

Caged Ball LM Guide Actuator SKR



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

Caged Ball LM Guide Actuator Model SKR

Model No. SKR20 to 46

Ball Cage Effect



The early forms of ball bearings were full-ball types without ball cages. Friction between balls caused loud noise, made high-speed rotation impossible and shortened the service life. Twenty years later, a Caged Ball design was developed for ball bearings. The new design enabled high-speed rotation at a low noise level, and extended the service life despite the reduced number of balls used. It marked a major development in the history of ball bearings.

Similarly, the quality of needle bearings was significantly improved by the caged needle structure. With cage-less, full-ball types of ball bearings, balls make metallic contact with one another and produce loud noise. In addition, they rotate in opposite directions, causing the sliding contact between two adjacent balls to occur at a speed twice the ball-spinning rate. It results in severe wear and shortens the service life.

In addition, without a cage, balls make point contact to increase bearing stress, thus facilitating breakage of the oil film. In contrast, each caged ball contacts the cage over a wide area. Therefore, the oil film does not break, the noise level is low and balls can rotate at a high speed, resulting in a long service life.



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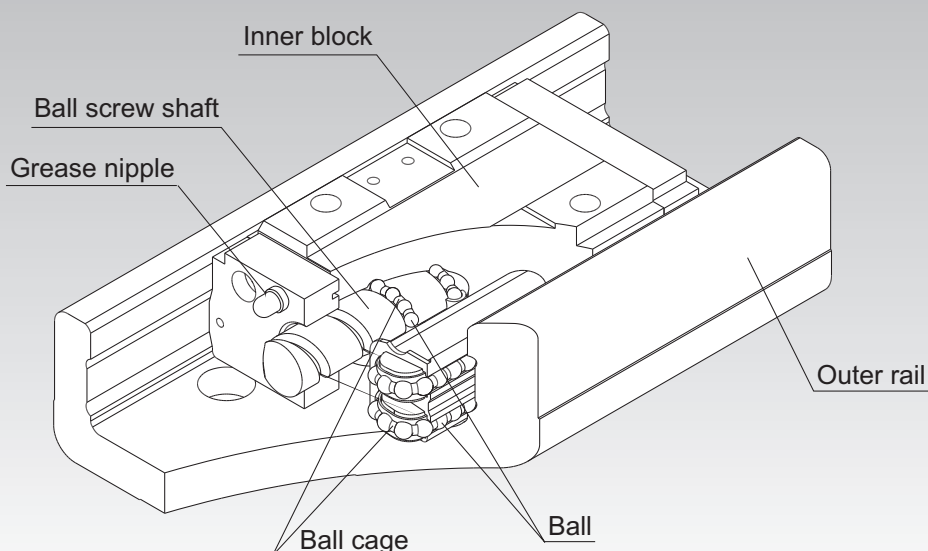


Fig.1 Structure of Caged Ball LM Guide Model SKR

Structure and Features

Caged Ball LM Guide Actuator model SKR is a compact actuator that has an inner block consisting of LM blocks and a ball screw nut integrated inside a U-shaped outer rail.

In addition, this model achieves high speed operation, lower noise and longer-term maintenance-free operation by using ball cages in the LM Guide units and the Ball Screw unit. (A ball cage is used only for the LM guide section of models SKR20 and SKR26 and the ball screws are fitted with QZ lubricators.)

[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 SKR can be used in any mounting orientation.

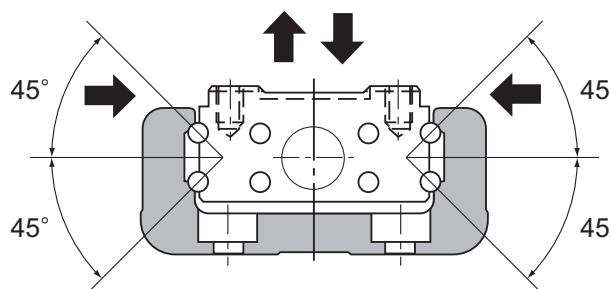


Fig.2 Load Capacity and Contact Angle of Model SKR

[High Rigidity]

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

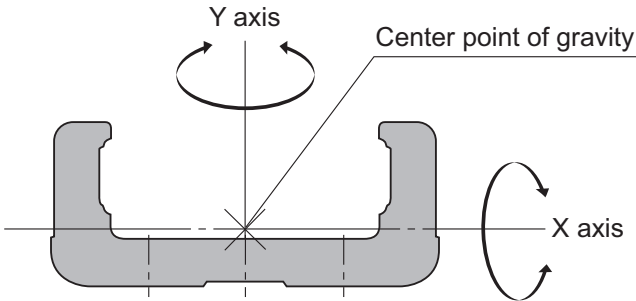


Fig.3 Cross Section of the Outer Rail

Table1 Cross-sectional Characteristics of the Outer rail Rail

| Model No. | I_x [mm ⁴] | I_y [mm ⁴] | Mass[kg/m] |
|-----------|--------------------------|--------------------------|------------|
| SKR20 | 6.0×10^3 | 6.14×10^4 | 2.6 |
| SKR26 | 1.66×10^4 | 1.48×10^5 | 3.9 |
| SKR33 | 5.35×10^4 | 3.52×10^5 | 6.1 |
| SKR46 | 2.05×10^5 | 1.45×10^6 | 12.6 |

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.

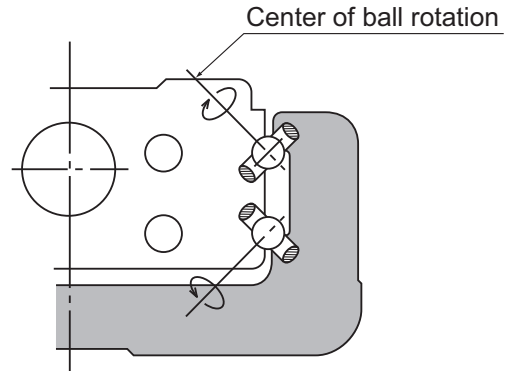


Fig.4 Contact Structure of SKR

[Space Saving]

Due to an integral structure where LM Guide units are placed on both side faces of the inner block and a Ball Screw unit is placed in the center of the inner block, a highly rigid and highly accurate actuator with a minimal space is achieved.

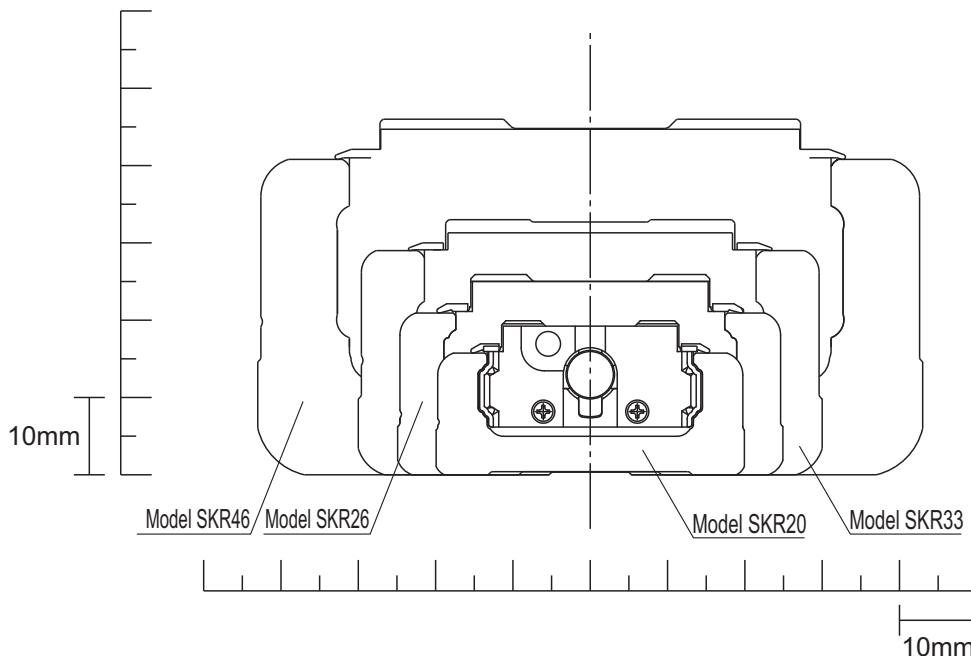


Fig.5 Cross Sectional Drawing

Caged Ball Technology

[High Speed]

Model SKR supports a latest high-rotation servomotor (6,000 min⁻¹) by using a ball cage and is capable of operating at higher speed than the full-ball type model KR.

To achieve faster motion, leads of 6 mm and 10 mm were provided on the full-ball type model KR33 ball screws, model SKR33 includes types with a 20 mm lead.

[High Lubricity]

Model SKR uses ball cages to eliminate friction between balls and significantly improve torque characteristics. As a result, the torque fluctuation is reduced and superb lubricity is achieved.

| Item | Description |
|----------------------|---------------------|
| Shaft diameter/lead | φ13/10mm |
| Shaft rotation speed | 60min ⁻¹ |

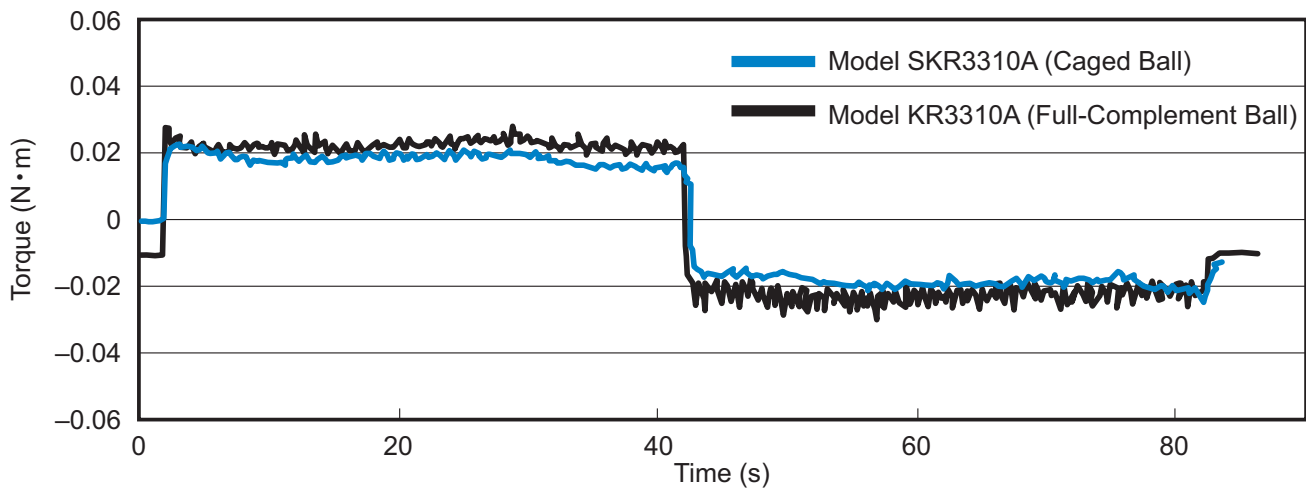


Fig.6 Comparison of Torque Fluctuation between Model SKR and Model KR

[Low Noise, Acceptable Running Sound]

In model SKR, the use of a ball cage in the LM guide section and ball screw section (SKR33 and 46 only) has eliminated collision noise between the balls. As a result, low noise and acceptable running sound are achieved.

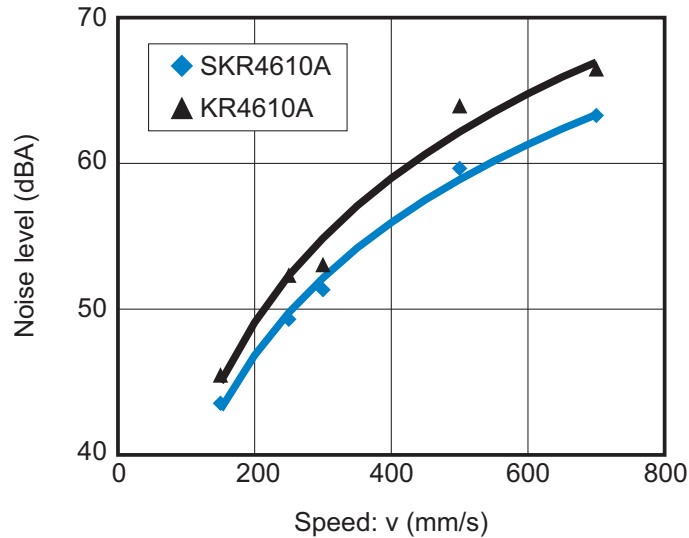


Fig.7 Comparison of Noise between Model SKR4610A and Model KR4610A

[Long-term Maintenance-free Operation]

With model SKR, the ball cage effect helps increase grease retention and achieve long-term maintenance-free operation.

[Long service life—3 times]

With model SKR, both the LM Guide unit and the Ball Screw unit have larger basic dynamic load ratings than the full-ball type model KR, and therefore a longer service lives are achieved.

The rated service life is calculated from the following equation.

LM guide unit

$$L=(C/P)^3 \times 50$$

L : Nominal life (km)

C : Basic dynamic load rating (N)

P : Applied load (N)

Ball screw unit

$$L=(Ca/Fa)^3 \times 10^6$$

L : Nominal life (rev)

Ca : Basic dynamic load rating (N)

Fa : Applied axial load (N)

As indicated in the equation above, the greater the basic dynamic load rating, the longer the service life of both the LM Guide unit and the Ball Screw unit.

Table2 Comparison of Basic Dynamic Load Rating between Model SKR and Model KR

Unit: N

| Basic dynamic load rating | | SKR20 | KR20 | SKR26 | KR26 | SKR33 | KR33 | SKR46 | KR46 |
|---------------------------|------------------|-------|------|-------|------|-------|-------|-------|-------|
| LM guide unit C | Long type block | 6010 | 3590 | 13000 | 7240 | 17000 | 11600 | 39500 | 27400 |
| | Short type block | — | — | — | — | 11300 | 4900 | 28400 | 14000 |
| Ball screw unit Ca | | 660 | 660 | 2350 | 2350 | 2700 | 1760 | 4240 | 3040 |

Note) On the SKR20/26, only the LM guide section features a ball cage.

[Seal]

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

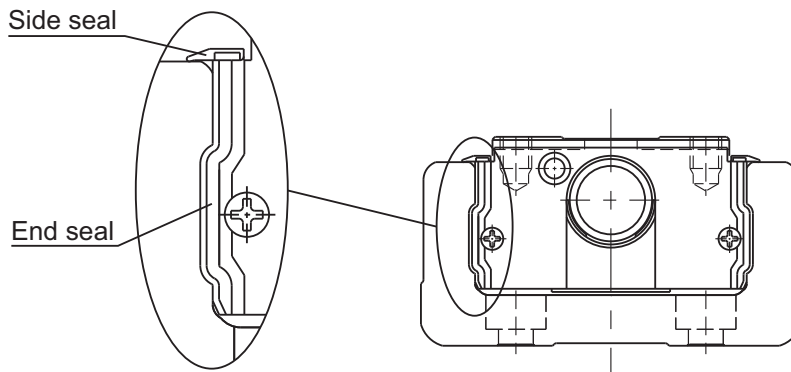


Table3 shows the rolling resistance and seal resistance per inner block (guide section).

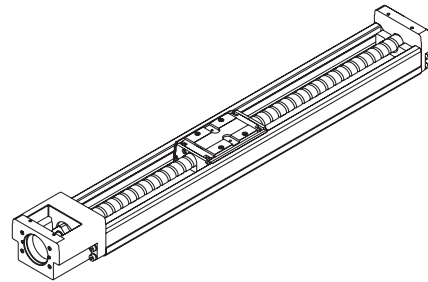
Table3 Maximum Resistance Value Unit: N

| Model No. | Rolling resistance value | Seal resistance value | Total |
|-----------|--------------------------|-----------------------|-------|
| SKR20 | 4.0 | 0.8 | 4.8 |
| SKR26 | 4.5 | 1.2 | 5.7 |
| SKR33 | 3.0 | 1.7 | 4.7 |
| SKR46 | 6.0 | 2.1 | 8.1 |

Types and Features

Model SKR-A (with a Single Long Type Block)

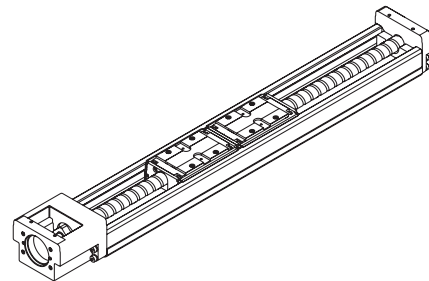
Representative model of SKR.



Model SKR-A

Model SKR-B (with Two Long Type Blocks)

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

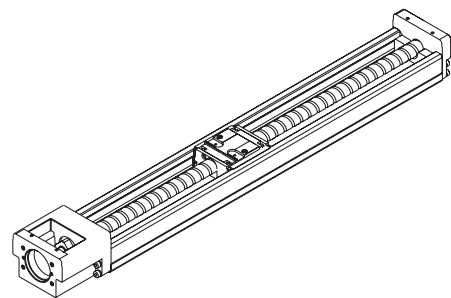


Model SKR-B

Model SKR-C (with a Single Short Type Block)

This model has a shorter overall length of the inner block and a longer stroke than model SKR-A.

* With model SKR3320, a short-block type is not available.

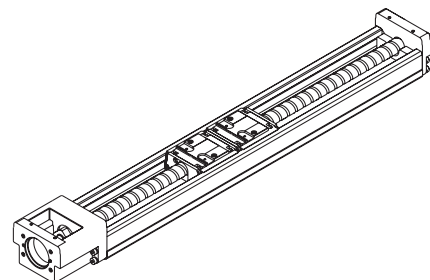


Model SKR-C

Model SKR-D (with Two Short Type Blocks)

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

* With model SKR3320, a short-block type is not available.

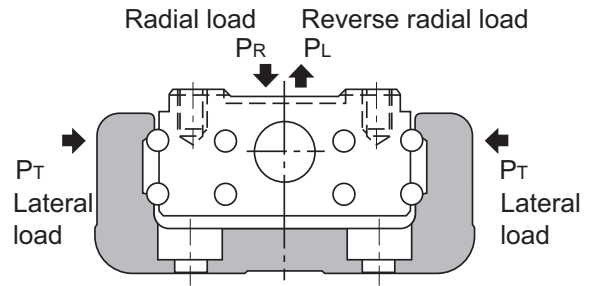


Model SKR-D

Load Ratings in All Directions and Static Permissible Moment

[Load Rating]

Caged Ball LM Guide Actuator Model SKR consists of an LM Guide, a Ball Screw and a support bearing.



● LM Guide Unit

Model SKR 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 Table4.

● Ball Screw Unit

Since the inner block is incorporated with a ball screw nut, model SKR is capable of receiving an axial load. The basic load rating value is indicated in Table4.

● Bearing Unit (Fixed Side)

Since housing A contains an angular bearing, model SKR is capable of receiving an axial load. The basic load rating value is indicated in Table4.

[Equivalent Load (LM Guide Unit)]

The equivalent load when the LM Guide unit of model SKR 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 directions

P_R : Radial load (N)

P_L : Reverse radial load (N)

P_T : Lateral load (N)

Table4 Load Rating of Model SKR

| Model No. | | | SKR20 | | SKR26 | | SKR33* | | | SKR46* | |
|---------------------------|---------------------------------------|--------------------------------------|------------------|---------|------------------|---------|------------------|---------|---------|------------------|---------|
| | | | SKR2001 | SKR2006 | SKR2602 | SKR2606 | SKR3306 | SKR3310 | SKR3320 | SKR4610 | SKR4620 |
| LM guide unit | Basic dynamic load rating C_0 (N) | Long type block | 6010 | | 13000 | | 17000 | | | 39500 | |
| | | Short type block | — | | — | | 11300 | | — | | 28400 |
| | Basic static load rating C_0 (N) | Long type block | 8030 | | 16500 | | 20400 | | | 45900 | |
| | | Short type block | — | | — | | 11500 | | — | | 28700 |
| | Radial clearance (mm) | Normal grade, high accuracy grade | -0.004 to 0 | | -0.006 to 0 | | -0.004 to 0 | | | -0.006 to 0 | |
| | | Precision grade | -0.006 to -0.004 | | -0.007 to -0.006 | | -0.012 to -0.004 | | | -0.016 to -0.006 | |
| Ball screw unit | Basic dynamic load rating C_a (N) | Normal grade, high accuracy grade | 660 | 860 | 2350 | 1950 | 4400 | 2700 | 2620 | 4350 | 4240 |
| | | Precision grade | 660 | 1060 | 2350 | 2390 | | | | | |
| | Basic static load rating C_{0a} (N) | Normal grade, high accuracy grade | 1170 | 1450 | 4020 | 3510 | 6290 | 3780 | 3770 | 6990 | 7040 |
| | | Precision grade | 1170 | 1600 | 4020 | 3900 | | | | | |
| | Screw shaft diameter (mm) | | 6 | | 8 | | 13 | | | 15 | |
| | Ball Screw lead (mm) | | 1 | 6 | 2 | 6 | 6 | 10 | 20 | 10 | 20 |
| | Thread minor diameter (mm) | | 5.3 | 5.0 | 6.6 | 6.7 | 10.8 | | | 12.5 | |
| | Ball center-to-center diameter (mm) | | 6.15 | 6.3 | 8.3 | 8.4 | 13.5 | | | 15.75 | |
| Bearing unit (Fixed side) | Axial direction | Basic dynamic load rating C_a (N) | 1150 | | 2000 | | 6250 | | | 6700 | |
| | | Static permissible load P_{0a} (N) | 735 | | 1230 | | 2700 | | | 3330 | |

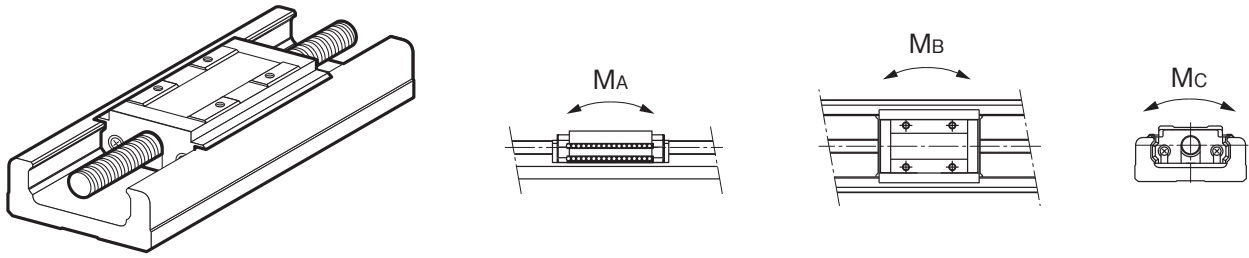
*For use in a special environment or where an axial load (25% or more of the basic dynamic load rating C_a) is applied, a special type is also available. Contact THK for details.

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

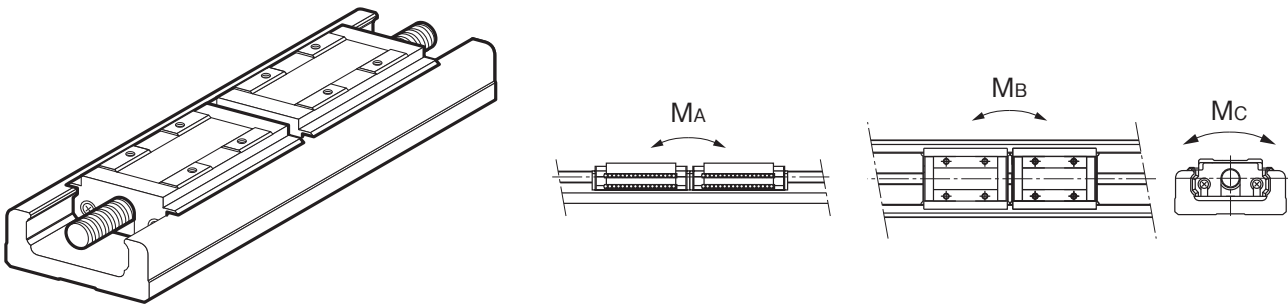
Note2) With model SKR3320, a short-block type is not available.

[Permissible Moment (LM Guide Unit)]

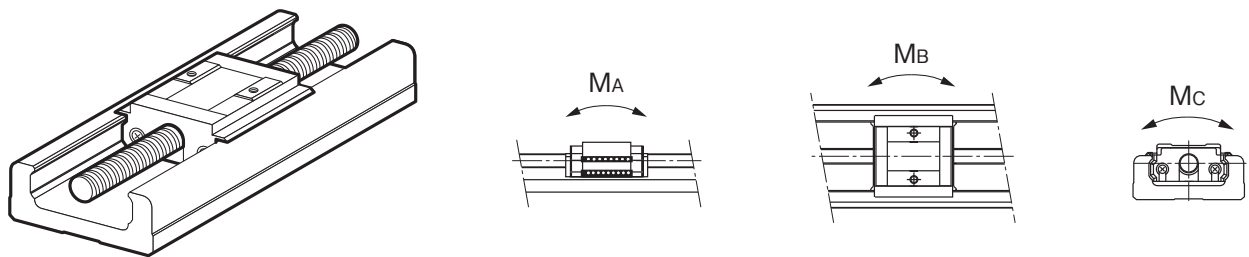
The Inner block is capable of receiving moment loads in all three (3) directions.
Table5 on page12 shows the permissible static moment in the M_A , M_B and M_C directions.



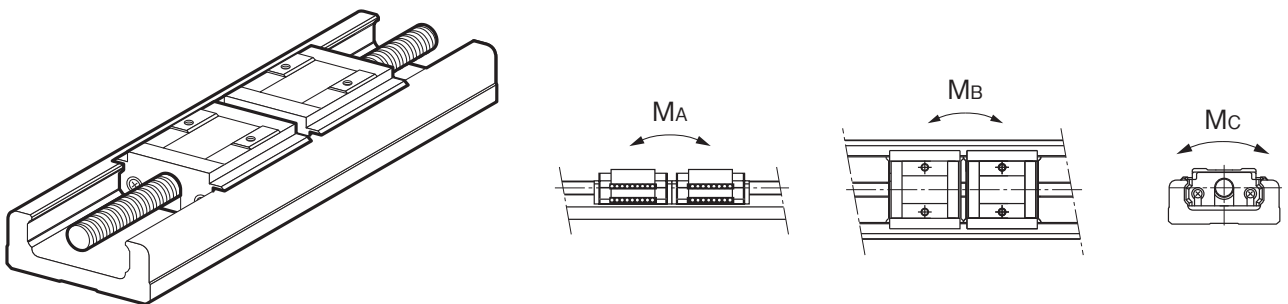
With a single long type block (Model SKR-A)



With double long type blocks (Model SKR-B)



With a single short type block (Model SKR-C)



With double short type blocks (Model SKR-D)

Table5 Static Permissible Moments of Model SKR

Unit: N-m

| Model No. | Static permissible moment | | |
|-----------|---------------------------|----------------|----------------|
| | M _A | M _B | M _C |
| SKR20-A | 38 | 38 | 98 |
| SKR20-B | 207 | 207 | 197 |
| SKR26-A | 117 | 117 | 265 |
| SKR26-B | 589 | 589 | 530 |
| SKR33-A | 173 | 173 | 424 |
| SKR33-B | 990 | 990 | 848 |
| SKR33-C | 58 | 58 | 240 |
| SKR33-D | 390 | 390 | 480 |
| SKR46-A | 579 | 579 | 1390 |
| SKR46-B | 3240 | 3240 | 2780 |
| SKR46-C | 236 | 236 | 870 |
| SKR46-D | 1460 | 1460 | 1740 |

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 SKR-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

Table6 Maximum speed

| Model No. | Ball Screw lead (mm) | Stroke* (mm) | | Outer rail length (mm) | Maximum speed (mm/s) | | |
|-----------|----------------------|-----------------|------------------|------------------------|----------------------|------------------|--|
| | | Long type block | Short type block | | Long type block | Short type block | |
| SKR20 | 1 | 30 | — | 100 | 100 | — | |
| | | 80 | — | 150 | 100 | — | |
| | | 130 | — | 200 | 100 | — | |
| | 6 | 30 | — | 100 | 600 | — | |
| | | 80 | — | 150 | 600 | — | |
| | | 130 | — | 200 | 600 | — | |
| SKR26 | 2 | 60 | — | 150 | 200 | — | |
| | | 110 | — | 200 | 200 | — | |
| | | 160 | — | 250 | 200 | — | |
| | | 210 | — | 300 | 200 | — | |
| | 6 | 60 | — | 150 | 600 | — | |
| | | 110 | — | 200 | 600 | — | |
| | | 160 | — | 250 | 600 | — | |
| | | 210 | — | 300 | 600 | — | |
| | | — | — | — | — | — | |
| SKR33 | 6 | 45 | 70 | 150 | 600 | | |
| | | 95 | 120 | 200 | 600 | | |
| | | 195 | 220 | 300 | 600 | | |
| | | 295 | 320 | 400 | 600 | | |
| | | 395 | 420 | 500 | 600 | | |
| | | 495 | 520 | 600 | 550 | 500 | |
| | | 595 | 620 | 700 | 390 | 360 | |
| | | 10 | 45 | 70 | 150 | 1000 | |
| | | | 95 | 120 | 200 | 1000 | |
| | 195 | | 220 | 300 | 1000 | | |
| | 295 | | 320 | 400 | 1000 | | |
| | 395 | | 420 | 500 | 1000 | | |
| | 495 | | 520 | 600 | 920 | 830 | |
| | 595 | | 620 | 700 | 650 | 600 | |
| | 20 | 45 | — | 150 | 2000 | — | |
| | | 95 | — | 200 | 2000 | — | |
| | | 195 | — | 300 | 2000 | — | |
| | | 295 | — | 400 | 2000 | — | |
| | | 395 | — | 500 | 2000 | — | |
| | | 495 | — | 600 | 1780 | — | |
| | | 595 | — | 700 | 1270 | — | |
| | | — | — | — | — | — | |
| | SKR46 | 10 | 190 | 220 | 340 | 1000 | |
| | | | 290 | 320 | 440 | 1000 | |
| 390 | | | 420 | 540 | 1000 | | |
| 490 | | | 520 | 640 | 1000 | 910 | |
| 590 | | | 620 | 740 | 730 | 660 | |
| 690 | | | 720 | 840 | 550 | 500 | |
| 790 | | | 820 | 940 | 430 | 400 | |
| 20 | | 190 | 220 | 340 | 2000 | | |
| | | 290 | 320 | 440 | 2000 | | |
| | | 390 | 420 | 540 | 2000 | | |
| | | 490 | 520 | 640 | 1980 | 1770 | |
| | | 590 | 620 | 740 | 1430 | 1300 | |
| | | 690 | 720 | 840 | 1080 | 990 | |
| | | 790 | 820 | 940 | 840 | 780 | |
| | | — | — | — | — | — | |

*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⁻¹), or by the permissible rotation speed of the Ball Screw.

Note2) When considering the use of this model at speed higher than the maximum speed indicated above, contact THK.

Lubrication

Table7 shows standard greases used in model SKR and grease nipple types.

Table7 Types of standard grease and grease nipples used

| Model No. | Standard grease | Grease nipple used |
|-----------|-------------------|--------------------|
| SKR20 | THK AFA Grease | PB107 |
| SKR26 | THK AFA Grease | PB107 |
| SKR33 | THK AFB-LF Grease | PB107 |
| SKR46 | THK AFB-LF Grease | A-M6F |

Static Safety Factor

Caged Ball LM Guide Actuator Model SKR 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 SKR” (see Table4 on page10).

[Calculating the Static Safety Factor]

● LM Guide Unit

To calculate a load applied to the LM Guide of model SKR, 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 SKR 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.

Service Life

[LM Guide Unit]

● Nominal Life

The nominal life (L) means the total travel distance that 90% of a group of units of the same LM Guide model can achieve without flaking (scale-like pieces on the metal surface) after individually running under the same conditions.

The nominal life of the LM Guide is obtained using the following equation.

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

L : Nominal life (km) f_w : Load factor (see Table8 on page17)
 C : Basic dynamic load rating (N) f_c : Contact factor (see Table9 on page18)
 P_c : Calculated applied load (N)

- If a moment is applied, calculate the equivalent load by multiplying the applied moment by the equivalent factor indicated in Table10 on page 18.

$$P_m = K \cdot M$$

P_m : Equivalent load (per inner block) (N)

K : Equivalent moment factor

M : Applied moment (N-mm)

(If planning to use the product with a wide inner block span, contact THK.)

If moment M_c is applied to model SKR-B/D

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

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

$$P_E = P_m + P$$

P_E : Overall 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) n_1 : Number of reciprocations per minute (min^{-1})
 ℓ_s : Stroke length (mm)

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

● Nominal Life

The nominal life (L) means the total travel distance that 90% of a group of units of the same Ball Screw (bearing) can achieve without flaking after individually running under the same conditions.

The nominal life of the Ball Screw unit/bearing unit (fixed side) is obtained using the following equation.

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

- L : Nominal life (rev)
- C_a : Basic dynamic load rating (N)
- F_a : Axial load (N)
- f_w : Load factor (see Table8)

Table8 Load Factor (f_w)

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

● 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) n_1 : Number of reciprocations per minute (min^{-1})
 ℓ_s : Stroke length (mm) ℓ : Ball Screw lead (mm)

■ f_c : Contact Factor

If two inner blocks are used in close contact with each other with model SKR-B/D, multiply the basic load rating by the corresponding contact factor indicated in Table9.

Table9 Contact Factor (f_c)

| Block type | Contact factor f_c |
|----------------------------|----------------------|
| Model SKR-B Model SKR-D | 0.81 |

■ f_w : Load Factor

In general, machines in reciprocal motion are likely to cause vibration and impact during operation, and it is particularly difficult to accurately determine each of vibration generated during high-speed operation, impact applied during repeated starting and stopping in normal use, etc. Therefore, where the effect of speed vibration is estimated to be significant, divide the basic load rating (C) by an empirically obtained load factor.

■ K: Moment Equivalent Factor (LM Guide Unit)

When model SKR 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 Table10.

Symbols K_A , K_B and K_C indicate the moment equivalent loads in the M_A , M_B and M_C directions, respectively.

Table10 Equivalent moment factor(K)

| Model No. | K_A | K_B | K_C |
|-----------|-----------------------|-----------------------|-----------------------|
| SKR20-A | 2.34×10^{-1} | 2.34×10^{-1} | 8.07×10^{-2} |
| SKR20-B | 4.38×10^{-2} | 4.38×10^{-2} | 8.07×10^{-2} |
| SKR26-A | 1.59×10^{-1} | 1.59×10^{-1} | 6.17×10^{-2} |
| SKR26-B | 3.18×10^{-2} | 3.18×10^{-2} | 6.17×10^{-2} |
| SKR33-A | 1.42×10^{-1} | 1.42×10^{-1} | 5.05×10^{-2} |
| SKR33-B | 2.47×10^{-2} | 2.47×10^{-2} | 5.05×10^{-2} |
| SKR33-C | 2.39×10^{-1} | 2.39×10^{-1} | 5.05×10^{-2} |
| SKR33-D | 3.54×10^{-2} | 3.54×10^{-2} | 5.05×10^{-2} |
| SKR46-A | 9.51×10^{-2} | 9.51×10^{-2} | 3.46×10^{-2} |
| SKR46-B | 1.70×10^{-2} | 1.70×10^{-2} | 3.46×10^{-2} |
| SKR46-C | 1.46×10^{-1} | 1.46×10^{-1} | 3.46×10^{-2} |
| SKR46-D | 2.36×10^{-2} | 2.36×10^{-2} | 3.46×10^{-2} |

K_A : Moment equivalent factor in the M_A direction.

K_B : Moment equivalent factor in the M_B direction.

K_C : Moment equivalent factor in the M_C direction.

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

Accuracy Standards

The accuracy standard of model SKR 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.

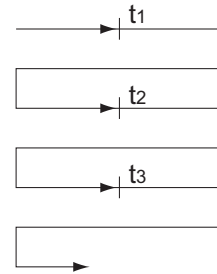


Fig.8 Positioning Repeatability

[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.

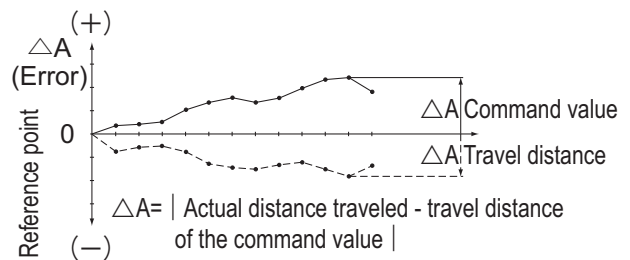


Fig.9 Positioning Accuracy

[Running of Parallelism (Vertical direction)]

Place a straightedge on the surface table where model SKR 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.

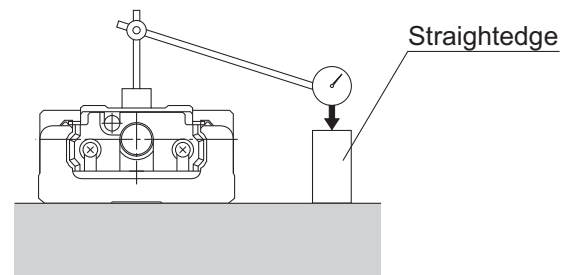


Fig.10 Running of Parallelism

[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.

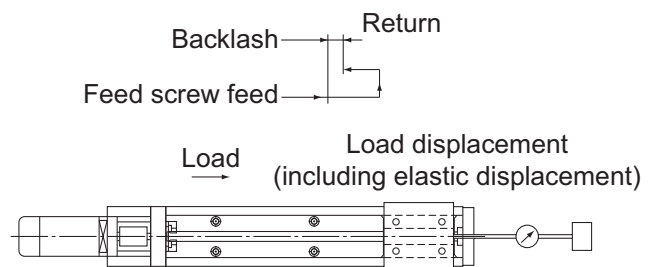


Fig.11 Backlash

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

Table11 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) |
|-----------|--------|-------------------|---------------------------|----------------------|--|----------|------------------------|
| SKR20 | 30 | 100 | ±0.01 | No standard defined | No standard defined | 0.02 | 0.5 |
| | 80 | 150 | | | | | |
| | 130 | 200 | | | | | |
| SKR26 | 60 | 150 | ±0.01 | No standard defined | No standard defined | 0.02 | 1.5 |
| | 110 | 200 | | | | | |
| | 160 | 250 | | | | | |
| | 210 | 300 | | | | | |
| SKR33 | 45 | 150 | ±0.01 | No standard defined | No standard defined | 0.02 | 7 |
| | 95 | 200 | | | | | |
| | 195 | 300 | | | | | |
| | 295 | 400 | | | | | |
| | 395 | 500 | | | | | |
| | 495 | 600 | | | | | |
| SKR46 | 595 | 700 | ±0.01 | No standard defined | No standard defined | 0.02 | 10 |
| | 190 | 340 | | | | | |
| | 290 | 440 | | | | | |
| | 390 | 540 | | | | | |
| | 490 | 640 | | | | | |
| | 590 | 740 | | | | | |
| | 690 | 840 | | | | | |
| 790 | 940 | | | | | | |

Table12 High Accuracy Grade (H)

Unit: mm

| Model No. | Stroke | Outer rail length | Positioning Repeatability | Positioning Accuracy | Running of Parallelism (Vertical direction) | Backlash | Starting torque (N-cm) |
|-----------|--------|-------------------|---------------------------|----------------------|---|----------|------------------------|
| SKR20 | 30 | 100 | ±0.005 | 0.06 | 0.025 | 0.01 | 0.5 |
| | 80 | 150 | | | | | |
| | 130 | 200 | | | | | |
| SKR26 | 60 | 150 | ±0.005 | 0.06 | 0.025 | 0.01 | 1.5 |
| | 110 | 200 | | | | | |
| | 160 | 250 | | | | | |
| | 210 | 300 | | | | | |
| SKR33 | 45 | 150 | ±0.005 | 0.06 | 0.025 | 0.02 | 7 |
| | 95 | 200 | | | | | |
| | 195 | 300 | | | | | |
| | 295 | 400 | | 0.10 | 0.035 | | |
| | 395 | 500 | | | | | |
| | 495 | 600 | | | | | |
| SKR46 | 595 | 700 | ±0.005 | 0.12 | 0.04 | 0.02 | 10 |
| | 190 | 340 | | | | | |
| | 290 | 440 | | | | | |
| | 390 | 540 | | 0.10 | 0.035 | | |
| | 490 | 640 | | | | | |
| | 590 | 740 | | | | | |
| | 690 | 840 | | 0.12 | 0.04 | | |
| 790 | 940 | | | | | | |

Table13 Precision Grade (P)

Unit: mm

| Model No. | Stroke* | Outer rail length | Positioning Repeatability | Positioning Accuracy | Running of Parallelism (Vertical direction) | Backlash | Starting torque (N-cm) |
|-----------|---------|-------------------|---------------------------|----------------------|---|----------|------------------------|
| SKR20 | 30 | 100 | ±0.003 | 0.02 | 0.01 | 0.003 | 1.2 |
| | 80 | 150 | | | | | |
| | 130 | 200 | | | | | |
| SKR26 | 60 | 150 | ±0.003 | 0.02 | 0.01 | 0.003 | 4 |
| | 110 | 200 | | | | | |
| | 160 | 250 | | | | | |
| SKR33 | 45 | 150 | ±0.003 | 0.02 | 0.01 | 0.003 | 15 |
| | 95 | 200 | | | | | |
| | 195 | 300 | | | | | |
| | 295 | 400 | | 0.025 | 0.015 | | |
| | 395 | 500 | | | | | |
| | 495 | 600 | | | | | |
| SKR46 | 595 | 700 | ±0.003 | 0.03 | 0.02 | 0.003 | 15 |
| | 190 | 340 | | | | | |
| | 290 | 440 | | | | | |
| | 390 | 540 | | 0.025 | 0.015 | | |
| | 490 | 640 | | | | | |
| 590 | 740 | 0.03 | 0.02 | 17 | | | |

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

Note1) The evaluation method complies with THK standards.

Note2) The starting torque represents the value when the following grease is used.

Models SKR20 and SKR26 : THK AFA Grease

Models SKR33 and SKR46 : THK AFB-LF Grease

Note3) If harder grease is used, such as vacuum/clean-room grease, the actual starting torque may exceed the values listed.

Note4) 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 |
|-----------|-----------------|------------------|-------------------|----------|
|-----------|-----------------|------------------|-------------------|----------|

| | | | | |
|--------------|-----------|----------|-------------|----------|
| SKR33 | 10 | A | 150L | P |
|--------------|-----------|----------|-------------|----------|

①

②

③

④

⑤

| | | | | |
|-------|-----------|---|----------------|-------------------------|
| SKR20 | 01 : 1mm | A | 75L : 75mm | No symbol: normal grade |
| SKR26 | 02 : 2mm | B | 100L : 100mm | H : High accuracy grade |
| SKR33 | 06 : 6mm | C | } | P : Precision Grade |
| SKR46 | 10 : 10mm | D | 1680L : 1680mm | |
| | 20 : 20mm | | | |

The available ball screw leads differ depending on the model.

SKR20 : "01", "06"

SKR26 : "02", "06"

SKR33 : "06", "10", "20" (20 mm is available for inner block type A and B only)

SKR46 : "10", "20"

| With/without a motor | Cover | Sensor | Housing A/ Intermediate Flange | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|--------------------|-----------------|-------------------|--|---------|---|---|---|---|---|---|---|---|---|---|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 0 | 1 | B | AQ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑥ | ⑦ | ⑧ | ⑨ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><td>0: direct-coupled (without a motor)</td></tr> <tr><td>1: direct-coupled (with a motor, specified by the customer)</td></tr> </table> | 0: direct-coupled (without a motor) | 1: direct-coupled (with a motor, specified by the customer) | <table border="1"> <tr><td>0: without a cover</td></tr> <tr><td>1: with a cover</td></tr> <tr><td>2: with a bellows</td></tr> </table> | 0: without a cover | 1: with a cover | 2: with a bellows | <table border="1"> <tr><td>0: none</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>6</td></tr> <tr><td>7</td></tr> <tr><td>B</td></tr> <tr><td>E</td></tr> <tr><td>H</td></tr> <tr><td>L</td></tr> <tr><td>J</td></tr> <tr><td>M</td></tr> <tr><td>AU</td></tr> <tr><td>AV</td></tr> <tr><td>AY</td></tr> </table> | 0: none | 1 | 2 | 6 | 7 | B | E | H | L | J | M | AU | AV | AY | <table border="1"> <tr><td>20</td></tr> <tr><td>40</td></tr> <tr><td>60</td></tr> <tr><td>A0</td></tr> <tr><td>AM</td></tr> <tr><td>AN</td></tr> <tr><td>AP</td></tr> <tr><td>AQ</td></tr> <tr><td>AR</td></tr> <tr><td>AS</td></tr> <tr><td>AT</td></tr> <tr><td>AU</td></tr> <tr><td>AV</td></tr> <tr><td>AY</td></tr> </table> | 20 | 40 | 60 | A0 | AM | AN | AP | AQ | AR | AS | AT | AU | AV | AY |
| 0: direct-coupled (without a motor) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1: direct-coupled (with a motor, specified by the customer) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0: without a cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1: with a cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2: with a bellows | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0: none | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AU | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AQ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AU | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

0: direct-coupled (without a motor)
1: direct-coupled (with a motor, specified by the customer)

0: without a cover
1: with a cover
2: with a bellows

| | |
|---------|----|
| 0: none | 20 |
| 1 | 40 |
| 2 | 60 |
| 6 | A0 |
| 7 | AM |
| B | AN |
| E | AP |
| H | AQ |
| L | AR |
| J | AS |
| M | AT |
| | AU |
| | AV |
| | AY |

If "0" is selected, a coupling is not attached. If a coupling is required, please indicate so.

"1" means that a motor specified by the customer is mounted.

For item ⑨, select a housing A/intermediate flange that matches the specified motor.

Several motors by different manufacturers can be mounted. Contact THK for details.

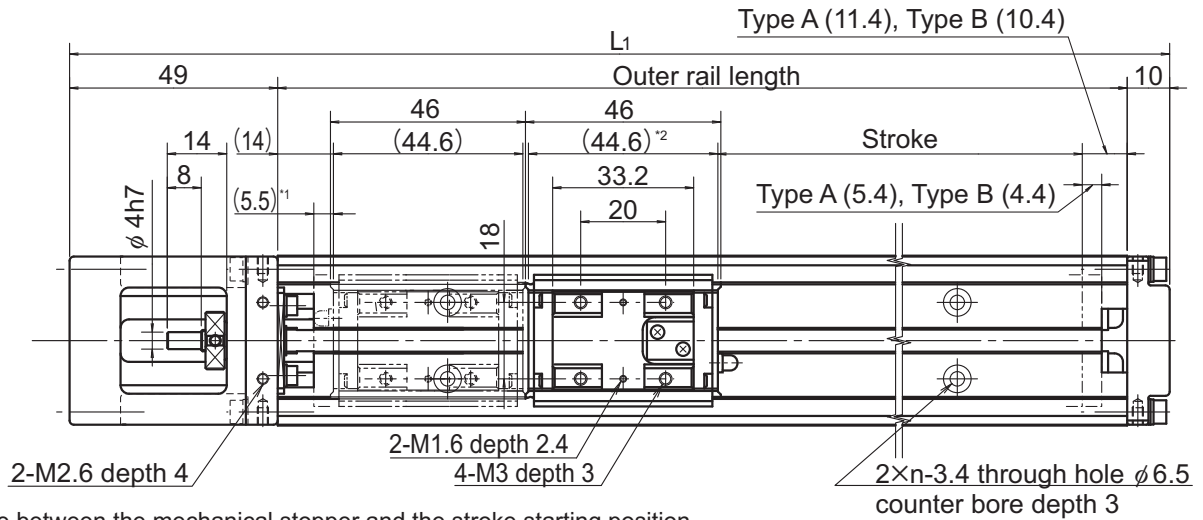
A type with a wrap-around housing A and a motor wrap-around type, which are not contained in the catalog, are also available. Contact THK for details.

Model SKR20 Standard Type

Model SKR20□□A (with a Single Long Nut Block)

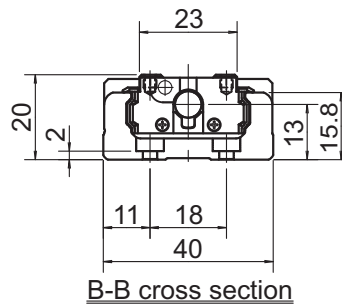
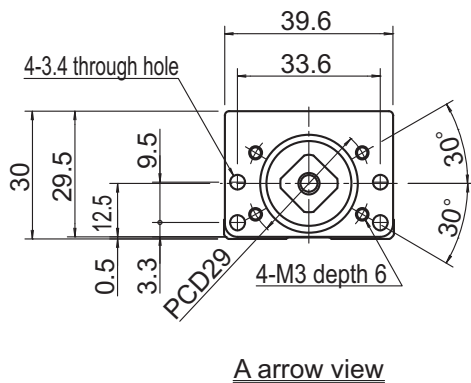
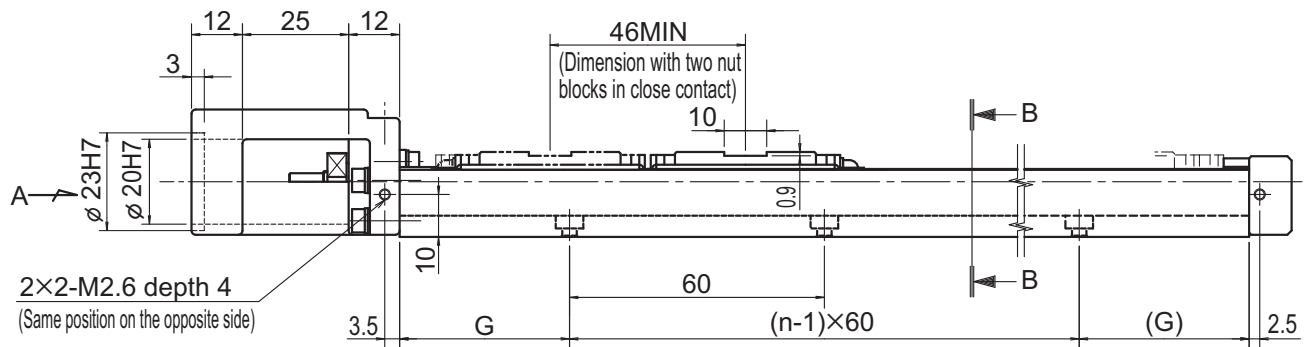
Model SKR20□□B (with Two Long Nut Blocks)

For model number coding, see page23.



*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 SKR-B (with two long-type inner blocks) is 90.6 mm.



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L_1 (mm) | G (mm) | n | Overall main unit mass (kg) | |
|---|----------|---------------------------|------------------------------|-----------|---|-----------------------------|--------|
| Type A | Type B | | | | | Type A | Type B |
| 30(40.9) | — | 100 | 159 | 20 | 2 | 0.45 | — |
| 80(90.9) | 35(44.9) | 150 | 209 | 15 | 3 | 0.58 | 0.66 |
| 130(140.9) | 85(94.9) | 200 | 259 | 40 | 3 | 0.72 | 0.8 |

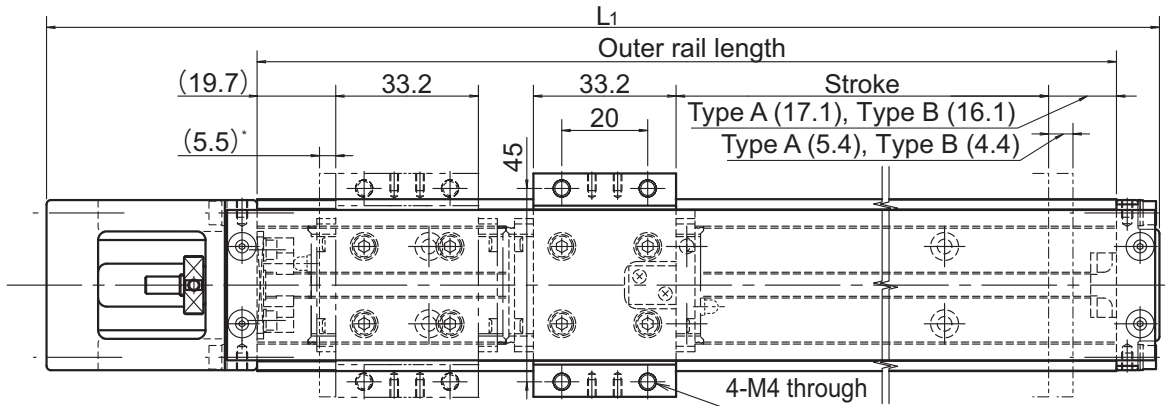
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR20 (with a Cover)

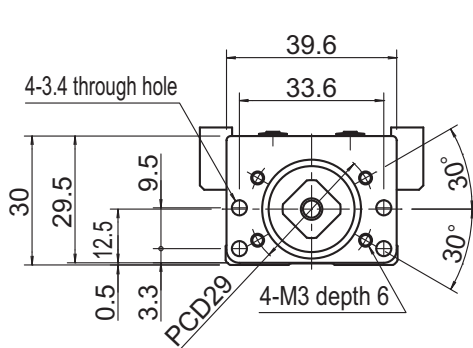
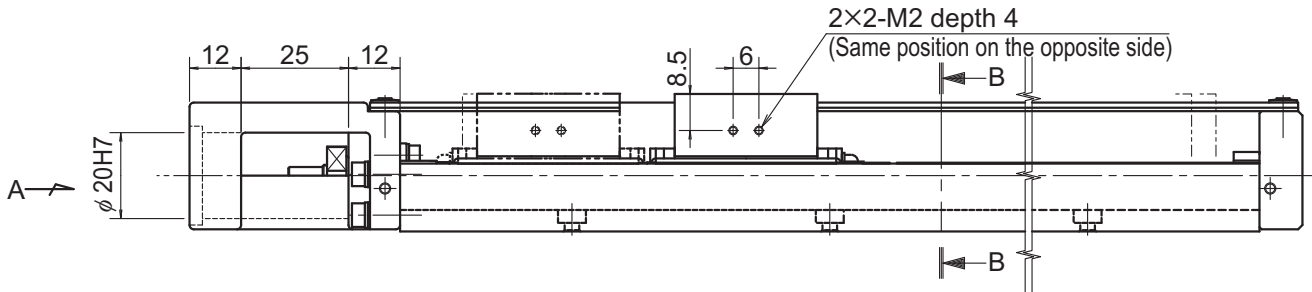
Model SKR20□□A (with a Single Long Nut Block)

Model SKR20□□B (with Two Long Nut Blocks)

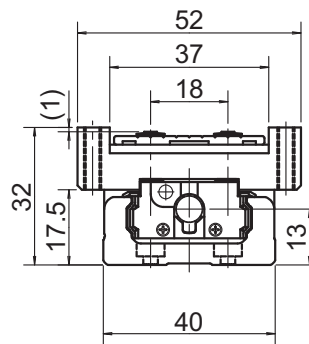
For model number coding, see page23.



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



A arrow view



B-B cross section

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L_1 (mm) | G (mm) | n | Overall main unit mass (kg) | |
|---|----------|---------------------------|------------------------------|-----------|---|-----------------------------|--------|
| Type A | Type B | | | | | Type A | Type B |
| 30(40.9) | — | 100 | 159 | 20 | 2 | 0.5 | — |
| 80(90.9) | 35(44.9) | 150 | 209 | 15 | 3 | 0.64 | 0.76 |
| 130(140.9) | 85(94.9) | 200 | 259 | 40 | 3 | 0.79 | 0.91 |

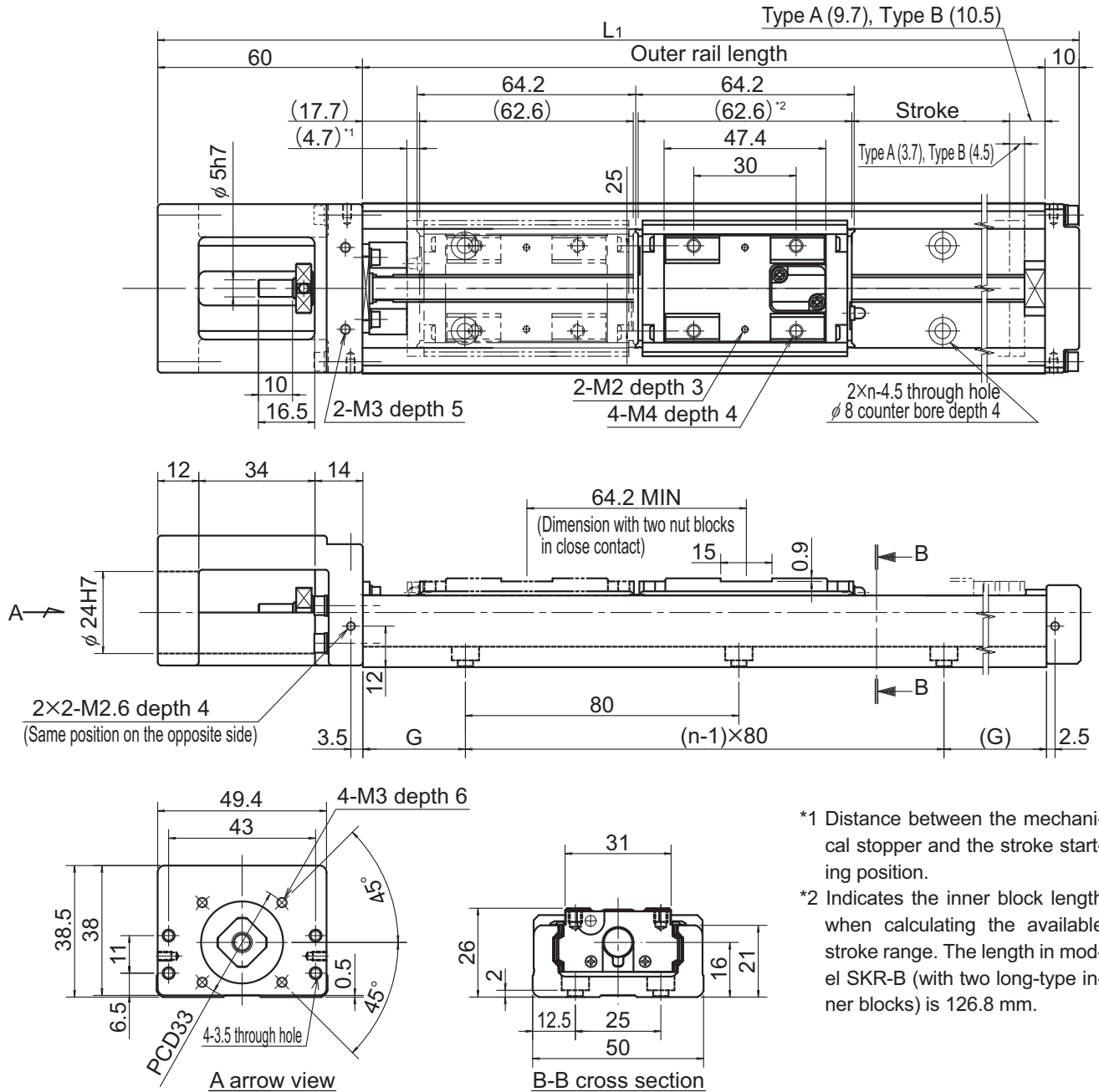
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR26 Standard Type

Model SKR26□□A (with a Single Long Nut Block)

Model SKR26□□B (with Two Long Nut Blocks)

For model number coding, see page23.



*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 SKR-B (with two long-type inner blocks) is 126.8 mm.

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L ₁ (mm) | G (mm) | n | Overall main unit mass (kg) | |
|---|------------|---------------------------|---------------------------------------|-----------|---|-----------------------------|--------|
| Type A | Type B | | | | | Type A | Type B |
| 60(68.4) | — | 150 | 220 | 35 | 2 | 0.99 | — |
| 110(118.4) | 45(54.2) | 200 | 270 | 20 | 3 | 1.2 | 1.38 |
| 160(168.4) | 95(104.2) | 250 | 320 | 45 | 3 | 1.41 | 1.59 |
| 210(218.4) | 145(154.2) | 300 | 370 | 30 | 4 | 1.62 | 1.8 |

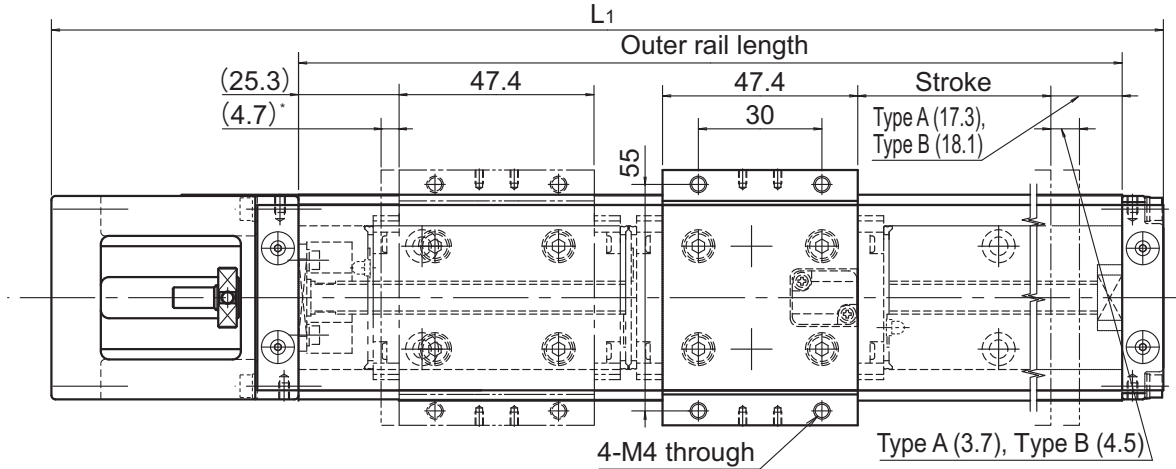
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR26 (with a Cover)

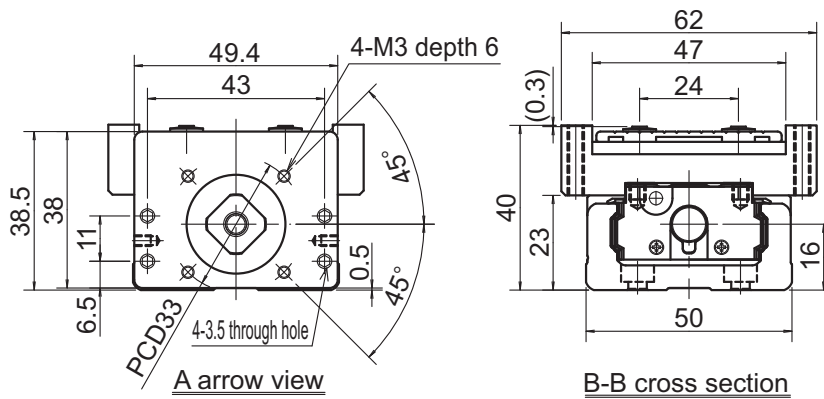
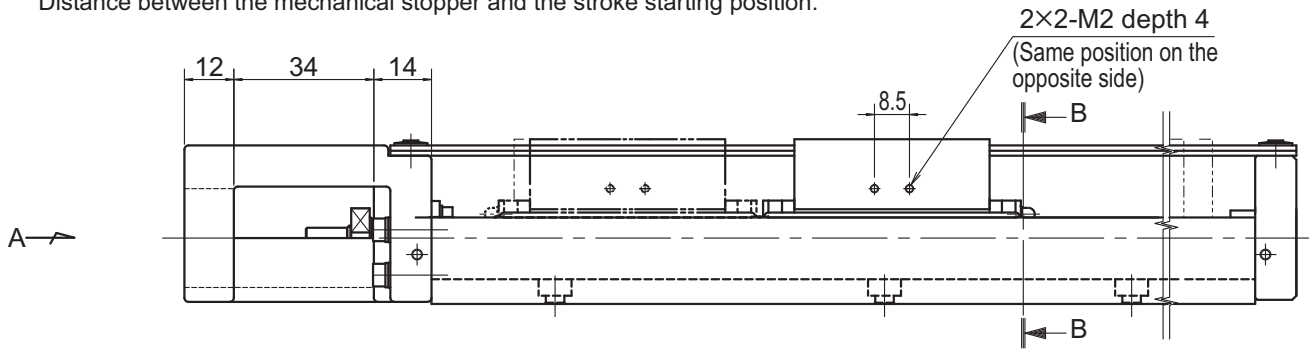
Model SKR26□□A (with a Single Long Nut Block)

Model SKR26□□B (with Two Long Nut Blocks)

For model number coding, see page23.



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



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L ₁ (mm) | G (mm) | n | Overall main unit mass (kg) | |
|---|------------|---------------------------|---------------------------------------|-----------|---|-----------------------------|--------|
| Type A | Type B | | | | | Type A | Type B |
| 60(68.4) | — | 150 | 220 | 35 | 2 | 1.1 | — |
| 110(118.4) | 45(54.2) | 200 | 270 | 20 | 3 | 1.32 | 1.57 |
| 160(168.4) | 95(104.2) | 250 | 320 | 45 | 3 | 1.54 | 1.79 |
| 210(218.4) | 145(154.2) | 300 | 370 | 30 | 4 | 1.76 | 2.01 |

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

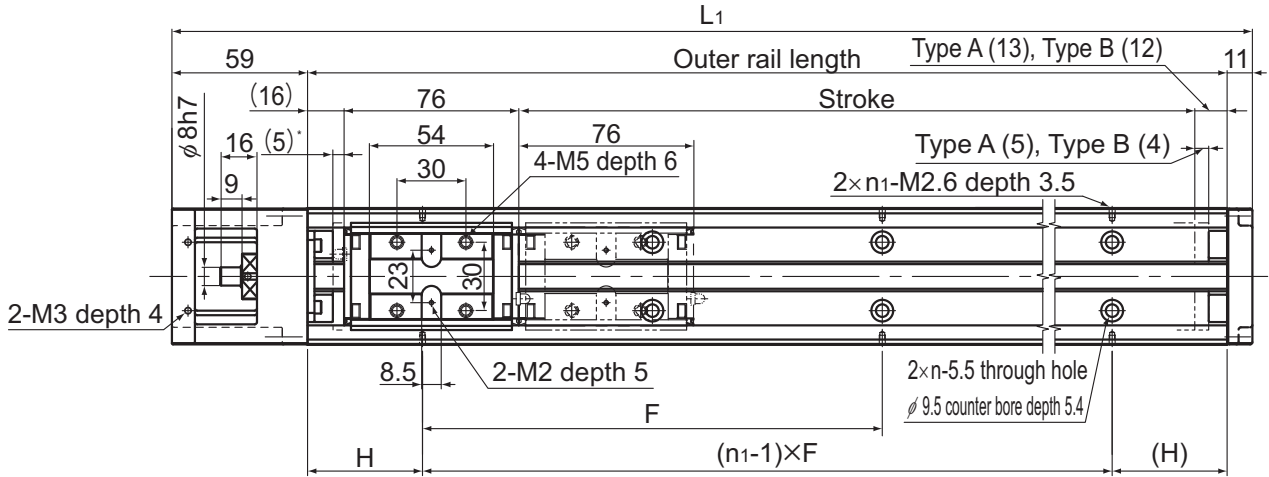
Options⇒page38

Model SKR33 Standard Type

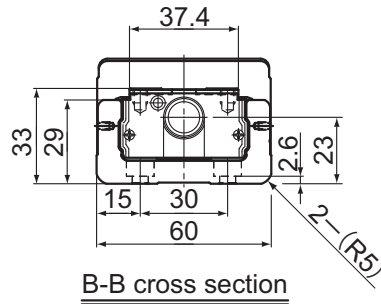
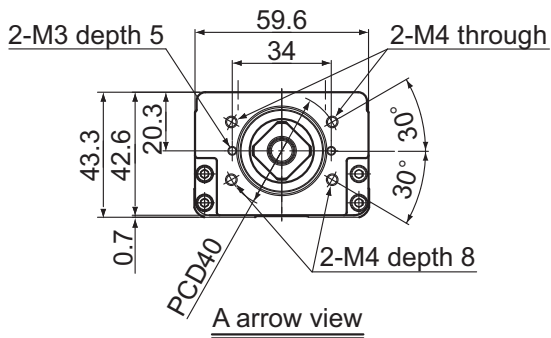
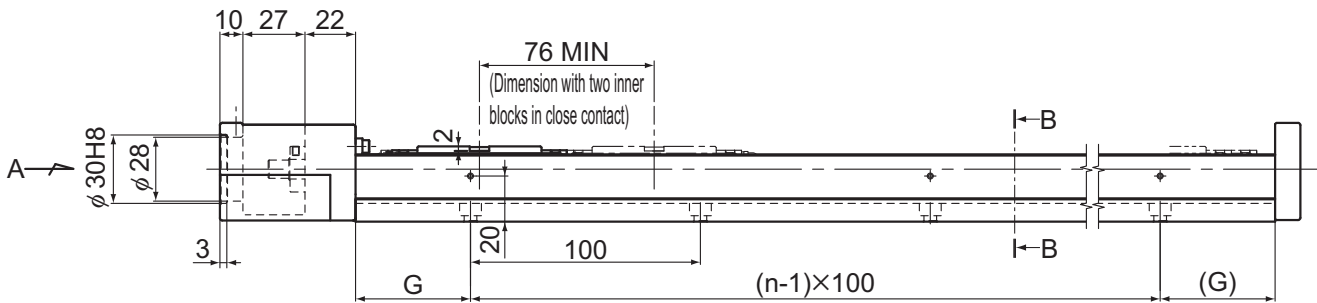
Model SKR33□□A (with a Single Long Nut Block)

Model SKR33□□B (with Two Long Nut Blocks)

For model number coding, see page23.



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



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L1(mm) | H (mm) | G (mm) | F (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|----------|---------------------------|--------------------------|-----------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type A | Type B | | | | | | | | Type A | Type B |
| 45(55) | — | 150 | 220 | 25 | 25 | 100 | 2 | 2 | 1.7 | — |
| 95(105) | — | 200 | 270 | 50 | 50 | 100 | 2 | 2 | 2.1 | — |
| 195(205) | 120(129) | 300 | 370 | 50 | 50 | 200 | 3 | 2 | 2.8 | 3.1 |
| 295(305) | 220(229) | 400 | 470 | 100 | 50 | 200 | 4 | 2 | 3.5 | 3.8 |
| 395(405) | 320(329) | 500 | 570 | 50 | 50 | 200 | 5 | 3 | 4.2 | 4.5 |
| 495(505) | 420(429) | 600 | 670 | 100 | 50 | 200 | 6 | 3 | 5.0 | 5.3 |
| 595(605) | 520(529) | 700 | 770 | 50 | 50 | 200 | 7 | 4 | 5.7 | 6.0 |

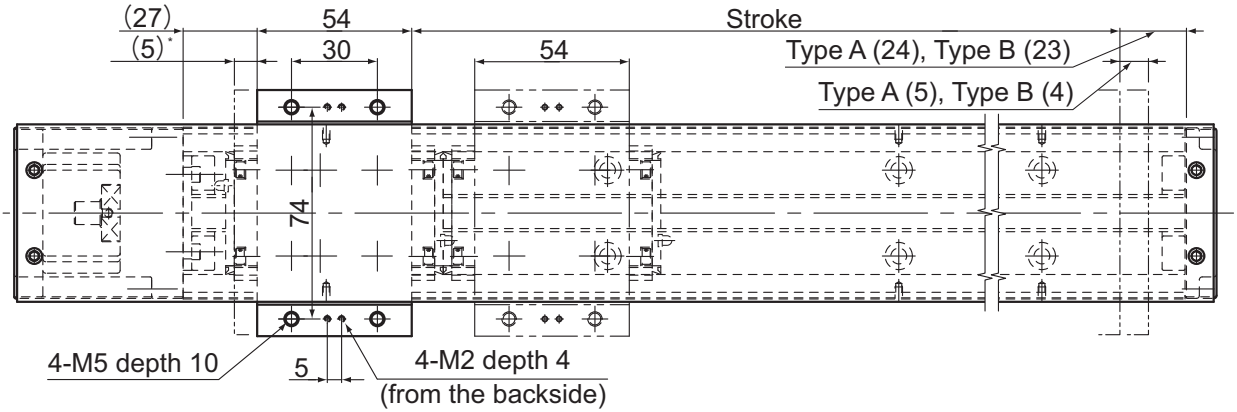
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR33 (with a Cover)

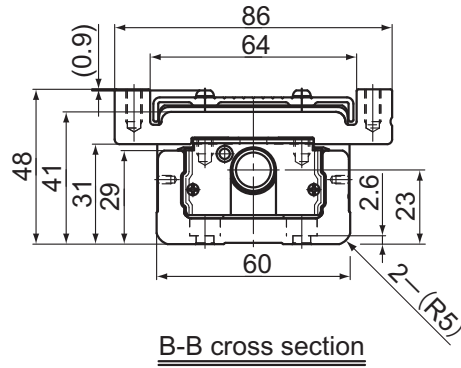
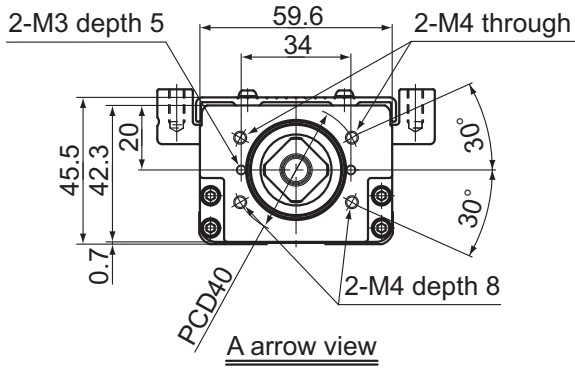
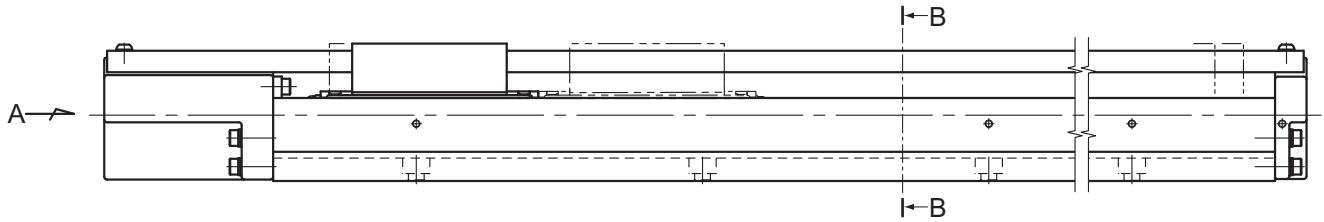
Model SKR33□□A (with a Single Long Nut Block)

Model SKR33□□B (with Two Long Nut Blocks)

For model number coding, see page23.



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



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L _t (mm) | H (mm) | G (mm) | F (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|----------|---------------------------|---------------------------------------|-----------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type A | Type B | | | | | | | | Type A | Type B |
| 45(55) | — | 150 | 220 | 25 | 25 | 100 | 2 | 2 | 1.9 | — |
| 95(105) | — | 200 | 270 | 50 | 50 | 100 | 2 | 2 | 2.3 | — |
| 195(205) | 120(129) | 300 | 370 | 50 | 50 | 200 | 3 | 2 | 3.1 | 3.5 |
| 295(305) | 220(229) | 400 | 470 | 100 | 50 | 200 | 4 | 2 | 3.8 | 4.2 |
| 395(405) | 320(329) | 500 | 570 | 50 | 50 | 200 | 5 | 3 | 4.6 | 5.0 |
| 495(505) | 420(429) | 600 | 670 | 100 | 50 | 200 | 6 | 3 | 5.3 | 5.7 |
| 595(605) | 520(529) | 700 | 770 | 50 | 50 | 200 | 7 | 4 | 6.1 | 6.5 |

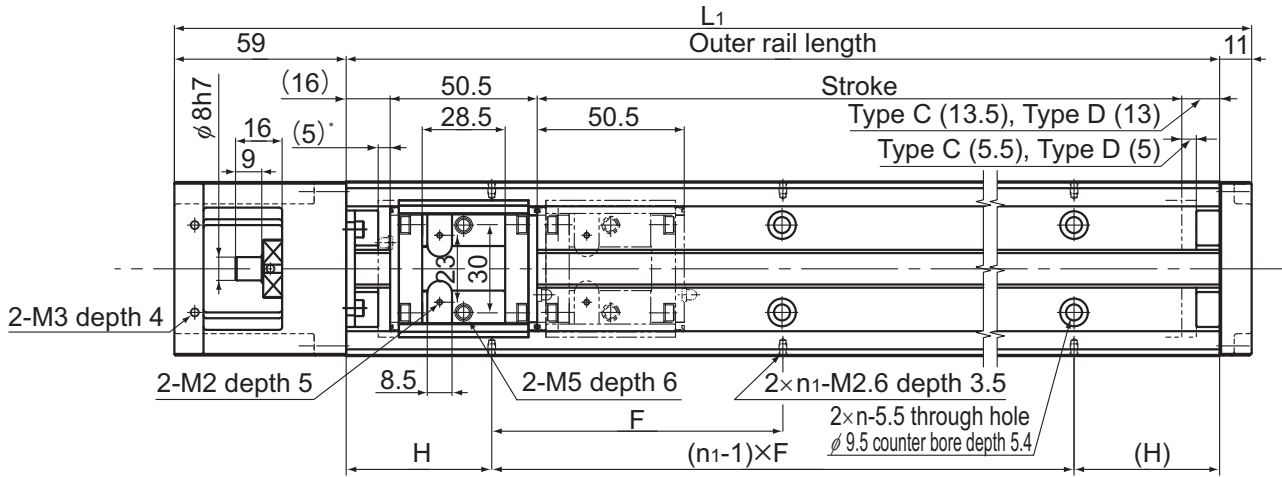
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR33 Standard Type

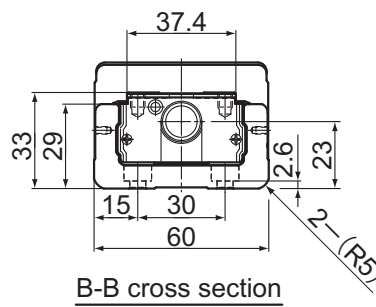
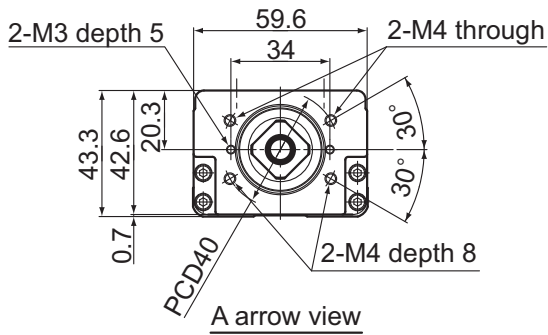
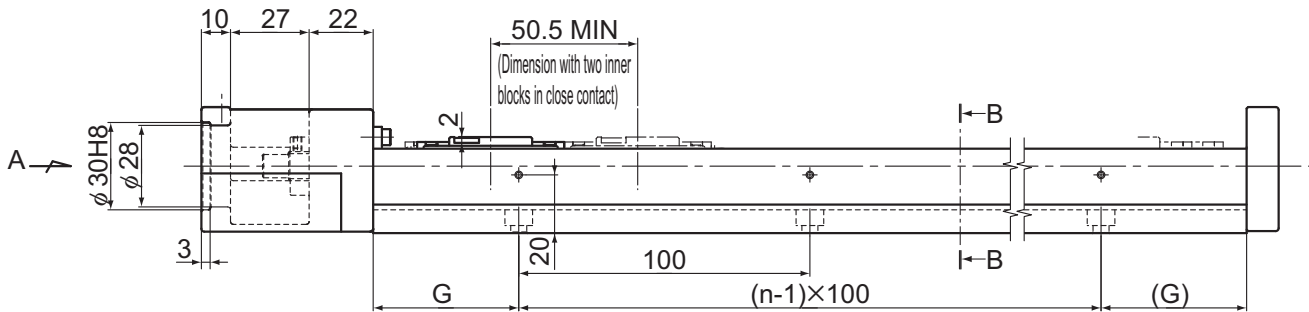
Model SKR33□□C (with a Single Short Nut Block)

Model SKR33□□D (with Two Short Nut Blocks)

For model number coding, see page23.



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



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L1(mm) | H (mm) | G (mm) | F (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|----------|---------------------------|--------------------------|-----------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type C | Type D | | | | | | | | Type C | Type D |
| 70(80.5) | 20(30) | 150 | 220 | 25 | 25 | 100 | 2 | 2 | 1.6 | 1.8 |
| 120(130.5) | 70(80) | 200 | 270 | 50 | 50 | 100 | 2 | 2 | 2.0 | 2.1 |
| 220(230.5) | 170(180) | 300 | 370 | 50 | 50 | 200 | 3 | 2 | 2.7 | 2.8 |
| 320(330.5) | 270(280) | 400 | 470 | 100 | 50 | 200 | 4 | 2 | 3.4 | 3.6 |
| 420(430.5) | 370(380) | 500 | 570 | 50 | 50 | 200 | 5 | 3 | 4.1 | 4.3 |
| 520(530.5) | 470(480) | 600 | 670 | 100 | 50 | 200 | 6 | 3 | 4.8 | 5.0 |
| 620(630.5) | 570(580) | 700 | 770 | 50 | 50 | 200 | 7 | 4 | 5.5 | 5.7 |

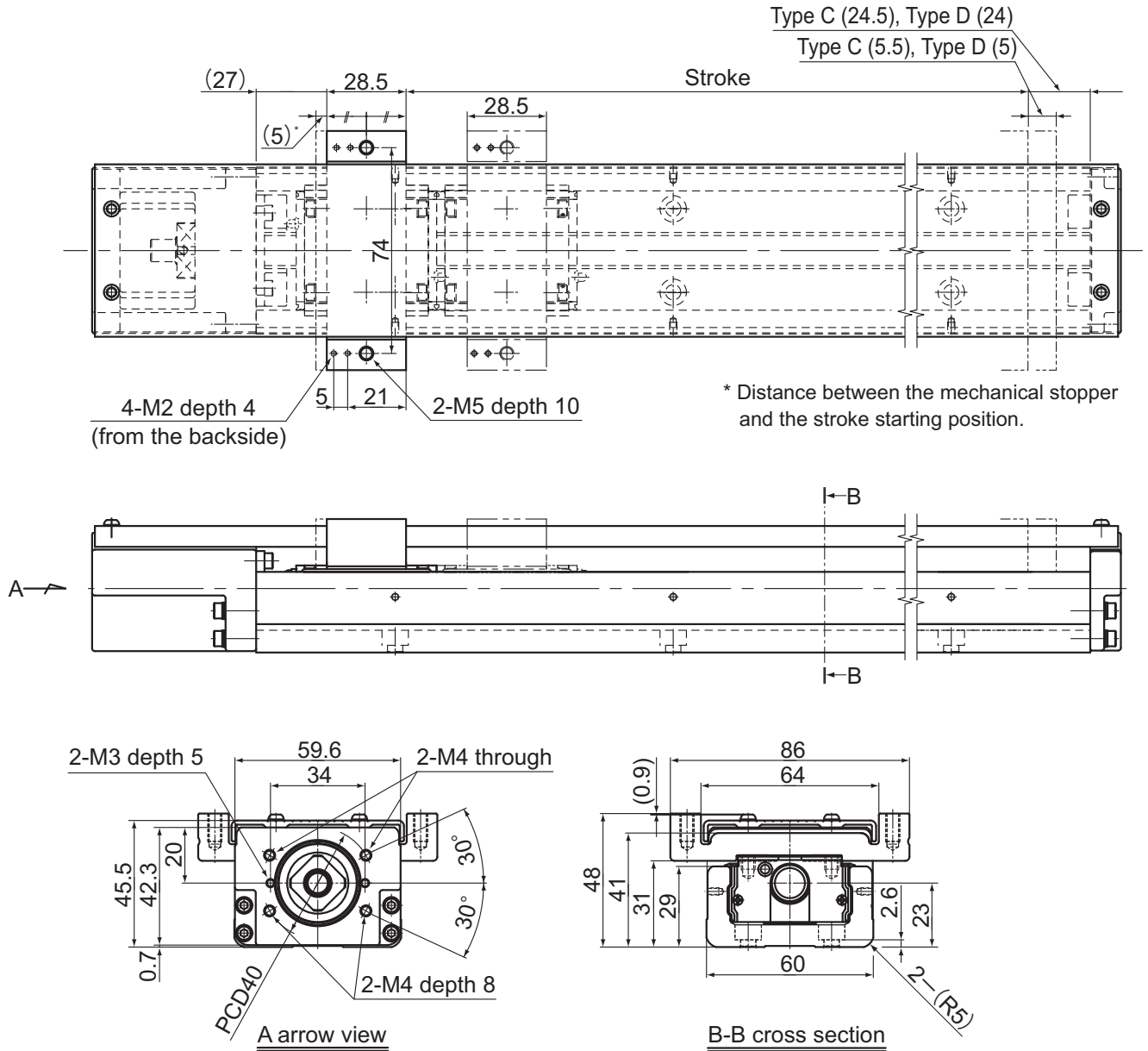
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR33 (with a Cover)

Model SKR33□□C (with a Single Short Nut Block)

Model SKR33□□D (with Two Short Nut Blocks)

For model number coding, see page23.



| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L _t (mm) | H (mm) | G (mm) | F (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|----------|---------------------------|---------------------------------------|-----------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type C | Type D* | | | | | | | | Type C | Type D |
| 70(80.5) | 20(30) | 150 | 220 | 25 | 25 | 100 | 2 | 2 | 1.8 | 2.0 |
| 120(130.5) | 70(80) | 200 | 270 | 50 | 50 | 100 | 2 | 2 | 2.2 | 2.3 |
| 220(230.5) | 170(180) | 300 | 370 | 50 | 50 | 200 | 3 | 2 | 2.9 | 3.1 |
| 320(330.5) | 270(280) | 400 | 470 | 100 | 50 | 200 | 4 | 2 | 3.7 | 3.8 |
| 420(430.5) | 370(380) | 500 | 570 | 50 | 50 | 200 | 5 | 3 | 4.4 | 4.6 |
| 520(530.5) | 470(480) | 600 | 670 | 100 | 50 | 200 | 6 | 3 | 5.2 | 5.3 |
| 620(630.5) | 570(580) | 700 | 770 | 50 | 50 | 200 | 7 | 4 | 5.9 | 6.1 |

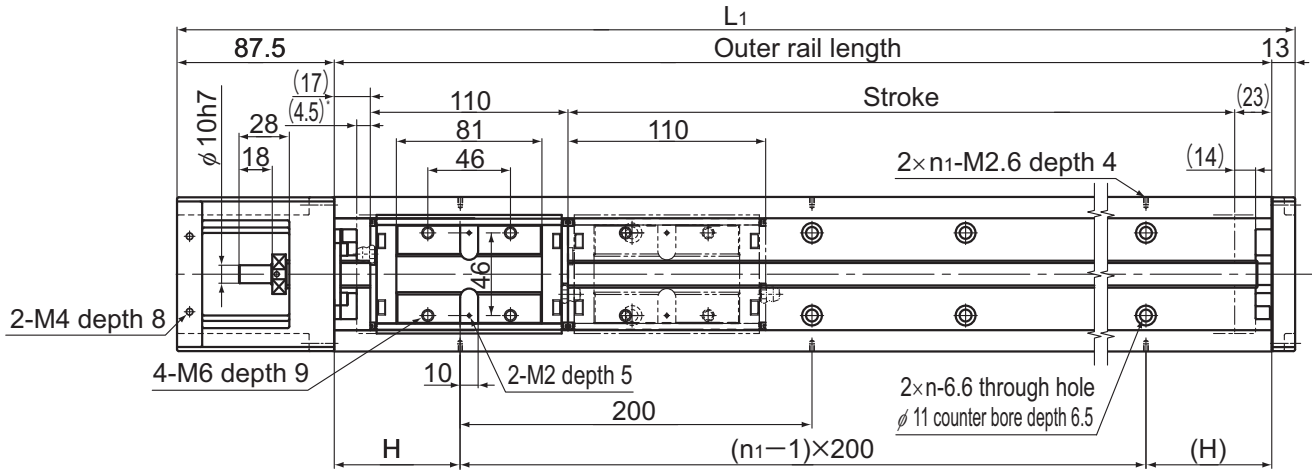
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR46 Standard Type

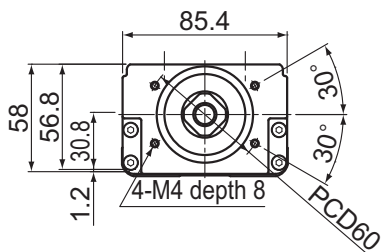
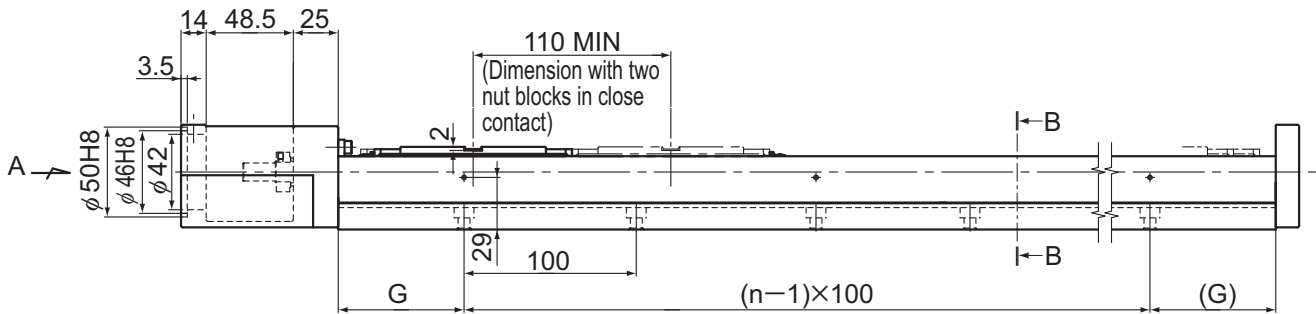
Model SKR46□□A (with a Single Long Nut Block)

Model SKR46□□B (with Two Long Nut Blocks)

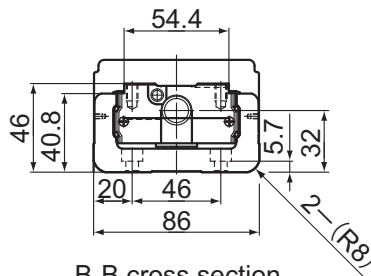
For model number coding, see page23.



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



A arrow view



B-B cross section

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L_1 (mm) | H (mm) | G (mm) | n | n_1 | Overall main unit mass (kg) | |
|---|------------|---------------------------|------------------------------|-----------|-----------|---|-------|-----------------------------|--------|
| Type A | Type B* | | | | | | | Type A | Type B |
| 190(208.5) | 80(98.5) | 340 | 440.5 | 70 | 70 | 3 | 2 | 6.4 | 7.4 |
| 290(308.5) | 180(198.5) | 440 | 540.5 | 20 | 70 | 4 | 3 | 7.8 | 8.7 |
| 390(408.5) | 280(298.5) | 540 | 640.5 | 70 | 70 | 5 | 3 | 9.2 | 10.1 |
| 490(508.5) | 380(398.5) | 640 | 740.5 | 20 | 70 | 6 | 4 | 10.6 | 11.5 |
| 590(608.5) | 480(498.5) | 740 | 840.5 | 70 | 70 | 7 | 4 | 12.0 | 12.9 |
| 690(708.5) | 580(598.5) | 840 | 940.5 | 20 | 70 | 8 | 5 | 13.4 | 14.4 |
| 790(808.5) | 680(698.5) | 940 | 1040.5 | 70 | 70 | 9 | 5 | 14.8 | 15.7 |

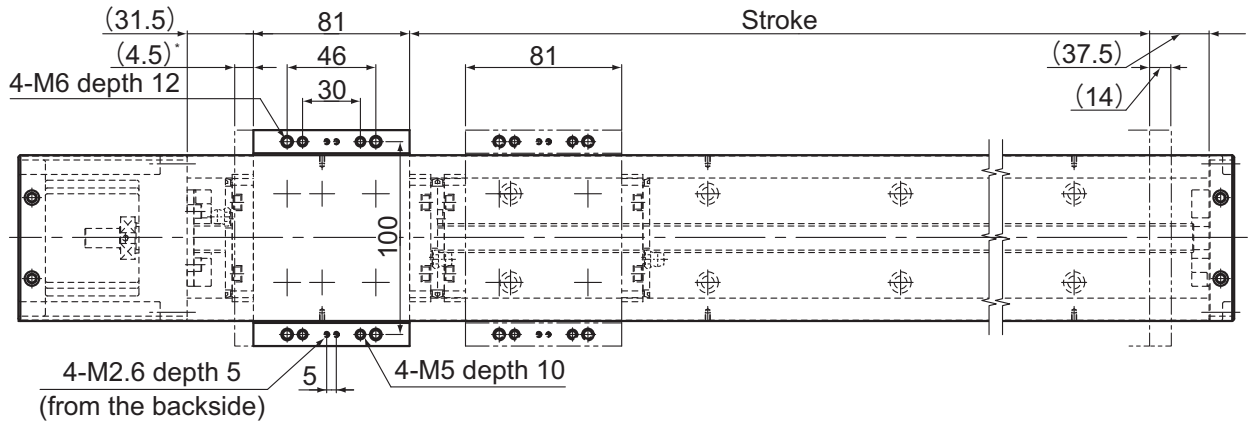
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR46 (with a Cover)

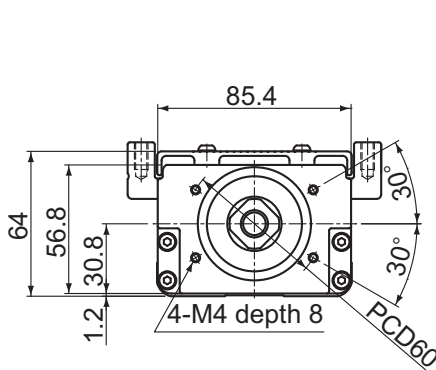
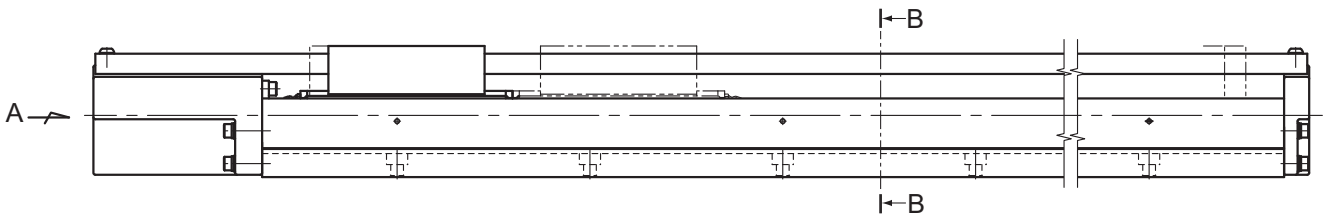
Model SKR46□□A (with a Single Long Nut Block)

Model SKR46□□B (with Two Long Nut Blocks)

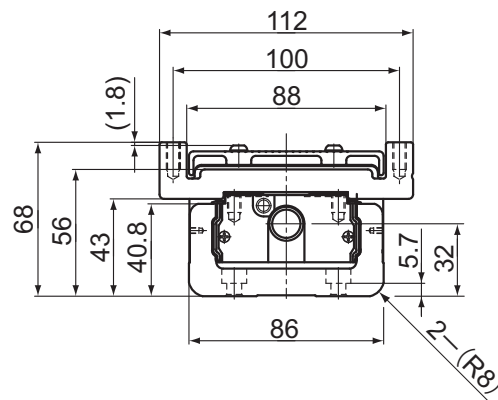
For model number coding, see page23.



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



A arrow view



B-B cross section

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L ₁ (mm) | H (mm) | G (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|------------|---------------------------|---------------------------------------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type A | Type B | | | | | | | Type A | Type B |
| 190(208.5) | 80(98.5) | 340 | 440.5 | 70 | 70 | 3 | 2 | 7.1 | 8.3 |
| 290(308.5) | 180(198.5) | 440 | 540.5 | 20 | 70 | 4 | 3 | 8.6 | 9.8 |
| 390(408.5) | 280(298.5) | 540 | 640.5 | 70 | 70 | 5 | 3 | 10.0 | 11.3 |
| 490(508.5) | 380(398.5) | 640 | 740.5 | 20 | 70 | 6 | 4 | 11.5 | 12.7 |
| 590(608.5) | 480(498.5) | 740 | 840.5 | 70 | 70 | 7 | 4 | 13.0 | 14.2 |
| 690(708.5) | 580(598.5) | 840 | 940.5 | 20 | 70 | 8 | 5 | 14.5 | 15.7 |
| 790(808.5) | 680(698.5) | 940 | 1040.5 | 70 | 70 | 9 | 5 | 16.0 | 17.2 |

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

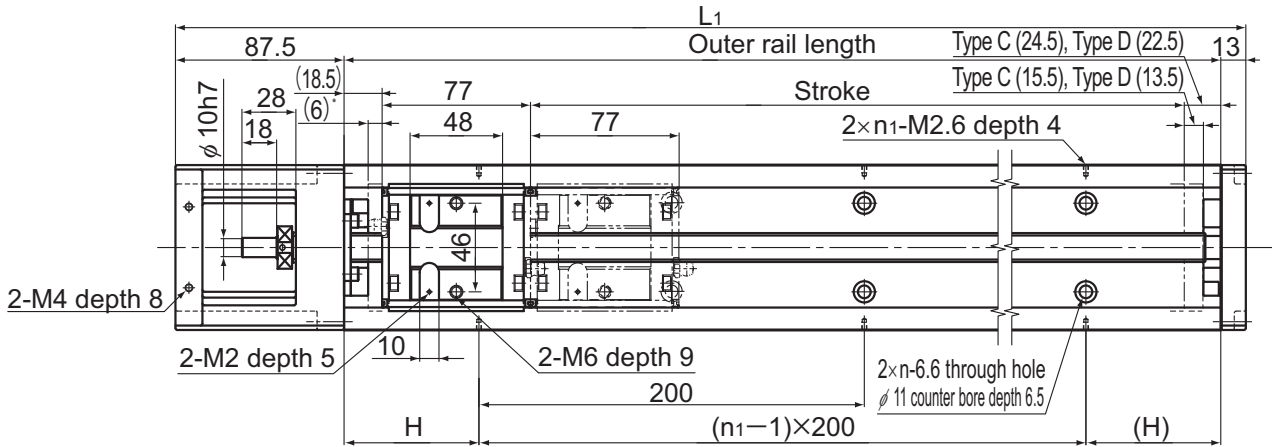
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Model SKR46 Standard Type

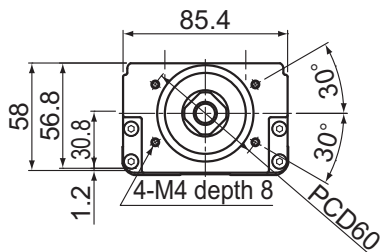
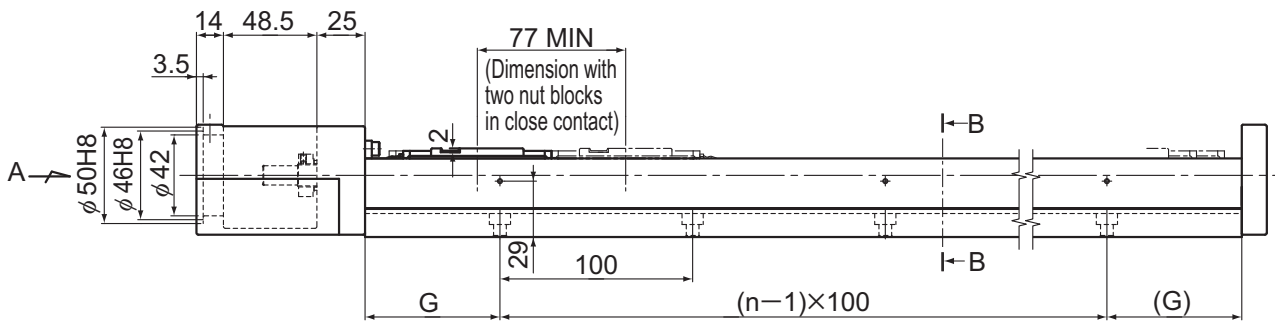
Model SKR46□□C (with a Single Short Nut Block)

Model SKR46□□D (with Two Short Nut Blocks)

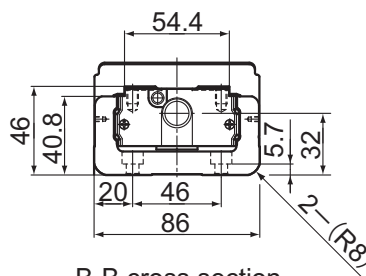
For model number coding, see page23.



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



A arrow view



B-B cross section

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L ₁ (mm) | H (mm) | G (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|------------|---------------------------|---------------------------------------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type C | Type D | | | | | | | Type C | Type D |
| 220(241.5) | 145(164.5) | 340 | 440.5 | 70 | 70 | 3 | 2 | 6.1 | 6.7 |
| 320(341.5) | 245(264.5) | 440 | 540.5 | 20 | 70 | 4 | 3 | 7.5 | 8.1 |
| 420(441.5) | 345(364.5) | 540 | 640.5 | 70 | 70 | 5 | 3 | 8.9 | 9.5 |
| 520(541.5) | 445(464.5) | 640 | 740.5 | 20 | 70 | 6 | 4 | 10.3 | 10.8 |
| 620(641.5) | 545(564.5) | 740 | 840.5 | 70 | 70 | 7 | 4 | 11.7 | 12.2 |
| 720(741.5) | 645(664.5) | 840 | 940.5 | 20 | 70 | 8 | 5 | 13.1 | 13.7 |
| 820(841.5) | 745(764.5) | 940 | 1040.5 | 70 | 70 | 9 | 5 | 14.5 | 15.0 |

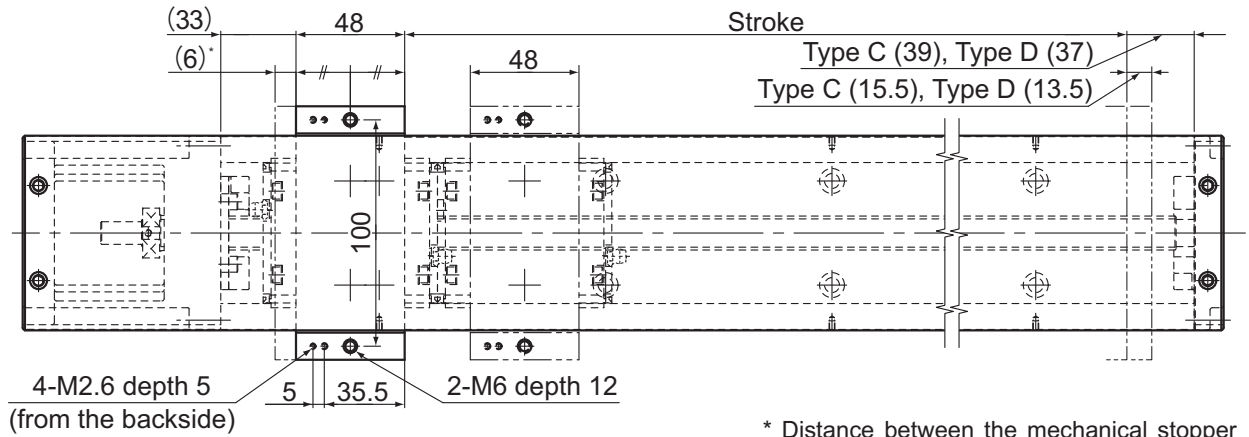
*Indicates a value when two inner blocks are in close contact with each other.

Model SKR46 (with a Cover)

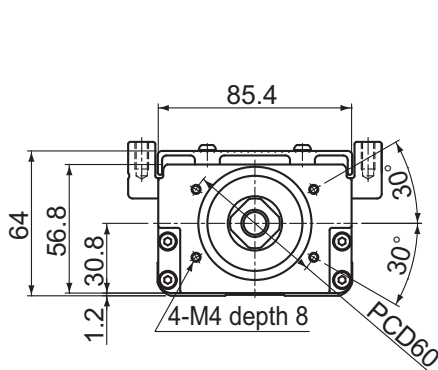
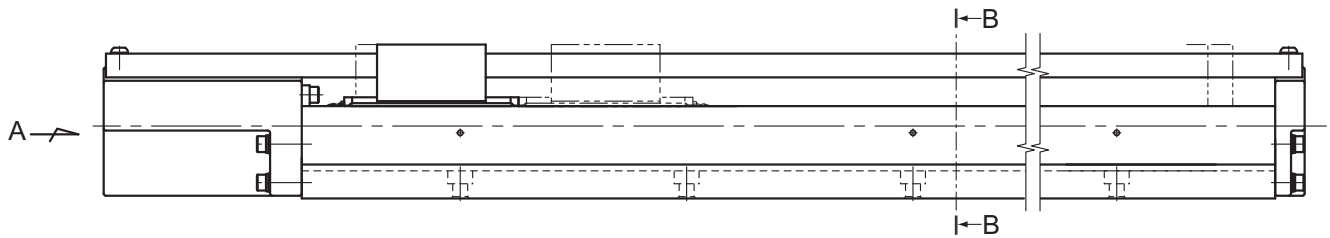
Model SKR46□□C (with a Single Short Nut Block)

Model SKR46□□D (with Two Short Nut Blocks)

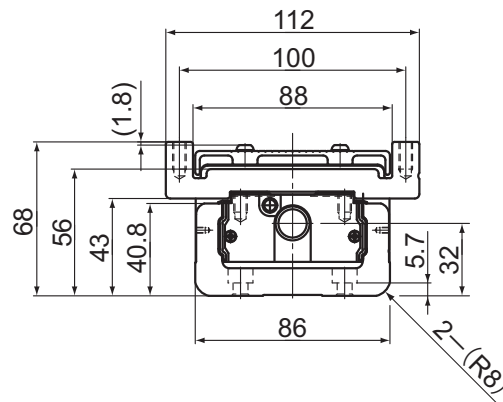
For model number coding, see page23.



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



A arrow view



B-B cross section

| Stroke (mm) (stroke between mechanical stoppers) | | Outer rail length (mm) | Overall length L ₁ (mm) | H (mm) | G (mm) | n | n ₁ | Overall main unit mass (kg) | |
|---|------------|---------------------------|---------------------------------------|-----------|-----------|---|----------------|-----------------------------|--------|
| Type C | Type D | | | | | | | Type C | Type D |
| 220(241.5) | 145(164.5) | 340 | 440.5 | 70 | 70 | 3 | 2 | 6.6 | 7.4 |
| 320(341.5) | 245(264.5) | 440 | 540.5 | 20 | 70 | 4 | 3 | 8.1 | 8.9 |
| 420(441.5) | 345(364.5) | 540 | 640.5 | 70 | 70 | 5 | 3 | 9.6 | 10.3 |
| 520(541.5) | 445(464.5) | 640 | 740.5 | 20 | 70 | 6 | 4 | 11.0 | 11.8 |
| 620(641.5) | 545(564.5) | 740 | 840.5 | 70 | 70 | 7 | 4 | 12.5 | 13.3 |
| 720(741.5) | 645(664.5) | 840 | 940.5 | 20 | 70 | 8 | 5 | 14 | 14.8 |
| 820(841.5) | 745(764.5) | 940 | 1040.5 | 70 | 70 | 9 | 5 | 15.5 | 16.3 |

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

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Mass of Moving Element

Table14 shows the mass of the inner block and top table of model SKR.

Table14 Mass of the Inner Block and Top table of SKR

Unit: kg

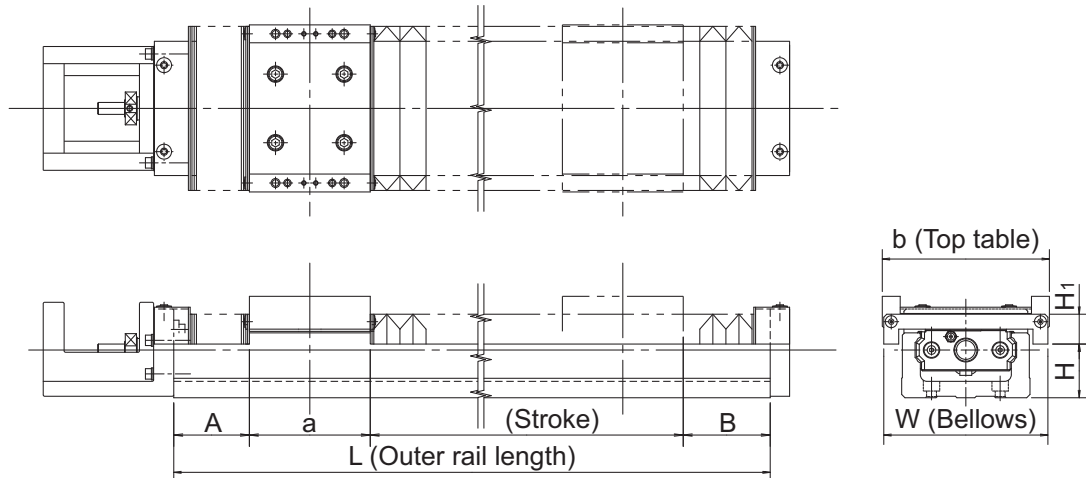
| Model No. | Long nut block types (A) | | Short nut block types (C) | |
|-----------|--------------------------|-----------|---------------------------|-----------|
| | Inner block | Top table | Inner block | Top table |
| SKR20 | 0.064 | 0.038 | — | — |
| SKR26 | 0.153 | 0.074 | — | — |
| SKR33 | 0.31 | 0.13 | 0.17 | 0.07 |
| SKR46 | 0.91 | 0.34 | 0.57 | 0.20 |

Options

Bellows

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

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

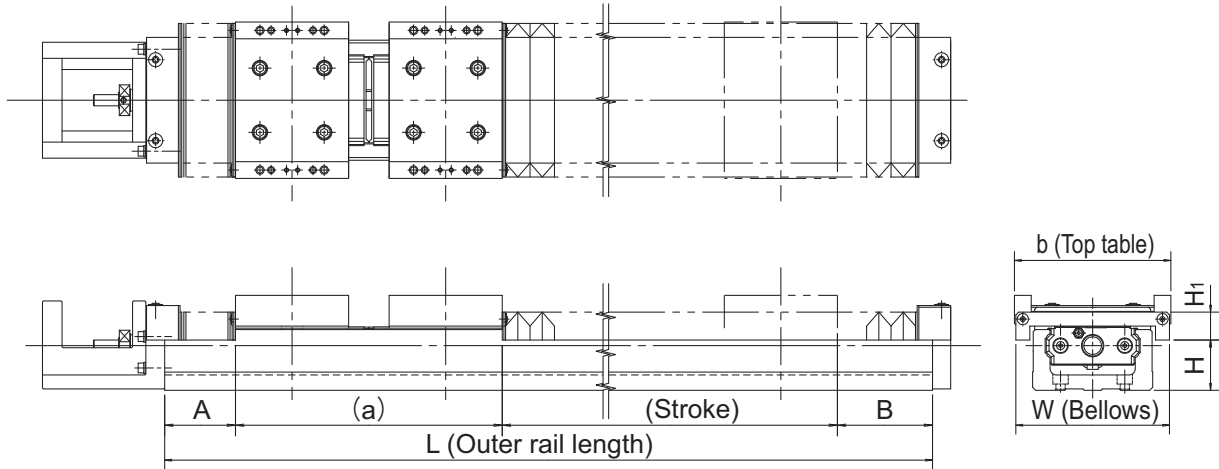


Unit: mm

| Model No. | Stroke ^{*1} | Outer rail length L | A | B | a | b | W | H | H ₁ |
|-----------|----------------------|------------------------|-------|-------|------|-----|-----|------|----------------|
| SKR20 | 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 | | | | | |
| SKR26 | 50(60.7) | 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 | | | | | |
| SKR33 | 30(42.8) | 150 | 25.6 | 27.6 | 54 | 86 | 84 | 24.5 | 20 |
| | 60(72.8) | 200 | 35.6 | 37.6 | | | | | |
| | 140(152.8) | 300 | 45.6 | 47.6 | | | | | |
| | 210(222.8) | 400 | 60.6 | 62.6 | | | | | |
| | 290(302.8) | 500 | 70.6 | 72.6 | | | | | |
| SKR46 | 140(155.8) | 340 | 52.1 | 51.1 | 81 | 112 | 110 | 36 | 20 |
| | 210(225.8) | 440 | 67.1 | 66.1 | | | | | |
| | 290(305.8) | 540 | 77.1 | 76.1 | | | | | |
| | 360(375.8) | 640 | 92.1 | 91.1 | | | | | |
| | 440(455.8) | 740 | 102.1 | 101.1 | | | | | |
| | 510(525.8) | 840 | 117.1 | 116.1 | | | | | |
| | 590(605.8) | 940 | 127.1 | 126.1 | | | | | |

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

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



Unit: mm

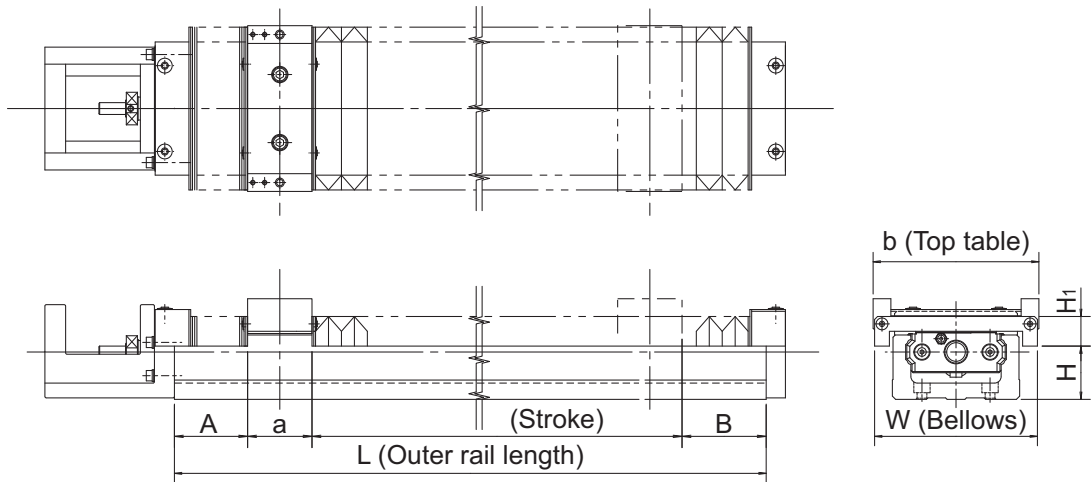
| Model No. | Stroke ^{*1,*2} | Outer rail length L | A | B | a | b | W | H | H ₁ |
|-----------|-------------------------|---------------------|-------|-------|-------|-----|-----|------|----------------|
| SKR20 | 25(34.8) | 150 | 18.8 | 17.2 | 79.2 | 52 | 60 | 10 | 20 |
| | 60(71.8) | 200 | 25.3 | 23.7 | | | | | |
| SKR26 | 35(46.5) | 200 | 23.7 | 17.6 | 111.6 | 62 | 74 | 18 | 20 |
| | 65(77.4) | 250 | 32.8 | 28.2 | | | | | |
| | 115(127.4) | 300 | 32.8 | 28.2 | | | | | |
| SKR33 | 80(96.8) | 300 | 35.6 | 37.6 | 130 | 86 | 84 | 24.5 | 20 |
| | 150(166.8) | 400 | 50.6 | 52.6 | | | | | |
| | 230(246.8) | 500 | 60.6 | 62.6 | | | | | |
| | 300(316.8) | 600 | 75.6 | 77.6 | | | | | |
| SKR46 | 60(75.8) | 340 | 37.1 | 36.1 | 191 | 112 | 110 | 36 | 20 |
| | 130(145.8) | 440 | 52.1 | 51.1 | | | | | |
| | 210(225.8) | 540 | 62.1 | 61.1 | | | | | |
| | 280(295.8) | 640 | 77.1 | 76.1 | | | | | |
| | 360(375.8) | 740 | 87.1 | 86.1 | | | | | |
| | 430(445.8) | 840 | 102.1 | 101.1 | | | | | |
| | 510(525.8) | 940 | 112.1 | 111.1 | | | | | |

*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 top tables.

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

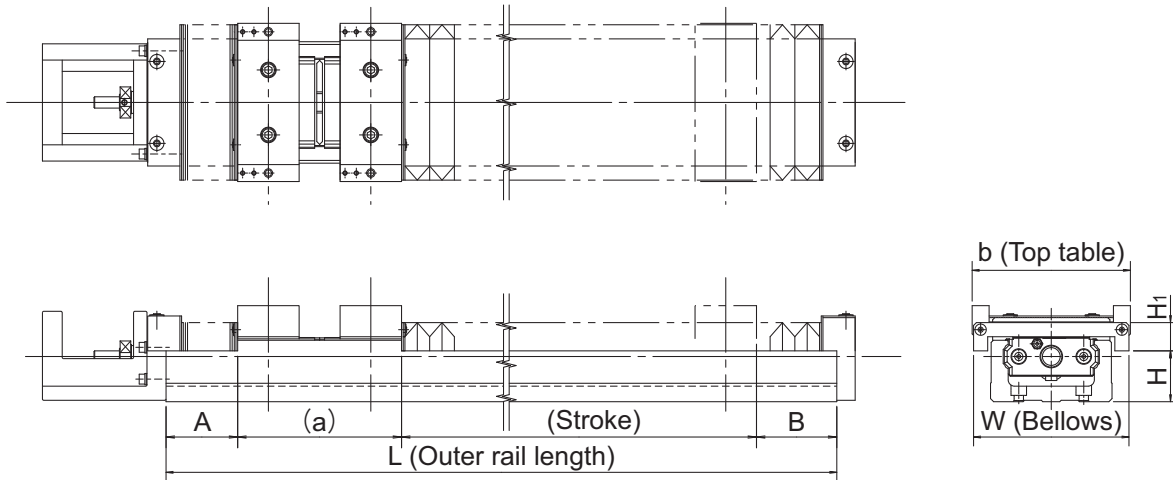


Unit: mm

| Model No. | Stroke* | Outer rail length L | A | B | a | b | W | H | H ₁ |
|------------|------------|---------------------|-------|-------|------|-----|-----|------|----------------|
| SKR33 | 45(58.3) | 150 | 30.6 | 32.6 | 28.5 | 80 | 80 | 21.5 | 17.5 |
| | 85(98.3) | 200 | 35.6 | 37.6 | | | | | |
| | 155(168.3) | 300 | 50.6 | 52.6 | | | | | |
| | 235(248.3) | 400 | 60.6 | 62.6 | | | | | |
| | 305(318.3) | 500 | 75.6 | 77.6 | | | | | |
| 385(398.3) | 600 | 85.6 | 87.6 | | | | | | |
| SKR46 | 160(178.8) | 340 | 57.1 | 56.1 | 48 | 112 | 110 | 36 | 20 |
| | 230(248.8) | 440 | 72.1 | 71.1 | | | | | |
| | 310(328.8) | 540 | 82.1 | 81.1 | | | | | |
| | 380(398.8) | 640 | 97.1 | 96.1 | | | | | |
| | 460(478.8) | 740 | 107.1 | 106.1 | | | | | |
| | 530(548.8) | 840 | 122.1 | 121.1 | | | | | |
| | 610(628.8) | 940 | 132.1 | 131.1 | | | | | |

*The value in the parentheses represents the maximum stroke.

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



Unit: mm

| Model No. | Stroke ^{*1,*2} | Outer rail length L | A | B | a | b | W | H | H ₁ |
|-----------|-------------------------|------------------------|-------|-------|-----|-----|-----|------|----------------|
| SKR33 | 45(57.8) | 200 | 30.6 | 32.6 | 79 | 86 | 84 | 24.5 | 20 |
| | 125(137.8) | 300 | 40.6 | 42.6 | | | | | |
| | 195(207.8) | 400 | 55.6 | 57.6 | | | | | |
| | 275(287.8) | 500 | 65.6 | 67.6 | | | | | |
| | 345(357.8) | 600 | 80.6 | 82.6 | | | | | |
| SKR46 | 110(121.8) | 340 | 47.1 | 46.1 | 125 | 112 | 110 | 36 | 20 |
| | 180(191.8) | 440 | 62.1 | 61.1 | | | | | |
| | 260(271.8) | 540 | 72.1 | 71.1 | | | | | |
| | 330(341.8) | 640 | 87.1 | 86.1 | | | | | |
| | 410(421.8) | 740 | 97.1 | 96.1 | | | | | |
| | 480(491.8) | 840 | 112.1 | 111.1 | | | | | |
| | 560(571.8) | 940 | 122.1 | 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 top tables.

Sensor

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

If the stroke is less than 70 mm, 2 sensor flag and 2 sensor rail will be attached.

[Example of Installation]

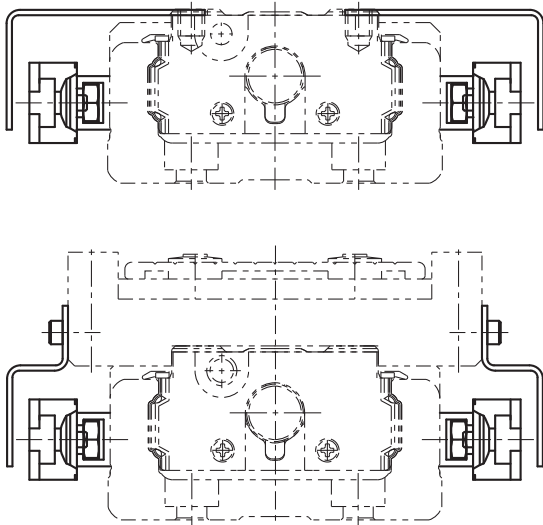


Table15 With/without a sensor

| 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 (Azbil Corp.) | Mounting screw/nut, detecting plate, sensor rail |
| B | Proximity Sensor N.C. contact [3 units] | APM-D3B1-003 (Azbil Corp.) | Mounting screw/nut, detecting plate, sensor rail |
| E | Proximity Sensor N.O. contact [1 unit] N.C. contact [2 units] | APM-D3A1-001 (Azbil Corp.) APM-D3B1-003 | Mounting screw/nut, detecting plate, sensor rail |
| H | Proximity Sensor N.O. contact [3 units] | GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) | Mounting screw/nut, detecting plate, sensor rail |
| L | Proximity Sensor N.C. contact [3 units] | GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.) | Mounting screw/nut, detecting plate, sensor rail |
| J | Proximity Sensor N.O. contact [1 unit] N.C. contact [2 units] | GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B | Mounting screw/nut, detecting plate, sensor rail |
| M | Proximity Sensor N.O. contact [1 unit] N.C. contact [2 units] | GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P | 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.

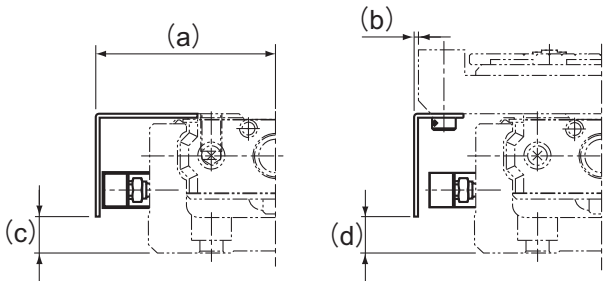
[Proximity Sensor]

APM-D3A1-001 (Azbil Corp.) 3 units
 APM-D3B1-003 (Azbil Corp.) 3 units
 GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) 3 units

GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.) 3 units
 GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) 3 units
 GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.) 3 units

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

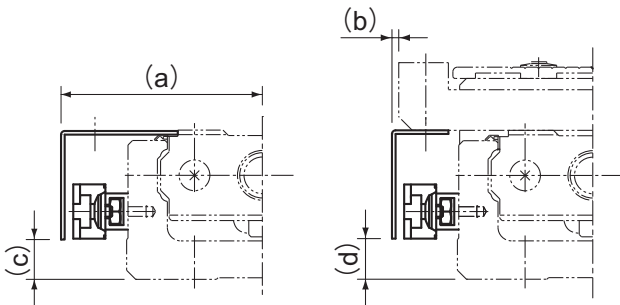
Unit: mm



| Model No. | a | b | c | d |
|-----------|------|-----|------|----|
| SKR20 | 32.5 | 6.6 | 6 | 6 |
| SKR26 | 37.5 | 6.4 | 8 | 8 |
| SKR33 | 43 | 0.3 | 14.8 | 15 |
| SKR46 | 56.2 | 0.2 | 26.8 | 22 |

● Proximity sensor GX-F12A GX-F12B GX-F12A-P GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)

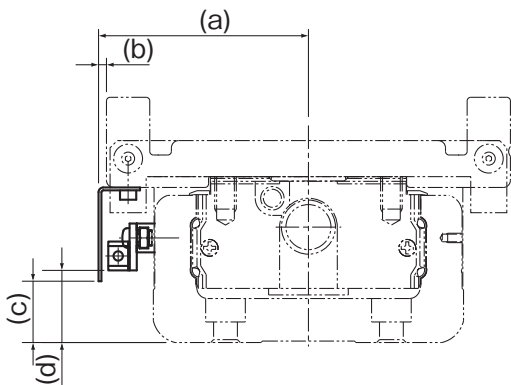
Unit: mm



| Model No. | a | b | c | d |
|-----------|------|-----|------|----|
| SKR20 | 34 | 8.1 | 3.6 | 4 |
| SKR26 | 39 | 7.9 | 6 | 6 |
| SKR33 | 44.7 | 2 | 13.8 | 15 |
| SKR46 | 57.7 | 1.8 | 24.8 | 22 |

● Proximity Sensor (with Bellows)

Unit: mm



| Model No. | a | b | c | d | Sensor type |
|-----------|------|-----|----|----|--|
| SKR33 | 47 | 4 | 8 | 6 | GX-F12 (Panasonic Industrial Devices SUNX Co., Ltd.) |
| SKR46 | 59.8 | 3.8 | 15 | 15 | |
| SKR33 | 45.3 | 2.3 | 10 | 11 | APM-D3 (Azbil Corp.) |
| SKR46 | 56.2 | 0.2 | 22 | 25 | |

[Photo Sensor]

EE-SX671 (Omron Corp.) 3 units

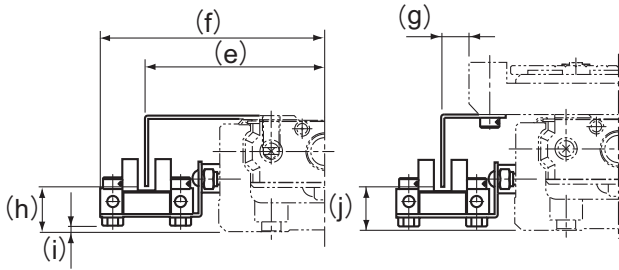
EE-SX674 (Omron Corp.) 3 units

Connector EE-1001 (Omron Corp.) 3 units

Note) The connector is an appended article.

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

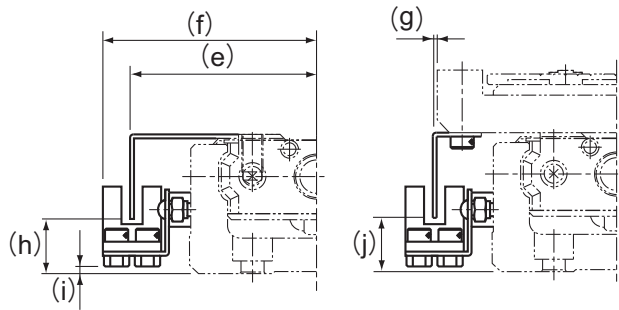
Unit: mm



| Model No. | e | f | g | h | i | j |
|-----------|------|------|------|------|------|------|
| SKR20 | 41 | 53.8 | 15 | 9.4 | 0.9 | 9.5 |
| SKR26 | 45.9 | 58.7 | 14.9 | 11.4 | 2.9 | 11.5 |
| SKR33 | 51.1 | 63.6 | 8.3 | 18.8 | 7.4 | 19.5 |
| SKR46 | 64.1 | 76.6 | 8.3 | 29.8 | 16.4 | 26.5 |

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

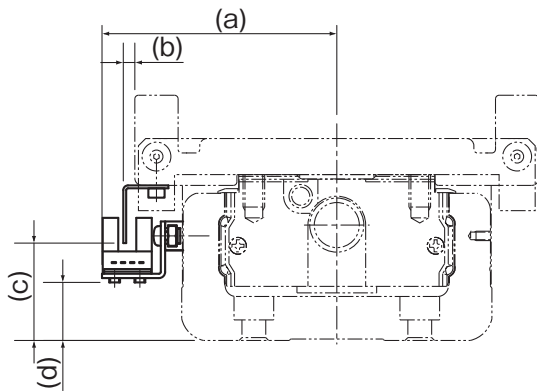
Unit: mm



| Model No. | e | f | g | h | i | j |
|-----------|------|------|------|------|------|----|
| SKR20 | 38.3 | 44.8 | 12.5 | 10.9 | 0.6 | 11 |
| SKR26 | 43.3 | 49.7 | 12.5 | 12.9 | 2.6 | 13 |
| SKR33 | 45.9 | 52.1 | 3.3 | 17.8 | 7.1 | 20 |
| SKR46 | 58.9 | 65.1 | 3.2 | 28.8 | 16.1 | 27 |

● Photo Sensor (with Bellows)

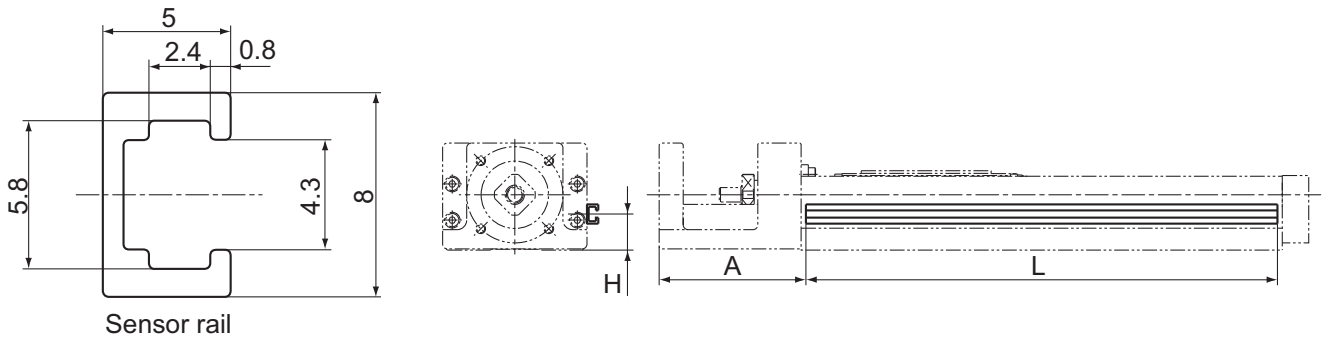
Unit: mm



| Model No. | a | b | c | d | Sensor type |
|-----------|------|-----|------|------|---------------------------|
| SKR33 | 63.6 | 8.3 | 14.5 | 2.4 | EE-SX671 (Omron Corp.) |
| SKR46 | 76.6 | 8.3 | 26.5 | 16.4 | |
| SKR33 | 52.1 | 3.3 | 18 | 5.1 | EE-SX674 (Omron Corp.) |
| SKR46 | 65.1 | 3.2 | 27 | 16.1 | |

[Sensor Rail]

The sensor rail can be attached alone.



Unit: mm

| Model No. | Stroke* | Outer rail length | H | A | L |
|-----------|---------|-------------------|----|------|-----|
| SKR20 | 30 | 100 | 10 | 43 | 111 |
| | 80 | 150 | | | 161 |
| | 130 | 200 | | | 211 |
| SKR26 | 60 | 150 | 12 | 54 | 161 |
| | 110 | 200 | | | 211 |
| | 160 | 250 | | | 261 |
| | 210 | 300 | | | 311 |
| SKR33 | 45 | 150 | 20 | 61 | 146 |
| | 95 | 200 | | | 196 |
| | 195 | 300 | | | 296 |
| | 295 | 400 | | | 396 |
| | 395 | 500 | | | 496 |
| | 495 | 600 | | | 596 |
| | 595 | 700 | | | 696 |
| SKR46 | 190 | 340 | 29 | 89.5 | 336 |
| | 290 | 440 | | | 436 |
| | 390 | 540 | | | 536 |
| | 490 | 640 | | | 636 |
| | 590 | 740 | | | 736 |
| | 690 | 840 | | | 836 |
| | 790 | 940 | | | 936 |

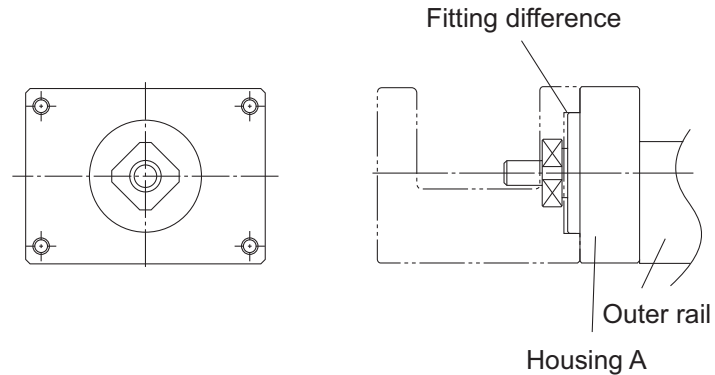
*Indicates stroke length when one long-type inner block is incorporated.

Housing

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.

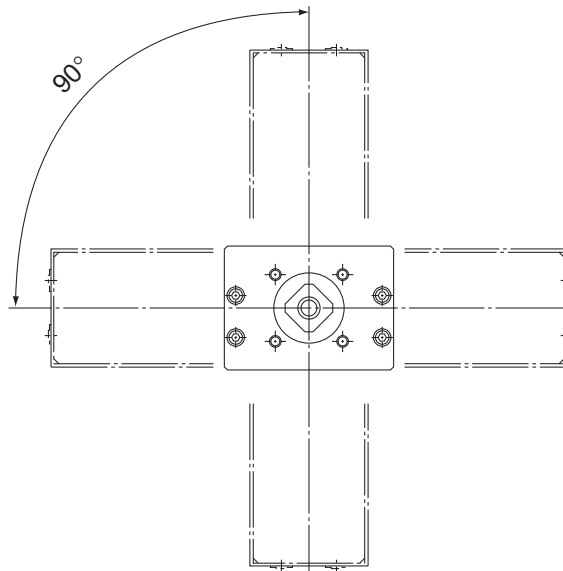
[Housing A for a Separate Motor]

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 pitches, the user can easily select a direction to mount the turnaround section.



Intermediate Flange

[Motor Used and Applicable Intermediate Flanges for Model SKR]

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

Table16 Table of Motors Used and Corresponding Intermediate Flanges

| | | Motor type | Rated output | Flange size | SKR20 | SKR26 | SKR33 | SKR46 | | | |
|---------------|---------------------|----------------|--------------|-------------|-----------|----------|---------|-------|----|----|----|
| AC servomotor | Yaskawa Electric | Σ -mini | SGMM-A1 | 10W | □25 | AN | AN | — | — | | |
| | | | SGMM-A2 | 20W | | AN | AN | — | — | | |
| | | | SGMM-A3 | 30W | | AN | AN | — | — | | |
| | | Σ -V | SGMJV-A5 | 50W | □40 | AQ | AQ | AQ | AQ | | |
| | | | | | | SGMAV-A5 | AQ | AQ | AQ | AQ | |
| | | | SGMJV-01 | 100W | | — | — | AQ | AQ | | |
| | | | | | | SGMAV-01 | — | — | AQ | AQ | |
| | | | SGMAV-C2 | 150W | | — | — | — | AQ | | |
| | | | | | | SGMJV-02 | 200W | — | — | — | AV |
| | | | SGMAV-02 | — | | | | — | — | AV | |
| | | | SGMJV-04 | 400W | | — | — | — | AV | | |
| | | | | | | SGMAV-04 | — | — | — | AV | |
| | | Σ -III | SGMAS-A5 | 50W | □40 | AQ | AQ | AQ | AQ | | |
| | | | SGMAS-01 | 100W | | — | — | AQ | AQ | | |
| | | | SGMPS-01 | | □60 | — | — | — | AV | | |
| | | | SGMAS-02 | 200W | | — | — | — | AV | | |
| | | | SGMAS-04 | 400W | | — | — | — | AV | | |
| | | Σ -II | SGMAH-A3 | 30W | □40 | AQ | AQ | AQ | AQ | | |
| | SGMAH-A5 | | 50W | AQ | | AQ | AQ | AQ | | | |
| | SGMAH-01 | | 100W | □60 | — | — | AQ | AQ | | | |
| | | | | | SGMPH-01 | — | — | — | AV | | |
| | SGMAH-02 | | 200W | | — | — | — | AV | | | |
| | SGMAH-04 | | 400W | | — | — | — | AV | | | |
| | Mitsubishi Electric | MELSERVO | J2-Jr | | HC-AQ013 | 10W | □28 | AM | AM | — | — |
| | | | | | HC-AQ023 | 20W | | AM | AM | — | — |
| | | | | HC-AQ033 | 30W | AM | | AM | — | — | |
| | | J3 | HF-MP053 | 50W | □40 | AQ | AQ | AQ | AQ | | |
| | | | | | | HF-KP053 | AQ | AQ | AQ | AQ | |
| | | | HF-MP13 | 100W | | — | — | AQ | AQ | | |
| | | | | | | HF-KP13 | — | — | AQ | AQ | |
| | | | HF-MP23 | 200W | | □60 | — | — | — | AV | |
| | | | | | | | HF-KP23 | — | — | — | AV |
| | | | HF-MP43 | 400W | | | — | — | — | AV | |
| HF-KP43 | | — | | | — | | — | AV | | | |
| J2 Super | | HC-MFS053 | 50W | □40 | AQ | | AQ | AQ | AQ | | |
| | | | | | HC-KFS053 | | AQ | AQ | AQ | AQ | |
| | | HC-MFS13 | 100W | | — | | — | AQ | AQ | | |
| | | | | | HC-KFS13 | — | — | AQ | AQ | | |
| | HC-MFS23 | 200W | □60 | | — | — | — | AV | | | |
| | | | | | HC-KFS23 | — | — | — | AV | | |
| | HC-MFS43 | 400W | | | — | — | — | AV | | | |
| | | | | | HC-KFS43 | — | — | — | AV | | |

| | | Motor type | | Rated output | Flange size | SKR20 | SKR26 | SKR33 | SKR46 | |
|---------------------|-----------------|--------------|---------------------|--------------|-------------|-------|-------|-------|-------|----|
| AC servomotor | Panasonic Corp. | MINAS | A4 | MSMD5A | 50W | □38 | AP | AP | AP | AP |
| | | | | MSMD01 | 100W | | — | — | AP | AP |
| | | | | MQMA01 | | | — | — | — | AY |
| | | | MSMD02 | 200W | □60 | — | — | — | AY | |
| | | | MAMA02 | | | — | — | — | AY | |
| | | | MSMD04 | 400W | | — | — | — | AY | |
| | | | MAMA04 | | — | — | — | AY | | |
| | | AIII | MSMA3A | 30W | □38 | AP | AP | AP | AP | |
| | | | MSMA5A | 50W | | AP | AP | AP | AP | |
| | | | MSMA01 | 100W | | — | — | AP | AP | |
| | | | MSMA02 | 200W | □60 | — | — | — | AY | |
| | | | MAMA02 | | | — | — | — | — | |
| | | | MSMA04 | 400W | | — | — | — | AY | |
| | | | MAMA04 | | — | — | — | AY | | |
| | SANYO Electric | SANMOTION Q1 | Q1AA04003D | 30W | □40 | AQ | AQ | AQ | AQ | |
| | | | Q1AA04005D | 50W | | AQ | AQ | AQ | AQ | |
| | | | Q1AA04010D | 100W | | — | — | AQ | AQ | |
| | | | Q1AA06020D | 200W | □60 | — | — | — | AV | |
| | | | Q1AA06040D | 400W | | — | — | — | AV | |
| | Omron | OMNUC G5 | R88M-K05030 | 50W | □40 | AQ | AQ | AQ | AQ | |
| | | | R88M-K10030 | 100W | | — | — | AQ | AQ | |
| | | | R88M-K20030 | 200W | □60 | — | — | — | AY | |
| | | | R88M-K40030 | 400W | | — | — | — | AY | |
| | | OMNUC G | R88M-G05030 | 50W | □40 | AQ | AQ | AQ | AQ | |
| | | | R88M-G10030 | 100W | | — | — | AQ | AQ | |
| | | | R88M-GP10030 | | □60 | — | — | — | AY | |
| | | | R88M-G20030 | 200W | | — | — | — | AY | |
| | | | R88M-G40030 | 400W | | — | — | — | AY | |
| | | | | | | | — | — | — | AY |
| | Fanuc | βis series | βis0.2/5000 | 50W | □40 | AQ | AQ | AQ | AQ | |
| βis0.3/5000 | | | 100W | — | | — | AQ | AQ | | |
| βis0.4/5000 | | | 130W | □60 | — | — | — | AV | | |
| βis0.5/6000 | | | 350W | | — | — | — | AV | | |
| βis1/6000 | | | 500W | | — | — | — | AV | | |
| Keyence Corporation | MV | MV-M05 | 50W | □40 | AQ | AQ | AQ | AQ | | |
| | | MV-M10 | 100W | | — | — | AQ | AQ | | |
| | | MV-M20 | 200W | □60 | — | — | — | AV | | |
| | | MV-M40 | 400W | | — | — | — | AV | | |
| Stepping motor | Oriental Motor | αStep | ASC3 * | | □28 | AS | AS | — | — | |
| | | | AS46, ASC46, AR46 | | □42 | AR | AR | AR | — | |
| | | | AS6 *, ASC66, AR6 * | | □60 | — | — | AU | AU | |
| | | 5 phase | CSK II | CSK52 * | | □28 | AS | AS | — | — |
| | | | | CSK54 * | | □42 | AR | AR | AR | — |
| | | | | CSK56 * | | □60 | — | — | AU | AU |
| | | | RK | RK54 * | | □42 | AR | AR | AR | — |
| | | | | RK56 * | | □60 | — | — | AU | AU |
| | | | | | | | | | | |
| | 2 phase | UMK | UMK24 * | | □42 | AR | AR | AR | — | |
| | | | UMK26 * | | □56.4 | — | — | AT | — | |
| | | CSK | CSK24 * | | □42 | AR | AR | AR | — | |
| CSK26 * | | | □56.4 | — | — | AT | — | | | |

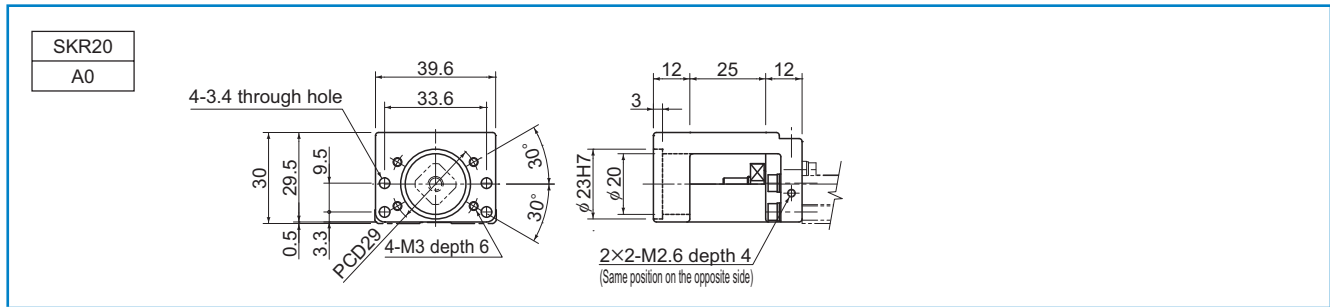
Note1) The symbols in the table indicate the housing A and intermediate flange.
 Note2) For motor coupling, contact THK.

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

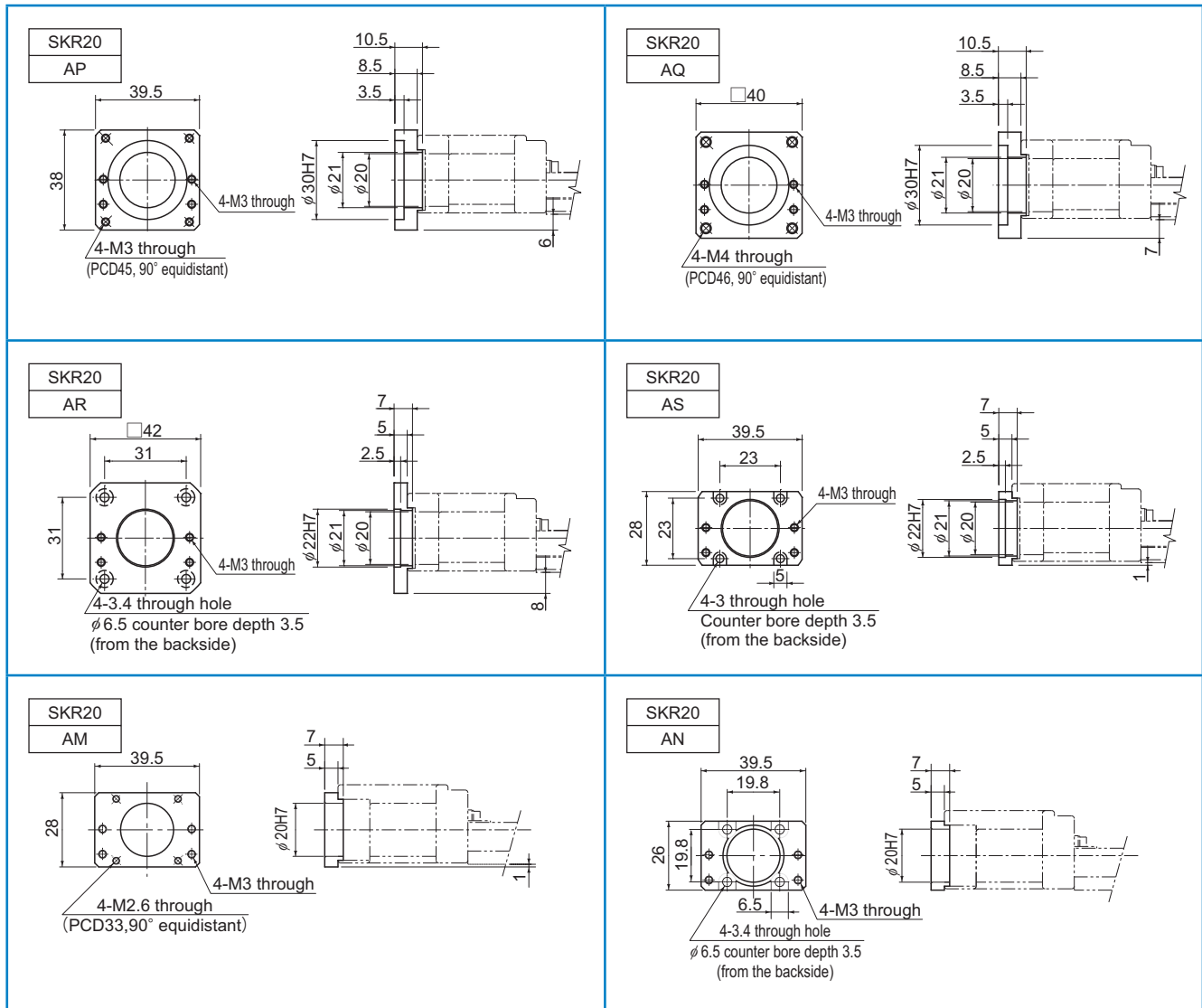
● For Model SKR20

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

■ Housing A



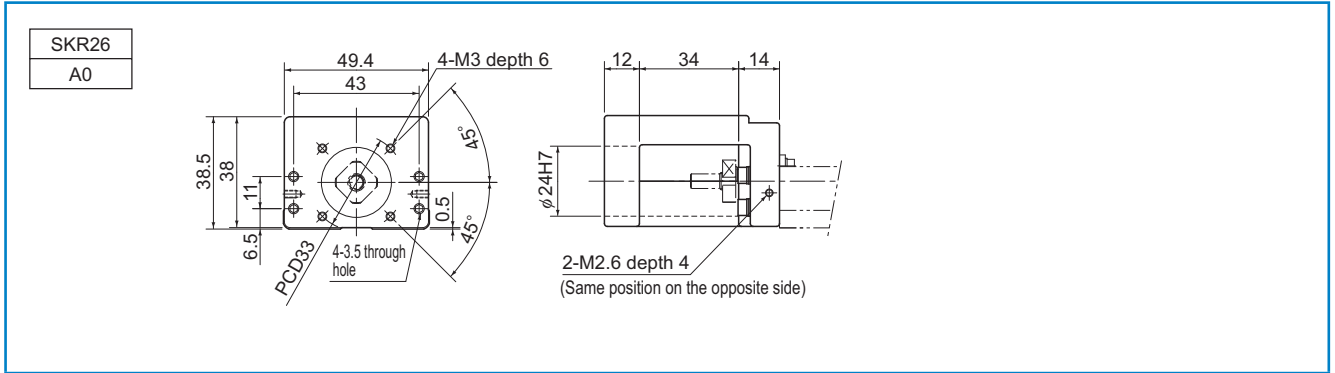
■ Intermediate Flange



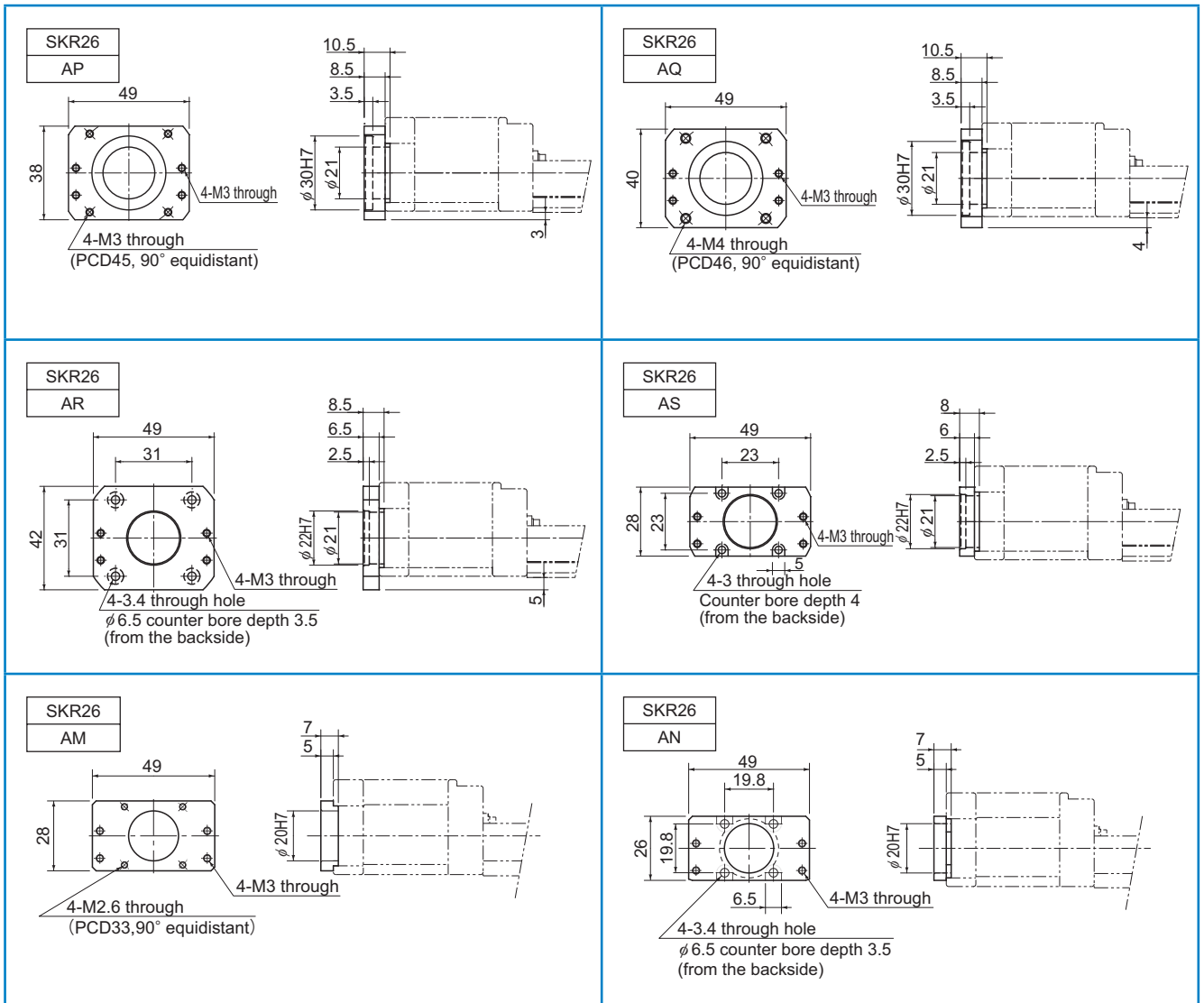
● For Model SKR26

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

■ Housing A



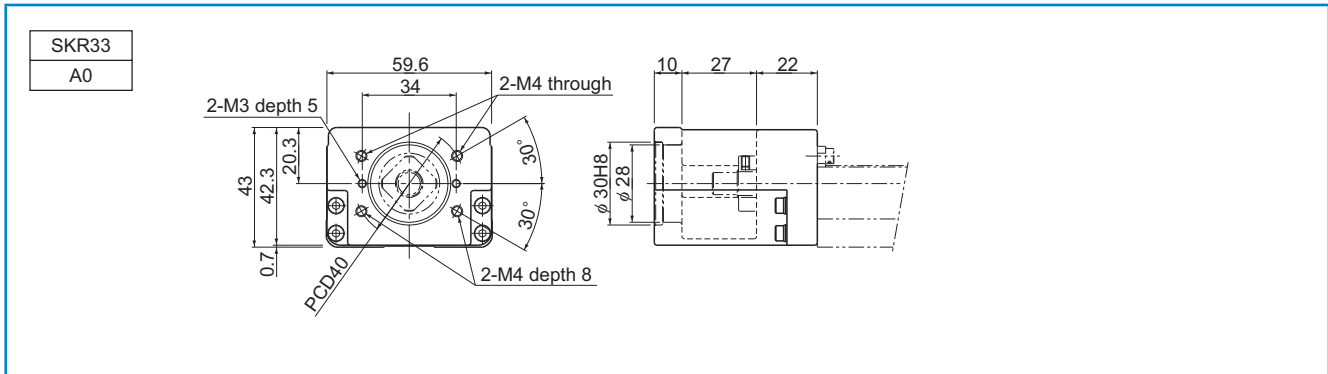
■ Intermediate Flange



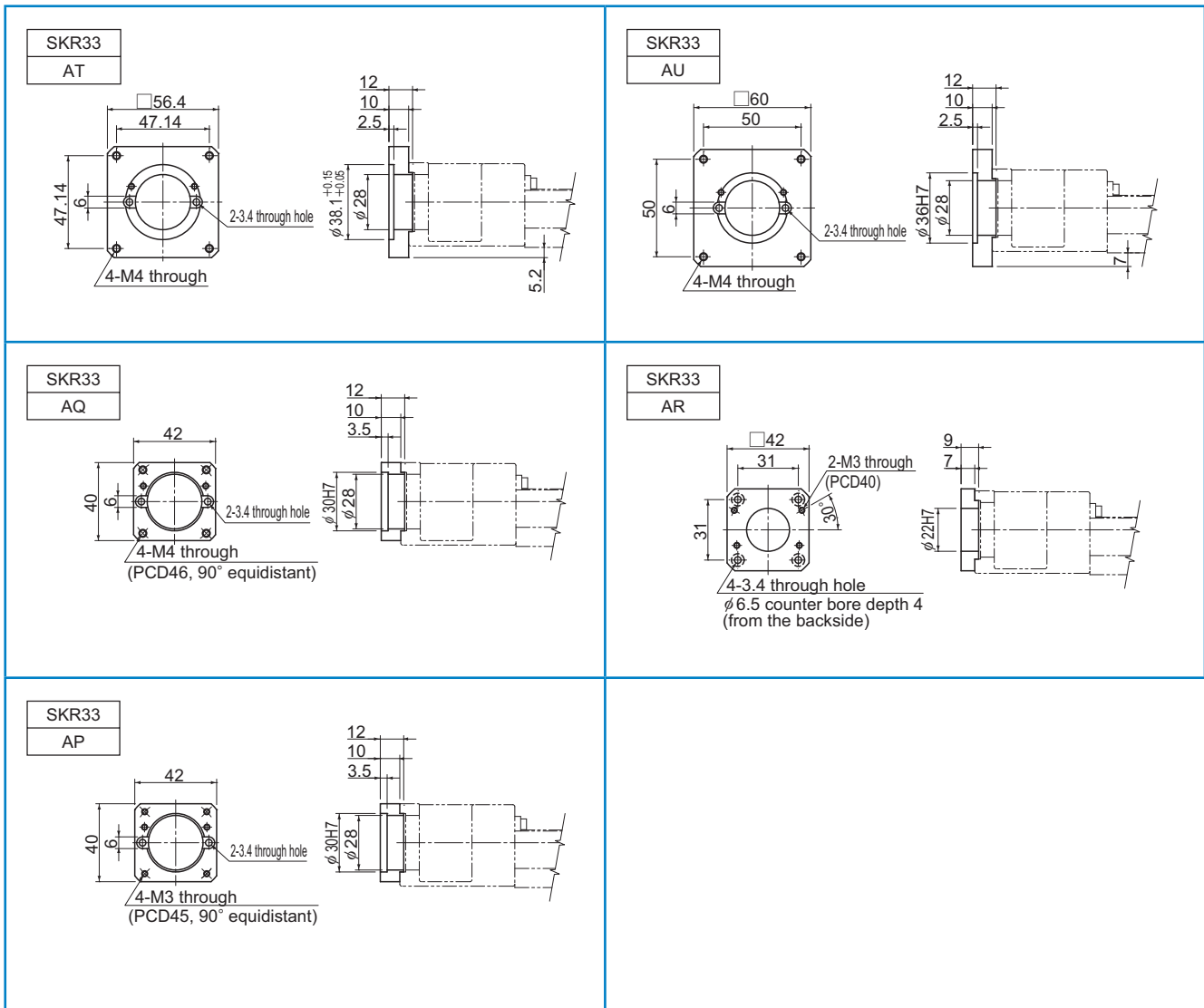
● For Model SKR33

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

■Housing A



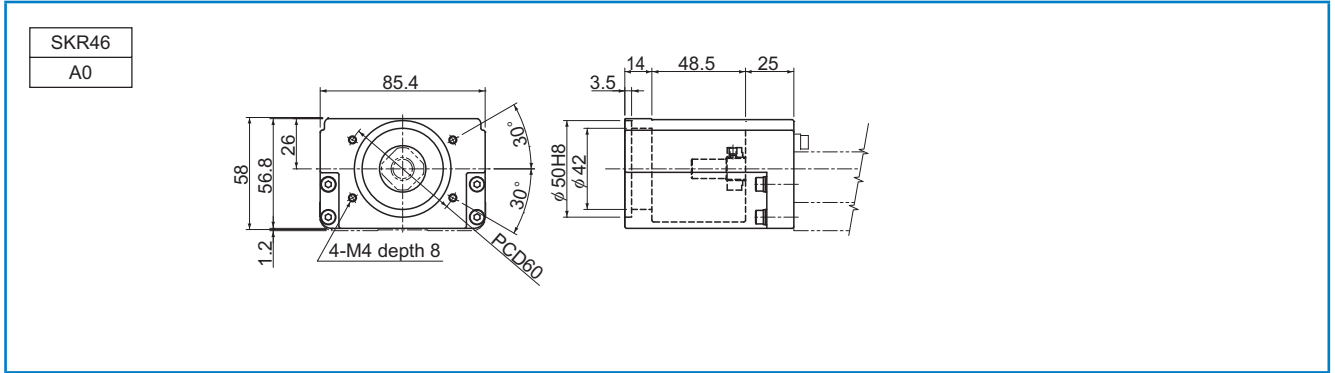
■Intermediate Flange



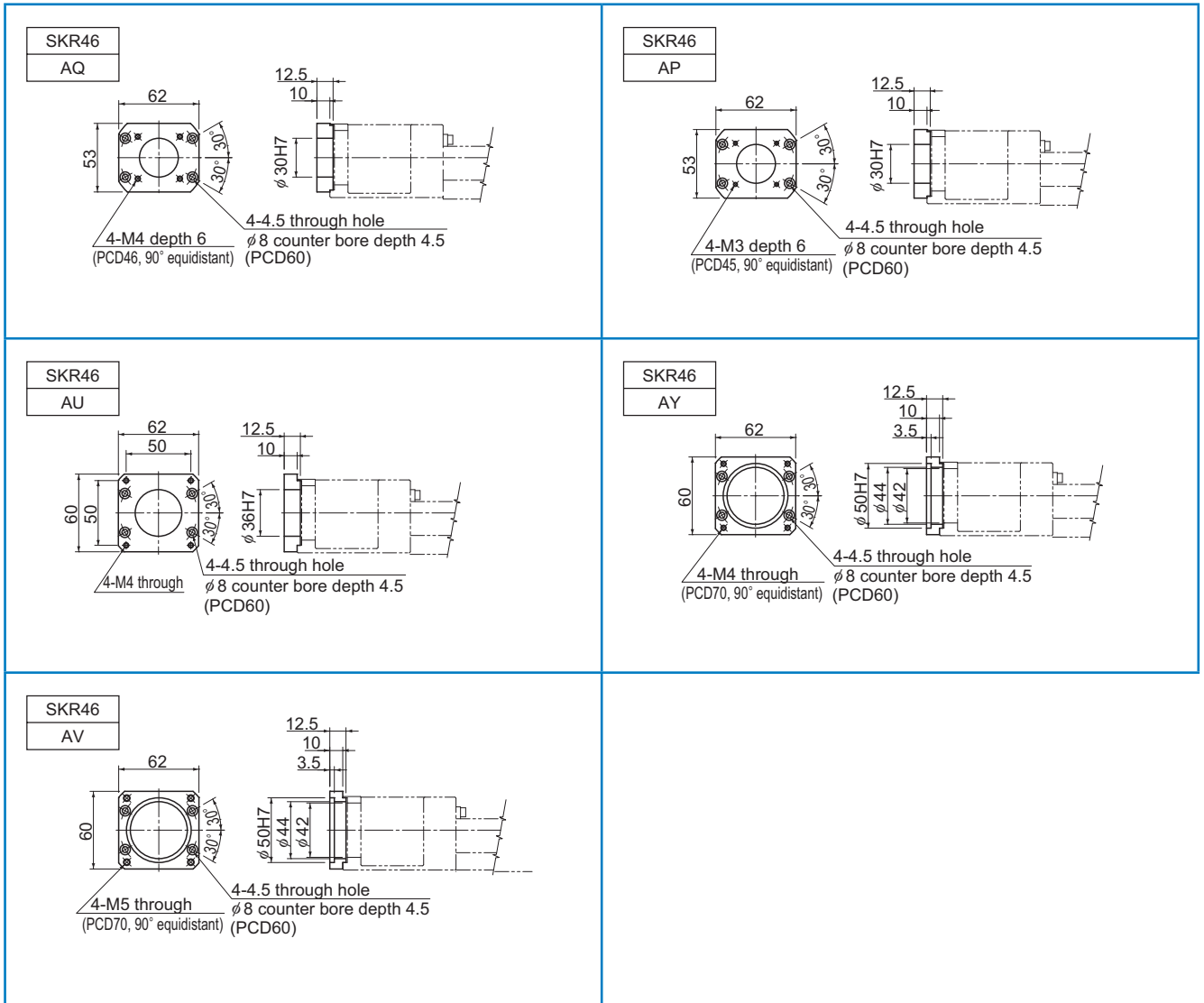
● For Model SKR46

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

■ Housing A

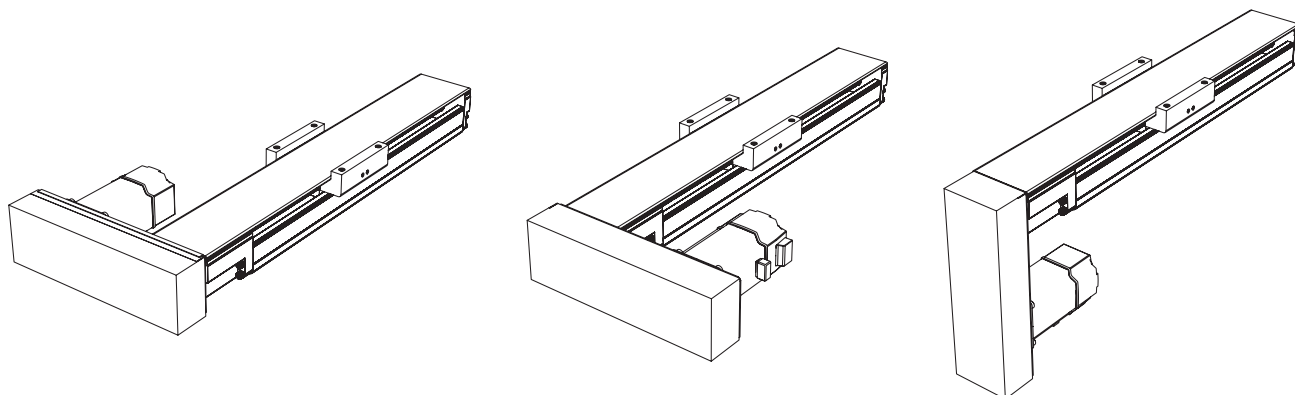


■ Intermediate Flange



Motor Wrap Type

Model SKR is 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.



[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 SKR, 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.
Models SKR20 and SKR26 : THK AFA Grease
Models SKR33 and SKR46 : 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 SKR 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 SKR -- Instruction Manual” from the THK technical support website.

Technical support website: <https://tech.thk.com/>

THK Caged Ball LM Guide Actuator Model SKR

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