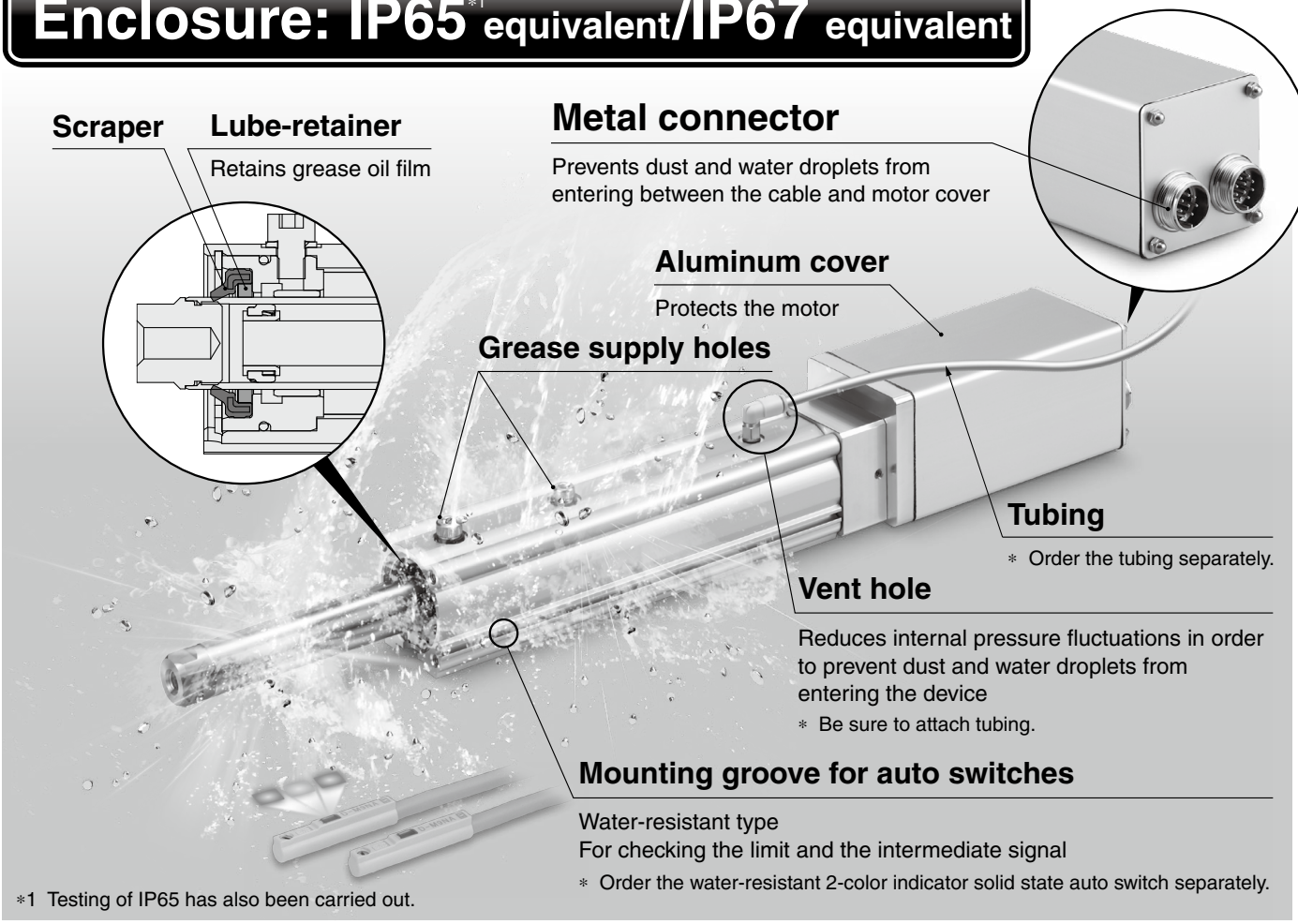
# Dust-tight/Water-jet-proof (IP65 Equivalent/IP67 Equivalent)

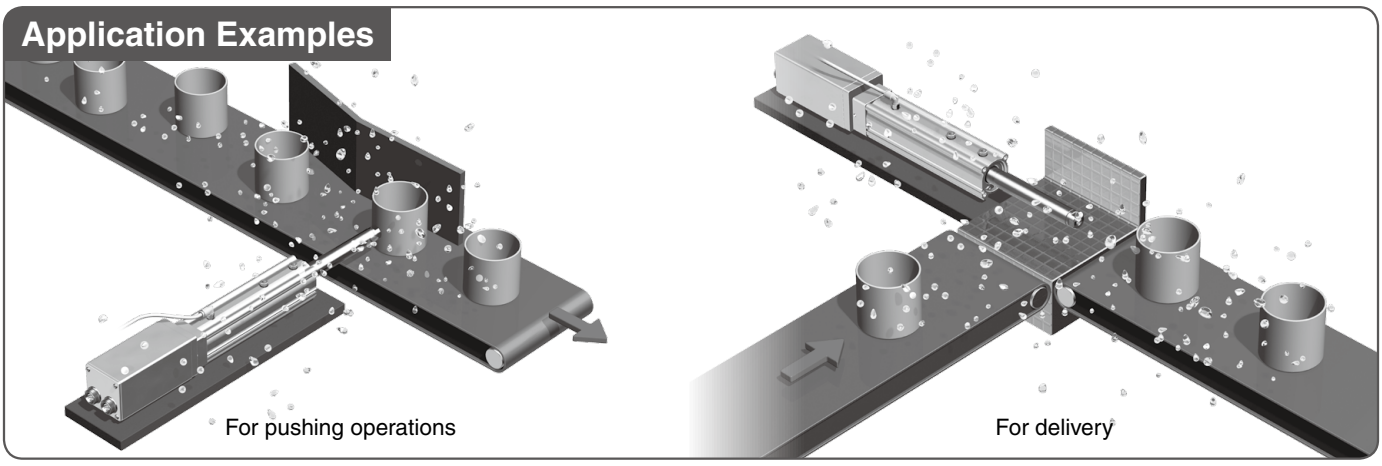
## Battery-less Absolute Encoder Type Electric Actuator/Rod Type

## Enclosure: IP65*1 equivalent/IP67 equivalent




*1 Testing of IP65 has also been carried out.

## Battery-less absolute encoder compatible

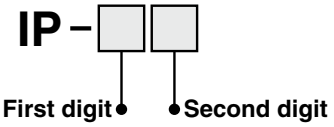



# *LEY-X8 Series*

SMC

# *LEY-X8 Series*
# Enclosure

## Degrees of Protection




**First Digit: Degree of protection against solid foreign objects**

| Degrees | Degree of protection |
|---|---|
| **0** | Not protected |
| **1** | Protected against solid foreign objects of 50 mmø and larger |
| **2** | Protected against solid foreign objects of 12 mmø and larger |
| **3** | Protected against solid foreign objects of 2.5 mmø and larger |
| **4** | Protected against solid foreign objects of 1.0 mmø and larger |
| **5** | Dust protected |
| **6** | Dust-tight |

**Second Digit: Degree of protection against water**

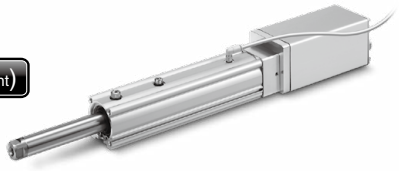
| Degrees | Degree of protection | |
|---|---|---|
| **0** | Not protected | — |
| **1** | Protected against vertically falling water droplets | Dripproof type 1 |
| **2** | Protected against vertically falling water droplets when enclosure is tilted up to 15° | Dripproof type 2 |
| **3** | Protected against rainfall when enclosure is tilted up to 60° | Rainproof type |
| **4** | Protected against splashing water | Splashproof type |
| **5** | Protected against water jets | Water-jet-proof type |
| **6** | Protected against powerful water jets | Powerful water-jet-proof type |
| **7** | Protected against the effects of temporary immersion in water | Immersible type |
| **8** | Protected against the effects of continuous immersion in water | Submersible type |

**Example) Degrees of protection**

| Degrees of protection | | | Details |
|---|---|---|---|
| **IP65** | Solid foreign objects | Dust-tight | Dust particles are prevented from entering the device. |
| | Entry of water | Water-jet-proof*1 | The direct application of water jets to the device from any direction will not cause any damage. |
| **IP67** | Solid foreign objects | Dust-tight | Dust particles are prevented from entering the device. |
| | Entry of water | Immersible*1 | The amount of water that enters the device when the actuator (in the stopped state) is submersed in up to 1 m of water for up to 30 mins will not cause any damage. |

*1 Be sure to take appropriate protective measures if the product is to be used in an environment where it will be constantly exposed to water or fluids other than water splash.
In particular, the product cannot be used in environments where oils, such as cutting oil or cutting fluid, are present.

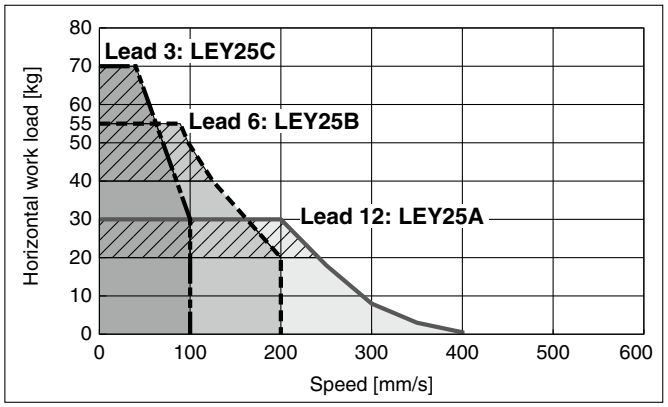
# Model Selection



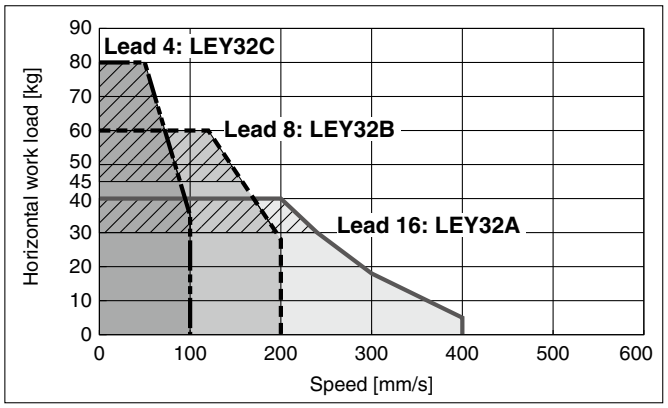
## Speed–Work Load Graph (Guide)

### Horizontal

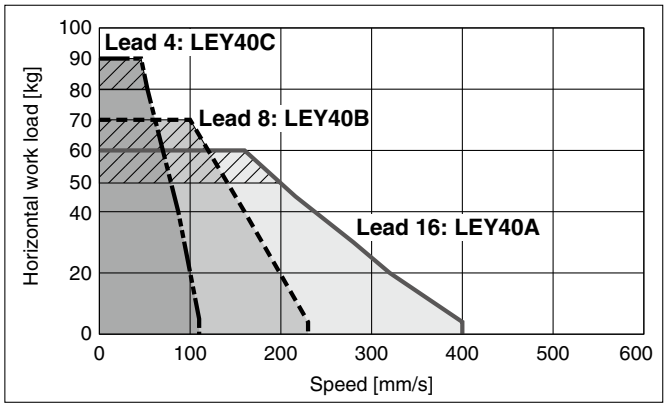
**LEY25□E-X8** ▨ for acceleration/deceleration: 2000 mm/s²




**LEY32□E-X8** ▨ for acceleration/deceleration: 2000 mm/s²

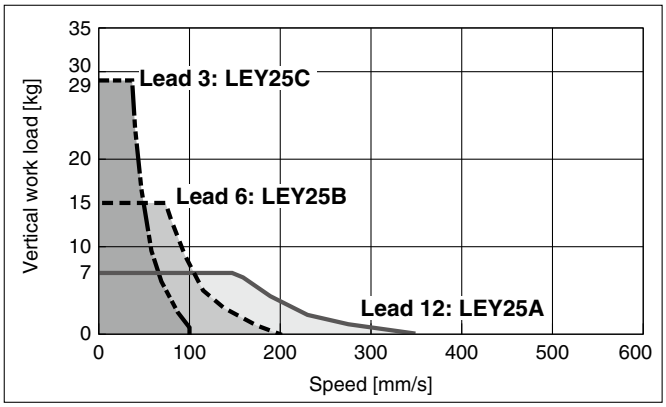



**LEY40□E-X8** ▨ for acceleration/deceleration: 2000 mm/s²

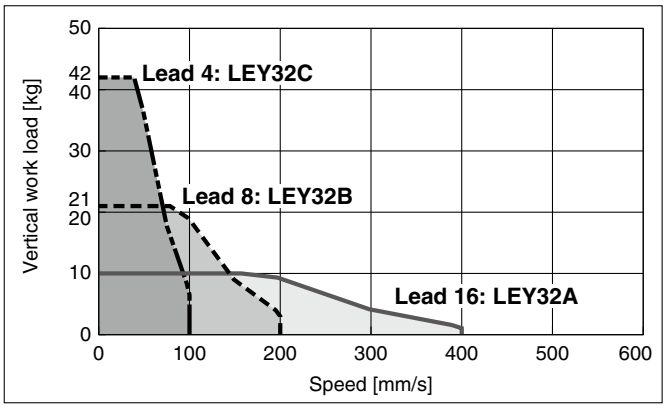



### Vertical

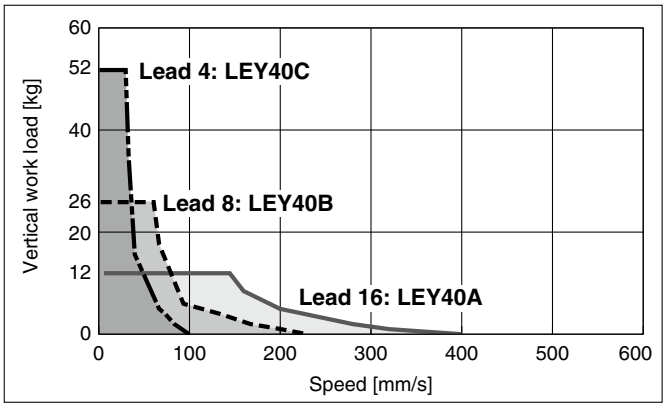
**LEY25□E-X8**




**LEY32□E-X8**




**LEY40□E-X8**

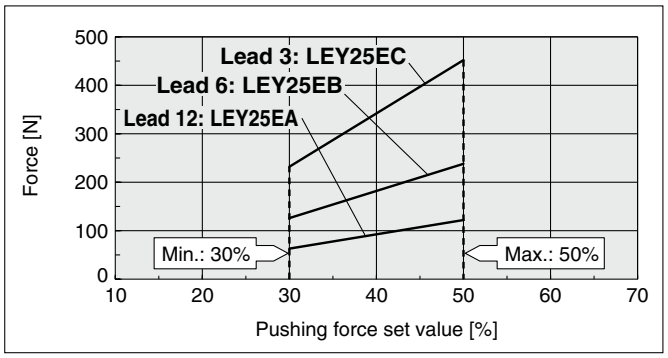


Items not listed are the same as those of the standard product. For details, refer to the **Web Catalog**.

## Force Conversion Graph (Guide)

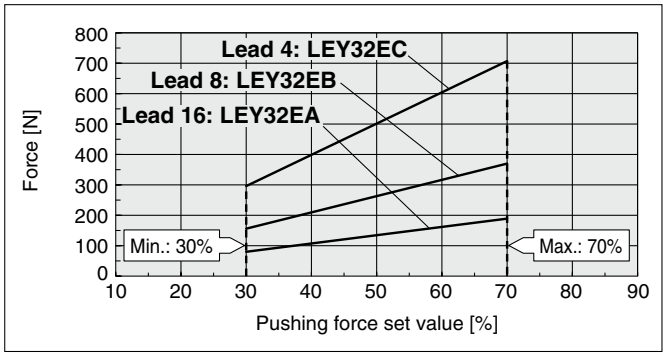
### Battery-less Absolute (Step Motor 24 VDC)

### LEY25□E-X8



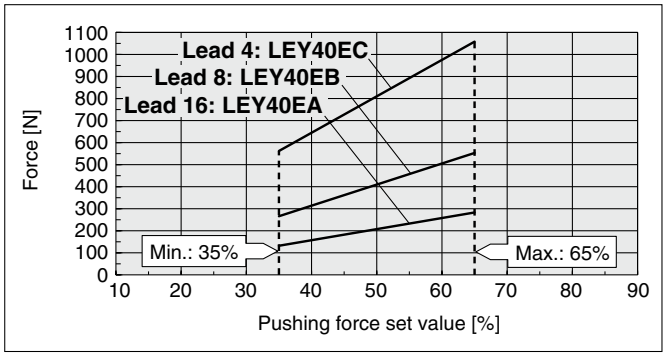

| Ambient temperature | Pushing force set value [%] | Duty ratio [%] | Continuous pushing time [min] |
|---|---|---|---|
| **40°C or less** | 50 or less | 100 | No restriction |

### LEY32□E-X8




| Ambient temperature | Pushing force set value [%] | Duty ratio [%] | Continuous pushing time [min] |
|---|---|---|---|
| **40°C or less** | 70 or less | 100 | No restriction |

### LEY40□E-X8




| Ambient temperature | Pushing force set value [%] | Duty ratio [%] | Continuous pushing time [min] |
|---|---|---|---|
| **40°C or less** | 65 or less | 100 | No restriction |

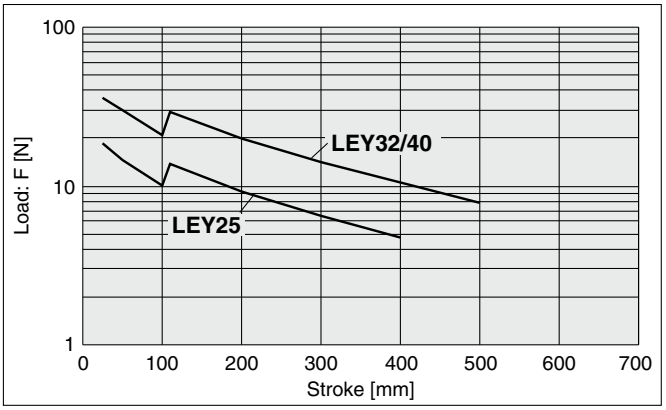
### <Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>

| Model | Lead | Pushing speed [mm/s] | Pushing force (Setting input value) |
|---|---|---|---|
| **LEY25□E** | A/B/C | 21 to 35 | 40 to 50% |
| **LEY32□E** | A | 24 to 30 | 50 to 70% |
| | B/C | 21 to 30 | |
| **LEY40□E** | A | 24 to 30 | 50 to 65% |
| | B/C | 21 to 30 | |

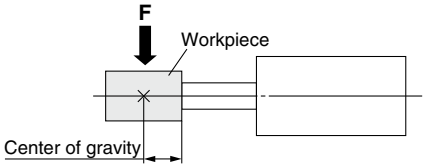
### <Set Values for Vertical Upward Transfer Pushing Operations>

| Model | LEY25□E | | | LEY32□E | | | LEY40□E | | |
|---|---|---|---|---|---|---|---|---|---|
| Lead | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** |
| Work load [kg] | 2.5 | 5 | 10 | 4.5 | 9 | 18 | 7 | 14 | 28 |
| Pushing force | 50% | | | 70% | | | 65% | | |

## Graph of Allowable Lateral Load on the Rod End (Guide)

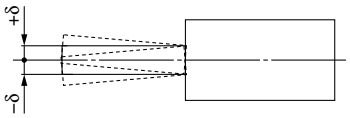



**[Stroke] = [Product stroke] + [Distance from the rod end to the center of gravity of the workpiece]**

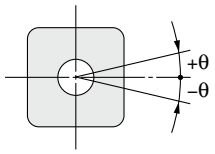



## Rod Displacement: δ [mm]

| Size \ Stroke | 30 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | ±0.3 | ±0.4 | ±0.7 | ±0.7 | ±0.9 | ±1.1 | ±1.3 | ±1.5 | ±1.7 | — | — |
| **32/40** | ±0.3 | ±0.4 | ±0.7 | ±0.6 | ±0.8 | ±1.0 | ±1.1 | ±1.3 | ±1.5 | ±1.7 | ±1.8 |




## Non-rotating Accuracy of Rod




| Size | Non-rotating accuracy θ |
|---|---|
| **25** | ±0.8° |
| **32/40** | ±0.7° |

∗ Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

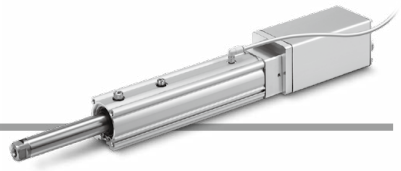
Battery-less Absolute (Step Motor 24 VDC)

# Dust-tight/Water-jet-proof (IP65 Equivalent/IP67 Equivalent) Electric Actuator/Rod Type

# *LEY-X8* (Made to Order) *Series* LEY25/32/40

RoHS

Refer to pages 2 to 4 for model selection.



## How to Order

**LEY 25 D E B – 50 ☐ ☐ ☐ – M1 CD17T – X8**

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

For details on controllers, refer to page 6.

● Made to order: Dust-tight/ Water-jet-proof

### ❶ Size

| |
|---|
| 25 |
| 32/40 |

### ❷ Motor mounting position

| | |
|---|---|
| D | In-line |

### ❸ Motor type

| | |
|---|---|
| E | Battery-less absolute (Step motor 24 VDC) |

### ❹ Lead [mm]

| Symbol | LEY25 | LEY32/40 |
|---|---|---|
| A | 12 | 16 |
| B | 6 | 8 |
| C | 3 | 4 |

### ❺ Stroke [mm]

| | |
|---|---|
| 30 | 30 |
| to | to |
| 500 | 500 |

∗ For details, refer to the applicable stroke table below.

### ❻ Motor option

| | |
|---|---|
| Nil | Without option |
| B | With lock |

### ❼ Rod end thread

| | |
|---|---|
| Nil | Rod end female thread |
| M | Rod end male thread (1 rod end nut is included.) |

### ❽ Mounting∗2

| Symbol | Type | Motor mounting position: In-line |
|---|---|---|
| Nil | Ends tapped/ Body bottom tapped∗3 | ● |
| F | Rod flange∗3 | ● |

### ❾ Actuator cable type/length

Robotic cable [m]

| | | | |
|---|---|---|---|
| MN | None | M8 | 8∗4 |
| M1 | 1.5 | MA | 10∗4 |
| M3 | 3 | MB | 15∗4 |
| M5 | 5 | MC | 20∗4 |

### Applicable Stroke Table∗1

●: Standard

| Model \ Stroke [mm] | 30 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | Manufacturable stroke range |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LEY25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | — | — | 30 to 400 |
| LEY32/40 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 30 to 500 |

∗ For auto switches, refer to page 12.
∗ "-X8" is not added to an actuator model with a controller part number suffix.
Example) "LEY25DEB-100" for the LEY25DEB-100M-M1CD17T-X8

**⑩ Controller**

| | |
|---|---|
| **Nil** | Without controller |
| **C□1□□** | With controller |

**C D 1 7 T**

**Interface**
(Communication protocol/Input/Output)

| | |
|---|---|
| **E** | EtherCAT® |
| **9** | EtherNet/IP™ |
| **P** | PROFINET |
| **D** | DeviceNet™ |
| **L** | IO-Link |
| **M** | CC-Link Ver. 1.10 |
| **5** | Parallel input (NPN) |
| **6** | Parallel input (PNP) |

**For single axis**

**Mounting**

| | |
|---|---|
| **7** | Screw mounting |
| **8**∗5 | DIN rail |

**Communication plug connector I/O cable**∗6

| Symbol | Type | Applicable interface |
|---|---|---|
| **Nil** | Without accessory | — |
| **S** | Straight type communication plug connector | DeviceNet™ CC-Link Ver. 1.10 |
| **T** | T-branch type communication plug connector | |
| **1** | I/O cable (1.5 m) | Parallel input (NPN) Parallel input (PNP) |
| **3** | I/O cable (3 m) | |
| **5** | I/O cable (5 m) | |

∗1 Please consult with SMC for non-standard strokes as they are produced as special orders.
∗2 The mounting bracket is shipped together with the product but does not come assembled.
∗3 For the horizontal cantilever mounting of the rod flange, or ends tapped types, use the actuator within the following stroke range.
· LEY25: 200 or less · LEY32/40: 100 or less
∗4 Produced upon receipt of order
∗5 The DIN rail is not included. It must be ordered separately.
∗6 Select "Nil" for anything other than DeviceNet™, CC-Link, or parallel input.
Select "Nil," "S," or "T" for DeviceNet™ or CC-Link.
Select "Nil," "1," "3," or "5" for parallel input.

## ⚠Caution

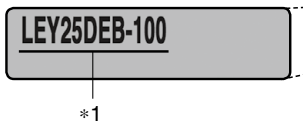
**[CE-compliant products]**
EMC compliance was tested by combining the electric actuator LEY series and the controller JXC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

**[Precautions relating to differences in controller versions]**
When the JXC series is to be used in combination with the battery-less absolute encoder, use a controller that is version V3.4 or S3.4 or higher. For details, refer to the **Web Catalog**.

## The actuator and controller are sold as a package.

Confirm that the combination of the controller and actuator is correct.

**<Check the following before use.>**
∗1 Check the actuator label for the model number. This number should match that of the controller.



∗ Refer to the Operation Manual for using the products. Please download it via our website:
https://www.smcworld.com

| | EtherCAT® direct input type | EtherNet/IP™ direct input type | PROFINET direct input type | DeviceNet™ direct input type | IO-Link direct input type | CC-Link direct input type | Step data input type |
|---|---|---|---|---|---|---|---|
| **Type** | | | | | | | |
| **Series** | **JXCE1** | **JXC91** | **JXCP1** | **JXCD1** | **JXCL1** | **JXCM1** | **JXC51 JXC61** |
| **Features** | EtherCAT® direct input | EtherNet/IP™ direct input | PROFINET direct input | DeviceNet™ direct input | IO-Link direct input | CC-Link direct input | Parallel I/O |
| **Compatible motor** | Battery-less absolute (Step motor 24 VDC) | | | | | | |
| **Max. number of step data** | 64 points | | | | | | |
| **Power supply voltage** | 24 VDC | | | | | | |

## Specifications

### Step Motor (Servo/24 VDC)

| | Model | | | LEY25□E-X8 | | | LEY32□E-X8 | | | LEY40□E-X8 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuator specifications | Work load [kg]*1 | Horizontal | (3000 [mm/s²]) | 20 | 40 | 60 | 30 | 45 | 60 | 50 | 60 | 80 |
| | | | (2000 [mm/s²]) | 30 | 55 | 70 | 40 | 60 | 80 | 60 | 70 | 90 |
| | | Vertical | (3000 [mm/s²]) | 7 | 15 | 29 | 10 | 21 | 42 | 12 | 26 | 52 |
| | Pushing force [N]*2 *3 *4 | | | 63 to 122 | 126 to 238 | 232 to 452 | 80 to 189 | 156 to 370 | 296 to 707 | 132 to 283 | 266 to 553 | 562 to 1058 |
| | Speed [mm/s]*4 | | | 18 to 400 | 9 to 200 | 5 to 100 | 24 to 400 | 12 to 200 | 6 to 100 | 24 to 400 | 12 to 230 | 6 to 110 |
| | Max. acceleration/deceleration [mm/s²] | | | 3000 | | | | | | | | |
| | Pushing speed [mm/s]*5 | | | 35 or less | | | 30 or less | | | 30 or less | | |
| | Positioning repeatability [mm] | | | ±0.02 | | | | | | | | |
| | Lost motion [mm]*6 | | | 0.1 or less | | | | | | | | |
| | Screw lead [mm] | | | 12 | 6 | 3 | 16 | 8 | 4 | 16 | 8 | 4 |
| | Impact/Vibration resistance [m/s²]*7 | | | 50/20 | | | | | | | | |
| | Actuation type | | | Ball screw (LEY□D) | | | | | | | | |
| | Guide type | | | Sliding bushing (Piston rod) | | | | | | | | |
| | Enclosure*8 | | | IP65 equivalent/IP67 equivalent*14 | | | | | | | | |
| | Operating temperature range [°C] | | | 5 to 40 | | | | | | | | |
| | Operating humidity range [%RH] | | | 90 or less (No condensation) | | | | | | | | |
| Electric specifications | Motor size | | | □42 | | | □56.4 | | | □56.4 | | |
| | Motor type | | | Battery-less absolute (Step motor 24 VDC) | | | | | | | | |
| | Encoder | | | Battery-less absolute (4096 pulse/rotation) | | | | | | | | |
| | Rated voltage [V] | | | 24 VDC ±10% | | | | | | | | |
| | Power consumption [W]*9 | | | 40 | | | 50 | | | 50 | | |
| | Standby power consumption when operating [W]*10 | | | 15 | | | 48 | | | 48 | | |
| | Max. instantaneous power consumption [W]*11 | | | 48 | | | 104 | | | 106 | | |
| Lock unit specifications | Type*12 | | | Non-magnetizing lock | | | | | | | | |
| | Holding force [N] | | | 78 | 157 | 294 | 108 | 216 | 421 | 127 | 265 | 519 |
| | Power consumption [W]*13 | | | 5 | | | 5 | | | 5 | | |
| | Rated voltage [V] | | | 24 VDC ±10% | | | | | | | | |

*1 Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check the "Model Selection" on page 2.
Vertical : Speed changes according to the work load. Check the "Model Selection" on page 2.
The values shown in ( ) are the acceleration/deceleration. Set these values to be 3000 [mm/s²] or less.

*2 Pushing force accuracy is ±20% (F.S.).

*3 The pushing force values for LEY25□E are 30% to 50%, for LEY32□E are 30% to 70%, and for LEY40□E are 35% to 65%.
The pushing force values change according to the duty ratio and pushing speed. Check the "Model Selection" on page 3.

*4 The speed and force may change depending on the cable length, load, and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)

*5 The allowable speed for pushing operations. When push conveying a workpiece, operate at the vertical work load or less.

*6 A reference value for correcting an error in reciprocal operation

*7 Impact resistance : No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

*8 Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water
Take appropriate protective measures. For details on enclosure, refer to the "Enclosure" on page 1.

*9 The power consumption (including the controller) is for when the actuator is operating.

*10 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

*11 The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

*12 With lock only

*13 For an actuator with lock, add the power consumption for the lock.

*14 Excludes the controller body and the connector part on the controller side

## Weight

### Weight: In-line Motor Type

| LEY25D | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Stroke | 30 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| **Product weight [kg]** | 1.48 | 1.55 | 1.72 | 1.97 | 2.15 | 2.32 | 2.50 | 2.67 | 2.85 |

| LEY32D | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stroke | 30 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| **Product weight [kg]** | 2.58 | 2.69 | 2.98 | 3.36 | 3.65 | 3.94 | 4.22 | 4.51 | 4.80 | 5.08 | 5.37 |

| LEY40D | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stroke | 30 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| **Product weight [kg]** | 2.93 | 3.04 | 3.33 | 3.71 | 4.00 | 4.29 | 4.57 | 4.86 | 5.15 | 5.43 | 5.72 |

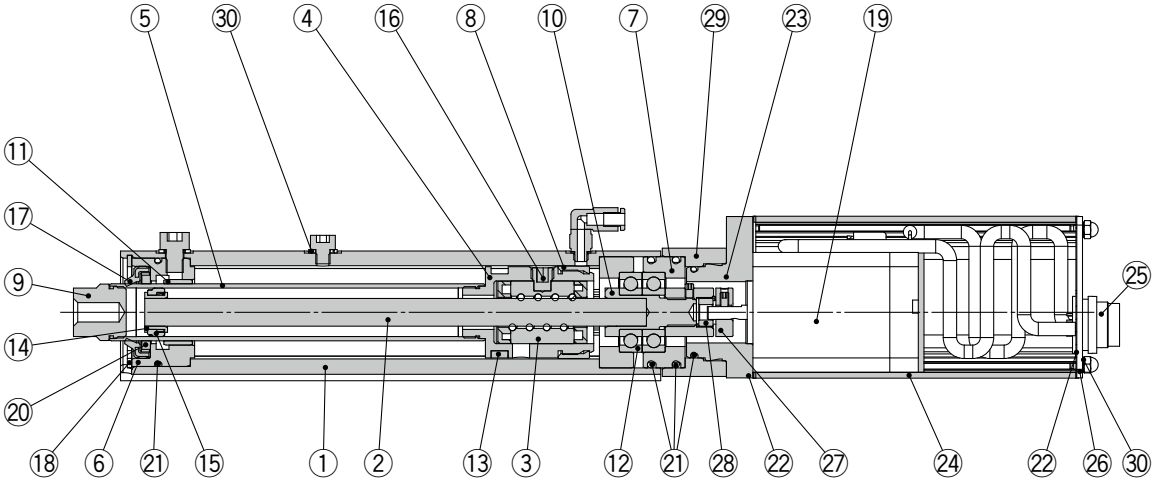
### Additional Weight

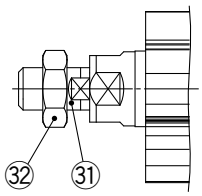
[kg]

| Size | | 25 | 32 | 40 |
|---|---|---|---|---|
| **Lock** | | 0.35 | 0.65 | 0.65 |
| **Rod end male thread** | **Male thread** | 0.03 | 0.03 | 0.03 |
| | **Nut** | 0.02 | 0.02 | 0.02 |
| **Rod flange (including mounting bolt)** | | 0.17 | 0.20 | 0.20 |

## Construction

### In-line motor type: LEY$^{25}_{32}_{40}$D




**When rod end male thread selected**

### Component Parts

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Body** | Aluminum alloy | Anodized |
| 2 | **Ball screw shaft** | Alloy steel | |
| 3 | **Ball screw nut** | Synthetic resin/Alloy steel | |
| 4 | **Piston** | Aluminum alloy | |
| 5 | **Piston rod** | Stainless steel | Hard chrome plating |
| 6 | **Rod cover** | Aluminum alloy | Anodized |
| 7 | **Bearing holder** | Aluminum alloy | |
| 8 | **Rotation stopper** | Resin | |
| 9 | **Socket** | Stainless steel | |
| 10 | **Connected shaft** | Free cutting carbon steel | Nickel plating |
| 11 | **Bushing** | Bearing alloy | |
| 12 | **Bearing** | — | |
| 13 | **Magnet** | — | |
| 14 | **Wear ring holder** | Stainless steel | Stroke 101 mm or more |
| 15 | **Wear ring** | Resin | Stroke 101 mm or more |
| 16 | **Parallel pin** | Stainless steel | |

| No. | Description | Material | Note |
|---|---|---|---|
| 17 | **Greater water resistant scraper** | Stainless steel/NBR | |
| 18 | **Retaining ring** | Stainless steel | |
| 19 | **Motor** | — | |
| 20 | **Lube-retainer** | Felt | |
| 21 | **O-ring** | NBR | |
| 22 | **Gasket** | Chloroprene | |
| 23 | **Motor adapter** | Aluminum alloy | LEY25 only |
| 24 | **Motor cover** | Aluminum alloy | Anodized |
| 25 | **Metal connector** | Zinc die-casted | Chrome plating |
| 26 | **End cover** | Aluminum alloy | Anodized |
| 27 | **Hub** | Aluminum alloy | |
| 28 | **Spider** | NBR | |
| 29 | **Motor block** | Aluminum alloy | Anodized |
| 30 | **Seal washer** | Stainless steel/NBR | |
| 31 | **Socket (Male thread)** | Stainless steel | |
| 32 | **Nut** | Stainless steel | |

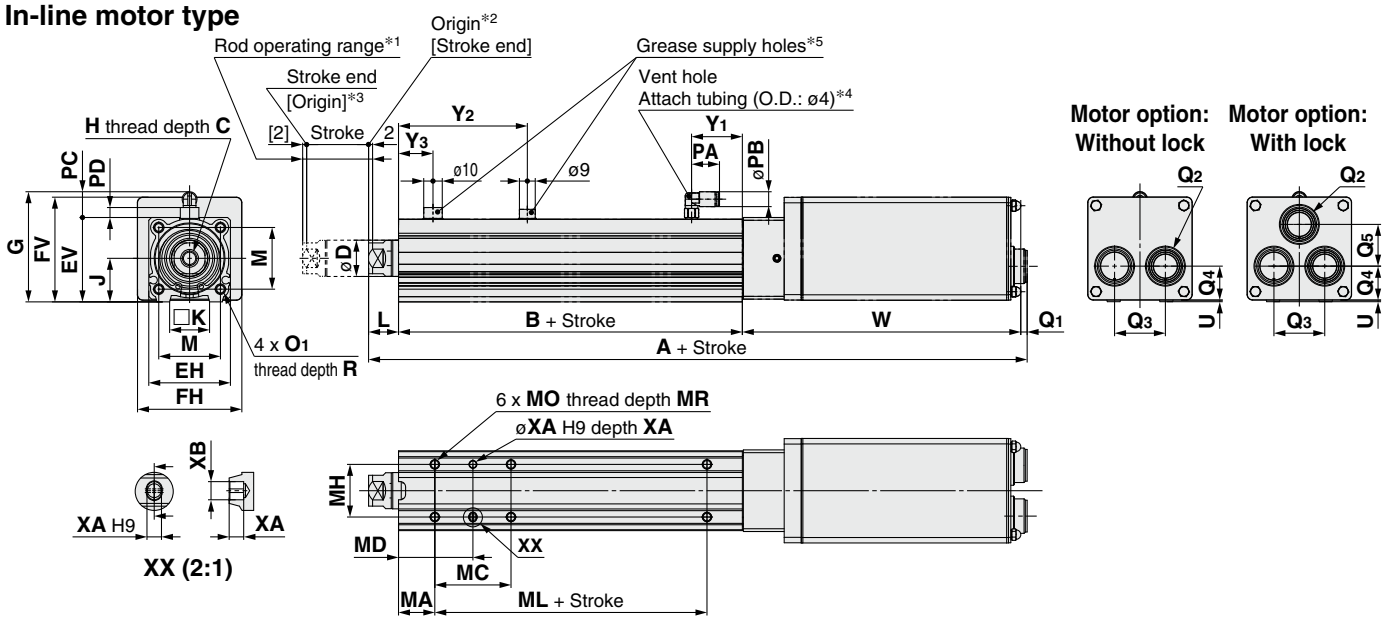
### Replacement Parts/Grease Pack

| Applied portion | Order no. |
|---|---|
| Piston rod<br>Piston | GR-S-010 (10 g)<br>GR-S-020 (20 g) |

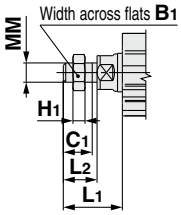
∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

## Dimensions

### In-line motor type




### Rod end male thread: LEY32D□-□□M
25
40




[mm]

| Size | $B_1$ | $C_1$ | $H_1$ | $L_1$ | $L_2$ | MM |
|---|---|---|---|---|---|---|
| 25 | 22 | 20.5 | 8 | 38 | 23.5 | M14 x 1.5 |
| 32/40 | 22 | 20.5 | 8 | 42 | 23.5 | M14 x 1.5 |

* The $L_1$ measurement is when the unit is in the original position. At this position, 2 mm at the end.

[mm]

| Size | Stroke range [mm] | A Without lock | A With lock | B | C | D | EH | EV | FH | FV | G | H | J | K | L | M | $O_1$ | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 30 to 100 | 262.5 | 312.5 | 89.5 | 13 | 20 | 44 | 45.5 | 57.6 | 57.7 | 61.4 | M8 x 1.25 | 24 | 17 | 14.5 | 34 | M5 x 0.8 | 8 |
| | 105 to 400 | 287.5 | 337.5 | 114.5 | | | | | | | | | | | | | | |
| 32 | 30 to 100 | 273 | 323 | 96 | 13 | 25 | 51 | 56.5 | 69.6 | 79.6 | 72.4 | M8 x 1.25 | 31 | 22 | 18.5 | 40 | M6 x 1.0 | 10 |
| | 105 to 500 | 303 | 353 | 126 | | | | | | | | | | | | | | |
| 40 | 30 to 100 | 295 | 355 | 96 | 13 | 25 | 51 | 56.5 | 69.6 | 79.6 | 72.4 | M8 x 1.25 | 31 | 22 | 18.5 | 40 | M6 x 1.0 | 10 |
| | 105 to 500 | 325 | 375 | 126 | | | | | | | | | | | | | | |

| Size | Stroke range [mm] | PA | PB | PC | PD | $Q_1$ | $Q_2$ Without lock | $Q_2$ With lock | $Q_3$ | $Q_4$ | $Q_5$ Without lock | $Q_5$ With lock | U | W Without lock | W With lock | $Y_1$ | $Y_2$ | $Y_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 30 to 100 | 15.4 | 8.2 | 15.9 | 6.5 | 3.5 | 2 x ø22 | 3 x ø22 | 28 | 18.7 | — | 23 | 0.9 | 155 | 205 | 28 | 71 | 19 |
| | 105 to 400 | | | | | | | | | | | | | | | | 96 | |
| 32 | 30 to 100 | 15.4 | 8.2 | 15.9 | 7.1 | 3.5 | 2 x ø22 | 3 x ø22 | 36 | 28 | — | 32 | 1 | 155 | 205 | 30 | 75.5 | 16 |
| | 105 to 500 | | | | | | | | | | | | | | | | 105.5 | |
| 40 | 30 to 100 | 15.4 | 8.2 | 15.9 | 7.1 | 3.5 | 2 x ø22 | 3 x ø22 | 36 | 28 | — | 32 | 1 | 177 | 227 | 30 | 75.5 | 16 |
| | 105 to 500 | | | | | | | | | | | | | | | | 105.5 | |

### Body Bottom Tapped

[mm]

| Size | Stroke range [mm] | MA | MC | MD | MH | ML | MO | MR | XA | XB |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 30 to 39 | 20 | 24 | 32 | 29 | 50 | M5 x 0.8 | 6.5 | 4 | 5 |
| | 40 to 100 | | 42 | 41 | | | | | | |
| | 101 to 124 | | | | | 75 | | | | |
| | 125 to 200 | | 59 | 49.5 | | | | | | |
| | 201 to 400 | | 76 | 58 | | | | | | |
| 32/40 | 30 to 39 | 25 | 22 | 36 | 30 | 50 | M6 x 1 | 8.5 | 5 | 6 |
| | 40 to 100 | | 36 | 43 | | | | | | |
| | 101 to 124 | | | | | 80 | | | | |
| | 125 to 200 | | 53 | 51.5 | | | | | | |
| | 201 to 500 | | 70 | 60 | | | | | | |

*1 This is the range within which the rod can move when it returns to origin. Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 Position after returning to origin
*3 [ ] for when the direction of return to origin has changed
*4 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.
*5 It is recommended to take appropriate protective measures if the product is to be used in an environment where fluids other than water splash.
In particular, the product cannot be used in environments where cutting oil, cutting fluid, etc., are present.
* The direction of rod end width across flats (□K) differs depending on the products.

For the mounting bracket dimensions, refer to the **Web Catalog**.

## Option: Actuator Cable

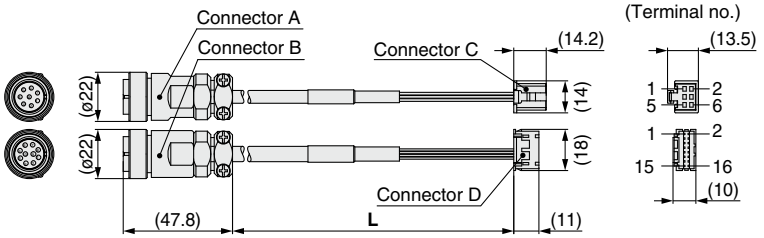
### [Metal connector robotic cable for battery-less absolute (Step motor 24 VDC)]

**LE − CE − 1 − X4**

**Cable length (L) [m]**

| | |
|---|---|
| **1** | 1.5 |
| **3** | 3 |
| **5** | 5 |
| **8** | 8*1 |
| **A** | 10*1 |
| **B** | 15*1 |
| **C** | 20*1 |

*1 Produced upon receipt of order




**Weight**

| Product no. | Weight [g] | Note |
|---|---|---|
| **LE-CE-1-X4** | 270 | Robotic cable |
| **LE-CE-3-X4** | 440 | |
| **LE-CE-5-X4** | 650 | |
| **LE-CE-8-X4** | 980 | |
| **LE-CE-A-X4** | 1200 | |
| **LE-CE-B-X4** | 1760 | |
| **LE-CE-C-X4** | 2290 | |

| Signal | Connector A terminal no. | Cable color | Connector C terminal no. |
|---|---|---|---|
| $\overline{A}$ | 1 | Red | 1 |
| A | 2 | Brown | 2 |
| COM-A | 3 | Green | 3 |
| COM-B | 4 | Blue | 4 |
| $\overline{B}$ | 5 | Yellow | 5 |
| B | 6 | Orange | 6 |

Shield

| Signal | Connector B terminal no. | Cable color | Connector D terminal no. |
|---|---|---|---|
| Vcc | 1 | Brown | 12 |
| GND | 2 | Black (Brown) | 13 |
| SD+ (RX) | 3 | Yellow | 11 |
| SD− (TX) | 4 | Black (Yellow) | 10 |
| A | 5 | Black (Red) | 6 |
| $\overline{A}$ | 6 | Red | 7 |
| B | 7 | Black (Orange) | 8 |
| $\overline{B}$ | 8 | Orange | 9 |
| Shield | 9 | Black | 3 |

### [Metal connector robotic cable with lock for battery-less absolute (Step motor 24 VDC)]

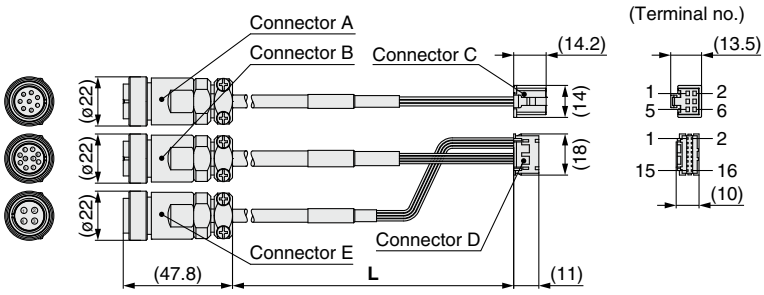
**LE − CE − 1 − B − X4**

**Cable length (L) [m]**

| | |
|---|---|
| **1** | 1.5 |
| **3** | 3 |
| **5** | 5 |
| **8** | 8*2 |
| **A** | 10*2 |
| **B** | 15*2 |
| **C** | 20*2 |

*2 Produced upon receipt of order

**With lock and sensor**




**Weight**

| Product no. | Weight [g] | Note |
|---|---|---|
| **LE-CE-1-B-X4** | 320 | Robotic cable |
| **LE-CE-3-B-X4** | 490 | |
| **LE-CE-5-B-X4** | 700 | |
| **LE-CE-8-B-X4** | 1030 | |
| **LE-CE-A-B-X4** | 1250 | |
| **LE-CE-B-B-X4** | 1810 | |
| **LE-CE-C-B-X4** | 2340 | |

| Signal | Connector A terminal no. | Cable color | Connector C terminal no. |
|---|---|---|---|
| $\overline{A}$ | 1 | Red | 1 |
| A | 2 | Brown | 2 |
| COM-A | 3 | Green | 3 |
| COM-B | 4 | Blue | 4 |
| $\overline{B}$ | 5 | Yellow | 5 |
| B | 6 | Orange | 6 |

Shield

| Signal | Connector B terminal no. | Cable color | Connector D terminal no. |
|---|---|---|---|
| Vcc | 1 | Brown | 12 |
| GND | 2 | Black (Brown) | 13 |
| SD+ (RX) | 3 | Yellow | 11 |
| SD− (TX) | 4 | Black (Yellow) | 10 |
| A | 5 | Black (Red) | 6 |
| $\overline{A}$ | 6 | Red | 7 |
| B | 7 | Black (Orange) | 8 |
| $\overline{B}$ | 8 | Orange | 9 |
| Shield | 9 | Black | 3 |

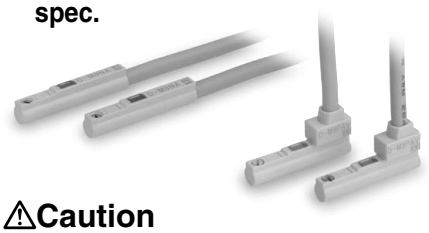
| Signal | Connector E terminal no. | | |
|---|---|---|---|
| Lock (+) | 4 | Red | 4 |
| Lock (−) | 3 | Black | 5 |
| Sensor (+) | 1 | Brown | 1 |
| Sensor (−) | 2 | Blue | 2 |

# Water Resistant 2-Color Indicator Solid State Auto Switch: Direct Mounting Type

# D-M9NA(V)/D-M9PA(V)/D-M9BA(V) CE RoHS

## Grommet

- **Water (coolant) resistant type**
- **2-wire load current is reduced (2.5 to 40 mA).**
- **The proper operating range can be determined by the color of the light. (Red → Green ← Red)**
- **Using flexible cable as standard spec.**



## ⚠Caution

### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.
Please consult with SMC if using coolant liquid other than water based solution.

## Weight

[g]

| Auto switch model | | D-M9NA(V) | D-M9PA(V) | D-M9BA(V) |
|---|---|---|---|---|
| Lead wire length | 0.5 m (**Nil**) | 8 | | 7 |
| | 1 m (**M**) | 14 | | 13 |
| | 3 m (**L**) | 41 | | 38 |
| | 5 m (**Z**) | 68 | | 63 |

## Auto Switch Specifications

PLC: Programmable Logic Controller

| D-M9□A, D-M9□AV (With indicator light) | | | | | | |
|---|---|---|---|---|---|---|
| Auto switch model | D-M9NA | D-M9NAV | D-M9PA | D-M9PAV | D-M9BA | D-M9BAV |
| Electrical entry direction | In-line | Perpendicular | In-line | Perpendicular | In-line | Perpendicular |
| Wiring type | 3-wire | | | | 2-wire | |
| Output type | NPN | | PNP | | — | |
| Applicable load | IC circuit, Relay, PLC | | | | 24 VDC relay, PLC | |
| Power supply voltage | 5, 12, 24 VDC (4.5 to 28 V) | | | | — | |
| Current consumption | 10 mA or less | | | | — | |
| Load voltage | 28 VDC or less | | — | | 24 VDC (10 to 28 VDC) | |
| Load current | 40 mA or less | | | | 2.5 to 40 mA | |
| Internal voltage drop | 0.8 V or less at 10 mA (2 V or less at 40 mA) | | | | 4 V or less | |
| Leakage current | 100 μA or less at 24 VDC | | | | 0.8 mA or less | |
| Indicator light | Operating range ····· Red LED illuminates.<br>Proper operating range ····· Green LED illuminates. | | | | | |
| Standard | CE marking (EMC directive/RoHS directive) | | | | | |

### Oilproof Flexible Heavy-duty Lead Wire Specifications

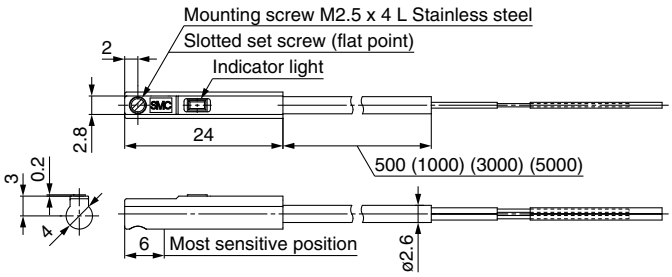
| Auto switch model | | D-M9NA□ | D-M9NAV□ | D-M9PA□ | D-M9PAV□ | D-M9BA□ | D-M9BAV□ |
|---|---|---|---|---|---|---|---|
| Sheath | Outside diameter [mm] | 2.6 | | | | | |
| Insulator | Number of cores | 3 cores (Brown/Blue/Black) | | | | 2 cores (Brown/Blue) | |
| | Outside diameter [mm] | 0.88 | | | | | |
| Conductor | Effective area [mm²] | 0.15 | | | | | |
| | Strand diameter [mm] | 0.05 | | | | | |
| Minimum bending radius [mm] | | 17 | | | | | |

∗ Refer to the **Web Catalog** for solid state auto switch common specifications.
∗ Refer to the **Web Catalog** for lead wire lengths.

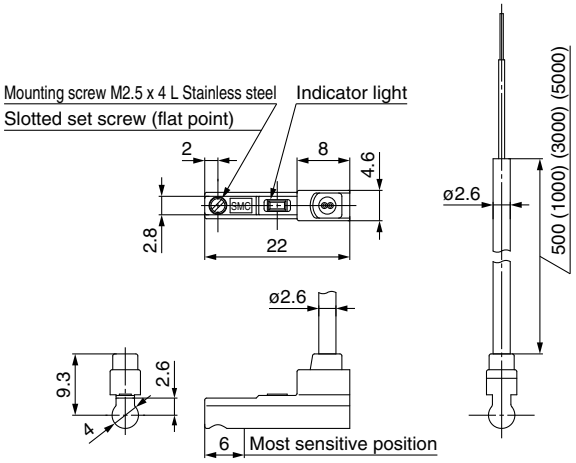
## Dimensions

[mm]

### D-M9□A




### D-M9□AV



| ⚠ **Safety Instructions** | Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use. |
|---|---|