

# THK

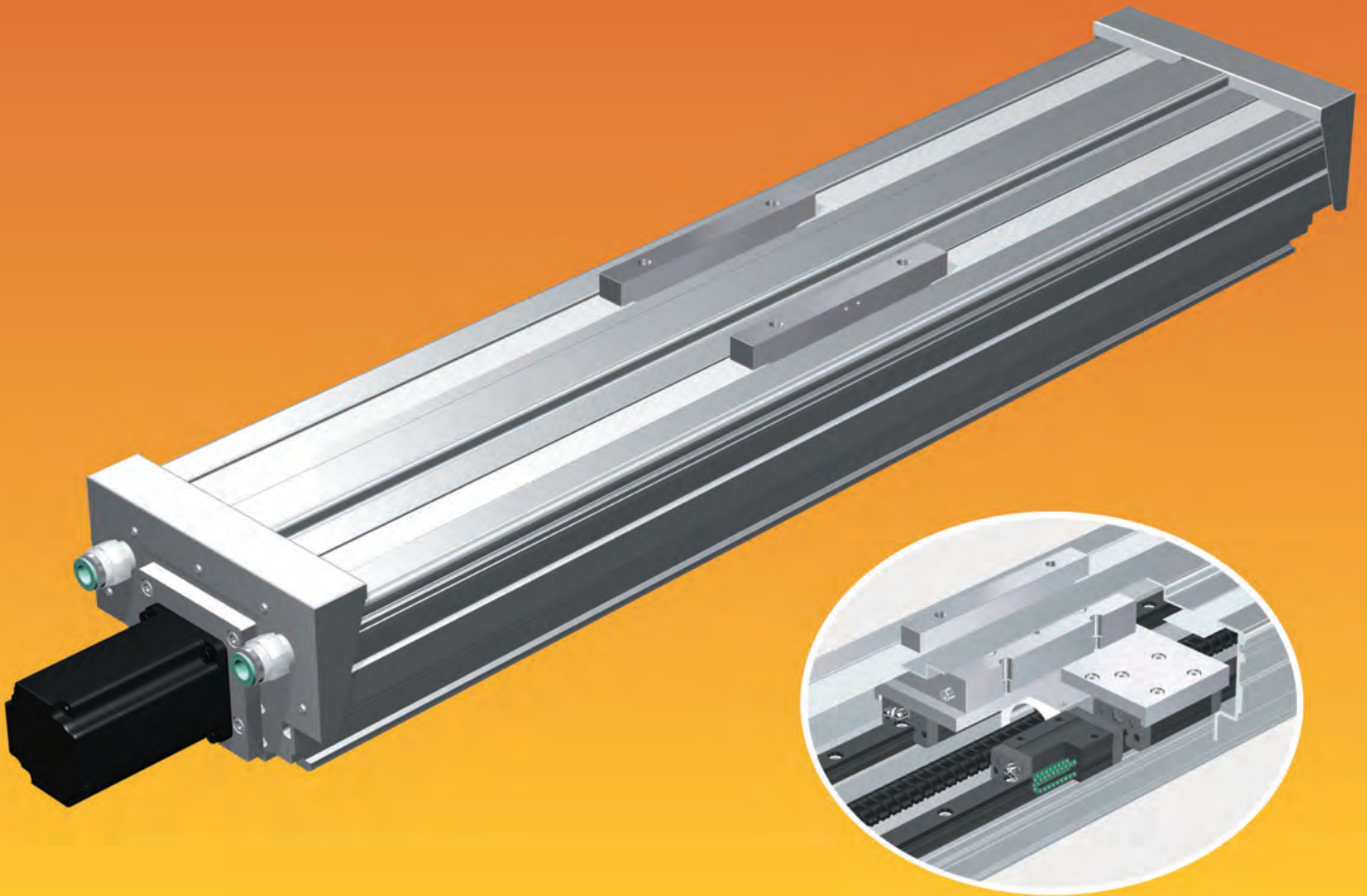


**NEW**

## LM actuator for clean-room environment

Low dust generation structure  
High speeds, low particle emission,  
and long strokes

# CGL



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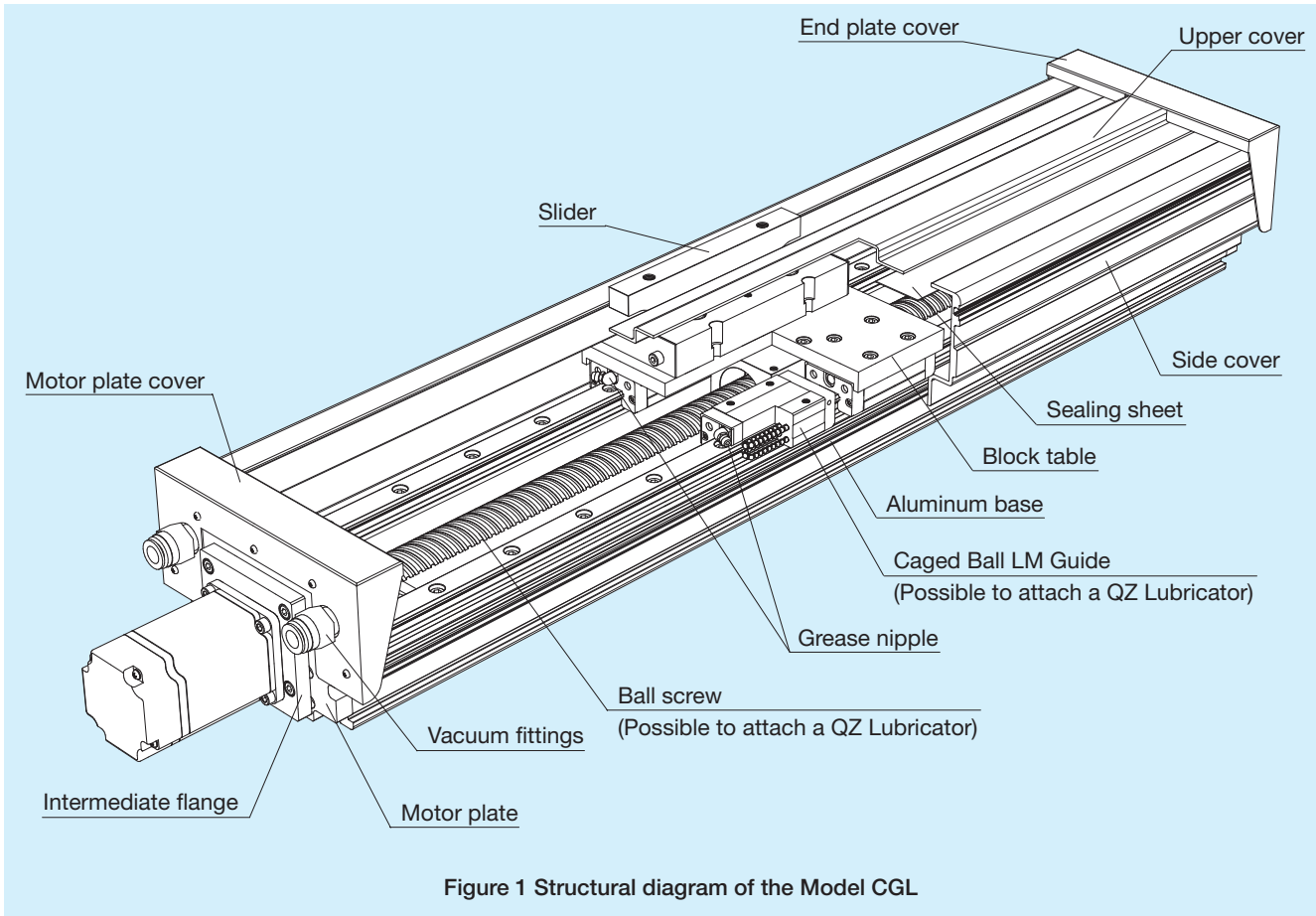
\*Product information is updated regularly on the THK website.

**THK CO., LTD.**  
TOKYO, JAPAN

CATALOG No.349-1E

# LM actuator for clean-room environment Model CGL

## Structure of the Model CGL



## 5 main characteristics of the Model CGL

1. Low dust emission is obtained by eliminating mutual friction generated between the metallic balls with integration of Caged-Ball Technology (LM Guide section only).
2. Suitable for utilization in clean rooms through the use of clean grease for low emission of dust particles.
3. Classification of ISO14644-1\*1 class 4\*2 (FED209E class 10 equivalent) with the utilization of THK original sealing sheet (refer to the preceding Figure).
4. It is also possible to obtain ISO14644-1\*1 class 4\*2 (FED209E class 10 equivalent) even in severe usage conditions with high speeds of 2,000mm/s, and stroke rates at 1,000mm or greater.
5. By combining the LM Guide with Ball Caged Guides and the QZ Lubricator (P.11 concerning attachment possibilities for the LM Guide and the Ball Screws\*3), CGL actuators have been realized as a long-term maintenance free product.

\*1 ISO14644-1 is equivalent with JIS B9920.

\*2 Achieving the class 4 level requires suction using a vacuum fittings.

\*3 Optional

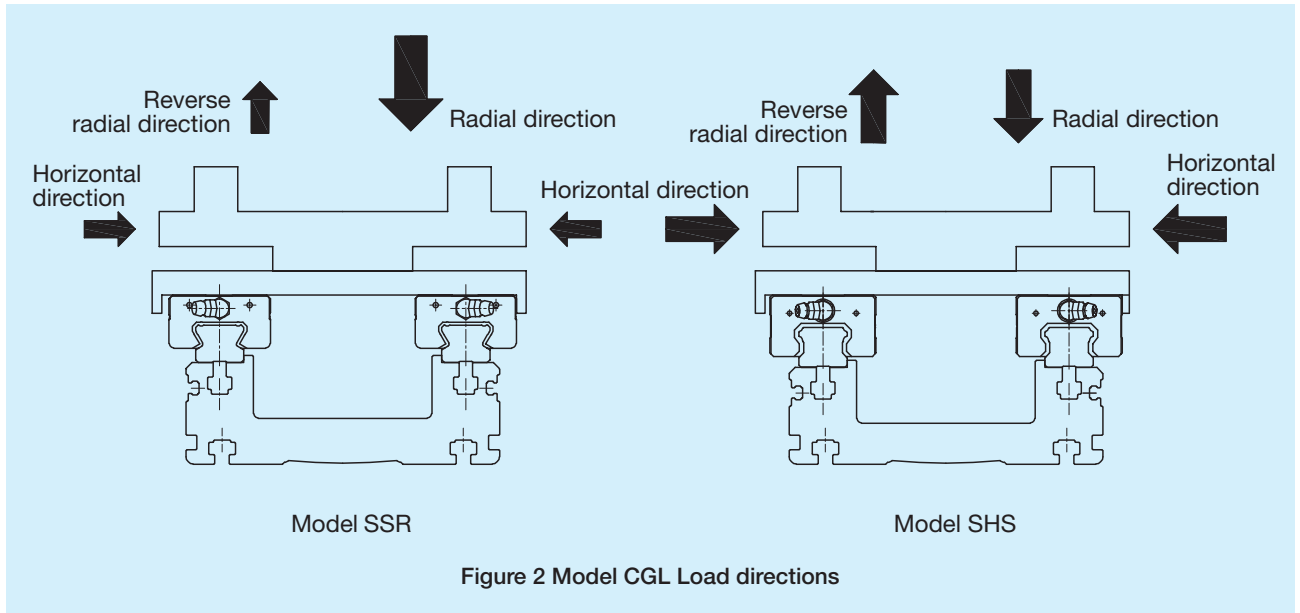
## ● Selection of the LM Guide and Ball Screws that best suit the application requirements

### [LM Guide]

It is possible to select from 2-types of LM Guides.

Model SSR: This model works best with horizontal applications due to its low cross-section compact feature and its ball contact structure that is durable against radial direction loads.

Model SHS: Due to its 4-way equal load rating features this model is able to work with multi-directional loads (radial, reverse radial and horizontal directions).



Note: The stroke range may differ according to the LM Guide type. Please check the dimensions Table.

### [Ball Screw]

Table 1 lists the various options for the types of Ball Screw leads.

When operating at high speeds please select the Large lead type of Ball Screw. (Maximum Speed→P.5)

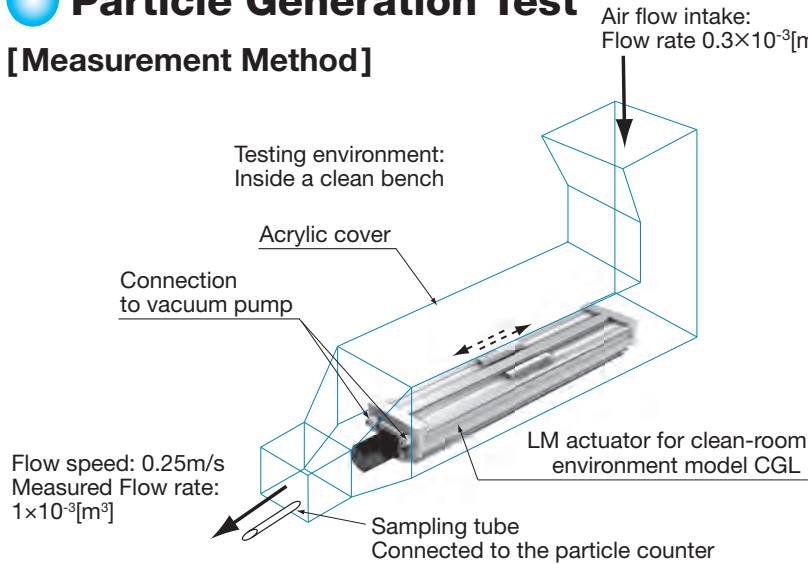
Ball Screws with small leads possess a larger thrust and thus are able to transport a larger mass.

Table 1 Ball Screw Leads by Model Number (Rolled Ball Screw)

Model number	Ball Screw lead (mm)
CGL15N	5, 10, 16, 20, 30
CGL20N	5, 10, 20, 40

# Particle Generation Test

## [Measurement Method]



### < Testing conditions >

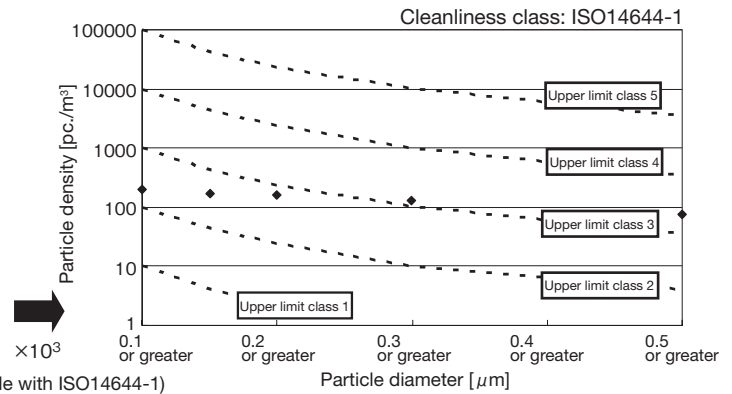
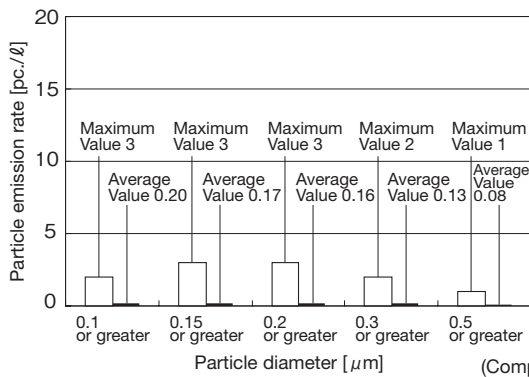
Category	Contents
Model number	CGL20N (Ball Screw lead 40mm)
Stroke	520mm
Speed	2000mm/s
Acceleration/ deceleration speed	$9.8 \text{m/s}^2$ (1G)
Vacuum rate	$88 \times 10^{-3} [\text{m}^3/\text{min}]$ (70ℓ/min)
Operating load	None

### < Measuring conditions >

Category	Contents
Measurement devices	Particle counter (KC-18 Lion Manufacturing Corp.)
Flow speed of the measurement section	250mm/s
Air intake rate	$0.3 \times 10^{-3} [\text{m}^3/\text{min}]$ (0.3ℓ/min)
Measured air rate	$1 \times 10^{-3} [\text{m}^3]$ (1ℓ)
Measurement time	50h

## [Measurement Results]

### ■ Evaluation results of 50-hour consecutive operations with the CGL20N-082-HV Model (Maximum speed 2,000mm/s)



### ■ Evaluation result of model CGL cleanliness level

Model number	Stroke [mm]	Speed [mm/s]	Acceleration/ deceleration speed [m/s <sup>2</sup> ]	Vacuum rate*1 $\times 10^{-3} [\text{m}^3/\text{min}]$	Cleanliness level*2 (ISO14644-1)
CGL15N (Ball Screw lead 30mm)	520	1500	9.807	80	4
CGL15N (Ball Screw lead 30mm)	1134	595		48	3
CGL20N (Ball Screw lead 40mm)	520	2000		88	4
CGL20N (Ball Screw lead 40mm)	1480	673		56	3

\*1 The effects of pipe flow resistance are not taken into consideration when the suction is decided. Pipe flow resistance is the resistance value arising from pipe length or pipe diameter. Please consider the effect of pipe length and diameter on pipe flow resistance.

\*2 Cleanliness level varies depending on the operating conditions.

### ■ Upper limit cleanliness density level according to ISO14644-1

Unit: pc./m<sup>3</sup>

Particle diameter	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
0.1 μm or greater	10	100	1000	10000	100000	1000000
0.2 μm or greater	2	24	237	2370	23700	237000
0.3 μm or greater	—	10	102	1020	10200	102000
0.5 μm or greater	—	4	35	352	3520	35200

# Product Specifications

## Specification

Model number		CGL15N			CGL20N			
Ball Screw lead	[mm]	5, 10, 16, 20, 30			5, 10, 20, 40			
Positioning repeatability (Note 1)	[mm]	±0.02						
Effective stroke (Note 2)	[mm]	100 to 1200			200 to 1550			
Maximum speed	[mm/s]	1500			2000			
LM Guide model number	—	SSR15XV	SSR15XW	SHS15V	SSR20XV	SSR20XW	SHS20V	
Permissible Moment Load (Note 3)	MA	[N·m]	85.3	119.6	163.7	166.6	242.1	353.8
	MB		60.8	81.3	155.8	115.6	167.6	335.2
	MC		76.0	115.6	203.8	131.3	190.1	378.3
Static allowance load (Note 4)	Radial direction	[N]	27200	46200	67800	40300	65500	107500
	Reverse radial direction		4800			7400		
	Horizontal direction		4800			7400		
	Axial direction		2100			2200		
Vacuum rate Recommendation (Note 5)	$\times 10^{-3}$ [m <sup>3</sup> /min]	16 to 80			24 to 88			

Note 1: The positioning repeatability is measured at an ambient temperature of 20°C.

Note 2: The effective stroke is shortened in accordance with the length of the block table. See the dimensional chart for stroke details.

Note 3: Permissible Moment Load is the value obtained when the travel lifespan of LM Guide unit reaches 5000km under the conditions of the maximum travel speed and acceleration/deceleration speed (0.3G).

Note 4: Static permissible load takes into consideration the static rated load of bolt tightening strength, LM Guide unit, ball screw unit and support bearing.

Note 5: The effects of pipe flow resistance are not taken into consideration when the vacuum rates are determined.

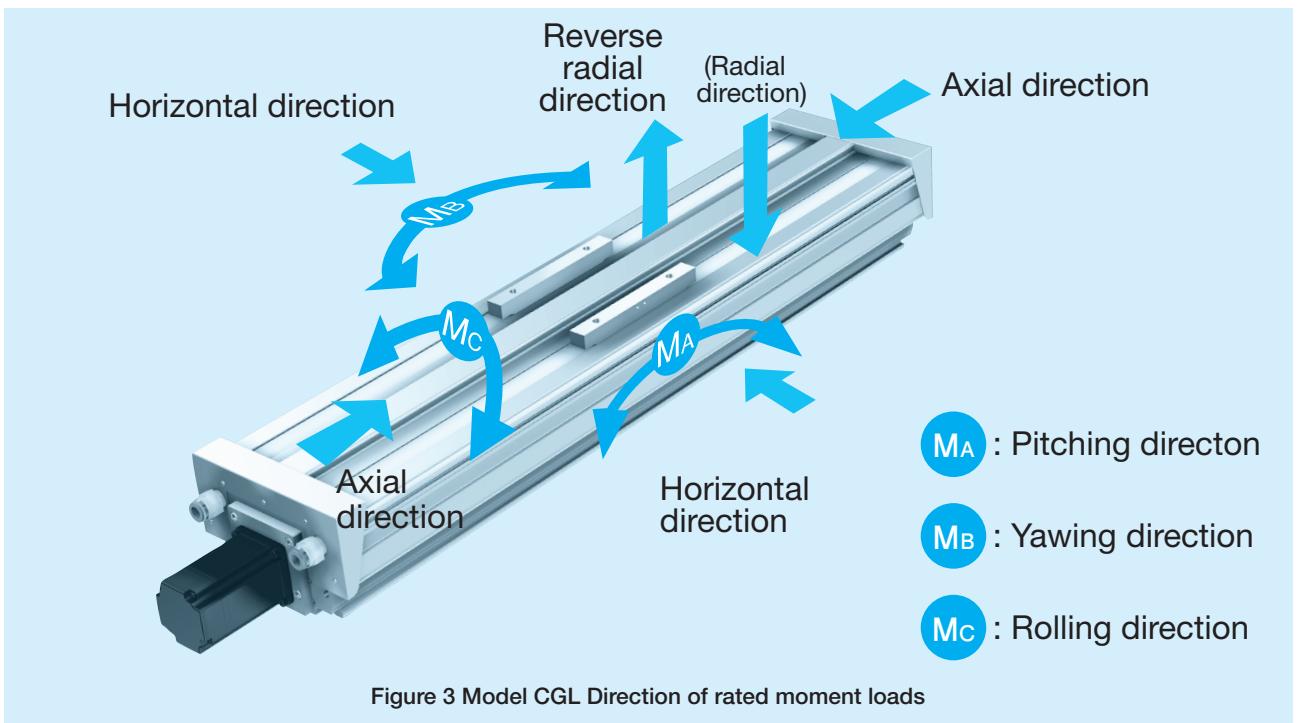


Figure 3 Model CGL Direction of rated moment loads

## Block Table Types

The block table types are determined in accordance with the selected LM Guide Model. Also, the stroke range may differ depending upon the block table used.

- S type: **Short table** (LM Guide model number: SSR-XV)  
This type makes it possible to lengthen the stroke by shortening the table length.
- L type: **Long table** (LM Guide model number: SSR-XW, and SHS-V)  
This product is suitable for high load levels or instances where the mass is positioned away from the center of the table.
- L-QZ type: **Long table with QZ Lubricator** (LM Guide model numbers: SSR-XWQZ and SHS-VQZ)  
QZ Lubricator is installed on the LM Guide and the Ball Screw. (This table is longer than the L-type table. See the dimensional table for more details.)

## ● Maximum Speed

The maximum speed is limited by the motor rated rotational speed (3000 min<sup>-1</sup>) or the permissible rotational speed of the ball screw.

Table 2 Maximum speed

Unit: mm/s

Model number		CGL15N					CGL20N			
Ball Screw lead		5	10	16	20	30	5	10	20	40
Base length	340						—	—	—	—
	460	240	500	800	1000	1500	200	500	1000	2000
	580									
	700									
	820									
	1060	200	380	660	750	1140				
	1240	140	260	460	520	790	180	260	740	1480
	1420	100	190	340	380	580	130	190	540	1080
	1600	—	—	—	—	—	100	—	410	830
	1780	—	—	—	—	—	80	—	330	660

## ● Base Rigidity

The CGL Model employs a proven aluminum base type of LM actuator Model GL-N resulting in a lightweight and highly rigid product.

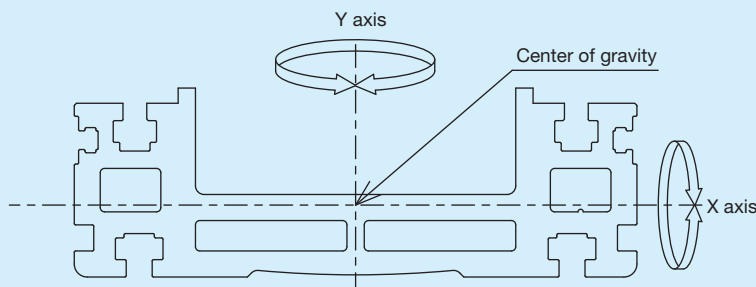


Figure 4 Base Section

Table 3 Geometrical Moment of Inertia and Mass in the Base

Model number	Geometrical Moment of Inertia		Mass
	I <sub>x</sub> [mm <sup>4</sup> ]	I <sub>y</sub> [mm <sup>4</sup> ]	[kg/m]
CGL15N	1.61×10 <sup>5</sup>	2.47×10 <sup>6</sup>	4.85
CGL20N	3.15×10 <sup>5</sup>	4.28×10 <sup>6</sup>	6.47 (Note 1)

Note 1: The LM Guide has a mass of 6.69kg/m in the case of Model SSR.

## ● Clean Characteristics

In order to improve the clean-room performance Model CGL employs the following specifications.

Highly anti-corrosive: The LM Guide and Ball Screws are coated with THK AP-C\*.

Low particle emission grease: THK AFE-CA grease\* is utilized due to its superior low particle emission properties.

Vacuum fittings: Clean One-touch Fittings KPQH12-03 for its clean specifications (SMC manufacturing Corp. Tubing outer diameter φ12mm).

\* Please refer to the THK general catalog (No.500) for details.



# Configuration of Numbers

CGL15N—070—SW Q—B30 Q—B—B  
 1            2            3 4            5 6            7 8

1	<b>Model Number</b>	CGL15N/CGL20N
2	<b>Base Length</b>	Example shows 700mm length specification
3	<b>LM Guide</b>	SV: SSR-XV (Block table S type) SW: SSR-XW (Block table L type) HV: SHS-V (Block table L type) Note: The block table will be the L-QZ type for SSR/SHS with QZ types. (Be aware that block table options may vary depending upon the LM Guide used.)
4	<b>LM Guide QZ Lubricator</b>	No symbol: Not provided with QZ Q: Provided with QZ (SSR-XW/SHS-V only)
5	<b>Ball Screw Lead</b>	◆CGL15N B05: Lead 5mm B10: Lead 10mm B16: Lead 16mm B20: Lead 20mm B30: Lead 30mm ◆CGL20N B05: Lead 5mm B10: Lead 10mm B20: Lead 20mm B40: Lead 40mm
6	<b>Ball Screw QZ Lubricator</b>	No symbol: Not provided with QZ Q: Provided with QZ (Block table L Model only)
7	<b>Intermediate Flange</b> (Note)	A: inner diameter $\phi$ 30H7, M4, PCD46 B: inner diameter $\phi$ 50H7, M5, PCD70 C: inner diameter $\phi$ 50H7, M4, PCD60 D: inner diameter $\phi$ 70H7, M5, PCD90 (CGL20N only) E: inner diameter $\phi$ 30H7, M3, PCD45 F: inner diameter $\phi$ 50H7, M4, PCD70 G: inner diameter $\phi$ 34H7, M3, PCD48 H: inner diameter $\phi$ 36H7, M4, mounting aperture pitch 50 I: inner diameter $\phi$ 60H7, M6, mounting aperture pitch 70 (CGL20 only) J: inner diameter $\phi$ 70H7, M6, PCD90 (CGL20N only)
8	<b>Sensors</b>	N: Not provided A: Photo sensor EE-SX-671 (3 pcs) B: Photo sensor EE-SX-674 (3 pcs) C1: Proximity Sensor TL-W3MC1 (N.O. contact [Normally open contact] 3 pcs.) C2: Proximity Sensor TL-W3MC1 (N.O. contact [Normally open contact] 1 pc.) Proximity Sensor TL-W3MC2 (N.C. contact [Normally closed contact] 2 pcs.)

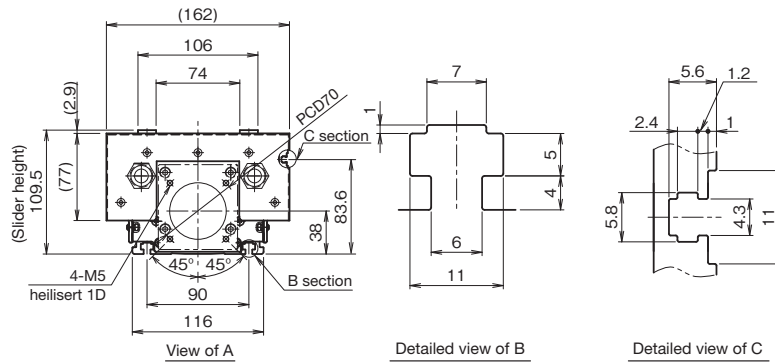
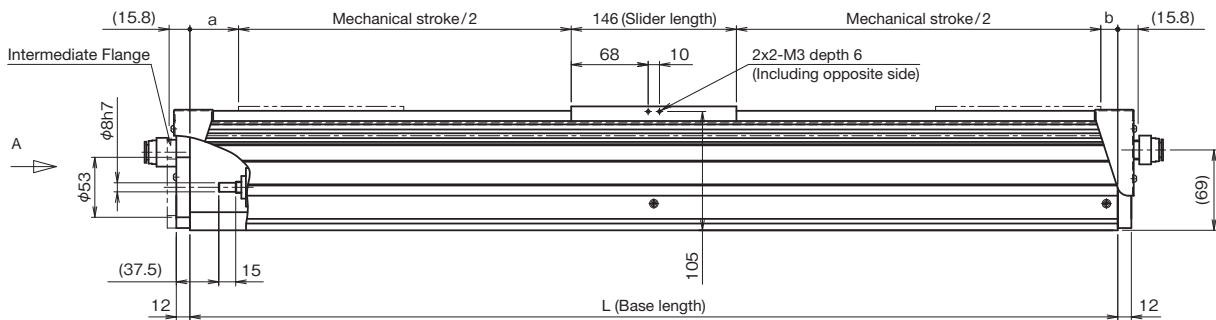
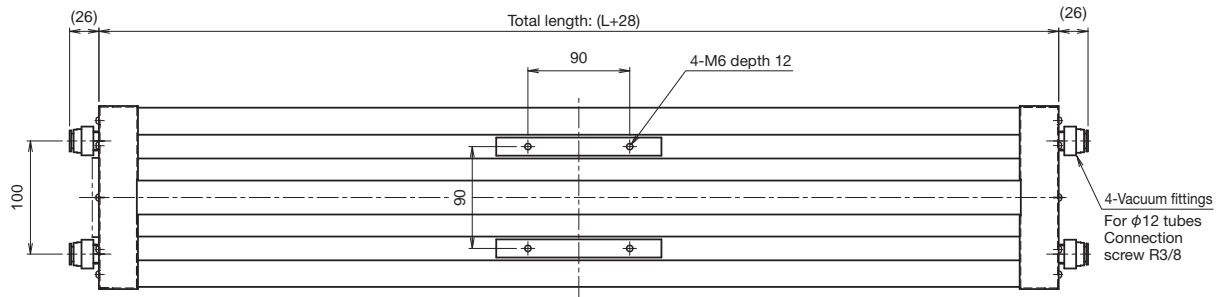
Note: The adhesive properties of the Sealing Sheets will be adjusted prior to shipping. Please indicate the desired Intermediate Flange type.

Please refer to the Code numbers listed in the Intermediate Flange Correspondence Table (→P.9) regarding the Motor that corresponds with each Intermediate Flange type.

For shipping with the Motor included, please contact THK.

# Dimensional Table

● CGL15N



Unit: mm

Block table type	a	b
S type	43	21
L type	43	29
L(QZ) type <sup>(Note 2)</sup>	52	29
L-QZ type	38	42

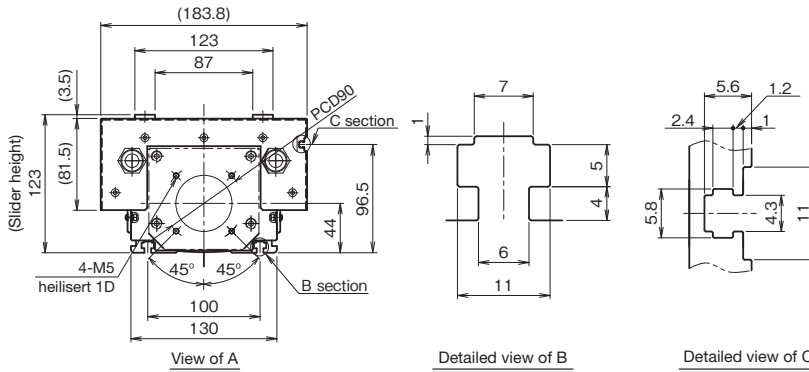
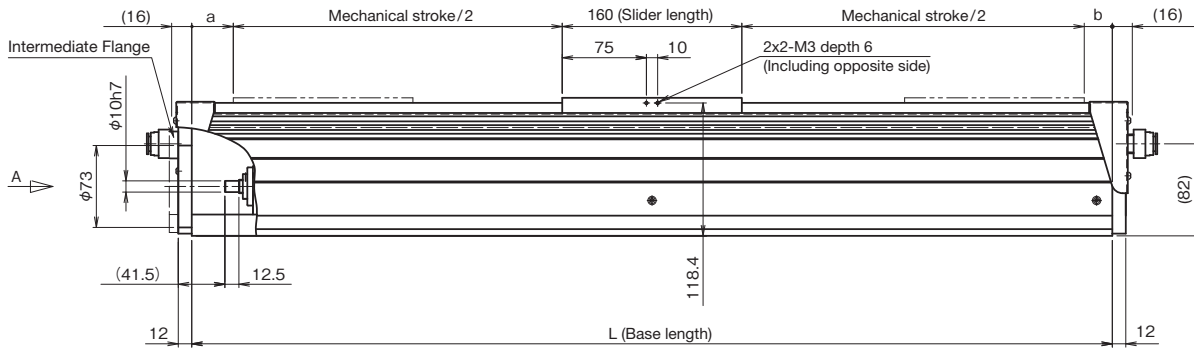
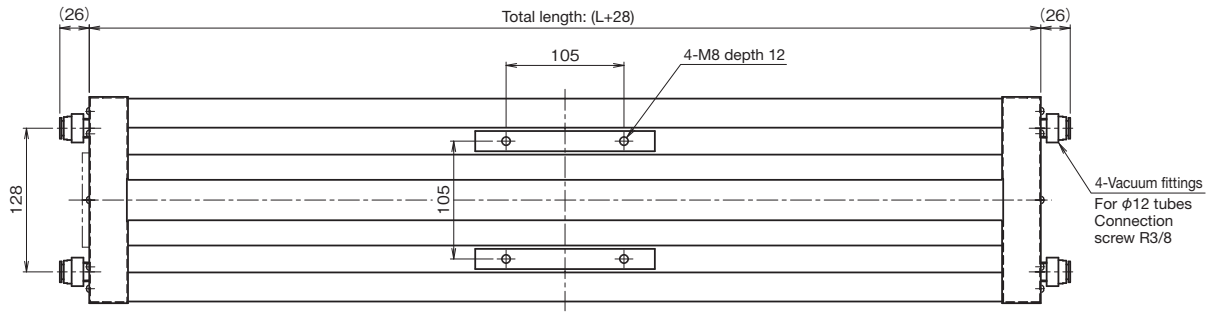
L (Base length) [mm]		340	460	580	700	820	1060	1240	1420
Mechanical stroke [mm]	S type	130	250	370	490	610	850	1030	1210
	L type	122	242	362	482	602	842	1022	1202
	L(QZ) type <sup>(Note 2)</sup>	113	233	353	473	593	833	1013	1193
	L-QZ type	114	234	354	474	594	834	1014	1194
Main unit mass [kg] <sup>(Note 1)</sup>	S type	10.2	11.6	13.1	14.6	16.0	18.8	21.0	23.0
	L type(SSR15XW)	10.9	12.0	13.4	15.0	16.4	19.2	21.4	23.5
	L type(SHS15V)	11.0	12.4	13.9	15.4	16.9	19.8	22.0	24.1

Note 1: The main unit mass includes the cover.

Note 2: Lubrication unit QZ is used only for the ball screw unit.

Note 3: Please refer to P.10 concerning the dimensions of the Intermediate Flange.





Unit: mm

Block table type	a	b
S type	37	25
L type	37	35
L(QZ) type <sup>(Note 2)</sup>	44	35
L-QZ type	30	50

L (Base length) [mm]		460	580	700	820	1060	1240	1420	1600	1780
Mechanical stroke [mm]	S type	238	358	478	598	838	1018	1198	1378	1558
	L type	228	348	468	588	828	1008	1188	1368	1548
	L(QZ) type <sup>(Note 2)</sup>	221	341	461	581	821	1001	1181	1361	1541
	L-QZ type	220	340	460	580	820	1000	1180	1360	1540
Main unit mass [kg] <sup>(Note 1)</sup>	S type	15.1	16.9	18.9	20.9	24.5	27.7	30.7	33.6	36.0
	L type (SSR20XW)	15.6	17.5	19.5	21.5	25.0	28.2	31.3	34.2	36.5
	L type (SHS20V)	16.4	18.4	20.4	22.5	26.1	29.3	32.4	35.5	37.8

Note 1: The main unit mass includes the cover.

Note 2: Lubrication unit QZ is used only for the ball screw unit.

Note 3: The maximum base length for the 10mm ball screw lead is 1420mm.

Note 4: Please refer to P.10 regarding the dimensions of the Intermediate Flange.

# Intermediate Flange

Intermediate flanges are available so that various motors may be mounted. Select the intermediate flange for compatibility with the motor in use.

Note 1: The Intermediate Flange will be shipping attached to the product.

Note 2: When attaching to Motors other than those listed in the Table please contact THK.

## Correspondence Table

Table 4 Correspondence table for motors and applicable intermediate flanges

	Motor					Symbol		
	Manufacturer	Series	Model number	Rated output	Flange angle	CGL15N	CGL20N	
AC Servo motor	YASKAWA Electric	$\Sigma$ -V	SGMJV-01	100W	$\square$ 40	A	A	
			SGMAV-01			A	A	
			SGMJV-02	200W	$\square$ 60	B	B	
			SGMAV-02			B	B	
			SGMJV-04	400W	$\square$ 60	—	B	
		SGMAV-04	—			B		
		$\Sigma$ -II	SGMAH-01	100W	$\square$ 40	A	A	
			SGMPH-01			B	B	
			SGMAH-02	200W	$\square$ 60	B	B	
			SGMAH-04			—	B	
	SGMPH-02		200W	$\square$ 80	—	J		
	SGMPH-04	400W			—	J		
	Mitsubishi Electric	MELSERVO	J3	HF-MP13	100W	$\square$ 40	A	A
				HF-KP13			A	A
				HF-MP23	200W	$\square$ 60	B	B
				HF-KP23			B	B
				HF-MP43	400W	$\square$ 60	—	B
		HF-KP43	—	B				
		J2-Super	HC-MFS13	100W	$\square$ 40	A	A	
			HC-KFS13			A	A	
			HC-MFS23	200W	$\square$ 60	B	B	
			HC-KFS23			B	B	
	HC-MFS43		400W	$\square$ 60	—	B		
	HC-KFS43	—			B			
	Panasonic	MINAS A4		MSMD01	100W	$\square$ 38	E	E
				MQMA01			F	F
				MSMD02	200W	$\square$ 60	F	F
				MSMD04			—	F
				MQMA02	200W	$\square$ 80	—	D
				MQMA04			400W	—
		MINAS AIII	MSMA01	100W	$\square$ 38	E	E	
			MSMA02			F	F	
			MSMA04	400W	$\square$ 60	—	F	
		MINAS A	MSMA01	100W	$\square$ 38	E	E	
			MQMA01			F	F	
			MSMA02	200W	$\square$ 60	F	F	
			MSMA04			400W	—	F
			MQMA02	200W	$\square$ 80	—	D	
			MQMA04			400W	—	D
		OMRON	OMNUC G	R88M-G10030	100W	$\square$ 40	A	A
R88M-GP10030				F			F	
R88M-G20030				200W	$\square$ 60	F	F	
R88M-G40030	400W					—	F	
R88M-GP20030	200W			$\square$ 80	—	D		
R88M-GP40030					400W	—	D	
FANUC	$\beta$ is series	$\beta$ is0.3/5000	100W	$\square$ 40	A	A		
		$\beta$ is0.4/5000			B	B		
		$\beta$ is0.5/6000	350W	$\square$ 60	B	B		
		$\beta$ is1/6000			500W	—	B	
SANYO DENKI	SANMOTION Q1	Q1AA04010D	100W	$\square$ 40	A	A		
		Q1AA06020D	200W	$\square$ 60	B	B		
		Q1AA06040D	400W		—	B		
Stepping motor	ORIENTAL MOTOR	5-phase	RK	RK564	—	$\square$ 60	H	H
				RK566			H	H
				RK569			H	H
				RK596			—	I
				RK599			—	I
	$\alpha$ step	AS66	$\square$ 60	H	H			
		ASC66		H	H			
		AS98		—	I			

# ● Dimensional Chart

## CGL15N

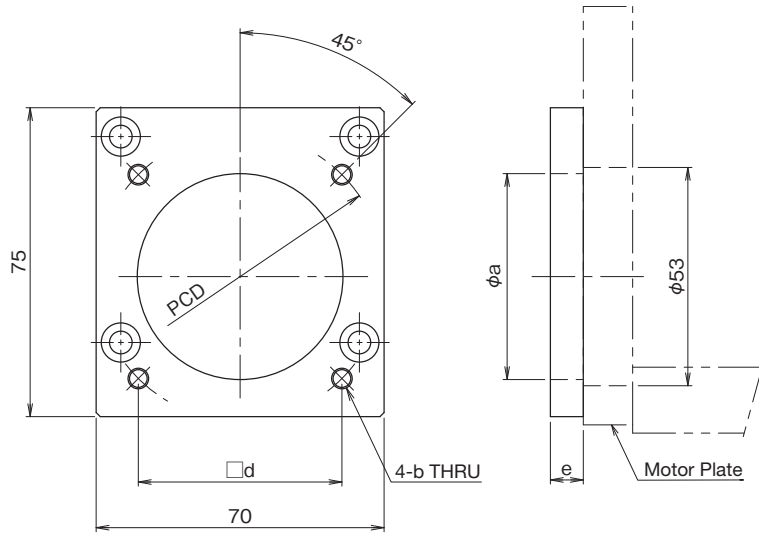


Table 5 Dimensional Table for the CGL15N Intermediate Flange

Unit: mm

Symbol	Intermediate Flange dimensions				
	a	b	PCD	d	e
A	30H7	M4	46	—	6
B	50H7	M5	70	—	8
C	50H7	M4	60	—	8
E	30H7	M3	45	—	6
F	50H7	M4	70	—	8
G	34H7	M3	48	—	5
H	36H7	M4	—	50	8

## CGL20N

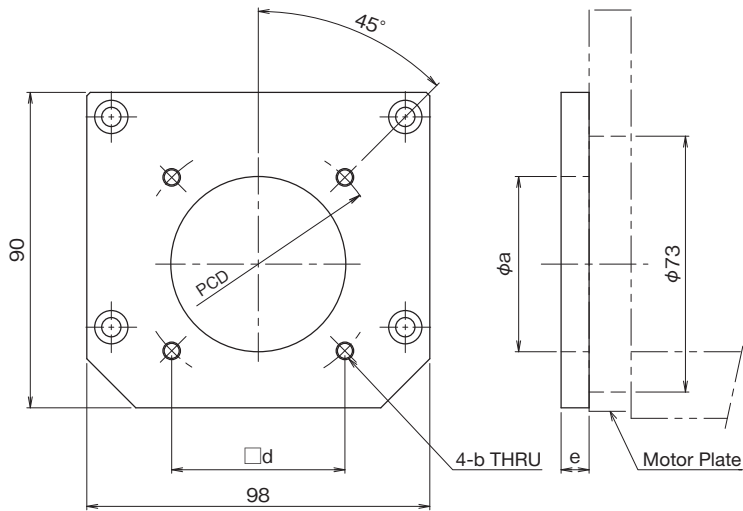


Table 6 Dimensional Table for the CGL20N Intermediate Flange

Unit: mm

Symbol	Intermediate Flange dimensions				
	a	b	PCD	d	e
A	30H7	M4	46	—	6
B	50H7	M5	70	—	8
C	50H7	M4	60	—	6
D	70H7	M5	90	—	8
E	30H7	M3	45	—	6
F	50H7	M4	70	—	6
G	34H7	M3	48	—	6
H	36H7	M4	—	50	6
I	60H7	M6	—	70	10
J	70H7	M6	90	—	10

# Options

## QZ Lubricator

### [LM Guide]

The QZ Lubricator provides a suitable amount of lubricating oil to the raceways of the LM rail.

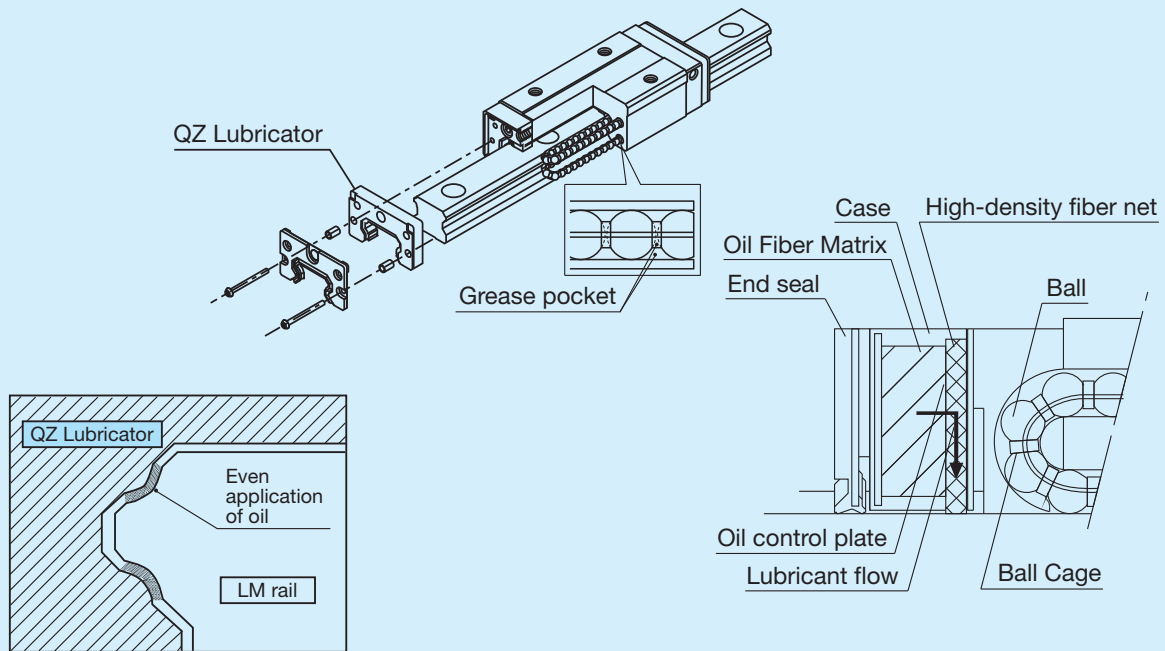


Figure 5 Structural image of QZ Lubricator (LM Guide)

### [Ball Screw]

The QZ Lubricator supplies the Ball Screw raceways with the proper amount of lubricant needed. Due to this an oil film is constantly formed along the Ball Guide surface making it possible to greatly extend the lubrication maintenance period.

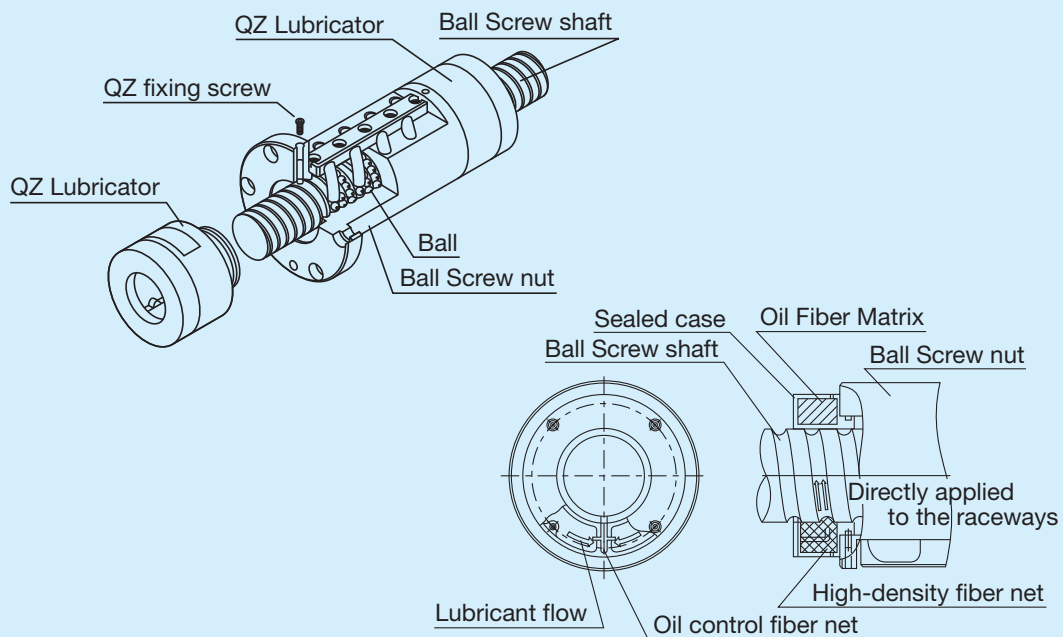


Figure 6 Structural image of QZ Lubricator (Ball Screw)

Model CGL makes it possible to attach a variety of sensor types to be used with the horizontal T slots.  
Please use the Code numbers listed in the correspondence table when selecting an appropriate sensor.

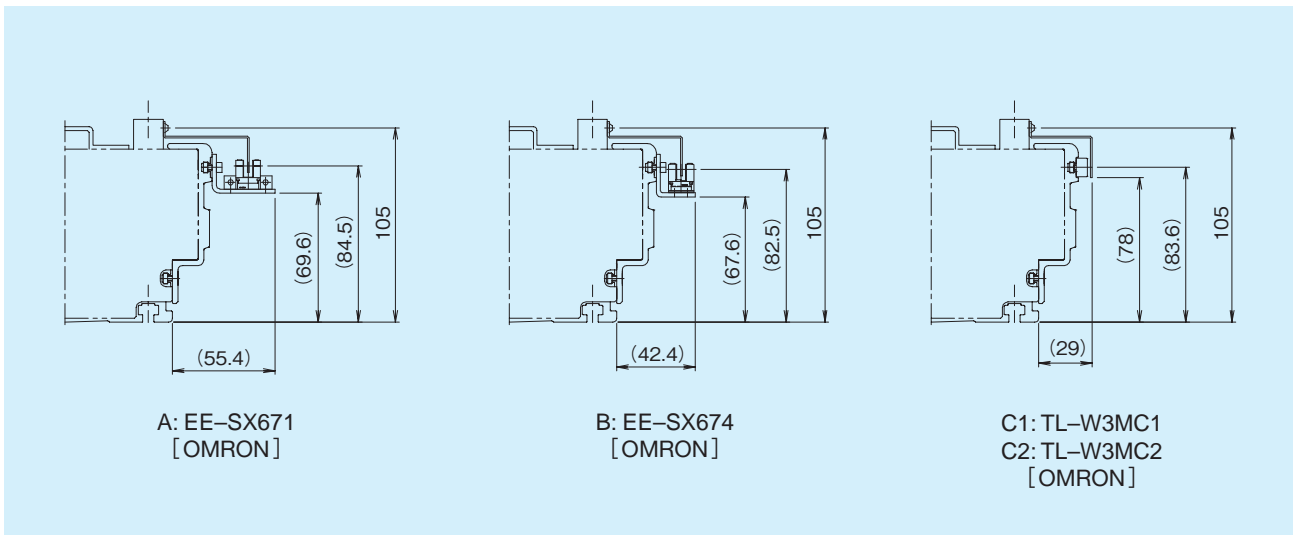
Type	Operation mode	Sensor model number	Quantity	Manufacturer	Symbol
Photo sensor	Switchover possible	EE-SX671	3	OMRON	A
	Switchover possible	EE-SX674	3	OMRON	B
Proximity sensor	N.O. contact	TL-W3MC1	3	OMRON	C1
	N.O. contact	TL-W3MC1	1	OMRON	C2
	N.C. contact	TL-W3MC2	2	OMRON	

Note 1: The output for all sensors will be NPN.

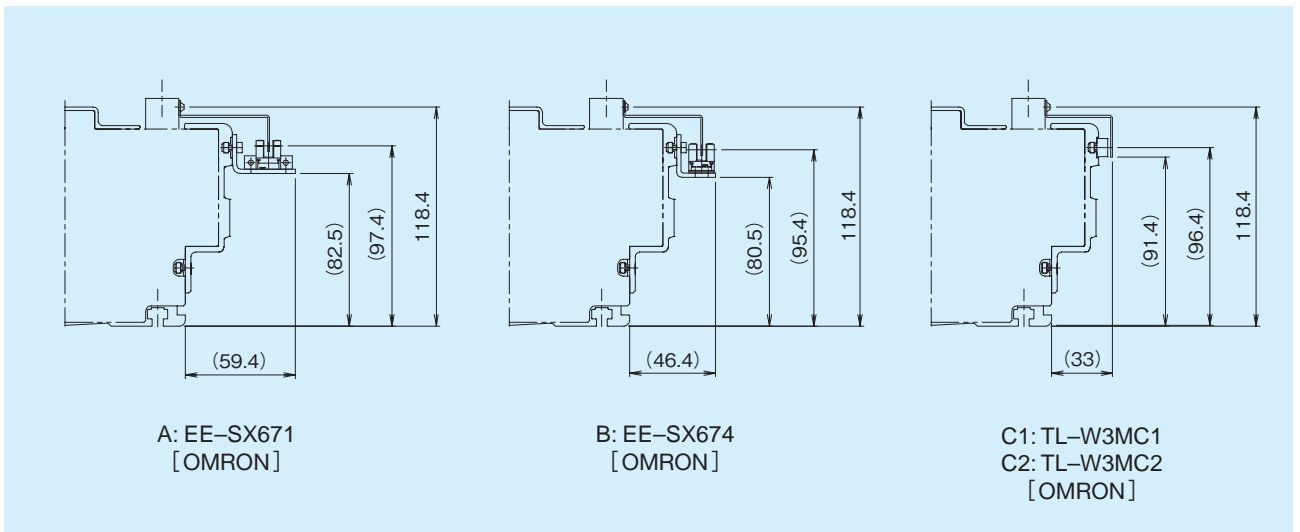
Note 2: A sensor kit (sensor main unit, sensor dogs, etc.) is mounted on the product at the time of shipment.

Note 3: N.O. contact: Normally open contact  
N.C. contact: Normally closed contact

• **CGL15N**

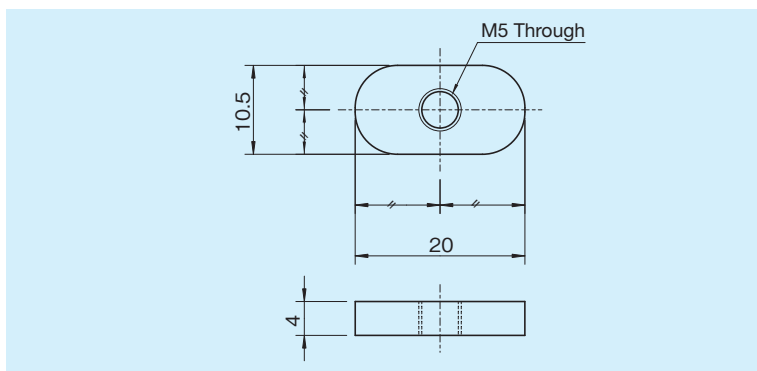


• **CGL20N**



## ● Base-mounting Fasteners (included)

T-Nuts are included with Model CGL for attachment to the base.



Base length (mm)	340	460	580	700	820	1060	1240	1420	1600	1780
Quantity	10	12	14	16	18	20	22	24	26	28

## ● Appendix

### ● Service Life Time and Static Safety Factor

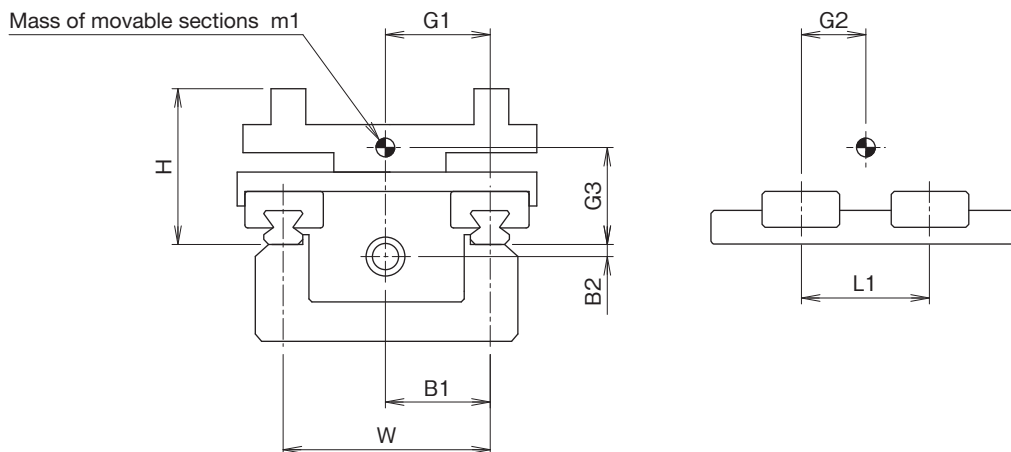
Model CGL consists of LM Guides, a ball screw, and support units. Please refer to the necessary items (LM Guide, Ball Screws, Support Unit) in the general catalog concerning the lifespan of each component and static safety factors.

The nominal life of the LM Guides and ball screw can be calculated using the technical calculation software available from the THK Technical Support Site (<https://tech.thk.com/>) or contained in the CD-ROM catalog. In calculating the nominal life, refer to the data in the following table.

Note: Please note that the calculation of life is theoretical. In actual use, the life varies depending on the service conditions such as the operating environment, lubrication conditions, the accuracy or rigidity of the area where the LM actuator is installed, and so forth.

[LM Guide]

Actuator model number	Block Table type	LM Guide model number	Thrust position		Rail span W [mm]	Block span L1 [mm]	Movable section			Slider height H [mm]	
			B1 [mm]	B2 [mm]			Mass m1 [kg]	Gravity center			
								G1 [mm]	G2 [mm]		G3 [mm]
CGL15N-***-SV-B	S	SSR15XV	45	-5.4	90	82	3.8	45	41	52.5	76.9
CGL15N-***-SW-B	L	SSR15XW		-5.4		74	4.2		37	52.5	76.9
CGL15N-***-SWQ-B	L-QZ	SSR15XWQZ		-5.4		94	4.3		47	52.5	76.9
CGL15N-***-HV-B	L	SHS15V		-5.4		74	4.3		37	52.5	76.9
CGL15N-***-HVQ-B	L-QZ	SHS15VQZ		-5.4		94	4.4		47	52.5	76.9
CGL20N-***-SV-B	S	SSR20XV	51	-2	102	108	5.4	51	54	56	81
CGL20N-***-SW-B	L	SSR20XW		-2		108	6.0		54	56	81
CGL20N-***-SWQ-B	L-QZ	SSR20XWQZ		-2		110	6.1		55	56	81
CGL20N-***-HV-B	L	SHS20V		-4		96	6.4		48	56	81
CGL20N-***-HVQ-B	L-QZ	SHS20VQZ		-4		110	6.5		55	56	81



[Ball Screw]

Actuator model number		Ball screw				
Model number	L (Base length)* [mm]	Ball Screw lead	Mounting method	Category	Model number	Mounting distance MAX [mm]
CGL15N	340	B05	Fixed-support	Rolled-without pre-load	BTK1605-2.6ZZ	196
	1420					1276
CGL15N	340	B10	Fixed-support	Rolled-without pre-load	BLK1510-5.6ZZ	188
	1420					1268
CGL15N	340	B16	Fixed-support	Rolled-without pre-load	BLK1616-3.6	188.5
	1420					1268.5
CGL15N	340	B20	Fixed-support	Rolled-without pre-load	WTF1520-3ZZ	191.5
	1420					1271.5
CGL15N	340	B30	Fixed-support	Rolled-without pre-load	WTF1530-2ZZ	186.5
	1420					1266.5
CGL20N	460	B05	Fixed-support	Rolled-without pre-load	BTK2005-2.6ZZ	315
	1780					1635
CGL20N	460	B10	Fixed-support	Rolled-without pre-load	BLK1510-5.6ZZ	307
	1420					1267
CGL20N	460	B20	Fixed-support	Rolled-without pre-load	BLK2020-3.6ZZ	310
	1780					1630
CGL20N	460	B40	Fixed-support	Rolled-without pre-load	WTF2040-2ZZ	309.5
	1780					1629.5

\* See the Dimensional Table for L (Base length) (Pages 7 and 8).

[Support Unit]

Model number	Support unit fixed side		Support unit support side	
	Angular ball bearing		Deep-groove ball bearing	
	Model number	Bearing model number	Model number	Bearing model number
CGL15N	GK10S	7000HTDFGMP5	GF10	608ZZ
CGL20N	GK12S	7001HTDFGMP5	GF12	6000ZZ

## ● Motor Selection

When selecting a motor for installation on Model CGL, refer to the following data. For details of the motor selection method and motor specifications, contact the motor manufacturer.

Actuator model number		Ball screw					
Model number	L (Base length)* [mm]	Ball Screw lead	Model number	Outer diameter [mm]	Lead [mm]	Shaft length [mm]	Shaft-end outer diameter [mm]
CGL15N	340	B05	BTK1605-2.6ZZ	16	5	311	φ8h7
	1420					1391	
CGL15N	340	B10	BLK1510-5.6ZZ	15	10	311	φ8h7
	1420					1391	
CGL15N	340	B16	BLK1616-3.6	16	16	311	φ8h7
	1420					1391	
CGL15N	340	B20	WTF1520-3ZZ	15	20	311	φ8h7
	1420					1391	
CGL15N	340	B30	WTF1530-2ZZ	15	30	311	φ8h7
	1420					1391	
CGL20N	460	B05	BTK2005-2.6ZZ	20	5	427	φ10h7
	1780					1747	
CGL20N	460	B10	BLK1510-5.6ZZ	15	10	427	φ10h7
	1420					1387	
CGL20N	460	B20	BLK2020-3.6ZZ	20	20	427	φ10h7
	1780					1747	
CGL20N	460	B40	WTF2040-2ZZ	20	40	427	φ10h7
	1780					1747	

LM Guide model number	Movable section mass [kg]	Sliding resistance [N]
CGL15N-***-SV-B	3.8	20.2
CGL15N-***-SW-B	4.2	20.6
CGL15N-***-SWQ-B	4.3	30.6
CGL15N-***-HV-B	4.3	21.2
CGL15N-***-HVQ-B	4.4	37.2
CGL20N-***-SV-B	5.4	25.0
CGL20N-***-SW-B	6.0	26.4
CGL20N-***-SWQ-B	6.1	38.4
CGL20N-***-HV-B	6.4	25.6
CGL20N-***-HVQ-B	6.5	41.6

Allowable input torque	
Model number	[N·m]
CGL15N	2.8
CGL20N	5.3

\* See the Dimensional Table for L (Base length) (Pages 7 and 8).





# LM actuator for clean-room environment Model CGL

## Precautions on Use

### ● Handling

- Please do not disassemble this product without a thorough understanding of the procedures involved. The product may become affected by the intrusion of foreign substances or may malfunction.
- Be careful not to drop or mishandle the product. Doing so could lead to injuries or damage. Further, in the event that a shock has been applied there is a possibility that the performance of the device have been damaged even if there is no perceptible damage to the external appearance.
- Do not use the device in excess of the allowable rotation rate. Doing so may cause damage to the parts or may cause an accident.
  - \* Contact THK for the permissible rotational speed.
- Under no circumstances should contact be made with the moving parts when operating the device or when it is in a state wherein operations are possible. Also, do not enter into the range of operations of the actuator.
- In the event that multiple parties are operating the actuator, be sure to verify the operating sequences, necessary communications and procedures in the event of a malfunction. Also, a non-participatory supervisor should be present to watch over operations.
- Do not press strongly on the sealing sheet.
- Do not use the sealing sheet in a deteriorated state.
- Due to a structure that allows for absorption of the interior of the cover, there may instances of particles adhering to the sealing sheet or nearby components. Please periodically wipe up the clean room with a wipe cloth and ethanol or similar substance.

### ● Operating environment

Please use the product in the following locations as usage in an inappropriate environment may lead to a malfunction.

- When clean room class 4 functions are needed, the ambient temperature is to be from +16°C to +24°C (frost does not occur at a humidity of 50%RH or less).
- When using the device in an ordinary environment (atmosphere), the ambient temperature is to be from +10°C to +40°C (frost does not occur at a humidity of 80%RH or less).
  - \* Please contact THK when considering usage in temperature ranges lying outside of these temperatures.
- Environments with no corrosive gases or flammable gases
- Environments with small amounts of dust, particles, salt and metallic particles.
- Environments that are not affected by water, oil or chemicals
- Environments wherein the main unit is not affected by vibration or shock
- For applications requiring non-traditional types of lubricants due to usage in special environments such as those that are exposed to vibrations, or in clean rooms, vacuum rooms or locations with very high or low temperatures, please contact THK.

### ● Mounting the actuator

- The mounting surface should be a machined surface or of equivalent roughness and accuracy. The flatness should be within 0.1mm/1000mm.
- If a system with lubrication unit QZ is used in a non-horizontal orientation (wall hanging, vertical position, etc.), contact THK.

### ● Lubrication

- To maximize the performance of this product, lubrication is required. Using the product with insufficient lubrication may increase wear of the rolling elements or damage the system early. In this product, THK AFE-CA grease is used as the standard grease.
- The Ball Screw section does not have a grease nipple. To lubricate, apply grease directly to the sliding surface.
- Do not mix differing types of lubricants.
- Please contact THK in the event that special lubrication is used.
- The interval for the application of grease is normally 100km. However, this may differ according to usage conditions and thus we recommend determining the greasing interval based on the results of the initial inspection.
- For applications requiring non-traditional types of lubricants due to usage in special environments such as those that are exposed to vibrations, or in clean-rooms, vacuum-rooms or locations with very high or low temperatures, please contact THK.

### ● Storage

- Please store this product in the packaging and position provided by our company in a horizontal position that avoids low and high temperatures and high levels of humidity.

## ● “LM GUIDE” and “” are the registered trademarks of THK CO., LTD

- There may be differences between products appearing in photographs and the actual product.
- The appearance, specifications, and other information are subject to change without prior notice to improve reliability, function, etc. When deciding to adopt the product, contact us beforehand.
- We have exercised great care in preparing this catalog, but it is still possible that are misspellings, omissions of letters, etc. THK assumes no responsibility or liability for damage resulting from such errors possibly contained herein.
- We employ the basic policy of observing the Foreign Exchange and Foreign Trade Control Law of Japan with regard to the export of our products/technologies or sales for export. For export of our products as discrete components, consult THK beforehand.

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