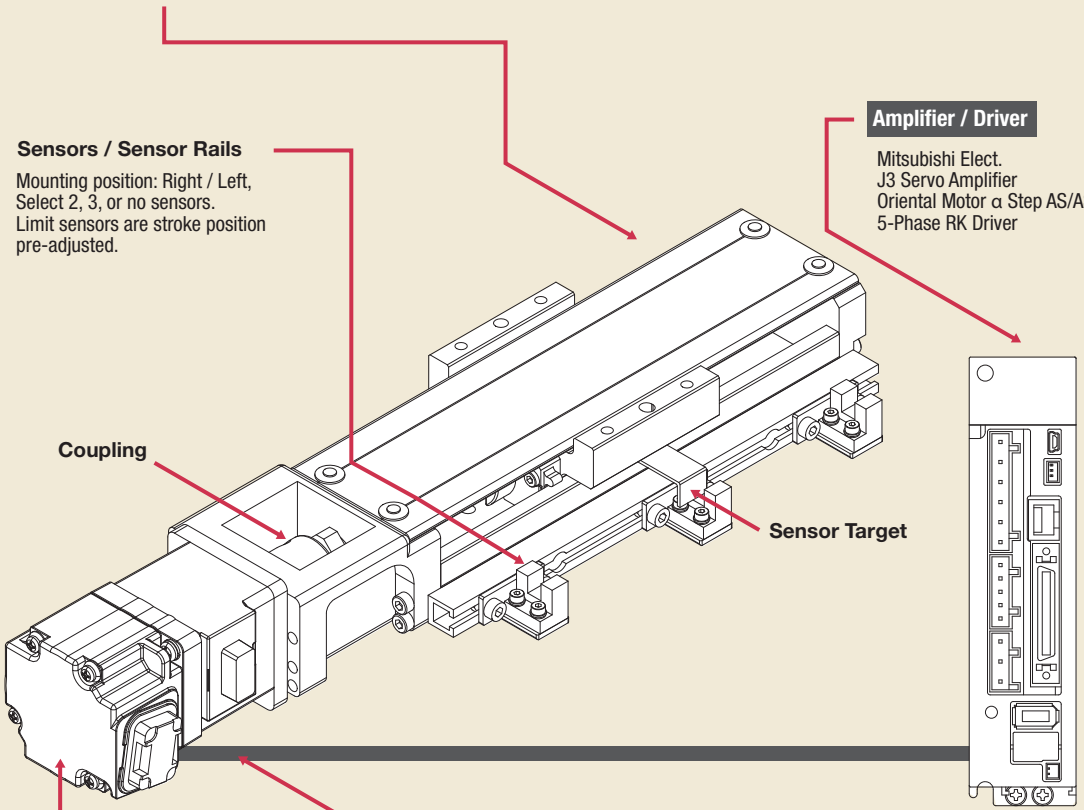
Motors and perihperals are integrated with High Accuracy Single Axis LX Actuators

High Accuracy	Built with Precision Grade actuators with ±3μm repeatability.
Save on design and assembly process steps	Motors and peripherals are pre-assembled and accuracy inspected before shipment. (Inspection Reports Included)
Motor Selection	Oriental Motor (Stepping) is offered. Amplifiers and drivers are also supplied in sets. Customers can freely configure with upstream control systems.

Best Lead time in the Industry

Most Units Ship in 11 Days!

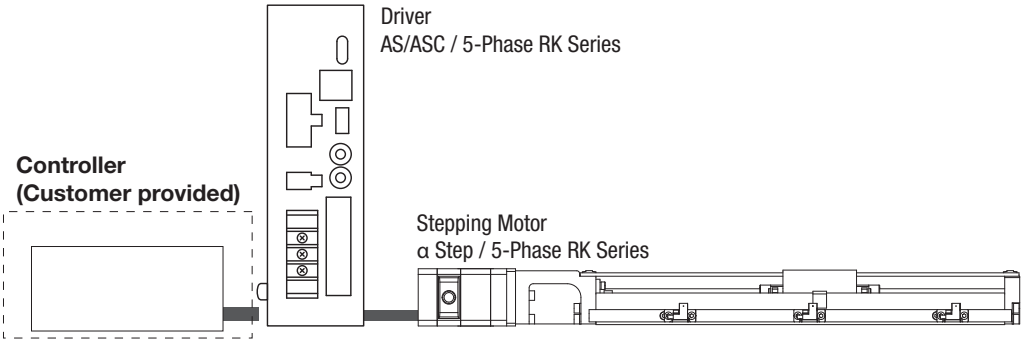
Single Axis Actuator LX Precision Grade Two types are offered: With or without Cover



Motor Driven Single Axis Actuators LX — Spec List

Oriental Motor Stepping Motor Specifications

■ System Diagram



■ Specifications

Actuator	Motor, Driver Set	Motor Output	Repeatability (mm)	Load Capacity (kg)		Max. Speed (mm/sec.)		Stroke (mm)	Page
				Horizontal	Vertical	Horizontal	Vertical		
LXM2001	ASC36AK	a Step	±0.003	15	2	30	—	30~130 (50 Pitch)	195
	AS46AA/MA					45	50		
	RK545AA/AMA	5-Phase				40	35		
LXM2005	ASC36AK	a Step		10		125	—		
	AS46AA/MA					200	225		
	RK545AA/AMA	5-Phase				120	115		
LXM2602	ASC36AK	a Step		20	5	45	—	60~210 (50 Pitch)	197
	AS46AA/MA					90	90		
	RK545AA/AMA	5-Phase				55	45		
LXM2605	ASC36AK	a Step		18		100	—		
	AS46AA/MA					175	175		
	RK545AA/AMA	5-Phase				105	80		
LXM3005	AS46AA/MA	a Step		32	8	160	150	40~490 (50 Pitch)	199
	AS66AAE/MAE					175	160		
	RK545AA/AMA	5-Phase				90	70		
	RK566AAE/AMAE					150	140		
LXM3010	AS46AA/MA	a Step		24		250	200		
	AS66AAE/ME					275	275		
	RS545AA/AMA	5-Phase				135	10		
	RS566AAE/AMAE					210	45		
LxM4510	AS66AAE/MAE	a Step		40	16	200	175	200~450 (50 Pitch)	201
	RK566AAE/AMAE	5-Phase				165	25		
LXM4520	AS66AAE/MAE	a Step		24		300	200		
	RK566AAE/AMAE	5-Phase				255	10		

*The Load Capaty and Max. Speed values are our experimental values, and for reference only. The actual results will vary according to application conditions.
The "Horizontal" values are for motors without brake, and the "Vertical" values are for motors with brakes.
Accel./Decel. distances 25mm each. 50mm each for LXM3010 and LXM4520.

Motor Driven Single Axis Actuators LX20 Standard / Cover Type

A unit consists of a motor amplifier, driver, coupling, cable, sensors, sensor rail and flag. Accuracy of the unit is inspected before shipment (Inspection Certificate included).

■ Oriental Motor Stepping Motor Specification

RoHS

■ Components

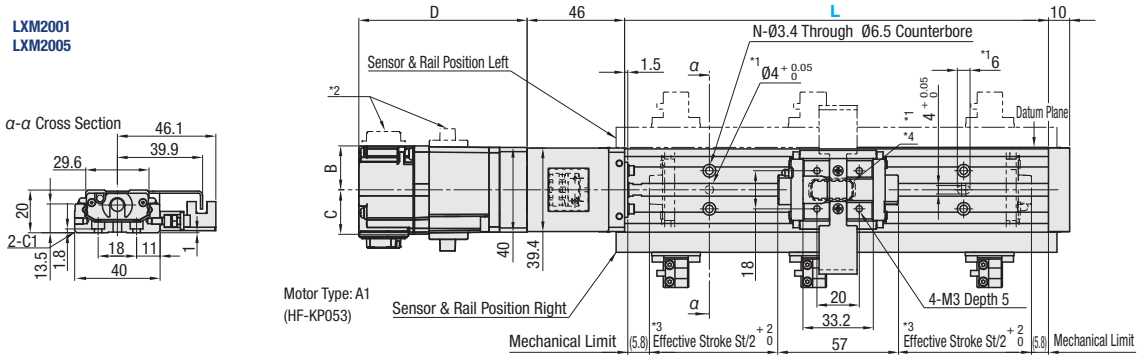
Actuator / Amplifier / Driver / Cable

Accessories: Instruction Manual for Driver

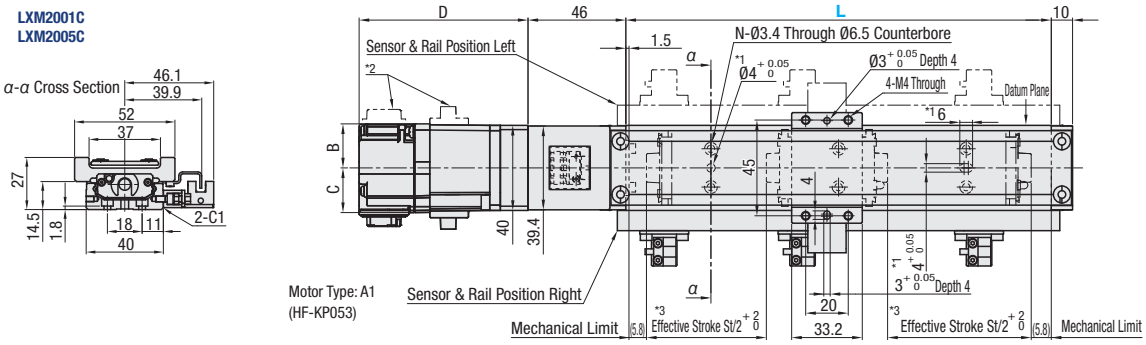
■ Actuator

	Base	Block
Material	Carbon Steel	SCM Material
Surface Treatment	Low Temperature Black Chrome Plating	
Hardness	Induction Hardened HRC58~64	HRC58~62

LXM2001
LXM2005

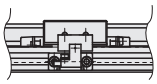


LXM2001C
LXM2005C

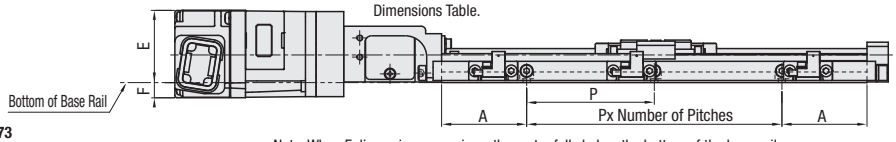


*1: Dowel Holes for Base Positioning
*2: Motor Cable will be attached to left side when position for sensor and rail is selected as "left".
*3: Limit sensor is adjusted to the positions that correspond to effective stroke St/2 +2 0.
*4: Ball returning plates are built with units with 5mm lead.
*5: Motor in the figure is for an example. For dimensions lineup, see Control Functions and Motor Dimensions Table.

Cover Type



Standard Type



For hole dimension details, **P.173**
Avoid interference with Sensor Flag.

Note: When F dimensions are minus, the motor falls below the bottom of the base rail.

■ Standard Specifications

Part Number	Lead (mm)	Ball Screw Diameter (mm)	Positioning Repeatability (mm)	Positioning (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N·m)		
							M_a	M_b	M_c
LXM2001	1	Ø6 (Ground)	±0.003	0.02	0.01	0.003	27	27	93
LXM2005	5								
LXM2001C	1								
LXM2005C	5								

*Allowable Static Moment **P.167**

■ Control Functions

Manufacturer Name	Motor Type						Driver Type			Motor Driver Set Part Number
	Selection	Motor	Manufacturer Part Number	Output / Type	Brake (Note 1)	Mass (kg)	Selection	Power Supply	Manufacturer Part Number	
Oriental Motor	T1	Stepping	ASM36AK	∝Step	None	0.22	D1	DC24V	ASD10B-K	ASC36AK
	T2		ASM46AA			0.5	D2	Single-Phase AC100V	ASD13A-A	AS46AA
	T2B		ASM46MA		Included	0.6	D2		ASD13A-A	AS46MA
	T4		PK545AW	5-phase	None	0.4	D4		RKD507-A	RK545AA
	T4B		PK545AWM		Included	0.52	D6		RKD507M-A	RK545AMA

Motor Driven Single Axis Actuators LX20 Standard / Cover Type

■ Load Capacity / Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/sec)	
			Horizontal	Vertical	Horizontal	Vertical
LXM2001 LXM2001C	Oriental Motor	T1	15	—	30	—
		T2(B)		2	45	50
		T4(B)			40	35
LXM2005 LXM2005C	Oriental Motor	T1	10	—	125	—
		T2(B)		2	200	225
		T4(B)			120	115

*Load capacity and max. velocity are reference values and may vary depending on operating conditions.
*Horizontal load capacity is for motor without brake and vertical load is for motor with brake.
*Distance for Acceleration / Deceleration: 25mm

■ Motor Dimensions Table

Manufacturer Name	Motor Type	Width B (mm)	Width C (mm)	Length D (mm)	Height E (mm)	Bottom Height F (mm)
Oriental Motor	T1	14	14	70	28	-1
	T2	21	21	71.9	34	-8
	T2B	21	21	101.9	34	-8
	T4	21	21	54	34	-8
	T4B	21	21	84	34	-8

*E, F Value in ( ) is for Sensor & Rail Position "Left".

■ Dimensions / Actuator Body Mass

Part Number	Item	Base Length L (mm)		
		100	150	200
LXM2001 LXM2005 LXM2001C LXM2005C	Effective Stroke (St)	30	80	130
	A	20	15	40
	P	60	60	60
	Number of Pitches	1	2	2
	Number of Holes N	4	6	6
Standard Type	Body Mass (kg)	0.67	0.81	0.94
Cover Type	Body Mass (kg)	0.69	0.63	0.95

*Mass shown includes actuator, coupling, sensor rail, 3 sensors and sensor flag. For motor mass, see the control function table.

■ Cable Configuration List

Cables come with terminal plug that directly connects with motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Cable	Brake Cable	Encoder Cable
Oriental Motor	T1	1 pc STPO-AS1-B-3	—	—
	T2			
	T2B		Arranged by Customer	
	T4	1 pc STPO-RK1-A-3	—	
	T4B	1 pc STPO-RK2-A-3		

(Note 1) Choose motor with brake when unit is used in vertical position.
(Note 2) When ordering "Without Driver" Type, driver is not included.
(Note 3–1) When ordering "with cables" type, cables indicated in cable configuration list will be included with unit.
(Note 3–2) To use cables with length other than 3m, choose "without cable" type and order cable separately.
(Note 4–1) Sensor rail comes with the unit even when no. of sensor is specified as "none"; sensor flag will not be included.
(Note 4–2) Terminals for sensor cables is not provided.

Part Number	Selection					
	Motor Type	Driver Type	Cable (Note 3)	Number of Sensors (Note 4)	Sensor & Rail Location	Base Length L (mm)
LXM2001 LXM2005 LXM2001C LXM2005C	Select from control function table	Select from control function table	Included (3m): **3** None: **N**	2 units: **2** 3 units: **3** None: **N**	Right: **R** Left: **L**	100~200 (50 Pitch)

Order Example

Part Number	–	Motor Type	–	Driver Type	–	Cable	–	Number of Sensors	–	Sensor & Rail Position	–	Base Length L
LXM2001	–	T1	–	D1	–	3	–	3	–	R	–	200

Motor Driven Single Axis Actuators LX26 Standard / Cover Type

A unit consists of a motor amplifier, driver, coupling, cable, sensors, sensor rail and flag. Accuracy of the unit is inspected before shipment (Inspection Certificate included).

■ Oriental Motor Stepping Motor Specification

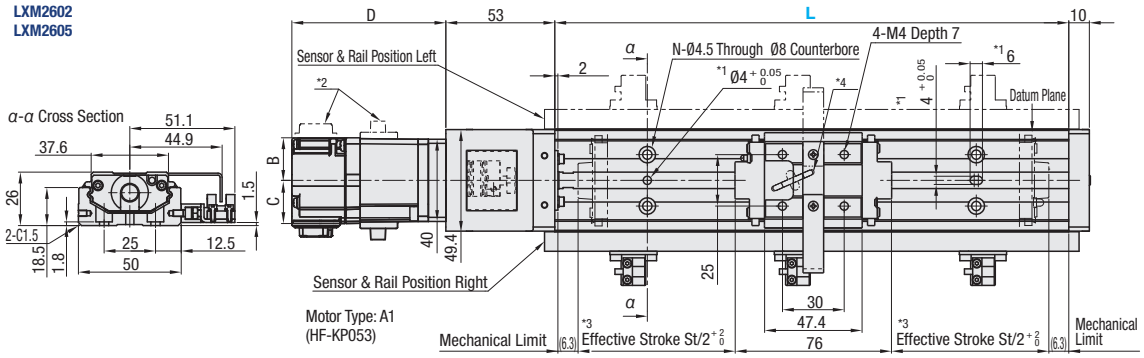
■ Components

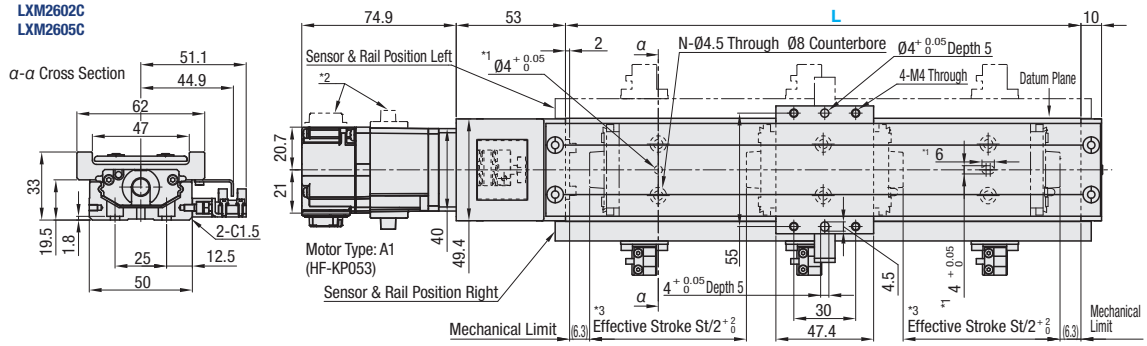
Actuator / Amplifier / Driver / Cable

Accessories: Instruction Manual for Driver

■ Actuator

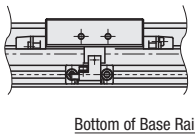
	Base	Block
Material	Carbon Steel	SCM Material
Surface Treatment	Low Temperature Black Chrome Plating	
Hardness	Induction Hardened HRC58~64	HRC58~62



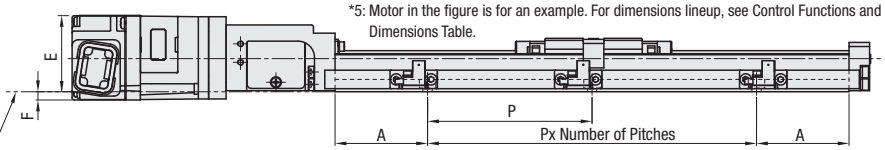


*1: Dowel Holes for Base Positioning
*2: Motor Cable will be attached to left side when position for sensor and rail is selected as "left".
*3: Limit sensor is adjusted to the positions that correspond to effective stroke St/2 .
*4: Lead 5 has a return tube.
*5: Motor in the figure is for an example. For dimensions lineup, see Control Functions and Motor Dimensions Table.

Cover Type



Standard Type



For hole dimension details, **P.177** Avoid interference with Sensor Flag.

Note: When F dimensions are minus, the motor falls below the bottom of the base rail.

■ Standard Specifications

Part Number	Lead (mm)	Ball Screw Diameter (mm)	Positioning Repeatability (mm)	Positioning (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N·m)		
							M_a	M_b	M_c
LXM2602	2	Ø8 (Ground)	±0.003	0.02	0.01	0.003	70	70	225
LXM2605	5								
LXM2602C	2								
LXM2605C	5								

*Allowable Static Moment **P.167**

■ Control Functions

Manufacturer Name	Motor Type						Driver Type			Motor Driver Set Part Number
	Selection	Motor	Manufacturer Part Number	Output / Type	Brake (Note 1)	Mass (kg)	Selection	Power Supply	Manufacturer Part Number	
Oriental Motor	T1	Stepping	ASM36AK	∝Step	None	0.22	D1	DC24V	ASD10B-K	ASC36AK
	T2		ASM46AA			0.5	D2	Single-Phase AC100V	ASD13A-A	AS46AA
	T2B		ASM46MA		Included	0.6	D2		ASD13A-A	AS46MA
	T4		PK545AW	5-phase	None	0.4	D4		RKD507-A	RK545AA
	T4B		PK545AWM		Included	0.52	D6		RKD507M-A	RK545AMA

Motor Driven Single Axis Actuators LX26 Standard / Cover Type

■ Load Capacity / Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/sec)	
			Horizontal	Vertical	Horizontal	Vertical
LXM2602 LXM2602C	Oriental Motor	T1	20	—	45	—
		T2(B)		5	90	90
		T4(B)			55	45
LXM2605 LXM2605C	Oriental Motor	T1	18	—	100	—
		T2(B)		5	175	175
		T4(B)			105	80

*Load capacity and max. velocity are reference values and may vary depending on operating conditions.
*Horizontal load capacity is for motor without brake and vertical load is for motor with brake.
*Distance for Acceleration / Deceleration: 25mm

■ Motor Dimensions Table

Manufacturer Name	Motor Type	Width B (mm)	Width C (mm)	Length D (mm)	Height E (mm)	Bottom Height F (mm)
Oriental Motor	T1	14	14	70	28	2
	T2	21	21	71.9	37	-5
	T2B	21	21	101.9	37	-5
	T4	21	21	53.5	37	-5
	T4B	21	21	83.5	37	-5

*E, F Value in ( ) is for Sensor & Rail Position "Left".

■ Dimensions / Actuator Body Mass

Part Number	Item	Base Length L (mm)			
		150	200	250	300
LXM2602 LXM2605 LXM2602C LXM2605C	Effective Stroke (St)	60	110	160	210
	A	35	20	45	30
	P	80	80	80	80
	Number of Pitches	1	2	2	3
	Number of Holes N	4	6	6	8
Standard Type	Body Mass (kg)	1.08	1.30	1.51	1.73
Cover Type	Body Mass (kg)	1.27	1.49	1.71	1.93

*Mass shown includes actuator, coupling, sensor rail, 3 sensors and sensor flag. For motor mass, see the control function table.

■ Cable Configuration List

Cables come with terminal plug that directly connects with motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Cable	Brake Cable	Encoder Cable
Oriental Motor	T1	1 pc STPO-AS1-B-3	—	—
	T2			
	T2B		Arranged by Customer	
	T4	1 pc STPO-RK1-A-3	—	
	T4B	1 pc STPO-RK2-A-3		

(Note 1) Choose motor with brake when unit is used in vertical position.
(Note 2) When ordering "Without Driver" Type, driver is not included.
(Note 3–1) When ordering "with cables" type, cables indicated in cable configuration list will be included with unit.
(Note 3–2) To use cables with length other than 3m, choose "without cable" type and order cable separately.
(Note 4–1) Sensor rail comes with the unit even when no. of sensor is specified as "none"; sensor flag will not be included.
(Note 4–2) Terminals for sensor cables is not provided.

Part Number	Selection					
	Motor Type	Driver Type	Cable (Note 3)	Number of Sensors (Note 4)	Sensor & Rail Location	Base Length L (mm)
LXM2602 LXM2605 LXM2602C LXM2605C	Select from control function table	Select from control function table	Included (3m): **3** None: **N**	2 units: **2** 3 units: **3** None: **N**	Right: **R** Left: **L**	150~300 (50 Pitch)

Order Example

Part Number	–	Motor Type	–	Driver Type	–	Cable	–	Number of Sensors	–	Sensor & Rail Position	–	Base Length L
LXM2602	–	A1	–	AM10	–	3	–	3	–	R	–	300

Motor Driven Single Axis Actuators LX30 Standard / Cover Type

A unit consists of a motor amplifier, driver, coupling, cable, sensors, sensor rail and flag. Accuracy of the unit is inspected before shipment (Inspection Certificate included).

■ Oriental Motor Stepping Motor Specification

RoHS

■ Components

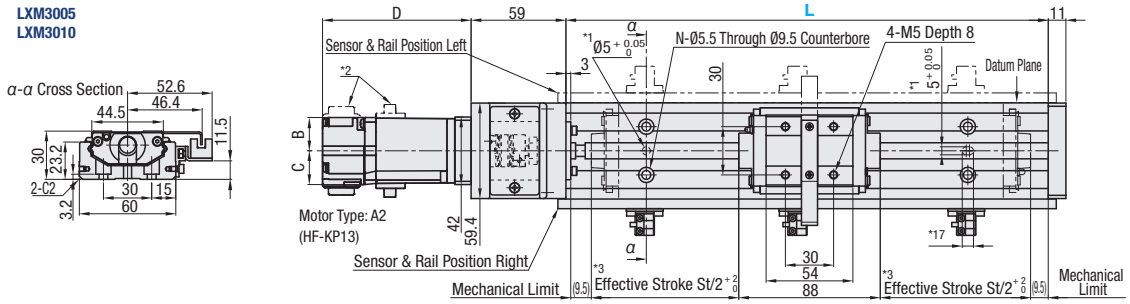
Actuator / Amplifier / Driver / Cable

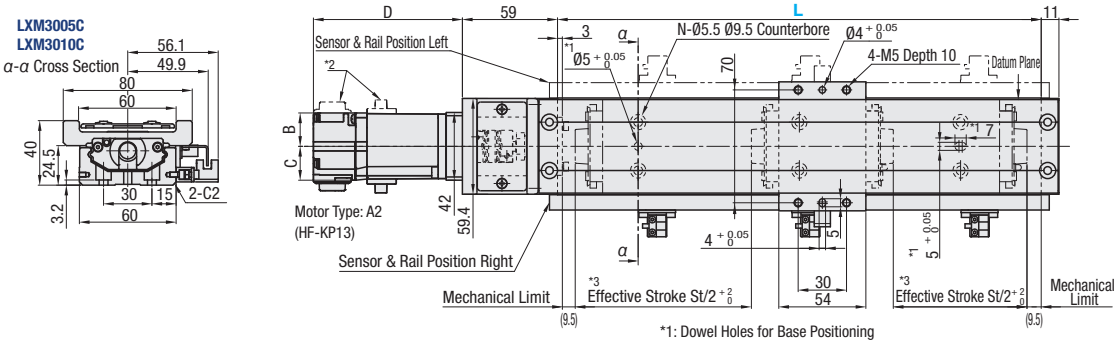
Accessories: Instruction Manual for Driver

■ Actuator

	Base	Block
Material	Carbon Steel	SCM Material
Surface Treatment	Low Temperature Black Chrome Plating	
Hardness	Induction Hardened HRC58~64	HRC58~62

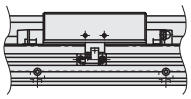
Specification of Driver **P.203**



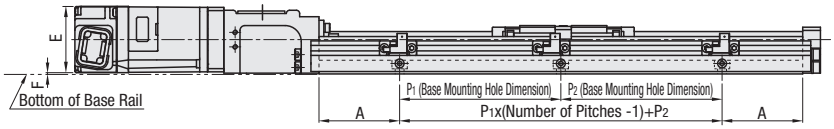


*1: Dowel Holes for Base Positioning
*2: Motor Cable will be attached to left side when position for sensor and rail is selected as "left".
*3: Limit sensor is adjusted to the positions that correspond to effective stroke St/2 +2 0 .
*4: Motor in the figure is for an example. For dimensions lineup, see Control Functions and Motor Dimensions Table.

Cover Type



Standard Type



For hole dimension details, **P.181**

Note: When F dimensions are minus, the motor falls below the bottom of the base rail.

■ Standard Specifications

Part Number	Lead (mm)	Ball Screw Diameter (mm)	Positioning Repeatability (mm)	Positioning (mm)		Parallelism (mm)		Backlash (mm)	Allowable Static Moment (N·m)		
				L=400 or Less	L=450 or More	L=400 or Less	L=450 or More		M_a	M_b	M_c
LXM3005	5	Ø10 (Ground)	±0.003	0.02	0.025	0.01	0.015	0.003	126	126	387
LXM3010	10										
LXM3005C	5										
LXM3010C	10										

■ Control Functions

Manufacturer Name	Motor Type						Driver Type			Motor Driver Set Part Number
		Motor	Manufacturer Part Number	Output / Type	Brake (Note 1)	Mass (kg)		Power Supply	Manufacturer Part Number	
Oriental Motor	T2	Stepping	ASM46AA	∝Step	None	0.5	D2	Single-Phase AC100V	ASD13A-A	AS46AA
	T3		ASM66AAE			0.85	D3		ASD24A-A	AS66AAE
	T4		PK545AW	5-phase		0.4	D4		RKD507-A	RK545AA
	T5		PK566AE			0.8	D5		RKD514L-A	RK566AAE
	T2B		ASM46MA	∝Step	Included	0.6	D2		ASD13A-A	AS46MA
	T3B		ASM66MAE			1.1	D3		ASD24A-A	AS66MAE
	T4B		PK545AWM	5-phase		0.52	D6		RKD507M-A	RK545AMA
	T5B		PK566AEM			1.1	D7		RKD514LM-A	RK566AMAE

Motor Driven Single Axis Actuators LX30 Standard / Cover Type

■ Load Capacity / Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/sec)	
			Horizontal	Vertical	Horizontal	Vertical
LXM3005 LXM3005C	Oriental Motor	T2 (B)	32	8	160	150
		T3 (B)			175	160
		T4 (B)			90	70
		T5 (B)			150	140
LXM3010 LXM3010C	Oriental Motor	T2 (B)	24	8	250	200
		T3 (B)			275	275
		T4 (B)			135	10
		T5 (B)			210	45

*Load capacity and max. velocity are reference values and may vary depending on operating conditions.
*Horizontal load capacity is for motor without brake and vertical load is for motor with brake.
*Distance for Acceleration/Deceleration: 25mm for LXM3005, 50mm for LX3010

■ Motor Dimensions Table

Manufacturer Name	Motor Type	Width B (mm)	Width C (mm)	Length D (mm)	Height E (mm)	Bottom Height F (mm)
Oriental Motor	T2	21	21	71.4	42	0.3
	T2B	21	21	101.4	42	0.3
	T3	30	30	73.6	51.3	-8.7
	T3B	30	30	108.6	51.3	-8.7
	T4	21	21	53.5	42	0.3
	T4B	21	21	83.5	42	0.3
	T5	30	30	69.5	51.3	-8.7
	T5B	30	30	109.5	51.3	-8.7

*E, F Value in ( ) is for Sensor & Rail Position "Left".

■ Dimensions / Actuator Body Mass

Part Number	Item	Base Length L (mm)									
		150	200	250	300	350	400	450	500	550	600
LXM3005 LXM3010 LXM3005C LXM3010C	Effective Stroke (St)	40	90	140	190	240	290	340	390	440	490
	A	25	50	50	50	50	50	50	50	50	50
	P1	—	—	100	100	100	100	100	100	100	100
	P2	100	100	50	100	50	100	50	100	50	100
	Number of Pitches	1	1	2	2	3	3	4	4	5	5
	Number of Holes N	4	4	6	6	8	8	10	10	12	12
Standard Type	Body Mass (kg)	1.64	1.99	2.32	2.67	3.01	3.36	3.70	4.04	4.39	4.73
Cover Type	Body Mass (kg)	2.09	2.43	2.78	3.12	3.47	3.82	4.16	4.50	4.84	5.19

*Mass shown includes actuator, coupling, sensor rail, 3 sensors and sensor flag. For motor mass, see the control function table.

■ Cable Configuration List

Cables come with terminal plug that directly connects with motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Cable	Brake Cable	Encoder Cable
Oriental Motor	T2	1 pc STPO-AS1-B-3	—	—
	T3			
	T4	1 pc STPO-RK1-A-3	—	
	T5			
	T2B	1 pc. STPO-AS1-B-3	Arranged by Customer	
	T3B	1 pc. STPO-AS1B-B-3	—	
	T4B	1 pc. STPO-RK2-A-3		
	T5B			

(Note 1) Choose motor with brake when unit is used in vertical position.
(Note 2) When ordering "Without Driver" Type, driver is not included.
(Note3-1) When ordering "with cables" type, cables indicated in cable configuration list will be included with unit.
(Note3-2) To use cables with length other than 3m, choose "without cable" type and order cable separately from the selection.
(Note 4-1) Sensor rail comes with the unit even when no. of sensor is specified as "none"; sensor flag will not be included.
(Note 4-2) Terminals for sensor cables is not provided.

Part Number	Selection					
	Motor Type	Driver Type	Cable (Note 3)	Number of Sensors (Note 4)	Sensor & Rail Location	Base Length L (mm)
LXM3005 LXM3010 LXM3005C LXM3010C	Control Functions Select from control function table.	Control Functions Select from control function table.	Included (3m): 3 None: N	2 units: 2 3 units: 3 None: N	Right: R Left: L	150~600 (50 Pitch)

Order Example

Part Number	–	Motor Type	–	Driver Type	–	Cable	–	Number of Sensors	–	Sensor & Rail Position	–	Base Length L
LXM3005	–	A2	–	AM10	–	3	–	3	–	R	–	600

Motor Driven Single Axis Actuators LX45 Standard / Cover Type

A unit consists of a motor amplifier, driver, coupling, cable, sensors, sensor rail and flag. Accuracy of the unit is inspected before shipment (Inspection Certificate included).

■ Oriental Motor Stepping Motor Specification

■ Components

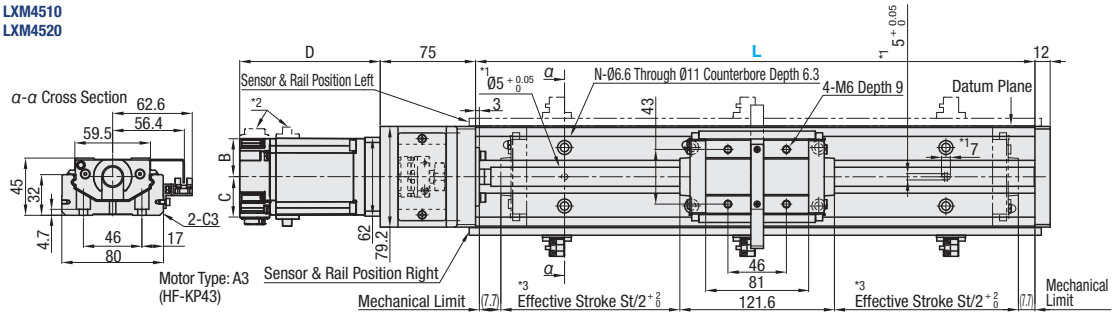
Actuator / Amplifier / Driver / Cable

Accessories: Instruction Manual for Driver

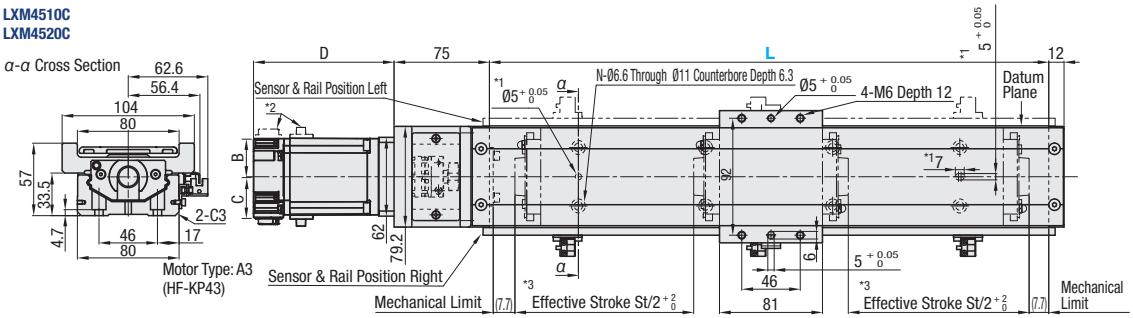
■ Actuator

	Base	Block
Material	Carbon Steel	SCM Material
Surface Treatment	Low Temperature Black Chrome Plating	
Hardness	Induction Hardened HRC58~64	HRC58~62

LXM4510
LXM4520

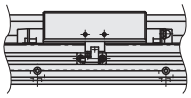


LXM4510C
LXM4520C

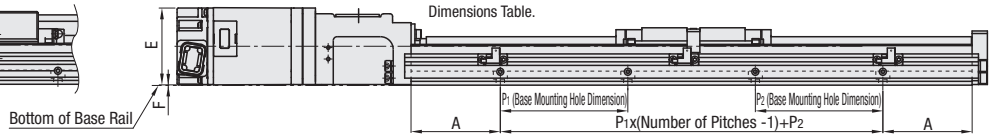


*1: Dowel Holes for Base Positioning
*2: Motor Cable will be attached to left side when position for sensor and rail is selected as "left".
*3: Limit sensor is adjusted to the positions that correspond to effective stroke St/2.
*4: Motor in the figure is for an example. For dimensions lineup, see Control Functions and Motor Dimensions Table.

Cover Type



Standard Type



For hole dimension details, P.185
Avoid interference with Sensor Flag.

Note: When F dimensions are minus, the motor falls below the bottom of the base rail.

■ Standard Specifications

Part Number	Lead (mm)	Ball Screw Diameter (mm)	Positioning Repeatability (mm)	Positioning (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N·m)		
							M_a	M_b	M_c
LXM4510	10	Ø15 (Ground)	±0.003	0.025	0.015	0.003	291	291	972
LXM4520	20								
LXM4510C	10								
LXM4520C	20								

*Allowable Static Moment P.167

■ Control Functions

Manufacturer Name	Motor Type						Driver Type			Motor Driver Set Part Number
	Selection	Motor	Manufacturer Part Number	Output / Type	Brake (Note 1)	Mass (kg)	Selection	Power Supply	Manufacturer Part Number	
Oriental Motor	T3	Stepping	ASM66AK	∝ Step	None	0.85	D3	Single-Phase AC100V	ASD24A-A	AS66AAE
	T5		PK566AE	5-Phase		0.8	D5		RKD514L-A	RK566AAE
	T3B		ASM66MAE	∝ Step	Included	1.1	D3		ASD24A-A	AS66MAE
	T5B		PK566AEM	5-Phase		1.1	D7		RKD514LM-A	RK566AMAE

Motor Driven Single Axis Actuators LX45 Standard / Cover Type

■ Load Capacity / Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/sec)	
			Horizontal	Vertical	Horizontal	Vertical
LXM4510 LXM4510C	Oriental Motor	T2(B)	40	16	200	175
		T4(B)			165	25
LXM4520 LXM4520C	Oriental Motor	T2(B)	24	16	300	200
		T4(B)			255	10

*Load capacity and max. velocity are reference values and may vary depending on operating conditions.
*Horizontal load capacity is for motor without brake and vertical load is for motor with brake.
*Distance for Acceleration/Deceleration: 25mm for LX4510, 50mm for LX4520

■ Motor Dimensions Table

Manufacturer Name	Motor Type	Width B (mm)	Width C (mm)	Length D (mm)	Height E (mm)	Bottom Height F (mm)
Oriental Motor	T3	30	30	73.6	60	0.5
	T3B	30	30	108.6	60	0.5
	T4	30	30	69.5	60	0.5
	T5B	30	30	109.5	60	0.5

*E, F Value in ( ) is for Sensor & Rail Position "Left".

■ Dimensions / Actuator Body Mass

Part Number	Item	Base Length L (mm)					
		340	390	440	490	540	590
LXM4510 LXM4520 LXM4510C LXM4520C	Effective Stroke (St)	200	250	300	350	400	450
	A	70	70	70	70	70	70
	P_1	100	100	100	100	100	100
	P_2	100	50	100	50	100	50
	Number of Pitches	2	3	3	4	4	5
	Number of Holes N	6	8	8	10	10	12
Standard Type	Body Mass (kg)	6.06	6.68	7.29	7.91	8.54	9.17
Cover Type	Body Mass (kg)	7.00	7.67	8.33	9.00	9.68	10.36

*Mass shown includes actuator, coupling, sensor rail, 3 sensors and sensor flag. For motor mass, see the control function table.

■ Cable Configuration List

Cables come with terminal plug that directly connects with motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Cable	Brake Cable	Encoder Cable
Oriental Motor	T3	1 pc STPO-AS1-B-3	—	—
	T5	1 pc STPO-RK1-A-3	—	
	T3B	1 pc STPO-AS1B-B-3		
	T5B	1 pc STPO-RK2-A-3		

(Note 1) Choose motor with brake when unit is used in vertical position.
(Note 2) When ordering "Without Driver" Type, driver is not included.
(Note 3–1) When ordering "with cables" type, cables indicated in cable configuration list will be included with unit.
(Note 3–2) To use cables with length other than 3m, choose "without cable" type and order cable separately.
(Note 4–1) Sensor rail comes with the unit even when no. of sensor is specified as "none"; sensor flag will not be included.
(Note 4–2) Terminals for sensor cables is not provided.

Part Number	Selection					
	Motor Type	Driver Type	Cable (Note 3)	Number of Sensors (Note 4)	Sensor & Rail Location	Base Length L (mm)
LXM4510 LXM4520 LXM4510C LXM4520C	Control Functions Select from control function table.	Control Functions Select from control function table.	Included (3m): **3** None: **N**	2 units: **2** 3 units: **3** None: **N**	Right: **R** Left: **L**	340~590 (50 Pitch)

Order Example

Part Number	–	Motor Type	–	Driver Type	–	Cable	–	Number of Sensors	–	Sensor & Rail Position	–	Base Length L
LXM4510	–	A3	–	AM40	–	3	–	3	–	R	–	590

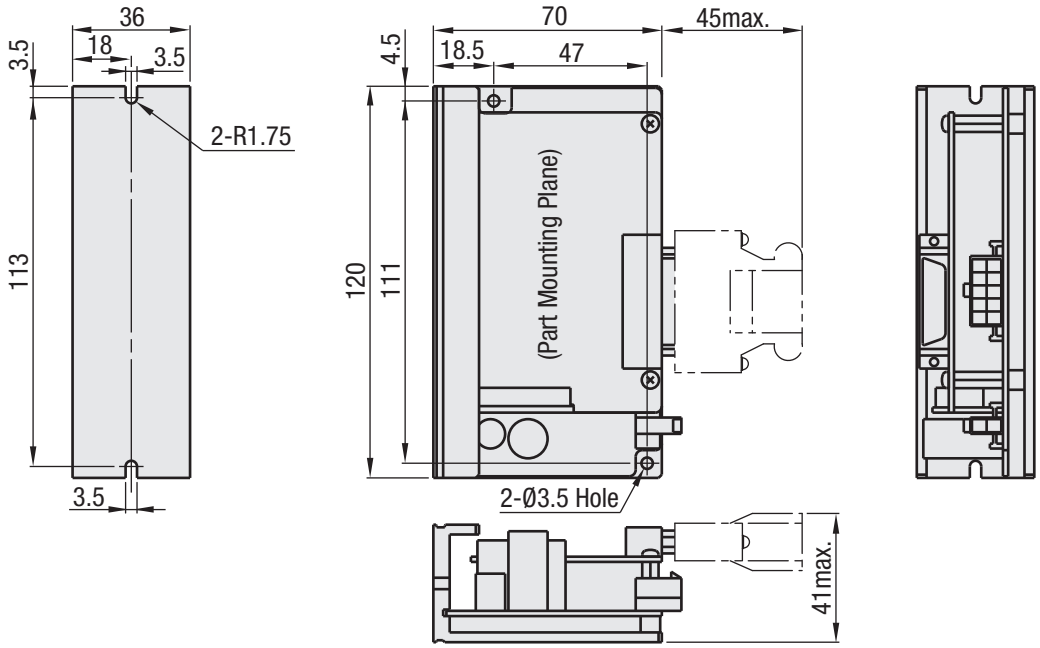
Specification of Amplifier / Driver

Oriental Motor ∝-Step ASC36AK

■ Driver Basic Specifications

Input Power Supply		DC24V ±10%
Velocity / Position Control Commands		Pulse Input
Maximum Input Pulse Frequency		250 kHz (when pulse duty is 50%)
Protection Functions		When the following protective functions are activated, motor stops automatically with alarm signal. Overload, overvoltage and velocity error protections, and overspend, EEPROM data error, sensor error and system error
Input Signal		Photo Coupler Input / Input Resistance: 220Ω Input Current: 7~20 mA [CW Pulse / CCW Pulse (Negative Logic Pulse Input), Pulse / Rotational Direction Switch (Negative Logic Pulse Input) / Current OFF / Alarm Clear / Resolution Switch]
Output Signal		Photo Coupler / Open-Collector Output External Use Condition: DC30V / 15mA max. (Positioning Completion Signal, Alarm Signal) Transistor / Open-Collector Output Interface Condition: DC30V, 15 mA max. (Feedback Pulse A/B Signal)
Insulation Resistance		100MΩ minimum when measured by DC500V megger between the following places. • Heat Sink – Power Supply Input Terminals
Dielectric Strength Voltage		Sufficient to withstand the following for one minute: • Heat Sink – Power Supply Input Terminals 0.5kV 50Hz or 60Hz
Operating Environment (in Operation)	Operating Temperature	0~+40°C (No Freezing)
	Operating Humidity	85%RH or below (No Condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

■ External Dimension Diagram



Single Axis Units – Overview

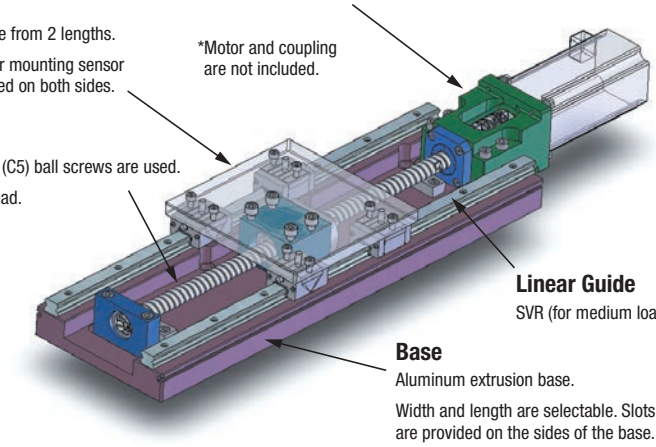
Can now replace costly in-house designs.
Rolled Ball Screw, Precision Ball Screw, and Cover Type are in our line-up!

Features

1 **High Accuracy**
Ball screw and linear guide are integrated. Rolled Ball Screw, Precision Ball Screw, and Cover Type are available.

2 **Economical**
Single Axis Units best suited for high load transfer cost equivalent to the components cost.

3 **Short Lead Time**
11 days shipping is available for various lineup.



■ Single Axis Unit List

Shape	Type	Product Name	Feature	Page
	KUA KUB KUH KUT	Rolled / Precision Ball Screw	Single Axis Unit Series Basic Type Rolled Ball Screw (C10) and Precision Ball Screw (C5) are used; best suited for heavy load transfer.	206
	KUAC KUBC KUHC KUTC	Cover Type Rolled / Precision Ball Screw	Cover is provided as standard equipment. Measures for intrusion of foreign objects, offering safety. Easy maintenance.	208

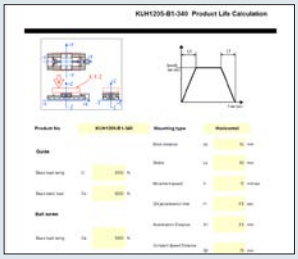
■ Useful Technical Calculation Software

Life calculation necessary for selection of single axis actuators can be easily achieved for free on MISUMI website:

Free on MISUMI website.

Selection Window

Calculation Result Window



KU Series for Environmental Measures / Technical Data

Environmental Measures

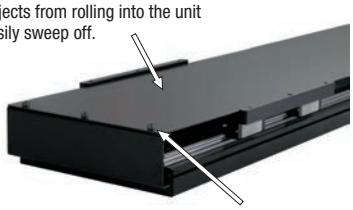
Cover Types are now available for safe use of Single Axis Units to meet customers' work environments.
Neither quotation nor delivery management is required. Maintenance costs are considerably reduced.

■ Cover Specifications (P.208)

- **Economical: Prevents components from falling off and dripping liquids, and protects machines economically.**
- **Easy: Ordering procedure and installation are simple. Easy machine cleaning and maintenance.**
- **Reduction: Reduced machine trouble. More advantages with less cost. Labor saving for customers.**

• Cover prevents intrusion of foreign objects.

Keep foreign objects from rolling into the unit and they are easily sweep off.



• Easy Cover installation with no complex adjustments.

• Motor Bracket is applicable to each manufacturer's motors.
*Motor and coupling are not included.

■ Cover Mounting Procedure

1) KUAC and KUBC are secured to device or table provided by customers.

2) Install the included brackets 1 and 2 to the Single Axis Unit.

3) Lastly, secure included cover 3 to included brackets 1 and 2 installed in Step 2).

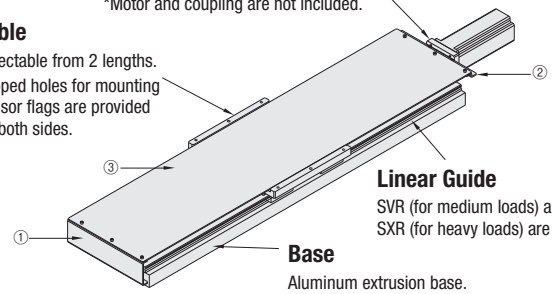
Note: Brackets 1 and 2, and cover 3 and mounting screws are included in the product package.
Assembly required.

Applications: Cover Series are best served as protection against damages to components by small parts dropped, and suitable for areas in which dripping of adhesive agent or oil is undesirable.

Motor Bracket
Compatible with Servo Motors and Stepping Motors.
Easy installation with pilot and no shaft centering adjustments.

*Motor and coupling are not included.

Table
Selectable from 2 lengths.
Tapped holes for mounting sensor flags are provided on both sides.



Linear Guide
SVR (for medium loads) and SXR (for heavy loads) are used.

Base
Aluminum extrusion base.
Width and length are selectable. Slots for sensor mounting are provided on the sides of the base.

Technical Data

■ Maximum Velocity

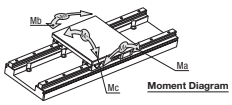
Part Number		*Max. Velocity (mm/s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
Rolled Ball Screw KUA(C) KUB(C)	1204(S, L, LS)	265	265	265	265	265	265	—	—	—
	1210(S, L, LS)	651	651	651	651	651	651	651	633	—
	1505(L)	264	264	264	264	264	264	264	264	264
	1510(L)	527	527	527	527	527	527	527	527	527
	1520(L)	1055	1055	1055	1055	1055	1055	1055	1055	1055
	2005L	200	200	200	200	200	200	200	200	200
	2010L	—	397	397	397	397	397	397	397	397
	2020L	—	—	801	801	801	801	801	801	801

Part Number		*Max. Velocity (mm/s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
Rolled Ball Screw KUH(C) KUT(C)	1205(S, L, LS)	486	486	486	—	—	—	—	—	—
	1210(S, L, LS)	972	972	972	972	766	611	—	—	—
	1505(L)	389	389	389	389	389	374	—	—	—
	1510(L)	778	778	778	778	778	749	—	—	—
	1520(L)	1556	1556	1556	1556	1556	1498	—	—	—
	2005L	292	292	292	292	292	292	292	292	286
	2010L	—	583	583	583	583	583	583	583	517
	2020L	—	—	1167	1167	1167	1167	1167	1167	1027

■ Allowable Static Moment

Part Number	Table Length	Allowable Static Moment (N·m)			Table Length	Allowable Static Moment (N·m)		
Type	L_1	M_a	M_b	M_c	L_1	M_a	M_b	M_c
KUA(C) KUB(C) KUH(C) KUT(C)	100	401.5	401.5	783.8	150	783.8	783.8	783.8
				858.1				858.1
	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
		1677.8	1677.8	3008.9		2411.3	2411.3	3008.9

The table above lists reference values in static state.
For actual life calculations, please use our Technical Calculation Software.



Moment Diagram

■ Terminology

– Positioning Repeatability
Position and Measure moves to a predetermined point in one direction are made seven times.

– Parallelism
An actuator is fixed to a surface plate. Parallelism readings are taken from a carriage center mounted dial indicator (0.01 graduation) setup against the surface plate. Measurement is taken along 20~30mm from the side of the base.

– Maximum Velocity
Values listed on each page are calculated based on critical speed and DN value of ball screws.
Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

Single Axis Units

Rolled Ball Screws / Precision Ball Screws

Feature: Various Sensor Sets (**P.210**) are available! Single Axis Units driven by Rolled Ball Screw and Precision Ball Screw. Suitable for heavy load transfer.

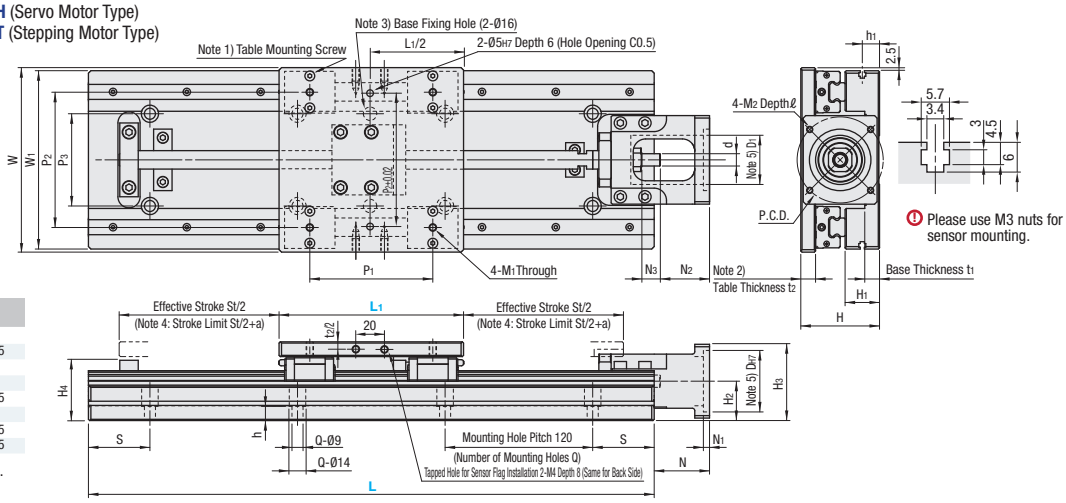
Note 1) The number of table mounting screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) When fixing a workpiece to the table, make sure that screw lengths are not longer than plate thickness t_2.
Note 3) Access hole is provided when L=340 (except L_1=100).
Note 4) Stroke limit is the stroke at the point of contact with the stopper.
Note 5) Some motor brackets have D dimensions smaller than D_1. When selecting couplings, refer to "Coupling Application Examples Parts Numbers" below.
EFor KUB / KUT Motor installation interface drawing and dimensions, see the next page.

Rolled Ball Screws

KUA (Servo Motor Type)
KUB (Stepping Motor Type)

Precision Ball Screw

KUH (Servo Motor Type)
KUT (Stepping Motor Type)



Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Type	No.	a
KUH KUT	1205	5
	1210	3.5
	1505	5
	1510	5
	1520	3.5
	2005	5
	2010	3.5
	2020	3.5

For KUA and KUB, a=5.

Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing with Housing	Stopper
Material	6063-T6 Aluminum Alloy	5052 Aluminum Alloy	5052 Aluminum Alloy	5052 Aluminum Alloy	1045 Carbon Steel	5052 Aluminum Alloy	POM Polyoxymethylene (White)
Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	—

Part Number		Selection		Ball Screw Rolled: BSSZ Precision: BSS			W Width	H Height	H_1 Guide Height	H_2 Shaft Center Height	Linear Guide Part No	Bearing		Coupling App Ex Part Number	
Type	No.	L Base Length	L_1 Table Length	Type	Dia	Lead						Fixed Side (Support Unit)	Support Side (Bearing Model)	KUA / KUH	KUB / KUT
Rolled Ball Screw KUA KUB / Precision Ball Screw KUH KUT	1204	340 400 460 520 580 640 700 760 820	100 150	Rolled Ball Screw	12	4	150	55	21	28	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1205			Precision		5									
	1210			Precision / Rolled		10									
	*1204S			Rolled Ball Screw		4								—	CPDW32 MCSLC32
	*1205S			Precision		5									
	*1210S					10									
	1505			Precision / Rolled	15	5		64	28	32		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510					10									
	1520					20									
	1204L		150 200	Rolled Ball Screw	12	4	200	55	21	28	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1205L			Precision		5									
	1210L			Precision / Rolled		10									
	*1204LS			Rolled Ball Screw		4								—	CPDW32 MCSLC32
	*1205LS			Precision		5									
	*1210LS					10									
	1505L			Precision / Rolled	15	5		64	28	32		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L					10									
	1520L					20									
	2005L				20	5		68	28	34	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L					10		79	39	40					
	2020L			Rolled Ball Screw Precision		20		68 79	28 39	34 40					

For Ball Screws, **P.44–73**. For Linear Guides, **P.6–43**. For Couplings please visit www.misumiusa.com (Coupling are not included.)
Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number		Table					Base				Base Mounting Hole				*Motor Installation Interface (KUA, KUH)										
Type	No.	W	t_2	M_1	P_1	P_2	W_1	H_4	t_1	h_1	P_3	h	Q	S	P.C.D.	D	D_1	H_3	N	N_1	N_2	N_3	d	M_2	L
Rolled Ball Screw KUA KUB / Precision Ball Screw KUH KUT	1204(S)	150	10	M6	L_1 P_1: 100 50; 150 100	110	145	42	10	13	75	9.5	L / Q W=150 W=200: 340 6 6; 400 6 8; 460 8 8; 520 8 10; 580 10 10; 640 10 12; 700 12 12; 760 12 14; 820 14 14	L / S W=150 W=200: 340 50 50; 400 80 20; 460 50 50; 520 80 20; 580 50 50; 640 80 20; 700 50 50; 760 80 20; 820 50 50	46	30	34	49	37	5	32	15	8	M4	8
	1205(S)																								
	1210(S)																								
	1505		12					49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510																								
	1520																								
	1204L(S)	200	10		L_1 P_1: 150 80; 200 130	160	195	42	10	13	120	9.5			46	30	34	49	37		32		8	M4	8
	1205L(S)																								
	1210L(S)																								
	1505L		12					49		20		11.5			70	50	45	62	45		40		10	M5	10
	1510L																								
	1520L																								
	2005L				L_1 P_1: 150 100; 200 150	150		55	12	20								64							
	2010L							61		29								70	57.5		39.5	18	12		
	2020L							55 (Rolled) 61 (Precision)		20 (Rolled) 29 (Precision)								64 (Rolled) 70 (Precision)							

Ordering Example

Part Number	–	L	–	L1
KUA1204	–	340	–	150

Days to Ship 11 Days

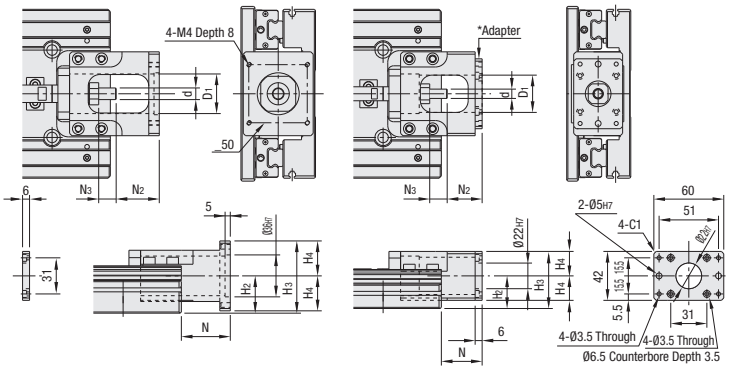
Sensor Set can be specified as alterations. Alteration Details **P.208**

* For KUB and KUT Motor installation interface dimensions, please see the next page.

Single Axis Units

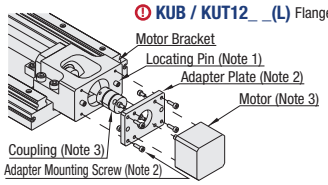
Rolled Ball Screws / Precision Ball Screws

■ KUB / KUT Motor Installation Interface



KUB / KUT12_ _(L)S
KUB / KUT15_ _(L)
KUB / KUT20_ _L
KUB / KUT12_ _(L)

■ Mounting Instruction



Note 1) Locating pin is press-fit into the motor bracket.
Note 2) A motor adapter plate and 4 pcs of mounting screws M3x10 are included.
Note 3) Motor and coupling are not included.

Part Number		*Motor Installation Interface (KUB / KUT)						
Type	No.	D_1	H_3	H_4	N	N_2	N_3	d
Stepping Motor Type KUB KUT	12_ _(L)	33.5	49	21	35	30	15	8
	*12_ _S(LS)		58	30	45	40		
	15_ _(L)	35.5	62		43	38		10
	2005L		64		58	40	18	12
	2010L		70					
KUB	2020L		64					
KUT	2020L		70					

KUB / KUT12_ _S (LS) flanged surface (H_3 dimensions) protrudes downward from the base bottom surface by 2mm.

■ Servo Motor Application Table

Part Number	Manufacturer	Part Number	Output (W)	Flange
KUA / KUH12_ _(L)	Yasukawa Electric Corporation	SGMAH-A3	30	40 sq.
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co., Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUA / KUH15_ _(L) KUA / KUH20_ _L	Yasukawa Electric Corporation	SGMAH-02	200	60 sq.
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co., Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

■ Stepping Motor Application Table

Part Number	Manufacturer	Part Number	Flange
KUB / KUT12_ _(L)	Oriental Motor	Step AS46 / ASC46	42 sq.
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUB / KUT12_ _(L)S		Step AS66 / ASC66	60 sq.
		Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	
KUB / KUT15_ _(L) KUB / KUT20_ _L		Step AS66 / ASC66	60 sq.
		Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

Step is applicable to AS and ASC Series Standard Type.

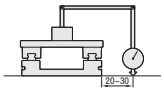
Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors are not limited to the above listed products. Please confirm each mounting dimension.

■ Accuracy / Static Load Capacity

Part Number		*Positioning Repeatability Positioning (mm)	Static Load Capacity (kg)		*Parallelism (mm)
Type	No.		Horizontal	Vertical	
Rolled Ball Screw KUA KUB	1204(S)	±0.03 (Rolled)	1679	138	
	1205(S)				
	1210(S)	±0.05 (Rolled) ±0.003 (Precision)			
	1505			153	
	1510				
	1520				
	1204L(S)	±0.03 (Rolled)	2897	137	
	1205L(S)				
	1210L(S)				
Precision Ball Screw KUH KUT	1505L	±0.05 (Rolled) ±0.003 (Precision)		153	
	1510L				
	1520L				
	2005L		4345	169	
	2010L	±0.08 (Rolled) ±0.003 (Precision)			
	2020L	±0.05 (Rolled) ±0.003 (Precision)			

L	Parallelism
340	0.06
400	0.07
460	0.08
520	0.09
580	0.10
640	0.12
700	0.13
760	0.14
820	0.15

Parallelism Measurement



The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software.
See **P.205** for Max. Velocity and Static Load Capacity. See our website for Moment of Inertia.
For Terminology, see **P.205**

■ Mass

Part Number	Mass (kg)								
	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
12_ _(S)	5.3	5.9	6.4	7.0	7.5	8.1	8.6	9.2	—
15_ _	6.5	7.2	7.8	8.5	9.2	9.9	10.6	11.3	11.9
12_ _L(S)	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	—
15_ _L	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4
20_ _L	11.4	12.5	13.6	14.7	15.8	16.9	18.0	19.1	20.2

Alterations

Part Number	–	L	–	L1	–	(KC, KLC, etc.)
KUA1204	–	340	–	150	–	KC5

Available for Rolled Ball Screw (KUA, KUB) only

Days to Ship **13** Days
Non-Returnable

■ Coupling Side Ball Screw End Face Machining

Alterations	Code	Spec.	
Keyway Machining on Fixed Side Shaft End	KC	Keyway is machined. KC=1mm Increment Ordering Code KC10	Part No. / KC: KUA / B12, KUA / B15, KUA / B20: 3≤KC≤14; 4≤KC≤19
Keyway Machining on Fixed Side Shaft End	KLC	Keyway machining location can be specified. K, S=1 mm Increment Ordering Code KLC-K5-S2	Part No. / KC: KUA / B12: 3≤K≤14; KUA / B15: 4≤K+S≤14; KUA / B20: 4≤K≤19, 5≤K+S≤19
A Flat Machined on Fixed Side Shaft End	SC	Set screw flat alteration SC=1mm Increment Ordering Code SC7	Part No. / KC: KUA / B12, KUA / B15, KUA / B20: 5≤SC≤14; 5≤SC≤19
A Flat Machined on Fixed Side Shaft End (2 Locations)	SWC	Two set screw flat alteration (at 90°location) SWC=1mm Increment Ordering Code SWC7	Part No. / KC: KUA / B12, KUA / B15, KUA / B20: 5≤SWC≤14; 5≤SWC≤19

Alterations

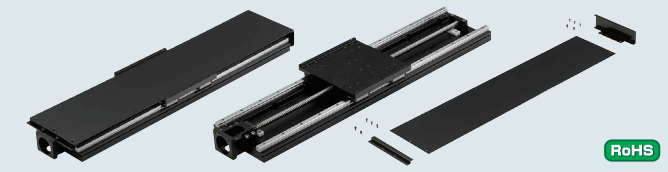
Part Number	–	L	–	L1	–	(A1, B1, etc.)
KUA1204	–	340	–	150	–	A1

For KUA, KUB, KUH and KUT, Sensor Set can be specified as alterations. Alteration Details **P.208**

Single Axis Units

Rolled Ball Screws / Precision Ball Screws – Cover Type

Feature: Various Sensor Sets (**P.210**) are available! Single Axis Units come with cover as standard equipment to prevent entry of foreign objects.



Rolled Ball Screws
KUAC (Servo Motor Type)
KUBC (Stepping Motor Type)

Precision Ball Screw
KUHC (Servo Motor Type)
KUTC (Stepping Motor Type)

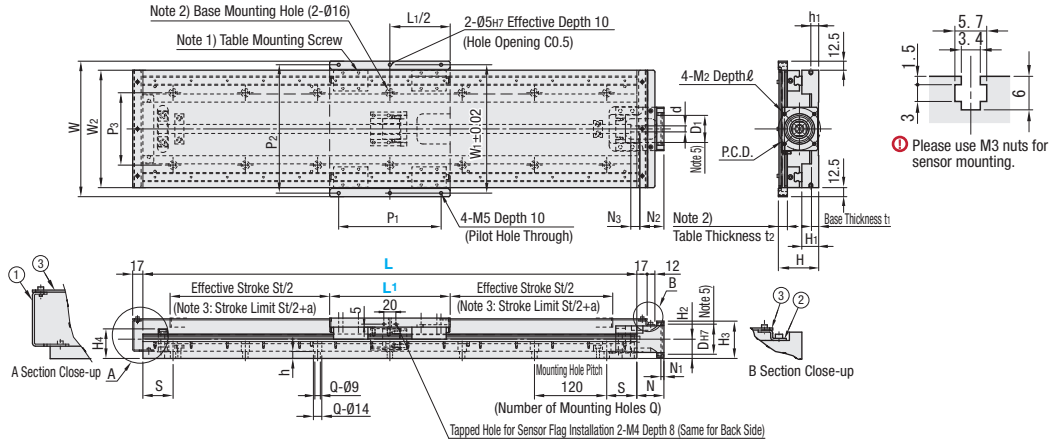
Note 1) The number of table mounting screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) Access hole is provided when L=340 (except L_1=100).
Note 3) Stroke limit is the stroke at the point of contact with the stopper.
Note 4) Do not hang the unit inverted. The cover will sag.
Note 5) Some motor brackets have D dimensions smaller than D_1. When selecting couplings, refer to "Coupling Application Examples Parts Numbers" below.

Accessories	MMaterial	SSurface Treatment	Qty	Note
$Bracket_1$	SECC	Electrostatic Painting (Black)	1	—
$Bracket_2$	SECC	Electrostatic Painting (Black)	1	—
$Cover_3$	5052 Aluminum Alloy	Anodize (Black)	1	—
Hex Socket Head Cap Screw M4x8	4137 Alloy Steel	Trivalent Chromate (Black)	6	Screws for Covers
Hex Socket Head Cap Screw M5x8	4137 Alloy Steel	Trivalent Chromate (Black)	8	Bracket Mounting Screw

Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Type	No.	a
KUHC KUTC	1205(L)	5
	1210(L)	3.5
	1505(L)	5
	1510(L)	5
	1520(L)	3.5
	2005(L)	5
	2010(L)	3.5
	2020(L)	3.5

For KUAC and KUBC, a=5.



Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing with Housing	Stopper
Material	6063-T6 Aluminum Alloy	5052 Aluminum Alloy	5052 Aluminum Alloy	5052 Aluminum Alloy	1045 Carbon Steel	5052 Aluminum Alloy	POM Polyoxymethylene (White)
Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	—

Part Number		Selection		Ball Screw Rolled: BSSZ Precision: BSS			W Width	W_1	H Height	H_1 Guide Height	H_2 Shaft Center Height	Linear Guide Part No	Bearing		Coupling App Ex Part Number	
Type	No.	L Base Length	L_1 Table Length	Type	Dia	Lead							Fixed Side (Support Unit)	Support Side (Bearing Model)	KUAC / KUHC	KUBC / KUTC
Rolled Ball Screw KUAC KUBC	1204	340 400 460 520 580 640 700 760 820	100 150	Rolled Ball Screw	12	4	170	159	65	21	28	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1205			Precision		5										
	1210			Precision / Rolled	15	10			74	28	32		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1505					5										
	1510					10										
	1520					20										
Precision Ball Screw KUHC KUTC	1204L		150 200	Rolled Ball Screw	12	4	220	209	65	21	28	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1205L			Precision		5										
	1210L			Precision / Rolled	15	10			74	28	32		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1505L					5										
	1510L					10										
	1520L					20										
	2005L				20	5			78	28	34	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L					10			89	39	40					
	2020L			Rolled Ball Screw		20			78	28	34					
				Precision					89	39	40					

*marked sizes are applicable to KUB and KUT only.
For size selections, see Price List

For Ball Screws, **P.44–73**. For Linear Guides, **P.6–43**. For Couplings please visit www.misumiusa.com (Coupling are not included.)
Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number		Table					Base			Base Mounting Hole				* Motor Installation Interface (KUA, KUH)											
Type	No.	W	t_2	W_1	P_1, P_2	W_2	H_4	t_1	h_1	P_3	h	Q	S	P.C.D.	D	D_1	H_3	N	N_1	N_2	N_3	d	M_2	L
Rolled Ball Screw KUAC KUBC	1204	170	20	159	L_1 P1 P2: 100 70 158; 150 120	145	42	10	13	75	9.5	L: 340 400 460 520 580 640 700 760 820; Q W=150: 6 6 8 8 10 10 12 12 14 14; Q W=200: 6 8 8 10 10 12 12 14 14	L: 340 400 460 520 580 640 700 760 820; S W=150: 50 80 50 80 50 80 80 80 50; S W=200: 50 20 50 20 50 20 50 20 50	46	30	34	49	37	5	32	15	8	M4	8
	1205																								
	1210																								
	1505		22				49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510																								
	1520																								
Precision Ball Screw KUHC KUTC	1204L	220	20	209	L_1 P1 P2: 150 120 208; 200 170	195	42	10	13	120	9.5			46	30	34	49	37		32		8	M4	8
	1205L																								
	1210L																								
	1505L		22				49		20		11.5			70	50	45	62	45		40		10	M5	10
	1510L							12																	
	1520L																								
	2005L				L_1 P1 P2: 150 120 208; 200 170		55		20								64								
	2010L						61		29								70	57.5		39.5	18	12			
	2020L						55 (Rolled) 61 (Precision)		20 (Rolled) 29 (Precision)								64 (Rolled) 70 (Precision)								

Ordering Example

Part Number	–	L	–	L1
KUHC1205	–	340	–	150

Days to Ship **11** Days

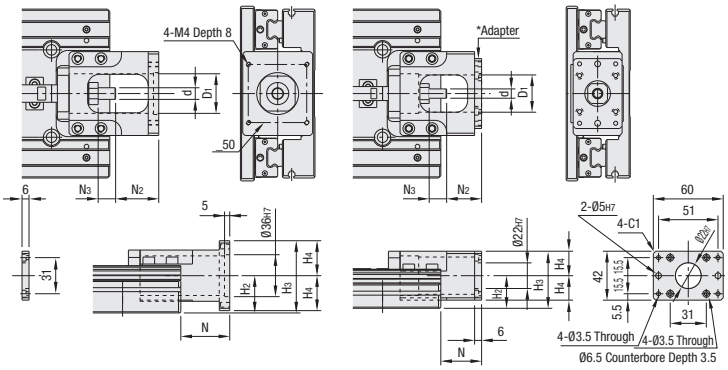
Sensor Set can be specified as alterations. Alteration Details **P.208**

* For KUBC and KUTC Motor installation interface dimensions, please see the next page.

Single Axis Units

Rolled Ball Screws / Precision Ball Screws – Cover Type

■ KUBC / KUTC Motor Installation Interface



KUBC / KUTC12_ _(L)

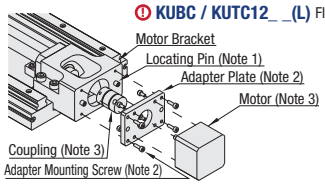
KUBC / KUTC15_ _(L)
KUBC / KUTC20_ _L

KUBC / KUTC12_ _(L)

Adapter Plate Diagram

Please see Motor Adapter Plate installation drawing.

■ Mounting Instruction



Note 1) Locating pin is press-fit into the motor bracket.
Note 2) A motor adapter plate and 4 pcs of mounting screws M3x10 are included.
Note 3) Motor and coupling are not included.

Part Number		Motor Installation Interface (KUBC / KUTC)						
Type	No.	D_1	H_3	H_4	N	N_2	N_3	d
Stepping Motor Type	12_ _(L)	33.5	49	21	35	30	15	8
	15_ _(L)		62		43	38		10
KUBC	2005L	35.5	64	30	58	40	18	12
KUTC	2010L		70					
KUBC	2020L		64					
KUTC	2020L		70					

KUBC / KUTC12_ _(L) flanged surface (H_3 dimensions) protrudes downward from the base bottom surface by 2mm.
For Cover Mounting Procedure, see catalog.

■ Servo Motor Application Table

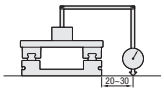
Part Number	Manufacturer	Part Number	Output (W)	Flange
KUA / KUH12_ _(L)	Yasukawa Electric Corporation	SGMAH-A3	30	40 sq.
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co., Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUA / KUH15_ _(L) KUA / KUH20_ _L	Yasukawa Electric Corporation	SGMAH-02	200	60 sq.
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co., Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

■ Accuracy / Static Load Capacity

Part Number		*Positioning Repeatability Positioning (mm)	Static Load Capacity (kg)		*Parallelism (mm)
Type	No.		Horizontal	Vertical	
Rolled Ball Screw KUAC KUBC	1204	±0.03 (Rolled)	1679	138	
	1205	±0.05 (Rolled) ±0.003 (Precision)			
	1210			153	
	1505				
	1510				
	1520				
	1204L	±0.03 (Rolled)	2897	137	
	1205L	±0.05 (Rolled) ±0.003 (Precision)			
	1210L			153	
	1505L				
	1510L				
	1520L				
Precision Ball Screw KUHC KUTC	2005L		4345	169	
	2010L	±0.08 (Rolled) ±0.003 (Precision)			
	2020L	±0.05 (Rolled) ±0.003 (Precision)			

L	Parallelism
340	0.06
400	0.07
460	0.08
520	0.09
580	0.10
640	0.12
700	0.13
760	0.14
820	0.15

Parallelism Measurement



The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software.
See **P.205** for Max. Velocity and Static Load Capacity. See our website for Moment of Inertia.
For Terminology, see **P.205**

■ Mass

Part Number	Mass (kg)								
	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
12_ _(S)	5.8	6.5	7.0	7.7	8.2	8.9	9.4	10.1	—
15_ _	7.1	7.8	8.5	9.2	10.0	10.7	11.4	12.2	12.8
12_ _L	7.3	8.0	8.6	9.2	9.8	10.4	11.0	11.7	—
15_ _L	8.8	9.6	10.5	11.4	12.2	13.1	13.9	14.8	15.7
20_ _L	12.2	13.4	14.5	15.7	16.9	18.0	19.2	20.4	21.5

Alterations

Part Number	–	L	–	L1	–	(KC, KLC, etc.)
KUAC1204	–	340	–	150	–	KC5

Available for Rolled Ball Screw (KUAC, KUBC) only

Days to Ship **13** Days

Non-Returnable

■ Stepping Motor Application Table

Part Number	Manufacturer	Part Number	Flange
KUBC / KUTC12_ _(L)	Oriental Motor	Step AS46 / ASC46	42 sq.
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUBC / KUTC15_ _(L) KUBC / KUTC20_ _L		Step AS6*	60 sq.
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

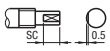
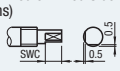
Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors are not limited to the above listed products. Please confirm each mounting dimension.

Alterations

Part Number	–	L	–	L1	–	(A1, B1, etc.)
KUHC1205	–	340	–	150	–	A2

For KUAC, KUBC, KUHC and KUTC, Sensor Set can be specified as alterations. Alteration Details **P.208**

■ Coupling Side Ball Screw End Face Machining

Alterations	Code	Spec.	
Keyway Machining on Fixed Side Shaft End 	KC	Keyway is machined. KC=1mm Increment Ordering Code KC10	Part No. / KC KUAC / BC12: 3≤KC≤14 KUAC / BC15: 4≤KC≤19 KUAC / BC20:
Keyway Machining on Fixed Side Shaft End 	KLC	Keyway machining location can be specified. K, S=1 mm Increment Ordering Code KLC-K5-S2	Part No. / KC KUAC / BC12: 3≤K≤14 KUAC / BC15: 4≤K+S≤14 KUAC / BC20: 4≤K≤19, 5≤K+S≤19
A Flat Machined on Fixed Side Shaft End 	SC	Set screw flat alteration SC=1mm Increment Ordering Code SC7	Part No. / KC KUAC / BC12: 5≤SC≤14 KUAC / BC15: KUAC / BC20: 5≤SC≤19
A Flat Machined on Fixed Side Shaft End (2 Locations) 	SWC	Two set screw flat alteration (at 90°location) SWC=1mm Increment Ordering Code SWC7	Part No. / KC KUAC / BC12: 5≤SWC≤14 KUAC / BC15: KUAC / BC20: 5≤SWC≤19

Single Axis Unit

Sensor Set Alteration List

■ Sensor Set Alteration List

Type	Alterations		Code	Spec.
Proximity Sensor (SUNX)	Applicable Model	KUA / KUB / KUH / KUT	A1 B1	Proximity Sensor set is included. A1, A2c Proximity Sensor 3 units (SUNX: GX-F8A) B1, B2c Proximity Sensor 3 units (SUNX: GX-F8B) A sensor set consists of the components listed in the table below.
		KUAC / KUBC / KUHC / KUTC	A2 B2	
Photo Sensor (SUNX)	Applicable Model	KUA / KUB 12_ _ / 12_ _S / 12_ _L(S)	C1	Photo Sensor set is included. C1~C7c Photo Sensor 3 units (SUNX: PM-L24) A sensor set consists of the components listed in the table below.
		KUH / KUT 15_ _ / 15_ _L	C2	
		KUA / KUB 2005L / 2020L KUH / KUT 2005L	C3	
		KUA / KUB 2010L KUH / KUT 2010L / 2020L	C4	
		KUAC / KUBC 12_ _ / 15_ _ KUHC / KUTC 12_ _L / 15_ _L	C5	
		KUAC / KUBC 2005L/2020L KUHC / KUTC 2005L	C6	
		KUAC / KUBC 2010L KUHC / KUTC 2010L / 2020L	C7	Photo Sensor set is included. D1~D7c Photo Sensor 3 units (OMRON: EE-SX911-R1M) A sensor set consists of the components listed in the table below.
Photo Sensor (OMRON)	Applicable Model	KUA / KUB 12_ _ / 12_ _S / 12_ _L(S)	D1	
		KUH / KUT 15_ _ / 15_ _L	D2	
		KUA / KUB 2005L / 2020L KUH / KUT 2005L	D3	
		KUA / KUB 2010L KUH / KUT 2010L / 2020L	D4	
		KUAC / KUBC 12_ _ / 15_ _ KUHC / KUTC 12_ _L / 15_ _L	D5	
		KUAC / KUBC 2005L / 2020L KUHC / KUTC 2005L	D6	
		KUAC / KUBC 2010L KUHC / KUTC 2010L / 2020L	D7	

Ordering Code A1

Components					
Sensor Flag	Proximity Sensor	Mounting Bracket	Sensor Mounting Screw	Sensor Mounting Nut	Sensor Flag Screw
1 pc	3 pcs	3 pcs	3 pcs	3 pcs	2 pcs

Ordering Code C1

Components				
Sensor Flag	Photo Sensor	Sensor Bracket	Sensor Mounting Screw	Sensor Mounting Washer
1 pc	3 pcs	3 pcs	6 pcs	6 pcs

Components			
Sensor Mounting Spring Washer	Sensor Flag Screw	Bracket Mounting Screw	Bracket Mounting Nut
6 pcs	2 pcs	6 pcs	6 pcs

Ordering Code D1

Components			
Sensor Flag	Photo Sensor	Sensor Bracket	Sensor Mounting Screw
1 pc	3 pcs	3 pcs	6 pcs

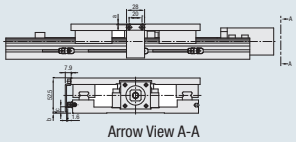
Components			
Sensor Mounting Spring Washer	Sensor Flag Screw	Bracket Mounting Screw	Bracket Mounting Nut
6 pcs	2 pcs	6 pcs	6 pcs

Alterations

Part Number	–	L	–	L1	–	(A1, B1, etc.)
KUA1204	–	340	–	150	–	A1

Days to Ship **11** Days

■ Standard Single Axis Unit — Proximity Sensor



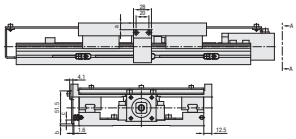
Arrow View A-A

■ Standard Proximity Sensor Dimension Table

Applicable Model	Code	a	b	c
KUA / KUB / KUH / KUT 12_ _ / 12_ _S / 12_ _L(S)	A1 B1	0.5	2	7.05
KUA / KUB / KUH / KUT 15_ _ / 15_ _L		1.5	10	6.05
KUA / KUB 2005L / 2020L KUH / KUT 2005L		1.5	14	2.05
KUA / KUB 2010L KUH / KUT 2010L / 2020L		1.5	25	0.05

KUA / KUB Series **P.206**
KUH / KUT Series **P.206**

■ Single Axis Unit, Cover — Proximity Sensor



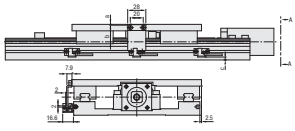
Arrow View A-A

■ Cover Type Proximity Sensor Dimension Table

Applicable Model	Code	a	b	c
KUAC / KUBC / KUHC / KUTC 12_ _ / 12_ _S / 12_ _L(S)	A2 B2	10.5	2	6.05
KUAC / KUBC / KUHC / KUTC 15_ _ / 15_ _L		12.5	10	6.05
KUAC / KUBC 2005L / 2020L KUHC / KUTC 2005L		12.5	14	2.05
KUAC / KUBC 2010L KUHC / KUTC 2010L / 2020L		12.5	25	0.05

KUAC / KUBC Series **P.208**
KUHC / KUTC Series **P.208**

■ Single Axis Unit, Standard — Photo Sensor



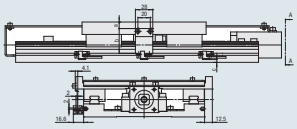
Arrow View A-A

■ Standard Specification Photo Sensor Dimension Table

Applicable Model	Code	a	b	c
KUA / KUB / KUH / KUT 12_ _ / 12_ _S / 12_ _L(S)	C1 D1	0.5	40	4.5
KUA / KUB / KUH / KUT 15_ _ / 15_ _L	C2 D2	1.5	41	11.5
KUA / KUB 2005L / 2020L KUH / KUT 2005L	C3 D3	1.5	45	11.5
KUA / KUB 2010L KUH / KUT 2010L / 2020L	C4 D4	1.5	47	20.5

KUA / KUB Series **P.206**
KUH / KUT Series **P.206**

■ Single Axis Unit, Cover — Photo Sensor



Arrow View A-A

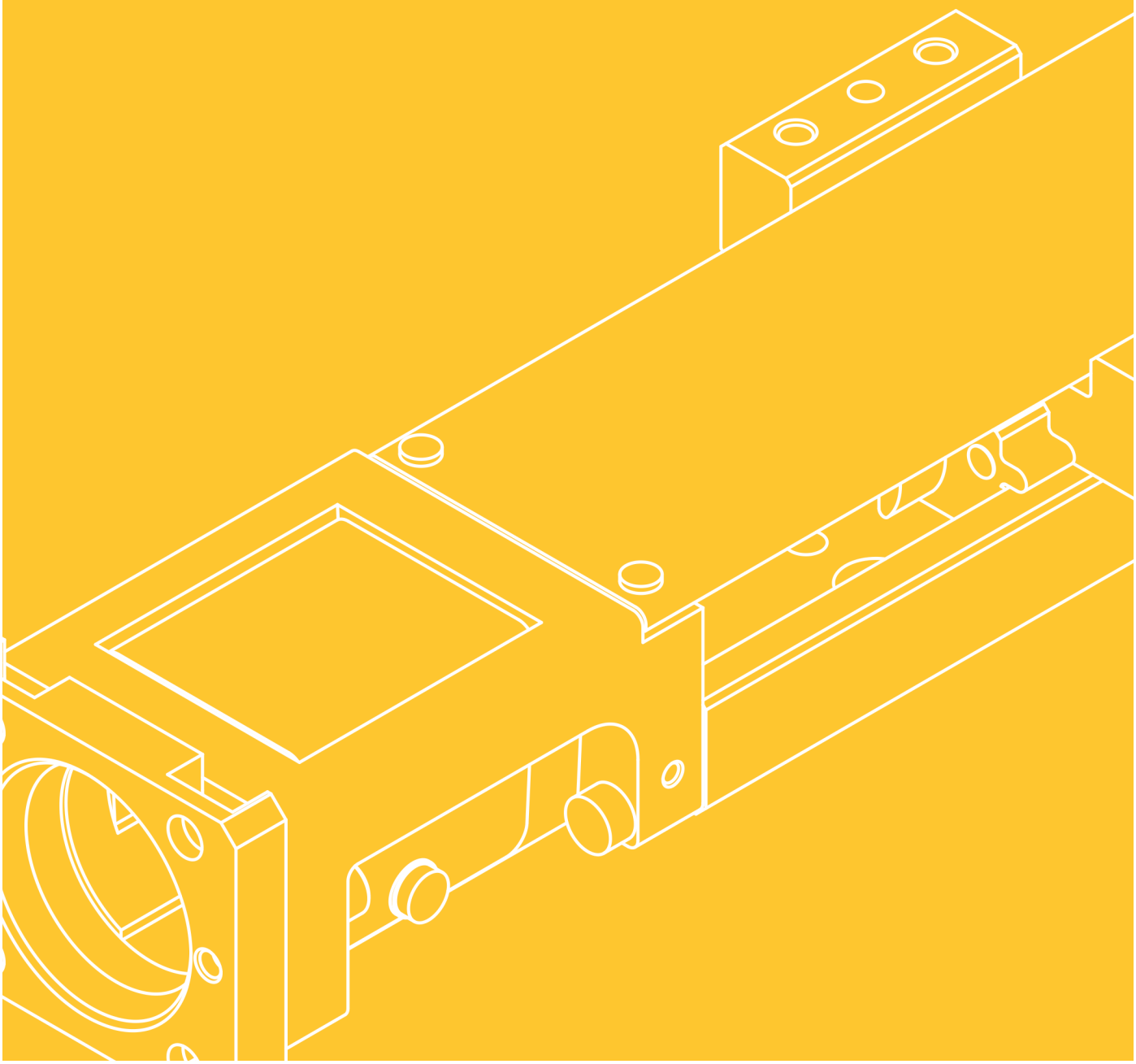
■ Cover Type Photo Sensor Dimension Table

Applicable Model	Code	a	b	c
KUAC / KUBC / KUHC / KUTC 12_ _ / 12_ _S / 12_ _L(S)	C5 D5	10.5	40	4.5
KUAC / KUBC / KUHC / KUTC 15_ _ / 15_ _L		12.5	40	11.5
KUAC / KUBC 2005L / 2020L KUHC / KUTC 2005L	C6 D6	12.5	44	11.5
KUAC / KUBC 2010L KUHC / KUTC 2010L / 2020L	C7 D7	12.5	46	20.5

KUAC / KUBC Series **P.208**
KUHC / KUTC Series **P.208**

RS SINGLE AXIS ROBOT with Ethernet Capabilities

coming in 2016



RS Series Single Axis Robot

Structure / Features

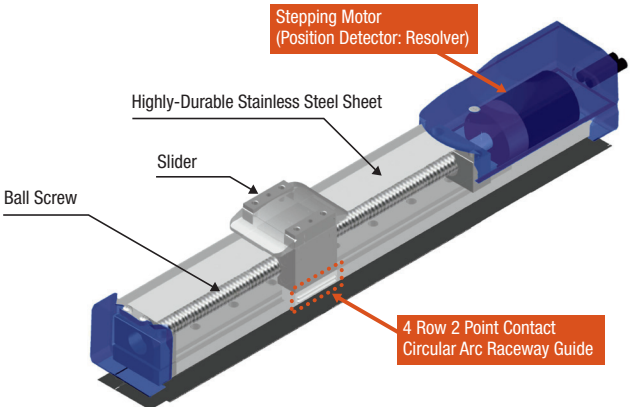
Shortest Lead Time – 5th Day Shipping!

Position Detector – High-Reliability "Resolver" Used

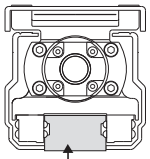
Small / Economical Actuators RS1 / 2 / 3 Series

Load Capacity: ~ 12kg (Horizontal) ~ 4kg (Vertical)

Controller
(Incremental Type)



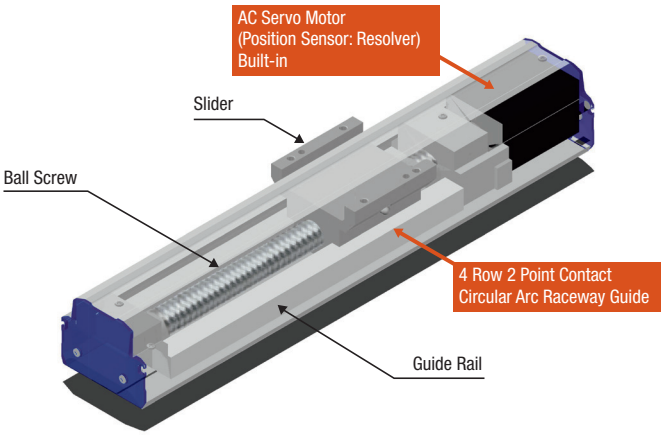
Cross Section View



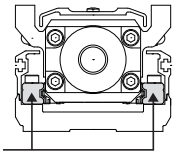
Large Heavy Load Capacity Actuator RSH1 / 2 / 3 / 4 / 5 Series

Load Capacity: ~80kg (Horizontal), ~20kg (Vertical)

Controller
(Absolute Type / Incremental Type)
*Absolute encoder requires no homing sequences.



Cross Section View

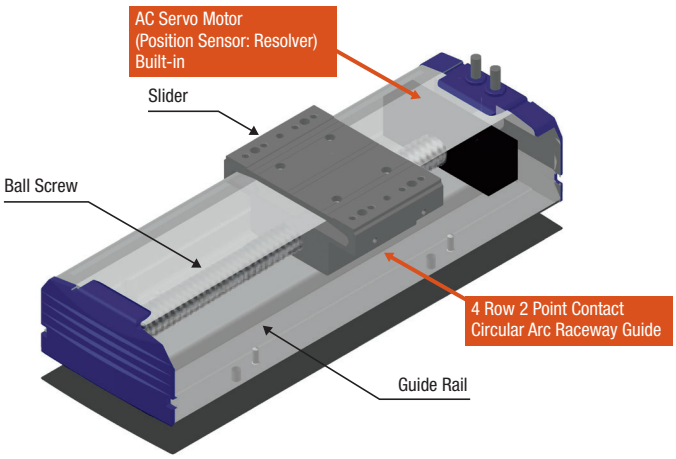


Large Heavy Load Capacity Actuator Width Space-Saving RSF4 Series

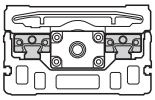
Load Capacity: ~80kg (Horizontal), ~20kg (Vertical)

Search Keyword
RSF4
misumiusa.com

Controller
(Absolute Type / Incremental Type)
*Absolute encoder requires no homing sequences.



Cross Section View



RS
SINGLE AXIS ROBOT

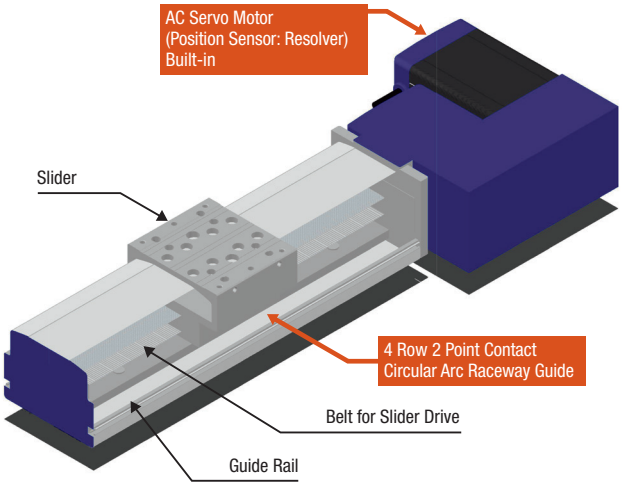
– For the detailed technical information, visit the MISUMI General Actuator Information site. To find this site, enter the "MISUMI Singe Axis Robot" text in the "Search" field.

Belt Driven RSB1 / 2 Series

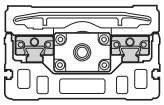
Load Capacity: ~20kg (Horizontal)

Search Keyword
RS Belt
misumiusa.com

Controller
(Absolute Type / Incremental Type)
*Absolute encoder requires no homing sequences.



Cross Section View

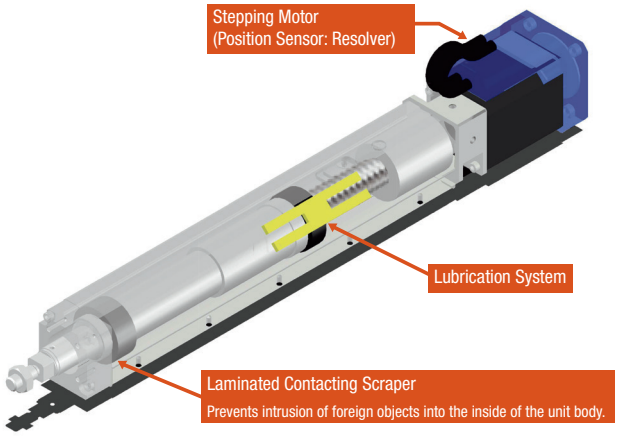


Small, Rod Type RSD – RSDG1 / 2 / 3 Series

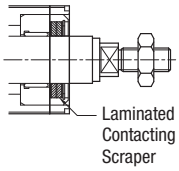
Load Capacity: ~60kg (Horizontal), ~30kg (Vertical)

Search Keyword
RSD, RSDG
misumiusa.com

Controller
(Incremental Type)



Cross Section View



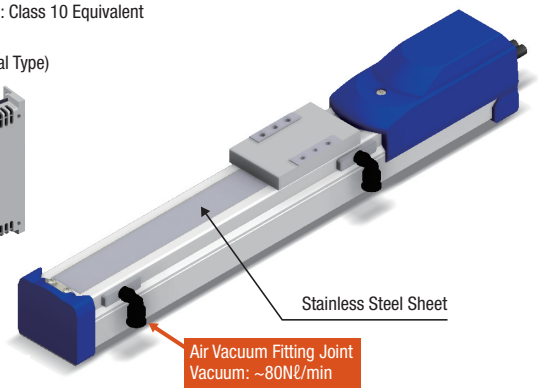
Small / Large – Clean Spec. RS1C / 2C / 3C – RSH1C / 2C / 3C Series

Search Keyword
Single Axis Robot – Clean Room Spec.
misumiusa.com

RS1C / 2C / 3C Series

Load Capacity: ~12kg (Horizontal), ~4kg (Vertical)
Cleanliness: Class 10 Equivalent

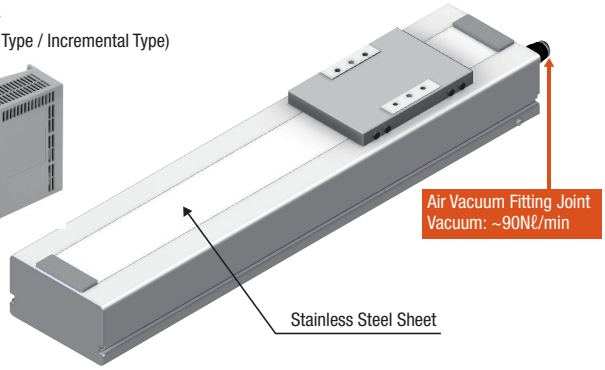
Controller
(Incremental Type)



RSH1C / 2C / 3C Series

Load Capacity: ~80kg (Horizontal), ~16kg (Vertical)
Cleanliness: Class 10 Equivalent

Controller
(Absolute Type / Incremental Type)



RS
SINGLE AXIS ROBOT

How to Enter Data

■ Support Software

Data can be entered from support software or handy terminal.

Data can be arranged using PC. Useful on initialization. Teaching is possible via online when actuator is activated.

Input Example

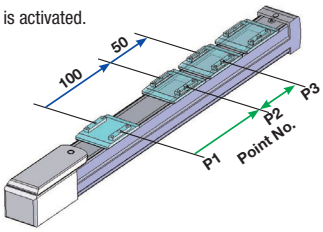
Point No.	Operation Type	Position	Velocity	Acceleration	Deceleration	Pushing	Zone -	Zone +	Proximity Range	Branch	Flag
P1	ABS Resin	0.00	100	100	100	100	0.00	0.00	1.00	0	0
P2	ABS Resin	100.00	100	100	100	100	0.00	0.00	1.00	0	0
P3	INC	50.00	80	40	100	100	0.00	0.00	1.00	0	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

■ Handy Terminal

Data can be arranged directly without using PC. Teaching is possible when actuator is activated.

Input Example

Point Arrangement		
P	1	
1.	Drive	ABS Resin —
2.	Position	100.00 mm
3.	Velocity	100 %
4.	Acceleration	100 %
⋮	⋮	⋮



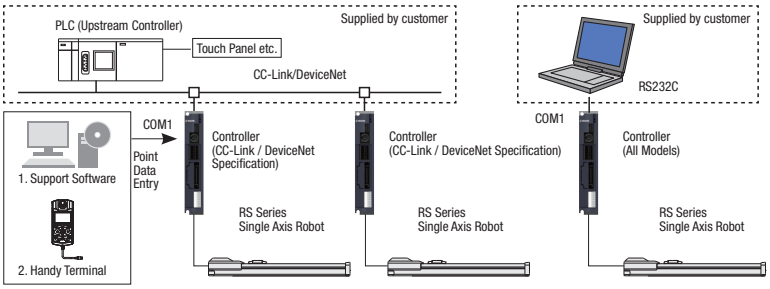
[Operations Based on Input Example]

1. Point No. P1 (ABS Resin Operation)
   Move to 0mm
2. Point No. P2 (ABS Resin Operation)
   0mm > Move to 100mm from 0mm
3. Point No. P3 (INC Operation)
   100mm > Move to 150mm from 100mm

(ⓘ Expressed in an absolute position)

Operation Example

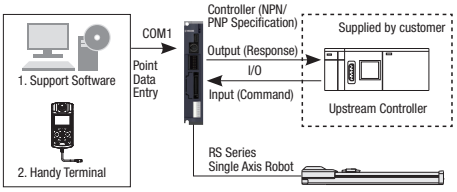
■ Remote Command Control / Remote I/O Control via CC-Link or DeviceNet



■ RS232C Online Command Control

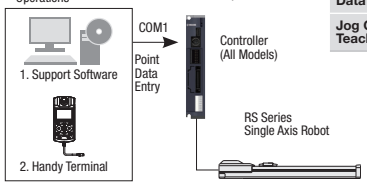
Communication Method	Remote Command Control (CC-Link / DeviceNet Specification) Communication Specifications	Online Command Control (RS232C Specification) Communication Specifications	Remote I/O Control (CC-Link / DeviceNet Specification) Communication Specifications	Parallel I/O Control
Robot Linked Qty	Maximum Number of Nodes	1	Maximum Number of Nodes	1
Upstream Controller	PLC etc.	PC Touch Panel PC	PLC etc.	PLC etc.
Position Move	O	O	O	O
Velocity / Acceleration Rewrite	O	O	X	X
Current Position Read	O	O	X	X
Point Data Rewrite	O	O	X	X
Jog Operation Teaching	O	O	O	O

■ Parallel Communication I/O Control



■ Simplified Operations

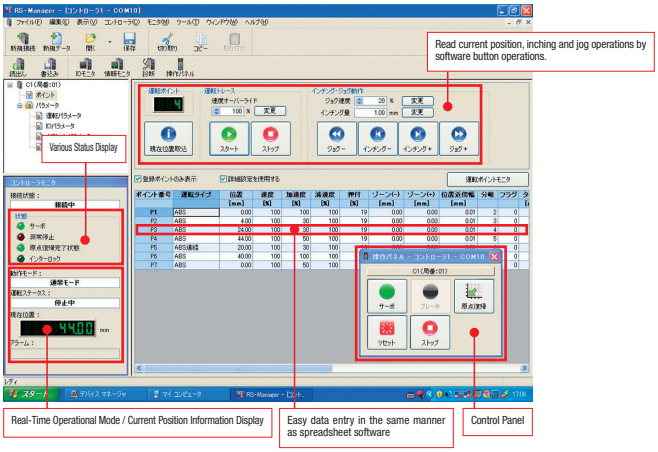
Tracing and continuous operations can be executed based on entered point data.



Support Software (RS-Manager) Features

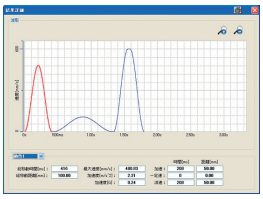
■ RS-Manager Operation Screen

Easy to create and edit point data on a PC. Teaching and test run can be performed in on-line operation.



■ Cycle Time Simulation Functions

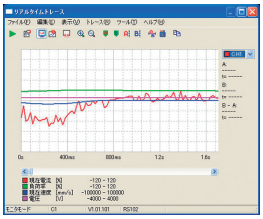
Based on entered actuator operational conditions and point data, simulation can be run to obtain time required for point-to-point operations. Predetermined operations allow efficient adjustments.



Quick reference cycle time simulations are available on our website.
ⓘ http://us.misumi-ec.com/

■ Real-Time Tracing Functions

Various information can be monitored in real time. Saving each item data will assist in scheduled maintenance. Also, helpful in unexpected troubles and analysis by comparing with data under normal conditions.



Real-Time Tracing Items (Simultaneous monitoring on 4 items at a max.)

- Voltage
- Commanded Speed
- Commanded Current Value
- I/O Status
- Word I/O Status
- Current Value
- Current Speed
- Internal Temp.
- Present Current Value
- Motor Load Factor

Lineup / Spec List
(Slider / Rod)

Spec List

■ Slider Type

For selections, please use Selection Software on the web. ⓘ Clean Room Specifications are now available on our website.

Type	Lead	Environmental Spec.	Max Load Capacity (kg) Horiz.	Max Load Capacity (kg) Vert.	Max. Push Force (N)	Maximum Velocity (mm/sec) *Values in the list are the maximum velocity — Stroke (mm) 50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	Position Detector	Input Power Supply	Standards	Pg
RS1	2	Standard	6	4	150					100																	Resolver Incremental Method	DC24V (±10%)	RoHS CE* Compliant	217
	6		4	2	90					300																				
	12		2	1	45					600																				
RS2	6		10	2	90							300						280	250	220	190									221
	12		6	1	45							600						560	500	440	380									
	20		4	—	27							1000						933	833	733	633									
RS3	6		12	4	120							300						280	250	220	190									225
	12		8	2	60							600						560	500	440	380									
	20		6	—	36							1000						933	833	733	633									
RSH1	6	Standard	40	8	283	—						360					324	270	234	216	180						Resolver Absolute Method / Incremental Method	AC Single Phase 100~115V 200~230V (±10%)		227
	12		20	4	141							720					648	540	468	432	360									
	20		12	—	84							1200					1080	900	780	720	600									
RSH2	5		50	16	339								300						255	225	195	180	165	150	135	120				231
	10		40	8	169								600						510	450	390	360	330	300	270	240				
	20		20	4	84								1200						1020	900	780	720	660	600	540	480				
	30		7	—	56								1800						1530	1350	1170	1080	990	900	810	720				
RSH3	5		80	—	339								300					255	225	195	180	165	150	135	120	105				233
	10		60	—	169								600					510	450	390	360	330	300	270	240	210				
	20		30	—	84								1200					1020	900	780	720	660	600	540	480	420				
RS1C	2	Clean	6	4	150					100																	Resolver Incremental Method	DC24V (±10%)		See Website
	6		4	2	90					300																				
	12		2	1	45					600																				
RS2C	6		10	2	90							300						280	250	220	190									
	12		6	1	45							600						560	500	440	380									
	20		4	—	27							1000						933	833	733	633									
RS3C	6		12	4	120							300						280	250	220	190									
	12		8	2	60							600						560	500	440	380									
	20		6	—	36							1000						933	833	733	633									
RSH1C	6	Clean	40	8	283	—						360					324	270	234	216	180						Resolver Absolute Method / Incremental Method	AC Single Phase 100~115V 200~230V (±10%)		
	12		20	4	141							720					648	540	468	432	360									
	20		12	—	84							1000						950	800	700	650									
RSH2C	5		50	16	339							300							255	225	195	180	165	150	135	120				
	10		40	8	169							600							510	450	390	360	330	300	270	240				
	20		20	4	84							1000								900	800	700	650	600	550	500				
RSH3C	5		80	—	339							300						264	225	195	180	165	150	135	120	105				
	10		60	—	169							600						528	450	390	360	330	300	270	240	210				
	20		30	—	84							1000							900	800	700	650	600	550	500	420				

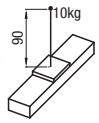
■ Rod Type

Type	Lead	Appearance	Max Load Capacity (kg) Horiz.	Max Load Capacity (kg) Vert.	Max. Push Force (N)	Maximum Velocity (mm/sec) *Values in the list are the maximum velocity — Stroke (mm) 50	100	150	200	250	300	Position Detector	Input Power Supply	Standards	Pg
RSD1	6	Standard Specification	20	8	100		250			—		Resolver Incremental Method	DC24V (±10%)	RoHS CE* Compliant	245
	12		10	4	75		500								
RSD2	2		45	25	600		80			72	53				247
	6		40	12	300		250			220	160				
	12		25	5	150		500			440	320				
RSD3	2		60	30	900		50								249
	6		55	20	550		150								
	12		50	10	250		300								
RSDG1	6	Support Guide Specifications	20	7.5	100		250			—					245
	12		10	3.5	75		500								
RSDG2	2		45	24	600		80			72	53				247
	6		40	11	300		250			220	160				
	12		25	4	150		500			440	320				
RSDG3	2		60	28.5	900		50								249
	6		55	18.5	550		150								
	12		50	8.5	250		300								

Selection Examples
(Slider Type)

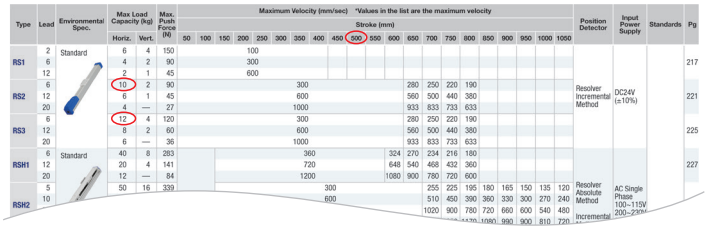
Positioning Operation Selection Example

[Selection Criteria] Horizontal load capacity 10kg, stroke 500mm, positioning time less than 1.0 sec, overhang dimension is 90mm to A direction in the diagram. (Standard Environment)



1. 2. Select a model with the max. load capacity of 10kg (in horizontal position) and moving stroke of 500mm from "Spec List" on the left-hand page.

<Selection Example>
- RS2 Lead 6
- RS3 Lead 6
- RSH1 Lead 20



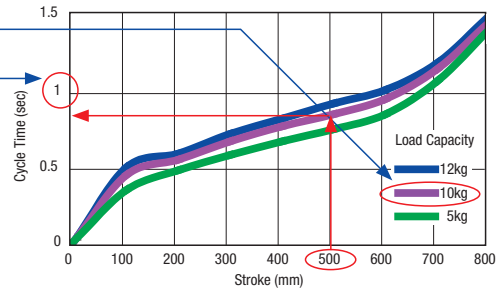
Type	Lead	Environmental Spec.	Max Load Capacity (kg) Horiz.	Max Load Capacity (kg) Vert.	Max. Push Force (N)	Maximum Velocity (mm/sec) *Values in the list are the maximum velocity — Stroke (mm) 50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	Position Detector	Input Power Supply	Standards	Pg
RS1	2	Standard	6	4	150				100																		Resolver Incremental Method	DC24V (±10%)		217
	6		4	2	90				300																					
	12		2	1	45				600																					
RS2	6		10	2	90						300							280	250	220	190									221
	12		6	1	45						600							560	500	440	380									
	20		4	—	27						1000							933	833	733	633									
RS3	6		12	4	120						300							280	250	220	190									225
	12		8	2	60						600							560	500	440	380									
	20		6	—	36						1000							933	833	733	633									
RSH1	6	Standard	40	8	283					360						324	270	234	216	180										227
	12		20	4	141					720						648	540	468	432	360										
	20		12	—	84					1200						1080	900	780	720	600										
RSH2	5		50	16	339				300									255	225	195	180	165	150	135	120		Resolver Absolute Method	AC Single Phase 100~115V 200~230V		
	10								600									510	450	390	360	330	300	270	240					
																		1020	900	780	720	660	600	540	480		Incremental			
																		[illegible]	[illegible]	1170	1080	990	900	810	720					

3. Select a model capable of positioning within 1.0 sec from "Cycle Time Graph"

<Ex.> Check RSH1 Lead 20 positioning time
- Select 10kg for load capacity.
- The graph indicates positioning time is less than 1.0 sec.
- The table indicates positioning time is 0.83 sec.

Note: The graph and table indicate calculated values, and these may vary depending on operating conditions.

Likewise, check the positioning time for RS2 Lead 6 and RS3 Lead 6.



<Selection Example>
- RS2 Lead 6 1.78 sec
- RS3 Lead 6 1.83 sec
- RSH1 Lead 20 0.83 sec

▶ • RSH1 Lead 20

sec

st	0	100	200	300	400	500	600	700	800
12 kg	0	0.48	0.57	0.70	0.80	0.90	0.99	1.17	1.48
10 kg	0	0.43	0.53	0.65	0.75	0.83	0.93	1.13	1.44
5 kg	0	0.33	0.46	0.56	0.65	0.73	0.83	1.05	1.39

4. Select a model whose gravity center of load is within allowable overhang.

<Ex.> Check RSH1 Lead 20 allowable overhang load.
- Check the direction.
- The table indicates the overhung is 100mm.

Note) Values are actual measurement and may vary depending on operating conditions.

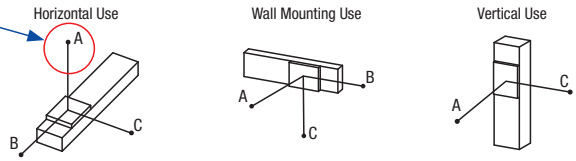
<Selection Example>
- RSH1 Lead 20 100 mm

▶ • Select RSH1 Lead 20

Note: When more than one model is suggested, please select a model with the maximum load capacity. When overhang equals 0, use linear guides with selected unit to support load mass.

Ex.) RSH1 Lead 20

■ **Allowable Overhang Load**



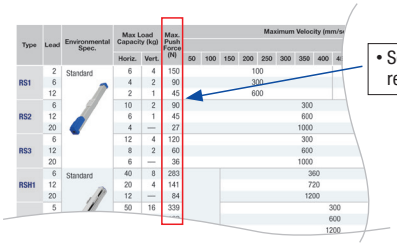
Horizontal Use (Unit [mm])

Lead	Mass	A	B	C
20	12 kg	85	25	43
	10 kg	100	32	54
	5 kg	197	76	120

Push Operation Selection Example

Confirm maximum push force and allowable static moment. For push operation, refer to Positioning Operation Selection Example above.

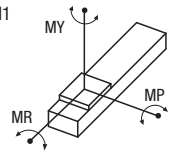
1. Check maximum push force



• Select a model meeting required push force

2. Check allowable static moment

Ex.) RSH1



• Check if the allowable static moment is larger than the moment generated by the push force.

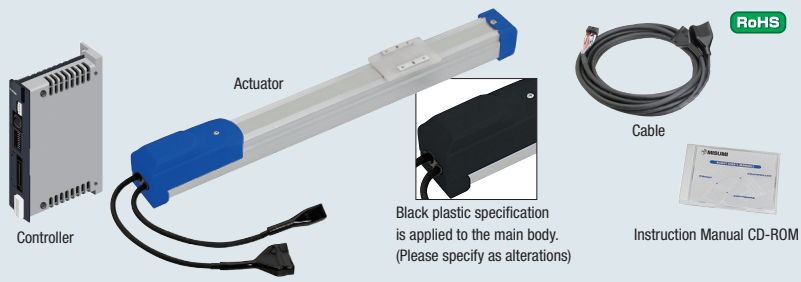
(Unit [N·m])

MY	70
MP	95
MR	110

★ Single Axis Robots RS1

Slider Type

Feature: Small, Economical Actuators Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).



RoHS

Controller Specifications **P.251** Cycle Time Graph **P.255** Clean Room Specifications are available on our website.

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

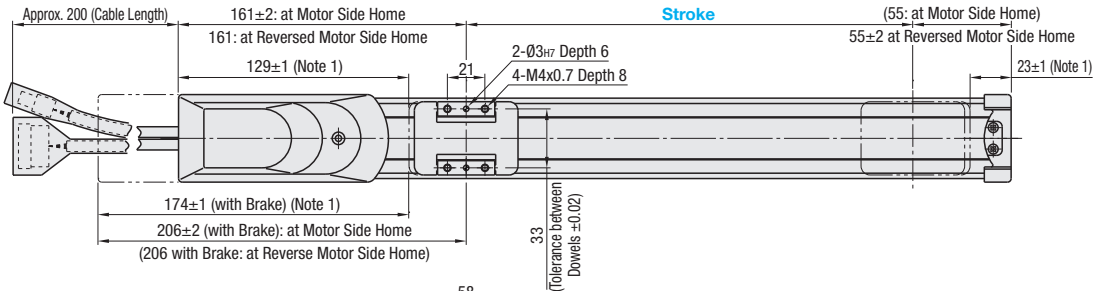
Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surface Treatment	—	—	Anodize

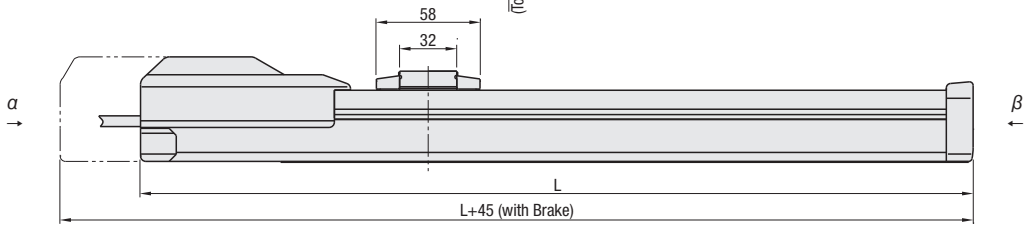
■ **General Specifications**

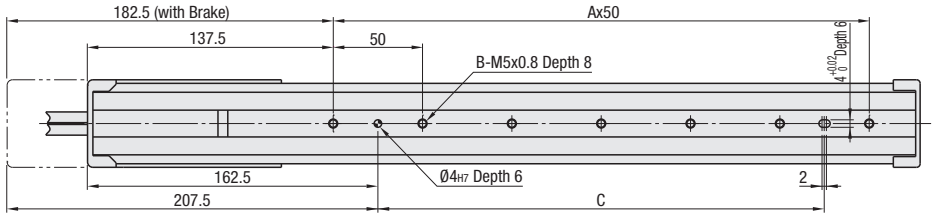
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

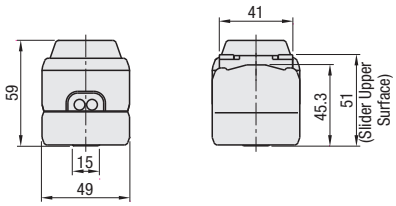
■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RS1	02	±0.02	6	4	150	50~400 (50 Pitch)	100	10,000 km or More	DC24V ±10%	255 Points
	06		4	2	90		300			
	12		2	1	45		600			









α Arrow View β Arrow View

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) The minimum bending radius of the cable is R30.
(Note 3) Clamp cable within 100mm from actuator end sections so as not to put the cable under strain.
(Note 4) When using Ø4 dowel holes for mounting the actuator, ensure that pin is not inserted to 6 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 50	100	150	200	250	300	350	400
RS1	L (mm)	266	316	366	416	466	516	566	616
	A (mm)	2	3	4	5	6	7	8	9
	B (mm)	3	4	5	6	7	8	9	10
	C (mm)	50	100	150	200	250	300	350	400
	Mass (kg)	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

The mass of "With Brake" Type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS1	02 06 12	None: **Leave blank** Included: **B**	**C1** DC24V ±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~400** (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS102B	–	C1	–	N	–	3	–	400

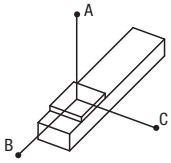
Days to Ship **8** Days

Note

Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

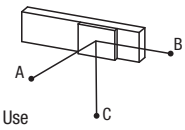
Horizontal Use



mm

Lead	Mass	A	B	C
02	6 kg	863	40	60
	4 kg	869	61	92
06	4 kg	567	56	84
	3 kg	556	76	112
	2 kg	687	116	169
12	2 kg	667	107	152
	1 kg	807	218	292

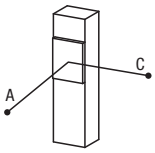
Wall Mounting Use



mm

Lead	Mass	A	B	C
02	6 kg	39	26	789
	4 kg	72	48	829
06	4 kg	63	43	507
	3 kg	92	62	516
	2 kg	149	102	656
12	2 kg	133	93	611
	1 kg	274	204	776

Vertical Use

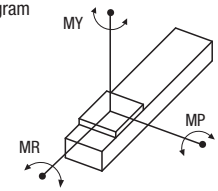


mm

Lead	Mass	A	C
02	4 kg	53	53
	2 kg	118	118
06	2 kg	107	107
	1 kg	223	223
12	1 kg	204	204
	0.5 kg	407	408

■ Allowable Static Moment

Moment Diagram

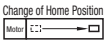
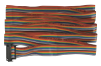


N·m

MY	MP	MR
16	19	17

Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS102B	–	C1	–	N	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
					Communication Specifications: RS232C	Communication Specifications: RS232C				
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RS1

Motor Wrap

RoHS

Controller Specifications P.251

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

Accessories	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

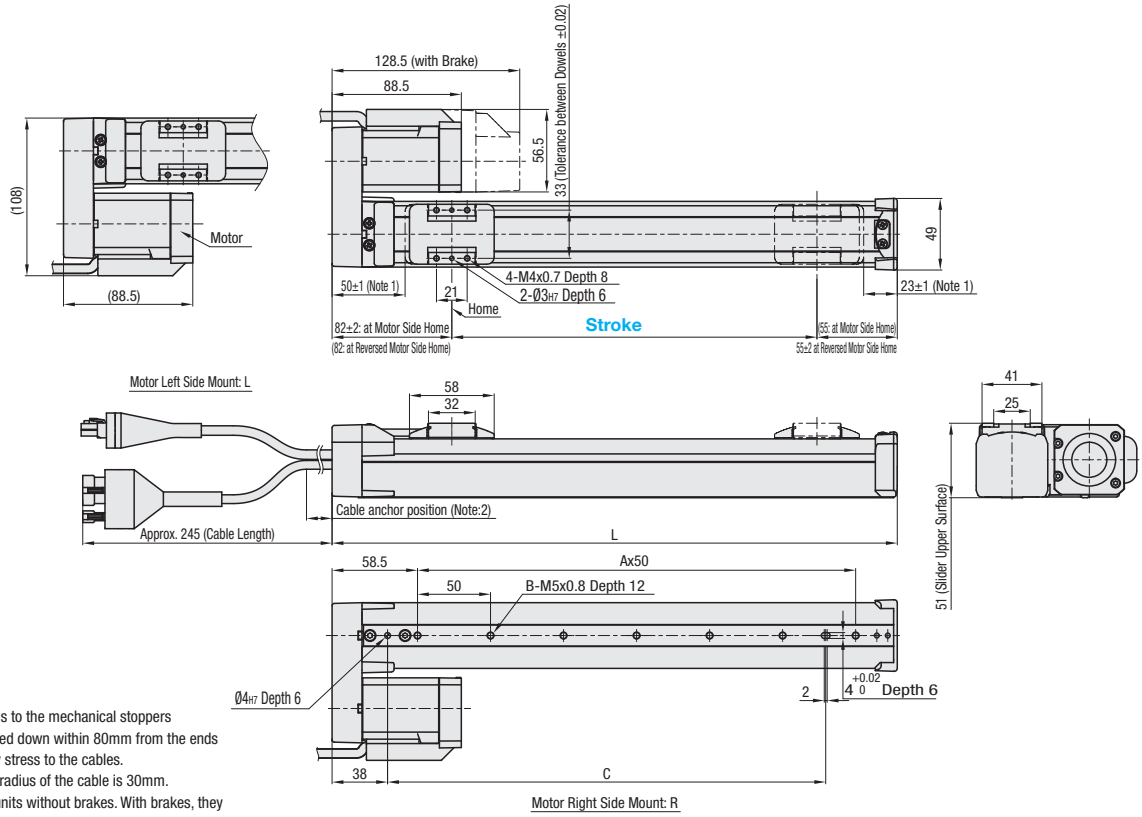
Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surfuce Treatment	—	—	Anodize

■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ P.254

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg)		Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
			Horizontal	Vertical						
RS1	02	±0.02	6	4	150	50~400 (50 Pitch)	100	10,000 km or More	DC24V ±10%	255 Points
	06		4	2	90		300			
	12		2	1	45		600			



(Note 1) Distances from the ends to the mechanical stoppers
(Note 2) The cables should be tied down within 80mm from the ends of the unit avoiding any stress to the cables.
(Note 3) The minimum bending radius of the cable is 30mm.
(Note 4) These masses are for units without brakes. With brakes, they are 0.2 kg heavier.
(Note 5) Belt cover is not right-left symmetrical. If the motor mounting orientation is changed, the belt cover can not be reinstalled.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm)							
		50	100	150	200	250	300	350	400
RS1	L (mm)	187	237	287	337	387	437	487	537
	A (mm)	2	3	4	5	6	7	8	9
	B (mm)	3	4	5	6	7	8	9	10
	C (mm)	100	150	200	250	300	350	400	450
	Mass (kg)	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.1

ⓘ The brake adds 0.2kg to the total mass.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection				
Type	Lead (mm)	With or w/o Brake (1)	Motor Mounting Position	Controller (2)	I/O Module	Cable Length (m)	Stroke (mm)
RS1	02 06 12	None: **Leave blank** Included: **B**	Right Side Mount: **R** Included:: **6**	Point Control: **C1** Pulse Control: **P1** (DC24V ±10%)	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~400** (50mm Increment)

(1) Choose the "Brake" option for use in vertical applications. (2) When the pulse train type controller is selected, the I/O type selection is not required.

Ordering Example

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS102B	–	L	–	C1	–	N	–	3	–	400
RS102B	–	L	–	P1			–	3	–	400

Days to Ship

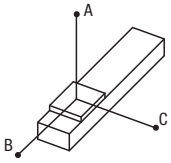
Configure Online

Note

Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

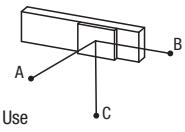
Horizontal Use



mm

Lead	Mass	A	B	C
02	6 kg	863	40	60
	4 kg	869	61	92
06	4 kg	567	56	84
	3 kg	556	76	112
	2 kg	687	116	169
12	2 kg	667	107	152
	1 kg	807	218	292

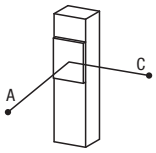
Wall Mounting Use



mm

Lead	Mass	A	B	C
02	6 kg	39	26	789
	4 kg	72	48	829
06	4 kg	63	43	507
	3 kg	92	62	516
	2 kg	149	102	656
12	2 kg	133	93	611
	1 kg	274	204	776

Vertical Use

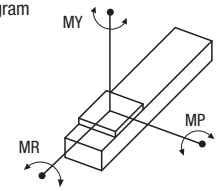


mm

Lead	Mass	A	C
02	4 kg	53	53
	2 kg	118	1189
06	2 kg	107	107
	1 kg	223	223
12	1 kg	204	204
	0.5 kg	407	408

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
16	19	17

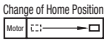
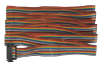
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)							
		50	100	150	200	250	300	350	400
RS1	02	100							
	06	300							
	12	400~600							

Please confirm the details of the Max. Speeds based on various strokes with MISUMI Web Simulator.

Alterations

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS102B	–	L	–	C1	–	N	–	3	–	400	–	G-E

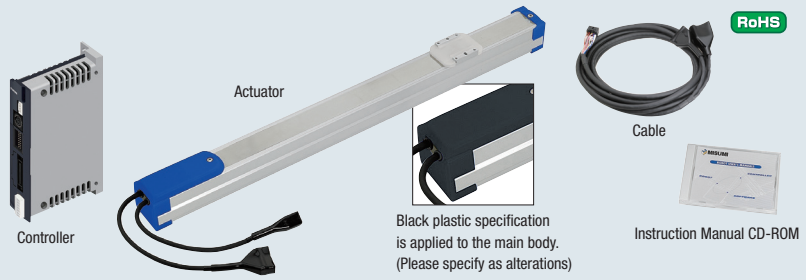
Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Instruction Manual MJ5: Body KJ3: Controller (C1) KJ4: Controller (P1)	Main Body Plastic Color Alterations
					Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	MJ5/KJ3/KJ4	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	Operation Manual is included.	Change the actuator plastic parts color to black.

For optional items, see **P.253** It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

★ Single Axis Robots RS2

Slider Type

■ **Feature: Small, Economical Actuators**
Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).



Controller Specifications **P.251** Clean Room Specifications are available on our website.

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surface Treatment	—	—	Anodize

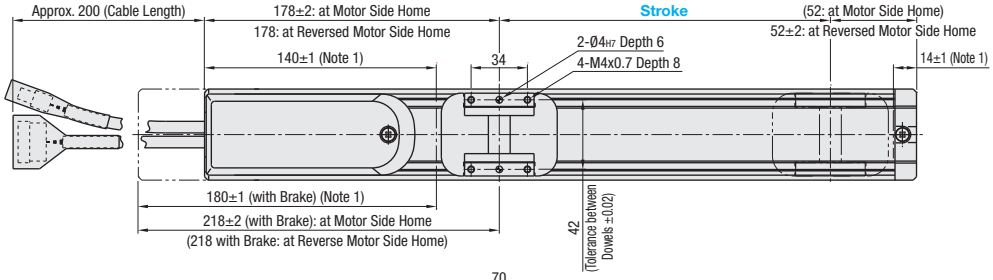
■ **General Specifications**

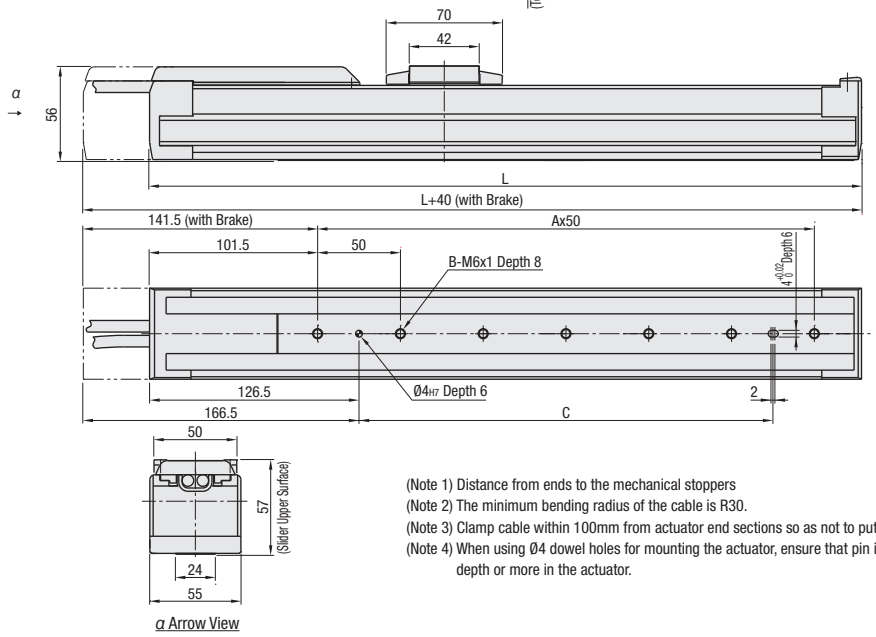
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RS2	06	±0.02	10	2	90	50~800 (50 Pitch)	300~190	10,000 km or More	DC24V ±10%	255 Points
	12		6	1	45		600~380			
	20		4	—	29		1000~633			

Note: Maximum velocity varies depending on the strokes. Please see Maximum Velocity Table on the next page.





(Note 1) Distance from ends to the mechanical stoppers
(Note 2) The minimum bending radius of the cable is R30.
(Note 3) Clamp cable within 100mm from actuator end sections so as not to put the cable under strain.
(Note 4) When using Ø4 dowel holes for mounting the actuator, ensure that pin is not inserted to 6 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2	L (mm)	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
	A (mm)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B (mm)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C (mm)	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0

ⓘ The mass of "With Brake" Type is 0.2 kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS2	06 12 20	None: **Leave blank** Included: **B**	**C1** DC24V ±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~800** (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS206B	–	C1	–	N	–	3	–	400

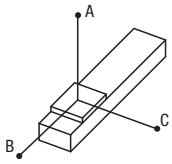
Days to Ship **8** Days

Note

Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

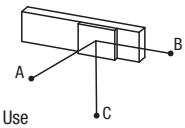
Horizontal Use



mm

Lead	Mass	A	B	C
06	10 kg	344	29	62
	8 kg	332	37	79
	4 kg	503	78	165
12	6 kg	335	47	95
	4 kg	347	72	139
20	4 kg	334	67	120
	2 kg	413	139	218

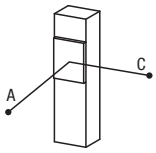
Wall Mounting Use



mm

Lead	Mass	A	B	C
06	8 kg	47	22	355
	6 kg	76	35	377
	4 kg	134	63	496
12	6 kg	63	31	263
	4 kg	109	57	300
20	4 kg	92	51	265
	2 kg	192	123	372

Vertical Use

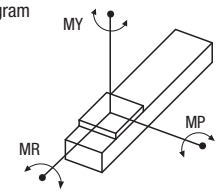


mm

Lead	Mass	A	C
06	2 kg	148	148
	1 kg	312	312
12	1 kg	286	286
	0.5 kg	578	579

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
25	33	30

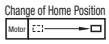
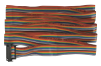
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)				
		50~600	650	700	750	800
RS2	06	300	280	250	220	190
	12	600	560	500	440	380
	20	1000	933	833	733	633

When the stroke is 650mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In that case, reduce the operation speed by referring to the maxmum velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS206B	–	C1	–	N	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
					Communication Specifications: RS232C	Communication Specifications: RS232C				
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RS2

Motor Wrap

RoHS

Controller Specifications **P.251**

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

Accessories	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

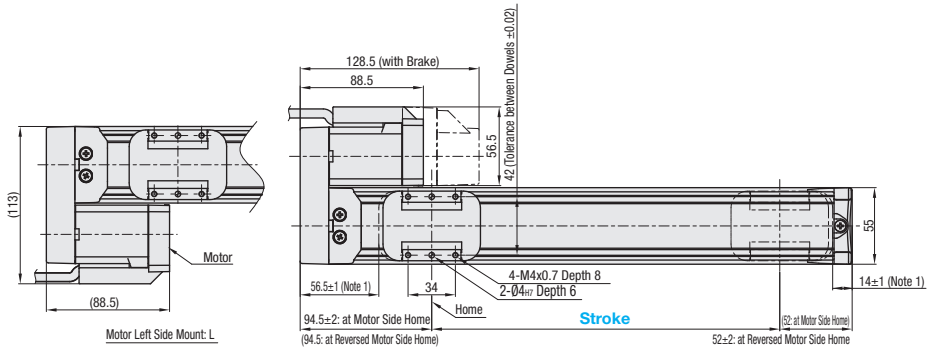
Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surface Treatment	—	—	Anodize

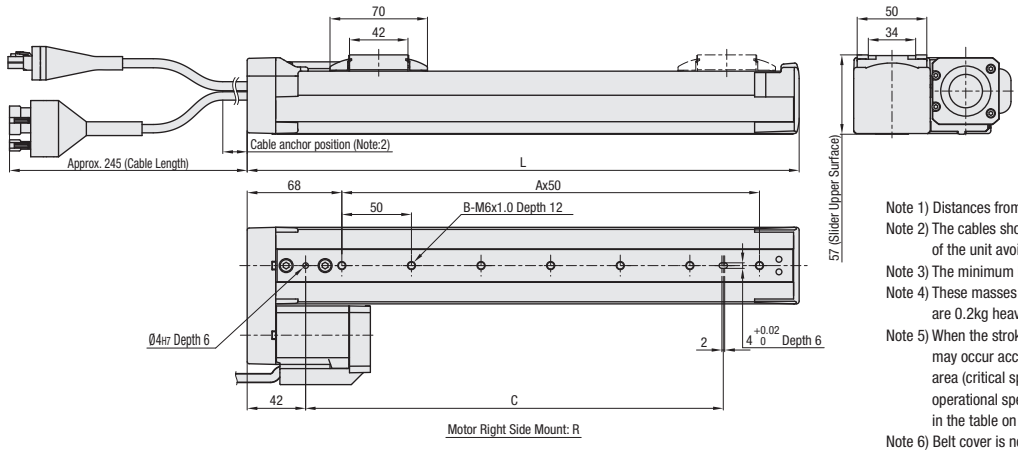
■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RS2	06	±0.02	10	2	90	50~800 (50 Pitch)	300~190	10,000 km or More	DC24V ±10%	255 Points
	12		6	1	45		600~380			
	20		4	—	27		1000~633			





Note 1) Distances from the ends to the mechanical stoppers
Note 2) The cables should be tied down within 80mm from the ends of the unit avoiding any stress to the cables.
Note 3) The minimum bending radius of the cable is 30mm.
Note 4) These masses are for units without brakes. With brakes, they are 0.2kg heavier.
Note 5) When the stroke is 600mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In such cases, reduce the programmed operational speeds by referring to the maximum velocities shown in the table on the left.
Note 6) Belt cover is not right-left symmetrical. If the motor mounting orientation is changed, the belt cover can not be reinstalled.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2	L (mm)	196.5	246.5	296.5	346.5	396.5	446.5	496.5	546.5	596.5	646.5	696.5	746.5	796.5	846.5	896.5	946.5
	A (mm)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	B (mm)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	C (mm)	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	3.8	4	4.1	4.3	4.5

ⓘ The brake adds 0.2kg to the total mass.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection				
Type	Lead (mm)	With or w/o Brake (1)	Motor Mounting Position	Controller (2)	I/O Module	Cable Length (m)	Stroke (mm)
RS2	06 12 20	None: Leave blank Included: B	Right Side Mount: R Left Side Mount: L	Point Control: C1 Pulse Control: P1 (DC24V ±10%)	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Flexible Cable)	50~800 (50mm Increment)

(1) Choose the "Brake" option for use in vertical applications. (2) When the pulse train type controller is selected, the I/O type selection is not required.

Ordering Example

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS206B	–	L	–	C1	–	N	–	3	–	400
RS206B	–	L	–	P1			–	3	–	400

Days to Ship

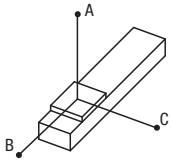
Configure Online

Note

Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

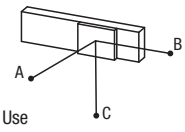
Horizontal Use



mm

Lead	Mass	A	B	C
06	10 kg	344	29	62
	8 kg	332	37	79
	4 kg	503	78	165
12	6 kg	335	47	95
	4 kg	347	72	139
20	4 kg	334	67	120
	2 kg	413	139	218

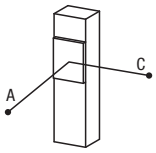
Wall Mounting Use



mm

Lead	Mass	A	B	C
02	8 kg	47	22	355
	6 kg	76	35	377
	4 kg	134	63	496
06	6 kg	63	31	263
	4 kg	109	57	300
12	4 kg	92	51	265
	2 kg	192	123	372

Vertical Use

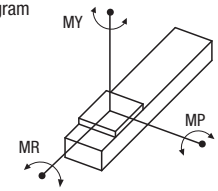


mm

Lead	Mass	A	C
02	2 kg	148	148
	1 kg	312	312
12	1 kg	286	286
	0.5 kg	578	579

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
25	33	30

■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)				
		50~600	650	700	750	800
RS2	06	300	280	250	220	190
	12	400~600	560	500	440	380
	20	350~1000	933	833	733	633

For stroke ranges 650 mm or more, ball screws may resonate in certain operation areas (critical speed). In that case, reduce the operation speed by referring to the Max. Velocity shown in the table above.

Alterations

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS206B	–	L	–	C1	–	N	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual	Main Body Plastic Color Alterations
		Motor			 Communication Specifications: RS232C	 Communication Specifications: RS232C	 T: Controller C1 TP: Controller P1		MJ5: Body KJ3: Controller (C1) KJ4: Controller (P1)	
Code	G	E	H	D	S	R	T	C	MJ5/KJ3/KJ4	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected. Specifi cations P.253	Operation Manual is included.	Change the actuator plastic parts color to black.

For optional items, see P.253 It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

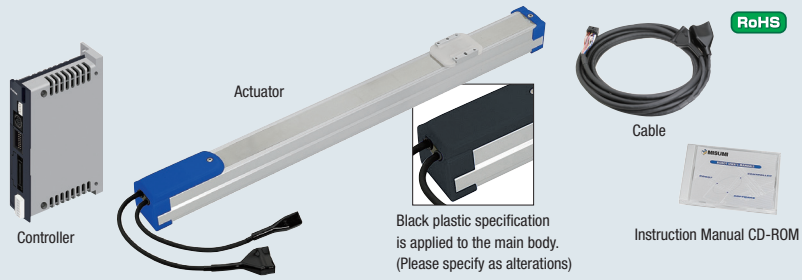
★ BEST SELLER

★ Single Axis Robots RS3

Slider Type

■ **Feature: Small, Economical Actuators**

Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).



Controller Specifications **P.251** Clean Room Specifications are available on our website.

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surfuce Treatment	—	—	Anodize

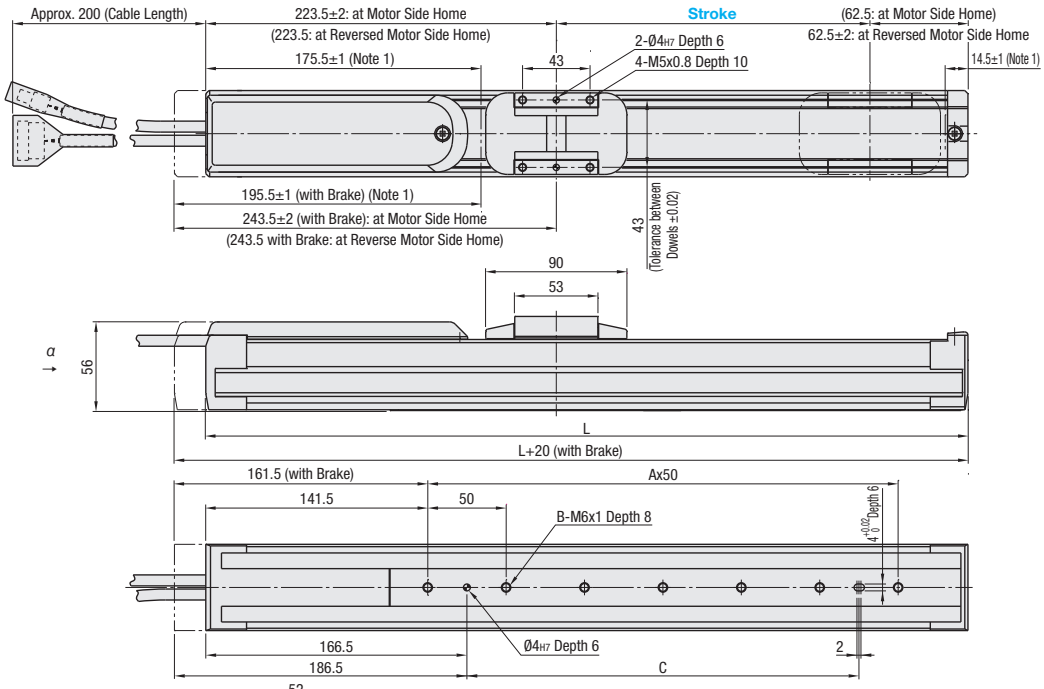
■ **General Specifications**

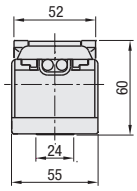
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RS3	06	±0.02	12	4	120	50~800 (50 Pitch)	300~190	10,000 km or More	DC24V ±10%	255 Points
	12		8	2	60		600~380			
	20		6	—	36		1000~633			

(Note) Maximum velocity varies depending on the strokes. Please see Maximum Velocity Table on the next page.





a Arrow View

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) The minimum bending radius of the cable is R30.
(Note 3) Clamp cable within 100mm from actuator end sections so as not to put the cable under strain.
(Note 4) When using Ø4 dowel holes for mounting the actuator, ensure that pin is not inserted to 6 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3	L (mm)	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
	A (mm)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B (mm)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C (mm)	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3

The mass of "With Brake" Type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS3	06 12 20	None: Leave blank Included: B	C1 DC24V ±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Flexible Cable)	50~800 (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

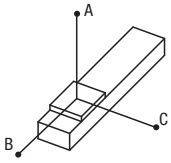
Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS306B	–	C1	–	N	–	3	–	400

Days to Ship 8 Days

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

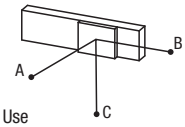
Horizontal Use



mm

Lead	Mass	A	B	C
06	12 kg	465	39	64
	10 kg	442	47	78
	8 kg	480	61	100
	6 kg	573	83	136
12	8 kg	403	56	88
	6 kg	399	76	118
	4 kg	500	118	179
20	6 kg	352	71	104
	4 kg	366	109	148
	2 kg	599	225	291

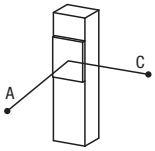
Wall Mounting Use



mm

Lead	Mass	A	B	C
06	12 kg	28	17	339
	10 kg	43	26	355
	8 kg	64	39	413
	6 kg	101	62	519
12	8 kg	55	34	305
	6 kg	85	55	334
	4 kg	146	96	449
20	6 kg	71	49	262
	4 kg	118	88	309
	2 kg	262	203	554

Vertical Use

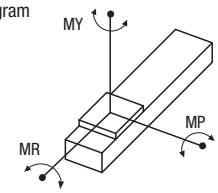


mm

Lead	Mass	A	C
06	4 kg	113	113
	2 kg	244	245
12	2 kg	224	224
	1 kg	458	459

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
32	38	34

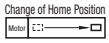
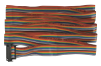
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)				
		50~600	650	700	750	800
RS3	06	300 (250)	280 (250)	250	220	190
	12	600 (500)	560 (500)	500	440	380
	20	1000	933	833	733	633

Values in ( ) are for vertical application.
When the stroke is 650mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In that case, reduce the operation speed by referring to the maxmum velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS306B	–	C1	–	N	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
					Communication Specifications: RS232C	Communication Specifications: RS232C				
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.

For optional items, see P.253 Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RS3

Motor Wrap

RoHS

Controller Specifications **P.251**

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

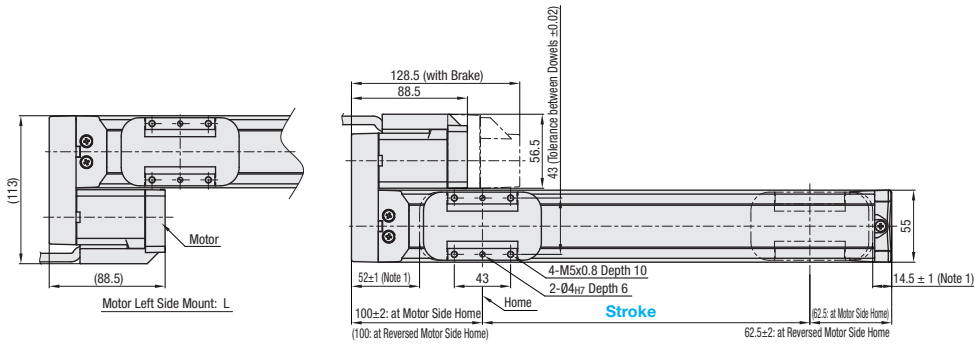
Components	Guide Rail	Slider	Side Cover
Material	Steel	Aluminum	Aluminum
Surface Treatment	—	—	Anodize

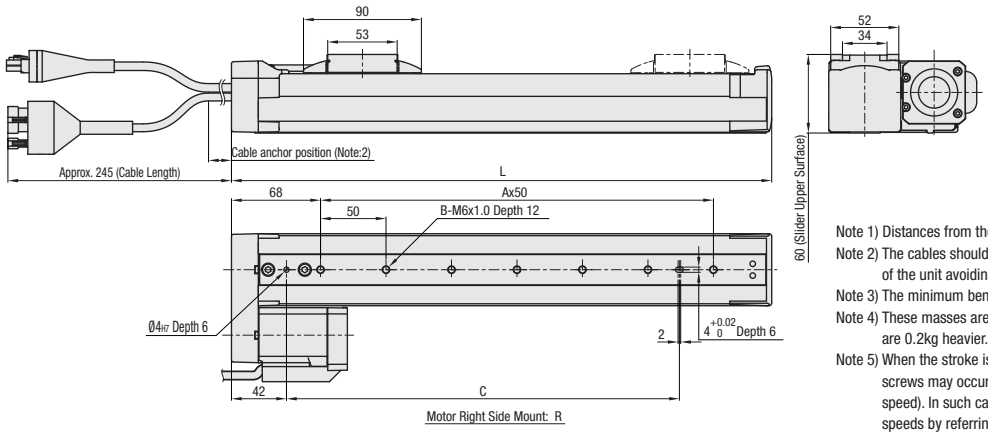
■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg)		Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
			Horizontal	Vertical						
RS3	06	±0.02	12	4	120	50~800 (50 Pitch)	300~190	10,000 km or More	DC24V ±10%	255 Points
	12		8	2	60		600~380			
	20		6	—	36		1000~633			





Note 1) Distances from the ends to the mechanical stoppers
Note 2) The cables should be tied down within 80mm from the ends of the unit avoiding any stress to the cables.
Note 3) The minimum bending radius of the cable is 30mm.
Note 4) These masses are for units without brakes. With brakes, they are 0.2kg heavier.
Note 5) When the stroke is 600mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In such cases, reduce the programmed operational speeds by referring to the maximum velocities shown in the table on the left.
Note 6) Belt cover is not right-left symmetrical. If the motor mounting orientation is changed, the belt cover can not be reinstalled.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm)															
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3	L (mm)	212.5	262.5	312.5	362.5	412.5	462.5	512.5	562.5	612.5	662.5	712.5	762.5	812.5	862.5	912.5	962.5
	A (mm)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	B (mm)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	C (mm)	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	1.7	1.9	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6

The brake adds 0.2kg to the total mass.

RS

SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection				
Type	Lead (mm)	With or w/o Brake (1)	Motor Mounting Position	Controller (2)	I/O Module	Cable Length (m)	Stroke (mm)
RS3	06 12 20	None: **Leave blank** Included: **B**	Right Side Mount: **R** Left Side Mount: **L**	Point Control: **C1** Pulse Control: **P1** (DC24V ±10%)	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~800** (50mm Increment)

(1) Choose the "Brake" option for use in vertical applications. (2) When the pulse train type controller is selected, the I/O type selection is not required.

Ordering Example

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RS306B	–	L	–	C1	–	N	–	3	–	400
RS306B	–	L	–	P1			–	3	–	400

Days to Ship

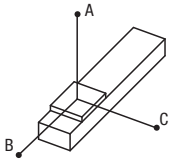
Configure Online

Note

Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

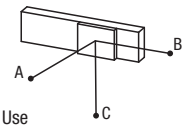
Horizontal Use



mm

Lead	Mass	A	B	C
06	12 kg	465	39	64
	10 kg	442	47	78
	8 kg	480	61	100
	6 kg	573	83	136
12	8 kg	403	56	88
	6 kg	399	76	118
	4 kg	500	118	179
20	6 kg	352	71	104
	4 kg	366	109	148
	2 kg	599	225	291

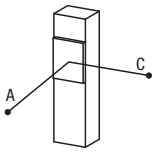
Wall Mounting Use



mm

Lead	Mass	A	B	C
06	12 kg	28	17	338
	10 kg	43	26	355
	8 kg	64	39	413
	6 kg	101	62	519
12	8 kg	55	34	305
	6 kg	85	55	334
	4 kg	146	96	449
20	6 kg	71	49	262
	4 kg	118	88	309
	2 kg	262	203	554

Vertical Use

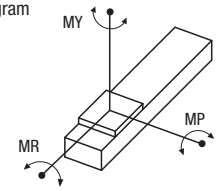


mm

Lead	Mass	A	C
06	4 kg	113	113
	2 kg	244	245
12	2 kg	224	224
	1 kg	458	459

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
25	33	30

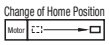
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)				
		50~600	650	700	750	800
RS3	06	300 (250)	280 (250)	250	220	190
	12	400~600 (500)	560 (500)	500	440	380
	20	350~1000	933	833	733	633

For stroke ranges 650 mm or more, ball screws may resonate in certain operation areas (critical speed). In that case, reduce the operation speed by referring to the Max. Velocity shown in the table above.

Alterations

Part Number	–	Motor Mounting Direction	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RS306B	–	L	–	C1	–	N	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual	Main Body Plastic Color Alterations
					Communication Specifications: RS232C	Communication Specifications: RS232C	T: Controller C1 TP: Controller P1		MJ5: Body KJ3: Controller (C1) KJ4: Controller (P1)	
Code	G	E	H	D	S	R	T	C	MJ5/KJ3/KJ4	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included.	Change the actuator plastic parts color to black.

For optional items, see **P.253** It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSH1

Slider Type

■ **Feature: Large, Heavy Load Capacity Actuators**

Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

RoHS

Controller Specifications **P.251** Clean Room Specifications are available on our website.

■ **Components:** Actuator / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / EXT Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

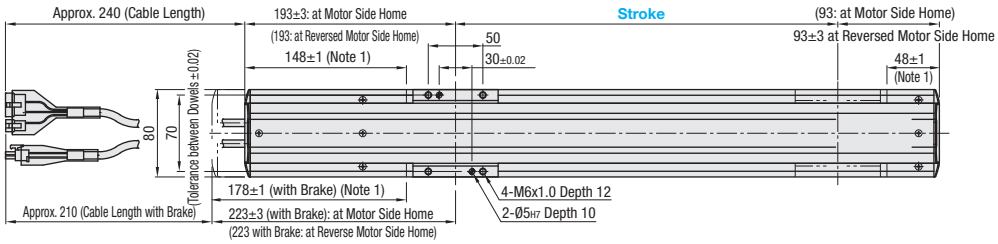
■ **General Specifications**

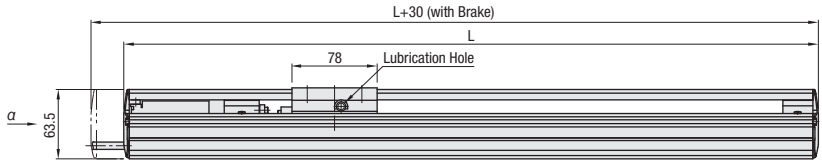
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø12 (C10 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

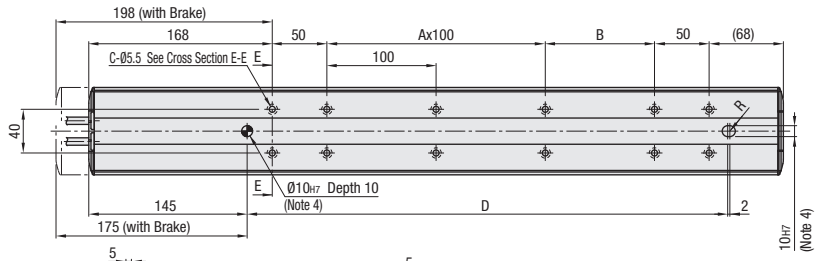
■ **Standard Specifications** Terminology & FAQ **P.254**

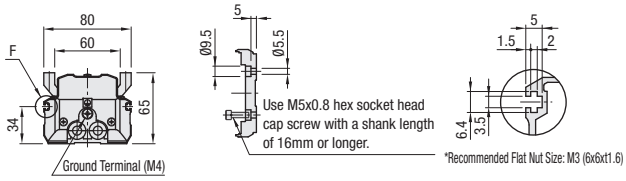
Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSH1	06	±0.02	40	8	283	150~800 (50 Pitch)	360~180	10,000 km or More	Single-phase AC 100~115V 200~230V ±10%	255 Points
	12		20	4	141		720~360			
	20		12	—	84		1200~600			

(Note) Maximum velocity varies depending on the strokes. Please see Maximum Velocity Table on the next page.









α Arrow View

Cross Section E-E

Part F: Detail of T Slot

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) When mounting, ensure mounting bolts do not interfere with the travel of the carriage.
(Note 3) Minimum bending radius of the cable is R50.
(Note 4) When using Ø10 dowel holes for mounting the actuator, ensure that pin is not inserted to 10 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS1	L (mm)	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
	A (mm)	0	0	1	1	2	2	3	3	4	4	5	5	6	6
	B (mm)	100	150	100	150	100	150	100	150	100	150	100	150	100	150
	C (mm)	8	8	10	10	12	12	14	14	16	16	18	18	20	20
	D (mm)	240	290	340	390	440	490	540	590	640	690	740	790	840	890
	Mass (kg)	3.6	3.9	4.2	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.3

The mass of w/ brake type becomes 0.3kg heavier.

RS

SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection				
Type	Lead (mm)	With or w/o Brake (1)	Controller (2)	I/O Module	W/ or w/o Nose Filter (3)	Cable Length (m)	Stroke (mm)
RSH1	06 12 20	None: **Leave blank** Included: **B**	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	None: **F0** Included: **F1** Specifications **P.254**	Standard / Flexible 3.5m: 3 / 3.5m: R3 5m: 5 / 5m: R5 10m: 10 / 10m: R10	**150~800** (50mm Increment)

(1) Choose "with brake" type for use in vertical applications. (W/ brake type is not available for Lead 20) (2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive. (3) This product needs a noise filter. When purchasing separately, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Ordering Example

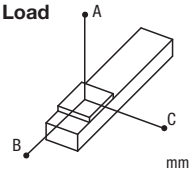
Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSH106B	–	C22A	–	N	–	F1	–	3	–	400

Days to Ship: 8 Days

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

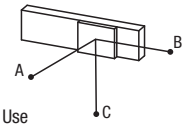
Horizontal Use



mm

Lead	Mass	A	B	C
06	40 kg	113	0	8
	30 kg	140	6	20
	20 kg	214	16	43
	10 kg	403	43	113
12	20 kg	103	14	33
	15 kg	139	22	51
	10 kg	203	39	87
	5 kg	364	89	188
20	12 kg	85	25	43
	10 kg	100	32	54
	5 kg	197	76	120

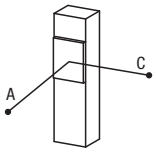
Wall Mounting Use



mm

Lead	Mass	A	B	C
06	40 kg	0	0	0
	30 kg	0	0	14
	20 kg	25	9	157
	10 kg	94	36	369
12	20 kg	15	6	55
	15 kg	33	15	100
	10 kg	69	32	172
	5 kg	171	81	340
20	12 kg	27	15	55
	10 kg	37	23	72
	5 kg	104	67	174

Vertical Use



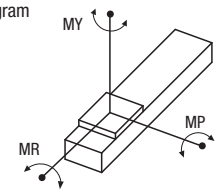
mm

Lead	Mass	A	C
06	8 kg	46	46
	6 kg	69	69
	4 kg	113	113
	2 kg	244	245
12	4 kg	98	99
	3 kg	137	138
	2 kg	214	216
	1 kg	447	448

When overhang equals 0, use linear guides with selected unit to support load mass.

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
70	95	110

■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)					
		150~550	600	650	700	750	800
RSH1	06	360	324	270	234	216	180
	12	720	648	540	468	432	360
	20	1200	1080	900	780	720	600

When the stroke is 600mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In that case, reduce the operation speed by referring to the maxmum velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSH106B	–	C22A	–	N	–	F1	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
					 Communication Specifications: RS232C	 Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RSH2

Slider Type

■ **Feature: Large, Heavy Load Capacity Actuators**
Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

RoHS

■ **Components:** Actuator / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / EXT Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

■ **General Specifications**

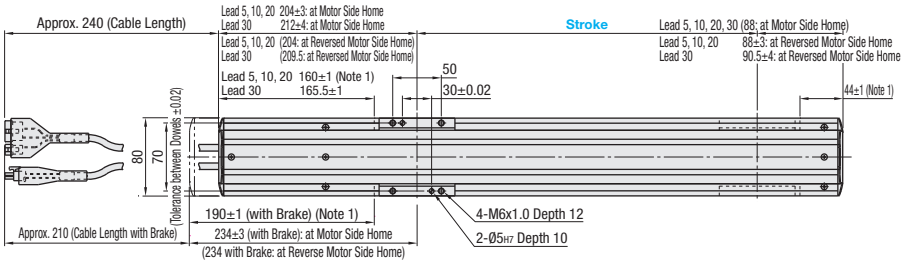
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

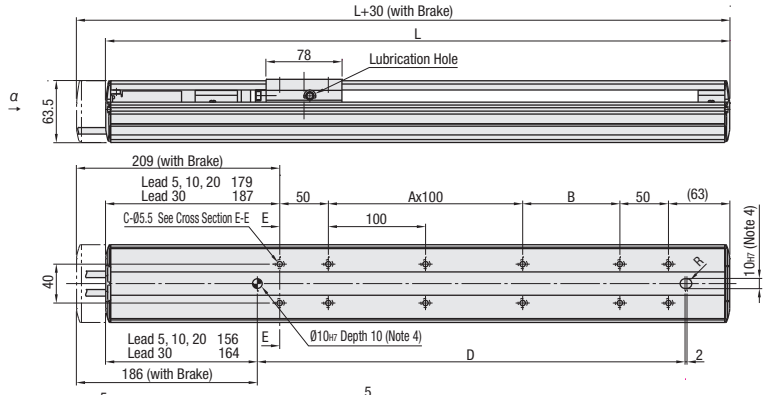
Controller Specifications **P.251** Clean Room Specifications are available on our website.

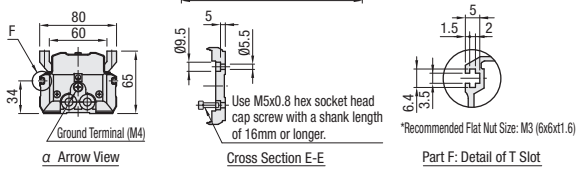
■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSH2	05	±0.01	50	16	339	150~1050 (50 Pitch)	300~120	10,000 km or More	Single-phase AC 100~115V 200~230V ±10%	255 Points
	10		40	8	169		600~240			
	20		20	4	84		1200~480			
	30		7	—	56		1800~720			

(Note) Maximum velocity varies depending on the strokes. Please see Maximum Velocity Table on the next page.







a Arrow View
Cross Section E-E
Part F: Detail of T Slot

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) When mounting, ensure mounting bolts do not interfere with the travel of the carriage.
(Note 3) Minimum bending radius of the cable is R50.
(Note 4) When using Ø10 dowel holes for mounting the actuator, ensure that pin is not inserted to 10 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH2	L (Lead 5, 10, 20)	442	492	542	592	642	692	742	792	842	892	942	992	1042	1092	1142	1192	1242	1292	1342
	L (Lead30)	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
	A (mm)	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
	B (mm)	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100
	C (mm)	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
	D (mm)	240	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140
	Mass (kg)	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.2	9.5

The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection				
Type	Lead (mm)	With or w/o Brake (1)	Controller (2)	I/O Module	W/ or w/o Nose Filter (3)	Cable Length (m)	Stroke (mm)
RSH2	05 10 20 30	None: **Leave blank** Included: **B**	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	None: **F0** Included: **F1** Specifications **P.254**	Standard / Flexible 3.5m: **3** / 3.5m: **R3** 5m: **5** / 5m: **R5** 10m: **10** / 10m: **R10**	**150~1050** (50mm Increment)

(1) Choose "with brake" type for use in vertical applications. (W / brake type is not available for Lead 30) (2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive. (3) This product needs a noise filter. When purchasing separately, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Ordering Example

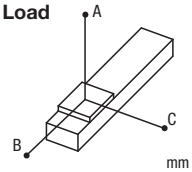
Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSH205B	–	C22A	–	N	–	F1	–	3	–	400

Days to Ship: **8** Days

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Allowable Overhang Load

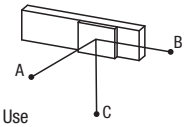
Horizontal Use



mm

Lead	Mass	A	B	C
05	50 kg	51	0	0
	40 kg	138	4	12
	30 kg	170	10	29
	20 kg	249	23	62
10	40 kg	35	0	6
	30 kg	74	8	20
	20 kg	121	20	46
	10 kg	251	56	122
20	20 kg	58	14	26
	15 kg	76	24	39
	10 kg	116	45	69
	5 kg	211	108	147
30	7 kg	78	43	49
	5 kg	112	80	80

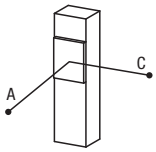
Wall Mounting Use



mm

Lead	Mass	A	B	C
05	50 kg	0	0	0
	40 kg	0	0	0
	30 kg	0	0	0
	20 kg	19	7	140
10	40 kg	0	0	0
	30 kg	0	0	0
	20 kg	7	0	30
	10 kg	85	39	202
20	20 kg	0	0	0
	15 kg	7	0	16
	10 kg	38	26	69
	5 kg	119	89	176
30	7 kg	21	19	34
	5 kg	55	57	77

Vertical Use



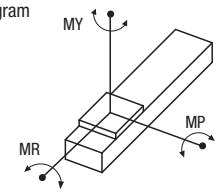
mm

Lead	Mass	A	C
05	16 kg	19	19
	15 kg	22	22
	10 kg	47	48
	5 kg	123	124
10	8 kg	57	58
	6 kg	85	86
	4 kg	141	143
	2 kg	310	311
20	4 kg	106	110
	2 kg	236	240

When overhang equals 0, use linear guides with selected unit to support load mass.

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
70	95	110

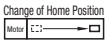
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm) 150~650	700	750	800	850	900	950	1000	1050
RSH2	05	300	255	225	195	180	165	150	135	120
	10	600	510	450	390	360	330	300	270	240
	20	1200	1020	900	780	720	660	600	540	480
	30	1800	1530	1350	1170	1080	990	900	810	720

When the stroke is 700mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In that case, reduce the operation speed by referring to the maxmum velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSH205B	–	C22A	–	N	–	F1	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
					Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RSH3

Slider Type

■ **Feature: Large, Heavy Load Capacity Actuators**
Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

Controller Specifications **P.251** Clean Room Specifications are available on our website.

■ **Components:** Actuator / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / EXT Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

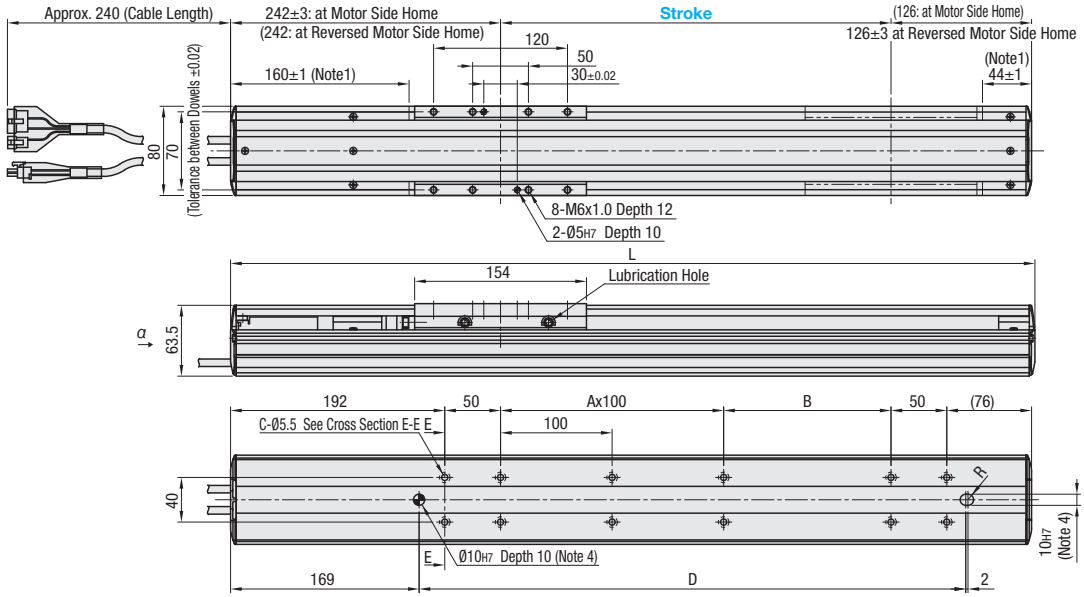
■ **General Specifications**

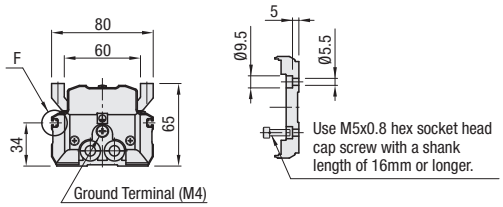
Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSH3	05	±0.01	80	339	150~1050 (50 Pitch)	300~120	10,000 km or More	AC100~115V AC200~230V ±10%	255 Points
	10		60	169		600~240			
	20		30	84		1200~480			

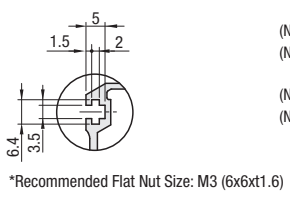
(Note) Maximum velocity varies depending on the strokes. Please see Maximum Velocity Table on the next page.





α Arrow View

Cross Section E-E



Part F: Detail of T Slot

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) When mounting, ensure mounting bolts do not interfere with the travel of the carriage.
(Note 3) Minimum bending radius of the cable is R50.
(Note 4) When using Ø10 dowel holes for mounting the actuator, ensure that pin is not inserted to 10 mm depth or more in the actuator.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm)																		
		150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH2	L (mm)	518	568	618	668	718	768	818	868	918	968	1018	1068	1118	1168	1218	1268	1318	1368	1418
	A (mm)	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
	B (mm)	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150
	C (mm)	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26
	D (mm)	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140	1190
	Mass (kg)	4.7	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.7	10.0	10.3

The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number		Selection				
Type	Lead (mm)	Controller (1)	I/O Module	W/ or w/o Nose Filter (2)	Cable Length (m)	Stroke (mm)
RSH3	05 10 20	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard: 3.5m: 3, 5m: 5, 10m: 10 Flexible: 3.5m: R3, 5m: R5, 10m: R10	150~1050 (50mm Increment)

(1) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(2) This product needs a noise filter. When purchasing separately, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Ordering Example

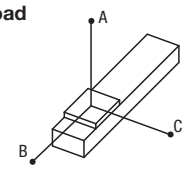
Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSH305	–	C22A	–	N	–	F1	–	3	–	400

Days to Ship: 8 Days

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

Horizontal Use

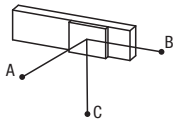


mm

Lead	Mass	A	B	C
05	80 kg	601	20	17
	60 kg	714	34	29
	40 kg	851	63	54
	20 kg	1094	148	127
10	60 kg	382	30	25
	40 kg	479	57	47
	20 kg	629	137	111
20	30 kg	279	70	50
	20 kg	334	116	81
	10 kg	573	256	176

When overhang equals 0, use linear guides with selected unit to support load mass.

Wall Mounting Use

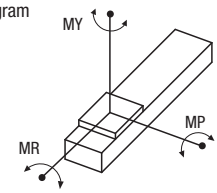


mm

Lead	Mass	A	B	C
05	80 kg	0	0	0
	60 kg	0	0	0
	40 kg	22	26	604
	20 kg	96	112	1005
10	60 kg	0	0	0
	40 kg	15	19	270
	20 kg	80	99	545
20	30 kg	20	29	160
	20 kg	53	75	255
	10 kg	147	215	515

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
128	163	143

■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)									
		150~600	650	700	750	800	850	900	950	1000	1050
RSH3	05	300	255	225	195	180	165	150	135	120	105
	10	600	510	450	390	360	330	300	270	240	210
	20	1200	1020	900	780	720	660	600	540	480	420

When the stroke is 700mm or more, the resonance of ball screws may occur according to the operating area (critical speed). In that case, reduce the operation speed by referring to the maxmum velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSH305	–	C22A	–	N	–	F1	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
					Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	MJ / ME	KJ / KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language

For optional items, see P.253 Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RSH4

Linear

RoHS

Controller Specifications **P.251**

■ **Components:** Actuator, Controller, Cable, (Battery), (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM), Power Connector, EXT Connector, Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

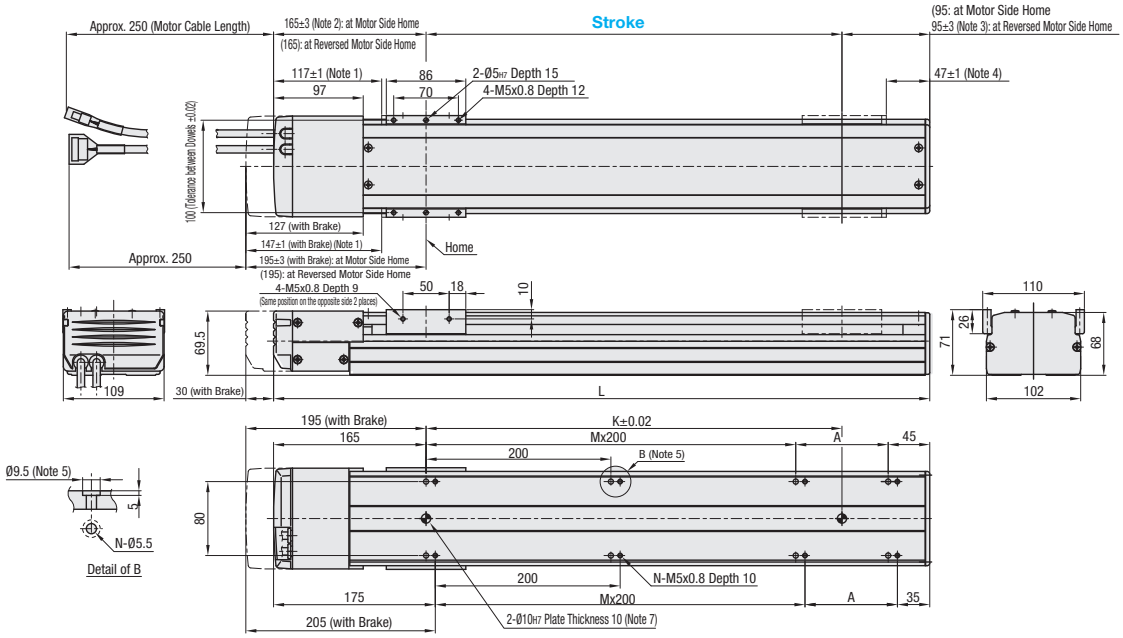
■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

■ Standard Specifications

Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSH4	05	±0.01	60	20	339	50~1050 (50 Pitch)	~300	10,000 km or More	Single-phase AC 100~115V 200~230V ±10%	255 Points
	10		40	10	169		~600			
	20		20	4	84		~1200			
	30		15	—	56		~1800			



Note 1) Mechanical stopper position from the ends.
Note 2) For Large Lead Type (Lead 30), 167.5±4.
Note 3) For Large Lead Type (Lead 30), 95±4.
Note 4) For Large Lead Type (Lead 30), 44.5±1.
Note 5) When mounting, washers cannot be used in Ø9.5 counter bored holes.
Note 6) The minimum bending radius of the motor cable is 50mm.
Note 7) When using Ø10 dowel holes for mounting the actuator, ensure that pin is not inserted beyond 10mm depth or more in the actuator.

■ Dimensions / Mass

Type	Dimensions / Mass	Stroke (mm) 150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RS3	L (mm)	410	460	510	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310
	A (mm)	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
	M (mm)	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
	N (mm)	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14
	K (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
	Mass (kg)	5.5	5.7	5.8	6.2	3.5	6.9	7.3	7.7	8.1	8.5	8.8	9.2	9.6	10.0	10.4	10.8	11.1	11.5	11.9

The brake adds 0.2kg to the total mass.

RS

SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection					
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	W/ or w/o Nose Filter (3)	Cable Length (m)	Stroke (mm)	Regenerative Unit
RSH4	05 10 20 30	None: Leave blank Included: B	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard / Flexible 3.5m: 3 / 3.5m: R3 5m: 5 / 5m: R5 10m: 10 / 10m: R10	150~1050 (50mm Increment)	RGT Always select this option when using 700 mm or more strokes in vertical applications.

(1) Choose the "Brake" option for use in vertical applications. (W/ brake type is not available for Lead 30)
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) A noise fi lter is required for this product. When the customer is purchasing the noise fi lter separately, please select "none". Be sure to install a surge absorber on the primary side of a noise fi lter.
For details, please see the Instruction Manual.

Ordering Example

Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSH420B	–	C22A	–	N	–	F1	–	3	–	200

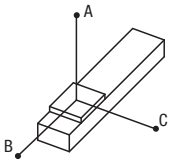
Days to Ship

Configure Online

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

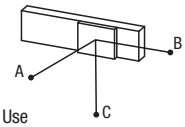
Horizontal Use



mm

Lead	Mass	A	B	C
05	30 kg	419	19	20
	50 kg	0	0	0
	60 kg	0	0	0
10	15 kg	389	71	74
	30 kg	179	17	20
	40 kg	106	0	0
20	5 kg	937	282	259
	10 kg	487	121	116
	20 kg	236	40	44
30	5 kg	491	273	215
	15 kg	223	61	63

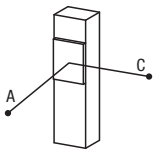
Wall Mounting Use



mm

Lead	Mass	A	B	C
05	10 kg	107	54	1410
	20 kg	22	0	540
	30 kg	0	0	0
10	10 kg	105	53	550
	20 kg	22	0	230
	30 kg	0	0	0
20	5 kg	250	213	905
	10 kg	99	51	438
	20 kg	21	0	149
30	5 kg	206	209	480
	15 kg	45	0	199

Vertical Use

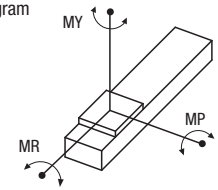


mm

Lead	Mass	A	C
05	10 kg	105	146
	15 kg	51	93
	20 kg	25	66
10	4 kg	338	380
	8 kg	142	183
	10 kg	102	144
20	1 kg	600	600
	2 kg	649	691
	4 kg	306	347

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
131	131	115

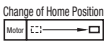
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)							
		150~700	750	800	850	900	950	1000	1050
RS3	05	300	240		195		150		135
	10	600	480		390		300		270
	20	800~1200	960		780		600		540
	30	800~1800	1440		1170		900		810

For stroke ranges 650 mm or more, ball screws may resonate in certain operation areas (critical speed). In that case, reduce the operation speed by referring to the Max. Velocity shown in the table above.

Alterations

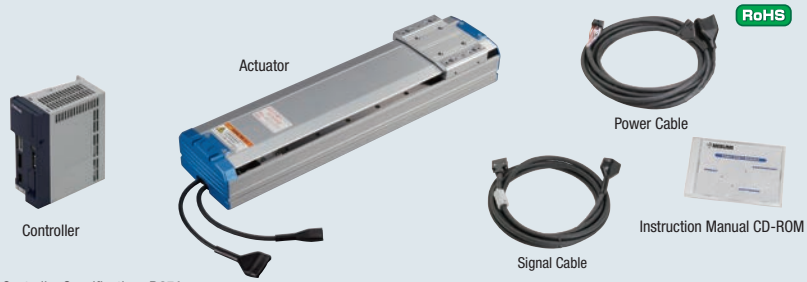
Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSH420B	–	C22A	–	N	–	F1	–	3	–	400	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual MJ5: Body KJ3: Controller (C1)
					Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	C	MJ5/KJ3/KJ4
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included.

For optional items, see P.253 It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSH5

Linear



RoHS

Controller Specifications **P.251**

■ **Components:** Actuator, Controller, Cable, (Battery), (Noise Filter)

■ **Accessories**

Accessories	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM), Power Connector, EXT Connector, Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

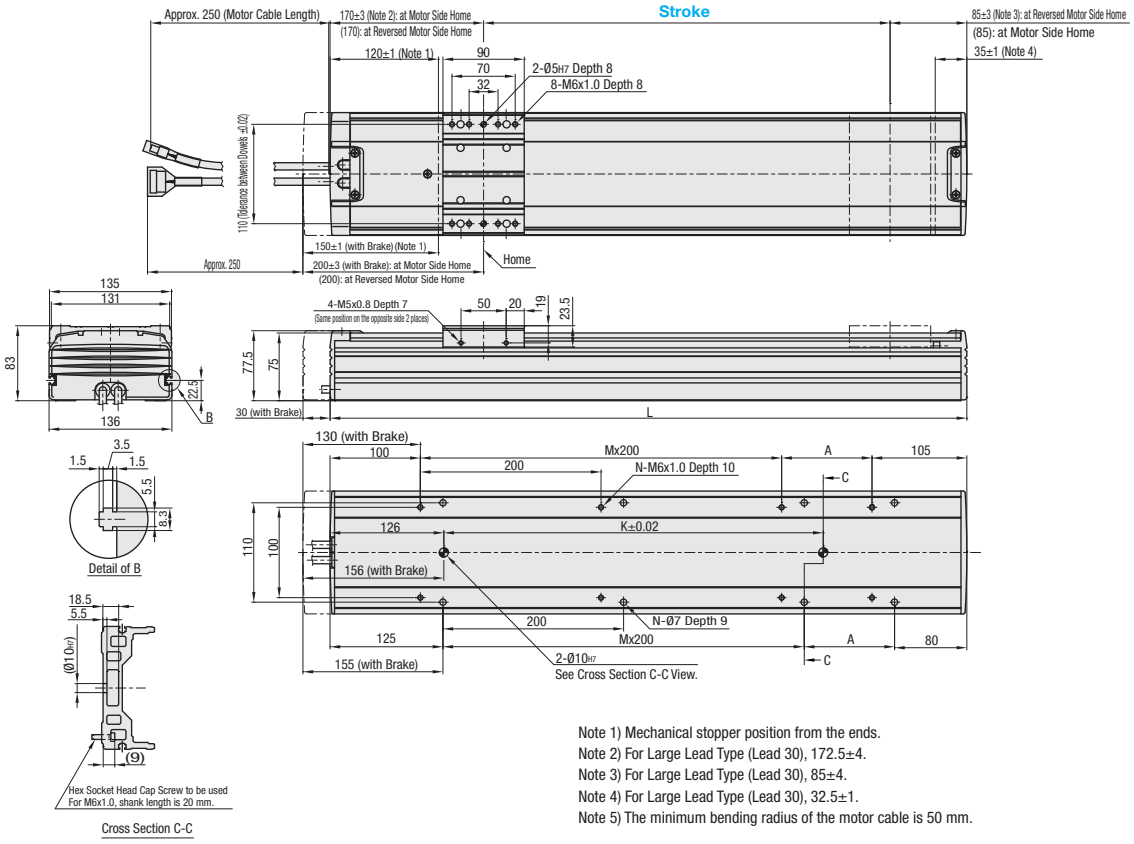
■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

■ Standard Specifications

Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSH5	05	±0.01	80	20	339	50~1050 (50 Pitch)	~300	10,000 km or More	Single-phase AC 100~115V 200~230V ±10%	255 Points
	10		55	10	169		~600			
	20		30	4	84		~1200			
	30		15	—	56		~1800			



Note 1) Mechanical stopper position from the ends.
Note 2) For Large Lead Type (Lead 30), 172.5±4.
Note 3) For Large Lead Type (Lead 30), 85±4.
Note 4) For Large Lead Type (Lead 30), 32.5±1.
Note 5) The minimum bending radius of the motor cable is 50 mm.

■ Dimensions / Mass

Type	Dimensions / Mass	Stroke (mm) 150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH5	L (mm)	406	455	505	555	605	655	705	755	805	855	905	955	1005	1055	1105	1155	1205	1255	1305
	A (mm)	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
	M (mm)	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
	N (mm)	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14
	K (mm)	240	240	240	240	420	420	420	420	600	600	600	600	780	780	780	780	960	960	960
	Mass (kg)	6.2	6.9	7.5	8.2	8.8	9.5	10.1	10.8	11.4	12.1	12.6	13.4	13.9	14.6	15.2	15.9	16.5	17.2	17.8

The brake adds 0.7kg to the total mass.

RS

SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection					
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	W/ or w/o Nose Filter (3)	Cable Length (m)	Stroke (mm)	Regenerative Unit
RSH5	05 10 20 30	None: Leave blank Included: B	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard / Flexible 3.5m: 3 / 3.5m: R3 5m: 5 / 5m: R5 10m: 10 / 10m: R10	150~1050 (50mm Increment)	RGT Always select this option when using 700 mm or more strokes in vertical applications.

(1) Choose the "Brake" option for use in vertical applications. (W/ brake type is not available for Lead 30)
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) A noise fi lter is required for this product. When the customer is purchasing the noise fi lter separately, please select "none". Be sure to install a surge absorber on the primary side of a noise fi lter.
For details, please see the Instruction Manual.

Ordering Example

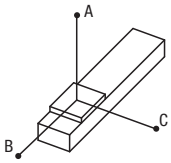
Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSH520B	–	C22A	–	N	–	F1	–	3	–	200

Days to Ship — Configure Online

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

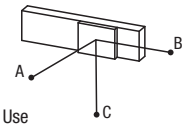
Horizontal Use



mm

Lead	Mass	A	B	C
05	50 kg	1575	158	222
	60 kg	1493	135	194
	80 kg	1466	107	159
10	15 kg	1132	353	361
	40 kg	872	183	218
	55 kg	946	140	184
20	5 kg	2153	1366	980
	15 kg	1193	465	430
	30 kg	1266	245	294
30	5 kg	1756	1364	863
	15 kg	1236	467	438

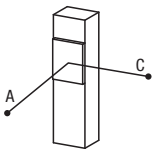
Wall Mounting Use



mm

Lead	Mass	A	B	C
05	30 kg	246	107	1095
	40 kg	167	64	798
	60 kg	88	20	508
10	10 kg	312	189	690
	20 kg	140	57	402
	30 kg	92	0	345
20	5 kg	1066	974	1578
	10 kg	402	276	775
	30 kg	219	105	678
30	5 kg	951	969	1286
	15 kg	408	277	803

Vertical Use

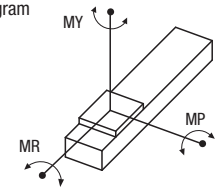


mm

Lead	Mass	A	C
05	10 kg	587	456
	15 kg	383	297
	20 kg	281	218
10	4 kg	1232	956
	8 kg	634	492
	10 kg	499	387
20	1 kg	600	600
	2 kg	1200	1200
	4 kg	1154	895

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
232	233	204

■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm) 150~700	750	800	850	900	950	1000	1050
RS3	05	300	240	195			150		135
	10	600	480	390			300		270
	20	1000~1200	960	780			600		540
	30	900~1800	1440	1170			900		810

For stroke ranges 650 mm or more, ball screws may resonate in certain operation areas (critical speed). In that case, reduce the operation speed by referring to the Max. Velocity shown in the table above.

Alterations

Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSH520B	–	C22A	–	N	–	F1	–	3	–	200	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual MJ5: Body KJ3: Controller (C1/C22)
		Motor			Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	C	MJ5/KJ3/KJ4
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included.

For optional items, see P.253 — It is more economical to order the optional items as alterations than purchasing them individually. — Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. — Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSF4

Linear, Narrow Type

RoHS

Controller Specifications **P.251**

■ **Components:** Actuator, Controller, Cable, (Battery), (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM), Power Connector, EXT Connector, Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

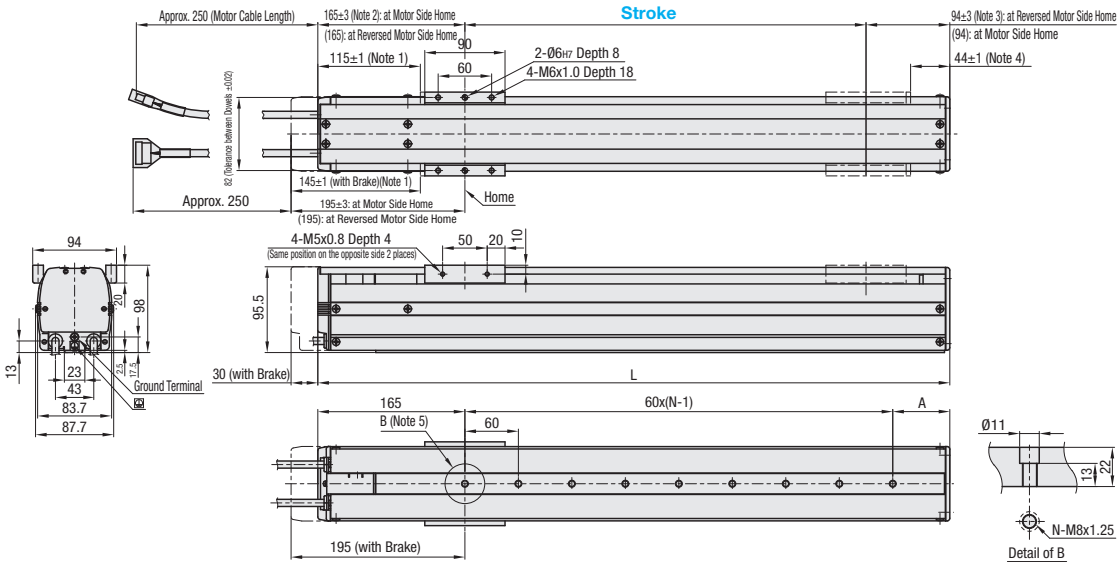
Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Max Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (mm/sec)	Rated Running Life	Input Power Supply	Max Positioning Point
RSF4	05	±0.01	80	20	339	50~1050 (50 Pitch)	~300	10,000 km or More	Single-phase AC 100~115V 200~230V ±10%	255 Points
	10		55	10	169		~600			
	20		30	4	84		~1200			
	30		15	—	56		~1800			



Note 1) Mechanical stopper position from the ends.
Note 2) For Large Lead Type (Lead 30), 167.5±4.
Note 3) For Large Lead Type (Lead 30), 94±4.
Note 4) For Large Lead Type (Lead 30), 41.5±1.
Note 5) When mounting, washers cannot be used in Ø11 counter bored holes.
Note 6) The minimum bending radius of the motor cable is 50mm.

■ **Dimensions / Mass**

Type	Dimensions / Mass	Stroke (mm) 150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH5	L (mm)	409	459	509	559	609	659	709	759	809	859	909	959	1009	1059	1109	1159	1209	1259	1309
	A (mm)	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84	74	64
	N (mm)	4	5	6	6	7	8	9	10	11	11	12	13	14	15	16	16	17	18	19
	Mass (kg)	5.5	5.9	6.2	6.6	6.9	7.3	7.6	8.0	8.3	8.7	9.0	9.4	9.7	10.0	10.3	10.7	11.0	11.4	11.7

The brake adds 0.7kg to the total mass.

RS

SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection					
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	W/ or w/o Nose Filter (3)	Cable Length (m)	Stroke (mm)	Regenerative Unit
RSF4	05 10 20 30	None: Leave blank Included: B	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard / Flexible 3.5m: 3 / 3.5m: R3 5m: 5 / 5m: R5 10m: 10 / 10m: R10	150~1050 (50mm Increment)	RGT Always select this option when using 700 mm or more strokes in vertical applications.

(1) Choose the "Brake" option for use in vertical applications. (W/ brake type is not available for Lead 30)
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) A noise fi lter is required for this product. When the customer is purchasing the noise fi lter separately, please select "none". Be sure to install a surge absorber on the primary side of a noise fi lter.
For details, please see the Instruction Manual.

Ordering Example

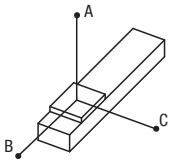
Part Number	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSF420B	–	C22A	–	N	–	F1	–	3	–	200

Days to Ship — Configure Online

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

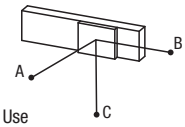
Horizontal Use



mm

Lead	Mass	A	B	C
05	50 kg	722	42	47
	60 kg	657	33	37
	80 kg	577	23	25
10	20 kg	617	119	127
	40 kg	422	53	59
	55 kg	420	36	40
20	5 kg	1292	505	462
	15 kg	572	158	151
	30 kg	455	73	75
30	5 kg	864	501	383
	15 kg	491	156	140

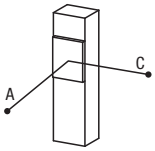
Wall Mounting Use



mm

Lead	Mass	A	B	C
05	10 kg	197	133	2360
	20 kg	54	0	985
	30 kg	0	0	427
10	10 kg	193	132	910
	20 kg	53	0	400
	30 kg	0	0	109
20	5 kg	416	388	1186
	10 kg	92	42	386
	30 kg	0	0	61
30	5 kg	349	384	776
	15 kg	87	40	306

Vertical Use

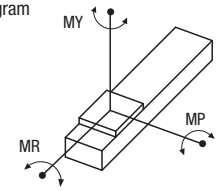


mm

Lead	Mass	A	C
05	10 kg	221	221
	15 kg	135	135
	20 kg	92	92
10	4 kg	594	594
	8 kg	280	280
	10 kg	217	217
20	1 kg	600	60
	2 kg	1098	1098
	4 kg	545	545

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
86	133	117

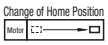
■ Max. Velocity (mm/sec)

Type	Lead (mm)	Stroke (mm)							
		150~700	750	800	850	900	950	1000	1050
RS3	05	300	240		195		150		135
	10	600	480		390		300		270
	20	1100~1200	960		780		600		540
	30	800~1800	1440		1170		900		810

For stroke ranges 650 mm or more, ball screws may resonate in certain operation areas (critical speed). In that case, reduce the operation speed by referring to the Max. Velocity shown in the table above.

Alterations

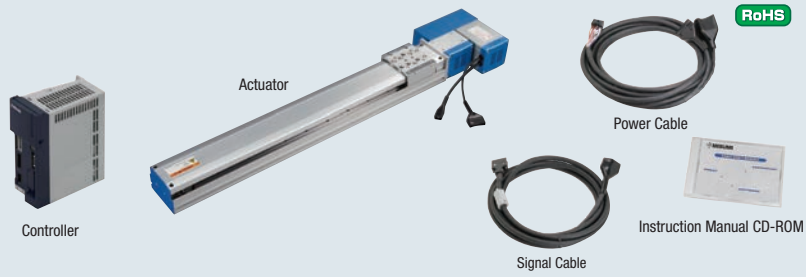
Part Number	–	Controller	–	I/O Module	–	Noise Filter	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSF420B	–	C22A	–	N	–	F1	–	3	–	200	–	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual MJ5: Body KJ3: Controller (C1/C22)
					Communication Specifications: RS232C	Communication Specifications: RS232C			
Code	G	E	H	D	S	R	T	C	MJ5/KJ3/KJ4
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included.

For optional items, see P.253 — It is more economical to order the optional items as alterations than purchasing them individually. — Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. — Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSB1

Belt Type



RoHS

■ **Components:** Actuator, Controller, Cable, (Battery), (Noise Filter)

■ **Accessories**

Accessories	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM), Power Connector, EXT Connector, Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surface Treatment	Anodize	—	Anodize	Anodize

■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

Controller Specifications **P.251**

■ Standard Specifications

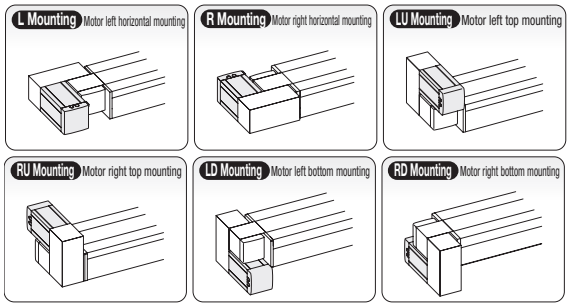
Terminology & FAQ **P.254**

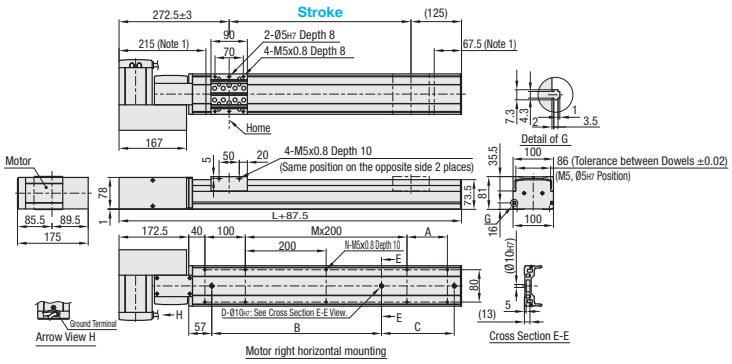
Type	Belt (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) (Horizontal only)	Stroke (mm)	Rated Running Life	Input Power Supply	Max Positioning Point
RSB1	Lead 25	±0.04	10	150~2550 (50 Pitch)	10,000km	AC100V~115V AC200~230V ±10%	255 Points

(Note) Reference running life value with the max. overhang load on the guides.

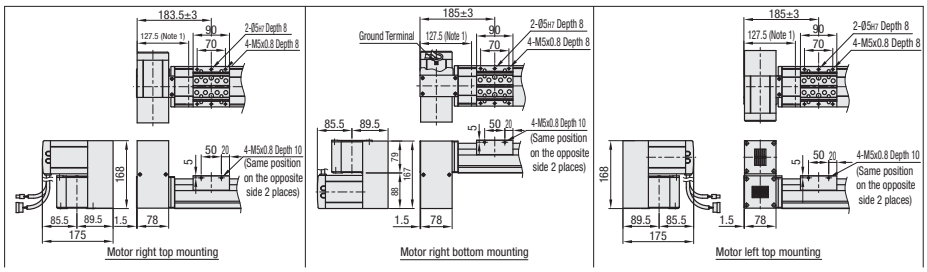
■ Motor Mounting Direction

Select motor mounting direction from the following six types:





Motor right horizontal mounting



Motor right top mounting | Motor right bottom mounting | Motor left top mounting

■ Dimensions / Mass

Note 1. Mechanical stopper position from the ends.

Type	Dimensions / Mass	Stroke (mm)																								
		150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	110	1150	1200	1250	1300	1350
RSB1	L (mm)	460	510	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460	1510	1560	1610	1660
	A (mm)	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
	B (mm)	240			420			600				780				960				1140				1320		
	C (mm)	—																								
	D (mm)	2																								
	M (mm)	—	1				2				3				4				5				6			
	N (mm)	6	8				10				12				14				16				18			
	Mass (kg)	7.4	7.8	8.2	8.6	9	9.4	9.8	10.1	10.5	10.9	11.3	11.7	12.1	12.5	12.9	13.3	13.7	14.1	14.5	14.9	15.3	15.7	16.1	16.5	16.9
		1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	
	L (mm)	1710	1760	1810	1860	1910	1960	2010	2060	2110	2160	2210	2260	2310	2360	2410	2460	2510	2560	2610	2660	2710	2760	2810	2860	
	A (mm)	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	
	B (mm)	1320																								
	C (mm)	—	240			420				600			780				960				1140				1320	
	D (mm)	2	3																							
	M (mm)	7				8				9				10				11				12				
	N (mm)	20				22				24				26				28				30				
	Mass (kg)	17.3	17.7	18	18.4	18.8	19.2	19.6	20	20.4	20.8	21.2	21.6	22	22.4	22.8	23.2	23.6	24	24.4	24.8	25.2	25.6	25.9	26.3	

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number		Selection				
Type	Motor Mounting Position	Controller (1)	I/O Module	W/ or w/o Nose Filter (2)	Cable	Stroke (mm)
RSB1	Motor left horizontal: L Motor right horizontal: R Motor left top: LU Motor right top: RU Motor left bottom: LD Motor right bottom: RD	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard: 3.5m: 3, 5m: 5, 10m: 10 Flexible: 3.5m: R3, 5m: R5, 10m: R10	150~2550 (50mm Increment)

(1) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(2) A noise fi lter is required for this product. When the customer is purchasing the noise fi lter separately, please select "none". Be sure to install a surge absorber on the primary side of a noise fi lter.
For details, please see the Instruction Manual.

Ordering Example

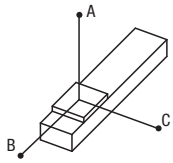
Part Number	–	Motor Mounting Position	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSB1	–	L	–	C21A	–	N	–	F1	–	5	–	2550

Days to Ship — Configure Online

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

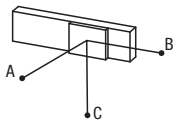
Horizontal Use



mm

Mass	A	B	C
3 kg	1800	1392	1084
5 kg	1574	826	696
8 kg	1221	509	474
10 kg	1171	403	407

Wall Mounting Use

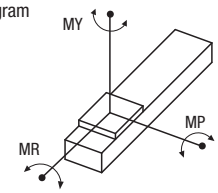


mm

Mass	A	B	C
3 kg	1144	1005	1734
5 kg	724	576	1199
8 kg	493	333	918
10 kg	414	254	869

■ Allowable Static Moment

Moment Diagram



N·m

MY	MP	MR
188	188	165

■ Max. Velocity (mm/sec)

Type	Stroke (mm)	
	150~350	450~2250
RSB1	~1750	1875

Alterations

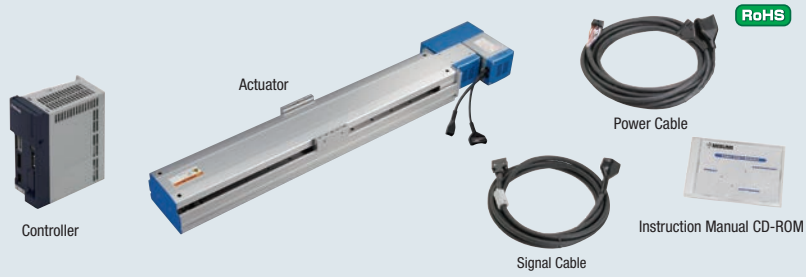
Part Number	–	Motor Mounting Position	–	Controller	–	I/O Type	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSB1	–	L	–	C21A	–	N	–	F1	–	5	–	2550

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual MJ5: Body KJ3: Controller (C1/C22)
		Motor			Communication Specifications: RS232C	Communication Specifications: RS232C		Length: 300m	
Code	G	E	H	D	S	R	T	C	MJ5/KJ3
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included.

For optional items, see P.253 It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSB2

Belt Type



RoHS

Controller Specifications **P.251**

■ **Components:** Actuator, Controller, Cable, (Battery), (Noise Filter)

■ **Accessories**

Accessories	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM), Power Connector, EXT Connector, Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Cover
Material	Aluminum	Steel	Aluminum	Aluminum
Surfuce Treatment	Anodize	—	Anodize	Anodize

■ **General Specifications**

Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo 100W	Resolver	0~40°C, 35~85%RH (No Condensation)

■ Standard Specifications

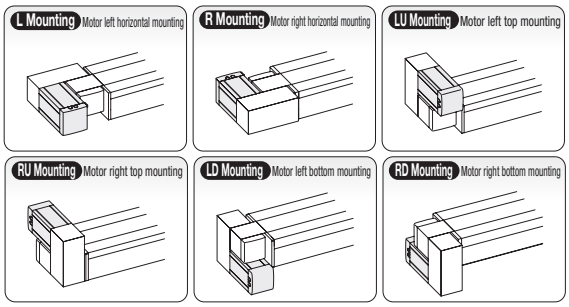
Terminology & FAQ **P.254**

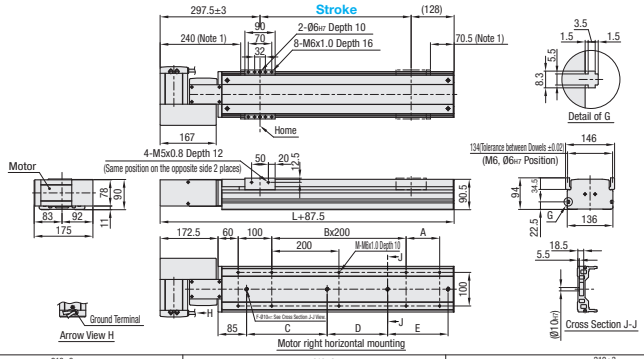
Type	Belt (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) (Horizontal only)	Stroke (mm)	Rated Running Life	Input Power Supply	Max Positioning Point
RSB2	Lead 25 Equivalent	±0.04	20	150~3050 (100 Pitch)	10,000 km	AC100V~115V AC200~230V ±10%	255 Points

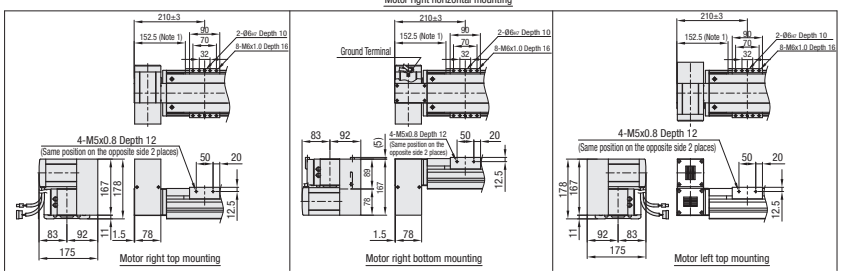
(Note) Reference running life value with the max. overhang load on the guides.

■ Motor Mounting Direction

Select motor mounting direction from the following six types:







■ Dimensions / Mass

(Note 1) Mechanical stopper position from the ends.

Type	Dimensions / Mass	Stroke (mm)																													
		150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600
RSB2	L (mm)	488	538	588	638	688	738	788	838	888	938	988	1038	1088	1138	1188	1238	1288	1338	1388	1438	1488	1538	1588	1638	1688	1738	1788	1838	1888	1938
	M (mm)	6	8				10					12				14			16					18				20			22
	A (mm)	—	50	100	150	200	50	100	150	200	50	100	150	200	50	10	100	200	50	100	150	200	50	100	150	200	50	100	150	200	50
	B (mm)	1					2					3				4			5					6				7			8
	C (mm)	240			420			600					780				960		1140												
	D (mm)	—																						240				420			600
	E (mm)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	F (mm)	2																						3							
	Mass (kg)	9.6	10.2	10.8	11.4	12	12.5	13.1	13.7	14.3	14.9	15.5	16	16.6	17.2	17.8	18.4	19	19.5	20.2	20.7	21.3	21.9	22.5	23.1	23.7	24.2	24.8	25.4	26	26.6

Type	Dimensions / Mass	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050
RSB2	L (mm)	1988	2038	2088	2138	2188	2238	2288	2338	2388	2438	2488	2538	2588	2638	2688	2738	2788	2838	2888	2938	2988	3038	3088	3138	3188	3238	3288	3338	3388
	M (mm)	22			24				26				28				30				32				34				36	
	A (mm)	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
	B (mm)	8			9				10				11				12				13				14				15	
	C (mm)	1140																												
	D (mm)	600			780				960				1140																	
	E (mm)	—															240				420			600				780		
	F (mm)	3																						4						
	Mass (kg)	27.2	27.7	28.3	28.9	29.5	30.1	30.7	31.3	31.9	32.4	33	33.6	34.2	34.8	35.4	35.9	36.5	37.1	37.7	38.3	38.9	39.4	40	40.6	41.2	41.8	42.4	43	43.6

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number		Selection				
Type	Motor Mounting Position	Controller (1)	I/O Module	W/ or w/o Nose Filter (2)	Cable	Stroke (mm)
RSB2	Motor Left Horizontal: L Motor Right Horizontal: R Motor Left Top: LU Motor Right Top: RU Motor Left Bottom: LD Motor Right Bottom: RD	Specifications / Power Supply: Absolute Encoders (w/ Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	None: F0 Included: F1 Specifications P.254	Standard / Flexible 3.5m: 3 / 3.5m: R3 5m: 5 / 5m: R5 10m: 10 / 10m: R10	150~3050 (50mm Increment)

(1) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive. (2) A noise fi lter is required for this product. When the customer is purchasing the noise fi lter separately, please select "none". Be sure to install a surge absorber on the primary side of a noise fi lter. For details, please see the Instruction Manual.

Ordering Example

Part Number	–	Motor Mounting Position	–	Controller	–	I/O Module	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSB2	–	L	–	C21A	–	N	–	F1	–	5	–	2550

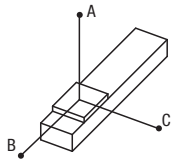
Days to Ship

Configure Online

Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.252

■ Allowable Overhang Load

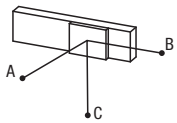
Horizontal Use



mm

Mass	A	B	C
5 kg	2159	1228	943
10 kg	1389	623	548
20 kg	1102	320	348

Wall Mounting Use

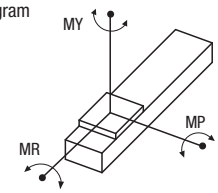


mm

Mass	A	B	C
5 kg	1064	816	1468
10 kg	564	377	888
20 kg	305	156	615

■ Allowable Static Moment

Moment Diagram



N·m

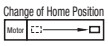
MY	MP	MR
226	227	199

■ Max. Velocity (mm/sec)

Type	Stroke (mm)	
	150~350	450~3050
RSB2	~1750	1875

Alterations

Part Number	–	Motor Mounting Position	–	Controller	–	I/O Type	–	W/ or w/o Nose Filter	–	Cable Length	–	Stroke
RSB2	–	L	–	C21A	–	N	–	F1	–	5	–	2550

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Cable for Daisychain Connection	Instruction Manual MJ5: Body KJ3: Controller (C1/C22)
					Communication Specifications: RS232C	Communication Specifications: RS232C		Length: 300m	
Code	G	E	H	D	S	R	T	C	MJ5/KJ3
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal is included. Spec. P.253	Handy Terminal with Deadman's Switch is included. Spec. P.253	Support Software with USB Communication Cable is included. Spec. P.253	Support Software with D-Sub Communication Cable is included. Spec. P.253	I/O Cable is included. Required for NPN/PNP configurations. Spec. P.253	A cable to connect multiple controllers. Up to 16 controllers can be connected.	Operation Manual is included. For Actuator MJ5: For Controller KJ3:

For optional items, see P.253 It is more economical to order the optional items as alterations than purchasing them individually. Entering point data requires the handy terminal or the support software.
An I/O Cable is required for Parallel Communication I/O Control. Please select the correct I/O cable type for the appropriate controller type.

Single Axis Robots RSD1 / RSDG1

Rod Type

■ **Feature: Small, Rod Type Actuators**

Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

RSD1 (without Support Guide) **RSDG1 (with Support Guide)** RoHS

Controller Specifications **P.251**

■ **Components:** Actuator / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / EXT Connector / Dummy Connector		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Type	Components	Body	Rod	Cover	Shaft	Ball Bushing
RSD1	Material	Aluminum	Steel	ABS Resin	—	—
	Surface Treatment	Acrylic Paint	—	—	—	—
RSDG1	Material	Aluminum	Steel	ABS Resin	Steel	Steel
	Surface Treatment	Acrylic Paint	—	—	—	—

■ **General Specifications**

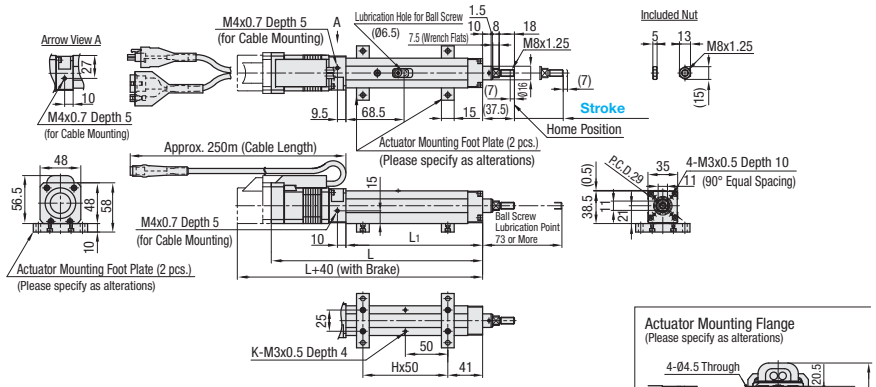
Type	Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
RSD1 RSDG1	Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

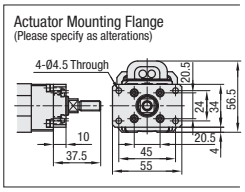
■ **Standard Specifications** Terminology & FAQ **P.254**

Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg)			Max. Push Force (N)	Rated Running Life ①1	Lost Motion (mm)	Rod Non-Rotational Accuracy (degrees)		Maximum Velocity ①2 (mm/sec)	Input Power Supply	Max Positioning Point
			Horizontal	Vertical									
				RSD1	RSDG1				RSD1	RSDG1			
RSD1 RSDG1	06	±0.02	~20	~8	~7.5	100	5,000 km or More	0.1 or Less	±1.0	±0.05	~250	DC24V ±10%	255 Points
	12		~10	~4	~3.5	75					~500		

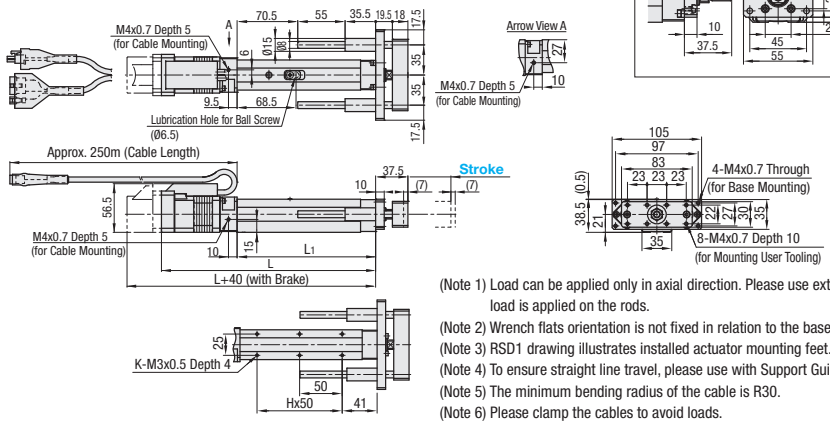
① 1. Vertical travel service life varies depending on load capacity. Please check Service Life Table.
① 2. Maximum Velocity varies depending on load capacity. Please refer to Velocity – Maximum Load Capacity Table.

RSD1 (Without Support Guide)





RSDG1 (With Support Guide)



(Note 1) Load can be applied only in axial direction. Please use externally mounted guides together so that no radial load is applied on the rods.
(Note 2) Wrench flats orientation is not fixed in relation to the base surface.
(Note 3) RSD1 drawing illustrates installed actuator mounting feet. Hole quantity K is as indicated in Dimensions Table.
(Note 4) To ensure straight line travel, please use with Support Guide.
(Note 5) The minimum bending radius of the cable is R30.
(Note 6) Please clamp the cables to avoid loads.

■ **Dimensions**

Type	Dimensions	Stroke (mm)			
		50	100	150	200
RSD1 RSDG1	L_1 (mm)	161	211	261	311
	L (mm)	249	299	349	391
	H (mm)	2	3	4	5
	K (mm)	6	8	10	12

■ **Mass (kg)**

Type	Stroke (mm)			
	50	100	150	200
RSD1	1.1	1.3	1.4	1.6
RSDG1	1.5	1.7	1.9	2.1

① The mass of "With Brake" Type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD1 RSDG1	06 12	None: **Leave blank** Included: **B**	**C1** DC24V±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~200** (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

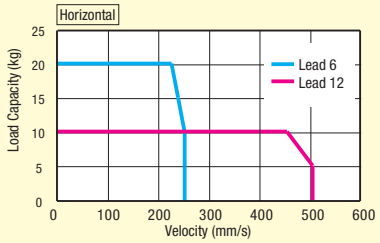
Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RSD106B	–	C1	–	N	–	3	–	150

Days to Ship **8** Days

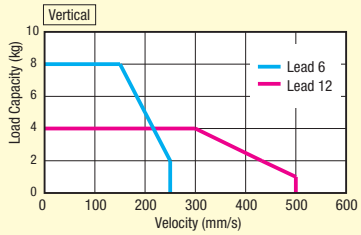
Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Velocity – Maximum Load Capacity Table

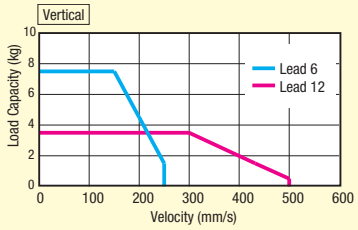
RSD1/RSDG1



RSD1



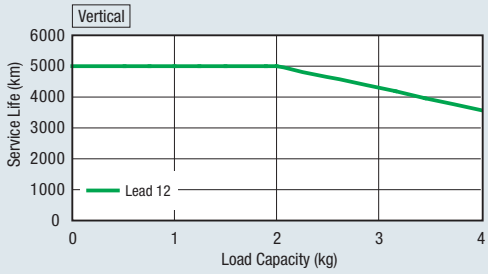
RSDG1



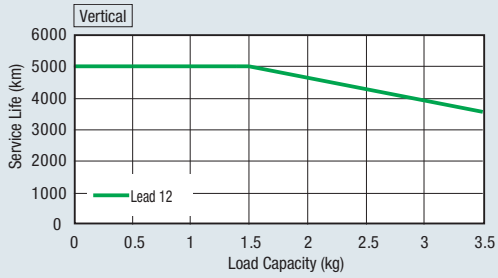
■ Service Life Table

Rated Running Life is 5,000km or more. For the following types, however, service life varies depending on its maximum load capacity, and how it is applied.

RSD1



RSDG1



Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSD106B	–	C1	–	N	–	3	–	200	–	S-MJ

Alterations	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Actuator Mounting Foot Plate	Actuator Mounting Flange
			 Communication Specifications: RS232C	 Communication Specifications: RS232C						
Code	H	D	S	R	T	MJ / ME	KJ / KE			
Spec.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.	2 plates are included for horizontal mounting.	1 plate is included for vertical mounting.

For optional items, see
Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RSD2 / RSDG2

Rod Type

■ **Feature: Small, Rod Type Actuators**

Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

Controller Specifications **P.251**

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector / 6 Mounting Nuts		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Type	Components	Body	Rod	Cover	Shaft	Ball Bushing
RSD2	Material	Aluminum	Steel	ABS Resin	—	—
	Surface Treatment	Acrylic Paint	—	—	—	—
RSDG2	Material	Aluminum	Steel	ABS Resin	Steel	Steel
	Surface Treatment	Acrylic Paint	—	—	—	—

■ **General Specifications**

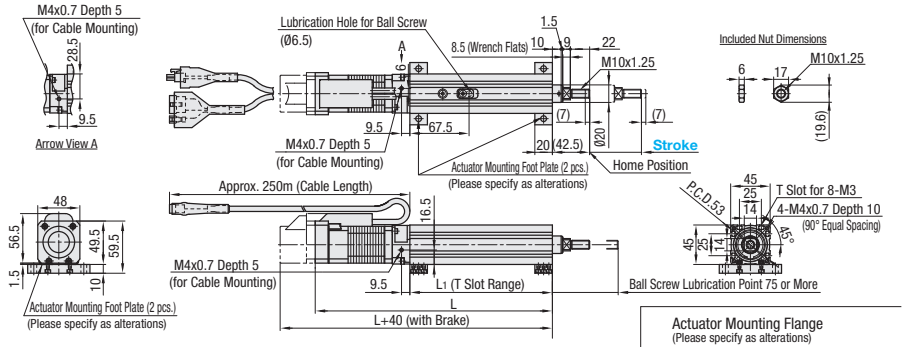
Type	Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
RSD2 RSDG2	Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

■ **Standard Specifications** Terminology & FAQ **P.254**

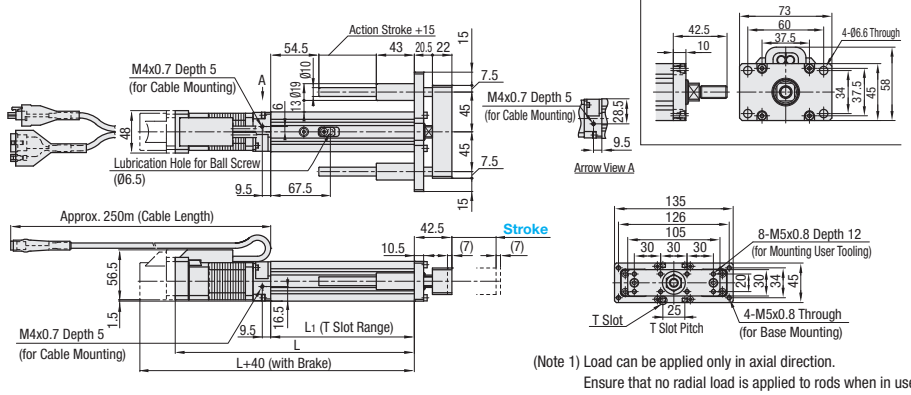
Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Vertical RSD2	Vertical RSDG2	Max. Push Force (N)	Rated Running Life ①1	Lost Motion (mm)	Rod Non-Rotational Accuracy (degrees) RSD2	Rod Non-Rotational Accuracy (degrees) RSDG2	Stroke (mm)	Maximum Velocity ①2 (mm/sec)	Input Power Supply	Max Positioning Point
RSD2 RSDG2	02	±0.02	~45	~25	~24	600	5,000 km or More	0.1 or Less	±1.0	±0.05	50~300 (50 Pitch)	~80	DC24V ±10%	255 Points
	06		~40	~12	~11	300						~250		
	12		~25	~5	~4	150						~500		

① 1. Vertical travel service life varies depending on load capacity. Please check Service Life Table.
① 2. Maximum Velocity varies depending on load capacity. Please refer to Velocity – Maximum Load Capacity Table.

RSD2 (Without Support Guide)



RSDG2 (With Support Guide)



(Note 1) Load can be applied only in axial direction.
Ensure that no radial load is applied to rods when in use.
(Note 2) Wrench flats orientation is not fixed in relation to the base surface.
(Note 3) RSD2 drawing illustrates installed actuator mounting feet.
(Note 4) To ensure straight line travel, please use with Support Guide.
(Note 5) The minimum bending radius of the cable is R30.
(Note 6) Please clamp the cables to avoid loads.

■ **Dimensions**

Type	Dimensions	Stroke (mm) 50	100	150	200	250	300
RSD2 RSDG2	L_1 (mm)	162.5	212.5	262.5	312.5	362.5	412.5
	L (mm)	270.5	320.5	370.5	420.5	470.5	520.5

■ **Mass (kg)**

Type	Stroke (mm) 50	100	150	200	250	300
RSD2	1.4	1.7	1.9	2.2	2.4	2.7
RSDG2	2.0	2.4	2.7	3.0	3.3	3.7

① The mass of "With Brake" Type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD2 RSDG2	02 06 12	None: **Leave blank** Included: **B**	**C1** DC24V±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~300** (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

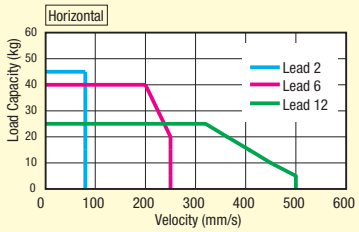
Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RSD206B	–	C1	–	N	–	3	–	150

Days to Ship **8** Days

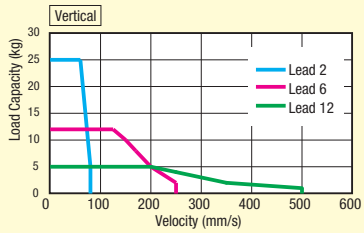
Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Velocity – Maximum Load Capacity Table

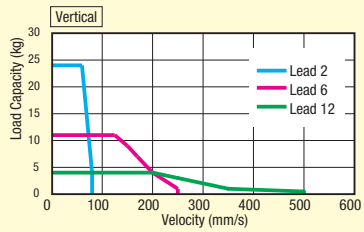
RSD2/RSDG2



RSD2



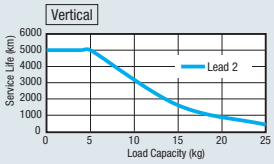
RSDG2



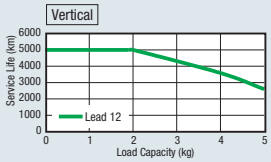
■ Service Life Table

Rated Running Life is 5,000km or more. For the following types, however, service life varies depending on its maximum load capacity, and how it is applied.

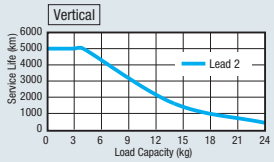
RSD2



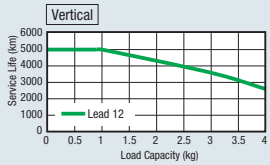
RSD2



RSDG2



RSDG2



Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(G, E, etc.)
RSD206B	–	C1	–	N	–	3	–	200	–	S-MJ

Alterations	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Actuator Mounting Foot Plate	Actuator Mounting Flange
			 Communication Specifications: RS232C	 Communication Specifications: RS232C						
Code	H	D	S	R	T	MJ / ME	KJ / KE			
Spec.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.	2 plates are included for horizontal mounting.	1 plate is included for vertical mounting.

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

Single Axis Robots RSD3/RSDG3

Rod Type

Feature: Small, Rod Type Actuators
Applicable to Remote Command Control, Remote I/O Control (CC-Link / DeviceNet Specification), Parallel I/O Control and Online Command Control (RS232C Specification).

Controller Specifications P.251

■ **Components:** Actuator / Controller / Cable

■ **Accessories**

	Controller I/O Specifications		
Accessories	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector / 6 Mounting Nuts		
	—	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Type	Components	Body	Rod	Cover	Shaft	Ball Bushing
RSD3	Material	Aluminum	Steel	ABS Resin	—	—
	Surface Treatment	Acrylic Paint	—	—	—	—
RSDG3	Material	Aluminum	Steel	ABS Resin	Steel	Steel
	Surface Treatment	Acrylic Paint	—	—	—	—

■ **General Specifications**

Type	Ball Screw	Motor	Position Detector	Operating Ambient Temperature / Humidity
RSD3 RSDG3	Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0~40°C, 35~85%RH (No Condensation)

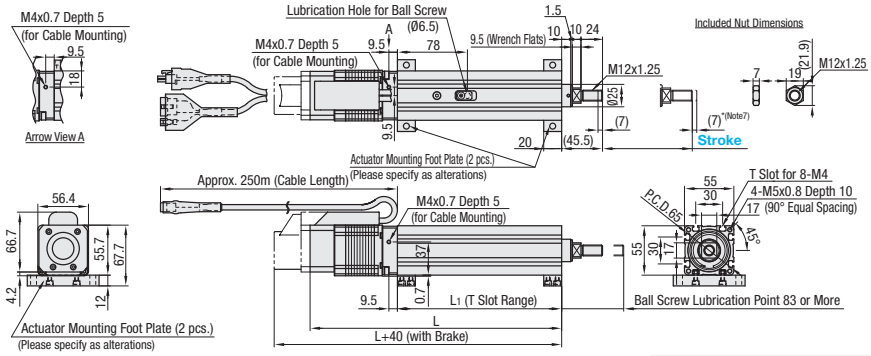
■ Standard Specifications

Terminology & FAQ P.254

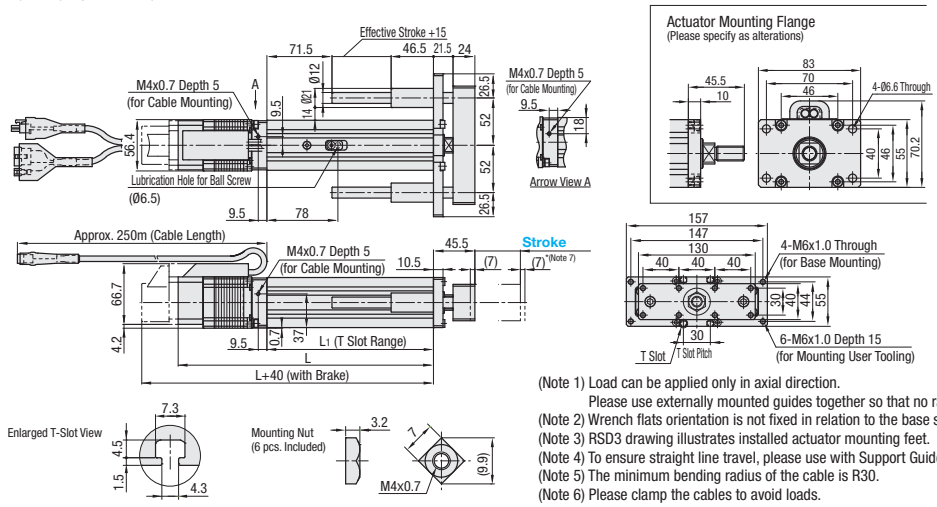
Type	Lead (mm)	Positioning Repeatability (mm)	Max Load Capacity (kg) Horizontal	Vertical RSD3	Vertical RSDG3	Max. Push Force (N)	Rated Running Life ①1	Lost Motion (mm)	Rod Non-Rotational Accuracy (degrees) RSD3	Rod Non-Rotational Accuracy (degrees) RSDG3	Stroke (mm)	Maximum Velocity ①2 (mm/sec)	Input Power Supply	Max Positioning Point
RSD3 RSDG3	02	±0.02	~60	~30	~28.5	900	5,000 km or More	0.1 or Less	±1.0	±0.05	50~300 (50 Pitch)	~50	DC24V ±10%	255 Points
	06		~55	~20	~18.5	550						~150		
	12		~50	~10	~8.5	250						~300		

① 1. Vertical travel service life varies depending on load capacity. Please check Service Life Table. ① 2. Maximum Velocity varies depending on load capacity. Please refer to Velocity – Maximum Load Capacity Table.

RSD3 (Without Support Guide)



RSDG3 (With Support Guide)



(Note 1) Load can be applied only in axial direction.
Please use externally mounted guides together so that no radial load is applied on the rods.
(Note 2) Wrench flats orientation is not fixed in relation to the base surface.
(Note 3) RSD3 drawing illustrates installed actuator mounting feet.
(Note 4) To ensure straight line travel, please use with Support Guide.
(Note 5) The minimum bending radius of the cable is R30.
(Note 6) Please clamp the cables to avoid loads.
(Note 7) (7) is 27mm only for Lead 2.

■ Dimensions

Type	Dimensions	Stroke (mm) 50	100	150	200	250	300
RSD3 RSDG3	L_1 (mm)	183	233	283	333	383	433
	L (mm)	280.5	330.5	380.5	430.5	480.5	530.5

■ Mass (kg)

Type	Stroke (mm) 50	100	150	200	250	300
RSD3	2.2	2.6	3.0	3.3	3.7	4.1
RSDG3	3.1	3.6	4.1	4.5	5.0	5.5

① The mass of "With Brake" Type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE

See notes on CE Marking. P.254

Part Number			Selection			
Type	Lead (mm)	With or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD3 RSDG3	02 06 12	None: **Leave blank** Included: **B**	**C1** DC24V±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**1** **3** **5** **10** (Flexible Cable)	**50~300** (50mm Increment)

(1) Choose w/ brake type for use in vertical application.

Ordering Example

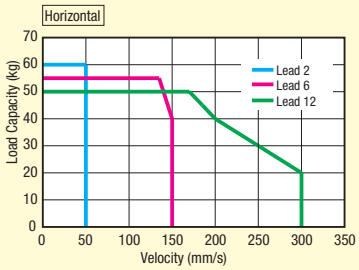
Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke
RSD306B	–	C1	–	N	–	3	–	150

Days to Ship **8** Days

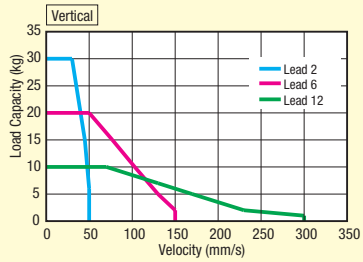
Note Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit. Circuit Examples **P.252**

■ Velocity – Maximum Load Capacity Table

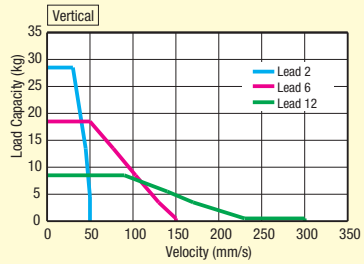
RSD3/RSDG3



RSD3



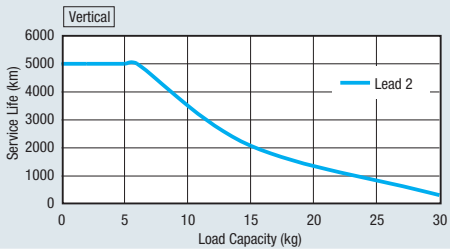
RSDG3



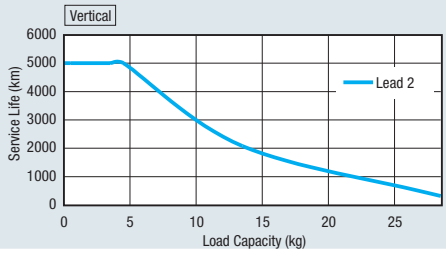
■ Service Life Table

Rated Running Life is 5,000km or more. For the following types, however, service life varies depending on its maximum load capacity, and how it is applied.

RSD3



RSD3



Alterations

Part Number	–	Controller	–	I/O Module	–	Cable Length	–	Stroke	–	(E, H, etc.)
RSD306B	–	C1	–	N	–	3	–	150	–	S-MJ

Alterations	Handy Terminal Standard Specification	Handy Terminal with Deadman's Switch	Support Software with USB Communication Cable	Support Software with D-Sub Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Actuator Mounting Foot Plate	Actuator Mounting Flange
			Communication Specifications: RS232C	Communication Specifications: RS232C						
Code	H	D	S	R	T	MJ / ME	KJ / KE			
Spec.	Handy Terminal is included. Spec. **P.253**	Handy Terminal with Deadman's Switch is included. Spec. **P.253**	Support Software with USB Communication Cable is included. Spec. **P.253**	Support Software with D-Sub Communication Cable is included. Spec. **P.253**	I/O Cable is included. Required for NPN/PNP configurations. Spec. **P.253**	Instruction Manual for robot main structures is included. MJ: Japanese Language ME: English Language	Instruction Manual for controllers is included. KJ: Japanese Language KE: English Language	Change the actuator plastic parts color to black.	2 plates are included for horizontal mounting.	1 plate is included for vertical mounting.

For optional items, see **P.253** Optional items can be purchased more economically as Alterations than as single items.
Point data requires Handy Terminal or Support Software.
Parallel Communication I/O Control requires I/O Cable.

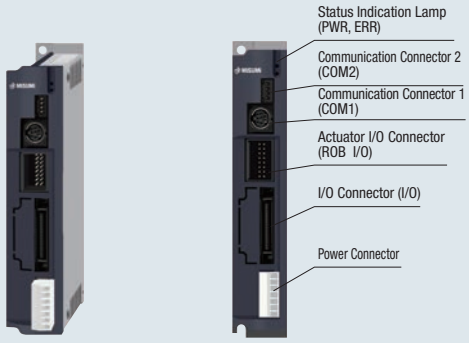
Single Axis Robot Controllers

MISUMI's Single Axis Robot Controllers are compact and high performance. *Included with RS actuators at time of order. Please select separate units for maintenance purpose.

Part Number	Specifications	Controlled Actuator	Input Power Supply
EXRS-C1	Incremental Type	RS1/2/3 RS1C/2C/3C RSD1/2/3 RSDG1/2/3	DC24V±10% 3A

RoHS

Part Name

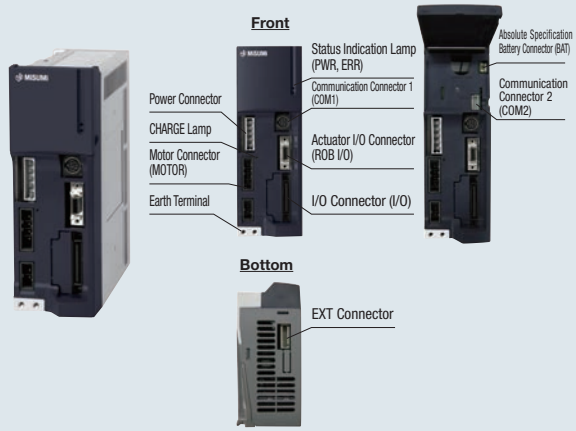


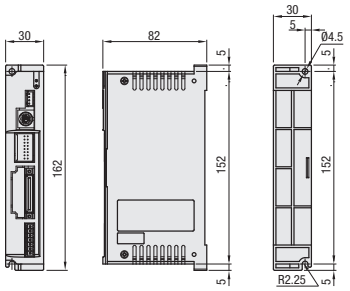
Part Number	Specifications	Controlled Actuator	Input Power Supply
EXRS-C21A	Absolute Encoders (w/Data Storage Battery)	RSH1/2/3 RSH1C/2C/3C	Single Phase AC100~115V±10%
EXRS-C22A			Single Phase AC200~230V±10%
EXRS-C21B	Incremental Type		Single Phase AC100~115V±10%
EXRS-C22B			Single Phase AC200~230V±10%

Controllers are shipped with preset parameters for each type.

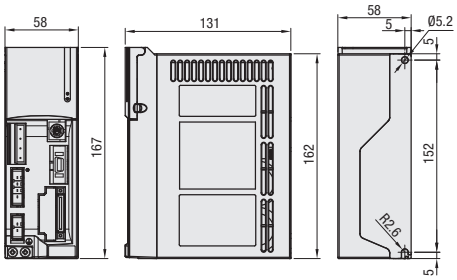
RoHS

Part Name





Part Number	I/O Module
EXRS-C1	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**



Part Number	I/O Module
EXRS-C21A/C22A Absolute Encoders (with Data Storage Battery)	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**
EXRS-C21B/C22B Incremental Type	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**

■ Standard Specifications

Part Number	EXRS-C1	EXRS-C21A/B EXRS-C22A/B
Number of Controlled Axes	1 axis	
Controlled Actuator	RS1/2/3/1C/2C/3C RSD1/2/3 RSDG1/2/3	RSH1/2/3/1C/2C/3C
External Dimension	30mm(W) x 162mm(H) x 80mm(D)	58mm(W) x 162mm(H) x 131mm(D)
Body Mass	Approx. 200g	Approx. 1.1kg
Input Power Supply Voltage	DC24V±10% 3A	EXRS-C21A/B: Single phase AC100~115V±10% EXRS-C22A/B: Single phase AC200~230V±10%
Power Capacity	70VA	400VA
Position Detection Method	Resolver	Resolver with Multiple Rotation Absolute Functions
Resolution	20480P/rev	16384P/rev
Control Method	Closed Loop Vector Control Method	
Dielectric Strength Voltage	DC500V 1MΩ or More	
Memory Capacity	Point (255 pts.), Parameters, Alarm Log (50 items)	
Protection Functions	Overload, Overvoltage, Temp., Power Module and Excessive Position Deviation Errors	
Operating / Storage Temp.	0~40°C/-10~65°C	
Operating Humidity	35~85%RH (No Condensation)	
Ambience	Indoors without direct sunlight. No corrosive and flammable gases, oil mist and dust.	
Vibration Resistance	In each X, Y and Z direction 10~57Hz Half amplitude 0.075mm 57~150Hz 9.8m/s2	

Ordering Example

Part Number	-	I/O Module
EXRS-C1	-	N

Days to Ship **8** Days

Single Axis Robot Controllers

CE

See notes on CE Marking. P.254

■ EXT Connector Signal Table

Pin No.	Signal Name	Description
1	+24V	Mechanical Brake Power Input
2	0V	(Supplied by Customer)
3	ES+	Emergency Stop Input Internal Power Supply
4	ES1	Emergency Stop Input 1
5	ES2	Emergency Stop Input 2
6	ES-	Emergency Stop Ready Signal (Open: Emergency Stop)
7	MPRDY1	Main Power Supply Ready Output Contacts
8	MPRDY2	(DC24V Transistor Output)

■ I/O Connector Signal Table (NPN/PNP Specifications)

Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
A1	+COM	A11	PIN6	B1	POUT0	B11	OUT2
A2	+COM	A12	PIN7	B2	POUT1	B12	OUT3
A3	(NC)	A13	JOG+	B3	POUT2	B13	BUSY
A4	(NC)	A14	JOG-	B4	POUT3	B14	END
A5	PIN0	A15	MANUAL	B5	POUT4	B15	/ALM
A6	PIN1	A16	ORG	B6	POUT5	B16	SRV-S
A7	PIN2	A17	/LOCK	B7	POUT6	B17	(NC)
A8	PIN3	A18	STARTITEACH	B8	POUT7	B18	(NC)
A9	PIN4	A19	RESET	B9	OUT0	B19	-COM
A10	PIN5	A20	SERVO	B10	OUT1	B20	-COM

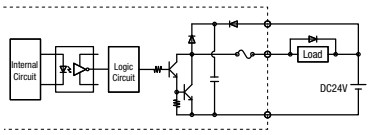
■ Signal Feature Descriptions

Type	Signal Name	Meaning	Description
Input	PIN0~7	Point No. Set 0~7	– Specify point number for positioning operation – Specify point No. for current position teachings (in manual operation mode)
	JOG+	Jog Move (+)	Jog moves in + direction when ON (in manual mode)
	JOG-	Jog Move (-)	Jog moves in - direction when ON (in manual mode)
	MANUAL	Manual Mode	ON: Manual Mode
	ORG	Return to Home	Start Homing
	/LOCK	Interlock	ON: Movable, OFF: Immovable, OFF while in movement: Deceleration Stop
	START	Start	Start positioning operation by specified point No.
	TEACH	Current Position Teach	Teach current position for specified point No. (in manual operation mode)
	RESET	Reset	– Reset Alarm – Reset Point No. Output – Clear remaining travel distance in relative positioning operation
	SERVO	Servo ON	ON: Turn ON Servo, OFF: Turn OFF Servo
Output	POUT0~7	Output Point No. 0~7	– Output point number to be activated by positioning operation – Output alarm No. in the event of alarm status.
	OUT0	Control Output 0	Assigned by following outputs based on parameters
	OUT1	Control Output 1	– Zone Output / Individual Zone Output / Manual Mode Status
	OUT2	Control Output 2	– Completion of Homing, Clamp Position, Alarm Output
	OUT3	Control Output 3	– Proximity Output, Moving
	ZONE	Zone Output	ON output when position is within the zones set by parameters
	PZONE	Individual Zone Output	ON output when moving into the zones specified by each point
	MANU-S	Manual Mode	ON in manual mode
	ORG-S	Completion of Homing	Output ON with the completion of return to home
	TLM-S	In Clamp Position	ON while in push operation
	/WARN	Alarm Output	ON while in alarm status
	NEAR	Proximity Range Output	ON output in the proximity of positioning operation completion
	MOVE	In Motion	ON in motion
	BUSY	In Operation	ON in operation
	END	Completion of Operation	Output operation results ON at normal stop
	/ALM	Alarm	ON in normal status, OFF output in the event of alarm status
	SRV-S	Servo Status	Output ON when servo is ON

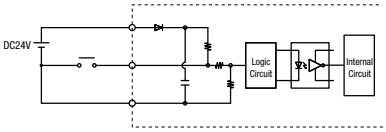
I/O Circuit Diagram

NPN Specifications

■ **Output Area**

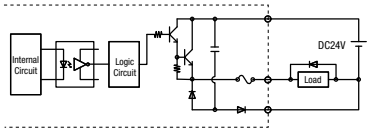


■ **Input Area**

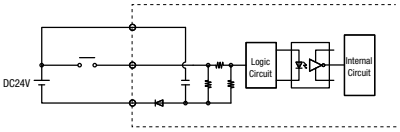


PNP Specifications

■ **Output Area**



■ **Input Area**



I/O Specifications

Selectable from 4 options according to controller specifications.

Type	Descriptions
NPN	16 Input - DC24V±10% / 4mA/1point / +Common 16 Outputs - DC24V±10%, 50mA/1 point, 0.4A max. total / 8 points, Sinking
PNP	16 Input - DC24V±10% / 4mA/1point / -Common 16 Outputs - DC24V±10%, 50mA/1 point, 0.4A max. total / 8 points, Sourcing
CC-Link	CC-Link applicable to Ver1.10, Remote Device Station (1)
DeviceNet	DeviceNet Slave 1 Node

Communication Specifications

■ CC-Link Network Board Specification

Item	CC-Link Network Specification				
Communication Protocol	CC-Link V1.10				
Station	Remote Device Station				
Number of Stations Occupied	1 Station				
Station Number Setting	1~64 (42 units at a max)				
Communication Speed Setting	156Kbps	625Kbps	2.5Mbps	5Mbps	10Mbps
Total Extended Distance	1200m	900m	400m	160m	100m
Monitor LED	RUN, ERR, SD, RD				

■ DeviceNet Network Board Specification

Item	DeviceNet Network Specification		
Compatible DeviceNet Specification	Volume 1 Release2.0 / Volume 2 Release2.0		
Device Type	Generic Device		
MAC ID Setting	0~63		
Communication Speed Setting	125kpbs	250kbps	500kbps
Total Extended Distance	500m	250m	100m
Monitor LED	Module, Network		

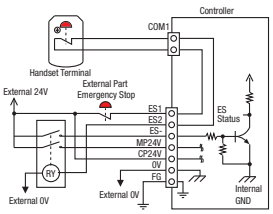
■ RS232C Communication Specification

Item	Specifications
Transmission Rate	38400bps
Data Bit Length	8 bits
Stop Bit Length	1 bit
Parity	Odd
Control Method	Not provided
Communication Method	Full-duplex Communications
Synchronizing Method	Asynchronous Method

Main Power Shutdown Circuit Examples

Examples of circuits necessary to interrupt the main power by emergency stop.

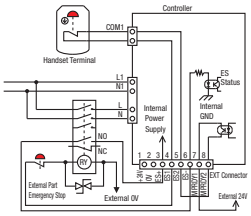
■ EXRS-C1 Circuit Example



Applicable Robots: RS1, 2, 3
RSD1/2/3
RS1C/2C/3C
RSDG1/2/3

See instruction manual for examples of circuits for handy terminals with Deadman switches.

■ EXRS-C21/22 Circuit Example



Applicable Robots: RSH1, 2, 3
RSH1C/2C/3C

See instruction manual for examples of circuits for handy terminals with Deadman switches.

***Note:** Power interruption circuit is not installed in this controller. Please be sure to provide an external power interruption circuit and form an emergency stop circuit.

Single Axis Robot Controllers

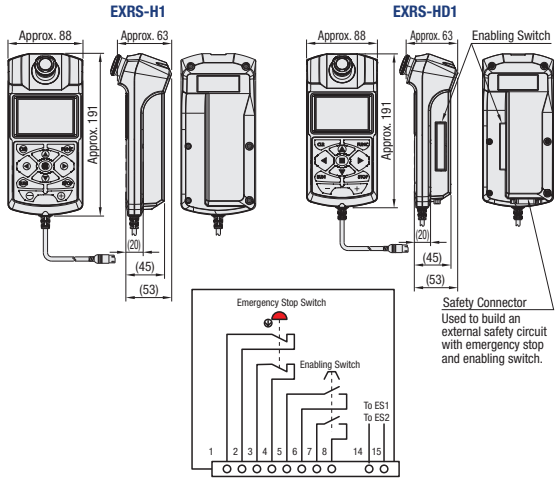
Options

Options

■ Handy Terminal

RoHS

Part Number	EXRS-H1	EXRS-HD1
Emergency Stop Button	Normally Closed Input (with Lock)	
Deadman's Switch	None	Included (3 Position Enable Switches)
Operating Temp.	0°C~40°C	
Operating Humidity	35%~85%RH (No Condensation)	
Body Mass	Approx. 450g	
Cable Length	3.5m	
Applicable Controller	EXRS-C1/C21/C22	



When using a Handy Terminal within the area of motion for the actuator, please use EXRS-HD1 to build safety circuits outside.

■ Support Software (with USB Communication Cable / D-Sub Communication Cable)

Communication Specifications: RS232C (EXRS-ST1/ST2)

Part Number	Communication Cable Length	Applicable Controller
EXRS-ST1	5m	EXRS-C1/C21/C22
EXRS-ST2		

*The cables are for communications between controller and PC. *Not applicable to Windows 7 (OS).

RoHS

EXRS-ST1

USB Communication Cable

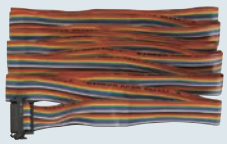
EXRS-ST2

D-Sub Communication Cable

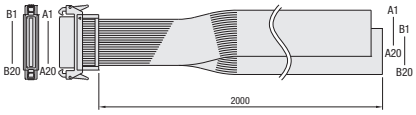
*USB driver is included in Support Software. (EXRS-ST1)

■ I/O Cable

RoHS



Part Number	EXRS-CB1
Cable Length	2m
Applicable Controller	EXRS-C1/C21/C22



Pin No.	Single	Cable Color	Pin No.	Single	Cable Color	Pin No.	Single	Cable Color	Pin No.	Single	Cable Color
A1	+COM	BR	A11	PIN6	BR	B1	POUT0	BR	B11	OUT2	BR
A2	+COM	R	A12	PIN7	R	B2	POUT1	R	B12	OUT3	R
A3	(NC)	OR	A13	JOG+	OR	B3	POUT2	OR	B13	BUSY	OR
A4	(NC)	Y	A14	JOG-	Y	B4	POUT3	Y	B14	END	Y
A5	PIN0	G	A15	MANUAL	G	B5	POUT4	G	B15	/ALM	G
A6	PIN1	BL	A16	ORG	BL	B6	POUT5	BL	B16	SRV-S	BL
A7	PIN2	V	A17	/LOCK	V	B7	POUT6	V	B17	(NC)	V
A8	PIN3	GY	A18	START TEACH	GY	B8	POUT7	GY	B18	(NC)	GY
A9	PIN4	W	A19	RESET	W	B9	OUT0	W	B19	-COM	W
A10	PIN5	BL	A20	SERVO	BL	B10	OUT1	BL	B20	-COM	BL

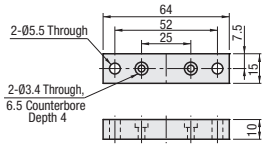
*Connection end to external device is non-terminated.

■ Instruction Manual

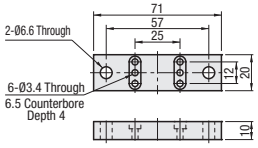
Part Number	Language	Type	Applicable Model
EXRS-MJ1	Japanese	Instruction Manual for robot main structures is included	RS1/2/3 RSD 1/2/3 RSDG 1/2/3 RSH1/2/3
EXRS-MJ2			
EXRS-MJ3		For Actuator (Clean Version)	RS1C/2C/3C
EXRS-MJ4			RSH1C/2C/3C
EXRS-KJ1		Instruction Manual for controllers is included	EXRS-C1
EXRS-KJ2			EXRS-C21/C22
EXRS-ME1	English	Instruction Manual for robot main structures is included	RS1/2/3 RSD1/2/3 RSDG1/2/3 RSH1/2/3
EXRS-ME2			
EXRS-ME3		For Actuator (Clean Version)	RS1C/2C/3C
EXRS-ME4			RSH1C/2C/3C
EXRS-KE1		Instruction Manual for controllers is included	EXRS-C1
EXRS-KE2			EXRS-C21/C22

■ Rod Type Dedicated Feet and Flanges

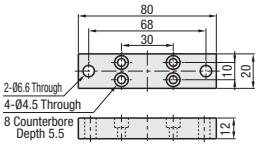
EXRS-HP1



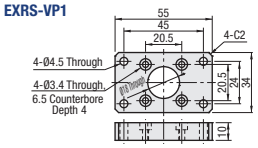
EXRS-HP2



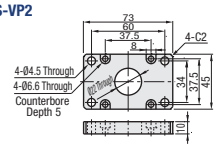
EXRS-HP3



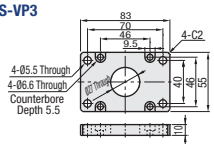
EXRS-VP1



EXRS-VP2



EXRS-VP3



Part Number	Applicable Model	Specifications	Components (1 set)
EXRS-HP1	RSD1 RSDG1	Foot	Mounting Plate, 2 pcs
EXRS-VP1	RSD1	Flange	Mounting Plate, 1 pc
EXRS-HP2	RSD2 RSDG2	Foot	Mounting Plate, 2 pcs Square Nut, 12 pcs
EXRS-VP2	RSD2	Flange	Mounting Plate, 1 pc
EXRS-HP3	RSD3 RSDG3	Foot	Mounting Plate, 2 pcs Square Nut, 8 pcs
EXRS-VP3	RSD3	Flange	Mounting Plate, 1 pc

Ordering Example | Part Number: EXRS-H1 | Days to Ship: 8 Days

Maintenance Products

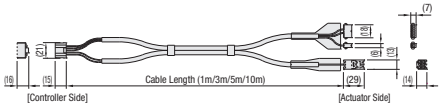
Maintenance Products

■ Power/Signal-Integrated Cables (Flex-Resistant)

(Controller EXRS-C1- For RS1, 2 ,3 ,1C, 2C, 3C)
(Controller EXRS-C1- For RSD1, 2, 3, RSDG1, 2, 3)

Part Number	Cable Length (m)
EXRS-CT1	1 3 5 10

RoHS



■ Power / Signal Cables

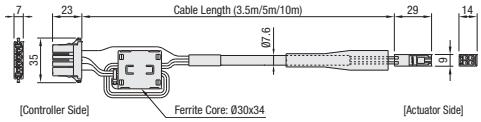
RoHS

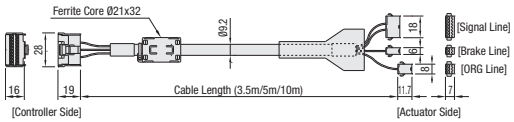
(Controller EXRS-C21/C22- For RSH1, 2 ,3 ,1C, 2C, 3C)

Power Cable

Signal Cable

Part Number	Type	Cable Length
EXRS-CM1	Power	3.5m:3 5m: 5 10m: 10
EXRS-CR1 (Standard)	Single	3.5m: 3 5m: 5 10m: 10
EXRS-CR2 (Flexible)		3.5m: 3 5m: 5 10m: 10





■ Data Storage Battery

EXRS-BA1

*Battery for absolute data back-up.
(Applicable Controllers: EXRS-C21/C22)
*Equipped as standard to absolute model controllers.
Replacement cycle is approx. one year.
*This product is outside the scope of RoHS Directive.

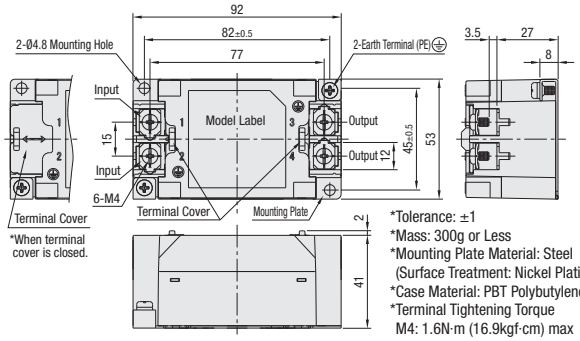
■ Noise Filter

As this product uses push-down type terminal block, it is shipped in the state below.
*Terminal cover is stored.
*Terminal block screws are kept on the upper side.

Part Number	Rated Voltage	Rated Current
EXRS-NF1	AC250V/ DC250V	10A

*These listed products are made by COSEL
*Other Recommended Products: SOSHIN ELECTRIC-made
Part Number: NF2010A-UP

RoHS



*Tolerance: ±1
*Mass: 300g or Less
*Mounting Plate Material: Steel
(Surface Treatment: Nickel Plating) t=1.0
*Case Material: PBT Polybutylene Terephthalate
*Terminal Tightening Torque
M4: 1.6N·m (16.9kgf·cm) max

Ordering Example: Part Number EXRS-CT1 – Cable Length 5

Days to Ship: 8 Days

Optional items can be purchased more economically as Alterations than as single items.

Terminology

- **Positioning Repeatability** Variations in stop positions when positioning moves approached in one direction from one starting location are made.
- **Maximum Load Capacity** Maximum load that can be placed on the carriage. A sum of the workpiece and the tooling must not exceed this value. Take Allowable Overhang into consideration if the workpiece C.G. is offset from the table center.
- **Max. Push Force** Maximum thrust force the slider can generate while not moving. Do not perform push and hold actions with shock loading since that may cause failures. Additionally, do not exceed 60% of the Static Load Capacity when the push point is offset from the slider's guide center.
- **Rated Force** Continuous force that can be generated. For workpiece holding and pushing operations, keep under the Rated Force (approx. 60%). Do not perform shock loading operations even under the Rated Force as that may cause failures. Do not exceed 60% of the Static Load Capacity when the static push point is offset from the slider's guide center.
- **Rated Running Life** Total running distance where 90% of the Actuators under the same operating condition will reach without failures.
- **Allowable Overhang Load** Indicates offset distance of tool/workpiece C.G. to the slider's guide center. It depends on the workpiece's load weight and lifetime and running distance of more than 10,000km is achieved when the center of gravity is within allowable overhung. The published values are calculated based on automatically configured acceleration values per given carried mass.
- **Allowable Static Moment** Moment load value applicable on the slider top surface while the actuator is static. For dynamic applications, overhang value must be determined with running life into consideration.
- **Lost Motion** A difference in position values when positioning moves are made to a specified coordinate from positive direction to negative direction.
- **Rod Non-Rotational Accuracy** Rod play in the rotational direction.

Notes on CE Marking

MISUMI Robot Series provide parts to be incorporated into customers' device and equipment. According to EC Directive, it is declared that these are supplied in an incomplete state. Therefore, no CE marks are attached. Please check for EC Directive compatibility with actuator built-in device or equipment (finished products). For details, please see the Instruction Manual.

Warranty

- **Warranty Terms** Comply with "Warranty Standards" printed on "Mechanical Standard Components for Factory Automation" catalog.
- **Warranty Period** One year from shipment date or within the first 2400 hours of operation whichever comes first.

Contact for Inquiry

For inquiries, please contact us at: MISUMI Corporation Motion Systems TEL: (800)681-7475

■ FAQ

Q1. The actuator does not move.
A1. When activating an actuator using Support Software or Handy Terminal, invalidate Option Parameter (80). (Option Valid = I/O Terminal Valid, Option Invalid = I/O Terminal Invalid) Then turn the servo status "ON" and operate the homing. After the completion of homing, start the operation by turning on "Operation".

Q2. LED light is on. Is there a controller defect?
A2. Blue: PWR (OFF: Control Power Shutoff, Blink: Servo OFF, ON: Servo ON),
Red: ERR (OFF: Control Power Shutoff / No Error Alarm; Blink: Error Alarm On (External Factor); ON: Error Alarm On (Internal Factor)

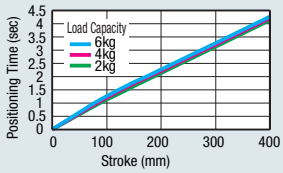
Q3. Teaching cannot be conducted by via I/O.
A3. To conduct teaching via I/O, the status needs to be ON for MANUAL Input and OFF for Interlock Input. Note that it does not function in the state of incmpletion of homing.

Q4. Is low-speed operation possible?
A4. Possible, however, 10 to 20% of max. velocity is the limit depending on the lead.

Cycle Time Graph

■ RS1 Cycle Time Graph (Product Page: RS1 P.217)

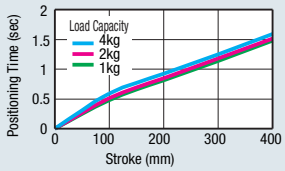
Horizontal Lead 2



sec

st	0	100	200	300	400
6 kg	0	1.27	2.27	3.27	4.27
4 kg	0	1.21	2.21	3.21	4.21
2 kg	0	1.14	2.14	3.14	4.14

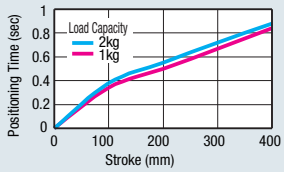
Horizontal Lead 6



sec

st	0	100	200	300	400
4 kg	0	0.59	0.92	1.25	1.59
2 kg	0	0.51	0.85	1.18	1.51
1 kg	0	0.48	0.81	1.14	1.48

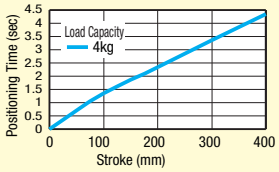
Horizontal Lead 12



sec

st	0	100	200	300	400
2 kg	0	0.38	0.55	0.72	0.88
1 kg	0	0.34	0.50	0.67	0.84

Vertical Lead 2

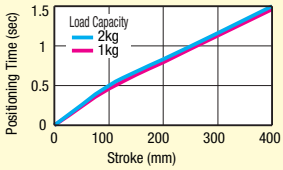


sec

st	0	100	200	300	400
4 kg	0	1.35	2.35	3.35	4.35

There is no positioning time variation for Lead 2 Vertical Spec.

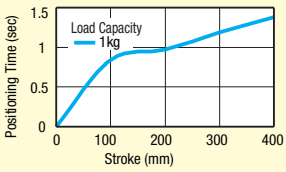
Vertical Lead 6



sec

st	0	100	200	300	400
2 kg	0	0.50	0.83	1.16	1.50
1 kg	0	0.46	0.79	1.13	1.46

Vertical Lead 12

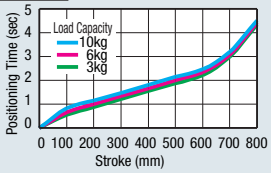


sec

st	0	100	200	300	400
1 kg	0	0.84	0.97	1.19	1.38

■ RS2 Cycle Time Graph (Product Page: RS2 P.221)

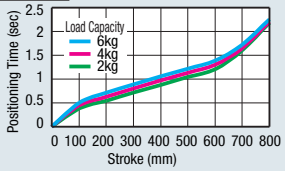
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
10 kg	0	0.83	1.14	1.47	1.81	2.14	2.47	3.20	4.51
6 kg	0	0.66	0.99	1.33	1.66	1.99	2.33	3.07	4.42
3 kg	0	0.55	0.88	1.22	1.55	1.88	2.22	2.98	4.35

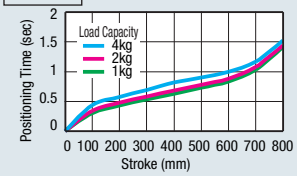
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
6 kg	0	0.50	0.72	0.89	1.06	1.22	1.39	1.72	2.25
4 kg	0	0.45	0.63	0.80	0.97	1.13	1.30	1.65	2.20
2 kg	0	0.38	0.55	0.72	0.88	1.05	1.21	1.60	2.18

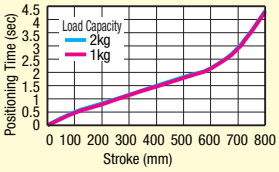
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800
4 kg	0	0.44	0.57	0.69	0.82	0.90	1.00	1.17	1.52
2 kg	0	0.34	0.48	0.58	0.68	0.78	0.88	1.08	1.44
1 kg	0	0.30	0.43	0.53	0.63	0.73	0.83	1.03	1.41

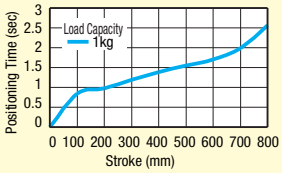
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
2 kg	0	0.50	0.83	1.16	1.50	1.83	2.16	2.94	4.32
1 kg	0	0.46	0.79	1.13	1.46	1.79	2.13	2.91	4.29

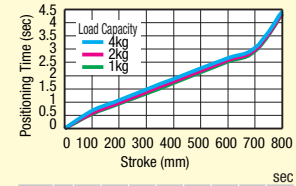
Vertical Lead 12



sec

st	0	100	200	300	400	500	600	700	800
1 kg	0	0.84	0.97	1.19	1.38	1.55	1.71	1.99	2.57

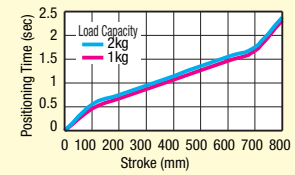
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
4 kg	0	0.67	1.07	1.47	1.87	2.27	2.67	3.07	4.42
2 kg	0	0.58	0.98	1.38	1.78	2.18	2.58	2.98	4.35
1 kg	0	0.53	0.93	1.33	1.73	2.13	2.53	2.93	4.31

Vertical Lead 12

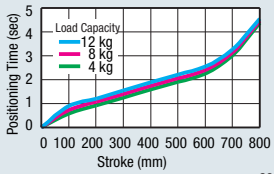


sec

st	0	100	200	300	400	500	600	700	800
2 kg	0	0.55	0.75	0.95	1.15	1.35	1.55	1.75	2.38
1 kg	0	0.46	0.67	0.87	1.07	1.27	1.47	1.67	2.31

■ RS3 Cycle Time Graph (Product Page: RS3 P.225)

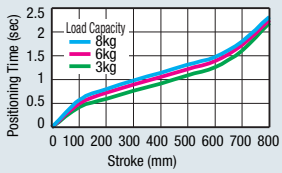
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
12 kg	0	0.90	1.21	1.55	1.88	2.21	2.55	3.26	4.56
8 kg	0	0.74	1.07	1.40	1.73	2.07	2.40	3.13	4.46
4 kg	0	0.59	0.92	1.25	1.59	1.92	2.25	3.01	4.37

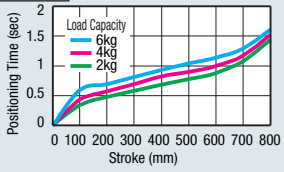
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
8 kg	0	0.57	0.80	0.98	1.14	1.31	1.48	1.80	2.32
6 kg	0	0.50	0.72	0.89	1.06	1.22	1.39	1.72	2.25
3 kg	0	0.42	0.59	0.76	0.92	1.09	1.26	1.61	2.19

Horizontal Lead 20

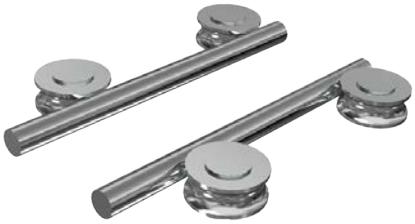


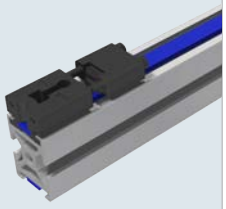
sec

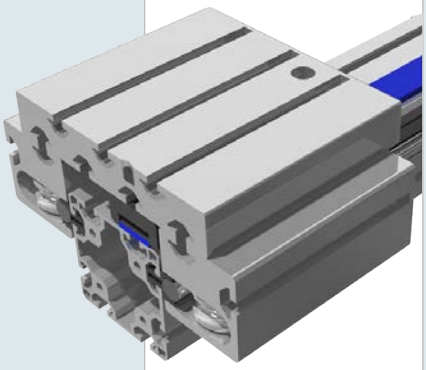
st	0	100	200	300	400	500	600	700	800
6 kg	0	0.60	0.69	0.81	0.93	1.04	1.14	1.29	1.61
4 kg	0	0.44	0.57	0.69	0.82	0.90	1.00	1.17	1.52
2 kg	0	0.34	0.48	0.58	0.68	0.78	0.88	1.08	1.44

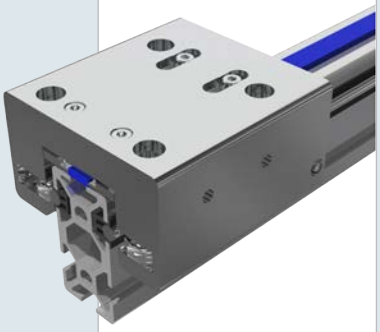
MSA Actuators/Drives Linear Support Mechanism

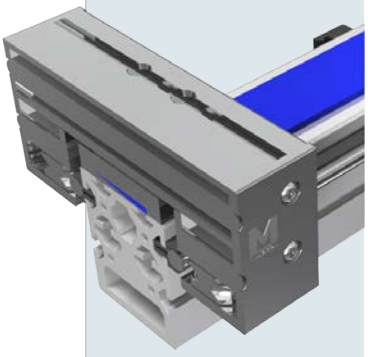
MSA-PSC P.259	MSA-628 P.260	MSA-M6S P.261	MSA-14S P.262	MSA-14H P.263
Slider	Roller with Hardened Shaft			

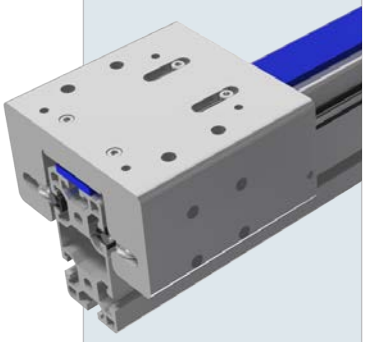






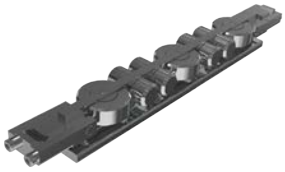


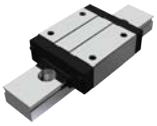




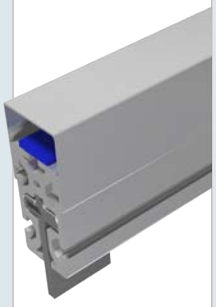
MSA Actuators/Drives Linear Support Mechanism

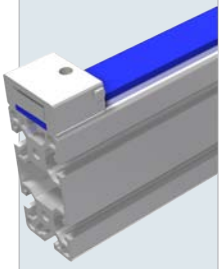
MSA-NBC P.264	MSA-135 P.265	MSA-R20 P.266	MSA-SB1 P.267	MSA-SB2 P.268	MSA-SB5 P.269	MSA-SBH P.270
Plastic Rollers		Linear Guide	None			

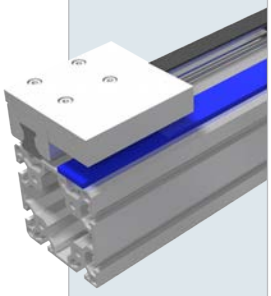


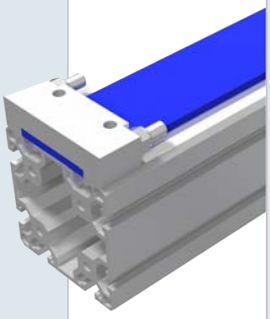


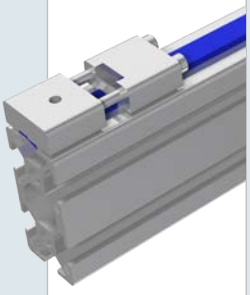
All SB Style Drives have no load bearing mechanism.
An external load bearing mechanism is
needed for each of these drives.

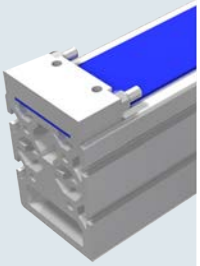












■ Available Accessories

Motor Mount Kits	
NEMA 23	MMK-A58-38-6-67
60 mm	MMK-A83-56-2-70
NEMA 34	MMK-A83-73-3-99
90 mm	MMK-A89-80-4-100

Custom motor mounts available

GearBox	Motor Mount Kit	3:1	5:1	7:1	10:1
MPG-062-23	NEMA 23	03	05	07	10
MPG-062-60	60 mm	03	05	07	10
		Standard Stock Sizes			

Ordering Example

Part Number	–	Ratio
MPG-062-23	–	05

NEMA 23 at 5:1

T-Slot Sensor Kit		Cable Length in Meters		
PNP NO	244-PNP-NO	02	06	12
PNP NC	244-PNP-NC	02	06	12
NPN NO	244-NPN-NO	02	06	12
NPN NC	244-NPN-NC	02	06	12

Ordering Example

Sensor Kit	–	PNP/NPN	–	Normally Open	–	Length
244	–	PNP	–	NO	–	2

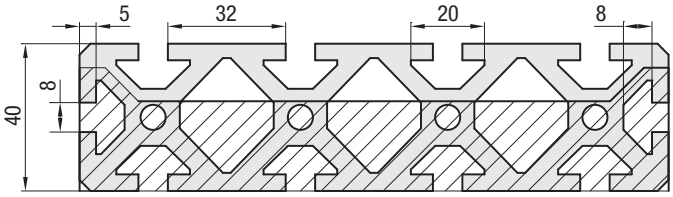
■ Available Accessories

Motor Mount Kits
Gear Boxes

Ordering Example

Call for Info

CART EXTENDER
FEATURES T-NUT SLOTS



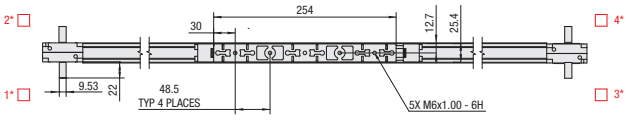
Single Axis MSA-PSC Belt Drive Actuator

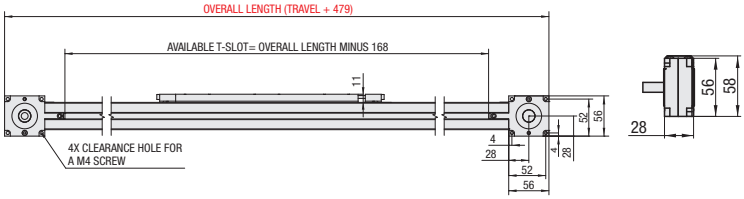
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	—	Delrin	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-PSC-0-GB	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)



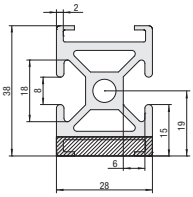


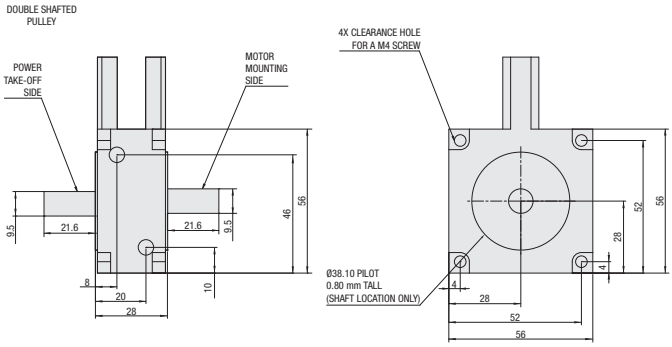
Specifications

	Horizontal	Vertical
Maximum Load	9 kg	9 kg
Maximum Speed	1270 mm/sec	635 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	1.7 Nm	
Acceleration Exceeding	5 G's	
Beam Dimensions	38 x 28 mm	
Weight		
First Meter of Travel	2.71 kg	
Additional per Meter	1.36 kg	
Travel		
Standard Stroke	271 to 571 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

Standard Sizes 500 mm to 6250 mm in 50mm increments.

MSA-PSA Belt Drive Actuators, 750 to 6250mm Length.
9 Kg Vertical and Horizontal load.
Travel Speed up to 1270 mm/sec.





Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	109.7 g
Weight of Idler Pulley	100.4 g
Weight of Cart	181.43 g
Weight of Belt	Stroke (mm) x 0.09 + 16 g
Travel per Revolution	105 mm
Pulley Pitch Diameter	33.42 mm
Pulley Material / Width	Steel / 12 mm
Breakaway Torque	8–10 N-cm
Rolling Resistance	113.4 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-PSC-0-GB	–	A	–	1	–	00750

MSA-PSC-Actuator, Single shaft in location #1, 750 mm overall length, 271 mm Stroke

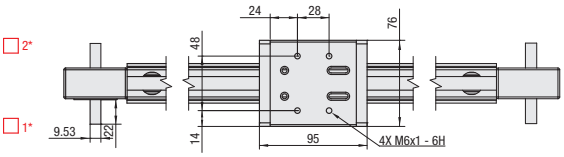
Single Axis MSA-628 Belt Drive Actuator

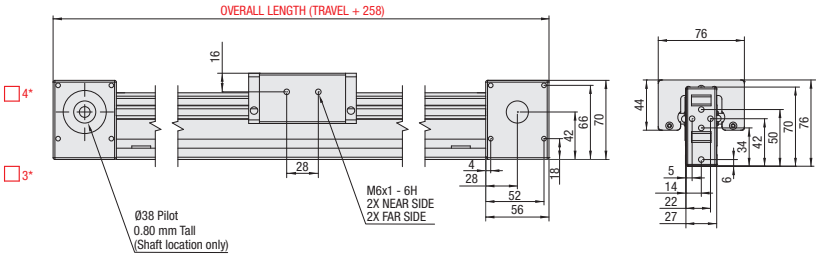
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	Chrome	Anodized	—	—

Type	Shaft Type	Shaft Location	Actuator Length
MSA-628-B-AB	A Single Shafted B Double Shafted	1 2 3 4	00500 to 06250 (50mm increment)



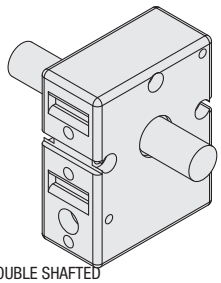


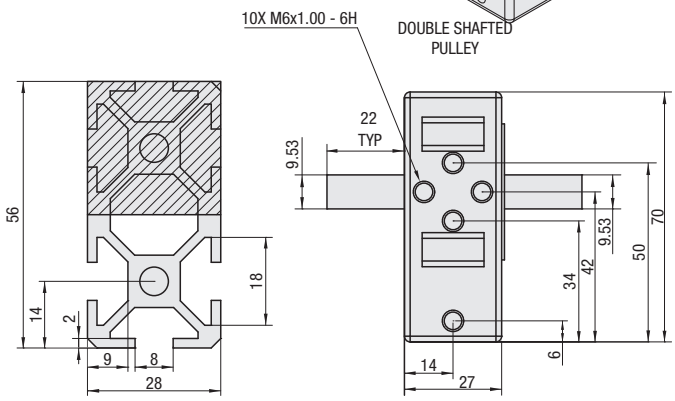
Specifications

	Horizontal	Vertical
Maximum Load	11.36 kg	11.36 kg
Maximum Speed	5080 mm/sec	2540 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	1.4 Nm	
Acceleration Exceeding	5 G's	
Beam Dimensions	38 x 28 mm	
Weight		
First Meter of Travel	4.55 kg	
Additional per Meter	1.82 kg	
Travel		
Standard Stroke	242 to 5992 mm (50 mm Pitch)	
Standard Length	500 to 6250 mm (50 mm Pitch)	

Standard Sizes 500 mm to 6250 mm in 50mm increments.

MSA-628 Belt Drive Actuators, 750 to 6250 mm Length.
9 Kg Vertical and Horizontal load.
Travel Speed up to 1270 mm/sec.





Features

Extruded aluminum actuator body with T-slots for ease of mounting
Easy to adjust belt tensioner
One piece, machined and stress proof shafted pulley
Zero backlash belt to pulley design
Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	109.7 g
Weight of Idler Pulley	100.4 g
Weight of Cart	544.31 g
Weight of Belt	Stroke (mm) x 0.09 + 16 g
Travel per Revolution	105 mm
Pulley Pitch Diameter	33.42 mm
Pulley Material / Width	Steel / 12 mm
Breakaway Torque	5.6–7.1 N-cm
Rolling Resistance	0.91 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-628-B-AB	–	A	–	1	–	00750

MSA-628-Actuator, Single shaft in location #1, 750 mm overall length, 492 mm Stroke

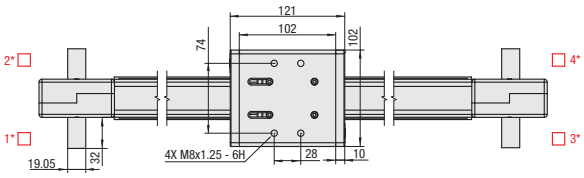
Single Axis MSA-M6S Belt Drive Actuator

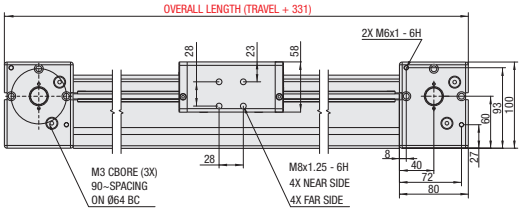
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

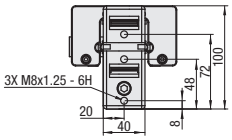
Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	Chrome	Anodized	—	—

Type	Shaft Type	Shaft Location	Actuator Length
MSA-M6S-E-BC	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)





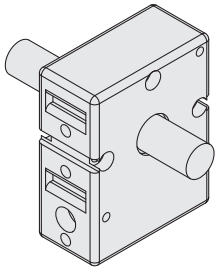


Specifications

	Horizontal	Vertical
Maximum Load	22.68 kg	22.68 kg
Maximum Speed	6230 mm/sec	3115 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	3.3 Nm	
Acceleration Exceeding	9 G's	
Beam Dimensions	80 x 40 mm	
Weight		
First Meter of Travel	10.43 kg	
Additional per Meter	5.44 kg	
Travel		
Standard Stroke	419 to 5919 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

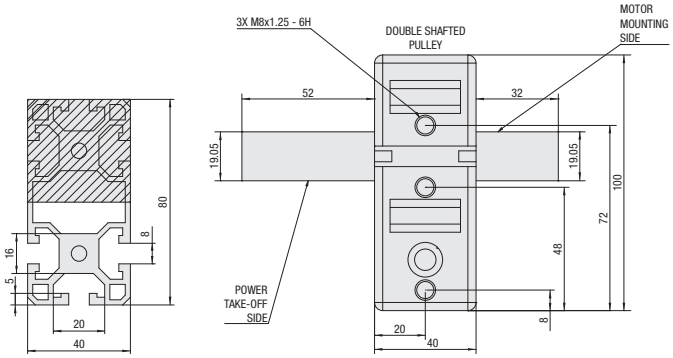
Standard Sizes 75 mm to 6250 mm in 50mm increments.

MSA-PSA Belt Drive Actuators, 750 to 6250 mm Length.
11.36 Kg Vertical and Horizontal load.
Travel Speed up to 5080 mm/sec.



Features

Extruded aluminum actuator body with T-slots for ease of mounting
Easy to adjust belt tensioner
One piece, machined and stress proof shafted pulley
Zero backlash belt to pulley design
Corrosion resistant components



Motor Sizing Information

Weight of Drive Pulley	263.9 g
Weight of Idler Pulley	179.8 g
Weight of Cart	1587.6 g
Weight of Belt	Stroke (mm) x 0.28 + 20.75 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 25 mm
Breakaway Torque	21.2–22.6 N-cm
Rolling Resistance	3.63 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-M6S-E-BC	–	A	–	1	–	00750

MSA-M6S-Actuator, Single shaft in location #1, 750 mm overall length, 419 mm Stroke

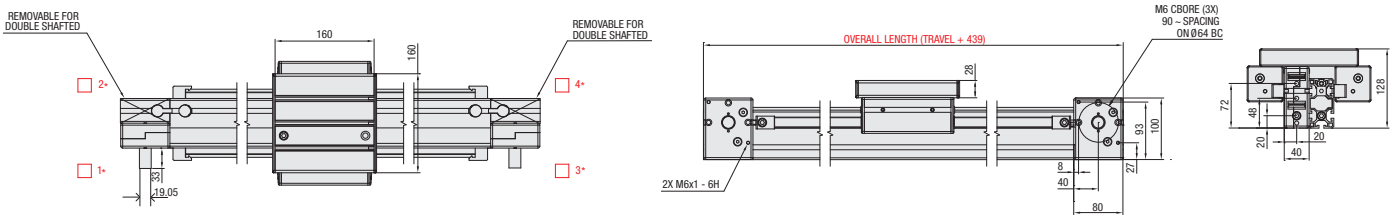
Single Axis MSA-14S Belt Drive Actuator

Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	Chrome	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-14S-G-BC	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)

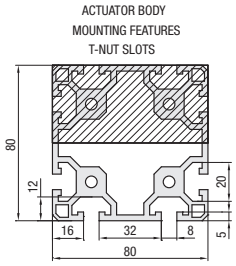


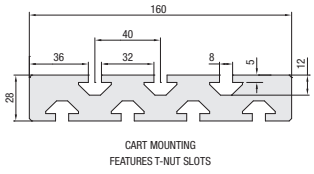
Specifications

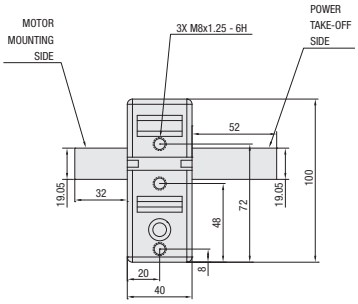
	Horizontal	Vertical
Maximum Load	90.72 kg	45.36 kg
Maximum Speed	10160 mm/sec	5080 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	26 Nm	
Acceleration Exceeding	9 G's	
Beam Dimensions	80 x 80 mm	
Weight		
First Meter of Travel	17.24 kg	
Additional per Meter	8.85 kg	
Travel		
Standard Stroke	311 to 5811 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

Standard Sizes 750 mm to 6250 mm in 50mm increments.

MSA-14S Belt Drive Actuators, 750 to 6250 mm Length.
22.68 Kg Vertical and Horizontal load.
Travel Speed up to 6230 mm/sec.







Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	263.9 g
Weight of Idler Pulley	179.8 g
Weight of Cart	3.54 g
Weight of Belt	Stroke (mm) x 0.28 + 20.75 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 25 mm
Breakaway Torque	30–31 N-cm
Rolling Resistance	8.5 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-14S-G-BC	–	A	–	1	–	00750

MSA-14S-Actuator, Single shaft in location #1, 750 mm overall length, 311 mm Stroke

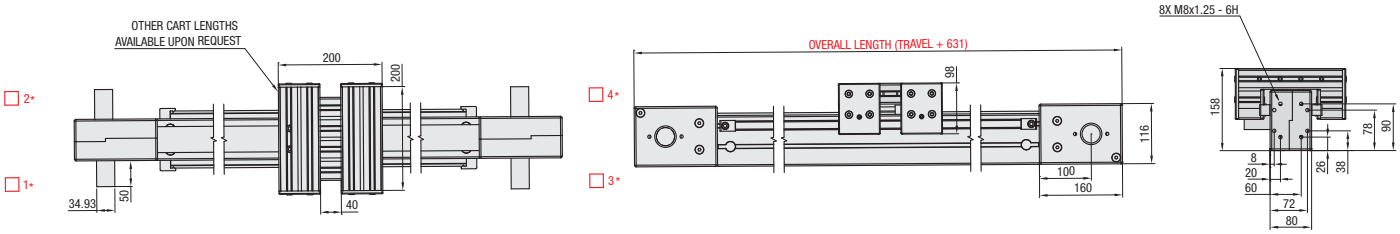
Single Axis MSA-14H Belt Drive Actuator

Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	Chrome	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-14H-I-CF	A Single Shafted	1	01000
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)

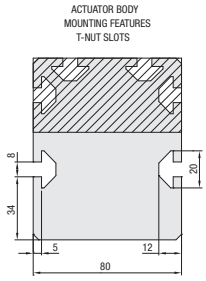


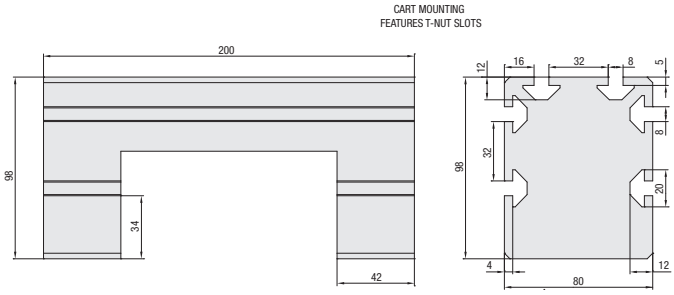
Specifications

	Horizontal	Vertical
Maximum Load	181.4 kg	136 kg
Maximum Speed	10160 mm/sec	5080 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	52 Nm	
Acceleration Exceeding	9 G's	
Beam Dimensions	98 x 80 mm	
Weight		
First Meter of Travel	36.3 kg	
Additional per Meter	10.43 kg	
Travel		
Standard Stroke	369 to 5619 mm (50 mm Pitch)	
Standard Length	1000 to 6250 mm (50 mm Pitch)	

Standard Sizes 1000 mm to 6250 mm in 50mm increments.

MSA-14H Belt Drive Actuators, 1000 to 6250 mm Length.
136 Kg Vertical, 181.4 kg Horizontal load.
Travel Speed up to 10160 mm/sec.





Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	633.1 g
Weight of Idler Pulley	616.4 g
Weight of Cart	5.4 g
Weight of Belt	Stroke (mm) x 0.70 + 98.3 g
Travel per Revolution	280 mm
Pulley Pitch Diameter	89.13 mm
Pulley Material / Width	Steel / 50 mm
Breakaway Torque	138.4–141.2 N-cm
Rolling Resistance	14.5 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-14H-I-CF	–	A	–	1	–	01000

MSA-14H-Actuator, Single shaft in location #1, 1000 mm overall length, 369 mm Stroke

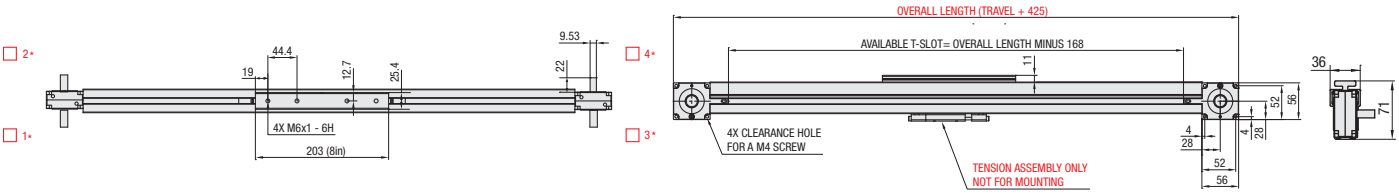
Single Axis MSA-NBC Belt Drive Actuator

Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	—

Type	Shaft Type	Shaft Location	Actuator Length
MSA-NBC-0-GB	A Single Shafted B Double Shafted	1 2 3 4	00500 to 06250 (50mm increment)

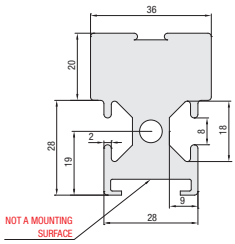


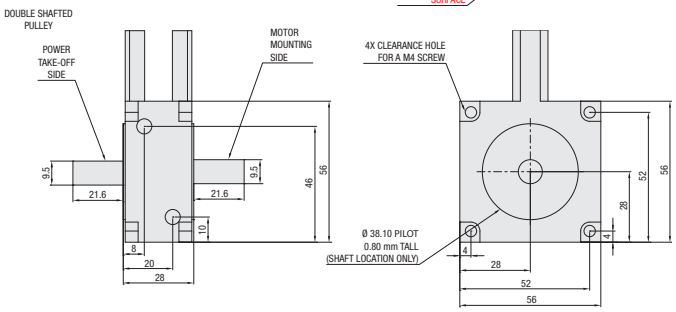
Specifications

	Horizontal	Vertical
Maximum Load	45.36 kg	45.36 kg
Maximum Speed	2540 mm/sec	1270 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	34 Nm	
Acceleration Exceeding	5 G's	
Beam Dimensions	56 x 56 mm	
Weight		
First Meter of Travel	2.95 kg	
Additional per Meter	1.36 kg	
Travel		
Standard Stroke	325 to 5675 mm (50 mm Pitch)	
Standard Length	750 to 6100 mm (50 mm Pitch)	

Standard Sizes 500 mm to 6250 mm in 50mm increments.

MSA-NBC Belt Drive Actuators, 500 to 6250mm Length.
45.36 Kg Vertical and Horizontal load.
Travel Speed up to 5080mm/sec.





Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	109.7 g
Weight of Idler Pulley	100.4 g
Weight of Cart	408.23 g
Weight of Belt	Stroke (mm) x 0.09 + 16 g
Travel per Revolution	105 mm
Pulley Pitch Diameter	33.42 mm
Pulley Material / Width	Steel / 12 mm
Breakaway Torque	21.2–22.6 N-cm
Rolling Resistance	0.91 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-NBC-0-GB	–	A	–	1	–	00750

MSA-NBC-Actuator, Single shaft in location #1, 750mm overall length, 325mm Stroke

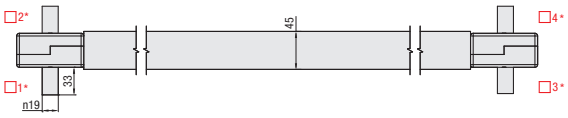
Single Axis MSA-135 Belt Drive Actuator

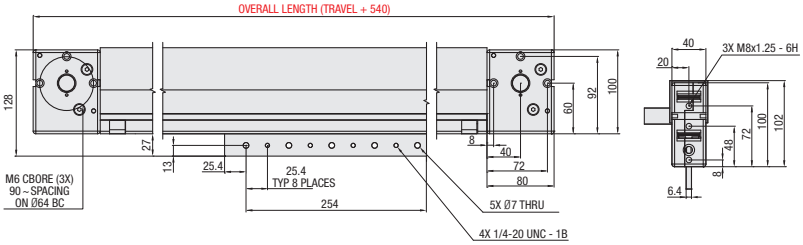
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Aluminum	Steel	Poly/Steel	Steel
Surface	Anodized	Anodized	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-135-0-BC	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06150
		4	(50mm increment)





Specifications

	Horizontal	Vertical
Maximum Load	226.8 kg	113.4 kg
Maximum Speed	5080 mm/sec	
Repeatability	+/- 0.025 mm	
Moment Load	52 Nm	
Acceleration Exceeding	10 G's	
Beam Dimensions	80 x 40 mm	
Weight		
First Meter of Travel	6.8 kg	
Additional per Meter	2.27 kg	
Travel		
Standard Stroke	210 to 5610 mm (50 mm Pitch)	
Standard Length	750 to 6150 mm (50 mm Pitch)	

Standard Sizes 750 mm to 6150 mm in 50mm increments.

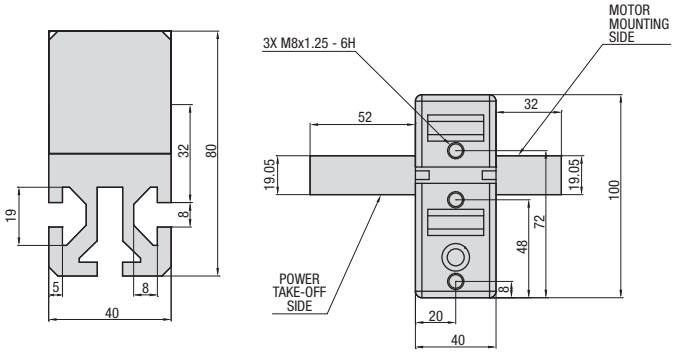
MSA-135 Belt Drive Actuators, 750 to 6150 mm Length.

113.4 kg Vertical, 226.4 kg Horizontal load.

Travel Speed up to 5080 mm/sec.

Features

Extruded aluminum actuator body with T-slots for ease of mounting
Easy to adjust belt tensioner
One piece, machined and stress proof shafted pulley
Zero backlash belt to pulley design
Corrosion resistant components



Motor Sizing Information

Weight of Drive Pulley	263.9 g
Weight of Idler Pulley	179.8 g
Weight of Cart	771.1 g
Weight of Belt	Stroke (mm) x 0.28 + 20.75 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 25 mm
Breakaway Torque	22.6–25.4 N-cm
Rolling Resistance	2.72 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-135-0-BC	–	A	–	1	–	00750

MSA-135-Actuator, Single shaft in location #1, 750mm overall length, 210 mm Stroke

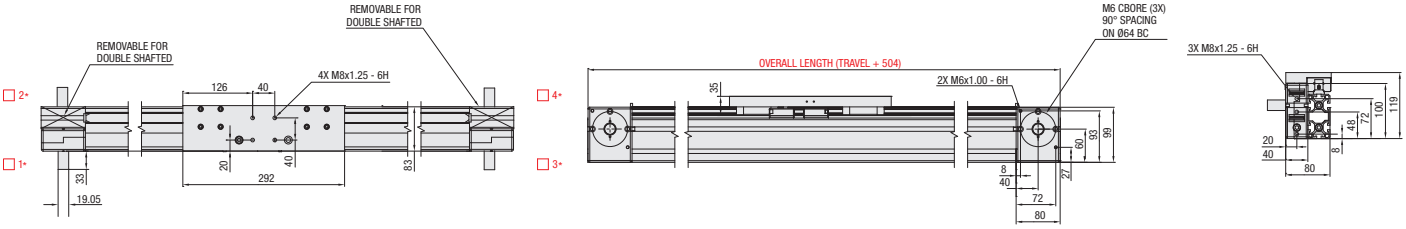
Single Axis MSA-R20 Belt Drive Actuator

Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	Steel	Aluminum	Poly/Steel	Steel
Surface	Anodized	Chrome	Anodized	—	—

Type	Shaft Type	Shaft Location	Actuator Length
MSA-R20-G-BC	A Single Shafted	1	00500
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)

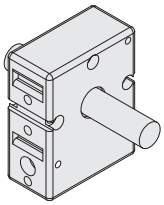


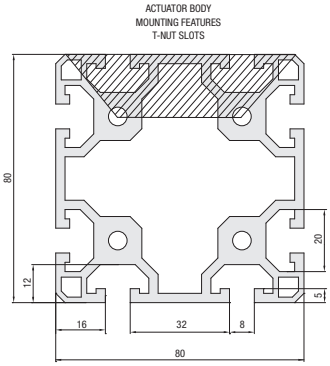
Specifications

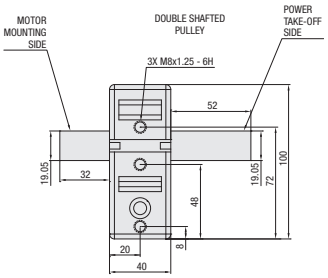
	Horizontal	Vertical
Maximum Load	181.4 kg	136 kg
Maximum Speed	10160 mm/sec	5080 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	52 Nm	
Acceleration Exceeding	20 G's	
Beam Dimensions	80 x 80 mm	
Weight		
First Meter of Travel	18.37 kg	
Additional per Meter	8.85 kg	
Travel		
Standard Stroke	247 to 1747 mm (50 mm Pitch)	
Standard Length	750 to 2250 mm (50 mm Pitch)	

Standard Sizes 750 mm to 2250 mm in 50mm increments.

MSA-R20 Belt Drive Actuators, 750 to 2250mm Length.
136 Kg Vertical and 181 Kg Horizontal load.
Travel Speed up to 10160 mm/sec.







Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	263.9 g
Weight of Idler Pulley	179.8 g
Weight of Cart	1814.4 g
Weight of Belt	Stroke (mm) x 0.09 + 16 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 25 mm
Breakaway Torque	18.4–19.8 N-cm
Rolling Resistance	22.68 g

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-R20-G-BC	–	A	–	1	–	00750

MSA-R20-Actuator, Single shaft in location #1, 750 mm overall length, 247mm Stroke

Single Axis MSA-SB1 Belt Drive

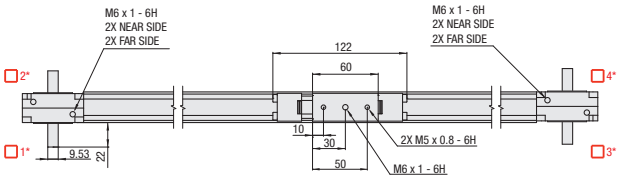
SB series units are belt drives only. An independent weight bearing mechanism is required along with the drive.

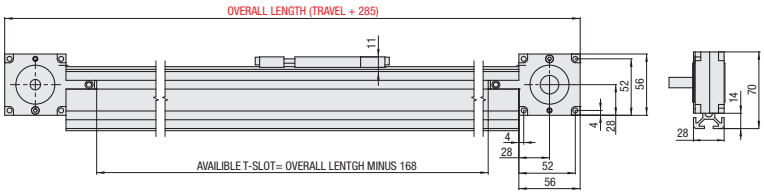
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	—	Aluminum	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-SB1-B-GB	A Single Shafted B Double Shafted	1 2 3 4	00750 to 06250 (50mm increment)



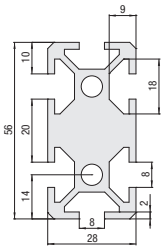


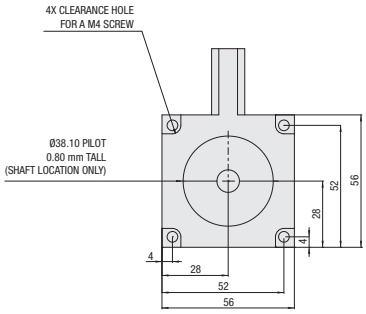
Specifications

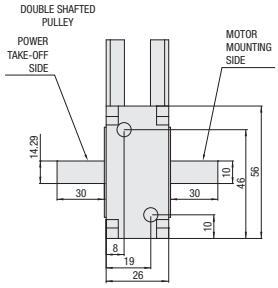
	Horizontal	Vertical
Maximum Load	45.36 kg	22.7 kg
Maximum Speed	5080 mm/sec	2525 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	—	
Acceleration Exceeding	5 G's	
Beam Dimensions	56 x 28 mm	
Weight		
First Meter of Travel	2.71 kg	
Additional per Meter	1.36 kg	
Travel		
Standard Stroke	465 to 5965 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

Standard Sizes 750 mm to 6250 mm in 50mm increments.

MSA-SB1 Belt Drive, 750 to 6250mm Length.
45.36 Kg Vertical and 22.7 kg Horizontal load.
Travel Speed up to 5050 mm/sec.







Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	109.7 g
Weight of Idler Pulley	100.4 g
Weight of Cart	—
Weight of Belt	Stroke (mm) x 0.10 + 18 g
Travel per Revolution	105 mm
Pulley Pitch Diameter	33.42 mm
Pulley Material / Width	Steel / 12 mm
Breakaway Torque	—
Rolling Resistance	—

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-SB1-B-GB	–	A	–	1	–	00750

MSA-SB1-Actuator, Single shaft in location #1, 750 mm overall length, 465 mm Stroke

Single Axis MSA-SB2 Belt Drive

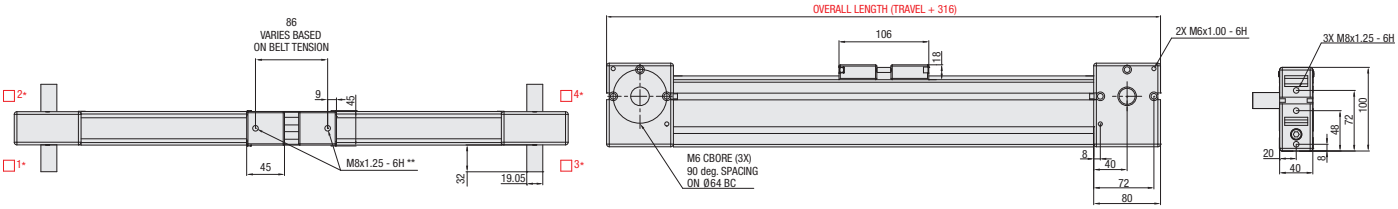
SB series units are belt drives only. An independent weight bearing mechanism is required along with the drive.

Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	—	Aluminum	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-SB2-E-BC	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)

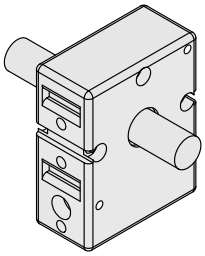


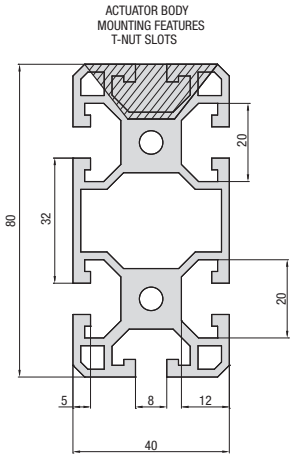
Specifications

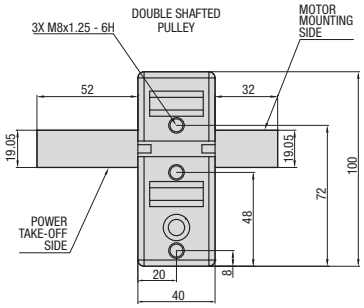
	Horizontal	Vertical
Maximum Load	226.8 kg	113.4 kg
Maximum Speed	10160 mm/sec	5080 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	—	
Acceleration Exceeding	20 G's	
Beam Dimensions	80 x 40 mm	
Weight		
First Meter of Travel	7.26 kg	
Additional per Meter	2.72 kg	
Travel		
Standard Stroke	184 to 5934 mm (50 mm Pitch)	
Standard Length	500 to 6250 mm (50 mm Pitch)	

Standard Sizes 500 mm to 6250 mm in 50mm increments.

MSA-SB2 Belt Drive, 750 to 6250mm Length.
113.4 Kg Vertical and 226.8 kg Horizontal load.
Travel Speed up to 10160 mm/sec.







Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components

Motor Sizing Information

Weight of Drive Pulley	263.9 g
Weight of Idler Pulley	179.8 g
Weight of Cart	—
Weight of Belt	Stroke (mm) x 0.28 + 50 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 25 mm
Breakaway Torque	—
Rolling Resistance	—

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-SB2-E-BC	–	A	–	1	–	00750

MSA-SB2-Actuator, Single shaft in location #1, 750 mm overall length, 434 mm Stroke

Single Axis MSA-SB5 Belt Drive

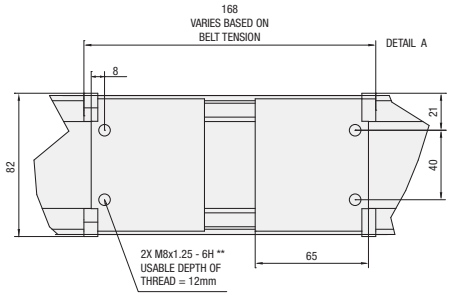
SB series units are belt drives only. An independent weight bearing mechanism is required along with the drive.

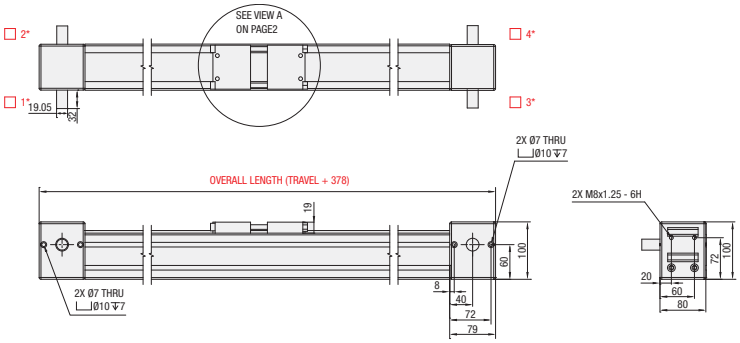
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

Actuator Material / Surface Treatment

Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	—	Aluminum	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-SB5-G-BE	A Single Shafted B Double Shafted	1 2 3 4	00750 to 06250 (50mm increment)



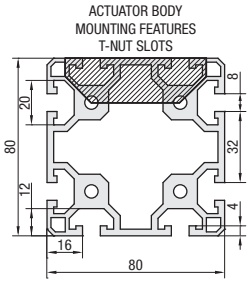


Specifications

	Horizontal	Vertical
Maximum Load	453.6 kg	226.8 kg
Maximum Speed	10160 mm/sec	5080 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	—	
Acceleration Exceeding	20 G's	
Beam Dimensions	80 x 80 mm	
Weight		
First Meter of Travel	12.7 kg	
Additional per Meter	5.0 kg	
Travel		
Standard Stroke	372 to 5872 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

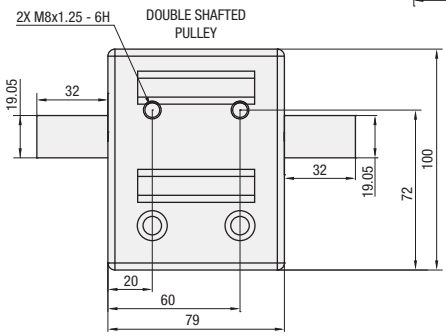
Standard Sizes 750 mm to 6250 mm in 50mm increments.

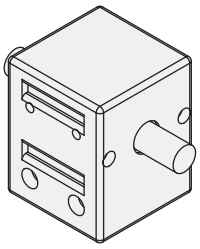
MSA-SB5 Belt Drive, 750 to 6250mm Length.
226.8 Kg Vertical and 453.6 kg Horizontal load.
Travel Speed up to 10160 mm/sec.



Features

Extruded aluminum actuator body with T-slots for ease of mounting
Easy to adjust belt tensioner
One piece, machined and stress proof shafted pulley
Zero backlash belt to pulley design
Corrosion resistant components





Motor Sizing Information

Weight of Drive Pulley	663.1 g
Weight of Idler Pulley	616.4 g
Weight of Cart	—
Weight of Belt	Stroke (mm) x 0.58 219.5 g
Travel per Revolution	150 mm
Pulley Pitch Diameter	47.74 mm
Pulley Material / Width	Steel / 50 mm
Breakaway Torque	—
Rolling Resistance	—

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-SB5-G-BE	–	A	–	1	–	00750

MSA-SB5-Actuator, Single shaft in location #1, 750 mm overall length, 372 mm Stroke

Single Axis MSA-SBH Belt Drive

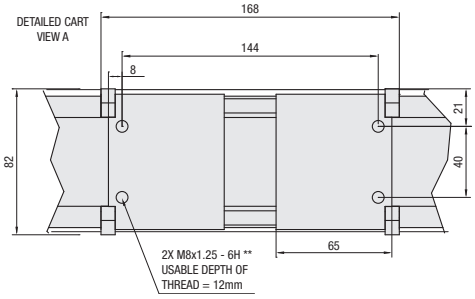
SB series units are belt drives only. An independent weight bearing mechanism is required along with the drive.

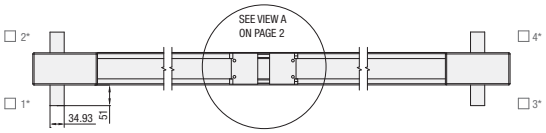
Accessories (see website)	
Motor Mounts	Sensors
Gearboxes	Motor Kits

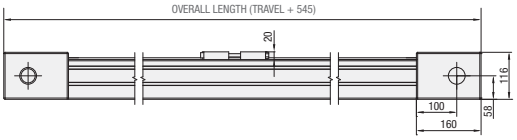
Actuator Material / Surface Treatment

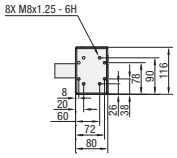
Components	Frame	Rail	Carriage	Belt	Pulleys
Material	Aluminum	—	Aluminum	Poly/Steel	Steel
Surface	Anodized	—	Anodized	—	Chrome

Type	Shaft Type	Shaft Location	Actuator Length
MSA-SBH-I-CH	A Single Shafted	1	00750
		2	to
	B Double Shafted	3	06250
		4	(50mm increment)







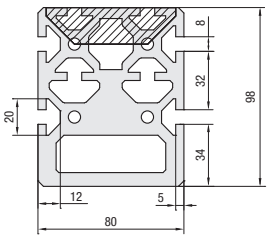


Specifications

	Horizontal	Vertical
Maximum Load	1134 kg	567 kg
Maximum Speed	15240 mm/sec	7620 mm/sec
Repeatability	+/- 0.025 mm	
Moment Load	—	
Acceleration Exceeding	20 G's	
Beam Dimensions	80 x 98 mm	
Weight		
First Meter of Travel	23.13 kg	
Additional per Meter	5.0 kg	
Travel		
Standard Stroke	205 to 5705 mm (50 mm Pitch)	
Standard Length	750 to 6250 mm (50 mm Pitch)	

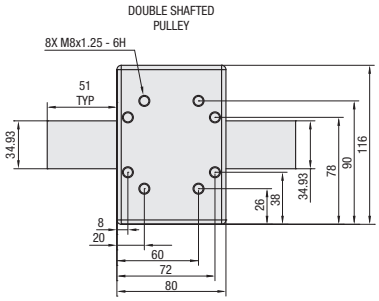
Standard Sizes 750 mm to 6250 mm in 50mm increments.

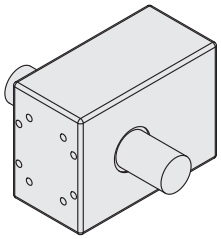
MSA-SBH Belt Drive, 750 to 6250 mm Length.
1134 Kg Vertical and 567 kg Horizontal load.
Travel Speed up to 15240 mm/sec.



Features

- Extruded aluminum actuator body with T-slots for ease of mounting
- Easy to adjust belt tensioner
- One piece, machined and stress proof shafted pulley
- Zero backlash belt to pulley design
- Corrosion resistant components





Motor Sizing Information

Weight of Drive Pulley	2451 g
Weight of Idler Pulley	2148 g
Weight of Cart	—
Weight of Belt	Stroke (mm) x 0.70 + 383 g
Travel per Revolution	280 mm
Pulley Pitch Diameter	89.13 mm
Pulley Material / Width	Steel / 50 mm
Breakaway Torque	—
Rolling Resistance	—

Ordering Example

Part Number	–	Shaft Type	–	Shaft Location	–	Shaft Length
MSA-SBH-I-CH	–	A	–	1	–	00750

MSA-SBH-Actuator, Single shaft in location #1, 750 mm overall length, 205 mm Stroke

NEW $ Linear Axis Actuators

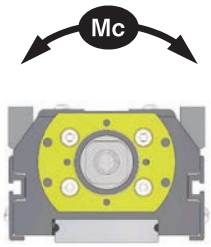
[Medium Accuracy] Single Axis Actuators LS – Overview

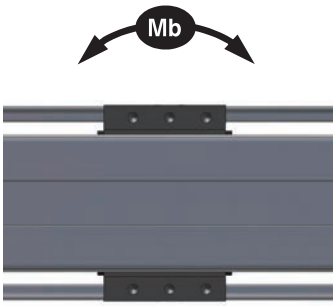
■ Load Rating

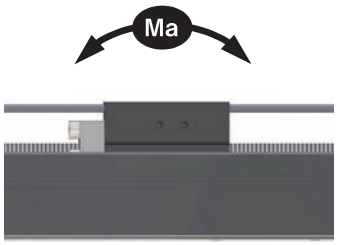
Type	Rail			Ball Screw						Bearing (Fixed Side) Axial Direction		Belt
	Basic Dynamic Load Rating C (N)	Basic Static Load Rating Co (N)	Radial Clearance (μm)	Basic Dynamic Load Rating Ca (N)	Basic Static Load Rating Coa (N)	Shaft Dia. (mm)	Lead (mm)	Root Dia. (mm)	Ball Center Dia. (mm)	Basic Dynamic Load Rating Ca (N)	Static Load Capacity Poa(N)	Allowable Tension (N)
LS1002	3500	5300	0~15	1200	2100	10	2	9.21	10.41	471.4	195.7	—
LS1004	3500	5300	0~15	1600	3400	10	4	8.68	10.68	471.4	195.7	—
LS1205	5800	8500	0~15	1800	4100	12	5	9.80	12.30	650	281.4	—
LS1210	5800	8500	0~15	2000	3500	12	10	9.80	12.30	650	281.4	—
LST10	4900	9700	-4~4	—	—	—	—	—	—	—	—	200

■ Allowable Static Moment

Type	Allowable Static Moment (N•m)		
	Ma	Mb	Mc
LS10	20.6	22.3	52.1
LS12	40.2	43.6	148
LST10	48.4	48.4	75.7







■ Material

Material: LS10 / LS12

Components	Base (Main Body)	Rail (Guide)	Table	Block	Motor Bracket	Cover	Stopper	Ball Screw (Rolled)
Material	A6063	Carbon Steel	A6061	A6061	A6061	A6063	POM / Stainless Steel	S55C
Surface Treatment	Black Anodize	—	Black Anodize	Black Anodize	Gold Anodize	Black Anodize	—	—
Hardness	—	HRC58 or more	—	—	—	—	—	HRC58~62

Material: LST10

Components	Base (Main Body)	Rail (Guide)	Table	Block	Motor Bracket	Cover	Stopper	Belt	Pulley
Material	A6063	Carbon Steel	A6063	A6061	A6061	A6063	POM	Polyurethane / Steel Cord	A2017
Surface Treatment	Black Anodize	—	Black Anodize	Black Anodize	Gold Anodize	Black Anodize	—	—	Clear Anodize
Hardness	—	HRC58~62	—	—	—	—	—	—	—

■ Total Mass (kg)

Type	Stroke (mm)												
	60	100	140	220	300	380	460	500	600	700	800	900	1000
LS10	1.20	1.33	1.47	1.73	2.00	—	—	—	—	—	—	—	—
LS12	2.30	2.49	2.68	3.06	3.44	3.82	4.20	—	—	—	—	—	—
LST10	—	—	—	—	—	—	—	3.3	3.7	4.1	4.5	4.9	5.3

NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LS – Overview

■ Moment of Inertia (10-4 kg • cm²)

Type	Stroke (mm)												
	60	100	140	220	300	380	460	500	600	700	800	900	1000
LS1002	188	218	249	310	371	—	—	—	—	—	—	—	—
LS1004	197	228	259	320	381	—	—	—	—	—	—	—	—
LS1205	400	464	527	654	781	908	1035	—	—	—	—	—	—
LS1210	461	525	588	715	842	969	1096	—	—	—	—	—	—
LST10	—	—	—	—	—	—	—	4135	4139	4143	4146	4150	4154

■ Maximum Travel Speed (mm/sec)

Type	Stroke												
	60	100	140	220	300	380	460	500	600	700	800	900	1000
LS1002	233	233	233	233	233	—	—	—	—	—	—	—	—
LS1004	467	467	467	467	467	—	—	—	—	—	—	—	—
LS1205	486	486	486	486	486	479	351	—	—	—	—	—	—
LS1210	972	972	972	972	972	958	702	—	—	—	—	—	—
LST10	—	—	—	—	—	—	—	400	400	350	350	300	300

■ Allowable Rotational Speed

Type	Stroke (mm)	Allowable Rotational Speed (min-1)
LS10	60~300	7000
LS12	60~300	5800
	380	5700
	460	4200
LST10	500 • 600	400
	700 • 800	350
	900 • 1000	300

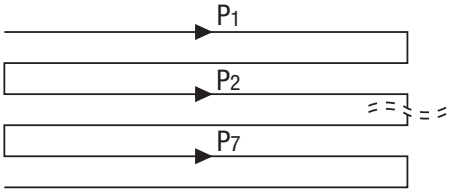
■ Accuracy Standards Table

Type	Positioning Repeatability (mm)	Running Parallelism (mm)	Starting Torque (N/cm)
LS10	±0.02	±0.02	2
LS12	±0.02	±0.02	7
LST10	±0.05	±0.05	—

■ Accuracy Standards

Positioning Repeatability

Repeat positioning and measurement seven times at the same point in a specified direction.
1/2 of the maximum difference with "±" in front is defined as the measurement value.
See Accuracy Standards Table for design values.



■ Maintenance

Routine Inspections:

Perform inspection once per 3 to 6 months.
Check for proper lubrication conditions, clean-up and refill grease.
Check the mounting screws for looseness.

NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LS10 (Ball Screw Driven)

For higher accuracy, see **P.171 & 177**

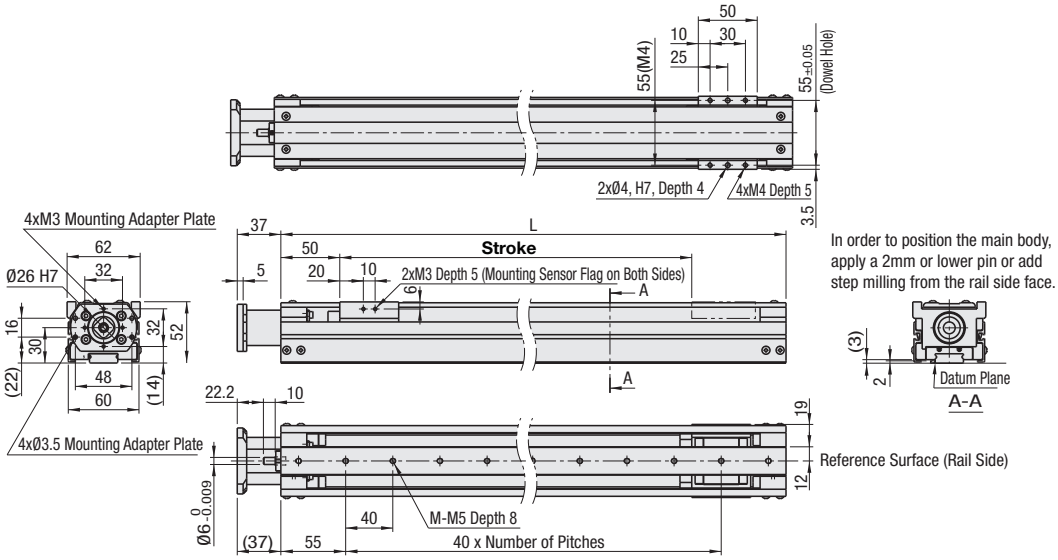
CAD 2D 3D

RoHS

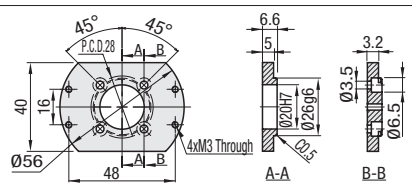
Accessory	Material	Surface Treatment	Quantity	Note
Adapter Plate	Aluminum Alloy	Black Anodize	1	—
Hex Socket Head Cap Screw M3 × 8	Steel	Nickel Plating	4	For Fixing Adapter Plate

No accessory is included with No Adapter Plate Type.

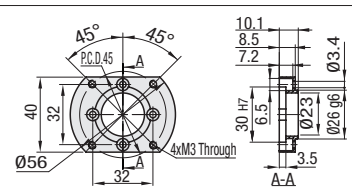
The Adapter Plate is not installed yet when being shipped from the factory.



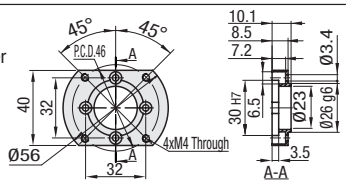
A25
Servo Stepping
No Adapter
25



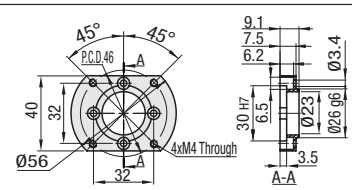
A38
Servo Stepping
No Adapter
38



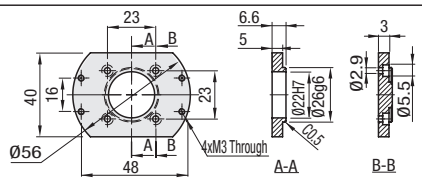
A40
Servo Stepping No Adapter
40



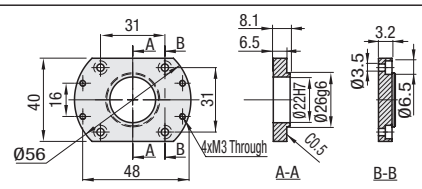
E40
Servo Stepping
No Adapter
40



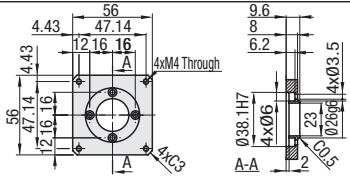
T28
Stepping
28



T42
Stepping
42



T56.4
Stepping
56.4



LS NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LS10 (Ball Screw Driven)

Part Number	Lead	Stroke (mm)	Motor Adapter Plates	L	Number of Holes (M)	Number of Pitches	Base Mounting
LS10	02 04	60	(Servo Motor) A25 A38 A40 E40	190	3	2	From the Bottom of Base Rail (Tapped Hole)
		100		230	4	3	
		140	(Stepping Motor) T28, T42, T56.4	270	5	4	
		220	(No Adapter Plate) N	350	7	6	
		300		430	9	8	

■ Accuracy Standards

Accuracy Standards	Standard Value
Positioning Repeatability (mm)	±0.02
Running Parallelism (mm)	±0.02
Starting Torque (N/cm)	2

The standard values are measured after the rail is mounted. (it is not the value measured before the rails are bolted down)

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T28	28	Oriental MotorMotor	CSK22	2-phase	SCXW21 SCPW21 CPDW19
			CSK52	5-phase	
			ASC3	a-Step	
T42	42		PK24	2-phase	
			CSK24		
			RK54	5-phase	
			RKS54/PK54		
			AS46, ASC46, AR46	a-Step	
T56.4	56.4	NEMA Standards	NEMA23	—	CPDW19

The NEMA standard is standardized by National Electrical Manufactures Association in U.S.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A25	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 SCPW21 CPDW19
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
		Mitsubishi Electric Corporation	HG-AK0136	10W	
			HG-AK0236	20W	
			HG-AK0336	30W	
A38	38	Panasonic	MSMD5A	50W	
			MSME5A		
			MSMD01	100W	
			MSME01		
A40	40	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5		
			SGMAS-A5		
		Mitsubishi Electric Corporation	HG-MR053		
			HG-KR053		
			HF-KP053		
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-K05030		
		Keyence Corporation	MV-M05		
			SV-M005		
E40	40	SIEMENS	1FK7011-5	50W	CPDW19
			1FK7015-5	100W	

Product numbers and specifications of motors are subject to change. Please check the manufacturers' information.

Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

Ordering Example

Part Number	–	Stroke	–	Motor Plates
LS1002	–	300	–	A25

Alterations

Part Number	–	Stroke	–	Motor Plates	–	Code
LS1002	–	300	–	A25	–	MP3

■ Photo Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty	Sensor Flag Mounting		Sensor Mounting	Sensor Bracket Mounting			Note
			Configurable to turn ON or OFF when Light is blocked	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Bracket	Bracket VMounting Screw	Bracket Mounting Nut	
MP	Photomicro Sensor	FPMY44	pc(s)	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Dedicated	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Hex Nut 2 pcs	Cable 1m

The Sensor Qty. is inserted in the "" part (within the range of 1~3 pc(s)). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty. is 2pcs

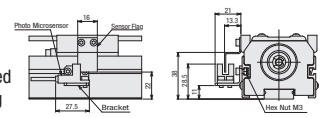
■ Proximity Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty.		Sensor Flag Mounting		Sensor Mounting		Note
			ON when near	ON when away	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Sensor Mounting Nut	
PR	Proximity Sensor - Two-Wire Type	EX4-T12	pc(s)	—	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Pan Head Screw M3 x 10	Hex Nut 1 pc	Cable 1m
PRO	Proximity Sensor - Three-Wire Type with N.O. Output	EMX4-T12	pc(s)	—					
PRC	Proximity Sensor - Three-Wire Type with N.C. Output	EMX4-T12C	—	pc(s)					
PRW1	Proximity Sensor - Three-Wire, Combination Type	—	1 pc	1 pc					
PRW2			1 pc	2 pcs					
PRW3			2 pcs	1 pc					

The Sensor Qty. is inserted in the "" part (within the range of 1~3 pc(s).). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty. is 2pcs.

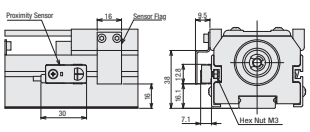
Photo Sensor Installation Drawing

The sensor can be installed also on the opposite side. The drawing only shows an example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right side).



Proximity Sensor Installation Drawing

The sensor can be installed also on the opposite side. The drawing only shows an example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right side).



NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LS12 (Ball Screw Driven)

For higher accuracy, see **P.173 & 177**

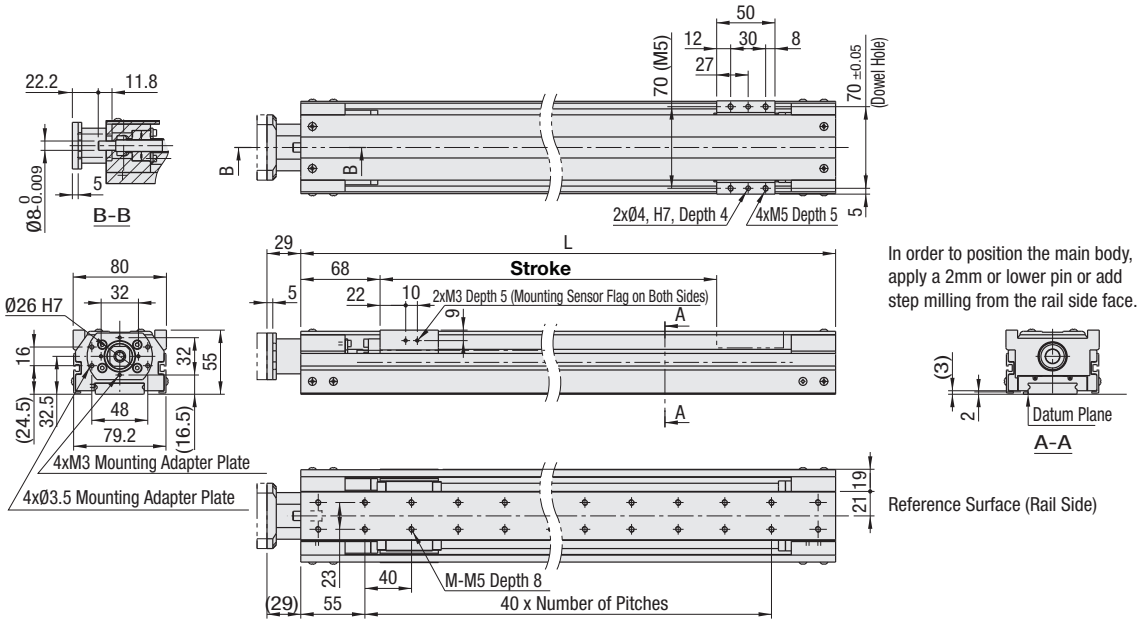
CAD 2D 3D

RoHS

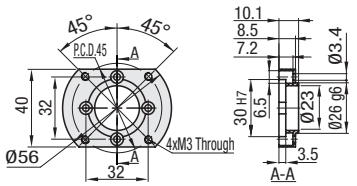
Accessory	Material	Surface Treatment	Quantity	Note
Adapter Plate	Aluminum Alloy	Black Anodize	1	—
Hex Socket Head Cap Screw M3 × 8	Steel	Nickel Plating	4	Adapter Plate for Fixing Adapter Plate

No accessory is included with No Adapter Plate Type.

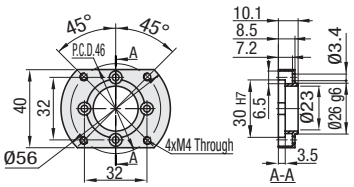
The Adapter Plate is not installed yet when being shipped from the factory.



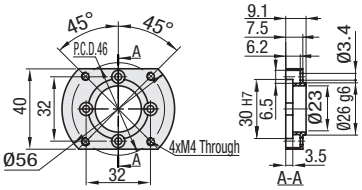
A38
Servo Stepping
No Adapter
38



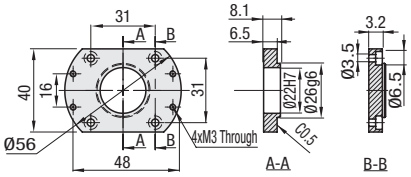
A40
Servo Stepping
No Adapter
40



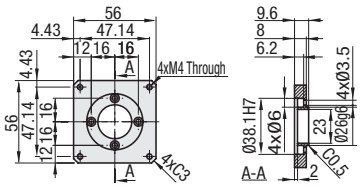
E40
Servo Stepping
No Adapter
40



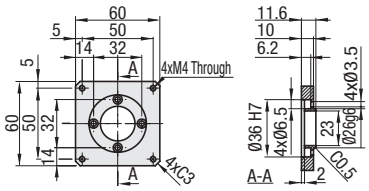
T42
Stepping
42



T56.4
Stepping
56.4



T60
Stepping
60



LS NEW $ Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LS12 (Ball Screw Driven)

Part Number	Lead	Stroke (mm)	Motor Adapter Plates	L	Number of Holes (M)	Number of Pitches	Base Mounting
LS12	05 10	60	(Servo Motor) A38 A40 E40 (Stepping Motor) T42, T56.4, T60 (No Adapter Plate) N	230	8	3	From the Bottom of Base Rail (Tapped Hole)
		100		270	10	4	
		140		310	12	5	
		220		390	16	7	
		300		470	20	9	
		380		550	24	11	
		460		630	28	13	

■ Accuracy Standards

Accuracy Standards	Standard Value
Positioning Repeatability (mm)	±0.02
Running Parallelism (mm)	±0.02
Starting Torque (N/cm)	7

The standard values are measured after the rail is mounted.
(it is not the value measured before the rails are bolted down.)

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Type	Recommended Coupling
T42	42	Oriental Motor Motor	PK24	2-phase	SCXW21 SCPW21 CPDW19
			RKS54/PK54	5-phase	
			AS46/ASC46/AR46	a- Step	
T60	60		RKS56/PK56	5-phase	
			AS6/ASC66/AR66	a-Step	
T56.4	56.4		PK26	20W	
		NEMA standards	NEMA23	—	CPDW19

The NEMA standard is standardized by National Electrical Manufactures Association in U.S.

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A38	38	Panasonic	MSMD5A/MSME5A	50W	SCXW21 SCPW21 CPDW19
			MSMD01/MSME01	100W	
A40	40	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5		
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HG-MR053	50W	
			HG-MR13	100W	
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-K05030	50W	
			R88M-K10030	100W	
		Keyence Corporation	MV-M05	50W	
			SV-M005		
			MV-M10	100W	
			SV-M010		
E40	40	SIEMENS	1FK7011-5	50W	CPDW25
			1FK7015-5	100W	

Product numbers and specifications of motors are subject to change.
Please check the manufacturers' information.

Applicable motors and couplings are not limited to the above listed products.
Please confirm each mounting dimension.

Ordering Example

Part Number	–	Stroke	–	Motor Plates
LS1205	–	300	–	A38

Alterations

Part Number	–	Stroke	–	Motor Plates	–	Code
LS1205	–	300	–	A38	–	MP3

■ Photo Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty	Sensor Flag Mounting		Sensor Mounting	Sensor Bracket Mounting			Note
			Configurable to turn ON or OFF when Light is blocked	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Bracket	Bracket Mounting Screw	Bracket Mounting Nut	
MP	Photomicro Sensor	FPMY44	pc(s)	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Dedicated	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Hex Nut 2 pcs	Cable 1m

The Sensor Qty. is inserted in the "" part (within the range of 1~3 pc(s)). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty is 2pcs

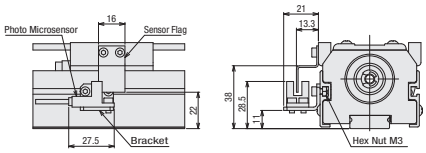
■ Proximity Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty		Sensor Flag Mounting		Sensor Mounting		Note
			ON when near	ON when away	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Sensor Mounting Nut	
PR	Proximity Sensor - Two-Wire Type	EX4-T12	pc(s)	—	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Pan Head Screw M3 x 10	Hex Nut 1 pc	Cable 1m
PRO	Proximity Sensor - Three-Wire Type with N.O. Output	EMX4-T12	pc(s)	—					
PRC	Proximity Sensor - Three-Wire Type with N.C. Output	EMX4-T12C	—	pc(s)					
PRW1	Proximity Sensor - Three-Wire, Combination Type	—	1 pc	1 pc					
PRW2			1 pc	2 pcs					
PRW3			2 pcs	1 pc					

The Sensor Qty. is inserted in the "" part (within the range of 1~3 pc(s)). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty is 2pcs

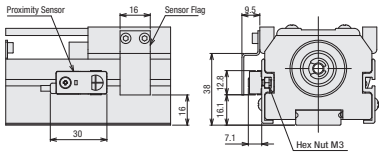
Photo Sensor Installation Drawing

The sensor can be installed also on the opposite side. The drawing only shows an example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right side).



Proximity Sensor Installation Drawing

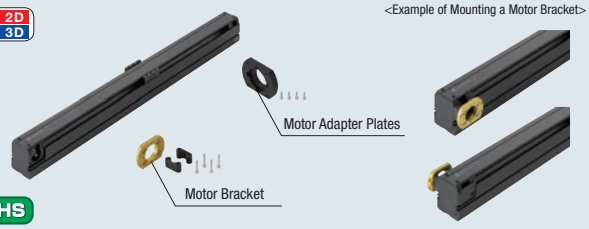
The sensor can be installed also on the opposite side. The drawing only shows an example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right side).



NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LST10 (Belt Driven)

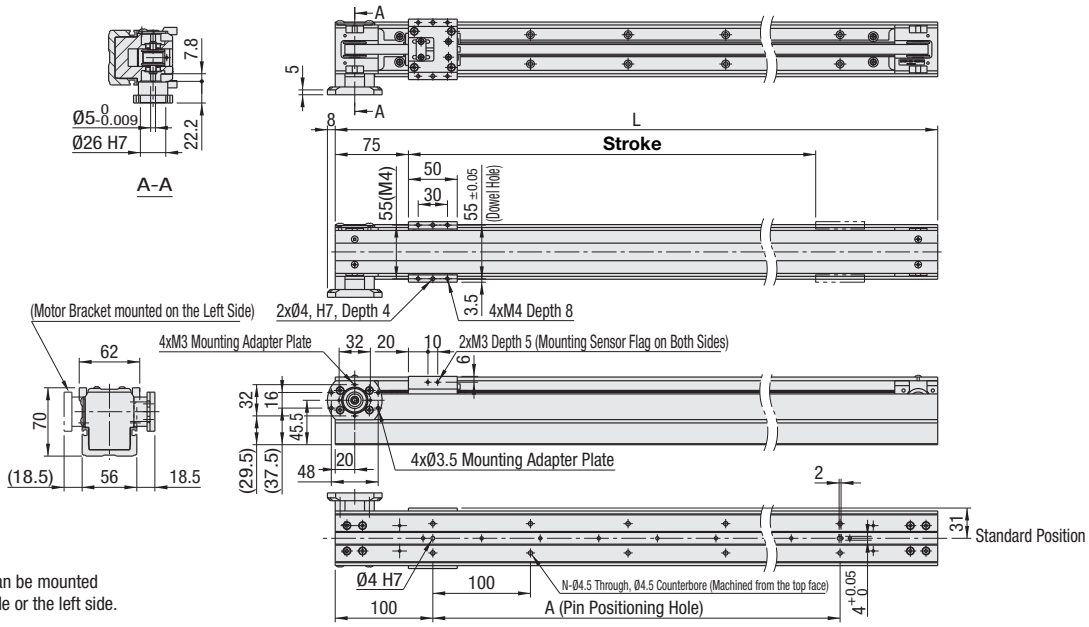
CAD 2D 3D



RoHS

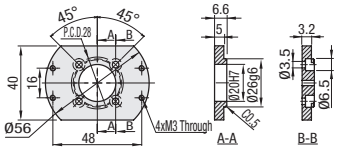
Accessory	Material	Surface Treatment	Quantity	Note
Motor Bracket	Aluminum Alloy	Gold Anodize	1	—
Spacer	Aluminum Alloy	Black Anodize	2	—
Hex Socket Head Cap Screw M4 × 20	Steel	Nickel Plating	4	Motor Bracket For fixing Adapter Plate
Adapter Plate	Aluminum Alloy	Black Anodize	1	—
Hex Socket Head Cap Screw M3 × 8	Steel	Nickel Plating	4	Adapter Plate For fixing Adapter Plate

No accessory is included with No Adapter Plate Type.
The Motor Bracket and Adapter Plate are not installed yet when being shipped from the factory.
The motor bracket can be mounted on either the right side or the left side.

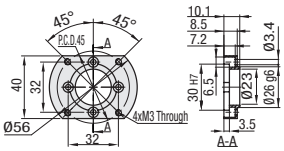


The motor bracket can be mounted on either the right side or the left side.

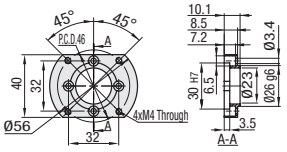
A25
Servo Stepping
No Adapter
25



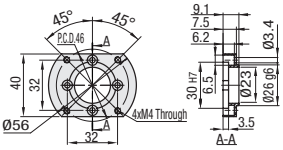
A38
Servo Stepping
No Adapter
38



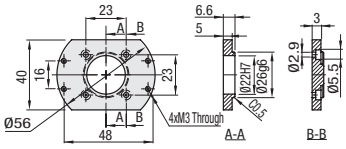
A40
Servo Stepping No Adapter
40



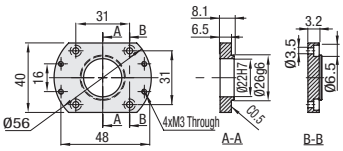
E40
Servo Stepping
No Adapter
40



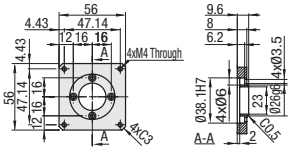
T28
Stepping
28



T42
Stepping
42



T56.4
Stepping
56.4



NEW Linear Axis Actuators

[Medium Accuracy] Single Axis Actuators LST10 (Belt Driven)

Part Number	Stroke	Motor Adapter Plates	L	A	Number of Holes (N)	Base Mounting
LST10	500	(Servo Motor) A25 A38 A40 E40	700	500	10	From the Top of Base Rail (Counterbored Hole)
	600		800	600	12	
	700	(Stepping Motor) T28, T42, T56.4	900	700	14	
	800		1000	800	16	
	900	(No Adapter Plate) N	1100	900	18	
	1000		1200	1000	20	

■ Accuracy Standards

Accuracy Standards	Standard Value
Positioning Repeatability (mm)	±0.05
Running Parallelism (mm)	±0.05

The standard values are measured after the rail is mounted. (it is not the value measured before the rails are bolted down.)

■ Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
T28	28	Oriental Motor	CSK22	2-phase	SCXW21 SCPW21 CPDW19
			CSK52	5-phase	
			ASC3	a- Step	
T42	42		PK24	2-phase	
			CSK24		
			RK54	5-phase	
			RKS54/PK54		
			AS46, ASC46, AR46	a-Step	
T56.4	56.4	NEMA standards	NEMA23	—	CPDW19

The NEMA standard is standardized by National Electrical Manufactures Association in U.S.

Ordering Example

Part Number	–	Stroke	–	Motor Plates
LST10	–	500	–	A25

Alterations

Part Number	–	Stroke	–	Motor Plates	–	Code
LST10	–	500	–	A25	–	MP3

■ Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A25	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 SCPW21 CPDW19
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
		Mitsubishi Electric Corporation	HG-AK0136	10W	
			HG-AK0236	20W	
			HG-AK0336	30W	
A38	38	Panasonic	MSMD5A	50W	
			MSME5A		
			MSMD01	100W	
			MSME01		
A40	40	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5		
			SGMAS-A5		
		Mitsubishi Electric Corporation	HG-MR053		
			HG-KR053		
			HF-KP053		
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-K05030		
		Keyence Corporation	MV-M05		
			SV-M005		
E40	40	SIEMENS	1FK7011-5	50W	CPDW19
			1FK7015-5	100W	

Product numbers and specifications of motors are subject to change. Please check the manufacturers' information.

Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

■ Photo Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty	Sensor Flag Mounting		Sensor Mounting	Sensor Bracket Mounting			Note
			Configurable to turn ON or OFF when Light is blocked	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Bracket	Bracket Mounting Screw	Bracket Mounting Nut	
MP	Photomicro Sensor	FPMY44	pc(s)	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Dedicated	Hex Socket Head Cap Screw M3 x 6, 2 pcs	Hex Nut 2 pcs	Cable 1m

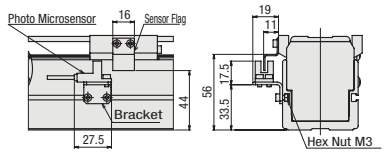
The Sensor Qty. is inserted in the "" part (within the range of 1~3 pc(s)). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty is 2pcs

■ Proximity Sensor Types - Set Part Specification

Code	Sensor Type	Sensor	Sensor Type/Qty.		Sensor Flag Mounting		Sensor Mounting		Note
			ON when near	ON when away	Sensor Flag	Sensor Flag Mounting Screw	Sensor Mounting Screw	Sensor Mounting Nut	
PR	Proximity Sensor – Two-Wire Type	EX4-T12	pc(s)	—	Dedicated	Hex Socket Head Cap Screw M3 x 5, 2 pcs	Pan Head Screw M3 x 10	Hex Nut 1 pc	Cable 1m
PRO	Proximity Sensor – Three-Wire Type with N.O. Output	EMX4-T12	pc(s)	—					
PRC	Proximity Sensor – Three-Wire Type with N.C. Output	EMX4-T12C	—	pc(s)					
PRW1	Proximity Sensor – Three-Wire, Combination Type	—	1 pc	1 pc					
PRW2			1 pc	2 pcs					
PRW3			2 pcs	1 pc					

The Sensor Qty is inserted in the "" part (within the range of 1~3 pc(s)). When the stroke amount is 100 or less, however, the upper limit for the Sensor Qty is 2pcs

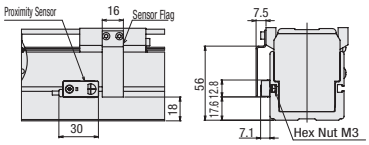
Photo Sensor Installation Drawing



The sensor can be installed also on the opposite side.

The drawing only shows some example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right).

Proximity Sensor Installation Drawing

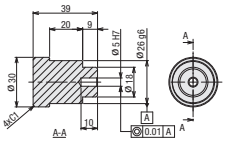


The sensor can be installed also on the opposite side.

The drawing only shows some example of sensor orientation. The sensor can also be installed in the opposite direction (i.e. with the cable wiring on the right).

Motor Bracket Mounting Fixture dedicated for LST10

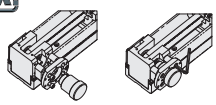
JIGLST10



Material:
Aluminum Alloy
Clear Anodize

Example

Use this jig for centering when a motor bracket is assebled.



Ordering Example

Part Number
JIGLST10

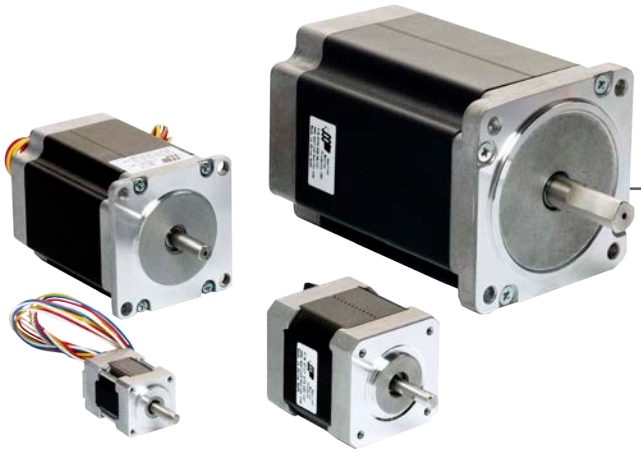
Stepper Motors, Drives & Controllers

Search the website with #ST for all of our current Stepper Motor products.

■ **Integrated**

Combining motor and drive together into a single device, resulting in reduced wiring and costs.

- NEMA 17 and 23 sizes available
- Ethernet, EtherNET/IP, RS-232, RS-485 and CANopen protocols supported
- IP65 versions available and choice of feedback



■ **Standard**

Multiple lines of standard stepper motors available

- Ranging in size standard frame sizes of NEMA 8-34
- Also available in metric sizes of 20–90mm
- Geared steppers (gearhead and motor)
- IP65 version available

Servomotors, Drives & Controllers

Search the website with #SV for all of our current Servo Motor products.

■ Controllers

Controllers available to support almost every protocol.
(Ethernet, EtherNET/IP, RS-232, RS-485 and CANopen, CC-link, Mechatrolink, EtherCAT and Modbus)

■ Servo Motors

Motors – Wide range of servo motors available in NEMA sizes 17, 23 and 34, as well as metric sizes 40, 60 and 80mm

Drives and Controllers – Servo drives and controllers are available in almost every protocol imaginable. Please contact our dedicated Motion Systems team (motionsystem@misumiusa.com), if there are any questions.

System Cables and Accessories are available for all motors and drives that Misumi offers.

Misumi will be glad to help you in selecting a drive, controller or both.

NEW NEW PRODUCT
★ BEST SELLER
TYPICALLY IN STOCK
COST EFFICIENT

LOW ← ACCURACY/COST → HIGH

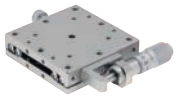
Type		Manual Stages						Motorized Stages	
		Simplified Adjustment Unit		Standard Precision Stages		High Precision Stages			
Usage, Picture									
		Travel Distance (max)	Load Capacity (max)	Travel Distance (max)	Load Capacity (max)	Travel Distance (max)	Load Capacity (max)	Travel Distance (max)	Load Capacity (max)
Linear Motion	X	±75 mm	98 N	±65 mm	39 N	±180 mm	343 N	50 mm	98 N
	Z	±50 mm	98 N	±65 mm	49 N	±65 mm	98 N	~15 mm	49 N
	XY	±25 mm	63 N	±35 mm	34 N	±60 mm	330 N	~15 mm	93 N
	XZ, XYZ	—	—	—		±12.5 mm	49 N	—	—
Rotary		360°	5~2000 N	—		360°	59 N	360°	29.4 N
Goniometer		—		—		±25°	60 N	—	
Multi Axis		—		—		XY: ±35 mm Rotation: 360°	50 N	—	
Feed Mechanism		– Feed Screw – Push Screw	– Rack & Pinion – Post & Clamp	– Rack & Pinion – Micrometer		– Rack & Pinion – Micrometer	– Feed Screw	—	
Guidance Structure		—		– Dovetail – Cross Roller		– Dovetail – Cross Roller	– Linear Ball Guides	– Linear Ball Guides – Deep Groove Ball Bearings	

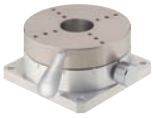
*Table shows units that are already combined. You can build different multi-axis configurations based on application requirements.

Simplified Adjustment Units

#SIX
X-Axis Units

#SIXY
XY-Axis Units

#SIZ
Z-Axis Units



#SIR
Rotary, Tilt Units

Manual Stages

★

#MSX
X-Axis Stages

★

#MSX
X-Axis Stages

#MSBP
Base Plates for Manual Stage

#MSXY
XY-Axis Stages

#MSZ
Z-Axis Stages

#MSRT
Rotary, Tilt Stages

#MSGO
Goniometer

#MSXZ
XZ-Axis Stages

#MSYZ
XYZ-Axis Stages

#MSMA
Multi-Axis Stages

#MHFS
Micrometer Heads, Feed Screws

#SRSC
Rods, Stands, Cross Clamps

#VNIR
Vernier Scales for Stage

#CCDA
CCD Camera Accessories

App. Example List

**MISUMI provides various product lineups for positioning and adjustments for FA applications.
Please utilize the application examples below for your product selections.**

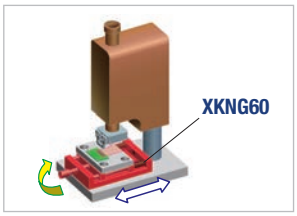
Simplified Adjustment App. Examples:

Simplified Adjustment is suitable for the positioning operation that does not require high accuracy.

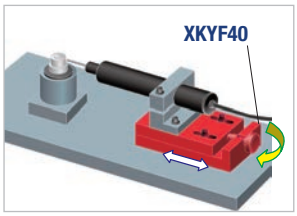
This Simplified Adjustment type includes a product having capability of tightly clamping workpieces once positioning is completed and a product equipped with a characteristic mechanism based on symmetrical action dual carriage.

: Stage Top Travel Direction : Handle Rotation

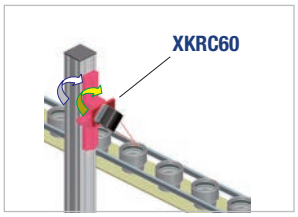
Easy linear adjustment
(**XKNG60** available on misumiusa.com)



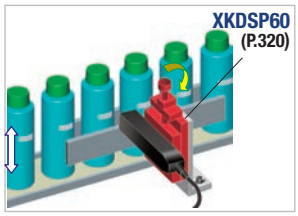
Provides strong clamp after linear positioning
(**XKYF40** available on misumiusa.com)



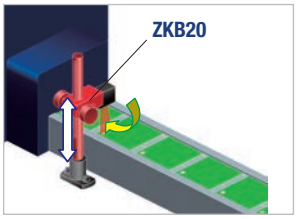
Position adjustment in angle rotation direction
(**XKRC60** available on misumiusa.com)



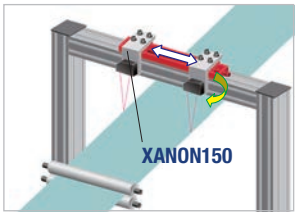
Fine feed mechanism in vertical direction



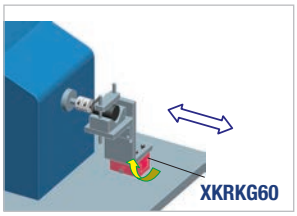
Fast and long feed mechanism in vertical direction
(**ZKB20** available on misumiusa.com)



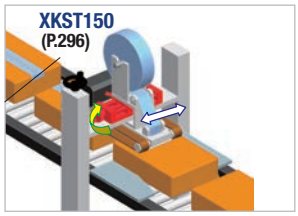
Position adjustment by open/close mechanism
(**XANON150** available on misumiusa.com)



Large and fast feed mechanism
(**XKRK60** available on misumiusa.com)



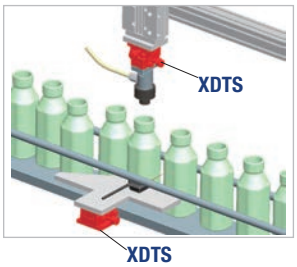
Provides linear adjustment to heavy workpieces



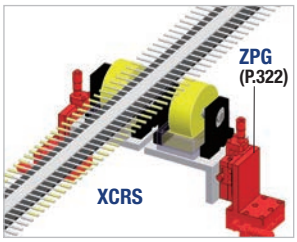
Standard Stages Examples:

Suitable for applications requiring approx. 30~50μm motion positioning accuracy and repeatability.

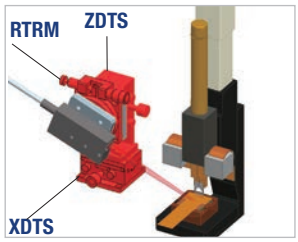
Positioning of Leak Inspection Instrument of Plastic Bottles
(**XDTS** available on misumiusa.com)



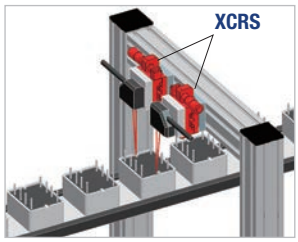
Positioning for Adhesive Application to Cotton Swabs



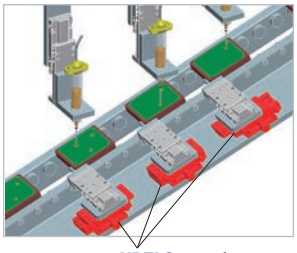
Positioning of Temperature Sensor for Camera Module Thermocompression
(**ZDTS, XDTS & RTRM** available on misumiusa.com)



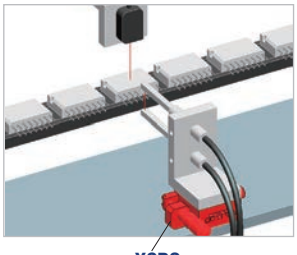
Positioning of Swage Detection Sensor for Converter
(**XCRS** available on misumiusa.com)



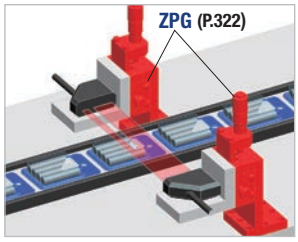
Positioning of Cylinder Stopper for Adhesive Application Device



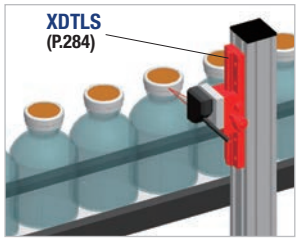
Sensor Positioning for Detecting Defects of Connector Terminal Press Fitting
(**XCRS** available on misumiusa.com)



Positioning of Labeling Defects Detection Sensor



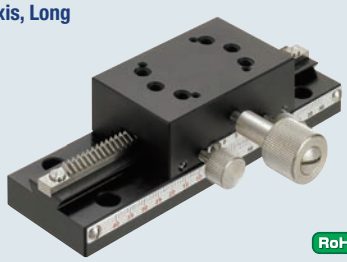
Positioning of Shrink Package Inspection Device



[Standard & High Precision] X-Axis Dovetail Slide, Rack & Pinion

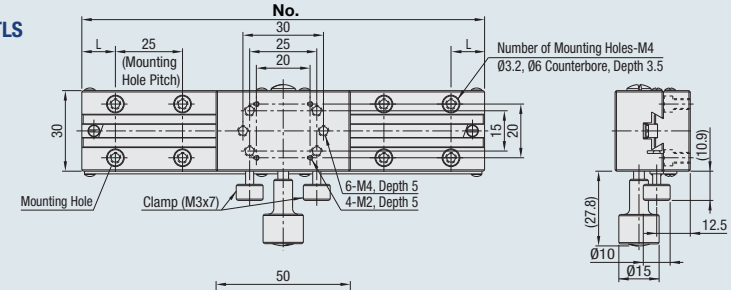
Features: Economically priced long stroke Rack and Pinion stages.

X-Axis, Long

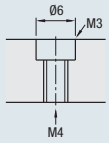


RoHS

XDTLS



Use M3 screws for mounting from top, M4 screws for mounting from bottom.



Ordering Example: Part Number **XDTLS100**

Example: Parallelism Inspection Unit

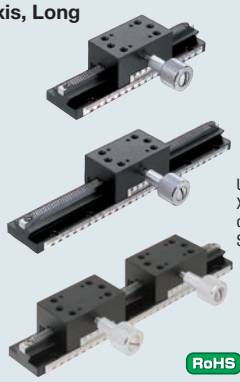
Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Number of Mounting Holes (Qty)	L	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)
XDTLS	80	30 x 50	±30	16.7	6	15	29.4	14.7	50 µm	0.15
	100 ★ ✓		±40		8	12.5				0.18
	150 ✓		±65		12				60 µm	0.23
	200		±90		16					0.30

Resolution (Vernier Scale Indication): 0.1mm/division
Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. **P.350**
For orders larger than indicated quantity, please request a quotation.

Features: Long stroke stages made of lightweight aluminum alloy. Select a size based on strokes needed. For stages with ±140mm stroke, see XLONG on **P.258**.

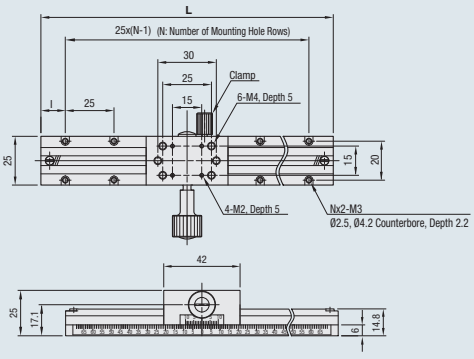
X-Axis, Long



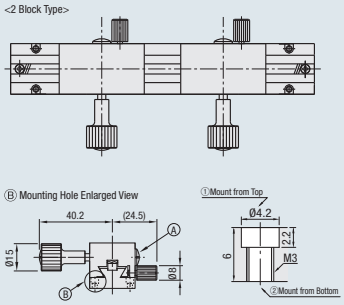
Use Adjustable Plates for XY-Axis Stages (XYPLT) to combine the Long Stroke Stages together. P.290

RoHS

XLWG



Material: Aluminum Alloy
Surface Treatment: Black Anodize



The scale in the above figure is for L150, and not for L50, L70, L100 or L200.
By turning the preload adjustment screw Ⓐ clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.

1. Mount from Top: Use M2 screws.
2. Mount from Bottom: Use M3 screws.

Ordering Example: Part Number **XLWG100**

Part Number Type	Part Number No.	L	Number of Blocks	Travel Distance (mm)	Travel per Rotation (mm)	N: Number of Mounting Hole Rows	Number of Mounting Holes (N x 2)	L (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)
XLWG	50 ★ ✓	50	1	±15	18	2	4	12.5	29.4	14.7	30	30	0.10
	70 ✓	70	1	±25		3	6	10.0					0.12
	100 ★ ✓	100	1	±40		4	8	12.5					0.14
	150 ★ ✓	150	1	±65		6	12				40	40	0.17
	150-2		2										0.24
	200 ★ ✓	200	1	±90		8	16				50	50	0.21
	200-2 ✓		2										0.28

Resolution (Vernier Scale Indication): 0.1mm/division; XLWG150-2 and 200-2 have two blocks. Please note that the stroke distances will be shorter than the one block versions.; Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. **P.350**; Adjustable Plate XPLT40: Use this plate when connecting stages with non-matching mounting holes. **P.290**, For orders larger than indicated quantity, please request a quotation.

★ BEST SELLER
(SELECT PART NUMBERS)
TYPICALLY IN STOCK
(SELECT PART NUMBERS)

[High Precision] X-Axis Dovetail Slide, Rack & Pinion

Long Stroke (300 mm)

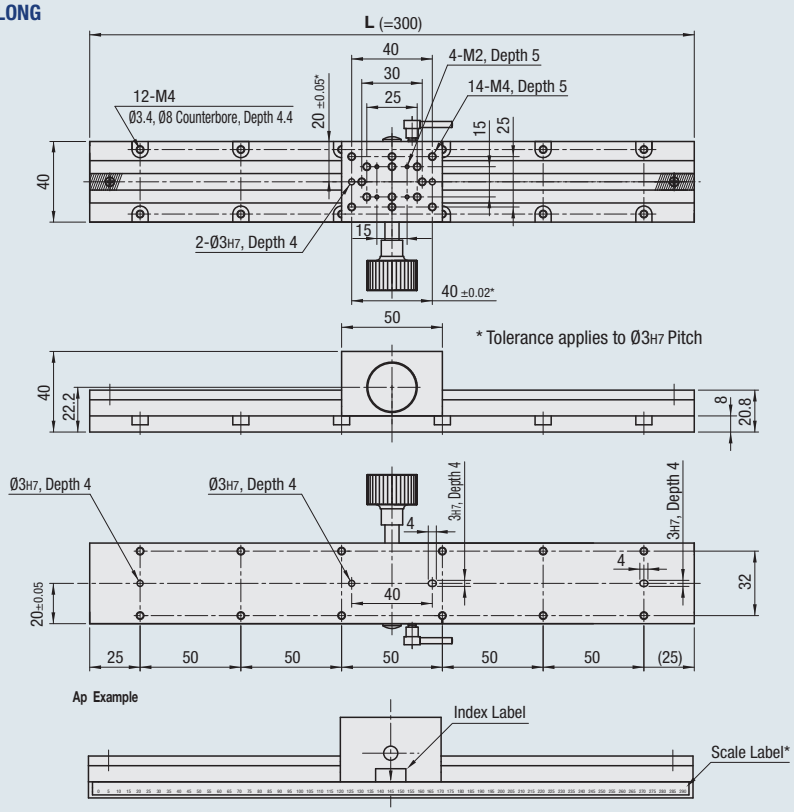
Features: Compatible with M size board (330mm x 250mm). Suitable for sensor adjustments and tooling changes.

X-Axis, Long Stroke (300mm)

Use Adjustable Plates for XY-Axis Stages (XYPLT) to combine the Long Stroke Stages together. **P.290**

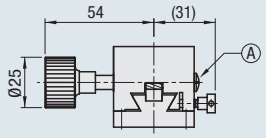
RoHS

XLONG

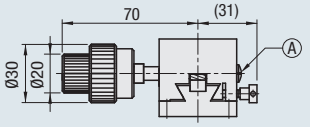


*Adhesive vernier scale label included can be placed at desired position in accordance with a required adjustment range.

Standard Knob



Coarse/Fine Feed Knob



Use M3 screws for mounting from top, M4 screws for mounting from bottom.

By turning the preload adjustment screw Ⓐ clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.

Dowel holes on top and bottom plates can be used to secure locating repeatability.

Do not remove blocks from bottom plate, as blocks are preloaded and ground fit for precision, and shipped after inspection.

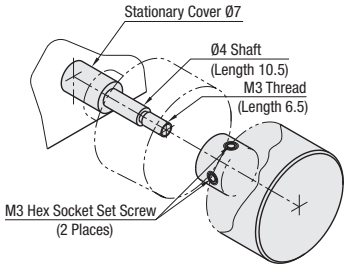
Material: Aluminum Alloy

Surface Treatment: Black Anodize

Accessory: Scaled Label (PET Film)
Index Label (PET Film)

Part Number		Block		Travel Distance (mm)	Travel per Rotation (mm)		Load Capacity (N)		Travel Accuracy	Weight (kg)
Type	L-No.	Knob	Qty.		Coarse	Fine	Horizontal	Vertical	Straightness	
XLONG	300 ★ ✔	Standard Knob	1	±140	18	—	49	24.5	150 µm	0.63
	300-2		2							0.81
	300-3		3							0.99
	300-SB ✔	Coarse/Fine Feeds Knob	1	±140	18	2.3			150 µm	0.70
	300-2SB ✔		2							0.95
	300-3SB		3							1.20

Resolution: 1mm/division



XLONG300 Standard Knob Type has an M3 set screw for the knob.

Ordering Example

Part Number
XLONG300
XLONG300-2SB

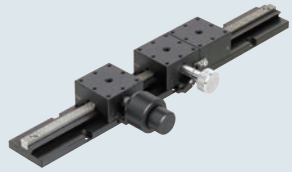
Example Assembly of Standard Knob

[High Precision] X-Axis Dovetail Slide, Rack & Pinion

Long Stroke (100, 200, 300, 400 mm) Block Combination

Features: Useable for tooling changes. Numbers, type and direction of blocks and rail length are selectable.

X-Axis, Long Stroke (100, 200, 300, 400mm) Block Combination



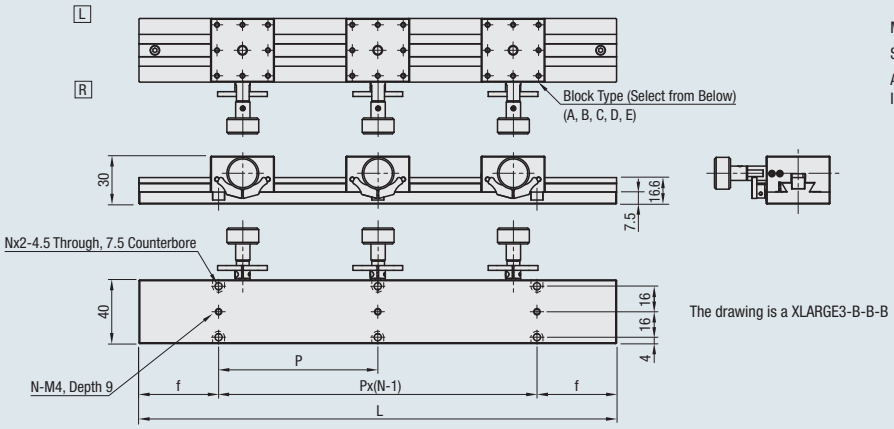
Moved distance can be read with the mark on the carriage and the scale on the base.

Resolution is 1mm.

RoHS

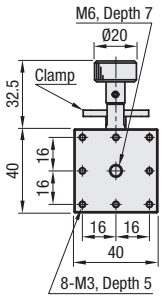
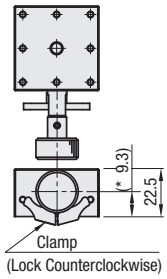
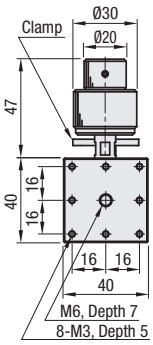
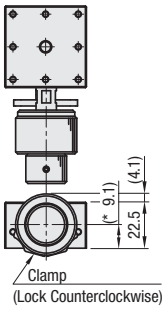
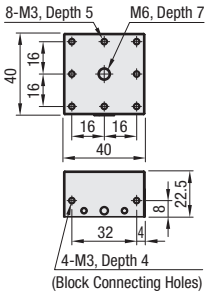
XLARGE

*Adhesive vernier scale label can be placed at desired position in accordance with a required adjustment range.



The drawing is a XLARGE3-B-B-B

Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: Scaled Label (PET Film)
Index Label (PET Film)

Block Type	Direction	Standard Knob (Left)	Standard Knob (Right)	Coarse/Fine Feed Knob (Left)	Coarse/Fine Feed Knob (Right)	Connecting Block
		A	B	C	D	E
Shape	L< >R					

Block Connecting Holes
The Connecting Block (E) includes hooks for connections, so connected blocks can carry larger objects.

Dimension of * marked part will vary ±0.3 mm due to its structure.

(Rail)

Part Number Type	Part Number No.	L	Block 1	Block 2	Block 3	Travel Distance *1 (mm)	Horizontal Load Capacity (N)	f	P	N	Weight *3 (kg)	Accessory TypeM-L	Accessory Quantity
XLARGE	1	100	A B C D E	A B C D E	A B C D E	60	29.4	12.5	75*2	2	0.15	CBM4-8	4
	2	200				160		25.0	150	2	0.29		4
	3	300				260		50.0	100	3	0.43		6
	4	400				360		50.0	100	4	0.57		8

When L (Rail Length) = 100, only one block can be selected.

When L (Rail Length) = 200, two blocks can be selected.

Joint Block has a stopper to prevent falling off.

Travel distance of *1 is the value obtained with one block. Addition of every one block shortens the travel distance by 40 mm.

*2 M4 (backside) is P = 100

*3 Weight of the rail itself. Unit weight should be calculated by adding the weight of the selected number of blocks.

For orders larger than indicated quantity, please request a quotation.

(Block)

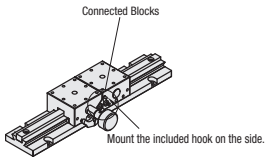
	Block Type	Weight (kg)
A	Standard Knob (Left)	0.12
B	Standard Knob (Right)	0.12
C	Coarse/Fine Feed Knob (Left)	0.17
D	Coarse/Fine Feed Knob (Right)	0.17
E	Connecting Block	0.08

Ordering Example

Part Number	Block 1	Block 2	Block 3
XLARGE2	A	A	—
XLARGE3	A	E	C
XLARGE4	E	B	C

Example

Block Connecting Method



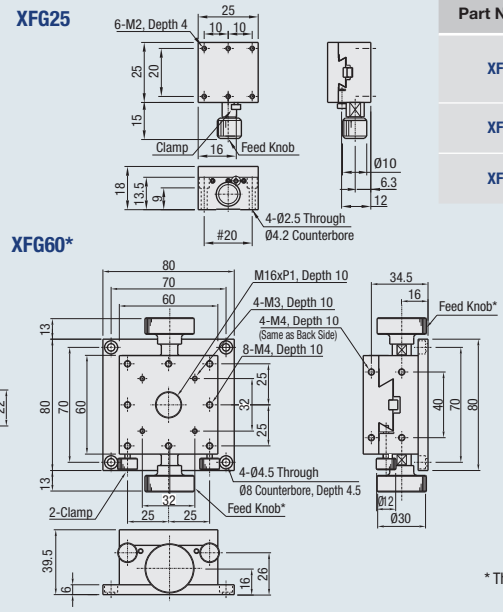
[High Precision] X-Axis Dovetail Slide, Rack and Pinion

Square, Coarse / Fine Feeds

Features: Square form factor Dovetail Slide Rack and Pinion stage. The 40 and 60 sizes can be ordered with the bottom plates removed as alterations.

X-Axis, Square

RoHS



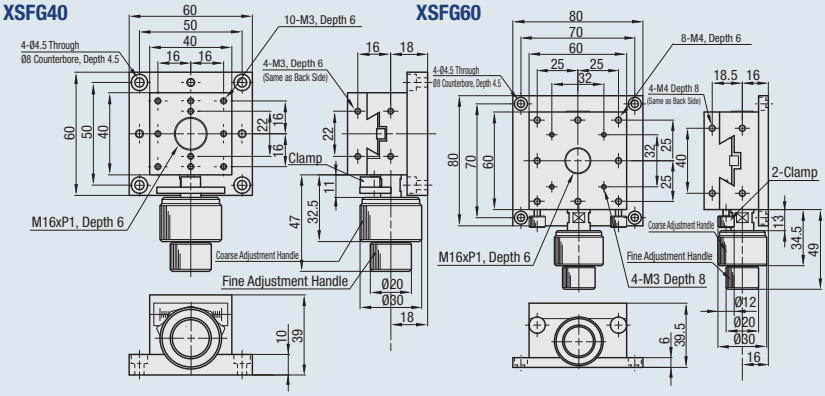
Part Number	Material	Surface Treatment
XFG25	Low Cadmium Brass	Black Fluororesin Treatment
XFG40	Aluminum Alloy	Black Anodize
XFG60		

* The feed knob for XFG60 can be operated from either side.

Features: Square form factor Dovetail Slide Rack and Pinion stage with Coarse/Fine combination feeds.
The coarse feed knob provides approx. 18mm travel, and the fine feed knob provides approx. 2.3 mm travel per one knob rotation.

X-Axis, Coarse / Fine Feeds

RoHS



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)		Load Capacity (N)		Travel Accuracy (μm)		Moment Load Capacity (N • m)			Parallelism (μm)	Weight (kg)	Accessory (4 pcs) Type M-L
Type	No.			Coarse	Fine	Horizontal	Vertical	Straightness	Motion Parallelism	Pitching	Yawing	Rolling			
XFG	25	25 x 25	±5	17	—	29.4	6.9	30	80	0.5	0.5	0.5	50	0.09	SCB2-12
	40	40 x 40	±10	20	—		14.7	20	30	3.0	3.0	2.0	40	0.21	SCB4-6
	60	60 x 60	±20	18	—	39.2	19.6	30	50	7.0	5.0	7.0	60	0.64	SCB4-6
XSFG	40 ★ ✔	40 x 40	±10	20	≈2.6	29.4	14.7	20	30	3.0	3.0	2.0	40	0.30	SCB4-10
	60	60 x 60	±20	18	≈2.3	39.2	19.6	30	50	7.0	5.0	7.0	60	0.51	SCB4-6

Resolution (Vernier Scale Indication): 0.1mm/division
For orders larger than indicated quantity, please check with WOS.
See the CAD data for details.

Ordering Example

Part Number
XFG40
XSFG60

Alterations

Part Number	(M)
XSFG40	M

Alteration	No Bottom Plate
Spec.	XFG40, XSFG40 4-Ø3.5 Through (From Back), Ø6 Counterbore, Depth 10 (M3 Screw Hole) XFG60, XSFG60 2-Ø4.5 Through (From Back), Ø8 Counterbore, Depth 6 (M4 Screw Hole) Not applicable to XFG25. The feed knobs will interfere with the mating bases.
Code	M

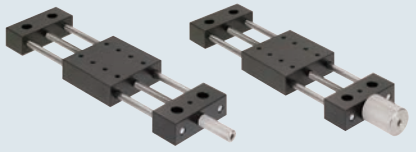
[Simplified Adjustments] X-Axis, Feed Screw, Large Lead (3.0 mm)

Standard / Large Handle, M6 Mounting Holes

Features: A feed screw type simplified adjustment unit with a 3.0mm 3-starts screw. Suitable for rapid feeding such as making quick fixture moves during set-up changes.
Types with M6 mounting holes on the top plate are also available.

X-Axis Large Lead

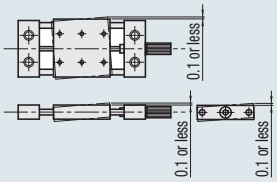
Travel per Rota 3.0mm



RoHS

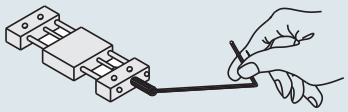
Accuracy Standards

Not recommended for precise positioning due to its clearance shown on the left.



One Point

Long stroke moves can be made easily with use of a ball-point hex wrench.



	Type		Main Body		Shaft	Knob	Feed Screw	Accessory
	Standard Handle	Large Handle	Material	Surface Treatment	Material	Material	Material	
M4 Mounting Hole	XKS	XKSL	Aluminum Alloy	Black Anodize	SUS304	SUS303	SUS304	SCB5-20, 4pcs
M6 Mounting Holes	XKSM	XKSML						

XKS (Standard Handle, M4 Mounting Holes)
XKSM (Standard Handle, M6 Mounting Holes)
XKSL (Large Handle, M4 Mounting Holes)
XKSML (Large Handle, M6 Mounting Holes)

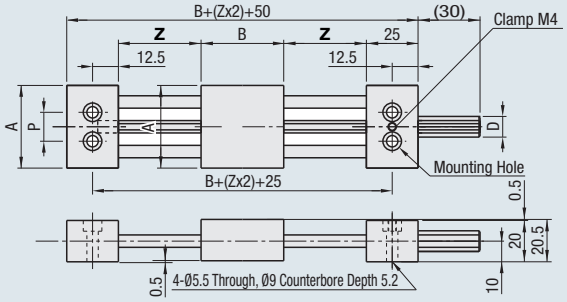
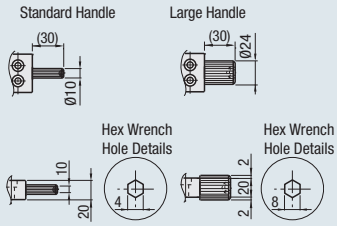


Table surfaces and bottoms are 0.5mm higher than the end mounts.

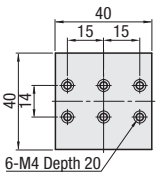
Handle Shape Comparisons



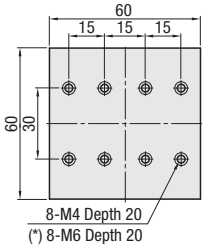
Large handle can cause interference, when used with main body plate due to its large height size.

Stage Top Mounting Hole Dimensions
(* marked only for XKSM and XKSML)

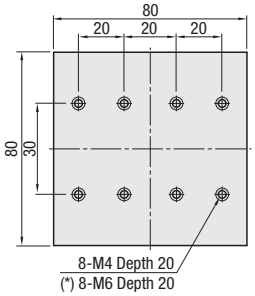
No.40



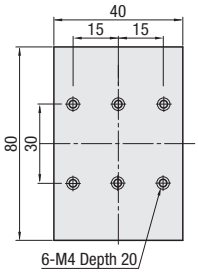
No.60(*)



No.80(*)



No.80A



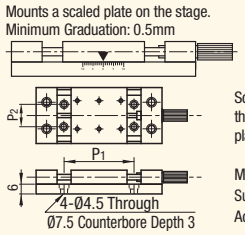
Do not force the handle to turn past the end of the travel limits as it may cause the handle to come loose.

Part Number		Z Selection				Stage A-B (mm)	D	P	Load Capacity (N)
Type	No.	Travel Distance (Z x 2)							
XKS XKSL	40	25	40	50		40 x 40	10 (Standard Handle) 24 (Large Handle)	14	68.6
									58.8
	60	25		50	75	60 x 60		30	68.6
									58.8
	80	25		50	75	80 x 80			63.7
									53.9
	80A	25	40	50		80 x 40			68.6
									58.6
XKSM XKSML	60	25		50	75	60 x 60			68.6
									58.8
	80	25		50	75	80 x 80			49.0

Travel per Rotation: 3.0mm

For orders larger than indicated quantity, please request a quotation.

Alteration	Mounting of a Scaled Plate on the Stage	Change of Clamp (Knurled Knob)
Spec.	Mounts a scaled plate on the stage. Minimum Graduation: 0.5mm	Changes Clamp Screw to Knurled Knob.
Code	MMR	CLC

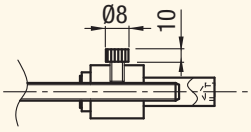


Large Handle

Scaled Plate alteration will change the mounting hole pitch since a plate is attached to the stage.

Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: SCB4-8 x 4 pcs.

A	Z	P_1	P_2
40	25	65	14
	40	95	
	50	115	
60	25	85	30
	50	135	
	75	185	
80	25	105	
	50	155	
	75	205	
80A	25	65	
	40	95	
	50	115	



Ordering Example

Part Number: (Z) Section
XKSL60-Z50

Alterations

Part Number	Z Section	(MMR, CLC)
XKSM80	Z50	MMR

[Simplified Adjustments] X-Axis, Feed Screw, Stroke Selectable

Standard/Large Handle, M6 Mounting Holes

Features: This series features freely selectable long stroke length/table size combinations. Easy-to-use large Handwheel Type in vertical applications and types with M6 mounting holes on the top plate are also available.

RoHS

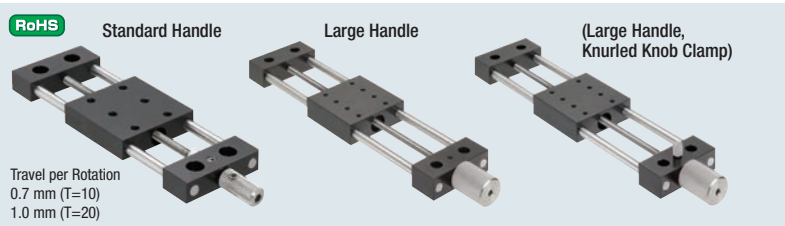


Table surfaces and bottoms are 0.5mm higher than the end mounts.

For accuracy standards, see the next page.

There are two handle sizes available to accommodate the T dimension. For details, see the table on the upper left.

Large handle can cause interference, when used with main body plate due to its large height size.

Large handle can be used in horizontally placed configuration by specifying MMR Alteration.

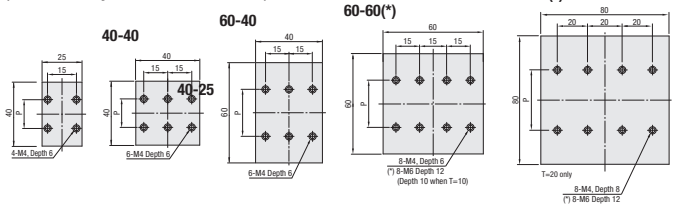
Large Lead Type with 3.0mm travel per Rotation is also available. **(P.288)**

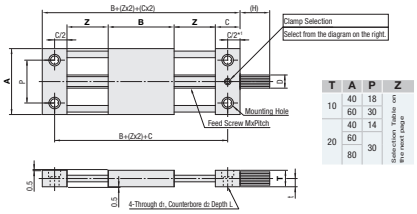
Do not force the handle to turn past the end of the travel limits as it may cause the handle to come loose.

	Type		Main Body		Shaft	Knob	Feed Screw	Accessory
	Standard Handle	Large Handle	Material	Surface Treatment	Material	Material	Material	
M4 Mounting Hole	XKNEF	XKFL	Aluminum Alloy	Black Anodize	SUS304	SUS303	SUS304	T=10 SCB4-10, 4 pcs T=20 SCB5-20, 4 pcs
M6 Mounting Hole	XKFM	XKFML						

xT	T	D	(H)	C	M x Pitch	M_1	d_1	d_2	L	R	g	t
XKNEF XKFM	10	7	16	15	M4 x P0.7	3	4.5	7.5	4.2	2.5	—	5
	20	10	30	25	M6 x P1.0	4	5.5	9	5.2	4	—	10
XKFL XKFML	10	15	16	15	M4 x P0.7	3	4.5	7.5	4.2	5	2.5	5
	20	24	30	25	M6 x P1.0	4	5.5	9	5.2	8	2	10

Stage Top Mounting Hole Dimensions (A-B)
(* marked only for XKFM and XKFML)

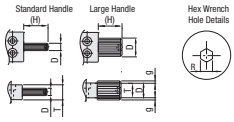




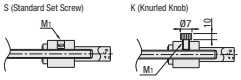
T	A	P	Z
10	40	18	Selection Table on the next page
	60	30	
20	40	14	
	60	30	
	80		

*1 When A=40 and T=20, tapped holes for clamping will be C/2=6mm in order to avoid interferences with the counterbored holes.

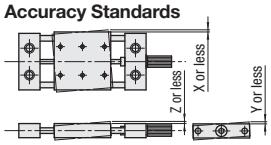
Handle Shape Comparisons



Clamp Selection



Accuracy Standards

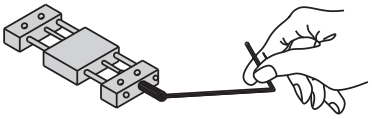


T	X	Y	Z
10	0.1	0.1	0.1
20	0.15	0.15	0.15

There are some mechanical clearances as shown above, and not recommended for positioning applications requiring accuracies.

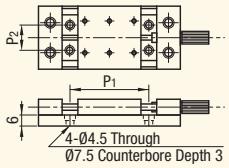
One Point

Long stroke moves can be made easily with use of a ball-point hex wrench.



Part Number			Z Selection								Clamp Selection	Load Capacity (N)			
												T=10		T=20	
Type	T	A-B	Travel Distance (Z x 2)									Z=10~30	Z=40~70	Z=10~30	Z=40~70
XKNEF XKFL	10 20	40-40	(10)		25		40		60		(Standard) S	39.2 (Horizontal) 19.6 (Vertical)	34.3 (Horizontal) 17.2 (Vertical)	78.4 (Horizontal) 39.2 (Vertical)	68.6 (Horizontal) 34.3 (Vertical)
		40-25	10		25		40		60						
		60-60		(15)		30		50		70					
		60-40		15		30		50		70					
		80-80 (T=20 only)		15		30		50		70		—	—		
XKFM XKFML	10 20	60-60		(15)		30		50		70	(Knurled Knob) K	39.2 (Horizontal) 19.6 (Vertical)	34.3 (Horizontal) 17.2 (Vertical)		
		80-80 (T=20 only)		15		30		50		70		—	—		

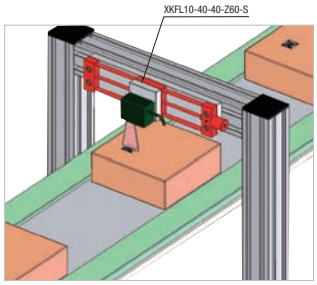
Dimensions in ( ) are not selectable when T=10.
Travel per Rotation: 0.7mm (T=10), 1.0mm (T=20)

Alteration	Mounting of a Scaled Plate on the Stage
Spec.	Mounts a scaled plate on the stage. Minimum Graduation: 0.5mm Scaled Plate alteration will change the mounting hole pitch since a plate is attached to the stage.  Material: Aluminum Alloy Surface Treatment: Black Anodize Accessory: CBSST4-8 x 4 pcs. Large Handle
Code	MMR

T	A	P_2
10	40	18
	60	30
20	40	14
	60	30
	80	

A-B	Z	P_1
40-40	10 25	50
	40 60	110
40-25	10 25	35
	40 60	95
60-60	15 30	75
	50 70	145
60-40	15 30	55
	50 70	125
80-80	15 30	95
	50 70	165

T	A-B
10	40-40
	40-25
	60-60
	60-40
20	40-40
	40-25
	60-60
	60-40
	80-80



Ordering Example

Part Number	Z Section	Clamp Selection
XKNEF10-40-25	Z40	S
XKFM20-60-60	Z50	K

Alterations

Part Number	Z Selection	Clamp Selection	(MMR)
XKNEF10-40-25	Z40	S	MMR

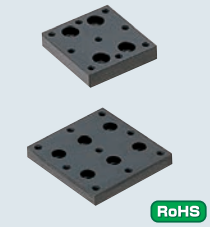
Example

Bar-code Reader
Position Adjustment

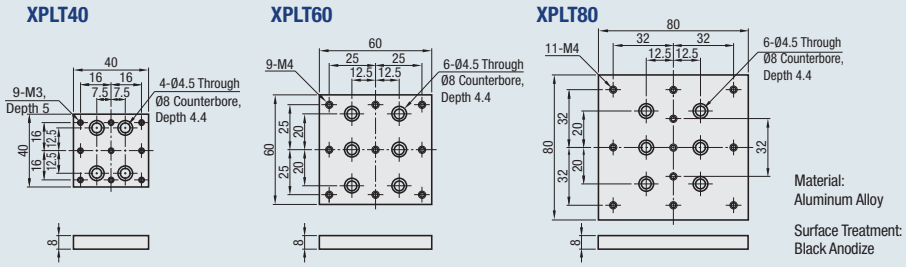
Adjustable Plates for XY-Axis Stages

Features: Offers a square mounting surface by attaching on top of a rectangular stage.

Adjustable Plate



RoHS



Material: Aluminum Alloy

Surface Treatment: Black Anodize

Part Number	
Type	No.
XPLT	40
	60
	80

For orders larger than indicated quantity, please request a quotation.

Ordering Example

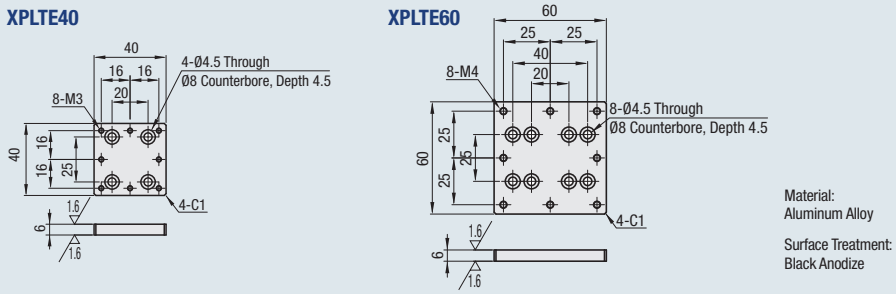
Part Number
XPLT40

Please see Plate/Stage Compatibility Chart on **P.291** for compatible stages.

Features: XY mounting plates that can be used for combinations of rapid feed stage (bottom) and fine feed stage (top). Convenient when feeding the X in rapid, Y in fine modes.

Adjustable Plates for XY-Axis Stages

RoHS



Material: Aluminum Alloy

Surface Treatment: Black Anodize

Part Number	
Type	No.
XPLTE	40
	60

For orders larger than indicated quantity, please request a quotation.

Ordering Example

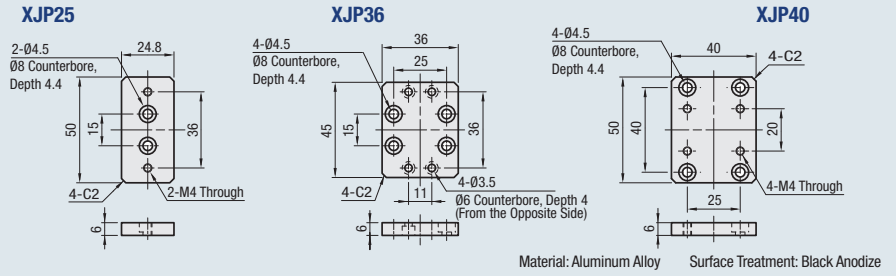
Part Number
XPLTE40

Please see Plate/Stage Compatibility Chart on **P.291** for compatible stages.

Features: Joint plates for combining two stages. Reversed knob types and different feed systems can be combined.

XY-Axis Joint Plates

RoHS



Material: Aluminum Alloy Surface Treatment: Black Anodize

Part Number		Accessory
Type	No.	Type M-L
XJP	25	SCB4-6 (4 pcs)
	36	SCB4-6 (4 pcs) SCB3-6 (4 pcs)
	40	SCB4-6 (8 pcs)

For orders larger than indicated quantity, please request a quotation.

Ordering Example

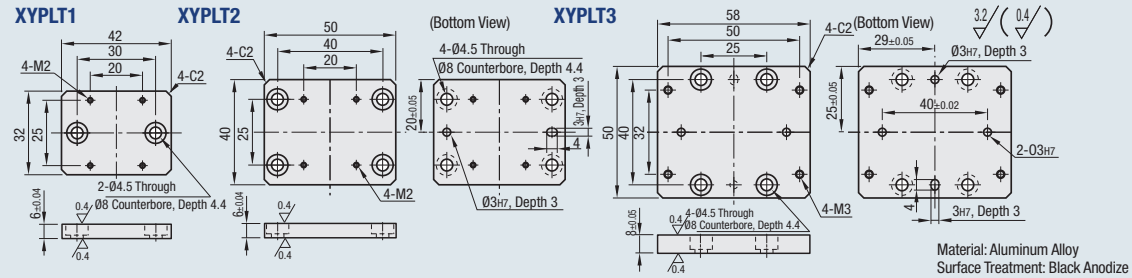
Part Number
XJP25

Please see Plate/Stage Compatibility Chart on **P.291** for compatible stages.

Features: Plates for assembling Long Stroke Stages. Utilize in 2-axis configurations.

Adjustable Plates for XY-Axis Stages

RoHS



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number		Applicable Stage Combination	
Type	No.	Stage (Bottom)	Stage (Top)
XYPLT	1	XLWG, XLSL	XLWG, XLSL
	2	XLONG (P.285)	XLWG, XLSL
	3	XLONG (P.285)	XLONG (P.285)

For orders larger than indicated quantity, please request a quotation.

Ordering Example

Part Number
XYPLT1

TYPICALLY IN STOCK
(SELECT PART NUMBERS)

[High Precision] X-Axis Cross Roller / Linear Guide

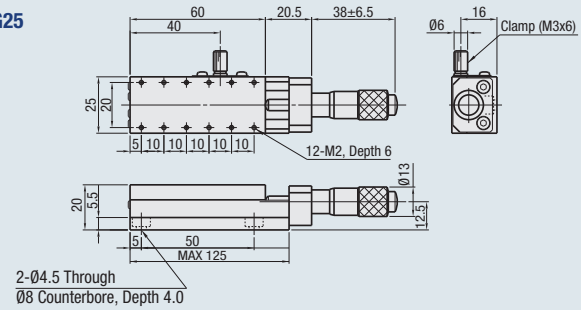
Long Stroke

Features: High precision long stroke stages with Cross Roller Guides.
The XLPG60 has two knobs enabling Coarse Feed (3mm/rev.) and Fine Feed (0.5mm/rev.).

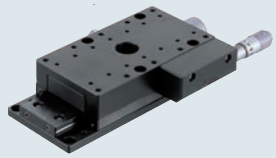
X-Axis, Long Stroke

RoHS

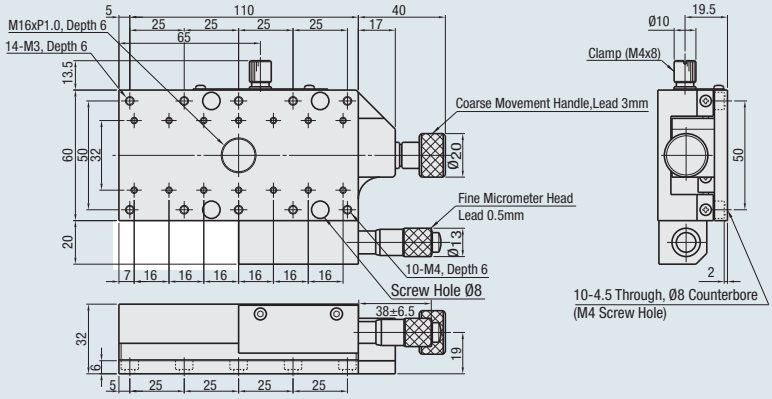
XLPG25



Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: SBCB4-6 XLPG25 (2 pcs) XLPG60 (10 pcs)



XLPG60



Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N• m)			Moment Rigidity (°/N • cm)			Parallelism	Weight (kg)
Type	No.			Horizontal	Straightness	Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XLPG	25	25 x 60	±6.5 mm	19.6	3 µm	10 µm	25"	15"	3.8	3.2	1.5	0.19	0.19	1.38	30 µm	0.1
	60	60 x 110	*Coarse Feed ±20 mm Fine Feed ±6.5 mm	78.4					8.1	7.0	5.3	0.02	0.03	0.07		0.8

Resolution (Micrometer Head): 10µm/division. * XLPG60 max. stroke is 53mm.

For orders larger than indicated quantity, please request a quotation.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**

Plate/Stage Compatibility Chart

Part Number		Top Face Size (mm)	Applicable Stage
Type	No.		
XPLT	40	40 x 40	XWG40 **(P.358)**, XYWG40 **(P.301)**, ZWG40 **(P.313)**, XLWG **(P.284)** ZLWG **(P.301)**, XLSL, ZLSL **(P.324)**, XSSL, XSSLC, XSP, REG40, 60 **(P.328)**
	60	60 x 60	XWG60, 90, 140, XYWG60, 90, 140 **(P.301)** ZWG60, 90, 140 **(P.313)** XSL, XSLC, XSB, REG 60 **(P.328)**
	80	80 x 80	

Applicable Stage Applicable Stage			Applicable Plate
(Compatible) Lower Stage		(Compatible) Upper Stage	
Type	No.	Part Number	Part Number
XWG XLSL XSL*1 XDTS*1 XFHT*1	60 90 140 4060*2 4090*2	XFG40-M **(P.287)**, XPG#40 **(P.292)**	XPLTE40
		XPG#60 **(P.292)**	XPLTE60

No.140 is not available for *1 marked types.
Types with *2 are available for XFHT only.

Compatible Stages

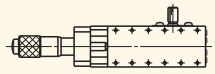
Bottom \ Top	XSSL XSSLC	XSL XSLC XSB	XSP
XSSL, XSSLC	XJP36	—	XJP25
XSL, XSLC, XSB	—	XJP40	—
XSP	XJP36	—	XJP25
XWG40	XJP36	—	XJP25
XWG60, 90	—	XJP40	—

Ordering Example

Part Number
XLPG25

Alterations

Part Number	(R)
XLPG25	R

Alteration	Clamp Position Change (Right/Left Reversed)
Spec.	
Code	R

See the CAD data for details.

[High Precision] X-Axis Cross Roller

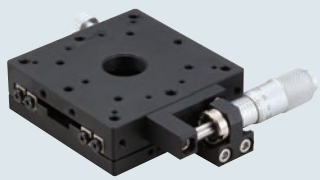
Micrometer Head

Features: High precision lightweight X-Axis Stages with Cross Roller slides.

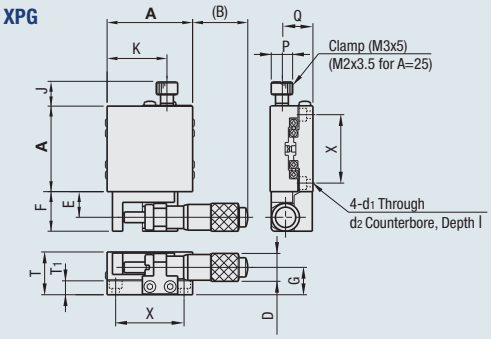
For standard precision X-Axis cross roller, search XCRS on our website

X-Axis

RoHS



XPG

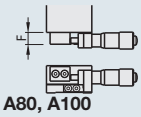


Material: Aluminum Alloy
Surface Treatment: Black Anodize

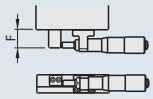
Mounting Hole Dimensions of the Top Table

A25, 80, and 100 have different feed bracket configuration.

A25

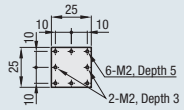


A80, A100

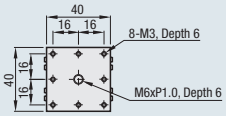


See the CAD data for details.

A25



A40



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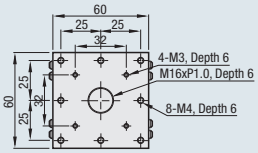

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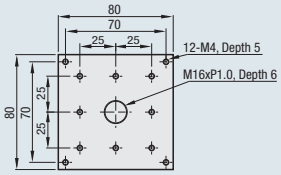

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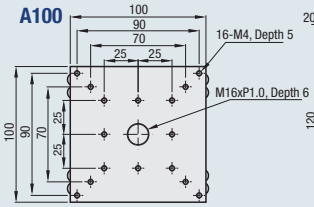

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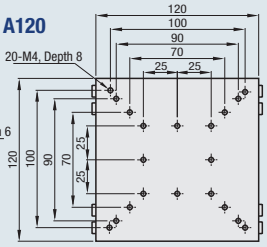
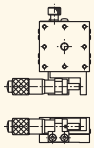
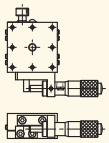
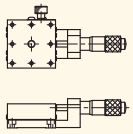


Part Number		Top View						Front View				Side View					
Type	A	(B)	Travel Distance (mm)	E	F	J	K	D	G	T	T_1	P	Q	X	d_1	d_2	l
XPG	25	25.0	±3.2	4.5	6.5	6.8	15.0	9.3	8.5	15	4.5	6	10.5	20	2.5	4.2	2.0
	40 ✓	26.0	±6.5	12.0	18.5	11.3	28.0	13.0	12.8	20	6.5	10	14.5	32	3.5	6.0	3.5
	60 ★ ✓	19.8		12.0	18.5	11.3	42.5	13.0	12.8	20	6.5	10	14.5	50	4.5	8.0	4.0
	80 ✓	43.5	±12.5	17.0	22.0	11.3	55.0	18.0	11.0	20	5.7	10	14.5	70	4.5	8.0	4.5
	100	28.5		17.0	22.0	11.3	67.5	18.0	11.0	20	5.7	10	14.5	90	4.5	8.0	4.5
	120	67.5	±25.0	13.0	20.0	11.5	67.5	21.0	18.0	30	9.5	10	18.0	100	4.5	8.0	4.5

Performance

A	Stage Surface (mm)	Load Capacity (N)		Travel Accuracy				Moment Load Capacity (N•m)			Moment Rigidity (″/N•cm)			Parallelism	Weight (kg)	Accessory (4 pcs)
		Horizontal	Vertical	Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling			TypeM-L
25	25 x 25	9.8	4.9	3 μm	10 μm	30″	30″	1.1	0.8	0.4	3.03	2.85	1.80	30 μm	0.04	SCB2-6
40	40 x 40	19.6	9.8			25″	15″	2.7	2.2	2.0	0.38	0.42	0.28		0.14	SCB3-6
60	60 x 60	49.0	19.6					5.2	4.3	5.5	0.12	0.11	0.07		0.25	SCB4-6
80	80 x 80	98.0	49.0					19.2	15.1	17.3	0.05	0.05	0.04		0.50	SCB4-6
100	100 x 100	147.0						36.0	30.0	33.0	0.06	0.07	0.05		0.70	SCB4-6
120	120 x 120	196.0				50″	30″	57.2	44.7	66.7	0.03	0.02	0.01		1.60	SCB4-10

Micrometer Head Resolution: 10μm/division, Travel per Rotation: 0.5mm

Alterations	Micrometer Head Position			No Micrometer Head
Spec.	Side Mount - Right/Left Reversed 	Side Mount - Top/Bottom Reversed*  Not applicable to XPG100 and 120.	Center 	No Micrometer Head Micrometer head and bracket will be removed before shipment. Since there is an internal spring, the carriage will not be stationary unless the clamp is tightened. Combination with alteration H is not available.
Code	CR	CZ	A	MN

*CZ: Attach Micrometer on the upper table (Standard Type has them attached to the bottom plate).

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

When other micrometer head mounting positions are desired, select from the "Specification Selectable Type" on **P.335**.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Ordering Example

Part Number
XPG60

Alterations

Part Number	(CR, CZ, A,...etc.)
XPG40	CZ

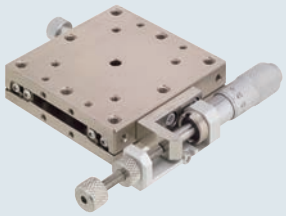
For Standard Precision X-Axis Cross Roller, search **XCRS** on our website.

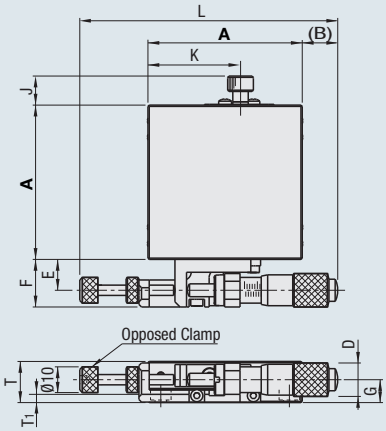
NEW [High Precision] X-Axis, Linear Ball Slide / Knob Covers

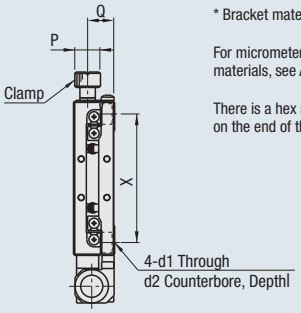
Opposed Clamp with Knob

Features: Side mounted micrometer shaft is opposed by a knobbed screw to improve vibration resistance and secures greater locking power.

X-Axis,
Opposed Clamp with Knob





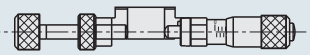


* Bracket material will be different when A=25.

For micrometer head and opposed clamp materials, see Adjust Screws ANKSS.

There is a hex socket (2.5mm hex, depth 2.5) on the end of the Opposed Clamp screw.

XSGNT25



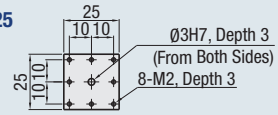
Has different feed bracket configuration.

RoHS

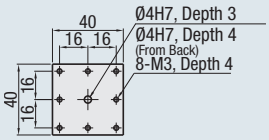
Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material
XSGNT	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303
						SUS303*	—	

Mounting Hole Dimensions of the Top Table

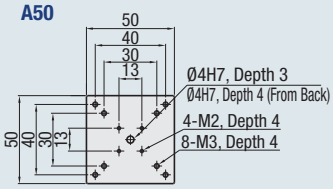
A25



A40



A50



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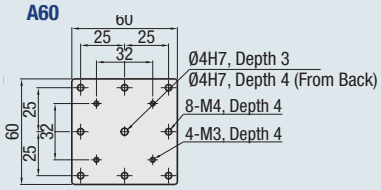
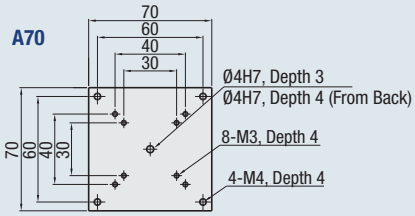


A70



Part Number		Top View						Front View				Side View						Accessory (4 pcs)
Type	A	(B)	E	F	J	K	L	D	G	T	T_1	P	Q	X	d_1	d_2	L	Type M-L
XSGNT	25	30	7	12	6.8	15	84.5	9.3	6.7	12	3.7	6	8.5	20	2.5	4.2	2.5	SCB2-4
	40	23.8	12	18.5	11.3	26	100.3	13	8.9	16	4.5	10	10.5	32	3.5	6	3.5	SCB3-6
	50	18.8				31								40				
	60	13.8				36					5			50	4.5	8	4	SCB4-6
	70	14.3				46.5			10	18	6		11.5	60			4.5	

• Performance

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)		Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism	Weight (kg)
Type	A			Horizontal	Vertical	Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XSGNT	25	25 x 25	±3.2	39.2	9.8	3 µm	10 µm	30"	25"	2.0	2.0	3.5	1.9	1.1	1.1	30 µm	0.07
	40	40 x 40	±6.5	98	49	1 µm	7 µm	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	15 µm	0.23
	50	50 x 50		147						6.8	6.8	6.0	0.15	0.14	0.09		0.28
	60	60 x 60		196						10.0	10.0	9.0	0.08	0.08	0.05		0.40
	70	70 x 70		225.4						13.8	13.8	12.9	0.06	0.05	0.03		0.58

Micrometer Head Resolution: 10µm/division

For orders larger than indicated quantity, please request a quotatib Cover HDCVR13 (Sold Separately): Ø13 micrometer head or feed screw knob can be increased in diameter to Ø30 by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Ordering Example

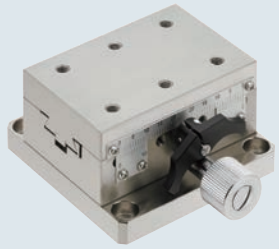
Part Number
XSGNT60

NEW [High Precision] X-Axis Dovetail Slide, Rack & Pinion

Rectangular, Steel, High Load Capacity

Features: XWGSR stages are made of steel with higher horizontal load capacities and impact resistance compared to the XWG Series

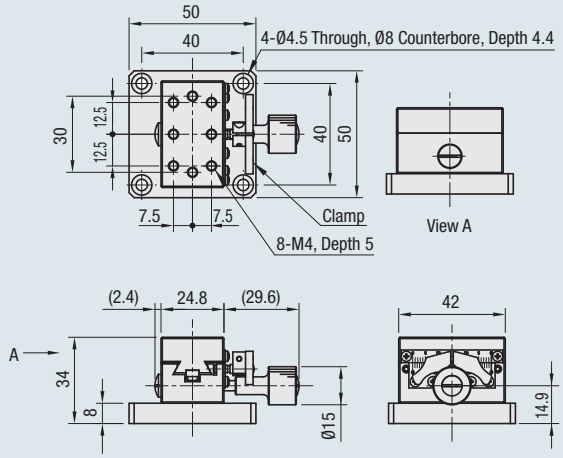
X-Axis, High Load Capacity

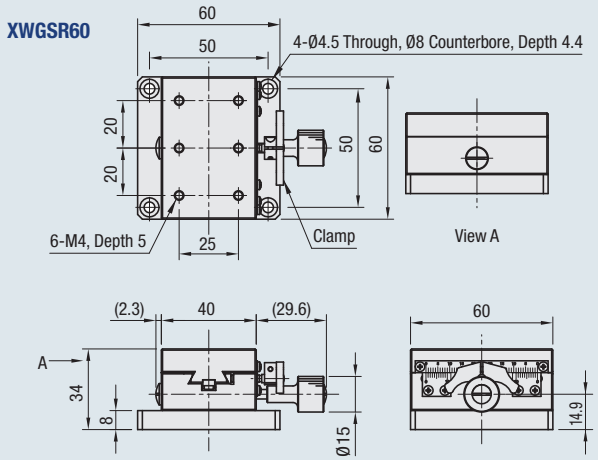


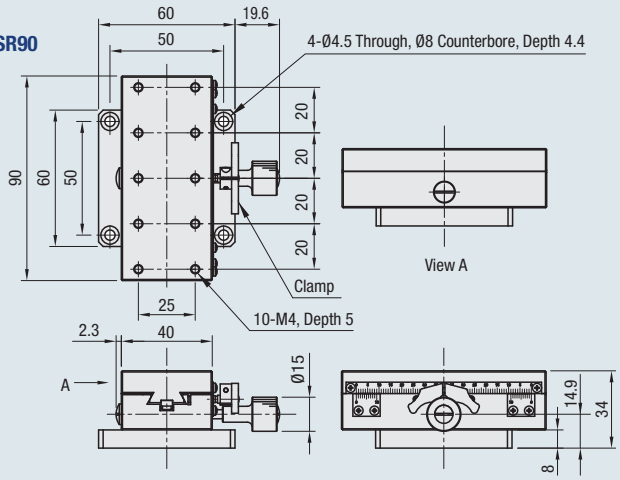
RoHS

Material: S45C

Surface Treatment:
Electroless Nickel Plating







Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Horizontal Load Capacity (N)	Moment Load Capacity (N • m)			Travel Accuracy (µm)		Parallelism	Weight (kg)	Accessory (4 pcs)
Type	No.					Pitching	Yawing	Rolling	Straightness	Motion Parallelism			Type M-L
XWGSR	40	24.8 x 40	±12	18	98	5.0	3.3	2.6	30	40	50 µm	0.36	SCB4-10
	60	40 x 60	±21		196	15.0	7.8	10.4				0.70	
	90	40 x 90	±35		294	27.5	16.5	28.6				0.94	

Resolution (Vernier Scale Indication): 0.1mm/division

Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. **P.350**

Ordering Example

Part Number
XWGSR40

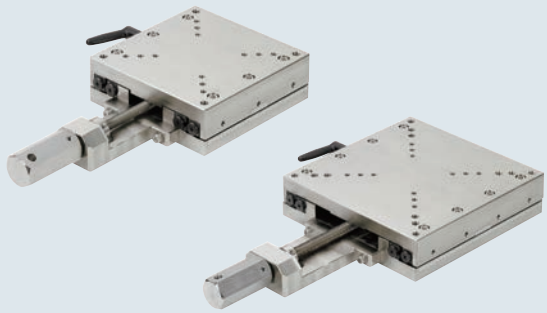
NEW [High Precision] X-Axis Cross Roller

Steel, High Load Capacity

Features: The stage can position 40 ~ 120kgf loads accurately.

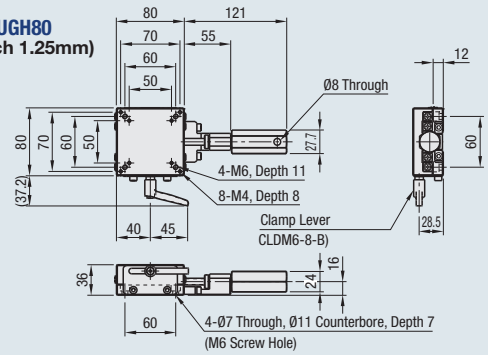
X-Axis, High Load Capacity

Material: (Main Body) S50C (Feed Screw) SUS304 Surface Treatment: Electroless Nickel Plating

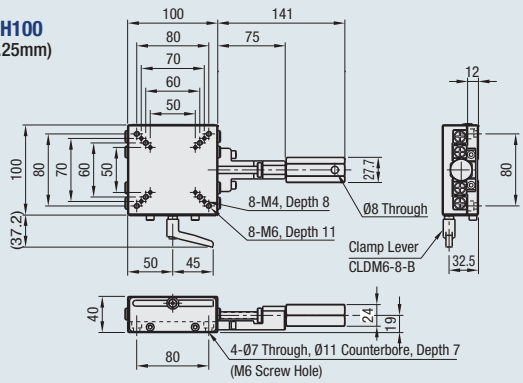


RoHS

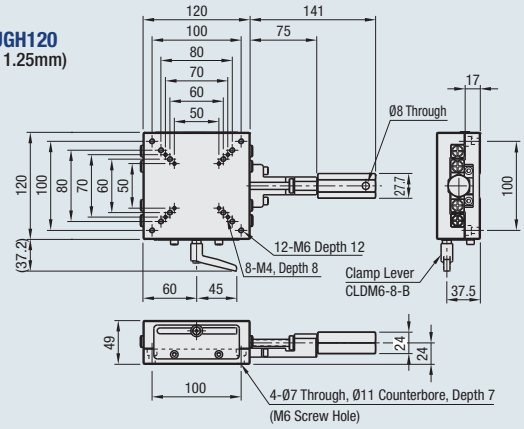
XTOUGH80
(Pitch 1.25mm)



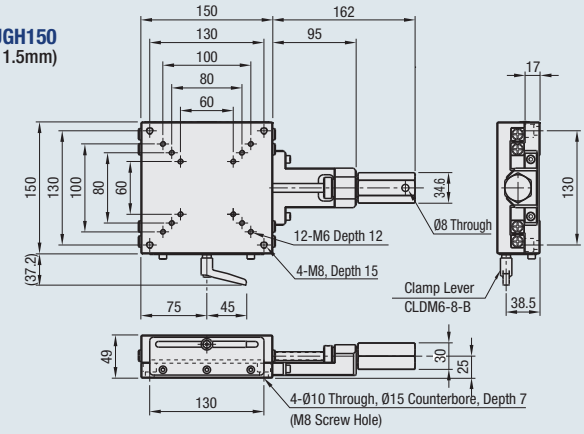
XTOUGH100
(Pitch 1.25mm)



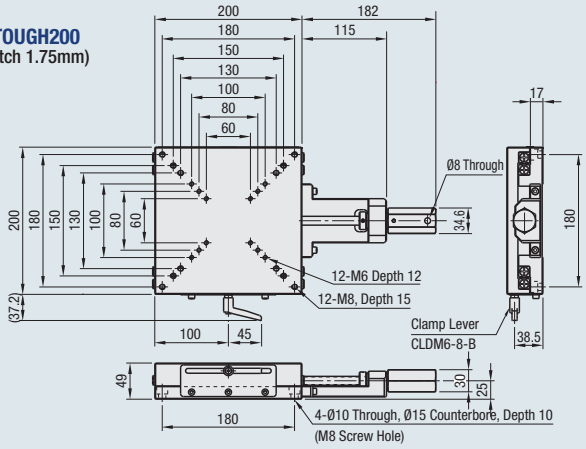
XTOUGH120
(Pitch 1.25mm)



XTOUGH150
(Pitch 1.5mm)



XTOUGH200
(Pitch 1.75mm)



On the opposite side of the clamp lever, Vernier Scale is provided. Resolution (Vernier Scale Indication): 0.1mm/division
The clamp lever cannot be mounted on the opposite side.

Ordering Example

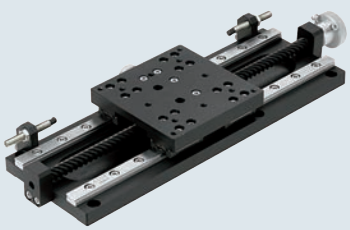
Part Number
XTOUGH150

Part Number		Stage Surface	Travel Distance	Travel per Rotation (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism	Weight	Accessory (4 pcs)
Type	No.	(mm)	(mm)			Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		(kg)	TypeM-L
XTOUGH	80	80 x 80	±20	1.25	392	6 µm	15 µm	50"	30"	30.1	25.1	23.0	0.228	0.139	0.059	50 µm	1.78	SCB6-16
	100	100 x 100	±25		588					70.3	58.6	56.0	0.033	0.015	0.021		2.98	
	120	120 x 120	±30		784					142.9	119.1	120.0	0.024	0.014	0.015		5.18	SCB6-20
	150	150 x 150	±40	1.5	980	10 µm	20 µm	80"	50"	252.9	210.7	219.9	0.009	0.008	0.003		8.48	SCB8-25
	200	200 x 200	±50	1.75	1176					527.9	439.9	479.8	0.004	0.002	0.003		13.82	

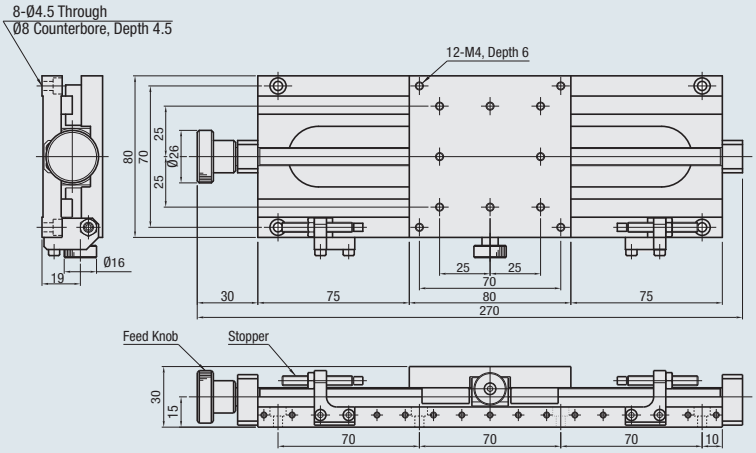
[High Precision] Linear Guide / [Simplified Adjustments] X-Axis, Heavy Load Adjustment Unit

Features: 128mm stroke stages. Well suited for positioning and set-up changes of large and heavy objects.

X-Axis, Linear Guide



XLSG80



Material:
Aluminum Alloy

Surface Treatment:
Black Anodize

Accessory:
SCB4-10 (8pcs)

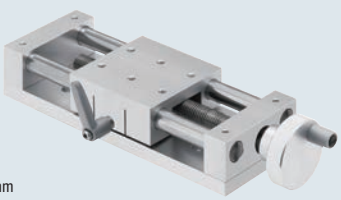
RoHS

Part Number		Stage Surface (mm)	Travel Distance per Rotation (mm)	Travel Distance (mm)	Load Capacity (N)	Motion Parallelism	Moment Load Capacity (N • m)			Parallelism	Weight (kg)
Type	No.				Horizontal		Pitching	Yawing	Rolling		
XLSG	80	80 x 80	24	128 mm	147	25 µm	10.6	7.5	11.5	50 µm	0.9

Travel Distance per Rotation: 24mm
Scale is not provided.

Features: The shaft is directly clamped with slit providing larger holding force than pushing by the feed screw.

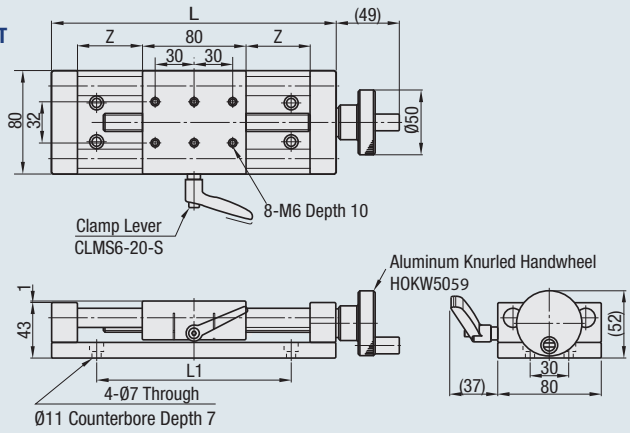
Standard



RoHS

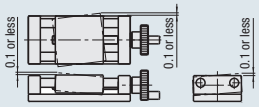
Travel per Rotation: 2.0mm

XKST



Accuracy Standards

Not recommended for precise positioning due to its clearance shown on the left.



Type	Main Body		Shaft (Ø15)		Feed Screw (M14)	Accessory
	Material	Surface Treatment	Material	Hardness	Material	
XKST	Aluminum Alloy	Clear Anodize	SUS440C Equivalent	56HRC~	SUS303	Mounting Screw (SCB6-15 x 4pcs) Scale Label

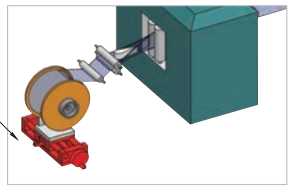
Part Number		Stage Surface (mm)	Travel Distance (mm) (Zx2)	L	L_1	Load Capacity (N)	Weight (kg)
Type	No.						
XKST	50	80 x 80	50	170	100	196	1.72
	100		100	220	150		2.00
	150		150	270	200		2.32

For orders larger than indicated quantity, please request a quotation.

Ordering Example

Part Number
XKST50

Example Sheet Position Adjustment

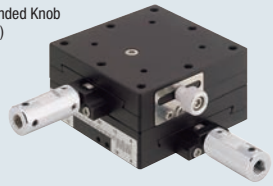


[High Precision] XY-Axis Dovetail Slide, Feed Screw

Extended Knob / Reinforced Clamp

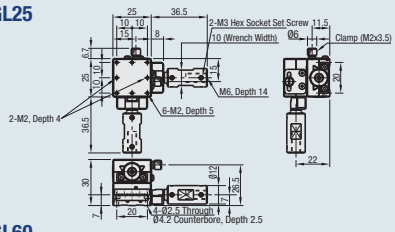
Features: Effective when feed knobs are difficult to turn due to the carriage mounted objects interfere, or when the knobs are hard to reach since the stage is deeply embedded inside a machine. Use adhesive to prevent the knob extension from pulling off.

XY-Axis, Extended Knob
(Lead 0.5mm)

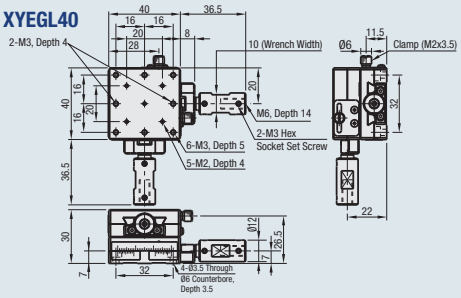


RoHS

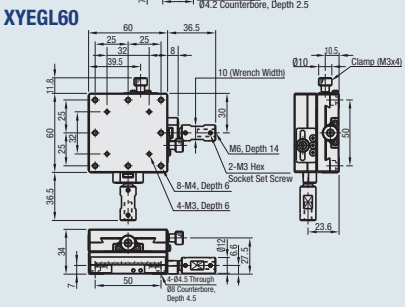
XYEGL25



XYEGL40



XYEGL60



Order Example

Part Number
XYEGL60

Alterations

Part Number	(R)
XYEGL60	R

Alteration	Clamp Position (Left/Right Reversed)
Spec.	
Code	R

See the CAD data for details.

Material: (Main Body) Low Cadmium Brass
(Feed Knob) Aluminum

Surface Treatment: Black Fluororesin Treatment

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Moment Load Capacity (N • m)			XY Orthogonality	Weight (kg)
Type	No.					Straightness (µm)	Pitching	Yawing	Rolling		
XYEGL	25	25 x 25	±5	0.5	28.4	30 µm	1.3	1.5	1.3	70 µm	0.20
	40	40 x 40	±7		27.4		3.0	3.0	3.0		0.40
	60	60 x 60	±9		33.3		4.0	4.0	4.0		1.01

Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**

Travel accuracy values shown are for single axis configuration.

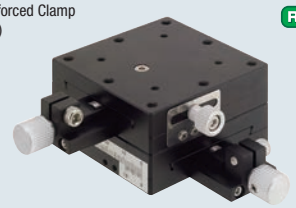
Tips: Knob Extension Method

Use the M6-Depth 14 tapped hole on the knob. Knob length and diameter can be increased for large objects and plates placed on the carriage.

(Ex.1) Seven Lobed knob. NKSM6-30 can be mounted to further lengthen the knob by 36mm.

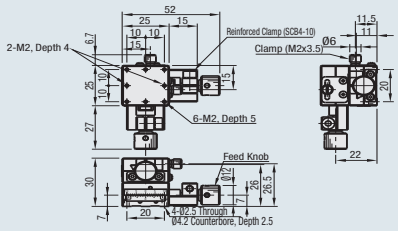
Features: The feed knob shaft is clamped directly for improved position holding performance of the XY Dovetail Slide Stage.

XY-Axis, Reinforced Clamp
(Lead 0.5mm)

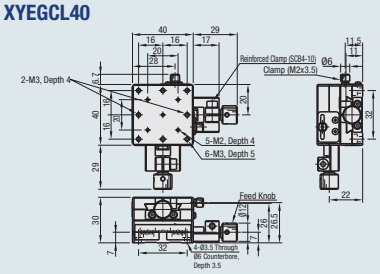


RoHS

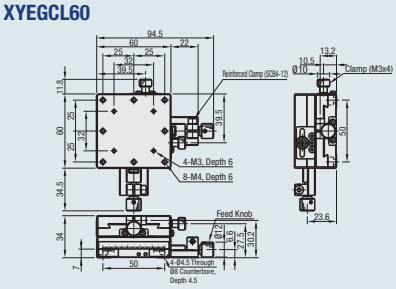
XYEGCL25



XYEGCL40



XYEGCL60

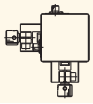


Order Example

Part Number
XYEGCL60

Alterations

Part Number	(R)
XYEGCL60	R

Alteration	Clamp Position (Left/Right Reversed)
Spec.	
Code	R

See the CAD data for details.

Material: (Main Body) Low Cadmium Brass
(Feed Knob) Aluminum

Surface Treatment: Black Fluororesin Treatment

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Moment Load Capacity (N • m)			XY Orthogonality	Weight (kg)
Type	No.					Straightness (µm)	Pitching	Yawing	Rolling		
XYEGCL	25	25 x 25	±5	0.5	28.4	30 µm	1.3	1.5	1.3	70 µm	0.20
	40	40 x 40	±7		27.4		3.0	3.0	3.0		0.40
	60	60 x 60	±9		33.3		4.0	4.0	4.0		1.01

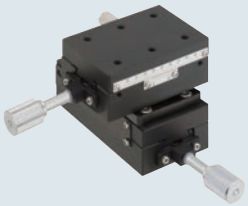
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Travel accuracy values shown are for single axis configuration.

[High Precision] XY-Axis Dovetail Slide, Feed Screw

Rectangular / Reinforced Clamp / Low Profile (Lead 4.2 mm)

Features: Smooth feeding 4.2mm lead Dovetail Slide Feed Screw Stages.

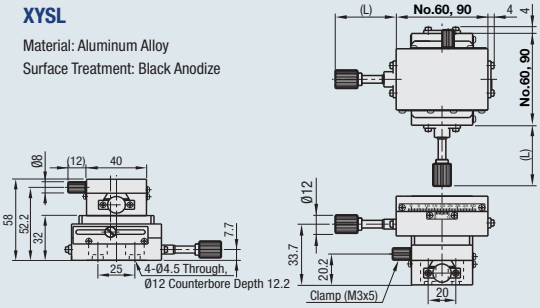
XY-Axis, Rectangular
(Lead 4.2mm)



RoHS

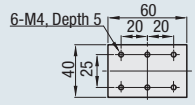
XYSL

Material: Aluminum Alloy
Surface Treatment: Black Anodize

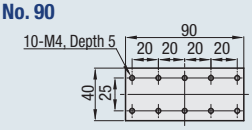


Stage Top Mounting Hole Dimensions

No. 60



No. 90

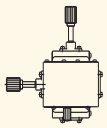


Order Example

Part Number
XYSL90

Alterations

Part Number	(R)
XYSL90	R

Alteration	Knob Position Change (Left/Right Reversed)
Spec.	
Code	R

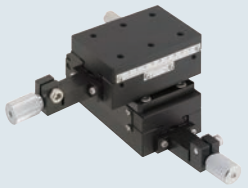
See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	(L)	E	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)	Accessory (4 pcs) Type M-L
XYSL	60	40 x 60	±21	40	34	4.2	34.3	30 µm	30 µm	0.45	SCB4-8
	90	40 x 90	±35	60	49					0.63	

Resolution (Vernier Scale Indication): 0.1mm/division Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Travel accuracy values shown are for single axis configuration.

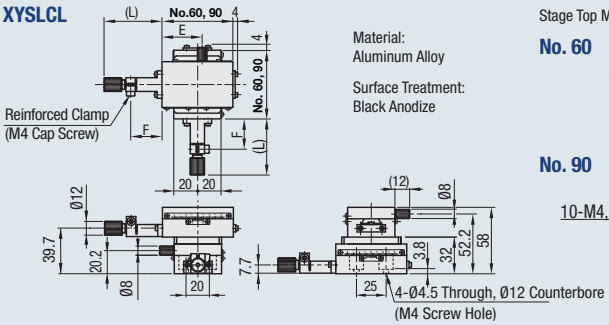
Features: The feed knob is directly retained with a split clamp, resulting in less position drift.

XY-Axis, Reinforced Clamp
(Lead 4.2mm)



RoHS

XYSLCL

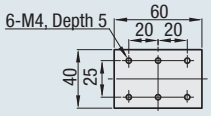


Material:
Aluminum Alloy

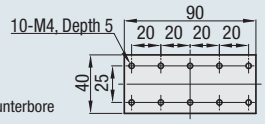
Surface Treatment:
Black Anodize

Stage Top Mounting Hole Dimensions

No. 60



No. 90

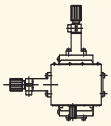


Order Example

Part Number
XYSLCL90

Alterations

Part Number	(R)
XYSLCL90	R

Alteration	Knob Position Change (Left/Right Reversed)
Spec.	 The reinforced clamp and the clamp screw are tightened in the same direction.
Code	R

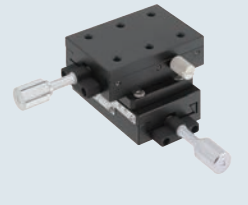
See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	(L)	E	F	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)	Accessory (4 pcs) Type M-L
XYSLCL	60	40 x 60	±21	49	34	26	4.2	37.4	30 µm	30 µm	0.37	SCB4-8
	90	40 x 90	±35	63	49	40.5		36.7			0.53	

Resolution (Vernier Scale Indication): 0.1mm/division Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Travel accuracy values shown are for single axis configuration.

Features: Travel distance per knob rotation is approx. 1/4 of the Rack and Pinion Type. Suitable for fine pitch positioning over a long stroke.

XY-Axis, Low Profile
(Lead 4.2mm)

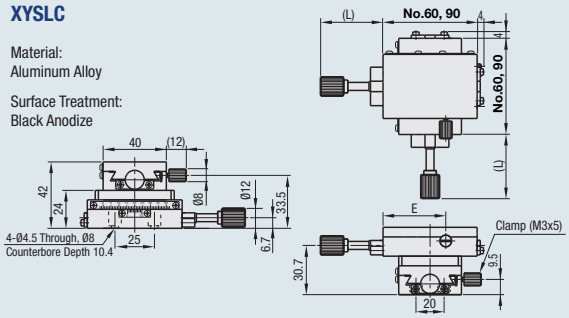


RoHS

XYSLC

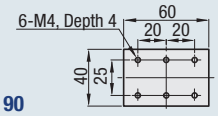
Material:
Aluminum Aluminum Alloy

Surface Treatment:
Black Anodize

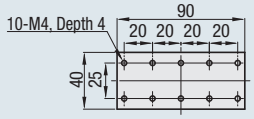


Stage Top Mounting Hole Dimensions

No. 60



No. 90

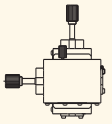


Order Example

Part Number
XYSLC60

Alterations

Part Number	(R)
XYSLC60	R

Alteration	Knob Position Change (Left/Right Reversed)
Spec.	 The reinforced clamp and the clamp screw are tightened in the same direction.
Code	R

See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	(L)	E	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)	Accessory (4 pcs) Type M-L
XYSLC	60	40 x 60	±21	40	40	4.2	24.5	30 µm	30 µm	0.33	SCB4-5
	90	40 x 90	±35	60	55					0.43	

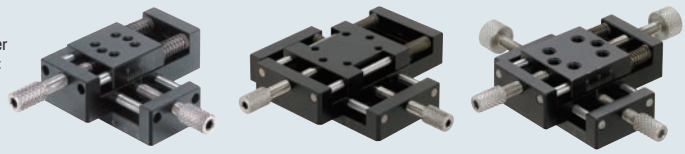
Resolution (Vernier Scale Indication): 0.1mm/division Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Travel accuracy values shown are for single axis configuration.

[Simplified Adjustments] XY-Axis, Push Screw

Features: Economical unit suitable for applications not requiring high accuracies. The springs used keep backlash low.

XY-Axis

Travel per Rotation: 0.5mm



CL Alteration

RoHS

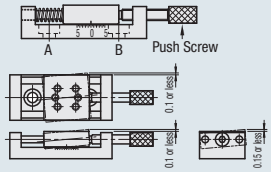
How to Mount

1Remove the Push Screw.
2Screw down the A side.
3Move the table manually to the A side.

Accuracy Standards

Not recommended for precise positioning due to its clearance shown on the right. Values are for single-axis configuration.

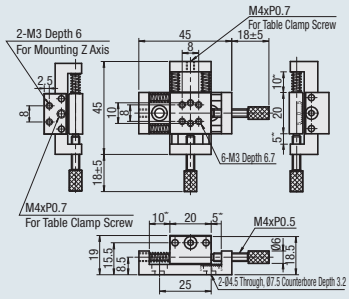
4Screw down the B side.
5Re-install the Push Screw.



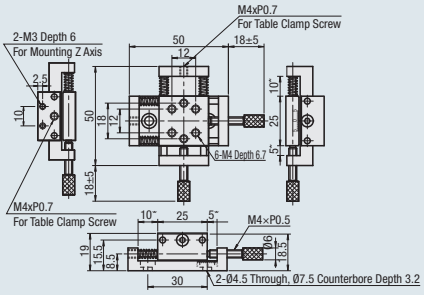
Type	Main Body		Shaft	Spring	Push Screw		Accessory
	Material	Surface Treatment	Material	Material	Material	Surface Treatment	
XYKNG	Aluminum Alloy	Black Anodize	SUS303	SUS304	S45C	Electroless Nickel Plating	No. 20, 25: CBS4-6, 2 pcs No. 40, 60: CBSS5-8, 4 pcs

* Dimensions are for "Scale aligned at 0 mark"

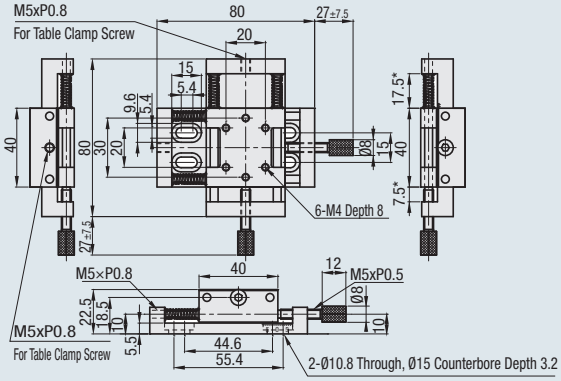
XYKNG20



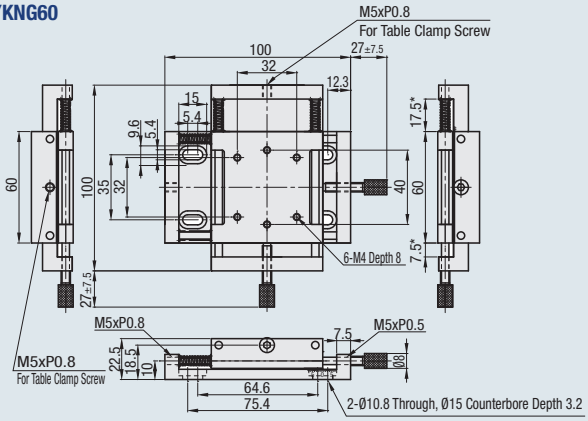
XYKNG25



XYKNG40



XYKNG60



Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)
Type	No.				
XYKNG	20	20 x 20	±5	9.8	0.04
	25	25 x 25			0.06
	40	40 x 40	±7.5	14.7	0.20
	60	60 x 60			0.36

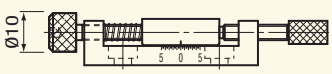
Travel per Rotation: 0.5mm
Minimum Graduation: 0.5mm

Order Example

Part Number
XYKNG20

Alterations

Part Number	(CL)
XYKNG20	CL

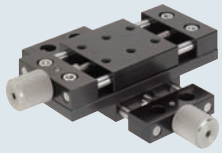
Alteration	Opposite Clamp Bolt
Spec.	Opposing clamp screws for table immobilizing (No. 20, 25: M4, Pitch 0.7, L=30mm; No. 40, 60: M5, Pitch 0.8, L=44mm) are included. Mounted as shown in the photo. 
Code	CL

[Simplified Adjustments] XY-Axis, Feed Screw

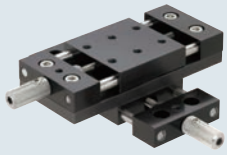
Standard / Large Handles

Features: Feed screw units are combined into XY arrangements. Operability improving large handles are available.

XY-Axis

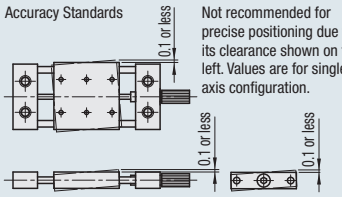


Travel per Rotation 0.7mm



RoHS

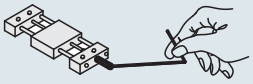
Accuracy Standards



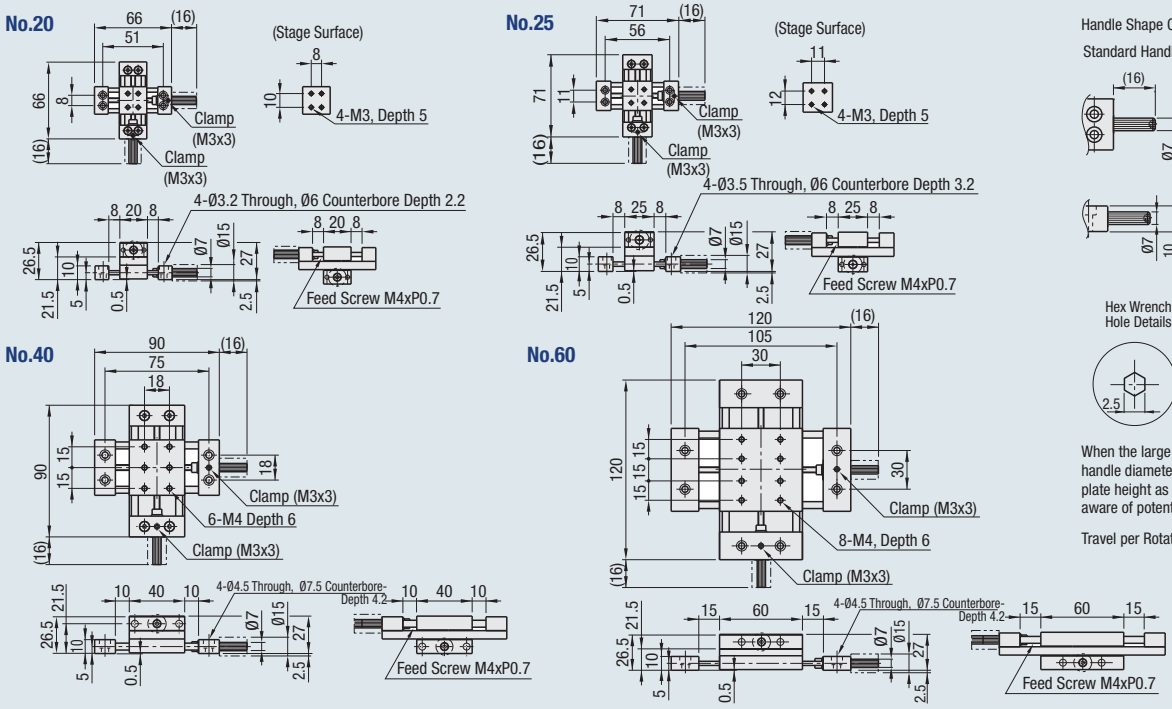
Not recommended for precise positioning due to its clearance shown on the left. Values are for single-axis configuration.

One Point

Long stroke moves can be made easily with use of a ball-point hex wrench.



Type		Main Body		Shaft	Knob	Feed Screw	Accessory
Standard Handle	Large Handle	Material	Surface Treatment	Material	Material	Material	
XYKNEJ	XYKJL	Aluminum Alloy	Black Anodize	SUS304	SUS303	SUS304	No. 20: CBSST3-12, 4 pcs No. 25: SCB3-10, 4 pcs No. 40, 60: SCB4-10, 4 pcs



When the large handle is selected, the handle diameter will exceed the end plate height as shown above. Please be aware of potential interferences.

Travel per Rotation: 0.7 mm

Do not force the handle to turn past the end of the travel limits as it may cause the handle to come loose.

Part Number			Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)
Type	No.	Large Handle				
(Standard Handle) XYKNEJ (Large Handle Selection) XYKJL	20	(Large Handle Top & Bottom) L (Large Handle Top only) A (Large Handle Bottom only) B	20 x 20	±7	18.6	0.10
	25		25 x 25			0.13
	40		40 x 40	±9	36.2	0.27
	60		60 x 60	±13	36.2	0.48

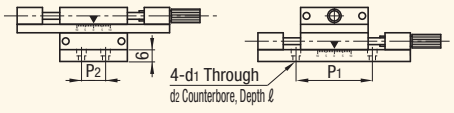
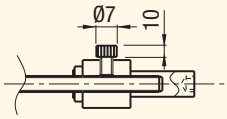
Order Example

Part Number
XYKNEJ40
XYKJL60L

Alterations

Part Number	(MMR)	(CLC)
XYKNEJ20	MMR	
XYKJL40A		CLC
XYKNEJ60	MMR	CLC

Travel per Rotation: 0.7mm

Alteration	Mounting of a Scaled Plate on the Stage	Change of Clamp (Knurled Knob)
Spec.	Mounts a scaled plate on the stage. Minimum Graduation: 0.5mm Included screws are changed as shown on the below right.  MMR alteration will change the mounting hole pitch since a plate is attached to the stage. AAccessory (4 pcs) No.20:SCB2-5 No.25:SCB3-6 No.40:CBSST4-8 No.60:CBSST4-8 	Changes Clamp Screw to Knurled Knob. Changes are for both X and Y axes. 
Code	MMR	CLC

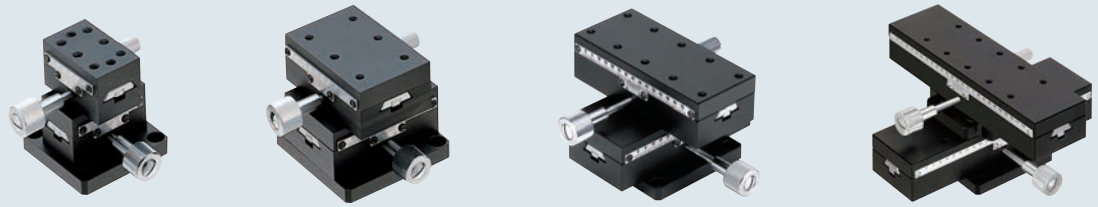
No.	P_1	P_2	d_1	d_2	L
20	26	8	2.5	4.3	4
25	31	11	3.5	6.0	3.5
40	50	18	4.5	7.5	3
60	75	30	4.5	7.5	3

[High Precision] XY-Axis Dovetail Slide, Rack & Pinion

Rectangular

Features: Square Dovetail Slide XY-Axis Stages with 18mm travel per knob rotation. Can be utilized for smooth long distance moves.

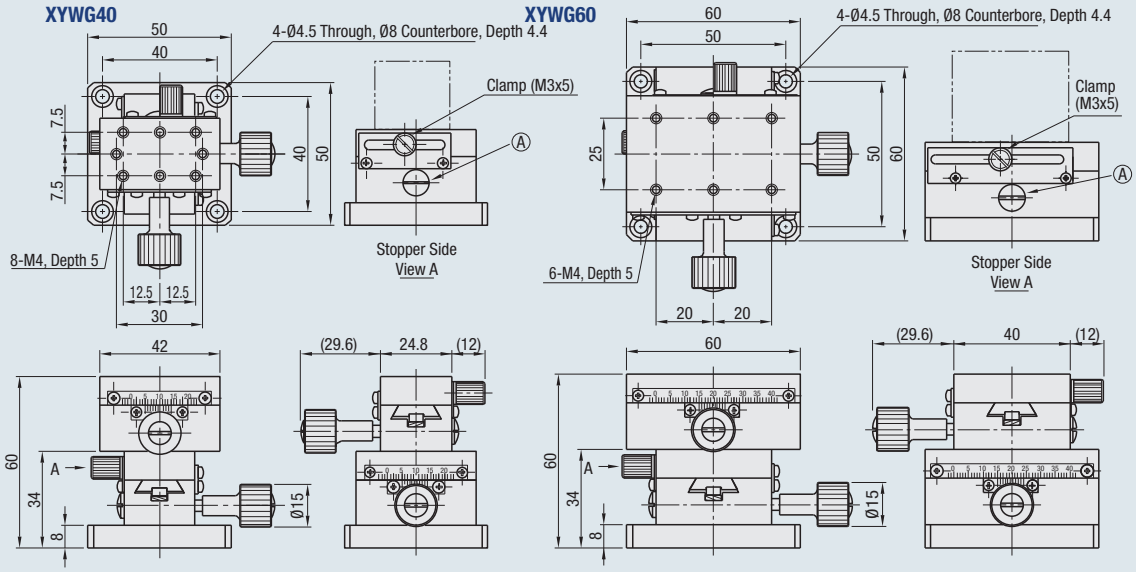
XY-Axis, Rectangular

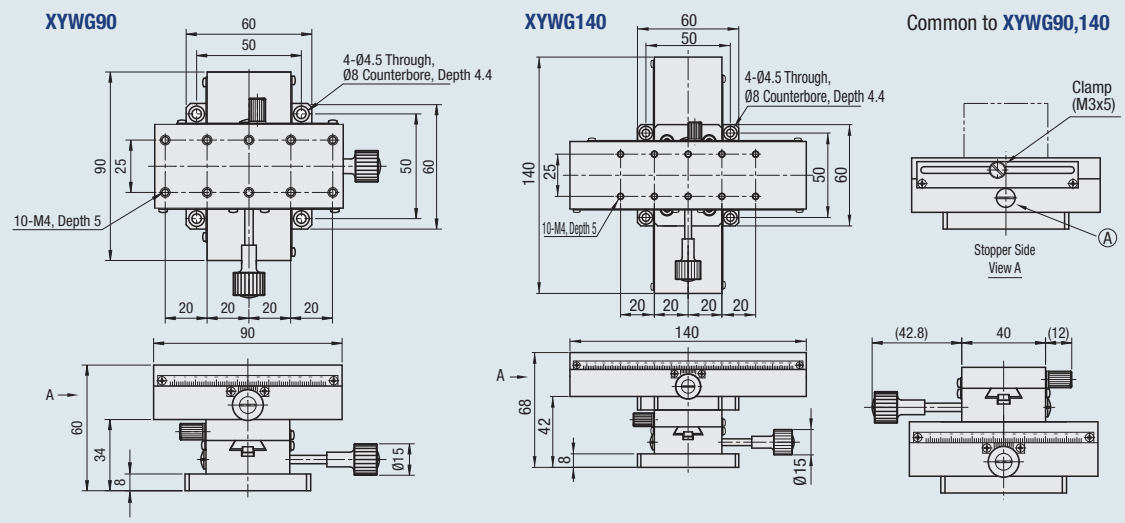


RoHS

Material: Aluminum Alloy

Surface Treatment: Black Anodize





By turning the preload adjustment screw clockwise Ⓐ with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)
Type	No.					Straightness	
XYWG	40	24.8 x 42	±12	18	24.5	30 µm	0.29
	60	40 x 60	±21		34.3		0.51
	90	40 x 90	±35				0.73
	140	40 x 140	±60				1.08

Order Example | Part Number XYWG90

Resolution (Vernier Scale Indication): 0.1mm/division

Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. **P.350**

Travel accuracy values shown are for single axis configuration.

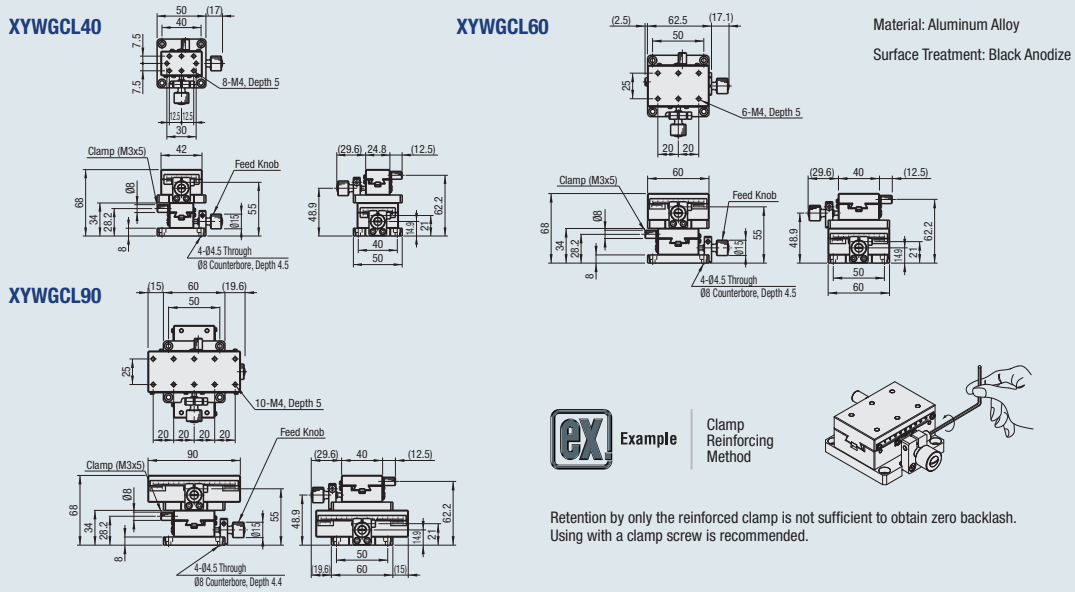
For Standard Precision XY-Axis Rack and Pinion, search **XYKRG** on our website.

[High Precision] XY-Axis Dovetail Slide, Rack & Pinion

Rectangular, Reinforced Clamp / Square

Features: Feed knob shaft is directly clamped for improved position holding performance.

XY-Axis, Reinforced Clamp



RoHS

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (µm)	Orthogonality (µm)	Weight (kg)
XYWGCL	40	24.8 x 42	±12	18	24.5	30	100	0.35
	60	40 x 60	±21		34.3			0.59
	90	40 x 90	±35					0.81

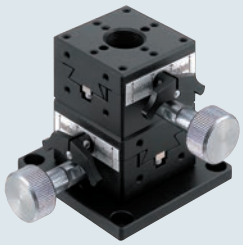
Resolution (Vernier Scale Indication): 0.1mm/division
Knob Cover HDCVR15 (Sold Separately): Ø15 knob diameter can be increased to Ø24 by installing the cover. **P.350**
Travel accuracy values shown are for single axis configuration.

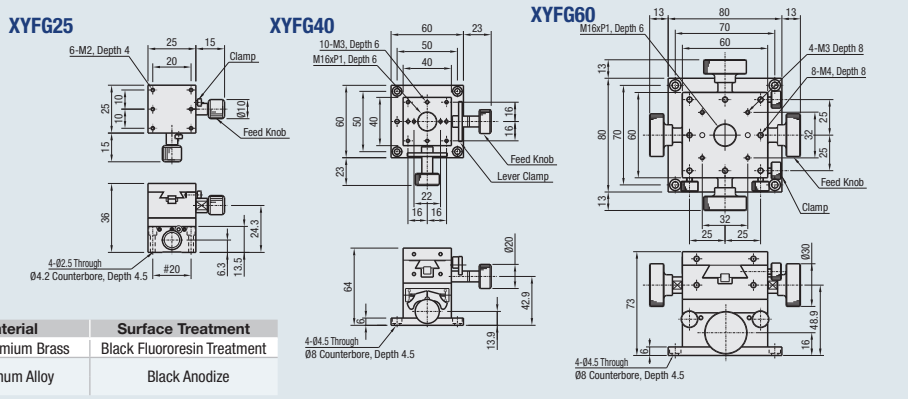
Order Example

Part Number
XYWGCL140

Features: Square Dovetail Slide XY-Axes Stages with 18mm travel per knob rotation. Each size has a different clamp configuration.

XY-Axis, Square





RoHS

Part Number	Material	Surface Treatment
XYFG25	Low Cadmium Brass	Black Fluororesin Treatment
XYFG40	Aluminum Alloy	Black Anodize
XYFG60		

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	Accessory (4 pcs) Type M-L
XYFG	25	25 x 25	±5	17	28.4	20 µm	0.18	SCB2-12
	40	40 x 40	±10	20	27.4		0.37	SCB4-6
	60	60 x 60	±20	18	29.4	30 µm	1.19	SCB4-6

Resolution (Vernier Scale Indication): 0.1mm/division
Travel accuracy values shown are for single axis configuration.

Order Example

Part Number
XYFG40

Alterations

Part Number	(M)
XYFG40	M

Alteration	No Bottom Plate
Spec.	XYFG40: 4-Ø4.3 Through (From Back), Ø6 Counterbore, Depth 10 (M3 Screw Hole) XYFG60: 2-Ø4.5 Through (From Back), Ø8 Counterbore, Depth 6 (M4 Screw Hole) Not applicable to XYFG25. The feed knobs will interfere with the mating bases.
Code	M

See the CAD data for details.

For Standard Precision XY-Axis Dovetail, Rack and Pinion, search **XYDTS** or **XYDTSC** on our website.

[High Precision] XY-Axis Cross Roller / Cross Roller with Dowel Holes

Micrometer Head / Feed Screw

Features: High mounting repeatability is obtained with the dowel holes of XYPGN.

XY-Axis

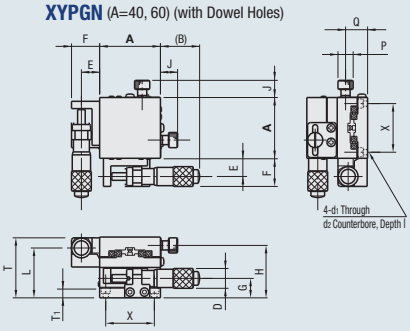
RoHS

For mounting hole dimensions of the Cross Roller Stage top table, see the CAD data for details.

Micrometer Head

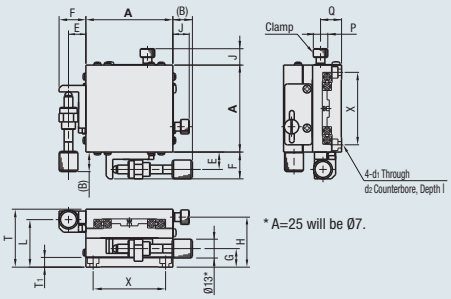
YPG (25≤A≤120)

XYPGN (A=40, 60) (with Dowel Holes)



Feed Screw (Pitch 0.5)

XYPCG (25≤A≤80)



* A=25 will be Ø7.

Mounting Hole Dimensions on the Top/Bottom of the Table of XY-Axis Stages with Dowel Holes

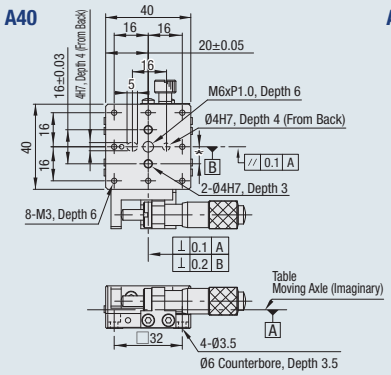
H7 hole and H7 long hole on bottom surface, and 2 H7 holes on upper surface.

Theoretical dimension tolerance of dowel holes on top and bottom surfaces is ±0.165.

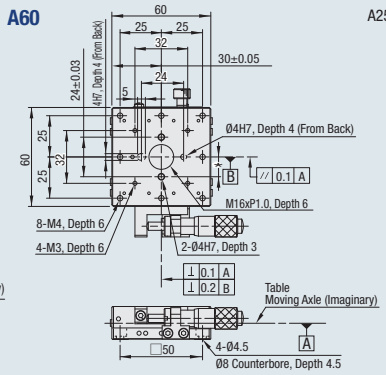
Material: Aluminum Alloy

Surface Treatment: Black Anodize

A40

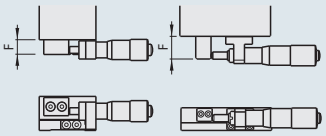


A60



A25, 80, and 100 have different feed bracket configuration.

A25 **A80, A100**



See the CAD data for details.

Micrometer Head (XYPG, XYPGN), Feed Screw (XYPCG)

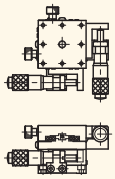
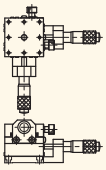
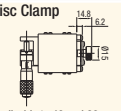
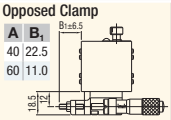
Part Number		Top View							Front View						Side View					
Type	A	Standard Micrometer (B)	Standard Micrometer Travel Distance (mm)	Feed Screw (B)	Feed Screw Travel Distance (mm)	E	F	J	D	G	H	T_1	L	T	P	Q	X	d_1	d_2	L
XYPG XYPCG XYPGN (Dowel Hole Type for 40 and 60 only)	25	25	±3.2	11	±3.2	4.5	6.5	6.8	9.3	8.5	25.9	4.5	23.5	30	6	10.5	20	2.5	4.2	2
	40	25.8	±6.5	25.8	±6.5	12	18.5	11.3	13	12.8	34.5	6.5	32.8	40	10	14.5	32	3.5	6	3.5
	60	19.8		19.8		12	18.5	11.3	13	12.8	34.5	6.5	32.8	40	10	14.5	50	4.5	8	4
	80	43.5	±12.5	10		17	22*	11.3	18	11	34.5	5.7	31	40	10	14.5	70	4.5	8	4.5
	*100	28.5		—	—	17	22	11.3	18	11	34.5	5.7	31	40	10	14.5	90	4.5	8	4.5
	*120	67.5	±25	—	—	13	20	11.5	21	18	48.0	9.5	48	60	10	18	100	4.5	8	4.5

* A100 and 120 are not available for Feed Screw Type (XYPCG). * When A=80 for the Feed Screw Type (XYPCG), F=20.

Performance

A	Stage Surface (mm)	Load Capacity (N)	Travel Accuracy: Straightness	Travel Accuracy: Parallelism	Travel Accuracy: Pitching	Travel Accuracy: Yawing	Moment Load Capacity (N•m): Pitching	Moment Load Capacity (N•m): Yawing	Moment Load Capacity (N•m): Rolling	Moment Rigidity ("/N•cm): Pitching	Moment Rigidity ("/N•cm): Yawing	Moment Rigidity ("/N•cm): Rolling	Parallelism	Weight (kg)	Accessory (4 pcs) Type M-L
25	25 x 25	9.8	3μm	20μm	30"	30"	0.4	0.8	0.4	4.83	5.70	4.83	60μm	0.08	SCB2-6
40	40 x 40	17.6			25"	15"	2.0	2.2	2.0	0.66	0.84	0.66		0.3	SCB3-6
60	60 x 60	44.1					5.2	4.3	5.2	0.19	0.22	0.19		0.52	SCB4-6
80	80 x 80	93.1					17.3	15.1	17.3	0.09	0.10	0.09		1.00	SCB4-6
100	100 x 100	140.1					33.0	30.0	33.0	0.11	0.14	0.11		1.40	SCB4-6
120	120 x 120	180.3					57.2	44.7	57.2	0.04	0.04	0.04		3.20	SCB4-10

XYPG and XYPGN: Micrometer Head Resolution: 10μm/division. Express service is not available.

Alterations	Position of Micrometer Head and Feed Screw		Reinforced Clamp		No Micrometer Head
Spec.	Side Mount - Right /Left Reversed 	Center 	Disc Clamp  Applicable to 40 and 60 square only. Combination with alteration A is not available. A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.	Opposed Clamp  Only applicable to 40, 60 of XYPG and XYPGN. Combination with alteration A is not available. The side drive micrometer head is opposed by a screw (M4x25, pitch 0.5). Improves vibration resistance and has secure position holding performance.	No Micrometer Head Applicable to XYPG only. Micrometer head and bracket will be removed before shipment. Since there is an internal spring, the carriage will not be stationary unless the clamp is tightened. Combination with alteration H is not available.
Code	CR	A	H	P	MN

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

For micrometer head or feed screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.335**).

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Order Example

Part Number
XYPG80

Alterations

Part Number	(CR, A...Etc)
XYPG60	A

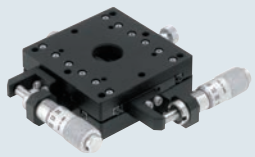
For Standard Precision XY-Axis Cross Roller, search **XYCRS** & **XYLBS** on our website.

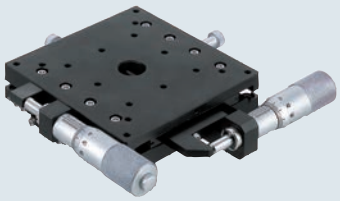
[High Precision] Cross Roller

Low Profile / Through Hole

Features: Extra low profile achieved by XY-Axis unitized construction in comparison to XYPG (**P.303**). 28mm height or less and no need for orthogonal aligning.

XY-Axis, Low Profile



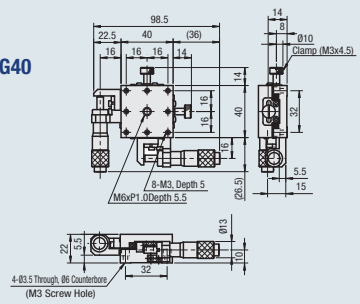


RoHS

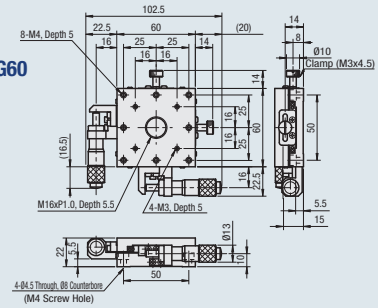
Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory:

XYSPG	40	SCB3-10	4 pcs
	60	SCB4-10	
	80		
	100		

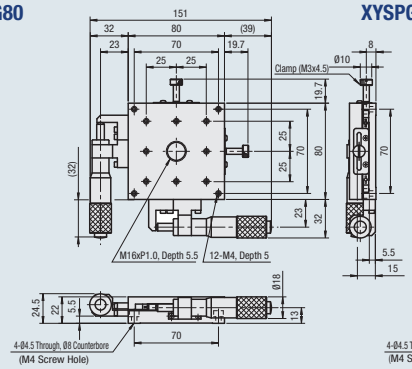
XYSPG40



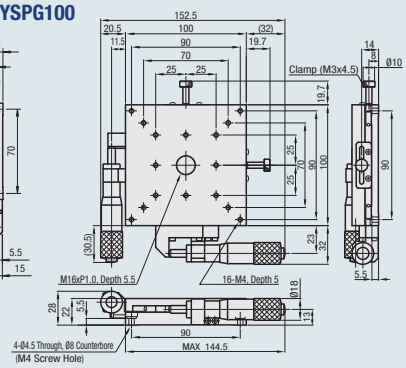
XYSPG60



XYSPG80

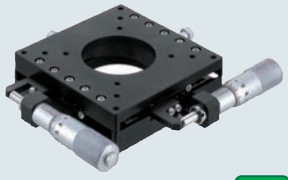


XYSPG100



Features: There is a Ø50 through hole in the stage center. Useful for illuminating from directly below.

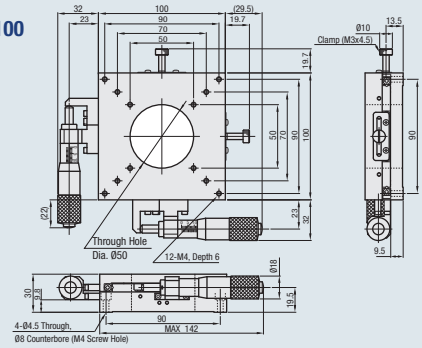
XY-Axis, Through Hole

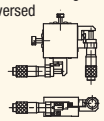
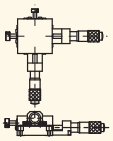


RoHS

Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: SCB4-14 (4 pcs)

XYPPG100



Alterations	Micrometer Position	
Spec.	Side Mount - Right / Left Reversed  Not applicable to XYSPG100.	Center 
Code	CR	A

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism	Weight (kg)
Type	No.				Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XYSPG	40	40 x 40	±6.5	9.8	3μm	20μm	40"	20"	0.7	0.8	0.7	0.57	0.50	0.64	50μm	0.2
	60	60 x 60		29.4					2.3	1.9	2.3	0.19	0.13	0.15		0.4
	80	80 x 80	±12.5	39.2					5.1	4.2	5.1	0.13	0.13	0.11		0.7
	100	100 x 100							5.1	4.2	5.1	0.08	0.10	0.08		1.1
XYPPG	100	100 x 100	±12.5	63.7	3μm	20μm	25"	15"	4.6	3.9	4.6	0.07	0.08	0.10	50μm	1.0

Micrometer Head Resolution: 10μm/division

Order Example

Part Number
XYSPG80

Alterations

Part Number	(CR, A)
XYSPG60	CR

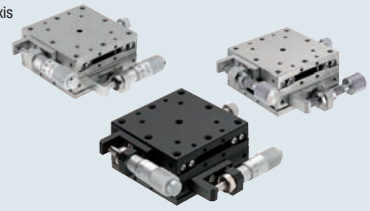
For Standard Precision XY-Axis Cross Roller with Low Profile, search **XYCRSC** on our website.

[High Precision] Linear Ball

Micrometer Head / Feed Screw

Features: Highly accurate, rigid, and economical stages. Even an XY stack is only 40mm high or less, and orthogonality alignment is not needed.

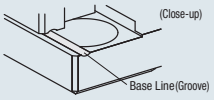
XY-Axis

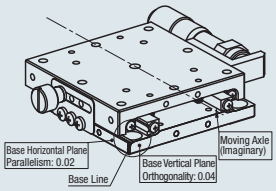


RoHS

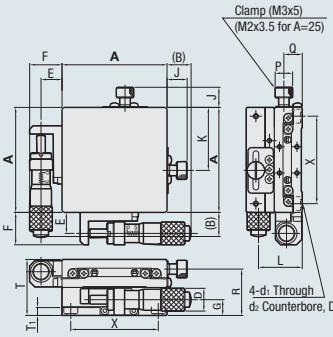
Standard Datum Configuration

MISUMI's Linear Ball Guide Stages have parallel and orthogonal datum in relation to the motion axis. The data are as illustrated.

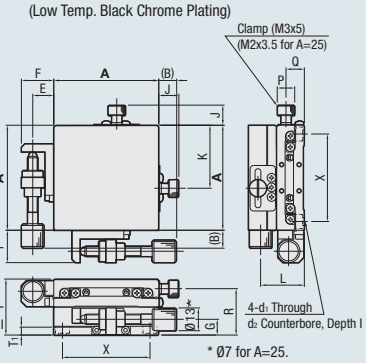




Micrometer Head
XYSG (25≤A≤100)
XYSGB (25≤A≤80)
(Low Temp. Black Chrome Plating)



Feed Screw (Pitch 0.5)
XYSCG (25≤A≤100)
XYSCGB (25≤A≤80)
(Low Temp. Black Chrome Plating)



Type		Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
		Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material	Surface Treatment
XYSG	(Micrometer)	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303	—
XYSCG	(Feed Screw)									
XYSGB	(Micrometer, Low Temp. Black Chrome Plating)		Low Temp. Black Chrome Plating					Black Anodize		Low Temp. Black Chrome Plating
XYSCGB	(Feed Screw, Low Temp. Black Chrome Plating)									

For Micrometer Head and Feed Screw materials, see **P.351–352**. For top surface mounting dimensions. See the CAD data for details.

Micrometer Head (XYSG, XYSGB) / Feed Screw (XYSCG, XYSCGB)

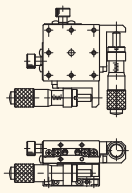
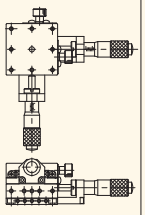
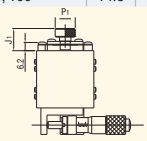
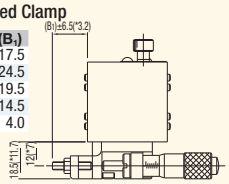
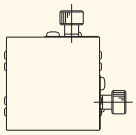
Part Number		Top View							Front View					Side View							Accessory (4 pcs)
Type	A	(B) Micrometer	(B) Feed Screw	Travel Distance	E	F	J	K	D	G	R	T	T_1	P	Q	L	X	d_1	d_2	L	Type M-L
XYSG / XYSCG / XYSGB (* only) / XYSCGB (* only)	25*	25	11	±3.2	7	9	6.8	15	9.3	7	20.5	24	3.7	6	8.5	19	20	2.5	4.2	2.5	SCB2-4
	40*	23.5	20	±6.5	12	18.5	11.3	26	13	8.9	26.5	32	4.5	10	10.5	24.9	32	3.5	6	3.5	SCB3-6
	50	18.5	15					31									40		6	3.5	SCB3-6
	60*	14	10.3					36					5				50	4.5	8	4	SCB4-6
	70	14.5	10.8					46.5		10	29.5	36	6		11.5	28	60		8	4.5	SCB4-6
	80*	43.5	10	±12.5*2	17	22*3		55	18	10.8	34.5	40	6.5		14.5	30.8	70		8	5.3	SCB4-6
	100	28.5	-5*1					67.5									90		8	5.3	SCB4-6

*1. Ends of feed screw knob are at 5mm inside of the carriage edges for XYSCG and XYSCGB. *2. Stroke of XYSCG80 and 100 is ±6.5mm. *3. When dimension A of Feed Screw Type XYSCG and XYSCGB are 80 or 100, F will be 20.

Performance

Part Number		Stage Surface (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism	Weight (kg)
Type	A			Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XYSG / XYSCG / XYSGB (* only) / XYSCGB (* only)	25*	25 x 25	38.2	3μm	10μm	30"	25"	2.0	2.0	2.0	3.00	2.20	3.00	30 μm	0.14
	40*	40 x 40	95.1	1μm*4	12μm	25"	15"	5.0	5.0	5.0	0.63	0.70	0.63		0.46
	50	50 x 50	144.1					6.0	6.8	6.0	0.24	0.28	0.24		0.56
	60*	60 x 60	192.1					9.0	10.0	9.0	0.13	0.16	0.13		0.80
	70	70 x 70	219.5					12.9	13.8	12.9	0.09	0.10	0.09		1.16
	80*	80 x 80	255.8	3μm	15μm			17.7	18.2	17.7	0.06	0.08	0.06	40 μm	1.80
	100	100 x 100	329.6					30.7	31.8	30.7	0.03	0.04	0.03		2.66

XYSG, XYSGB Micrometer Head Resolution: 10μm/division *4. XYSGB, XYSCGB40 and 60 straightness is 3μm.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer head knobs can be increased in diameter by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Alterations	Position of Micrometer Head and Feed Screw		Reinforced Clamp		No Micrometer Head
Spec.	Side Mount - Right / Left Reversed	Center	Disc Clamp	Opposed Clamp	No Micrometer Head
			A / J_1 / P_1: 40, 50, 60, 70 — 15.8 — 10; 80, 100 — 14.8 — 15  Not applicable to 25 square. Combination with alteration A is not available. A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.	A / (B_1): *25 — 17.5; 40 — 24.5; 50 — 19.5; 60 — 14.5; 70 — 4.0  Applicable to XYSG only. Not applicable to 80 and 100 square. Combination with alteration A is not available.The side drive micrometer head is opposed by a screw (M4x25, pitch 0.5). Improves vibration resistance and has secure position holding performance. When A=25, * marked dimensions are applicable. The specification table dimensions (B) will be 30, and G will be 6.	 Applicable to XYSG and XYSGB only. Micrometer head and bracket will be removed before shipment. Since there is a spring inside, the carriage will not be stationary unless the clamp is tightened. Combination with alteration H is not available.
Code	CR	A	H	P	MN

For 25 Square Opposed Clamp, the bracket material is SUS303.

When Position Change Alteration is selected, mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

For micrometer head or feed screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.335**).

Order Example

Part Number
XYSG40
XYSCGB60

Alterations

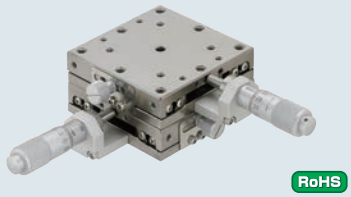
Part Number	(CR, A, H, P, MN)
XYSCG40	A

[High Precision] Linear Ball

Symmetrical Stack, Space Saving

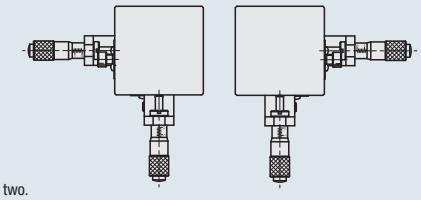
Features: Since two side faces out of four are freely configurable, this type of stage product can be symmetrically aligned with its reserved type for combination use or can be configured for space-saving.

Symmetrical Stack, Space Saving



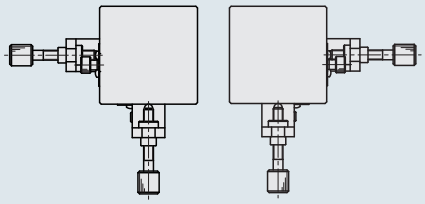
Black Linear Ball – Micrometer Head
DSXYSGB

(Standard: -A) (Right / Left Reversed: -AR)



Linear Ball – Feed Screw
DSXYSCG

(Standard: -A) (Right / Left Reversed: -AR)



The number of faces intended for knob / clamp operations is limited to two.
Space for adjustment is saved
It is also possible to reposition two stages in such a way that they become much closer to each other.

For dimension details, see the CAD data.

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Stage Configuration		Reference Part Number (Page)
Type	No.				Top	Bottom	
Black Linear Ball Micrometer Head **DSXYSGB** / Linear Ball Feed Screw **DSXYSCG**	**25-A**	25 x 25	±3.2	38.2	X###-AR	X###-A	XYSGB#-A (P.305) / XYSCG#-A (P.305) / (Asymmetrical)
	25-AR				X###-A	X###-AR	
	40-A	40 x 40	±6.5	95.2	X###-AR	X###-A	
	40-AR				X###-A	X###-AR	
	50-A	50 x 50		144.2	X###-AR	X###-A	
	50-AR				X###-A	X###-AR	
	60-A	60 x 60		192.1	X###-AR	X###-A	
	60-AR				X###-A	X###-AR	
	70-A	70 x 70		329.6	X###-AR	X###-A	
	70-AR				X###-A	X###-AR	
	80-A	80 x 80	±12.5(*)	255.8	X###-AR	X###-A	
	80-AR				X###-A	X###-AR	
	100-A	100 x 100		329.6	X###-AR	X###-A	
	100-AR				X###-A	X###-AR	

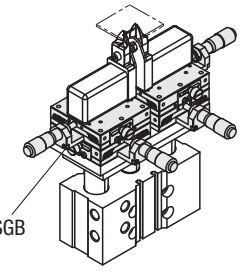
* Stroke is ±6.5mm for Feed Screw Type.

Ordering Example

Part Number
DSXYSGB80-A
DSXYSGB80-AR

For symmetrical use, select one standard stage (-A Type) and one reversed (-AR Type) stage, respectively, as indicated above.

Example Lead Wire Cutting Machine

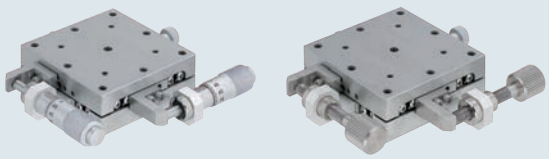


[High Precision] XY-Axis Linear Ball Slide

Low Profile

Features: Extra low profile achieved by XY-Axis unitized construction in comparison to XYSG (**P.305**). 26mm height or less and no need for orthogonal aligning.

XY-Axis, Low Profile

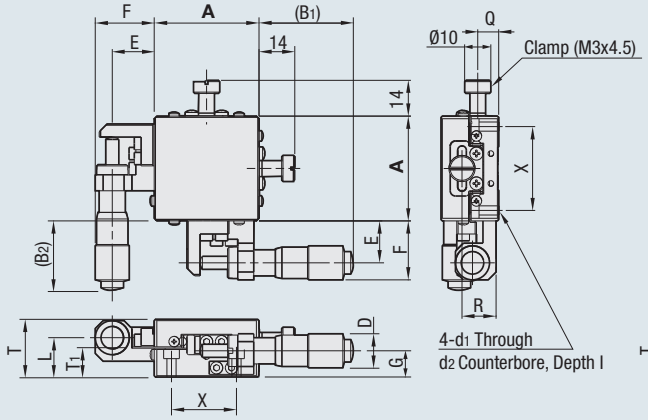


RoHS

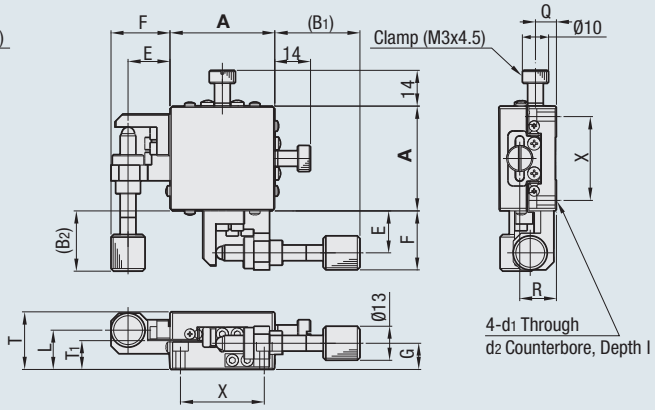
Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
Material	Surface Treatment	Material	Surface Treatment	Material	Material	Surface Treatment	Material
SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303

For materials of Micrometer Head and Feed Screw components, see **P.359**

Micrometer Head
XYSSG (A=40, 60, 80,100)



Feed Screw (Lead 0.5)
XYSSCG (A=40, 60, 80,100)



Micrometer Head (XYSSG), Feed Screw (XYSSCG)

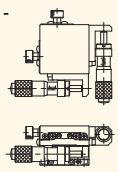
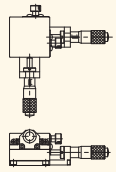
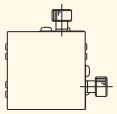
Part Number		Top View							Front View					Side View						Accessory (4 pcs.)
Type	A	Micrometer		Feed Screw		Travel Distance (mm)	E	F	D	G	T	L	T_1	Q	R	X	d_1	d_2	L	Type M-L
		(B_1)	(B_2)	(B_1)	(B_2)															
XYSSG XYSSCG	40	36	26.5	32.5	23	±6.5	16	22.5	13	10	22	15	10.5	8	14	32	3.5	6	3.5	SCB3-10
	60	20.3	16.5	16.8	13	±6.5	16	22.5	13	10	22	15	10.5	8	14	50	4.5	8	4.5	SCB4-10
	80	39	32	0	-7*1	±12.5*2	23	32*2	18*2	15	26	17	12.5	9.5	16.5	70	4.5	8	6.5	SCB4-10
	100	29	22	-10	-17	±12.5*2	23	32*2	18*2	15	26	17	12.5	9.5	16.5	90	4.5	8	6.5	SCB4-10

The end of feed screw (XYSSCG) is at 7mm inside of the stage end face. *2. For XYSSCG Feed Screw Type A=80, 100, travel distance per rotation is ±6.5, F=30, and D=13.

Performance

Part Number		Stage Surface (mm)	Load Capacity (N)	Travel Accuracy					Moment Load Capacity (N • m)			Moment Rigidity (''/N • cm)			Parallelism	Weight (kg)
Type	A			Straightness	Motion Parallelism		Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XYSSG XYSSCG	40	40 × 40	88.2	3 μm	12μm		40''	20''	4.5	5.0	4.5	0.80	0.68	0.85	30μm	0.34
	60	60 × 60	186.2						9.0	8.1	9.0	0.21	0.19	0.20		0.64
	80	80 × 80	255.8		15μm				16.4	15.9	16.4	0.09	0.06	0.08	40μm	1.32
	100	100 × 100	329.3						27.6	28.6	27.6	0.06	0.03	0.06		2.66

XYSSG: Micrometer Head Resolution: 10μm/division

Alterations	Position of Micrometer Head and Feed Screw		No Micrometer Head
Spec.	Side Mount - Right/Left Reversed 	Center 	No Micrometer Head  Applicable to XYSSG only. Micrometer head and bracket will be removed before shipment. Since there is an internal spring, the carriage will not be stationary unless the clamp is tightened.
Code	CR	A	MN

Order Example

Part Number
XYSSG40

Alterations

Part Number	(CR, A, MN)
XYSSG40	A

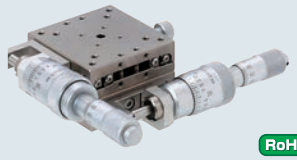
When Position Change Alteration is selected, mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

[High Precision] XY-Axis Linear Ball Slide

Coarse / Fine Micrometer Head

Features: Highly accurate and rigid stages. Even an XY stack is only 40mm high or less, and orthogonality alignment is not needed. Coarse/Fine Feed type suitable for any application.

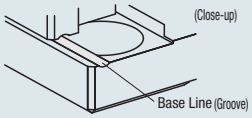
XY-Axis Coarse / Fine Micrometer Head

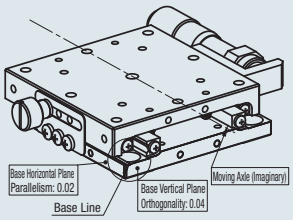


RoHS

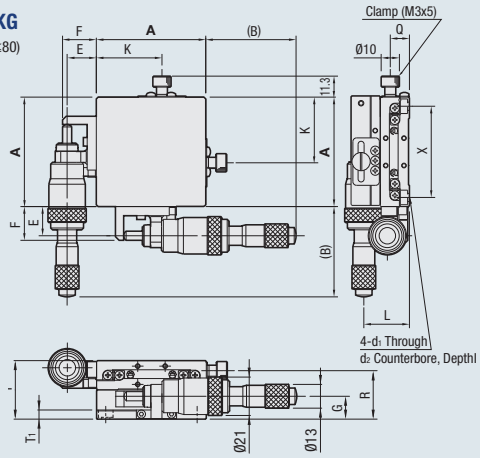
Standard Datum Configuration

MISUMI's Linear Ball Guide Stages have parallel and orthogonal datum in relation to the motion axis. The data are as illustrated.



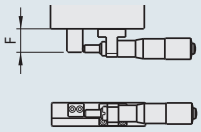


XYSKG
(40≤A≤80)



A80, A100

A80 and 100 have different configuration.



Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material
XYSKG	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303

For Micrometer Head and Feed Screw materials, see **P.351–352**.

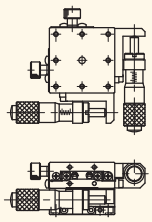
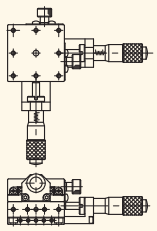
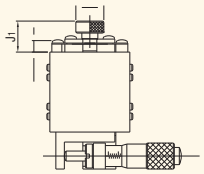
For top surface mounting dimensions, see the CAD data for details.

Part Number		Top View				Front View				Side View						Accessory (4 pcs)
Type	A	(B)	E	F	K	G	R	T	T_1	Q	L	X	d_1	d_2	L	Type M-L
XYSKG	40	60	16	18.5	26	11.6	26.5	32	4.5	10.5	27.6	32	3.5	6	3.5	SCB3-6
	50	55			31							40				
	60	50			36				5			50	4.5	8	4.0	SCB4-6
	70	50.5			46.5	12.5	29.5	36	6	11.5	30.5	60			4.5	
	80	49.5	17	25	55	11	34.5	40	6.5	14.5	31	70			5.3	

Performance

Part Number		Stage Surface (mm)	Travel Distance (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity (°/N • cm)			Parallelism	Weight (kg)
Type	A				Straightness	Motion Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		
XYSKG	40	40 x 40	Coarse ±6.5mm	95.1	1μm	12μm	25"	15"	5.0	5.0	5.0	0.63	0.70	0.63	30μm	0.44
	50	50 x 50		144.1					6.0	6.8	6.0	0.24	0.28	0.24		0.54
	60	60 x 60	Fine Feed 0.2 mm	192.1					9.0	10.0	9.0	0.13	0.16	0.13		0.78
	70	70 x 70		219.5					12.9	13.8	12.9	0.09	0.10	0.09		1.14
	80	80 x 80		255.8	3μm	15μm			17.7	18.2	17.7	0.06	0.08	0.06	40μm	1.78

Coarse/Fine Micrometer Head Resolution Coarse:10μm, Fine: 0.5μm
For orders larger than indicated quantity, please request a quotation.

Alterations	Position of Micrometer Head and Feed Screw		Reinforced Clamp
Spec.	Side Mount - Right / Left Reversed 	Center 	Disc Clamp A / J_1 / P_1 40, 50, 60, 70 / 15.8 / 10 80 / 14.8 / 15 A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.  Combination with alteration A is not available.
Code	CR	A	H

Order Example

Part Number
XYSKG40

Alterations

Part Number	(CR, A, H)
XYSKG40	A

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

For micrometer head or feed screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.335**).

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

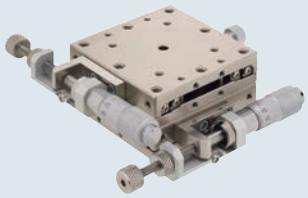
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

[High Precision] XY-Axis Linear Ball Slide

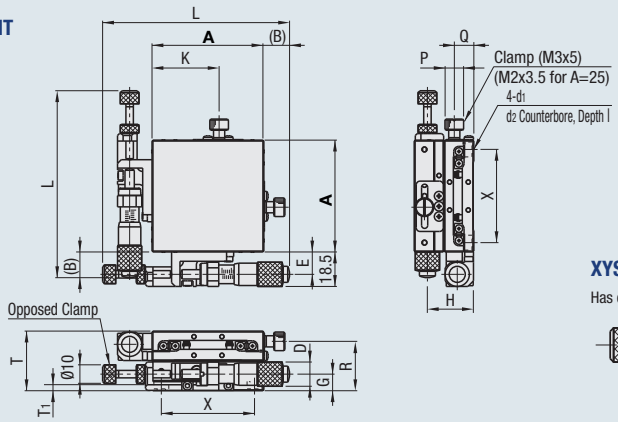
Opposed Clamp with Knob

Features: Side mounted micrometer shaft is opposed by a knobbed screw to improve vibration resistance and secures greater locking power.

XY-Axis, Opposed Clamp with Knob

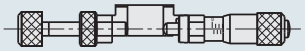


XYSGNT



XYSGNT25

Has different feed bracket configuration.



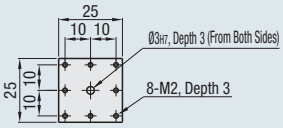
RoHS

Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material
XYSGNT	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303
						SUS303*	—	

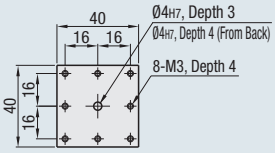
* Bracket material will be different for 25 square only. For micrometer head and opposed clamp materials, see Adjust Screws ANKSS.
Opposed clamp shaft has a hex socket (2.5 hex, depth 2.5) on the end.

Mounting Hole Dimensions of the Top Table

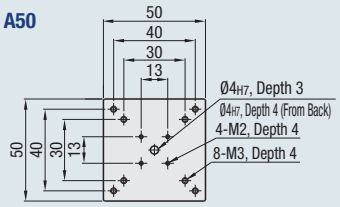
A25



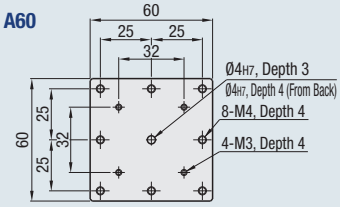
A40



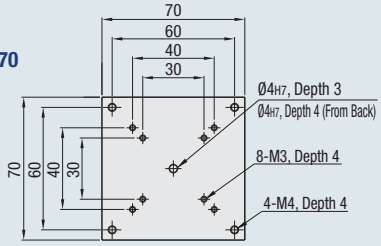
A50



A60



A70



Part Number		Top View				Front View					Side View							Accessory (4 pcs)
Type	A	(B)	E	K	L	D	G	T	T_1	R	H	P	Q	X	d_1	d_2	L	Type M-L
XYSGNT	25	30	7	15	84.5	9.3	6.7	24	3.7	20.5	19	6	8.5	20	2.5	4.2	2.5	SCB2-4
	40	23.8	12	26	100.3	13	8.9	32	4.5	26.5	24.9	10	10.5	32	3.5	6	3.5	SCB3-6
	50	18.8		31										40				
	60	13.8		36					5					50	4.5	8	4	SCB4-6
	70	14.3		46.5			10	36	6	29.5	28		11.5	60			4.5	

Performance

Part Number		Stage Surface (mm)	Travel Distance (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity (″/N • cm)			Parall-elism	Ortho-gonality	Weight (kg)
Type	A				Straightness	Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling			
XYSGNT	25	25x25	±3.2	38.2	3 µm	10 µm	30″	25″	2.0	2.0	3.5	3.0	2.2	2.2	30 µm	10 µm	0.14
	40	40x40	±6.5	95.1	1 µm	12 µm	25″	15″	5.0	5.0	5.0	0.63	0.70	0.63			0.46
	50	50x50		144.1					6.0	6.8	6.0	0.24	0.28	0.24			0.56
	60	60x60		192.1					9.0	10.0	9.0	0.13	0.16	0.13			0.8
	70	70x70		219.5					12.9	13.8	12.9	0.09	0.10	0.90			1.16

Micrometer Head Resolution: 10µm/division
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer head or feed screw knob can be increased in diameter to Ø30 by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
XYSGNT60

[Standard] XY-Axis Cross Roller

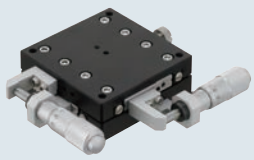
Low Profile

Points on Similar Product Comparison | Travel Accuracy Straightness 30µm

Similar Product Pages | P.309

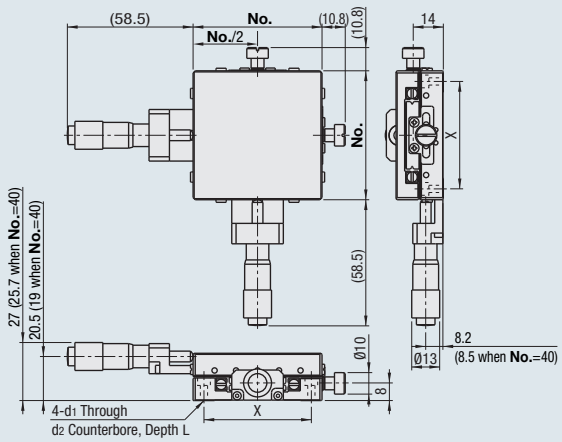
Features: Economical stages with a micrometer head capable of 0.01mm resolution adjustments. Micrometer head position is selectable from 3 types.

XY-Axis, Low Profile

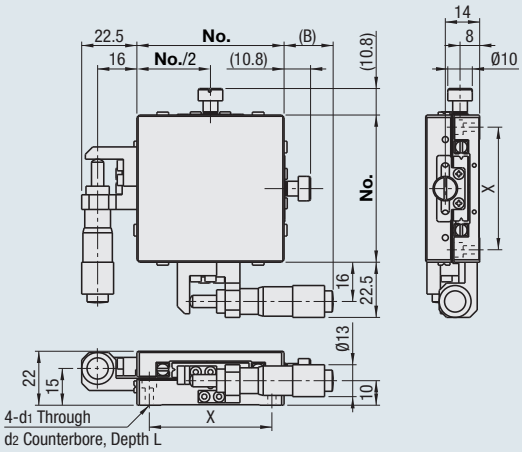


RoHS

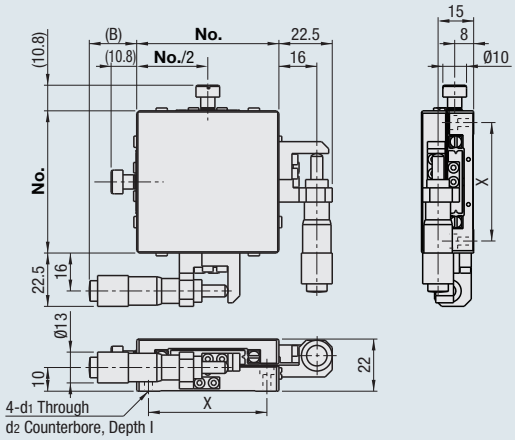
XYCRSC##-A (Micrometer Head Center Drive)



XYCRSC##-C (Micrometer Head Side Drive – Standard)

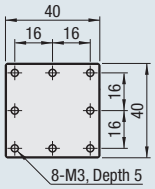


XYCRSC##-CR (Micrometer Head Side Drive – Reversed)

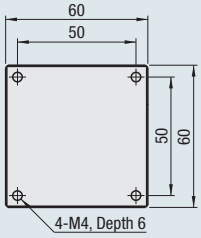


Mounting Hole Dimensions of the Top Table

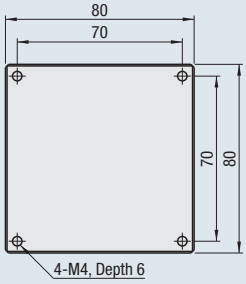
No. 40



No. 60



No. 80



See the CAD data for details.

Material: Aluminum Alloy Surface Treatment: Black Anodize

High Precision Stage Existing Product: XYSPG (**P.304**)

XY-Axis Stages

Part Number			Stage Surface (mm)	Travel Distance (mm)	Top View	Side View				Load Capacity (N)	Travel Accuracy	Weight (kg)
Type	No.	Micrometer Head Position			(B)	X	d_1	d_2	L		Straightness	
XYCRSC	40	A (Center) C (Standard) CR (Right/Left Reversed)	40 x 40	±6.5	36	32	3.4	6	3.5	9.8	30 µm	0.2
	60		60 x 60		20	50	4.5	8	4.5	29.4		0.4
	80		80 x 80		11	70	4.5	8	4.5	39.2		0.7

Order Example

Part Number
XYCRSC60-A
XYCRSC80-C

[Simplified Adjustments] Z-Axis, Push Screw

Features: Economical product configured for Z-axis use by adding a bracket to a push screw type X-axis stage.

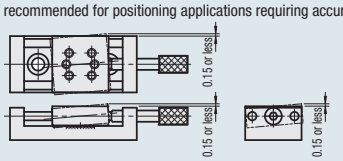
Z-Axis, Push Screw

RoHS

Travel per Rotation: 0.5mm

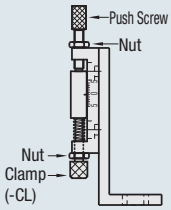
Accuracy Standards

There are some mechanical clearances as shown below, and not recommended for positioning applications requiring accuracies.



One Point

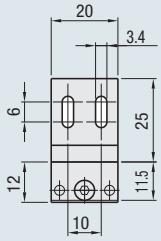
The push screw and clamp (Alterations: -CL) can be reinforced by combining with an extra nut to form a double-nut arrangement.



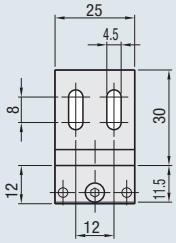
Type	Main Body		Shaft	Spring	Push Screw	Accessory
	Material	Surface Treatment	Material	Material	Material	
ZKNG	Aluminum Alloy	Black Anodize	SUS303	SUS304	S45C (Electroless Nickel Plating)	Hex Socket Low Head Cap Screw (CBS4-6) 2 pcs

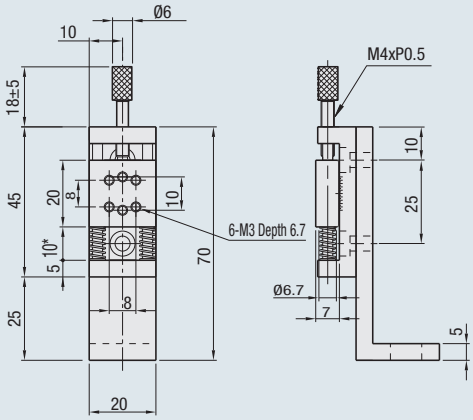
* Dimensions when scale is set at 0

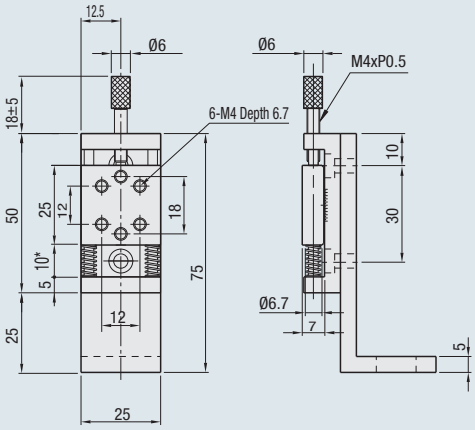
ZKNG20



ZKNG25

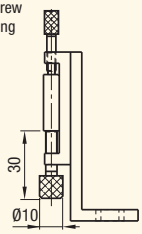






Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)
Type	No.				
ZKNG	20	20 x 20	±5	2	0.05
	25	25 x 25			0.07

Travel per Rotation: 0.5mm
Minimum Graduation: 0.5mm

Alteration	Opposite Clamp Bolt
Spec.	Opposing clamp screw for table immobilizing (M4, Pitch 0.7) will be included. 
Code	CL

Order Example

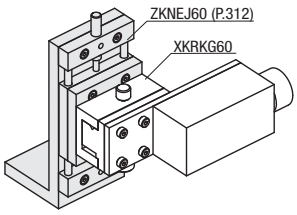
Part Number
ZKNG20

Alterations

Part Number	(CL)
ZKNG20	CL

Example

Suitable for low magnification camera XZ-axis adjustments by combining with an X-Axis Rack & Pinion Unit.



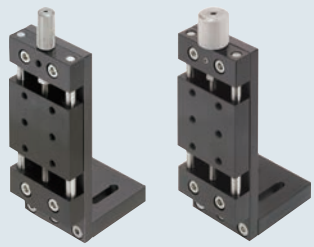
[Simplified Adjustments] Z-Axis, Feed Screw

Standard / Large Handles

Features: Product configured for Z-axis use by adding a bracket to a feed screw type X-axis stage.

Z-Axis, Feed Screw

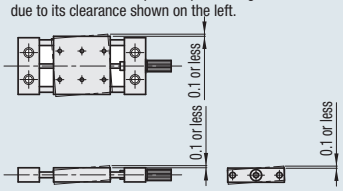
RoHS



Travel per Rotation 0.7mm

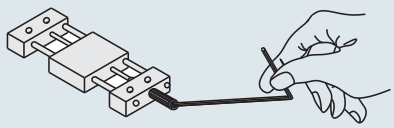
Accuracy Standards

Not recommended for precise positioning due to its clearance shown on the left.



One Point

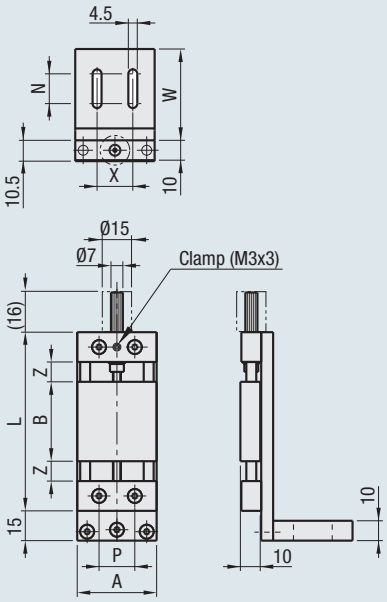
Long stroke moves can be made easily with use of a ball-point hex wrench.



Type		Main Body		Shaft	Knob	Feed Screw	Accessory
Standard Handle	Large Handle	Material	Surface Treatment	Material	Material	Material	
ZKNEJ	ZKJL	Aluminum Alloy	Black Anodize	SUS304	SUS303	SUS304	Hex Socket Head Cap Screw (SCB4-15) 2 pcs

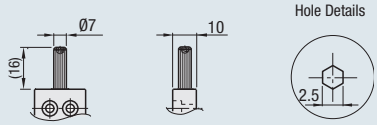
ZKNEJ (Standard Handle)

ZKJL (Large Handle)

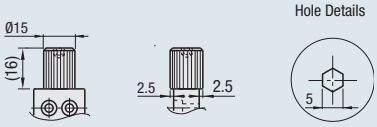


Handle Shape Comparisons

Standard Handle

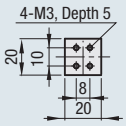


Large Handle

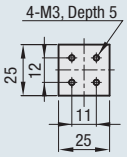


Stage Top Mounting Hole Dimensions

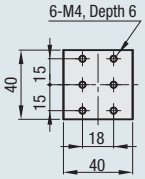
No.20



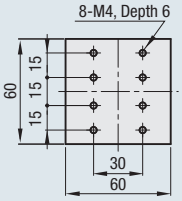
No.25



No.40



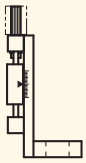
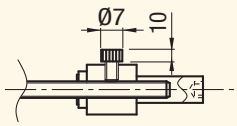
No.60



Do not force the handle to turn past the end of the travel limits as it may cause the handle to come loose.

Part Number		Stage Surface (mm)	Travel Distance (mm)	Z	L	P	W	X	N	Load Capacity (N)	Weight (kg)
Type	No.										
ZKNEJ ZKJL	20	20 x 20	±7	8	66	8	36	10	10	9.8	0.08
	25	25 x 25			71	11		15			0.10
	40	40 x 40	±9	10	90	18	46	18	15	19.6	0.22
	60	60 x 60	±13	15	120	30	56	40	20		0.39

Travel per Rotation: 0.7mm

Alterations	Mount a Scaled Label	Change of Clamp (Knurled Knob)
Spec.	Adds a scaled label on a Z-axis bracket. Minimum Graduation: 0.5mm 	Changes Clamp Screw to Knurled Knob. 
Code	MMR	CLC

Order Example

Part Number
ZKJL40

Alterations

Part Number	(MMR)	(CLC)
ZKJL60		CLC
ZKNEJ20	MMR	
ZKNEJ40	MMR	CLC

[High Precision] Z-Axis Dovetail Slide, Rack & Pinion

Rectangular

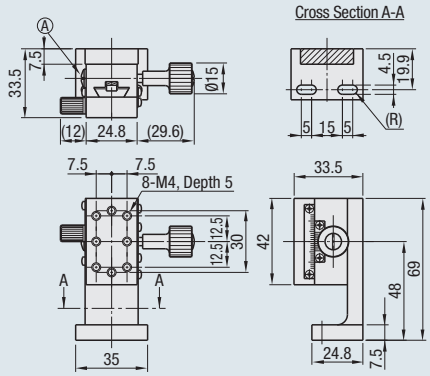
Features: Rectangular Dovetail Slide Z-Axis Stages with 18mm travel per knob rotation.

Z Axis, Rectangular

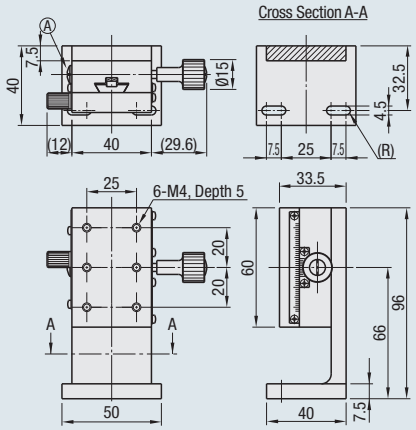
RoHS

Example

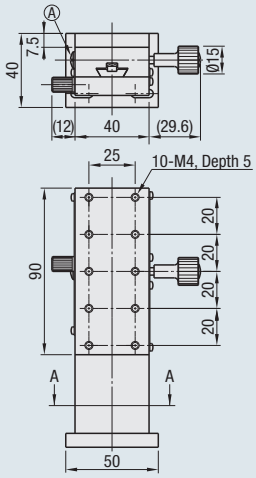
ZWG40



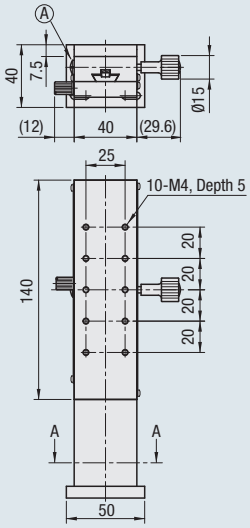
ZWG60



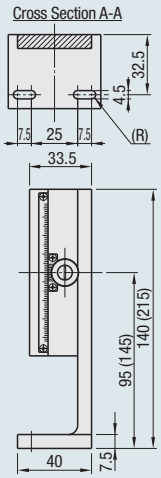
ZWG90



ZWG140



Common to ZWG90, 140



Dimensions in ( ) are for ZWG140.

By turning the preload adjustment screw Ⓐ clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.

Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: CBST4-12 (2 pcs)

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Travel Accuracy (μm)	Load Capacity (N)	Weight (kg)
Type	No.				Straightness		
ZWG	40	24.8 x 42	±12	18	20	14.7	0.17
	60	40 x 60	±21		30	19.6	0.33
	90	40 x 90	±35				0.45
	140	40 x 140	±60				0.68

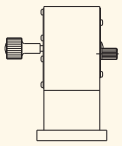
Resolution (Vernier Scale Indication): 0.1mm/division
Knob Cover HDCVR15 (Sold Separately): Dovetail Stage Ø15 knobs can be increased in diameter by installing the cover. P.350

Order Example

Part Number
ZWG60

Alterations

Part Number	(R)
ZWG60	R

Alteration	Feed Knob Position Change (Left/Right Reversed)
Spec.	Scale letters will be horizontal. 
Code	R

For Standard Precision Z-Axis Dovetail Slide, search **ZDTS** & **ZDTSC** on our website.

[Standard and High Precision] Z-Axis Dovetail Slide, Rack & Pinion

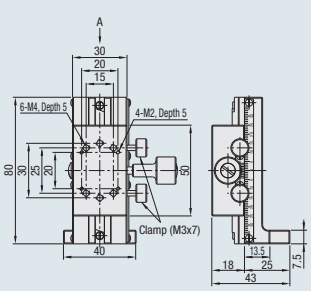
Long

Features: Economically priced long stroke Rack & Pinion stages.

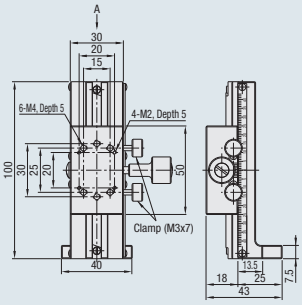
Z-Axis, Long

RoHS

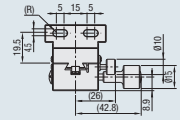
ZDTLS80



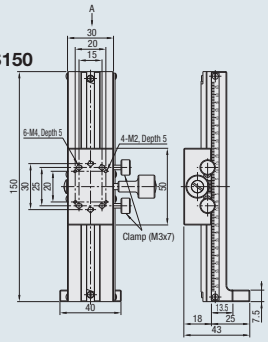
ZDTLS100



Arrow View A



ZDTLS150



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)
Type	No.					Straightness	
ZDTLS	80	30 x 50	±30	16.7	14.7	50 µm	0.16
	100		±35				0.19
	150		±65			60 µm	0.24

Resolution (Vernier Scale Indication): 0.1mm/division
Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. **P.350**

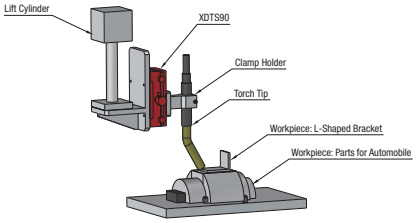
Order Example

Part Number
ZDTLS100

Example

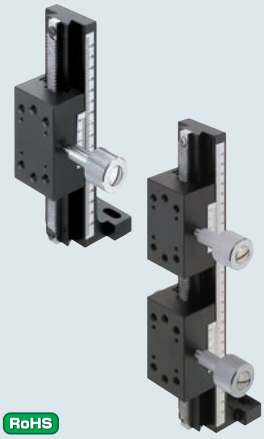
Welding Head Tip Adjustment Unit

Assuring Repeatability: Adjustment by a stage not by a clamp holder secures repeatability preventing misalignment of the torch.



Features: Long stroke stages made of lightweight aluminum alloy. Length is selectable in accordance with the stroke required.

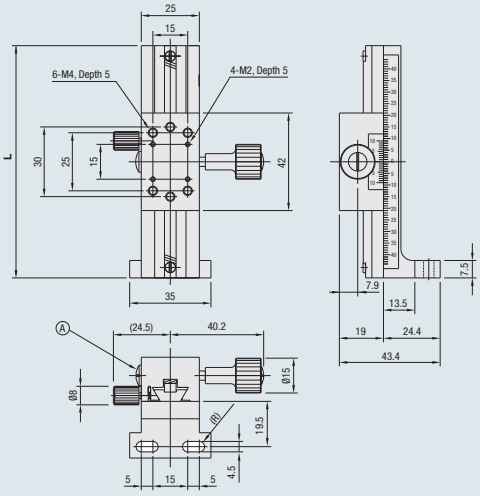
Z-Axis, Long



RoHS

ZLWG
(L=50, 70, 100, 150, 150-2)

Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: CBST4-12 (2 pcs)



The scale shown is for L100. Scales will be different for L50, L70, L150, and L150-2.

By turning the preload adjustment screw (A) clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.

See the CAD data for details.

Part Number		L	Number of Blocks	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)
Type	No.						Straightness	
ZLWG	50	50	1	±15	18	14.7	30 µm	0.120
	70	70	1	±25				0.135
	100	100	1	±40				0.160
	150	150	1	±65			40 µm	0.215
	150-2		2	±44				0.285

Resolution (Vernier Scale Indication): 0.1mm/division.
Knob Cover HDCVR15 (Sold Separately): Dovetail Stage Ø15 knobs can be increased in diameter by installing the cover. **P.350**. ZLWG150-2 has two blocks. Please note that the stroke distances will be shorter than the one block versions.

Order Example

Part Number
ZLWG100

[High Precision] Dovetail Slide, Rack & Pinion

Rectangular, Reinforced Clamp

Features: Feed knob shaft is directly clamped for improved position holding performance compared to ZWG on **P.313**.

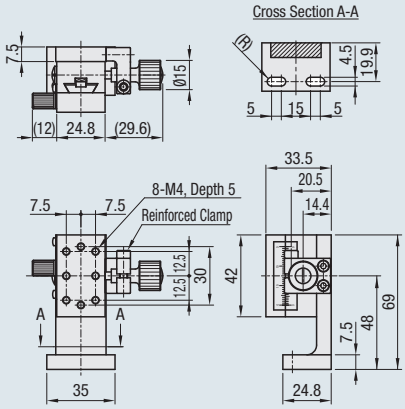
Z Axis, Reinforced Clamp

RoHS

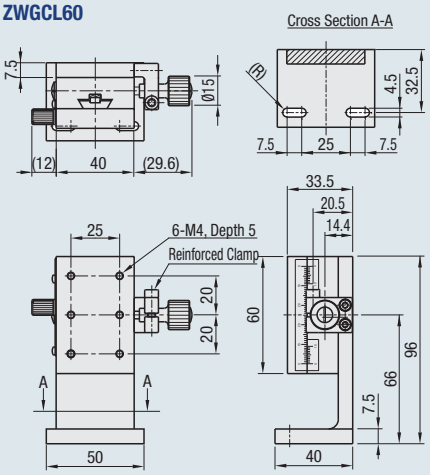
Material:
Aluminum Alloy

Surface Treatment:
Black Anodize

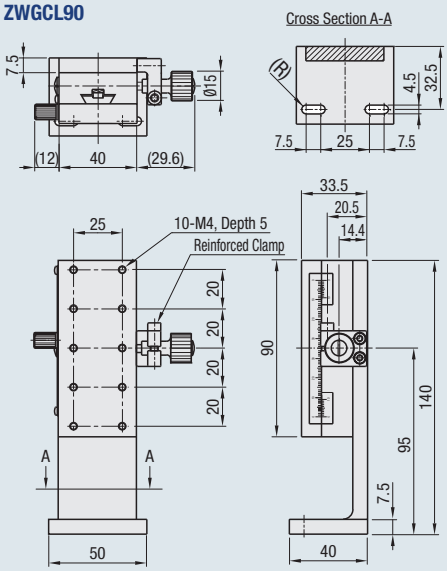
ZWGCL40



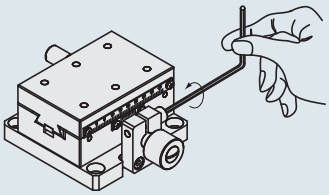
ZWGCL60



ZWGCL90



Example | Clamp Reinforcing Method



Retention by only the reinforced clamp is not sufficient to obtain zero backlash. Using with a clamp screw is recommended.

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)	Accessory (2 pcs)
Type	A				Straightness (μm)		
ZWGCL	40	24.8 x 42	±12	14.7	30	0.23	CBST4-12
	60	40 x 60	±21	19.6		0.38	
	90	40 x 90	±35			0.51	

Resolution (Vernier Scale Indication): 0.1mm/division

Knob Cover HDCVR15 (Sold Separately): Ø15 knob can be increased in diameter by installing the cover. **P.350**

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
ZWGCL60

[High Precision] Dovetail Slide, Feed Screw

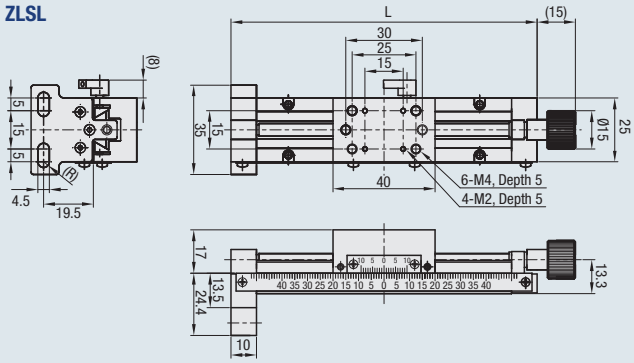
Long (Selectable Lead Type), Square

Features: Dovetail Slide Feed Screw stage with selectable screw lead in 2mm, 5mm, 10mm. Long strokes equivalent of Rack & Pinion stages. Also suitable for vertical uses.

Z-Axis Long (Selectable lead type)

RoHS

ZLSL



The scale in the above figure is for L120, and not for L90,150.

The external dimensions will be the same if L is the same, even if the move distance per knob rotation is different.

Material: Aluminum Alloy

Surface Treatment: Black Anodize

Part Number TYPE	Part Number No.	Travel per Rotation (mm)	Travel Distance (mm)	L	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)
ZLSL	90	2	±27	90	14.7	30	0.18
		5					
		10					
	120	2	±42	120			0.2
		5					
		10					
	150	5	±57	150		40	0.22
		10					

Resolution (Vernier Scale Indication): 0.1mm/division
Knob Cover HDCVR15 (Sold Separately): Ø15 knobs can be increased in diameter by installing the cover. P.350
Adjustable Plate XPLT40: Use this plate when connecting stages with non-matching mounting holes. P.290

Order Example

Part Number
ZLSL90-5

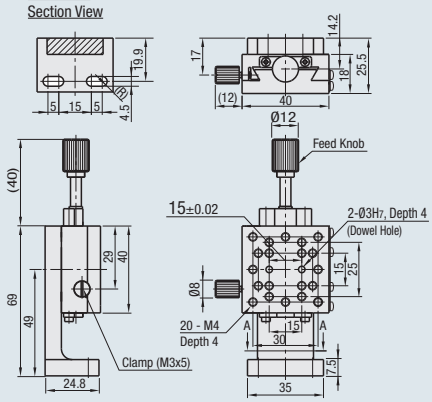
Features: Low profile (18mm height/axis) Dovetail Slide Stages with smooth 4.2mm lead feeding.

Z Axis, Square (Lead 4.2mm)

RoHS

ZSC40

A-A Cross Section View

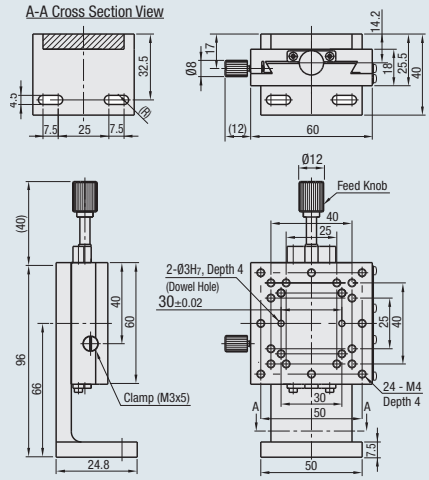


Material: Aluminum Alloy

Surface Treatment: Black Anodize

ZSC60

A-A Cross Section View



Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs) Type M-L
ZSC	40	40 x 40	±11	4.2	9.8	20	0.16	CBST4-12
	60	60 x 60	±21		14.7	30	0.31	CBST4-12

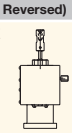
Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. P.350
XY-Axis Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.290

Order Example

Part Number
ZSC40

Alterations

Part Number	(R)
ZSC40	R

Alteration	Clamp Position Change (Right/Left Reversed)	
Spec.	ZSC##-R	ZSCL##-R 
Code	R	

Tips: Knob Extension Method

Knob length and diameter can be increased by utilizing the M6, Depth 14 tapped hole.

(Ex.) Seven Lobed Knob: NKSM6-30 can be mounted to extend the knob by 36mm.

Use adhesive to prevent the knob extension from pulling off.

See the CAD data for details.

[High Precision] Dovetail Slide, Feed Screw

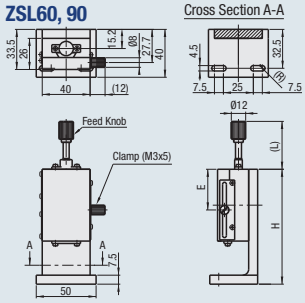
Rectangular / Reinforced Clamp / Low Profile (Lead 4.2 mm)

Features: Dovetail Slide Stages with smooth 4.2mm lead feed screw. Left/Right Reversed configuration is also available.

Z-Axis, Rectangular (Lead 4.2mm)

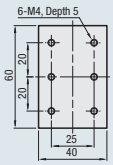
RoHS

ZSL60, 90

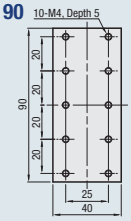


Upper Mounting Hole Dimensions

No. 60



No. 90



See the CAD data for details.

Material: Aluminum Alloy
Surface Treatment: Black Anodize

Order Example

Part Number
ZSL60

Alterations

Part Number	(R)
ZSL60	R

Alteration	Spec.	Code
Clamp Position (Left/Right Reversed)		R

See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	H	(L)	E	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs) Type M-L
ZSL	60	60 x 40	±21	4.2	96	40	26	19.6	30	0.33	CBST4-12
	90	90 x 40	±35		140	60	41			0.45	

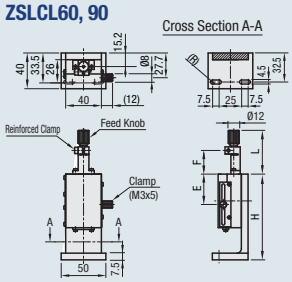
Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Adjustable Plate XPLT: Use this plate when connecting stages with non-matching mounting holes. **P.290**

Features: The feed knob is directly retained with a split clamp, resulting in less position drift.

Z-Axis, Reinforced Clamp (Lead 4.2mm)

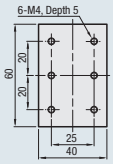
RoHS

ZSLCL60, 90

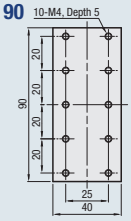


Upper Mounting Hole Dimensions

No. 60



No. 90



See the CAD data for details.

Material: Aluminum Alloy
Surface Treatment: Black Anodize

Order Example

Part Number
ZSLCL60

Alterations

Part Number	(R)
ZSLCL60	R

Alteration	Spec.	Code
Clamp Position (Left/Right Reversed)		R

See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	H	(L)	E	F	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs) Type M-L
ZSLCL	60	60 x 40	±21	4.2	96	49	34	26.5	19.6	30	0.32	CBST4-12
	90	90 x 40	±35		140	63	49	40.5			0.40	

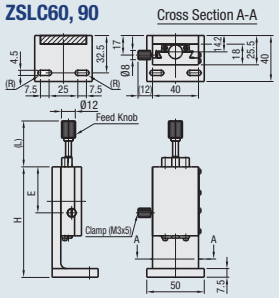
Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Adjustable Plate XPLT: Use this plate when connecting stages with non-matching mounting holes. **P.290**
There will be residual clearances with carriage retaining only with a Reinforced Clamp. Use a Clamp Screw in combination.

Features: Z-Axis, Low Profile Type XSLC. Are suitable for use in limited spaces.

Z-Axis, Low Profile (Lead 4.2mm)

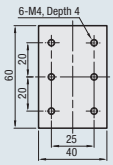
RoHS

ZSLC60, 90

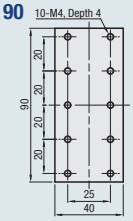


Upper Mounting Hole Dimensions

No. 60



No. 90



See the CAD data for details.

Material: Aluminum Alloy
Surface Treatment: Black Anodize

Order Example

Part Number
ZSLC60

Alterations

Part Number	(R)
ZSLC60	R

Alteration	Spec.	Code
Clamp Position (Left/Right Reversed)		R

See the CAD data for details.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	H	(L)	E	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs) Type M-L
ZSLC	60	60 x 40	±21	4.2	96	40	35	14.7	30	0.27	CBST4-12
	90	90 x 40	±35		140	60	40			0.35	

Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
Adjustable Plate XPLT: Use this plate when connecting stages with non-matching mounting holes. **P.290**

[High Precision] Z-Axis Dovetail Slide, Feed Screw

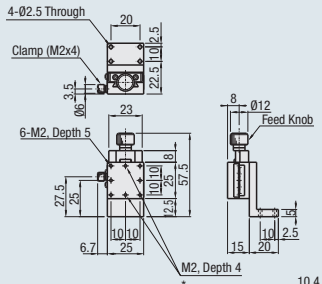
Standard, Hex Wrench Drive

Features: Dovetail Slide is applied as a guide mechanism to realize smooth operation.

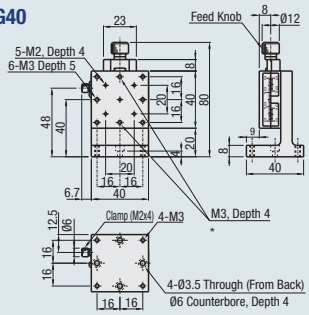
Z-Axis (Lead 0.5mm)

RoHS

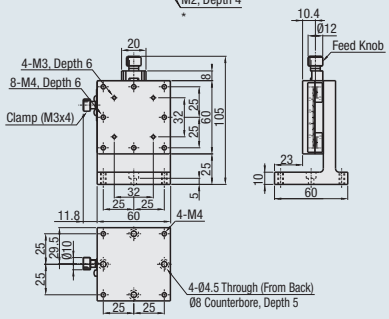
ZEG25



ZEG40



ZEG60



* The depth will be short due to the stage shape.

Order Example

Part Number
ZEG25

Alterations

Part Number	(R)
ZEG25	R

Alteration	Spec.	Code
		R

See the CAD data for details.

Material: (Main Body) Low Cadmium Brass
(Feed Knob) Aluminum

Surface Treatment: Black Fluororesin Treatment

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Straightness	Weight (kg)	Accessory (4 pcs)
Type	No.							Type M-L
ZEG	25	25 x 25	±5	0.5	9.8	30μm	0.09	SCB2-8
	40	40 x 40	±7				0.26	SCB3-8
	60	60 x 60	±9		19.6		0.75	SCB4-10

Resolution (Vernier Scale Indication): 0.1mm/division

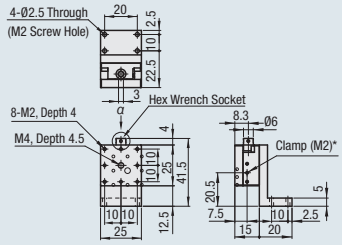
Features: Hex wrench feed drives prevent inadvertent position changes.

Z-Axis
Hex Wrench Drive
(Lead 0.5mm)

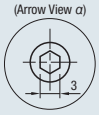
RoHS

XY-Axis **P.340**

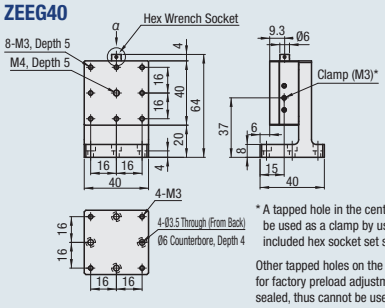
ZEEG25



Hex Wrench Hole Details
(Arrow View α)



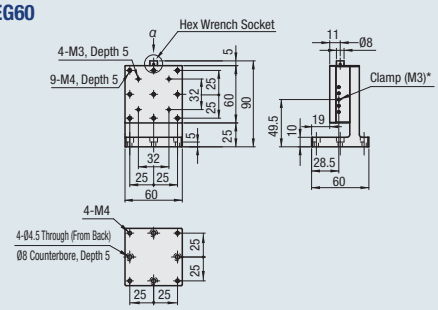
ZEEG40



* A tapped hole in the center can be used as a clamp by using an included hex socket set screw.

Other tapped holes on the side are for factory preload adjustments and sealed, thus cannot be used.

ZEEG60



Order Example

Part Number
ZEEG60

Material: (Main Body) Low Cadmium Brass
(Hex Wrench Socket) Aluminum

Surface Treatment: Black Fluororesin Treatment

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Straightness	Weight (kg)	Accessory (4 pcs)
Type	No.							Type M-L
ZEEG	25	25 x 25	±3	0.5	9.8	20μm	0.08	SCB2-8
	40	40 x 40	±5				0.29	SCB3-8
	60	60 x 60	±7		19.6		0.67	SCB4-10

Resolution (Vernier Scale Indication): 0.1mm/division (ZEEG has no vernier scale.)

For Standard Precision Z-Axis Dovetail Slide, search **ZFES** on our website.

[High Precision] Z-Axis Dovetail Slide, Feed Screw

Extended Knob / Reinforced Clamp

Features: Effective when feed knobs are difficult to turn due to the carriage mounted objects interfering or when the knobs are hard to reach since the stage is deeply embedded inside a machine.

Z-Axis, Extended Knob
(Lead 0.5mm)

RoHS

Material: (Main Body) Low Cadmium Brass, (Feed Knob) Low Cadmium Brass
Surface Treatment: Black Fluororesin Treatment

Order Example

Part Number
ZEGL60

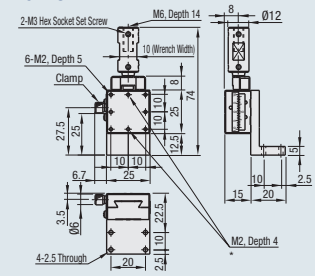
Alterations

Part Number	(R)
ZEGL60	R

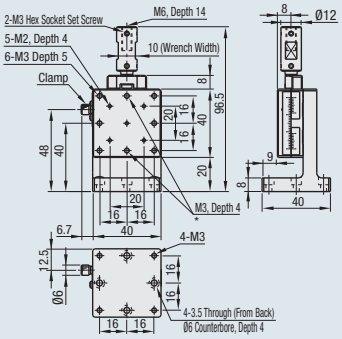
Alteration	Clamp Position Change (Right / Left Reversed)
Spec.	
Code	R

See the CAD data for details.

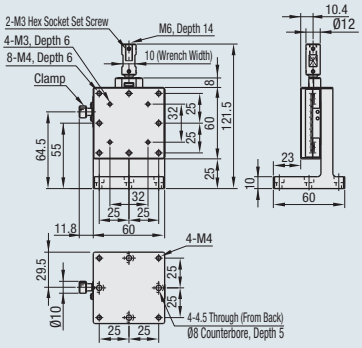
ZEGL25



ZEGL40



ZEGL60



Tips: Knob Extension Method

Knob length and diameter can be increased by utilizing the M6, Depth 14 tapped hole. (Ex.) Seven Lobed Knob NKSM6-30 can be mounted to extend the knob by 36mm. Use adhesive to prevent the knob extension from pulling off.

* The depth will be short due to the stage shape.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Load Capacity (N • m) Pitching	Yawing	Rolling	Weight (kg)	Accessory (4 pcs) Type M-L
ZEGL	25	25 x 25	±5	0.5	9.8	30	2.0	1.5	1.5	0.12	SCB2-8
	40	40 x 40	±7		9.8		4.0	3.0	3.0	0.27	SCB3-8
	60	60 x 60	±9		19.6		5.0	4.0	4.0	0.71	SCB4-10

Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
XY-Axis Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. **P.290**

Features: Z-Axis stage feed knob shaft is directly clamped with a split clamp for improved position holding performance.

Z Axis, Reinforced Clamp
(Lead 0.5mm)

RoHS

Material: (Main Body) Low Cadmium
Surface Treatment: Black Fluororesin Treatment

Order Example

Part Number
ZEGCL40

Alterations

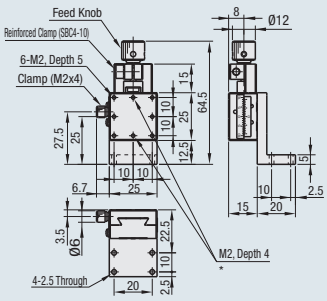
Part Number	(R)
ZEGCL60	R

Alteration	Clamp Position Change (Right / Left Reversed)
Spec.	
Code	R

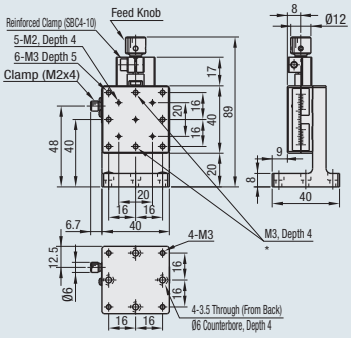
See the CAD data for details.

When alteration R is specified for ZEGCL, reinforced clamp position will not change.

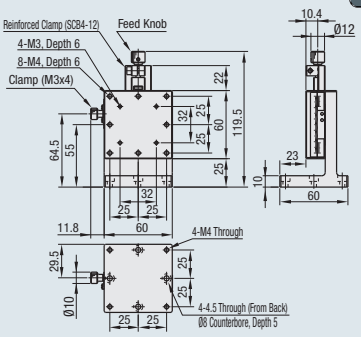
ZEGCL25



ZEGCL40



ZEGCL60



* The depth will be short due to the stage shape.

Part Number Type	Part Number No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Load Capacity (N • m) Pitching	Yawing	Rolling	Weight (kg)	Accessory (4 pcs) Type M-L
ZEGCL	25	25 x 25	±5	0.5	9.8	30	2.0	1.5	1.5	0.10	SCB2-8
	40	40 x 40	±7		9.8		4.0	3.0	3.0	0.27	SCB3-8
	60	60 x 60	±9		19.6		5.0	4.0	4.0	0.71	SCB4-10

Resolution (Vernier Scale Indication): 0.1mm/division
Extension Cover HDEXT12 (Sold Separately): Ø12 feed screw knob can be extended. **P.350**
XY-Axis Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. **P.290**
There will be residual clearances with carriage retaining only with a Reinforced Clamp. Use a Clamp Screw in combination.

[Simplified Adjustments] Z-Axis, Feed Screw

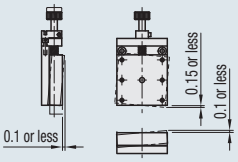
For Set-Up Changes, For First Time Installment

Features: Z-axis unit that can support a load. Suitable for camera and dispenser setup changes with little backlash and a scale.

Z-Axis, For Set-Up Changes

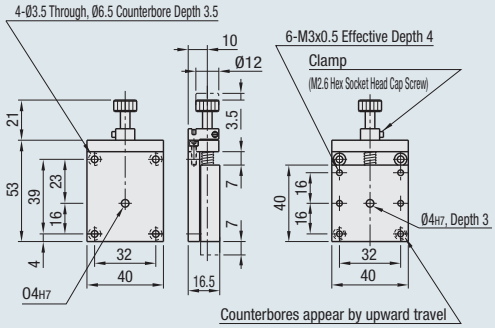
Travel per Rotation: 1.5mm RoHS

Accuracy Standards

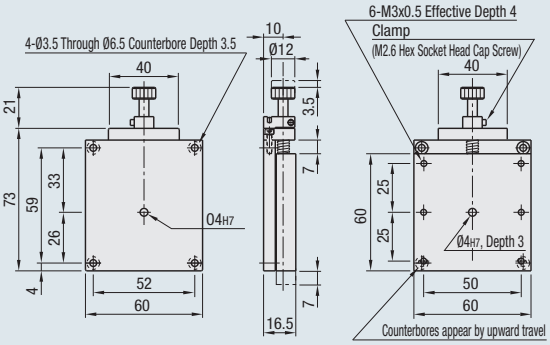


Not recommended for precise positioning due to its clearance shown on the left.

XKDSP40



XKDSP60



Material: Aluminum Alloy
Surface Treatment: Black Anodize
Accessory: Hex Socket Head Cap Screw CB3-10, 4 pcs

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)
Type	No.				
XKDSP	40	40 x 40	±6	19.6	0.10
	60	60 x 60		39.2	0.19

Order Example — Part Number: XKDSP60

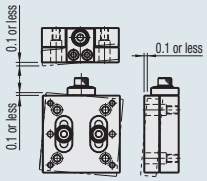
Travel per Rotation: 1.5mm Minimum Graduation: 0.5mm
The allowable loads are for using in Z-Axis configuration (in the orientation shown in the photo).

Features: Z-axis unit that can support a load. The nylon coated nut used has little backlash. Suitable for infrequently adjusted axis such as on cameras, etc.

Z-Axis, For First Time Installment

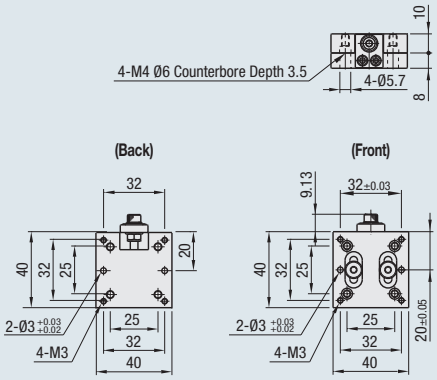
Photo: Front Side
Travel per Rotation 0.7mm RoHS

Accuracy Standards



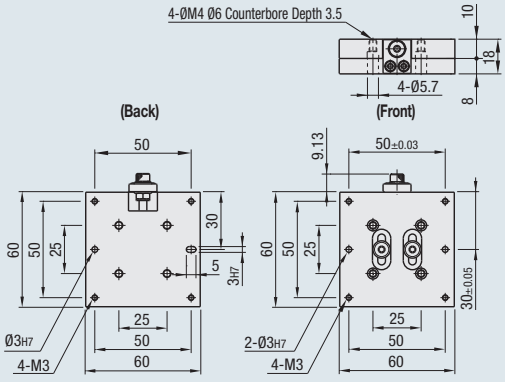
Not recommended for precise positioning due to its clearance shown on the left.
Values are obtained before shipping.

XKEMA40



Can be tightened from the front with Hex Socket Head Cap Screw M3 and from back with M4.

XKEMA60



Material: A5052
Surface Treatment: Black Anodize
Accessory: Dowel Pin MS3-10, 2pcs Hex Socket Head Cap Screw CB3-10, 4 pcs

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)
Type	No.				
XKEMA	40	40 x 40	±3	49	70
	60	60 x 60	±5	98	160

Order Example — Part Number: XKEMA40

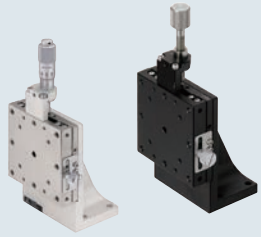
The allowable loads are for using in Z-Axis configuration (in the orientation shown in the photo).

[High Precision] Z-Axis Linear Ball

Micrometer Head / Feed Screw

Features: High Precision/rigidity Linear Ball Slide Z-Axis Stages. Further cost savings is possible by selecting the Feed Screw Type. Low Temp. Black Chrome Plated Types are also available. Suitable for applications where light reflections are to be avoided.

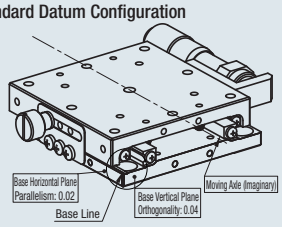
Z-Axis



RoHS

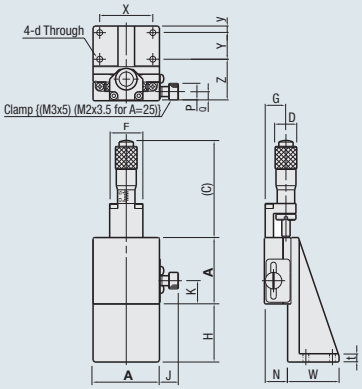
Z-Axis of A25 has different bracket configuration.
For top surface mounting dimensions and feed bracket shapes, see the CAD data for details.

Standard Datum Configuration



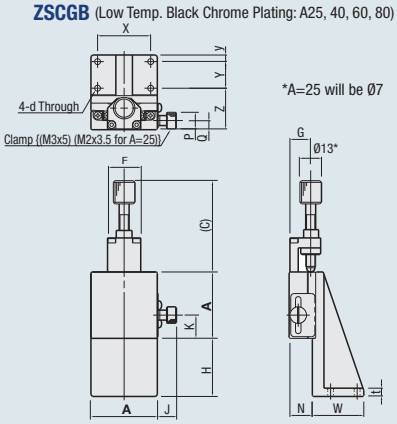
MISUMI's Linear Ball Guide Stages have parallel and orthogonal datum in relation to the motion axis. The data are as illustrated.

Micrometer Head
ZSG (25≤A≤80)
ZSGB (Low Temp. Black Chrome Plating: A25, 40, 60, 80)



Feed Screw (Pitch 0.5)
ZSCG (25≤A≤80)
ZSCGB (Low Temp. Black Chrome Plating: A25, 40, 60, 80)

*A=25 will be Ø7



Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material	Surface Treatment
ZSG ZSCG	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303	—
ZSGB ZSCGB		Low Temp. Black Chrome Plating					Black Anodize		Low Temp. Black Chrome Plating

Micrometer Head (ZSG, ZSGB) / Feed Screw (ZSCG, ZSCGB)

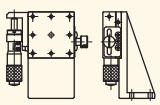
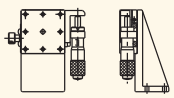
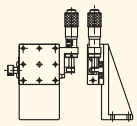
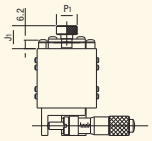
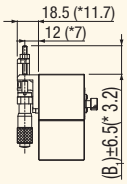
Part Number		Front View						Side View					Top View							Accessory (4 pcs.)
Type	A	H	(C) Micrometer	(C) Feed Screw	Travel Distance (mm)	F	K	J	D	G	N	W	t	P	Q	X	Y	y	Z	d	Type M-L
ZSG ZSCG ZSGB (* only) ZSCGB (* only)	25*	12.5	37	23	±3.2	13	10	6.8	9.3	10	12	20	5	6	3.5	20	10	2.5	19.5	2.5	SCB2-8
	40*	35	58.5	55	±6.5	20	14	11.3	13	13	14	31	5	10	5.5	32	16	4	25	3.5	SCB3-10
	50	30				20	19	11.3	13	13	14	57	5	10	5.5	40	40	6	25	3.5	SCB3-10
	60*	25				20	24	11.3	13	13	14	42	8	10	5.5	50	25	5	26	4.5	SCB4-12
	70	25				20	23.5	11.3	13	14	16	55	8	10	6.5	40	40	4	27	3.5	SCB3-12
	80*	20	96		±12.5*1	24	25	11.3	18	16.5	20	45	7	10	5.5	50	25	5	35	4.5	SCB4-12

*1. When A=80, the feed screw (ZSCG, ZSCGB) travel is ±6.5.

Performance

Part Number		Stage Surface (mm)	Load Capacity (N)	Travel Accuracy			Moment Load Capacity (N•m)			Moment Rigidity (″/N•cm)			Weight (kg)
Type	A			Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	
ZSG ZSCG ZSGB (* only) ZSCGB (* only)	25*	25 x 25	9.8	3μm	30″	25″	2.0	2.0	3.5	1.90	1.10	1.10	0.23
	40*	40 x 40	49	1μm*2	25″	15″	5.0	5.0	5.0	0.42	0.35	0.21	0.32
	50	50 x 50					6.8	6.8	6.0	0.15	0.14	0.09	0.44
	60*	60 x 60					10.0	10.0	9.0	0.08	0.08	0.05	0.58
	70	70 x 70					13.8	13.8	12.9	0.06	0.05	0.03	0.84
	80*	80 x 80		3μm			18.2	18.2	17.7	0.04	0.04	0.02	1.20

ZSG, ZSGB Micrometer Head Resolution: 10μm/division. *2. ZSGB and ZSCGB straightness is 3μm.

Alterations	Position of Micrometer Head and Feed Screw			Reinforced Clamp	
Spec.	Side Up 	Side Up and Right/ Left Reversed 	Side Down  Not applicable to ZSGB and ZSCGB.	Disc Clamp A / J_1 / P_1 40, 50, 60, 70 / 15.8 / 10 80 / 14.8 / 15  Not applicable to 25 square. A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.	Opposed Clamp  A / (B_1) 25 / 17.5 40 / 24.5 50 / 19.5 60 / 14.5 70 / 4.0 Not applicable to ZSCG, ZSGB and ZSCGB. Applicable only when alteration C or CR is selected with ZSG25, 40, 50, 60, and 70. The side drive micrometer head is opposed by a screw (M4x25, pitch 0.5). Improves vibration resistance and has secure position holding performance. When A=25, * marked dimensions are applicable. G dimension in the table will be 6. Note that the micrometer protrudes 17.5mm (±3.2) from the Z-axis bracket.
Code	C	CR	CU	H	P

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**
For 25 Square Opposed Clamp, the bracket material is SUS303.
Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

Order Example

Part Number
ZSG60
ZSGB60

Alterations

Part Number	(C, CR, CU, H, P)
ZSG40	C

For Standard Precision Z-Axis Linear Ball Slide, search **ZLBS** on our website.

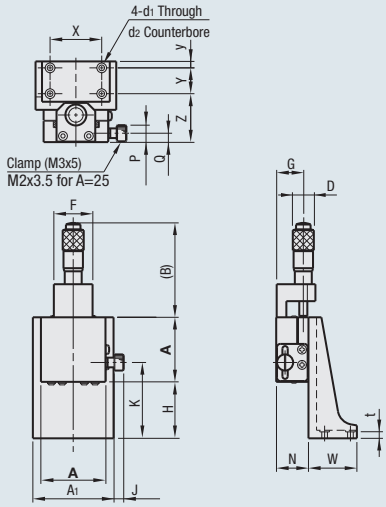
[High Precision] Z-Axis Cross Roller

Features: Cross Roller Z-Axis Stages made of lightweight aluminum alloy.

Z-Axis

RoHS

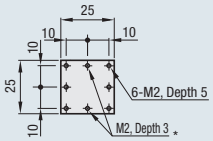
ZPG



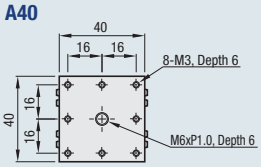
Material: Aluminum Alloy
Surface Treatment: Black Anodize

Mounting Hole Dimensions of the Top Table

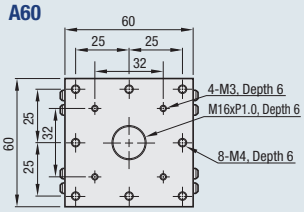
A25



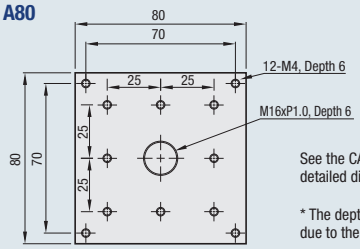
A40



A60



A80



See the CAD data for detailed dimensions.

* The depth will be short due to the stage shape.

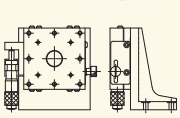
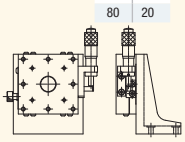
Micrometer Head (ZPG)

Part Number		Front View							Side View					Top View								Accessory (4 pcs)
Type	A	A_1	H	(B)	Travel Distance (mm)	F	K	J	D	G	N	W	t	P	Q	X	Y	y	Z	d_1	d_2	Type M-L
ZPG	25	25	12.5	37.0	±3.2	11	22.5	6.8	9.3	12.5	15	20	5	6	4.5	20	10	2.5	22.5	2.5	—	SCB2-8
	40	50	35.0	58.5	±6.5	24	47.0	6.3	13.0	16.8	20	30	4	10	5.5	32	16	4.0	30.0	3.5	6	SCB3-8
	60	70	20.0	58.5	±6.5	24	37.5	6.3	13.0	16.8	20	45	7	10	5.5	50	25	5.0	35.0	4.5	8	SCB4-12
	80	80	20.0	96.0	±12.5	24	45.0	11.5	18.0	16.5	20	45	7	10	5.5	50	25	5.0	35.0	4.5	8	

Performance

Part Number		Stage Surface	Load Capacity (N)	Travel Accuracy			Moment Load Capacity (N•m)			Moment Rigidity (″/N•cm)			Weight
Type	A	(mm)		Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	(kg)
ZPG	25	25 x 25	4.9	3μm	30″	30″	1.1	0.8	0.4	3.03	2.85	1.80	0.06
	40	40 x 40	9.8		25″	15″	2.7	2.2	2.0	0.38	0.42	0.28	0.20
	60	60 x 60	19.6				5.2	4.3	5.5	0.12	0.11	0.07	0.45
	80	80 x 80	49.0				19.2	15.1	17.3	0.05	0.05	0.04	0.80

Micrometer Head Resolution: 10μm/division

Alterations	Micrometer Head Position	
Spec.	Side Up A / H 25 / 12.5 40 / 35 60 / 20 80 / 50  H dimension is changed.	Side Down A / H 25 / 12.5 40 / 20 60 / 20 80 / 20  H dimension is changed.
Code	C	CU

Mounting dimensions of micrometer heads and clamps are different from those of standard products. Bracket shapes differ depending on the sizes. See the CAD data for detailed dimensions.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Express service is not available.

Order Example

Part Number
ZPG60

Alterations

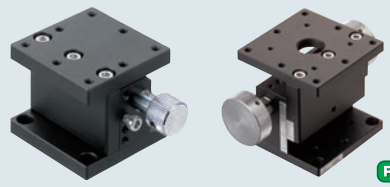
Part Number	(C, CR, CU, H, P)
ZPG80	CU

For Standard Precision Z-Axis Linear Cross Roller Slide, search **ZCRS** on our website.

[High Precision] Dovetail Slide, Rack & Pinion / Cross Roller

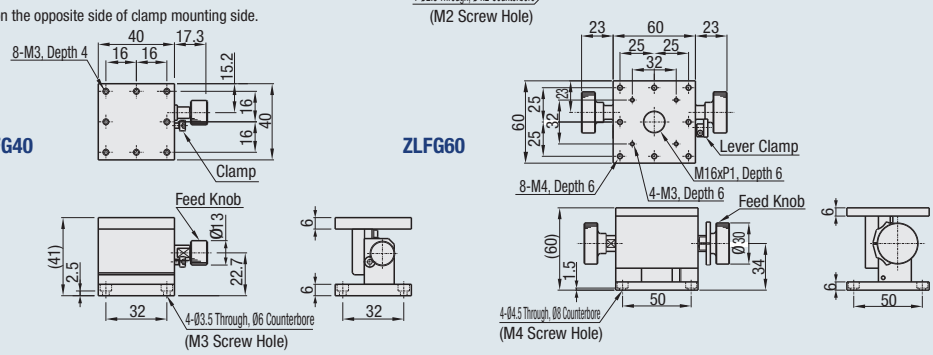
Features: Rack and Pinion Stages with horizontal surface moving vertically.

Horizontal Surface Z-Axis Stages, Rack and Pinion



RoHS

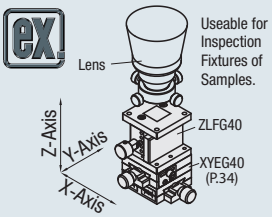
Vernier scale will be on the opposite side of clamp mounting side.



Part Number	Material	Surface Treatment
ZLFG25	Low Cadmium Brass	Black Fluororesin Treatment
ZLFG40	Aluminum Alloy	Black Anodize
ZLFG60		

Order Example

Part Number
ZLFG60

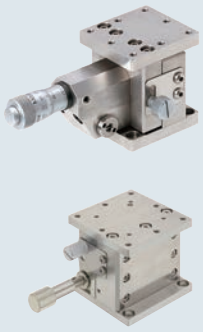


Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Moment Load Capacity (N•m)			Weight (kg)	Accessory (4 pcs)
Type	No.					Straightness	Pitching	Yawing	Rolling		Type M-L
ZLFG	25	25 x 25	±2.5	≈8	6.9	30μm	0.6	1.0	1.5	0.08	SCB2-8
	40	40 x 40	±5	≈13	9.8		0.6	1.0	1.5	0.12	SCB3-6
	60	60 x 60	±10	≈17	14.7		4.0	4.0	2.5	0.47	SCB4-6

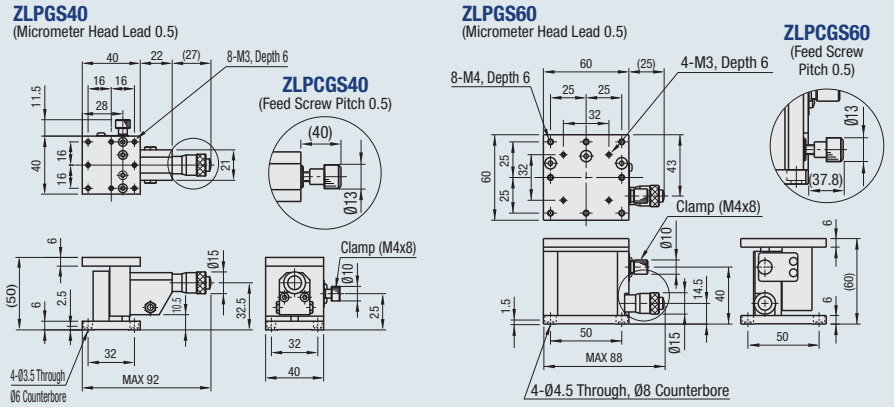
Resolution (Vernier Scale Indication): 0.1mm/division

Features: Suitable for highly accurate fine adjustment of horizontal surface of Z-axis.

Horizontal Surface Z-Axis, Cross Roller (Stainless Steel)



RoHS



See the CAD data for details.

Material: Stainless Steel

Order Example

Part Number
ZLPGS40

Part Number		Stage Surface	Travel Distance	Load Capacity	Travel Accuracy	Moment Load Capacity (N•m)			Moment Rigidity (°/N•cm)			Parallelism	Weight	Accessory (4 pcs)
Type	No.	(mm)	(mm)	(N)	Straightness	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	(μm)	(kg)	TypeM-L
ZLPGS	40	40 x 40	±3	29.4	3μm	1.8	1.1	1.2	0.81	0.22	0.30	100	0.49	SCB3-6
	60	60 x 60	±3	58.8		3.3	2.4	3.1	0.42	0.18	0.12		0.99	SCB4-6
ZLPCGS	40	40 x 40	±3	29.4	3μm	1.8	1.1	1.2	0.81	0.22	0.30	100	0.47	SCB3-6
	60	60 x 60	±3	29.4		3.3	2.4	3.1	0.42	0.18	0.12		0.97	SCB4-6

Micrometer Head Resolution: 10μm/division

Knob Cover HDCVR15 (Sold Separately): Ø15 micrometer head knobs can be increased in diameter by installing the cover. **P.350**

Though having a repeatability, the lift may misalign with the scale graduation depending on the stroke, due to the principle of leverage used for the structure. Use the micrometer head scale for reference only.

For Standard Precision Horizontal Surface Z-Axis Feed or Linear Ball Slide, search **ZLFD** & **ZLLB** on our website.

[High Precision] Z-Axis Cross Roller

Micrometer Head / Feed Screw

Features: Suitable for highly accurate fine adjustment of horizontal surface of Z-axis.

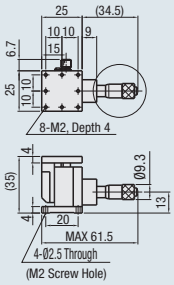
Horizontal Surface Z-Axis, Cross Roller

ZLPG
(Micrometer Head Lead 0.5)

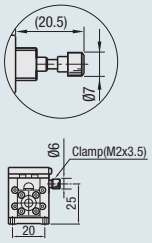
ZLPCG
(Feed Screw Pitch 0.5)

RoHS

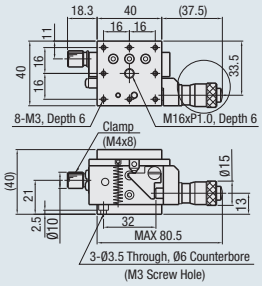
ZLPG25
(Micrometer Head)



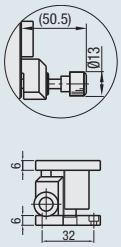
ZLPCG25
(Feed Screw)



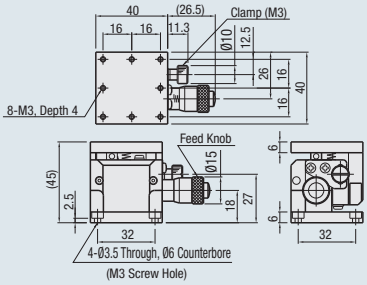
ZLPG40
(Micrometer Head)



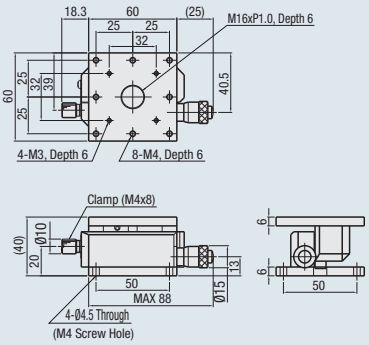
ZLPCG40
(Feed Screw)



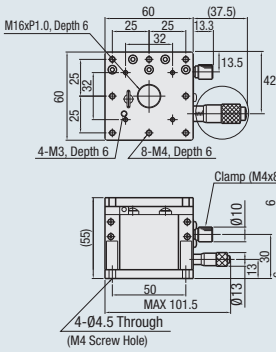
ZLPG40H
(Micrometer Head)



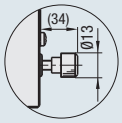
ZLPG60L
(Micrometer Head)



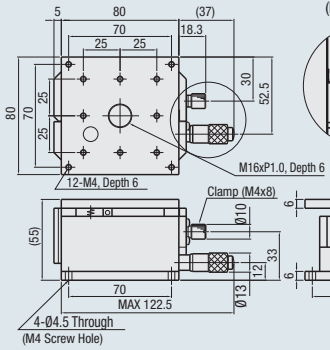
ZLPG60
(Micrometer Head)



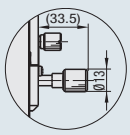
ZLPCG60
(Feed Screw)



ZLPG80
(Micrometer Head)



ZLPCG80
(Feed Screw)



See the CAD data for details.

Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number		Stage Surface	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy	Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism	Weight	Accessory	
Type	No.	(mm)			Straightness	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		(kg)	TypeM-L	Quantity
ZLPG ZLPCG (* only)	25*	25 x 25	±2	9.8	3 µm	0.7	0.5	0.5	4.08	2.50	2.37	50 µm	0.06	SCB2-8	4
	40*	40 x 40	±3			2.3	1.5	2.0	1.96	1.63	0.97	100 µm	0.20	SCB3-6	3
	40H	40 x 40	±3	19.6		3.6	2.2	2.4	1.03	0.52	0.6		0.20	SCB3-6	4
	60L	60 x 60	±3			2.3	1.5	4.2	1.01	0.72	0.21		0.30	SCB4-10	
	60*	60 x 60	±5	39.2*[1]		6.2	4.1	6.2	0.11	0.23	0.17		0.60	SCB4-10	
	80*	80 x 80	±5	29.4		3.8	2.5	6.3	0.55	0.22	0.06		1.00	SCB4-10	

Micrometer Head Resolution: 10µm/division. *1. ZLPCG60 (feed screw) load capacity is 29.4N.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Though having a repeatability, the lift may misalign with the scale graduation depending on the stroke, due to the principle of leverage used for the structure. Use the micrometer head scale for reference only.

Order Example

Part Number
ZLPG40

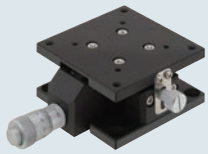
[High Precision] Z-Axis, Linear Guide Low Profile

Micrometer Head / Feed Screw

Features: Low profile horizontal surface Z-Axis stages with 33mm profile height. Height can be kept low even for an XYZ configuration.

Horizontal Surface Z-Axis, Linear Guide Low Profile

ZLTG
(Micrometer Head Lead 0.5)



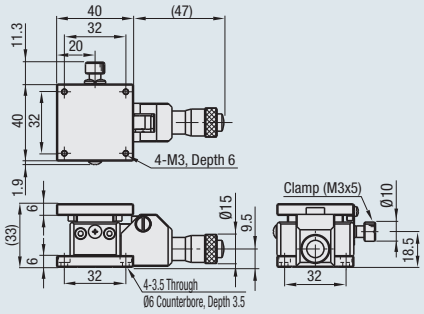
ZLTCG
(Feed Screw Pitch 0.5)

RoHS

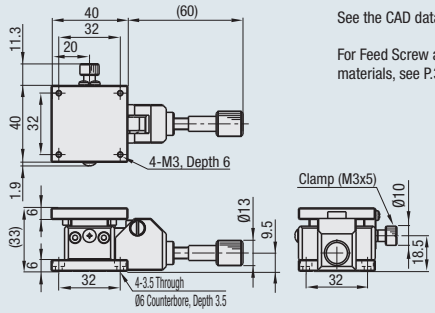
See the CAD data for details.

For Feed Screw and Micrometer Head materials, see P.351, P.352.

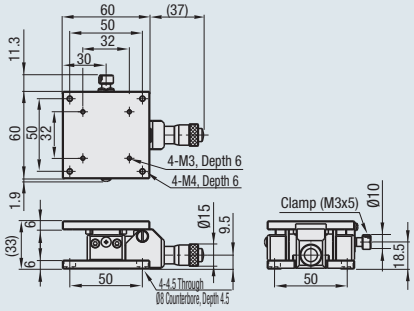
ZLTG40



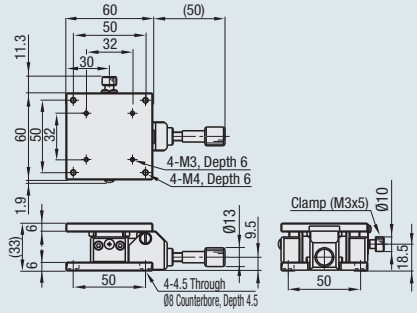
ZLTCG40



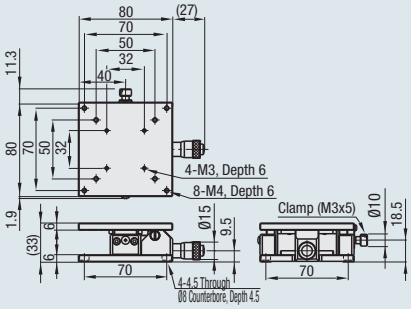
ZLTG60



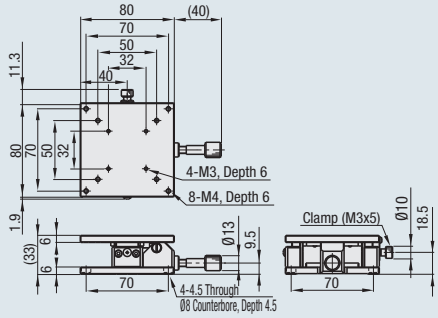
ZLTCG60



ZLTG80



ZLTCG80



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Part Number		Stage Surface (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy	Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Parallelism (µm)	Weight (kg)	Accessory (4 pcs)
Type	A				Straightness (µm)	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling			
ZLTG	40	40 x 40	±3	19.6	5	0.9	1.5	0.5	3.66	0.91	5.64	100	0.16	SCB3-6
	60	60 x 60	±3	29.4			2.3	0.7	3.67	0.25	4.81		0.24	SCB4-6
	80	80 x 80	±3				3.0	0.6	3.52	0.07	4.99		0.32	SCB4-6
ZLTCG	40	40 x 40	±3	19.6	5	0.9	1.5	0.5	3.66	0.91	5.64	100	0.14	SCB3-6
	60	60 x 60	±3	29.4			2.3	0.7	3.67	0.25	4.81		0.22	SCB4-6
	80	80 x 80	±3				3.0	0.6	3.52	0.07	4.99		0.30	SCB4-6

Micrometer Head Resolution: 10µm/division

Though having a repeatability, the lift may misalign with the scale graduation depending on the stroke, due to the principle of leverage used for the structure. Use the micrometer head scale for reference only.

Order Example

Part Number
ZLTG80

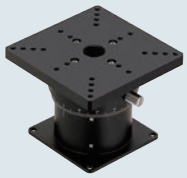
[High Precision] Helicoid Screw, Z-Axis Level Stages

High Load Capacity

Features: Longer strokes than the Cross Roller Horizontal Surface Z-Axis Stages and equivalent load capacities to the Lab Jacks. The multi-start screws used prevent plays.

Helicoid Screw, Horizontal Surface Z-Axis Stages

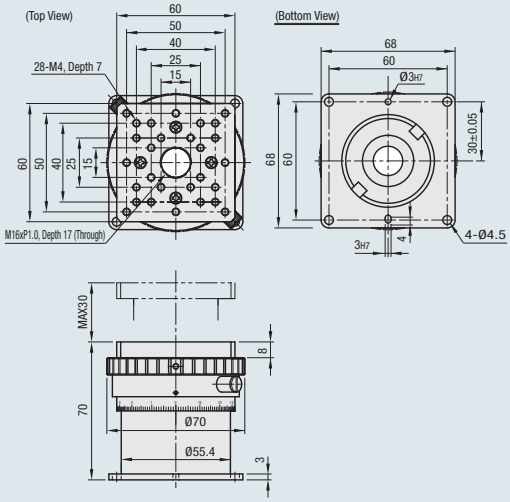
RoHS



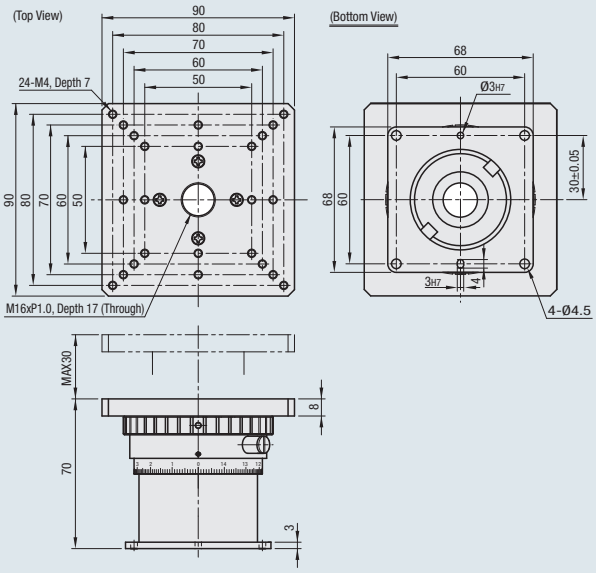
(15mm Elevated)

With Mount Plates (60, 90 Square)

ZHRD30-60

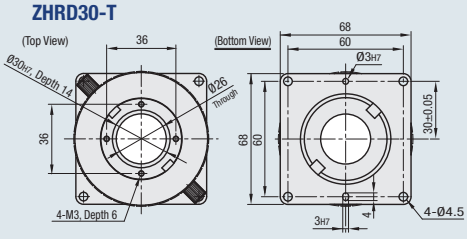


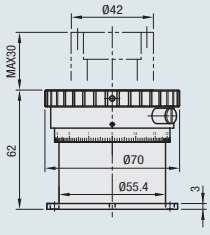
ZHRD30-90



Through Hole Type

ZHRD30-T





A shaft can me mounted on the Through Hole Type utilizing the Ø30H7 hole.

Dh7 O.D. tolerance is recommended for the shaft to be mounted.

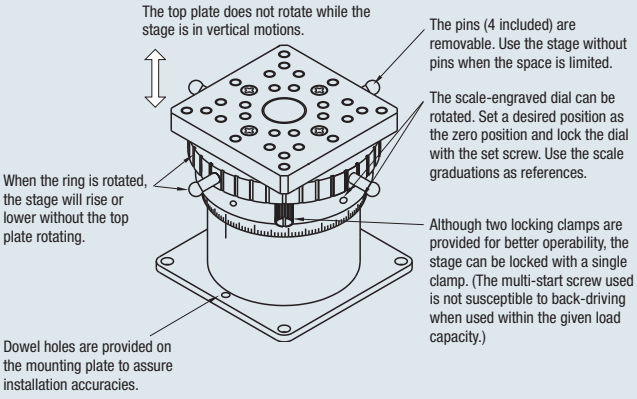
Use adhesive to prevent the knob extension from pulling off.

Material: Aluminum Alloy

Surface Treatment: Black Anodize

Accessory: Rotation Support Pin (Material: SUS303, 4 pcs.)

[Overview: Helicoid Screw, Horizontal Surface Z-Axis Stages]



Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Parallelism (µm)	Weight (kg)	Accessory (4 pcs)
Type	No.							
ZHRD	30-60	60 x 60	30	(15) *	68.6	50 µm	0.50	SCB4-8
	30-90	90 x 90					0.59	
	30-T	—					0.42	

When elevating the plate with moment load applied to its top face, some play might occur. * The travel distance per knob rotation varies to some extent depending on the current table position.

Order Example

Part Number
ZHRD30-60

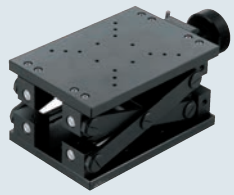
[High Precision] Lab Jack Horizontal Surface Z-Axis Stages

High Load Capacity

Features: Suitable for Z-axis applications requiring long stroke adjustments.

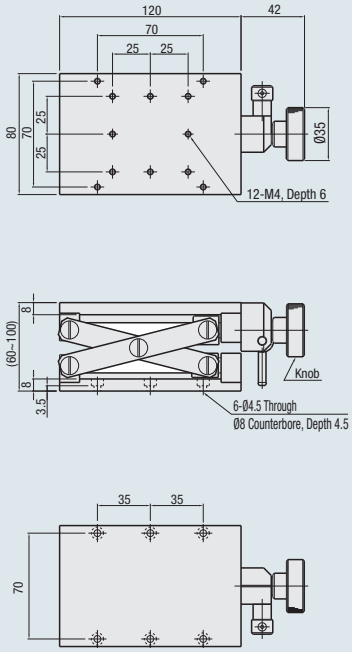
Lab Jack (Horizontal Surface Z-Axis)

Part numbers (in): Not RoHS Compliant

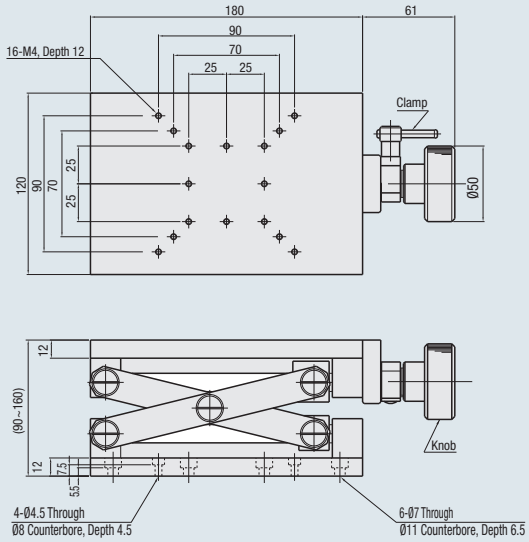


RoHS

ZLJG80



ZLJG120



Knob operated elevating table with relatively high load capacity. A split clamp on the operating shaft securely holds the load in position.

Counterclockwise rotation of the knob elevates the stage surface.

Material: Aluminum Alloy

Surface Treatment: Black Anodize

Accessory: Hex Socket Head Cap Screw (Stainless Steel), ZLJG80: SCB4-10 (6 pcs), ZLJG120: SCB4-12, SCB6-12 (4 pcs each)

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Parallelism (µm)	Weight (kg)
Type	No.						
ZLJG	80	80 x 120	40	2	68.6	200 µm	1.25
	120	120 x 180	70	3	98.0		3.50

Order Example

Part Number
ZLJG80

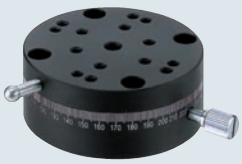
For Standard Precision Lab Jack Horizontal Surface Z-Axis, search **ZLJS** on our website.

[High Precision] Rotary Stages

Coarse Feed / Feed Screw

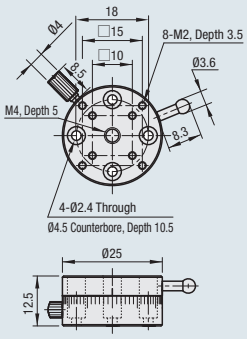
Features: Suitable for large angle positioning applications such as LED lighting and sensor positioning.

Rotary Stages, Coarse Feed

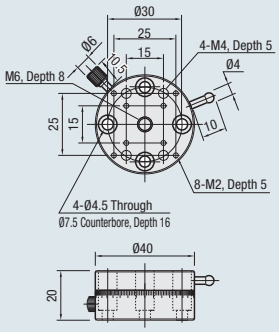


RoHS

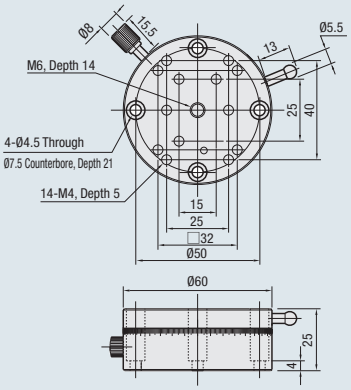
REG25



REG40



REG60



Material: Aluminum Alloy, Surface Treatment: Black Anodize

Part Number		Stage Surface (mm)	Travel Distance	Resolution	Load Capacity (N)		Eccentricity (mm)	Weight (kg)	Accessory (4 pcs)
Type	No.				Horizontal	Vertical			Type M-L
REG	25	Ø25	Coarse 360°	5°	29.4	9.8	0.05	0.02	SCB2-5
	40	Ø40		2°	49.0	16.3		0.06	SCB4-8
	60	Ø60		1°	68.6	22.8		0.20	SCB4-8

XREG25 can not be combined with other stages.

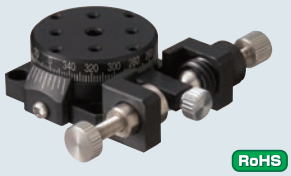
EXWG, XYWG (**P.301**), ZWG (**P.313**), XLWG (**P.284**), ZLWG (**P.314**, (REG60 requires XPLT60 on **P.290**)).

Order Example

Part Number
REG40

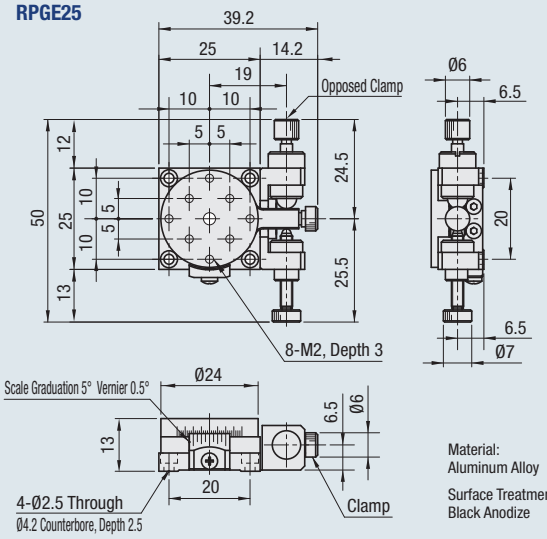
Features: Small Ø24 diameter rotary stage capable of fine screw feeds.

Rotary Stages, Feed Screw



RoHS

RPGE25



Material:
Aluminum Alloy

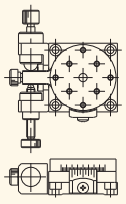
Surface Treatment:
Black Anodize

Order Example

Part Number
RPGE25

Alterations

Part Number	(NR)
RPGE25	NR

Alteration	Feed Knob Position Change
Spec.	 Side Mount - Right/Left Reversed
Code	NR

Part Number		Stage Surface (mm)	Travel Distance	Resolution	Load Capacity (N)	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs)
Type	No.			Vernier	Horizontal			TypeM-L
RPGE	25	Ø24	Coarse 360° Fine Feed ±3°	0.5°	9.8	0.05	0.03	SCB2-6

For Standard Precision Rotary Stages, search **RTRM, RTRS** & **RTSS** on our website.

[High Precision] Rotary Stages

Micrometer Head

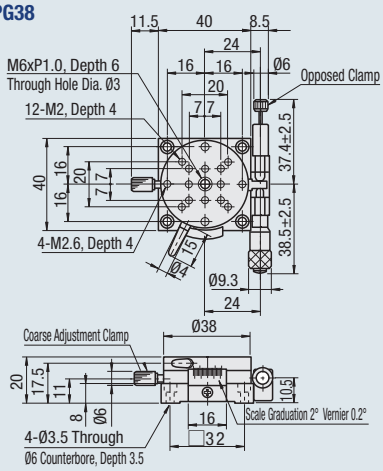
Features: Micrometer equipped rotary stages capable of fine feeds.

Rotary Stages, Micrometer Head

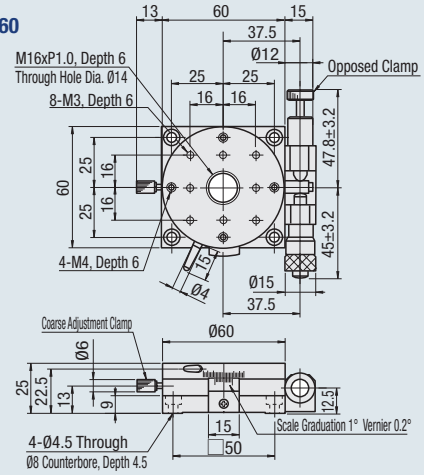
Material: Aluminum Alloy

Surface Treatment: Black Anodize

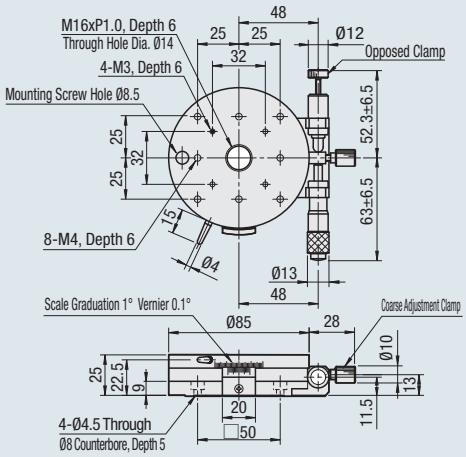
RPG38



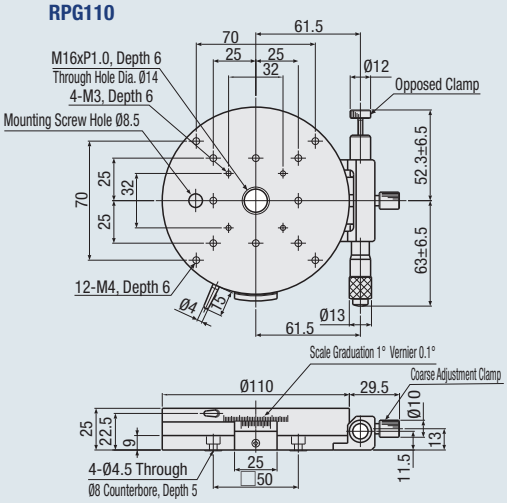
RPG60



RPG85



RPG110

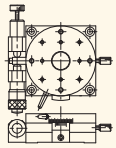


Part Number		Stage Surface (mm)	Travel Distance	Resolution		Load Capacity (N)	Moment Load Capacity (N, m)	Moment Rigidity (″/N, cm)	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs)
Type	No.			Vernier	Micrometer	Horizontal					TypeM-L
RPG	38	Ø38	Coarse 360° Fine Feed ±5°	0.2°	≈1'26"/Scale Graduation	9.8	0.3	3.56	0.05	0.09	SCB3-8
	60	Ø60			≈55"/Scale Graduation	29.4	0.7	0.41		0.28	SCB4-10
	85	Ø85		0.1°	≈43"/Scale Graduation	39.2	1.2	0.22		0.48	SCB4-8
	110	Ø110			≈34"/Scale Graduation	49.0	1.5	0.17		0.75	SCB4-8

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Coarse Clamps and Opposed Clamps are available for sale as special order items. Contact our customer service.

Alteration	Micrometer Position
Spec.	 Side Mount - Right/Left Reversed
Code	NR

Order Example

Part Number
RPG38

Alterations

Part Number	(NR)
RPG60	NR

Mounting dimensions of micrometer head and clamp are different from those of standard products. See the CAD data for details.

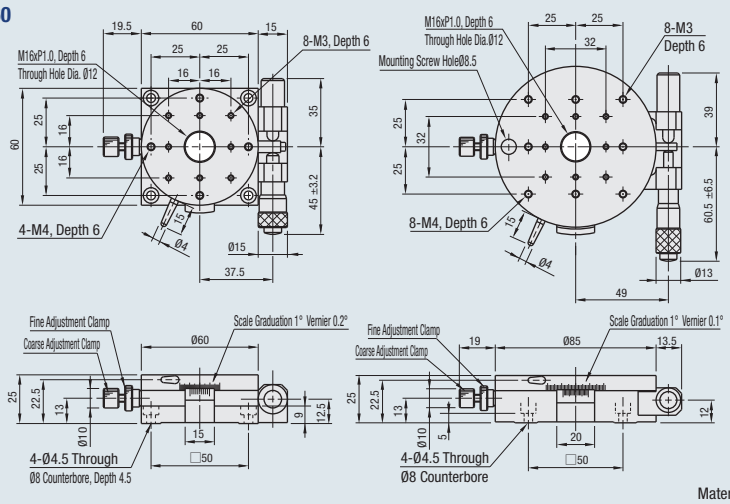
[High Precision] Rotary Cross Roller Bearing

Stainless Steel / Through Hole

Features: Stainless steel material used has improved rigidity over aluminum alloy rotary stages.

Stainless Steel

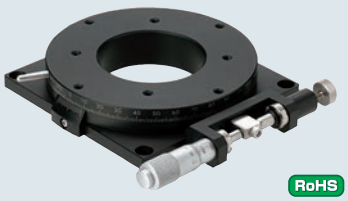
RoHS



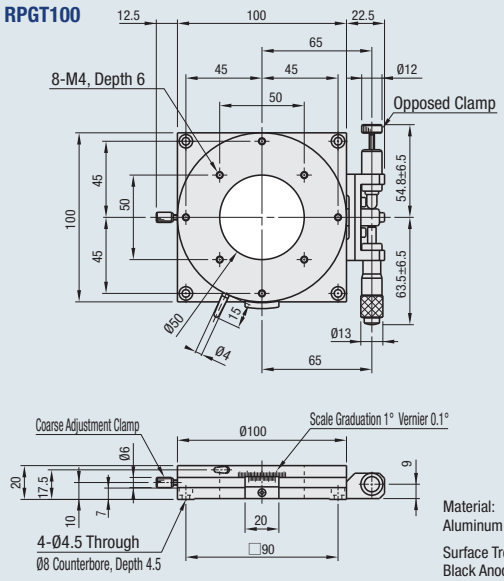
Material: Stainless Steel

Features: There is a through hole in the center of the stage allowing passages of laser, wiring and etc.

Through Hole



RoHS



Material:
Aluminum Alloy

Surface Treatment:
Black Anodize

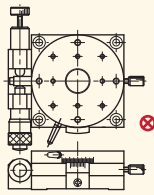
Order Example

Part Number
RPGS60

Alterations

Part Number	(NR)
RPGS60	NR

Mounting dimensions of micrometer head and clamp are different from those of standard products. See the CAD data for details.

Alteration	Micrometer Position
Spec.	 Side Mount – Right/ Left Reversed ⊗ Not applicable to RPGS85
Code	NR

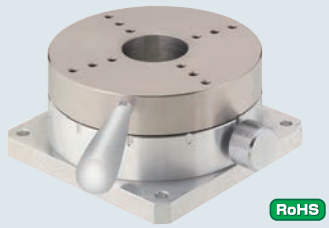
Part Number		Stage Surface (mm)	Travel Distance	Resolution		Load Capacity (N)	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs)
Type	No.			Vernier	Micrometer	Horizontal			TypeM-L
RPGS	60	Ø60	Coarse 360°Fine ±5°	0.2°	≈55"/Scale Graduation	49.0	0.05	0.58	SCB4-8
	85	Ø85		0.1°	≈42"/Scale Graduation	58.8		0.97	SCB4-10
RPGT	100	Ø100	Coarse 360°Fine ±5°	0.1°	≈32"/Scale Graduation	58.8	0.05	0.45	SCB4-6

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

[Manual Units] Rotary Tables

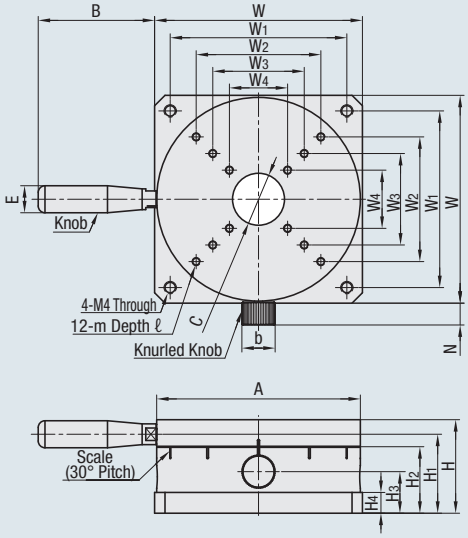
Features: Units best suited for simplified positioning. With a built-in plunger, positions are indexed by 30°.

Rotary Tables



RoHS

KUS



Material: S45C
Surface Treatment: Electroless Nickel Plating
Knob: GRMSN
Knurled Knob: NOBA

Through Hole C is not applicable to KUS50.

Part Number		Stage Surface (mm)								Base (mm)							Knob (mm)		Knurled Knob (mm)	
Type	No.	A	W	W_1	W_2	W_3	W_4	M	C	m	l	H	H1	H2	H3	H4	B	E	N	b
KUS	50	Ø48	50	40	27	18	9	M5	—	M4	6	34	28	22	13	5	44	Ø10	11.5	Ø12
	100	Ø98	100	85	60	44	28	M6	Ø25	M4	8	45	38	32	20	10	56	Ø13	10.5	Ø16
	200	Ø198	200	175	124	94	64	M8	Ø70	M5	10	70	61	52.5	32	12	67	Ø16	14.5	Ø30

Part Number		Stage Surface (mm)	Number of Indexed Positions	Indexing Angle	Load Capacity N{kgf}	Indexable Load (Reference Values) N{kgf}	Travel Accuracy			Weight (kg)
Type	No.						Eccentricity (mm)	Parallelism (mm)	Surface Runout (mm)	
KUS	50	Ø48	12	30°±1°	980 {100}	98 {10}	0.1	0.2	0.1	0.34
	100	Ø98			1470 {150}	196 {20}				1.64
	200	Ø198			1960 {200}	294 {30}				8.70

Still usable when exceeding the indexable loads but plunger indexing will not work.

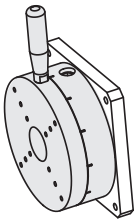
Rotary Table Mounting Orientation

Care must be taken for installations shown on the right.

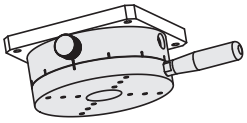
No.	Inverted Mounting	Vertical Side Mounting
50	g	g
100	r	g
200	r	r

g: Usable, though limitations apply for loads and moments.
r: Performance may be seriously affected depending on application.
Make sure to take precaution against load from falling if failure occurs in this application.

Vertical Side Mounting



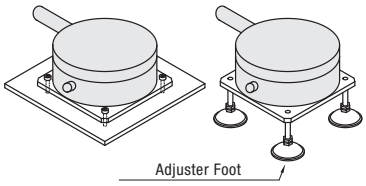
Inverted Mounting



Order Example

Part Number
KUS100

Example



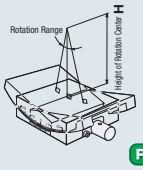
[High Precision] Goniometer Stages

Dovetail Slide, 1-Axis / 2-Axis

Features: Circular arc motion stages with arc centers located on central perpendicular line above the stage tops. Suitable for large angle positioning applications.

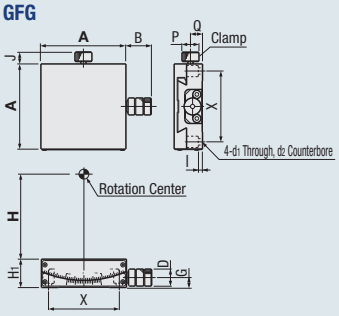
1-Axis

The height of Rotation Center is as shown below.



RoHS

GFG

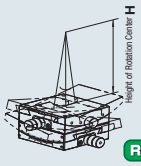


Material: Low Cadmium Brass

Surface Treatment: Black Fluororesin Treatment

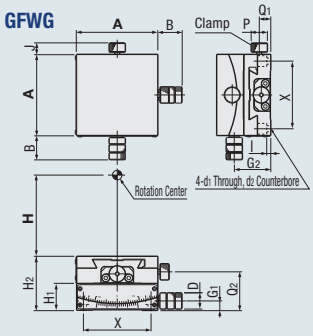
2-Axis

The height of Rotation Center is as shown below.



RoHS

GFWG



Material: Low Cadmium Brass

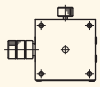
Surface Treatment: Black Fluororesin Treatment

Ordering Example

Part Number
GFG40-25
GFWG60-60

Alterations

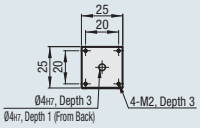
Part Number	(NR)
GFG40-25	NR

Alter-ation	Feed Knob Position Change
Spec.	Side Mount - Right/Left Reversed 
Code	NR

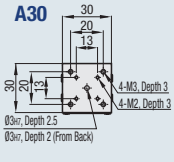
See the CAD data for details.

Table Mounting Hole Dimensions

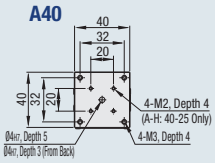
A25



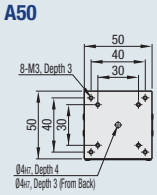
A30



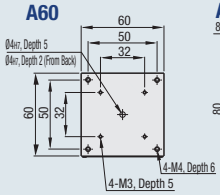
A40



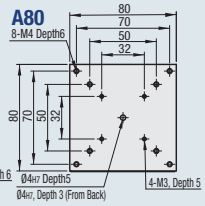
A50



A60



A80



1-Axis

Part Number Type	A-H	Top View B	Top View J	Front View H_1	Front View D	Front View G	Side View P	Side View Q	Side View X	Side View L	Side View d_1	Side View d_2	Accessory (4 pcs) Type M-L
GFG	25-20	19	9	15	10	5.5	10	6.2	20	3	2.5	4.2	SCB2-6
	25-35	19	9	15	10	6	10	7.7	20	3	2.5	4.2	
	30-30	19.5	8.7	14	10	6.5	6	6.3	13	5	2.3	3.8	SCB2-8
	30-44	19.5	8.7	13	10	6.5	6	6.3	13	5	2.3	3.8	
	40-25	17.5	8	15	9	4.8	10	5.8	32	2	3.5	6	SCB3-6
	40-40	18	8	20	12	8.5	10	9.7	32	5	3.5	6	SCB3-8
	40-60	18	8	20	12	8.5	10	9.7	32	5	3.5	6	
	50-50	18	7.7	18	12	7	10	7	40	3	3.5	6	SCB3-6
	50-68	18	7.7	18	12	8	10	8	40	3	3.5	6	
	50-86	18	7.7	18	12	8	10	8	40	3	3.5	6	
	60-35	18	8.6	25	12	9	12	10	50	3	4.5	8	SCB4-8
	60-60	18	8.6	20	12	7	12	8.5	50	3	4.5	8	
	60-80	18	8.6	20	12	7	12	8.5	50	3	4.5	8	
	80-100	25	14	30	15	11	15	14	70	7	4.5	8	SCB4-12
	80-130	25	14	30	15	11	15	13	70	7	4.5	8	

Performance

Part Number Type	A-H	Stage Surface (mm)	Height of Rotation Center H (mm)	Travel Distance	Travel per Rotation	Load Capacity (N)	Moment Load Capacity (N•m) Pitching	Yawing	Rolling	Weight (kg)
GFG	25-20	25 x 25	20	±15°	≈2.0°	19.6	0.3	0.3	0.3	0.07
	25-35		35	±10°						
	30-30	30 x 30	30	±10°	≈2.06°	9.8	0.5	0.5	0.5	0.10
	30-44		44		≈1.5°					
	40-25	40 x 40	25	±20°	≈2.2°	29.4	0.8	1.0	1.0	0.18
	40-40		40	±15°	≈1.89°					0.24
	40-60		60	±10°	≈1.33°					
	50-50	50 x 50	50		≈1.55°		1.0	1.2	1.2	0.36
	50-68		68		≈1.2°					
	50-86		86	±8°	≈0.97°					
	60-35	60 x 60	35	±25°	≈2.0°	58.8	1.5	2.0	2.0	0.72
	60-60		60	±20°	≈1.3°					0.58
	60-80		80	±15°	≈1.0°					
	80-100	80 x 80	100	±18°	≈1.0°	49.0	2.0	3.0	3.0	0.64
	80-130		130	±15°						

Resolution (Vernier Scale Indication): 0.1°/division

Please note that, when the stage is moved in a travel distance higher than the predetermined value, the top plate may come off.

2-Axis

Part Number Type	A-H	Top View B	Top View J	Front View H_1	Front View H_2	Front View D	Front View G_1	Front View Q_2	Side View P	Side View Q_1	Side View G_2	Side View X	Side View L	Side View d_1	Side View d_2	Accessory (4 pcs) Type M-L
GFWG	25-20	19	9	15	30	10	6	21.15	10	7.7	20.5	20	3	2.5	4.2	SCB2-6
	30-30	19.5	8.7	13	27	10	6.5	19.3	6	6.3	19.5	13	5	2.3	3.8	SCB2-8
	40-25	17.5/18*	8	20	35	12	8.5	25.8	10	9.7	24.8	32	5	3.5	6	SCB3-6
	40-40	18	8	20	40	12	8.5	29.7	10	9.7	28.5	32	5	3.5	6	SCB3-8
	50-50	18	7.7	18	36	12	8	25	10	8	25	40	3	3.5	6	SCB3-6
	50-68	18	7.7	18	36	12	8	26	10	8	26	40	3	3.5	6	
	60-35	18	8.6	20	45	12	7	30	12	8.5	29	50	3	4.5	8	SCB4-8
	60-60	18	8.6	20	40	12	7	28.5	12	8.5	27	50	3	4.5	8	
	80-100	25	14	30	60	15	11	44	15	13	41	70	7	4.5	8	SCB4-12

Performance

Part Number Type	A-H	Stage Surface (mm)	Height of Rotation Center H(mm)	Travel Distance	Travel per Rotation	Moment Load Capacity (N•m) Pitching	Yawing	Rolling	Load Capacity (N)	Weight (kg)
GFWG	25-20	25 x 25	20	(Top)±15°/(Bottom)±10°	(Top)=2.0°/(Bottom)=2.0°	0.3	0.3	0.3	19.6	0.14
	30-30	30 x 30	30	(Top)±10°/(Bottom)±10°	(Top)=2.06°/(Bottom)=1.5°	0.5	0.5	0.5	9.8	0.20
	40-25	40 x 40	25	(Top)±20°/(Bottom)±15°	(Top)=2.2°/(Bottom)=1.89°	0.8	1.0	0.8	27.4	0.42
	40-40		40	(Top)±15°/(Bottom)±10°	(Top)=1.89°/(Bottom)=1.33°				26.4	0.48
	50-50	50 x 50	50	(Top)±10°/(Bottom)±10°	(Top)=1.55°/(Bottom)=1.2°	1.0	1.2	1.0	24.5	0.72
	50-68		68	(Top)±10°/(Bottom)±8°	(Top)=1.2°/(Bottom)=0.97°					
	60-35	60 x 60	35	(Top)±25°/(Bottom)±20°	(Top)=2.0°/(Bottom)=1.3°	1.5	2.0	1.5	51.9	1.30
	60-60		60	(Top)±20°/(Bottom)±15°	(Top)=1.3°/(Bottom)=1.0°				52.9	1.16
	80-100	80 x 80	100	(Top)±18°/(Bottom)±15°	(Top)=1.0°/(Bottom)=1.0°	2.0	3.0	2.0	42.1	1.28

Resolution (Vernier Scale Indication): 0.1°/division

*GFWG40-25 knob length (B): Top 17.5, Bottom 18mm

For Standard Precision Goniometer Stage, Dovetail Slide 1-Axis, search **GFSG** on our website.

[High Precision] Goniometer Stages – Dovetail Slide, 2-Axis

Symmetrical Stack, Space Saving

Features: Since two side faces out of four are freely configurable, this type of stage product can be symmetrically aligned with its reserved type for combination use or can be configured for space-saving.

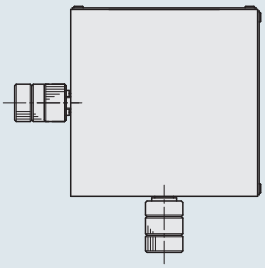
Symmetrical Stack, Space Saving

RoHS

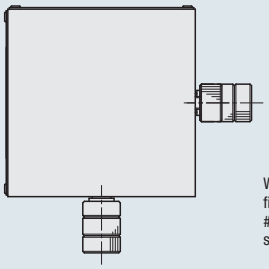
DSGFWG

- The number of faces intended for knob / clamp operations is limited to two.
- Space for adjustment is saved.
- It is also possible to reposition two stages in such a way that they become much closer to each other.

(Standard: -A)



(Right/Left Reversed: -R)



When symmetrical use as shown on the above figure is desired, select one ##-## Type and one ##-##-R Type, respectively. (Those types are not sold as a set.)

Note: For dimension details, see the CAD data or the catalog's 1-axis stage dimension details on **P.337**.

Part Number		Stage Surface (mm)	Travel (O) (Top / Bottom)	Horizontal Load Capacity (N)	Stage Configuration (GFG: P.81)		Reference Part Number (Page)
Type	No.				Top	Bottom	
DSGFWG	25-20	25 x 25	±15/±10	19.6	GFG25-20-NR	GFG25-35	GFWG (P.332)
	25-20-R				GFG25-20	GFG25-35-NR	
	30-30	30 x 30	±10/±10	9.8	GFG30-30-NR	GFG30-44	
	30-30-R				GFG30-30	GFG30-44-NR	
	40-25	40 x 40	±20/±15	27.4	GFG40-25-NR	GFG40-40	
	40-25-R				GFG40-25	GFG40-40-NR	
	40-40		±15/±10	26.4	GFG40-40-NR	GFG40-60	
	40-40-R				GFG40-40	GFG40-60-NR	
	50-50	50 x 50	±10/±10	24.5	GFG50-50-NR	GFG50-68	
	50-50-R				GFG50-50	GFG50-68-NR	
	50-68		±10/±8		GFG50-68-NR	GFG50-86	
	50-68-R				GFG50-68	GFG50-86-NR	
	60-35	60 x 60	±25/±20	51.9	GFG60-35-NR	GFG60-60	
	60-35-R				GFG60-35	GFG60-60-NR	
	60-60		±20/±15	52.9	GFG60-60-NR	GFG60-80	
	60-60-R				GFG60-60	GFG60-80-NR	
	80-100	80 x 80	±18/±15	42.1	GFG80-100-NR	GFG80-130	
	80-100-R				GFG80-100	GFG80-130-NR	

For symmetrical use, select one standard stage and one reversed (-R Type) stage, respectively, as indicated above.

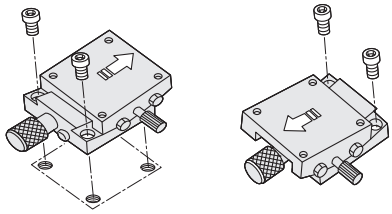
Extension Cover HDEXT12 (Sold Separately): Ø12 knob can be extended. **P.350**

Order Example

Part Number
DSGFWG60-60

Example

How to Mount a Goniometer Stage: Move the top plate to access mounting holes as shown below.



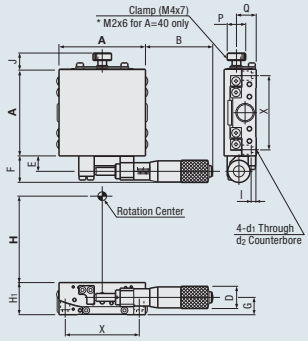
[High Precision] Goniometer Stages

Cross Roller, 1-Axis / 2-Axis

Features: High Accuracy Stages with Cross Roller Guides. Excellent operability makes them suitable for frequent positioning applications. Also suitable for fine feeding.

1-Axis

GPG

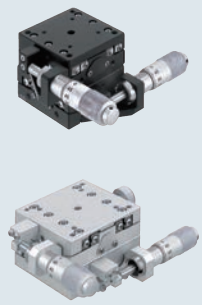


Material: Aluminum Alloy

Surface Treatment: GPG40, 60: Black Anodize, GPG50, 70: Clear Anodize

RoHS

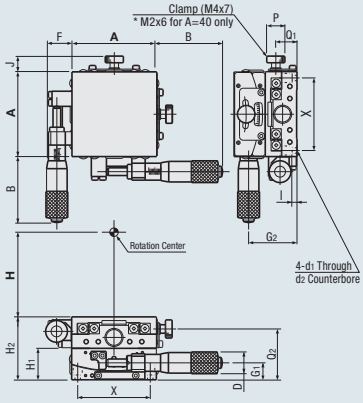
2-Axis



GPWG

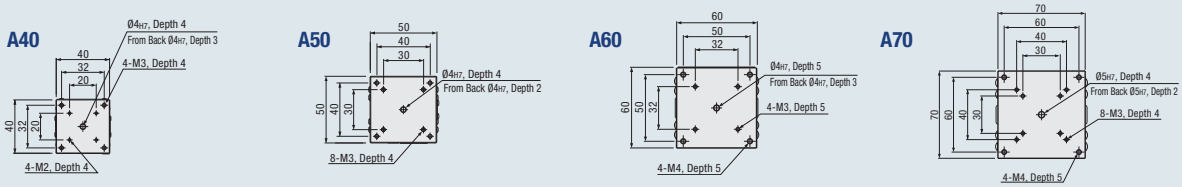
Material: Aluminum Alloy

Surface Treatment: GPWG40, 60: Black Anodize, GPWG50, 70: Clear Anodize



RoHS

Table Mounting Hole Dimensions



Part Number		Top View				Front View			Side View					
Type	A-H	B	J	E	F	H_1	D	G	P	Q	X	L	d_1	d_2
GPG	40-40	38	5.5	7.5	14	20	13	11	3.8	14	32	3	3.5	6
	40-60													
	40-80									15				
	50-50	31	13	11.5	18	18	13	9.3	15	9	40	3	3.5	6
	50-68									10				
	50-86													
	60-50	31	13.5	8	14	25	13	13	15	15.5	50	5	4.5	8
	60-75							12.9		15.9				
	60-100									16.4				
	60-125							12.8		16.3				
	70-70	52	13.3	12.5	21.5	26	18	14	15	16	60	4	4.5	8
	70-96									17.5				
	70-122													

Part Number		Top View			Front View					Side View						
Type	A-H	B	J	F	H_1	H_2	D	G_1	Q_2	P	Q_1	G_2	X	L	d_1	d_2
GPWG	40-40	38	5.5	14	20	40	13	11	34	3.8	14	31	32	3	3.5	6
	40-60								34		15					
	50-50	31	13	18	18	36	13	9.3	27	15	10	27.3	40	3	3.5	6
	50-68								28							
	60-50	31	13.5	14	25	50	13	12.9	40.5	15	15.9	35	50	5	4.5	8
	60-75								40.9		16.4	35.5				
	60-100							12.8	41.5		16.3	35.4				
	70-70	52	13.3	21.5	26	52	18	14	42	15	17.5	40	60	4	4.5	8
	70-96								43.5							

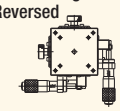
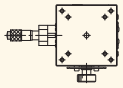
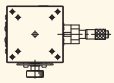
Performance

Part Number		Stage Surface (mm)	Height of Rotation Center H (mm)	Rotation Center Runout	Travel Distance	Resolution (°/division) (Micrometer)	Load Capacity (N)	Moment Load Capacity (N • m)			Moment Rigidity (°/N • cm)			Weight (kg)	Accessory (4 pcs.)
Type	A-H							Pitch	Yaw	Roll	Pitch	Yaw	Roll		TypeM-L
GPG	40-40	40 x 40	40±0.2	0.01mm or Less	±7°	≈42	29.4	1.0	0.8	0.9	1.30	1.15	0.27	0.13	SCB3-6
	40-60		60±0.2		±4°	≈30									
	40-80		80±0.2			≈23									
	50-50	50 x 50	50±0.2		±3°	≈53		1.5	1.2	2.5	0.60	0.26	0.37	0.23	SCB3-6
	50-68		68±0.2			≈40									
	50-86		86±0.2			≈33									
	60-50	60 x 60	50±0.2		±4°	≈33	49.0	1.5	2.0	2.6	0.27	0.09	0.10	0.31	SCB4-10
	60-75		75±0.2			≈24									
	60-100		100±0.2		±3°	≈18								0.30	
	60-125		125±0.2		±2.5°	≈15									
	70-70	70 x 70	70±0.2		±3°	≈25		3.6	2.8	5.7	0.17	0.06	0.06	0.53	SCB4-8
	70-96		96±0.2			≈19									
	70-122		122±0.2			≈15									

Part Number		Stage Surface (mm)	Height of Rotation Center H(mm)	Travel Distance	Resolution (°/division) (Micrometer)	Load Capacity (N)	Moment Load Capacity (N • m)			Moment Rigidity (°/N • cm)			Weight (kg)	Accessory (4 pcs.)
Type	A-H						Pitch	Yaw	Roll	Pitch	Yaw	Roll		TypeM-L
GPWG	40-40	40 x 40	40±0.4	(Top)±7°/(Bottom)±4°	(Top)≈42 /(Bottom)≈30	27.4	1.0	0.8	0.9	1.57	2.30	1.57	0.26	SCB3-6
	40-60		60±0.4	(Top)±4°/(Bottom)±4°	(Top)≈30 /(Bottom)≈23									
	50-50	50 x 50	50±0.4	(Top)±3°/(Bottom)±3°	(Top)≈53 /(Bottom)≈40	27.4	1.5	1.2	1.5	0.97	0.52	0.97	0.46	SCB3-6
	50-68		68±0.4		(Top)≈40 /(Bottom)≈33									
	60-50	60 x 60	50±0.4	(Top)±4°/(Bottom)±4°	(Top)≈33 /(Bottom)≈24	46.0	1.5	2.0	1.5	0.37	0.18	0.37	0.62	SCB4-10
	60-75		75±0.4	(Top)±4°/(Bottom)±3°	(Top)≈24 /(Bottom)≈18									
	60-100		100±0.4	(Top)±3°/(Bottom)±2.5°	(Top)≈18 /(Bottom)≈15								0.60	
	70-70	70 x 70	70±0.4	(Top)±3°/(Bottom)±3°	(Top)≈25 /(Bottom)≈19	44.1	3.6	2.8	3.6	0.23	0.12	0.23	1.06	SCB4-8
	70-96		96±0.4		(Top)≈19 /(Bottom)≈15									

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Alterations	Micrometer Position		
Spec.	Side Mount - Right/ Left Reversed 	Center  Applicable only when A=50, 70.	Center Mount Reversed  Applicable only when A=50, 70.
Code	NR	A	AR

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products.

See the CAD data for details.

Ordering Example

Part Number
GPG40-40
GPWG70-96

Alterations

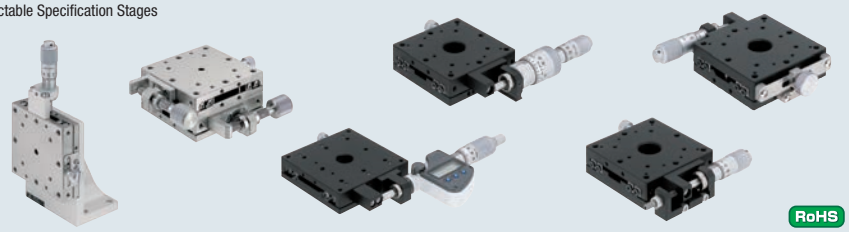
Part Number	(NR, A, AR)
GPG40-40	NR
GPWG500-50	A

[High Precision] X / XY / Z-Axis Stages

Selectable

Features: Various X, XY, and Z-Axis Linear Ball Slide / Cross Roller Stages (**P.292**, **P.305**, **P.321** respectively) that can be customer specified on 1. Feed Mechanism Mount Position, 2. Feed Type, 3. Clamp Type, and 4. Grease Type.

Selectable Specification Stages



RoHS

Part Number			Stage Used
Type	Axis	Guide	
FS	X	R	XSG (web)
		C	XPG (P.292)
	XY	R	XYSG (P.305)
	Z	R	ZSG

* Refer to the stage with the same size as the table.
Guide Type R: Linear Ball Slide, C: Cross Roller Slide

Stage			1. Feed Position	2. Feeding Method		3. Clamp Type	4. Grease
Axis	Type	Size	Center/Side	Micrometer Head (Stroke: mm)	Feed Screw (Pitch/Stroke: mm)	Selection	Selection
X-Axis	FSXR (Linear Ball)	25	(Center): A, AR, AZ, AZR (Side): C, CR, CZ, CZR	N (Standard ±3.2)	F (Hex Socket 0.5/±3.2) B (Feed Screw 0.5/±3.2)	S (Standard)	G (Standard) R (Clean Env. Compatible)*2
		40 50 60 70		N (Standard ±6.5) M (Coarse Fine Feed ±6.5)	F (Hex Socket 0.5/±6.5) B (Feed Screw 0.5/±6.5) J (Feed Screw 1.0/±6.5)	S (Standard) H (Disc) P (Opposed) Applicable only when C and CR, and the feed type is N or F.	
		80		N (Standard ±12.5) M (Coarse Fine Feed ±6.5) D (Digital Micrometer ±12.5) *1 Only applicable to feed position A ,AR and C.		S (Standard) H (Disc)	
	FSXC (Cross Roller)	25	(Center): A, AR, AZ (Side): C, CR, CZ *3	N (Standard ±3.2)	B (Feed Screw 0.5/±3.2)	S (Standard)	G (Standard)
		40 60		N (Standard ±6.5) M (Coarse Fine Feed ±6.5)			
		80		N (Standard ±12.5) M (Coarse Fine Feed ±6.5)			
XY-Axis	FSXYR (Linear Ball)	25	(Center): A, AR (Side): C, CR	N (Standard ±3.2)	F (Hex Socket 0.5/±3.2) B (Feed Screw 0.5/±3.2)	S (Standard)	G (Standard) R (Clean Env. Compatible)*2
		40 50 60 70		N (Standard ±6.5) M (Coarse Fine Feed ±6.5)	F (Hex Socket 0.5/±6.5) B (Feed Screw 0.5/±6.5) J (Feed Screw 1.0/±6.5)	S (Standard) H (Disc) Only applicable to C, CR. P (Opposed) Applicable only when C and CR, and the feed type is N or F.	
		80		N (Standard ±12.5) M (Coarse Fine Feed ±6.5) D (Digital Micrometer ±12.5) *1 Only applicable to feed position A and AR.		S (Standard) H (Disc) Only applicable to C, CR.	
Z-Axis	FSZR (Linear Ball)	25	(Center) : AZ, AZR (Side): C, CR, CZ, CZR Feeding direction of C, CR is upward; that of the others is downwards.	N (Standard ±3.2)	F (Hex Socket 0.5/±3.2) B (Feed Screw 0.5/±3.2)	S (Standard)	G (Standard) R (Clean Env. Compatible)*2
		40 50 60 70		N (Standard ±6.5) M (Coarse Fine Feed ±6.5) Not applicable to C, CR.	F (Hex Socket 0.5/±6.5) B (Feed Screw 0.5/±6.5) J (Feed Screw 1.0/±6.5)	S (Standard) H (Disc) P (Opposed) Applicable only when C and CR, and the feed type is N or F.	
		80		N (Standard ±12.5) M (Coarse Fine Feed ±6.5) Not applicable to C, CR.		S (Standard) H (Disc)	

*1 Only clamp position will be changed for Digital Micrometer A and AR. *2 When feed type M (coarse/fine feeds) or D (digital micrometer) is selected, grease R (clean env. compatible) is not applicable. *3 Combination with M, B is not available for cross roller stages AZ and CZ. Combination with B is not available for cross roller stages with Table Size 80.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Ordering Example

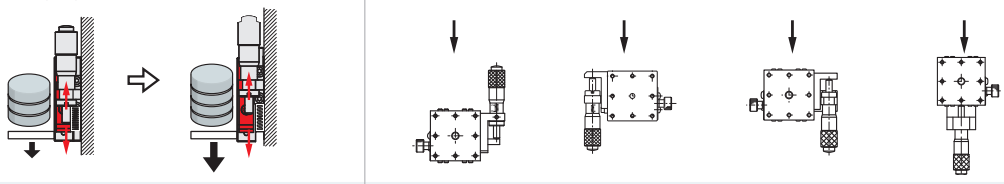
Part Number	1. Feed Position	2. Feeding Method	3. Clamp Type	4. Grease
FSXYR40	C	F	S	R

One Point:

Differences of using X-Axis Stages (XPG **P.292**) vertically versus the true Z-Axis Stages (ZSG **P.321** and ZPG **P.322**).

The true Z-Axis stages are designed and constructed with considerations given to the micrometer head/feed screw drive directions and the spring force direction to prevent the stage surfaces from falling due to the loads. (Center drive is the standard.)

NG		OK			
Standard, CR, A	STOP!!	CZ	Standard	CR	A



A load exceeding the spring pull force will cause the carriage to drop.

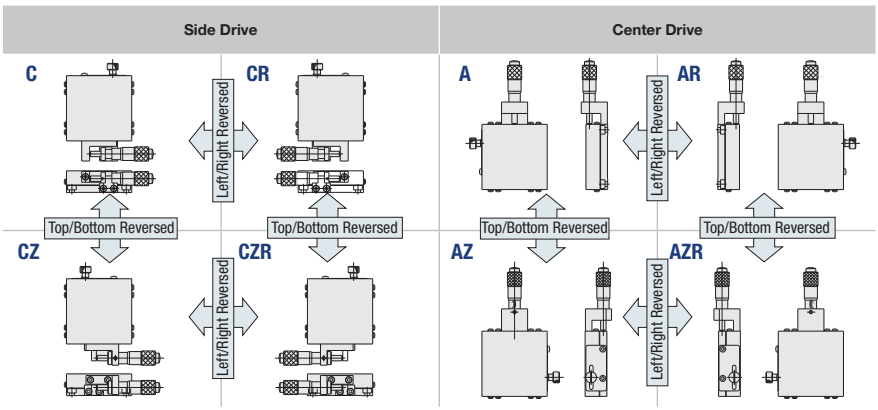
CZ: The carriage does not drop since the micrometer head tip pushes the bracket on the bottom plate.
Standard, CR, A: The stage does not move down when the micrometer head is mounted pointing up.

However, do not apply a load exceeding the specified vertical load capacity.

Notes on Vertical Uses of X-Axis Stage:

The carriage may drop if mounted vertically with the micrometer head tip pointed down with XSG## (or -CR / -A selected). (The carriage does not drop when mounted with the micrometer head tip pointing up.)

1. Feed Position



2. Feeding Method

N (Standard Micrometer Head)

Table Size 25
(Stroke ±3.2mm,
Min. Reading
0.01mm)

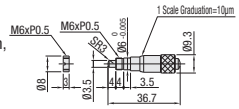


Table Size 40~70 (Stroke ±6.5mm, Min. Reading 0.01mm)

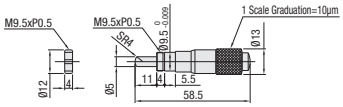
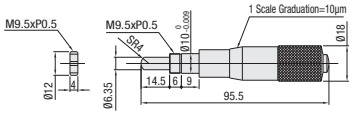


Table Size 80 (Stroke ±12.5mm, Min. Reading 0.01mm)



F (Hex Socket Screw Pitch 0.5)

Table Size 25 (M3 x P0.5, Stroke ±3.2mm)

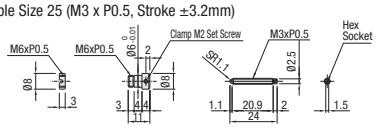
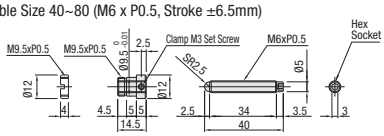


Table Size 40~80 (M6 x P0.5, Stroke ±6.5mm)



The screw shaft can be locked with a set screw on the bushing.

B (Feed Screw Pitch 0.5)
J (Feed Screw Pitch 1.0)

Table Size 25 (B M3 x P0.5, Stroke ±3.2mm)

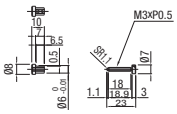
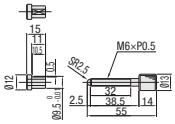
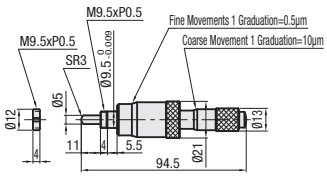


Table Size 40~80 (B M6 x P0.5, Stroke ±6.5mm),
(J M6 x P1.0, Stroke ±6.5mm)



M (Coarse/Fine Micrometer Head)

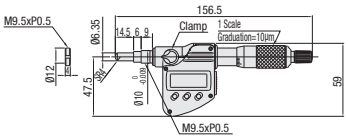
Table Size 40~80
(Stroke: Coarse Feed: ±6.5mm,
Fine Feed: 0.2mm)
Min. Reading: Coarse Feed: 10μm,
Fine Feed: 0.5μm



D (Digital Micrometer Head)

Ratchet function is not available.

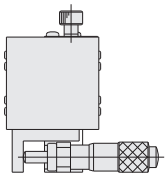
Table Size 80
(Stroke: 0~25mm)
Min. Reading 0.01mm,
Digital Readout 0.001mm



3. Clamp Type

S (Standard)

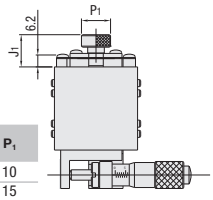
The stage side surface is held with a clamp plate by tightening the clamp screw.



H (Disc Clamp)

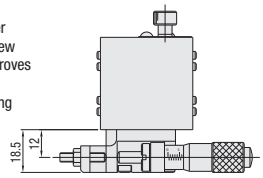
A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.

Guide Method	A	J_1	P_1
Linear Ball	40, 50, 60, 70	15.8	10
	80	14.8	15



P (Opposed Clamp)

The side drive micrometer head is opposed by a screw (M4 x 25, pitch 0.5). Improves vibration resistance and has secure position holding performance.



4. Grease

Item		Condition		Unit	Measurement Method	G (Standard) Guide Mechanism Surface	G (Standard) Drive Component	R (Clean Env. Compatible)
Grease Performance	Thickener	—		—	—	Lithium Soap-Based	Urea-Based	Lithium Soap-Based
	Base Oil	—		—	—	Mineral Oil	Mineral Oil (Mixture)	Fine Synthetic Oil
	Base Oil Kinetic Viscosity	40°C		mm^2/s	JIS K2220 5.19	131	—	100
		100°C				12.2	—	—
	Miscible Consistency	—		—	JIS K2220 7	283	275	315
	Dropping Point	—		°C	JIS K2220 8	181°C	280°C	220°C
	Evaporation Amount	—		wt%	—	0.24	0.26	0.7
	Oil Separation	100°C x 24hr		wt%	JIS K2220 5.7	2.8	0.0	2.6
	Low Temperature Torque	(Starting)	-30°C	N • m	JIS K2220 514	—	—	0.22
		(Rotation)				—	—	0.06
	Operating Temperature	In Air		°C	—	-25~120°C	-15~150°C	-40~120°C

*The guide mechanism grease for the Linear Ball Guide Stages are R (clean environment compatible) by default. The only change applicable when the R (clean environment compatible) alteration is specified is the grease for other drive components. *Grease Change Locations:* Guide Mechanism Surfaces (Slide Surfaces, Slide Contacts, Guides), and Drive Components (Micrometer Heads, Feed Screws)

[High Precision] XY-Axis, Rotary, Feed Screw / [High Precision] Dovetail Slide, Feed Screw

Features: Compact Sized and Integrated Type Stages rotatable and slidable based on XY-Axis.

XY-Axis + Rotary

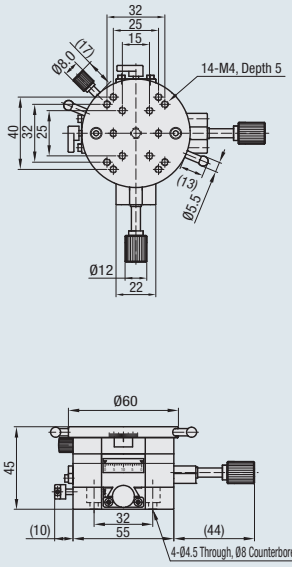
RoHS

Scale is provided with the actual product.
For specifications, see Specification Diagram.

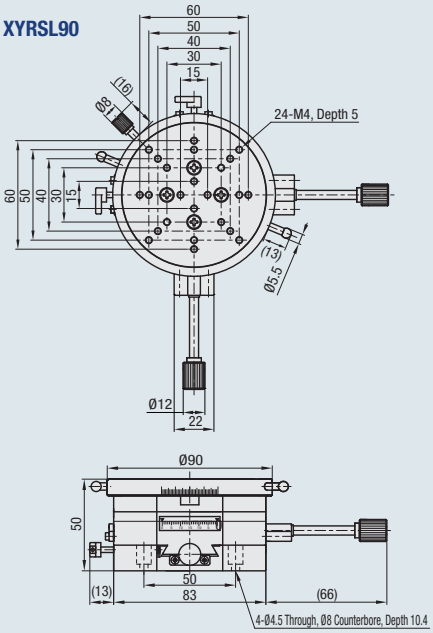
Material: Aluminum Alloy

Surface Treatment: Black Anodize

XYRSL60



XYRSL90



Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Straightness (μm)	Weight (kg)
Type	No.						
XYRSL	60	Ø60	XY: ±21 360° Rotation	4.2	34.3	30	0.39
	90	Ø90	XY: ±35 360° Rotation				0.88

Order Example

Part Number
XYRSL60

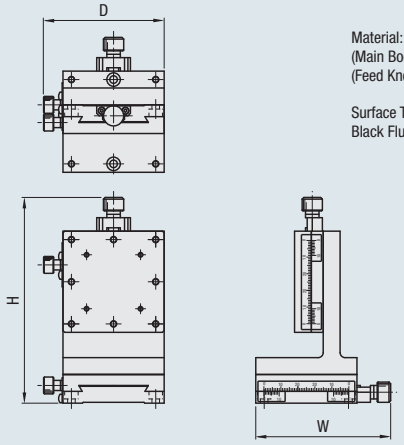
Features: XZ-Axis dovetail slide stages with 15mm thickness. Shipped orthogonally aligned to ease customer's assembly steps.

XZ-Axis Feed Screw (Lead 0.5mm)

RoHS

Z-Axis **P.326**

XZEG



Material:
(Main Body) Low Cadmium Brass
(Feed Knob) Aluminum

Surface Treatment:
Black Fluororesin Treatment

Order Example

Part Number
XZEG25

Standard Stages with Similar Specifications:
Combination of XFES and ZFES (P.315)

Part Number		Stage Configuration		Stage Surface (mm)	External Dimension (mm)			Travel Distance (mm)		Load Capacity (N)	Weight (kg)	Accessory (4 pcs.)
Type	No.	Bottom	Top		W	D	H	X	Z			Type M-L
XZEG	25	XEG25	ZEG25	25 x 25	45	31.7	72.5	±5	±5	9.8	0.17	SCB2-8
	40	XEG40	ZEG40	40 x 40	60	46.7	95.0	±7	±7		0.46	SCB3-6
	60	XEG60	ZEG60	60 x 60	80.5	71.8	122.5	±9	±9	19.6	1.35	SCB4-6

For dimension details, see the CAD data.

[High Precision] Dovetail Slide, Rack & Pinion / X: Feed Screw, Z: Rack & Pinion

Features: Rapid feeding XZ-Axis stages with 18mm travel per knob rotation. Shipped orthogonally aligned to ease customer's assembly steps.

XZ-Axis, Rack & Pinion

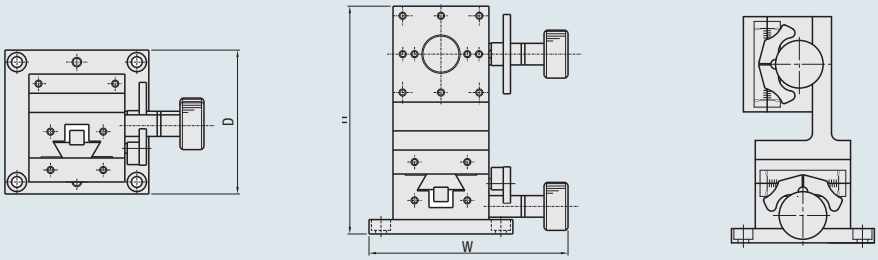
RoHS

Part Number	Material	Surface Treatment
XZFG25	Low Cadmium Brass	Black Fluororesin Treatment
XZFG40	Aluminum Alloy	Black Anodize
XZFG60		

Order Example

Part Number
XZFG25

XZFG



Part Number		Stage Configuration		Stage Surface (mm)	External Dimension (mm)			Travel Distance (mm)		Load Capacity (N)	Weight (kg)	Accessory (4 pcs)
Type	No.	Bottom	Top		W	D	H	X	Z			Type M-L
XZFG	25	XFG25	ZFG25	25 x 25	40	38	55.5	±5	±5	6.9	0.20	SCB2-12
	40	XFG40	ZFG40	40 x 40	83	60	95.0	±10	±10	14.7	0.45	SCB4-6
	60	XFG60	ZFG60	60 x 60	110	80	105.5	±20	+20	19.6	1.25	SCB4-6

For dimension details, see the CAD data for each stage. (XFG & ZFG)

Features: Travel per knob rotation for X-Axis is 0.5mm, and for Z-Axis is 14/20mm. XZ stage with a fine feed X-Axis and a rapid feed vertical Z-axis.

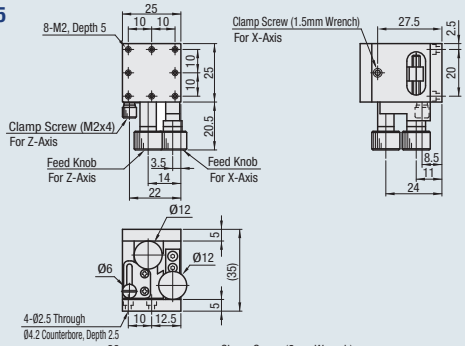
Moving Horizontal Surface XZ Stage

RoHS

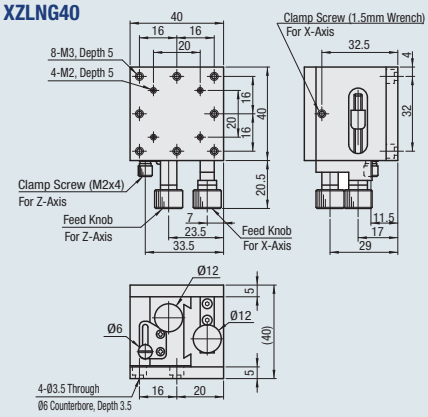
Order Example

Part Number
XZLNG60

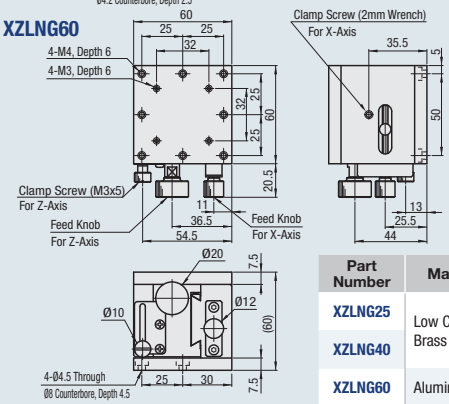
XZLNG25



XZLNG40



XZLNG60



Part Number	Material	Surface Treatment
XZLNG25	Low Cadmium Brass	Black Fluororesin Treatment
XZLNG40		
XZLNG60	Aluminum Alloy	Black Anodize

No graduated scale on XZLNG, For orders larger than indicated quantity, please request a quotation.

Part Number		Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	Accessory (4 pcs)
Type	No.							Type M-L
XZLNG	25	25 x 25	X: ±5 Z:+10	X: 0.5 Z≈14	9.8	30μm	0.17	SCB2-5
	40	40 x 40	X: ±7 Z:+10				0.51	SCB3-6
	60	60 x 60	X: ±10 Z:+26	X: 0.5 Z≈20			0.62	SCB4-8

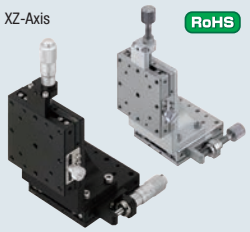
[High Precision] Linear Ball

Micrometer Head / Feed Screw

Features: High Precision/rigidity Linear Ball Slide XZ-Axis Stages. Further cost savings is possible by selecting the Feed Screw Type.

XZ-Axis

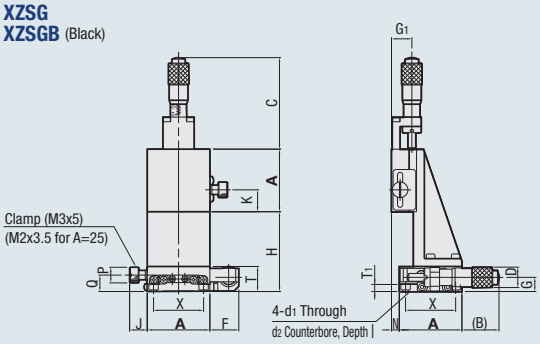
RoHS



Z-Axis of A=25 has different bracket shape.

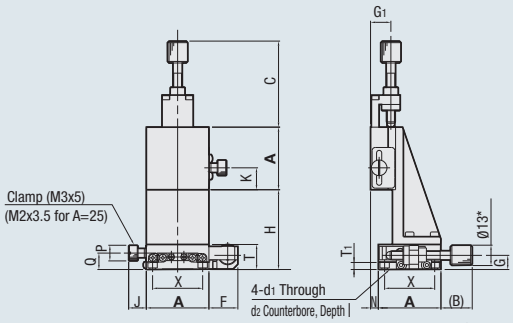
Micrometer Head

XZSG
XZSGB (Black)



Feed Screw (Pitch 0.5)

XZSCG



*A=25 will be Ø7.

Characteristics of Black Chrome Plating

Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material	Surface Treatment
XZSG XZSCG	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303	—
XZSGB		Low Temp. Black Chrome Plating					Black Anodize		Low Temp. Black Chrome Plating

For Micrometer Head and Feed Screw materials, see **P.359** and **P.360**

Micrometer Head (XZSG, XZSGB) / Feed Screw (XZSCG)

Part Number		Front View									Side View												Accessory (4 pcs)
Type	A	H	C Micrometer	C Feed Screw	K	Q	P	J	F	T	T_1	N	(B) Micrometer	(B) Feed Screw	Travel Distance (mm)	D	G	G_1	X	d_1	d_2	L	Type M-L
XZSG XZSCG XZSGB (*only)	25*	24.5	37.0	23	10	8.5	6	6.8	11.7	12	3.7	7	25	11	±3.2	9.3	7	10	20	2.5	4.2	2.5	SCB2-4
	40*	51	58.5	55	14	10.5	10	11.3	18.5	16	4.5	5	24	20.3	±6.5	13	8.9		32	3.5	6	3.5	SCB3-6
	50	46			19							20	18.7	15.3					40				
	60*	41			24						5	21	14	10.3					50	4.5	8	4.0	SCB4-6
	70	43			23.5	11.5				18	6	12	14.5	10.8			9.95	14	60			4.5	
	80*	40	96.0		25	14.5			26*1	20	6.5	20	43.5	10	±12.5*2	18	10.8	16.5	70			5.3	

*1 When feed screw A=80, F=20, *2 Travel distance of Feed Screw Type XZSCG80 is ±6.5mm.

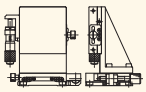
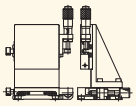
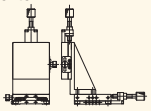
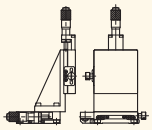
Performance

Part Number		Stage Surface (mm)	Load Capacity (N)	Travel Accuracy			Moment Load Capacity (N • m)			Moment Rigidity (″/N • cm)			Weight (kg)
Type	A			Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	
XZSG XZSCG XZSGB (*only)	25*	25 x 25	9.8	3μm	30″	25″	2.0	2.0	3.5	3.80	2.20	2.20	0.3
	40*	40 x 40	49.0	1μm*3	25″	15″	5.0	5.0	5.0	0.84	0.56	0.56	0.55
	50	50 x 50					6.8	6.0	6.0	0.30	0.23	0.23	0.72
	60*	60 x 60					10.0	9.0	9.0	0.16	0.13	0.13	0.98
	70	70 x 70					13.8	12.9	12.9	0.12	0.08	0.08	1.42
	80*	80 x 80		3μm			18.2	17.7	17.7	0.08	0.06	0.06	2.10

XZSG, XZSGB Micrometer Head Resolution: 10μm/division. *3 XZSGB Straightness is 3μm.

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Alterations	Position of Micrometer Head and Feed Screw			
Spec.	Side Up 	Side Down  Not applicable to XZSGB.	Center  Not applicable to XZSGB.	Reversed 
Code	C	CU	A	R

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

Ordering Example

Part Number
XZSG80

Alterations

Part Number	(C, CU, A, R)
XZSG40	C

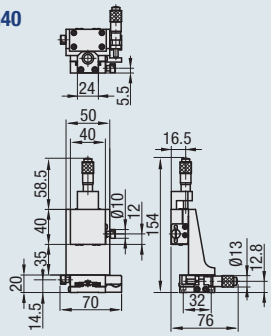
[High Precision] Cross Roller
Micrometer Head

Features: Cross Roller X 2-Axis Stages made of light weight alloy.

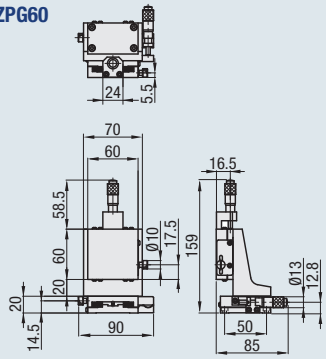
XZ-Axis

RoHS

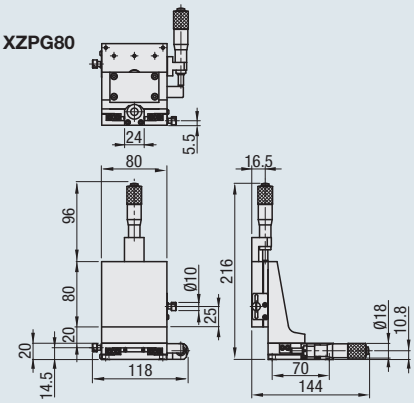
XZPG40



XZPG60



XZPG80



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Order Example

Part Number
XZPG60

For top surface mounting hole dimensions, see Cross Roller X-Axis Stages on **P.290**.

Part Number		Stage Configuration		Stage Surface (mm)	Travel Distance (mm)		Load Capacity (N)	Weight (kg)
Type	No.	Bottom	Top		X	Z		
XZPG	40	XPG40	ZPG40	40 x 40	±6.5	±6.5	9.8	0.34
	60	XPG60	ZPG60	60 x 60			19.6	0.70
	80	XPG80	ZPG80	80 x 80	±12.5	±12.5	49.0	1.30

For dimension details, see the CAD data.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

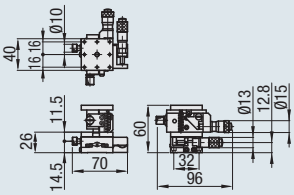
For orders larger than indicated quantity, please request a quotation.

Features: Cross Roller XZ-Axis Stages made of lightweight aluminum alloy. The horizontal surfaces move vertically.

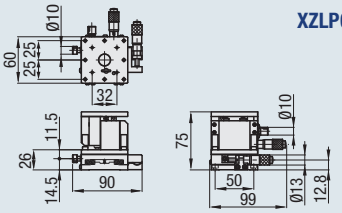
X + Horizontal Surface Z-Axis

RoHS

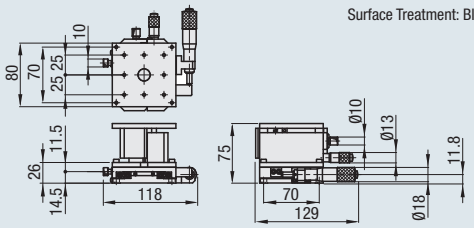
XZLPG40



XZLPG60



XZLPG80



Material: Aluminum Alloy
Surface Treatment: Black Anodize

Order Example

Part Number
XZLPG80

Part Number		Stage Configuration		Stage Surface (mm)	Travel Distance (mm)		Load Capacity (N)	Weight (kg)
Type	No.	Bottom	Top		X	Z		
XZLPG	40	XPG40	ZLPG40	40 x 40	±6.5	±3.0	9.8	0.35
	60	XPG60	ZLPG60	60 x 60		±5.0	19.6	0.63
	80	XPG80	ZLPG80	80 x 80	±12.5		29.4	1.47

For dimension details, see the CAD data.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

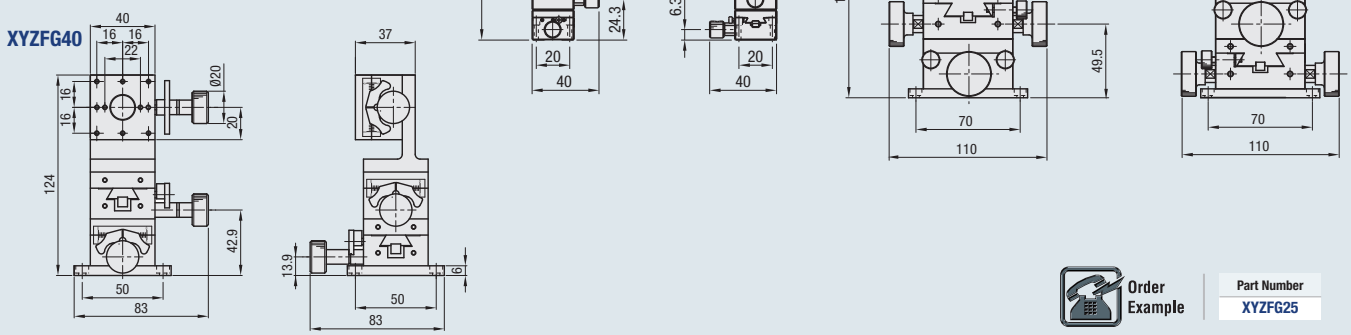
For orders larger than indicated quantity, please request a quotation.

[High Precision] Dovetail Slide, Rack & Pinion / XY: Feed Screw, Z: Rack & Pinion

Features: Dovetail Slide XYZ-Axis Stages with approx.18mm of travel per rotation.

XYZ-Axis, Rack & Pinion

RoHS



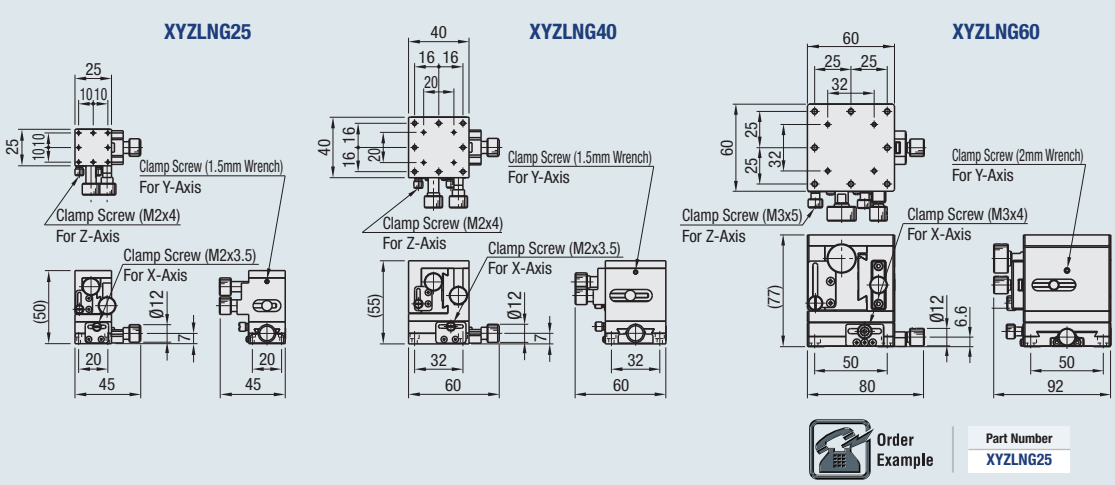
Part Number		Stage Configuration		Stage Surface	Travel Distance (mm)			Load Capacity (N)	Weight	Accessory (4 pcs)
Type	No.	Bottom	Top	(mm)	X	Y	Z		(kg)	Type M-L
XYZFG	25	XYFG25	ZFG25	25x25	±5	±5	±5	6.9	0.29	SCB2-12
	40	XYFG40	ZFG40	40x40	±10	±10	±10	14.7	0.61	SCB4-6
	60	XYFG60	ZFG60	60x60	±20	±20	+20	19.6	1.79	SCB4-6

For dimension details, material and characteristics, see the CAD data for each stage. (XYFG & ZFG)

Features: XYZ-Axes Stages with a vertically moving horizontal surface Z-axis.

XY + Horizontal Surface Z-Axis

RoHS



Part Number		Stage Configuration		Stage Surface	Travel Distance (mm)			Load Capacity (N)	Weight	Accessory (4 pcs)
Type	No.	Bottom	Top	(mm)	X	Y	Z		(kg)	Type M-L
XYZLNG	25	XEG25-R	XZLNG25	25 x 25	±5	±5	+10	9.8	0.24	SCB2-8
	40	XEG40-R	XZLNG40	40 x 40	±7	±7			0.70	SCB3-6
	60	XEG60-R	XZLNG60	60 x 60	±9	±10	+26		1.22	SCB4-6

For detailed dimensions, material and characteristics, see the CAD data for each stage. (XEG#-R & XZLNG)

[High Precision] Dovetail Slide, Feed Screw

Features: XYZ-Axis low profile (height ~15mm) dovetail slide stages with feed screws.

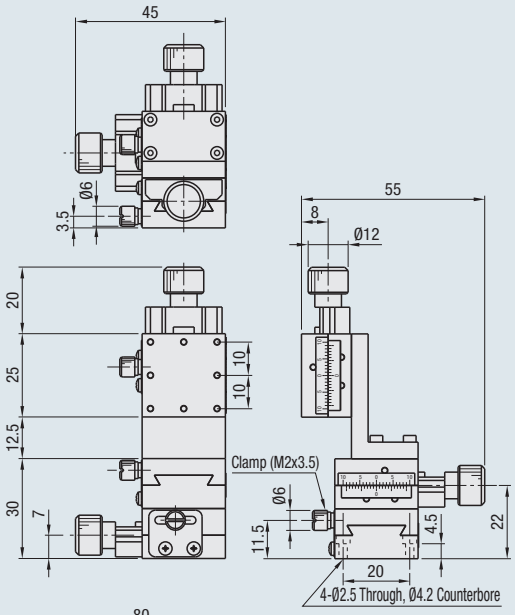
XYZ-Axis Feed Screw
(Lead 0.5mm)

Material:
(Main Body) Low Cadmium Brass,
(Feed Knob) Aluminum

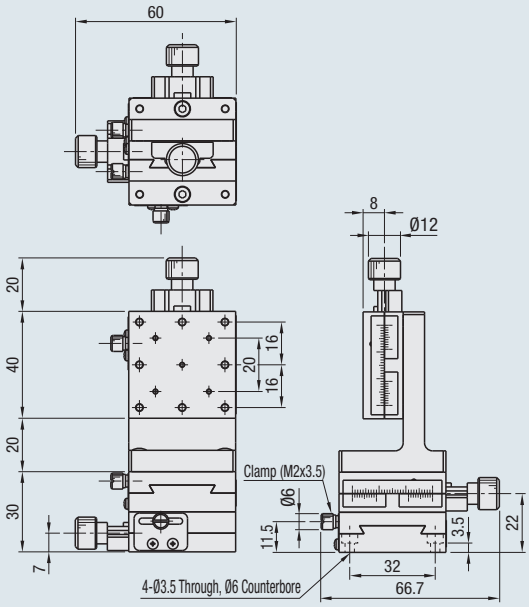
Surface Treatment:
Black Fluororesin Treatment

RoHS

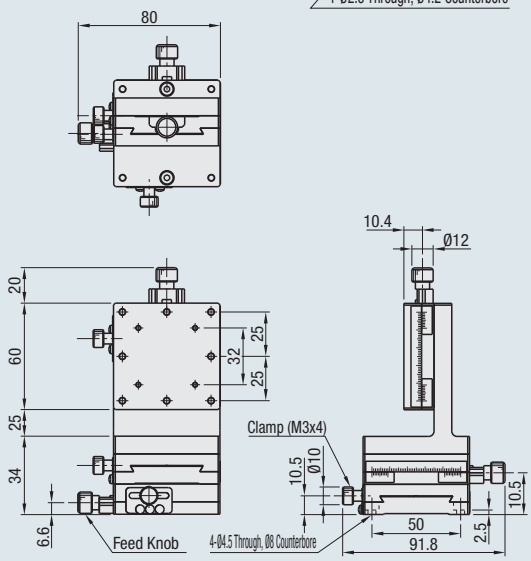
XYZEG25



XYZEG40



XYZEG60



Part Number		Stage Configuration		Stage Surface	Travel Distance (mm)			Load Capacity (N)	Weight	Accessory (4 pcs)
Type	No.	Bottom	Top	(mm)	X	Y	Z		(kg)	Type M-L
XYZEG	25	XYEG25	ZEG25	25 x 25	±5	±5	±5	9.8	0.24	SCB2-8
	40	XYEG40	ZEG40	40 x 40	±7	±7	±7		0.65	SCB3-6
	60	XYEG60	ZEG60	60 x 60	±9	±9	±9	19.6	1.95	SCB4-6

For detailed dimensions, material and characteristics, see the CAD data for each stage. (XYEG & ZEG)

Extension Cover HDEXT12 (Sold Separately): Ø12 knob can be extended. **P.350**

Order Example

Part Number
XYZEG25

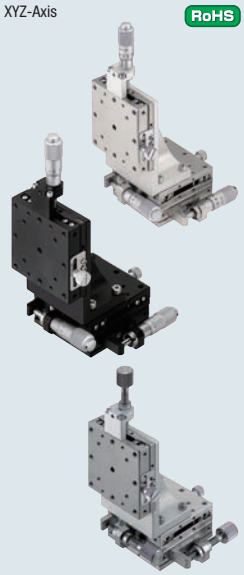
[High Precision] Linear Ball

Micrometer Head / Feed Screw

Features: High Precision/rigidity Linear Ball Slide XYZ-Axis Stages. Further cost savings is possible by selecting the Feed Screw Type.

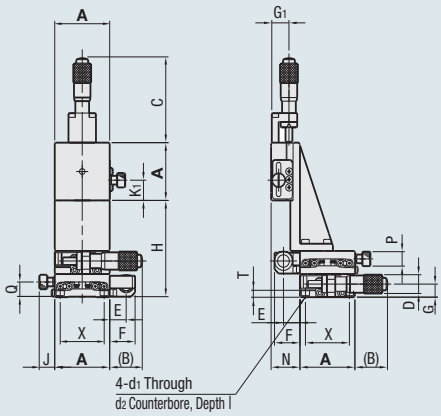
XYZ-Axis

RoHS

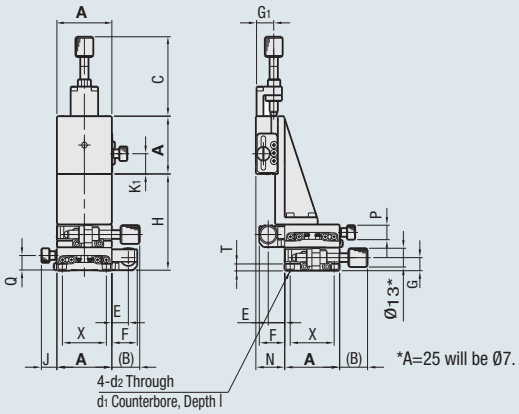


For top surface mounting dimensions, see Positioning Stages Catalog on **P.22**.

Micrometer Head
XYZSG (25≤A≤80), **XYZSGB** (Black) (A=25, 40, 60, 80)



Feed Screw (Pitch 0.5)
XYZSCG (25≤A≤80)



*A=25 will be Ø7.

For Micrometer Head and Feed Screw materials, see **P.351–352**.

Type		Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
Micrometer Head	Feed Screw	Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material	Surface Treatment
XYZSG	XYZSCG	SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303	—
XYZSGB	—	SUS440C	Low Temp. Black Chrome Plating	SUS440C	58HRC~	SUS304WPB	A5052	Black Anodize	SUS303	Low Temp. Black Chrome Plating

Micrometer Head (XYZSG, XYZSGB) / Feed Screw (XYZSCG)

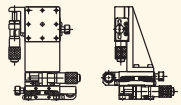
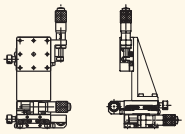
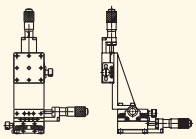
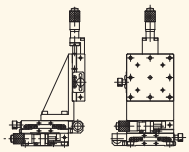
Part Number		Front View											Side View										Accessory (4 pcs)
Type	A	H	(C) Micrometer	(C) Feed Screw	K_1	Q	J	(B) Micrometer	(B) Feed Screw	Travel Distance (mm)	E	F	N	T	D	G	P	G_1	X	d_1	d_2	L	Type M-L
XYZSG XYZSCG XYZSGB (*only)	25*	36.5	37	23	10	8.5	6.8	25	11	±3.2	7	11.7	7	3.7	9.3	7	6	10	20	2.5	4.2	2.5	SCB2-4
	40*	67	58.5	55	14	10.5	11.3	23.5	20.3	±6.5	12	18.5	5	4.5	13	8.9	10	13	32	3.5	6	3.5	SCB3-6
	50	62	58.5	55	19	10.5	11.3	18.5	15.3	±6.5	12	18.5	20	4.5	13	8.9	10	13	40	3.5	6	3.5	SCB3-6
	60*	57	58.5	55	24	10.5	11.3	13.5	10.3	±6.5	12	18.5	21	5	13	8.9	10	13	50	4.5	8	4	SCB4-6
	70	61	58.5	55	23.5	11.5	11.3	14	10.8	±6.5	12	18.5	12	6	13	10	10	14	60	4.5	8	4.5	SCB4-6
	80*	60	96	55	25	14.5	11.3	43.5	10	±12.5*1	17	26*2	20	6.5	18	10.8	10	16.5	70	4.5	8	5.3	SCB4-6

*1XYZSCG80 stroke is ±6.5mm, *2When feed screw XYZSCG A=80, F=23.5.

Performance

Part Number		Stage Surface (mm)	Load Capacity (N)	Travel Accuracy			Moment Load Capacity (N • m)			Moment Rigidity ("/N • cm)			Weight (kg)
Type	A			Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	
XYZSG XYZSCG XYZSGB (*only)	25*	25 x 25	9.8	3μm	30"	25"	2.0	2.0	2.0	4.10	3.30	4.90	0.37
	40*	40 x 40	49	1μm Black Linear Ball Slides: 3μm	25"	15"	5.0	5.0	5.0	0.98	0.91	1.05	0.78
	50	50 x 50					6.0	6.0	6.0	0.38	0.37	0.39	1.00
	60*	60 x 60					9.0	9.0	9.0	0.21	0.21	0.21	1.38
	70	70 x 70					12.9	12.9	12.9	0.14	0.13	0.15	2.00
	80*	80 x 80		3μm			17.7	17.7	17.7	0.10	0.10	0.10	3.00

XYZSG and XYZSGB: Micrometer Head Resolution: 10μm/division
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Alterations	Position of Micrometer Head and Feed Screw			
	Side Up	Side Down	Center	Reversed
Spec.	 The micrometer heads may interfere depending on each axis stroke position. Please check and verify the usable stroke ranges with the CAD data.	 XNot applicable to XYZSGB.		
Code	C	CU	A	R

Ordering Example

Part Number
XYZSG40

Alterations

Part Number	(C, CU, A, R)
XYZSG40	C

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

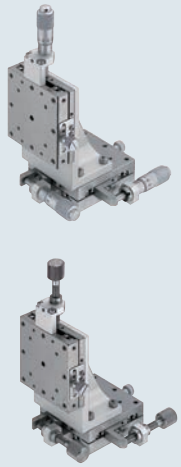
[High Precision] Linear Ball

Low Profile

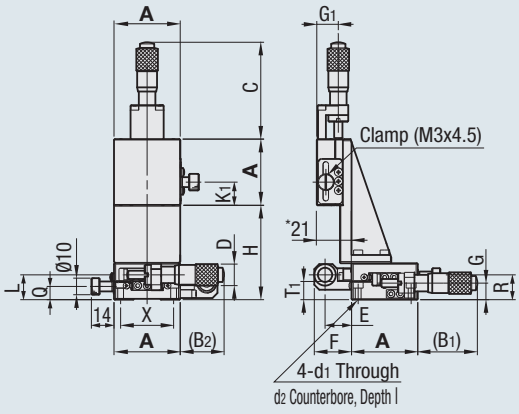
Features: XYZ-Axis Stages with low profile Linear Ball Slide XY-Axis.

XYZ-Axis

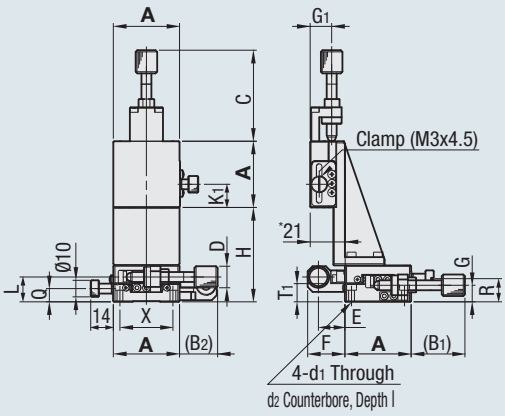
RoHS



Micrometer Head
XYZSSG



Feed Screw (Pitch 0.5)
XYZSSCG



* When A=80, the bracket shape will be different. Therefore, the stage protrusion from the bracket will be 20.

For top surface mounting dimensions and feed bracket shapes, see Linear Positioning Stages Catalog on **P.22**.

For Micrometer Head and Feed Screw materials, see **P.351–352.**

Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
Material	Surface Treatment	Material	Hardness	Material	Material	Surface Treatment	Material
SUS440C	Electroless Nickel Plating	SUS440C	58HRC~	SUS304WPB	A5052	Clear Anodize	SUS303

Micrometer Head (XYZSSG), Feed Screw (XYZSSCG)

Part Number		Front View											Side View											Accessory (4 pcs)
Type	A	H	K_1	C		(B_2)		Travel Distance (mm)	D	L	Q	X	R	G	G_1	T_1	E	F	(B_1)		d_1	d_2	L	Type M-L
				Micrometer	Feed Screw	Micrometer	Feed Screw												Micrometer	Feed Screw				
XYZSSG XYZSSCG	40	57	14	58.5	55	26.5	23	±6.5	13	15	8	32	14	10	13	10.5	16	22.5	36	32.5	3.5	6	3.5	SCB3-10
	60	47	24	58.5	55	16.5	13	±6.5	13	15	8	50	14	10	13	10.5	16	22.5	20.3	16.8	4.5	8	4.5	SCB4-10
	80	46	25	96	55	32	-7*1	±12.5*2	18*2	17	9.5	70	16.5	15	16.5	12.5	23	32*2	39	0	4.5	8	6.5	SCB4-10

*1The end of feed screw (XYZSSCG) is at 7mm inside of the stage end face. *2When feed screw XYZSSCG A=80, stroke=±6.5, D=13, F=30.

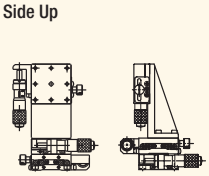
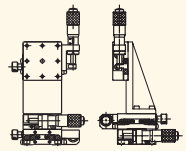
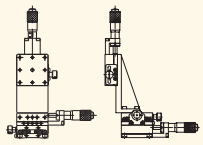
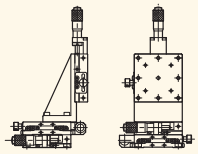
Performance

Part Number		Stage Surface (mm)	Load Capacity (N)	Travel Accuracy			Moment Load Capacity (N • m)			Moment Rigidity (″/N • cm)			Weight (kg)
Type	A			Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	
XYZSSG XYZSSCG	40	40 × 40	49	3μm	40″	20″	4.5	5.0	4.5	1.15	0.89	1.27	0.66
	60	60 × 60					9.0	8.1	9.0	0.29	0.24	0.28	1.22
	80	80 × 80					16.4	15.9	16.4	0.13	0.08	0.12	2.52

XYZSSG: Micrometer Head Resolution: 10μm/division

Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob diameter can be increased by installing the cover. **P.350**

Extension Cover HDEXT13 (Sold Separately): Feed knob of Ø13 micrometer head and feed screw can be extended. **P.350**

Alterations	Position of Micrometer Head and Feed Screw			
Spec.	Side Up 	Side Down 	Center 	Reversed 
Code	C	CU	A	R

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. See the CAD data for details.

Ordering Example

Part Number
XYZSSG40

Alterations

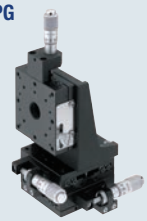
Part Number	(C, CU, A, R)
XYZSSG40	C

[High Precision] Combination Stages

Features: Lightweight XYZ-Axis Cross Roller Stages made of aluminum alloy. Choose from combinations of XY-Axis profile heights and Z-axis stoke requirements.

Combination Stages

XYZPG



XYZLPG

XYZLSPG

RoHS

Features: Combination Stages of Cross Roller as the base and Rotary/Goniometer Stages.

Combination Stages

XYRPG

XYRSPG

XYZLRPG

XYZLRSPG

RoHS

Part Number		Stage Configuration		Stage Surface (mm)	External Dimension (mm)			Travel Distance (mm)			Load Capacity (N)	Weight (kg)
Type	No.	Bottom	Top		W	D	H	X	Y	Z		
XYZPG	40	XYPG40 (P.303)	ZPG40 (P.322)	40 x 40	84.5	77.5	173.5	±6.5	±6.5	±6.5	9.8	0.48
	60	XYPG60 (P.303)	ZPG60 (P.322)	60 x 60	98.5	91.5	178.5				19.6	0.95
	80	XYPG80 (P.303)	ZPG80 (P.322)	80 x 80	149.5	143.5	236	±12.5	±12.5	±12.5	49.0	1.80
XYZLPG	40	XYPG40 (P.303)	ZLPG40 (P.324)	40 x 40	96	77	80	±6.5	±6.5	±3.0	9.8	0.48
	60	XYPG60 (P.303)	ZLPG60 (P.324)	60 x 60	115	92	95			±5.0	39.2	1.12
	80	XYPG80 (P.303)	ZLPG80 (P.324)	80 x 80	150	135	95	±12.5	±12.5		29.4	2.00
XYZLSPG	40	XYSPG40 (P.304)	ZLPG40 (P.324)	40 x 40	100	81	62	±6.5	±6.5	±3.0	7.8	0.40
	60	XYSPG60 (P.304)	ZLPG60 (P.324)	60 x 60	119	97	77			±5.0	23.5	1.00
	80	XYSPG80 (P.304)	ZLPG80 (P.324)	80 x 80	151	102	77	±12.5	±12.5		29.4	1.70

For detailed dimensions, material and characteristics, see the CAD data and the catalog page for each stage.
For included screw sizes, see the pages for the bottom stages.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

Combinations of Cross Roller stages listed in this catalog.

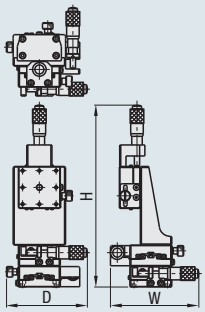
Part Number		Stage Configuration			Stage Surface (mm)	External Dimension (mm)			Travel Distance (mm)				Load Capacity (N)	Weight (kg)
Type	No.	Bottom	Middle	Top		W	D	H	X	Y	Z	F		
1XYRPG (XY-Axis + Rotary)	38	XYPG40 (P.303)	RPG38 (P.329)	—	Ø38	85	84	60	±6.5	±6.5	—	Coarse 360° Fine Feed ±5°	9.8	0.37
	60	XYPG60 (P.303)	RPG60 (P.329)	—	Ø60	99	98	65			—		29.4	0.78
	85	XYPG80 (P.303)	RPG80 (P.329)	—	Ø85	150	137	65	±12.5	±12.5	—		39.2	1.48
2XYZLRPG (XY-Axis + Horizontal Surf. Z-Axis + Rotary)	38	XYPG40 (P.303)	ZLPG40 (P.324)	RPG38 (P.329)	Ø38	96	84	100	±6.5	±6.5	±3.0	Coarse 360° Fine Feed ±5°	8.9	0.57
	60	XYPG60 (P.303)	ZLPG60 (P.324)	RPG60 (P.329)	Ø60	115	98	120			±5.0		29.4	1.40
	85	XYPG80 (P.303)	ZLPG80 (P.324)	RPG85 (P.329)	Ø85	150	137	120	±12.5	±12.5			24.7	2.48
3XYRSPG (Low Profile XY-Axis + Rotary)	38	XYSPG40 (P.304)	RPG38 (P.329)	—	Ø38	99	84	42	±6.5	±6.5	—	Coarse 360° Fine Feed ±5°	8.8	0.29
	60	XYSPG60 (P.304)	RPG60 (P.329)	—	Ø60	103	101	47			—		26.4	0.68
	85	XYSPG80 (P.304)	RPG80 (P.329)	—	Ø85	151	132	47	±12.5	±12.5	—		34.3	1.18
4XYZLRSPG (Low Profile XY-Axis + Horizontal Surf. Z + Rotary)	38	XYSPG40 (P.304)	ZLPG40 (P.324)	RPG38 (P.329)	Ø38	100	84	82	±6.5	±6.5	±3.0	Coarse 360° Fine Feed ±5°	6.8	0.49
	60	XYSPG60 (P.304)	ZLPG60 (P.324)	RPG60 (P.329)	Ø60	119	101	102			±5.0		20.6	1.28
	85	XYSPG80 (P.304)	ZLPG80 (P.324)	RPG85 (P.329)	Ø85	151	132	102	±12.5	±12.5			22.5	2.18

For detailed dimensions, material and characteristics, see the CAD data and the catalog page for each stage.
For included screw sizes, see the pages for the bottom stages.
Knob Cover HDCVR13 (Sold Separately): Ø13 micrometer knob can be increased in diameter by installing the cover. **P.350**
Extension Cover HDEXT13 (Sold Separately): Ø13 micrometer head knob can be extended. **P.350**

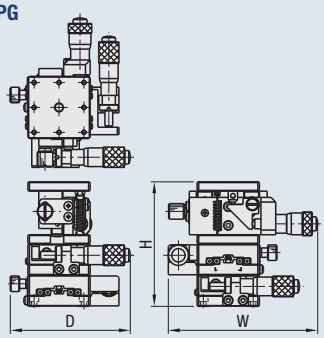
Ordering Example

Part Number
XYRPG38

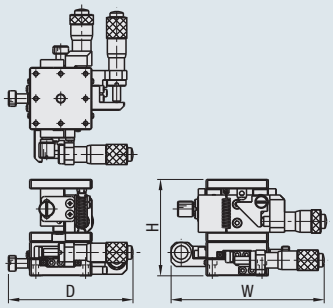
XY+Z
XYZPG



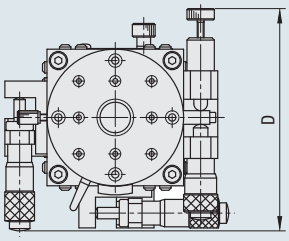
XY + Horizontal Surface Z-Axis
XYZLPG

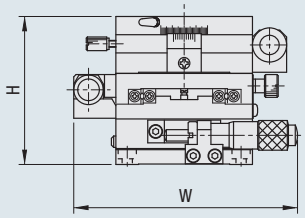


Low Profile XY-Axis + Horizontal Surface Z-Axis
XYZLSPG

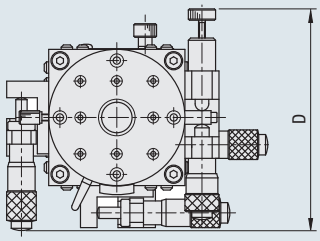


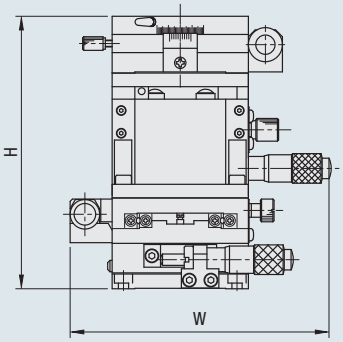
XYRPG
(XY-Axis + Rotary)



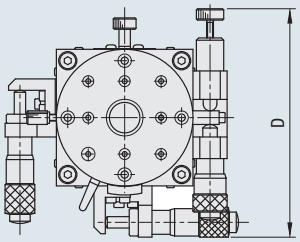


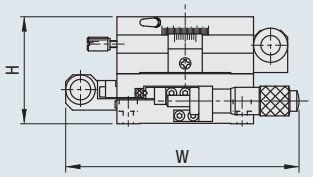
XYZLRPG
(XY-Axis + Horizontal Surf.
Z-Axis + Rotary)



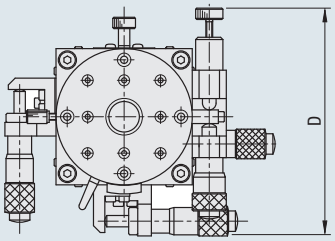


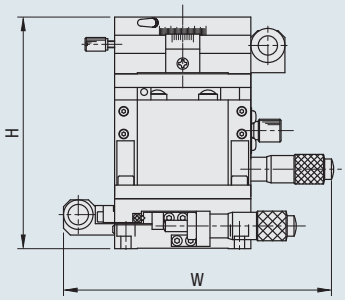
XYRSPG
(Low Profile XY-Axis + Rotary)





XYZLRSPG
(Low Profile XY-Axis + Horizontal
Surf. Z-Axis + Rotary)





The shapes are different depending on the size. See details on CAD data.

[High Precision] Dovetail Slide, Post Mounted

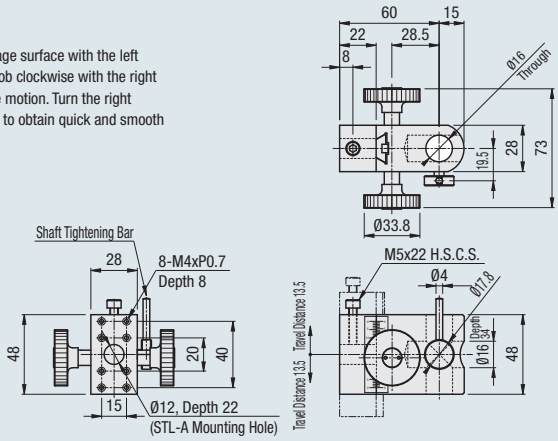
Features: Stages mountable on posts. STLC48 can be mounted directly on Ø16 posts. STLX35 and STLXYZ35 can be used with Ø12 Post Clamps.

1-Axis Slide with Crossed Mounting Bores

RoHS

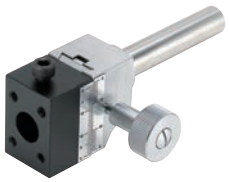
STLC48

Hold the left knob facing the stage surface with the left hand, turn (tighten) the right knob clockwise with the right hand to obtain resilient carriage motion. Turn the right knob counterclockwise (loosen) to obtain quick and smooth carriage motion.



Part Name	Material	Surface Treatment
Stage	Aluminum Alloy	Black Anodize
Holder		

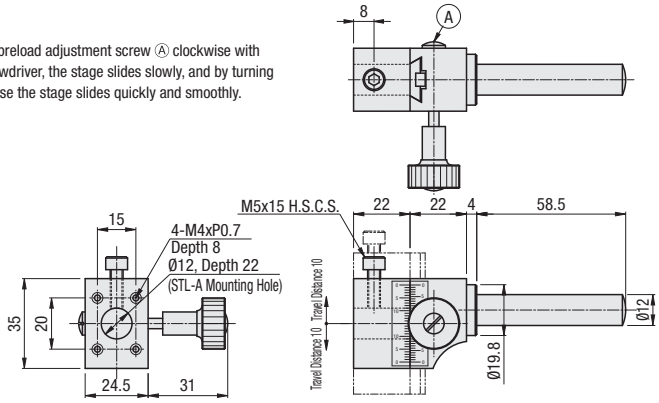
1-Axis Slide with a Shaft



RoHS

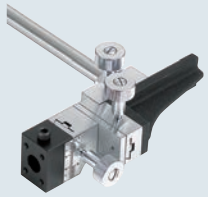
STLX35

By turning the preload adjustment screw Ⓐ clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.



Part Name	Material	Surface Treatment
Stage	Aluminum Alloy	Black Anodize
Holder	Low Cadmium Brass	Nickel Chrome Plating
Shaft	SUS303	—
Washer	Low Cadmium Brass	Nickel Chrome Plating

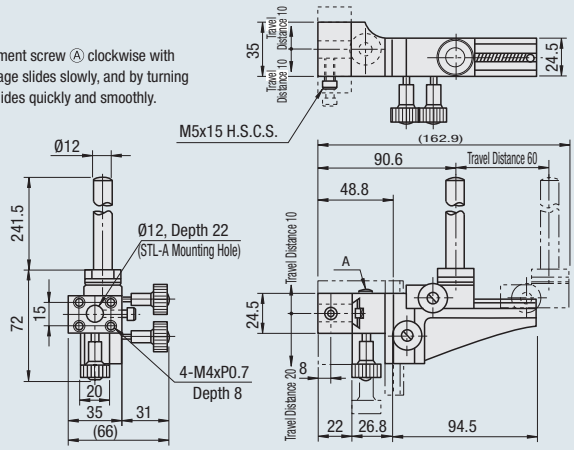
3-Axis Slide with a Shaft



RoHS

STLXYZ35

By turning the preload adjustment screw Ⓐ clockwise with a flathead screwdriver, the stage slides slowly, and by turning counterclockwise the stage slides quickly and smoothly.



Part Name	Material	Surface Treatment
Stage	Aluminum Alloy	Black Anodize
Holder	Brass	Nickel Chrome Plating
Shaft	SUS303	—
Washer	Brass	Nickel Chrome Plating

Each of the above stages is not provided with any clamping mechanism but, based on its own weight, can prevent itself from being slid as long as the applied load falls within the allowable load range.
* When a stage with a clamp is needed, combine a Dovetail Stage, Base Plate and Shaft for stages (**P.348**).

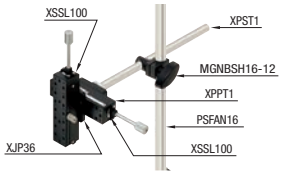
Part Number		Travel Distance (mm)			Travel per Rotation (mm)	Load Capacity (N)	Weight (kg)
Type	No.	X-Axis	Y-Axis	Z-Axis			
STLC	48	27	—	—	18	29.4	0.35
STLX	35	20	—	—		19.6	0.26
STLXYZ	35	20	30	60		19.6	0.96

Ordering Example

Part Number
STLC48

Example

Economical Scaled Post Unit is available as Simplified Adjustment Units.



Accessories for Dovetail Slide Stages

Base / Shaft / CCD Camera Adapter / Holder

Features: Accessories can be combined with dovetail stages to form a variety of Post Mounted Stages.

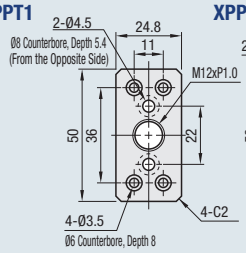
Base for Stages

RoHS

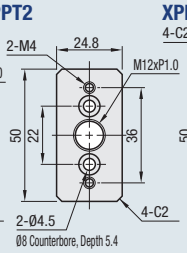
Base Plates to connect the Dovetail Stages XPST1, 2, 3 (below).

For applicable stages, see the table below.

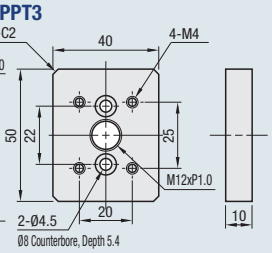
XPPT1



XPPT2



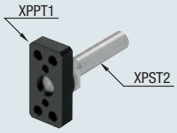
XPPT3



Material:
Aluminum Alloy

Surface Treatment:
Black Anodize

Example

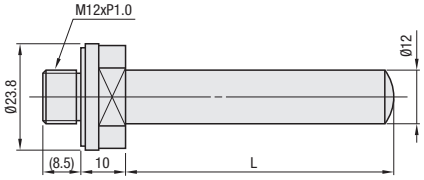


Shaft for Stages (Ø12)

RoHS

XPST1 (L=241.5)

XPST2 (L=51.5)

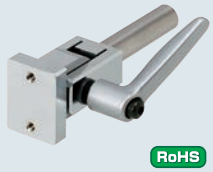


Material:
SUS303, Low
Cadmium Brass

Surface Treatment:
Nickel Chrome Plating

Example

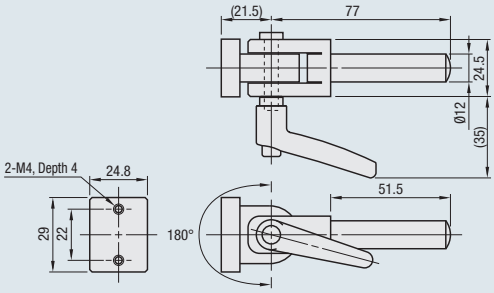
Shaft for Stages (with Lever)



RoHS

Tilt angle can be adjusted easily. (180º Max.)

XPST3

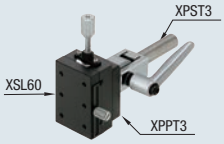


Material:
SUS303 Low
Cadmium Brass

Surface Treatment:
Nickel Chrome Plating

Accessory:
SCB4-8 (2 pcs)

Example



Part Number		Applicable Stage	Accessory: Type M-L (Qty.)
Type	No.		
XPPT	1	XSSL, XSSLC	SCB4-8 (2 pcs), SCB3-6 (4 pcs)
	2	XSP	SCB4-8 (4 pcs)
	3	XSL, XSLC, XSB	SCB4-8 (6 pcs)

Ordering Example

Part Number
XPPT1
XPST1

Not compatible with XSC.

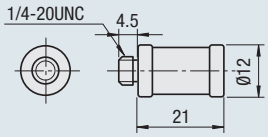
Features: Common to all camera manufacturers.

CCD Camera Adapters

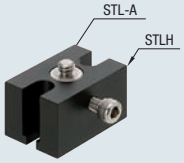
RoHS

STL-A

Material: SUS303



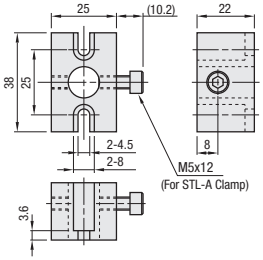
Example



CCD Camera Holder

RoHS

STLH

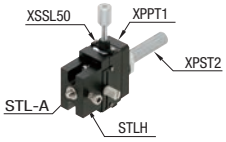


Can be combined with XWG, XYWG (**P.301**), ZWG (**P.313**), XLWG (**P.284**), ZLWG (**P.314**), REG (**P.328**) and other Dovetail Slide Stages.

Part Name	Material	Surface Treatment
Body	Aluminum Alloy	Black Anodize
Screw	SUSXM7	—

Accessory: SCB4-8 (2 pcs), Flat Washers (2 pcs)

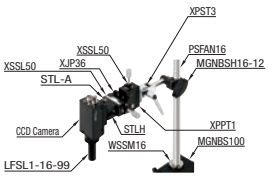
Example



Ordering Example

Part Number
STL-A

Example



Accessories for Stages

Tooling Plates, Knob Covers, Extension Covers

Features: Stages and holders are unitized to be fixed to an isolator. Tapped holes are selectable from M4 and M6. (Hole Pitch: 25mm)

Tooling Plates

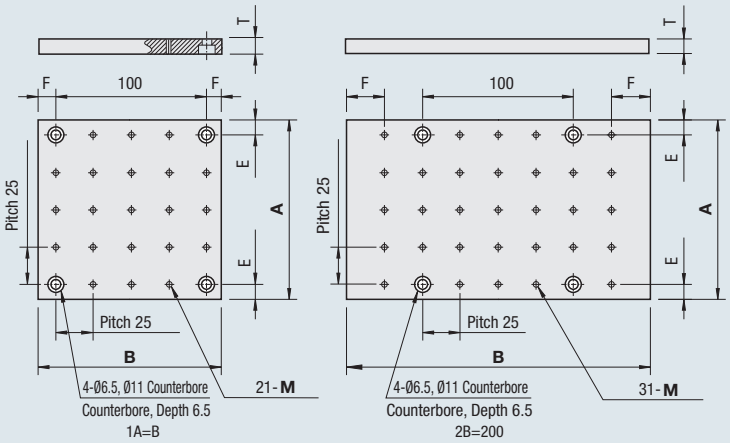
RoHS

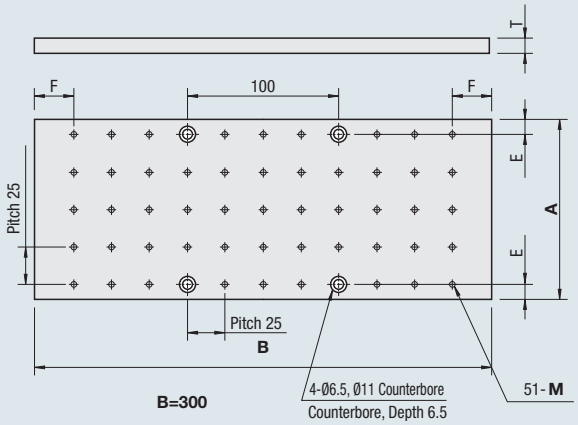
Material: Aluminum Alloy

Surface Treatment: Black Anodize

Mounting holes for M6 screws with a 100mm pitch are centrally located on the plates.

BBA





Part Number		A	B	Drawing	Tapped Holes	T	E	F
Type	M							
BBA	4	120	120	1	21	10	10	10
		150	150			10	25	25
		200	200		45	10	25	25
	6	120	200	2	31	10	10	25
		150				10	25	25
		120	300	3	51	10	10	25
		150				10	25	25
		200			73	10	25	25

For orders larger than indicated quantity, please request a quotation.

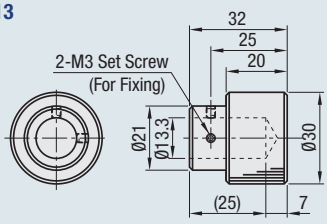
Ordering Example

Part Number		A	B
Type	M		
BBA	4	120	200

Features: Ø13 micrometer head or feed screw can be increased in diameter by installing the cover.

Knob Covers RoHS

HDCVR13



Material: ABS Resin (Black)

Example

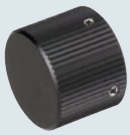
* Sold by set of 3.

Three pieces of Knob Covers (HDCVR13) are included in one order.
For orders larger than indicated quantity, please request a quotation.

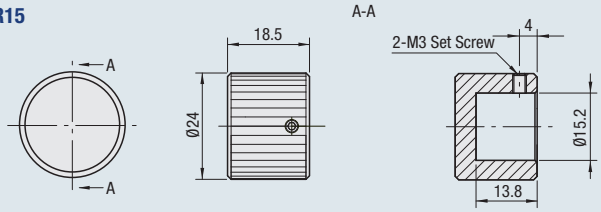
Ordering Example | Part Number **HDCVR13**

Features: Ø15 knobs can be increased in diameter by installing the cover. See below for the list of applicable stages.

Knob Covers RoHS



HDCVR15



Material: Aluminum Alloy
Surface Treatment: Black Anodize

* Sold by set of 3.

Part Number		Applicable Stage
Type	No.	
HDCVR	15	XWG, XYWG (**P.301**), ZWG (**P.313**), XLWG (**P.284**), ZLWG (**P.314**), XDTLS (**P.284**), ZDTLS (**P.314**) (Knob Dia. Ø15)

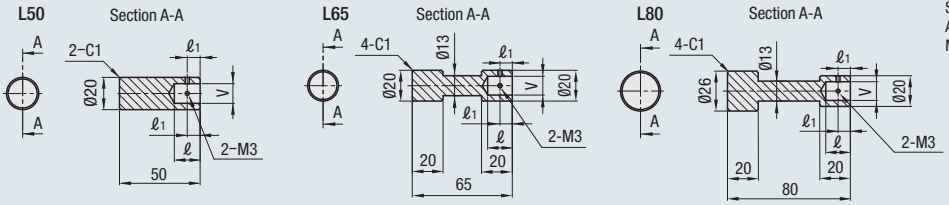
*Three Knob Covers (HDCVR15) come in a package per order.
For orders larger than indicated quantity, please request a quotation.

Features: Feed knob of Ø12 and Ø13 micrometer head and feed screw can be extended.

Extension Covers

RoHS

HDEXT



Material: A2017

Surface Treatment: Clear Anodize
Accessory: Set Screw, MSSK3-3 (2 pcs)

Part Number			Applicable Knobs	Knob O.D.	V	L	L_1
Type	No.	L					
HDEXT	12	50	Ø12	Ø20	12.3	16	8
		65					
		80		Ø26			
	13	50	Ø13	Ø20	13.3	14	7
		65					
		80		Ø26			

For orders larger than indicated quantity, please request a quotation.

Ordering Example | Part Number **HDEXT12-65**

Stage Maintenance Parts

Micrometer Head

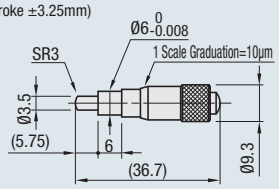
Features: Micrometer head which enables fine adjustment can be ordered separately. Economical MISUMI original products are also available.

Micrometer Head

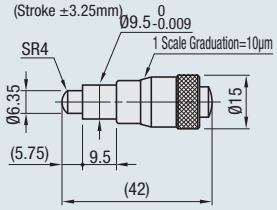
RoHS

(Dedicated Wrench)

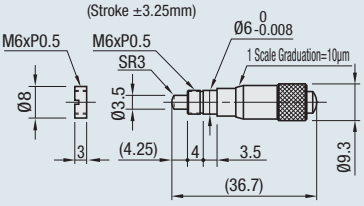
MCLN1
(Stroke ±3.25mm)



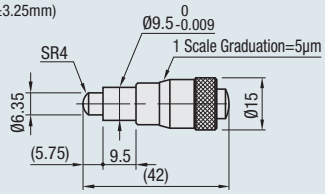
MCLN2
(Stroke ±3.25mm)



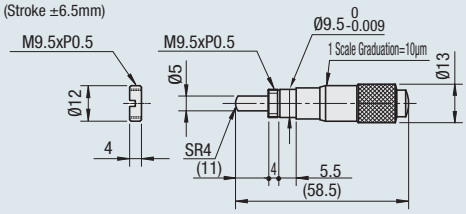
MCLN3 (w/ Nut)
(Stroke ±3.25mm)



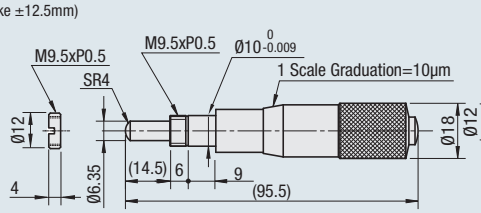
MCLN4
(Stroke ±3.25mm)



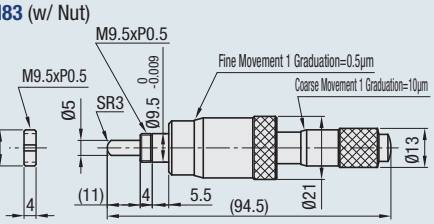
MCLN6 (w/ Nut)
(Stroke ±6.5mm)



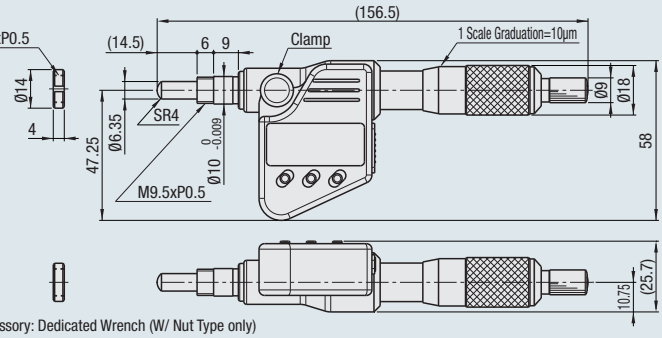
MCLN12 (w/ Nut)
(Stroke ±12.5mm)



MCLN83 (w/ Nut)



MCLN84 (w/ Nut)



The drawing shows the micrometer in stroke center state.

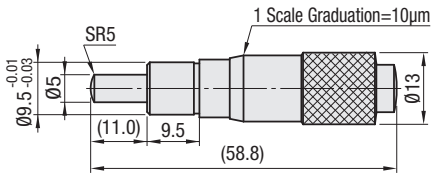
Micrometer has a bolt/nut system, so the total length doesn't change.

Material Spindle: SKS, Handle: SUM, Nut/Thread: Low Cadmium Brass, Accessory: Dedicated Wrench (W/ Nut Type only)

Standard Micrometer Head
(MISUMI Original)

RoHS

MCMH6



Type	Spindle	Main Body	
	Material	Material	Surface Treatment
MCMH	SUS416	SUM43	Trivalent Chromate

Part Number		Stroke (mm)	Minimum Graduation (mm)	Travel Distance per Rotation (mm)	Weight (kg)
Type	No.				
MCLN	1	±3.25	0.01	0.5	0.01
	2				0.03
	3				0.01
	4		0.005	0.25	0.03
	6	±6.5	0.01	0.5	
	12	±12.5			0.09
	83	Coarse Feed ±6.5, Fine Feed 0.2	Coarse Feed 0.01, Fine Feed 0.0005	0.5	0.10
	84	±12.5	0.001	0.5	0.235
MCMH	6	±6.5	0.01	0.5	0.03

Ordering Example | Part Number **MCLN6**

Stage Maintenance Parts

Feed Screws / Clamp Screws with Levers / Vernier Scale

Features: Precision finished screw/bushing fits minimizes play.

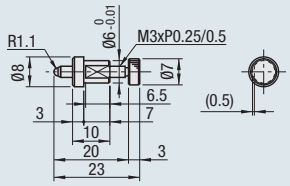
Feed Screw

RoHS

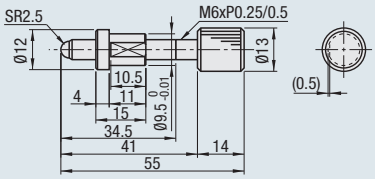
Knob Type

XBMF (Lead 0.25) (No. = 3, 6)
XBM (Lead 0.5) (No. = 3, 6, 12)

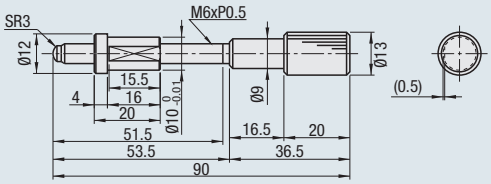
No.3



No.6



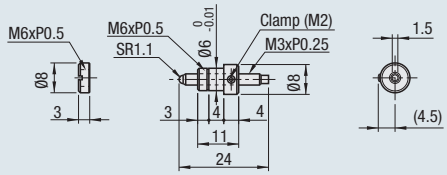
No.12



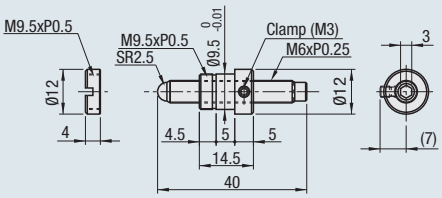
Hex Socket Type

XBRF (Lead 0.25) (No. = 3, 6)

No.3



No.6



Hex Socket Type can be locked with a set screw on the bushing.

Material Screw: SUS303, Nut: Low Cadmium Brass

Feed Screw	Part Number (Lead) Type	Part Number No.	Stroke	Linear Ball Slide Type / Cross Roller Type Applicable Stage Surface Size	Weight (kg)
With Knob	(0.25) XBMF (* only) (0.5) XBM	3*	±3.2	25 Square	5
		6*	±6.5	40 ~ 80 square	30
		12	±12.5	100/120 Square	50
Hex Socket Head Cap Screw	(0.25) XBRF	3	±3.2	25 Square	5
		6	±6.5	40 ~ 80 square	15

A dedicated wrench is included with XBRF.

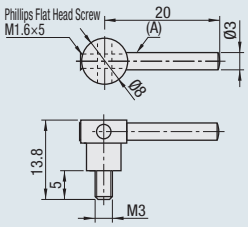
Ordering Example Part Number **XBMF3**

Features: Clamp Screws with Levers. More torque can be applied for clamping compared to the standard clamp screws. Dovetail slide stage clamps can be reinforced.

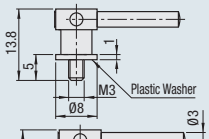
Clamp Screws with Levers for Dovetail Stages

RoHS

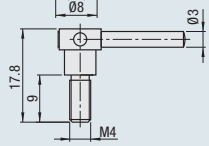
STRONG3



STRONG3W (With Washer)



STRONG4



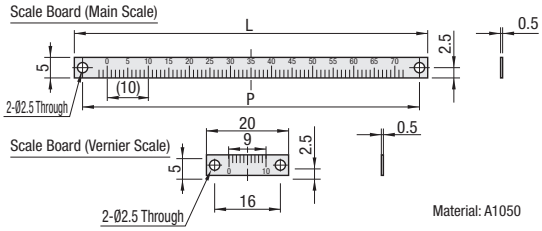
Type	No.	Applicable Stage
STRONG	3	XLWG (P.284), XSLC, XSC, XSSLC
	3W	XWG, XSL, XSSL, XSP, XSB
	4	XLONG (P.285)

Shaft (A) is fixed with a Phillips flat head screw (M1.6x5), and the lever position can be turned by 90 degrees by removing the screw and rotating the shaft.

Material Lever: Stainless Steel
Screw: Low Cadmium Brass

Vernier Scale

RoHS



Material: A1050

Type	No.	L	P	Applicable Stage
VNIR	40	36	32	XWG, XYWG, XSL, XSLC, XSC, XSSL, XSSLC
	60	56	52	
	90	86	82	Select the size that corresponds to the stage.
	140	136	132	

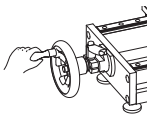
Resolution: 0.1mm
See the XY Stage Overview pages for vernier scale reading instructions.

For orders larger than indicated quantity, please request a quotation.

Ordering Example Part Number **STRONG3** **VNIR60**

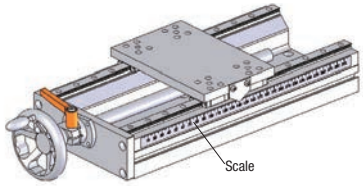
[Manual Units] Overview

Product List

Type			Manual
			
Standard			Features: Units best suited for simplified positioning. Shipping cost is small. P.354
Rapid Feed			Features: Built-in speed multiplier enables feed rate of 2.5 times of the standard units. P.355
With Position Indicator	Standard		Features: Position Indicator allows easy position adjustments. P.356
Table Fixed Type			Features: Direct table clamping avoids position drifts. P.357
Handwheel Orientation Configurable	Elevator Type		Features: Units suited for up-and-down movements. P.359
Symmetrical Action Dual Carriages			Features: Right and left tables move simultaneously. Usable as an inspection component. P.360

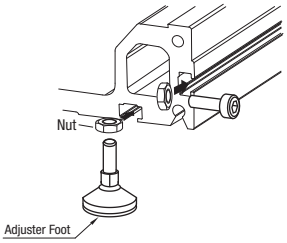
Example App. Example of Manual Units

Horizontal
Scales can be installed on the frame side surfaces.

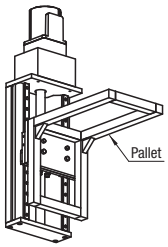


* Application Example of KUE14-C-320

Usage of Frame Slots
Side and bottom surfaces are grooved for M6 nuts. Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install a leveling mount.



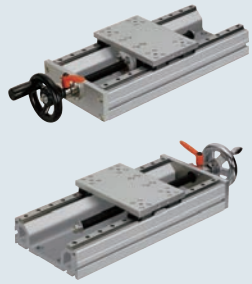
Transfer
Used to move workpieces vertically.



[Manual Units] Standard

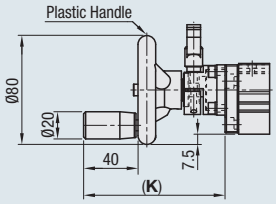
Features: Units best suited for simple manual positioning.

Standard

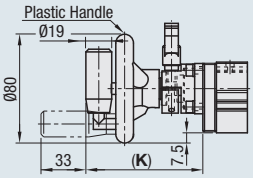


KUE (Standard)

Handwheel Type A



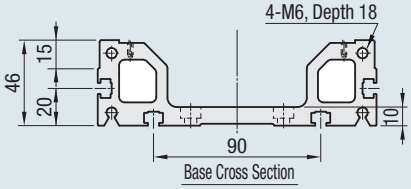
Handwheel Type B
Folding Type



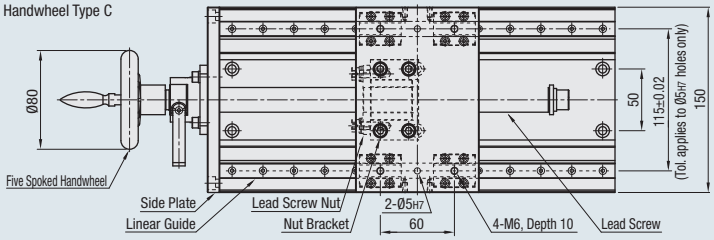
Components

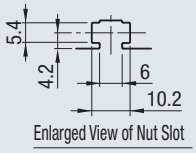
Parts	Base	Table	Lead Screw	Lead Screw Nut	Nut Bracket	Side Plate
Material	Aluminum Alloy	Aluminum Alloy	S45C	Brass	Aluminum Alloy	Aluminum Alloy
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	—	Clear Anodize	Clear Anodize

RoHS

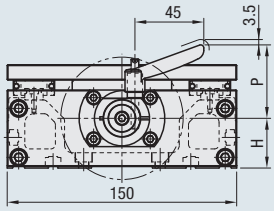


Handwheel Type C

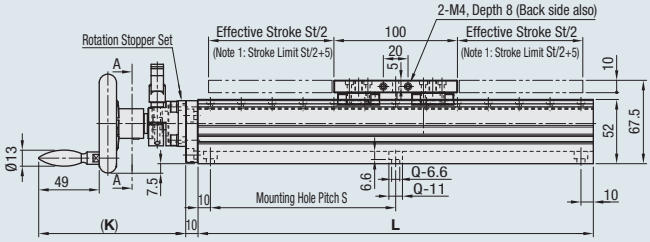




Use M6 nuts.



Arrow View A-A



Note 1) Stroke limit is where stroke reaches the mechanical limit.

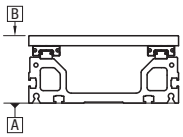
Part Number Type	Part Number No.	Handwheel Type	Base Length L (mm)	Effective Stroke St(mm)	Lead Screw Thread Dia.	Lead Screw Lead	Allowable Load (N) Horizontal	Allowable Load (N) Vertical	Allowable Moment (N • m) M_a	M_b	M_c	N	H	P	Base Mounting Hole S	Q (Number of Holes)	(K) Handwheel Type A	B	C	Mass (kg) Handwheel Type A	B	C
KUE	14	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	170	53	14	3	245	49	7	7	13	5.5	34.5	43	150	4	100	82	115	2.9	2.9	3.2
			220	103											200	4				3.4	3.4	3.7
			320	203											150	6				4.4	4.4	4.7
			370	253											175	6				4.9	4.9	5.2
			420	303											200	6				5.4	5.4	5.7
			470	353											150	8				5.9	5.9	6.2
	20		170	53	20	4	1470	294	43	43	81	7.5	32.5	45.5	150	4	103	85	118	3.5	3.5	3.8
			220	103											200	4				4	4	4.3
			320	203											150	6				5	5	5.3
			370	253											175	6				5.5	5.5	5.8
			420	303											200	6				6	6	6.3
			470	353											150	8				6.5	6.5	6.8

Accuracy

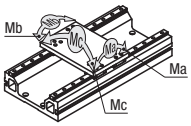
Type	Parallelism (mm)	Backlash (mm)
KUE	0.15	0.3

Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram on the right.) Backlash is not a guaranteed value but reference value.

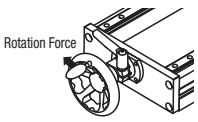
Parallelism Fig.



Moment Diagram



Turning Force Fig.



Required Torque, Required Turning Force

Part Number Type	Part Number No.	Required Torque (N • m) Horizontal	Required Torque (N • m) Vertical	Required Turning Force (N) Horizontal	Required Turning Force (N) Vertical
KUE	14	0.04	0.2	1.5	7.7
	20	0.06	0.4	2.3	16.2

Torque and turning force required at max. load capacity. Turning force is the force that rotates the handwheel. (See the diagram on the right.) Vertical values are those when elevating the table.

Part Number Type	Part Number No.	Handwheel Type
KUE	14	A
		B
		C
	20	A
		B
		C

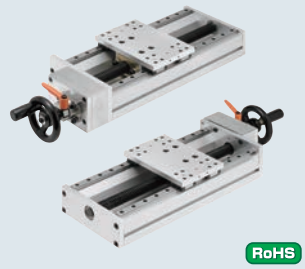
Ordering Example

Part Number	Handwheel Type	L
KUE14	A	320

[Manual Units] Rapid Feed

Features: Built-in speed multiplier enables feed rate of 2.5 times of the standard units.

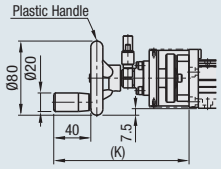
X-Axis



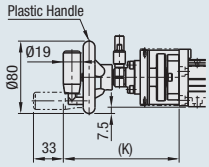
RoHS

KUEHS

Handwheel Type A



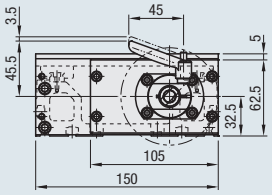
Handwheel Type B



Components

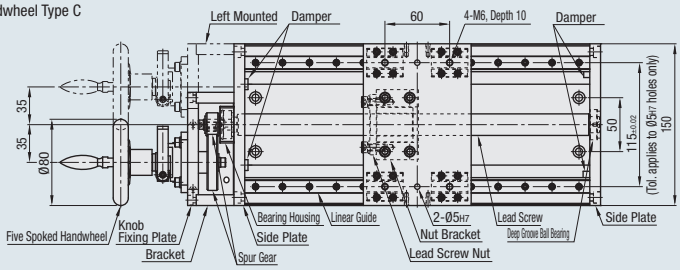
Parts	Base	Table	Lead Screw	Lead Screw Nut
Material	A6063S-T5	A6063	S45C	Brass
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	—

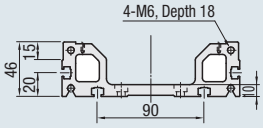
Parts	Nut Bracket	Side Plate	Spur Gear	Cover
Material	A5052	A6063	S45C	SUS304HL
Surface Treatment	Clear Anodize	Clear Anodize	—	—



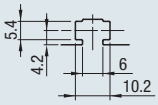
Arrow View A-A

Handwheel Type C

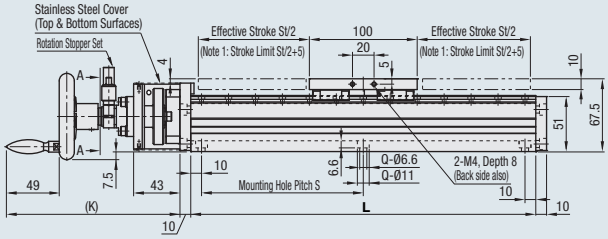




Base Cross Section



Enlarged View of Nut Slot
Use M6 nuts.



* The drawing shows right side mount.

Note 1) Stroke limit is where stroke reaches the mechanical limit.

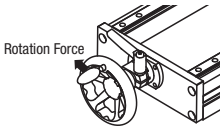
Part Number		Handwheel Type	Base Length L (mm)	Effective Stroke St(mm)	Lead Screw		Allowable Load (N)		Allowable Moment (N • m)			Base Mounting Hole		Mass (kg)		
Type	No.				Thread Dia.	Lead	Horizontal	Vertical	M_a	M_b	M_c	S	Q (Number of Holes)	Handwheel Type		
														A	B	C
KUEHS	20	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	320	203	20	4	490	98	14	14	27	150	6	6.2	6.2	6.2
			370	253								175	6	6.7	6.7	6.7
			420	303								200	6	7.2	7.2	7.2
			470	353								150	8	7.7	7.7	7.7

Required Torque, Required Turning Force

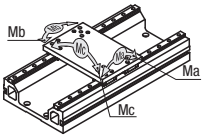
Part Number		Required Torque (N • m)		Required Turning Force (N)	
Type	No.	Horizontal	Vertical	Horizontal	Vertical
KUEHS	20	0.147	1.051	5.653	40.41

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel.
*Vertical values are those when elevating the table.

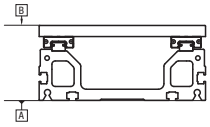
Turning Force Fig.



Moment Diagram



Parallelism Fig.



Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUEHS	0.15	0.3

*Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram)
*The backlash value shown is for a lead screw model, and is a reference value.

Part Number		Knob Type
Type	No.	
KUEHS	20	A
		B
		C

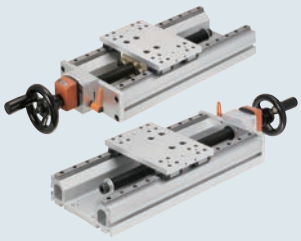
Ordering Example

Part Number	Handwheel Type	L
KUEHS20	L	320

[Manual Units] with Position Indicator

Features: Position Indicator allows easy position adjustments.

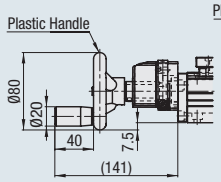
X-Axis



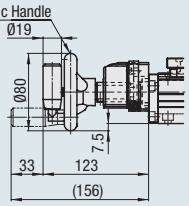
RoHS

KUDP

Handwheel Type A



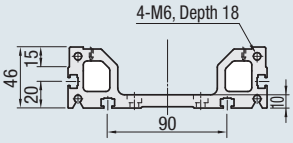
Handwheel Type B



Components

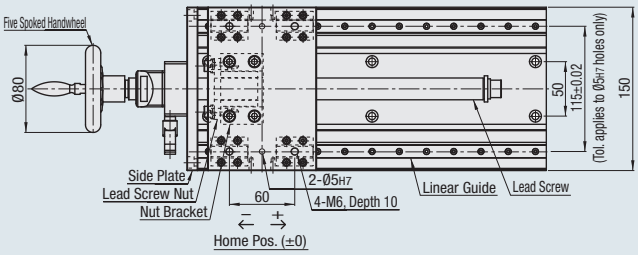
Parts	Base	Table	Lead Screw
Material	A6063S-T5	A6063	S45C
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide

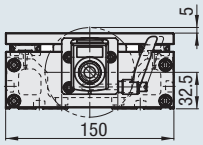
Parts	Lead Screw Nut	Nut Bracket	Side Plate
Material	Brass	A5052	A6063
Surface Treatment	—	Clear Anodize	Clear Anodize



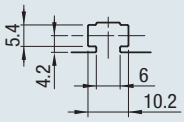
Base Cross Section

Handwheel Type C

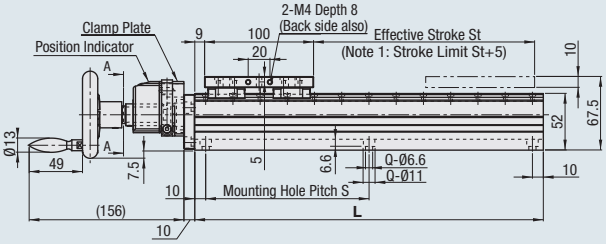




Arrow View A-A



Enlarged View of Nut Slot
Use M6 nuts.



Note 1) Stroke limit is where stroke reaches the mechanical limit.

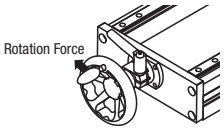
Part Number		Handwheel Type	Base Length L (mm)	Effective Stroke St(mm)	Lead Screw		Allowable Load (N)		Allowable Moment (N•m)			Base Mounting Hole		Mass (kg)		
Type	No.				Thread Dia.	Lead	Horizontal	Vertical	M_a	M_b	M_c	S	Q (Number of Holes)	Handwheel Type A	B	C
KUDP	20	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	170	53	20	4	490	98	14	14	27	150	4	3.8	3.8	4.1
			220	103								200	4	4.3	4.3	4.6
			320	203								150	6	5.3	5.3	5.6
			370	253								175	6	5.8	5.8	6.1
			420	303								200	6	6.3	6.3	6.6
			470	353								150	8	6.8	6.8	7.1

Required Torque, Required Turning Force

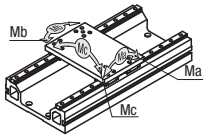
Part Number		Required Torque (N • m)		Required Turning Force (N)	
Type	No.	Horizontal	Vertical	Horizontal	Vertical
KUDP	20	0.059	0.333	2.261	12.823

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel.
*Vertical values are those when elevating the table.

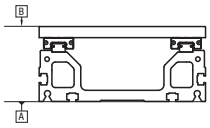
Turning Force Fig.



Moment Diagram



Parallelism Fig.



Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUDP	0.15	0.3

*Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram)
*The backlash value shown is for a lead screw model, and is a reference value.

Part Number		Knob Type
Type	No.	
KUEHS	20	A
		B
		C

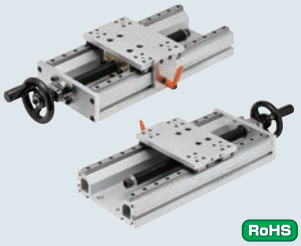
Ordering Example

Part Number	Handwheel Type	L
KUEHS20	L	320

[Manual Units] Table Fixed Type

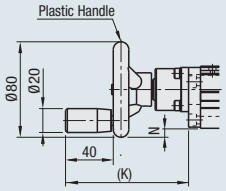
Features: Direct table clamping avoids position drifts caused by leadscrew backlash.

X-Axis

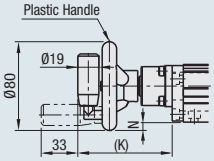


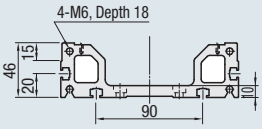
KUEC

Handwheel Type A

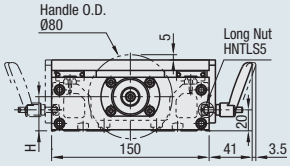


Handwheel Type B

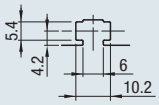




Base Cross Section



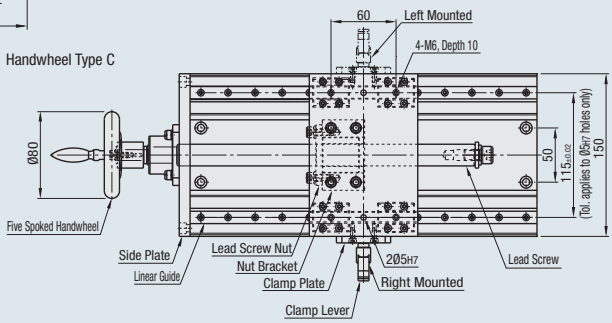
Arrow View A-A

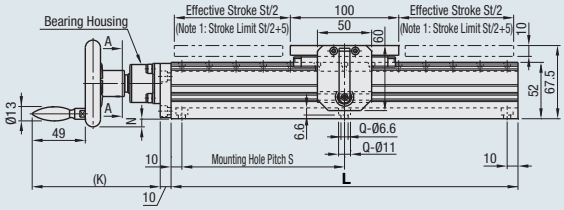


Enlarged View of Nut Slot

Use M6 nuts.

Handwheel Type C





Note 1) Stroke limit is where stroke reaches the mechanical limit.

Components

Parts	Base	Table	Lead Screw	Lead Screw Nut
Material	A6063S-T5	A6063	S45C	Brass
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	—

Parts	Nut Bracket	Side Plate	Clamp Plate
Material	A5052	A6063	A6063
Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize

Part Number		Handwheel Type	Base Length L (mm)	Effective Stroke St (mm)	Lead Screw		Allowable Load (N)		Moment Load Capacity (N • m)			Base Mounting Hole		Mass (kg)		
Type	No.				Thread Dia.	Lead	Horizontal	Vertical	M_a	M_b	M_c	S	Q (Number of Holes)	Handwheel Type A	B	C
KUEC	14	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	170	53	14	3	490	98	14	14	27	150	4	2.9	2.9	3.2
			220	103								200	4	3.4	3.4	3.7
			320	203								150	6	4.4	4.4	4.7
			370	253								175	6	4.9	4.9	5.2
			420	303								200	6	5.4	5.4	5.7
			470	353								150	8	5.9	5.9	6.2
	20		170	53	20	4	490	98	14	14	27	150	4	3.5	3.5	3.8
			220	103								200	4	4	4	4.3
			320	203								150	6	5	5	5.3
			370	253								175	6	5.5	5.5	5.8
			420	303								200	6	6	6	6.3
			470	353								150	8	6.5	6.5	6.8

Required Torque, Required Turning Force

Part Number		Required Torque (N • m)		Required Turning Force (N)	
Type	No.	Horizontal	Vertical	Horizontal	Vertical
KUEC	14	0.039	0.206	1.503	7.918
	20	0.059	0.426	2.261	16.402

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel.
*Vertical values are those when elevating the table.

Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUEC	0.15	0.3

*Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram)
*The backlash value shown is for a lead screw model, and is a reference value.

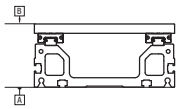
Clamping Force 100N

* Clamping Force is not a guaranteed value but a reference value.

Clamping Force Testing Method

* The clamping force shown is a force to move the table when tightened at 30N.

Parallelism Fig.



Part Number	
Type	No.
KUEC	14
	20

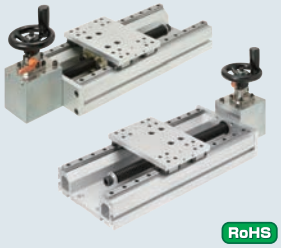
Ordering Example

Part Number	Handwheel Type	Clamp Position	L
KUEC14	A	W	320

[Manual Units] Handwheel Orientation Configurable

Features: Handwheel orientation is selectable. Best suited for use in limited spaces.

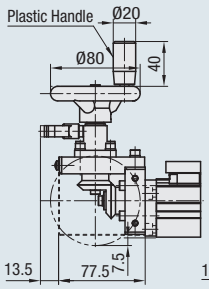
X-Axis



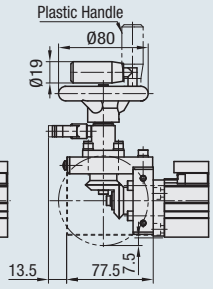
RoHS

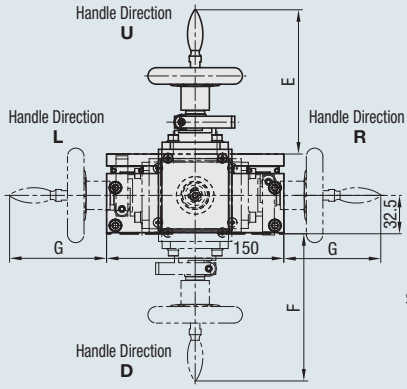
KUEF

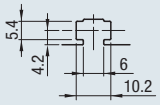
Handwheel Type A



Handwheel Type B

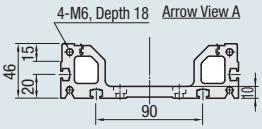






Enlarged View of Nut Slot

Use M6 nuts.



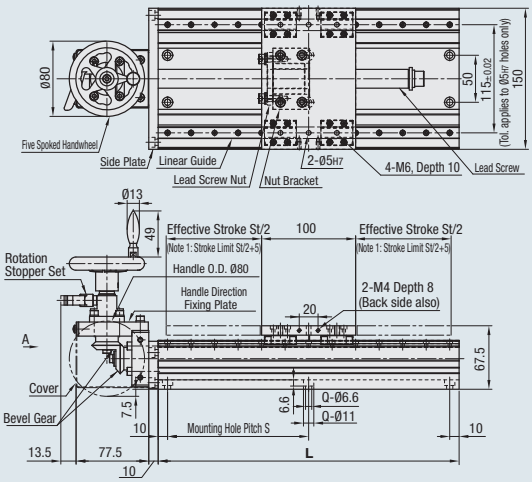
Base Cross Section

Components

Parts	Base	Table	Lead Screw	Lead Screw Nut
Material	A6063S-T5	A6063	S45C	Brass
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	—

Parts	Nut Bracket	Side Plate	Bevel Gear	Cover
Material	A5052	A6063	S45C	AUS304HL
Surface Treatment	Clear Anodize	Clear Anodize	—	—

Handwheel Type C



Note 1) Stroke limit is where stroke reaches the mechanical limit.

Part Number Type	Part Number No.	Handwheel Type	Handwheel Orientation Configurable	Base Length L (mm)	Effective Stroke St (mm)	Lead Screw Thread Dia.	Lead Screw Lead	Allowable Load (N) Horizontal	Allowable Load (N) Vertical	Allowable Moment (N • m) M_a	M_b	M_c	Handwheel Type A E	A F	A G	B E	B F	B G	C E	C F	C G	Base Mounting Hole S	Q (Number of Holes)	Mass (kg) Handwheel Type A	B	C
KUEF	20	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	U D L R	170	53	20	4	490	98	14	14	27	107	109.5	67	122	124.5	82	122	124.5	82	150	4	4.7	4.7	5
				220	103																	200		5.2	5.2	5.5
				320	203																	150	6	6.2	6.2	6.5
				370	253																	175		6.7	6.7	7
				420	303																	200		7.2	7.2	7.5
				470	353																	150	8	7.7	7.7	7.7

Required Torque, Required Turning Force

Part Number Type	Part Number No.	Required Torque (N • m) Horizontal	Required Torque (N • m) Vertical	Required Turning Force (N) Horizontal	Required Turning Force (N) Vertical
KUEF	20	0.059	0.420	2.261	16.164

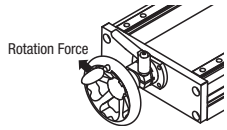
*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel.
*Vertical values are those when elevating the table.

Accuracy

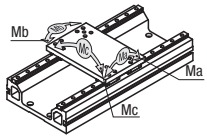
Type	Parallelism (mm)	Backlash (mm)
KUEF	0.15	0.5

*Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram)
*The backlash value shown is for a lead screw model, and is a reference value.

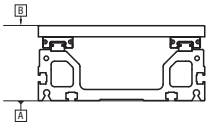
Turning Force Fig.



Moment Diagram



Parallelism Fig.



Part Number Type	Part Number No.	Knob Type
KUEF	20	A
		B
		C

Ordering Example

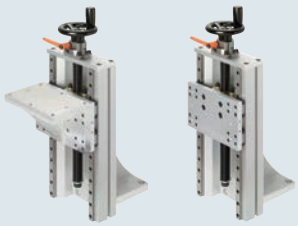
Part Number	Handwheel Type	Handwheel Orientation	L
KUEF20	A	L	320

[Manual Units] Elevator Type

Features: Units suited for up-and-down movements. Simple vertical positioning is possible.

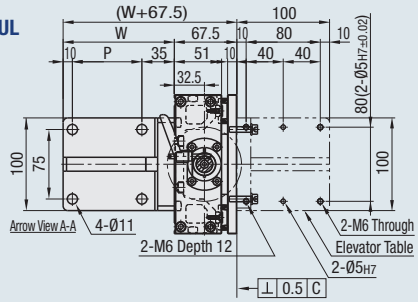
Z-Axis, Elevator Type

RoHS



(w/ Elevator Table) (w/o Elevator Table)

KUL

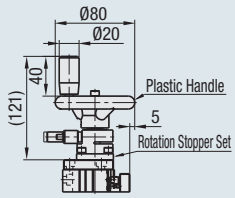


Components

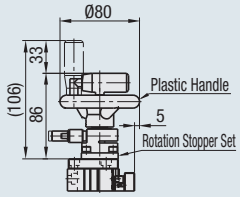
Parts	Base	Table	Elevator Table	Angle Plate
Material	A6063S-T5	A6063	AC7A	AC7A
Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize	Clear Anodize

Parts	Lead Screw	Lead Screw Nut	Nut Bracket	Side Plate
Material	S45C	Brass	A5052	A6063
Surface Treatment	Black Oxide	—	Clear Anodize	Clear Anodize

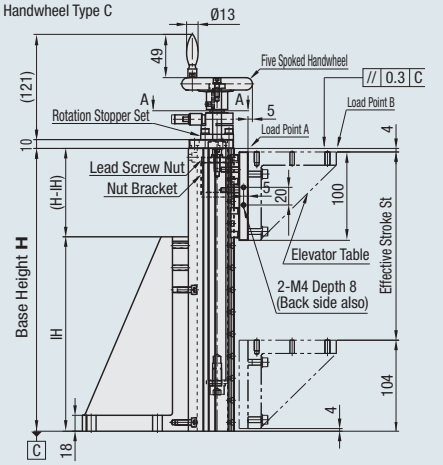
Handwheel Type A

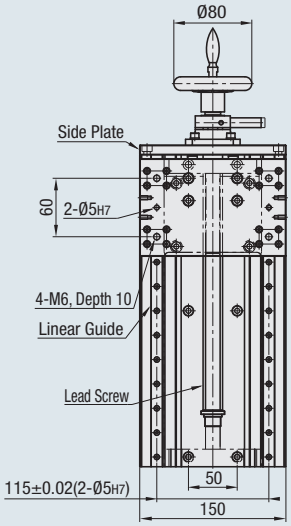


Handwheel Type B



Handwheel Type C





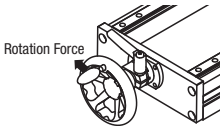
Part Number Type	Part Number No.	Handwheel Type	Elevator Table Selection	Base Height H (mm)	Effective Stroke St (mm)	Lead Screw Thread Dia.	Lead Screw Lead	Allowable Load (N) When Load Applied to Point A	Allowable Load (N) When Load Applied to Point B	Allowable Moment (N • m) M_a	M_b	M_c	W	P	IH	Mass (kg) Handwheel Type A	B	C
KUL	20	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	Not Specified (w/) N (w/o)	170	62	20	4	294	270	43	43	81	120	75	220	6.1	6.1	6.4
				220	112											6.8	6.8	7.1
				320	212											7.9	7.9	8.2
				370	262											8.5	8.5	8.8
				420	312								150	105	350	10.3	10.3	10.6
				470	362											10.8	10.8	11.1

Required Torque, Required Turning Force

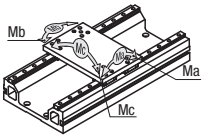
Part Number Type	Part Number No.	Required Torque (N • m)	Required Turning Force (N)
KUL	20	0.861	33.112

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel.

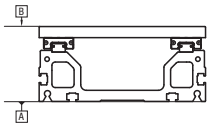
Turning Force Fig.



Moment Diagram



Parallelism Fig.



Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUL	0.15	0.3

*Parallelism is the degree of running parallelism for dimension B against dimension A. (See the diagram.)
*Backlash is not a guaranteed value but reference value.

Part Number Type	Part Number No.	Knob Type
KUL	20	A
		B
		C

Ordering Example

Part Number	Handwheel Type	Elevator Table	L	
KUL20	A		320	(w/ Elevator Table)
KUL20	A	N	320	(w/o Elevator Table)

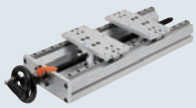
[Manual Units] Symmetrical Action Dual Carriages

Features: Units best suited for simple manual positioning and capable of moving right and left tables simultaneously.

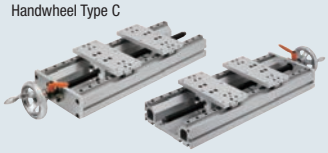
Symmetrical Action Dual Carriages RoHS

Handwheel Type A

Handwheel Type B

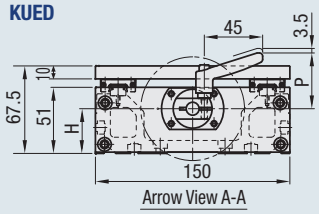


Handwheel Type C



Right and left tables move simultaneously.

KUED



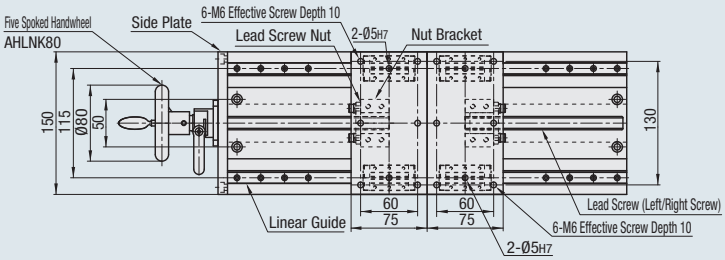
Components

Parts	Base	Table	Lead Screw	Lead Screw Nut	Nut Bracket	Side Plate
Material	A6063S-T5	A6063	S45C	Brass	A5052	A6063
Surface Treatment	Clear Anodize	Clear Anodize	—	—	Clear Anodize	Clear Anodize

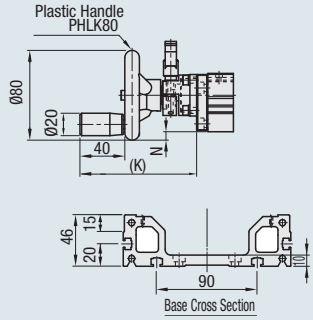
Stroke

Type	Effective Stroke St (mm)			
	L=320	L=370	L=420	L=470
KUED	65	90	115	145

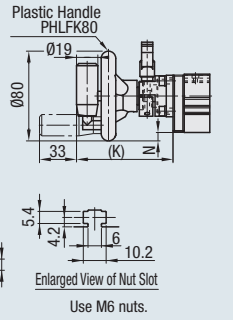
Handwheel Type C Note 1) Stroke limit is where stroke reaches the mechanical limit.

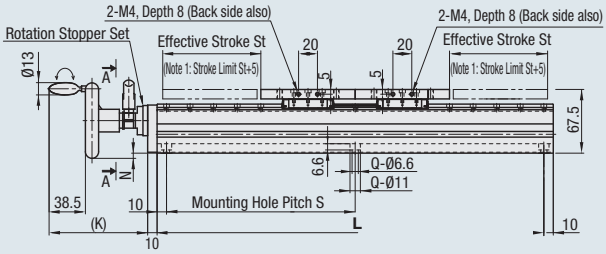


Handwheel Type A



Handwheel Type B: Folding Type





Part Number		Handwheel Type	Base Length L (mm)	Effective Stroke St (mm)	Lead Screw		Allowable Load (N)		Allowable Moment (N • m)			Base Mounting Hole		Mass (kg)		
Type	No.				Thread Dia.	Lead	Horizontal	Vertical	Ma	Mb	Mc	S	Q (Number of Holes)	Handwheel Type A	B	C
KUED	14	A: Plastic Handle B: Plastic Offset Handwheel – Folding Type C: Five Spoked Handwheel	320	65	14	3	122.5	24.5	0.5	0.5	6	150	6	4.9	4.6	4.6
			370	90								175	6	5.4	5.1	5.1
			420	115								200	6	5.9	5.6	5.6
			470	145								150	8	6.4	6.1	6.1
	20		320	65	20	4	245	49	1	1	13	150	6	5.5	5.2	5.2
			370	90								175	6	6	5.7	5.7
			420	115								200	6	6.5	6.2	6.7
			470	145								150	8	7	6.7	6.7

Mass

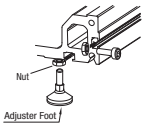
Part Number		Handwheel Type	Mass (kg)			
Type	No.		L=320	L=370	L=420	L=470
KUED	14	A	4.9	5.4	5.9	6.4
		B	4.6	5.1	5.6	6.1
		C	4.6	5.1	5.6	6.1
	20	A	5.5	6	6.5	7
		B	5.2	5.7	6.2	6.7
		C	5.2	5.7	6.2	6.7

Required Torque, Required Turning Force

Part Number		Required Torque (N • m)		Required Turning Force (N)	
Type	No.	Horizontal	Vertical	Horizontal	Vertical
KUED	14	0.039	0.223	1.503	8.586
	20	0.059	0.433	2.261	17.022

* The above torque / turning force is a value required when the allowable load is applied to the two tables.
* Turning force is the force that rotates the handwheel. (See the diagram)
* Vertical values are those when elevating the table.

Example Usage of Frame Slots



Side and bottom surfaces are grooved for M6 nuts. Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install a leveling mount.

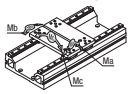
Allowable Load, Allowable Moment

Part Number		Allowable Load (N)		Allowable Moment (N • m)		
Type	No.	Horizontal	Vertical	M_a	M_b	M_c
KUED	14	122.5	24.5	0.5	0.5	6
	20	245	49	1	1	13

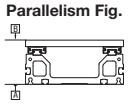
* The above allowable load/moment is a value measured per table.

Turning Force Fig.

Moment Diagram



Parallelism Fig.



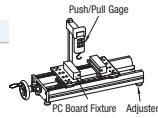
Part Number		Handwheel
Type	No.	Type
KUED	14	A
		B
		C
	20	A
		B
		C

Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUED	0.15	0.3

Ordering Example

Part Number	Handwheel Type	L
KUED14	A	320



As the sampling inspection tool of circuit boards, can be used to clamp workpieces.

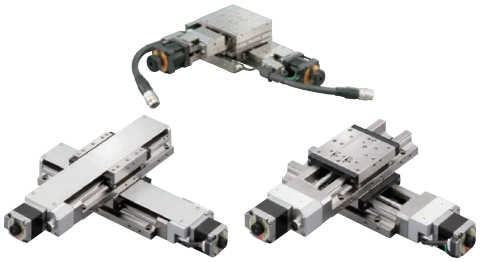
Motorized Stages Overview

Product Spotlight – Actuators –

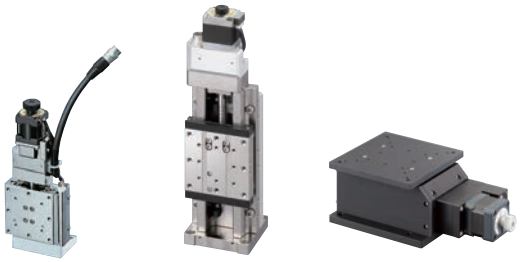
Category View Enter CATEGORY CODE to see category details.

Linear / X-Axis
Catagory Code: #ACX

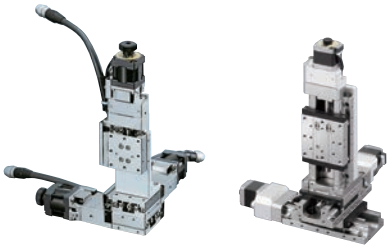
Linear / XY-Axis
Catagory Code: #ACXY



Linear / Z-Axis
Catagory Code: #ACZ



Linear / XYZ-Axis
Catagory Code: #ACXY



Rotary
Catagory Code: #ACRT

Goniometer
Catagory Code: #ACGN

Cables
Catagory Code: #ACCB

Control Parts
Catagory Code: #ACCP

DC24V Input Driver

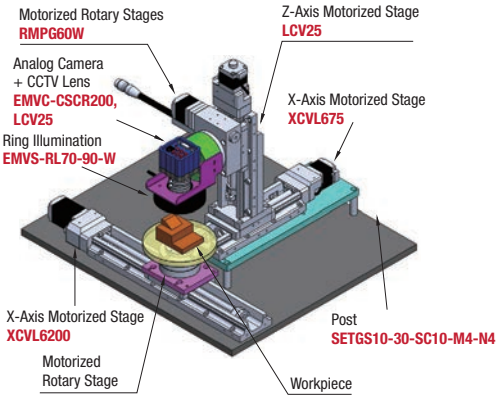
Motorized Stages Guide

Application Example

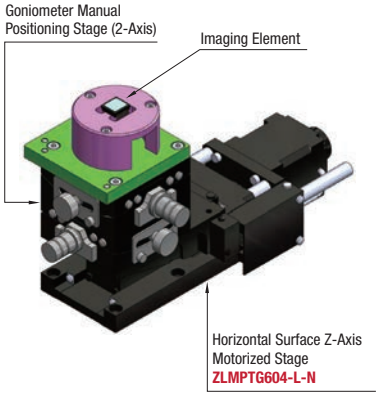
For Motorized Stages, in addition to X-Axis, and other Linear Motion Axis types, a wide variation of products, such as Rotary and Goniometer, is offered, so high precision positioning applications can be supported.

- Stage for Microscope-based XY Mapping
- Incorporated in desktop equipment for locating cameras and dispensers
- By integrating the sensor into the main body, compactness is achieved without having any portion protruded from the stage side surface.
- By specially designing the housing shape, high rigidity and compactness have been achieved.
- Motorized Stages are manufactured by MISUMI GROUP SURUGA Production Platform Co., Ltd. (former MISUMI-Suruga Seiki Co. Ltd.), reputable XY-Axis Stage producer.

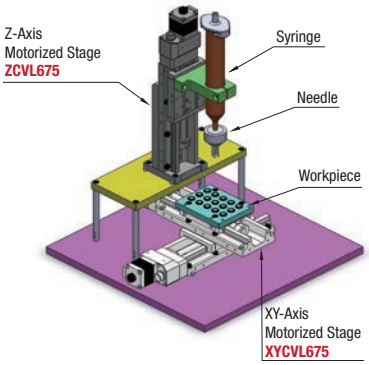
■ Appearance Inspecting Apparatus



■ Image Capturing Unit for Focusing Position Inspecting Devices



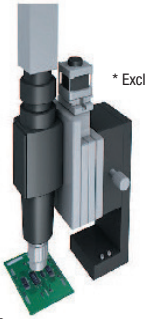
■ Adhesive Application Device for Small Lenses



■ Auto Focus

Have Angular Contact Bearings built in as the bearing and are excellent in rigidity.

Can be securely used even for High Resolution Type Microscopes.



* Excluding KXT Series

– Linear Ball Guide Stage

■ Image Alignment (Rotary Stage)

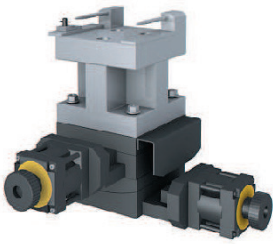
Please use this in combination with image processing devices.

A Sine Motion Stage is manipulated by rolled ball screws and is excellent in durability.

– Sine Motion Rotary Stages

■ Angle Adjustments of Optical Components (Goniometer Stage)

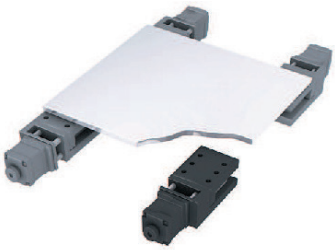
Use this for fine angle-adjusting optical pickup devices, including DVD players. (This product is excellent in endurance and thus, use in applications where endurance is required is recommended.)



– Sine Motion Goniometer Stages

■ Lifting panels and circuit boards

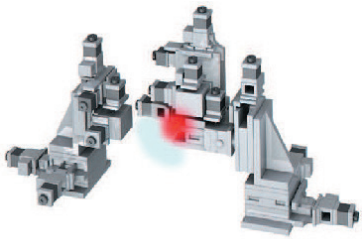
By using in combination with a Horizontal Surface Z-Axis Stage, horizontal alignment is also enabled.



– Horizontal Surface Z-Axis Cross Roller Guides

■ 6-Axis Stage Units

Alignment performance of image sensors for LCD / Digital Cameras is proven. For combination of components, please consult MISUMI.



– Stage Units (available also through Special Order)

MOTORIZED STAGE GUIDE

Motorized Stages – Overview

■ Advantages of Motorized Stages

- **Remote Control**
  Stages can be remote controlled by the Handset Terminal (HDT100) or a computer.
  Cable length can be specified.
- **High Precision**
  (For details, refer to specs. of each stage.)
  Suitable for use in applications where high precision level not achievable with a manual positioning stage is required.
- **Automation**
  Can be programmed to reciprocate between predetermined points along coordinates (Teaching Function; see below).

■ Features

– Plug and play with only 5 minutes of setup time.
Usable by simply connecting the motorized stage controller and cable.

– Handset Terminal (HDT100) enables direct control without connecting to a PC.

■ Operating Environment

Operating Environment: 10 ~ 50°C, 20 ~ 70%RH* (No Condensation)

Recommended Operating Environment: 22±5°C, 20~70%RH* (No Condensation)

*RH represents Relative Humidity (a term used to describe the amount of water vapor in the air).

■ Operations of Motorized Stages

There are three major operation modes for the motorized stages.

1) **Continuous Jog:** Jogs while the button on the Handset Terminal (HDT100) is pressed.
   => Effective when the stage is not easily accessible for manual operation.

2) **Step Move:** Preset distance steps can be commanded to move.
   => Movements at fixed pitches (such as 1mm increment) are possible.

3) **Coordinate Positioning Mode:** Command mode to move from 0 (Home) to specified coordinate points.
   => Instruction such as "move to point C from A via B" is configurable.

Functions below are provided to support the Coordinate Positioning Mode.

- **Homing** Since the controller system cannot identify the current mechanical position of the stage axis immediately after the controller is turned on, this function returns the axis to a predetermined position and resets the coordinate value on the controller to zero. Homing routine can be selected from 12 patterns.
- **Teaching** Moves the stage to specified registered coordinate (up to six axes).
  => By automating repetitive processes, reduction in cycle time can be achieved.

Motorized Stages Linear Ball Cave-X Positioner Guide

Motorized Linear Ball Slide Stages, CAVE-X POSITIONER: Overview

■ Features

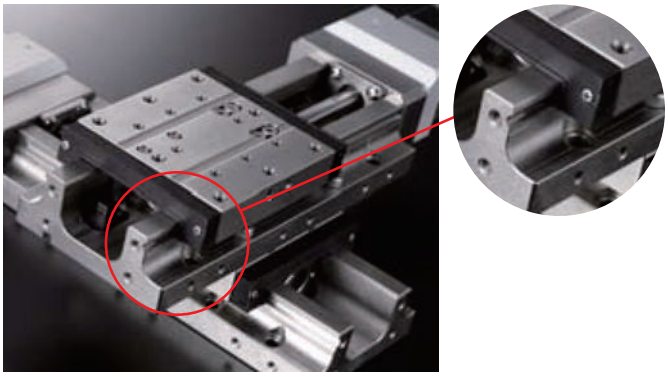
1) Space Saving The sensor is installed on the main body and cannot protrude from the side face of stage. The housing is specially designed to achieve high rigidity and compactness.

2) High Rigidity The parts have thickness enough to retain high rigidity.

3) High Precision In order to achieve high travel accuracy, the main body base and the guide mechanism are integrated into one. The mechanical components are specially designed to achieve the high drive performance.

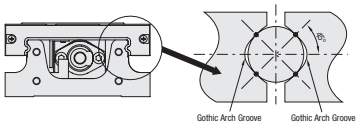
4) Economical For key parts, the in-house intensive mass production approach is adopted to achieve highly economical price.

CAVE-X Linear Ball Guide Mechanism

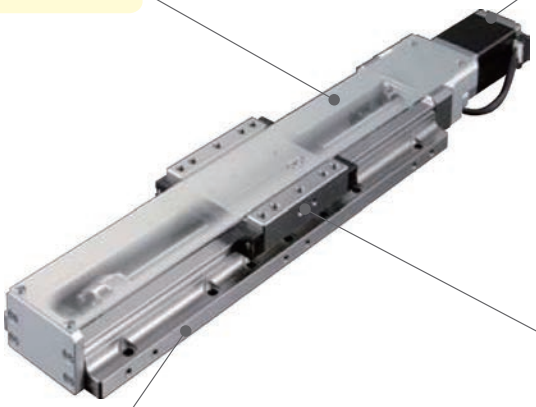


• High Rigidity

Gothic Arch Grooved Ball Guides are machined directly on the top/bottom plate of the main body (Stainless Steel Hardened Type). Since Gothic Arch Groove is composed of two arches, the number of contacts on Ball is also two on one side. As shown below, the groove is so shaped that ball has four-point contact on the both side, thereby providing high rigidity.



■ Function



Cover Type
- Prevents entry of foreign objects.
- Prevents grease splash. (* For XCVL only)

Motor Option
- High Speed (Servo Motor)

Material and Antirust
- SUS440C Equivalent
- Electroless Nickel Plating

Addition of Sensors
- Additional home sensor(s) can be given.

Motorized Stages Linear Ball Cave-X Positioner Guide

Motorized Linear Ball Slide Stages, CAVE-X POSITIONER: Overview

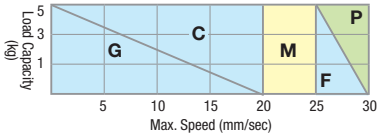
■ Product List

Axis	Track	Part Number: Type / Travel Distance (mm)	No. 20	No. 30	No. 50	No. 75	No. 100	No. 150	No. 200	No. 300	Page/ Reference
			* Values in ( ) are for Stage Surface Size (mm)								
X-Axis	Finite Track Type	XCV	620 (60 x 60)	630 (60 x 70)							366
	Infinite Track Type	XCVL		630 (60 x 60)	650 (60 x 60)	675 (60 x 60)					368
		XCVL					6100 (60 x 60)	6150 (60 x 60)	6200 (60 x 60)	6300 (60 x 60)	370
XY-Axis	Finite Track Type	XYCV	620 (60 x 60)	630 (60 x 70)							372
	Infinite Track Type	XYCVL		630 (60 x 60)	650 (60 x 60)	675 (60 x 60)					374
Z-Axis	Finite Track Type	ZCV	620 (60 x 60)	630 (60 x 70)							#HACZ
	Infinite Track Type	ZCVL		630 (60 x 60)	650 (60 x 60)	675 (60 x 60)					376
XYZ-Axis	Finite Track Type	XYZCV	620 (60 x 60)	630 (60 x 70)							378
	Infinite Track Type	XYZCVL		630 (60 x 60)	650 (60 x 60)						380

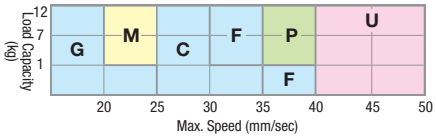
■ Type and Performance of the Applicable Motor

• Load Capacity and Max. Speed per Model

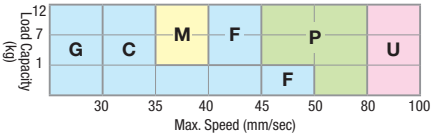
■ XCV, XYCV, ZCV



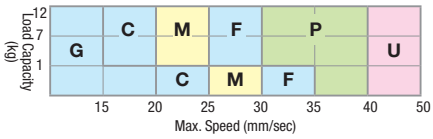
■ XCVL630~675 Lead 1



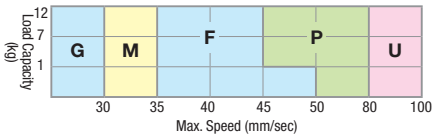
■ XCVL630~675 Lead 2



■ ZCVL630~675 Lead 2



■ XCVL6100~6300 Lead 2



Type	Motor Code	Model	Manufacturer
5-Phase Stepping Motor 0.75A/Phase	C	C005C-90215	Oriental Motor Co., Ltd.
	F	PK525HPB-C1	
	G	PK523HPMB-C1	
Electromagnetic Brake	M	PK545AWM	Oriental Motor Co., Ltd.
@-Step	P	ASM34AK	Oriental Motor Co., Ltd.
AC Servo Motor	U	HF-KP053	Mitsubishi Electric Corporation

*For the part numbers, the relevant manufacturers' control numbers are used.

■ Reference Data: Motor Performance

Caution • Data below are for standard reference, not guaranteed.

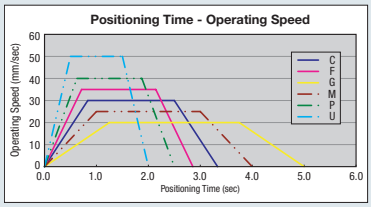
Operation Mode: Set up the acceleration/deceleration time to 1/4 of the positioning time and the uniform speed time to 1/2 of the positioning time.

• Note that the speed and positioning time differ depending on the current condition of use.

■ XCVL675 (Horizontal Mounting)

Motor Code	Max. Speed	Acceleration Time	Uniform Speed Time	Deceleration Time	Positioning Time
C	30.0	0.83	1.67	0.83	3.33
F	35.0	0.71	1.43	0.71	2.86
G	20.0	1.25	2.50	1.25	5.00
M	25.0	1.00	2.00	1.00	4.00
P	40.0	0.63	1.25	0.63	2.50
U	50.0	0.50	1.00	0.50	2.00

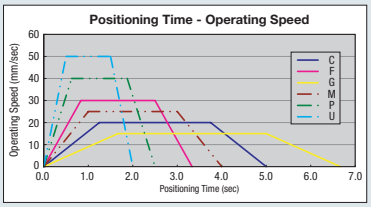
Unit Max. Speed: "mm/sec"; Acceleration, Uniform Speed, Deceleration, Positioning: "sec"



■ XCVL675 (Vertical Mounting)

Motor Code	Max. Speed	Acceleration Time	Uniform Speed Time	Deceleration Time	Positioning Time
C	20.0	1.25	2.50	1.25	5.00
F	30.0	0.83	1.67	0.83	3.33
G	15.0	1.67	3.33	1.67	6.67
M	25.0	1.00	2.00	1.00	4.00
P	40.0	0.63	1.25	0.63	2.50
U	50.0	0.50	1.00	0.50	2.00

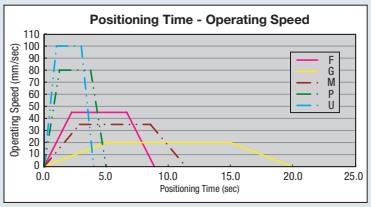
Unit Max. Speed: "mm/sec"; Acceleration, Uniform Speed, Deceleration, Positioning: "sec"



■ XCVL6300 (Horizontal Mounting)

Motor Code	Max. Speed	Acceleration Time	Uniform Speed Time	Deceleration Time	Positioning Time
F	45.0	2.22	4.44	2.22	8.89
G	20.0	5.00	10.00	5.00	20.00
M	35.0	2.86	5.71	2.86	11.43
P	80.0	1.25	2.50	1.25	5.00
U	100.0	1.00	2.00	1.00	4.00

Unit Max. Speed: "mm/sec"; Acceleration, Uniform Speed, Deceleration, Positioning: "sec"



■ Applicable Cable for Motor Code [U]

The applicable cable for the Motor Code [U] is always the same. The code for this cable is also "U" and is identical to the code for the mating motor. Plug the motor cable and sensor cable into the connectors on the stage side. The motor driver and motor cable (encoder cable) are sold as a set.

Motor Code	Cable Code	Driver No.	Motor Cable	Encoder Cable	Manufacturer
M	M	RKD507M-A (Oriental Motor Co., Ltd.)	STPO-RK2-A-3 (Accessory)	—	HR10AP-S-A-6-2 (Hirose Electric Co., LTD.)
P	P	ASD10A-K (Oriental Motor Co., Ltd.)	STPO-AS1-B-3 (Accessory)	—	
U	U	MR-J3-10A (Mitsubishi Electric Corporation)	SVPM-J3HF1-B-3-02S (Accessory)	SVEM-J3HF1-B-3 (Accessory)	

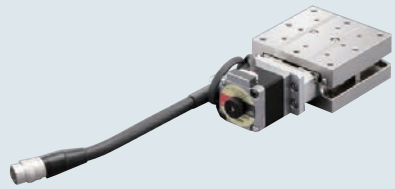
NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

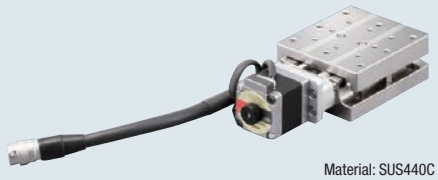
[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Compact

Features: Are excellent in rigidity and are compact in width. The overall length is also designed for space-saving.

■ X-Axis

RoHS

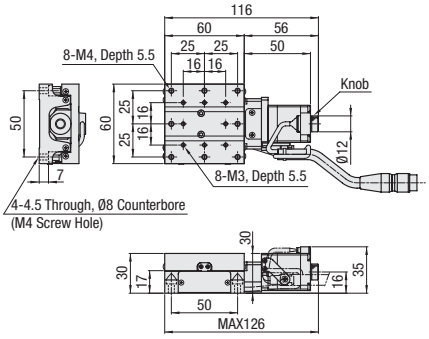




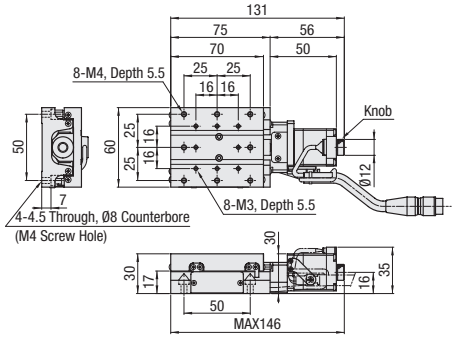
Material: SUS440C Equivalent
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-12 (4 pcs)

For Controllers, Handset Terminals, see **P.399**

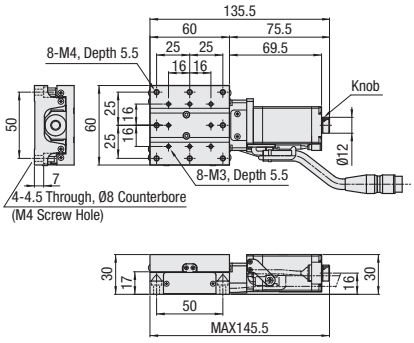
XCV620-C-N



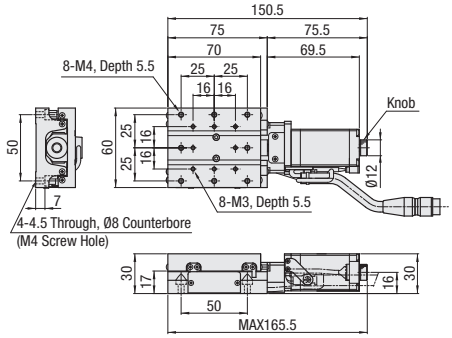
XCV630-C-N



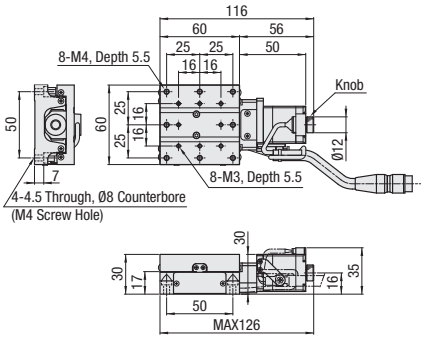
XCV620-F-N



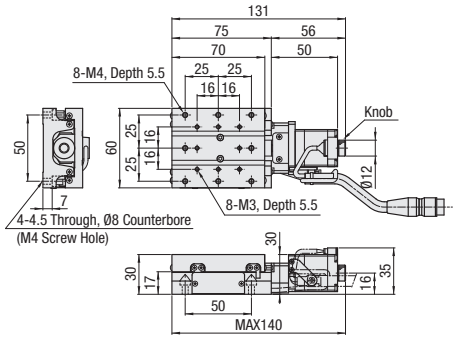
XCV630-F-N



XCV620-G-N



XCV630-G-N



For the detailed dimensions of CAVE-X Positioner with the Motor P installed, see the applicable CAD data.

NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Compact

Part Number	Motor	Cable	Mechanical Standards: Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Accuracy Standards: Unidirectional Positioning Accuracy	Moment Rigidity ("/N•cm): Pitching	Yawing	Rolling	Pitching	Yawing
XCV620	C (Standard) F (High Torque) G (High Resolution) P (@-Step)	N (Cable not included, separately sold) P (For @-Step) ! For combination of motors and cables, see the table below.	60N60	20	0.78 (0.87)	5μm	0.08	0.05	0.05	20"	15"
XCV630			60N70	30	0.9 (0.99)	5μm	0.08	0.05	0.05	20"	15"

! When the Motor Option P is selected, the driver is included with as the Set. The cable is available for Option P and is unavailable for Option N.
*1 The value differs depending on the type of motor. The above raw values are for stages incorporating Motor C (Standard) and the values in ( ) for stages incorporating Motor F (High Torque).

Ordering Example

Part Number	–	Motor	–	Cable
XCV620	–	C	–	N

Days to Ship Configure Online

■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

Motor/Cable Application Table	Motor	Cable
	C,F,G	N (Not Provided)
	P	P

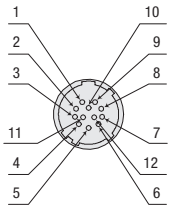
! For the cable for C, F or G, see MSCB_ on P.400

■ Common Specifications

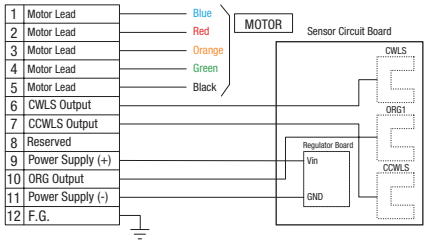
Feed Screw		Ball Screw Ø8, Lead 1
Guide		Linear Ball Guide
Resolution*2	Full	2μm/Pulse (1μm/Pulse) *3
	Half	1μm/Pulse (0.5μm/Pulse) *3
	Fine (Upon 1/20 partitioned)	0.1μm (0.05μm)
Max. Speed*4		20mm/sec (30mm/sec) *5 (Pulse Rate: 5kHz)
Positioning Repeatability		±0.5 μm
Load Capacity		49N
Lost Motion		1 μm
Backlash		1 μm
Motion Straightness		3 μm
Motion Parallelism		15 μm / 10 μm

*2 This represents the travel distance of stage per one pulse signal.
*3 The values in ( ) are for Motor Option G (High Resolution).
*4 This represents the max. speed that can be driven by the recommended controller switched to Full Step mode, with the max. load applied. (The value differs depending on the current driving controller and the current load.)
*5 The values in ( ) are for Motor Option F (High Torque).
The value differs depending on the motor option.

■ Connector Pin Configuration



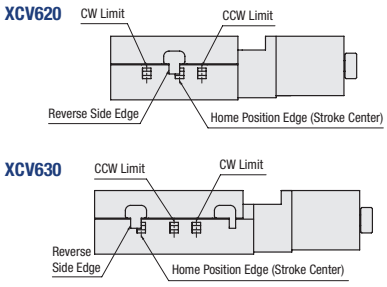
■ Wiring Diagram

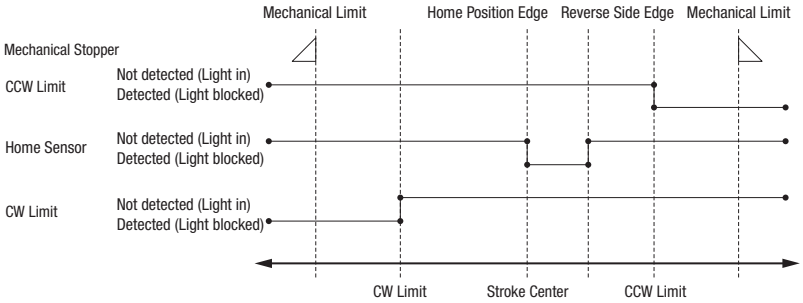


■ Electrical Specifications

Motor		C	F	G
MOTOR	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)		
	Step Angle	0.72°	0.72°	0.36°
CONNECTOR	Applicable Receptacle Connector	HR10A-10P-12S(73) (Hirose Electric Co., LTD.)		
SENSOR	Limit Sensor	Provided		
	Home Sensor	Photomicrosensor: EE-SX4134 (OMRON Corp.)		
	Near Home Sensor	—		
	Power Supply Voltage	DC5~24V ±10%		
	Current Consumption	60mA or less in Total		
	Control Output	NPN Open Collector Output DC5~24V, 8mA or less Residual Voltage 0.3V or less (when load current is 2mA)		
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)		

■ Timing Chart





(Unit: mm) CW Direction ← → CCW Direction

	Reference Position	Mechanical Limit	CW Limit	Home Position Edge Stroke Center	Other Signal Edge	CCW Limit	Mechanical Limit
XCV620	Homing	11	10.5	0	5	10.5	13
XCV630	Homing	16	15.5	0	5	15.5	18

Homing mentioned here means that Homing Routine Type 4 is executed by using the MSCTL102 Series controller.
The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

Type 3	After detection is executed in the CCW direction, the process of detecting in the CCW direction is begun based on the ORG signal.
Type 4	After detection is executed in the CW direction, the process of detecting in the CW direction is begun based on the ORG signal.
Type 9	After Type 3 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 10	After Type 4 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

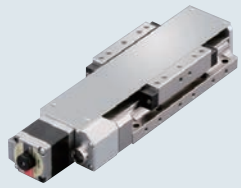
[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 30~75

Features: Have high rigidity and compactness in width. Support 30~75mm of travel distance.

■ XCVL (w/o Cover)

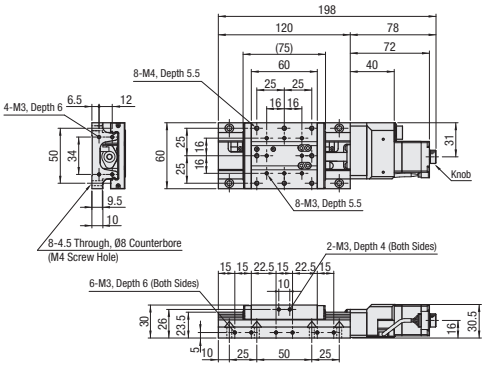
■ XCVLC (with Cover)

RoHS

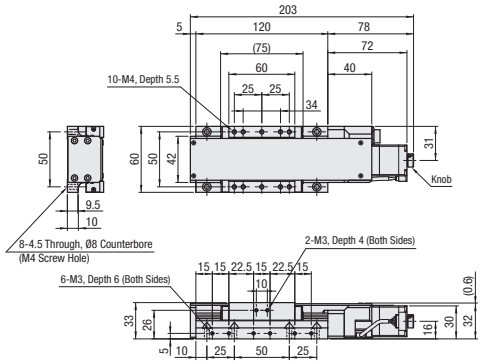


Material: SUS440C Equivalent
Surface Treatment: Electroless Nickel Plating
Accessory: SUS Hex Socket Screw M4-14 (8 pcs.)

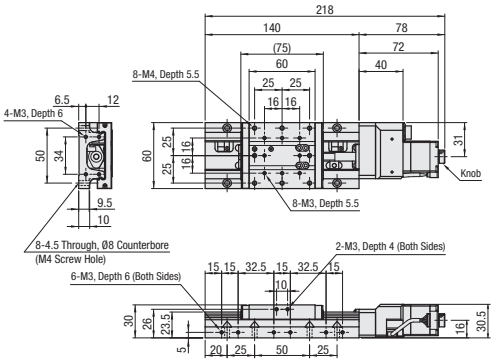
XCVL630



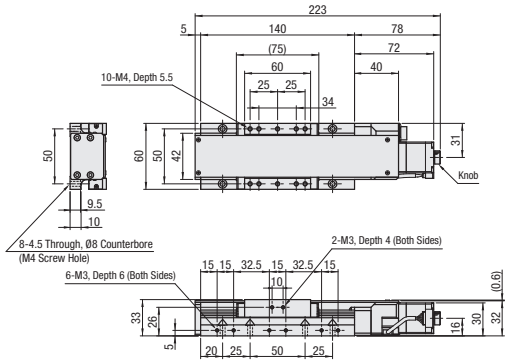
XCVLC630



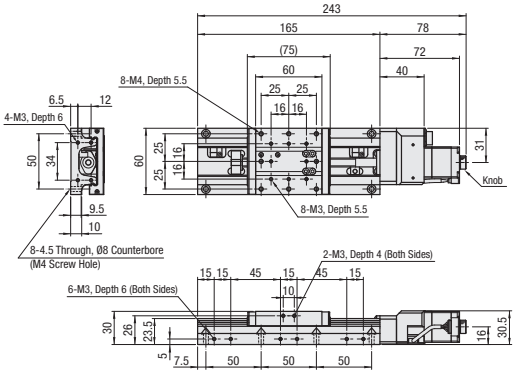
XCVL650



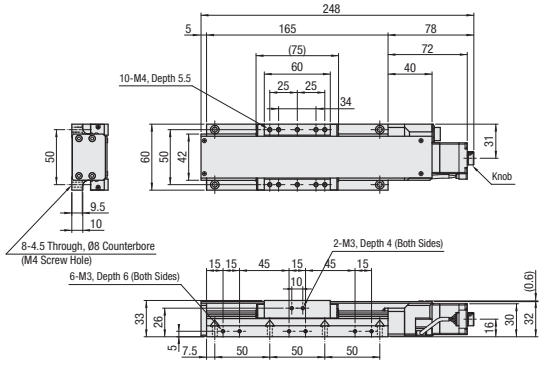
XCVLC650



XCVL675



XCVLC675



■ Sensor Mounting Position

The above diagrams are for stages incorporating Motor C. For detailed dimensions about stages incorporating Motor F, G, M, P or U, see the relevant CAD data.

NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 30~75

Part Number	Lead	Sensor	Motor	Cable	Mechanical Standards: Stage Surface (mm)	Mechanical Standards: Travel Distance (mm)	Mechanical Standards: Weight (kg)	Accuracy Standards: Unidirectional Positioning Accuracy	Accuracy Standards: Moment Rigidity (″/N·cm): Pitching	Accuracy Standards: Moment Rigidity (″/N·cm): Yawing	Accuracy Standards: Moment Rigidity (″/N·cm): Rolling	Accuracy Standards: Pitching	Accuracy Standards: Yawing
XCVL630 (w/o Cover) XCVLC630 (with Cover)	1 (Lead 1mm) 2 (Lead 2mm)	N (W/o Sensor) 1 (CCW Right) 2 (CCW Left) 3 (Right-Center) 4 (Left-Center) 5 (CW Right) 6 (CW Left)	C (Standard) F (High Torque) G (High Resolution) M (With Brake) P (@-Step) U (Servo Motor, Amplifier)	N (Cable not included, separately sold) M (With Brake) P (For @-Step) U (For Servo Motor) ⓘ For combination of motors and cables, see the table below.	60N60	30 (Lead 1mm only)	1.28 (1.34*1)	5μm	0.05	0.05	0.05	20″	15″
XCVL650 (w/o Cover) XCVLC650 (with Cover)						50	1.40 (1.44*1)	5μm					
XCVL675 (w/o Cover) XCVLC675 (with Cover)						75	1.54 (1.60*1)	7μm					

*1 When the "With Cover" option is selected
ⓘ When the Motor Option M or P is selected, the driver is included with as the Set. When the Option U is selected, the Amplifier is included with. The cable is available for Option M, P, U and is unavailable for Option N.
ⓘ ▭: The values are for standard motors (C).

Ordering Example

Part Number	–	Lead	–	Motor	–	Cable
XCVL630	–	1	–	C	–	N

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■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

Motor/Cable Application Table	Motor	Cable
	C,F,G	N (Not Provided)
	M	M
	P	P
	U	U

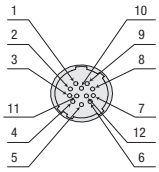
ⓘ For the cable for C, F or G, see MSCB_ on **P.400**
For the cable for F or G, see

■ Common Specifications

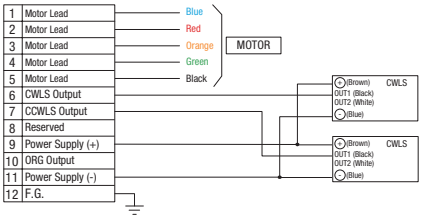
Feed Screw		Ball Screw Ø8, Lead 1	Ball Screw Ø8, Lead 2
Guide		Linear Ball Guide	
Resolution	Full	2μm	4μm
	Half	1μm	2μm
	Fine	0.1μm for 1/20 partitioned	0.2μm for 1/20 partitioned
Max. Speed		30mm/sec	35mm/sec
Positioning Repeatability		±0.5μm	
Load Capacity		117.6N	
Lost Motion		1μm	
Backlash		1μm	
Straightness		3μm	
Parallelism		15μm	
Motion Parallelism		10μm	

ⓘ ▭: The values are for standard motors (C).

■ Connector Pin Configuration



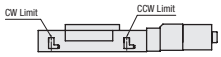
■ Wiring Diagram

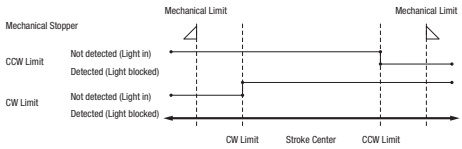


■ Electrical Specifications

Motor		C	F	G	U
MOTOR	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)			AC Servo Motor
	Step Angle	0.72°	0.72°	0.36°	18-bit Encoder (262144P/R)
CONNECTOR	Applicable Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)			Motor Cable JN4FT04SJ1-R (Japan Aviation Electronics Industry, Ltd.) Encoder 1674320-1 (Tyco Electronics Japan G.K.)
SENSOR	Limit Sensor	Provided			
	Home Sensor	Not Provided by standard (Photomicrosensor PM-L24 (Panasonic Industrial Devices SUNX Co., Ltd.) is available as the option.)			
	Near Home Sensor	—			
	Power Supply Voltage	DC5~24V ±10%			
	Current Consumption	45mA or less (15mA or less per sensor)			
	Control Output	NPN Open Collector Output DC30V, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)			
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)			

■ Timing Chart





(Unit: mm) CW Direction ◄——► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	CCW Limit	Mechanical Limit
XCVL630	Stroke Center	17.5	15.5	15.5	17.5
XCVL650	Stroke Center	27.5	25.5	25.5	27.5
XCVL675	Stroke Center	40	37.5	37.5	40

The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

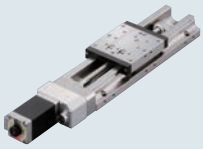
Type 5	After detection is executed in the CCW direction, the process of detecting in the CW direction is begun based on the CCWLS signal.
Type 6	After detection is executed in the CW direction, the process of detecting in the CCW direction is begun based on the CWLS signal.
Type 11	After Type 5 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 12	After Type 6 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 100~300

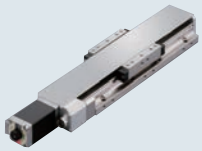
Features: Have high rigidity and are compact in width. Support 100~300mm of travel distance.

■ XCVL (w/o Cover)



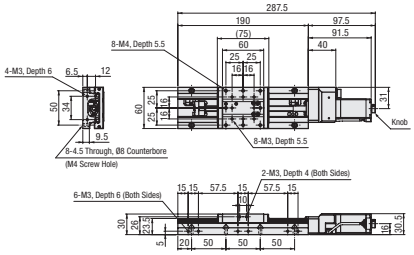
■ XCVLC (with Cover)

RoHS

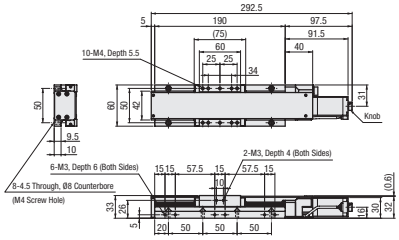


Material: SUS440C Equivalent
Surface Treatment: Electroless Nickel Plating
Accessory: SUS Hex Socket Screw M4-14 (in pcs)
- XCVL6100/XCVLC6100 (8 pcs)
- XCVL6150/XCVLC6150 (14 pcs)
- XCVL6200/XCVLC6200 (12 pcs)
- XCVL6300/XCVLC6300 (16 pcs)

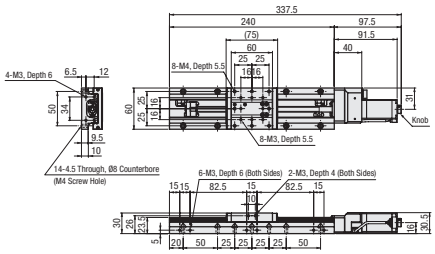
XCVL6100



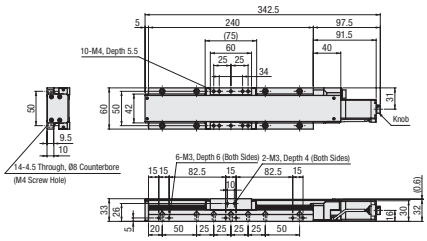
XCVLC6100



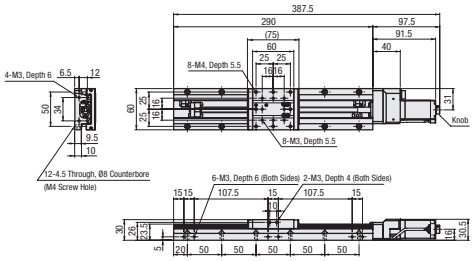
XCVL6150



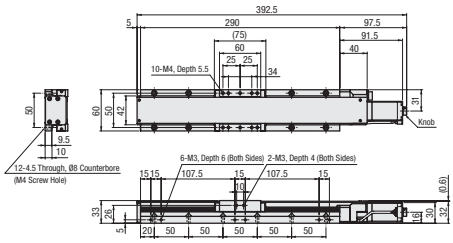
XCVLC6150



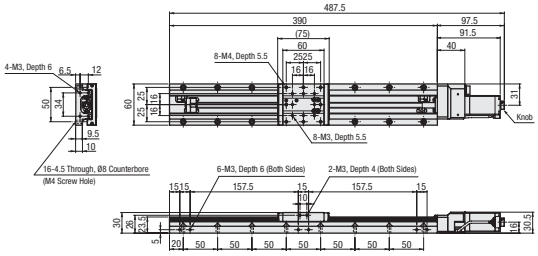
XCVL6200



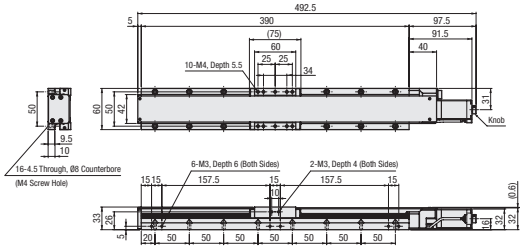
XCVLC6200



XCVL6300



XCVLC6300



■ Sensor Mounting Position

The above diagrams are for stages incorporating Motor F. For detailed dimensions about stages incorporating Motor G, M, P, U, see the relevant CAD data.

NEW Motorized Stages X-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized X-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 100~300

Part Number	Lead	Sensor	Motor	Cable	Mechanical Standards: Stage Surface (mm)	Mechanical Standards: Travel Distance (mm)	Mechanical Standards: Weight (kg)	Accuracy Standards: Unidirectional Positioning Accuracy	Accuracy Standards: Motion Straightness	Accuracy Standards: Motion Parallelism	Accuracy Standards: Pitching	Accuracy Standards: Yawing
XCVL6100 (w/o Cover) XCVL6100 (with Cover)	2 (Lead 2mm)	N (W/o Sensor) 1 (CCW Right) 2 (CCW Left) 3 (Right-Center) 4 (Left-Center) 5 (CW Right) 6 (CW Left)	F (High Torque) G (High Resolution) M (With Brake) P (@-Step) U (Servo Motor, Amplifier)	N (Cable not included, separately sold) M (With Brake) P (For @-Step) U (For Servo Motor) ! For combination of motors and cables, see the table below.	60N60	100	1.8 (1.86*1)	10 µm	5 µm	10 µm	25"	20"
XCVL6150 (w/o Cover) XCVL6150 (with Cover)						150	2.1 (2.16*1)	15 µm	5 µm	15 µm	25"	20"
XCVL6200 (w/o Cover) XCVL6200 (with Cover)						200	2.42 (2.48*1)	15 µm	7 µm	20 µm	30"	20"
XCVL6300 (w/o Cover) XCVL6300 (with Cover)						300	3.02 (3.12*1)	25 µm	7 µm	25 µm	35"	20"

*1 When the "With Cover" option is selectedEWhen the Motor Option M or P is selected, the driver is included with as the Set. When the Option U is selected, the Amplifier is included with.
The cable is available for Option M, P, U and is unavailable for Option N.
! ▭: The value differs depending on the type of motor. The above values are for stages incorporating Motor F (High Torque).

Ordering Example

Part Number	–	Lead	–	Sensor	–	Motor	–	Cable
XCVL6100	–	1	–	N	–	C	–	N

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■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

	Motor	Cable
Motor/Cable Application Table	F, G	N (Not Provided)
	M	M
	P	P
	U	U

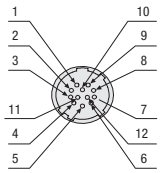
! For the cable for F or G, see **P.400**

■ Common Specifications

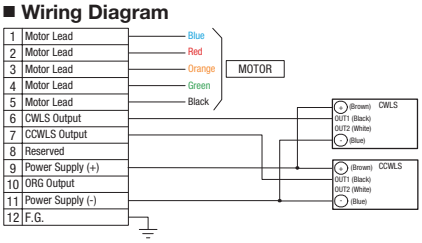
Feed Screw		Ball Screw Ø8, Lead 2
Guide		Linear Ball Guide
Resolution	Full	4µm
	Half	2µm
	Fine Feed upon 1/20 Partitioned	0.2µm
Max. Speed		45mm/sec
Positioning Repeatability		±0.5µm
Load Capacity		117.6N
Moment Rigidity	Pitch	0.05"/N•cm
	Yawing	0.05"/N•cm
	Rolling	0.05"/N•cm
Lost Motion		1 µm
Backlash		1 µm
Parallelism		15 µm

! ▭: The values are for standard motors (C).

■ Connector Pin Configuration



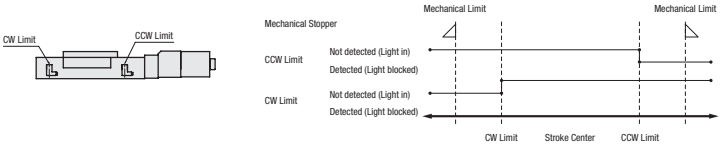
■ Wiring Diagram



■ Electrical Specifications

Motor		F	G	U
MOTOR	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)		AC Servo Motor
	Step Angle	0.72°	0.36°	18-bit Encoder (262144P/R)
CONNECTOR	Applicable Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)		Motor Cable JN4FT04SJ1-R (Japan Aviation Electronics Industry, Ltd.) Encoder 1674320-1 (Tyco Electronics Japan G.K.)
SENSOR	Limit Sensor	Provided		
	Home Sensor	Not Provided by standard (Photomicrosensor PM-L24 (Panasonic Industrial Devices SUNX Co., Ltd.) is available as the option.)		
	Near Home Sensor	—		
	Power Supply Voltage	DC5~24V ±10%		
	Current Consumption	45mA or less (15mA or less per sensor)		
	Control Output	NPN Open Collector Output DC30V or less, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)		
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)		

■ Timing Chart



(Unit: mm) CW Direction ◄ ► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	CCW Limit	Mechanical Limit
XCVL_6100	Stroke Center	52.5	50.5	50.5	52.5
XCVL_6150	Stroke Center	77.5	75.5	75.5	77.5
XCVL_6200	Stroke Center	102.5	100.5	100.5	102.5
XCVL_6300	Stroke Center	152.5	150.5	150.5	152.5

The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

Type 5	After detection is executed in the CCW direction, the process of detecting in the CW direction is begun based on the CCWLS signal.
Type 6	After detection is executed in the CW direction, the process of detecting in the CCW direction is begun based on the CWLS signal.
Type 11	After Type 5 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 12	After Type 6 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages XY-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XY-Axis — Linear Ball, CAVE-X POSITIONER — Compact

Features: XY-Axis Type with High Rigidity, Compactness in width and the Space-saving design for the overall length.

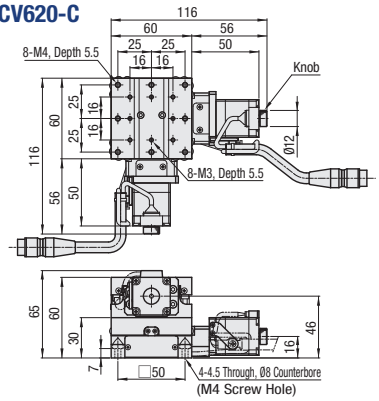
■ **XY-Axis, Compact**

RoHS

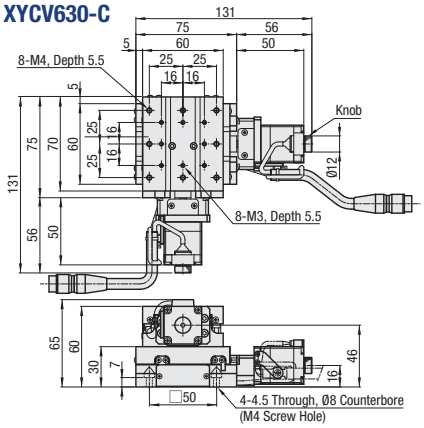
Material: SUS440C
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-12 (4 pcs)

For Controllers, Handset Terminals, see **P.399**

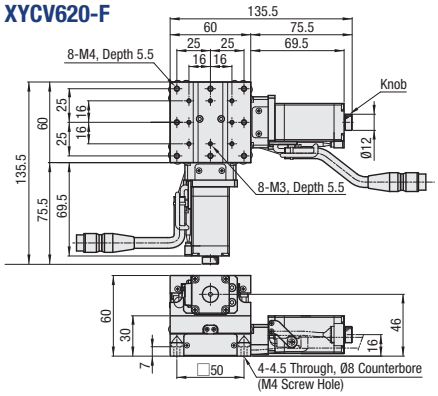
XYCV620-C



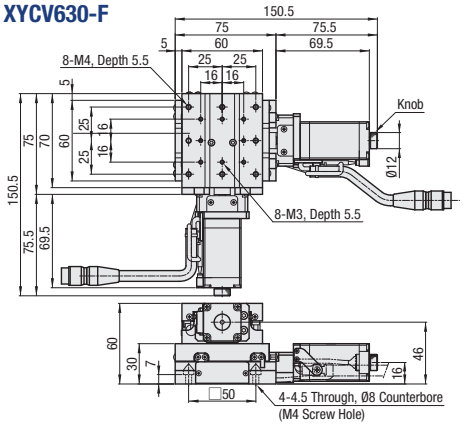
XYCV630-C



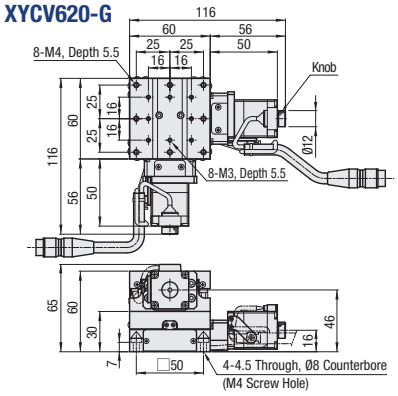
XYCV620-F



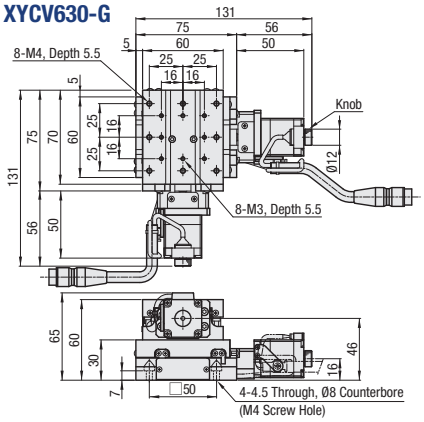
XYCV630-F



XYCV620-G



XYCV630-G



For the detailed dimensions of CAVE-X Positioner with the Motor P installed, see the applicable CAD data.

NEW Motorized Stages XY-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XY-Axis — Linear Ball, CAVE-X POSITIONER — Compact

Part Number		Motor	Cable	Mechanical Standards			Accuracy Standards		
Type	No.			Stage Surface (mm)	Travel Distance (mm)	Weight*2 (kg)	Unidirectional Positioning Accuracy (for a single axis stage horizontally placed)	Pitching	Yawing
XYCV	620	C (Standard) F (High Torque) G (High Resolution) P*1 (@-Step)	N (Cable not included, separately sold) P (For @-xt) For combination of motors and cables, see the table below.	60×60	20	1.6	5 µm	20''	15''
	630			60×70	30	1.8			

*1 When the Motor Option P is selected, the driver is included with as the Set. The cable is available for Option P and is unavailable for Option N (Cable not included).
*2 The value is for C Type of Motor.

Ordering Example

Part Number	–	Motor	–	Cable
XYCV620	–	C	–	N
XYCV630	–	P	–	P

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■ Common Specifications

Feed Screw		Ball Screw Ø8, Lead 1
Guide		Linear Ball Guide
Resolution*3	Full	2 µm/Pulse (1 µm/Pulse) *4
	Half	1 µm/Pulse (0.5 µm/Pulse) *4
	Fine Feed upon 1/20 Partitioned	0.1µm (0.05 µm)
Max. Speed*5		20mm/sec (30mm/sec)*6 (Pulse Rate: 5kHz)
Positioning Repeatability		±0.5 µm
Load Capacity *7		39.2N
Lost Motion		1 µm
Backlash		1 µm
Motion Straightness		3 µm
Parallelism		15 µm
Motion Parallelism		10 µm

The above specifications are for a single axis.
*3 This represents the travel distance of stage per one pulse signal.
*4 The values in ( ) are for Motor Option G (High Resolution).
*5 This represents the max. speed that can be driven by the recommended controller switched to Full Step mode, with the max. load applied. (The value differs depending on the current driving controller and the current load.)
*6 The values in ( ) are for Motor Option F (High Torque).
The value differs depending on the motor option.
*7 The above load capacity value is for XY-Axis.

■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

Motor/Cable Application Table	Motor	Cable
	C, F, G	N (Not Provided)
	P	P

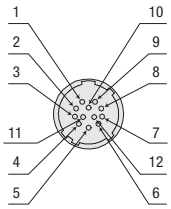
For the cable for C, F or G, see MSCB_ on P.

■ Max. Speed

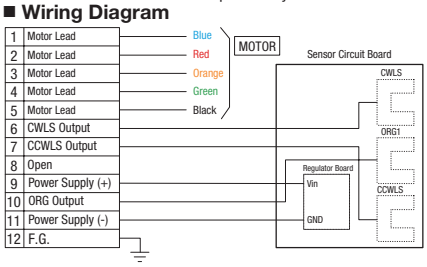
Motor	(mm/sec)
C	20
F	30
G	20
P	30

Note that the speed and positioning time differ depending on the current condition of use. The speed and positioning time are not guaranteed values but reference values provided by MISUMI.

■ Connector Pin Configuration



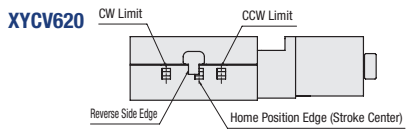
■ Wiring Diagram

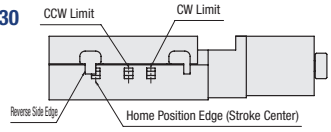


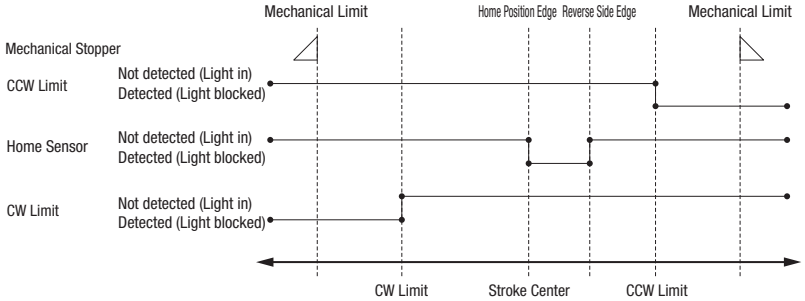
■ Electrical Specifications

Motor		C	F	G	U
MOTOR	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)			@-Step Motor
	Step Angle	0.72°	0.72°	0.36°	0.36° (When 1000P/R is set)
CONNECTOR	Applicable Receptacle Connector	HR10A-10P-12S(73) (Hirose Electric Co., LTD.)			5557-10P (Molex Com.)
SENSOR	Limit Sensor	Provided			
	Home Sensor	Photomicrosensor: EE-SX4134 (OMRON Corp.)			
	Near Home Sensor	—			
	Power Supply Voltage	DC5~24V ±10%			
	Current Consumption	60mA or less in Total			
	Control Output	NPN Open Collector Output DC5~24V, 8mA or less Residual Voltage 0.3V or less (when load current is 2mA)			
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)			

■ Timing Chart







(Unit: mm) CW Direction ◄——► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	Home Position Edge Stroke Center	Other Signal Edge	CCW Limit	Mechanical Limit
XYCV620	Homing	11	10.5	0	5	10.5	13
XYCV630	Homing	16	15.5	0	5	15.5	18

Homing mentioned here means that Homing Routine Type 4 is executed by using the MSCTL102 Series controller.
The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

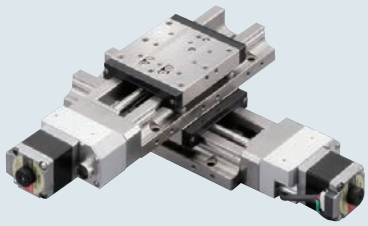
Type 3	After detection is executed in the CCW direction, the process of detecting in the CCW direction is begun based on the ORG signal.
Type 4	After detection is executed in the CW direction, the process of detecting in the CW direction is begun based on the ORG signal.
Type 9	After Type 3 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 10	After Type 4 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages XY-Axis Linear Ball Cave-X Positioner

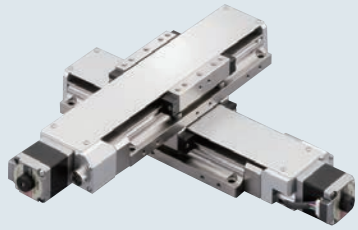
[High Precision] Motorized XY-Axis — Linear Ball, CAVE-X POSITIONER

Features: Have high rigidity and compactness in width. Support 30~75mm of travel distance.

■ **XY-Axis: XYCVL (w/o Cover)**



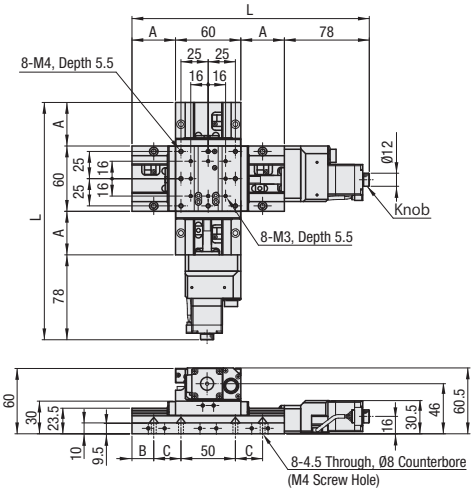
■ **XY-Axis: XYCVLC (with Cover)** RoHS



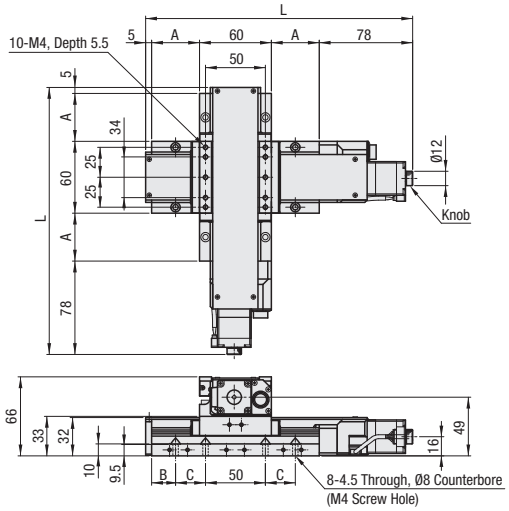
Material: SUS440C
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-14 (8 pcs)

For Controllers, Handset Terminals, see **P.399**

XYCVL (w/o Cover)

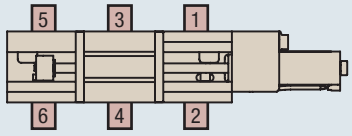


XYCVLC (with Cover)



See the CAD data for detailed dimensions.

Additional Position for mounting Home Sensor (Option)



■ **Dimension Table**

Part Number		L	A	B	C
Type	No.				
XYCVL	630	198	30	10	25
	650	218	40	20	25
	675	243	52.5	7.5	50

Part Number		L	A	B	C
Type	No.				
XYCVLC	630	203	30	10	25
	650	223	40	20	25
	675	248	52.5	7.5	50

NEW Motorized Stages XY-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XY-Axis — Linear Ball, CAVE-X POSITIONER

Part Number		Lead (mm)	Sensor	Motor	Cable	Mechanical Standards			Accuracy Standards		
Type	No.					Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Unidirectional Positioning Accuracy (for a single axis)	Pitching	Yawing
XYCVL (w/o Cover) XYCVLC (with Cover)	630	1	N (W/o Sensor) 1 (CCW Right) 2 (CCW Left) 3 (Right-Center) 4 (Left-Center) 5 (CW Right) 6 (CW Left)	C (Standard) F (High Torque) G (High Resolution) P*1 (@-Step) U*1 (Motor, Amplifier)	N (Cable not included, separately sold) P*1 (For @-Step) U*1 (For Servo Motor)	60×60	30	2.6 (2.7*2)	5μm	20''	15''
	650	1					50	2.8 (2.9*2)			
		2									
	675	1					75	3.1 (3.3*2)	7μm		
		2									

*1 When the Motor Option P is selected, the driver is included with as the Set. When the Option U is selected, the Amplifier is included with. The cable is available for Option P, U and is unavailable for Option N (Cable not included).
*2 Values in ( ) are for stages with Cover.
The accuracy specifications above are certified for single-axis horizontal mounting orientation.

Ordering Example

Part Number	–	Lead	–	Sensor	–	Motor	–	Cable
XYCVL630	–	1	–	N	–	C	–	N
XYCVLC675	–	2	–	6	–	U	–	U

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■ Common Specifications

Feed Screw		Ball Screw Ø8, Lead 1	Ball Screw Ø8, Lead 2
Guide		Linear Ball Guide	
Resolution	Full	2 μm	4 μm
	Half	1μm	2 μm
	Fine	0.1 μm for 1/20 partitioned	0.2 μm for 1/20 partitioned
Max. Speed		30mm/sec	35mm/sec
Positioning Repeatability*		±0.5μm	
Load Capacity		98N	
Lost Motion*		1 μm	
Backlash*		1 μm	
Motion Straightness*		3 μm	
Parallelism*		15 μm	
Motion Parallelism*		10 μm	

* The above accuracy standard is for a single axis.

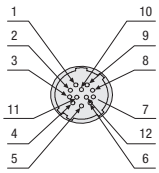
■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

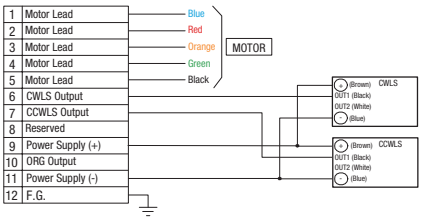
	Motor	Cable
Motor/Cable Application Table	C, F, G	N (Not Provided)
	P	P
	U	U

For the cable for C, F or G, see MSCB_ on P.

■ Connector Pin Configuration



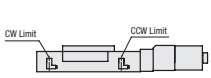
■ Wiring Diagram

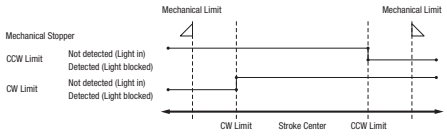


■ Electrical Specifications

Motor		C	F	G	P	U
Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)			@-Step Motor	AC Servo Motor
	Step Angle	0.72°	0.72°	0.36°	0.36° (When 1000P/R is set)	18-bit Encoder (262144P/R)
Connector	Applicable Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)			5559-10P Molex Com.	Motor Cable: JN4FT04SJ1-R Japan Aviation Electronics Industry, Ltd. Encoder: 1674320-1 (Tyco Electronics Japan G.K.)
Sensor	Limit Sensor	Provided				
	Home Sensor	Not Provided by standard (Photomicrosensor PM-L24 (Panasonic Industrial Devices SUNX Co., Ltd.) is available as the option.)				
	Near Home Sensor	—				
	Power Supply Voltage	DC5~24V ±10%				
	Current Consumption	45mA or less (15mA per Sensor)				
	Control Output	NPN Open Collector Output DC30V, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)				
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)				

■ Timing Chart





(Unit: mm) CW Direction ◄——► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	CCW Limit	Mechanical Limit
XCVL_6100	Stroke Center	52.5	50.5	50.5	52.5
XCVL_6150	Stroke Center	77.5	75.5	75.5	77.5
XCVL_6200	Stroke Center	102.5	100.5	100.5	102.5
XCVL_6300	Stroke Center	152.5	150.5	150.5	152.5

The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

NEW Motorized Stages Z-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized Z-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 30~75

Features: Z-Axis Type having high rigidity and compactness in width and supporting 30~75mm of travel distance.

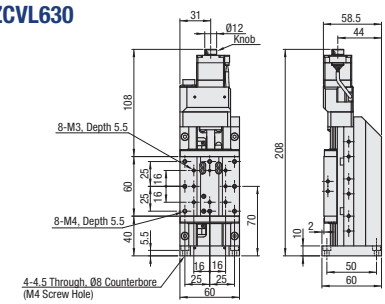
■ **ZCVL (w/o Cover)**

■ **ZCVLC (with Cover)** RoHS

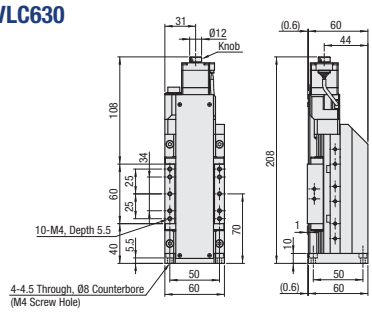
Material: SUS440C
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-10 (4 pcs)

For Controllers, Handset Terminals, see **P.399**

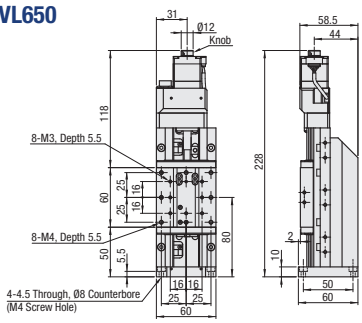
ZCVL630



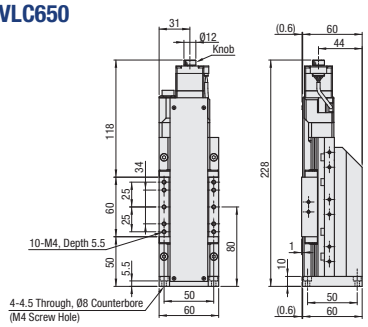
ZCVLC630



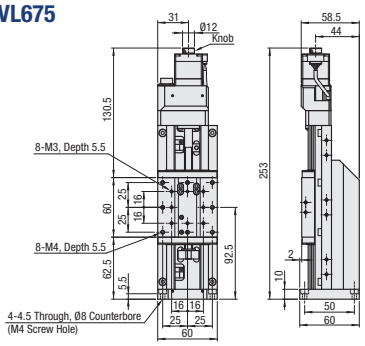
ZCVL650



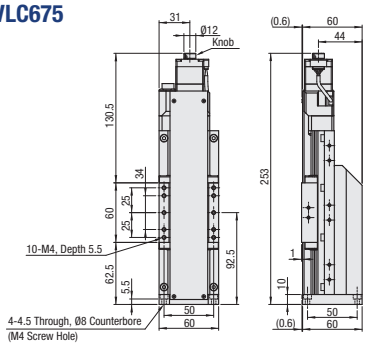
ZCVLC650



ZCVL675

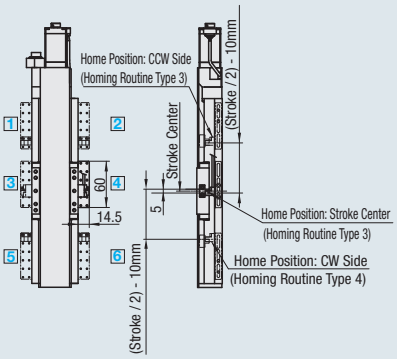


ZCVLC675



See the CAD data for detailed dimensions.

Additional Position for Mounting Home Sensor (Option)



NEW Motorized Stages Z-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized Z-Axis — Linear Ball, CAVE-X POSITIONER — Stroke 30~75

Part Number		Lead (mm)	Home Sensor Options of Additional Position for Home Sensor	Motor	Cable	Mechanical Standards			Accuracy Standards		
Type	No.					Stage Surface (mm)	Travel Distance (mm)	Weight*2 (kg)	Unidirectional Positioning Accuracy (for a single axis stage horizontally placed) Unidirectional Positioning Accuracy (for a single axis stage placed flatly)	Pitching	Yawing
ZCVL (w/o Cover) ZCVLC (with Cover)	630	1	N (W/o Sensor) 1 (CCW Right) 2 (CCW Left) 3 (Right-Center) 4 (Left-Center) 5 (CW Right) 6 (CW Left) ⓘ Limit Sensor is built-in.	C (Standard) F (High Torque) G (High Resolution) M*1 (With Brake) P*1 (@-Step) U*1 (Servo Motor)	N (Cable not included, separately sold) M*1 (For Motor with Brake) P (For @-Step) U (For Servo Motor) ⓘ For combination of motors and cables, see the table below.	60×60	30	ZCVL:2.0 ZCVLC:2.1	5 µm	20''	15''
	650						50	ZCVL:2.1 ZCVLC:2.2			
	675						75	ZCVL:2.3 ZCVLC:2.3	7 µm		

*1 When the Motor Option M or P is selected, the driver is included with as the Set. When the Option U is selected, the Amplifier is included with.
The cable is available for Option M, P, U and is unavailable for Option N (Cable not included).
*2 The value is for C Type of Motor.

Ordering Example

Part Number	–	Lead	–	Sensor	–	Motor	–	Cable
ZCVL630	–	1	–	N	–	C	–	N
ZCVLC630	–	1	–	1	–	P	–	P

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■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

	Motor	Cable
Motor/Cable Application Table	C, F, G	N (Not Provided)
	M	M
	P	P
	U	U

ⓘ For the cable for C, F or G, see MSCB_ on P.400

■ Max. Speed

Motor	(mm/sec)
C	20
F	30
G	15
M	25
P	40
U	50

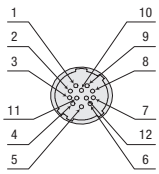
ⓘ Note that the speed and positioning time differ depending on the current condition of use. The speed and positioning time are not guaranteed values but reference values provided by MISUMI.

■ Common Specifications

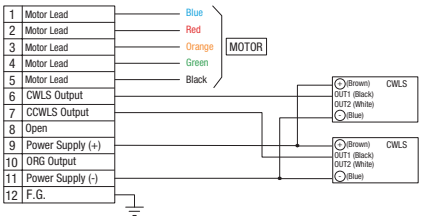
Feed Screw		Ball Screw Ø8, Lead 1
Guide		Linear Ball Guide
Resolution	Full	2 µm
	Half	1 µm
	Fine	0.1µm for 1/20 partitioned
Max. Speed		20mm/sec
Positioning Repeatability		±0.5 µm
Load Capacity*3		68.6N
Lost Motion		1 µm
Backlash		1 µm
Motion Straightness		3 µm
Parallelism		15 µm
Motion Parallelism		10 µm

ⓘ The value differs depending on the type of motor.
ⓘ The above specifications table is for a single axis stage placed flatly.
*3 The above load capacity value is for Z-Axis.

■ Connector Pin Configuration



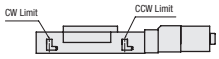
■ Wiring Diagram

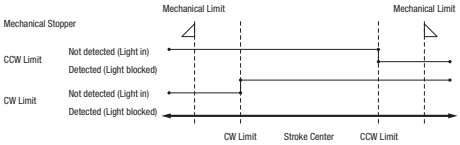


■ Electrical Specifications

Motor		C	F	G	M	P	U
		Standard	High Torque	High Resolution	With Brake	Stepping-out Prevention	High Speed
Motor	Type	5-Phase Stepping Motor 0.75A/Phase				@-Step Motor	AC Servo Motor
	Step Angle	0.72°	0.72°	0.36°	0.72°	0.36° (When 1000P/R is set)	18-bit Encoder (262144P/R)
Connector	Applicable Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)			350720-1 (Tyco Electronics Japan G.K.)	5557-10P (Molex Com.)	Motor Cable JN4FT04SJ1-R (Japan Aviation Electronics Industry, Ltd.) Encoder: 1674320-1 (Tyco Electronics Japan G.K.)
Sensor	Limit Sensor	Provided					
	Home Sensor	Not Provided by standard (Photomicrosensor PM-L24 (Panasonic Industrial Devices SUNX Co., Ltd.) is available as the option.)					
	Near Home Sensor	—					
	Power Supply Voltage	DC5~24V±10%					
	Current Consumption	45mA or less (15mA or less per sensor)					
	Control Output	NPN Open Collector Output DC30V or less, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)					
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)					

■ Timing Chart





(Unit: mm) CW Direction ◄——► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	CCW Limit	Mechanical Limit
ZCVL_630	Stroke Center	17.5	15.5	15.5	17.5
ZCVL_650	Stroke Center	27.5	25.5	25.5	27.5
ZCVL_675	Stroke Center	40	37.5	37.5	40

ⓘ The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

Type 5	After detection is executed in the CCW direction, the process of detecting in the CW direction is begun based on the CCWLS signal.
Type 6	After detection is executed in the CW direction, the process of detecting in the CCW direction is begun based on the CWLS signal.
Type 11	After Type 5 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 12	After Type 6 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages XYZ-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XYZ-Axis — Linear Ball, CAVE-X POSITIONER

Features: XYZ-Axis Type with High Rigidity, Compactness in width and the Space-saving design for the overall length.

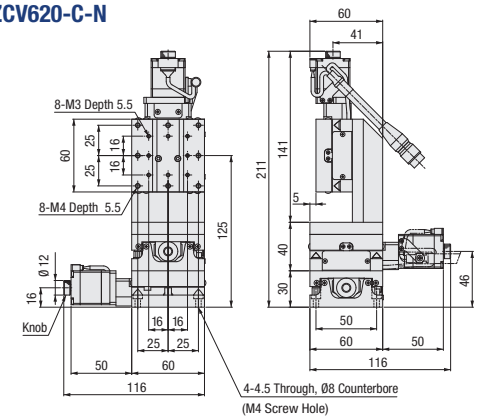
■ **XYZ-Axis, Compact**

RoHS

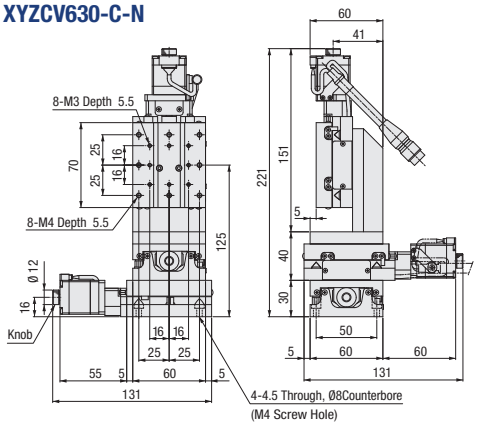
Material: SUS440C
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-14 (4 pcs)

For Controllers, Handset Terminals, see **P.399**

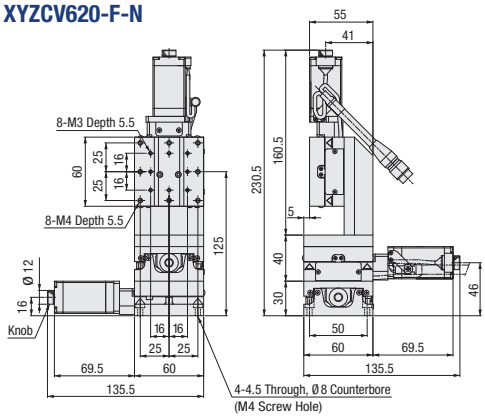
XYZCV620-C-N



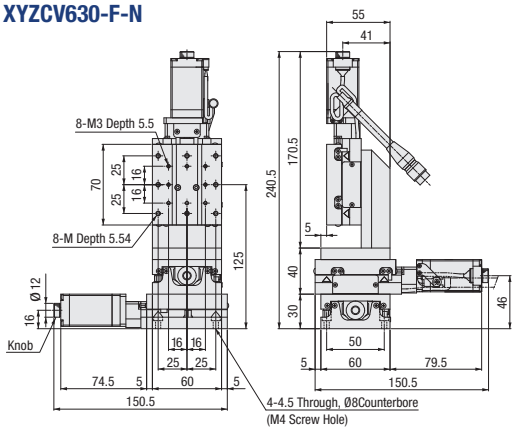
XYZCV630-C-N



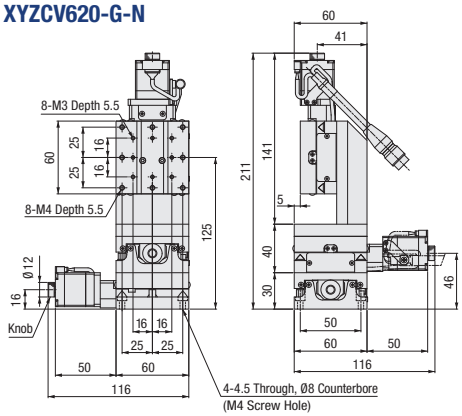
XYZCV620-F-N



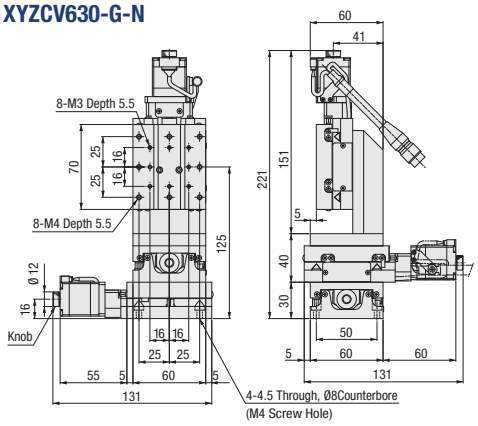
XYZCV630-F-N



XYZCV620-G-N



XYZCV630-G-N



NEW Motorized Stages XYZ-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XYZ-Axis — Linear Ball, CAVE-X POSITIONER

Part Number		Lead (mm)	Motor	Cable	Mechanical Standards			Accuracy Standards		
Type	No.				Stage Surface (mm)	Travel Distance (mm)	Weight*2 (kg)	Unidirectional Positioning Accuracy (for a single axis stage horizontally placed)	Pitching	Yawing
XYZCV	620	1	C (Standard) F (High Torque) G (High Resolution) P (@-Step)	N (Cable not included, separately sold) P (For @-Step) For combination of motors and cables, see the table below.	60 × 60	30	2.7	5 µm	20''	15''
	630				60 × 70	50	3.1			

*1 When the Motor Option P is selected, the driver is included with as the Set. The cable is available for Option P and is unavailable for Option N (Cable not included). *2 The value is for C Type of Motor.

Ordering Example

Part Number	–	Motor	–	Cable
XYZCV620	–	C	–	N

Days to Ship — Configure Online

■ Max. Speed

Motor	(mm/sec)
C	20
F	30
G	20
P	30

Note that the speed and positioning time differ depending on the current condition of use. The speed and positioning time are not guaranteed values but reference values provided by MISUMI.

■ Common Specifications

Feed Screw		Ball Screw Ø8, Lead 1
Guide		Linear Ball Guide
Resolution*3	Full	2µm/Pulse (1 µm/Pulse)*4
	Half	1µm/Pulse (0.5 µm/Pulse)*4
	Fine Feed (Upon 1/20 Partitioned)	0.1 µm (0.05 µm)*4
Max. Speed*5		20mm/sec (30mm/sec)*6
		(Pulse Rate: 5kHz)

Positioning Repeatability	±0.5 µm
Load Capacity*7	29.4N
Lost Motion	1 µm
Backlash	1 µm
Motion Straightness	3 µm
Parallelism	15 µm
Motion Parallelism	10 µm

The above specifications table is for a single axis stage placed flatly.

*3 This represents the travel distance of stage per one pulse signal.
*4 The values in ( ) are for Motor Option G (High Resolution).
*5 This represents the max. speed that can be driven by the recommended controller switched to Full Step mode, with the max. load applied. (The value differs depending on the current driving controller and the current load.)
*6 The values in ( ) are for Motor Option F (High Torque).
The value differs depending on the motor option.
*7 The above load capacity value is for Z-Axis.

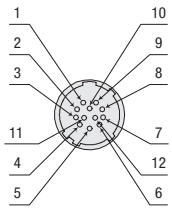
■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

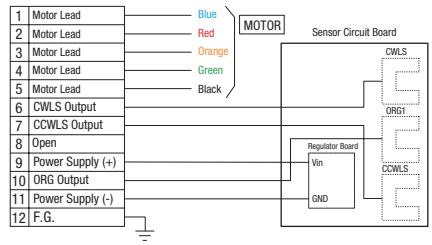
	Motor	Cable
Motor/Cable Application Table	C, F, G	N (Not Provided)
	P	P

For the cable for C, F or G, see MSCB_ on P.400

■ Connector Pin Configuration



■ Wiring Diagram

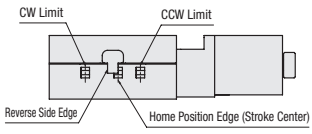


■ Electrical Specifications

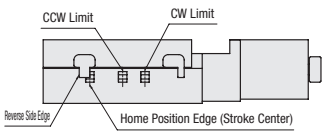
Motor		C	F	G	P
Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)			@-Step Motor
	Step Angle	0.72°	0.72°	0.36°	0.36° (When 1000P/R is set)
Connector	Applicable Receptacle Connector	HR10A-10P-12S(73)(Hirose Electric Co., LTD.)			5557-10P (Molex Com.)
Sensor	Limit Sensor	Provided			
	Home Sensor	Photomicrosensor: EE-SX4134 (OMRON Corp.)			
	Near Home Sensor	—			
	Power Supply Voltage	DC5~24V ±10%			
	Current Consumption	60mA or less in Total			
	Control Output	NPN Open Collector Output DC5~24V, 8mA or less Residual Voltage 0.3V or less (when load current is 2mA)			
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)			

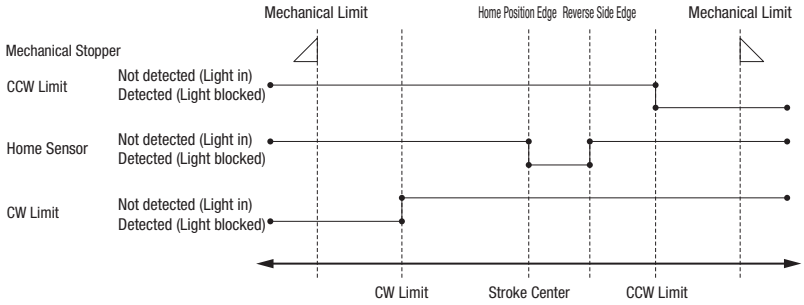
■ Timing Chart

XYZCV620



XYZCV630





(Unit: mm) CW Direction ← → CCW Direction

	Reference Position	Mechanical Limit	CW Limit	Home Position Edge Stroke Center	Other Signal Edge	CCW Limit	Mechanical Limit
XYZCV620	Homing	11	10.5	0	5	10.5	13
XYZCV630	Homing	16	15.5	0	5	15.5	18

Homing mentioned here means that Homing Routine Type 4 is executed by using the MSCTL102 Series controller.
The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

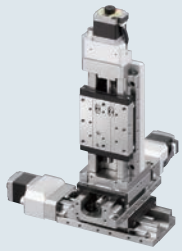
Type 3	After detection is executed in the CCW direction, the process of detecting in the CCW direction is begun based on the ORG signal.
Type 4	After detection is executed in the CW direction, the process of detecting in the CW direction is begun based on the ORG signal.
Type 9	After Type 3 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 10	After Type 4 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

NEW Motorized Stages XYZ-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XYZ-Axis — Linear Ball, CAVE-X POSITIONER

Features: Have high rigidity and compactness in width. Support 30~50mm of travel distance.

■ **XYZCVL (w/o Cover)**



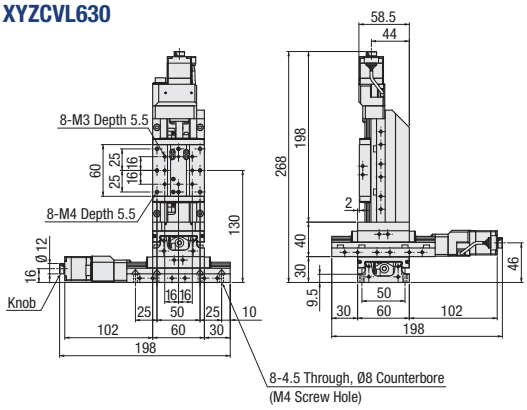
■ **XYZCVLC (with Cover)**

RoHS

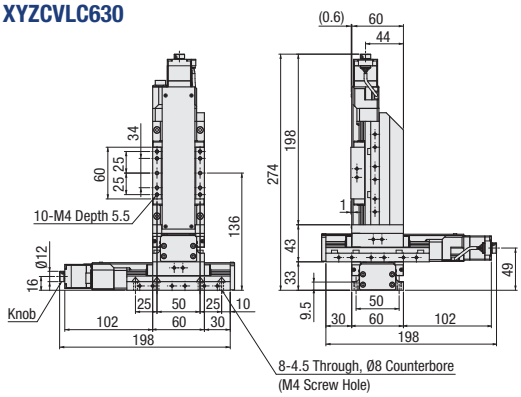
Material: SUS440C
Surface Treatment: Electroless Nickel Plating
Accessory: SCB4-14 (4 pcs)

For Controllers, Handset Terminals, see **P.399**

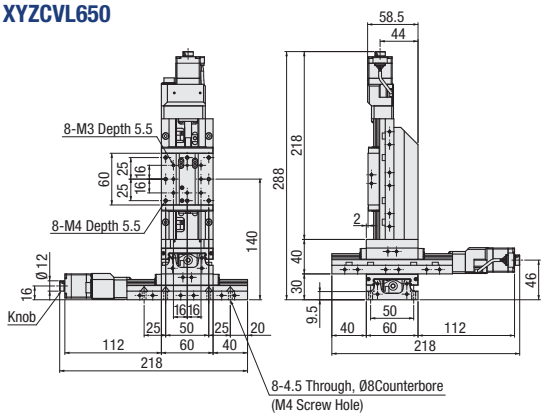
XYZCVL630



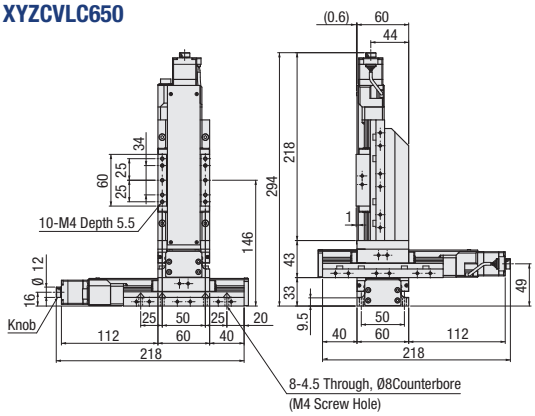
XYZCVLC630

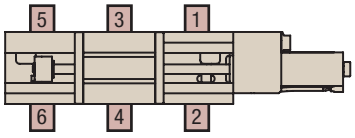


XYZCVL650



XYZCVLC650





The above diagrams are for stages incorporating Motor C. For detailed dimensions about stages incorporating Motor F, G, M, P or U, see the relevant CAD data.

NEW Motorized Stages XYZ-Axis Linear Ball Cave-X Positioner

[High Precision] Motorized XYZ-Axis — Linear Ball, CAVE-X POSITIONER

Part Number		Lead (mm)	Home Sensor Options of Additional Position for Home Sensor	Motor	Cable	Mechanical Standards			Accuracy Standards		
Type	No.					Stage Surface (mm)	Travel Distance (mm)	Weight*2 (kg)	Unidirectional Positioning Accuracy (for a single axis stage horizontally placed) Unidirectional Positioning Accuracy (for a single axis stage placed flatly)	Pitching	Yawing
XYZCVL (w/o Cover) XYZCVLC (with Cover)	630	1	N (W/o Sensor) 1 (CCW Right) 2 (CCW Left) 3 (Right-Center) 4 (Left-Center) 5 (CW Right) 6 (CW Left) ⓘ Limit Sensor is built-in.	C (Standard) F (High Torque) G (High Resolution) M*1 (With Brake) P*1 (@-Step) U*1 (Servo Motor)	N (Cable not included, separately sold) M*1 (For Motor with Brake) P (For @-Step) U (For Servo Motor) ⓘ For combination of motors and cables, see the table below.	60 × 60	30	4.6 (4.7*3)	5 µm	20''	15''
	650						50	4.9 (5.0*3)			

*1 When the Motor Option M or P is selected, the driver is included with as the Set. When the Option U is selected, the Amplifier is included with. The cable is available for Option M, P, U and is unavailable for Option N (Cable not included). *2 The value is for C Type of Motor. *3 Values in ( ) are for stages with Cover.

ⓘ The accuracy specifications above are certified for single-axis horizontal mounting orientation.

Ordering Example

Part Number	–	Lead	–	Sensor	–	Motor	–	Cable
XYZCVL630	–	1	–	N	–	C	–	N

Days to Ship Configure Online

■ Motor/Cable Application Table

The available cable differs depending on the type of motor.

Motor/Cable Application Table	Motor	Cable
	C, F, G	N (Not Provided)
	M	M
	P	P
	U	U

ⓘ For the cable for C, F or G, see MSCB_ on P.400

■ Max. Speed

Motor	(mm/sec)
C	20
F	30
G	15
M	25
P	40
U	50

ⓘ Note that the speed and positioning time differ depending on the current condition of use. The speed and positioning time are not guaranteed values but reference values provided by MISUMI.

■ Common Specifications

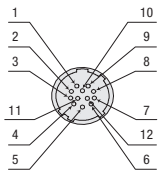
Feed Screw		Ball Screw Ø8, Lead 1
Guide		Linear Ball Guide
Resolution	Full	2 µm
	Half	1 µm
	Fine	0.1µm for 1/20 partitioned
Max. Speed		20mm/sec
Positioning Repeatability		±0.5 µm
Load Capacity*3		68.6N
Lost Motion		1 µm
Backlash		1 µm
Motion Straightness		3 µm
Parallelism		15 µm
Motion Parallelism		10 µm

ⓘ The value differs depending on the type of motor.

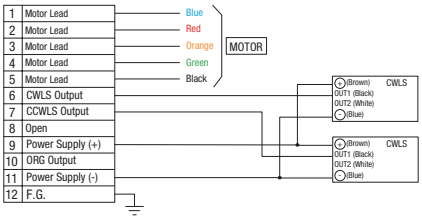
ⓘ The above specifications table is for a single axis stage placed flatly.

*3 The above load capacity value is for Z-Axis.

■ Connector Pin Configuration



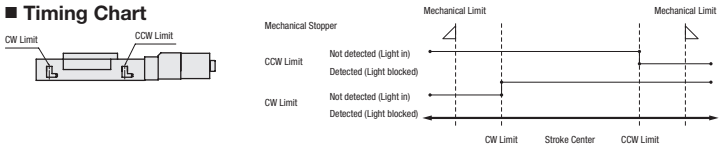
■ Wiring Diagram



■ Electrical Specifications

Motor		C Standard	F High Torque	G High Resolution	M With Brake	P Stepping-out Prevention	U High Speed
Motor	Type	5-Phase Stepping Motor 0.75A/Phase				@-Step Motor	AC Servo Motor
	Step Angle	0.72°	0.72°	0.36°	0.72°	0.36° (When 1000P/R is set)	18-bit Encoder (262144P/R)
Connector	Applicable Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)			350720-1 (Tyco Electronics Japan G.K.)	5557-10P (Molex Com.)	Motor Cable JN4FT04SJ1-R (Japan Aviation Electronics Industry, Ltd.) Encoder: 1674320-1 (Tyco Electronics Japan G.K.)
Sensor	Limit Sensor	Provided					
	Home Sensor	Not Provided by standard (Photomicrosensor PM-L24 (Panasonic Industrial Devices SUNX Co., Ltd.) is available as the option.)					
	Near Home Sensor	—					
	Power Supply Voltage	DC5~24V±10%					
	Current Consumption	45mA or less (15mA or less per sensor)					
	Control Output	NPN Open Collector Output DC30V or less, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)					
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)					

■ Timing Chart



(Unit: mm) CW Direction ◄——► CCW Direction

	Reference Position	Mechanical Limit	CW Limit	CCW Limit	Mechanical Limit
ZCVL_630	Stroke Center	17.5	15.5	15.5	17.5
ZCVL_650	Stroke Center	27.5	25.5	25.5	27.5

ⓘ The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method

Type 5	After detection is executed in the CCW direction, the process of detecting in the CW direction is begun based on the CCWLS signal.
Type 6	After detection is executed in the CW direction, the process of detecting in the CCW direction is begun based on the CWLS signal.
Type 11	After Type 5 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 12	After Type 6 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

Motorized Linear Ball Stage Guide

Motorized Linear Ball Slide Stages — Overview

■ Features of XMSG Series

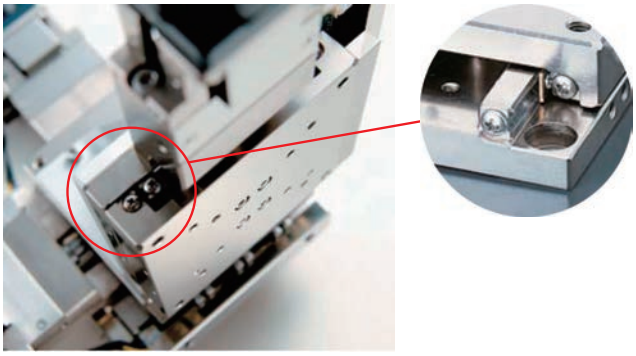
1) Low Profile The guide-integrated structure eliminates the need for fastening screws and thereby, provides low profile.

2) High Rigidity Since the number of fastening components is reduced and Stainless Steel is adopted as the material, low profile and high rigidity are achieved.

3) High Precision Since the guides are directly machined onto the housing, high accuracy is achieved for traveling motion and parallelism between the top and bottom surfaces.

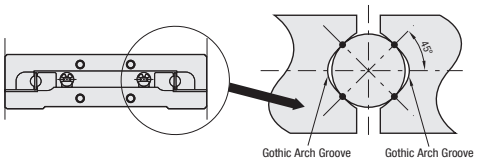
4) Economical By adopting the MISUMI's unique production system, the price is sharply reduced.

Linear Ball Guide Mechanism

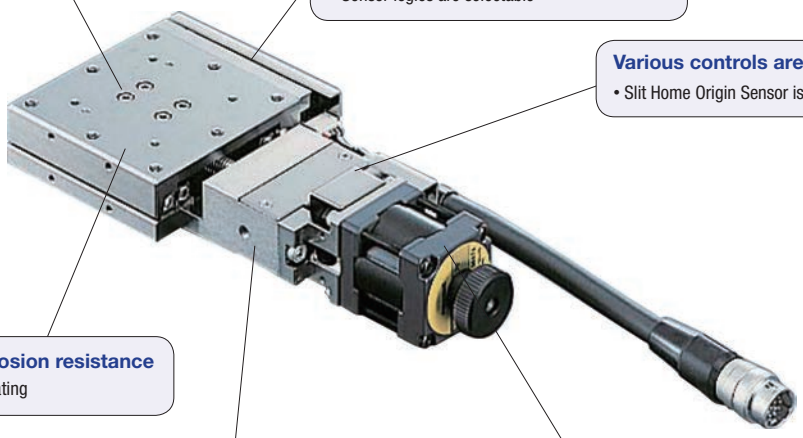


• High Rigidity

Gothic Arch Grooved Ball Guides are machined directly on the top/bottom plate of the main body (Stainless Steel Hardened Type). Since Gothic Arch Groove is composed of two arches, the number of contacts on Ball is also two on one side. As shown below, the groove is so shaped that ball have four-point contact on the both side, thereby providing high rigidity.



■ Function of XMSG Series



Stainless Steel material ensures safe use
• Material: SUS440C

The sensor is freely configurable
• Installation can be reversed to the right or left
• Sensor voltages are selectable
• Sensor logics are selectable

Various controls are supported
• Slit Home Origin Sensor is installed.

Excellent in corrosion resistance
• Electroless Nickel Plating

Useable even in the Z-Axis direction
• Angular Contact Bearing

Motor can be easily selected to meet any of the following requirements:
• Resolution needs to be enhanced.
• Torque needs to be enhanced.
• Speed needs to be increased.

Motorized Linear Ball Stage Guide

Motorized Linear Ball Slide Stages — Overview

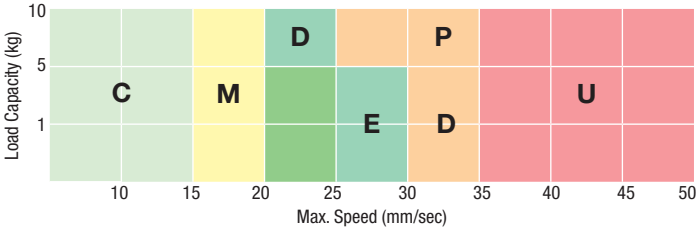
■ Product List

Axis	Accuracy Range	Part Number					Reference
		Type	No. * Values in ( ) are for Stage Surface Size (mm)				
		Travel Distance	13 mm	15 mm	30 mm	50 mm	
X-Axis	High Precision	XMSG	413 (40 x 40) 513 (50 x 50)	615 (60 x 60) 715 (70 x 70)	430 (40 x 60) 530 (50 x 70)	650 (60 x 100) 750 (70 x 110)	#ACX
XY-Axis	High Precision	XYMSG	413 (40 x 40) 513 (50 x 50)	615 (60 x 60) 715 (70 x 70)			#ACXY
Z-Axis	High Precision	ZMSG	413 (40 x 40) 513 (50 x 50)	615 (60 x 60) 715 (70 x 70)			#ACZ
XYZ-Axis	High Precision	XYZMSG	413 (40 x 40) 513 (50 x 50)	615 (60 x 60) 715 (70 x 70)			#ACXY

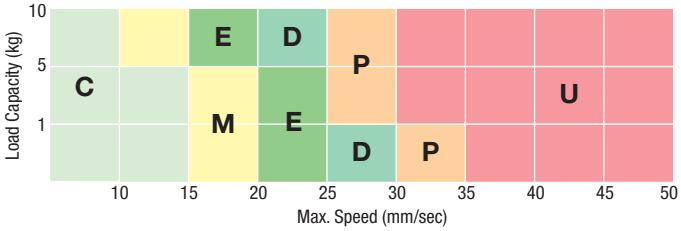
■ Type and Performance of the Applicable Motor

• Load Capacity and Max. Speed per Model

X-Axis/XY-Axis ••• XMSG/XYMSG



Z-Axis ••• ZMSG



■ Reference Data: Motor Performance

• The speed and positioning time are not guaranteed values but reference values provided by MISUMI.

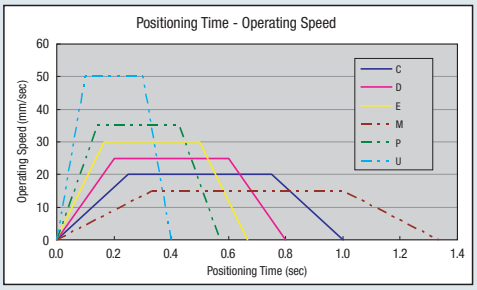
Operation Pattern: Set up the acceleration/deceleration time to 1/4 of the positioning time and the uniform speed time to 1/2 of the positioning time.

• Note that the speed and positioning time differ depending on the current condition of use.

Horizontal mounting (X-Axis): 15mm stroke

Motor Type	Max. Speed	Acceleration Time	Uniform Speed Time	Deceleration Time	Positioning Time
C	20.00	0.25	0.50	0.25	1.00
D	25.00	0.20	0.40	0.20	0.80
E	30.00	0.17	0.33	0.17	0.67
M	15.00	0.33	0.67	0.33	1.33
P	35.00	0.14	0.29	0.14	0.57
U	50.00	0.10	0.20	0.10	0.40

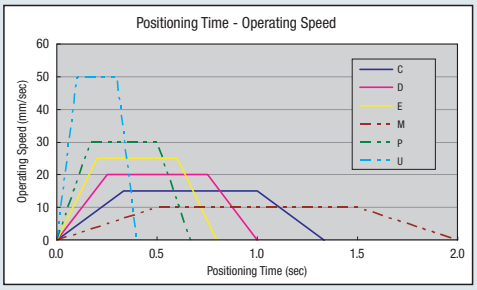
Unit Max. Speed: "mm/sec"; Acceleration, Uniform Speed, Deceleration, Positioning: "sec"



Vertical mounting (Z-Axis): 15mm stroke

Motor Type	Max. Speed	Acceleration Time	Uniform Speed Time	Deceleration Time	Positioning Time
C	15.00	0.3	0.67	0.33	1.33
D	20.00	0.25	0.50	0.25	1.00
E	25.00	0.20	0.40	0.20	0.80
M	10.00	0.50	1.00	0.50	2.00
P	30.00	0.17	0.34	0.17	0.67
U	50.00	0.10	0.20	0.10	0.40

Unit Max. Speed: "mm/sec"; Acceleration, Uniform Speed, Deceleration, Positioning: "sec"



■ Applicable Cable for Motor Code [M, P, U]

The available cable is pre-determined for Motors M, P and U. This is, combination of cable and motor is determined, by default. For example, the Cable M is available for Motor M. The motor cable and sensor cable are plugged into the connector on the stage side. The motor driver and motor cable (encoder cable) are sold as a set.[*1]

Motor Code	Max. Speed	Cable Code	Motor Cable	Encoder Cable	Sensor Cable
M	M	RKD507M-A Oriental Motor Co., Ltd.	STPO-RK2-A-3 Motor Code M	—	PG-H-ASSY5-2000
P	P	ASD10A-K Oriental Motor Co., Ltd.	STPO-AS1-B-3 Motor Code P	—	
U	U	MR-J3-10A Mitsubishi Electric Corporation	SVPM-J3HF1-B-3-02S Motor Code U	SVEM-J3HF1-B-3 Motor Code U	

[*1] If a product other than the Set product is desired, you need to request quotation. For details, please contact MISUMI.

Motorized Linear Ball Stage Guide

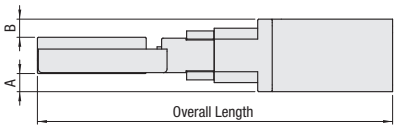
Motorized Linear Ball Slide Stages — Overview

■ XMSG Series: Electrical Specifications per Motor

Motor				C	D	E	M	P	U
				Standard	High Torque	High Resolution	With Brake	Stepping-out Prevention	High Speed
Stage Type				XMSG					
Motor		Type		5-Phase Stepping Motor 0.75A/Phase				@-Step Motor	AC Servo Motor
		Manufacturer		Oriental Motor Co., Ltd.					Mitsubishi Electric Corporation
		Part Number		PMM33BH2-C59-1	PK525HPB	PK523HPMB	PK545AWM	ASM34AK	HF-KP053
		Brake		Not Provided			Provided	Not Provided	Not Provided
		Step Angle		0.72°	0.72°	0.36°	0.72°	0.36° (When 1000P/R is set)	18-bit Encoder (262144P/R)
		Mass (kg)		0.1	0.20	0.11	0.52	0.15	0.35
		Dim. (mm)		28	28	28	42	28	40
		Overall Length (mm)		42	61.5	42	69	45	66.4
		(Instant) Max. Torque by Excitation (N·m)		0.033	0.073	0.038	0.240	0.055	0.480
		Driver Part Number		—*			RKD507M-A	ASD10A-K	MR-J3-10A
		Input Power Supply (Voltage / Frequency)		—*			Single-phase AC100-115V 50/60Hz	DC24V ±10%	3-phase / Single-phase AC200-230V 50/60Hz
Resolution (Pulse) (μm)	Lead 1mm	Full/Half(μm)		2/1	2/1	1/0.5	2/1	1/0.5	(Motor Resolution) 18-bit Encoder (262144P/R)
		Micro Step (μm)		0.1 (upon 1/20 partitioned)	0.1 (upon 1/20 partitioned)	0.05 (upon 1/20 partitioned)	0.1 (upon 1/20 partitioned)	—	
Connector	Motor	Part Number		HR10A-10J-12P(73) Hirose Electric Co., LTD.			350782-1 Tyco Electronics (Old Tyco AMP) Japan G.K.	5557-10R Molex Com.	Motor Cable: — Encoder: —
		Type of Receptacle Side		HR10A-10P-12S(73) Hirose Electric Co., LTD.			350720-1 Tyco Electronics (Old Tyco AMP) Japan G.K.	5559-10P Molex Com.	Motor Cable: JN4FT04SJ1-R Japan Aviation Electronics Industry, Ltd. Encoder: 1674320-1 Tyco Electronics Japan G.K.
	Sensor	Part Number	Limit Sensor	HR10A-10J-12P(73) Hirose Electric Co., LTD.			S5B-ZR-SM4-TF(LF)(SN) JST Co., Ltd.		
			ORG1 Sensor						
			ORG2 Sensor				PM-L24 Loose Wire	—	
		Type of Receptacle Side	Limit Sensor	HR10A-10P-12S(73) Hirose Electric Co., LTD.			ZHR-5 JST Co., Ltd.		
			ORG1 Sensor						
			ORG2 Sensor				—		
Sensor	Limit Sensor			Provided					
	ORG1 Sensor			Provided					
	ORG2 Sensor			Provided				—	
	Part Number			Photomicrosensor: EE-SX384, EE-SX484 (OMRON Corp.) (For Motor M, PM-L24 (Sunx Co., Ltd.) is applicable as the ORG2 Sensor.)					
	Power Supply Voltage			DC5V±5% (DC24V±10% is also available as the option.) (PM-L24 Power Supply Voltage: DC5~24V±10%)					
	Current Consumption			100mA or less (25mA per sensor) (PM-L24 Current Consumption: 15mA or less)					
	Control Output			EE-SX384/EE-SX484: NPN Open Collector Output DC5~24V, 16mA or less Residual Voltage 0.4V or less (when load current is 16mA) PM-L24: NPN Open Collector Output DC30V or less, 50mA or less Residual Voltage 0.7V or less (when load current is 50mA) Residual Voltage 0.4V or less (when load current is 16mA)					
	Output Logic			EE-SX384: When Light is blocked, Output Transistor ON (Conducting) EE-SX484: When Light is blocked, Output Transistor OFF (Non-Conducting) PM-L24: When Light is blocked, Output Transistor OFF (Non-Conducting)					

The same Electrical Specifications are applied for XYMSG, ZMSG and XYZMSG.

■ XMSG Series: External Dimension Diagram



■ XMSG SeriesExternal Dimension Table

Motor Selection	Size (mm)	A	B	Overall Length							
				413	513	615	715	430	530	650	750
C	28	4	4	142.5	152.5	162.5	172.5	171	181	220	230
D	28	4	4	163	173	183	193	191.5	201.5	240.5	250.5
E	28	4	4	143.5	153.5	163.5	173.5	172	182	221	231
M	42	11	11	182	192	202	212	210.5	220.5	259.5	269.5
P	28	4	4	144	154	164	174	172.5	182.5	221.5	231.5
U	40	10	10	175.9	185.9	195.9	205.9	204.4	214.4	253.4	263.4

■ Features of XMSG Series Motor

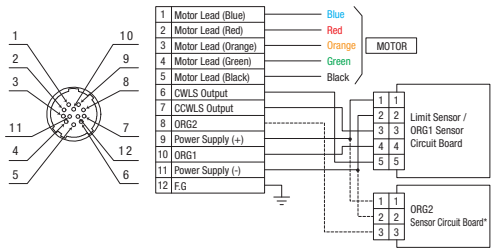
Type	Motor Code	Features of Motor	Price	Speed	Torque	Resolution	Stepping-out Prevent.	Response
Stepping Motor Driver	C	Standard	P	G	G	G	n	R
	D	High Torque	P	G	P	G	n	R
	E	High Resolution	P	G	G	P	n	R
	M	With Brake	G	G	G	G	n	R
@-Step	P	Stepping-out Prevention	G	G	G	G	P	P
AC Servo Motor	U	High Speed	R	P	P	P	P	P

Motorized Linear Ball Stage Guide

Motorized Linear Ball Slide Stages — Overview

■ XMSG Series: Connector Pin Configuration / Connecting Diagram

Motor	Motor (Pin Configuration / Connecting Diagram)	Sensor (Pin Configuration / Connecting Diagram)
C•D•E	[Pin Configuration (Common)] [Connecting Diagram (Common)]	■ Sensor used per logic
M	[Pin Configuration (Motor)] [Connecting Diagram (Motor)]	[Connecting Diagram (Sensor)]
P	Part Number of Motor Cable: STPO-AS1-B-3	[Connecting Diagram (Sensor)]
U	Part Number of Motor Cable: SVPM-J3HF1-B-3-02S	[Connecting Diagram (Sensor)]

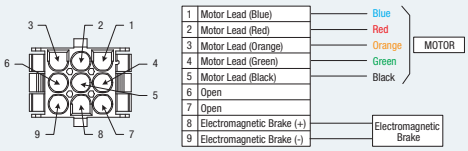


The dotted line connections are not functional when a standard cable (for 3-sensor) is used.

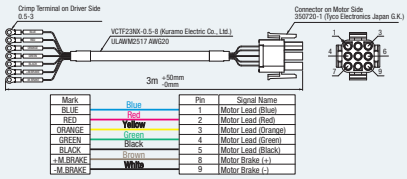
■ Sensor used per logic

Sensor Logic	CWLS, CCWLS	ORG1	ORG2
A (All N.C.)	EE-SX484		EE-SX384
B (All N.O.)	EE-SX384		EE-SX484
C (Limit N.C.; ORG1, ORG2 N.O.)	EE-SX484	EE-SX384	EE-SX484

*When 4 pcs. of ORG2 sensor are used, the cable for 4-sensor, 12-pin (MS4CB) is required. In this case, select "5 (Not Provided)" as the cable option and separately purchase MS4CB. Note that the other type of Homing Method than described here is recommended for this application.



Part Number of the Connecting Cable: STPO-RK2-A-3



Mark		Pin	Signal Name
BLUE	Blue	1	Motor Lead (Blue)
RED	Red	2	Motor Lead (Red)
ORANGE	Yellow	3	Motor Lead (Orange)
GREEN	Green	4	Motor Lead (Green)
BLACK	Black	5	Motor Lead (Black)
+M.BRAKE	Brown	8	Motor Brake (+)
-M.BRAKE	White	9	Motor Brake (-)

[Connecting Diagram (Sensor)]

Power Supply (+)	Brown	1	1
Power Supply (-)	Blue	2	2
CCWLS Output	Black	3	3
ORG1 Output	Yellow	4	4
CWLS Output	White	5	5

Limit Sensor / ORG1 Sensor Circuit Board

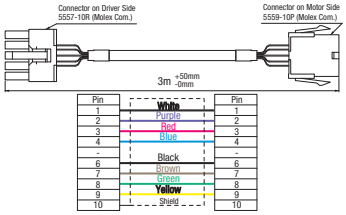
Power Supply (+)	Brown
Power Supply (-)	Blue
ORG2 Output (OUT1)	Black
ORG2 Output (OUT2)	White

ORG2 Sensor

Part Number of the Connecting Sensor Cable:
PG-H-ASSY5-2000

(MISUMI)

Part Number of Motor Cable: STPO-AS1-B-3



Pin		Pin
1	White	1
2	Purple	2
3	Red	3
4	Blue	4
-		-
6	Black	6
7	Brown	7
8	Green	8
9	Yellow	9
10	Shield	10

[Connecting Diagram (Sensor)]

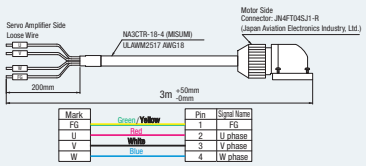
Power Supply (+)	Brown	1	1
Power Supply (-)	Blue	2	2
CCWLS Output	Black	3	3
ORG1 Output	Yellow	4	4
CWLS Output	White	5	5

Limit Sensor / ORG1 Sensor Circuit Board

Part Number of the Connecting Sensor Cable:
PG-H-ASSY5-2000

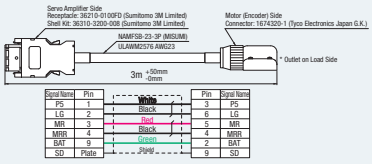
(MISUMI)

Part Number of Motor Cable: SVPM-J3HF1-B-3-02S



Mark		Pin	Signal Name
FG	Green/Yellow	1	FG
U	Red	2	U phase
V	White	3	V phase
W	Blue	4	W phase

Part Number of Encoder Cable: SVEM-J3HF-1-B-3



Signal Name	Pin		Pin	Signal Name
P5	1	White	3	P5
LG	2	Black	6	LG
MR	3	Red	5	MR
MRR	4	Black	4	MRR
BAT	9	Green	2	BAT
SD	Plate	Shield	9	SD

[Connecting Diagram (Sensor)]

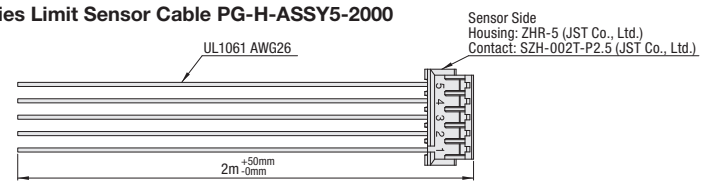
Power Supply (+)	Brown	1	1
Power Supply (-)	Blue	2	2
CCWLS Output	Black	3	3
ORG1 Output	Yellow	4	4
CWLS Output	White	5	5

Limit Sensor / ORG1 Sensor Circuit Board

Part Number of the Connecting Sensor Cable:
PG-H-ASSY5-2000

(MISUMI)

■ XMSG Series Limit Sensor Cable PG-H-ASSY5-2000



	Pin	Signal Name
Brown	1	V+
Blue	2	V-
Black	3	CCWLS
Yellow	4	ORG1
White	5	CWLS

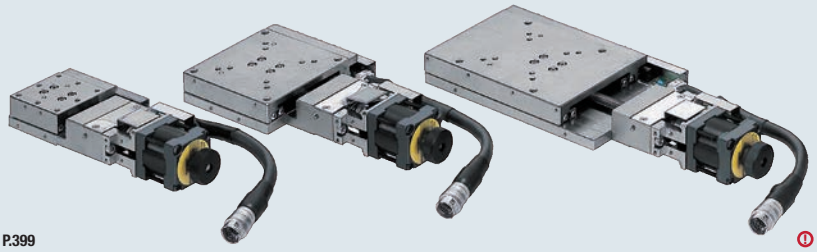
Motorized Stages X-Axis Linear Ball Guide

[Motorized] X-Axis, Linear Ball Slide

Features: Integrated Linear Ball Guide Stage with high precision and rigidity, yet economical. The carriage height is 20mm.

■ X-Axis Motorized Stage

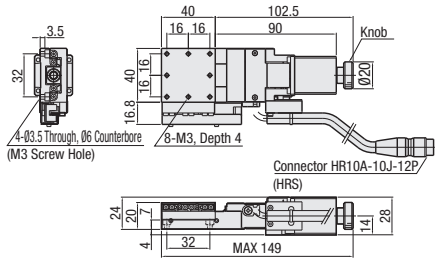
RoHS



For Controllers, Handset Terminals, see **P.399**

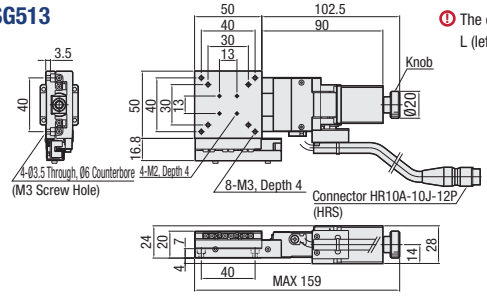
The products shown here is cover position R Type.

XMSG413

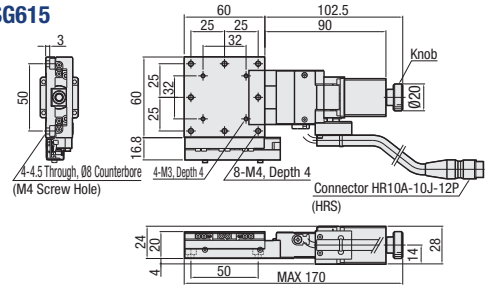


XMSG513

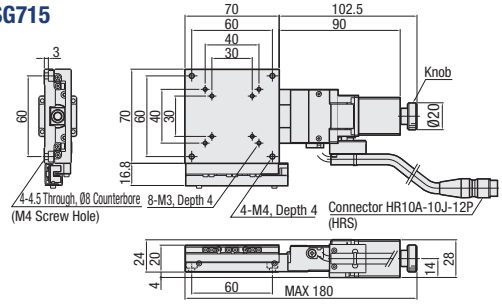
The drawing is for the L (left) cover position.



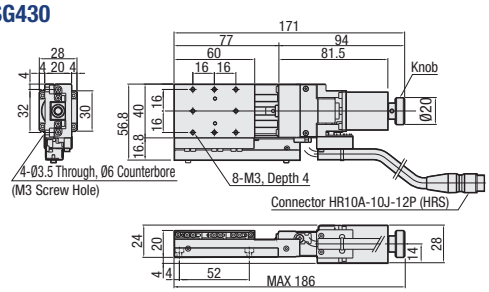
XMSG615



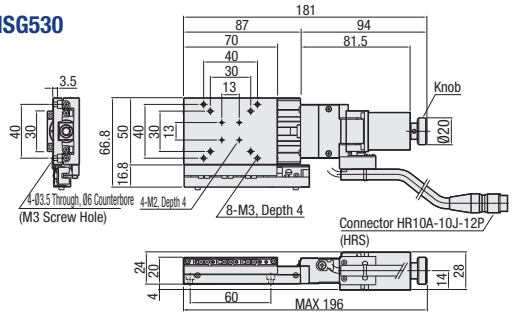
XMSG715



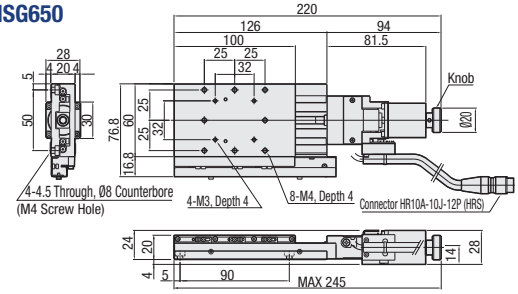
XMSG430



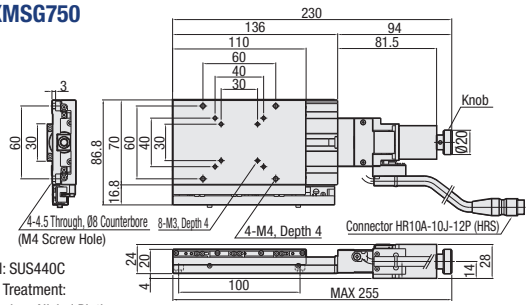
XMSG530



XMSG650



XMSG750



Material: SUS440C
Surface Treatment:
Electroless Nickel Plating

For a Medium Precision version of this, search **XMBS** on our website.

Motorized Stages X-Axis Linear Ball Guide

[Motorized] X-Axis, Linear Ball Slide

Part Number Type	Part Number No.	Sensor Cover Position	Sensor Logic	Voltage (V)	Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Positioning Accuracy	Moment Rigidity ("/N•cm) Pitch	Yaw	Roll	Straightness	Motion Parallelism	Pitching	Yawing	Accessory (4 pcs) Type M-L
XMSG	413	R	A All N.C.	5	40× 40	13	0.5	6μm or Less	0.22	0.17	0.12	1μm or Less	5μm or Less	15" or Less	10" or Less	SCB3-8
	513				50× 50	13	0.6		0.14	0.10	0.06					SCB3-8
	615				60× 60	15	0.7		0.08	0.07	0.03					SCB4-8
	715				70× 70	15	0.9		0.03	0.03	0.01					SCB4-8
	430	L	C Limit Switches are N.C; Home Sensor is N.O.	24	40× 60	30	0.6	12μm or Less	0.24	0.18	0.26	2μm or Less	10μm or Less	20" or Less	15" or Less	SCB3-8
	530				50× 70	30	0.8		0.12	0.13	0.10					SCB3-8
	650				60×100	50	1.1		0.05	0.05	0.05					SCB4-8
	750				70×110	50	1.2		0.03	0.03	0.03					SCB4-8

Photos shown on the left-hand page are for the Cover Position R Type, and the drawings are for the Cover Position L type.

Ordering Example

Part Number	–	Sensor
XMSG413	–	LA5

Days to Ship **Configure Online**

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

[Common Specifications]

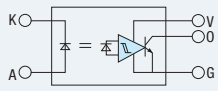
Feed Screw	Ball Screw Ø6, Lead 1
Guide	Linear Ball Guide
Resolution*1	2 μm/Pulse (Full) 1 μm/Pulse (Half)
Max. Speed*2	10 mm/sec (Pulse Rate: 5kHz)

Positioning Repeatability	Within ±0.5 μm
Load Capacity	49N
Lost Motion	1 μm or less
Backlash	0.5 μm or less
Parallelism	15 μm or less

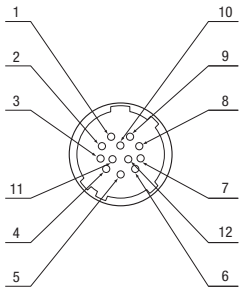
*1 Stage travel per one pulse.
*2 Max. speed that can be driven by MISUMI controller (MSCTL102) switched to Full Step mode, with the max. load applied. (The value changes depending on the driver and controller used, or the load.)
The above specifications table is for a single axis stage placed flatly.

■ Electrical Specifications

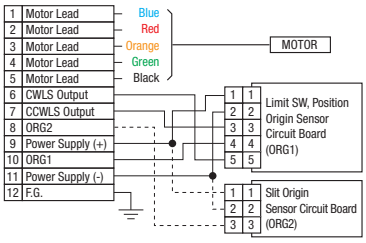
Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)
	Step Angle	0.72°
Compatible Receptacle Connector		HR10A-10P-12S (Hirose Electric Co., LTD.)
Sensor	Current Consumption	100mA or less (25mA per Sensor)
	Control Output	NPN Open Collector Output DC5 ~ 24V, 16mA or less Residual Voltage 0.4V or less (when load current is 16mA)
	Output Logic	N.C ••• Light seen N.O ••• Light blocked <Internal Circuit> K: Emitter Cathode V: Receptor Supply+ A: Receptor Anode O: Output G: Receptor Supply-



■ Connector Pin Configuration

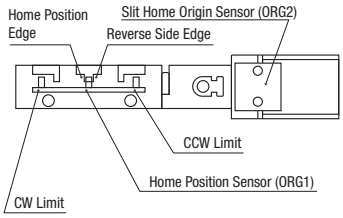


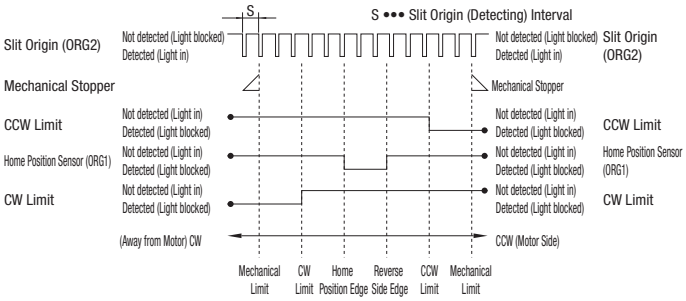
■ Connecting Diagram



*The dotted line connections are not functional when a standard cable is used.

■ Included Sensor Timing Chart (for A Sensor Logic)





(Unit: mm) CW Direction ← → CCW Direction

Travel Distance	Reference Position	Mechanical Limit	CW Limit	Home	Other Signal Edge	CCW Limit	Mechanical Limit
13	Homing	8	7.5	0	2	6.5	7
15	Homing	9	8.5	0	2	7.5	8
30	Homing	16.5	16	0	2	15	15.5
50	Homing	26.5	26	0	2	25	25.5
Common	Slit Home Position (Detecting) Interval S=1						

Homing Routine Above: When MSCTL102 controller is used and when the Homing Routine Type 3 (see below) is executed.
The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method (when MSCTL102 is used)

Type 3	After detection is executed in the CCW direction, the process of detecting in the CCW direction is begun based on the ORG signal.
Type 4	After detection is executed in the CW direction, the process of detecting in the CW direction is begun based on the ORG signal.
Type 9	After Type 3 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 10	After Type 4 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

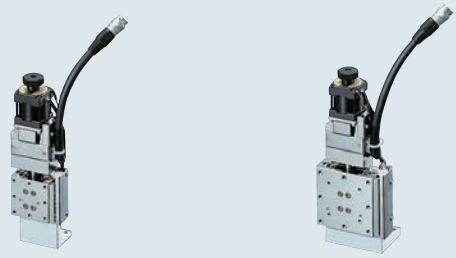
Motorized Stages Z-Axis Linear Ball Guide

[Motorized] Z-Axis, Linear Ball Slide

Features: Z-Axis Stage with integrated Linear Ball Guides, with High Precision and rigidity.

■ Z-Axis Motorized Stage

RoHS



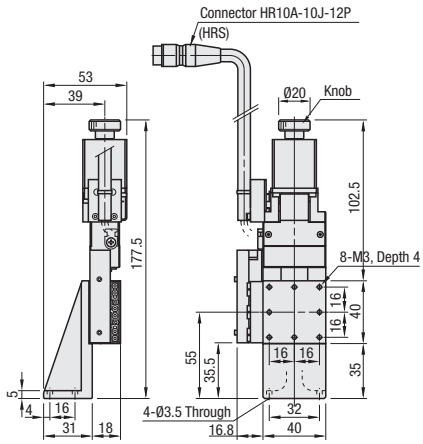
* The photo is for the Cover Position R Type.

For electrical specifications, connector pin assignment, wiring diagram, and a timing chart, see **P.400–401**

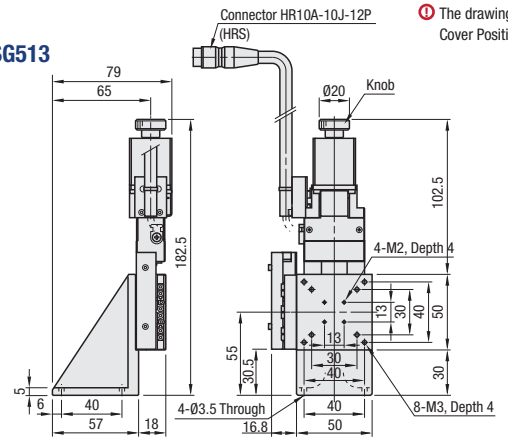
For Controllers, Handset Terminals, see **P.399**

The drawing is for the L (left) Cover Position Type.

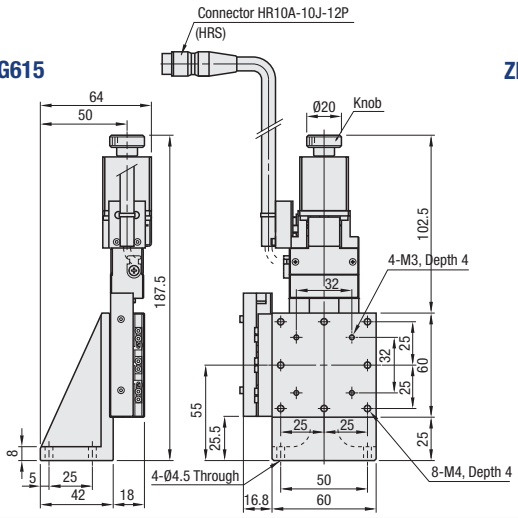
ZMSG413



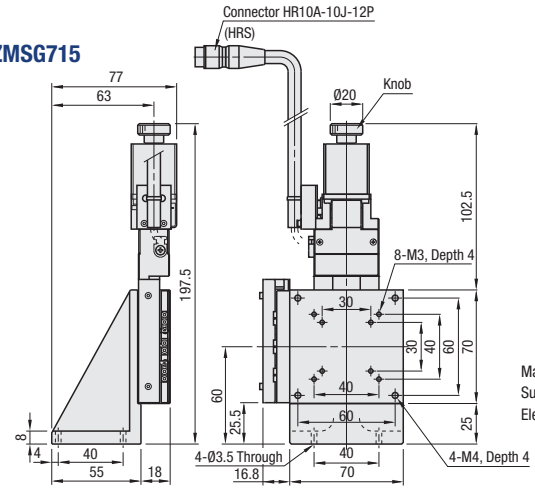
ZMSG513



ZMSG615

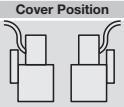


ZMSG715



These diagrams are for stages incorporating Motor C. For detailed dimensions about stages incorporating Motor F, G, M, P or U, see the relevant CAD data.

Material: SUS440C
Surface Treatment: Electroless Nickel Plating

Part Number		Sensor		Voltage (V)	Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Pitching	Yawing	Motion Parallelism	Load Capacity (N)	Accessory (4 pcs)
Type	No.	Cover Position	Logic									Type M-L
ZMSG	413	 L R	A All N.C. C Limit Switches are N.C; Home Sensor is N.O.	5	40× 40	13	0.6	15" or less	10" or less	5μm or Less	49.0	SCB3-10
	513				50× 50		0.8					SCB3-10
	615			24	60× 60	15	0.9					SCB4-12
	715				70× 70		1.2					SCB4-12

All the photos are for the Cover Position R Type, and all the drawings are for the Cover Position L Type.

Ordering Example

Part Number	–	Sensor
ZMSG413	-	RA5

Days to Ship

Configure Online

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

[Common Specifications]

The accuracy specifications below are certified for single-axis horizontal mounting orientation.

Feed Screw	Ball Screw Ø6, Lead 1	Positioning Repeatability	Within ±0.5 μm
Guide	Linear Ball Guide	Load Capacity	1 μm or less
Resolution*1	2 μm/Pulse (Full) 1 μm/Pulse (Half)	Lost Motion	0.5 μm or less
Max. Speed*2	10 mm/sec (Pulse Rate: 5kHz)	Backlash	6 μm or less
		Parallelism	1 μm or less

*1. Stage travel per one pulse. *2Max. speed that can be driven by MISUMI controller (MSCTL102) switched to Full Step mode, with the max. load applied. (The value changes depending on the driver and controller used, or the load.)

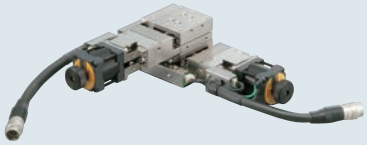
Motorized Stages XY-Axis Linear Ball Guide

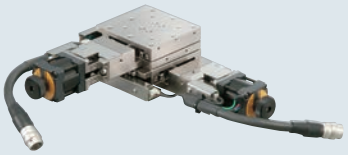
[Motorized] XY-Axis, Linear Ball Slide

Features: Integrated Linear Ball Slide Guides with High Precision and rigidity.

■ XY-Axis Motorized Stage

RoHS



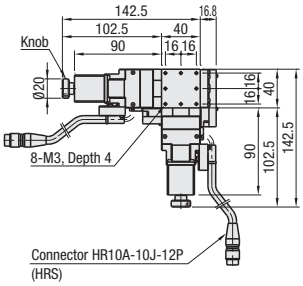


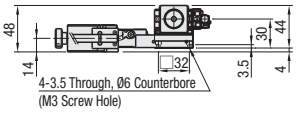
For electrical specifications, connector pin assignment, wiring diagram, and a timing chart, see **P.400–401**

For Controllers, Handset Terminals, see **P.399**

* The photo is for the Cover Position R Type.

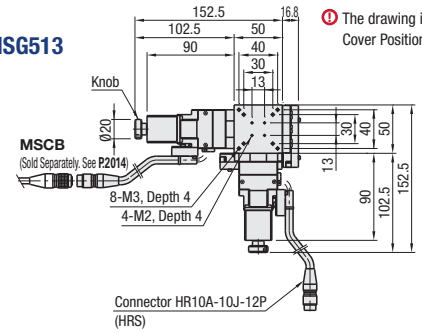
XYMSG413

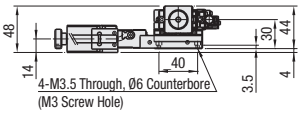




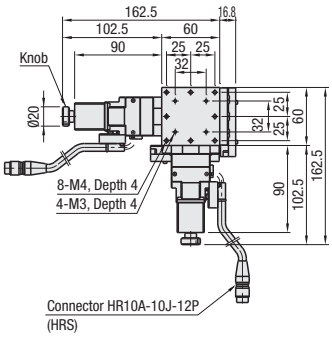
XYMSG513

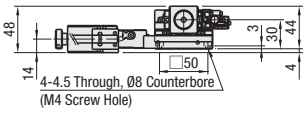
The drawing is for the L (left) Cover Position Type.



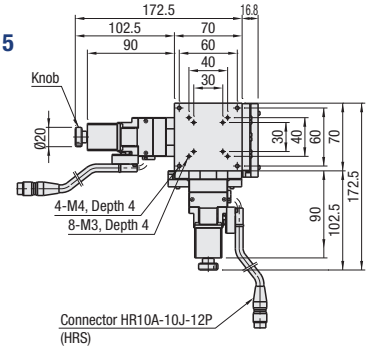


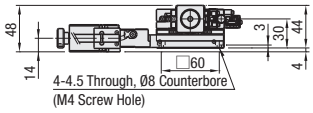
XYMSG615



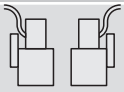


XYMSG715





Material: SUS440C
Surface Treatment:
Electroless Nickel Plating

Part Number		Sensor		Voltage (V)	Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Motion Perpendicularity	Pitching	Yawing	Load Capacity (N)	Accessory (4 pcs)
Type	No.	Cover Position	Logic									Type M-L
XYMSG	413	 L R	A All N.C. C Limit Switches are N.C; Home Sensor is N.O.	5	40×40	13	1.0	5μm or less / Full Stroke	15" or less	10" or less	93.1	SCB3-8
	513				50×50		1.2				92.1	SCB3-8
	615			24	60×60	15	1.7				91.1	SCB4-8
	715				70×70		1.8				89.2	SCB4-8

All the photos are for the Cover Position R Type, and all the drawings are for the Cover Position L Type.

Ordering Example

Part Number	–	Sensor
XYMSG413	–	RA5

Days to Ship

Configure Online

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

[Common Specifications]

The accuracy specifications below are certified for single-axis horizontal mounting orientation.

Feed Screw	Ball Screw Ø6, Lead 1	Positioning Repeatability	Within ±0.5 μm
Guide	Linear Ball Guide	Load Capacity	1 μm or less
Resolution*1	2 μm/Pulse (Full) 1 μm/Pulse (Half)	Lost Motion	0.5 μm or less
Max. Speed*2	10 mm/sec (Pulse Rate: 5kHz)	Backlash	6 μm or less
		Parallelism	1 μm or less

*1. Stage travel per one pulse. *2Max. speed that can be driven by MISUMI controller (MSCTL102) switched to Full Step mode, with the max. load applied. (The value changes depending on the driver and controller used, or the load.)

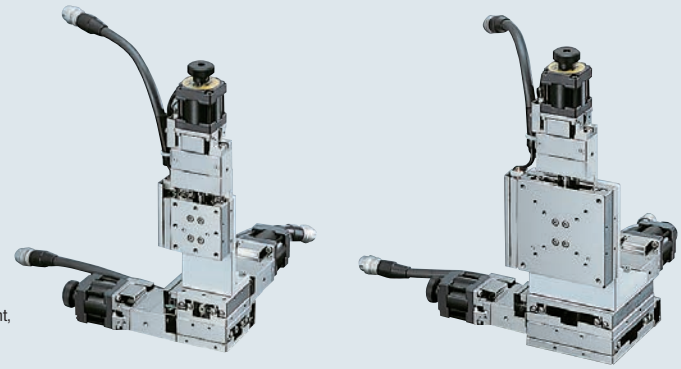
NEW Motorized Stages XYZ-Axis Linear Ball Guide

[Motorized] XYZ-Axis Linear Ball

Features: Integrated Linear Ball Slide Guides with High Precision and rigidity.

■ XYZ-Axis Motorized Stage

RoHS



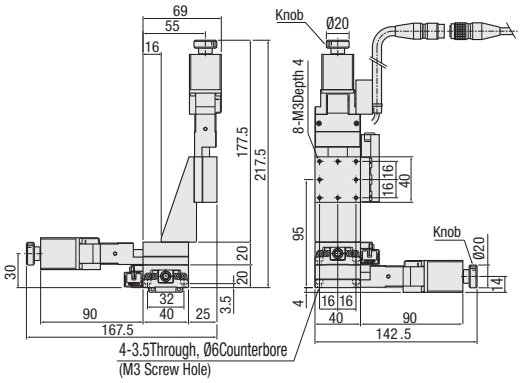
Material: Stainless Steel
Surface Treatment: Electroless Nickel Plating
Accessory XYZMSG 413, 513: SCB3-8 (4pcs)
Accessory XYZMSG 615, 715: SCB4-8 (4pcs)

For electrical specifications, connector pin assignment, wiring diagram, and a timing chart, see **P.400–401**
For Controllers, Handset Terminals, see **P.399**

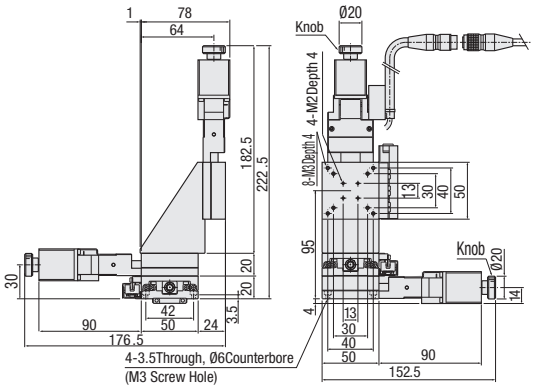
The drawings are for the R (right) Cover Position Type.

The Hex Wrench dedicated for tightening XY-bottom axis is included with. * The sensor cover position shown on the photo is L (Standard).

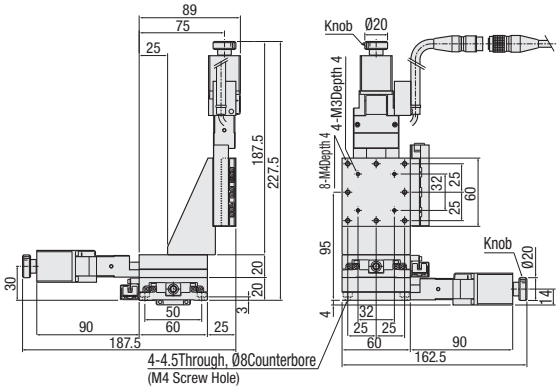
XYZMSG413



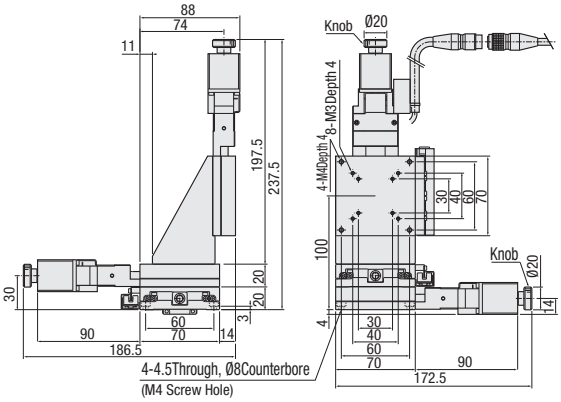
XYZMSG513



XYZMSG615



XYZMSG715



NEW Motorized Stages XYZ-Axis Linear Ball Guide

[Motorized] XYZ-Axis Linear Ball

Part Number		Sensor		Voltage (V)	Stage Surface (mm)	Travel Distance (mm)	Weight (kg)	Motion Perpendicularity	Pitching	Yawing	Accessory (4 pcs)
Type	No.	Cover Position	Logic								Type M-L
XMSG	413	R	A All N.C.	5	40×40	13	1.6	5μm or less / Full Stroke	15" or Less	10" or Less	SCB3-8
	513				50×50		2.0				SCB3-8
	615	L	C Limit Switches are N.C; Home Sensor is N.O.		60×60	15	2.6				SCB4-8
	715				70×70		3.0				SCB4-8

Photos shown on the left-hand page are for the Cover Position R Type, and the drawings are for the Cover Position L type.

Ordering Example

Part Number	–	Sensor
XYZMSG413	–	RA5

Days to Ship

Configure Online

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

[Common Specifications]

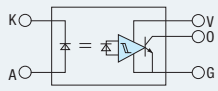
Feed Screw	Ball Screw Ø6, Lead 1
Guide	Linear Ball Guide
Resolution*1	2 μm/Pulse (Full) 1 μm/Pulse (Half)
Max. Speed*2	10 mm/sec (Pulse Rate: 5kHz)

Positioning Repeatability	Within ±0.5 μm
Load Capacity	49N
Lost Motion	1 μm or less
Backlash	0.5 μm or less
Parallelism	15 μm or less

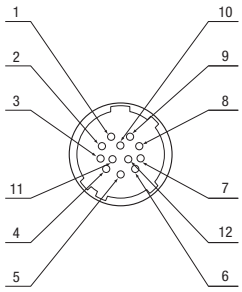
*1 Stage travel per one pulse.
*2 Max. speed that can be driven by MISUMI controller (MSCTL102) switched to Full Step mode, with the max. load applied. (The value changes depending on the driver and controller used, or the load.)
The above specifications table is for a single axis stage placed flatly.

■ Electrical Specifications

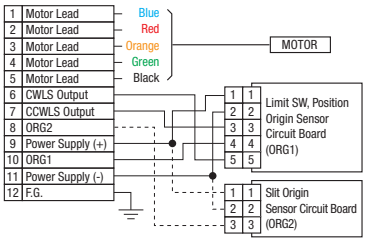
Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)
	Step Angle	0.72°
Compatible Receptacle Connector		HR10A-10P-12S (Hirose Electric Co., LTD.)
Sensor	Current Consumption	100mA or less (25mA per Sensor)
	Control Output	NPN Open Collector Output DC5 ~ 24V, 16mA or less Residual Voltage 0.4V or less (when load current is 16mA)
	Output Logic	N.C ••• Light seen N.O ••• Light blocked <Internal Circuit> K: Emitter Cathode V: Receptor Supply+ A: Receptor Anode O: Output G: Receptor Supply-



■ Connector Pin Configuration

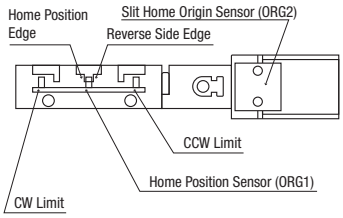


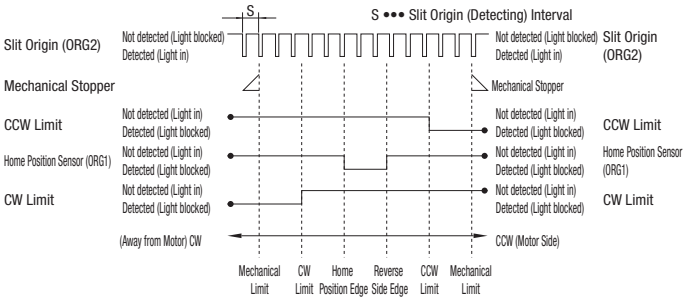
■ Connecting Diagram



*The dotted line connections are not functional when a standard cable is used.

■ Included Sensor Timing Chart (for A Sensor Logic)





(Unit: mm) CW Direction ← → CCW Direction

Travel Distance	Reference Position	Mechanical Limit	CW Limit	Home	Other Signal Edge	CCW Limit	Mechanical Limit
13	Homing	8	7.5	0	2	6.5	7
15	Homing	9	8.5	0	2	7.5	8
30	Homing	16.5	16	0	2	15	15.5
50	Homing	26.5	26	0	2	25	25.5
Common	Slit Home Position (Detecting) Interval S=1						

Homing Routine Above: When MSCTL102 controller is used and when the Homing Routine Type 3 (see below) is executed.
The coordinates shown are design values. There may be approx. ±0.5mm misalignment on the physical dimensions.

■ Recommended Homing Method (when MSCTL102 is used)

Type 3	After detection is executed in the CCW direction, the process of detecting in the CCW direction is begun based on the ORG signal.
Type 4	After detection is executed in the CW direction, the process of detecting in the CW direction is begun based on the ORG signal.
Type 9	After Type 3 is executed, the process of detecting in the CCW direction is begun based on the TIMING signal.
Type 10	After Type 4 is executed, the process of detecting in the CW direction is begun based on the TIMING signal.

Overview of Motorized Cross Roller Stages

Overview of Motorized Cross Roller Stages

■ Features

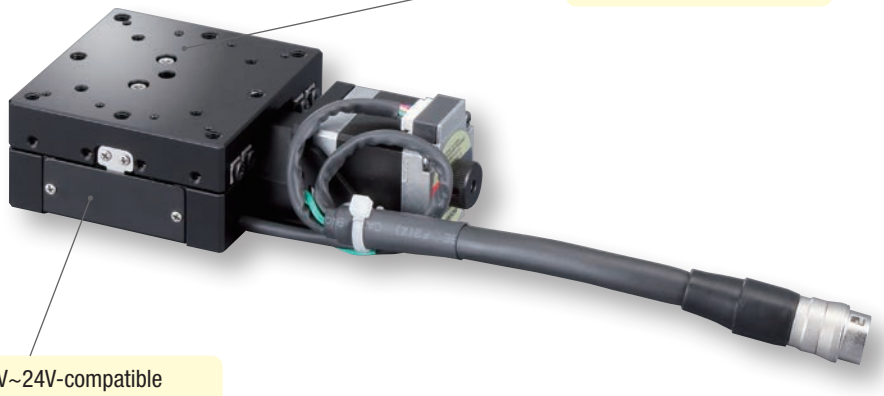
(1) Lightweight By adopting Aluminum for the housing, lightweight is achieved.

(2) Compactness XCR Series: Since the Photo Sensor is embedded in the housing, the stage has no excess protrusion and can be used without being bothered with difference between the right hand type and the left hand type.

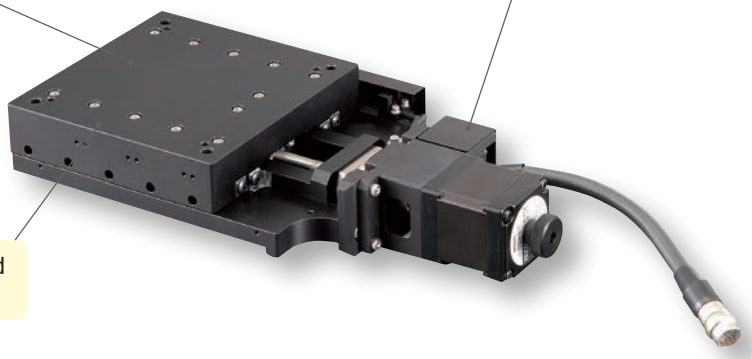
XMPTG Series: Has a low profile housing but excels in rigidity. Up to 25kg load capacity is available.

(3) High Precision Since the stage is so designed that thin rollers and V groove rails are put in line contact, high rigidity is achieved. Furthermore, since it is little likely to cause the differential slide phenomenon and is low-friction-processed, the stage is excellent in fine feed motion.

■ Features of XCR Series



■ Features of XMSG Series



Overview of Motorized Cross Roller Stages

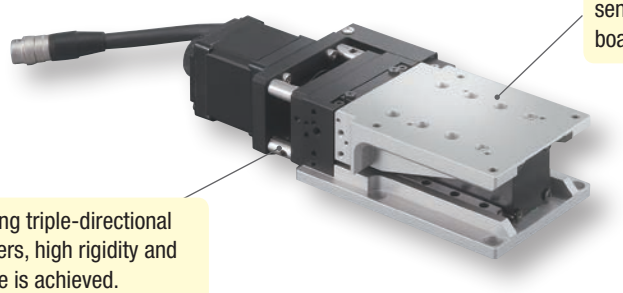
Product details available online!

Overview of Motorized Cross Roller Stages

■ Features of Horizontal Surface Z-Axis, Wedge Type

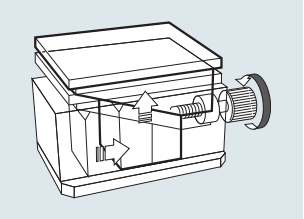
The V groove rails and the cross roller guides are located in the three directions (horizontal direction, vertical direction and oblique direction). The carriage can be vertically moved by manipulating the Precision Ball Screw.

Since the whole slide surface is rolling motion-intended, the stage can be moved with high accuracy and can withstand heavy moment load.



Easy to use, because the sensor logic switching circuit board is installed in advance.

By adopting triple-directional cross rollers, high rigidity and low profile is achieved.



■ Product List

Axis	Features	Part Number									Search
		Type	No. * Values in ( ) are for Stage Surface Size (mm).								
		Travel Distance (mm)	15	20	25	30	40	50	70	100	
X-Axis	Compact	XCR	415 (40x40)	620 (60x60)							#ACX
	Travel Distance: 30mm	XMPG				730 (60x70)					#ACX
	Travel Distance: 100mm or less	XMPG				830 (80x80)			870 (80x130)	8100 (80x160)	#ACX
	Low Profile	XMPTG			725 (70x70)	830 (80x80)	1040 (100x100)	1250 (120x120)			#ACX
XY-Axis	Compact	XYCR	415 (40x40)	620 (60x60)							#ACXY
	Travel Distance: 30mm	XYMPG				730 (60x70)					#ACXY
Z-Axis	Compact	ZCR	415 (40x40)	620 (60x60)							#ACZ
	Travel Distance: 30mm	ZMPG				730 (60x70)					#ACZ
	Low Profile	ZMPTG			725 (70x70)	830 (80x80)	1040 (100x100)	1250 (120x120)			#ACZ

Axis	Features	Part Number					Search
		Type	No. * Values in ( ) are for Stage Surface Size (mm)				
		Travel Distance (mm)	4	6	8	12	
Horizontal Surface Z-Axis	High Load Capacity	ZLMPG			808 (80x100)	12012 (120x120)	#ACZ
	Low Profile	ZLMPTG	604 (60x60) 704 (70x70)				#ACZ

■ To Ensure Safe Operation of Stage

– How to Mount

By moving the top plate in CW or CCW direction, the area for two screw holes can be exposed (four screw holes in total).

– What is installed on stage carriage and the bottom plate?

Note that, if a mating component with insufficient roughness is mounted on the stage or if the stage is installed on a base with insufficient smoothness, the stage surface might be deformed and thereby, the accuracy might be affected adversely. [General Flatness Guideline: 10μm or better]

– Mounting Orientation of Stages

The specifications for each stage product are defined by assuming that the stage is installed on a flat surface.

Be careful when inverted-mounting or horizontal/vertical side-mounting the stage.

The load capacity / accuracy substantially differs depending on the mounting orientation.

Contact Misumi for any assistance with questions.

Motorized Rotation Stages Guide

Overview of Motorized Rotary Stages

Stages intended to perform angle adjustment.

■ Application Example

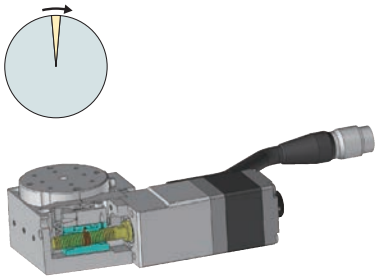
- Correct component orientation during the Assembly or Installation process
- Laminate a camera lens or cellular phone-dedicated liquid crystal panel in the Production and Inspection lines.

■ Features of Ball Screw Type Rotary Stages

(1) High Durability — Ball Screw Type intended for rolling motion is unlikely to be worn even after preforming the fine angle positioning process repeatedly and is durable.

(2) Acceleration/Deceleration Performance Enhanced: — Since the sliding resistance is less than on the Warm Gear Type, this type of stage can start up and accelerate the more smoothly.

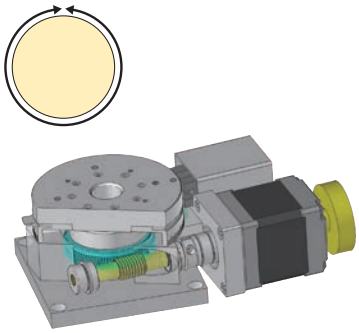
(3) Backlash Reduced: — By adopting the preload-applying component as the mechanical element, frequency of the backlash phenomenon can be reduced almost to Zero.



■ Features of Worm Gear Type Rotary Stages

(1) 360° Rotation: — Rotary stages suitable for large angle-positioning with high accuracy or being rotated 360˚ repeatedly.

(2) With Through Hole: — This type of stage has the through holes machined and thus, is suitable for routing cables or for rotating polarizers.



■ Product List

Motion Mechanism	Accuracy Range	Part Number						Search
		Type	No. * Values in ( ) are for Stage Surface Size					
Ball Screw	High Precision	RMBG	40 (Ø40)	60 (Ø60)				#ACRT
Worm Gear	High Precision	RMPG	40W (Ø39)	60W (Ø59) 60Z (Ø59)				#ACRT
		RMWG			75 (Ø70)	100 (Ø100)	180 (Ø180)	#ACRT
Direct Drive	High Precision	RMDG	40W (Ø39)					#ACRT

Motorized Rotation Stages Guide

Product details available online!

Overview of Motorized Rotary Stages

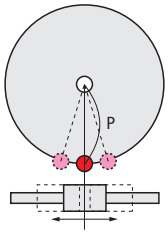
■ Ball Screw Type Rotary Stages

The driving force from the ball screw is converted from the linear motion to the rotary one.
(Due to this conversion, there is difference between the ball screw-based travel distance and the stage movement angle.)
Therefore, upon the stroke motion, the resolution per one pulse changes during move from the stroke center to the stroke end.
In addition, even when the pulse signal is sent with the mode set to "Uniform Speed," the rotational speed cannot be constant.

Calculation of Travel Distance

The following expressions based on the stroke center are used:
(1) Movement Angle = arcSin ((Input Pulse) x X) / P)
(2) Input Pulse = P x Sin (Movement Angle) / X

Definition



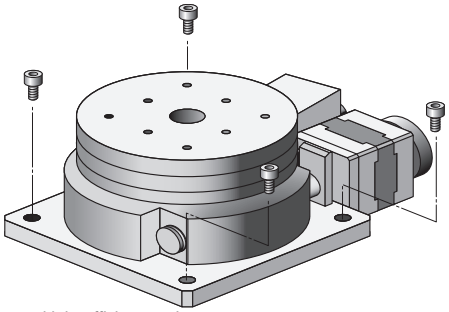
P = Inter-fulcrum Distance
(Distance between Central Axis and Bearing)

Definition	Value	Unit
Inter-fulcrum Distance P*	17	mm
Ball Screw Lead	1	mm
Basic Step Angle for Motor	0.72	°
Ball Screw Travel Distance per one pulse X	0.002	mm

* The inter-fulcrum distance differs depending on the stage type.

Basic Performance

Part Number	Basic Step Angle for Motor	Inter-fulcrum Distance P
RMBG40	0.72°	17mm
RMBG60	0.72°	27mm



■ To Ensure Safe Operation of Stage

How to Mount

Use the included screws with 4 mounting holes on the bottom plate.
*RMBG, RMPG40W, RMPG60W is designed to be fastened with 3 points.

What is installed on stage carriage and the bottom plate

Note that, if a mating component with insufficient roughness is mounted on the stage or if the stage is installed on a base with insufficient roughness, the stage surface might be deformed and thereby, the accuracy might be affected adversely. [General Flatness Guideline: 10μm or better]

Mounting Orientation of Stages

The performance for each stage product is defined by assuming that the stage is installed on a flat surface. Be careful when inverted-mounting or horizontal/vertical side-mounting the stage. The load capacity / accuracy differs depending on the mounting orientation.
The load capacity / accuracy substantially differs depending on the mounting orientation.
For adequacy of the above mounting, see refer to the "Orientation Property Table per Product" below.
If any question is raised (i.e. "Which type of product is the most suitable for the current application?" and "How to use this product?"), please contact us.

▼ Orientation Property Table per Product

Part Number	Travel Guide [Feeding Method]	Inverted Mounting	Horizontal Side Mounting	Vertical Side Mounting
RMBG	Angular Contact Ball Bearing [Ball Screw Type]	O	O	O
RMPG/RMWG	Ball Bearing [Worm Gear Type]	O	O	O

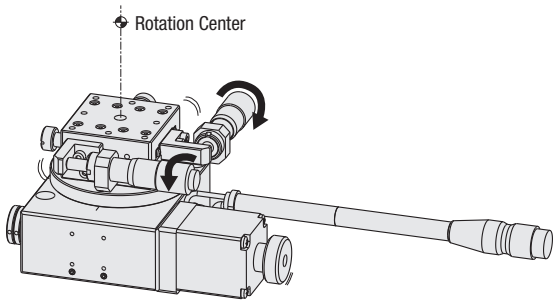
O: Usable, though limitations apply for loads and moments.

■ About Rotation Center

How to perform central axis alignment

When assembling the rotary stage with the mating equipment or with a workpiece, try to align the central axes on the both sides to each other, so the performance of stage can be fully exerted.
Adoption of the following techniques is recommended for central axis alignment:

- While rotating the rotary stage, use the dial gauge to locate a point where the eccentricity is the minimum and then, fix the stage side or the workpiece side to this point.
- By combining the current motorized stage with a manual XY-Axis stage, fine adjustment for the central axis is facilitated.

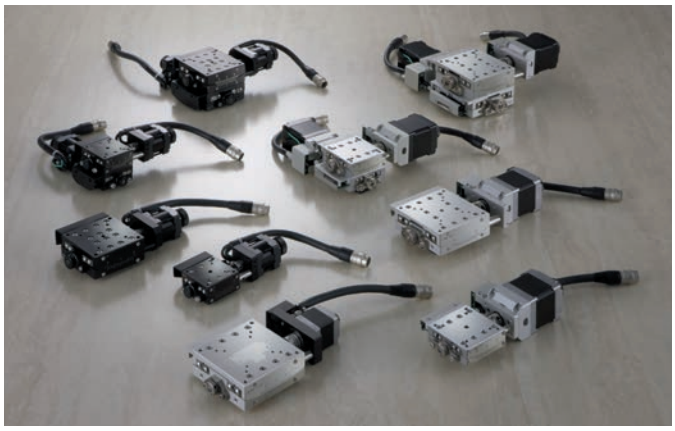


EOn the stage main body, any surface is not provided as Installation Datum Plane.

Motorized Goniometer Stages Guide

Overview of Motorized Goniometer Stages

Circular arc motion stages with arc centers located on central perpendicular line above the stage tops.



■ Application Example

- Is used to repeat fine angle adjustment by cooperating with an optical pickup adjustment or inspection device.
- Is used to correct component orientation during the Assembly or Installation process
- Is used to laminate a camera lens or cellular phone-dedicated liquid crystal panel in the Production and Inspection lines.

■ Features of Ball Screw Type Goniometer Stages

High Precision Goniometer Stages based on the ball screw. This type of stage is suitable for being driven at fine angle repeatedly.

(1) High Durability: High Precision Goniometer Stages intended to be manipulated by the ball screw and suitable for being driven at fine angle. Since this type of stage is rolling motion-intended unlike Worm Gear Type which is sliding motion-intended, it is unlikely to be worn even after being driven repeatedly and is excellent in durability.

(2) Acceleration/Deceleration Performance Enhanced: Since the sliding resistance is less than on the Warm Gear Type, this type of stage can start up and accelerate the more smoothly.

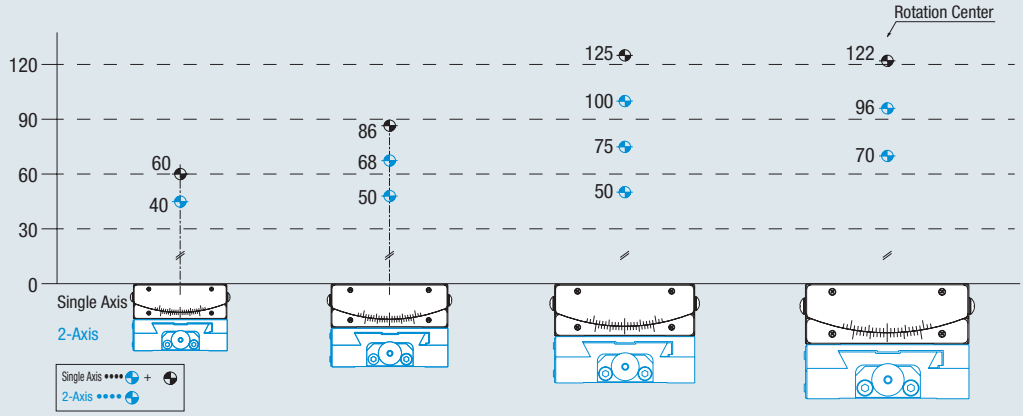
(3) Backlash Reduced: By adopting the preload-applying component as the mechanical element, frequency of the backlash phenomenon can be reduced almost to Zero.

■ Features of Worm Gear Type Goniometer Stages

Rich array of variations: Offer a variety of size / work distance (Height of Rotation Center) options.

■ Height List of Rotation Center

- Each value below indicates the height of rotation center for each stage size.
- Each of the rotation center heights written in the blue font color represents the height at which 2-Aixs configuration is enabled.



Stage Surface Size	40x40	50x50	60x60	70x70
Ball Screw Type	—	—	—	0
Worm Gear Type	0	0	0	0

Motorized Goniometer Stages Guide

Product details available online!

Overview of Motorized Goniometer Stages

■ Product List

Motion Mechanism	Axis	Part Number: Type / Stage Surface Size (mm)	No. Values in ( ) are for the rotational moving amount (Upper/Lower Stage): 40 x 40	50 x 50	60 x 60	70 x 70	Search
Ball Screw	1-Axis	GMPBG				70-70 (±5°) 70-96 (±4°) 70-122 (±3°)	#ACGN
	2-Axis	GMPBWG				70-70 (±5°/±4°) 70-96 (±4°/±3°)	#ACGN
Worm Gear	1-Axis	GMPG	40-40 (±8°) 40-60 (±6°)	50-50 (±10°) 50-68 (±8°) 50-86 (±6°)	60-50 (±10°) 60-75 (±8°) 60-100 (±6°) 60-125 (±5°)	70-70 (±9°) 70-96 (±7°) 70-122 (±5°)	#ACGN
	2-Axis	GMPWG	40-40 (±8°/±6°)	50-50 (±10°/±8°) 50-68 (±8°/±6°)	60-50(±10°/±8°) 60-75 (±8°/±6°) 60-100 (±6°/±5°)	70-70 (±9°/±7°) 70-96 (±7°/±5°)	#ACGN

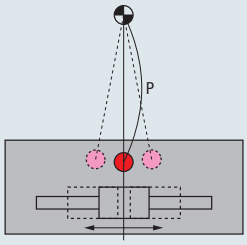
■ About Travel Distance and Uniform Speed Property

The driving force from the ball screw is converted from the linear motion to the rotary one.

(Due to this conversion, there is difference between the ball screw-based travel distance and the stage movement angle.)

Therefore, upon the stroke motion, the resolution per one pulse changes during move from the stroke center to the stroke end.

In addition, even when the pulse signal is sent with the mode set to "Uniform Speed," the rotational speed cannot be constant.



P = Inter-fulcrum Distance
(Distance between Central Axis and Bearing)

■ Calculation of Travel Distance

* The following expressions based on the stroke center are used:

(1) Movement Angle = arcSin ((Input Pulse) x X) / P) (2) Input Pulse = P x Sin (Movement Angle) / X

■ Definition

Definition	Value	Unit
Inter-fulcrum Distance P*	76	mm
Ball Screw Lead	1	mm
Basic Step Angle for Motor	0.72	•
Ball Screw Travel Distance per one pulse X	0.002	mm

*The inter-fulcrum distance differs depending on the stage type.

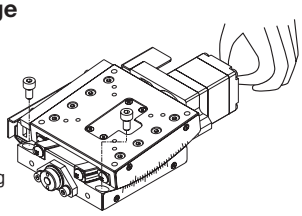
■ Basic Specifications

Part Number	Basic Step Angle for Motor	Inter-fulcrum Distance P
GMPBG70-70	0.72°	76 mm
GMPBG70-96	0.72°	102 mm
GMPBG70-122	0.72°	128 mm

■ To Ensure Safe Operation of Stage

■ How To Mount

By stroking the top plate in CW or CCW direction, the area for two screw holes can be exposed (four screw holes in total). For Sine Motion Stages, if you try to perform this operation by using the controller, the limit sensor senses it and blocks the mounting holes from being exposed. Be sure to expose those mounting holes manually to tighten the included screws therein.



■ Orientation Property Table per Product

Travel Guide [Feeding Method]	Inverted Mounting	Horizontal Side Mounting	Vertical Side Mounting
Cross Roller [Ball Screw]	O	O	O
Cross Roller [Worm Gear]	O	O	O

O: Usable, though limitations apply for loads and moments.

■ What is installed on stage carriage and the bottom plate

Note that, if a mating component with insufficient roughness is mounted on the stage of if the stage is installed on a base with insufficient roughness, the stage surface might be deformed and thereby, the accuracy might be affected adversely.
[General Flatness Guideline: 10μm or better]

■ Mounting Orientation of Stages

The specifications for each stage product are defined by assuming that the stage is installed on a flat surface.

Be careful when inverted-mounting or horizontal/vertical side-mounting the stage.

The load capacity / accuracy substantially differs depending on the mounting orientation.

For adequacy of the above mounting, see refer to the "Orientation Property Table per Product" below.

Contact Misumi for any assistance with questions.

■ About Rotation Center Runout / Height of Rotation Center

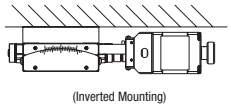
MISUMI Goniometer Stages – Cross Roller generate little runout on the rotation center and excel in accuracy.

■ Rotation Center Runout

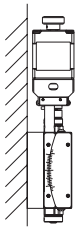
When a hardened precision ball is put on the (not design-theoretical but actual) rotation center part and then, the full stoke motion is run, the resulting runout amount (X, Y, Z) shall be defined as the Rotation Center Runout.

■ Height of Rotation Center (Work Distance)

The height from the center of hardened precision ball to the stage top surface shall be defined as the Height of Rotation Center.



(Inverted Mounting)



Vertical Side Mounting

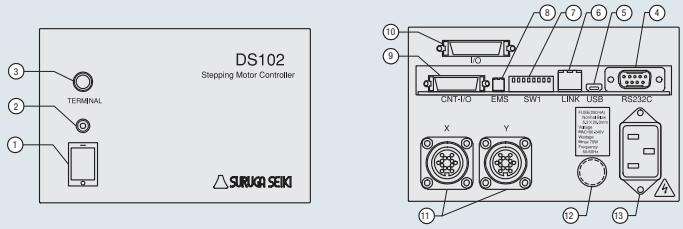
Control Instruments for Motorized Stages

Peripherals for Motorized Stages

Features: Compact and lower priced controller incorporating the 2-Axis driver for driving the 5-Phase Stepping Motor (0.75A/Phase).

■ MSCTL102

MSCTL102

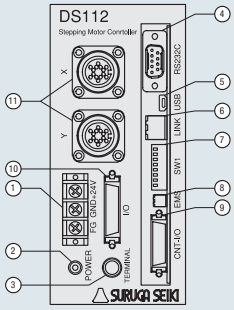


(1) Power Switch
(2) POWERLED
(3) TERMINAL*1
(4) RS232C*2
(5) USB Connector *3
(6) LINK Connector
(7) DIP Switch *4
(8) EMS Connector *5
(9) I/O Connector for Controller *6
(10) General Purpose I/O Connector *7
(11) Stage Connector *8
(12) Fuse Holder
(13) AC Plug

■ MSCTL112

RoHS

MSCTL112



(1) Terminal Block for Power Supply
(2) POWERLED
(3) TERMINAL*1
(4) RS232C Connector *2
(5) USB Connector *3
(6) LINK Connector
(7) DIP Switch *4
(8) EMS Connector *5
(9) I/O Connector for Controller *6
(10) General Purpose I/O Connector *7
(11) Stage Connector *8

Specifications
*1. Connector for HDT100 (Handset Terminal)
*2. Dsub 9 Male
*3. Mini B Type
*4. Make settings for RS232C baud rate (2bit), Link No. (2bit), USB ID (2bit) and Command Response (1bit).
*5. Part Number S02B-PASK-2 (LF) (SN) (Manufactured by JST Mfg. Co.,Ltd.)
*6. Part Number 10226-52A2PL (Manufactured by 3M Company)
*7. Part Number 10226-0200 (Manufactured by 3M Company)
(This is provided only with products whose part number has the "-IO" text is inserted therein.)
*8. Part Number 09-0054-00-14 (Manufactured by Binder GmbH)

Part Number		External Dimensions			Input Power Supply	Max. Power Consumption	Driver Type	Driver Rated Current	Weight
Type	No.	W	D	H					
MSCTL	102	140	300	90	AC100~240V±10% 50/60Hz	70W or less	Normal (Full/Half)	0.75A/Phase	2.2 kg
	102-IO								
	102-MS						Micro Step (16 steps)		
	102-IO-MS								
	112	70	165	155	DC24V±10%	2.5A or less	Normal (Full/Half)		1.2 kg
	112-IO								
	112-MS						Micro Step (16 steps)		
	112-IO-MS								

*For XMSG, XYMSG, ZMSG, if the 24V option is selected for the sensor voltage, the MSCTL102 controller is not compatible. If you purchase any of these Series, select the 5V Sensor Voltage option.

■ Controller Performance Specifications

Number of Control Axes	2
Coordinate Setting Range	±99,999,999pls
Speed Setting Range	1~999,999pps
Pulse Rate Rise Setting Range	1~9,999pps
Acceleration/Deceleration Time Range	1~9,999ms
Mechanical Limit	2 for Each Axis: CW/CCW Direction (Input logic reversal is possible)
Near Home Detection	1 for Each Axis (Input logic reversal is possible)
Home Detection	1 for Each Axis (Input logic reversal is possible)
Home Detection Method	12 Routine Types
Home Position	1 Point/Axis (Configurable freely within effective range)
External Communication I/F	RS232C: 4,800~38,400bps [D-SUB9 Pin Male] USB2.0: Compatible with Full/Low Speed only [USB Mini B Terminal] Control I/O: 9 Inputs (24VDC Opto-coupler Inputs), 12 Outputs (Open Collector Outputs)
Link	RS485 (It can externally control up to 3 stages and up to 6 axes in daisy chain.)
Programming	8 Programs (100 Steps/Program; Starts and stops by control I/O signals)
Teaching	64 Points (positioning is commendable from signal I/O)
Interpolation	6-Axis Linear Interpolation (however, linear semi-interpolation between the linked stages is possible)
General Purpose I/O	(When a product with the "-IO" No. assigned is selected) Control I/O: 16 Inputs: 24VDC Opto-coupler Inputs, 12 Outputs: Open Collector Outputs

To facilitate the settings for Programming/Teaching for MSCTL102/112 Series, use of HDT100 Handset Terminal or of the dedicated software, "MSSOFT," separately sold, is recommended.

■ Controller Software

Part Number
MSSOFT

■ Main Functions

- Manual Manipulation (Continuous Jog, Step Move, Absolute Value-based Move, Homing)
- Teaching
- Edition/Uploading/Downloading of Stored Program
- Monitoring / Forced Outage of General Purpose I/O Port

Microsoft® Windows® is the software intended to set up or control the motor controller MSCTL102 plugged to the USB or RS232C port on Microsoft® Windows®. This software has capability of controlling up to 6 axes. Supported OS: Microsoft® Windows® 2000 / XP / 7 / 8 (*For Windows®)

Ordering Example

Part Number
MSCTL102
MSSOFT

Days to Ship

Configure Online

Control Instruments for Motorized Stages

Peripherals for Motorized Stages

■ Handset Terminal

RoHS

Part Number	
Type	No.
HDT	100

■ Basic Specifications

Indicator	LCD (16 bit, 2 tiers)
Input Power Supply	DC24V (supplied from the main body)
Number of Keys	12
Cable Length	1.5 m
External Dimentions	73(W) x 130(D) x 27(H)mm
Weight	280 g

HDT100

Enables the operator to, in a handheld way, control various functions such as continuous jogging, step moves, home, and program executions by connecting with the controller (MSCTL102).

* A PC dedicated for programming will be required.

■ DC24V Input Driver

Part Number	Input Power Supply	Rated Current	Resolution	Operating Temperature Range	External Dimensions	Weight	Signal Input
MSDR24-C	DC24V±10%	0.75A/Phase	1~1/250	0~40°C	65(W) x 45(D) x 28(H) mm	0.04 kg	Opto-coupler Input
MSDR24-N			Full/Half				
MSDR2436	DC24V-36V±10%		1~1/250		100(W) x 70(D) x 36(H) mm	0.2 kg	

For inquiry about the Instruction Manual and Drawing, please contact MISUMI.

■ Cable for DC24V Input Driver

Part Number	Applicable Driver	Length
MSDR24-CB	MSDR24-C/MSDR24	600 mm
MSDR2436-CB	MSDR2436	

■ Sample Program of Stage Ciontroller

http://jpn.surugaost.jp/sampleprogram.php

If you want to control a stage and its peripherals on PC, you are required to create the specific program. The applicable sample program is downloadable from the Web site for the OST Business Div. in Suruga Seiki Co., Ltd.

This sample program is offered for the referential purpose and you do not necessarily need to follow the logic on the sample program.

Creating the final version of the control program is customers' responsiblity.

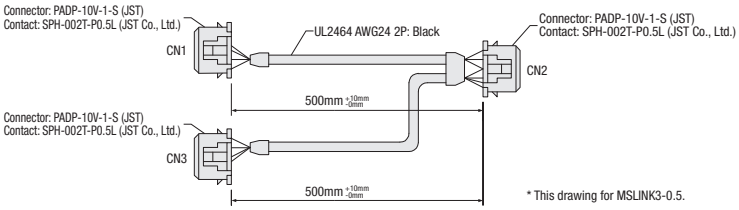
■ MSCTL-Dedicated Cable

The photo is for MSLINK2-0.5.

RoHS

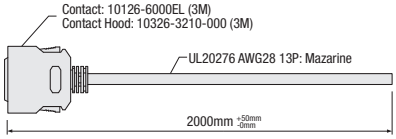
■ Link Cable MSLINK_-0.5

Use this cable to control 4 or 6 axes by establishing linkage among multiple units of MSCTL102/112 (controller). When establishing linkage between the 2 units, adopt MSLINK2-0.5; and when establishing linkage among three units, adopt MSLINK3-0.5.



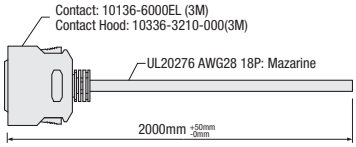
■ I/O Control Cable MSCNT2

When desiring to control MSCTL102/112 (controller) by manipulating the Upstream controller, use this cable. The one end is the loose wire.



■ General Purpose I/O MSGP2

When desiring to control an external deice by wiring it to MSCTL102/112 (controller), use this cable. The one end is the loose wire.



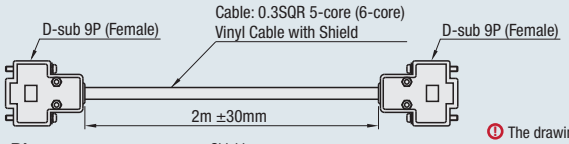
Part Number		Cable Length
MSLINK2-0.5	For linkage between 2 controllers	0.5 m
MSLINK3-0.5	For linkage among 3 controllers	
MSCNT2	For Upstream Controller-based I/O Control	2.0 m The one end is the loose wire.
MSGP2	For General Purpose I/O from/to External Device	

■ External Control Cable

The photo is for the MSRS232C cable.

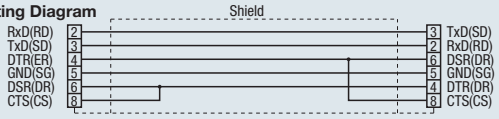
RoHS

MSUSB1.8
MSRS232C



The drawing is for the MSRS232C cable.

Connecting Diagram



Part Number	Interface	Compatible Controller	Connector for the PC Side	Cable Length
MSUSB1.8	USB	MSCTL102/112	USB A Terminal Socket	1.8 m
MSRS232C	RS232C		D-sub 9P	2 m

Ordering Example

Part Number
HDT100
MSDR24
MSCNT2

Days to Ship

Configure Online

Cables for Motorized Stages

Cable for Motorized Stages

SRCB (for 16-pin)

MSCB (for 12-pin)

One End Loose Wire Cable

RoHS

Part Number		Cable		Connector		
Type	No.	Features	Overall Length	Existence of Connector	Controller Side	Stage Side
SRCB (for 16-pin) MSCB (for 12-pin) MS4CB (for 4-sensor, 12-pin)	2	Ordinary Cable	2 m	Provided on both ends	09-0341-02-14(Binder)	QSRCB SRCN6A21-16S(JAE) QMSCB/MS4CB HR10A-10P-12S(73)(HRS)
	4		4 m			
	6		6 m			
	2B	Ordinary Cable Provided on one end. (The other end is loose wire.)	2 m	Provided on one end (controller side). (The other end is loose wire.)	—	
	4B		4 m			
	6B		6 m			
	2-R	Robot Cable	2 m	Provided on both ends	09-0341-02-14(Binder)	
	4-R		4 m			
	6-R		6 m			
	2B-R	Robot Cable Provided on one end. (The other end is loose wire.)	2 m	Provided on one end (controller side). (The other end is loose wire.)	—	
	4B-R		4 m			
	6B-R		6 m			

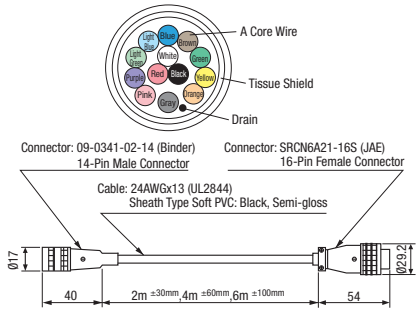
■ Common Specifications

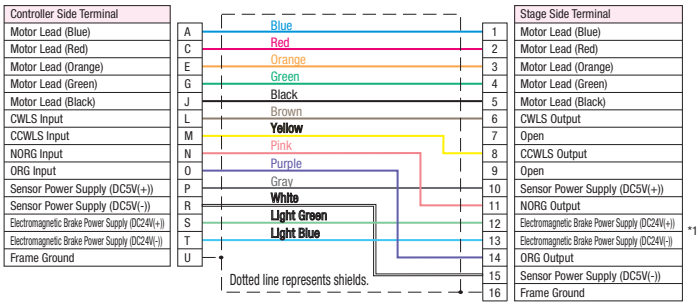
Type	Finished O.D.	Min. Bending Radius	Conductor		Insulator	Sheath	
			Configuration	O.D.	Material	Material	Color
Ordinary Cable	6.70 ±0.15 mm	R33 mm	40 wires / 0.08mm [24AWG]	0.65 mm	PVC	PVC	Black
Robot Cable			50 wires / 0.08mm [24AWG]		ETFE		

■ Ordinary Cable

SRCB2(B), SRCB4(B), SRCB6(B)

*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.

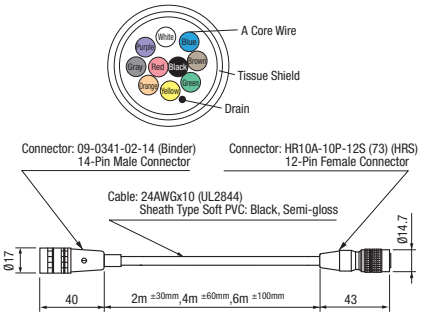


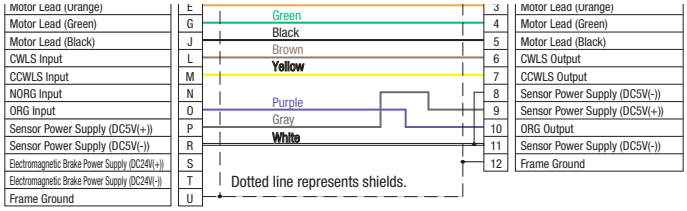


*1. This terminal is open for any motor other than ones with Electromagnetic Brake.

MSCB2(B), MSCB4(B), MSCB6(B)

*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.





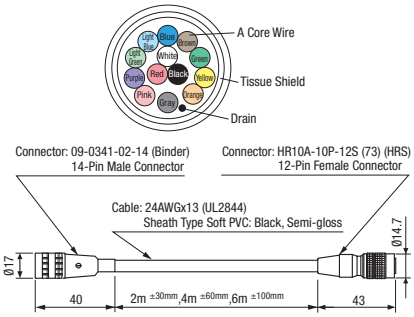
Ordering Example | Part Number SRCB2 | Days to Ship | Configure Online

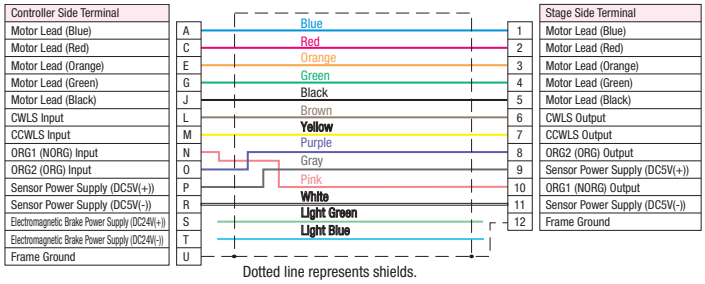
Cables for Motorized Stages

Cable for Motorized Stages

MS4CB2(B), MS4CB4(B), MS4CB6(B)

*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.

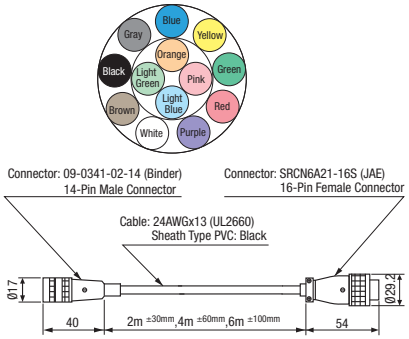


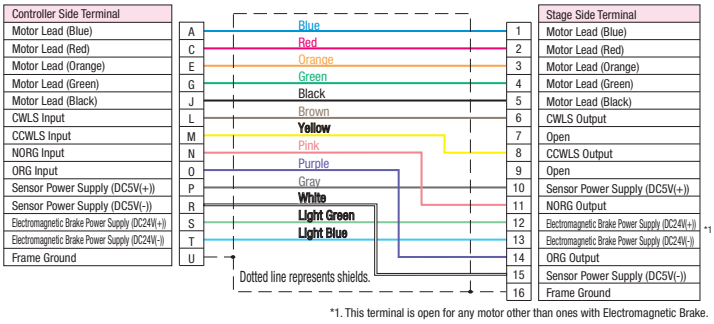


■ **Robot Cable**

SRCB2(B)-R, SRCB4(B)-R, SRCB6(B)-R

*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.

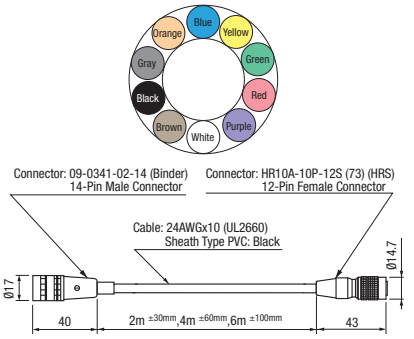


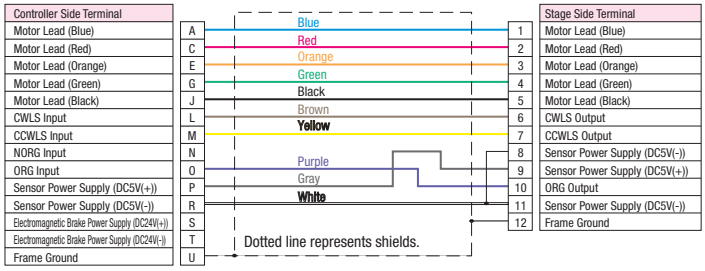


*1. This terminal is open for any motor other than ones with Electromagnetic Brake.

MS4CB2(B)-R, MS4CB4(B)-R ,MS4CB6(B)-R

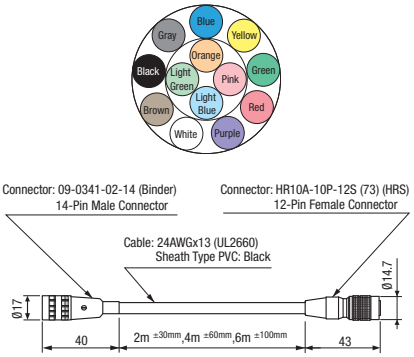
*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.

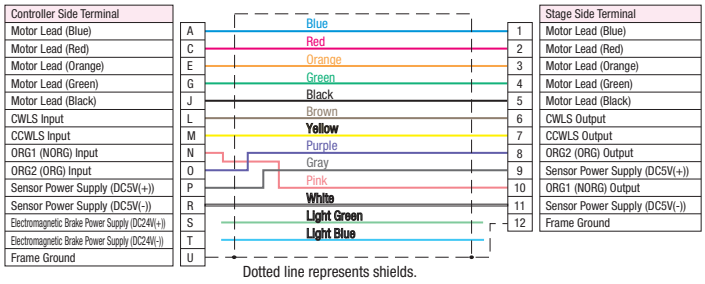




MS4CB2(B)-R, MS4CB4(B)-R ,MS4CB6(B)-R

*For the cable with the loose wire on one end (with the "B" text inserted on end of the Part Number), the loose wire side should be regarded as 14-pin Male Connector (Controller)-oriented.





NOTE: The complete Terms and Conditions applicable to the products and purchases from this catalog are found at: http://us.misumi-ec.com/contents/terms/.

Express Limited Warranty (Annex-B)

MISUMI USA, Inc. (the "Company") has a Mechanical Components for Assembly Automation Catalog (the "Catalog") that lists products for sale (the "Products") which are subject to the Terms and Conditions of Catalog Use (the "Terms and Conditions"). The Company provides an Express Limited Warranty (the "Limited Warranty") for Products that is further set forth in this Annex A. Customer, through their purchase of Products, agrees to be bound by this Limited Warranty. A manufacturer guarantee certificate or warranty may also apply to certain Products, which shall supersede and void this Limited Warranty as to such Product(s).

A. Scope of Limited Warranty

1. Company warrants that the Products shall be free of defects in material and workmanship. During the Warranty Period, the Company at its sole discretion may repair or replace a Product with a defect attributable to the Company ("Defect") free of charge on condition that the customer provides the Company with written notice describing the alleged defect, within the warranty period (defined in the Limited Warranty), and the Company deems the alleged defect covered under this Limited Warranty. Minor flaws such as scratches, marks, dents or discoloration that do not affect the function of the Product do not constitute a Defect, unless the Company, in its sole discretion, deems such flaw to be a Defect.

2. **EXCLUSIONS**

This Limited Warranty does not cover damages or defects to Products resulting from or in any way contributed to:

(1) Use in devices that transport humans such as automobiles, vehicles, or ships; medical equipment with the purpose of curing or diagnosing humans; or general household consumer goods such as electronic and electric equipment.

(2) Use in aerospace equipment, nuclear energy equipment, or military-related products such as weapons or arms.

(3) Customer's reckless, negligent or abusive handling or use of the Product.

(4) Natural disasters including, but not limited to, earthquakes, fires and floods.

(5) Failure to comply with Product specifications, intended uses, Terms and Conditions, drawings; or documentation shipped with the Product or accessory.

(6) Any repair, modification, processing or disassembly of the Product.

(7) Damage to equipment other than the Product itself.

(8) Use outside of the country where the Company originally shipped the Product at the time of purchase.

B. Warranty Period

This Limited Warranty is valid for a period of one (1) year from the date Company ships Product to original purchaser.

C. Inspection and Notification

Within one (1) week of receipt of Product, customer should confirm the name, quantity and specifications of the Product(s) and check for any Defect. The customer must provide written notice to the Company within one (1) week of receipt of Product, or the Company may deem that the Product(s) are free from Defect.

D. Uncovered Products

The customer will be charged for all replacements and repairs of Product not covered by this Limited Warrarny.

E. LIMITATION OF LIABILITY

IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, ANY CLAIMS OF PROPERTY DAMAGE, BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, TORT, OR ANY OTHER LEGAL THEORY. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

F. LIMITATION OF WARRANTY

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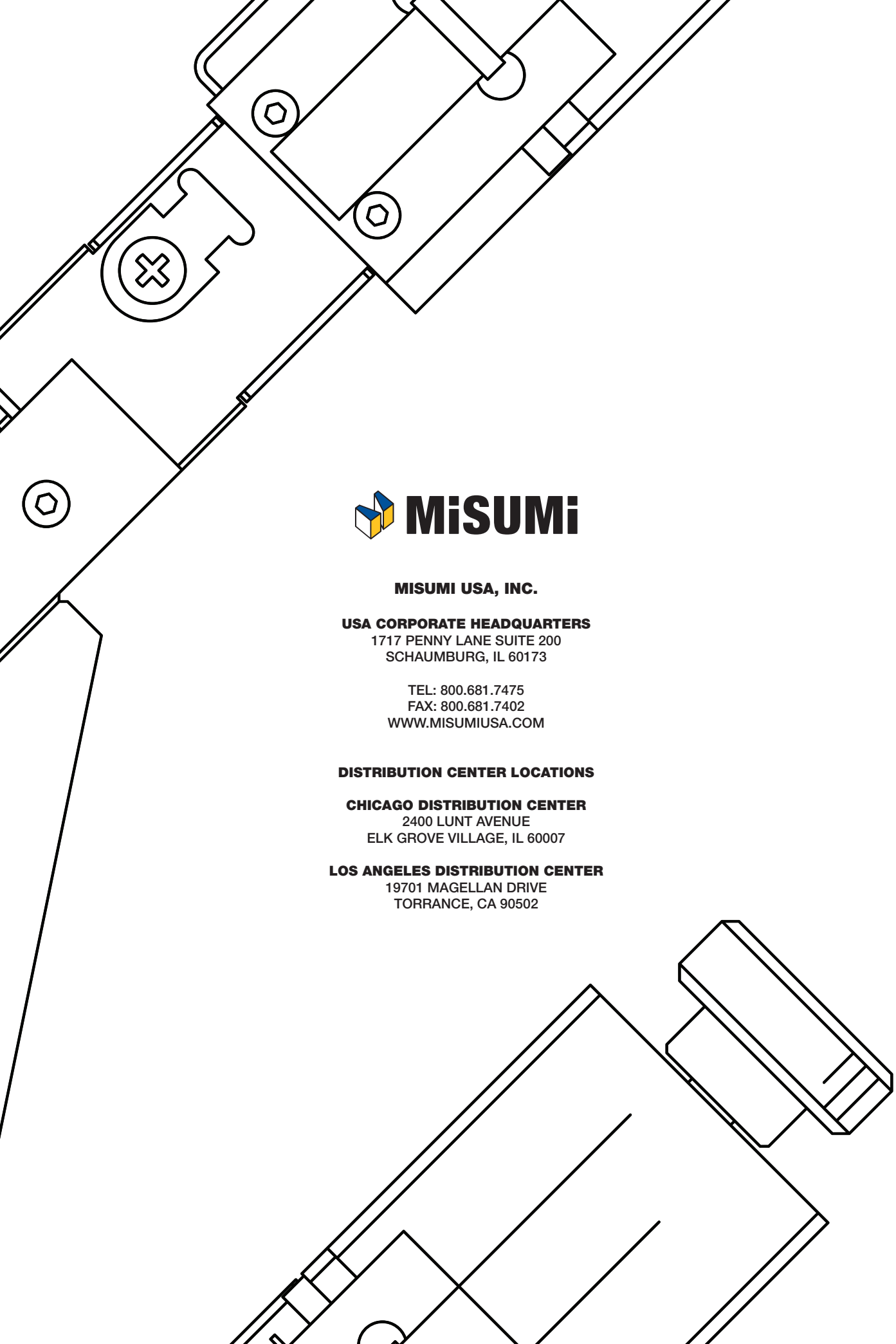

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