

SKR



Caged Ball LM Guide Actuator Model SKR

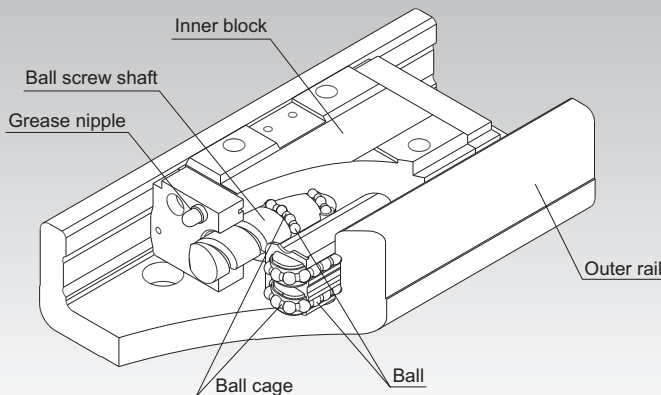


Fig. 1: Structure of the Caged Ball LM Guide Actuator Model SKR

Structure and Features

The Caged Ball LM Guide Actuator Model SKR is a compact actuator that has an inner block, which is a combination of an LM block and ball screw nut, inside a U-shaped outer rail.

In addition, by using ball cages in the LM Guide units and the ball screw unit, this model achieves high speeds, low noise, and long-term maintenance-free operation superior to the conventional Model KR. (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 load rating on the inner block is uniform in the four directions (radial, reverse-radial, and lateral directions), enabling the Model SKR to be used in any mounting orientation.

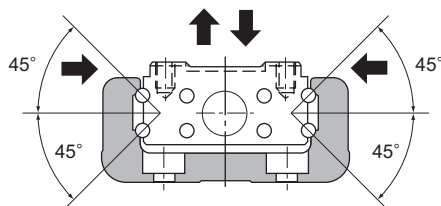


Fig. 2: Load Capacity and Contact Angle of Model SKR

High Rigidity

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

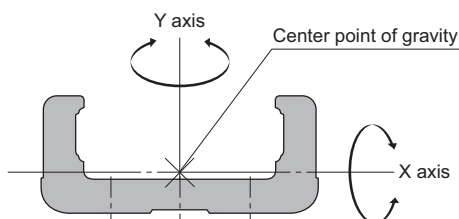


Fig. 3: Cross Section of the Outer Rail

Table 1: Cross-Sectional Characteristics of the Outer 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
SKR55	2.07×10^5	2.09×10^6	13.2
SKR65	4.51×10^5	5.73×10^6	22.1

I_x = geometric moment of inertia around X axis

I_y = geometric moment of inertia around Y axis

High Accuracy

Since the linear guide consists of four rows of circular-arc grooves that enable balls to smoothly move with two points of contact 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 highly accurate feeding. The system contributes significantly to increasing precision and quality by providing precision-grade positioning performance to all kinds of machines.

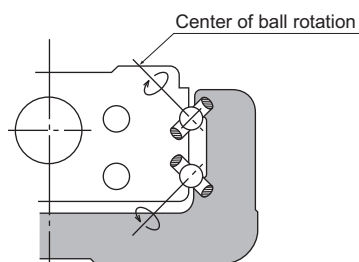


Fig. 4: Contact Structure of Model SKR

Space Saving

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

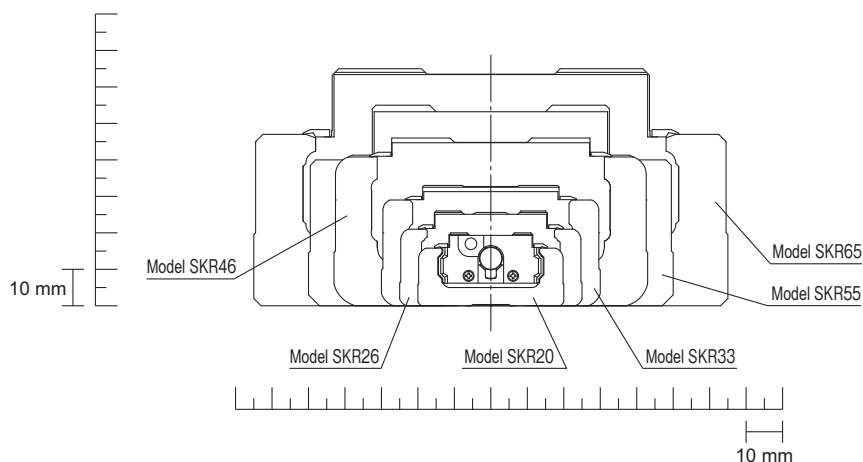


Fig. 5: Cross-Sectional Drawing

Caged Ball Technology

High Speed

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

In order to achieve higher-speed operation, models SKR33/55/65 are available in more lead variations, including high leads which were not feasible with the Model KR.

Model No.	Lead	
	SKR	KR
33	6, 10, 20	5, 6, 10
55	20, 30, 40	20
65	20, 25, 30, 50	25

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	φ13/10 mm
Shaft rotation speed	60 min ⁻¹

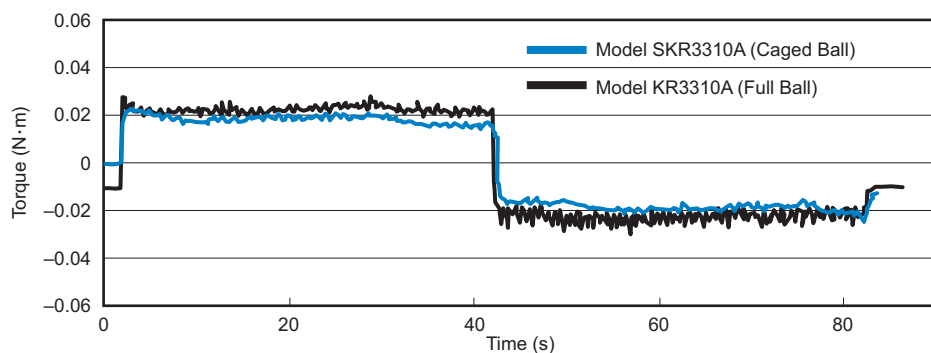


Fig. 6: Comparison of Torque Fluctuation between Model SKR and Model KR

Low Noise and Reduced Running Sound

In Model SKR, the use of a ball cage in the LM Guide section and ball screw section (excluding models SKR20/26) has eliminated collision noise between the balls. As a result, low noise and reduced running sound are achieved.

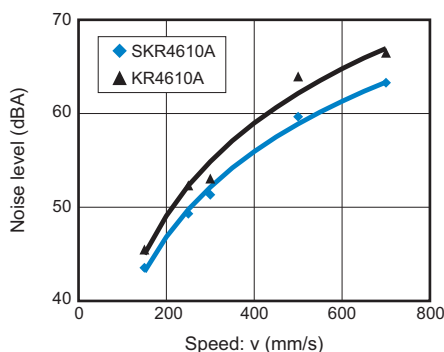


Fig. 7: Comparison of Noise between Model SKR4610A and Model KR4610A

Long-Term Maintenance-Free Operation

With Model SKR, the ball cage increases grease retention and achieves long-term maintenance-free operation.

Tripled Service Life

With Model SKR, both the LM Guide unit and the ball screw unit have larger basic dynamic load ratings than the Full-Ball Model KR, and therefore a longer service life is achieved.

The rated service life is calculated by the following equation.

LM guide unit

$$L_{10} = (C/P)^3 \times 50$$

L_{10} : Nominal life (km)

C : Basic dynamic load rating (N)

P : Applied load (N)

Ball screw unit

$$L_{10} = (Ca/Fa)^3 \times 10^6$$

L_{10} : 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.

Table 2: Comparison of Basic Dynamic Load Rating between Model SKR and Model KR

Unit: N

Basic dynamic load rating		SKR 20	KR 20	SKR 26	KR 26	SKR 33	KR 33	SKR 46	KR 46	SKR 55	KR 55	SKR 65	KR 65
LM Guide unit C	Long block	6,010	3,590	13,000	7,240	17,000	11,600	39,500	27,400	55,400	38,100	74,400	50,900
	Short block	□	□	□	□	11,300	4,900	28,400	14,000	□	□	□	□
Ball screw unit Ca		660	660	2,350	2,350	2,700	1,760	4,240	3,040	10,900	3,620	12,000	5,680

Note: On the SKR20/26, only the LM Guide units feature a ball cage.

Seals

Model SKR is equipped with end seals and side seals for contamination protection as standard.

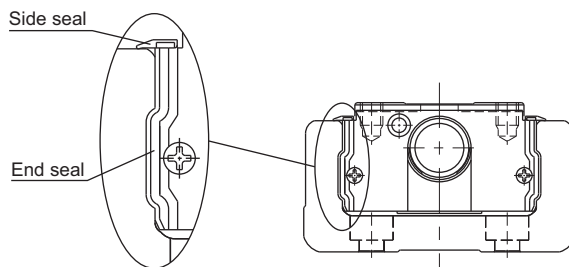


Table 3 shows the rolling resistance and seal resistance per inner block (guide section).

Table 3: Maximum Resistance Value Unit: N

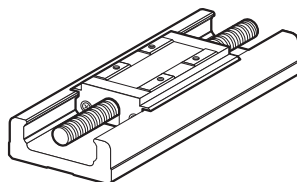
Model No.	Rolling resistance value	Seal resistance value	Total
SKR20	4.0	0.8	4.8
SKR26	4.5	1.2	5.7
SKR33	3.0	1.7	4.7
SKR46	6.0	2.1	8.1
SKR55	14.0	3.8	17.8
SKR65	20.0	4.1	24.1

Types and Configurations

Types

Model SKR-A (with a Single Long Block)

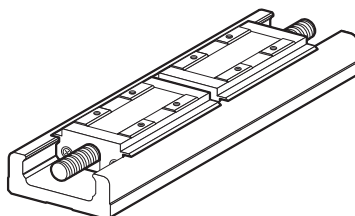
This is a representative model of SKR.



Model SKR-A

Model SKR-B (with Two Long Blocks)

Equipped with two inner blocks of Model SKR-A, this model achieves higher rigidity and higher load carrying capacity.



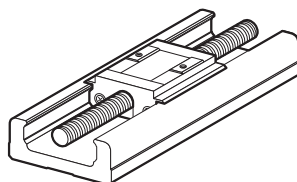
Model SKR-B

Model SKR-C (with a Single Short Block)

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

(Applicable models: SKR33¹, 46)

¹ Model SKR3320 is not available with a short block.



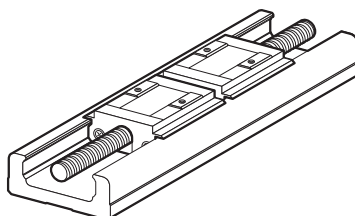
Model SKR-C

Model SKR-D (with Two Short Blocks)

Equipped with two inner blocks of Model SKR-C, this design allows a span between blocks that suits the equipment, thereby achieving high rigidity.

(Applicable models: SKR33¹, 46)

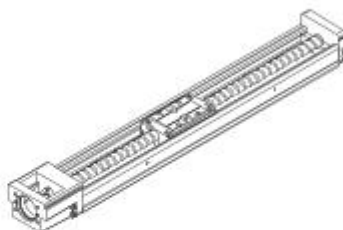
¹ Model SKR3320 is not available with a short block.



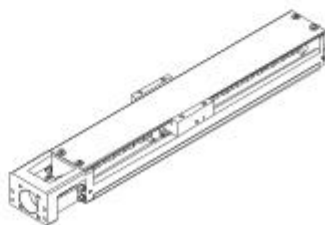
Model SKR-D

Configurations

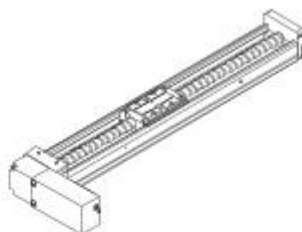
Direct Motor Coupling (Without Cover)



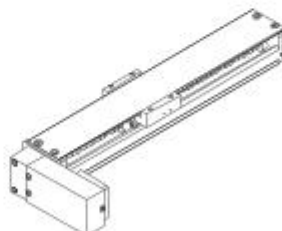
Direct Motor Coupling (With Cover)



Motor Wrap (Without Cover)



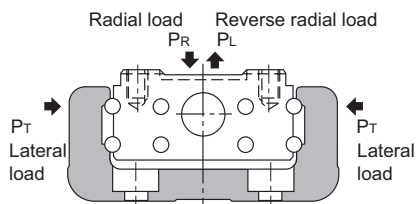
Motor Wrap (With Cover)



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 Table 4.

● Ball Screw Unit

Since a ball screw nut is incorporated into the inner block, Model SKR is capable of receiving an axial load. The basic load rating value is indicated in Table 4.

● 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 Table 4.

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)

Table 4: Load Rating of Model SKR

Model No.			SKR20		SKR26		SKR33 ¹			
			SKR2001	SKR2006	SKR2602	SKR2606	SKR3306	SKR3310	SKR3320	
LM Guide unit	Basic dynamic load rating C (N)	Long block	6,010		13,000		17,000			
		Short block	□		□		11,300		□	
	Basic static load rating C ₀ (N)	Long block	8,030		16,500		20,400			
		Short block	□		□		11,500		□	
	Radial clearance (mm)	Normal grade, High Accuracy grade	-0.004 to 0		-0.006 to 0		□0.004 to 0			
		Precision grade	□0.006 to □0.004		□0.007 to □0.006		□0.012 to □0.004			
Ball screw unit	Basic dynamic load rating C _a (N)	Normal grade, High Accuracy grade	660	860	2,350	1,950	4,400	2,700	2,620	
		Precision grade	660	1,060	2,350	2,390				
	Basic static load rating C _{0a} (N)	Normal grade, High Accuracy grade	1,170	1,450	4,020	3,510	6,290	3,780	3,770	
		Precision grade	1,170	1,600	4,020	3,900				
	Screw shaft diameter (mm)		6		8		13			
	Ball screw lead (mm)		1	6	2	6	6	10	20	
	Thread minor diameter (mm)		5.3	5.0	6.6	6.7	10.8			
	Ball center-to-center diameter (mm)		6.15	6.3	8.3	8.4	13.5			
Bearing unit (□xed side)	Axial direction	Basic dynamic load rating C _a (N)	1,150		2,000		6,250			
		Static permissible load P _{0a} (N)	735		1,230		2,700			

¹ A special type is also available for use in a special environment or where an axial load (25% or more of the basic dynamic load rating C_a) is applied. Contact THK for details.

Notes: The load ratings in the LM Guide unit each indicate the load rating per inner block.

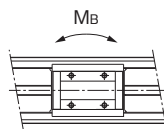
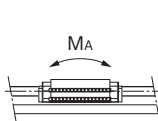
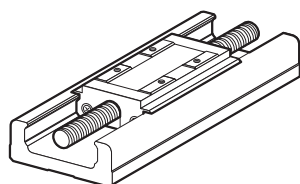
With model SKR3320, a short-block type is not available.

	SKR46 ¹		SKR55			SKR65			
	SKR4610	SKR4620	SKR5520	SKR5530	SKR5540	SKR6520	SKR6525	SKR6530	SKR6550
	39,500		55,400			74,400			
	28,400		□			□			
	45,900		62,500			81,600			
	28,700		□			□			
	□0.006 to 0		-0.007 to 0			-0.008 to 0			
	-0.016 to -0.006		-0.019 to -0.007			-0.022 to -0.008			
	4,350	4,240	10,900	7,000	6,800	12,100	12,000	8,200	7,600
	6,990	7,040	17,600	11,500	9,900	21,600	22,000	14,500	12,600
	15		20			25			
	10	20	20	30	40	20	25	30	50
	12.4		17.1			22.1			
	15.75		20.75			25.75			
	6,700		7,600			13,700			
	3,330		3,990			5,830			

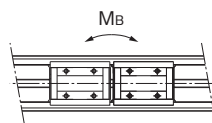
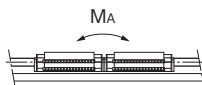
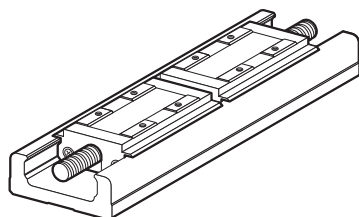
Static Permissible Moment (LM Guide Unit)

The inner block is capable of receiving moment loads in all three directions.

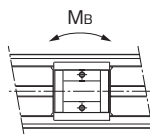
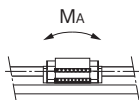
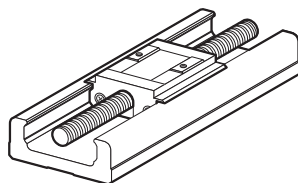
A2-15 Table 5 shows the permissible static moment in the M_A , M_B , and M_C directions.



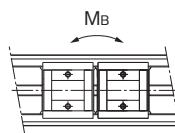
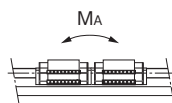
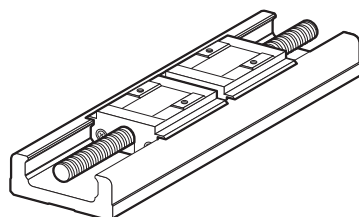
With a single long block (Model SKR-A)



With double long blocks (Model SKR-B)



With a single short block (Model SKR-C)



With double short blocks (Model SKR-D)

Table 5: 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	1,390
SKR46-B	3,240	3,240	2,780
SKR46-C	236	236	870
SKR46-D	1,460	1,460	1,740
SKR55-A	923	923	2,276
SKR55-B	5,125	5,125	4,552
SKR65-A	1,366	1,366	3,868
SKR65-B	7,702	7,702	7,736

Notes: Symbols A, B, C, or D at the end of each model number indicate the inner block size and the number of inner blocks used.

A: With a single long block

B: With double long blocks

C: With a single short block

D: With double short blocks

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

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

Maximum Speeds with Different Strokes

Table 6: Maximum speed

Model No.	Ball screw lead (mm)	Stroke ¹ (mm)		Outer rail length (mm)	Maximum speed (mm/s)	
		Long block	Short block		Long block	Short 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	□
	6	210	□	300	200	□
		60	□	150	600	□
		110	□	200	600	□
SKR33	6	160	□	250	600	□
		210	□	300	600	□
		295	□	400	600	□
		395	□	500	600	□
		495	□	600	550	500
		595	□	700	390	360
	10	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
	20	595	620	700	390	360
		45	70	150	1,000	
		95	120	200	1,000	
		195	220	300	1,000	
		295	320	400	1,000	
		395	420	500	1,000	
SKR46	10	495	520	600	920	830
		595	620	700	650	600
	20	45	□	150	2,000	□
		95	□	200	2,000	□
		195	□	300	2,000	□
		295	□	400	2,000	□
	30	395	□	500	2,000	□
		495	□	600	1,780	□
		595	□	700	1,270	□
	40	190	220	340	1,000	
		290	320	440	1,000	
		390	420	540	1,000	
		490	520	640	1,000	910
		590	620	740	730	660
		690	720	840	550	500
SKR46	20	790	820	940	430	400
		190	220	340	2,000	
		290	320	440	2,000	
		390	420	540	2,000	
		490	520	640	1,980	1,770
		590	620	740	1,430	1,300
	30	690	720	840	1,080	990
		790	820	940	840	780

¹ Indicates stroke length with one long inner block.

Notes: The maximum speed is the value restricted by the permissible rotation speed of the ball screw or the permissible speed of the guide, with the motor rotating at 6,000 min⁻¹.

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

Model No.	Ball screw lead (mm)	Stroke ¹ (mm)		Outer rail length (mm)	Maximum speed (mm/s)	
		Long block	Short block		Long block	Short block
SKR55	20	800	□	980	1,100	□
		900		1,080	880	
		1,000		1,180	730	
		1,100		1,280	610	
		1,200		1,380	520	
	30	800		980	1,650	
		900		1,080	1,330	
		1,000		1,180	1,100	
		1,100		1,280	920	
		1,200		1,380	780	
	40	800		980	2,160	
		900		1,080	1,750	
		1,000		1,180	1,440	
		1,100		1,280	1,210	
		1,200		1,380	1,030	
SKR65	20	790		980	1,470	
		990		1,180	970	
		1,190		1,380	690	
		1,490		1,680	450	
	25	790		980	1,810	
		990		1,180	1,200	
		1,190		1,380	850	
		1,490		1,680	550	
	30	790		980	2,210	
		990		1,180	1,460	
		1,190		1,380	1,030	
		1,490		1,680	670	
	50	790		980	3,000	
		990		1,180	2,350	
		1,190		1,380	1,680	
		1,490		1,680	1,100	

¹ Indicates stroke length with one long inner block.

Notes: The maximum speed is restricted by the permissible rotation speed of the ball screw, the permissible speed of the guide or 6,000 min⁻¹ of motor speed.

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

Lubrication

Table 7 shows standard greases used in Model SKR and grease nipple types.

Table 7: 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
SKR55	THK AFB-LF Grease	A-M6F
SKR65	THK AFB-LF Grease	A-M6F

Static Safety Factor

● LM Guide Unit

During actual operation, damage may be caused by an unexpectedly large load acting on the LM Guide that is caused in particular by sudden starting and stopping or a large moment created by an overhang. Therefore, a static safety factor f_s must be considered.

The static safety factor f_s is derived from the relationship between the applied load and the basic static load rating. The estimates of the static safety factor based on operating conditions are given in Table 8.

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

f_s : Static safety factor

C_0^1 : Basic static load rating (N)

$P_{\max}$: Maximum applied load (N)

● Ball Screw Unit and Bearing Unit (Fixed Side)

For the ball screw and the bearing, a static safety factor f_s based on the relationship between the calculated maximum axial load and the static load rating must be considered. Vibrations, impacts, or inertia due to starting and stopping may result in an unexpectedly large load. Therefore, please confirm that a sufficient static safety factor has been ensured when selecting a model. The estimates of the static safety factor based on operating conditions are given in Table 8.

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

f_s : Static safety factor

C_{0a}^1 : Basic static load rating (N)

$F_{\max}$: Maximum applied load (N)

Table 8: Estimates of the Static Safety Factor (f_s)

Load conditions ²	Lower Limit of f_s
Without vibrations or impacts	2
With vibrations or impacts	5

¹ The basic static load rating is a static load with a constant direction and size where 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.

² Vibrations and impacts are typically caused by factors such as acceleration and deceleration, sudden starting and stopping, vibrations and impacts from an external machine, and changes in processing power over time.

Service Life

LM Guide Unit

● Nominal Life

The nominal life 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 formula.

■ Calculating the Nominal Life

The nominal life (L_{10}) of an LM Guide with balls is obtained from the following formula using the basic dynamic load rating (C) based on a reference distance of 50 km, and the calculated load acting on the LM Guide (P_c).

□ LM Guide with balls (using a basic dynamic load rating based on a nominal life of 50 km)

$$L_{10} = \left(\frac{C}{P_c} \right)^3 \times 50 \quad \dots\dots\dots (1)$$

L_{10}	: Nominal life	(km)
C	: Basic dynamic load rating	(N)
P_c	: Calculated load	(N)

Note: This nominal life formula may not apply if the length of the stroke is less than or equal to twice the length of the LM block.

When comparing the nominal life (L_{10}), you must take into account whether the basic dynamic load rating was defined based on 50 km or 100 km. Convert the basic dynamic load rating based on ISO 14728-1 as necessary.

ISO-regulated basic dynamic load rating conversion formula:

□ LM Guide with balls

$$C_{100} = \frac{C_{50}}{1.26}$$

C_{50}	: Basic dynamic load rating based on a nominal life of 50 km
C_{100}	: Basic dynamic load rating based on a nominal life of 100 km

■ Calculating the Modified Nominal Life

During use, an LM Guide may be subjected to vibrations and shocks as well as fluctuating loads, which are difficult to detect. In addition, having LM blocks arranged directly behind one another will have a decisive impact on the service life. Taking these factors into account, the modified nominal life (L_{10m}) can be calculated according to the formula (2) below.

● Modified factor α

$$\alpha = \frac{f_c}{f_w}$$

α	: Modified factor	
f_c	: Contact factor	(see Table 10 on A2-23)
f_w	: Load factor	(see Table 9 on A2-22)

● Modified nominal life L_{10m}

□ LM Guide with balls

$$L_{10m} = \left(\alpha \times \frac{C}{P_c} \right)^3 \times 50 \quad \dots\dots\dots (2)$$

L_{10m}	: Modified nominal life	(km)
C	: Basic dynamic load rating	(N)
P_c	: Calculated load	(N)

- If a moment is applied, calculate the equivalent load by multiplying the applied moment by the equivalent factor indicated in Table 11 on **A2-23**.

$$P_m = K \cdot M$$

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 models 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_{10}) 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).

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

L_h : Service life time (h) n_1 : Number of reciprocations per minute (min^{-1})

ℓ_s : Stroke length (mm)

Ball Screw Unit and Bearing Unit (Fixed Side)

● Nominal Life

The nominal life (L_{10}) means the total travel distance that 90% of a group of units of the same ball screw (bearing) can achieve without taking 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.

■ Calculating the Nominal Life

The nominal life (L_{10}) is obtained from the following equation using the basic dynamic load rating (C_a) and the load acting on the ball screw in the axial direction (F_a).

$$L_{10} = \left(\frac{C_a}{F_a} \right)^3 \times 10^6 \dots\dots\dots(1)$$

L_{10} : Nominal life (rev.)

C_a : Basic dynamic load rating (N)

F_a : Axial load (N)

■Calculating the Modified Nominal Life

During use, a ball screw may be subjected to vibrations and shocks as well as fluctuating loads, which are difficult to detect. Taking these factors into account, the modified nominal life (L_{10m}) can be calculated according to formula (2) below.

- Modified factor α

$$\alpha = \frac{1}{f_w}$$

α : Modified factor

f_w : Load factor (see Table 9)

- Modified nominal life L_{10m}

$$L_{10m} = \left(\alpha \times \frac{C_a}{F_a} \right)^3 \times 10^6 \dots\dots\dots (2)$$

L_{10m} : Modified nominal life (rev.)

α : Modified factor

C_a : Basic dynamic load rating (N)

F_a : Axial load (N)

Table 9: Load Factor (f_w)

Vibrations/impacts	Speed (V)	f_w
Faint	Very low $V \leq 0.25$ m/s	1 to 1.2
Weak	Under low speeds 0.25 m/s < $V \leq 1$ m/s	1.2 to 1.5
Medium	Under medium speeds 1 m/s < $V \leq 2$ m/s	1.5 to 2
Strong	Under high speeds $V > 2$ m/s	2 to 3.5

● Service Life Time

When the nominal life (L_{10}) 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).

$$L_h = \frac{L_{10} \cdot \ell}{2 \cdot \ell_s \cdot n_1 \times 60}$$

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 models SKR-B/D, multiply the basic load rating by the corresponding contact factor indicated in Table 10.

Table 10: 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 vibrations and impacts during operation, and it is particularly difficult to accurately determine all of the vibrations generated during high-speed operation, the impacts applied in normal use during repeated starting and stopping, 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 Table 11.

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

Table 11: 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}
SKR55-A	8.12×10^{-2}	8.12×10^{-2}	2.88×10^{-2}
SKR55-B	1.46×10^{-2}	1.46×10^{-2}	2.88×10^{-2}
SKR65-A	7.16×10^{-2}	7.16×10^{-2}	2.21×10^{-2}
SKR65-B	1.27×10^{-2}	1.27×10^{-2}	2.21×10^{-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 standards of Model SKR are defined for positioning repeatability, positioning accuracy, running parallelism (vertical direction), and backlash.

Positioning Repeatability

Command the position to a given arbitrary point. Measure the position and repeat seven times from the same direction. Record the difference between the largest and smallest values. Conduct the same test at three points: the middle of the stroke, and at both the approximate maximum and minimum positions of travel. Express the maximum difference value of the three measurements divided by 2 with a $\pm$ symbol.

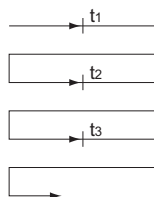


Fig. 8: Positioning Repeatability

Positioning Accuracy

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

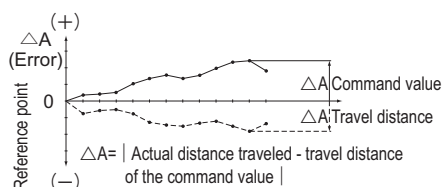


Fig. 9: Positioning Accuracy

Running Parallelism (Vertical Direction)

Place a straightedge on the surface table where Model KR is mounted, measure most of 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.

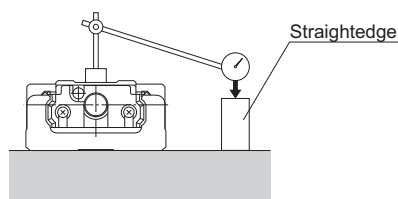


Fig. 10: Running Parallelism

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.

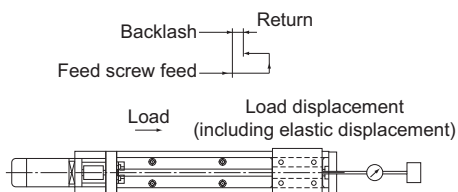


Fig. 11: Backlash

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.

Table 12: Normal Grade (No Symbol)

Unit: mm

Model No.	Stroke ¹	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					
SKR55	790	940	±0.01	No standard defined	No standard defined	0.05	12
	800	980					
	900	1,080					
	1,000	1,180					
	1,100	1,280					
SKR65	1,200	1,380	±0.01	No standard defined	No standard defined	0.05	12
	790	980					
	990	1,180					
	1,190	1,380					
	1,490	1,680	±0.012				15

¹ Indicates stroke length with one long inner block.

Notes: The evaluation method for accuracy standards complies with THK standards.

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

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

Models SKR20 and SKR26: THK AFA Grease

Models SKR33, SKR46, SKR55, and SKR65: THK AFB-LF Grease

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

Contact THK for accuracy information of units longer than the standard length.

Table 13: High Accuracy Grade (H)

Unit: mm

Model No.	Stroke ¹	Outer rail length	Positioning repeatability	Positioning accuracy	Running 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					
595	700						
SKR46	190	340	±0.005	0.10	0.035	0.02	10
	290	440					
	390	540					
	490	640		0.12	0.04		
	590	740					
	690	840		0.15	0.05		
	790	940					
SKR55	800	980	±0.005	0.18	0.05	0.05	12
	900	1,080		0.25			
	1,000	1,180					
	1,100	1,280					
	1,200	1,380					
SKR65	790	980	±0.008	0.18	0.05	0.05	12
	990	1,180		0.2			
	1,190	1,380					
	1,490	1,680		0.28			0.055

¹ Indicates stroke length with one long inner block.

Notes: The evaluation method for accuracy standards complies with THK standards.

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

The starting torque refers to the values when the below greases are used.

Models SKR20, SKR26: THK AFA Grease

Models SKR33, SKR46, SKR55, SKR65: THK AFB-LF Grease

If highly viscous grease such as vacuum grease or clean room grease is used, the actual starting torque may exceed the corresponding value in the table. Use caution in selecting a motor.

Contact THK for accuracy information of units longer than the standard length.

Table 14: Precision Grade (P)

Unit: mm

Model No.	Stroke ¹	Outer rail length	Positioning repeatability	Positioning accuracy	Running 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					
	210	300					
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		0.03	0.02		
	595	700					
SKR46	190	340	±0.003	0.025	0.015	0.003	15
	290	440					
	390	540					
	490	640		0.03	0.02		17
	590	740					
	690	840					
	790	940					
SKR55	800	980	±0.005	0.035	0.025	0.003	17
	900	1,080		0.04	0.03		20
	1,000	1,180					
SKR65	790	980	±0.005	0.035	0.025	0.005	20
	990	1,180		0.04	0.03		22
	1,190	1,380					

¹ Indicates stroke length with one long inner block.

Notes: The evaluation method complies with THK standards.

Measurements are taken while using a motor provided by THK.

For motor-wrap configurations, these values may not apply.

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

Models SKR20, SKR26: THK AFA Grease

Models SKR33, SKR46, SKR55, SKR65: THK AFB-LF Grease

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

Contact THK for information on accuracy for lengths equal to or longer than the standard outer rail.

Model Number Coding

Model No.	Ball screw lead	Inner block type	QZ specification	Stroke	Accuracy grade
SKR33	10	A	QZ	0270	P
①	②	③	④	⑤	⑥

SKR20	01: 1 mm	A	No symbol : No QZ	0020: 20 mm	No symbol: Normal grade
SKR26	02: 2 mm	B	QZ	0030: 30 mm	H: High Accuracy grade
SKR33	06: 6 mm	C	QZA	to	P: Precision grade
SKR46	10: 10 mm	D	QZB	1490: 1,490 mm	
SKR55	20: 20 mm		QZAD		
SKR65	25: 25 mm				
	30: 30 mm				
	40: 40 mm				
	50: 50 mm				

QZ specification ④ can be selected on the following models.

SKR33 (→ **A2-38**)

SKR46 (→ **A2-46**)

Note: It cannot be selected for SKR20, SKR26, SKR55 and SKR65.

If QZ, QZA, QZB, or QZAD is selected for QZ specification ④, specify a stroke incorporating QZ. (→ **A2-65**)

If "2: with a bellows" has been selected for Cover ⑧, specify a stroke incorporating the bellows. (→ **A2-76**)

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"

SKR55: "20," "30," "40"

SKR65: "20," "25," "30," "50"

With/without a motor	Cover	Sensor	Housing A/ intermediate flange
0	1	B	AQ

⑦

⑧

⑨

⑩

With direct coupling
0: Direct coupling (without motor)
1: Direct coupling (THK will purchase and mount the motor you specify)
With motor wrap
R1: Non-standard side wrap (without motor)
R2: Standard side wrap (without motor)
R3: Bottom side wrap (without motor)
R4: Non-standard side wrap (THK will purchase and mount the motor you specify)
R5: Standard side wrap (THK will purchase and mount the motor you specify)
R6: Bottom side wrap (THK will purchase and mount the motor you specify)

0: Without cover
1: With cover
2: With bellows

0: None
1
2
6
7
B
E
H
L
J
M

With direct coupling	With motor wrap
A0	WN-05D
AN	WP-08D
AP	WP-08K
AQ	WP-08M
AR	WQ-08D
AS	WQ-08K
AT	WQ-08M
AU	WV-14M
AV	WY-11M
AY	WY-14M
AZ	WZ-16M
A5	WZ-19M
A6	W5-19M
20	
30	
40	
60	

If QZ specification ④ "QZ," "QZA," "QZB," or "QZAD" is selected, "2: With bellows" cannot be selected.

If "0" is selected:

No coupling will be attached. Please specify if a coupling is required when ordering.

If "R1," "R2," or "R3" is selected:

A timing pulley and timing belt will be included.

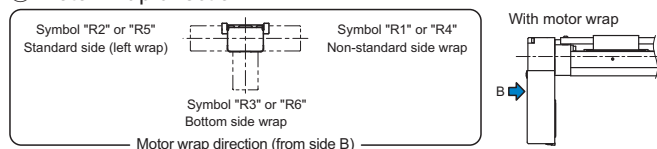
If "1," "R4," "R5," or "R6" is selected:

The designated motor will be mounted. Please specify the motor cable direction separately.

Please select an option for ⑩ Housing A/intermediate flange that matches the specified motor.

Note: This product is compatible with motors from various manufacturers. Contact THK for details.

⑦ Motor wrap direction

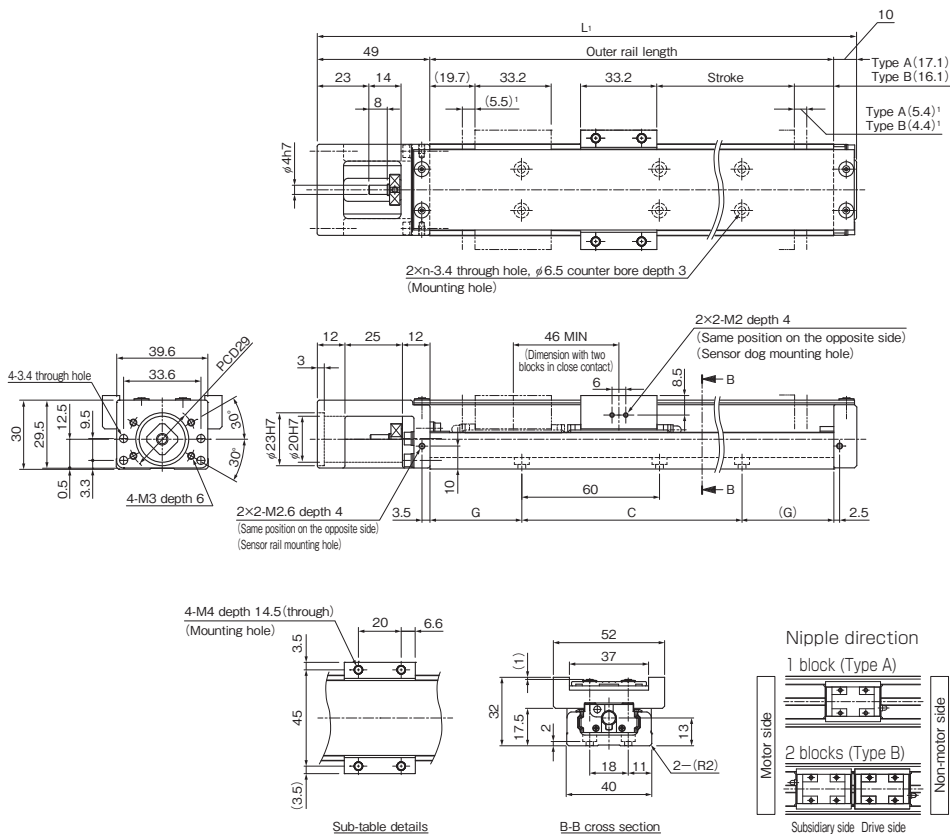


SKR20 With Cover, Direct Motor Coupling

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

Model SKR20□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	n	Overall main unit mass (kg)	
Type A	Type B ¹						Type A	Type B
30 (40.9)	□	100	159	60	20	2	0.55	□
80 (90.9)	35 (44.9)	150	209	120	15	3	0.69	0.81
130 (140.9)	85 (94.9)	200	259	120	40	3	0.84	0.96

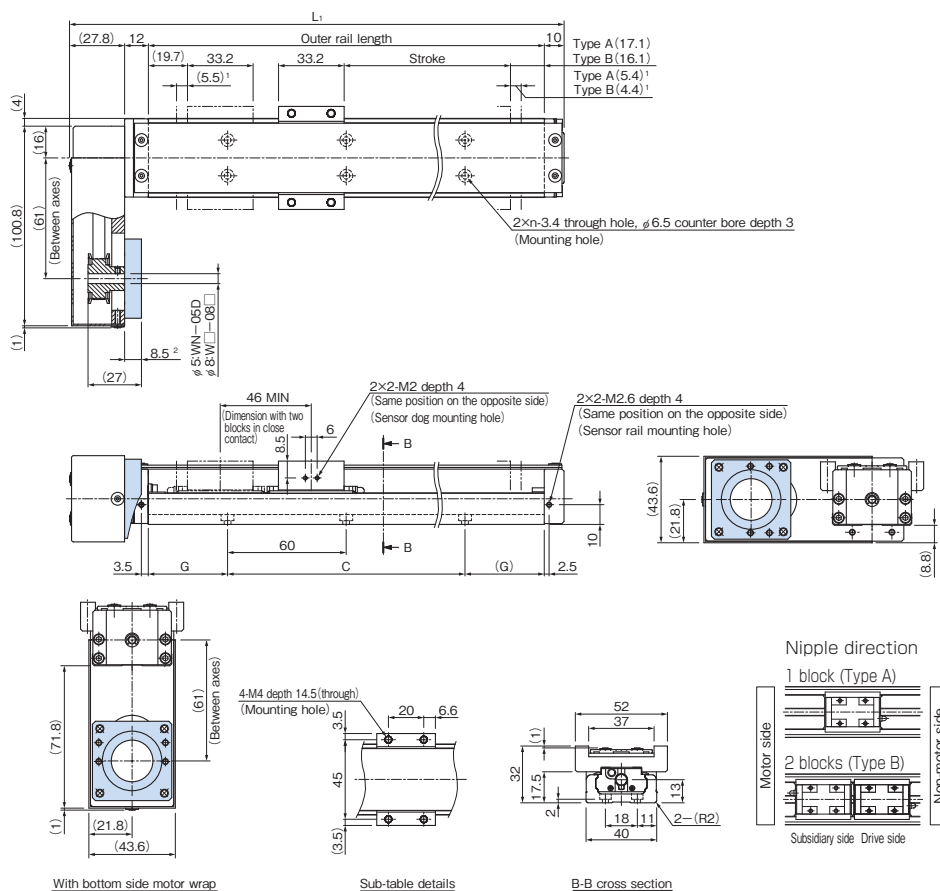
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR20 With Cover, Motor Wrap

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

Model SKR20□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



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

² Dimensions will vary if 3WN is selected for model number coding. $\square$ Housing A/intermediate $\square$ angle. For details, see **A2-96**.

Stroke (mm) (stroke between mechanical stoppers)		Outer rail length (mm)	Overall length L_1 (mm)	C (mm)	G (mm)	n	Overall main unit mass (kg)	
Type A	Type B ¹						Type A	Type B
30 (40.9)	$\square$	100	149.8	60	20	2	0.81	$\square$
80 (90.9)	35 (44.9)	150	199.8	120	15	3	0.95	1.07
130 (140.9)	85 (94.9)	200	249.8	120	40	3	1.09	1.21

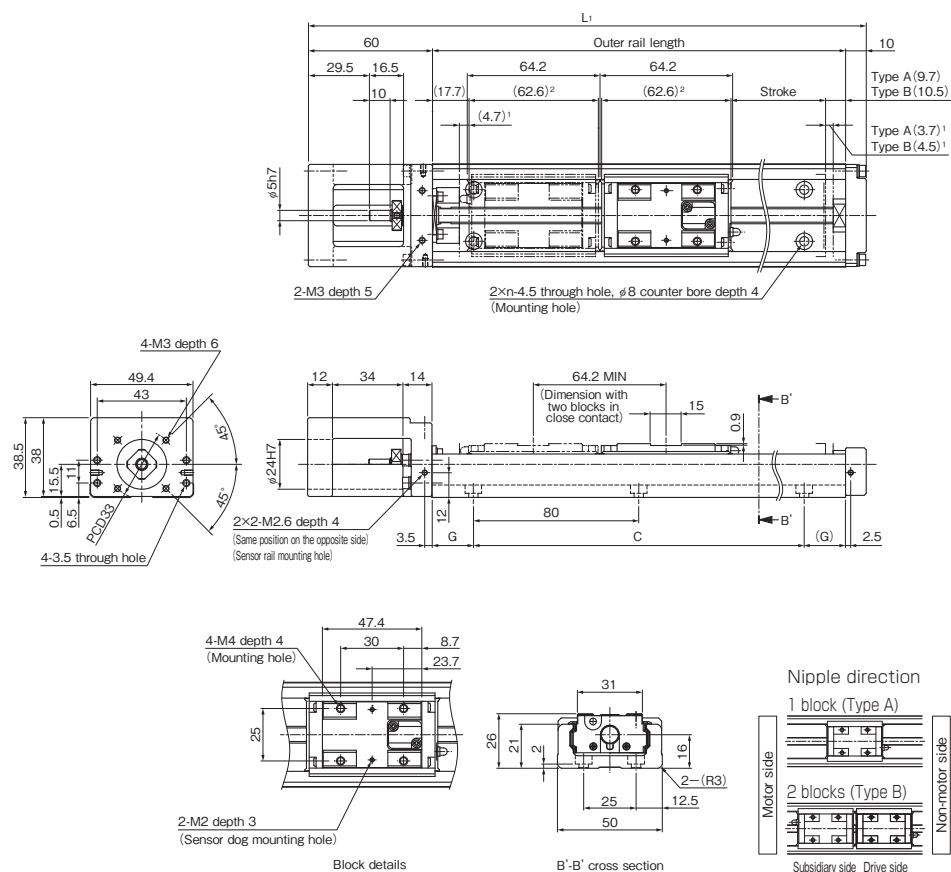
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR26 Without Cover, Direct Motor Coupling

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

Model SKR26□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



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

² This indicates the block length when calculating the possible stroke range.

It is 126.8 mm (total) for an SKR26 with two blocks in close contact with each other (Type B).

Stroke (mm) (stroke between mechanical stoppers)		Outer rail length (mm)	Overall length L_1 (mm)	C (mm)	G (mm)	n	Overall main unit mass (kg)	
Type A	Type B ¹						Type A	Type B
60 (68.4)	□	150	220	80	35	2	1.01	□
110 (118.4)	45 (54.2)	200	270	160	20	3	1.22	1.39
160 (168.4)	95 (104.2)	250	320	160	45	3	1.43	1.6
210 (218.4)	145 (154.2)	300	370	240	30	4	1.64	1.81

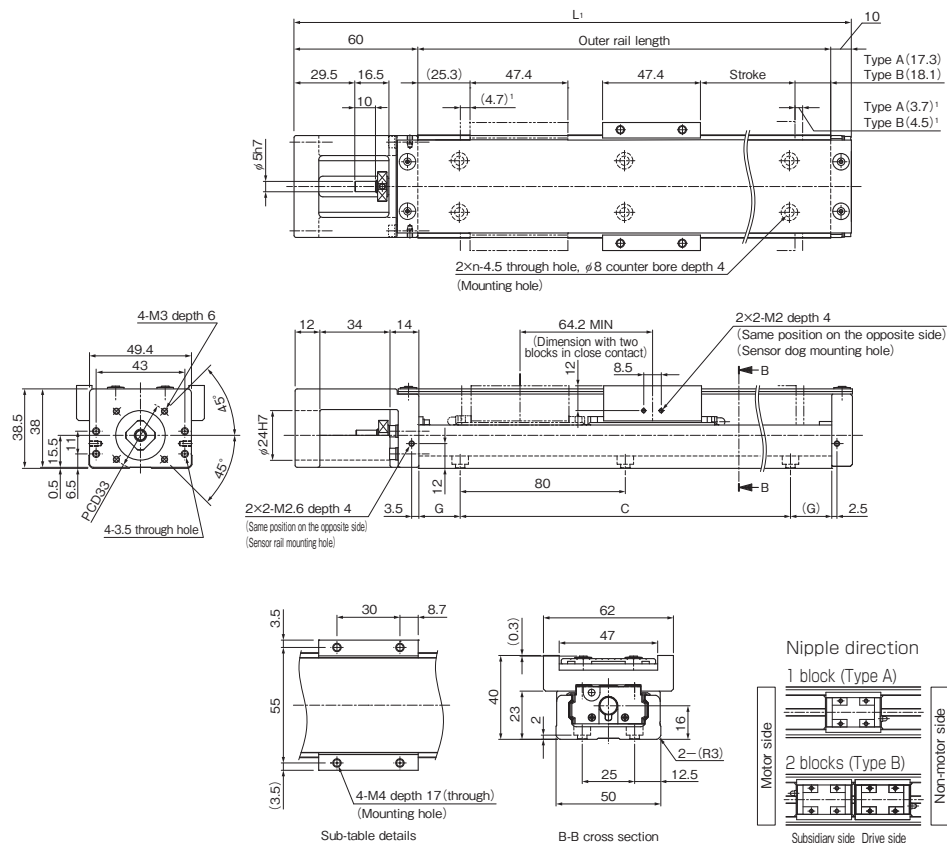
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR26 With Cover, Direct Motor Coupling

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

Model SKR26□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	n	Overall main unit mass (kg)	
Type A	Type B ¹						Type A	Type B
60 (68.4)	□	150	220	80	35	2	1.17	□
110 (118.4)	45 (54.2)	200	270	160	20	3	1.39	1.64
160 (168.4)	95 (104.2)	250	320	160	45	3	1.61	1.86
210 (218.4)	145 (154.2)	300	370	240	30	4	1.83	2.08

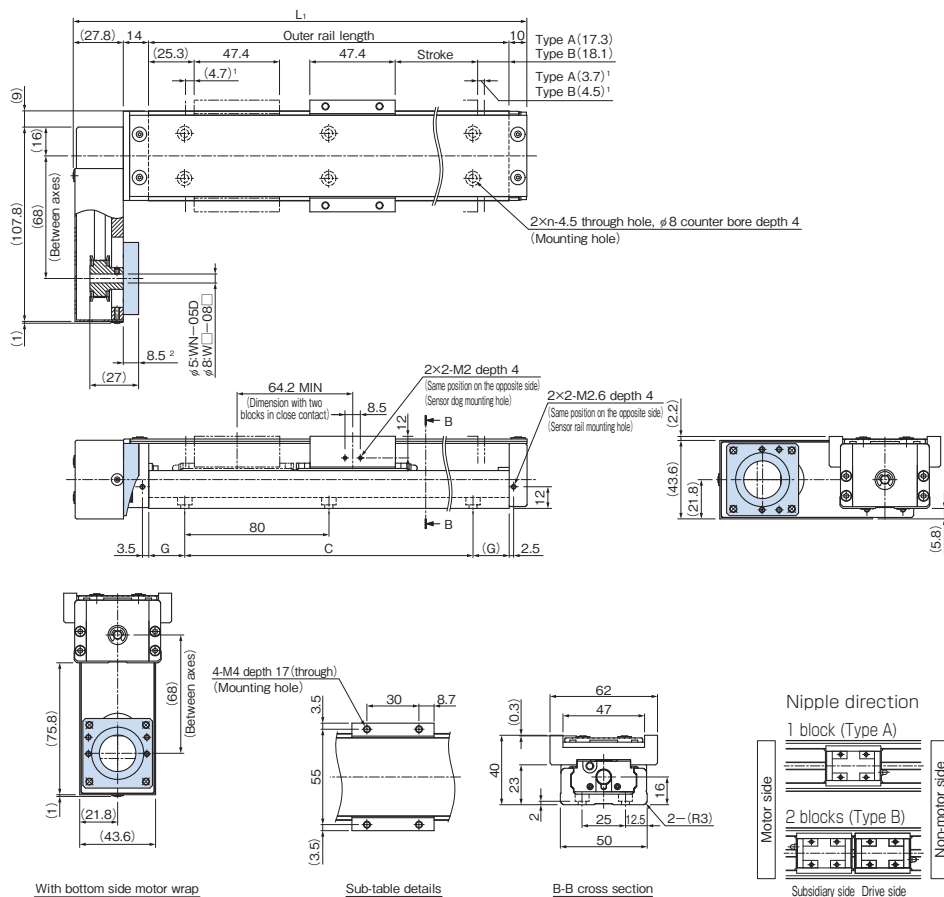
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR26 With Cover, Motor Wrap

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

Model SKR26□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



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

² Dimensions will vary if "3WN" is selected for model number coding. ³ Housing A/intermediate ⁴ angle. For details, see **A2-99**.

Stroke (mm) (stroke between mechanical stoppers)		Outer rail length (mm)	Overall length L ₁ (mm)	C (mm)	G (mm)	n	Overall main unit mass (kg)	
Type A	Type B ¹						Type A	Type B
60 (68.4)	□	150	201.8	80	35	2	1.39	□
110 (118.4)	45 (54.2)	200	251.8	160	20	3	1.61	1.86
160 (168.4)	95 (104.2)	250	301.8	160	45	3	1.84	2.09
210 (218.4)	145 (154.2)	300	351.8	240	30	4	2.06	2.31

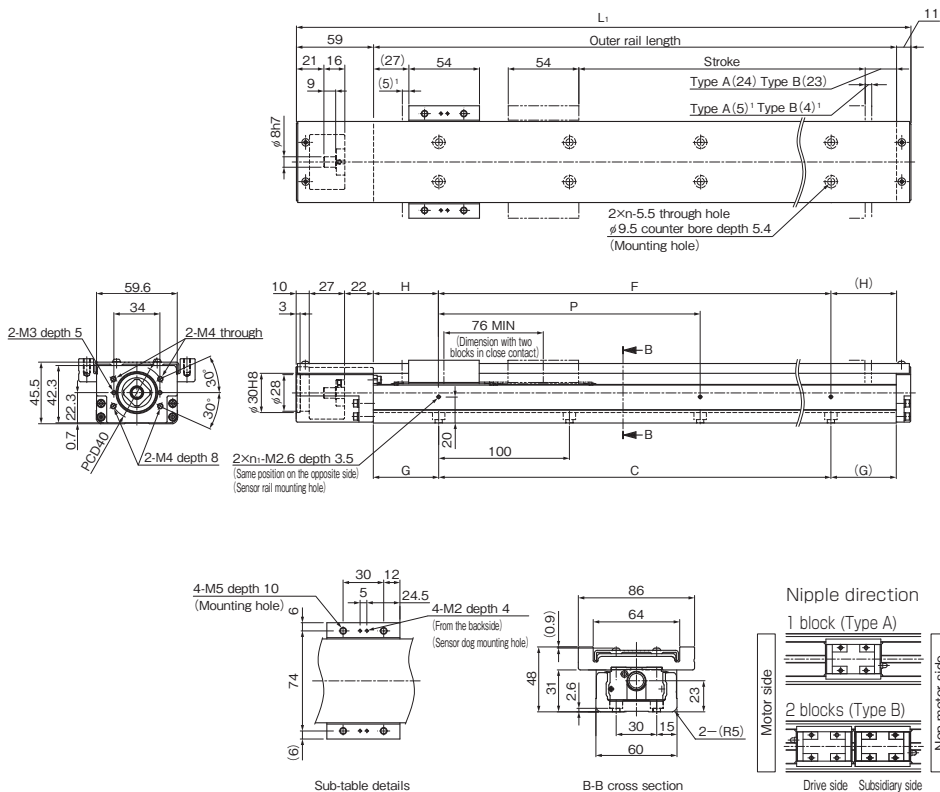
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR33 With Cover, Direct Motor Coupling

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

Model SKR33□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	P (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹										Type A	Type B
45 (55)	□	150	220	100	25	100	100	25	2	2	2.3	□
95 (105)	□	200	270	100	50	100	100	50	2	2	2.6	□
195 (205)	120 (129)	300	370	200	50	200	200	50	3	2	3.4	4
295 (305)	220 (229)	400	470	300	50	200	200	100	4	2	4.2	4.8
395 (405)	320 (329)	500	570	400	50	200	400	50	5	3	4.9	5.5
495 (505)	420 (429)	600	670	500	50	200	400	100	6	3	5.7	6.3
595 (605)	520 (529)	700	770	600	50	200	600	50	7	4	6.4	7

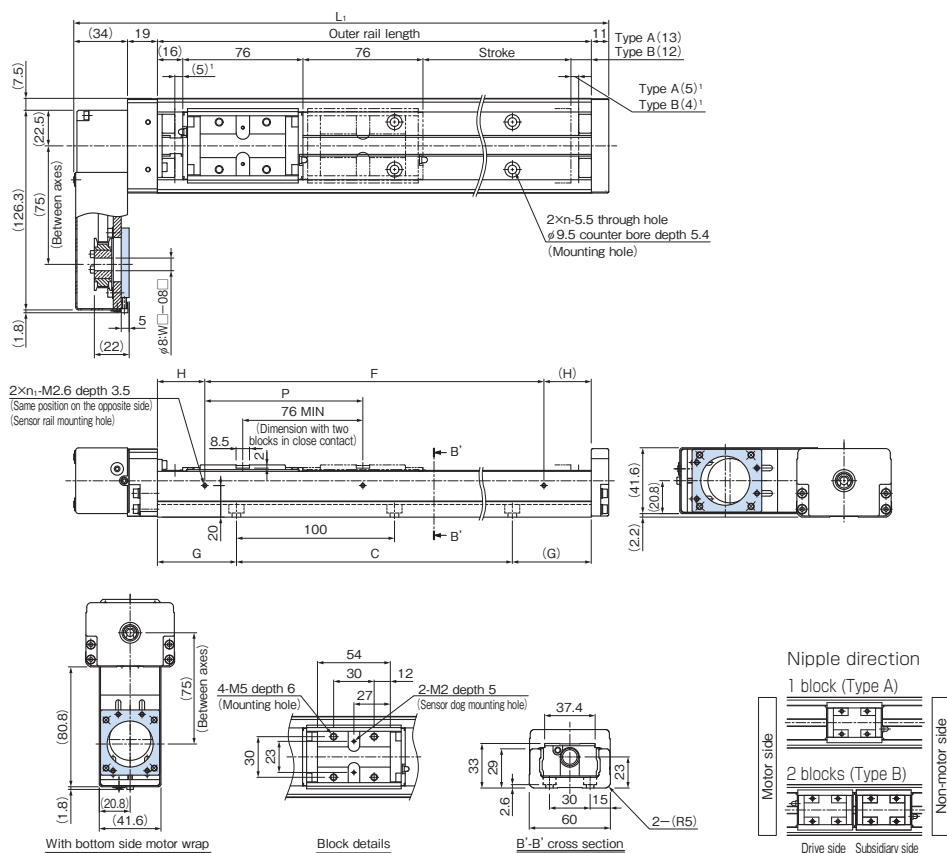
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR33 Without Cover, Motor Wrap

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

Model SKR33□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	P (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹										Type A	Type B
45 (55)	□	150	214	100	25	100	100	25	2	2	2.2	□
95 (105)	□	200	264	100	50	100	100	50	2	2	2.6	□
195 (205)	120 (129)	300	364	200	50	200	200	50	3	2	3.3	3.7
295 (305)	220 (229)	400	464	300	50	200	200	100	4	2	4	4.4
395 (405)	320 (329)	500	564	400	50	200	400	50	5	3	4.8	5.2
495 (505)	420 (429)	600	664	500	50	200	400	100	6	3	5.5	5.9
595 (605)	520 (529)	700	764	600	50	200	600	50	7	4	6.2	6.6

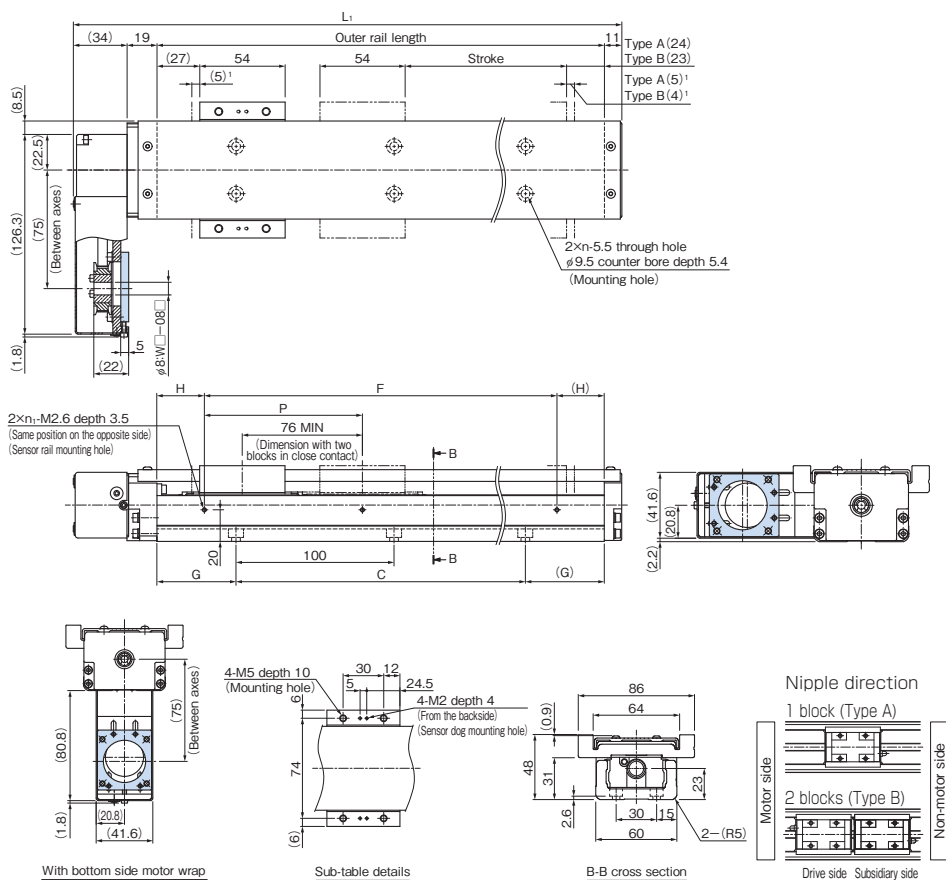
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR33 With Cover, Motor Wrap

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

Model SKR33□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Sub-table details

B-B cross section

¹ 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)	C (mm)	G (mm)	P (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type A	Type B ¹										Type A	Type B
45 (55)	□	150	214	100	25	100	100	25	2	2	2.5	□
95 (105)	□	200	264	100	50	100	100	50	2	2	2.9	□
195 (205)	120 (129)	300	364	200	50	200	200	50	3	2	3.7	4.3
295 (305)	220 (229)	400	464	300	50	200	200	100	4	2	4.4	5
395 (405)	320 (329)	500	564	400	50	200	400	50	5	3	5.2	5.8
495 (505)	420 (429)	600	664	500	50	200	400	100	6	3	6	6.6
595 (605)	520 (529)	700	764	600	50	200	600	50	7	4	6.7	7.3

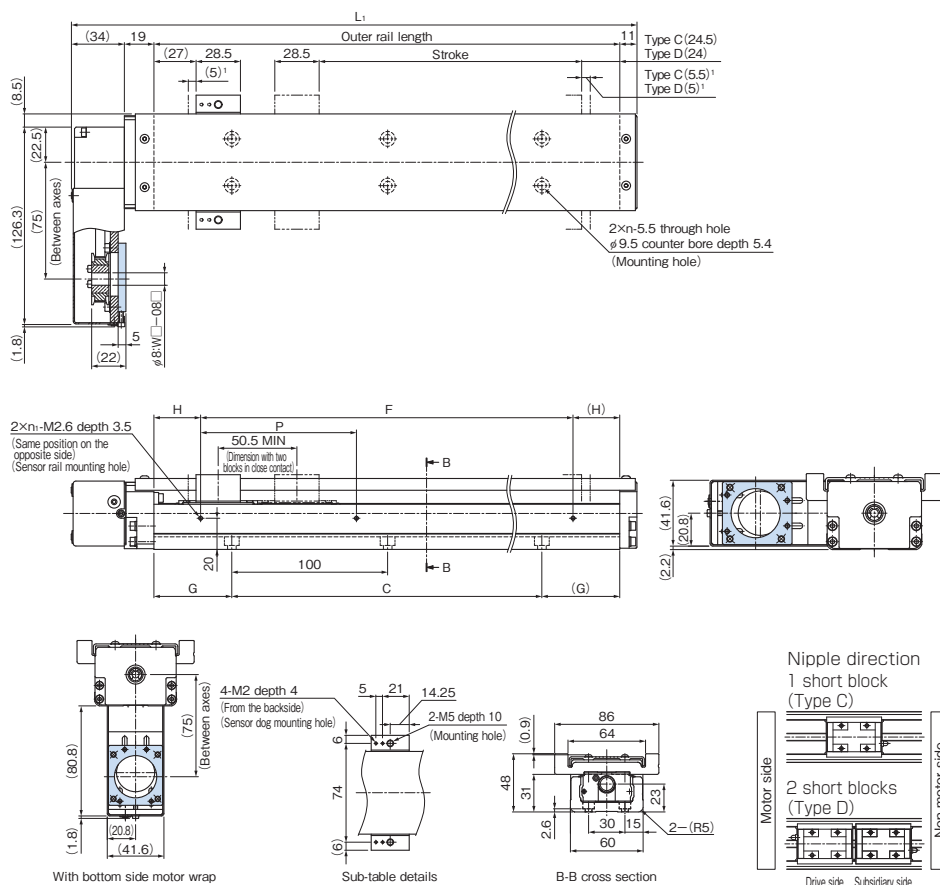
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR33 With Cover, Motor Wrap

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

Model SKR33□□D (with Two Short Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Sub-table details

B-B cross section

¹ 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)	C (mm)	G (mm)	P (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type C	Type D ¹										Type C	Type D
70 (80.5)	20 (30)	150	214	100	25	100	100	25	2	2	2.2	2.5
120 (130.5)	70 (80)	200	264	100	50	100	100	50	2	2	2.6	2.9
220 (230.5)	170 (180)	300	364	200	50	200	200	50	3	2	3.4	3.7
320 (330.5)	270 (280)	400	464	300	50	200	200	100	4	2	4.1	4.4
420 (430.5)	370 (380)	500	564	400	50	200	400	50	5	3	4.9	5.2
520 (530.5)	470 (480)	600	664	500	50	200	400	100	6	3	5.7	6
620 (630.5)	570 (580)	700	764	600	50	200	600	50	7	4	6.4	6.7

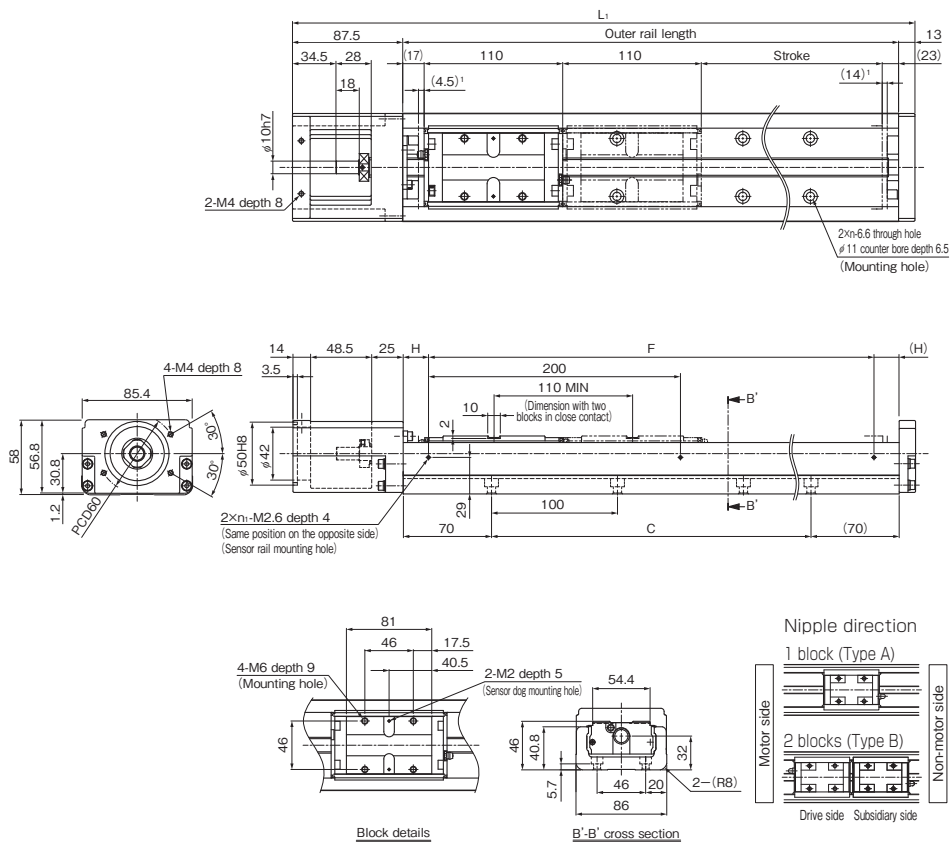
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 Without Cover, Direct Motor Coupling

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

Model SKR46□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹								Type A	Type B
190 (208.5)	80 (98.5)	340	440.5	200	200	70	3	2	6.7	7.7
290 (308.5)	180 (198.5)	440	540.5	300	400	20	4	3	8.1	9.1
390 (408.5)	280 (298.5)	540	640.5	400	400	70	5	3	9.5	10.5
490 (508.5)	380 (398.5)	640	740.5	500	600	20	6	4	10.9	11.9
590 (608.5)	480 (498.5)	740	840.5	600	600	70	7	4	12.3	13.3
690 (708.5)	580 (598.5)	840	940.5	700	800	20	8	5	13.8	14.8
790 (808.5)	680 (698.5)	940	1,040.5	800	800	70	9	5	15.2	16.2

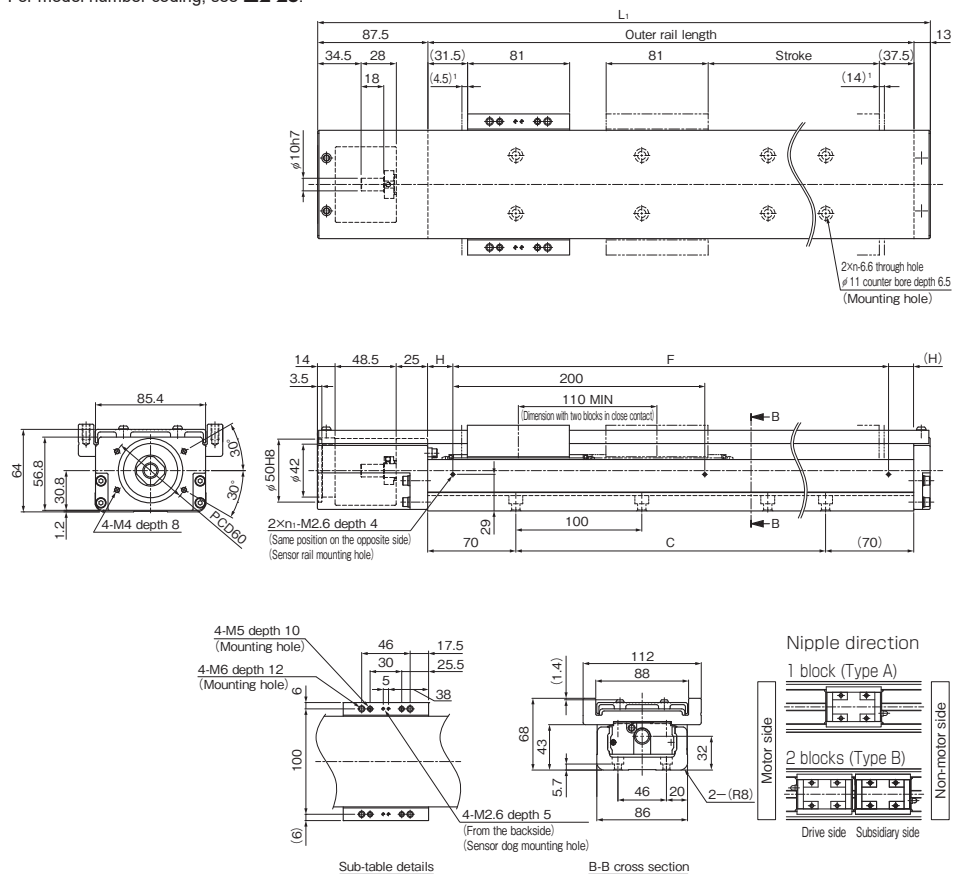
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 With Cover, Direct Motor Coupling

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

Model SKR46□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type A	Type B ¹								Type A	Type B
190 (208.5)	80 (98.5)	340	440.5	200	200	70	3	2	7.7	9.1
290 (308.5)	180 (198.5)	440	540.5	300	400	20	4	3	9.2	10.6
390 (408.5)	280 (298.5)	540	640.5	400	400	70	5	3	10.7	12.1
490 (508.5)	380 (398.5)	640	740.5	500	600	20	6	4	12.2	13.6
590 (608.5)	480 (498.5)	740	840.5	600	600	70	7	4	13.7	15.1
690 (708.5)	580 (598.5)	840	940.5	700	800	20	8	5	15.2	16.6
790 (808.5)	680 (698.5)	940	1,040.5	800	800	70	9	5	16.7	18.1

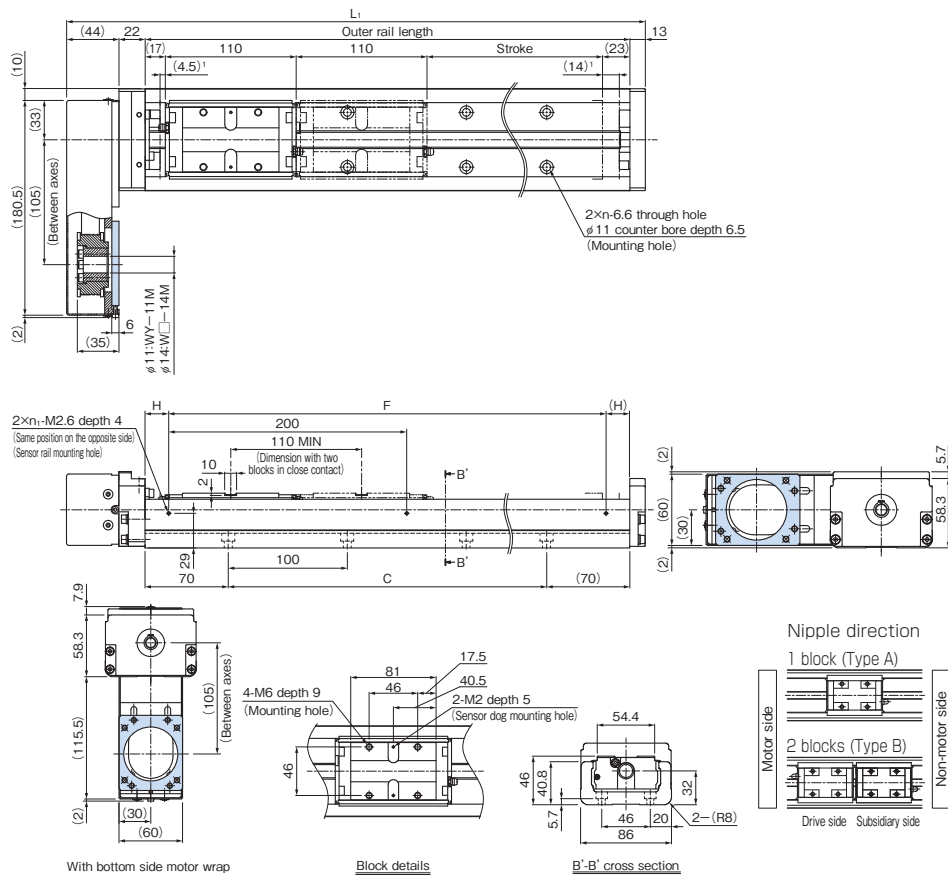
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 Without Cover, Motor Wrap

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

Model SKR46□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B¹								Type A	Type B
190 (208.5)	80 (98.5)	340	419	200	200	70	3	2	7.7	8.7
290 (308.5)	180 (198.5)	440	519	300	400	20	4	3	9.1	10.1
390 (408.5)	280 (298.5)	540	619	400	400	70	5	3	10.5	11.5
490 (508.5)	380 (398.5)	640	719	500	600	20	6	4	11.9	12.9
590 (608.5)	480 (498.5)	740	819	600	600	70	7	4	13.3	14.3
690 (708.5)	580 (598.5)	840	919	700	800	20	8	5	14.7	15.7
790 (808.5)	680 (698.5)	940	1,019	800	800	70	9	5	16.1	17.1

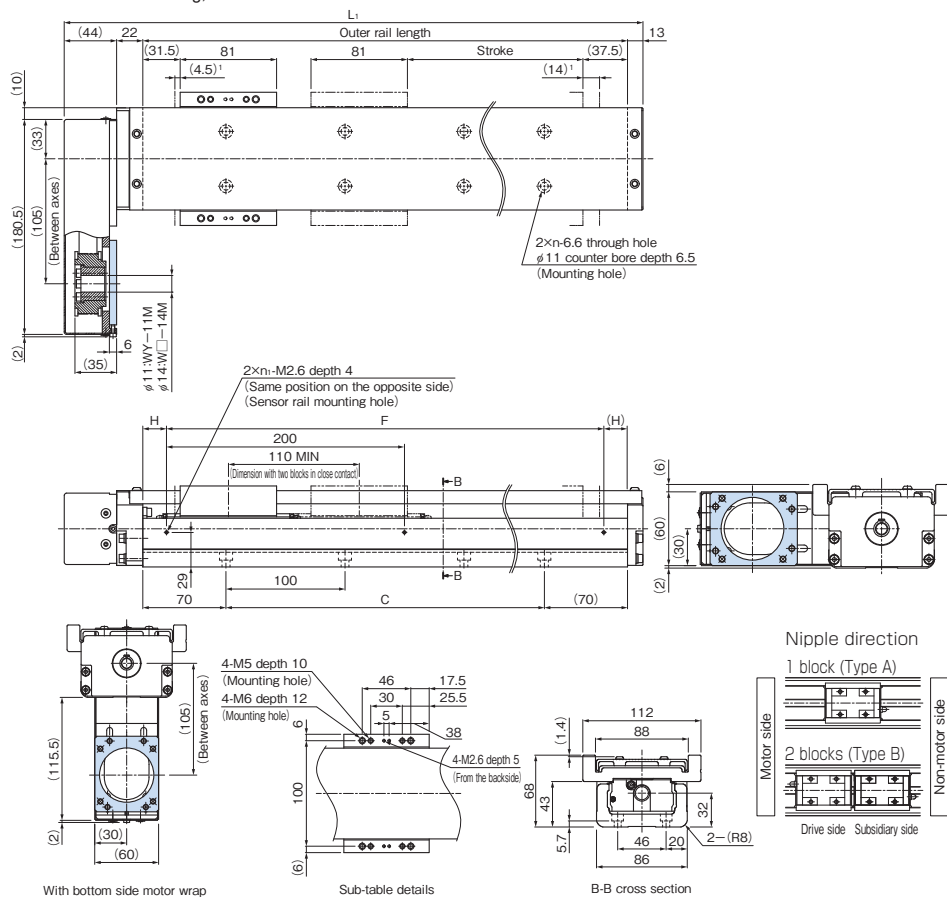
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 With Cover, Motor Wrap

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

Model SKR46□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Sub-table details

B-B cross section

¹ 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)	C (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹								Type A	Type B
190 (208.5)	80 (98.5)	340	419	200	200	70	3	2	8.6	10
290 (308.5)	180 (198.5)	440	519	300	400	20	4	3	10.1	11.5
390 (408.5)	280 (298.5)	540	619	400	400	70	5	3	11.6	13
490 (508.5)	380 (398.5)	640	719	500	600	20	6	4	13.1	14.5
590 (608.5)	480 (498.5)	740	819	600	600	70	7	4	14.6	16
690 (708.5)	580 (598.5)	840	919	700	800	20	8	5	16.1	17.5
790 (808.5)	680 (698.5)	940	1,019	800	800	70	9	5	17.6	19

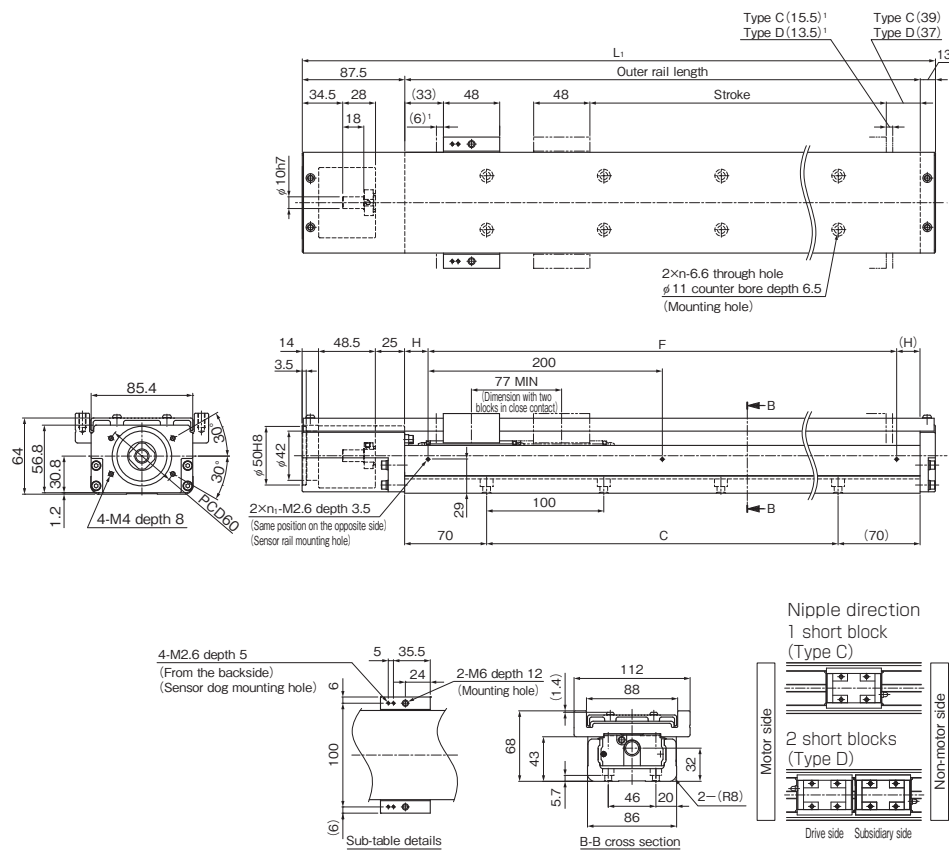
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 With Cover, Direct Motor Coupling

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

Model SKR46□□D (with Two Short Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type C	Type D ¹								Type C	Type D
220 (241.5)	145 (164.5)	340	440.5	200	200	70	3	2	7.1	7.9
320 (341.5)	245 (264.5)	440	540.5	300	400	20	4	3	8.6	9.4
420 (441.5)	345 (364.5)	540	640.5	400	400	70	5	3	10.1	10.9
520 (541.5)	445 (464.5)	640	740.5	500	600	20	6	4	11.6	12.4
620 (641.5)	545 (564.5)	740	840.5	600	600	70	7	4	13.1	13.9
720 (741.5)	645 (664.5)	840	940.5	700	800	20	8	5	14.6	15.4
820 (841.5)	745 (764.5)	940	1,040.5	800	800	70	9	5	16.1	16.9

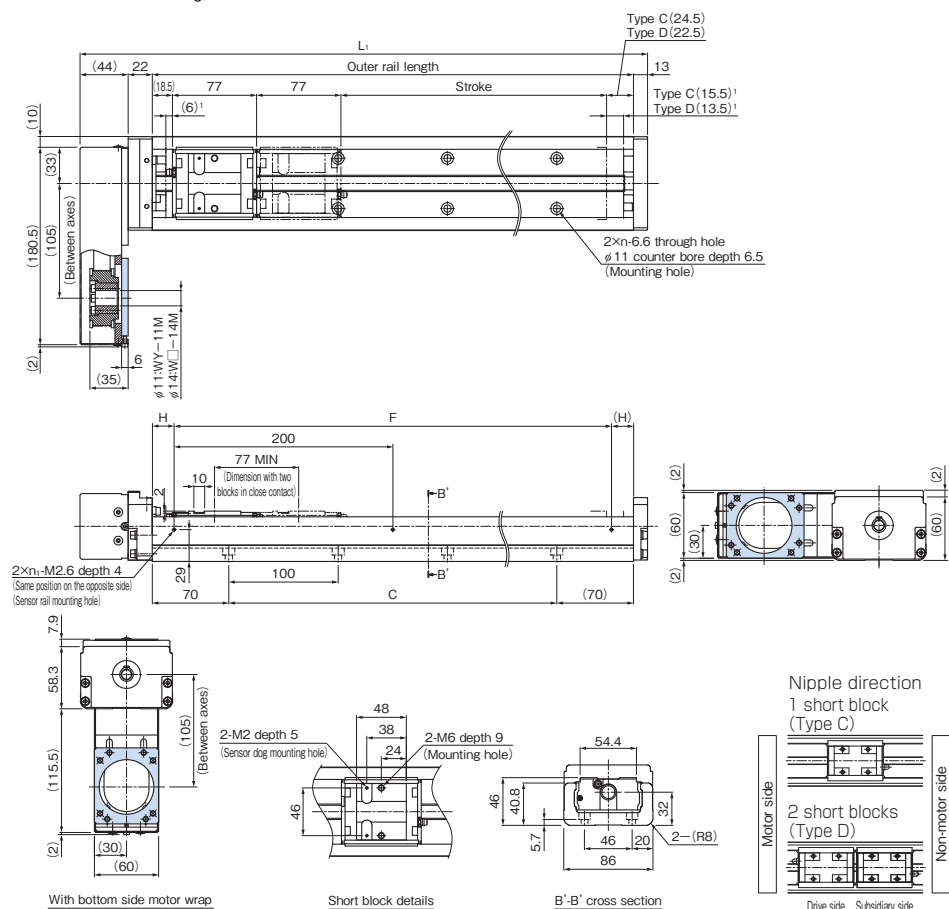
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 Without Cover, Motor Wrap

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

Model SKR46□□D (with Two Short Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Short block details

B'-B' cross section

¹ 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)	C (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type C	Type D ¹								Type C	Type D
220 (241.5)	145 (164.5)	340	419	200	200	70	3	2	7.3	7.9
320 (341.5)	245 (264.5)	440	519	300	400	20	4	3	8.7	9.3
420 (441.5)	345 (364.5)	540	619	400	400	70	5	3	10.1	10.7
520 (541.5)	445 (464.5)	640	719	500	600	20	6	4	11.5	12.1
620 (641.5)	545 (564.5)	740	819	600	600	70	7	4	12.9	13.5
720 (741.5)	645 (664.5)	840	919	700	800	20	8	5	14.3	14.9
820 (841.5)	745 (764.5)	940	1,019	800	800	70	9	5	15.7	16.3

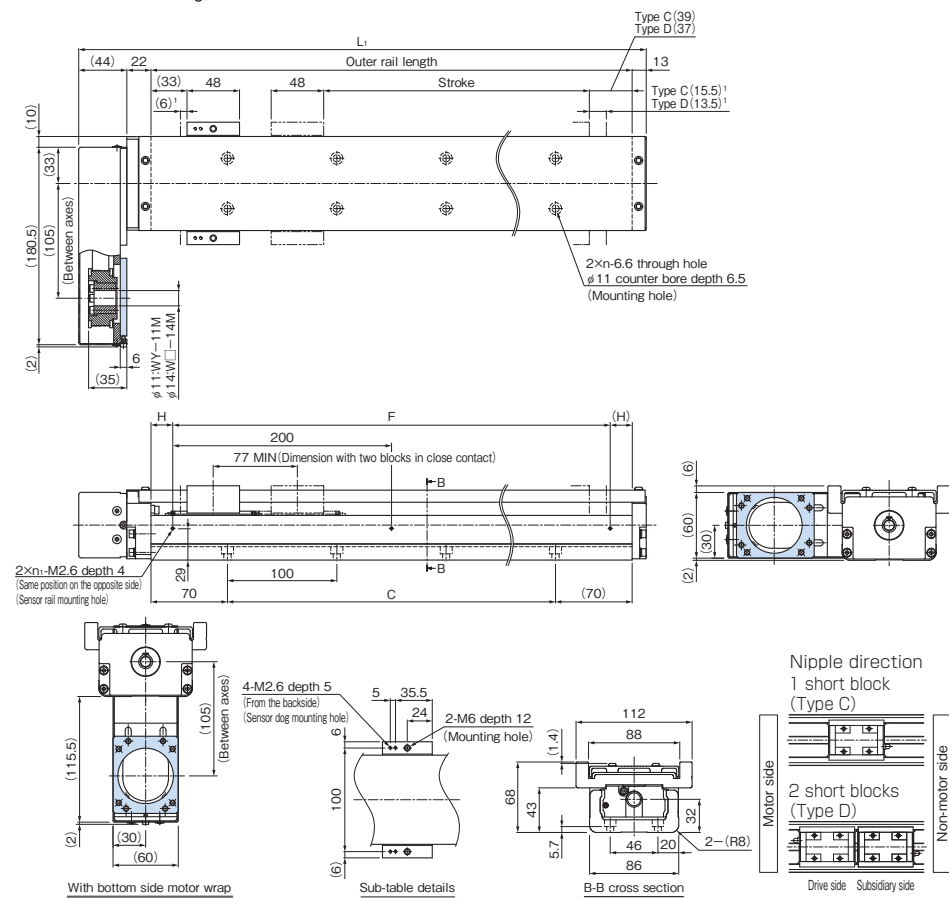
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR46 With Cover, Motor Wrap

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

Model SKR46□□D (with Two Short Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type C	Type D ¹								Type C	Type D
220 (241.5)	145 (164.5)	340	419	200	200	70	3	2	8	8.8
320 (341.5)	245 (264.5)	440	519	300	400	20	4	3	9.5	10.3
420 (441.5)	345 (364.5)	540	619	400	400	70	5	3	11	11.8
520 (541.5)	445 (464.5)	640	719	500	600	20	6	4	12.5	13.3
620 (641.5)	545 (564.5)	740	819	600	600	70	7	4	14	14.8
720 (741.5)	645 (664.5)	840	919	700	800	20	8	5	15.5	16.3
820 (841.5)	745 (764.5)	940	1,019	800	800	70	9	5	17	17.8

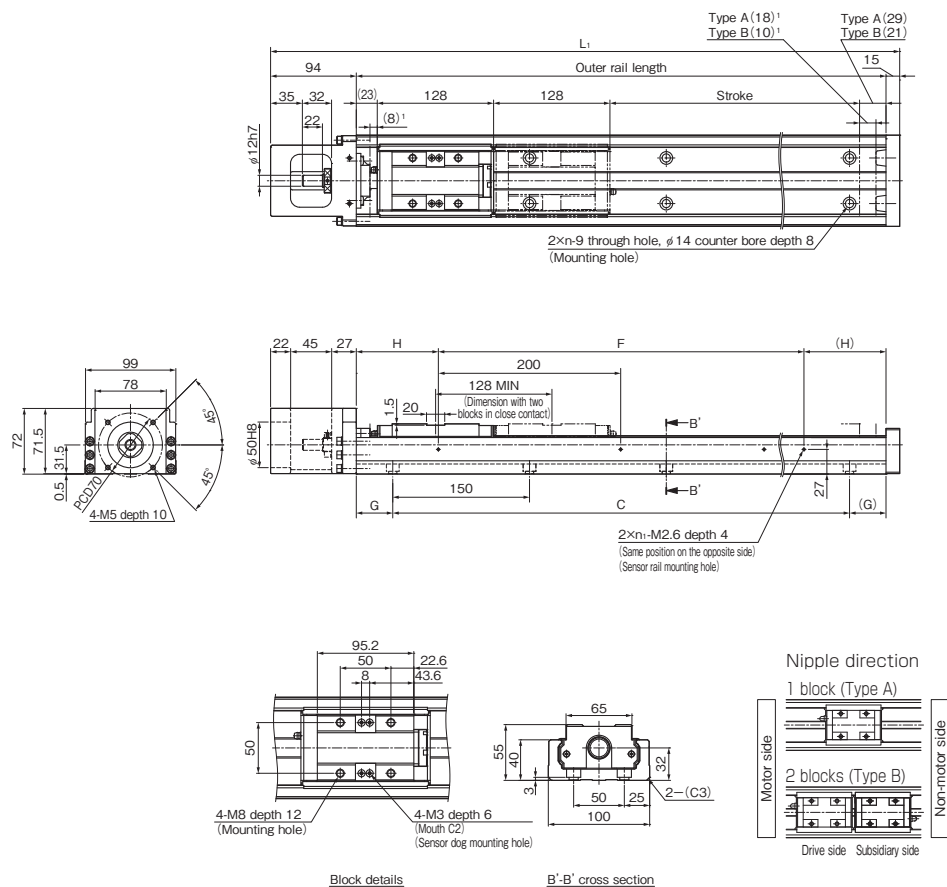
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR55 Without Cover, Direct Motor Coupling

Model SKR55□□A (with a Single Long Block)

Model SKR55□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹									Type A	Type B
800 (826)	680 (698)	980	1,089	900	40	800	90	7	5	20.9	22.8
900 (926)	780 (798)	1,080	1,189	1,050	15	1,000	40	8	6	22.6	24.5
1,000 (1,026)	880 (898)	1,180	1,289	1,050	65	1,000	90	8	6	24.4	26.3
1,100 (1,126)	980 (998)	1,280	1,389	1,200	40	1,200	40	9	7	26.2	28.1
1,200 (1,226)	1,080 (1,098)	1,380	1,489	1,350	15	1,200	90	10	7	27.9	29.8

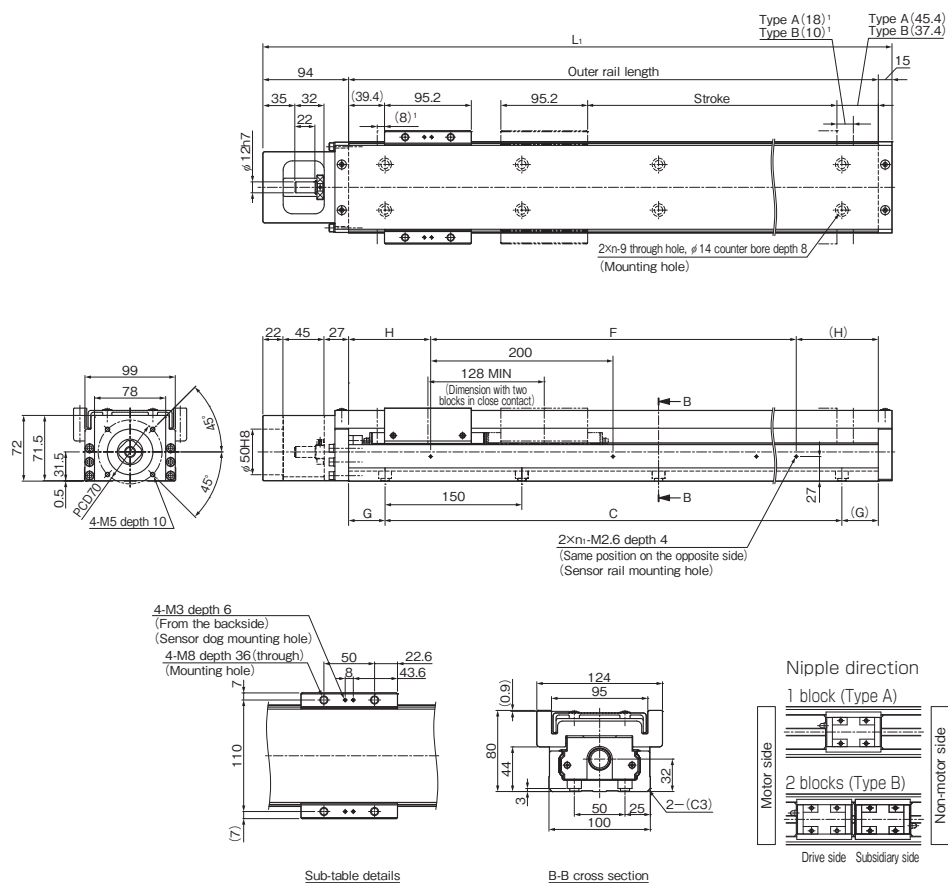
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR55 With Cover, Direct Motor Coupling

Model SKR55□□A (with a Single Long Block)

Model SKR55□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B ¹									Type A	Type B
800 (826)	680 (698)	980	1,089	900	40	800	90	7	5	23.8	27.6
900 (926)	780 (798)	1,080	1,189	1,050	15	1,000	40	8	6	25.7	29.5
1,000 (1,026)	880 (898)	1,180	1,289	1,050	65	1,000	90	8	6	27.6	31.4
1,100 (1,126)	980 (998)	1,280	1,389	1,200	40	1,200	40	9	7	29.5	33.3
1,200 (1,226)	1,080 (1,098)	1,380	1,489	1,350	15	1,200	90	10	7	31.4	35.2

¹ Indicates a value when two inner blocks are in close contact with each other.

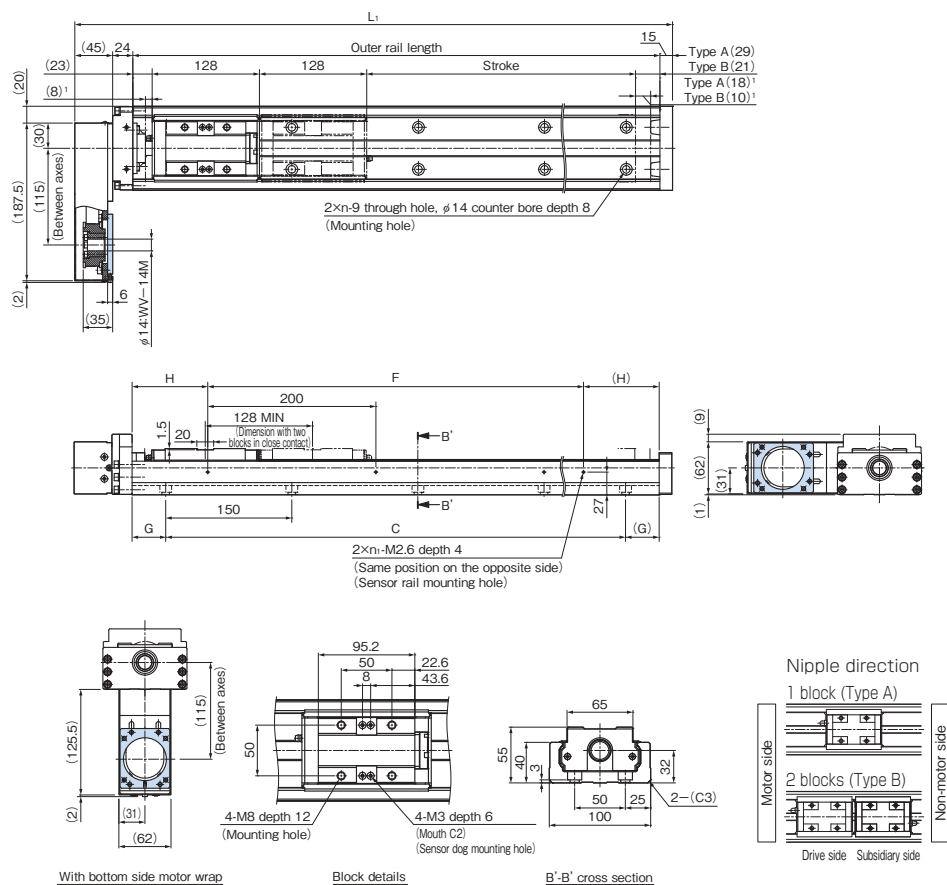
SKR55 Without Cover, Motor Wrap

Motor Flange Size, 60×60

Model SKR55□□A (with a Single Long Block)

Model SKR55□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



[†] 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B [†]									Type A	Type B
800 (826)	680 (698)	980	1,064	900	40	800	90	7	5	21.8	23.7
900 (926)	780 (798)	1,080	1,164	1,050	15	1,000	40	8	6	23.6	25.5
1,000 (1,026)	880 (898)	1,180	1,264	1,050	65	1,000	90	8	6	25.3	27.2
1,100 (1,126)	980 (998)	1,280	1,364	1,200	40	1,200	40	9	7	27.1	29
1,200 (1,226)	1,080 (1,098)	1,380	1,464	1,350	15	1,200	90	10	7	28.9	30.8

[†] Indicates a value when two inner blocks are in close contact with each other.

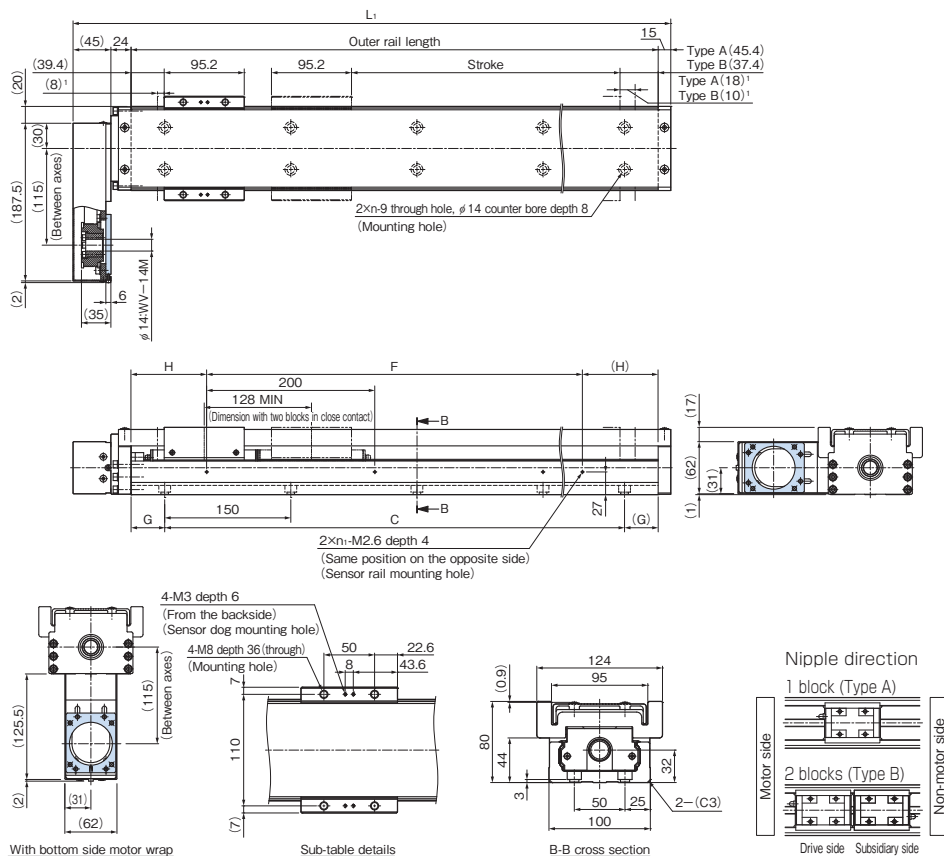
SKR55 With Cover, Motor Wrap

Motor Flange Size, 60×60

Model SKR55□□A (with a Single Long Block)

Model SKR55□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



¹ 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type A	Type B ¹									Type A	Type B
800 (826)	680 (698)	980	1,064	900	40	800	90	7	5	24.8	28.6
900 (926)	780 (798)	1,080	1,164	1,050	15	1,000	40	8	6	26.7	30.5
1,000 (1,026)	880 (898)	1,180	1,264	1,050	65	1,000	90	8	6	28.6	32.4
1,100 (1,126)	980 (998)	1,280	1,364	1,200	40	1,200	40	9	7	30.5	34.3
1,200 (1,226)	1,080 (1,098)	1,380	1,464	1,350	15	1,200	90	10	7	32.4	36.2

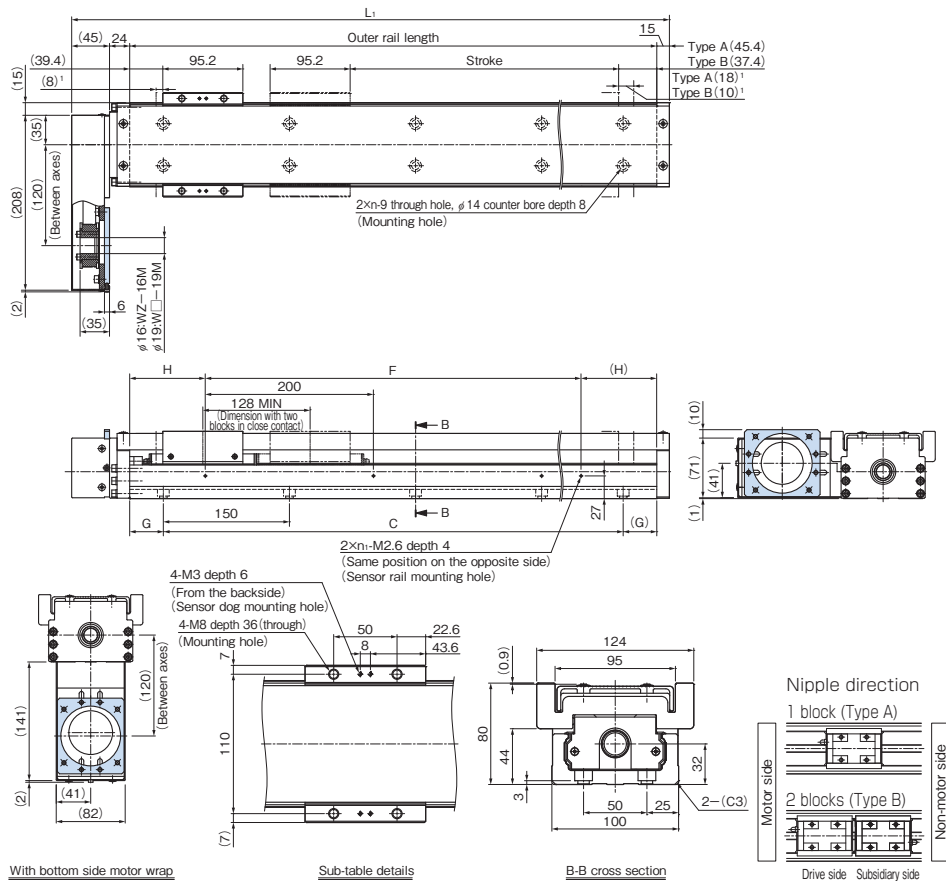
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR55 With Cover, Motor Wrap Motor Flange Size, 80×80

Model SKR55□□A (with a Single Long Block)

Model SKR55□□B (with Two Long Blocks)

For model number coding, see **A2-28**.

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

Stroke (mm) (stroke between mechanical stoppers)		Outer rail length (mm)	Overall length L: (mm)	C (mm)	G (mm)	F (mm)	H (mm)	n	n _i	Overall main unit mass (kg)	
Type A	Type B'									Type A	Type B
800 (826)	680 (698)	980	1,064	900	40	800	90	7	5	24.8	28.6
900 (926)	780 (798)	1,080	1,164	1,050	15	1,000	40	8	6	26.7	30.5
1,000 (1,026)	880 (898)	1,180	1,264	1,050	65	1,000	90	8	6	28.6	32.4
1,100 (1,126)	980 (998)	1,280	1,364	1,200	40	1,200	40	9	7	30.5	34.3
1,200 (1,226)	1,080 (1,098)	1,380	1,464	1,350	15	1,200	90	10	7	32.4	36.2

¹ Indicates a value when two inner blocks are in close contact with each other.

For model number coding, see **A2-28**.

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

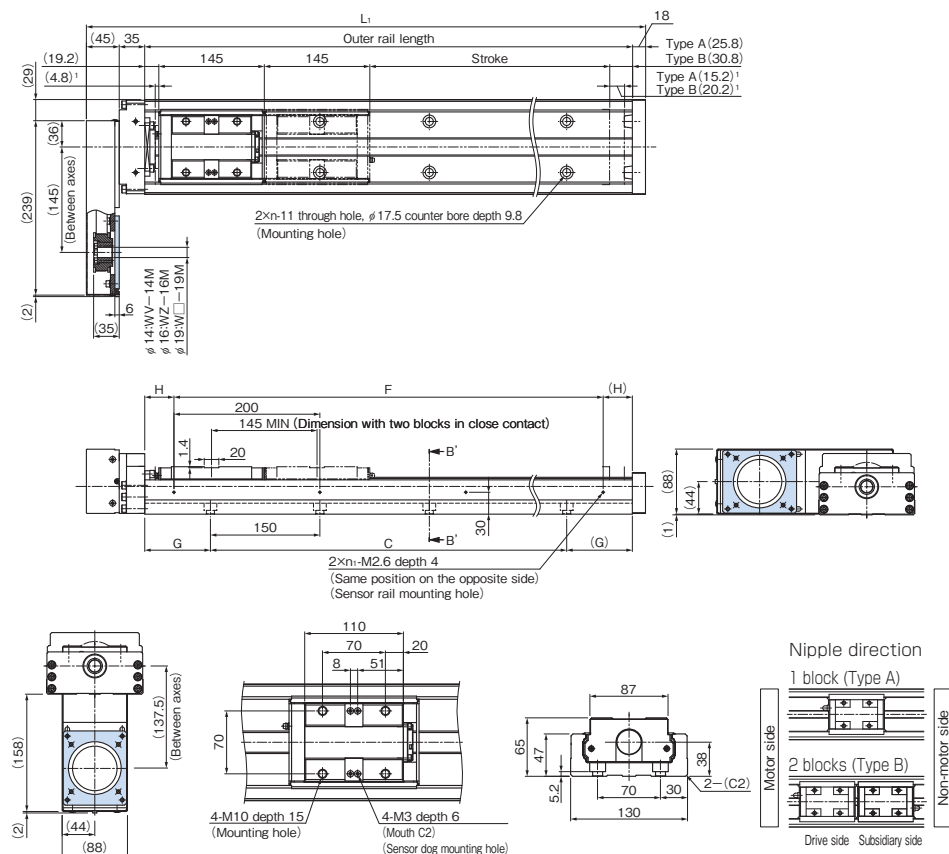
¹ Indicates a value when two inner blocks are in close contact with each other.

SKR65 Without Cover, Motor Wrap

Model SKR65□□A (with a Single Long Block)

Model SKR65□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Block details

B'-B' cross section

[†] 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n ₁	Overall main unit mass (kg)	
Type A	Type B [†]									Type A	Type B
790 (810)	640 (665)	980	1,078	900	40	800	90	7	5	31.9	34.9
990 (1,010)	840 (865)	1,180	1,278	1,050	65	1,000	90	8	6	37.1	40.1
1,190 (1,210)	1,040 (1,065)	1,380	1,478	1,200	90	1,200	90	9	7	42.3	45.3
1,490 (1,510)	1,340 (1,365)	1,680	1,778	1,500	90	1,600	40	11	9	50	53

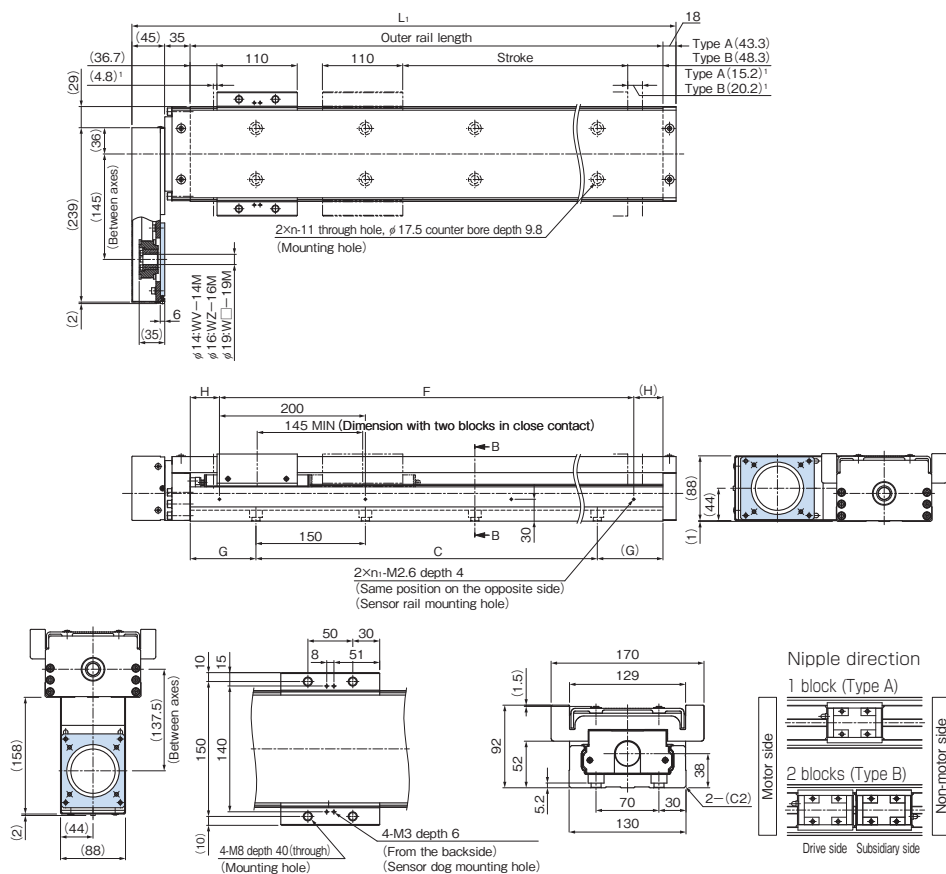
[†] Indicates a value when two inner blocks are in close contact with each other.

SKR65 With Cover, Motor Wrap

Model SKR65□□A (with a Single Long Block)

Model SKR65□□B (with Two Long Blocks)

For model number coding, see **A2-28**.



With bottom side motor wrap

Sub-table details

B-B cross section

¹ 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)	C (mm)	G (mm)	F (mm)	H (mm)	n	n_1	Overall main unit mass (kg)	
Type A	Type B ¹									Type A	Type B
790 (810)	640 (665)	980	1,078	900	40	800	90	7	5	35.1	41.8
990 (1,010)	840 (865)	1,180	1,278	1,050	65	1,000	90	8	6	40.5	47.2
1,190 (1,210)	1,040 (1,065)	1,380	1,478	1,200	90	1,200	90	9	7	45.9	52.6
1,490 (1,510)	1,340 (1,365)	1,680	1,778	1,500	90	1,600	40	11	9	54	60.7

¹ Indicates a value when two inner blocks are in close contact with each other.

Mass of Moving Elements

Table 15 shows the mass of the inner block and sub-table of Model SKR.

Table 15: Mass of the Inner Block and Sub-Table of SKR

Unit: kg

Model No.	Long block types				Short block types			
	A/B	Inner block	Sub-table	Total mass	C/D	Inner block	Sub-table	Total mass
SKR20	Type A	0.07	0.05	0.12	Type C	□	□	□
	Type B	0.14	0.1	0.24	Type D	□	□	□
SKR26	Type A	0.17	0.08	0.25	Type C	□	□	□
	Type B	0.34	0.16	0.5	Type D	□	□	□
SKR33	Type A	0.4	0.2	0.6	Type C	0.2	0.1	0.3
	Type B	0.8	0.4	1.2	Type D	0.4	0.2	0.6
SKR46	Type A	1.0	0.4	1.4	Type C	0.6	0.2	0.8
	Type B	2.0	0.8	2.8	Type D	1.2	0.4	1.6
SKR55	Type A	1.9	1.9	3.8	Type C	□	□	□
	Type B	3.8	3.8	7.6	Type D	□	□	□
SKR65	Type A	3.0	3.7	6.7	Type C	□	□	□
	Type B	6.0	7.4	13.4	Type D	□	□	□