

Series LEY

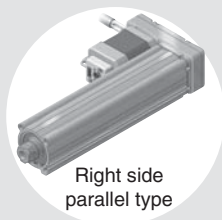
Step Motor (Servo/24 VDC) Servo Motor (24 VDC) Type

Rod Type Series LEY /Size: 16, 25, 32, 40

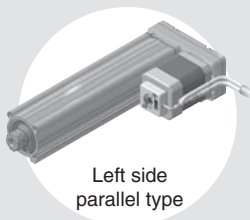
Control of intermediate positioning and pushing is possible.
High precision with ball screws (Positioning repeatability: ± 0.02 mm)

Motor mounting position selectable

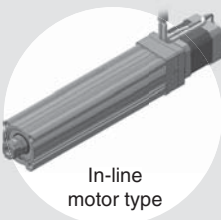
Top mounting type is the standard product.



Right side parallel type



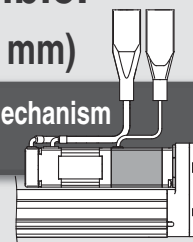
Left side parallel type



In-line motor type

Non-magnetizing lock mechanism (Option)

Prevents a workpiece from dropping. (Holding)



Motor cover available (Option)



Offering 2 types of actuator cables

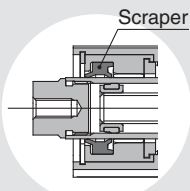
- Standard cable
- Robotic cable (Flexible cable)

Manual override screw

For manual piston rod operation
Adjustment operation possible when power OFF

Scraper

Prevents foreign matter from entering.

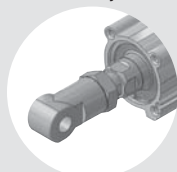


Scraper

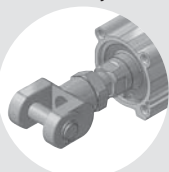
Pages 241, 242

Rod end brackets

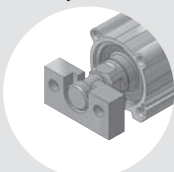
Single knuckle joint



Double knuckle joint

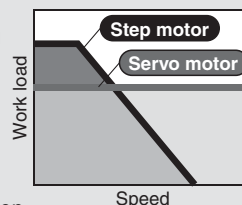


Simple joint



2 types of motors selectable

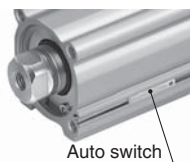
- Step motor (Servo/24 VDC)
Ideal for transfer of high load at a low speed and pushing operation
- Servo motor (24 VDC)
Stable at high speed and silent operation



Groove for auto switch

For checking the limit and intermediate signal
Applicable to the D-M9□ and D-M9□W (2-color indication)

* The auto switches should be ordered separately. Refer to pages 243 and 244 for details.

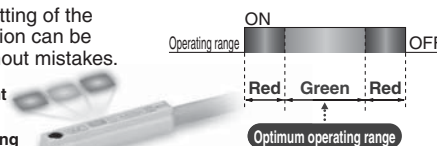


Auto switch

2-color indication solid state auto switch

Appropriate setting of the mounting position can be performed without mistakes.

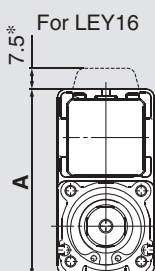
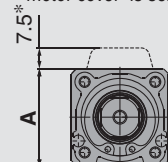
A green light lights up at the optimum operating range.



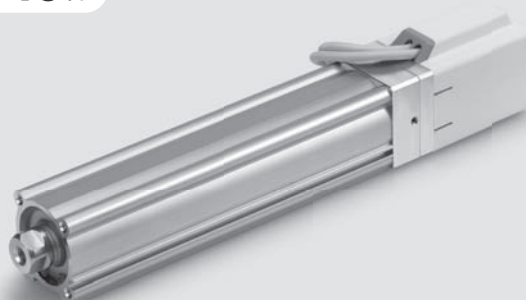
In-line motor type Height dimension shortened by up to 49%

For LEY16D

* When "Motor option/With motor cover" is selected.



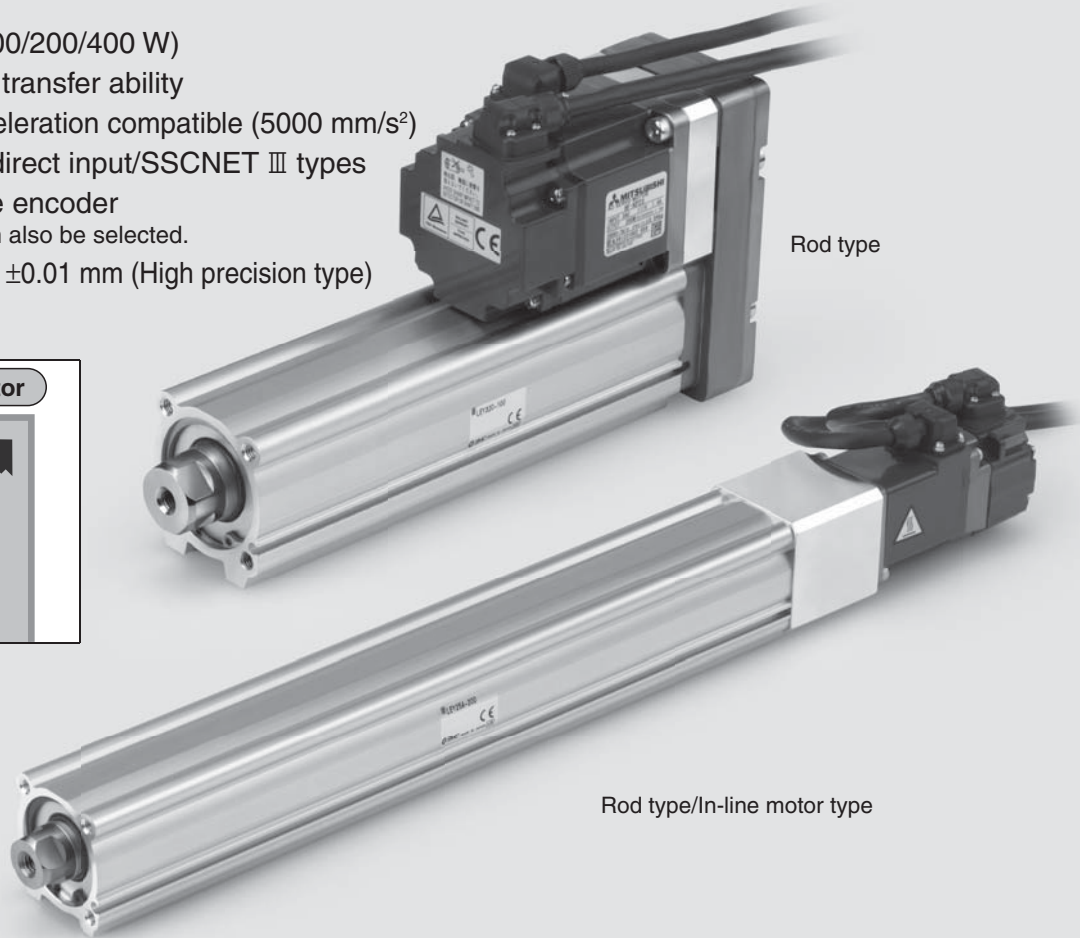
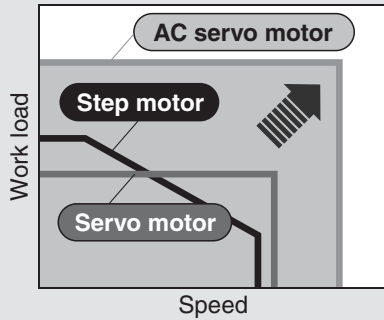
A Dimension [mm]		
Size	In-line motor	Motor top mounting
16	35.5	67.5
25	46.5	92
32, 40	61	118



AC Servo Motor Type

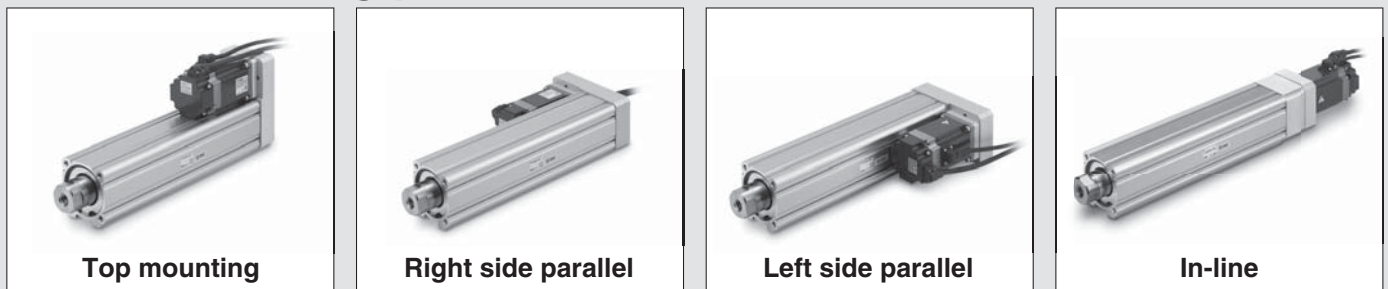
Rod Type Series **LEY** /Size: 25, 32, 63

- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s²)
- Pulse input/CC-Link direct input/SSCNET III types
- With internal absolute encoder
 - * Incremental encoder can also be selected.
- Positioning repeatability ± 0.01 mm (High precision type)



Large bore size 63

Motor mounting position can be selected from 4 directions!



●Max. work load (kg)

	Top/Parallel	In-line
Horizontal	200	80
Vertical	115	72

●Max. pushing force (N)

Top/Parallel	3343
In-line	1910

●High output motor: 400 w

●Max. speed: 1000 mm/s

* 500 mm stroke

●Dust-tight/Water-jet-proof (IP65 equivalent)

Series LEY

Step Motor (Servo/24 VDC) Servo Motor (24 VDC) Type

Guide Rod Type Series LEYG /Size: 16, 25, 32, 40

Compact integrated guide rods Lateral load resistance and high non-rotating accuracy

Compatible with sliding bearing and ball bushing bearing

- **Sliding bearing**
Suitable for lateral load applications such as a stopper where impact is applied
- **Ball bushing bearing**
Smooth operation suitable for pusher and lifter

Improved rigidity

Lateral end load: 5 times more*

* Compared with rod type, size 25 and 100 mm stroke

Motor top mounting type

In-line motor type

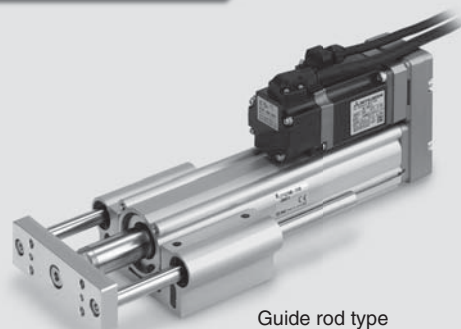
Non-rotating accuracy improved by using two guide rods

Bore size [mm]	16	25	32	40
Sliding bearing	$\pm 0.06^\circ$		$\pm 0.05^\circ$	
Ball bushing bearing	$\pm 0.05^\circ$		$\pm 0.04^\circ$	

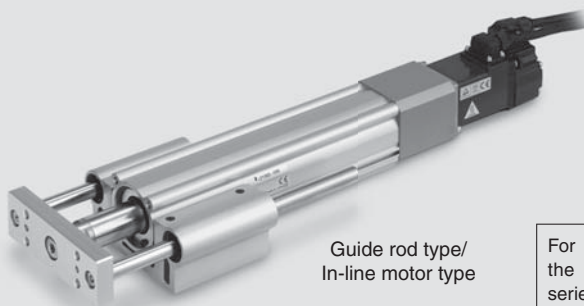
When the cylinder is retracted (initial value), the non-rotating accuracy without a load or deflection of the guide rods will be below the values shown in the table.

AC Servo Motor Type

Guide Rod Type Series LEYG /Size: 25, 32



Guide rod type

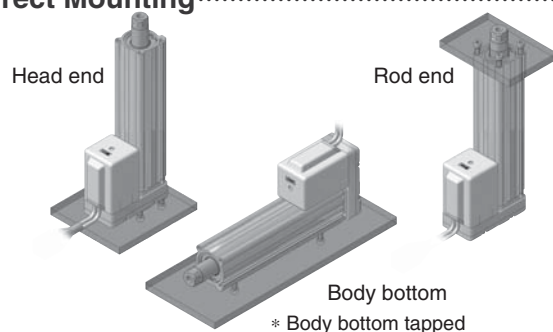


Guide rod type/
In-line motor type

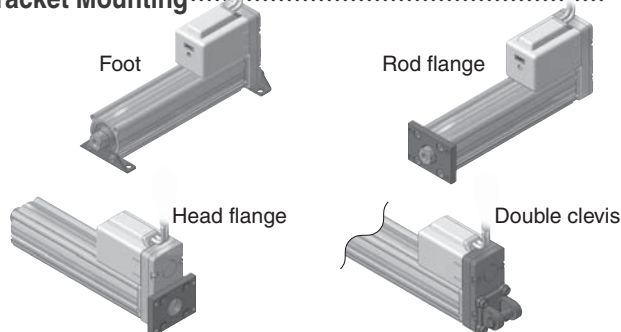
For use of auto switches for the guide rod type LEYG series, refer to page 296.

Mounting Variations

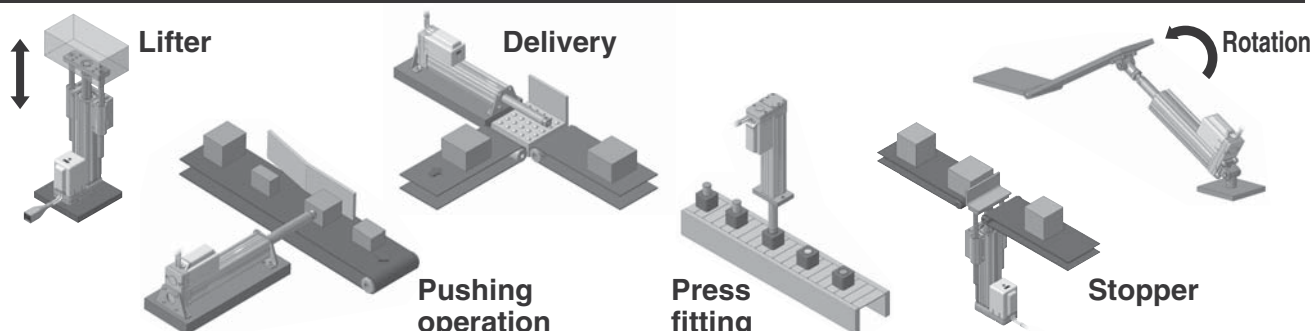
Direct Mounting



Bracket Mounting



Application Examples

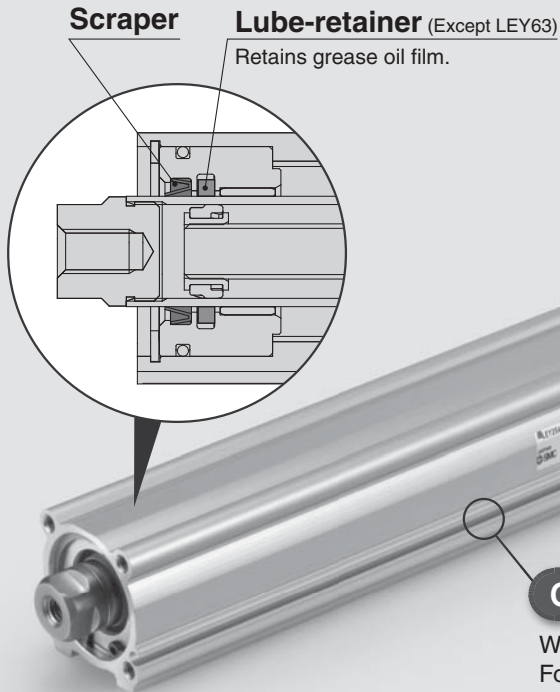


Dust-tight/Water-jet-proof (IP65 Equivalent)

● **Enclosure: IP65 equivalent**

● **Max. stroke: 500 mm***

* For size 32

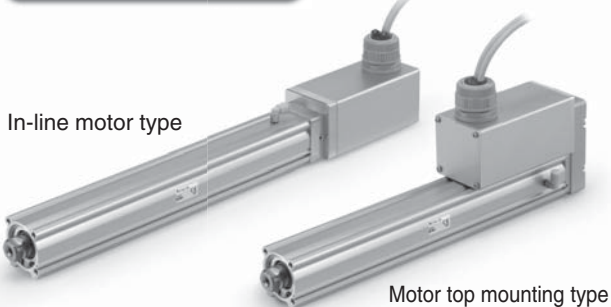


LEY-X5 (Refer to page 219.)

Step Motor (Servo/24 VDC) Type

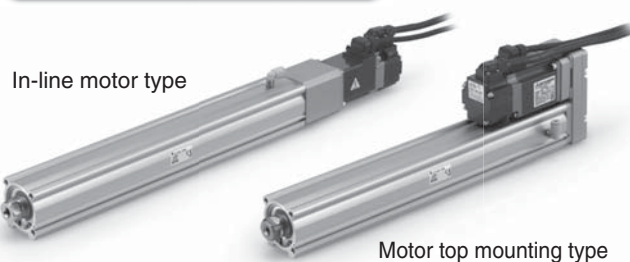
Size
25, 32

Servo Motor (24 VDC) Type



LEY-X5 (Refer to page 223.)

AC Servo Motor (100/200 W) Type

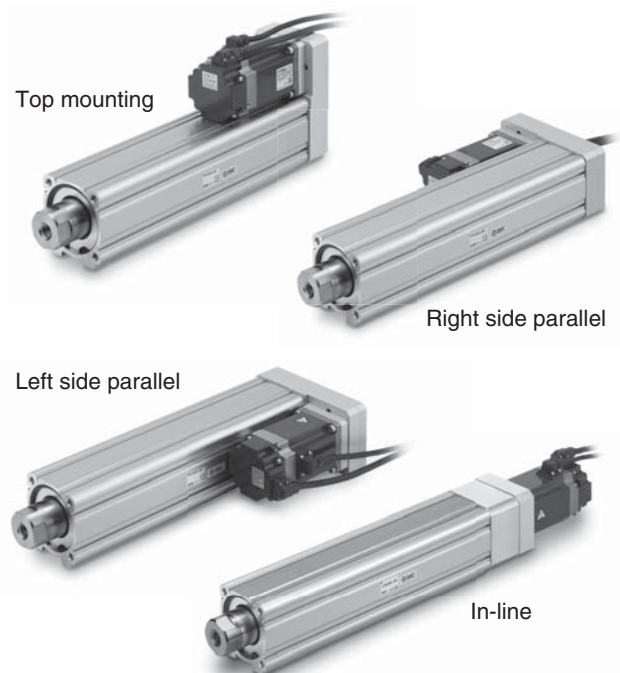


LEY63□□□-□P

(Refer to page 223./Option)

Size
63

AC Servo Motor (400 W) Type



LEFS
LEFB

LEJS
LEJB

LEL

LEM

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS
11-LEJS

11-LEJS

25A-

LEC□
LECS□

LECS-T
LECYM

LECYU

Motorless

LAT3

Electric Actuator/Rod Type *Series LEY*

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

◎Rod Type *Series LEY*



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How to Order	Page 229
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Construction	Page 233
Dimensions	Page 235
Accessory Mounting Brackets	Page 241

Auto Switch	Page 243
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◎Rod Type *LEY-X5* Dust-tight/Water-jet-proof (IP65 Equivalent)

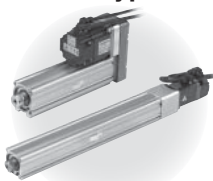


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Auto Switch	Page 498
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AC Servo Motor

◎Rod Type *Series LEY* Size 25, 32



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◎Rod Type *Series LEY* Size 63

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

* Select options



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Construction	Pages 257, 493
Dimensions	Pages 258, 494

◎Rod Type *LEY-X5* Dust-tight/Water-jet-proof (IP65 Equivalent)



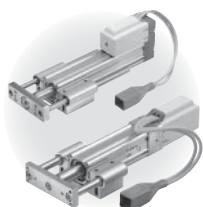
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How to Order	Page 485
Specifications	Page 486
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Dimensions	Page 488

Electric Actuator/Guide Rod Type *Series LEYG*

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

◎Guide Rod Type *Series LEYG*

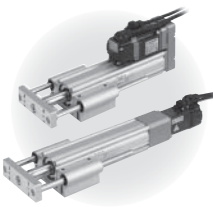


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Support Block	Page 285

Specific Product Precautions	Page 294
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AC Servo Motor

◎Guide Rod Type *Series LEYG*



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Construction	Page 290
Dimensions	Page 291
Support Block	Page 293

◎Step Motor (Servo/24 VDC)/

Servo Motor (24 VDC) Controller

Step Data Input Type/ <i>Series LEC6/LECA6</i>	Page 551
Controller Setting Kit/ <i>LEC-W2</i>	Page 560
Teaching Box/ <i>LEC-T1</i>	Page 561
CC-Link Direct Input Type/ <i>Series LECPMJ</i>	Page 591
Controller Setting Kit/ <i>LEC-W2</i>	Page 595
Teaching Box/ <i>LEC-T1</i>	Page 596
Gateway Unit/ <i>Series LEC-G</i>	Page 563
Programless Controller/ <i>Series LEC1</i>	Page 567
Step Motor Driver/ <i>Series LEC1</i>	Page 581
Controller Setting Kit/ <i>LEC-W2</i>	Page 588
Teaching Box/ <i>LEC-T1</i>	Page 589



◎AC Servo Motor Driver

Series LEC6/LECA6/ *LEC6/LECA6*

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<i>Series LEC6-T</i>	Page 620
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<i>Series LEC6/LECYU</i>	Page 648
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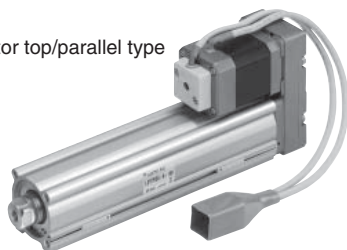
Rod Type

Series LEY

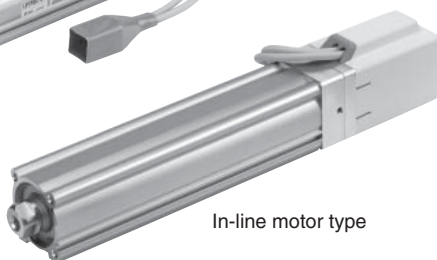
Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Motor top/parallel type



In-line motor type



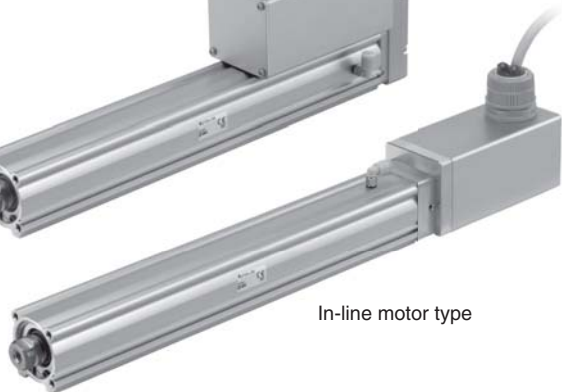
Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5

Motor top mounting type

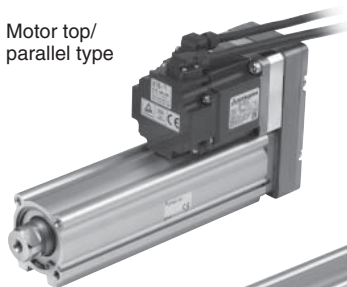


In-line motor type

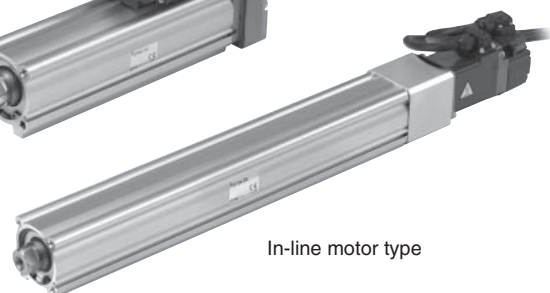


AC Servo Motor

Motor top/
parallel type



In-line motor type



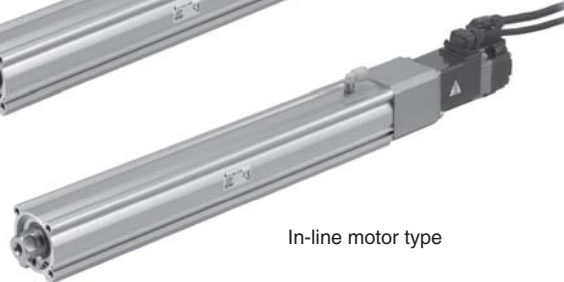
Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5

Motor top/parallel type



In-line motor type



LEFS
LEFB

LEJS
LEJB

LEL

LEM

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS

11-LEJS

25A-

LEC

LECS

LECS-T

LECYM
LECYU

Motorless

LAT3

Model Selection

Series LEY ▶ Page 229



Selection Procedure

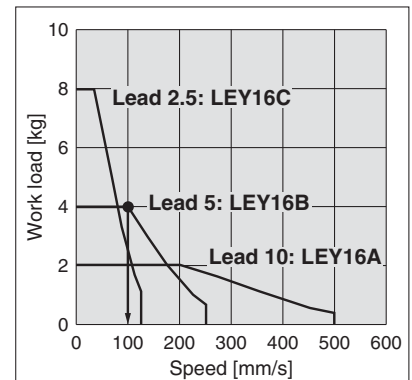
Positioning Control Selection Procedure



Selection Example

Operating conditions

- Workpiece mass: 4 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s²]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



<Speed-Vertical work load graph> (LEY16/Step motor)

Step 1 Check the work load–speed. <Speed-Vertical work load graph>

Select the target model based on the workpiece mass and speed with reference to the <Speed-Vertical work load graph>.

Selection example) The **LEY16B** is temporarily selected based on the graph shown on the right side.

* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to page 231 for the horizontal work load in the specifications, and page 294 for the precautions.

Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

- Cycle time T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be obtained by the following equation.

$$T1 = V/a1 \text{ [s]}$$

$$T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as motor types, load and in position of the step data. Therefore, calculate the settling time with reference to the following value.

$$T4 = 0.2 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

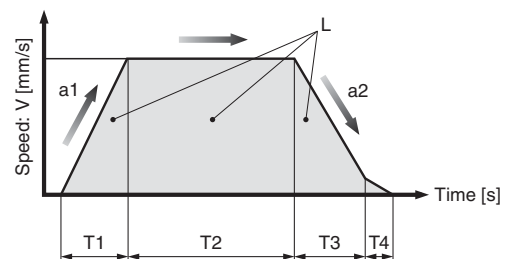
$$T1 = V/a1 = 100/3000 = 0.033 \text{ [s]}, T3 = V/a2 = 100/3000 = 0.033 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 100 \cdot (0.033 + 0.033)}{100} = 1.97 \text{ [s]}$$

$$T4 = 0.2 \text{ [s]}$$

Therefore, the cycle time can be obtained as follows.

$$T = T1 + T2 + T3 + T4 = 0.033 + 1.967 + 0.033 + 0.2 = 2.233 \text{ [s]}$$



- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1: Acceleration [mm/s²] ... (Operating condition)
- a2: Deceleration [mm/s²] ... (Operating condition)

T1: Acceleration time [s] ... Time until reaching the set speed

T2: Constant speed time [s] ... Time while the actuator is operating at a constant speed

T3: Deceleration time [s] ... Time from the beginning of the constant speed operation to stop

T4: Settling time [s] ... Time until positioning is completed

Based on the above calculation result, the **LEY16B-200** is selected.

Selection Procedure

Pushing Control Selection Procedure

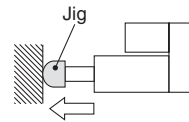


* The duty ratio is a ratio at the time that can keep being pushed.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Duty ratio: 20 [%]
- Jig weight: 0.2 [kg]
- Speed: 100 [mm/s]
- Pushing force: 60 [N]
- Stroke: 200 [mm]



Step 1 Check the duty ratio.

<Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio with reference to the <Conversion table of pushing force–duty ratio>.

Selection example)

Based on the table below,

- Duty ratio: 20 [%]

Therefore, the set value of pushing force will be 70 [%].

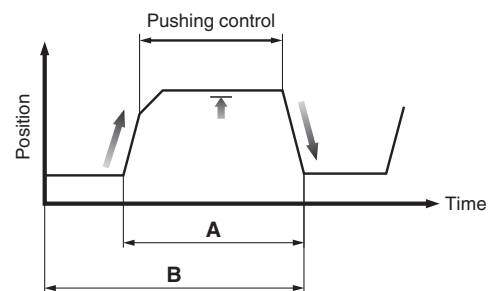
<Conversion table of pushing force–duty ratio>

(LEY16/Step motor)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 or less	100	—
50	70	12
70	20	1.3
85	15	0.8

* [Set value of pushing force] is one of the step data input to the controller.

* [Continuous pushing time] is the time that the actuator can continuously keep pushing.



$$\text{Duty ratio} = A/B \times 100 [\%]$$

Step 2 Check the pushing force. <Force conversion graph>

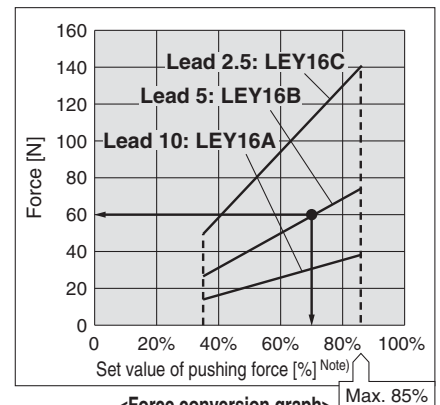
Select the target model based on the set value of pushing force and force with reference to the <Force conversion graph>.

Selection example)

Based on the graph shown on the right side,

- Set value of pushing force: 70 [%]
- Pushing force: 60 [N]

Therefore, the **LEY16B** is temporarily selected.



<Force conversion graph>
(LEY16/Step motor)

Note) Set values for the controller.

Step 3 Check the lateral load on the rod end.

<Graph of allowable lateral load on the rod end>

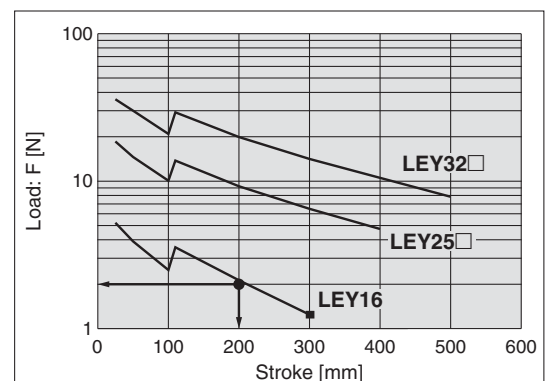
Confirm the allowable lateral load on the rod end of the actuator: LEY16□, which has been selected temporarily with reference to the <Graph of allowable lateral load on the rod end>.

Selection example)

Based on the graph shown on the right side,

- Jig weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

Therefore, the lateral load on the rod end is in the allowable range.



<Graph of allowable lateral load on the rod end>

Based on the above calculation result, the **LEY16B-200** is selected.

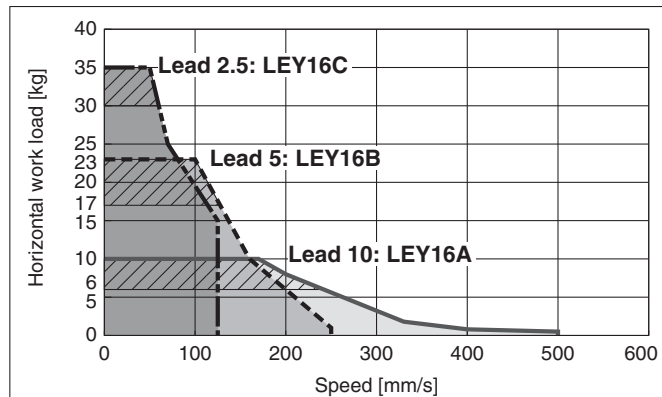
Speed-Work Load Graph (Guide)

For Step Motor (Servo/24 VDC) LECP6, LECP1, LECPMJ

Horizontal

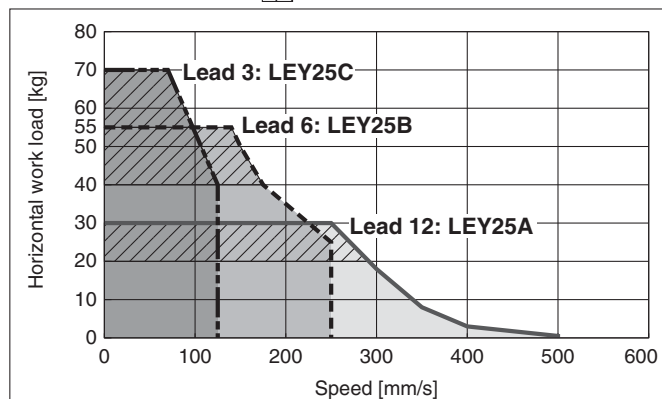
LEY16□

▨ for acceleration/deceleration: 2000 mm/s²



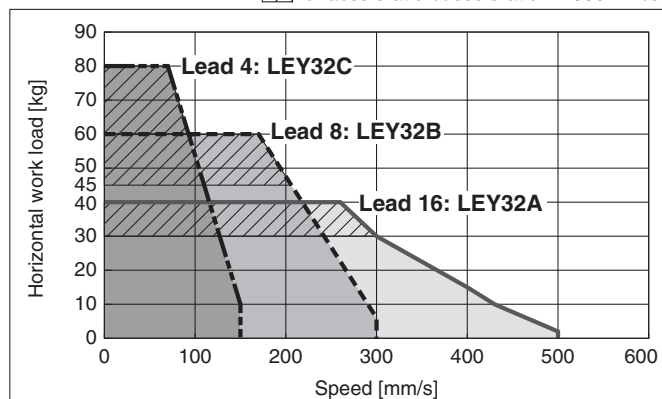
LEY25□

▨ for acceleration/deceleration: 2000 mm/s²



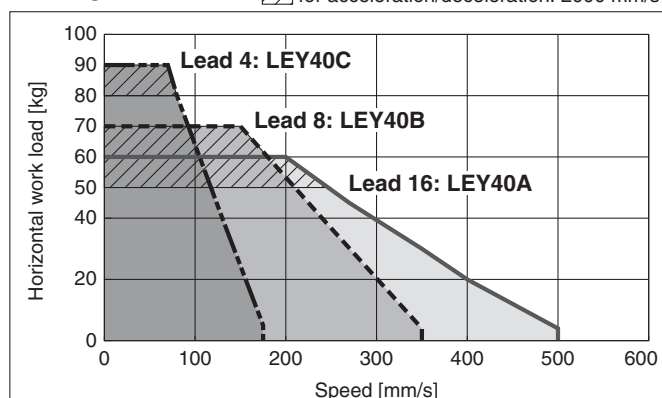
LEY32□

▨ for acceleration/deceleration: 2000 mm/s²



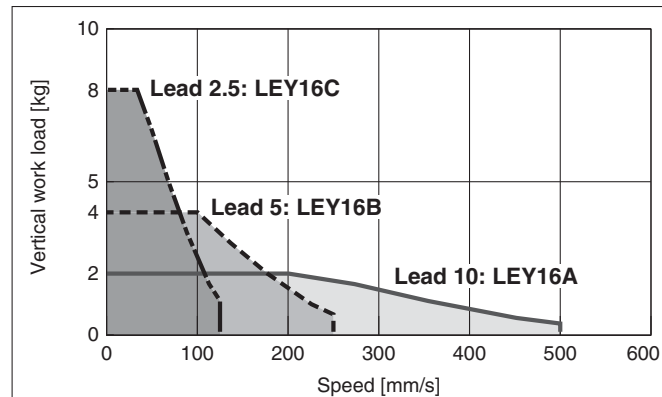
LEY40□

▨ for acceleration/deceleration: 2000 mm/s²

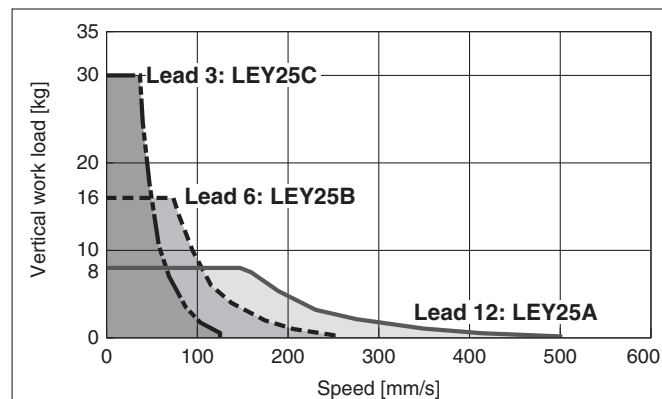


Vertical

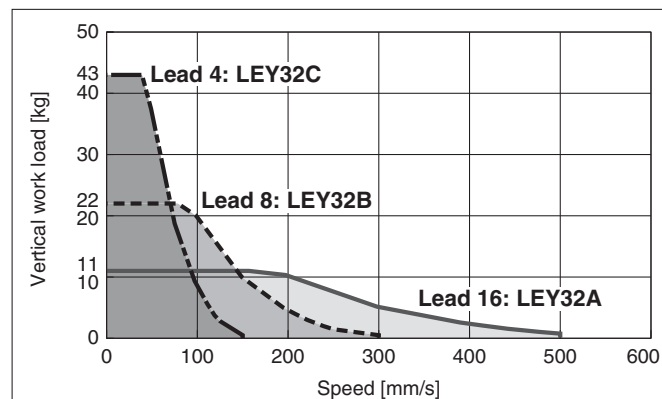
LEY16□



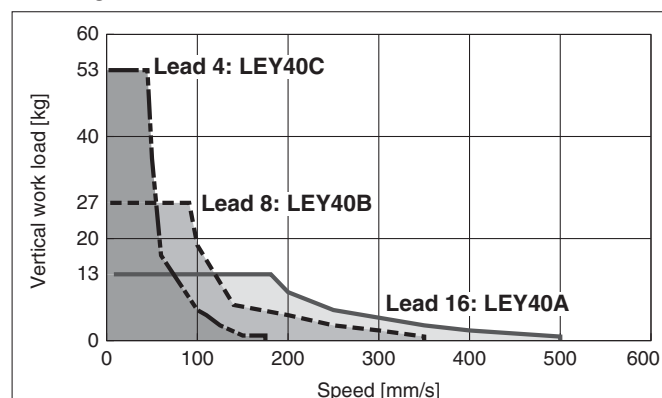
LEY25□



LEY32□



LEY40□

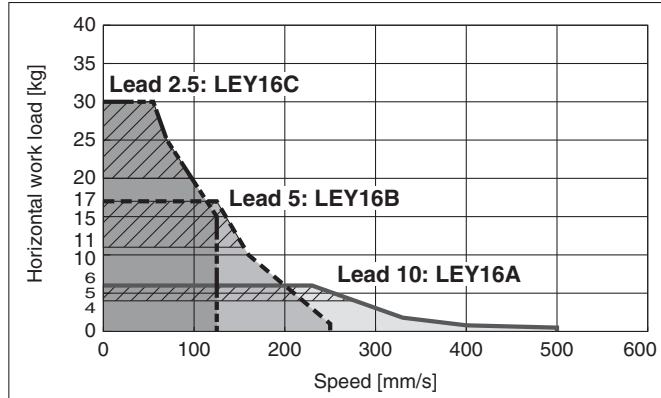


Refer to page 215 for the LECP6, LECP1, LECPMJ, and page 217 for the LECA6.

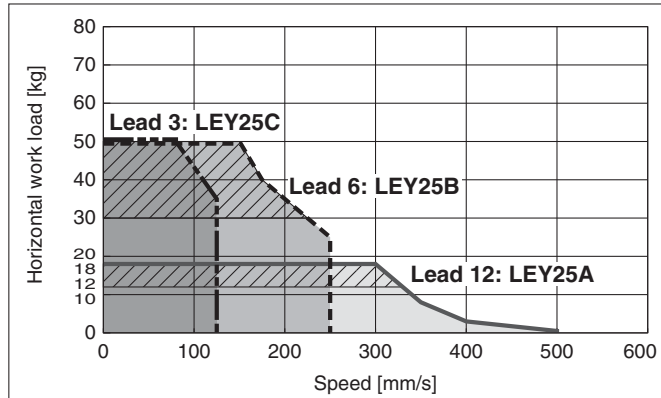
Speed-Work Load Graph (Guide) For Step Motor (Servo/24 VDC) LECPA

Horizontal

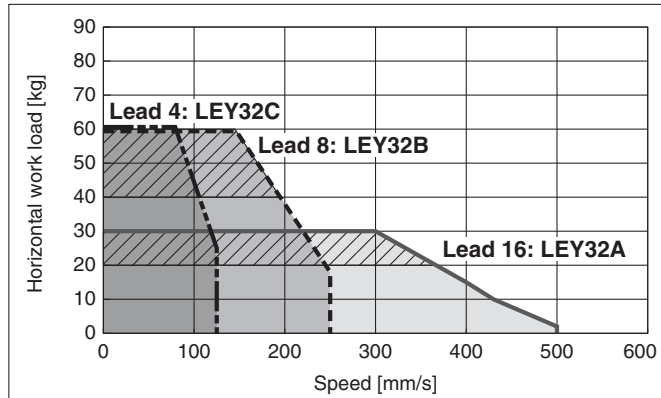
LEY16 for acceleration/deceleration: 2000 mm/s²



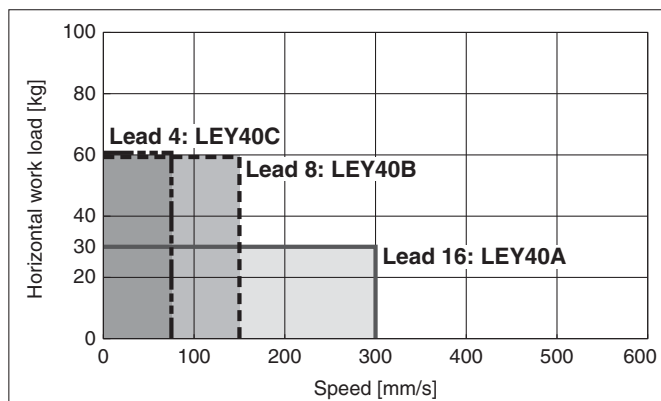
LEY25 for acceleration/deceleration: 2000 mm/s²



LEY32 for acceleration/deceleration: 2000 mm/s²

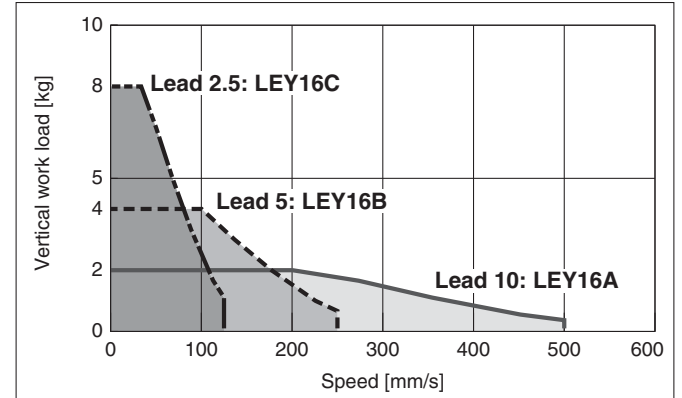


LEY40

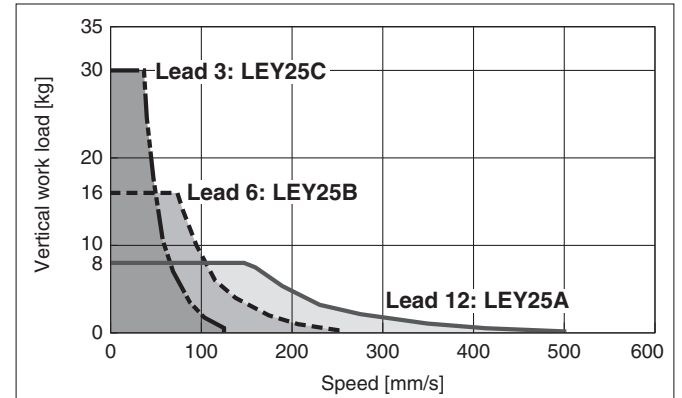


Vertical

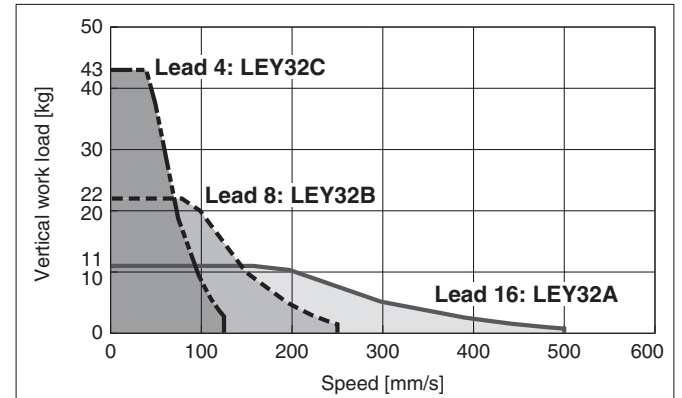
LEY16



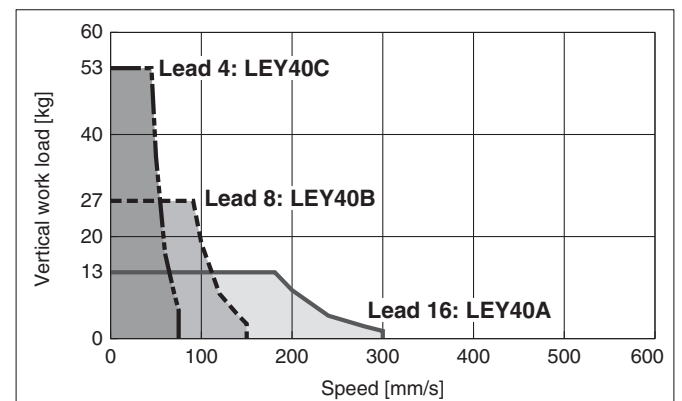
LEY25



LEY32



LEY40

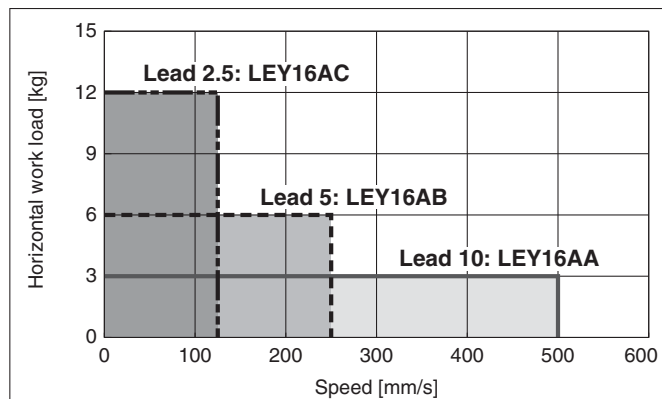


Speed-Work Load Graph (Guide) For Servo Motor (24 VDC) LECA6

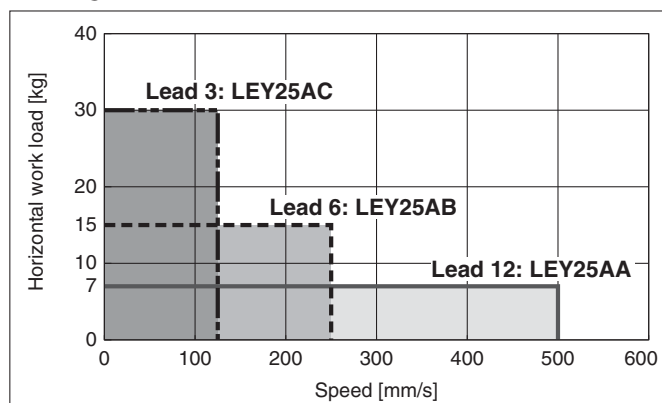
Refer to page 215 for the LECP6, LECP1,
LECPMJ, and page 216 for the LECPA.

Horizontal

LEY16A□

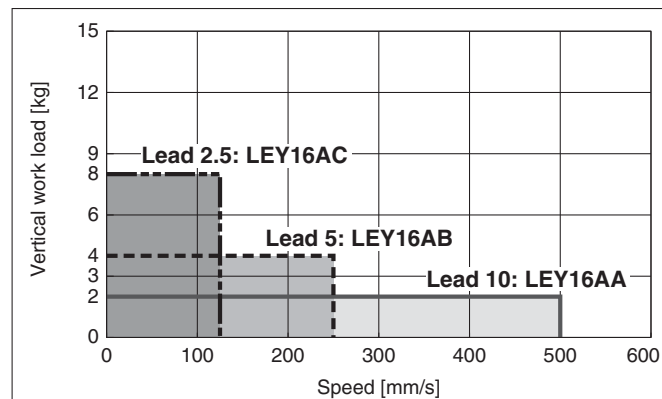


LEY25A□

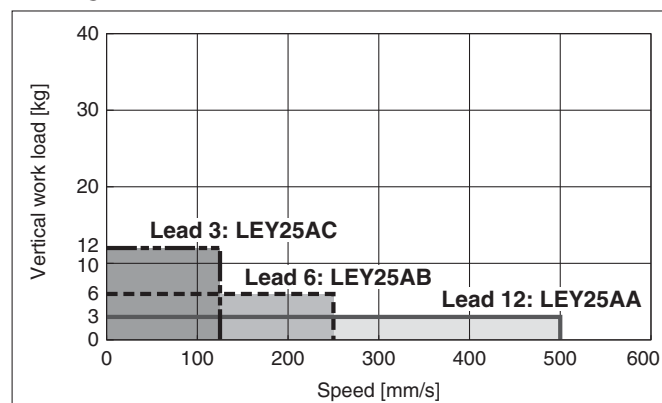


Vertical

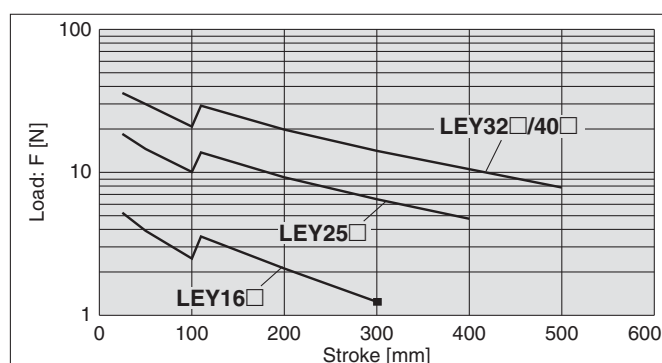
LEY16A□



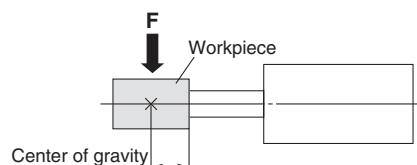
LEY25A□



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



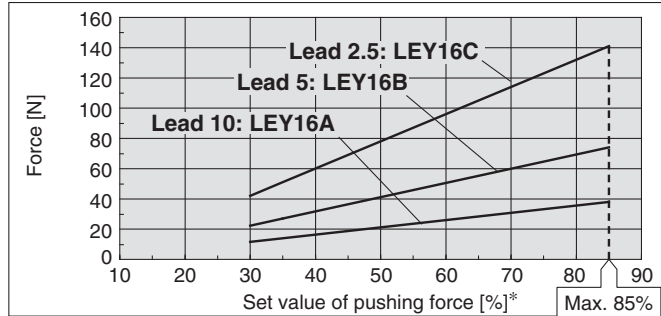
[Stroke] = [Product stroke] + [Distance from the rod end to the center of gravity of the workpiece]



Force Conversion Graph (Guide)

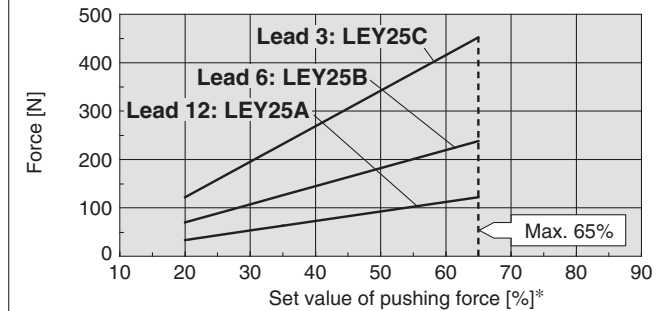
Step Motor (Servo/24 VDC)

LEY16



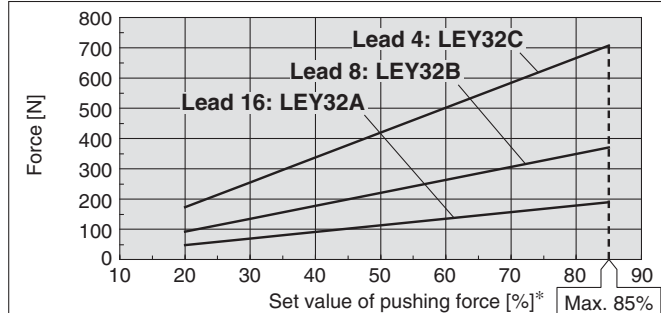
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
40°C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEY25



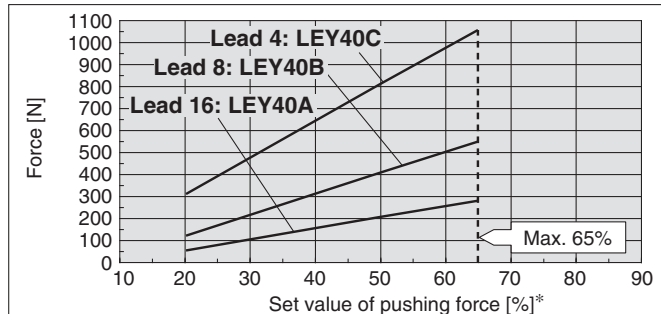
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	65 or less	100	—

LEY32



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
40°C	65 or less	100	—
	85	50	15

LEY40

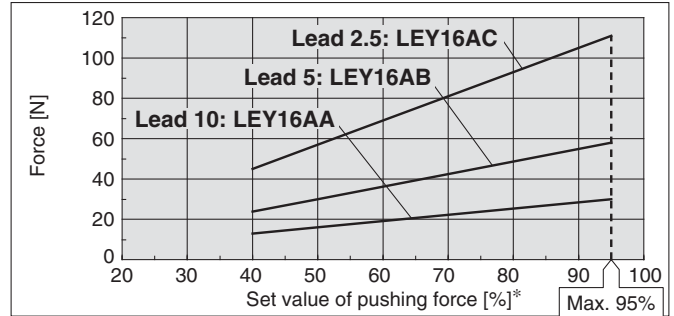


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	65 or less	100	—

* Set values for the controller.

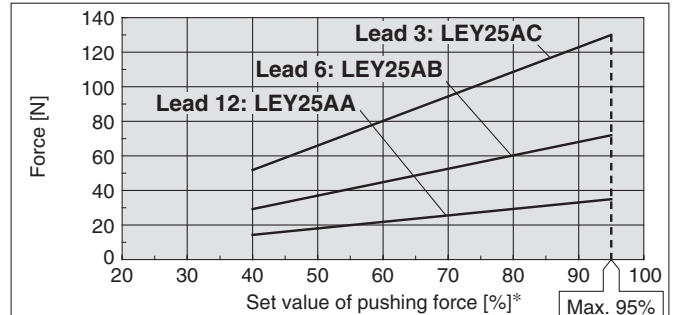
Servo Motor (24 VDC)

LEY16



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	95 or less	100	—

LEY25



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	95 or less	100	—

<Pushing Force and Trigger Level Range> Without Load

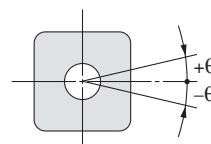
Model	Pushing speed [mm/s]	Pushing force (Setting input value)	Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16□	1 to 4	30% to 85%	LEY16□A	1 to 4	40% to 95%
	5 to 20	35% to 85%		5 to 20	60% to 95%
	21 to 50	60% to 85%		21 to 50	80% to 95%
LEY25□	1 to 4	20% to 65%	LEY25□A	1 to 4	40% to 95%
	5 to 20	35% to 65%		5 to 20	60% to 95%
	21 to 35	50% to 65%		21 to 35	80% to 95%
LEY32□	1 to 4	20% to 85%	* The pushing force in the table shows the range within which the completion signal [INP] is normally output. If the product is operated outside this range (low pushing force), the [INP] signal may be output when the actuator is moving (before pushing).		
	5 to 20	35% to 85%			
	21 to 30	60% to 85%			
LEY40□	1 to 4	20% to 65%			
	5 to 20	35% to 65%			
	21 to 30	50% to 65%			

<Set Values for Vertical Upward Transfer Pushing Operation>

For vertical loads (upward), set the pushing force to the maximum value shown below, and operate at the work load or less.

Model	LEY16□	LEY25□	LEY32□	LEY40□	LEY16□A	LEY25□A
Lead	A B C	A B C	A B C	A B C	A B C	A B C
Work load [kg]	1 1.5 3	2.5 5 10	4.5 9 18	7 14 28	1 1.5 3	1.2 2.5 5
Pushing force	85%	65%	85%	65%	95%	95%

Non-rotating Accuracy of Rod



Size	Non-rotating accuracy θ
16	±1.1°
25	±0.8°
32	±0.7°
40	

* Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

This may cause deformation of the non-rotating guide, abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

Model Selection

Series **LEY-X5** ▶ Page 477



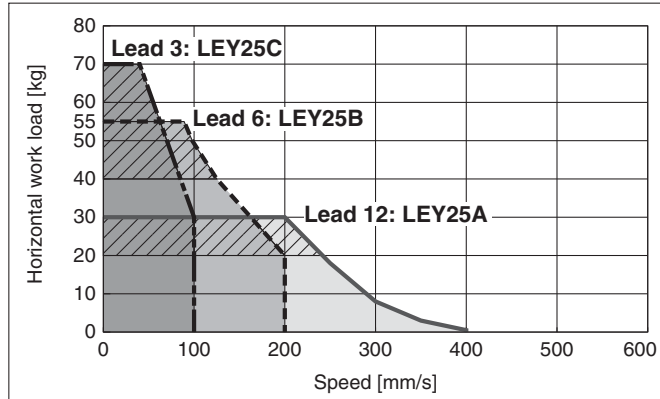
Refer to page 220 for the LECPA or LECA6.

Speed-Work Load Graph (Guide) for Step Motor (Servo/24 VDC) LECP6, LECP1, LECPMJ

Horizontal

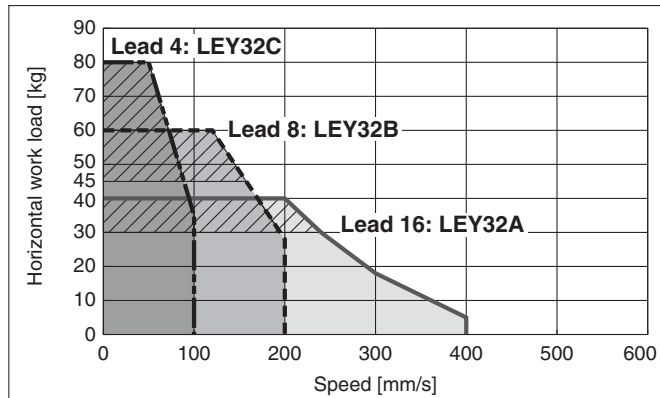
LEY25□

▨ for acceleration/deceleration: 2000 mm/s²



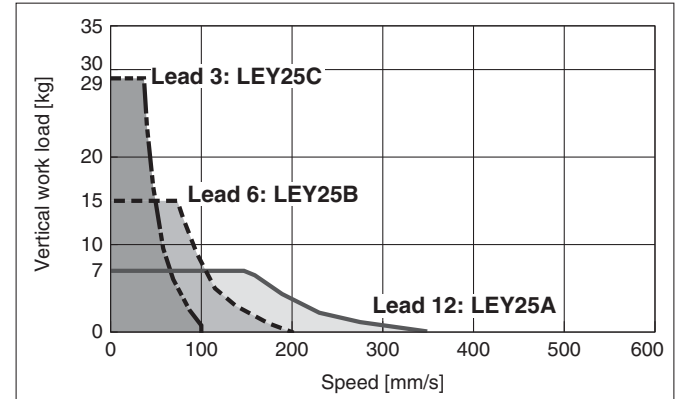
LEY32□

▨ for acceleration/deceleration: 2000 mm/s²

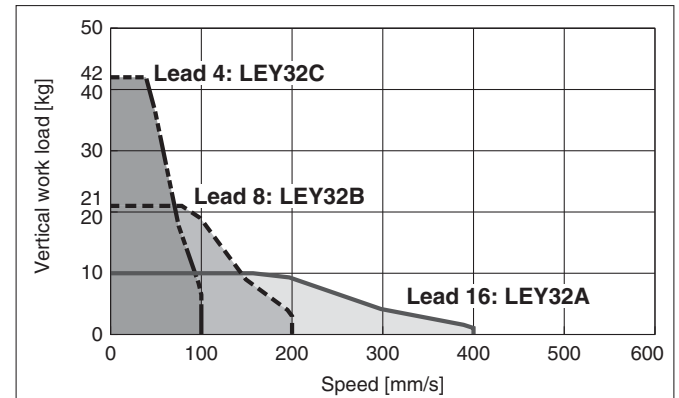


Vertical

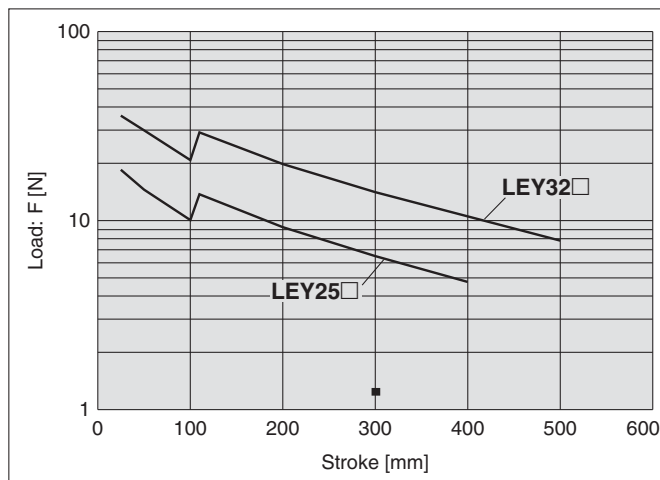
LEY25□



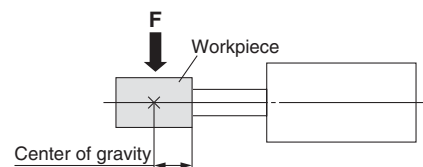
LEY32□



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]



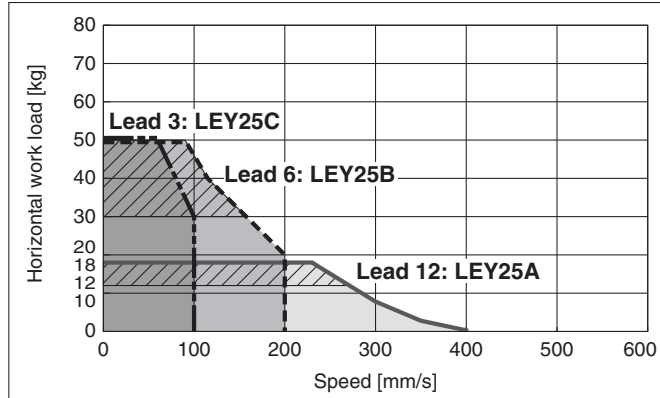
Refer to page 219 for the
LECP6, LECP1, LECPMJ.

Speed-Work Load Graph (Guide) For Step Motor (Servo/24 VDC) LECPA

Horizontal

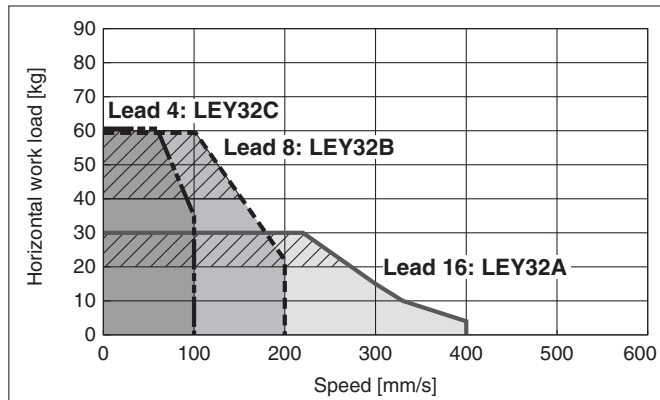
LEY25

for acceleration/deceleration: 2000 mm/s²



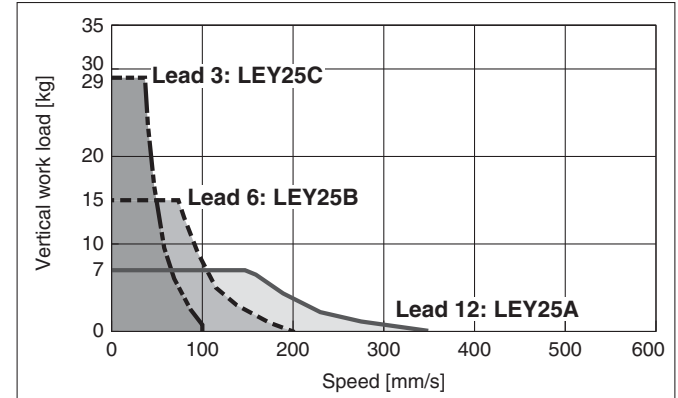
LEY32

for acceleration/deceleration: 2000 mm/s²

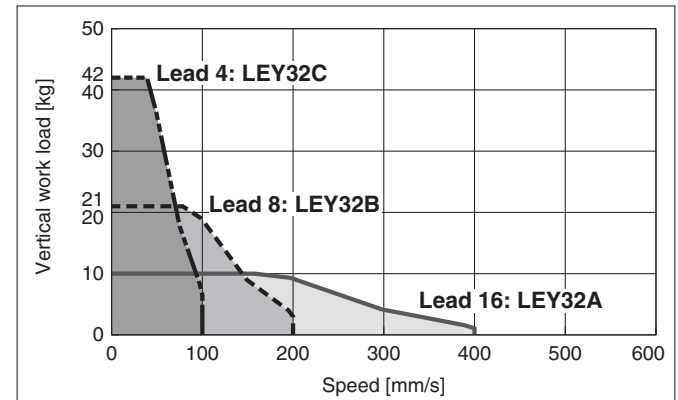


Vertical

LEY25



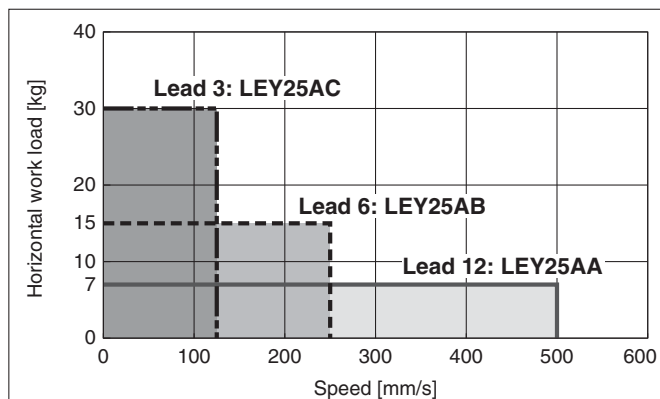
LEY32



For Servo Motor (24 VDC) LECA6

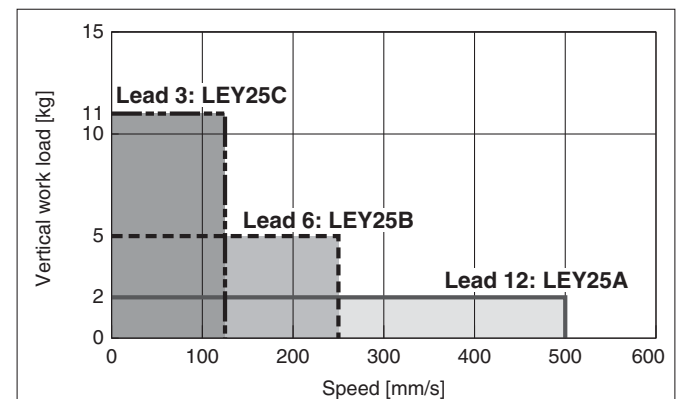
Horizontal

LEY25A



Vertical

LEY25



Series LEY-X5

Step Motor (Servo/24 VDC)

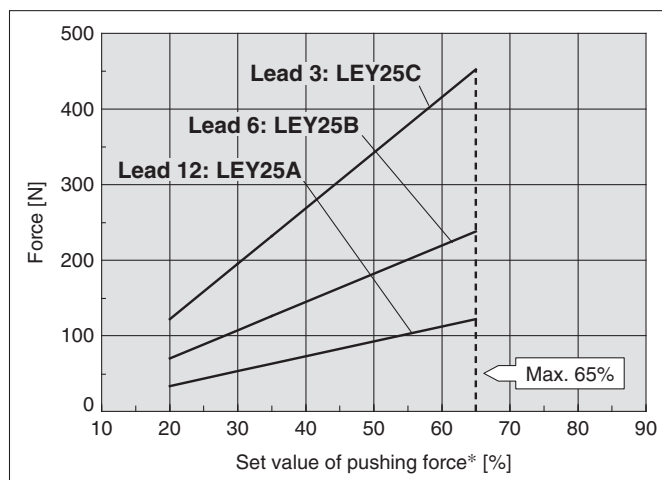
Servo Motor (24 VDC)

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

Force Conversion Graph

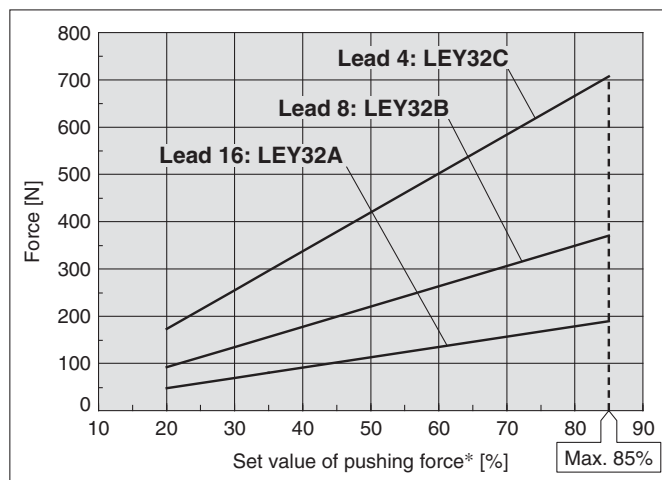
Step Motor (Servo/24 VDC)

LEY25



Ambient temperature	Set value of pushing force* [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	65 or less	100	—

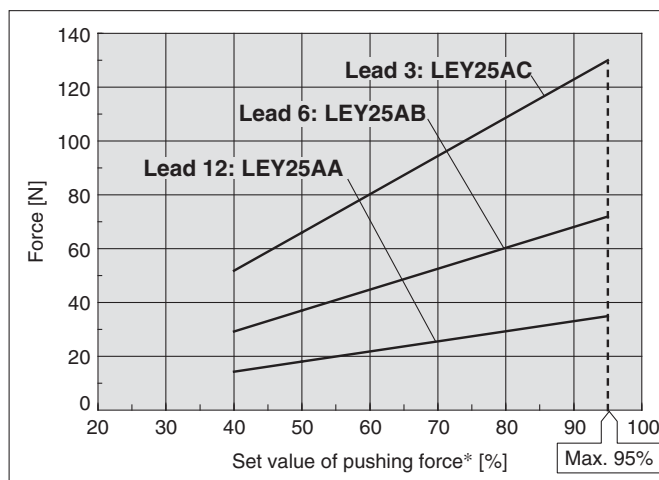
LEY32



Ambient temperature	Set value of pushing force* [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
40°C	65 or less	100	—
	85	50	15

Servo Motor (24 VDC)

LEY25



Ambient temperature	Set value of pushing force* [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	95 or less	100	—

<Pushing Force and Trigger Level Range> Without Load

Model	Pushing speed [mm/s]	Pushing force (Setting input value)	Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY25□	1 to 4	20% to 65%	LEY25□A	1 to 4	40% to 95%
	5 to 20	35% to 65%		5 to 20	60% to 95%
	21 to 35	50% to 65%		21 to 35	80% to 95%
LEY32□	1 to 4	20% to 85%			
	5 to 20	35% to 85%			
	21 to 30	60% to 85%			

<Set Values for Vertical Upward Transfer Pushing Operation>

For vertical loads (upward), set the pushing force to the maximum value shown below, and operate at the work load or less.

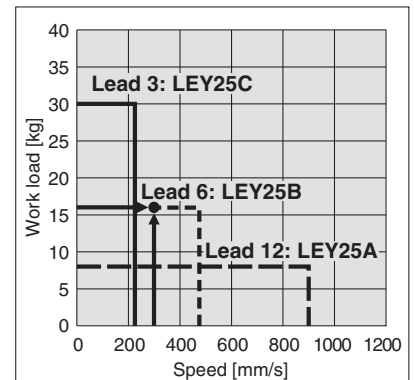
Model	LEY25□			LEY32□			LEY25□A		
Lead	A	B	C	A	B	C	A	B	C
Work load [kg]	2.5	5	10	4.5	9	18	1.2	2.5	5
Pushing force	65%			85%			95%		

* Set values for the controller.

LAT3	Motorless	LECYM LECYU	LECSS-T	LECS	LEC	25A-	11-LEJS	11-LEFS	LEY-X5	LEH	LER	LEPY LEPS	LES LESH	LEY LEYG	LEM	LEL	LEJS LEJB	LEFS LEFB
------	-----------	----------------	---------	------	-----	------	---------	---------	--------	-----	-----	--------------	-------------	-------------	-----	-----	--------------	--------------

**Selection Procedure****Positioning Control Selection Procedure****Selection Example****Operating conditions**

- Workpiece mass: 16 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s²]
- Stroke: 300 [mm]
- Workpiece mounting condition: Vertical upward downward transfer

**<Speed-Vertical work load graph> (LEY25)****Step 1** Check the work load–speed. <Speed-Vertical work load graph>

Select the target model based on the workpiece mass and speed with reference to the <Speed-Vertical work load graph>.

Selection example) The **LEY25B** is temporarily selected based on the graph shown on the right side.

* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to pages 247, 256, 486 and 492 for the horizontal work load in the specifications, and page 294 for the precautions.

The regeneration option may be necessary. Refer to pages 225 and 226 for "Required Conditions for Regeneration Option".

Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

- Cycle time T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be obtained by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the motor type and load. The value below is recommended.

$$T4 = 0.05 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

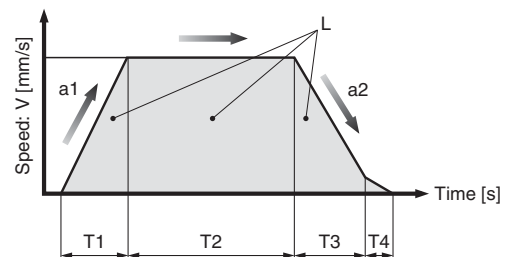
$$T1 = V/a1 = 300/5000 = 0.06 \text{ [s]}, \quad T3 = V/a2 = 300/5000 = 0.06 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.06 + 0.06)}{300} = 0.94 \text{ [s]}$$

$$T4 = 0.05 \text{ [s]}$$

Therefore, the cycle time can be obtained as follows.

$$T = T1 + T2 + T3 + T4 = 0.06 + 0.94 + 0.06 + 0.05 = 1.11 \text{ [s]}$$



- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- $a1$: Acceleration [mm/s²] ... (Operating condition)
- $a2$: Deceleration [mm/s²] ... (Operating condition)

T1: Acceleration time [s] ... Time until reaching the set speed

T2: Constant speed time [s] ... Time while the actuator is operating at a constant speed

T3: Deceleration time [s] ... Time from the beginning of the constant speed operation to stop

T4: Settling time [s] ... Time until positioning is completed

Based on the above calculation result, the LEY25B-300 is selected.

Selection Procedure

Pushing Control Selection Procedure

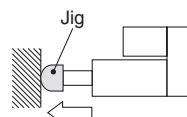


* The duty ratio is a ratio at the time that can keep being pushed.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Pushing force: 255 [N]
- Duty ratio: 60 [%]
- Speed: 100 [mm/s]
- Stroke: 300 [mm]



Step 1 Check the duty ratio.

<Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio with reference to the <Conversion table of pushing force–duty ratio>.

Selection example)

Based on the table below,

- Duty ratio: 60 [%]

Therefore, the set value of pushing force will be 30 [%].

<Conversion table of pushing force–duty ratio>

(LEY25/AC Servo motor)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

* [Set value of pushing force] is one of the data input to the driver.

* [Continuous pushing time] is the time that the actuator can continuously keep pushing.

Step 2 Check the pushing force. <Force conversion graph>

Select the target model based on the torque limit/command value and pushing force with reference to the <Force conversion graph>.

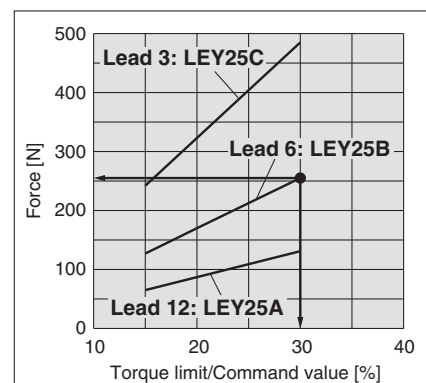
Selection example)

Based on the graph shown on the right side,

- Torque limit/Command value: 30 [%]

- Pushing force: 255 [N]

Therefore, the **LEY25B** is temporarily selected.



<Force conversion graph>
(LEY25)

Step 3 Check the lateral load on the rod end.

<Graph of allowable lateral load on the rod end>

Confirm the allowable lateral load on the rod end of the actuator: LEY25B, which has been selected temporarily with reference to the <Graph of allowable lateral load on the rod end>.

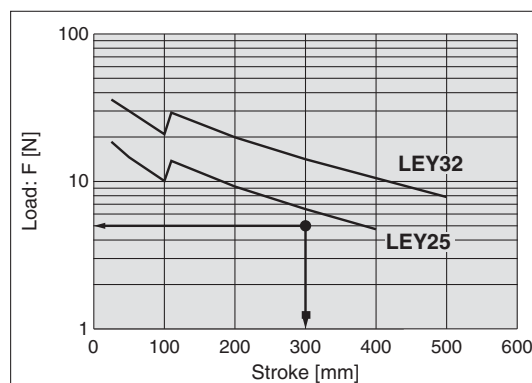
Selection example)

Based on the graph shown on the right side,

- Jig weight: 0.5 [kg] ≈ 5 [N]

- Product stroke: 300 [mm]

Therefore, the lateral load on the rod end is in the allowable range.



<Graph of allowable lateral load on the rod end>

Based on the above calculation result, the **LEY25B-300** is selected.

Series LEY/LEY-X5

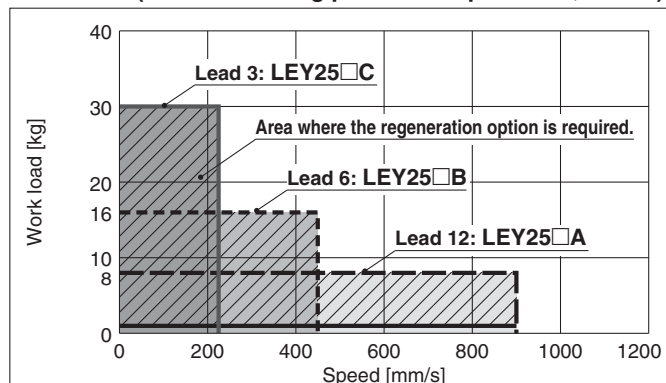
AC Servo Motor

Size 25, 32, 63

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

Speed-Vertical Work Load Graph/Required Conditions for “Regeneration Option”

LEY25□ (Motor mounting position: Top/Parallel, In-line)



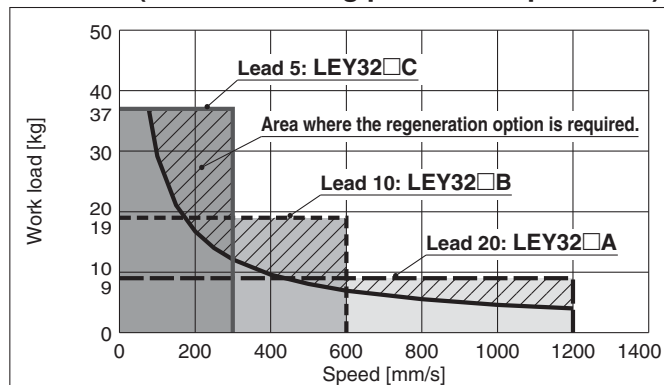
Required conditions for “Regeneration option”

* Regeneration option is required when using product above regeneration line in graph. (Order separately.)

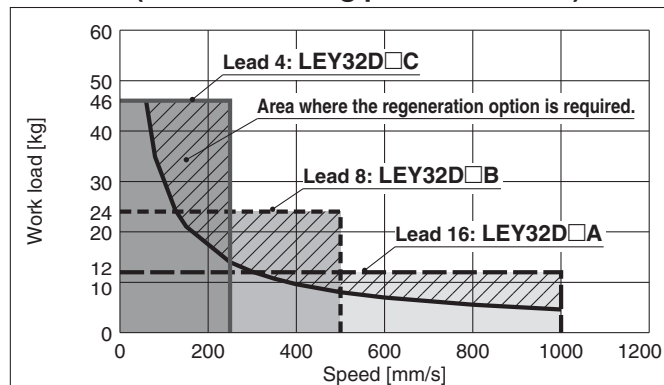
“Regeneration Option” Models

Size	Model
LEY25□	LEC-MR-RB-032
LEY32□	LEC-MR-RB-032
LEY63□	LEC-MR-RB-12

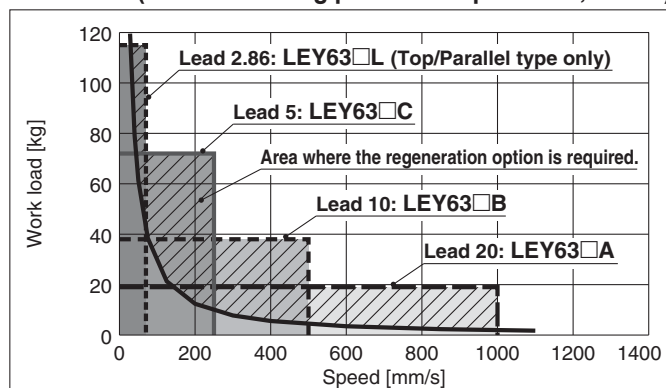
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



LEY63□ (Motor mounting position: Top/Parallel, In-line)



LEY25□ (Motor mounting position: Top/Parallel, In-line)

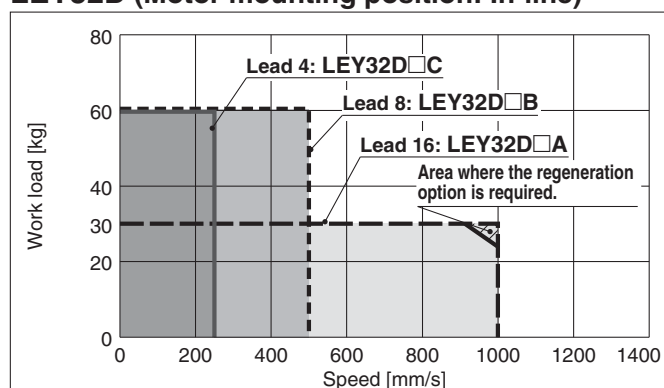


* Regeneration option is required when using product above regeneration line in graph. (Order separately.)

“Regeneration Option” Models

Size	Model
LEY25 □	LEC-MR-RB-032
LEY32 □	LEC-MR-RB-032
LEY63 □	—

LEY32D (Motor mounting position: In-line)



Graph showing Work load [kg] vs Speed [mm/s] for LEY63 tool types. The graph shows four horizontal bars representing different tool types:

- Lead 2.86: LEY63 L (Top/Parallel type only)**: Work load of 200 kg, Speed range 0 to 100 mm/s.
- Lead 5: LEY63 C**: Work load of 80 kg, Speed range 0 to 250 mm/s.
- Lead 10: LEY63 B**: Work load of 70 kg, Speed range 0 to 500 mm/s.
- Lead 20: LEY63 A**: Work load of 40 kg, Speed range 0 to 1000 mm/s.

Allowable Stroke Speed

Model	AC servo motor	Lead		Stroke [mm]													
		Symbol	[mm]	30	50	100	150	200	250	300	350	400	450	500	600	700	800
LEY25□ 〔Motor mounting position: Top/Parallel, In-line〕	100 W □40	A	12	900							600		—	—	—		
		B	6	450							300		—	—	—		
		C	3	225							150		—	—	—		
		(Motor rotation speed)		(4500 rpm)							(3000 rpm)		—	—	—		
LEY32□ 〔Motor mounting position: Top/Parallel〕	200 W □60	A	20	1200							800		—				
		B	10	600							400		—				
		C	5	300							200		—				
		(Motor rotation speed)		(3600 rpm)							(2400 rpm)		—				
LEY32D 〔Motor mounting position: In-line〕	200 W □60	A	16	1000							640		—				
		B	8	500							320		—				
		C	4	250							160		—				
		(Motor rotation speed)		(3750 rpm)							(2400 rpm)		—				
LEY63□ 〔Motor mounting position: Top/Parallel, In-line〕	400 W □60	A	20	1000										800	600	500	
		B	10	500										400	300	250	
		C	5	250										200	150	125	
		(Motor rotation speed)		(3000 rpm)										(2400 rpm)	(1800 rpm)	(1500 rpm)	
		L*	2.86	70													
		(Motor rotation speed)		(1470 rpm)													

* Top/Parallel type only

LAT

Series LEY/LEY-X5

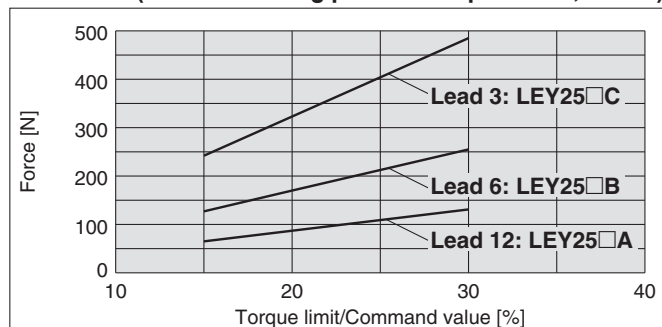
AC Servo Motor

Size 25, 32, 63

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

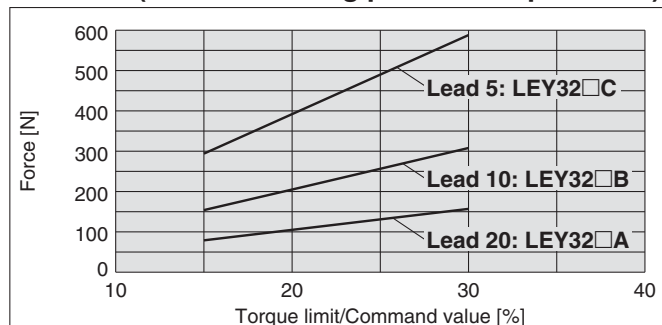
Force Conversion Graph (Guide)

LEY25□ (Motor mounting position: Top/Parallel, In-line)



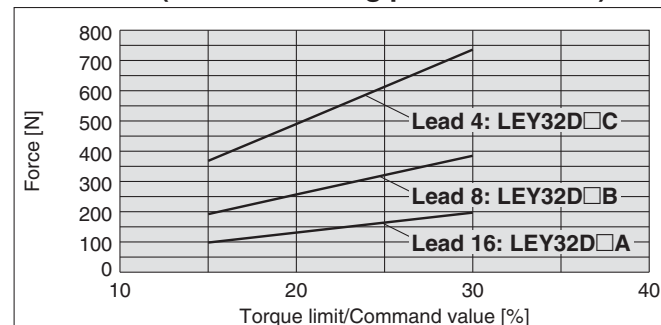
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32□ (Motor mounting position: Top/Parallel)



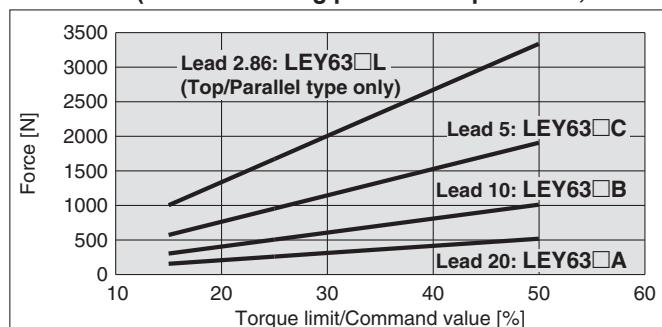
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32D□ (Motor mounting position: In-line)



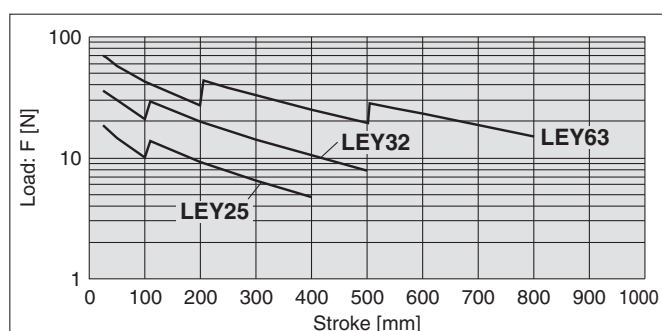
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY63□ (Motor mounting position: Top/Parallel, In-line)

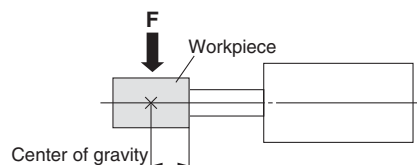


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5
40	30	0.5
50	20	0.16

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]



LAT3

Motorless

LECYM
LECYU

LECSS-T

LECS □

LEC □

25A-

11-LEJS

11-LEFS

LEY-X5

LEH

LER

LEPY
LEPS

LES
LESH

LEY
LEYG

LEM

LEL

LEJS
LEJB

LEFS
LEFB

Electric Actuator/ Rod Type

Series **LEY** LEY16, 25, 32, 40



Dust-tight/Water-jet-proof ▶ Page 477 Secondary Battery Compatible ▶ Page 533

How to Order

LEY 16 [] [] B - 30 [] [] [] - S 1 6N 1 []

1 2 3 4 5 6 7 8 9 10 11 12 13

1 Size

16
25
32
40

2 Motor mounting position

Nil	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

3 Motor type

Symbol	Type	Size			Compatible controller/driver
		LEY16	LEY25	LEY32/40	
Nil	Step motor (Servo/24 VDC)	●	●	●	LECP6 LECP1 LECPA LECPMJ
A	Servo motor (24 VDC)	●	●	—	LECA6

4 Lead [mm]

Symbol	LEY16	LEY25	LEY32/40
A	10	12	16
B	5	6	8
C	2.5	3	4

5 Stroke [mm]

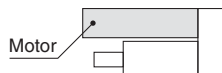
30	30
to	to
500	500

* Refer to the applicable stroke table.

6 Motor option*

Nil	Without option
C	With motor cover
B	With lock
W	With lock/motor cover

* When "With lock" or "With lock/motor cover" are selected for the top mounting and right/left side parallel types, the motor body will stick out of the end of the body for size 16/40 with strokes 30 mm or less. Check for interference with workpieces before selecting a model.



7 Rod end thread

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

Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEY series and the controller LEC series.

The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, conformity to 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 conformity to the EMC directive for the machinery and equipment as a whole.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 559 for the noise filter set.

Refer to the LECA Operation Manual for installation.

③ CC-Link direct input type (LECPMJ) is not CE-compliant.

[UL-compliant products]

When conformity to UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

* Applicable stroke table

Model	Stroke [mm]											Manufacturable stroke range [mm]
	30	50	100	150	200	250	300	350	400	450	500	
LEY16	●	●	●	●	●	●	●	—	—	—	—	10 to 300
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32/40	●	●	●	●	●	●	●	●	●	●	●	20 to 500

* Please consult with SMC for non-standard strokes as they are produced as special orders.

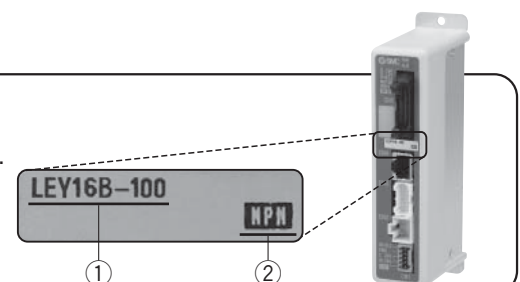
For auto switches, refer to pages 243 and 244.

The actuator and controller/driver are sold as a package.

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

<Check the following before use.>

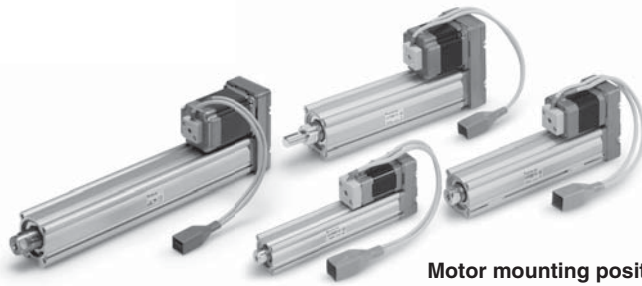
- Check the actuator label for model number. This matches the controller/driver.
- Check Parallel I/O configuration matches (NPN or PNP)



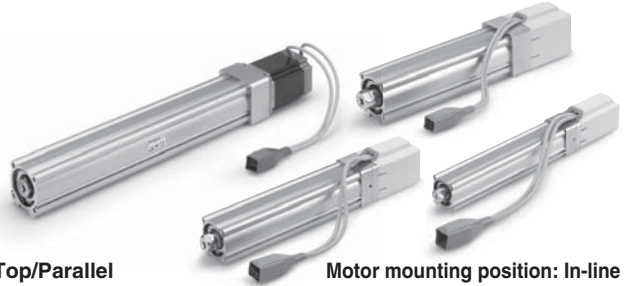
* Refer to the operation manual for using the products. Please download it via our website, <http://www.smcworld.com>

Electric Actuator/Rod Type **Series LEY**

Step Motor (Servo/24 VDC) Servo Motor (24 VDC)



Motor mounting position: Top/Parallel



Motor mounting position: In-line

8 Mounting^{*1}

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
Nil	Ends tapped/ Body bottom tapped ^{*2}	●	●
L	Foot	●	—
F	Rod flange ^{*2}	● ^{*4}	●
G	Head flange ^{*2}	● ^{*5}	—
D	Double clevis ^{*3}	●	—

^{*1} Mounting bracket is shipped together, (but not assembled).

^{*2} For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
• LEY25: 200 mm or less
• LEY32/40: 100 mm or less

^{*3} For mounting with the double clevis, use the actuator within the following stroke range.
• LEY16: 100 mm or less
• LEY25: 200 mm or less
• LEY32/40: 200 mm or less

^{*4} Rod flange is not available for the LEY16/40 with stroke 30 mm and motor option "With lock", "With lock/motor cover".

^{*5} Head flange is not available for the LEY32/40.

13 Controller/Driver mounting

Nil	Screw mounting
D	DIN rail mounting ^{*1}

^{*1} DIN rail is not included. Order it separately.

9 Actuator cable type^{*1}

Nil	Without cable
S	Standard cable ^{*2}
R	Robotic cable (Flexible cable)

^{*1} The standard cable should be used on fixed parts. For using on moving parts, select the robotic cable.

^{*2} Only available for the motor type "Step motor."

11 Controller/Driver type^{*1}

Nil	Without controller/driver	
6N	LECP6/LECA6	NPN
6P	(Step data input type)	PNP
1N	LECP1 ^{*2}	NPN
1P	(Programless type)	PNP
MJ	LECPMJ ^{*2 *3}	—
	(CC-Link direct input type)	
AN	LECPA ^{*2 *4}	NPN
AP	(Pulse input type)	PNP

^{*1} For details about controller/driver and compatible motor, refer to the compatible controller/driver below.

^{*2} Only available for the motor type "Step motor."

^{*3} Not applicable to CE.

^{*4} When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 587 separately.

10 Actuator cable length [m]

Nil	Without cable
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

^{*} Produced upon receipt of order (Robotic cable only). Refer to the specifications Note 5) on page 231.

12 I/O cable length^{*1}, Communication plug






Nil	Without cable (Without communication plug connector) ^{*3}	
1	1.5 m	
3	3 m ^{*2}	
5	5 m ^{*2}	
S	Straight type communication plug connector ^{*3}	
T	T-branch type communication plug connector ^{*3}	

^{*1} When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 559 (For LECP6/LECA6), page 573 (For LECP1) or page 587 (For LECPA) if I/O cable is required.

^{*2} When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

^{*3} For the LECPMJ, only "Nil", "S" and "T" are selectable since I/O cable is not included.

Compatible Controller/Driver

Type	Step data input type	Step data input type	CC-Link direct input type	Programless type	Pulse input type
					
Series	LECP6	LECA6	LECPMJ	LECP1	LECPA
Features	Value (Step data) input Standard controller		CC-Link direct input	Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)		
Maximum number of step data	64 points			14 points	—
Power supply voltage	24 VDC				
Reference page	Page 551	Page 551	Page 591	Page 567	Page 581

Specifications

Step Motor (Servo/24 VDC)

Model			LEY16			LEY25			LEY32			LEY40		
Stroke [mm] ^{Note 1)}			30, 50, 100, 150 200, 250, 300			30, 50, 100, 150, 200 250, 300, 350, 400			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500		
Work load [kg] ^{Note 2)}	Horizontal (LECP6, LECP1, LECPMJ)	(3000 [mm/s ²])	6	17	30	20	40	60	30	45	60	50	60	80
		(2000 [mm/s ²])	10	23	35	30	55	70	40	60	80	60	70	90
	Horizontal (LECPA)	(3000 [mm/s ²])	4	11	20	12	30	30	20	40	40	30	60	60
		(2000 [mm/s ²])	6	17	30	18	50	50	30	60	60	—	—	—
	Vertical	(3000 [mm/s ²])	2	4	8	8	16	30	11	22	43	13	27	53
Pushing force [N] ^{Note 3) 4) 5)}			14 to 38	27 to 74	51 to 141	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] ^{Note 5)}	LECP6/LECP1/LECPMJ		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 300	6 to 150	24 to 500	12 to 350	6 to 175
	LECPA									12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
Max. acceleration/deceleration [mm/s ²]			3000											
Pushing speed [mm/s] ^{Note 6)}			50 or less			35 or less			30 or less			30 or less		
Positioning repeatability [mm]			±0.02											
Lost motion [mm] ^{Note 7)}			0.1 or less											
Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
Impact/Vibration resistance [m/s ²] ^{Note 8)}			50/20											
Actuation type			Ball screw + Belt (LEY□)/Ball screw (LEY□D)											
Guide type			Sliding bushing (Piston rod)											
Operating temperature range [°C]			5 to 40											
Operating humidity range [%RH]			90 or less (No condensation)											
Motor size			□28			□42			□56.4			□56.4		
	Motor type		Step motor (Servo/24 VDC)											
	Encoder		Incremental A/B phase (800 pulse/rotation)											
	Rated voltage [V]		24 VDC ±10%											
	Power consumption [W] ^{Note 9)}		23			40			50			50		
Standby power consumption when operating [W] ^{Note 10)}			16			15			48			48		
	Max. instantaneous power consumption [W] ^{Note 11)}		43			48			104			106		
Type ^{Note 12)}			Non-magnetizing lock											
	Holding force [N]		20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W] ^{Note 13)}		2.9			5			5			5		
	Rated voltage [V]		24 VDC ±10%											

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.

Note 2) 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 "Model Selection" on pages 215 and 216.

Vertical: Speed changes according to the work load. Check "Model Selection" on pages 215 and 216.

The values shown in () are the acceleration/deceleration.

Set these values to be 3000 [mm/s²] or less.

Note 3) Pushing force accuracy is ±20% (F.S.).

Note 4) The pushing force values for LEY16□ is 35% to 85%, for LEY25□ is 35% to 65%, for LEY32□ is 35% to 85% and for LEY40□ is 35% to 65%.

The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 218.

Note 5) 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%)

Note 6) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.

Note 7) A reference value for correcting an error in reciprocal operation.

Note 8) 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. (Test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

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

Note 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.

Note 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.

Note 12) With lock only

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

Specifications

Servo Motor (24 VDC)

Model			LEY16A			LEY25A		
Actuator specifications	Stroke [mm] ^{Note 1)}		30, 50, 100, 150 200, 250, 300			30, 50, 100, 150, 200 250, 300, 350, 400		
	Work load [kg] ^{Note 2)}	Horizontal (3000 [mm/s²])	3	6	12	7	15	30
		Vertical (3000 [mm/s²])	2	4	8	3	6	12
	Pushing force [N] ^{Note 3) 4)}		16 to 30	30 to 58	57 to 111	18 to 35	37 to 72	66 to 130
	Speed [mm/s]		1 to 500	1 to 250	1 to 125	2 to 500	1 to 250	1 to 125
	Max. acceleration/deceleration [mm/s²]		3000					
	Pushing speed [mm/s] ^{Note 5)}		50 or less			35 or less		
	Positioning repeatability [mm]		±0.02					
	Lost motion [mm] ^{Note 6)}		0.1 or less					
	Screw lead [mm]		10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²] ^{Note 7)}		50/20					
	Electric specifications	Actuation type		Ball screw + Belt (LEY□□)/Ball screw (LEY□D)				
Guide type		Sliding bushing (Piston rod)						
Operating temperature range [°C]		5 to 40						
Operating humidity range [%RH]		90 or less (No condensation)						
Motor size		□28			□42			
Motor output [W]		30			36			
Motor type		Servo motor (24 VDC)						
Encoder		Incremental A/B phase (800 pulse/rotation)/Z phase						
Rated voltage [V]		24 VDC ±10%						
Power consumption [W] ^{Note 8)}		40			86			
Standby power consumption when operating [W] ^{Note 9)}		4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)			
Max. instantaneous power consumption [W] ^{Note 10)}		59			96			
Lock unit specifications	Type ^{Note 11)}		Non-magnetizing lock					
	Holding force [N]		20	39	78	78	157	294
	Power consumption [W] ^{Note 12)}		2.9			5		
	Rated voltage [V]		24 VDC ±10%					

- Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
- Note 2) 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. Vertical: Check "Model Selection" on page 217 for details. The values shown in () are the acceleration/deceleration. Set these values to be 3000 [mm/s²] or less.
- Note 3) Pushing force accuracy is ±20% (F.S.).
- Note 4) The pushing force values for LEY16A□ is 50% to 95% and for LEY25A□ is 50% to 95%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 218.
- Note 5) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
- Note 6) A reference value for correcting an error in reciprocal operation.
- Note 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. (Test was performed with the actuator in the initial state.)
- Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
- Note 8) The power consumption (including the controller) is for when the actuator is operating.
- Note 9) 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.
- Note 10) 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.
- Note 11) With lock only
- Note 12) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top/Parallel Type

Series		LEY16							LEY25								LEY32											
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.18	1.25	1.42	1.68	1.86	2.03	2.21	2.38	2.56	2.09	2.20	2.49	2.77	3.17	3.46	3.74	4.03	4.32	4.60	4.89
	Servo motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.14	1.21	1.38	1.64	1.82	1.99	2.17	2.34	2.52	—	—	—	—	—	—	—	—	—	—	—

Series		LEY40										
Stroke [mm]		30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	2.39	2.50	2.79	3.07	3.47	3.76	4.04	4.33	4.62	4.90	5.19
	Servo motor	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Series		LEY16D							LEY25D								LEY32D											
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.17	1.24	1.41	1.67	1.85	2.02	2.20	2.37	2.55	2.08	2.19	2.48	2.76	3.16	3.45	3.73	4.02	4.31	4.59	4.88
	Servo motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.13	1.20	1.37	1.63	1.81	1.98	2.16	2.33	2.51	—	—	—	—	—	—	—	—	—	—	—

Series		LEY40D										
Stroke [mm]		30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	2.38	2.49	2.78	3.06	3.46	3.75	4.03	4.32	4.61	4.89	5.18
	Servo motor	—	—	—	—	—	—	—	—	—	—	—

Additional Weight

Size		16	25	32	40
Lock		0.12	0.26	0.53	0.53
Motor cover		0.02	0.03	0.04	0.05
Lock/Motor cover		0.16	0.32	0.61	0.62
Rod end male thread	Male thread	0.01	0.03	0.03	0.03
	Nut	0.01	0.02	0.02	0.02
Foot (2 sets including mounting bolt)		0.06	0.08	0.14	0.14
Rod flange (including mounting bolt)		0.13	0.17	0.20	0.20
Head flange (including mounting bolt)					
Double clevis (including pin, retaining ring and mounting bolt)		0.08	0.16	0.22	0.22

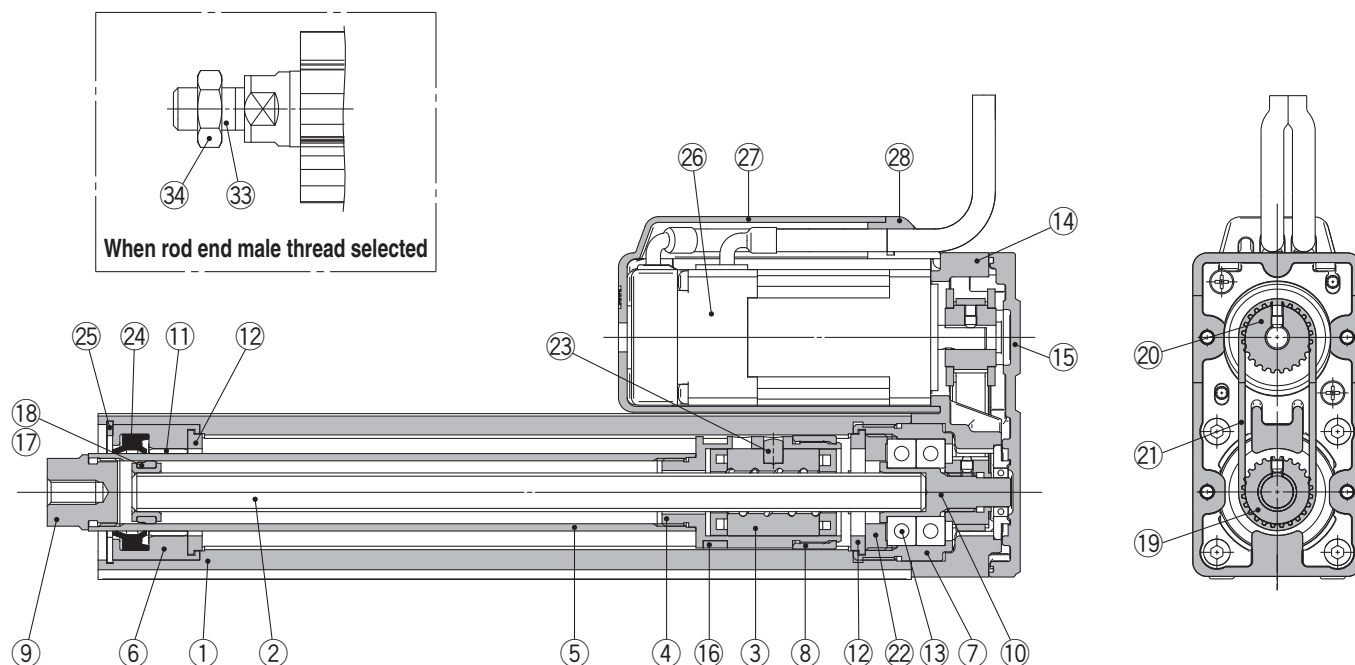
Series LEY

Step Motor (Servo/24 VDC)

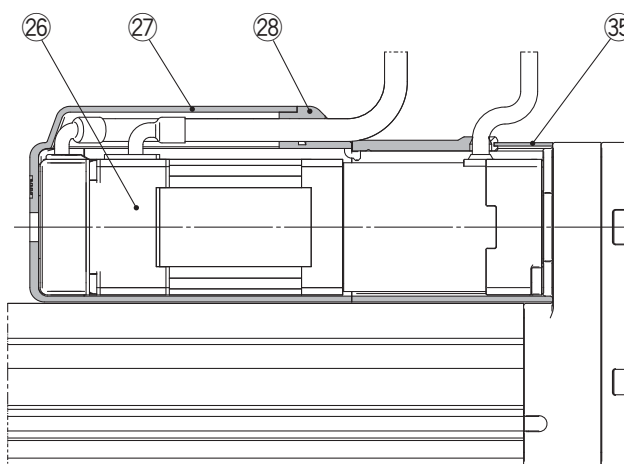
Servo Motor (24 VDC)

Construction

Motor top mounting type: LEY 16
25
32
40

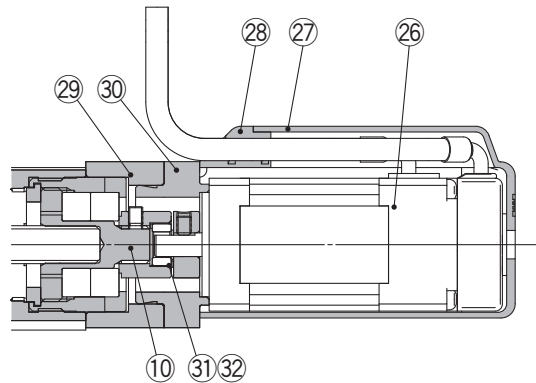


Motor top/parallel type
With lock/motor cover

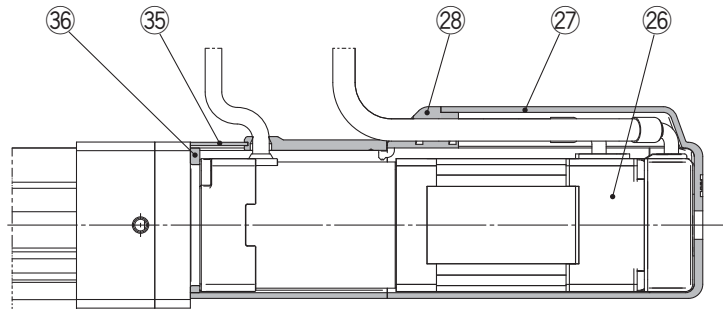


Construction

In-line motor type: LEY 16
 25 D
 32
 40



In-line motor type: With lock/motor cover



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw (shaft)	Alloy steel	
3	Ball screw nut	Resin/Alloy steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plating
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plating
10	Connected shaft	Free cutting carbon steel	Nickel plating
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Coating
15	Return plate	Aluminum die-cast	Coating
16	Magnet	—	
17	Wear ring holder	Stainless steel	Stroke 101 mm or more
18	Wear ring	POM	Stroke 101 mm or more
19	Screw shaft pulley	Aluminum alloy	
20	Motor pulley	Aluminum alloy	
21	Belt	—	
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	
24	Seal	NBR	
25	Retaining ring	Steel for spring	Phosphate coated

No.	Description	Material	Note
26	Motor	—	
27	Motor cover	Synthetic resin	Only "With motor cover"
28	Grommet	Synthetic resin	Only "With motor cover"
29	Motor block	Aluminum alloy	Anodized
30	Motor adapter	Aluminum alloy	Anodized/LEY16, 25 only
31	Hub	Aluminum alloy	
32	Spider	NBR	
33	Socket (Male thread)	Free cutting carbon steel	Nickel plating
34	Nut	Alloy steel	
35	Motor cover with lock	Aluminum alloy	Only "With lock/motor cover"
36	Cover support	Aluminum alloy	Only "With lock/motor cover"

Replacement Parts (Top/Parallel only)/Belt

No.	Size	Order no.
21	16	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Replacement Parts/Grease Pack

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

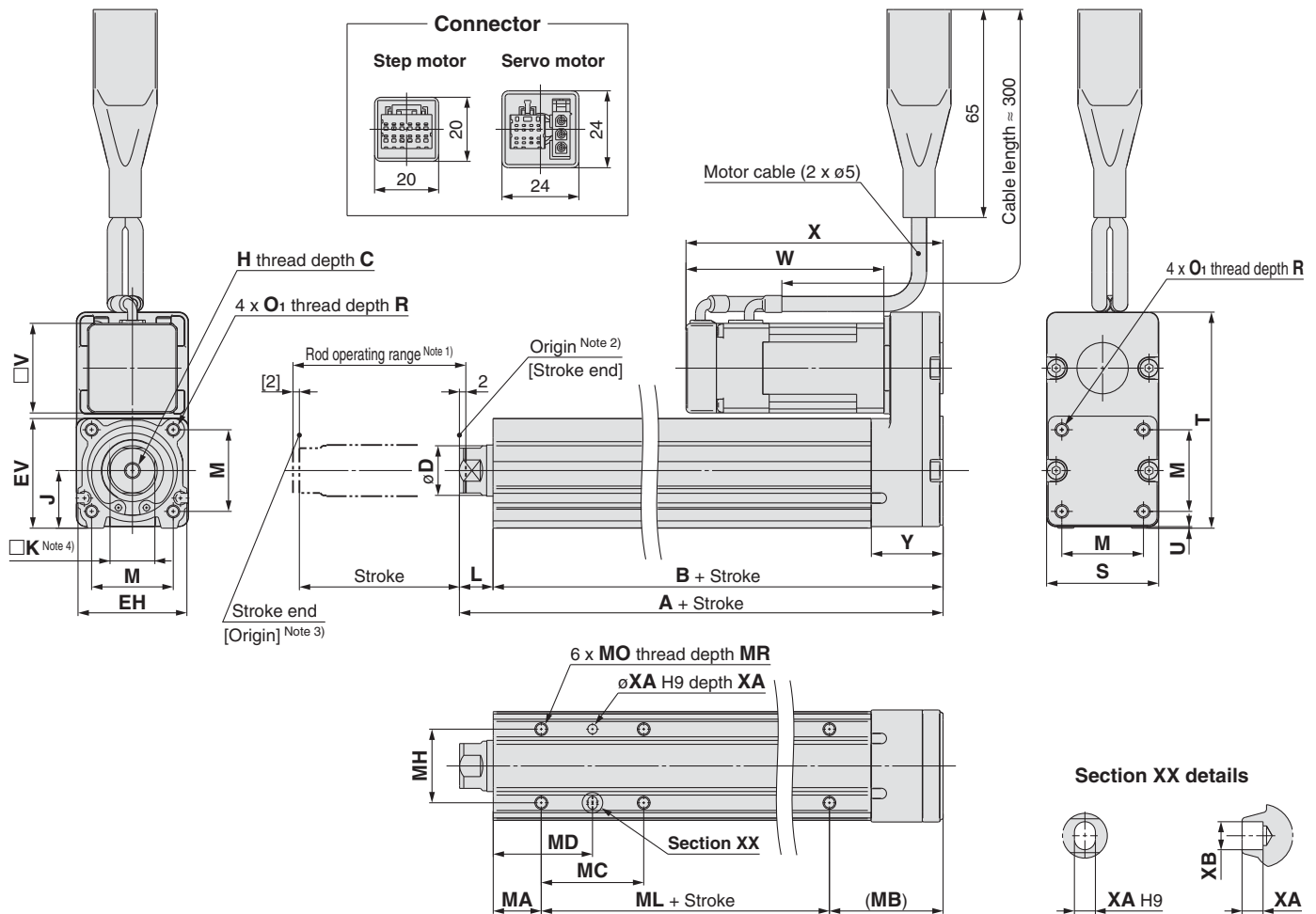
* Apply grease on the piston rod periodically.
 Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Series LEY

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Dimensions: Motor Top/Parallel



Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) Position after return to origin.

Note 3) [] for when the direction of return to origin has changed.

Note 4) The direction of rod end width across flats (□K) differs depending on the products.

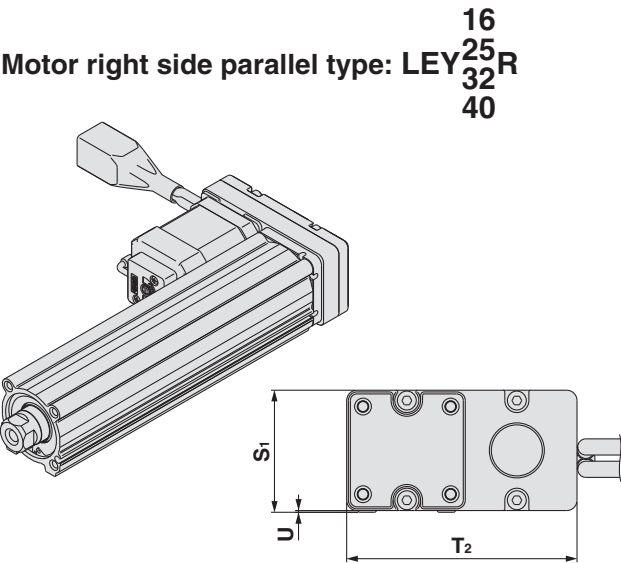
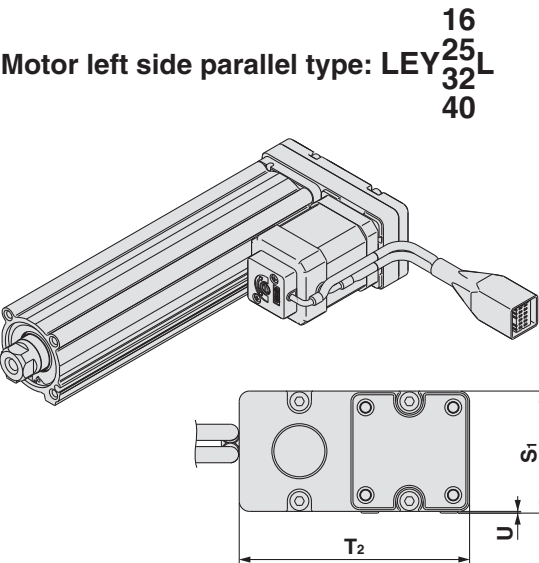
[mm]																							
Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U	V	Step motor		Servo motor		Y
																			W	X	W	X	
16	10 to 100	101	90.5	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	67.5	0.5	28	61.8	80.3	62.5	81	22.5
	101 to 300	121	110.5																				
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	92	1	42	63.4	85.4	59.6	81.6	26.5
	101 to 400	155.5	141																				
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	68.4	95.4	—	—	34
	101 to 500	178.5	160																				
40	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	90.4	117.4	—	—	34
	101 to 500	178.5	160																				

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
16	10 to 39	15	35.5	17	23.5	23	40	M4 x 0.7	5.5	3	4
	40 to 100			32	31						
	101 to 300			62	46						
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124			59	49.5		75				
	125 to 200			76	58						
	201 to 400										
32 40	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124			53	51.5		80				
	125 to 200			70	60						
	201 to 500										

Dimensions: Motor Top/Parallel



[mm]			
Size	S ₁	T ₂	U
16	35.5	67	0.5
25	47	91	1
32, 40	61	117	1

Note) When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

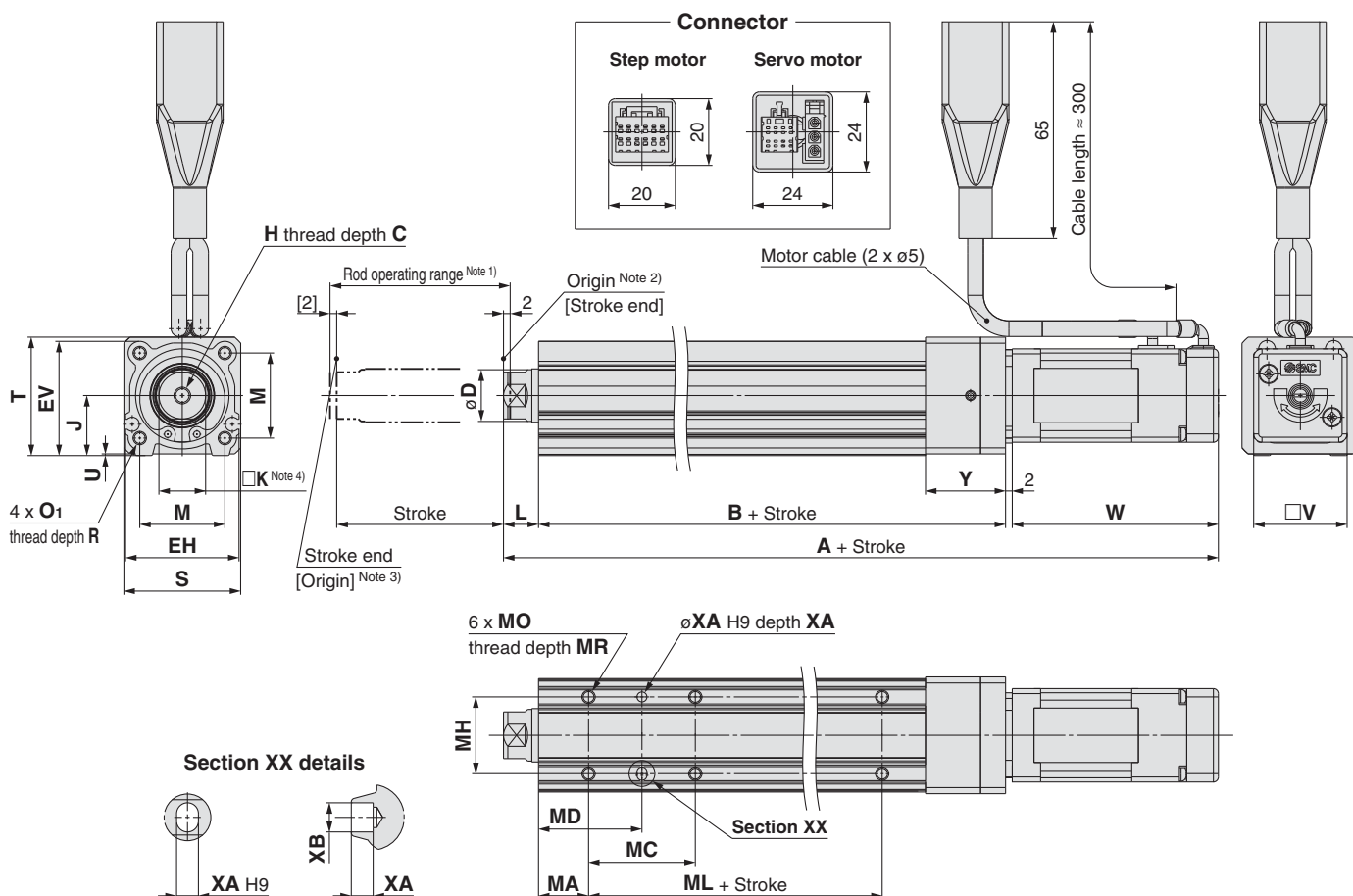
- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- LECS□
- LECSS-T
- LECYM
- LECYU
- Motor/less
- LAT3

Series LEY

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Dimensions: In-line Motor



Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) Position after return to origin.

Note 3) [] for when the direction of return to origin has changed.

Note 4) The direction of rod end width across flats (□K) differs depending on the products.

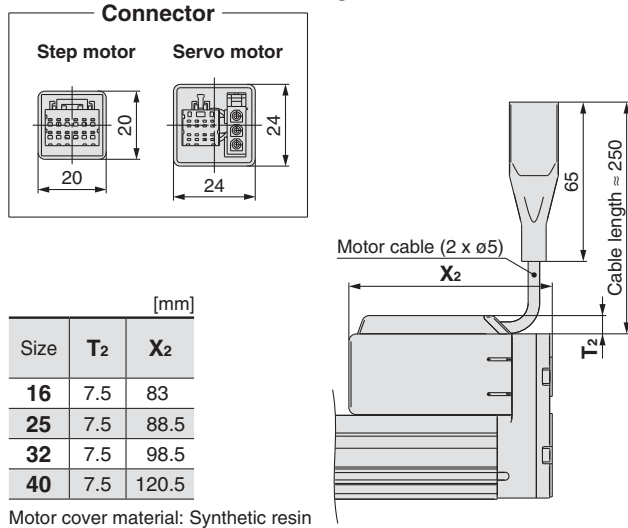
[mm]																						
Size	Stroke range [mm]	Step motor	Servo motor	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U	V	Step motor	Servo motor	Y
		A																		W		
16	10 to 100	166.3	167	92	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	35.5	0.5	28	61.8	62.5	24
	101 to 300	186.3	187	112																		
25	15 to 100	195.4	191.6	115.5	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	42	63.4	59.6	26
	101 to 400	220.4	216.6	140.5																		
32	20 to 100	216.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	68.4	—	32
	101 to 500	246.9	—	158																		
40	20 to 100	238.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	90.4	—	32
	101 to 500	268.9	—	158																		

Body Bottom Tapped

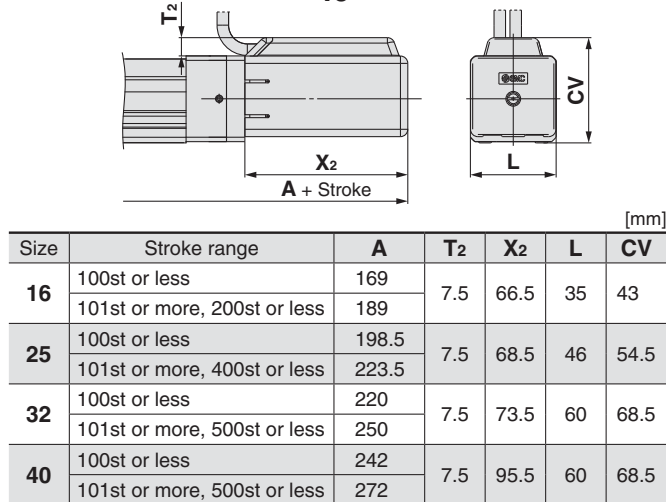
Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
16	10 to 39	15	17	23.5	23	40	M4 x 0.7	5.5	3	4
	40 to 100		32	31						
	101 to 300		62	46						
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124		59	49.5						
	125 to 200		76	58						
	201 to 400		76	58						
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124		53	51.5						
	125 to 200		53	51.5						
	201 to 500		70	60						

Dimensions

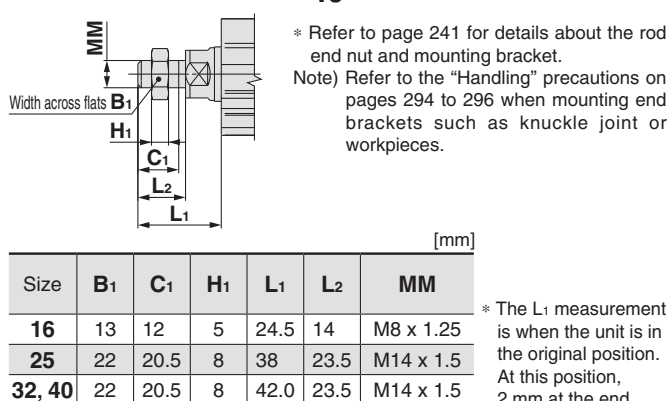
Motor top/parallel type 16 A
 With motor cover: LEY 25 B-□ C
 32
 40



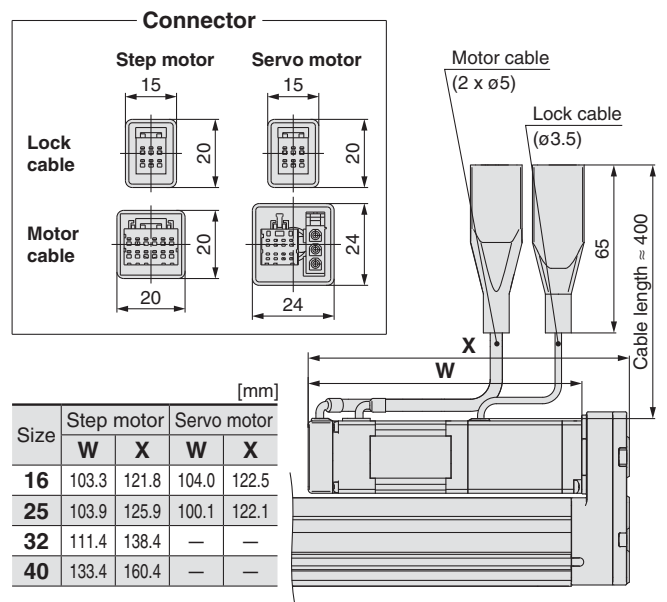
In-line motor type 16 A
 With motor cover: LEY 25 D□ B-□ C
 32
 40



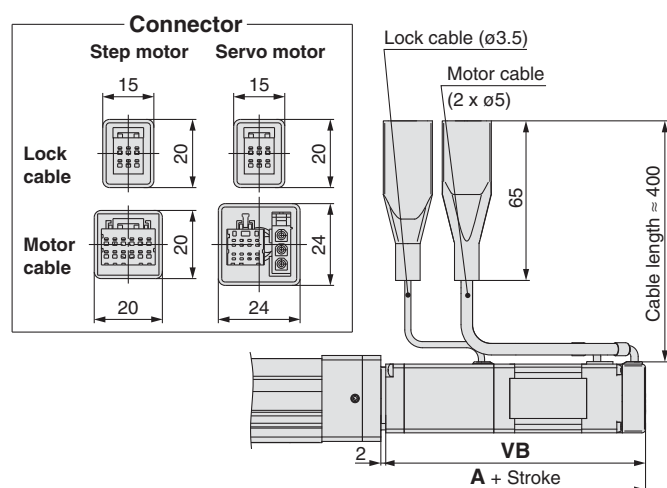
End male thread: LEY 16 A
 25 B-□□ M
 32 C
 40



With lock: LEY 16 A
 25 B-□ B
 32 C
 40



With lock: LEY 16 A
 25 D□ B-□ B
 32 C
 40



Size	Stroke range	Step motor	Servo motor	Step motor	Servo motor
		A		VB	
16	100st or less	207.8	208.5	103.3	104
	101st or more, 200st or less	227.8	228.5		
25	100st or less	235.9	232.1	103.9	100.1
	101st or more, 400st or less	260.9	257.1		
32	100st or less	259.9	—	111.4	—
	101st or more, 500st or less	289.9	—		
40	100st or less	281.9	—	133.4	—
	101st or more, 500st or less	311.9	—		

LEFS
LEFB

LEJS
LEJB

LEL

LEM

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS

11-LEJS

25A-
LEC□

LEC□

LEC□

LEC□

Motorless

LAT3

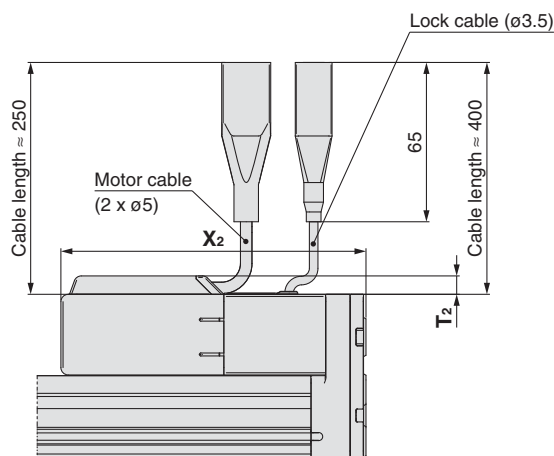
Series LEY

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

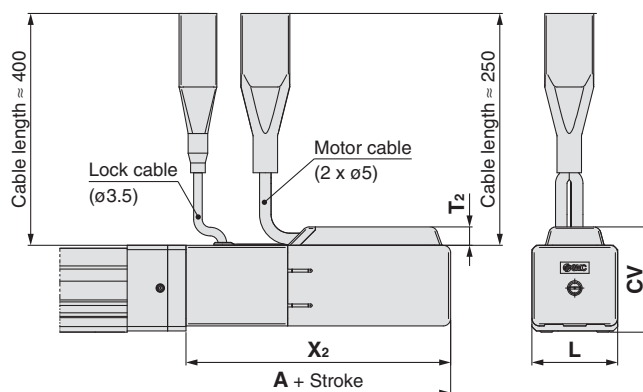
Dimensions

Motor top/parallel type
With lock/motor cover: LEY $\begin{matrix} 16 \\ 25 \\ 32 \\ 40 \end{matrix}$ \square \square $\begin{matrix} A \\ B \\ C \end{matrix}$ \square \square \square \square W



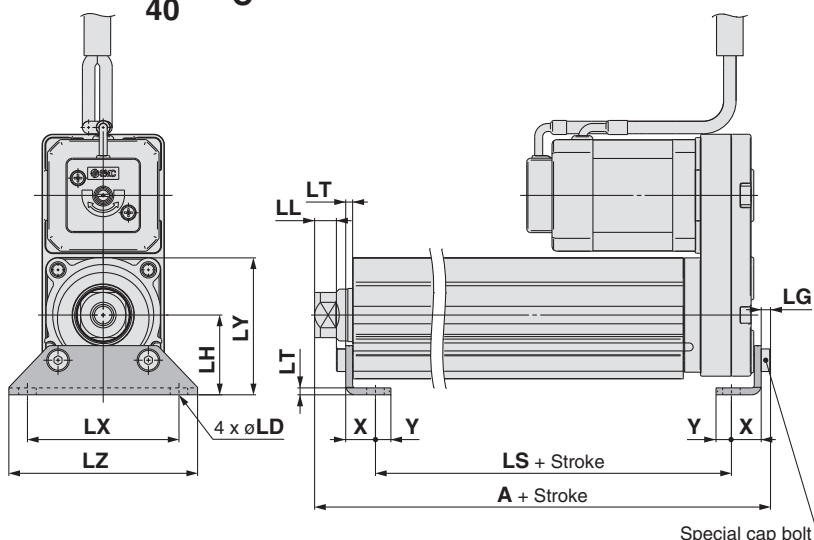
Size	T ₂	X ₂
16	7.5	124.5
25	7.5	129
32	7.5	141.5
40	7.5	163.5

In-line motor type
With lock/motor cover: LEY $\begin{matrix} 16 \\ 25 \\ 32 \\ 40 \end{matrix}$ D \square $\begin{matrix} A \\ B \\ C \end{matrix}$ \square \square W



Size	Stroke range	A	T ₂	X ₂	L	CV
16	100st or less	210.5	7.5	108	35	43
	101st or more, 300st or less	230.5				
25	100st or less	239	7.5	109	46	54.4
	101st or more, 400st or less	264				
32	100st or less	263	7.5	116.5	60	68.5
	101st or more, 500st or less	293				
40	100st or less	285	7.5	138.5	60	68.5
	101st or more, 500st or less	315				

Foot: LEY $\begin{matrix} 16 \\ 25 \\ 32 \\ 40 \end{matrix}$ \square \square $\begin{matrix} A \\ B \\ C \end{matrix}$ \square \square \square \square L



Included parts
• Foot
• Body mounting bolt

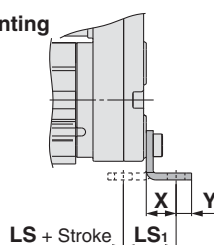
Foot [mm]

Size	Stroke range [mm]	A	LS	LS ₁	LL	LD	LG
16	10 to 100	106.1	76.7	16.1	5.4	6.6	2.8
	101 to 300	126.1	96.7				
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5
	101 to 400	161.6	123.8				
32	20 to 100	155.7	114	19.2	11.3	6.6	4
40	101 to 500	185.7	144				

Size	Stroke range [mm]	LH	LT	LX	LY	LZ	X	Y
16	10 to 100	24	2.3	48	40.3	62	9.2	5.8
	101 to 300							
25	15 to 100	30	2.6	57	51.5	71	11.2	5.8
	101 to 400							
32	20 to 100	36	3.2	76	61.5	90	11.2	7
40	101 to 500							

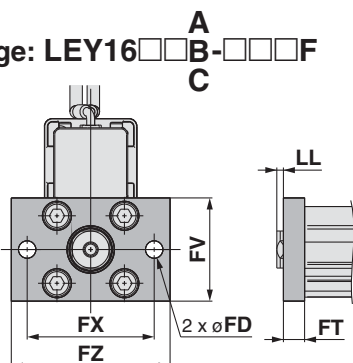
Material: Carbon steel (Chromate treated)
* The A measurement is when the unit is in the original position.
At this position, 2 mm at the end.
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Outward mounting

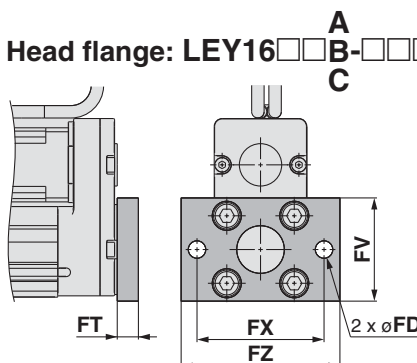


Dimensions

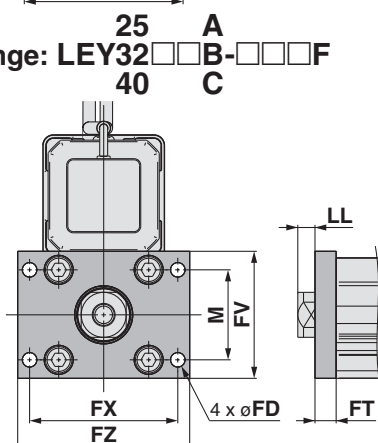
Rod flange: LEY16□□B-□□□F



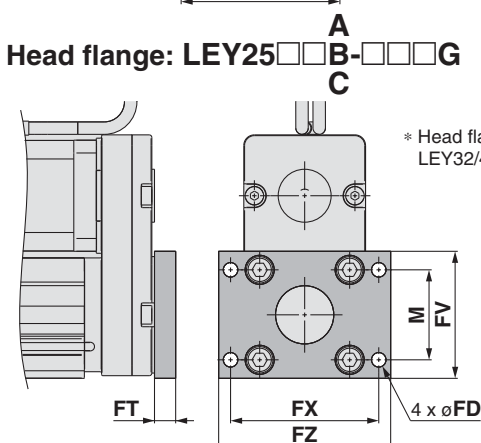
Head flange: LEY16□□B-□□□G



Rod flange: LEY32□□B-□□□F
40 C



Head flange: LEY25□□B-□□□G
C



* Head flange is not available for the LEY32/40.

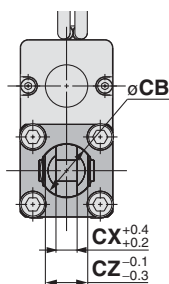
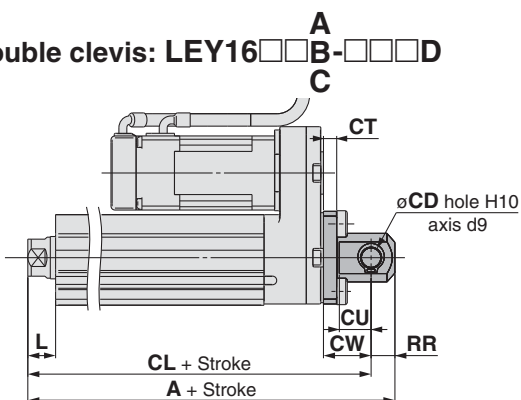
Included parts
• Flange
• Body mounting bolt

Rod/Head Flange [mm]

Size	FD	FT	FV	FX	FZ	LL	M
16	6.6	8	39	48	60	2.5	—
25	5.5	8	48	56	65	6.5	34
32, 40	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

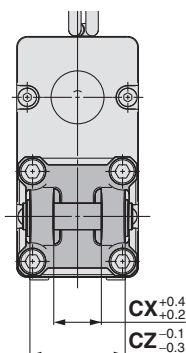
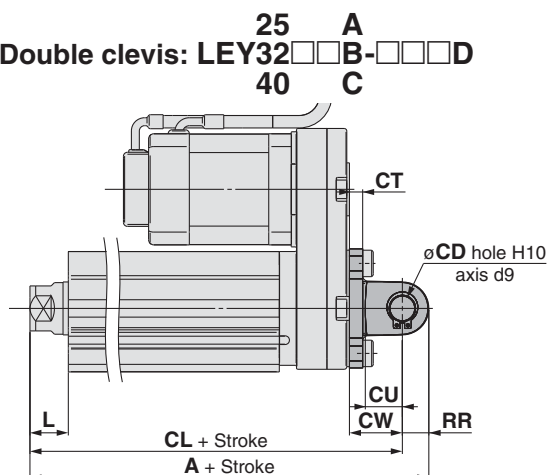
Double clevis: LEY16□□B-□□□D



Included parts
• Double clevis
• Body mounting bolt
• Clevis pin
• Retaining ring

* Refer to page 241 for details about the rod end nut and mounting bracket.

Double clevis: LEY32□□B-□□□D
40 C



Double Clevis [mm]

Size	Stroke range [mm]	A	CL	CB	CD	CT
16	10 to 100	128	119	20	8	5
25	15 to 100	160.5	150.5	—	10	5
	101 to 200	185.5	175.5	—	10	6
32	20 to 100	180.5	170.5	—	10	6
40	101 to 200	210.5	200.5	—	10	6

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
16	10 to 100	12	18	8	16	10.5	9
25	15 to 100	14	20	18	36	14.5	10
	101 to 200	14	22	18	36	18.5	10
32	20 to 100	14	22	18	36	18.5	10
40	101 to 200	14	22	18	36	18.5	10

Material: Cast iron (Coating)

* The A and CL measurements are when the unit is in the original position. At this position, 2 mm at the end.

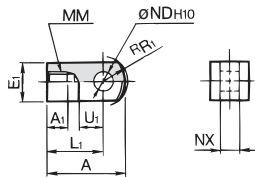
Accessory Mounting Brackets

Accessory Brackets/Support Brackets

Single Knuckle Joint

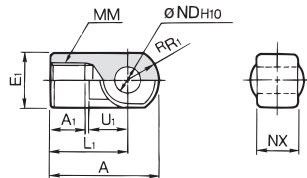
* If a knuckle joint is used, select the body option [end male thread].

I-G02



Material: Carbon steel
Surface treatment: Nickel plating

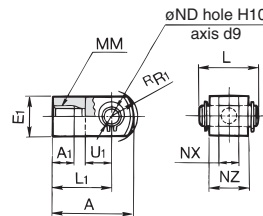
I-G04



Material: Cast iron
Surface treatment: Nickel plating

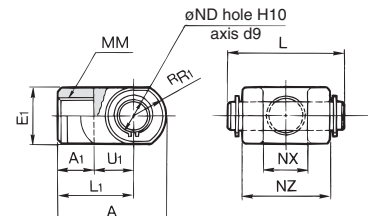
Double Knuckle Joint

Y-G02



Material: Carbon steel
Surface treatment: Nickel plating

Y-G04



Material: Cast iron
Surface treatment: Nickel plating

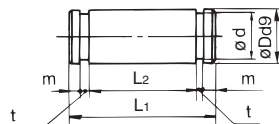
Part no.	Applicable size	A	A ₁	E ₁	L ₁	MM	R ₁	U ₁	NDH ₁₀	NX
I-G02	16	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₀	8 ^{+0.2} _{0.4}
I-G04	25, 32, 40	42	14	∅22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{+0.3} _{0.5}
I-G05	63	56	18	∅28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{+0.3} _{0.5}

* Knuckle pin and retaining ring are included. [mm]

Part no.	Applicable size	A	A ₁	E ₁	L ₁	MM	R ₁
Y-G02	16	34	8.5	□16	25	M8 x 1.25	10.3
Y-G04	25, 32, 40	42	16	∅22	30	M14 x 1.5	12
Y-G05	63	56	20	∅28	40	M18 x 1.5	16

Part no.	Applicable size	U ₁	NDH ₁₀	NX	NZ	L	Applicable pin part no.
Y-G02	16	11.5	8 ^{+0.058} ₀	8 ^{+0.4} _{0.2}	16	21	IY-G02
Y-G04	25, 32, 40	14	10 ^{+0.058} ₀	18 ^{+0.5} _{0.3}	36	41.6	IY-G04
Y-G05	63	20	14 ^{+0.070} ₀	22 ^{+0.5} _{0.3}	44	50.6	IY-G05

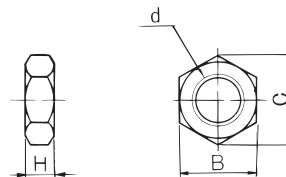
Knuckle Pin (Common with double clevis pin)



Material: Carbon steel
[mm]

Part no.	Applicable size	Dd9	L ₁	L ₂	d	m	t	Retaining ring
IY-G02	16	8 ^{+0.040} _{-0.076}	21	16.2	7.6	1.5	0.9	Type C retaining ring 8
IY-G04	25, 32, 40	10 ^{+0.040} _{-0.076}	41.6	36.2	9.6	1.55	1.15	Type C retaining ring 10
IY-G05	63	14 ^{+0.050} _{-0.093}	50.6	44.2	13.4	2.05	1.15	Type C retaining ring 14

Rod End Nut



Material: Carbon steel (Nickel plating)
[mm]

Part no.	Applicable size	d	H	B	C
NT-02	16	M8 x 1.25	5	13	15.0
NT-04	25, 32, 40	M14 x 1.5	8	22	25.4
NT-05	63	M18 x 1.5	11	27	31.2

Mounting Brackets/Part No.

Applicable size	Foot	Flange	Double clevis
16	LEY-L016	LEY-F016	LEY-D016
25	LEY-L025	LEY-F025	LEY-D025
32, 40	LEY-L032	LEY-F032	LEY-D032
63	LEY-L063	LEY-F063	LEY-D063

* When ordering foot brackets, order 2 pieces per actuator.

* Parts belonging to each bracket are as follows.

Foot: Body mounting bolt

Flange: Body mounting bolt

Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

Simple Joint Brackets * The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

Joint and Mounting Bracket (Type A/B)/Part No.

Joint **LEY-U025**

Applicable size
025 25, 32, 40

Mounting bracket **YA-03**

Applicable size
03 25, 32, 40

Mounting bracket
YA Type A mounting bracket
YB Type B mounting bracket

Material: Chromium molybdenum steel (Nickel plating) [mm]

Part no.	Applicable size	B	D	E	F	M	T ₁	T ₂	U
YA-03	25, 32, 40	18	6.8	16	6	42	6.5	10	6

Part no.	Applicable size	V	W	Weight [g]
YA-03	25, 32, 40	18	56	55

Allowable Eccentricity [mm]

Applicable size	25	32	40
Eccentricity tolerance	±1		
Backlash	0.5		

<How to Order>

- The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

Example) Order no.
Joint..... LEY-U025
Type A mounting bracket..... YA-03

Joint and Mounting Bracket (Type A/B)/Part No.

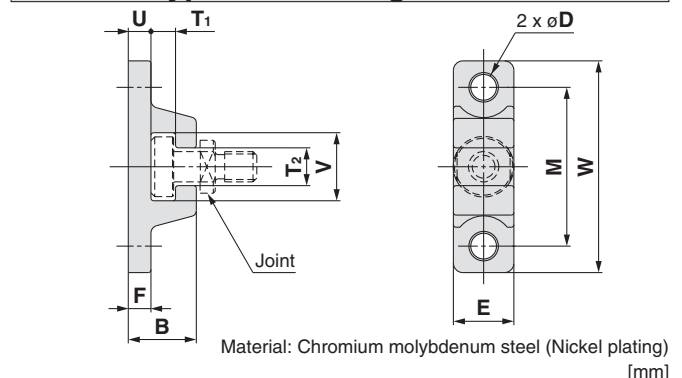
Applicable size	Joint part no.	Applicable mounting bracket part no.	
		Type A mounting bracket	Type B mounting bracket
25, 32, 40	LEY-U025	YA-03	YB-03

Joint

Material: Stainless steel [mm]

Part no.	Applicable size	UA	C	d ₁	d ₂	H	K	L	UT	Weight [g]
LEY-U025	25, 32, 40	17	11	16	8	M8 x 1.25	14	7	6	22

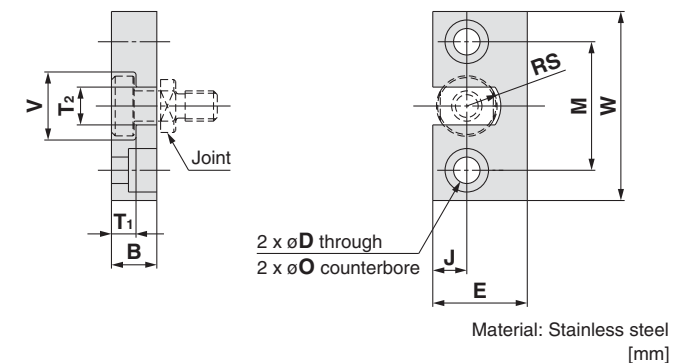
Type A Mounting Bracket



Part no.	Applicable size	B	D	E	F	M	T ₁	T ₂	U
YA-03	25, 32, 40	18	6.8	16	6	42	6.5	10	6

Part no.	Applicable size	V	W	Weight [g]
YA-03	25, 32, 40	18	56	55

Type B Mounting Bracket



Part no.	Applicable size	B	D	E	J	M	øO
YB-03	25, 32, 40	12	7	25	9	34	11.5 depth 7.5

Part no.	Applicable size	T ₁	T ₂	V	W	RS	Weight [g]
YB-03	25, 32, 40	6.5	10	18	50	9	80

Floating Joints (Refer to the WEB catalog or the Best Pneumatics No. 2 for details.)

- For Male Thread/JC (Light weight type)
- With the aluminum case

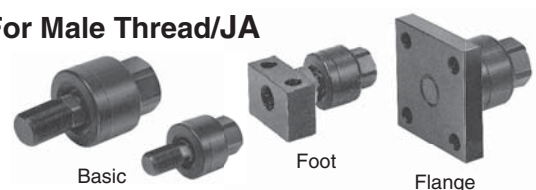


- For Male Thread/JS (Stainless steel)
- Stainless steel 304 (Appearance)
- Dust cover Fluororubber/Silicone rubber



Applicable size	Thread size
16	M8 x 1.25
25, 32, 40	M14 x 1.5

- For Male Thread/JA



- For Female Thread/JB



Applicable size	Thread size
16	M5 x 0.8
25, 32, 40	M8 x 1.25

Solid State Auto Switch Direct Mounting Style D-M9N(V)/D-M9P(V)/D-M9B(V)



Refer to SMC website for the details about products conforming to the international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	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	Red LED lights up when turned ON.					
Standards	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N□	D-M9P□	D-M9B□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm ²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 for solid state auto switch common specifications.

Note 2) Refer to the Best Pneumatics No. 2 for lead wire lengths.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Flexibility is 1.5 times greater than the former model (SMC comparison).
- Using flexible cable as standard.



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.

Weight

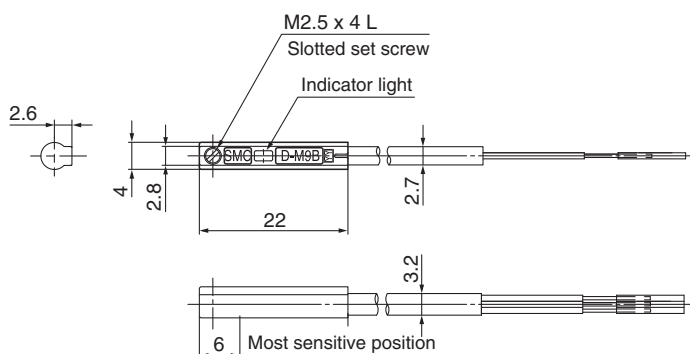
[g]

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(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

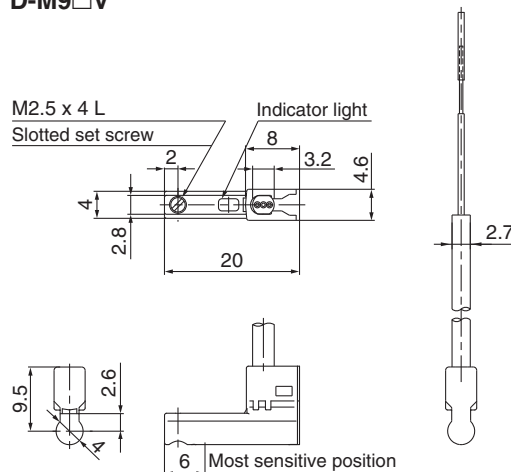
Dimensions

[mm]

D-M9□



D-M9□V



2-Color Indication Solid State Auto Switch Direct Mounting Style

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)



RoHS

Refer to SMC website for the details about products conforming to the international standards.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Flexibility is 1.5 times greater than the former model (SMC comparison).
- Using flexible cable as standard.
- The optimum operating range can be determined by the color of the light. (Red → Green ← Red)



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.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry	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 lights up. Optimum operating range Green LED lights up.					
Standards	CE marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW□	D-M9PW□	D-M9BW□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 for solid state auto switch common specifications.

Note 2) Refer to the Best Pneumatics No. 2 for lead wire lengths.

Weight

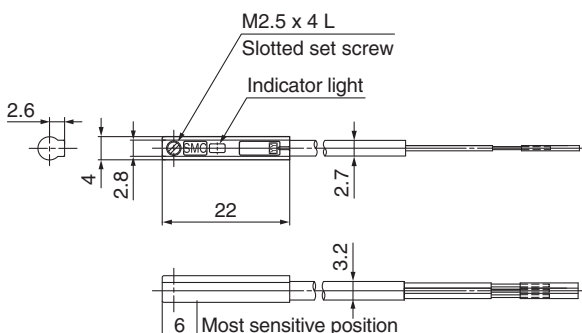
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Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Lead wire length	0.5 m (Nil)	8	—	7
	1 m (M)	14	—	13
	3 m (L)	41	—	38
	5 m (Z)	68	—	63

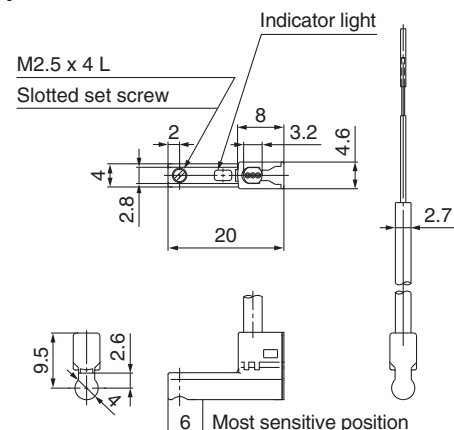
Dimensions

[mm]

D-M9□W



D-M9□WV



LEFS
LEJB

LEJS
LEJB

LEL

LEM

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS

11-LEJS

25A-

LEC□

LECS□

LECS-T

LECYM
LECYU

Motorless

LAT3

Electric Actuator/ Rod Type

Series **LEY** LEY25, 32 Size **25, 32**



Dust-tight/Water-jet-proof ▶ Page 485 Secondary Battery Compatible ▶ Page 535 Motorless Type ▶ Page 833

SSCNET III/H Compatible ▶ Page 627 MECHATROLINK Compatible ▶ Page 725

How to Order

LEY H 25 S2 B - 100 - S 2 A1

1 2 3 4 5 6 7 8 9 10 11 12 13

1 Accuracy

Nil	Basic type
H	High precision type

2 Size

25
32

3 Motor mounting position

Nil	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

4 Motor type*1

Symbol	Type	Output [W]	Actuator size	Compatible drivers*2
S2	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3	AC servo motor (Incremental encoder)	200	32	LECSA□-S3
S6	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7

*1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.

*2 For details about the driver, refer to page 598.

5 Lead [mm]

Symbol	LEY25	LEY32*
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

* The values shown in () are the lead for size 32 top mounting, right/left side parallel types. (Equivalent lead which includes the pulley ratio [1.25:1])

6 Stroke [mm]

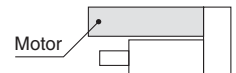
30	30
to	to
500	500

* Refer to the applicable stroke table for details.

7 Motor option

Nil	Without option
B	With lock*

* When "With lock" is selected for the top mounting and right/left side parallel types, the motor body will stick out of the end of the body for size 25 with strokes 30 mm or less. Check for interference with workpieces before selecting a model.



8 Rod end thread

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

9 Mounting*1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
Nil	Ends tapped/ Body bottom tapped*2	●	●
L	Foot	●	—
F	Rod flange*2	●*4	●
G	Head flange*2	●*5	—
D	Double clevis*3	●	—

*1 Mounting bracket is shipped together, (but not assembled).

*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.

• LEY25: 200 mm or less • LEY32: 100 mm or less

*3 For mounting with the double clevis, use the actuator within the following stroke range.

• LEY25: 200 mm or less • LEY32: 200 mm or less

*4 Rod flange is not available for the LEY25 with stroke 30 mm and motor option "With lock".

*5 Head flange is not available for the LEY32.

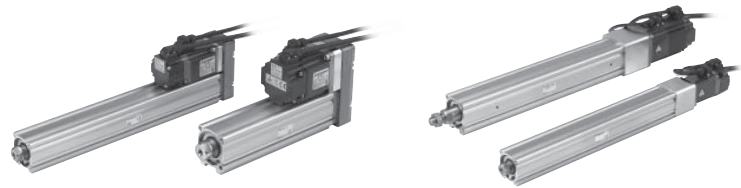
* Applicable stroke table

●: Standard

Model	Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
LEY25		●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32		●	●	●	●	●	●	●	●	●	●	●	20 to 500

Note) Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 243 and 244.



Motor mounting position: Top/Parallel

Motor mounting position: In-line

10 Cable type*

Nil	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

* The motor and encoder cables are included.
(The lock cable is also included when the motor with lock option is selected.)

* Standard cable entry direction is
• Top/Parallel: (A) Axis side
• In-line: (B) Counter axis side
(Refer to page 614 for details.)

11 Cable length* [m]

Nil	Without cable
2	2
5	5
A	10

* The length of the encoder, motor and lock cables are the same.

12 Driver type*

	Compatible driver	Power supply voltage [V]
Nil	Without driver	—
A1	LECSA1-S□	100 to 120
A2	LECSA2-S□	200 to 230
B1	LECSB1-S□	100 to 120
B2	LECSB2-S□	200 to 230
C1	LECSC1-S□	100 to 120
C2	LECSC2-S□	200 to 230
S1	LECSS1-S□	100 to 120
S2	LECSS2-S□	200 to 230

* When the driver type is selected, the cable is included. Select cable type and cable length.

Example)

S2S2: Standard cable (2 m) + Driver (LECSS2)

S2 : Standard cable (2 m)





Nil : Without cable and driver

13 I/O cable length [m]*

Nil	Without cable
H	Without cable (Connector only)
1	1.5

* When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected.
Refer to page 615 if I/O cable is required.
(Options are shown on page 615.)

Compatible Driver

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET Ⅲ type
				
Series	LECSA	LECSB	LECSC	LECSS
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage [V]	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)			
Reference page	Page 598			

Specifications

Model			LEY25S ¹ (Top/Parallel)/LEY25DS ² (In-line)			LEY32S ³ (Top/Parallel)			LEY32DS ³ (In-line)			
Actuator specifications	Stroke [mm] ^{Note 1)}		30, 50, 100, 150, 200, 250, 300, 350, 400			30, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500			30, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500			
	Work load [kg]	Horizontal ^{Note 2)}	18	50	50	30	60	60	30	60	60	
		Vertical	8	16	30	9	19	37	12	24	46	
	Pushing force [N] ^{Note 3)} (Set value: 15 to 30%)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736	
	Max. ^{Note 4)} speed [mm/s]	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—						
	Pushing speed [mm/s] ²⁾ ^{Note 5)}		35 or less			30 or less			30 or less			
	Max. acceleration/deceleration [mm/s ²]		5000			5000			5000			
	Positioning repeatability [mm]		Basic type			±0.02			±0.02			
			High precision type			±0.01			±0.01			
	Lost motion ^{Note 6)} [mm]		Basic type			0.1 or less			0.1 or less			
			High precision type			0.05 or less			0.05 or less			
Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4		
Impact/Vibration resistance [m/s ²] ^{Note 7)}		50/20			50/20			50/20				
Actuation type		Ball screw + Belt (LEY□□)/Ball screw (LEY□□)			Ball screw + Belt [1.25:1]			Ball screw				
Guide type		Sliding bushing (Piston rod)			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)				
Operating temperature range [°C]		5 to 40			5 to 40			5 to 40				
Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)			90 or less (No condensation)				
Required conditions for ^{Note 8)} "Regeneration option" [kg]		Horizontal	8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required	
		Vertical	3 or more	2 or more	2 or more	6 or more	7 or more	11 or more	6 or more	7 or more	12 or more	
Electric specifications	Motor output/Size		100 W/□40			200 W/□60			200 W/□60			
	Motor type		AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)			
	Encoder		Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)			
	Power consumption [W] ^{Note 9)}	Horizontal	45			65			65			
		Vertical	145			175			175			
	Standby power consumption when operating [W] ^{Note 10)}	Horizontal	2			2			2			
		Vertical	8			8			8			
	Max. instantaneous power consumption [W] ^{Note 11)}		445			724			724			
	Type ^{Note 12)}		Non-magnetizing lock			Non-magnetizing lock			Non-magnetizing lock			
	Lock unit specifications	Holding force [N]		131	255	485	157	308	588	197	385	736
		Power consumption [W] at 20°C ^{Note 13)}		6.3			7.9			7.9		
		Rated voltage [V]		24 VDC ⁰ _{-10%}			24 VDC ⁰ _{-10%}			24 VDC ⁰ _{-10%}		

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.

Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.

Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph" on page 227.

Note 4) The allowable speed changes according to the stroke. Set the number of rotations according to speed.

Note 5) The allowable collision speed for the pushing operation with the torque control mode, etc.

Note 6) A reference value for correcting an error in reciprocal operation.

Note 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. (Test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in

both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

Note 8) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%). Order the regeneration option separately. For details and order numbers, refer to "Required Conditions for Regeneration Option" on pages 225 and 226.

Note 9) The power consumption (including the driver) is for when the actuator is operating.

Note 10) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

Note 11) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

Note 12) Only when motor option "With lock" is selected.

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

Weight

Product Weight

[kg]

Series		LEY25S□ (Motor mounting position: Top/Parallel)										LEY32S□ (Motor mounting position: Top/Parallel)									
Motor type	Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
	Incremental encoder	1.31	1.38	1.55	1.81	1.99	2.16	2.34	2.51	2.69	2.42	2.53	2.82	3.29	3.57	3.85	4.14	4.42	4.70	4.98	5.26
	Absolute encoder	1.37	1.44	1.61	1.87	2.05	2.22	2.40	2.57	2.75	2.36	2.47	2.76	3.23	3.51	3.79	4.08	4.36	4.64	4.92	5.20
Series		LEY25DS□ (Motor mounting position: In-line)										LEY32DS□ (Motor mounting position: In-line)									
Motor type	Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
	Incremental encoder	1.34	1.41	1.58	1.84	2.02	2.19	2.37	2.54	2.72	2.44	2.55	2.84	3.31	3.59	3.87	4.16	4.44	4.72	5.00	5.28
	Absolute encoder	1.40	1.47	1.64	1.90	2.08	2.25	2.43	2.60	2.78	2.38	2.49	2.78	3.25	3.53	3.81	4.10	4.38	4.66	4.94	5.22

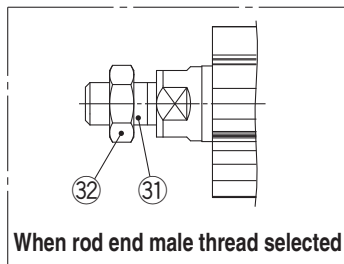
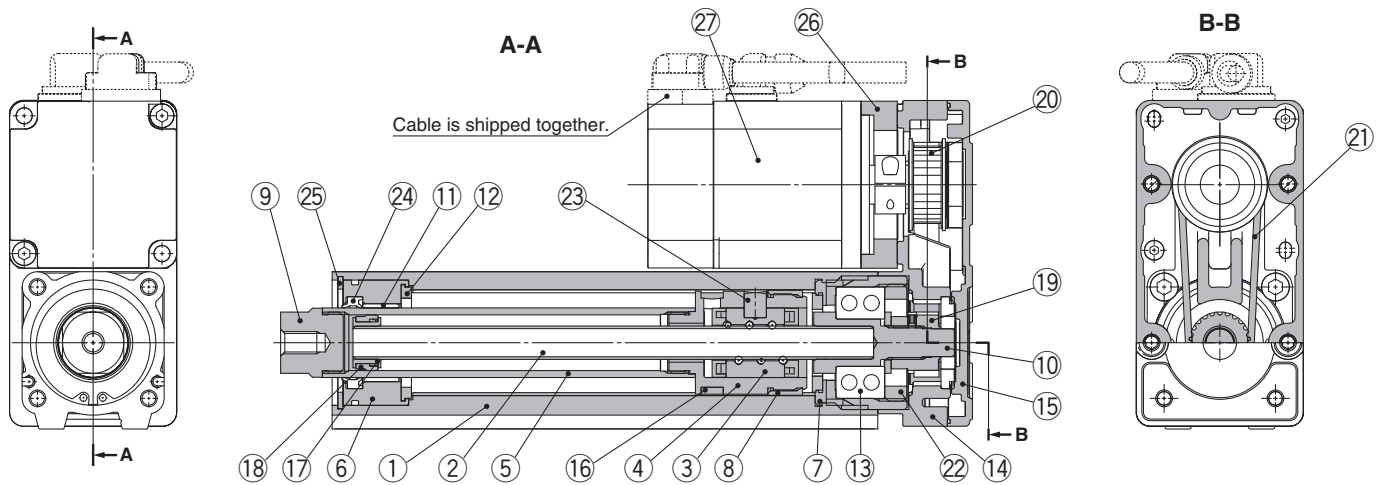
Additional Weight

[kg]

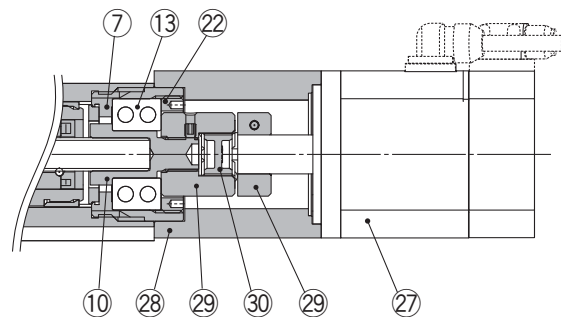
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring and mounting bolt)		0.16	0.22

Construction

Motor top mounting type: LEY²⁵₃₂



In-line motor type: LEY²⁵₃₂D



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw shaft	Alloy steel	
3	Ball screw nut	Resin/Alloy steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plating
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plating
10	Connected shaft	Free cutting carbon steel	Nickel plating
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Coating
15	Return plate	Aluminum die-cast	Coating
16	Magnet	—	
17	Wear ring holder	Stainless steel	Stroke 101 mm or more
18	Wear ring	POM	Stroke 101 mm or more
19	Screw shaft pulley	Aluminum alloy	
20	Motor pulley	Aluminum alloy	
21	Belt	—	
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	

No.	Description	Material	Note
24	Seal	NBR	
25	Retaining ring	Steel for spring	Phosphate coated
26	Motor adapter	Aluminum alloy	Coating
27	Motor	—	
28	Motor block	Aluminum alloy	Coating
29	Hub	Aluminum alloy	
30	Spider	Urethane	
31	Socket (Male thread)	Free cutting carbon steel	Nickel plating
32	Nut	Alloy steel	Zinc chromated

Replacement Parts (Top/Parallel only)/Belt

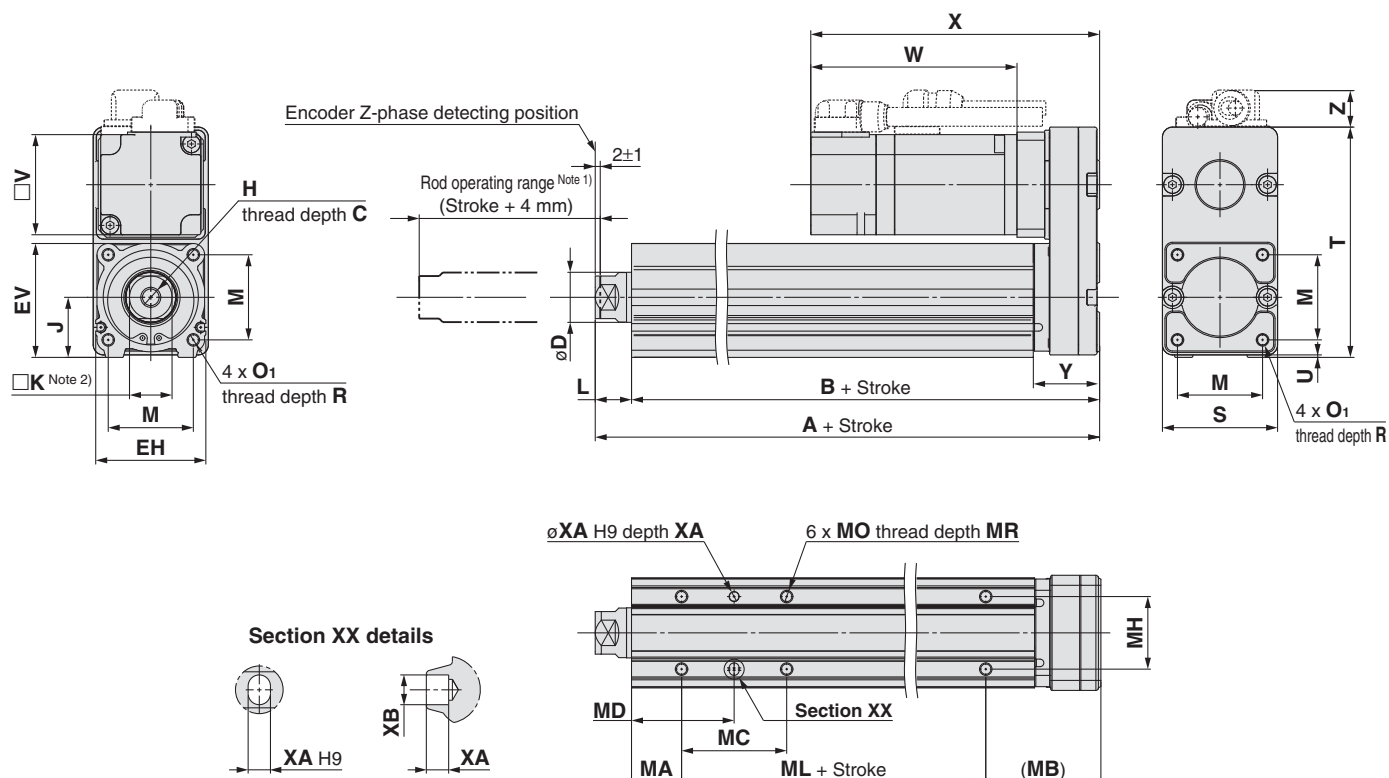
No.	Size	Order no.
21	25	LE-D-2-2
	32	LE-D-2-4

Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g) 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: Motor Top/Parallel



Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) The direction of rod end width across flats (□K) differs depending on the products.

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46
	105 to 400	155.5	141												
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60
	105 to 500	178.5	160												

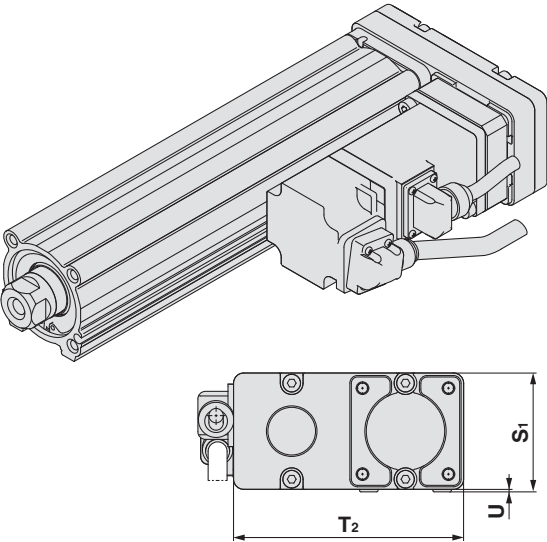
Size	Stroke range [mm]	T	U	Y	V	Incremental encoder						Absolute encoder					
						Without lock			With lock			Without lock			With lock		
						W	X	Z	W	X	Z	W	X	Z	W	X	Z
25	15 to 100	92	1	26.5	40	87	120	14.1	123.9	156.9	15.8	82.4	115.4	14.1	123.5	156.5	15.8
	105 to 400																
32	20 to 100	118	1	34	60	88.2	128.2	17.1	116.8	156.8	17.1	76.6	116.6	17.1	116.1	156.1	17.1
	105 to 500																

Body Bottom Tapped

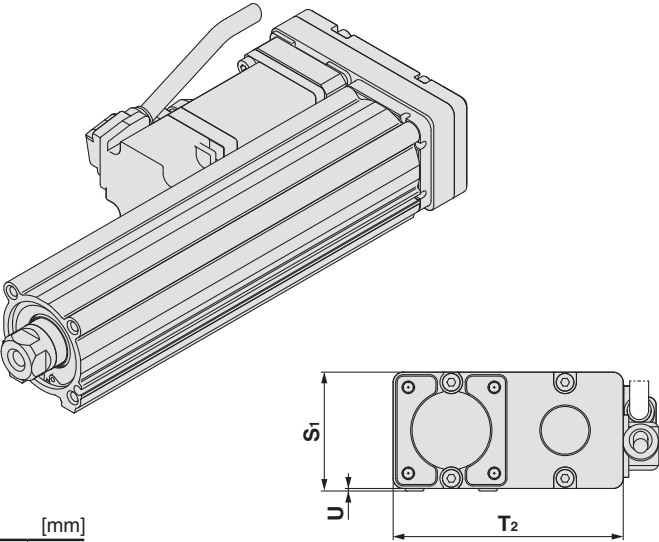
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41		75				
	101 to 124			59	49.5						
	125 to 200			76	58						
	201 to 400										
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43		80				
	101 to 124			53	51.5						
	125 to 200			70	60						
	201 to 500										

Dimensions: Motor Top/Parallel

Motor left side parallel type: **LEY²⁵₃₂L**



Motor right side parallel type: **LEY²⁵₃₂R**

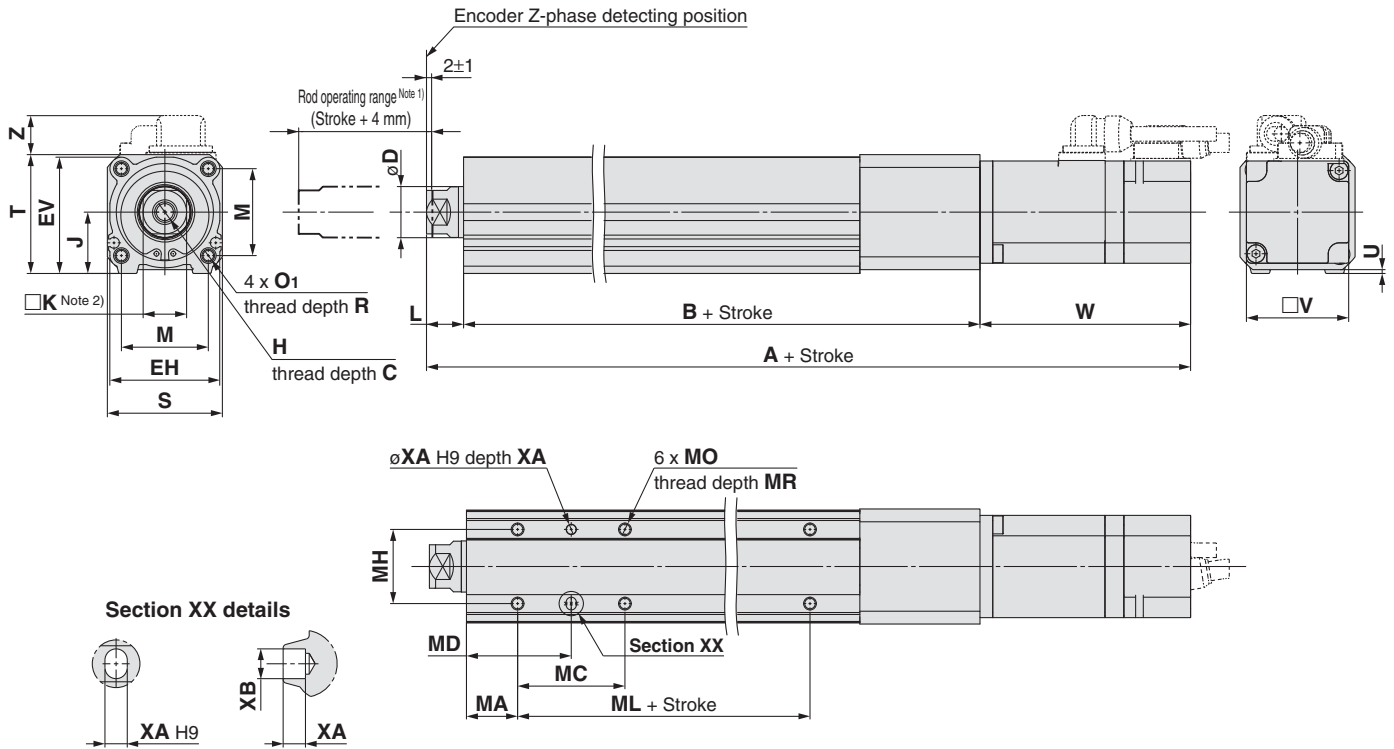


[mm]			
Size	S ₁	T ₂	U
25	47	91	1
32	61	117	1

Note) When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY**
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- LECS□
- LECS-T
- LECYM
- LECYU
- Motorless
- LAT3

Dimensions: In-line Motor



Note 1) Range within which the rod can move.

Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) The direction of rod end width across flats (□K) differs depending on the products.

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U
25	15 to 100	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5
	105 to 400														
32	20 to 100	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	61	1
	105 to 500														

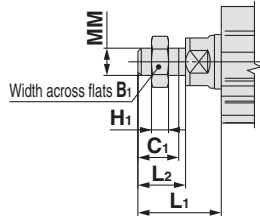
Size	Stroke range [mm]	B	V	Incremental encoder						Absolute encoder					
				Without lock			With lock			Without lock			With lock		
				A	W	Z	A	W	Z	A	W	Z	A	W	Z
25	15 to 100	136.5	40	238	87	14.6	274.9	123.9	16.3	233.4	82.4	14.6	274.5	123.5	16.3
	105 to 400	161.5		263			299.9			258.4			299.5		
32	20 to 100	156	60	262.7	88.2	17.1	291.3	116.8	17.1	251.1	76.6	17.1	290.6	116.1	17.1
	105 to 500	186		292.7			321.3			281.1			320.6		

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41		75				
	101 to 124		59	49.5		75				
	125 to 200		76	58		75				
	201 to 400		76	58		75				
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43		80				
	101 to 124		53	51.5		80				
	125 to 200		53	51.5		80				
	201 to 500		70	60		80				

Dimensions

End male thread: LEY²⁵₃₂□□^A_B-□□^C_M



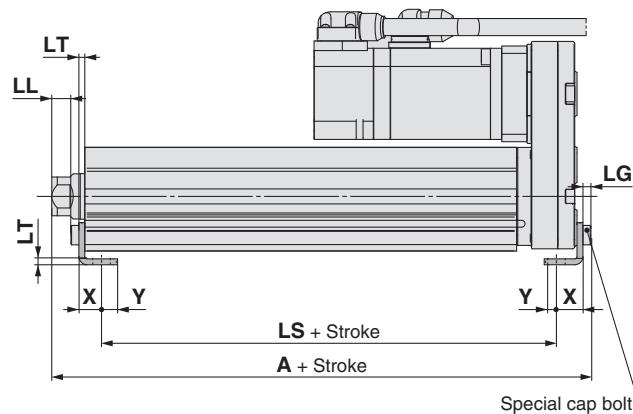
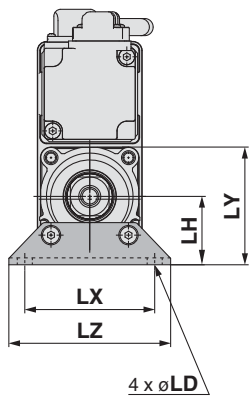
* Refer to page 241 for details about the rod end nut and mounting bracket.

Note) Refer to the precautions on page 296 when mounting end brackets such as knuckle joint or workpieces.

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	22	20.5	8	42.0	23.5	M14 x 1.5

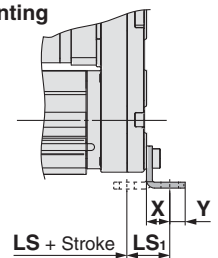
* The L₁ measurement is when the unit is in the original position. At this position, 2 mm at the end.

Foot: LEY²⁵₃₂□□^A_B-□□□□^C_L



Included parts
• Foot
• Body mounting bolt

Outward mounting



Foot

Size	Stroke range [mm]	A	LS	LS ₁	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	123.8											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

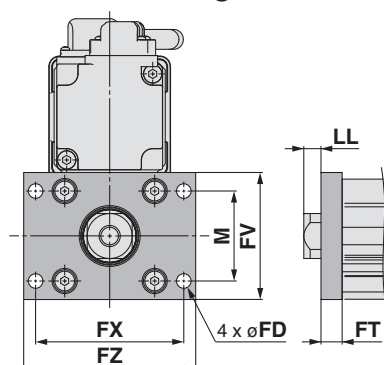
Material: Carbon steel (Chromate treated)

* The A measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end.

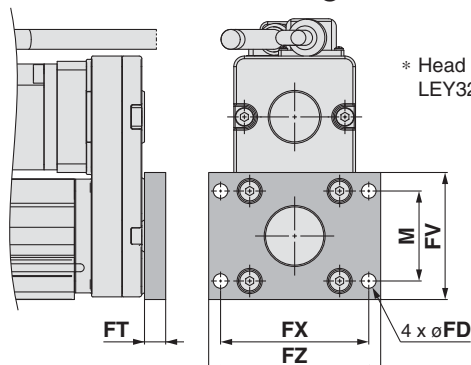
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Dimensions

Rod flange: LEY²⁵₃₂□□^A□□^B□□□^F_C



Head flange: LEY25□□^A□□^B□□□^G_C



* Head flange is not available for the LEY32.

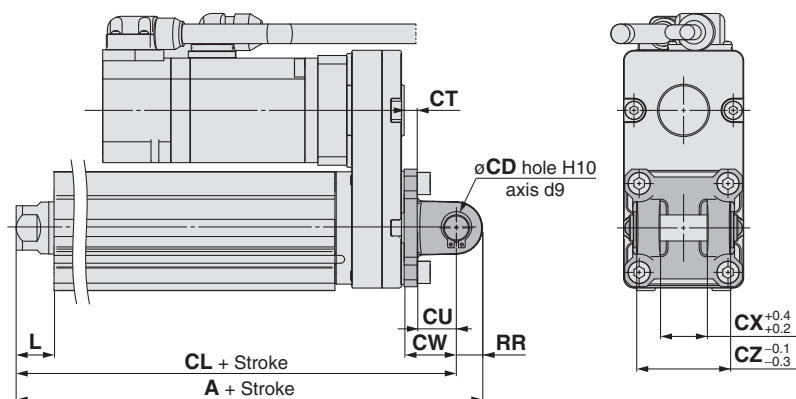
Included parts
• Flange
• Body mounting bolt

Rod/Head Flange [mm]

Size	FD	FT	FV	FX	FZ	LL	M
25	5.5	8	48	56	65	6.5	34
32	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

Double clevis: LEY²⁵₃₂□□^A□□^B□□□^D_C



Included parts
• Double clevis
• Body mounting bolt
• Clevis pin
• Retaining ring

* Refer to page 241 for details about the rod end nut and mounting bracket.

Double Clevis [mm]

Size	Stroke range [mm]	A	CL	CD	CT
25	15 to 100	160.5	150.5	10	5
	101 to 200	185.5	175.5		
32	20 to 100	180.5	170.5	10	6
	101 to 200	210.5	200.5		

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
25	15 to 100	14	20	18	36	14.5	10
	101 to 200						
32	20 to 100	14	22	18	36	18.5	10
	101 to 200						

Material: Cast iron (Coating)

* The A and CL measurements are when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end.

LAT3

Motorless

LECYM
LECYU

LECSS-T

LECS □

LEC □

25A-

11-LEJS

11-LEFS

LEY-X5

LEH

LER

LEPY
LEPS

LES
LESH

LEY
LEYG

LEM

LEL

LEJS
LEJB

LEFS
LEFB

Electric Actuator/ Rod Type

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

* Select options

Series LEY LEY63 **Size 63**


Motorless Type ▶ Page 833

SSCNET III/H Compatible ▶ Page 627

MECHATROLINK Compatible ▶ Page 725

How to Order

LEY **H** **63** **S4** **B** - **200** - **S** **2** **A2**

1 2 3 4 5 6 7 8 9 10 11 12 13 14

1 Accuracy

Nil	Basic type
H	High precision type

3 Motor mounting position

Nil	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

6 Stroke [mm]

100	100
to	to
800	800

2 Size

63

4 Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver
S4	AC servo motor (Incremental encoder)	400	63	LECSA2-S4
S8	AC servo motor (Absolute encoder)	400	63	LECSB2-S8 LECSC2-S8 LECSS2-S8

5 Lead [mm]

Symbol	LEY63
A	20
B	10
C	5
L	2.86*

* Screw lead 5 mm, Pulley ratio [4:7] equivalent lead

* Only available for top mounting and right/left side parallel types.

7 Dust-tight/Water-jet-proof

Nil	IP5x equivalent (Dust-protected)
P	IP65 equivalent (Dust-tight/Water-jet-proof)/ With vent hole tap

* When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water.

* The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: ø4 or more, Connection thread: Rc1/8].

* Cannot be used in environments exposed to cutting oil etc. Take suitable protective measures.

8 Motor option

Nil	Without option
B	With lock

9 Rod end thread

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

10 Mounting^{*1}

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
Nil	Ends tapped/ Body bottom tapped ^{*2}	●	●
L	Foot	●	—
F	Rod flange ^{*2}	●	●
D	Double clevis ^{*3}	●	—

*1 Mounting bracket is shipped together, (but not assembled).

*2 For horizontal cantilever mounting with the rod flange and ends tapped, use the actuator within the following stroke range.

• LEY63: 400 mm or less

*3 For mounting with the double clevis, use the actuator within the following stroke range.

• LEY63: 300 mm or less

11 Cable type^{Note 1)}

Nil	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

Note 1) The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)

12 Cable length^{Note 2)} [m]

Nil	Without cable
2	2
5	5
A	10

Note 2) The length of the encoder, motor and lock cables are the same.

13 Driver type

	Compatible driver	Power supply voltage
Nil	Without driver	
A2	LECSA2/Pulse input (Incremental encoder)	200 V to 230 V
B2	LECSB2/Pulse input (Absolute encoder)	200 V to 230 V
C2	LECSC2/CC-Link (Absolute encoder)	200 V to 230 V
S2	LECSS2/SSCNET III (Absolute encoder)	200 V to 230 V

* When the driver type is selected, the cable is included. Select cable type and cable length.

Example)

S2S2: Standard cable (2 m) + Driver (LECSC2)

S2 : Standard cable (2 m)

Nil : Without cable and driver

14 I/O cable length [m]*

Nil	Without cable
H	Without cable (Connector only)
1	1.5

* When "Without driver" is selected for driver type, only

"Nil: Without cable" can be selected.

Refer to page 615 if I/O cable is required.

(Options are shown on page 615.)

* Applicable stroke table

Model	Stroke [mm]	100	200	300	400	500	600	700	800	Manufacturable stroke range
LEY63		●	●	●	●	●	●	●	●	50 to 800

Note) Please consult with SMC for non-standard strokes as they are produced as special orders.

Specifications

Model			LEY63S ⁴ □ (Top/Parallel)				LEY63DS ⁴ □ (In-line)			
Actuator specifications	Stroke [mm] ^{Note 1)}		100, 200, 300, 400, 500, 600, 700, 800							
	Work load [kg]	Horizontal ^{Note 2)}	40	70	80	200	40	70	80	
		Vertical	19	38	72	115	19	38	72	
	Pushing force [N]/Set value ^{Note 3)} : 15 to 50% ^{Note 4)}		156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910	
	^{Note 5)} Max. speed [mm/s]	Stroke range	Up to 500	1000	500	250	70	1000	500	250
			505 to 600	800	400	200		800	400	200
			605 to 700	600	300	150		600	300	150
			705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s] ^{Note 6)}		30 or less							
	Max. acceleration/deceleration [mm/s ²]		5000				3000	5000		
	Positioning repeatability [mm]	Basic type	±0.02							
		High precision type	±0.01							
	Lost motion [mm] ^{Note 7)}	Basic type	0.1 or less							
		High precision type	0.05 or less							
Screw lead [mm] (including pulley ratio)		20	10	5	5 (2.86)	20	10	5		
Impact/Vibration resistance [m/s ²] ^{Note 8)}		50/20								
Actuation type		Ball screw				Ball screw + Belt ^[Pulley ratio 4:7]	Ball screw			
Guide type		Sliding bushing (Piston rod)								
Operating temperature range [°C]		5 to 40								
Operating humidity range [%RH]		90 or less (No condensation)								
Required conditions for ^{Note 9)} “Regeneration option” [kg]	Horizontal	Not required	Not required	Not required	Not required	Not required	Not required	Not required		
	Vertical	2 or more	5 or more	12 or more	46 or more	2 or more	5 or more	12 or more		
Electric specifications	Motor output/Size		400 W/□60							
	Motor type		AC servo motor (200 VAC)							
	Encoder		Motor type S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)							
	Power consumption [W] ^{Note 10)}	Horizontal	210							
		Vertical	230							
	Standby power consumption when operating [W] ^{Note 11)}	Horizontal	2							
		Vertical	18							
	Max. instantaneous power consumption [W] ^{Note 12)}		1275							
	Lock unit specifications	Type ^{Note 13)}		Non-magnetizing lock						
		Holding force [N]		313	607	1146	2006	313	607	1146
Power consumption [W] at 20°C ^{Note 14)}		7.9								
Rated voltage [V]		24 VDC ⁰ _{-10%}								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.

Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.

Note 3) Set values for the driver.

Note 4) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. The pushing force and duty ratio change according to the set value. Set it with reference to "Force Conversion Graph" on page 227.

Note 5) The allowable speed changes according to the stroke. Set the number of rotations according to speed.

Note 6) The allowable collision speed for the pushing operation with the torque control mode, etc.

Note 7) A reference value for correcting an error in reciprocal operation.

Note 8) 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. (Test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

Note 9) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%).

Note 10) The power consumption (including the driver) is for when the actuator is operating.

Note 11) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

Note 12) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

Note 13) Only when motor option "With lock" is selected.

Note 14) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

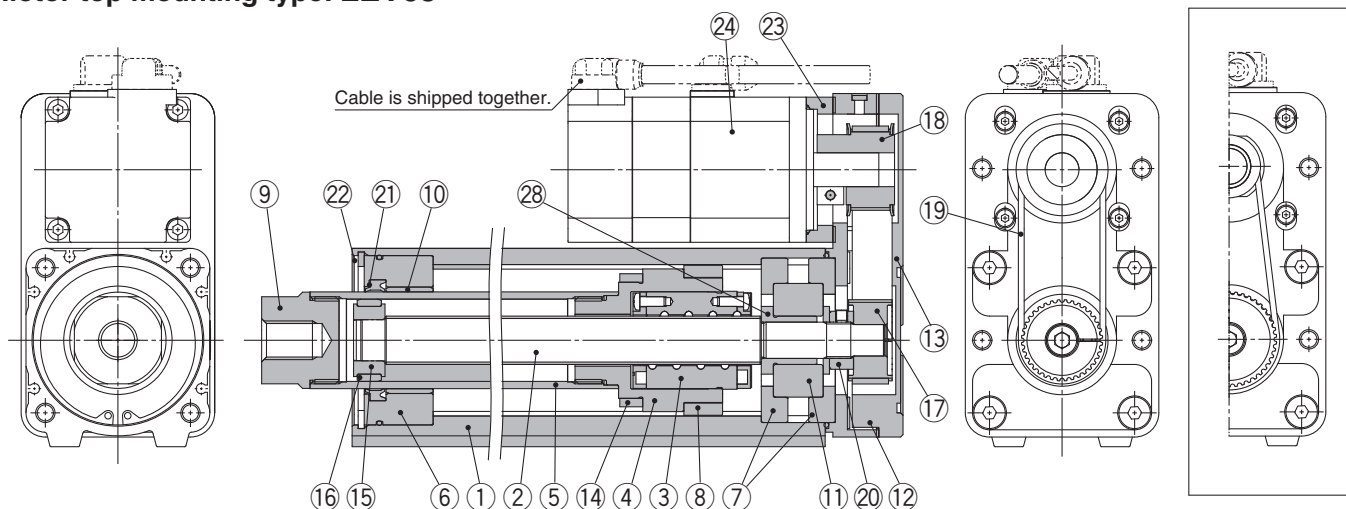
Series		LEY63S□ (Motor mounting position: Top/Parallel)							
Stroke [mm]		100	200	300	400	500	600	700	800
Motor type	Incremental encoder	5.4	6.6	8.3	9.4	10.5	12.2	13.4	14.5
	Absolute encoder	5.5	6.7	8.4	9.5	10.6	12.3	13.5	14.6
Series		LEY63DS□□ (Motor mounting position: In-line)							
Stroke [mm]		100	200	300	400	500	600	700	800
Motor type	Incremental encoder	5.6	6.7	8.4	9.6	10.7	12.4	13.5	14.7
	Absolute encoder	5.7	6.8	8.5	9.7	10.8	12.5	13.6	14.8

Additional Weight

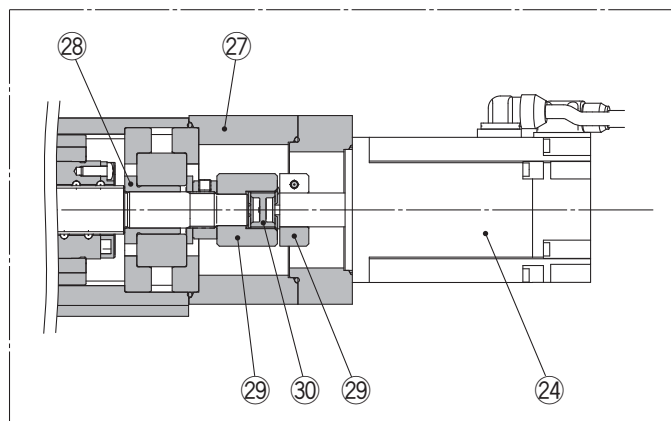
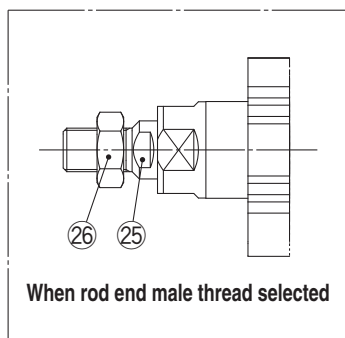
Size		63
Lock	Incremental encoder	0.4
	Absolute encoder	0.6
Rod end male thread	Male thread	0.12
	Nut	0.04
Foot (2 sets including mounting bolt)		0.26
Rod flange (including mounting bolt)		0.51
Double clevis (including pin, retaining ring and mounting bolt)		0.58

Construction

Motor top mounting type: LEY63



In-line motor type: LEY63D



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw shaft	Alloy steel	
3	Ball screw nut	Resin/Alloy steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plating
6	Rod cover	Aluminum alloy	
7	Bearing holder	Aluminum alloy	
8	Rotation stopper	Resin	
9	Socket	Free cutting carbon steel	Nickel plating
10	Bushing	Lead bronze cast	
11	Bearing	—	
12	Return box	Aluminum alloy	Coating
13	Return plate	Aluminum alloy	Coating
14	Magnet	—	
15	Wear ring holder	Stainless steel	

No.	Description	Material	Note
16	Wear ring	Resin	
17	Screw shaft pulley	Aluminum alloy	
18	Motor pulley	Aluminum alloy	
19	Belt	—	
20	Lock nut	Alloy steel	Black dyed
21	Seal	NBR	
22	Retaining ring	Steel for spring	
23	Motor adapter	Aluminum alloy	Coating
24	Motor	—	
25	Socket (Male thread)	Free cutting carbon steel	Nickel plating
26	Nut	Alloy steel	Trivalent chromated
27	Motor block	Aluminum alloy	Coating
28	Spacer A	Stainless steel	
29	Hub	Aluminum alloy	
30	Spider	Urethane	

Replacement Parts (Top/Parallel only)/Belt

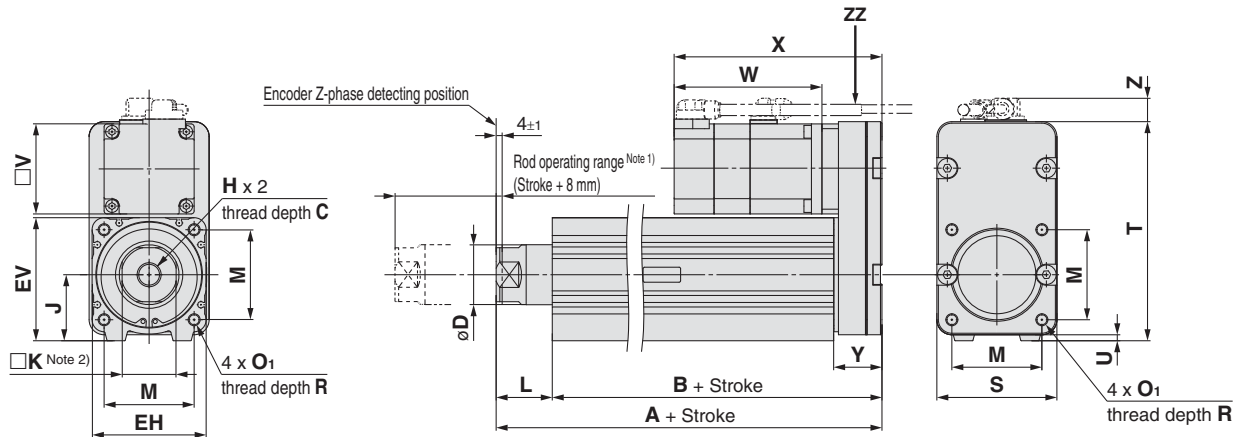
No.	Size	Lead	Order no.
19	63	A/B/C	LE-D-2-5
		L	LE-D-2-6

Replacement Parts/Grease Pack

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

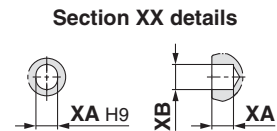
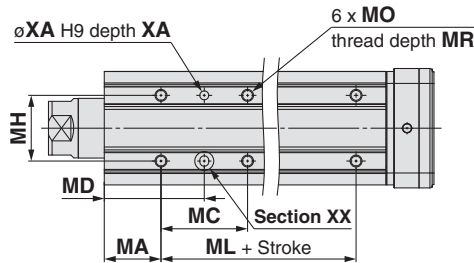
* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top/Parallel

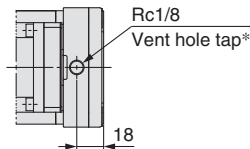


Note 1) Range within which the rod can move.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) The direction of rod end width across flats (□K) differs depending on the products.



IP65 equivalent (Dust-tight/Water-jet-proof): LEY63□□□-□P (View ZZ)



* When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: $\phi 4$ or more, Connection thread: Rc1/8].

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	Y
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	32.2
	205 to 500	227.6	190.2													
	505 to 800	262.6	225.2													

Size	Stroke range [mm]	T	U	V	Incremental encoder						Absolute encoder					
					Without lock			With lock			Without lock			With lock		
					W	X	Z	W	X	Z	W	X	Z	W	X	Z
63	Up to 200	146	4	60	110.2	150.2	15.6 (16.6)*	138.8	178.8	15.6 (16.6)*	98.5	138.5	15.6 (16.6)*	138	178	15.6 (16.6)*
	205 to 500															
	505 to 800															

* The values in () are the dimensions when L is selected for screw lead.

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

Series **LEY**

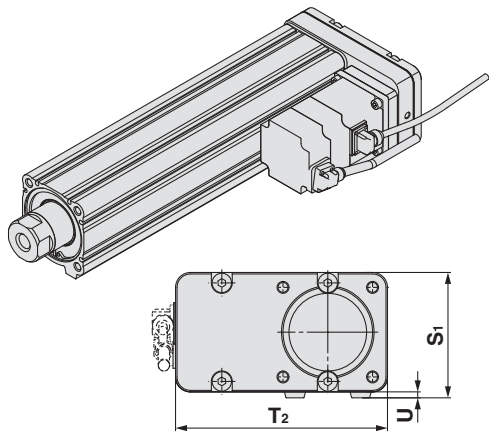
AC Servo Motor

Size **63**

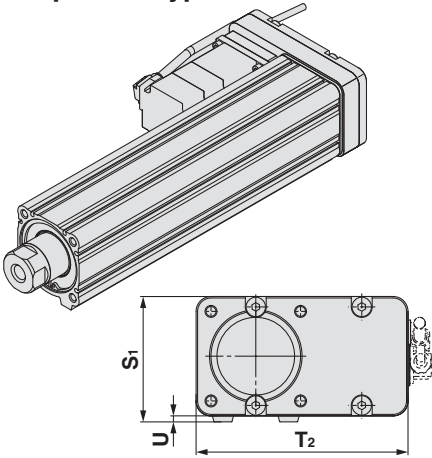
Dust-tight/Water-jet-proof (IP65 Equivalent)

Dimensions: Motor Top/Parallel

Motor left side parallel type: **LEY63L**



Motor right side parallel type: **LEY63R**

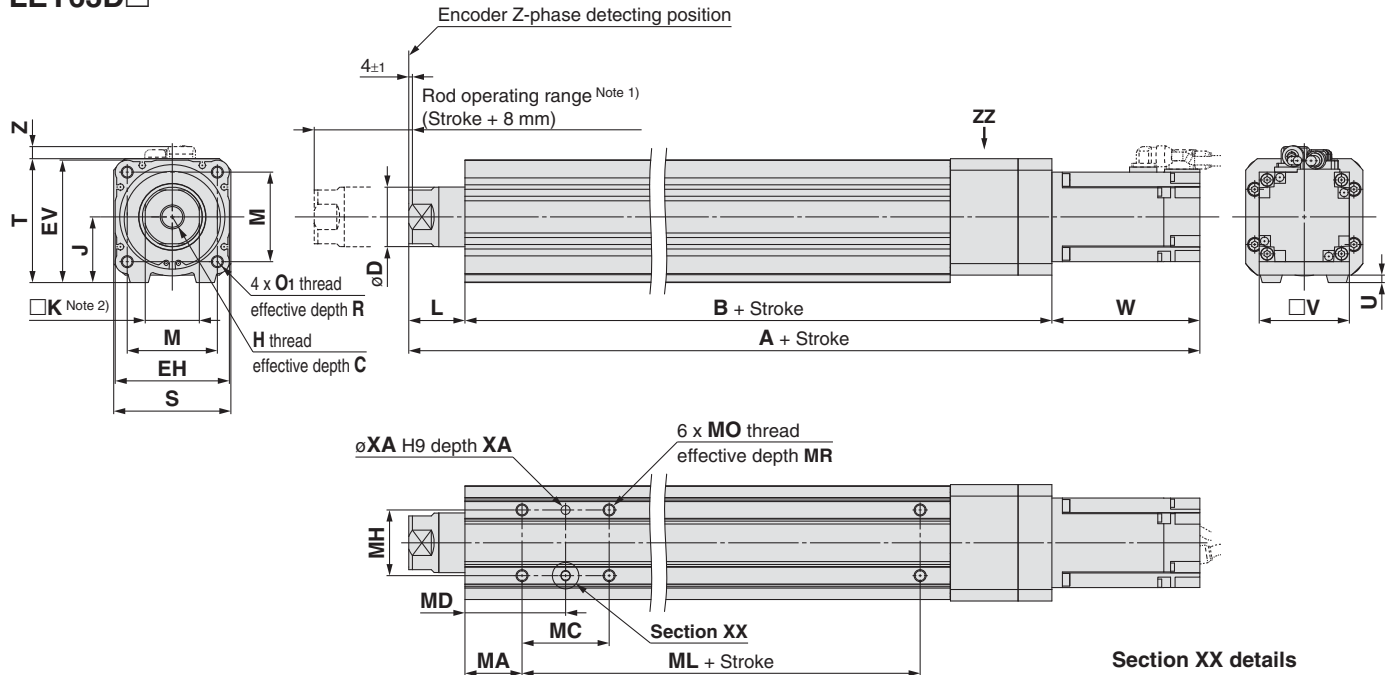


Size	S ₁	T ₂	U
63	84	142	4

Note) When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

Dimensions: In-line Motor

LEY63D□



Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

Note 2) The direction of rod end width across flats (□K) differs depending on the products.

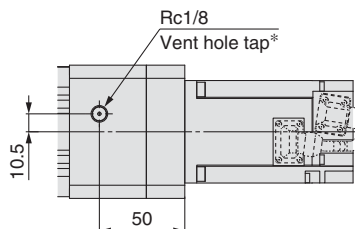
Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U
63	Up to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5
	205 to 500														
	505 to 800														

Size	Stroke range [mm]	B	V	Incremental encoder						Absolute encoder					
				Without lock			With lock			Without lock			With lock		
				A	W	Z	A	W	Z	A	W	Z	A	W	Z
63	Up to 200	190.7	60	338.3	110.2	8.1	366.9	138.8	8.1	326.6	98.5	8.1	366.1	138	8.1
	205 to 500	225.7		373.3			401.9			361.6			401.1		
	505 to 800	260.7		408.3			436.9			396.6			436.1		

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

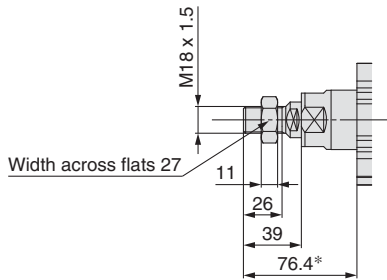
IP65 equivalent (Dust-tight/Water-jet-proof): LEY63D□□-□P (View ZZ)



* When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: ø4 or more, Connection thread: Rc1/8].

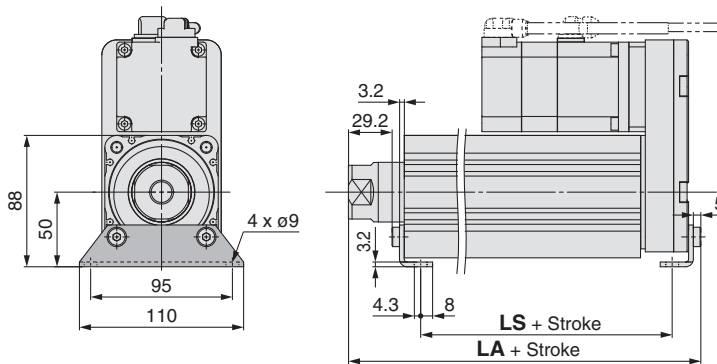
Dimensions

End male thread: LEY63□□□-□□M

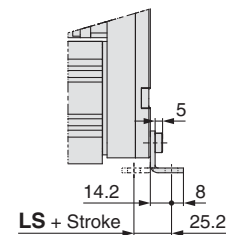


* The measurement 76.4 is when the unit is in the Z-phase detecting position. At this position, 4 mm at the end.

Foot: LEY63□□□-□□L



Outward mounting



Included parts
• Foot
• Body mounting bolt

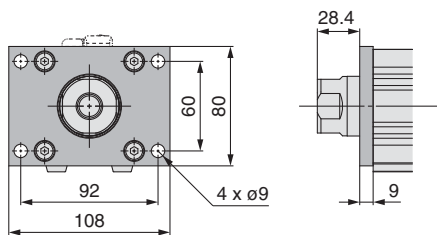
Material: Carbon steel (Chromate treated)

* The overall length is when the unit is in the Z-phase first detecting position. At this position, 4 mm at the end.

Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

[mm]		
Stroke range [mm]	LA	LS
50 to 200	200.8	133.2
201 to 500	235.8	168.2
501 to 800	270.8	203.2

Rod flange: LEY63□□□-□□F

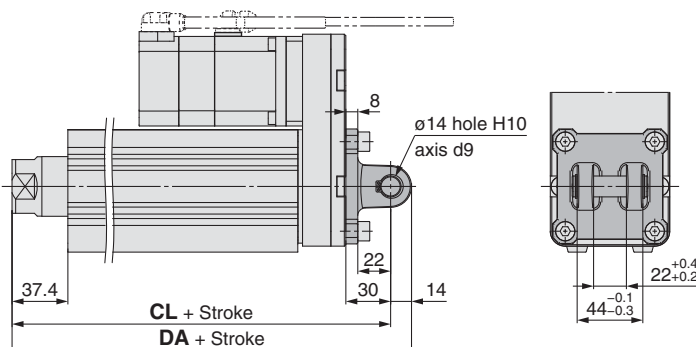


Included parts
• Flange
• Body mounting bolt

Material: Carbon steel (Nickel plating)

* When the unit is in the Z-phase first detecting position. At this position, 4 mm at the end.

Double clevis: LEY63□□□-□□D



Included parts
• Double clevis
• Body mounting bolt
• Clevis pin
• Retaining ring

Material: Cast iron (Coating)

* The overall length is when the unit is in the Z-phase first detecting position. At this position, 4 mm at the end.

[mm]		
Stroke range [mm]	DA	CL
50 to 200	236.6	222.6
201 to 500	271.6	257.6
501 to 800	306.6	292.6