

**ACTUATOR  
UNITS**

**NEW**

# Compact series

Compact Series

**KRF**



For details, visit THK at [www.thk.com](http://www.thk.com)

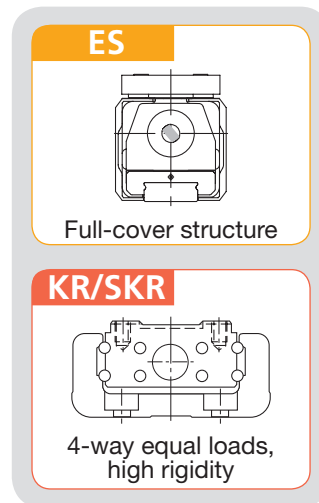
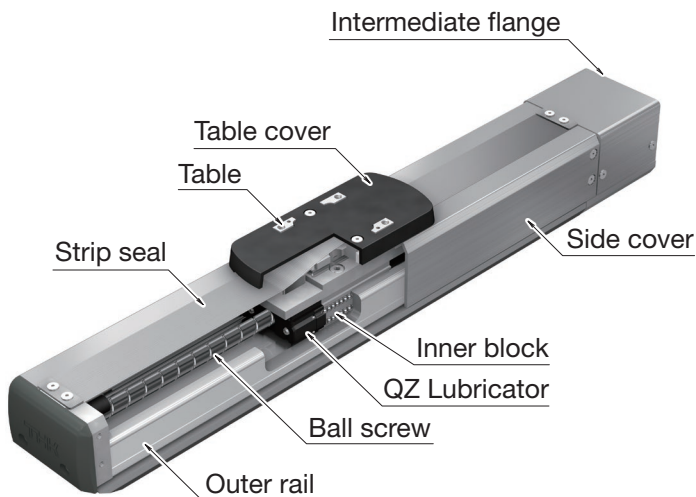
\* Product information is updated regularly on the THK website.

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

CATALOG No.375-11E-EU

# Compact Series KRF

## High rigidity fully enclosed actuator



- ✓ Outer rail of KR/SKR with proven history adopted
- ✓ Single axis actuator with high moment rigidity

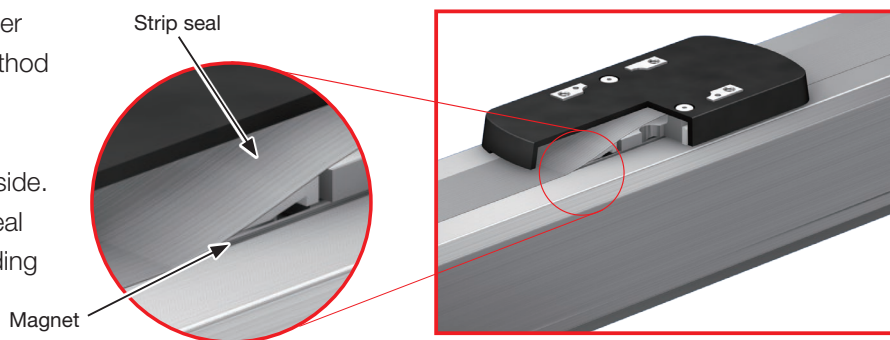
Supported size (guideline)

KR/SKR	20	26	33
KRF	4	5	6

### Features

## 1 Fully enclosed design

Strip seals on the side cover and upper surface using magnetic attraction method provide a fully enclosed structure. It prevents any problems caused by entering of foreign materials from outside. As well, the top surface of the strip seal is less likely to generate dust by avoiding the contact.

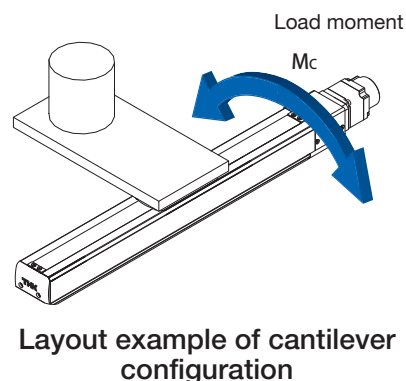
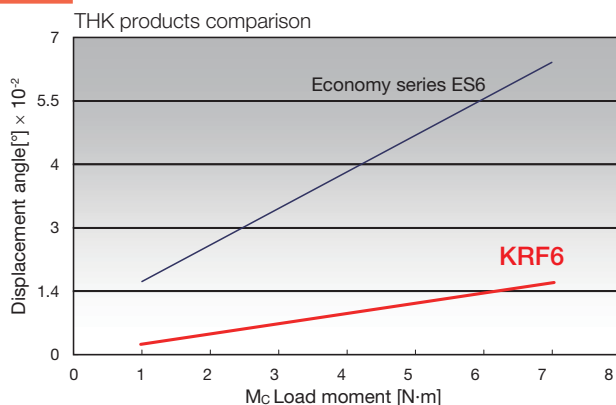


### Magnetic attraction method

The magnet built in the side cover attracts the strip seal and prevents it from lifting, reducing the development of clearance.

## 2 High rigidity

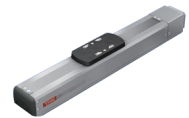
Use of a steel outer rail with a cross-sectional U shape enables to receive larger moment. The actuator body's high rigidity allows for a compact, space-saving design.



## Model configuration

### KRF (type without motor)

In the case of actuator main unit only, or when the motor specified by the customer is installed



Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Motor shaft fixing method	Option
KRF4R	06	0050	A	0	WN	D	MR-SB
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KRF4	06: 6mm	0050: 50mm	A	0: Without motor	A0: Without intermediate flange	No symbol: Select when directly coupled	No symbol: None
KRF5	10: 10mm	0100: 100mm		1: With motor* (Prepared by THK)	AN	D: D-cut	MR: Motor right wrap*
KRF6		0150: 150mm			AQ	K: Key	ML: Motor left wrap*
KRF4R		0200: 200mm			AP	M: Friction tightening	MD: Motor down wrap*
KRF5R		0250: 250mm			AS		GR: Gray cover
KRF6R		0300: 300mm			AR		SB: Slider base
		0350: 350mm			AU		□1□2: Sensor
		0400: 400mm			AT		
		0450: 450mm			WN		
		0500: 500mm			WP		
		0550: 550mm			WQ		
		0600: 600mm					
		0650: 650mm					
		0700: 700mm					
		0750: 750mm					
		0800: 800mm					

R represents motor wrap.

KRF4, and KRF4R have ball screw lead of 6mm only.

When selecting "0", for motor direct coupling specification, a coupling is not provided. For motor wrap specifications, a timing pulley and timing belt are provided. When selecting "1", the motor you specify will be installed.

\*Specify the motor cable orientation separately.

Maximum stroke differs depending on models.  
KRF4: 300mm  
KRF5: 550mm  
KRF6: 800mm

Selectable motor shaft fixing methods differ depending on models.  
KRF4R: "D", "K"  
KRF5R: "D", "K"  
KRF6R: "D", "K", "M"

Specify the option symbol by writing in the order of description from left adding "-".  
\* This is valid only when selecting KRF□R for model (1).

Change the cover color to gray  
You can change the color of housing cover to gray.  
Standard: red    When GR is selected: gray

### Sample model configuration

Main unit only (without motor type)	KRF4-06-0150A-0-AM-GR-L1
Main unit only (when the motor specified by the customer is installed)	KRF5-10-0500A-1-AQ-L6

### Pages for detailed description

(6) Intermediate flange	→ P.20
(7) Option	SB: With slider base → P.17
	□1□2: Sensor → P.18
	GR: Change the cover color to gray → P.19

## Lineup List

[KRF4, 5]



[KRF6]



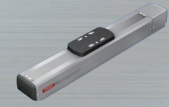
Model	Ball screw lead [mm]	Stroke [mm]	Motor capacity [W]		Maximum load capacity *1 [kg]		
			Stepper motor	Servo motor [W]	Horizontal mount	Wall mount	Vertical mount
KRF4	6	50 to 300	-	50	6	5.5	4
KRF5	6	50 to 550	-	50	19	14	6
	10				15	12.5	3.5
KRF6	6	50 to 800	-	100	35	24	10
	10				30	22	5

\*1 The maximum load capacity indicates the capacity at the rated speed under 0.5 G for horizontal mount and wall mount and 0.3 G for vertical mount.

\*2 The maximum speed is the value restricted by the motor rotational speed (at 3,000min-1) or by the permissible rotational speed of the ball screw.



	Maximum speed for each stroke *2 [mm/s]																
	Stroke [mm]																
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
			300														
					300					250							
					500					430							
					300						260	220	200	170	150		
					500						440	380	330	290	260		



# KRF5 without motor

## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
KRF5	06	0150	A	0	AN	GR-SB

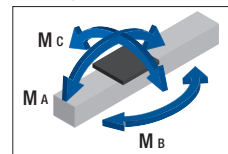
<b>KRF5</b>	<b>06:</b> 6mm <b>10:</b> 10mm	<b>0050:</b> 50mm to <b>0550:</b> 550mm	<b>A</b>	<b>0:</b> Without motor <b>1:</b> With motor (Prepared by THK)	<b>A0:</b> Without intermediate flange <b>AN</b> <b>AQ</b> <b>AP</b> <b>AS</b> <b>AR</b>	<b>No symbol:</b> Red cover <b>GR:</b> Gray cover <b>SB:</b> Slider base <input type="checkbox"/> 1 <input type="checkbox"/> 2: Sensor Note: If the GR is not included in the model configuration, cover will be red.
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## Basic Specifications

LM guide portion	Basic dynamic load rating C [N]	7240	
	Basic Static Load Rating C <sub>0</sub> [N]	12150	
Ball screw portion	Basic dynamic load rating C <sub>a</sub> [N]	1950	1120
	Basic Static Load Rating C <sub>0a</sub> [N]	3510	1740
	Screw shaft diameter [mm]	φ8	
	Ball screw lead [mm]	6	10
Bearing portion (Fixed side)	Axial direction	Basic dynamic load rating C <sub>a</sub> [N]	2050
		Static Permissible Load P <sub>0a</sub> [N]	1830
Permissible rotational speed * <sup>1</sup> [min <sup>-1</sup> ]		3000	
Starting torque * <sup>2</sup> [N·m]		0.01	0.012
Positioning repeatability * <sup>3</sup> [mm]		±0.010	
Lost motion * <sup>3</sup> [mm]		0.1	
Permissible input torque [N·m]		0.671	
Static permissible moment * <sup>4</sup> [N·m]		MA: 84 MB: 48.4 Mc: 105.8	

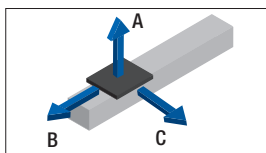
- \*<sup>1</sup> Dependent on the stroke.
- \*<sup>2</sup> The starting torque represents values when the standard grease is filled.
- \*<sup>3</sup> These represent values when measured using a motor provided by THK.
- \*<sup>4</sup> Applied point of moment load for MA and MC are the top face of the table, and that for MB is the center of the table.

Static permissible moment

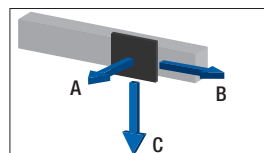


## Reference Permissible Overhang Length\*

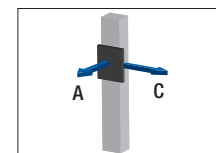
Horizontal use



Wall use



Vertical use



Horizontal mount

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	9.5	350	50	150
	19	150	20	60
10	7.5	310	70	180
	15	130	20	60

Wall mount

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	7	180	60	500
	14	60	20	130
10	6	170	70	390
	12.5	60	20	120

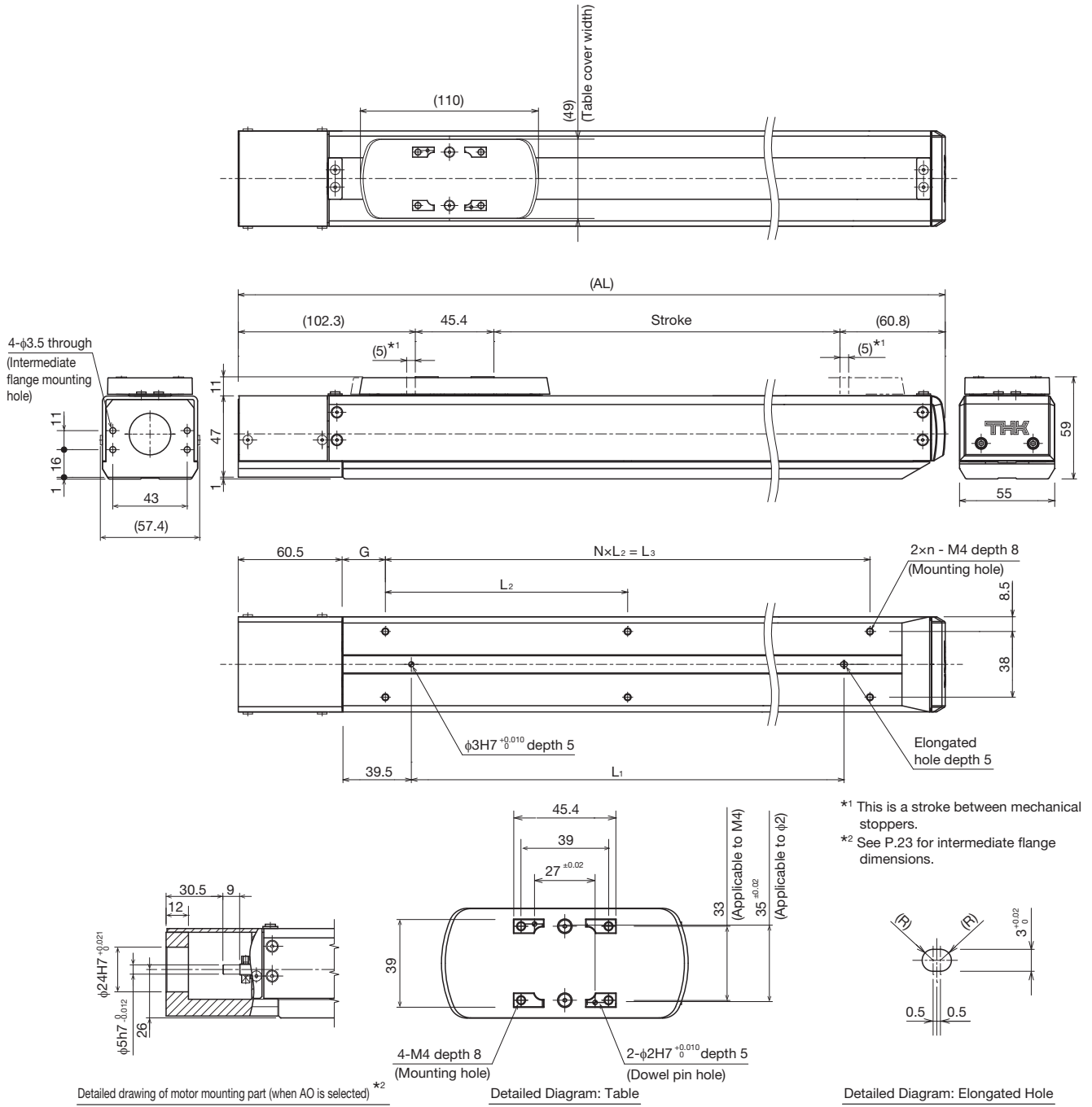
Vertical mount

Ball screw lead [mm]	Load mass [kg]	A	C
6	3	210	210
	6	90	90
10	1.5	390	390
	3.5	180	180

\* This value is the overhang length whose running life is 10,000 km for horizontal mount and wall mount, and 5,000 km for vertical direction. A permissible value of the applied load in each direction.

# KRF5

## Dimensions

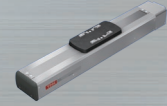


Stroke [mm] (Stroke between mechanical stoppers)	50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)	350 (360)	400 (410)	450 (460)	500 (510)	550 (560)	
Maximum speed <sup>*3 *4</sup> [mm/s]	300										250	
	500										430	
Dimensions [mm]	AL	259	309	359	409	459	509	559	609	659	709	759
	L <sub>1</sub>	100	150	200	250	300	350	400	450	500	550	600
	L <sub>2</sub>	140	100	120	140	115	130	110	120	135	120	130
	L <sub>3</sub>	140	200	240	280	345	390	440	480	540	600	650
Mounting pitch count	N	1	2	2	2	3	3	4	4	4	5	5
Mounting hole count	n	2	3	3	3	4	4	5	5	5	6	6
Weight [kg]	2.0	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	

<sup>\*3</sup> The maximum speed varies depending on the motor used.

<sup>\*4</sup> The maximum speed is the value restricted by the permissible rotational speed of the ball screw.

# KRF6 without motor



## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
KRF6	06	0150	A	0	AQ	GR-SB

<b>KRF6</b>	<b>06:</b> 6mm	<b>0050:</b> 50mm	<b>A</b>	<b>0:</b> Without motor	<b>A0:</b> Without intermediate flange	<b>No symbol:</b> Red cover
	<b>10:</b> 10mm	to		<b>1:</b> With motor (Prepared by THK)	<b>AQ</b>	<b>GR:</b> Gray cover
		<b>0800:</b> 800mm			<b>AP</b>	<b>SB:</b> Slider base
					<b>AR</b>	<input type="checkbox"/> 1 <input type="checkbox"/> 2: Sensor
					<b>AU</b>	Note: If the GR is not included in the model configuration, cover will be red.
					<b>AT</b>	

## Basic Specifications

LM guide portion	Basic dynamic load rating C [N]	11600	
	Basic Static Load Rating Co [N]	20200	
Ball screw portion	Basic dynamic load rating Ca [N]	2840	1760
	Basic Static Load Rating Coa [N]	4900	2840
	Screw shaft diameter [mm]	φ10	
Bearing portion (Fixed side)	Ball screw lead [mm]	6	10
	Axial direction	Basic dynamic load rating Ca [N]	2930
		Static Permissible Load Poa [N]	2150
Permissible rotational speed * <sup>1</sup> [min <sup>-1</sup> ]		3000	
Starting torque * <sup>2</sup> [N·m]		0.014	0.02
Positioning repeatability * <sup>3</sup> [mm]		±0.010	
Lost motion * <sup>3</sup> [mm]		0.1	
Permissible input torque [N·m]		1.035	
Static permissible moment * <sup>4</sup> [N·m]		MA: 166 MB: 103.8 MC: 179.5	

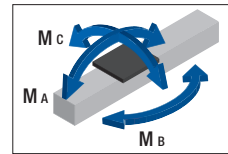
\*<sup>1</sup> Dependent on the stroke.

\*<sup>2</sup> The starting torque represents values when the standard grease is filled.

\*<sup>3</sup> These represent values when measured using a motor provided by THK.

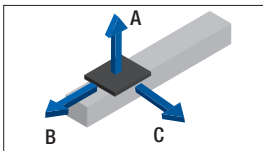
\*<sup>4</sup> Applied point of moment load for MA and MC are the top face of the table, and that for MB is the center of the table.

Static permissible moment

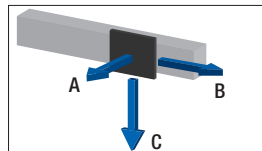


## Reference Permissible Overhang Length\*

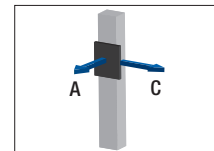
Horizontal use



Wall use



Vertical use



Horizontal mount

[mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	17.5	390	50	160
	35	170	10	60
10	15	320	60	170
	30	130	10	50

Wall mount

[mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	12	200	70	600
	24	70	20	140
10	11	200	80	460
	22	70	30	120

Vertical mount

[mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	5	240	240
	10	100	100
10	2.5	510	510
	5	230	230

\* This value is the overhang length whose running life is 10,000 km for horizontal mount and wall mount, and 5,000 km for vertical direction. A permissible value of the applied load in each direction.

## Dimensions

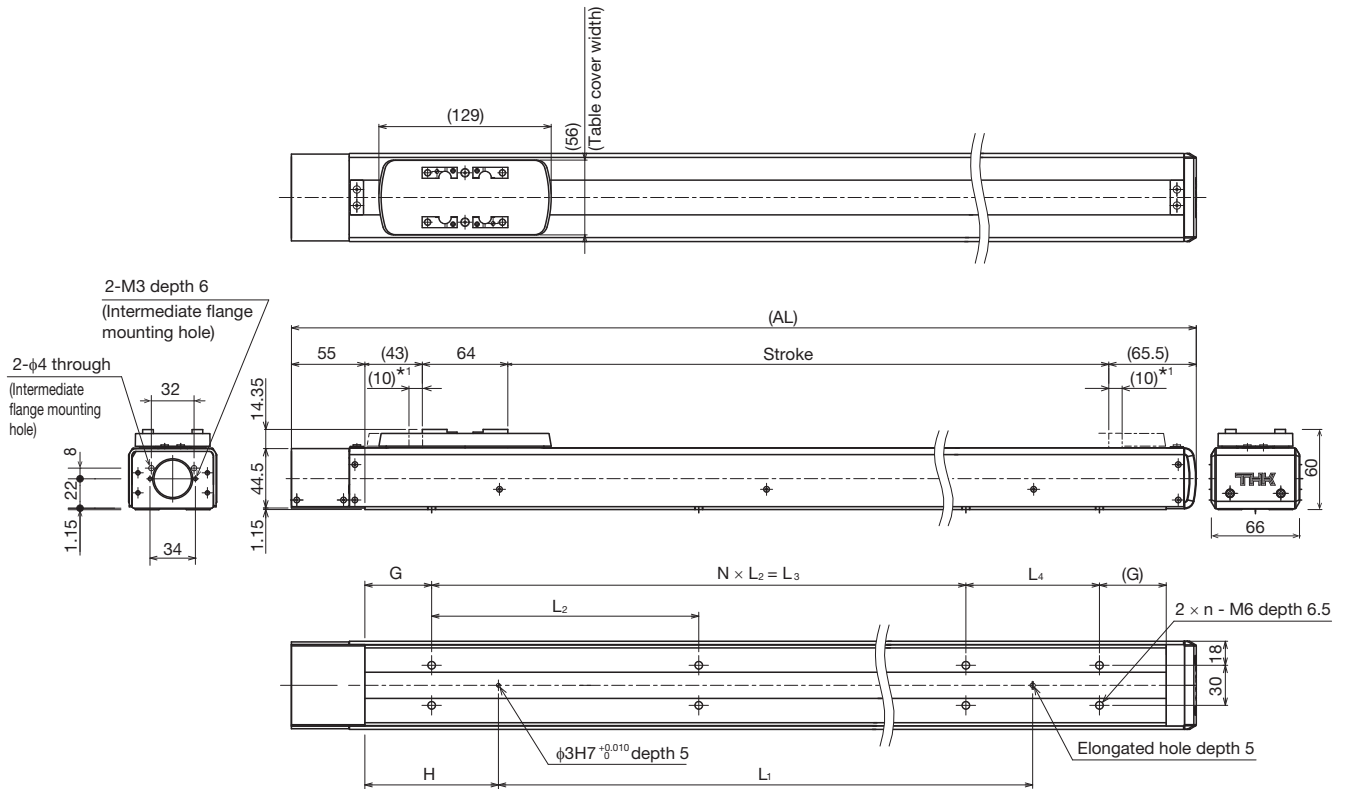
Stroke [mm] (Stroke between mechanical stoppers)	50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)	
Maximum speed * <sup>3</sup> * <sup>4</sup> [mm/s]	Ball screw lead: 6mm		300						
	Ball screw lead: 10mm		500						
Dimensions [mm]	AL	277.5	327.5	377.5	427.5	477.5	527.5	577.5	627.5
	L1	100	150	200	200	250	250	300	350
	L2	100	200	200	200	200	200	200	200
	L3	100	200	200	200	200	400	400	400
	L4	-	-	-	-	100	-	-	-
	G	50	25	50	75	50	25	50	75
H	50	50	50	75	75	100	100	100	
Mounting pitch count	N	1	1	1	1	2	2	2	
Mounting hole count	n	2	2	2	2	3	3	3	
Weight [kg]	2.7	3.1	3.5	3.9	4.3	4.8	5.2	5.6	

\*<sup>3</sup> The maximum speed varies depending on the motor used.

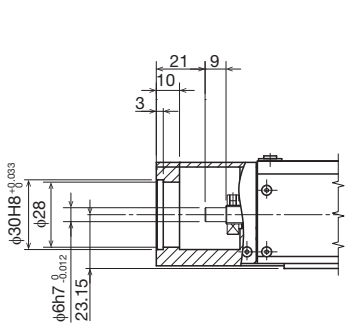
\*<sup>4</sup> The maximum speed is the value restricted by the permissible rotational speed of the ball screw.

# KRF6

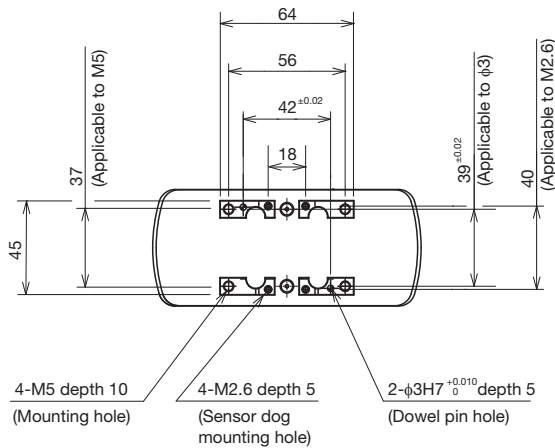
## Dimensions



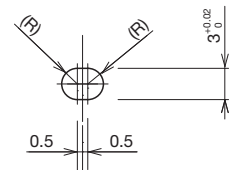
\*1 This is a stroke between mechanical stoppers.  
 \*2 See P.24 for intermediate flange dimensions.



Detailed drawing of motor mounting part (when A0 is selected) \*2



Detailed Diagram: Table



Detailed Diagram: Elongated Hole

Stroke [mm] (Stroke between mechanical stoppers)		450 (470)	500 (520)	550 (570)	600 (620)	650 (670)	700 (720)	750 (770)	800 (820)
Maximum speed [mm/s]	Ball screw lead: 6mm		300		260	220	200	170	150
	Ball screw lead: 10mm		500		440	380	330	290	260
Dimensions [mm]	AL	677.5	727.5	777.5	827.5	877.5	927.5	977.5	1027.5
	L <sub>1</sub>	400	450	500	550	600	650	700	750
	L <sub>2</sub>	200	200	200	200	200	200	200	200
	L <sub>3</sub>	400	600	600	600	600	800	800	800
	L <sub>4</sub>	100	-	-	-	100	-	-	-
	G	50	25	50	75	50	25	50	75
	H	100	100	100	100	100	100	100	100
Mounting pitch count	N	2	3	3	3	3	4	4	4
Mounting hole count	n	4	4	4	4	5	5	5	5
Weight [kg]		6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.8

\*3 The maximum speed varies depending on the motor used.

\*4 The maximum speed is the value restricted by the permissible rotational speed of the ball screw.