



New Products

New Products

Electric Actuator ESA Series



ELECTRIC ACTUATOR ESA SERIES

SLEEK DESIGN
EXCELLENT COST PERFORMANCE



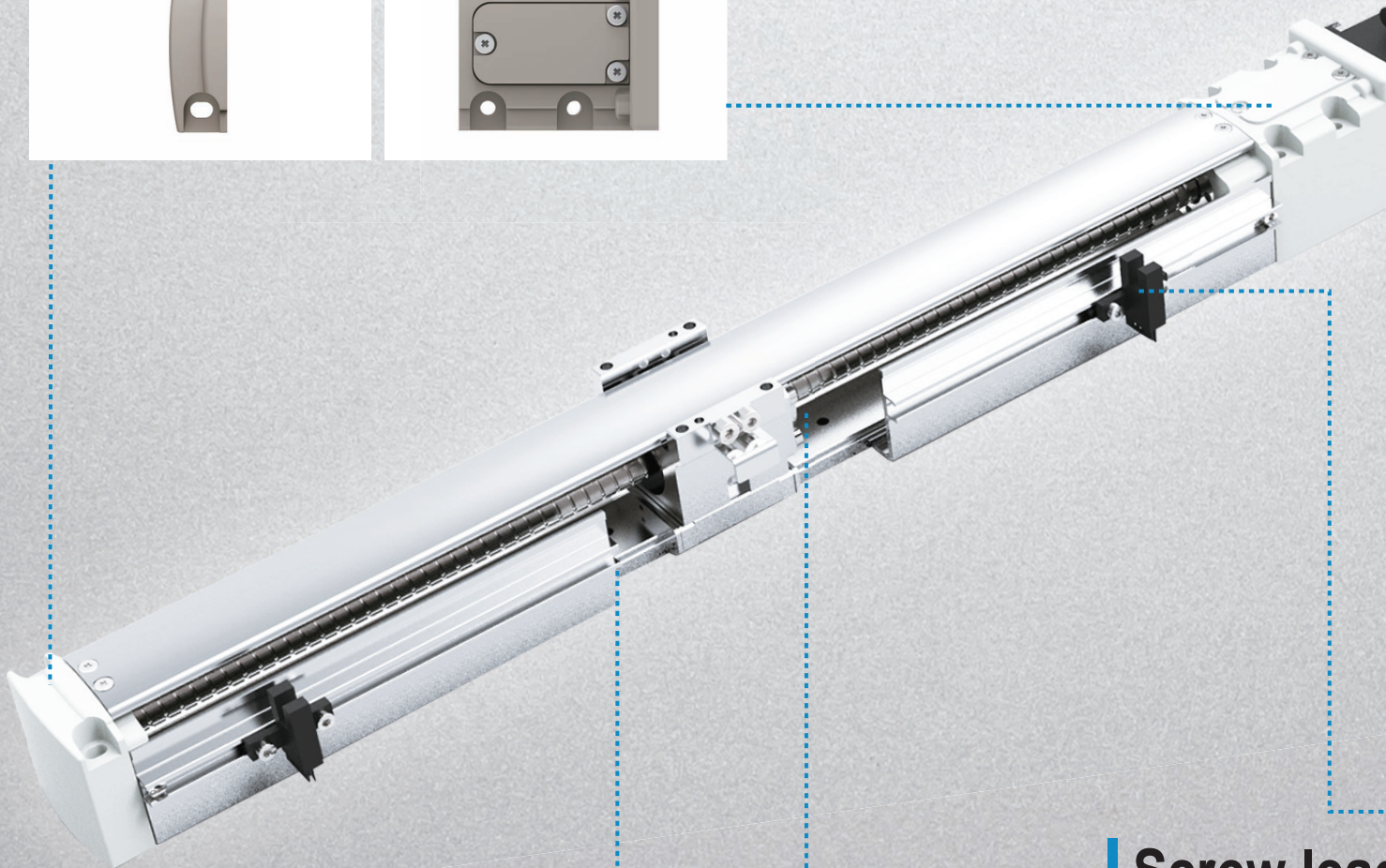
CKD (China) Corporation
C-CC-1416A

ESA Series

**Perfect for conveying
small parts!**

Can be mounted from the top

Through holes are opened on the upper surface for easy mounting.

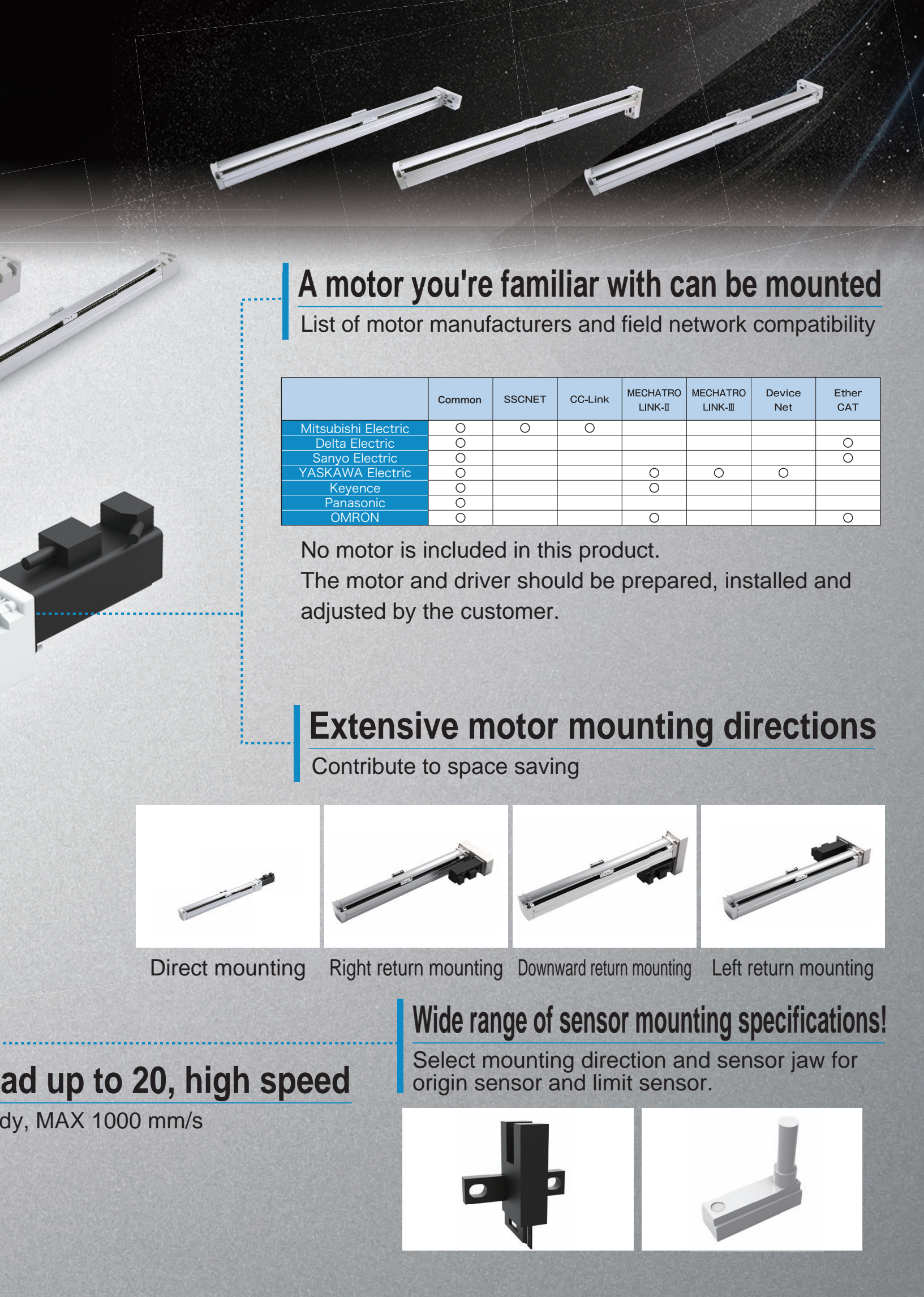


Equipped with linear guide

Highly reliable structure

Screw lead

Compact body



A motor you're familiar with can be mounted

List of motor manufacturers and field network compatibility

| | Common | SSCNET | CC-Link | MECHATRO LINK-II | MECHATRO LINK-III | Device Net | Ether CAT |
|---------------------|--------|--------|---------|---------------------|----------------------|---------------|--------------|
| Mitsubishi Electric | ○ | ○ | ○ | | | | |
| Delta Electric | ○ | | | | | | ○ |
| Sanyo Electric | ○ | | | | | | ○ |
| YASKAWA Electric | ○ | | | ○ | ○ | ○ | |
| Keyence | ○ | | | ○ | | | |
| Panasonic | ○ | | | | | | |
| OMRON | ○ | | | ○ | | | ○ |

No motor is included in this product.

The motor and driver should be prepared, installed and adjusted by the customer.

Extensive motor mounting directions

Contribute to space saving



Direct mounting

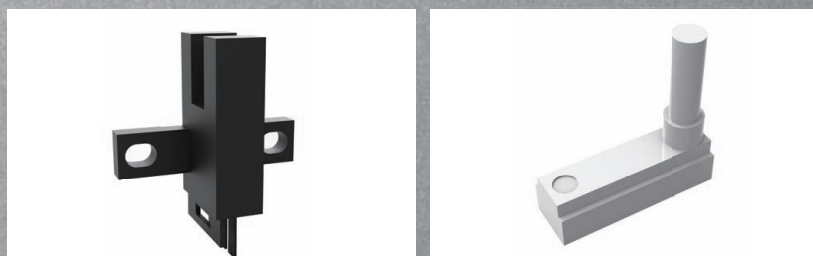
Right return mounting

Downward return mounting

Left return mounting


Wide range of sensor mounting specifications!

Select mounting direction and sensor jaw for origin sensor and limit sensor.



ad up to 20, high speed

dy, MAX 1000 mm/s



ESA - 06 L E - 05 0050 N NN - M 1 MR C B

| | |
|--|---|
| Sensor rail and magnet or jaw for mounting | |
| NN | None |
| MR | Sensor rail and magnet. Right side mounting |
| ML | Sensor rail and magnet. Left side mounting |
| DR | Sensor rail and jaw. Right side mounting |
| DL | Sensor rail and jaw. Left side mounting |

Diagram illustrating a motorized slider mechanism. The components labeled are the **Slider** and the **Motor**. The slider is shown moving along a track, with arrows indicating directions: **Left**, **Right**, **Downward**, and an arrow pointing away from the slider block.

D: The downward return mounting stroke length starts from 150 mm.

| | | | | | | | | Screw lead (mm) | Maximum transportable weight (kg) | | Listed page |
|--|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------------------------|----------|-------------|
| | 350 | 400 | 450 | 500 | 550 | 600 | 700 | | Horizontal | Vertical | |
| | | | | | | | | 5 | 10 | 3 | P1 to P6 |
| | | | | | | | | 10 | 5 | 1.5 | |
| | | | | | | | | 20 | 3 | 1 | |
| | | | | | | 230 | 200 | 5 | 30 | 10 | P7 to P12 |
| | | | | | | 460 | 400 | 10 | 15 | 5 | |
| | | | | | | 920 | 800 | 20 | 8 | 2 | |

*Maximum transportable weight are values with acceleration/deceleration of 0.3 G.

List of motors used

| Code | Model | | |
|------|---------------------------------|-------------|---------------|
| | Manufacturer | Series | 100 W |
| M | Mitsubishi Electric Corporation | MELSERVO J3 | HF-KP13 |
| | | MELSERVO J4 | HG-KR13 |
| | OMRON Corporation | OMNUC G5 | R88M-K10030H |
| | | 1S | R88M-1M10030H |
| | Sanyo Electric Corporation | SANMOTION R | R2AA04010FX |
| | Delta Electric, Inc. | ECMA-C | ECMA-C10401ES |
| Y | YASKAWA Electric Corporation | Σ -V | SGMJV-01ADA21 |
| | | Σ -7 | SGM7J-01ADA21 |
| | Keyence Corporation | SV | SV-M010□□ |
| | | SV2 | SV2-M010□□ |
| P | Panasonic Corporation | MINAS A5 | MSMD012G1A |
| | | MINAS A6 | MSMD012G1A |



Electric Actuator ESA-04LE Series

100 W servo motor mountable Motor direct mounting type

How to order

ESA-04L **E** - **05** **0200** **N** **NN** - **M** **1** **MR** **C** **B**

| A Motor mounting direction | |
|----------------------------|-----------------|
| E | Direct mounting |

| B Screw lead | |
|-----------------|----------------------|
| 05 | Screw lead 5 mm |
| 10 | Screw lead 10 mm |
| 20 | Screw lead 20 mm |
| C Stroke length | |
| 0050 | Stroke length 50 mm |
| ~ | (Per 50 mm) |
| 0500 | Stroke length 500 mm |

| D Motor type | |
|------------------------|---|
| M | For mounted motor specification, refer to the Series Variation page at the beginning of the manual. |
| Y | |
| P | |
| E Sensor specification | |
| NN | None |
| MR | Sensor rail and magnet. Right side mounting |
| ML | Sensor rail and magnet. Left side mounting |
| DR | Sensor rail and jaw. Right side mounting |
| DL | Sensor rail and jaw. Left side mounting |

| F Origin sensor | |
|-----------------|------|
| N | None |
| C | Yes |
| G Limit sensor | |
| N | None |
| B | Yes |

*MR, ML: The sensor is a cylinder switch.
DR, DL: The sensor is a photoelectric sensor.

*Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting "None" for either.

<Example of model number>

ESA-04LE-050200NNN-M1MRCB

Body size : Body width 48 mm
Motor mounting direction : Direct mounting
Screw lead : 5 mm
Stroke length : 200 mm
Motor type : M
Sensor specification : Sensor rail and magnet. Right side mounting
Origin sensor : Yes
Limit sensor : Yes

Specifications

| | | | |
|--|--|-----|-----|
| Applicable motor capacity | 100 W servo motor | | |
| Driving mode | Ball screw $\phi 12$ | | |
| Stroke length mm | 50 to 500 | | |
| Screw lead mm | 5 | 10 | 20 |
| Maximum transportable weight | Horizontal kg | 10 | 5 |
| | Vertical kg | 3 | 1.5 |
| Rated thrust N | 339 | 170 | 85 |
| Repetitive accuracy mm | ± 0.02 | | |
| Idling distance mm | 0.1 or less | | |
| Operating ambient temperature and humidity | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | |
| Storage ambient temperature and humidity | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | |
| Environment | Without corrosive gas, explosive gas or dust | | |

*Maximum transportable weight are values with acceleration/deceleration of 0.3 G.

Stroke length and maximum speed (Unit: mm/s)

| Stroke length | 50 to 500 |
|---------------|-----------|
| Screw lead | |
| 5 | 250 |
| 10 | 500 |
| 20 | 1000 |

Allowable overhang length

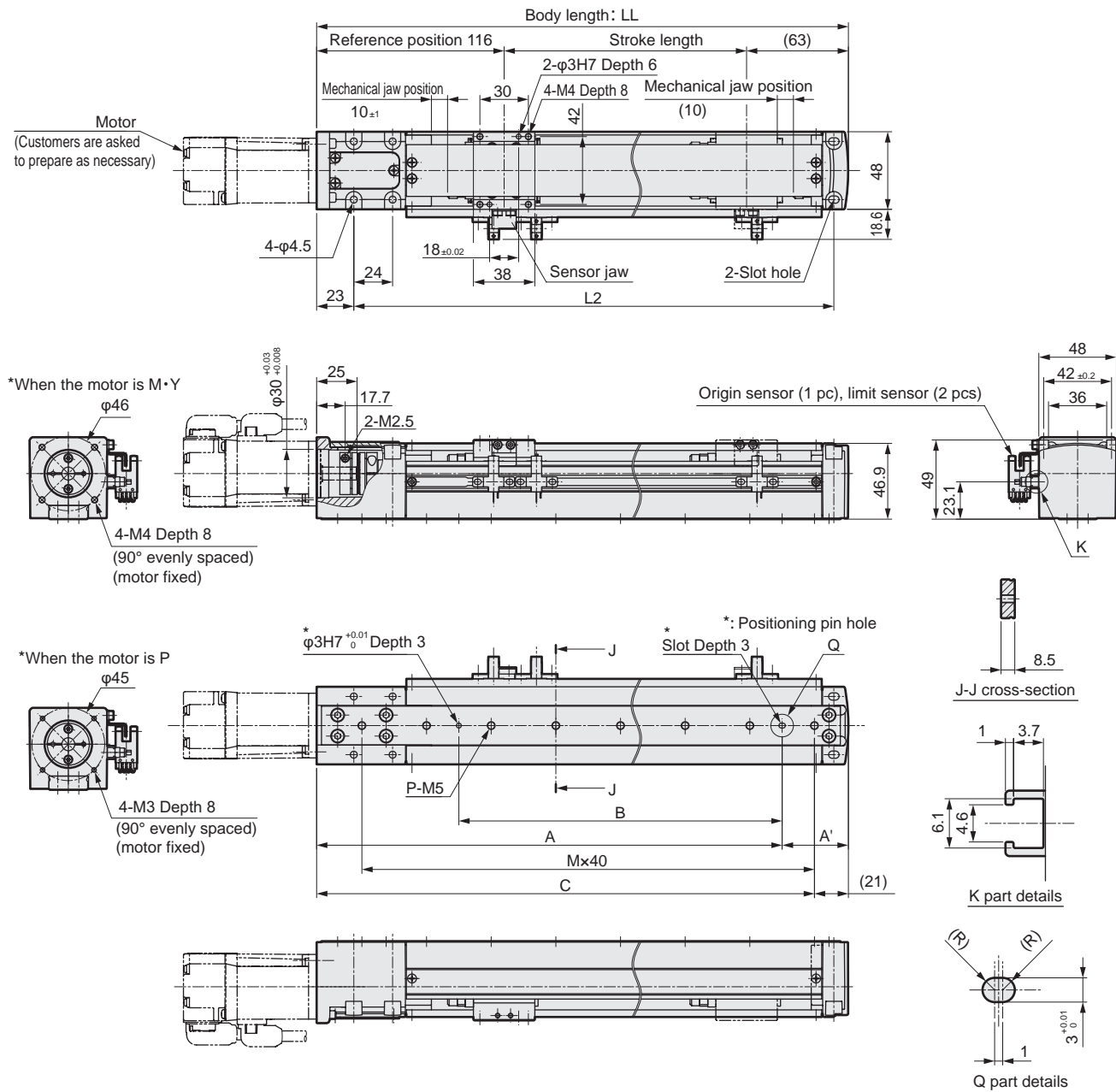
| Mounting style | Screw lead | Load kg | Overhang (mm) | | |
|----------------|------------|---------|---------------|----|-----|
| | | | A | B | C |
| Horizontal | 5 | 6 | 237 | 24 | 56 |
| | | 10 | 137 | 13 | 30 |
| | 10 | 3 | 286 | 51 | 99 |
| | | 5 | 164 | 28 | 56 |
| | 20 | 2 | 221 | 65 | 92 |
| | | 3 | 142 | 42 | 59 |
| Side | 5 | 6 | 56 | 24 | 237 |
| | | 10 | 30 | 13 | 137 |
| | 10 | 3 | 99 | 51 | 286 |
| | | 5 | 56 | 28 | 164 |
| | 20 | 2 | 92 | 65 | 221 |
| | | 3 | 59 | 42 | 142 |
| Vertical | 5 | 1 | 188 | — | 188 |
| | | 3 | 62 | — | 62 |
| | 10 | 1 | 166 | — | 166 |
| | | 1.5 | 111 | — | 111 |
| | 20 | 0.5 | 262 | — | 262 |
| | | 1 | 131 | — | 131 |

*Overhang length with travel life of 5000 km.

*Stroke length: 350 mm, Acceleration/deceleration: 0.3 G, Motor speed: 3000 rpm, Direction: Uni-direction

*Refer to page 15 for details.

Dimensions (ESA-04LE)



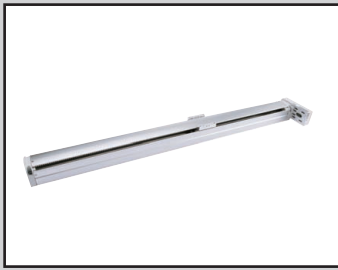
| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 |
|--------------------|------|------|------|------|------|------|------|------|------|------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| Body length: LL | 229 | 279 | 329 | 379 | 429 | 479 | 529 | 579 | 629 | 679 |
| L2 | 197 | 247 | 297 | 347 | 397 | 447 | 497 | 547 | 597 | 647 |
| A | 178 | 238 | 288 | 338 | 378 | 438 | 488 | 538 | 578 | 638 |
| A' | 51 | 41 | 41 | 41 | 51 | 41 | 41 | 41 | 51 | 41 |
| B | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
| C | 208 | 258 | 308 | 358 | 408 | 458 | 508 | 558 | 608 | 658 |
| M | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 |
| P | 6 | 7 | 8 | 9 | 11 | 12 | 13 | 14 | 16 | 17 |
| Weight (kg) | 1.8 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 |

List of attachments

| Mounted motor specification | Coupling | Motor mounting bolt | Size | Quantity |
|-----------------------------|--------------------|---------------------|------|----------|
| M | Assembled shipment | M4 | | 4 |
| Y | | M4 | | 4 |
| P | | M3 | | 4 |

【When selecting origin sensor/limit sensor】

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |



Electric Actuator ESA-04L Series

100 W servo motor mountable Motor return mounting type

How to order

ESA-04L  -     -     

| A Motor mounting direction | |
|----------------------------|--------------------------|
| R | Right return mounting |
| D | Downward return mounting |
| L | Left return mounting |

| B Screw lead | |
|-----------------|-----------------------|
| 05 | Screw lead 5 mm |
| 10 | Screw lead 10 mm |
| 20 | Screw lead 20 mm |
| C Stroke length | |
| 0050 | Stroke length: 50 mm |
| ~ | (Per 50 mm) |
| 0500 | Stroke length: 500 mm |

*150 to 500 mm in case of downward return mounting.

| D Motor type | |
|------------------------|---|
| M | For mounted motor specification, refer to the Series Variation page at the beginning of the manual. |
| Y | |
| P | |
| E Sensor specification | |
| NN | None |
| MR | Sensor rail and magnet. Right side mounting |
| ML | Sensor rail and magnet. Left side mounting |
| DR | Sensor rail and jaw. Right side mounting |
| DL | Sensor rail and jaw. Left side mounting |

| F Origin sensor | |
|-----------------|------|
| N | None |
| C | Yes |
| G Limit sensor | |
| N | None |
| B | Yes |

*MR, ML: The sensor is a cylinder switch.

DR, DL: The sensor is a photoelectric sensor.

*Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting "None" for either.

*The motor return direction cannot be the same as the sensor mounting direction.

Example: The sensor rail mounting direction cannot be Right if the motor return direction is R.

<Example of model number>

ESA-04LL-050200NNN-M1MRCB

Body size : Body width 48 mm
 Motor mounting direction : Left return mounting
 Screw lead : 5 mm
 Stroke length : 200 mm
 Motor type : M
 Sensor specification : Sensor rail and magnet. Right side mounting
 Origin sensor : Yes
 Limit sensor : Yes

Specifications

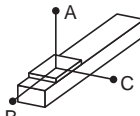
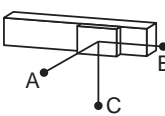
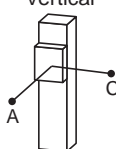
| | | | |
|--|--|-----|-----|
| Applicable motor capacity | 100 W servo motor | | |
| Driving mode | Ball screw $\phi 12$ | | |
| Stroke length mm | 50 to 500 | | |
| Screw lead mm | 5 | 10 | 20 |
| Maximum transportable weight | Horizontal kg | 10 | 5 |
| | Vertical kg | 3 | 1.5 |
| Rated thrust N | 339 | 170 | 85 |
| Repetitive accuracy mm | ± 0.02 | | |
| Idling distance mm | 0.1 or less | | |
| Operating ambient temperature and humidity | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | |
| Storage ambient temperature and humidity | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | |
| Environment | Without corrosive gas, explosive gas or dust | | |

*Maximum transportable weight are values with acceleration/deceleration of 0.3 G.

Stroke length and maximum speed (Unit: mm/s)

| Stroke length Screw lead | 50 to 500 |
|-----------------------------|-----------|
| 5 | 250 |
| 10 | 500 |
| 20 | 1000 |

Allowable overhang length

| Mounting style | Screw lead | Load kg | Overhang (mm) | | |
|---|------------|---------|---------------|----|-----|
| | | | A | B | C |
| Horizontal  | 5 | 6 | 237 | 24 | 56 |
| | | 10 | 137 | 13 | 30 |
| | 10 | 3 | 286 | 51 | 99 |
| | | 5 | 164 | 28 | 56 |
| | 20 | 2 | 221 | 65 | 92 |
| | | 3 | 142 | 42 | 59 |
| Side  | 5 | 6 | 56 | 24 | 237 |
| | | 10 | 30 | 13 | 137 |
| | 10 | 3 | 99 | 51 | 286 |
| | | 5 | 56 | 28 | 164 |
| | 20 | 2 | 92 | 65 | 221 |
| | | 3 | 59 | 42 | 142 |
| Vertical  | 5 | 1 | 188 | — | 188 |
| | | 3 | 62 | — | 62 |
| | 10 | 1 | 166 | — | 166 |
| | | 1.5 | 111 | — | 111 |
| | 20 | 0.5 | 262 | — | 262 |
| | | 1 | 131 | — | 131 |

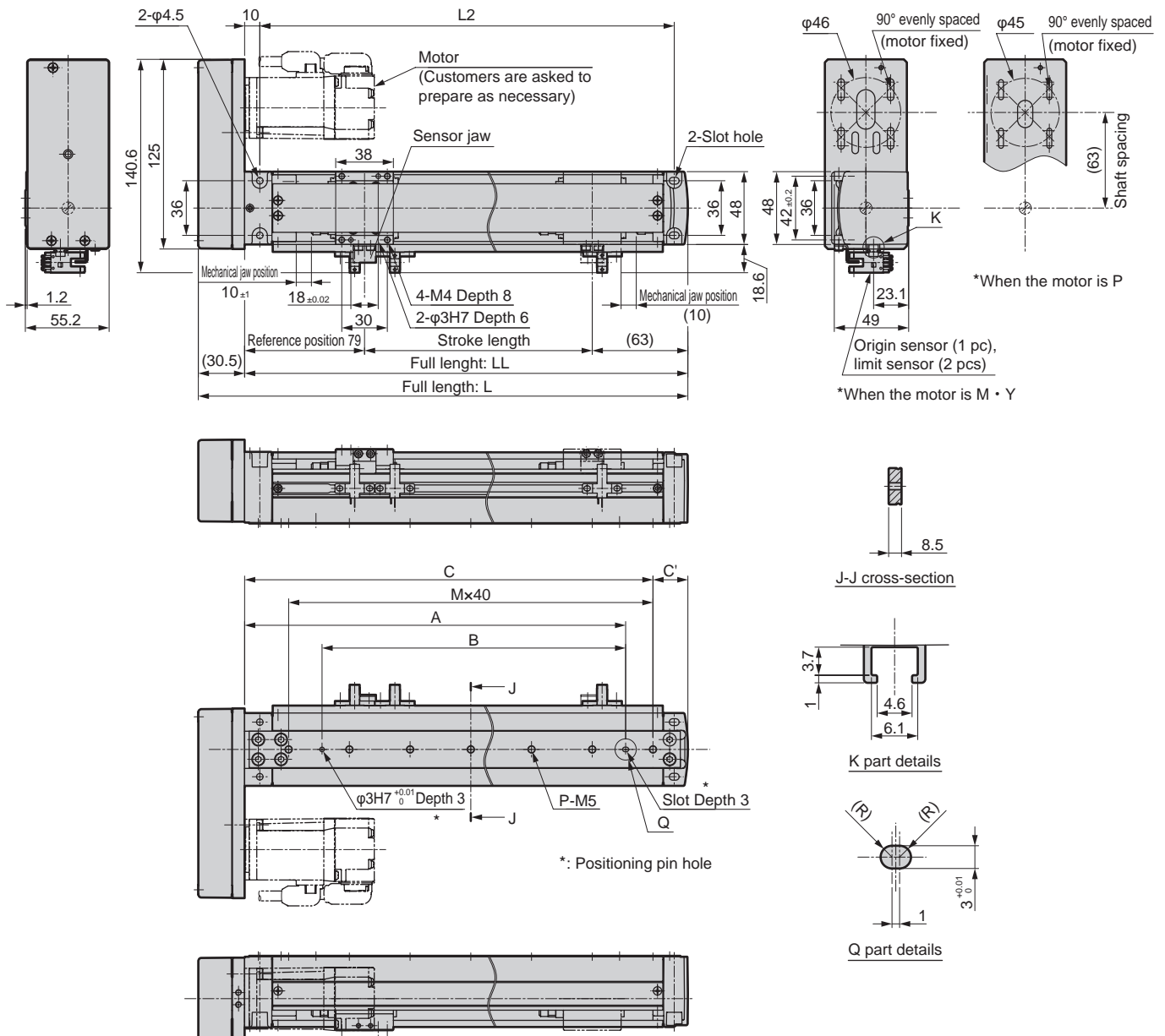
*Overhang length with travel life of 5000 km.

*Stroke length: 350 mm, Acceleration/deceleration: 0.3 G, Motor speed: 3000 rpm, Direction: Uni-direction

*Refer to page 15 for details.

Dimensions (ESA-04L※)

●R: Right return mounting type



| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| Full length: L | 222.5 | 272.5 | 322.5 | 372.5 | 422.5 | 472.5 | 522.5 | 572.5 | 622.5 | 672.5 |
| Body length: LL | 192 | 242 | 292 | 342 | 392 | 442 | 492 | 542 | 592 | 642 |
| L2 | 173 | 223 | 273 | 323 | 373 | 423 | 473 | 523 | 573 | 623 |
| A | 147 | 197 | 247 | 297 | 347 | 397 | 447 | 497 | 547 | 597 |
| B | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
| C | 174 | 219 | 269 | 319 | 374 | 419 | 469 | 519 | 574 | 619 |
| C' | 18 | 23 | 23 | 23 | 18 | 23 | 23 | 23 | 18 | 23 |
| M | 4 | 5 | 6 | 7 | 9 | 10 | 11 | 12 | 14 | 15 |
| P | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 |
| Weight (kg) | 2.0 | 2.1 | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |

List of attachments

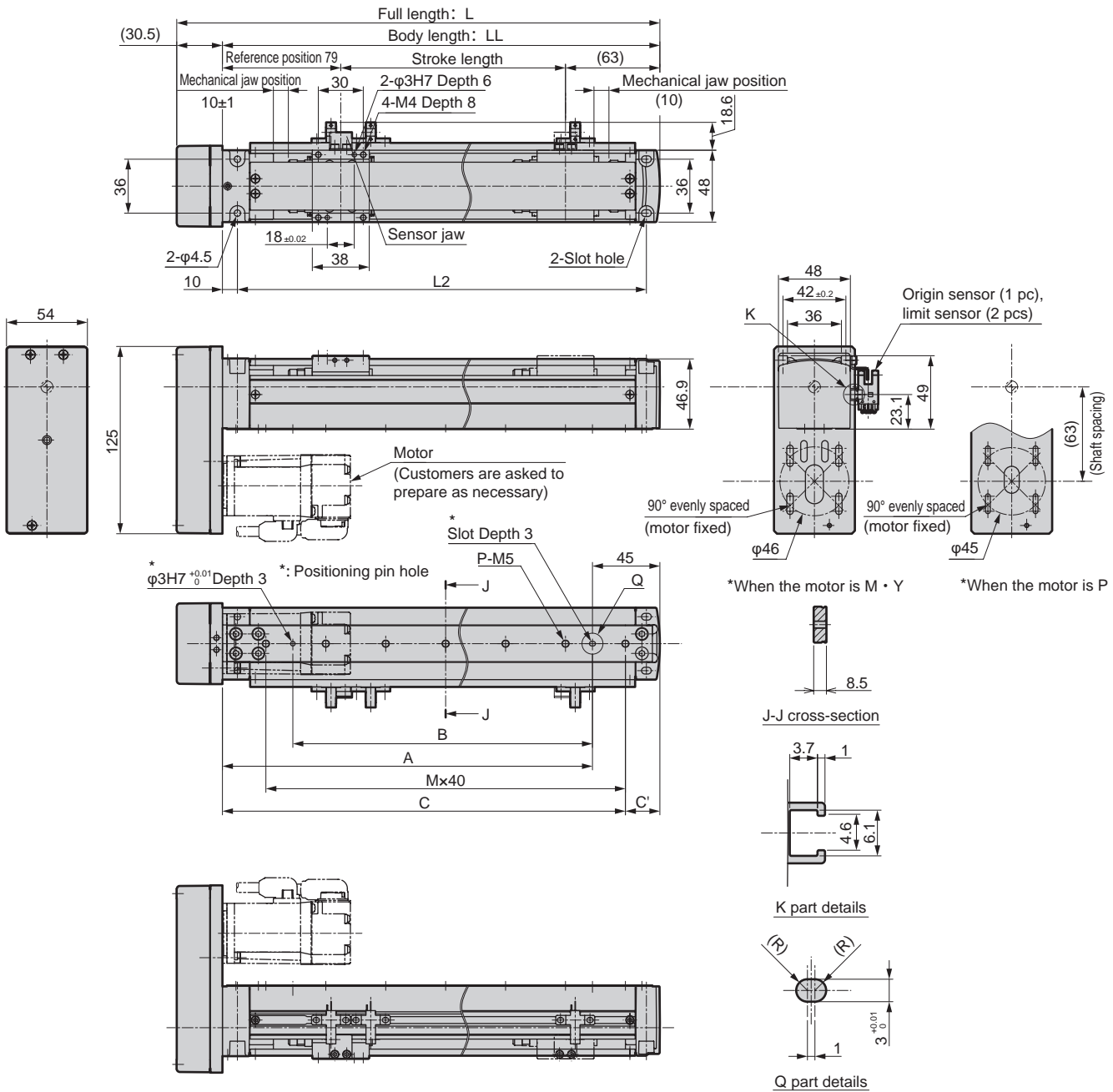
| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

【When selecting origin sensor/limit sensor】

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |

Dimensions (ESA-04L※)

●D: Downward return mounting type



| Stroke length code | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| Full length: L | 322.5 | 372.5 | 422.5 | 472.5 | 522.5 | 572.5 | 622.5 | 672.5 |
| Body length: LL | 292 | 342 | 392 | 442 | 492 | 542 | 592 | 642 |
| L2 | 273 | 323 | 373 | 423 | 473 | 523 | 573 | 623 |
| A | 247 | 297 | 347 | 397 | 447 | 497 | 547 | 597 |
| B | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
| C | 269 | 319 | 374 | 419 | 469 | 519 | 574 | 619 |
| C' | 23 | 23 | 18 | 23 | 23 | 23 | 18 | 23 |
| M | 6 | 7 | 9 | 10 | 11 | 12 | 14 | 15 |
| P | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 |
| Weight (kg) | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |

List of attachments

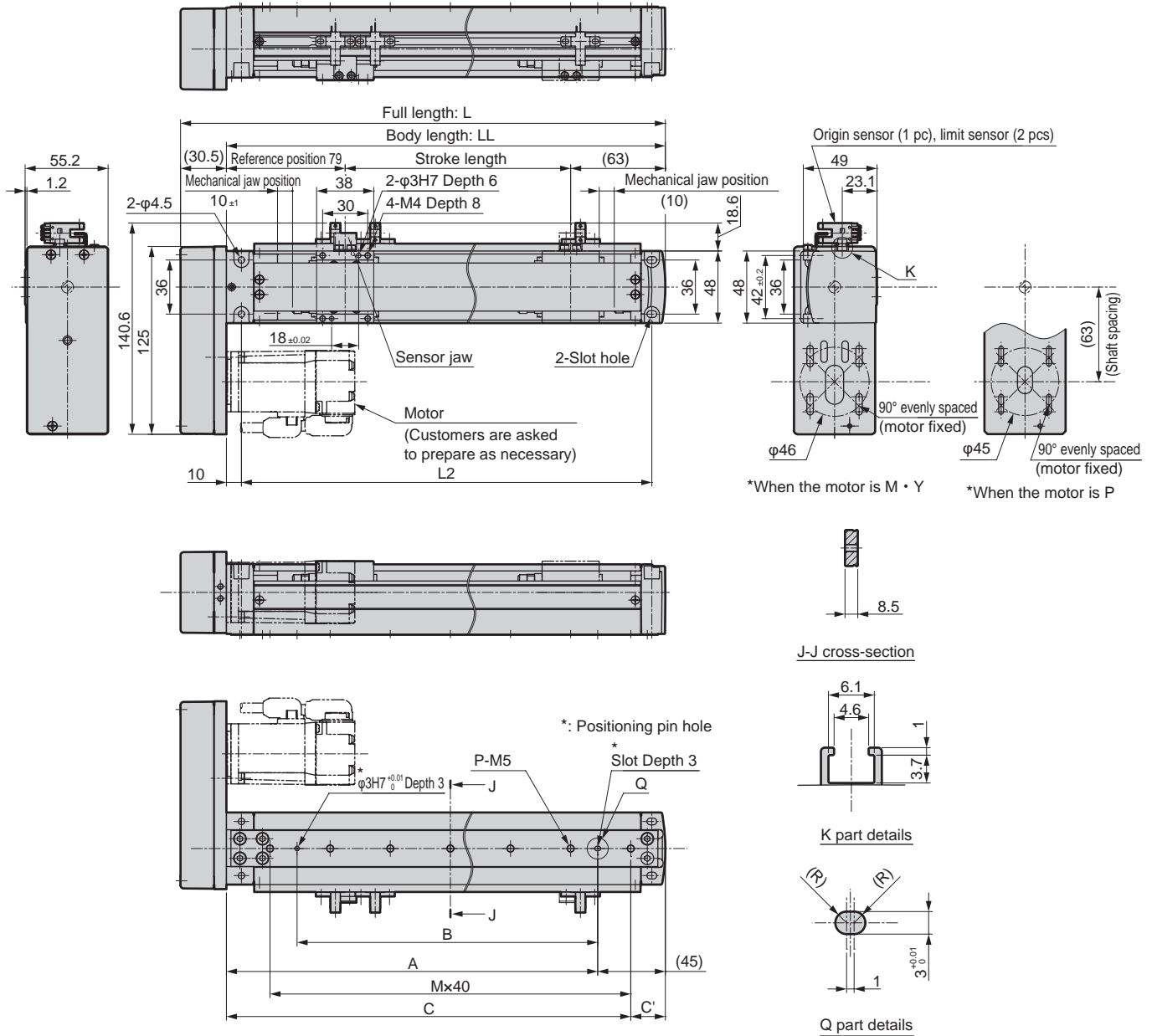
| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |

Dimensions (ESA-04L※)

●L: Left return mounting type



| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| Full length: L | 222.5 | 272.5 | 322.5 | 372.5 | 422.5 | 472.5 | 522.5 | 572.5 | 622.5 | 672.5 |
| Body length: LL | 192 | 242 | 292 | 342 | 392 | 442 | 492 | 542 | 592 | 642 |
| L2 | 173 | 223 | 273 | 323 | 373 | 423 | 473 | 523 | 573 | 623 |
| A | 147 | 197 | 247 | 297 | 347 | 397 | 447 | 497 | 547 | 597 |
| B | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
| C | 174 | 219 | 269 | 319 | 374 | 419 | 469 | 519 | 574 | 619 |
| C' | 18 | 23 | 23 | 23 | 18 | 23 | 23 | 23 | 18 | 23 |
| M | 4 | 5 | 6 | 7 | 9 | 10 | 11 | 12 | 14 | 15 |
| P | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 |
| Weight (kg) | 2.0 | 2.1 | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |

List of attachments

| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |



Electric Actuator ESA-06LE Series

100 W servo motor mountable Motor direct mounting type

How to order

ESA-06L **E** - **05** **0200** **N** **NN** - **M** **1** **MR** **C** **B**

| A Motor mounting direction | |
|----------------------------|-----------------|
| E | Direct mounting |

| B Screw lead | |
|-----------------|-----------------------|
| 05 | Screw lead 5 mm |
| 10 | Screw lead 10 mm |
| 20 | Screw lead 20 mm |
| C Stroke length | |
| 0050 | Stroke length: 50 mm |
| ~ | (Per 50 mm) |
| 0600 | Stroke length: 600 mm |
| 0700 | Stroke length: 700 mm |

| D Motor type | |
|------------------------|---|
| M | For mounted motor specification, refer to the Series Variation page at the beginning of the manual. |
| Y | |
| P | |
| E Sensor specification | |
| NN | None |
| MR | Sensor rail and magnet. Right side mounting |
| ML | Sensor rail and magnet. Left side mounting |
| DR | Sensor rail and jaw. Right side mounting |
| DL | Sensor rail and jaw. Left side mounting |

| F Origin sensor | |
|-----------------|------|
| N | None |
| C | Yes |
| G Limit sensor | |
| N | None |
| B | Yes |

*MR, ML: The sensor is a cylinder switch.

DR, DL: The sensor is a photoelectric sensor.

*Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting "None" for either.

<Example of model number>

ESA-06LE-050200NNN-M1MRCB

Body size : Body width 70 mm
 Motor mounting direction : Direct mounting
 Screw lead : 5 mm
 Stroke length : 200 mm
 Motor type : M
 Sensor specification : Sensor rail and magnet. Right side mounting
 Origin sensor : Yes
 Limit sensor : Yes

Specifications

| | | | | | |
|--|------------|--|-------------|-----|----|
| Applicable motor capacity | | 100 W servo motor | | | |
| Driving mode | | Ball screw φ12 | | | |
| Stroke length | | mm50 to 700 | | | |
| Screw lead | | mm51020 | | | |
| Maximum transportable weight | Horizontal | kg | 30 | 15 | 8 |
| | Vertical | kg | 10 | 5 | 2 |
| Rated thrust | | N | 339 | 170 | 85 |
| Repetitive accuracy | | mm | ±0.02 | | |
| Idling distance | | mm | 0.1 or less | | |
| Operating ambient temperature and humidity | | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | | |
| Storage ambient temperature and humidity | | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | | |
| Enviroment | | Without corrosive gas, explosive gas or dust | | | |

*Maximum transportable weight are values with acceleration/deceleration of 0.3 G.

Stroke length and maximum speed (Unit: mm/s)

| Stroke length Screw lead | 50 to 550 | 600 | 700 |
|-----------------------------|-----------|-----|-----|
| 5 | 250 | 230 | 200 |
| 10 | 500 | 460 | 400 |
| 20 | 1000 | 920 | 800 |

Allowable overhang length

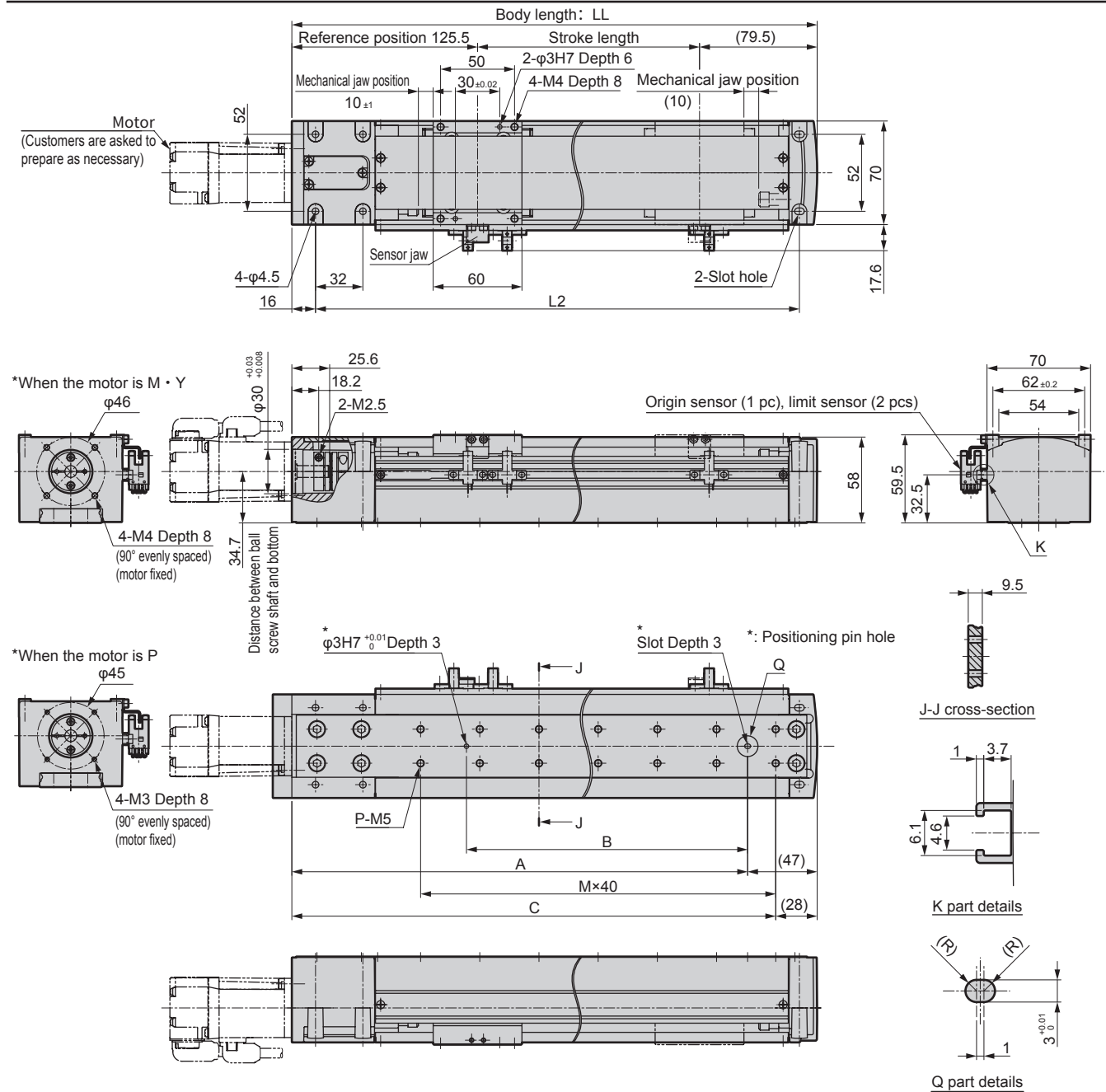
| Mounting style | Screw lead | Load kg | Overhang (mm) | | |
|----------------|------------|---------|---------------|-----|-----|
| | | | A | B | C |
| Horizontal | 5 | 10 | 480 | 50 | 110 |
| | | 30 | 130 | 10 | 25 |
| | 10 | 3 | 800 | 145 | 330 |
| | | 8 | 280 | 50 | 120 |
| | 20 | 15 | 140 | 23 | 55 |
| | | 3 | 430 | 130 | 170 |
| Side | 5 | 5 | 260 | 70 | 100 |
| | | 8 | 150 | 40 | 60 |
| | 10 | 3 | 300 | 145 | 800 |
| | | 8 | 120 | 50 | 280 |
| | 20 | 15 | 55 | 23 | 140 |
| | | 3 | 170 | 130 | 430 |
| Vertical | 5 | 5 | 100 | 170 | 260 |
| | | 8 | 60 | 40 | 150 |
| | 10 | 2 | 300 | — | 300 |
| | | 4 | 150 | — | 150 |
| | 20 | 10 | 60 | — | 60 |
| | | 1 | 410 | — | 410 |
| | 10 | 2 | 205 | — | 205 |
| | | 5 | 82 | — | 82 |
| | 20 | 1 | 300 | — | 300 |
| | | 2 | 150 | — | 150 |

*Overhang length with travel life of 5000 km.

*Stroke length: 350 mm, Acceleration/deceleration: 0.3 G, Motor speed: 3000 rpm, Direction: Uni-direction

*Refer to page 15 for details.

Dimensions (ESA-06LE)



| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 | 0550 | 0600 | 0700 |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 |
| Body length: LL | 255 | 305 | 355 | 405 | 455 | 505 | 555 | 605 | 655 | 705 | 755 | 805 | 905 |
| L2 | 227 | 277 | 327 | 377 | 427 | 477 | 527 | 577 | 627 | 677 | 727 | 777 | 877 |
| A | 208 | 258 | 308 | 358 | 408 | 458 | 508 | 558 | 608 | 658 | 708 | 758 | 858 |
| B | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 800 |
| C | 227 | 277 | 327 | 377 | 427 | 477 | 527 | 577 | 627 | 677 | 727 | 777 | 877 |
| M | 5 | 6 | 6 | 8 | 10 | 11 | 11 | 13 | 15 | 16 | 16 | 18 | 21 |
| P | 12 | 14 | 14 | 18 | 22 | 24 | 24 | 28 | 32 | 34 | 34 | 38 | 44 |
| Weight (kg) | 3.1 | 3.3 | 3.5 | 3.7 | 3.8 | 4.0 | 4.2 | 4.4 | 4.5 | 4.7 | 4.9 | 5.1 | 5.4 |

List of attachments

| Mounted motor specification | Coupling | Motor mounting bolt | |
|-----------------------------|--------------------|---------------------|----------|
| | | Size | Quantity |
| M | Assembled shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |



Electric Actuator ESA-06L Series

100 W servo motor mountable Motor return mounting type

How to order

ESA-06L  -     -     

| A Motor mounting direction | |
|----------------------------|--------------------------|
| R | Right return mounting |
| D | Downward return mounting |
| L | Left return mounting |

| B Screw lead | |
|-----------------|----------------------|
| 05 | Screw lead 5 mm |
| 10 | Screw lead 10 mm |
| 20 | Screw lead 20 mm |
| C Stroke length | |
| 0050 | Stroke length 50 mm |
| ~ | (Per 50 mm) |
| 0600 | Stroke length 600 mm |
| 0700 | Stroke length 700 mm |

*150 to 500 mm in case of downward return mounting.

| D Motor type | |
|------------------------|---|
| M | For mounted motor specification, refer to the Series Variation page at the beginning of the manual. |
| Y | |
| P | |
| E Sensor specification | |
| NN | None |
| MR | Sensor rail and magnet. Right side mounting |
| ML | Sensor rail and magnet. Left side mounting |
| DR | Sensor rail and jaw. Right side mounting |
| DL | Sensor rail and jaw. Left side mounting |

| F Origin sensor | |
|-----------------|------|
| N | None |
| C | Yes |
| G Limit sensor | |
| N | None |
| B | Yes |

*MR, ML: The sensor is a cylinder switch.

DR, DL: The sensor is a photoelectric sensor.

*Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting "None" for either.

*The motor return direction cannot be the same as the sensor mounting direction.

Example: The sensor rail mounting direction cannot be Right if the motor return direction is R.

<Example of model number>

ESA-06LL-050200NNN-M1MRCB

Body size : Body width 70 mm
 Motor mounting direction : Left return mounting
 Screw lead : 5 mm
 Stroke length : 200 mm
 Motor type : M
 Sensor specification : Sensor rail and magnet. Right side mounting
 Origin sensor : Yes
 Limit sensor : Yes

Specifications

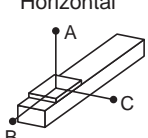
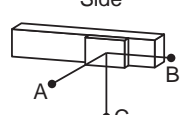
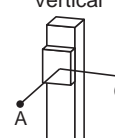
| | | | | | |
|--|------------|--|-------------|-----|----|
| Applicable motor capacity | | 100 W servo motor | | | |
| Driving mode | | Ball screw φ12 | | | |
| Stroke length | | mm | 50 to 700 | | |
| Screw lead | | mm | 5 | 10 | 20 |
| Maximum transportable weight | Horizontal | kg | 30 | 15 | 8 |
| | Vertical | kg | 10 | 5 | 2 |
| Rated thrust | | N | 339 | 170 | 85 |
| Repetitive accuracy | | mm | ±0.02 | | |
| Idling distance | | mm | 0.1 or less | | |
| Operating ambient temperature and humidity | | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | | |
| Storage ambient temperature and humidity | | 0 to 40°C (with no icing) 20% to 80% (with no condensation) | | | |
| Enviroment | | Without corrosive gas, explosive gas or dust | | | |

*Maximum transportable weight are values with acceleration/deceleration of 0.3 G.

Stroke length and maximum speed (Unit: mm/s)

| Stroke length Screw lead | 50 to 550 | 600 | 700 |
|-----------------------------|-----------|-----|-----|
| 5 | 250 | 230 | 200 |
| 10 | 500 | 460 | 400 |
| 20 | 1000 | 920 | 800 |

Allowable overhang length

| Mounting style | Screw lead | Load kg | Overhang (mm) | | |
|---|------------|---------|---------------|-----|-----|
| | | | A | B | C |
| Horizontal  | 5 | 10 | 480 | 50 | 110 |
| | | 30 | 130 | 10 | 25 |
| | | 3 | 800 | 145 | 330 |
| | 10 | 8 | 280 | 50 | 120 |
| | | 15 | 140 | 23 | 55 |
| | | 3 | 430 | 130 | 170 |
| Side  | 5 | 5 | 260 | 70 | 100 |
| | | 8 | 150 | 40 | 60 |
| | | 10 | 110 | 50 | 480 |
| | 10 | 30 | 25 | 10 | 130 |
| | | 3 | 300 | 145 | 800 |
| | | 8 | 120 | 50 | 280 |
| | 20 | 15 | 55 | 23 | 140 |
| | | 3 | 170 | 130 | 430 |
| | | 5 | 100 | 170 | 260 |
| Vertical  | 5 | 8 | 60 | 40 | 150 |
| | | 2 | 300 | — | 300 |
| | | 4 | 150 | — | 150 |
| | 10 | 10 | 60 | — | 60 |
| | | 1 | 410 | — | 410 |
| | | 2 | 205 | — | 205 |
| | 20 | 5 | 82 | — | 82 |
| | | 1 | 300 | — | 300 |
| | | 2 | 150 | — | 150 |

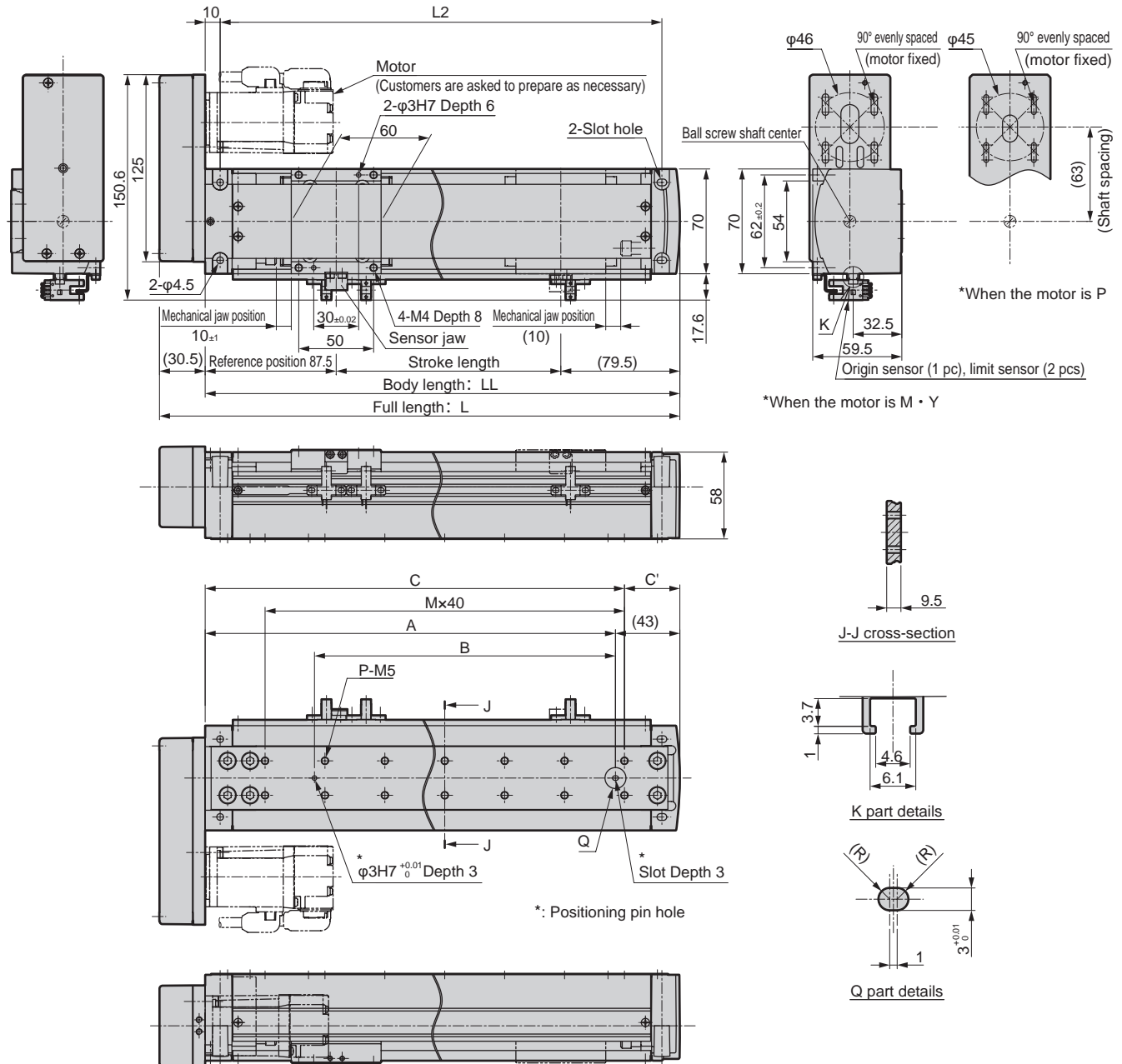
*Overhang length with travel life of 5000 km.

*Stroke length: 350 mm, Acceleration/deceleration: 0.3 G, Motor speed: 3000 rpm, Direction: Uni-direction

*Refer to page 15 for details.

Dimensions (ESA-06L※)

●R: Right return mounting type



| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 | 0550 | 0600 | 0700 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 |
| Full length: L | 247.5 | 297.5 | 347.5 | 397.5 | 447.5 | 497.5 | 547.5 | 597.5 | 647.5 | 697.5 | 747.5 | 797.5 | 897.5 |
| Body length: LL | 217 | 267 | 317 | 367 | 417 | 467 | 517 | 567 | 617 | 667 | 717 | 767 | 867 |
| L2 | 195 | 245 | 295 | 345 | 395 | 445 | 495 | 545 | 595 | 645 | 695 | 745 | 845 |
| A | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | 674 | 724 | 824 |
| B | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 750 |
| C | 190 | 240 | 280 | 335 | 390 | 440 | 480 | 535 | 590 | 640 | 680 | 735 | 840 |
| C' | 27 | 27 | 37 | 32 | 27 | 27 | 37 | 32 | 27 | 27 | 37 | 32 | 27 |
| M | 3 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 | 17 | 20 |
| P | 8 | 12 | 14 | 16 | 18 | 22 | 24 | 26 | 28 | 32 | 34 | 36 | 42 |
| Weight (kg) | 3.3 | 3.5 | 3.7 | 3.9 | 4.0 | 4.2 | 4.4 | 4.6 | 4.7 | 4.9 | 5.1 | 5.3 | 5.6 |

List of attachments

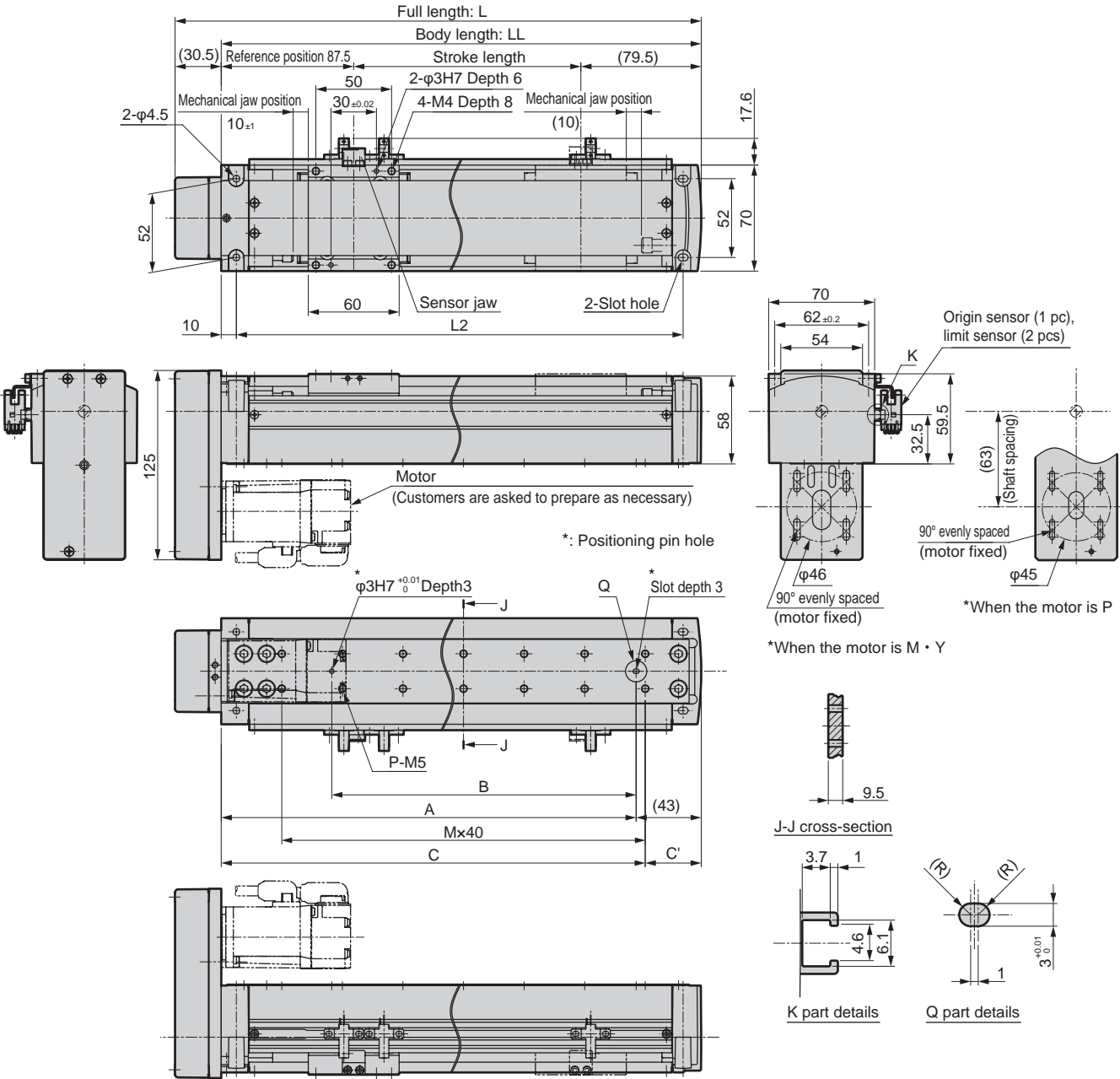
| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |

Dimensions (ESA-06L※)

●D: Downward return mounting type



| Stroke length code | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 | 0550 | 0600 | 0700 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 |
| Full length: L | 347.5 | 397.5 | 447.5 | 497.5 | 547.5 | 597.5 | 647.5 | 697.5 | 747.5 | 797.5 | 897.5 |
| Body length: LL | 317 | 367 | 417 | 467 | 517 | 567 | 617 | 667 | 717 | 767 | 867 |
| L2 | 295 | 345 | 395 | 445 | 495 | 545 | 595 | 645 | 695 | 745 | 845 |
| A | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | 674 | 724 | 824 |
| B | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 750 |
| C | 280 | 335 | 390 | 440 | 480 | 535 | 590 | 640 | 680 | 735 | 840 |
| C' | 37 | 32 | 27 | 27 | 37 | 32 | 27 | 27 | 37 | 32 | 27 |
| M | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 | 17 | 20 |
| P | 14 | 16 | 18 | 22 | 24 | 26 | 28 | 32 | 34 | 36 | 42 |
| Weight (kg) | 3.7 | 3.9 | 4.0 | 4.2 | 4.4 | 4.6 | 4.7 | 4.9 | 5.1 | 5.3 | 5.6 |

List of attachments

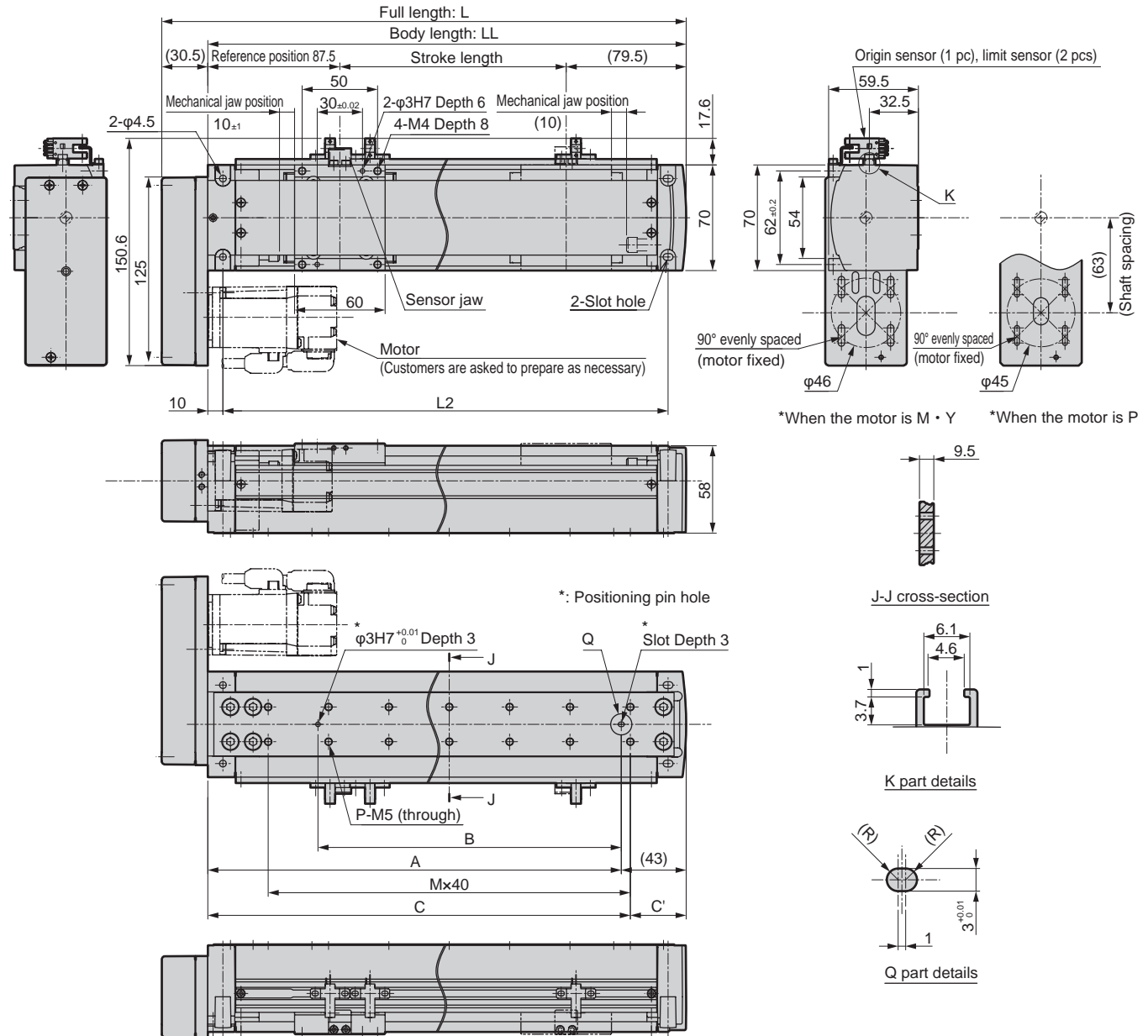
| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |

Dimensions (ESA-06L※)

●L: Left return mounting type



| Stroke length code | 0050 | 0100 | 0150 | 0200 | 0250 | 0300 | 0350 | 0400 | 0450 | 0500 | 0550 | 0600 | 0700 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Stroke length (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 |
| Full length: L | 247.5 | 297.5 | 347.5 | 397.5 | 447.5 | 497.5 | 547.5 | 597.5 | 647.5 | 697.5 | 747.5 | 797.5 | 897.5 |
| Body length: LL | 217 | 267 | 317 | 367 | 417 | 467 | 517 | 567 | 617 | 667 | 717 | 767 | 867 |
| L2 | 195 | 245 | 295 | 345 | 395 | 445 | 495 | 545 | 595 | 645 | 695 | 745 | 845 |
| A | 174 | 224 | 274 | 324 | 374 | 424 | 474 | 524 | 574 | 624 | 674 | 724 | 824 |
| B | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 750 |
| C | 190 | 240 | 280 | 335 | 390 | 440 | 480 | 535 | 590 | 640 | 680 | 735 | 840 |
| C' | 27 | 27 | 37 | 32 | 27 | 27 | 37 | 32 | 27 | 27 | 37 | 32 | 27 |
| M | 3 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 | 17 | 20 |
| P | 8 | 12 | 14 | 16 | 18 | 22 | 24 | 26 | 28 | 32 | 34 | 36 | 42 |
| Weight (kg) | 3.3 | 3.5 | 3.7 | 3.9 | 4.0 | 4.2 | 4.4 | 4.6 | 4.7 | 4.9 | 5.1 | 5.3 | 5.6 |

List of attachments

| Mounted motor specification | Pulley | Motor mounting bolt | |
|-----------------------------|----------------------|---------------------|----------|
| | | Size | Quantity |
| M | Attached at shipment | M4 | 4 |
| Y | | M4 | 4 |
| P | | M3 | 4 |

[When selecting origin sensor/limit sensor]

| Sensor type | Manufacturer | Model | Quantity |
|----------------------|--------------|----------|----------|
| Cylinder switch | CKD | SW-T2V | 3 |
| Photoelectric sensor | OMRON | EE-SX672 | 3 |

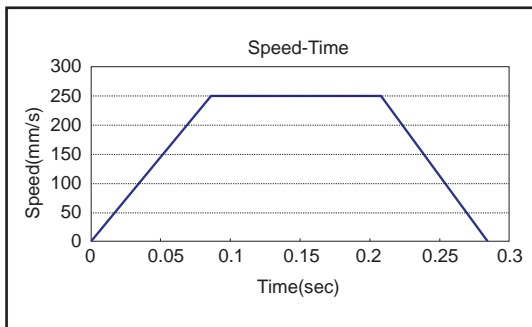
STEP-1 Checking transportable weight

The transportable weight differs depending on the mounting style, the transport speed and the acceleration/deceleration. Select each size and screw lead referring to the specifications page for each model and page 15 of the technical data.

STEP-2 Checking tact time

Select the compatible model, size and screw lead for the specification with motor according to the "Speed and transportable weight" table and for the motorless specification according to the "Maximum speed".

Check whether the selected model complies with your requirements on tact time referring to the example of tact time calculation on page 14 of the technical data.



*For an electric actuator, acceleration/deceleration needs to be considered, as shown on the left.

Depending on the stroke length and acceleration/deceleration, it may not reach the set speed in some cases.

*Do not use at a speed that exceeds the specifications.

*Acceleration/deceleration should not be more than 0.3 G.

$$[\text{Set time (s)}] \div [\text{Acceleration (mm/s}^2\text{)}] = [\text{Acceleration time (s)}]$$

$$0.3 \text{ G} = 2940 \text{ mm/s}^2 = 2.94 \text{ m/s}^2$$

STEP-3 Checking static allowable load and moment

Calculate the load and moment arising when the slider stops.

According to the calculation formula below, check that the resultant moment (M_T) meets the following equation.

According to the mounting style specified on page 15, check that the amount of overhang and allowable moment meet the following equation.

$$M_T = \frac{W}{W_{\max}} + \frac{MP}{MP_{\max}} + \frac{MR}{MR_{\max}} + \frac{MY}{MY_{\max}} < 1$$

W_{\max} : Allowable load

Ensure that the "L" on page 16 is less than the allowable amount of overhang A, B and C on page 15.

M_T : Resultant moment (must be smaller than 1)

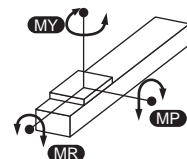
W : Vertical load

MR : Rotation moment

MP : Pitching moment

MY : Yawing moment

*Consider all moments acting according to the situation as the moment load during operation.



Static allowable load and moment

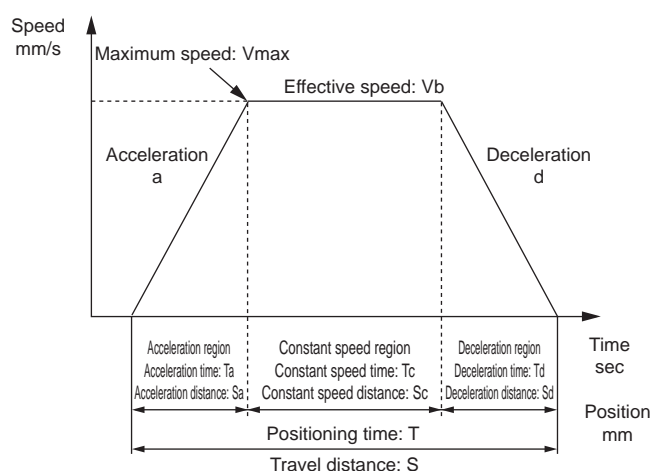
| Model | Vertical load W_{\max} (N) | Pitching moment MP_{\max} (N·m) | Yawing moment MY_{\max} (N·m) | Rotation moment MR_{\max} (N·m) |
|--------|---------------------------------|--------------------------------------|------------------------------------|--------------------------------------|
| ESA-04 | 484 | 10 | 10 | 18 |
| ESA-06 | 781 | 24.6 | 24.6 | 48 |

STEP-4 Checking allowable overhang length

Check that the overhang length during operation falls in the range of allowable overhang length (page 15).

Example of tact time calculation

Tact setting for a transport operation



| | Content | Code | Unit | Remarks |
|------------------|-------------------------|-----------|-------------------|--|
| Set value | Set speed | V | mm/s | |
| | Set acceleration | a | mm/s ² | |
| | Set deceleration | d | mm/s ² | |
| | Travel distance | S | mm | |
| Calculated value | Maximum speed | V_{max} | mm/s | $= \{2 \times a \times d \times S / (a + d)\}^{1/2}$ |
| | Effective speed | V_b | mm/s | Smaller of V and V_{max} |
| | Acceleration time | T_a | s | $= V_b / a$ |
| | Deceleration time | T_d | s | $= V_b / d$ |
| | Constant speed time | T_c | s | $= S_c / V_b$ |
| | Acceleration distance | S_a | mm | $= (a \times T_a^2) / 2$ |
| | Deceleration distance | S_d | mm | $= (d \times T_d^2) / 2$ |
| | Constant speed distance | S_c | mm | $= S - (S_a + S_d)$ |
| | Positioning time | T | s | $= T_a + T_c + T_d$ |

Example of calculation

Conditions

Model: ESA-06LE-200500NNN-M1NNN

Set speed $V = 1000 \text{ mm/s}$

Set acceleration $a = 0.3 \text{ G} = 2.94 \text{ m/s}^2 = 2940 \text{ mm/s}^2$

Set deceleration $d = 0.3 \text{ G} = 2.94 \text{ m/s}^2 = 2940 \text{ mm/s}^2$

Travel distance $S = 500 \text{ mm}$

Calculation results

Maximum speed $V_{max} = \{2 \times 2940 \times 2940 \times 500 / (2940 + 2940)\}^{1/2} = 1212.436 \text{ mm/s}$

Effective speed $V_b = 1000 \text{ mm/s}$

$V: 1000 \leq V_{max}: 1212.436$

Acceleration time $T_a = 1000 / 2940 = 0.340 \text{ s}$

Deceleration time $T_d = 1000 / 2940 = 0.340 \text{ s}$

Constant speed time $T_c = 160.136 / 1000 = 0.160136 \text{ s}$

Acceleration distance $S_a = (2940 \times 0.340^2) / 2 = 169.932 \text{ mm}$

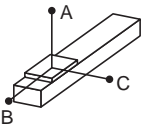
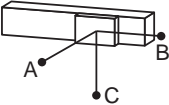
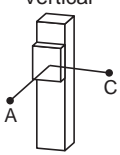
Deceleration distance $S_d = (2940 \times 0.340^2) / 2 = 169.932 \text{ mm}$

Constant speed distance $S_c = 500 - (169.932 + 169.932) = 160.136 \text{ mm}$

Positioning time $T = 0.340 + 0.160136 + 0.340 = 0.840 \text{ s}$

[Allowable amount of overhang]

ESA-04

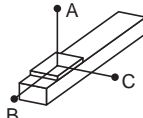
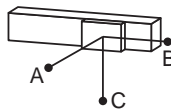
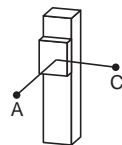
| Mounting style | Screw lead | Load kg | Overhang (mm) | | |
|---|------------|---------|---------------|----|-----|
| | | | A | B | C |
| Horizontal  | 5 | 6 | 237 | 24 | 56 |
| | | 10 | 137 | 13 | 30 |
| | 10 | 3 | 286 | 51 | 99 |
| | | 5 | 164 | 28 | 56 |
| | 20 | 2 | 221 | 65 | 92 |
| | | 3 | 142 | 42 | 59 |
| Side  | 5 | 6 | 56 | 24 | 237 |
| | | 10 | 30 | 13 | 137 |
| | 10 | 3 | 99 | 51 | 286 |
| | | 5 | 56 | 28 | 164 |
| | 20 | 2 | 92 | 65 | 221 |
| | | 3 | 59 | 42 | 142 |
| Vertical  | 5 | 1 | 188 | — | 188 |
| | | 3 | 62 | — | 62 |
| | 10 | 1 | 166 | — | 166 |
| | | 1.5 | 111 | — | 111 |
| | 20 | 0.5 | 262 | — | 262 |
| | | 1 | 131 | — | 131 |

* 1: The actuator travel life is restricted to 5000 km.

* 2: Only load at uni-direction of overhang.

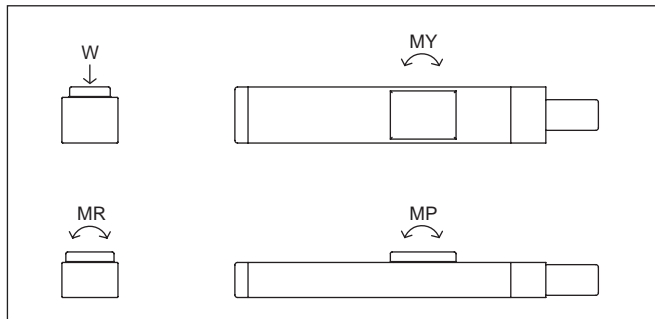
* 3: Values with stroke length of 350 mm and motor speed of 3000 rpm.

ESA-06

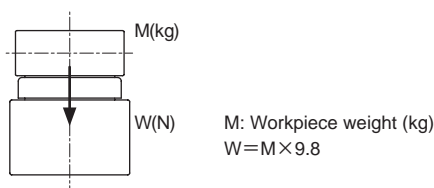
| Mounting style | Screw lead | Load kg | Overhang (mm) | | | |
|--|--|---------|---------------|-----|-----|-----|
| | | | A | B | C | |
| <div>Horizontal</div>  | 5 | 10 | 480 | 50 | 110 | |
| | | 30 | 130 | 10 | 25 | |
| | 10 | 3 | 800 | 145 | 330 | |
| | | 8 | 280 | 50 | 120 | |
| | | 15 | 140 | 23 | 55 | |
| | 20 | 3 | 430 | 130 | 170 | |
| | | 5 | 260 | 70 | 100 | |
| | | 8 | 150 | 40 | 60 | |
| | <div>Side</div>  | 5 | 10 | 110 | 50 | 480 |
| 30 | | | 25 | 10 | 130 | |
| 10 | | 3 | 300 | 145 | 800 | |
| | | 8 | 120 | 50 | 280 | |
| | | 15 | 55 | 23 | 140 | |
| 20 | | 3 | 170 | 130 | 430 | |
| | | 5 | 100 | 170 | 260 | |
| | | 8 | 60 | 40 | 150 | |
| <div>Vertical</div>  | | 5 | 2 | 300 | — | 300 |
| | | | 4 | 150 | — | 150 |
| | | | 10 | 60 | — | 60 |
| | | 10 | 1 | 410 | — | 410 |
| | 2 | | 205 | — | 205 | |
| | 5 | | 82 | — | 82 | |
| | 20 | 1 | 300 | — | 300 | |
| | | 2 | 150 | — | 150 | |

Calculating the static allowable moment for each mounting style

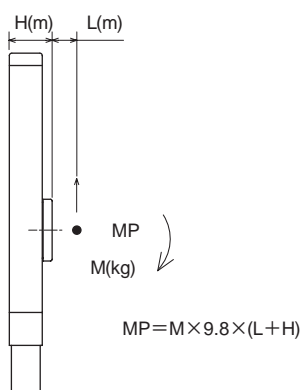
● Checking the allowable moment



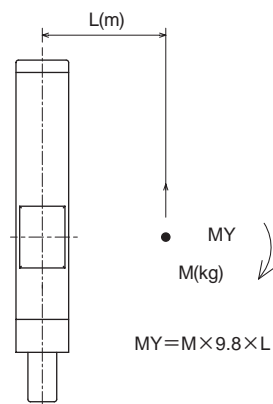
● Vertical load W(N)



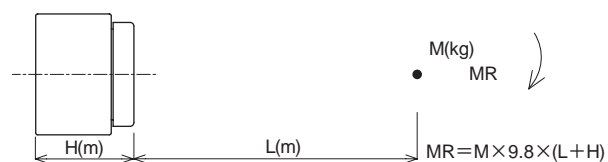
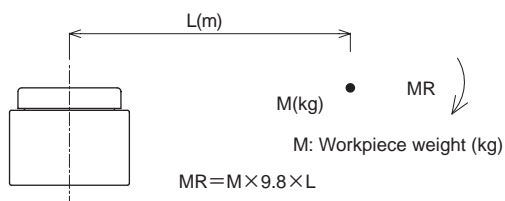
● Pitching moment MP(N·m)



● Yawing moment MY(N·m)



● Rotation moment MR(N·m)



| | H (m) |
|--------|--------|
| ESA-04 | 0.049 |
| ESA-06 | 0.0595 |

List of attachments

Basic type

Motor mounting screw (common motor mounting direction)

| Mounted motor | Motor capacity | Thread size | Quantity |
|---------------|----------------|-------------|----------|
| M | 100 W | M4 | 2 |
| Y | | M4 | 2 |
| P | | M3 | 4 |

Motor mounting direction difference

| Model | Attachment name | Quantity |
|---|--------------------------------------|----------|
| E (Direct mounting) | Coupling (assembled before shipment) | 1 |
| R (Right return mounting) L (Left return mounting) | Pulley | 1 |
| D (Downward return mounting) | Belt | 1 |

When selecting origin sensor/limit sensor

| Shipping format | Quantity |
|------------------------------------|-----------------|
| Attached at shipment ^{*1} | 3 ^{*2} |

*1: Sensor mounting screws are also attached.

*2: If "None" is selected for either origin sensor or limit sensor, the other also needs to be "None". If "None" is selected, the sensor jaw will also be "None".

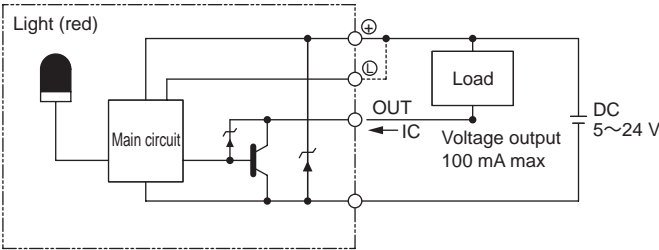
Origin sensor/limit sensor

| Manufacturer | Model |
|--------------|----------|
| OMRON | EE-SX672 |

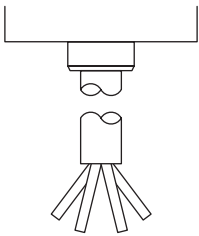
Performance

| Description | Specifications |
|---------------------------|--|
| Differential distance | 0.025 mm |
| Light source | Infrared LED with a peak wavelength of 940 nm |
| Indicator | Light indicator (red) |
| Supply voltage | 5 to 24 VDC \pm 10%, ripple (p-p): 10% max |
| Current consumption | 35 mA max (NPN pre-wired models) |
| Control output | NPN open collector: 5 to 24 VDC, 100 mA max OFF current (leakage current):0.5 mA max 100 mA load current with a residual voltage of 0.8 V max 40 mA load current with a residual voltage of 0.4 V max |
| Ambient illumination | 1000 lx max. with fluorescent light on the surface of the receiver |
| Ambient temperature range | Operating: -25 to +55°C, Storage: -30 to +80°C (with no icing or condensation) |
| Ambient humidity range | Operating: 5% to 85%, Storage: 5% to 95% (with no icing or condensation) |
| Degree of protection | IEC60529 IP50 |
| Standard cable length | 1 m (Connector with wire [EE-1010 1M]) |

Output circuit



Wiring diagram



Terminal layout

| | |
|-------|-------------|
| Brown | 5 to 24 VDC |
| Pink | L |
| Blue | 0 V |
| Black | OUTPUT |

List of attachments

◆Coupling

Model: SFC-020SA2-7B-8B

Quantity: 1

Compatible model: Motor direct mounting type

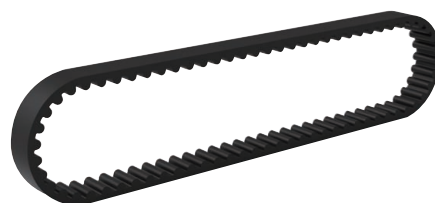


◆Timing belt

Model: 216-3GT-6

Quantity: 1

Compatible model: Motor return mounting type



◆Pulley (Motor side)

Model: D4-43394 (With two M4 fastening screws)

Quantity: 1

Compatible model: Motor return mounting type

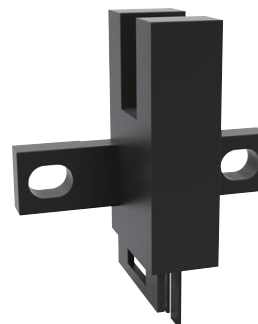


◆Photoelectric sensor

Model: OMRON EE-SX672

Quantity: 1

Compatible model: all types



◆Sensor jaw

Model: D4-434701

Quantity: 1

Compatible model: all types





Safety Precautions

Be sure to read this section before use.

When designing equipment using electric actuators, the manufacturer is obligated to ensure that the safety of the mechanism and the system that runs the electrical controls are secured, and manufacture a safe device on this basis. It is important to select, use, handle, and maintain CKD products appropriately to ensure their safe usage.

Observe warnings and cautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.



WARNING

- 1 This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience.**

- 2 Use the product within the specifications range.**

This product must be used within its stated specifications. In addition, never modify or additionally machine this product. This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors or for use under the following conditions or environments.

(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

- ① Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency operation (turning off/on, etc.) circuits, press machines, brake circuits, safety devices or applications.
- ② Use for applications where life or assets could be significantly affected, and special safety measures are required.

- 3 Observe organization standards and regulations, etc., related to the safety of the device design.**

- 4 Do not remove devices before confirming safety.**

- ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
- ② Note that there may be hot or charged sections even after operation is stopped.
- ③ Before inspecting or maintaining equipment, be sure to shut off the power supply of the equipment and relevant equipment, using caution to avoid electrical shock.

- 5 Observe the instructions and cautions of each product to prevent accidents.**

- ① Unexpected movement may occur during teaching or test operations, so keep your hands away from the actuator. Also, when operating from a position where the shaft body cannot be seen, before operation ensure that it is safe to move the actuator.

- 6 Be sure to observe the precautions in order to prevent electrical shock.**

- ① Do not touch the controller interior heat sink, cement resistor, or motor.
The high temperatures can cause burns. Inspect after sufficient time has passed.
Even immediately after turning off the power supply, high voltage will be applied until the electric charge stored in the internal capacitor is discharged, so do not touch for about 3 minutes.
- ② Before maintenance and inspection, turn OFF the controller power supply switch.
There is a risk of electrical shock from high voltage.
- ③ Do not attach or detach connectors while the power is ON. This may cause malfunction, failure, or electric shock.

- 7 Install an overcurrent protector.**

The wiring to the controller should comply with the JIS B 9960-1:2008 Safety of Machinery - Electrical Equipment of Machines - Part 1: General Requirements. Install an overcurrent protection device (a wiring circuit breaker or circuit protector) for the drive (power supply connector, power supply terminal block) and the control (input-output connectors) on the primary side of power supply.

(Excerpt from JIS B 9960-1 7.2.1 General)

Overcurrent protection shall be provided where the circuit current in a machine (equipment) may exceed either the ratings of components or the permissible current of conductors, whichever is the smaller. The ratings or set values to be selected shall be provided in 7.2.10.

- 8 Observe the following cautions to prevent accidents.**

■ The safety precautions contained in this manual are classified into three items, i.e. "DANGER", "WARNING" and "CAUTION".



DANGER : In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.



WARNING : A dangerous situation may occur if handling is mistaken, leading to fatalities or serious injuries.



CAUTION : A dangerous situation may occur if handling is mistaken, leading to minor injuries or property damage.

In addition, in some cases, "CAUTION" are also likely to result in serious consequences.

All items contain important information and must be observed.

Disclaimer regarding orders

1 Period of warranty

This warranty is valid for one (1) year after delivery to the customer's designated site.

2 Scope of warranty

In case any defect clearly attributable to CKD is found during the warranty period, CKD shall, at its own discretion, repair the defect in the CKD plant or replace the relevant product in whole or in part and at no cost, according to its own judgment.

Note that the following failures are excluded from the warranty scope:

- ① When used outside the conditions/environments described in product specifications
- ② Failures resulting from erroneous use or management such as careless handling
- ③ Failures resulting from factors other than the delivered product
- ④ Failures caused by improper use of the product
- ⑤ Failures resulting from modifications to the structure, performance, specifications or the like of the delivered product without our involvement or repairs likewise outside our designated range
- ⑥ Failures resulting from incorporating the product into the purchaser's machine/equipment, which could have been avoided provided that the machine/equipment was equipped with the functions, structures and the like conventional in the industry
- ⑦ Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered
- ⑧ Failures caused by fire, earthquake, flood, lightning strike, other natural disaster, landslide, pollution, salt damage, gas damage, abnormal voltage, other external factors

The warranty covers the actual delivered product, as a single unit, and does not cover any damages resulting from losses induced by failure in the delivered product.

3

Warranty for exported products

- (1) CKD will repair products returned to the CKD plant or a company/factory designated by CKD. Compensation of construction and expenses due to return is excluded.
- (2) The repaired product will be delivered to a location designated by the customer within mainland China with domestic packaging specifications.

The warranty terms specify basic items. If the warranty contents described in an individual specification drawing or specification sheet are different from these warranty terms, the specification drawing or specification sheet will take precedence.

4

Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the systems, machines and equipment used.

5

Service range

The service costs for dispatched technicians are not included in the price of delivered items. The following will be charged separately.

- (1) Guidance of mounting adjustment/on-site trial run
- (2) Maintenance inspection, adjustment and repair
- (3) Technical guidance and technical education (operation, programming, wiring method, safety education, etc.)



Safety Precautions

Be sure to read this section before use.

Product-specific cautions: Electric Actuator ESA Series

Design and selection

DANGER

- **Do not use in places where dangerous goods such as ignitable substances, inflammable substances or explosives are present.** Otherwise, there is a possibility of ignition, combustion or explosion.
- **Ensure that the product is free of water droplets, oil droplets, etc.** Failure to do so may lead to fire or malfunction.
- **When mounting the product, be sure to hold and fix it (including workpieces) securely.** Otherwise, falling, dropping, abnormal operation, etc. of the product may cause injury.

WARNING

- **Use the product within the specifications range.**
- **If there is a risk of bodily injury, install a protective cover.**
 - Design a structure that prevents personnel from entering the electric actuator's operating range or coming into contact with those sections directly if there is a risk the electric actuator's movable part may cause harm to personnel.
- **Please design safety circuits or devices to prevent equipment damages or personal accidents caused by machine shutdown due to system abnormalities (such as emergency stop and power failure).**
- **Install indoors with low humidity.**

There is a risk of electric leakage or fire accidents in places exposed to rainwater or where there is high humidity (humidity of 85% or more, condensation). Oil drops and oil mist are also strictly prohibited.

 - Otherwise it may result in product damages or abnormal operations.
- **Use and store in accordance with the working/storage temperatures and where there is no condensation.**

(Storage temperature: -10°C to 50°C, storage humidity: 35% to 80%; ambient temperature: 0°C to 40°C, ambient humidity: 35% to 80%)

Failure to do so may result in abnormal stop or decreased product service life. Ventilate in locations where heat may build up.
- **Install in a location free from direct sunlight, dust, heating elements and corrosive gas/explosive gas/inflammable gas/combustibles, and away from heat sources. Furthermore, chemical resistance has not been reviewed for this product.**

This may lead to damage, explosions, or fire.

- **Use and store in locations free from strong electromagnetic waves, ultraviolet rays, or radiation.**

This may cause malfunction or damage.
- **Consider the possibility of power source failure.**
 - For devices controlled with power sources, take measures to prevent bodily injury or machine damage if the power source is damaged.
- **Consider the operation status when restarting after emergency or abnormal stops.**
 - Please adopt a reasonable design to prevent personal injuries or equipment damages due to restart operation. If there is a need to reset the electric actuator to the starting position, design a safe control device. Consider the possibility of failure of the mounted motor. Take measures to prevent bodily injury or machine damage even in the event of a power failure.
- **Avoid using this product where vibration and impact are present.**
- **Do not apply a load to this product that is greater than or equal to the allowable load listed in the materials for selection.**

CAUTION

- **Do not use in a range where the moving slider could collide with the stroke end.**
- **Please specify maintenance conditions of the unit in the Instruction Manual.**
 - The product's performance may drop too low to maintain an appropriate safety level depending on usage conditions, working environment, and maintenance status. Proper maintenance will maximize the product functionality.
- **Regarding installing, setting up, and/or adjusting the actuator, read through the Instruction Manual and operate correctly.**
- **Products are manufactured based on compliance with various standards. Do not disassemble or modify the product.**
- **Refer to the instruction manual of the motor and control attached to this product for safe wiring and design.**
- **The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.**

Mounting, installation and adjustment

DANGER

- Do not enter the operating range of the product while the product is operable. The product may suddenly move and may result in injuries.

WARNING

- Precision parts are built in, so laying the product on its side or applying vibration or impact during transportation are strictly prohibited. It may cause damage to the parts.
- For preliminary installation, place horizontally.
- Do not step onto the packaging or place objects on it.
- Avoid condensation, freezing, etc., and maintain ambient temperatures of -10 to 50°C and ambient humidity of 35 to 80% when transporting and carrying.
Failure to do so may cause damage to the product.
- Mount the product on incombustible materials. Direct mounting on combustibles or mounting near combustibles may cause fire.
Failure to do so may cause burns.
- Do not step onto the product or place objects on it. This may result in falling, knocking the product over, injury due to falling, product damage and/or malfunctions due therein, etc.
- Take measures to prevent bodily injury or machine damage even in the event of a power failure. There is a risk of unexpected accidents.
- When malfunctions occur, stop the operation immediately and contact CKD's local sales office.

CAUTION

- Do not install in places where large vibration or impact is transmitted.
This may cause malfunction.

- Do not operate the movable parts of the product with external force or sudden deceleration. This may lead to malfunction or damage due to regenerative current.
- When returning to origin, excluding pressing operation, do not hit the mechanical jaw, etc. The feed screw could be damaged or malfunction.
- Durability varies with transported load and environment. The transport load, etc. should be at a setting well within the margin. Be sure not to apply impact to movable parts when using the product.
- Do not apply excessive moment to the slider. This may cause damage or malfunction of the product.
- Make the flatness of the installation surface 0.05 mm/200 mm or less.
- Install such that no torsion or bending force is applied to the product.
- Ensure that the flatness of the workpiece side attached to the slider is 0.02 mm or less, and do not apply torsion or bending force to the product. This may cause damage or malfunction of the product.
- Tighten the body mounting screws with the appropriate torque shown in the table below.

| Thread size | Tightening torque (N•m) |
|-------------|-------------------------|
| M3 | 0.7 |
| M4 | 1.5 |
| M5 | 3 |
| M6 | 5.2 |
| M8 | 12.5 |
| M10 | 24.5 |

- Provide a safety device to prevent possible falling of any movable part due to its self weight for vertical use, etc.
Falling of movable parts may result in injury or product damage.
- The return type is not available with a safety device against breakage of timing belt. Provide a safety device on the device side for safety.
Falling of movable parts may result in injury or product damage.

Use and maintenance

DANGER

- Do not operate the unit with wet hands.
Failure to do so may cause electric shock.

CAUTION

- Regularly inspect the product at least two or three times a year to check that it operates correctly.
- Routinely resupply the grease at intervals of about 100 km. However, it depends on working conditions, so we recommend determining the lubrication interval by initial inspection. Refer to the Instruction Manual for details.

- When performing maintenance, inspection and repair, stop the power supply to this product. Caution people in the vicinity that a third party should not turn ON the power inadvertently or operate the product.
- When disposing of the product, comply with laws pertaining to waste treatment and cleaning. Consign it to a specialized waste disposal company for processing.

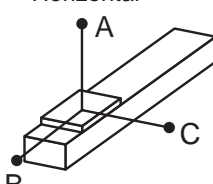
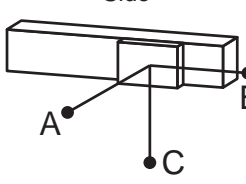
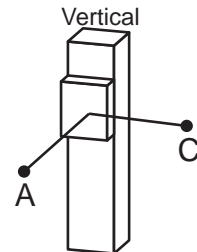
ESA Model Selection Check Sheet → CKD(Rep name)

Fill in the form and send to the nearest CKD Sales Office. We will reply with the selection results.

Customer:

| | | | |
|---------|--|------------|--|
| Company | | Department | |
| Name | | Email | |
| TEL | | FAX | |

Selection conditions:

| | | | |
|----------------------|--|--|--|
| Desired model | ESA— | | |
| Basic specifications | Maximum stroke length: mm, Screw lead: mm | | |
| Operation conditions | Travel stroke: mm, Travel time: sec | | |
| | Set speed: mm/s | | |
| | Set acceleration/deceleration: mm/s ² (set acceleration/deceleration time: sec) | | |
| | Repetitive accuracy: ± mm | | |
| Load conditions | Mounting style: Horizontal (upward)/horizontal (side)/other <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>Horizontal</p>  </div> <div style="text-align: center;"> <p>Side</p>  </div> <div style="text-align: center;"> <p>Vertical</p>  </div> </div> | | |
| | Load weight: kg | | |
| | Overhang (distance from the slider center to the load center of gravity): Direction A mm, Direction B mm, Direction C mm | | |
| | Pressing load: No / Yes (N) Operating / Stopped Direction of the force applied to slider center () | | |
| Usage environment | Ambient temperature: °C, Ambient humidity: % | | |
| | Environment: | | |
| Motor used | Manufacturer: , Model: | | |
| | Motor capacity: W | | |
| Remarks | | | |

MEMO

Diverse lineup of motorless products

Universal slider type

ESA Series

EBS Series

Slider type (Standard)
Catalog No. CC-1387A

ETS/ETV Series

Ball screw drive/belt drive type
Catalog No. CC-1165A/CC-1216A

Universal rod type

EBR Series

Guidance built-in guide rod type
Catalog No. CC-1387A

Universal low dust generation type

ECS/ECV Series

Motorless ball screw drive type
Catalog No. CC-1217A/CC-1257A

Fast tact type

EKS Series

Slider type (fast tact/high rigidity)
Catalog No. CC-1387A

Applicable to various industries

ETS/ECS P4 Series

Compatible with the secondary cell
Catalog No. CC-1283A

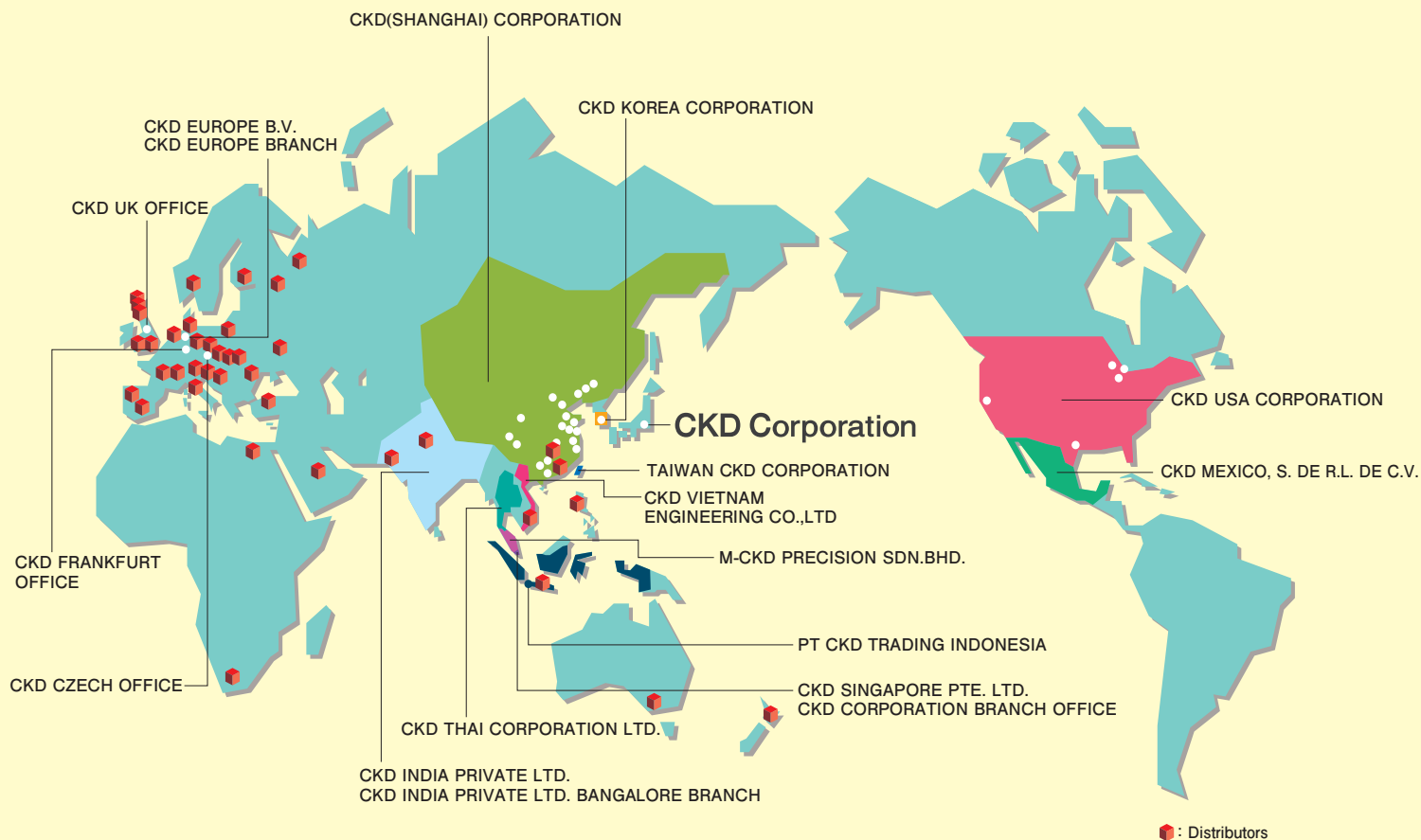
P4

(The secondary cell)

ETS/ETV/ECS/ECV FP1 Series

FP Series for food manufacturing processes
Catalog No. CC-1320A





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- XI'AN OFFICE
- WUHAN OFFICE
- ZHENGZHOU OFFICE
- CHANGSHA OFFICE
- GUANGZHOU OFFICE
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