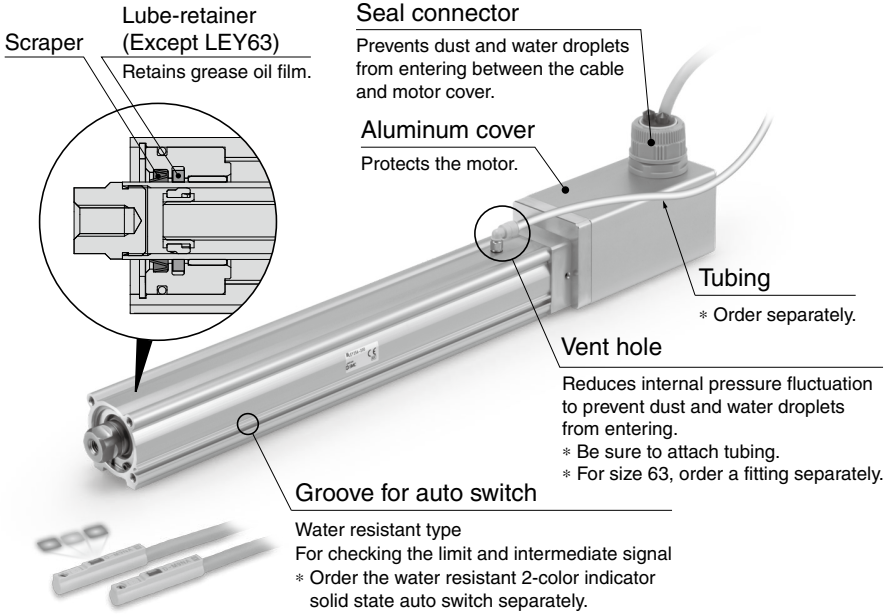
●Enclosure: IP65 equivalent Note)
●Max. stroke: 500 mm*

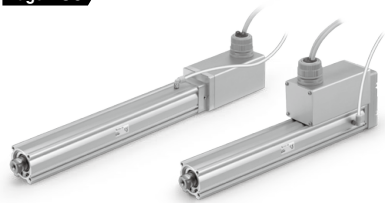
* For size 32



LEY-X5 (Made to Order) Size 25, 32

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

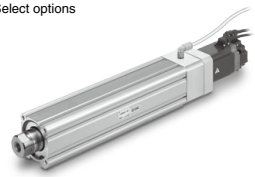
Page 486



LEY63□□□-□P Size 63

AC Servo Motor (400 W) Type Page 500

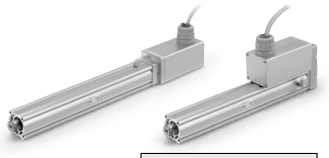
* Select options



AC Servo Motor (100/200 W) Type Page 494

Note) IP65 enclosure: The protection structure against solid foreign objects is dust-tight type and the protection structure against water is water-jet-proof type.
Dust-tight means that no dust can enter the inside of the equipment.
Water-jet-proof means that the product is not adversely affected by direct water jets from any direction. That is, even when direct water jets are applied to the product for 3 minutes by means of the pre-determined method, there is no water entry that hinders correct operation inside the equipment. Be sure to take appropriate protection measures when the product is used in an environment where it is constantly exposed to water or fluids other than water splash. In particular, the product cannot be used in an environment with oil, such as cutting oil or cutting fluid.

Model Selection



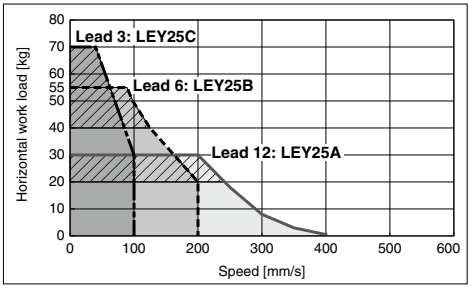
LEY-X5 Series ▶ Page 486

Refer to page 229 for the LECPA or LECA6.

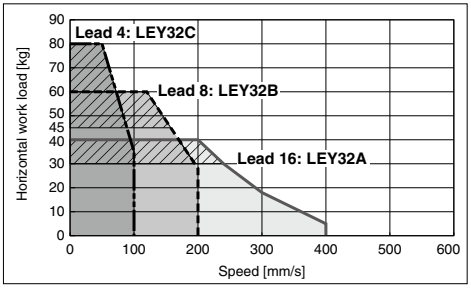
Speed–Work Load Graph (Guide) for Step Motor (Servo/24 VDC) LECP6, LECP1, LECPMJ

Horizontal

LEY25□

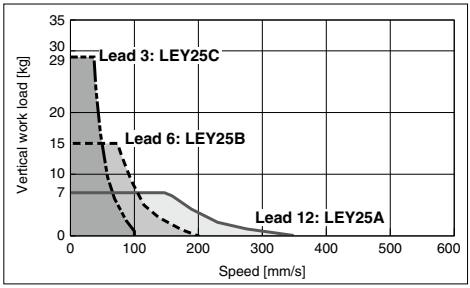


LEY32□

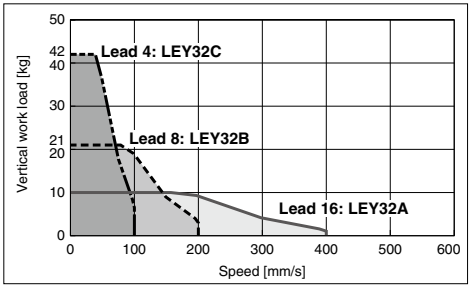


Vertical

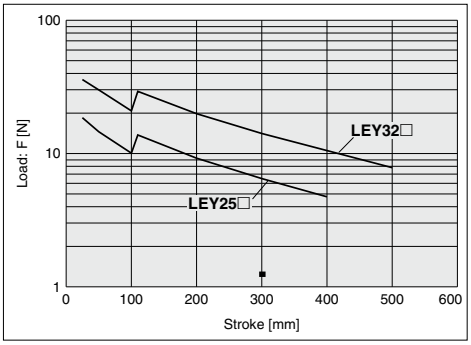
LEY25□



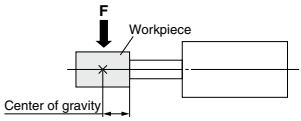
LEY32□



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



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

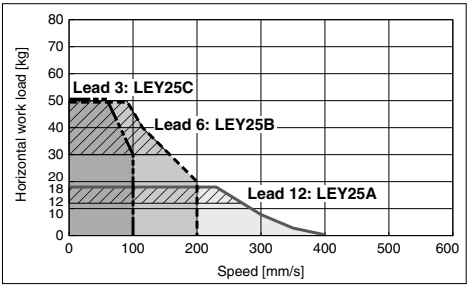


Refer to page 228 for the LECP6, LECP1, LECPMJ.

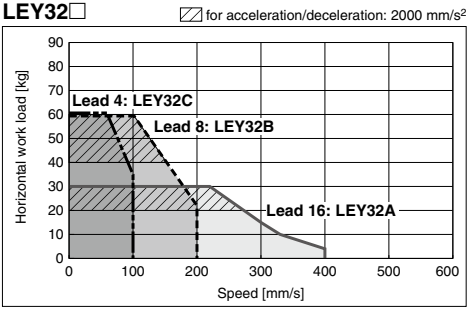
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA

Horizontal

LEY25□

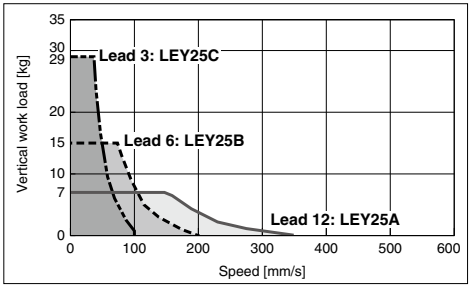


LEY32□

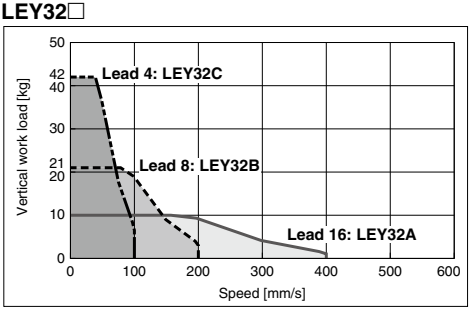


Vertical

LEY25□



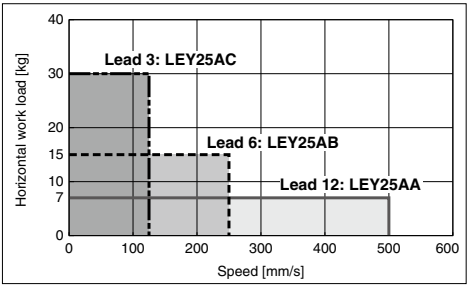
LEY32□



For Servo Motor (24 VDC) LECA6

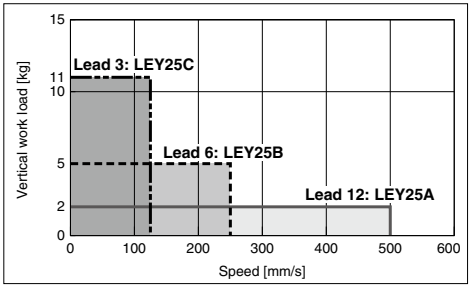
Horizontal

LEY25A□



Vertical

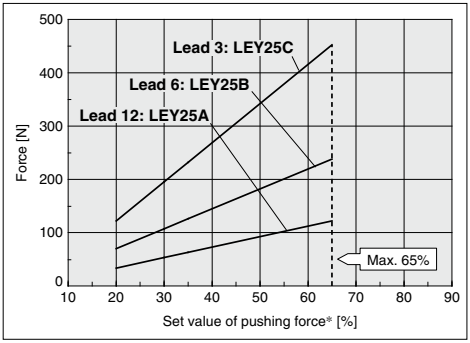
LEY25□



Force Conversion Graph

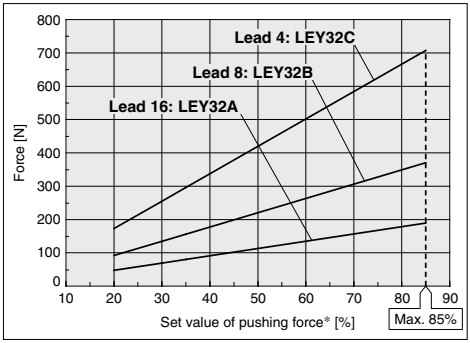
Step Motor (Servo/24 VDC)

LEY25



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

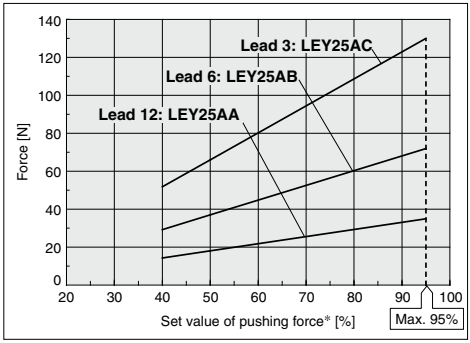
LEY32



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)
LEY25□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 35	50% to 65%
LEY32□	1 to 4	20% to 85%
	5 to 20	35% to 85%
	21 to 30	60% to 85%

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

<Set Values for Vertical Upward Transfer Pushing Operation>

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

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

* Set values for the controller.

AC Servo Motor

Electric Actuator/Rod Type

LEY/LEY-X5 Series Dust-tight/Water-jet-proof (IP65 Equivalent)

Model Selection

Size **25, 32, 63**

LEY Series ▶ Pages **254, 264** **LEY-X5 Series** ▶ Pages **494, 500**

Selection Procedure

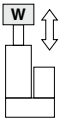
Positioning Control Selection Procedure

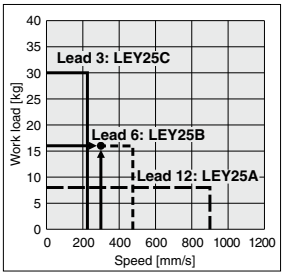
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

Selection Example

Operating conditions

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





<Speed–Vertical work load graph> (LEY25)

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

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

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

* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to the horizontal work load in the specifications on pages 256, 265, 495 and 501, and the precautions.

The regeneration option may be necessary. Refer to pages 234 and 235 for "Required Conditions for Regeneration Option".

Step 2 **Check the cycle time.**

Calculate the cycle time using the following calculation method.

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

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

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

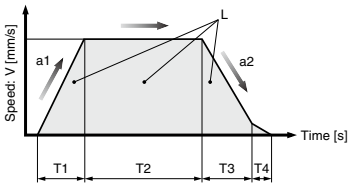
$$T1 = V/a1 \text{ [s]} \qquad T3 = V/a2 \text{ [s]}$$

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

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

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

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



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

T1: Acceleration time [s] ··· Time until reaching the set speed
T2: Constant speed time [s] ··· Time while the actuator is operating at a constant speed
T3: Deceleration time [s] ··· Time from the beginning of the constant speed operation to stop
T4: Settling time [s] ··· Time until positioning is completed

Calculation example)
T1 to T4 can be calculated as follows.

$T1 = V/a1 = 300/5000 = 0.06$ [s], $T3 = V/a2 = 300/5000 = 0.06$ [s]

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

$T4 = 0.05$ [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 [s]**

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

Selection Procedure

Force Control Selection Procedure

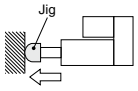
Step 1 Check the duty ratio. → **Step 2** Check the force. → **Step 3** Check the lateral load on the rod end.

∗ The duty ratio is a ratio of the operation time in one cycle.

Selection Example

Operating conditions

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



Step 1 **Check the duty ratio.**
<Conversion table of force–duty ratio>

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

Selection example)
Based on the table below,
- Duty ratio: 60 [%]

Therefore, Torque limit/Command value will be 30 [%].

<Conversion table of force–duty ratio>
(LEY25/AC Servo motor)

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

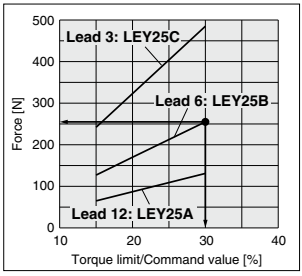
∗ [Torque limit/Command value [%]] is the set value for the driver.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.

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

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

Selection example)
Based on the graph shown on the right side,
- Torque limit/Command value: 30 [%]
- Force: 255 [N]

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



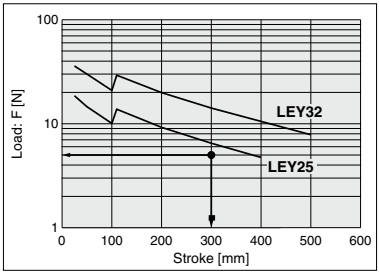
<Force conversion graph>
(LEY25)

Step 3 **Check the lateral load on the rod end.**
<Graph of allowable lateral load on the rod end>

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

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.5 [kg] ≈ 5 [N]
- Product stroke: 300 [mm]

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

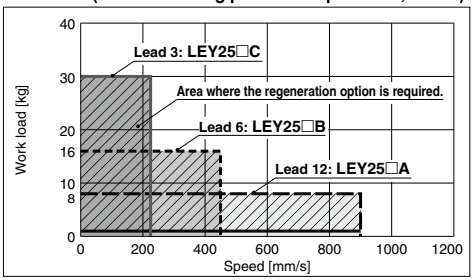


<Graph of allowable lateral load on the rod end>

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

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

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



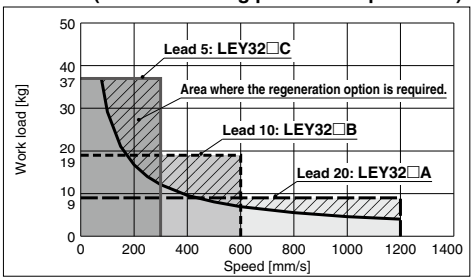
Required conditions for "Regeneration option"

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

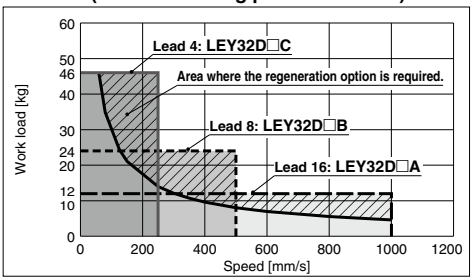
"Regeneration Option" Models

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

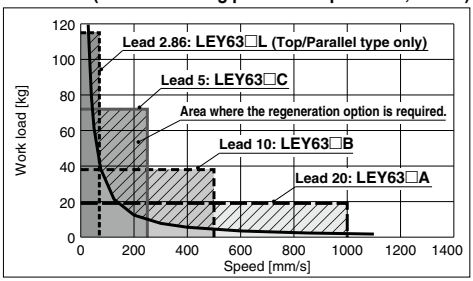
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)

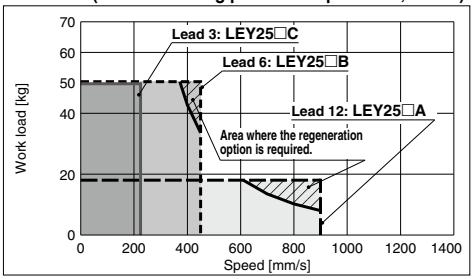


LEY63□ (Motor mounting position: Top/Parallel, In-line)



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

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



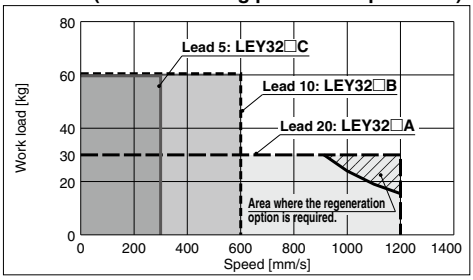
Required conditions for "Regeneration option"

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

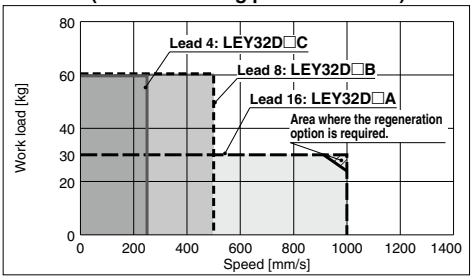
"Regeneration Option" Models

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

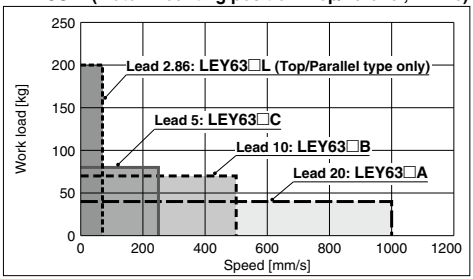
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



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



Allowable Stroke Speed

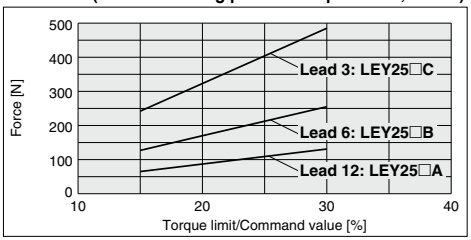
[mm/s]

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

∗ Top/Parallel type only

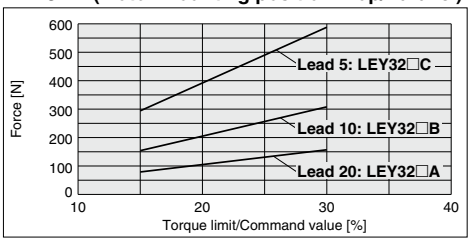
Force Conversion Graph (Guide)

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



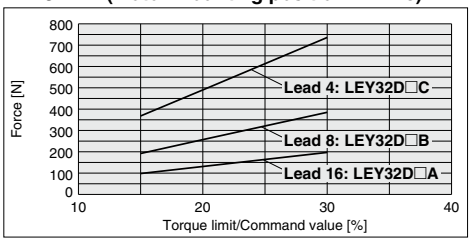
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32□ (Motor mounting position: Top/Parallel)



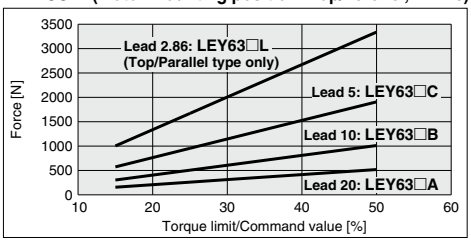
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32D□ (Motor mounting position: In-line)



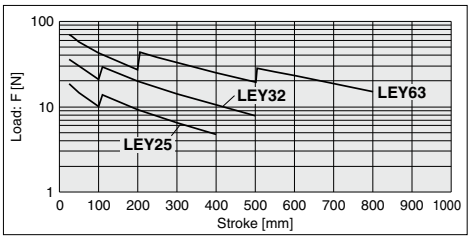
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

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

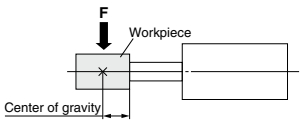


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5
40	30	0.5
50	20	0.16

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



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



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

Electric Actuator/ Rod Type

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

CE RoHS

LEY-X5 (Made to Order) *Series* LEY25, 32

Refer to page 228 for model selection.

How to Order

LEY 25 D □ B – 50 □ □ □ – R 1 6N 1 □ – X5

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

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

❶ Size

25	
32	

❷ Motor mounting position

Nil	Top mounting
D	In-line

❸ Motor type

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

❹ Lead [mm]

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

❺ Stroke [mm]

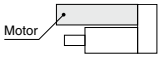
30	30
to	to
500	500

∗ Refer to the applicable stroke table.

❻ Motor option∗

Nil	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 strokes 50 mm or less. Check for interference with workpieces before selecting a model.



❼ Rod end thread

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

❽ Mounting∗1

Symbol	Type	Motor mounting position: Top mounting	Motor mounting position: In-line
Nil	Ends tapped/ Body bottom tapped ∗2	●	●
L	Foot	●	—
F	Rod flange ∗2	● ∗3	●
G	Head flange ∗2	● ∗4	—

∗1 Mounting bracket is shipped together, (but not assembled).
∗2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
• LEY25: 200 mm or less • LEY32: 100 mm or less
∗3 Rod flange is not available for the LEY25/32 with stroke 50 mm or less and motor option "With lock".
∗4 Head flange is not available for the LEY32.

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

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

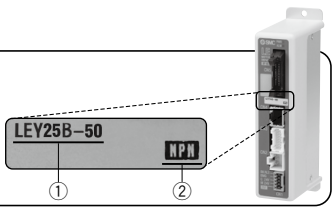
∗ For auto switches, refer to page 507.
∗ "-X5" is not added to an actuator model with a controller/driver part number suffix.
Example) "LEY25DB-100" for the LEY25DB-100BMU-R16N1D-X5

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

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

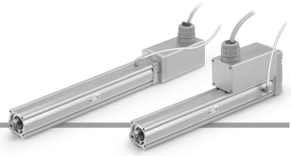
<Check the following before use.>

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

SMC



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∗		

∗ Produced upon receipt of order. Refer to the specifications Note 5) on page 488.

⑪ Controller/Driver type∗1

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

∗1 For details about controller/driver and compatible motor, refer to the compatible controller/driver below.
∗2 Only available for the motor type "Step motor".
∗3 Not applicable to CE.
∗4 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 596 separately.

⑫ I/O cable length [m]∗1, Communication plug

Nil	Without cable
1	1.5
3	3∗2
5	5∗2
S	Straight type communication plug connector∗3
T	T-branch type communication plug connector∗3

∗1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 568 (For LECP6/LECA6), page 582 (For LECP1) or page 596 (For LECPA) if I/O cable is required.
∗2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.
∗3 For the LECPMJ, only "Nil", "S" and "T" are selectable since I/O cable is not included.

⑬ Controller/Driver mounting

Nil	Screw mounting
D	DIN rail mounting∗

∗ DIN rail is not included. Order it separately.

Compatible Controller/Driver

Type	**Step data input type** 	**Step data input type** 	**CC-Link direct input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECA6**	**LECPMJ**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		CC-Link direct input	Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)		
Maximum number of step data	64 points			14 points	—
Power supply voltage	24 VDC				
Reference page	Page 560	Page 560	Page 600	Page 576	Page 590

Specifications

Step Motor (Servo/24 VDC)

	Model				LEY25			LEY32		
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		
	Work load [kg] Note 2)	Horizontal	For LECP6 LECP1 LECPMJ	(3000 [mm/s²])	20	40	60	30	45	60
				(2000 [mm/s²])	30	60	70	40	60	80
			For LECPA	(3000 [mm/s²])	12	30	30	20	40	40
				(2000 [mm/s²])	18	50	50	30	60	60
		Vertical Note 15)		(3000 [mm/s²])	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/s²]				3000					
	Pushing speed [mm/s] Note 6)				35 or less			30 or less		
	Positioning repeatability [mm]				±0.02					
	Lost motion [mm] Note 7)				0.1 or less					
	Screw lead [mm]				12	6	3	16	8	4
	Impact/Vibration resistance [m/s²] Note 8)				50/20					
	Actuation type				Ball screw + Belt (LEY□) Ball screw (LEY□D)					
	Guide type				Sliding bushing (Piston rod)					
	Enclosure Note 9)				IP65 equivalent					
	Operating temperature range [°C]				5 to 40					
	Operating humidity range [%RH]				90 or less (No condensation)					
Electric specifications	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 10)				40			50		
	Standby power consumption when operating [W] Note 11)				15			48		
	Max. instantaneous power consumption [W] Note 12)				48			104		
Lock unit specifications	Type Note 13)				Non-magnetizing lock					
	Holding force [N]				78	157	294	108	216	421
	Power consumption [W] Note 14)				5			5		
	Rated voltage [V]				24 VDC ±10%					

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

Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check "Model Selection" on page 228.
Vertical: Speed changes according to the work load. Check "Model Selection" on page 228.
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 230.

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

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

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

Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

Note 9) Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures. For details about enclosure, refer to "Enclosure" on page 306.

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

Note 11) 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 12) 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 13) With lock only

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

Note 15) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Specifications

Servo Motor (24 VDC)

Model				LEY25A		
Actuator specifications	Stroke [mm] Note 1)			30, 50, 100, 150, 200 250, 300, 350, 400		
	Work load [kg] Note 2)	Horizontal	(3000 [mm/s²])	7	15	30
		Vertical Note 14)	(3000 [mm/s²])	2	5	11
	Pushing force [N] Note 3) Note 4)			18 to 35	37 to 72	66 to 130
	Speed [mm/s]			2 to 400	1 to 200	1 to 100
	Max. acceleration/deceleration [mm/s²]			3000		
	Pushing speed [mm/s] Note 5)			35 or less		
	Positioning repeatability [mm]			±0.02		
	Lost motion [mm] Note 6)			0.1 or less		
	Screw lead [mm]			12	6	3
	Impact/Vibration resistance [m/s²] Note 7)			50/20		
	Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)		
	Guide type			Sliding bushing (Piston rod)		
	Enclosure Note 8)			IP65 equivalent		
	Operating temperature range [°C]			5 to 40		
	Operating humidity range [%RH]			90 or less (No condensation)		
Electric specifications	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 9)			86		
	Standby power consumption when operating [W] Note 10)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 11)			96		
Lock unit specifications	Type Note 12)			Non-magnetizing lock		
	Holding force [N]			78	157	294
	Power consumption [W] Note 13)			5		
	Rated voltage [V]			24 VDC ±10%		

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check "Model Selection" on page 228. 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 230.
Note 5) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures. For details about enclosure, refer to "Enclosure" on page 306.
Note 9) The power consumption (including the controller) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation with the maximum work load. Except during the pushing operation.
Note 11) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 12) With lock only
Note 13) For an actuator with lock, add the power consumption for the lock.
Note 14) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

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	—	—	—	—	—	—	—	—	—	—	—

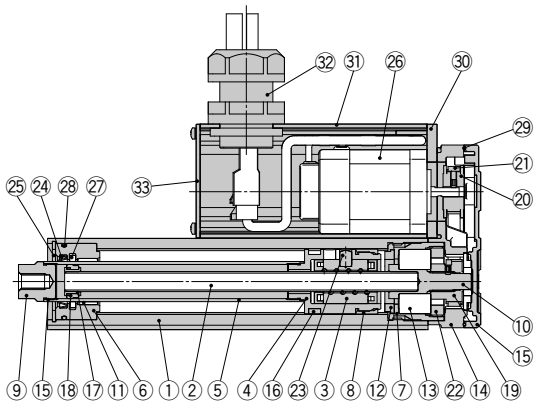
Additional Weight

[kg]

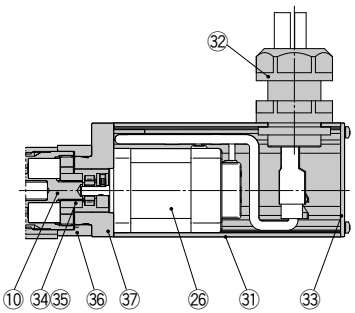
Size		25	32
Lock		0.33	0.63
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

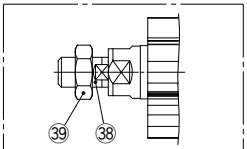
Construction

Motor top mounting type: LEY$^{25}_{32}$



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





When rod end male thread selected

Component Parts

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

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 plating
26	**Motor**	—	
27	**Lube-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 plating
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

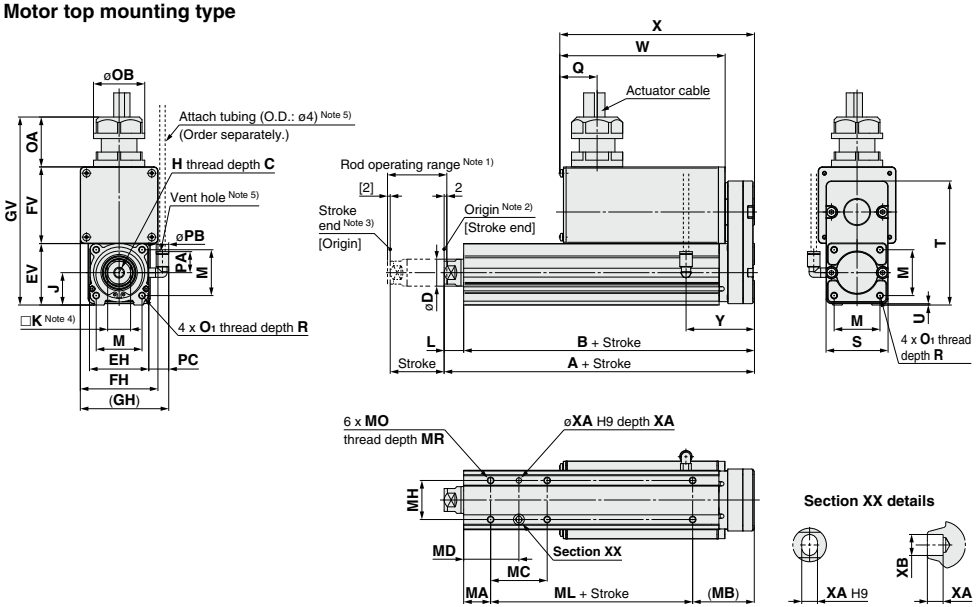
Replacement Parts/Grease Pack

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 first.

Dimensions

Motor top mounting type



[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	FH	FV	GH	GV	H	J	K	L	M	O1
25	15 to 100	130.5	116	13	20	44	45.5	57.6	56.8	66.2	139.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	69.6	78.6	76.2	173.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0
	101 to 500	178.5	160														

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	15.4	8.2	28	46	92	1	15.4	123	173	145	195	51
	101 to 400															
32	20 to 100	10	37	38	15.4	8.2	28	60	118	1	15.9	123	173	150	200	61
	101 to 500															

Body Bottom Tapped

[mm]

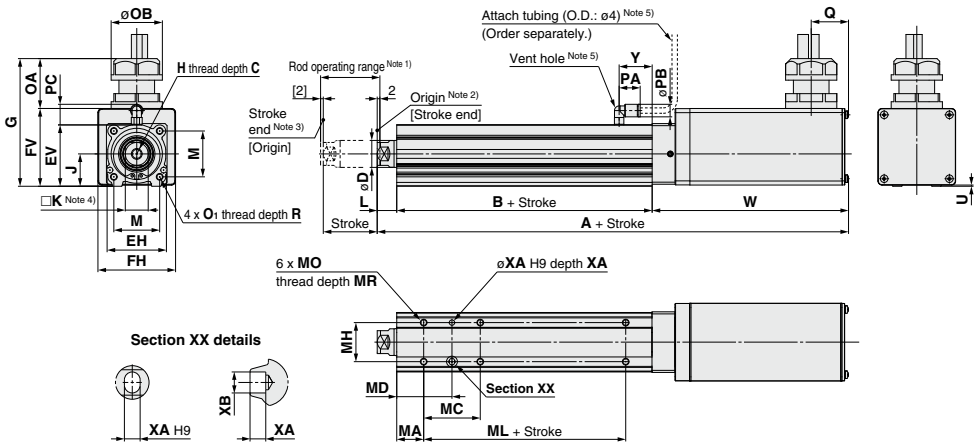
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125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

Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) [ ] for when the direction of return to origin has changed.
Note 4) The direction of rod end width across flats (□K) differs depending on the products.
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 247. For the mounting bracket dimensions, refer to page 250.

Dimensions

In-line motor type



[mm]

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	114.5											
32	20 to 100	265.5	315.5	96	13	25	51	56.5	69.6	79.6	116.6	M8 x 1.25	31	22	18.5
	101 to 500	295.5	345.5	126											

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	15.4	8.2	28	0.9	15.9	146	196	24.5
	101 to 400													
32	20 to 100	40	M6 x 1.0	10	37	38	15.4	8.2	28	1	15.9	151	201	27
	101 to 500													

Body Bottom Tapped

[mm]

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

Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) [ ] for when the direction of return to origin has changed.
Note 4) The direction of rod end width across flats (□K) differs depending on the products.
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 247. For the mounting bracket dimensions, refer to page 250.

AC Servo Motor

Electric Actuator/ Rod Type

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

LEY-X5 (Made to Order) *Series* LEY25, 32

Refer to page 232 for model selection.

CE RoHS

How to Order

LEY H 25 □ S2 B – 100 □ □ □ – S 2 A1 □ – X5

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

• **Made to Order: Dust-tight/ Water-jet-proof**

❶ Accuracy

Nil	Basic type
H	High precision type

❷ Size

25
32

❸ Motor mounting position

Nil	Top mounting
D	In-line

❹ Motor type*

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

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

❺ 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.

❻ Stroke [mm]

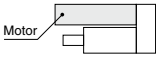
30	30
to	to
500	500

* Refer to the applicable stroke table.

❼ Motor option

Nil	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 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

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

❾ Mounting*1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
- LEY25: 200 mm or less
- LEY32: 100 mm or less

*3 Rod flange is not available for the LEY25 with stroke 30 mm and motor option "With lock".
*4 Head flange is not available for the LEY32.

❿ 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 623 for details.)

⓫ Cable length [m]*

Nil	Without cable
2	2
5	5
A	10

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

⓬ Driver type*

	Compatible driver	Power supply voltage [V]
Nil	Without driver	—
A1	LECSA1	100 to 120
A2	LECSA2	200 to 230
B1	LECSB1	100 to 120
B2	LECSB2	200 to 230
C1	LECSC1	100 to 120
C2	LECSC2	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)
  Nil : Without cable and driver

⓭ I/O cable length [m]*

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

* When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected. Refer to page 624 if I/O cable is required. (Options are shown on page 624.)

* 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

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

* For auto switches, refer to page 507.

SMC

Specifications

	Model			LEY25S$^{2}_{6}$/LEY25DS$^{2}_{6}$			LEY32S$^{3}_{7}$ (Top mounting)			LEY32DS$^{3}_{7}$ (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 Note 10)		8	16	30	9	19	37	12	24	46
	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 Note 4) [mm/s]	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s] Note 5)			35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s^2]			5000			5000					
	Positioning repeatability [mm]	Basic type		±0.02								
		High precision type		±0.01								
	Lost motion [mm] Note 6)	Basic type		0.1 or less								
		High precision type		0.05 or less								
	Lead [mm]			12	6	3	20 Note 7)	10 Note 7)	5 Note 7)	16	8	4
	Impact/Vibration resistance [m/s^2] Note 8)			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)					
	Enclosure Note 9)			IP65 equivalent								
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option			May be required depending on speed and work load. (Refer to pages 234 and 235.)								
Electric specifications	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/incremental dual 18-bit encoder (Resolution: 262144 p/rev)								
	Power consumption [W] Note 11)	Horizontal		45			65			65		
		Vertical		145			175			175		
	Standby power consumption when operating [W] Note 12)	Horizontal		2			2			2		
		Vertical		8			8			8		
	Max. instantaneous power consumption [W] Note 13)			445			724			724		
Lock unit specifications	Type Note 14)			Non-magnetizing lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20°C Note 15)			6.3			7.9			7.9		
	Rated voltage [V]			24 VDC $^{0}_{-10\%}$								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph" on page 236. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 4) The allowable speed changes according to the stroke. Set the number of rotations according to speed.
Note 5) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 7) Equivalent lead which includes the pulley ratio [1.25:1]
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures. For details about enclosure, refer to "Enclosure" on page 306.
Note 10) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.
Note 11) The power consumption (including the driver) is for when the actuator is operating.
Note 12) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 13) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 14) Only when motor option "With lock" is selected.
Note 15) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY25S□ (Motor mounting position: Top mounting)									LEY32S□ (Motor mounting position: Top mounting)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	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)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Incremental encoder	1.34	1.41	1.58	1.84	2.02	2.19	2.37	2.54	2.72	2.44	2.55	2.84	3.31	3.59	3.87	4.16	4.44	4.72	5.00	5.28
	Absolute encoder	1.40	1.47	1.64	1.90	2.08	2.25	2.43	2.60	2.78	2.38	2.49	2.78	3.25	3.53	3.81	4.10	4.38	4.66	4.94	5.22

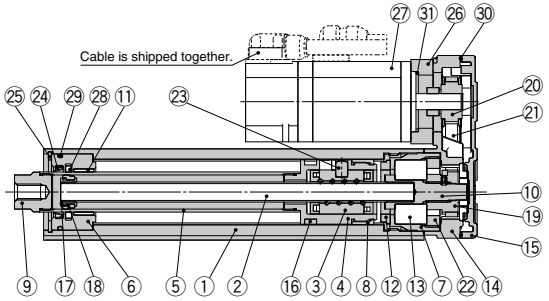
Additional Weight

[kg]

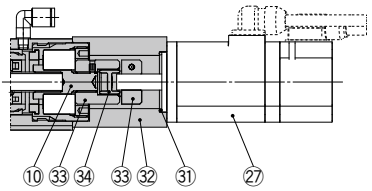
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

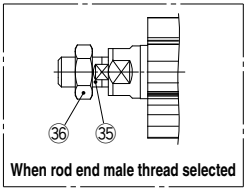
Construction

Motor top mounting type: LEY$^{25}_{32}$



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





When rod end male thread selected

Component Parts

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

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 plating
26	**Motor adapter**	Aluminum alloy	Coating
27	**Motor**	—	
28	**Lube-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 plating
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

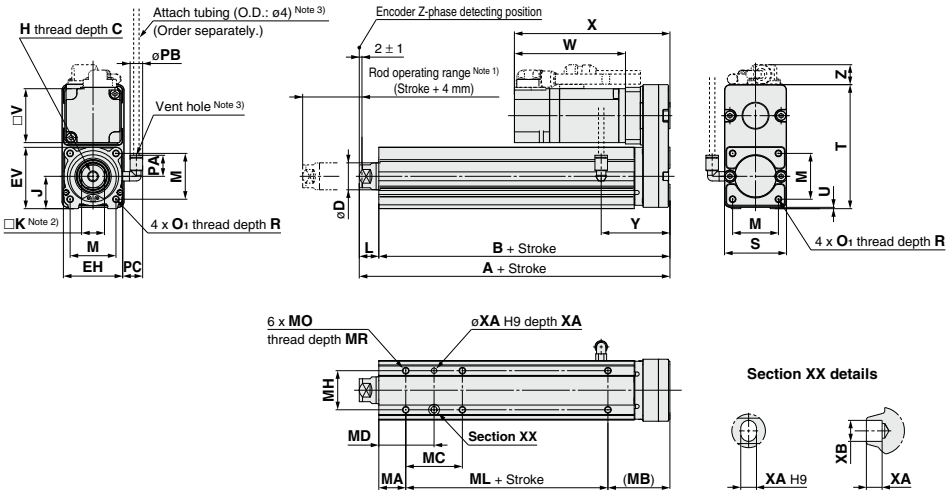
Replacement Parts/Grease Pack

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 first.

Dimensions

Motor top mounting type: LEY$^{25}_{32}$



[mm]

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	15.4	8.2	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	15.4	8.2	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	15.4	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	15.9	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																	

Body Bottom Tapped

[mm]

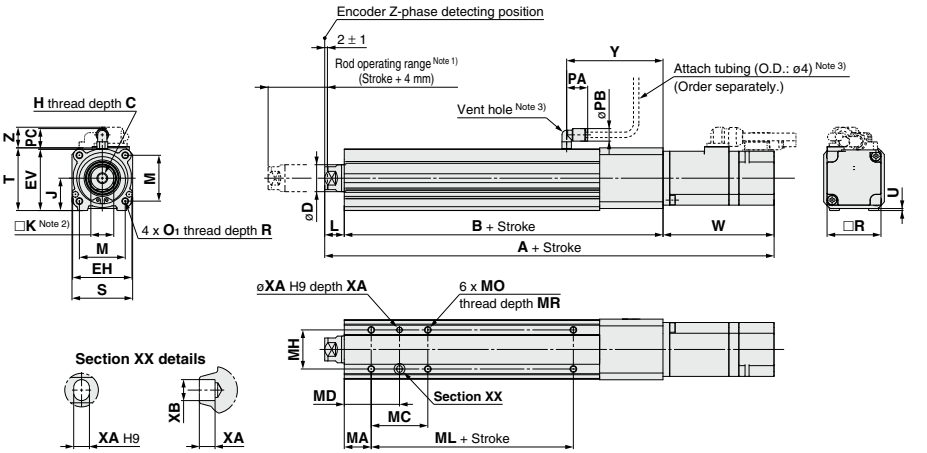
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125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

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 261. For the mounting bracket dimensions, refer to page 250.

Dimensions

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



[mm]

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	O1	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	15.4	8.2	40	45	46.5	1.5	15.9	71.5
	101 to 400															
32	20 to 100	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60	60	61	1	15.9	87
	101 to 500															

Body Bottom Tapped

[mm]

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

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 261. For the mounting bracket dimensions, refer to page 250.

AC Servo Motor

Electric Actuator/ Rod Type

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

∗ Select options

LEY Series LEY63

CE RoHS

Refer to page 232 for model selection.

How to Order

LEY H 63 ❶ ❷ ❸ S4 B ❹ ❺ – 200 P ❻ ❼ ❽ ❾ – S ❿ 2 ⓫ A2 ⓬ ⓭ ⓮

❶ Accuracy

Nil	Basic type
H	High precision type

❷ Size

63

❸ Motor mounting position

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

❹ Motor type

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

❺ Lead [mm]

Symbol	LEY63
A	20
B	10
C	5
L	2.86∗

∗ Screw lead 5 mm, Pulley ratio [4:7] equivalent lead
∗ Only available for top mounting and right/left side parallel types.

❻ Stroke [mm]

100	100
to	to
800	800

❼ Dust/Drip proof

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

∗ When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water.
∗ The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: ø4 or more, Connection thread: Rc1/8].
∗ Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures. For details about enclosure, refer to "Enclosure" on page 306.

❽ Motor option

Nil	Without option
B	With lock

❾ Rod end thread

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

❿ Mounting∗1

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

∗1 Mounting bracket is shipped together, (but not assembled).
∗2 For horizontal cantilever mounting with the rod flange and ends tapped, use the actuator within the following stroke range.
• LEY63: 400 mm or less
∗3 For mounting with the double clevis, use the actuator within the following stroke range.
• LEY63: 300 mm or less

⓫ Cable type Note 1)

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

Note 1) The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
∗ Standard cable entry direction is
• Top/Parallel: (A) Axis side
• In-line: (B) Counter axis side
(Refer to page 623 for details.)

⓬ Cable length Note 2) [m]

Nil	Without cable
2	2
5	5
A	10

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

⓭ Driver type

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

∗ When the driver type is selected, the cable is included. Select cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
Nil : Without cable and driver

⓮ I/O cable length [m]∗

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

∗ When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected.
Refer to page 624 if I/O cable is required.
(Options are shown on page 624.)

∗ Applicable stroke table

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

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

SMC

Specifications

Model			LEY63S$^{4}_{8}$□ (Top/Parallel)				LEY63DS$^{4}_{8}$□ (In-line)		
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400, 500, 600, 700, 800						
	Work load [kg]	Horizontal Note 2)	40	70	80	200	40	70	80
		Vertical Note 9)	19	38	72	115	19	38	72
	Force [N]/Set value Note 3) : 15 to 50% Note 4)		156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910
	Max. speed [mm/s] Note 5)	Stroke range: Up to 500	1000	500	250	70	1000	500	250
		Stroke range: 505 to 600	800	400	200		800	400	200
		Stroke range: 605 to 700	600	300	150		600	300	150
		Stroke range: 705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s] Note 6)		30 or less						
	Max. acceleration/deceleration [mm/s²]		5000			3000	5000		
	Positioning repeatability [mm]	Basic type	±0.02						
		High precision type	±0.01						
	Lost motion [mm] Note 7)	Basic type	0.1 or less						
		High precision type	0.05 or less						
	Screw lead [mm] (including pulley ratio)		20	10	5	5 (2.86)	20	10	5
	Impact/Vibration resistance [m/s²] Note 8)		50/20						
	Actuation type		Ball screw			Ball screw + Belt [Pulley ratio 4:7]	Ball screw		
	Guide type		Sliding bushing (Piston rod)						
	Operating temperature range [°C]		5 to 40						
	Operating humidity range [%RH]		90 or less (No condensation)						
	Regeneration option		May be required depending on speed and work load. (Refer to pages 234 and 235.)						
Electric specifications	Motor output/Size		400 W/□60						
	Motor type		AC servo motor (200 VAC)						
	Encoder		Motor type S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)						
	Power consumption [W] Note 10)	Horizontal	210						
		Vertical	230						
	Standby power consumption when operating [W] Note 11)	Horizontal	2						
		Vertical	18						
	Max. instantaneous power consumption [W] Note 12)		1275						
Lock unit specifications	Type Note 13)		Non-magnetizing lock						
	Holding force [N]		313	607	1146	2006	313	607	1146
	Power consumption [W] at 20°C Note 14)		7.9						
	Rated voltage [V]		24 VDC$^{0}_{-10\%}$						

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) Set values for the driver.
Note 4) The force setting range (set values for the driver) for the force control with the torque control mode. The pushing force and duty ratio change according to the set value. Set it with reference to "Force Conversion Graph" on page 236. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 5) The allowable speed changes according to the stroke. Set the number of rotations according to speed.
Note 6) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 7) A reference value for correcting an error in reciprocal operation.
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.
Note 10) The power consumption (including the driver) is for when the actuator is operating.
Note 11) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 12) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 13) Only when motor option "With lock" is selected.
Note 14) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY63S□ (Motor mounting position: Top/Parallel)							
Stroke [mm]		100	200	300	400	500	600	700	800
Motor type	Incremental encoder	5.4	6.6	8.3	9.4	10.5	12.2	13.4	14.5
	Absolute encoder	5.5	6.7	8.4	9.5	10.6	12.3	13.5	14.6

Series		LEY63DS□□ (Motor mounting position: In-line)							
Stroke [mm]		100	200	300	400	500	600	700	800
Motor type	Incremental encoder	5.6	6.7	8.4	9.6	10.7	12.4	13.5	14.7
	Absolute encoder	5.7	6.8	8.5	9.7	10.8	12.5	13.6	14.8

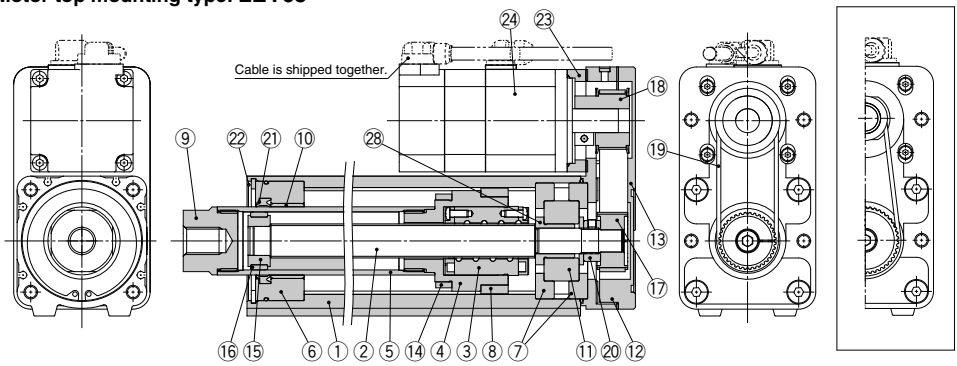
Additional Weight

[kg]

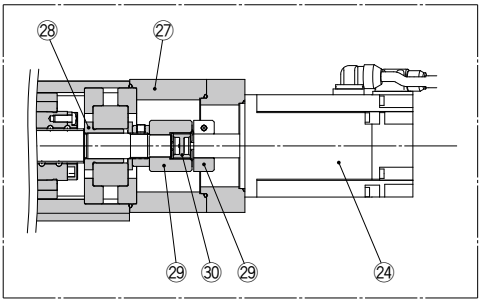
Size		63
Lock	Incremental encoder	0.4
	Absolute encoder	0.6
Rod end male thread	Male thread	0.12
	Nut	0.04
Foot (2 sets including mounting bolt)		0.26
Rod flange (including mounting bolt)		0.51
Double clevis (including pin, retaining ring and mounting bolt)		0.58

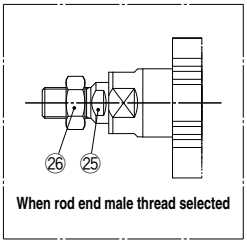
Construction

Motor top mounting type: LEY63



In-line motor type: LEY63D





When rod end male thread selected

Component Parts

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

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

Replacement Parts (Top/Parallel only)/Belt

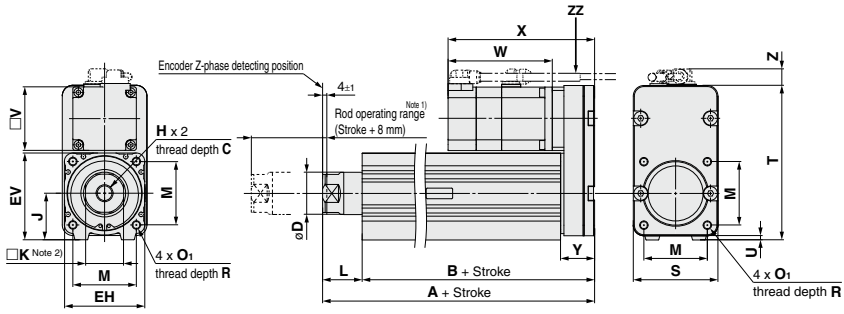
No.	Size	Lead	Order no.
19	**63**	A/B/C	LE-D-2-5
		L	LE-D-2-6

Replacement Parts/Grease Pack

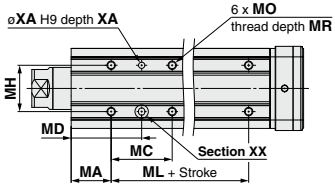
Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

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

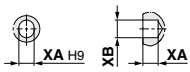
Dimensions: Motor Top/Parallel



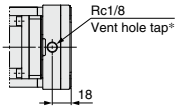
Note 1) Range within which the rod can move.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.



Section XX details



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



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

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	Y
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	32.2
	205 to 500	227.6	190.2													
	505 to 800	262.6	225.2													

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

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

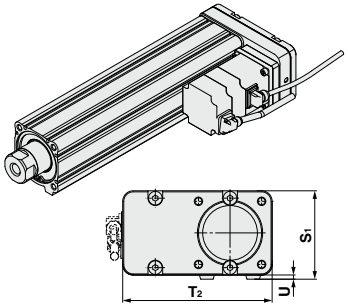
Body Bottom Tapped

[mm]

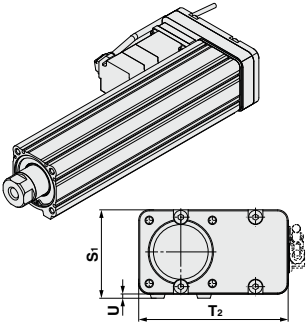
Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY63L



Motor right side parallel type: LEY63R



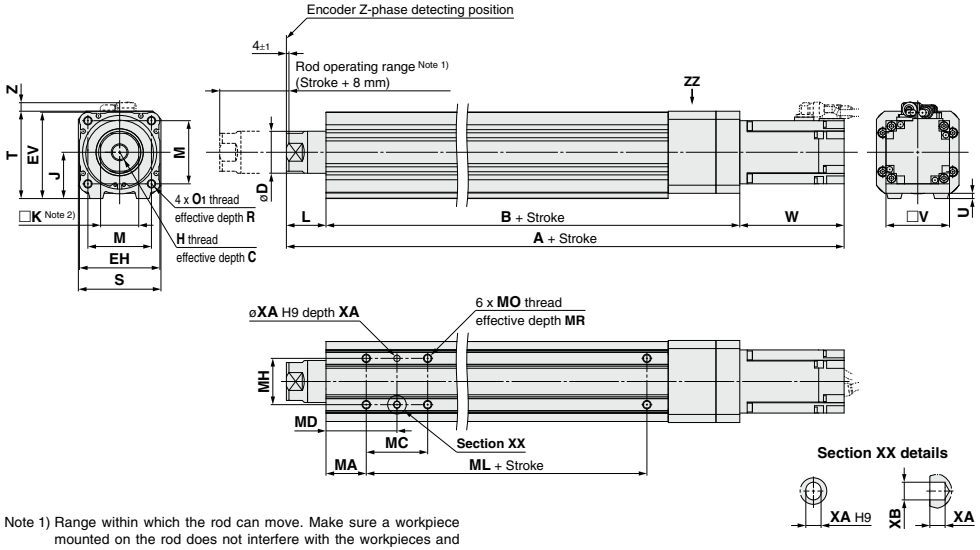
[mm]

Size	S_1	T_2	U
63	84	142	4

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

Dimensions: In-line Motor

LEY63D□



Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the 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	O1	R	S	T	U
63	Up to 200 205 to 500 505 to 800	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5

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

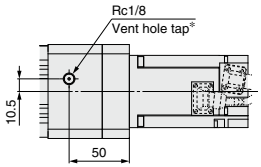
Body Bottom Tapped

[mm]

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

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

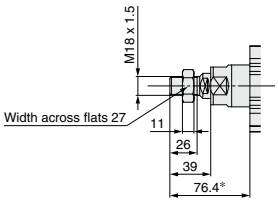
(View ZZ)



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

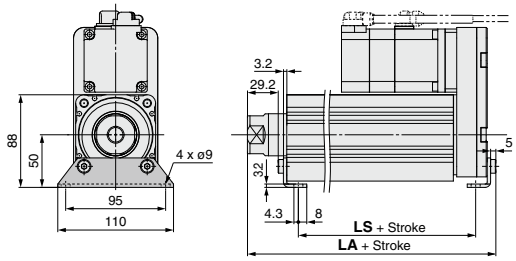
Dimensions

End male thread: LEY63□□□-□□M

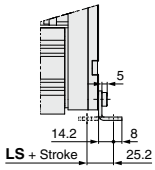


* The measurement 76.4 is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Foot: LEY63□□□-□□L



Outward mounting



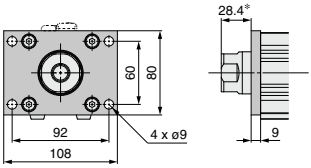
Included parts
• Foot
• Body mounting bolt

Material: Carbon steel (Chromate treated)
* The overall length is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

[mm]

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

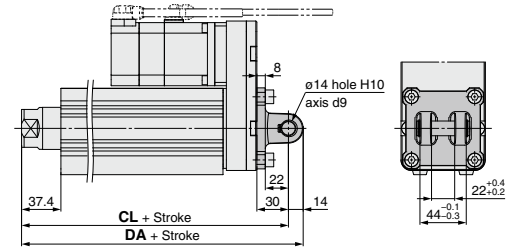
Rod flange: LEY63□□□-□□F



Included parts
• Flange
• Body mounting bolt

Material: Carbon steel (Nickel plating)
* When the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Double clevis: LEY63□□□-□□D



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

[mm]

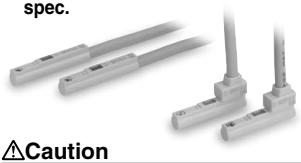
Stroke range [mm]	DA	CL
50 to 200	236.6	222.6
201 to 500	271.6	257.6
501 to 800	306.6	292.6

Material: Cast iron (Coating)
* The overall length is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Water Resistant 2-Color Indicator
Solid State Auto Switch: Direct Mounting Type
D-M9NA(V)/D-M9PA(V)/D-M9BA(V) CE RoHS

Grommet

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



⚠Caution

Precautions

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

Weight (g)

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

Auto Switch Specifications

PLC: Programmable Logic Controller

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

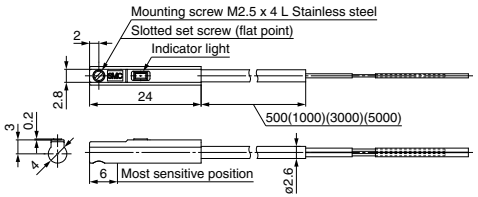
Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NA□	D-M9NAV□	D-M9PA□	D-M9PAV□	D-M9BA□	D-M9BAV□
Sheath	Outside diameter [mm]	2.6	2.7 x 3.2 (ellipse)	2.6	2.7 x 3.2 (ellipse)	2.6	2.6
Insulator	Number of cores	3 cores (Brown/Blue/Black)				2 cores (Brown/Blue)	
	Outside diameter [mm]	0.88	0.9	0.88	0.9	0.88	
Conductor	Effective area [mm²]	0.15					
	Strand diameter [mm]	0.05					
Minimum bending radius [mm] (Reference values)		17	20	17	20	17	

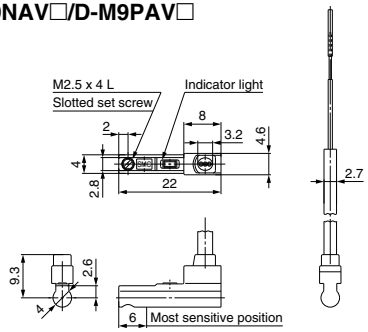
Note 1) Refer to Best Pneumatics No. 2-1 for solid state auto switch common specifications.
Note 2) Refer to Best Pneumatics No. 2-1 for lead wire lengths.

Dimensions (mm)

D-M9□A



D-M9NAV□/D-M9PAV□



D-M9BAV□