

Electric Actuators

Series LEY



Rod Type/Guide Rod Type

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

Rod Type Series LEY

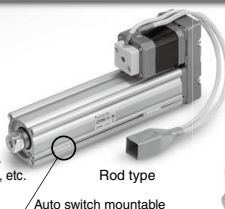
Size: 16, 25, 32, 40 ▶Page 128

Long stroke:

Max. 500 mm (LEY32, 40)

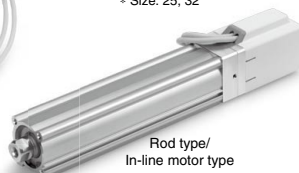
Mounting variations

- Direct mounting: 3 directions, Bracket mounting: 3 types
- Either positioning or pushing control can be selected.
- Possible to hold the actuator with the rod pushing to a workpiece, etc.



Rod type

Auto switch mountable



Rod type/
In-line motor type

Dust/Drip proof (IP65) specification: -X5 ▶Page 132

* Size: 25, 32

Guide Rod Type Series LEYG

Size: 16, 25, 32, 40 ▶Page 154

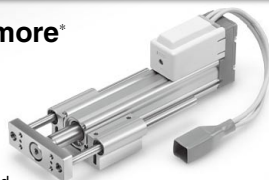
Lateral end load: 5 times more*

* Compared with rod type, size 25 and 100 stroke

Compatible with sliding bearing and ball bushing bearing.

Compatible with moment load and stopper (sliding bearing).

- Either positioning or pushing control can be selected.
- Possible to hold the actuator with the rod pushing to a workpiece, etc.



Guide rod type



Guide rod type/
In-line motor type

AC Servo Motor Type

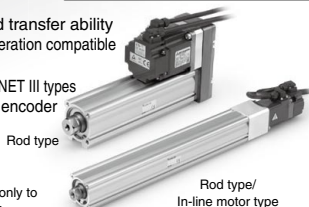
* Not applicable to UL.

▶Page 174

Rod Type Series LEY Size: 25, 32, 63^{Note)}

Dust/Drip proof (IP65) specification: -X5

- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5,000 mm/s²)
- Pulse input/CC-Link/SSCNET III types
- With internal absolute encoder (For LECSB/C/S)



Rod type

Rod type/
In-line motor type

Note) LEY63 is applicable only to the in-line motor type

Guide Rod Type Series LEYG Size: 25, 32

Guide rod type



Guide rod type/
In-line motor type

▶Page 198

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Controller/
Driver

▶Page 367

- ▶Step data input type
Series LECPC/LECA6
64 points positioning
- ▶Programless type
Series LECPC1
14 points positioning
- ▶Pulse input type
Series LECPC



AC Servo Motor Driver

* Not applicable to UL.

▶For absolute encoder

- Pulse input type
Series LECSB
- CC-Link direct input type
Series LECSC
- SSCNET III type
Series LECSS



▶For incremental encoder

- Pulse input type/
Positioning type
Series LECSA



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

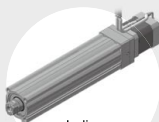
Top mounting type is the standard product.



Right side parallel type



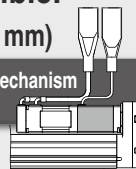
Left side parallel type



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

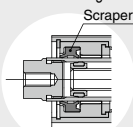
- Standard cable
- Robotic cable (Flexible cable)

Manual override screw

For manual piston rod operation
Adjustment operation possible when power OFF

Scraper

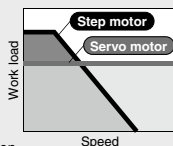
Prevents foreign matter from entering.



Motor top/parallel type

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



Pages 144, 145

Rod end brackets

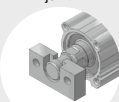
Single knuckle joint



Double knuckle joint



Simple joint



Groove for auto switch

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

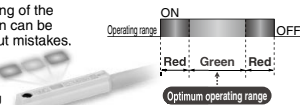
* The auto switches should be ordered separately. Refer to pages 146 and 147 for details.



2-color indication solid state auto switch

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

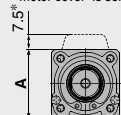
A **green** light lights up at the optimum operating range.



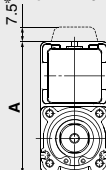
In-line motor type Height dimension shortened by up to 49%

For LEY16D

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



For LEY16



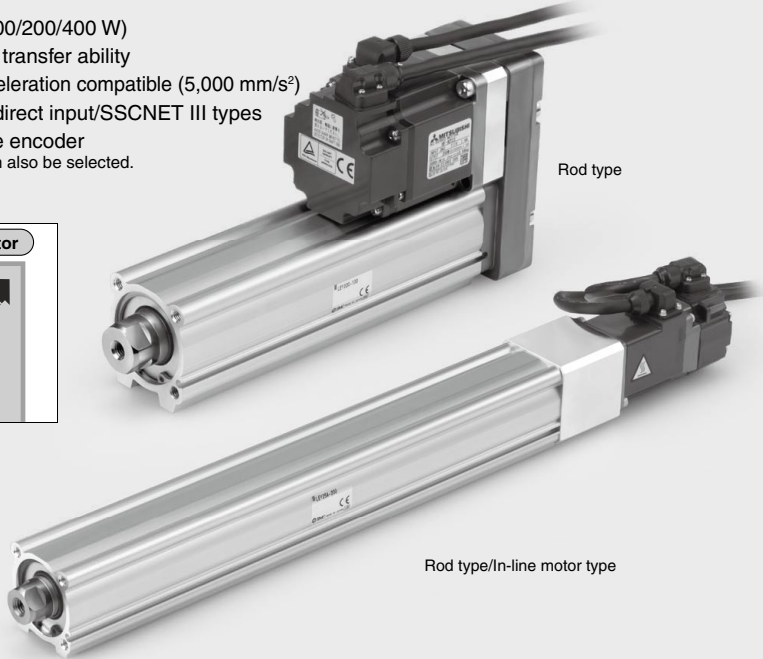
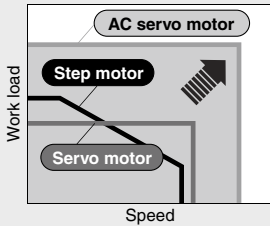
A Dimension		(mm)
Size	In-line motor	Motor top mounting
16	35.5	67.5
25	46.5	92
32, 40	61	118



AC Servo Motor Type

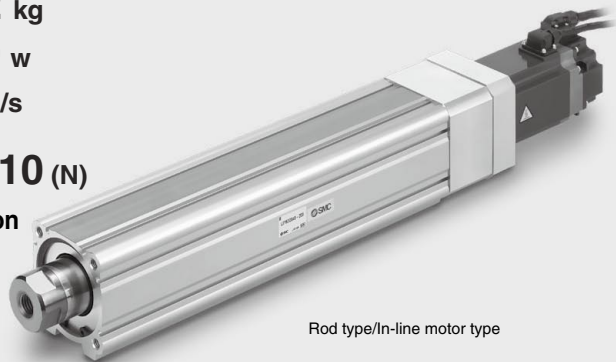
Rod Type Series **LEY** /Size: 25, 32, 63

- High output motor (100/200/400 W)
 - Improved high speed transfer ability
 - High acceleration/deceleration compatible (5,000 mm/s²)
 - Pulse input/CC-Link direct input/SSCNET III types
 - With internal absolute encoder
- * Incremental encoder can also be selected.



Added large bore size **63**!

- Work load **Horizontal** 80 kg
Vertical 72 kg
- High output motor: 400 w
- Max. speed: 1,000 mm/s
* 500 stroke
- Max. pushing force: 1,910 (N)
- Dust/Drip proof specification (IP65)



LEF

LEJ

LEL

LEY
LEYGLES
LESHLEPY
LEPS

LER

LEH

LECA6
LECP6

LEC-G

LECP1

LECPA

LECS

LAT3

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 shock 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 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	±0.06°		±0.05°	
Ball bushing bearing	±0.07°		±0.06°	

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

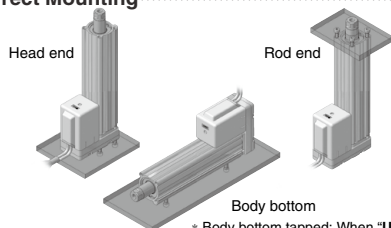
Guide rod type

Guide rod type/
In-line motor type

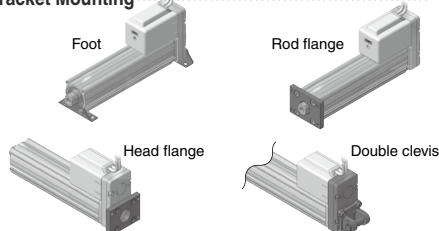
For use of auto switches for the guide rod type LEYG series, refer to page 209.

Mounting Variations

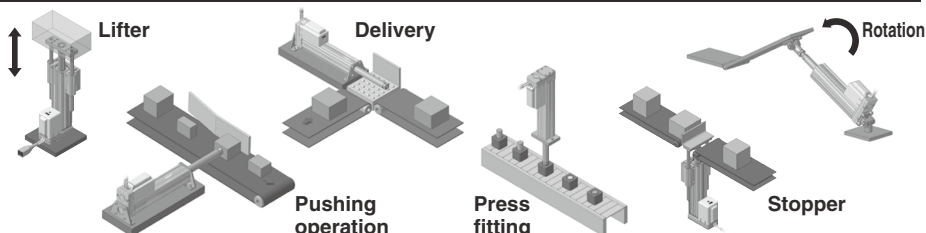
Direct Mounting



Bracket Mounting



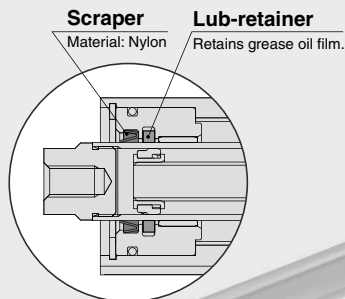
Application Examples



Dust/Drip proof (IP65) specification

- **Enclosure: IP65**
- **Max. stroke: 500 mm***

* For size 32



Seal connector

Prevents dust and water droplets from entering between the cable and motor cover.

Aluminum cover

Protects the motor.

Vent hole

Reduces internal pressure fluctuation to prevent dust and water droplets from entering.

Groove for auto switch

Water resistant type (Coolant)
For checking the limit and intermediate signal

* Order the water resistant 2-color indication solid state auto switch separately. (Refer to page 153.)



LEY-X5 (Refer to page 148.)

Step Motor (Servo/24 VDC) Type

Servo Motor (24 VDC) Type

Size

25, 32

In-line motor type

Motor top mounting type

LEY-X5 (Refer to page 193.)

AC Servo Motor (100/200 W) Type

In-line motor type

Motor top mounting type

LEY63D□□-□P

(Refer to page 188./Option)

Size

63

AC Servo Motor (400 W) Type

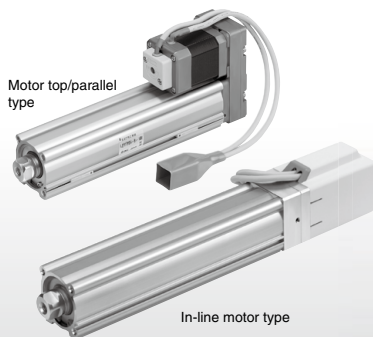
In-line motor type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

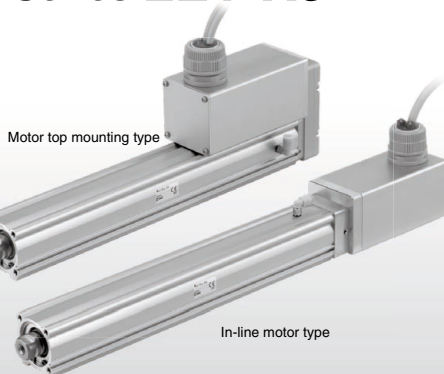
Rod Type **Page 134**

Series **LEY**



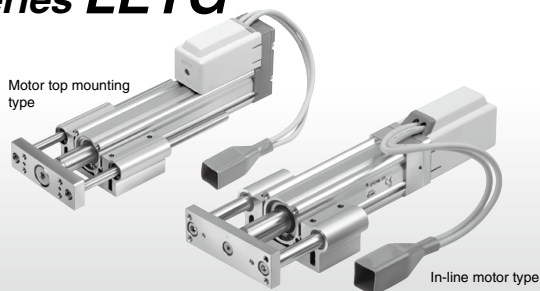
Dust/Drip proof (IP65) specification **Page 148**

Series **LEY-X5**



Guide Rod Type **Page 160**

Series **LEYG**



Step Motor/Servo Motor Controller **Page 367**
Step Motor Driver

Series **LECP6/LECA6**

Series **LEC-G**

Series **LECP1**

Series **LECPA**



Model Selection



Selection Procedure

Positioning Control Selection Procedure

Step 1 Check the work load–speed.
(Vertical transfer)

Step 2 Check the cycle time.

Selection Example

Operating conditions

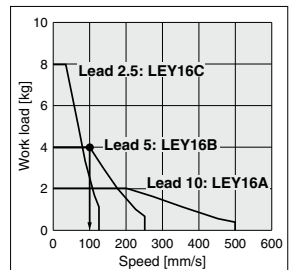
- Workpiece mass: 4 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s²]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



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.



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

* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to page 136 for the horizontal work load in the specifications, and page 169 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.

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

- $T2$: 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 conditions such as motor types, load and in positioning of the step data. Therefore, please 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.

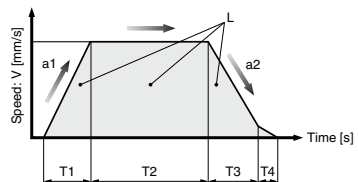
$$T1 = V/a1 = 100/3000 = 0.033 \text{ [s]}, \quad T3 = V/a2 = 100/3000 = 0.033 \text{ [s]}$$

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

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

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 in position is completed

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

Pushing Control Selection Procedure

Step 1 Check the duty ratio.

Step 2 Check the pushing force.

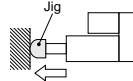
Step 3 Check the lateral load on the rod end.

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

Selection Example

Operating conditions

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

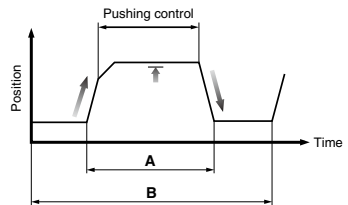
Therefore, the set value of pushing force will be 70 [%].

<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>.

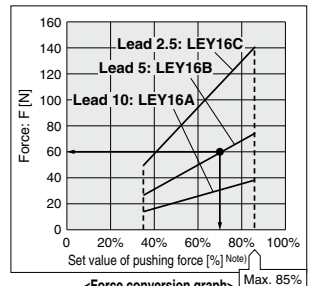
Selection example)

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>.

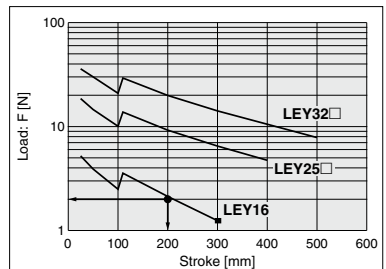
Selection example)

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.



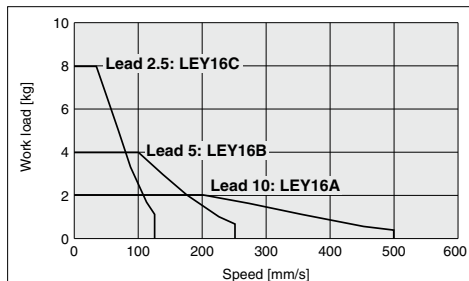
<Graph of allowable lateral load on the rod end>

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

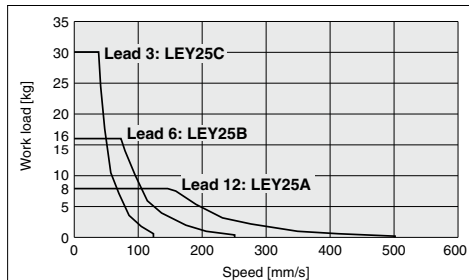
Speed-Vertical Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

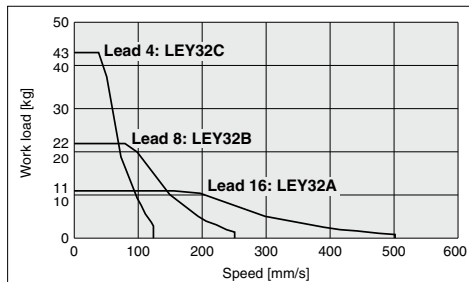
LEY16



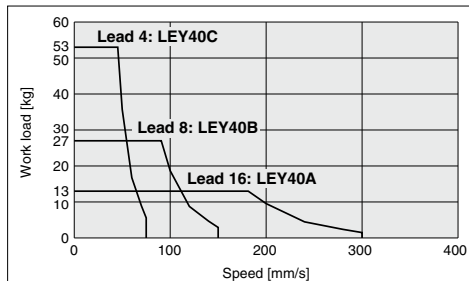
LEY25



LEY32

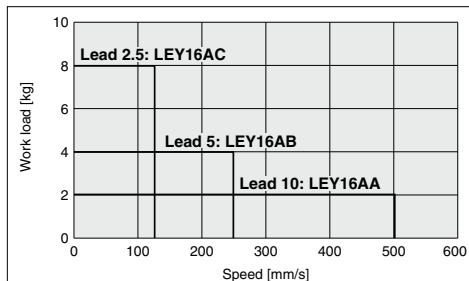


LEY40

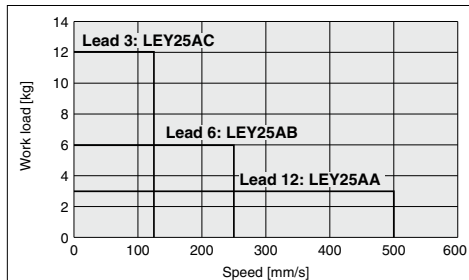


Servo Motor (24 VDC)

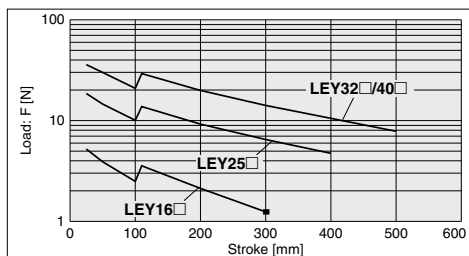
LEY16



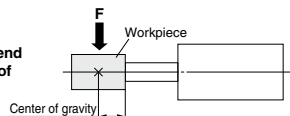
LEY25



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



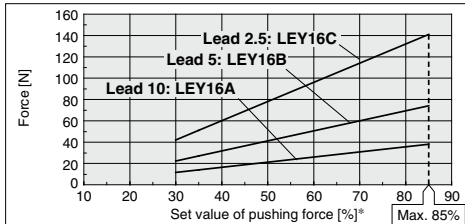
[Stroke]
= [Product stroke] +
[Distance from the rod end
to the center of gravity of
the workpiece]



Force Conversion Graph (Guide)

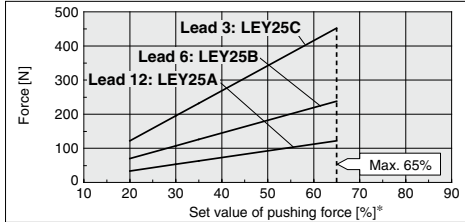
Step Motor (Servo/24 VDC)

LEY16



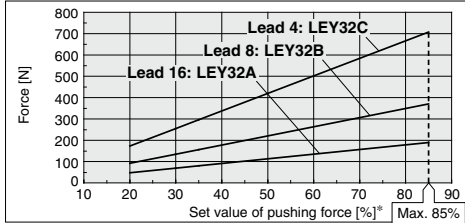
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
	40 or less	100	—
40°C	50	70	12
	70	20	1.3
	85	15	0.8

LEY25



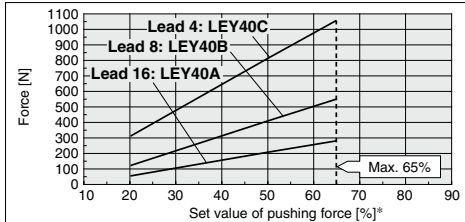
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	65 or less	100	—
40°C	65 or less	100	—

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

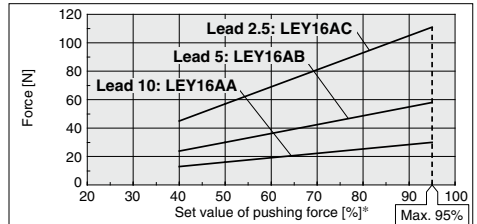


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	65 or less	100	—
40°C or less	65 or less	100	—

* Set values for the controller.

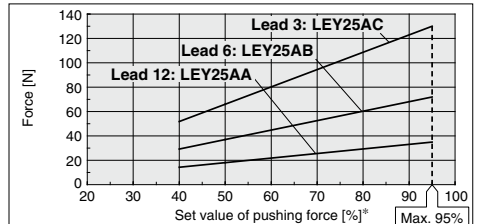
Servo Motor (24 VDC)

LEY16



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	95 or less	100	—
40°C or less	95 or less	100	—

LEY25



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	95 or less	100	—
40°C or less	95 or less	100	—

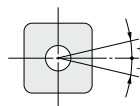
<Pushing Force and Trigger Level Range> Without Load

Model	Pushing speed [mm/s] (Setting input value)	Pushing force [N] (Setting input value)	Model	Pushing speed [mm/s] (Setting input value)	Pushing force [N] (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%		1 to 4	35% to 85%
	5 to 20	35% to 85%		5 to 20	60% to 85%
	21 to 30	60% to 85%		21 to 30	80% to 85%
LEY40□	1 to 4	20% to 65%		1 to 4	35% to 65%
	5 to 20	35% to 65%		5 to 20	60% to 65%
	21 to 30	50% to 65%		21 to 30	80% to 65%

Note) 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	±0.7°

* 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.

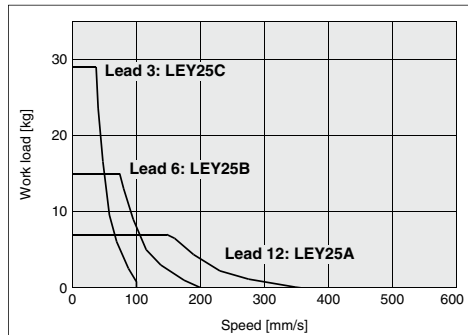
Model Selection



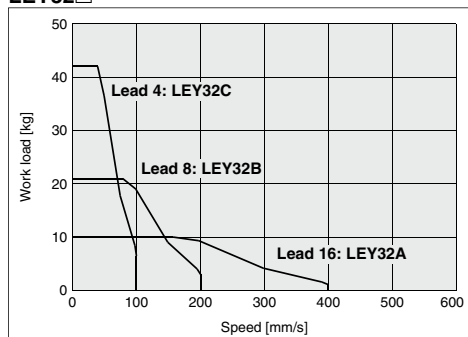
Speed-Vertical Work Load Graph

Step Motor (Servo/24 VDC)

LEY25□

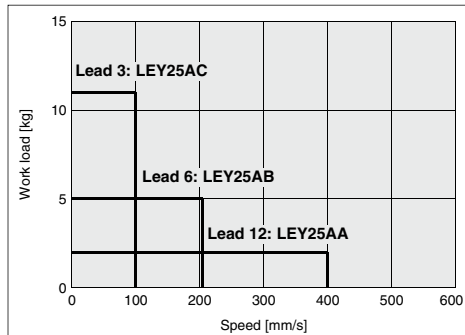


LEY32□

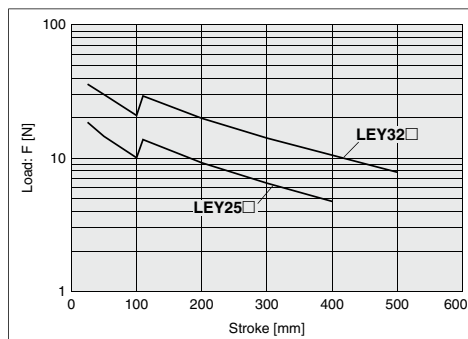


Servo Motor (24 VDC)

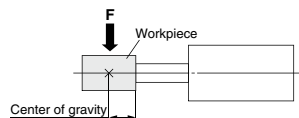
LEY25A□



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



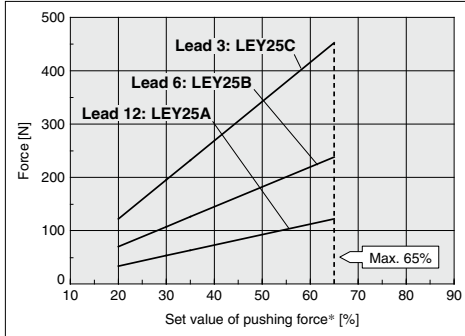
$$[\text{Stroke}] = [\text{Product stroke}] + [\text{Distance from the rod end to the center of gravity of the workpiece}]$$



Force Conversion Graph

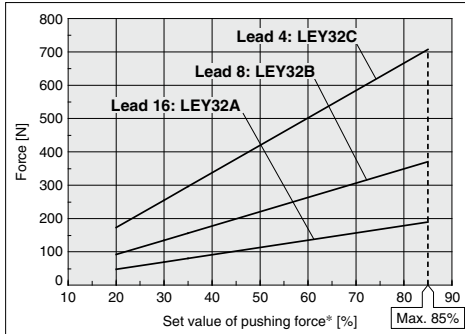
Step Motor (Servo/24 VDC)

LEY25



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

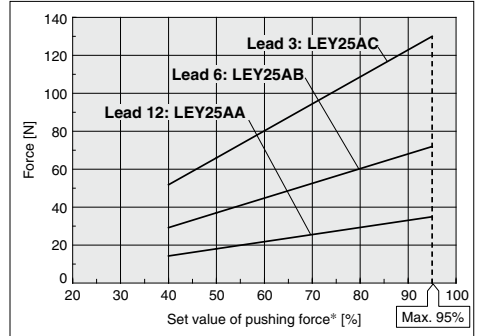
LEY32



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%	LEY32□A	1 to 4	40% to 95%
	5 to 20	35% to 85%		5 to 20	60% to 95%
	21 to 30	60% to 85%		21 to 35	80% to 95%

(Note) 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.

Electric Actuator/Rod Type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Series LEY

LEY16, 25, 32, 40



RoHS

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 controllers/driver
		LEY16	LEY25	LEY32/40	
Nil	Step motor (Servo/24 VDC)	●	●	●	LECP6 LECP1 LECPA
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

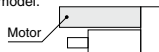
* Refer to the applicable stroke table.

6 Motor option*1

Nil	Without option
C	With motor cover
B	With lock*2

*1 When [With lock] is selected, [With motor cover] cannot be selected.

*2 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 16 with strokes 30 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 384 for the noise filter set. Refer to the LECA Operation Manual for installation.

[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

● Standard

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

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

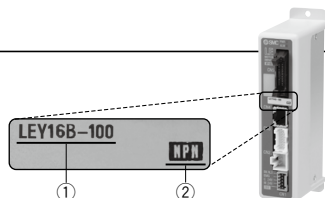
For auto switches, refer to pages 146 and 147.

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

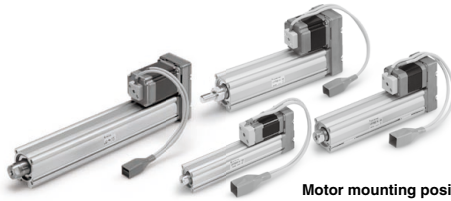
Confirm that the combination of the controller/driver and the actuator is correct.

<Check the following before use.>

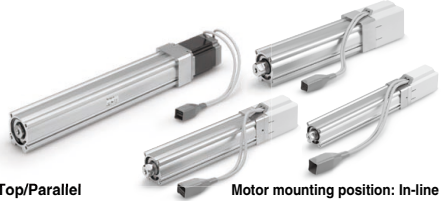
- ① Check the actuator label for model number. This matches the controller/driver.
- ② Check Parallel I/O configuration matches (NPN or PNP)



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



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 (Standard) ^{*2}	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange ^{*2}	●	●
G	Head flange ^{*2}	● ^{*4}	—
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 or less
- LEY32/40: 100 or less

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

- LEY16: 100 or less
- LEY25: 200 or less
- LEY32/40: 200 or less

^{*4} Head flange is not available for the LEY32/40.

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."

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 136.

11 Controller/Driver type^{*1}

Nil	Without controller/driver	
6N	LECP6/LECA6	NPN
6P	(Step data input type)	PNP
1N	LECP1 ^{*2}	NPN
1P	(Programmless type)	PNP
AN	LECPA ^{*2}	NPN
AP	(Pulse input type)	PNP

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

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

12 I/O cable length [m]^{*1}

Nil	Without cable
1	1.5
3	3 ^{*2}
5	5 ^{*2}

^{*1} When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 384 (For LECP6/LECA6), page 397 (For LECP1) or page 404 (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.

13 Controller/Driver mounting

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

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

Compatible Controllers/Driver

Type	Step data input type	Step data input type	Programmless type	Pulse input type
Series	LECP6	LECA6	LECP1	LECPA
Features	Value (Step data) input Standard controller		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 376	Page 376	Page 391	Page 398

Specifications

Step Motor (Servo/24 VDC)

Model			LEY16			LEY25			LEY32			LEY40			
Actuator specifications	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	(3000 [mm/s ²])	4	11	20	12	30	30	20	40	40	30	60	60
		Vertical	(2000 [mm/s ²])	6	17	30	18	50	50	30	60	60	—	—	—
			(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)}		15 to 500 8 to 250 4 to 125			18 to 500 9 to 250 5 to 125			24 to 500 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												
	Screw lead [mm]		10 5 2.5			12 6 3			16 8 4			16 8 4			
Impact/Vibration resistance [m/s ²] ^{Note 7)}		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)													
Electric specifications	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 8)}		23			40			50			50			
Lock unit specifications	Standby power consumption when operating [W] ^{Note 9)}		16			15			48			48			
	Max. instantaneous power consumption [W] ^{Note 10)}		43			48			104			106			
	Type ^{Note 11)}		Non-magnetizing lock												
	Holding force [N]		20 39 78			78 157 294			108 216 421			127 265 519			
	Power consumption [W] ^{Note 12)}		2.9			5			5			5			
Rated voltage [V]		24 VDC ±10%													

Note 1) 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. The actual work load and transfer speed change according to the condition of the external guide.

Vertical: Speed changes according to the work load. Check "Model Selection" on page 128.

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 129.

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) 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.

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 ^{Note 2)} ^{Horizontal (3000 [mm/m²])}	3	6	12		7	15	30	
	[kg] ^{Note 2)} ^{Vertical (3000 [mm/m²])}	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]	15 to 500	8 to 250	4 to 125		18 to 500	9 to 250	5 to 125	
	Max. acceleration/deceleration [mm/s ²]	3000							
	Pushing speed [mm/s] ^{Note 5)}	50 or less				35 or less			
	Positioning repeatability [mm]	±0.02							
	Screw lead [mm]	10	5	2.5		12	6	3	
	Impact/Vibration resistance [m/s ²] ^{Note 6)}	50/20							
Electric specifications	Actuation type	Ball screw + Belt (LEY□□)/Ball screw (LEY□□)							
	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 7)}	40				86			
Lock unit specifications	Standby power consumption when operating [W] ^{Note 8)}	4 (Horizontal)/6 (Vertical)				4 (Horizontal)/12 (Vertical)			
	Max. instantaneous power consumption [W] ^{Note 9)}	59				96			
	Type ^{Note 10)}	Non-magnetizing lock							
	Holding force [N]	20	39	78		78	157	294	
	Power consumption [W] ^{Note 11)}	2.9				5			
	Rated voltage [V]	24 VDC ±10%							

Note 1) 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. The actual work load and transfer speed change according to the condition of the external guide.

Vertical: Check "Model Selection" on page 128 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 128.

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

Note 6) 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 7) The power consumption (including the controller) is for when the actuator is operating.

Note 8) 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 9) 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 10) With lock only

Note 11) 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

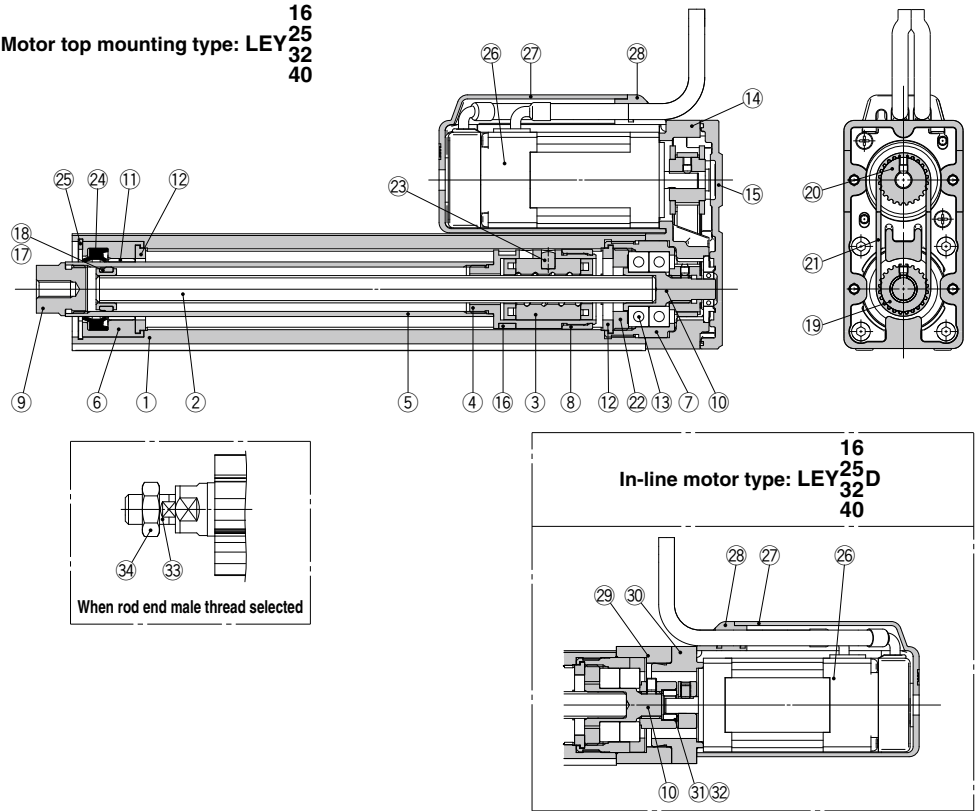
Series		LEY16D								LEY25D								LEY32D										
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.17	1.24	1.41	1.67	1.85	2.02	2.20	2.37	2.55	2.08	2.19	2.48	2.76	3.16	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

Additional Weight					[kg]
Size		16	25	32	40
Lock		0.12	0.26	0.53	0.53
Motor cover		0.02	0.03	0.04	0.05
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

Construction



Component Parts

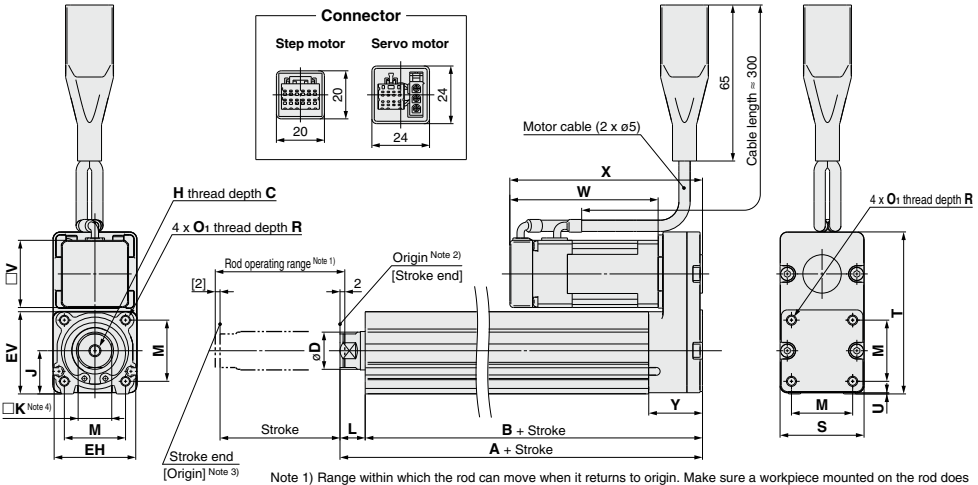
No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw (shaft)	Alloy steel	
3	Ball screw nut	Resin/Alloy steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Trivalent chromated
15	Return plate	Aluminum die-cast	Trivalent chromated
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	

No.	Description	Material	Note
21	Belt	—	
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	
24	Seal	NBR	
25	Retaining ring	Steel for spring	Phosphate coated
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 plated
34	Nut	Alloy steel	

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

Dimensions: Motor Top/Parallel

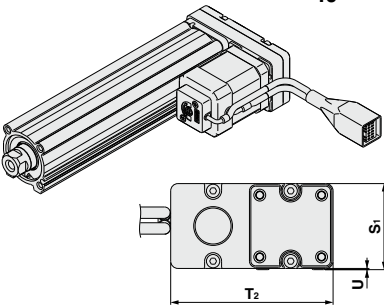


Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The direction of rod end width across flats (□K) differs depending on the products.

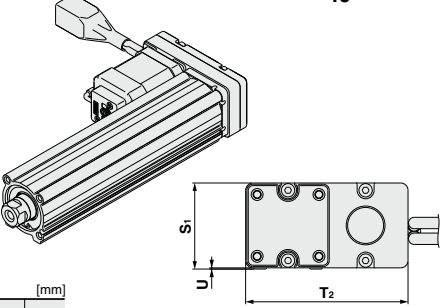
Note 4) The direction of tool end width across flats (L_W) differs depending on the products.

Size	Stroke range (mm)	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U	V	[mm]				
																			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																				

Motor left side parallel type: LEY16, LEY25, LEY32, LEY40



Motor right side parallel type: LEY16, LEY25, LEY32, LEY40

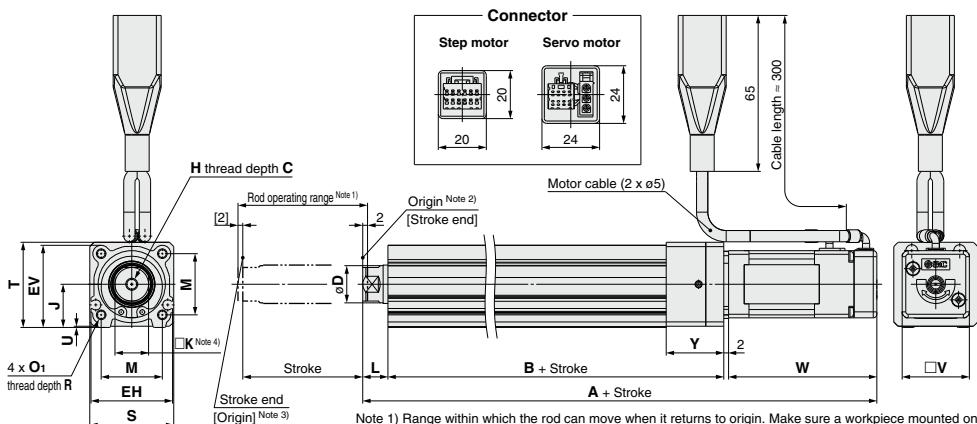


Size	S ₁	T ₂	U
16	35.5	67	0.5
25	47	91	1
32, 40	61	117	1

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.

- LEF
- LEJ
- LEL
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LECA6
- LECP6
- LEC-G
- LECP1
- LECPA
- LECS
- LAT3

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) The number in brackets indicates when the direction of return to origin has changed.

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

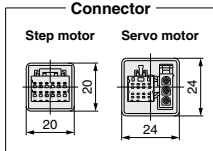
[mm]																		
Size	Stroke range (mm)	Step motor	Servo motor	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U
		A																
16	10 to 100	166.3	167	92	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	35.5	0.5
	101 to 300	186.3	187	112														
25	15 to 100	195.4	191.6	115.5	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5
	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
	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
	101 to 500	268.9	—	158														

Size	Stroke range (mm)	V	Step motor	Servo motor	Y
			W		
16	10 to 100	28	61.8	62.5	24
	101 to 300				
25	15 to 100	42	63.4	59.6	26
	101 to 400				
32	20 to 100	56.4	68.4	—	32
	101 to 500				
40	20 to 100	56.4	90.4	—	32
	101 to 500				

Dimensions

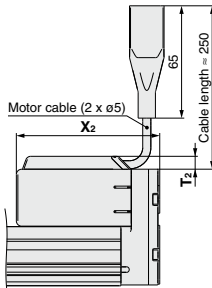
Motor top/parallel type 16

With motor cover: LEY ²⁵□□³²B-□⁴⁰C



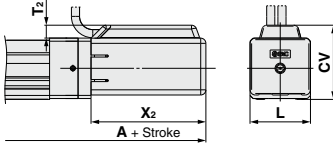
Size	T ₂	X ₂
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material: Synthetic resin



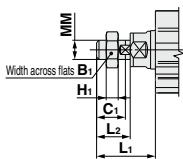
In-line motor type 16

With motor cover: LEY ²⁵□□³²D□B-□⁴⁰C



Size	Stroke range	A	T ₂	X ₂	L	CV
16	100st or less	169	7.5	66.5	35	43
	101st or more, 200st or less	189				
	100st or less	198.5	7.5	68.5	46	54.5
25	101st or more, 400st or less	223.5				
	100st or less	220				
	101st or more, 500st or less	250	7.5	73.5	60	68.5
32	100st or less	242				
	101st or more, 500st or less	272	7.5	95.5	60	68.5

End male thread: LEY ²⁵□□³²B-□□⁴⁰C

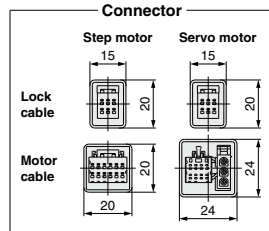


Size	B ₁	C ₁	H ₁	L ₁	L ₂	MM
16	13	12	5	24.5	14	M8 x 1.25
25	22	20.5	8	38	23.5	M14 x 1.5
32, 40	22	20.5	8	42.0	23.5	M14 x 1.5

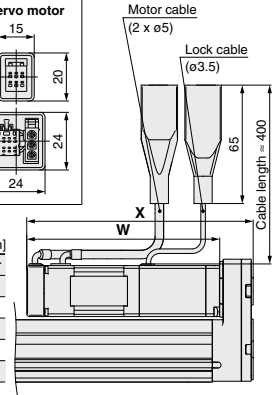
* Refer to page 144 for details about the rod end nut and mounting bracket.
Note) Refer to the "Handling" precautions on pages 170 and 171 when mounting end brackets such as knuckle joint or workpieces.

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

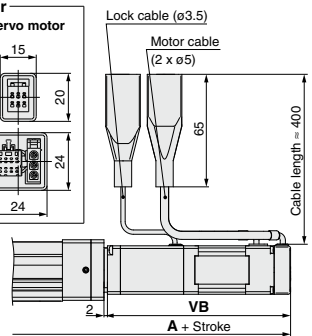
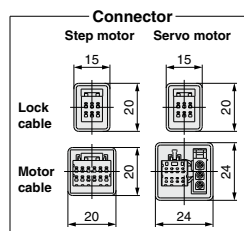
With lock: LEY ²⁵□□³²B-□⁴⁰C



Size	Step motor W	Step motor X	Servo motor W	Servo motor X
16	103.3	121.8	104.0	122.5
25	103.9	125.9	100.1	122.1
32	111.4	138.4	—	—
40	133.4	160.4	—	—

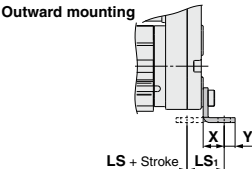
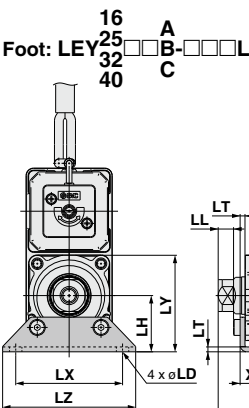
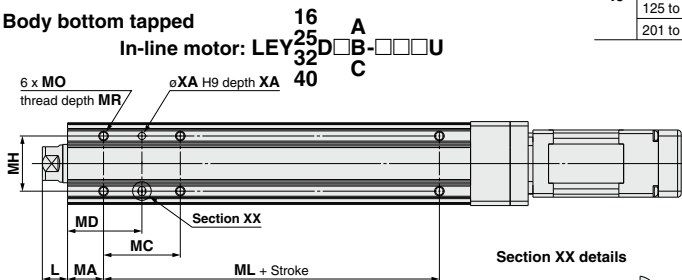
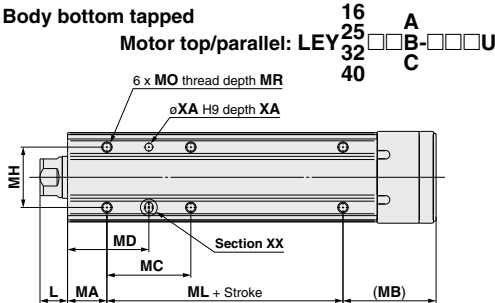


With lock: LEY ²⁵□□³²D□B-□⁴⁰C



Size	Stroke range	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		
	100st or less	235.9	232.1		
25	101st or more, 400st or less	260.9	257.1	103.9	100.1
	100st or less	259.9	—		
	101st or more, 500st or less	289.9	—		
32	100st or less	281.9	—	111.4	—
	101st or more, 500st or less	311.9	—		

Dimensions



Body Bottom Tapped [mm]

Size	Stroke range (mm)	L	MA	MB	MC	MD	MH	ML
16	10 to 39	10.5	15	35.5	17	23.5	23	40
	40 to 100				32	31		60
	101 to 300				62	46		
25	15 to 39	14.5	20	46	24	32	29	50
	40 to 100				42	41		75
	101 to 124				59	49.5		
	125 to 200				76	58	30	
	201 to 400				22	36		
32 40	20 to 39	18.5	25	55	36	43	30	50
	40 to 100				53	51.5		80
	101 to 124				70	60		
	125 to 200							
	201 to 500							

Size	Stroke range (mm)	MO	MR	XA	XB
16	10 to 39	M4 x 0.7	5.5	3	4
	40 to 100				
	101 to 300				
25	15 to 39	M5 x 0.8	6.5	4	5
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 400				
32 40	20 to 39	M6 x 1	8.5	5	6
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 500				

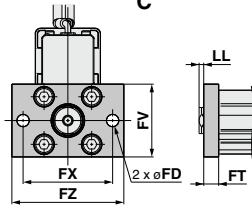
Foot [mm]

Size	Stroke range (mm)	A	LS	LS1	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				
	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5
25	101 to 400	161.6	123.8				
	20 to 100	155.7	114	19.2	11.3	6.6	4
40	101 to 500	185.7	144				

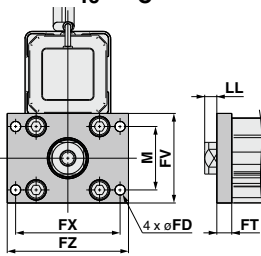
Size	Stroke range (mm)	LH	LT	LX	LY	LZ	X	Y
16	10 to 100	24	2.3	48	40.3	62	9.2	5.8
	101 to 300							
	15 to 100	30	2.6	57	51.5	71	11.2	5.8
25	101 to 400							
	20 to 100	36	3.2	76	61.5	90	11.2	7
40	101 to 500							

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.

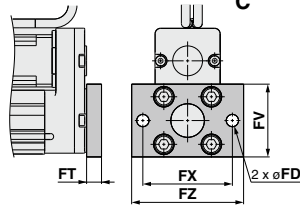
Rod flange: LEY16□□B-□□□F



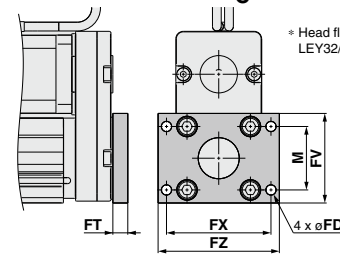
Rod flange: LEY32□□B-□□□F
40



Head flange: LEY16□□B-□□□G



Head flange: LEY25□□B-□□□G



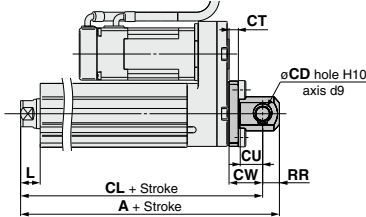
Included parts
• Flange
• Body mounting bolt

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 plated)

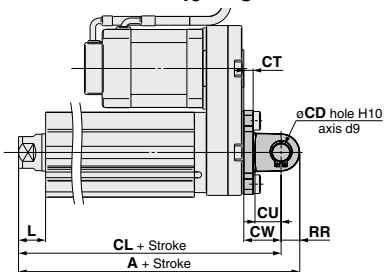
Double clevis: LEY16□□B-□□□D



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

* Refer to page 144 for details about the rod end nut and mounting bracket.

Double clevis: LEY32□□B-□□□D
40



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	—	—	—
32	20 to 100	180.5	170.5	—	10	6
40	101 to 200	210.5	200.5	—	—	—

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	—	—	—	—	—	—
32	20 to 100	14	22	18	36	18.5	10
40	101 to 200	—	—	—	—	—	—

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.

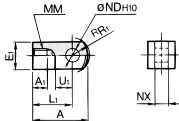
Accessory Mounting Brackets

Accessory Brackets/Support Brackets

Single Knuckle Joint

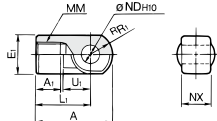
* If a knuckle joint is used, select the body option [end male thread].

I-G02



Material: Carbon steel
Surface treatment: Nickel plated

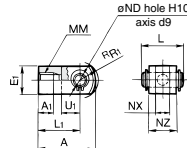
I-G04



Material: Cast iron
Surface treatment: Nickel plated

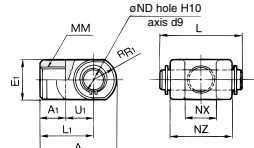
Double Knuckle Joint

Y-G02



Material: Carbon steel
Surface treatment: Nickel plated

Y-G04



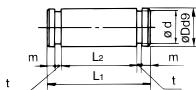
Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable size	A	A ₁	E ₁	L ₁	MM	R ₁	U ₁	ND _{H10}	NX
I-G02	16	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₋₀	8 ^{+0.3} _{-0.2}
I-G04	25, 32, 40	42	14	ø22	30	M14 x 1.5	12	14	10 ^{+0.058} ₋₀	18 ^{+0.3} _{-0.2}

* 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	ø22	30	M14 x 1.5	12

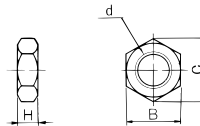
Knuckle Pin (Common with double clevis pin)



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

Rod End Nut



Material: Carbon steel (Nickel plated)
[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

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

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

* Parts belonging to each bracket are as follows.

Foot: Body mounting bolt

Flange: Body mounting bolt

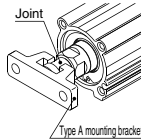
Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

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**

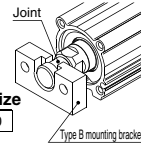
Applicable size
025 25, 32, 40



Mounting bracket **YA-03**

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

Applicable size
03 25, 32, 40



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)

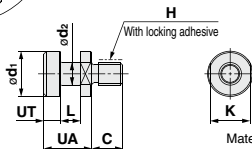
- Joint LEY-U025
- Type A mounting bracket YA-03

Order no.

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

Floating Joints (Refer to 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)

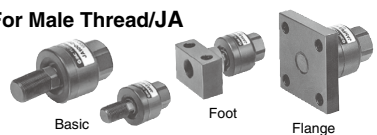
- Dust cover

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)



RoHS

Refer to SMC website for 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 conventional model (SMC comparison).
- Using flexible cable as standard.



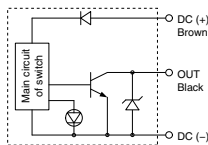
Caution

Precautions

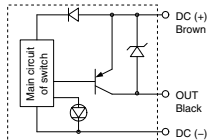
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

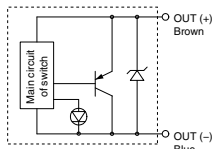
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



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					

● Lead wires — Oilproof flexible heavy-duty vinyl cord: $\phi 2.7 \times 3.2$ ellipse, 0.15 mm², 2 cores (D-M9B(V)), 3 cores (D-M9N(V)/D-M9P(V))

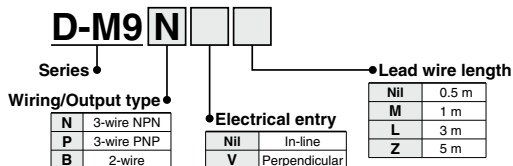
Note) Refer to Best Pneumatics No. 2 for solid state auto switch common specifications.

Weight

[g]

Auto switch model	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)	0.5	8	7
	1	14	13
	3	41	38
	5	68	63

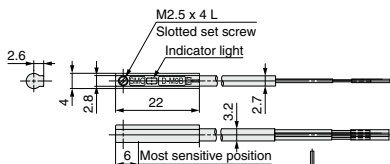
How to Order



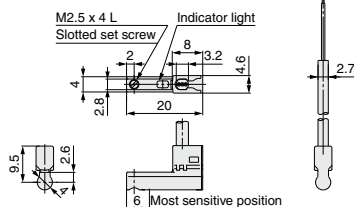
Dimensions

[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 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 conventional model (SMC comparison).
- Using flexible cable as standard.
- The optimum operating range can be determined by the color of the light. (Red → Green ← Red)



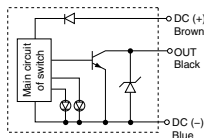
Caution

Precautions

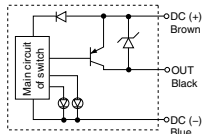
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

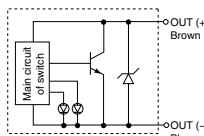
D-M9NW/M9NWW



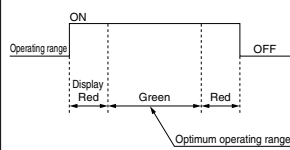
D-M9PW/M9PWW



D-M9BW/M9BWW



Indicator light/Indication method



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWW	D-M9PW	D-M9PWW	D-M9BW	D-M9BWW
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					

● Lead wires — Oilproof flexible heavy-duty vinyl cord: ø2.7 x 3.2 ellipse, 0.15 mm², 2 cores (D-M9BW(V)), 3 cores (D-M9NW(V), D-M9PW(V))

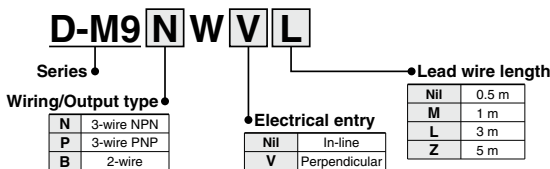
Note) Refer to Best Pneumatics No. 2 for solid state auto switch common specifications.

Weight

[g]

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

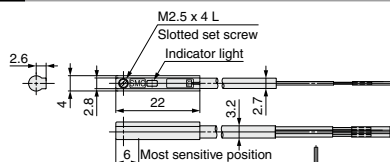
How to Order



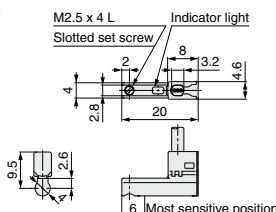
Dimensions

[mm]

D-M9□W



D-M9□WV



Electric Actuator/Rod Type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)



Series LEY-X5

Size: 25, 32 Dust/Drip proof (IP65) specification



How to Order

LEY 25 D B - 50 - R 1 6N 1 - X5

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

Dust/Drip proof specification

1 Size

25	30
32	

2 Motor mounting position

NII	Top mounting
D	In-line

3 Motor type

Symbol	Type	Size		Compatible controllers/driver
		25	32	
NII	Step motor (Servo/24 VDC)	●	●	LECP6 LECP1 LECPA
A	Servo motor (24 VDC)	●	—	LECA6

4 Lead [mm]

Symbol	LEY25	LEY32
A	12	16
B	6	8
C	3	4

5 Stroke [mm]

30	30
to	to
500	500

6 Motor option

NII	Without option
B	With lock

* Refer to the applicable stroke table.

7 Rod end thread

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

9 Actuator cable type

R	Robotic cable (Flexible cable)
---	--------------------------------

* Cable is shipped assembled.

10 Actuator cable length [m]

1	1.5	A	10
3	3	B	15
5	5	C	20
8	8		

11 Controller/Driver type

NII	Without controller/driver	
6N	LECP6/LECA6	NPN
6P	(Step data input type)	PNP
1N*	LECP1	NPN
1P*	(Programmable type)	PNP
AN*	LECPA	NPN
AP*	(Pulse input type)	PNP

* Only available for the motor type "Step motor".

13 Controller/Driver mounting

NII	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

8 Mounting*1

Symbol	Type	Motor mounting position	
		Top mounting	In-line
NII	Ends tapped (Standard)*2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange*2	●	●
G	Head flange*2	●*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 or less • LEY32: 100 or less

*3 Head flange is not available for the LEY32.

12 I/O cable length [m]*1

NII	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 384 (For LECP6/LECA6), page 397 (For LECP1) or page 404 (For LECPA) if I/O cable is required.

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

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 384 for the noise filter set. Refer to the LECA Operation Manual for installation.

[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.

* For auto switches, refer to page 153.

* "X5" is not added to an actuator model with a controller/driver part number suffix.

Example) "LEY25DB-100" for the LEY25DB-100BMU-P16NID-X5

Applicable stroke table

● Standard

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

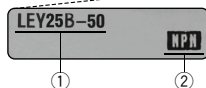
* Consult with SMC for non-standard strokes as they are produced as special orders.

The actuator and controller/driver are sold as a package. (Controller/Driver → Page 367)

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>

Specifications

Step Motor (Servo/24 VDC)

Model			LEY25				LEY32			
Stroke [mm] ^{Note 1)}			30, 50, 100, 150, 200 250, 300, 350, 400				30, 50, 100, 150, 200 250, 300, 350, 400, 450, 500			
Work load [kg] ^{Note 2)}	Horizontal	(3000 [mm/s ²])	12	30	30	20	40	40		
		(2000 [mm/s ²])	18	50	50	30	60	60		
	Vertical	(3000 [mm/s ²])	7	15	29	10	21	42		
Pushing force [N] ^{Note 3)} ^{Note 4)} ^{Note 5)}			63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707		
Speed [mm/s] ^{Note 5)}			18 to 400	9 to 200	5 to 100	24 to 400	12 to 200	6 to 100		
Max. acceleration/deceleration [mm/s ²]			3,000							
Pushing speed [mm/s] ^{Note 6)}			35 or less				30 or less			
Positioning repeatability [mm]			±0.02							
Screw lead [mm]			12	6	3	16	8	4		
Impact/Vibration resistance [m/s ²] ^{Note 7)}			50/20							
Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)							
Guide type			Sliding bushing (Piston rod)							
Enclosure			IP65							
Operating temperature range [°C]			5 to 40							
Operating humidity range [%RH]			90 or less (No condensation)							
Motor size			□42			□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 8)}			40			50				
Standby power consumption when operating [W] ^{Note 9)}			15			48				
Max. instantaneous power consumption [W] ^{Note 10)}			48			104				
Type ^{Note 11)}			Non-magnetizing lock							
Holding force [N]			78	157	294	108	216	421		
Power consumption [W] ^{Note 12)}			5			5				
Rated voltage [V]			24 VDC ±10%							

Note 1) 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. The actual work load and transfer speed change according to the condition of the external guide.

Vertical: Speed changes according to the work load. Check "Model Selection" on page 132.

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 LEY25□ is 35% to 65% and for LEY32□ is 35% to 85%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 133.

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) 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.

Series LEY-X5

Dust/Drip proof (IP65) specification

Specifications

Servo Motor (24 VDC)

	Model		LEY25A		
	Stroke [mm]	Note 1)	30, 50, 100, 150, 200 250, 300, 350, 400		
Actuator specifications	Work load [kg]	Horizontal (3000 [mm/s ²])	7	15	30
	Vertical (3000 [mm/s ²])	2	5	11	
Pushing force [N]	Note 3) Note 4)		18 to 35	37 to 72	66 to 130
	Speed [mm/s]		18 to 400	9 to 200	5 to 100
Max. acceleration/deceleration [mm/s ²]			3,000		
	Pushing speed [mm/s]		35 or less		
Positioning repeatability [mm]			±0.02		
	Screw lead [mm]		12	6	3
Impact/Vibration resistance [m/s ²]	Note 6)		50/20		
	Actuation type		Ball screw + Belt (LEY□□) Ball screw (LEY□ID)		
Guide type			Sliding bushing (Piston rod)		
	Enclosure		IP65		
Operating temperature range [°C]			5 to 40		
	Operating humidity range [%RH]		90 or less (No condensation)		
Motor size			□42		
	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 7)		86		
	Standby power consumption when operating [W]		4 (Horizontal)/12 (Vertical)		
Max. instantaneous power consumption [W]	Note 9)		96		
	Type		Non-magnetizing lock		
Holding force [N]			78	157	294
	Power consumption [W]		5		
Rated voltage [V]			24 VDC ±10%		

- Note 1) 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. The actual work load and transfer speed change according to the condition of the external guide. Vertical: Speed changes according to the work load. Check "Model Selection" on page 132. 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 LEY25A□□ is 50% to 95%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 133.
- Note 5) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
- Note 6) 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 7) The power consumption (including the controller) is for when the actuator is operating.
- Note 8) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation with the maximum work load. Except during the pushing operation.
- Note 9) 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 10) With lock only
- Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top Mounting Type

Model		LEY25										LEY32									
Stroke [mm]		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	1.45	1.52	1.69	1.95	2.13	2.30	2.48	2.65	2.83	2.48	2.59	2.88	3.35	3.64	3.91	4.21	4.49	4.76	5.04	5.32
	Servo motor	1.41	1.48	1.65	1.91	2.09	2.26	2.44	2.61	2.79	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

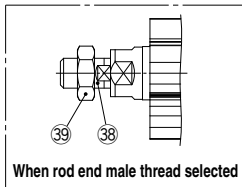
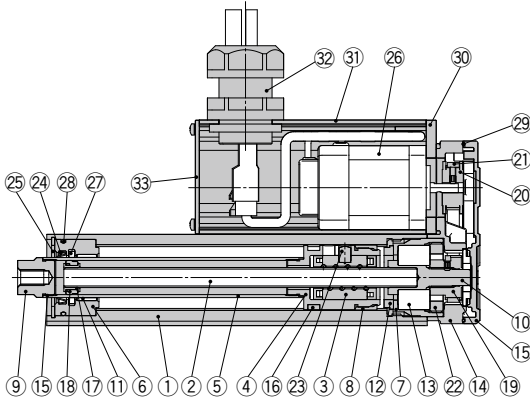
Model		LEY25D									LEY32D										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	1.46	1.53	1.70	1.96	2.14	2.31	2.49	2.66	2.84	2.49	2.60	2.89	3.36	3.65	3.92	4.22	4.50	4.77	5.05	5.33
	Servo motor	1.42	1.49	1.66	1.92	2.10	2.27	2.45	2.62	2.80	—	—	—	—	—	—	—	—	—	—	—

Additional Weight

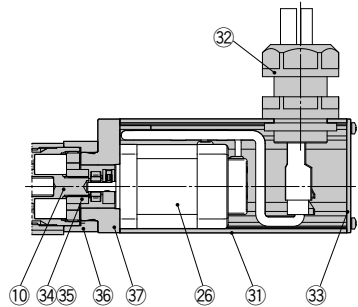
Size		25	32
Lock		0.33	0.63
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

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 plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Trivalent chromated
15	Return plate	Aluminum die-cast	Trivalent chromated
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	

No.	Description	Material	Note
21	Belt	—	
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	
24	Scraper	Nylon	
25	Retaining ring	Steel for spring	Nickel plated
26	Motor	—	
27	Lub-retainer	Felt	
28	O-ring	NBR	
29	Gasket	NBR	
30	Motor adapter	Aluminum alloy	Anodized
31	Motor cover	Aluminum alloy	Anodized
32	Seal connector	—	
33	End cover	Aluminum alloy	Anodized
34	Hub	Aluminum alloy	
35	Spider	NBR	
36	Motor block	Aluminum alloy	Anodized
37	Motor adapter	Aluminum alloy	LEY25 only
38	Socket (Male thread)	Free cutting carbon steel	Nickel plated
39	Nut	Alloy steel	

Replacement Parts (Top mounting only)/Belt

No.	Size	Order no.
21	25	LE-D-2-2
	32	LE-D-2-3

Replacement Parts/Grease Pack

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

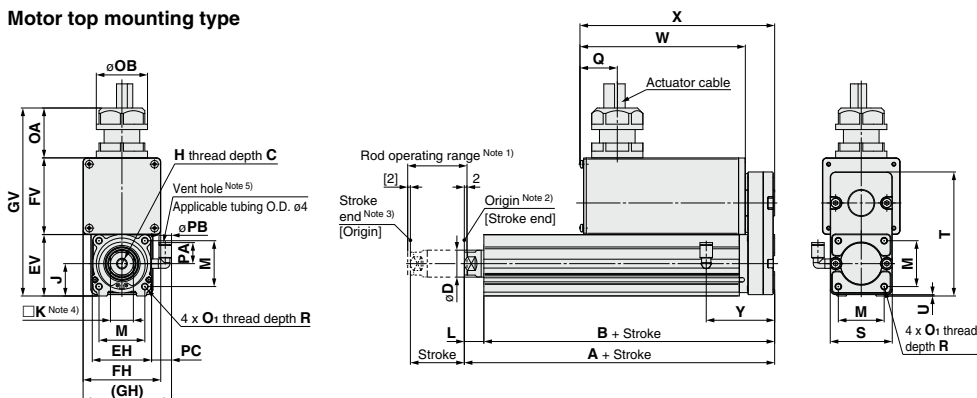
* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes sooner.

Series LEY-X5

Dust/Drip proof (IP65) specification

Dimensions

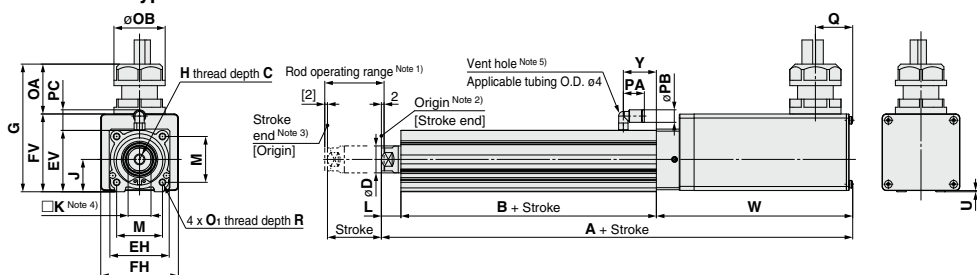
Motor top mounting type



Size	Stroke range (mm)	A	B	C	D	EH	EV	FH	FV	GH	GV	H	J	K	L	M	O ₁
25	15 to 100	130.5	116	13	20	44	45.5	57.6	56.8	65.6	139.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8
	101 to 400	155.5	141														
	20 to 100	148.5	130														
32	101 to 500	178.5	160	13	25	51	56.5	69.6	78.6	75.6	173.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0

Size	Stroke range (mm)	R	OA	OB	PA	PB	Q	S	T	U	PC	W		X		Y
												Without lock	With lock	Without lock	With lock	
25	15 to 100	8	37	38	15.6	9.3	28	46	92	1	14.8	123	173	145	195	51
	101 to 400															
	20 to 100															
32	101 to 500	10	37	38	15.6	9.3	28	60	118	1	15.3	123	173	150	200	61

In-line motor type



Size	Stroke range (mm)	A		B	C	D	EH	EV	FH	FV	G	H	J	K	L
		Without lock	With lock												
25	15 to 100	250	300	89.5	13	20	44	45.5	57.6	57.7	94.7	M8 x 1.25	24	17	14.5
	101 to 400	275	325	124.5											
	20 to 100	265.5	315.5	96											
32	101 to 500	295.5	345.5	126	13	25	51	56.5	69.6	79.6	116.6	M8 x 1.25	31	22	18.5

Size	Stroke range (mm)	M	O ₁	R	OA	OB	PA	PB	Q	U	PC	W		Y
												Without lock	With lock	
25	15 to 100	34	M5 x 0.8	8	37	38	15.6	9.3	28	0.9	15.3	146	196	24.5
	101 to 400													
	20 to 100													
32	101 to 500	40	M6 x 1.0	10	37	38	15.6	9.3	28	1	15.3	151	201	26

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) The number in brackets indicates 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.

Note 5) The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.

Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 141.
For the mounting dimensions, refer to page 144.

Water Resistant 2-Color Indication Solid State Auto Switch: Direct Mounting Style

D-M9NA(V)/D-M9PA(V)/D-M9BA(V)

Grommet

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



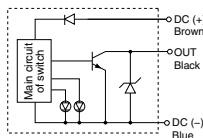
⚠ Caution

Precautions

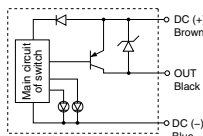
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

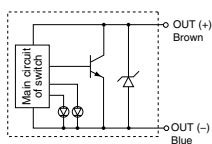
D-M9NA/M9NAV



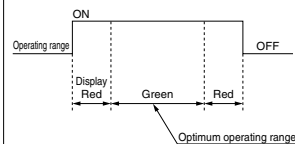
D-M9PA/M9PAV



D-M9BA/M9BAV



Indicator light/Indication method



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□A, D-M9□AV (With indicator light)						
Auto switch model	D-M9NA	D-M9NAV	D-M9PA	D-M9PAV	D-M9BA	D-M9BAV
Electrical entry	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					

- Lead wires — Oilproof flexible heavy-duty vinyl cord: $\phi 2.7 \times 3.2$ ellipse, 0.15 mm², 2 cores (D-M9BA(V)), 3 cores (D-M9NA(V), D-M9PA(V))

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

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

Weight

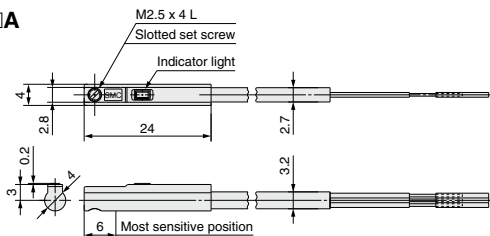
[g]

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

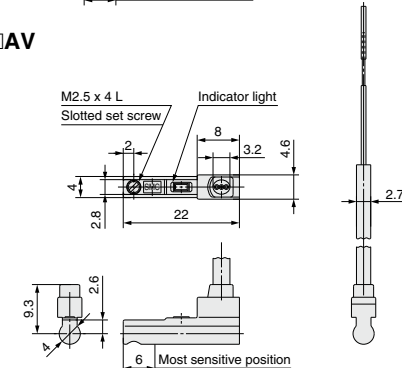
Dimensions

[mm]

D-M9□A



D-M9□AV

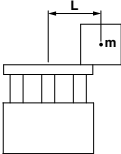
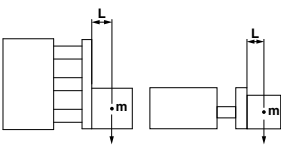


Model Selection



Moment Load Graph

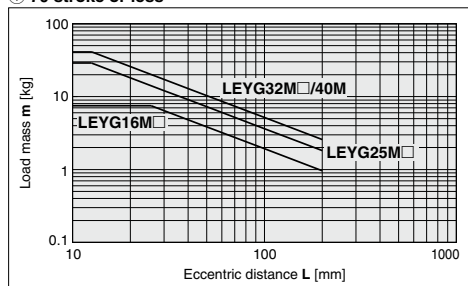
Selection conditions

Mounting position	Vertical		Horizontal	
				
Max. speed [mm/s]	"Speed-Vertical Work Load Graph"		200 or less	Over 200
Graph (Sliding bearing type)	①, ②		⑤, ⑥*	—
Graph (Ball bushing bearing type)	③, ④		⑦, ⑧	⑨, ⑩

* For the sliding bearing type, the speed is restricted with a horizontal/moment load.

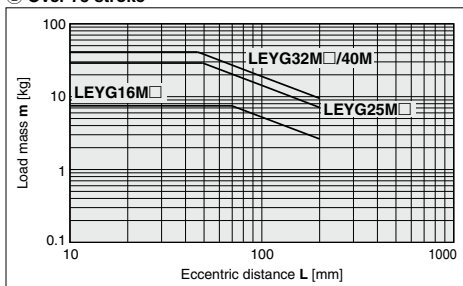
Vertical Mounting, Sliding Bearing

① 70 stroke or less



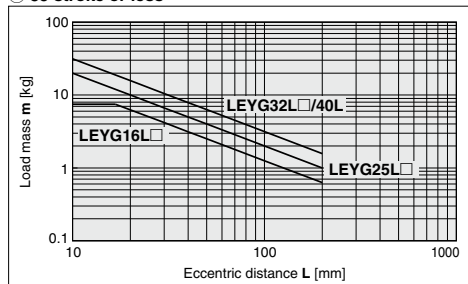
* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed-Vertical Work Load Graph" on page 156.

② Over 75 stroke



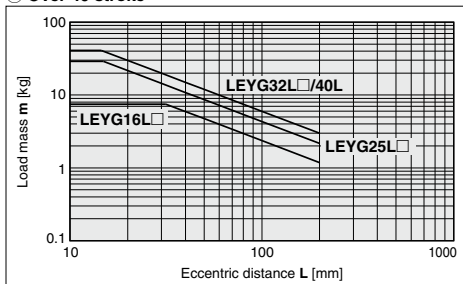
Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed-Vertical Work Load Graph" on page 156.

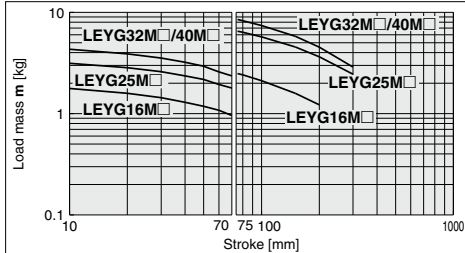
④ Over 40 stroke



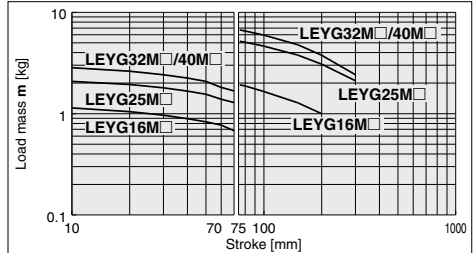
Moment Load Graph

Horizontal Mounting, Sliding Bearing

⑤ L = 50 mm



⑥ L = 100 mm



* Set the speed to less than or equal to the values shown below.

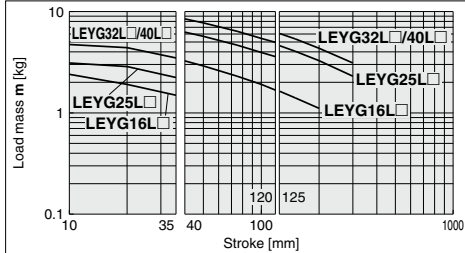
Motor type	LEYG□M□A	LEYG□M□B	LEYG□M□C
Step motor (Servo/24 VDC)	200 mm/s	125 mm/s	75 mm/s
Servo motor (24 VDC)	200 mm/s	200 mm/s	125 mm/s

* For the specifications below, operate the system at the "load mass" shown in the graph x 80%.

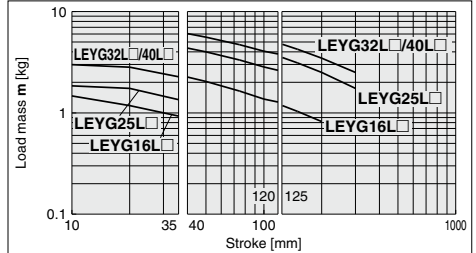
• LEYG25MAA/Servo motor (24 VDC), Lead 12

Horizontal Mounting, Ball Bushing Bearing

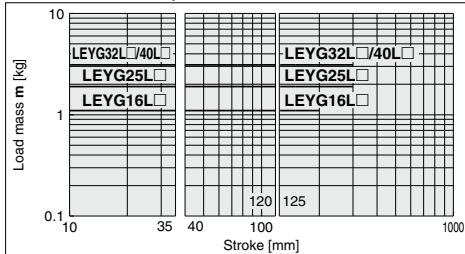
⑦ L = 50 mm Max. speed = 200 mm/s or less



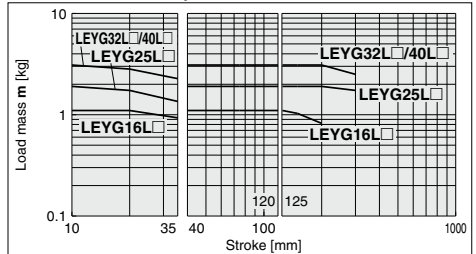
⑧ L = 100 mm Max. speed = 200 mm/s or less



⑨ L = 50 mm Max. speed = Over 200 mm/s

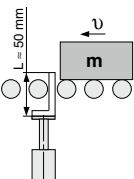


⑩ L = 100 mm Max. speed = Over 200 mm/s



Operating Range when Used as Stopper

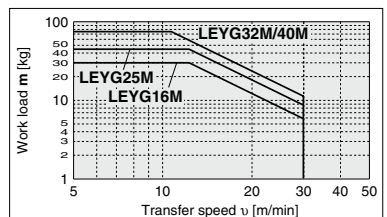
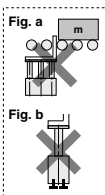
LEYG□M (Sliding bearing)



⚠ Caution

Handling Precautions

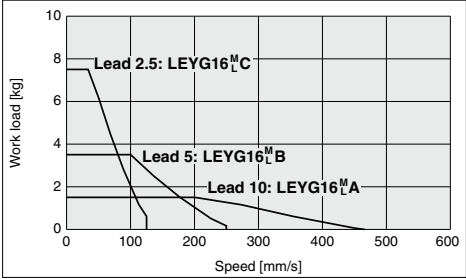
- Note 1) When used as a stopper, select a model with 30 stroke or less.
- Note 2) LEYG□L (ball bushing bearing) cannot be used as a stopper.
- Note 3) Workpiece collision in series with guide rod cannot be permitted (Fig. a).
- Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (Fig. b).



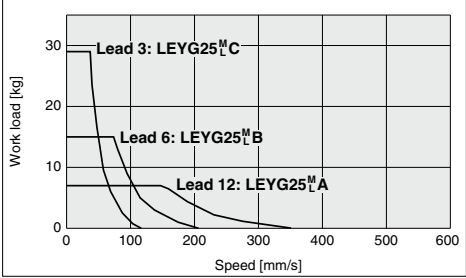
Speed-Vertical Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

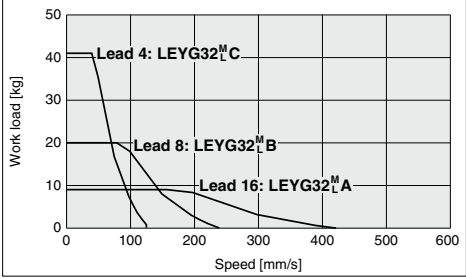
LEYG16^M_L□



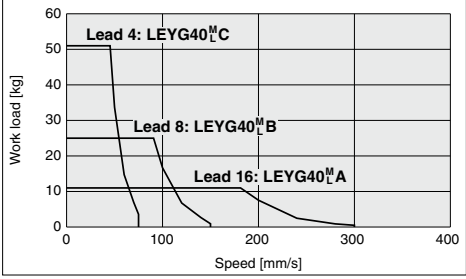
LEYG25^M_L□



LEYG32^M_L□

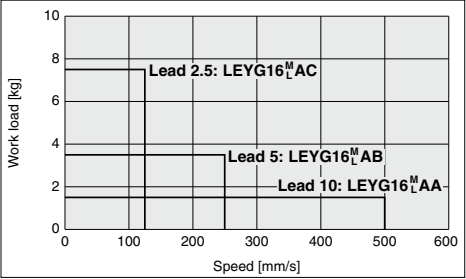


LEYG40^M_L□

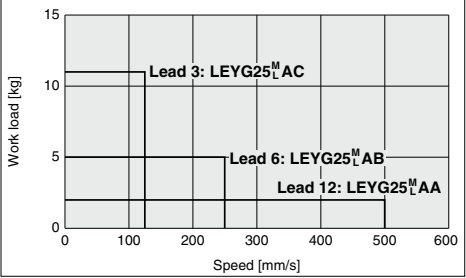


Servo Motor (24 VDC)

LEYG16^M_LA□



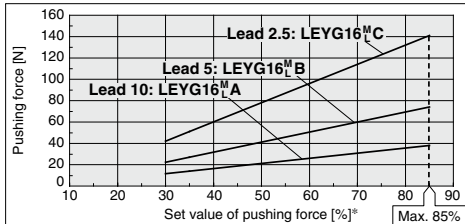
LEYG25^M_LA□



Force Conversion Graph (Guide)

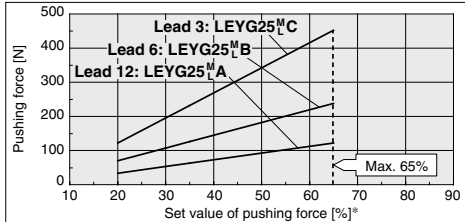
Step Motor (Servo/24 VDC)

LEYG16^M□



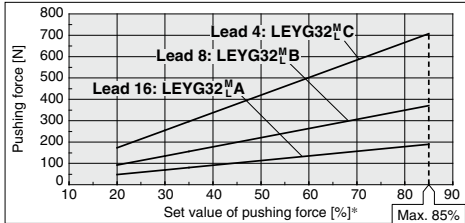
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
	40 or less	100	—
40°C	50	70	12
	70	20	1.3
	85	15	0.8

LEYG25^M□



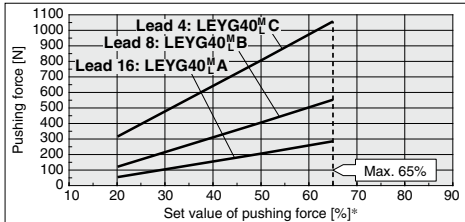
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	65 or less	100	—
40°C or less	65 or less	100	—

LEYG32^M□



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

LEYG40^M□

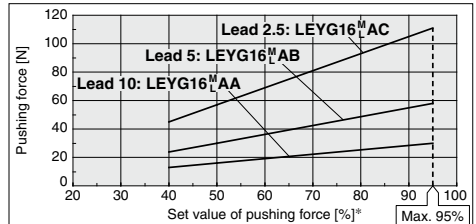


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	65 or less	100	—

* Set values for the controller.

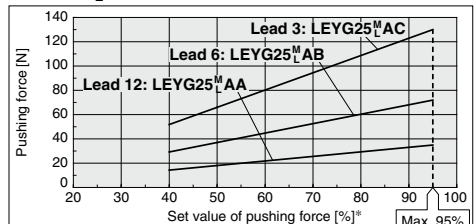
Servo Motor (24 VDC)

LEYG16^M□



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

LEYG25^M□



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

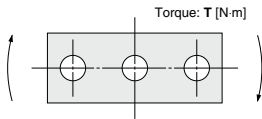
<Pushing Force and Trigger Level Range> Without Load

Model	Pushing speed [mm/s]	Pushing force (Setting input value)	Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEYG16 ^M □	1 to 4	30% to 85%	LEYG16 ^M □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%
LEYG25 ^M □	1 to 4	20% to 65%	LEYG25 ^M □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%
LEYG32 ^M □	1 to 4	20% to 85%	LEYG40 ^M □	1 to 4	20% to 65%
	5 to 20	35% to 85%		5 to 20	35% to 65%
	21 to 30	60% to 85%		21 to 30	50% to 65%

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

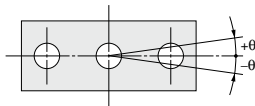
Model	LEYG16 ^M 			LEYG25 ^M 			LEYG32 ^M 			LEYG40 ^M 			LEYG16 ^M  A			LEYG25 ^M  A		
Lead	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Work load [kg]	0.5	1	2.5	1.5	4	9	2.5	7	16	5	12	26	0.5	1	2.5	0.5	1.5	4
Pushing force	85%			65%			85%			65%			95%			95%		

Allowable Rotational Torque of Plate



Model	Stroke [mm]				
	30	50	100	200	300
LEYG16M	0.70	0.57	1.05	0.56	—
LEYG16L	0.82	1.48	0.97	0.57	—
LEYG25M	1.56	1.29	3.50	2.18	1.36
LEYG25L	1.52	3.57	2.47	2.05	1.44
LEYG32M	2.55	2.09	5.39	3.26	1.88
LEYG32L	2.80	5.76	4.05	3.23	2.32
LEYG40M	2.55	2.09	5.39	3.26	1.88
LEYG40L	2.80	5.76	4.05	3.23	2.32

Non-rotating Accuracy of Plate



Size	Non-rotating accuracy θ	
	LEYG□M	LEYG□L
16	0.06°	0.07°
25	0.05°	0.06°
32		
40		

LAT3	LECS□	LECPA	LECP1	LEC-G	LECA6 LECP6	LEH	LER	LEPY LEPS	LES LESH	LEY LEYG	LEL	LEJ	LEF
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Electric Actuator/Guide Rod Type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Series LEYG

LEYG16, 25, 32, 40



RoHS

How to Order

LEYG **16** **M** **□** **□** **B** - **50** **□** **□** - **S** **1** **6N** **1** **□**

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

1 Size

16
25
32
40

2 Bearing type

M	Sliding bearing
L	Ball bushing bearing

* When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting). The speed is also restricted with a horizontal/moment load. Refer to "Model Selection" on page 154.

4 Motor type

Symbol	Type	Size			Compatible controllers/driver
		LEYG16	LEYG25	LEYG32/40	
Nil	Step motor (Servo/24 VDC)	●	●	●	LECP6 LECP1 LECPA
A	Servo motor (24 VDC)	●	●	—	LECA6

3 Motor mounting position

Nil	Top mounting
D	In-line

5 Lead [mm]

Symbol	LEYG16	LEYG25	LEYG32/40
A	10	12	16
B	5	6	8
C	2.5	3	4

6 Stroke [mm]

30	30
to	to
300	300

* Refer to the applicable stroke table.

7 Motor option*

Nil	Without option
C	With motor cover
B	With lock

* When [With lock] is selected, [With motor cover] cannot be selected.

8 Guide option

Nil	Without option
F	With grease retaining function

* Only available for size 25 and 32 sliding bearings. (Refer to "Construction" on page 164.)

* Applicable stroke table

● Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	Manufacturable stroke range [mm]
LEYG16	●	●	●	●	●	—	—	10 to 200
LEYG25	●	●	●	●	●	●	●	15 to 300
LEYG32/40	●	●	●	●	●	●	●	20 to 300

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

Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEYG 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 384 for the noise filter set. Refer to the LECA Operation Manual for installation.

[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.

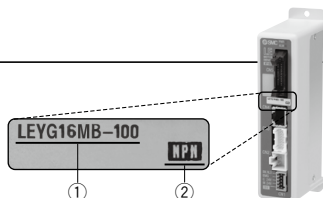
For auto switches, refer to pages 146 and 147.

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

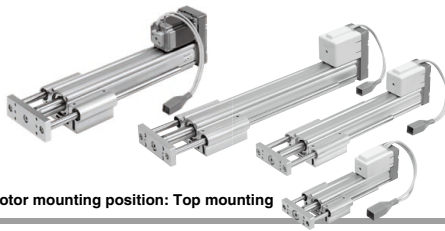
Confirm that the combination of the controller/driver and the actuator is correct.

<Check the following before use.>

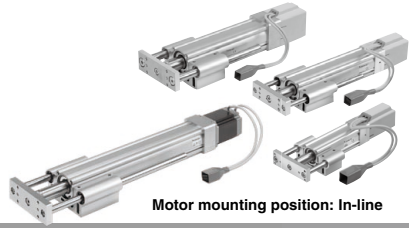
- Check the actuator label for model number. This matches the controller/driver.
- Check Parallel I/O configuration matches (NPN or PNP).



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



Motor mounting position: Top mounting



Motor mounting position: In-line

9 Actuator cable type*1

NII	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".

10 Actuator cable length [m]

NII	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 162.

11 Controller/Driver type*1

NII	Without controller/driver	
6N	LECP6/LECA6	NPN
6P	(Step data input type)	PNP
1N	LECP1*2	NPN
1P	(Programless type)	PNP
AN	LECPA*2	NPN
AP	(Pulse input type)	PNP

*1 For details about controllers/driver and compatible motors, refer to the compatible controllers/driver below.

*2 Only available for the motor type "Step motor".

12 I/O cable length [m]*1

NII	Without cable
1	1.5
3	3*2
5	5*2

*1 If "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 384 (For LECP6/LECA6), page 397 (For LECP1) or page 404 (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.

13 Controller/Driver mounting

NII	Screw mounting
D	DIN rail mounting*1

*1 DIN rail is not included. Order it separately.

Use of auto switches for the guide rod type LEYG series

- Insert the auto switch from the front side with rod (plate) sticking out.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Consult with SMC when using auto switch on the rod stick out side.

Compatible Controllers/Driver

Type	Step data input type	Step data input type	Programless type	Pulse input type
				
Series	LECP6	LECA6	LECP1	LECPA
Features	Value (Step data) input Standard controller		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 376	Page 376	Page 391	Page 398

Specifications

Step Motor (Servo/24 VDC)

Model			LEYG16 ^M _L			LEYG25 ^M _L			LEYG32 ^M _L			LEYG40 ^M _L			
Actuator specifications	Stroke [mm] ^{Note 1)}		30, 50, 100, 150, 200			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			
	Work load [kg] ^{Note 2)}	Horizontal	Acceleration/Deceleration at 3000 [mm/s ²]	4	11	20	12	30	30	20	40	40	30	60	60
			Acceleration/Deceleration at 2000 [mm/s ²]	6	17	30	18	50	50	30	60	60	—	—	—
		Vertical	Acceleration/Deceleration at 3000 [mm/s ²]	1.5	3.5	7.5	7	15	29	9	20	41	11	25	51
	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)}		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	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												
	Screw lead [mm]		10	5	2.5	12	6	3	16	8	4	16	8	4	
Electric specifications	Impact/Vibration resistance [m/s ²] ^{Note 7)}		50/20												
	Actuation type		Ball screw + Belt (LEYG□□□), Ball screw (LEYG□□□D)												
	Guide type		Sliding bearing (LEYG□□M), Ball bushing bearing (LEYG□□L)												
	Operating temp. 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 8)}		23			40			50			50			
Lock unit specifications	Standby power consumption when operating [W] ^{Note 9)}		16			15			48			48			
	Max. instantaneous power consumption [W] ^{Note 10)}		43			48			104			106			
	Type ^{Note 11)}		Non-magnetizing lock												
	Holding force [N]		20	39	78	78	157	294	108	216	421	127	265	519	
	Power consumption [W] ^{Note 12)}		2.9			5			5			5			
	Rated voltage [V]		24 VDC ±10%												

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

Note 2) Horizontal: The maximum value of the work load for the positioning operation. The work load is the same as the vertical work load during pushing operation. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.

Vertical: Speed changes according to the work load. Check "Model Selection" on page 156.

Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

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

Note 4) The pushing force values for LEYG16□□ is 35% to 85%, for LEYG25□□ is 35% to 65%, for LEYG32□□ is 35% to 85% and for LEYG40□□ is 35% to 65%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 157.

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%)

When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting).

The speed is also restricted with a horizontal/moment load. Refer to "Model Selection" on page 154.

Note 6) The allowable speed for the pushing operation.

Note 7) Impact resistance: No malfunction occurred when it 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.

Specifications

Servo Motor (24 VDC)

Model		LEYG16 ^M A			LEYG25 ^M A			
Actuator specifications	Stroke [mm] ^{Note 1)}	30, 50, 100, 150, 200			30, 50, 100, 150, 200, 250, 300			
	Work load [kg] ^{Note 2)}	Horizontal	Acceleration/Deceleration at 3000 [mm/s ²]		3	6	12	
		Vertical	Acceleration/Deceleration at 3000 [mm/s ²]		1.5	3.5	7.5	
	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]		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125
	Max. acceleration/deceleration [mm/s ²]		3000					
	Pushing speed [mm/s] ^{Note 5)}		50 or less			35 or less		
	Positioning repeatability [mm]		±0.02					
	Screw lead [mm]		10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s ²] ^{Note 6)}		50/20					
Actuation type		Ball screw + Belt (LEYG□□□), Ball screw (LEYG□□□D)						
Guide type		Sliding bearing (LEYG□□□), Ball bushing bearing (LEYG□□□L)						
Operating temp. range [°C]		5 to 40						
Operating humidity range [%RH]		90 or less (No condensation)						
Electric specifications	Motor size	□28			□42			
	Motor output [W]	30			36			
	Motor type	Servo motor (24 VDC)						
	Encoder	Incremental A/B (800 pulse/rotation)/Z phase						
	Rated voltage [V]	24 VDC ±10%						
	Power consumption [W] ^{Note 7)}	40			86			
	Standby power consumption when operating [W] ^{Note 8)}	4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)			
	Max. instantaneous power consumption [W] ^{Note 9)}	59			96			
Lock unit specifications	Type ^{Note 10)}	Non-magnetizing lock						
	Holding force [N]	20	39	78	78	157	294	
	Power consumption [W] ^{Note 11)}	2.9			5			
	Rated voltage [V]	24 VDC ±10%						

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

Note 2) Horizontal: The maximum value of the work load for the positioning operation. The work load is the same as the vertical work load during pushing operation. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.

Vertical: Check "Model Selection" on page 156 for details. Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

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

Note 4) The pushing force values for LEYG16□□□ is 50% to 95% and for LEYG25□□□□ is 50% to 95%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 157.

Note 5) The allowable speed for the pushing operation.

Note 6) Impact resistance: No malfunction occurred when it 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 7) The power consumption (including the controller) is for when the actuator is operating.

Note 8) 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 9) 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 10) With lock only

Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top Mounting Type

Model		LEYG16M					LEYG25M					LEYG32M				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200	250	300	30	50	100
		0.83	0.97	1.20	1.49	1.66	1.67	1.86	2.18	2.60	2.94	3.28	3.54	2.91	3.17	3.72
Product weight [kg]	Servo motor	0.83	0.97	1.20	1.49	1.66	1.63	1.82	2.14	2.56	2.90	3.24	3.50	—	—	—
		0.83	0.97	1.20	1.49	1.66	1.63	1.82	2.14	2.56	2.90	3.24	3.50	—	—	—

Model		LEYG16L					LEYG25L					LEYG32L				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200	250	300	30	50	100
		0.84	0.97	1.14	1.43	1.58	1.68	1.89	2.13	2.56	2.82	3.14	3.38	2.91	3.18	3.57
Product weight [kg]	Servo motor	0.84	0.97	1.14	1.43	1.58	1.64	1.85	2.09	2.52	2.78	3.10	3.34	—	—	—
		0.84	0.97	1.14	1.43	1.58	1.64	1.85	2.09	2.52	2.78	3.10	3.34	—	—	—

Model		LEYG40M					LEYG40L				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200
		3.21	3.47	4.02	4.58	5.25	3.21	3.48	3.87	4.42	4.96
Product weight [kg]	Servo motor	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Model		LEYG16M					LEYG25M					LEYG32M				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200	250	300	30	50	100
		0.83	0.97	1.20	1.49	1.66	1.66	1.85	2.17	2.59	2.93	3.27	3.53	2.90	3.16	3.71
Product weight [kg]	Servo motor	0.83	0.97	1.20	1.49	1.66	1.62	1.81	2.13	2.55	2.89	3.23	3.49	—	—	—
		0.83	0.97	1.20	1.49	1.66	1.62	1.81	2.13	2.55	2.89	3.23	3.49	—	—	—

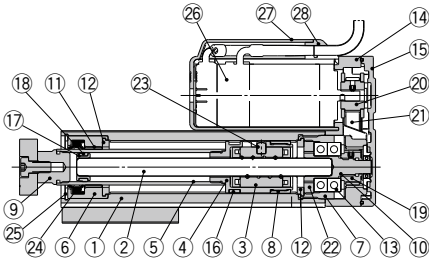
Model		LEYG16L					LEYG25L					LEYG32L				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200	250	300	30	50	100
		0.84	0.97	1.14	1.43	1.58	1.67	1.88	2.12	2.55	2.81	3.13	3.37	2.90	3.17	3.56
Product weight [kg]	Servo motor	0.84	0.97	1.14	1.43	1.58	1.63	1.84	2.08	2.51	2.77	3.09	3.33	—	—	—
		0.84	0.97	1.14	1.43	1.58	1.63	1.84	2.08	2.51	2.77	3.09	3.33	—	—	—

Model		LEYG40M					LEYG40L				
Stroke [mm]	Step motor	30	50	100	150	200	30	50	100	150	200
		3.20	3.46	4.01	4.57	5.24	3.20	3.47	3.86	4.41	4.95
Product weight [kg]	Servo motor	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—

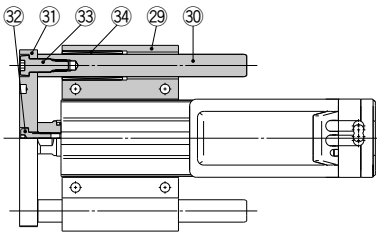
Additional Weight

Size	16	25	32	40
Lock	0.12	0.26	0.53	0.53
Motor cover	0.02	0.03	0.04	0.05

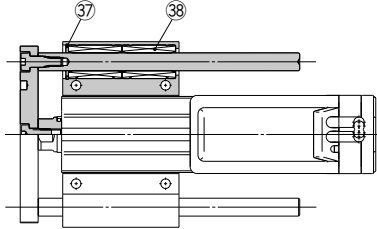
Construction



LEYG□M

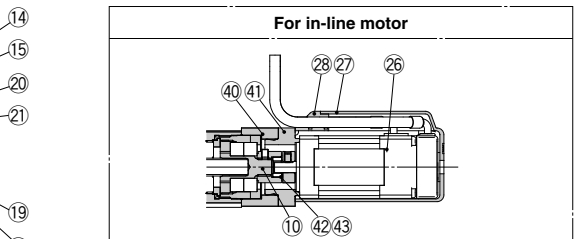


LEYG□L



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 plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Trivalent chromated
15	Return plate	Aluminum die-cast	Trivalent chromated
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	



For in-line motor

LEYG¹⁶₂₅₃₂₄₀M: 50st or less

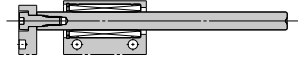


LEYG¹⁶₂₅₃₂₄₀M: Over 50st

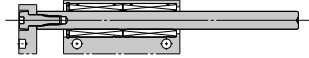


LEYG¹⁶₂₅₃₂₄₀L: 30st or less

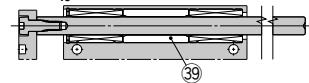
LEYG¹⁶₂₅₃₂₄₀L: 100st or less



LEYG¹⁶₂₅₃₂₄₀L: Over 30st, 100st or less

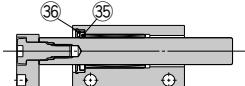


LEYG¹⁶₂₅₃₂₄₀L: Over 100st



When grease retaining function selected

LEYG²⁵₃₂₄₀M□□□□F: 50st or less



LEYG²⁵₃₂₄₀M□□□□F: Over 50st



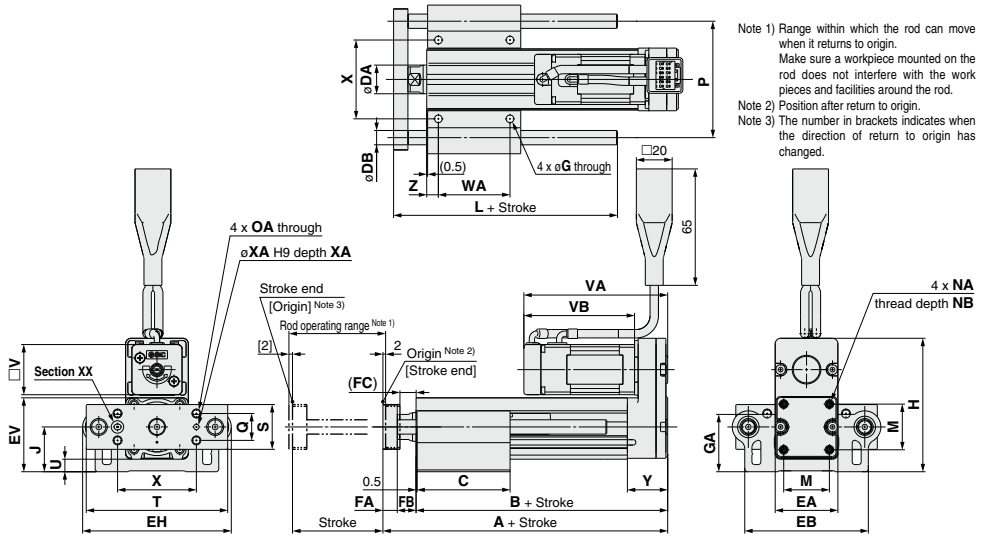
Note) Felt material is inserted to retain grease at the sliding part of the sliding bearing. This lengthens the life of the sliding part, but does not guarantee it permanently.

Replacement Parts/Belt

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

No.	Description	Material	Note
23	Parallel pin	Stainless steel	
24	Seal	NBR	
25	Retaining ring	Steel for spring	Phosphate coated
26	Motor	—	
27	Motor cover	Synthetic resin	
28	Grommet	Synthetic resin	
29	Guide attachment	Aluminum alloy	Anodized
30	Guide rod	Carbon steel	
31	Plate	Aluminum alloy	Anodized
32	Plate mounting bolt	Carbon steel	Nickel plated
33	Guide bolt	Carbon steel	Nickel plated
34	Sliding bearing	—	
35	Lub-retainer	Felt	
36	Holder	Resin	
37	Retaining ring	Steel for spring	Phosphate coated
38	Ball bushing	—	
39	Spacer	Aluminum alloy	Chromated
40	Motor block	Aluminum alloy	Anodized
41	Motor adapter	Aluminum alloy	Anodized/LEY16, 25 only
42	Hub	Aluminum alloy	
43	Spider	NBR	

Dimensions: Motor Top Mounting



LEYG□L (Ball bushing bearing)
Standard stroke: 50, 100, 200

Size	Stroke range	L	DB
16	90st or less	75	8
	91st or more, 200st or less	105	
	114st or less	91	
25	115st or more, 190st or less	115	10
	191st or more, 300st or less	133	
	114st or less	97.5	
32	115st or more, 190st or less	116.5	13
	191st or more, 300st or less	134	

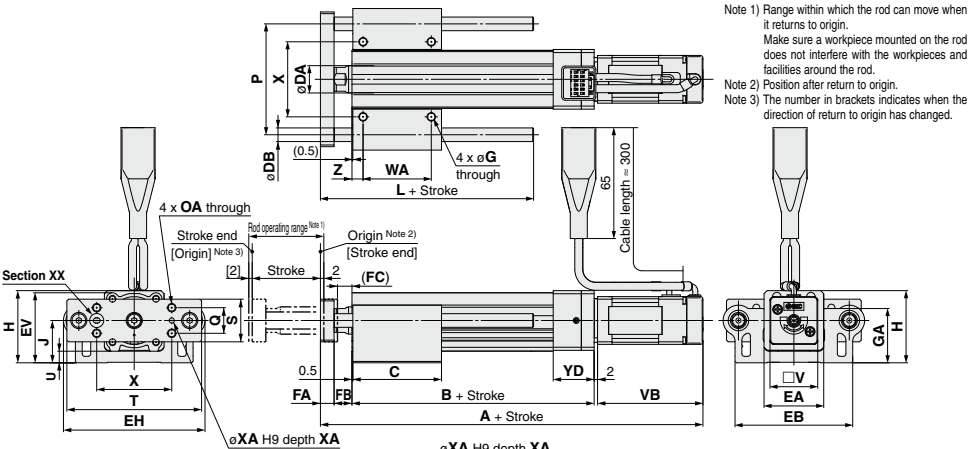
LEYG□M (Sliding bearing)
Standard stroke: 30, 50, 100

Size	Stroke range	L	DB
16	64st or less	51.5	10
	65st or more, 90st or less	74.5	
	91st or more, 200st or less	105	
25	59st or less	67.5	12
	60st or more, 185st or less	100.5	
	186st or more, 300st or less	138	
32	54st or less	74	16
	55st or more, 180st or less	107	
40	181st or more, 300st or less	144	

LEYG□M, LEYG□L Common

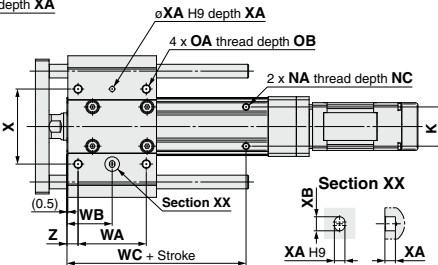
Size	Stroke range	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
16	39st or less	109	90.5	37																	
	40st or more, 100st or less	129	110.5	52	16	35	69	83	41.3	8	10.5	8.5	4.3	31.8	74.5	24.8	23	25.5	M4 x 0.7	7	5.5
	101st or more, 200st or less	129	110.5	82																	
25	39st or less	141.5	116	50																	
	40st or more, 100st or less	166.5	141	67.5	20	46	85	103	52.5	11	14.5	12.5	5.4	40.3	99	30.8	29	34	M5 x 0.8	8	6.5
	101st or more, 124st or less	166.5	141	84.5																	
32	125st or more, 200st or less	166.5	141	102																	
	201st or more, 300st or less	166.5	141	102																	
	39st or less	160.5	130	55																	
40	40st or more, 100st or less	190.5	160	68	25	60	101	123	64	12	18.5	16.5	5.4	50.3	125.5	38.3	30	40	M6 x 1.0	10	8.5
	101st or more, 124st or less	190.5	160	85																	
	125st or more, 200st or less	190.5	160	102																	
16	39st or less	109	90.5	37																	
	40st or more, 100st or less	129	110.5	52	16	35	69	83	41.3	8	10.5	8.5	4.3	31.8	74.5	24.8	23	25.5	M4 x 0.7	7	5.5
	101st or more, 200st or less	129	110.5	82																	
25	39st or less	141.5	116	50																	
	40st or more, 100st or less	166.5	141	67.5	20	46	85	103	52.5	11	14.5	12.5	5.4	40.3	99	30.8	29	34	M5 x 0.8	8	6.5
	101st or more, 124st or less	166.5	141	84.5																	
32	125st or more, 200st or less	166.5	141	102																	
	201st or more, 300st or less	166.5	141	102																	
	39st or less	160.5	130	55																	
40	40st or more, 100st or less	190.5	160	68	25	60	101	123	64	12	18.5	16.5	5.4	50.3	125.5	38.3	30	40	M6 x 1.0	10	8.5
	101st or more, 124st or less	190.5	160	85																	
	125st or more, 200st or less	190.5	160	102																	
16	39st or less	109	90.5	37																	
	40st or more, 100st or less	129	110.5	52	16	35	69	83	41.3	8	10.5	8.5	4.3	31.8	74.5	24.8	23	25.5	M4 x 0.7	7	5.5
	101st or more, 200st or less	129	110.5	82																	
25	39st or less	141.5	116	50																	
	40st or more, 100st or less	166.5	141	67.5	20	46	85	103	52.5	11	14.5	12.5	5.4	40.3	99	30.8	29	34	M5 x 0.8	8	6.5
	101st or more, 124st or less	166.5	141	84.5																	
32	125st or more, 200st or less	166.5	141	102																	
	201st or more, 300st or less	166.5	141	102																	
	39st or less	160.5	130	55																	
40	40st or more, 100st or less	190.5	160	68	25	60	101	123	64	12	18.5	16.5	5.4	50.3	125.5	38.3	30	40	M6 x 1.0	10	8.5
	101st or more, 124st or less	190.5	160	85																	
	125st or more, 200st or less	190.5	160	102																	

Dimensions: In-line Motor



LEYG□L (Ball bushing bearing)
Standard stroke: 50, 100, 200

Size	Stroke range	L	DB
16	90st or less	75	8
	91st or more, 200st or less	105	
	114st or less	91	
25	115st or more, 190st or less	115	10
	191st or more, 300st or less	133	
	114st or less	97.5	
32	115st or more, 190st or less	116.5	13
40	191st or more, 300st or less	134	



LEYG□M (Sliding bearing)
Standard stroke: 30, 50, 100

Size	Stroke range	L	DB
16	64st or less	51.5	
	65st or more, 30st or less	74.5	10
	91st or more, 200st or less	105	
25	59st or less	67.5	
	60st or more, 165st or less	100.5	12
	186st or more, 300st or less	138	
32	54st or less	74	
	55st or more, 160st or less	107	16
	181st or more, 300st or less	144	

LEYG□M, LEYG□L Common

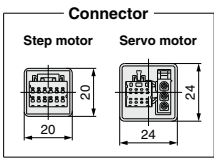
Size	Stroke range	Step motor	Servo motor	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
16	39st or less	174.3	175	92	37																
	40st or more, 100st or less			52			16	35	69	83	41.3	8	10.5	8.5	4.3	31.8	42.5	24.8	23	M4 x 0.7	5.5
	101st or more, 200st or less	194.3	195	112	82																
	39st or less	206.4	202.6	115.5	50																
25	40st or more, 100st or less			67.5			20	45	85	103	52.5	11	14.5	12.5	5.4	40.3	53.5	30.8	29	M5 x 0.8	6.5
	101st or more, 124st or less			84.5																	
	125st or more, 200st or less	231.4	227.6	140.5	102																
	201st or more, 300st or less			55																	
32	39st or less	228.9	—	128	68		25	60	101	123	64	12	18.5	16.5	5.4	50.3	68.5	38.3	30	M6 x 1.0	8.5
	40st or more, 100st or less				85																
	101st or more, 124st or less	258.9	—	158	102																
	125st or more, 200st or less				55																
40	39st or less	250.9	—	128	68		25	60	101	123	64	12	18.5	16.5	5.4	50.3	68.5	38.3	30	M6 x 1.0	8.5
	40st or more, 100st or less				85																
	101st or more, 124st or less	280.9	—	158	102																
	125st or more, 200st or less				55																

Size	Stroke range	OA	OB	P	Q	S	T	U	V	Step motor	Servo motor	WA	WB	WC	X	XA	XB	YD	Z
16	39st or less											25	19	55					
	40st or more, 100st or less	M5 x 0.8	10	65	15	25	79	6.8	28	61.8	62.5	40	26.5	75	44	3	4	24	6.5
	101st or more, 200st or less											70	41.5	75					
	39st or less											35	26	70					
25	40st or more, 100st or less											50	33.5	95					
	101st or more, 124st or less	M6 x 1.0	12	80	18	30	95	6.8	42	63.4	59.6	70	43.5	105	54	4	5	26	8.5
	125st or more, 200st or less											85	51						
	201st or more, 300st or less											40	28.5	75					
32	39st or less											50	33.5	105					
	40st or more, 100st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	68.4	—	70	43.5	105	64	5	6	32	8.5
	101st or more, 124st or less											85	51						
	125st or more, 200st or less											40	28.5	75					
40	39st or less											50	33.5	105					
	40st or more, 100st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	90.4	—	70	43.5	105	64	5	6	32	8.5
	101st or more, 124st or less											85	51						
	125st or more, 200st or less											40	28.5	75					

Dimensions

Motor top mounting type

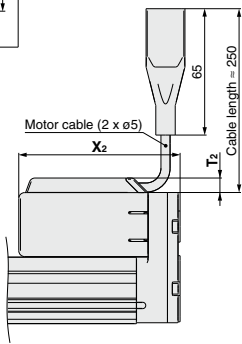
With motor cover: LEYG ¹⁶₂₅₃₂₄₀ □ □ ^A_B □ ^C_C



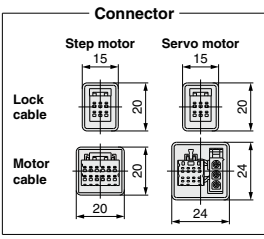
[mm]

Size	T ₂	X ₂
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material:
Synthetic resin

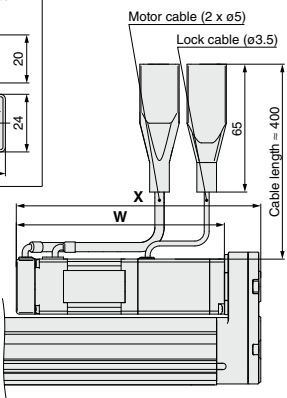


With lock: LEYG ¹⁶₂₅₃₂₄₀ □ □ ^A_B □ ^C_B



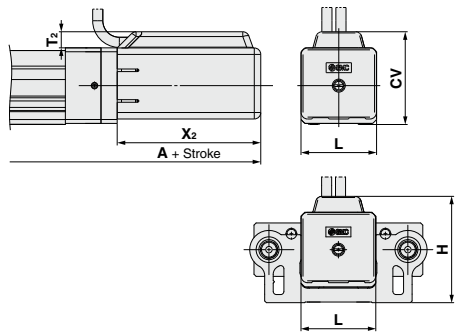
[mm]

Size	Step motor		Servo motor	
	W	X	W	X
16	103.3	121.8	104.0	122.5
25	103.9	125.9	100.1	122.1
32	111.4	138.4	—	—
40	133.4	160.4	—	—



In-line motor type

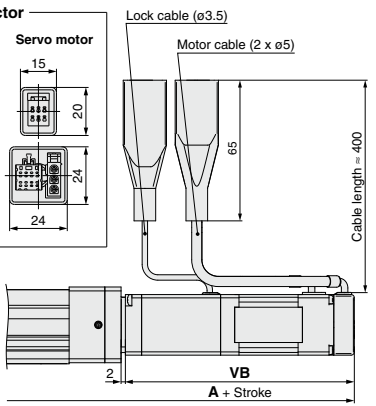
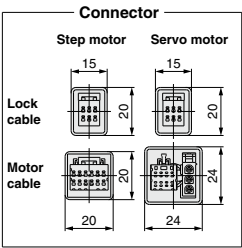
With motor cover: LEYG ¹⁶₂₅₃₂₄₀ □ □ ^A_D □ ^B_B □ ^C_C



[mm]

Size	Stroke range	A	T ₂	X ₂	L	H	CV
16	100st or less	177	7.5	66.5	35	49.8	43
	101st or more, 200st or less	197					
	100st or less	209.5					
25	101st or more, 300st or less	234.5	7.5	68.5	46	61.3	54.5
	100st or less	232					
	101st or more, 300st or less	262					
32	100st or less	254	7.5	73.5	60	75.8	68.5
	101st or more, 300st or less	254					
	100st or less	284					
40	101st or more, 300st or less	284	7.5	95.5	60	75.8	68.5
	100st or less	254					
	101st or more, 300st or less	284					

With lock: LEYG ¹⁶₂₅₃₂₄₀ □ □ ^A_D □ ^B_B □ ^C_B



[mm]

Size	Stroke range	Step motor		Servo motor	
		A		VB	
16	100st or less	215.8	216.5	103.3	104
	101st or more, 200st or less	235.8	236.5		
	100st or less	246.9	243.1		
25	101st or more, 300st or less	271.9	268.1	103.9	100.1
	100st or less	271.9	—		
	101st or more, 300st or less	301.9	—		
32	100st or less	293.9	—	133.4	—
	101st or more, 300st or less	323.9	—		
	100st or less	323.9	—		
40	101st or more, 300st or less	323.9	—		
	100st or less	323.9	—		
	101st or more, 300st or less	323.9	—		

- LEF
- LEJ
- LEL
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LECA6
- LECP6
- LEC-G
- LECP1
- LECPA
- LECPA
- LECS
- LAT3

Support Block

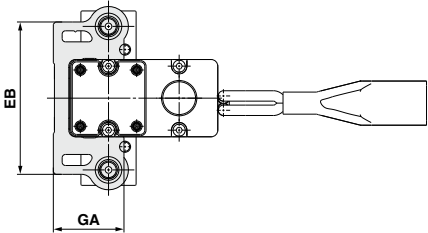
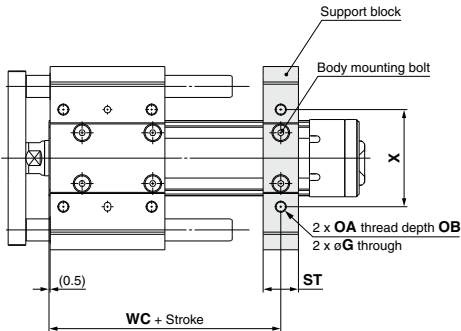
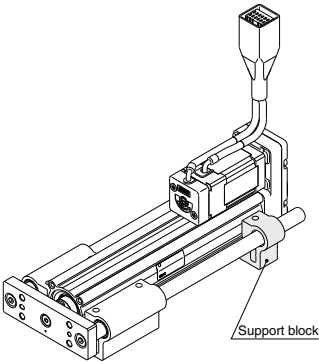
●Guide for support block application

When the stroke exceeds 100 mm and the lateral load is applied, the body will be bent based on the load. Mounting the support block is recommended. (Please order it separately from the models shown below.)

Support Block Model

LEYG-S016

●Size	
016	For size 16
025	For size 25
032	For size 32, 40



⚠Caution

Do not install the body using only a support block.
The support block should be used only for support.

[mm]										
Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
16	LEYG-S016	100st or less	69	4.3	31.8	M5 x 0.8	10	16	55	44
		101st or more, 200st or less							75	
25	LEYG-S025	100st or less	85	5.4	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32	LEYG-S032	100st or less	101	5.4	50.3	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

* Two body mounting bolts are included with the support block.



Series LEY/LEYG Electric Actuators/ Specific Product Precautions 1

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

Please download it via our website, <http://www.smcworld.com>

Design/Selection

⚠ Warning

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by load and allowable lateral load on the rod end. If the product is used outside of the operating limit, the eccentric load applied to the piston rod will be excessive and have adverse effects such as creating play on the sliding parts of the piston rod, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

This can cause failure.

3. When used as a stopper, select the LEYG series "Sliding bearing".

4. When used as a stopper, fix the main body with a guide attachment ("Top mounting" or "Bottom mounting").

If the end of the actuator is used to fix the main body (end mounting), the excessive load acts on the actuator, which adversely affects the operation and life of the product.

Handling

⚠ Caution

1. INP output signal

1) Positioning operation

When the product comes within the set range by step data [In position], the INP output signal will turn on.

Initial value: Set to [0.50] or higher.

2) Pushing operation

When the effective force exceeds step data [Trigger LV], the INP output signal will turn on.

Use the product within the specified range of [Pushing force] and [Trigger LV].

a) To ensure that the actuator pushes the workpiece with the set [Pushing force], it is recommended that the [Trigger LV] be set to the same value as the [Pushing force].

b) When the [Pushing force] and [Trigger LV] are set less than the specified range, the INP output signal will turn on from the pushing start position.

Handling

⚠ Caution

<Pushing Force and Trigger Level Range> Without load/With lateral load on rod end

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%	LEY40□	1 to 4	20% to 65%
	5 to 20	35% to 85%		5 to 20	35% to 65%
	21 to 30	60% to 85%		21 to 30	50% to 65%

* 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□
Lead	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
Pushing force	85%	65%	85%	65%

Model	LEY16□A	LEY25□A
Lead	A B C	A B C
Work load [kg]	1 1.5 3	1.2 2.5 5
Pushing force	95%	95%

Model	LEYG16□	LEYG25□	LEYG32□	LEYG40□
Lead	A B C	A B C	A B C	A B C
Work load [kg]	0.5 1 2.5	1.5 4 9	2.5 7 16	5 12 26
Pushing force	85%	65%	85%	65%

Model	LEYG16□A	LEYG25□A
Lead	A B C	A B C
Work load [kg]	0.5 1 2.5	0.5 1.5 4
Pushing force	95%	95%

2. When the pushing operation is used, be sure to set to [Pushing operation].

Also, do not hit the workpiece in positioning operation or in the range of positioning operation. It may malfunction.

3. Use the product within the specified pushing speed range for the pushing operation.

It may lead to damage and malfunction.

4. The moving force should be the initial value (LEY16 □/25 □/32 □/40 □: 100%, LEY16A □: 150%, LEY25A □: 200%).

If the moving force is set below the initial value, it may cause an alarm.

5. The actual speed of this actuator is affected by the load.

Check the model selection section of the catalog.

6. Do not apply a load, impact or resistance in addition to the transferred load during return to origin.

Additional force will cause the displacement of the origin position since it is based on detected motor torque.



Series LEY/LEYG

Electric Actuators/ Specific Product Precautions 2

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

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Handling

⚠ Caution

7. In pushing operation, set the product to a position of at least 2 mm away from a workpiece. (This position is referred to as a pushing start position.)

The following alarms may be generated and operation may become unstable.

- a. "Posn failed" alarm is generated.

The product cannot reach a pushing start position due to variation in the target position.

- b. "Pushing ALM" alarm is generated.

The product is pushed back from a pushing start position after starting to push.

8. Do not scratch or dent the sliding parts of the piston rod, by striking or attaching objects.

The piston rod and guide rod are manufactured to precise tolerances, even a slight deformation may cause malfunction.

9. When an external guide is used, connect it in such a way that no impact or load is applied to it.

Use a freely moving connector (such as a floating joint).

10. Do not operate by fixing the piston rod and moving the actuator body.

Excessive load will be applied to the piston rod, leading to damage to the actuator and reduced the life of the product.

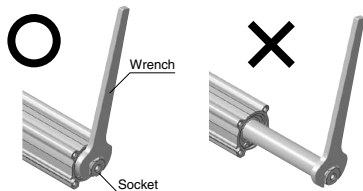
11. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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.

Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque (N·m) or less	LEY16□□	LEY25□□	LEY32/40□□
	0.8	1.1	1.4

When screwing in a bracket or nut to the end of the piston rod, hold the flats of the rod end with a wrench (the piston rod should be fully retracted). Do not apply tightening torque to the non-rotating mechanism.



12. When rotational torque is applied to the end of the plate, use it within the allowable range. [Series LEYG]

This may cause deformation of the guide rod and bushing, play in the guide or an increase in the sliding resistance.

13. For the pushing operation, use the product within the duty ratio range below.

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

• Step motor (Servo/24 VDC)

LEY16□

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

LEY25□

Pushing force [%]	Ambient temperature: 25°C or less		Ambient temperature: 40°C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
65 or less	100	—	100	—

LEY32□/40□

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

• Servo motor (24 VDC)

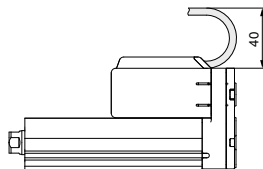
LEY16A□

Pushing force [%]	Ambient temperature: 25°C or less		Ambient temperature: 40°C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
95 or less	100	—	100	—

LEY25A□

Pushing force [%]	Ambient temperature: 25°C or less		Ambient temperature: 40°C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
95 or less	100	—	100	—

14. When mounting the product, keep a 40 mm or longer diameter for bends in the cable.



15. When mounting a bolt, workpiece or jig, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.

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



Series LEY/LEYG

Electric Actuators/ Specific Product Precautions 3

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

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Handling

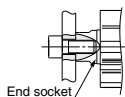
⚠ Caution

16. When mounting the product and/or a workpiece, tighten the mounting screws within the specified torque range.

Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

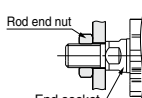
<Series LEY>

Workpiece fixed/Rod end female thread

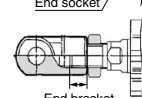


Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)	End socket width across flats (mm)
LEY16	M5 x 0.8	3.0	10	14
LEY25	M8 x 1.25	12.5	13	17
LEY32/40	M8 x 1.25	12.5	13	22

Workpiece fixed/Rod end male thread (When "Rod end male thread" is selected.)



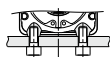
Model	Thread size	Max. tightening torque (N·m)	Effective thread length (mm)	End socket width across flats (mm)
LEY16	M8 x 1.25	12.5	12	14
LEY25	M14 x 1.5	65.0	20.5	17
LEY32/40	M14 x 1.5	65.0	20.5	22



Model	Rod end nut width across flats (mm)	Length (mm)	End bracket screw-in depth (mm)
LEY16	13	5	5 or more
LEY25	22	8	8 or more
LEY32/40	22	8	8 or more

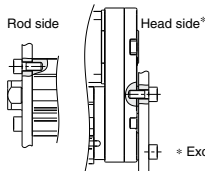
* Rod end nut is an accessory.

Body fixed/Body bottom tapped style (When "Body bottom tapped" is selected.)



Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEY16	M4 x 0.7	1.5	5.5
LEY25	M5 x 0.8	3.0	6.5
LEY32/40	M6 x 1.0	5.2	8.8

Body fixed/Rod side/Head side tapped style

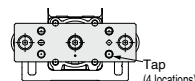


Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEY16	M4 x 0.7	1.5	7
LEY25	M5 x 0.8	3.0	8
LEY32/40	M6 x 1.0	5.2	10

* Except the LEY□D.

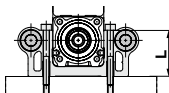
<Series LEYG>

Workpiece fixed/Plate tapped style



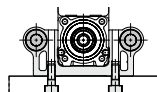
Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEYG16 SM	M5 x 0.8	3.0	8
LEYG25 SM	M6 x 1.0	5.2	11
LEYG32/40 SM	M6 x 1.0	5.2	12

Body fixed/Top mounting



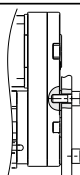
Model	Bolt	Max. tightening torque (N·m)	Length: L (mm)
LEYG16 SM	M4 x 0.7	1.5	32
LEYG25 SM	M5 x 0.8	3.0	40.5
LEYG32/40 SM	M5 x 0.8	3.0	50.5

Body fixed/Bottom mounting



Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEYG16 SM	M5 x 0.8	3.0	10
LEYG25 SM	M6 x 1.0	5.2	12
LEYG32/40 SM	M6 x 1.0	5.2	12

Body fixed/Head side tapped style



Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEYG16 SM	M4 x 0.7	1.5	7
LEYG25 SM	M5 x 0.8	3.0	8
LEYG32/40 SM	M6 x 1.0	5.2	10

17. Keep the flatness of the mounting surface within the following ranges when mounting the actuator body and workpiece.

Unevenness of a workpiece or base mounted on the body of the product may cause an increase in the sliding resistance.

Model	Mounting position	Flatness
LEY□	Body/Body bottom	0.1 mm or less
LEYG□	Top mounting/Bottom mounting	0.05 mm or less
	Workpiece/Plate mounting	0.05 mm or less

18. When using auto switch with the guide rod type LEYG series, the following limits will be in effect. Please select the product while paying attention to this.

- Insert the auto switch from the front side with rod (plate) sticking out.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Consult with SMC when using auto switch on the rod stick out side.



Series LEY/LEYG

Electric Actuators/ Specific Product Precautions 4

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Enclosure

IP-□□

First characteristic numeral • Second characteristic numeral

• First Characteristics:

Degrees of protection against solid foreign objects

0	Non-protected
1	Protected against solid foreign objects of 50 mmφ and greater
2	Protected against solid foreign objects of 12 mmφ and greater
3	Protected against solid foreign objects of 2.5 mmφ and greater
4	Protected against solid foreign objects of 1.0 mmφ and greater
5	Dust-protected
6	Dust-tight

• Second Characteristics:

Degrees of protection against water

0	Non-protected	—
1	Protected against vertically falling water drops	Drip-proof type 1
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Drip-proof type 2
3	Protected against rainfall when enclosure tilted up to 60°	Rain-proof type
4	Protected against splashing water	Splash-proof type
5	Protected against water jets	Water-jet-proof type
6	Protected against powerful water jets	Powerful water-jet-proof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) In the case of stipulated as IP65, we can know the degrees of protection is dust-tight and water-jet-proof on the grounds that the first characteristic numeral is "6" and the second characteristic numeral is "5" respectively, that gives it will not be adversely affected by direct water jets from any direction.
(* The water jets which are "5" of the second characteristic numeral based on JIS C 0920 (2003) indicates a flow of water for 3 minutes at 12.5 L per minute.)

Maintenance

⚠ Warning

1. Ensure that the power supply is stopped and the workpiece is removed before starting maintenance work or replacement of the product.

• Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Belt check
Inspection before daily operation	○	—
Inspection every 6 months/ 250 km/5 million cycles*	○	○

* Select whichever comes sooner.

• Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

• Belt replacement (Guide)

It is recommended that the belt be replaced after being in service for 2 years, or before reaching the following distance.

Model	Distance	Model	Distance	Model	Distance
LEY16□A	2,000 km	LEY25□A	2,500 km	LEY32A	4,000 km
LEY16□B	1,000 km	LEY25□B	1,200 km	LEY32B	2,000 km
LEY16□C	500 km	LEY25□C	600 km	LEY32C	1,000 km

Model	Distance
LEY40A	4,000 km
LEY40B	2,000 km
LEY40C	1,000 km

• Items for belt check

Stop operation immediately and replace the belt when belt appear to be below. Further, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out

Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt

Belt corner becomes round and frayed thread sticks out.

c. Belt partially cut

Belt is partially cut. Foreign matter caught in teeth other than cut part causes flaw.

d. Vertical line of belt teeth

Flaw which is made when the belt runs on the flange.

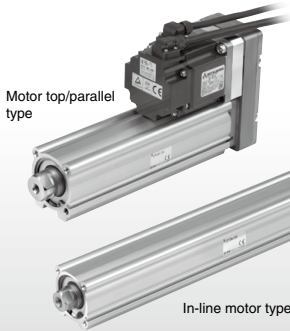
e. Rubber back of the belt is softened and sticky

f. Crack on the back of the belt

AC Servo Motor

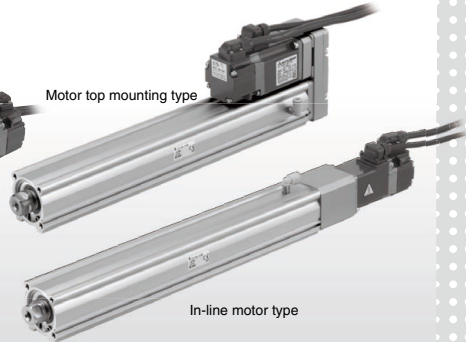
Rod Type **Page 180**

Series **LEY**



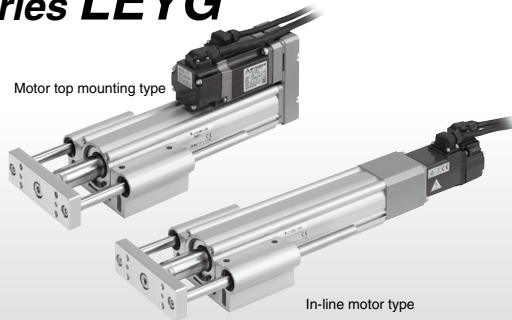
Dust/Drip proof (IP65) specification **Page 193**

Series **LEY-X5**



Guide Rod Type **Page 202**

Series **LEYG**



AC Servo Motor Driver **Page 409**

Series **LECS**□



Model Selection



Selection Procedure

Positioning Control Selection Procedure

Step 1 Check the work load–speed.
(Vertical transfer)

Step 2 Check the cycle time.

Selection Example

Operating conditions

- Workpiece mass: 16 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 5,000 [mm/s²]
- Stroke: 300 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



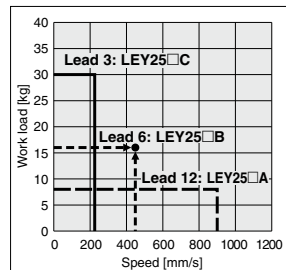
Step 1 Check the work load–speed. <Speed–Vertical work load graph>

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

Selection example) The **LEY25□B** 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 182, 189 and 194 for the horizontal work load in the specifications, and page 209 for the precautions.

The regeneration option may be necessary. Refer to pages 176, 177 and 179 for "Required Conditions for Regeneration Option".



<Speed–Vertical work load graph>
(LEY25□)

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 positioning of the step data. Therefore, please calculate the settling time with reference to the following value.

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

Calculation example)

T1 to T4 can be calculated as follows.

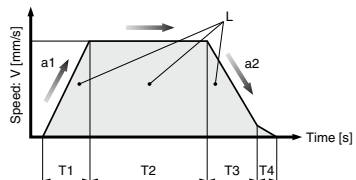
$$T1 = V/a1 = 300/5000 = 0.06 \text{ [s]}, T3 = V/a2 = 300/5000 = 0.06 \text{ [s]}$$

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

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

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 in position is completed

Based on the above calculation result, the **LEY25□B-300** is selected.

Selection Procedure

Pushing Control Selection Procedure

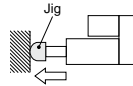
Step 1 Check the pushing force.

Step 2 Check the lateral load on the rod end.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Pushing force: 200 [N]
- Speed: 100 [mm/s]
- Stroke: 300 [mm]



Step 1 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>.

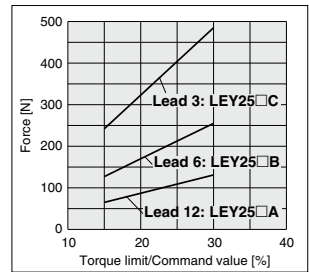
Selection example)

Based on the graph shown on the right side,

- Torque limit/Command value: 24 [%]

- Pushing force: 200 [N]

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



<Force conversion graph>
(LEY25□)

Step 2 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>.

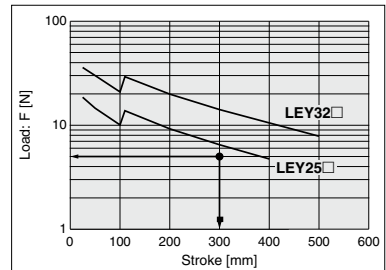
Selection example)

Based on the graph shown on the right side,

- Jig weight: 0.2 [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>

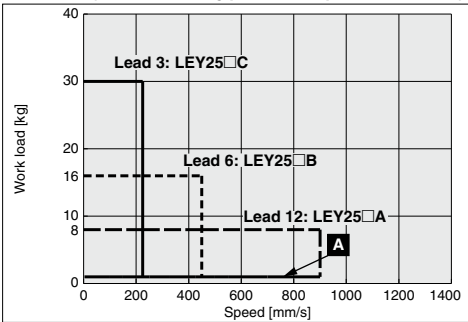
Based on the above calculation result, the **LEY25B-300** is selected.

Series **LEY/LEY-X5**

Size **25, 32** **Dust/Drip proof (IP65) specification**

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

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



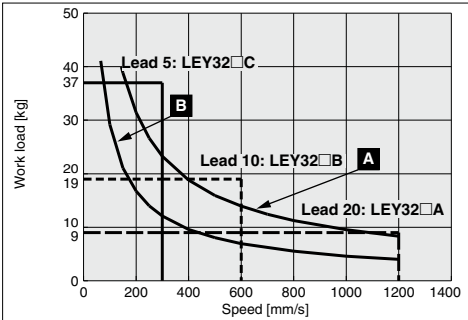
Required conditions for “Regeneration option”

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

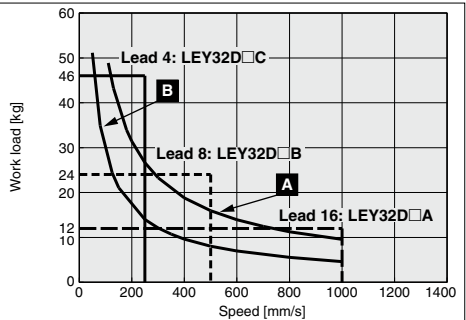
“Regeneration Option” Models

Operating conditions	Regenerative conditions	Vertical transfer
A	Duty ratio 50% or more	LEC-MR-RB-032
B	Duty ratio 100%	

LEY32□ (Motor mounting position: Top/Parallel)

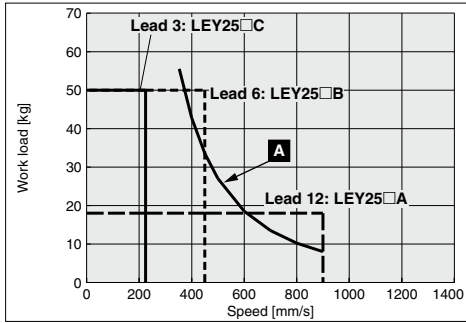


LEY32D (Motor mounting position: In-line)



Speed–Horizontal Work Load Graph/Required Conditions for “Regeneration Option”

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



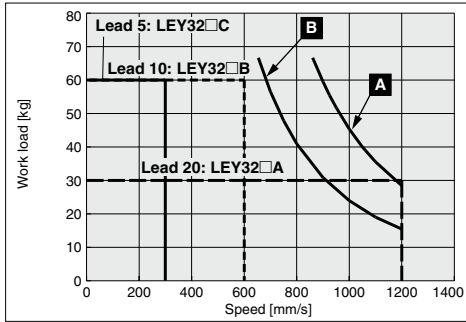
Required conditions for “Regeneration option”

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

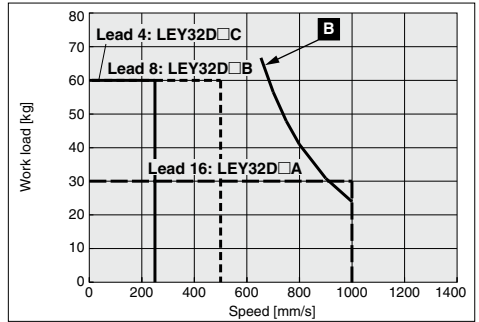
“Regeneration Option” Models

Operating conditions	Regenerative conditions	Horizontal transfer
A	Duty ratio 50% or more	LEC-MR-RB-032
B	Duty ratio 100%	

LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



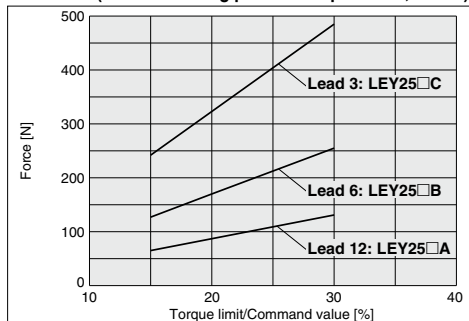
Allowable Stroke Speed

[mm/s]

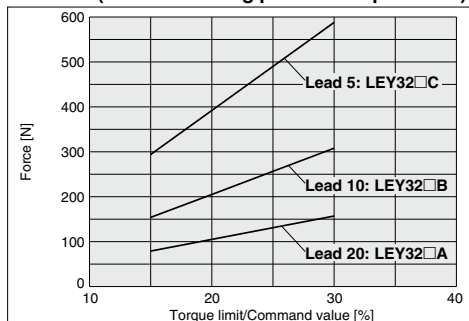
Model	AC servo motor	Lead Symbol	Stroke [mm]													
			[mm]	30	50	100	150	200	250	300	350	400	450	500		
LEY25□ (Motor mounting position: Top/Parallel, In-line)	100 W /□40	A	12				900					600	—	—		
		B	6				450					300	—	—		
		C	3				225					150	—	—		
		(Motor rotation speed)					(4500 rpm)					(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)			

Force Conversion Graph (Guide)

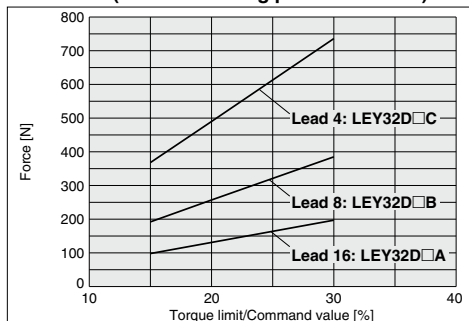
LEY25□ (Motor mounting position: Top/Parallel, In-line)



LEY32□ (Motor mounting position: Top/Parallel)



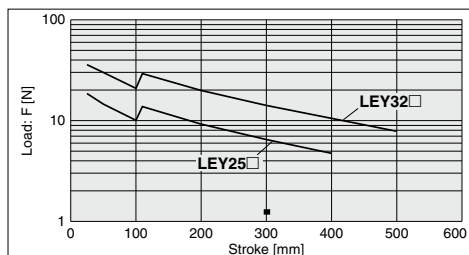
LEY32D□ (Motor mounting position: In-line)



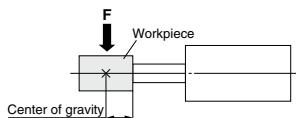
*1 When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 30% or less.

*2 When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analog torque should be set 30% or less.

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



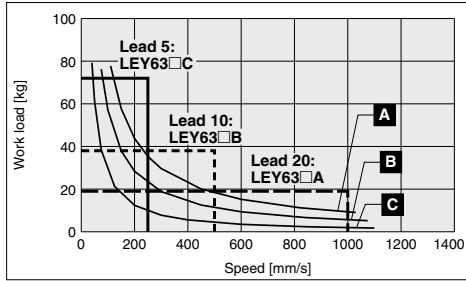
[Stroke] = [Product stroke] + [Distance from the rod end to the center of gravity of the workpiece]



Speed-Work Load Graph/Required Conditions for "Regeneration Option"

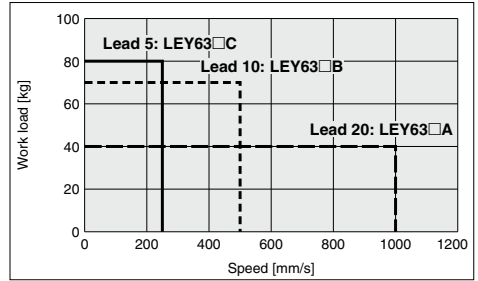
Vertical transfer

LEY63□



Horizontal transfer

LEY63□



Required conditions for "Regeneration option"

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

"Regeneration Option" Models

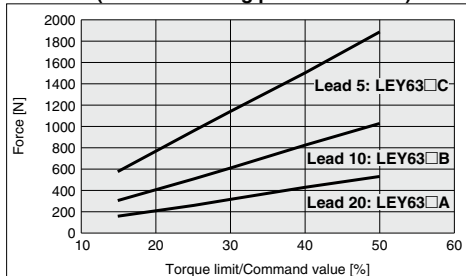
Operating conditions	Regenerative conditions	Vertical transfer	Horizontal transfer
A	Duty ratio 50% or more	LEC-MR-RB-032	Not required
B	Duty ratio 100%		
C		LEC-MR-RB-12	

Allowable Stroke Speed

Model	AC servo motor	Lead		Stroke [mm]							[mm/s]
		Symbol	[mm]	100	200	300	400	500	600	700	800
LEY63□	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)

Force Conversion Graph

LEY63□ (Motor mounting position: In-line)



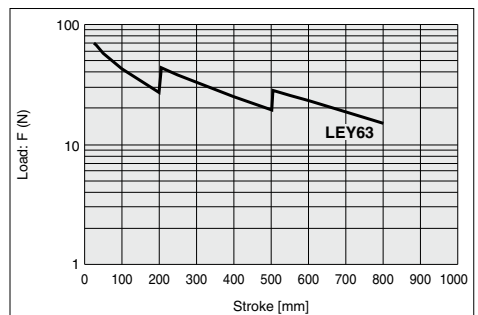
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	100 (60)	— (1.5)
40	50 (30)	1.5 (0.5)
50	30 (20)	0.5 (0.16)

*1 The values in () are for a closely-mounted driver.

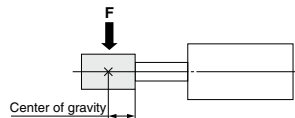
*2 When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 50% or less.

*3 When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analog torque should be set 50% or less.

Graph of Allowable Lateral Load on the Rod End



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



Electric Actuator/Rod Type

AC Servo Motor

Series LEY

LEY25, 32

Size 25, 32



RoHS

How to Order

LEY **25** **S2** **B** - **100** **S** **2** **A1**

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

1 Size

25
32

2 Motor mounting position

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

3 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 LECS□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-S7 LECS□-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 367.

4 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 1:2.5:1)

5 Stroke [mm]

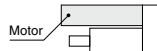
30	30
to	to
500	500

* Refer to the table below for details.

6 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 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.)

8 Mounting*1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
Nil	Ends tapped (Standard)*2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange*2	●	●
G	Head flange*2	●*4	—
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 or less • LEY32: 100 or less

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

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

*4 Head flange is not available for the LEY32.

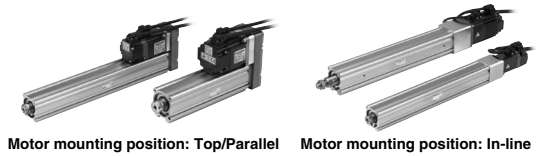
* Applicable stroke table

● 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) Consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 146 and 147.



Motor mounting position: Top/Parallel Motor mounting position: In-line

9 Cable type*

Nii	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 425 for details.)

12 I/O connector

Nii	Without connector
H	With connector

10 Cable length* [m]

Nii	Without cable
2	2
5	5
A	10

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

11 Driver type*

	Compatible drivers	Power supply voltage (V)
Nii	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)
Nii : Without cable and driver

Compatible Drivers

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 409			

Specifications

Model			LEY25S ² (Top/Parallel)/LEY25DS ² (In-line)			LEY32S ² (Top/Parallel)			LEY32DS ² (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						
	Pushing speed [mm/s] ^{Note 5)}	Stroke range	405 to 500	—	—	—	800	400	200	640	320	160
			35 or less			30 or less			30 or less			
	Max. acceleration/deceleration [mm/s ²]		5,000			5,000			5,000			
	Positioning repeatability [mm]		±0.02			±0.02			±0.02			
Lead [mm] (including pulley ratio)		12	6	3		20	10	5	16	8	4	
Impact/Vibration resistance [m/s ²] ^{Note 6)}		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 7)} "Regeneration option"		Horizontal	8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required	
"Regeneration option" [kg]		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	
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)										
Power consumption [W] ^{Note 8)}		Horizontal	45			65			65			
Standby power consumption when operating [W] ^{Note 9)}		Vertical	145			175			175			
Max. instantaneous power consumption [W] ^{Note 10)}		Horizontal	2			2			2			
		Vertical	8			8			8			
		445			724			724				
Type ^{Note 11)}		Non-magnetizing lock										
Holding force [N]		131	255	485	157	308	588	197	385	736		
Power consumption [W] at 20°C ^{Note 12)}		6.3			7.9			7.9				
Rated voltage [V]		24 VDC ⁰ _{-10%}										

Note 1) 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 178.
Note 4) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 5) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 6) Impact resistance: No malfunction occurred when the actuator was tested with a drop test in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 7) 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 176 and 177.
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 12) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

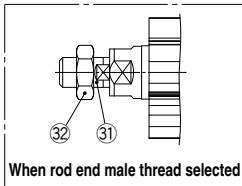
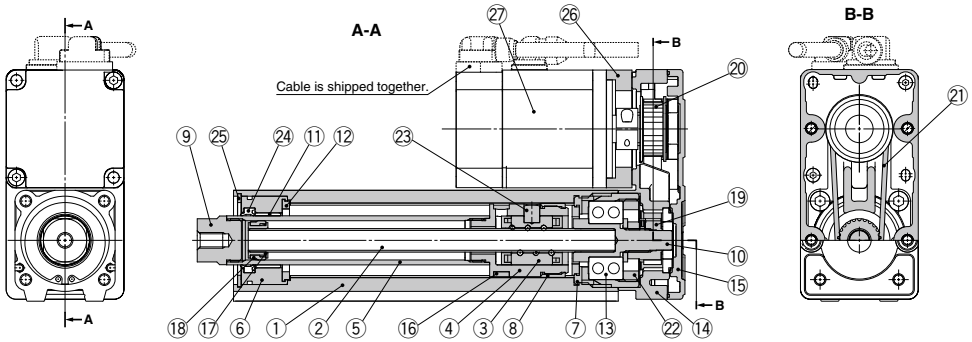
Series		LEY25S□ (Motor mounting position: Top/Parallel)										LEY32S□ (Motor mounting position: Top/Parallel)									
Motor type	Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
	Incremental encoder	1.31	1.38	1.55	1.81	1.99	2.16	2.34	2.51	2.69	2.42	2.53	2.82	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

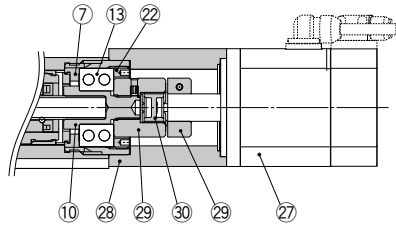
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)			
Head flange (including mounting bolt)		0.17	0.20
Double clevis (including pin, retaining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

Construction

Motor top mounting type: LEY²⁵₃₂



In-line motor type: LEY²⁵_{32D}



Component Parts

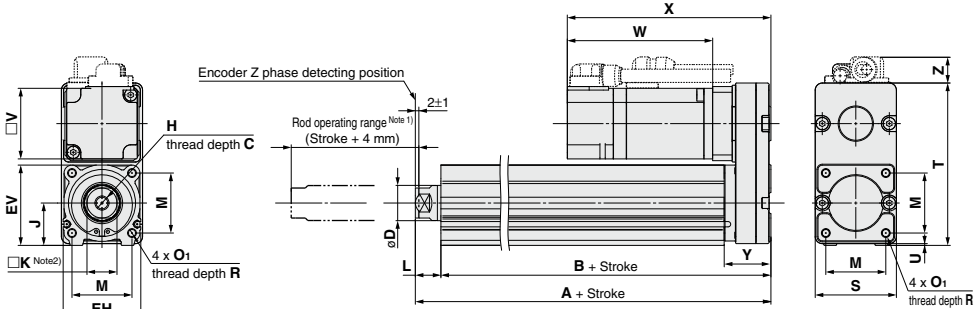
No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw (shaft)	Alloy steel	
3	Ball screw nut	Resin/Alloy steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
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	

No.	Description	Material	Note
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
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 plated
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

Dimensions: Motor Top/Parallel



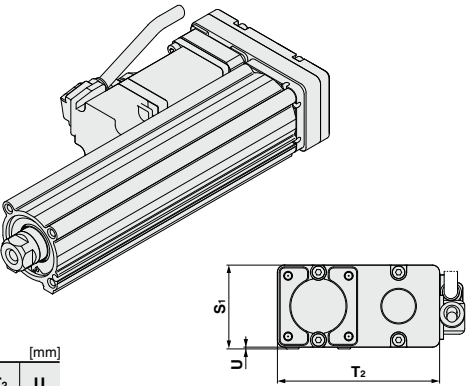
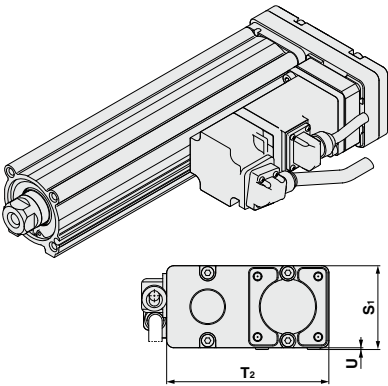
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

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																

Motor left side parallel type: LEY²⁵₃₂L

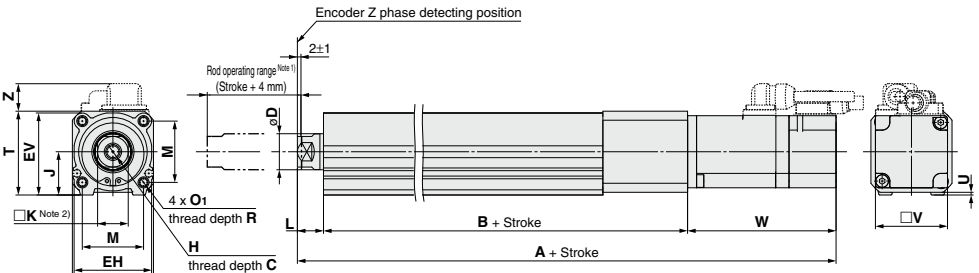
Motor right side parallel type: LEY²⁵₃₂R



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.

Dimensions: In-line Motor

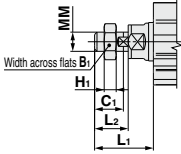


Note 1) Range within which the rod can move.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

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		

End male thread: LEY²⁵₃₂□□B-□□M
C



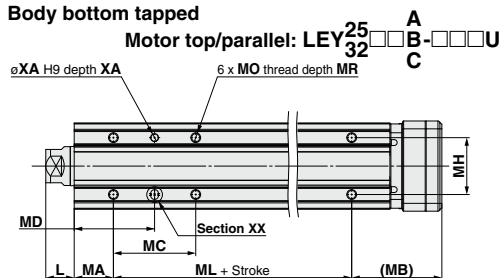
* Refer to page 144 for details about the rod end nut and mounting bracket.
Note) Refer to the "Handling" precautions on page 210 when mounting end brackets such as knuckle joint or work pieces.

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.

Dimensions

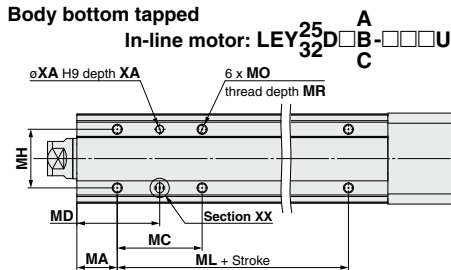
Body bottom tapped



Body Bottom Tapped

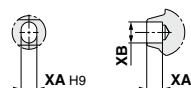
Size	Stroke range (mm)	L	MA	MB	MC	MD	MH	ML
25	15 to 39	14.5	20	46	24	32	29	50
	40 to 100				42	41		75
	101 to 124				59	49.5		
	125 to 200				76	58		
	201 to 400				22	36		50
32	20 to 39	18.5	25	55	36	43	30	80
	40 to 100				53	51.5		80
	101 to 124				70	60		
	125 to 200							
	201 to 500							

Body bottom tapped

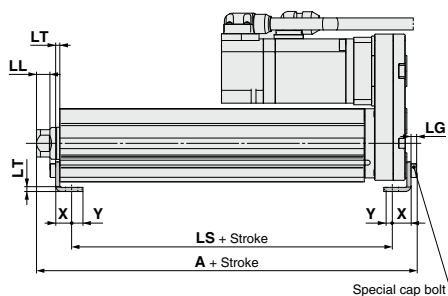
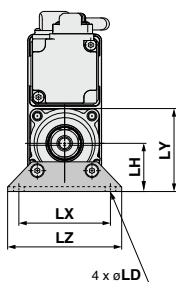


Size	Stroke range (mm)	MO	MR	XA	XB
25	15 to 39	M5 x 0.8	6.5	4	5
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 400				
32	20 to 39	M6 x 1	8.5	5	6
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 500				

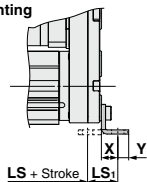
Section XX details



Foot: LEY²⁵₃₂□□B-□□□L



Outward mounting



Included parts

- Foot
- Body mounting bolt

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	99	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	124											
	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
32	101 to 500	185.7	144											

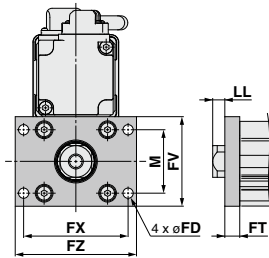
Material: Carbon steel (Chromate treated)

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

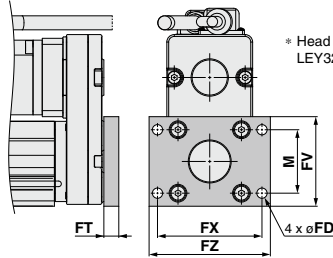
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Dimensions

Rod flange: LEY ²⁵/₃₂ ☐ **A** ☐ **B** ☐ ☐ **C** ☐ **F**



Head flange: LEY25 ☐ **A** ☐ **B** ☐ ☐ **C** ☐ **G**



* Head flange is not available for the LEY32.

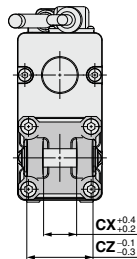
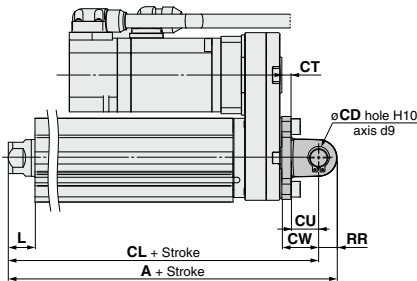
Included parts
• Flange
• Body mounting bolt

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 plated)

Double clevis: LEY ²⁵/₃₂ ☐ **A** ☐ **B** ☐ ☐ **C** ☐ **D**



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

* Refer to page 144 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.

Electric Actuator/Rod Type

AC Servo Motor

Series LEY

LEY63

Size 63

Dust/Drip proof (IP65) specification

(Select options)



RoHS

How to Order

LEY 63 D S4 B - 200 - S 2 A2

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

① Size

63

② Motor mounting position

D In-line

③ Motor type

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

④ Lead [mm]

Symbol	LEY63
A	20
B	10
C	5

⑤ Stroke [mm]

100	100
to	to
800	800

⑥ Dust/Drip proof

Nil	IP5x (Dust proof specification)
P	IP65 (Dust/Drip proof specification)/With vent hole tap

* When using the dust/drip proof (IP65), 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].

⑦ Motor option

Nil	Without option
B	With lock

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
Nil	Ends tapped (Standard) ^{*2}	●
U	Body bottom tapped	●
F	Rod flange ^{*2}	●

*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: 100 or less

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 "(B) Counter axis side". (Refer to page 425 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 drivers	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 (LECSS2)

S2 : Standard cable (2 m)

Nil : Without cable and driver

●Standard

* Applicable stroke table

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

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

Specifications

Model		LEY63DS□□			
Actuator specifications	Stroke [mm] ^{Note 1)}	100, 200, 300, 400, 500, 600, 700, 800			
	Work load [kg]	Horizontal ^{Note 2)}	40	70	80
		Vertical	19	38	72
	Pushing force [N]/Set value ^{Note 3)} : 15 to 50% ^{Note 4)}		156 to 521	304 to 1,012	573 to 1,910
	Max. speed [mm/s] ^{Note 5)}	Stroke range	Up to 500	500	250
			505 to 600	400	200
			605 to 700	300	150
			705 to 800	250	125
	Pushing speed [mm/s] ^{Note 6)}		30 or less		
	Max. acceleration/deceleration [mm/s ²]		5,000		
	Positioning repeatability [mm]		±0.02		
	Screw lead [mm] (including pulley ratio)		20	10	5
Electric specifications	Impact/Vibration resistance [m/s ²] ^{Note 7)}		50/20		
	Actuation type		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 "Regeneration option" [kg] ^{Note 8)}	Horizontal	Not required	Not required	Not required
		Vertical	2 or more	5 or more	12 or more
	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 9)}	Horizontal	210		
		Vertical	230		
Lock unit specifications	Standby power consumption when operating [W] ^{Note 10)}	Horizontal	2		
		Vertical	18		
	Max. instantaneous power consumption [W] ^{Note 11)}		1275		
	Type ^{Note 12)}		Non-magnetizing lock		
	Holding force [N]		313	607	1,146
Lock unit specifications	Power consumption [W] at 20°C ^{Note 13)}		7.9		
	Rated voltage [V]		24 VDC ⁰ / _{-10%}		

Note 1) 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 179.

Note 5) The allowable speed changes according to the stroke.

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

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%).

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		LEY63DS□□							
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

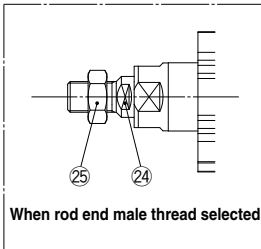
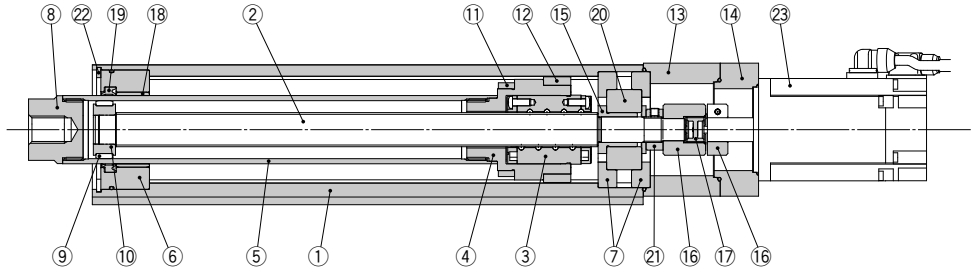
Additional Weight

[kg]

Size		63
Lock	Incremental encoder	0.4
	Absolute encoder	0.6
Rod end male thread	Male thread	0.12
	Nut	0.04
Rod flange (including mounting bolt)		0.51

Construction

In-line motor type: LEY63



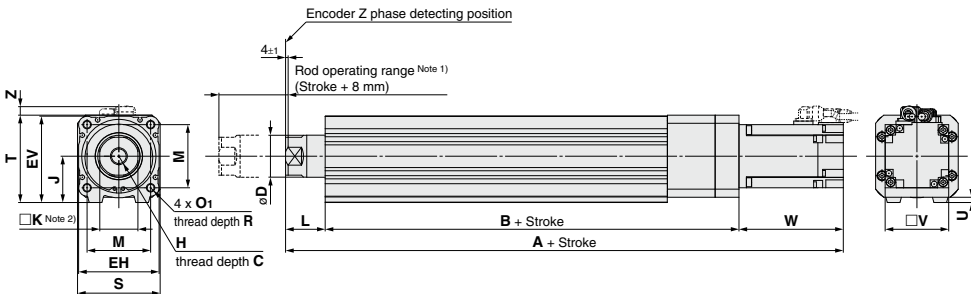
Component Parts

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 plated
6	Rod cover	Aluminum alloy	
7	Bearing holder	Aluminum alloy	
8	Socket	Free cutting carbon steel	Nickel plated
9	Wear ring	Resin	
10	Wear ring holder	Stainless steel	
11	Magnet	—	
12	Rotation stopper	Resin	
13	Motor block	Aluminum alloy	Coating

No.	Description	Material	Note
14	Motor adapter	Aluminum alloy	Coating
15	Spacer A	Stainless steel	
16	Hub	Aluminum alloy	
17	Spider	Urethane	
18	Bushing	Lead bronze cast	
19	Seal	NBR	
20	Bearing	—	
21	Lock nut	Alloy steel	Hard chrome plated
22	Retaining ring	Steel for spring	Phosphate coated
23	Motor	—	
24	Socket (Male thread)	Free cutting carbon steel	Nickel plated
25	Nut	Alloy steel	Trivalent chromated

Dimensions: In-line Motor

LEY63D□



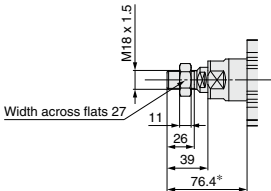
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

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

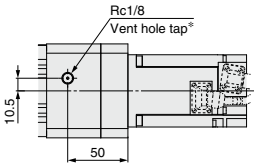
															[mm]
Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	T	U
63	Up to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5
	205 to 500														
	505 to 800														
Size	Stroke range [mm]	B	V	Incremental encoder						Absolute encoder					
				Without lock			With lock			Without lock			With 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		

End male thread: **LEY63□□□-□□M**

IP65 (Dust/Drip proof specification): **LEY63D□□-□P**



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



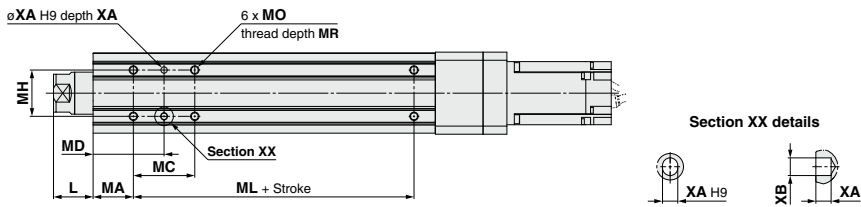
* When using the dust/drip proof (IP65), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: ø4 or more, Connection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

Series **LEY**

Size **63** Dust/Drip proof (IP65) specification
(Select options)

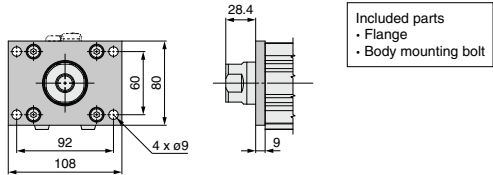
Dimensions: In-line Motor

Body bottom tapped: LEY63□□□-□□U



											[mm]
Size	Stroke range [mm]	L	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	37.4	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				

Rod flange: LEY63□□□-□□F



Material: Carbon steel (Nickel plated)

Electric Actuator/Rod Type

AC Servo Motor

Series LEY-X5

LEY25, 32

Dust/Drip proof (IP65) specification



RoHS



How to Order

LEY 25 ☐ S2 B - 100 ☐ ☐ ☐ - S 2 A1 ☐ - X5

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

• Dust/Drip proof specification

1 Size

25
32

2 Motor mounting position

NII	Top mounting
D	In-line

3 Motor type*

Symbol	Type	Output [W]	Actuator size	Compatible drivers
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 LECSS□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-S7 LECSS□-S7 LECSS□-S7

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

4 Lead [mm]

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

* The values shown in () are the equivalent lead which includes the pulley ratio for size 32 top mounting type.

5 Stroke [mm]

30	30
to	to
500	500

* Refer to the applicable stroke table.

6 Motor option

NII	Without option
B	With lock*

* When "With lock" is selected for the top mounting type, the motor body will stick out of the end of the body for size 25 with strokes 30 or less. Check for interference with workpieces before selecting a model.



7 Rod end thread

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

8 Mounting*1

Symbol	Type	Motor mounting position	
		Top mounting	In-line
NII	Ends tapped (Standard)*2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange*2	●	●
G	Head flange*2	●*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 or less

• LEY32: 100 or less

*3 Head flange is not available for the LEY32.

9 Cable type*

NII	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 mounting: (A) Axis side

• In-line: (B) Counter axis side

(Refer to page 425 for details.)

10 Cable length [m]*

NII	Without cable
2	2
5	5
A	10

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

12 I/O connector

NII	Without connector
H	With connector

* Applicable stroke table

Model	Stroke	Standard										
		30	50	100	150	200	250	300	350	400	450	500
LEY25		●	●	●	●	●	●	●	●	●	—	—
LEY32		●	●	●	●	●	●	●	●	●	●	●
											15 to 400	20 to 500

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

11 Driver type*

	Compatible drivers	Power supply voltage [V]
NII	Without driver	—
A1	LECSA1	100 to 120
A2	LECSA2	200 to 230
B1	LECSB1	100 to 120
B2	LECSB2	200 to 230
C1	LECSB1	100 to 120
C2	LECSB2	200 to 230
S1	LECSS1	100 to 120
S2	LECSS2	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)

NII : Without cable and driver

* For auto switches, refer to page 153.



Series LEY-X5

Dust/Drip proof (IP65) specification

Specifications

Model			LEY25S ₆ ² /LEY25DS ₆ ²			LEY32S ₃ ³ (Top mounting)			LEY32DS ₃ ³ (In-line)			
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			
Actuator specifications	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. speed [mm/s] Note 4)	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] Note 5)		35 or less			30 or less			30 or less			
	Max. acceleration/deceleration [mm/s ²]		5,000			5,000			5,000			
	Positioning repeatability [mm]		±0.02			±0.02			±0.02			
	Lead [mm]		12	6	3	20 Note 6)	10 Note 6)	5 Note 6)	16	8	4	
	Impact/Vibration resistance [m/s ²] Note 7)		50/20			50/20			50/20			
	Actuation type		Ball screw + Belt/Ball screw			Ball screw + Belt			Ball screw			
	Guide type		Sliding bushing (Piston rod)			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)			
	Enclosure					IP65						
	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)		Horizontal	8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required	
"Regeneration option" [kg]			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/incremental dual 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						
	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%							

Note 1) 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 178.

Note 4) The allowable speed changes according to the stroke.

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

Note 6) Equivalent lead which includes the pulley ratio [1.25:1]

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 176 and 177.

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

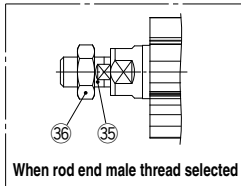
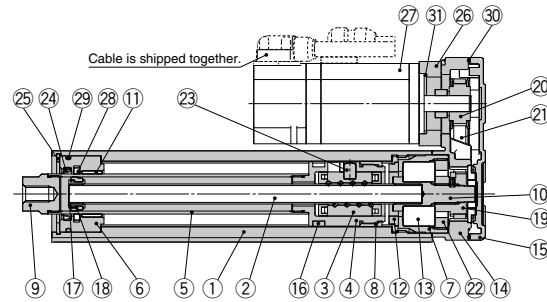
Series		LEY25S□ (Motor mounting position: Top mounting)										LEY32S□ (Motor mounting position: Top mounting)									
Motor type	Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
	Incremental encoder	1.31	1.38	1.55	1.81	1.99	2.16	2.34	2.51	2.69	2.42	2.53	2.82	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

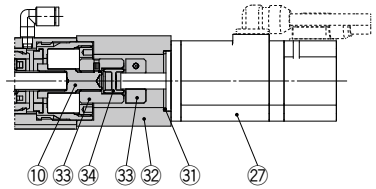
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)			
Head flange (including mounting bolt)		0.17	0.20

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 plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
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

No.	Description	Material	Note
19	Screw shaft pulley	Aluminum alloy	
20	Motor pulley	Aluminum alloy	
21	Belt	—	
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	
24	Scraper	Nylon	
25	Retaining ring	Steel for spring	Nickel plated
26	Motor adapter	Aluminum alloy	Coating
27	Motor	—	
28	Lub-retainer	Felt	
29	O-ring	NBR	
30	Gasket	NBR	
31	O-ring	NBR	
32	Motor block	Aluminum alloy	Coating
33	Hub	Aluminum alloy	
34	Spider	Urethane	
35	Socket (Male thread)	Free cutting carbon steel	Nickel plated
36	Nut	Alloy steel	Zinc chromated

Replacement Parts (Top mounting 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)

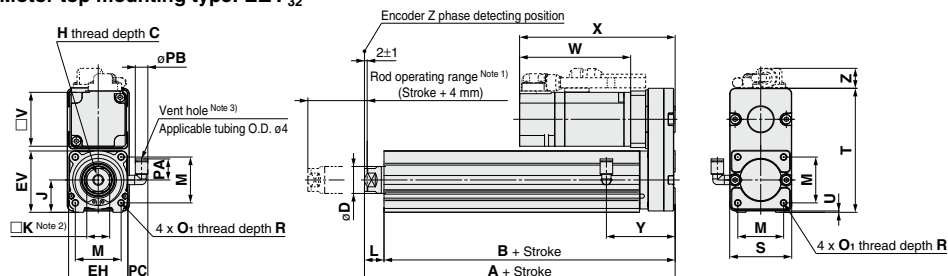
* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes sooner.

Series LEY-X5

Dust/Drip proof (IP65) specification

Dimensions

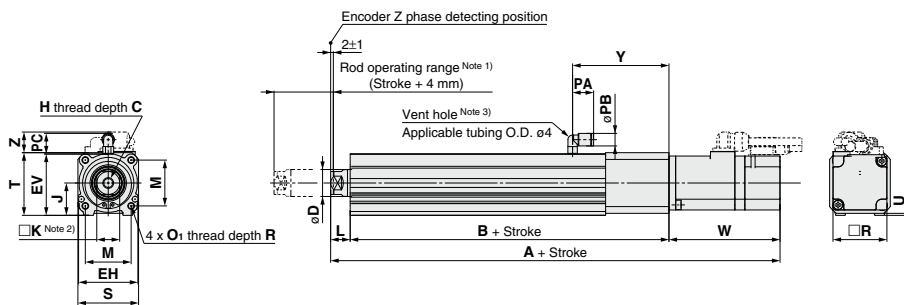
Motor top mounting type: LEY²⁵₃₂



Size	Stroke range (mm)	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	PA	PB	V
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	15.6	9.3	40
	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	15.6	9.3	60
	101 to 500	178.5	160														

Size	Stroke range (mm)	S	T	U	PC	Incremental encoder						Absolute encoder						Y
						Without lock			With lock			Without lock			With lock			
						W	X	Z	W	X	Z	W	X	Z	W	X	Z	
25	15 to 100	46	92	1	14.8	87	120	14.1	123.9	156.9	15.8	82.4	115.4	14.1	123.5	156.5	15.8	51
	101 to 400																	
32	20 to 100	60	118	1	15.3	88.2	128.2	17.1	116.8	156.8	17.1	76.6	116.6	17.1	116.1	156.1	17.1	61
	101 to 500																	

In-line motor type: LEY²⁵₃₂D



Size	Stroke range (mm)	Incremental encoder						Absolute encoder						B	C	D	EH	EV
		Without lock			With lock			Without lock			With lock							
		A	W	Z	A	W	Z	A	W	Z	A	W	Z					
25	15 to 100	238	87	14.6	274.9	123.9	16.3	233.4	82.4	14.6	274.5	123.5	16.3	136.5	13	20	44	45.5
	101 to 400	263			299.9			258.4			299.5			161.5				
32	20 to 100	262.7	88.2	17.1	291.3	116.8	17.1	251.1	76.6	17.1	290.6	116.1	17.1	156	13	25	51	56.5
	101 to 500	292.7			321.3			281.1			320.6			186				

Size	Stroke range (mm)	H	J	K	L	M	O ₁	R	PA	PB	V	S	T	U	PC	Y
25	15 to 100	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.6	9.3	40	45	46.5	1.5	15.3	71.5
	101 to 400															
32	20 to 100	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.6	9.3	60	60	61	1	15.3	87
	101 to 500															

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.

Note 3) The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.

Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 185.
For the mounting dimensions, refer to page 144.

LAT3	LECS□	LECPA	LECP1	LEC-G	LECA6 LECP6	LEH	LER	LEPY LEPS	LES LESH	LEY LEYG	LEL	LEJ	LEF
------	-------	-------	-------	-------	----------------	-----	-----	--------------	-------------	-------------	-----	-----	-----

Model Selection



Moment Load Graph

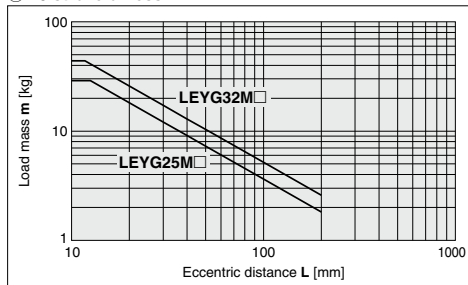
Selection conditions

Mounting position	Vertical		Horizontal	
Max. speed [mm/s]	"Speed-Vertical Work Load Graph"		200 or less	Over 200
Graph (Sliding bearing type)	①, ②		⑤, ⑥*	⑦, ⑧
Graph (Ball bushing bearing type)	③, ④		⑨, ⑩	⑪, ⑫

* For the sliding bearing type, the speed is restricted with a horizontal/moment load.

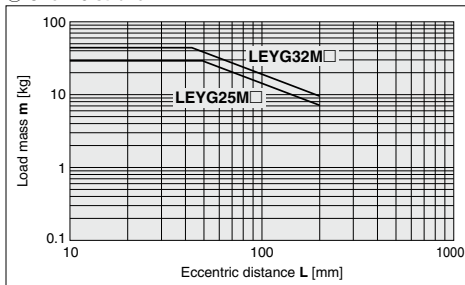
Vertical Mounting, Sliding Bearing

① 70 stroke or less



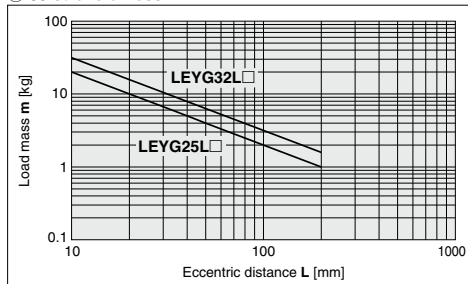
* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed-Vertical Work Load Graph" on page 200.

② Over 75 stroke



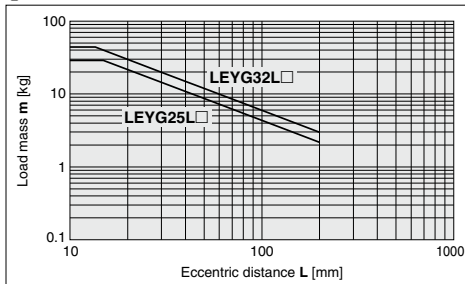
Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed-Vertical Work Load Graph" on page 200.

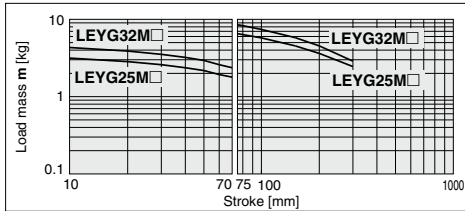
④ Over 40 stroke



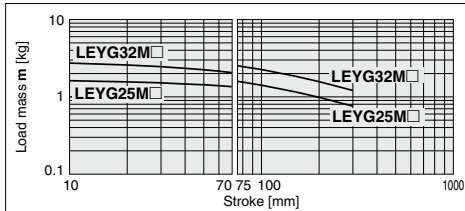
Moment Load Graph

Horizontal Mounting, Sliding Bearing

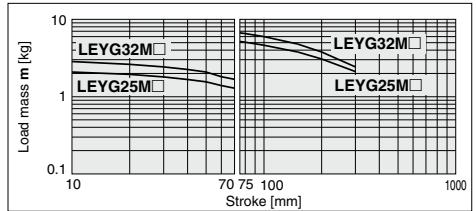
⑤ L = 50 mm Max. speed = 200 mm/s or less



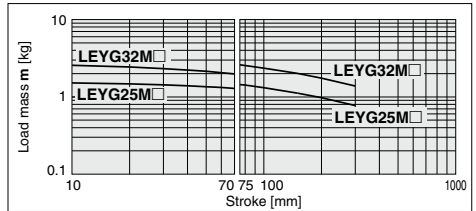
⑦ L = 50 mm Max. speed = Over 200 mm/s



⑥ L = 100 mm Max. speed = 200 mm/s or less

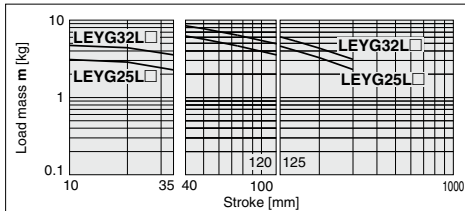


⑧ L = 100 mm Max. speed = Over 200 mm/s

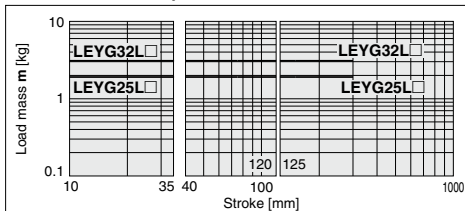


Horizontal Mounting, Ball Bushing Bearing

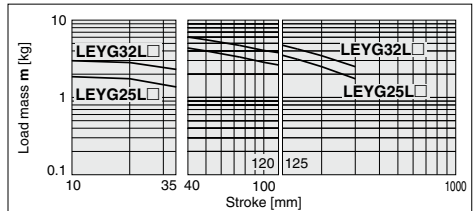
⑨ L = 50 mm Max. speed = 200 mm/s or less



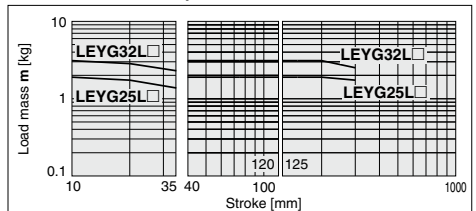
⑪ L = 50 mm Max. speed = Over 200 mm/s



⑩ L = 100 mm Max. speed = 200 mm/s or less

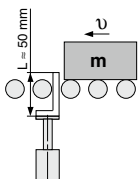


⑫ L = 100 mm Max. speed = Over 200 mm/s



Operating Range when Used as Stopper

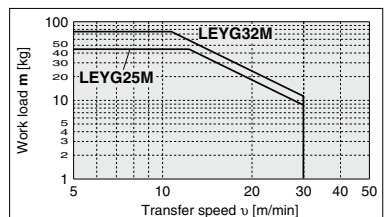
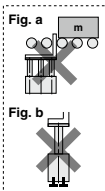
LEYG□M (Sliding bearing)



Caution

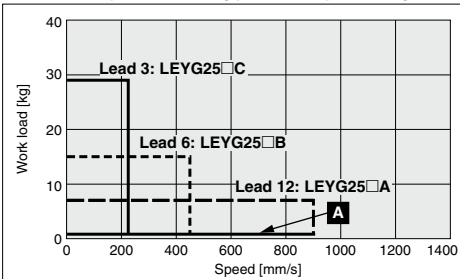
Handling Precautions

- Note 1) When used as a stopper, select a model with 30 stroke or less.
- Note 2) LEYG□L (ball bushing bearing) cannot be used as a stopper.
- Note 3) Workpiece collision in series with guide rod cannot be permitted (Fig. a).
- Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (Fig. b).



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

LEYG25 (Motor mounting position: Top mounting/In-line)



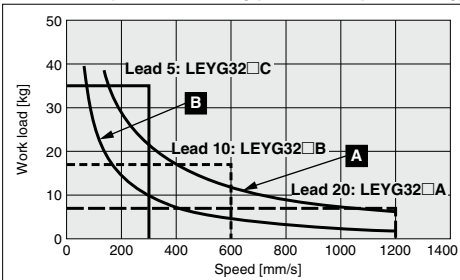
Required conditions for “Regeneration option”

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

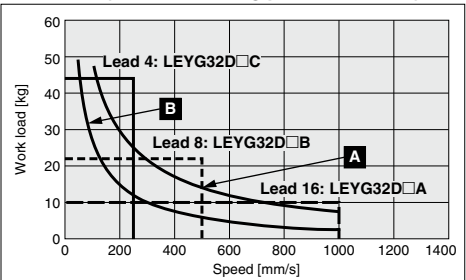
“Regeneration Option” Models

Operating conditions	Regenerative conditions	Vertical transfer
A	Duty ratio 50% or more	LEC-MR-RB-032
B	Duty ratio 100%	

LEYG32 (Motor mounting position: Top mounting)

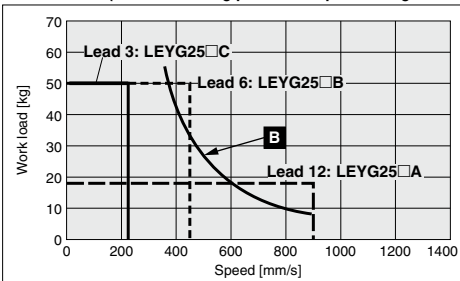


LEYG32D (Motor mounting position: In-line)



Speed–Horizontal Work Load Graph/Required Conditions for “Regeneration Option”

LEYG25 (Motor mounting position: Top mounting/In-line)



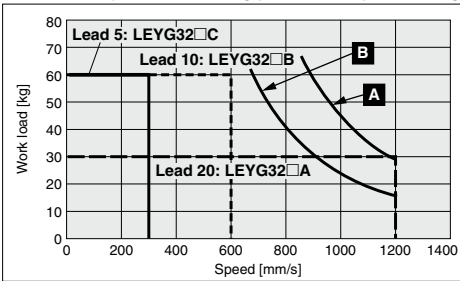
Required conditions for “Regeneration option”

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

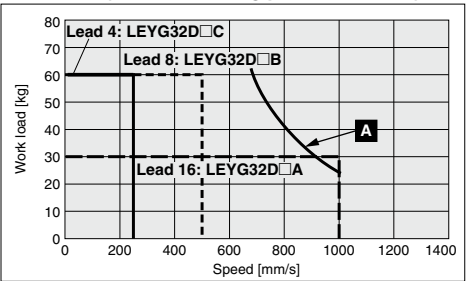
“Regeneration Option” Models

Operating conditions	Regenerative conditions	Horizontal transfer
A	Duty ratio 50% or more	LEC-MR-RB-032
B	Duty ratio 100%	

LEYG32 (Motor mounting position: Top mounting)

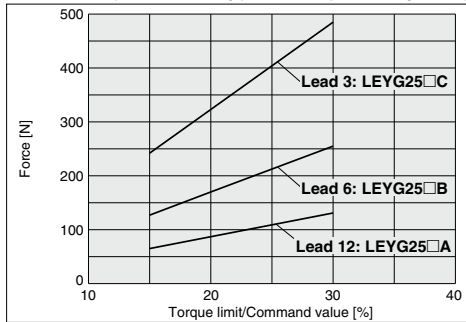


LEYG32D (Motor mounting position: In-line)

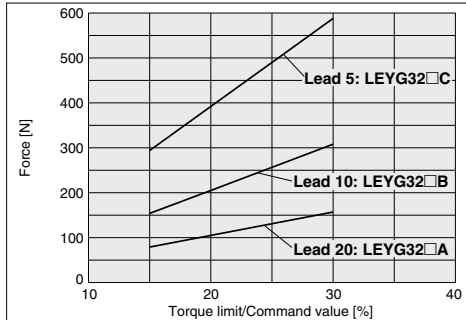


Force Conversion Graph

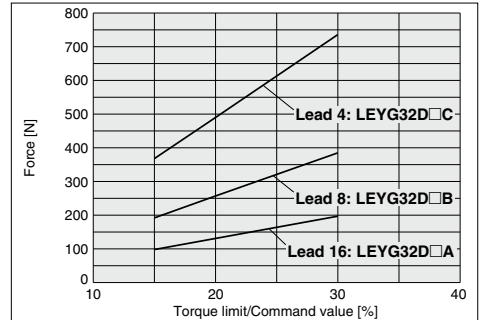
LEYG25 (Motor mounting position: Top mounting/In-line)



LEYG32 (Motor mounting position: Top mounting)



LEYG32D (Motor mounting position: In-line)



*1 When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 30% or less.

*2 When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analog torque should be set 30% or less.

Electric Actuator/Guide Rod Type

AC Servo Motor

Series LEYG

LEYG25, 32



RoHS

How to Order

LEYG **25** **M** **S2** **B** - **100** - **S** **2** **A1**

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

1 Size

25
32

2 Bearing type

M	Sliding bearing
L	Ball bushing bearing

3 Motor mounting position

Nil	Top mounting
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 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-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 409.

5 Lead [mm]

Symbol	LEYG25	LEYG32*
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

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

6 Stroke [mm]

30	30
to	to
300	300

* Refer to the table below for details.

7 Motor option

Nil	Without option
B	With lock

8 Guide option

Nil	Without option
F	With grease retaining function

* Only available for size 25 and 32 sliding bearings. (Refer to "Construction" on page 205.)

9 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 mounting: (A) Axis side
- In-line: (B) Counter axis side

(Refer to page 425 for details.)

10 Cable length* [m]

Nil	Without cable
2	2
5	5
A	10

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

* Applicable stroke table

● Standard

Model	Stroke (mm)	30	50	100	150	200	250	300	Manufacturable stroke range
LEYG25		●	●	●	●	●	●	●	15 to 300
LEYG32		●	●	●	●	●	●	●	20 to 300

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

For auto switches, refer to pages 146 and 147.



Motor mounting position: Top mounting



Motor mounting position: In-line

11 Driver type*

	Compatible drivers	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

12 I/O connector

Nil	Without connector
H	With connector

Use of auto switches for the guide rod type LEYG series

- Insert the auto switch from the front side with rod (plate) sticking out.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Consult with SMC when using auto switch on the rod stick out side.

Compatible Drivers

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 type
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 409			

Specifications

Model		LEYG25□S ² (Top mounting) LEYG25□DS ² (In-line)			LEYG32□S ² (Top mounting)			LEYG32□DS ² (In-line)			
Actuator specifications	Stroke [mm] ^{Note 1)}		30, 50, 100, 150, 200, 250, 300			30, 50, 100, 200, 250, 300			30, 50, 100, 200, 250, 300		
	Work load [kg]	Horizontal ^{Note 2)}	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	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. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s ²] ^{Note 4)}		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s ²]		5,000			5,000			5,000		
	Positioning repeatability [mm]		±0.02			±0.02			±0.02		
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s ²] ^{Note 5)}		50/20			50/20			50/20		
	Actuation type		Ball screw + Belt [1:1]/Ball screw			Ball screw + Belt [1:1.25]			Ball screw		
	Guide type		Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)								
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 6)}		8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required	
"Regeneration option" [kg]		2 or more	1 or more	1 or more	4 or more	5 or more	9 or more	4 or more	5 or more	9 or more	
Motor output/Size		100 W□40			200 W□60						
Motor type		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)									
Electric specifications	Power consumption [W] ^{Note 7)}	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W] ^{Note 8)}	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W] ^{Note 9)}		445			724			724		
	Type ^{Note 10)}		Non-magnetizing lock			Non-magnetizing lock					
Lock unit specifications	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption at 20°C [W] ^{Note 11)}		6.3			7.9			7.9		
	Rated voltage [V]		24 VDC ⁰ _{-10%}								

Note 1) 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 201.
Note 4) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 5) 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 6) 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 page 200.
Note 7) The power consumption (including the driver) is for when the actuator is operating.
Note 8) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during operation.
Note 9) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 10) Only when motor option "With lock" is selected.
Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Top Mounting Type [kg]

Series		LEYG25M							LEYG32M						
Motor type	Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
	Incremental encoder	1.80	1.99	2.31	2.73	3.07	3.41	3.67	3.24	3.50	4.05	4.80	5.35	5.83	6.28
	Absolute encoder	1.86	2.05	2.37	2.79	3.13	3.47	3.73	3.18	3.44	3.99	4.74	5.29	5.77	6.22
Series		LEYG25L							LEYG32L						
Motor type	Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
	Incremental encoder	1.81	2.02	2.26	2.69	2.95	3.27	3.51	3.24	3.51	3.9	4.64	5.06	5.56	5.96
	Absolute encoder	1.87	2.08	2.32	2.75	3.01	3.33	3.57	3.18	3.45	3.84	4.58	5.00	5.50	5.90

Weight: In-line Motor Type [kg]

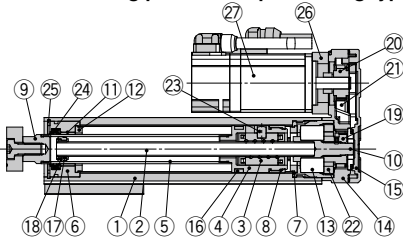
Series		LEYG25MD							LEYG32MD						
Motor type	Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
	Incremental encoder	1.83	2.02	2.34	2.76	3.10	3.44	3.70	3.26	3.52	4.07	4.82	5.37	5.85	6.30
	Absolute encoder	1.89	2.08	2.40	2.82	3.16	3.50	3.76	3.20	3.46	4.01	4.76	5.31	5.79	6.24
Series		LEYG25LD							LEYG32LD						
Motor type	Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
	Incremental encoder	1.84	2.05	2.29	2.72	2.98	3.30	3.54	3.26	3.53	3.92	4.66	5.08	5.58	5.98
	Absolute encoder	1.90	2.11	2.35	2.78	3.04	3.36	3.60	3.20	3.47	3.86	4.60	5.02	5.52	5.92

Additional Weight [kg]

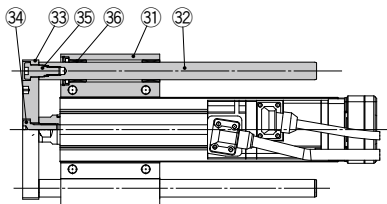
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66

Construction

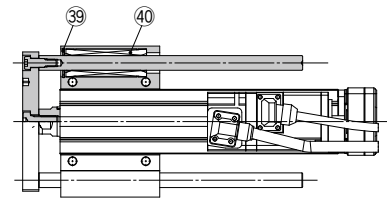
Motor mounting position: Top mounting type



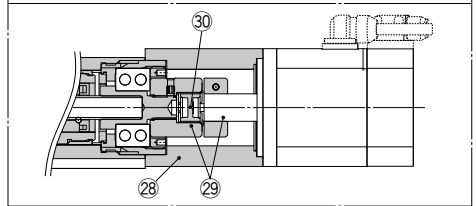
LEYG□M



LEYG□L



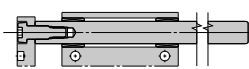
Motor mounting position: In-line type



LEYG25/32M: 50st or less

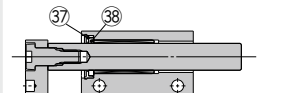


LEYG25/32M: Over 50st

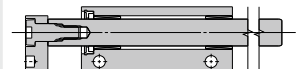


When grease retaining function selected

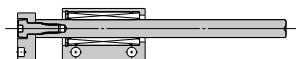
LEYG25/32M: 50st or less



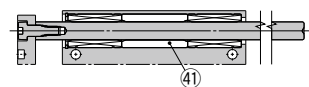
LEYG25/32M: Over 50st



LEYG25/32L: 100st or less



LEYG25/32L: Over 100st



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw shaft	Alloy steel	
3	Ball screw nut	—	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	Hard chrome plated
6	Rod cover	Aluminum alloy	
7	Housing	Aluminum alloy	
8	Rotation stopper	POM	
9	Socket	Free cutting carbon steel	Nickel plated
10	Connected shaft	Free cutting carbon steel	Nickel plated
11	Bushing	Lead bronze cast	
12	Bumper	Urethane	
13	Bearing	—	
14	Return box	Aluminum die-cast	Trivalent chromated
15	Return plate	Aluminum die-cast	Trivalent chromated
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	—	

Support Block

Size	Order no.
25	LEYG-S025
32	LEYG-S032

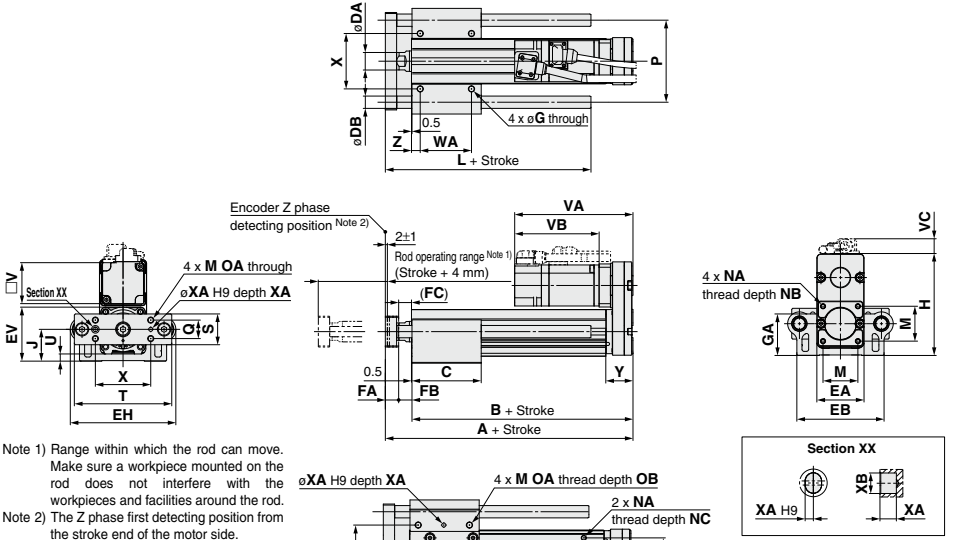
* Two body mounting bolts are included with the support block.

No.	Description	Material	Note
22	Bearing stopper	Aluminum alloy	
23	Parallel pin	Stainless steel	
24	Seal	NBR	
25	Retaining ring	Steel for spring	Phosphate coated
26	Motor adapter	Aluminum alloy	Anodized
27	Motor	—	
28	Motor block	Aluminum alloy	Anodized
29	Hub	Aluminum alloy	
30	Spider	Urethane	Spider
31	Guide attachment	Aluminum alloy	Anodized
32	Guide rod	Carbon steel	
33	Plate	Aluminum alloy	Anodized
34	Plate mounting bolt	Carbon steel	Nickel plated
35	Guide bolt	Carbon steel	Nickel plated
36	Sliding bearing	—	
37	Felt	Felt	
38	Holder	Resin	
39	Retaining ring	Steel for spring	Phosphate coated
40	Ball bushing	—	
41	Spacer	Aluminum alloy	Chromated

Replacement Parts /Belt

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

Dimensions: Top Mounting



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 Z phase first detecting position from the stroke end of the motor side.

LEYG□L (Ball bushing bearing) [mm]				
Size	Stroke range (mm)	L	DB	
25	Up to 114	91	10	
	115 to 190	115		
	191 to 300	133		
32	Up to 114	97.5	13	
	115 to 190	116.5		
	191 to 300	34		

LEYG□M (Sliding bearing) [mm]				
Size	Stroke range (mm)	L	DB	
25	Up to 59	67.5	12	
	60 to 185	100.5		
	186 to 300	138		
32	Up to 59	74	16	
	60 to 185	107		
	186 to 300	144		

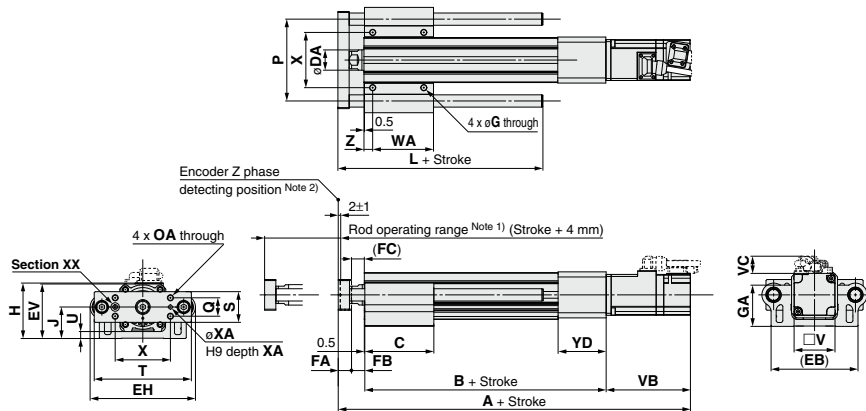
LEYG□M, LEYG□L Common

Size	Stroke range (mm)	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
25	Up tp 39	141.5	116	50	20	46	85	103	52.5	11	14.5	12.5	5.4	40.3	99	30.8	29	34	M5 x 0.8	8	6.5
	40 to 100			67.5																	
	101 to 124			84.5																	
	125 to 200	166.5	141	102																	
	201 to 300			55																	
32	Up tp 39	160.5	130	55	25	60	101	123	64	12	18.5	16.5	5.4	50.3	126	38.3	30	40	M6 x 1.0	10	8.5
	40 to 100			68																	
	101 to 124			85																	
	125 to 200	190.5	160	102																	
	201 to 300			55																	

Size	Stroke range (mm)	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	Y	Z
25	Up tp 39	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	26.5	8.5
	40 to 100									50	33.5	95					
	101 to 124									70	43.5	95					
	125 to 200									85	51	95					
	201 to 300									40	28.5	75					
32	Up tp 39	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	34	8.5
	40 to 100									50	33.5	105					
	101 to 124									70	43.5	105					
	125 to 200									85	51	105					
	201 to 300									85	51	105					

Size	Incremental encoder						Absolute encoder					
	Without lock			With lock			Without lock			With lock		
	VA	VB	VC	VA	VB	VC	VA	VB	VC	VA	VB	VC
25	120	87	14.1	156.9	123.9	15.8	115.4	82.4	14.1	156.5	123.5	15.8
32	128.2	88.2	17.1	156.8	116.8	17.1	116.6	76.6	17.1	156.1	116.1	17.1

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 Z phase first detecting position from the stroke end of the motor side.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range (mm)	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range (mm)	L	DB
25	Up to 59	67.5	12
	60 to 185	100.5	
	186 to 300	138	
32	Up to 59	74	16
	60 to 185	107	
	186 to 300	144	

LEYG□M, LEYG□L Common [mm]

Size	Stroke range (mm)	B	C	DA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC		
25	Up to 39	115.5	50	20	85	103	52.5	11	14.5	12.5	5.4	40.3	53.5	30.8	29	M5 x 0.8	6.5		
	40 to 100		67.5																
	101 to 124	140.5	84.5																
	125 to 200		102																
	201 to 300		102																
32	Up to 39	128	55	25	101	123	64	12	18.5	16.5	5.4	50.3	68.5	38.3	30	M6 x 1.0	8.5		
	40 to 100		68																
	101 to 124	158	85																
	125 to 200		102																
	201 to 300		102																
Size	Stroke range (mm)	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z		
25	Up to 39	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	47	8.5		
	40 to 100									50	33.5								
	101 to 124									70	43.5	95							
	125 to 200									85	51								
	201 to 300									40	28.5	75							
32	Up to 39	M6 x 1.0	12	95	28	40	117	7.3	60	50	33.5	105	64	5	6	60	8.5		
	40 to 100									50	33.5								
	101 to 124									70	43.5	105							
	125 to 200									85	51								
	201 to 300									85	51	105							
Size	Stroke range (mm)	Incremental encoder						Absolute encoder											
		Without lock			With lock			Without lock			With lock								
		A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC			
25	15 to 100	249			14.6	285.9			16.3	244.4			14.6	285.5			16.3		
	105 to 300	274				310.9				269.4				315.5					
32	15 to 100	274.7			88.2	303.3			17.1	263.1			17.1	302.6			17.1		
	105 to 300	304.7				333.3				293.1				332.6					

Support Block

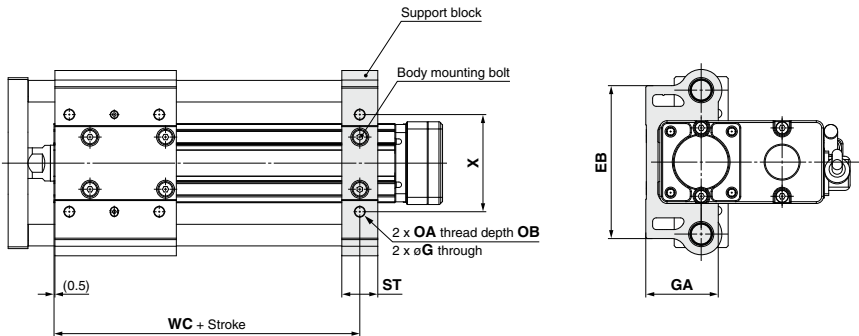
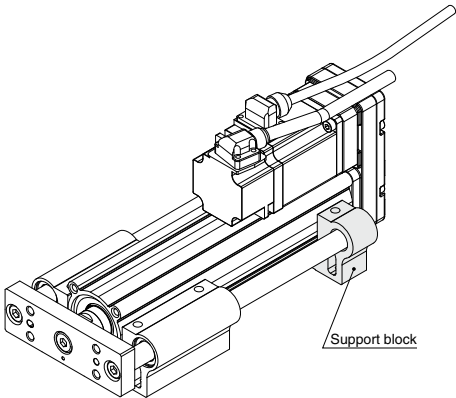
● **Guide for support block application**

When the stroke exceeds 100 mm and the lateral load is applied, the body will be bent based on the load. Mounting the support block is recommended. (Please order it separately from the models shown below.)

Support Block Model

LEYG-S 025

● Size	
025	For size 25
032	For size 32



⚠ Caution

Do not install the body using only a support block.
The support block should be used only for support.

[mm]										
Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
25	LEYG-S025	100st or less	85	5.4	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32	LEYG-S032	100st or less	101	5.4	50.3	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

* Two body mounting bolts are included with the support block.



Series LEY/LEYG

Electric Actuators/ Specific Product Precautions 1

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

Please download it via our website, <http://www.smcworld.com>

Design/Selection

⚠ Warning

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by load and allowable lateral load on the rod end. If the product is used outside of the operating limit, the eccentric load applied to the piston rod will be excessive and have adverse effects such as creating play on the sliding parts of the piston rod, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

This can cause failure.

3. Do not use as a stopper.

Handling

⚠ Caution

1. When the pushing operation is used, be sure to set to "Torque control mode", and use within the specified pushing speed range for each series.

Do not allow the piston rod to hit the workpiece and end of the stroke in the "Position control mode", "Speed control mode" or "Positioning mode". The lead screw, bearing and internal stopper may be damaged and lead to malfunction.

2. When operating with "Torque control mode", the value of the internal torque command (LECSA) or the maximum output command for analog torque (LECSB) should be set 30% or less.

It may lead to damage and malfunction.

3. The forward/reverse torque limit is set to 100% (3 times the motor rated torque) as default.

This value is the maximum torque (the limit value) in the "Position control mode", "Speed control mode" or "Positioning mode". When the product is operated with a smaller value than the default, acceleration when driving can decrease. Set the value after confirming the actual device to be used.

4. The maximum speed of this actuator is affected by the product stroke.

Check the model selection section of the catalog.

5. Do not apply a load, impact or resistance in addition to the transferred load during return to origin.

Additional force will cause the displacement of the origin position.

6. Do not scratch or dent the sliding parts of the piston rod, by striking or attaching objects.

The piston rod and guide rod are manufactured to precise tolerances, even a slight deformation may cause malfunction.

7. When an external guide is used, connect it in such a way that no impact or load is applied to it.

Use a freely moving connector (such as a floating joint).

8. Do not operate by fixing the piston rod and moving the actuator body.

Excessive load will be applied to the piston rod, leading to damage to the actuator and reduced the life of the product.

Handling

⚠ Caution

9. When an actuator is operated with one end fixed and the other free (ends tapped (standard), flange type), a bending moment may act on the actuator due to vibration generated at the stroke end, which can damage the actuator. In such a case, install a mounting bracket to suppress the vibration of the actuator body or reduce the speed so that the actuator does not vibrate.

Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.

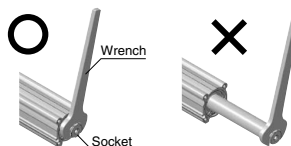
10. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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.

Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque [N·m] or less	LEY25□	LEY32
	1.1	1.4

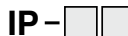
When screwing in a bracket or nut to the end of the piston rod, hold the flats of the rod end with a wrench (the piston rod should be fully retracted). Do not apply tightening torque to the non-rotating mechanism.



11. When using auto switch with the guide rod type LEYG series, the following limits will be in effect. Please select the product while paying attention to this.

- Insert the auto switch from the front side with rod (plate) sticking out.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Consult with SMC when using auto switch on the rod stick out side.

Enclosure



First characteristic numeral • Second characteristic numeral

• First Characteristics:

Degrees of protection against solid foreign objects

0	Non-protected
1	Protected against solid foreign objects of 50 mmφ and greater
2	Protected against solid foreign objects of 12 mmφ and greater
3	Protected against solid foreign objects of 2.5 mmφ and greater
4	Protected against solid foreign objects of 1.0 mmφ and greater
5	Dust-protected
6	Dust-tight



Series LEY/LEYG Electric Actuators/ Specific Product Precautions 2

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

Please download it via our website, <http://www.smcworld.com>

Enclosure

• Second Characteristics:

Degrees of protection against water

0	Non-protected	—
1	Protected against vertically falling water drops	Dripproof type 1
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure tilted up to 60°	Rainproof type
4	Protected against splashing water	Splashproof type
5	Protected against water jets	Water-jet-proof type
6	Protected against powerful water jets	Powerful water-jet-proof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) In the case of stipulated as IP65, we can know the degrees of protection is dust-tight and water-jet-proof on the grounds that the first characteristic numeral is "6" and the second characteristic numeral is "5" respectively, that gives it will not be adversely affected by direct water jets from any direction.
(* The water jets which are "5" of the second characteristic numeral based on JIS C 0920 (2003) indicates a flow of water for 3 minutes at 12.5 L per minute.)

Mounting

⚠ Caution

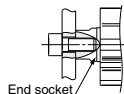
1. When mounting workpieces or jigs to the piston rod end, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.

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

2. When mounting the product and/or a workpiece, tighten the mounting screws within the specified torque range.

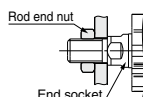
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Workpiece fixed/Rod end female thread

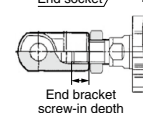


Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)	End socket width across flats (mm)
LEY25	M8 x 1.25	12.5	13	17
LEY32	M8 x 1.25	12.5	13	22

Workpiece fixed/Rod end male thread (When "Rod end male thread" is selected.)



Model	Thread size	Max. tightening torque (N·m)	Effective thread length (mm)	End socket width across flats (mm)
LEY25	M14 x 1.5	65.0	20.5	17
LEY32	M14 x 1.5	65.0	20.5	22



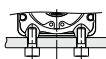
Model	Rod end nut width across flats (mm)	Rod end nut length (mm)	End bracket screw-in depth (mm)
LEY25	22	8	8 or more
LEY32	22	8	8 or more

* Rod end nut is an accessory.

Mounting

⚠ Caution

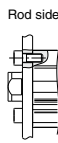
Body fixed/Body bottom tapped style (When "Body bottom tapped" is selected.)



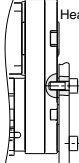
Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEY25	M5 x 0.8	3.0	6.5
LEY32	M6 x 1.0	5.2	8.8

Body fixed/Rod side/Head side tapped style

Rod side



Head side*



Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth (mm)
LEY25	M5 x 0.8	3.0	8
LEY32	M6 x 1.0	5.2	10

* Except the LEY□D.

3. Keep the flatness of the mounting surface within the following ranges when mounting the actuator body and workpiece.

Unevenness of a workpiece or base mounted on the body of the product may cause an increase in the sliding resistance.

Model	Mounting position	Flatness
LEY□	Body/Body bottom	0.1 mm or less



Maintenance

⚠ Warning

1. Ensure that the power supply is stopped and the workpiece is removed before starting maintenance work or replacement of the product.

• Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Belt check
Inspection before daily operation	○	—
Inspection every 6 months/250 km/5 million cycles*	○	○

* Select whichever comes sooner.

• Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

• Items for belt check

Stop operation immediately and replace the belt when belt appear to be below. Further, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out

Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt

Belt corner becomes round and frayed thread sticks out.

c. Belt partially cut

Belt is partially cut. Foreign matter caught in teeth other than cut part causes flaw.

d. Vertical line of belt teeth

Flaw which is made when the belt runs on the flange.

e. Rubber back of the belt is softened and sticky

f. Crack on the back of the belt