

# LM Guide Actuator

## KR



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**Integrated LM Guide and Ball Screw  
High-rigidity / High-precision Actuator**

# **LM Guide Actuator Model KR**

Model No. KR15 to 65



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# KR

## LM Guide Actuator Model KR

### LM Guide + Ball Screw = Integral-structure Actuator

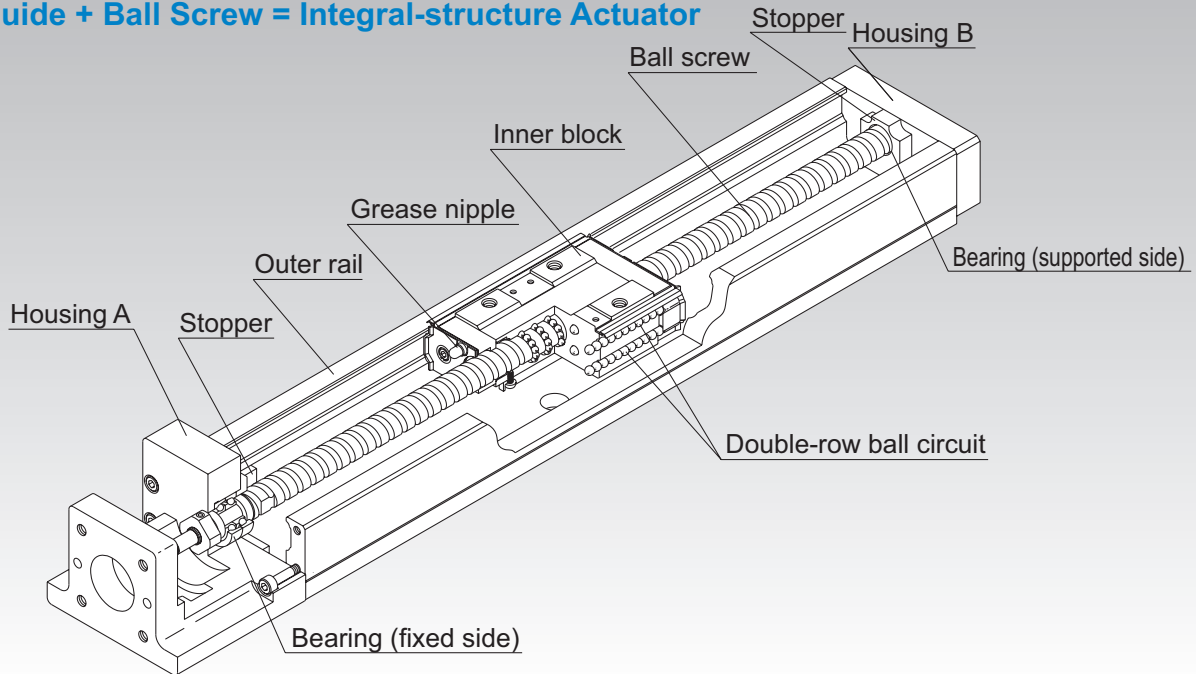


Fig.1 Structure of LM Guide Actuator Model KR

## Structure and Features

Because of its integral-structure inner block consisting of a highly rigid outer rail with a U-shaped cross section, LM Guide units on both side faces and a Ball Screw unit in the center, LM Guide Actuator model KR achieves a highly rigid and highly accurate actuator in a minimal space.

In addition, since the housings A and B also serve as support units and the inner block as a table, this model allows significant reduction of man-hours required for design and assembly, thus contributing to total cost cutting.

**[4-way Equal Load]**

Each row of balls is arranged at a contact angle of 45° so that the rated load on the inner block is uniform under loads applied to the inner block in the four directions (radial, reverse radial and lateral directions). As a result, model KR can be used in any mounting orientation.

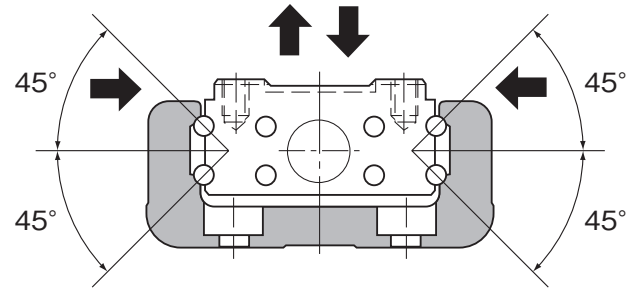


Fig.2 Load Capacity and Contact Angle of Model KR

**[High Rigidity]**

Use of an outer rail with a U-shaped cross section increases the rigidity against a moment and torsion.

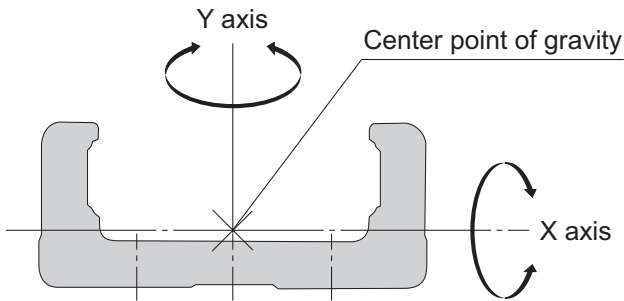


Fig.3 Cross Section of the Outer Rail

Table1 Cross-sectional Characteristics of the Outer rail Rail

| Model No. | $I_x$ [mm <sup>4</sup> ] | $I_y$ [mm <sup>4</sup> ] | Mass [kg/m] |
|-----------|--------------------------|--------------------------|-------------|
| KR15      | $9.08 \times 10^2$       | $1.42 \times 10^4$       | 1.04        |
| KR20      | $6.1 \times 10^3$        | $6.2 \times 10^4$        | 2.6         |
| KR26      | $1.7 \times 10^4$        | $1.5 \times 10^5$        | 3.9         |
| KR30H     | $2.7 \times 10^4$        | $2.8 \times 10^5$        | 5.0         |
| KR33      | $6.2 \times 10^4$        | $3.8 \times 10^5$        | 6.6         |
| KR45H     | $8.4 \times 10^4$        | $8.9 \times 10^5$        | 9.0         |
| KR46      | $2.4 \times 10^5$        | $1.5 \times 10^6$        | 12.6        |
| KR55      | $2.2 \times 10^5$        | $2.3 \times 10^6$        | 15.0        |
| KR65      | $4.6 \times 10^5$        | $5.9 \times 10^6$        | 23.1        |

$I_x$ =geometrical moment of inertia around X axis  
 $I_y$ =geometrical moment of inertia around Y axis

**[High Accuracy]**

Since the linear guide section consists of 4 rows of circular-arc grooves that enable balls to smoothly move even under a preload, a highly rigid guide with no clearance is achieved. Additionally, variation in frictional resistance caused by load fluctuation is minimized, allowing the system to follow highly accurate feed.

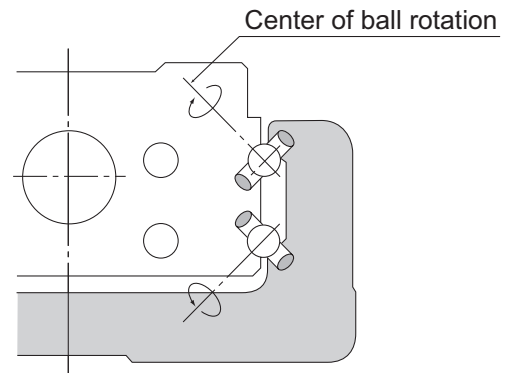


Fig.4 Contact Structure of Model KR

**[Space Saving]**

Use of an inner block integrating LM Guide units on both ends and a Ball Screw unit in the center makes model KR a highly rigid and highly accurate actuator in a minimal space.

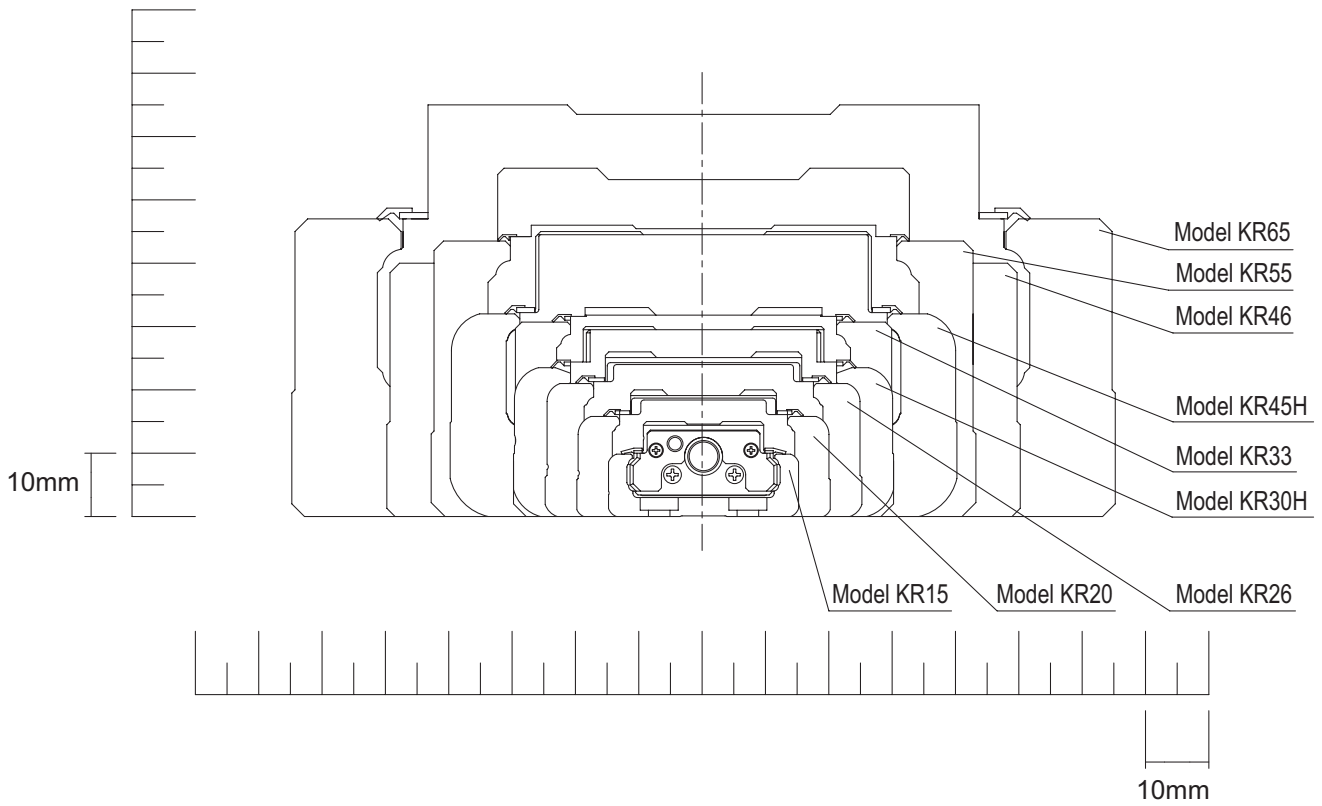


Fig.5 Cross Sectional Drawing

[Seal]

Model KR is equipped with end seals and side seals for dust prevention as standard.

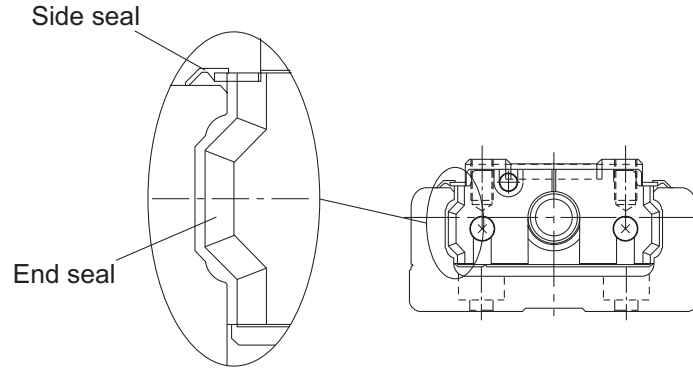


Table2 shows the rolling resistance and seal resistance per inner block (guide section).

Table2 Maximum Resistance Value Unit: N

| Model No. | Rolling resistance value | Seal resistance value | Total |
|-----------|--------------------------|-----------------------|-------|
| KR15      | 0.2                      | 0.7                   | 0.9   |
| KR20      | 0.5                      | 0.7                   | 1.2   |
| KR26      | 0.6                      | 0.8                   | 1.4   |
| KR30H     | 1.5                      | 2.0                   | 3.5   |
| KR33      | 1.5                      | 1.9                   | 3.4   |
| KR45H     | 2.5                      | 2.6                   | 5.1   |
| KR46      | 2.5                      | 2.5                   | 5     |
| KR55      | 5.0                      | 3.8                   | 8.8   |
| KR65      | 6.0                      | 4.1                   | 10.1  |

Note) The rolling resistance represents the value when a lubricant is not used.

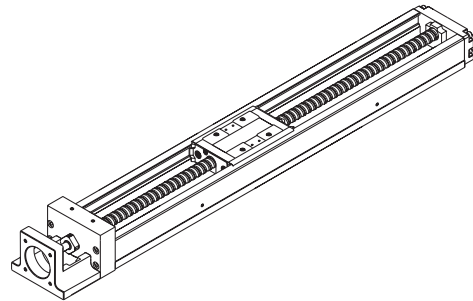
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## Types and Features

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### Model KR-A (with a Single Long Type Block)

Representative model of KR.

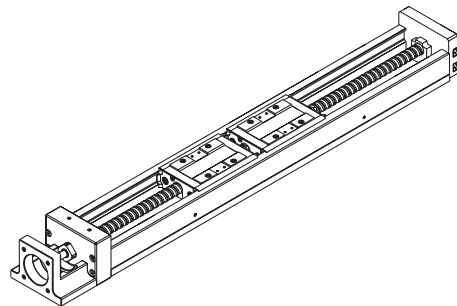


Model KR-A

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### Model KR-B (with Two Long Type Blocks)

Equipped with two units of the inner block of model KR-A, this model achieves higher rigidity and higher load carrying capacity.

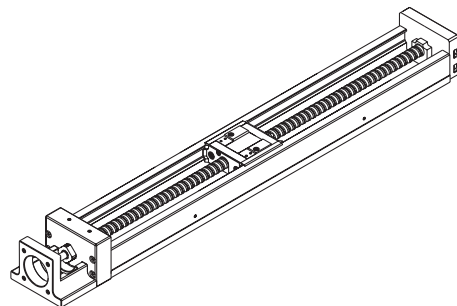


Model KR-B

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### Model KR-C (with a Single Short Type Block)

This model has a shorter overall length of the inner block and a longer stroke than model KR-A. (Supported models: model KR30H, 33, 45H, 46)



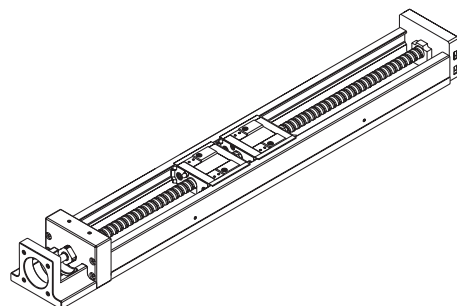
Model KR-C

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### Model KR-D (with Two Short Type Blocks)

Equipped with two units of the inner block of model KR-C, this design allows a span between blocks that suits the equipment, thus to achieve high rigidity.

(Supported models: model KR30H, 33, 45H, 46)

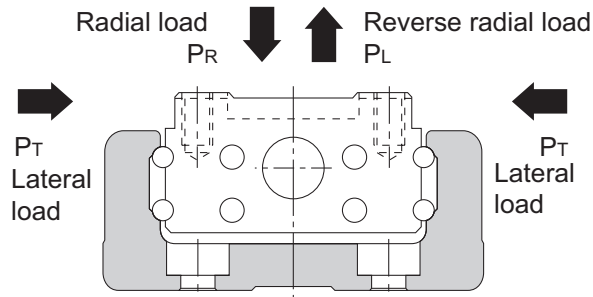


Model KR-D



## Load Ratings in All Directions and Static Permissible Moment

### [Load Rating]



#### ● LM Guide Unit

Model KR is capable of receiving loads in four directions (radial, reverse radial and lateral directions). Its basic load ratings are equal in all four directions (radial, reverse radial and lateral directions), and their values are indicated in Table3 on page9 and page10.

#### ● Ball Screw Unit

Since the inner block is incorporated with a ball screw nut, model KR is capable of receiving an axial load. The basic load rating value is indicated in Table3 on page9 and page10.

#### ● Bearing Unit (Fixed Side)

Since housing A contains an angular bearing, model KR is capable of receiving an axial load. The basic load rating value is indicated in Table3 on page9 and page10.

### [Equivalent Load (LM Guide Unit)]

The equivalent load when the LM Guide unit of model KR simultaneously receives loads in all directions is obtained from the following equation.

$$P_E = P_R (P_L) + P_T$$

|       |                            |     |
|-------|----------------------------|-----|
| $P_E$ | : Equivalent load          | (N) |
|       | : Radial direction         |     |
|       | : Reverse radial direction |     |
|       | : Lateral direction        |     |
| $P_R$ | : Radial load              | (N) |
| $P_L$ | : Reverse radial load      | (N) |
| $P_T$ | : Lateral load             | (N) |

Table3 Load Rating of Model KR

| Model No.                 |  |   | KR15             |        | KR20             |        | KR26             |        |  |
|---------------------------|--|---|------------------|--------|------------------|--------|------------------|--------|--|
|                           |  |   | KR1501           | KR1502 | KR2001           | KR2006 | KR2602           | KR2606 |  |
| LM guide unit             | Basic dynamic load rating C (N)              | Long type block                             | 1930             |        | 3590             |        | 7240             |        |  |
|                           |  | Short type block                            | —                |        | —                |        | —                |        |  |
|                           | Basic static load rating C <sub>0</sub> (N)  | Long type block                             | 3450             |        | 6300             |        | 12150            |        |  |
|                           |  | Short type block                            | —                |        | —                |        | —                |        |  |
|                           | Radial clearance (mm)                        | Normal grade, high accuracy grade           | -0.001 to +0.002 |        | -0.003 to +0.002 |        | -0.004 to +0.002 |        |  |
|                           |  | Precision grade                             | -0.005 to -0.002 |        | -0.007 to -0.003 |        | -0.01 to -0.004  |        |  |
| Ball screw unit           | Basic dynamic load rating Ca (N)             | Normal grade, high accuracy grade           | 340              | 230    | 660              | 860    | 2350             | 1950   |  |
|                           |  | Precision grade                             | 340              | 230    | 660              | 1060   | 2350             | 2390   |  |
|                           | Basic static load rating C <sub>0a</sub> (N) | Normal grade, high accuracy grade           | 660              | 410    | 1170             | 1450   | 4020             | 3510   |  |
|                           |  | Precision grade                             | 660              | 410    | 1170             | 1600   | 4020             | 3900   |  |
|                           | Screw shaft diameter (mm)                    |   | 5                |        | 6                |        | 8                |        |  |
|                           | Lead (mm)                                    |   | 1                | 2      | 1                | 6      | 2                | 6      |  |
|                           | Thread minor diameter (mm)                   |   | 4.5              |        | 5.3              | 5.0    | 6.6              | 6.7    |  |
|                           | Ball center-to-center diameter (mm)          |   | 5.15             |        | 6.15             | 6.3    | 8.3              | 8.4    |  |
| Bearing unit (Fixed side) | Axial direction                              | Basic dynamic load rating Ca (N)            | 590              |        | 1000             |        | 1380             |        |  |
|                           |  | Static permissible load P <sub>0a</sub> (N) | 290              |        | 1240             |        | 1760             |        |  |

Note1) The load ratings in the LM Guide unit each indicate the load rating per inner block.

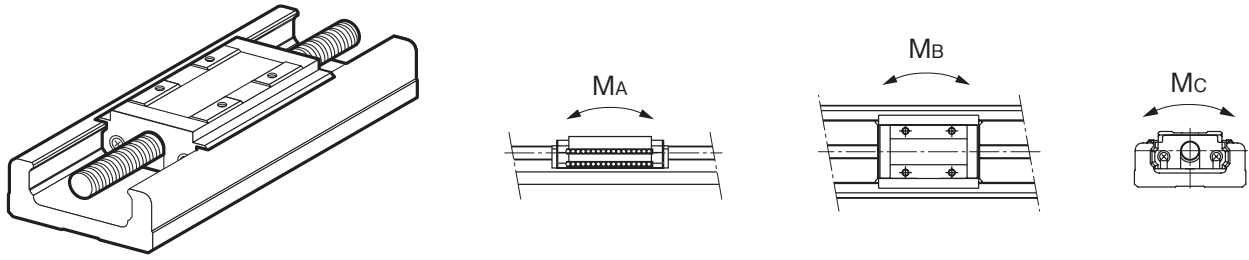
Note2) The Ball Screw of precision grade (grade P) for models KR30H, KR33, KR45H10 and KR4610 is incorporated with spacer balls in the proportion of one to one.

Note3) The Ball Screw of precision grade (grade P) for models KR45H20, KR4620, KR55 and KR65 is incorporated with spacer balls in the proportion of two to one.

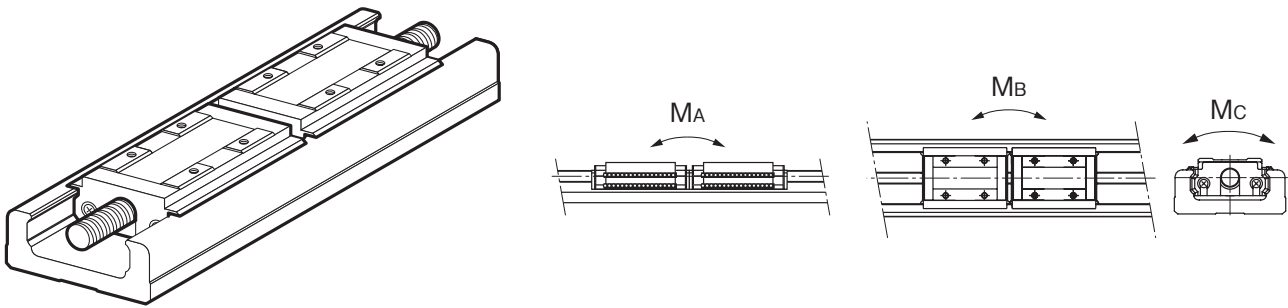
|  | KR30H            |         | KR33             |        | KR45H            |         | KR46             |        | KR55             | KR65             |
|--|------------------|---------|------------------|--------|------------------|---------|------------------|--------|------------------|------------------|
|  | KR30H06          | KR30H10 | KR3306           | KR3310 | KR45H10          | KR45H20 | KR4610           | KR4620 |                  |                  |
|  | 11600            |         | 11600            |        | 23300            |         | 27400            |        | 38100            | 50900            |
|  | 4900             |         | 4900             |        | 11900            |         | 14000            |        | —                | —                |
|  | 20200            |         | 20200            |        | 39200            |         | 45500            |        | 61900            | 80900            |
|  | 10000            |         | 10000            |        | 19600            |         | 22700            |        | —                | —                |
|  | −0.004 to +0.002 |         | −0.004 to +0.002 |        | −0.006 to +0.003 |         | −0.006 to +0.003 |        | −0.007 to +0.004 | −0.008 to +0.004 |
|  | −0.012 to −0.004 |         | −0.012 to −0.004 |        | −0.016 to −0.006 |         | −0.016 to −0.006 |        | −0.019 to −0.007 | −0.022 to −0.008 |
|  | 2840             | 1760    | 2840             | 1760   | 3140             | 3040    | 3140             | 3040   | 3620             | 5680             |
|  | 2250             | 1370    | 2250             | 1370   | 2940             | 3430    | 2940             | 3430   | 3980             | 5950             |
|  | 4900             | 2840    | 4900             | 2840   | 6760             | 7150    | 6760             | 7150   | 9290             | 14500            |
|  | 2740             | 1570    | 2740             | 1570   | 3720             | 5290    | 3720             | 5290   | 6850             | 10700            |
|  | 10               |         | 10               |        | 15               |         | 15               |        | 20               | 25               |
|  | 6                | 10      | 6                | 10     | 10               | 20      | 10               | 20     | 20               | 25               |
|  | 7.8              |         | 7.8              |        | 12.5             |         | 12.5             |        | 17.5             | 22               |
|  | 10.5             |         | 10.5             |        | 15.75            |         | 15.75            |        | 20.75            | 26               |
|  | 1790             |         | 1790             |        | 6660             |         | 6660             |        | 7600             | 13700            |
|  | 2590             |         | 2590             |        | 3240             |         | 3240             |        | 3990             | 5830             |

**[Static Permissible Moment (LM Guide Unit)]**

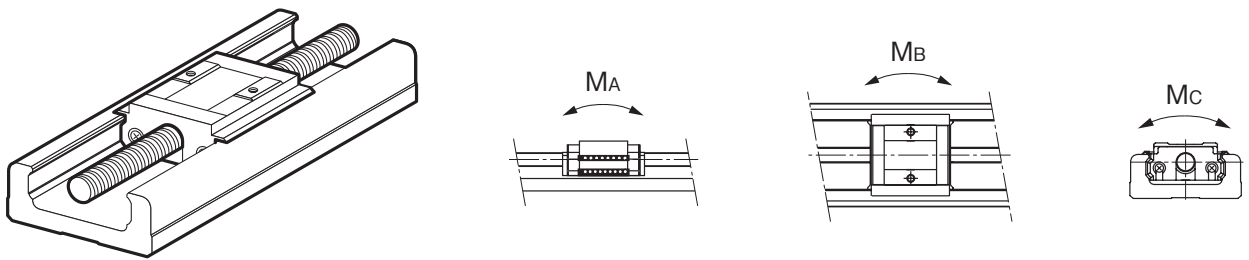
The Inner block is capable of receiving moment loads in all three (3) directions.  
Table4 on page12 shows static permissible moments in the  $M_A$ ,  $M_B$  and  $M_C$  directions.



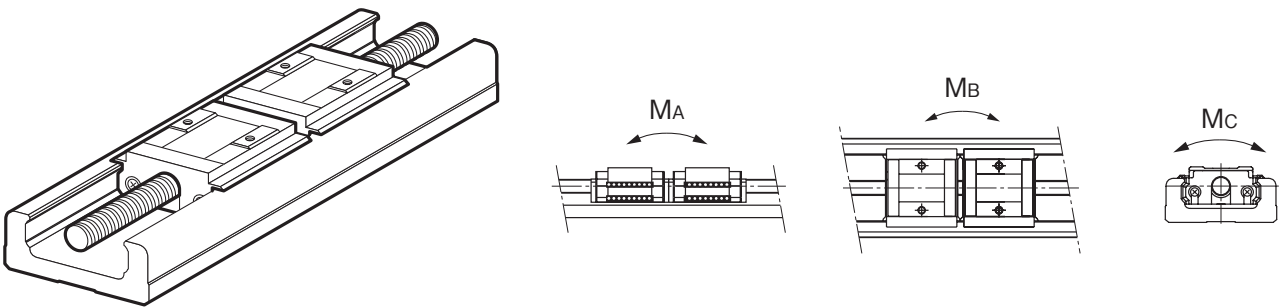
With a single long type block (Model KR-A)



With double long type blocks (Model KR-B)



With a single long type block (Model KR-C)



With double long type blocks (Model KR-D)

Table4 Static Permissible Moments of Model KR

Unit: N-m

| Model No. | Static permissible moment |                |                |
|-----------|---------------------------|----------------|----------------|
|           | M <sub>A</sub>            | M <sub>B</sub> | M <sub>C</sub> |
| KR15-A    | 12.1                      | 12.1           | 38             |
| KR15-B    | 70.3                      | 70.3           | 76             |
| KR20-A    | 31                        | 31             | 83             |
| KR20-B    | 176                       | 176            | 165            |
| KR26-A    | 84                        | 84             | 208            |
| KR26-B    | 480                       | 480            | 416            |
| KR30H-A   | 166                       | 166            | 428            |
| KR30H-B   | 908                       | 908            | 857            |
| KR30H-C   | 44                        | 44             | 214            |
| KR30H-D   | 319                       | 319            | 427            |
| KR33-A    | 166                       | 166            | 428            |
| KR33-B    | 908                       | 908            | 857            |
| KR33-C    | 44                        | 44             | 214            |
| KR33-D    | 319                       | 319            | 427            |
| KR45H-A   | 486                       | 486            | 925            |
| KR45H-B   | 2732                      | 2732           | 1850           |
| KR45H-C   | 130                       | 130            | 463            |
| KR45H-D   | 994                       | 994            | 925            |
| KR46-A    | 547                       | 547            | 1400           |
| KR46-B    | 2940                      | 2940           | 2800           |
| KR46-C    | 149                       | 149            | 700            |
| KR46-D    | 1010                      | 1010           | 1400           |
| KR55-A    | 870                       | 870            | 2280           |
| KR55-B    | 4890                      | 4890           | 4570           |
| KR65-A    | 1300                      | 1300           | 3920           |
| KR65-B    | 7230                      | 7230           | 7840           |

Note1) Symbols A, B, C or D in the end of each model number indicates the inner block size and the number of inner blocks used.

- A: With a single long type block
- B: With double long type blocks
- C: With a single short type block
- D: With double short type blocks

Note2) The values for models KR-B/D indicate the values when double inner blocks are used in close contact with each other.

Note3) Static permissible moment is the maximum moment that can be permitted while the product is stationary.

## Maximum Speeds with Different Strokes

Table5 Maximum speed

| Model No. | Ball Screw lead (mm) | Stroke' (mm)    |                  | Outer rail length (mm) | Maximum speed (mm/s) |                     |              |                  |                     |              |
|-----------|----------------------|-----------------|------------------|------------------------|----------------------|---------------------|--------------|------------------|---------------------|--------------|
|           |                      |                 |                  |                        | Precision grade      | High accuracy grade | Normal grade | Precision grade  | High accuracy grade | Normal grade |
|           |                      | Long type block | Short type block |                        | Long type block      |                     |              | Short type block |                     |              |
| KR15      | 01                   | 25              | —                | 75                     | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 50              | —                | 100                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 75              | —                | 125                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 100             | —                | 150                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 125             | —                | 175                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 150             | —                | 200                    | 100                  | 100                 | —            |                  |                     |              |
|           | 02                   | 25              | —                | 75                     | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 50              | —                | 100                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 75              | —                | 125                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 100             | —                | 150                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 125             | —                | 175                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 150             | —                | 200                    | 200                  | 200                 | —            |                  |                     |              |
| KR20      | 01                   | 30              | —                | 100                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 80              | —                | 150                    | 100                  | 100                 | —            |                  |                     |              |
|           |                      | 130             | —                | 200                    | 100                  | 100                 | —            |                  |                     |              |
|           | 06                   | 30              | —                | 100                    | 600                  | 600                 | —            |                  |                     |              |
|           |                      | 80              | —                | 150                    | 600                  | 600                 | —            |                  |                     |              |
|           |                      | 130             | —                | 200                    | 600                  | 600                 | —            |                  |                     |              |
| KR26      | 02                   | 60              | —                | 150                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 110             | —                | 200                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 160             | —                | 250                    | 200                  | 200                 | —            |                  |                     |              |
|           |                      | 210             | —                | 300                    | 200                  | 200                 | —            |                  |                     |              |
|           | 06                   | 60              | —                | 150                    | 600                  | 590                 | —            |                  |                     |              |
|           |                      | 110             | —                | 200                    | 600                  | 590                 | —            |                  |                     |              |
|           |                      | 160             | —                | 250                    | 600                  | 590                 | —            |                  |                     |              |
|           |                      | 210             | —                | 300                    | 600                  | 590                 | —            |                  |                     |              |
| KR30H     | 06                   | 50              | 70               | 150                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 100             | 120              | 200                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 200             | 220              | 300                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 300             | 320              | 400                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 400             | 420              | 500                    | 590                  | 470                 | 530          | 470              |                     |              |
|           | 10                   | 500             | 520              | 600                    | 395                  | 395                 | 360          | 360              |                     |              |
|           |                      | 50              | 70               | 150                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           |                      | 100             | 120              | 200                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           |                      | 200             | 220              | 300                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           |                      | 300             | 320              | 400                    | 1000                 | 790                 | 1000         | 790              |                     |              |
| KR33      | 06                   | 400             | 420              | 500                    | 980                  | 790                 | 880          | 790              |                     |              |
|           |                      | 500             | 520              | 600                    | 650                  | 650                 | 600          | 600              |                     |              |
|           |                      | 50              | 75               | 150                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 100             | 125              | 200                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 200             | 225              | 300                    | 600                  | 470                 | 600          | 470              |                     |              |
|           |                      | 300             | 325              | 400                    | 600                  | 470                 | 600          | 470              |                     |              |
|           | 10                   | 400             | 425              | 500                    | 590                  | 470                 | 530          | 470              |                     |              |
|           |                      | 500             | 525              | 600                    | 395                  | 395                 | 360          | 360              |                     |              |
|           |                      | 600             | 625              | 700                    | 280                  | 280                 | 260          | 260              |                     |              |
|           |                      | 50              | 75               | 150                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           |                      | 100             | 125              | 200                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           |                      | 200             | 225              | 300                    | 1000                 | 790                 | 1000         | 790              |                     |              |
|           | 300                  | 325             | 400              | 1000                   | 790                  | 1000                | 790          |                  |                     |              |
|           | 400                  | 425             | 500              | 980                    | 790                  | 880                 | 790          |                  |                     |              |
|           | 500                  | 525             | 600              | 650                    | 650                  | 600                 | 600          |                  |                     |              |
|           | 600                  | 625             | 700              | 470                    | 470                  | 430                 | 430          |                  |                     |              |

| Model No. | Ball Screw lead (mm) | Stroke* (mm)    |                  | Outer rail length (mm) | Maximum speed (mm/s) |                     |              |                  |                     |              |
|-----------|----------------------|-----------------|------------------|------------------------|----------------------|---------------------|--------------|------------------|---------------------|--------------|
|           |                      |                 |                  |                        | Precision grade      | High accuracy grade | Normal grade | Precision grade  | High accuracy grade | Normal grade |
|           |                      | Long type block | Short type block |                        | Long type block      |                     |              | Short type block |                     |              |
| KR45H     | 10                   | 200             | 230              | 340                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 300             | 330              | 440                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 400             | 430              | 540                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 500             | 530              | 640                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 600             | 630              | 740                    | 730                  | 520                 | 640          | 520              |                     |              |
|           |                      | 700             | 730              | 840                    | —                    | 520                 | —            | 490              |                     |              |
|           | 20                   | 800             | 830              | 940                    | —                    | 430                 | —            | 380              |                     |              |
|           |                      | 200             | 230              | 340                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 300             | 330              | 440                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 400             | 430              | 540                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 500             | 530              | 640                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 600             | 630              | 740                    | 1430                 | 1050                | 1280         | 1050             |                     |              |
| KR46      | 10                   | 700             | 730              | 840                    | —                    | 1050                | —            | 980              |                     |              |
|           |                      | 800             | 830              | 940                    | —                    | 840                 | —            | 770              |                     |              |
|           |                      | 190             | 220              | 340                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 290             | 320              | 440                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 390             | 420              | 540                    | 740                  | 520                 | 740          | 520              |                     |              |
|           |                      | 490             | 520              | 640                    | 740                  | 520                 | 740          | 520              |                     |              |
|           | 20                   | 590             | 620              | 740                    | 730                  | 520                 | 650          | 520              |                     |              |
|           |                      | 690             | 720              | 840                    | —                    | 520                 | —            | 490              |                     |              |
|           |                      | 790             | 820              | 940                    | —                    | 430                 | —            | 390              |                     |              |
|           |                      | 190             | 220              | 340                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 290             | 320              | 440                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 390             | 420              | 540                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
| KR55      | 20                   | 490             | 520              | 640                    | 1480                 | 1050                | 1480         | 1050             |                     |              |
|           |                      | 590             | 620              | 740                    | 1440                 | 1050                | 1300         | 1050             |                     |              |
|           |                      | 690             | 720              | 840                    | —                    | 1050                | —            | 990              |                     |              |
|           |                      | 790             | 820              | 940                    | —                    | 850                 | —            | 780              |                     |              |
|           |                      | 800             | —                | 980                    | 1120                 | 800                 | —            | —                |                     |              |
| KR65      | 25                   | 900             | —                | 1080                   | 900                  | 800                 | —            | —                |                     |              |
|           |                      | 1000            | —                | 1180                   | 740                  | 740                 | —            | —                |                     |              |
|           |                      | 1100            | —                | 1280                   | —                    | 620                 | —            | —                |                     |              |
|           |                      | 1200            | —                | 1380                   | —                    | 530                 | —            | —                |                     |              |

\*Indicates a stroke when one inner block is incorporated.

Note1) The maximum speed is the value restricted by the motor rotation speed (at 6,000 min<sup>-1</sup>), or by the permissible rotation speed of the Ball Screw.

Note2) If you are considering using this product at the maximum travel speed of Table5 or faster, contact THK.

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## Lubrication

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Table6 shows standard greases used in model KR and grease nipple types.

Table6 Types of standard grease and grease nipples used

| Model No. | Standard grease   | Grease nipple used |
|-----------|-------------------|--------------------|
| KR15      | THK AFF Grease    | —                  |
| KR20      | THK AFA Grease    | PB107              |
| KR26      | THK AFA Grease    | PB107              |
| KR30H     | THK AFB-LF Grease | PB107              |
| KR33      | THK AFB-LF Grease | PB107              |
| KR45H     | THK AFB-LF Grease | A-M6F              |
| KR46      | THK AFB-LF Grease | A-M6F              |
| KR55      | THK AFB-LF Grease | A-M6F              |
| KR65      | THK AFB-LF Grease | A-M6F              |



## Static Safety Factor

LM Guide Actuator Model KR consists of an LM Guide, a Ball Screw and a support bearing. The static safety factor and the service life of each component can be obtained from the basic load rating indicated in “Rated load of model KR” (see Table3 on page9).

### [Calculating the Static Safety Factor]

#### ● LM Guide Unit

To calculate a load applied to the LM Guide of model KR, the average load required for calculating the service life and the maximum load needed for calculating the static safety factor must be obtained first. In particular, if the system starts and stops frequently, or if a large moment caused by an overhung load is applied to the system, it may receive an unexpectedly large load.

When selecting a model number, make sure that the desired model is capable of receiving the required maximum load (whether stationary or in motion).

$$f_s = \frac{C_0}{P_{\max}}$$

- $f_s$  : Static safety factor  
 $C_0$  : Basic static load rating (N)  
 $P_{\max}$  : Maximum applied load (N)

\*The basic static load rating is a static load with a constant direction and magnitude whereby the sum of the permanent deformation of the rolling element and that of the raceway on the contact area under the maximum stress is 0.0001 times the rolling element diameter.

#### ● Ball Screw Unit/Bearing Unit(Fixed Side)

If an unexpected external force is applied in the axial direction as a result of an inertia caused by an impact or start and stop while model KR is stationary or operating, it is necessary to take into account the static safety factor.

$$f_s = \frac{C_{0a}}{F_{\max}}$$

- $f_s$  : Static safety factor  
 $C_{0a}$  : Basic static load rating (N)  
 $F_{\max}$  : Maximum applied load (N)

### [Standard Values for the Static Safety Factor ( $f_s$ )]

| Machine type                 | Load conditions             | Minimum Static Safety Factor ( $f_s$ ) |
|------------------------------|-----------------------------|--|
| General industrial machinery | Without vibration or impact | 1.0 to 3.5                             |
|                              | With vibration or impact    | 2.0 to 5.0                             |

\*The standard value of the static safety factor may vary depending on the load conditions as well as environment, lubrication status, mounting accuracy, and/or rigidity.

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## Service Life

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### [LM Guide Unit]

#### ● Nominal Life

$$L = \left( \frac{f_c \cdot C}{f_w \cdot P_c} \right)^3 \times 50$$

- L : Nominal life (km)  
(The total travel distance that 90% of a group of identical LM Guide units independently operating under the same conditions can achieve without showing flaking)
- C : Basic dynamic load rating (N)
- P<sub>c</sub> : Calculated applied load (N)
- f<sub>w</sub> : Load factor (see Table8 on page19)
- f<sub>c</sub> : Contact factor (see Table7 on page19)

- If a moment is applied to model KR-A/C or model KR-B/D using two inner blocks in close contact with each other, calculate the equivalent load by multiplying the applied moment by the equivalent factor indicated in Table9 on page19.

$$P_m = K \cdot M$$

- P<sub>m</sub> : Equivalent load (per inner block) (N)
- K : Equivalent moment factor (see Table9 on page19)
- M : Applied moment (N-mm)  
(If planning to use the product with a wide inner block span, contact THK.)

- If moment M<sub>c</sub> is applied to model KR-B/D

$$P_m = \frac{K_c \cdot M_c}{2}$$

- If a radial load (P) and a moment are simultaneously applied to model KR

$$P_E = P_m + P$$

- P<sub>E</sub> : Total equivalent radial load (N)  
Perform a nominal life calculation using the above data.

### ● Service Life Time

When the nominal life (L) has been obtained, the service life time is obtained using the following equation (if the stroke length and the number of reciprocations per minute are constant).

$$L_h = \frac{L \times 10^6}{2 \cdot \ell_s \cdot n_1 \times 60}$$

$L_h$  : Service life time (h)  
 $\ell_s$  : Stroke length (mm)  
 $n_1$  : Number of reciprocations per minute ( $\text{min}^{-1}$ )

### [Ball Screw Unit/Bearing Unit(Fixed Side)]

#### ● Nominal Life

$$L = \left( \frac{C_a}{f_w \cdot F_a} \right)^3 \times 10^6$$

$L$  : Nominal life (rev)  
 (The total number of revolutions that 90% of a group of identical Ball Screw units independently operating under the same conditions can achieve without showing flaking)  
 $C_a$  : Basic dynamic load rating (N)  
 $F_a$  : Applied load (N)  
 $f_w$  : Load factor (see Table8 on page19)

#### ● Service Life Time

When the nominal life (L) has been obtained, the service life time is obtained using the following equation (if the stroke length and the number of reciprocations per minute are constant).

$$L_h = \frac{L \cdot \ell}{2 \cdot \ell_s \cdot n_1 \times 60}$$

$L_h$  : Service life time (h)  
 $\ell_s$  : Stroke length (mm)  
 $n_1$  : Number of reciprocations per minute ( $\text{min}^{-1}$ )  
 $\ell$  : Ball Screw lead (mm)

### ■f<sub>c</sub>: Contact Factor

If two inner blocks are used in close contact with each other with model KR-B/D, multiply the basic load rating by the corresponding contact factor indicated in Table7.

Table7 Contact Factor (f<sub>c</sub>)

| Inner block types        | Contact factor f <sub>c</sub> |
|--------------------------|-------------------------------|
| Model KR-B<br>Model KR-D | 0.81                          |

### ■f<sub>w</sub>: Load Factor

Table8 shows load factors.

Table8 Load Factor (f<sub>w</sub>)

| Vibrations/impact | Speed(V)                | f <sub>w</sub> |
|-------------------|-------------------------|----------------|
| Faint             | Very low<br>V ≤ 0.25m/s | 1 to 1.2       |
| Weak              | Slow<br>0.25 < V ≤ 1m/s | 1.2 to 1.5     |
| Medium            | Medium<br>1 < V ≤ 2m/s  | 1.5 to 2       |
| Strong            | High<br>V > 2m/s        | 2 to 3.5       |

### ■K: Moment Equivalent Factor (LM Guide Unit)

When model KR travels under a moment, the distribution of load applied to the LM Guide is locally large. In such cases, calculate the load by multiplying the moment value by the corresponding moment equivalent factor indicated in Table9.

Symbols K<sub>A</sub>, K<sub>B</sub> and K<sub>C</sub> indicate the moment equivalent loads in the M<sub>A</sub>, M<sub>B</sub> and M<sub>C</sub> directions, respectively.

Table9 Equivalent moment factor(K)

| Model No. | K <sub>A</sub>          | K <sub>B</sub>          | K <sub>C</sub>          |
|-----------|-------------------------|-------------------------|-------------------------|
| KR15-A    | 3.2 × 10 <sup>-1</sup>  | 3.2 × 10 <sup>-1</sup>  | 9.09 × 10 <sup>-2</sup> |
| KR15-B    | 5.96 × 10 <sup>-2</sup> | 5.96 × 10 <sup>-2</sup> | 9.09 × 10 <sup>-2</sup> |
| KR20-A    | 2.4 × 10 <sup>-1</sup>  | 2.4 × 10 <sup>-1</sup>  | 7.69 × 10 <sup>-2</sup> |
| KR20-B    | 4.26 × 10 <sup>-2</sup> | 4.26 × 10 <sup>-2</sup> | 7.69 × 10 <sup>-2</sup> |
| KR26-A    | 1.73 × 10 <sup>-1</sup> | 1.73 × 10 <sup>-1</sup> | 5.88 × 10 <sup>-2</sup> |
| KR26-B    | 3.06 × 10 <sup>-2</sup> | 3.06 × 10 <sup>-2</sup> | 5.88 × 10 <sup>-2</sup> |
| KR30H-A   | 1.51 × 10 <sup>-1</sup> | 1.51 × 10 <sup>-1</sup> | 4.78 × 10 <sup>-2</sup> |
| KR30H-B   | 2.76 × 10 <sup>-2</sup> | 2.76 × 10 <sup>-2</sup> | 4.78 × 10 <sup>-2</sup> |
| KR30H-C   | 2.77 × 10 <sup>-1</sup> | 2.77 × 10 <sup>-1</sup> | 4.78 × 10 <sup>-2</sup> |
| KR30H-D   | 3.99 × 10 <sup>-2</sup> | 3.99 × 10 <sup>-2</sup> | 4.78 × 10 <sup>-2</sup> |
| KR33-A    | 1.51 × 10 <sup>-1</sup> | 1.51 × 10 <sup>-1</sup> | 4.93 × 10 <sup>-2</sup> |
| KR33-B    | 2.57 × 10 <sup>-2</sup> | 2.57 × 10 <sup>-2</sup> | 4.93 × 10 <sup>-2</sup> |
| KR33-C    | 2.77 × 10 <sup>-1</sup> | 2.77 × 10 <sup>-1</sup> | 4.93 × 10 <sup>-2</sup> |
| KR33-D    | 3.55 × 10 <sup>-2</sup> | 3.55 × 10 <sup>-2</sup> | 4.93 × 10 <sup>-2</sup> |
| KR45H-A   | 9.83 × 10 <sup>-2</sup> | 9.83 × 10 <sup>-2</sup> | 3.45 × 10 <sup>-2</sup> |
| KR45H-B   | 1.87 × 10 <sup>-2</sup> | 1.87 × 10 <sup>-2</sup> | 3.45 × 10 <sup>-2</sup> |
| KR45H-C   | 1.83 × 10 <sup>-1</sup> | 1.83 × 10 <sup>-1</sup> | 3.45 × 10 <sup>-2</sup> |
| KR45H-D   | 2.81 × 10 <sup>-2</sup> | 2.81 × 10 <sup>-2</sup> | 3.45 × 10 <sup>-2</sup> |
| KR46-A    | 1.01 × 10 <sup>-1</sup> | 1.01 × 10 <sup>-1</sup> | 3.38 × 10 <sup>-2</sup> |
| KR46-B    | 1.78 × 10 <sup>-2</sup> | 1.78 × 10 <sup>-2</sup> | 3.38 × 10 <sup>-2</sup> |
| KR46-C    | 1.85 × 10 <sup>-1</sup> | 1.85 × 10 <sup>-1</sup> | 3.38 × 10 <sup>-2</sup> |
| KR46-D    | 2.5 × 10 <sup>-2</sup>  | 2.5 × 10 <sup>-2</sup>  | 3.38 × 10 <sup>-2</sup> |
| KR55-A    | 8.63 × 10 <sup>-2</sup> | 8.63 × 10 <sup>-2</sup> | 2.83 × 10 <sup>-2</sup> |
| KR55-B    | 1.53 × 10 <sup>-2</sup> | 1.53 × 10 <sup>-2</sup> | 2.83 × 10 <sup>-2</sup> |
| KR65-A    | 7.55 × 10 <sup>-2</sup> | 7.55 × 10 <sup>-2</sup> | 2.14 × 10 <sup>-2</sup> |
| KR65-B    | 1.35 × 10 <sup>-2</sup> | 1.35 × 10 <sup>-2</sup> | 2.14 × 10 <sup>-2</sup> |

Note) The values for models KR-B/D indicate the values when double inner blocks are used in close contact with each other.

# Example of Calculating the Nominal Life

## [Condition (Horizontal Installation)]

|                            |  |
|----------------------------|--|
| Assumed model number       | : KR 5520A   |
| LM Guide unit              | ( $C = 38100\text{N}$ , $C_0 = 61900\text{N}$ )    |
| Ball Screw unit            | ( $C_a = 3620\text{N}$ , $C_{0a} = 9290\text{N}$ ) |
| Bearing unit(Fixed Side)   | ( $C_a = 7600\text{N}$ , $P_{0a} = 3990\text{N}$ ) |
| Mass                       | : $m = 30\text{kg}$                                |
| Speed                      | : $v = 500\text{mm/s}$                             |
| Acceleration               | : $\alpha = 2.4\text{m/s}^2$                       |
| Stroke                     | : $l_s = 1200\text{mm}$                            |
| Gravitational acceleration | : $g = 9.807\text{m/s}^2$                          |
| Velocity diagram           | : see Fig.1  |

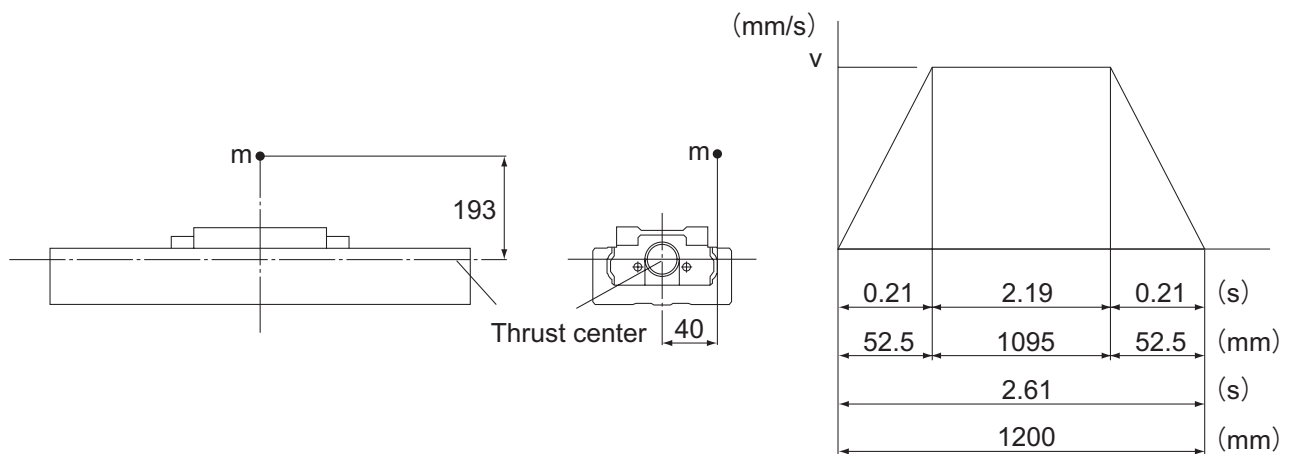


Fig.1 Velocity Diagram

## [Consideration]

### ● Studying the LM Guide Unit

#### ■ Load Applied to the Inner Block

\* Assuming that a single inner block is used, convert applied moments  $M_A$  and  $M_B$  into applied load by multiplying them by the moment equivalent factor ( $K_A = K_B = 8.63 \times 10^{-2}$ ).

\* Assuming that a single shaft is used, convert applied moment  $M_C$  into applied load by multiplying it by the moment equivalent factor ( $K_C = 2.83 \times 10^{-2}$ ).

- During uniform motion:

$$P_1 = mg + K_C \cdot mg \times 40 = 627 \text{ N}$$

- During acceleration:

$$P_{1a} = P_1 + K_A \cdot m\alpha \times 193 = 1826 \text{ N}$$

$$P_{1aT} = -K_B \cdot m\alpha \times 40 = -249 \text{ N}$$

- During deceleration:

$$P_{1d} = P_1 - K_A \cdot m\alpha \times 193 = -572 \text{ N}$$

$$P_{1dT} = K_B \cdot m\alpha \times 40 = 249 \text{ N}$$

\* Since the groove under a load is different from the assumed groove, give "0" (zero) to  $P_{1aT}$  and  $P_{1d}$ .

### ■ Combined Radial And Thrust Load

- During uniform motion:

$$P_{1E} = P_1 = 627 \text{ N}$$

- During acceleration:

$$P_{1aE} = P_{1a} + P_{1aT} = 1826 \text{ N}$$

- During deceleration:

$$P_{1dE} = P_{1d} + P_{1dT} = 249 \text{ N}$$

### ■ Static Safety Factor

$$f_s = \frac{C_0}{P_{\max}} = \frac{C_0}{P_{1aE}} = 33.9$$

### ■ Nominal Life

- Average load

$$P_m = \sqrt[3]{\frac{1}{\ell_s} (P_{1E}^3 \times 1095 + P_{1aE}^3 \times 52.5 + P_{1dE}^3 \times 52.5)} = 790 \text{ N}$$

- Nominal life

$$L = \left( \frac{C}{f_w \cdot P_m} \right)^3 \times 50 = 3.25 \times 10^6 \text{ km}$$

$$f_w \quad : \text{ Load factor} \quad (1.2)$$

### ● Studying the Ball Screw Unit

#### ■ Axial load

- During forward uniform motion:

$$Fa_1 = \mu \cdot mg + f = 11 \text{ N}$$

$\mu$  : Friction coefficient(0.005)

$f$  : Rolling resistance of one KR inner block + seal resistance(10.0 N)

- During forward acceleration:

$$Fa_2 = Fa_1 + m\alpha = 83 \text{ N}$$

- During forward deceleration:

$$Fa_3 = Fa_1 - m\alpha = -61 \text{ N}$$

- During uniform backward motion

$$Fa_4 = -Fa_1 = -11 \text{ N}$$

- During backward acceleration:

$$Fa_5 = Fa_4 - m\alpha = -83 \text{ N}$$

- During backward deceleration:

$$Fa_6 = Fa_4 + m\alpha = 61 \text{ N}$$

\* Since the groove under a load is different from the assumed groove, give "0" (zero) to  $Fa_3$ ,  $Fa_4$  and  $Fa_5$ .

### ■ Static Safety Factor

$$f_s = \frac{C_{0a}}{F_{a\max}} = \frac{C_{0a}}{F_{a2}} = 111.9$$

### ■Buckling Load

$$P_1 = \frac{n \cdot \pi^2 \cdot E \cdot I}{\ell_a^2} \times 0.5 = 11000 \text{ N}$$

- $P_1$  : Buckling load (N)  
 $\ell_a$  : Distance between two mounting surfaces (1300 mm)  
 $E$  : Young's modulus ( $2.06 \times 10^5 \text{ N/mm}^2$ )  
 $n$  : Factor for mounting method (fixed-fixed: 4.0)  
 0.5 : Safety factor  
 $I$  : Minimum geometrical moment of inertia of the shaft ( $\text{mm}^4$ )

$$I = \frac{\pi}{64} \cdot d_1^4$$

- $d_1$  : Screw-shaft thread minor diameter (17.5 mm)

### ■Permissible tensile Compressive Load

$$P_2 = \delta \cdot \frac{\pi}{4} \cdot d_1^2 = 35300 \text{ N}$$

- $P_2$  : Permissible tensile compressive load (N)  
 $\delta$  : Permissible tensile compressive stress ( $147 \text{ N/mm}^2$ )  
 $d_1$  : Screw-shaft thread minor diameter (17.5mm)

### ■Dangerous Speed

$$N_1 = \frac{60 \cdot \lambda^2}{2\pi \cdot \ell_b^2} \cdot \sqrt{\frac{E \times 10^3 \cdot I}{\gamma \cdot A}} \times 0.8 = 1560 \text{ min}^{-1}$$

- $N_1$  : Dangerous speed ( $\text{min}^{-1}$ )  
 $\ell_b$  : Distance between two mounting surfaces (1300mm)  
 $\gamma$  : Density ( $7.85 \times 10^{-6} \text{ kg/mm}^3$ )  
 $\lambda$  : Factor according to the mounting method (fixed-supported 3.927)  
 0.8 : Safety factor

### ■DN Value

$$DN=31125(\leq 50000)$$

- $D$  : Ball center-to-center diameter (20.75mm)  
 $N$  : Maximum working rotation speed ( $1500 \text{ min}^{-1}$ )

### ■Nominal Life

- Average axial load

$$F_{am} = \sqrt[3]{\frac{1}{2 \cdot \ell_s} (F_{a1}^3 \times 1095 + F_{a2}^3 \times 52.5 + F_{a6}^3 \times 52.5)} = 26.2 \text{ N}$$

- Nominal life

$$L = \left( \frac{C_a}{f_w \cdot F_{am}} \right)^3 \cdot \ell = 3.05 \times 10^7 \text{ km}$$

- $f_w$  : Load factor (1.2)  
 $\ell$  : Ball Screw lead (20mm)

● **Bearing Unit (Fixed Side)**

■ **Axial Load (Same as the Ball Screw Unit)**

$F_{a1} = 11 \text{ N}$

$F_{a2} = 83 \text{ N}$

$F_{a3} = 0 \text{ N}$

$F_{a4} = 0 \text{ N}$

$F_{a5} = 0 \text{ N}$

$F_{a6} = 61 \text{ N}$

■ **Static Safety Factor**

$$f_s = \frac{P_{0a}}{F_{amax}} = \frac{P_{0a}}{F_{a2}} = 48.0$$

■ **Nominal Life**

- Average axial load

$$F_{am} = \sqrt[3]{\frac{1}{2 \cdot \ell_s} (F_{a1}^3 \times 1095 + F_{a2}^3 \times 52.5 + F_{a6}^3 \times 52.5)} = 26.2 \text{ N}$$

- Nominal life

$$L = \left( \frac{C_a}{f_w \cdot F_{am}} \right)^3 \times 10^6 = 1.41 \times 10^{13} \text{ rev}$$

$f_w$  : Load factor (1.2)

\* Convert the above nominal life into the service life in travel distance of the Ball Screw.

$$L_s = L \cdot \ell \times 10^{-6} = 2.82 \times 10^8 \text{ km}$$

**[Result]**

The table below shows the result of the examination.

| KR5520A  | LM guide unit      | Ball screw unit    | Bearing unit (Fixed side) |
|--|--------------------|--------------------|---------------------------|
| Static safety factor                               | 33.9               | 111.9              | 48.0                      |
| Buckling load(N)                                   | —                  | 11000              | —                         |
| Permissible tensile compressive load(N)            | —                  | 35300              | —                         |
| Dangerous speed(min <sup>-1</sup> )                | —                  | 1560               | —                         |
| DN Value   | —                  | 31125              | —                         |
| Nominal life(km)                                   | $3.25 \times 10^6$ | $3.05 \times 10^7$ | $2.82 \times 10^8$        |
| Maximum working rotation speed(min <sup>-1</sup> ) | —                  | 1500               | —                         |

Note1) From the static safety coefficient and other values above, it is judged that the assumed model can be used.

Note2) Of the rated lives of the three components, the shortest value (of LM Guide unit) is considered the nominal life of the assumed model KR 5520A.



**[Condition (Vertical Installation)]**

Assumed model number : KR 5520A  
 LM Guide Unit (C = 38100 N, C<sub>0</sub> = 61900N)  
 Ball Screw Unit (C<sub>a</sub> = 3620 N, C<sub>0a</sub> = 9290 N)  
 Bearing Unit(Fixed Side) (C<sub>a</sub> = 7600 N, P<sub>0a</sub> = 3990 N)  
 Mass : m = 30 kg  
 Speed : v = 500mm/s  
 Acceleration : α = 2.4 m/s<sup>2</sup>  
 Stroke : l<sub>s</sub> = 1200 mm  
 Gravitational acceleration : g = 9.807 m/s<sup>2</sup>  
 Velocity diagram see Fig.2

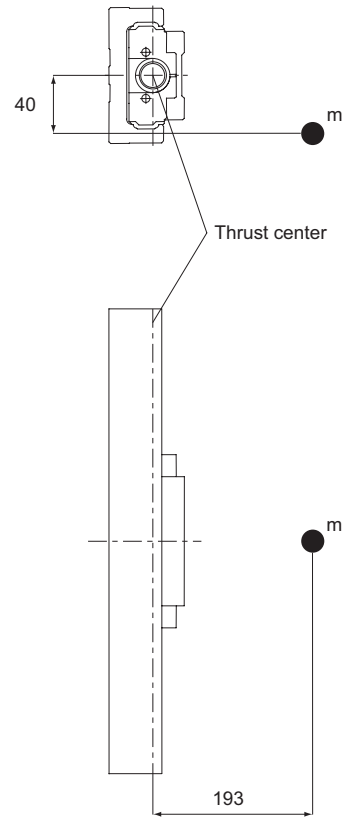
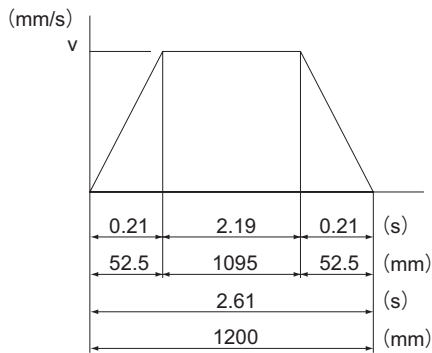


Fig.2 Velocity Diagram

**[Consideration]**

● **Studying the LM Guide Unit**

■ **Load Applied to the Inner Block**

\* Assuming that a single inner block is used, convert applied moments M<sub>A</sub> and M<sub>B</sub> into applied load by multiplying them by the moment equivalent factor (K<sub>A</sub> = K<sub>B</sub> = 8.63 × 10<sup>-2</sup>).

- During uniform motion:

$$P_1 = K_A \cdot mg \times 193 = 4900 \text{ N}$$

$$P_{1T} = K_B \cdot mg \times 40 = 1016 \text{ N}$$

- During acceleration:

$$P_{1a} = P_1 + K_A \cdot m\alpha \times 193 = 6100 \text{ N}$$

$$P_{1aT} = P_{1T} + K_B \cdot m\alpha \times 40 = 1264 \text{ N}$$

- During deceleration:

$$P_{1d} = P_1 - K_A \cdot m\alpha \times 193 = 3701 \text{ N}$$

$$P_{1dT} = P_{1dT} - K_B \cdot m\alpha \times 40 = 767 \text{ N}$$

■ **Combined Radial And Thrust Load**

- During uniform motion:

$$P_{1E} = P_1 + P_{1T} = 5916 \text{ N}$$

- During acceleration:

$$P_{1aE} = P_{1a} + P_{1aT} = 7364 \text{ N}$$

- During deceleration:

$$P_{1dE} = P_{1d} + P_{1dT} = 4468 \text{ N}$$

■ **Static Safety Factor**

$$f_s = \frac{C_0}{P_{max}} = \frac{C_0}{P_{1aE}} = 8.4$$

### ■Nominal Life

- Average load

$$P_m = \sqrt[3]{\frac{1}{\ell_s} (P_{1E}^3 \times 1095 + P_{1aE}^3 \times 52.5 + P_{1dE}^3 \times 52.5)} = 5947 \text{ N}$$

- Nominal life

$$L = \left( \frac{C}{f_w \cdot P_m} \right)^3 \times 50 = 7.61 \times 10^3 \text{ km}$$

$f_w$  : Load factor (1.2)

### ● Studying the Ball Screw Unit

#### ■Axial Load

- During upward uniform motion:

$$F_{a1} = mg + f = 304 \text{ N}$$

$f$  : Sliding resistance per block (10.0 N)

- During upward acceleration:

$$F_{a2} = F_{a1} + m\alpha = 376 \text{ N}$$

- During upward deceleration:

$$F_{a3} = F_{a1} - m\alpha = 232 \text{ N}$$

- During downward uniform motion:

$$F_{a4} = mg - f = 284 \text{ N}$$

- During downward acceleration:

$$F_{a5} = F_{a4} - m\alpha = 212 \text{ N}$$

- During downward deceleration:

$$F_{a6} = F_{a4} + m\alpha = 356 \text{ N}$$

#### ■Static Safety Factor

$$f_s = \frac{C_{0a}}{F_{\max}} = \frac{C_{0a}}{F_{a2}} = 24.7$$

#### ■Buckling Load

Same as Horizontal Installation

#### ■Permissible Tensile Compressive Load

Same as Horizontal Installation

#### ■Dangerous Speed

Same as Horizontal Installation

#### ■DN Value

Same as Horizontal Installation

### ■Nominal Life

- Average axial load

$$F_m = \sqrt[3]{\frac{1}{2 \cdot \ell_s} (F_{a1}^3 \times 1095 + F_{a2}^3 \times 52.5 + F_{a3}^3 \times 52.5 + F_{a4}^3 \times 1095 + F_{a5}^3 \times 52.5 + F_{a6}^3 \times 52.5)} = 296 \text{ N}$$

- Nominal life

$$L = \left( \frac{C_a}{f_w \cdot F_m} \right)^3 \times \ell = 2.11 \times 10^4 \text{ km}$$

$f_w$  : Load factor (1.2)       $\ell$  : Ball Screw lead (20mm)

● **Bearing Unit (Fixed Side)**

■ **Axial Load (Same as the Ball Screw Unit)**

$$F_{a1} = 304 \text{ N}$$

$$F_{a2} = 376 \text{ N}$$

$$F_{a3} = 232 \text{ N}$$

$$F_{a4} = 284 \text{ N}$$

$$F_{a5} = 212 \text{ N}$$

$$F_{a6} = 356 \text{ N}$$

■ **Static Safety Factor**

$$f_s = \frac{P_{0a}}{F_{\max}} = \frac{P_{0a}}{F_{a2}} = 10.6$$

■ **Nominal Life**

● Average axial load

$$F_m = \sqrt[3]{\frac{1}{2 \cdot \ell_s} (F_{a1}^3 \times 1095 + F_{a2}^3 \times 52.5 + F_{a3}^3 \times 52.5 + F_{a4}^3 \times 1095 + F_{a5}^3 \times 52.5 + F_{a6}^3 \times 52.5)} = 296 \text{ N}$$

● Nominal life

$$L = \left( \frac{C_a}{f_w \cdot F_m} \right)^3 \times 10^6 = 9.80 \times 10^9 \text{ rev}$$

$$f_w : \text{Load factor} \quad (1.2)$$

\* Convert the above nominal life into the service life in travel distance of the Ball Screw.

$$L_s = L \cdot \ell \times 10^{-6} = 1.95 \times 10^5 \text{ km}$$

**[Result]**

The table below shows the result of the examination.

| KR5520A  | LM guide unit          | Ball screw unit        | Bearing unit (Fixed side) |
|--|------------------------|------------------------|---------------------------|
| Static safety factor                               | 8.4                    | 24.7                   | 10.6                      |
| Buckling load(N)                                   | —                      | 11000                  | —                         |
| Permissible tensile compressive load(N)            | —                      | 35300                  | —                         |
| Dangerous speed(min <sup>-1</sup> )                | —                      | 1560                   | —                         |
| DN Value   | —                      | 31125                  | —                         |
| Nominal life(km)                                   | 7.61 × 10 <sup>3</sup> | 2.11 × 10 <sup>4</sup> | 1.95 × 10 <sup>5</sup>    |
| Maximum working rotation speed(min <sup>-1</sup> ) | —                      | 1500                   | —                         |

Note1) From the static safety coefficient and other values above, it is judged that the assumed model can be used.

Note2) Of the rated lives of the three components, the shortest value (of LM Guide unit) is considered the nominal life of the assumed model KR 5520A.

# Accuracy Standards

The accuracy standard of model KR is defined in positioning repeatability, positioning accuracy, running parallelism (vertical direction) and backlash.

## [Positioning Repeatability]

After repeating positioning to a given point in the same direction seven times, measure the halting point and obtain the value of half the maximum difference. Perform this measurement in the center and both ends of the travel distance; use the maximum difference as the measurement value and express the value of half the maximum difference with a “±” sign prefixed to the value.

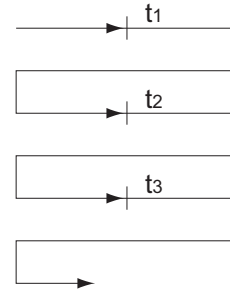


Fig.3 Positioning Repeatability

## [Positioning Accuracy]

Using the maximum stroke as the reference length, express the maximum error between the actual distance traveled from the reference point and the command value in an absolute value as positioning accuracy.

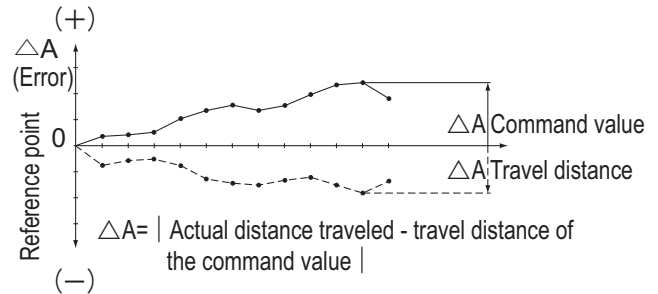


Fig.4 Positioning Accuracy

## [Running of Parallelism (Vertical direction)]

Place a straightedge on the surface table where model KR is mounted, measure almost throughout the travel distance of the inner block using a test indicator. Use the maximum difference among the readings within the travel distance as the running parallelism measurement.

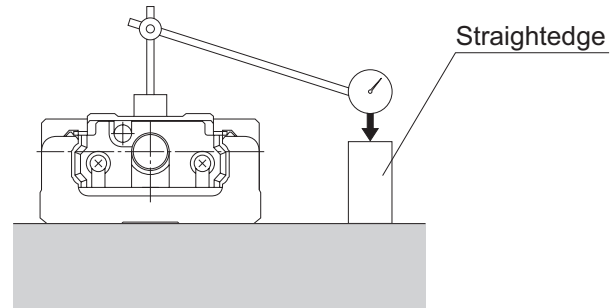


Fig.5 Running of Parallelism

## [Backlash]

Feed and slightly move the inner block and read the measurement on the test indicator as the reference value. Subsequently, apply a load to the inner block from the same direction (table feed direction), and then release the inner block from the load. Use the difference between the reference value and the return as the backlash measurement.

Perform this measurement in the center and near both ends, and use the maximum value as the measurement value.

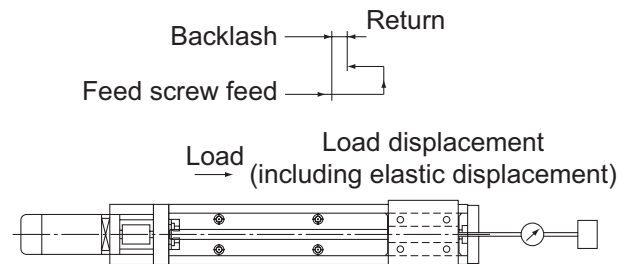


Fig.6 Backlash

The accuracies of model KR are classified into normal grade (no symbol), high accuracy grade (H) and precision grade (P). Tables below show standards for all the accuracies.

Table10 Normal Grade (No Symbol)

Unit: mm

| Model No. | Stroke* | Outer rail length | Positioning Repeatability | Positioning Accuracy | Running Parallelism (Vertical Direction) | Backlash | Starting torque (N-cm) |
|-----------|---------|-------------------|---------------------------|----------------------|--|----------|------------------------|
| KR20      | 30      | 100               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 0.5                    |
|           | 80      | 150               |                           |                      |  |          |                        |
|           | 130     | 200               |                           |                      |  |          |                        |
| KR26      | 60      | 150               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 1.5                    |
|           | 110     | 200               |                           |                      |  |          |                        |
|           | 160     | 250               |                           |                      |  |          |                        |
| KR30H     | 50      | 150               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 7                      |
|           | 100     | 200               |                           |                      |  |          |                        |
|           | 200     | 300               |                           |                      |  |          |                        |
|           | 300     | 400               |                           |                      |  |          |                        |
|           | 400     | 500               |                           |                      |  |          |                        |
| KR33      | 50      | 150               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 7                      |
|           | 100     | 200               |                           |                      |  |          |                        |
|           | 200     | 300               |                           |                      |  |          |                        |
|           | 300     | 400               |                           |                      |  |          |                        |
|           | 400     | 500               |                           |                      |  |          |                        |
|           | 500     | 600               |                           |                      |  |          |                        |
|           | 600     | 700               |                           |                      |  |          |                        |
| KR45H     | 200     | 340               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 10                     |
|           | 300     | 440               |                           |                      |  |          |                        |
|           | 400     | 540               |                           |                      |  |          |                        |
|           | 500     | 640               |                           |                      |  |          |                        |
|           | 600     | 740               |                           |                      |  |          |                        |
|           | 700     | 840               |                           |                      |  |          |                        |
| KR46      | 190     | 340               | ±0.01                     | No standard defined  | No standard defined                      | 0.02     | 10                     |
|           | 290     | 440               |                           |                      |  |          |                        |
|           | 390     | 540               |                           |                      |  |          |                        |
|           | 490     | 640               |                           |                      |  |          |                        |
|           | 590     | 740               |                           |                      |  |          |                        |
|           | 690     | 840               |                           |                      |  |          |                        |
| KR55      | 800     | 980               | ±0.01                     | No standard defined  | No standard defined                      | 0.05     | 12                     |
|           | 900     | 1080              |                           |                      |  |          |                        |
|           | 1000    | 1180              |                           |                      |  |          |                        |
|           | 1100    | 1280              |                           |                      |  |          |                        |
|           | 1200    | 1380              |                           |                      |  |          |                        |
| KR65      | 790     | 980               | ±0.01                     | No standard defined  | No standard defined                      | 0.05     | 12                     |
|           | 990     | 1180              |                           |                      |  |          |                        |
|           | 1190    | 1380              |                           |                      |  |          |                        |
|           | 1490    | 1680              | ±0.012                    |                      |  |          | 15                     |

\*Indicates a stroke when one long-type inner block is incorporated.

Note1) The evaluation method complies with THK standards.

Note2) Measurements are taken while using a motor provided by THK. For motor-wrap configuration, these values may not apply.

Note3) The starting torque represents the value when THK AFB-LF Grease is used.

However, that of models KR20 and KR26 represents the value when THK AFA Grease is used, and that of KR15 represents the value when THK AFF Grease is used.

Note4) If highly viscous grease such as vacuum grease and clean room grease is used, the actual starting torque may exceed the corresponding value in the table. Use much care in selecting a motor.

Note5) Contact THK for information on the accuracy for standard or longer stroke.

Note6) Model KR15 is available in high accuracy grade (H) and precision grade (P) only.

Table11 High Accuracy Grade (H)

Unit: mm

| Model No. | Stroke* | Outer rail length | Positioning accuracy repeatability | Positioning Accuracy | Running of Parallelism (Vertical direction) | Backlash | Starting torque (N-cm) |
|-----------|---------|-------------------|------------------------------------|----------------------|---|----------|------------------------|
| KR15      | 25      | 75                | ±0.004                             | 0.04                 | 0.02  | 0.01     | 0.4                    |
|           | 50      | 100               |                                    |                      |   |          |                        |
|           | 75      | 125               |                                    |                      |   |          |                        |
|           | 100     | 150               |                                    |                      |   |          |                        |
|           | 125     | 175               |                                    |                      |   |          |                        |
|           | 150     | 200               |                                    |                      |   |          |                        |
| KR20      | 30      | 100               | ±0.005                             | 0.06                 | 0.025                                       | 0.01     | 0.5                    |
|           | 80      | 150               |                                    |                      |   |          |                        |
|           | 130     | 200               |                                    |                      |   |          |                        |
| KR26      | 60      | 150               | ±0.005                             | 0.06                 | 0.025                                       | 0.01     | 1.5                    |
|           | 110     | 200               |                                    |                      |   |          |                        |
|           | 160     | 250               |                                    |                      |   |          |                        |
|           | 210     | 300               |                                    |                      |   |          |                        |
| KR30H     | 50      | 150               | ±0.005                             | 0.06                 | 0.025                                       | 0.02     | 7                      |
|           | 100     | 200               |                                    |                      |   |          |                        |
|           | 200     | 300               |                                    | 0.10                 | 0.035                                       |          |                        |
|           | 300     | 400               |                                    |                      |   |          |                        |
|           | 400     | 500               |                                    |                      |   |          |                        |
|           | 500     | 600               |                                    |                      |   |          |                        |
| KR33      | 50      | 150               | ±0.005                             | 0.06                 | 0.025                                       | 0.02     | 7                      |
|           | 100     | 200               |                                    |                      |   |          |                        |
|           | 200     | 300               |                                    | 0.10                 | 0.035                                       |          |                        |
|           | 300     | 400               |                                    |                      |   |          |                        |
|           | 400     | 500               |                                    |                      |   |          |                        |
|           | 500     | 600               |                                    |                      |   |          |                        |
|           | 600     | 700               |                                    |                      |   |          |                        |
| KR45H     | 200     | 340               | ±0.005                             | 0.10                 | 0.035                                       | 0.02     | 10                     |
|           | 300     | 440               |                                    |                      |   |          |                        |
|           | 400     | 540               |                                    | 0.12                 | 0.04  |          |                        |
|           | 500     | 640               |                                    |                      |   |          |                        |
|           | 600     | 740               |                                    |                      |   |          |                        |
|           | 700     | 840               |                                    | 0.15                 | 0.05  |          |                        |
|           | 800     | 940               |                                    |                      |   |          |                        |
| KR46      | 190     | 340               | ±0.005                             | 0.10                 | 0.035                                       | 0.02     | 10                     |
|           | 290     | 440               |                                    |                      |   |          |                        |
|           | 390     | 540               |                                    | 0.12                 | 0.04  |          |                        |
|           | 490     | 640               |                                    |                      |   |          |                        |
|           | 590     | 740               |                                    |                      |   |          |                        |
|           | 690     | 840               |                                    | 0.15                 | 0.05  |          |                        |
|           | 790     | 940               |                                    |                      |   |          |                        |
| KR55      | 800     | 980               | ±0.005                             | 0.18                 | 0.05  | 0.05     | 12                     |
|           | 900     | 1080              |                                    |                      |   |          |                        |
|           | 1000    | 1180              |                                    |                      |   |          |                        |
|           | 1100    | 1280              |                                    |                      |   |          |                        |
|           | 1200    | 1380              |                                    |                      |   |          |                        |
| KR65      | 790     | 980               | ±0.008                             | 0.18                 | 0.05  | 0.05     | 12                     |
|           | 990     | 1180              |                                    |                      |   |          |                        |
|           | 1190    | 1380              |                                    |                      |   |          |                        |
|           | 1490    | 1680              |                                    | 0.28                 |   |          | 0.055                  |

Table12 Precision Grade (P)

Unit: mm

| Model No. | Stroke* | Outer rail length | Positioning accuracy repeatability | Positioning Accuracy | Running of Parallelism (Vertical direction) | Backlash | Starting torque (N-cm) |
|-----------|---------|-------------------|------------------------------------|----------------------|---|----------|------------------------|
| KR15      | 25      | 75                | ±0.003                             | 0.02                 | 0.01  | 0.002    | 0.8                    |
|           | 50      | 100               |                                    |                      |   |          |                        |
|           | 75      | 125               |                                    |                      |   |          |                        |
|           | 100     | 150               |                                    |                      |   |          |                        |
|           | 125     | 175               |                                    |                      |   |          |                        |
| KR20      | 150     | 200               | ±0.003                             | 0.02                 | 0.01  | 0.003    | 1.2                    |
|           | 30      | 100               |                                    |                      |   |          |                        |
|           | 80      | 150               |                                    |                      |   |          |                        |
| KR26      | 130     | 200               | ±0.003                             | 0.02                 | 0.01  | 0.003    | 4                      |
|           | 60      | 150               |                                    |                      |   |          |                        |
|           | 110     | 200               |                                    |                      |   |          |                        |
|           | 160     | 250               |                                    |                      |   |          |                        |
| KR30H     | 210     | 300               | ±0.003                             | 0.02                 | 0.01  | 0.003    | 15                     |
|           | 50      | 150               |                                    |                      |   |          |                        |
|           | 100     | 200               |                                    |                      |   |          |                        |
|           | 200     | 300               |                                    | 0.025                | 0.015                                       |          |                        |
|           | 300     | 400               |                                    |                      |   |          |                        |
|           | 400     | 500               |                                    |                      |   |          |                        |
| KR33      | 500     | 600               | ±0.003                             | 0.02                 | 0.01  | 0.003    | 15                     |
|           | 600     | 700               |                                    |                      |   |          |                        |
|           | 200     | 300               |                                    |                      |   |          |                        |
|           | 300     | 400               |                                    |                      |   |          |                        |
|           | 400     | 500               |                                    |                      |   |          |                        |
|           | 500     | 600               |                                    |                      |   |          |                        |
|           | KR45H   | 600               |                                    | 700                  | ±0.003                                      |          |                        |
| 200       |         | 340               |                                    |                      |   |          |                        |
| 300       |         | 440               |                                    |                      |   |          |                        |
| 400       |         | 540               | 0.03                               | 0.02                 |   |          |                        |
| 500       |         | 640               |                                    |                      |   |          |                        |
| KR46      | 600     | 740               | ±0.003                             | 0.025                | 0.015                                       | 0.003    | 15                     |
|           | 190     | 340               |                                    |                      |   |          |                        |
|           | 290     | 440               |                                    |                      |   |          |                        |
|           | 390     | 540               |                                    | 0.03                 | 0.02  |          |                        |
|           | 490     | 640               |                                    |                      |   |          |                        |
|           | 590     | 740               |                                    |                      |   |          |                        |
|           | 690     | 840               |                                    |                      |   |          |                        |
| KR55      | 790     | 940               | ±0.005                             | 0.035                | 0.025                                       | 0.003    | 17                     |
|           | 800     | 980               |                                    |                      |   |          |                        |
|           | 900     | 1080              |                                    |                      |   |          |                        |
| KR65      | 1000    | 1180              | ±0.005                             | 0.035                | 0.025                                       | 0.003    | 20                     |
|           | 790     | 980               |                                    |                      |   |          |                        |
|           | 990     | 1180              |                                    |                      |   |          |                        |
| KR65      | 1190    | 1380              | ±0.005                             | 0.04                 | 0.03  | 0.005    | 22                     |
|           | 790     | 980               |                                    |                      |   |          |                        |

\*Indicates a stroke when one long-type inner block is incorporated.

Note1) The evaluation method complies with THK standards.

Note2) Measurements are taken while using a motor provided by THK. For motor-wrap configuration, these values may not apply.

Note3) The starting torque represents the value when THK AFB-LF Grease is used.

However, that of models KR20 and KR26 represents the value when THK AFA Grease is used, and that of KR15 represents the value when THK AFF Grease is used.

Note4) If highly viscous grease such as vacuum grease and clean room grease is used, the actual starting torque may exceed the corresponding value in the table. Use much care in selecting a motor.

Note5) Contact THK for information on the accuracy for standard or longer stroke.

# Model Number Coding

| Model No. | Ball Screw Lead | Inner block type | Outer rail length | Accuracy |
|-----------|-----------------|------------------|-------------------|----------|
|-----------|-----------------|------------------|-------------------|----------|

|             |           |          |          |             |          |
|-------------|-----------|----------|----------|-------------|----------|
| <b>KR33</b> | <b>10</b> | <b>A</b> | <b>+</b> | <b>150L</b> | <b>P</b> |
| ①           | ②         | ③        |          | ④           | ⑤        |

|       |                        |   |                |                         |
|-------|------------------------|---|----------------|-------------------------|
| KR15  | 01 : 1mm               | A | 75L : 75mm     | No symbol: normal grade |
| KR20  | 02 : 2mm               | B | 100L : 100mm   | H : High accuracy grade |
| KR26  | 06 : 6mm               | C | ∅              | P : Precision Grade     |
| KR30H | 10 : 10mm              | D | 1680L : 1680mm |                         |
| KR33  | 20 : 20mm              |   |                |                         |
| KR45H | 25 : 25 mm (KR65 only) |   |                |                         |
| KR46  |                        |   |                |                         |
| KR55  |                        |   |                |                         |
| KR65  |                        |   |                |                         |

The available ball screw leads differ depending on the model.

KR15 : "01", "02"  
 KR20 : "01", "06"  
 KR26 : "02", "06"  
 KR30H : "06", "10"  
 KR33 : "06", "10"  
 KR45H : "10", "20"  
 KR46 : "10", "20"  
 KR55 : "20"  
 KR65 : "25"



|  | With/without a motor  |   | Cover  | Sensor  | Housing A/<br>Intermediate<br>Flange   |
|--|---|---|--|---|--|
|  | <b>0</b>  | - | <b>1</b>   | <b>B</b>  | <b>0A</b>  |
|  | ⑥   |   | ⑦  | ⑧   | ⑨  |
|  | 0: direct-coupled (without a motor)<br>1: direct-coupled (with a motor, specified by the customer)  |   | 0: without a cover<br>1: with a cover<br>2: with a bellows | 0: none<br>1<br>2<br>6<br>7<br>B<br>E<br>H<br>L<br>J<br>M | 10<br>20<br>30<br>40<br>50<br>60<br>00<br>0A<br>0B<br>0C<br>0D<br>0E<br>0F<br>0G<br>0M<br>0N<br>1C<br>2B<br>2F<br>3M<br>3N<br>5F<br>5G<br>5H<br>5I<br>5K |
|  | <p>If "0" is selected, a coupling is not attached. If a coupling is required, please indicate so.</p> <p>"1" means that a motor specified by the customer is mounted.</p> <p>For item ⑨, select a housing A/intermediate flange that matches the specified motor.</p> |   |  |   |  |
|  | <p>Several motors by different manufacturers can be mounted. Contact THK for details.</p>   |   |  |   |  |

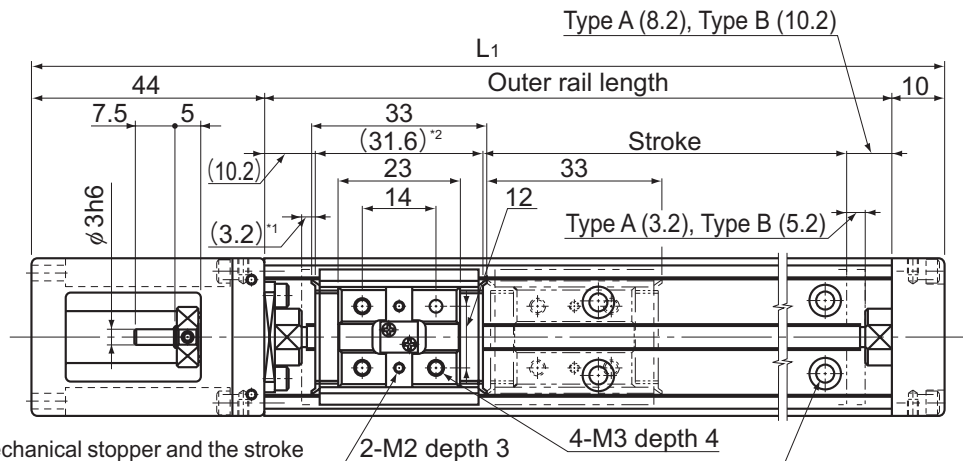
A type with a wrap-around housing A and a motor wrap-around type, which are not contained in the catalog, are also available. Contact THK for details.

# Model KR15 Standard Type

Model KR15□□A (with a Single Long Nut Block)

Model KR15□□B (with Two Long Nut Blocks)

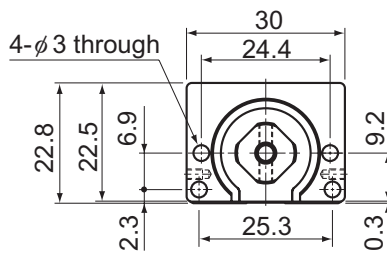
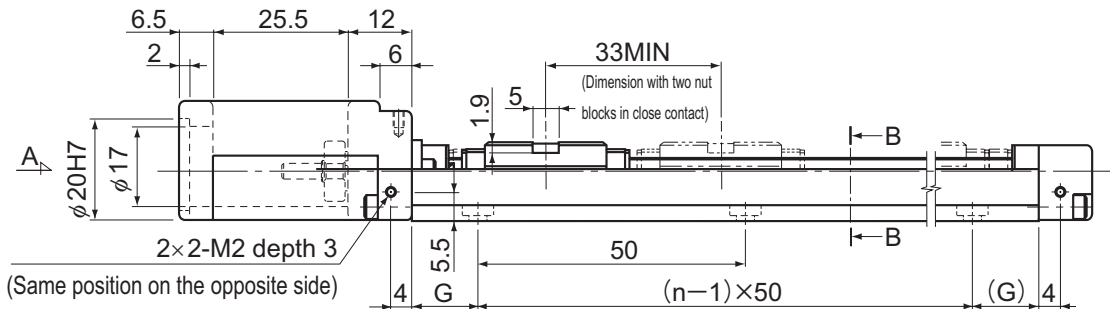
For model number coding, see page31.



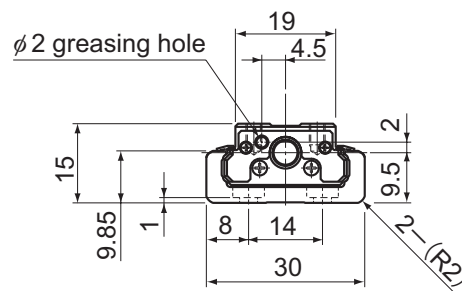
\*1 Distance between the mechanical stopper and the stroke starting position.

\*2 Indicates the inner block length when calculating the available stroke range. The length in model KR-B (with two long-type inner blocks) is 64.6 mm.

2×n-3.4 through hole,  $\phi$  6 counter bore depth 2  
(Fixed using M3 hexagon socket button bolt)



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | G<br>(mm) | n | Overall main unit mass (kg) |        |
|---|------------|---------------------------|------------------------------|-----------|---|-----------------------------|--------|
| Type A  | Type B*    |                           |                              |           |   | Type A                      | Type B |
| 25(31.4)  | —          | 75                        | 129                          | 12.5      | 2 | 0.19                        | —      |
| 50(56.4)  | —          | 100                       | 154                          | 25        | 2 | 0.22                        | —      |
| 75(81.4)  | 40(48.4)   | 125                       | 179                          | 12.5      | 3 | 0.25                        | 0.292  |
| 100(106.4)  | 65(73.4)   | 150                       | 204                          | 25        | 3 | 0.28                        | 0.322  |
| 125(131.4)  | 90(98.4)   | 175                       | 229                          | 12.5      | 4 | 0.31                        | 0.352  |
| 150(156.4)  | 115(123.4) | 200                       | 254                          | 25        | 4 | 0.34                        | 0.382  |

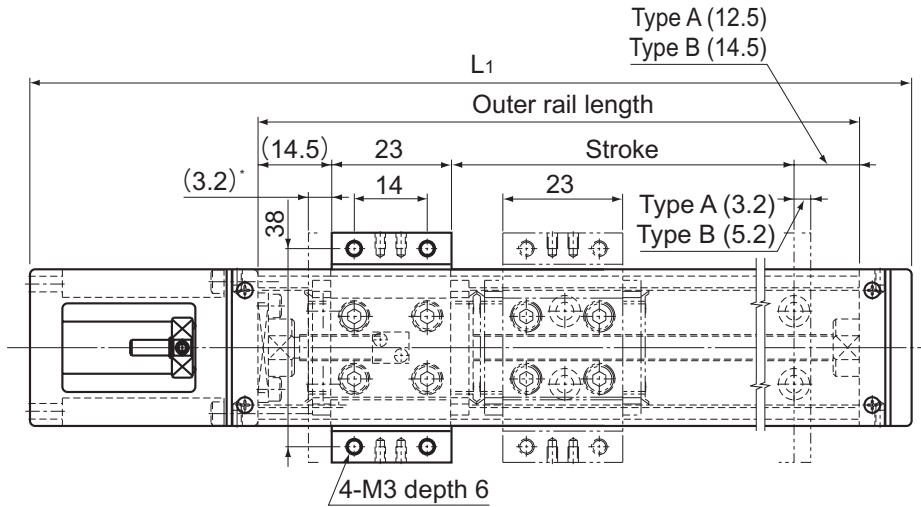
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR15 (with a Cover)

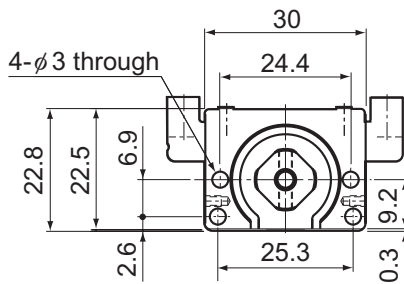
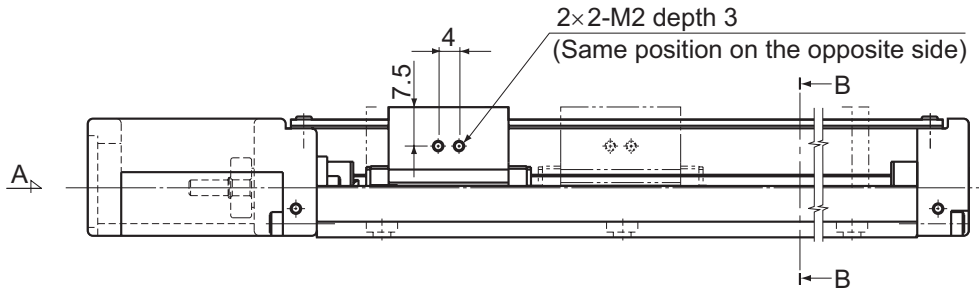
Model KR15□□A (with a Single Long Nut Block)

Model KR15□□B (with Two Long Nut Blocks)

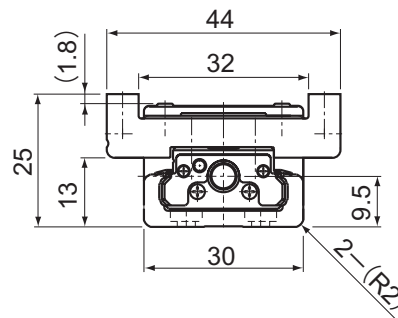
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*    |                           |                                       | Type A                      | Type B |
| 25(31.4)  | —          | 75                        | 129                                   | 0.23                        | —      |
| 50(56.4)  | —          | 100                       | 154                                   | 0.26                        | —      |
| 75(81.4)  | 40(48.4)   | 125                       | 179                                   | 0.3                         | 0.364  |
| 100(106.4)  | 65(73.4)   | 150                       | 204                                   | 0.33                        | 0.394  |
| 125(131.4)  | 90(98.4)   | 175                       | 229                                   | 0.36                        | 0.424  |
| 150(156.4)  | 115(123.4) | 200                       | 254                                   | 0.4                         | 0.464  |

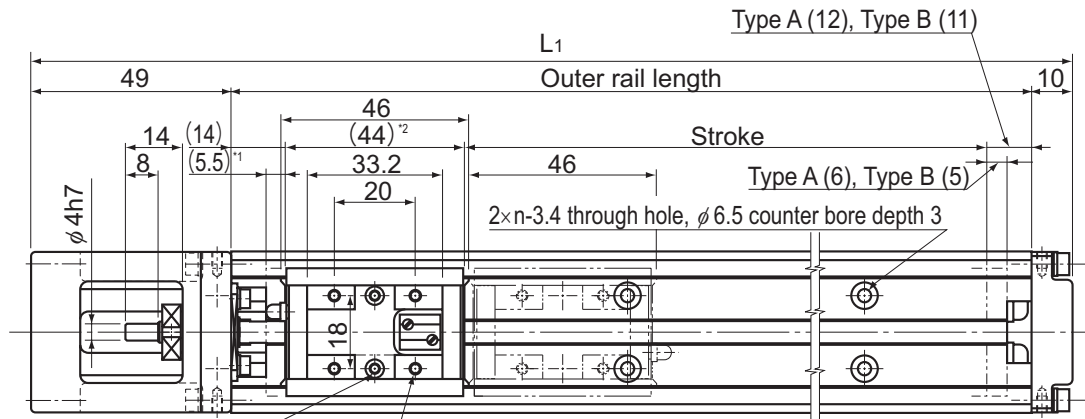
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR20 Standard Type

Model KR20□□A (with a Single Long Nut Block)

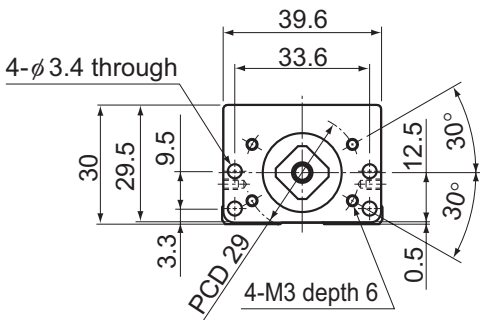
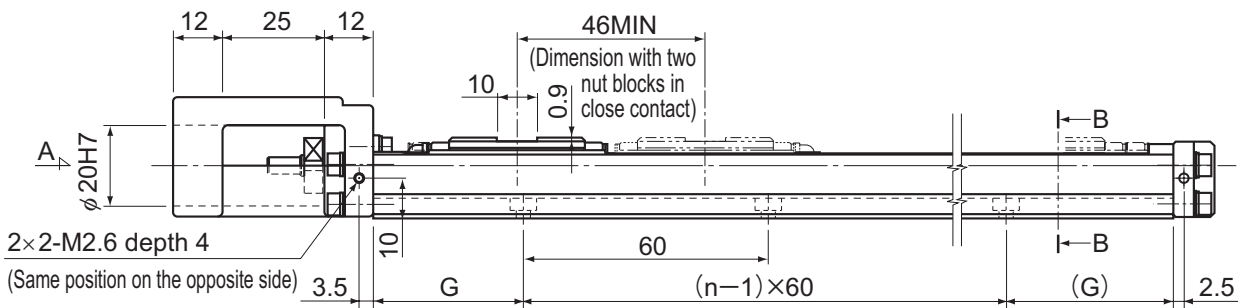
Model KR20□□B (with Two Long Nut Blocks)

For model number coding, see page31.

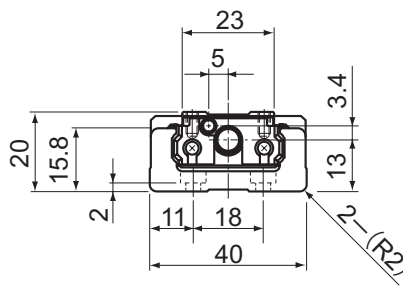


2-M2.6 depth 6  
(Mouth C1.3) 4-M3 depth 4.5

\*1 Distance between the mechanical stopper and the stroke starting position.  
\*2 Indicates the inner block length when calculating the available stroke range.  
The length in model KR-B (with two long-type inner blocks) is 90 mm.



A arrow view



B-B cross section

Nipple orientation

With a single inner block

With two inner blocks

| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | G<br>(mm) | n | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------|---|-----------------------------|--------|
| Type A  | Type B*  |                           |                                       |           |   | Type A                      | Type B |
| 30(41.5)  | —        | 100                       | 159                                   | 20        | 2 | 0.45                        | —      |
| 80(91.5)  | 35(45.5) | 150                       | 209                                   | 15        | 3 | 0.58                        | 0.655  |
| 130(141.5)  | 85(95.5) | 200                       | 259                                   | 40        | 3 | 0.72                        | 0.795  |

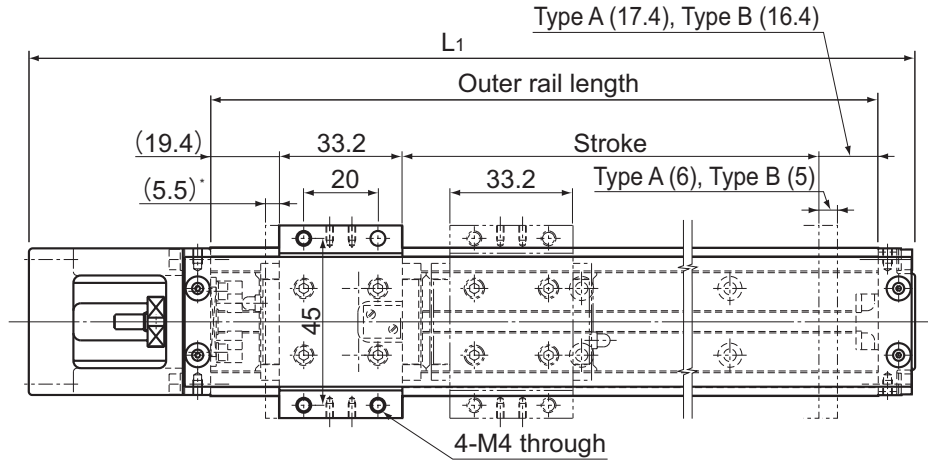
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR20 (with a Cover)

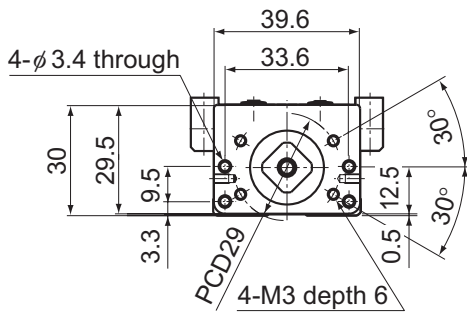
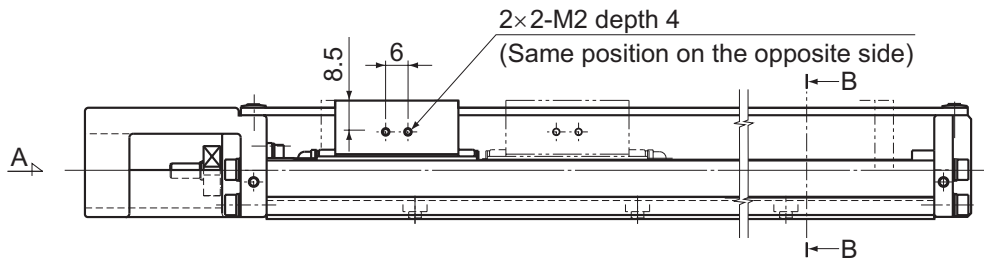
Model KR20□□A (with a Single Long Nut Block)

Model KR20□□B (with Two Long Nut Blocks)

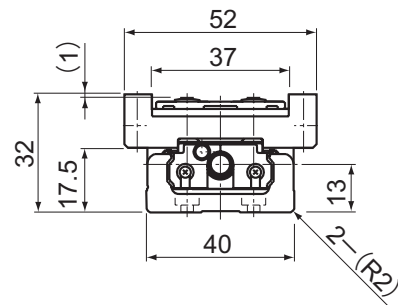
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*  |                           |                                       | Type A                      | Type B |
| 30(41.5)  | —        | 100                       | 159                                   | 0.51                        | —      |
| 80(91.5)  | 35(45.5) | 150                       | 209                                   | 0.66                        | 0.78   |
| 130(141.5)  | 85(95.5) | 200                       | 259                                   | 0.8                         | 0.92   |

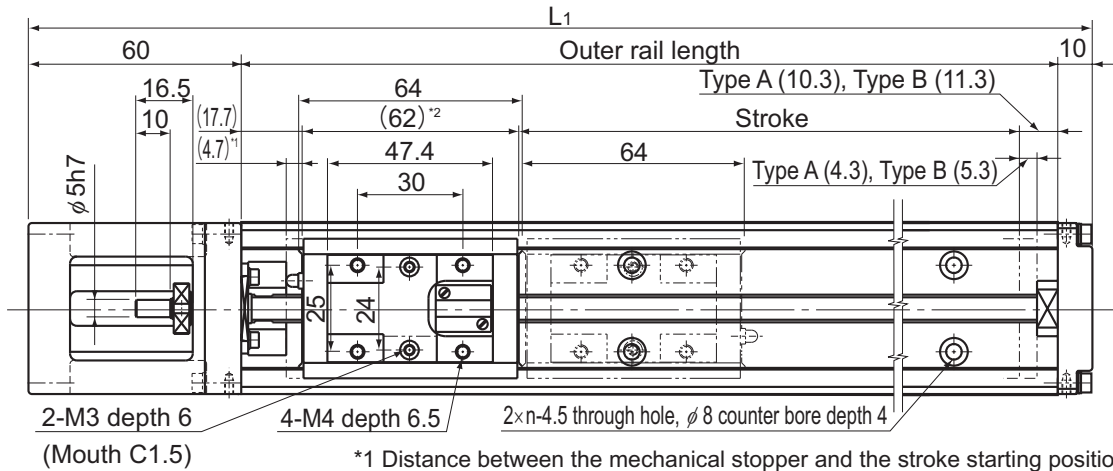
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR26 Standard Type

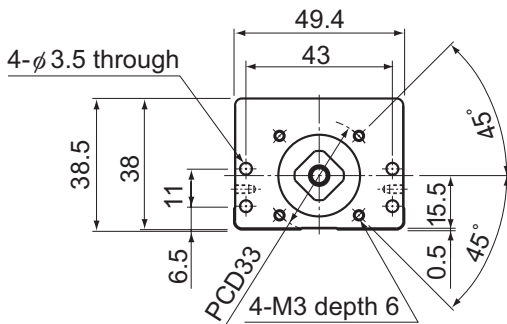
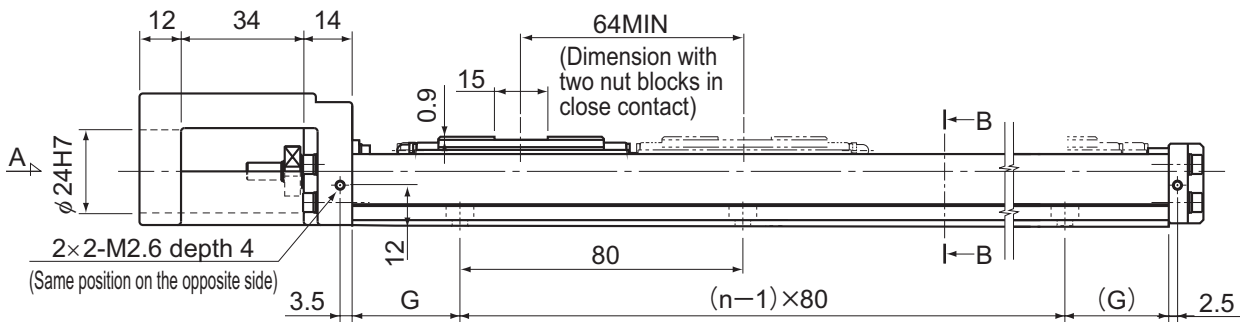
Model KR26□□A (with a Single Long Nut Block)

Model KR26□□B (with Two Long Nut Blocks)

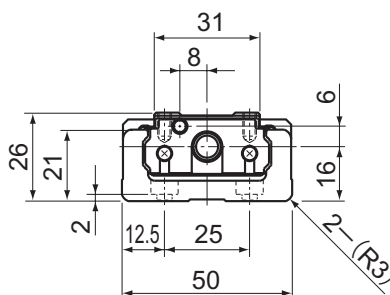
For model number coding, see page31.



- \*1 Distance between the mechanical stopper and the stroke starting position.
- \*2 Indicates the inner block length when calculating the available stroke range. The length in model KR-B (with two long-type inner blocks) is 126 mm.



A arrow view



B-B cross section

Nipple orientation

With a single inner block

With two inner blocks

| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | G<br>(mm) | n | Overall main unit mass (kg) |        |
|---|----------|---------------------------|------------------------------|-----------|---|-----------------------------|--------|
| Type A  | Type B*  |                           |                              |           |   | Type A                      | Type B |
| 60(69)  | —        | 150                       | 220                          | 35        | 2 | 0.99                        | —      |
| 110(119)  | 45(55)   | 200                       | 270                          | 20        | 3 | 1.2                         | 1.38   |
| 160(169)  | 95(105)  | 250                       | 320                          | 45        | 3 | 1.41                        | 1.59   |
| 210(219)  | 145(155) | 300                       | 370                          | 30        | 4 | 1.62                        | 1.8    |

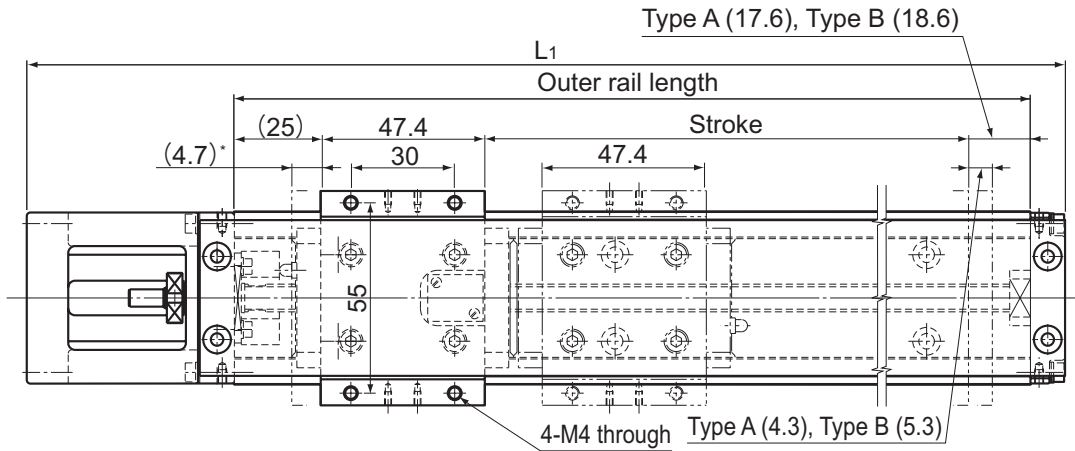
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR26 (with a Cover)

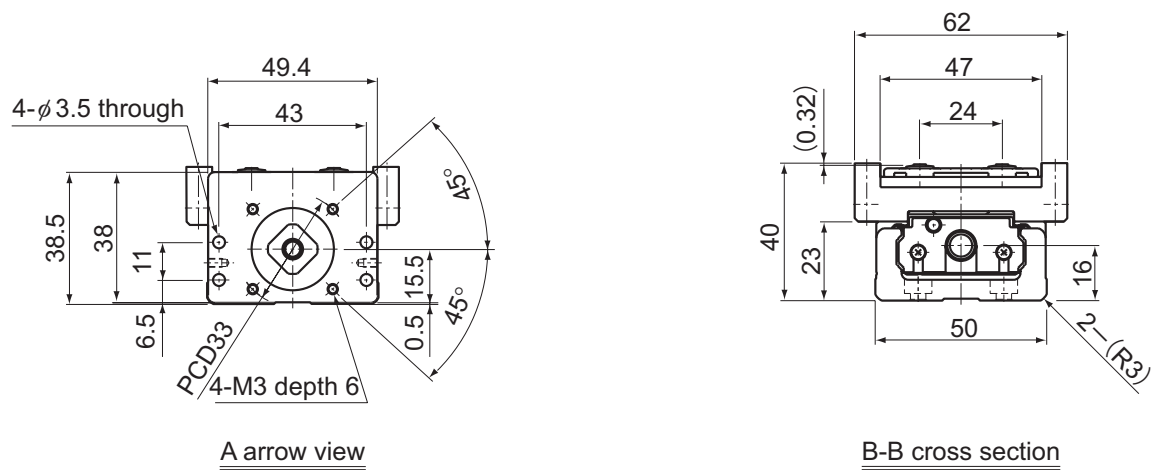
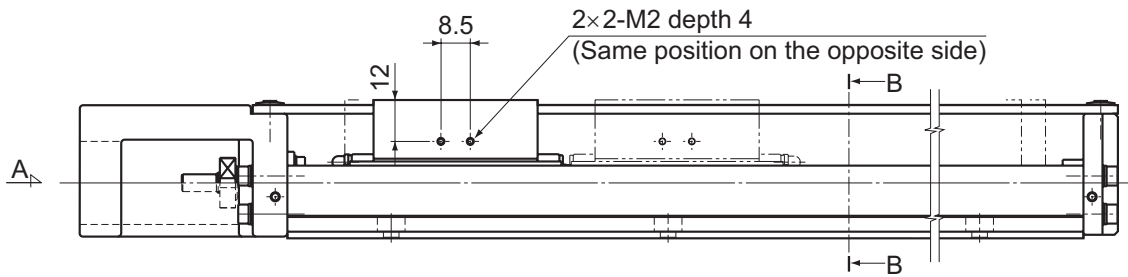
Model KR26□□A (with a Single Long Nut Block)

Model KR26□□B (with Two Long Nut Blocks)

For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|------------------------------|-----------------------------|--------|
| Type A  | Type B*  |                           |                              | Type A                      | Type B |
| 60(69)  | —        | 150                       | 220                          | 1.12                        | —      |
| 110(119)  | 45(55)   | 200                       | 270                          | 1.34                        | 1.605  |
| 160(169)  | 95(105)  | 250                       | 320                          | 1.56                        | 1.825  |
| 210(219)  | 145(155) | 300                       | 370                          | 1.78                        | 2.045  |

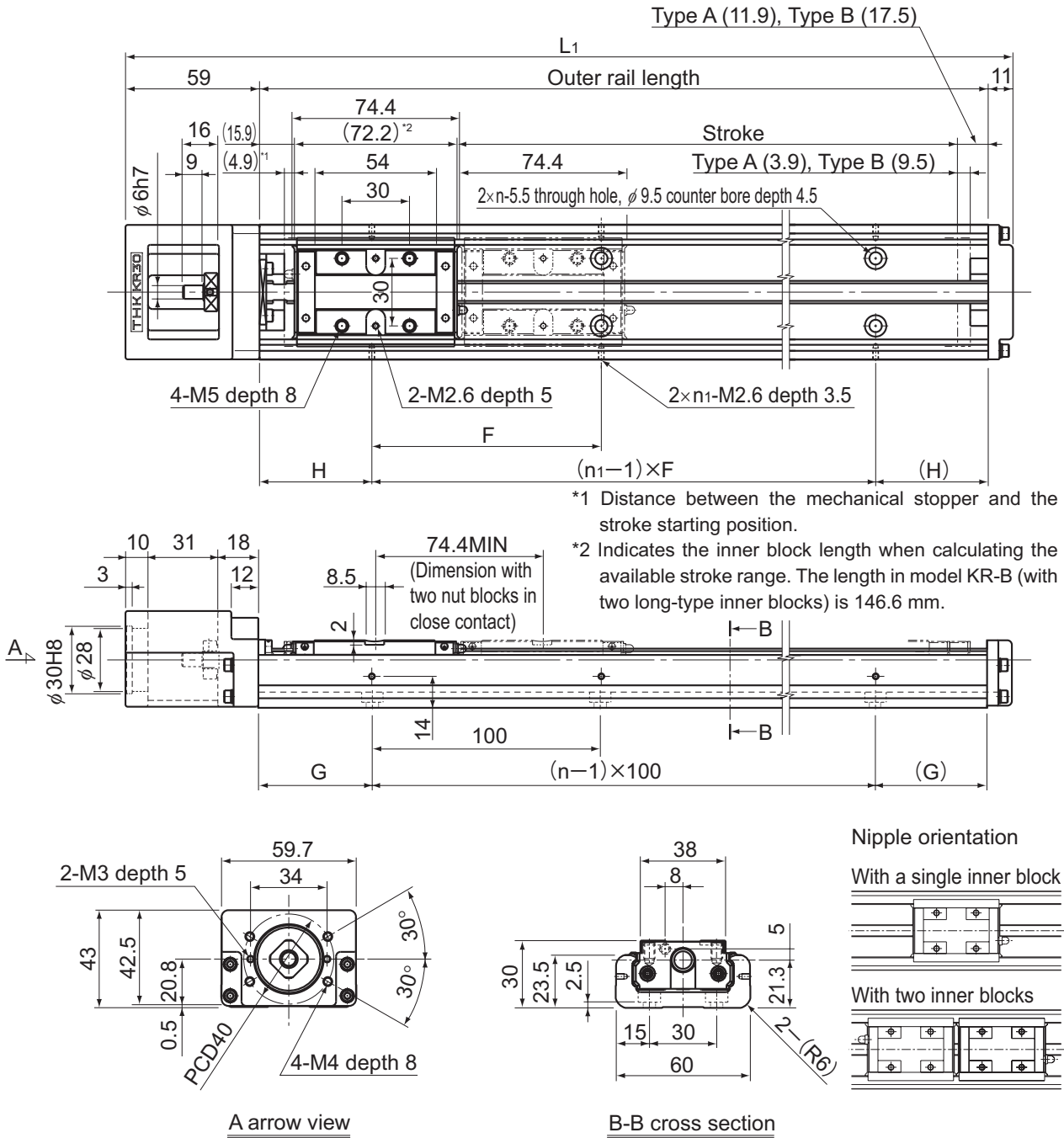
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR30H Standard Type

Model KR30H□□A (with a Single Long Nut Block)

Model KR30H□□B (with Two Long Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | G<br>(mm) | F<br>(mm) | n | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|-----------|---|-------|--------------------------------|--------|
| Type A  | Type B*    |                           |                              |           |           |           |   |       | Type A                         | Type B |
| 50(58.8)  | —          | 150                       | 220                          | 25        | 25        | 100       | 2 | 2     | 1.4                            | —      |
| 100(108.8)  | —          | 200                       | 270                          | 50        | 50        | 100       | 2 | 2     | 1.6                            | —      |
| 200(208.8)  | 120(134.4) | 300                       | 370                          | 50        | 50        | 200       | 3 | 2     | 2.2                            | 2.5    |
| 300(308.8)  | 220(234.4) | 400                       | 470                          | 100       | 50        | 200       | 4 | 2     | 2.7                            | 3      |
| 400(408.8)  | 320(334.4) | 500                       | 570                          | 50        | 50        | 200       | 5 | 3     | 3.2                            | 3.5    |
| 500(508.8)  | 420(434.4) | 600                       | 670                          | 100       | 50        | 200       | 6 | 3     | 3.8                            | 4.1    |

\*Indicates a value when two inner blocks are in close contact with each other.

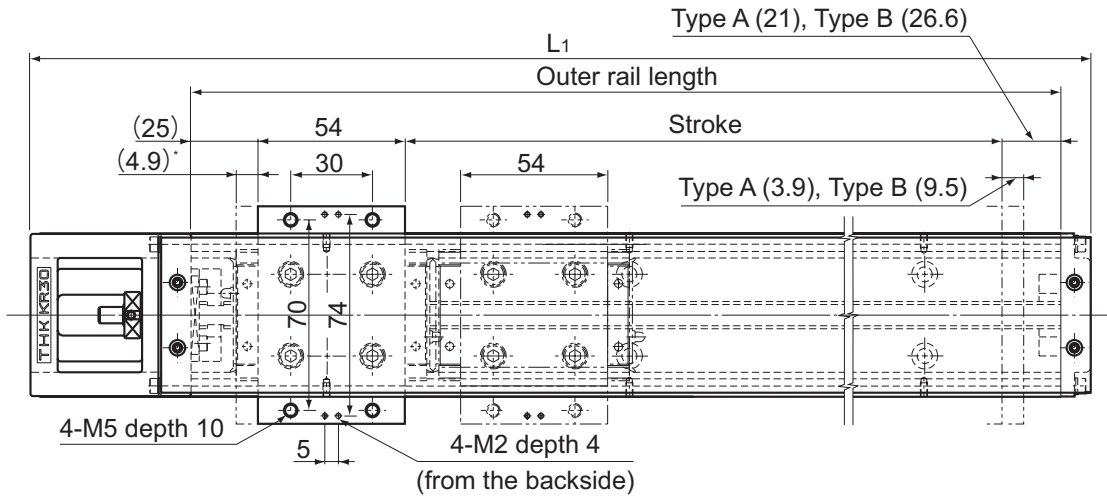


# Model KR30H (with a Cover)

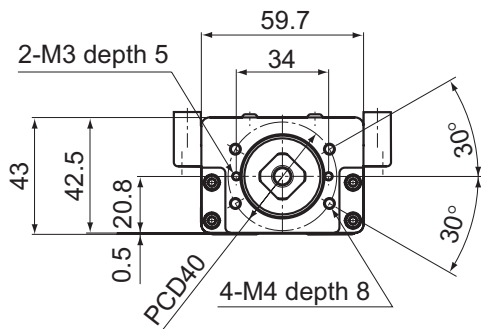
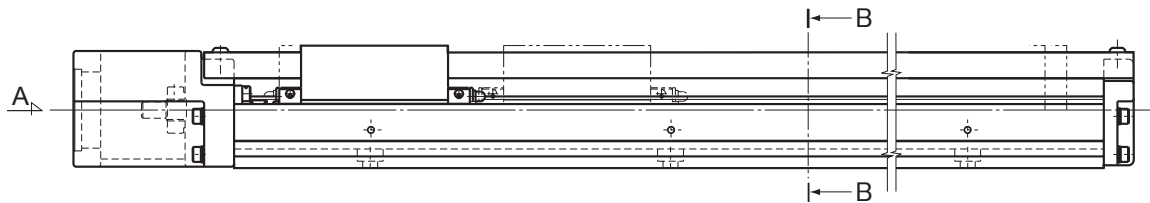
Model KR30H□□A (with a Single Long Nut Block)

Model KR30H□□B (with Two Long Nut Blocks)

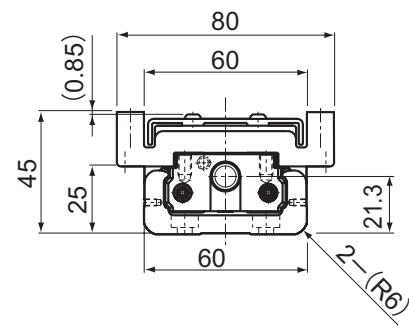
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*    |                           |                                       | Type A                      | Type B |
| 50(58.8)  | —          | 150                       | 220                                   | 1.6                         | —      |
| 100(108.8)  | —          | 200                       | 270                                   | 1.8                         | —      |
| 200(208.8)  | 120(134.4) | 300                       | 370                                   | 2.4                         | 2.83   |
| 300(308.8)  | 220(234.4) | 400                       | 470                                   | 3                           | 3.43   |
| 400(408.8)  | 320(334.4) | 500                       | 570                                   | 3.5                         | 3.93   |
| 500(508.8)  | 420(434.4) | 600                       | 670                                   | 4.1                         | 4.53   |

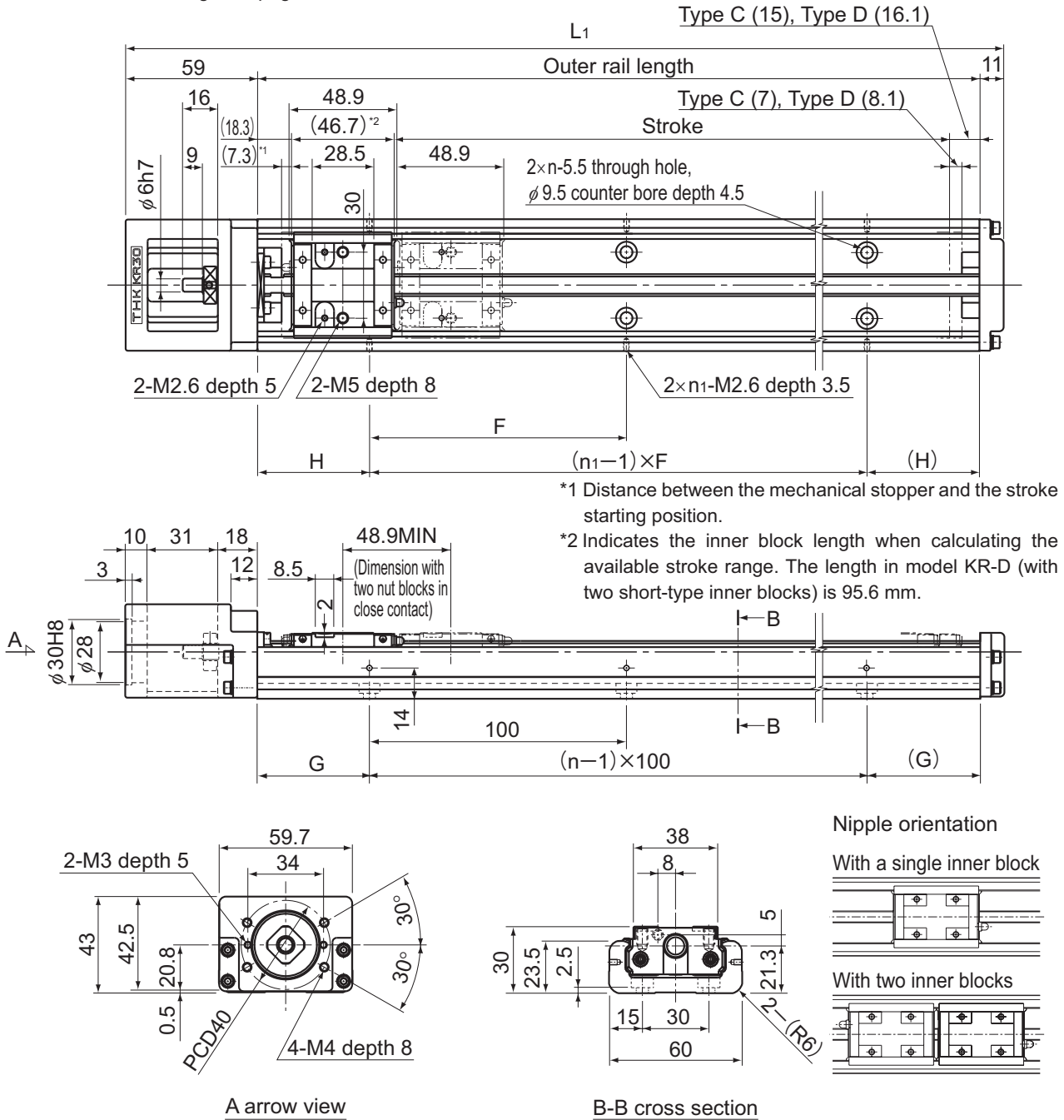
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR30H Standard Type

Model KR30H□□C (with a Single Short Nut Block)

Model KR30H□□D (with Two Short Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | G<br>(mm) | F<br>(mm) | n | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|-----------|---|-------|--------------------------------|--------|
| Type C  | Type D*    |                           |                              |           |           |           |   |       | Type C                         | Type D |
| 70(84.3)  | 20(35.4)   | 150                       | 220                          | 25        | 25        | 100       | 2 | 2     | 1.3                            | 1.47   |
| 120(134.3)  | 70(85.4)   | 200                       | 270                          | 50        | 50        | 100       | 2 | 2     | 1.5                            | 1.67   |
| 220(234.3)  | 170(185.4) | 300                       | 370                          | 50        | 50        | 200       | 3 | 2     | 2.1                            | 2.27   |
| 320(334.3)  | 270(285.4) | 400                       | 470                          | 100       | 50        | 200       | 4 | 2     | 2.6                            | 2.77   |
| 420(434.3)  | 370(385.4) | 500                       | 570                          | 50        | 50        | 200       | 5 | 3     | 3.1                            | 3.27   |
| 520(534.3)  | 470(485.4) | 600                       | 670                          | 100       | 50        | 200       | 6 | 3     | 3.7                            | 3.87   |

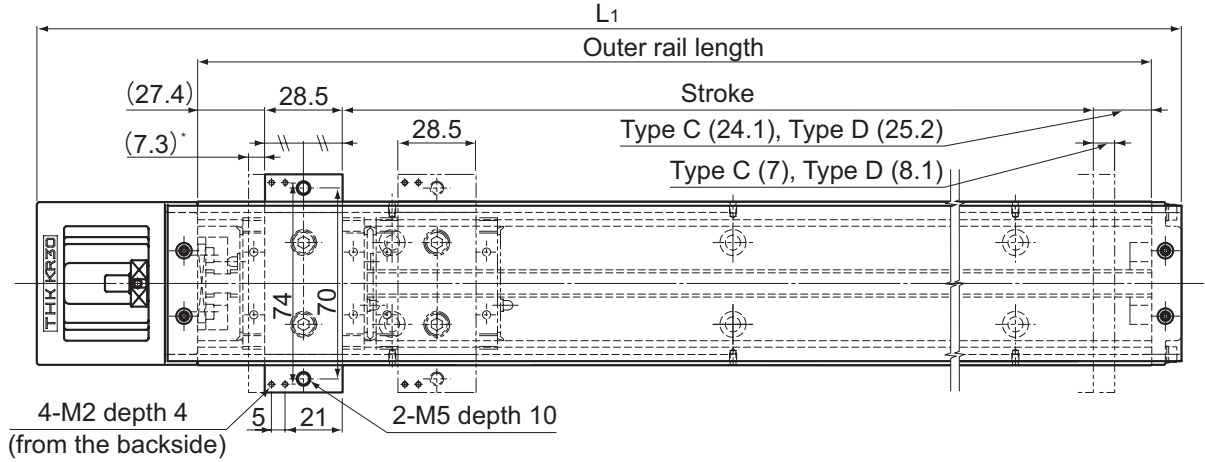
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR30H (with a Cover)

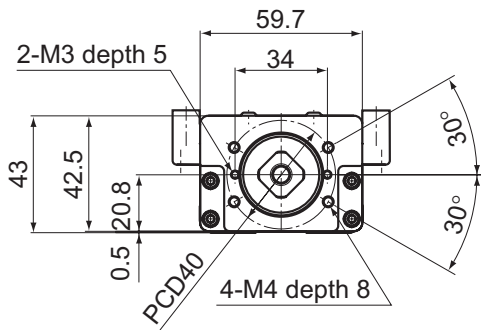
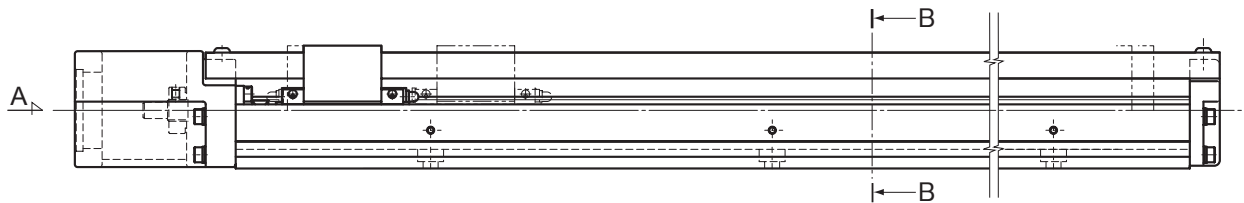
Model KR30H□□C (with a Single Short Nut Block)

Model KR30H□□D (with Two Short Nut Blocks)

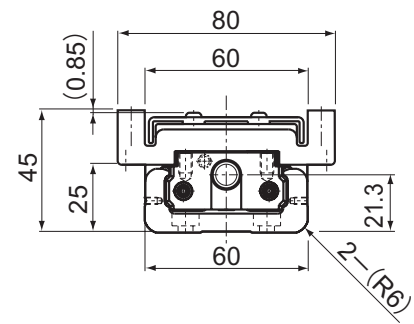
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|------------------------------|-----------------------------|--------|
| Type C  | Type D*    |                           |                              | Type C                      | Type D |
| 70(84.3)  | 20(35.4)   | 150                       | 220                          | 1.4                         | 1.64   |
| 120(134.3)  | 70(85.4)   | 200                       | 270                          | 1.6                         | 1.84   |
| 220(234.3)  | 170(185.4) | 300                       | 370                          | 2.2                         | 2.44   |
| 320(334.3)  | 270(285.4) | 400                       | 470                          | 2.8                         | 3.04   |
| 420(434.3)  | 370(385.4) | 500                       | 570                          | 3.3                         | 3.54   |
| 520(534.3)  | 470(485.4) | 600                       | 670                          | 3.9                         | 4.14   |

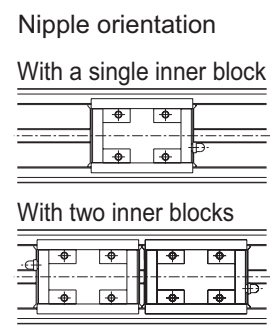
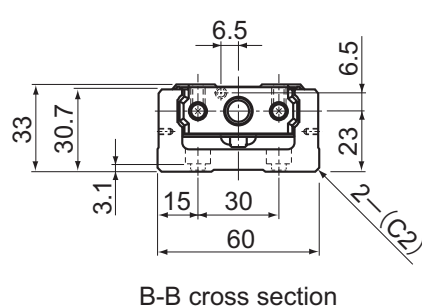
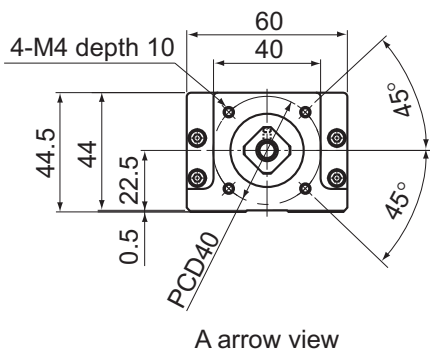
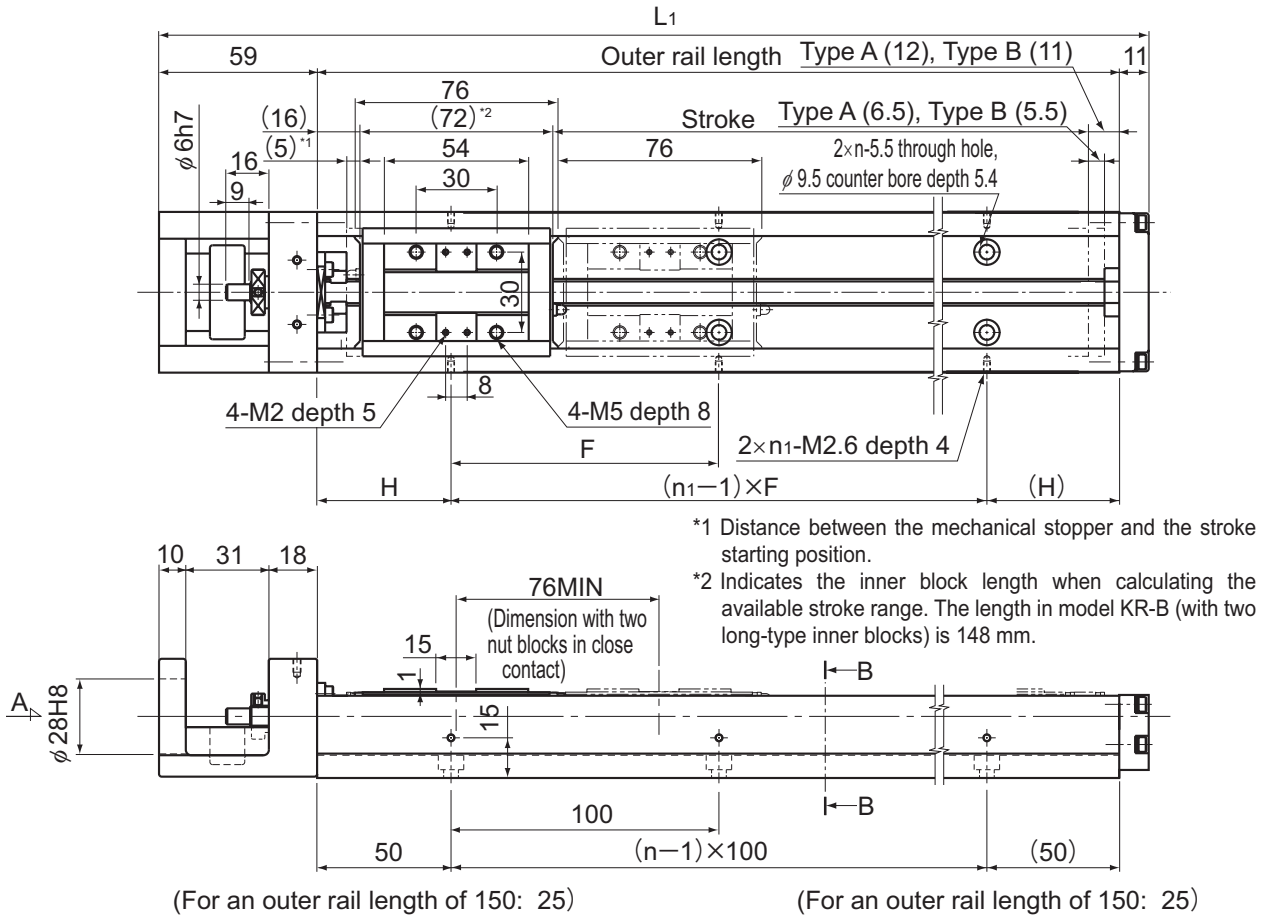
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR33 Standard Type

Model KR33□□A (with a Single Long Nut Block)

Model KR33□□B (with Two Long Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | F<br>(mm) | n | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|---|-------|--------------------------------|--------|
| Type A  | Type B*    |                           |                              |           |           |   |       | Type A                         | Type B |
| 50(61.5)  | —          | 150                       | 220                          | 25        | 100       | 2 | 2     | 1.7                            | —      |
| 100(111.5)  | —          | 200                       | 270                          | 50        | 100       | 2 | 2     | 2                              | —      |
| 200(211.5)  | 125(135.5) | 300                       | 370                          | 50        | 200       | 3 | 2     | 2.6                            | 2.95   |
| 300(311.5)  | 225(235.5) | 400                       | 470                          | 100       | 200       | 4 | 2     | 3.2                            | 3.55   |
| 400(411.5)  | 325(335.5) | 500                       | 570                          | 50        | 200       | 5 | 3     | 3.9                            | 4.25   |
| 500(511.5)  | 425(435.5) | 600                       | 670                          | 100       | 200       | 6 | 3     | 4.5                            | 4.85   |
| 600(611.5)  | 525(535.5) | 700                       | 770                          | 50        | 200       | 7 | 4     | 5.5                            | 5.85   |

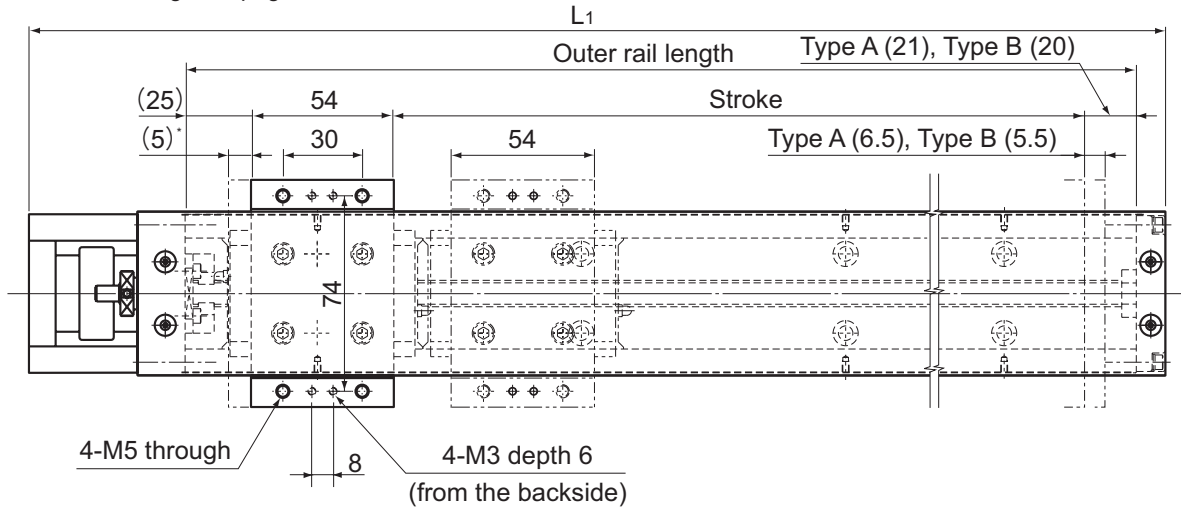
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR33 (with a Cover)

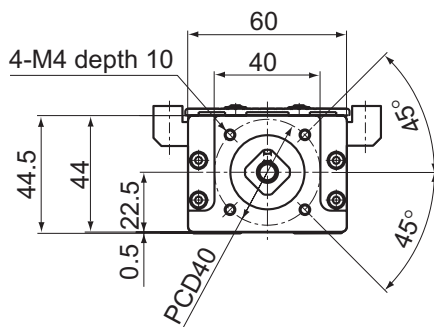
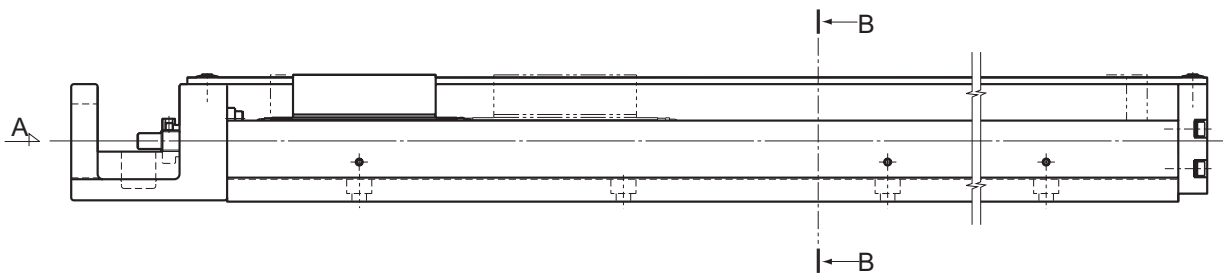
Model KR33□□A (with a Single Long Nut Block)

Model KR33□□B (with Two Long Nut Blocks)

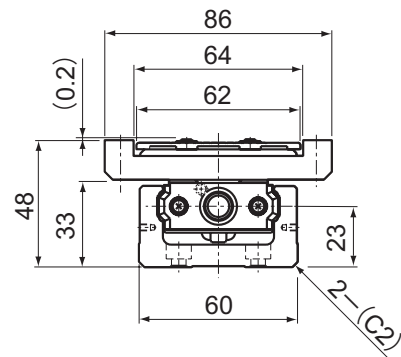
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*    |                           |                                       | Type A                      | Type B |
| 50(61.5)  | —          | 150                       | 220                                   | 1.9                         | —      |
| 100(111.5)  | —          | 200                       | 270                                   | 2.2                         | —      |
| 200(211.5)  | 125(135.5) | 300                       | 370                                   | 2.8                         | 3.28   |
| 300(311.5)  | 225(235.5) | 400                       | 470                                   | 3.5                         | 3.98   |
| 400(411.5)  | 325(335.5) | 500                       | 570                                   | 4.2                         | 4.68   |
| 500(511.5)  | 425(435.5) | 600                       | 670                                   | 4.8                         | 5.28   |
| 600(611.5)  | 525(535.5) | 700                       | 770                                   | 5.9                         | 6.38   |

\*Indicates a value when two inner blocks are in close contact with each other.

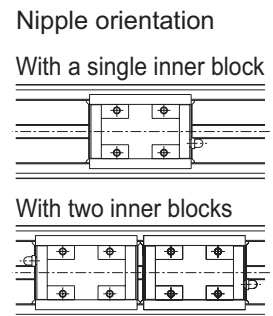
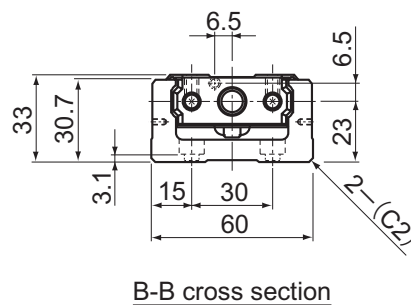
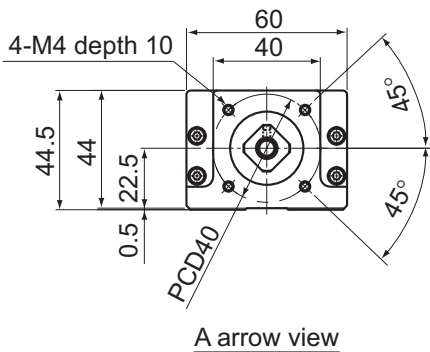
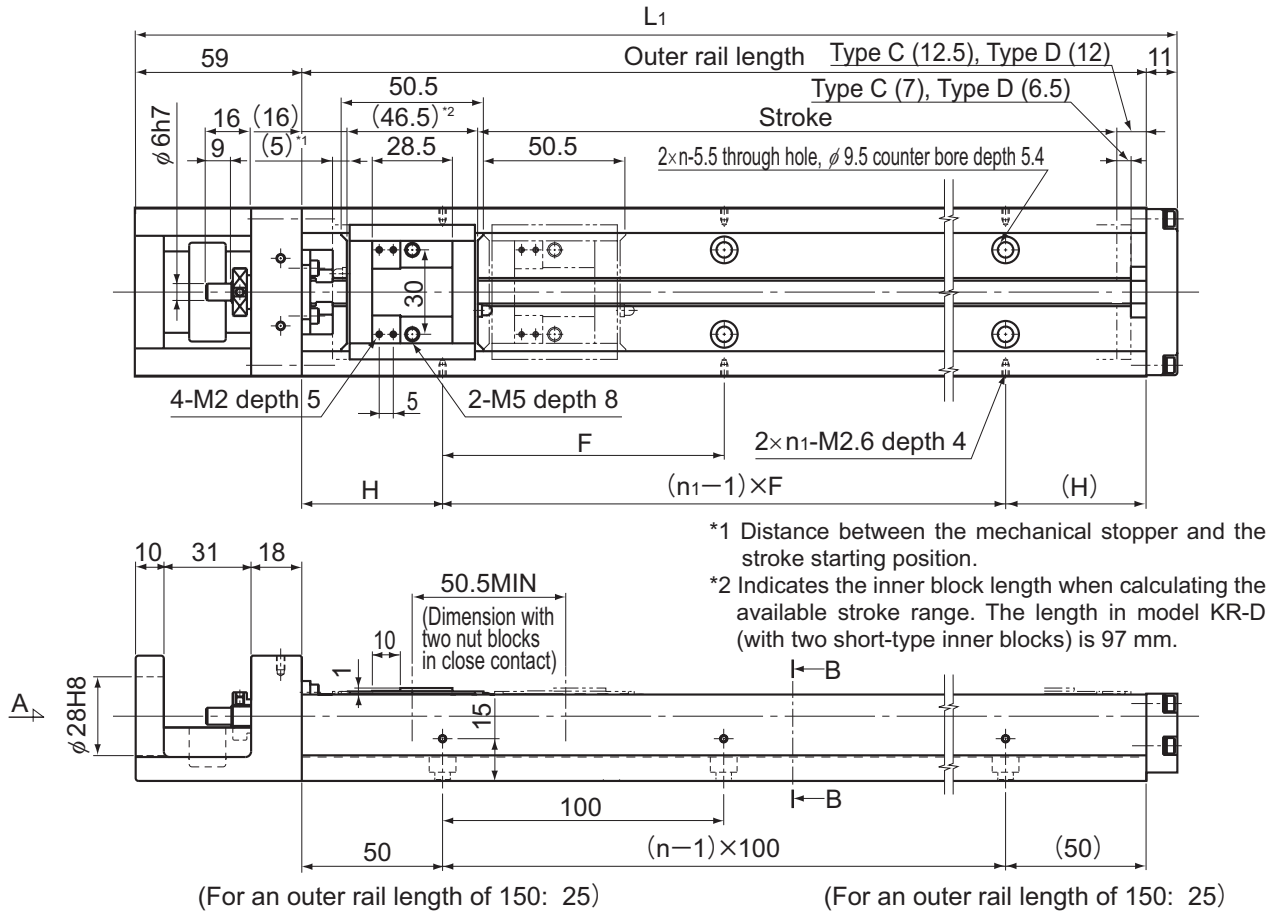
Note) It must be noted that the cover-mounting bolt is 0.2 mm higher than the top face of the sub table.

# Model KR33 Standard Type

Model KR33□□C (with a Single Short Nut Block)

Model KR33□□D (with Two Short Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | F<br>(mm) | n | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|---|-------|--------------------------------|--------|
| Type C  | Type D*    |                           |                              |           |           |   |       | Type C                         | Type D |
| 75(87)  | 25(36.5)   | 150                       | 220                          | 25        | 100       | 2 | 2     | 1.6                            | 1.83   |
| 125(137)  | 75(86.5)   | 200                       | 270                          | 50        | 100       | 2 | 2     | 1.9                            | 2.13   |
| 225(237)  | 175(186.5) | 300                       | 370                          | 50        | 200       | 3 | 2     | 2.5                            | 2.73   |
| 325(337)  | 275(286.5) | 400                       | 470                          | 100       | 200       | 4 | 2     | 3.1                            | 3.33   |
| 425(437)  | 375(386.5) | 500                       | 570                          | 50        | 200       | 5 | 3     | 3.8                            | 4.03   |
| 525(537)  | 475(486.5) | 600                       | 670                          | 100       | 200       | 6 | 3     | 4.4                            | 4.63   |
| 625(637)  | 575(586.5) | 700                       | 770                          | 50        | 200       | 7 | 4     | 5.4                            | 5.63   |

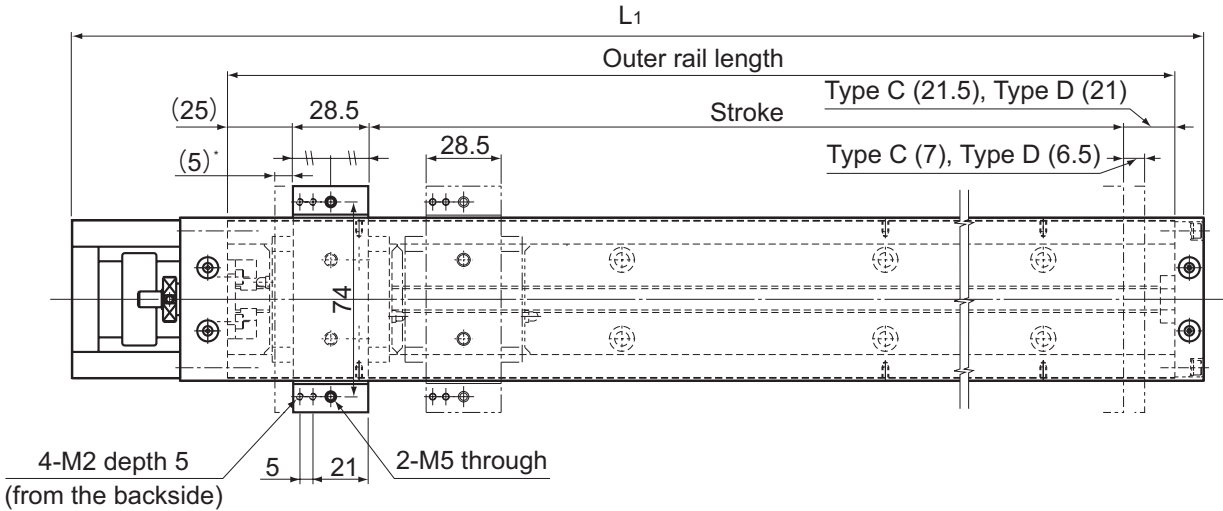
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR33 (with a Cover)

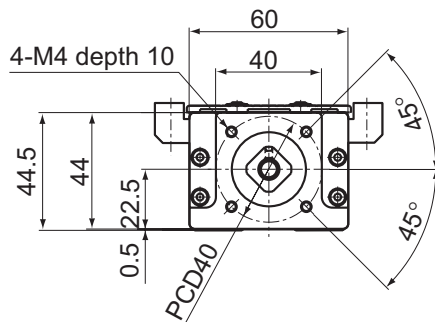
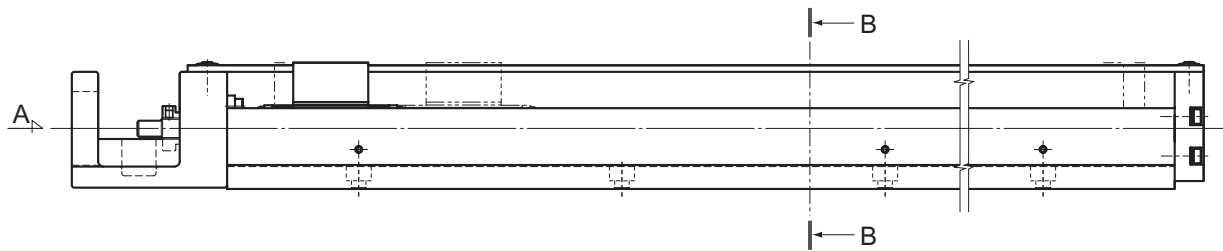
Model KR33□□C (with a Single Short Nut Block)

Model KR33□□D (with Two Short Nut Blocks)

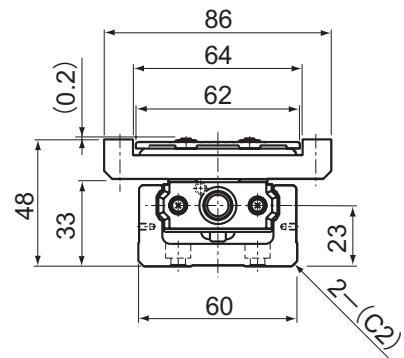
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|------------------------------|-----------------------------|--------|
| Type C  | Type D*    |                           |                              | Type C                      | Type D |
| 75(87)  | 25(36.5)   | 150                       | 220                          | 1.7                         | 2      |
| 125(137)  | 75(86.5)   | 200                       | 270                          | 2.1                         | 2.4    |
| 225(237)  | 175(186.5) | 300                       | 370                          | 2.7                         | 3      |
| 325(337)  | 275(286.5) | 400                       | 470                          | 3.3                         | 3.6    |
| 425(437)  | 375(386.5) | 500                       | 570                          | 4                           | 4.3    |
| 525(537)  | 475(486.5) | 600                       | 670                          | 4.7                         | 5      |
| 625(637)  | 575(586.5) | 700                       | 770                          | 5.7                         | 5.93   |

\*Indicates a value when two inner blocks are in close contact with each other.

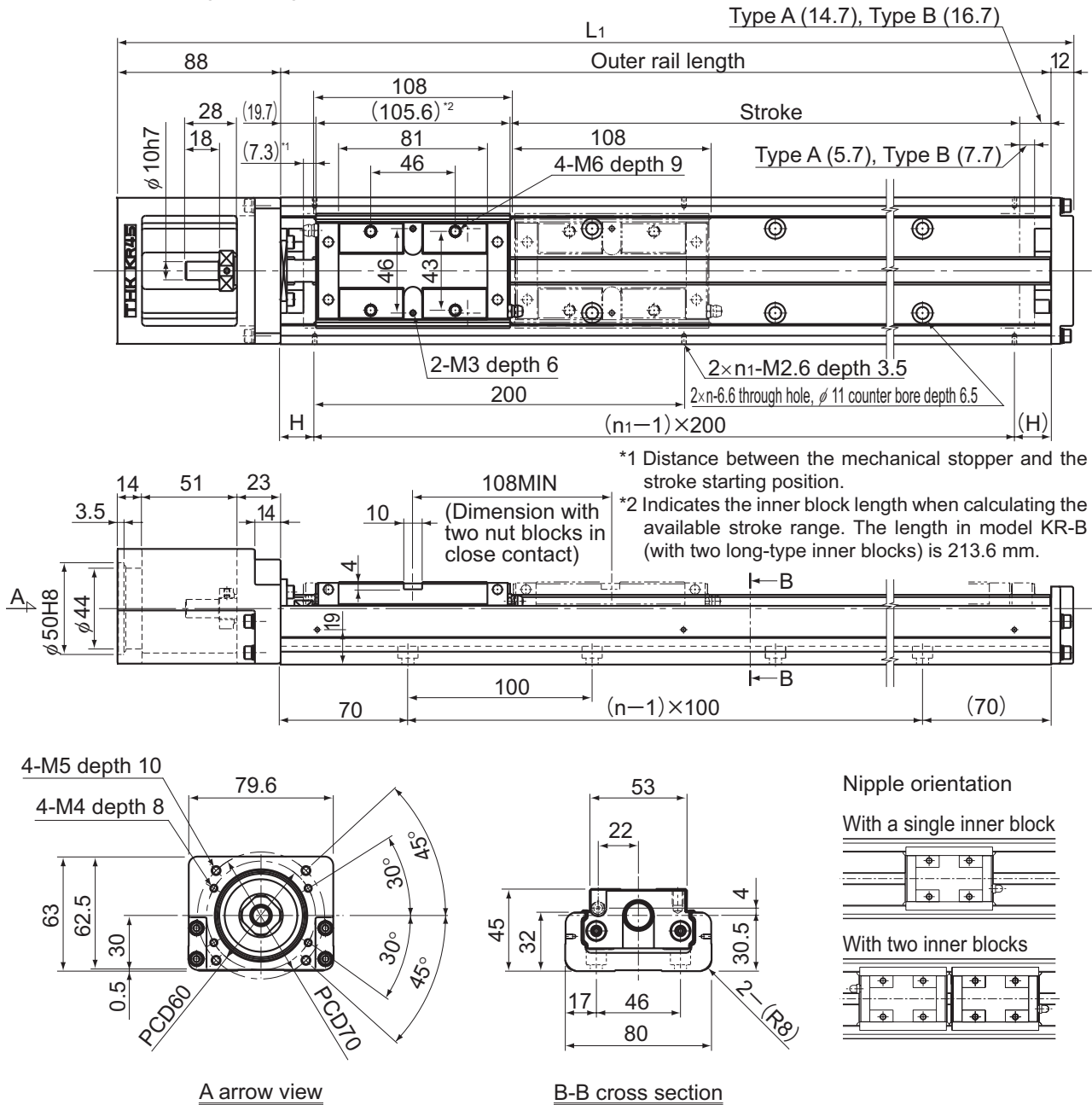
Note) It must be noted that the cover-mounting bolt is 0.2 mm higher than the top face of the sub table.

# Model KR45H Standard Type

Model KR45H□□A (with a Single Long Nut Block)

Model KR45H□□B (with Two Long Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | H<br>(mm) | n | n <sub>1</sub> | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------|---|----------------|-----------------------------|--------|
| Type A  | Type B*  |                           |                                       |           |   |                | Type A                      | Type B |
| 200(213)  | 90(105)  | 340                       | 440                                   | 70        | 3 | 2              | 5.1                         | 6.05   |
| 300(313)  | 190(205) | 440                       | 540                                   | 20        | 4 | 3              | 6.1                         | 7.05   |
| 400(413)  | 290(305) | 540                       | 640                                   | 70        | 5 | 3              | 7.1                         | 8.05   |
| 500(513)  | 390(405) | 640                       | 740                                   | 20        | 6 | 4              | 8.1                         | 9.05   |
| 600(613)  | 490(505) | 740                       | 840                                   | 70        | 7 | 4              | 9.1                         | 10.05  |
| 700(713)  | 590(605) | 840                       | 940                                   | 20        | 8 | 5              | 10.1                        | 11.05  |
| 800(813)  | 690(705) | 940                       | 1040                                  | 70        | 9 | 5              | 11.2                        | 12.15  |

\*Indicates a value when two inner blocks are in close contact with each other.

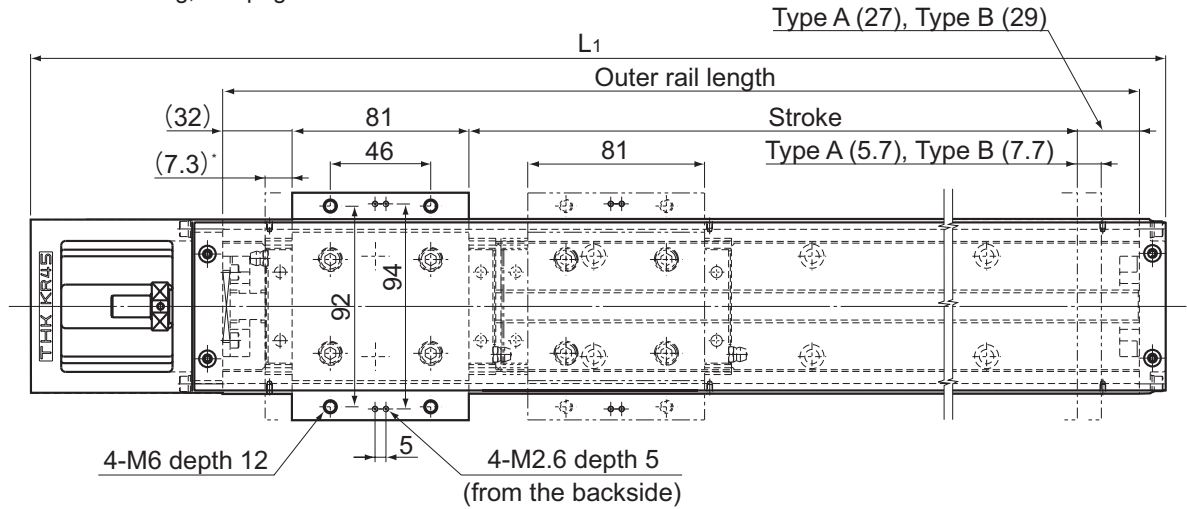


# Model KR45H (with a Cover)

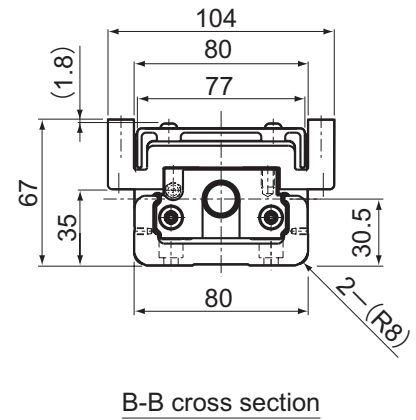
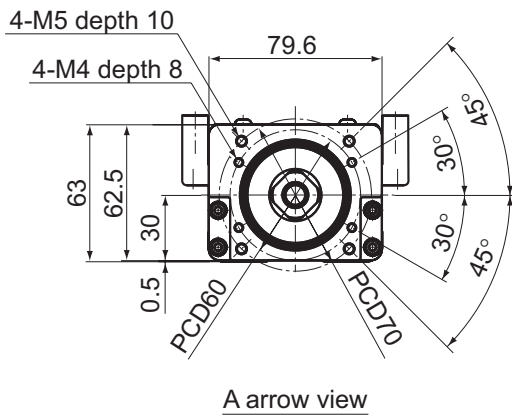
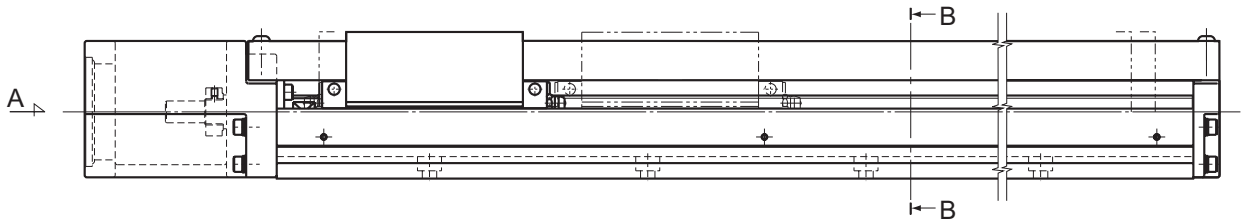
Model KR45H□□A (with a Single Long Nut Block)

Model KR45H□□B (with Two Long Nut Blocks)

For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*  |                           |                                       | Type A                      | Type B |
| 200(213)  | 90(105)  | 340                       | 440                                   | 5.7                         | 7.01   |
| 300(313)  | 190(205) | 440                       | 540                                   | 6.8                         | 8.11   |
| 400(413)  | 290(305) | 540                       | 640                                   | 7.9                         | 9.21   |
| 500(513)  | 390(405) | 640                       | 740                                   | 9                           | 10.31  |
| 600(613)  | 490(505) | 740                       | 840                                   | 10.1                        | 11.41  |
| 700(713)  | 590(605) | 840                       | 940                                   | 11.2                        | 12.51  |
| 800(813)  | 690(705) | 940                       | 1040                                  | 12.3                        | 13.61  |

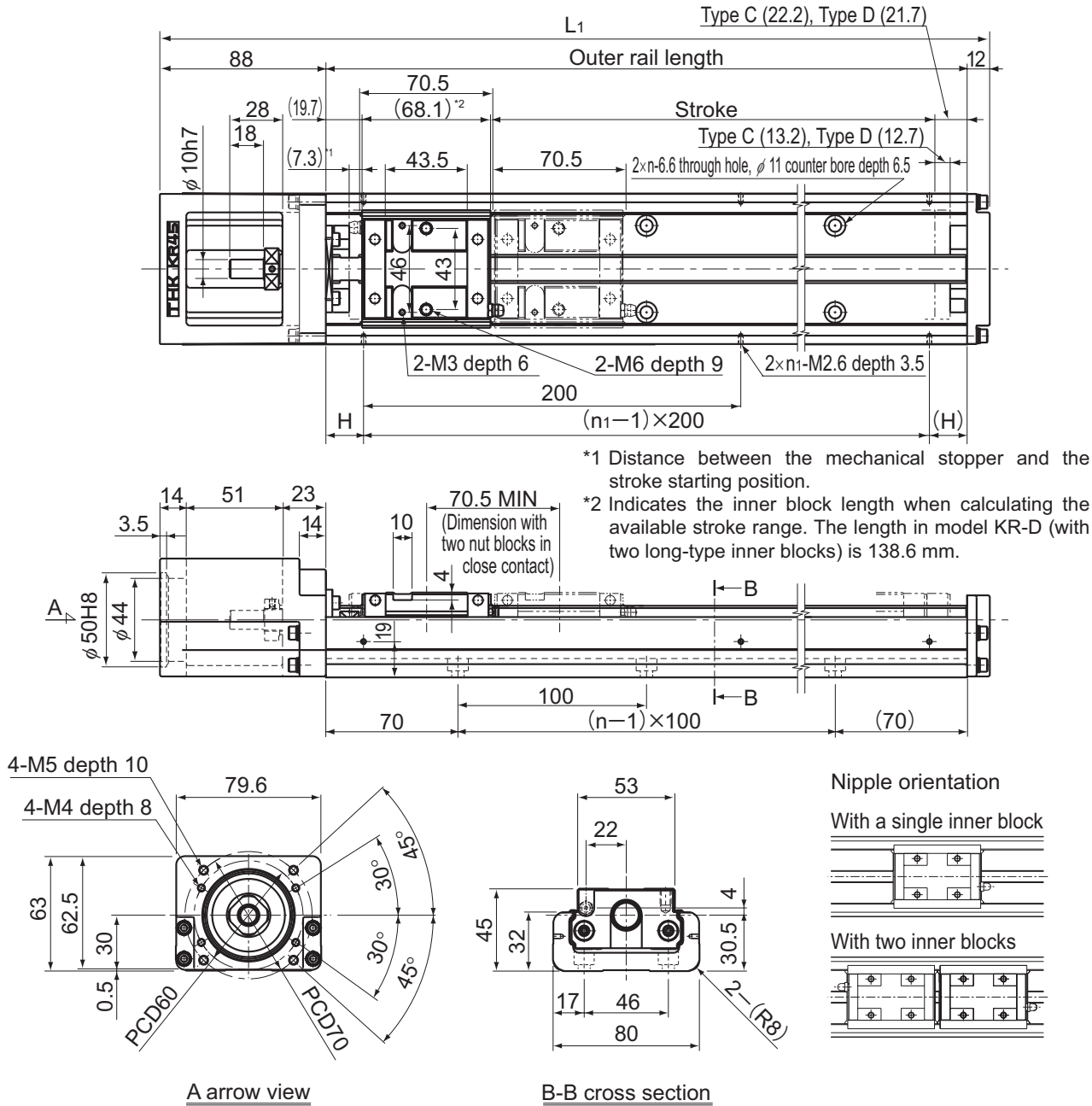
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR45H Standard Type

Model KR45H□□C (with a Single Short Nut Block)

Model KR45H□□D (with Two Short Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | n | $n_1$ | Overall main unit mass (kg) |        |
|---|----------|---------------------------|------------------------------|-----------|---|-------|-----------------------------|--------|
| Type C  | Type D*  |                           |                              |           |   |       | Type C                      | Type D |
| 230(250.5)  | 160(180) | 340                       | 440                          | 70        | 3 | 2     | 4.7                         | 5.23   |
| 330(350.5)  | 260(280) | 440                       | 540                          | 20        | 4 | 3     | 5.7                         | 6.23   |
| 430(450.5)  | 360(380) | 540                       | 640                          | 70        | 5 | 3     | 6.7                         | 7.23   |
| 530(550.5)  | 460(480) | 640                       | 740                          | 20        | 6 | 4     | 7.7                         | 8.23   |
| 630(650.5)  | 560(580) | 740                       | 840                          | 70        | 7 | 4     | 8.7                         | 9.23   |
| 730(750.5)  | 660(680) | 840                       | 940                          | 20        | 8 | 5     | 9.7                         | 10.23  |
| 830(850.5)  | 760(780) | 940                       | 1040                         | 70        | 9 | 5     | 10.8                        | 11.33  |

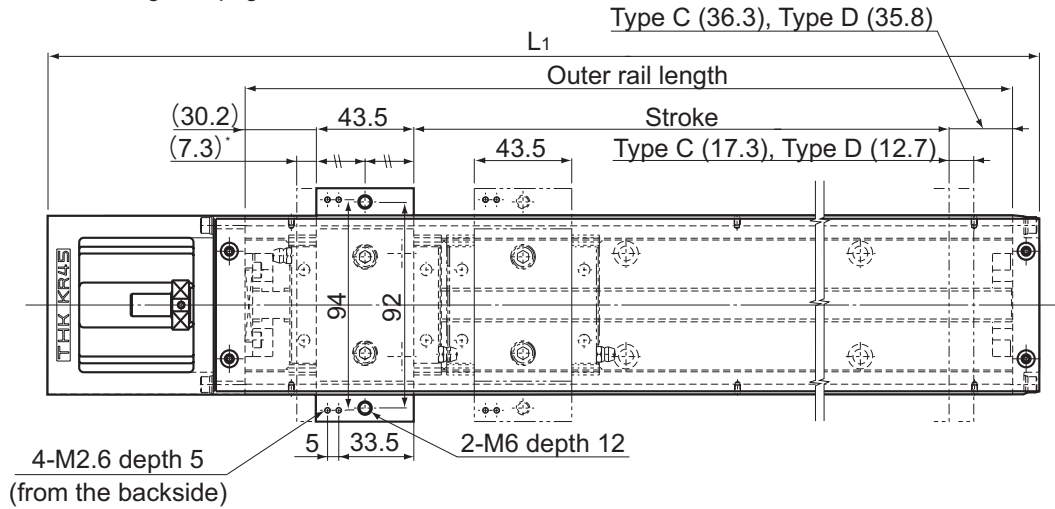
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR45H (with a Cover)

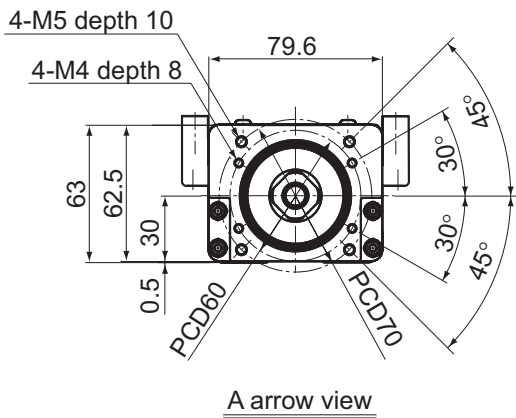
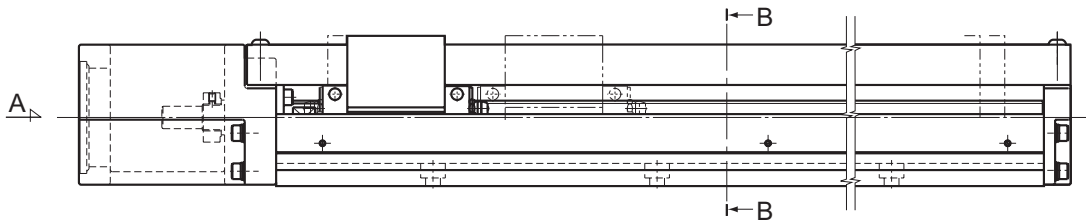
Model KR45H□□C (with a Single Short Nut Block)

Model KR45H□□D (with Two Short Nut Blocks)

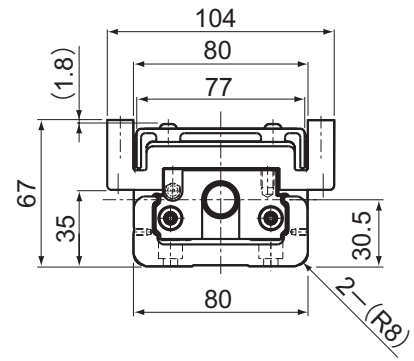
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type C  | Type D*  |                           |                                       | Type C                      | Type D |
| 230(250.5)  | 160(180) | 340                       | 440                                   | 5.1                         | 5.82   |
| 330(350.5)  | 260(280) | 440                       | 540                                   | 6.2                         | 6.92   |
| 430(450.5)  | 360(380) | 540                       | 640                                   | 7.3                         | 8.02   |
| 530(550.5)  | 460(480) | 640                       | 740                                   | 8.4                         | 9.12   |
| 630(650.5)  | 560(580) | 740                       | 840                                   | 9.5                         | 10.22  |
| 730(750.5)  | 660(680) | 840                       | 940                                   | 10.6                        | 11.32  |
| 830(850.5)  | 760(780) | 940                       | 1040                                  | 11.7                        | 12.42  |

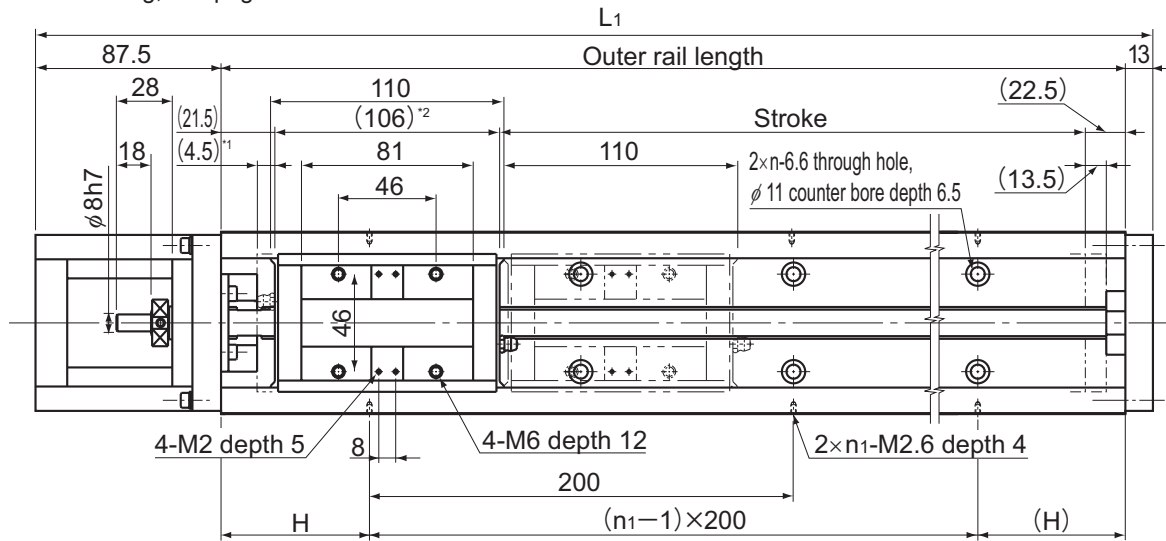
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR46 Standard Type

Model KR46□□A (with a Single Long Nut Block)

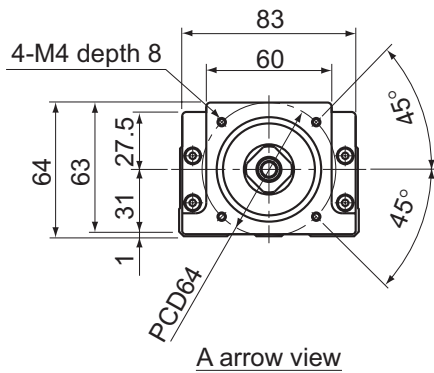
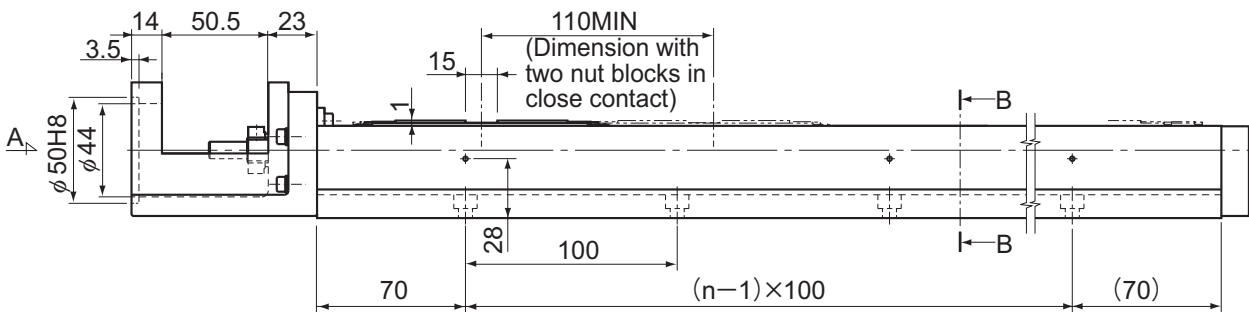
Model KR46□□B (with Two Long Nut Blocks)

For model number coding, see page31.

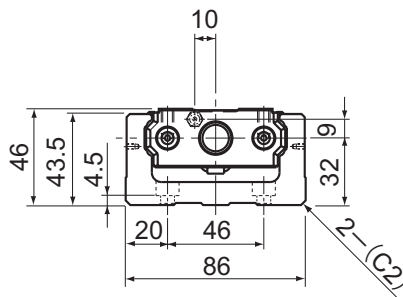


\*1 Distance between the mechanical stopper and the stroke starting position.

\*2 Indicates the inner block length when calculating the available stroke range. The length in model KR-B (with two long-type inner blocks) is 216 mm.



A arrow view



B-B cross section

Nipple orientation

With a single inner block

With two inner blocks

| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | n | $n_1$ | Overall main unit mass (kg) |        |
|---|----------|---------------------------|------------------------------|-----------|---|-------|-----------------------------|--------|
| Type A  | Type B*  |                           |                              |           |   |       | Type A                      | Type B |
| 190(208)  | 80(98)   | 340                       | 440.5                        | 70        | 3 | 2     | 7.7                         | 8.9    |
| 290(308)  | 180(198) | 440                       | 540.5                        | 20        | 4 | 3     | 9                           | 10.2   |
| 390(408)  | 280(298) | 540                       | 640.5                        | 70        | 5 | 3     | 10.3                        | 11.5   |
| 490(508)  | 380(398) | 640                       | 740.5                        | 20        | 6 | 4     | 11.6                        | 12.8   |
| 590(608)  | 480(498) | 740                       | 840.5                        | 70        | 7 | 4     | 12.8                        | 14     |
| 690(708)  | 580(598) | 840                       | 940.5                        | 20        | 8 | 5     | 14.1                        | 15.3   |
| 790(808)  | 680(698) | 940                       | 1040.5                       | 70        | 9 | 5     | 15.3                        | 16.5   |

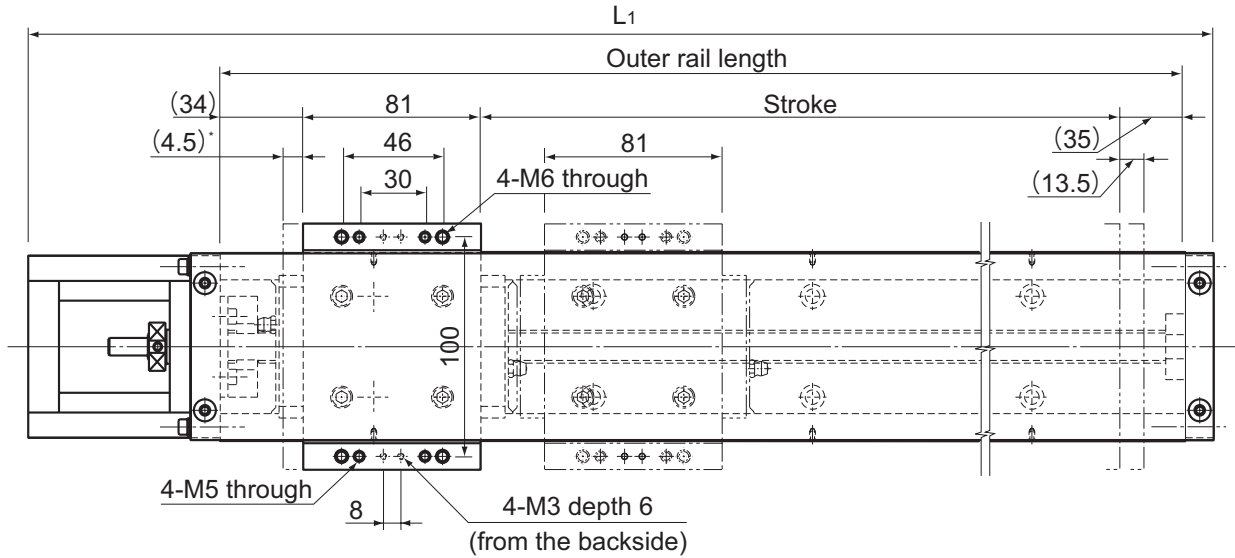
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR46 (with a Cover)

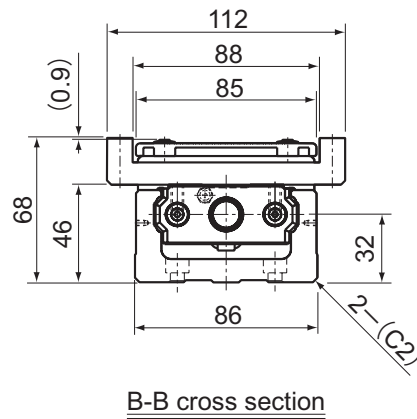
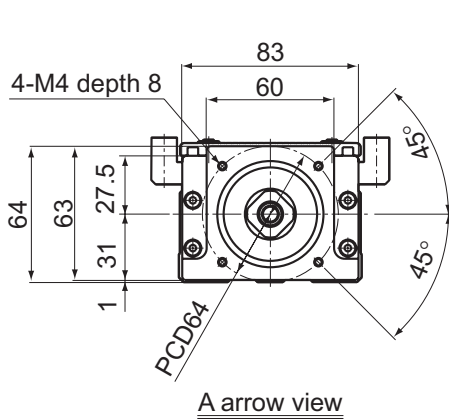
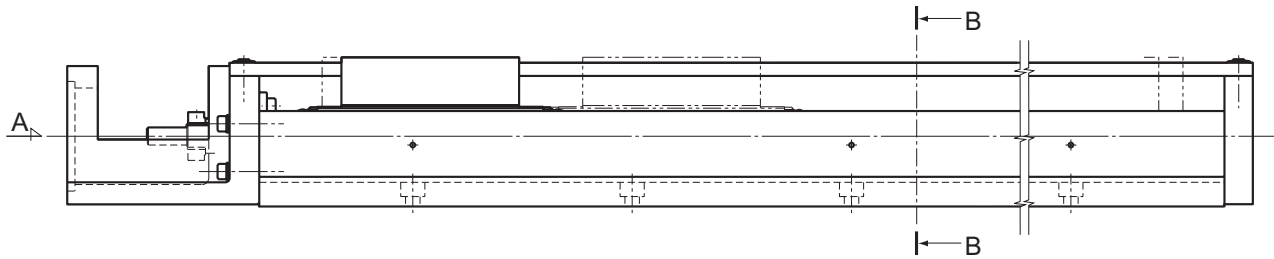
Model KR46□□A (with a Single Long Nut Block)

Model KR46□□B (with Two Long Nut Blocks)

For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*  |                           |                                       | Type A                      | Type B |
| 190(208)  | 80(98)   | 340                       | 440.5                                 | 8.3                         | 9.79   |
| 290(308)  | 180(198) | 440                       | 540.5                                 | 9.7                         | 11.19  |
| 390(408)  | 280(298) | 540                       | 640.5                                 | 11                          | 12.49  |
| 490(508)  | 380(398) | 640                       | 740.5                                 | 12.4                        | 13.89  |
| 590(608)  | 480(498) | 740                       | 840.5                                 | 13.7                        | 15.19  |
| 690(708)  | 580(598) | 840                       | 940.5                                 | 15                          | 16.49  |
| 790(808)  | 680(698) | 940                       | 1040.5                                | 16.3                        | 17.79  |

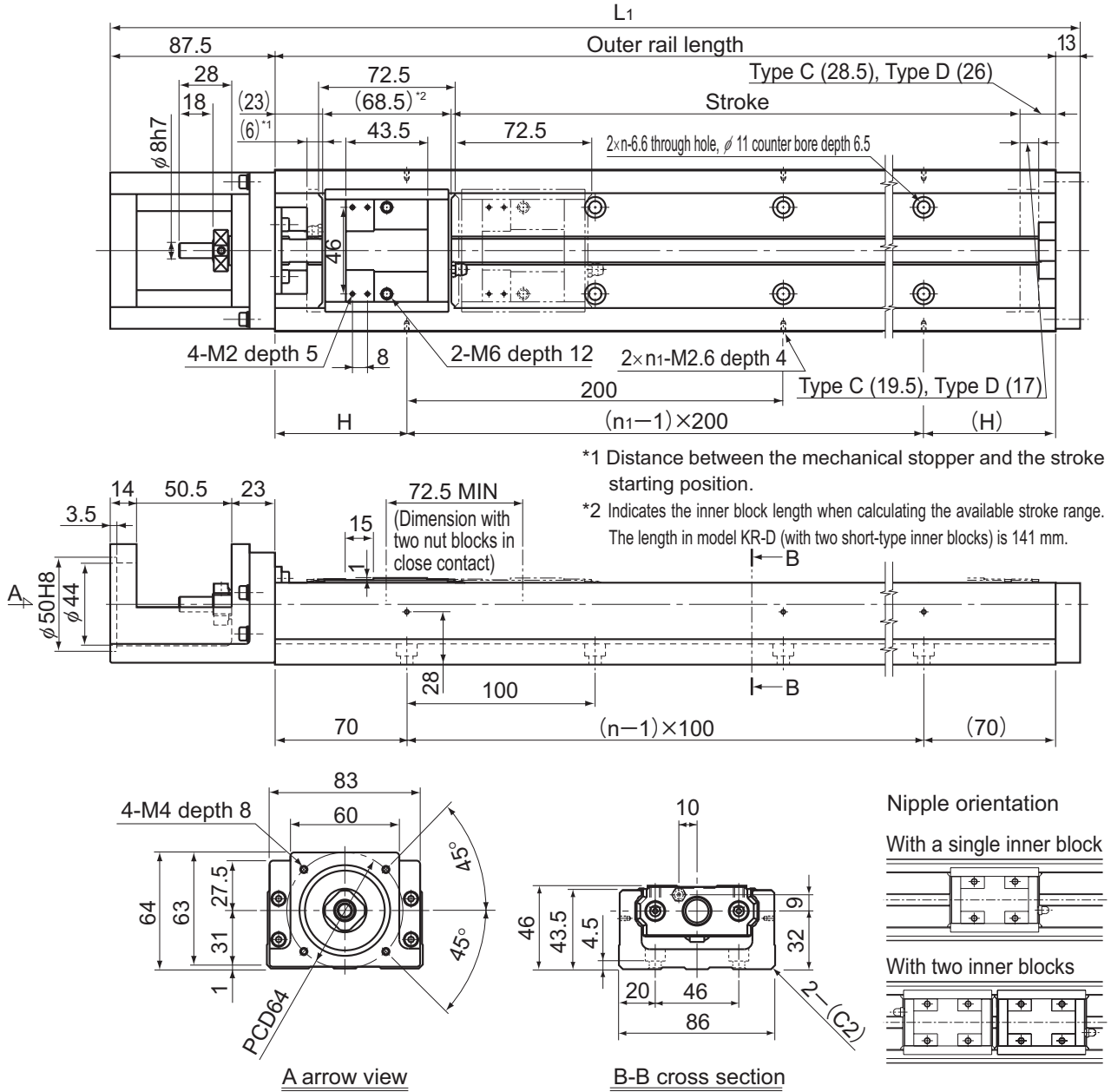
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR46 Standard Type

Model KR46□□C (with a Single Short Nut Block)

Model KR46□□D (with Two Short Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | n | $n_1$ | Overall main unit mass (kg) |        |
|---|----------|---------------------------|------------------------------|-----------|---|-------|-----------------------------|--------|
| Type C  | Type D*  |                           |                              |           |   |       | Type C                      | Type D |
| 220(245.5)  | 150(173) | 340                       | 440.5                        | 70        | 3 | 2     | 7.3                         | 8.1    |
| 320(345.5)  | 250(273) | 440                       | 540.5                        | 20        | 4 | 3     | 8.6                         | 9.4    |
| 420(445.5)  | 350(373) | 540                       | 640.5                        | 70        | 5 | 3     | 9.9                         | 10.7   |
| 520(545.5)  | 450(473) | 640                       | 740.5                        | 20        | 6 | 4     | 11.2                        | 12     |
| 620(645.5)  | 550(573) | 740                       | 840.5                        | 70        | 7 | 4     | 12.4                        | 13.2   |
| 720(745.5)  | 650(673) | 840                       | 940.5                        | 20        | 8 | 5     | 13.7                        | 14.5   |
| 820(845.5)  | 750(773) | 940                       | 1040.5                       | 70        | 9 | 5     | 14.9                        | 15.7   |

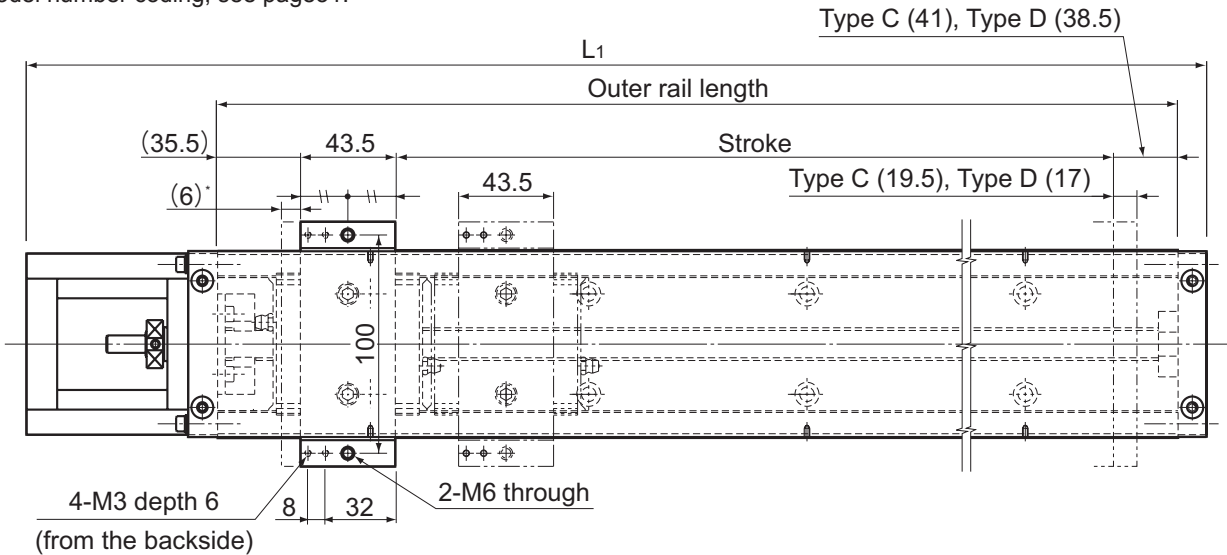
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR46 (with a Cover)

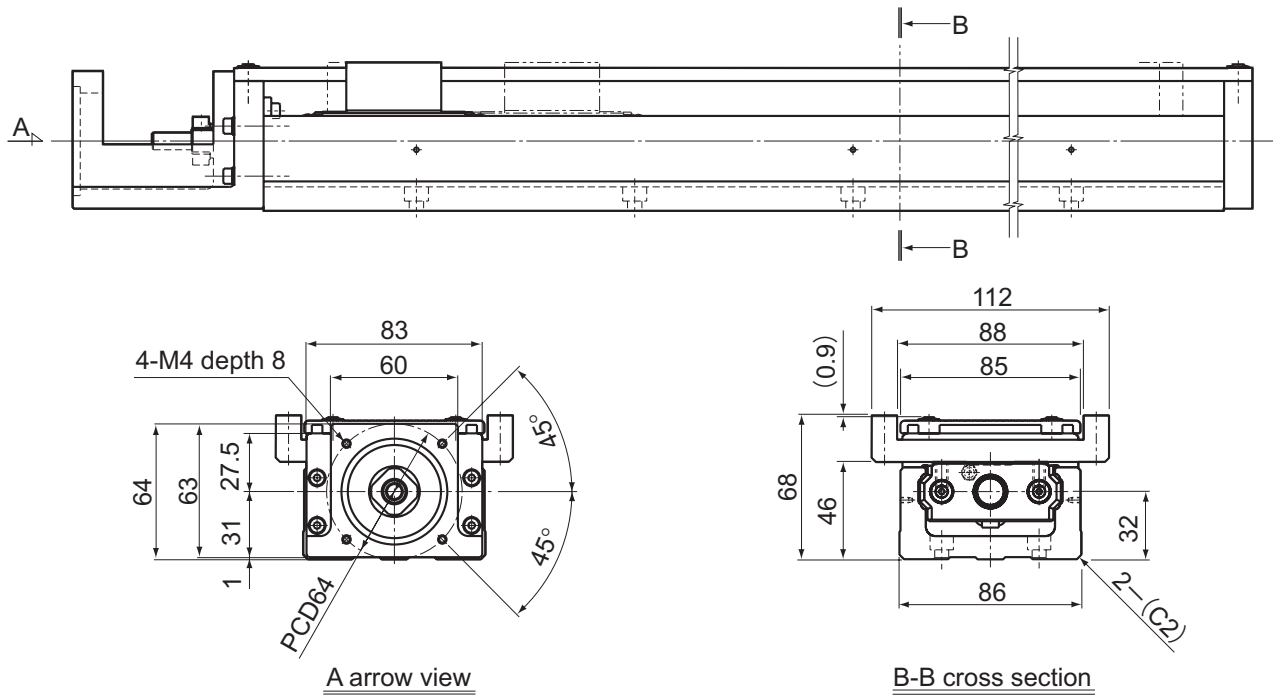
Model KR46□□C (with a Single Short Nut Block)

Model KR46□□D (with Two Short Nut Blocks)

For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



| Stroke (mm)<br>(stroke between mechanical stoppers) |          | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|----------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type C  | Type D*  |                           |                                       | Type C                      | Type D |
| 220(245.5)  | 150(173) | 340                       | 440.5                                 | 7.8                         | 8.79   |
| 320(345.5)  | 250(273) | 440                       | 540.5                                 | 9.1                         | 10.09  |
| 420(445.5)  | 350(373) | 540                       | 640.5                                 | 10.5                        | 11.49  |
| 520(545.5)  | 450(473) | 640                       | 740.5                                 | 11.9                        | 12.89  |
| 620(645.5)  | 550(573) | 740                       | 840.5                                 | 13.2                        | 14.19  |
| 720(745.5)  | 650(673) | 840                       | 940.5                                 | 14.5                        | 15.49  |
| 820(845.5)  | 750(773) | 940                       | 1040.5                                | 15.8                        | 16.79  |

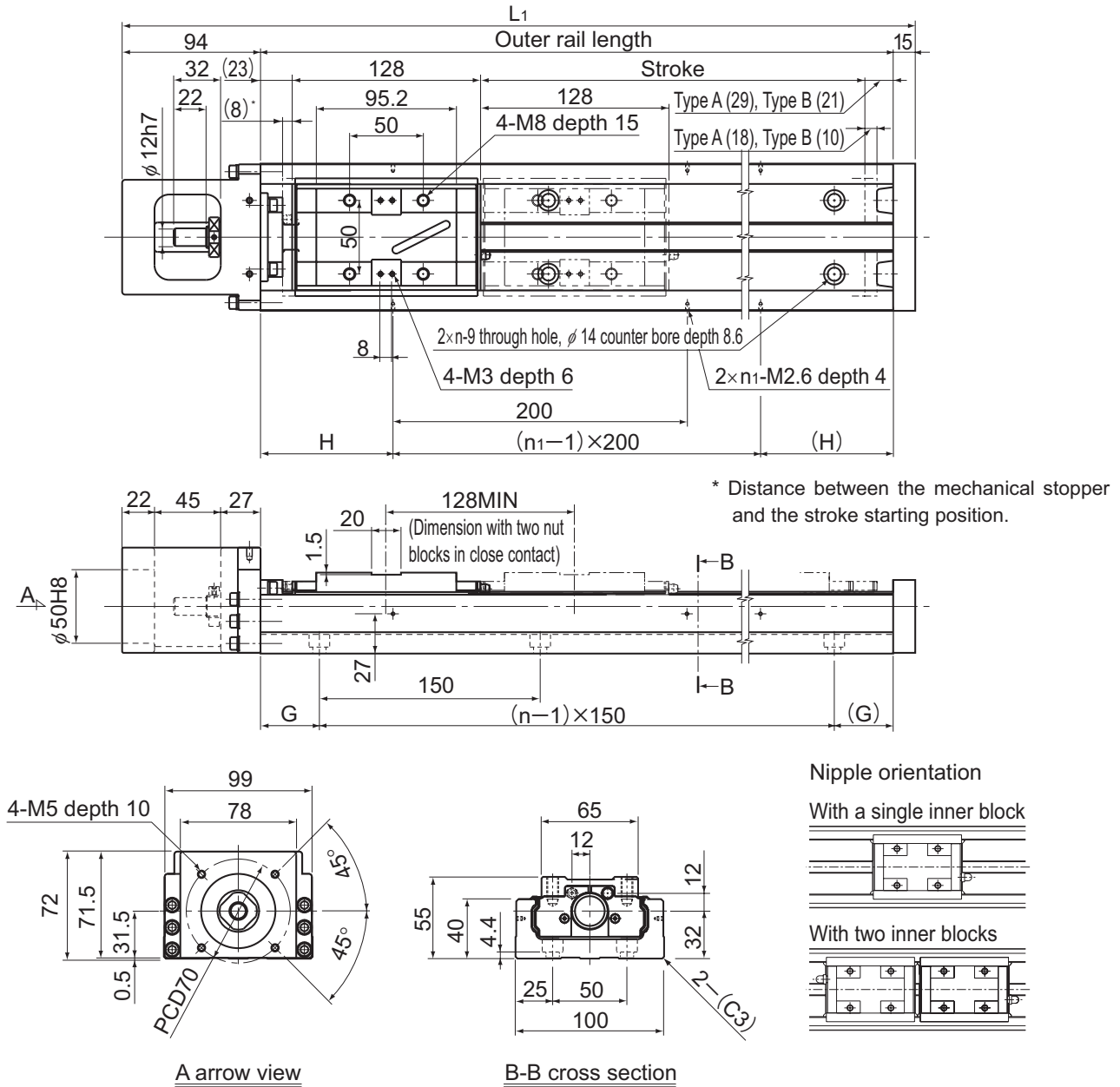
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR55 Standard Type

Model KR5520A (with a Single Long Nut Block)

Model KR5520B (with Two Long Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | G<br>(mm) | n  | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|----|-------|--------------------------------|--------|
| Type A  | Type B*    |                           |                              |           |           |    |       | Type A                         | Type B |
| 800(826)  | 680(698)   | 980                       | 1089                         | 90        | 40        | 7  | 5     | 19.9                           | 21.6   |
| 900(926)  | 780(798)   | 1080                      | 1189                         | 40        | 15        | 8  | 6     | 21.7                           | 23.4   |
| 1000(1026)  | 880(898)   | 1180                      | 1289                         | 90        | 65        | 8  | 6     | 23.4                           | 25.1   |
| 1100(1126)  | 980(998)   | 1280                      | 1389                         | 40        | 40        | 9  | 7     | 25.1                           | 26.8   |
| 1200(1226)  | 1080(1098) | 1380                      | 1489                         | 90        | 15        | 10 | 7     | 26.9                           | 28.6   |

\*Indicates a value when two inner blocks are in close contact with each other.

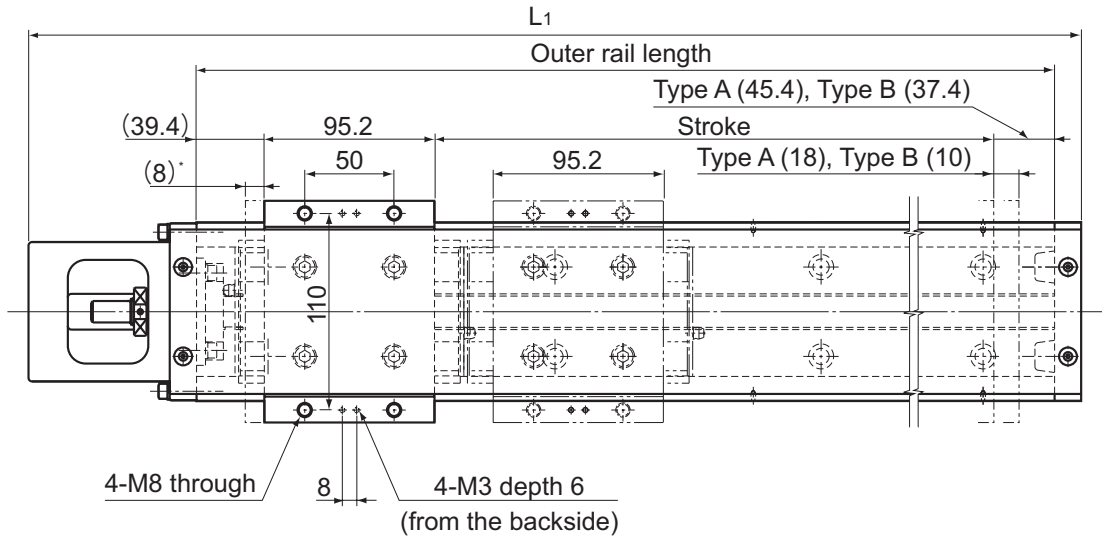


# Model KR55 (with a Cover)

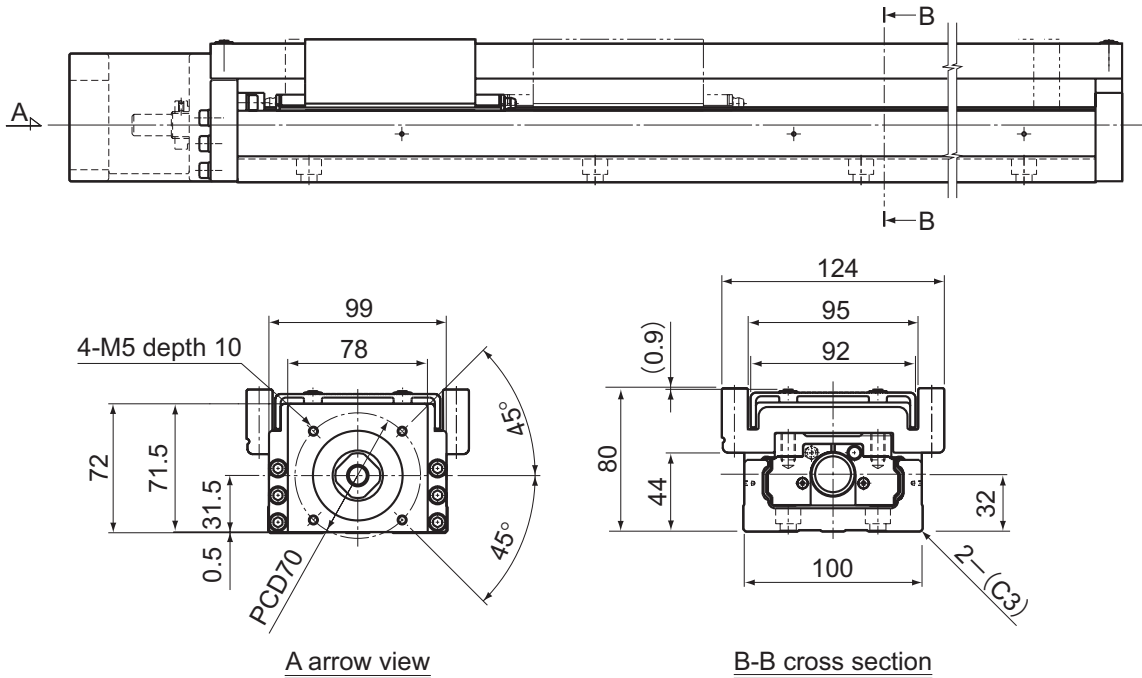
Model KR5520A (with a Single Long Nut Block)

Model KR5520B (with Two Long Nut Blocks)

For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*    |                           |                                       | Type A                      | Type B |
| 800(826)  | 680(698)   | 980                       | 1089                                  | 22.7                        | 26.2   |
| 900(926)  | 780(798)   | 1080                      | 1189                                  | 24.6                        | 28.1   |
| 1000(1026)  | 880(898)   | 1180                      | 1289                                  | 26.4                        | 29.9   |
| 1100(1126)  | 980(998)   | 1280                      | 1389                                  | 28.1                        | 31.6   |
| 1200(1226)  | 1080(1098) | 1380                      | 1489                                  | 30                          | 33.5   |

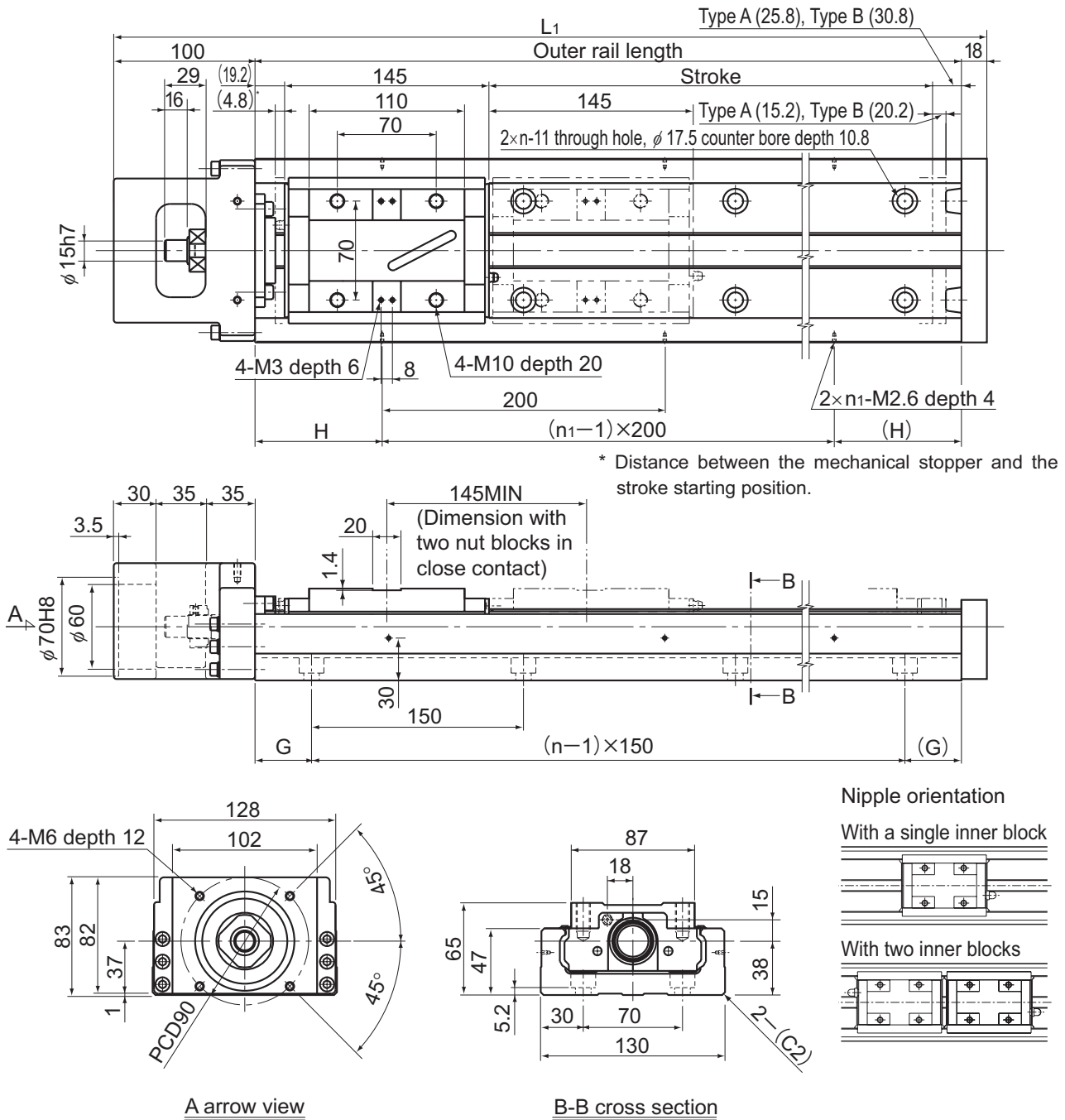
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR65 Standard Type

Model KR6525A (with a Single Long Nut Block)

Model KR6525B (with Two Long Nut Blocks)

For model number coding, see page31.



| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>$L_1$ (mm) | H<br>(mm) | G<br>(mm) | n  | $n_1$ | Overall main unit mass<br>(kg) |        |
|---|------------|---------------------------|------------------------------|-----------|-----------|----|-------|--------------------------------|--------|
| Type A  | Type B*    |                           |                              |           |           |    |       | Type A                         | Type B |
| 790(810)  | 640(665)   | 980                       | 1098                         | 90        | 40        | 7  | 5     | 31.6                           | 34.6   |
| 990(1010)   | 840(865)   | 1180                      | 1298                         | 90        | 65        | 8  | 6     | 37                             | 40     |
| 1190(1210)  | 1040(1065) | 1380                      | 1498                         | 90        | 90        | 9  | 7     | 42.4                           | 45.4   |
| 1490(1510)  | 1340(1365) | 1680                      | 1798                         | 40        | 90        | 11 | 9     | 50.5                           | 53.5   |

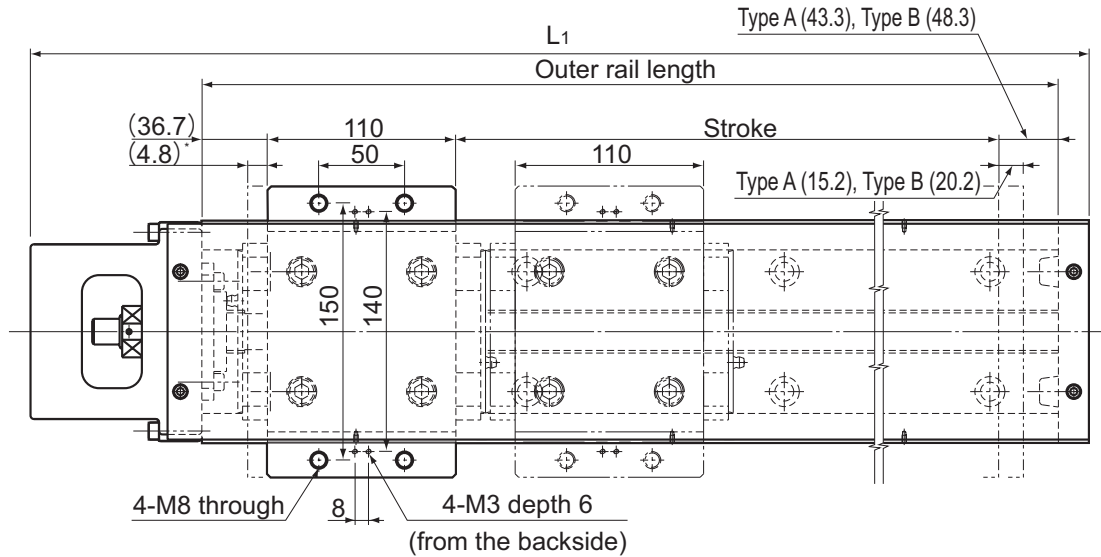
\*Indicates a value when two inner blocks are in close contact with each other.

# Model KR65 (with a Cover)

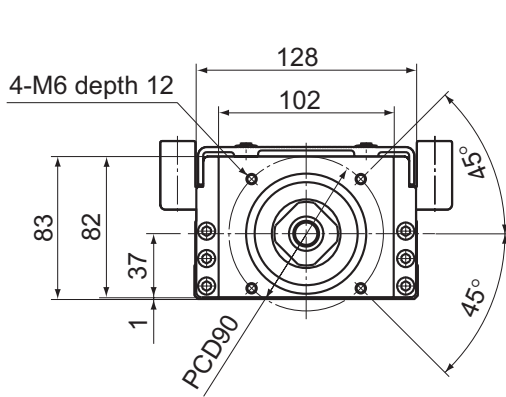
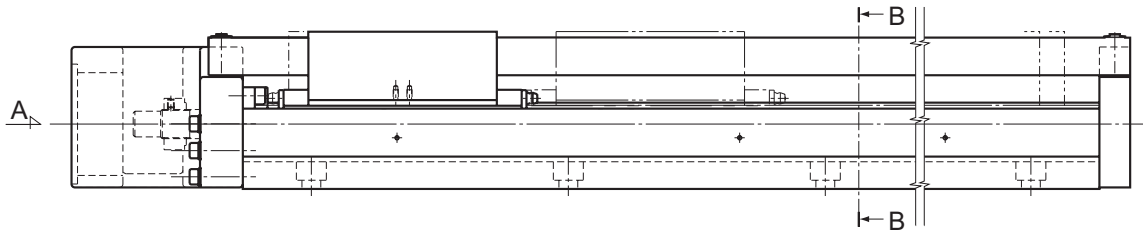
Model KR6525A (with a Single Long Nut Block)

Model KR6525B (with Two Long Nut Blocks)

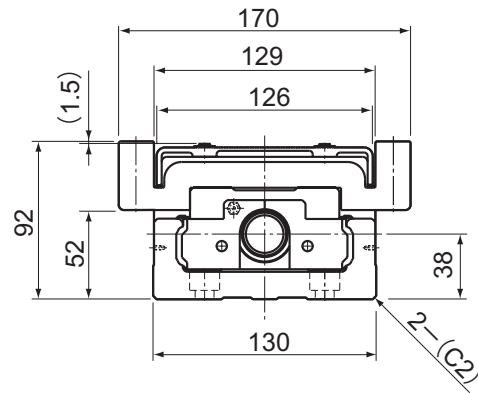
For model number coding, see page31.



\* Distance between the mechanical stopper and the stroke starting position.



A arrow view



B-B cross section

| Stroke (mm)<br>(stroke between mechanical stoppers) |            | Outer rail length<br>(mm) | Overall length<br>L <sub>1</sub> (mm) | Overall main unit mass (kg) |        |
|---|------------|---------------------------|---------------------------------------|-----------------------------|--------|
| Type A  | Type B*    |                           |                                       | Type A                      | Type B |
| 790(810)  | 640(665)   | 980                       | 1098                                  | 36.3                        | 43     |
| 990(1010)   | 840(865)   | 1180                      | 1298                                  | 42                          | 48.7   |
| 1190(1210)  | 1040(1065) | 1380                      | 1498                                  | 47.6                        | 54.3   |
| 1490(1510)  | 1340(1365) | 1680                      | 1798                                  | 56.1                        | 62.8   |

\*Indicates a value when two inner blocks are in close contact with each other.

## Mass of Moving Element

Table13 shows the mass of the inner block and Sub table of model KR.

Table13 Mass of the Inner Block and Sub table of KR

Unit: kg

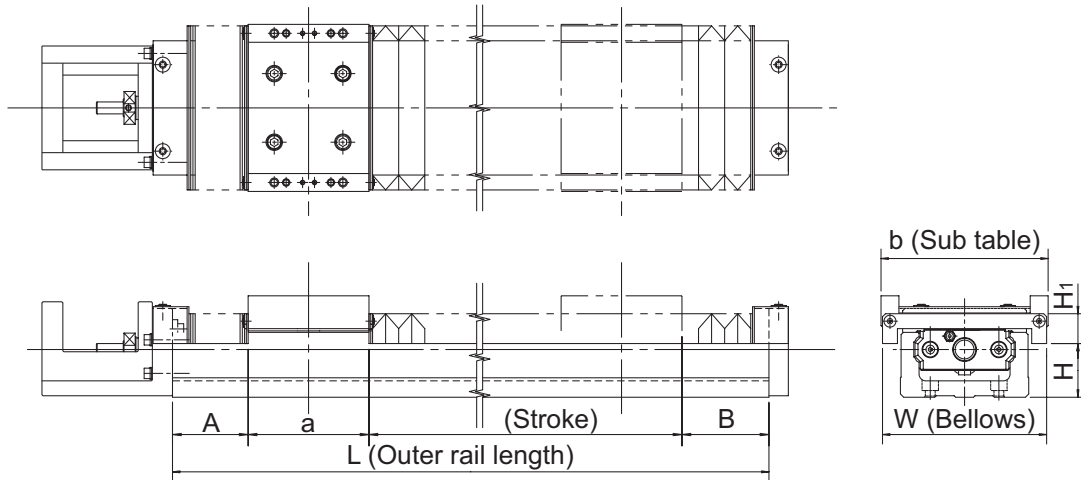
| Model No. | Long nut block types (A) |           | Short nut block types (C) |           |
|-----------|--------------------------|-----------|---------------------------|-----------|
|           | Inner block              | Sub table | Inner block               | Sub table |
| KR15      | 0.042                    | 0.022     | —                         | —         |
| KR20      | 0.075                    | 0.045     | —                         | —         |
| KR26      | 0.180                    | 0.085     | —                         | —         |
| KR30H     | 0.30                     | 0.13      | 0.17                      | 0.07      |
| KR33      | 0.35                     | 0.13      | 0.23                      | 0.07      |
| KR45H     | 0.95                     | 0.36      | 0.53                      | 0.19      |
| KR46      | 1.20                     | 0.29      | 0.80                      | 0.19      |
| KR55      | 1.70                     | 1.80      | —                         | —         |
| KR65      | 3.00                     | 3.70      | —                         | —         |

# Options

## Bellows

For model KR, bellows are available for contamination protection in addition to a cover.

### [Model KR-A (with a Single Long Nut Block)]



Unit: mm

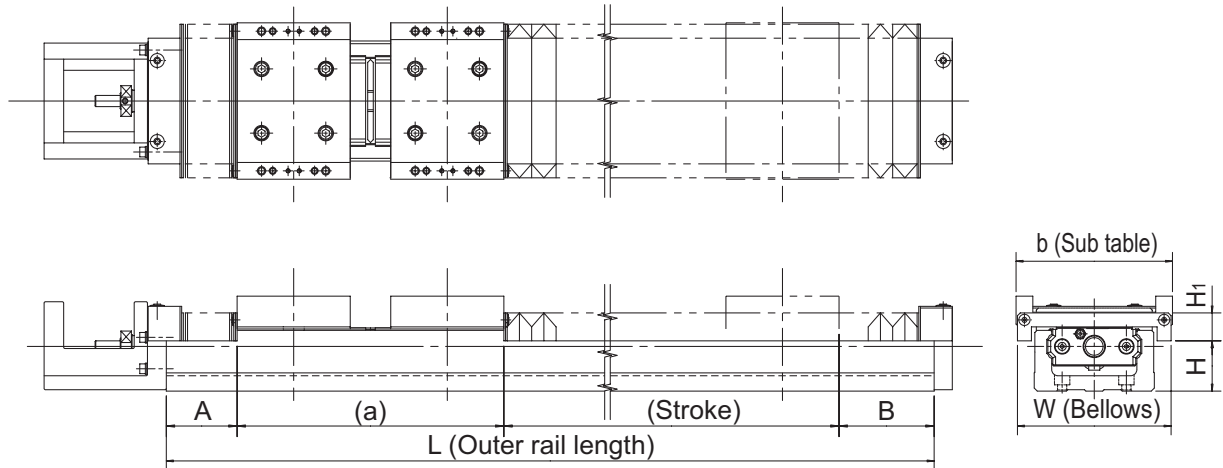
| Model No. | Stroke*1   | Outer rail length<br>L | A    | B    | a    | b  | W  | H    | H <sub>1</sub> |
|-----------|------------|------------------------|------|------|------|----|----|------|----------------|
| KR15      | 15(22.2)   | 75                     | 15.8 | 14   | 23   | 44 | 49 | 8    | 15.5           |
|           | 30(37.2)   | 100                    | 20.8 | 19   |      |    |    |      |                |
|           | 45(52.2)   | 125                    | 25.8 | 24   |      |    |    |      |                |
|           | 60(67.2)   | 150                    | 30.8 | 29   |      |    |    |      |                |
|           | 75(82.2)   | 175                    | 35.8 | 34   |      |    |    |      |                |
|           | 90(97.2)   | 200                    | 40.8 | 39   |      |    |    |      |                |
| KR20      | 20(30.8)   | 100                    | 18.8 | 17.2 | 33.2 | 52 | 60 | 10   | 20             |
|           | 55(67.8)   | 150                    | 25.3 | 23.7 |      |    |    |      |                |
|           | 80(93.6)   | 200                    | 37   | 36.2 |      |    |    |      |                |
| KR26      | 50(61.3)   | 150                    | 23.7 | 17.6 | 47.4 | 62 | 74 | 18   | 20             |
|           | 80(91.6)   | 200                    | 32.8 | 28.2 |      |    |    |      |                |
|           | 110(125.6) | 250                    | 40.8 | 36.2 |      |    |    |      |                |
|           | 160(175.6) | 300                    | 40.8 | 36.2 |      |    |    |      |                |
| KR30H     | 30(42)     | 150                    | 28.5 | 25.5 | 54   | 80 | 80 | 21.5 | 17.5           |
|           | 60(72)     | 200                    | 38.5 | 35.5 |      |    |    |      |                |
|           | 130(142)   | 300                    | 53.5 | 50.5 |      |    |    |      |                |
|           | 200(212)   | 400                    | 68.5 | 65.5 |      |    |    |      |                |
|           | 270(282)   | 500                    | 83.5 | 80.5 |      |    |    |      |                |
|           | 340(352)   | 600                    | 98.5 | 95.5 |      |    |    |      |                |
| KR33      | 30(42)     | 150                    | 28.4 | 25.6 | 54   | 86 | 84 | 24.5 | 20             |
|           | 70(82)     | 200                    | 33.4 | 30.6 |      |    |    |      |                |
|           | 150(162)   | 300                    | 43.4 | 40.6 |      |    |    |      |                |
|           | 220(232)   | 400                    | 58.4 | 55.6 |      |    |    |      |                |
|           | 300(312)   | 500                    | 68.4 | 65.6 |      |    |    |      |                |
|           | 370(382)   | 600                    | 83.4 | 80.6 |      |    |    |      |                |
|           | 450(462)   | 700                    | 93.4 | 90.6 |      |    |    |      |                |

| Model No. | Stroke*1     | Outer rail length<br>L | A     | B     | a    | b   | W   | H  | H <sub>i</sub> |
|-----------|--------------|------------------------|-------|-------|------|-----|-----|----|----------------|
| KR45H     | 160(177)     | 340                    | 41.1  | 40.9  | 81   | 104 | 104 | 28 | 28             |
|           | 240(255)     | 440                    | 52.1  | 51.9  |      |     |     |    |                |
|           | 320(339)     | 540                    | 60.1  | 59.9  |      |     |     |    |                |
|           | 400(423)     | 640                    | 68.1  | 67.9  |      |     |     |    |                |
|           | 470(491)     | 740                    | 84.1  | 83.9  |      |     |     |    |                |
|           | 550(575)     | 840                    | 92.1  | 91.9  |      |     |     |    |                |
|           | 640(659)     | 940                    | 100.1 | 99.9  |      |     |     |    |                |
| KR46      | 140(155)     | 340                    | 52.9  | 51.1  | 81   | 112 | 110 | 36 | 20             |
|           | 210(225)     | 440                    | 67.9  | 66.1  |      |     |     |    |                |
|           | 290(305)     | 540                    | 77.9  | 76.1  |      |     |     |    |                |
|           | 360(375)     | 640                    | 92.9  | 91.1  |      |     |     |    |                |
|           | 440(455)     | 740                    | 102.9 | 101.1 |      |     |     |    |                |
|           | 510(525)     | 840                    | 117.9 | 116.1 |      |     |     |    |                |
|           | 590(605)     | 940                    | 127.9 | 126.1 |      |     |     |    |                |
| KR55      | 700(719.6)   | 980                    | 84.6  | 80.6  | 95.2 | 124 | 154 | 37 | 40             |
|           | 790(809.6)   | 1080                   | 89.6  | 85.6  |      |     |     |    |                |
|           | 870(889.6)   | 1180                   | 99.6  | 95.6  |      |     |     |    |                |
|           | 960(979.6)   | 1280                   | 104.6 | 100.6 |      |     |     |    |                |
|           | 1050(1069.6) | 1380                   | 109.6 | 105.6 |      |     |     |    |                |
| KR65      | 680(703.2)   | 980                    | 85.1  | 81.7  | 110  | 170 | 184 | 40 | 47             |
|           | 860(883.2)   | 1180                   | 95.1  | 91.7  |      |     |     |    |                |
|           | 1030(1053.2) | 1380                   | 110.1 | 106.7 |      |     |     |    |                |
|           | 1290(1313.2) | 1680                   | 130.1 | 126.7 |      |     |     |    |                |

\*1 The value in the parentheses represents the maximum stroke.

\*2 The bellows for KR55 and KR65 are only suitable for horizontal orientation. If the bellows is to be used in other orientations (vertical or wall-mounted), contact THK.

[Model KR-B (with Two Long Nut Blocks)]



Unit: mm

| Model No. | Stroke <sup>*1,*2</sup> | Outer rail length L | A     | B     | a     | b   | W   | H    | H <sub>1</sub> |
|-----------|-------------------------|---------------------|-------|-------|-------|-----|-----|------|----------------|
| KR15      | 20(29.2)                | 125                 | 20.8  | 19    | 56    | 44  | 49  | 8    | 15.5           |
|           | 35(44.2)                | 150                 | 25.8  | 24    |       |     |     |      |                |
|           | 50(59.2)                | 175                 | 30.8  | 29    |       |     |     |      |                |
|           | 65(74.2)                | 200                 | 35.8  | 34    |       |     |     |      |                |
| KR20      | 25(34.8)                | 150                 | 18.8  | 17.2  | 79.2  | 52  | 60  | 10   | 20             |
|           | 60(71.8)                | 200                 | 25.3  | 23.7  |       |     |     |      |                |
| KR26      | 35(47.3)                | 200                 | 23.7  | 17.6  | 111.4 | 62  | 74  | 18   | 20             |
|           | 65(77.6)                | 250                 | 32.8  | 28.2  |       |     |     |      |                |
|           | 115(127.6)              | 300                 | 32.8  | 28.2  |       |     |     |      |                |
| KR30H     | 85(97.6)                | 300                 | 38.5  | 35.5  | 128.4 | 80  | 80  | 21.5 | 17.5           |
|           | 155(167.6)              | 400                 | 53.5  | 50.5  |       |     |     |      |                |
|           | 225(237.6)              | 500                 | 68.5  | 65.5  |       |     |     |      |                |
|           | 295(307.6)              | 600                 | 83.5  | 80.5  |       |     |     |      |                |
| KR33      | 80(96)                  | 300                 | 38.4  | 35.6  | 130   | 86  | 84  | 24.5 | 20             |
|           | 160(176)                | 400                 | 48.4  | 45.6  |       |     |     |      |                |
|           | 240(256)                | 500                 | 58.4  | 55.6  |       |     |     |      |                |
|           | 310(326)                | 600                 | 73.4  | 70.6  |       |     |     |      |                |
|           | 390(406)                | 700                 | 83.4  | 80.6  |       |     |     |      |                |
| KR45H     | 80(95)                  | 340                 | 28.1  | 27.9  | 189   | 104 | 104 | 28   | 28             |
|           | 155(170.5)              | 440                 | 41.1  | 39.4  |       |     |     |      |                |
|           | 230(247)                | 540                 | 52.1  | 51.9  |       |     |     |      |                |
|           | 310(331)                | 640                 | 60.1  | 59.9  |       |     |     |      |                |
|           | 400(415)                | 740                 | 68.1  | 67.9  |       |     |     |      |                |
|           | 465(483)                | 840                 | 84.1  | 83.9  |       |     |     |      |                |
| KR46      | 550(567)                | 940                 | 92.1  | 91.9  | 191   | 112 | 110 | 36   | 20             |
|           | 60(75)                  | 340                 | 37.9  | 36.1  |       |     |     |      |                |
|           | 130(145)                | 440                 | 52.9  | 51.1  |       |     |     |      |                |
|           | 210(225)                | 540                 | 62.9  | 61.1  |       |     |     |      |                |
|           | 280(295)                | 640                 | 77.9  | 76.1  |       |     |     |      |                |
|           | 360(375)                | 740                 | 87.9  | 86.1  |       |     |     |      |                |
|           | 430(445)                | 840                 | 102.9 | 101.1 |       |     |     |      |                |
| 510(525)  | 940                     | 112.9               | 111.1 |       |       |     |     |      |                |
| KR55      | 590(612)                | 980                 | 74.6  | 70.6  | 222.8 | 124 | 154 | 37   | 40             |
|           | 670(692)                | 1080                | 84.6  | 80.6  |       |     |     |      |                |
|           | 760(782)                | 1180                | 89.6  | 85.6  |       |     |     |      |                |
|           | 850(872)                | 1280                | 94.6  | 90.6  |       |     |     |      |                |
|           | 930(952)                | 1380                | 104.6 | 100.6 |       |     |     |      |                |
| KR65      | 550(578.6)              | 980                 | 75.1  | 71.7  | 254.6 | 170 | 184 | 40   | 47             |
|           | 720(748.6)              | 1180                | 90.1  | 86.7  |       |     |     |      |                |
|           | 900(928.6)              | 1380                | 100.1 | 96.7  |       |     |     |      |                |
|           | 1160(1188.6)            | 1680                | 120.1 | 116.7 |       |     |     |      |                |

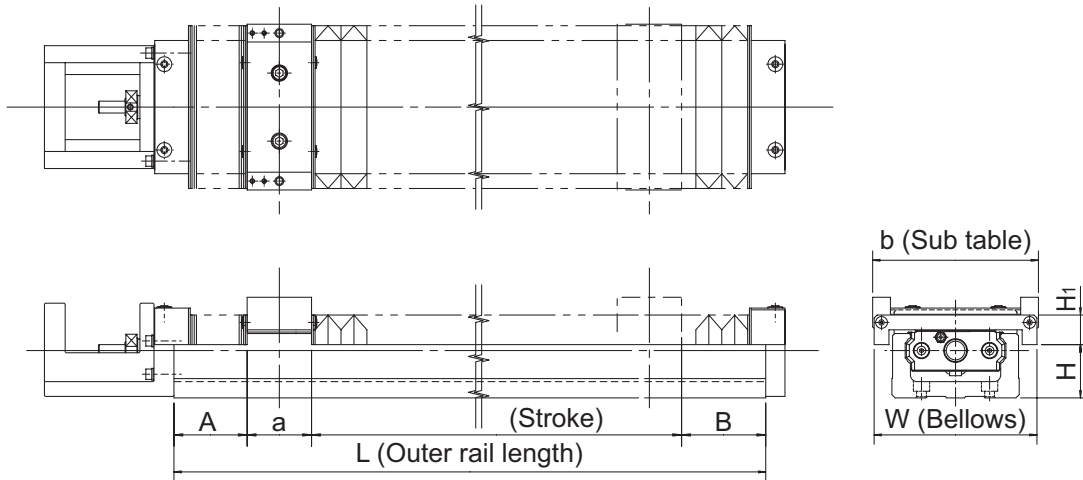
\*1 The strokes in the table are values when the blocks are in close contact with each other.

\*2 The value in the parentheses represents the maximum stroke.

\*3 The bellows for KR55 and KR65 are only suitable for horizontal orientation. If the bellows is to be used in other orientations (vertical or wall-mounted), contact THK.

Note) The bellows cannot be attached between the sub tables.

[Model KR-C (with a Single Short Nut Block)]



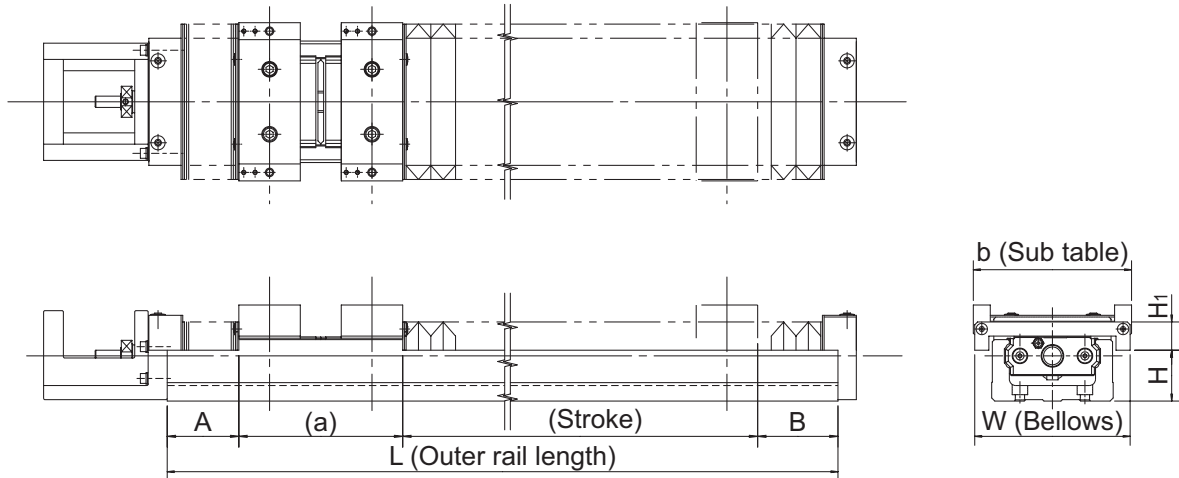
Unit: mm

| Model No. | Stroke*    | Outer rail length L | A     | B     | a    | b   | W   | H    | H <sub>i</sub> |
|-----------|------------|---------------------|-------|-------|------|-----|-----|------|----------------|
| KR30H     | 45(57.5)   | 150                 | 33.5  | 30.5  | 28.5 | 80  | 80  | 21.5 | 17.5           |
|           | 85(97.5)   | 200                 | 38.5  | 35.5  |      |     |     |      |                |
|           | 155(167.5) | 300                 | 53.5  | 50.5  |      |     |     |      |                |
|           | 225(237.5) | 400                 | 68.5  | 65.5  |      |     |     |      |                |
|           | 295(307.5) | 500                 | 83.5  | 80.5  |      |     |     |      |                |
|           | 365(377.5) | 600                 | 98.5  | 95.5  |      |     |     |      |                |
| KR33      | 55(67.5)   | 150                 | 28.4  | 25.6  | 28.5 | 86  | 84  | 24.5 | 20             |
|           | 95(107.5)  | 200                 | 33.4  | 30.6  |      |     |     |      |                |
|           | 165(177.5) | 300                 | 48.4  | 45.6  |      |     |     |      |                |
|           | 245(257.5) | 400                 | 58.4  | 55.6  |      |     |     |      |                |
|           | 315(327.5) | 500                 | 73.4  | 70.6  |      |     |     |      |                |
|           | 395(407.5) | 600                 | 83.4  | 80.6  |      |     |     |      |                |
|           | 465(477.5) | 700                 | 98.4  | 95.6  |      |     |     |      |                |
| KR45H     | 190(208.5) | 340                 | 44.1  | 43.9  | 43.5 | 104 | 104 | 28   | 28             |
|           | 275(292.5) | 440                 | 52.1  | 51.9  |      |     |     |      |                |
|           | 340(360.5) | 540                 | 68.1  | 67.9  |      |     |     |      |                |
|           | 425(444.5) | 640                 | 76.1  | 75.9  |      |     |     |      |                |
|           | 510(528.5) | 740                 | 84.1  | 83.9  |      |     |     |      |                |
|           | 580(596.5) | 840                 | 100.1 | 99.9  |      |     |     |      |                |
|           | 660(680.5) | 940                 | 108.1 | 107.9 |      |     |     |      |                |
| KR46      | 170(182.5) | 340                 | 57.9  | 56.1  | 43.5 | 112 | 110 | 36   | 20             |
|           | 240(252.5) | 440                 | 72.9  | 71.1  |      |     |     |      |                |
|           | 320(332.5) | 540                 | 82.9  | 81.1  |      |     |     |      |                |
|           | 390(402.5) | 640                 | 97.9  | 96.1  |      |     |     |      |                |
|           | 470(482.5) | 740                 | 107.9 | 106.1 |      |     |     |      |                |
|           | 540(552.5) | 840                 | 122.9 | 121.1 |      |     |     |      |                |
|           | 620(632.5) | 940                 | 132.9 | 131.1 |      |     |     |      |                |

\*The value in the parentheses represents the maximum stroke.



[Model KR-D (with Two Short Nut Blocks)]



Unit: mm

| Model No.  | Stroke <sup>*1,*2</sup> | Outer rail length L | A     | B     | a    | b   | W   | H    | H <sub>1</sub> |
|------------|-------------------------|---------------------|-------|-------|------|-----|-----|------|----------------|
| KR30H      | 15(28.6)                | 150                 | 23.5  | 20.5  | 77.4 | 80  | 80  | 21.5 | 17.5           |
|            | 45(58.6)                | 200                 | 33.5  | 30.5  |      |     |     |      |                |
|            | 115(128.6)              | 300                 | 48.5  | 45.5  |      |     |     |      |                |
|            | 185(198.6)              | 400                 | 63.5  | 60.5  |      |     |     |      |                |
|            | 255(268.6)              | 500                 | 78.5  | 75.5  |      |     |     |      |                |
| 325(338.6) | 600                     | 93.5                | 90.5  |       |      |     |     |      |                |
| KR33       | 55(67)                  | 200                 | 28.4  | 25.6  | 79   | 86  | 84  | 24.5 | 20             |
|            | 125(137)                | 300                 | 43.4  | 40.6  |      |     |     |      |                |
|            | 205(217)                | 400                 | 53.4  | 50.6  |      |     |     |      |                |
|            | 275(287)                | 500                 | 68.4  | 65.6  |      |     |     |      |                |
|            | 355(367)                | 600                 | 78.4  | 75.6  |      |     |     |      |                |
| 425(437)   | 700                     | 93.4                | 90.6  |       |      |     |     |      |                |
| KR45H      | 140(154)                | 340                 | 36.1  | 35.9  | 114  | 104 | 104 | 28   | 28             |
|            | 220(238)                | 440                 | 44.1  | 43.9  |      |     |     |      |                |
|            | 290(306)                | 540                 | 60.1  | 59.9  |      |     |     |      |                |
|            | 370(390)                | 640                 | 68.1  | 67.9  |      |     |     |      |                |
|            | 455(474)                | 740                 | 76.1  | 75.9  |      |     |     |      |                |
|            | 525(542)                | 840                 | 92.1  | 91.9  |      |     |     |      |                |
| 605(626)   | 940                     | 100.1               | 99.9  |       |      |     |     |      |                |
| KR46       | 110(130)                | 340                 | 47.9  | 46.1  | 116  | 112 | 110 | 36   | 20             |
|            | 180(200)                | 440                 | 62.9  | 61.1  |      |     |     |      |                |
|            | 260(280)                | 540                 | 72.9  | 71.1  |      |     |     |      |                |
|            | 330(350)                | 640                 | 87.9  | 86.1  |      |     |     |      |                |
|            | 410(430)                | 740                 | 97.9  | 96.1  |      |     |     |      |                |
|            | 480(500)                | 840                 | 112.9 | 111.1 |      |     |     |      |                |
| 560(580)   | 940                     | 122.9               | 121.1 |       |      |     |     |      |                |

\*1 The strokes in the table are values when the blocks are in close contact with each other.

\*2 The value in the parentheses represents the maximum stroke.

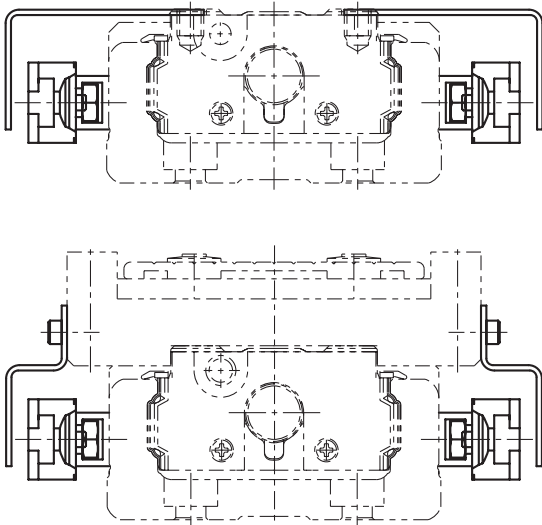
Note) The bellows cannot be attached between the sub tables.

## Sensor

Optional proximity sensors and photo sensors are available for model KR. Models equipped with a sensor are also provided with a dedicated sensor rail/sensor dog.

If the Outer rail length is short, a model having a sensor and a sensor rail attached on both sides is available.

### [Example of Installation]



Outer rail length with a sensor/sensor rail mounted on both sides  
Unit: mm

| Model No. | Outer rail length |
|-----------|-------------------|
| KR15A     | 75 · 100          |
| KR15B     | 125               |
| KR20A     | 100               |
| KR20B     | 150               |
| KR26A     | 150               |
| KR26B     | 200               |

Table14 With/without a sensor

| Symbol | Description  | Type   | Accessory   |
|--------|--|--|---|
| 0      | None   | —  | —   |
| 1      | With sensor rail   | —  | Mounting screws, sensor rail  |
| 2      | Photo Sensor* [3 units]  | EE-SX671 (Omron Corp.)                                 | Mounting screw/nut, detecting plate, sensor rail, mounting plate, connector (EE-1001) |
| 6      | Photo Sensor* [3 units]  | EE-SX674 (Omron Corp.)                                 | Mounting screw/nut, detecting plate, sensor rail, mounting plate, connector (EE-1001) |
| 7      | Proximity Sensor N.O. contact [3 units]                          | APM-D3A1-001 (Yamatake Corp.)                          | Mounting screw/nut, detecting plate, sensor rail                                      |
| B      | Proximity Sensor N.C. contact [3 units]                          | APM-D3B1-003 (Yamatake Corp.)                          | Mounting screw/nut, detecting plate, sensor rail                                      |
| E      | Proximity Sensor N.O. contact [1 unit]<br>N.C. contact [2 units] | APM-D3A1-001<br>APM-D3B1-003 (Yamatake Corp.)          | Mounting screw/nut, detecting plate, sensor rail                                      |
| H      | Proximity Sensor N.O. contact [3 units]                          | GX-F12A (Panasonic Electric Works SUNX)                | Mounting screw/nut, detecting plate, sensor rail                                      |
| L      | Proximity Sensor N.C. contact [3 units]                          | GX-F12B (Panasonic Electric Works SUNX)                | Mounting screw/nut, detecting plate, sensor rail                                      |
| J      | Proximity Sensor N.O. contact [1 unit]<br>N.C. contact [2 units] | GX-F12A<br>GX-F12B (Panasonic Electric Works SUNX)     | Mounting screw/nut, detecting plate, sensor rail                                      |
| M      | Proximity Sensor N.O. contact [1 unit]<br>N.C. contact [2 units] | GX-F12A-P<br>GX-F12B-P (Panasonic Electric Works SUNX) | Mounting screw/nut, detecting plate, sensor rail                                      |

N.O. contact: normally open contact

N.C. contact: normally closed contact

\*The photo-sensors can be switched between ON when lit and ON when unlit.

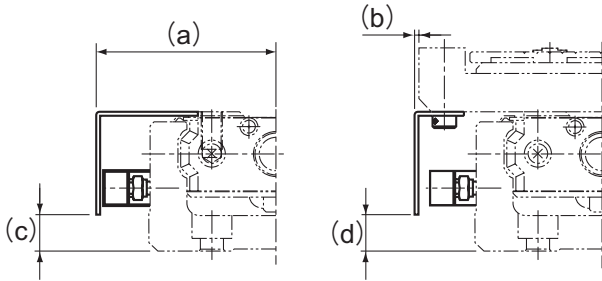
**[Proximity Sensor]**

APM-D3A1-001 (Yamatake Corp.) 3 units  
 APM-D3B1-003 (Yamatake Corp.) 3 units  
 GX-F12A (Panasonic Electric Works SUNX) 3 units

GX-F12B (Panasonic Electric Works SUNX) 3 units  
 GX-F12A-P (Panasonic Electric Works SUNX) 3 units  
 GX-F12B-P (Panasonic Electric Works SUNX) 3 units

● **Proximity Sensor: APM-D3A1-001 APM-D3B1-003 (Yamatake Corp.)**

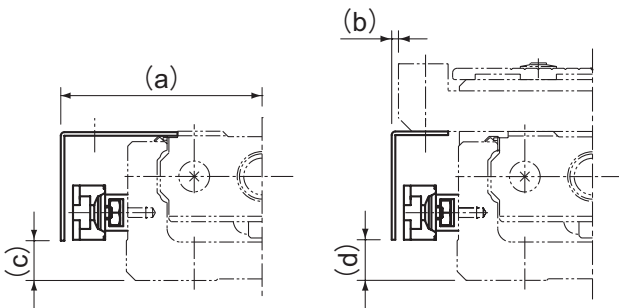
Unit: mm



| Model No. | a    | b    | c    | d   |
|-----------|------|------|------|-----|
| KR15      | 27.8 | 5.8  | 1.4  | 1.4 |
| KR20      | 32.5 | 6.6  | 6    | 6   |
| KR26      | 37   | 6.4  | 8    | 8   |
| KR30H     | 43.3 | 3.3  | 8.8  | 9   |
| KR33      | 42.5 | -0.6 | 8.8  | 9   |
| KR45H     | 53.2 | 1.2  | 14   | 14  |
| KR46      | 55.4 | -0.6 | 21.8 | 22  |
| KR55      | 62.4 | 0.4  | 22   | 22  |
| KR65      | 77.4 | -7.6 | 25.1 | 25  |

● **Proximity Sensor: GX-F12A GX-F12B GX-F12A-P GX-F12B-P (Panasonic Electric Works SUNX)**

Unit: mm



| Model No. | a    | b   | c    | d  |
|-----------|------|-----|------|----|
| KR20      | 34   | 8.1 | 3.6  | 4  |
| KR26      | 38.5 | 7.9 | 6    | 6  |
| KR30H     | 45   | 5   | 8.8  | 9  |
| KR33      | 44.5 | 1.5 | 8.8  | 9  |
| KR45H     | 54.8 | 2.8 | 13.8 | 14 |
| KR46      | 57.5 | 1.5 | 21.8 | 22 |
| KR55      | 64.5 | 2.5 | 22   | 22 |
| KR65      | 79   | -6  | 25.1 | 25 |

**[Photo Sensor]**

EE-SX671 (Omron Corp.) 3 units

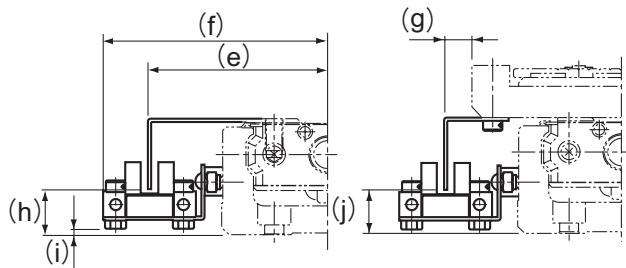
EE-SX674 (Omron Corp.) 3 units

Connector EE-1001 (Omron Corp.) 3 units

Note) The connector is an appended article.

**● Photo Sensor: EE-SX671 (Omron Corp.)**

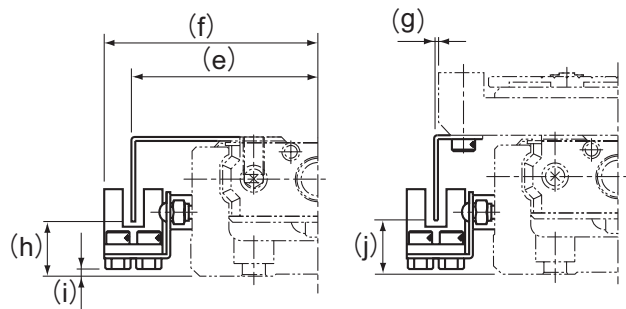
Unit: mm



| Model No. | e    | f    | g    | h    | i    | j    |
|-----------|------|------|------|------|------|------|
| KR20      | 41.3 | 53.8 | 15   | 9.4  | 0.9  | 9.5  |
| KR26      | 46   | 58.7 | 14.9 | 11.4 | 2.9  | 11.5 |
| KR30H     | 51.3 | 63.9 | 11.3 | 13.8 | 1.4  | 13.5 |
| KR33      | 50.8 | 63.7 | 7.7  | 12.8 | 2.2  | 13   |
| KR45H     | 61.2 | 73.8 | 9.3  | 18.3 | 6.4  | 18.5 |
| KR46      | 63.6 | 76.6 | 7.7  | 25.8 | 15.2 | 26   |
| KR55      | 70.7 | 83.5 | 8.6  | 24.5 | 13.6 | 25   |
| KR65      | 85.5 | 98.5 | 0.6  | 28.1 | 16.6 | 28   |

**● Photo Sensor: EE-SX674 (Omron Corp.)**

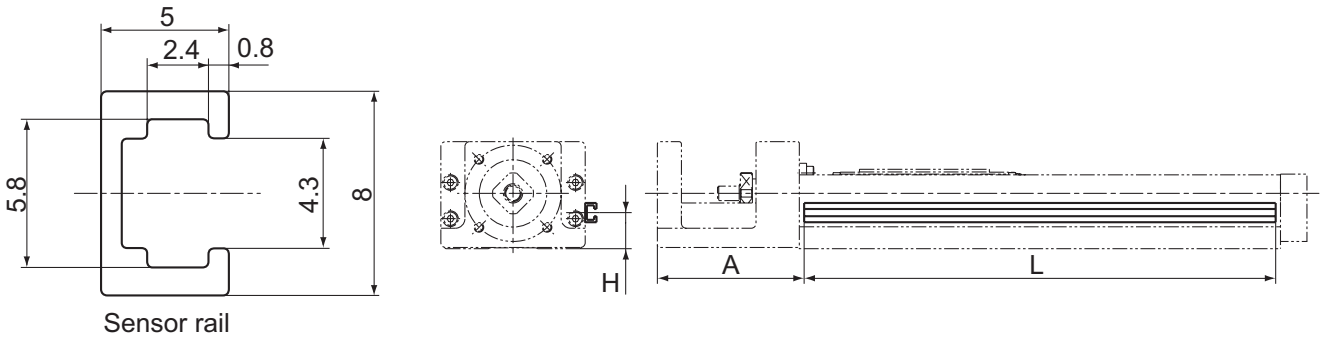
Unit: mm



| Model No. | e    | f    | g    | h    | i    | j  |
|-----------|------|------|------|------|------|----|
| KR20      | 38.3 | 44.8 | 12.5 | 10.9 | 0.6  | 11 |
| KR26      | 43.5 | 49.7 | 12.5 | 12.9 | 2.6  | 13 |
| KR30H     | 46.2 | 52.4 | 6.3  | 13.8 | 1.1  | 14 |
| KR33      | 44.5 | 50.7 | 1.5  | 12.8 | 1.7  | 13 |
| KR45H     | 56.2 | 62.3 | 4.2  | 19   | 6.1  | 19 |
| KR46      | 57.5 | 63.6 | 1.5  | 25.8 | 14.1 | 26 |
| KR55      | 63.5 | 70.5 | 1.5  | 24.5 | 13.1 | 24 |
| KR65      | 79   | 85.5 | -6   | 28.6 | 16.1 | 28 |

[Sensor Rail]

The sensor rail can be attached alone.



Unit: mm

| Model No. | Stroke* | Outer rail length | H   | A    | L   |
|-----------|---------|-------------------|-----|------|-----|
| KR15      | 25      | 75                | 5.5 | 37.5 | 88  |
|           | 50      | 100               |     |      | 113 |
|           | 75      | 125               |     |      | 138 |
|           | 100     | 150               |     |      | 163 |
|           | 125     | 175               |     |      | 188 |
|           | 150     | 200               |     |      | 213 |
| KR20      | 30      | 100               | 10  | 43   | 111 |
|           | 80      | 150               |     |      | 161 |
|           | 130     | 200               |     |      | 211 |
| KR26      | 60      | 150               | 12  | 54   | 161 |
|           | 110     | 200               |     |      | 211 |
|           | 160     | 250               |     |      | 261 |
|           | 210     | 300               |     |      | 311 |
| KR30H     | 50      | 150               | 14  | 61   | 146 |
|           | 100     | 200               |     |      | 196 |
|           | 200     | 300               |     |      | 296 |
|           | 300     | 400               |     |      | 396 |
|           | 400     | 500               |     |      | 496 |
|           | 500     | 600               |     |      | 596 |
| KR33      | 50      | 150               | 15  | 61   | 146 |
|           | 100     | 200               |     |      | 196 |
|           | 200     | 300               |     |      | 296 |
|           | 300     | 400               |     |      | 396 |
|           | 400     | 500               |     |      | 496 |
|           | 500     | 600               |     |      | 596 |
|           | 600     | 700               |     |      | 696 |
| KR45H     | 200     | 340               | 19  | 90   | 336 |
|           | 300     | 440               |     |      | 436 |
|           | 400     | 540               |     |      | 536 |
|           | 500     | 640               |     |      | 636 |
|           | 600     | 740               |     |      | 736 |
|           | 700     | 840               |     |      | 836 |
|           | 800     | 940               |     |      | 936 |

Unit: mm

| Model No. | Stroke* | Outer rail length | H  | A    | L    |
|-----------|---------|-------------------|----|------|------|
| KR46      | 190     | 340               | 28 | 89.5 | 336  |
|           | 290     | 440               |    |      | 436  |
|           | 390     | 540               |    |      | 536  |
|           | 490     | 640               |    |      | 636  |
|           | 590     | 740               |    |      | 736  |
|           | 690     | 840               |    |      | 836  |
|           | 790     | 940               |    |      | 936  |
| KR55      | 800     | 980               | 27 | 96   | 976  |
|           | 900     | 1080              |    |      | 1076 |
|           | 1000    | 1180              |    |      | 1176 |
|           | 1100    | 1280              |    |      | 1276 |
| KR65      | 1200    | 1380              | 30 | 102  | 1376 |
|           | 790     | 980               |    |      | 976  |
|           | 990     | 1180              |    |      | 1176 |
|           | 1190    | 1380              |    |      | 1376 |
|           | 1490    | 1680              |    |      | 1676 |

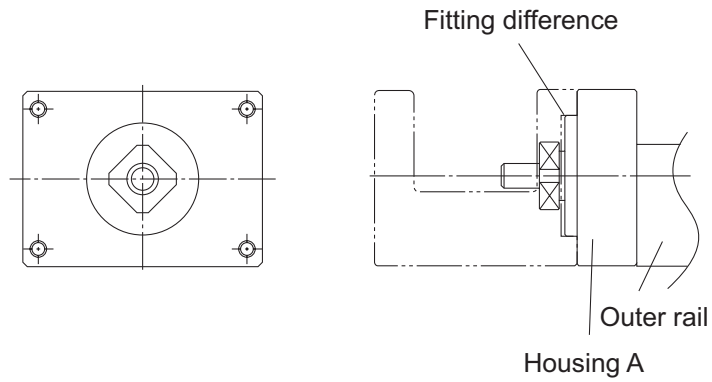
# Housing

## [Housing A]

THK also offers Housing A provided with a separate motor, and a turnaround type of Housing A, as options in order to support a motor bracket or a turnaround section that the customer may separately produce.

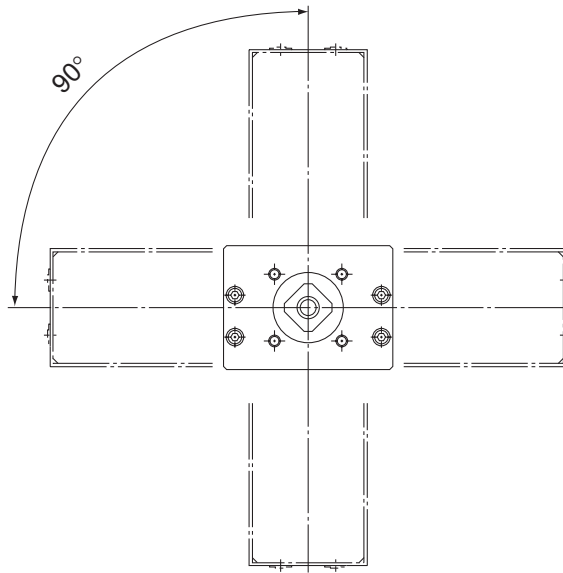
## [Housing A for a Separate Motor]

By using the fitting difference, the user can easily mount a separately manufactured motor bracket.



## [Turnaround Housing A]

Since the mounting holes are drilled in constant pitch, the user can select the motor bracket orientation.



## Intermediate Flange

### [Motor Used and Applicable Intermediate Flanges for Model KR]

Several types of intermediate flanges for mounting motors are available for model KR. Specify an intermediate flange that matches the motor used.

Table15 Table of Motors Used and Corresponding Intermediate Flanges

| Motor type          |                  | Rated output | Dimension angle | KR15     | KR20 | KR26 | KR30H | KR33 | KR45H | KR46 | KR55 | KR65 |    |    |    |
|---------------------|------------------|--------------|-----------------|----------|------|------|-------|------|-------|------|------|------|----|----|----|
| AC servomotor       | Yaskawa Electric | Σ-mini       | SGMM-A1         | 10W      | □25  | 0B   | 3N    | 0N   | —     | —    | —    | —    |    |    |    |
|                     |                  |              | SGMM-A2         | 20W      |      | 0B   | 3N    | 0N   | —     | —    | —    | —    |    |    |    |
|                     |                  |              | SGMM-A3         | 30W      |      | —    | 3N    | 0N   | —     | —    | —    | —    |    |    |    |
|                     |                  | Σ-V          | SGMJV-A5        | 50W      | □40  | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              | SGMJV-01        | 100W     |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              | SGMAV-C2        | 150W     |      | —    | —     | —    | —     | —    | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | —    | 0B   | 0F | —  | —  |
|                     |                  |              | SGMJV-02        | 200W     |      | □60  | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     |                  |              |                 |          |      |      | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     |                  |              | SGMJV-04        | 400W     |      |      | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     | —                |              |                 |          |      |      | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     | SGMAV-04         | 400W         | —               | —        | —    |      | —     | —    | 0D    | 40   | 00   | 0A   |    |    |    |
|                     |                  |              | —               | —        | —    |      | —     | —    | —     | —    | 00   | 0A   |    |    |    |
|                     | SGMAV-06         | 550W         | —               | —        | —    |      | —     | —    | —     | —    | 00   | 0A   |    |    |    |
|                     |                  |              | —               | —        | —    |      | —     | —    | —     | —    | 0B   | 0G   |    |    |    |
|                     | SGMAV-08         | 750W         | —               | —        | —    |      | —     | —    | —     | —    | 0B   | 0G   |    |    |    |
|                     |                  |              | —               | —        | —    |      | —     | —    | —     | —    | 0B   | 0G   |    |    |    |
|                     | Σ-III            | SGMAS-A5     | 50W             | □40      | —    | 0B   | 0B    | 0B   | 5H    | 0B   | 0F   | —    | —  |    |    |
|                     |                  |              |                 |          | —    | —    | —     | 0B   | 5H    | 0B   | 0F   | —    | —  |    |    |
|                     |                  | SGMAS-01     | 100W            |          | —    | —    | —     | —    | —     | 0D   | 40   | 00   | 0A |    |    |
|                     |                  |              |                 |          | —    | —    | —     | —    | —     | 0D   | 40   | 00   | 0A |    |    |
|                     |                  | SGMAS-02     | 200W            |          | □60  | —    | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     |                  | SGMAS-04     | 400W            |          |      | —    | —     | —    | —     | —    | —    | —    | 0B | 00 |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | —    | —    | 0B | 00 |    |
|                     | SGMPS-02         | 200W         | □80             | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 00 |    |    |
|                     |                  |              |                 | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 00 |    |    |
|                     | SGMPS-04         | 400W         |                 | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 0G |    |    |
|                     |                  |              |                 | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 0G |    |    |
|                     | Σ-II             | SGMAH-A3     |                 | 30W      | □40  | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  | SGMAH-01     |                 | 100W     |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     |                  | SGMAH-02     | 200W            | □60      |      | —    | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     |                  | SGMAH-04     | 400W            |          |      | —    | —     | —    | —     | —    | —    | —    | 0B | 00 |    |
|                     |                  |              |                 |          |      | —    | —     | —    | —     | —    | —    | —    | 0B | 00 |    |
|                     | SGMPH-02         | 200W         | □80             |          | —    | —    | —     | —    | —     | —    | —    | 0B   | 00 |    |    |
| —                   |                  |              |                 |          | —    | —    | —     | —    | —     | —    | 0B   | 00   |    |    |    |
| SGMPH-04            | 400W             | —            |                 |          | —    | —    | —     | —    | —     | —    | 0B   | 0G   |    |    |    |
|                     |                  | —            |                 |          | —    | —    | —     | —    | —     | —    | 0B   | 0G   |    |    |    |
| SGMAH-08            | 750W             | —            |                 | —        | —    | —    | —     | —    | —     | 0B   | 0G   |      |    |    |    |
|                     |                  | —            |                 | —        | —    | —    | —     | —    | —     | 0B   | 0G   |      |    |    |    |
| Mitsubishi Electric | MELSERVO         | J2-Jr        |                 | HC-AQ013 | 10W  | □28  | 0A    | 3M   | 0M    | —    | —    | —    | —  |    |    |
|                     |                  |              |                 | HC-AQ023 | 20W  |      | 0A    | 3M   | 0M    | —    | —    | —    | —  |    |    |
|                     |                  |              | HC-AQ033        | 30W      | —    |      | 3M    | 0M   | —     | —    | —    | —    |    |    |    |
|                     |                  | J3           | HF-MP053        | 50W      | □40  | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              | HF-MP13         | 100W     |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              |                 |          |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | —  |    |
|                     |                  |              | HF-MP23         | 200W     |      | □60  | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     |                  |              |                 |          |      |      | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     |                  | HF-MP43      | 400W            | —        | —    |      | —     | —    | —     | 0D   | 40   | 00   | 0A |    |    |
|                     |                  |              |                 | —        | —    |      | —     | —    | —     | 0D   | 40   | 00   | 0A |    |    |
|                     |                  | HF-MP73      | 750W            | □80      | —    |      | —     | —    | —     | —    | —    | —    | 0B | 0G |    |
|                     |                  |              |                 |          | —    |      | —     | —    | —     | —    | —    | —    | 0B | 0G |    |
|                     |                  | J2 Super     | HC-MFS053       |          | 50W  | □40  | —     | 0B   | 0B    | 0B   | 5H   | 0B   | 0F | —  | —  |
|                     |                  |              |                 |          |      |      | —     | 0B   | 0B    | 0B   | 5H   | 0B   | 0F | —  | —  |
|                     |                  |              | HC-MFS13        |          | 100W |      | —     | —    | —     | 0B   | 5H   | 0B   | 0F | —  | —  |
|                     |                  |              |                 |          |      |      | —     | —    | —     | 0B   | 5H   | 0B   | 0F | —  | —  |
|                     |                  |              | HC-MFS23        | 200W     | □60  |      | —     | —    | —     | —    | —    | 0D   | 40 | 00 | 0A |
|                     | —                |              |                 |          |      |      | —     | —    | —     | —    | 0D   | 40   | 00 | 0A |    |
|                     | HC-MFS43         | 400W         | —               | —        |      | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |    |    |
|                     |                  |              | —               | —        |      | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |    |    |
|                     | HC-MFS73         | 750W         | □80             | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 0G |    |    |
|                     |                  |              |                 | —        |      | —    | —     | —    | —     | —    | —    | 0B   | 0G |    |    |

| Motor type          |                 |             |                     | Rated output | Dimension angle | KR15 | KR20 | KR26 | KR30H | KR33 | KR45H | KR46 | KR55 | KR65 |    |   |
|---------------------|-----------------|-------------|---------------------|--------------|-----------------|------|------|------|-------|------|-------|------|------|------|----|---|
| AC servomotor       | Panasonic Corp. | MINAS       | A4                  | MSMD5A       | 50W             | □38  | —    | 0A   | 0A    | 0A   | 5K    | 0A   | 0G   | —    | —  |   |
|                     |                 |             |                     | MSMD01       | 100W            |      | —    | —    | —     | 0A   | 5K    | 0A   | 0G   | —    | —  |   |
|                     |                 |             |                     | MQMA01       |                 |      | 200W | —    | —     | —    | —     | —    | 0C   | 30   | —  | — |
|                     |                 |             |                     | MSMD02       | 400W            |      |      | —    | —     | —    | —     | —    | 0C   | 30   | —  | — |
|                     |                 |             | MAMA02              | □60          |                 | —    | —    | —    | —     | —    | 0C    | 30   | —    | —    |    |   |
|                     |                 |             | MSMD04              |              |                 | 750W | —    | —    | —     | —    | —     | 0C   | 30   | —    | —  |   |
|                     |                 |             | MAMA04              | □80          |                 |      | —    | —    | —     | —    | —     | —    | —    | 0A   | 2B |   |
|                     |                 |             | MSMD08              |              | 200W            | —    | —    | —    | —     | —    | —     | —    | 0A   | 2B   |    |   |
|                     |                 | MAMA08      | AIII                | MSMA3A       |                 | 30W  | □38  | —    | 0A    | 0A   | 0A    | 5K   | 0A   | 0G   | —  | — |
|                     |                 | MSMA5A      |                     | 50W          | —               | 0A   |      | 0A   | 0A    | 5K   | 0A    | 0G   | —    | —    |    |   |
|                     |                 | MSMA01      |                     | 100W         | —               | —    |      | —    | 0A    | 5K   | 0A    | 0G   | —    | —    |    |   |
|                     |                 | MSMA02      |                     | 200W         | —               | —    |      | —    | —     | —    | 0C    | 30   | —    | —    |    |   |
|                     |                 | MAMA02      |                     |              | □60             | —    | —    | —    | —     | —    | 0C    | 30   | —    | —    |    |   |
|                     |                 | MSMA04      |                     | 400W         |                 | —    | —    | —    | —     | —    | 0C    | 30   | —    | —    |    |   |
|                     |                 | MAMA04      |                     |              | 750W            | —    | —    | —    | —     | —    | 0C    | 30   | —    | —    |    |   |
|                     |                 | MSMA08      |                     | 200W         |                 | —    | —    | —    | —     | —    | —     | —    | 0A   | 2B   |    |   |
|                     | MAMA08          | □80         | —                   |              | —               | —    | —    | —    | —     | —    | 0A    | 2B   |      |      |    |   |
|                     | SANYO Electric  |             | SANMOTION           | Q1           | Q1AA04003D      | 30W  | □40  | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | — |
|                     |                 | Q1AA04005D  |                     |              | 50W             | —    |      | 0B   | 0B    | 0B   | 5H    | 0B   | 0F   | —    | —  |   |
|                     |                 | Q1AA04010D  |                     |              | 100W            | —    |      | —    | —     | 0B   | 5H    | 0B   | 0F   | —    | —  |   |
|                     |                 | Q1AA06020D  |                     |              | 200W            | —    |      | —    | —     | —    | —     | 0D   | 40   | 00   | 0A |   |
|                     |                 | Q1AA06040D  |                     | 400W         | □60             | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
|                     |                 | Q1AA07075D  |                     | 750W         |                 | □76  | —    | —    | —     | —    | —     | —    | 0A   | 2B   |    |   |
|                     |                 | Omron       |                     | OMNUC G5     | R88M-K05030     | 50W  | □40  | —    | 0B    | 0B   | 0B    | 5H   | 0B   | 0F   | —  | — |
|                     |                 |             |                     |              | R88M-K10030     | 100W |      | —    | —     | —    | 0B    | 5H   | 0B   | 0F   | —  | — |
|                     |                 |             | R88M-K20030         |              | 200W            | □60  |      | —    | —     | —    | —     | 0C   | 30   | —    | —  |   |
|                     |                 |             | R88M-K40030         |              | 400W            |      |      | —    | —     | —    | —     | 0C   | 30   | —    | —  |   |
|                     |                 |             | R88M-K75030         | 750W         | □80             | —    | —    | —    | —     | —    | —     | 0A   | 2B   |      |    |   |
|                     |                 |             | OMNUC G             | R88M-G05030  | 50W             | □40  | —    | 0B   | 0B    | 0B   | 5H    | 0B   | 0F   | —    | —  |   |
|                     |                 |             |                     | R88M-G10030  | 100W            |      | —    | —    | —     | 0B   | 5H    | 0B   | 0F   | —    | —  |   |
|                     |                 |             |                     | R88M-GP10030 | 200W            |      | □60  | —    | —     | —    | —     | —    | 0C   | 30   | —  | — |
|                     |                 | R88M-G20030 |                     | 400W         |                 |      |      | —    | —     | —    | —     | 0C   | 30   | —    | —  |   |
| R88M-G40030         |                 | 400W        |                     | □80          | —               | —    | —    | —    | —     | —    | —     | 0A   | 2B   |      |    |   |
| R88M-GP20030        | 200W            | —           |                     |              | —               | —    | —    | —    | —     | —    | 0A    | 2B   |      |      |    |   |
| R88M-GP40030        | 400W            | —           |                     |              | —               | —    | —    | —    | —     | —    | 0A    | 2B   |      |      |    |   |
| R88M-G75030         | 750W            | —           |                     |              | —               | —    | —    | —    | —     | —    | 0A    | 2B   |      |      |    |   |
| Fanuc               | βis series      | βis0.2/5000 | 50W                 | □40          | —               | 0B   | 0B   | 0B   | 5H    | 0B   | 0F    | —    | —    |      |    |   |
|                     |                 | βis0.3/5000 | 100W                |              | —               | —    | —    | 0B   | 5H    | 0B   | 0F    | —    | —    |      |    |   |
|                     |                 | βis0.4/5000 | 130W                |              | □60             | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
|                     |                 | βis0.5/6000 | 350W                |              |                 | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
|                     |                 | βis1/6000   | 500W                |              |                 | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
| Keyence Corporation | MV              | MV-M05      | 50W                 | □40          | —               | 0B   | 0B   | 0B   | 5H    | 0B   | 0F    | —    | —    |      |    |   |
|                     |                 | MV-M10      | 100W                |              | —               | —    | —    | 0B   | 5H    | 0B   | 0F    | —    | —    |      |    |   |
|                     |                 | MV-M20      | 200W                |              | □60             | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
|                     |                 | MV-M40      | 400W                |              |                 | —    | —    | —    | —     | —    | 0D    | 40   | 00   | 0A   |    |   |
|                     |                 | MV-M75      | 750W                |              |                 | □76  | —    | —    | —     | —    | —     | —    | 0A   | 2B   |    |   |
| Stepping motor      | Oriental Motor  | αStep       | ASC3 *              | □28          | 0D              | 0F   | 0F   | —    | —     | —    | —     | —    | —    |      |    |   |
|                     |                 |             | AS46, ASC46, AR46   | □42          | —               | 0E   | 0E   | 1C   | 5I    | —    | —     | —    | —    |      |    |   |
|                     |                 |             | AS6 *, ASC66, AR6 * | □60          | —               | —    | —    | 0E   | 5G    | 0F   | 10    | —    | —    |      |    |   |
|                     |                 |             | AS9 *               | □85          | —               | —    | —    | —    | —     | —    | —     | 0G   | 2F   |      |    |   |
|                     |                 |             | CSK52 *             | □28          | 0D              | 0F   | 0F   | —    | —     | —    | —     | —    | —    |      |    |   |
|                     |                 |             | CSK54 *             | □42          | —               | 0E   | 0E   | 1C   | 5I    | —    | —     | —    | —    |      |    |   |
|                     |                 | 5 phase     | CSK II              | CSK56 *      | □60             | —    | —    | —    | 0E    | 5G   | 0F    | 10   | —    | —    |    |   |
|                     |                 |             |                     | CSK59 *      | □85             | —    | —    | —    | —     | —    | —     | —    | 0G   | 2F   |    |   |
|                     |                 |             |                     | RK54 *       | □42             | —    | 0E   | 0E   | 1C    | 5I   | —     | —    | —    | —    |    |   |
|                     |                 | RK          | RK56 *              | □60          | —               | —    | —    | 0E   | 5G    | 0F   | 10    | —    | —    |      |    |   |
|                     |                 |             | RK59 *              | □85          | —               | —    | —    | —    | —     | —    | —     | 0G   | 2F   |      |    |   |
|                     |                 |             | 2 phase             | UMK          | UMK24 *         | □42  | —    | 0E   | 0E    | 1C   | 5I    | —    | —    | —    | —  |   |
| UMK26 *             | □56.4           | —           |                     |              | —               | —    | 0D   | 5F   | —     | —    | —     | —    |      |      |    |   |
| CSK                 | CSK24 *         | □42         |                     | —            | 0E              | 0E   | 1C   | 5I   | —     | —    | —     | —    |      |      |    |   |
|                     | CSK26 *         | □56.4       |                     | —            | —               | —    | 0D   | 5F   | —     | —    | —     | —    |      |      |    |   |

Note1) The symbols in the table indicate the housing A and intermediate flange.

Note2) For motor coupling, contact THK.

Note3) Model KR15 has a limit in input torque. The permissible input torque for model KR1501 is 0.051 N-m at a maximum and that for model KR1502 is 0.103 N-m at a maximum. If the maximum torque of the motor mounted to model KR15 exceeds the permissible input torque, take a safety measure such as setting a torque limit.

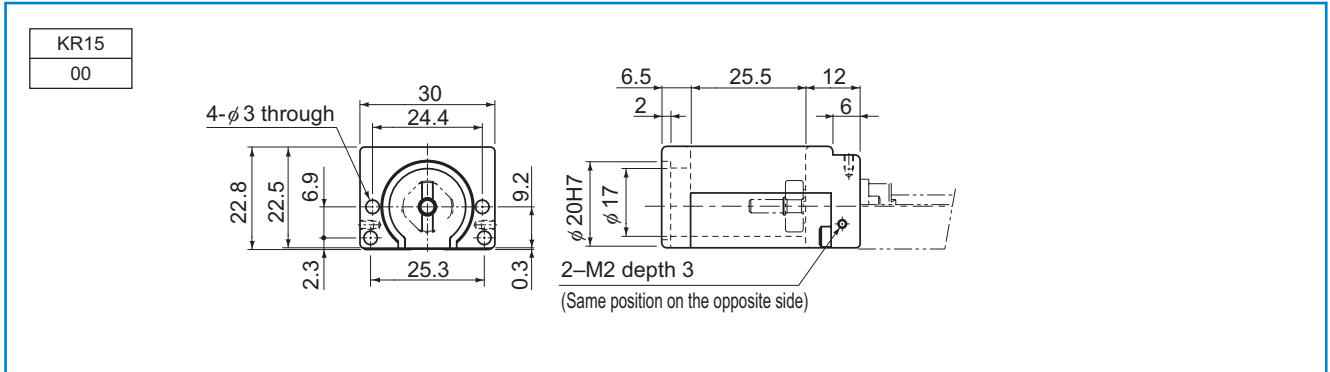


[Dimensional Drawing of Housing A/Intermediate Flange for Model KR]

● For Model KR15

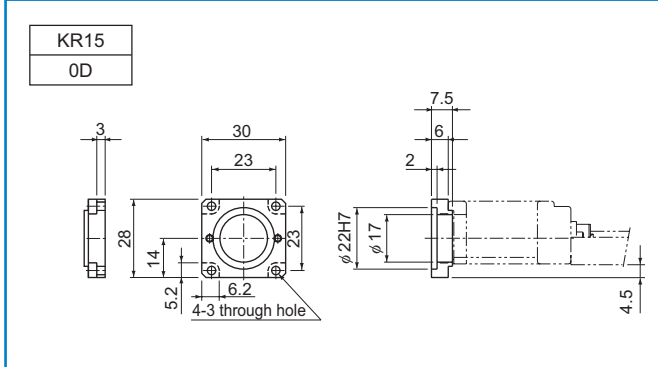
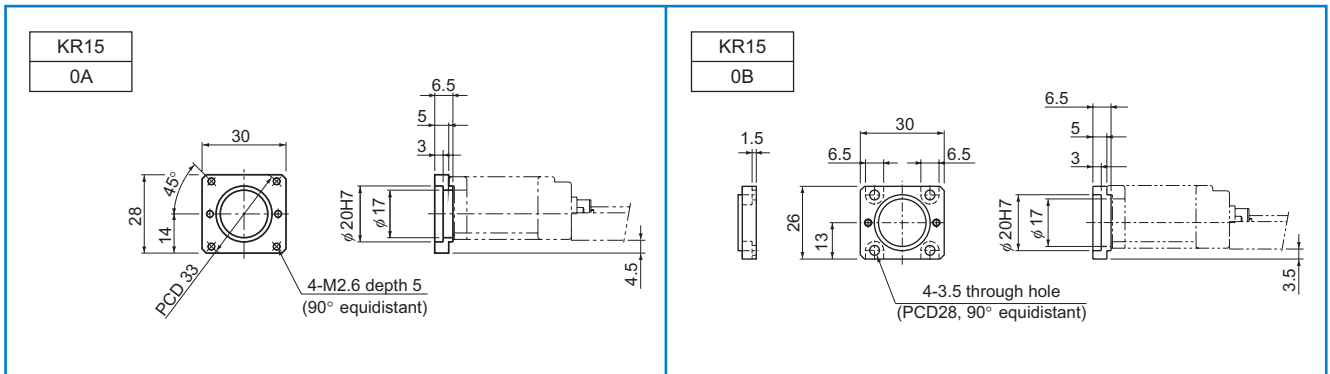
|      |                           |
|------|---------------------------|
| KR** | ··· Actuator model number |
| ●◇   | ···●: Housing A           |
|      | ◇: Intermediate Flange    |

■ Housing A



■ Intermediate Flange

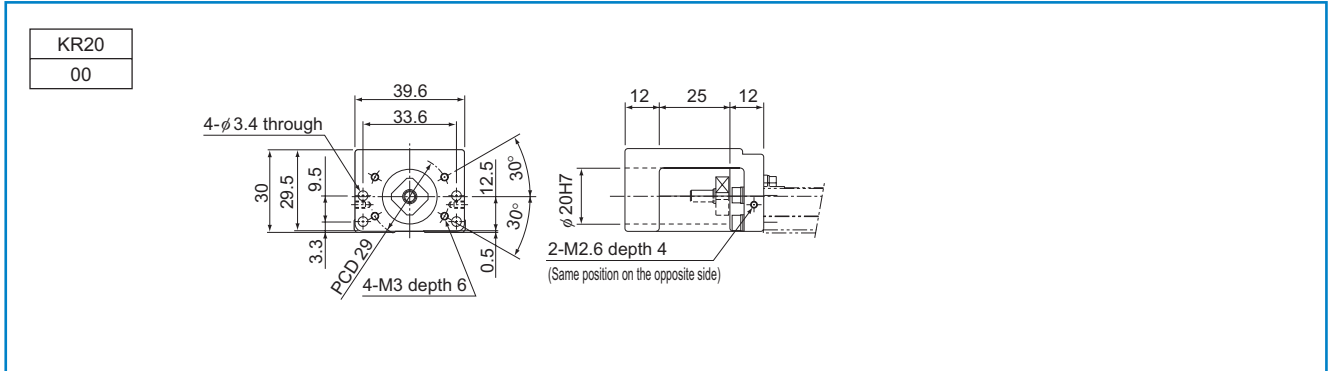
Each intermediate flange is made of steel and provided with THK AP-C treatment, a surface treatment for corrosion resistance.



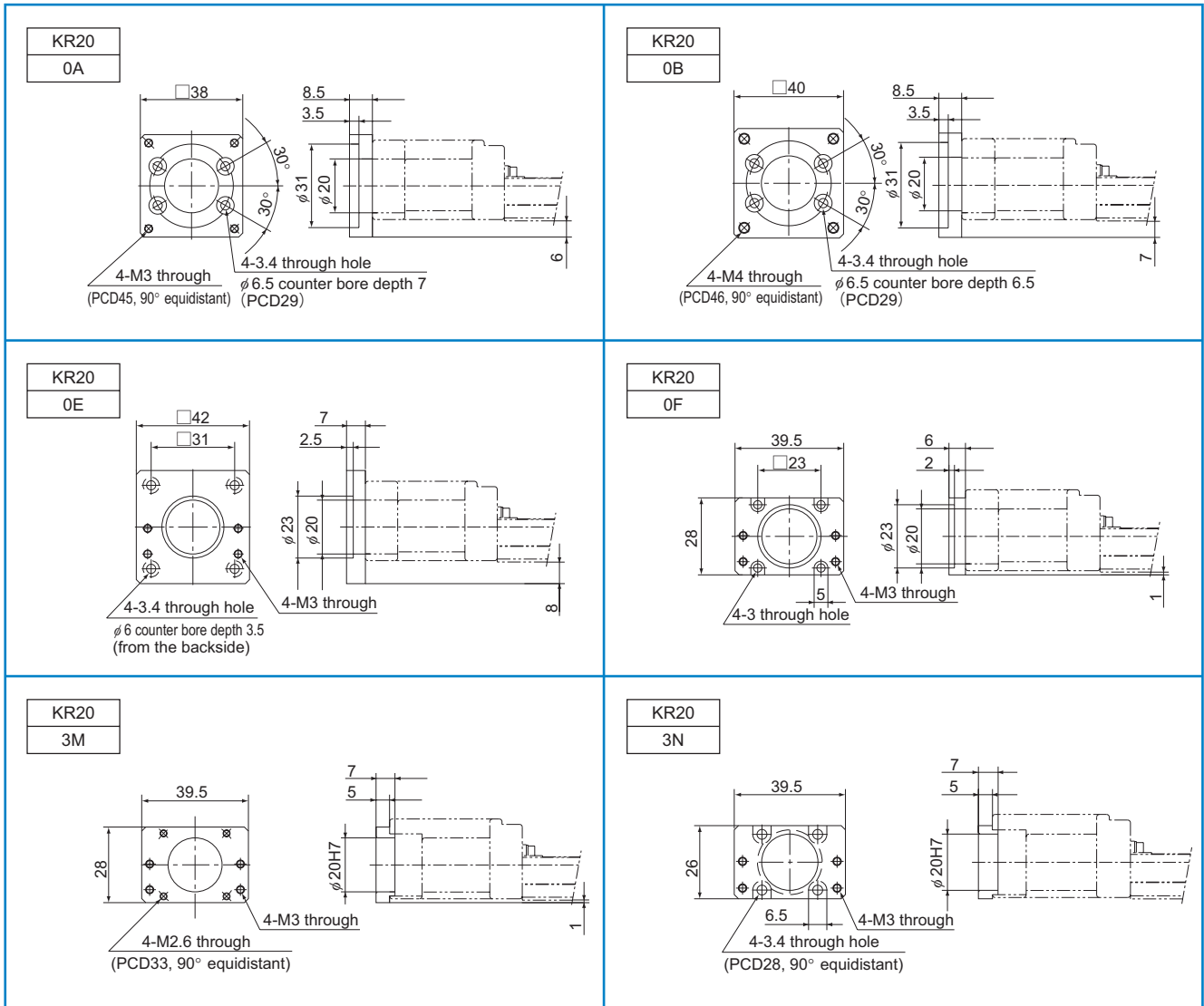
● For Model KR20

|      |                            |
|------|----------------------------|
| KR** | ···· Actuator model number |
| ●    | ···· Housing A             |
| ◇    | ···· Intermediate Flange   |

■ Housing A



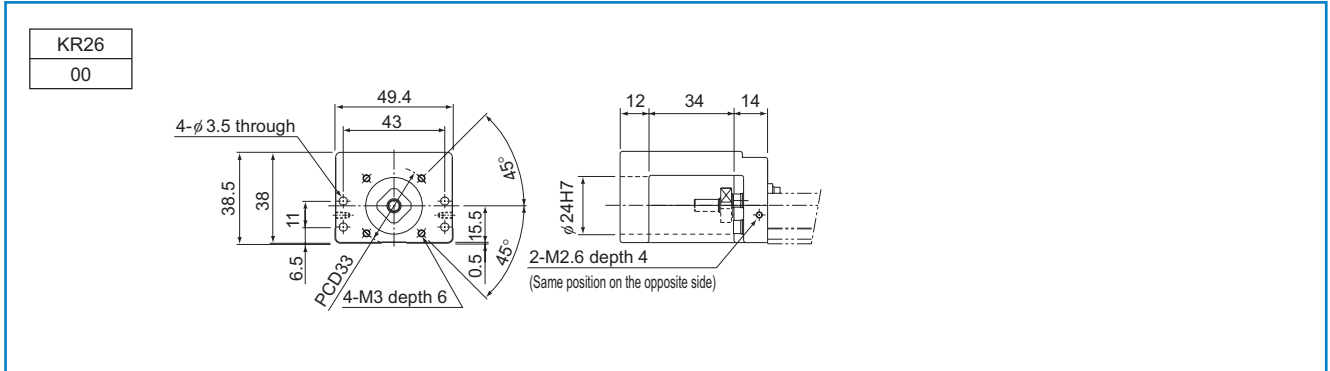
■ Intermediate Flange



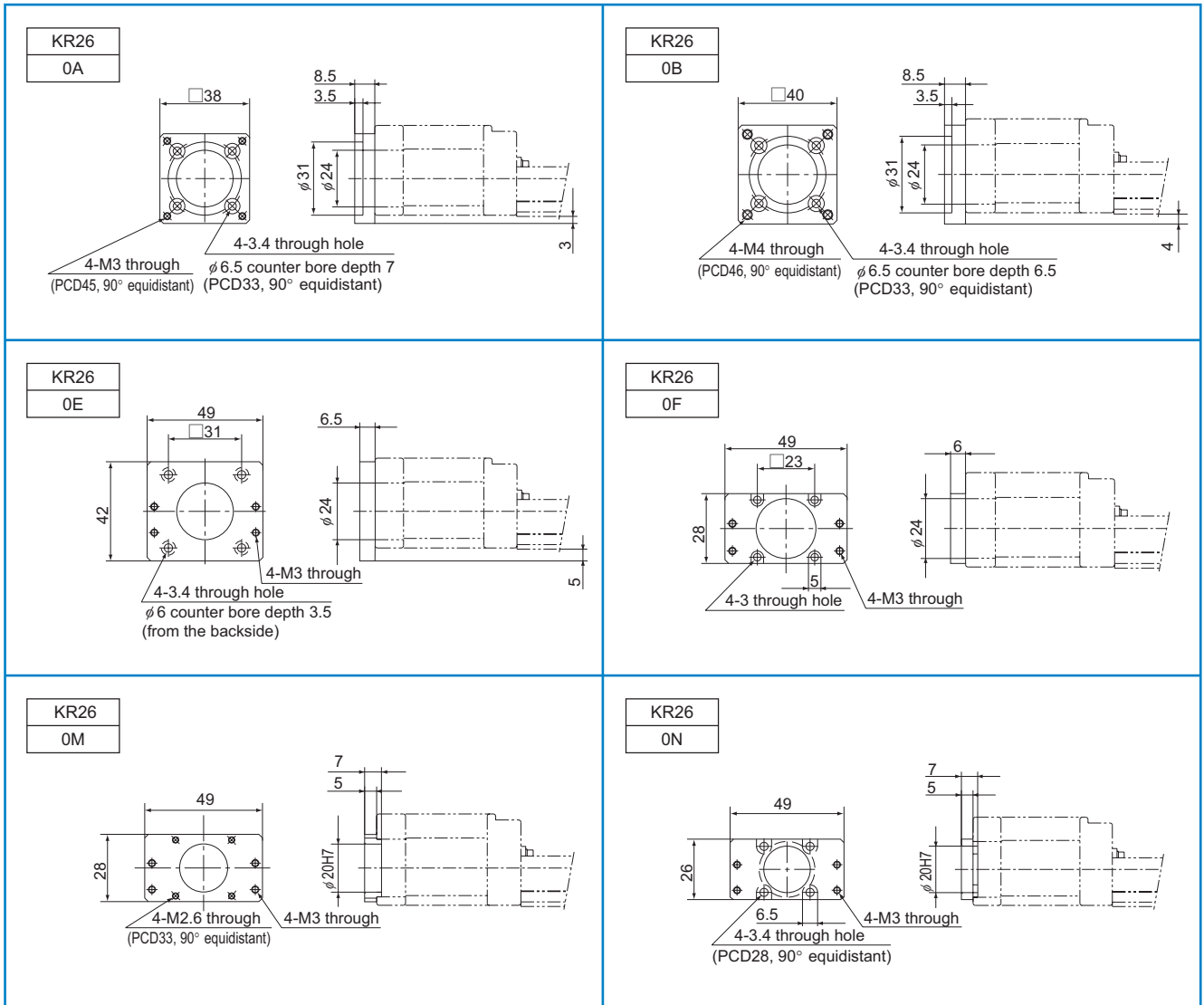
● For Model KR26

|      |                           |
|------|---------------------------|
| KR** | ··· Actuator model number |
| ●◇   | ···●: Housing A           |
|      | ◇: Intermediate Flange    |

■ Housing A



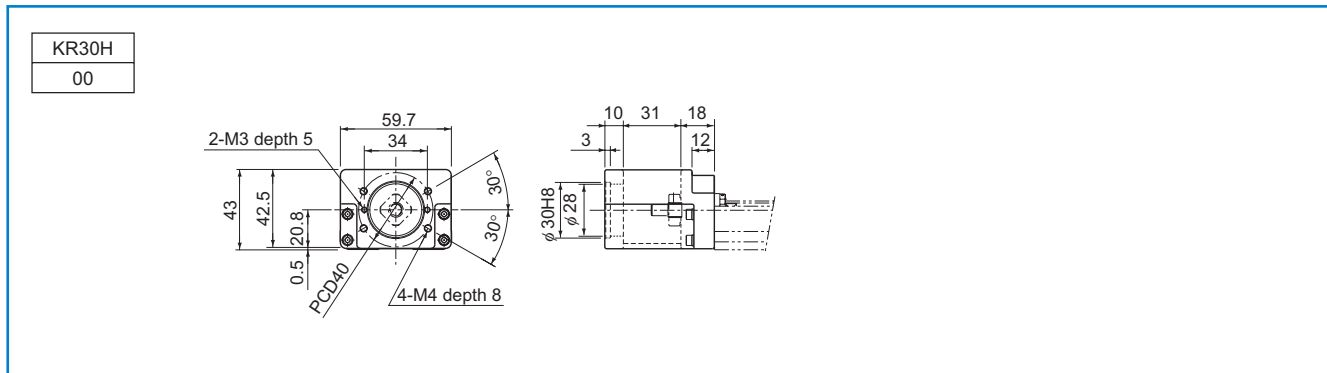
■ Intermediate Flange



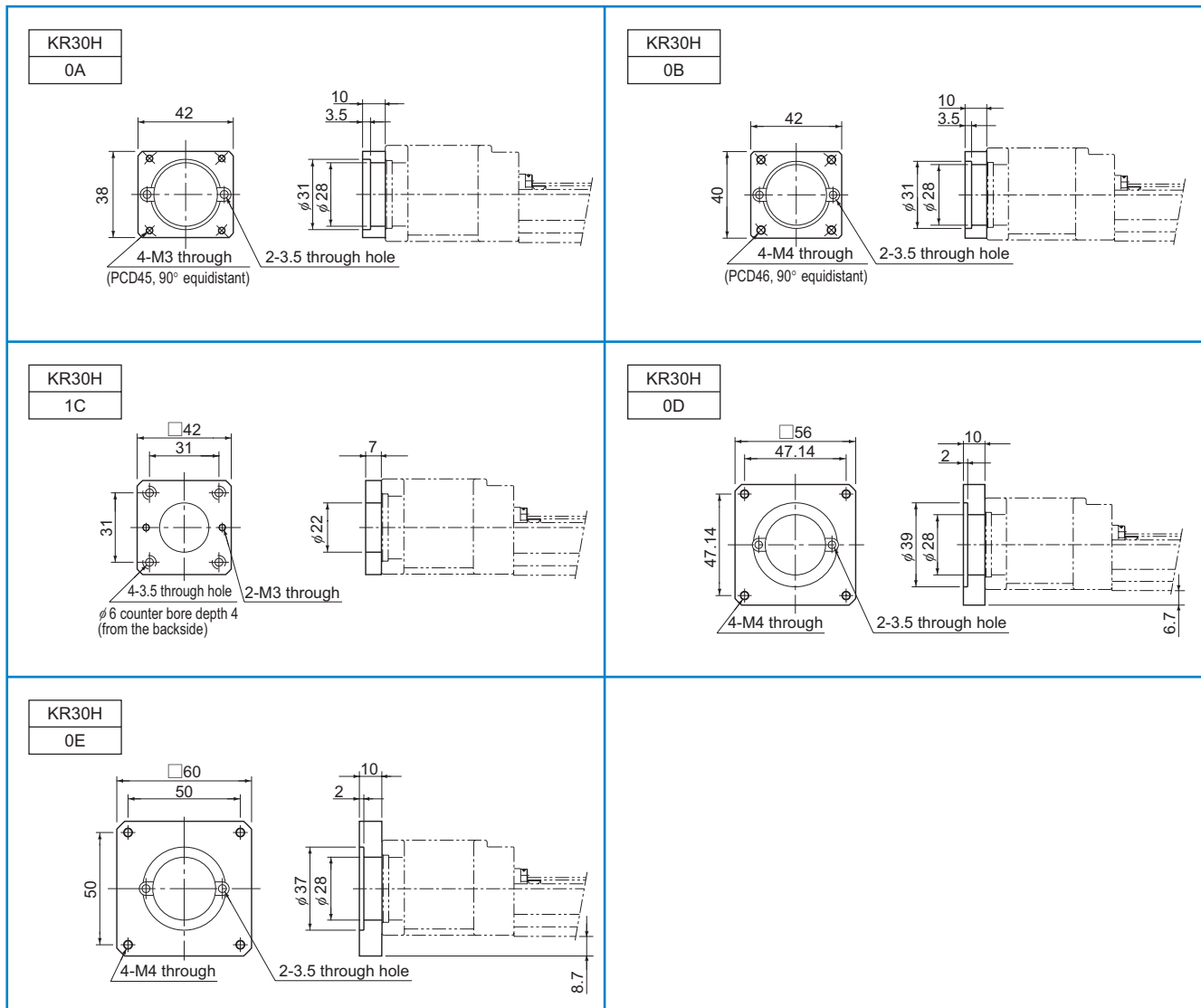
● For Model KR30H

|      |                            |
|------|----------------------------|
| KR** | ···· Actuator model number |
| ●    | ···· Housing A             |
| ◇    | ◇···· Intermediate Flange  |

■ Housing A



■ Intermediate Flange



● For Model KR33

|      |                           |
|------|---------------------------|
| KR** | ··· Actuator model number |
| ●◇   | ···●: Housing A           |
|      | ◇: Intermediate Flange    |

■ Housing A

|   |      |    |  |   |      |    |  |
|---|------|----|--|---|------|----|--|
| <table border="1"> <tr><td>KR33</td></tr> <tr><td>00</td></tr> </table> | KR33 | 00 |  | <table border="1"> <tr><td>KR33</td></tr> <tr><td>10</td></tr> </table> | KR33 | 10 |  |
| KR33  |      |    |  |   |      |    |  |
| 00  |      |    |  |   |      |    |  |
| KR33  |      |    |  |   |      |    |  |
| 10  |      |    |  |   |      |    |  |
| <table border="1"> <tr><td>KR33</td></tr> <tr><td>50</td></tr> </table> | KR33 | 50 |  |   |      |    |  |
| KR33  |      |    |  |   |      |    |  |
| 50  |      |    |  |   |      |    |  |

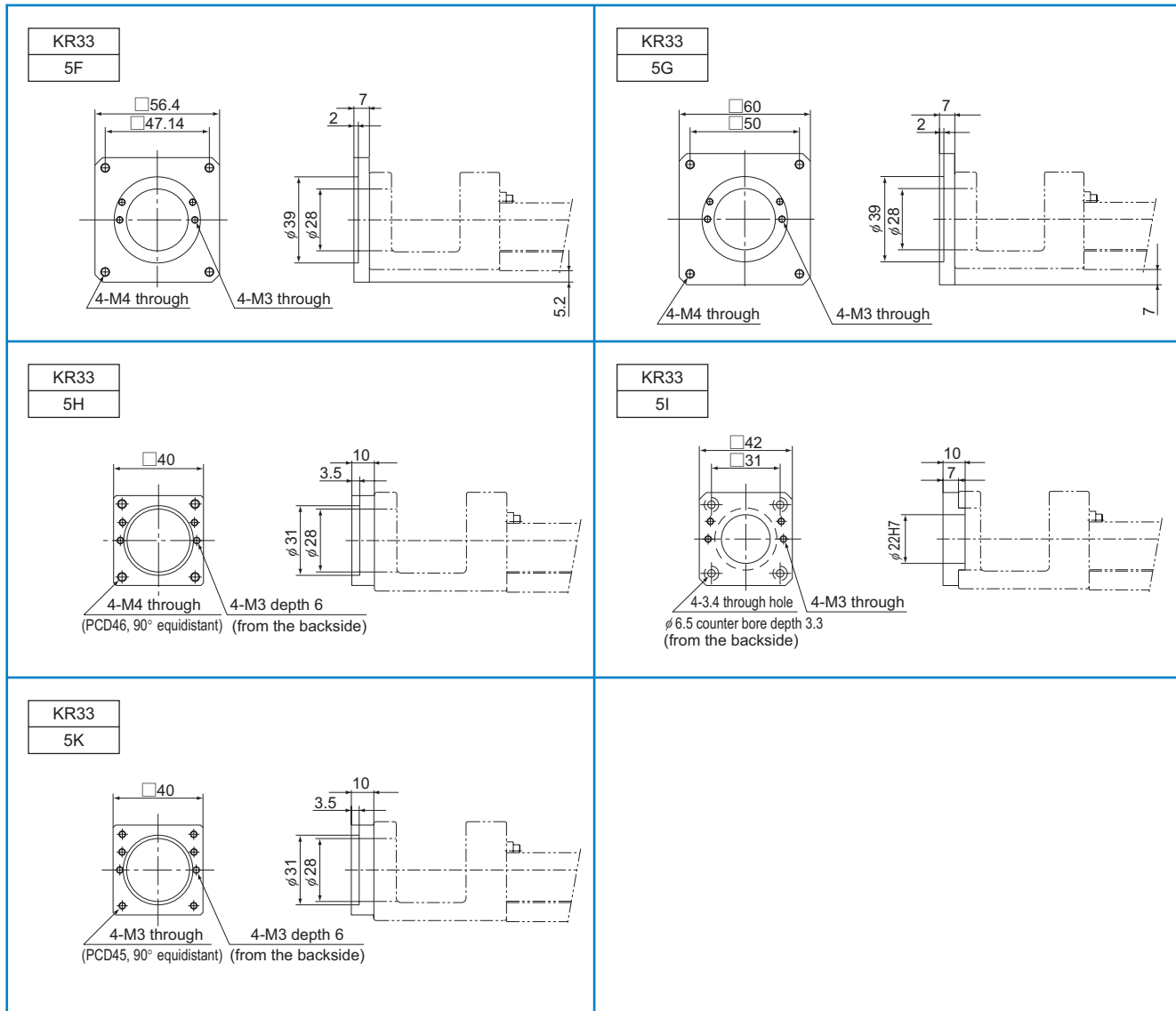
■ Housing A for a Separate Motor

■ Turnaround Housing A

|   |      |    |  |   |      |    |  |
|---|------|----|--|---|------|----|--|
| <table border="1"> <tr><td>KR33</td></tr> <tr><td>30</td></tr> </table> | KR33 | 30 |  | <table border="1"> <tr><td>KR33</td></tr> <tr><td>40</td></tr> </table> | KR33 | 40 |  |
| KR33  |      |    |  |   |      |    |  |
| 30  |      |    |  |   |      |    |  |
| KR33  |      |    |  |   |      |    |  |
| 40  |      |    |  |   |      |    |  |

## Intermediate Flange

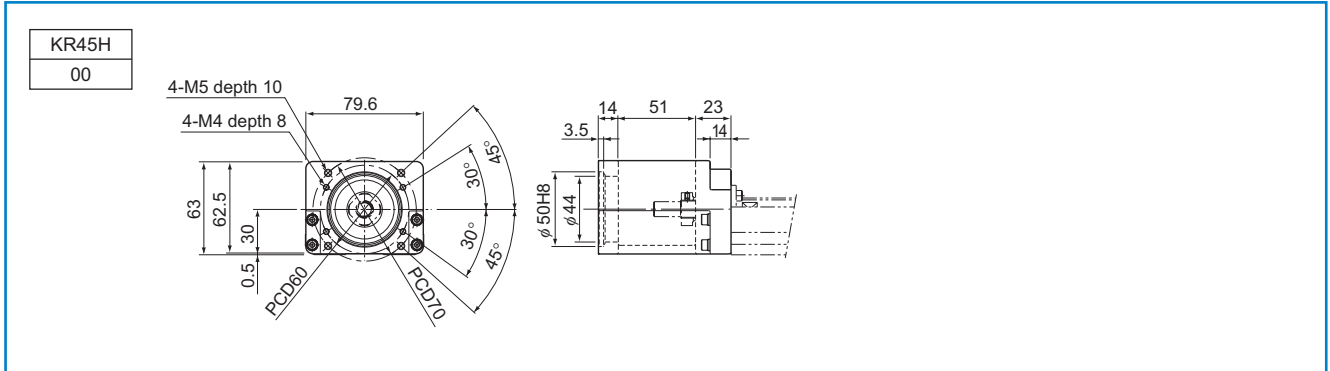
Each intermediate flange is made of steel and provided with THK AP-C treatment, a surface treatment for corrosion resistance.



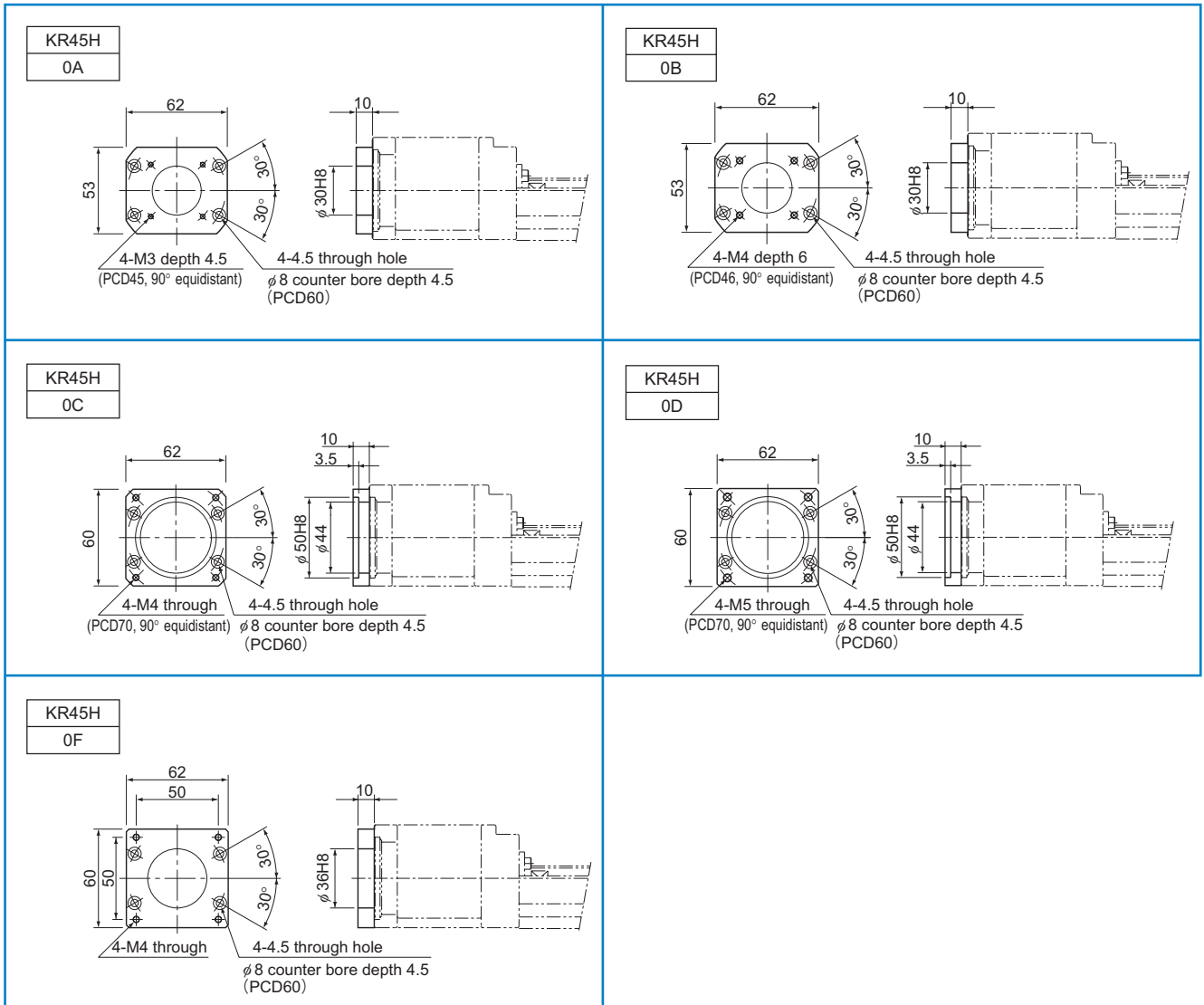
● For Model KR45H

|      |                           |
|------|---------------------------|
| KR** | ··· Actuator model number |
| ●    | ··· Housing A             |
| ◇    | ◇ Intermediate Flange     |

■ Housing A



■ Intermediate Flange



● For Model KR46

|      |  |
|------|--|
| KR** | ··· Actuator model number                  |
| ● ◇  | ··· ●: Housing A<br>◇: Intermediate Flange |

■ Housing A

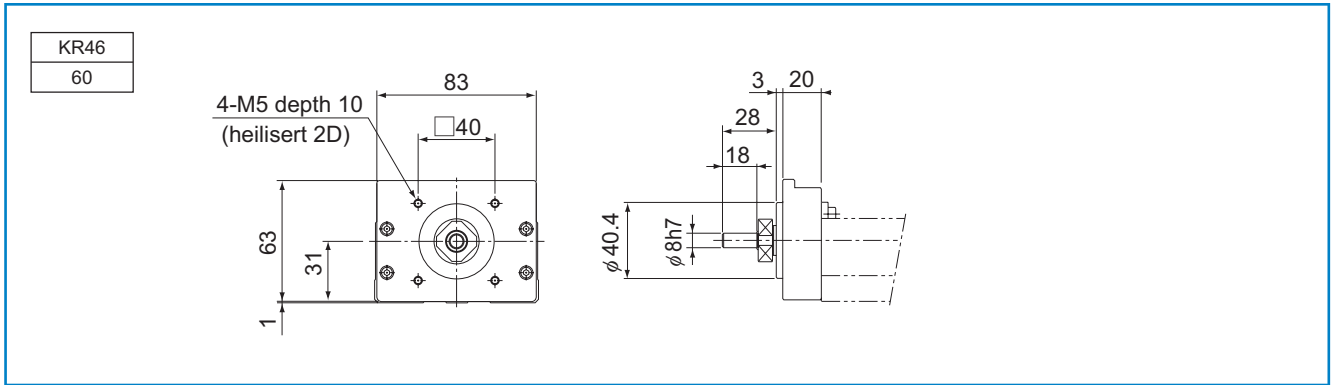
|   |      |    |   |      |    |
|---|------|----|---|------|----|
| <table border="1"> <tr><td>KR46</td></tr> <tr><td>00</td></tr> </table> | KR46 | 00 | <table border="1"> <tr><td>KR46</td></tr> <tr><td>10</td></tr> </table> | KR46 | 10 |
| KR46  |      |    |   |      |    |
| 00  |      |    |   |      |    |
| KR46  |      |    |   |      |    |
| 10  |      |    |   |      |    |
| <table border="1"> <tr><td>KR46</td></tr> <tr><td>20</td></tr> </table> | KR46 | 20 | <table border="1"> <tr><td>KR46</td></tr> <tr><td>30</td></tr> </table> | KR46 | 30 |
| KR46  |      |    |   |      |    |
| 20  |      |    |   |      |    |
| KR46  |      |    |   |      |    |
| 30  |      |    |   |      |    |
| <table border="1"> <tr><td>KR46</td></tr> <tr><td>40</td></tr> </table> | KR46 | 40 |   |      |    |
| KR46  |      |    |   |      |    |
| 40  |      |    |   |      |    |

■ Housing A for a Separate Motor

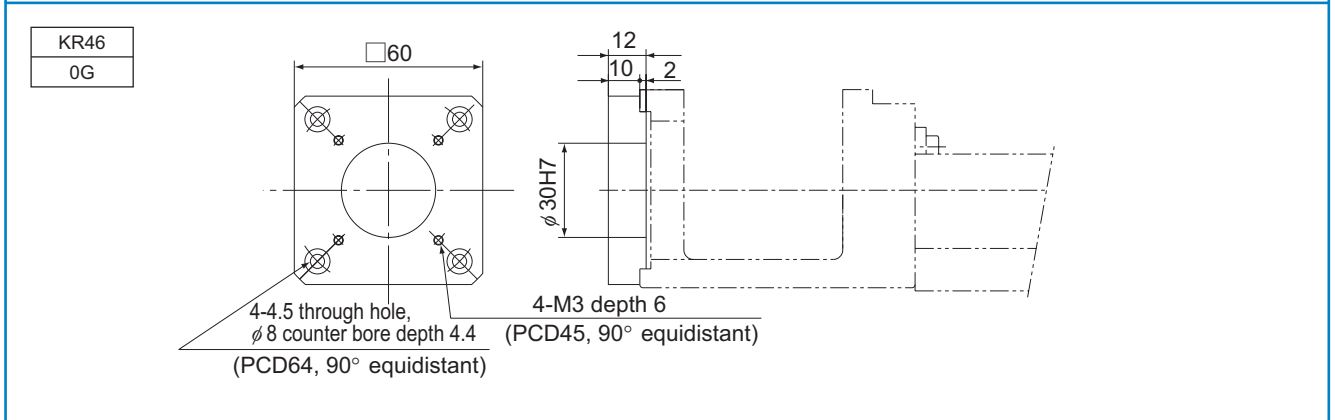
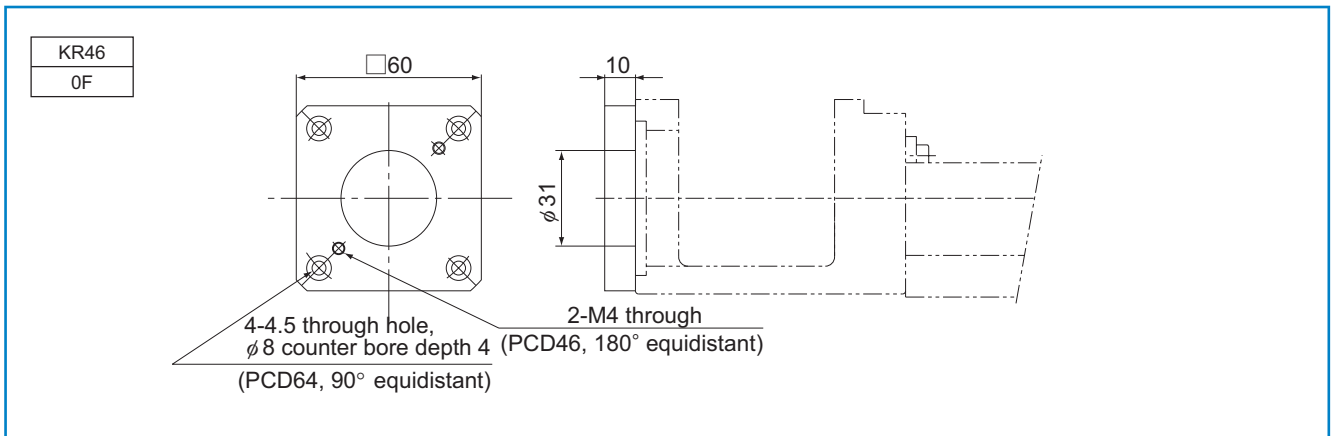
|      |
|------|
| KR46 |
| 50   |



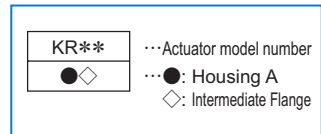
■ Turnaround Housing A



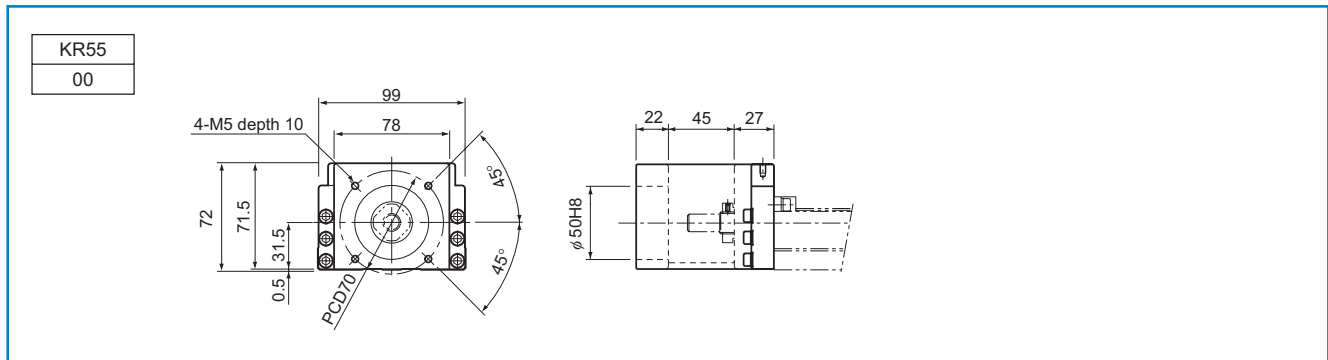
■ Intermediate Flange



● For Model KR55

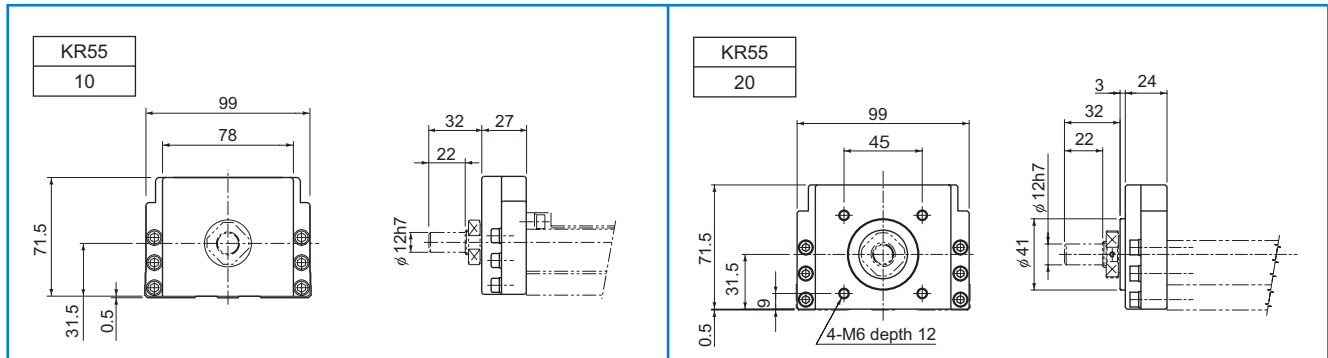


■ Housing A

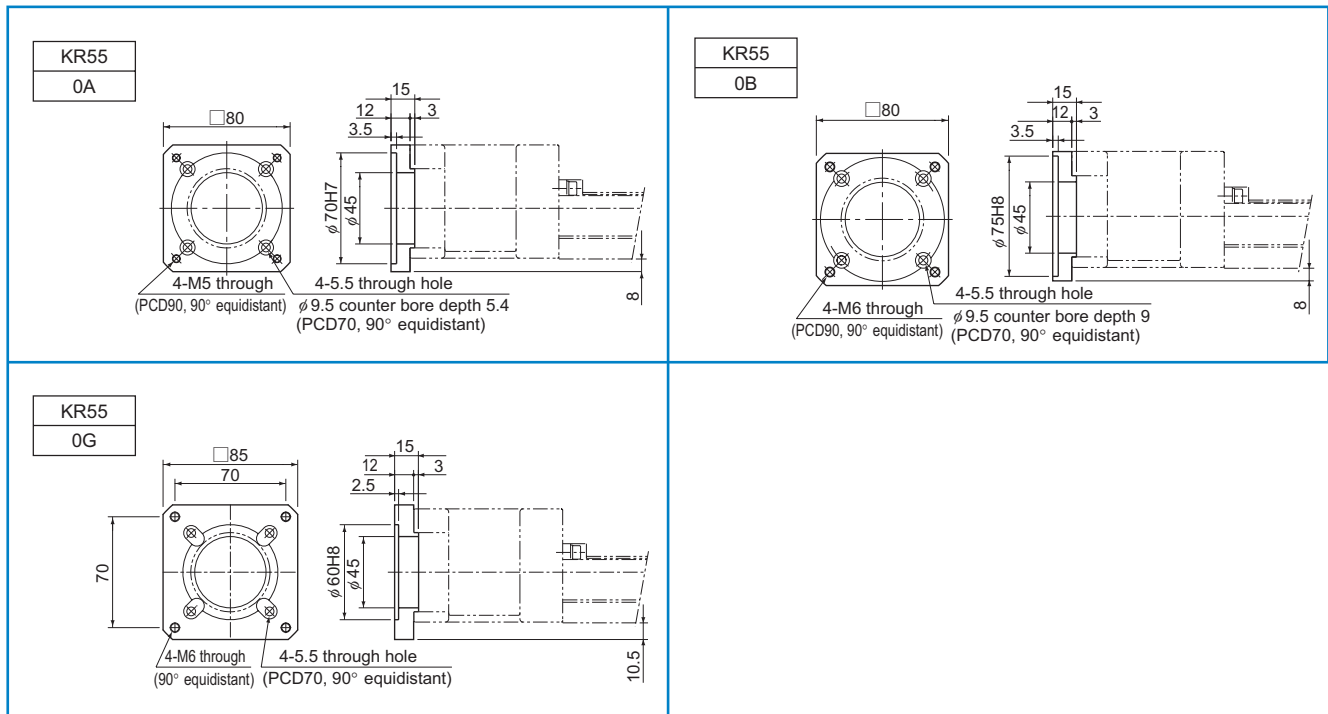


■ Turnaround Housing A

Note) Specify mounting holes when ordering.



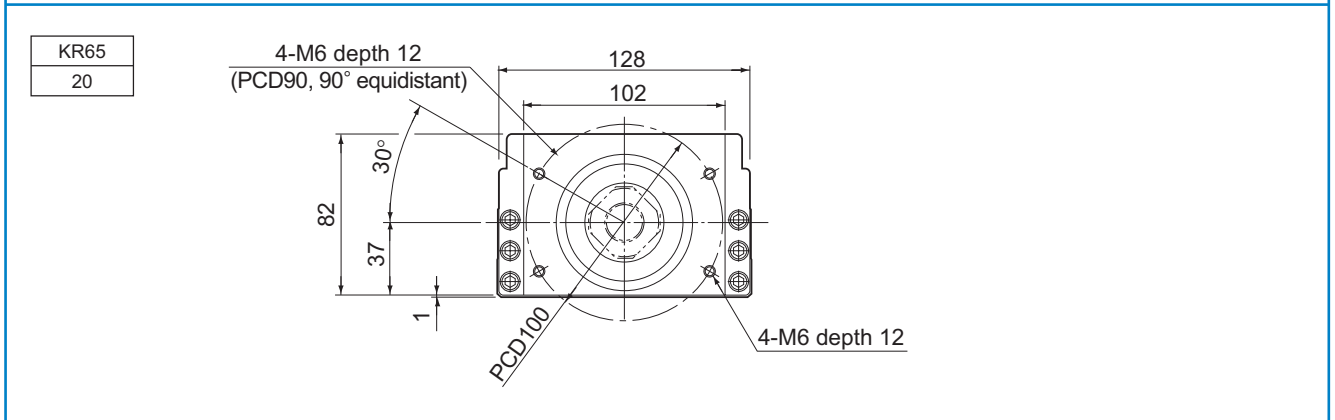
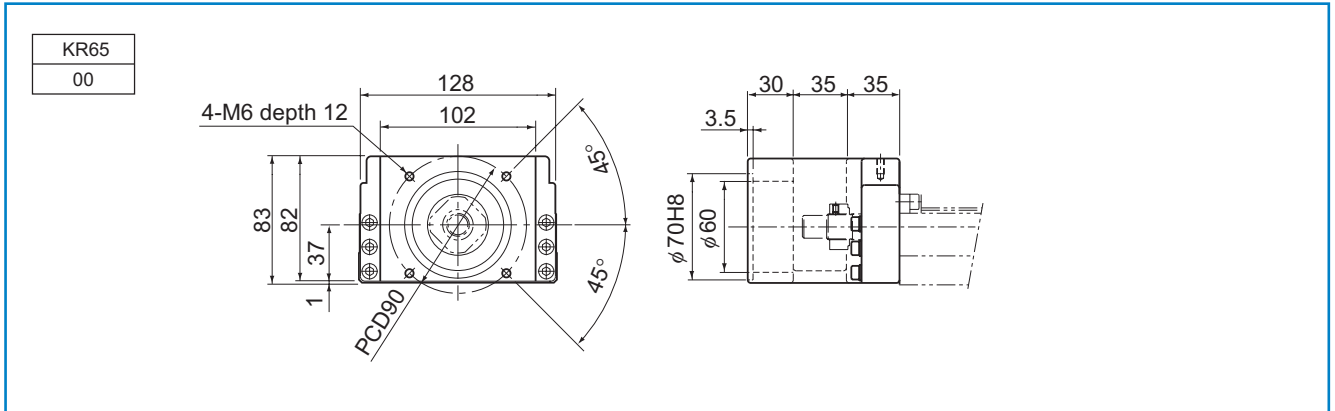
■ Intermediate Flange



● For Model KR65

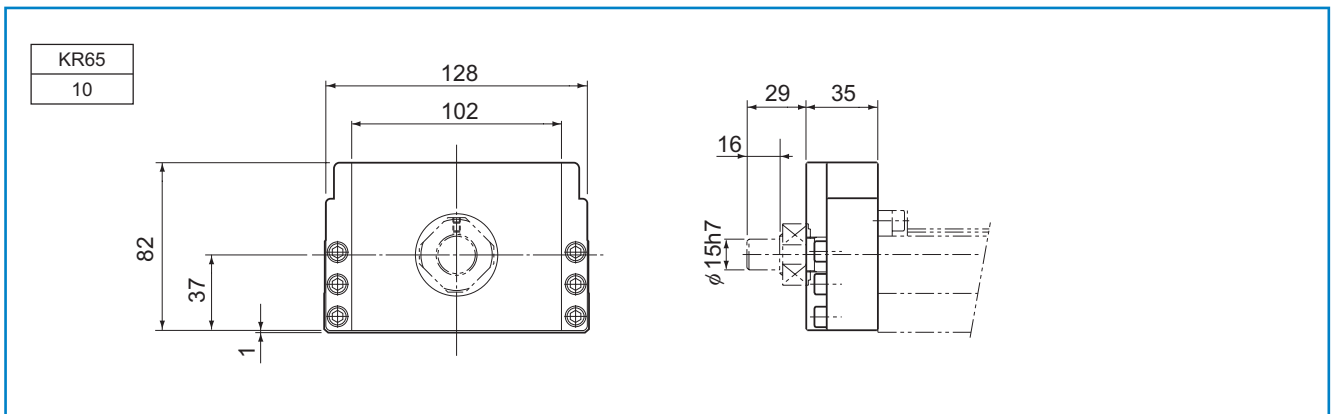
|      |                           |
|------|---------------------------|
| KR** | ··· Actuator model number |
| ●◇   | ···●: Housing A           |
|      | ◇: Intermediate Flange    |

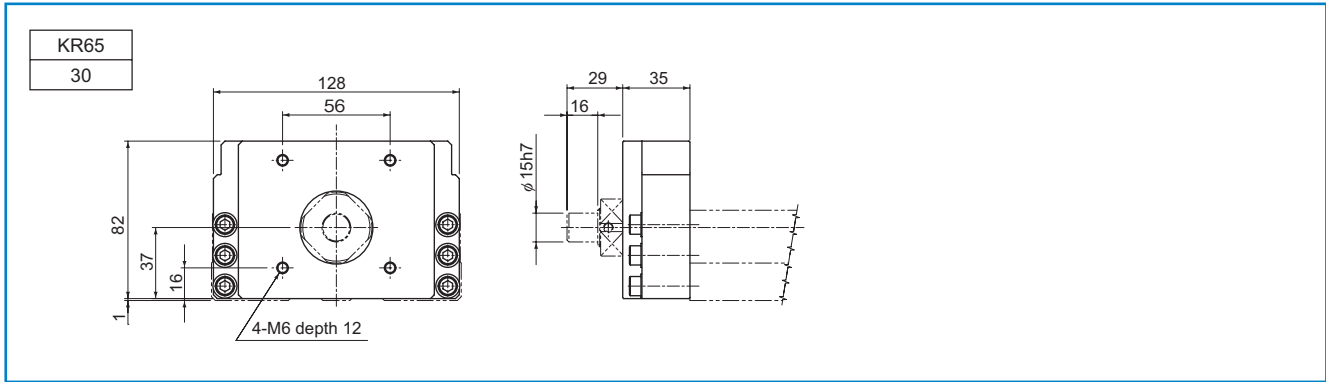
■ Housing A



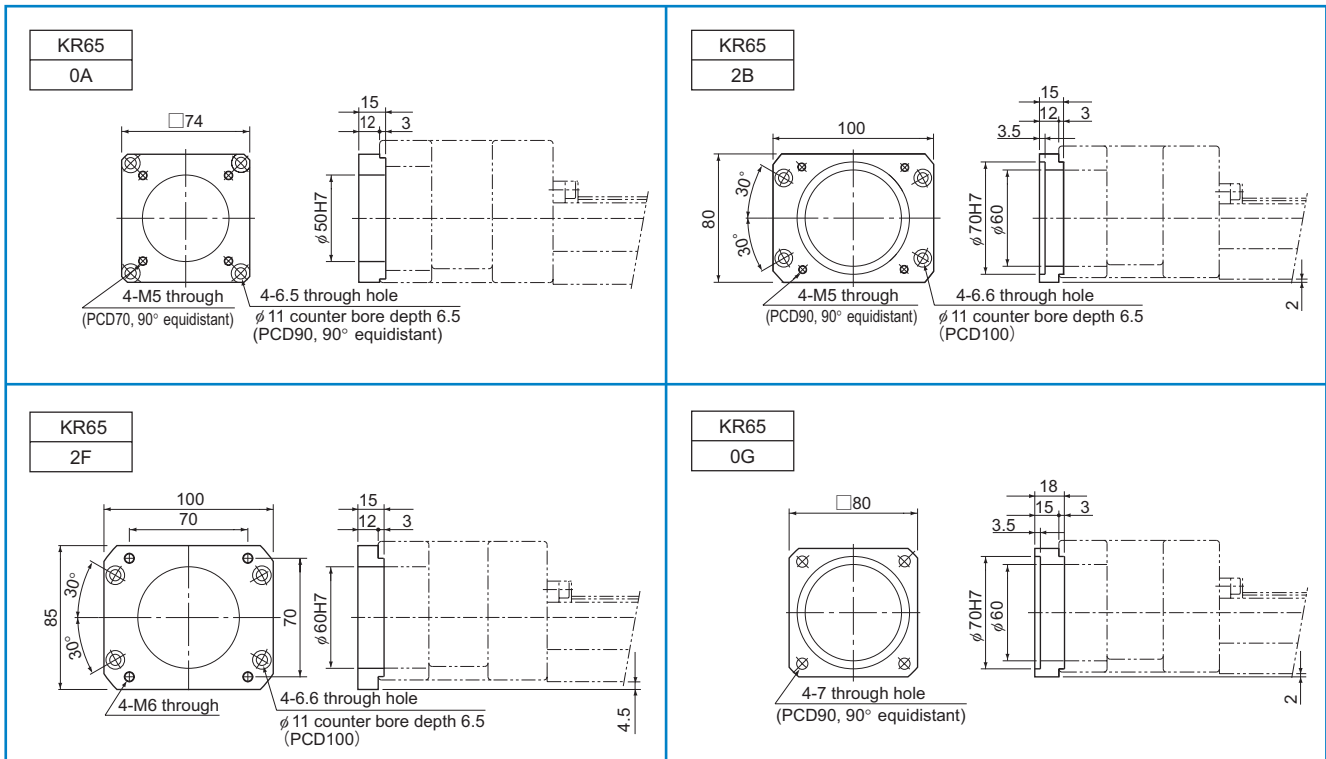
■ Turnaround Housing A

Note) Specify mounting holes when ordering.





## Intermediate Flange



## Appendix

Various types of options are available for model KR. Select an appropriate model according to your application. There are also options not contained in this catalog. Contact THK for details.

| Name          |  | Overview  |
|---------------|--|---|
| Cover         | Cover  | Serve as contamination protection accessories or the likes  |
|               | Bellows  |   |
| Sensor        | Proximity sensor   | Supporting manufacturer: Yamatake, Panasonic Electric Works SUNX  |
|               | Photo sensor   | Supporting manufacturer: Omron  |
|               | Sensor rail  | For mounting a sensor   |
| Motor bracket | Housing  | For standard type model KR without a motor<br>If the customer manufactures a motor bracket<br>For motor wrap type                   |
|               | Table of Motors Used in Model KR and Corresponding Intermediate flange | Supporting manufacturer: Yaskawa Electric, Mitsubishi Electric, Panasonic, Sanyo Electric, Omron, Fanuc, Keyence and Oriental Motor |
|               | Intermediate flange dimensional table for model KR                     | —   |

Table1 Table of Applicable Options

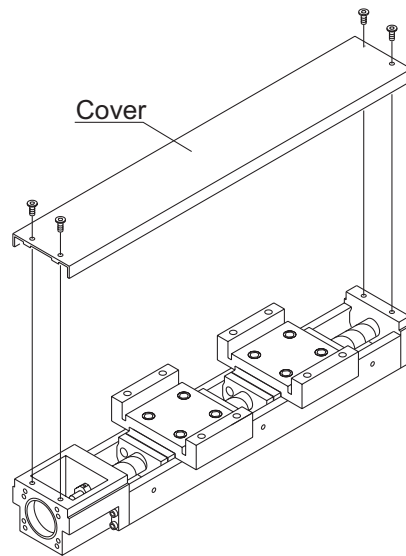
| Model No. | Cover | Bellows | Proximity sensor | Photo sensor | Housing A for a Separate Motor | Turnaround Housing A | Intermediate flange |
|-----------|-------|---------|------------------|--------------|--------------------------------|----------------------|---------------------|
| KR15      | ○     | ○       | ○                | —            | —                              | △                    | ○                   |
| KR20      | ○     | ○       | ○                | ○            | —                              | —                    | ○                   |
| KR26      | ○     | ○       | ○                | ○            | —                              | —                    | ○                   |
| KR30H     | ○     | ○       | ○                | ○            | —                              | △                    | ○                   |
| KR33      | ○     | ○       | ○                | ○            | ○                              | ○                    | ○                   |
| KR45H     | ○     | ○       | ○                | ○            | —                              | △                    | ○                   |
| KR46      | ○     | ○       | ○                | ○            | ○                              | ○                    | ○                   |
| KR55      | ○     | ○       | ○                | ○            | —                              | ○                    | ○                   |
| KR65      | ○     | ○       | ○                | ○            | —                              | ○                    | ○                   |

△ : There are also options not contained in this catalog. Contact THK for details.

# Cover

For model KR, covers are available as an option.

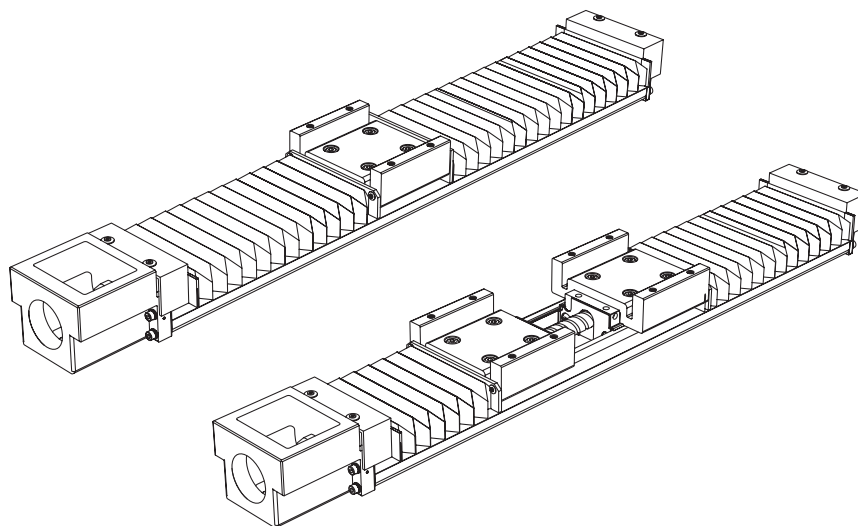
[Example of Installation]



# Bellows

● For dimensions of the bellows, see page60 to page64.

For model KR, bellows are available for contamination protection in addition to a cover.



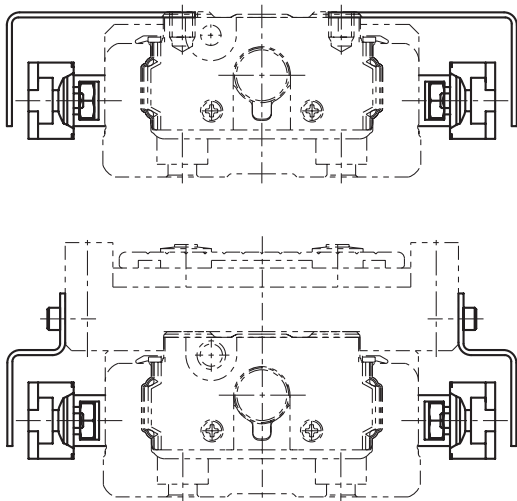
## Sensor

● For detailed dimensions, see page65 to page68.

Optional proximity sensors and photo sensors are available for model KR. Models equipped with a sensor are also provided with a dedicated sensor rail/sensor dog.

If the Outer rail length is short, a model having a sensor and a sensor rail attached on both sides is available.

### [Installed Example]



## Housing

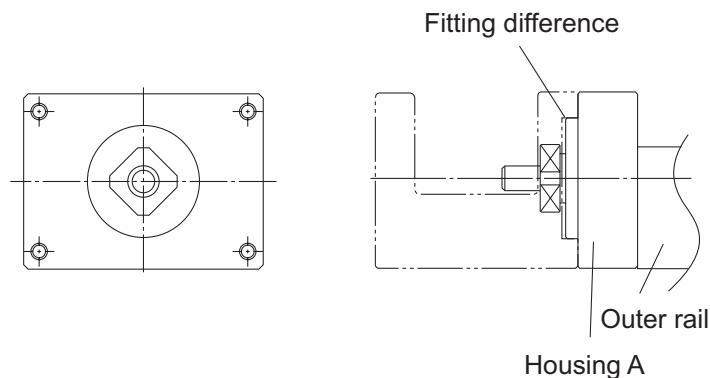
● For detailed dimensions, see page69 to page83.

### [Housing A]

THK also offers Housing A provided with a separate motor, and a turnaround type of Housing A, as options in order to support a motor bracket or a turnaround section that the customer may separately produce.

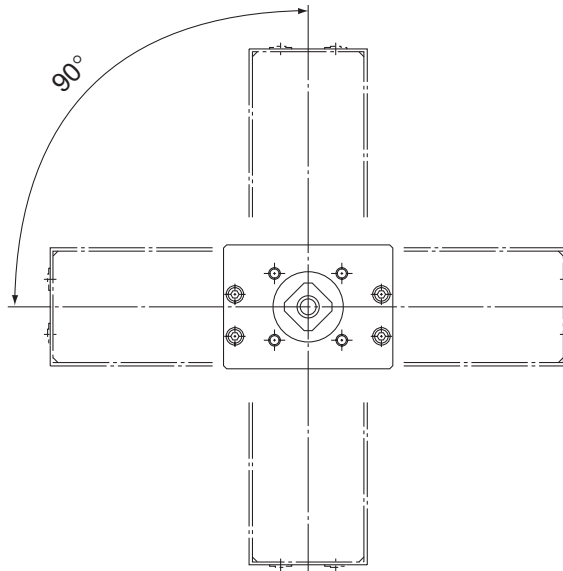
### [Housing A for a Separate Motor]

By using the fitting difference, the user can easily mount a separately manufactured motor bracket.



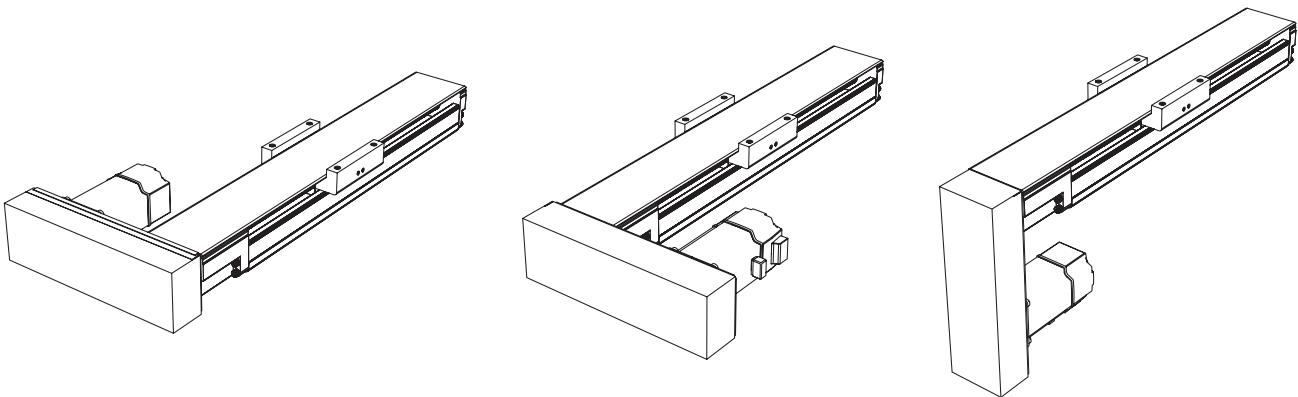
**[Turnaround Housing A]**

Since the mounting holes are drilled in constant pitch, the user can select the motor bracket orientation.



# Motor Wrap Type

Model KR are available in “Motor Wrap” types that allow the motor to be turned around in order to minimize the dimension in the longitudinal direction (Pulley ratio:1:1). Contact THK for details.

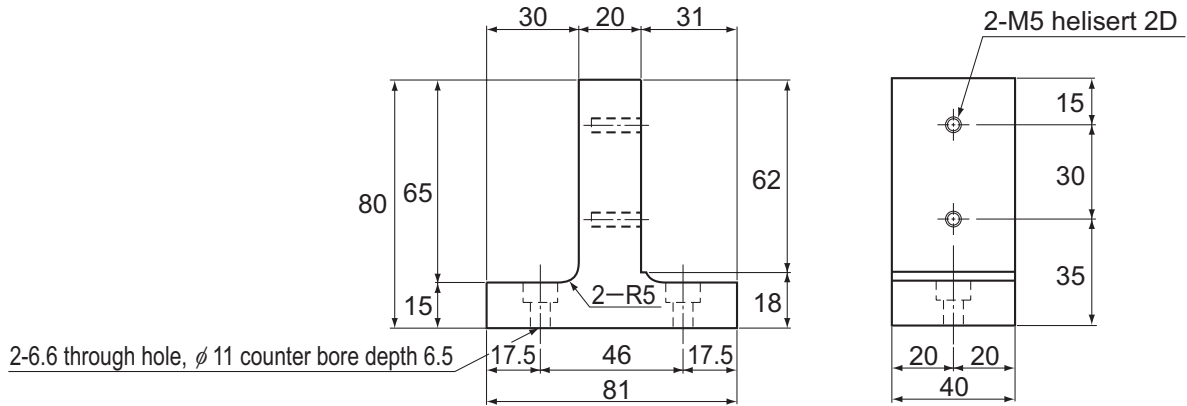




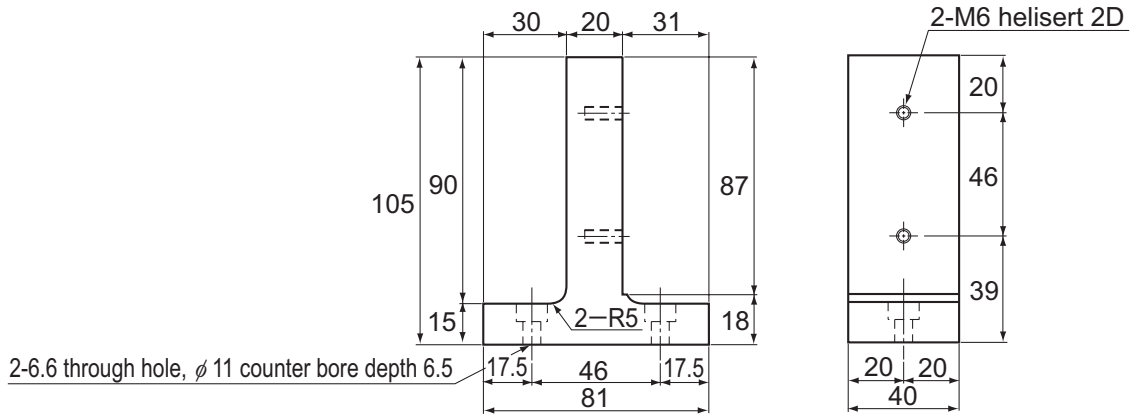
# XY Bracket (for Reference)

Brackets for installing models KR33/46 are available. The brackets use aluminum to reduce the weights and keep the inertia as low as possible.

## [KR-008XS (for Model KR33, Single-Shaft Type)]

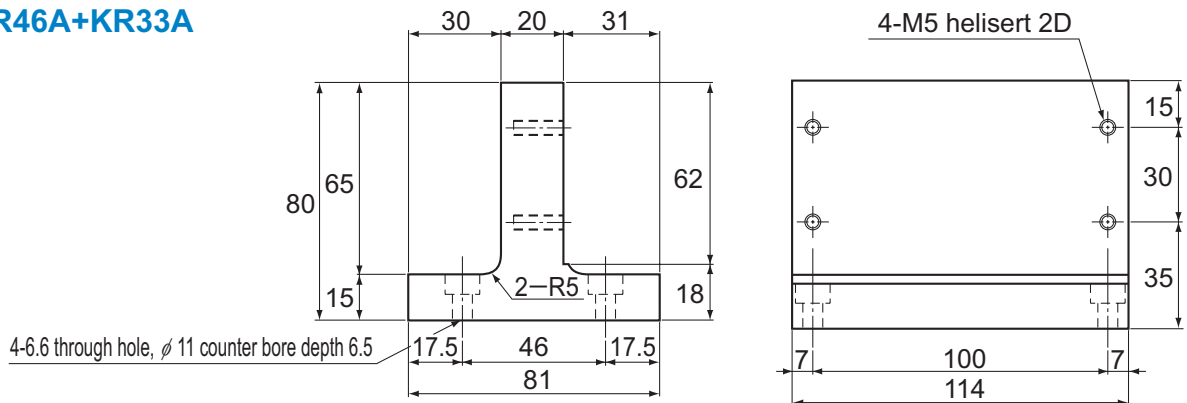


## [KR-008XL (for Model KR46, Single-Shaft Type)]



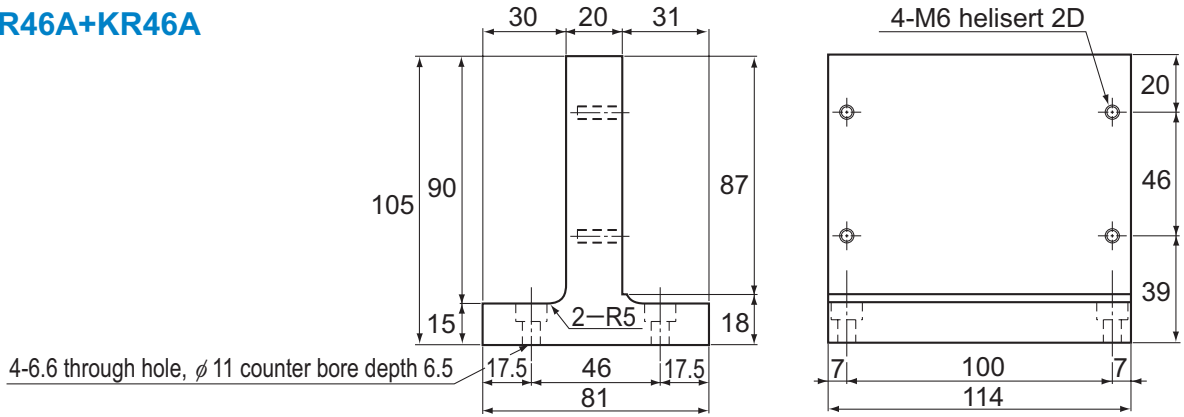
## [KR-003XS (for Model KR33, Outer Rail Fixed)]

### KR46A+KR33A



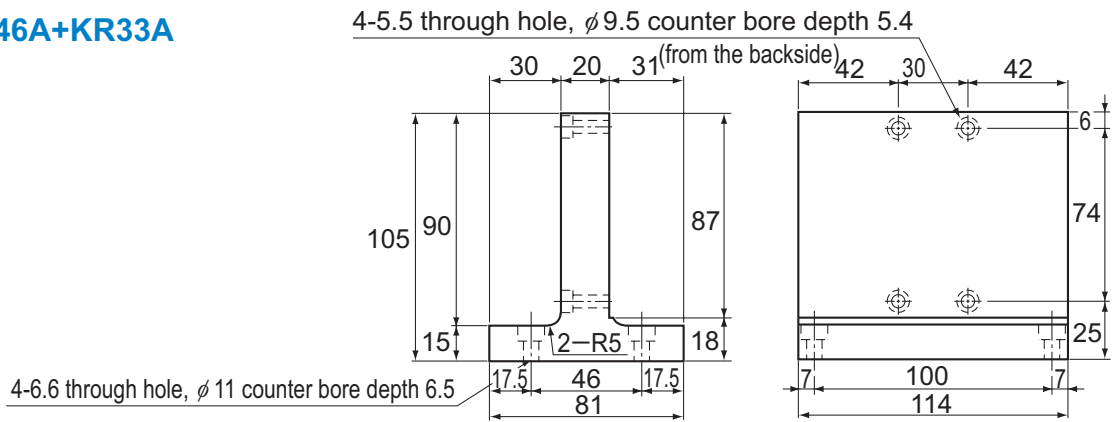
[KR-003XL (for Model KR46, Outer Rail Fixed)]

**KR46A+KR46A**

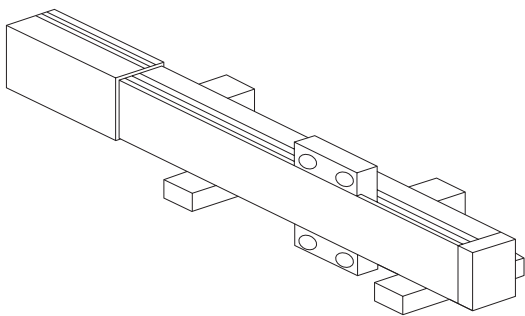


[KR-002XS (for Model KR33, Slider Fixed)]

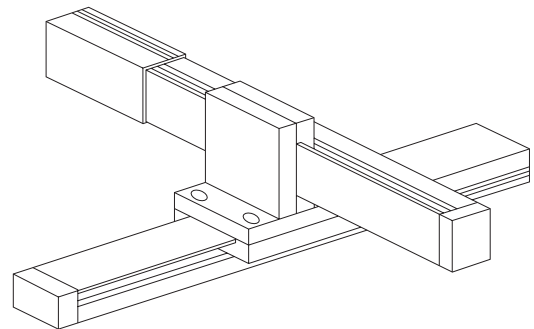
**KR46A+KR33A**



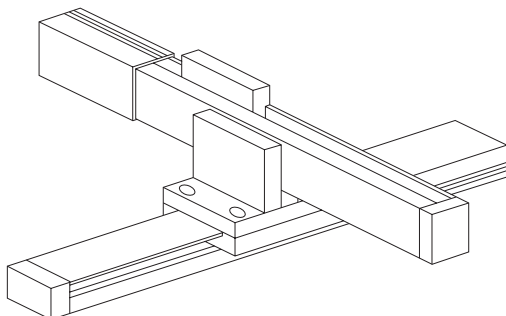
[Example of Combinations]



For single shaft



Slider fixed



Outer rail fixed

# Precautions on Use

## [Handling]

- (1) Do not disassemble this product unless absolutely necessary. This will cause dust to enter the product resulting in loss of functionality.
- (2) Take care not to drop or strike this product. This could cause injury or product damage. Giving an impact to it could also cause damage to its function even if the product looks intact.
- (3) Exceeding the dangerous speed may lead the components to be damaged or cause an accident. Be sure to use the product within the specification range designated by THK.
- (4) Foreign material entering the product will cause damage to the ball circulation components and loss of functionality. Prevent foreign material, such as dust or cutting chips, from entering the system.
- (5) When planning to use the product in an environment where the coolant penetrates the inner block, it may cause trouble to product functions depending on the type of the coolant. Contact THK for details.
- (6) The service temperature range of this product is 0 to 40°C (no freezing or condensation). If you consider using this product outside the service temperature range, contact THK.
- (7) If the product will be used in location exposed to vibrations or in special environment such as vacuum/clean-room, and/or high/low temperatures, contact THK.
- (8) If the product is operating or in the ready state, never touch a moving part. In addition, do not enter the operating area of the actuator.
- (9) If two or more people are involved in the operation, confirm the procedures such as a sequence, signs and anomalies in advance, and appoint another person for monitoring the operation.

## [Lubrication]

- (1) Thoroughly remove the anti-rust oil before using the product.
- (2) To maximize the performance of model KR, lubrication is required. Using the product without adequate lubrication may induce premature wear in rolling components and/or shorten the service life. Note the standard grease used in the product as follows.  
 Model KR15 : THK AFF Grease  
 Models KR20 and KR26 : THK AFA Grease  
 Models KR30H, KR33, KR45H, KR46, KR55 and KR65 : THK AFB-LF Grease
- (3) Do not mix lubricants of different physical properties.
- (4) Before selecting special lubricant, contact THK.
- (5) When adopting oil lubrication method, contact THK.
- (6) Because the intervals between greasing vary depending on the conditions of product use, it is recommended that the greasing interval be determined through an initial inspection.
- (7) If the product will be used in location exposed to vibrations or in special environment such as vacuum/clean-room, and/or high/low temperatures, contact THK.

## [Storage]

Model KR should be stored in a horizontal orientation in the THK wrapping and package, avoiding high or low temperatures and high levels of humidity.

## [Instruction Manual]

You can download the “LM Guide Actuator Model KR -- Instruction Manual” from the THK technical support website. Technical support website: <https://tech.thk.com/>

# THK LM Guide Actuator Model KR

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