

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	

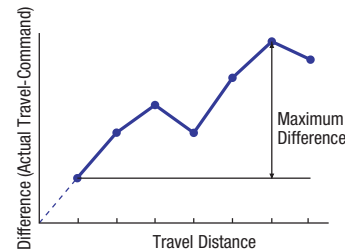
Accuracy Standards

- 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".

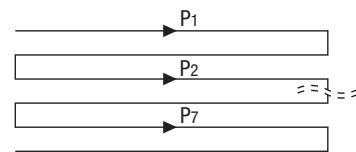


- Positioning Repeatability

Repeat positioning and measurement seven times at the same point in a specified direction.

1/2 of the maximum difference with "±" given is the measurement value.

For standard values, please see "Accuracy Standards Table".

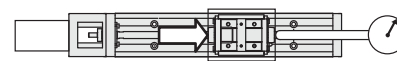


- Backlash

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".



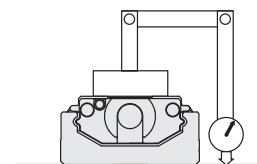
- Running Parallelism

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".



Cautions for using Single-axis Actuator LX / Low Particle 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.

Cautions for Operating Environments:

Ensure that it is used at an ambient temperature of 50°C or less. 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		
LX45	10	340~590	3300
	20		

Part Number	Lead	Rail Length	Allowable Rotational Speed (min ⁻¹)
LX30	5	150~450	4920
		500	4440
		550	3600
	10	600	3000
		150~450	4980
		500	4440
		550	3600
		600	3000

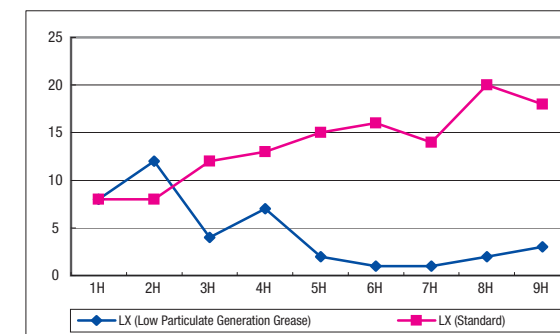
About Single-axis Actuator LX Low Particle Grease

The products are shipped with low particle grease applied or high cleanliness 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

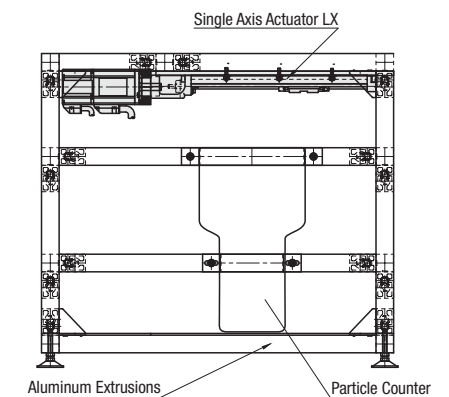
Items	Conditions	Unit	Measurement Method	LG2 (Made by NSK Ltd.)
Thickener	-	-	-	Lithium Type
Base Oil	-	-	-	Mineral Oil + Synthetic Hydrocarbon Oil
Base Oil Kinetic Viscosity	40°C	mm ² /s	JIS K2220 5.19	30
Worked Penetration	-	-	JIS K2220 5.3	207
Dropping Point	-	°C	JIS K2220 5.4	200
Evaporation	99°C x 22hr	wt%	-	1.40%
Oil Separation	100°C x 24hr	wt%	JIS K2220 5.14	0.80%
Operating Temp.	In Air	°C	-	-10~80

Particulate Generation Comparison



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

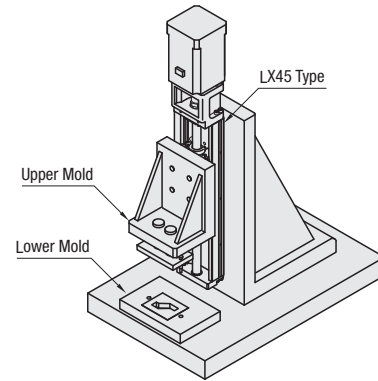
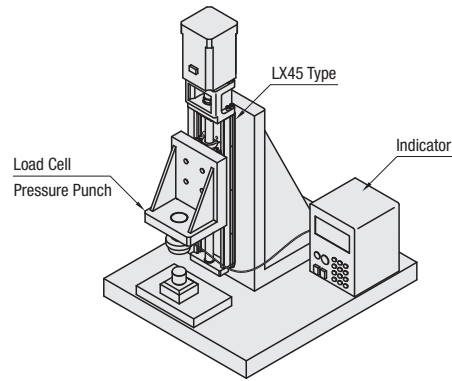
Single Axis Actuator KU / Application Examples

Linear Axis Actuator LX is the actuator in which ball screw and linear guide are incorporated. High Precision Positioning Type and High Speed & 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.401 to P.460 for product details.

Servo Press Machine

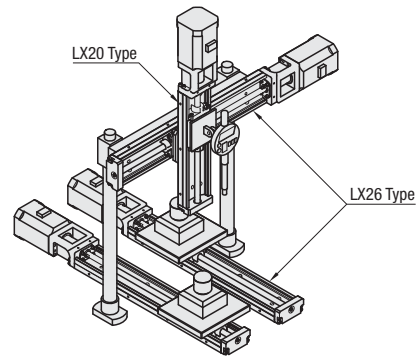
Use as pressure axis for servo press machine.

- 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.)



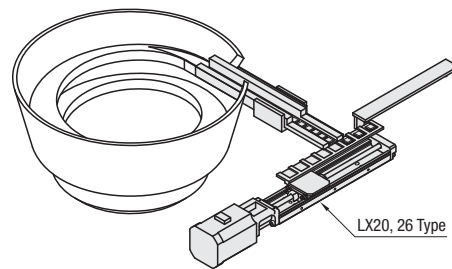
Measurement Unit

Use in combination with Servo Motor for measuring process.
 -Possible only with our high precision actuators.
 -Compatible with various products due to its compactness.



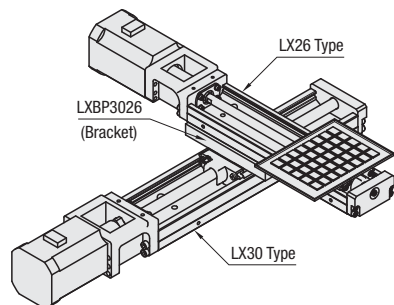
Precision Conveyance

Best suited for high precision conveyance
 -Advanced precision will guarantee operation.



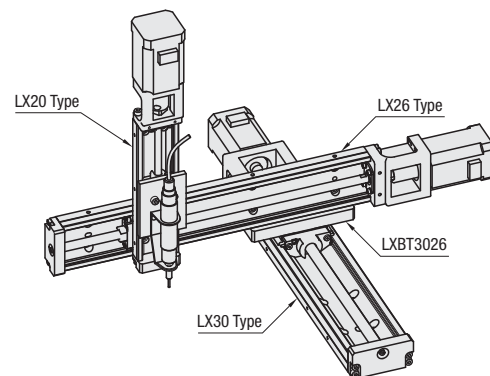
Part Supply Table

Part supply by connecting two axes
 -Mounting Bracket will be included.



Painting Unit

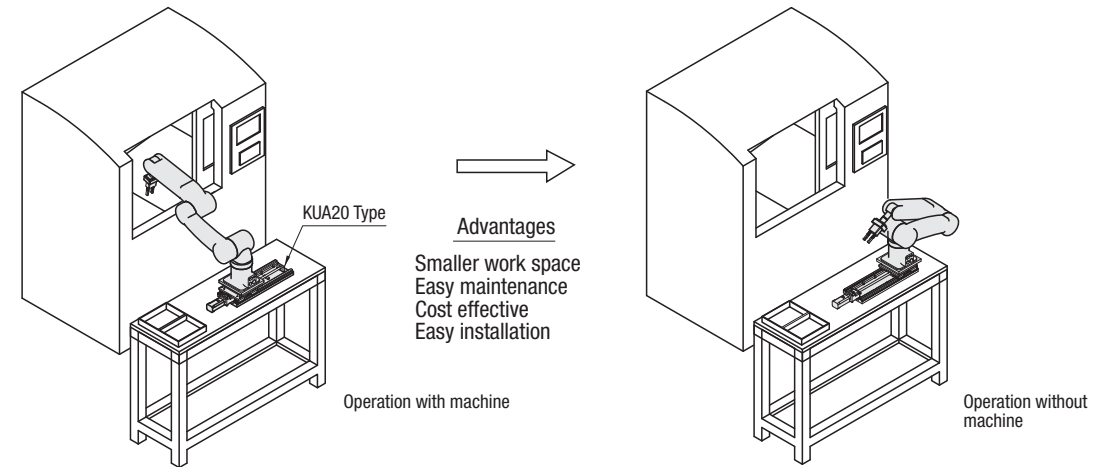
Painting Unit by connecting three axes.
 -Be able to design to your needs.
 -Bracket is included; part design is not necessary



Single Axis Unit KU is the unit in which ball screw and linear guide are incorporated. Usable for small motorized actuator or movable table of Loader as well as conveying heavy load. Bellows type and cover type are available for better operating environment. Suruga Seiki Co. Ltd., well established as XY Stage, manufactures unit body.
 - Please see P.461 to P.474 for product details.

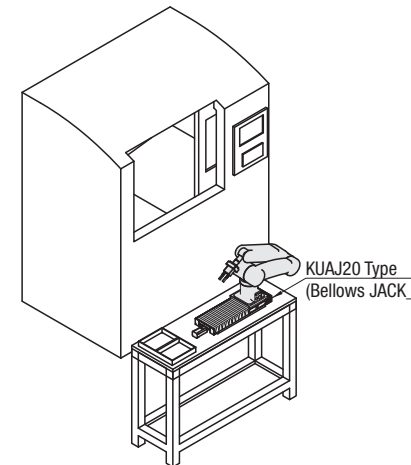
Put in/Take off Work in Machine Tool

-Single axis actuator can be used to give space for a rationalized robot system.



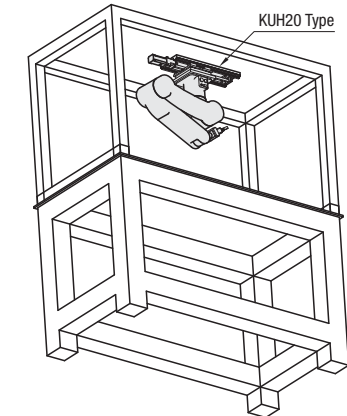
Put in/Take off Work (Bellows · Cover Type)

-Usable where drops of water or dust exist
 Bellows can be used as safety covers.



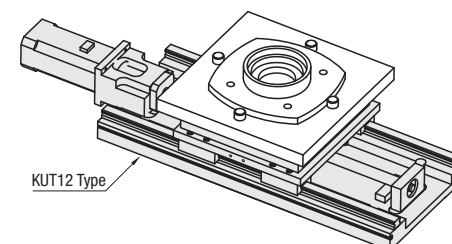
Work Alignment

-Can be mounted on the wall or ceiling due to high rigidity.



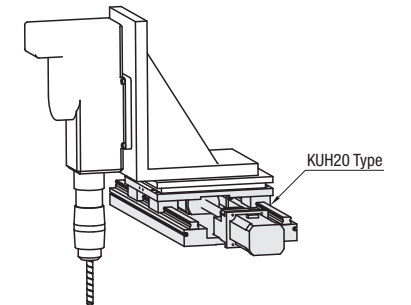
Precision Table of Large Parts

-Bellows or covers are selectable when used where drops of water or dust exist.
 -Ball screw grade is selectable according to precision.
 -Precision Ball Screw (C5) is adopted for KUH-KUT.



Drill Head

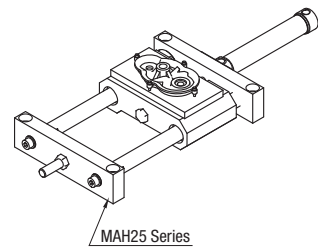
-Available for heavy industrial processing.



Standardized air module units. Applicable for transporting and transferring tasks in vertical and horizontal applications.

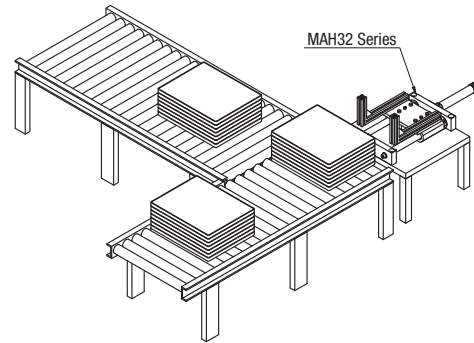
Workpiece Transfer

· Small and lightweight parts to large and heavy parts can be transported.



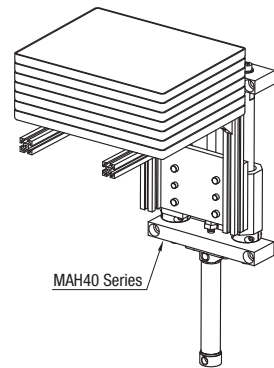
Pallet Transfer

· Simple and convenient structure advantages of pneumatic equipment saves labor of installing add-on parts.



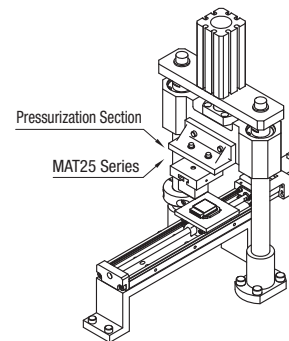
Return Conveyor Lift

· Used for lifts in vertical installation



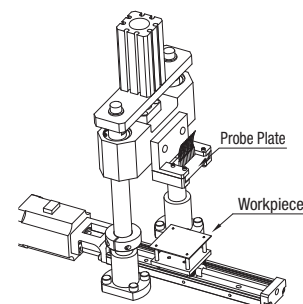
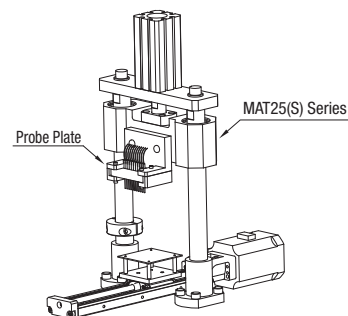
Press Unit for Small Parts

Lead frame forming and PC board presses. Press force can be adjusted by air supply pressure.



Probe Up/Down Unit for Electrical Inspection

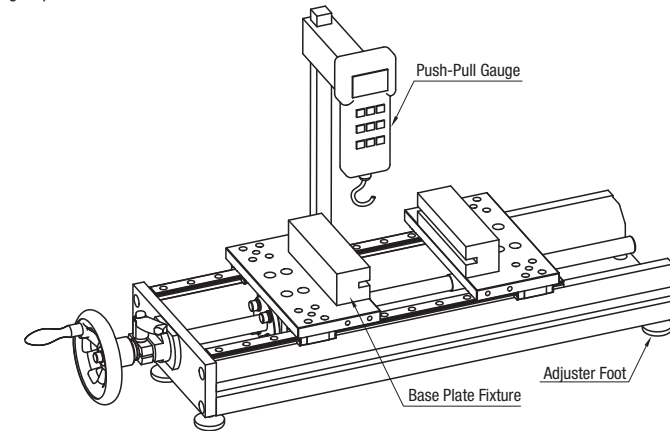
Applicable for various work pieces by replacing the probe head. There are three tooling mount surfaces.



Simplified manually operated units and easy operating units requiring no control settings.

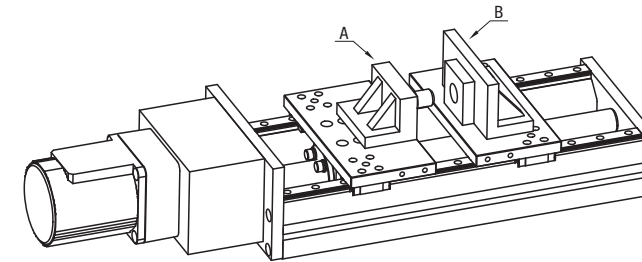
Served as an Inspection Jig

Used as a work piece fixture outfit with inspection jig for sampling inspections on circuit boards.



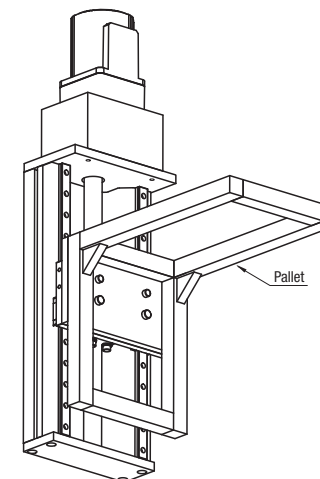
Press-fit Fixture

Can be used for a light press fitting fixture. Can be made to handle various work pieces by replacing the A and B blocks. It can be used in both compression and tensioning processes as a tension adjuster for sheets, textile and wire materials and in tensioning process.



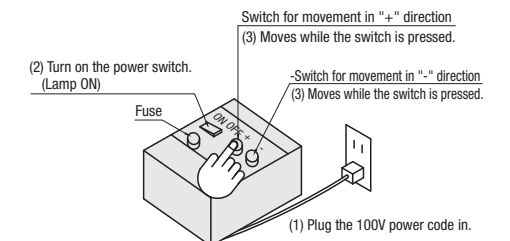
Transfers

Used to move work pieces vertically.



Motorized Unit Operations

Just push the desired directional button.





Single Axis Actuator LX20 Standard Type



LX Related information	P. 401 ~	P. 404
Specifications	P. 961 ~	P. 970
Coupling	P. 1745 ~	P. 1754
Proximity Sensor	P. 1725 ~	P. 1744
Photo Sensor - Rail	P. 1905 ~	P. 1908
Selection - Life Calculation Example		

CAD Data

Design Patent and Utility Model Right Obtained

RoHS

Specifications
LX20

Standards

Screw Shaft Diameter (mm) 6

Lead (mm) 1,5

Accuracy High Grade - Precision Grade

Accessory

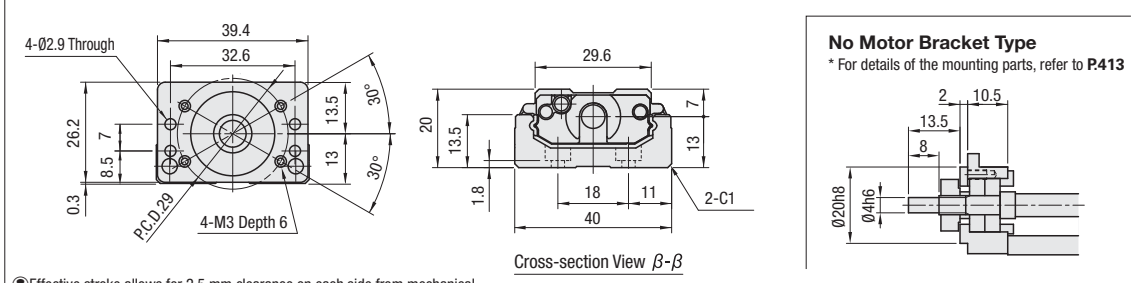
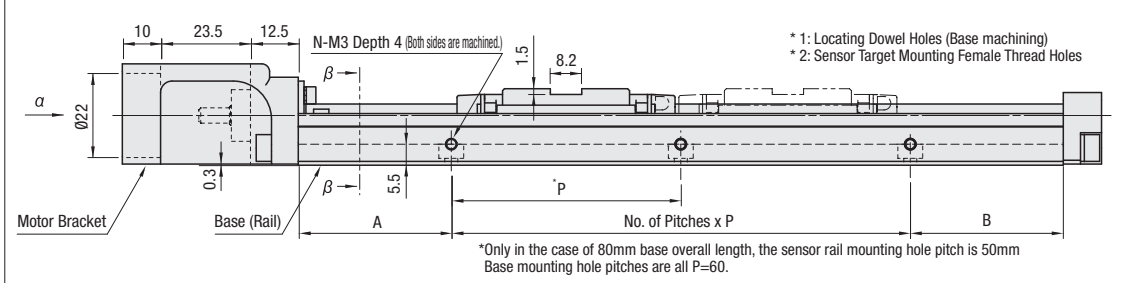
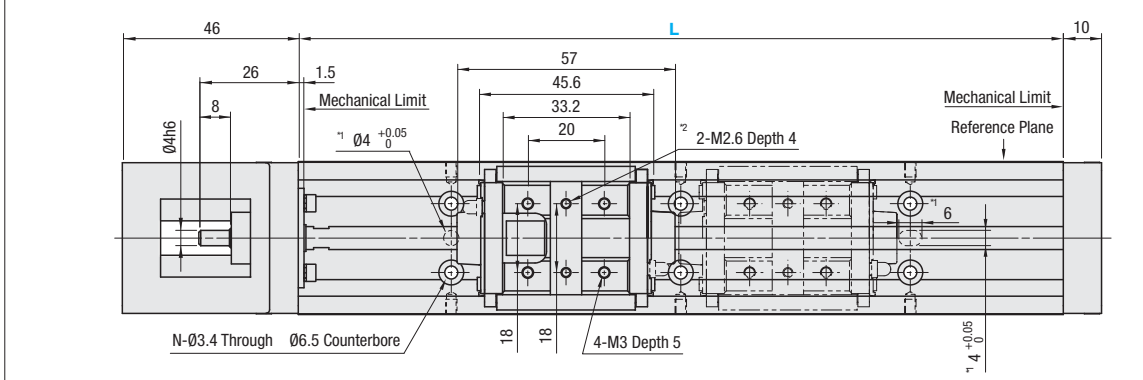
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surface Treatment: Black Anodize
 (2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
P No accessory is included for No Motor Bracket Type.

<No Motor Bracket Type>

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 1	LX2001	LX2001P	LX2001G	LX2001PG
Lead 5	LX2005	LX2005P	LX2005G	LX2005PG

*Low Particulate Generation Grease Information P.404

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AIS12Cu	EN AW-5052/AlMg2,5	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58-62	-	-	-	HRC58-62



Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
 For Double Block Type, effective strokes are the values when two blocks in contact with each other.
 For Double Block Type, double-dashed lined blocks are not connected with the ball screw

Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Effective Stroke		Mounting Hole Dimensions				
				Single Block	Double Blocks	A	P	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX2001 LX2005	(Standard Grease) LX2001P LX2005P	(Servo Motors) A2025 A2028 A2038 A2040 E2040 (Stepping Motors) T2028 T2042 (Without attachment) N (Without Motor Bracket) F	80	16.5	-	10	60	10	1	4
(Low Particulate Generation Grease) LX2001G LX2005G	(Low Particulate Generation Grease) LX2001PG LX2005PG		100	36.5	-	20	60	20	1	4
			150	86.5	-	15	60	15	2	6
			200	136.5	79.5	40	60	40	2	6
			250	186.5	149.5	35	60	35	3	8
			300	236.5	199.5	30	60	30	4	10

Accuracy Standards
 Precision certificate is enclosed with precision grade products.
 Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
 Precision Certificate is enclosed with precision grade products.
 Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (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

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
		Ma	Mb	Mc
1	6199	27	27	93
2	12398	353	353	186

Reference values are for a static state. For life calculation, use our technical calculation software.
 For allowable static moment, please see P.402.

Base Length (L)	Moment of Inertia (kg · cm ²)			
	LX2001		LX2005	
	Single Block	Double Blocks	Single Block	Double Blocks
80	0.0047	-	-	-
100	0.0049	-	0.0054	-
150	0.0053	-	0.0059	-
200	0.0058	0.0058	0.0063	0.0069
250	-	-	0.0068	0.0074
300	-	-	0.0073	0.0078

Base Length (L)	Total Mass (kg)		Base Length (L)	Part Number	
	Single Block	Double Blocks		LX2001	LX2005
80	0.40	-	80	190	-
100	0.45	-	100	190	694
150	0.58	-	150	190	694
200	0.71	0.79	200	190	694
250	0.83	0.92	250	-	694
300	0.96	1.05	300	-	633

Part Number	Flange Size	Manufacturer	Wattage
A2025	25	Yasukawa Electric Corporation	10W/20W/30W
A2028	28	Mitsubishi Electric Corporation	10W/20W/30W
A2038	38	Panasonic	30W/50W/100W
E2040	40	SIEMENS	50W/100W
A2040	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co., Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W

Part Number	Flange Size	Manufacturer	Type
T2028	28	Oriental Motor	2-phase / 5-phase / α Step
T2042	42		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and applicable motor model details, please see P.413.

Order Example Part Number - Block Qty. - Motor Adapter Plates - Base Overall Length (L)
LX2001 - B1 - A2025 - 200

Days to Ship High Grade Standard Grease LX2001 - 2005: **8 Days** Standard Grease Precision Grade LX2001P - 2005P: **10 Days** Low Particulate Generation Grease Without Motor Bracket: **13 Days**

All bracket-less products are shipped on the 13th day after order received.
 For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	L=80 (Lead 1 Only)	L=100	L=150	L=200	L=250 (Lead 5 Only)	L=300 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX20 -B1-							Servo Stepping No Adapter	1	6	1
LX20 -B2-								2		
LX20 -B1-F							No Bracket	1	6	5
LX20 -B2-F								2		

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=80 (Lead 1 Only)	L=100	L=150	L=200	L=250 (Lead 5 Only)	L=300 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX20 -B1-							Servo Stepping No Adapter	1	6	1
LX20 -B2-								2		
LX20 -B1-F							No Bracket	1	6	5
LX20 -B2-F								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
 LX20 Series sensor set can be specified as an alteration.
 Alteration Details P.414

Precision Grade - Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price



Single Axis Actuator LX20 Cover Type



LX Related information		
Specifications	P.401 ~	P.404
Coupling	P.961 ~	P.970
Proximity Sensor	P.1745 ~	P.1754
Photo Sensor / Rail	P.1725 ~	P.1744
Selection / Life		
Calculation Example	P.1905 ~	P.1908

CAD Data

Design Patent and Utility Model Right Obtained

<No Motor Bracket Type>

Specifications

LX20

Cover

Screw Shaft Diameter (mm)	6
Lead (mm)	1,5
Accuracy	High Grade · Precision Grade

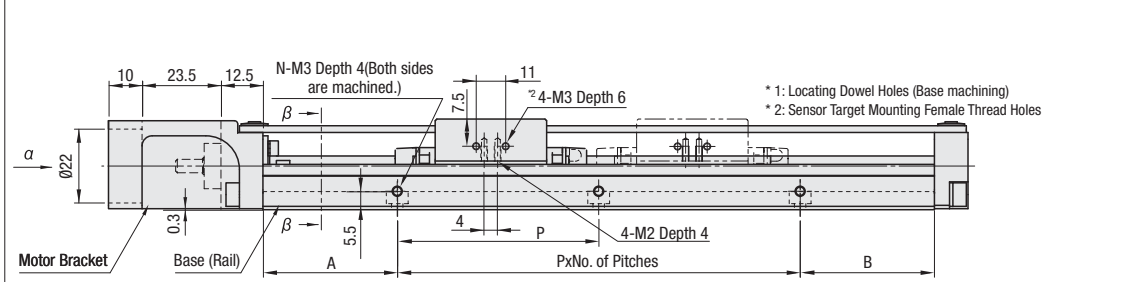
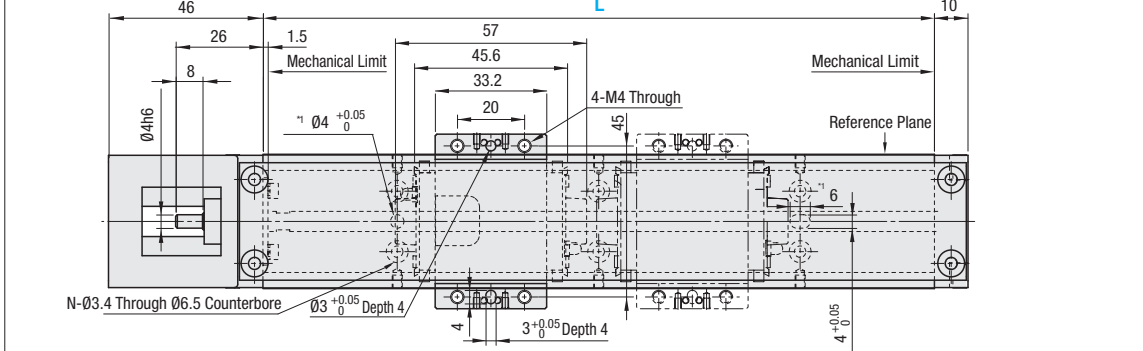
Accessory

(1) Motor Adapter Plate
 (M) Material: EN AW-5052/AlMg2,5
 (S) Surface Treatment: Black Anodize
 (2) 4 Adapter Plate Screws (M) Material: 1.4567/X3CrNiCu18-9-4
 (No accessory is included for No Motor Bracket Type.)

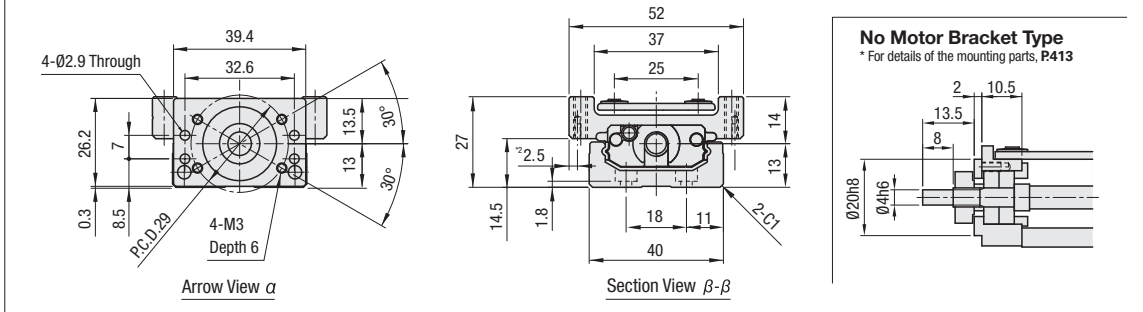
RoHS

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 1	LX2001C	LX2001CP	LX2001CG	LX2001CPG
Lead 5	LX2005C	LX2005CP	LX2005CG	LX2005CPG

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover			Stopper	Precision Ball Screw (ground)
					Material	Surface Treatment	Hardness		
Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AISI12Cu	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4		
Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-		
Hardness	Induction Hardening HRC58-64	HRC58-62	-	-	-	-	HRC58-62		



*Only in the case of 80mm base overall length, the sensor rail mounting hole pitch is 50mm
 Base mounting hole pitches are all P=60.



No Motor Bracket Type
 * For details of the mounting parts, P413

Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
 For Double Block Type, effective strokes are the values when two blocks in contact with each other.
 For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Effective Stroke		Mounting Hole Dimensions				
				Single Block	Double Blocks	A	P	B	No. of pitches	Hole Qty. (N)
(Standard Grease) LX2001C LX2005C	(Standard Grease) LX2001CP LX2005CP	(Servo Motors) A2025 A2028 A2038 A2040 E2040 (Stepping Motors) T2028 T2042 (Without attachment) N (Without Motor Bracket) F	80 100 150 200 250 300	16.5 36.5 86.5 136.5 186.5 236.5	- - - 79.5 149.5 199.5	10 20 15 40 35 30	60 60 60 60 60 60	10 20 15 40 35 30	1 1 2 2 3 4	4 4 6 6 8 10

Accuracy Standards
 Precision certificate is enclosed with precision grade products.
 Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
 Precision Certificate is enclosed with precision grade products.
 Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (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

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N·m)		
		Ma	Mb	Mc
1	6199	27	27	93
2	12398	353	353	186

Allowable Static Load · Moment
 Reference values are for a static state.
 For life calculation, use our technical calculation software.
 For allowable static moment, please see P.402.

Base Length (L)	Moment of Inertia (kg·cm ²)			
	Single Block	Double Blocks	Single Block	Double Blocks
80	0.0047	-	-	-
100	0.0049	-	0.0059	-
150	0.0053	-	0.0063	-
200	0.0058	0.0058	0.0068	0.0078
250	-	-	0.0073	0.0083
300	-	-	0.0077	0.0088

Base Length (L)	Total Mass (kg)	
	Single Block	Double Blocks
80	0.51	-
100	0.56	-
150	0.69	-
200	0.81	0.97
250	0.94	1.10
300	1.07	1.23

Base Length (L)	Part Number	
	LX2001C	LX2005C
80	190	-
100	190	694
150	190	694
200	190	694
250	-	694
300	-	633

Part Number	Flange Size	Manufacturer	Wattage
A2025	25	Yasukawa Electric Corporation	10W/20W/30W
A2028	28	Mitsubishi Electric Corporation	10W/20W/30W
A2038	38	Panasonic	30W/50W/100W
E2040	40	SIEMENS	50W/100W
A2040	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co., Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W

Order Example: Part Number LX2001C - Block Qty. B1 - Motor Adapter Plates A2025 - Base Overall Length (L) 300

Days to Ship: High Grade Standard Grease LX2001C · 2005C (8 Days), Standard Grease Precision Grade LX2001CP · 2005CP (10 Days), Low Particulate Generation Grease Without Motor Bracket (13 Days)

All No Bracket products are shipped on the 13th day after order received.
 For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Part Number	High Grade € Unit Price 1 ~ 2 pc(s).						Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
	L=80 (Lead 1 Only)	L=100	L=150	L=200	L=250 (Lead 5 Only)	L=300 (Lead 5 Only)				
LX20_C-B1_							Servo Stepping No Adapter	1	6	1
LX20_C-B2_								2		
LX20_C-B1-F							No Bracket	1	6	5
LX20_C-B2-F								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
 LX20_ Series sensor set can be specified as alterations.
 Alteration Details P414

Single Actuator LX20 Motor Adapter Plates / Motor Adapter Centering Tools



Single Axis Actuator LX Sensor Sets (Alterations)

Note:*Marked area indicates where the Motor Adapter protrudes beyond the Rail. Special attention must be given.

A2025 Servo 25 	A2028 Servo 28
A2038 Servo 38 	A2040 Servo 40
T2028 Stepping 28 	T2042 Stepping 42
E2040 Servo 40 	F No Motor Bracket Type

Servo Motor Application Table

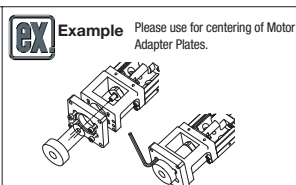
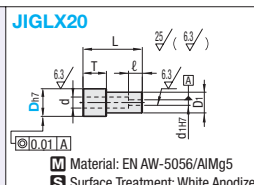
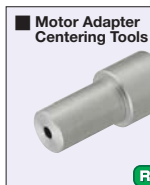
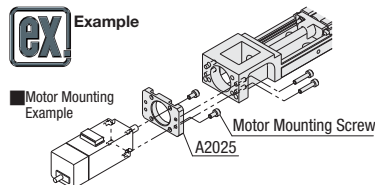
Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling
A2025	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCPW16 (P.963)
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2028	28	Mitsubishi Electric Corporation	HC-AQ013	10W	MCSLC16 (P.964)
			HC-AQ023	20W	
			HC-AQ033	30W	
A2038	38	Panasonic	MSMD-5A	50W	CPDT19 (P.965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2040	40	SIEMENS	1FK7011-5	50W	CPDW19 (P.965)
			1FK7015-5	100W	

Part Number	Flange Size	Manufacturer	Motor/Part Number	Wattage	Recommended Coupling
A2040	40	Yasukawa Electric Corporation	SGMJV-A5	50W	SCPW16 (P.963) MCSLC16 (P.964) CPDT19 (P.965)
			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	
			R88M-W03030	30W	
		Omron Corporation	R88M-W05030	50W	
			R88M-U03030	30W	
			R88M-U05030	50W	
Keyence Corporation	MV-M05 (D)	50W			
	SV-M005	50W			

① Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
 ② 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	Motor/Part Number	Type	Recommended Coupling
T2028	28	Oriental Motor	CSK22	2-phase	SCPW16 (P.963) MCSLC16 (P.964)
			CSK52	5-phase	
			ASC3*	α Step	
T2042	42	Oriental Motor	UMK24*/PK24*	2-phase	SCPW16 (P.963) MCSLC16 (P.964)
			CSK24	2-phase	
			RK54	5-phase	
			UPK54*/PK54*	5-phase	
			AS46,ASC46,AR46	α Step	



Secure included Motor Adapter to the Motor
 ③ Motor, coupling and motor mounting screws are not included.

Part Number	D	Corresponding Attachments	d	D ₁	d ₁	L	T	ℓ	€ Unit Price 1 ~ 5 pc(s).
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
 Days to Ship: 6 Days

Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Proximity Sensor (Mounting Components)	Sensor Rail		Sensor (*Qty per sensor included)			Sensor Target		Code (Is sensor Qty.)	€ Unit Price (Stroke up to 150)			€ Unit Price (Stroke 200 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (1 pc.)	Sensor Target (1 pc.)	Sensor Target Mounting Screws	1 pc.		2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.	
LX20__	GX-F8A (ON when near)	SENAT3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	Flat Head Screw M2.6-4 (1pc)	XA__							
	GX-F8B (ON when away)							XB__							
LX20__C	GX-F8A (ON when near)							FA__							
	GX-F8B (ON when away)							FB__							

Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (Is sensor Qty.)	€ Unit Price (Stroke up to 150)			€ Unit Price (Stroke 200 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX20__	PM-L24	SENAT3_H	CBM3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM2-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc) CBM3-6 (2 pcs.)	SP__						
LX20__C									CBM3-6 (2 pcs.)	MP__						

Photo Sensor Type (Omron Corporation) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (Is sensor Qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX20__	EE-SX91-R 1M	SENAT3_H	CBM3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M3 Small Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc) CBM3-6 (2 pcs.)	OP__						
LX20__C									CBM3-6 (2 pcs.)	EP__						

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group.
 *Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

Alterations: Part Number - Block Qty. - Motor Adapter Plates - Base Overall Length (L) - (Code)
 LX2001 - B1 - A2025 - 300 - XA2
 LX2005C - B1 - A2028 - 200 - EP3
 Sensor quantity is entered as the "Code" value. Days to Ship: 8 Days

Proximity Sensor Type Installation Drawings -SUNX Limited-

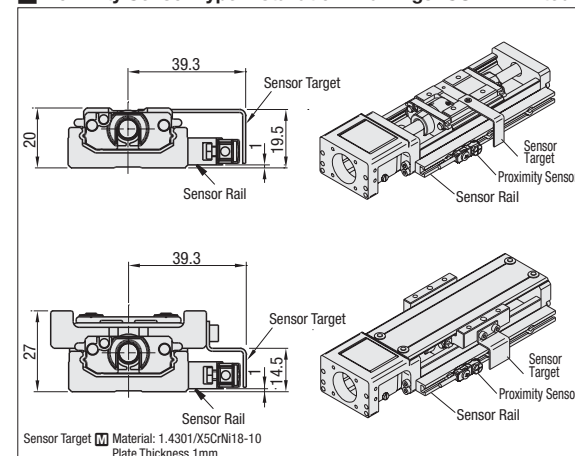


Photo Sensor Type Installation Drawings -SUNX Limited-

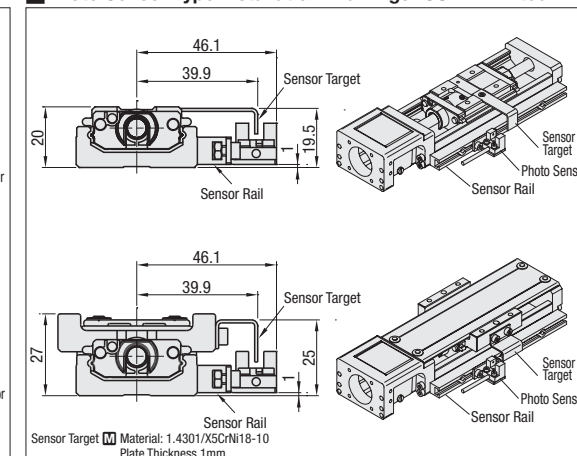
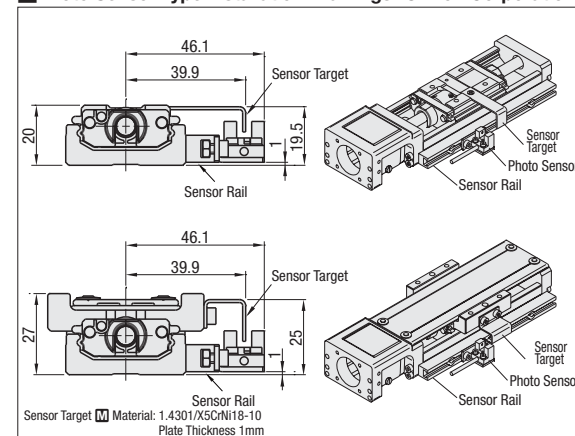


Photo Sensor Type Installation Drawings -Omron Corporation-



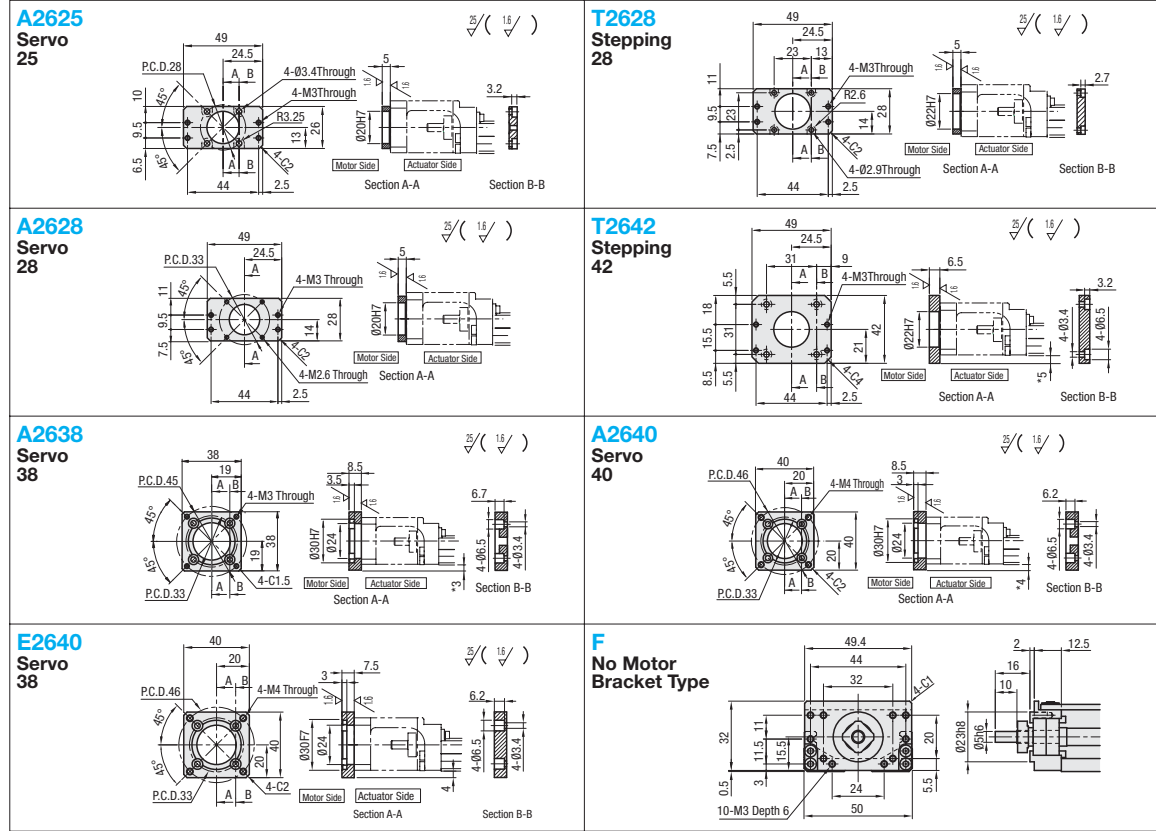
③ SUNX and Omron photo sensors are the same in outside dimensions.
 ④ Please access each sensor manufacturer's website for the specifications of sensors in use. Sensor specifications are not available on our catalogues.

Cautions
 -Sensor set is shipped with LX Actuator. Please assemble parts by customers.
 -Please check for all included parts immediately after unpacking. Some small parts can be lost.
 Please handle the products with great care.

Single Axis Actuator LX26 Motor Adapter Plates / Motor Adapter Centering Tools

Single Axis Actuator LX26 Sensor Sets (Alterations)

Note:*Marked area indicates where the Motor Adapter protrudes beyond the Rail. Special attention must be given.



Servo Motor Application Table

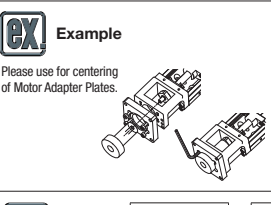
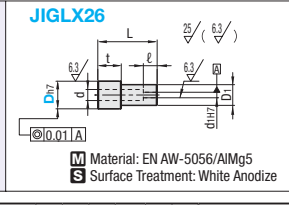
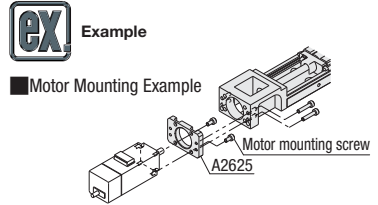
Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2625	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 (P963)
			SGMMJ-A2	20W	SCPW21 (P963)
			SGMMJ-A3	30W	MCSLC16 (P964)
A2628	28	Mitsubishi Electric Corporation	HC-AQ013	10W	MCSLC20 (P964)
			HC-AQ023	20W	CPDW19 (P965)
			HC-AQ033	30W	
A2638	38	Panasonic	MSMD-5A	50W	SCXW21 (P963)
			MSMA-3A	30W	SCPW21 (P963)
			MSMA-5A	50W	MCSLC20 (P964)
			MSMA-01	100W	CPDW19 (P965)
E2640	40	SIEMENS	1FK7011-5	50W	CPDW19 (P963)
			1FK7015-5	100W	MCSLC20 (P964)

Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling	
A2640	40	Yasukawa Electric Corporation	SGMJV-A5	50W	SCXW21 (P963)	
			SGMAH-A5	50W		
			SGMAS-A5	50W		
		Mitsubishi Electric Corporation	HC-MFS053	50W		SCPW21 (P963)
			HC-KFS053	50W		SCPW21 (P963)
			HF-KP053	50W		MCSLC16 (P964)
		Sanyo Denki Co., Ltd.	Q1AA04003D	30W		MCSLC20 (P964)
			Q1AA04005D	50W		CPDW19 (P965)
			R88M-W03030	30W		MCSLC20 (P964)
		Omron Corporation	R88M-W05030	50W		CPDW19 (P965)
			R88M-U03030	30W		CPDW19 (P965)
			R88M-U05030	50W		
Keyence Corporation	MV-M05 (D)	50W				
	SV-M005	50W				

Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Product number	Type	Recommended Coupling
T2628	28	Oriental Motor	CSK22	2-phase	SCXW21 (P963)
			CSK52	5-phase	
			ASC3*	α Step	
T2642	42	Oriental Motor	UMK24*/PK24*	2-phase	MCSLC16 (P964)
			CSK24	2-phase	MCSLC20 (P964)
			RK54	5-phase	CPDW19 (P965)
			UPK54*/PK54*	5-phase	
			AS46, ASC46, AR46	α Step	

① Product numbers and specifications of motors are subject to change. Please check the manufacturers' information.
 ② Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
 ③ Shaft insert depth in coupling will be 0.5mm shorter on each side when used with Siemens motor.



Secure included Motor Adapter to the Motor
 ④ Motor, coupling and motor mounting screws are not included.

Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price 1 - 5 pc(s).
JIGLX26	20	A2628	8	15	5	47.5	17	12	
	30	A2638/A2640	8	15	5	49.5	13	11	

Order Example: Part No. - D JIGLX26 - 20
 Days to Ship: 6 Days
 For orders larger than indicated quantity, please request a quotation.

Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Proximity Sensor (Mounting Components)	Sensor Rail		Sensor (*Qty per sensor included)			Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (1 pc.)	Sensor Target 1 pc.	Sensor Target Mounting Screws	Sensor Qty.		1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.
LX26_	GX-F8A (ON when near)	SENAT3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	Flat Head Screw M2.6-4 (1pc)	XA_							
	XB_														
LX26_C	GX-F8A (ON when near)	SENAT3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	CBM3-6 (2 pcs.)	FA_							
	FB_														

Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)			
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.	1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.
LX26_	PM-L24	SENAT3_H	CBM3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM2-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc)	SP_							
LX26_C									CBM3-6 (2 pcs.)	MP_							

Photo Sensor Type (Omron Corporation) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)			
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.	1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.
LX26_	EE-SX91-R1M	SENAT3_H	CBM3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	Small Flat Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc)	OP_							
LX26_C									CBM3-6 (2 pcs.)	EP_							

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MITSUBISHI FA Mechanical Group.
 * Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

Alterations: Part Number - Block Qty. - Motor Adapter Plates - Base Overall Length (L) - (Code)
 LX2602 - B1 - A2628 - 400 - SP2
 LX2605C - B1 - A2638 - 200 - MP2
 Sensor quantity is entered as the "Code" value.
 Days to Ship: 13 Days

Proximity Sensor Type Installation Drawings -SUNX Limited-

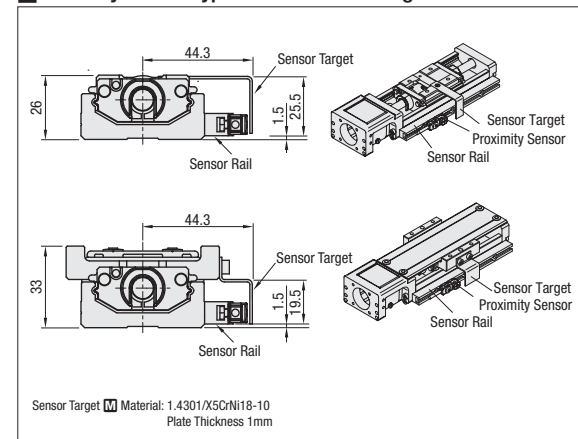


Photo Sensor Type Installation Drawings -SUNX Limited-

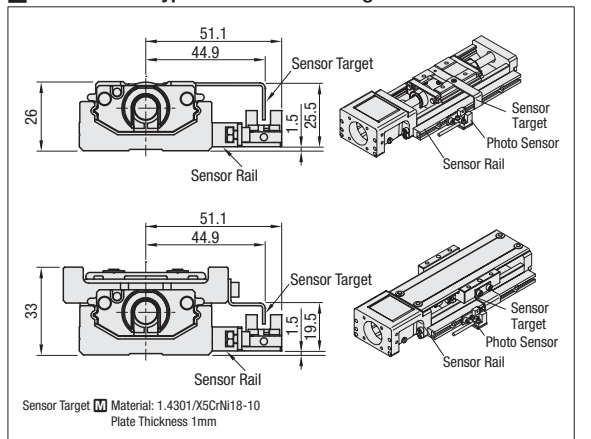
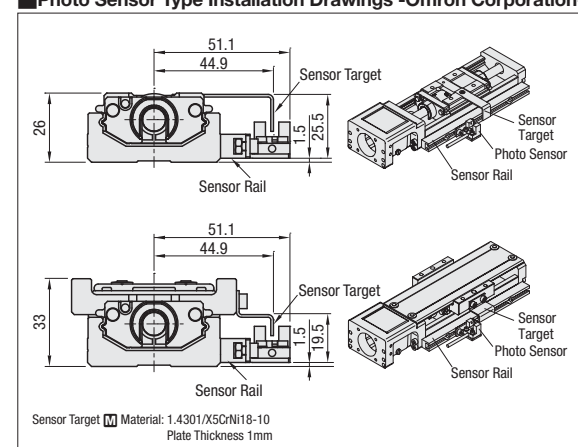


Photo Sensor Type Installation Drawings -Omron Corporation-



④ SUNX and Omron photo sensors are the same in outside dimensions.
 ⑤ Please access each sensor manufacturer's website for the specifications of sensors in use. Sensor specifications are not available on our catalogues.

Cautions
 -Sensor set is shipped with LX Actuator.
 -Please assemble parts by customers.
 -Please check for all included parts immediately after unpacking.
 -Some small parts can be lost. Please handle the products with great care.



Single Axis Actuator LX30 Standard Type



Price Reduction
15%

■ LX Related Information		
Specifications	P. 401 ~	P. 404
Coupling	P. 961 ~	P. 970
Proximity Sensor	P. 1745 ~	P. 1754
Photo Sensor - Rail	P. 1725 ~	P. 1744
Selection - Life Calculation Example	P. 1905 ~	P. 1908

CAD Data

Design Patent and Utility Model Right Obtained

RoHS

Specifications

LX30 Standards

Screw Shaft Diameter (mm)	10
Lead (mm)	5 · 10
Accuracy	High Grade · Precision Grade

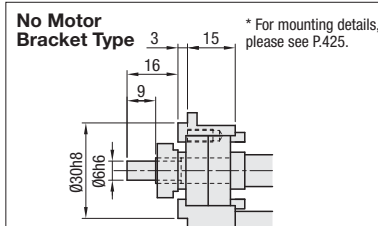
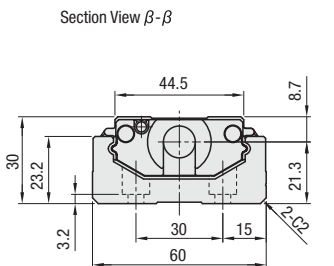
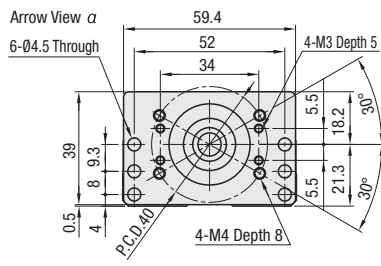
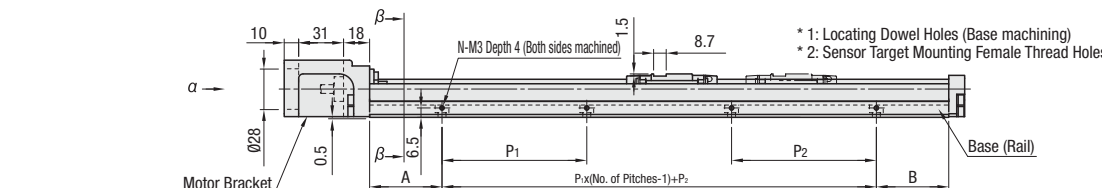
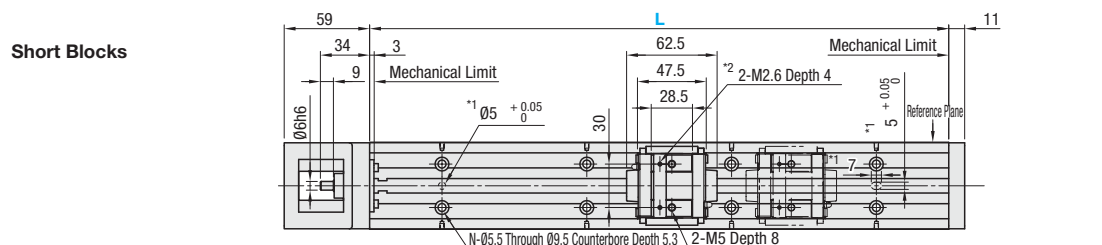
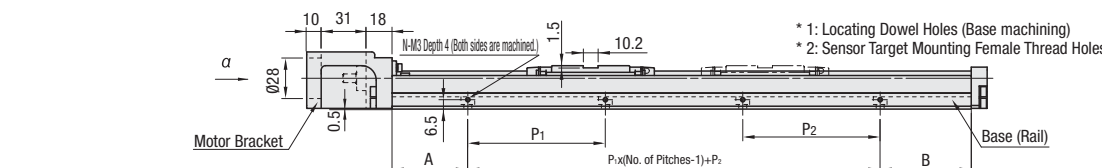
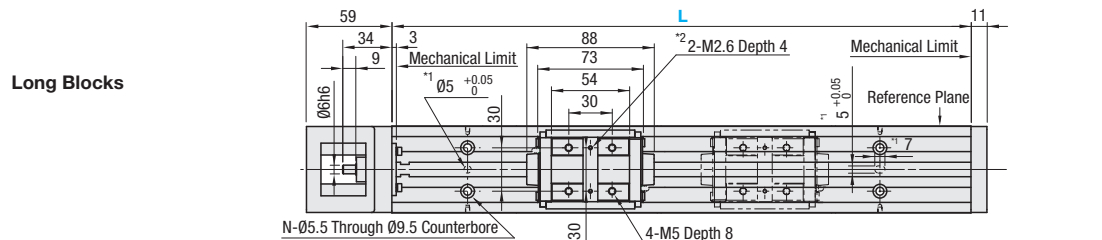
Accessory

(1) Motor Adapter Plate
 (M) Material: EN AW-5052/AlMg2.5 (S) Surface Treatment: Black Anodize
 (2) 4 Adapter Plate Screws (M) Material: 1.4567/X3CrNiCu18-9-4
 *No accessory is included for No Motor Bracket Type.

Standard L Dimensions	
Lead 5	LX3005
Lead 10	LX3010

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 5	LX3005	LX3005P	LX3005G	LX3005PG
Lead 10	LX3010	LX3010P	LX3010G	LX3010PG

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
(M) Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AISI12Cu	EN AW-5052/AlMg2.5	NBR	1.7242/16CrMo4
(S) Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
(H) Hardness	Induction Hardening HRC58 ~ 64	HRC58-62	-	-	-	HRC58-62



Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
 For Double Block Type, effective strokes are the values when two blocks in contact with each other.
 For Double Block Type, double-dashed lined blocks are not connected with the ball screw

Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
				A	P1	P2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX3005 LX3010	Long Blocks (1 pc.) B1 (2 pcs.) B2 * For B2 L ≥ 300	(Servo) A3038 A3040 E3040 (Stepping) T3042 T3056.4 T3060 (Without attachment) 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	50	50	2	6
			350	50	100	50	50	3	8
(Low Particulate Generation Grease) LX3005G LX3010G	Short Blocks (1 pc.) S1 (2 pcs.) S2	(Without attachment) N (Without Motor Bracket) F	400	50	100	100	50	3	8
			450	50	100	50	50	4	10
			500	50	100	50	50	4	10
			550	50	100	50	50	5	12
			600	50	100	50	50	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
 * Precision Certificate is enclosed with precision grade products.
 * No Attachment Type consists of an actuator and bracket. Please note that it is different from No Motor Bracket Type.

Accuracy Standards

Accuracy Standards	Up to L=400		L=400 or more	
	High Grade	Precision Grade	High Grade	Precision Grade
Positioning Accuracy (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			

Allowable Static Load / Moment

Block Types	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. Please use our Technical Calculation Software for life calculations.
 For allowable static moment, please see P.402.

Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke				Moment of Inertia (kg · cm ²)						Total Mass (kg)					
	LX30				LX3005		LX3010		LX30							
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
125	29	-	54.5	-	0.0436	-	0.0428	-	-	-	-	-	1.30	-	1.18	-
150	54	-	79.5	17	0.0454	-	0.0446	0.0474	0.0513	-	0.0482	0.0591	1.47	-	1.35	1.53
200	104	-	129.5	67	0.0491	-	0.0483	0.0494	0.055	-	0.0518	0.0564	1.81	-	1.68	1.86
250	154	-	179.5	117	0.0528	-	0.052	0.0531	0.0587	-	0.0555	0.0601	2.14	-	2.02	2.2
300	204	116	229.5	167	0.0565	0.0584	0.0557	0.0568	0.0624	0.0702	0.0592	0.0638	2.48	2.79	2.35	2.53
350	254	166	279.5	217	0.0602	0.0621	0.0594	0.0605	0.0661	0.0739	0.0629	0.0675	2.81	3.12	2.69	2.87
400	304	216	329.5	267	0.0638	0.0658	0.063	0.0642	0.0698	0.0776	0.0666	0.0712	3.15	3.46	3.02	3.21
450	354	266	379.5	317	0.0675	0.0695	0.0667	0.0679	0.0735	0.0812	0.0703	0.0749	3.49	3.79	3.36	3.54
500	404	316	429.5	367	0.0712	0.0732	0.0704	0.0716	0.0772	0.0849	0.074	0.0785	3.82	4.13	3.7	3.88
550	454	366	479.5	417	0.0749	0.0768	0.0741	0.0753	0.0808	0.0886	0.0777	0.0822	4.16	4.47	4.03	4.21
600	504	416	529.5	467	0.0786	0.0805	0.0778	0.0789	0.0845	0.0923	0.0813	0.0859	4.49	4.8	4.37	4.55

Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A3038	38	Panasonic	30W/50W/100W
A3040	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co., Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
E3040	40	Keyence Corporation	50W/100W
		SIEMENS	30W/50W/100W

Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T3042	42	Oriental Motor	2-phase / 5-phase / α Step
T3056.4	56.4		2-phase / 5-phase / α Step
			2-phase / 5-phase / α Step
T3060	60	2-phase / 5-phase / α Step	

Maximum Velocity

Max. Velocity (mm/s)	LX3005		LX3010	
	L125-L450	L460-L550	L550-L600	L600
LX3005	410	370	300	250
LX3010	830	740	600	500

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Order Example: Part Number **LX3010** - Block Qty. **B1** - Motor Adapter Plates **A3040** - Base Overall Length (L) **600**

Days to Ship: High Grade Standard Grease LX3005 · 3010 **8 Days**; Standard Grease/Precision Grade LX3005P · 3010P **10 Days**; Low Particulate Generation Grease-No Motor Bracket **13 Days**

Price: €

* All No Bracket products are shipped on the 13th day after order received.
 * For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L (mm)											Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead	
	L=125 (Lead 5 Only)	L=150	L=200	L=250	L=300	L=350	L=400	L=450	L=500	L=550	L=600					
LX30 - B1/S1 -														1	10	5
LX30 - B2/S2 -														2		
LX30 - B1/S1 - F														1	10	
LX30 - B2/S2 - F														2		

Precision Grade · Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
 LX30... Series sensor set can be specified as an alteration.
 Alteration Details P.426



Single Axis Actuator LX45 Cover Type



Price Reduction
25%

Specifications	P. 401 ~ P. 404
Coupling	P. 961 ~ P. 970
Proximity Sensor	P. 1745 ~ P. 1754
Photo Sensor / Rail	P. 1725 ~ P. 1744
Selection / Life Calculation Example	P. 1905 ~ P. 1908

CAD Data

Design Patent and Utility Model Right Obtained

RoHS

Specifications

LX45	
Cover	
Screw Shaft Diameter (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade / Precision Grade

Accessory

(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2.5
S Surface Treatment: Black Anodize

(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
N No accessory is included for No Motor Bracket Type.

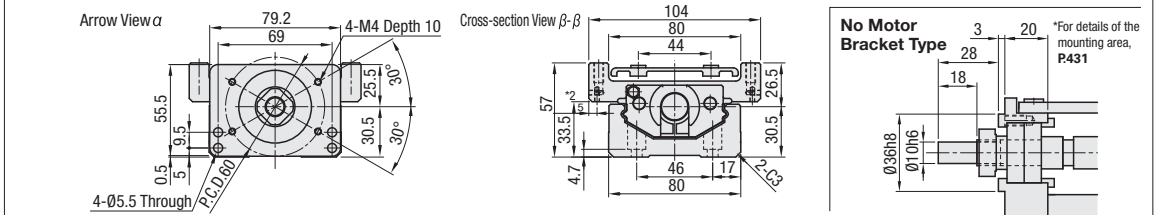
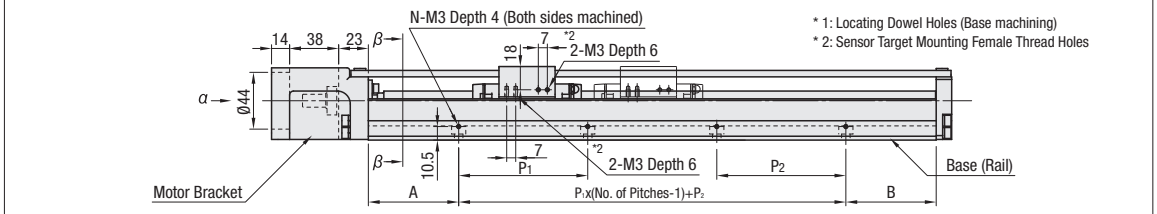
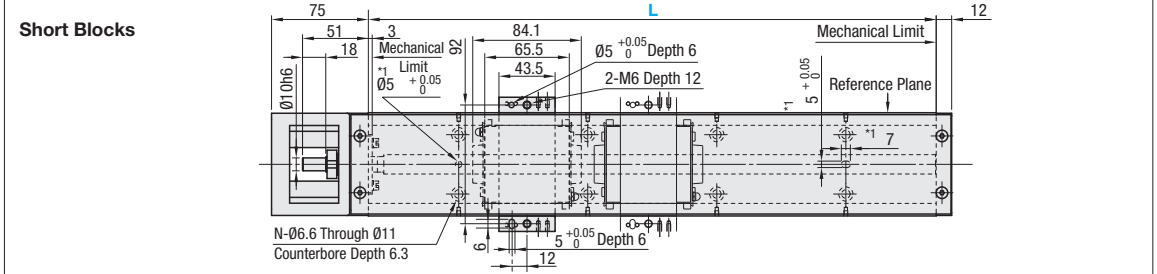
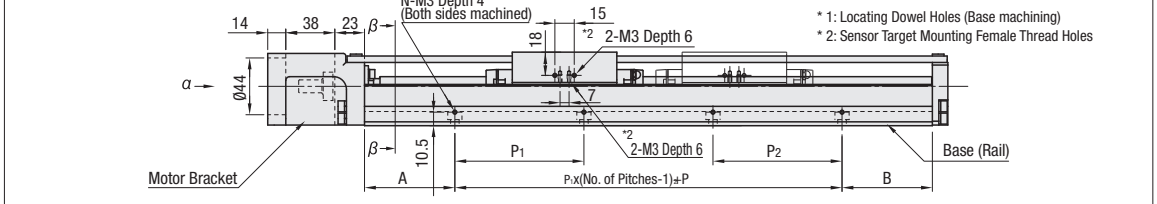
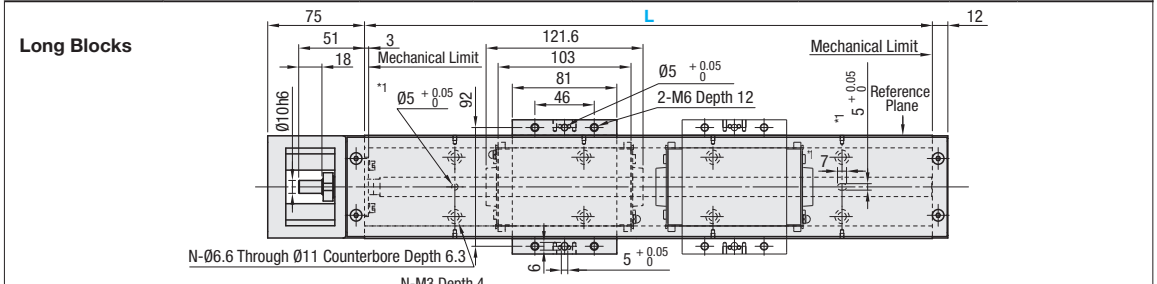
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Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 10	LX4510C	LX4510CP	LX4510CG	LX4510CPG
Lead 20	LX4520C	LX4520CP	LX4520CG	LX4520CPG

Low Particulate Generation Grease Information P.404

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AISI12Cu	EN AW-5052/AlMg2.5	EN AW-6063/AlMg0.7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62



Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5 mm in total.
 For Double Block Type, effective strokes are the values when two blocks in contact with each other.
 For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
High Grade	Precision Grade				A	P1	P2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX4510C LX4520C	(Standard Grease) LX4510CP LX4520CP	Long Blocks (1 pc.) B1 (2 pcs.) B2	(Servo) A4538 A4540 MA4560 A4560 E4540 E4555 (Stepping) T4560	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
				440	70	100	100	70	3	8
(Low Particulate Generation Grease) LX4510CG LX4520CG	(Low Particulate Generation Grease) LX4510CPG LX4520CPG	Short Blocks (1 pc.) S1 (2 pcs.) S2	(Without Attachment) N (Without Motor Bracket) F	490	70	100	50	70	4	10
				540	70	100	100	70	4	10
				590	70	100	50	70	5	12

Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
 Precision Certificate is enclosed with precision grade products.
 Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

Accuracy Standards			Allowable Static Load · Moment					
Positioning Accuracy (mm)	High Grade	Precision Grade	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)			
Backlash (mm)	0.1	0.025	Block Types	Ma	Mb	Mc		
Positioning Repeatability (mm)	±0.005	±0.003	Long Block	B1	32441	291	291	972
Running Parallelism (mm)	0.035	0.015	Short Block	B2	64882	3945	3945	1944
Starting Torque (N · cm)	10			S1	17175	145	145	515
				S2	34350	1444	1444	1029

Base Length (L)	Effective Stroke				Moment of Inertia (kg · cm ²)						Total Mass (kg)					
	B1	B2	S1	S2	LX4510C		LX4520C		LX4510C		LX4520C					
340	210.4	88.8	247.9	163.8	0.2674	0.3053	0.2507	0.272	0.3825	0.5344	0.3157	0.4008	6.59	8.09	5.94	6.78
390	260.4	138.8	297.9	213.8	0.2869	0.3249	0.2702	0.2915	0.402	0.5539	0.3352	0.4203	7.23	8.73	6.57	7.41
440	310.4	188.8	347.9	263.8	0.3064	0.3444	0.2897	0.311	0.4215	0.5734	0.3547	0.4399	7.86	9.36	7.2	8.04
490	360.4	238.8	397.9	313.8	0.3259	0.3639	0.3092	0.3305	0.441	0.5929	0.3742	0.4594	8.49	9.99	7.84	8.68
540	410.4	288.8	447.9	363.8	0.3454	0.3834	0.3287	0.35	0.4605	0.6124	0.3937	0.4789	9.13	10.63	8.47	9.31
590	460.4	338.8	497.9	413.8	0.3649	0.4029	0.3482	0.3695	0.48	0.6319	0.4132	0.4984	9.76	11.26	9.1	9.94

Servo Motor Application Table				Maximum Speed					
Part Number	Flange Size	Manufacturer	Wattage	Part Number	Flange Size	Manufacturer	Wattage		
A4538	38	Panasonic	30W/50W/100W	LX4510	40	SIEMENS	50W/100W		
		Yasukawa Electric Corporation	30W/50W/100W			LX4520	55	SIEMENS	380W
		Mitsubishi Electric Corporation	50W/100W						
A4540	40	Sanyo Denki Co., Ltd.	30W/50W/100W	The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.					
		Omron Corporation	30W/50W/100W						
		Keyence Corporation	50W/100W						
MA4560	60	Panasonic	100W/200W/300W						
		Yasukawa Electric Corporation	200W/400W						
A4560	60	Mitsubishi Electric Corporation	200W/400W						
		Sanyo Denki Co., Ltd.	200W/400W						
		Omron Corporation	200W/400W						
		Keyence Corporation	200W/400W						

Order Example Part Number - Block Qty. - Motor Adapter Plates - Base Overall Length (L)
LX4510C - B1 - A4540 - 540

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Days to Ship: High Grade Standard Grease LX4510C - 4520C: **8 Days**; Standard Grease Precision Grade LX4510CP - 4520CP: **10 Days**; Low Particulate Generation Grease - No Motor Bracket: **13 Days**

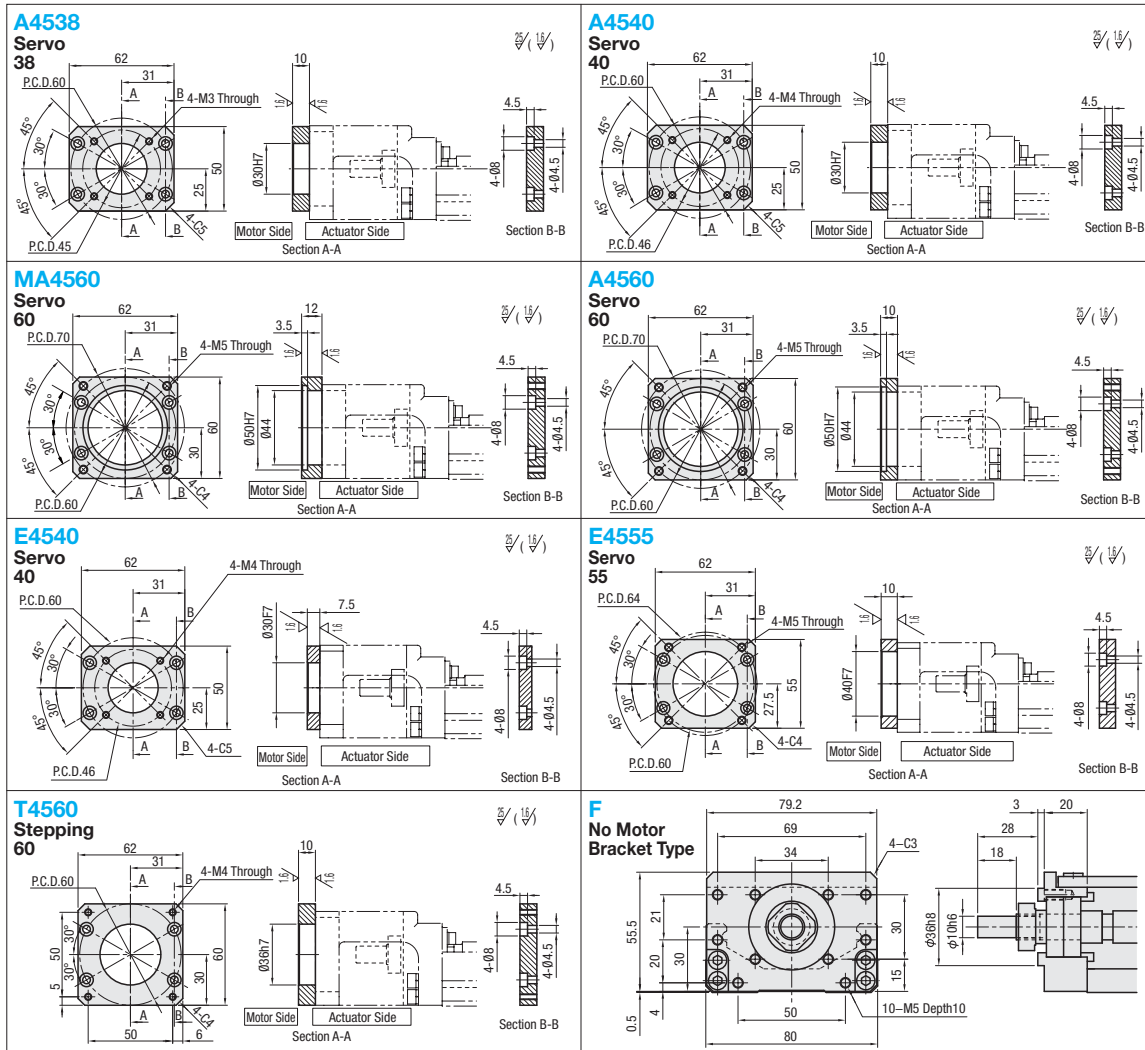
All No Bracket products are shipped on the 13th day after order received.
 For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

High Grade € Unit Price 1 ~ 2 pc(s).										
Part Number	L=340	L=390	L=440	L=490	L=540	L=590	Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX45_C-B1/S1_							Servo Stepping No Adapter	1	15	0,1
LX45_C-B2/S2_								2		
LX45_C-B1/S1-F							No Bracket	1		0,2
LX45_C-B2/S2-F								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
 LX45_Series sensor set can be specified as alterations.
 Alteration Details P.432

Single Actuator LX45 Motor Adapter Plates / Motor Adapter Centering Tools

CAD Data

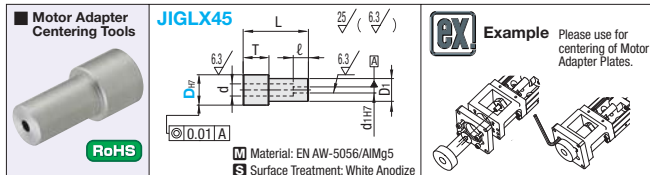


Part No.	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A4538	38	Panasonic	MSMD-5A	50W	SCXW28 (P963) SCPW28 (P963) CPDW25 (P965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
			SGMJV-A5	50W	
A4540	40	Yasukawa Electric Corporation	SGMAH-A5	50W	
			SGMAH-01	100W	
			SGMPH-01	100W	
			Mitsubishi Electric Corporation	HC-MFS053	50W
				HC-MFS13	100W
		Q1AA04003D		30W	
		Sanyo Denki Co., Ltd.	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	50W			
MA4560	60	Panasonic	MQMA-01	100W	
			MQMA-02	200W	
			MQMA-03	300W	

Part No.	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling
E4540	40	SIEMENS	1FK7011-5	50W	SCXW34 (P963) SCPW34 (P963) CPDW32 (P965)
E4555	55	SIEMENS	1FK7015-5	100W	
			1FK7022-5	380W	
A4560	60	Yasukawa Electric Corporation	SGMJV-02	200W	
			SGMJV-04	400W	
		Mitsubishi Electric Corporation	HC-MFS 23	200W	
			HC-KFS 23	200W	
			HC-MFS 43	400W	
		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				

Part No.	Flange Size	Manufacturer	Product number	Type	Recommended Coupling
T4560	60	Oriental Motor	UPK56*/PK56* AS6*, ASC66, AR66	5-phase α Step	SCXW28, SCPW28 CPDW25

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.



Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price
JIGLX45	30	A4538/A4540	15	25	10	62	22	20	1 ~ 5 pc(s).
	50	A4560/MA4560	15	25	10	61.5	13.5	20	
	36	T4560	15	25	10	62	22	20	

Order Example: Part No. JIGLX45 - 30 Days to Ship 6 Days

Single Axis Actuator LX45 Sensor Sets (Alterations)

Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Proximity Sensor	Sensor Rail		Sensor (*Qty per sensor included.)		Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 440)			€ Unit Price (Stroke 490 or more)				
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (3 pcs.)	Sensor Target (1 pc.)	Mounting Screws		Sensor Qty.	1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.	3 Pcs.
LX45 _B- LX45 _S-	GX-F12A (ON when near)	SENC3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	Flat Head Screw M3-5 (1pc)	XA_								
	GX-F12B (ON when away)								XB_							
LX45 _C-B-	GX-F12A (ON when near)	SENC3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	CBM3-6 (2 pcs.)	FA_								
	GX-F12B (ON when away)								FB_							
LX45 _C-S-	GX-F12A (ON when near)	SENC3_H	CBM3-6	CBSST3-8	LBNR3	(Original)	CBM3-6 (2 pcs.)	FAS_								
	GX-F12B (ON when away)								FBS_							

Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor			Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 440)			€ Unit Price (Stroke 490 or more)					
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)		Mounting Screws	Sensor Qty.	1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.	3 Pcs.
LX45 _B- LX45 _S- LX45 _C-B- LX45 _C-S-	PM-L24	SENC3_H	SCB3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc)	SP_								
											MP_							
											MPS_							

Photo Sensor Type (Omron Corporation) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor			Sensor Target		Code (is sensor qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)					
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)		Mounting Screws	Sensor Qty.	1 pc.	2 pcs.	3 Pcs.	Sensor Qty.	1 pc.	2 pcs.	3 Pcs.
LX45 _B- LX45 _S- LX45 _C-B- LX45 _C-S-	EE-SX91-R 1M	SENC3_H	SCB3-6	(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M3 Small Flat Washers (2 pcs.)	(Original)	Flat Head Screw M2.6-4 (1pc)	OP_								
											EP_							
											EPS_							

Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group. Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

Alterations: Part Number LX4510 - Block Qty. B1 - Motor Adapter Plates A4540 - Base Overall Length (L) 590 - (Code) XA1 - Sensor quantity is entered as the "Code" value. Days to Ship 13 Days

Proximity Sensor Type Installation Drawings -SUNX Limited-

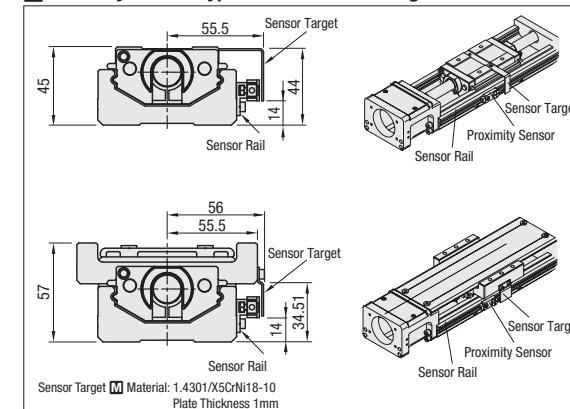


Photo Sensor Type Installation Drawings -SUNX Limited-

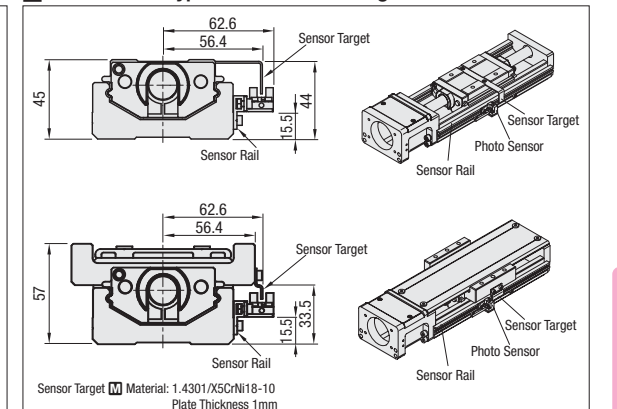
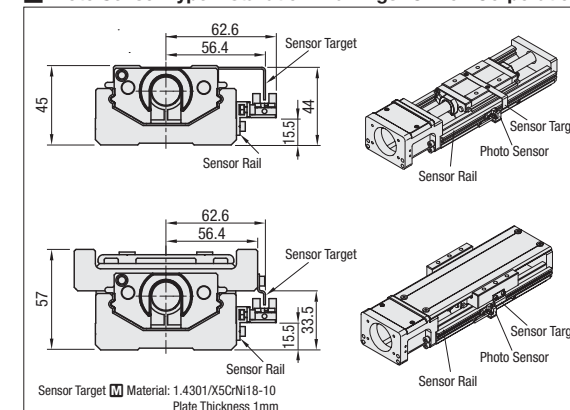


Photo Sensor Type Installation Drawings -Omron Corporation-



SUNX and Omron photo sensors are the same in outside dimensions. Please access each sensor manufacturer's website for the specifications of sensors in use. Sensor specifications are not available on our catalogues.

Cautions
 -Sensor set is shipped with LX Actuator. Please assemble parts by customers.
 -Please check for all included parts immediately after unpacking.
 Some small parts can be lost. Please handle the products with great care.



Single Axis Actuator LX30 Motor Folded Type



■ LX Related Information	P. 401 ~ P. 404
Specifications	P. 961 ~ P. 970
Coupling	P. 1745 ~ P. 1754
Proximity Sensor	P. 1725 ~ P. 1744
Photo Sensor - Rail	P. 1905 ~ P. 1908
Selection - Life Calculation Example	

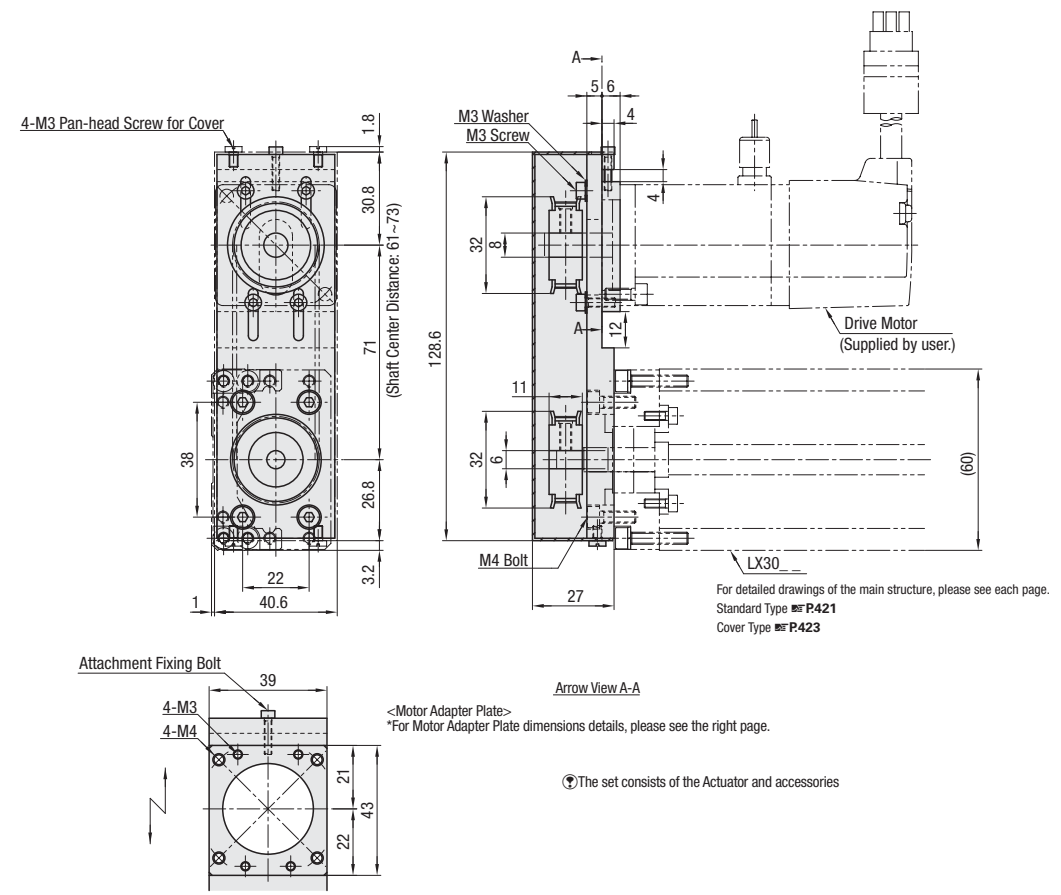
CAD Data



RoHS	Specifications
	LX30
	Standard / Cover
	Screw Shaft Diameter (mm) 10
	Lead (mm) 5, 10
	Accuracy High Grade
	Accessory
(1) Motor Adapter Plate	
■ Material: Steel	
■ Surface Treatment: LTBC Plating	
(2) 4 Adapter Plate Screws	
■ Material: 1.4567/X3CrNiCu18-9-4	
(3) High Torque Timing Pulley	
Part Number: HTPA44S2M060	
(4) High Torque Timing Belt	
Part Number: HTBN230S2M-60	

Standard L Dimensions	Standard Grease	
	High Grade Standards	High Grade with Cover
Lead 5	LXR3005	LXR3005C
Lead 10	LXR3010	LXR3010C

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
■ Material	JIS STKM	JIS SCM Material	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
■ Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
■ Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62



Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Detailed Mounting Hole Dimensions P421,423					
				A	P1	P2	B	No. of Pitches	Hole Qty. (N)
(High Grade Standards) LXR3005 LXR3010	(High Grade with Cover) LXR3005C LXR3010C	(Servo) RA3038 RA3040 (Stepping) RT3042 (Without attachment) N	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			

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

Base Length (L)	Effective Stroke				Total Mass (kg)							
	LXR30_				LXR30_				LXR30_ C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
125	29	-	54.5	-	1.55	-	1.43	-	2.01	-	1.75	-
150	54	-	79.5	17	1.72	-	1.60	1.78	2.17	-	1.92	2.23
200	104	-	129.5	67	2.06	-	1.93	2.11	2.50	-	2.25	2.57
250	154	-	179.5	117	2.39	-	2.27	2.45	2.84	-	2.59	2.91
300	204	116	229.5	167	2.73	3.04	2.60	2.78	3.17	3.74	2.92	3.24
350	254	166	279.5	217	3.06	3.37	2.94	3.12	3.51	4.08	3.26	3.58
400	304	216	329.5	267	3.40	3.71	3.27	3.46	3.85	4.41	3.60	3.91
450	354	266	379.5	317	3.74	4.04	3.61	3.79	4.18	4.75	3.93	4.25
500	404	316	429.5	367	4.07	4.38	3.95	4.13	4.52	5.08	4.27	4.58
550	454	366	479.5	417	4.41	4.72	4.28	4.46	4.85	5.42	4.60	4.92
600	504	416	529.5	467	4.74	5.05	4.62	4.80	5.19	5.76	4.94	5.26

⊕ For Moment of Inertia, please see each page. Standard type ■ P421 Cover Type ■ P423

Order Example

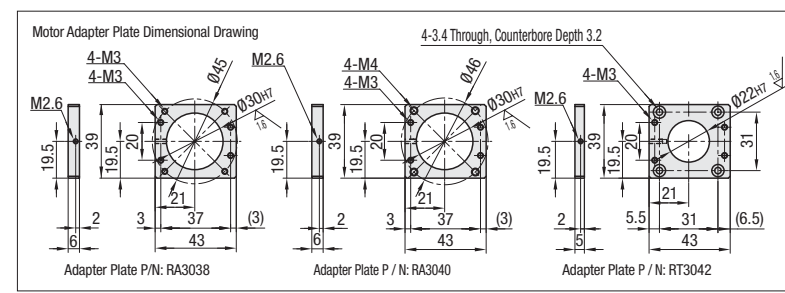
Part Number: LXR3010C - Block Qty.: B1 - Motor Adapter Plates: RA3040 - Base Overall Length (L): 600

Days to Ship: 13 Days

Alterations

Alteration	Code	Spec.	Price Adder
No Belt - No Pulley	NBP	Excluded from the set.	

⊕ For ordering 3 or more identical models, Days to Ship is to be quoted in each case.



Servo Motor Application Table			
Part Number	Flange Size	Manufacturer	Wattage
RA3038	38	Panasonic	30W/50W/100W
RA3040	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co., Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W

Stepping Motor Application Table			
Part Number	Flange Size	Manufacturer	Type
RT3042	42	Oriental Motor	2-phase / 5-phase / Δ / Step

⊕ For Motor Adapter Plate detail drawings and compatible Motor details, P431

Accuracy Standards	Up to L=400		L=400 or more High Grade
	High Grade	High Grade	
Positioning Accuracy (mm)	0.06	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		

Block Types	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. Please use our Technical Calculation Software for life calculations.
⊕ For allowable static moment, please see P.402.

Part Number	High Grade € Unit Price 1 ~ 2 pc(s).											Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
	L=125 (Lead 5 Only)	L=150	L=200	L=250	L=300	L=350	L=400	L=450	L=500	L=550	L=600				
LXR30_ -B1/S1-												Servo Stepping No Adapter	1	10	5
LXR30_ -B2/S2-											2				
LXR30_ C-B1/S1-											1				
LXR30_ C-B2/S2-											2				

⊕ For orders larger than indicated quantity, Days to Ship is to be estimated in each case.



Single Axis Actuator LX45 Motor Folded Type



■ LX Related information	P.401 ~	P.404
Specifications	P.961 ~	P.970
Coupling	P.1745 ~	P.1754
Proximity Sensor	P.1725 ~	P.1744
Photo Sensor · Rail		
Selection	P.1905 ~	P.1908
Life Calculation Example		

CAD Data



RoHS

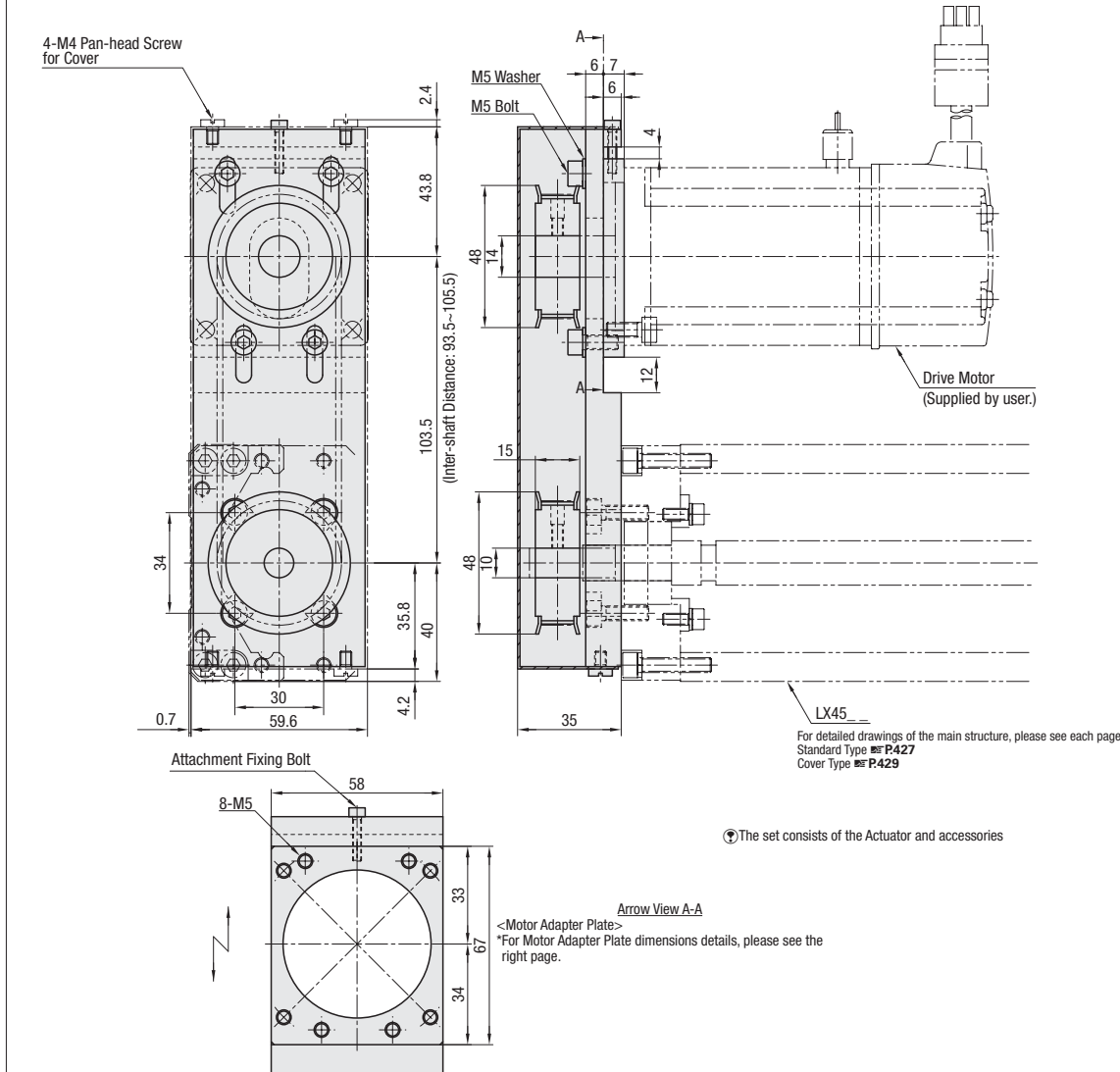
Specifications	
LX45	
Standard · Cover	
Screw Shaft Diameter (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade

Accessory

- Motor Adapter Plate
Material: Steel
Surface Treatment: LTBC Plating
- 4 Adapter Plate Screws
Material: 1.4567/X3CrNiCu18-9-4
- High Torque Timing Pulley
Part Number: HTPA44S3M100
- High Torque Timing Belt
Part Number: HTBN339S3M-100

Standard L Dimensions	Standard Grease	
	High Grade Standards	High Grade with Cover
Lead 10	LXR4510	LXR4510C
Lead 20	LXR4520	LXR4520C

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
Material	JIS STKM	JIS CM Material	EN AW-5052/AlMg2.5	EN AW-5052/AlMg2.5	EN AW-6063/AlMg0.7Si	NBR	1.7242/16CrMo4
Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
Hardness	Induction Hardening HRC58-64	HRC58-62	-	-	-	-	HRC58-62



Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Detailed Mounting Hole Dimensions P427,429					
				A	P1	P2	B	No. of Pitches	Hole Qty. (N)
(High Grade Standards) (High Grade with Cover) LXR4510 LXR4520 LXR4510C LXR4520C	Long Blocks (1 pc.) B1 (2 pcs.) B2	(Servo) RA4560	340	70	100	100	70	2	6
		(Stepping) RT4560	390	70	100	50	70	3	8
	Short Blocks (1 pc.) S1 (2 pcs.) S2	(Without attachment) N	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		

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke				Total Mass (kg)							
	LXR45				LXR45				LXR45_C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	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	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	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	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	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	9.43	10.35	9.04	9.57	10.41	11.91	9.75	10.59

Ⓢ For Moment of Inertia, please see each page. Standard type P427 Cover Type P429

Order Example

Part Number: LXR4510 - Block Qty.: B1 - Motor Adapter Plates: RA4560 - Base Overall Length (L): 540 - Days to Ship: 13 Days

Part Number: LXR4510 - Block Qty.: B1 - Motor Adapter Plates: RA4560 - Base Overall Length (L): 540 - (NBP)

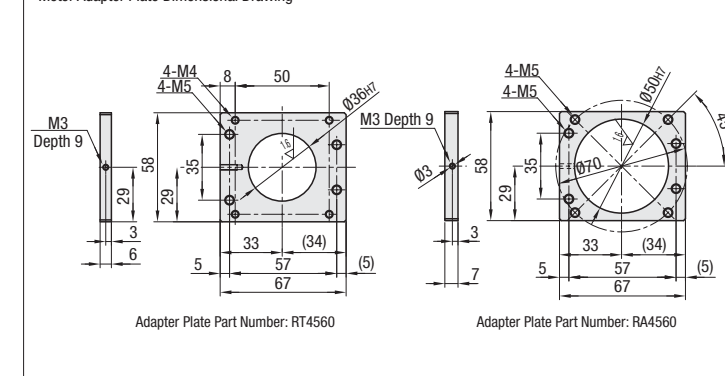
Alterations

Alteration	Code	Spec.	Price Adder
No Belt · No Pulley	NBP	Excluded from the set.	

Ⓢ For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Alteration	Code	Spec.	Price Adder
No Belt · No Pulley	NBP	Excluded from the set.	

Motor Adapter Plate Dimensional Drawing



Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
RA4560	60	Yasukawa Electric Corporation	200W/400W
		Mitsubishi Electric Corporation	200W/400W
		Sanyo Denki Co., Ltd.	200W/400W
		Omron Corporation	200W/400W
		Keyence Corporation	200W/400W

Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Types
RT4560	60	Oriental Motor	5-phase / α Step

Ⓢ For Motor Adapter Plate detail drawings and compatible Motor details, P431

Accuracy Standards

Accuracy Standards	High Grade
Positioning Accuracy (mm)	0.1
Backlash (mm)	0.02
Positioning Repeatability (mm)	± 0.005
Running Parallelism (mm)	0.035
Starting Torque (N · cm)	10

Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
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. Please use our Technical Calculation Software for life calculations.
Ⓢ For allowable static moment, please see P402.

Maximum Velocity

	Max. Velocity (mm/s)	
	LXR4510	LXR4520
	550	1110

Ⓢ The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Price

Part Number	High Grade € Unit Price 1 ~ 2 unit(s)						Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
	L=340	L=390	L=440	L=490	L=540	L=590				
LXR45 -B1/S1-							Servo Stepping	1	15	10
LXR45 -B2/S2-								2		
LXR45 C-B1/S1-							No Adapter	1	20	
LXR45 C-B2/S2-								2		

Ⓢ For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Two Axes Mounting Brackets for Single Axis Actuators

CAD Data

Features: Brackets combined with LX Actuators are standardized to meet customers' requests.

X-Y Axis Brackets

LXBT

Material: EN AC-51300/G-AlMg5, Surface Treatment: Black Anodize

Example: LXBT3026A (X-Axis), LX2602 (X-Axis), LX30 (Y-Axis)

Part Number	LX Combination Y / X axis	A	B	C	D	E	F	T	H	P1	P2	P3	P4	P5	P6	d1	m	d2	z	h	€ Unit Price 1 ~ 2 pc(s).
3026A	30 / 26 (C)	112	53.5	75	12	35.5	20.5	15	23	30	80	25	70	26.5	4	M4	5.5	9.5	5.5		
3026B	30 C / 26 (C)																				
3030A	30 / 30 (C)																				
3030B	30 C / 30 (C)																				
4530A	45 / 30 (C)																				
4530B	45 C / 30 (C)	79.5	90	17	42	31	21	27	43	100	30	92	39.5	5	M5	6.5	11	7			
4545A	45 / 45 (C)																				
4545B	45 C / 45 (C)																				

LXBT... A Y axis is only applicable to Standard Type, and LXBT... B Y axis is to Cover Type. For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

X-Z Axis Brackets

LXBL

Material: EN AC-51300/G-AlMg5, Surface Treatment: Black Anodize

Example: LXBL3026 (X-Axis), LX30 C (X-Axis), LX2602 (Z-Axis)

Part Number	LX Combination X / Z axis	A	B	C	D	E	P1	P2	P3	P4	m	d1	d2	z	€ Unit Price 1 ~ 2 pc(s).
3026	30 C / 26 (C)	100	54	110	23	15	70	30	80	25	M4	4	5.5	12	
3030	30 C / 30 (C)														
4530	45 C / 30 (C)														
4545	45 C / 45 (C)														

LXBL... X axis is only applicable to Cover Type. P1 tolerance is only applicable for d1. For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

X-Y Axis Horizontal Brackets

LXBP

Material: EN AW-5052/AlMg2.5, Surface Treatment: Black Anodize

Example: LXBP3026 (X-Axis), LX2602 (Y-Axis), LX30 (Y-Axis)

Part Number	LX Combination Y / X axis	A	B	T	P1	P2	P3	P4	m	D	z	h	€ Unit Price 1 ~ 2 pc(s).
3026	30 / 26 (C)	100	54	12	30	30	80	25	M4	5.5	9.5	6	
3030	30 / 30 (C)												
4530	45 / 30 (C)												
4545	45 / 45 (C)												

LXBP... Y axis is only applicable to Standard Type. For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Order Example: Part Number LXBP3026, Days to Ship 6 Days, P.87

Order Example: Part Number LXBP3026, Days to Ship 8 Days, P.87

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Linear Encoders (Linear Scales)

CAD Data

RoHS

Example: LX2602 (X-Axis), LX30 (Y-Axis)

D-Sub 9 Pin Male Plug

Setup LED

Set Screw M3x0.5x8

Attachment Surface

Yaw Tolerance ±0.5°

Useable length is L-40mm.

Reference Mark

M3 Fixed Hole Two places

Optical Center (Optical Reading Center)

Position of Reference Mark (The Home Point Recognition)

Dynamic Bending Radius

Static Bending Radius

Enlarged View A

Scale Surface

Lead Head

Clearance between the read head and scale 0.8±0.1

Scale Thickness 0.2

Mounting Height

D-Sub 9 Pin Connector Specification

Function	Signal	Pin No.	Color
Electrical Power	5V	5	Brown
	0V	1	White
Incremental Signal	A+	2	Green
	A-	6	Yellow
	B+	4	Blue
	B-	8	Red
Reference Mark	Z+/Q-	3	Pink
	Z-/Q+	7	Gray
Shield	Internal	9	Inner Shield
	External	Case	Outer Shield

Part Name	Items	Specifications
Read Head	Resolution	SRGH24X=1µm / SRGH24Z=0.5µm / SRGH24M=0.1µm
	Max. Velocity (m/s)	SRGH24X=5 (m/s), SRGH24Z=3 (m/s), SRGH24M=0.25 (m/s)
	Lowest Recommended Value of Counter Clock Frequency (MHz)	Encoder Velocity (m/s) / Resolution (µm) × Velocity Factor (Note) Select 4 (MHz) or more for 0.1 µm resolution.
	Power Supply	DC5V±5% (120mA)
	Ripple	200mVpp at Max. frequency 500KHz
	Temperature	In storage: -20°C ~ 70°C In operation: 0°C ~ 50°C
	Humidity	In operation, max. relative humidity 80% (No condensation) In storage, max. relative humidity 95% (No condensation)
	Water Resistance	IP40
	Acceleration	While in motion: 500m/s² BS EN 60068-2-7:1993
	Shocks (Non-Op.)	1000m/s², 6ms, 1/2sine BS EN 60068-2-7:1993
	Vibration (in motion)	55Hz ~ 2000Hz: 100m/s² at a max BS EN 60068-2-6:1993
	Mass	Read Head 11g Cable 38g/m
	Electromagnetic Interference Compatibility (EMC)	BS EN 61326
	Cable Length	Double Shield Type, Max. O.D. 4.4mm Cable. Fatigue life: 20 x 10⁶ cycles or more by bending radius 20mm
	Cable Specifications	Cable Length: 1.5m with D-Sub 9 Pin Male Plug
Scale	Electrical Integration	Read Head is designed in compliance with the relevant ECM Standards. Be sure to follow the appropriate installation, shielding and grounding procedures to fully comply with ECM.
	Type	Reflective gold plated steel tape, protective lacquer coated, backed with double sided adhesive tape.
	Compatible Host Material	Metal, Ceramics and Composites (Steel, Aluminum, Ceramics, etc.) with Thermal Expansion Coefficient up to 0 ~ 22µm/m°C.
Reference Mark	Linear Expansion Coefficient	The scale tape clamped on both ends using an epoxy cement will make the expansion coefficient equal with the host base. (24 hours required for epoxy cement to cure completely)
	Ends Anchor Method	Epoxy cemented end clamping method. Less than 1µm migration of the ends at -20~50°C.
	Operational Specifications	Temp.: -10 ~ 120°C Humidity: Relative humidity 80% (No condensation)
Reference Mark	Type	Magnetically actuated
	Repeatability	Output is synchronized with incremental signal. Position: Repeatability (unidirectional) is maintained at temperature of ±20°C. Magnetic field: ±0.02T constant or variable ±7.5T/s

Part Number	Scale Overall Length L Specify in 50mm Increments	€ Unit Price 1 ~ 4 pc(s).						
		L100~300	L350~550	L600~800	L850~1050	L1100~1300	L1350~1550	L1600~2000
	100~200							
	200~300							
	300~400							

Order Example: Part Number LXBP3026, Days to Ship 10 Days, P.87

Alterations: No Reference Mark (NR), No End Clamp (NE), No Adhesive (NB)

Alterations	Code	Spec.	Price Adder
No Reference Mark	NR	Excluded from the set.	
No End Clamp	NE	Excluded from the set.	
No Adhesive	NB	Excluded from the set.	

Motor Driven Single Axis Actuator LX - Overview

Spec List

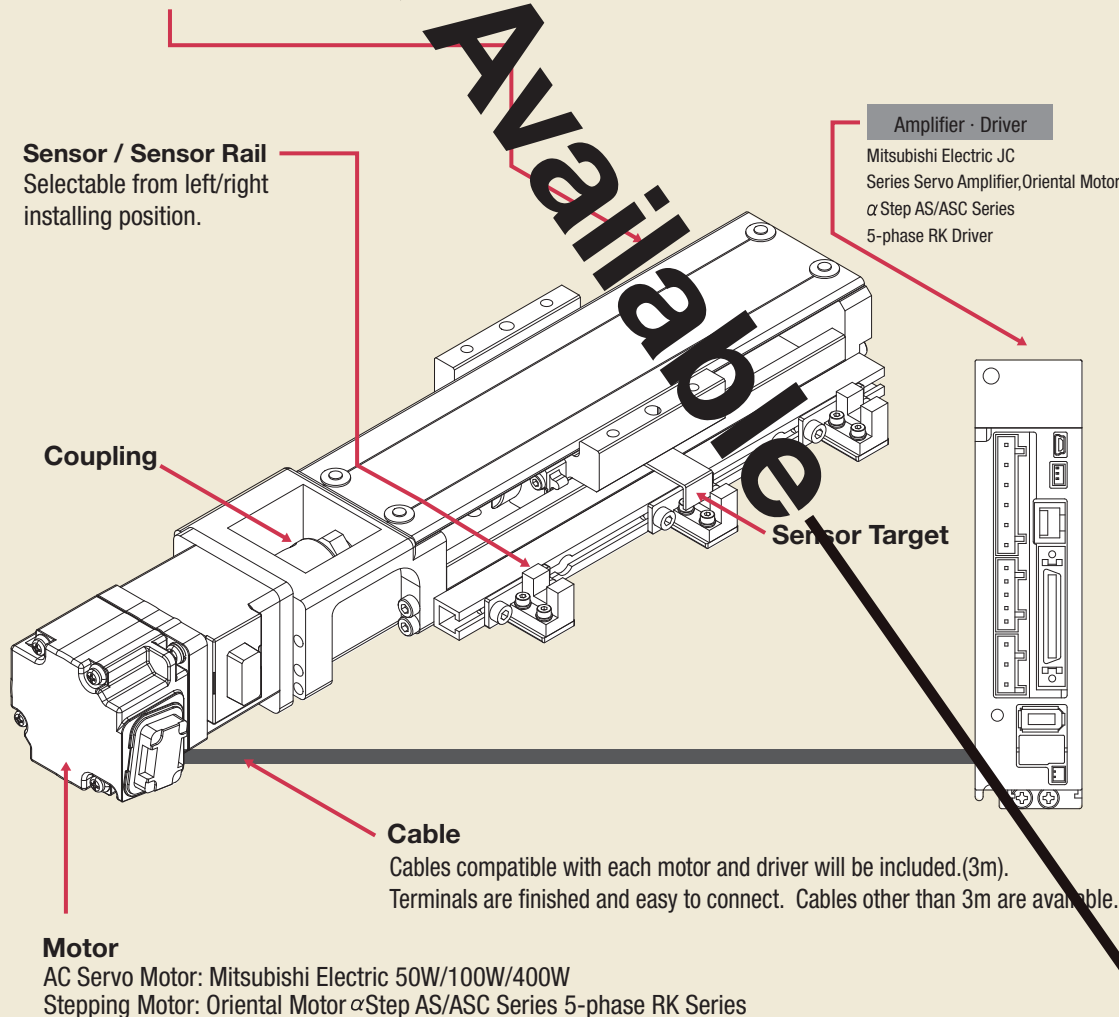
High precision single axis actuator LX with pre-assembled motor and peripheral parts

- High Accuracy** Precision grade: precision class Repeatability positioning accuracy: $\pm 3 \mu\text{m}$.
- Reduced Precedural Steps** A unit consists of motor and peripheral parts. Accuracy of the unit is inspected before shipment. (Inspection Sheet attached).
- Wide Motor Variation** Selectable from AC Servo Motor of Mitsubishi Electric Corporation and Stepping Motor of Oriental Motor. Amplifier and driver are included. Upstream controller will be provided at customer's end.

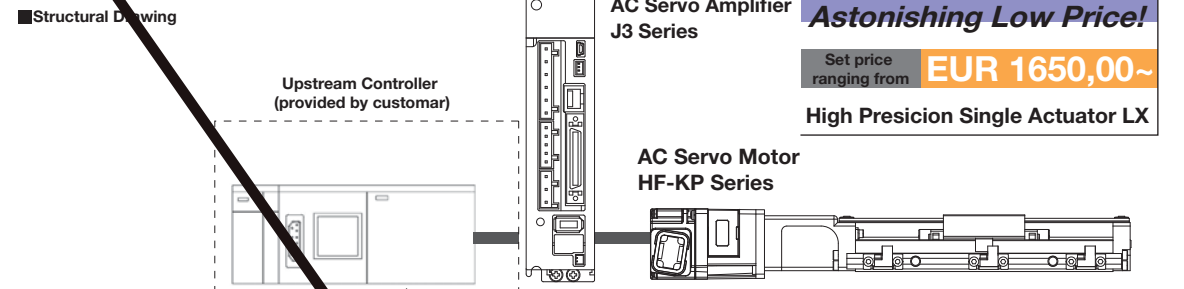
Shortened lead time of just 8 days!

Fully support customer for reduction of assembly steps and manufacturing work loads.

Single Axis Actuator LX Precision Grade Selectable from Standard Type and Cover Type



Mitsubishi Electric AC Servo Motor Specifications



■ Specifications

Actuator	Motor	Motor Output	Amplifier	Repeatability Positioning Accuracy (mm)	Load Capacity (kg)		Max. Velocity (mm/sec)		Stroke (mm)	Page
					Horizontal	Vertical	Horizontal	Vertical		
	HF-KP053(B)	50W	MF-J3-10	± 0.003	15	2	50	50	30~130 (50Pitch)	P.441~444
					10		250	250		
					20	5	100	100		
	HF-KP13(B)	100W	MF-J3-10	± 0.003	18	8	250	250	60~210 (50Pitch)	P.449~452
					32		235	250		
					24		450	400		
	HF-KP43(B)	400W	MR-J3-10	± 0.003	40	16	400	375	200~450 (50Pitch)	P.453~456
					24		450	450		

* Load capacity and max. velocity are reference values obtained by verifications. These vary depending on driving condition.
* The horizontal values are for motors without brake, and the vertical values are for motors with a brake.
* Acceleration /Deceleration Distance: 25mm each LXM3010 and LXM4520: 50mm each

Oriental Motor Stepping Motor Specifications



■ Specifications

Actuator	Motor, Driver Set.	Motor Output	Repeatability Positioning Accuracy (mm)	Load Capacity (kg)		Max. Velocity (mm/sec)		Stroke (mm)	Page
				Horizontal	Vertical	Horizontal	Vertical		
	ASC36AK	α Step	± 0.003	15	2	30	-	30~130 (50Pitch)	P.441~444
	AS46AA/MA	5-phase				45	30		
	RK545AA/AMA	5-phase				40	30		
	ASC36AK	α Step	± 0.003	10	5	125	-	60~210 (50Pitch)	P.445~448
	AS46AA/MA	5-phase				200	225		
	RK545AA/AMA	5-phase				120	115		
	ASC36AK	α Step	± 0.003	20	5	45	-	40~490 (50Pitch)	P.449~452
	AS46AA/MA	5-phase				90	90		
	RK545AA/AMA	5-phase				55	45		
	ASC36AK	α Step	± 0.003	18	8	100	-	40~490 (50Pitch)	P.449~452
	AS46AA/MA	5-phase				175	175		
	RK545AA/AMA	5-phase				105	80		
	AS46AA/MA	α Step	± 0.003	32	8	160	150	40~490 (50Pitch)	P.449~452
	AS66AAE/MAE	5-phase				175	160		
	RK545AA/AMA	5-phase				90	70		
	AS46AA/MA	α Step	± 0.003	24	16	150	140	200~450 (50Pitch)	P.453~456
	AS66AAE/MAE	5-phase				250	200		
	RK545AA/AMA	5-phase				135	10		
	AS46AA/MA	α Step	± 0.003	40	16	210	45	200~450 (50Pitch)	P.453~456
	AS66AAE/MAE	5-phase				200	175		
	RK566AAE/AMAE	5-phase				165	25		
	AS66AAE/MAE	α Step	± 0.003	24	16	300	200	200~450 (50Pitch)	P.453~456
	RK566AAE/AMAE	5-phase				255	10		

* Load capacity and max. velocity are reference values obtained by verifications. These vary depending on driving condition.
* The horizontal values are for motors without brake, and the vertical values are for motors with a brake.
* Acceleration /Deceleration Distance: 25mm each LXM3010 and LXM4520: 50mm each



Motor Driven Single Axis Actuator LX26 Standard Type

CAD Data

⊕ A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification

Oriental Motor Stepping Motor Specification

RoHS

Components
Actuator - Amplifier - Driver - Cable
Accessories: Amplifier - Driver Instruction Manuals

Amplifier

Cable

Driver

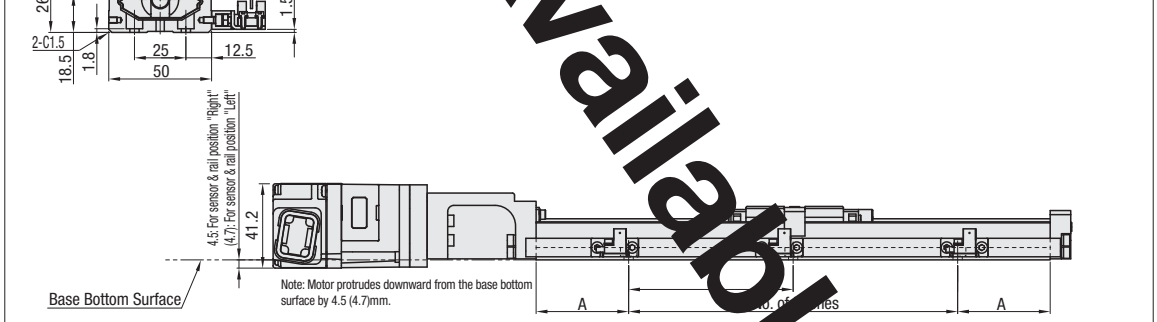
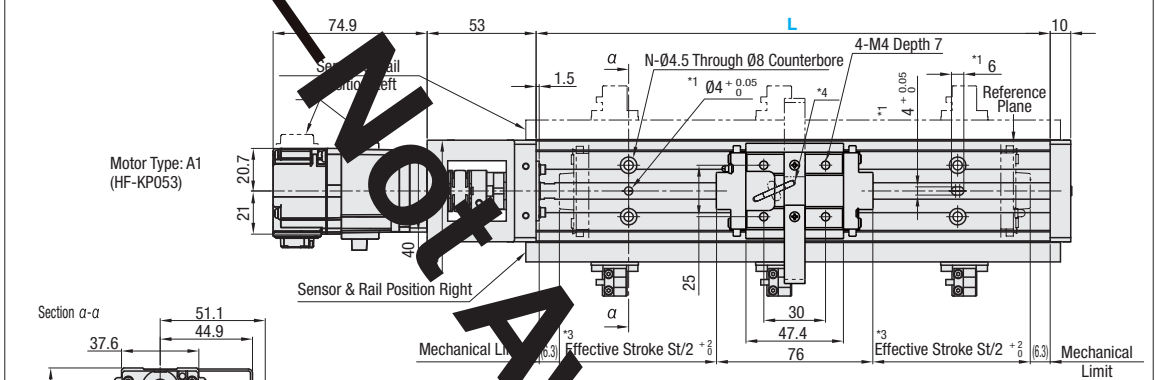
Actuator (Motor Driven)

Actuator (Motor Driven)

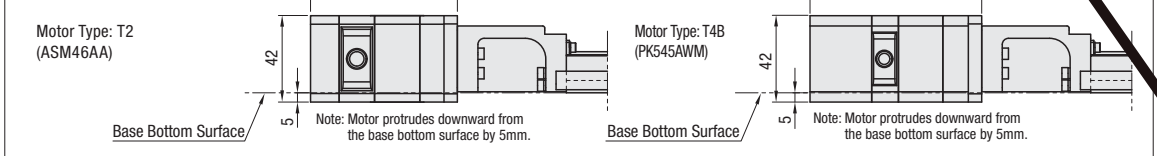
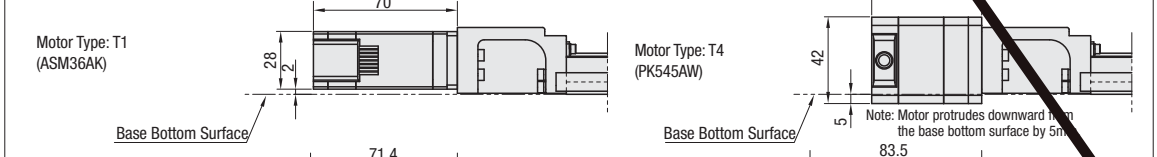
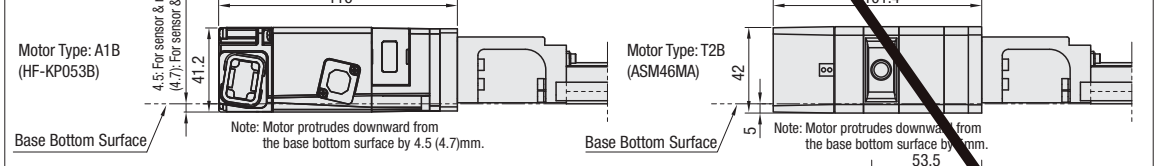
Actuator

	Base	Block
Material	JIS STKM	JIS SCM Material
Surface Treatment	LTBC Plating	
Hardness	Induction Hardening HRC58-64	HRC58-62

Amplifier - Driver Specifications: P457-458-459
Cable Specifications: P460



- * 1: Locating Dowel Holes (Base machining)
- * 2: When "Sensor Rail Left" is selected, the motor cable location will also be on the left.
- * 3: Limit sensors will be adjusted at positions to make effective stroke St/2.
- * 4: Read 5 has a return tube.



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N·m)		
							Ma	Mb	Mc
	2	Ø8 (ground)	±0.003	0.02	0.01	0.003	70	70	225
	5								

* For Allowable Static Load Moment, see P402

Load Capacity - Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
Mitsubishi Electric Corporation	T1	A1 (B)	5	100	100	-
		T1	-	45	-	-
		T2 (B)	5	90	90	-
Oriental Motor	T1	T1 (B)	5	55	45	-
		T2 (B)	5	175	175	-
	T4 (B)	T1	5	250	250	-
		T2 (B)	5	105	80	-

Dimensions - Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)			
		150	200	250	300
	Effective Stroke St	60	110	160	210
	A	35	20	45	30
	P	80	80	80	80
	No. of Pitches	1	2	2	3
	Hole Qty. (N)	4	6	6	8
	Main Structure Mass (kg)	1.08	1.30	1.51	1.73

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for brake motors.
* Acceleration / Deceleration Distance: 25mm each

* The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variation	Amplifier / Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor / Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	Cables (3m): 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	150-300 (50 Pitch)

Order Example: Part Number - Motor Type - Amplifier / Driver Variation - Cable Length - Sensor Qty. - Sensor / Rail Position - Base Length L

Example: 3 - 3 - R - 300

List of Controls

Manufacturer Name	Selection	Motor	Motor Variation			Weight (kg)	Selection	Amplifier - Driver Variation		Motor Drivers Manufacturer Set Part Numbers
			Manufacturer Part Number	Output Variation	Brake (Note 3)			Power Supply	Manufacturer Part Numbers	
Mitsubishi Electric Corporation		AC Servo	HF-KP053	50W	w/o	0.35	AC200V	MR-J3-10A (General-purpose A Type)		-
			HF-KP053B		w/	0.4				
Oriental Motor		Stepping	ASM36AK	Q Step	w/o	0.5	Single phase AC100V	ASD10B-K	ASC36AK	
			ASM46AA		w/	0.8		ASD13A-A	AS46AA	
			ASM46MA		w/	0.8		ASD13A-A	AS46MA	
			PK545AW	5-phase	w/o	0.4		RKD507-A	RK545AA	
			PK545AWM		w/	0.52		RKD507M-A	RK545AMA	

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Source Cable	For Brakes Cables	Encoder Cables
Mitsubishi Electric Corporation	A1	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEIM-J3HF1-B-3
	A1B	1 pc. SVPM-J3HF1-B-3-02S	1 pc. SVPM-J3HF1B-B-3-02S	1 pc. SVEIM-J3HF1-B-3
Oriental Motor	T1	1 pc. STPO-AS1-B-3	-	-
	T2	1 pc. STPO-AS1-B-3	Customer provided	-
	T4	1 pc. STPO-RK1-A-3	-	-
	T4B	1 pc. STPO-RK2-A-3	-	-

- (Note 1-1) When "w/o amplifier" is selected, cables in Cable Configuration List are included. For the specification, see P460.
- (Note 1-2) When other than standard cables (3m) are required, please select "w/o cable" option and separately use from the cables listed on Cables Page P460.
- (Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.
- (Note 2-2) The sensor cable end will need to be terminated by the customer. For details, See FPM on page 46.
- (Note 3) Please use brake motor for vertical applications.
- (Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship: **13 Days** ⊕ For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price: (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
 <Ex.> For LXM2602-A1-AM10-3-3-R-200,
 1643,00 EUR (Actuator Body Price + Controller Price) + 81,00 EUR (Cable Price) + 28,00 EUR (Sensor Price) Sales Price = 1752,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier / Driver Variation	€ Unit Price 1 ~ 2 unit(s)			
			L150	L200	L250	L300

Cable Price

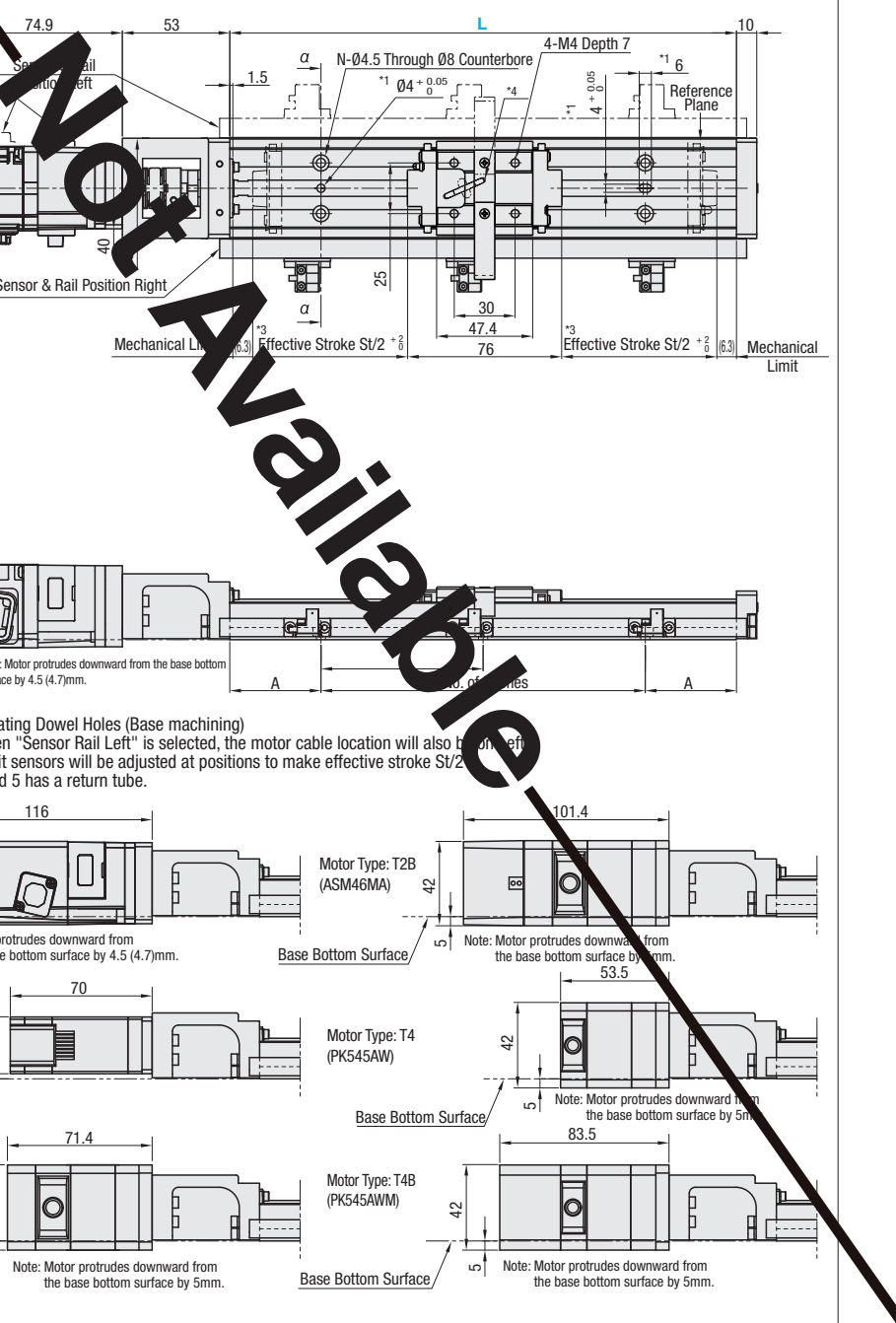
Motor Variation	€ Unit Price	
	With Cable (3m)	w/o Cable

⊕ Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

⊕ For orders larger than indicated quantity, please request a quotation.





Motor Driven Single Axis Actuator LX45 Standard Type

CAD Data

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification

Oriental Motor Stepping Motor Specification

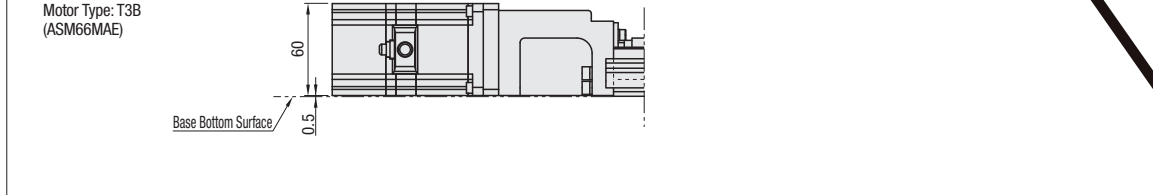
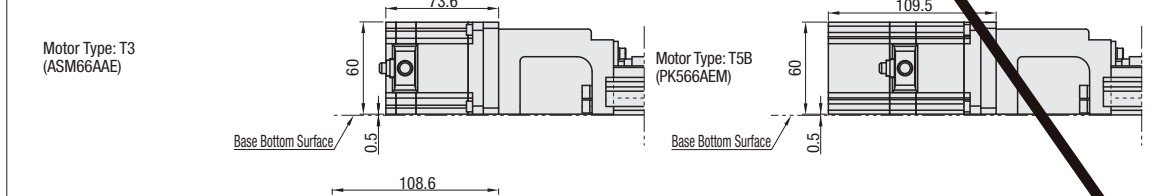
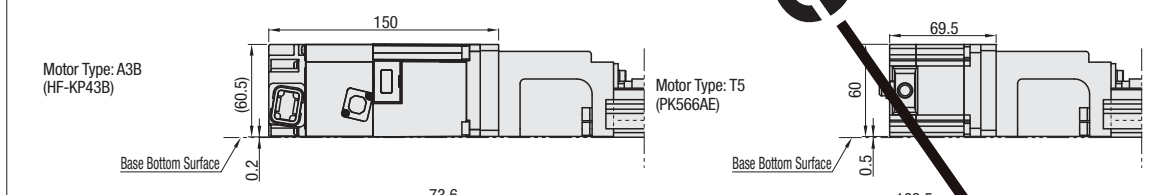
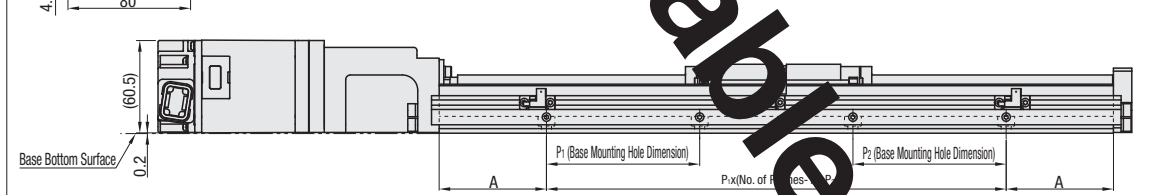
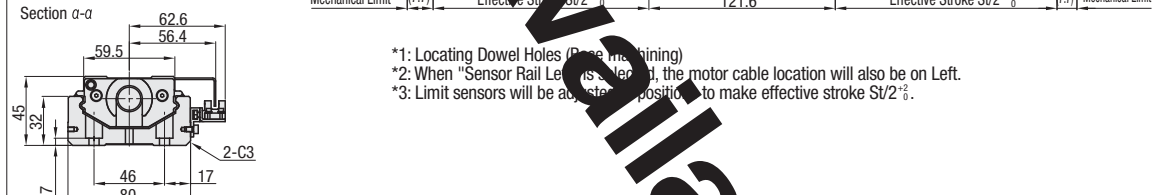
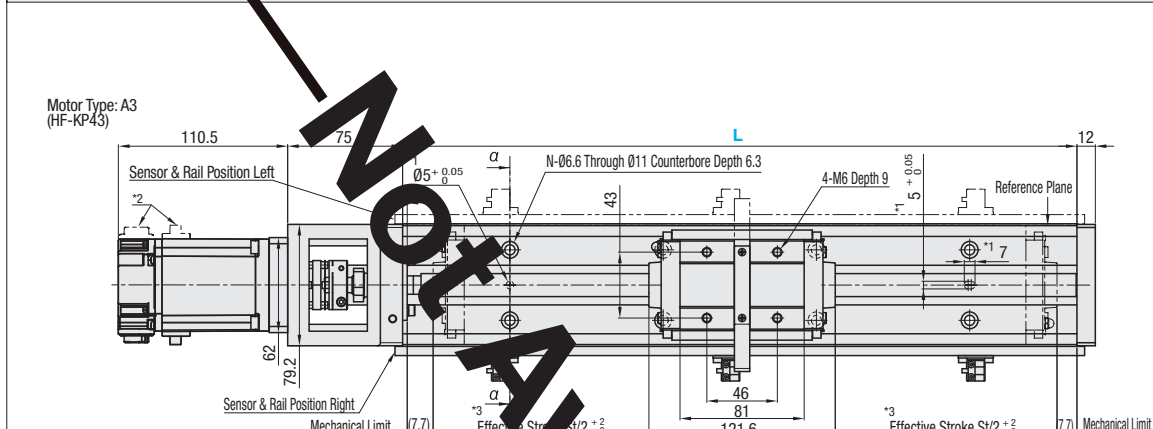
RoHS

Components
Actuator / Amplifier / Driver / Cable
Accessories: Amplifier / Driver Instruction Manuals

Actuator

	Base	Block
Material	JIS STKM	JIS SCM Material
Surface Treatment	LTBC Plating	
Hardness	Induction Hardening HRC58-64	HRC58-62

Amplifier / Driver Specifications **P457-458-459**
Cable Specifications **P460**



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N · m)		
							Ma	Mb	Mc
	10	Ø15 (ground)	±0.003	0.025	0.015	0.003	291	291	972
	20								

* For Allowable Static Load Moment, see P402

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
Mitsubishi Electric Corporation	A3 (B)	T3 (B)	40	16	400	375
					200	175
Oriental Motor	T5 (B)	T5 (B)			165	25
					450	450
Mitsubishi Electric Corporation	A3 (B)	T3 (B)	24	16	300	200
					255	10

Dimensions · Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)					
		340	390	440	490	540	590
	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
No. of pitches		2	3	3	4	4	5
Hole Qty. (N)		6	8	8	10	10	12
Main Structure Mass (kg)		6.06	6.68	7.29	7.91	8.54	9.17

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for brake motors.
* Acceleration / Deceleration Distance: 25mm each LX4520: 50mm each

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selections					
	Motor Variation	Amplifier · Driver Variations	Cable (Note 1)	Sensor Qty (Note 2)	Sensor · Rail Position	Base Overall Length L (mm)
List of controls Select from	List of controls Select from		Cables (3m) 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	340-590 (50 Pitch)

Order Example: Part Number - Motor Type - Amplifier · Driver Variations - Cable Length - Sensor Qty. - Sensor & Rail Position - Base Length L

Example: 3 - 3 - R - 590

List of controls

Manufacturer Name	Selection	Motor Variation				Amplifier · Driver Variation			Motor Drivers Manufacturer Set Part Numbers
		Motor	Manufacturer Part Numbers	Output · Variation	Brake (3)	Weight (kg)	Selection	Power Supply	
Mitsubishi Electric Corporation	AC Servo	HF-KP43	HF-KP43B	400W	w/o	0.5	AC200V	MR-J3-40A (General-purpose A Type)	
					w/	0.2			
Oriental Motor	Stepping	ASM66AAE	α Step		w/o	0.285	Single phase AC100V	ASD24A-A	AS66AAE
		PK566AE	5-phase		w/	0.4		RKD514L-A	RK566AAE
		ASM66MAE	α Step		w/	1.1		ASD24A-A	AS66MAE
		PK566AEM	5-phase		w/	1.1		RKD514LM-A	RK566AAE

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Variation	Motor Power Cable	Brake Cables	Encoder Cable
Mitsubishi Electric Corporation	A3	1 pc.	-	1 pc. SVEM-J3HF1-B-3
	A3B	SVPM-J3HF1-B-3-02S	1 pc. SVPM-J3HF1B-B-3-02S	
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) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, see P460

(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cable" option and separately choose from the cables listed on Cables on P460

(Note 2) When "w/o sensor" is selected, sensor rail comes with the target sensor target will not be included.

(Note 2-2) If sensor cable ends will need to be terminated by the customer, please refer to details, See FPML24 on P.1746.

(Note 3) Please use brake motor for vertical applications.

(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship **13 Days** For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For LXM4510-A3-AM40-3-3-R-590,
2617,00 EUR (Actuator Price + Control Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price) → Sales Price = 2617,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier · Driver Variations	€ Unit Price 1 ~ 2 unit(s)						
			L340	L390	L440	L490	L540	L590	

For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variation	Unit Price	
	With Cable (3m)	w-o Cable

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

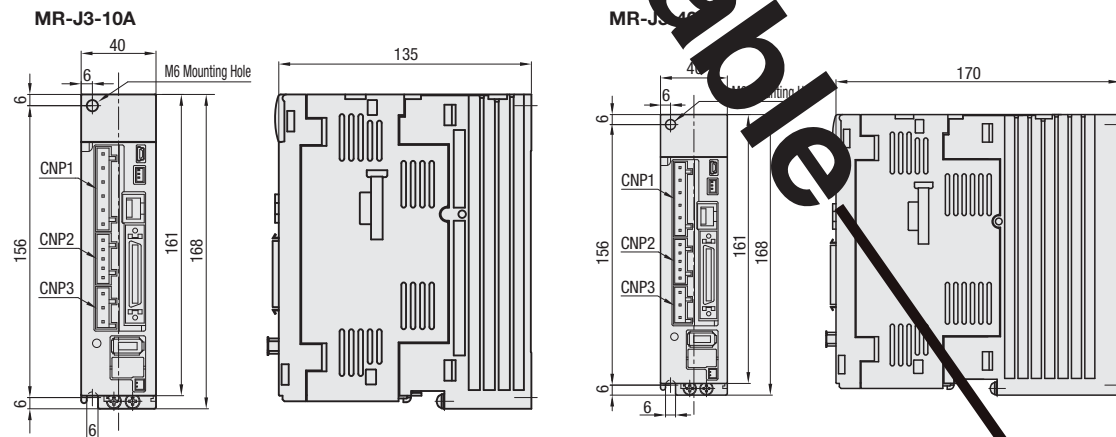
Amplifier & Driver Specifications / Setup Software (with USB Cable)

Mitsubishi Electric AC Servo MELSERVO-J3 Series

Amplifier Basic Specifications

Servo Amplifier Model		MR-J3-10A/MR-J3-40A
Main Circuit Power Supply	Voltage · Frequency	Three-phase / Single-phase AC200 ~ 230V / 50, 60Hz
	Allowable Voltage Fluctuations	Three-phase AC200 ~ 230V: Three-phase AC170 ~ 253V Single-phase AC200 ~ 230V: Single-phase AC170 ~ 253V
	Allowable Frequency Fluctuations	within ±5%
Control Circuit Power Supply	Voltage · Frequency	Single-phase AC200 ~ 230V / 50, 60Hz
	Allowable Voltage Fluctuations	Single-phase AC170 ~ 253V
	Allowable Frequency Fluctuations	within ±5%
Interface Power Supply	Input	30W
Regenerative Resistor Allowable Dissipation Power	Regenerative Resistor	DC24V±10% (Required Current Capacity: 300mA)
	Amplifier Built-in Resistor	10A: None 40A: 10W
Control Method	Dynamic Brake	Sine Wave PWM Control / Current Control Type Built-in
Protection Features		
Over current Cutoff, Regenerative Overvoltage Cutoff, Overload Cutoff (Electronic Thermal Protection), Servo Motor Over Temp. Protection, Encoder Error and Regenerative Error Protections, Low Voltage / Instantaneous Power Failure, Over speed and Excessive Error Protections		
Position Control Mode	Maximum Input Pulse Frequency	1Mpps (Differential Receiver), 200kpps (Open Collector)
	Position Feedback Pulse	Encoder Resolution: 262144p/rev
	Command Pulse Multiplication	Electronic Gear A/B ratio A=1 ~ 1048576, B=1 ~ 1048576/10<math>$$</math>
	In-position Range Setting	0 ~ ±10000pulse (Command Pulse Unit)
	Excess Error	±3 revolutions
Velocity Control Mode	Torque Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Max. Torque)
	Velocity Control Range	Analog Velocity Commands 1:2000, Internal Speed Commands 1:5000
	Analog Speed Command Input	DC 0 ~ ±10V/Rated Rotational Velocity
	Velocity Fluctuation Rate	±0.01% or less (Load Fluctuations 0 ~ 100%) 0% (Power Supply Fluctuations ±10%) ±2% or less (Ambient Temperature 25°C±10°C) Only by Analog Velocity Commands
Torque Control Mode	Torque Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Max. Torque)
	Analog Torque Command Input	DC 0 ~ ±8V/Max. Torque (Input Impedance 10 ~ 12kΩ)
	Velocity Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Rated Rotational Velocity)
Environment	Structure	IP00 (Cooling, Open)
	Ambient Temperature	Operating: -55°C (No freezing), Storage: -20 ~ 65°C (No freezing)
	Ambient Humidity	Operating: 5%RH or less (No condensation), Storage: 90%RH or less (No condensation)
	Ambience	Indoors (not direct sunlight), No corrosive gas, flammable gases, oil mist and dust
	Altitude	1000m or less above sea-level
Vibrations	5.0/s² (0.5g) or less	
Mass	10A: 1.2kg, 40A: 1.2kg	

External Dimensional Drawings



Setup Software (with USB Cable)

Used for Mitsubishi Electric AC Servo MELSERVO-J3 Series Amplifier gain adjustments.



Part Number	Cable Length	€ Unit Price
	3m	

Order Example

Part Number

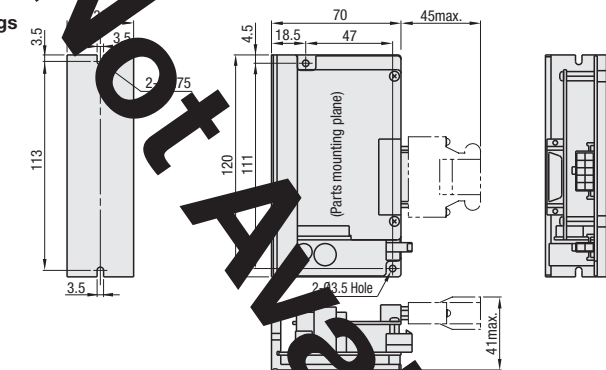
Days to Ship **8 Days**

Oriental Motor α -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 Features	When the following protection functions are activated, alarm signals are sent to bring motor to a non-regenerative stop. Overload, Overvoltage and Velocity Error protections, and Over speed, EEPROM data error, Sensor error and System error	
Input Signal	Opto-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	Opto-coupler · Open-collector output Interface Condition: DC30V · 15mA or less (In-Position, Alarm and Timing) Transistor · Open-Collector output Interface Conditions: DC30V, 15 mA or less (Feedback Pulse A/B-phase)	
Insulation Resistance	100MΩ or more measured at DC500V, by an Insulation Resistance Meter as shown below. · Heat sink - Power supply input terminals	
Dielectric Strength Voltage	No abnormality is observed when applied for 1 min. as follows. · Heat sink - Power supply input terminals 0.5kV 50Hz or 60Hz	
Operating Environment (In operation)	Ambient Temperature	0 ~ 40°C (No freezing)
	Ambient Humidity	85%RH or less (No condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

External Dimensional Drawings

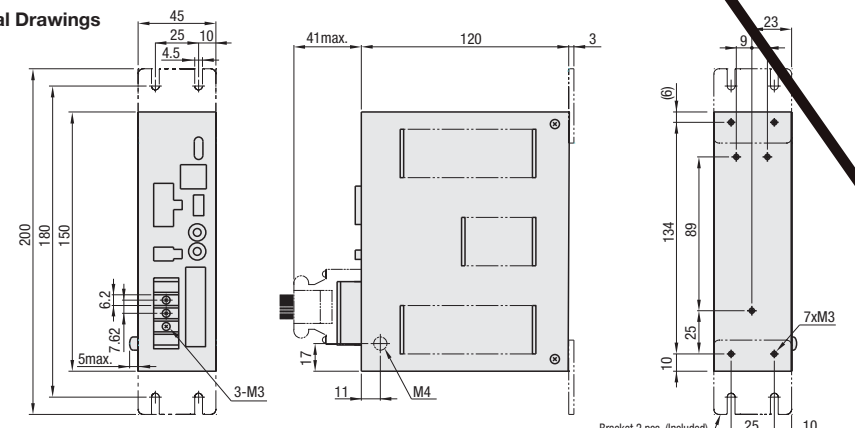


Oriental Motor α -Step AS46AA (MA) / AS66AAE (MAE)

Driver Basic Specifications

Input Power Supply	Single phase AC100-115V -15~+10% 50/60Hz	
Velocity · Position Control Commands	Pulse Input	
Maximum Input Pulse Frequency	250 kHz (When pulse duty is 50%)	
Protection Features	When the following protection functions are activated, alarm signals are sent to bring motor to a non-regenerative stop. Over Temp., Overload, Overvoltage, Velocity error and Over current protections, and EEPROM data error, Sensor error and System error	
Input Signal	Opto-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	Opto-coupler · Open-collector output External Use Conditions: DC30V, 15mA or less (In-position and Alarm) Transistor Open-collector output External Use Conditions: DC30V, 15 mA or less (Feedback Pulse A/B-phase) Line Driver Output 26C31 (Timing, Feedback Pulse A/B-phase)	
Insulation Resistance	100MΩ or more measured at DC500V, by an Insulation Resistance Meter as shown below. · Frame - Power supply input terminals · Signal I/O - Power supply input terminals	
Dielectric Strength Voltage	No abnormality is observed when applied for 1 min. as follows. · Frame - Power supply input terminals 1.5kV 50Hz or 60Hz · Signal - Power supply input output terminals 2.3kV 50Hz or 60Hz	
Operating Environment (In operation)	Ambient Temperature	0 ~ +50°C (No freezing)
	Ambient Humidity	85%RH or less (No condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

External Dimensional Drawings



Oriental Motor 5-phase Stepping Motors RK545AA (AMA) / RK566AAE (AMAE)

Driver Basic Specifications

Input Signal	Input Method	Opto-coupler input: Input resistance 220Ω, Input current 10 ~ 20 mA Opto-coupler "ON": +4.5 ~ 5V, Opto-coupler "OFF": 0 ~ +1V (Voltage between terminals)
	CW Pulse Signal (Pulse Signal)	CW direction step command signal (Step command for Step & Dir. input mode) is negative logic (low going) pulse, width 2.5μs or more, rise/fall time 2μs or less, pulse duty 50% or less. Motor will take one step when the pulse input goes from "ON" to "OFF". Max pulse frequency 200kHz (at 50% pulse duty)
	CCW Pulse Signal (Directional Signal)	CCW direction step command signal (Step & Dir. input mode: Dir. Opto-coupler ON=CW, OFF=CCW) is negative logic (low going) pulse, width 2.5μs or more, rise/fall time 2μs or less, pulse duty 50% or less. Motor will take one step when the pulse input goes from "ON" to "OFF". Max pulse frequency 200kHz (at 50% pulse duty)
Output Signal	Electromagnetic Brake Release Signal*	When Opto-coupler is "ON", electromagnetic brake is released to enable motor operation. When Opto-coupler is "OFF", electromagnetic brake is applied to hold the motor shaft.
	Step Angle Switch Signal	When Opto-coupler is "OFF", DATA1 is selected, when ON, DATA2 is selected.
	Output Type	Opto-coupler / Open-collector Output Interface Conditions: DC24V or less, 15mA or less
Functions	Excitation Timing Signal	When excitation sequence is at step "0", signal is sent. (Opto-coupler is "ON") Ex.) 0.72°/step (Divide by 1): Signal output every 10 pulses 0.072°/step (Divide by 10): Signal output every 100 pulses
	Over temp. Signal	Output is turned off when the driver's internal temperature rises to approximately 80°C (176°F) or above. (Opto-coupler: OFF)
Display (LED)	Automatic current reduction, automatic current OFF, step angle switch, pulse input method switch, electromagnetic brake function switch*, smooth drive function, power saving mode*	
Cooling Method	Power input, excitation timing signal output, over temp. signal output	
Insulation Resistance	Natural Air Cooled Method	
Dielectric Strength Voltage	100MΩ or more measured at DC500V by an Insulation Resistance Meter as shown below.	
	No abnormality is observed when applied for 1 min. as follows. (AC1.5kV/1.8kV 50Hz or 60Hz)	
Operating Environment (In operation)	Ambient Temperature	0 ~ +50°C (No freezing)
	Ambient Humidity	85%RH or less (No condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

* Motors with Electromagnetic Brake only

RK545AA (AMA)

RK566AAE (AMAE)

Recommended for use with Motor Driven Single Axis Actuator LX. A 3m long cable is included as the standard accessory; if different cable length is required, please order the cable separately. Other than listed on this page, FA Electronics Catalog lists more various items with Shield or custom alterations. For details, please see Wiring Parts and PC Parts FA Electronics Catalog 2009. P.1045 ~ 1047 (Cable for Mitsubishi Electric J3 Series) P.1101 (Cable for Oriental Motor)

Cable for Mitsubishi Electric J3 Series

Motor Power Cable / Brake Cable

When motor w/ brake is selected, please use both cables for power supply and brake. The cable is pulled out from the load side.

For Power Supply: Amplifier Side Configurable Length Motor Side 200mm

For Brake: Amplifier Side Configurable Length Motor Side 200mm

Cable Type	Part Number	Cable Type	Configurable Length (m)	Insulation Strip Length (Amplifier Side)	€ Unit Price		Applicable Actuators	Applicable Motor Type	Applicable Amplifier Type
					€ Unit Price	€ Unit Price/m			
For Power Supply		B (Movable)	0.2-30 (0.1mm Increment)	02S (200mm)			LXM20/26 LXM30 LXM45	A1: HF-KP053 (50W) A2: HF-KP13 (100W) A3: HF-KP43 (400W)	AM10:MR-J3-10A AM40:MR-J3-40A
For Brakes							LXM20/26 LXM30 LXM45	A1B: HF-KP053B (50W) A2B: HF-KP13B (100W) A3B: HF-KP43B (400W)	AM10:MR-J3-10A AM40:MR-J3-40A

Encoder Cable

Standard type: Configurable Length (Length: up to 10m)

Long Distance Amplifier-side Extension: (Length: up to 50m)

Long Distance Motor-side Extension: (Length: 0.3m)

The cable is pulled out from the load side. In the case of 10-50m, please use both long distance type amplifier side and motor side extension cables.

Cable Type	Part Number	Cable Type	Configurable Length (m)	€ Unit Price		Applicable Actuators / Motor Type / Amplifier Type		
				€ Unit Price	€ Unit Price/m			
Standard Type		B (Movable)	0.2-10 (0.1mm Increment)			LXM20/26 LXM30 LXM45	A1 (B): HF-KP053 (B) (50W) A2 (B): HF-KP13 (B) (100W) A3 (B): HF-KP13 (B) (400W)	AM10:MR-J3-10A AM40:MR-J3-40A
Long Distance Type Amplifier Side Extension		D (with Shield / for Flex Type)	10-50					
Long Distance Type Motor Side Extension		B (Movable)	0.3					

Cable for Oriental Motors

α Step Cable

Driver Side Configurable Length Motor Side

STPO-AS1B type has a lead wire exit.

Cable Number	Cable Type	Configurable Length (m)	€ Unit Price		Applicable Actuators / Motors / Motor - Driver Set Part Numbers		
			€ Unit Price	€ Unit Price/m			
1	B (Movable)	2-20 (0.1mm Increment)			LXM20/26 LXM30/45 LX30/45	T1/T2/T2B T3 T3B	ASC36AK/AS46AA/AS46MA AS66AAE AS66MAE

Cable for 5-phase Motor
(Dedicated Cable for Single Axis Actuator LX)

Cable for 5-phase Motor with Brake
(Dedicated Cable for Single Axis Actuator LX)

Configurable Length

Circuit numbers from joint side

Wire Color	Pin	Mark	Wire Color
White	1	BLUE	White
Red	2	RED	Red
Yellow	3	ORANGE	Yellow
Green	4	GREEN	Green
Black	5	BLACK	Black
		+M.BRAKE	Brown
		-M.BRAKE	White

Part Number	Cable Type	Configurable Length (m)	€ Unit Price		Applicable Actuators / Motors / Motor - Driver Set Part Numbers		
			€ Unit Price	€ Unit Price/m			
A (For Mounting)	B (Movable)	0.2-20 (0.1mm Increment)			LXM30 LXM45	T4B/T5B T5B	RK545AA/RK566AAE RK566AAE

Order Example: Part Number - Cable Type - Configurable Length - Insulation Strip Length*
B - 5 - 02S

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece

P. 88

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

Quantity	Discount Rate
1-9	5%
10-49	10%
50-99	10%
100-299	15%

Calculation Method: Basic € Unit Price + "€ Unit Price/m" x "Specified Length" = Product Price

Tolerance

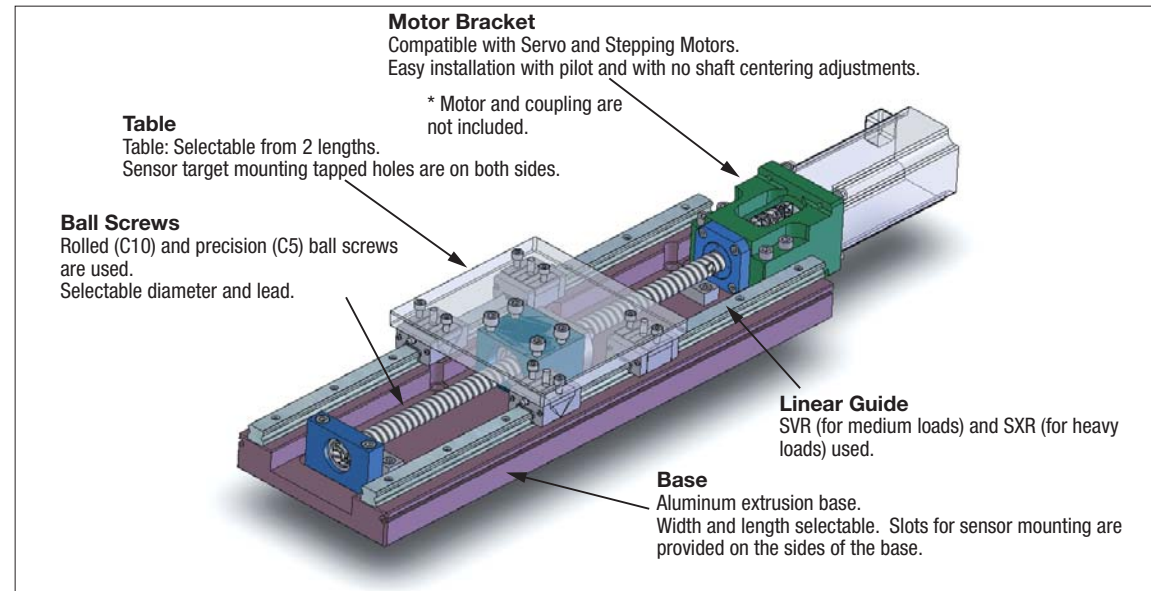
Configurable Length (m)	Tolerance
~0.9	+20mm
1-4	+50mm
4.1-50	+3% of length

Single Axis Units - Overview

KU Series for Environmental Measures

Single Axis Units best suited for high load transfer are shipped only at a part price and on the 13th day after order received! Rolled Ball Screw, Precision Ball Screw, Bellows and Cover Type are lined up!

Features



Single Axis Unit List

Shape	Type	Product Name	Features	Page
	KUA KUB	Rolled Ball Screw Type	Single Axis Unit Series Basic Type Rolled Ball Screw (C10) is used, and best suited for heavy load transfer.	P463
	KUH KUT	Precision Ball Screw Type	Precision Ball Screw (C5) is used. High Grade Type with improved precision and silent level.	P465
	KUAJ KUBJ	Bellows Type Rolled Ball Screw Type	Bellows compatible type (Bellows are sold separately) ☺ Bellows are sewn, and the body material is CR rubber. Coolants prevent intrusion of foreign objects, and response to special environments	P467
	KUAC KUBC KUHC KUTC	Cover Type Rolled - Precision Ball Screw Type	Cover is provided as standard equipment. Measures for intrusion of foreign objects and safety. Easy maintenance.	P469-472

Moment of Inertia · Mass

Part Number	Moment of Inertia (kg · cm ²)								Part Number	Weight (kg)											
	Type	No.	L=340	L=400	L=460	L=520	L=580	L=640		L=700	L=760	L=820	Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700
KUA KUB	12_ (S)	0.658	0.667	0.677	0.686	0.696	0.706	0.715	0.725	-	KUA KUB	12_ (S)	5.3	5.9	6.4	7.0	7.5	8.1	8.6	9.2	-
	15_	0.724	0.747	0.771	0.794	0.818	0.841	0.864	0.888	0.911		15_	6.5	7.2	7.8	8.5	9.2	9.9	10.6	11.3	11.9
	12_ L (S)	0.661	0.670	0.680	0.689	0.699	0.709	0.718	0.728	-		12_ L (S)	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	-
	15_ L	0.727	0.751	0.774	0.797	0.821	0.844	0.868	0.891	0.914		15_ L	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4
	20_ L	0.970	1.044	1.118	1.192	1.266	1.340	1.414	1.488	1.562	20_ L	11.4	12.5	13.6	14.7	15.8	16.9	18.0	19.1	20.2	

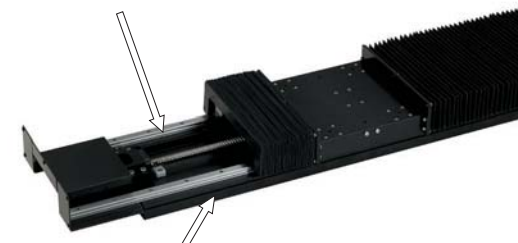
Bellows and Cover Types are now available for safe usage of Single Axis Units, meeting customers' work environments. Neither quotation nor delivery management are required. Maintenance fee will be considerably reduced.

Bellows Specifications (P467)

- **Safety:** Not only prevents dust and splashes but also prevents operators and clothing from being caught in the unit.
- **Easy:** Ordering procedure and installation are simple. Discussion over bellows specification is not required.
- **Reduction:** Easy to maintain. Longer operation time can be achieved with much fewer troubles.

○ Bellows keep from entry of foreign objects.
Protect unit components, and enable continuous machine operations under harsh conditions.

○ Bellows encloses the entire driving part.
· MISUMI's bellows are quality and highly-durable sewn bellows.
· MISUMI's Bellows feature smooth movement and low noise.



○ Easy Bellows installation with no complex adjustments.



○ Motor Bracket is applicable to each manufacturer's motors.
* Motor and coupling are not included.

⚠ Bellows are not included with this product. Please select bellows from P.468.

Cover Specifications (P.469 ~ 472)

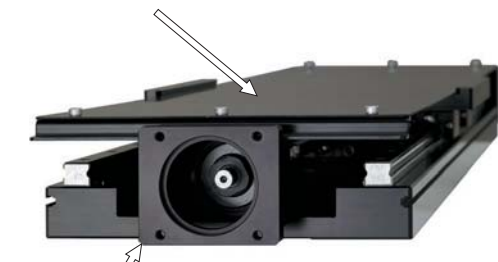
- **Economical:** Prevents components from falling off and dripping liquids. Protects machines economically.
- **Easy:** Easy procurement and installation. Easy machine cleaning and maintenance.
- **Reduction:** Reduced machine trouble. More advantages with less cost. Labor saving for customers.

○ Cover prevents intrusion of foreign objects.
Keeps out foreign objects to roll into the unit and they are easily swept off.

*Bellows Type is recommended for potential intrusion of foreign objects from side surfaces.



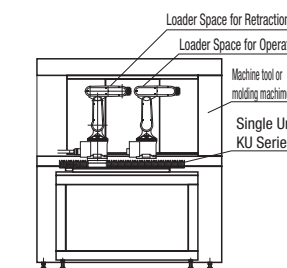
○ Easy Cover installation with no tricky adjustments.



○ Motor Bracket is applicable to each manufacturer's motors.
* Motor and coupling are not included.

Benefits from Bellows / Cover Specifications (Reference)

Cost reduction by 1620,00 EUR annually
With Bellows and Cover specifications, labor hours are reduced by 1/4
60 hrs for Routine Clean-up + 12 hrs for Scheduled Maintenance = 72 hrs
Annual Cost 1620,00 EUR (72 hrs x @30,00) => 2160,00 EUR
Adopting the specifications will reduce maintenance cost by 540,00 EUR
(Note) Annually accumulated hrs are indicated. @30,00 is hourly labor cost.



KU Series Application Examples-

KU Series are not only used for transfers but also served as a retractor for loaders.
Using retraction units saves enough space available for machine tool change-over, clean up and operators working in manufacturing area, and dramatically improves operation efficiency.

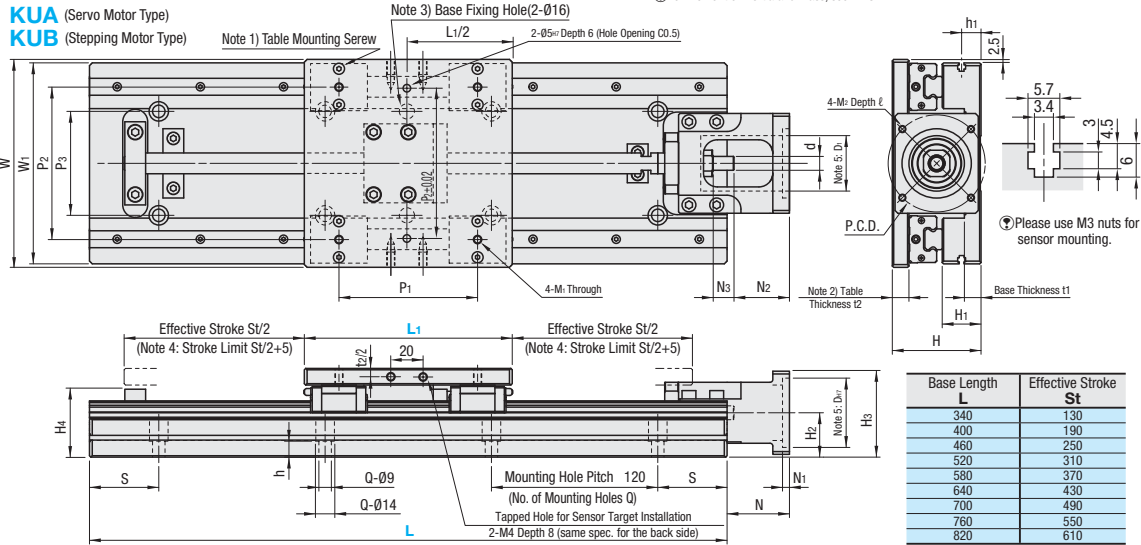


Single Axis Units -Rolled Ball Screw Type-

Features: Single Axis Units driven by rolled 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 work piece to the table, make sure that screw lengths are not longer than plate thickness "t2".
 - Note 3) Only when W=150 and L1=150 or W=200 and L1=150, 200, access hole is provided.
 - 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 D1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.
- ☑ For KUB Motor installation interface drawing and dimensions, please see the right-hand page.
☑ For moment of inertia and mass, see P461



Part	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing Housing	Stopper
Material	EN AW-6063/AlMg0.7Si-T6	EN AW-5052/AlMg2.5	EN AW-5052/AlMg2.5	EN AW-5052/AlMg2.5	1.1191/C45E	EN AW-5052/AlMg2.5	POM (White)
Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number	Type	No.	Selections		W Table Width	H Height	H1 Guide Height	H2 Shaft Center Height	Ball Screws		Linear Guides		Bearing		Coupling Application Examples	
			L Base Length	L1 Table Length					Part Number	Diameter	Lead	Part Number	Fixed Side (Support Units)	Support Side (Bearing Models)	KJA	KUB
KUA Servo Motor Driven Type	KUA	1204	340	100	150	55	21	28	12	4	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20	-
		1210														
		*1204S														
		*1210S														
		1505														
		1510														
		1520														
		1204L														
		1210L														
		*1204LS														
KUB Stepping Motor Driven Type	KUB	1204L	340	150	200	64	28	32	15	5	SX2R24	BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32	-
		1210L														
		*1204LS														
		*1210LS														
		1505L														
		1510L														
		1520L														
		2005L														
		2010L														
		2020L														

☑ For details, please see P660 ~ 664 for ball screws, P659 ~ 662 for Linear Guides, P694 for Support Units, P694 ~ 965 for Couplings. (Couplings are not included)
☑ Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number	Type	No.	Table				Base				Base Mounting Holes								* Motor Installation Interface (KUA)										
			W	t2	M1	P1	P2	W1	H1	t1	h1	P3	h	Q	S	P.C.D.	D	D1	H3	N	N1	N2	N3	d	M2	ℓ			
KUA Servo Motor Driven Type	KUA	1204 (S)	150	10	M6	110	145	42	10	13	75	9.5	L	W=150	W=200	340	50	40	80	20	46	30	34	49	37	32	8	M4	8
		1210 (S)																											
		1505																											
		1510																											
		1520																											
KUB Stepping Motor Driven Type	KUB	1204L (S)	200	12	M6	160	195	49	12	20	120	11.5	L	W=150	W=200	340	50	40	80	20	70	50	45	62	45	40	10	M5	10
		1210L (S)																											
		1505L																											
		1510L																											
		1520L																											

Order Example: Part Number - L - L1
KUA1204 - 340 - 150

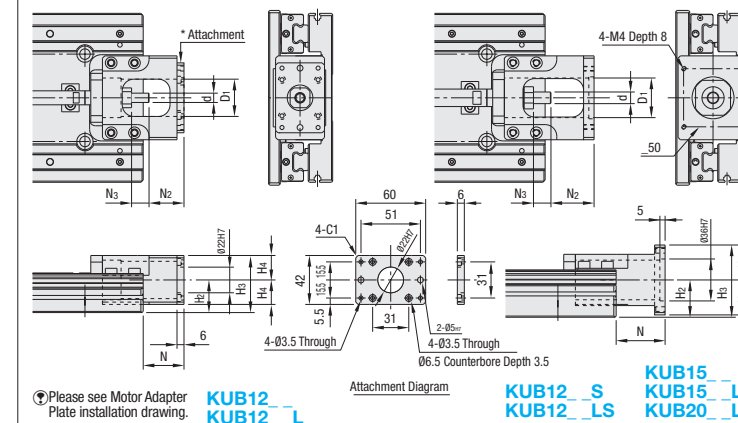


13 Days

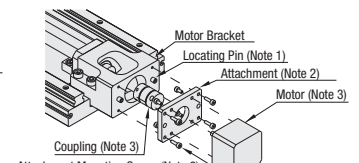
☑ For KUB Motor installation interface dimensions, please see the right-hand page.
☑ For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

CAD Data

KUB Motor Mounting Interface



Mounting Instruction (KUT12_(L))



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)								
	Type	No.	D1	H3	H4	N	N2	N3	d
KUB Stepping Motor Driven Type	12 (L)	33.5	49	21	35	30	-	-	8
	*12 (LS)	58	45	40	15	-	-	-	10
KUB Servo Motor Driven Type	15 (L)	62	43	38	-	-	-	-	10
	2005L	35.5	64	30	-	-	-	-	12
	2010L	70	58	40	18	-	-	-	-
	2020L	64	-	-	-	-	-	-	-

☑ KUB12_(L) flanged surface (H3 dimensions) protrudes downward from the base bottom surface by 2mm.

Price

Part Number	Type	€ Unit Price 1 ~ 2 unit(s)							
		L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760
1204									
1210									
*1204S									
*1210S									
1505									
1510									
1520									
1204L									
1210L									
*1204LS									
*1210LS									
1505L									
1510L									
1520L									
2005L									
2010L									
2020L									

Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle	
					Yasukawa Electric Corporation
KUA12_(L)	Mitsubishi Electric Corporation	HC-MFS13 HF-MP13	100 100	40	
	Sanyo Denki Co., Ltd.	R2AA04003F R2AA04005F R2AA04010F	30 50 100	40	
	Omron Corporation	R8M-W05030 R8M-W05030 R8M-W10030	50 50 100	40	
KUA15_(L) KUA20_L	Yasukawa Electric Corporation	SGMAH-02 SGMAH-04 HC-MFS23	200 400 200	60	
	Mitsubishi Electric Corporation	HC-KFS23 HF-MP23 HA-KP23 HC-MFS43	200 200 200 400	60	
		HC-KFS43 HF-MP43 HA-KP43	400 400 400	60	
		Sanyo Denki Co., Ltd.	R2AA06020F R2AA06040F	200 400	60
		Omron Corporation	R8M-W20030 R8M-W40030	200 400	60

Stepping Motor Application Table

Part Number	Manufacturers	Part Number	Flange Angle
KUB12_S KUB12_LS	Oriental Motor	5-phase RK56* (PK564) 5-phase RK56* (PK566) 5-phase RK56* (PK569)	60
		α Step AS66 / ASC66 α Step AS69 5-phase RK56* (PK564) 5-phase RK56* (PK566) 5-phase RK56* (PK569)	60

☑ Product numbers and specifications of motors are subject to change.
☑ Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

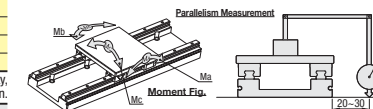
Alterations: Part Number - L - L1 - (KC - KLC...etc.)
KUA1204 - 340 - 150 - KC5
15 Days

Allowable Static Load · Moment

Part Number	Type	No.	Static Load Capacity(kg)		Table Length L1	Allowable Static Moment (N·m)			Table Length L1	Allowable Static Moment (N·m)		
			Horizontal	Vertical		Ma	Mb	Mc		Ma	Mb	Mc
KUA KUB	KUA KUB	1204 (S)	1679.0	138.0	100	401.5	401.5	858.1	150	783.8	783.8	858.1
		1210 (S)										
		1505										
		1510										
		1520										
		1204L (S)										
		1210L (S)										
		1505L										
		1510L										
		1520L										
KUB	KUB	2005L	2897.0	153.0	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
		2010L										
		2020L										
		2020L										

☑ The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).

☑ For moment of inertia and mass, see P461



Accuracy · Maximum Speed

Part Number	Type	No.	(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)									
					L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820	
KUA	KUA	1204 (S, LS)	±0.03	0.06	265	265	265	265	265	265	265	265	265	265
		1505 (L)												
		1510 (L)												
		1520 (L)												
		2005L												
KUB	KUB	1204L (S)	±0.05	0.07	651	651	651	651	651	651	651	651	651	651
		1210L (S)												
		1505L												
		1510L												
		1520L												

(1) Positioning Repeatability

Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "+" given is the measurement value.

(2) 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. (See the illustration above)

(3) Maximum Velocity

Values in the table 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.

Coupling Side Ball Screw End Face Machining

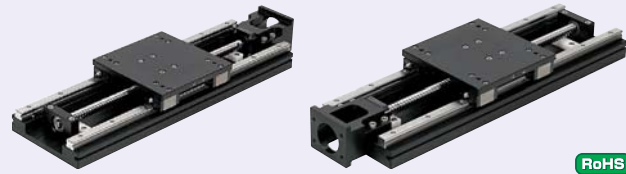
Alterations	Code	Spec	Price Adder
Keyway Machining on Fixed Side Shaft End Detailed Keyway Dimensions P651	KC	Keyway is machined. KC = 1mm Increments (Ordering Code) KC10	16,00
Keyway Machining on Fixed Side Shaft End	KLC	Keyway machining location can be specified. KCS = 1mm Increment (Ordering Code) KLC-KS-S2	16,00
A Flat Machined on Fixed Side Shaft End	SC	Set screw flat alteration SC = 1mm Increments (Ordering Code) SC7	8,00
A Flat Machined on Fixed Side Shaft End (2 Locations)	SWC	Two set screw flat alteration (at 90° location) JIS SWC = 1mm Increments (Ordering Code) JIS SWC	8,00

☑ KUA and KUB Sensor Set can be specified as an alteration. For details of alterations, see P473

Single Axis Units

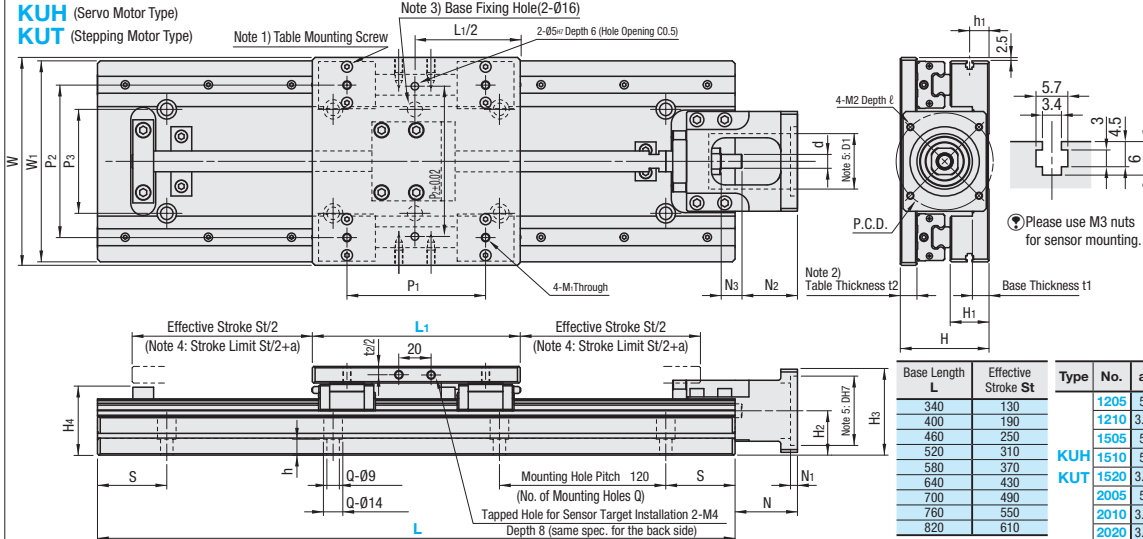
-Precision Ball Screw Type-

Features: Single Axis Units driven by precision ball screws. Improved accuracies and sound level.



- 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 work piece to the table, make sure that screw lengths are not longer than plate thickness "t2".
- Note 3) Only when W=150 and L1=150 or W=200 and L1=150-200, access hole is provided.
- 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 D1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.

☑ For KUT Motor installation interface drawing and dimensions, please see the right-hand page.



Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing Housing	Stopper
Material	EN AW-6063/AlMg0,7SiT6	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)
Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number	Selections		W	H	H1	H2	Ball Screws	Linear Guides		Bearing		Coupling Application Examples	
	L	L1						Part Number	Fixed Side (Support Units)	Support Side (Bearing Models)	KUH	KUT	
KUH Servo Motor Driven Type	1205	340	150	55	21	28	Precision Ball Screws	SV2R24	BRWE10	B608Z2	CPDW25	CPDW19	
	1210 (S)										MCSLC20		
	*1205S										-		
	*1210S										CPDW32		
	1505										MCSLC32		
KUT Stepping Motor Driven Type	1510	150	200	64	28	32	Precision Grade C5	SX2R24	BRWE12	B6000Z2	CPDW40	CPDW32	
	1520										MCSLC40		
	1205L										MCSLC32		
	1210L										CPDW19		
	*1205LS										MCSLC20		
KUH Servo Motor Driven Type	1510L	200	64	28	32	Precision Grade C5	SX2R28	BRWE15	B6002Z2	CPDW40	CPDW32		
	1520L										MCSLC40		
	2005L										CPDW32		
	2010L										MCSLC32		
	2020L										CPDW32		

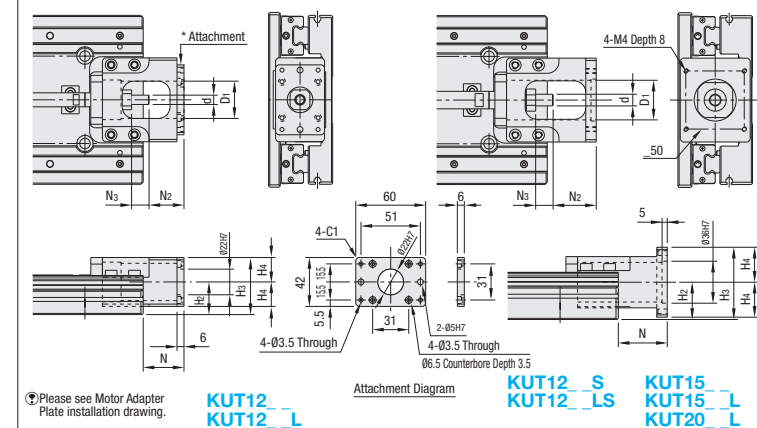
☑ For details, please see P660 ~ 664 for ball screws, P559 ~ 562 for Linear Guides, P694 for Support Units, P694 ~ 965 for Couplings. (Couplings are not included)
 ☑ Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number	Table	Base	Base Mounting Holes		* Motor installation interface (KUH)																																																									
			W	t2	M1	P1	P2	H4	t1	h1	P3	h	Q	S	P.C.D.	D	D1	H3	N	N1	N2	N3	d	M2	ℓ																																					
KUH Servo Motor Driven Type	150	12	M6	L1	P1	110	145	42	10	13	9.5	L	W=150	W=200	46	30	34	49	37	32	8	M4	8	10	10	10																																				
																											340	6	6	340	50	50	70	50	45	62	45	40	15	10	M5	10																				
																											400	6	8	400	80	20	46	30	34	49	37	5	32	8	M4	8	8																			
																											460	8	8	460	50	50	520	80	20	46	30	34	49	37	5	32	8	M4	8																	
																											520	8	10	520	80	20	580	10	10	580	10	10	640	10	12	640	80	20	700	-	12	700	-	50	760	-	14	760	-	20	820	-	14	820	-	50
KUT Stepping Motor Driven Type	200	12	M6	L1	P1	160	195	49	12	20	120	L	W=150	W=200	46	30	34	49	37	40	10	M5	10	10	10	10																																				
																											1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10	1510L	55	10						
																											1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10	1520L	61	10
																											2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10	2005L	61	10
																											2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10	2010L	61	10
2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10	2020L	61	10																											

* For KUT Motor installation interface dimensions, please see the right-hand page.

Order Example: Part Number - L - L1
 KUH1205 - 340 - 150
 Days to Ship: 13 Days
 Sensor Set can be specified as alterations. For details of alterations, see P473.

KUT Motor Installation Interface



Part Number	Type	€ Unit Price 1 ~ 2 unit(s)								
		L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
1205	KUH									
1210										
*1205S										
*1210S										
1505										
1510										
1520										
1205L										
1210L										
*1205LS										
*1210LS	KUT									
1505L										
1510L										
1520L										
2005L										
2010L										
2020L										

Servo Motor Application Table

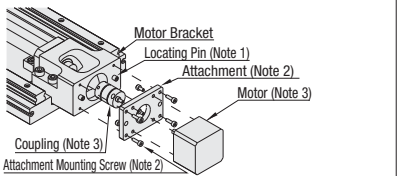
Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUH12_(L)	Yasukawa Electric Corporation	SGMAH-A3	30	40
		SGMAH-A5	50	
		SGMAH-D1	100	
		HC-MFS053	50	
		HF-MP053	50	
	Mitsubishi Electric Corporation	HC-MFS13	100	
		HF-MP13	100	
		R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
Sanyo Denki Co., Ltd.	R88M-W03030	30		
	R88M-W05030	50		
	R88M-W10030	100		
	SGMAH-02	200		
	SGMAH-04	400		
KUH15_(L)	Yasukawa Electric Corporation	HC-MFS23	200	60
		HC-MFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
	Mitsubishi Electric Corporation	HC-MFS43	400	
		HF-MP43	400	
		HA-KP43	400	
		R2AA06020F	200	
		R2AA06040F	400	
Sanyo Denki Co., Ltd.	R88M-W20030	200		
	R88M-W40030	400		
	R88M-W20030	200		
	R88M-W40030	400		
	R88M-W20030	200		

Stepping Motor Application Table

Part Number	Manufacturers	Part Number	Flange Angle	
KUT12_	Oriental Motor	α Step AS46 / ASC46	42	
		5-phase RK54* (PK543)		
		5-phase RK54* (PK544)		
		5-phase RK54* (PK545)		
		α Step AS66 / ASC66		
	KUH	5-phase RK56* (PK564)		60
		5-phase RK56* (PK566)		
		5-phase RK56* (PK569)		
		α Step AS66 / ASC66		
		α Step AS69		
KUT15_	Oriental Motor	α Step AS69	60	
		5-phase RK56* (PK564)		
		5-phase RK56* (PK566)		
		5-phase RK56* (PK569)		
		α Step AS69		

☑ Product numbers and specifications of motors are subject to change. Please check the manufacturers' information.
 ☑ Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

Motor Adapter Plate Installation Drawing (KUT12_(L))

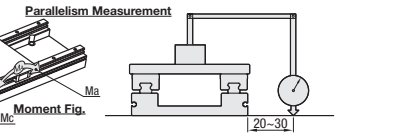


Part Number	Type	Motor Installation Interface (KUT)							
		No.	D1	H3	H4	N	N2	N3	d
12 (S)	KUH	12	33.5	49	21	35	30		8
*12 (S) (LS)		15	58	45	40		15	10	
2005L		35.5	64	30					
2010L		70	58	40	18	12			
2020L									

Allowable Static Load · Moment

Part Number	Type	No.	Static Load Capacity(kg)		Table Length L1	Allowable Static Moment (N·m)			Table Length L1	Allowable Static Moment (N·m)		
			Horizontal	Vertical		Ma	Mb	Mc		Ma	Mb	Mc
1205 (S)	KUH	1679.0	138.0	100	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
1210 (S)												
1505												
1510												
1520												
1205L (S)		2897.0	153.0	150	1677.8	1677.8	3008.9	2411.3	2103.7			
1210L (S)												
1510L												
1520L												
2005L												
2010L	169.0	150	1677.8	1677.8	3008.9	2411.3	2103.7					
2020L												

☑ The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).



Accuracy · Maximum Speed

Part Number	Type	No.	Repeatability Positioning Accuracy (mm)	Parallelism (mm)	(3) Max. Velocity (mm/s)								
					L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
1205 (S, L, LS)	KUH	1679.0	±0.003	0.06	486	486	486	-	-	-	-	-	-
1210 (S, L, LS)			0.07	972	972	972	972	611	-	-	-		
1505 (L)			0.07	389	389	389	389	374	-	-	-		
1510 (L)			0.08	778	778	778	778	749	-	-	-		
1520 (L)			0.09	520	520	520	520	520	292	292	292		
2005L		2897.0	150	±0.003	0.10	1556	1556	1556	1556	1498	-	-	-
1510L				0.12	640	640	640	640	640	583	583	583	
2005L				0.13	292	292	292	292	292	292	292	286	
2010L				0.14	760	760	760	760	760	760	760	517	
2020L				0.15	820	820	820	820	820	1167	1167	1167	

- Positioning Repeatability**
Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "±" given is the measurement value.
- 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. (See the illustration above.)
- Maximum Velocity**
Values in the table 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.

Moment of Inertia · Mass

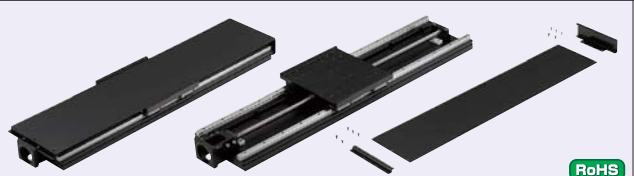
Part Number	Type	No.	Moment of Inertia (kg·cm²)							
			L=340	L=400	L=460	L=520	L=580	L=640	L=700	

Single Axis Units

-Rolled Ball Screw Type w/Cover-

CAD Data

Features: Single Axis Units come with cover as standard equipment to prevent entry of foreign objects.

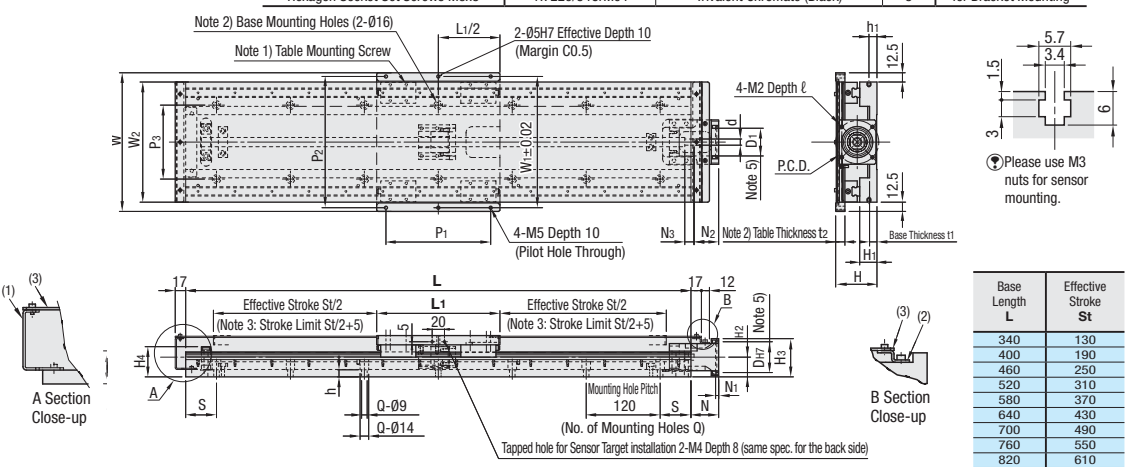


Note 1) The number of Table mounting screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
 Note 2) Only when W=170 and L1=150, or W=220 and L1=150 / 200, an access hole is provided.
 Note 3) Stroke limit is the stroke at the point of contact with the stopper.
 Note 4) Do not hang the unit inverted. The cover will sag large.
 Note 5) Some motor brackets have D dimensions smaller than D1.
 When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.

RoHS

KUAC (Servo Motor Type)
KUBC (Stepping Motor Type)

Accessory	Material	Surface Treatment	Qty.	Note
Bracket (1)	SECC	Electrodeposited Painting (Black)	1	-
Bracket (2)	SECC	Electrodeposited Painting (Black)	1	-
Cover (3)	EN AW-5052/AlMg2.5	Anodize (Black)	1	-
Hexagon Socket Set Screws M4x8	1.7220/34CrMo4	Trivalent Chromate (Black)	6	Screws for Covers
Hexagon Socket Set Screws M5x8	1.7220/34CrMo4	Trivalent Chromate (Black)	8	for Bracket Mounting



Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support-side Bearing Housing	Stopper
Material	EN AW-6063-T6	EN AW-5052/AlMg2.5	EN AW-5052/AlMg2.5	EN AW-5052/AlMg2.5	1.1191/C45E	EN AW-5052/AlMg2.5	POM (White)
Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number	Selection	W	H	H1	H2	Ball Screws		Linear Guides		Bearing		Coupling Application Examples Part No.					
						Type	Ø	Lead	Part Number	Fixed Side (Support Units)	Support Side (Bearing Models)	KUAC	KUBC				
KUAC Servo Motor Driven Type	1204	340	65	21	28	Rolled Ball Screws BSSZ	12	4	SV2R24	BRWE10	B608ZZ	CPDW25 MCSC25	CPDW19 MCSC20				
	1210	400	74	28	32									CPDW40 MCSC40	CPDW32 MCSC32		
	1510	460	74	28	32											CPDW40 MCSC40	CPDW32 MCSC32
	1520	520	74	28	32												
1204L	640	65	21	28	CPDW25 MCSC25	CPDW19 MCSC20											
1210L	700	74	28	32			CPDW40 MCSC40	CPDW32 MCSC32									
1505L	760	74	28	32					CPDW40 MCSC40	CPDW32 MCSC32							
1510L	820	74	28	32							CPDW40 MCSC40	CPDW32 MCSC32					
1520L	880	74	28	32	CPDW40 MCSC40	CPDW32 MCSC32											
2005L	89	39	40	CPDW40 MCSC40			CPDW32 MCSC32										
2010L	78	28	34					CPDW40 MCSC40	CPDW32 MCSC32								
2020L	89	39	40							CPDW40 MCSC40	CPDW32 MCSC32						
	78	28	34		CPDW40 MCSC40	CPDW32 MCSC32											

For details, please refer to P.660 ~ 664 for ball screws, P.559 ~ 562 for Linear Guides, P.694 for Support Units, P.694 ~ 965 for Couplings. (Couplings 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		* Motor Installation Interface (KUAC)																					
		W	t2	W1	P1 / P2	W2	H4	t1	h1	Ps	h	Q	S	P.C.D.	D	D1	H3	N	N1	N2	N3	d	M2	ℓ	
KUAC Servo Motor Driven Type	1204	20	20	170	159	42	10	13	9.5	46	30	34	49	37	32	8	M4	8							
	1210	22	22	170	159	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	1510	22	22	170	159	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	1520	22	22	170	159	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
KUBC Stepping Motor Driven Type	1204L	20	20	220	209	42	10	13	9.5	46	30	34	49	37	32	8	M4	8							
	1210L	22	22	220	209	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	1505L	22	22	220	209	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	1510L	22	22	220	209	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
KUBC Stepping Motor Driven Type	1520L	22	22	220	209	49	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	2005L	22	22	220	209	55	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	2010L	22	22	220	209	61	12	20	11.5	70	50	45	62	45	40	10	M5	10							
	2020L	22	22	220	209	55	12	20	11.5	70	50	45	62	45	40	10	M5	10							

* KUBC motor installation interface dimensions are the same as those of KUB. For details, see P.464

Cover Mounting Procedure

- 1) KUAC and KUBC are secured to device and table provided by customers.
- 2) Included brackets (1) and (2) are installed to the Single Axis Unit.
- 3) Lastly, secure included cover (3) to included brackets (1) and (2) installed in step 2).

Note) The graph and table indicate calculated values, and these may vary depending on operating conditions. Brackets (1) and (2), and cover (3) and mounting screws are included in the product package. Please install bracket cover by customer.

Purposes of Use: KUAC and KUBC Series are best served as protection against dropped small parts to damage components, and for the area in which does not allow dripping of adhesive agent and oil.

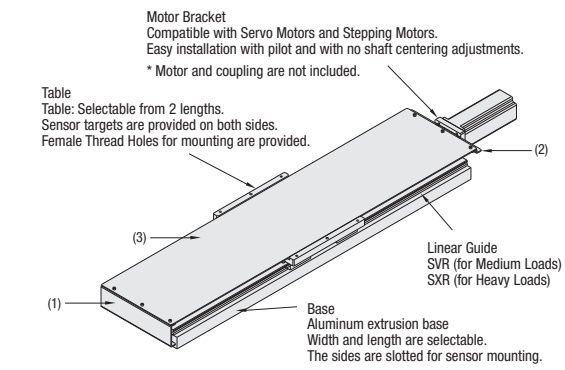


Part Number	Type	€ Unit Price 1 ~ 2 unit(s)								
		L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAC Servo Motor Driven Type	1204									
	1210									
	1505									
	1510									
	1520									
KUBC Stepping Motor Driven Type	1204L									
	1210L									
	1505L									
	1510L									
	1520L									

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUAC12_ (L)	Yasukawa Electric Corporation	SGMAH-A3	30	_40
		SGMAH-A5	50	
		SGMAH-01	100	
		HC-MFS053	50	
		HC-MFS13	100	
	Mitsubishi Electric Corporation	HF-MP053	50	
		HF-MP13	100	
		R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
Sanyo Denki Co., Ltd.	R88M-W03030	30		
	R88M-W05030	50		
	R88M-W10030	100		
	R88M-W20030	200		
	R88M-W40030	400		
KUAC15_ (L) KUAC20_ (L)	Yasukawa Electric Corporation	SGMAH-02	200	_60
		SGMAH-04	400	
		HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
	Mitsubishi Electric Corporation	HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
Sanyo Denki Co., Ltd.	R2AA06020F	200		
	R2AA06040F	400		
	R88M-W20030	200		
	R88M-W40030	400		
	R88M-W20030	200		



Allowable Static Load / Moment

Part Number	Type	No.	Static Load Capacity (kg)	Table Length	Allowable Static Moment (N · m)			Table Length L1	Allowable Static Moment (N · m)			
					Horiz.	Vertical	Ma		Mb	Mc	Ma	Mb
KUAC Servo Motor Driven Type	1204											
	1210		138.0									
	1505	1679.0		100	401.5	401.5	858.1	150	783.8	783.8	858.1	
	1510		153.0									
	1520											
KUBC Stepping Motor Driven Type	1204L											
	1210L											
	1505L	2897.0		150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7	
	1510L		153.0									
	1520L											

The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).

Accuracy / Maximum Speed

Part Number	Type	No.	(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)															
					L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820							
KUAC Servo Motor Driven Type	1204 (L)		±0.03	0.06	265	265	265	265	265	265	265	265	265	265	265	265	265	265	265	265
	1210 (L)		±0.05	0.07	651	651	651	651	651	651	651	651	651	651	651	651	651	651	651	651
	1505 (L)		±0.05	0.08	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264
	1510 (L)		±0.05	0.09	527	527	527	527	527	527	527	527	527	527	527	527	527	527	527	527
	1520 (L)		±0.05	0.10	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055
KUBC Stepping Motor Driven Type	1204L (L)		±0.03	0.06	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
	1210L (L)		±0.05	0.07	651	651	651	651	651	651	651	651	651	651	651	651	651	651	651	651
	1505L (L)		±0.05	0.08	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264
	1510L (L)		±0.05	0.09	527	527	527	527	527	527	527	527	527	527	527	527	527	527	527	527
	1520L (L)		±0.05	0.10	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055

- (1) Positioning Repeatability Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "±" given is the measurement value.
- (2) 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 (See the illustration above)
- (3) Maximum Velocity Values in the table 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 Unit-dedicated Sensor Set Alteration List

■ Sensor Set Alteration List

Types	Alterations	Code	Spec.	Price Adder
Proximity Sensor (SUNX-made)	KUA/KUB/KUH/KUT	A1 B1	Proximity Sensor set is included. A1 - A2 - A3→Proximity Sensor 3 units (made by SUNX: GX-F8A) B1 - B2 - B3→Proximity Sensor 3 units (made by SUNX: GX-F8B) A sensor set consists of the components listed in the table below.	113,00
	KUAC/KUBC/KUHC/KUTC	A2 B2		
	KUAJ/KUBJ	A3 B3		
Photo Sensor (SUNX-made)	KUA/KUB 12_/_/12_/_S/12_/_L(S)	C1	Photo Sensor set is included. C1 - C11→Photo Sensor 3 units (made by SUNX: PM-L24) A sensor set consists of the components listed in the table below.	69,00
	KUH/KUT 15_/_/15_/_L	C2		
	KUA/KUB 2005L/2020L	C3		
	KUH/KUT 2005L	C4		
	KUA/KUB 2010L	C5		
	KUH/KUT 2010L/2020L	C6		
	KUAC/KUBC 12_/_/15_/_ 12_/_L/15_/_L	C7		
	KUAC/KUBC 2005L/2020L	C8		
	KUHC/KUTC 2005L	C9		
	KUAC/KUBC 2010L	C10		
	KUHC/KUTC 2010L/2020L	C11		
Photo Sensor (made by OMRON)	KUA/KUB 12_/_/12_/_S/12_/_L(S)	D1	Photo Sensor set is included. D1 - D11→Photo Sensor 3 units (made by OMRON: EE-SX911-R1M) A sensor set consists of the components listed in the table below.	69,00
	KUH/KUT 15_/_/15_/_L	D2		
	KUA/KUB 2005L/2020L	D3		
	KUH/KUT 2005L	D4		
	KUA/KUB 2010L	D5		
	KUH/KUT 2010L/2020L	D6		
	KUAC/KUBC 12_/_/15_/_ 12_/_L/15_/_L	D7		
	KUAC/KUBC 2005L/2020L	D8		
	KUHC/KUTC 2005L	D9		
	KUAC/KUBC 2010L	D10		
	KUHC/KUTC 2010L/2020L	D11		

Components					
Sensor Target	Proximity Sensor	Mounting Bracket	Sensor Mounting Screw	Sensor Mounting Nut	Sensor Target Screw
1 pc.	3 Pcs.	3 Pcs.	3 Pcs.	3 Pcs.	2 pcs.

Ordering Code A1

Components				
Sensor Target	Photo Sensor	Sensor Bracket	Sensor Mounting Screw	Sensor Mounting Washer
1 pc.	3 Pcs.	3 Pcs.	6 pcs.	6 pcs.

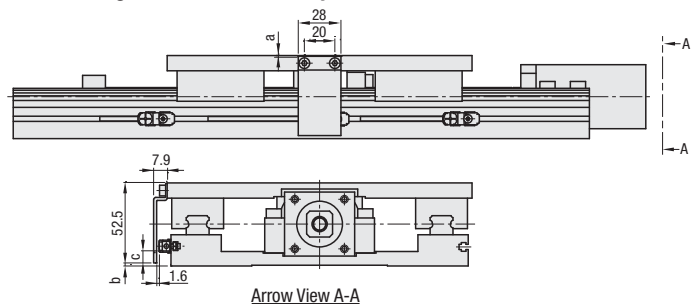
Ordering Code C1

Components			
Sensor Mounting Spring Washer	Sensor Target Screw	Bracket Mounting Screw	Bracket Mounting Nut
6 pcs.	2 pcs.	6 pcs.	6 pcs.

Ordering Code D1

Alterations Part Number - L - L1 - (A1, B1...etc.) Days to Ship **13 Days**

■ Standard Single Axis Unit - Proximity Sensors

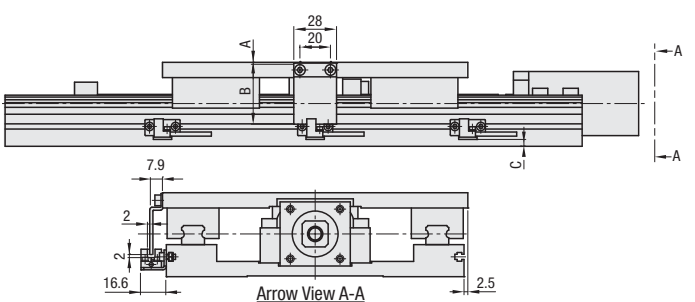


■ Standard - Proximity Sensor Dimension Table

Applicable Models	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 KUHC/KUTC 2005L		1.5	14	2.05
KUA/KUB 2010L KUHC/KUTC 2010L/2020L		1.5	25	0.05

KUA / KUB Series P463
KUHC / KUTC Series P465

■ Standard Single Axis Unit - Photo Sensors

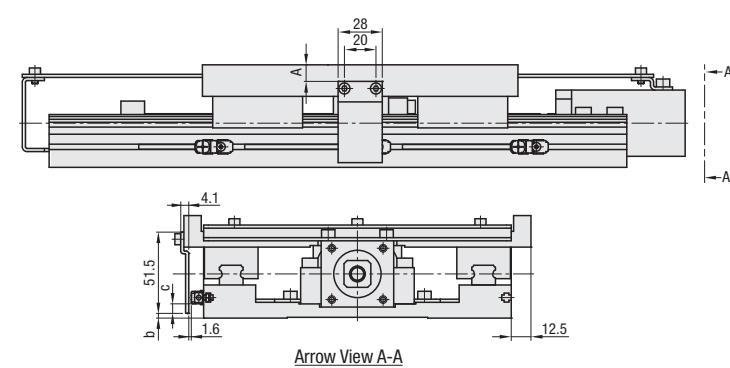


■ Standard - Photo Sensor Dimension Table

Applicable Models	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 KUHC/KUTC 2005L	C3 D3	1.5	45	11.5
KUA/KUB 2010L KUHC/KUTC 2010L/2020L	C4 D4	1.5	47	20.5

KUA / KUB Series P463
KUHC / KUTC Series P465

■ Single Axis Unit w/Cover - Proximity Sensors

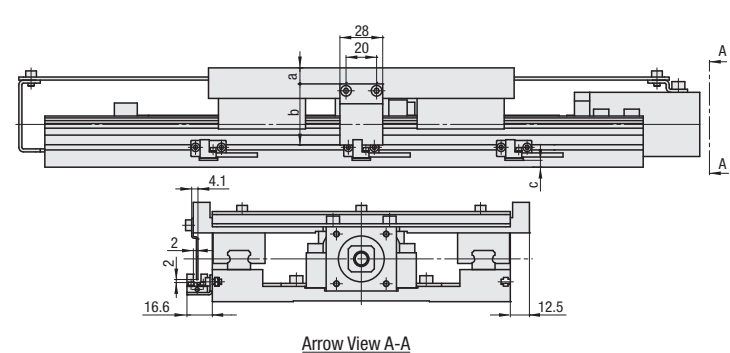


■ Cover Specification Proximity Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAC/KUBC/KUHC/KUTC 12_/_/12_/_S/12_/_L(S)	A2 B2	10.5	3	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 P469
KUHC / KUTC Series P471

■ Single Axis Unit w/Cover - Photo Sensors

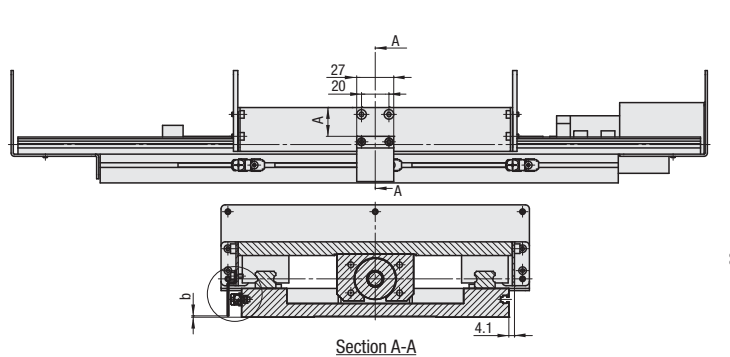


■ Cover Specification Photo Sensor Dimension Table

Applicable Models	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 P469
KUHC / KUTC Series P471

■ Single Axis Unit w/Bellows - Proximity Sensors

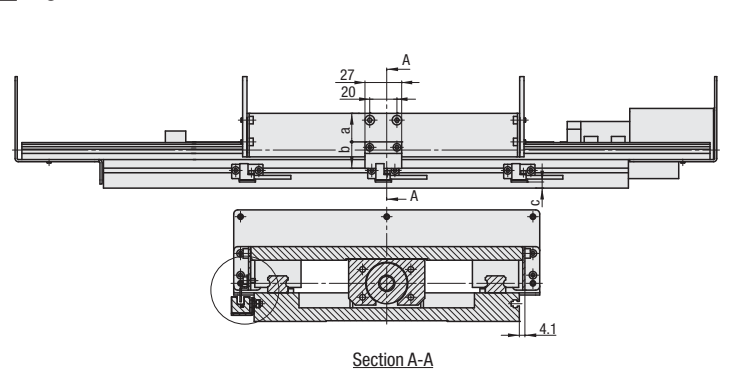


■ Bellows Specifications Proximity Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAJ/KUBJ 12_/_/12_/_L	A3 B3	21	1	8.05
KUAJ/KUBJ 15_/_/15_/_L		22	9	7.05
KUAJ/KUBJ 2005L/2020L		21	14	2.05
KUAJ/KUBJ 2010L		21	25	0.05

KUAJ / KUBJ Series P467

■ Single Axis Unit w/Bellows - Photo Sensors



■ Bellows Specification Photo Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAJ/KUBJ 12_/_/12_/_L	C8 D8	21	19.5	4.5
KUAJ/KUBJ 15_/_/15_/_L	C9 D9	22	20.5	11.5
KUAJ/KUBJ 2005L/2020L	C10 D10	21	25.5	11.5
KUAJ/KUBJ 2010L	C11 D11	21	27.5	20.5

KUAJ / KUBJ Series P467



Pneumatic Module Units (Vertical)

Spec. Change

Printed in Purple

Price Reduction

Up to 15%

CAD Data

Air control module unit that requires no basic designing. To be used in vertical position for operations such as pressurization cutting and push motion.

RoHS

Specifications List

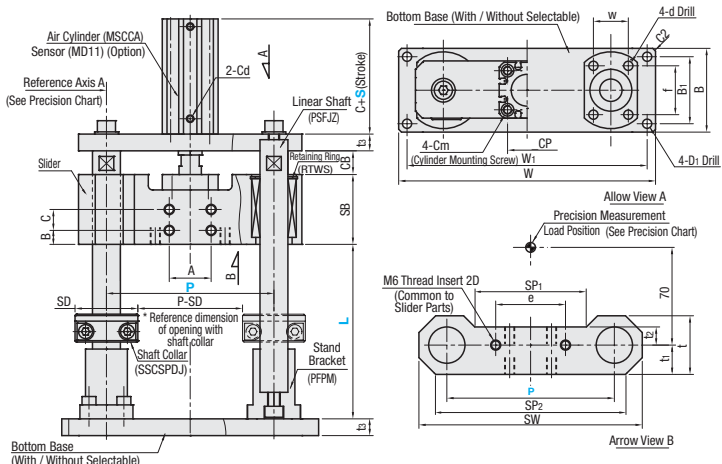
Part Number	Specifications
Type	No. Cylinder Base
MAT25	NN (S) N (w/o) N (w/o)
MAT32	NB (S) N (w/o) B (w/)
MAT40	CN (S) C (w/) N (w/o)
MAT63	CB (S) C (w/) B (w/)

Components

Parts	Base	Slider	Related Connecting Parts
Material	EN AW-6063/AlMg0.7Si	EN AW-6063/AlMg0.7Si	JIS SUS
Surface Treatment	White Alumite	White Alumite	-

1) Possible to select the unit without a cylinder and mount other manufacturer's cylinder.
 2) Compatible cylinder diameters are Ø25, Ø32, Ø40, Ø50 and Ø63.
 3) MAT25 is the only option for S Type. (MAT25 (S))
 4) S Type shaft diameter is Ø16. (See the Components List below)

MAT25
MAT32
MAT40
MAT50
MAT63



Module Components

Part Number	Component Name
Type	No. Cylinder Linear Shafts Floating Joints Linear Bushings Retaining Rings Shaft Collars Stand Brackets
MAT25	NN · NBS CNS · CBS NN · NB CN · CB MSCCA25 PSFJZ16 (Shaft Dia. 16) FJUCS10 LMU16 RTWS28 SSCSPDJ16 PPFM16
MAT32	NN · NB CN · CB MSCCA32 PSFJZ20 (Shaft Dia. 20) FJUCS14 LMU20 RTWS32 SSCSPDJ20 PPFM20
MAT40	NN · NB CN · CB MSCCA40 PSFJZ25 (Shaft Dia. 25) FJUCS14 LMU25 RTWS40 SSCSPDJ25 PPFM25
MAT50	NN · NB CN · CB MSCCA50 PSFJZ25 (Shaft Dia. 25) FJUCS18 LMU25 RTWS40 SSCSPDJ25 PPFM25
MAT63	NN · NB CN · CB MSCCA63 PSFJZ25 (Shaft Dia. 25) FJUCS18 LMU25 RTWS40 SSCSPDJ25 PPFM25

For details of the components above, please confirm on the relevant catalog pages.

Part Number	Selections	Slider Dimensions	Stand Mounting Dimensions	Base Dimensions (When type with base is selected.)	
Type	No. S P L (Specified in 10mm Increments) CB C CP Cm Cd SB	d f w	ts D1	SD	
MAT25	NN (S) NB (S) CN (S) CB (S) 120 Only	17 28 5 50	When MAT25(S) is selected 5.5 32 20 When MAT25 is selected 6.6 35 25	6.6 S 35	40
MAT32	NN NB CN CB 150 200	27 34 5 68	9 45 35	12 9	45
MAT40	NN NB CN CB 30 50	39.5 40 6 68	9 45 35	12 9	45
MAT50	NN NB CN CB 200	40.5 50 8 72	9 45 35	15 11	45
MAT63	NN NB CN CB 200	46 60 10 72	9 45 35	15 11	45

Order Example: Part Number - S - P - L - Alterations
MAT25NN - 30 - 120 - 180 - NSC

Days to Ship: 13 Days

Alterations: Part Number - S - P - L - (NSC · AS)
MAT25NN - 30 - 120 - 180 - NSC

Alteration	Code	Spec.	Price Adder
Without Shaft Collar	NSC	Excluding Shaft Collar	-10.00 MAT25 -13.00 MAT32, 40, 50, 63 -14.00
With Auto Switches	AS	Auto switches are included. Part Number MD11L3 2 pcs. Only applicable for cylinder units.	+41.00

Price

Part Number	Type	No.	€ Unit Price 1 - 4 unit(s)											
			Cylinder Stroke S=30						Cylinder Stroke S=50					
			L=120-200		L=210-250		L=260-300		L=160-200		L=210-250		L=260-300	
MAT25	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT32	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT40	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT50	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT63	NNS	120	150	200	120	150	200	120	150	200	120	150	200	

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Part Number	Type	No.	Mass (kg)											
			Cylinder Stroke S=30						Cylinder Stroke S=50					
			L=120-200		L=210-250		L=260-300		L=160-200		L=210-250		L=260-300	
MAT25	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT32	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT40	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT50	NNS	120	150	200	120	150	200	120	150	200	120	150	200	
MAT63	NNS	120	150	200	120	150	200	120	150	200	120	150	200	

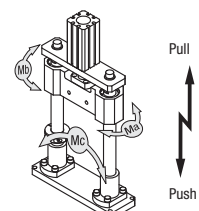
Speed · Load Capacity · Force · Allowable Moment

Type	P Slider Pitch	Slider Mass (Incl. Joint)	Maximum Speed (mm/s)	Load Capacity (kN)	Cylinder Thrust Force Reference Value (kN)								Allowable Static Moment (N·m)																												
					at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa		Ma	Mb	Mc																										
					Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke																													
MAT25 (S)	120	0.9	500	0.08	0.15	0.20	0.19	0.25	0.23	0.30	0.26	0.34	3.6	3.6	5.9																										
MAT25	120	0.9														500	0.13	0.24	0.32	0.30	0.40	0.36	0.48	0.42	0.56	7.7	7.7	9.8													
MAT32	150	1.8																											500	0.22	0.42	0.50	0.53	0.63	0.63	0.75	0.74	0.88	7.7	7.7	13.1
MAT40	200	2.6																																							
MAT50	200	2.8	500	0.59	1.12	1.25	1.40	1.56	1.68	1.87	1.96	2.18	7.7	7.7	13.1																										
MAT63	200	2.8														500	0.59	1.12	1.25	1.40	1.56	1.68	1.87	1.96	2.18	7.7	7.7	13.1													

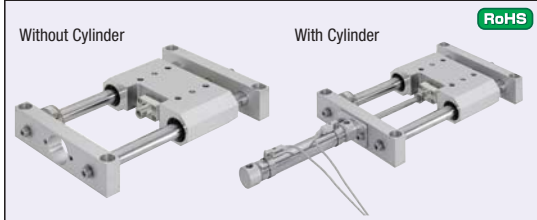
Accuracy

Part Number	Running Parallelism to Reference Axis (Upright)					
	Under No Load			Under Load (reference)		
	Slider Pitch					
MAT25 (S)	120	150	200	120	150	200
MAT25	0.07	0.07	0.07	0.10	0.10	0.10
MAT32	0.07	0.07	0.07	0.10	0.10	0.10
MAT40	0.07	0.07	0.07	0.10	0.10	0.10
MAT50	0.07	0.07	0.07	0.10	0.10	0.10
MAT63	0.07	0.07	0.07	0.10	0.10	0.10

- Measurement reference is Axis A.
- Put surface "e" under load, apply 3kg mass in the position of 70mm from the shaft center, and measure.
- Accuracy does not vary by difference in cylinder stroke.
- Running parallelism values are for reference only.



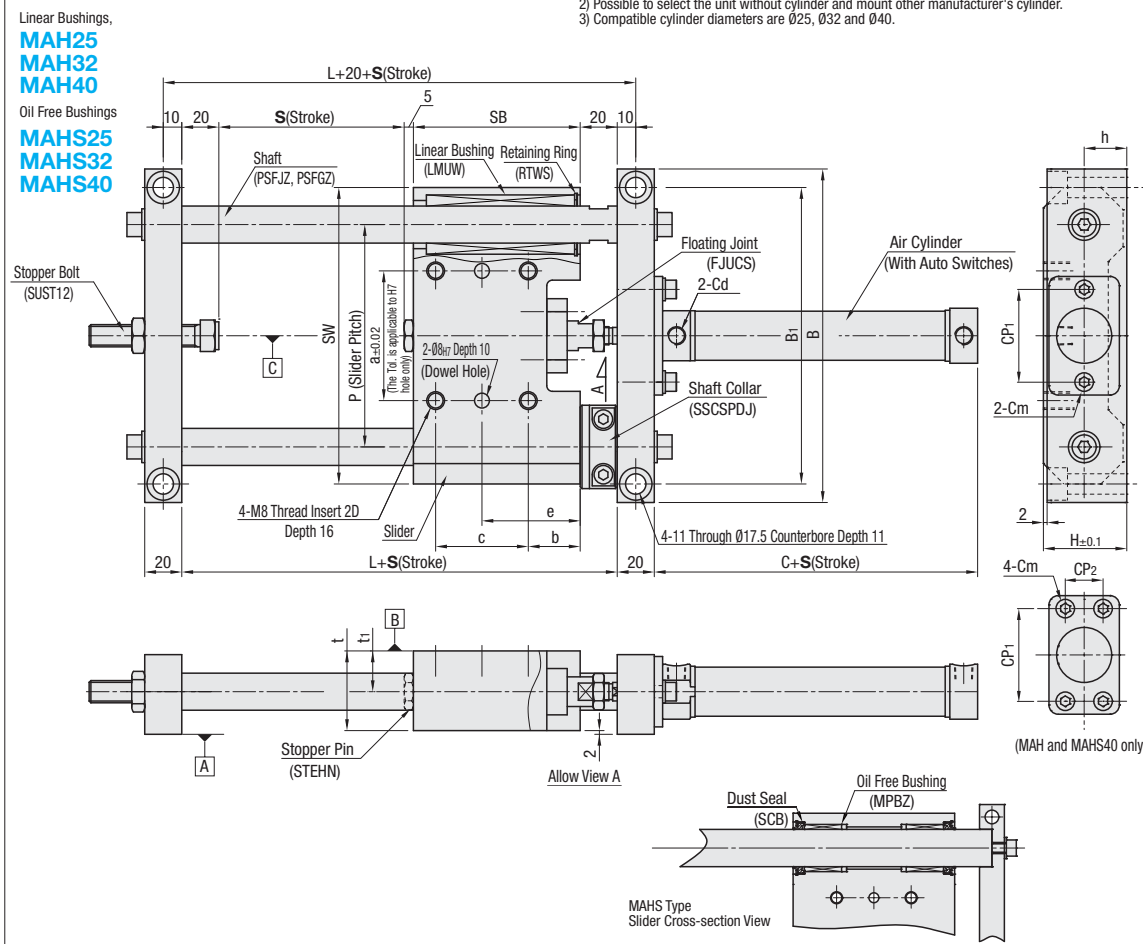
Standardized module unit of vacuum equipments. Can be used both in horizontal and vertical positions for work conveyance and transfer.



RoHS

Specifications List			Components			
Part Number	Type	Specifications	Parts	Base	Slider	Related Connecting Parts
MAH25	N	N (w/o)	Material	EN AW-6063/AlMg0,7Si	EN AW-6063/AlMg0,7Si	SUS
MAH32	C	C (w/)				
MAHS25	N	N (w/o)	Surface Treatment	Clear Anodize	Clear Anodize	-
MAHS32	C	C (w/)				
MAHS40	C	C (w/)				

- 1) No auto switch is included for Cylinder Units.
- 2) Possible to select the unit without cylinder and mount other manufacturer's cylinder.
- 3) Compatible cylinder diameters are Ø25, Ø32 and Ø40.



Module Components

Part Number	Type	No.	Cylinder	Floating Joints	Shaft	Component Name		Stopper Bolts	Stopper Pins	Shaft Collars
						MAH25/32/40 Linear Bushings	MAHS25/32/40 Oil Free Bushings			
MAH25	N	-	-	FJUCS10	PSFJZ20	LMUW20	MPBZ20-30	SUST12-60	STEHN17	SSCSPDJ20
MAHS25	C	-	Ø25 Pen-shaped	FJUCS10	PSFGZ20	LMUW25	MPBZ25-30	SUST12-60	STEHN17	SSCSPDJ25
MAH32	N	-	-	FJUCS10	PSFJZ25	LMUW30	MPBZ30-30	SUST12-60	STEHN17	SSCSPDJ30
MAHS32	C	-	Ø32 Pen-shaped	FJUCS10	PSFGZ25	LMUW30	MPBZ30-30	SUST12-60	STEHN17	SSCSPDJ30
MAH40	N	-	-	FJUCS14	PSFJZ30	LMUW30	MPBZ30-30	SUST12-60	STEHN17	SSCSPDJ30
MAHS40	C	-	Ø40 Pen-shaped	FJUCS14	PSFGZ30	LMUW30	MPBZ30-30	SUST12-60	STEHN17	SSCSPDJ30

Pages on Catalog Original P2-1406 P115 P279 P331 P1427 P1425 P250

Part Number	Type	No.	Selections S (Stroke)	P (Slider Pitch)	H	L	B	B1	C	Cd	CP1	CP2	Cm	h	SW	SB	t	t1	Slider Mounting Hole Locations			
																			a	b	c	e
MAH25	N	-	100	120	48	135	180	160	-	-	60	-	-	23	160	90	46	25	70	28	50	53
MAHS25	C	-	150	120	48	135	180	160	66	Rc1/8	60	-	-	23	160	90	46	25	70	28	50	53
MAH32	N	-	200	150	54	165	220	200	-	-	60	-	6	27	200	120	52	27	90	30	60	60
MAHS32	C	-	250	150	54	165	220	200	68	Rc1/8	60	-	6	27	200	120	52	27	90	30	60	60
MAH40	N	-	300	200	62	175	270	250	-	-	66	36	-	30	256	130	60	32	120	35	60	65
MAHS40	C	-	350	200	62	175	270	250	93	Rc1/4	66	36	-	30	256	130	60	32	120	35	60	65

For size selections please see Price List.

Order Example
Part Number - S
MAH25N - 250
MAHS40C - 300

Days to Ship
13 Days

Price

Alterations

Part Number - S - (NSC · CSA · AS)
MAH25N - 200 - NSC

Alterations	Code	Spec.	Price Adder
Without Shaft Collar	NSC	Excluding Shaft Collar	MAH 0,25 -13,00 0,32 -14,00 0,40 -14,00
Stopper Alteration	CSA	Change to shock absorber from stopper bolt	+60,00
With Auto Switches	AS	Auto switches are included. Part Number MSRCS 2 pcs. Only applicable to cylinder units.	+35,00

MAH (Linear Bushings Type)

Part Number	Type	No.	€ Unit Price 1 ~ 4 unit(s)						
			Stroke						
MAH25	N	-	100	150	200	250	300	350	400
	C	-							
MAH32	N	-							
	C	-							
MAH40	N	-							
	C	-							

MAHS (Oil Free Bushings Type)

Part Number	Type	No.	€ Unit Price 1 ~ 4 unit(s)						
			Stroke						
MAHS25	N	-	100	150	200	250	300	350	400
	C	-							
MAHS32	N	-							
	C	-							
MAHS40	N	-							
	C	-							

With Shock Absorbers (Changed from stopper bolt as alteration)

Orifice Type	Screw Shaft Dia.	Stroke mm	Max. Absorbed Energy J (kgf·m)	Max. Absorbed Energy Per Min. J/min (kgf·m/min)	Max. Mass kg	Collision Velocity Range m/s	Max. Resistance Value N (kgf)	Max. Operating Cycle min ⁻¹	Operating Temp. Range °C	Piston Rod Return Force N (kgf)
Single Orifice	M20x1.5	16	29.4 (3.0)	343 (35)	300	0.3~1	3528 (360)	60	-5~70	18.1 (1.84) or less

Mass

Part Number	Type	No.	Weight (kg)						
			Stroke 100	Stroke 150	Stroke 200	Stroke 250	Stroke 300	Stroke 350	Stroke 400
MAH25	N	-	3.7 (3.7)	4.0 (4.0)	4.2 (4.2)	4.5 (4.5)	4.7 (4.7)	-	-
MAHS25	C	-	4.2 (4.2)	4.5 (4.5)	4.8 (4.8)	5.1 (5.1)	5.4 (5.4)	-	-
MAH32	N	-	-	6.9 (6.9)	7.2 (7.3)	7.6 (7.7)	8.0 (8.1)	8.4 (8.5)	-
MAHS32	C	-	-	7.5 (7.6)	8.0 (8.0)	8.4 (8.5)	8.9 (9.0)	9.4 (9.4)	-
MAH40	N	-	-	-	10.7 (10.9)	11.2 (11.5)	11.8 (12.0)	12.3 (12.6)	12.9 (13.1)
MAHS40	C	-	-	-	11.8 (12.1)	12.5 (12.8)	13.2 (13.4)	13.8 (14.1)	14.5 (14.7)

Speed · Allowable Load · Allowable Moment · Thrust Force · Running Parallelism

Type	Slider Pitch Dist. P	Max. Speed (mm/s)	Load Capacity (kN)	Allowable Static Moment (N·m)			Cylinder Thrust Force Reference Value (kN)								Surface B with respect to surface A Running Parallelism	Dowel hole with respect to surface C Running Parallelism
				Ma	Mb	Mc	at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa			
							In-stroke	Out-stroke	In-stroke	Out-stroke	In-stroke	Out-stroke	In-stroke	Out-stroke		
MAH25	120	500	0.51	11.2	11.2	16.8	0.17	0.20	0.21	0.25	0.25	0.30	0.29	0.34	0.07	0.07
MAH32	150	500	0.57	18.1	18.1	24.2	0.28	0.32	0.35	0.40	0.42	0.48	0.48	0.56	0.07	0.07
MAH40	200	500	0.91	34.5	34.5	56.1	0.44	0.50	0.55	0.63	0.66	0.75	0.77	0.88	0.07	0.07

Speed · Allowable Load · Allowable Moment · Thrust Force · Running Parallelism

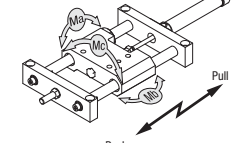
Type	Slider Pitch Dist. P	Max. Speed (mm/s)	Load Capacity (kN)	Allowable Static Moment (N·m)			Cylinder Thrust Force Reference Value (kN)								Surface B with respect to surface A Running Parallelism	Dowel hole with respect to surface C Running Parallelism
				Ma	Mb	Mc	at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa			
							In-stroke	Out-stroke	In-stroke	Out-stroke	In-stroke	Out-stroke	In-stroke	Out-stroke		
MAHS25	120	500	7.7	150	150	188	0.17	0.20	0.21	0.25	0.25	0.30	0.29	0.34	0.15	0.15
MAHS32	150	500	9.7	333	333	294	0.28	0.32	0.35	0.40	0.42	0.48	0.48	0.56	0.15	0.15
MAHS40	200	500	11.6	526	526	470	0.44	0.50	0.55	0.63	0.66	0.75	0.77	0.88	0.15	0.15

*1) Allowable load is for unit used in horizontal position. When unit used in vertical position multiply the given values by 0.6 to obtain reference load. 2) Running parallelism values are for reference only.

Reference Deflection when Loaded

Type	Load that creates 0.1mm deflection when stroked (N)						
	Stroke						
MAH25 · MAHS25	100	150	200	250	300	350	400
MAH25 · MAHS25	1941	1074	661	435	302	-	-
MAH32 · MAHS32	-	1941	1248	849	603	444	-
MAH40 · MAHS40	-	-	2386	1639	1174	869	662

Allowable Moment

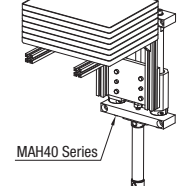
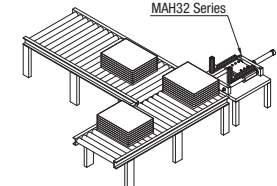
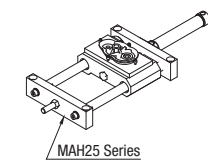


Example

Workpiece Transfer
Possible to transfer parts ranging from small and light to large and heavy parts

Pallet Transfer
Simple and convenient structure advantages of pneumatic equipment saves labor of installing add-on parts.

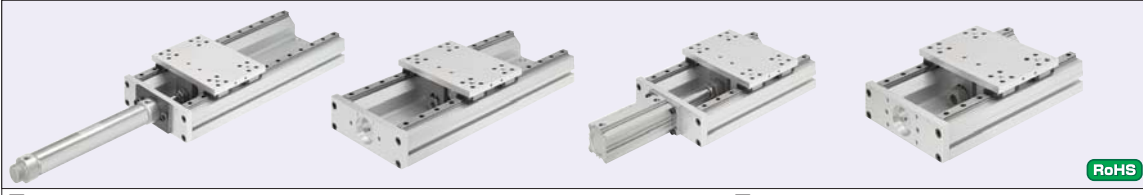
Return Conveyor Lift
Used for lifts in vertical installation





Pneumatic Module Units (Linear Guides)

CAD Data

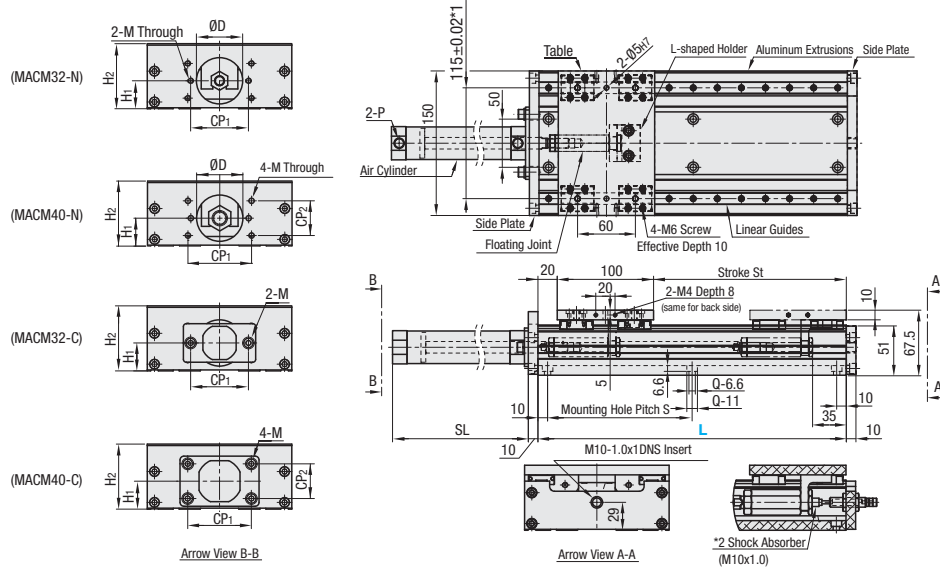


RoHS

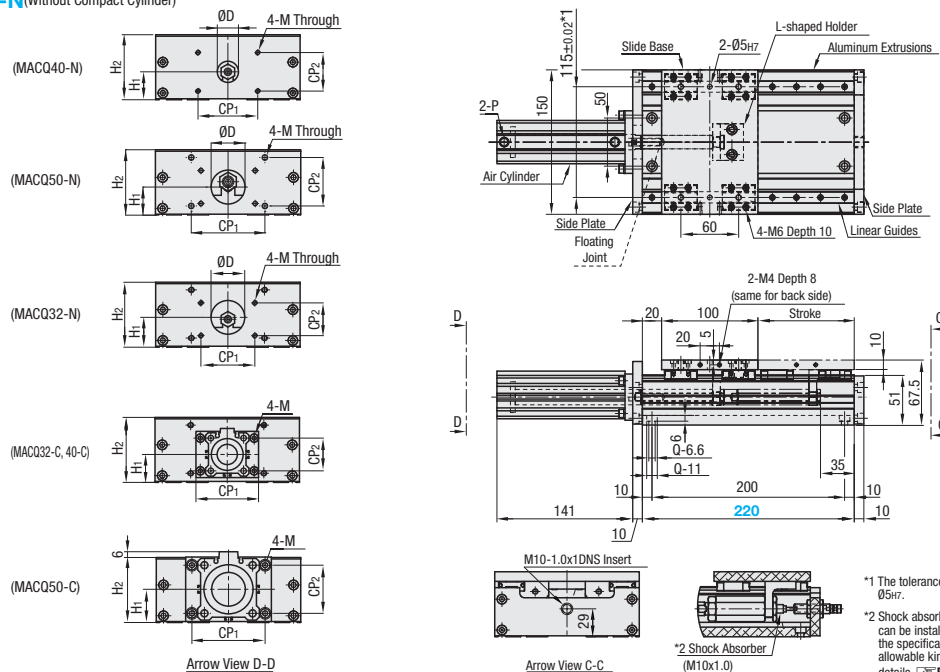
Components					Stroke						
Parts	Frame	Table	Floating Joints	L-shaped Holder	Side Plate	Part Number	Stroke St (mm)				
Material	EN AW-6063-T5	EN AW-6063/AlMg0.7Si	1.1191/C45E	1.0038/S235JR	EN AW-6063/AlMg0.7Si	Type	L=220	L=320	L=370	L=420	L=470
Surface Treatment	Clear Anodize	Clear Anodize	Tuffride	Tuffride	Clear Anodize	MACM (Pen-shaped)	100	200	250	300	350
						MACQ (Flat Type)	100	-	-	-	-

Floating joint and L-shaped holder are included for the units without cylinder.

MACM -C (With Pen-shaped Cylinder)
MACM -N (Without Pen-shaped Cylinder)



MACQ -C (With Compact Cylinder)
MACQ -N (Without Compact Cylinder)



Part Number	Type	Cylinder Bore Diameter	Cylinder w/ or w/o	Selection Frame Length L	Linear Guide						Air Cylinders						H1	H2
					Part Number	P	CP1	CP2	M	D	SL							
MACM (Pen-shaped)		32	C	220	SE2B13	Rc1/8	60	-	M6	-	-						29	66
						Rc1/4	66	36	M6	48	-							
		Rc1/8	56			34	M5	35	-									
		Rc1/4	62			40	M5	22	-									
MACQ (Flat Type)		32	C	220	SE2B13	Rc1/8	56	34	M5	35	-						34.5	66
						Rc1/4	62	40	M5	22	-							
		Rc1/8	56			34	M5	35	-									
		Rc1/4	62			40	M5	22	-									

For details of Linear Guides, P513 For details of Flat Type Air Cylinders, P1369 For details of Pen-shaped Air Cylinders, P1393

Part Number	Type	Cylinder Bore Diameter	Frame Mounting Holes		
			S	Q	(Hole Qty.)
MACM (Pen-shaped)		32	L	S	Q
			220	200	4
			320	150	6
			370	175	6
			420	200	6
MACQ (Flat Type)		32	L	S	Q
			220	200	4
			470	150	8

Order Example: Part Number - w/ or w/o Cylinder - L
MACM32 - C - 220

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship estimate is provided.

Part Number	Type	Cylinder Bore Diameter	w/ or w/o Cylinder	€ Unit Price 1 ~ 2 unit(s)				
				L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)		32	C					
			N					
		40	C					
			N					
MACQ (Flat Type)		32	C					
			N					
		40	C					
			N					
		50	C					
			N					

Part Number	Type	Cylinder Bore Diameter	Cylinder w/ or w/o	Mass (kg)				
				L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)		32	C	3.6	4.7	5.1	5.6	6.1
			N	3.1	4.0	4.4	4.8	5.2
		40	C	4.1	4.2	5.6	6.1	6.7
			N	3.2	4.0	4.4	4.8	5.3
MACQ (Flat Type)		32	C	3.8	-	-	-	-
			N	3.1	-	-	-	-
		40	C	4.1	-	-	-	-
			N	3.2	-	-	-	-
		50	C	4.6	-	-	-	-
			N	3.2	-	-	-	-

Speed · Load Capacity · Force · Allowable Moment

Part Number	Type	Cylinder Bore Diameter	Used Piston Velocity (mm/s)	Allowable Kinetic Energy (J)	Allowable Moment (N·m)			Cylinder Thrust Force Reference Value (kN)							
					Ma	Mb	Mc	at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa	
								Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke
MACM (Pen-shaped)		32	50~500	0.65	16.1	8.8	9.5	0.28	0.32	0.34	0.42	0.41	0.48	0.48	0.56
		40		0.44				0.50	0.55	0.63	0.66	0.75	0.77	0.88	
MACQ (Flat Type)		32		0.29				0.24	0.32	0.30	0.40	0.36	0.48	0.42	0.56
		40		0.52				0.42	0.50	0.52	0.62	0.63	0.75	0.73	0.88
		50	0.91	0.66	0.78	0.82	0.98	0.99	1.17	1.15	1.37				

Accuracy

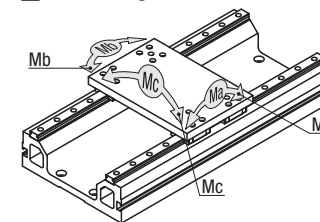
Type	Parallelism (mm)	Stroke Tolerance (mm)
MACM (Pen-shaped)	0.15	-0.4~+1.9
MACQ (Flat Type)		-0.4~+1.4

Kinetic Energy Calculation Formula: $E = \frac{1}{2}(m+1)V^2$
m: Load Capacity (kg)
V: Velocity (m/sec)

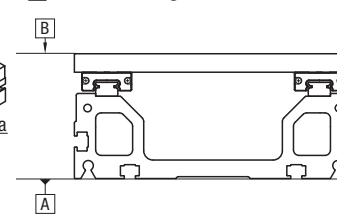
(Note 1) 1 kg is the mass of table and joint. Use within the allowable max energy value.

* Parallelism is surface B running parallelism with respect to surface A. (See the figure below)

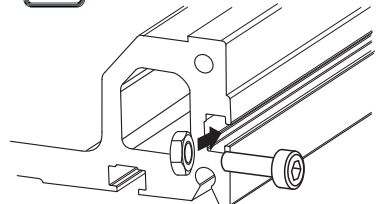
Moment Fig.



Parallelism Fig.



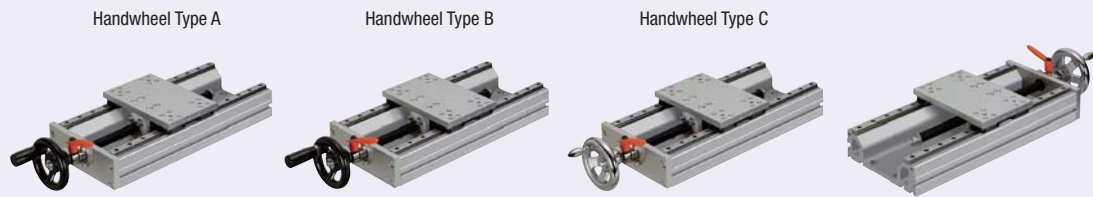
Example



Usage of Frame Slots
Side and bottom surfaces are slotted for M6 nuts.

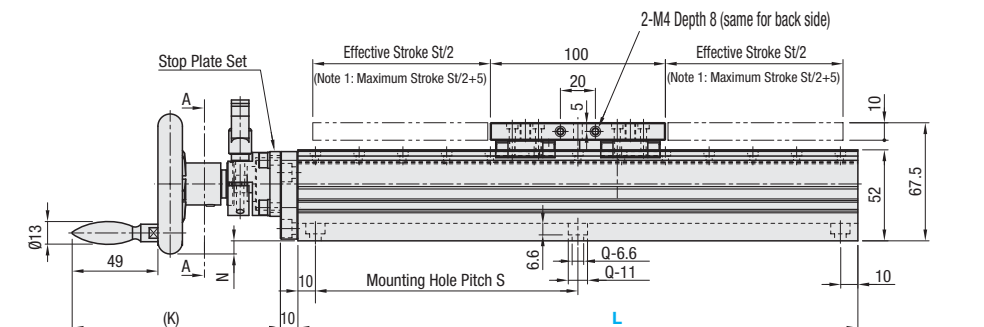
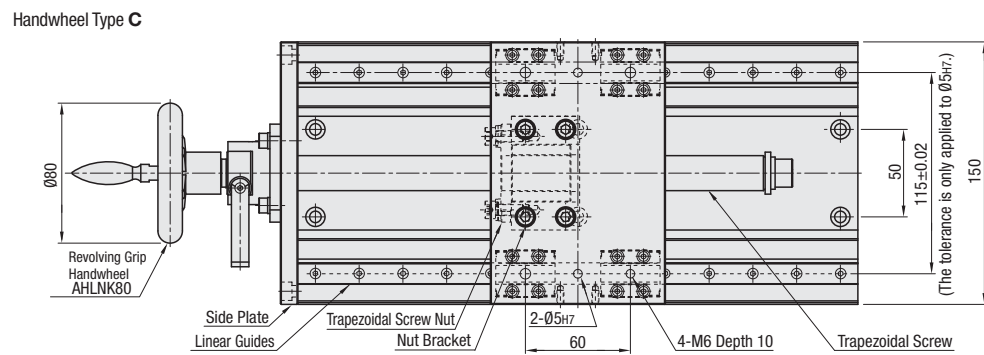
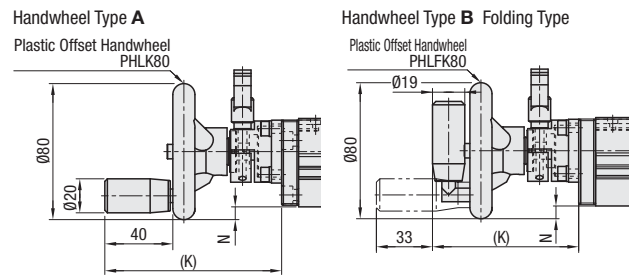
*1 The tolerance is only applied to Ø5H7.
*2 Shock absorber (not included) can be installed when using the specifications that exceeds allowable kinetic energy. For details, P2344

Features: Units best suited for simplified manual positioning. Load capacity of High Load Type is approx. three times that of Standard Type.

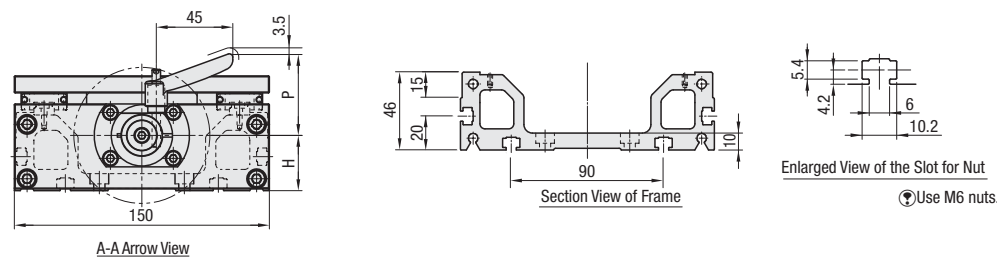


RoHS

KUE (Standard) **KUEH** (High Load)



Note 1) Stroke limit is where stroke reaches the mechanical limit.



Components

Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-	Clear Anodize	Clear Anodize

Stroke

Type	Effective Stroke St (mm)				
	L=220	L=320	L=370	L=420	L=470
KUE	103	203	253	303	353
KUEH					

Part Number	Handwheel Type	Selections	Trapezoidal Lead Screws			Trapezoidal Screw Nut	Rotation Stopper Set	Linear Guide	(K)			N	H	P	
			Frame Length L	Type	Screw Shaft Dia.				Lead	Handwheel Type	A				B
KUE (Standard)	14	A Plastic Offset Handwheel PHLK	220	MTSBRA	14	3	MTRFR (Brass Type)	MTQDM	SE2B13	100	82	115	5.5	34.5	43
		B Plastic Offset Handwheel PHLFK	320							103	85	118	7.5	32.5	45.5
		C Folding Type Handwheel PHLFK	370							106	88	121	7.5	32.5	48
KUEH (High Load)	20	Bosh Handwheel AHLNK	420	MTSBR	20	4	-	(Original)							
		470													

For details of Handwheels, P.1014-1017. For details of trapezoidal screws and nuts, P.711-712-718. For details of Rotation Stopper Set, P.729. For details of Linear Guides, P.513

Part Number	Handwheel Type	Frame Mounting Holes S · Q (Hole Qty.)		
		L	S	Q (Hole Qty.)
KUE	14	220	200	4
		320	150	6
		370	175	6
		420	200	6
KUEH	20	470	150	8

Order Example: Part Number **KUE14** - Handwheel Type **A** - L **320**

Days to Ship: **10 Days** (Standard Type (KUE)) **13 Days** (High Load Type (KUEH))

Price

Part Number	Handwheel Type	€ Unit Price 1 - 2 unit(s)				
		L=220	L=320	L=370	L=420	L=470
KUE	A					
	B					
	C					
KUEH	A					
	B					
	C					

Mass

Part Number	Handwheel Type	Mass (kg)				
		L=220	L=320	L=370	L=420	L=470
KUE	A	3.4	4.4	4.9	5.4	5.9
	B	3.1	4.1	4.6	5.1	5.6
	C	3.1	4.1	4.6	5.1	5.6
KUEH	A	4	5	5.5	6	6.5
	B	3.7	4.7	5.2	5.7	6.2
	C	3.7	4.7	5.2	5.7	6.2

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Allowable Load · Allowable Moment

Part Number	No.	Allowable Load (N)		Allowable Moment (N·m)		
		Horizontal	Vertical	Ma	Mb	Mc
KUE	14	245	49	7	7	13
	20	490	98	14	14	27
KUEH	20	1470	294	43	43	81

Required Torque · Required Turning Force

Part Number	No.	Required Torque (N·m)		Required Turning Force (N)	
		Horizontal	Vertical	Horizontal	Vertical
KUE	14	0.039	0.199	1.503	7.637
	20	0.059	0.414	2.261	15.915
KUEH	20	0.074	1.38	2.841	53.09

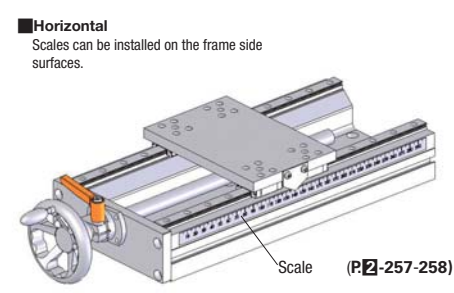
* Required torque and turning force at max. load capacity.
* Turning force is the force that rotates the handwheel. (See the figure on the right)
* Vertical values are those when elevating the table.

Accuracy

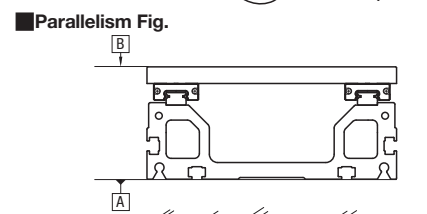
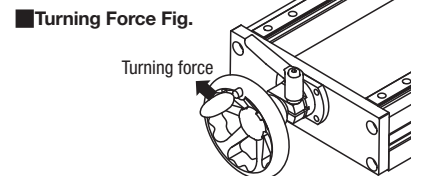
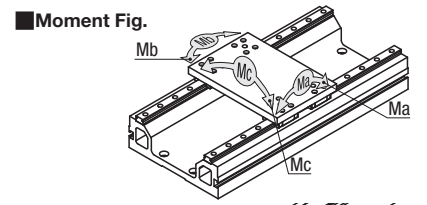
Type	Parallelism (mm)	Backlash (mm)
KUE KUEH	0.15	0.3

* Parallelism is the degree of running parallelism for dimension B against dimension A. (See the figure right)
* Backlash is not a guaranteed value but a reference value.

Example

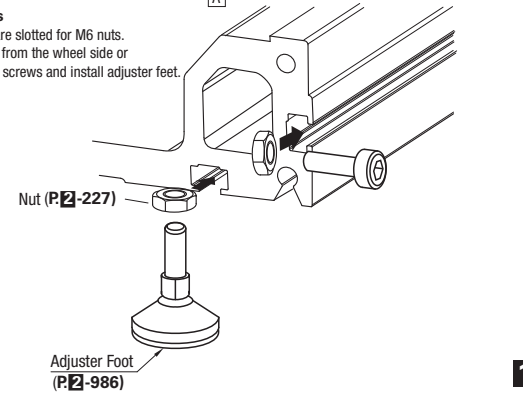


* Application Example of KUE14-C-320



Usage of Frame Slots

Side and bottom surfaces are slotted for M6 nuts. Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install adjuster feet.



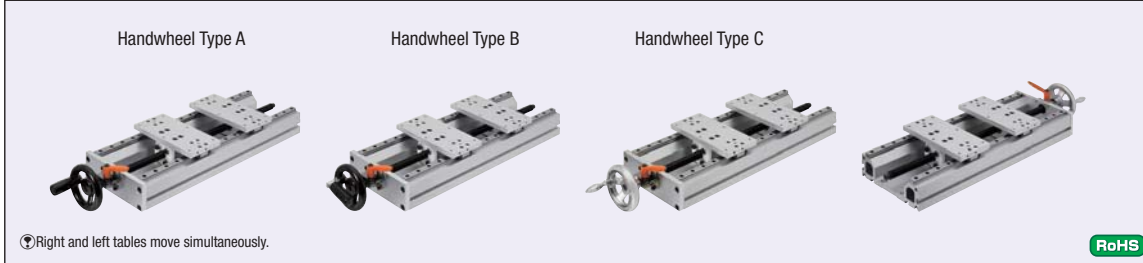


Manually Operated Units - Symmetrical Action Dual Carriage



CAD Data

■ **Features:** Units best suited for simple manual positioning. Right and left tables move simultaneously.

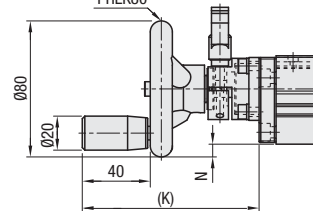


⊕ Right and left tables move simultaneously.

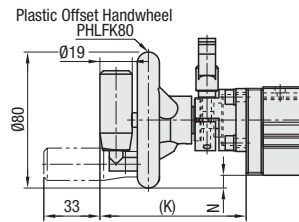


KUED

Handwheel Type A
Plastic Offset Handwheel PHLK80



Handwheel Type B Folding Type
Plastic Offset Handwheel PHLFK80



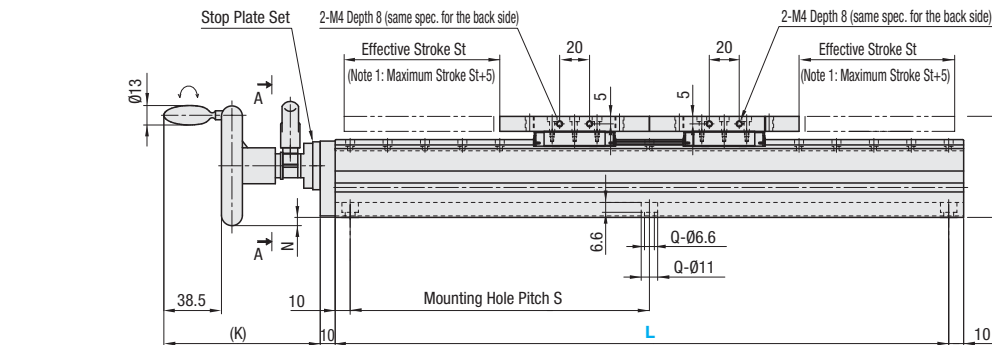
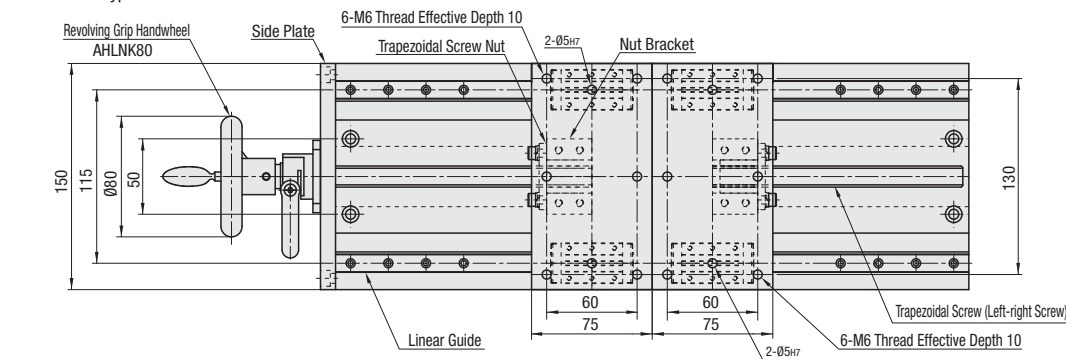
Components

Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si
Surface Treatment	Clear Anodize	Clear Anodize			Clear Anodize	Clear Anodize

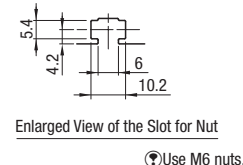
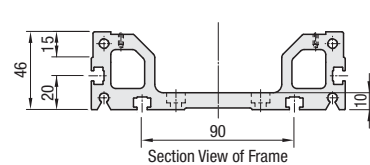
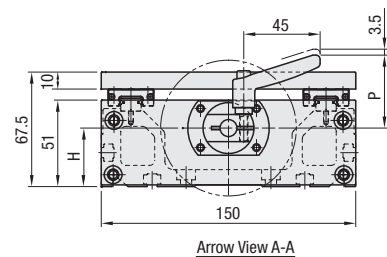
Stroke

Type	Effective Stroke St (mm)			
	L=320	L=370	L=420	L=470
KUED	65	90	115	145

Handwheel Type C
Revolving Grip Handwheel AHLNK80



Note 1) Stroke limit is where stroke reaches the mechanical limit.



⊕ Use M6 nuts.

Part Number	Handwheel Type	Selection	Trapezoidal Lead Screws			Rotation Stopper Set	Linear Guide	K			N	H	P				
			Frame Length L	Type	Screw Shaft Dia.			Lead	Type	Part Number				No.	A	B	C
KUED	14	A Plastic Offset Handwheel PHLK	320	MTSBWA	14	3	MTQDM	SE2B13	14	100	82	115	5.5	34.5	43		
		B Plastic Offset Handwheel PHLFK Folding Type	370													420	470
		C Five Spoked Handwheel AHLNK	420													470	
KUED	20	A Plastic Offset Handwheel PHLK	320	MTSBWCA	20	4	MTQDM	SE2B13	20	103	85	118	7.5	32.5	45.5		
		B Plastic Offset Handwheel PHLFK Folding Type	370													420	470
		C Five Spoked Handwheel AHLNK	420													470	

⊕ For details of Handwheels, see P2-1014-1017 For details of trapezoidal lead screws, nuts, and Linear Guides, see P711, 712, 718, 513 For Rotation Stopper Set, see P729

Part Number	Frame Mounting Holes			
KUED	14	L	S	Q (Hole Qty.)
		320	150	6
		420	200	6
KUED	20	L	S	Q (Hole Qty.)
		470	150	8



Part Number - Handwheel Type - L
KUED14 - A - 320



10 Days

⊕ For ordering 3 or more identical models, Days to Ship is to be quoted in each case.



Part Number	Handwheel	€ Unit Price 1 ~ 2 unit(s)			
		L=320	L=370	L=420	L=470
KUED	14	A			
		B			
		C			
	20	A			
		B			
		C			

⊕ For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Allowable Load · Allowable Moment

Part Number	Allowable Load (N)	Allowable Moment (N·m)				
		Horizontal	Vertical	Ma	Mb	Mc
KUED	14	122.5	24.5	0.5	0.5	6
	20	245	49	1	1	13

* Allowable load and moment are values per table.

Required Torque · Required Turning Force

Part Number	Required Torque (N·m)	Required Turning Force (N)	
		Horizontal	Vertical
KUED	14	0.039	0.223
	20	0.059	0.433

* Torque and turning force required when allowable load is applied on two tables.

* Turning force is the force that rotates the handwheel. (See the figure on the right)

* Vertical values are those when elevating the table.

Accuracy

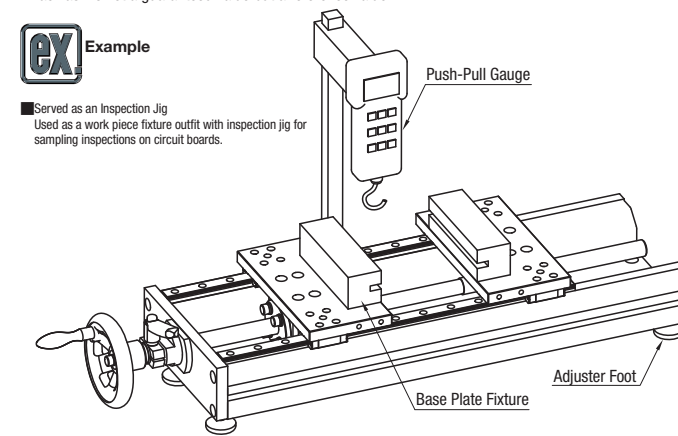
Type	Parallelism (mm)	Backlash (mm)
KUED	0.15	0.3

* Parallelism is the degree of running parallelism for dimension B against dimension A. (See the figure right)

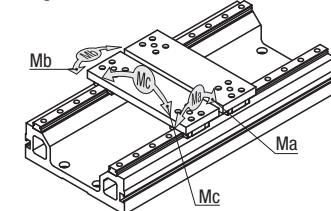
* Backlash is not a guaranteed value but a reference value.



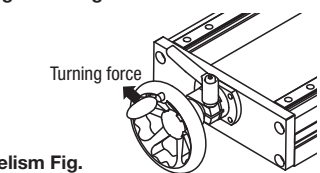
Served as an Inspection Jig
Used as a work piece fixture outfit with inspection jig for sampling inspections on circuit boards.



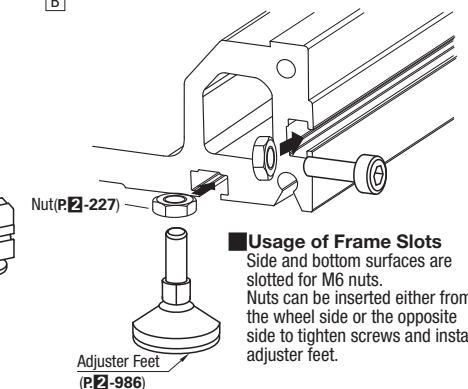
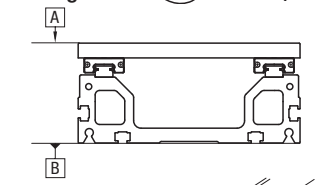
Moment Fig.



Turning Force Fig.



Parallelism Fig.



Usage of Frame Slots
Side and bottom surfaces are slotted for M6 nuts. Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install adjuster feet.

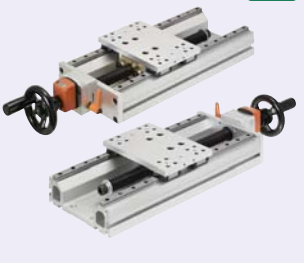


Manually Operated Units

-with Position Indicator-

CAD Data

Features: Position Indicator allows easy position adjustments.



RoHS

KUDP

Handwheel Type A
Plastic Offset Handwheel PHLK80

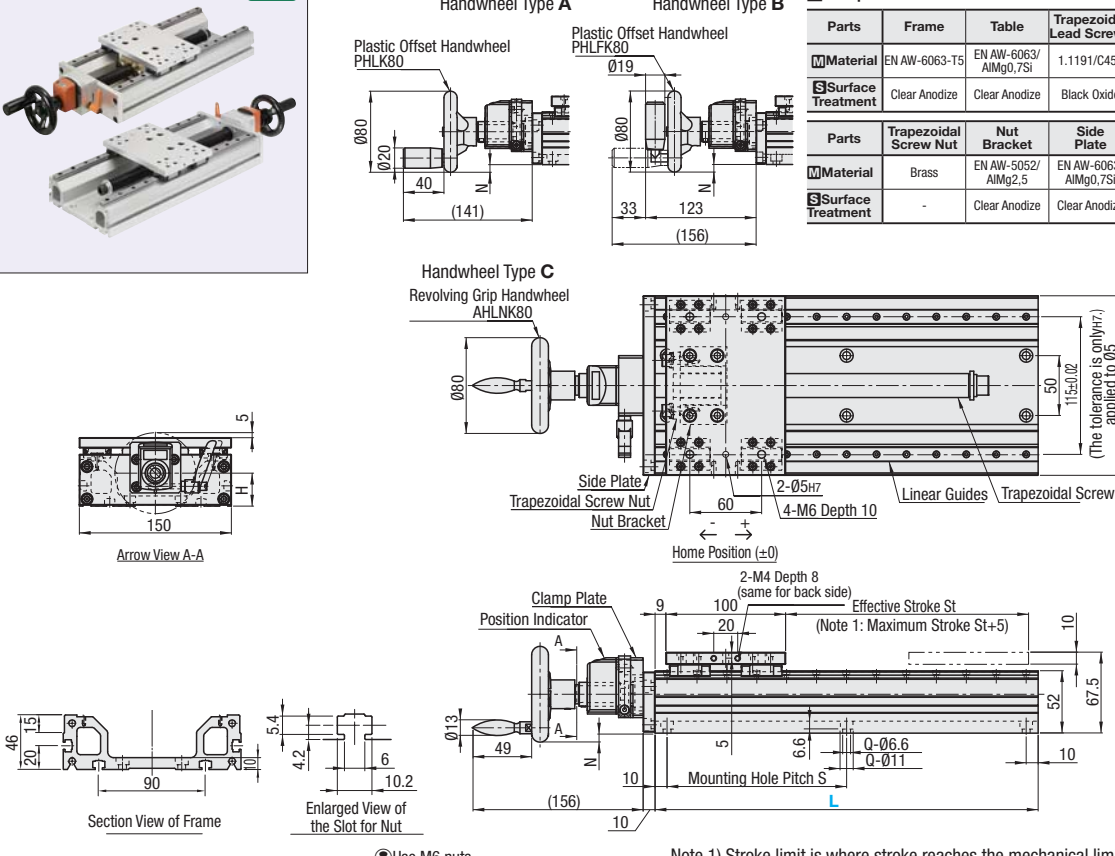
Handwheel Type B
Plastic Offset Handwheel PHLFK80

Handwheel Type C
Revolving Grip Handwheel AHLNK80

Components

Parts	Frame	Table	Trapezoidal Lead Screws
Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C4SE
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide

Parts	Trapezoidal Screw Nut	Nut Bracket	Side Plate
Material	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si
Surface Treatment	-	Clear Anodize	Clear Anodize



Arrow View A-A

Section View of Frame

Enlarged View of the Slot for Nut

Use M6 nuts.

Note 1) Stroke limit is where stroke reaches the mechanical limit.

Part Number	Handwheel Type	Selection	Trapezoidal Lead Screws			Trapezoidal Screw Nut	Linear Guide	Position Indicator	N	H	Frame Mounting Holes				
			Frame Length L	Type	Screw Shaft Dia.							Lead	S - Q (Hole Qty.)		
KUDP	20	A Plastic Offset Handwheel PHLK	220	MTSBRC	20	4	MTRFR	SE2B13	DPNL4	7.5	32.5	L S Q (Hole Qty.)			
		B Plastic Offset Handwheel PHLFK	320										220	200	4
		C Folding Type	370										320	150	6
			420										370	175	6
			470										420	200	6
			470	150	8										

Order Example: Part Number - Handwheel Type - L
KUDP20 - A - 320

Days to Ship: 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Mass

Part Number	Handwheel Type	Mass (kg)				
		L=220	L=320	L=370	L=420	L=470
KUDP	A	4.3	5.3	5.8	6.3	6.8
	B	4.0	5.0	5.5	6.0	6.5
	C	4.0	5.0	5.5	6.0	6.5

Allowable Load - Allowable Moment

Part Number	Type	Allowable Load (N)		Allowable Moment (Nm)		
		Horizontal	Vertical	Ma	Mb	Mc
KUDP	20	490	98	14	14	27

Required Torque - Required Turning Force

Part Number	Type	Required Torque (Nm)		Required Turning Force (N)	
		Horizontal	Vertical	Horizontal	Vertical
KUDP	20	0.059	0.414	2.261	15.915

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)
*Vertical values are those when elevating the table.

Price

Part Number	Handwheel Type	€ Unit Price 1 - 2 unit(s)				
		L=220	L=320	L=370	L=420	L=470
KUDP	A					
	B					
	C					

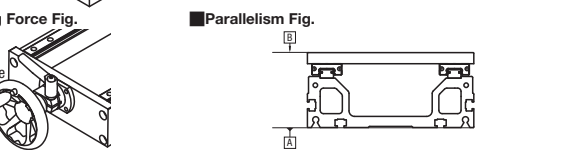
Effective Stroke

Type	Effective Stroke St (mm)				
	L=220	L=320	L=370	L=420	L=470
KUDP	103	203	253	303	353

Moment Fig.

Type	Accuracy	
	Parallelism (mm)	Backlash (mm)
KUDP	0.15	0.3

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

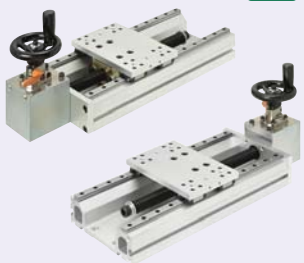


Manually Operated Units

-Handwheel Direction Configurable Type-

CAD Data

Features: Handwheel orientation is selectable. Best suited for usage in space-savings.



RoHS

KUEF

Handwheel Type A
Plastic Offset Handwheel PHLK80

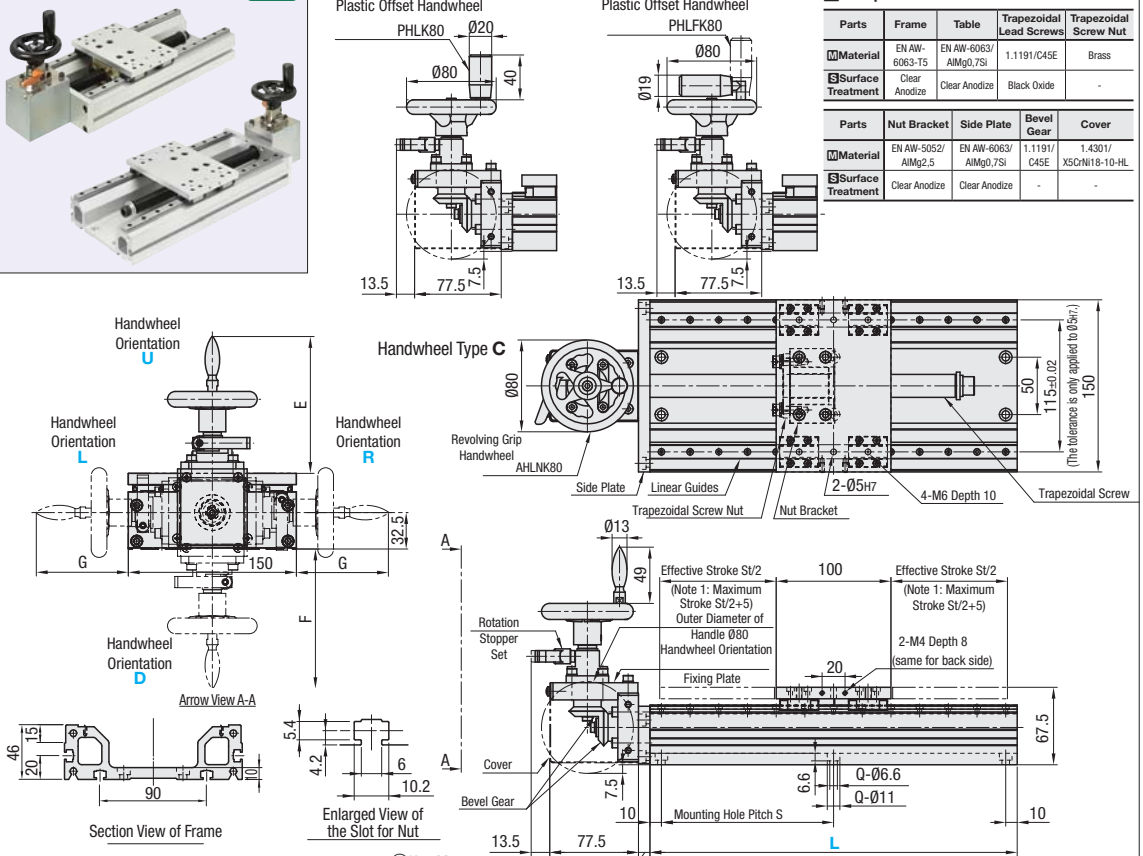
Handwheel Type B
Plastic Offset Handwheel PHLFK80

Handwheel Type C
Revolving Grip Handwheel AHLNK80

Components

Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut
Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C4SE	Brass
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-

Parts	Nut Bracket	Side Plate	Bevel Gear	Cover
Material	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	1.1191/C4SE	1.4301/ X5CrNi18-10-HL
Surface Treatment	Clear Anodize	Clear Anodize	-	-



Arrow View A-A

Section View of Frame

Enlarged View of the Slot for Nut

Use M6 nuts.

Note 1) Stroke limit is where stroke reaches the mechanical limit.

Part Number	Handwheel Type	Handwheel Orientation Configurable	Selection	Trapezoidal Lead Screws			Trapezoidal Screw Nut	Linear Guide	E	F	G	Frame Mounting Holes									
				Frame Length L	Screw Shaft Dia.	Lead							Type	Part Number	Handwheel Type	Handwheel Type	S - Q (Hole Qty.)				
KUEF	20	U D L R	220 320 370 420 470	MTSBRB	20	4	MTRFR	SE2B13	107	122	122	109.5	124.5	124.5	67	82	82	L S Q (Hole Qty.)			
																			220	200	4
																			320	150	6
																			370	175	6
																			420	200	6
470	150	8																			

Order Example: Part Number - Handwheel Type - Handwheel Orientation - L
KUEF20 - A - L - 320

Days to Ship: 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Mass

Part Number	Handwheel Type	Mass (kg)				
		L=220	L=320	L=370	L=420	L=470
KUEF	A	5.5	6.5	7.0	7.5	8.0
	B	5.2	6.2	6.7	7.2	7.7
	C	5.2	6.2	6.7	7.2	7.7

Allowable Load - Allowable Moment

Part Number	Type	Allowable Load (N)		Allowable Moment (N·m)		
		Horizontal	Vertical	Ma	Mb	Mc
KUEF	20	490	98	14	14	27

Required Torque - Required Turning Force

Part Number	Type	Required Torque (N·m)		Required Turning Force (N)	
		Horizontal	Vertical	Horizontal	Vertical
KUEF	20	0.059	0.414	2.261	15.915

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)
*Vertical values are those when elevating the table.

Price

Part Number	Handwheel Type	€ Unit Price 1 - 2 unit(s)				
		L=220	L=320	L=370	L=420	L=470
KUEF	A					
	B					
	C					

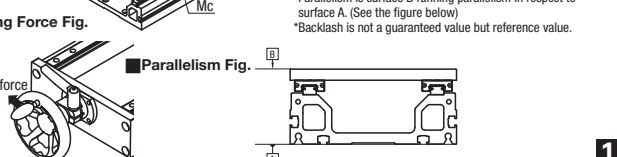
Effective Stroke

Type	Effective Stroke St (mm)				
	L=220	L=320	L=370	L=420	L=470
KUEF	103	203	253	303	353

Moment Fig.

Type	Accuracy	
	Parallelism (mm)	Backlash (mm)
KUEF	0.15	0.5

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.






Manually Operated Units

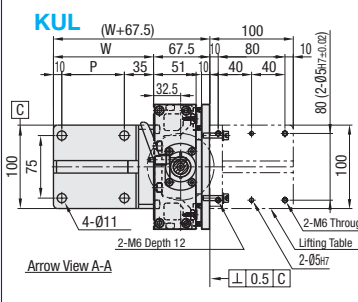
-Elevator Types-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



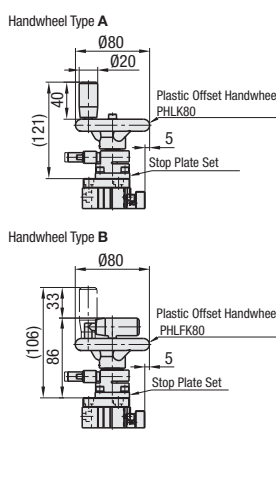
Handwheel Type A
Handwheel Type B



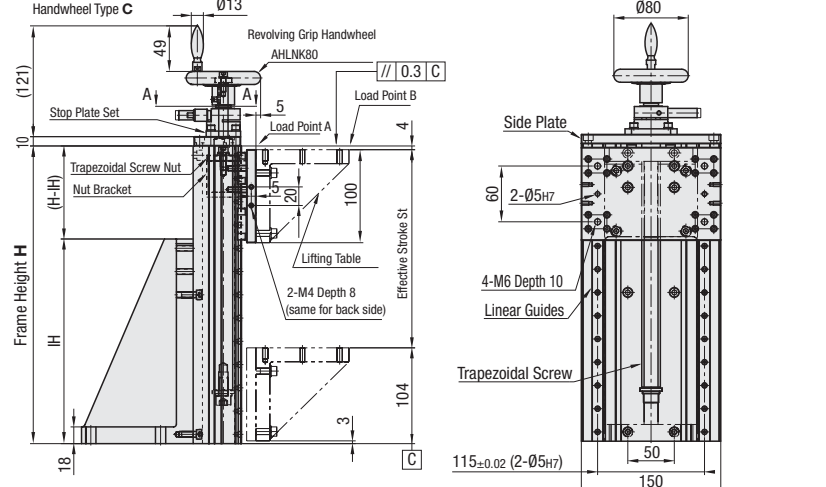
KUL (W+67.5)

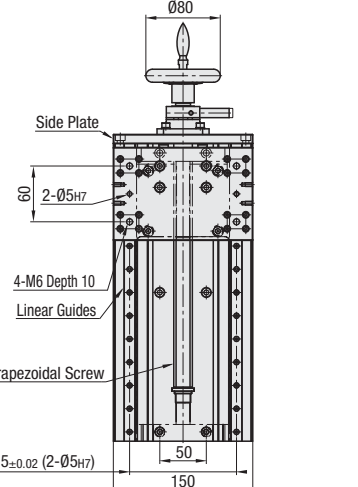
Components				
Parts	Frame	Table	Elevator Table	Angle Plate
M Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	EN AC-51300/G-AlMg5	EN AC-51300/G-AlMg5
S Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize	Clear Anodize

Parts	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si
S Surface Treatment	Black Oxide	-	Clear Anodize	Clear Anodize



Handwheel Type C
Handwheel Type B





Part Number	Handwheel Type	Elevator Table Selection	Selection	Trapezoidal Lead Screws			Trapezoidal Screw Nut	Rotation Stopper Set	Linear Guide	W	P	IH				
				Frame Height H	Type	Screw Shaft Dia.							Lead	Type		
KUL 20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK C Folding Type D Bosh Handwheel AHLNK	Not specified N	220	MTSBC	20	4	MTRFR	MTQDM	SE2B13	H	W	IH				
			320										H	P	H	IH
			370										320	75	320	220
			420										370		370	
			470										420	105	420	350

Order Example

Part Number: **KUL20** - Handwheel Type: **A** - Elevator Table: **N** - H: **320** (with Elevator Table)
 Part Number: **KUL20** - Handwheel Type: **A** - Elevator Table: **N** - H: **320** (without Elevator Table)

Days to Ship 13 Days For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	Handwheel Type	€ Unit Price 1 ~ 2 unit(s)				
		For no table (N), 30,00 EUR is subtracted from the prices below.				
Type	No.	H=220	H=320	H=370	H=420	H=470
KUL	20					
		A				
		B				
		C				

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number	Handwheel Type	Mass (kg)					
		H=220	H=320	H=370	H=420	H=470	
KUL	20	A	6.6	7.6	8.1	9.8	10.3
		B	6.3	7.3	7.8	9.5	10.0
		C	6.3	7.3	7.8	9.5	10.0

Effective Stroke

Type	Effective Stroke St (mm)				
	H=220	H=320	H=370	H=420	H=470
KUL	112	212	262	312	362

Allowable Load - Allowable Moment

Part Number	Allowable Load (N)	Allowable Moment (N·m)			
		Ma	Mb	Mc	
KUL 20	294	270	43	43	81

Accuracy

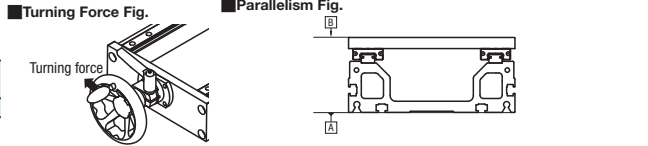
Type	Parallelism (mm)	Backlash (mm)
KUL	0.15	0.3

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
 *Backlash is not a guaranteed value but reference value.

Required Torque - Required Turning Force

Part Number	Required Torque (N·m)	Required Turning Force (N)
KUL 20	1.46	56.142

*Torque and turning force required at max. load capacity.
 *Turning force is the force that rotates the handwheel. (See the figure on the right)




Manually Operated Units

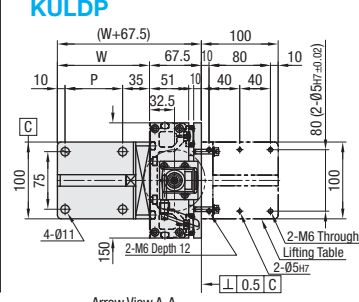
-Elevator Type with Position Indicator-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



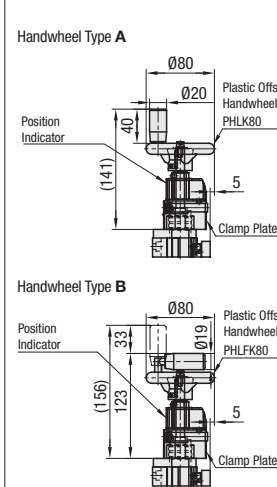
Handwheel Type A
Handwheel Type B



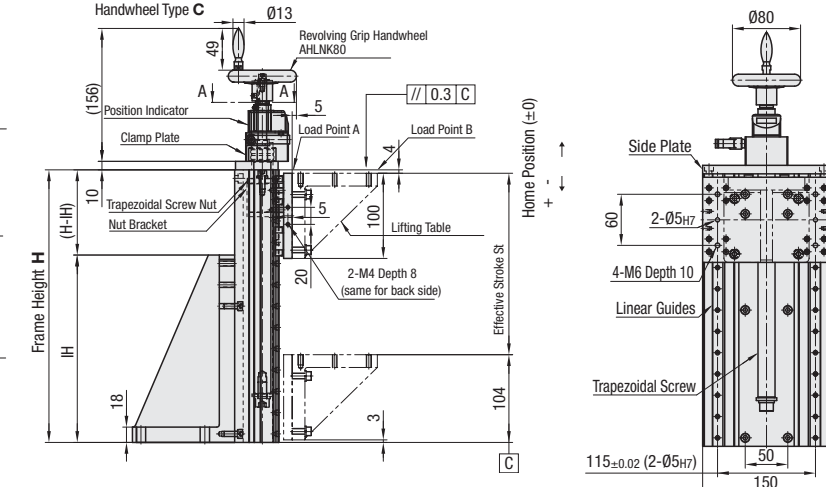
KULD (W+67.5)

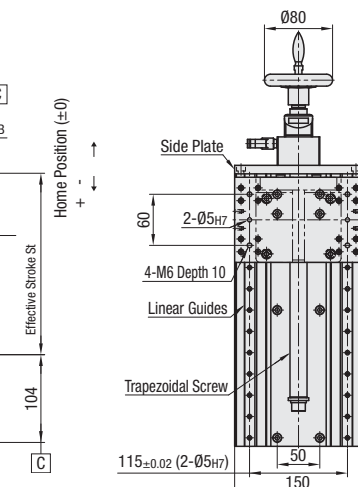
Components				
Parts	Frame	Table	Elevator Table	Angle Plate
M Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	EN AC-51300/G-AlMg5	EN AC-51300/G-AlMg5
S Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize	Clear Anodize

Parts	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si
S Surface Treatment	Black Oxide	-	Clear Anodize	Clear Anodize



Handwheel Type C
Handwheel Type B





Part Number	Handwheel Type	Elevator Table Selection	Selection	Trapezoidal Lead Screws			Trapezoidal Screw Nut	Rotation Stopper Set	Linear Guide	Position Indicator Part Number	W	P	IH				
				Frame Height H	Type	Screw Shaft Dia.								Lead	Type		
KULD 20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK C Folding Type D Bosh Handwheel AHLNK	Not specified N	220	MTSBC	20	4	MTRFR	MTQDM	SE2B13	DPNL4	H	W	IH				
			320											H	P	H	IH
			370											320	75	320	220
			420											370		370	
			470											420	105	420	350

Order Example

Part Number: **KULD20** - Handwheel Type: **A** - Elevator Table: **N** - H: **320** (with Elevator Table)
 Part Number: **KULD20** - Handwheel Type: **A** - Elevator Table: **N** - H: **320** (without Elevator Table)

Days to Ship 13 Days For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	Handwheel Type	€ Unit Price 1 ~ 2 unit(s)				
		For no table (N), 30,00 EUR is subtracted from the prices below.				
Type	No.	H=220	H=320	H=370	H=420	H=470
KULD	20					
		A				
		B				
		C				

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number	Handwheel Type	Mass (kg)					
		H=220	H=320	H=370	H=420	H=470	
KULD	20	A	7.2	8.2	8.7	10.6	11.2
		B	6.9	7.9	8.4	10.3	10.9
		C	6.9	7.9	8.4	10.3	10.9

Effective Stroke

Type	Effective Stroke St (mm)				
	H=220	H=320	H=370	H=420	H=470
KULD	112	212	262	312	362

Allowable Load - Allowable Moment

Part Number	Allowable Load (N)	Allowable Moment (N·m)			
		Ma	Mb	Mc	
KULD 20	294	270	43	43	81

Accuracy

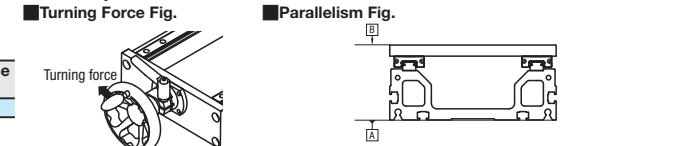
Type	Parallelism (mm)	Backlash (mm)
KULD	0.15	0.3

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
 *Backlash is not a guaranteed value but reference value.

Required Torque - Required Turning Force

Part Number	Required Torque (N·m)	Required Turning Force (N)
KULD 20	1.46	56.142

*Torque and turning force required at max. load capacity.
 *Turning force is the force that rotates the handwheel. (See the figure on the right)



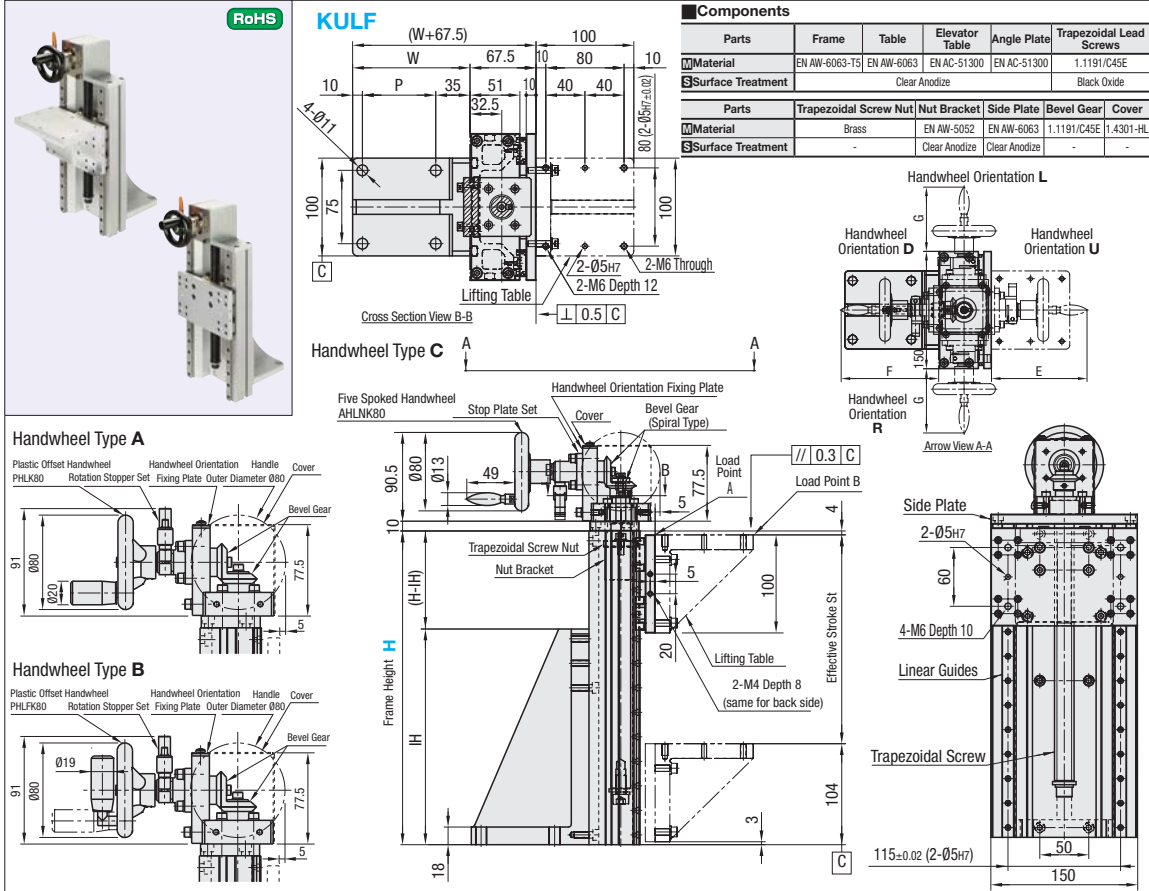


Manually Operated Units

-Elevator Type Handwheel Orientation Configurable-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



Part Number	Type	Handwheel Type	Handwheel Orientation Specifications	Elevator Table Selections	Frame Height H	Trapezoidal Lead Screw Type	Trapezoidal Lead Screw Lead	Trapezoidal Screw Nut Type	Linear Guide Part Number	E			F			G			W	P	IH	
										A	B	C	A	B	C	A	B	C				
KULF20	A	B	U	D	220	MTSRBB	20	4	MTRFR	SE2B13	107	122	122	109.5	124.5	124.5	67	82	82	112	120	120
											122	122	122	109.5	124.5	124.5	67	82	82	112	120	120
											122	122	122	109.5	124.5	124.5	67	82	82	112	120	120

Order Example

Part Number: KULF20 - Handwheel Type: A - Handwheel Orientation: L - Elevator Table: - L - 320 (with Elevator Table)

Part Number: KULF20 - Handwheel Type: A - Handwheel Orientation: U - Elevator Table: N - 320 (without Elevator Table)

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Mass

Part Number	Handwheel Type	Mass (kg)
KULF 20	A	8.4
	B	8.1
	C	8.1

Allowable Load - Allowable Moment

Part Number	When load applied to Point A	When load applied to Point B	Allowable Moment (N·m)
KULF 20	98	98	14, 14, 27

Turning Force Fig.

Part Number	Required Torque (N·m)	Required Turning Force (N)
KULF 20	1.46	56.142

Torque and turning force required at max. load capacity.
Turning force is the force that rotates the handwheel. (See the figure on the right)

Price

Part Number	Handwheel Type	€ Unit Price 1 - 2 unit(s)
KULF 20	A	H=220 H=320 H=370 H=420 H=470
	B	
	C	

Effective Stroke

Type	H=220	H=320	H=370	H=420	H=470
KULF	112	212	262	312	362

Accuracy

Type	Parallelism (mm)	Backlash (mm)
KULF	0.15	0.5

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

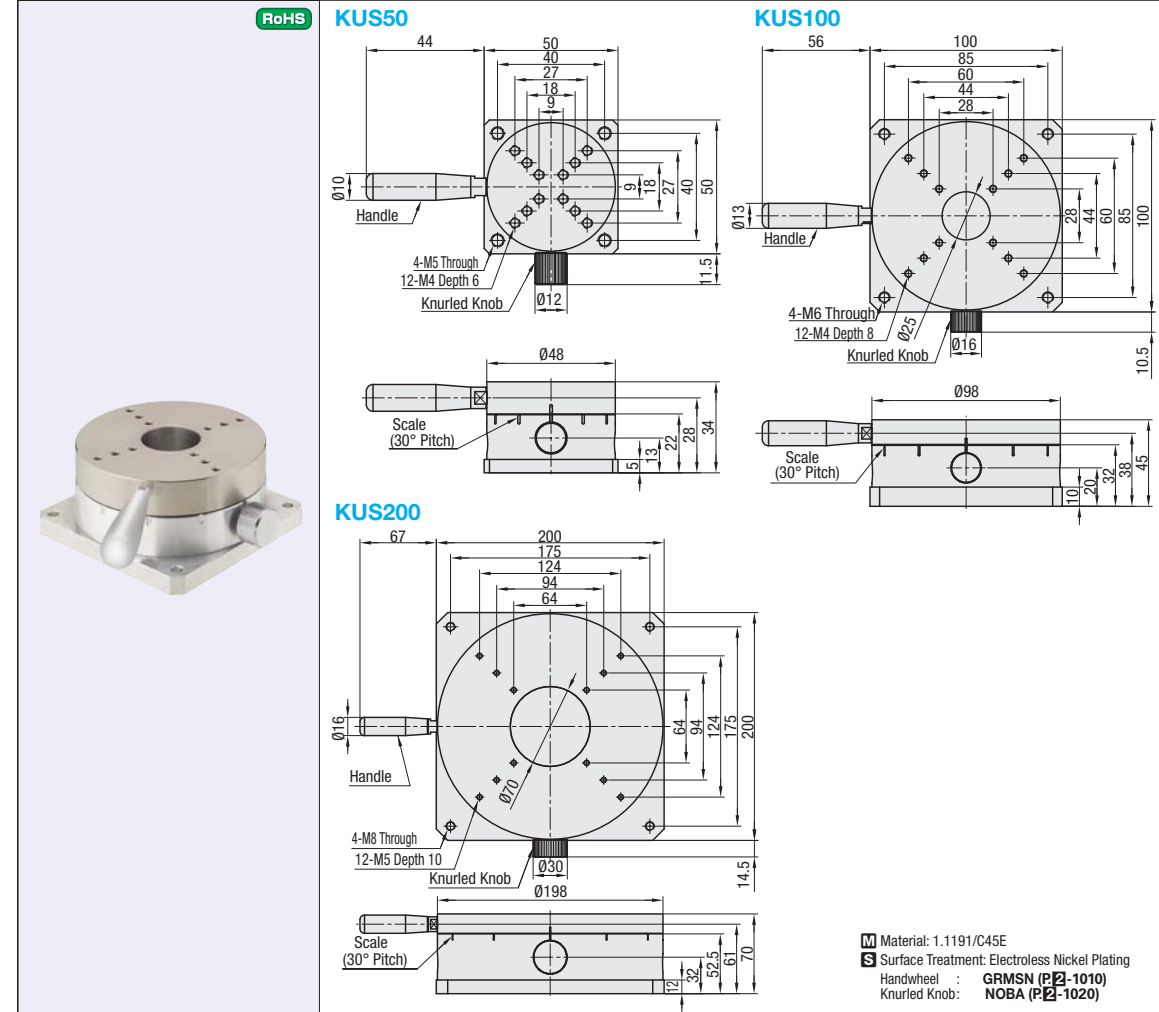


Manually Operated Units

-Rotating Tables-

CAD Data

Features: Units best suited for simplified positioning. With a built-in plunger, positions are indexed by 30°.



Part Number	Type	No.	Stage Diameter (mm)	No. of Indexed Positions	Indexing Angle	Load Capacity N(kgf)	Indexable Loads (reference values) N(kgf)	Motion Accuracies			Weight (kg)	€ Unit Price 1 - 2 unit(s)			
								Eccentricity (mm)	Parallelism (mm)	Surface Run-out (mm)					
KUS	50	100	048	12	30°±1°	980(100)	98(10)	0.1	0.2	0.1	0.34	1.64			
													1470(150)	196(20)	1.64
													1960(200)	392(40)	8.70

Still usable when exceeding the indexable loads but plunger indexing will not work.

Order Example Part Number: KUS100

Days to Ship 13 Days

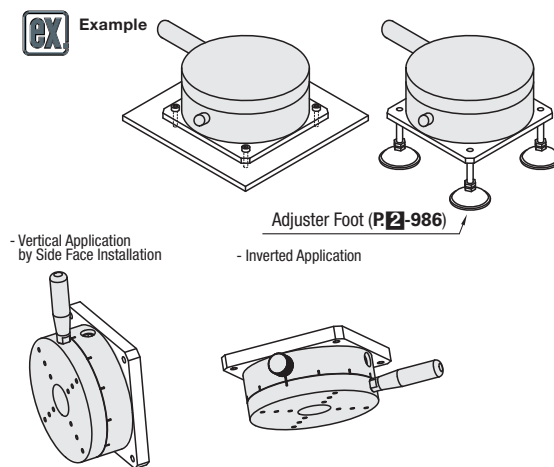
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Rotating Table Mounting Orientation

Cautions are needed for the mounting styles as shown on right.

No.	Inverted Application	Vertical Application by Wall Mount Installation
50	○	○
100	○	○
200	△	△

O: Limitations exist on loads and moments, but useable.
△: Performance may be seriously affected depending on application.
⊙: Cautions required for falls depending on applied loads.



Motor Driven Units

Reduced Delivery Time

Price Reduction 16%

CAD Data

Features: No need for any control settings. Simplified positioning units with quick and easy motorized operations.



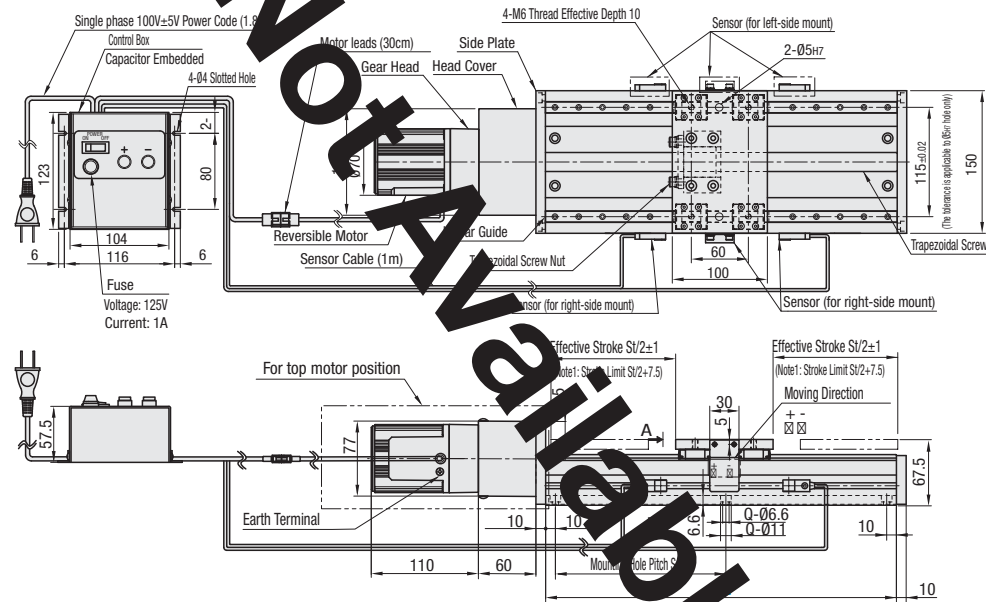
CE non-compliant

RoHS

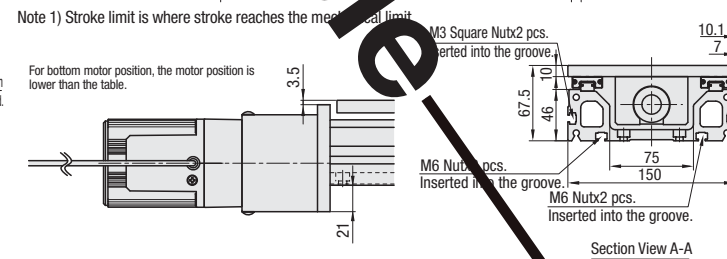
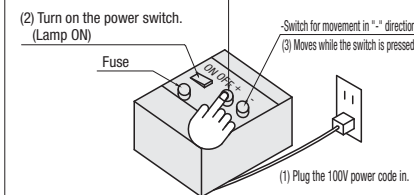
Components

Parts	Frame	Cable	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate	Head Cover	Control Box
Material	EN AW-6063/AlMg0,7Si	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	1.4301/X5CrNi18-10	1.0330/DC01
Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-	Clear Anodize	Clear Anodize	-	Baked Finish (beige)

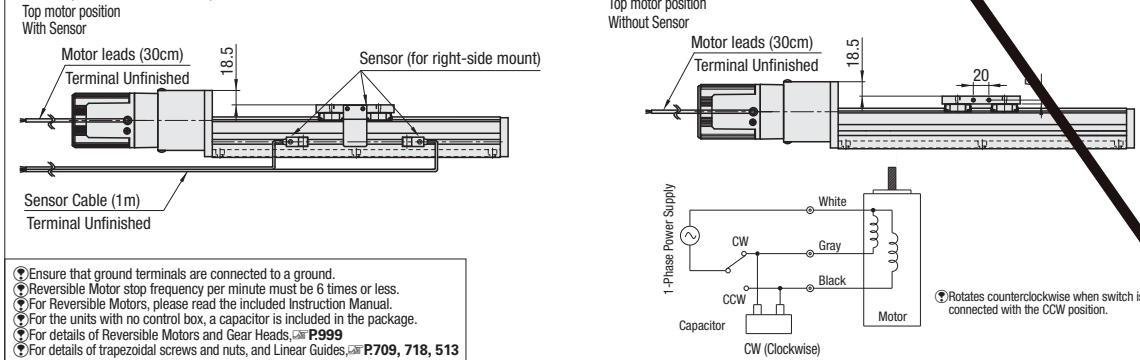
(with Control Box)



Operation Method



(without Control Box)



- Ensure that ground terminals are connected to a ground.
- Reversible Motor stop frequency per minute must be 6 times or less.
- For Reversible Motors, please read the included Instruction Manual.
- For the units with no control box, a capacitor is included in the package.
- For details of Reversible Motors and Gear Heads, see P.999
- For details of trapezoidal screws and nuts, and Linear Guides, see P.709, 718, 513

Part Number	Motor Mounting Position	Sensor	L Frame Length	Trapezoidal Lead Screws Type	Trapezoidal Screw Nut Type	Linear Guides Part Number	Sensor Part Number	Reversible Motor Part Number	Gear Head Part Number
with Control Box	M1 (Top) M2 (Bottom)	S1 (Right Side Mount) S2 (Left Side Mount)	220 320 370 420 470	MTSBRK (Screw Shaft Dia.: 20) (Lead: 4)	MTRFR (Brass Type)	SE2B13	Sunx-made	PACMR70 (Voltage: 100V 50/60HZ) (Output: 15W) Rated Speed 50Hz: 1275min ⁻¹ 60Hz: 1575min ⁻¹	PACMGX70 (Reduction Ratio: 5)
without Control Box		S1 (Right Side Mount) S2 (Left Side Mount) S3 (without Sensor)							

Part Number	Stroke		Frame Mounting Holes		
	L	S	L	S	Q (Hole Qty.)
220	100	220	200	4	
320	200	320	150	6	
370	250	370	175	6	
420	300	420	200	6	
470	350	470	150	8	



Order Example Part Number - Motor Mount Position - Sensor - L - 320



Days to Ship •KUK 15 Days •KUG 18 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	Sensor	€ Unit Price (2 units)			
		L=220	L=320	L=370	L=420

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass / Accuracy

Part Number	Mass (kg)					Parallelism (mm)	Stop Precision (mm)	Backlash (mm)
	L=220	L=320	L=370	L=420	L=470			
6	7	7.5	8	8.5	0.15	±1	0.3	

- The mass values do not include control box. (Control box mass is 0.8kg.)
- Parallelism is the degree of running parallelism for dimension B against dimension A. (See Figure 1 on the right)
- Stop precision is indicated in travel distance to stop from where is detected by sensor or the stop is reached.
- Backlash is not a guaranteed value but a reference value.

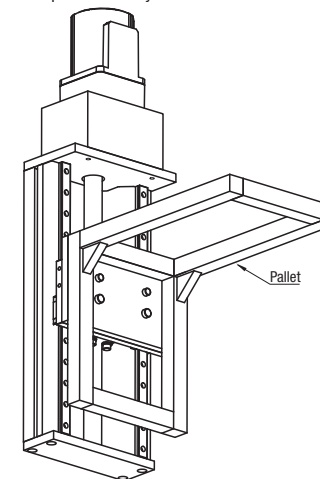
Load Capacity / Allowable Moment / Operation Speed

Part Number	Allowable Load (N)		Allowable Moment (N·m)			Operation Speed (mm/s)	
	Horizontal	Vertical	Ma	Mb	Mc	50Hz	60Hz
	490	98	14	14	27	17	21

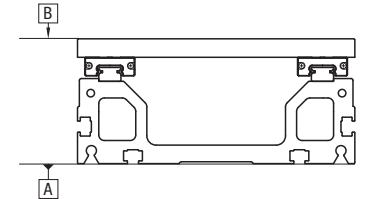
Operation speeds are calculated based on motor rated speed but not guaranteed values. The values vary according to loads.

Example

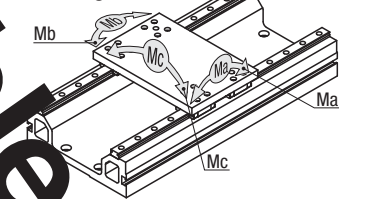
Transfer
Used to move work pieces vertically.



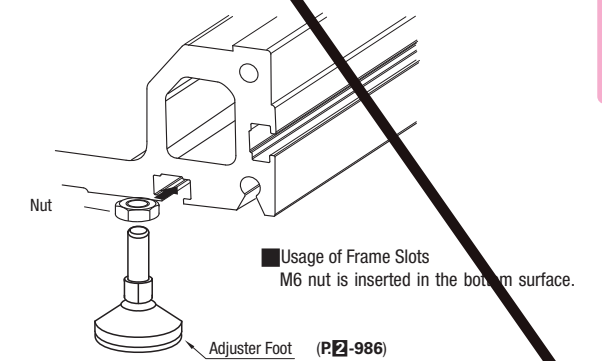
Parallelism Fig.



Moment Fig.



Usage of Frame Slots
M6 nut is inserted in the bottom surface.



Linear Guides

Linear Guides Raydent



Miniature Linear Guides



Product Name Page	Raydent 508	Product Name Page	Miniature Linear Guides -Short Blocks- 509	Short Blocks with Dowel Holes 511
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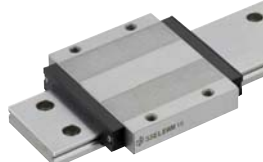
Miniature Linear Guides -Standard Blocks- 513-516	Standard Blocks with Dowel Holes 517	Wide Standard Blocks 519
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Miniature Linear Guides -Long Blocks- 521-524	Long Blocks with Dowel Hole 525	Wide Long Blocks 527	Extra Long Blocks 529
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Miniature Linear Guides -Wide Rail Standard Blocks- 531-534	Wide Rail with Dowel Holes, Standard Blocks 535	Wide Rail, Wide Standard Blocks 537
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Miniature Linear Guides -Wide Rail Long Blocks- 539-542	Wide Rail with Dowel Holes, Long Blocks 543	Wide Rail, Wide Long Blocks 545
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Miniature Linear Guides -Heat Resistant- 547	With Lubrication Unit 549	Miniature Dust Resistant 551
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Medium / Heavy Load Linear Guides



Product Name Page	Medium / Heavy Load Self-Lubrication Type 553-566	Medium and Heavy Load, Dust Resistant 553-556	Medium / Heavy Load Wide Blocks, Dust Resistant 553-556
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Price Reduction
up to 12%



Price Reduction
10%



Price Reduction
10%

Medium and Heavy Load 557-562	Medium / Heavy Load Wide Blocks 557-562	Medium and Heavy Load with Dowel Holes 563-566
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Medium and Heavy Load with Plastic Retainers 567-570•573-576	Medium / Heavy Load Wide Block Resin Retainers 573-576	Extra Heavy Load, Extra Super Heavy Load, With Plastic Retainers 571•577-580
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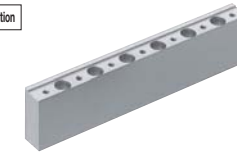
Linear Guide Peripheral Parts



Extra Heavy Load / Extra Super Heavy Load Wide Block Resin Retainers 577-580	Product Name Page	Stopper Clamps for Miniature Linear Guides 581
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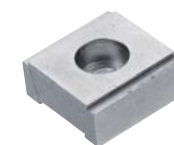
Addition



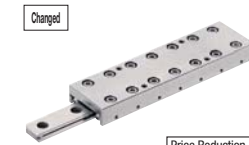
Stopper Clamps for Medium / Heavy Load Linear Guides 582	Height Adjusting Blocks for Linear Guides 583-585	Stopper Bolts 586	Linear Guide Block Stopper Plates 586
---	--	----------------------	--



Linear Guide Mounting Hole Caps (Package) 586	Rail Push Plates 586	Linear Locks 587	Linear Lock Plates 588
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Cross Rollers Table



Changed

Price Reduction
20%

Linear Guide Lock Units 588	Linear Guide Lock Plates 588	Product Name Page	Cross Roller Tables 591•592
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Changed

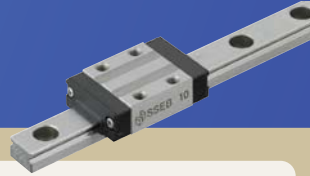


Price Reduction
20%



Cross Roller Guides 593	Ball Slide Guides 594	Pneumatically Driven Linear Guides 597-600
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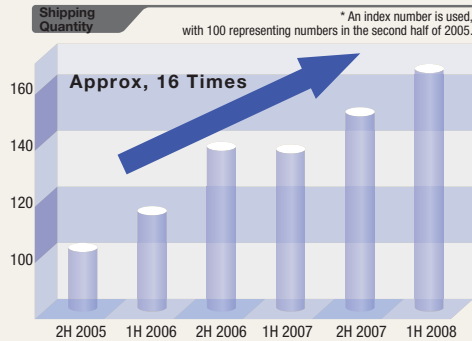
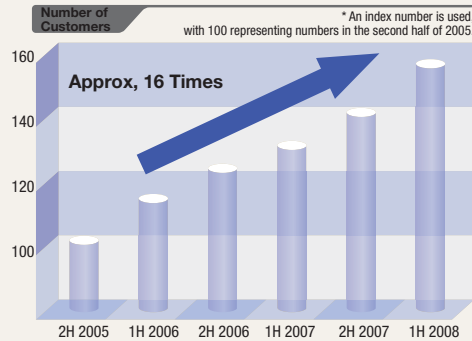
We have absolute confidence in quality of MISUMI Linear Guides!



Quality

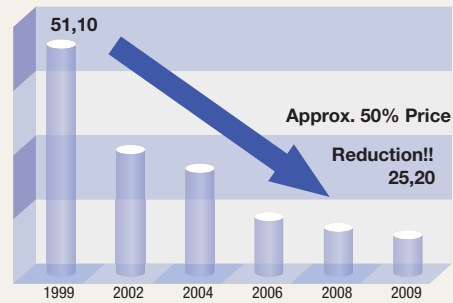
MISUMI Linear Guides are manufactured by Suruga Seiki Co.,Ltd. (Except products on P.549 and P.567-580)

Proof of High Quality Increased by approx. 1.6 times in both the number of customers and shipping for 3 years!

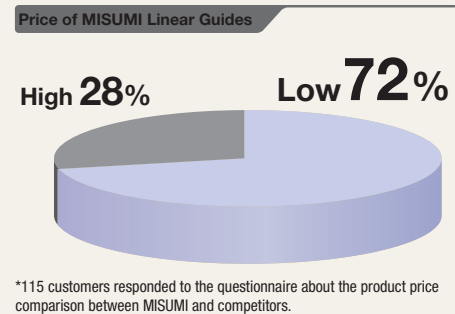


Price

Approx. 50% significant price reduction in the last 10 years!



72% of our customers said that MISUMI products are economical.



Days to Ship

MISUMI's next day shipping service, which is the fastest in the industry, is able to meet the customers' requirements in case of a sudden change of designing.

SURUGA SEIKI CO.,LTD Fast Facts

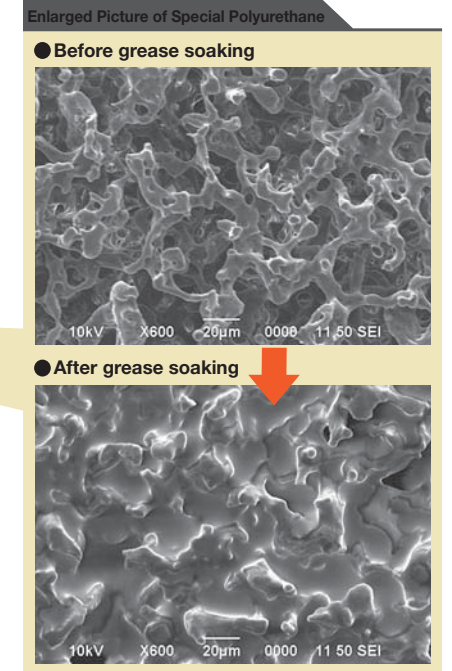
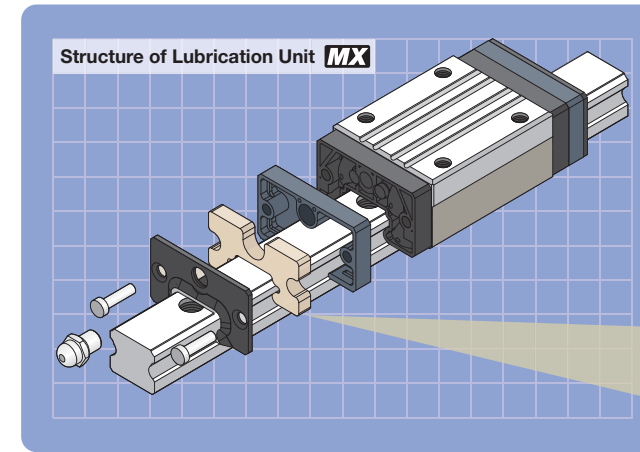
- Corporate Name SURUGA SEIKI CO., LTD
- Head Office 549-1, Nanatsushinya, Shimizu-ku, Shizuoka City, Shizuoka 424-8566
- Established May 8, 1964

Suruga Seiki develops its business by making extensive use of precision processing technologies which require micron-level precision. We have been developing and manufacturing press die components including punch&die-related parts that has the top market share in Japan, optical devices, and FA (factory automation) products. We have been actively expanding our overseas business and have operations in the United States, Vietnam, Korea, China, Thailand and Poland.



Our goal is to be one of the most creative companies with our prominent precision processing technology.

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



Special polyurethane has interconnected micropores and is excellent in waterholding capacity. Enables to impregnate much grease.

Features

Feature 1 Long Term Maintenance-free Condition

Special polyurethane in Lubrication Unit **MX** impregnates 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

8th day shipping same as that of standard products

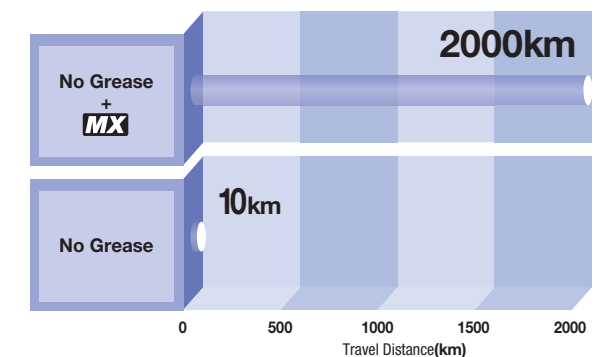
Test Result

Linear guides with Lubrication Unit **MX** achieved 2,000km travel while linear guides with no grease stopped in a short time.

Test Conditions




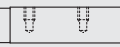










Sample	SXR24Type
Load	2.87kN
Travel Speed	750mm/sec

·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.







Linear Guide Selection Table

Miniature Linear Guides












Rails	Blocks	Short	Standard	Long	Extra Long
					
Standard Rails	Standard	 P509~P512	 P513~P518	 P521~P526	 P529
	Wide	-	 P519	 P527	-
Wide Rails	Standard	-	 P531~P536	 P539~P543	-
	Wide	-	 P537	 P545	-

Special Configurations

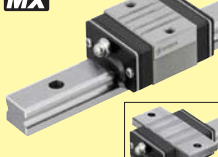
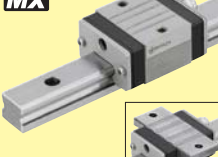


Specifications	Dust Resistant	With Lubrication Unit	Heat Resistant	Raydent
Standard Rails	 P551	 P549	 P547	 P508

Linear Guides for Medium and Heavy Load





Lubrication Units **MX** : Products applicable to Self-lubrication Type

Specifications		Medium Load	Heavy Load	Extra Heavy Load	Extra Super Heavy Load
Standard	Carbon Steel	 P559•563	 P561•565	-	-
	Stainless Steel	 P557•563	 P557•565	-	-
W/Plastic Retainers	Carbon Steel	 P573	 P575	 P577	 P579
	Stainless Steel	 P567	 P569	 P571	-

Special Configurations

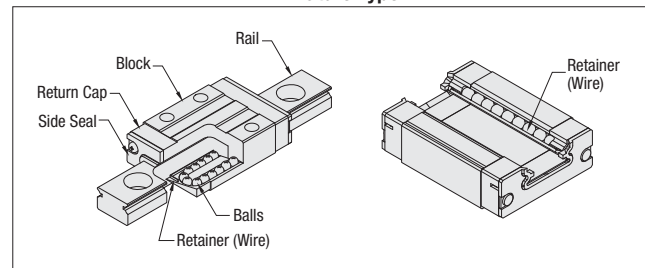
Specifications	Medium Load		Heavy Load	
	Double-Sealed	W/Metal Scrapers	Double-Sealed	W/Metal Scrapers
Dust Resistant	 P553	 P553	 P555	 P555

Linear Guide Related Products

	Position Retaining Parts	Rail Height Adjusting Blocks	Block Fall-off Prevention Parts Dust Prevention Parts	Block · Rail Fixture Parts
For Miniature Guides	 P581	 P585	<ul style="list-style-type: none"> Stopper Bolts for Linear Guides P586 Linear Guide Block Stopper Plates P586 	<ul style="list-style-type: none"> Linear Guides Adjustment Units P586 Linear Locks P587
Medium and Heavy Load	 P582	 P583 · 584	<ul style="list-style-type: none"> Rail Mounting Hole Caps P586 	<ul style="list-style-type: none"> Linear Guide Lock Units P588

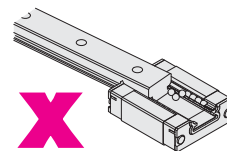
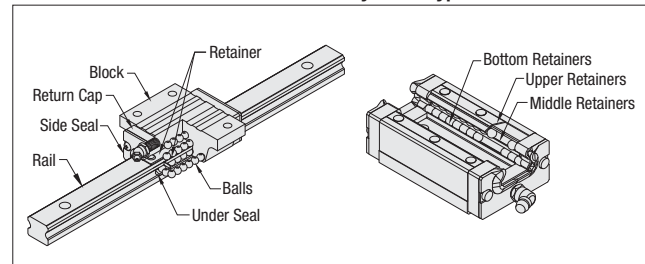
Linear Guide Structure and Features

Miniature 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
 Balls do not fall out of MISUMI linear guides when removed from rails as the blocks are equipped with ball-retainers. 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.

Medium and Heavy Load Type



Precision

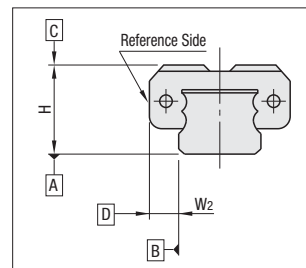
- Dimensional Accuracies

Unit: μm

Type	Accuracy Standards	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	$\pm 25(20)$	
	Width W_2 Pair Variation	10	20	40	
Medium and Heavy Load Type	Accuracy Standards	High Grade	Inter-changeable	Standard Grade	
	Height H Tolerance	± 40	± 20	± 100	
	Height H Pair Variation	15	15	20	
	Width W_2 Tolerance	24, 28	15	25	20
		33, 42	15	25	30
Width W_2 Pair Variation	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 () is for the products on P549



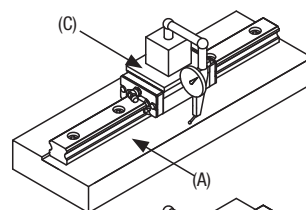
- Running Parallelism

Unit: μm

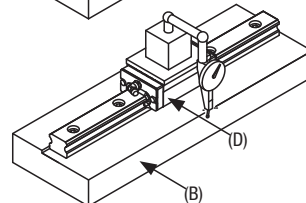
Rail Length (mm)	Precision Grade	Miniature			Medium and Heavy Load		
		High Grade	Standard Grade	High Grade	Inter-changeable	Standard Grade	
Over 50	2	3	13	7	6	7	
50	80	2	3	13	7	6	7
80	125	3	7	15	7	6.5	7
125	200	3	7	15	7	7	7
200	250	3.5	9	17	7	8	7
250	315	4	11	18	8	9	12
315	400	5	11	18	8	11	12
400	500	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 surf. C against surf. A



-Running parallelism of surf. D against surf. B



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	

- 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.

*marked size is for Extra Heavy Load and Extra Super Heavy Load.

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 load applied 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 0.001 times that of the diameter of the rolling element (balls).

-Allowable Static Moment ($M_A / M_B / M_C$)

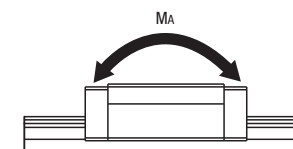
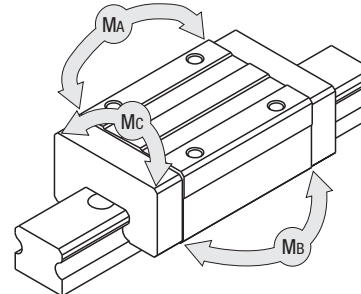
Allowable static moment is a critical static moment load defined by permanent deformation value similar to basic static load rating Co.

$$\text{Allowable Load (N)} \leq C_o / f_s$$

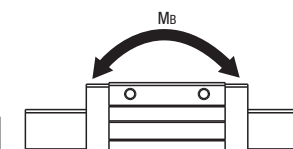
$$\text{Allowable Moment (N} \cdot \text{m)} \leq (M_A, M_B, M_C) / f_s$$

f_s : Statistic Safety Factor C_o : Basic Static Load Rating (N)

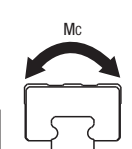
M_A, M_B, M_C : Static Allowable Moment (N · m)



Pitch Direction



Yaw Direction



Roll Direction

-Static Safety Factor (f_s)

Basic Static Load Rating C_o , 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

Operating Life Calculation for Linear Guides

Operating Life

When Linear Guide is loaded in linear reciprocating motion, scaly damages called flaking appear due to material fatigue as the stress works on the rolling elements and rolling contact surfaces constantly. Total travel distance until the first flaking occurs is called Life of Linear Guides.

Rated Life

Rated Life is the total travel distance that 90% of linear guides of the same type can reach, under the same conditions, with no occurrence of flaking damage. Rated Life can be obtained from the Basic Dynamic Load Rating and the actual load applied on the linear guide, as shown below.

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

Load must be calculated before actually using Linear Guides. To obtain load during linear reciprocating motion, it is necessary to fully consider vibration and impact during motion, and also distribution status in relation to Linear Guides. So, it is not easy to obtain load by calculation. Operating temperature also critically affects life. All these conditions considered, the above-mentioned calculation formula is as follows.

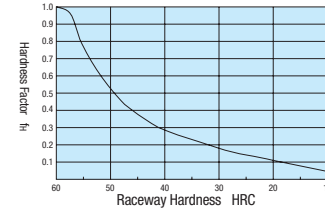
$$L = \left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P}\right)^3 \cdot 50$$

L : Rated Life (km)
C : Basic Dynamic Load Rating (N)
P : Applied Load (N)
f_H : Hardness Factors (See Fig. 1)
f_T : Temperature Factors (See Fig. 2)
f_C : Contact Factors (See Table 1)
f_W : Load Factors (See Table 2)

Hardness Factor (f_H)

For Linear Guide applications, sufficient hardness is required for ball contact shafts. Inappropriate hardness causes less allowable load, resulting in shorter life. Please correct the rated life according to the temperature factors.

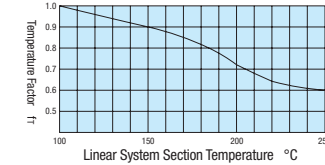
Fig. 1 Hardness Factor



Temperature Factor (f_T)

If the Linear Guide temperature exceeds 100°C, the Linear Guide and shaft hardness decreases, resulting in less allowable load and shorter life than used at a room temperature. Please correct the rated life according to the temperature factors. * Please use Linear Guides under the allowable temperature shown on each product page.

Fig. 2 Temperature Factor



Contact Factor (f_C)

For actual applications, more than 2 blocks are generally used per shaft. In this case, load applied to each block varies depending on machining precision but is not uniformly distributed. As a result, per-block allowable load varies depending on per-shaft Linear Guide quantity. Please correct the rated life according to Table 1. Temperature Factor.

Table 1. Contact Factor

Number of bearings installable on one shaft.	Contact Factor f _C
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

Load Factor (f_W)

To calculate load applied to the Linear Guides, other than object weight, it requires inertia force attributed to motion velocity or moment loads. It, however, is difficult to attain accurate calculations due to potential vibration and impacts caused during reciprocating motion, other than repeated start-stop motions. Table 2. Load factor helps simplify life calculation.

Table 2. Load Factor

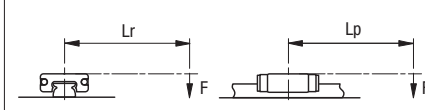
Condition of Use	f _W
No shocks/vibrations, low speed: 15m/min. or less	1.0-1.5
No significant shocks/vibrations, medium speed: 60m/min. or less	1.5-2.0
With shocks/vibrations, high speed: 60m/min. or more	2.0-3.5

Applied Load P Calculation Method

When load is applied to a block, convert moment load into applied load by the following formula.

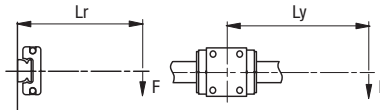
- Horizontal Installation

$$P = F + \frac{C_0 \cdot X(F \cdot L_r)}{M_c} + \frac{C_0 \cdot X(F \cdot L_p)}{M_A}$$



- Lateral Installation

$$P = F + \frac{C_0 \cdot X(F \cdot L_r)}{M_c} + \frac{C_0 \cdot X(F \cdot L_y)}{M_b}$$



P: Applied Load (N)
F: Downward Load (N)
C₀: Static Load Rating (N)
M_A: Allowable Static Moment - Pitch Direction (N * m)
M_b: Allowable Static Moment - Yaw Direction (N * m)
M_c: Allowable Static Moment - Roll Direction (N * m)
L_p: Distance from block center to load center in Pitch direction (m)
L_y: Distance from block center to load center in Yaw direction (m)
L_r: Distance from block center to load center in Roll direction (m)

Load Calculation

Linear Guides perform linear reciprocating motion while supporting object weight. Therefore, load applied to Linear Guides varies depending on the center of gravity of the object, thrust force applied position or changes in speed at start, stop, acceleration and deceleration. For Linear Guide selections, these conditions must be fully considered.

Table 3. Condition of Use and Load Calculation Formula.

Classification	Condition of Use and Loads	Classification	Condition of Use and Loads
1	Horizontal Axes $P_1 = \frac{1}{4} W + \frac{X_0}{2X} W + \frac{Y_0}{2Y} W$ $P_2 = \frac{1}{4} W - \frac{X_0}{2X} W + \frac{Y_0}{2Y} W$ $P_3 = \frac{1}{4} W + \frac{X_0}{2X} W - \frac{Y_0}{2Y} W$ $P_4 = \frac{1}{4} W - \frac{X_0}{2X} W - \frac{Y_0}{2Y} W$	3	Wall Mounted Horizontal Axes $P_1 = P_2 = P_3 = P_4 = \frac{l_1}{2X} W$ $P_{1S} = P_{3S} = \frac{1}{4} W + \frac{X_0}{2X} W$ $P_{2S} = P_{4S} = \frac{1}{4} W - \frac{X_0}{2X} W$
	Vertical Axes $P_1 = P_2 = P_3 = P_4 = \frac{l_1}{2X} W$ $P_{1S} = P_{2S} = P_{3S} = P_{4S} = \frac{y_0}{2X} W$		At Acceleration/Deceleration - When accelerating from a start $P_1 = P_3 = \frac{1}{4} W \left(1 + \frac{2V_1 \cdot l_1}{g \cdot t_1 \cdot X} \right)$ $P_2 = P_4 = \frac{1}{4} W \left(1 - \frac{2V_1 \cdot l_1}{g \cdot t_1 \cdot X} \right)$ - When decelerating to a stop $P_1 = P_3 = \frac{1}{4} W \left(1 - \frac{2V_1 \cdot l_1}{g \cdot t_3 \cdot X} \right)$ $P_2 = P_4 = \frac{1}{4} W \left(1 + \frac{2V_1 \cdot l_1}{g \cdot t_3 \cdot X} \right)$ - At uniform speed $P_1 = P_2 = P_3 = P_4 = \frac{1}{4} W$ <p>g: Gravitational Acceleration = 9.8x10³mm/sec²</p>

W : Applied Load (N) P₁, P₂, P₃ and P₄: Load applied to Linear Guides (N)

X, Y: Linear Guide Span (mm) V: Travel Speed (mm/sec) t₁: Acceleration Time (sec) t₃: Deceleration Time (sec)

Average of Fluctuating Loads

In general, load applied to Linear Guides varies depending on their applications. For example, there are cases at the start and stop of reciprocating motion, during constant motion or transfer with/without a work-piece. Considering these fluctuating loads, it requires average load under which the life equals to the one under the conditions.

(1) When load changes in stages according to the distance (Fig. 3)

Travel distance l₁ under load P₁

Travel distance l₂ under load P₂

...

Travel distance l_n under load P_n

Average load P_m is obtained by the following formula.

$$P_m = \sqrt[3]{\frac{1}{l} (P_1^3 l_1 + P_2^3 l_2 + \dots + P_n^3 l_n)}$$

P_m: Fluctuating Load Average (N) l: Total Travel Distance (m)

(2) When load changes almost linearly (Fig. 4)

Average load P_m is approximately obtained by the following formula.

$$P_m = \frac{1}{3} (P_{min} + 2 \cdot P_{max})$$

P_{min}: Minimum Fluctuating Load (N)

P_{max}: Maximum Fluctuating Load (N)

(3) When load changes in a sine curve as shown on Fig. 5 (a) and (b), average load P_m is approximately obtained by the following formula.

Fig. 5 (a) P_m=0.65P_{max}

Fig. 5 (b) P_m=0.75P_{max}

Fig. 3 Staged Fluctuating Loads

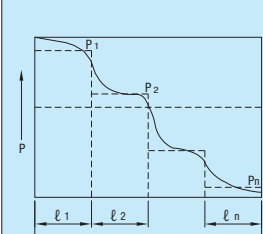


Fig. 4 Constant Fluctuating Loads

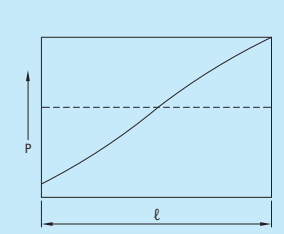
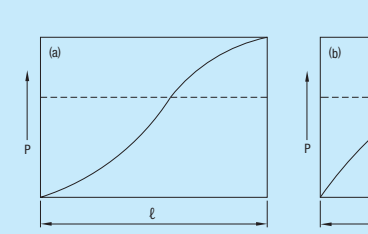


Fig. 5 Sine Curve-formed Fluctuating Loads

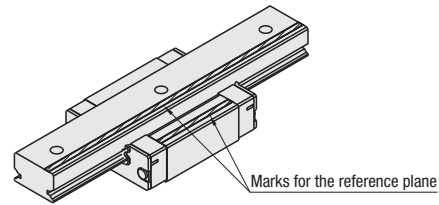


Installation and Maintenance of Linear Guides

Installation Method of Linear Guides

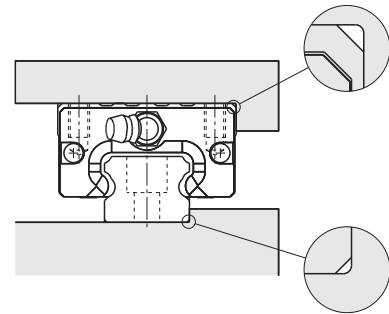
MISUMI Linear Guides have a datum surface (a surface with a straight groove) on both the rail and block. (Refer to the right figure)

When installing Linear Guides, correctly match the datum of the guides and installation bases.



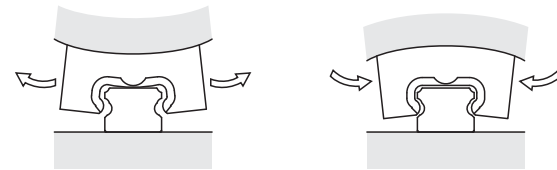
Mounting Surface Shape

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.



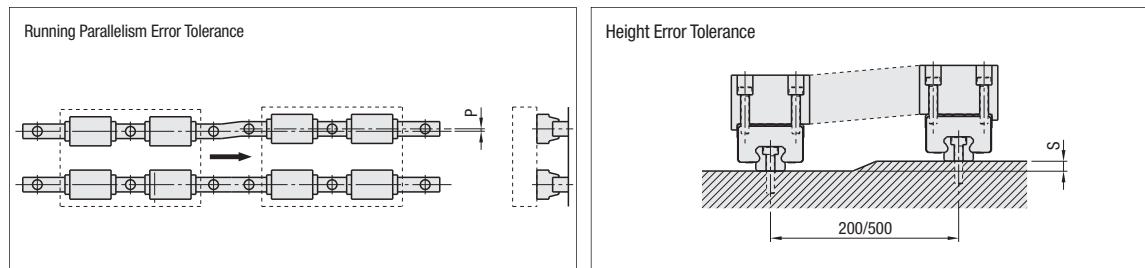
Block Mounting Surface Flatness

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 5 μ m mounting surface flatness is recommended.



Installation Error Tolerance

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



Installation Error Tolerance

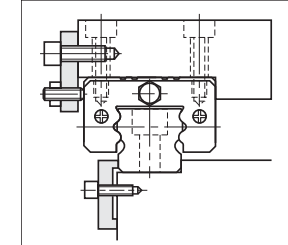
Type	Radial Clearance	Parallelism Error Tolerance of 2 Shafts (P)	Height Error Tolerance of 2 Shafts
Miniature Type	Light Preload	6 μ m or less	15 μ m or less / 200mm
	Interchangeable-Slight Clearance	10 μ m or less	30 μ m or less / 200mm
Medium and Heavy Load Type	Light Preload / Normal Clearance	20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

Rail Installation

-When datum provided on installation bases

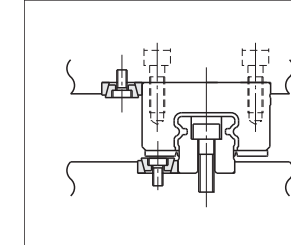
- (1) Remove burrs and dusts on the mating surfaces before installation.
- (2) Place a rail on the installation side of the base gently, and tighten the screws temporarily while pushing the rail against the datum shoulder.
- (3) Installation methods Figure 1-3 are recommended when using linear guides 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



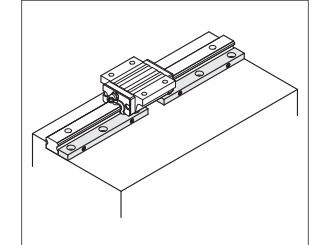
Refer to P588

Fig. 2: Taper gib method



Refer to P588

Fig. 3: Push screw method



Refer to P586

-When datum not provided on installation bases

Straight Gauge

- (1) Place a rail on the installation side of the base gently, and tighten the screws temporarily.
- (2) Place a straightedge parallel to the temporarily tightened rail.
- (3) Use the straightedge as a reference, snug down 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 straightedge 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: Straightedge method

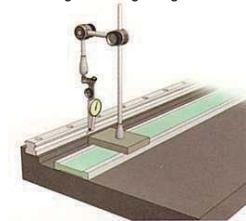


Fig. 5: Secondary rail mounting method

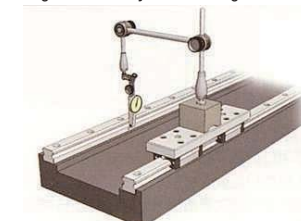


Table 1: Screw Tightening Torque (For SCM Material)

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.

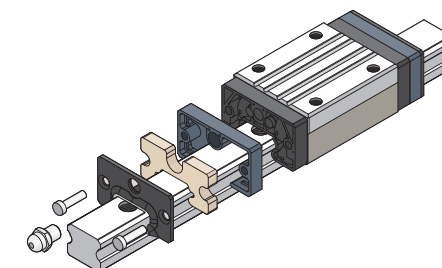
- Miniature Type: Filled with Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.).
- Medium / Heavy Load type: Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.)
- Recommended Lubrication Intervals: Every 6 months

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.

- Lubrication Unit **MX** significantly extends lubrication intervals.

For details, refer to **P498**



Special Greases / Details of Rail Length (L dimension) Configurable Type

Linear Guides with LTBC

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 little.
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	€ Unit Price Added to price of standard type
Miniature Linear Guides	P509~P546		(1 Block)
Ⓢ Not applicable to Heat Resisting Type or lubrication unit type.			(2 Blocks)
Medium and Heavy Load Linear Guides	P553~P566		(1 Block)
Ⓢ Not applicable to Plastic Retainer Type.			(2 Blocks)



Part Number - L
 Example: 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.



10 Days
 Express B 5,00 EUR / piece P. 88
 Ⓢ A Express Charge of 13,50 EUR for 3 or more identical pieces.



Price [Please refer to each product page for Volume Discount.]



Alterations [Part Number - L SEBL10L - 270]
 Ⓢ Confirm the details of alterations on the page #s shown in the table on the left.

Add the unit price in the above table to the unit price of applicable standard product.

Price Calculation Example: SEBL10L-270 (Standard Preload Type)
 (Standard Type € Unit Price) + (Additional € Unit Price from above) = (Total)
 60,30 EUR + 15,00 EUR = 75,30 EUR

M (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
L	41~50	48~67	58~82	88~127	140~199	3
L	51~65	68~87	83~107	128~167	200~259	4
L	66~80	88~107	108~132	168~207	260~319	5
L	81~95	108~127	133~157	208~247	320~379	6
L	96~110	128~147	158~182	248~287	380~439	7
L	111~125	148~167	183~207	288~327	440~499	8
L	126~129	168~187	208~232	328~367	500~559	9
L	-	188~207	233~257	368~407	560~619	10
L	-	208~227	258~282	408~447	620~679	11
L	-	228~247	283~307	448~487	680~699	12
L	-	248~267	308~332	488~527	-	13
L	-	268~274	333~357	528~567	-	14
L	-	-	358~382	568~607	-	15
L	-	-	383~407	608~647	-	16
L	-	-	408~432	648~669	-	17
L	-	-	433~457	-	-	18
L	-	-	458~469	-	-	19
F	F=15	F=20	F=25	F=40	F=60	

Medium and Heavy Load Type

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

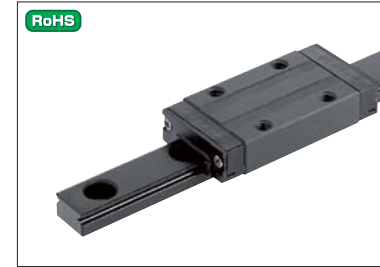
Miniature Linear Guide -Wide Rail-

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

About G Dimensions

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



LTBC plating on linear guides:

Type: LTBC plating with fluoropolymer layer on top
 Thickness: 5µm thick.
 Corrosion protection: Excellent rust prevention for long term period
 Material benefits: Chemically deposited at low temperature without any change in material structure.
 Peeling: The coating is resistant to cracking from extreme and repeated bending. Even hairpin-shaped bending won't cause cracks. Plating won't be exfoliated by repeat bending (Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity).
 Optical benefits: Less reflections (suitable for places where light reflections are undesirable).
 (Note) Surface treatment will not be applied to mounting holes of rails and blocks of LTBC plated linear guide.

Explanation of LTBC Plated Model Types

For LTBC plated products, change the first letter of part numbers "S" to "R".

	[Standard]	[LTBC Plated Products]
(Ex.)	:SEB10-115	→ :RFB10-115
	:SSEB16-270	→ :RSEB16-270
	:SKR24-520	→ :RXR24-520
	:SSVR33-700	→ :RSVR33-700

Table: LTBC Plated Miniature Linear Guides

Rails	Block Length	Block Type	Catalog Page	STKM				Stainless Steel			
				1 Block		2 Blocks		1 Block		2 Blocks	
				Selectable	Specified	Selectable	Specified	Selectable	Specified	Selectable	Specified
Standard	Standard	Standard	P513	REB	REBL	RE2B	RE2BL	RSEB	RSEBL	RSE2B	RSE2BL
	Long	Standard	P521	RELB	RELBL	REL2B	REL2BL	RSELB	RSELBL	RSEL2B	RSEL2BL
Wide	Standard	Standard	P531	REBW	REBWL	RE2BW	RE2BWL	RSEBW	RSEBWL	RSE2BW	RSE2BWL
	Long	Standard	P539	RELBW	RELBWL	REL2BW	REL2BWL	RSELBW	RSELBWL	RSEL2BW	RSEL2BWL

Table: LTBC Plated Medium and Heavy Load Linear Guides

Rails	Block Length	Block Type	Catalog Page	STKM				Stainless Steel			
				1 Block		2 Blocks		1 Block		2 Blocks	
				Selectable	Specified	Selectable	Specified	Selectable	Specified	Selectable	Specified
Standard	Medium Load	Standard	P557*559	RVR	RVRL	RV2R	RV2RL	RSVR	RSVRL	RSV2R	RSV2RL
		With Dowel Holes	P563	RVRN	RVRLN	RV2RN	RV2RLN	-	-	-	-
		Wide (Through Holes)	P559	RVW	RVWL	RV2W	RV2WL	-	-	-	-
	Heavy Load	Wide (Female Thread Holes)	P559	RVWT	RVWTL	RV2WT	RV2WTL	-	-	-	-
		Standard	P557*561	RXR	RXRL	RX2R	RX2RL	RSXR	RSXRL	RSX2R	RSX2RL
		With Dowel Holes	P565	RXRN	RXRNL	RX2RN	RX2RNL	-	-	-	-
		Wide (Through Holes)	P561	RXW	RXWL	RX2W	RX2WL	-	-	-	-
		Wide (Female Thread Holes)	P561	RXWT	RXWTL	RX2WT	RX2WTL	-	-	-	-

Price of LTBC (For LTBC plated products, add the price below to the unit price of Linear Guides.)

Part Number	Type	H	L	€ Unit Price		Part Number	Type	H	L	€ Unit Price	
				Blocks 1 pc.	Blocks 2 pcs.					Blocks 1 pc.	Blocks 2 pcs.
Miniature Type Wide Rails (Page P531)	8		40-55			24		100-220			
			56-70					221-280			
			71-85					281-340			
			86-100					341-400			
			101-115					401-460			
			116-130					461-520			
			35-75					521-580			
			76-95					581-640			
	10		96-115			28		641-700			
			116-135					701-760			
			136-155					761-820			
			156-175					821-880			
			176-195					881-940			
			196-215					941-1000			
			216-235					1001-1120			
			236-255					1121-1240			
13		256-275			33		160-280				
		45-95					281-340				
		96-120					341-400				
		121-145					401-460				
		146-170					461-520				
		171-195					521-580				
		196-220					581-640				
		221-245					641-700				
16		246-270			33		701-760				
		271-295					761-820				
		296-320					821-880				
		321-345					881-940				
		346-370					941-1000				
		371-395					1001-1120				
		396-420					1121-1240				
		421-445					160-280				
20		446-470			33		281-340				
		70-150					341-400				
		151-190					401-460				
		191-230					461-520				
		231-270					521-580				
		271-310					581-640				
		311-350					641-700				
		351-390					701-760				
20		391-430			33		761-820				
		431-470					821-880				
		471-510					881-940				
		511-550					941-1000				
		551-590					1001-1120				
		591-630					1121-1240				
		631-670					160-280				
		100-200					281-340				
201-220			341-400								
221-280			401-460								
281-340			461-520								
341-400			521-580								
401-460			581-640								
461-520			641-700								
521-580			701-760								
581-640			761-820								
641-700			821-880								

Ⓢ Not applicable to H6.5.

Ⓢ H dimension 24 is available up to 1,000mm of L dimension.
 Ⓢ For H28, L is available up to 1240mm.
 Ⓢ For H33, L is available up to 1240mm.