Clean Series LM Guide Actuator

CKSF



Low dust-generating structure
compatible with long strokes and ideal
for transporting in clean environments

For Clean Environments

CKSF

Low Dust-Generating LM Guide Actuator

An LM Guide actuator with low dust-generating structure ideal for clean environments.
The entire cover has a unique covering mechanism that uses a strip seal to achieve low dust generation.
Achieves cleanliness (ISO 14644-1[1]) Class 4 equivalence.[2]

[1] ISO 14644-1:1999 is JIS B 9920 equivalent
[2] FED209D Class 10 equivalent
Note) Suction using suction ports is required to achieve Class 4.



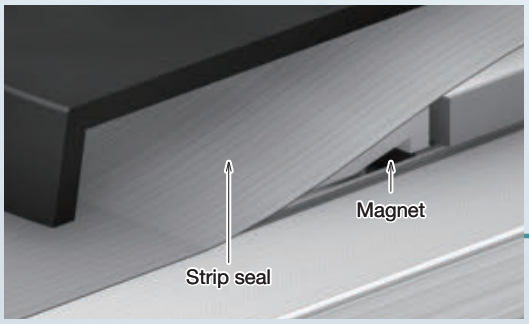


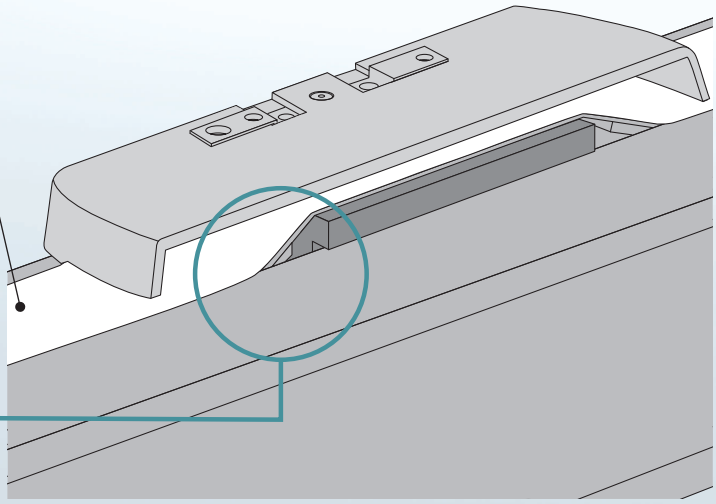
Cleanliness Class 4 ^{2}

The unique cover mechanism

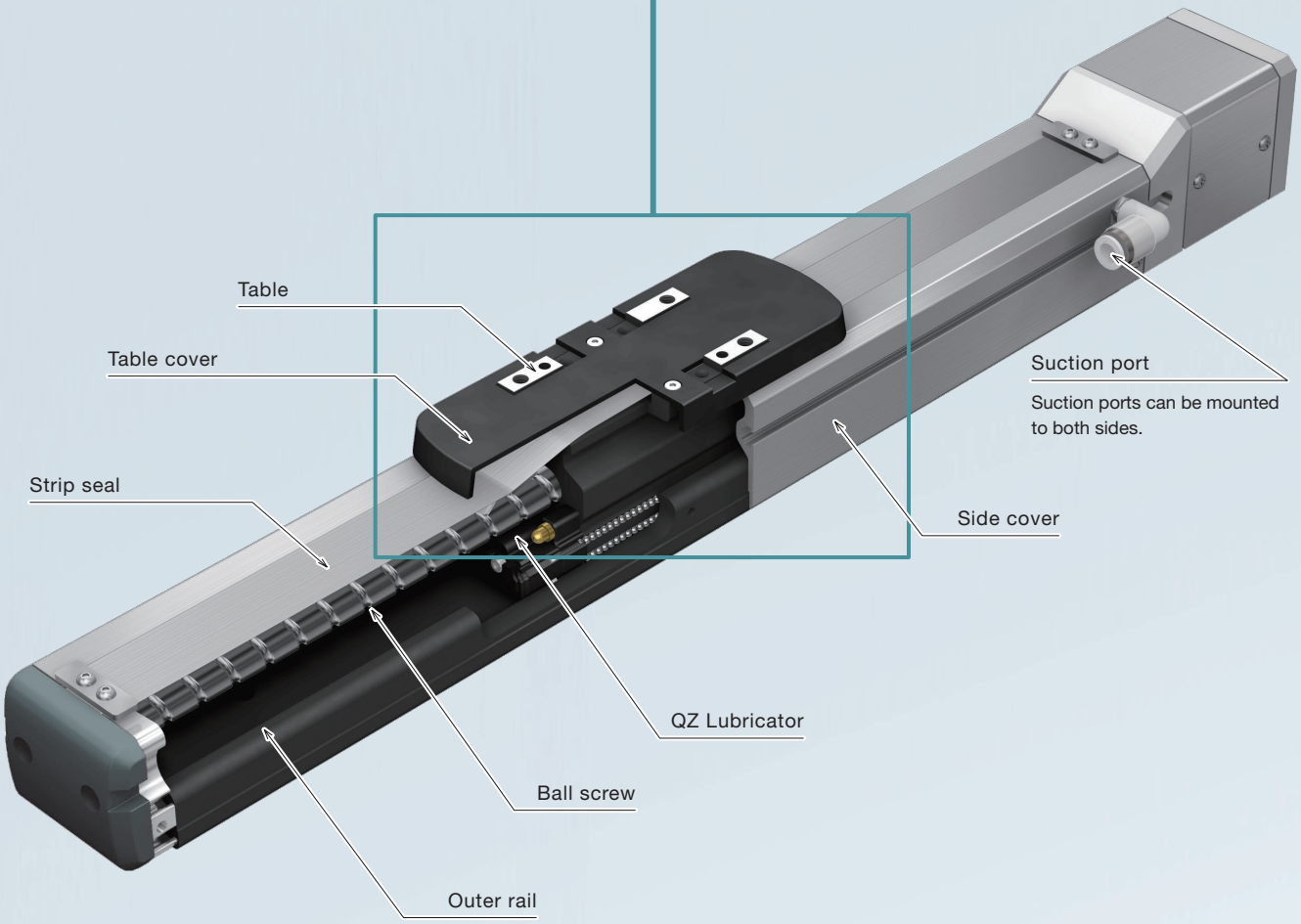
Strip seal

A unique covering mechanism in which the top surface of the strip seal does not make contact, creating a structure with low dust generation.





* Image is representative only

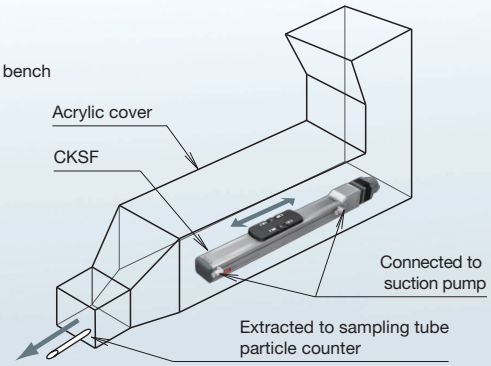


enables low dust generation.

Dust Generation Test

Test method

Test environment: In clean bench



Flow speed: 250 mm/s
Measured airflow: 1 × 10^{-3} m^3

Test conditions

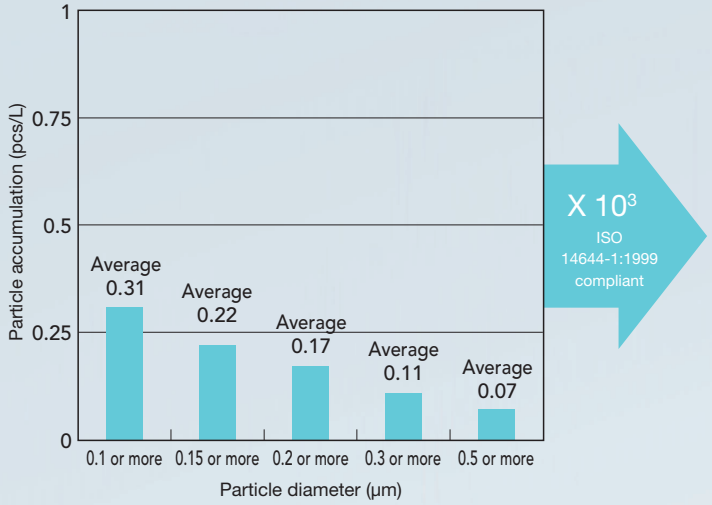
Item	Description
Model	CKSF4-10-0400
Stroke	400 mm
Speed	500 mm/s
Acceleration/deceleration rate	9.8 m/s^2 (1 G)
Vacuum rate	30 × 10^{-3} m^3/min (30 L/min)
Applied load	None

Measurement conditions

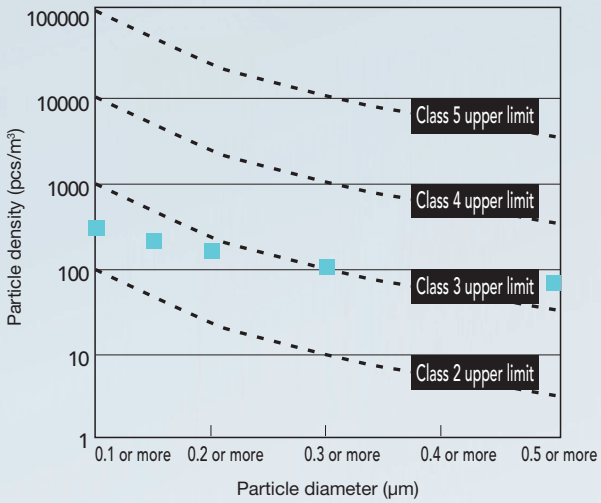
Item	Description
Measuring equipment	Particle counter (KC-18 supplied by Rion Co., Ltd.)
Flow speed at measurement point	250 mm/s
Measured airflow	1 × 10^{-3} m^3 (1 L)
Measurement time	50 h

Test result

●Results after 50 hours of continuous operation (maximum speed 500 mm/s)



●Cleanliness class: ISO14644-1:1999



●Air cleanliness class evaluation results

Model	Stroke (mm)	Speed (mm/s)	Acceleration/deceleration rate (m/s^2)	Vacuum rate[1] ×10^{-3} (m^3/min)	Cleanliness[2, 3] (ISO14644-1:1999)
CKSF4-10-0400	400	500	9.8	30	Class 4
CKSF5-20-0600	600	1000	19.6	50	Class 6
CKSF6-30-0650	650	1500	19.6	60	Class 5
CKSF8-40-0750	750	2000	19.6	160	Class 5
CKSF10-50-0850	850	2500	14.7	230	Class 7

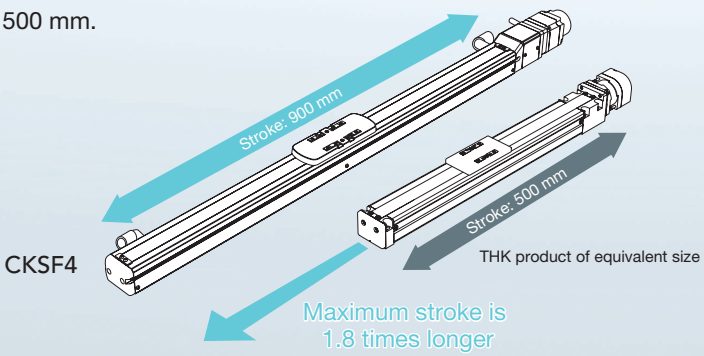
[1] The vacuum rate does not include the effect of piping resistance. Piping resistance is dependent on the piping length and piping diameter, and can reduce the flow amount.
[2] The air cleanliness class varies with the operating conditions.
[3] The sliding part of the strip seal will show initial wear. (Evaluation test results represent post-initial wear data.) Additionally, the measurement data is for reference and does not ensure an air cleanliness class.

Enables long strokes, high-speed performance, high rigidity and long-term maintenance-free operation.

THK Technology 1 Long Stroke

Supports a wide range of stroke lengths from 50 mm to 1500 mm.

Maximum stroke **1500** mm



THK Technology 2 High-Speed Performance

Adopts a KSF series unit with excellent high-speed performance to enable high-speed operation in clean environments.

Maximum speed **2500*** mm/s

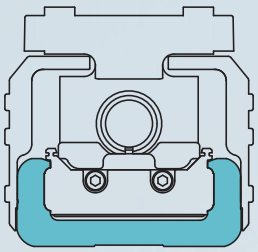
* With CKSF10

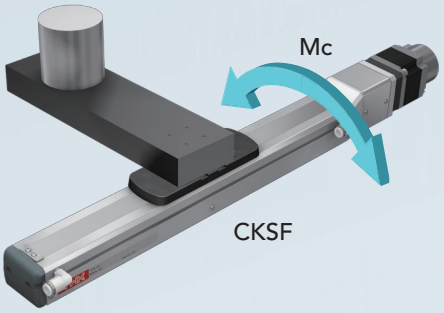
Achieves maximum acceleration/deceleration rate of **2 G***

* Maximum acceleration/deceleration rate differs depending on the model and operating conditions.

THK Technology 3 High Rigidity

Using a steel outer rail with a U-shaped cross-section enables it to receive a larger moment.
The actuator body's high rigidity allows for a compact, space-saving design.





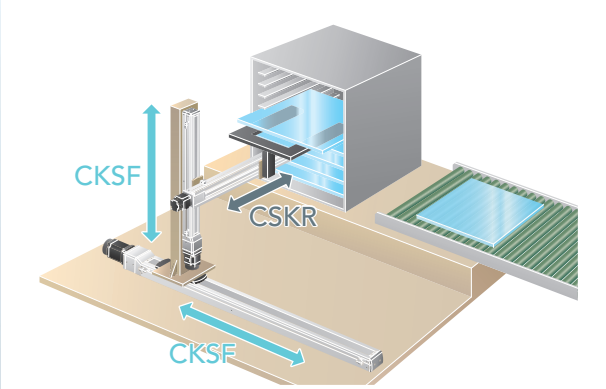
THK Technology 4 Long-Term Maintenance-Free Operation

The QZ Lubricator, which supplies the appropriate amount of lubricant, is adopted as standard to enable long-term maintenance-free operation.

Used mainly in the electronic components industry, it is also suitable for transportation and inspection in medical/food industry clean environments.

Electronic components industry

Liquid Crystal Glass Conveyor



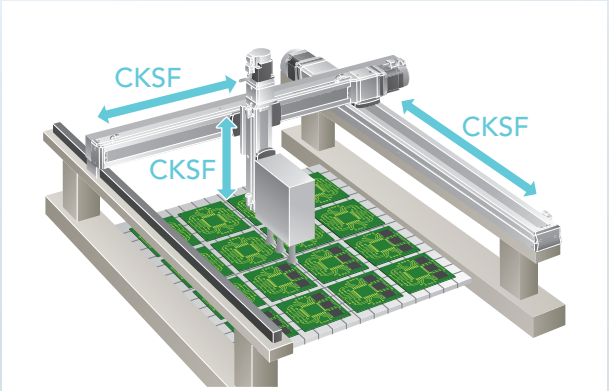
Liquid crystal glass conveyor parts use clean series actuators. Using CKSF for the XZ-axis reduces the amount of dust generated and enables long-stroke conveyance with minimal vibration of the workpiece due to its high rigidity.

Model used

X-axis: CKSF10
Y-axis: CSKR2606A
Z-axis: CKSF6

Electronic components industry

PCB Mounting Device



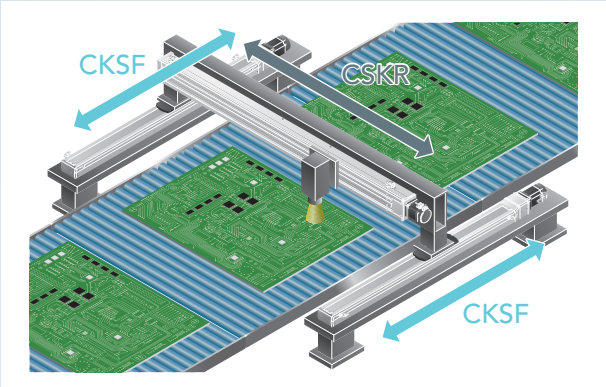
The clean series CKSF is used for the travel parts of PCB mounting devices. The high-lead ball screw provides excellent high-speed performance and accurately positions circuit boards, with high rigidity for dramatically improved mounting precision, while also suppressing dust generation.

Model used

X-axis: CKSF8
Y-axis: CKSF6
Z-axis: CKSF4

Electronic components industry

Substrate Laceration Inspection Device



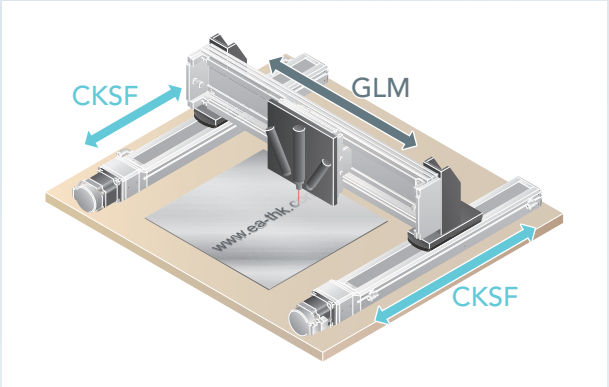
CKSF is used for the X-axis and CSKR is used for the Y-axis of this microscope for laceration inspection equipment. Using CKSF to support long stroke lengths on the X-axis makes it possible to inspect large-sized boards.

Model used

X-axis: CKSF8
Y-axis: CSKR4620A

Electronic components industry

Laser Marking Equipment



CKSF is used for the X-axis and GLM is used for the Y-axis of the laser-moving part. The use of the long-stroke, clean series CKSF together with the low dust-generating, non-contact drive GLM enables rapid takt times for the marking of large materials inside of clean rooms while minimizing dust generation.

Model used

X-axis: CKSF8
Y-axis: GLM20AP

Series Lineup

Model	Ball screw lead (mm)	Stroke (mm)	Estimated motor capacity (W)	Maximum load capacity[1] (kg)			
				Horizontal	Wall-mounted	Vertical	
CKSF4	10	50 to 900	100	19	10.5	8.5	
	16			14	8.5	7	
CKSF5	10	50 to 900	100	26	19	12.5	
	20			7.5	7.5	6	
CKSF6	20	50 to 1300	200	42	20	12	
	30			20.5	18	7.5	
CKSF8	20	100 to 1500	400	83.5	45	23.5	
	40			19	19	10.5	
CKSF10	25	100 to 1500	750	118.5	76	33.5	
	50			40	40	14.5	

[1] Maximum load capacity is the weight at the speed and acceleration/deceleration rate as below.
Speed: Rated motor rotational speed 3000 min^{-1}
Acceleration and deceleration rate: 0.3 G for a lead less than 20 mm, and 0.5 G for a lead of 20 mm or more
[2] The maximum speed is limited by the actuator's permissible speed.

Model Number Coding

Model (1)		Ball screw lead (2)		Stroke (3)		With/without motor (4)
CKSF4	-	10	-	0050	-	0
CKSF4		10: 10 mm		0050: 50 mm		0: Without motor
CKSF5		16: 16 mm		0100: 100 mm		1: With motor (Specified motor prepared and mounted by THK)
CKSF6		20: 20 mm		to		
CKSF8		25: 25 mm		1500: 1500 mm		
CKSF10		30: 30 mm				
		40: 40 mm				
		50: 50 mm				

Ball screw leads that can be selected differ depending on the model.
CKSF4: "10," "16"
CKSF5: "10," "20"
CKSF6: "20," "30"
CKSF8: "20," "40"
CKSF10: "25," "50"

Stroke and stroke pitch that can be selected differ depending on the model.
CKSF4: 50 mm to 900 mm (at 50 mm pitch)
CKSF5: 50 mm to 900 mm (at 50 mm pitch)
CKSF6: 50 mm to 1300 mm (at 50 mm pitch)
CKSF8: 100 mm to 1500 mm (at 100 mm pitch)
CKSF10: 100 mm to 1500 mm (at 100 mm pitch)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

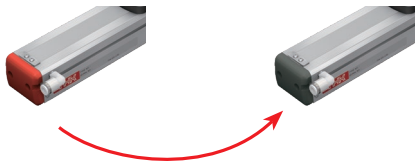
When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately.
Select (5) Intermediate flange to match the specified motor.

	Maximum speed for each stroke[2] (mm/s)																									Product page
	Stroke (mm)																									
	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1400	1500			
	500					440	380	340	300	260	230	210														p. 9
	800					710	620	540	480	420	380	340														
	500							440	390	350	310	280														p. 15
	1000							890	790	700	630	570														
	1000							980	870	770	690	630	570	520	470	430	400	370	340	320						p. 21
	1500							1480	1310	1160	1040	940	850	780	710	650	600	550	510	480						
	1000								980		800		670		560		480		420		360	320				p. 27
	2000								1970		1610		1340		1130		970		840		730	650				
	1250												1050		890		760		660		580	510				p. 33
	2500												2110		1790		1530		1330		1160	1030				

	Intermediate flange (5)		Options (6)
-	A0	-	GR-6
	A0		No symbol: None
	AP		T: Back tap
	AQ		GR: Gray cover
	AR		6: Photo sensor
	AU		J: Proximity sensor
	AV		M: Proximity sensor (PNP)
	AY		
	AZ		
	A5		
	A6		

Specify the option symbol by writing "-" in the order indicated.
(Ex.) GR-6: Gray cover, photo sensor

Gray cover
The housing cover can be changed to gray.
Standard: Red "GR" selected: Gray



CKSF4

Main Unit Width 43 mm | Main Unit Height 46 mm | Stroke Max. 900 mm

Model Number Coding

Model (1)	Ball screw lead (2)	Stroke (3)	With/without motor (4)	Intermediate flange (5)	Options (6)
CKSF4	10	0050	0	A0	GR-6
CKSF4	10: 10 mm 16: 16 mm	0050: 50 mm to 0900: 900 mm	0: Without motor 1: With motor (Specified motor prepared and mounted by THK)	A0 AP AQ AR	No symbol: None T: Back tap GR: Gray cover 6: Photo sensor J: Proximity sensor M: Proximity sensor (PNP)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately. Select (5) Intermediate flange to match the specified motor.

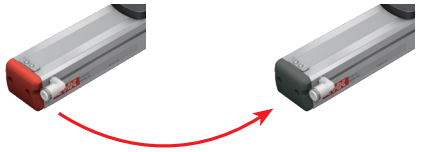
Intermediate flange details
→ p. 14

Back tap details
→ p. 13
Sensor details
→ p. 13

(6) Options

Gray cover
The housing cover can be changed to gray.

Standard: Red | When selecting "GR": Gray



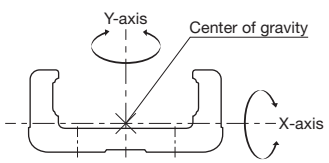
Selection Materials

Basic Specifications

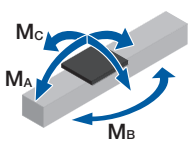
LM Guide	Basic dynamic load rating C (N)		6400	
	Basic static load rating C_0 (N)		12900	
	Radial clearance (mm)		-0.003 to +0.002	
	Geometrical moment of inertia	I_x[1] (mm^4)	6.1×10^3	
		I_y[2] (mm^4)	6.2×10^4	
		Weight (kg/m)	2.6	
Ball screw	Ball screw lead (mm)		10	16
	Basic dynamic load rating Ca (N)		2860	1850
	Basic static load rating C_0a (N)		5110	3420
	Screw shaft diameter (mm)		ϕ10	
	Thread minor diameter (mm)		ϕ8.06	
	Ball center-to-center diameter (mm)		ϕ10.5	
	Permissible rotational speed[3] (min^{-1})		5000	4000
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	2930	
		Static permissible load P_0a (N)	2140	
Starting torque[4] (N·cm)			1.5	
Positioning repeatability[5] (mm)			±0.01	
Lost motion[5] (mm)			0.1	
Permissible input torque (N·m)			1.2	
Static permissible moment[6] (N·m)			M_A: 103, M_B: 103, M_C: 58	
Running life[7] (km)			10,000	20,000
Standard grease/Grease nipple used			THK AFF Grease/PB107	
Guideline value of vacuum rate[8] × 10^{-3} (m^3/min)			30	

[1] I_x = Geometrical moment of inertia of area around the X-axis.
[2] I_y = Geometrical moment of inertia of area around the Y-axis.
[3] Permissible rotational speed may decrease if the stroke is lengthened.
[4] The starting torque represents the value when containing THK AFF Grease.
[5] The value when measured using a motor for inspection.
[6] The moment reference for M_A and M_C is the table top face; the moment reference for M_B is the table center.
[7] The conditions for calculation are as follows:
Stroke: 500 mm. Speed: 500 mm/s (for 10 mm lead), 800 mm/s (for 16 mm lead). Load mass: maximum load capacity (see p. 7). Acceleration and deceleration rate: acceleration and deceleration rate when maximum load capacity is set (see p. 7). Center of gravity: center of the table upper surface.
[8] The vacuum rate does not include the effect of piping resistance.

Geometrical moment of inertia



Static permissible moment



Motor Selection Information

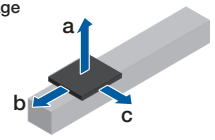
Stroke (mm)	LM Guide		Ball screw		Motor mounting part
	Weight of moving element (kg)	Sliding resistance value[1] (N)	Lead (mm)	Shaft length (mm)	Shaft end diameter (mm)
50 to 900	0.4	1.5	10, 16	257 to 1107	ϕ6h7

[1] This value is the sum of the rolling resistance value and seal resistance value.

Note) Refer to page 14 for applicable couplings.

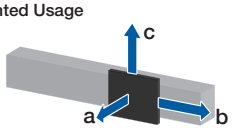
Permissible Overhang Length[2]

Horizontal Usage



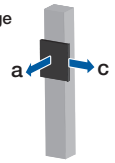
Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	10	4.5	400	130	220
		9.5	400	60	100
		19	210	20	40
	16	3.5	400	140	210
		7	370	60	100
		14	160	30	40

Wall-Mounted Usage



Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	10	2.5	370	220	400
		5	160	90	400
		10.5	50	30	350
	16	2	360	230	400
		4	160	100	400
		8	50	30	240

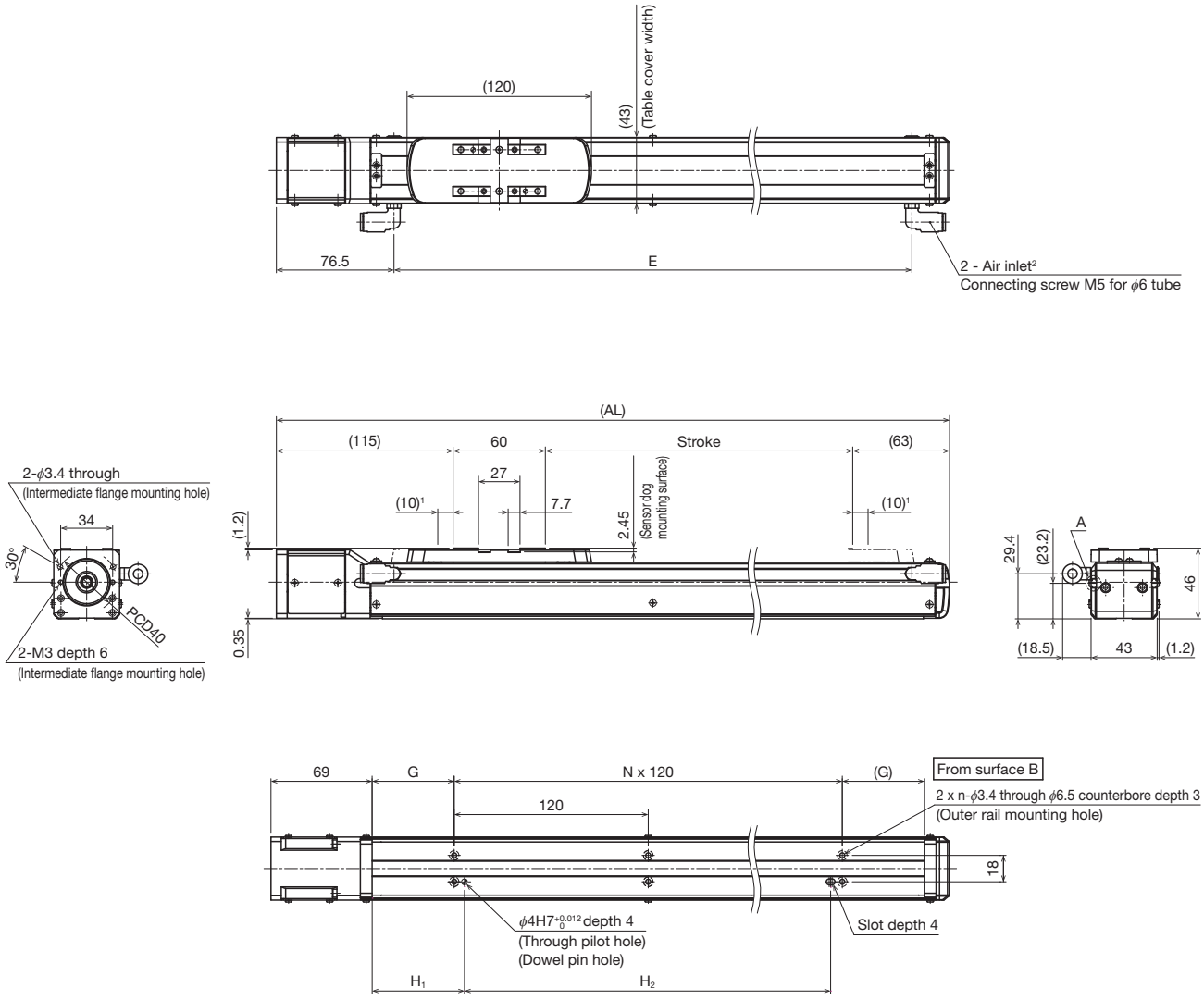
Vertical Usage



Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	c (mm)
Direct coupling	10	2	280	280
		4	130	130
		8.5	50	50
	16	1.5	260	260
		3.5	120	120
		7	50	50

[2] Value when LM Guide running life is restricted to 10,000 km (20,000 km for a 16 mm lead). The calculation conditions are as follows.
Stroke: 475 mm. Acceleration/deceleration rate: 0.3 G. Speed: 500 mm/s (for 10 mm lead), 800 mm/s (for 16 mm lead). Overhang direction: Load in one direction only. Dimensions a, b, and c are the dimensions from the center of the table upper surface.

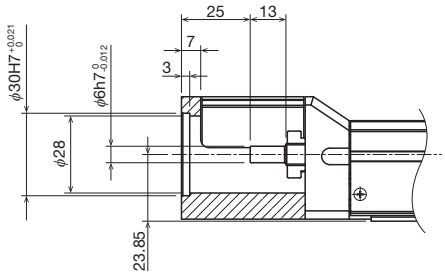
Dimensions



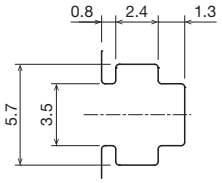
[1] Stroke up to mechanical stopper.
[2] Suction ports can be mounted from either side. Plug any unused suction ports. Two plugs are included.

Stroke (mm) (Stroke between mechanical stoppers)		50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)	
Maximum speed[5] (mm/s)	Ball screw lead: 10 mm	500								
	Ball screw lead: 16 mm	800								
Dimensions (mm)	AL	288	338	388	438	488	538	588	638	
	G	41	66	91	56	81	46	71	96	
	H_1	48	48	48	63	63	63	48	48	
	H_2	75	125	175	225	275	325	375	425	
	E	187	237	287	337	387	437	487	537	
Mounting pitch count	N	1	1	1	2	2	3	3	3	
Mounting hole count	n	2	2	2	3	3	4	4	4	
Weight (kg)		1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	

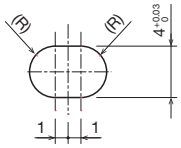
[5] Maximum speed is limited by the actuator's permissible speed.



Details of motor mounting part (with A0 selected)[3]



Section A (detail)[4]



Slot (detail)

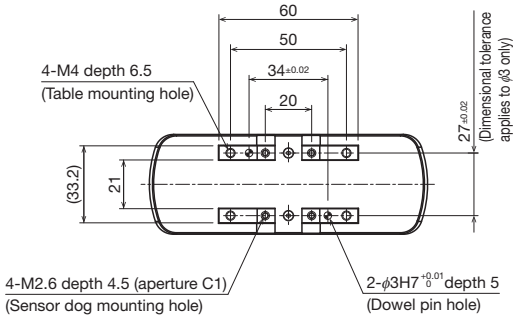
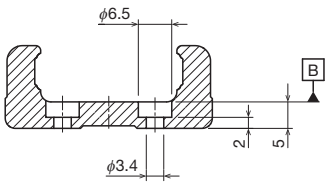


Table details



Outer rail mounting hole details

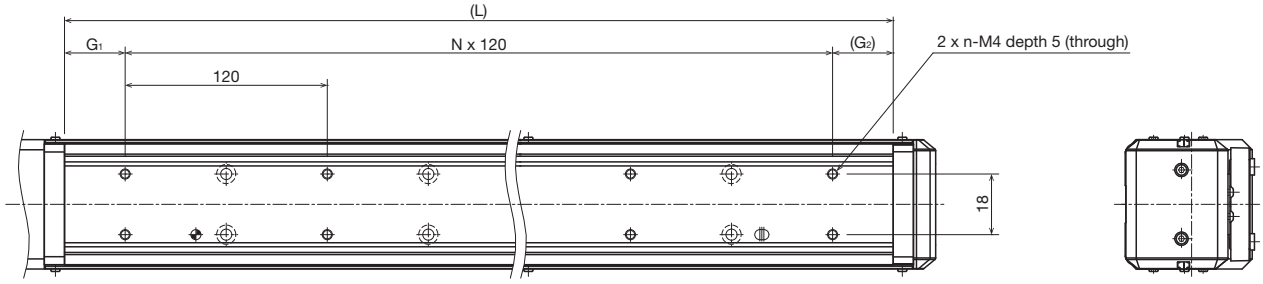
[3] See page 14 for intermediate flange dimensions.
[4] The T-slot in part A is exclusively for sensor mounting. Do not use it for any other purpose.

	450 (470)	500 (520)	550 (570)	600 (620)	650 (670)	700 (720)	750 (770)	800 (820)	850 (870)	900 (920)
		500		440	380	340	300	260	230	210
		800		710	620	540	480	420	380	340
	688	738	788	838	888	938	988	1038	1088	1138
	61	86	51	76	41	66	91	56	81	46
	48	63	63	63	48	48	48	63	63	63
	475	525	575	625	675	725	775	825	875	925
	587	637	687	737	787	837	887	937	987	1037
	4	4	5	5	6	6	6	7	7	8
	5	5	6	6	7	7	7	8	8	9
	3	3.2	3.4	3.6	3.8	4	4.2	4.4	4.6	4.7

Options

T: Back Tap

Back taps are available to allow body mounting without removing the cover.



Note 1) The standard counterbore will remain even if a back tap is selected.

Stroke (mm)		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
Dimensions (mm)	L	202	252	302	352	402	452	502	552	602	652	702	752	802	852	902	952	1002	1052
	G_1	34	59	84	42	74	39	78	89	54	79	44	69	34	59	84	42	74	39
	G_2	48	73	98	70	88	53	64	103	68	93	58	83	48	73	98	70	88	53
Mounting pitch count	N	1	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8
Mounting hole count	n	2	2	2	3	3	4	4	4	5	5	6	6	7	7	7	8	8	9

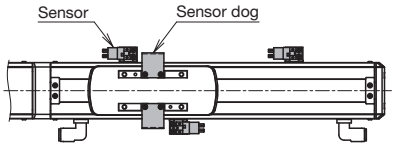
Sensors

Optional photo sensors and proximity sensors are available. Keep the following precautions (Notes 2 to 5) in mind for use. Various sensors can be mounted using the T-slot in the side cover.

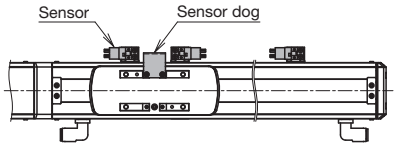
Symbol	Description	Model	Accessories
6	Photo sensor[1] (x3)	EE-SX674 (OMRON Corporation)	Mounting screws, nuts, sensor dog (x1 or 2), mounting plates (x3), connectors (EE-1001 x3)
J	Proximity sensor NO contact[2] (x1) NC contact[3] (x2)	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)
M	Proximity sensor NO contact[2] (x1) (PNP output) NC contact[3] (x2) (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)

[1] The photo sensors can be switched between ON when lit and ON when unlit.
[2] NO contact: Normally open contact point
[3] NC contact: Normally closed contact point

Note 2) The sensor accessories are supplied with the actuator unit. To be mounted by the customer.
Note 3) If proximity sensors are placed too close to each other, they may not work properly. In this case, provide sensors with variant frequencies. (For specifications, contact each manufacturer.)
Note 4) For a 50 mm stroke, 2 sensor dogs are mounted.
Note 5) Mounting of sensors other than those in the table above is possible. Contact THK for details.

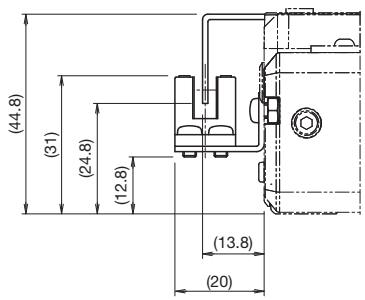


With sensors mounted on both sides



With sensor mounted on one side

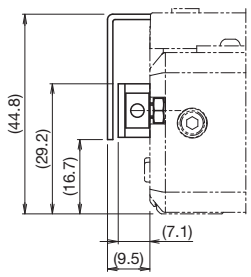
Photo Sensor Mounting Dimensions



Symbol	Model	Manufacturer
6	EE-SX674	OMRON Corporation

Sensor dog width: 26 mm

Proximity Sensor Mounting Dimensions



Symbol	Model	Manufacturer
J	GX-F12A	Panasonic Industrial Devices SUNX Co., Ltd.
	GX-F12B	
M	GX-F12A-P	
	GX-F12B-P	

Sensor dog width: 26 mm

Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

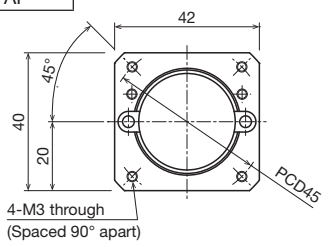
Compatibility Table: Motors used, intermediate flanges, and couplings

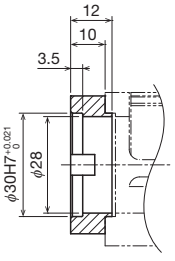
Motor type	Manufacturer	Series		Motor model	Motor rated output (W)	Flange angle	Intermediate flange	Applicable coupling model	
								MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
AC servo motor	YASKAWA Electric Corporation	Σ-V		SGMJV-A5	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				SGMAV-A5					
				SGMJV-01	100				
				SGMAV-01					
		Σ-7		SGM7J-A5	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				SGM7A-A5					
				SGM7J-01	100				
				SGM7A-01					
		Σ-X		SGMXJ-A5	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				SGMXA-A5					
				SGMXJ-01	100				
				SGMXA-01					
	Mitsubishi Electric Corporation	MELSERVO	J4	HG-KR053	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				HG-MR053					
				HG-KR13	100				
				HG-MR13					
			J5	HK-KT053W	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				HK-KT13W	100				
			JN	HF-KN053	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				HF-KN13	100				
	TAMAGAWA SEIKI CO., LTD.	TBL-iII		TS4602	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				TS4603	100				
		TBL-iIV		TSM3102	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				TSM3104	100				
	Panasonic Corporation	MINAS	A5	MSMD5A	50	□38	AP	SFC-020DA2-6B-8B	XGT2-19C-6-8
				MSME5A					
				MSMD01	100				
				MSME01					
			A6	MSMF5A	50	□38	AP	SFC-020DA2-6B-8B	XGT2-19C-6-8
				MHMF5A		□40	AQ		
				MSMF01	100	□38	AP	SFC-020DA2-6B-8B	XGT2-19C-6-8
				MHMF01		□40	AQ		
	KEYENCE CORPORATION	SV		SV-M005	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				SV-M010	100				
		SV2		SV2-M005	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				SV2-M010	100				
	SANYO DENKI CO., LTD.	SANMOTION R		R2□A04005	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				R2□A04010	100				
	OMRON Corporation	OMNUC G5		R88M-K05030	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				R88M-K10030	100				
		1S		R88M-1M10030	100	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
	FANUC CORPORATION	β is Series		βis0.2/5000	50	□40	AQ	SFC-020DA2-6B-8B	XGT2-19C-6-8
				βis0.3/5000	100				

Motor type	Manufacturer	Series		Motor model	Flange angle	Intermediate flange	Applicable coupling model	
							MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
Stepper motor	ORIENTAL MOTOR CO., LTD.	α step		AZ4*, AR4* (excluding AZM48)	□42	AR	SFC-020DA2-6B-6B	XGT2-15C-6-6
				AZM48			SFC-020DA2-6B-8B	XGT2-19C-6-8
		5-phase	CRK	CRK54*			SFC-020DA2-5B-6B	XGT2-15C-5-6
			RK II	RKS54*			SFC-020DA2-6B-6B	XGT2-15C-6-6
			CVK	PKP54*			SFC-020DA2-5B-6B	XGT2-15C-5-6
		2-phase	PKP/ CVD	PKP24*			SFC-020DA2-5B-6B	XGT2-15C-5-6
	KEYENCE CORPORATION	2-phase		QS-M42	□42	AR	SFC-020DA2-5B-6B	XGT2-15C-5-6
	SANYO DENKI CO., LTD.	PB		PBDM423, PBA**423	□42	AR	SFC-020DA2-6B-6B	XGT2-15C-6-6
		5-phase		FAF54*/FDF54*/ FA511M42/FB511M42			SFC-020DA2-6B-6B	XGT2-15C-6-6
		2-phase		DB14H52*			SFC-020DA2-5B-6B	XGT2-15C-5-6
				DU15H52*			SFC-020DA2-5B-6B	XGT2-15C-5-6

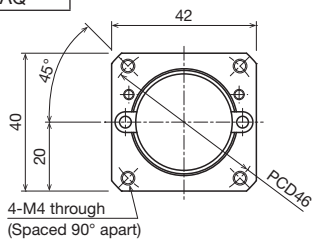
Note 1) Motor model number in the table shows the main part of the model number only. For details about models, please refer to the catalogs from each motor manufacturer.
Note 2) If the maximum torque for motors exceeds the permissible input torque (see page 9), establish safety measures to limit torque.
Note 3) When installing a motor other than the motor model numbers listed above, contact THK.

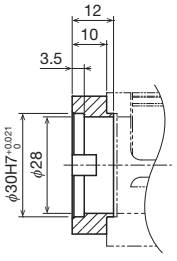
CKSF4
AP



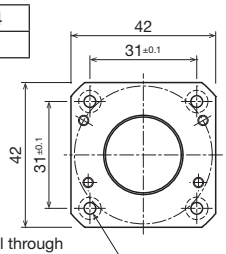


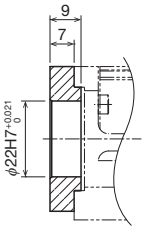
CKSF4
AQ





CKSF4
AR





Note 4) Refer to "Left side surface diagram" and "Details of motor mounting part" for "A0" intermediate flange. (→ p. 12)

CKSF*	Actuator model
◇◇	◇: Intermediate flange

CKSF5

Main Unit Width	Main Unit Height	Stroke Max.
52.6 mm	50 mm	900 mm

Model Number Coding

Model	Ball screw lead	Stroke	With/without motor	Intermediate flange	Options
(1)	(2)	(3)	(4)	(5)	(6)
CKSF5 -	10 -	0050 -	0 -	A0 -	GR-6
CKSF5	10: 10 mm 20: 20 mm	0050: 50 mm to 0900: 900 mm	0: Without motor 1: With motor (Specified motor prepared and mounted by THK)	A0 AP AQ AR	No symbol: None T: Back tap GR: Gray cover 6: Photo sensor J: Proximity sensor M: Proximity sensor (PNP)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately. Select (5) Intermediate flange to match the specified motor.

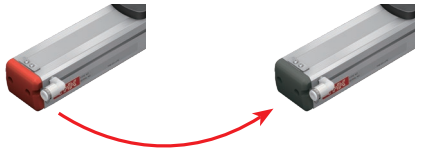
Intermediate flange details
→ p. 20

Back tap details
→ p. 19
Sensor details
→ p. 19

(6) Options

Gray cover
The housing cover can be changed to gray.

Standard: Red When selecting "GR": Gray



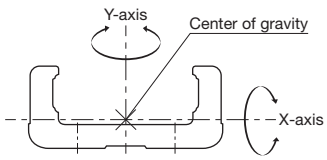
Selection Materials

Basic Specifications

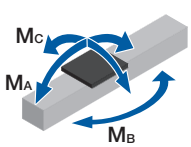
LM Guide	Basic dynamic load rating C (N)		10200	
	Basic static load rating C_0 (N)		17900	
	Radial clearance (mm)		-0.004 to +0.002	
	Geometrical moment of inertia	I_x[1] (mm^4)	1.7×10^4	
		I_y[2] (mm^4)	1.5×10^5	
		Weight (kg/m)	3.9	
Ball screw	Ball screw lead (mm)		10	20
	Basic dynamic load rating Ca (N)		3350	2150
	Basic static load rating C_0a (N)		6600	4470
	Screw shaft diameter (mm)		ϕ13	
	Thread minor diameter (mm)		ϕ11.06	
	Ball center-to-center diameter (mm)		ϕ13.5	
	Permissible rotational speed[3] (min^{-1})		5000	4000
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	6100	
		Static permissible load P_0a (N)	3100	
Starting torque[4] (N·cm)			7	
Positioning repeatability[5] (mm)			±0.01	
Lost motion[5] (mm)			0.1	
Permissible input torque (N·m)			1.8	
Static permissible moment[6] (N·m)			M_A: 147, M_B: 147, M_C: 149	
Running life[7] (km)			10,000	20,000
Standard grease/Grease nipple used			THK AFF Grease/PB107	
Guideline value of vacuum rate[8] × 10^{-3} (m^3/min)			50	

[1] I_x = Geometrical moment of inertia of area around the X-axis.
[2] I_y = Geometrical moment of inertia of area around the Y-axis.
[3] Permissible rotational speed may decrease if the stroke is lengthened.
[4] The starting torque represents the value when containing THK AFF Grease.
[5] The value when measured using a motor for inspection.
[6] The moment reference for M_A and M_C is the table top face; the moment reference for M_B is the table center.
[7] The conditions for calculation are as follows:
Stroke: 500 mm. Speed: 500 mm/s (for 10 mm lead), 1000 mm/s (for 20 mm lead). Load mass: maximum load capacity (see p. 7). Acceleration and deceleration rate: acceleration and deceleration rate when maximum load capacity is set (see p. 7). Center of gravity: center of the table upper surface.
[8] The vacuum rate does not include the effect of piping resistance.

Geometrical moment of inertia



Static permissible moment



Motor Selection Information

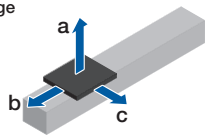
Stroke (mm)	LM Guide		Ball screw		Motor mounting part
	Weight of moving element (kg)	Sliding resistance value[1] (N)	Lead (mm)	Shaft length (mm)	Shaft end diameter (mm)
50 to 900	0.5	1.5	10, 20	274 to 1124	ϕ8h7

[1] This value is the sum of the rolling resistance value and seal resistance value.

Note) Refer to page 20 for applicable couplings.

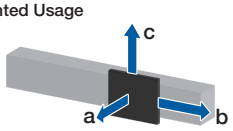
Permissible Overhang Length[2]

Horizontal Usage



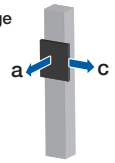
Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	10	6.5	500	160	330
		13	500	70	150
		26	260	30	70
	20	1.5	500	360	500
		3.5	500	170	300
		7.5	380	80	140

Wall-Mounted Usage



Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	10	4.5	420	200	500
		9.5	180	90	500
		19	70	30	310
	20	1.5	500	340	500
		3.5	280	160	500
		7.5	110	60	320

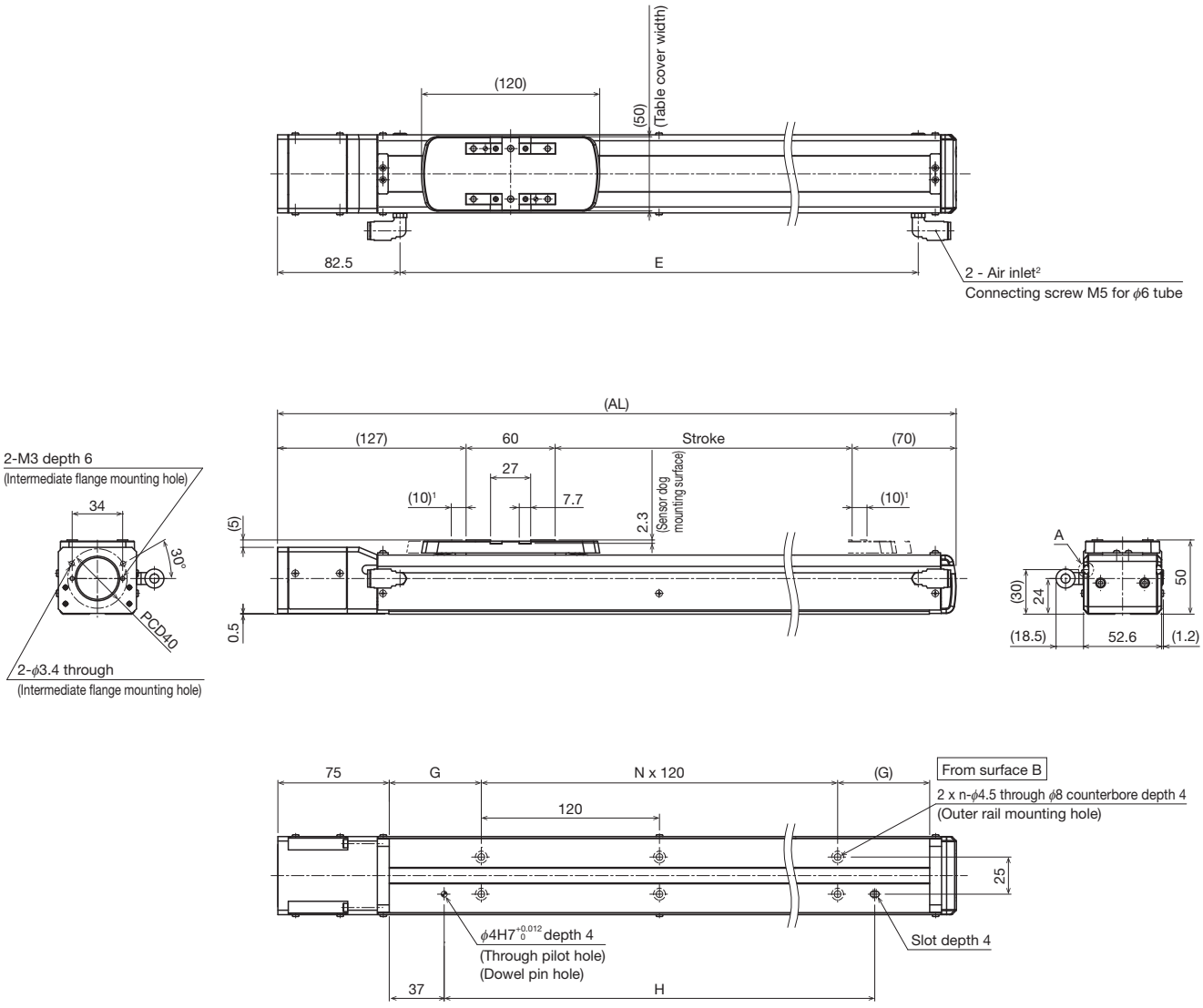
Vertical Usage



Estimated motor capacity 100 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	c (mm)
Direct coupling	10	3	310	310
		6	140	140
		12.5	60	60
	20	1	440	440
		2.5	210	210
		5.5	90	90

[2] Value when LM Guide running life is restricted to 10,000 km (20,000 km for a 20 mm lead). The calculation conditions are as follows.
Stroke: 475 mm. Acceleration/deceleration rate: 0.3 G. Speed: 500 mm/s (for 10 mm lead), 1000 mm/s (for 20 mm lead). Overhang direction: Load in one direction only. Dimensions a, b, and c are the dimensions from the center of the table upper surface.

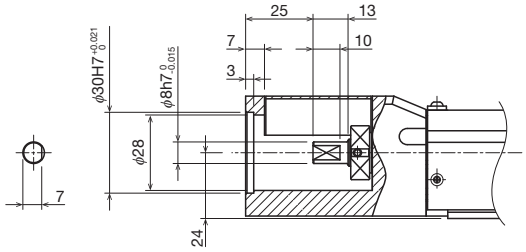
Dimensions



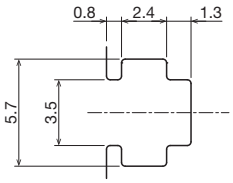
[1] Stroke up to mechanical stopper.
[2] Suction ports can be mounted from either side. Plug any unused suction ports. Two plugs are included.

Stroke (mm) (Stroke between mechanical stoppers)		50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)	
Maximum speed[5] (mm/s)	Ball screw lead: 10 mm	500								
	Ball screw lead: 20 mm	1000								
Dimensions (mm)	AL	307	357	407	457	507	557	607	657	
	G	47	72	97	62	87	52	77	102	
	H	140	190	240	290	340	390	440	490	
	E	199	249	299	349	399	449	499	549	
Mounting pitch count	N	1	1	1	2	2	3	3	3	
Mounting hole count	n	2	2	2	3	3	4	4	4	
Weight (kg)		2.3	2.6	2.8	3.1	3.4	3.7	4	4.2	

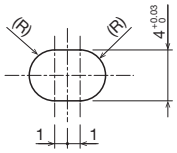
[5] Maximum speed is limited by the actuator's permissible speed.



Details of motor mounting part (with A0 selected)[3]



Section A (detail)[4]



Slot (detail)

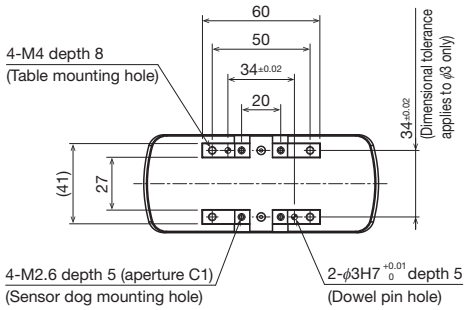
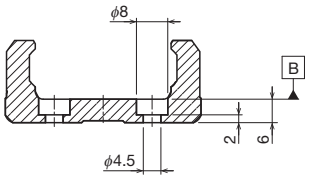


Table details



Outer rail mounting hole details

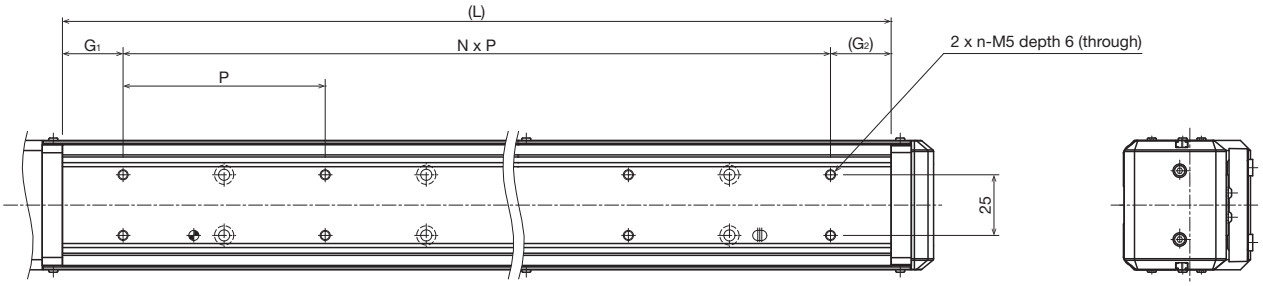
[3] See page 20 for intermediate flange dimensions.
[4] The T-slot in part A is exclusively for sensor mounting. Do not use it for any other purpose.

	450 (470)	500 (520)	550 (570)	600 (620)	650 (670)	700 (720)	750 (770)	800 (820)	850 (870)	900 (920)
			500			440	390	350	310	280
			1000			890	790	700	630	570
	707	757	807	857	907	957	1007	1057	1107	1157
	67	92	57	82	47	72	97	62	87	52
	540	590	640	690	740	790	840	890	940	990
	599	649	699	749	799	849	899	949	999	1049
	4	4	5	5	6	6	6	7	7	8
	5	5	6	6	7	7	7	8	8	9
	4.5	4.8	5.1	5.4	5.6	5.9	6.2	6.5	6.8	7

Options

T: Back Tap

Back taps are available to allow body mounting without removing the cover.



Note 1) The standard counterbore will remain even if a back tap is selected.

Stroke (mm)		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
Dimensions (mm)	L	214	264	314	364	414	464	514	564	614	664	714	764	814	864	914	964	1014	1064
	P	80	120																
	G_1	27	12	27	52	77	27	67	92	57	82	47	72	27	62	87	52	77	27
	G_2	27	12	47	72	97	77	87	112	77	102	67	92	67	82	107	72	97	77
Mounting pitch count	N	2	2	2	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8
Mounting hole count	n	3	3	3	3	3	4	4	4	5	5	6	6	7	7	7	8	8	9

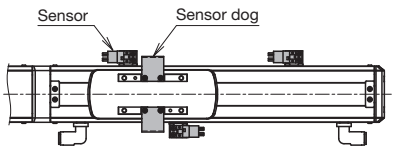
Sensors

Optional photo sensors and proximity sensors are available. Keep the following precautions (Notes 2 to 5) in mind for use. Various sensors can be mounted using the T-slot in the side cover.

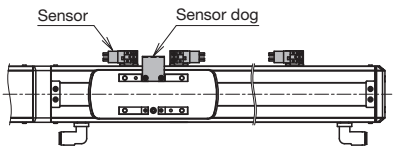
Symbol	Description	Model	Accessories
6	Photo sensor[1] (x3)	EE-SX674 (OMRON Corporation)	Mounting screws, nuts, sensor dog (x1 or 2), mounting plates (x3), connectors (EE-1001 x3)
J	Proximity sensor NO contact[2] (x1) NC contact[3] (x2)	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)
M	Proximity sensor NO contact[2] (x1) (PNP output) NC contact[3] (x2) (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)

[1] The photo sensors can be switched between ON when lit and ON when unlit.
[2] NO contact: Normally open contact point
[3] NC contact: Normally closed contact point

Note 2) The sensor accessories are supplied with the actuator unit. To be mounted by the customer.
Note 3) If proximity sensors are placed too close to each other, they may not work properly. In this case, provide sensors with variant frequencies. (For specifications, contact each manufacturer.)
Note 4) For a 50 mm stroke, 2 sensor dogs are mounted.
Note 5) Mounting of sensors other than those in the table above is possible. Contact THK for details.

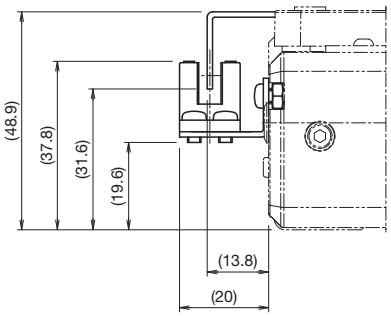


With sensors mounted on both sides



With sensor mounted on one side

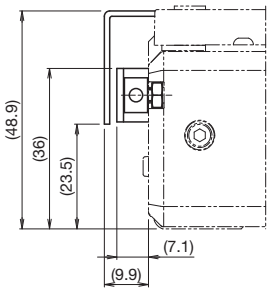
Photo Sensor Mounting Dimensions



Symbol	Model	Manufacturer
6	EE-SX674	OMRON Corporation

Sensor dog width: 26 mm

Proximity Sensor Mounting Dimensions



Symbol	Model	Manufacturer
J	GX-F12A	Panasonic Industrial Devices SUNX Co., Ltd.
	GX-F12B	
M	GX-F12A-P	
	GX-F12B-P	

Sensor dog width: 26 mm

Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

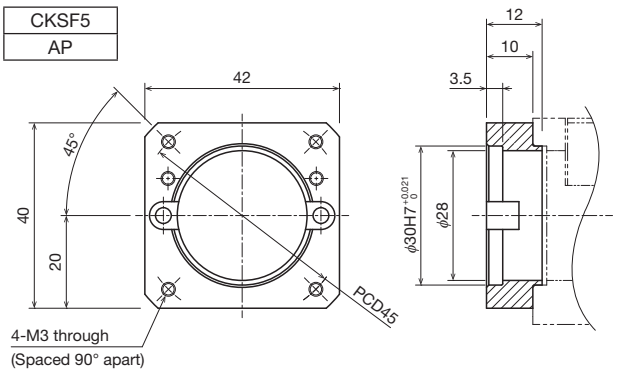
Compatibility Table: Motors used, intermediate flanges, and couplings

Motor type	Manufacturer	Series		Motor model	Motor rated output (W)	Flange angle	Intermediate flange	Applicable coupling model	
								MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
AC servo motor	YASKAWA Electric Corporation	Σ-V		SGMJV-01	100	□40	AQ	SFC-020DA2-8B-8B	XGT2-19C-8-8
				SGMAV-01					
		Σ-7		SGM7J-01					
				SGM7A-01					
		Σ-X		SGMXJ-01					
				SGMXA-01					
	Mitsubishi Electric Corporation	MELSERVO	J4	HG-KR13	100	□40	AQ		
				HG-MR13					
			J5	HK-KT13W					
			JN	HF-KN13					
	TAMAGAWA SEIKI CO., LTD.	TBL-iII		TS4603	100	□40	AQ		
		TBL-iIV		TSM3104					
	Panasonic Corporation	MINAS	A5	MSMD01	100	□38	AP		
				MSME01					
			A6	MSMF01		□38	AP		
				MHMF01		□40	AQ		
	KEYENCE CORPORATION	SV		SV-M010	100	□40	AQ		
		SV2		SV2-M010					
	SANYO DENKI CO., LTD.	SANMOTION R		R2□A04010	100	□40	AQ		
	OMRON Corporation	OMNUC G5		R88M-K10030	100	□40	AQ		
		1S		R88M-1M10030					
	FANUC CORPORATION	β is Series		βis0.3/5000	100	□40	AQ		

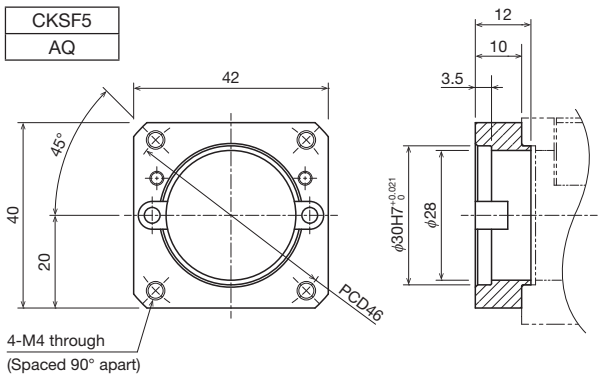
Motor type	Manufacturer	Series		Motor model	Flange angle	Intermediate flange	Applicable coupling model	
							MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
Stepper motor	ORIENTAL MOTOR CO., LTD.	α step		AZ4*, AR4* (excluding AZM48)	□42	AR	SFC-020DA2-6B-8B	XGT2-19C-6-8
				AZM48			SFC-020DA2-8B-8B	XGT2-19C-8-8
		5-phase	CRK	CRK54*			SFC-020DA2-5B-8B	XGT2-19C-5-8
			RK II	RKS54*			SFC-020DA2-6B-8B	XGT2-19C-6-8
			CVK	PKP54*			SFC-020DA2-5B-8B	XGT2-19C-5-8
		2-phase	PKP/ CVD	PKP24*			SFC-020DA2-5B-8B	XGT2-19C-5-8
	KEYENCE CORPORATION	2-phase		QS-M42	□42	AR	SFC-020DA2-5B-8B	XGT2-19C-5-8
	SANYO DENKI CO., LTD.	PB		PBDM423, PBA**423	□42	AR	SFC-020DA2-6B-8B	XGT2-19C-6-8
		5-phase		FAF54*/FDF54*/ FA511M42/FB511M42			SFC-020DA2-6B-8B	XGT2-19C-6-8
		2-phase		DB14H52*			SFC-020DA2-5B-8B	XGT2-19C-5-8
				DU15H52*			SFC-020DA2-5B-8B	XGT2-19C-5-8

Note 1) Motor model number in the table shows the main part of the model number only. For details about models, please refer to the catalogs from each motor manufacturer.
Note 2) If the maximum torque for motors exceeds the permissible input torque (see page 15), establish safety measures to limit torque.
Note 3) When installing a motor other than the motor model numbers listed above, contact THK.

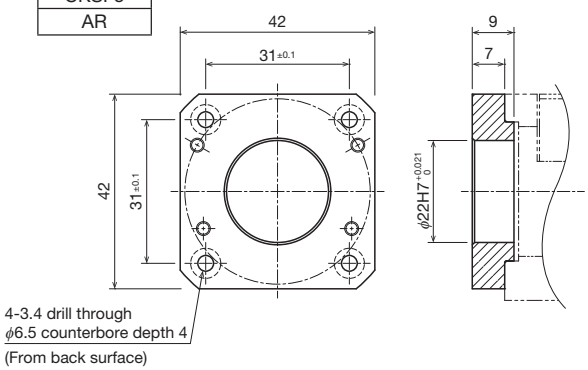
CKSF5
AP



CKSF5
AQ



CKSF5
AR



Note 4) Refer to "Left side surface diagram" and "Details of motor mounting part" for "A0" intermediate flange. (→ p. 18)

CKSF*	Actuator model
◇◇	◇: Intermediate flange

CKSF6

Main Unit Width 64 mm | Main Unit Height 64 mm | Stroke Max. 1300 mm

Model Number Coding

Model (1)	Ball screw lead (2)	Stroke (3)	With/without motor (4)	Intermediate flange (5)	Options (6)
CKSF6	30	0050	0	A0	GR-6
CKSF6	20: 20 mm 30: 30 mm	0050: 50 mm to 1300: 1300 mm	0: Without motor 1: With motor (Specified motor prepared and mounted by THK)	A0 AU AV AY	No symbol: None T: Back tap GR: Gray cover 6: Photo sensor J: Proximity sensor M: Proximity sensor (PNP)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately. Select (5) Intermediate flange to match the specified motor.

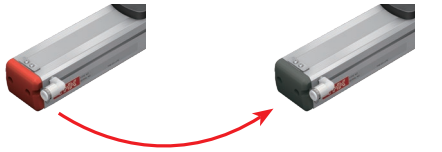
Intermediate flange details → p. 26

Back tap details → p. 25
Sensor details → p. 25

(6) Options

Gray cover
The housing cover can be changed to gray.

Standard: Red | When selecting "GR": Gray



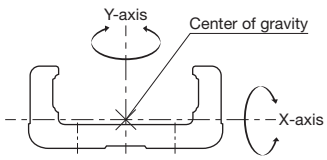
Selection Materials

Basic Specifications

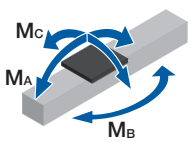
LM Guide	Basic dynamic load rating C (N)		17400	
	Basic static load rating C_0 (N)		33000	
	Radial clearance (mm)		-0.004 to +0.002	
	Geometrical moment of inertia	I_x[1] (mm^4)	2.7×10^4	
		I_y[2] (mm^4)	2.8×10^5	
		Weight (kg/m)	5	
Ball screw	Ball screw lead (mm)		20	30
	Basic dynamic load rating Ca (N)		3400	3230
	Basic static load rating C_0a (N)		8070	6570
	Screw shaft diameter (mm)		ϕ15	
	Thread minor diameter (mm)		ϕ12.5	
	Ball center-to-center diameter (mm)		ϕ15.75	
	Permissible rotational speed[3] (min^{-1})		3000	
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	6650	
		Static permissible load P_0a (N)	3250	
Starting torque[4] (N·cm)			6.2	8.3
Positioning repeatability[5] (mm)			±0.01	
Lost motion[5] (mm)			0.1	
Permissible input torque (N·m)			3.1	
Static permissible moment[6] (N·m)			M_A: 330, M_B: 216, M_C: 188	
Running life[7] (km)			20,000	
Standard grease/Grease nipple used			THK AFF Grease/PB107	
Guideline value of vacuum rate[8] × 10^{-3} (m^3/min)			60	

[1] I_x = Geometrical moment of inertia of area around the X-axis.
[2] I_y = Geometrical moment of inertia of area around the Y-axis.
[3] Permissible rotational speed may decrease if the stroke is lengthened.
[4] The starting torque represents the value when containing THK AFF Grease.
[5] The value when measured using a motor for inspection.
[6] The moment reference for M_A and M_C is the table top face; the moment reference for M_B is the table center.
[7] The conditions for calculation are as follows:
Stroke: 700 mm. Speed: 1000 mm/s (for 20 mm lead), 1500 mm/s (for 30 mm lead). Load mass: maximum load capacity (see p. 7). Acceleration and deceleration rate: acceleration and deceleration rate when maximum load capacity is set (see p. 7). Center of gravity: center of the table upper surface.
[8] The vacuum rate does not include the effect of piping resistance.

Geometrical moment of inertia



Static permissible moment



Motor Selection Information

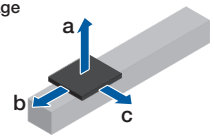
Stroke (mm)	LM Guide		Ball screw		Motor mounting part
	Weight of moving element (kg)	Sliding resistance value[1] (N)	Lead (mm)	Shaft length (mm)	Shaft end diameter (mm)
50 to 1300	1	3.5	20, 30	328 to 1578	ϕ9h7

[1] This value is the sum of the rolling resistance value and seal resistance value.

Note) Refer to page 26 for applicable couplings.

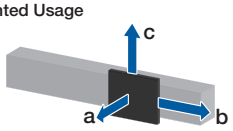
Permissible Overhang Length[2]

Horizontal Usage



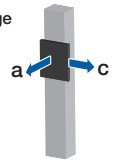
Estimated motor capacity 200 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	20	6.5	600	210	380
		13.5	540	100	180
		27	230	40	80
	30	1.5	600	600	600
		3.5	600	400	600
		7.5	600	190	300

Wall-Mounted Usage



Estimated motor capacity 200 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	20	4.5	530	290	600
		9	230	130	600
		18.5	80	40	290
	30	1.5	600	600	600
		3.5	600	370	600
		7.5	270	170	600

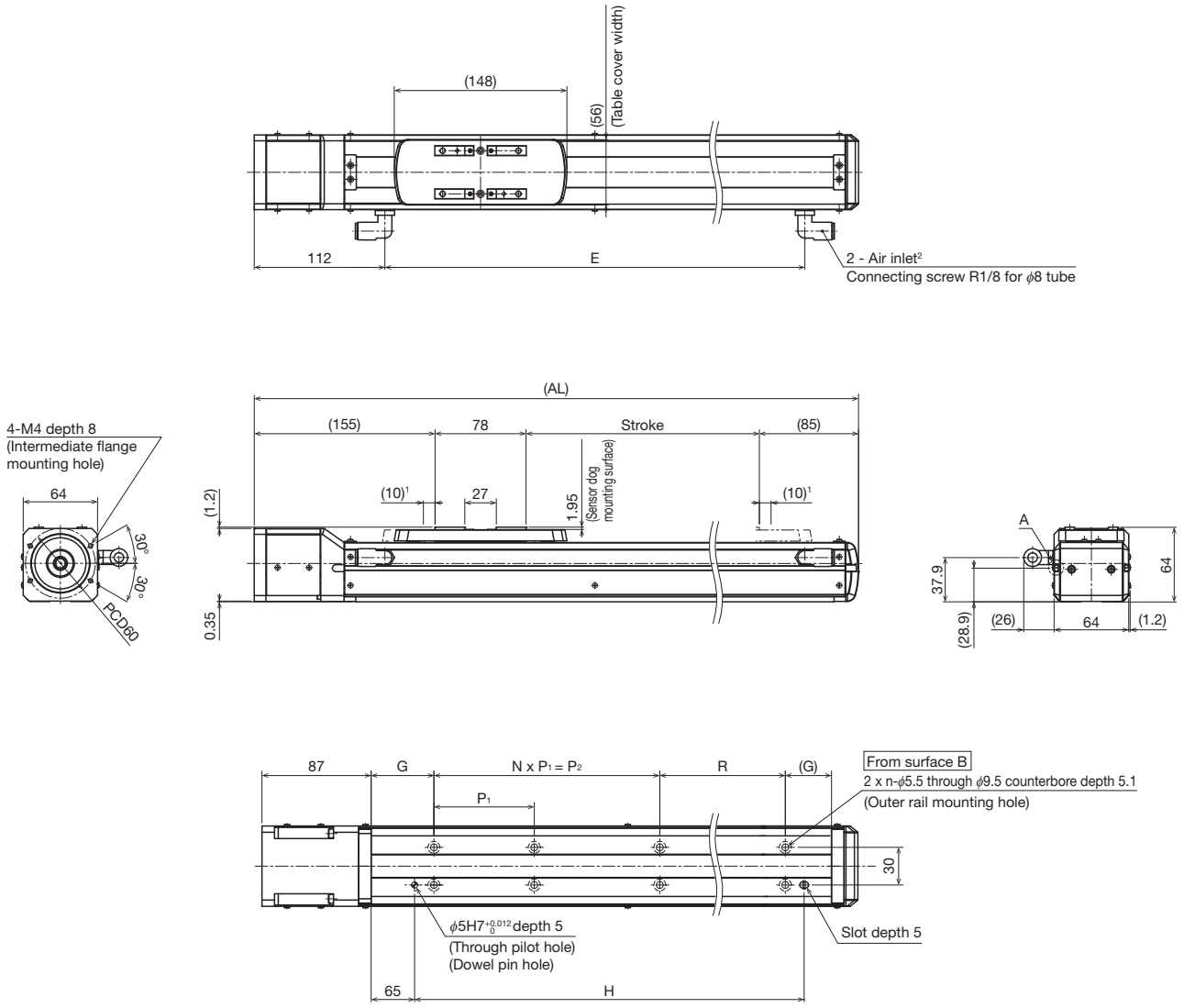
Vertical Usage



Estimated motor capacity 200 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	c (mm)
Direct coupling	20	2.5	500	500
		5.5	230	230
		11	100	100
	30	1	600	600
		2	590	590
		4.5	280	280

[2] Value when LM Guide running life is restricted to 20,000 km. The calculation conditions are as follows.
Stroke: 675 mm. Acceleration/deceleration rate: 0.3 G. Speed: 1000 mm/s (for 20 mm lead), 1500 mm/s (for 30 mm lead). Overhang direction: Load in one direction only. Dimensions a, b, and c are the dimensions from the center of the table upper surface.

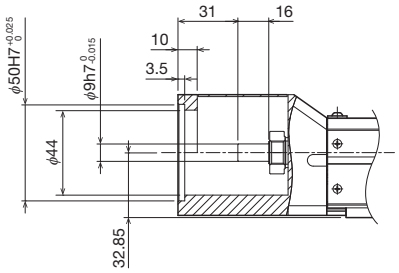
Dimensions



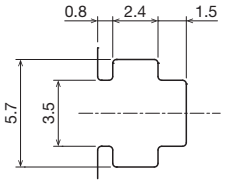
[1] Stroke up to mechanical stopper.
[2] Suction ports can be mounted from either side. Plug any unused suction ports. Two plugs are included.

Stroke (mm) (Stroke between mechanical stoppers)		50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)	450 (470)	500 (520)	550 (570)	600 (620)	
Maximum speed[5] (mm/s)	Ball screw lead: 20 mm	1000												
	Ball screw lead: 30 mm	1500												
Dimensions (mm)	AL	368	418	468	518	568	618	668	718	768	818	868	918	
	G	80	105	80	105	80	105	80	105	80	105	80	105	
	P_1	100	100	200	200	200	200	200	200	200	200	200	200	
	P_2	-	-	-	-	-	-	400	400	400	400	600	600	
	R	-	-	-	-	100	100	-	-	100	100	-	-	
	H	130	180	230	280	330	380	430	480	530	580	630	680	
	E	210	260	310	360	410	460	510	560	610	660	710	760	
Mounting pitch count	N	-	-	-	-	-	-	2	2	2	2	3	3	
Mounting hole count	n	2	2	2	2	3	3	3	3	4	4	4	4	
Weight (kg)		3.9	4.3	4.7	5.1	5.5	5.8	6.2	6.6	7	7.4	7.8	8.2	

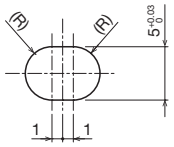
[5] Maximum speed is limited by the actuator's permissible speed.



Details of motor mounting part (with A0 selected)[3]



Section A (detail)[4]



Slot (detail)

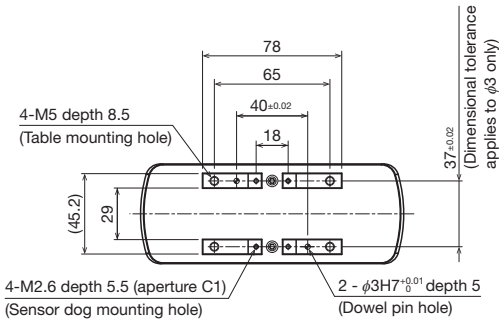
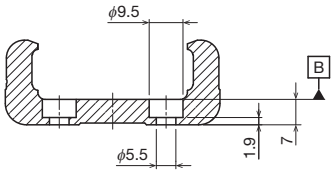


Table details



Outer rail mounting hole details

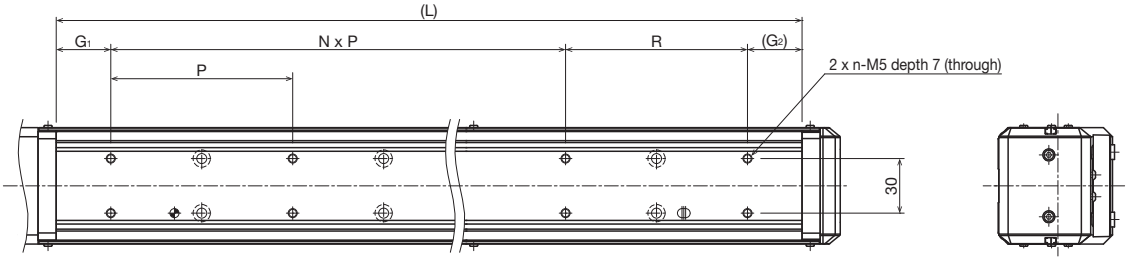
[3] See page 26 for intermediate flange dimensions.
[4] The T-slot in part A is exclusively for sensor mounting. Do not use it for any other purpose.

	650 (670)	700 (720)	750 (770)	800 (820)	850 (870)	900 (920)	950 (970)	1000 (1020)	1050 (1070)	1100 (1120)	1150 (1170)	1200 (1220)	1250 (1270)	1300 (1320)
	1000	980	870	770	690	630	570	520	470	430	400	370	340	320
	1500	1480	1310	1160	1040	940	850	780	710	650	600	550	510	480
	968	1018	1068	1118	1168	1218	1268	1318	1368	1418	1468	1518	1568	1618
	80	105	80	105	80	105	80	105	80	105	80	105	80	105
	200	200	200	200	200	200	200	200	200	200	200	200	200	200
	600	600	800	800	800	800	1000	1000	1000	1000	1200	1200	1200	1200
	100	100	-	-	100	100	-	-	100	100	-	-	100	100
	730	780	830	880	930	980	1030	1080	1130	1180	1230	1280	1330	1380
	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460
	3	3	4	4	4	4	5	5	5	5	6	6	6	6
	5	5	5	5	6	6	6	6	7	7	7	7	8	8
	8.6	8.9	9.3	9.7	10.1	10.5	10.9	11.3	11.7	12	12.4	12.8	13.2	13.6

Options

T: Back Tap

Back taps are available to allow body mounting without removing the cover.



Note 1) The standard counterbore will remain even if a back tap is selected.

Stroke (mm)		50	100	150	200	250	300	350	400	450	500	550	600	650
Dimensions (mm)	L	260	310	360	410	460	510	560	610	660	710	760	810	860
	P	100		200										
	G_1	30	55	30	55	30	55	30	55	30	55	30	55	30
	G_2	30	55	30	55	30	55	30	55	30	55	30	55	30
	R	-	-	100	100	-	-	100	100	-	-	100	100	-
Mounting pitch count	N	2	2	1	1	2	2	2	2	3	3	3	3	4
Mounting hole count	n	3	3	3	3	3	3	4	4	4	4	5	5	5

Stroke (mm)		700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Dimensions (mm)	L	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460	1510
	P	200												
	G_1	55	30	55	30	55	30	55	30	55	30	55	30	55
	G_2	55	30	55	30	55	30	55	30	55	30	55	30	55
	R	-	100	100	-	-	100	100	-	-	100	100	-	-
Mounting pitch count	N	4	4	4	5	5	5	5	6	6	6	6	7	7
Mounting hole count	n	5	6	6	6	6	7	7	7	7	8	8	8	8

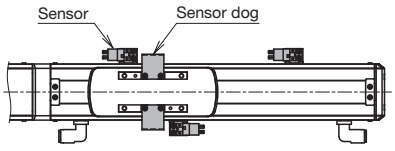
Sensors

Optional photo sensors and proximity sensors are available. Keep the following precautions (Notes 2 to 5) in mind for use. Various sensors can be mounted using the T-slot in the side cover.

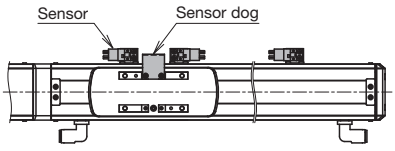
Symbol	Description	Model	Accessories
6	Photo sensor[1] (x3)	EE-SX674 (OMRON Corporation)	Mounting screws, nuts, sensor dog (x1 or 2), mounting plates (x3), connectors (EE-1001 x3)
J	Proximity sensor NO contact[2] (x1) NC contact[3] (x2)	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)
M	Proximity sensor NO contact[2] (x1) (PNP output) NC contact[3] (x2) (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1 or 2)

[1] The photo sensors can be switched between ON when lit and ON when unlit.
[2] NO contact: Normally open contact point
[3] NC contact: Normally closed contact point

Note 2) The sensor accessories are supplied with the actuator unit. To be mounted by the customer.
Note 3) If proximity sensors are placed too close to each other, they may not work properly. In this case, provide sensors with variant frequencies.
(For specifications, contact each manufacturer.)
Note 4) For a 50 mm stroke, 2 sensor dogs are mounted.
Note 5) Mounting of sensors other than those in the table above is possible. Contact THK for details.

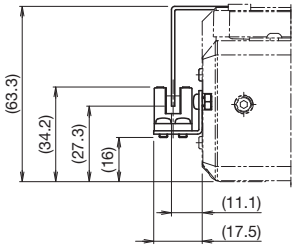


With sensors mounted on both sides



With sensor mounted on one side

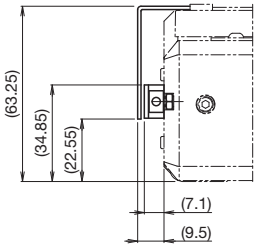
Photo Sensor Mounting Dimensions



Symbol	Model	Manufacturer
6	EE-SX674	OMRON Corporation

Sensor dog width: 25 mm

Proximity Sensor Mounting Dimensions



Symbol	Model	Manufacturer
J	GX-F12A	Panasonic Industrial Devices SUNX Co., Ltd.
	GX-F12B	
M	GX-F12A-P	
	GX-F12B-P	

Sensor dog width: 25 mm

Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

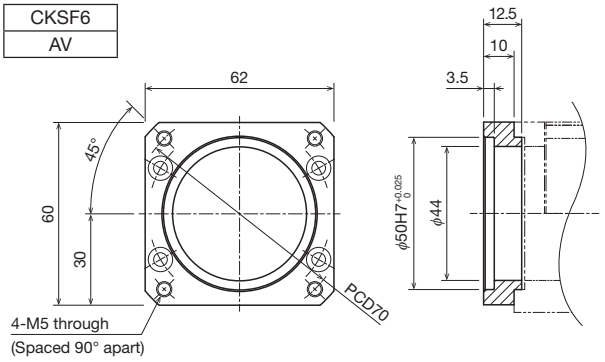
Compatibility Table: Motors used, intermediate flanges, and couplings

Motor type	Manufacturer	Series		Motor model	Motor rated output (W)	Flange angle	Intermediate flange	Applicable coupling model	
								MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
AC servo motor	YASKAWA Electric Corporation	Σ-V		SGMJV-02	200	□60	AV	SFC-030DA2-9B-14B	XGT2-27C-9-BT-14-BT
				SGMAV-02					
		Σ-7		SGM7J-02					
				SGM7A-02					
		Σ-X		SGMXJ-02					
				SGMXA-02					
	Mitsubishi Electric Corporation	MELSERVO	J4	HG-KR23	200	□60	AV	SFC-030DA2-9B-14B	XGT2-27C-9-BT-14-BT
				HG-MR23					
			J5	HK-KT23W					
			JN	HF-KN23					
	TAMAGAWA SEIKI CO., LTD.	TBL-iII		TS4607	200	□60	AV	SFC-030DA2-9B-14B	XGT2-27C-9-BT-14-BT
		TBL-iIV		TSM3202					
	Panasonic Corporation	MINAS	A5	MSMD02	200	□60	AY	SFC-030DA2-9B-11B	XGT2-25C-9-BT-11-BT
				MSME02					
			A6	MSMF02					
				MHMF02					
	KEYENCE CORPORATION	SV		SV-M020	200	□60	AV	SFC-030DA2-9B-14B	XGT2-27C-9-BT-14-BT
		SV2		SV2-M020					
	SANYO DENKI CO., LTD.	SANMOTION R		R2□A06020	200	□60	AV	SFC-030DA2-9B-14B	XGT2-27C-9-BT-14-BT
	OMRON Corporation	OMNUC G5		R88M-K20030	200	□60	AY	SFC-030DA2-9B-11B	XGT2-25C-9-BT-11-BT
		1S		R88M-1M20030					

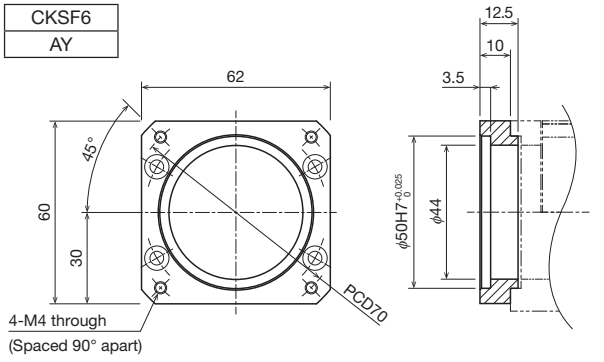
Motor type	Manufacturer	Series		Motor model	Flange angle	Intermediate flange	Applicable coupling model	
							MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
Stepper motor	ORIENTAL MOTOR CO., LTD.	α step		AZ6*, AR6*	□60	AU	SFC-025DA2-9B-10B-L43	XGT2-25C-9-BT-10-BT
		5-phase	CRK[1]	CRK56* (CRK569PM*)			SFC-025DA2-8B-9B-L43 (SFC-025DA2-9B-10B-L43)	XGT2-25C-8-BT-9-BT (XGT2-25C-9-BT-10-BT)
			RK II	RKS56*			SFC-025DA2-8B-9B-L43	XGT2-25C-8-BT-9-BT
			CVK[1]	PKP56* (PKP569FM*)			SFC-025DA2-8B-9B-L43 (SFC-025DA2-9B-10B-L43)	XGL2-25C-8-BT-9-BT (XGT2-25C-9-BT-10-BT)
	KEYENCE CORPORATION	2-phase		QS-M60	□60	AU	SFC-025DA2-8B-9B-L43	XGT2-25C-8-BT-9-BT
	SANYO DENKI CO., LTD.	PB		PBDM60*, PBA**60*	□60	AU	SFC-025DA2-9B-10B-L43	XGT2-25C-9-BT-10-BT
		5-phase		FAM56* / FDM56* / FA512M60/FB512M60				
		2-phase		DB16H78*			SFC-025DA2-8B-9B-L43	XGL2-25C-8-BT-9-BT

[1] Items in parentheses have different motor shaft diameters and require a coupling to be specified.
Note 1) Motor model number in the table shows the main part of the model number only. For details about models, please refer to the catalogs from each motor manufacturer.
Note 2) If the maximum torque for motors exceeds the permissible input torque (see page 21), establish safety measures to limit torque.
Note 3) When installing a motor other than the motor model numbers listed above, contact THK.

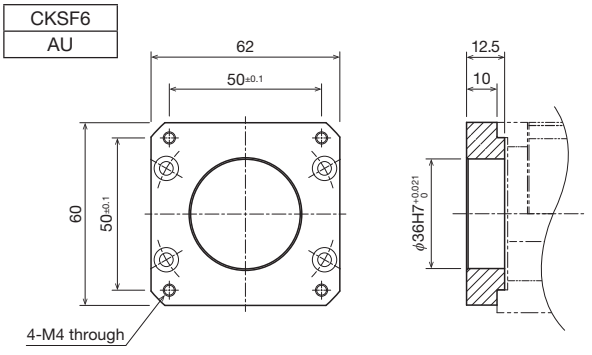
CKSF6
AV



CKSF6
AY



CKSF6
AU



Note 4) Refer to "Left side surface diagram" and "Details of motor mounting part" for "A0" intermediate flange. (→ p. 24)

CKSF*	Actuator model
◇◇	◇: Intermediate flange

CKSF8

Main Unit Width	Main Unit Height	Stroke Max.
84 mm	68 mm	1500 mm

Model Number Coding

Model	Ball screw lead	Stroke	With/without motor	Intermediate flange	Options
(1)	(2)	(3)	(4)	(5)	(6)
CKSF8 -	20 -	0700 -	0 -	A0 -	GR-6
CKSF8	20: 20 mm 40: 40 mm	0100: 100 mm to 1500: 1500 mm	0: Without motor 1: With motor (Specified motor prepared and mounted by THK)	A0 AU AV AY	No symbol: None T: Back tap GR: Gray cover 6: Photo sensor J: Proximity sensor M: Proximity sensor (PNP)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately. Select (5) Intermediate flange to match the specified motor.

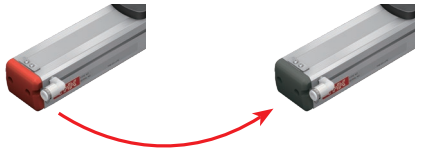
Intermediate flange details
→ p. 32

Back tap details
→ p. 31
Sensor details
→ p. 31

(6) Options

Gray cover
The housing cover can be changed to gray.

Standard: Red When selecting "GR": Gray



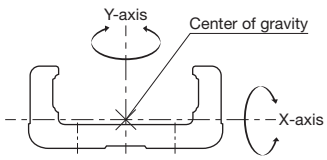
Selection Materials

Basic Specifications

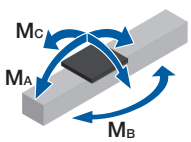
LM Guide	Basic dynamic load rating C (N)		32400	
	Basic static load rating C_0 (N)		63500	
	Radial clearance (mm)		-0.006 to +0.003	
	Geometrical moment of inertia	I_x[1] (mm⁴)	8.4 x 10^4	
		I_y[2] (mm⁴)	8.9 x 10^5	
		Weight (kg/m)	9	
Ball screw	Ball screw lead (mm)		20	40
	Basic dynamic load rating Ca (N)		4030	3750
	Basic static load rating C_0a (N)		10540	8870
	Screw shaft diameter (mm)		ϕ20	
	Thread minor diameter (mm)		ϕ17.5	
	Ball center-to-center diameter (mm)		ϕ20.75	
	Permissible rotational speed[3] (min^{-1})		3000	
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	7600	
		Static permissible load P_0a (N)	4000	
Starting torque[4] (N·cm)			12	
Positioning repeatability[5] (mm)			±0.01	
Lost motion[5] (mm)			0.1	
Permissible input torque (N·m)			7.1	
Static permissible moment[6] (N·m)			M_A: 730, M_B: 437, M_C: 387	
Running life[7] (km)			20,000	
Standard grease/Grease nipple used			THK AFF Grease/PB107	
Guideline value of vacuum rate[8] × 10^{-3} (m^3/min)			160	

[1] I_x = Geometrical moment of inertia of area around the X-axis.
[2] I_y = Geometrical moment of inertia of area around the Y-axis.
[3] Permissible rotational speed may decrease if the stroke is lengthened.
[4] The starting torque represents the value when containing THK AFF Grease.
[5] The value when measured using a motor for inspection.
[6] The moment reference for M_A and M_C is the table top face; the moment reference for M_B is the table center.
[7] The conditions for calculation are as follows:
Stroke: 800 mm. Speed: 1000 mm/s (for 20 mm lead), 2000 mm/s (for 40 mm lead). Load mass: maximum load capacity (see p. 7). Acceleration and deceleration rate: acceleration and deceleration rate when maximum load capacity is set (see p. 7). Center of gravity: center of the table upper surface.
[8] The vacuum rate does not include the effect of piping resistance.

Geometrical moment of inertia



Static permissible moment



Motor Selection Information

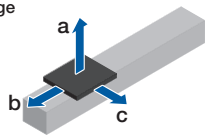
Stroke (mm)	LM Guide		Ball screw		Motor mounting part
	Weight of moving element (kg)	Sliding resistance value[1] (N)	Lead (mm)	Shaft length (mm)	Shaft end diameter (mm)
100 to 1500	2.1	5.1	20, 40	446 to 1846	ϕ12h7

[1] This value is the sum of the rolling resistance value and seal resistance value.

Note) Refer to page 32 for applicable couplings.

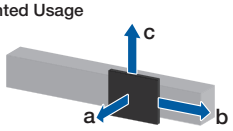
Permissible Overhang Length[2]

Horizontal Usage



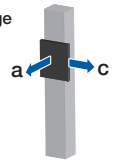
Estimated motor capacity 400 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	20	12	800	340	550
		24.5	800	160	260
		49	420	70	120
	40	2	800	800	800
		4	800	760	800
		8.5	800	370	520

Wall-Mounted Usage



Estimated motor capacity 400 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	20	10.5	620	370	800
		21	280	160	800
		42	100	60	410
	40	2	800	800	800
		4	800	720	800
		8.5	510	340	800

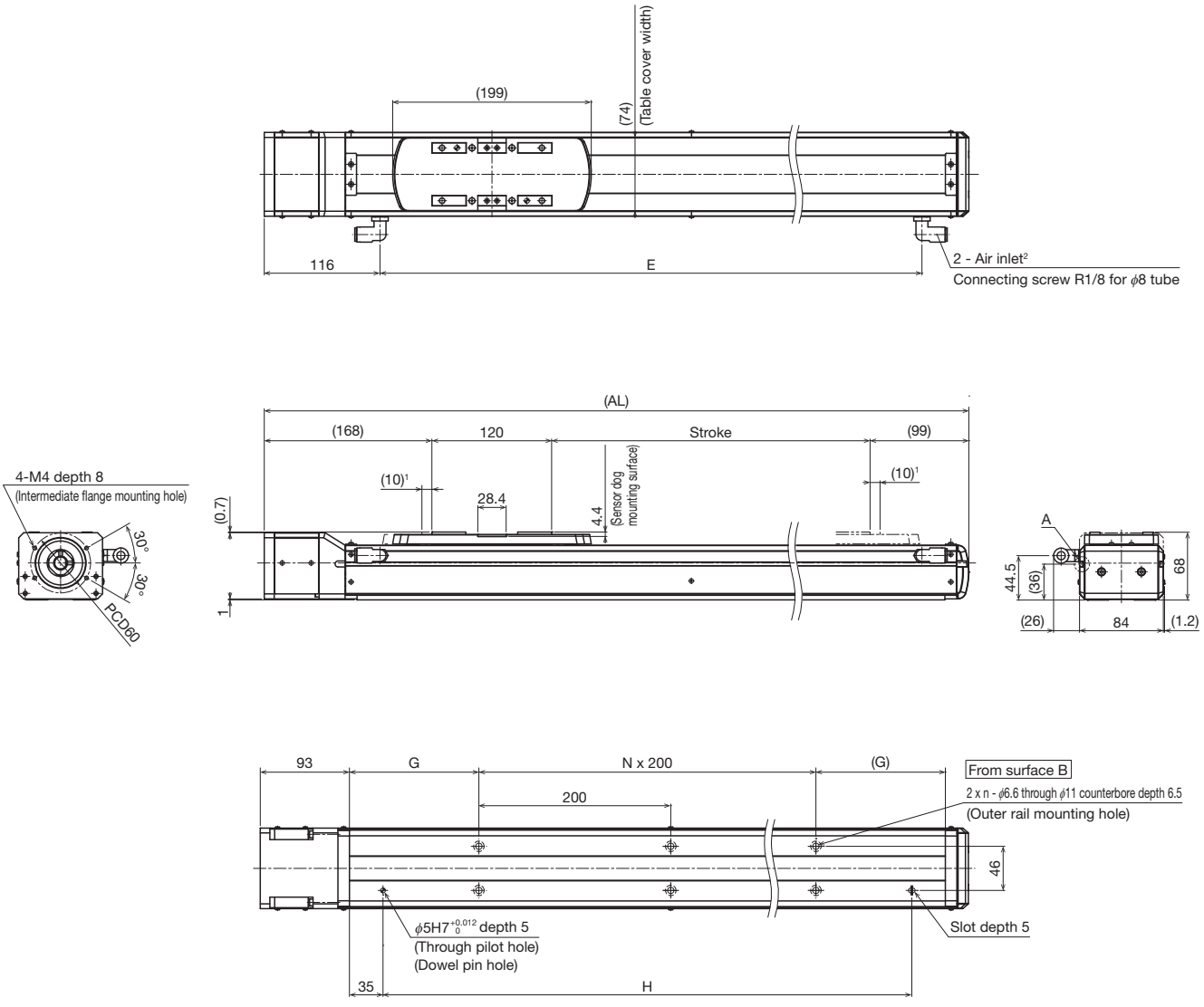
Vertical Usage



Estimated motor capacity 400 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	c (mm)
Direct coupling	20	5	750	750
		10.5	360	360
		21.5	160	160
	40	1	800	800
		2.5	800	800
		5.5	510	510

[2] Value when LM Guide running life is restricted to 20,000 km. The calculation conditions are as follows.
Stroke: 800 mm. Acceleration/deceleration rate: 0.3 G. Speed: 1000 mm/s (for 20 mm lead), 2000 mm/s (for 40 mm lead). Overhang direction: Load in one direction only. Dimensions a, b, and c are the dimensions from the center of the table upper surface.

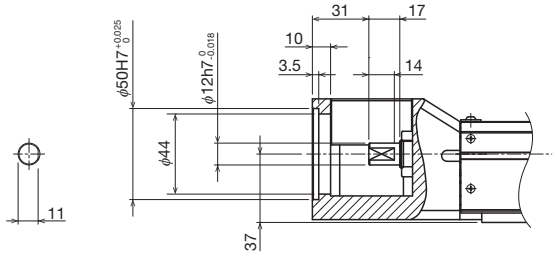
Dimensions



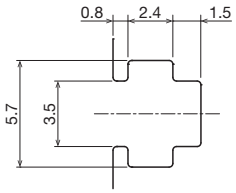
[1] Stroke up to mechanical stopper.
[2] Suction ports can be mounted from either side. Plug any unused suction ports. Two plugs are included.

Stroke (mm) (Stroke between mechanical stoppers)		100 (120)	200 (220)	300 (320)	400 (420)	500 (520)	600 (620)	700 (720)	
Maximum speed[5] (mm/s)	Ball screw lead: 20 mm	1000							
	Ball screw lead: 40 mm	2000							
Dimensions (mm)	AL	487	587	687	787	887	987	1087	
	G	85	135	85	135	85	135	85	
	H	300	400	500	600	700	800	900	
	E	324	424	524	624	724	824	924	
Mounting pitch count	N	1	1	2	2	3	3	4	
Mounting hole count	n	2	2	3	3	4	4	5	
Weight (kg)		8.1	9.4	10.7	12	13.3	14.6	15.9	

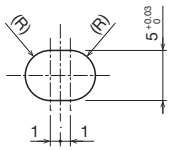
[5] Maximum speed is limited by the actuator's permissible speed.



Details of motor mounting part (with A0 selected)[3]



Section A (detail)[4]



Slot (detail)

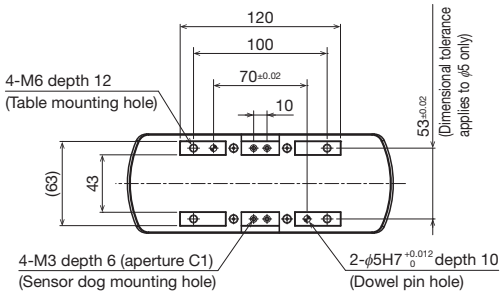
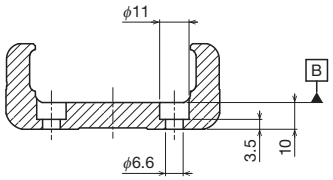


Table details



Outer rail mounting hole details

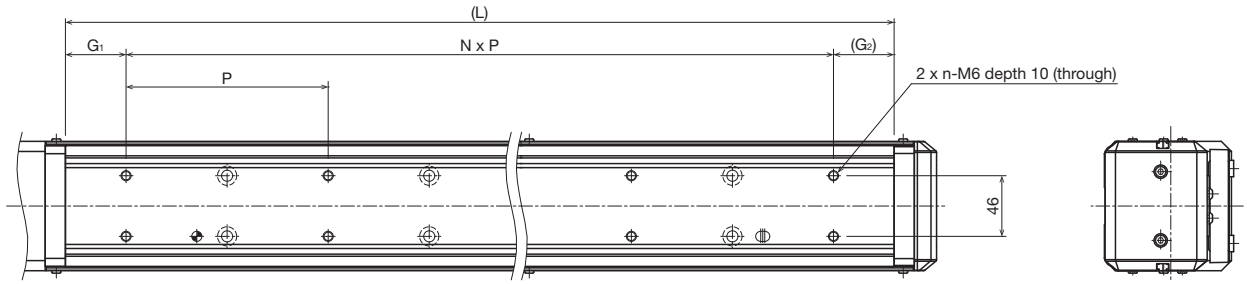
[3] See page 32 for intermediate flange dimensions.
[4] The T-slot in part A is exclusively for sensor mounting. Do not use it for any other purpose.

	800 (820)	900 (920)	1000 (1020)	1100 (1120)	1200 (1220)	1300 (1320)	1400 (1420)	1500 (1520)
	980	800	670	560	480	420	360	320
	1970	1610	1340	1130	970	840	730	650
	1187	1287	1387	1487	1587	1687	1787	1887
	135	85	135	85	135	85	135	85
	1000	1100	1200	1300	1400	1500	1600	1700
	1024	1124	1224	1324	1424	1524	1624	1724
	4	5	5	6	6	7	7	8
	5	6	6	7	7	8	8	9
	17.2	18.5	19.8	21.1	22.4	23.7	25	26.3

Options

T: Back Tap

Back taps are available to allow body mounting without removing the cover.



Note 1) The standard counterbore will remain even if a back tap is selected.

Stroke (mm)		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Dimensions (mm)	L	370	470	570	670	770	870	970	1070	1170	1270	1370	1470	1570	1670	1770
	P	120	200													
	G_1	65	25	70	120	70	120	70	120	70	120	70	120	70	120	70
	G_2	65	45	100	150	100	150	100	150	100	150	100	150	100	150	100
Mounting pitch count	N	2	2	2	2	3	3	4	4	5	5	6	6	7	7	8
Mounting hole count	n	3	3	3	3	4	4	5	5	6	6	7	7	8	8	9

Sensors

Optional photo sensors and proximity sensors are available. Keep the following precautions (Notes 2 to 4) in mind for use.
Various sensors can be mounted using the T-slot in the side cover.

Symbol	Description	Model	Accessories
6	Photo sensor[1] (x3)	EE-SX674 (OMRON Corporation)	Mounting screws, nuts, sensor dog (x1), mounting plates (x3), connectors (EE-1001)
J	Proximity sensor NO contact[2] (x1) NC contact[3] (x2)	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1)
M	Proximity sensor NO contact[2] (x1) (PNP output) NC contact[3] (x2) (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1)

[1] The photo sensors can be switched between ON when lit and ON when unlit.
[2] NO contact: Normally open contact point
[3] NC contact: Normally closed contact point

Note 2) The sensor accessories are supplied with the actuator unit. To be mounted by the customer.
Note 3) If proximity sensors are placed too close to each other, they may not work properly. In this case, provide sensors with variant frequencies.
(For specifications, contact each manufacturer.)
Note 4) Mounting of sensors other than those in the table above is possible. Contact THK for details.

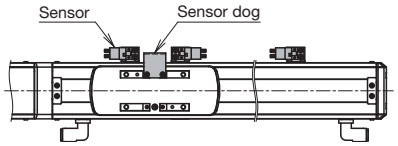
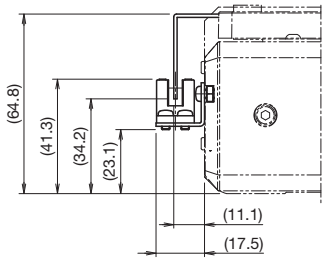


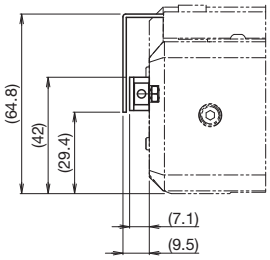
Photo Sensor Mounting Dimensions



Symbol	Model	Manufacturer
6	EE-SX674	OMRON Corporation

Sensor dog width: 27 mm

Proximity Sensor Mounting Dimensions



Symbol	Model	Manufacturer
J	GX-F12A	Panasonic Industrial Devices SUNX Co., Ltd.
	GX-F12B	
M	GX-F12A-P	
	GX-F12B-P	

Sensor dog width: 27 mm

Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

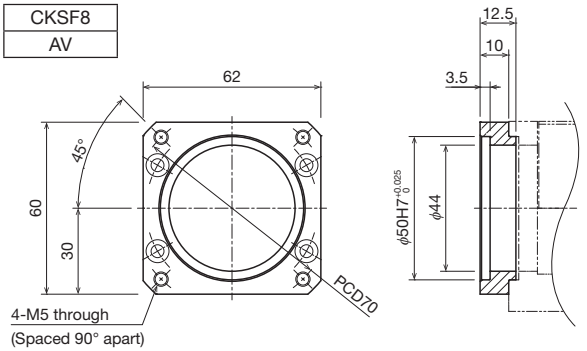
Compatibility Table: Motors used, intermediate flanges, and couplings

Motor type	Manufacturer	Series		Motor model	Motor rated output (W)	Flange angle	Intermediate flange	Applicable coupling model	
								MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
AC servo motor	YASKAWA Electric Corporation	Σ-V		SGMJV-04	400	□60	AV	SFC-035DA2-12B-14B	XGT2-30C-12-14
				SGMAV-04					
		Σ-7		SGM7J-04					
				SGM7A-04					
		Σ-X		SGMXJ-04					
				SGMXA-04					
	Mitsubishi Electric Corporation	MELSERVO	J4	HG-MR43	400	□60	AV	SFC-035DA2-12B-14B	XGT2-30C-12-14
				HG-KR43					
			J5	HK-KT43W					
			JN	HF-KN43					
	TAMAGAWA SEIKI CO., LTD.	TBL-iII		TS4609	400	□60	AV	SFC-035DA2-12B-14B	XGT2-30C-12-14
		TBL-iIV		TSM3204					
	Panasonic Corporation	MINAS	A5	MSMD04	400	□60	AY	SFC-035DA2-12B-14B	XGT2-30C-12-14
				MSME04					
			A6	MSMF04					
				MHMF04					
	KEYENCE CORPORATION	SV		SV-M040	400	□60	AV	SFC-035DA2-12B-14B	XGT2-30C-12-14
		SV2		SV2-M040					
	SANYO DENKI CO., LTD.	SANMOTION R		R2□A06040	400	□60	AV	SFC-035DA2-12B-14B	XGT2-30C-12-14
	OMRON Corporation	OMNUC G5		R88M-K40030	400	□60	AY	SFC-035DA2-12B-14B	XGT2-30C-12-14
		1S		R88M-1M40030					

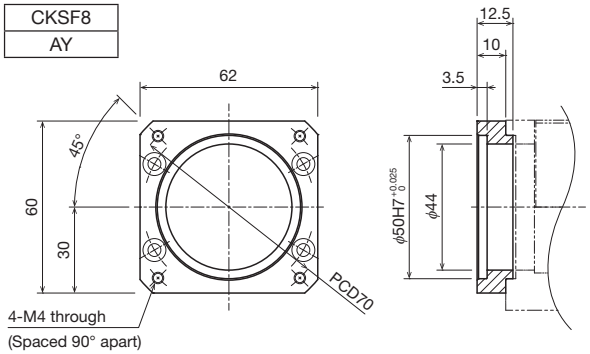
Motor type	Manufacturer	Series		Motor model	Flange angle	Intermediate flange	Applicable coupling model	
							MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
Stepper motor	ORIENTAL MOTOR CO., LTD.	α step		AZ6*, AR6*	□60	AU	SFC-025DA2-10B-12B-L43	XGT2-25C-10-12
		5-phase	CRK[1]	CRK56* (CRK569PM*)			SFC-025DA2-8B-12B-L43 (SFC-025DA2-10B-12B-L43)	XGT2-25C-8-12 (XGT2-25C-10-12)
			RK II	RKS56*			SFC-025DA2-10B-12B-L43	XGT2-25C-10-12
			CVK[1]	PKP56* (PKP569FM*)			SFC-025DA2-8B-12B-L43 (SFC-025DA2-10B-12B-L43)	XGT2-25C-8-12 (XGT2-25C-10-12)
	KEYENCE CORPORATION	2-phase		QS-M60	□60	AU	SFC-025DA2-8B-12B-L43	XGT2-25C-8-12
	SANYO DENKI CO., LTD.	PB		PBDM60*, PBA**60*	□60	AU	SFC-025DA2-10B-12B-L43	XGL2-25C-10-12
		5-phase		FAM56*/FDM56*/ FA512M60/FB512M60			SFC-025DA2-10B-12B-L43	XGT2-25C-10-12
		2-phase		DB16H78*			SFC-025DA2-8B-12B-L43	XGL2-25C-8-12

[1] Items in parentheses have different motor shaft diameters and require a coupling to be specified.
Note 1) Motor model number in the table shows the main part of the model number only. For details about models, please refer to the catalogs from each motor manufacturer.
Note 2) If the maximum torque for motors exceeds the permissible input torque (see page 27), establish safety measures to limit torque.
Note 3) When installing a motor other than the motor model numbers listed above, contact THK.

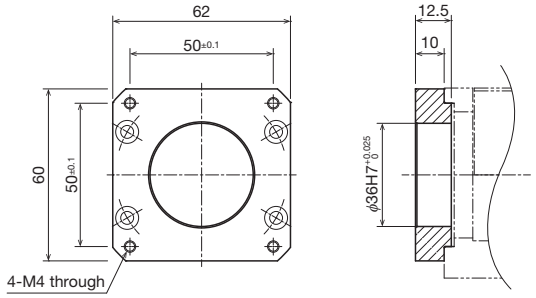
CKSF8
AV



CKSF8
AY



CKSF8
AU



Note 4) Refer to "Left side surface diagram" and "Details of motor mounting part" for "A0" intermediate flange. (→ p. 30)

CKSF*	Actuator model
◇◇	◇: Intermediate flange

CKSF10

Main Unit Width	Main Unit Height	Stroke Max.
104 mm	90 mm	1500 mm

Model Number Coding

Model	Ball screw lead	Stroke	With/without motor	Intermediate flange	Options
(1)	(2)	(3)	(4)	(5)	(6)
CKSF10 -	25 -	0700 -	0 -	A0 -	GR-6
CKSF10	25: 25 mm 50: 50 mm	0100: 100 mm to 1500: 1500 mm	0: Without motor 1: With motor (Specified motor prepared and mounted by THK)	A0 AZ A5 A6	No symbol: None T: Back tap GR: Gray cover 6: Photo sensor J: Proximity sensor M: Proximity sensor (PNP)

When selecting "0":
A coupling is not provided. Indicate when placing an order if a coupling is required.

When selecting "1":
The specified motor will be installed. Indicate the motor cable direction separately. Select (5) Intermediate flange to match the specified motor.

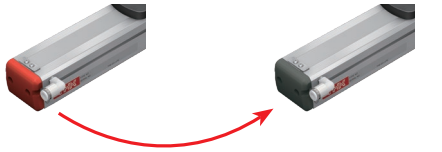
Intermediate flange details
→ p. 38

Back tap details
→ p. 37
Sensor details
→ p. 37

(6) Options

Gray cover
The housing cover can be changed to gray.

Standard: Red When selecting "GR": Gray



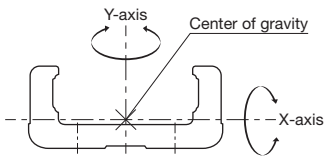
Selection Materials

Basic Specifications

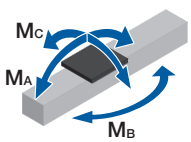
LM Guide	Basic dynamic load rating C (N)		58500	
	Basic static load rating C_0 (N)		103700	
	Radial clearance (mm)		-0.007 to +0.004	
	Geometrical moment of inertia	I_x[1] (mm⁴)	2.2×10^5	
		I_y[2] (mm⁴)	2.3×10^6	
		Weight (kg/m)	15	
Ball screw	Ball screw lead (mm)		25	50
	Basic dynamic load rating Ca (N)		6650	4150
	Basic static load rating C_0a (N)		21050	11170
	Screw shaft diameter (mm)		ϕ25	
	Thread minor diameter (mm)		ϕ22.5	
	Ball center-to-center diameter (mm)		ϕ25.75	
	Permissible rotational speed[3] (min^{-1})		3000	
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	13700	
		Static permissible load P_0a (N)	5830	
Starting torque[4] (N·cm)			12	16
Positioning repeatability[5] (mm)			±0.01	
Lost motion[5] (mm)			0.1	
Permissible input torque (N·m)			15.5	
Static permissible moment[6] (N·m)			M_A: 1049, M_B: 712, M_C: 671	
Running life[7] (km)			20,000	
Standard grease/Grease nipple used			THK AFF Grease/A-M6F	
Guideline value of vacuum rate[8] × 10^{-3} (m^3/min)			230	

[1] I_x = Geometrical moment of inertia of area around the X-axis.
[2] I_y = Geometrical moment of inertia of area around the Y-axis.
[3] Permissible rotational speed may decrease if the stroke is lengthened.
[4] The starting torque represents the value when containing THK AFF Grease.
[5] The value when measured using a motor for inspection.
[6] The moment reference for M_A and M_C is the table top face; the moment reference for M_B is the table center.
[7] The conditions for calculation are as follows:
Stroke: 800 mm. Speed: 1250 mm/s (for 25 mm lead), 2500 mm/s (for 50 mm lead). Load mass: maximum load capacity (see p. 7). Acceleration and deceleration rate: acceleration and deceleration rate when maximum load capacity is set (see p. 7). Center of gravity: center of the table upper surface.
[8] The vacuum rate does not include the effect of piping resistance.

Geometrical moment of inertia



Static permissible moment



Motor Selection Information

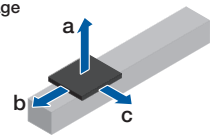
Stroke (mm)	LM Guide		Ball screw		Motor mounting part
	Weight of moving element (kg)	Sliding resistance value[1] (N)	Lead (mm)	Shaft length (mm)	Shaft end diameter (mm)
100 to 1500	4	8.8	25, 50	485 to 1885	ϕ15h7

[1] This value is the sum of the rolling resistance value and seal resistance value.

Note) Refer to page 38 for applicable couplings.

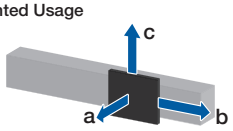
Permissible Overhang Length[2]

Horizontal Usage



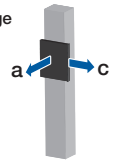
Estimated motor capacity 750 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	25	8	1000	1000	1000
		16.5	1000	540	850
		33.5	1000	260	410
	50	2.5	1000	1000	1000
		5.5	1000	1000	1000
		11	1000	620	910

Wall-Mounted Usage



Estimated motor capacity 750 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	b (mm)	c (mm)
Direct coupling	25	8	1000	1000	1000
		16.5	830	500	1000
		33.5	370	220	1000
	50	2.5	1000	1000	1000
		5.5	1000	1000	1000
		11	890	570	1000

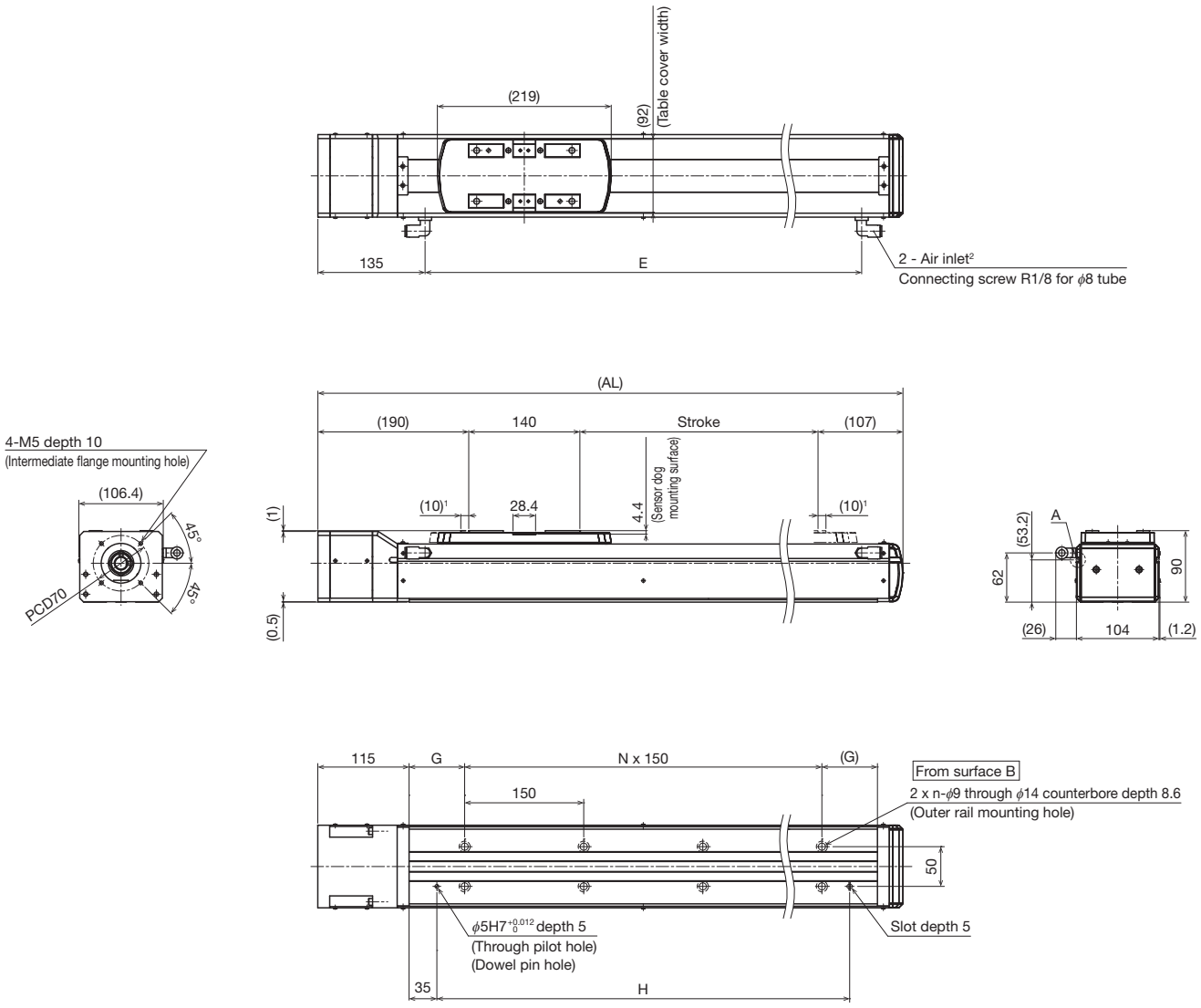
Vertical Usage



Estimated motor capacity 750 W	Ball screw lead (mm)	Load mass (kg)	a (mm)	c (mm)
Direct coupling	25	4.5	1000	1000
		9.5	880	880
		19	420	420
	50	1.5	1000	1000
		3.5	1000	1000
		7.5	810	810

[2] Value when LM Guide running life is restricted to 20,000 km. The calculation conditions are as follows.
Stroke: 800 mm. Acceleration/deceleration rate: 0.3 G. Speed: 1250 mm/s (for 25 mm lead), 2500 mm/s (for 50 mm lead). Overhang direction: Load in one direction only. Dimensions a, b, and c are the dimensions from the center of the table upper surface.

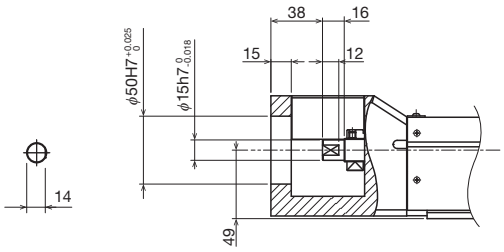
Dimensions



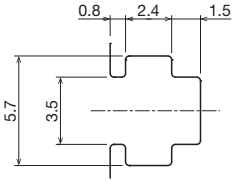
[1] Stroke up to mechanical stopper.
[2] Suction ports can be mounted from either side. Plug any unused suction ports. Two plugs are included.

Stroke (mm) (Stroke between mechanical stoppers)		100 (120)	200 (220)	300 (320)	400 (420)	500 (520)	600 (620)	700 (720)	
Maximum speed[5] (mm/s)	Ball screw lead: 25 mm	1250							
	Ball screw lead: 50 mm	2500							
Dimensions (mm)	AL	537	637	737	837	937	1037	1137	
	G	120	95	70	120	95	70	120	
	H	320	420	520	620	720	820	920	
	E	350	450	550	650	750	850	950	
Mounting pitch count	N	1	2	3	3	4	5	5	
Mounting hole count	n	2	3	4	4	5	6	6	
Weight (kg)		14.7	16.8	18.8	20.9	22.9	25	27	

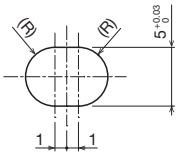
[5] Maximum speed is limited by the actuator's permissible speed.



Details of motor mounting part (with A0 selected)[3]



Section A (detail)[4]



Slot (detail)

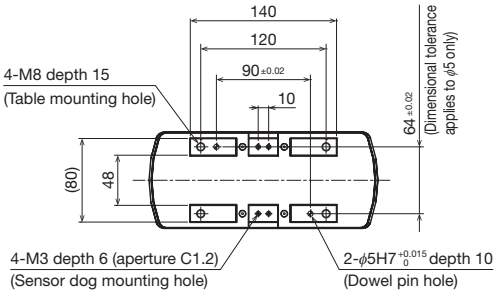
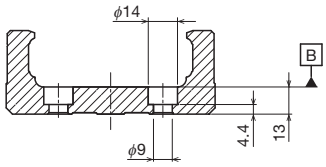


Table details



Outer rail mounting hole details

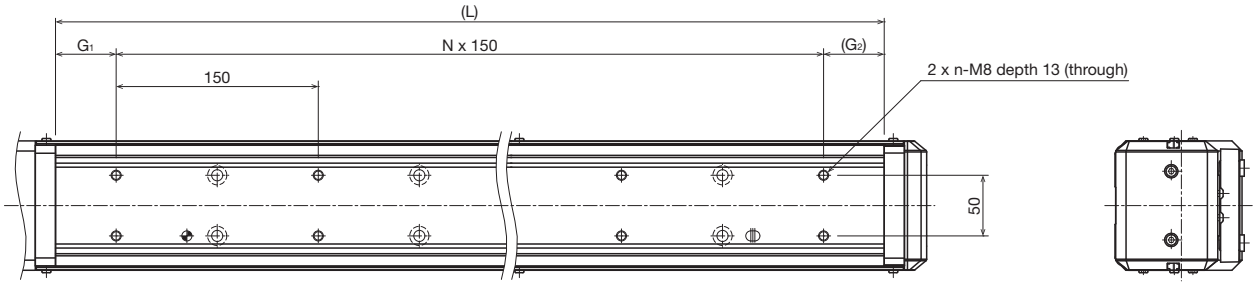
[3] See page 38 for intermediate flange dimensions.
[4] The T-slot in part A is exclusively for sensor mounting. Do not use it for any other purpose.

	800 (820)	900 (920)	1000 (1020)	1100 (1120)	1200 (1220)	1300 (1320)	1400 (1420)	1500 (1520)
1250			1050	890	760	660	580	510
2500			2110	1790	1530	1330	1160	1030
	1237	1337	1437	1537	1637	1737	1837	1937
	95	70	120	95	70	120	95	70
	1020	1120	1220	1320	1420	1520	1620	1720
	1050	1150	1250	1350	1450	1550	1650	1750
	6	7	7	8	9	9	10	11
	7	8	8	9	10	10	11	12
	29.1	31.2	33.2	35.3	37.3	39.4	41.5	43.5

Options

T: Back Tap

Back taps are available to allow body mounting without removing the cover.



Note 1) The standard counterbore will remain even if a back tap is selected.

Stroke (mm)		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Dimensions (mm)	L	390	490	590	690	790	890	990	1090	1190	1290	1390	1490	1590	1690	1790
	G_1	45	80	55	105	80	55	105	80	55	105	80	55	105	80	55
	G_2	45	110	85	135	110	85	135	110	85	135	110	85	135	110	85
Mounting pitch count	N	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11
Mounting hole count	n	3	3	4	4	5	6	6	7	8	8	9	10	10	11	12

Sensors

Optional photo sensors and proximity sensors are available. Keep the following precautions (Notes 2 to 4) in mind for use.
Various sensors can be mounted using the T-slot in the side cover.

Symbol	Description	Model	Accessories
6	Photo sensor[1] (x3)	EE-SX674 (OMRON Corporation)	Mounting screws, nuts, sensor dog (x1), mounting plates (x3), connectors (EE-1001)
J	Proximity sensor NO contact[2] (x1) NC contact[3] (x2)	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1)
M	Proximity sensor NO contact[2] (x1) (PNP output) NC contact[3] (x2) (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor dog (x1)

[1] The photo sensors can be switched between ON when lit and ON when unlit.
[2] NO contact: Normally open contact point
[3] NC contact: Normally closed contact point

Note 2) The sensor accessories are supplied with the actuator unit. To be mounted by the customer.
Note 3) If proximity sensors are placed too close to each other, they may not work properly. In this case, provide sensors with variant frequencies.
(For specifications, contact each manufacturer.)
Note 4) Mounting of sensors other than those in the table above is possible. Contact THK for details.

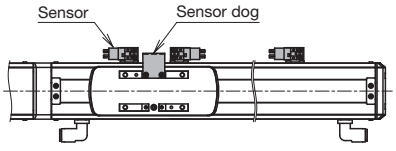
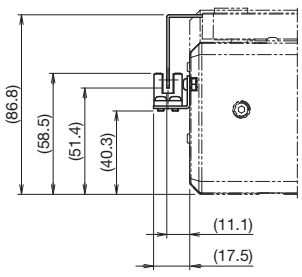


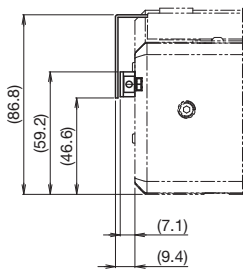
Photo Sensor Mounting Dimensions



Symbol	Model	Manufacturer
6	EE-SX674	OMRON Corporation

Sensor dog width: 27 mm

Proximity Sensor Mounting Dimensions



Symbol	Model	Manufacturer
J	GX-F12A GX-F12B	Panasonic Industrial Devices SUNX Co., Ltd.
M	GX-F12A-P GX-F12B-P	

Sensor dog width: 27 mm

Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

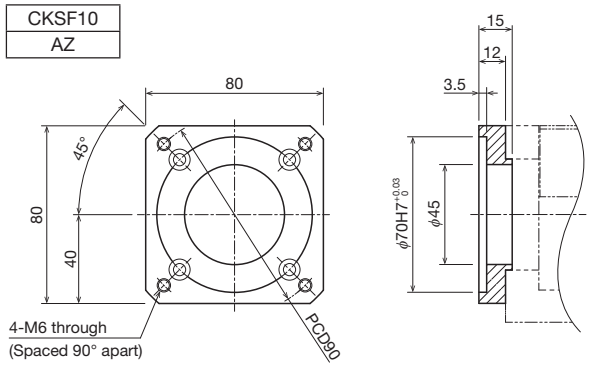
Compatibility Table: Motors used, intermediate flanges, and couplings

Motor type	Manufacturer	Series		Motor model	Motor rated output (W)	Flange angle	Intermediate flange	Applicable coupling model	
								MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
AC servo motor	YASKAWA Electric Corporation	Σ-V		SGMJV-08	750	□80	AZ	SFC-040DA2-15B-19B	XGT2-39C-15-19
				SGMAV-08					
		Σ-7		SGM7J-08					
				SGM7A-08					
		Σ-X		SGMXJ-08					
				SGMXA-08					
	Mitsubishi Electric Corporation	MELSERVO	J4	HG-KR73	750	□80	AZ	SFC-040DA2-15B-19B	XGT2-39C-15-19
				HG-MR73					
			J5	HK-KT7M3W					
	TAMAGAWA SEIKI CO., LTD.	TBL-iII		TS4614	750	□80	AZ	SFC-040DA2-15B-19B	XGT2-39C-15-19
		TBL-iIV		TSM3304					
	Panasonic Corporation	MINAS	A5	MSMD08	750	□80	A5	SFC-040DA2-15B-19B	XGT2-39C-15-19
				MSME08					
			A6	MSMF08					
				MHMF08					
	KEYENCE CORPORATION	SV		SV-M075	750	□80	AZ	SFC-040DA2-15B-19B	XGT2-39C-15-19
		SV2		SV2-M075					
	SANYO DENKI CO., LTD.	SANMOTION R		R2AA08075	750	□80	AZ	SFC-040DA2-15B-16B	XGT2-39C-15-16
	OMRON Corporation	OMNUC G5		R88M-K75030	750	□80	A5	SFC-040DA2-15B-19B	XGT2-39C-15-19
		1S		R88M-1M75030					

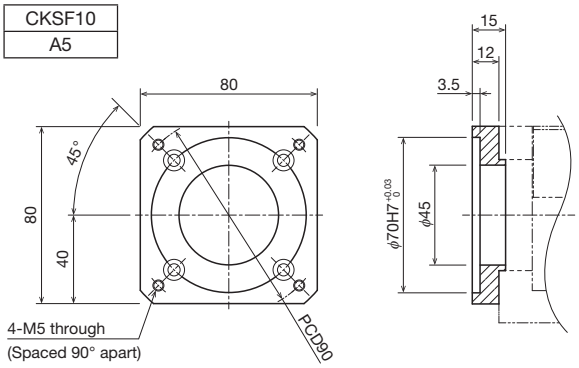
Motor type	Manufacturer	Series		Motor model	Flange angle	Intermediate flange	Applicable coupling model	
							MIKI PULLEY CO., LTD.	Nabeya Bi-tech Kaisha (NBK)
Stepper motor	ORIENTAL MOTOR CO., LTD.	α step		AZ9*, AR9*	□85	A6	SFC-035DA2-14B-15B	XGT2-30C-14-15
		5-phase	RK II	RKS59*	□85	A6	SFC-035DA2-14B-15B	XGT2-34C-14-15

Note 1) Motor model number in the table shows the main part of the model number only. For details about models, please refer to the catalogs from each motor manufacturer.
Note 2) If the maximum torque for motors exceeds the permissible input torque (see page 33), establish safety measures to limit torque.
Note 3) When installing a motor other than the motor model numbers listed above, contact THK.

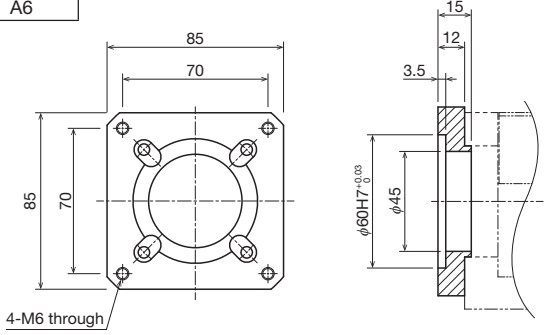
CKSF10
AZ



CKSF10
A5



CKSF10
A6



Note 4) Refer to "Left side surface diagram" and "Details of motor mounting part" for "A0" intermediate flange. (→ p. 36)

CKSF*	Actuator model
◇◇	◇: Intermediate flange

Load Rating and Radial Clearance

Model			CKSF4		CKSF5		CKSF6		CKSF8		CKSF10	
LM Guide	Basic dynamic load rating C (N)		6400		10200		17400		32400		58500	
	Basic static load rating C_0 (N)		12900		17900		33000		63500		103700	
	Radial clearance (mm)		-0.003 to +0.002		-0.004 to +0.002		-0.004 to +0.002		-0.006 to +0.003		-0.007 to +0.004	
Ball screw	Ball screw lead (mm)		10	16	10	20	20	30	20	40	25	50
	Basic dynamic load rating Ca (N)		2860	1850	3350	2150	3400	3230	4030	3750	6650	4150
	Basic static load rating C_0a (N)		5110	3420	6600	4470	8070	6570	10540	8870	21050	11170
Bearing (Fixed side)	Axial direction	Basic dynamic load rating Ca (N)	2930		6100		6650		7600		13700	
		Static permissible load P_0a (N)	2140		3100		3250		4000		5830	

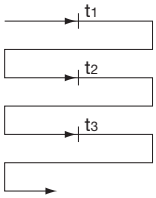
Static Permissible Moment

Model	Static permissible moment		
	M_A	M_B	M_C
CKSF4	103	103	58
CKSF5	147	147	149
CKSF6	330	216	188
CKSF8	730	437	387
CKSF10	1049	712	671

Note) Static permissible moment is the maximum permissible moment when the unit is stationary.

Accuracy Standards

Positioning repeatability



Positioning is repeated 7 times in the same direction at a given point, the stop position is measured, and half of the read maximum difference is obtained.
This measurement is made at the center of the travel distance and at each of the two ends. The largest of the obtained values is set as the measurement value, and a ± sign is added to half of the maximum difference for display.

Model	Ball screw lead (mm)	Positioning repeatability (mm)	Lost motion (mm)	Starting torque (N·cm)
CKSF4	10	±0.01	0.1	1.5
	16			
CKSF5	10	±0.01	0.1	7
	20			
CKSF6	20	±0.01	0.1	6.2
	30			8.3
CKSF8	20	±0.01	0.1	12
	40			
CKSF10	25	±0.01	0.1	12
	50			16

MEMO

MEMO

⚠ Precautions for Use

Application of These Products
· These products cannot be used for equipment or systems used in situations involving human life and limb.
· Be certain to contact THK in advance if considering utilizing for special applications, such as devices or systems used in passenger vehicles, medical equipment, aerospace, nuclear power, or electric power equipment.

Rotational motor drive products

Handling
· When using the product in locations exposed to constant vibrations or in special environments such as in clean rooms, vacuums, and low/high temperatures, contact THK.
· Tilting the table or the outer rail may cause them to fall due to their own weight.

Safety Precautions
· Before operation, thoroughly read and follow "Manipulating industrial robots - Safety" (JIS B 8433) and "Ordinance on Industrial Safety and Health" (Ministry of Health, Labour and Welfare of Japan).
· Be certain to read the instruction manual carefully, ensure you fully understand its contents, and observe precautions for safety.
· When installing, adjusting, inspecting, and maintaining the actuator body and related connected devices, be sure to unplug all plugs from outlets and lock them or prepare a safety plug so that the power cannot be turned on except by the operator. In a visible location, post a notice clearly stating that work is in progress.
· Never touch the operating parts of the actuator while it is live. Also, do not enter the operating range of the actuator while the product is in operation or a ready state.
· If multiple people are involved in the operation, confirm procedures such as work process, signs, and abnormalities in advance, and appoint a separate person for monitoring the operation.
· Do not disassemble these products unnecessarily. Doing so may lead to contamination by foreign materials or deterioration in accuracy.
· Take care not to drop or strike this product. Otherwise, it may cause injury or damage the unit. Even if there is no outward indication of damage, a sudden impact could prevent the unit from functioning properly.
· Do not exceed the permissible rotation speed when using the product. This could damage the product or otherwise cause it to malfunction. Please use the product within the range of speeds we have specified.
· Take care to avoid contamination of foreign material such as debris or cutting chips. This may result in damage to the ball circulation parts or decreased functionality.
· Contact THK regarding use in environments where coolant may enter the product.
· An impact-absorbing mechanism such as a shock absorber must be installed if there is a risk that the slider may collide with the stoppers attached to both ends of the movable range.
The stoppers are not intended to absorb impacts during slider collision. Colliding with the stoppers during operation may result in damage or injury.
· Operation of the actuator over the torque limit value may lead to component damage or accidents.
· Keep the torque limit setting parameters within the allowable torque limit values.
· Among these products are those with total body weight exceeding 20 kg. When transporting or assembling, always take safety into consideration to avoid injury or damage, and use appropriate conveying equipment.
· In applications where this product will be moved or transferred, the conditions of use may cause inertia from the motor's weight to result in damage to the motor attachments (Housing A and motor bracket) or other parts. Please contact THK before using in this manner.

Operating Environment
· Indoors, ambient temperature between 0°C to 40°C, and ambient humidity of 80% RH or less (no freezing or condensation).
· Places free from corrosive gas and flammable gas.
· Places where vibration or impacts are not transmitted to the unit.
· Places free from electrically conductive powder (such as iron powder), dust, oil mist, moisture, salt, and organic solvents.
· Places free from direct sunlight and radiant heat.
· Places free from strong electric and magnetic fields.
· Places that are easily accessible for maintenance and cleaning.
· When using the product in locations exposed to constant vibrations or in special environments such as in vacuums or low/high temperatures, contact THK.

Actuator Mounting Surface
· Mount to a flat surface suitable for mechanical machining or with comparable precision. Some products have regulated degrees of flatness.
· Mount to a base with sufficient rigidity.

Lubrication
· For effective use of the actuator's functions, lubrication is required. Insufficient lubrication may cause greater wear on moving parts, leading to premature damage.
· Do not use a mix of lubricants with different properties. Note that the encapsulated lubricant may differ depending on the product.
· Contact THK if using special lubricants.
· 100 km should be considered a guideline for greasing intervals. However, this may vary depending on the operating conditions, so THK recommends determining a greasing interval during the initial inspection.

Storage
· When storing this actuator, pack it as designated by THK and store it in a horizontal position away from high or low temperatures and high humidity.
· When storing the controller, avoid high or low temperatures and high humidity.

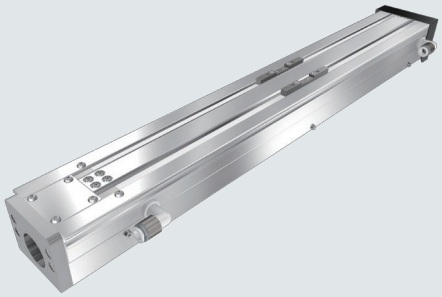
Disposal
· The product should be treated as industrial waste and disposed of appropriately.

Other Recommended Products

Clean Series
Caged Ball LM Guide Actuator

CSKR

- ○ Ideal for assembly and inspection in clean environments due to the unique low dust-generating structure
- ○ Realizes up to Class 3 cleanliness
- ○ Caged ball effect enables long life and long-term maintenance-free operation



Clean Series LM Guide Actuator **CKSF**

- **LM Guide and Caged Ball are registered trademarks of THK CO., LTD.**
- The actual products may differ from the illustrations and photographs in this catalog.
- Outward appearances and specifications are subject to change without notice for the purpose of improvement. Please consult with THK before using.
- Although great care has been taken in the production of this catalog, THK will not take any responsibility for damages resulting from typographical errors or omissions.
- For exports of our products and technologies and sales for export, our basic policy is to comply with the Foreign Exchange and Foreign Trade Act and other laws and regulations. Please consult us in advance if you want to export our products by the piece.

All rights reserved.

THK CO., LTD.

Headquarters 2-12-10 Shibaura, Minato-ku, Tokyo 108-8506 Japan
International Sales Department Phone: +81-3-5730-3860
www.thk.com

CATALOG No.386-10E ©THK CO., LTD. 202207