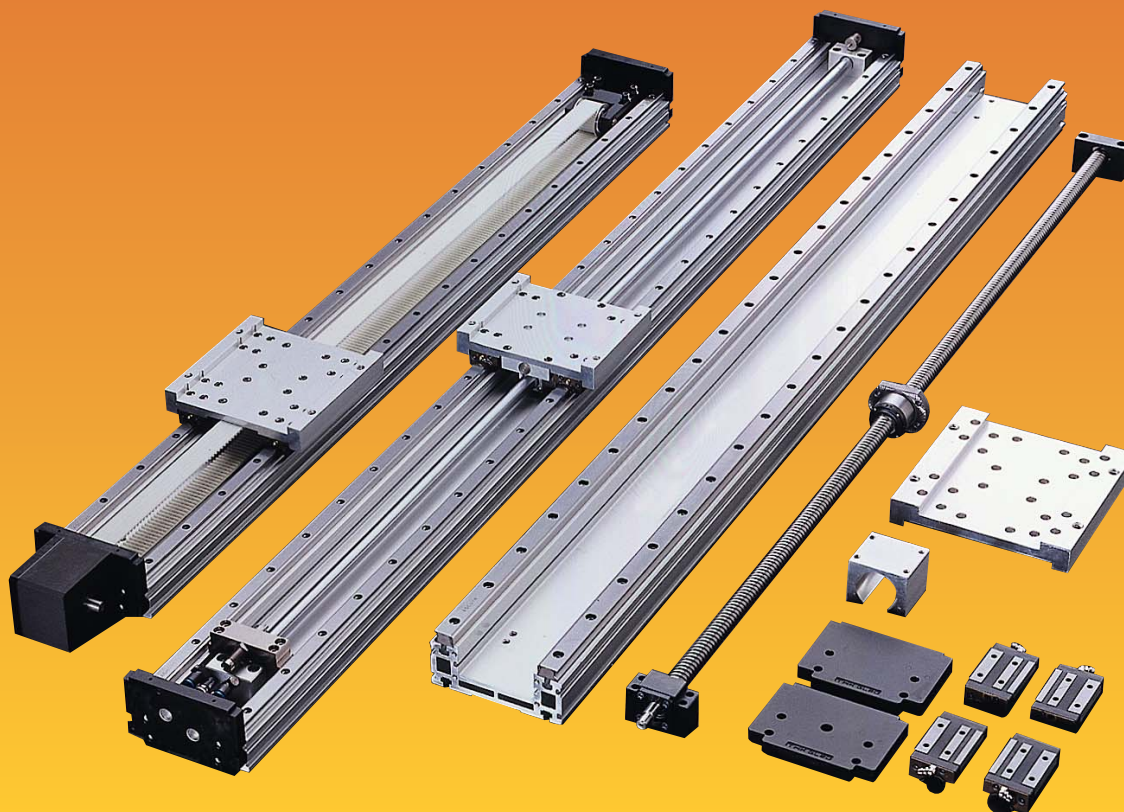


NEW

LM Actuator **GL**

Low Cost Simple Actuator
LM Assembly Kit Also Available

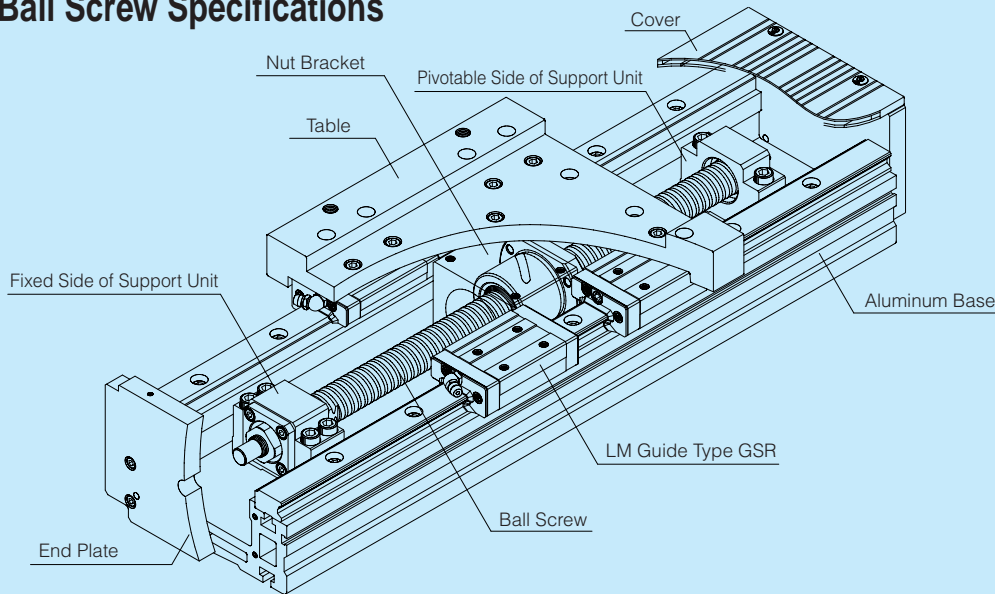


LM Actuator Type GL


The LM Actuator type GL combines a type GSR to an aluminum base being sold as an assembly kit with its main parts such as the top table and drive system standardized.

We supply actuator parts that are right for your needs at low cost. You can manufacture your own actuator that matches your specifications because you can select your own actuator parts.

Type GL Ball Screw Specifications



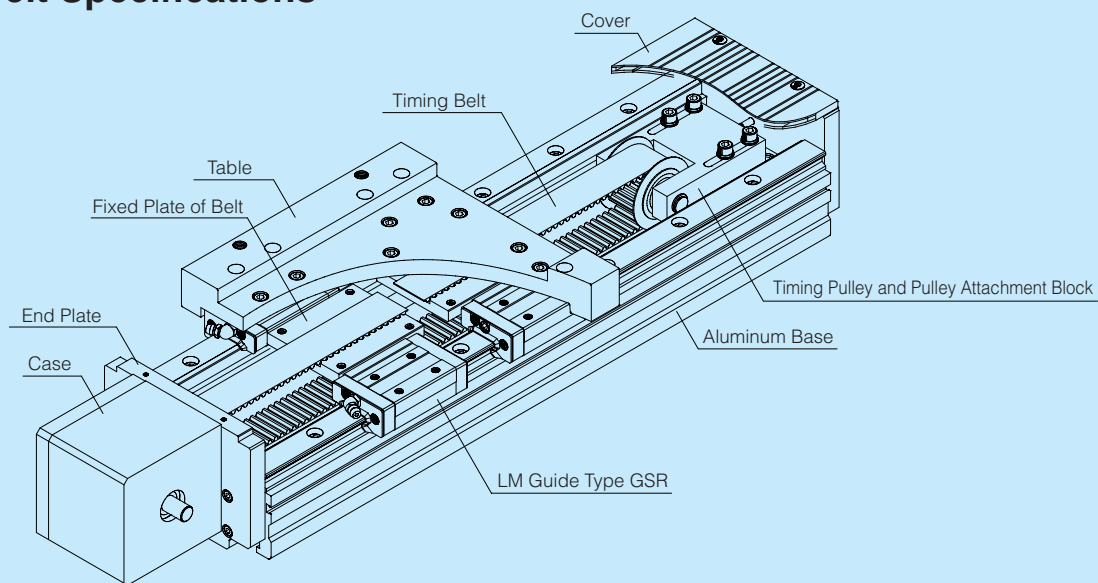
Construction

Single-axis actuator with built-in  threaded ball screw that combines an LM guide type GSR to the aluminum base of the type GL. We have three types of ball screw leads available to allow selection to meet your specific transfer equipment and uses.

Features

- **Enables manufacturing of actuator that corresponds to it use**
Allows you to manufacture the actuator that matches your specifications because you can select the parts.
- **Short delivery time**
All parts are standardized to enable manufacturing with short delivery times.
- **Lightweight and highly rigid**
The base aluminum extrusion material and cross section form employs a hollow construction that has superior rigidity allow the actuator to be lightweight and rigid.
- **Right and left hand ball screw specifications available**
Right and left hand ball screw specifications are available to meet your requirements. Right and left hand screws enable simultaneous operation of the top table.
- **Ball screw lead**
Ball screws with a precision transfer of 5 mm or high speed transfer of 40 mm are available to correspond to a variety of needs.

Type GL Belt Specifications



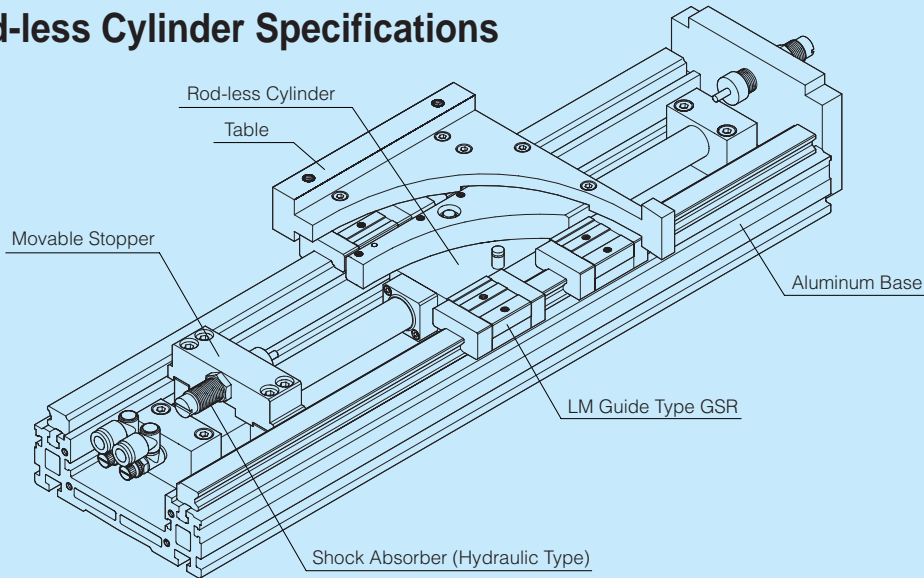
Construction

Single-axis actuator with built-in high rigidity belt (steel core) that combines an LM guide type GSR to the aluminum base of the type GL.

Features

- **Enables high-speed transfer**
LM guide type GSR without clearance and highly rigid belt enable high speeds.
- **Corresponds to long strokes**
Long strokes can be manufactured that is impossible with ball screws. (Contact **THK** for strokes that are not standard.)
- **Short delivery time**
All parts are standardized to enable manufacturing with short delivery times.
- **Lightweight and highly rigid**
The base aluminum extrusion material and cross section form employs a hollow construction that has superior rigidity allow the actuator to be lightweight and rigid.

Type GL Rod-less Cylinder Specifications



Construction

Single-axis actuator with built-in high coercive force-magnetic type rod-less cylinder that combines a type GSR LM rail to the aluminum base of the type GL. The magnetic type rod-less cylinder has a highly powerful magnet attached to the outer circumference of the cylinder's internal piston thereby holding the piston and slider. The structure has a double dust seal as a measure to prevent contamination.

Features

- **Low cost**

Use current ball screw and type GL belt specifications to allow lower price.

- **Quite travel**

Magnetic type rod-less cylinder enables quiet travel.

- **Stroke adjustments possible**

Easy stroke adjustments are possible because you can move the stopper to any desired position.

- **Contamination prevention**

No contamination can enter the inside of the cylinder because of the use of the magnetic type rod-less cylinder drive system. Also, structure includes a double dust seal. Use the optional twill braid if being used under poor ambient conditions.

Rod-less Cylinder Specifications

	Model Number	GL15-R	GL20-R
Rod-less Cylinder	Tube diameter (mm)	φ16	φ25
	Maximum transfer mass (kg)	15	30
	Tube connection diameter	M5	Rc1/8
	Tube diameter (mm)	6	8
	Fluid used	Air	Air
	Withstand pressure (MPa)	0.9	0.9
	Maximum pressure (MPa)	0.6	0.6
	Minimum operating pressure (MPa)	0.25	0.2
	Speed range of use (mm/sec)	150 - 500 (600 when horizontal and no load)	100 - 500 (600 when horizontal and no load)
	Temperature of use (°C)	5-70	5-70
Shock Absorber	Cushion	Shock absorber (with movable stopper)	Shock absorber (with movable stopper)
	Aspiring energy (J)	6.9	9.8
	Aspiring energy per minute (J/min)	Max. 98	Max. 176
	Collision speed (m/sec)	Max. 1	Max. 1
	Frequency of use (cpm)	Max. 60	Max. 60
	Cushion stroke (mm)	9	11

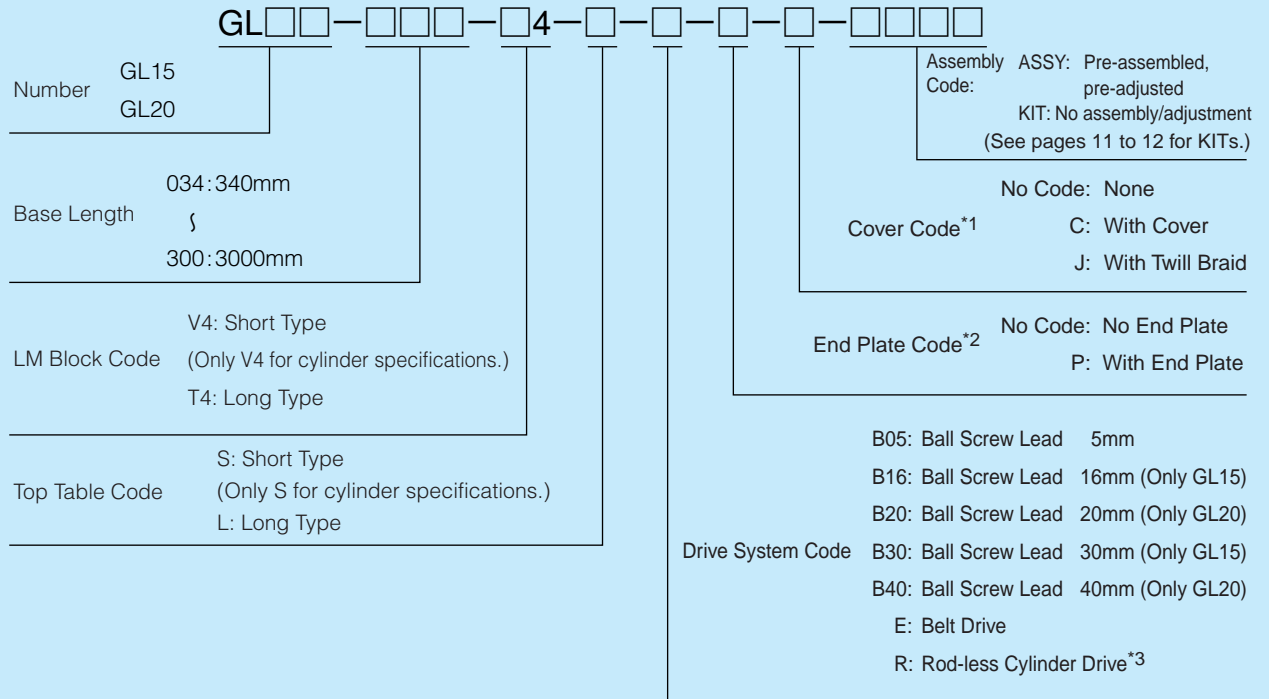
Cautions for Use

Note the following items to prevent uncoupling of the magnet from the rod-less cylinder's piston.

1. Always use within the pressure of use.
2. Do not use the closed center valve to stop the air pressure circuit part way. (Piston can become uncoupled.)
3. Do not modify the piston structure or collide the piston inside the cylinder tube as the stopper. The cylinder should always use the dedicated shock absorber to stop.
4. Lubrication of the cylinder is unnecessary, but you may lubricate. Use ISOVG32 or ISOVG46 when lubricating.

Configuration of Numbers

The following shows the numbering of type GL. When you have a desired kit part, enter “KIT” behind the number. Enter “ASSY” for your preferred pre-assembled and pre-adjusted part.
(Only assembled parts are available for rod-less cylinder specifications. They are not sold in kits.)



*1 Cover can be up to 240 with length of base.

*2 End plate is only for ball screw drives. No entry necessary for belt or rod-less cylinder drives.

*3 The twill braid for the rod-less cylinder specification is an option. Contact **THK** because the stroke is different.

Ex. 1 (Pre-assembled Part)

GL15-082-T4-L-B30-P-J-ASSY

Ex. 2 (Kit Part)

GL20-070-T4-L-E-C-KIT

If you have ordered kit parts, we will deliver all parts together.

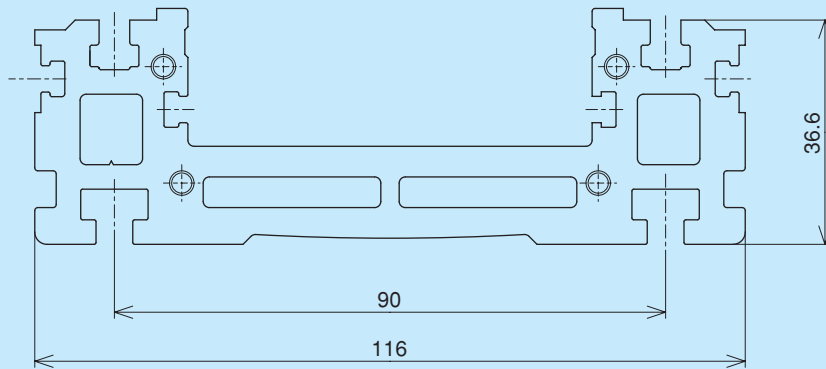
Ex. 3 (Cylinder Specifications)

GL15-080-V4-S-R-ASSY

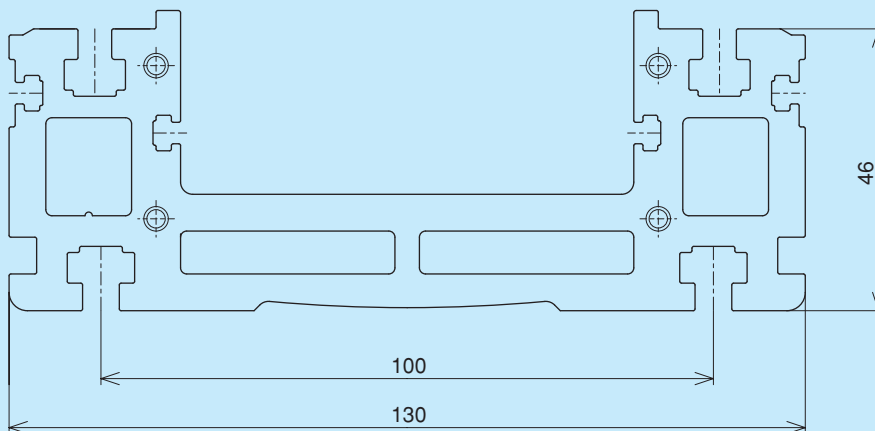
Base Cross Section Form

The base uses a high strength aluminum alloy with an anodic oxide coating making it lightweight and resistant to corrosion. The cross section form employs a hollow construction that is lightweight and highly rigid.

GL15



GL20



Standard Base Length and Stroke

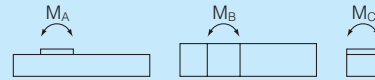
The following table shows the stroke for use of the type GL standard base length and drive assembly kit (ball screw, belt or rod-less cylinder).

Unit: mm															
GL15	Standard Base Length L_0	340	460	580	700	820	1060	1240	1420	1600	1780	1960	—	—	—
	Ball Screw	100	220	340	460	580	820	1000	1180	—	—	—	—	—	—
	Belt	70	190	310	430	550	790	970	1150	1330	1510	1690	—	—	—
	Rod-less Cylinder	—	200	320	440	560	800	980	1160	—	—	—	—	—	—
GL20	Standard Base Length L_0	460	580	700	820	1060	1240	1420	1600	1780	1960	2200	2320	2500	3000
	Ball Screw	200	320	440	560	800	980	1160	1340	1520	—	—	—	—	—
	Belt	160	280	400	520	760	940	1120	1300	1480	1660	1900	2020	2200	2700
	Rod-less Cylinder	—	270	390	510	750	930	1110	1290	—	1650	—	—	—	—

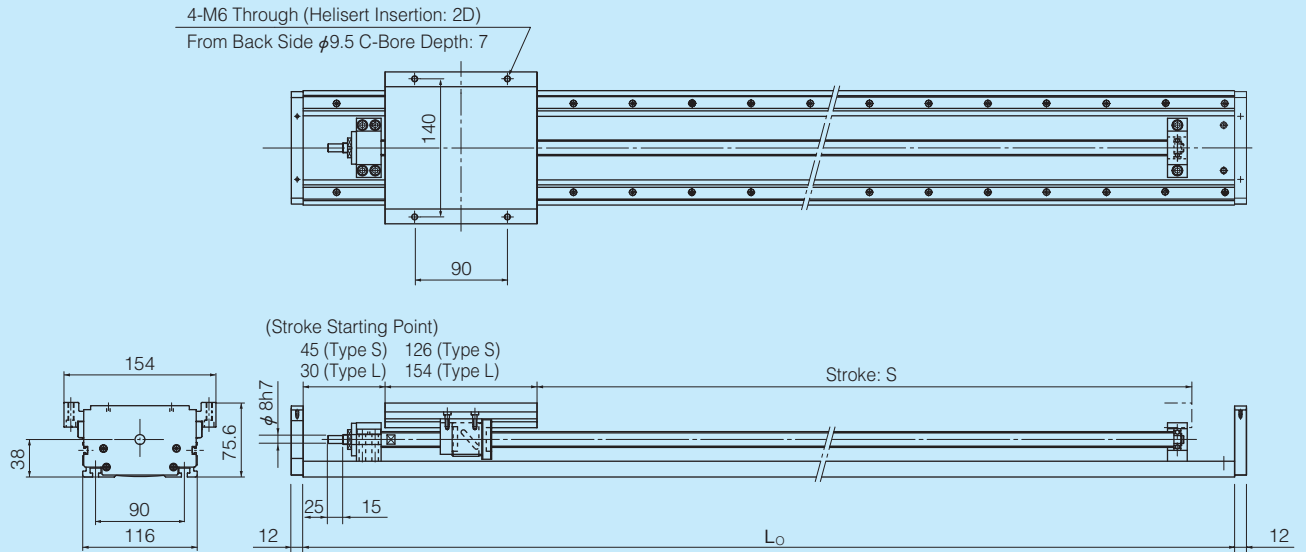
* Table shows the maximum stroke length for a type L (long type) table.
 Type S ball screw kit (short type) table has the same stroke as the type L.
 Maximum stroke is GL15: +30 mm, GL 20: +20 mm when using the belt kit type S table.
 Rod-less cylinder table shows the stroke for type S (short type) only.

Type GL15 (Ball Screw Specifications) Pre-assembled Diagram

Repeatable Positioning Accuracy	$\pm 0.02\text{mm}$			
Moment of Load (N•m) Note 1	Type S	M _A 84.3	M _B 79.4	M _C 130.4
	Type L	M _A 121.6	M _B 114.7	M _C 171.6



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

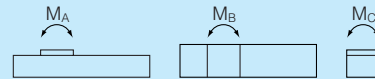


Stroke: S	100	220	340	460	580	820	1000	1180
Base Length: L ₀	340	460	580	700	820	1060	1240	1420

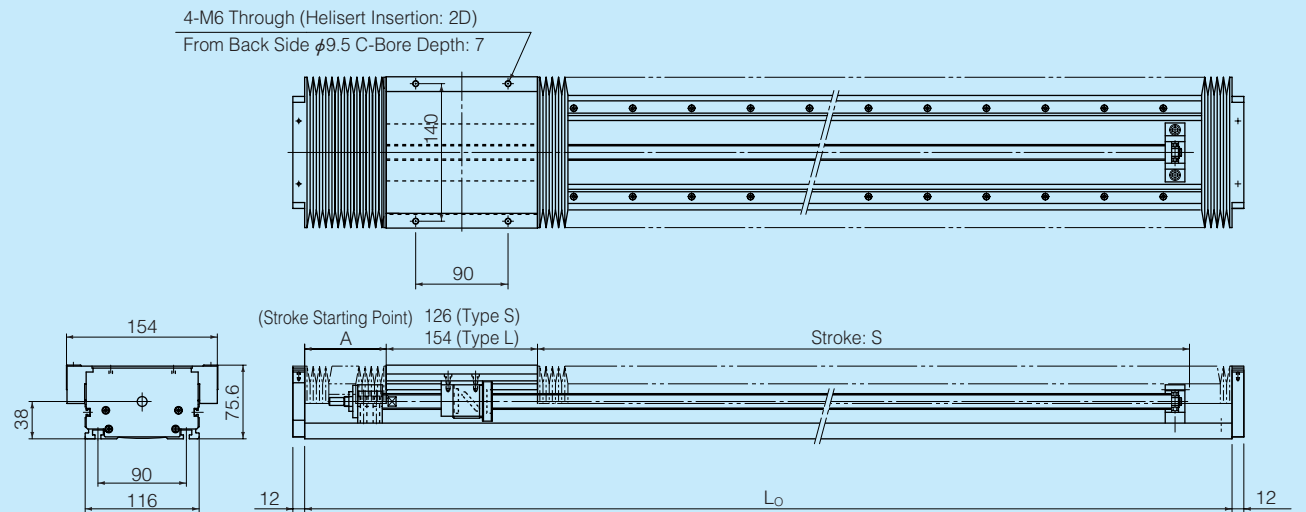
* Table shows stroke using type L table.

Type GL15 (Ball Screw Specifications) Pre-assembled Diagram With Twill Braid

Repeatable Positioning Accuracy	$\pm 0.02\text{mm}$			
Moment of Load (N•m) Note 1	Type S	M _A 84.3	M _B 79.4	M _C 130.4
	Type L	M _A 121.6	M _B 114.7	M _C 171.6



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

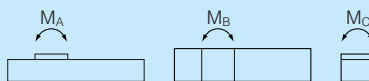


Stroke: S	100	200	340	455	560	770	910	1070
Base Length: L ₀	340	460	580	700	820	1060	1240	1420
Stroke Starting Point: A	Type S	57	57	57	59.5	67	82	102
	Type L	43	43	43	45.5	53	68	88

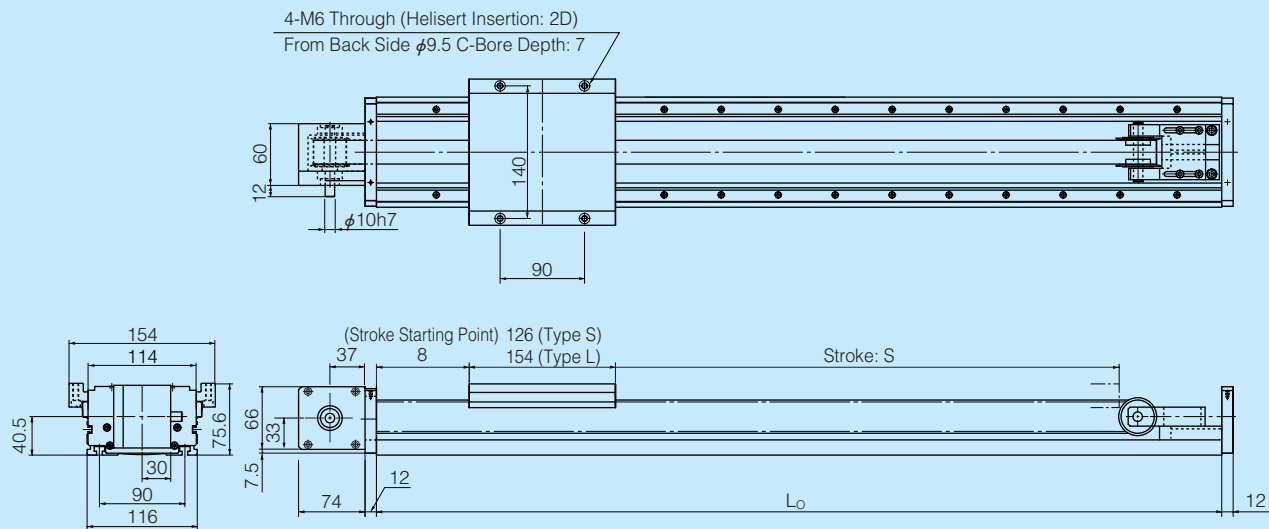
* Table shows stroke using type L table.

Type GL15 (Belt Specifications) Pre-assembled Diagram

Repeatable Positioning Accuracy	±0.08mm				
Moment of Load (N•m) Note 1	Type S	M _A 84.3	M _B 79.4	M _C 130.4	
	Type L	M _A 121.6	M _B 114.7	M _C 171.6	



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

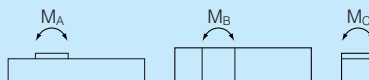


Stroke: S	70	190	310	430	550	790	970	1150	1330	1510	1690
Base Length: L ₀	340	460	580	700	820	1060	1240	1420	1600	1780	1960

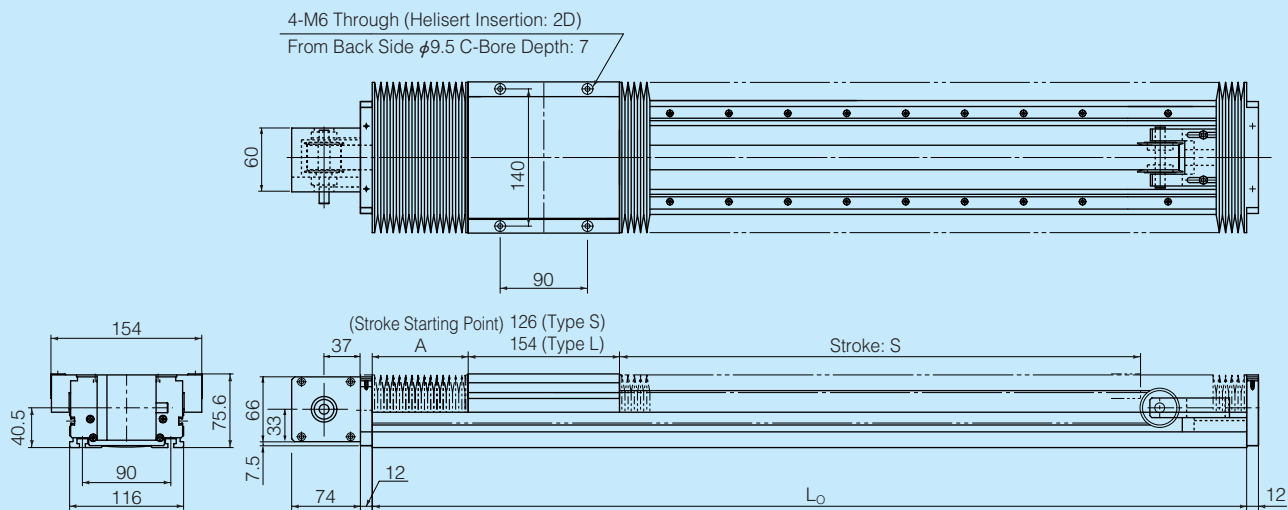
* Table shows stroke using type L table.
Maximum stroke is +30 mm for type S table specifications.

Type GL15 (Belt Specifications) Pre-assembled Diagram With Twill Braid

Repeatable Positioning Accuracy	±0.08mm				
Moment of Load (N•m) Note 1	Type S	M _A 84.3	M _B 79.4	M _C 130.4	
	Type L	M _A 121.6	M _B 114.7	M _C 171.6	



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

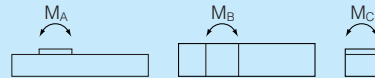


Stroke: S	50	160	280	380	480	700	840	980	1120	1260	1400
Base Length: L ₀	340	460	580	700	820	1060	1240	1420	1600	1780	1960
Stroke Starting Point: A	30	40	50	65	80	105	125	145	165	185	205

* Table shows stroke using type L table.
Maximum stroke is + 28 mm for type S table specifications.
Stroke starting point A is the same for both type S table and type L table.

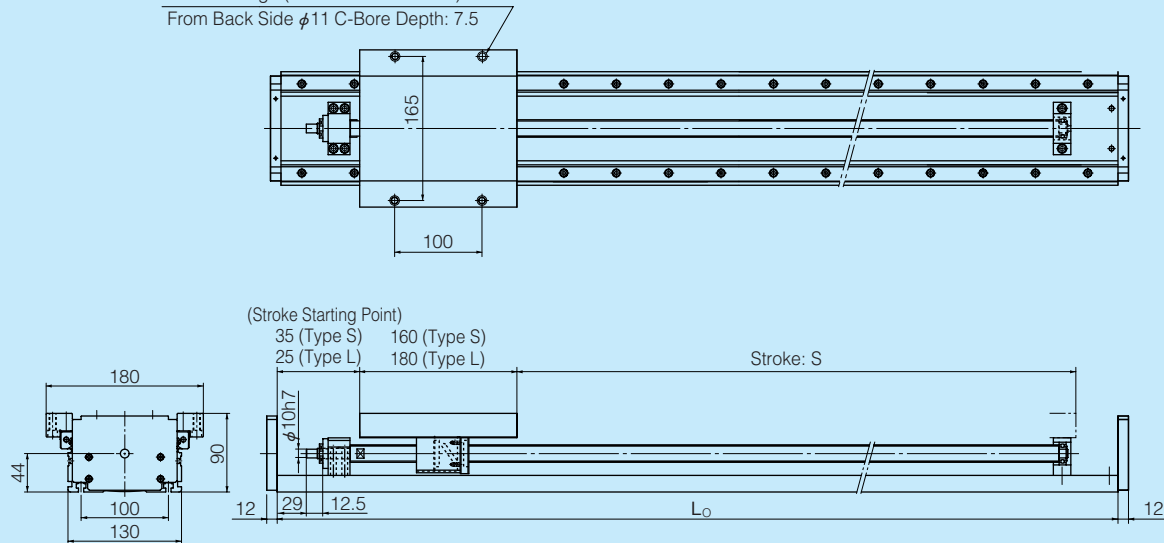
Type GL20 (Ball Screw Specifications) Pre-assembled Diagram

Repeatable Positioning Accuracy	$\pm 0.02\text{mm}$
Moment of Load (N·m) Note 1	Type S $M_A 170.6$ $M_B 160.8$ $M_C 237.2$
	Type L $M_A 217.6$ $M_B 195.8$ $M_C 311.8$



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

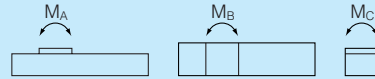
4-M8 Through (Helisert Insertion: 2D)
From Back Side $\phi 11$ C-Bore Depth: 7.5



Stroke: S	200	320	440	560	800	980	1160	1340	1520
Base Length: L_0	460	580	700	820	1060	1240	1420	1600	1780

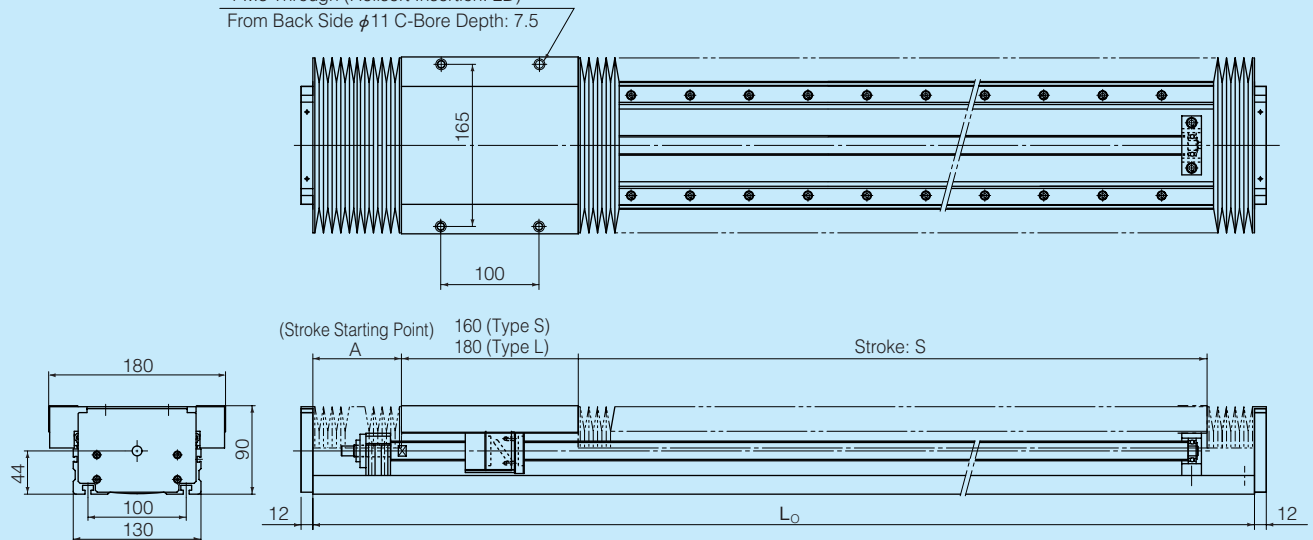
Type GL20 (Ball Screw Specifications) Pre-assembled Diagram With Twill Braid

Repeatable Positioning Accuracy	$\pm 0.02\text{mm}$
Moment of Load (N·m) Note 1	Type S $M_A 170.6$ $M_B 160.8$ $M_C 237.2$
	Type L $M_A 217.6$ $M_B 195.8$ $M_C 311.8$



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

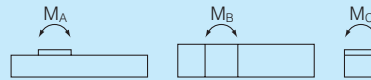
4-M8 Through (Helisert Insertion: 2D)
From Back Side $\phi 11$ C-Bore Depth: 7.5



Stroke: S	200	320	440	560	780	940	1100	1260	1400
Base Length: L_0	460	580	700	820	1060	1240	1420	1600	1780
Stroke Starting Point: A	Type S	50	50	50	50	60	70	80	90
	Type L	40	40	40	40	50	60	70	80

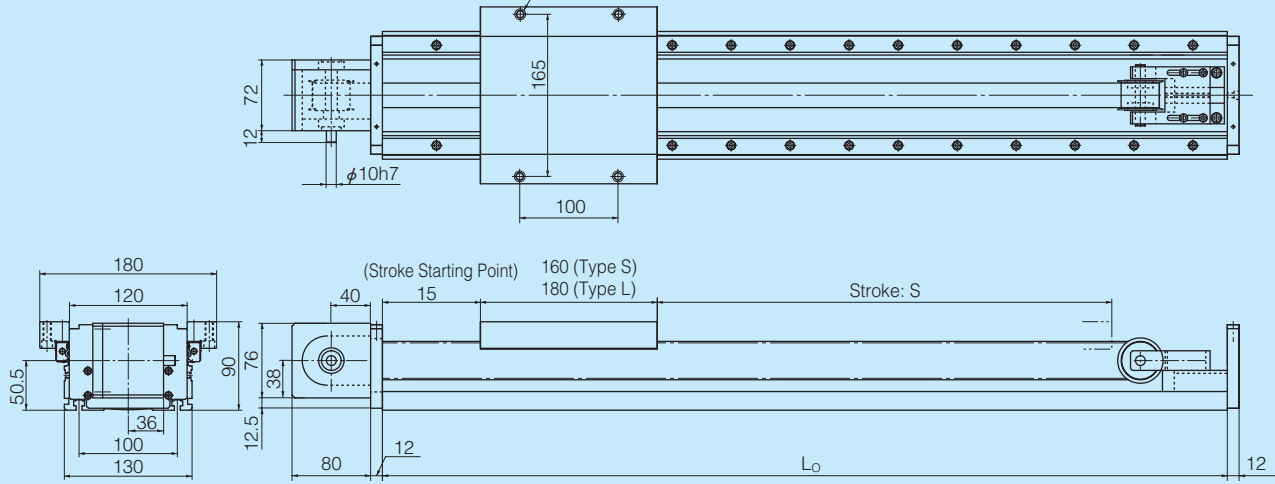
Type GL20 (Belt Specifications) Pre-assembled Diagram

Repeatable Positioning Accuracy	$\pm 0.08\text{mm}$		
Moment of Load (N•m) Note 1	Type S	$M_A 170.6$ $M_B 160.8$ $M_C 237.2$	
	Type L	$M_A 217.6$ $M_B 195.0$ $M_C 311.8$	



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

4-M8 Through (Helisert Insertion: 2D)
From Back Side $\phi 11$ C-Bore Depth: 7.5

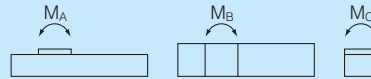


Stroke: S	160	280	400	520	760	940	1120	1300	1480	1660	1900	2020	2200	2700
Base Length: L_0	460	580	700	820	1060	1240	1420	1600	1780	1960	2200	2320	2500	3000

* Table shows stroke using type L table.
Maximum stroke is +20 mm for type S table specifications.

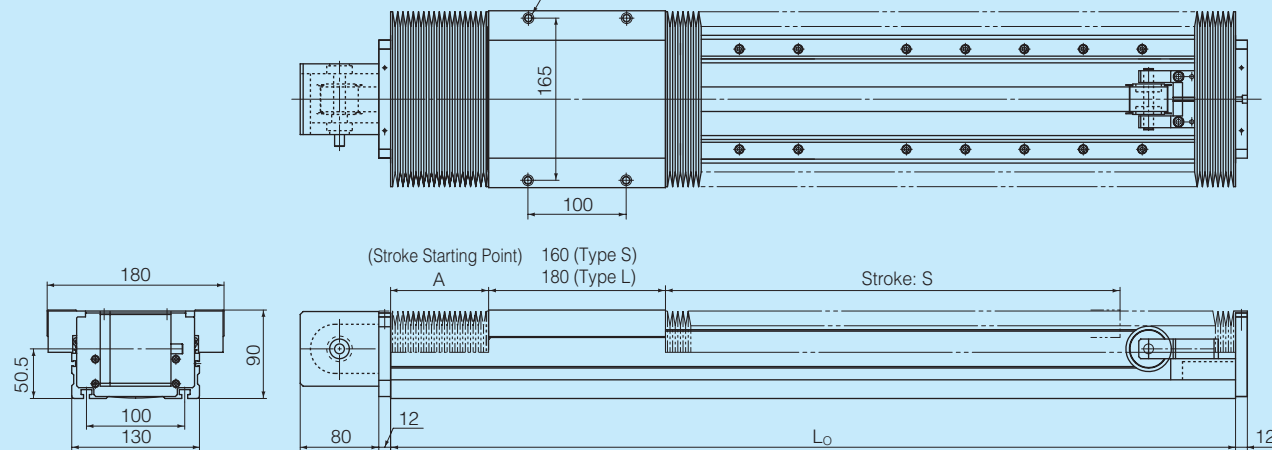
Type GL20 (Belt Specifications) Pre-assembled Diagram With Twill Braid

Repeatable Positioning Accuracy	$\pm 0.08\text{mm}$		
Moment of Load (N•m) Note 1	Type S	$M_A 170.6$ $M_B 160.8$ $M_C 237.2$	
	Type L	$M_A 217.6$ $M_B 195.0$ $M_C 311.8$	



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

4-M8 Through (Helisert Insertion: 2D)
From Back Side $\phi 11$ C-Bore Depth: 7.5

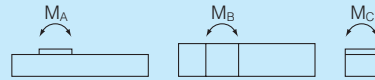


Stroke: S	140	240	340	440	660	820	990	1140	1280	1420	1620	1700	1840	2260
Base Length: L_0	460	580	700	820	1060	1240	1420	1600	1780	1960	2200	2320	2500	3000
Stroke Starting Point: A	40	50	80	100	110	120	125	145	160	180	200	220	240	280

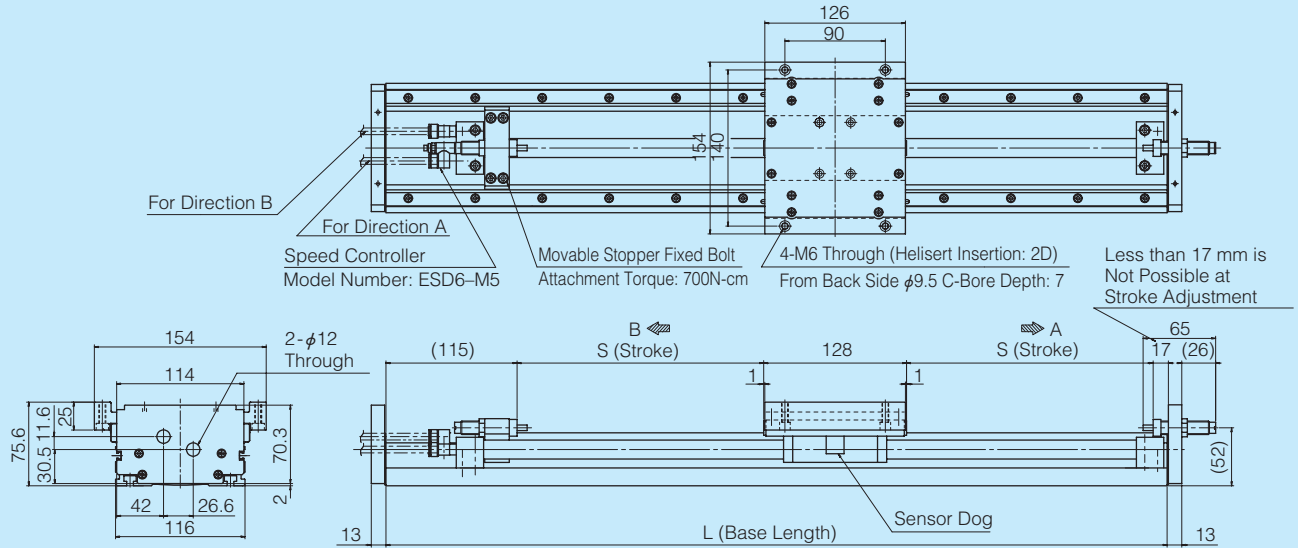
* Table shows stroke using type L table.
Maximum stroke is +20 mm for type S table specifications.
Stroke starting point A is the same for both type S table and type L table.

Type GL15 (Rod-less Cylinder Specifications) Pre-assembled Diagram

Moment of Load (N·m) Note 1 Type S M_A 84.3 M_B 79.4 M_C 130.4



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

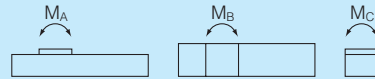


Base Length: L_0	460	580	700	820	1060	1240	1420
Stroke: 2S	200	320	440	560	800	980	1160

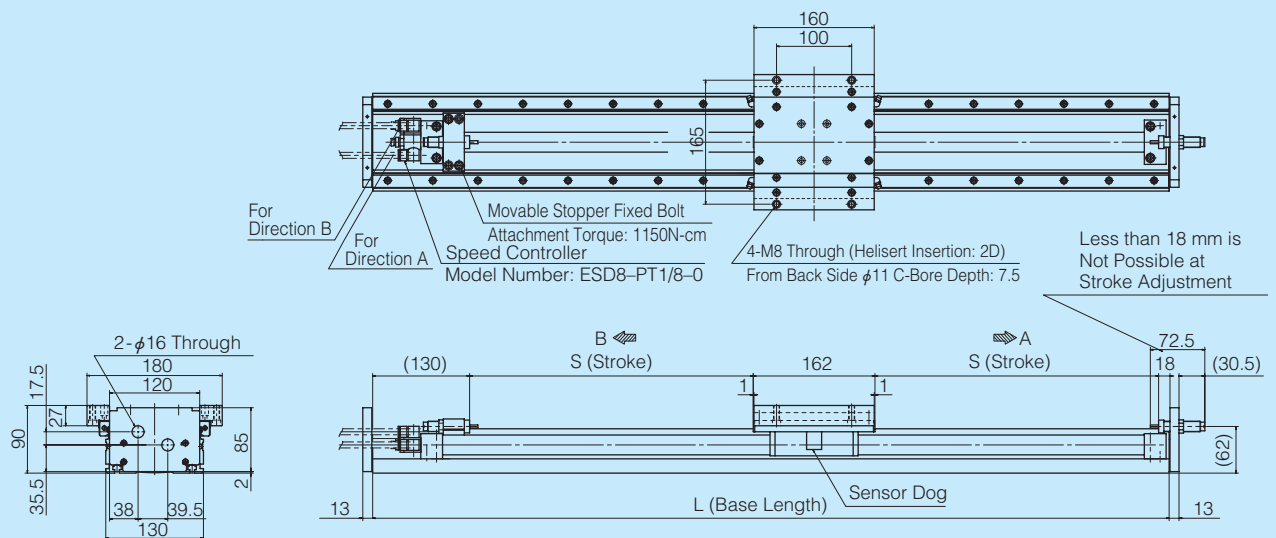
Strokes longer than 1160 require special handling.
See page 14 for the sensor type.

Type GL20 (Rod-less Cylinder Specifications) Pre-assembled Diagram

Moment of Load (N·m) Note 1 Type S M_A 170.6 M_B 160.8 M_C 237.2



Note 1: The value of the moment of load is the longevity travel distance of 5000 km.

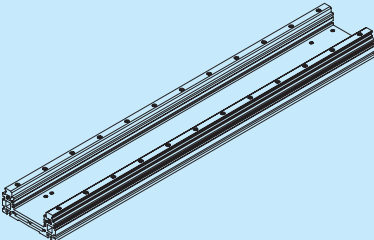
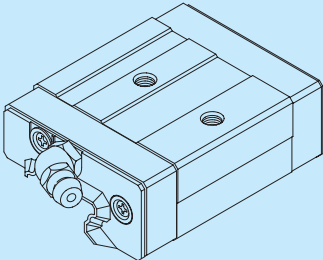
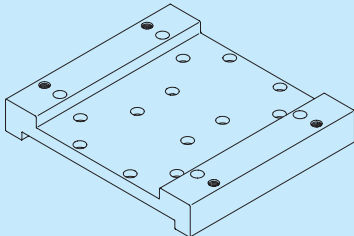
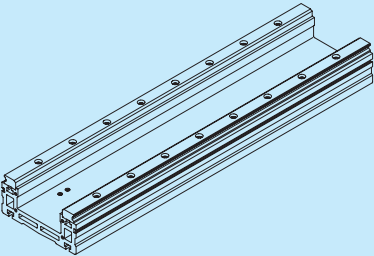
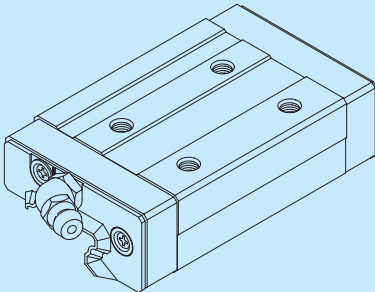
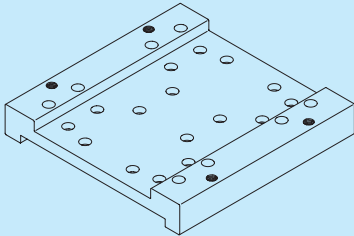
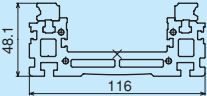
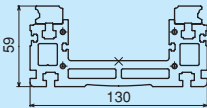


Base Length: L_0	580	700	820	1060	1240	1420	1600	1960
Stroke: 2S	270	390	510	750	930	1110	1290	1650

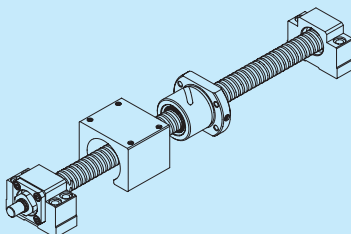
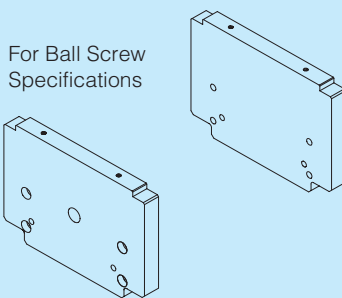
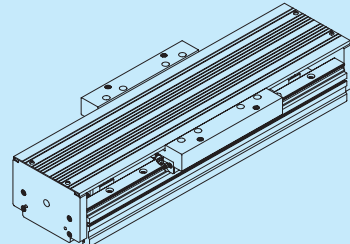
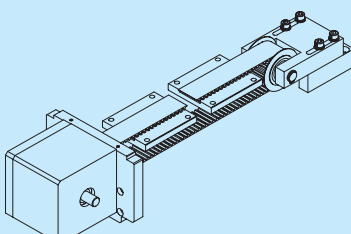
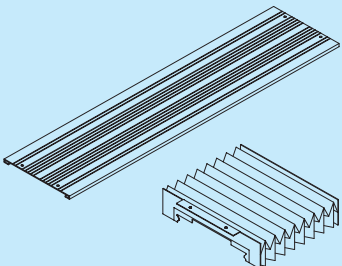
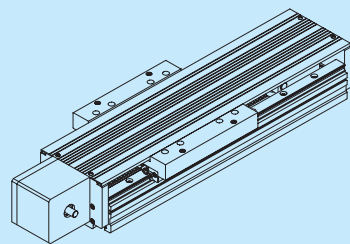
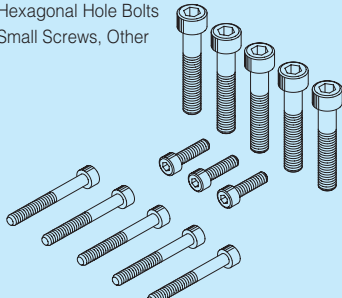
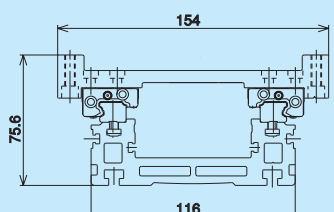
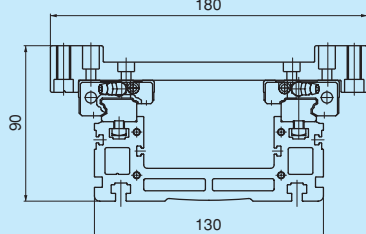
Strokes longer than 1650 require special handling.
See page 14 for the sensor type.

Enabling You to Get Assembly Kit Parts at Low Prices

Quick Delivery At Low Prices

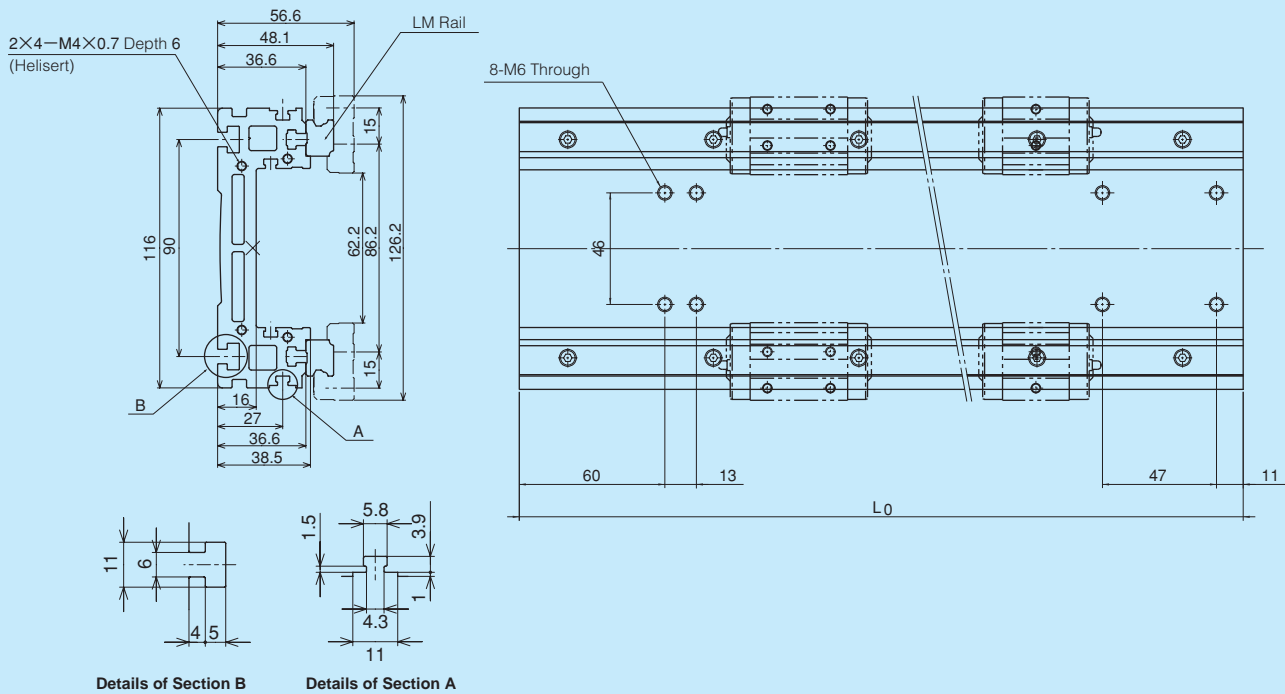
Base with Rail	LM Block	Top Table
Type M (Small Size) 	Type V (Short Type) 	Type S (Short Type) 
Type L (Large Size) 	Type T (Long Type) 	Type L (Long Type) 
Type M (GSR15 with Rail) Cross Section Dimensions W116 × H48.1 	For Mid-sized Loads Short Type Type V For Heavy Loads Long Type Type T Blocks for Type M GSR15V GSR15T	Main Dimensions For Short W154 × L126 For Long W154 × L154
Type L (GSR20 with Rail) Cross Section Dimensions W130 × H59 	Blocks for Type L GSR20V GSR20T	For Short W180 × L160 For Long W180 × L180
Example GL15-034 Base Length 340mm Number	Example GL15-V4 Quantity Block Type V or T Number	Example GL20-L Table Type S or L Number

Delivery of Standard Assembly Kit in One Week *1

Drive System		Options	Pre-assembled Diagram								
Type B (Ball Screw Kit) 		Type P (End Plate) 2 in 1 For Ball Screw Specifications 	Ball Screw Assembly Kit 								
Type E (Belt Kit) 		Type C (Cover) Type J (Twill Braid) 	Belt Assembly Kit 								
<table border="1"> <thead> <tr> <th></th> <th>Ball Screw</th> <th>Belt</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Type M</td> <td> $\phi 15$ Lead 30 $\phi 16$ Lead 5 $\phi 16$ Lead 16 </td> <td> Pitch 5 Belt Width 25 Number of Pulley Teeth 22 </td> </tr> <tr> <td> $\phi 20$ Lead 5 $\phi 20$ Lead 20 $\phi 20$ Lead 40 </td> <td> Pitch 5 Belt Width 25 Number of Pulley Teeth 24 </td> </tr> </tbody> </table>			Ball Screw	Belt	Type M	$\phi 15$ Lead 30 $\phi 16$ Lead 5 $\phi 16$ Lead 16	Pitch 5 Belt Width 25 Number of Pulley Teeth 22	$\phi 20$ Lead 5 $\phi 20$ Lead 20 $\phi 20$ Lead 40	Pitch 5 Belt Width 25 Number of Pulley Teeth 24	Bolt For Assembly (Accessory Parts) Hexagonal Hole Bolts Small Screws, Other 	GL15 Cross Section Dimensions 
	Ball Screw	Belt									
Type M	$\phi 15$ Lead 30 $\phi 16$ Lead 5 $\phi 16$ Lead 16	Pitch 5 Belt Width 25 Number of Pulley Teeth 22									
	$\phi 20$ Lead 5 $\phi 20$ Lead 20 $\phi 20$ Lead 40	Pitch 5 Belt Width 25 Number of Pulley Teeth 24									
Example GL15-034-B05 Ball Screw Lead 5 mm Drive System Ball Screw Type Base Length 340mm Number		Example: End Plate GL15-P End Plate Number	GL20 Cross Section Dimensions 								
GL15-034-E Drive System Belt Type Base Length 340 mm Number		Example: Cover GL15-034-C Cover Base Length 340mm Number									
		Example: Twill Braid GL15-034-J Twill Braid Base Length 340mm Number									

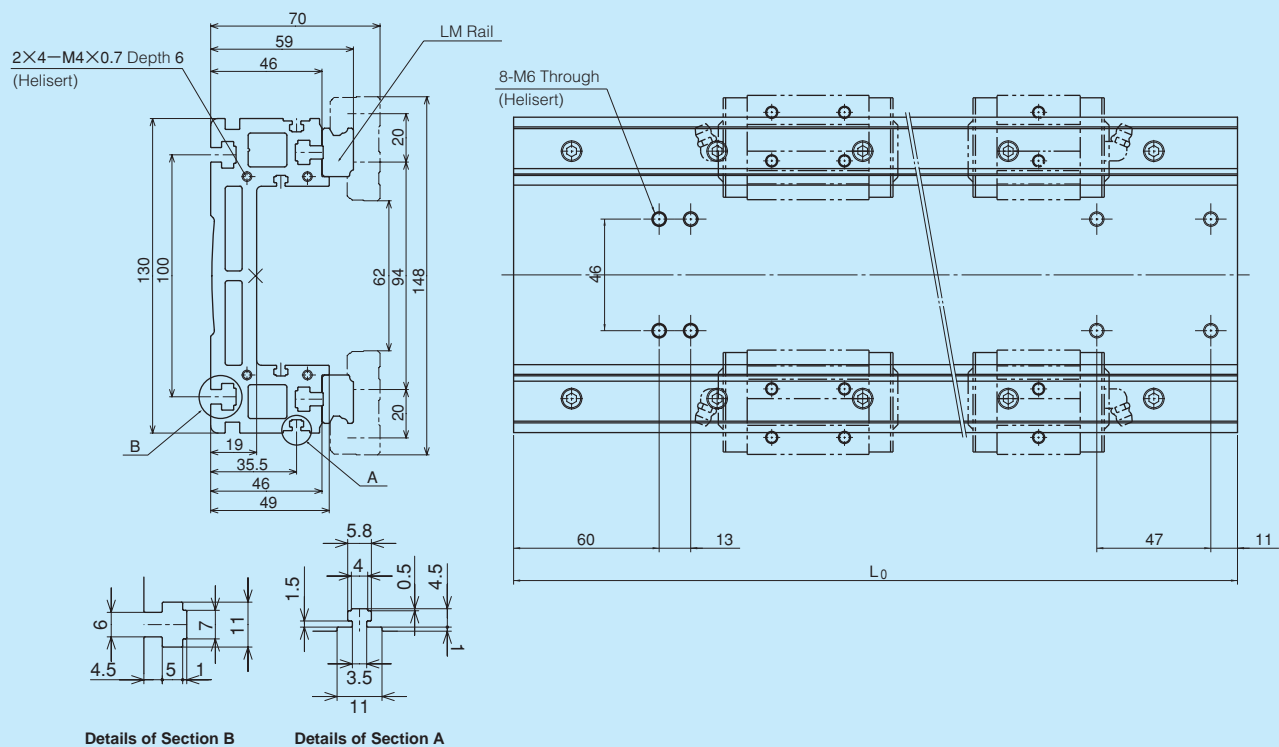
*1 (Number of days can vary according to region.)

Type M (Used on GSR15)



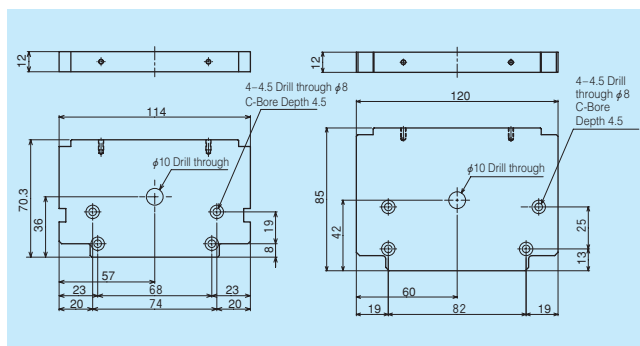
* See standard lengths and strokes table on page 5 for details of L₀.

Type L (Used on GSR20)



* See standard lengths and strokes table on page 5 for details of L₀.

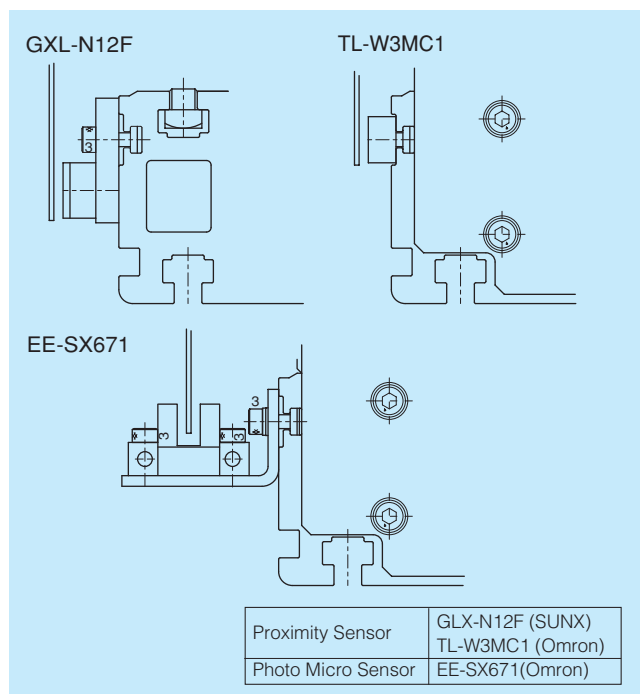
End Plate



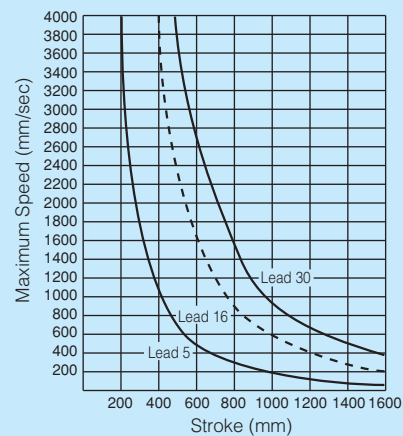
Maximum Travel Speed

The maximum travel speed is limited danger speed of the ball screw regardless of the maximum number of rotations of the motor when using the type GL ball screw kit.

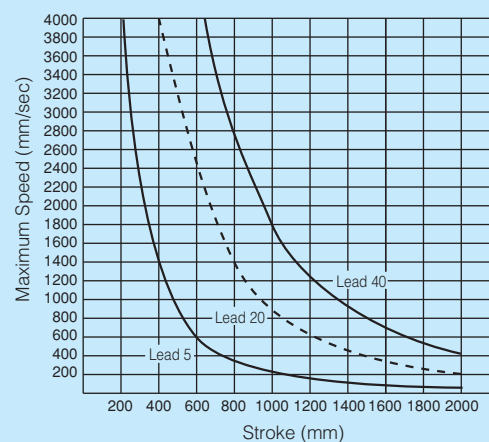
Example of Sensor Attachment



With the GL15

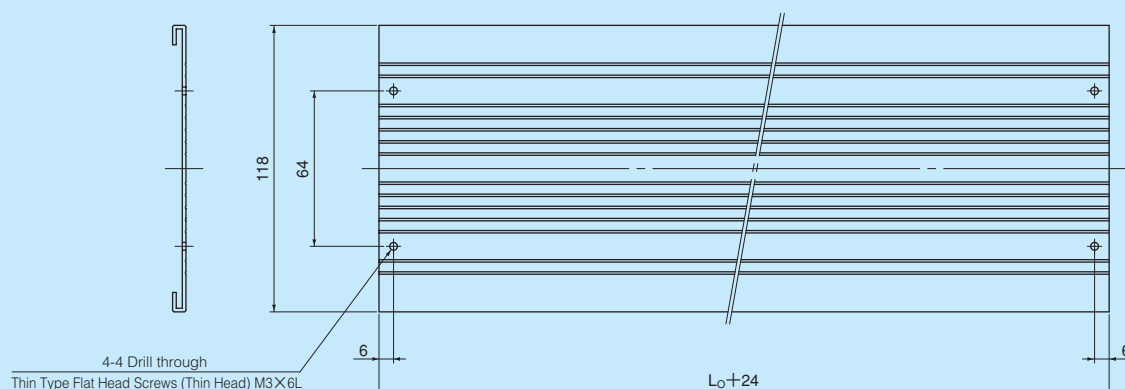


With the GL20



Cover

Material: Aluminum Surface Processing: Anodic Oxide Coating



THK Four way equal load rating LM Guide® with Caged Ball™ technology

LM Actuator GL

Notes on use

* Precautions in handling the LM block

The LM block includes precision mold resin. When it is dropped or struck, it may be damaged. Please take great care in handling the LM block.

* Using holes on the sides of the LM block for lubrication nipples

When it is necessary to use holes on the sides of the LM block for attachment of lubrication nipples, please contact THK. THK will install nipples on the LM block. (Holes are not made all the way through to prevent foreign materials from entering.)

These holes are for lubrication nipples only. Use of these holes for other purpose may break end plate.

* Reinstalling the LM block

When the LM block is removed from the LM rail and then reinstalled, please insert it very carefully and correctly.

** For reinstallation, we recommend that a special insertion jig to be used. Please contact THK upon the use of jig.

* Coolant

When the LM block is used in an environment in which some coolant may enter the LM block, some types of coolant may adversely affect the functions of the LM block. Please contact THK when selecting a coolant.

* Operating temperature range

The LM block is made from special resin. Do not use it above 80°C.

* Lubrication

Ordinary grease may not be utilized when the system is used in a special environment such as an area subject to extremes of temperature or continuous vibration, a clean room, or a vacuum environment. If the system is to be used in a special environment, please contact THK.

* All right reserved.

* Specifications are subject to change without notice.

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