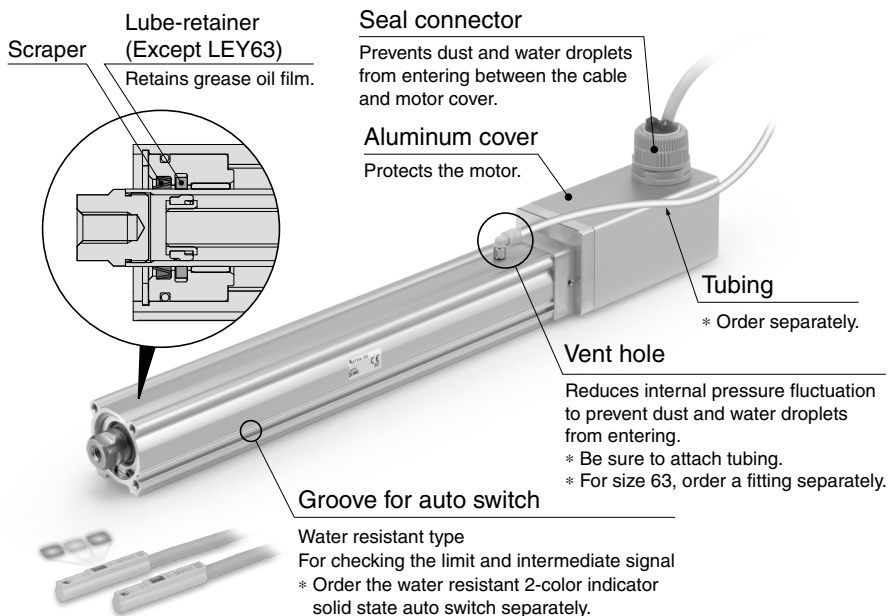


Environment Dust-tight/Water-jet-proof (IP65 Equivalent)

● **Enclosure: IP65 equivalent** Note)

● **Max. stroke: 500 mm***

* For size 32

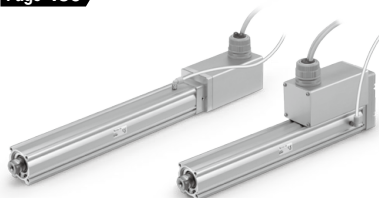


LEY-X5 (Made to Order) Size 25, 32

Step Motor (Servo/24 VDC)

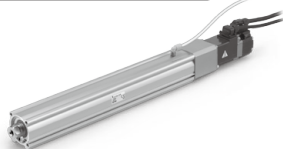
Servo Motor (24 VDC) **Type**

Page 486



AC Servo Motor (100/200 W) **Type**

Page 494

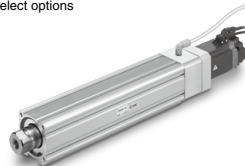


LEY63 Size 63

AC Servo Motor (400 W) **Type**

Page 500

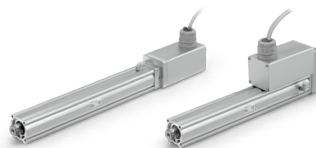
* Select options



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.

LEF
LEJ
LEL
LEM
LEY
LES
LEPY
LEPS
LER
LEH
LEY-X5
11-LEFS
11-LEJS
25A-
LEC
LEC
SS
LEC
SS-T
LEC
Y
Motor-less
LAT
LZ
LC3F2

Model Selection



Refer to page 229 for the LECPA or LECA6.

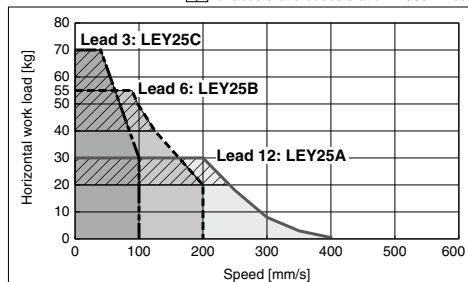
LEY-X5 Series Page 486

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

Horizontal

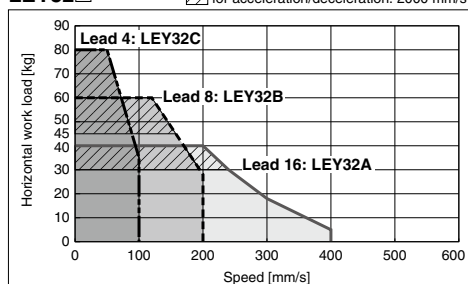
LEY25

for acceleration/deceleration: 2000 mm/s²



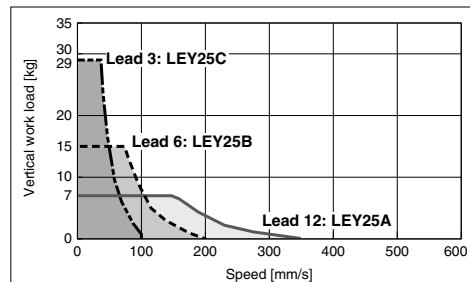
LEY32

for acceleration/deceleration: 2000 mm/s²

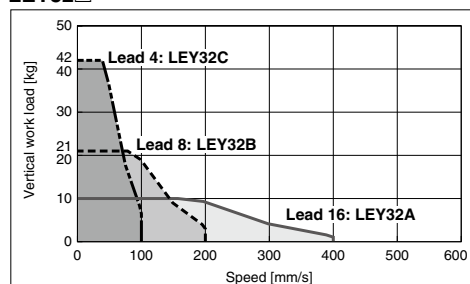


Vertical

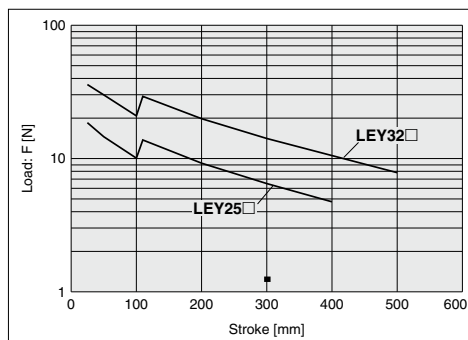
LEY25



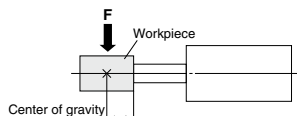
LEY32



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



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



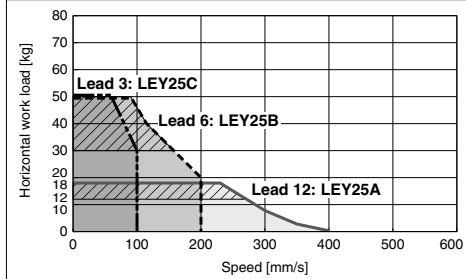
Speed-Work Load Graph (Guide) For Step Motor (Servo/24 VDC) LECPA

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

Horizontal

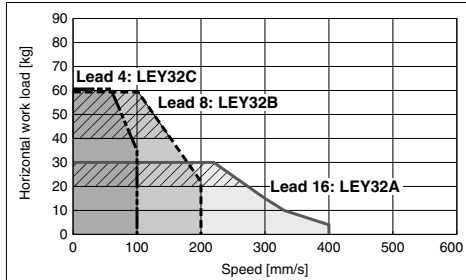
LEY25□

▨ for acceleration/deceleration: 2000 mm/s²



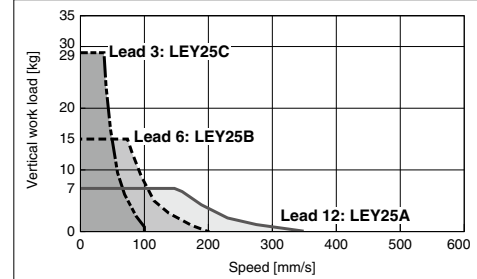
LEY32□

▨ for acceleration/deceleration: 2000 mm/s²

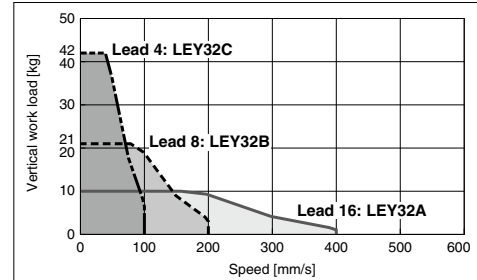


Vertical

LEY25□



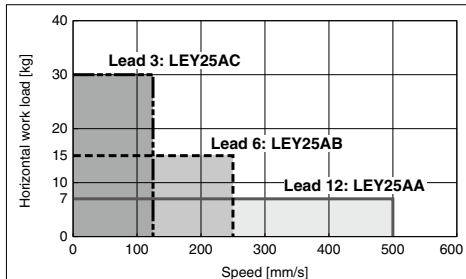
LEY32□



For Servo Motor (24 VDC) LECA6

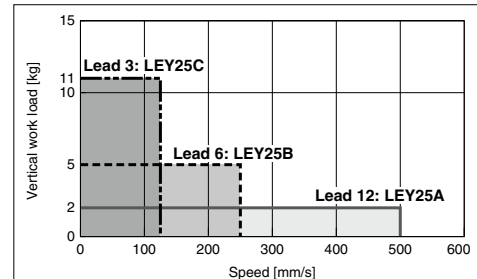
Horizontal

LEY25A□



Vertical

LEY25□



LEY-X5 Series

Step Motor (Servo/24 VDC)

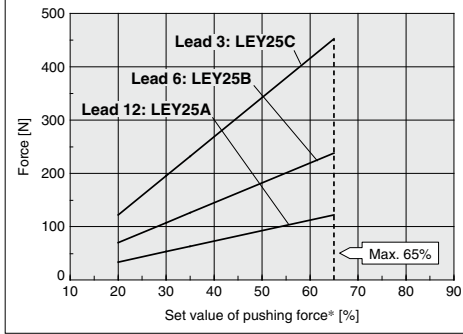
Servo Motor (24 VDC)

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

Force Conversion Graph

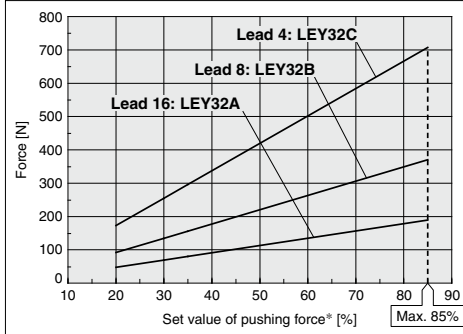
Step Motor (Servo/24 VDC)

LEY25



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

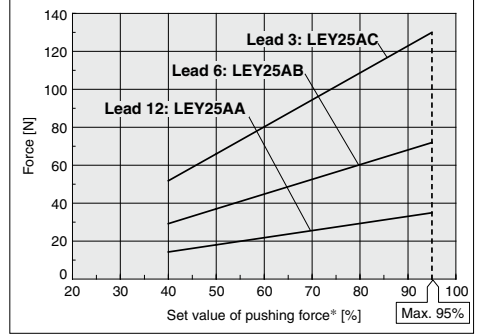
LEY32



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

Servo Motor (24 VDC)

LEY25



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

<Pushing Force and Trigger Level Range> Without Load

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

<Set Values for Vertical Upward Transfer Pushing Operation>

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

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

* Set values for the controller.

LEF
LEJ
LEL
LEM
LEY
LES
LEPY LEPS
LER
LEH
LEY -X5
11- LEFS
11- LEJS
25A-
LEC□
LEC S□
LEC SS-T
LEC Y□
Motor- less
LAT
LZ□
LC3F2

Model Selection

Size 25, 32, 63



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

Selection Procedure

Positioning Control Selection Procedure

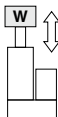
Step 1 Check the work load–speed.
(Vertical transfer)

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

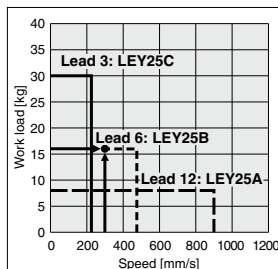

Step 1 Check the work load–speed. <Speed–Vertical work load graph>

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".



<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 motor type and load. The value below is recommended.

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

Calculation example)

T1 to T4 can be calculated as follows.

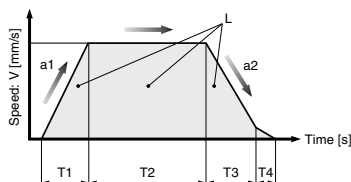
$$T1 = V/a1 = 300/5000 = 0.06 \text{ [s]}, T3 = V/a2 = 300/5000 = 0.06 \text{ [s]}$$

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

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

Therefore, the cycle time can be obtained as follows.

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



L : Stroke [mm] ... (Operating condition)

V : Speed [mm/s] ... (Operating condition)

a1: Acceleration [mm/s²] ... (Operating condition)

a2: Deceleration [mm/s²] ... (Operating condition)

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

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

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

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

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

Selection Procedure

Force Control Selection Procedure

Step 1 Check the duty ratio.

Step 2 Check the force.

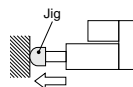
Step 3 Check the lateral load on the rod end.

* 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>.

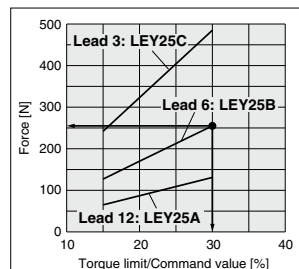
Selection example)

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>.

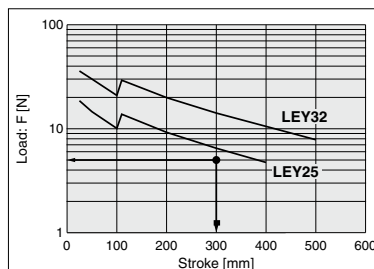
Selection example)

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.

LEY/LEY-X5 Series

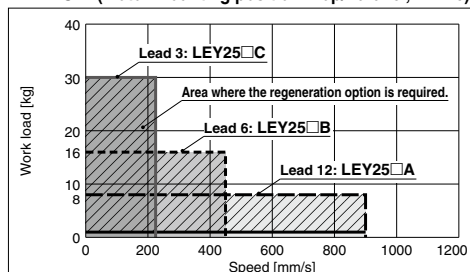
AC Servo Motor

Size 25, 32, 63

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

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

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



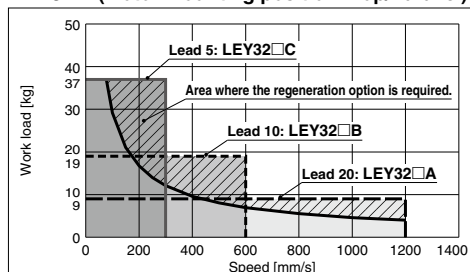
Required conditions for “Regeneration option”

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

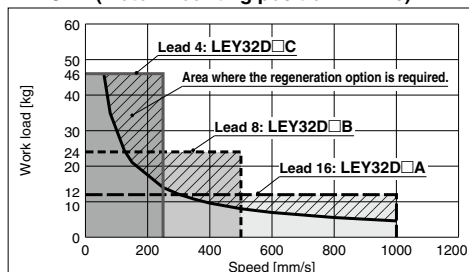
“Regeneration Option” Models

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

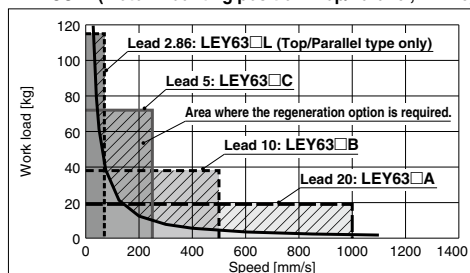
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)

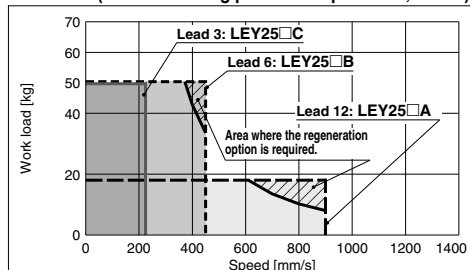


LEY63□ (Motor mounting position: Top/Parallel, In-line)



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

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



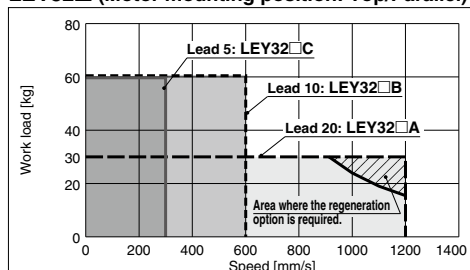
Required conditions for “Regeneration option”

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

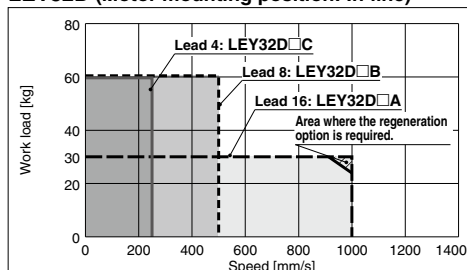
“Regeneration Option” Models

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

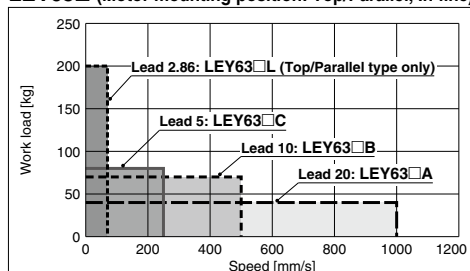
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



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



Allowable Stroke Speed

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

LEY/LEY-X5 Series

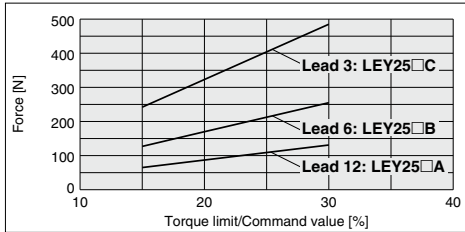
AC Servo Motor

Size 25, 32, 63

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

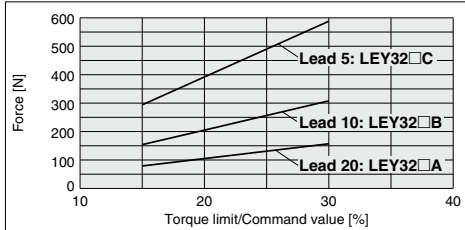
Force Conversion Graph (Guide)

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



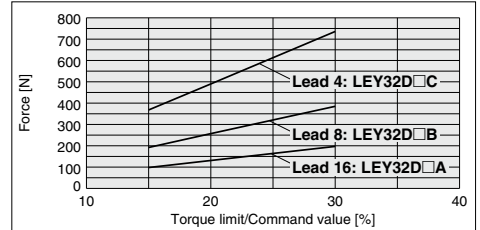
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32□ (Motor mounting position: Top/Parallel)



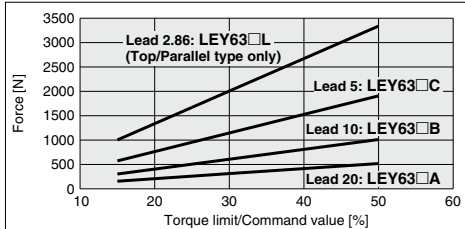
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32D□ (Motor mounting position: In-line)



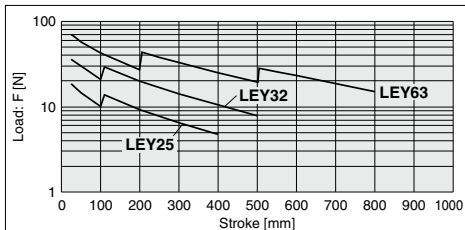
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

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

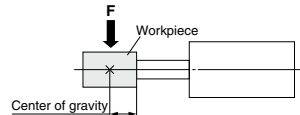


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5
40	30	0.5
50	20	0.16

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



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



Electric Actuator/ Rod Type

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



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

RoHS

Refer to page 228 for model selection.

How to Order

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

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

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

1 Size

25
32

2 Motor mounting position

Nil	Top mounting
D	In-line

3 Motor type

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

4 Lead [mm]

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

5 Stroke [mm]

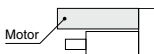
30	30
to	to
500	500

* Refer to the applicable stroke table.

6 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.



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 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 LEY25/32 with stroke 50 mm or less and motor option "With lock".

*4 Head flange is not available for the LEY32.

Applicable Stroke Table

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.

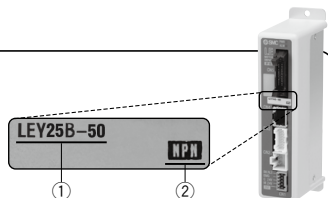
Example) "LEY25DB-100" for the LEY25DB-100BMU-R16N1D-X5

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

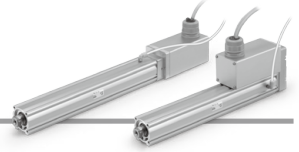
Confirm that the combination of the controller/driver and the actuator is correct.

<Check the following before use.>

- 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>



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	NPN
6P	(Step data input type)	PNP
1N	LECP1 *2	NPN
1P	(Programless type)	PNP
MJ	LECPMJ *2 *3	—
	(CC-Link direct input type)	
AN	LECPA *2 *4	NPN
AP	(Pulse input type)	PNP

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

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

*3 Not applicable to CE.

*4 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 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

LEY-X5 Series

Step Motor (Servo/24 VDC) Servo Motor (24 VDC) Dust-tight/Water-jet-proof (IP65 Equivalent)

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	For LECP6 LECP1 LECPMJ	(3000 [mm/s ²])	20	40	60	30	45	60
			(2000 [mm/s ²])	30	60	70	40	60	80
		For LECPA	(3000 [mm/s ²])	12	30	30	20	40	40
			(2000 [mm/s ²])	18	50	50	30	60	60
	Vertical ^{Note 15)}	(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]				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/s ²] ^{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)					
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		
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/s ²])	7	15	30
		Vertical ^{Note 14)}	(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]			2 to 400	1 to 200	1 to 100
	Max. acceleration/deceleration [mm/s ²]			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/s ²] ^{Note 7)}			50/20			
Electric specifications	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)		
	Motor size			□42		
	Motor type			Servo motor (24 VDC)		
Lock unit specifications	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		
	Type ^{Note 12)}			Non-magnetizing lock		
	Holding force [N]			78	157	294
Lock unit specifications	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□ are 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 lead 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

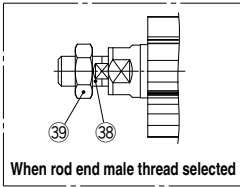
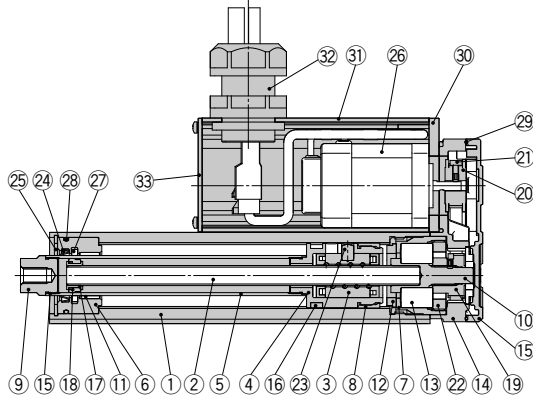
Size		[kg]	
Size		25	32
Lock		0.33	0.63
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)			
Head flange (including mounting bolt)		0.17	0.20

LEY-X5 Series

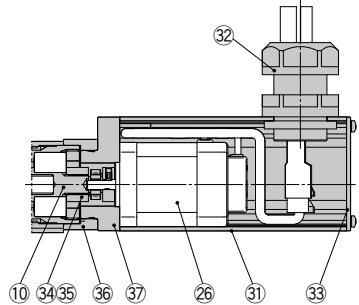
Step Motor (Servo/24 VDC) Servo Motor (24 VDC) Dust-tight/Water-jet-proof (IP65 Equivalent)

Construction

Motor top mounting type: LEY²⁵₃₂



In-line motor type: LEY²⁵₃₂D



Component Parts

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

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

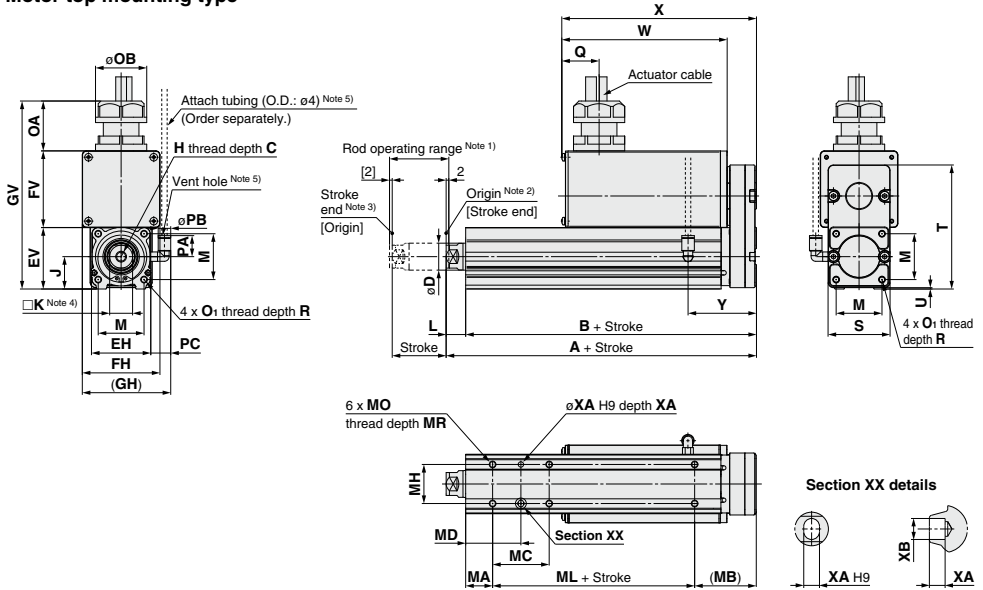
Replacement Parts/Grease Pack

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



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	66.2	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	76.2	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	15.4	8.2	28	46	92	1	15.4	123	173	145	195	51
	101 to 400															
	20 to 100															
32	101 to 500	10	37	38	15.4	8.2	28	60	118	1	15.9	123	173	150	200	61

Body Bottom Tapped

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

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.

LEY-X5 Series

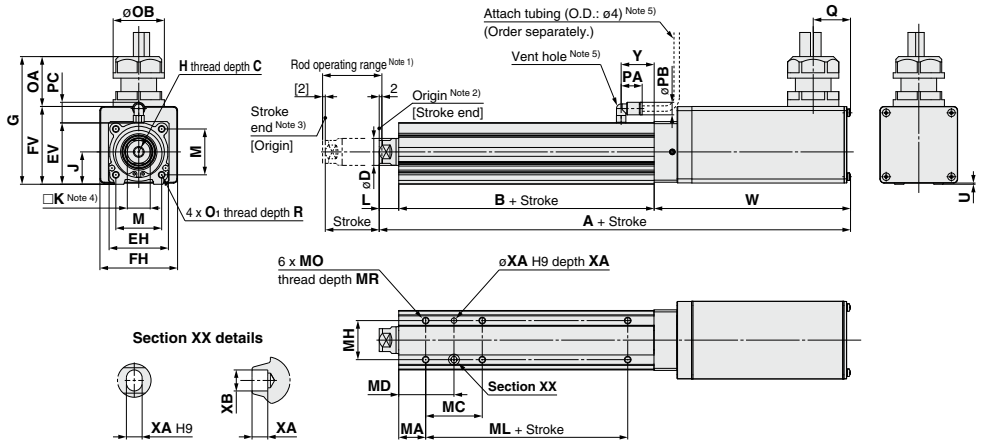
Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

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

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		75				
	101 to 124		59	49.5						
	125 to 200		76	58						
	201 to 400		22	36		50				
32	20 to 39	25	36	43	30	80	M6 x 1	8.5	5	6
	40 to 100		53	51.5						
	101 to 124		70	60						
	125 to 200									
	201 to 500									

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.

LEF
LEJ
LEL
LEM
LEY
LES
LEPY LEPS
LER
LEH
LEY -X5
11- LEFS
11- LEJS
25A-
LEC□
LEC S□
LEC SS-T
LEC Y□
Motor- less
LAT
LZ□
LC3F2

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.



How to Order

LEY **H** **25** **S2** **B** - **100** **S** **2** **A1** - **X5**

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

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

1 Accuracy

Nil	Basic type
H	High precision type

2 Size

25
32

3 Motor mounting position

Nil	Top mounting
D	In-line

4 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 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.

5 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.

8 Rod end thread

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

6 Stroke [mm]

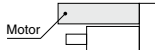
30	30
to	to
500	500

* Refer to the applicable stroke table.

7 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.



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.

9 Mounting*1

Symbol	Type	Motor mounting position	
		Top mounting	In-line
Nil	Ends tapped/ Body bottom tapped	●	●
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.

10 Cable type*

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

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

* Standard cable entry direction is

• Top mounting: (A) Axis side

• In-line: (B) Counter axis side

(Refer to page 623 for details.)

12 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	LECSS1	100 to 120
C2	LECSS2	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

* For auto switches, refer to page 507.

* Applicable Stroke Table

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

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

AC Servo Motor

LEY-X5 Series

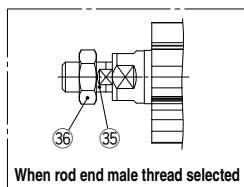
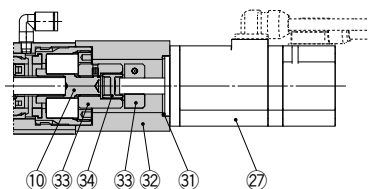
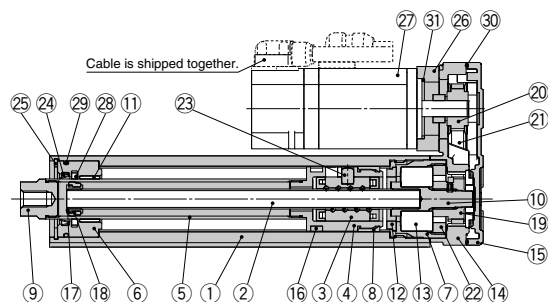
AC Servo Motor

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

Construction

Motor top mounting type: LEY²⁵₃₂

In-line motor type: LEY²⁵₃₂D



Component Parts

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

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

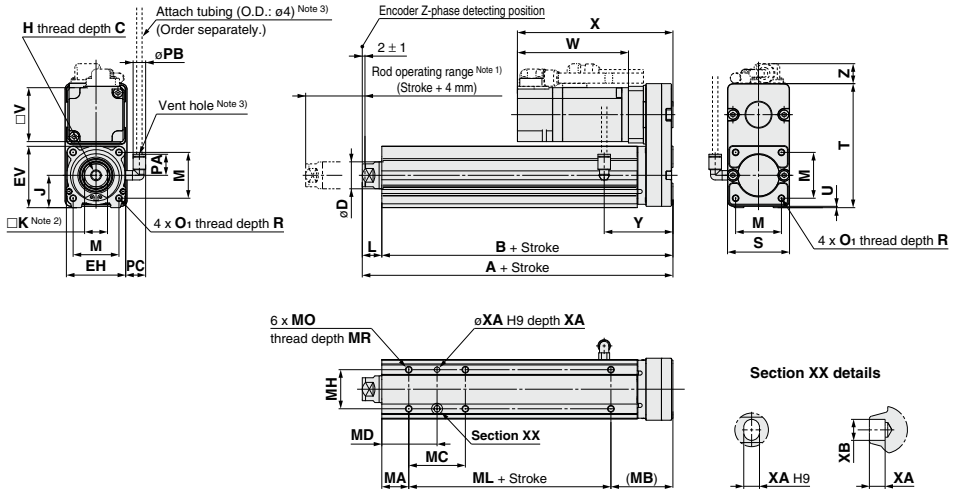
Applied portion	Order no.
Piston rod	GR-S-010 (10 g)
	GR-S-020 (20 g)

* 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: LEY²⁵₃₂



[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

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

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.

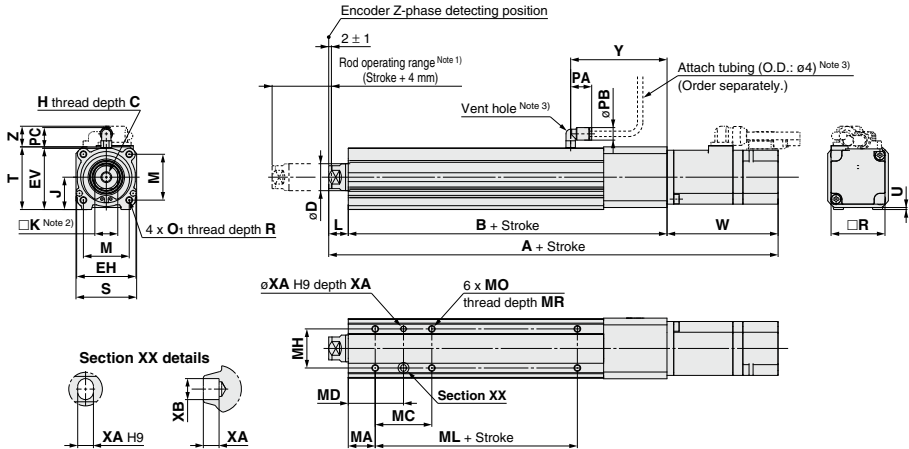
LEY-X5 Series

AC Servo Motor

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

Dimensions

In-line motor type: LEY²⁵₃₂D



Size	Stroke range [mm]	Incremental encoder						Absolute encoder						[mm]				
		Without lock			With lock			Without lock			With lock			B	C	D	EH	EV
		A	W	Z	A	W	Z	A	W	Z	A	W	Z					
25	15 to 100	238			274.9			233.4			274.5			136.5	13	20	44	45.5
	101 to 400	263	87	14.6	299.9	123.9	16.3	258.4	82.4	14.6	299.5	123.5	16.3	161.5				
	20 to 100	262.7			291.3			251.1			290.6			156				
32	101 to 500	292.7	88.2	17.1	321.3	116.8	17.1	281.1	76.6	17.1	320.6	116.1	17.1	186	13	25	51	56.5
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	15.4	8.2	40	45	46.5	1.5	15.9	71.5		
	101 to 400																	
	20 to 100																	
32	101 to 500	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		

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41		75				
	101 to 124		59	49.5						
	125 to 200		76	58						
	201 to 400									
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43		80				
	101 to 124		53	51.5						
	125 to 200		70	60						
	201 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 261. For the mounting bracket dimensions, refer to page 250.

LEF
LEJ
LEL
LEM
LEY
LES
LEPY LEPS
LER
LEH
LEY -X5
11- LEFS
11- LEJS
25A-
LEC□
LEC S□
LEC SS-T
LEC Y□
Motor- less
LAT
LZ□
LC3F2

Electric Actuator/ Rod Type

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

* Select options

LEY Series LEY63



Refer to page 232 for model selection.

How to Order

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

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

1 Accuracy

NII	Basic type
H	High precision type

2 Size

63

4 Motor type

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

5 Lead [mm]

Symbol	LEY63
A	20
B	10
C	5
L	2.86*

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

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

3 Motor mounting position

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

6 Stroke [mm]

100	100
to	to
800	800

7 Dust/Drip proof

NII	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.

8 Motor option

NII	Without option
B	With lock

9 Rod end thread

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

10 Mounting^{*1}

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
NII	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

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

NII	Without cable
2	2
5	5
A	10

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

14 I/O cable length [m]*

NII	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.)

13 Driver type

	Compatible driver	Power supply voltage
NII	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

* Applicable stroke table

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

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

Specifications

Model			LEY63S ₃ □ (Top/Parallel)					LEY63DS ₃ □ (In-line)							
Actuator specifications	Stroke [mm] <small>Note 1)</small>		100, 200, 300, 400, 500, 600, 700, 800												
	Work load [kg]	Horizontal <small>Note 2)</small>	40	70	80	200	40	70	80						
		Vertical <small>Note 9)</small>	19	38	72	115	19	38	72						
	Force [N]/Set value <small>Note 3)</small> : 15 to 50% <small>Note 4)</small>		156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910						
	Max. speed <small>Note 5)</small> [mm/s]	Stroke range	Up to 500	1000	500	250	70	1000	500	250					
			505 to 600	800	400	200		800	400	200					
			605 to 700	600	300	150		600	300	150					
			705 to 800	500	250	125		500	250	125					
	Pushing speed [mm/s] <small>Note 6)</small>		30 or less												
	Max. acceleration/deceleration [mm/s ²]		5000					3000		5000					
Positioning repeatability [mm]	Basic type	±0.02													
	High precision type	±0.01													
Lost motion [mm] <small>Note 7)</small>	Basic type	0.1 or less													
	High precision type	0.05 or less													
Screw lead [mm] (including pulley ratio)		20	10	5	5 (2.86)	20	10	5							
Impact/Vibration resistance [m/s ²] <small>Note 8)</small>		50/20													
Actuation type		Ball screw					Ball screw + Ball 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.)													
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)													
Electric specifications	Power consumption [W] <small>Note 10)</small>	Horizontal	210												
		Vertical	230												
	Standby power consumption when operating [W] <small>Note 11)</small>	Horizontal	2												
		Vertical	18												
	Max. instantaneous power consumption [W] <small>Note 12)</small>		1275												
	Type <small>Note 13)</small>		Non-magnetizing lock												
Lock unit specifications	Holding force [N]		313	607	1146	2006	313	607	1146						
	Power consumption [W] at 20°C <small>Note 14)</small>		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 LECF 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 the 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

Series		LEY63S ₃ □ (Motor mounting position: Top/Parallel)								[kg]
Motor type	Stroke [mm]	100	200	300	400	500	600	700	800	
	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 ₃ □ (Motor mounting position: In-line)								
Motor type	Stroke [mm]	100	200	300	400	500	600	700	800	
	Incremental encoder	5.6	6.7	8.4	9.6	10.7	12.4	13.5	14.7	
	Absolute encoder	5.7	6.8	8.5	9.7	10.8	12.5	13.6	14.8	

Additional Weight

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

LEY Series

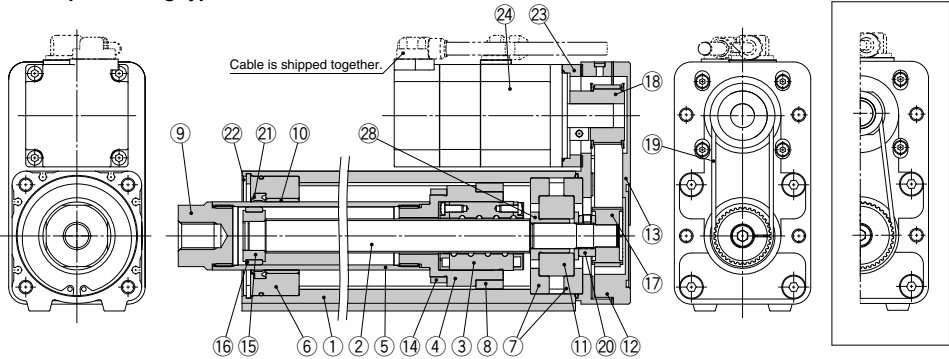
AC Servo Motor

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

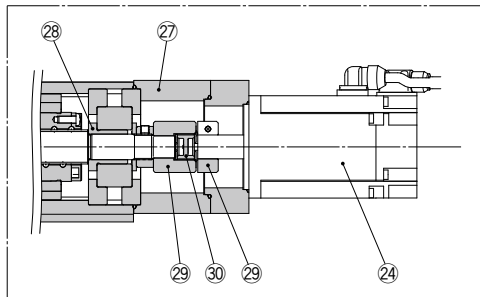
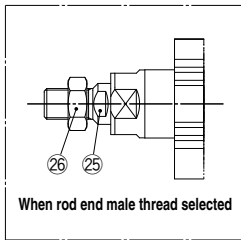
* Select options

Construction

Motor top mounting type: LEY63



In-line motor type: LEY63D



Component Parts

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

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

Replacement Parts (Top/Parallel only)/Belt

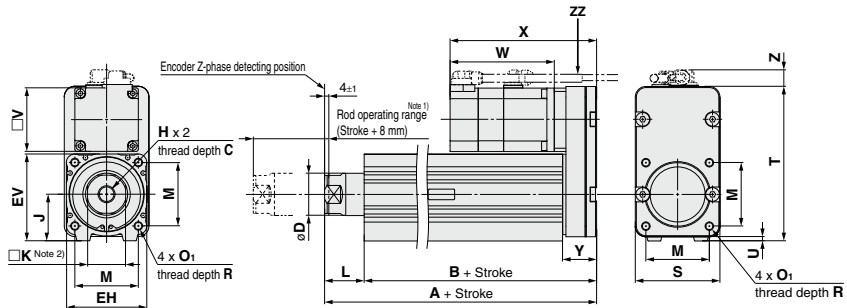
No.	Size	Lead	Order no.
19	63	A/B/C	LE-D-2-5
		L	LE-D-2-6

Replacement Parts/Grease Pack

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

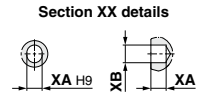
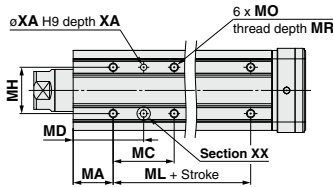
* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top/Parallel

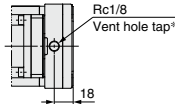


Note 1) Range within which the rod can move.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.

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



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



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

																	[mm]
Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O ₁	R	S	Y	
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	32.2	
	205 to 500	227.6	190.2														
	505 to 800	262.6	225.2														
Size	Stroke range [mm]	T	U	V	Incremental encoder						Absolute encoder						
					Without lock			With lock			Without lock			With lock			
					W	X	Z	W	X	Z	W	X	Z	W	X	Z	
63	Up to 200	146	4	60	110.2	150.2	15.6 (16.6)*	138.8	178.8	15.6 (16.6)*	98.5	138.5	15.6 (16.6)*	138	178	15.6 (16.6)*	
	205 to 500																
	505 to 800																

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

Body Bottom Tapped

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														

LEY Series

AC Servo Motor

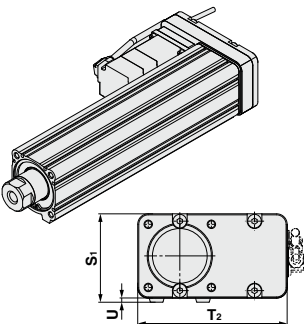
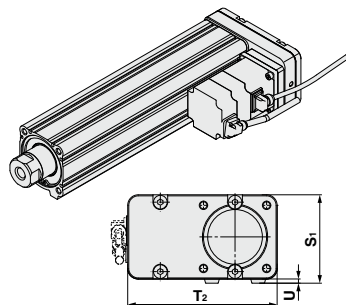
Dust-tight/Water-jet-proof (IP65 Equivalent)

* Select options

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY63L

Motor right side parallel type: LEY63R

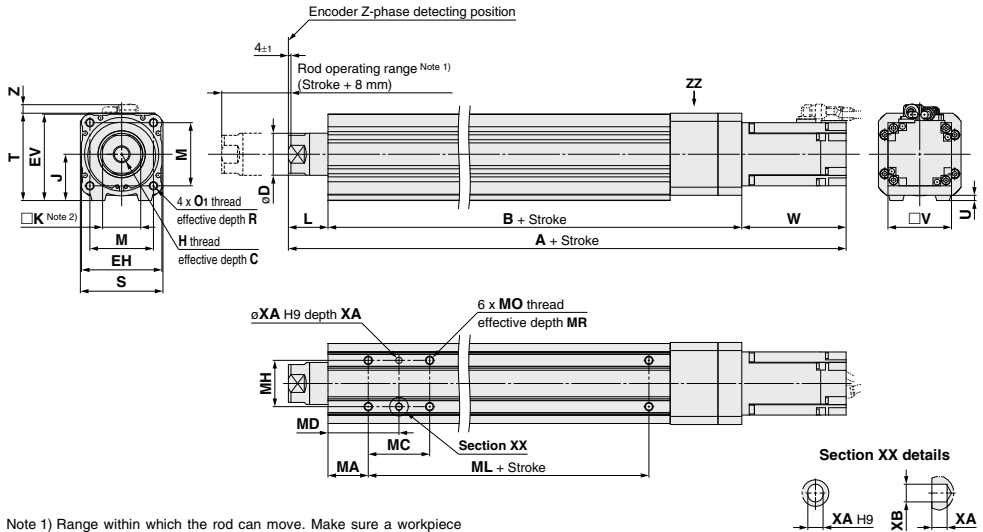


[mm]			
Size	S ₁	T ₂	U
63	84	142	4

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 rod.

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

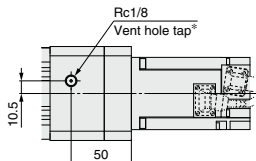
Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U
63	Up to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5
	205 to 500														
	505 to 800														

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

Body Bottom Tapped

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

LEY Series

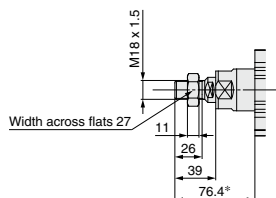
AC Servo Motor

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

* Select options

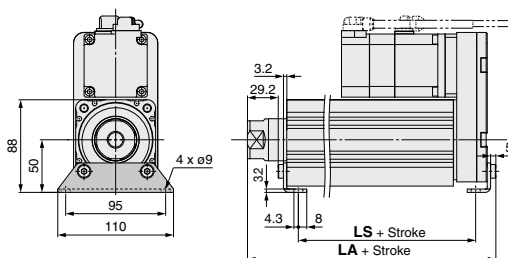
Dimensions

End male thread: LEY63□□□-□□M

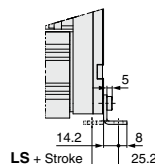


* The measurement 76.4 is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Foot: LEY63□□□-□□L



Outward mounting



Included parts
• Foot
• Body mounting bolt

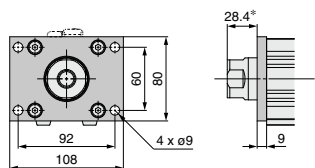
Material: Carbon steel (Chromate treated)

* 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.

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

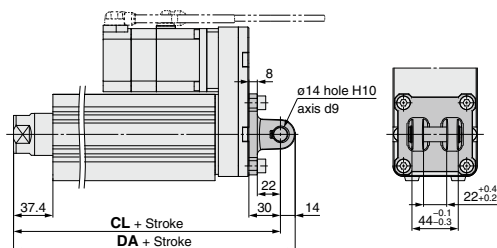


Included parts
• Flange
• Body mounting bolt

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

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.

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

Water Resistant 2-Color Indicator Solid State Auto Switch: Direct Mounting Type 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 proper operating range can be determined by the color of the light. (Red → Green ← Red)
- Using flexible cable as standard spec.



⚠ Caution

Precautions

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

Weight

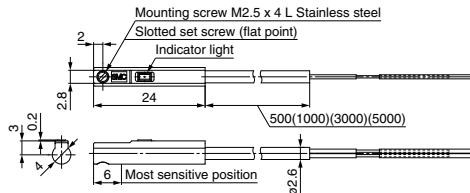
(g)

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

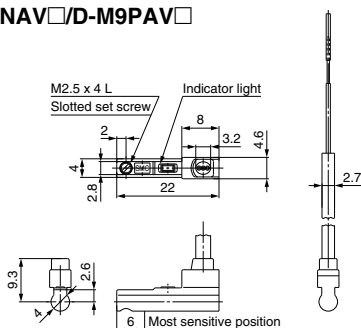
Dimensions

(mm)

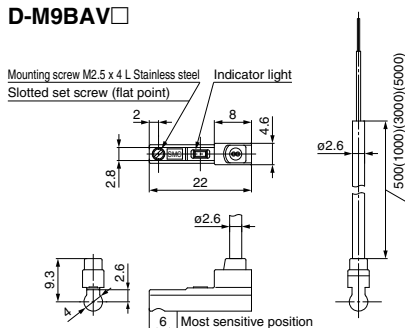
D-M9□A



D-M9NAV□/D-M9PAV□



D-M9BAV□



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 [mm ²]	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.