



**ELECTRIC
ACTUATORS**

NEW

Economy series

ES/EC



For details, visit THK at www.thk.com

* Product information is updated regularly on the THK website.

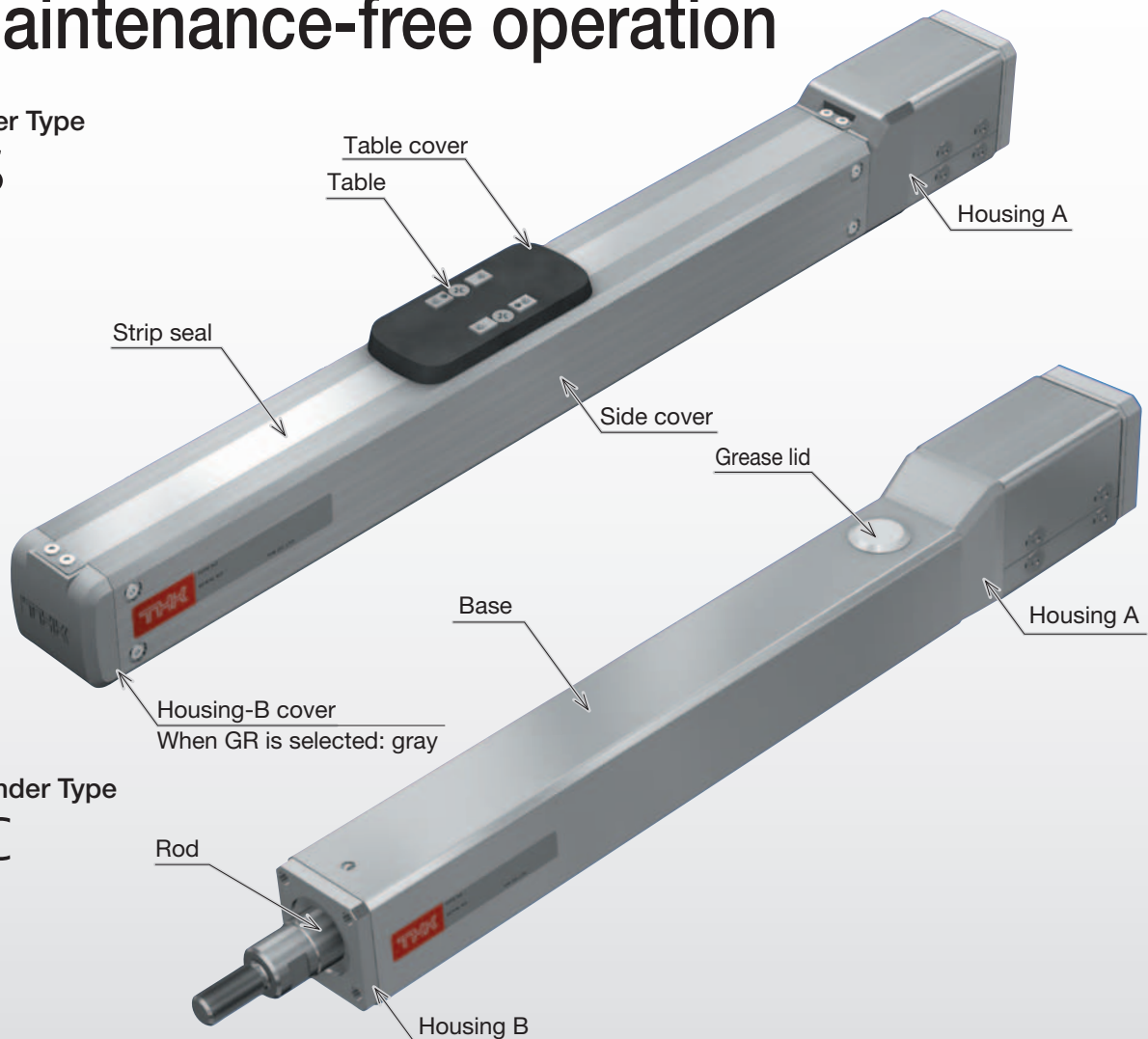
THK CO., LTD.
TOKYO, JAPAN

CATALOG No.373-1E

Electrical Actuator Economy series ES/EC

Reasonably priced, Long-term maintenance-free operation

Slider Type ES



Cylinder Type EC

Features

Compact and reliable

By incorporating an LM Guide within its rectilinear guide, the ES provides both compactness and reliability.

Reasonably priced

The use of LM Guides reduces the number of components required, making the ES available at a reasonable cost.

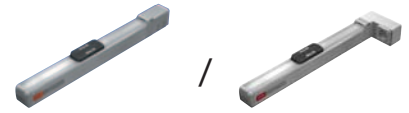
Long-term maintenance-free operation

The ES incorporates the model SRS LM Guide, equipped with ball retainers, as well as Lubricator QZ, for optimal ball-screw lubrication. The combined effect provides for long-term maintenance-free operation.

Predictable service life

The service life of the LM Guide and ball screw can be calculated based on usage conditions. Contact THK for details.

Model Configuration



ES/EC (without motor)

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|--------|---------------|--------------------|---------------------|--------|
| ES4R | 06 | 0150 | B | 0 | A | MR-GR |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |

| | | | | | | |
|------|----------|-------------|---|------------------------------------|---------|---|
| ES3 | 06: 6mm | 0050: 50mm | B | 0: Without motor | N: None | No symbol: Red cover |
| ES4 | 12: 12mm | 0100: 100mm | | 1: With motor (Prepared by THK) | A | MR: Motor right-turn folded *1 |
| ES5 | | 0150: 150mm | | | B | ML: Motor left-turn folded *1 |
| ES6 | | 0200: 200mm | | | C | GR: Change the cover color to gray |
| ES3R | | 0250: 250mm | | | | SB: With slider base *2 |
| ES4R | | 0300: 300mm | | | | CB: With cylinder base *3 |
| ES5R | | 0350: 350mm | | | | FL: With flange *3 *4 |
| ES6R | | 0400: 400mm | | | | LB: With link ball *3 *4 |
| EC3 | | 0450: 450mm | | | | □ ₁ □ ₂ : Sensor *2 |
| EC4 | | 0500: 500mm | | | | |
| EC3R | | 0550: 550mm | | | | |
| EC4R | | 0600: 600mm | | | | |
| EC3H | | | | | | |
| EC4H | | | | | | |

When 0 is selected, a coupling is not provided for motor direct coupled specification. Timing pulley and timing belt are provided for motor wrap configuration. When 1 is selected, THK will prepare a motor and install it.

R represents motor wrap, and H represents with linear bush.

For ES3, ES3R, EC3, EC3R and EC3H, only ball screw lead 6 is applicable.

Maximum stroke differs depending on models.
 ES3: 300mm
 ES4: 400mm
 ES5: 500mm
 ES6: 600mm
 EC3: 200mm
 EC4: 300mm

*1 This is valid only when selecting ES□R or EC□R for model (1).
 *2 This is valid only when selecting ES for model (1).
 *3 This is valid only when selecting EC for model (1).
 *4 If you select EC□H for model (1), FL and LB cannot be selected.

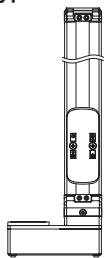
Change the cover color to gray
 You can change the color of ES housing cover to gray.
 No symbol: red When GR is selected: gray

If the GR is not included in the model configuration, cover will be red.

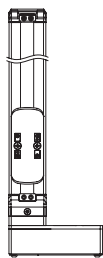
Specify the option symbol by writing in the order of description from left adding "-".

Folded direction

Slider type ES

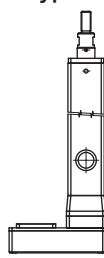


Option symbol ML: Left-turn folded

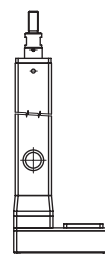


Option symbol MR: Right-turn folded

Cylinder type EC



Option symbol ML: Left-turn folded



Option symbol MR: Right-turn folded

Pages for detailed description

| | | |
|-------------------------|--|--------------|
| (6) Intermediate flange | | P. 33 |
| (7) Options | GR: Change the cover color to gray | P. 33 |
| | SB: With slider base | P. 34 |
| | CB: With cylinder base | P. 38 |
| | FL: With flange | P. 38 |
| | LB: With link ball | P. 38 |
| | □ ₁ □ ₂ : Sensor | P. 36 |

Series List

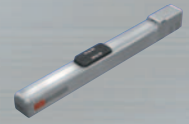
| Model | Ball screw lead [mm] | Stroke [mm] | Rated speed *1 [mm/s] | The reference motor | | Maximum load capacity *2 [kg] | | |
|-------|----------------------|-------------|-----------------------|---------------------|-----------------|-------------------------------|----------|--|
| | | | | Stepper motor | Servo motor [W] | Horizontal | Vertical | |
| | | | | | | | | |
| ES3 | 6 | 50 to 300 | — | □28 | — | 1 | 0.5 | |
| ES4 | 6 | 50 to 400 | — | □35 | — | to 9 | to 4 | |
| | 12 | | | | | to 7.5 | to 1.5 | |
| ES5 | 6 | 50 to 500 | 300 | — | 50 | 10 | 5 | |
| | 12 | | 600 | | | 6 | 2 | |
| ES6 | 6 | 50 to 600 | 300 | — | 50 | 10 | 5 | |
| | 12 | | 600 | | | 6 | 2 | |
| ES3R | 6 | 50 to 300 | — | □28 | — | 1 | to 0.5 | |
| ES4R | 6 | 50 to 400 | — | □35 | — | 4 | to 1.5 | |
| | 12 | | | | | 2 | 1 | |
| ES5R | 6 | 50 to 500 | 300 | — | 50 | 8 | 2 | |
| | 12 | | 600 | | | 6 | 1 | |
| ES6R | 6 | 50 to 600 | 300 | — | 50 | 8 | 2 | |
| | 12 | | 600 | | | 6 | 1 | |
| EC3 | 6 | 50 to 200 | — | □35 | — | 15 | 6 | |
| EC4 | 6 | 50 to 300 | 300 | — | 50 | 14 | 6 | |
| | 12 | | 600 | | | 7 | 3 | |
| EC3R | 6 | 50 to 200 | — | □35 | — | 15 | 3 | |
| EC4R | 6 | 50 to 300 | 300 | — | 50 | 14 | 6 | |
| | 12 | | 600 | | | 7 | 3 | |
| EC3H | 6 | 50 to 200 | — | □35 | — | 15 | 6 | |
| EC4H | 6 | 50 to 300 | 300 | — | 50 | 14 | 6 | |
| | 12 | | 600 | | | 7 | 3 | |

*1 Based on rated motor speed (3,000min⁻¹).

*2 Load mass represents values with THK control devices used. Determine load mass according to specifications of the motor you actually use. For selecting a motor, see Reference Materials for Selecting on page 39 and 40.

*3 Maximum speed is dependent on motor speed of 3,000min⁻¹ and, if applicable, permissible rotation speed of ball screw.

| Maximum speed for each stroke *3 [mm/s] | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Stroke [mm] | | | | | | | | | | | |
| 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
| 300 | | | | | | | | | | | |
| 300 | | | | | | | | | | | |
| 600 | | | | | | | | | | | |
| 300 | | | | | | | | | | | |
| 600 | | | | | | | | | | | |
| 300 | | | | | | | | | 270 | 230 | |
| 600 | | | | | | | | | 540 | 460 | |
| 300 | | | | | | | | | | | |
| 300 | | | | | | | | | | | |
| 600 | | | | | | | | | | | |
| 300 | | | | | | | | | | | |
| 600 | | | | | | | | | | | |
| 300 | | | | | | | | | 270 | 230 | |
| 600 | | | | | | | | | 540 | 460 | |
| 300 | | | 250 | | | | | | | | |
| 300 | | | | 230 | 170 | | | | | | |
| 600 | | | | 460 | 340 | | | | | | |
| 300 | | | 250 | | | | | | | | |
| 300 | | | | 230 | 170 | | | | | | |
| 600 | | | | 460 | 340 | | | | | | |
| 300 | | | 250 | | | | | | | | |
| 300 | | | | 230 | 170 | | | | | | |
| 600 | | | | 460 | 340 | | | | | | |



ES3 Slider type Directly coupled without motor

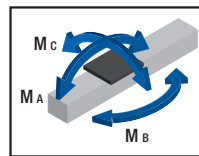
Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|------------|-----------------|---|---------------|---|----------------------|--|
| ES3 | 06 | 0150 | B | 0 | A | GR-SB |
| ES3 | 06: 6mm | 0050: 50mm to 0300: 300mm | B | 0: Without motor 1: With motor | A B | No symbol: Red cover GR: Change the cover color to gray SB: With slider base □₁□₂: Sensor |

Basic Specifications

| | | | |
|---|---|--|------|
| LM Guide (SRS9) | Basic dynamic load rating C [N] | 2690 | |
| | Basic static load rating C ₀ [N] | 2310 | |
| | Radial clearance [μm] | -2 to +2 | |
| Ball screw portion | Shaft diameter [mm] | φ6 | |
| | Lead [mm] | 6 | |
| | Basic dynamic load rating C _a [N] | 1400 | |
| | Basic static load rating C _{0a} [N] | 2440 | |
| | Root diameter [mm] | φ5.1 | |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating C _a [N] | 6550 |
| | | Static permissible load P _{0a} [N] | 2310 |
| | Permissible rotational speed [min ⁻¹] | 3000 | |
| Starting torque [N-mm] | | 8 | |
| Positioning repeatability [mm] * ² | | ±0.020 | |
| Lost motion [mm] * ² | | 0.1 | |
| Maximum input torque [N-m] | | 0.065 | |

Static Permissible Moment *¹

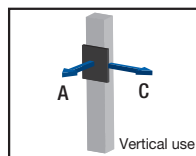
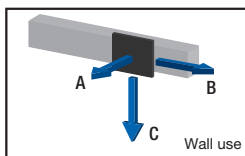
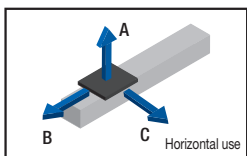


| | [N·m] |
|----------------|-------|
| M _A | 6.0 |
| M _B | 7.5 |
| M _C | 5.9 |

*¹ Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*² When the appropriate motor is used.

Reference Permissible Overhang Length *¹ *²

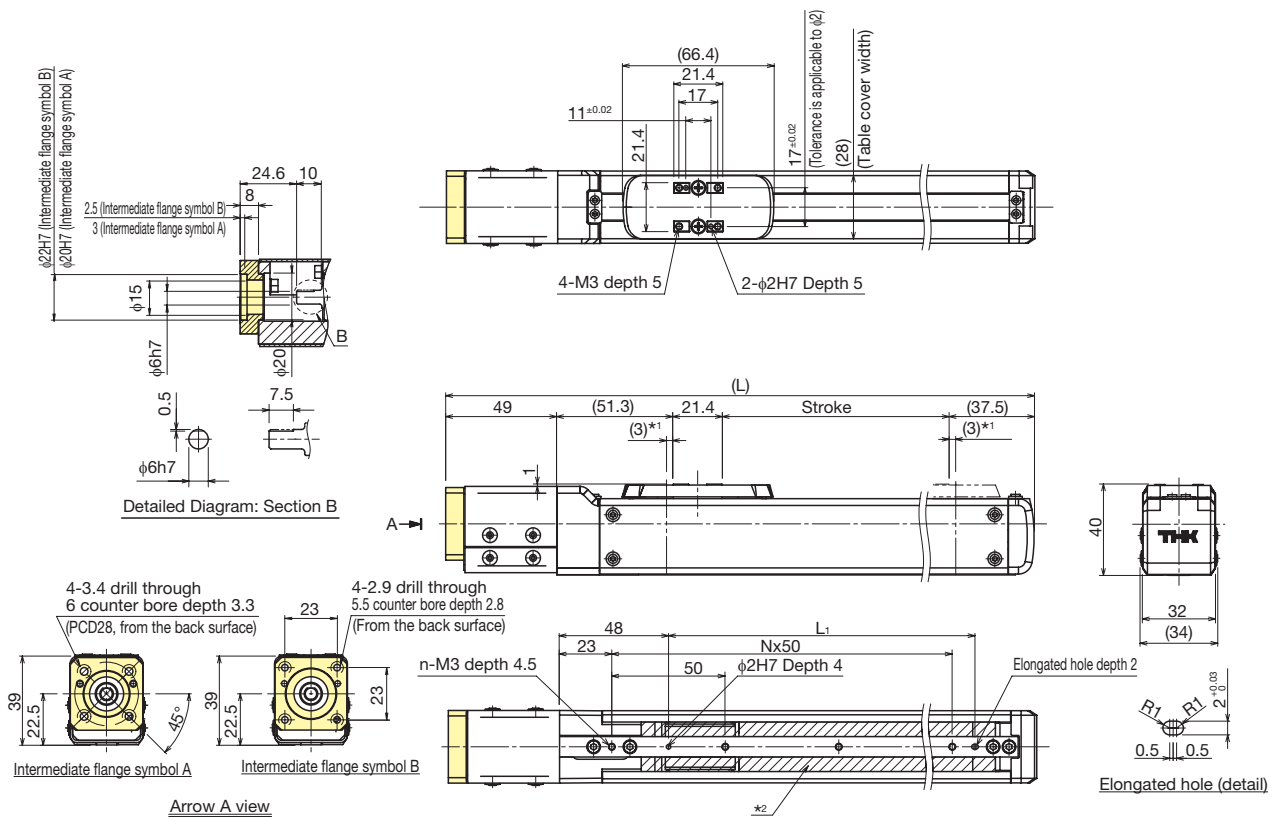


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 0.5 | 200 | 200 | 200 | 6 | 0.5 | 200 | 200 | 200 | 6 | 0.3 | 200 | 200 | |
| | 1 | 200 | 160 | 200 | | 1 | 170 | 150 | 200 | | 0.5 | 200 | 200 | |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



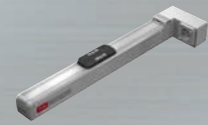
*1 This is a stroke between mechanical stoppers.

*2 indicates an opening.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) |
|---|----------------------|---------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | 300 | | | | | |
| Dimensions [mm] | L | 209.2 | 259.2 | 309.2 | 359.2 | 409.2 | 459.2 |
| | L ₁ | 85 | 135 | 185 | 235 | 285 | 335 |
| Mounting pitch count | N | 2 | 3 | 4 | 5 | 6 | 7 |
| Mounting hole count | n | 3 | 4 | 5 | 6 | 7 | 8 |
| Weight [kg] | | 0.65 | 0.7 | 0.8 | 0.85 | 0.9 | 0.95 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES3R Slider type Motor wrap

Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------------|-----------------|---|---------------|---|---------------------|--|
| ES3R | 06 | 0150 | B | 0 | A | MR-GR |
| ES3R | 06: 6mm | 0050: 50mm to 0300: 300mm | B | 0: Without motor 1: With motor | A | MR: Motor right-turn folded ML: Motor left-turn folded GR: Change the cover color to gray SB: With slider base □₁□₂: Sensor |

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

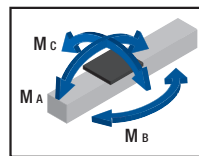
| | | | |
|---|---|--|------|
| LM Guide (SRS9) | Basic dynamic load rating C [N] | 2690 | |
| | Basic static load rating C ₀ [N] | 2310 | |
| | Radial clearance [μm] | -2 to +2 | |
| Ball screw portion | Shaft diameter [mm] | φ6 | |
| | Lead [mm] | 6 | |
| | Basic dynamic load rating C _a [N] | 1400 | |
| | Basic static load rating C _{0a} [N] | 2440 | |
| | Root diameter [mm] | φ5.1 | |
| Bearing portion (fixed side) | Axial direction | Ball center-to-center diameter [mm] | φ6.3 |
| | | Basic dynamic load rating C _a [N] | 6550 |
| | Permissible rotational speed [min ⁻¹] | Static permissible load P _{0a} [N] | 2310 |
| | | Starting torque * ¹ [N·mm] | 8 |
| Positioning repeatability [mm] * ³ | | ±0.020 | |
| Lost motion [mm] * ³ | | 0.1 | |
| Maximum input torque [N·m] | | 0.065 | |

*¹ Pulley and timing belt not included.

*² Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

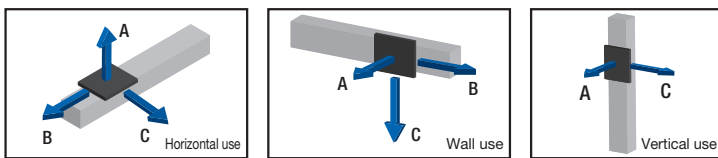
*³ When the appropriate motor is used.

Static Permissible Moment *²



| | [N·m] |
|----------------|-------|
| M _A | 6.0 |
| M _B | 7.5 |
| M _C | 5.9 |

Reference Permissible Overhang Length *¹ *²

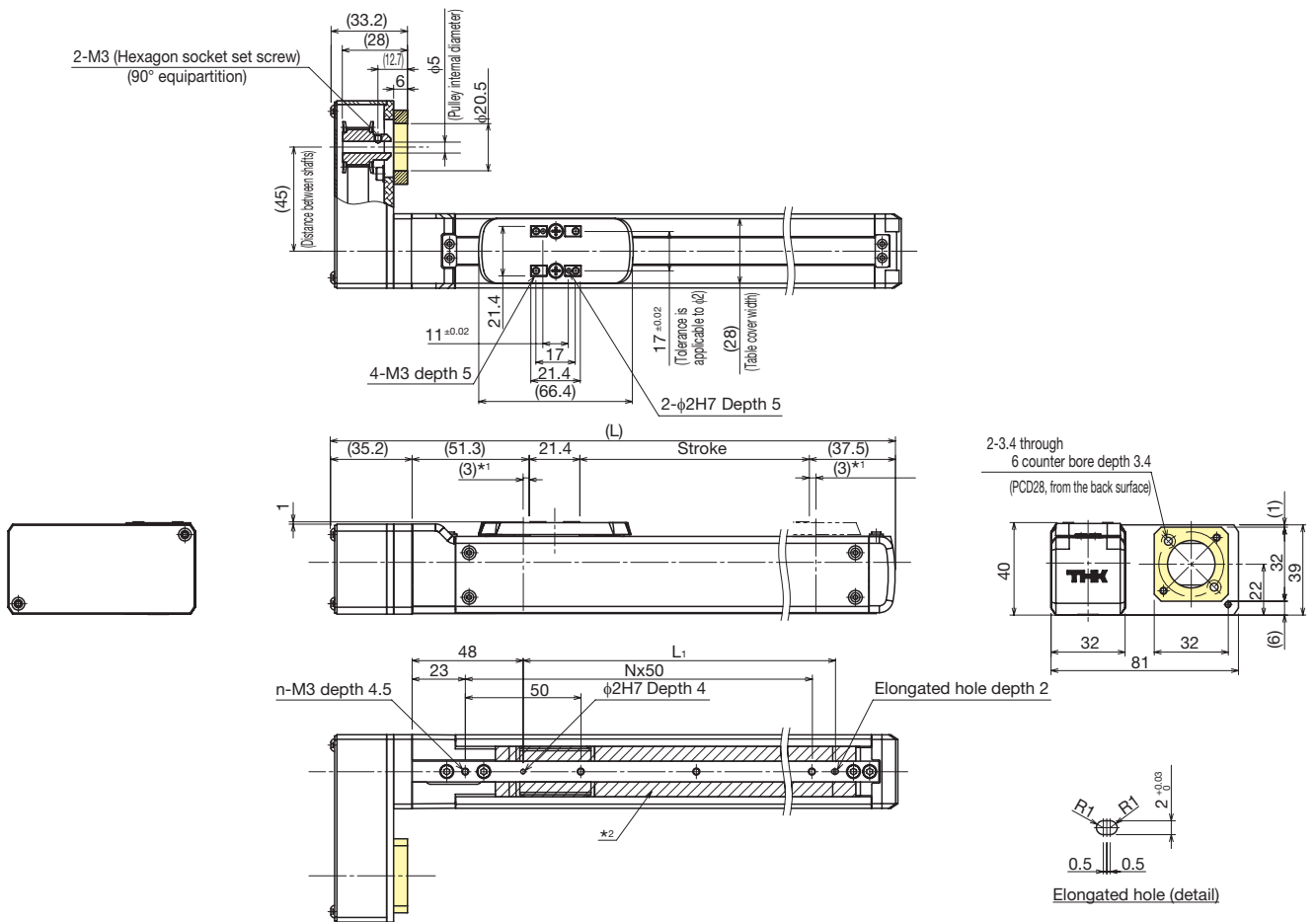


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 0.5 | 200 | 200 | 200 | 6 | 0.5 | 200 | 200 | 200 | 6 | 0.3 | 200 | 200 | |
| | 1 | 200 | 160 | 200 | | 1 | 170 | 150 | 200 | | 0.5 | 200 | 200 | |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

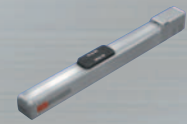


*1 This is a stroke between mechanical stoppers.
 *2 indicates an opening.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) |
|---|----------------------|---------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed *1*2 [mm/s] | Ball screw lead: 6mm | 300 | | | | | |
| Dimensions [mm] | L | 195.4 | 245.4 | 295.4 | 345.4 | 395.4 | 445.4 |
| | L ₁ | 85 | 135 | 185 | 235 | 285 | 335 |
| Mounting pitch count | N | 2 | 3 | 4 | 5 | 6 | 7 |
| Mounting hole count | n | 3 | 4 | 5 | 6 | 7 | 8 |
| Weight [kg] | | 0.65 | 0.7 | 0.8 | 0.85 | 0.9 | 0.95 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES4 Slider type Directly coupled without motor

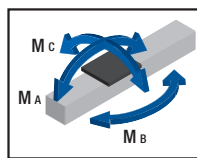
Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------|---------------|--------------------|---------------------|--|
| ES4 | 06 | 0150 | B | 0 | A | GR-SB |
| ES4 | 06: 6mm | 0050: 50mm | B | 0: Without motor | A | No symbol: Red cover |
| | 12: 12mm | to | | 1: With motor | B | GR: Change the cover color to gray |
| | | 0400: 400mm | | | | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Basic Specifications

| | | | |
|-----------------------------------|---|---|-----------|
| LM Guide (SRS9W) | Basic dynamic load rating C [N] | | 3290 |
| | Basic static load rating Co [N] | | 3340 |
| | Radial clearance [μm] | | -2 to +2 |
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating Ca [N] | | 1770 920 |
| | Basic static load rating Coa [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| | Ball center-to-center diameter [mm] | | φ8.4 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating Ca [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| | Permissible rotational speed [min ⁻¹] | | 3000 |
| Starting torque [N-mm] | | 12 21 | |
| Positioning repeatability [mm] *2 | | ±0.020 | |
| Lost motion [mm] *2 | | 0.1 | |
| Maximum input torque [N-m] | | 0.16 | |

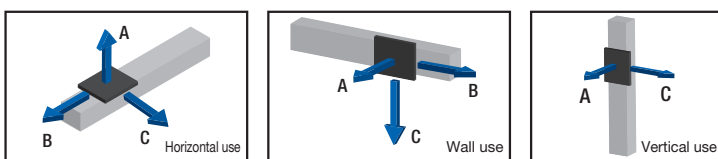
Static Permissible Moment *1



| | [N·m] |
|----|-------|
| MA | 9.3 |
| MB | 13.5 |
| MC | 17.7 |

*1 Maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.
 *2 When the appropriate motor is used.

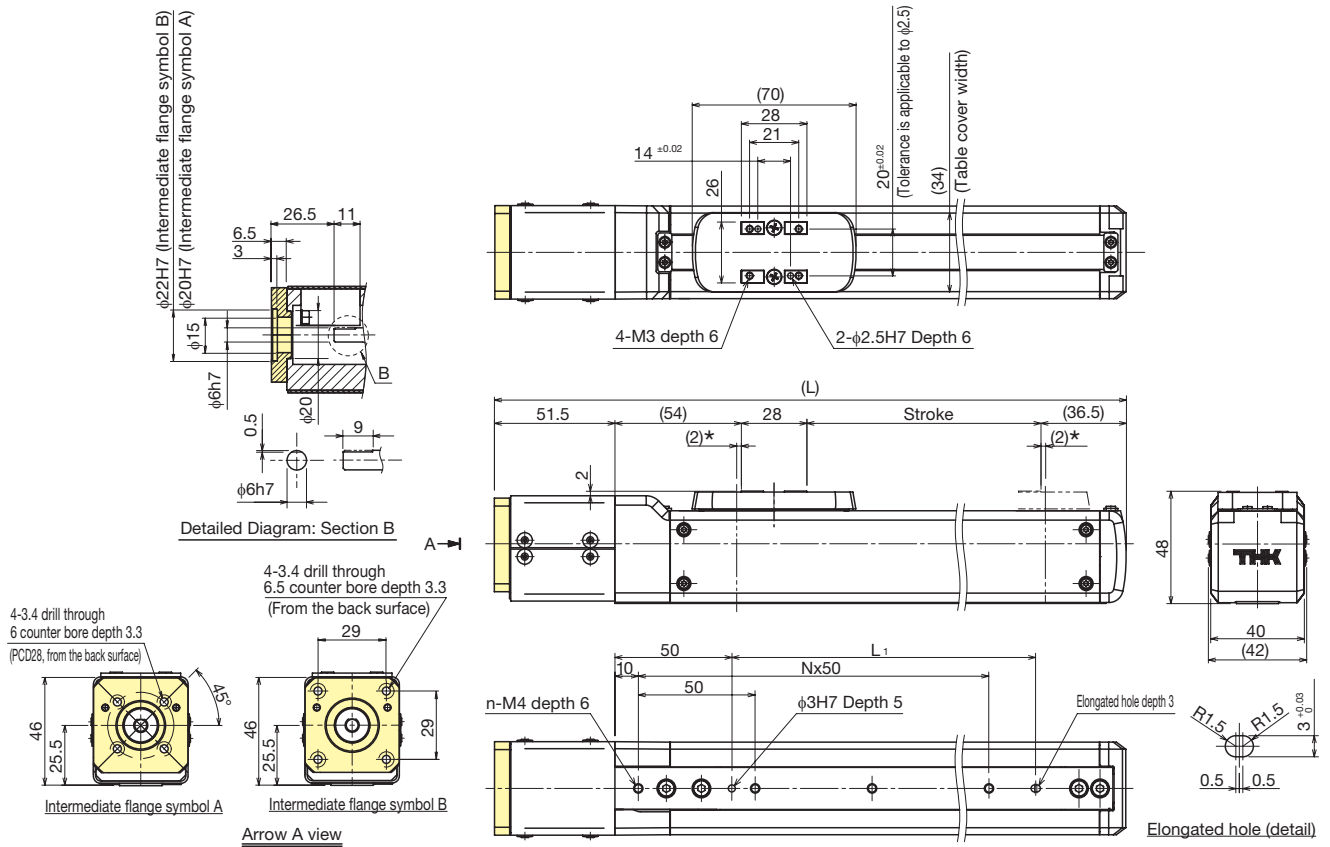
Reference Permissible Overhang Length *1 *2



| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|----|-----|----------------------|----------------|----|----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 4.5 | 300 | 50 | 100 | 6 | 4.5 | 60 | 30 | 300 | 6 | 2 | 100 | 110 | |
| | 9 | 160 | 20 | 40 | | 9 | 10 | 5 | 70 | | 4 | 30 | 40 | |
| 12 | 3.8 | 260 | 60 | 100 | 12 | 3.8 | 70 | 40 | 220 | 12 | 0.8 | 260 | 300 | |
| | 7.5 | 110 | 20 | 40 | | 7.5 | 10 | 10 | 50 | | 1.5 | 130 | 150 | |

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.
 *2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



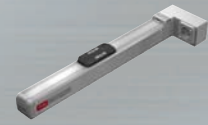
* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (54) | 100 (104) | 150 (154) | 200 (204) | 250 (254) | 300 (304) | 350 (354) | 400 (404) |
|---|-----------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed *1*2 [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | |
| | Ball screw lead: 12mm | 600 | | | | | | | |
| Dimensions [mm] | L | 220 | 270 | 320 | 370 | 420 | 470 | 520 | 570 |
| | L ₁ | 80 | 130 | 180 | 230 | 280 | 330 | 380 | 430 |
| Mounting pitch count | N | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Mounting hole count | n | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Weight [kg] | | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES4R Slider type Motor wrap



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------|---------------|--------------------|---------------------|--|
| ES4R | 06 | 0150 | B | 0 | A | MR-GR |
| ES4R | 06: 6mm | 0050: 50mm | B | 0: Without motor | A | MR: Motor right-turn folded |
| | 12: 12mm | to | | 1: With motor | | ML: Motor left-turn folded |
| | | 0400: 400mm | | | | GR: Change the cover color to gray |
| | | | | | | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

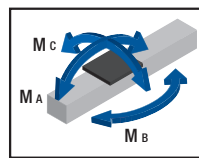
| | | | |
|---|--|--|--------------|
| LM Guide (SRS9W) | Basic dynamic load rating C [N] | | 3290 |
| | Basic static load rating C ₀ [N] | | 3340 |
| | Radial clearance [μm] | | -2 to +2 |
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating C _a [N] | | 1770 920 |
| | Basic static load rating C _{0a} [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| Bearing portion (fixed side) | Ball center-to-center diameter [mm] | | φ8.4 |
| | Axial direction | Basic dynamic load rating C _a [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| Permissible rotational speed [min ⁻¹] | | 3000 | |
| Starting torque * ¹ [N-mm] | | 12 21 | |
| Positioning repeatability [mm] * ³ | | ±0.020 | |
| Lost motion [mm] * ³ | | 0.1 | |
| Maximum input torque [N-m] | | 0.16 | |

*¹ Pulley and timing belt not included.

*² Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*³ When the appropriate motor is used.

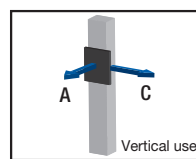
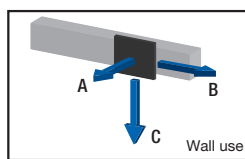
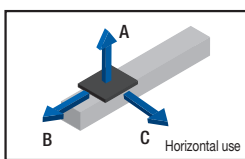
Static Permissible Moment *²



[N-m]

| | |
|----------------|------|
| M _A | 9.3 |
| M _B | 13.5 |
| M _C | 17.7 |

Reference Permissible Overhang Length *¹ *²

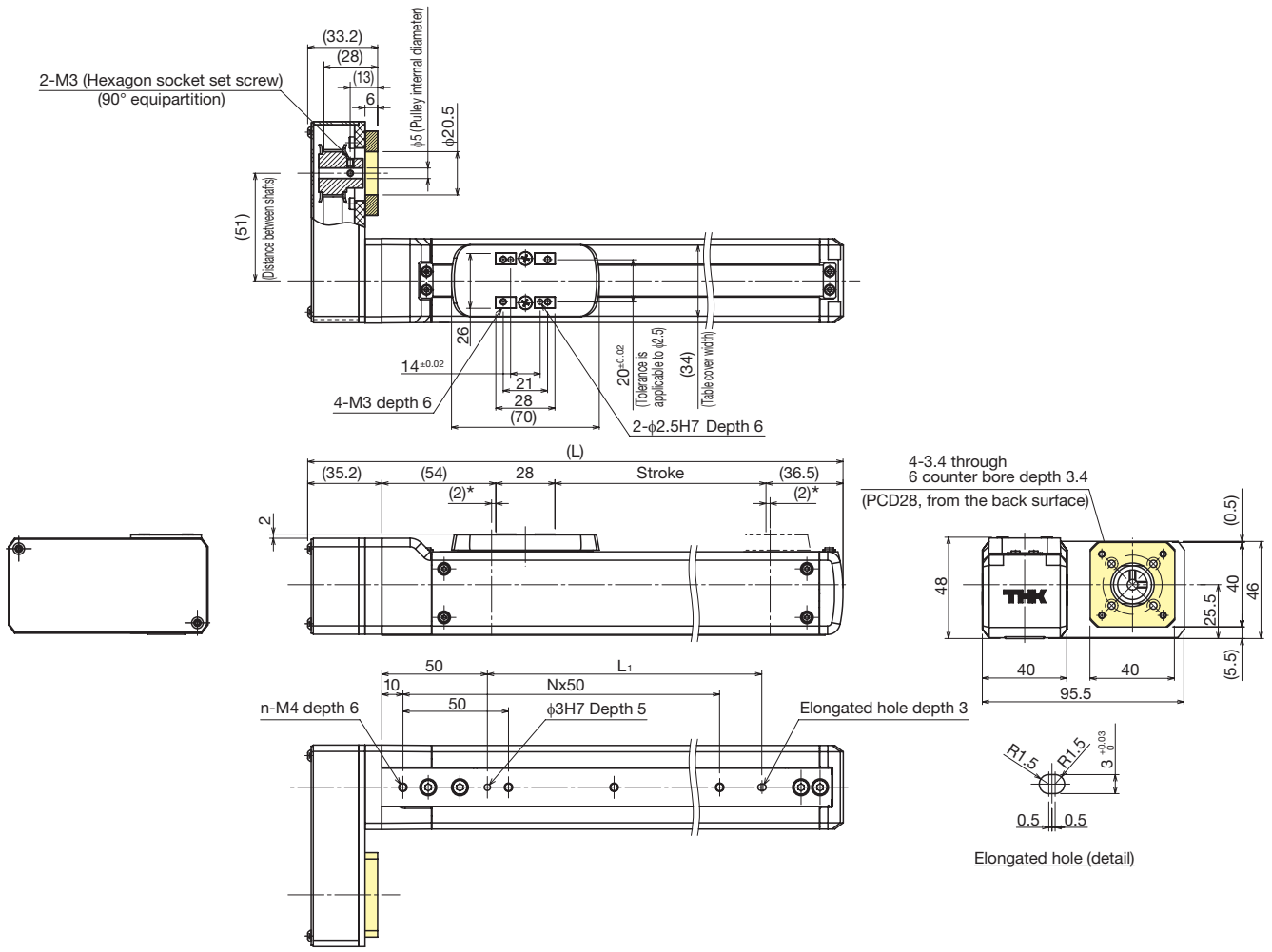


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C |
| 6 | 2 | 300 | 120 | 240 | 6 | 2 | 210 | 110 | 300 | 6 | 0.8 | 280 | 300 |
| | 4 | 300 | 50 | 110 | | 4 | 80 | 40 | 300 | | 1.5 | 140 | 160 |
| 12 | 1 | 300 | 240 | 300 | 12 | 1 | 300 | 260 | 300 | 12 | 0.5 | 300 | 300 |
| | 2 | 300 | 120 | 200 | | 2 | 170 | 110 | 300 | | 1 | 210 | 240 |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

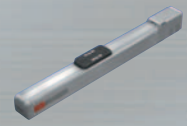


* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (54) | 100 (104) | 150 (154) | 200 (204) | 250 (254) | 300 (304) | 350 (354) | 400 (404) |
|---|-----------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed ^{*1*} [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | |
| | Ball screw lead: 12mm | 600 | | | | | | | |
| Dimensions [mm] | L | 203.7 | 253.7 | 303.7 | 353.7 | 403.7 | 453.7 | 503.7 | 553.7 |
| | L ₁ | 80 | 130 | 180 | 230 | 280 | 330 | 380 | 430 |
| Mounting pitch count | N | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Mounting hole count | n | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Weight [kg] | | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES5 Slider type Directly coupled without motor

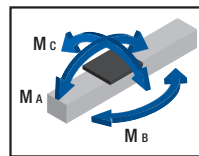
Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------|---------------|--------------------|---------------------|--|
| ES5 | 06 | 0150 | B | 0 | B | GR-SB |
| ES5 | 06: 6mm | 0050: 50mm | B | 0: Without motor | N | No symbol: Red cover |
| | 12: 12mm | to | | 1: With motor | B | GR: Change the cover color to gray |
| | | 0500: 500mm | | | C | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Basic Specifications

| | | | |
|---|---|--|-----------|
| LM Guide (SRS12W) | Basic dynamic load rating C [N] | | 5480 |
| | Basic static load rating C ₀ [N] | | 5300 |
| | Radial clearance [μm] | | -3 to +3 |
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating C _a [N] | | 1770 920 |
| | Basic static load rating C _{0a} [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| | Ball center-to-center diameter [mm] | | φ8.4 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating C _a [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| | Permissible rotational speed [min ⁻¹] | | 3000 |
| Starting torque [N·mm] | | 14 27 | |
| Positioning repeatability [mm] * ² | | ±0.020 | |
| Lost motion [mm] * ² | | 0.1 | |
| Maximum input torque [N·m] | | 0.35 | |

Static Permissible Moment *¹

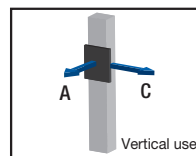
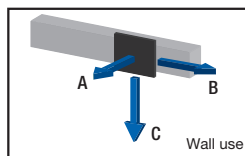
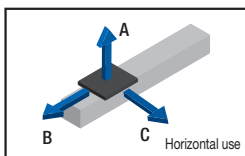


| | [N·m] |
|----------------|-------|
| M _A | 10.5 |
| M _B | 22 |
| M _C | 22.1 |

*¹ Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*² When the appropriate motor is used.

Reference Permissible Overhang Length *¹ *²

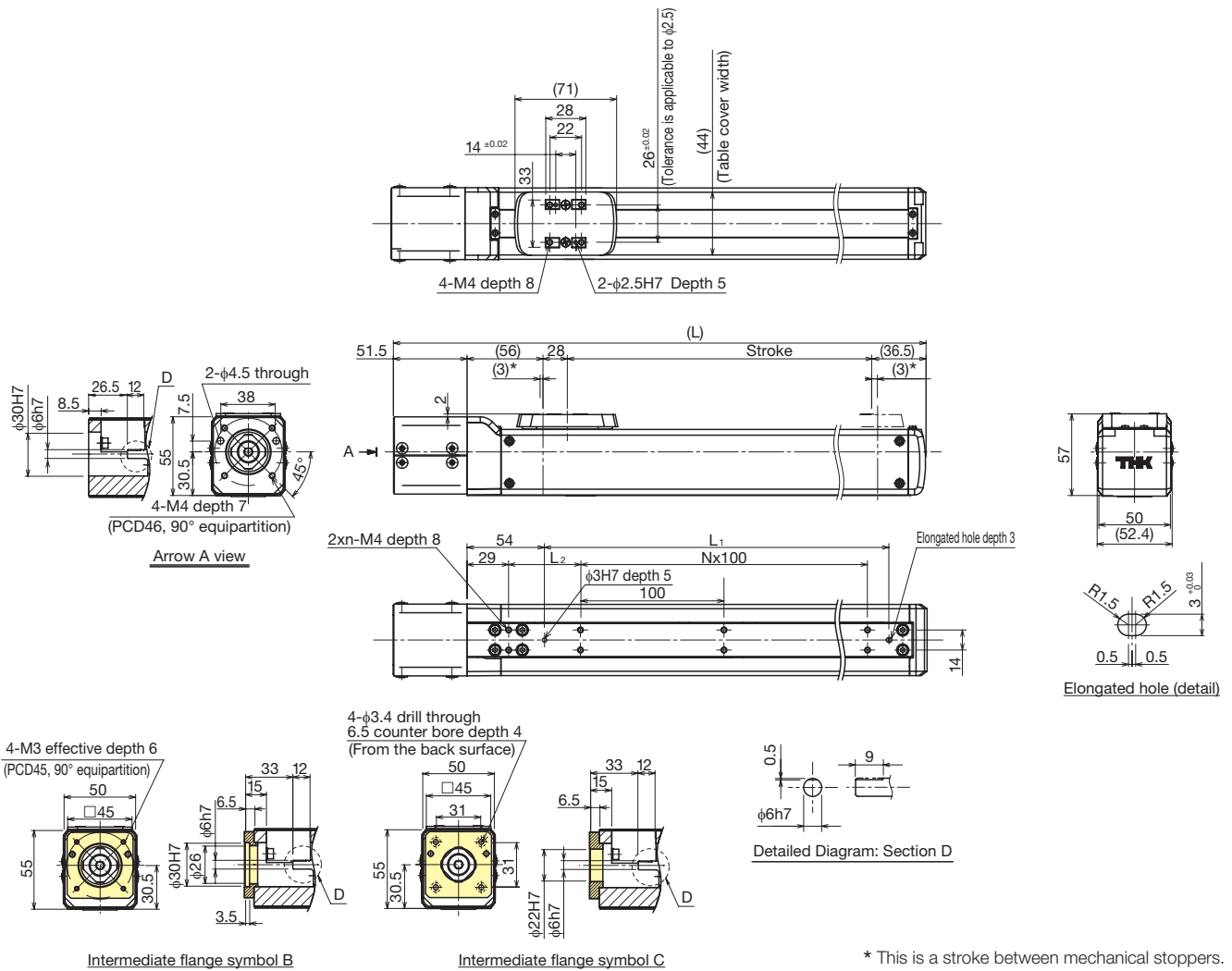


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 5 | 400 | 90 | 200 | 6 | 5 | 160 | 70 | 400 | 6 | 2.5 | 160 | 160 | |
| | 10 | 270 | 40 | 90 | | 10 | 50 | 20 | 220 | | 5 | 70 | 70 | |
| 12 | 3 | 400 | 160 | 280 | 12 | 3 | 260 | 130 | 400 | 12 | 1 | 400 | 400 | |
| | 6 | 320 | 70 | 130 | | 6 | 100 | 50 | 250 | | 2 | 200 | 200 | |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



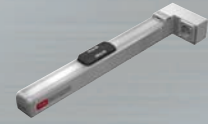
* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) | 350 (356) | 400 (406) | 450 (456) | 500 (506) |
|---|-----------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | | | |
| | Ball screw lead: 12mm | 600 | | | | | | | | | |
| Dimensions [mm] | L | 222 | 272 | 322 | 372 | 422 | 472 | 522 | 572 | 622 | 672 |
| | L ₁ | 90 | 140 | 190 | 240 | 290 | 340 | 390 | 440 | 490 | 540 |
| | L ₂ | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 |
| Mounting pitch count | N | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| Mounting hole count | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| Weight [kg] | | 1.5 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.4 | 2.5 | 2.6 | 2.8 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES5R Slider type Motor wrap



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|------------------|---------------|--------------------|---------------------|--|
| ES5R | 06 | 0150 | B | 0 | A | MR-GR |
| ES5R | 06: 6mm | 0050: 50mm to | B | 0: Without motor | A | MR: Motor right-turn folded |
| | 12: 12mm | 0500: 500mm | | 1: With motor | | ML: Motor left-turn folded |
| | | | | | | GR: Change the cover color to gray |
| | | | | | | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

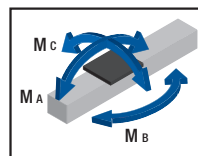
| | | | |
|---|--|--|--------------|
| LM Guide (SRS12W) | Basic dynamic load rating C [N] | | 5480 |
| | Basic static load rating C ₀ [N] | | 5300 |
| | Radial clearance [μm] | | -3 to +3 |
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating C _a [N] | | 1770 920 |
| | Basic static load rating C _{0a} [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| | Ball center-to-center diameter [mm] | | φ8.4 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating C _a [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| Permissible rotational speed [min ⁻¹] | | 3000 | |
| Starting torque *1 [N-mm] | | 14 | 27 |
| Positioning repeatability [mm] *3 | | ±0.020 | |
| Lost motion [mm] *3 | | 0.1 | |
| Maximum input torque [N-m] | | 0.35 | |

*1 Pulley and timing belt not included.

*2 Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

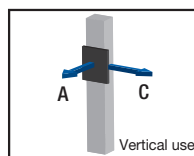
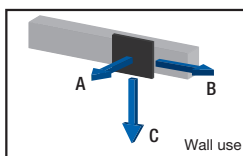
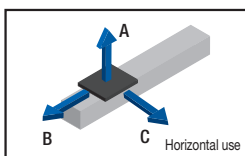
*3 When the appropriate motor is used.

Static Permissible Moment *2



| | [N-m] |
|----------------|-------|
| M _A | 10.5 |
| M _B | 22 |
| M _C | 22.1 |

Reference Permissible Overhang Length *1 *2

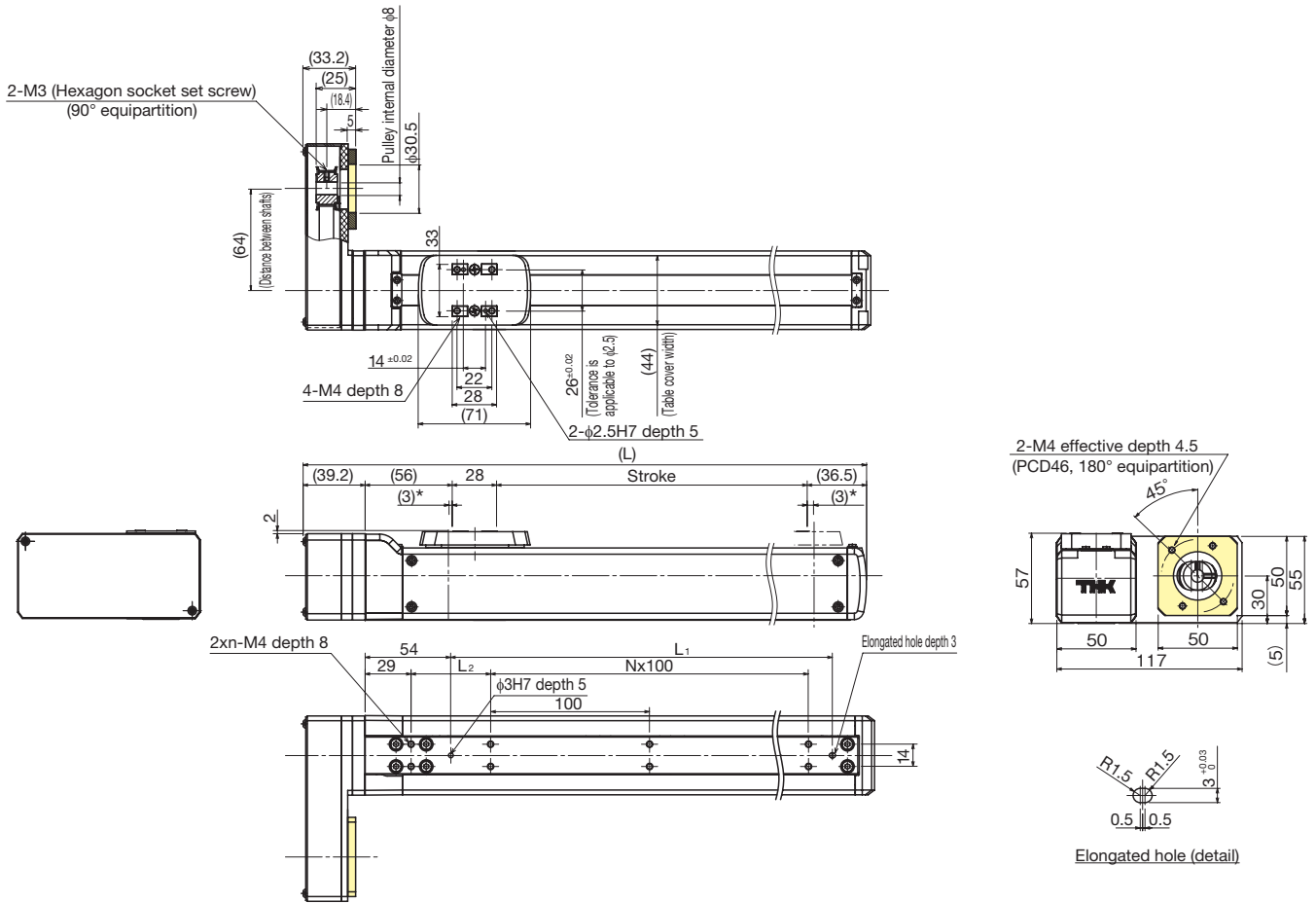


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 4 | 400 | 110 | 260 | 6 | 4 | 220 | 90 | 400 | 6 | 1 | 400 | 400 | |
| | 8 | 340 | 50 | 120 | | 8 | 80 | 30 | 320 | | 2 | 210 | 210 | |
| 12 | 3 | 400 | 160 | 280 | 12 | 3 | 260 | 130 | 400 | 12 | 0.5 | 400 | 400 | |
| | 6 | 320 | 70 | 130 | | 6 | 100 | 50 | 250 | | 1 | 400 | 400 | |

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



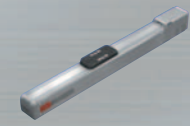
* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) | 350 (356) | 400 (406) | 450 (456) | 500 (506) |
|---|-----------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | | | |
| | Ball screw lead: 12mm | 600 | | | | | | | | | |
| Dimensions [mm] | L | 209.7 | 259.7 | 309.7 | 359.7 | 409.7 | 459.7 | 509.7 | 559.7 | 609.7 | 659.7 |
| | L ₁ | 90 | 140 | 190 | 240 | 290 | 340 | 390 | 440 | 490 | 540 |
| | L ₂ | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 |
| Mounting pitch count | N | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| Mounting hole count | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| Weight [kg] | | 1.5 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES6 Slider type Directly coupled without motor



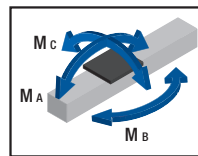
Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------|---------------|--------------------|---------------------|--|
| ES6 | 06 | 0150 | B | 0 | A | GR-SB |
| ES6 | 06: 6mm | 0050: 50mm | B | 0: Without motor | N | No symbol: Red cover |
| | 12: 12mm | to | | 1: With motor | B | GR: Change the cover color to gray |
| | | 0600: 600mm | | | C | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Basic Specifications

| | | | |
|---|--|--|--------------|
| LM Guide (SRS12W) | Basic dynamic load rating C [N] | | 5480 |
| | Basic static load rating C ₀ [N] | | 5300 |
| | Radial clearance [μm] | | -3 to +3 |
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating C _a [N] | | 1770 920 |
| | Basic static load rating C _{0a} [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| | Ball center-to-center diameter [mm] | | φ8.4 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating C _a [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| Permissible rotational speed [min ⁻¹] | | 3000 | |
| Starting torque [N·mm] | | 15 | 29 |
| Positioning repeatability [mm] * ² | | ±0.020 | |
| Lost motion [mm] * ² | | 0.1 | |
| Maximum input torque [N·m] | | 0.35 | |

Static Permissible Moment *¹

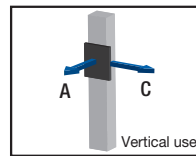
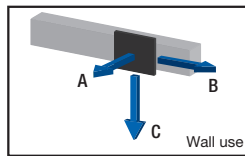
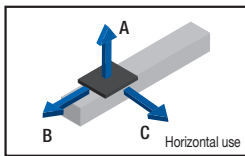


| | [N·m] |
|----------------|-------|
| M _A | 10.5 |
| M _B | 22 |
| M _C | 22.1 |

*¹ Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*² When the appropriate motor is used.

Reference Permissible Overhang Length *¹ *²

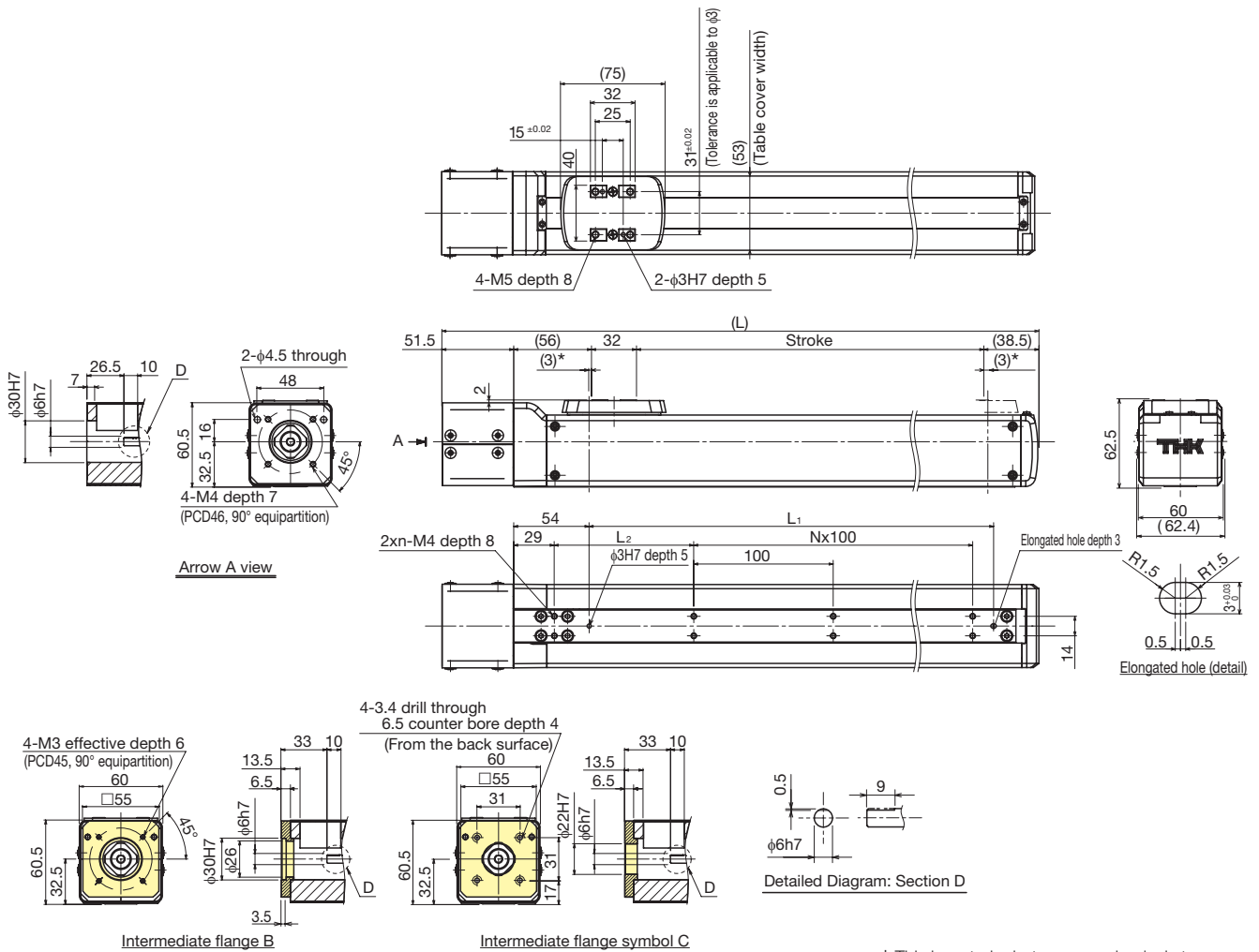


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 5 | 500 | 90 | 200 | 6 | 5 | 160 | 70 | 500 | 6 | 2.5 | 160 | 160 | |
| | 10 | 260 | 40 | 90 | | 10 | 40 | 20 | 210 | | 5 | 60 | 60 | |
| 12 | 3 | 500 | 160 | 280 | 12 | 3 | 250 | 130 | 500 | 12 | 1 | 420 | 420 | |
| | 6 | 320 | 70 | 130 | | 6 | 90 | 50 | 240 | | 2 | 190 | 190 | |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

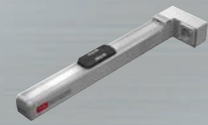


* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) | 350 (356) | 400 (406) | 450 (456) | 500 (506) | 550 (556) | 600 (606) |
|---|-----------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | | | | 270 | 230 |
| | Ball screw lead: 12mm | 600 | | | | | | | | | | 540 | 460 |
| Dimensions [mm] | L | 228 | 278 | 328 | 378 | 428 | 478 | 528 | 578 | 628 | 678 | 728 | 778 |
| | L ₁ | 90 | 140 | 190 | 240 | 290 | 340 | 390 | 440 | 490 | 540 | 590 | 640 |
| | L ₂ | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 |
| Mounting pitch count | N | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 |
| Mounting hole count | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 |
| Weight [kg] | | 1.9 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.9 | 3.0 | 3.2 | 3.3 | 3.5 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES6R Slider type Motor wrap

Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|---------------------------------|---------------|-----------------------------------|---------------------|--|
| ES6R | 06 | 0150 | B | 0 | A | MR-GR |
| ES6R | 06: 6mm | 0050: 50mm to 0600: 600mm | B | 0: Without motor 1: With motor | A | MR: Motor right-turn folded |
| | 12: 12mm | | | | | ML: Motor left-turn folded |
| | | | | | | GR: Change the cover color to gray |
| | | | | | | SB: With slider base |
| | | | | | | □ ₁ □ ₂ : Sensor |

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

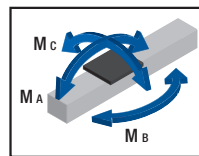
| | | | |
|------------------------------|---|--|------|
| LM Guide (SRS12W) | Basic dynamic load rating C [N] | 5480 | |
| | Basic static load rating C ₀ [N] | 5300 | |
| | Radial clearance [μm] | -3 to +3 | |
| Ball screw portion | Shaft diameter [mm] | φ8 | |
| | Lead [mm] | 6 | 12 |
| | Basic dynamic load rating C _a [N] | 1770 | 920 |
| | Basic static load rating C _{0a} [N] | 3040 | 1600 |
| | Root diameter [mm] | φ6.8 | |
| | Ball center-to-center diameter [mm] | φ8.4 | |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating C _a [N] | 8000 |
| | | Static permissible load P _{0a} [N] | 3240 |
| | Permissible rotational speed [min ⁻¹] | 3000 | |
| | Starting torque * ¹ [N-mm] | 15 | 29 |
| | Positioning repeatability [mm] * ³ | ±0.020 | |
| | Lost motion [mm] * ³ | 0.1 | |
| | Maximum input torque [N-m] | 0.35 | |

*¹ Pulley and timing belt not included.

*² Maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

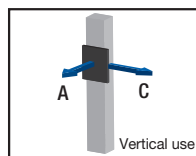
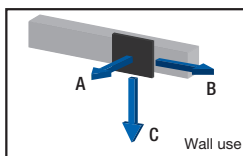
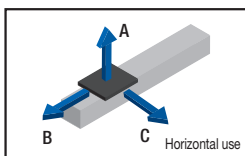
*³ When the appropriate motor is used.

Static Permissible Moment *²



| | [N-m] |
|----------------|-------|
| M _A | 10.5 |
| M _B | 22 |
| M _C | 22.1 |

Reference Permissible Overhang Length *¹ *²

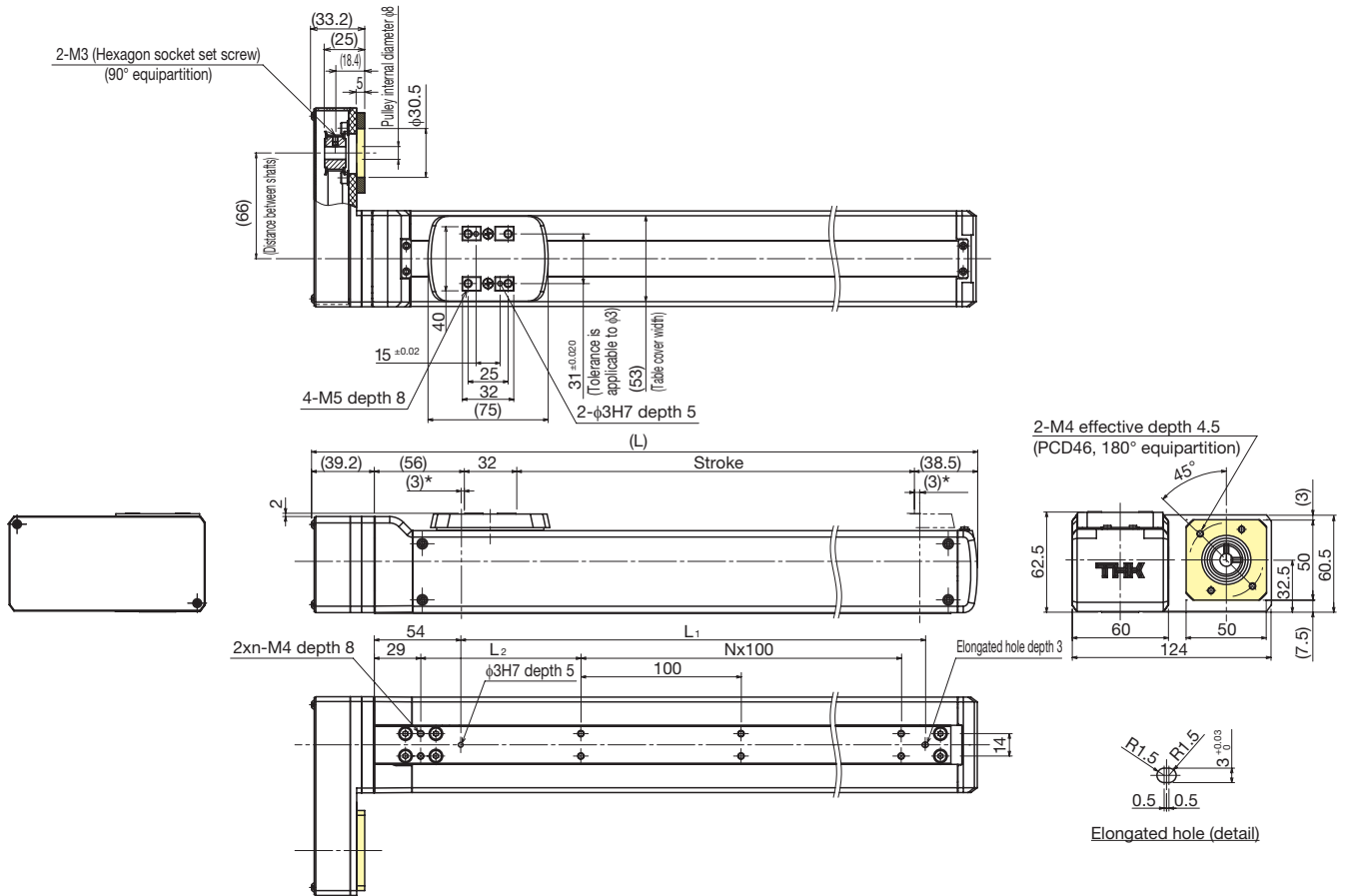


| Horizontal mount [mm] | | | | | Wall mount [mm] | | | | | Vertical mount [mm] | | | | |
|-----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|-----|----------------------|----------------|-----|-----|--|
| Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | B | C | Ball screw lead [mm] | Load mass [kg] | A | C | |
| 6 | 4 | 500 | 110 | 260 | 6 | 4 | 210 | 90 | 500 | 6 | 1 | 450 | 450 | |
| | 8 | 340 | 50 | 120 | | 8 | 70 | 30 | 300 | | 2 | 210 | 210 | |
| 12 | 3 | 500 | 160 | 280 | 12 | 3 | 250 | 130 | 500 | 12 | 0.5 | 500 | 500 | |
| | 6 | 320 | 70 | 130 | | 6 | 90 | 50 | 240 | | 1 | 420 | 420 | |

*¹ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*² Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



* This is a stroke between mechanical stoppers.

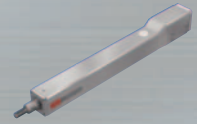
| Stroke [mm] (Stroke between mechanical stoppers) | 50 (56) | 100 (106) | 150 (156) | 200 (206) | 250 (256) | 300 (306) | 350 (356) | 400 (406) | 450 (456) | 500 (506) | 550 (556) | 600 (606) | |
|--|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------|
| Maximum speed ^{*1*} ^{*2} [mm/s] | Ball screw lead: 6mm | 300 | | | | | | | | | | 270 | 230 |
| | Ball screw lead: 12mm | 600 | | | | | | | | | | 540 | 460 |
| Dimensions [mm] | L | 215.7 | 265.7 | 315.7 | 365.7 | 415.7 | 465.7 | 515.7 | 565.7 | 615.7 | 665.7 | 715.7 | 765.7 |
| | L ₁ | 90 | 140 | 190 | 240 | 290 | 340 | 390 | 440 | 490 | 540 | 590 | 640 |
| | L ₂ | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 50 |
| Mounting pitch count | N | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 |
| Mounting hole count | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 |
| Weight [kg] | | 1.9 | 2.0 | 2.1 | 2.2 | 2.4 | 2.6 | 2.7 | 2.8 | 3.0 | 3.1 | 3.3 | 3.4 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3

Cylinder type Directly coupled without motor



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|------------|-----------------|---|---------------|---|----------------------|--|
| EC3 | 06 | 0150 | B | 0 | A | FL-LB |
| EC3 | 06: 6mm | 0050: 50mm to 0200: 200mm | B | 0: Without motor 1: With motor | A B | No symbol: None CB: With cylinder base FL: With flange LB: With link ball |

Basic Specifications

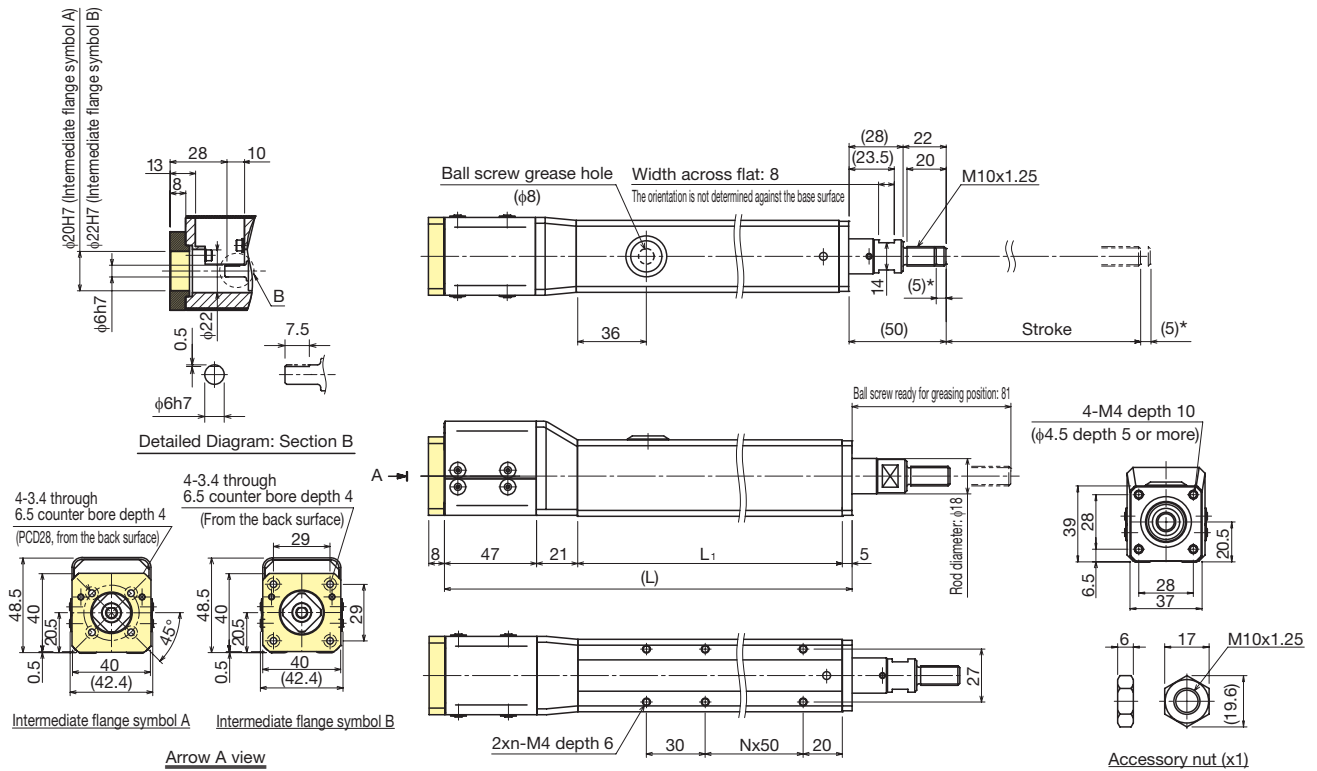
| | | | |
|---|----------------------------------|----------------------------------|--------|
| Ball screw portion | Shaft diameter [mm] | | φ6 |
| | Lead [mm] | | 6 |
| | Basic dynamic load rating Ca [N] | | 1400 |
| | Basic static load rating C0a [N] | | 2440 |
| | Root diameter [mm] | | φ5.1 |
| Ball center-to-center diameter [mm] | | φ6.3 | |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating Ca [N] | 6550 |
| | | Static permissible load P0a [N] | 2310 |
| Permissible rotational speed [min ⁻¹] | | | 3000 |
| Starting torque [N-mm] | | | 14 |
| Positioning repeatability [mm] * | | | ±0.020 |
| Lost motion [mm] * | | | 0.1 |
| Maximum input torque [N-m] | | | 0.16 |

* When appropriate motor is used.

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

Dimensions



* This is a stroke between mechanical stoppers.

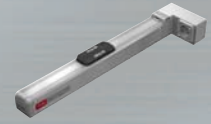
| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) |
|---|----------------------|---------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | | 300 | | 250 |
| Dimensions [mm] | L | 208 | 258 | 308 | 358 |
| | L ₁ | 135 | 185 | 235 | 285 |
| Mounting pitch count | N | 1 | 2 | 3 | 4 |
| Mounting hole count | n | 3 | 4 | 5 | 6 |
| Weight [kg] | | 1.0 | 1.2 | 1.4 | 1.6 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3R

Cylinder type Motor wrap



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------------|-----------------|---|---------------|---|---------------------|---|
| EC3R | 06 | 0150 | B | 0 | A | MR-FL-LB |
| EC3R | 06: 6mm | 0050: 50mm to 0200: 200mm | B | 0: Without motor 1: With motor | A | MR: Motor right-turn folded ML: Motor left-turn folded CB: With cylinder base FL: With flange LB: With link ball |

Basic Specifications

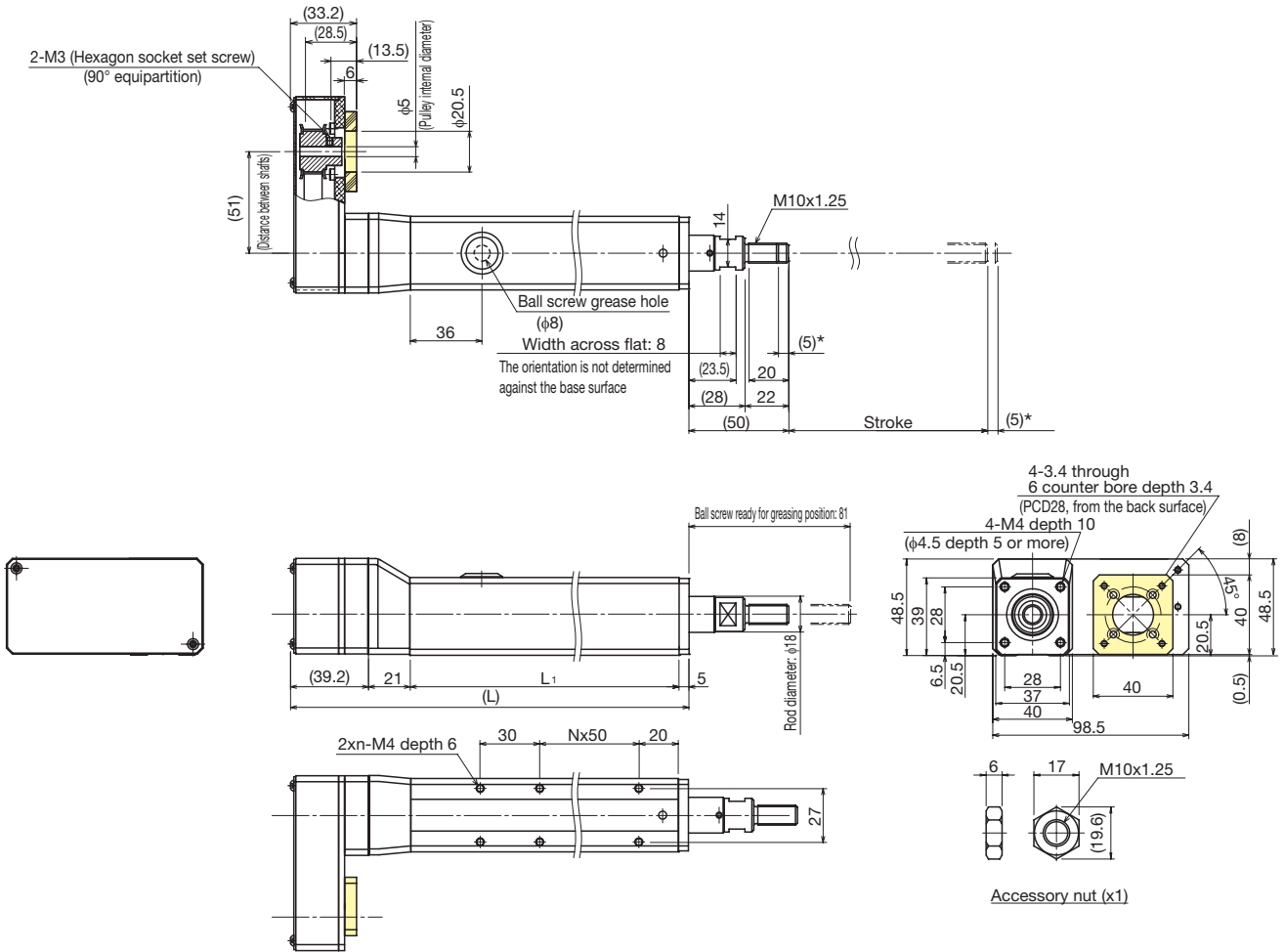
| | | | |
|-----------------------------------|---|----------------------------------|------|
| Ball screw portion | Shaft diameter [mm] | | φ6 |
| | Lead [mm] | | 6 |
| | Basic dynamic load rating Ca [N] | | 1400 |
| | Basic static load rating C0a [N] | | 2440 |
| | Root diameter [mm] | | φ5.1 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating Ca [N] | 6550 |
| | | Static permissible load P0a [N] | 2310 |
| | Permissible rotational speed [min ⁻¹] | | 3000 |
| Starting torque *1 [N·mm] | | 14 | |
| Positioning repeatability [mm] *2 | | ±0.020 | |
| Lost motion [mm] *2 | | 0.1 | |
| Maximum input torque [N·m] | | 0.16 | |

*1 Pulley and timing belt not included.

*2 When appropriate motor is used.

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide. Take into account the sliding resistance of LM Guide when making selection.

Dimensions



* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) |
|---|----------------------|---------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | | 300 | | 250 |
| Dimensions [mm] | L | 200.2 | 250.2 | 300.2 | 350.2 |
| | L ₁ | 135 | 185 | 235 | 285 |
| Mounting pitch count | N | 1 | 2 | 3 | 4 |
| Mounting hole count | n | 3 | 4 | 5 | 6 |
| Weight [kg] | | 1.0 | 1.2 | 1.4 | 1.6 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3H

Cylinder type Directly coupled without motor/with linear bush



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------------|-----------------|---|---------------|---|----------------------|---|
| EC3H | 06 | 0150 | B | 0 | A | CB |
| EC3H | 06: 6mm | 0050: 50mm to 0200: 200mm | B | 0: Without motor 1: With motor | A B | No symbol: None CB: With cylinder base |

Basic Specifications

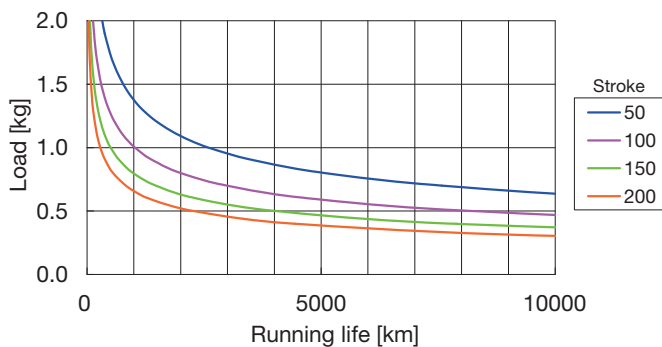
| | | | |
|---|----------------------------------|----------------------------------|--------|
| Ball screw portion | Shaft diameter [mm] | | φ6 |
| | Lead [mm] | | 6 |
| | Basic dynamic load rating Ca [N] | | 1400 |
| | Basic static load rating C0 [N] | | 2440 |
| | Root diameter [mm] | | φ5.1 |
| Ball center-to-center diameter [mm] | | φ6.3 | |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating Ca [N] | 6550 |
| | | Static permissible load P0a [N] | 2310 |
| Linear bush unit (LMK8LUU) | Basic dynamic load rating C [N] | | 265 |
| | Basic static load rating C0 [N] | | 402 |
| Permissible rotational speed [min ⁻¹] | | | 3000 |
| Starting torque [N·mm] | | | 18 |
| Positioning repeatability [mm] * | | | ±0.020 |
| Lost motion [mm] * | | | 0.1 |
| Maximum input torque [N·m] | | | 0.16 |

* When appropriate motor is used.

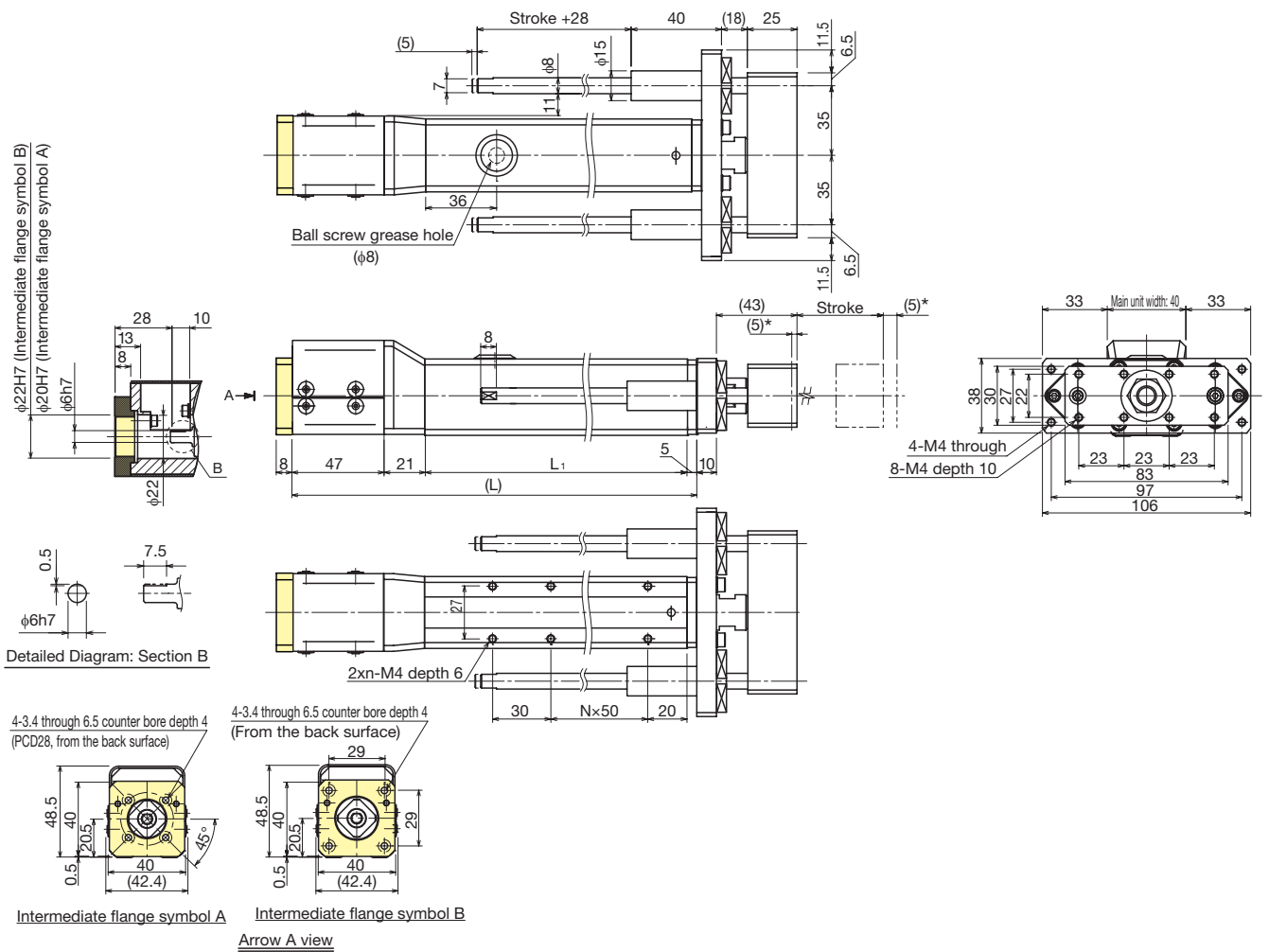
Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide. Take into account the sliding resistance of LM Guide when making selection.

Reference Load and Running Life

Running life varies when a load is applied to the end without using an LM guide, as shown below.



Dimensions



* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) |
|---|----------------------|---------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | | 300 | | 250 |
| Dimensions [mm] | L | 208 | 258 | 308 | 358 |
| | L ₁ | 135 | 185 | 235 | 285 |
| Mounting pitch count | N | 1 | 2 | 3 | 4 |
| Mounting hole count | n | 3 | 4 | 5 | 6 |
| Weight [kg] | | 1.3 | 1.5 | 1.8 | 2.0 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC4

Cylinder type Directly coupled without motor



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------|---------------|--------------------|---------------------|---------------------------------------|
| EC4 | 06 | 0150 | B | 0 | B | FL-LB |
| EC4 | 06: 6mm | 0050: 50mm | B | 0: Without motor | N | No symbol: None |
| | 12: 12mm | to | | 1: With motor | B | CB: With cylinder base |
| | | 0300: 300mm | | | C | FL: With flange LB: With link ball |

Basic Specifications

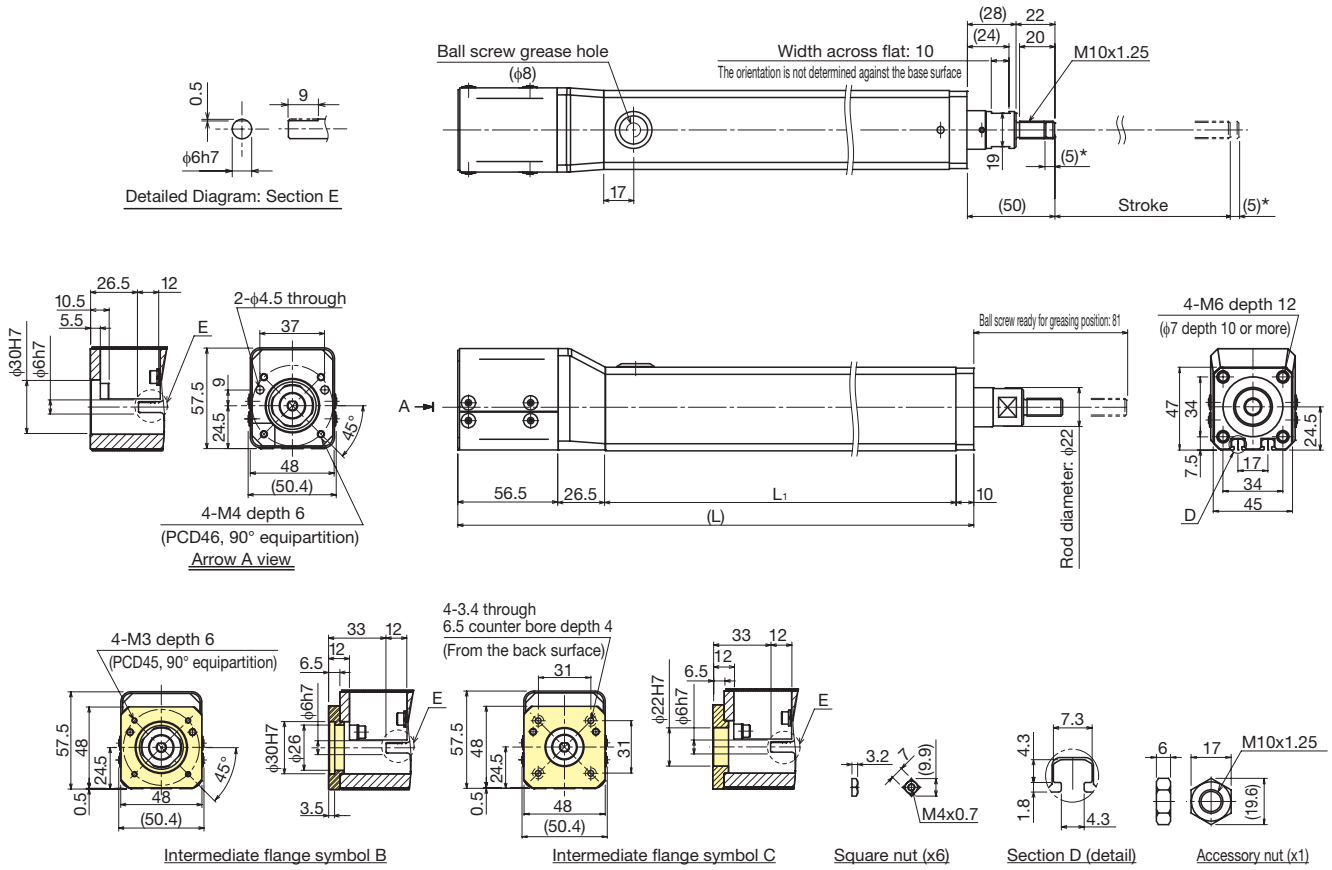
| | | | |
|---|-------------------------------------|----------------------------------|--------------|
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating Ca [N] | | 1770 920 |
| | Basic static load rating C0a [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| Bearing portion (fixed side) | Ball center-to-center diameter [mm] | | φ8.4 |
| | Axial direction | Basic dynamic load rating Ca [N] | 8000 |
| | | Static permissible load P0a [N] | 3240 |
| Permissible rotational speed [min ⁻¹] | | 3000 | |
| Starting torque [N·mm] | | 22 42 | |
| Positioning repeatability [mm] * | | ±0.020 | |
| Lost motion [mm] * | | 0.1 | |
| Maximum input torque [N·m] | | 0.35 | |

* When appropriate motor is used.

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

Dimensions



* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) | 250 (260) | 300 (310) |
|---|------------------------------|---------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed ^{*1 *2} [mm/s] | Ball screw lead: 6mm | | | 300 | | 230 | 170 |
| | Ball screw lead: 12mm | | | 600 | | 460 | 340 |
| Dimensions [mm] | L | 240 | 290 | 340 | 390 | 440 | 490 |
| | L ₁ ^{*3} | 147 | 197 | 247 | 297 | 347 | 397 |
| Weight [kg] | | 1.6 | 1.9 | 2.2 | 2.6 | 2.9 | 3.2 |

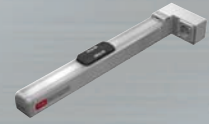
^{*1} Load capacity and maximum speed vary depending on the motor used.

^{*2} Dependent on the permissible rotational speed of the ball screw.

^{*3} T slot milling in the range of L₁.

EC4R

Cylinder type Motor wrap



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|------------------|---------------|--------------------|---------------------|-----------------------------|
| EC4R | 06 | 0150 | B | 0 | A | MR-FL-LB |
| EC4R | 06: 6mm | 0050: 50mm to | B | 0: Without motor | A | MR: Motor right-turn folded |
| | 12: 12mm | 0300: 300mm | | 1: With motor | | ML: Motor left-turn folded |
| | | | | | | CB: With cylinder base |
| | | | | | | FL: With flange |
| | | | | | | LB: With link ball |

Basic Specifications

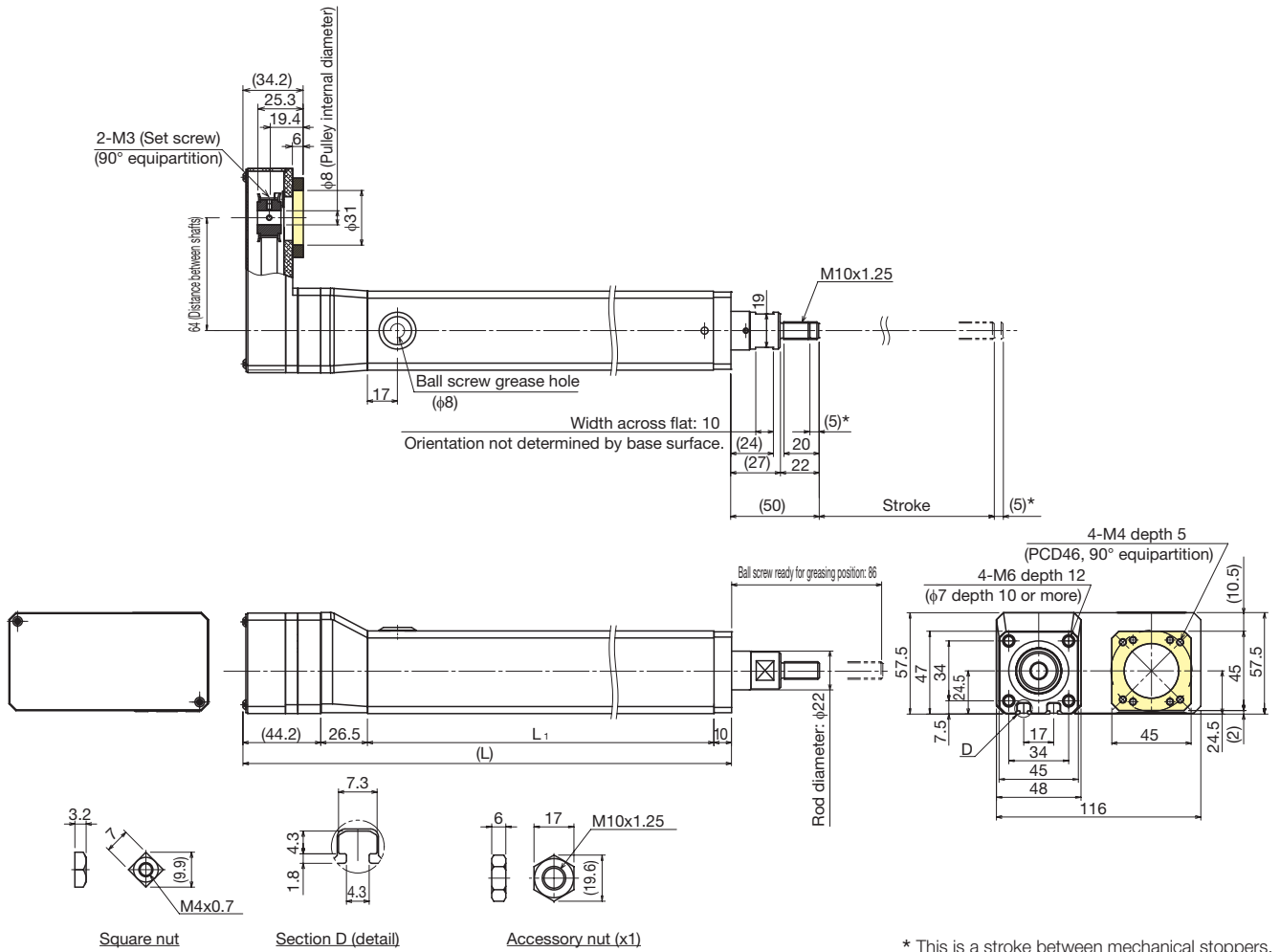
| | | | |
|-----------------------------------|---|----------------------------------|--------------|
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating Ca [N] | | 1770 920 |
| | Basic static load rating C0 [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| Bearing portion (fixed side) | Axial direction | Basic dynamic load rating Ca [N] | 8000 |
| | | Static permissible load P0a [N] | 3240 |
| | Permissible rotational speed [min ⁻¹] | | 3000 |
| Starting torque *1 [N-mm] | | 22 42 | |
| Positioning repeatability [mm] *2 | | ±0.020 | |
| Lost motion [mm] *2 | | 0.1 | |
| Maximum input torque [N-m] | | 0.35 | |

*1 Pulley and timing belt not included.

*2 When appropriate motor is used.

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide. Take into account the sliding resistance of LM Guide when making selection.

Dimensions



* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) | 250 (260) | 300 (310) |
|---|-----------------------|---------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed *1 *2 [mm/s] | Ball screw lead: 6mm | | | 300 | | 230 | 170 |
| | Ball screw lead: 12mm | | | 600 | | 460 | 340 |
| Dimensions [mm] | L | 227.7 | 277.7 | 327.7 | 377.7 | 427.7 | 477.7 |
| | L ₁ *3 | 147 | 197 | 247 | 297 | 347 | 397 |
| Weight [kg] | | 1.6 | 1.9 | 2.3 | 2.6 | 2.9 | 3.2 |

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

*3 T slot milling in the range of L₁.

EC4H

Cylinder type Directly coupled without motor/with linear bush



Model Configuration

| Model | Ball screw lead | Stroke | Design symbol | With/without motor | Intermediate flange | Option |
|-------|-----------------|-------------------|---------------|--------------------|---------------------|------------------------|
| EC4H | 06 | 0150 | B | 0 | B | CB |
| EC4H | 06: 6mm | 0050: 50mm | B | 0: Without motor | N | No symbol: None |
| | 12: 12mm | to 0300: 300mm | | 1: With motor | B | CB: With cylinder base |
| | | | | | C | |

Basic Specifications

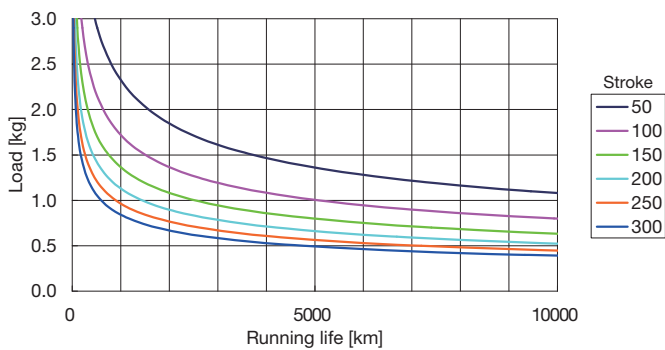
| | | | |
|---|-------------------------------------|----------------------------------|--------------|
| Ball screw portion | Shaft diameter [mm] | | φ8 |
| | Lead [mm] | | 6 12 |
| | Basic dynamic load rating Ca [N] | | 1770 920 |
| | Basic static load rating C0a [N] | | 3040 1600 |
| | Root diameter [mm] | | φ6.8 |
| Bearing portion (fixed side) | Ball center-to-center diameter [mm] | | φ8.4 |
| | Axial direction | Basic dynamic load rating Ca [N] | 8000 |
| | | Static permissible load P0a [N] | 3240 |
| Linear bush unit (LMK10LUU) | Basic dynamic load rating C [N] | | 373 |
| | Basic static load rating C0 [N] | | 549 |
| Permissible rotational speed [min ⁻¹] | | | 3000 |
| Starting torque [N·mm] | | | 28 55 |
| Positioning repeatability [mm]* | | | ±0.020 |
| Lost motion [mm]* | | | 0.1 |
| Maximum input torque [N·m]* | | | 0.35 |

* When appropriate motor is used.

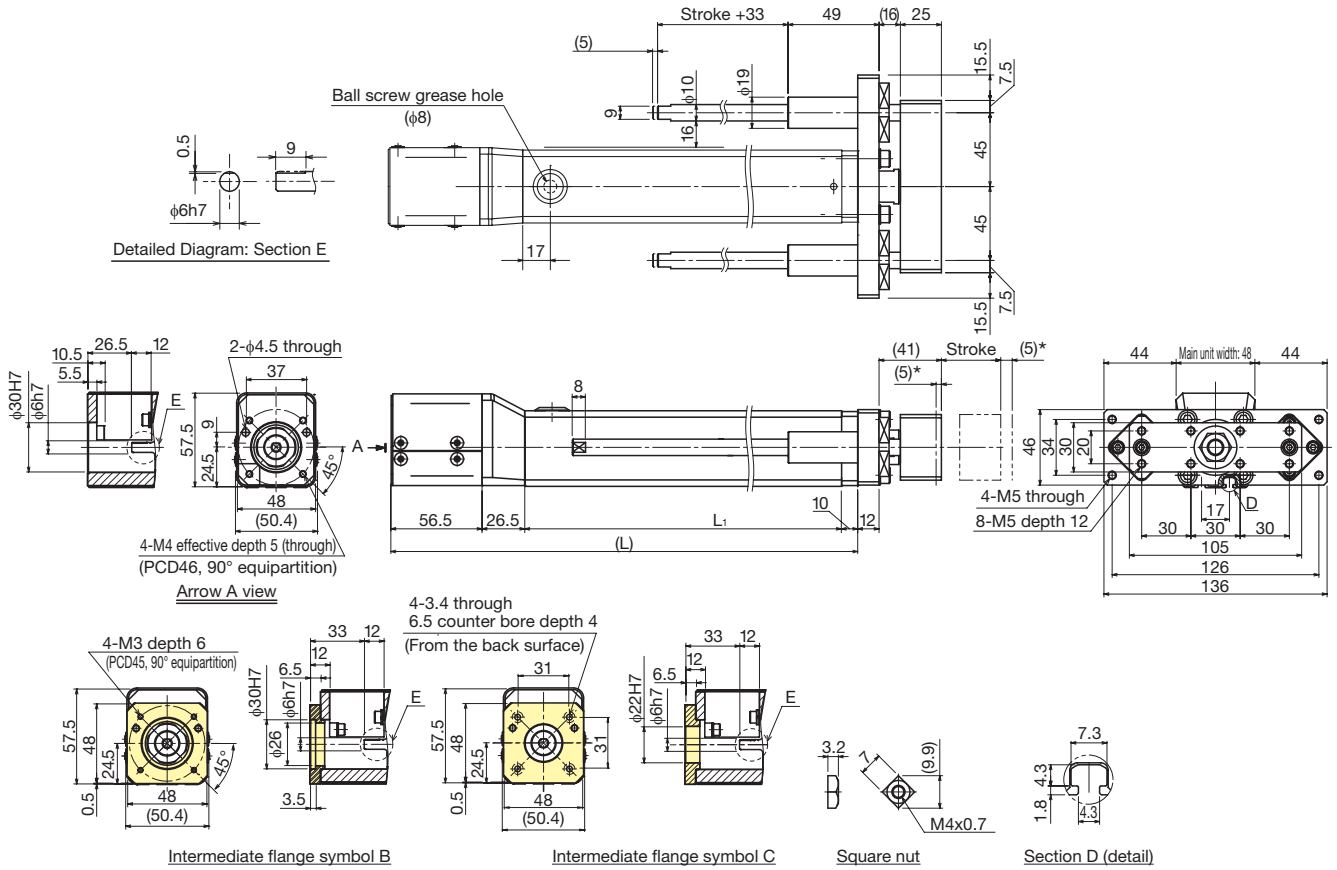
Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide. Take into account the sliding resistance of LM Guide when making selection.

Reference Load and Running Life

Running life varies when a load is applied to the end without using an LM guide, as shown below.



Dimensions



* This is a stroke between mechanical stoppers.

| Stroke [mm] (Stroke between mechanical stoppers) | | 50 (60) | 100 (110) | 150 (160) | 200 (210) | 250 (260) | 300 (310) |
|---|------------------------------|---------|-----------|-----------|-----------|-----------|-----------|
| Maximum speed ^{*1*} [mm/s] | Ball screw lead: 6mm | 300 | | | 230 | 170 | |
| | Ball screw lead: 12mm | 600 | | | 460 | 340 | |
| Dimensions [mm] | L | 240 | 290 | 340 | 390 | 440 | 490 |
| | L ₁ ^{*3} | 147 | 197 | 247 | 297 | 347 | 397 |
| Weight ^{*3} [kg] | | 2.2 | 2.5 | 2.9 | 3.3 | 3.6 | 4.0 |

^{*1} Load capacity and maximum speed vary depending on the motor used.

^{*2} Dependent on the permissible rotational speed of the ball screw.

^{*3} T slot milling in the range of L₁.

ES/EC Intermediate Flange

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

| Motor type | | | Motor rated output | Flange angle | Intermediate flange model | | | | | | | | | | | |
|---------------------------------|----------|-------------|--------------------|--------------|---------------------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|
| | | | | | ES3 | | ES4 | | ES5 | | ES6 | | EC3 | | EC4 | |
| | | | | | Direct coupling | Motor Wrap | Direct coupling | Motor Wrap | Direct coupling | Motor Wrap | Direct coupling | Motor Wrap | Direct coupling | Motor Wrap | Direct coupling | Motor Wrap |
| Yaskawa Electric Corporation | Σ-Vmini | SGMMV-A2 | 20W | □25 | A | A | - | - | - | - | - | - | - | - | - | - |
| | | SGMMV-A3 | 30W | | - | - | A | A | - | - | - | A | A | - | - | |
| | Σ-V | SGMJV-A5 | 50W | □40 | - | - | - | - | N | A | N | A | - | - | N | A |
| | | SGMAV-A5 | | | - | - | - | - | N | A | N | A | - | - | N | A |
| Mitsubishi Electric Corporation | J3 | HG-AK0236 | 20W | □25 | A | A | - | - | - | - | - | - | - | - | - | - |
| | | HG-AK0336 | 30W | | - | - | A | A | - | - | - | A | A | - | - | |
| | | HF-KP053 | 50W | | □40 | - | - | - | - | N | A | N | A | - | - | N |
| | HF-MP053 | - | | - | | - | - | N | A | N | A | - | - | N | A | |
| | HG-KR053 | - | | - | | - | - | N | A | N | A | - | - | N | A | |
| | HG-MR053 | - | | - | | - | - | N | A | N | A | - | - | N | A | |
| | JN | HF-KN053 | - | - | - | - | N | A | N | A | - | - | N | A | | |
| Panasonic Corporation | A5 | MSME 5A | | □38 | - | - | - | - | B | - | B | - | - | B | - | |
| OMRON Corporation | G5 | R88M-K05030 | | □40 | - | - | - | - | N | - | N | - | - | N | - | |
| Oriental Motor Co. Ltd. | α step | ARM24* | | □28 | B | - | - | - | - | - | - | - | - | - | - | - |
| | | ARLM46* | | □42 | - | - | - | - | C | - | C | - | - | - | C | - |
| | | ARM46* | | □42 | - | - | - | - | C | - | C | - | - | - | C | - |
| | 5 phase | PK523* | | □28 | B | - | - | - | - | - | - | - | - | - | - | - |
| | | RK54* | | □42 | - | - | - | - | C | - | C | - | - | - | C | - |
| | 2 phase | PK23* | | □35 | - | - | B | - | - | - | - | - | B | - | - | - |

* For motor wrap type, a set screw connects pulley and motor output shaft. Select a D-cut motor output shaft.

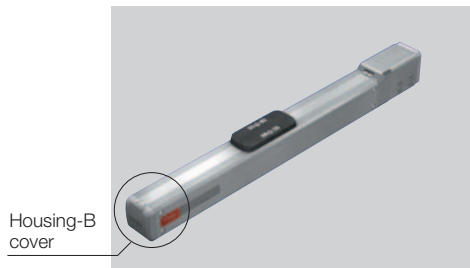
Under "Intermediate flange model," "N" indicates that there is no intermediate flange.

Mitsubishi model HF-KN053 does not support D-cut shafts; consult the manufacturer for further details.

Common options for ES

GR: Change the cover color to gray

As an option for ES and EC, the cover color can be changed from red to gray.



No symbol: red cover



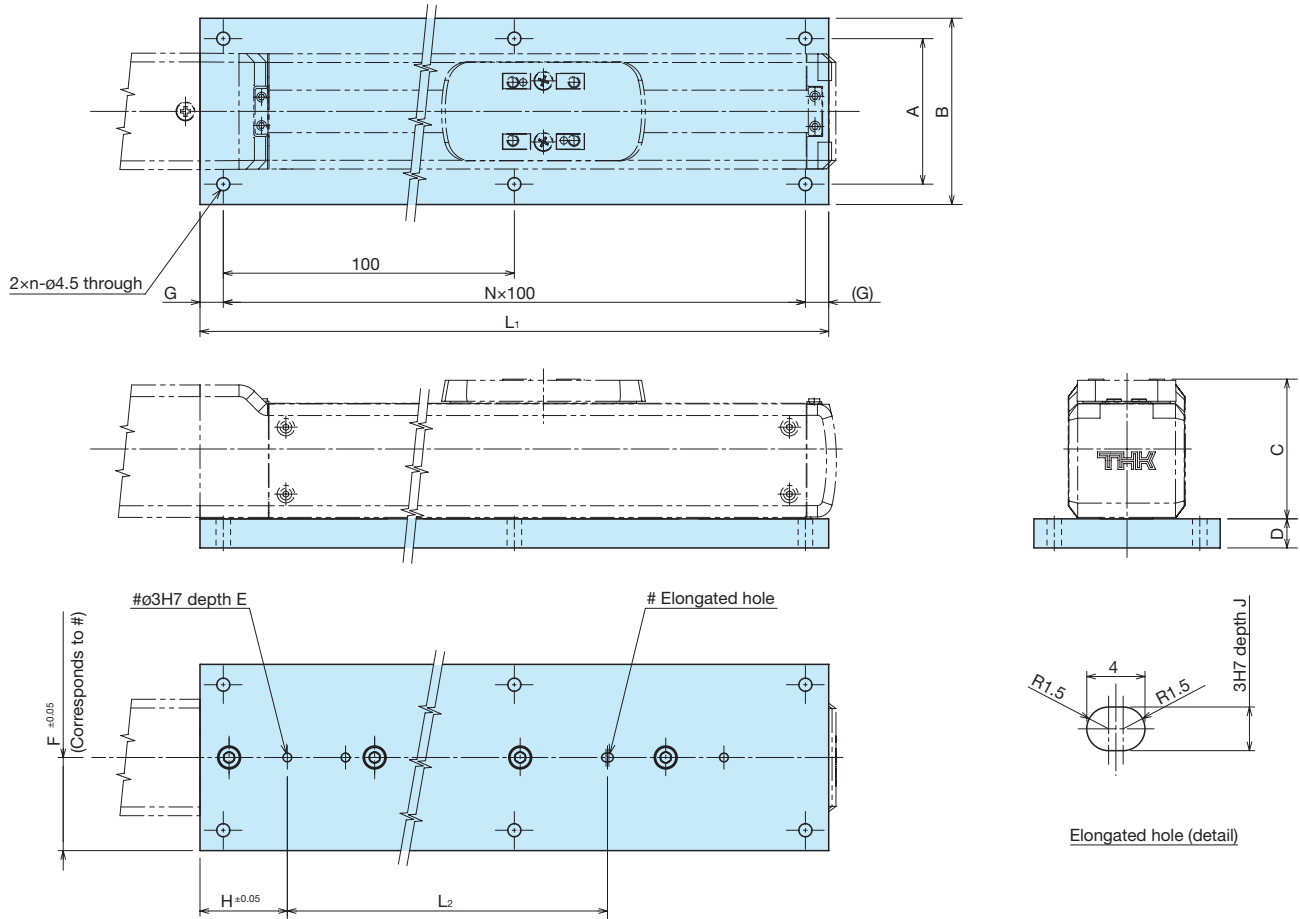
When GR is selected: gray cover

If the GR is not included in the model configuration, cover will be red.

ES Option

SB: Slider base (direct coupled specification)

THK provides a slider base for installing the ES main unit from the top face.
(Included with unit)



Unit: mm

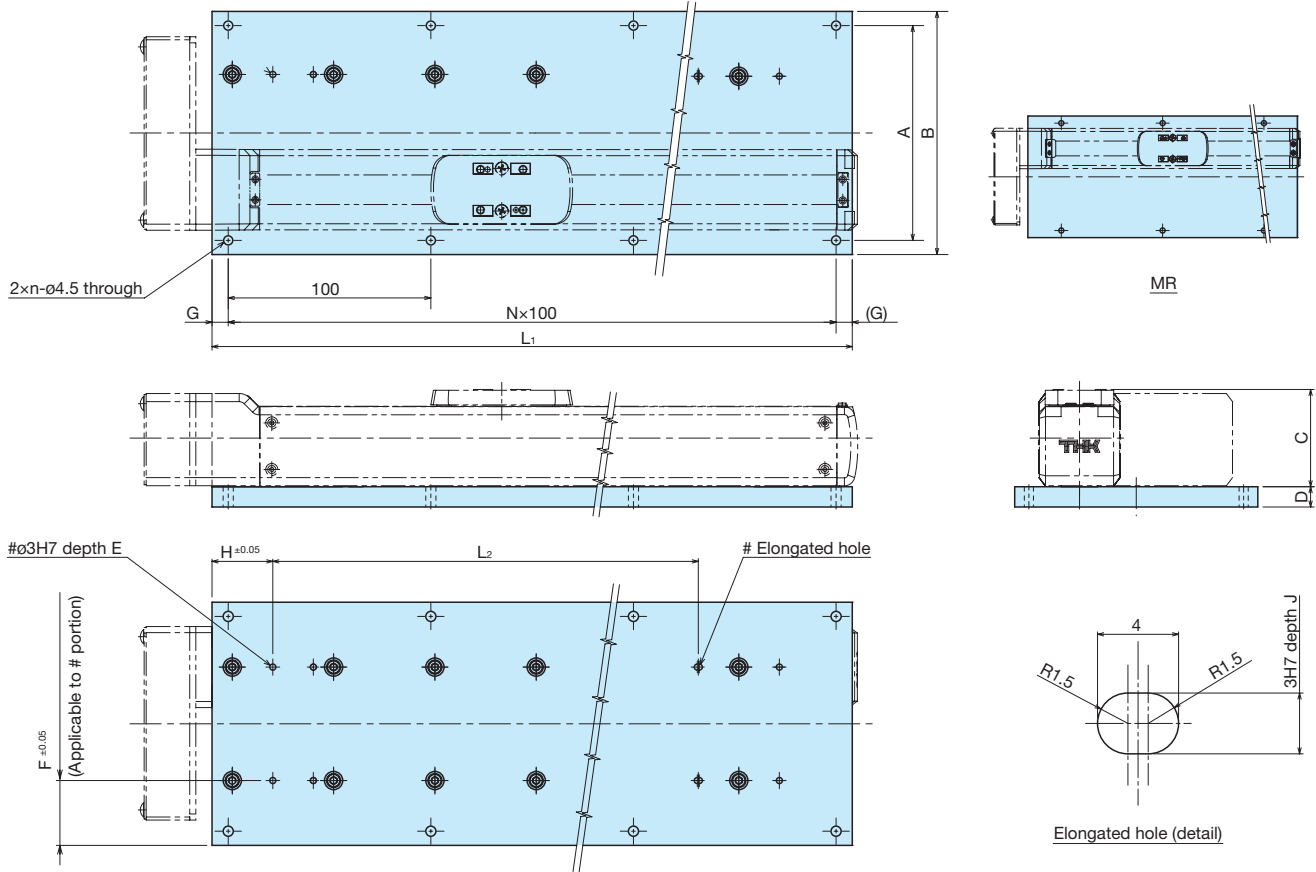
| Model | A | B | C | D | E | F | H | J |
|-------|----|----|------|----|----|----|----|----|
| ES3 | 42 | 56 | 40 | 8 | 8 | 28 | 40 | 8 |
| ES4 | 50 | 64 | 48 | 10 | 10 | 32 | 30 | 10 |
| ES5 | 70 | 84 | 57 | 10 | 10 | 42 | 45 | 10 |
| ES6 | 70 | 84 | 62.5 | 10 | 10 | 42 | 45 | 10 |

| Stroke | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
|--------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ES3 | L ₁ [mm] | 156 | 206 | 256 | 306 | 356 | 406 | - | - | - | - | - | - |
| | L ₂ [mm] | 70 | 120 | 170 | 220 | 270 | 320 | - | - | - | - | - | - |
| | n | 2 | 2 | 3 | 3 | 4 | 4 | - | - | - | - | - | - |
| | N | 1 | 1 | 2 | 2 | 3 | 3 | - | - | - | - | - | - |
| | G[mm] | 28 | 53 | 28 | 53 | 28 | 53 | - | - | - | - | - | - |
| ES4 | L ₁ [mm] | 166 | 216 | 266 | 316 | 366 | 416 | 466 | 516 | - | - | - | - |
| | L ₂ [mm] | 60 | 110 | 160 | 210 | 260 | 310 | 360 | 410 | - | - | - | - |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | - | - | - | - |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | - | - | - | - |
| | G[mm] | 33 | 8 | 33 | 8 | 33 | 8 | 33 | 8 | - | - | - | - |
| ES5 | L ₁ [mm] | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | - | - |
| | L ₂ [mm] | 70 | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 520 | - | - |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | - | - |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | - | - |
| | G[mm] | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | - | - |
| ES6 | L ₁ [mm] | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | 674 | 724 |
| | L ₂ [mm] | 70 | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 520 | 570 | 620 |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| | G[mm] | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 |

ES Option

SB: Slider base (motor wrap type)

THK provides a slider base for installing the ES main unit from the top face.
(Included with unit)



Unit: mm

| Model | A | B | C | D | E | F | | H | J |
|-------|-----|-----|------|----|----|----|-----|----|----|
| | | | | | | MR | ML | | |
| ES3 | 92 | 106 | 40 | 8 | 8 | 28 | 78 | 40 | 8 |
| ES4 | 106 | 120 | 48 | 10 | 10 | 32 | 88 | 30 | 10 |
| ES5 | 136 | 150 | 57 | 10 | 10 | 42 | 108 | 45 | 10 |
| ES6 | 136 | 150 | 62.5 | 10 | 10 | 42 | 108 | 45 | 10 |

| Stroke | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
|---------------------|---------------------|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | ES3 | L ₁ [mm] | 156 | 206 | 256 | 306 | 356 | 406 | - | - | - | - |
| L ₂ [mm] | 70 | | 120 | 170 | 220 | 270 | 320 | - | - | - | - | - | - |
| n | 2 | | 2 | 3 | 3 | 4 | 4 | - | - | - | - | - | - |
| N | 1 | | 1 | 2 | 2 | 3 | 3 | - | - | - | - | - | - |
| G[mm] | 28 | | 53 | 28 | 53 | 28 | 53 | - | - | - | - | - | - |
| ES4 | L ₁ [mm] | 166 | 216 | 266 | 316 | 366 | 416 | 466 | 516 | - | - | - | - |
| | L ₂ [mm] | 60 | 110 | 160 | 210 | 260 | 310 | 360 | 410 | - | - | - | - |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | - | - | - | - |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | - | - | - | - |
| | G[mm] | 33 | 8 | 33 | 8 | 33 | 8 | 33 | 8 | - | - | - | - |
| ES5 | L ₁ [mm] | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | - | - |
| | L ₂ [mm] | 70 | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 520 | - | - |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | - | - |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | - | - |
| | G[mm] | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | - | - |
| ES6 | L ₁ [mm] | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | 674 | 724 |
| | L ₂ [mm] | 70 | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 520 | 570 | 620 |
| | n | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 |
| | N | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| | G[mm] | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 | 37 | 12 |

□₁□₂: Sensors

ES units can be equipped with optional proximity sensors and photo sensors. Sensor-equipped models also feature a dedicated sensor rail. The following precautions apply to sensor-equipped ES units.

1. The customer should provide a sensor target; a sensor target cannot be installed onto the actuator main unit.
2. When ordered, the sensor is included with the unit.
3. When motor wrap is selected, a sensor cannot be mounted on the same side as the folded direction of the motor.
4. When an optional sensor is used, the home position may differ from that indicated in this brochure.
5. When proximity sensors are placed too close to each other, they may not work properly. For closely grouped proximity sensors, the customer must provide sensors with variant frequencies (consult the respective manufacturer for sensor specifications).

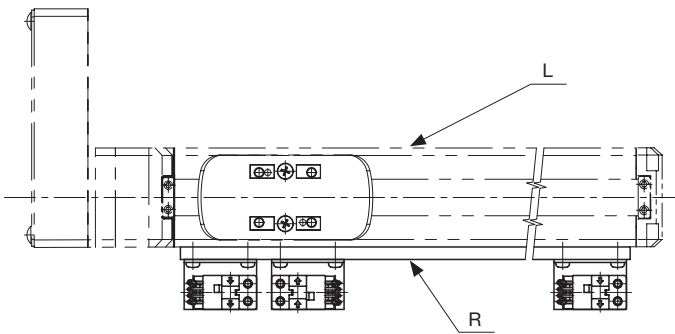
| Description | Type | Accessory | Symbol | |
|--|--|--|----------------|----------------|
| | | | □ ₁ | □ ₂ |
| With sensor rail | – | – | L/R | 1 |
| Photo Sensor * [3 units] | EE-SX674 (OMRON Corporation) | Mounting screw, nuts, sensor rail (x1), mounting plates (x3), connectors (EE-1001, x3) | L/R | 6 |
| Sensor N.O. contact [x1] N.C. contact points [x2] | GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.) | Mounting screws, nuts, sensor rail | L/R | J |
| Sensor N.O. contact [x1] (PNP output) N.C. contact points [x2] (PNP output) | GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.) | Mounting screws, nuts, sensor rail | L/R | M |

N.O. contact: Normally open contact point

N.C. contact: Normally closed contact point

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

Example: When a photo sensor is selected with motor wrap



Sensor symbols

| Symbol | |
|----------------|----------------|
| □ ₁ | □ ₂ |
| R | 6 |

□₁ represents the mounting position for sensor rail and sensor.

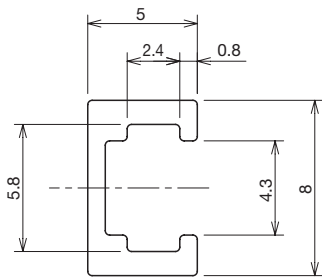
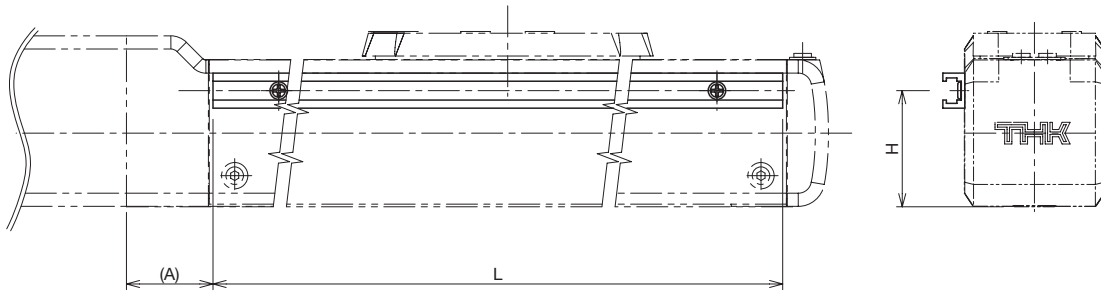
□₂ represents the type of sensors.

□₁ on the same side as the folded direction of the motor cannot be selected.

L cannot be selected.

□₁□₂: Sensor

Symbol 1: Sensor rail

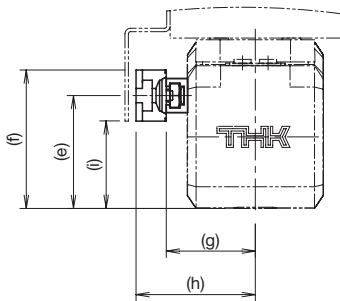


Sensor rail (detail)

Unit: mm

| Model | H | A | L |
|-------|------|------|-----------|
| ES3 | 26.5 | 19.8 | Stroke+80 |
| ES4 | 31.5 | 26 | |
| ES5 | 38.1 | 27 | |
| ES6 | 43.6 | 29 | |

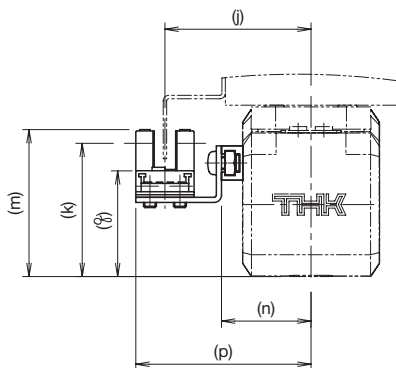
Symbols J, M: Proximity sensor GX-F12* (Panasonic Industrial Devices SUNX Co., Ltd.)



Unit: mm

| Model | e | f | g | h | i |
|-------|------|------|------|------|------|
| ES3 | 26.5 | 32.5 | 20.9 | 28 | 20.5 |
| ES4 | 31.5 | 37.5 | 24.8 | 31.9 | 25.5 |
| ES5 | 38.1 | 44.1 | 29.8 | 36.9 | 32.1 |
| ES6 | 43.6 | 49.6 | 34.8 | 41.9 | 37.6 |

Symbol 6: Photo sensor EE-SX674 (OMRON Corporation)



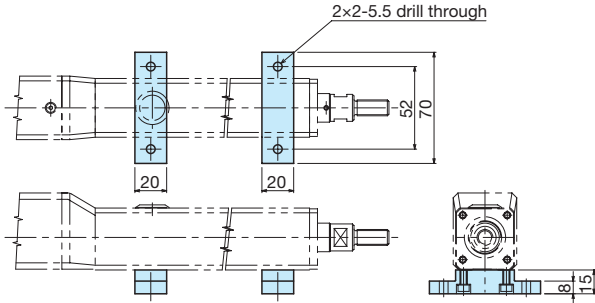
Unit: mm

| Model | j | k | m | n | p | φ |
|-------|------|------|------|------|------|------|
| ES3 | 31.4 | 28.6 | 31.8 | 20.9 | 38.4 | 22.2 |
| ES4 | 35.3 | 33.6 | 36.8 | 24.8 | 42.3 | 27.2 |
| ES5 | 40.3 | 40.2 | 43.4 | 29.8 | 47.3 | 33.8 |
| ES6 | 45.3 | 45.7 | 48.9 | 34.8 | 52.3 | 39.3 |

EC Option

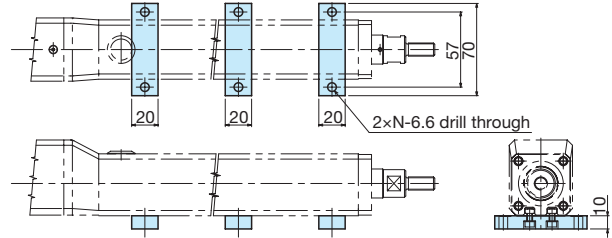
CB: Cylinder Base

EC3



(Included with unit)

EC4

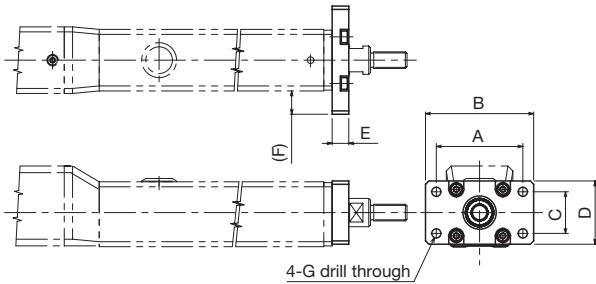


| | | | | | | |
|--------|----|-----|-----|-----|-----|-----|
| Stroke | 50 | 100 | 150 | 200 | 250 | 300 |
| N | 2 | 2 | 2 | 2 | 3 | 3 |

(Included with unit)

FL: Flange

EC3/4, EC3R/4R

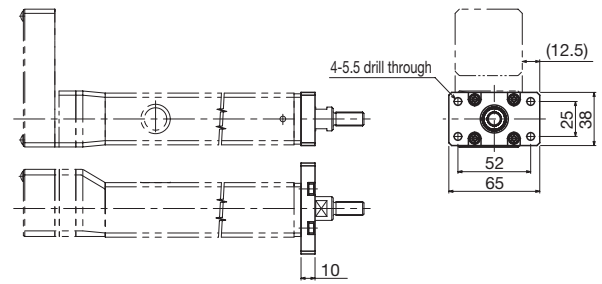


Unit: mm

| Model | A | B | C | D | E | F | G |
|----------|----|----|----|----|----|----|-----|
| EC3/EC3R | 52 | 65 | 25 | 38 | 10 | 14 | 5.5 |
| EC4/EC4R | 60 | 75 | 34 | 46 | 12 | 15 | 6.6 |

(Included with unit)

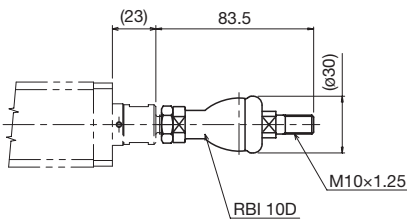
EC3R (When ST=50)



(Included with unit)

LB: Link Ball

EC3/4



(Included with unit)

ES Motor Selection

See the table below to select a motor to be installed to ES. For details on how to select a motor and motor specifications, contact the manufacturer.

| Actuator | | Ball Screw | | | | Recommended Coupling | | |
|----------|-------------------|--------------|------------------------|----------------------|--|----------------------|---------------------------------------|--|
| Model | Stroke *1 [mm] | Lead [mm] | Shaft diameter [mm] | Shaft length [mm] | Outer diameter of shaft end [mm] | Actuator model | Model | Inertial moment [kg · cm ²] |
| ES3 | 50 | 6 | φ6 | 182 | φ6h7 | ES3 | SFC-005DA2 (Miki Pulley Co., LTD.) | 0.0036 |
| | 300 | | | 432 | | | XBW-15C2 (Nabeya Bi-tech Kaisha) | 0.0022 |
| ES4 | 50 | 6 | φ8 | 191 | φ6h7 | ES4 | SFC-010DA2 (Miki Pulley Co., LTD.) | 0.0079 |
| | 400 | | | 541 | | | XBW-19C2 (Nabeya Bi-tech Kaisha) | 0.0067 |
| | 50 | 12 | φ8 | 191 | φ6h7 | | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 400 | | | 541 | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |
| ES5 | 50 | 6 | φ8 | 191 | φ6h7 | ES5 | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 500 | | | 641 | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |
| | 50 | 12 | φ8 | 191 | φ6h7 | | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 500 | | | 641 | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |
| ES6 | 50 | 6 | φ8 | 198 | φ6h7 | ES6 | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 600 | | | 748 | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |
| | 50 | 12 | φ8 | 198 | φ6h7 | | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 600 | | | 748 | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |

*1 For strokes, see the corresponding specification tables.

| Actuator model | Weight of moving element [kg] | Sliding resistance [N] |
|----------------|-------------------------------------|------------------------------|
| ES3 | 0.17 | 3 |
| ES4 | 0.18 | 4.8 |
| ES5 | 0.23 | 6.5 |
| ES6 | 0.34 | 6.6 |

| Actuator model | Permissible input torque | |
|----------------|----------------------------------|-----------------------|
| | Direct motor coupling [N · m] | Motor wrap [N · m] |
| ES3 | 0.065 | 0.065 |
| ES4 | 0.16 | 0.16 |
| ES5 | 0.35 | 0.35 |
| ES6 | 0.35 | 0.35 |

| Timing pulley (The sum of two.) | |
|---------------------------------|--|
| Actuator model | Inertial moment [kg · cm ²] |
| ES3 | 0.0060 |
| ES4 | 0.0202 |
| ES5 | 0.0182 |
| ES6 | 0.0182 |

EC Motor Selection

See the table below to select a motor to be installed to EC. For details on how to select a motor and motor specifications, contact the manufacturer.

| Actuator | | Ball Screw | | | | Recommended Coupling | | | |
|----------|-------------------|--------------|------------------------|----------------------|--|----------------------|---------------------------------------|--|-------|
| Model | Stroke *1 [mm] | Lead [mm] | Shaft diameter [mm] | Shaft length [mm] | Outer diameter of shaft end [mm] | Actuator model | Model | Inertial moment [kg · cm ²] | |
| EC3 | 50 | 6 | φ6 | 159 | φ6h7 | EC3 | SFC-010DA2 (Miki Pulley Co., LTD.) | 0.0079 | |
| | 200 | | | 309 | | | XBW-19C2 (Nabeya Bi-tech Kaisha) | 0.0067 | |
| EC4 | 50 | 6 | φ8 | 175 | φ6h7 | | EC4 | SFC-020DA2 (Miki Pulley Co., LTD.) | 0.034 |
| | 300 | | | 425 | | | | XBW-25C2 (Nabeya Bi-tech Kaisha) | 0.023 |
| | 50 | 12 | φ8 | 175 | φ6h7 | | | | |
| | 300 | | | 425 | | | | | |

*1 For strokes, see the corresponding specification tables.

| Actuator model | Weight of moving element [kg] | | | | | | Sliding resistance [N] | |
|----------------|----------------------------------|------|------|------|------|------|------------------------------|-----|
| | Stroke [mm] | 50 | 100 | 150 | 200 | 250 | | 300 |
| EC3* | | 0.53 | 0.63 | 0.73 | 0.83 | – | – | 7.5 |
| EC4* | | 0.86 | 1.02 | 1.17 | 1.33 | 1.48 | 1.63 | 10 |

* Values with a Linear Bushing attached.

| Permissible input torque | | | Timing pulley (The sum of two.) | |
|--------------------------|----------------------------------|-----------------------|---------------------------------|--|
| Actuator model | Direct motor coupling [N · m] | Motor wrap [N · m] | Actuator model | Inertial moment [kg · cm ²] |
| EC3 | 0.16 | 0.16 | EC3 | 0.0195 |
| EC4 | 0.35 | 0.35 | EC4 | 0.0182 |



Precautions on Use

● Application

- This product cannot be applied to any equipment or system that may be used under a life-threatening condition.
- If you are considering using this product for special applications such as mobile vehicles, medical uses, aerospace, or thermonuclear power generation or a power plant, make sure to contact THK for applicability beforehand.

● Handling

- Do not disassemble this product unless absolutely necessary. This will cause dust to enter the product resulting in loss of functionality.
- Take care not to drop or strike this product. This could cause injury or product damage or impair the product's function even if the product looks intact.
- Exceeding the maximum recommended speed could damage components or cause an accident. Be sure to use the product within the specification range designated by THK.
- 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.
- Using the product in an environment where coolant can penetrate the inner block could cause malfunction, depending on the type of the coolant. Contact THK for details.
- The service temperature range of this product is 0 to 40°C (no freezing or condensation). Consult THK before attempting to use the product outside this temperature range.
- Contact THK before attempting to use the product in a location exposed to vibration or abnormally high or low temperatures, or in a vacuum or clean room.
- When the product is operating or in the ready state, never touch a moving part. In addition, do not enter the operating area.
- If two or more people are involved in the operation, confirm the procedures in advance, and appoint another person to monitor the operation.

● Environment

- An indoor location and ambient temperatures from 0 to 40°C, and humidity of 80%RH or below (no freezing or condensation).

Wrong environment can cause failures of the actuator and driver. The best place to use the product is as follows:

- A place free from corrosive gas and flammable gas.
- A place where vibration or impact is not transmitted to the unit.
- A place free from electrically conductive powder (such as iron powder), dust, oil mist, cutting fluid, moisture, salt, and organic solvent.
- A place free from direct sunlight and radiant heat.
- A place free from strong electric and magnetic fields.
- A place that is easily accessible for service and cleaning purposes.
- When using the product in locations exposed to constant vibrations or in special environments such as vacuum or abnormally high or low temperatures, contact THK in advance.

● Mounting Surface

- The surface should be the plane that has the precision of machining or the equivalent of that. Some products specify the required flatness. When you wish to use the product with QZ in a position other than horizontal (such as wall mount and vertical posture), contact THK.

● Lubrication

- In order to effectively use the actuator, lubrication is required. Insufficient lubrication may increase abrasion on the rolling part and cause early failure.
- Do not use a mix of lubricants with different physical properties. Note that encapsulated lubricant types vary depending on products.
- Please contact THK if using special lubricants.
- THK recommend the greasing interval to be approximately every 100km. However, it may vary depending on the usage conditions, so THK recommends determining a greasing interval during the initial inspection.
- If the product is to be used in a location exposed to vibrations or in a special environment such as vacuum, or abnormally high or low temperatures, or in a clean room, normal lubricants may not be used. Contact THK for details.
- When adopting oil lubrication method, contact THK.

● Storage


- When storing this actuator, enclose it in a package designated by THK and store it in a horizontal position away from abnormally high or low temperatures and high humidity.

● Instruction Manual

- Instruction Manuals can be downloaded from the website (a login process may be required).
THK Technical Support site <https://tech.thk.com/>
"Economy series ES/EC Instruction Manual"
and other contents including CAD data and PC software (D-STEP) can also be downloaded.



Economy Series ES/EC

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