New

Electric Actuators

Rod Type **Guide Rod Type**

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

Rod Type *Series LEY*

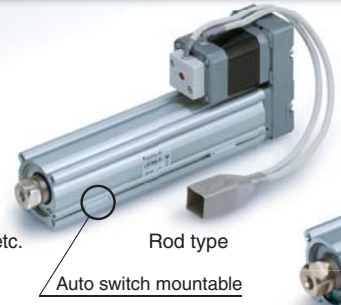
Size: 16, 25, 32, 40

Long stroke:

Max. 500 mm (LEY32, 40)

Mounting variations

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



Dust/Drip proof (IP65) specification: **-X5**

∗ Size: 25, 32

Rod type/
In-line motor type

Guide Rod Type *Series LEYG*

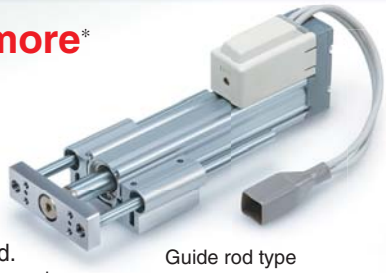
Size: 16, 25, 32, 40

Lateral end load: 5 times more*

∗ Compared with rod type, size 25 and 100 stroke

Compatible with sliding bearing and ball bushing bearing.
Compatible with moment load and stopper (sliding bearing).

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



Guide rod type

Guide rod type/
In-line motor type

AC Servo Motor Type

∗ Not applicable to UL.

Rod Type *Series LEY*

Size: 25, 32, 63 Note)

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

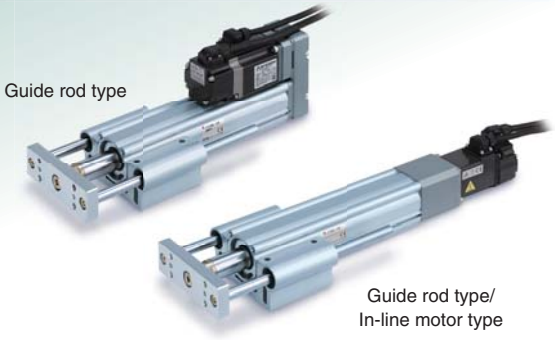
Dust/Drip proof (IP65) specification: **-X5**

Rod type/
In-line motor type

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

Guide Rod Type *Series LEYG*

Size: 25, 32



Guide rod type/
In-line motor type

Step Motor (Servo/24 VDC) **Servo Motor (24 VDC)** **Controller/ Driver**

- **Step data input type**
  Series LECP6/LECA6
  64 points positioning
- **Programless type**
  Series LECP1
  14 points positioning
- **Pulse input type**
  Series LECPA

AC Servo Motor **Driver**

∗ Not applicable to UL.

For absolute encoder

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

For incremental encoder

- **Pulse input type/ Positioning type**
  Series LECSA

Series LEY

SMC

CAT.EUS100-83D-UK

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

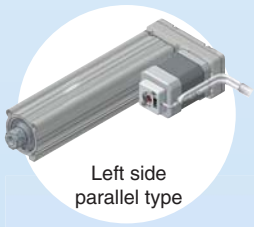
Rod Type *Series LEY* /Size: 16, 25, 32, 40

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

Motor mounting position selectable

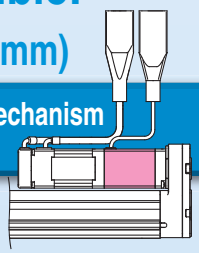
Top mounting type is the standard product.


Right side parallel type


Left side parallel type


In-line motor type

Non-magnetizing lock mechanism (Option)

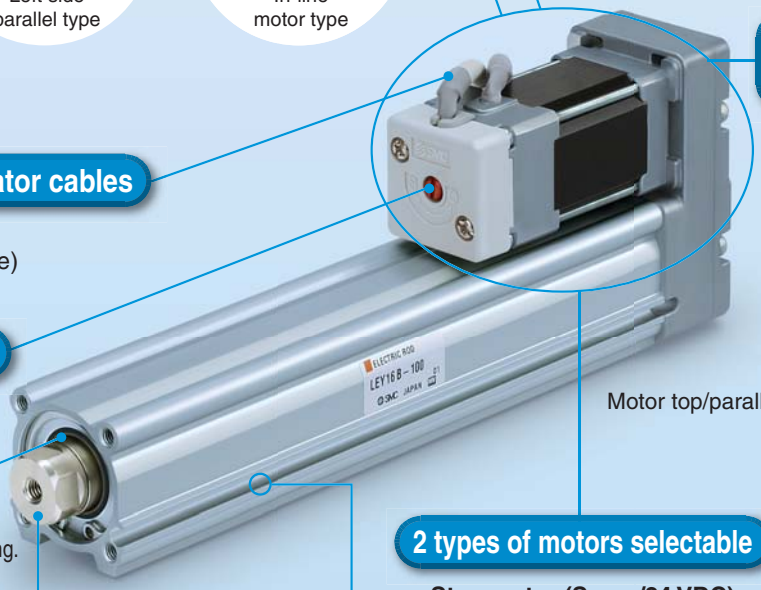


Prevents a workpiece from dropping. (Holding)

Motor cover available (Option)

Offering 2 types of actuator cables

- Standard cable
- Robotic cable (Flexible cable)



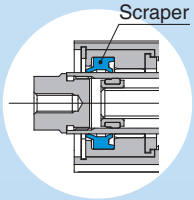
Motor top/parallel type

Manual override screw

For manual piston rod operation
Adjustment operation possible when power OFF

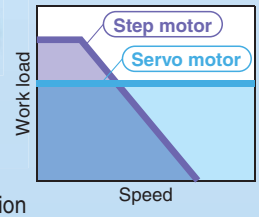
Scraper

Prevents foreign matter from entering.



2 types of motors selectable

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

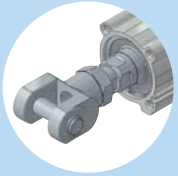


Pages 19, 20

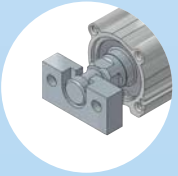
Rod end brackets

Single knuckle joint

Double knuckle joint



Simple joint



Groove for auto switch

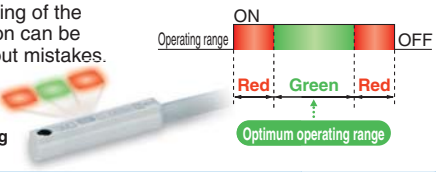
For checking the limit and intermediate signal
Applicable to the D-M9□ and D-M9□W (2-colour indication)

* The auto switches should be ordered separately. Refer to pages 21 and 22 for details.

2-colour indication solid state auto switch

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

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

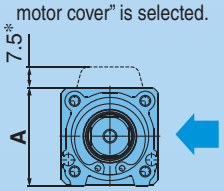


In-line motor type

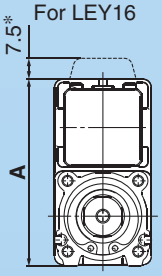
Height dimension shortened by up to 49%

For LEY16D

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



For LEY16



A Dimension [mm]

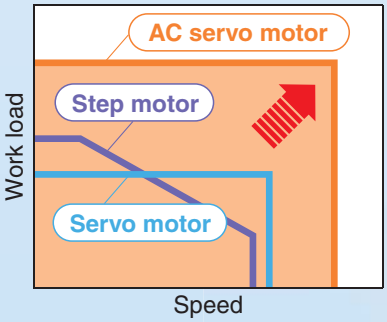
Size	In-line motor	Motor top mounting
16	35.5	67.5
25	46.5	92
32, 40	61	118

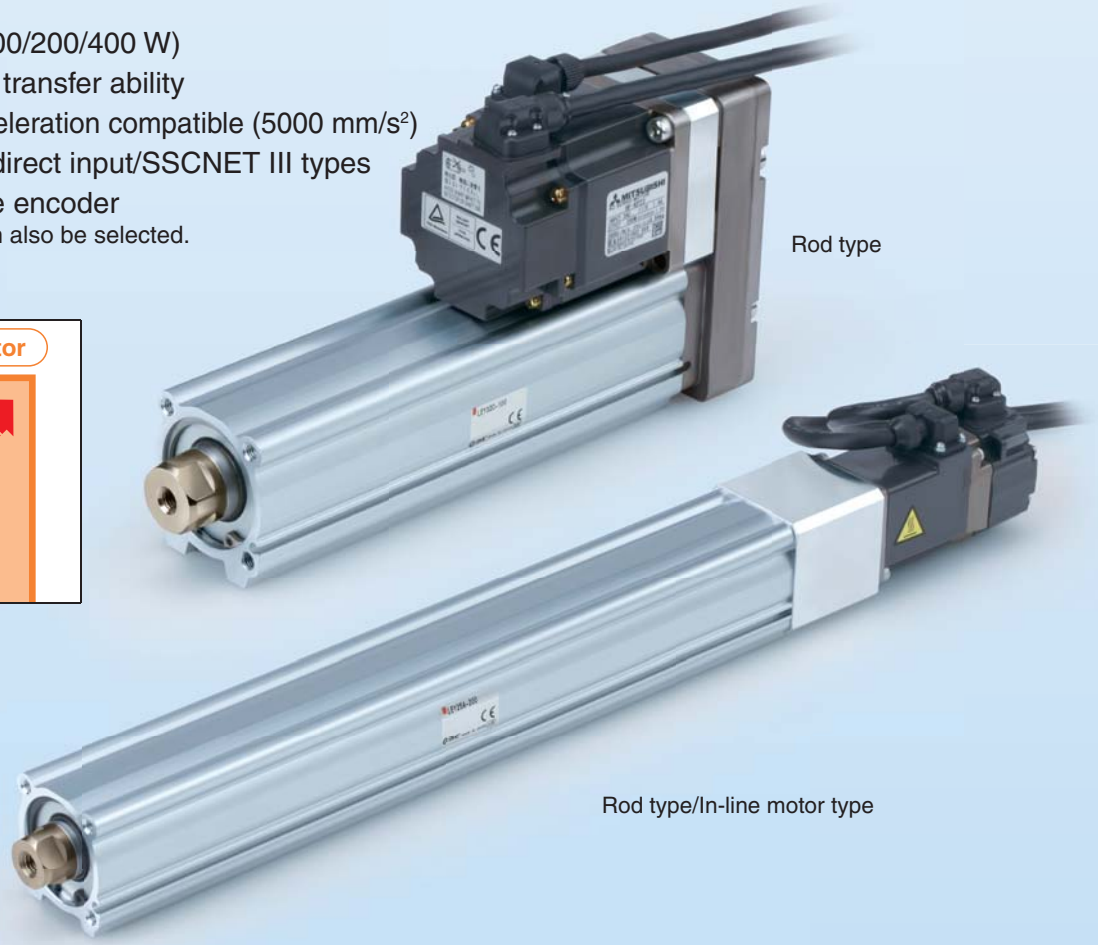
AC Servo Motor Type

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

- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s²)
- Pulse input/CC-Link direct input/SSCNET III types
- With internal absolute encoder

∗ Incremental encoder can also be selected.



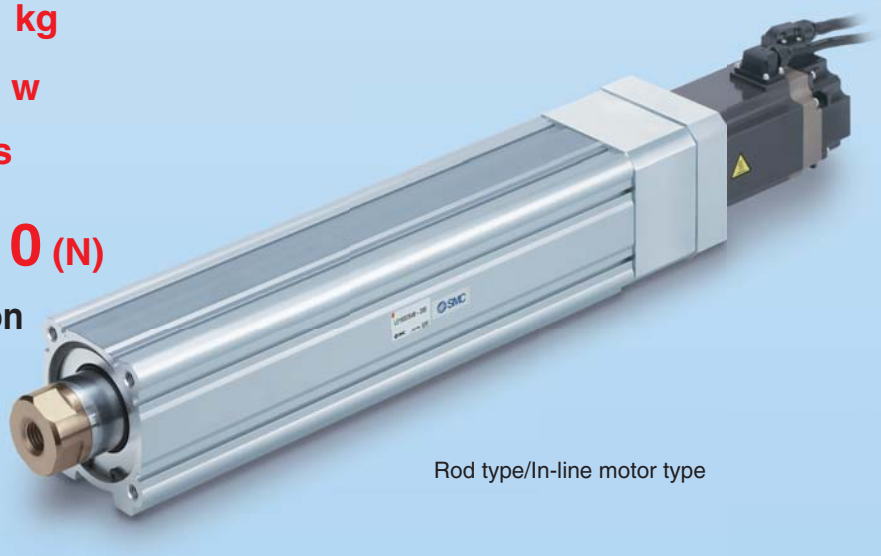


Rod type

Rod type/In-line motor type

Added large bore size 63!

- **Work load** Horizontal **80 kg**
  Vertical **72 kg**
- **High output motor: 400 w**
- **Max. speed: 1000 mm/s**
  ∗ 500 stroke
- **Max. pushing force: 1910 (N)**
- **Dust/Drip proof specification (IP65)**



Rod type/In-line motor type

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

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

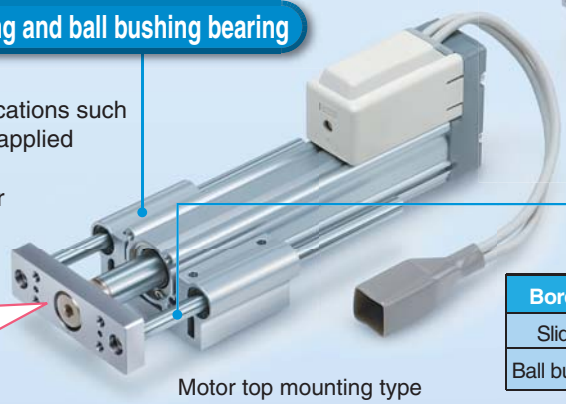
Compact integrated guide rods

Lateral load resistance and high non-rotating accuracy

In-line motor type

Compatible with sliding bearing and ball bushing bearing

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



Motor top mounting type

Improved rigidity

Lateral end load: 5 times more*

* Compared with rod type, size 25 and 100 stroke

Non-rotating accuracy improved by using two guide rods

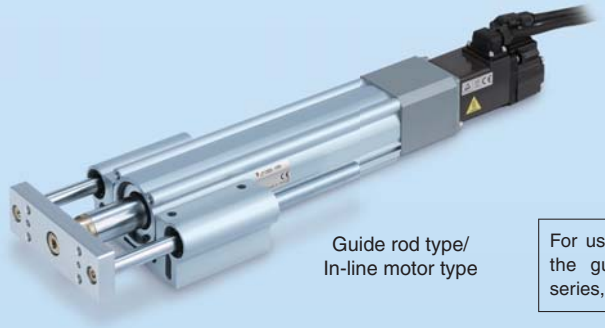
Bore size [mm]	16	25	32	40
Sliding bearing	±0.06°	±0.05°		
Ball bushing bearing	±0.07°	±0.06°		

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

AC Servo Motor Type

Guide Rod Type *Series LEYG* /Size: 25, 32

Guide rod type

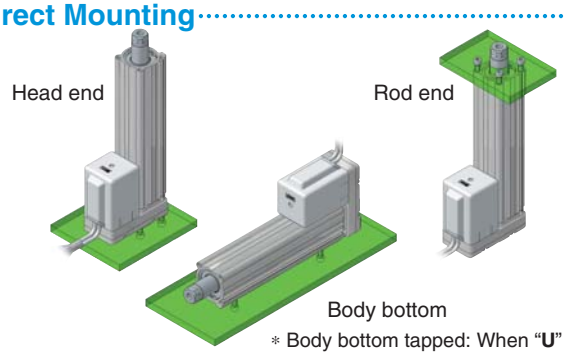


Guide rod type/
In-line motor type

For use of auto switches for the guide rod type LEYG series, refer to page 118.

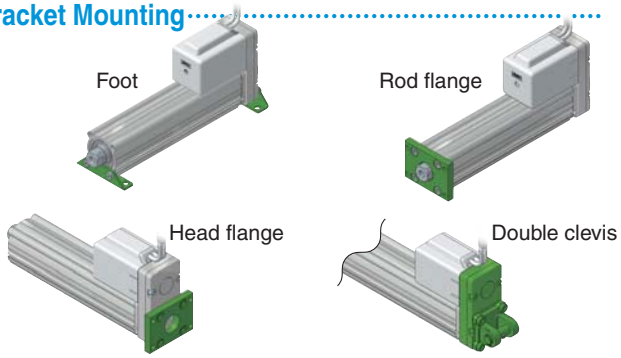
Mounting Variations

Direct Mounting

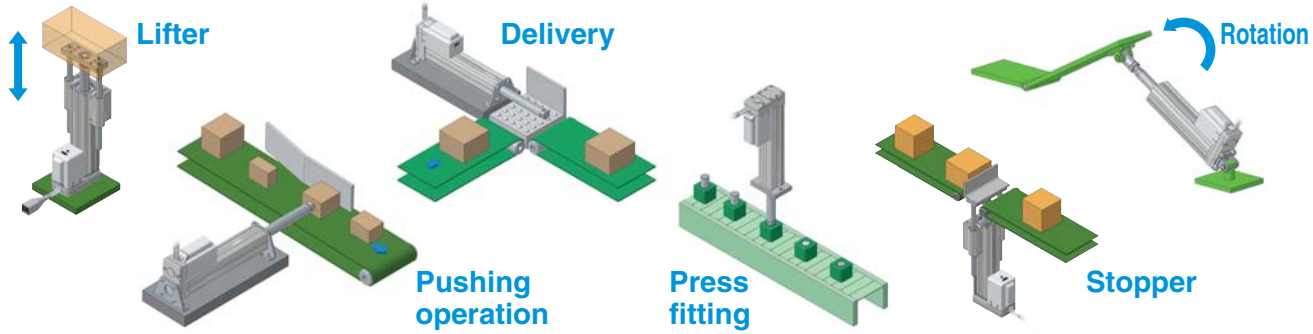


* Body bottom tapped: When "**U**" is selected

Bracket Mounting



Application Examples

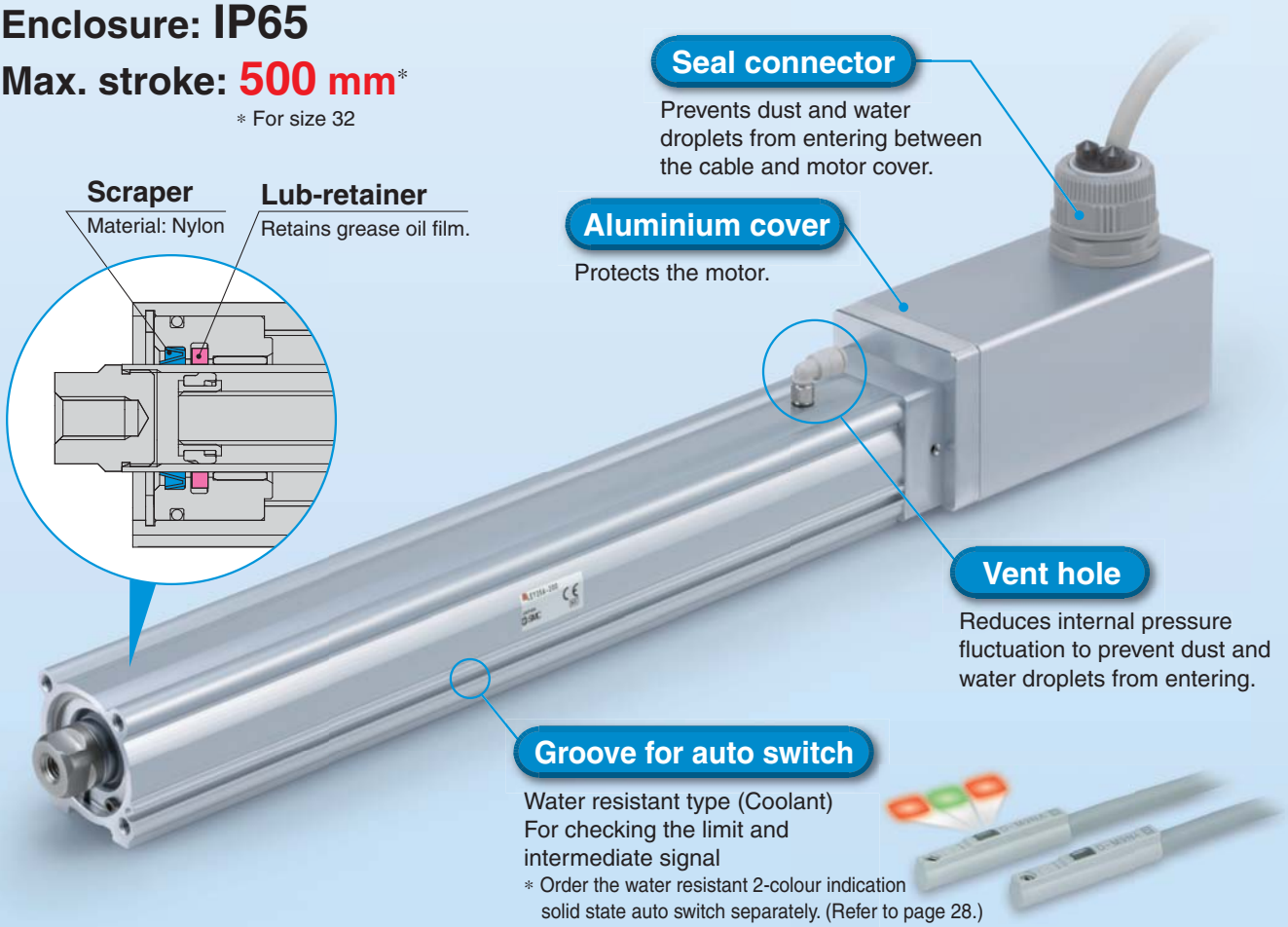


Dust/Drip proof (IP65) specification

●Enclosure: IP65

●Max. stroke: 500 mm*

* For size 32

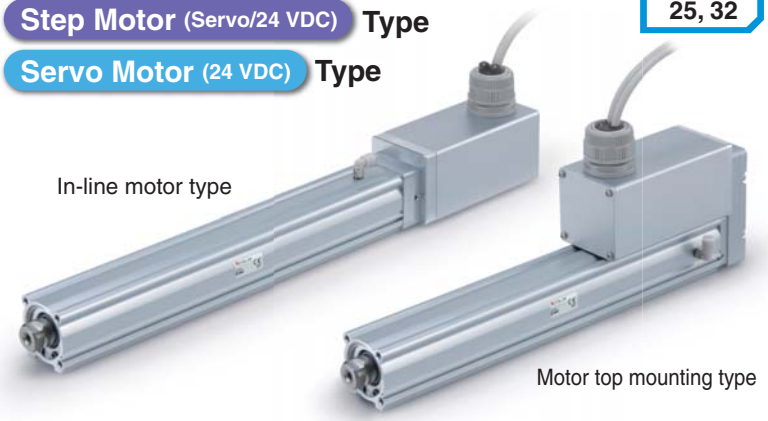


LEY-X5 (Refer to page 23.)

Size: 25, 32

Step Motor (Servo/24 VDC) Type

Servo Motor (24 VDC) Type



LEY-X5 (Refer to page 103.)

AC Servo Motor (100/200 W) Type

LEY63D□□-□P

(Refer to page 98./Option)

Size: 63

AC Servo Motor (400 W) Type

Step Data Input Type Series LECP6/LECA6

Simple Setting to Use Straight Away

◎Easy Mode for Simple Setting

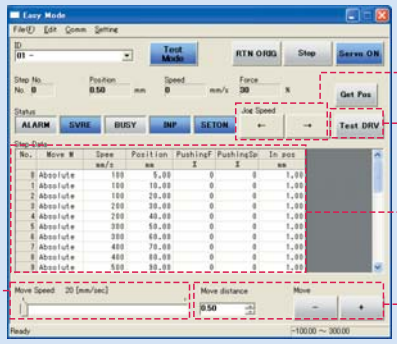
If you want to use it right away, select "Easy Mode."

Step motor (Servo/24 VDC)
LECP6

Servo motor (24 VDC)
LECA6

<When a PC is used>
Controller setting software

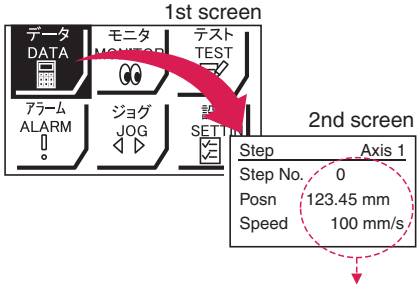
- Step data setting, test operation, move jog and move for the constant rate can be set and operated on one screen.



<When a TB (teaching box) is used>

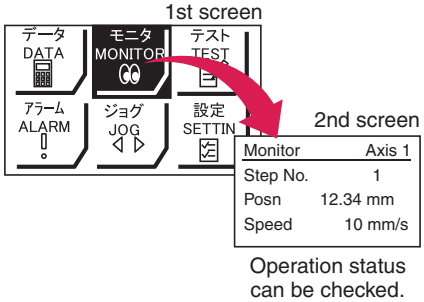
- Simple screen without scrolling promotes ease of setting and operating.
- Pick up an icon from the first screen to select a function.
- Set up the step data and check the monitor on the second screen.

Example of setting the step data



It can be registered by "SET" after entering the values.

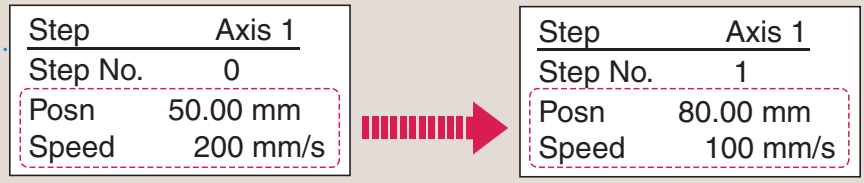
Example of checking the operation status



Operation status can be checked.

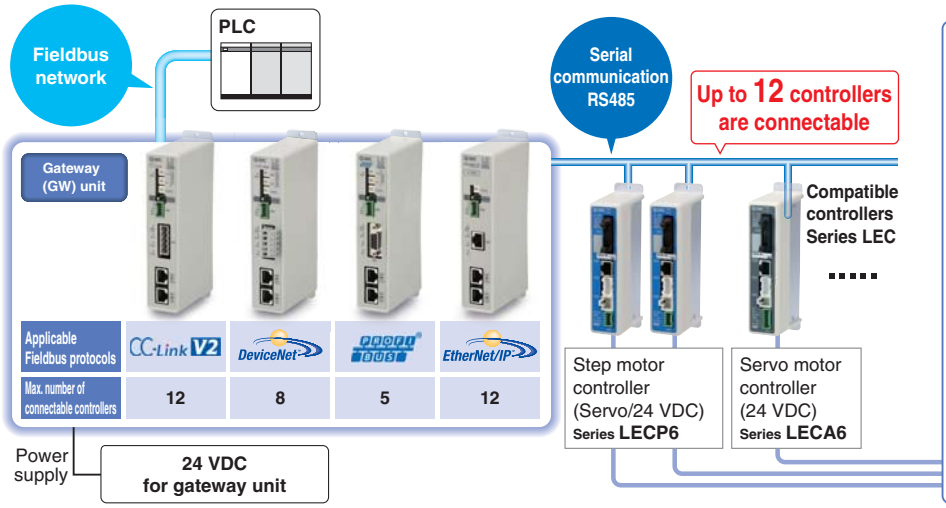
Teaching box screen

- **Data can be set with position and speed.** (Other conditions are already set.)



Gateway Unit Series LEC-G

- Unit linking the LECP6/LECA6 series and Fieldbus network
- Two methods of operation
  Step data input: Operate using preset step data in the controller.
  Numerical data input: The actuator operates using values such as position and speed from the PLC.



Compatible electric actuators


Electric gripper
Series **LEH**


Electric slide table
Series **LES**


Electric actuator/ Rod type
Series **LEY**


Electric actuator/ Slider type
Series **LEF**


Electric actuator/ Rotary table
Series **LER**


Electric actuator/ Miniature type
Series **LEP**


Electric actuator/ Guide rod slider
Series **LEL**

SMC

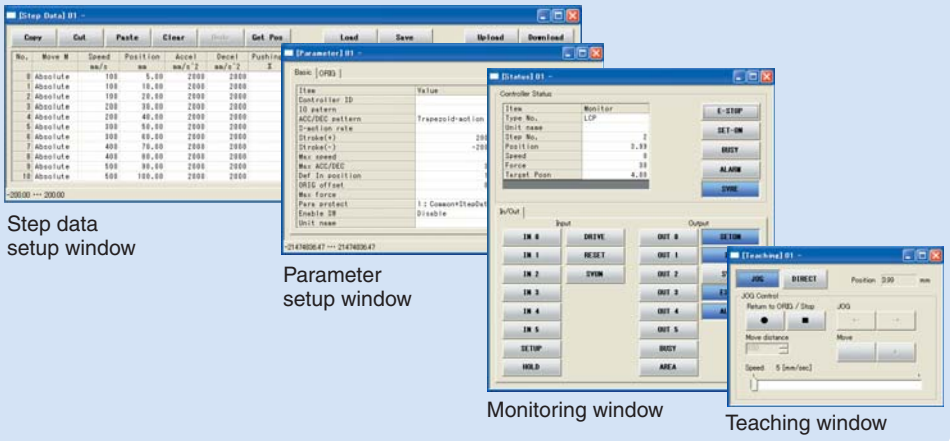
◎Normal Mode for Detailed Setting

Select normal mode when detailed setting is required.

- Step data can be set in detail.
- Parameters can be set.
- Signals and terminal status can be monitored.
- JOG and constant rate movement, return to origin, test operation and testing of forced output can be performed.

<When a PC is used> Controller setting software

- Step data setting, parameter setting, monitor, teaching, etc., are indicated in different windows.



Step data setup window

Parameter setup window

Monitoring window

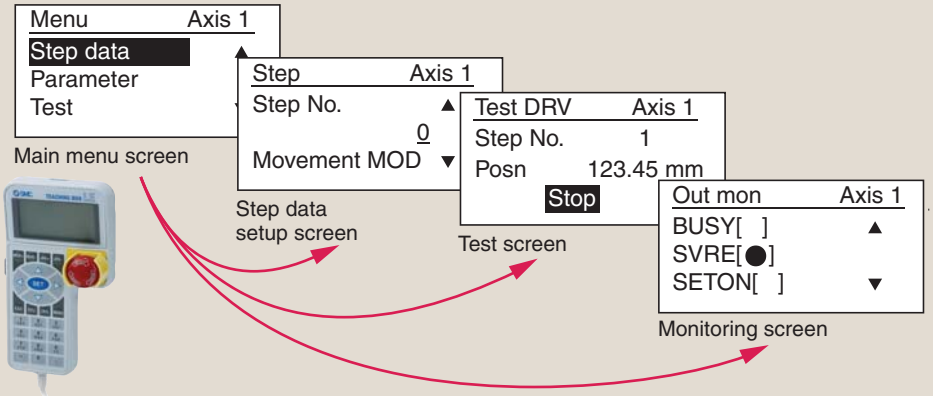
Teaching window

<When a TB (teaching box) is used>

- Multiple step data can be stored in the teaching box, and transferred to the controller.
- Continuous test operation by up to 5 step data.

Teaching box screen

- Each function (step data setting, test, monitor, etc.) can be selected from the main menu.



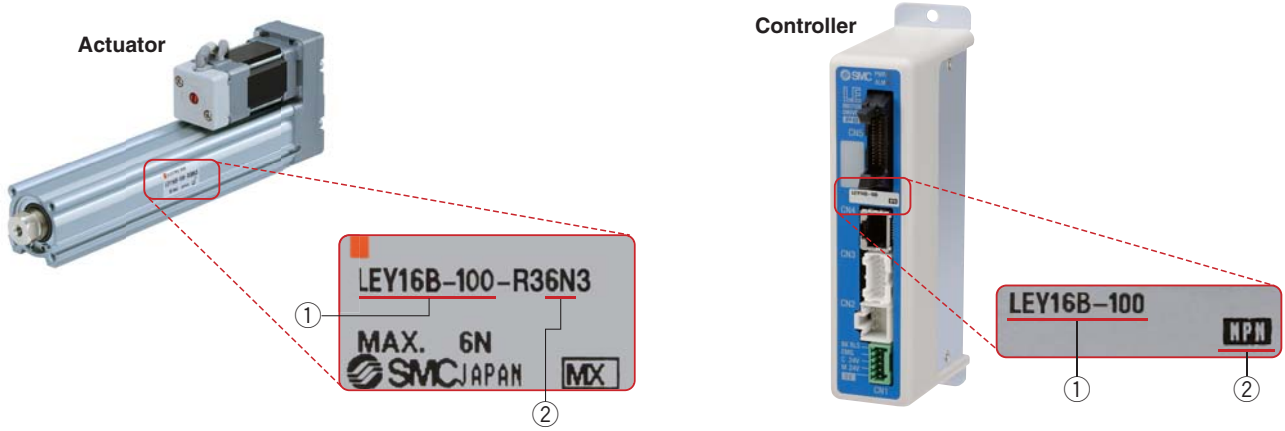
The actuator and controller are provided as a set. (They can be ordered separately.)

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

<Check the following before use.>

① Check the actuator label for model number. This matches the controller.

② Check Parallel I/O configuration matches (NPN or PNP).



Programless Type Series LECP1

Step motor
(Servo/24 VDC)
LECP1

No programming

Capable of setting up an electric actuator operation without using a PC or teaching box

1 Setting position number

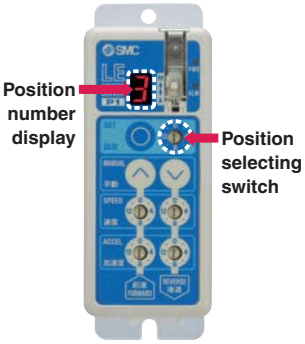
Setting a registered number for the stop position
Maximum 14 points

2 Setting a stop position

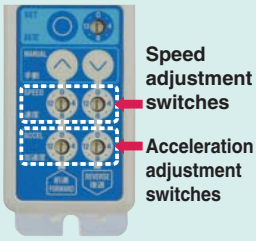
Moving the actuator to a stop position using FORWARD and REVERSE buttons

3 Registration

Registering the stop position using SET button

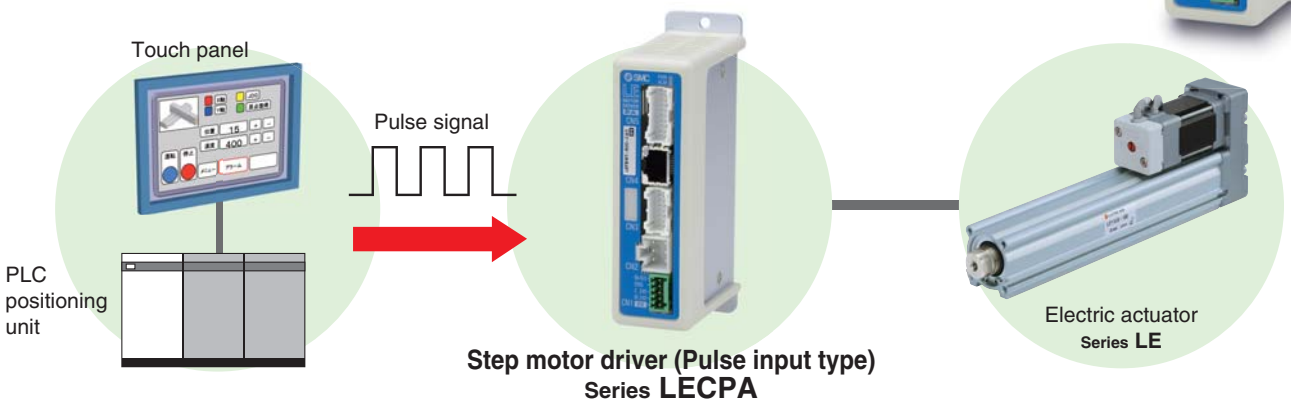


Speed/Acceleration 16-level adjustment



Pulse Input Type Series LECPA

- **A driver that uses pulse signals to allow positioning at any position. The actuator can be controlled from the customers' positioning unit.**



- **Return-to-origin command signal**
  Enables automatic return-to-origin action.

- **With force limit function (Pushing force/Gripping force operation available)**
  Pushing force/Positioning operation possible by switching signals.

Function

Item	Step data input type LECP6/LECA6	Programless type LECP1	Pulse input type LECPA
Step data and parameter setting	• Input from controller setting software (PC) • Input from teaching box	• Select using controller operation buttons	• Input from controller setting software (PC) • Input from teaching box
Step data "position" setting	• Input the numerical value from controller setting software (PC) or teaching box • Input the numerical value • Direct teaching • JOG teaching	• Direct teaching • JOG teaching	• No "position" setting required Position and speed set by pulse signal
Number of step data	64 points	14 points	—
Operation command (I/O signal)	Step No. [IN*] input ⇒ [DRIVE] input	Step No. [IN*] input only	Pulse signal
Completion signal	[INP] output	[OUT*] output	[INP] output

Setting Items

TB: Teaching box PC: Controller setting software

Item		Contents	Easy mode		Normal mode	Step data input type LECP6/LECA6	Pulse input type LECPA	Programless type LECP1*
			TB	PC	TB/PC			
Step data setting (Excerpt)	Movement MOD	Selection of "absolute position" and "relative position"	△	●	●	Set at ABS/INC	No setting required	Fixed value (ABS)
	Speed	Transfer speed	●	●	●	Set in units of 1 mm/s		Select from 16-level
	Position	[Position]: Target position [Pushing]: Pushing start position	●	●	●	Set in units of 0.01 mm		Direct teaching JOG teaching
	Acceleration/Deceleration	Acceleration/deceleration during movement	●	●	●	Set in units of 1 mm/s²		Select from 16-level
	Pushing force	Rate of force during pushing operation	●	●	●	Set in units of 1%	Set in units of 1%	Select from 3-level (weak, medium, strong)
	Trigger LV	Target force during pushing operation	△	●	●	Set in units of 1%	Set in units of 1%	No setting required (same value as pushing force)
	Pushing speed	Speed during pushing operation	△	●	●	Set in units of 1 mm/s	Set in units of 1 mm/s	No setting required
	Moving force	Force during positioning operation	△	●	●	Set to 100%	Set to (Different values for each actuator)%	
	Area output	Conditions for area output signal to turn ON	△	●	●	Set in units of 0.01 mm	Set in units of 0.01 mm	
	In position	[Position]: Width to the target position [Pushing]: How much it moves during pushing	△	●	●	Set to 0.5 mm or more (Units: 0.01 mm)	Set to (Different values for each actuator) or more (Units: 0.01 mm)	
Parameter setting (Excerpt)	Stroke (+)	+ side limit of position	×	×	●	Set in units of 0.01 mm	Set in units of 0.01 mm	
	Stroke (–)	– side limit of position	×	×	●	Set in units of 0.01 mm	Set in units of 0.01 mm	
	ORIG direction	Direction of the return to origin can be set.	×	×	●	Compatible	Compatible	Compatible
	ORIG speed	Speed during return to origin position	×	×	●	Set in units of 1 mm/s	Set in units of 1 mm/s	No setting required
	ORIG ACC	Acceleration during return to origin position	×	×	●	Set in units of 1 mm/s²	Set in units of 1 mm/s	
Test	JOG		●	●	●	Continuous operation at the set speed can be tested while the switch is being pressed.	Continuous operation at the set speed can be tested while the switch is being pressed.	Hold down MANUAL button (⌃⌄) for uniform sending (speed is specified value)
	MOVE		×	●	●	Operation at the set distance and speed from the current position can be tested.	Operation at the set distance and speed from the current position can be tested.	Press MANUAL button (⌃⌄) once for sizing operation (speed, sizing amount are specified values)
	Return to ORIG		●	●	●	Compatible	Compatible	Compatible
	Test drive	Operation of the specified step data	●	●	● (Continuous operation)	Compatible	Not compatible	Compatible
	Forced output	ON/OFF of the output terminal can be tested.	×	×	●	Compatible	Compatible	Not compatible
Monitor	DRV mon	Current position, speed, force and the specified step data can be monitored.	●	●	●	Compatible	Compatible	
	In/Out mon	Current ON/OFF status of the input and output terminal can be monitored.	×	×	●	Compatible	Compatible	
ALM	Status	Alarm currently being generated can be confirmed.	●	●	●	Compatible	Compatible	Compatible (display alarm group)
	ALM Log record	Alarm generated in the past can be confirmed.	×	×	●	Compatible	Compatible	Not compatible
File	Save/Load	Step data and parameter can be saved, forwarded and deleted.	×	×	●	Compatible	Compatible	
Other	Language	Can be changed to Japanese or English.	●	●	●	Compatible	Compatible	

△: Can be set from TB Ver. 2.** (The version information is displayed on the initial screen)
* Programless type LECP1 cannot be used with the teaching box and controller setting kit.

System Construction/General Purpose I/O

●Electric actuator/
Rod type

Provided by customer

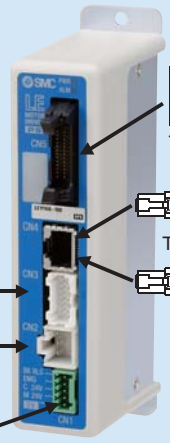
PLC

Power supply for I/O signal
24 VDC Note)

●I/O cable Pages 58, 71

Controller type	Part no.
LECP6/LECA6	LEC-CN5-□
LECP1 (Programless)	LEC-CK4-□

●Controller* Page 49



To CN5

To CN4

To CN3

To CN2

To CN1

Step data input type
LECP6/LECA6

Programless type
LECP1
Page 65

Note) The teaching box, controller setting kit and Touch Operator Interface cannot be connected.

Provided by customer

Power supply for controller
24 VDC Note)

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

●Power supply plug Page 50

(Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

●Actuator cable* Pages 56, 70

Controller type	Standard cable	Robotic cable
LECP6 (Step data input type)	LE-CP-□-S	LE-CP-□
LECA6 (Step data input type)	—	LE-CA-□
LECP1 (Programless type)	LE-CP-□-S	LE-CP-□

●Touch Operator Interface (Provided by customer)

GP4501T/GP3500T
Manufactured by Digital Electronics Corp.

Pro-face
for the best interface

Cockpit parts can be downloaded free via the Pro-face website. Using cockpit parts makes adjustment from the Touch Operator Interface possible.

The * mark: Can be included in the "How to Order" for the actuator.

Option

●Teaching box Page 60

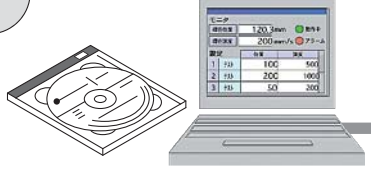
(With 3 m cable)
Part no.: LEC-T1-3JG□

Or

●Controller setting kit Page 59

Controller setting kit
(Communication cable, conversion unit and USB cable are included.)
Part no.: LEC-W2

Communication cable●
(3 m)



●USB cable
(A-miniB type)
(0.3 m)

PC

Note) Cannot be used with the programless type (LECP1).

System Construction/Pulse Signal

●Electric actuator/
Rod type

Provided by customer

PLC

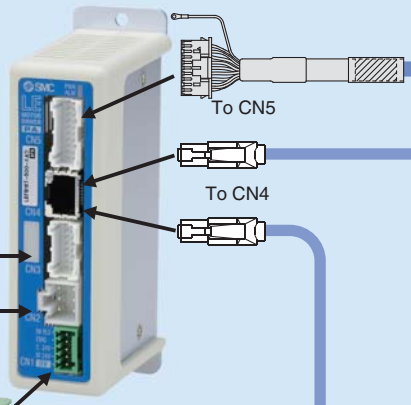
Power supply for I/O signal
24 VDC Note)

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

●Driver* Page 72

●I/O cable Page 78

Driver type	Part no.
LECPA	LEC-CL5-□



Provided by customer

Power supply for driver
24 VDC Note)

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

●Power supply plug (Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

●Actuator cable* Page 77

Driver type	Standard cable	Robotic cable
LECPA (Pulse input type)	LE-CP-□-S	LE-CP-□

The * mark: Can be included in the "How to Order" for the actuator.

Option

●Teaching box Page 80
(With 3 m cable)
Part no.: LEC-T1-3JG□

Or

●Controller setting software Page 79
Communication cable (With conversion unit) and USB cable are included.
Part no.: LEC-W2

Communication cable●

●USB cable
(A-miniB type)

PC

System Construction/Fieldbus Network

PLC
(Provided by customer)

Power supply for gateway unit
24 VDC Note 1)

Power supply

Fieldbus network

Gateway (GW) unit Page 62

Applicable Fieldbus protocols
CC-Link Ver. 2.0
DeviceNet™
PROFIBUS DP
EtherNet/IP™

●Power supply connector (Accessory) — To CN4

●Communication connector (Accessory)* — To CN3

* CC-Link Ver. 2.0
DeviceNet™ only

To CN2

To CN1

Page 62
●Communication cable
LEC-CG1-□

Page 62
●Cable between branches
LEC-CG2-□

●Terminating resistor connector 120Ω
LEC-CGR

●Branch connector Page 62
LEC-CGD

Page 62
●Communication cable
LEC-CG1-□

●Controller Page 50

To CN4

●Power supply connector (Accessory) — To CN1

Controller input power supply Note 1)

●Controller Page 50

●Power supply connector (Accessory) — To CN1

Controller input power supply Note 1)

●Electric actuator/ Rod type

Series LEY

Option

●Controller setting software Page 59
(Communication cable and USB cable are included.)
Part no.: LEC-W2

●Communication cable

●USB cable
(A-miniB type)

PC
(Provided by customer)

Or

●Teaching box Page 60
(With 3 m cable)
Part no.: LEC-T1-3JG□

Applicable Fieldbus protocols	Max. number of connectable controllers
CC-Link Ver. 2.0	12
DeviceNet™	8
PROFIBUS DP	5
EtherNet/IP™	12

Compatible controllers

Step motor controller (Servo/24 VDC)	Series LECP6
Servo motor controller (24 VDC)	Series LECA6

Note 1) Connect the 0 V terminals for both the controller input power supply and gateway unit power supply.
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

AC Servo Motor Driver

Series LECS□

Series LECS□ list

	Series	Compatible motor (100/200 VAC)			Control method			Application/ Function	Compatible option
		100 W	200 W	400 W	Note 1) Positioning	Pulse	Network direct input	Note 2) Synchronous	Setup software LEC-MR-SETUP221
Incremental Type	**LECSA** (Pulse input type/ Positioning type) 	●	●	●	Up to 7 points ●	●			●
Absolute Type	**LECSB** (Pulse input type) 	●	●	●		●			●
	LECSC (CC-Link direct input type) 	●	●	●	Up to 255 points ●		CC-Link Ver. 1.10 ●		●
	LECSS (SSCNET III type) Compatible with Mitsubishi Electric's servo system controller network 	●	●	●			SSCNET III ●	●	●

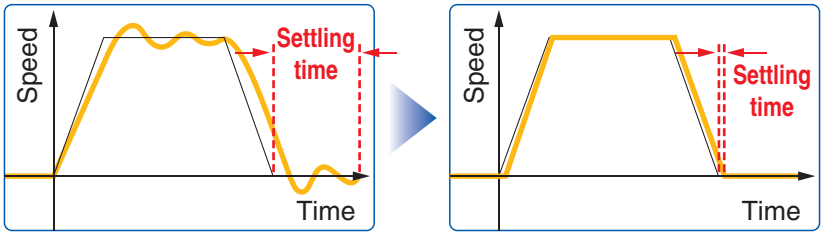
Note 1) For positioning type, setting needs to be changed to use with maximum set values.
Setup software (MR Configurator) LEC-MR-SETUP221 is required.
Note 2) Available when the Mitsubishi motion controller is used for the master equipment.

AC Servo Motor Driver — Series LECS□

Servo adjustment using auto gain tuning

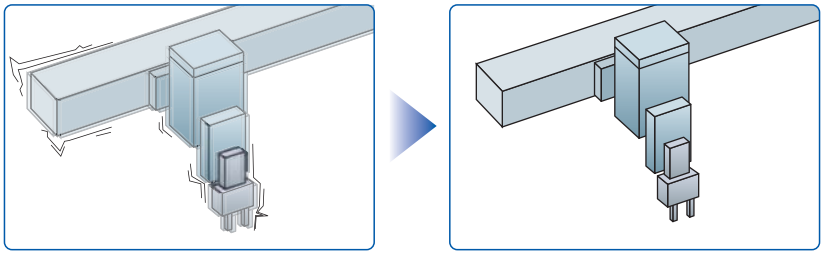
Auto resonant filter function

- Control the difference between command value and actual action



Auto damping control function

- Automatically suppress low frequency machine vibrations (up to 100 Hz)



With display setting function

One-touch adjustment button

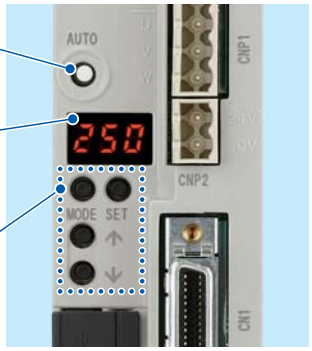
One-touch servo adjustment

Display

Display the monitor, parameter and alarm.

Settings

Set parameters and monitor display, etc. with push buttons.



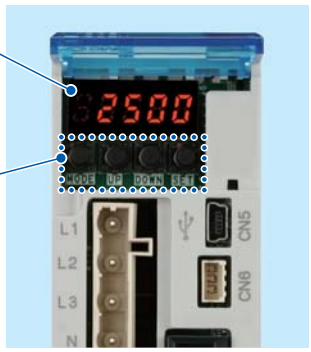
LECSA

Display

Display the monitor, parameter and alarm.

Settings

Set parameters and monitor display, etc. with push buttons.



(With the front cover opened)

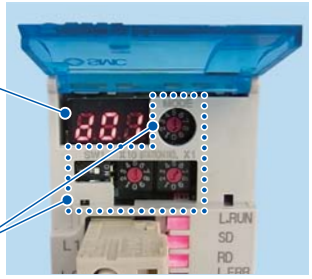
LECSB

Display

Display the communication status with the driver, the alarm and the point table No.

Settings

Control Baud rate, station number and the occupied station count.



(With the front cover opened)

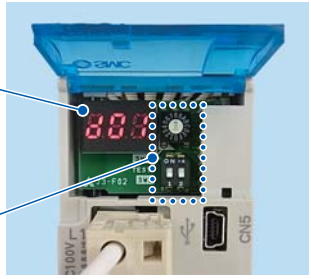
LECSC

Display

Display the communication status with the driver and the alarm.

Settings

Switches for selecting axis and switching to the test operation



(With the front cover opened)

LECSS

System Construction

Incremental encoder compatible *Series* LECSA
(Pulse input type/Positioning type)

Provided by customer

Power supply
Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)

◎Option
Regeneration option Page 132
Part no.: **LEC-MR-RB-□**

Main circuit power supply connector Page 126
(Accessory)

Driver

Motor cable Page 132

Standard cable	Robotic cable
LE-CSM-S□□	LE-CSM-R□□

Lock cable Page 132

Standard cable	Robotic cable
LE-CSB-S□□	LE-CSB-R□□

Electric actuator Pages 90, 111
Rod type
Series LEY
Guide rod type/
In-line motor type
Series LEYG

Encoder cable Page 132

Standard cable	Robotic cable
LE-CSE-S□□	LE-CSE-R□□

Provided by customer

Control circuit power supply
24 VDC

Control circuit power supply connector Page 126
(Accessory)

◎Option

Setup software Page 133
(MR Configurator™)
Part no.: **LEC-MR-SETUP221□**

PC

∗ Order USB cable (Part no.: LEC-MR-J3USB) separately to use this software.

USB cable Page 133
Part no.: **LEC-MR-J3USB**

◎Option
I/O connector Page 132
Part no.: **LE-CSNA**

Provided by customer

PLC (Positioning unit)
Power supply for I/O signal 24 VDC

Absolute encoder compatible *Series* LECSB
(Pulse input type)

Provided by customer

Power supply
Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

◎Option
Regeneration option Page 132
Part no.: **LEC-MR-RB-□**

Main circuit power supply connector Page 127
(Accessory)

Driver

Motor cable Page 132

Standard cable	Robotic cable
LE-CSM-S□□	LE-CSM-R□□

Lock cable Page 132

Standard cable	Robotic cable
LE-CSB-S□□	LE-CSB-R□□

Control circuit power supply connector Page 127
(Accessory)

Electric actuator Pages 90, 111
Rod type
Series LEY
Guide rod type/
In-line motor type
Series LEYG

Motor connector Page 127
(Accessory)

Encoder cable Page 132

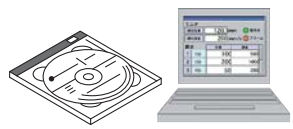
Standard cable	Robotic cable
LE-CSE-S□□	LE-CSE-R□□

Battery (Accessory) Page 133
Part no.: **(LEC-MR-J3BAT)**

USB cable Page 133
Part no.: **LEC-MR-J3USB**

◎Option

Setup software Page 133
(MR Configurator™)
Part no.: **LEC-MR-SETUP221□**



PC

∗ Order USB cable (Part no.: LEC-MR-J3USB) separately to use this software.

Analogue monitor output
RS-422 communication

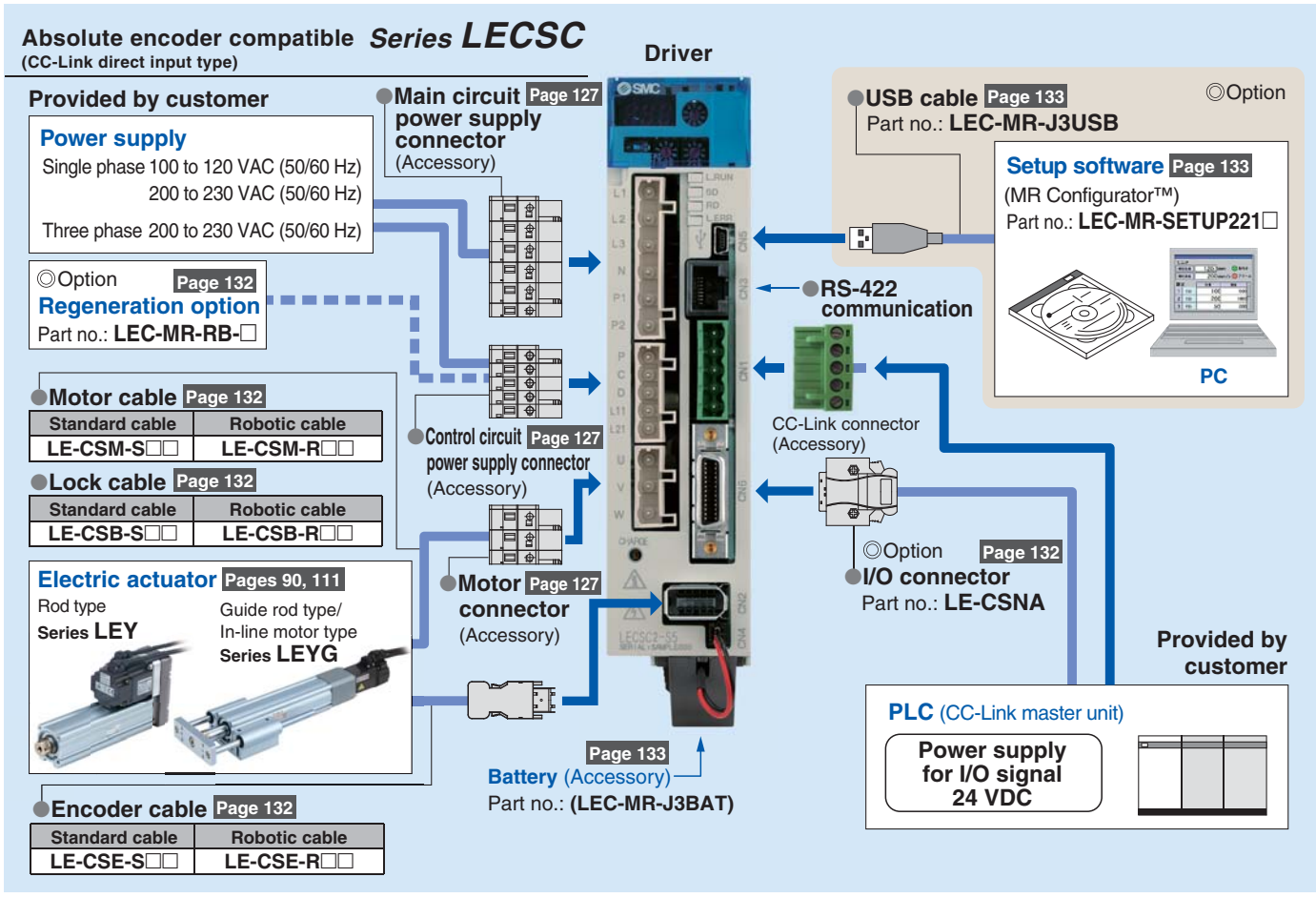
◎Option
I/O connector Page 132
Part no.: **LE-CSNB**

Provided by customer

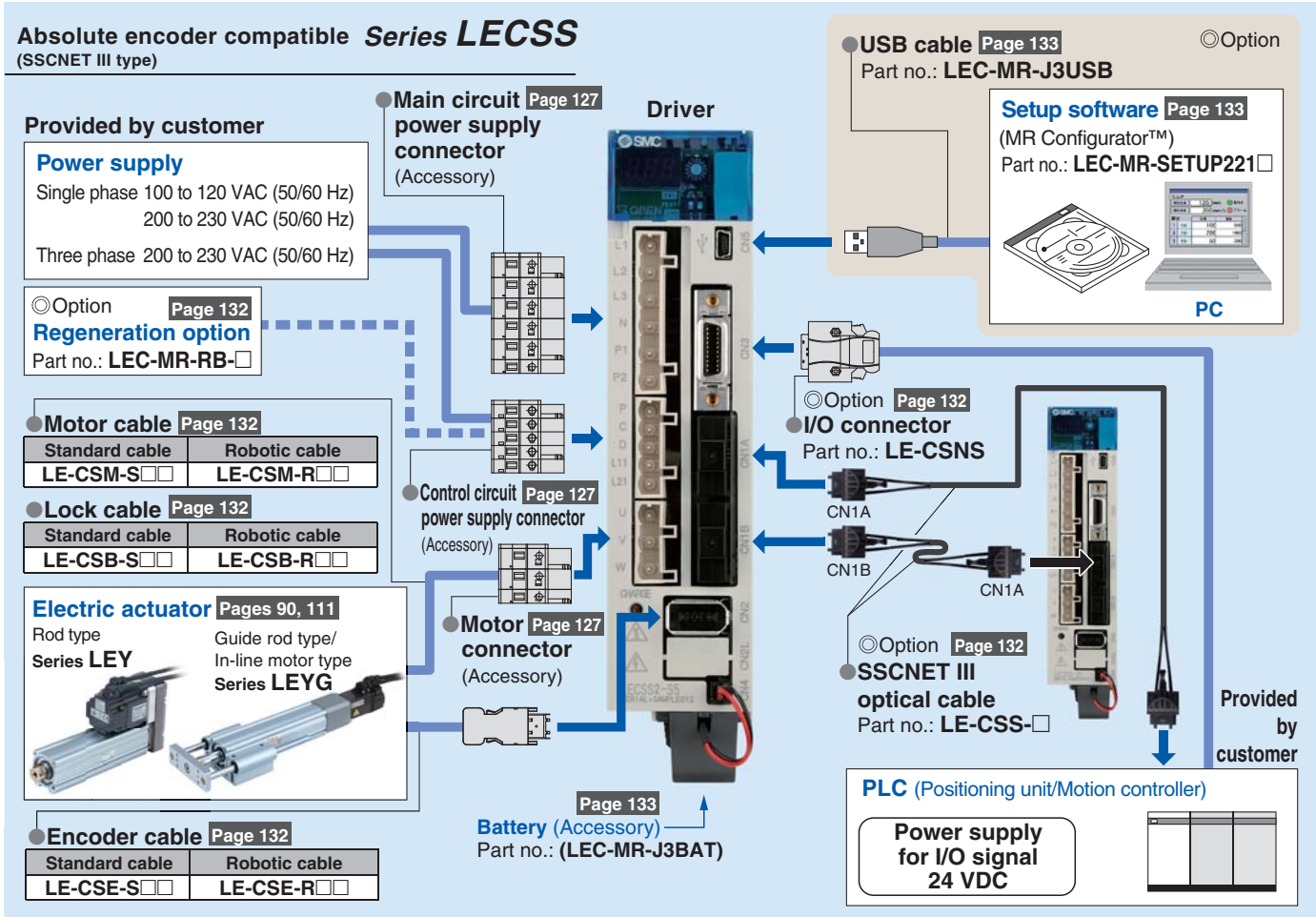
PLC (Positioning unit)
Power supply for I/O signal 24 VDC

System Construction

Absolute encoder compatible Series LECSC
(CC-Link direct input type)

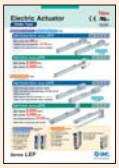


Absolute encoder compatible Series LECSS
(SSCNET III type)



SMC Electric Actuators

Slider Type
Step Motor (Servo/24 VDC) | Servo Motor (24 VDC) | AC Servo Motor


CAT.ES100-87

Ball screw drive
Series LEFS

Clean room compatible

Series LEFS

Size	Max. work load (kg)	Stroke (mm)
16	10	Up to 400
25	20	Up to 600
32	45	Up to 800
40	60	Up to 1000

Belt drive
Series LEFB

Series LEFB

Size	Max. work load (kg)	Stroke (mm)
16	1	Up to 1000
25	5	Up to 2000
32	14	Up to 2000

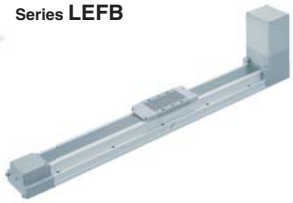
Ball screw drive
Series LEFS

Clean room compatible

Series LEFS

Size	Max. work load (kg)	Stroke (mm)
25	20	Up to 600
32	45	Up to 800
40	60	Up to 1000

Belt drive
Series LEFB



Series LEFB

Size	Max. work load (kg)	Stroke (mm)
25	5	Up to 2000
32	15	Up to 2500
40	25	Up to 3000

High Rigidity Slider Type
AC Servo Motor

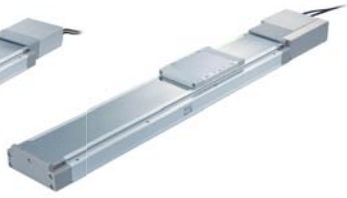

CAT.ES100-104

Ball screw drive
Series LEJS

Series LEJS

Size	Max. work load (kg)	Stroke (mm)
40	55	200 to 1200
63	85	300 to 1500

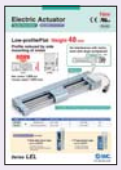
Belt drive
Series LEJB



Series LEJB

Size	Max. work load (kg)	Stroke (mm)
40	20	200 to 2000
63	30	300 to 3000

Guide Rod Slider
Step Motor (Servo/24 VDC)


CAT.ES100-101

Belt drive
Series LEL

Series LEL25M
Sliding bearing

Size	Max. work load (kg)	Stroke (mm)
25	3	Up to 1000

Series LEL25L
Ball bushing bearing

Size	Max. work load (kg)	Stroke (mm)
25	5	Up to 1000

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


CAT.ES100-83

Basic type
Series LEY

Dust/Drip proof compatible

Series LEY

Size	Pushing force (N)	Stroke (mm)
16	141	Up to 300
25	452	Up to 400
32	707	Up to 500
40	1058	Up to 500

In-line motor type
Series LEY□D

Dust/Drip proof compatible

Guide rod type
Series LEYG

Series LEYG

Size	Pushing force (N)	Stroke (mm)
16	141	Up to 200
25	452	Up to 300
32	707	Up to 300
40	1058	Up to 300

Guide rod type /In-line motor type
Series LEYG□D

AC Servo Motor

Basic type
Series LEY

Dust/Drip proof compatible

Series LEY

Size	Pushing force (N)	Stroke (mm)
25	485	Up to 400
32	588	Up to 500

In-line motor type
Series LEY□D

Dust/Drip proof compatible

Series LEY

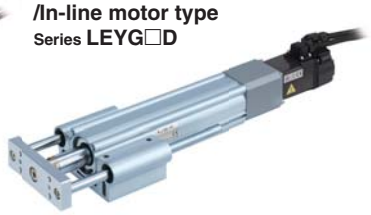
Size	Pushing force (N)	Stroke (mm)
25	485	Up to 400
32	736	Up to 500
63	1910	Up to 800

Guide rod type
Series LEYG

Series LEYG

Size	Pushing force (N)	Stroke (mm)
25	485	300
32	588	

Guide rod type /In-line motor type
Series LEYG□D



Series LEYG

Size	Pushing force (N)	Stroke (mm)
25	485	300
32	736	

SMC Electric Actuators

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


CAT.ES100-78

Compact type Series LES

Basic type/R type
Series LES□R

Size	Max. work load (kg)	Stroke (mm)
8	1	30, 50, 75
16	3	30, 50 75, 100
25	5	30, 50, 75 100, 125, 150

Symmetrical type/L type
Series LES□L

In-line motor type/D type
Series LES□D

High rigidity type Series LESH

Basic type/R type
Series LESH□R

Size	Max. work load (kg)	Stroke (mm)
8	2	50, 75
16	6	50, 100
25	9	50, 100 150

Symmetrical type/L type
Series LESH□L

In-line motor type/D type
Series LESH□D

Miniature
Step Motor (Servo/24 VDC)


CAT.ES100-92

Rod type
Series LEPY

Series LEPY

Size	Max. work load (kg)	Stroke (mm)
6	1	25, 50, 75
10	2	

Slide table type
Series LEPS

Series LEPS

Size	Max. work load (kg)	Stroke (mm)
6	1	25
10	2	50

Rotary Table
Step Motor (Servo/24 VDC)


CAT.ES100-94

Basic type
Series LER

High precision type
Series LERH

Series LER

Size	Rotating torque (N·m)		Max. speed (°/s)	
	Basic	High torque	Basic	High torque
10	0.2	0.3	420	280
30	0.8	1.2		
50	6.6	10		

Gripper
Step Motor (Servo/24 VDC)


CAT.ES100-77

2-finger type
Series LEHZ

Series LEHZ

Size	Max. gripping force (N)		Stroke/both sides (mm)
	Basic	Compact	
10	14	6	4
16		8	6
20	40	28	10
25			14
32	130	—	22
40	210	—	30

2-finger type
With dust cover
Series LEHZJ

Series LEHZJ

Size	Max. gripping force (N)		Stroke/both sides (mm)
	Basic	Compact	
10	14	6	4
16		8	6
20	40	28	10
25			14

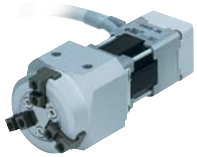
2-finger type
Long stroke
Series LEHF

Series LEHF

Size	Max. gripping force (N)	Stroke/both sides (mm)
10	7	16 (32)
20	28	24 (48)
32	120	32 (64)
40	180	40 (80)

Note) ( ): Long stroke

3-finger type
Series LEHS



Series LEHS

Size	Max. gripping force (N)		Stroke/both sides (mm)
	Basic	Compact	
10	5.5	3.5	4
20	22	17	6
32	90	—	8
40	130	—	12

Controller/Driver

Controller

Step data input type
For step motor
Series LECP6

Control motor
Step motor (Servo/24 VDC)

Step data input type
For servo motor
Series LECA6

Control motor
Servo motor (24 VDC)

Programless type
Series LECP1

Control motor
Step motor (Servo/24 VDC)

Driver

Pulse input type
Series LECPA

Control motor
Step motor (Servo/24 VDC)

Gateway Unit

Fieldbus-compatible gateway (GW) unit
Series LEC-G

Applicable Fieldbus protocols	CC-Link V2	DeviceNet	PROFIBUS	EtherNet/IP
Max. number of connectable controllers	12	8	5	12

Driver

AC Servo Motor Driver

Pulse input type/
Positioning type
Series LECSA
(Incremental type)

Control motor
AC servo motor (100/200/400 W)

Pulse input type
Series LECSB
(Absolute type)

Control motor
AC servo motor (100/200/400 W)

CC-Link direct input type
Series LECSC
(Absolute type)

Control motor
AC servo motor (100/200/400 W)

SSCNET III type
Series LECSS
(Absolute type)

Control motor
AC servo motor (100/200/400 W)

Electric Actuator Rod Type *Series* LEY

Motor top/parallel type

In-line motor type

Specifications	Series	Stroke [mm]	Pushing force [N]	Vertical work load [kg]	Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Controller /Driver series	Reference page
Step motor (Servo/24 VDC)	LEY16□	30 to 300	38	2	15 to 500	10	±0.02 or less	Series LECP6 Series LECP1 Series LECPA	Page 2
			74	4	8 to 250	5			
			141	8	4 to 125	2.5			
	LEY25□	30 to 400	122	8	18 to 500	12			
			238	16	9 to 250	6			
			452	30	5 to 125	3			
	LEY32□	30 to 500	189	11	24 to 500	16			
			370	22	12 to 250	8			
			707	43	6 to 125	4			
	LEY40□	30 to 500	283	13	24 to 300	16			
			553	27	12 to 150	8			
			1058	53	6 to 75	4			
Servo motor (24 VDC)	LEY16□A	50 to 300	30	2	15 to 500	10		Series LECA6	
			58	4	8 to 250	5			
			111	8	4 to 125	2.5			
	LEY25□A	50 to 400	35	3	18 to 500	12			
			72	6	9 to 250	6			
			130	12	5 to 125	3			

Motor top/parallel type

In-line motor type

Specifications	Series	Stroke [mm]	Pushing force [N]	Vertical work load [kg]	Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Driver series	Reference page
AC servo motor	LEY25□S	30 to 400	131	8	900	12	±0.02 or less	Series LECSA Series LECSB Series LECSC Series LECSS	Page 84
			255	16	450	6			
			485	30	225	3			
	LEY32□S	30 to 500	157 (197)	9 (12)	1200 (1000)	20 (16)			
			308 (385)	19 (24)	600 (500)	10 (8)			
			588 (736)	37 (46)	300 (250)	5 (4)			
	LEY63□S	100 to 800	521	19	1000	20			
			1012	38	500	10			
			1910	72	250	5			

The values shown in ( ): In-line motor type

Controller/Driver *LEC*

LECP6

LECA6

LECP1

LECPA

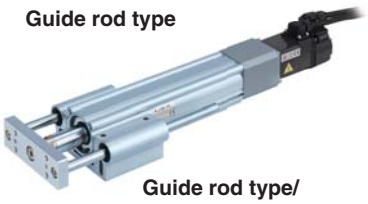
Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	Reference page
				Input	Output		
Step data input type	LECP6	Step motor (Servo/24 VDC)	24 VDC ±10%	11 inputs (Photo-coupler isolation)	13 outputs (Photo-coupler isolation)	64	Page 49
	LECA6	Servo motor (24 VDC)					
Programless type	LECP1	Step motor (Servo/24 VDC)	24 VDC ±10%	6 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	14	
Pulse input type	LECPA	Step motor (Servo/24 VDC)	24 VDC ±10%	5 inputs (Photo-coupler isolation)	9 outputs (Photo-coupler isolation)	—	

Electric Actuator Guide Rod Type *Series LEYG*

Motor top mounting type

In-line motor type

Guide rod type



Guide rod type/
In-line motor type

Specifications	Series	Stroke [mm]	Pushing force [N]	Vertical work load [kg]	Speed [mm/s]	Screw lead [mm]	Controller /Driver series	Reference page
Step motor (Servo/24 VDC)	LEYG16□	30 to 200	38	1.5	15 to 500	10	Series LECP6 Series LECP1 Series LECPA	Page 29
			74	3.5	8 to 250	5		
			141	7.5	4 to 125	2.5		
	LEYG25□	30 to 300	122	7	18 to 500	12		
			238	15	9 to 250	6		
			452	29	5 to 125	3		
	LEYG32□	30 to 300	189	9	24 to 500	16		
			370	20	12 to 250	8		
			707	41	6 to 125	4		
	LEYG40□	30 to 300	283	11	24 to 300	16		
			553	25	12 to 150	8		
			1058	51	6 to 75	4		
Servo motor (24 VDC)	LEYG16□A	30 to 200	30	1.5	15 to 500	10	Series LECA6	
			58	3.5	8 to 250	5		
			111	7.5	4 to 125	2.5		
	LEYG25□A	30 to 300	35	2	18 to 500	12		
			72	5	9 to 250	6		
			130	11	5 to 125	3		

Specifications	Series	Stroke [mm]	Pushing force [N]	Vertical work load [kg]	Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Driver series	Reference page
AC servo motor	LEYG25□S	30 to 300	131	7	900	12	±0.02 or less	Series LECSA Series LECSB Series LECSC Series LECSS	Page 107
			255	15	450	6			
			485	29	225	3			
	LEYG32□S	30 to 300	157 (197)	7 (10)	1200 (1000)	20 (16)			
			308 (385)	17 (22)	600 (500)	10 (8)			
			588 (736)	35 (44)	300 (250)	5 (4)			

The values shown in ( ): In-line motor type

Driver *LEC*

LECSA

LECSB

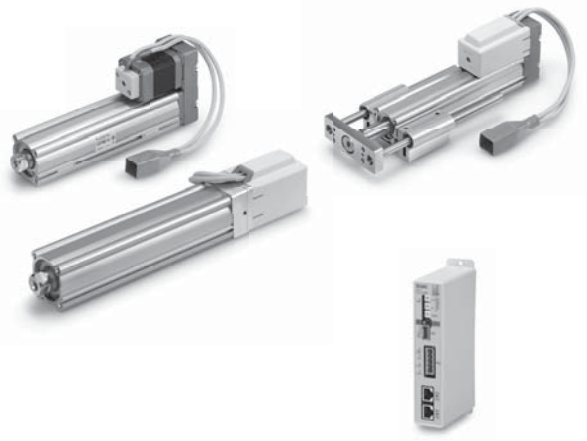
LECSC

LECSS

Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	Reference page
				Input	Output		
Pulse input type (For incremental encoder)	LECSA	AC servo motor (100/200/400 W)	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)	6 inputs (Photo-coupler isolation)	4 outputs (Photo-coupler isolation)	7	Page 121
Pulse input type (For absolute encoder)	LECSB			10 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	—	
CC-Link direct input type (For absolute encoder)	LECSC			4 inputs (Photo-coupler isolation)	3 outputs (Photo-coupler isolation)	255	
SSCNET III type (For absolute encoder)	LECSS			4 inputs (Photo-coupler isolation)	3 outputs (Photo-coupler isolation)	—	

INDEX

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



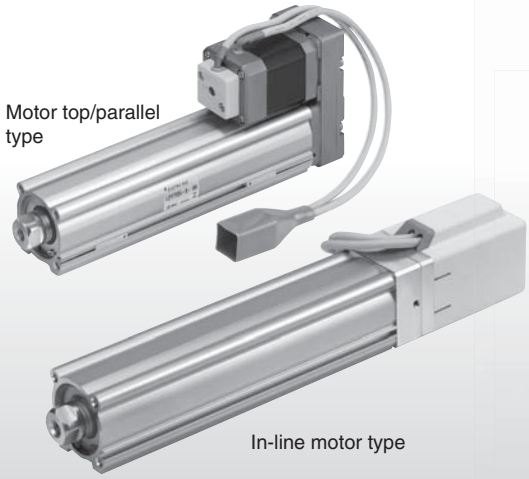
AC Servo Motor Type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

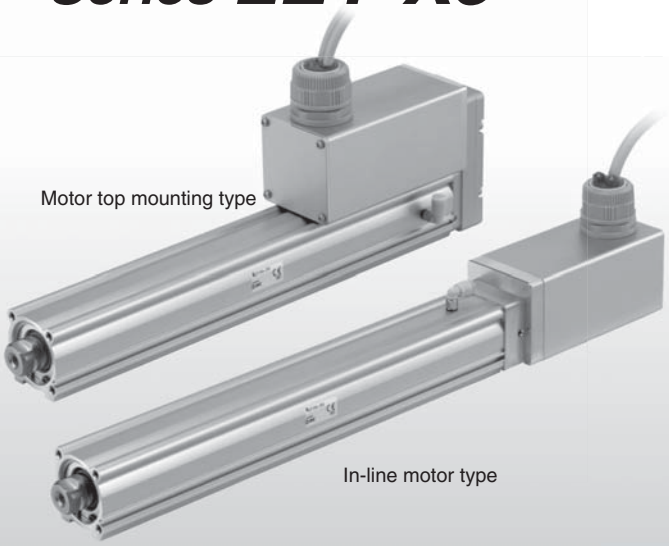
Rod Type Page 2

Series LEY



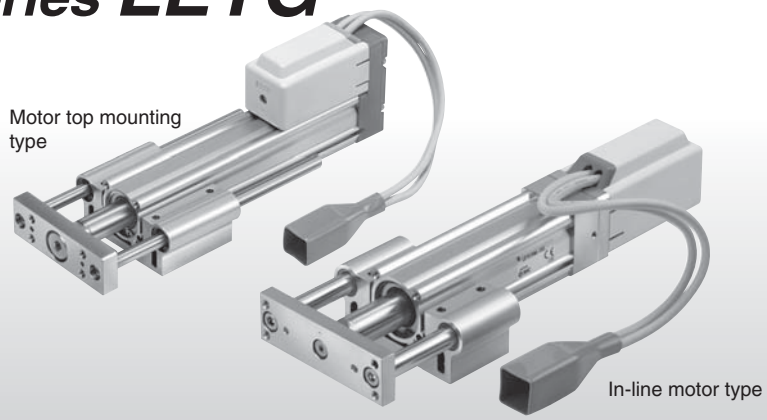
Dust/Drip proof (IP65) specification Page 23

Series LEY-X5



Guide Rod Type Page 29

Series LEYG



Step Motor/Servo Motor Controller Page 49

Step Motor Driver

Series LECP6/LECA6
Series LEC-G
Series LECP1
Series LECPA

Series LEY
Model Selection

Selection Procedure

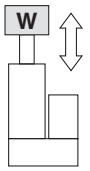
Positioning Control Selection Procedure

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

Selection Example

Operating conditions

- Workpiece mass: 4 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward downward transfer

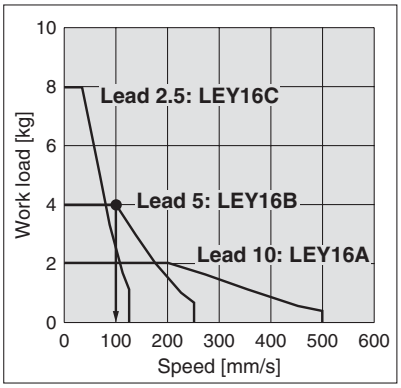


Step 1 **Check the work load–speed. <Speed–Vertical work load graph>**

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

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

∗ It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to page 10 for the horizontal work load in the specifications, and page 44 for the precautions.



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

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.

  $T = T1 + T2 + T3 + T4$ [s]

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

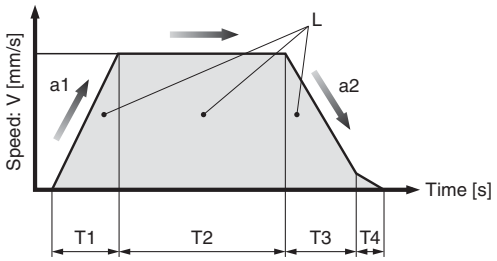
  $T1 = V/a1$ [s] $T3 = V/a2$ [s]

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

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

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

  $T4 = 0.2$ [s]



L : Stroke [mm] ··· (Operating condition)
V : Speed [mm/s] ··· (Operating condition)
a1: Acceleration [mm/s^2] ··· (Operating condition)
a2: Deceleration [mm/s^2] ··· (Operating condition)

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

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

$T1 = V/a1 = 100/3000 = 0.033$ [s], $T3 = V/a2 = 100/3000 = 0.033$ [s]

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

$T4 = 0.2$ [s]

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.033 + 1.967 + 0.033 + 0.2 =$ **2.233 [s]**

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

Pushing Control Selection Procedure

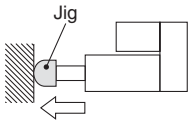
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

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

Selection Example

Operating conditions

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



Step 1 Check the duty ratio.

<Conversion table of pushing force–duty ratio>

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

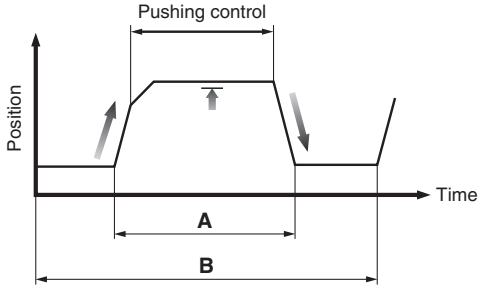
Selection example)
Based on the table below,
- Duty ratio: 20 [%]

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

<Conversion table of pushing force–duty ratio>
(LEY16/Step motor)

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

∗ [Set value of pushing force] is one of the step data input to the controller.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.



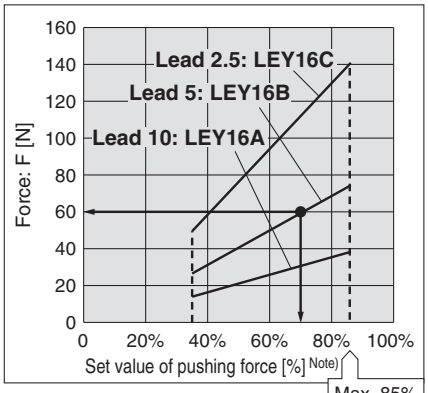
Duty ratio = A/B x 100 [%]

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

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

Selection example)
Based on the graph shown on the right side,
- Set value of pushing force: 70 [%]
- Pushing force: 60 [N]

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



<Force conversion graph>
(LEY16/Step motor)

Note) Set values for the controller.

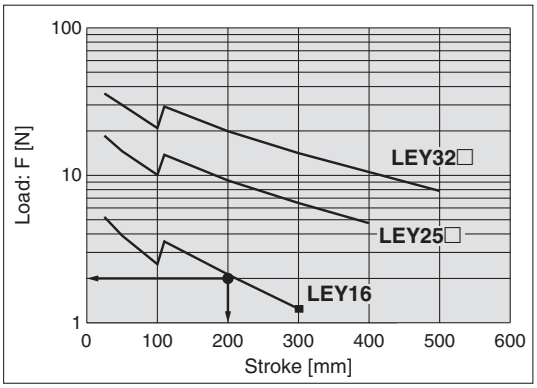
Step 3 Check the lateral load on the rod end.

<Graph of allowable lateral load on the rod end>

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

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

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



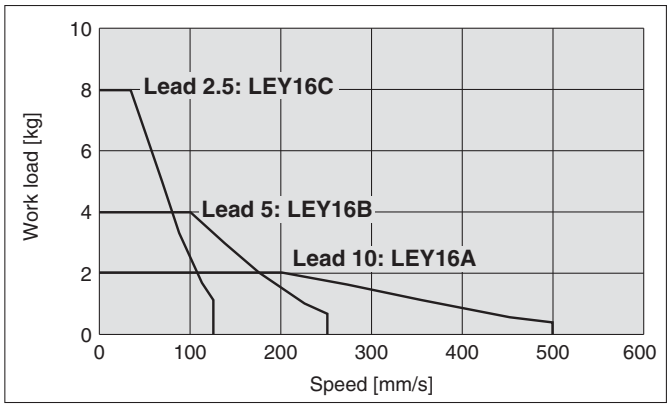
<Graph of allowable lateral load on the rod end>

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

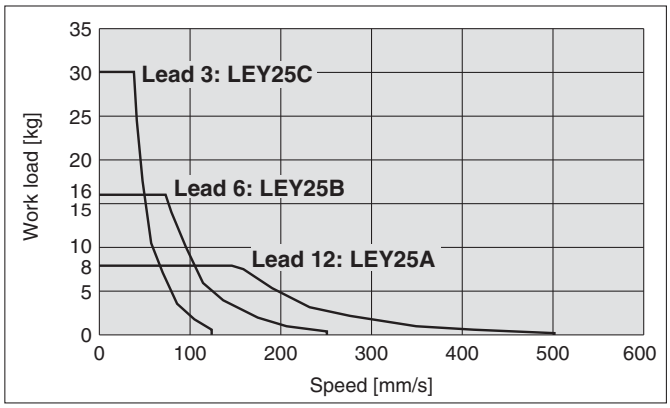
Speed–Vertical Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

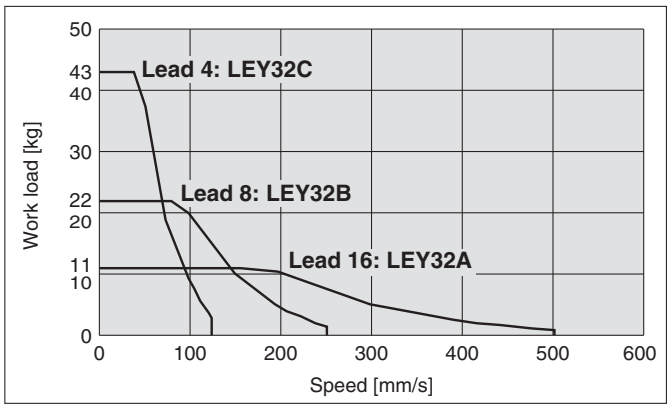
LEY16



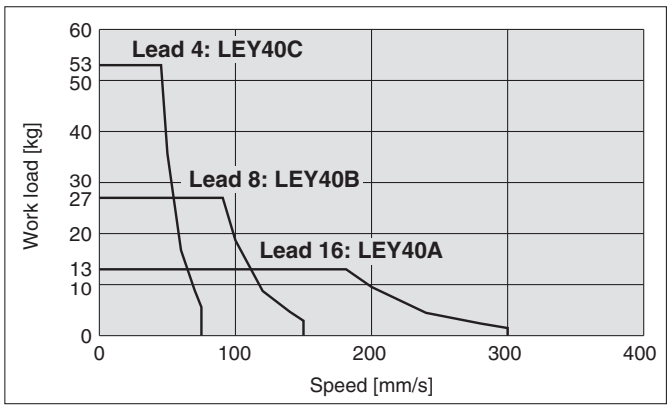
LEY25



LEY32

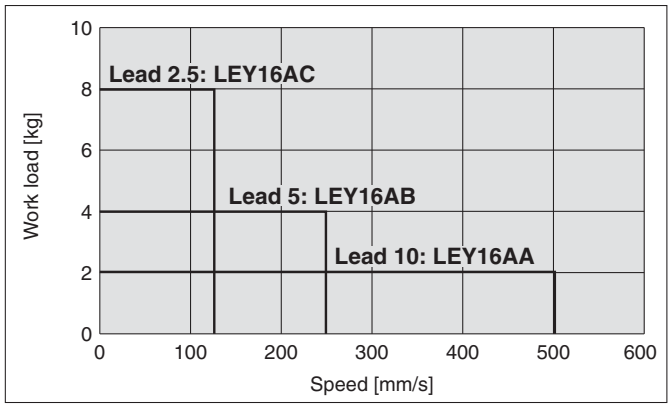


LEY40

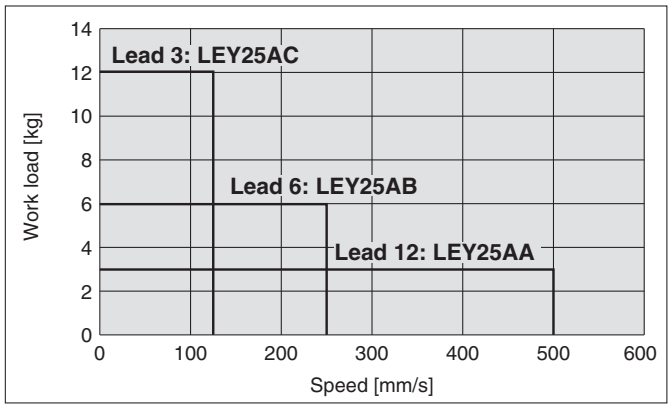


Servo Motor (24 VDC)

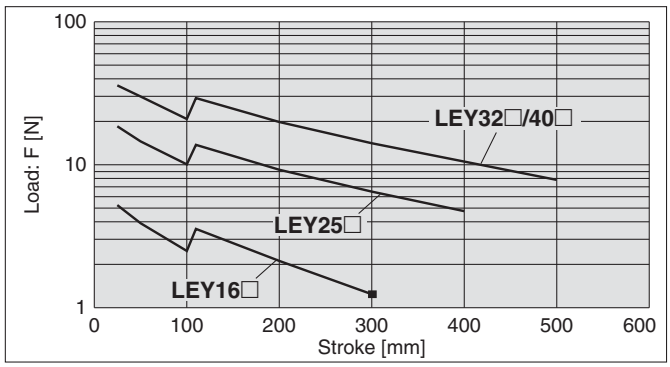
LEY16



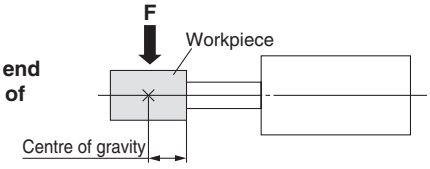
LEY25



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



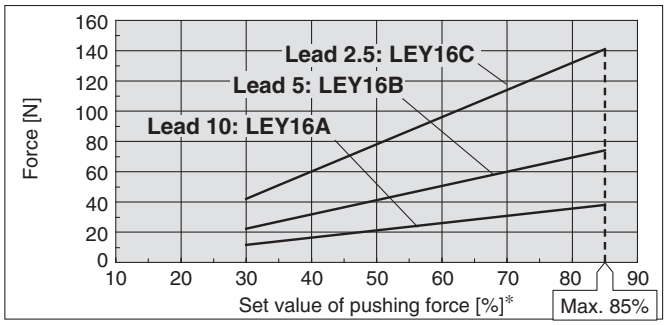
[Stroke]
= [Product stroke] +
[Distance from the rod end to the centre of gravity of the workpiece]



Force Conversion Graph (Guide)

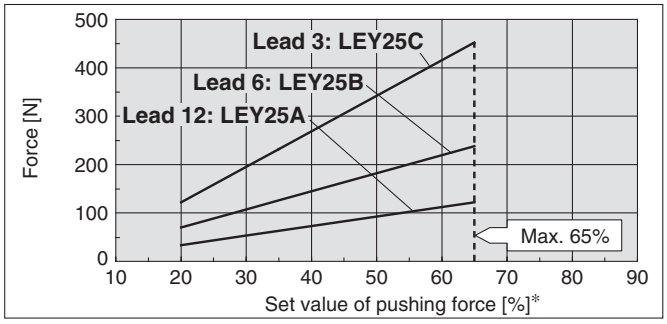
Step Motor (Servo/24 VDC)

LEY16



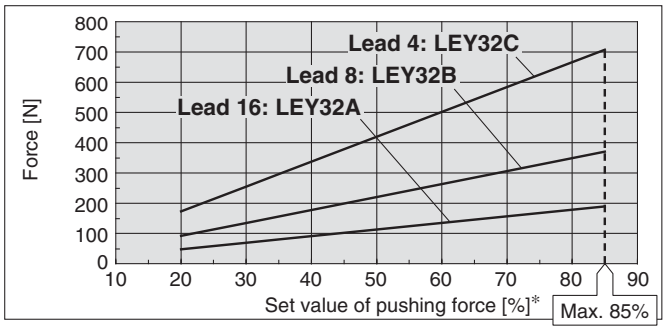
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
40°C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEY25

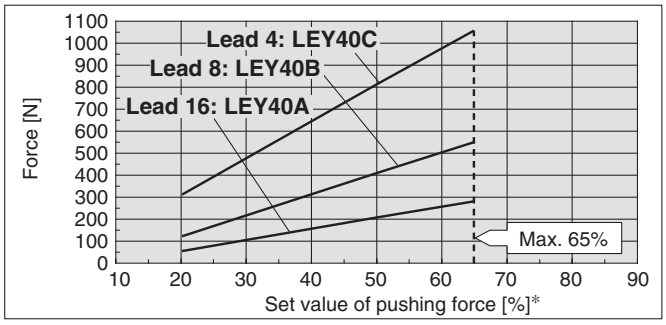


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	65 or less	100	—

LEY32



LEY40

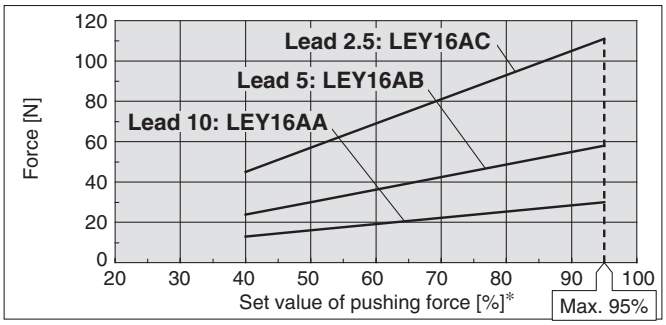


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25°C or less	85 or less	100	—
40°C	65 or less	100	—
	85	50	15

∗ Set values for the controller.

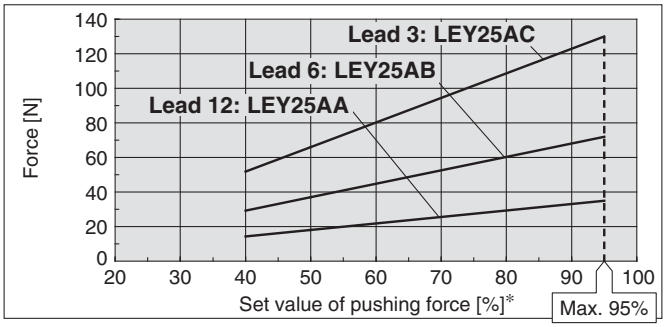
Servo Motor (24 VDC)

LEY16



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

LEY25



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

<Pushing Force and Trigger Level Range> Without Load

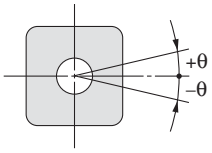
Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16□	1 to 4	30% to 85%
	5 to 20	35% to 85%
	21 to 50	60% to 85%
LEY25□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 35	50% to 65%
LEY32□	1 to 4	20% to 85%
	5 to 20	35% to 85%
	21 to 30	60% to 85%
LEY40□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 30	50% to 65%

Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 50	80% to 95%
LEY25□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 35	80% to 95%

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

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

Non-rotating Accuracy of Rod



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

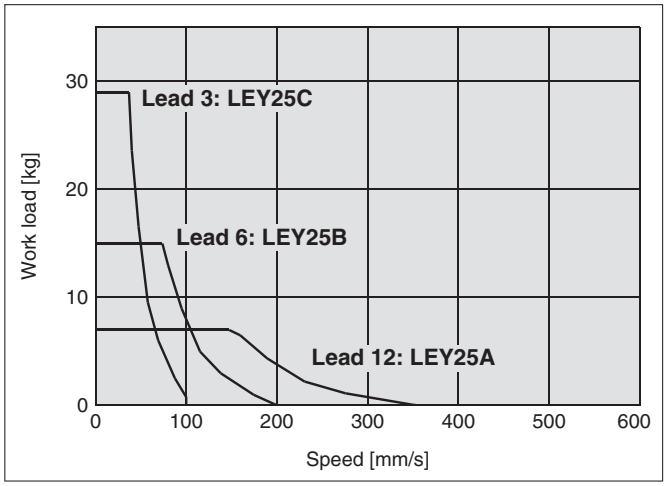
∗ Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause deformation of the non-rotating guide, abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

Model Selection

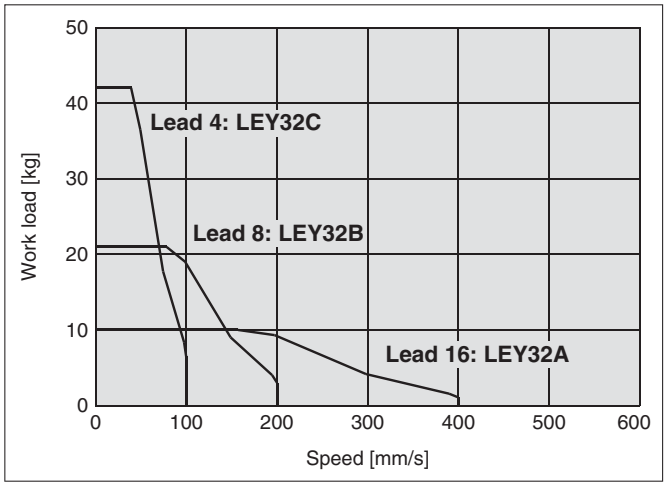
Speed–Vertical Work Load Graph

Step Motor (Servo/24 VDC)

LEY25□

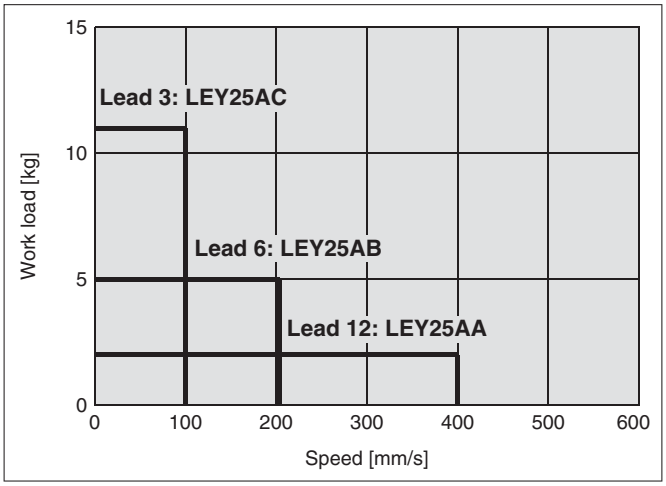


LEY32□

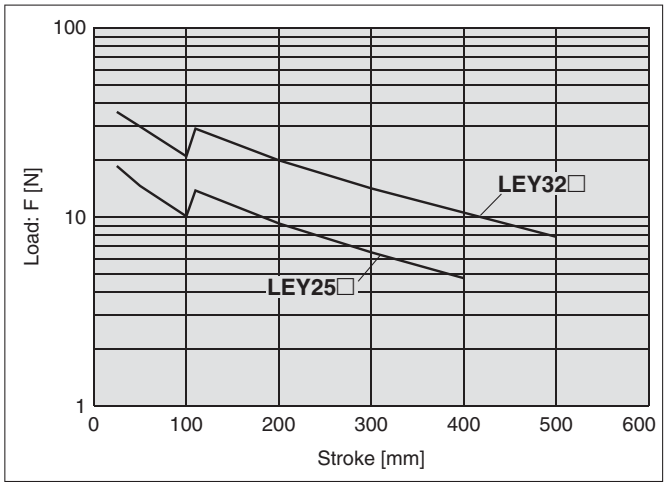


Servo Motor (24 VDC)

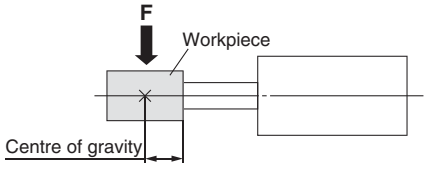
LEY25A□



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



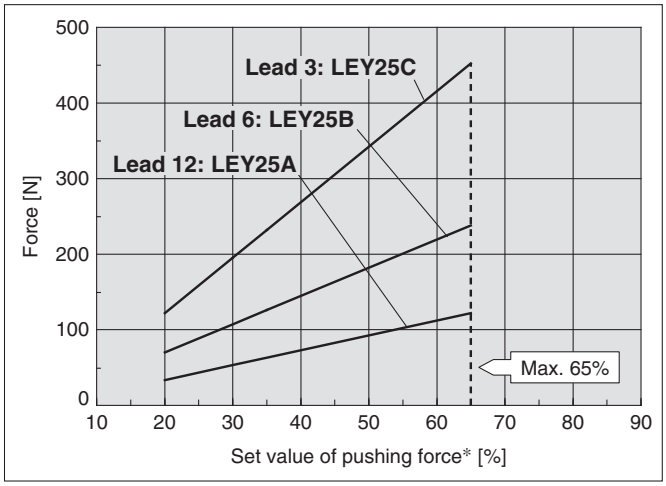
[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]



Force Conversion Graph

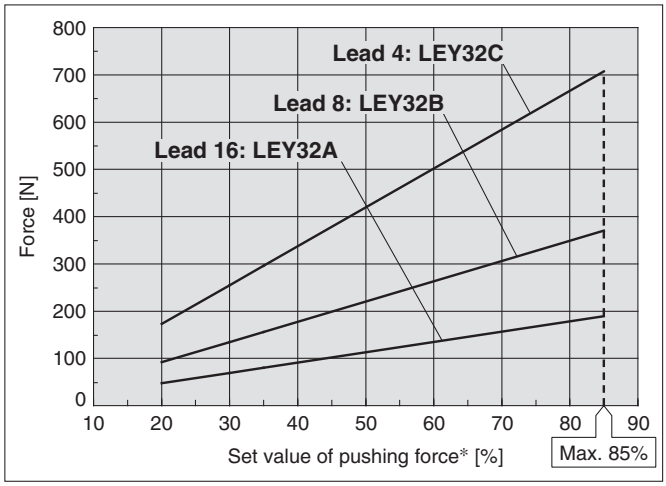
Step Motor (Servo/24 VDC)

LEY25



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

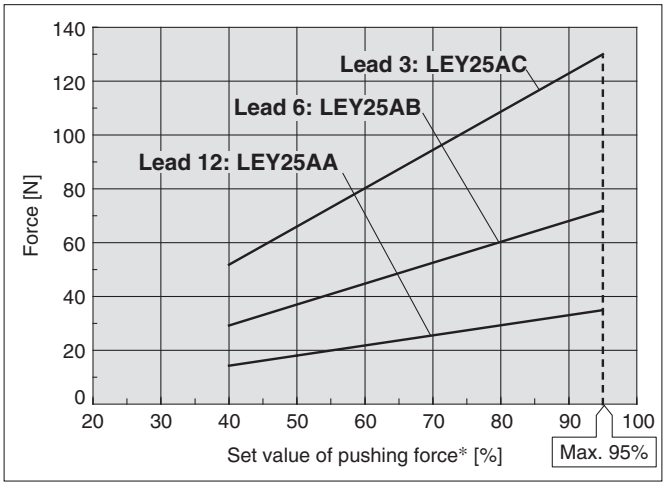
LEY32



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

Servo Motor (24 VDC)

LEY25



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

<Pushing Force and Trigger Level Range> Without Load

Model	Pushing speed [mm/s]	Pushing force (Setting input value)
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%

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

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

* Set values for the controller.

Electric Actuator/Rod Type

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

Series LEY

LEY16, 25, 32, 40

RoHS

How to Order

LEY 16 ❑ ❑ B – 30 ❑ ❑ ❑ – S 1 6P 1 ❑

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Size

16
25
32
40

❷ Motor mounting position

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

❸ Motor type

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

❹ Lead [mm]

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

❺ Stroke [mm]

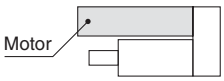
30	30
to	to
500	500

∗ Refer to the applicable stroke table.

❻ Motor option

—	Without option
C	With motor cover
B	With lock
W	With lock and motor cover

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



❼ Rod end thread

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

⚠ Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEY series and the controller LEC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 58 for the noise filter set.
Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

∗ Applicable stroke table

●Standard

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

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

For auto switches, refer to pages 21 and 22.

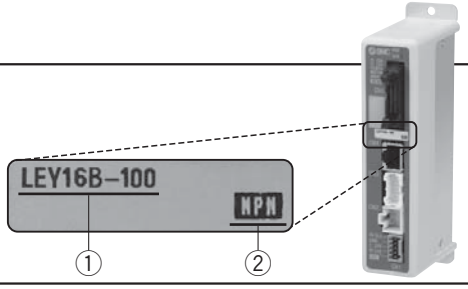
The actuator and controller/driver are sold as a package.

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

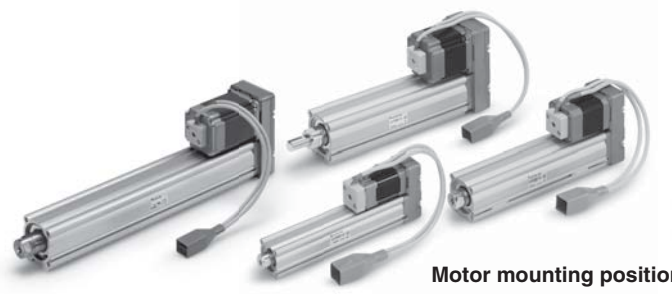
<Check the following before use.>

① Check the actuator label for model number. This matches the controller/driver.

② Check Parallel I/O configuration matches (NPN or PNP)



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



Motor mounting position: Top/Parallel

Motor mounting position: In-line

⑧ Mounting*1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
・LEY25: 200 or less
・LEY32/40: 100 or less
*3 For mounting with the double clevis, use the actuator within the following stroke range.
・LEY16: 100 or less
・LEY25: 200 or less
・LEY32/40: 200 or less
*4 Head flange is not available for the LEY32/40.

⑨ Actuator cable type*1

—	Without cable
S	Standard cable*2
R	Robotic cable (Flexible cable)

*1 The standard cable should be used on fixed parts. For using on moving parts, select the robotic cable.
*2 Only available for the motor type "Step motor."

⑩ Actuator cable length [m]

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

* Produced upon receipt of order (Robotic cable only) Refer to the specifications Note 5) on page 10.

⑪ Controller/Driver type*1

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

*1 For details about controller/drivers and compatible motors, refer to the compatible controller/drivers below.
*2 Only available for the motor type "Step motor."

⑫ I/O cable length [m]*1

—	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controllers/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 58 (For LECP6/LECA6), page 71 (For LECP1) or page 78 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

⑬ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*1

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

Compatible Controllers/Driver

Type	Step data input type 	Step data input type 	Programless type 	Pulse input type 
Series	**LECP6**	**LECA6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points		14 points	—
Power supply voltage	24 VDC			
Reference page	Page 50	Page 50	Page 65	Page 72

Specifications

Step Motor (Servo/24 VDC)

Model				LEY16			LEY25			LEY32			LEY40		
Actuator specifications	Stroke [mm] Note 1)			30, 50, 100, 150 200, 250, 300			30, 50, 100, 150, 200 250, 300, 350, 400			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500		
	Work load [kg] Note 2)	Horizontal	(3000 [mm/s²])	4	11	20	12	30	30	20	40	40	30	60	60
			(2000 [mm/s²])	6	17	30	18	50	50	30	60	60	—	—	—
		Vertical	(3000 [mm/s²])	2	4	8	8	16	30	11	22	43	13	27	53
	Pushing force [N] Note 3) 4) 5)			14 to 38	27 to 74	51 to 141	63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707	132 to 283	266 to 553	562 to 1058
	Speed [mm/s] Note 5)			15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/s²]			3000											
	Pushing speed [mm/s] Note 6)			50 or less			35 or less			30 or less			30 or less		
	Positioning repeatability [mm]			±0.02											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)			50/20											
	Actuation type			Ball screw + Belt (LEY□)/Ball screw (LEY□D)											
	Guide type			Sliding bushing (Piston rod)											
	Operating temprature range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
Electric specifications	Motor size			□28			□42			□56.4			□56.4		
	Motor type			Step motor (Servo/24 VDC)											
	Encoder			Incremental A/B phase (800 pulse/rotation)											
	Rated voltage [V]			24 VDC ±10%											
	Power consumption [W] Note 8)			23			40			50			50		
	Standby power consumption when operating [W] Note 9)			16			15			48			48		
	Max. instantaneous power consumption [W] Note 10)			43			48			104			106		
Lock unit specifications	Type Note 11)			Non-magnetizing lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W] Note 12)			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10%											

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check “Model Selection” on page 2.
The values shown in ( ) are the acceleration/deceleration.
Set these values to be 3000 [mm/s²] or less.
Note 3) Pushing force accuracy is ±20% (F.S.).
Note 4) The pushing force values for LEY16□ is 35% to 85%, for LEY25□ is 35% to 65%, for LEY32□ is 35% to 85% and for LEY40□ is 35% to 65%.
The pushing force values change according to the duty ratio and pushing speed. Check “Model Selection” on page 3.
Note 5) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
Note 6) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The power consumption (including the controller) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 11) With lock only
Note 12) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

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

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Check "Model Selection" on page 2 for details.
The values shown in ( ) are the acceleration/deceleration.
Set these values to be 3000 [mm/s²] or less.
Note 3) Pushing force accuracy is ±20% (F.S.).
Note 4) The pushing force values for LEY16A□ is 50% to 95% and for LEY25A□ is 50% to 95%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 3.
Note 5) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 6) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 7) The power consumption (including the controller) is for when the actuator is operating.
Note 8) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 9) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 10) With lock only
Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top/Parallel Type

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

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

Weight: In-line Motor Type

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

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

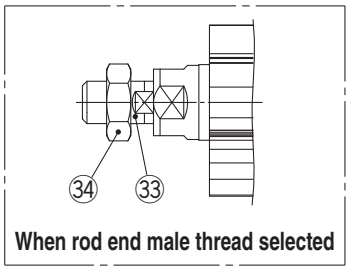
Additional Weight

[kg]

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

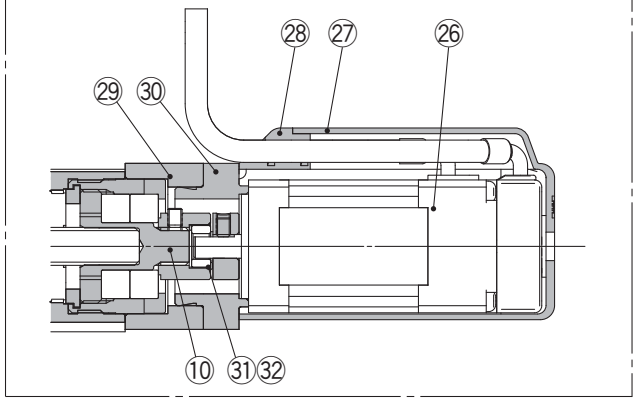
Construction

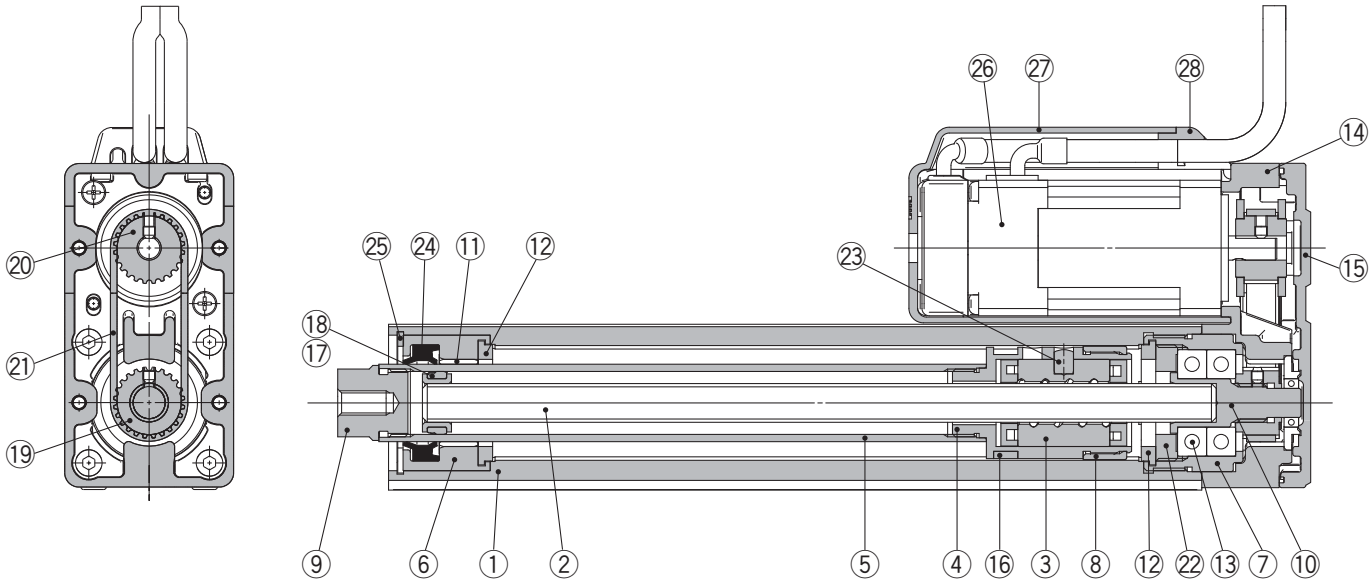
Motor top mounting type: LEY16/25/32/40



When rod end male thread selected

In-line motor type: LEY16/25/32/40D





Component Parts

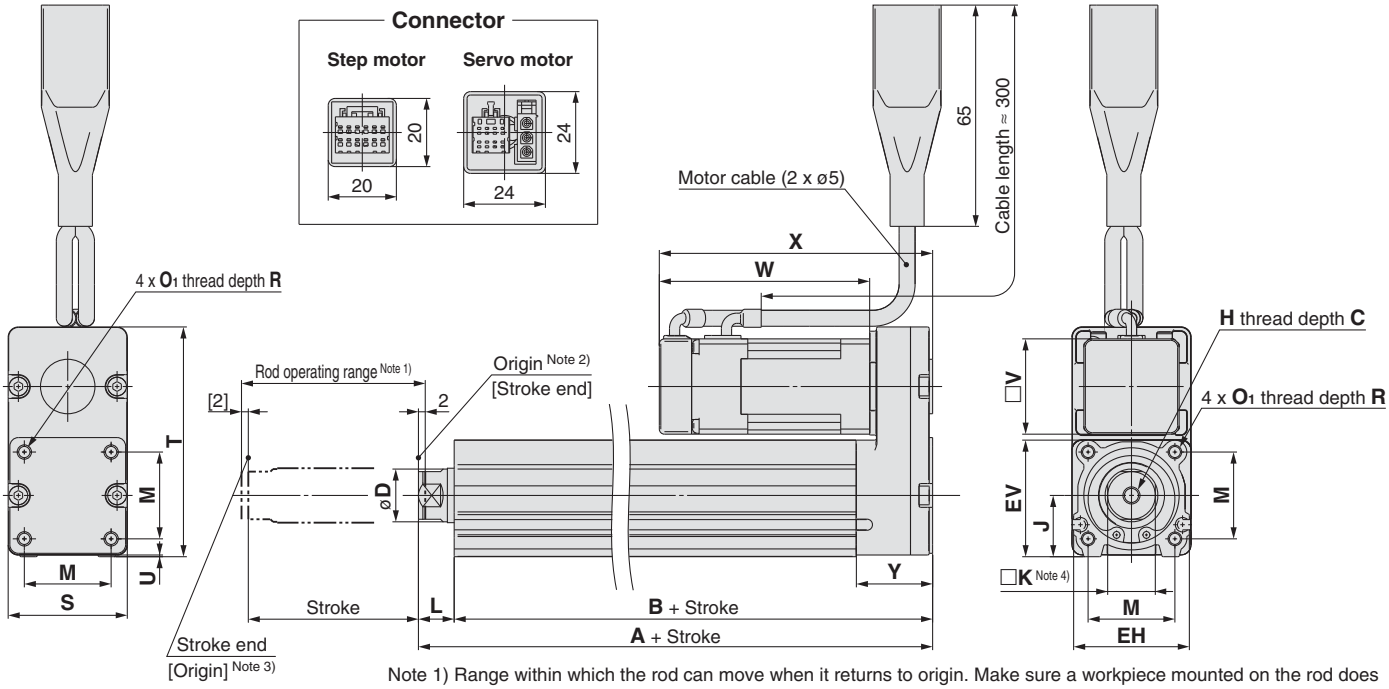
No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw (shaft)**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome Anodised
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation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

No.	Description	Material	Note
21	**Belt**	—	
22	**Bearing stopper**	Aluminium alloy	
23	**Parallel pin**	Stainless steel	
24	**Seal**	NBR	
25	**Retaining ring**	Steel for spring	Phosphate coated
26	**Motor**	—	
27	**Motor cover**	Synthetic resin	Only “With motor cover”
28	**Grommet**	Synthetic resin	Only “With motor cover”
29	**Motor block**	Aluminium alloy	Anodised
30	**Motor adapter**	Aluminium alloy	Anodised/LEY16, 25 only
31	**Hub**	Aluminium alloy	
32	**Spider**	NBR	
33	**Socket (Male thread)**	Free cutting carbon steel	Nickel plated
34	**Nut**	Alloy steel	

Replacement Parts (Top/Parallel only)/Belt

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

Dimensions: Motor Top/Parallel

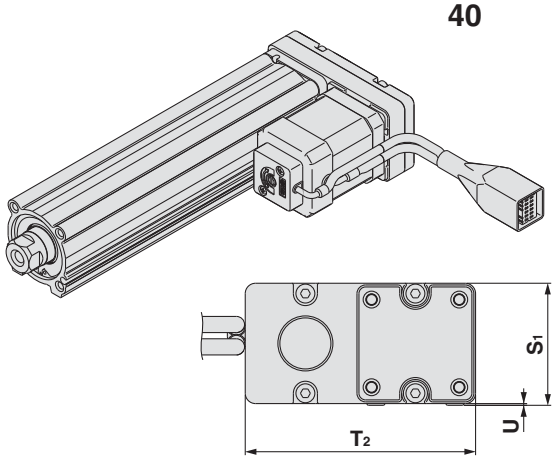


Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin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

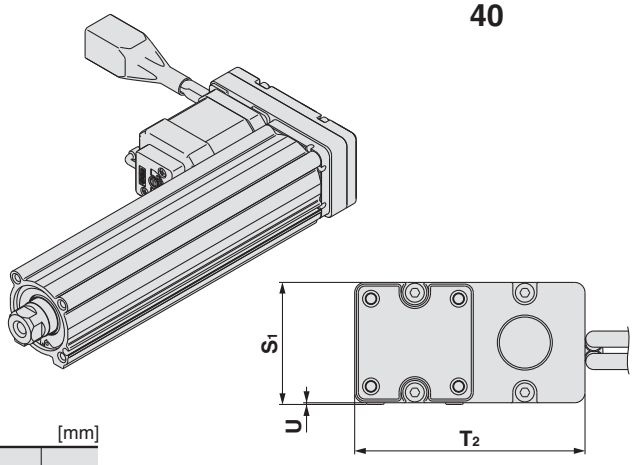
[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	V	Step motor W	Step motor X	Servo motor W	Servo motor X	Y
16	10 to 100	101	90.5	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	67.5	0.5	28	61.8	80.3	62.5	81	22.5
	101 to 300	121	110.5																				
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	92	1	42	63.4	85.4	59.6	81.6	26.5
	101 to 400	155.5	141																				
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	68.4	95.4	—	—	34
	101 to 500	178.5	160																				
40	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	90.4	117.4	—	—	34
	101 to 500	178.5	160																				

Motor left side parallel type: LEY16/25/32/40L



Motor right side parallel type: LEY16/25/32/40R

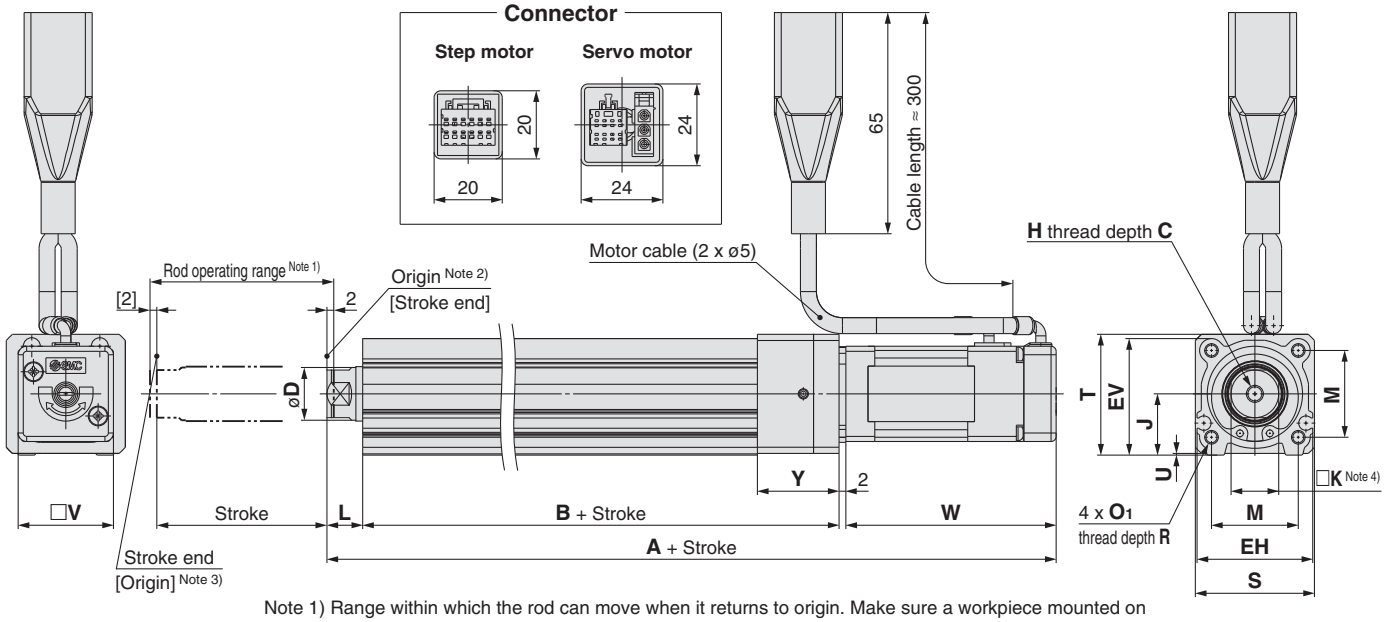


[mm]

Size	S_1	T_2	U
16	35.5	67	0.5
25	47	91	1
32, 40	61	117	1

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

Dimensions: In-line Motor



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

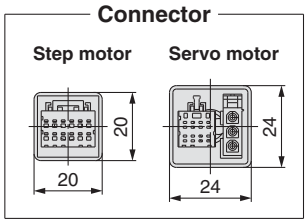
[mm]

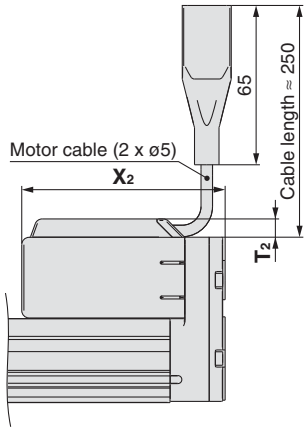
Size	Stroke range [mm]	Step motor	Servo motor	B	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U
		A																
16	10 to 100	166.3	167	92	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	35.5	0.5
	101 to 300	186.3	187	112														
25	15 to 100	195.4	191.6	115.5	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5
	101 to 400	220.4	216.6	140.5														
32	20 to 100	216.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1
	101 to 500	246.9	—	158														
40	20 to 100	238.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1
	101 to 500	268.9	—	158														

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

Dimensions

Motor top/parallel type
With motor cover: LEY16/25/32/40□□A/B/C-□C



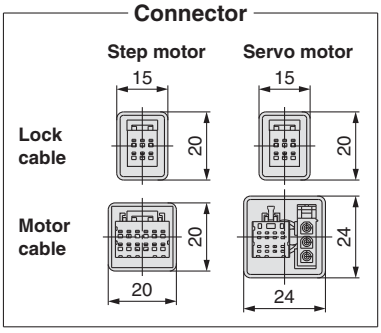


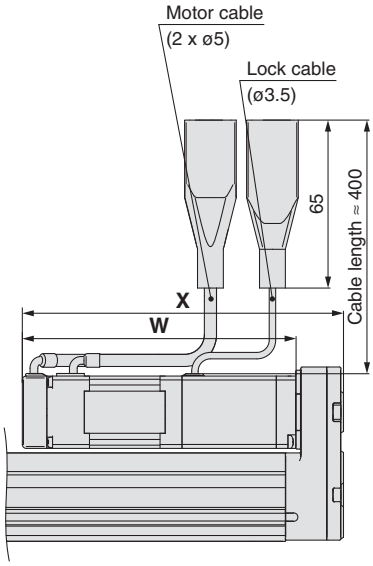
[mm]

Size	T2	X2
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material: Synthetic resin

With lock: LEY16/25/32/40□□A/B/C-□B

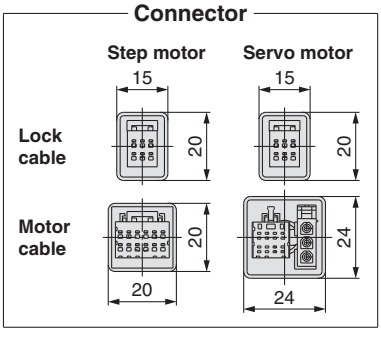


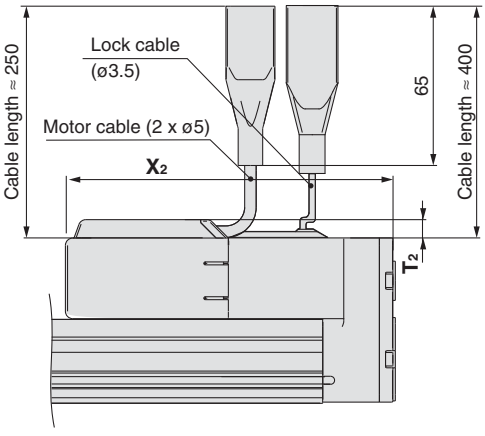


[mm]

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

With lock and cover: LEY16/25/32/40□□A/B/C-□W



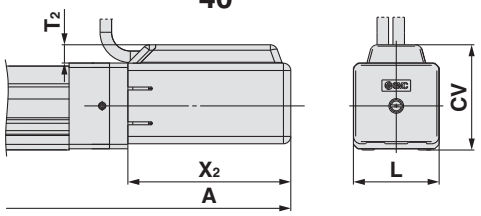


[mm]

Size	T2	X2
16	7.5	124.5
25	7.5	129
32	7.5	141.5
40	7.5	163.5

Dimensions

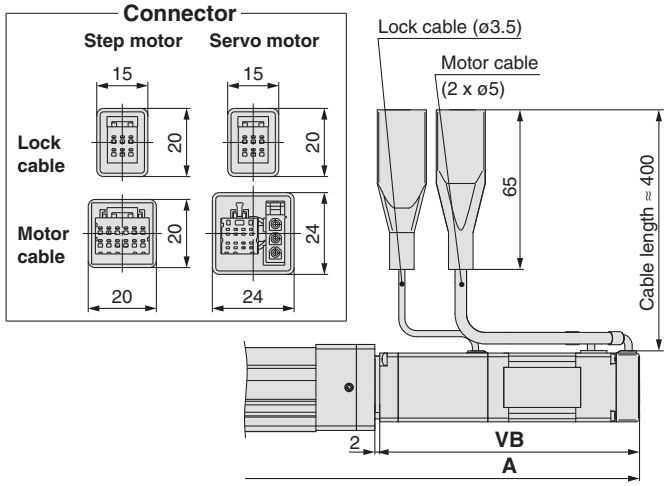
In-line motor type
With motor cover: LEY16/25/32/40 D□ A/C B-□C



[mm]

Size	Stroke range	A	T2	X2	L	CV
16	100st or less	169	7.5	66.5	35	43
	101st or more, 200st or less	189				
25	100st or less	198.5	7.5	68.5	46	54.5
	101st or more, 400st or less	223.5				
32	100st or less	220	7.5	73.5	60	68.5
	101st or more, 500st or less	250				
40	100st or less	242	7.5	95.5	60	68.5
	101st or more, 500st or less	272				

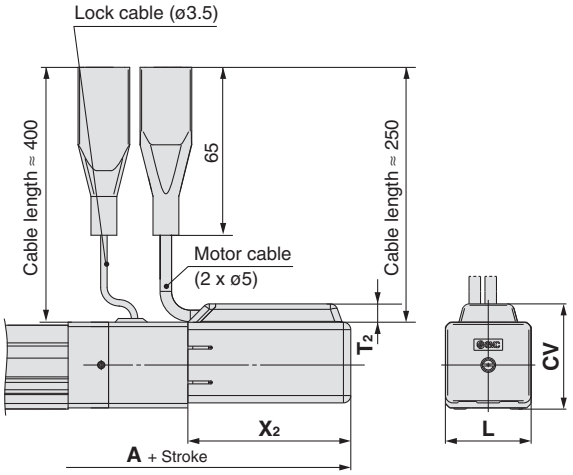
With lock: LEY16/25/32/40 D□ A/C B-□B



[mm]

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

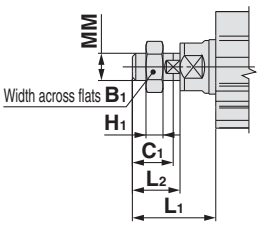
With lock and cover: LEY16/25/32/40 D□ A/C B-□W



[mm]

Size	Stroke range	A	T2	X2	L	CV
16	100st or less	210.5	7.5	108	35	43
	101st to 300st	230.5				
25	100st or less	239	7.5	109	46	54.5
	101st to 400 st	264				
32	100st or less	263	7.5	116.5	60	68.5
	101st to 500 st	293				
40	100st or less	285	7.5	138.5	60	68.5
	101st to 500 st	315				

End male thread: LEY16/25/32/40 □□ A/C B-□□M



* Refer to page 19 for details about the rod end nut and mounting bracket.
Note) Refer to the "Handling" precautions on pages 45 and 46 when mounting end brackets such as knuckle joint or work pieces.

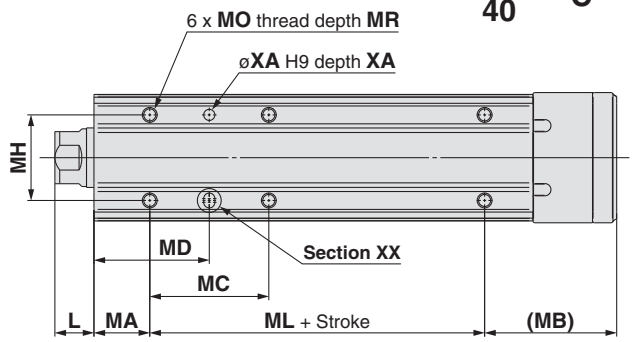
[mm]

Size	B1	C1	H1	L1	L2	MM
16	13	12	5	24.5	14	M8 x 1.25
25	22	20.5	8	38	23.5	M14 x 1.5
32, 40	22	20.5	8	42.0	23.5	M14 x 1.5

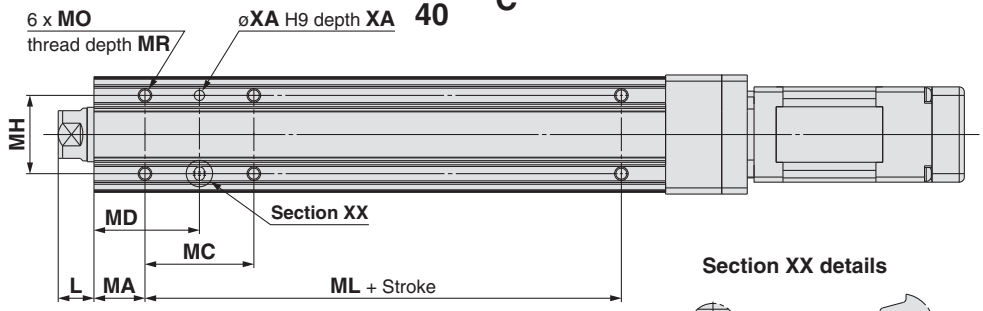
* The L1 measurement is when the unit is in the original position. At this position, 2 mm at the end.

Dimensions

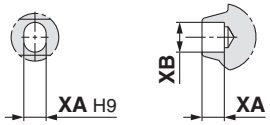
Body bottom tapped
Motor top/parallel: LEY16/25/32/40 A/C □□B-□□□U



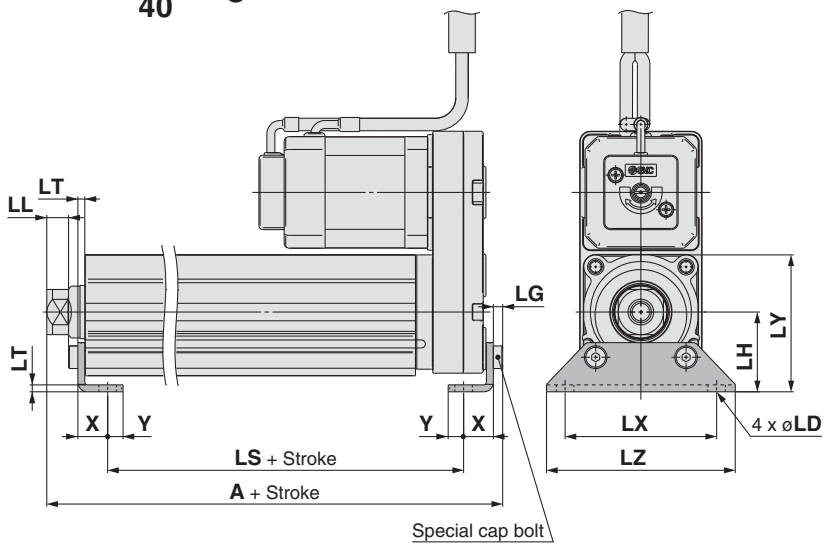
Body bottom tapped
In-line motor: LEY16/25/32/40 A/C D□B-□□□U



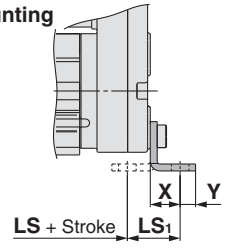
Section XX details



Foot: LEY16/25/32/40 A/C □□B-□□□L



Outward mounting



Body Bottom Tapped

[mm]

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

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

Included parts
- Foot
- Body mounting bolt

Foot

[mm]

Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG
16	10 to 100	106.1	76.5	16.1	5.4	6.6	2.8
	101 to 300	126.1	96.5				
25	15 to 100	136.6	99	19.8	8.4	6.6	3.5
	101 to 400	161.6	124				
32 40	20 to 100	155.7	114	19.2	11.3	6.6	4
	101 to 500	185.7	144				

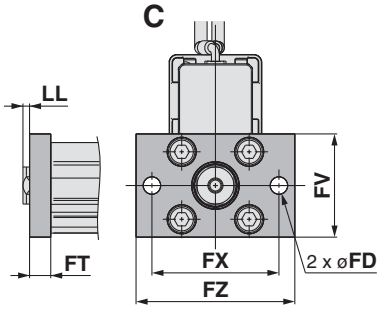
Size	Stroke range [mm]	LH	LT	LX	LY	LZ	X	Y
16	10 to 100	24	2.3	48	40.3	62	9.2	5.8
	101 to 300							
25	15 to 100	30	2.6	57	51.5	71	11.2	5.8
	101 to 400							
32 40	20 to 100	36	3.2	76	61.5	90	11.2	7
	101 to 500							

Material: Carbon steel (Chromate treated)

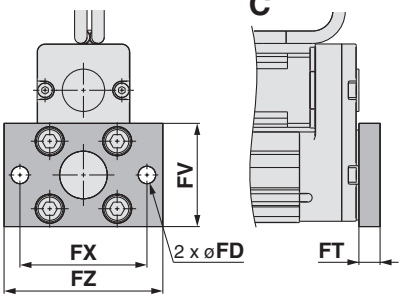
∗ The A measurement is when the unit is in the original position. At this position, 2 mm at the end.

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

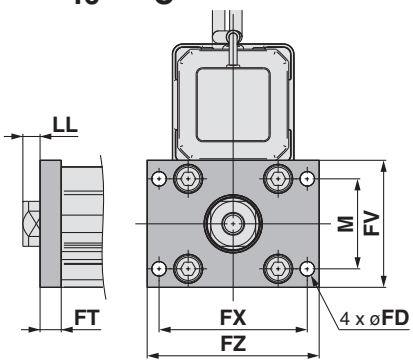
Rod flange: LEY16□□A/B/C-□□□F



Head flange: LEY16□□A/B/C-□□□G

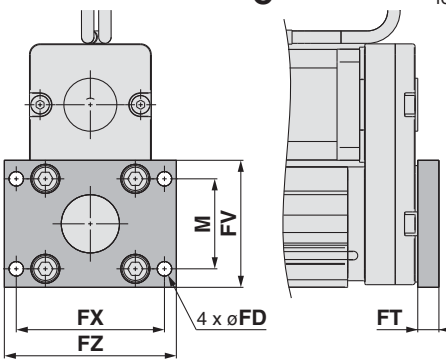


Rod flange: LEY32/40□□A/B/C-□□□F



Head flange: LEY25□□A/B/C-□□□G

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



Included parts
- Flange
- Body mounting bolt

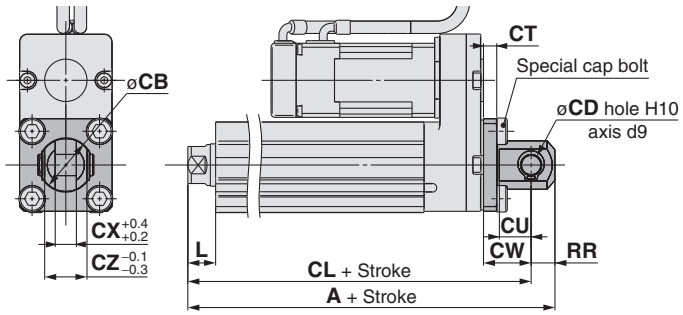
Rod/Head Flange

[mm]

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

Material: Carbon steel (Nickel plated)

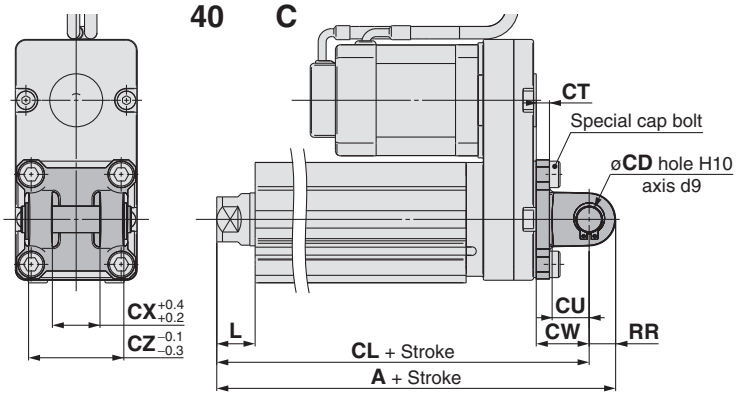
Double clevis: LEY16□□A/B/C-□□□D



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

∗ Refer to page 19 for details about the rod end nut and mounting bracket.

Double clevis: LEY32/40□□A/B/C-□□□D



Double Clevis

[mm]

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

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

Material: Cast iron (Coating)

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

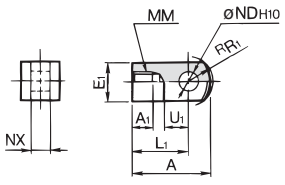
Accessory Mounting Brackets

Accessory Brackets/Support Brackets

Single Knuckle Joint

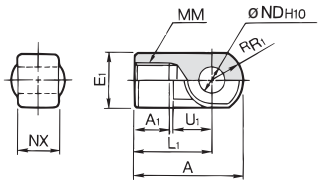
∗ If a knuckle joint is used, select the body option [end male thread].

I-G02



Material: Carbon steel
Surface treatment: Nickel plated

I-G04

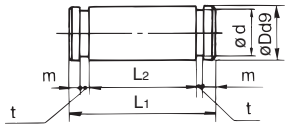


Material: Cast iron
Surface treatment: Nickel plated

[mm]

Part no.	Applicable size	A	A1	E1	L1	MM	R1	U1	NDH10	NX
I-G02	16	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{-0.2}_{-0.4}$
I-G04	25, 32, 40	42	14	ø22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{-0.3}_{-0.5}$

Knuckle Pin (Common with double clevis pin)



Material: Carbon steel
[mm]

Part no.	Applicable size	Dd9	L1	L2	d	m	t	Retaining ring
IY-G02	16	$8^{-0.040}_{-0.076}$	21	16.2	7.6	1.5	0.9	Type C retaining ring 8
IY-G04	25, 32, 40	$10^{-0.040}_{-0.076}$	41.6	36.2	9.6	1.55	1.15	Type C retaining ring 10

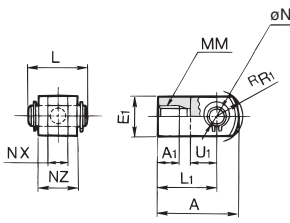
Mounting Brackets/Part No.

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

∗ When ordering foot brackets, order 2 pieces per cylinder.
∗ Parts belonging to each bracket are as follows.
Foot: Body mounting bolt
Flange: Body mounting bolt
Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

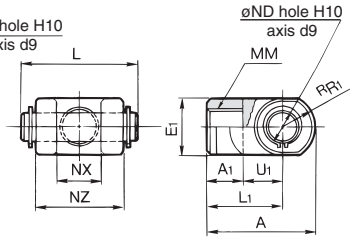
Double Knuckle Joint

Y-G02



Material: Carbon steel
Surface treatment: Nickel plated

Y-G04



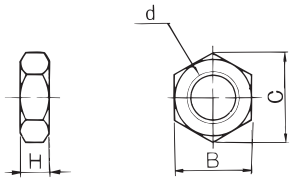
Material: Cast iron
Surface treatment: Nickel plated

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

Part no.	Applicable size	A	A1	E1	L1	MM	R1
Y-G02	16	34	8.5	□16	25	M8 x 1.25	10.3
Y-G04	25, 32, 40	42	16	ø22	30	M14 x 1.5	12

Part no.	Applicable size	U1	NDH10	NX	NZ	L	Applicable pin part no.
Y-G02	16	11.5	$8^{+0.058}_{0}$	$8^{+0.4}_{+0.2}$	16	21	IY-G02
Y-G04	25, 32, 40	14	$10^{+0.058}_{0}$	$18^{+0.5}_{+0.3}$	36	41.6	IY-G04

Rod End Nut



Material: Carbon steel (Nickel plated)
[mm]

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

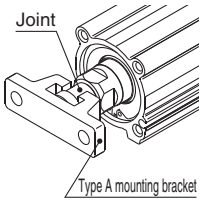
Simple Joint Brackets ∗ The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

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

Joint **LEY-U025**

Applicable size

025	25, 32, 40



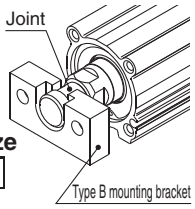
Mounting bracket **YA-03**

Mounting bracket

YA	Type A mounting bracket
YB	Type B mounting bracket

Applicable size

03	25, 32, 40



Allowable Eccentricity [mm]

Applicable size	25	32	40
Eccentricity tolerance	±1		
Backlash	0.5		

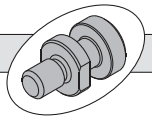
<How to Order>
- The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

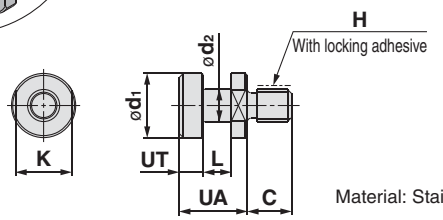
Example) Order no.
- Joint LEY-U025
- Type A mounting bracket YA-03

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

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

Joint



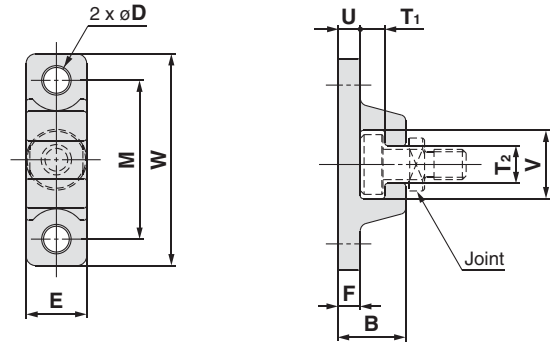


Material: Stainless steel

[mm]

Part no.	Applicable size	UA	C	d1	d2	H	K	L	UT	Weight [g]
LEY-U025	**25, 32, 40**	17	11	16	8	M8 x 1.25	14	7	6	22

Type A Mounting Bracket



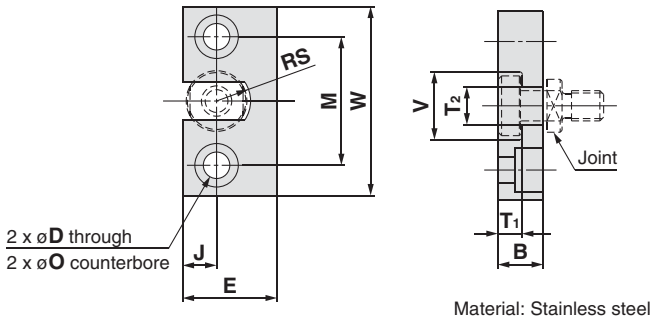
Material: Chromium molybdenum steel (Nickel plated)

[mm]

Part no.	Applicable size	B	D	E	F	M	T1	T2	U
YA-03	**25, 32, 40**	18	6.8	16	6	42	6.5	10	6

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

Type B Mounting Bracket



Material: Stainless steel

[mm]

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

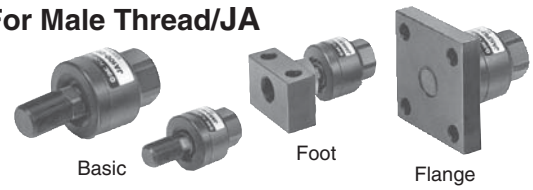
Part no.	Applicable size	T1	T2	V	W	RS	Weight [g]
YB-03	**25, 32, 40**	6.5	10	18	50	9	80

Floating Joints (Refer to Best Pneumatics No. 2 for details.)

●For Male Thread/JC (Light weight type)

- **With the aluminium case**

●For Male Thread/JA



●For Male Thread/JS (Stainless steel)

- **Stainless steel 304 (Appearance)**
- **Dust cover**
  Fluororubber/Silicone rubber

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

●For Female Thread/JB

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

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

CE RoHS

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

Grommet

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

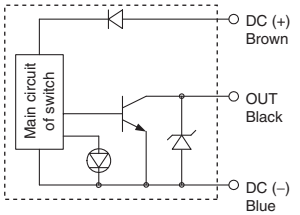
⚠Caution

Precautions

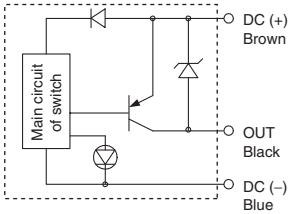
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

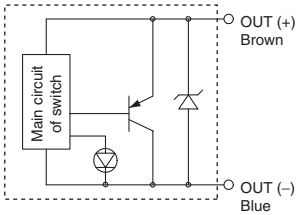
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED lights up when turned ON.					
Standards	CE marking, RoHS					

•Lead wires — Oilproof flexible heavy-duty vinyl cord: ø2.7 x 3.2 ellipse, 0.15 mm², 2 cores (D-M9B(V)), 3 cores (D-M9N(V)/D-M9P(V))

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

Weight

[g]

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

How to Order

D-M9 N □ □

Series

Wiring/Output type

N	3-wire NPN
P	3-wire PNP
B	2-wire

Electrical entry

—	In-line
V	Perpendicular

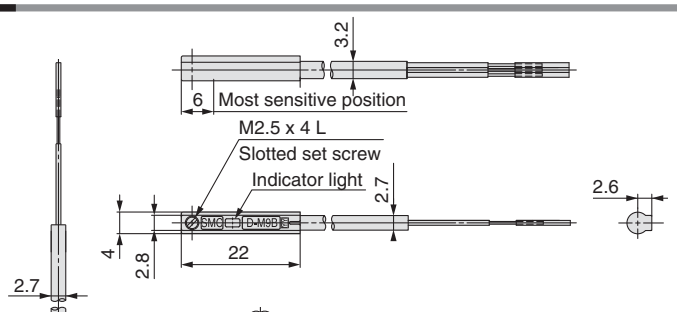
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

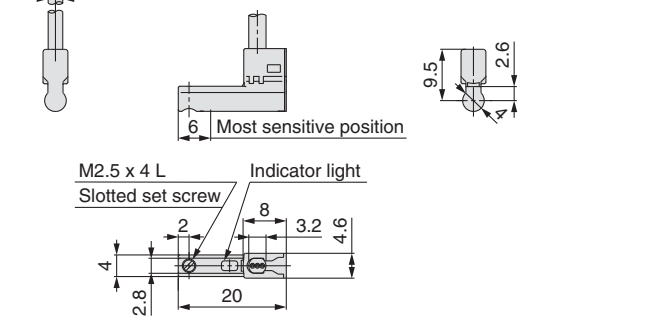
Dimensions

[mm]

D-M9□



D-M9□V



2-Colour Indication Solid State Auto Switch
Direct Mounting Style
D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

CE RoHS

Grommet

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

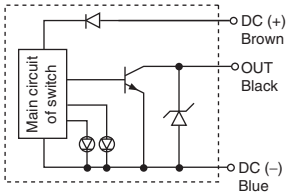
⚠Caution

Precautions

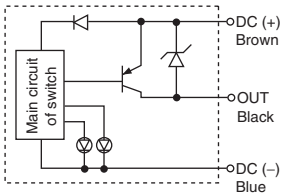
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

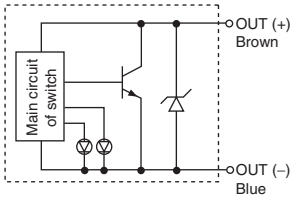
D-M9NW/M9NWV



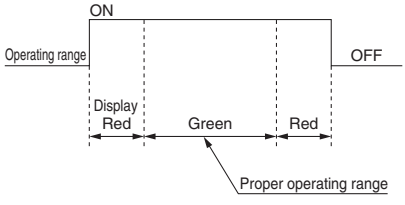
D-M9PW/M9PWV



D-M9BW/M9BWV



Indicator light/Indication method



Auto Switch Specifications

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

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range ····· Red LED lights up. Optimum operating range ····· Green LED lights up.					
Standards	CE marking, RoHS					

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

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

Weight

[g]

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

How to Order

D-M9 N W V L

Series

Wiring/Output type

N	3-wire NPN
P	3-wire PNP
B	2-wire

Electrical entry

—	In-line
V	Perpendicular

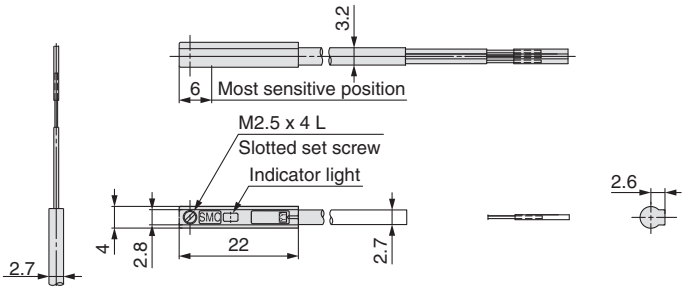
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

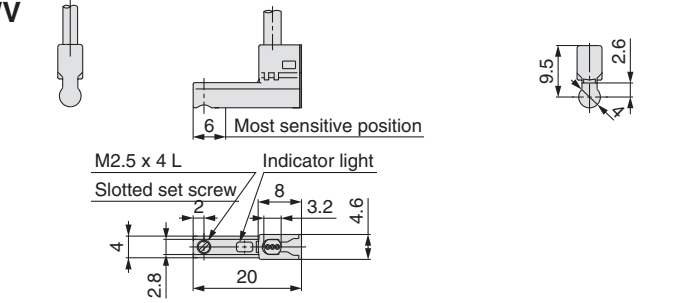
Dimensions

[mm]

D-M9□W



D-M9□WV



SMC

Electric Actuator/Rod Type

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

Series LEY-X5

Size: 25, 32

Dust/Drip proof (IP65) specification

How to Order

LEY 25 D ❑ B – 50 ❑ ❑ ❑ – R 1 6P 1 ❑ – X5

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

● Dust/Drop proof specification

❶ Size

25	
32	

❷ Motor mounting position

—	Top mounting
D	In-line

❸ Motor type

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

—	Without option
B	With lock

❼ Rod end thread

—	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
—	Ends tapped (Standard)∗2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange∗2	●	●
G	Head flange∗2	●∗3	—

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

∗2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
・LEY25: 200 or less ・LEY32: 100 or less

∗3 Head flange is not available for the LEY32.

❾ Actuator cable type

R	Robotic cable (Flexible cable)

∗ Cable is shipped assembled.

❿ Actuator cable length [m]

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

⓫ Controller/Driver type

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

∗ Only available for the motor type “Step motor”.

⓬ I/O cable length [m]∗1

—	Without cable
1	1.5
3	3∗2
5	5∗2

∗1 When “Without controller/driver” is selected for controller/driver types, I/O cable cannot be selected. Refer to page 58 (For LECP6/LECA6), page 71 (For LECP1) or page 78 (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.

⓭ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting∗

∗ DIN rail is not included. Order it separately.

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEY series and the controller LEC series. The EMC depends on the configuration of the customer’s control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer’s equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 58 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

Applicable stroke table

●Standard

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

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

∗ For auto switches, refer to page 28.

∗ “-X5” is not added to an actuator model with a controller/driver part number suffix.
Example) “LEY25DB-100” for the LEY25DB-100BMU-P16NID-X5

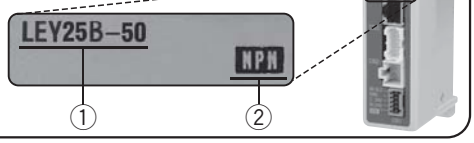
The actuator and controller/driver are sold as a package. (Controller/Driver → Page 49)

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

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	(3000 [mm/s²])	12	30	30	20	40	40
			(2000 [mm/s²])	18	50	50	30	60	60
		Vertical	(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]			3,000					
	Pushing speed [mm/s] Note 6)			35 or less			30 or less		
	Positioning repeatability [mm]			±0.02					
	Screw lead [mm]			12	6	3	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)			50/20					
	Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)					
	Guide type			Sliding bushing (Piston rod)					
	Enclosure			IP65					
	Operating temprature 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 8)			40			50		
	Standby power consumption when operating [W] Note 9)			15			48		
	Max. instantaneous power consumption [W] Note 10)			48			104		
Lock unit specifications	Type Note 11)			Non-magnetizing lock					
	Holding force [N]			78	157	294	108	216	421
	Power consumption [W] Note 12)			5			5		
	Rated voltage [V]			24 VDC ±10%					

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check “Model Selection” on page 6.
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 7.
Note 5) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
Note 6) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The power consumption (including the controller) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 11) With lock only
Note 12) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model				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	(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]			18 to 400	9 to 200	5 to 100
	Max. acceleration/deceleration [mm/s²]			3,000		
	Pushing speed [mm/s] Note 5)			35 or less		
	Positioning repeatability [mm]			±0.02		
	Screw lead [mm]			12	6	3
	Impact/Vibration resistance [m/s²] Note 6)			50/20		
	Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)		
	Guide type			Sliding bushing (Piston rod)		
	Enclosure			IP65		
	Operating temprature 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 7)			86		
	Standby power consumption when operating [W] Note 8)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 9)			96		
Lock unit specifications	Type Note 10)			Non-magnetizing lock		
	Holding force [N]			78	157	294
	Power consumption [W] Note 11)			5		
	Rated voltage [V]			24 VDC ±10%		

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

Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check "Model Selection" on page 6. 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 7.

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

Note 6) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

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

Note 8) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation with the maximum work load. Except during the pushing operation.

Note 9) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

Note 10) With lock only

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

Weight

Weight: Motor Top Mounting Type

Model		LEY25									LEY32										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	1.45	1.52	1.69	1.95	2.13	2.30	2.48	2.65	2.83	2.48	2.59	2.88	3.35	3.64	3.91	4.21	4.49	4.76	5.04	5.32
	Servo motor	1.41	1.48	1.65	1.91	2.09	2.26	2.44	2.61	2.79	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

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

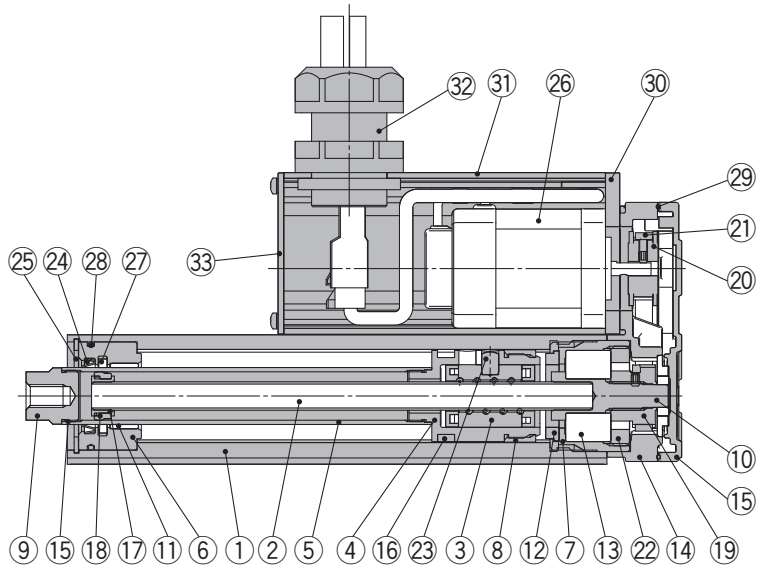
Additional Weight

[kg]

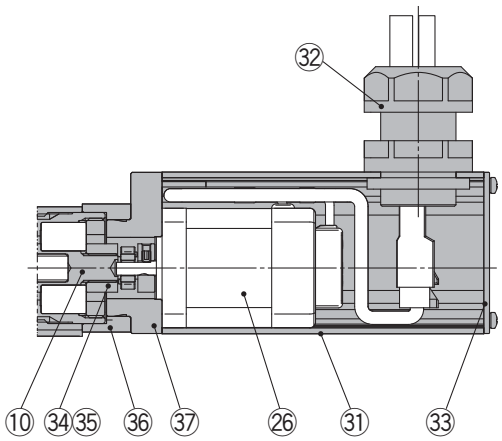
Size		25	32
Lock		0.33	0.63
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

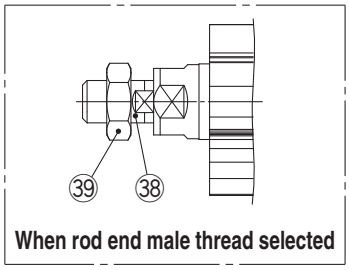
Construction

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**	Aluminium alloy	Anodised
2	**Ball screw (shaft)**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome Anodised
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plated
10	**Connected shaft**	Free cutting carbon steel	Nickel plated
11	**Bushing**	Lead bronze cast	
12	**Bumper**	Urethane	
13	**Bearing**	—	
14	**Return box**	Aluminium die-cast	Trivalent chromated
15	**Return plate**	Aluminium die-cast	Trivalent chromated
16	**Magnet**	—	
17	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
18	**Wear ring**	POM	Stroke 101 mm or more
19	**Screw shaft pulley**	Aluminium alloy	
20	**Motor pulley**	Aluminium alloy	

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

Replacement Parts (Top mounting only)/Belt

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

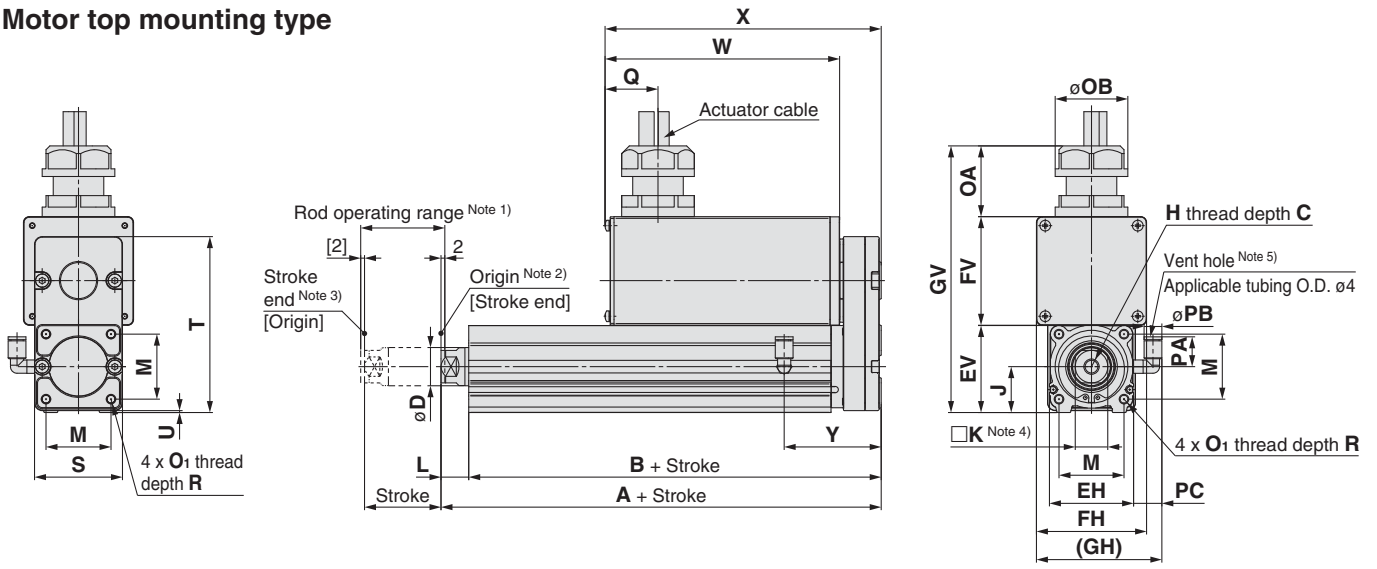
Replacement Parts/Grease Pack

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

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

Dimensions

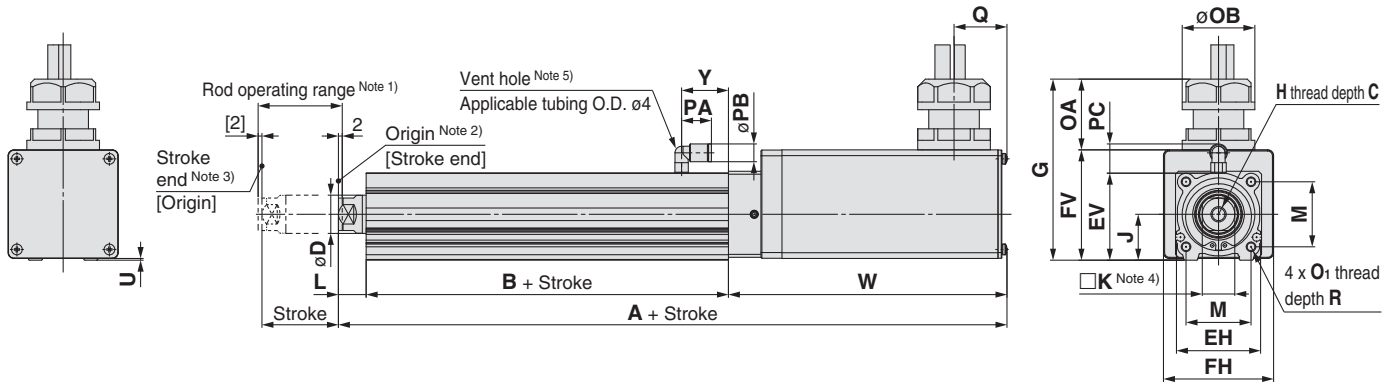
Motor top mounting type



Size	Stroke range [mm]	A	B	C	D	EH	EV	FH	FV	GH	GV	H	J	K	L	M	O_1
25	15 to 100	130.5	116	13	20	44	45.5	57.6	56.8	65.6	139.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	69.6	78.6	75.6	173.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0
	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	15.6	9.3	28	46	92	1	14.8	123	173	145	195	51
	101 to 400															
32	20 to 100	10	37	38	15.6	9.3	28	60	118	1	15.3	123	173	150	200	61
	101 to 500															

In-line motor type



Size	Stroke range [mm]	A		B	C	D	EH	EV	FH	FV	G	H	J	K	L
		Without lock	With lock												
25	15 to 100	250	300	89.5	13	20	44	45.5	57.6	57.7	94.7	M8 x 1.25	24	17	14.5
	101 to 400	275	325	124.5											
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	15.6	9.3	28	0.9	15.3	146	196	24.5
	101 to 400													
32	20 to 100	40	M6 x 1.0	10	37	38	15.6	9.3	28	1	15.3	151	201	26
	101 to 500													

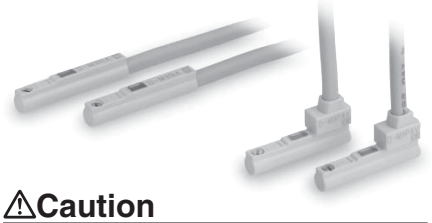
Note 1) Range within which the rod can move when it returns to origin. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The direction of rod end width across flats (□K) differs depending on the products.
Note 5) The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 15.
For the mounting dimensions, refer to page 19.

Water Resistant 2-Colour Indication Solid State Auto Switch: Direct Mounting Style
D-M9NA(V)/D-M9PA(V)/D-M9BA(V)

Grommet

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



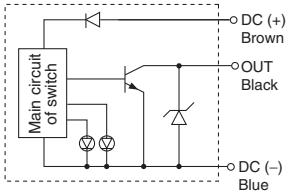
⚠Caution

Precautions

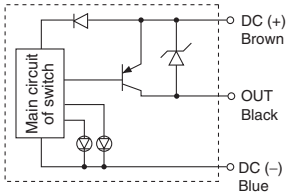
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

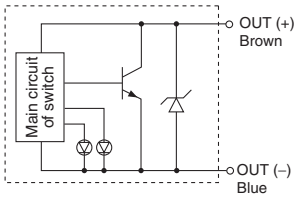
D-M9NA/M9NAV



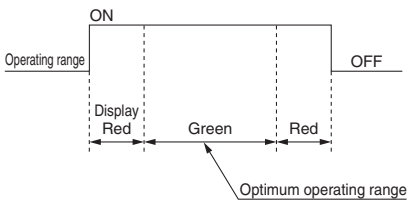
D-M9PA/M9PAV



D-M9BA/M9BAV



Indicator light/Indication method



Auto Switch Specifications

PLC: Programmable Logic Controller

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

• Lead wires — Oilproof flexible heavy-duty vinyl cord: ø2.7 x 3.2 ellipse, 0.15 mm², 2 cores (D-M9BA(V)), 3 cores (D-M9NA(V), D-M9PA(V))

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

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

Weight

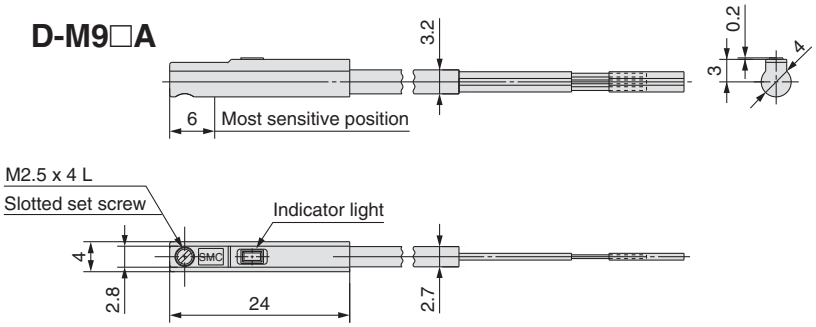
[g]

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

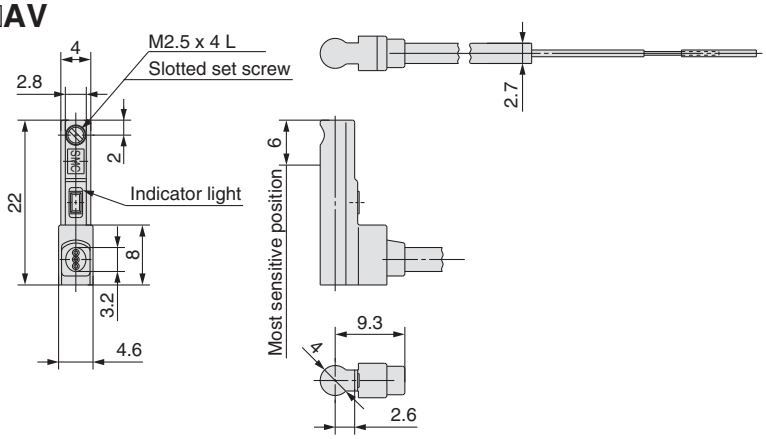
Dimensions

[mm]

D-M9□A

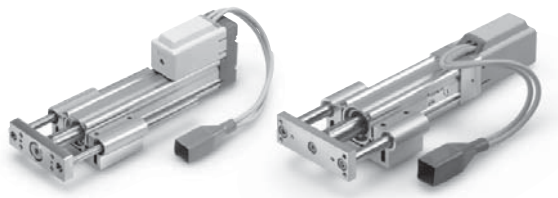


D-M9□AV



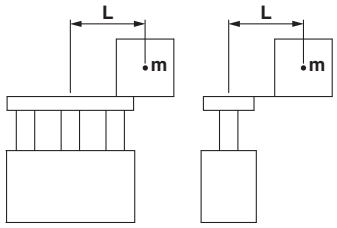
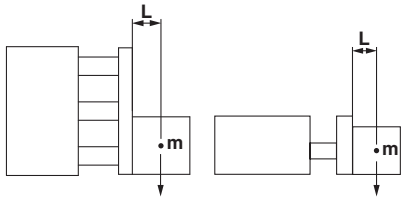
SMC

Series LEYG
Model Selection



Moment Load Graph

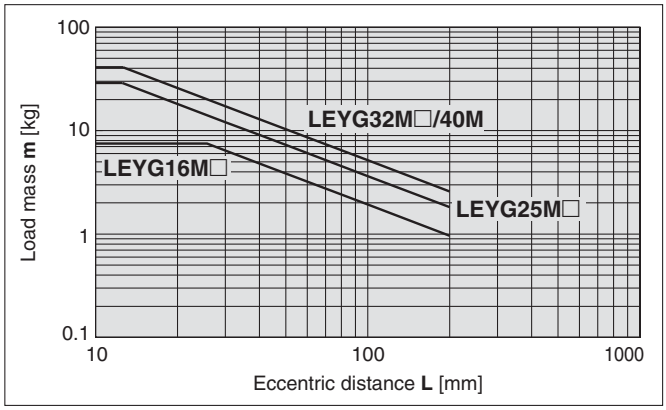
Selection conditions

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

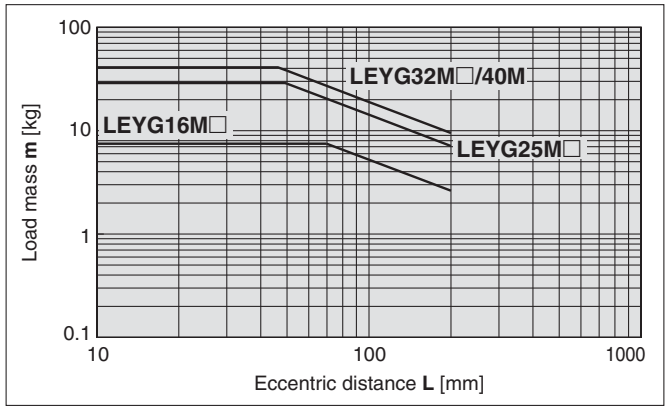
∗ For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 stroke or less



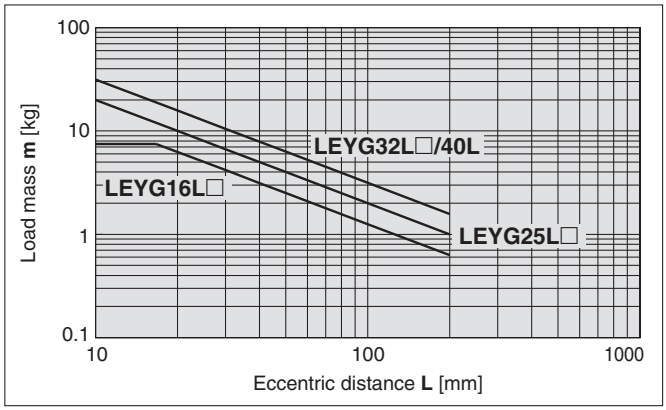
② Over 75 stroke



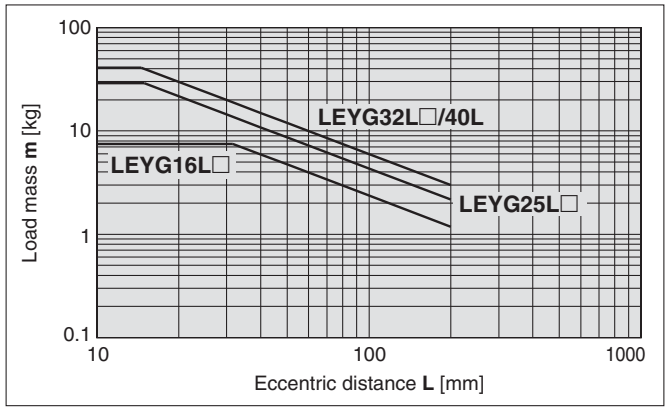
∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 31.

Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



④ Over 40 stroke

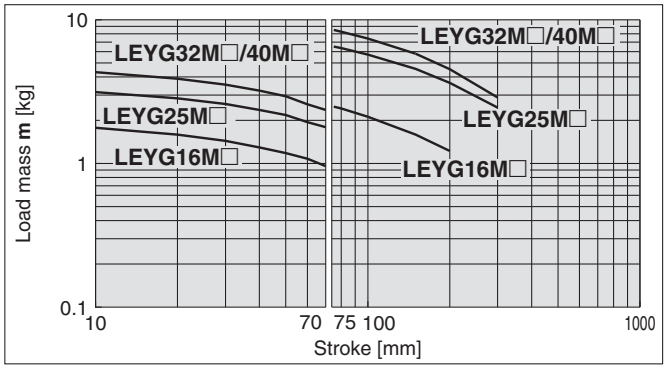


∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 31.

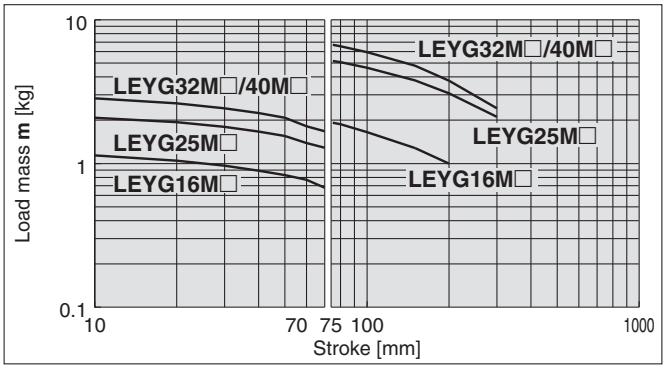
Moment Load Graph

Horizontal Mounting, Sliding Bearing

⑤ **L = 50 mm**



⑥ **L = 100 mm**



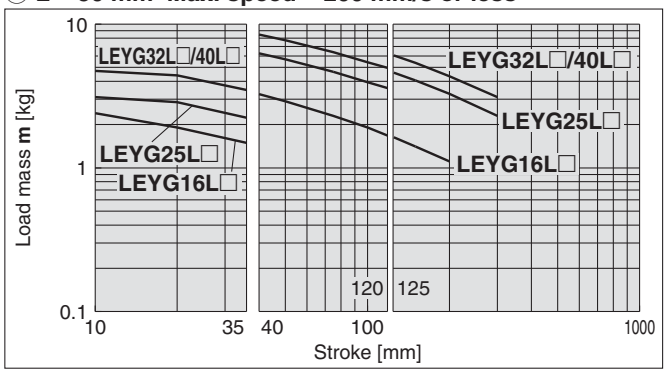
∗ Set the speed to less than or equal to the values shown below.

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

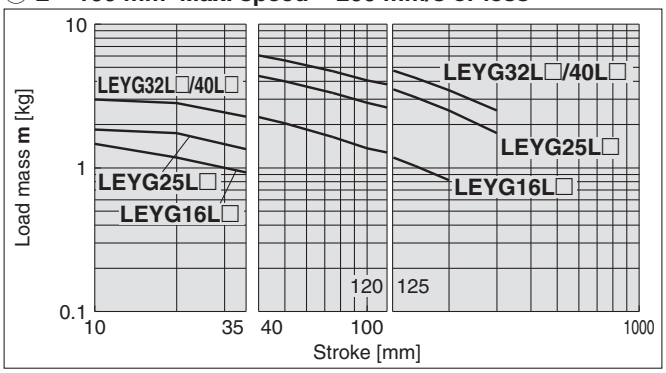
∗ For the specifications below, operate the system at the “load mass” shown in the graph x 80%.
- LEYG25MAA/Servo motor (24 VDC), Lead 12

Horizontal Mounting, Ball Bushing Bearing

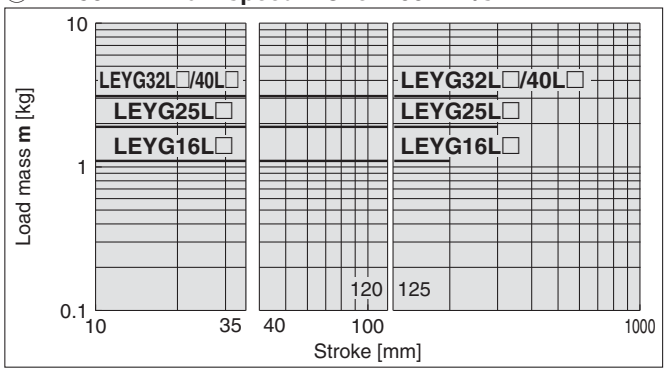
⑦ **L = 50 mm Max. speed = 200 mm/s or less**



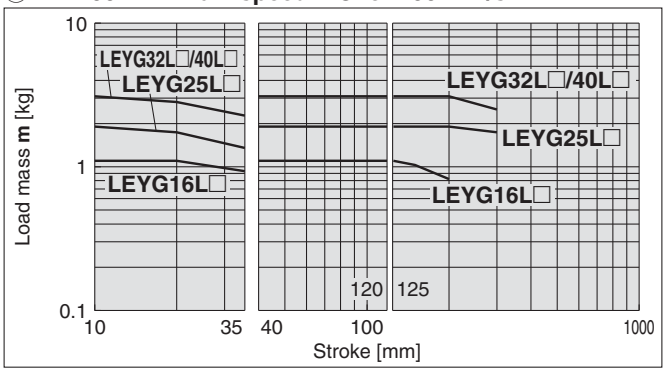
⑧ **L = 100 mm Max. speed = 200 mm/s or less**



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

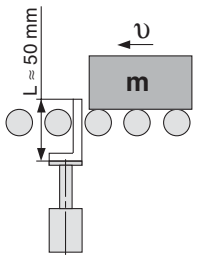


⑩ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

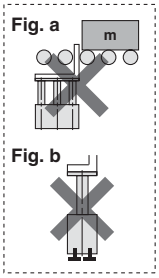
Handling Precautions

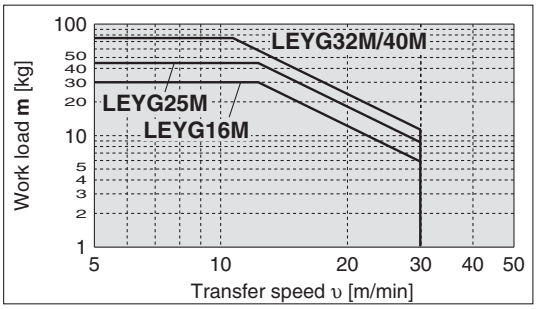
Note 1) When used as a stopper, select a model with 30 stroke or less.

Note 2) LEYG□L (ball bushing bearing) cannot be used as a stopper.

Note 3) Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).

Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).



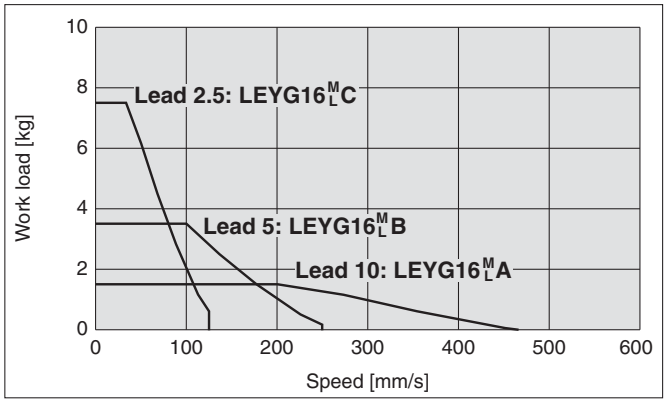


SMC

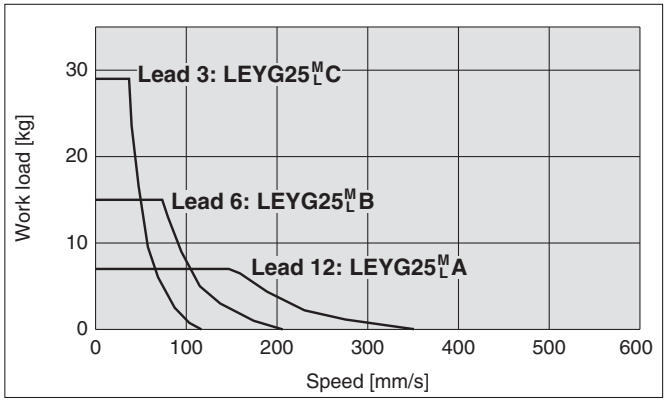
Speed–Vertical Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

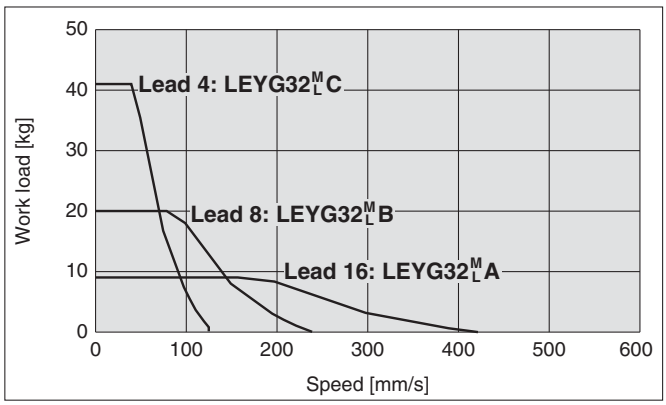
LEYG16$^{M}_{L}$□



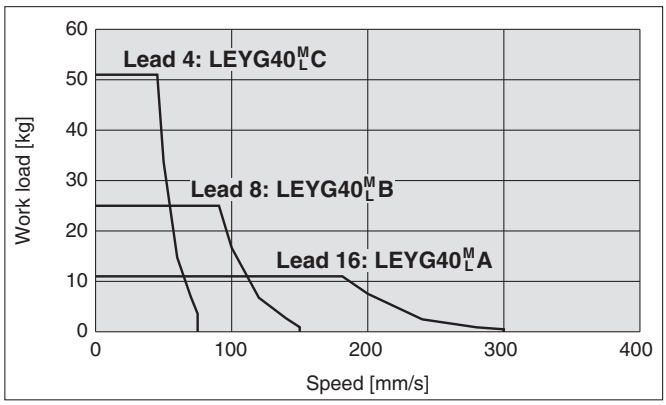
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□

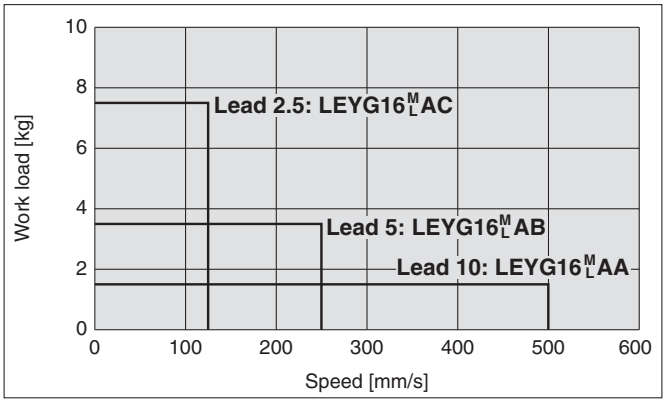


LEYG40$^{M}_{L}$□

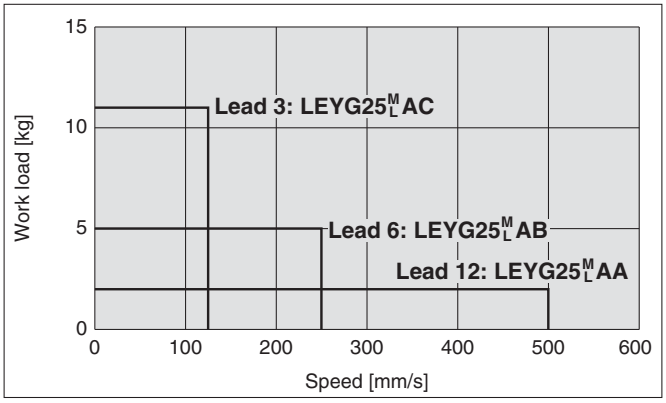


Servo Motor (24 VDC)

LEYG16$^{M}_{L}$A□



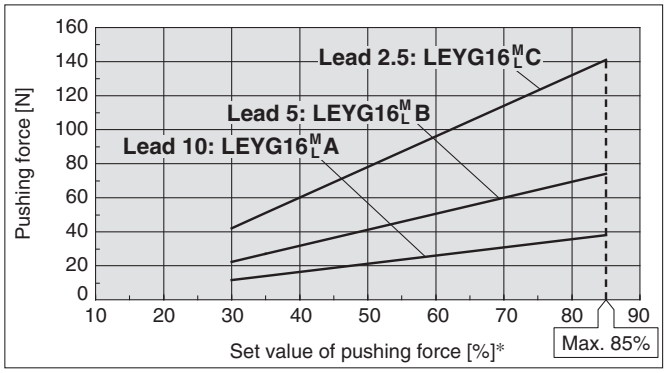
LEYG25$^{M}_{L}$A□



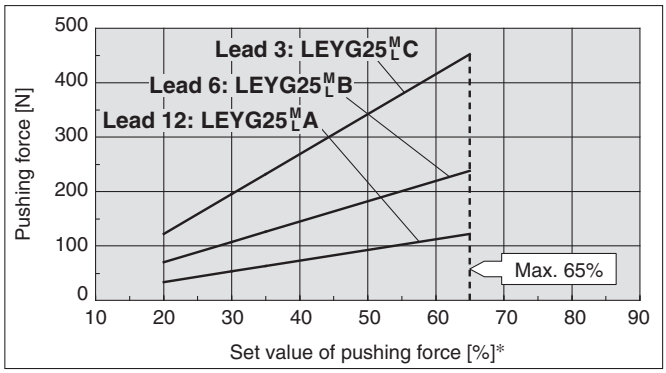
Force Conversion Graph (Guide)

Step Motor (Servo/24 VDC)

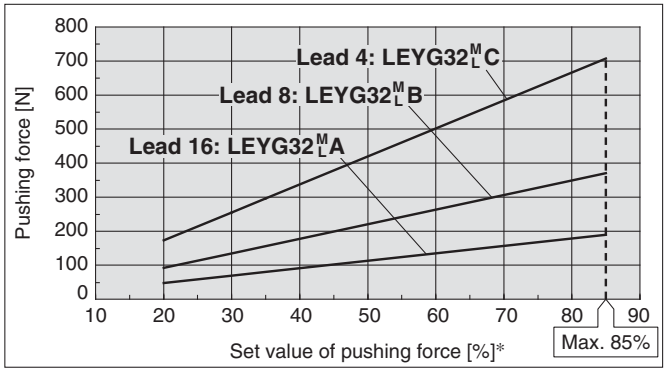
LEYG16$^{M}_{L}$□



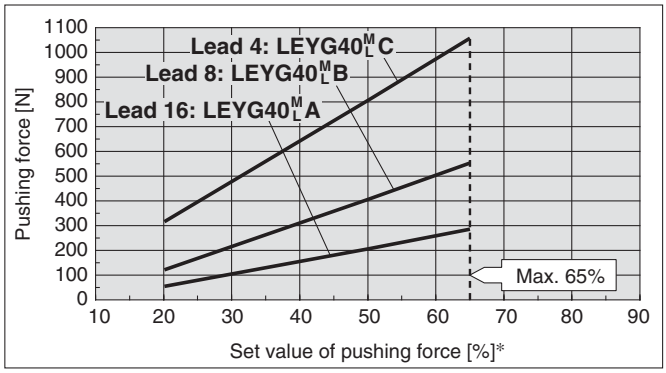
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□



LEYG40$^{M}_{L}$□

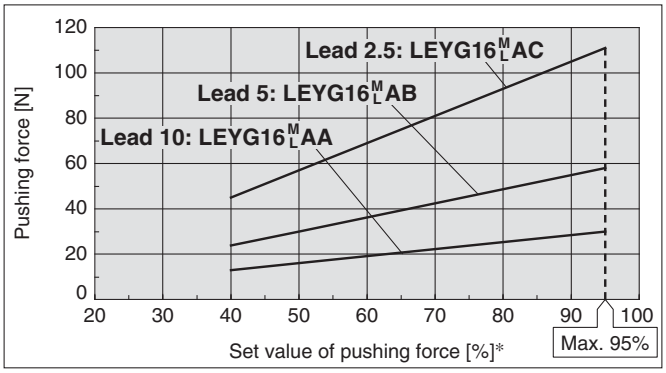


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40°C or less	85 or less	100	—

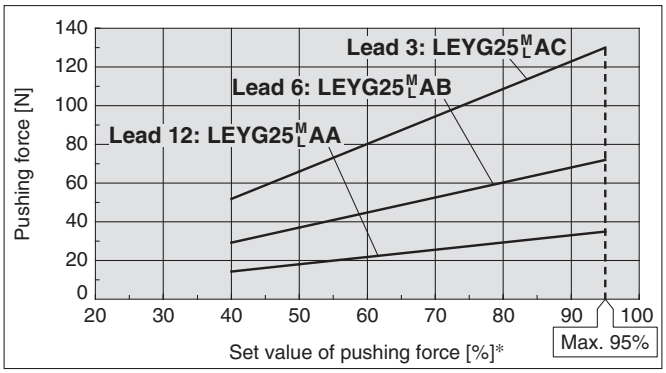
∗ Set values for the controller.

Servo Motor (24 VDC)

LEYG16$^{M}_{L}$A□



LEYG25$^{M}_{L}$A□



<Pushing Force and Trigger Level Range> Without Load

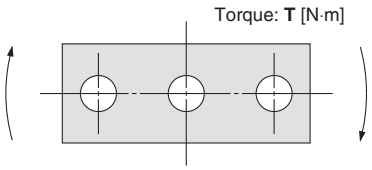
Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEYG16$^{M}_{L}$□	1 to 4	30% to 85%
	5 to 20	35% to 85%
	21 to 50	60% to 85%
LEYG25$^{M}_{L}$□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 35	50% to 65%
LEYG32$^{M}_{L}$□	1 to 4	20% to 85%
	5 to 20	35% to 85%
	21 to 30	60% to 85%
LEYG40$^{M}_{L}$□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

Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEYG16$^{M}_{L}$□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 50	80% to 95%
LEYG25$^{M}_{L}$□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 35	80% to 95%

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

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

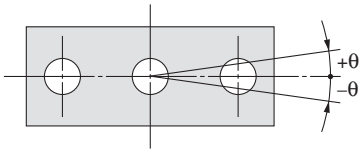
Allowable Rotational Torque of Plate



T [N·m]

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

Non-rotating Accuracy of Plate



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

Electric Actuator/Guide Rod Type

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

Series LEYG

LEYG16, 25, 32, 40

How to Order

LEYG 16 M ☐ ☐ B – 50 ☐ ☐ – S 1 6P 1 ☐

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Size

16
25
32
40

❷ Bearing type

M	Sliding bearing
L	Ball bushing bearing

∗ When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting). The speed is also restricted with a horizontal/moment load. Refer to "Model Selection" on page 29.

❹ Motor type

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

❸ Motor mounting position

—	Top mounting
D	In-line

❺ Lead [mm]

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

❻ Stroke [mm]

30	30
to	to
300	300

∗ Refer to the applicable stroke table.

❼ Motor option

—	Without option
C	With motor cover
B	With lock
W	With lock and motor cover

❽ Guide option

—	Without option
F	With grease retaining function

∗ Only available for size 25 and 32 sliding bearings. (Refer to "Construction" on page 38.)

∗ Applicable stroke table

●Standard

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

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

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEYG series and the controller LEC series. The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 58 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

For auto switches, refer to pages 21 and 22.

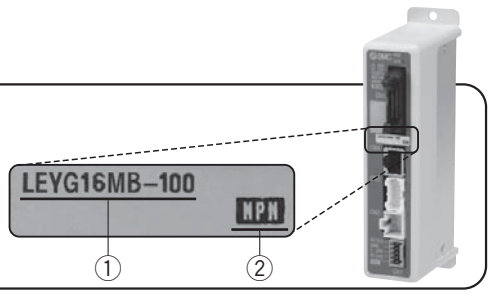
The actuator and controller/driver are sold as a package.

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

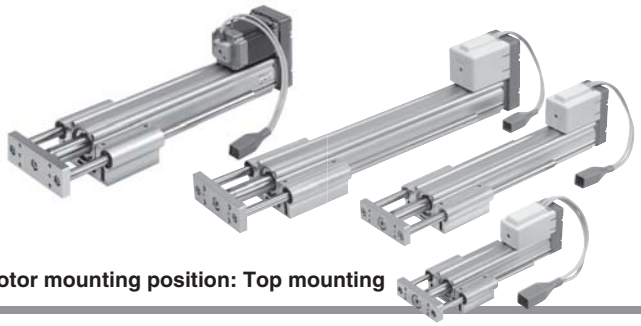
<Check the following before use.>

① Check the actuator label for model number. This matches the controller/driver.

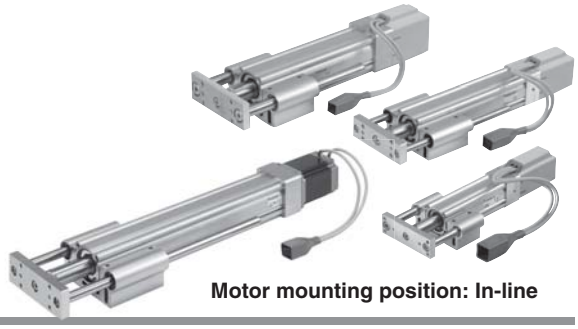
② Check Parallel I/O configuration matches (NPN or PNP).



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



Motor mounting position: Top mounting



Motor mounting position: In-line

⑨ Actuator cable type*1

—	Without cable
S	Standard cable*2
R	Robotic cable (Flexible cable)

*1 The standard cable should be used on fixed parts. For using on moving parts, select the robotic cable.
*2 Only available for the motor type "Step motor".

⑩ Actuator cable length [m]

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

* Produced upon receipt of order (Robotic cable only) Refer to the specifications Note 5) on page 36.

⑪ Controller/Driver type*1

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

*1 For details about controllers/driver and compatible motors, refer to the compatible controller/drivers below.
*2 Only available for the motor type "Step motor".

⑫ I/O cable length [m]*1

—	Without cable
1	1.5
3	3*2
5	5*2

*1 If "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 58 (For LECP6/ LECA6), page 71 (For LECP1) or page 78 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

⑬ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*1, 2

*1 Only available for the controller/driver types "6N" and "6P".
*2 DIN rail is not included. Order it separately.

Use of auto switches for the guide rod type LEYG series
· Insert the auto switch from the front side with rod (plate) sticking out.
· For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
· Consult with SMC when using auto switch on the rod stick out side.

Compatible Controllers/Driver

Type	Step data input type	Step data input type	Programless type	Pulse input type
				
Series	**LECP6**	**LECA6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points		14 points	—
Power supply voltage	24 VDC			
Reference page	Page 50	Page 50	Page 65	Page 72

Specifications

Step Motor (Servo/24 VDC)

Model				LEYG16$^{M}_{L}$			LEYG25$^{M}_{L}$			LEYG32$^{M}_{L}$			LEYG40$^{M}_{L}$		
Actuator specifications	Stroke [mm] Note 1)			30, 50, 100, 150, 200			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300		
	Work load [kg] Note 2)	Horizontal	Acceleration/Deceleration at 3000 [mm/s²]	4	11	20	12	30	30	20	40	40	30	60	60
			Acceleration/Deceleration at 2000 [mm/s²]	6	17	30	18	50	50	30	60	60	—	—	—
		Vertical	Acceleration/Deceleration at 3000 [mm/s²]	1.5	3.5	7.5	7	15	29	9	20	41	11	25	51
	Pushing force [N] Note 3) 4) 5)			14 to 38	27 to 74	51 to 141	63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707	132 to 283	266 to 553	562 to 1058
	Speed [mm/s] Note 5)			15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/s²]			3000											
	Pushing speed [mm/s] Note 6)			50 or less			35 or less			30 or less			30 or less		
	Positioning repeatability [mm]			±0.02											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)			50/20											
	Actuation type			Ball screw + Belt (LEYG□□), Ball screw (LEYG□□D)											
	Guide type			Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)											
	Operating temp. range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
Electric specifications	Motor size			□28			□42			□56.4			□56.4		
	Motor type			Step motor (Servo/24 VDC)											
	Encoder			Incremental A/B phase (800 pulse/rotation)											
	Rated voltage [V]			24 VDC ±10%											
	Power consumption [W] Note 8)			23			40			50			50		
	Standby power consumption when operating [W] Note 9)			16			15			48			48		
	Max. instantaneous power consumption [W] Note 10)			43			48			104			106		
Lock unit specifications	Type Note 11)			Non-magnetizing lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W] Note 12)			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10%											

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

Note 2) Horizontal: The maximum value of the work load for the positioning operation. The work load is the same as the vertical work load during pushing operation. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check “Model Selection” on page 31.
Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

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

Note 4) The pushing force values for LEYG16□□ is 35% to 85%, for LEYG25□□ is 35% to 65%, for LEYG32□□ is 35% to 85% and for LEYG40□□ is 35% to 65%. The pushing force values change according to the duty ratio and pushing speed. Check “Model Selection” on page 32.

Note 5) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting).
The speed is also restricted with a horizontal/moment load. Refer to “Model Selection” on page 29.

Note 6) The allowable speed for the pushing operation.

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

Note 8) The power consumption (including the controller) is for when the actuator is operating.

Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.

Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

Note 11) With lock only

Note 12) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model			LEYG16$^{M}_{L}$A			LEYG25$^{M}_{L}$A		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150, 200			30, 50, 100, 150, 200, 250, 300		
	Work load [kg] Note 2)	Horizontal: Acceleration/Deceleration at 3000 [mm/s²]	3	6	12	7	15	30
		Vertical: Acceleration/Deceleration at 3000 [mm/s²]	1.5	3.5	7.5	2	5	11
	Pushing force [N] Note 3) 4)		16 to 30	30 to 58	57 to 111	18 to 35	37 to 72	66 to 130
	Speed [mm/s]		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125
	Max. acceleration/deceleration [mm/s²]		3000					
	Pushing speed [mm/s] Note 5)		50 or less			35 or less		
	Positioning repeatability [mm]		±0.02					
	Screw lead [mm]		10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²] Note 6)		50/20					
	Actuation type		Ball screw + Belt (LEYG□□), Ball screw (LEYG□□D)					
	Guide type		Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)					
	Operating temp. range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condenstation)					
Electric specifications	Motor size		□28			□42		
	Motor output [W]		30			36		
	Motor type		Servo motor (24 VDC)					
	Encoder		Incremental A/B (800 pulse/rotation)/Z phase					
	Rated voltage [V]		24 VDC ±10%					
	Power consumption [W] Note 7)		40			86		
	Standby power consumption when operating [W] Note 8)		4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 9)		59			96		
Lock unit specifications	Type Note 10)		Non-magnetizing lock					
	Holding force [N]		20	39	78	78	157	294
	Power consumption [W] Note 11)		2.9			5		
	Rated voltage [V]		24 VDC ±10%					

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

Note 2) Horizontal: The maximum value of the work load for the positioning operation. The work load is the same as the vertical work load during pushing operation. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Check "Model Selection" on page 31 for details.
Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

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

Note 4) The pushing force values for LEYG16□A□ is 50% to 95% and for LEYG25□A□ is 50% to 95%. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 32.

Note 5) The allowable speed for the pushing operation.

Note 6) Impact resistance: No malfunction occurred when it was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)

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

Note 8) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.

Note 9) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

Note 10) With lock only

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

Weight

Weight: Motor Top Mounting Type

Model		LEYG16M					LEYG25M							LEYG32M						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.83	0.97	1.20	1.49	1.66	1.67	1.86	2.18	2.60	2.94	3.28	3.54	2.91	3.17	3.72	4.28	4.95	5.44	5.88
	Servo motor	0.83	0.97	1.20	1.49	1.66	1.63	1.82	2.14	2.56	2.90	3.24	3.50	—	—	—	—	—	—	—

Model		LEYG16L					LEYG25L							LEYG32L						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.84	0.97	1.14	1.43	1.58	1.68	1.89	2.13	2.56	2.82	3.14	3.38	2.91	3.18	3.57	4.12	4.66	5.17	5.56
	Servo motor	0.84	0.97	1.14	1.43	1.58	1.64	1.85	2.09	2.52	2.78	3.10	3.34	—	—	—	—	—	—	—

Model		LEYG40M							LEYG40L						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	3.21	3.47	4.02	4.58	5.25	5.74	6.18	3.21	3.48	3.87	4.42	4.96	5.47	5.86
	Servo motor	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Model		LEYG16M					LEYG25M							LEYG32M						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.83	0.97	1.20	1.49	1.66	1.66	1.85	2.17	2.59	2.93	3.27	3.53	2.90	3.16	3.71	4.27	4.94	5.43	5.87
	Servo motor	0.83	0.97	1.20	1.49	1.66	1.62	1.81	2.13	2.55	2.89	3.23	3.49	—	—	—	—	—	—	—

Model		LEYG16L					LEYG25L							LEYG32L						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.84	0.97	1.14	1.43	1.58	1.67	1.88	2.12	2.55	2.81	3.13	3.37	2.90	3.17	3.56	4.11	4.65	5.16	5.55
	Servo motor	0.84	0.97	1.14	1.43	1.58	1.63	1.84	2.08	2.51	2.77	3.09	3.33	—	—	—	—	—	—	—

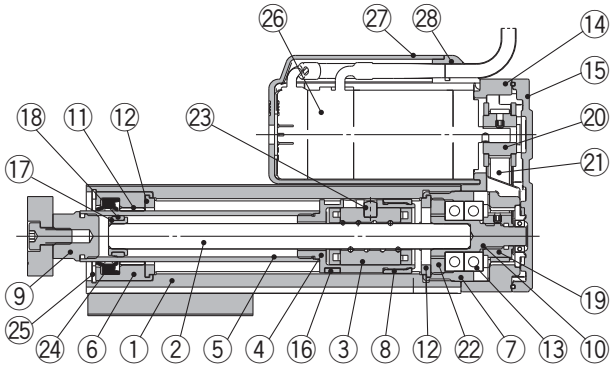
Model		LEYG40M							LEYG40L						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	3.20	3.46	4.01	4.57	5.24	5.73	6.17	3.20	3.47	3.86	4.41	4.95	5.46	5.85
	Servo motor	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Additional Weight

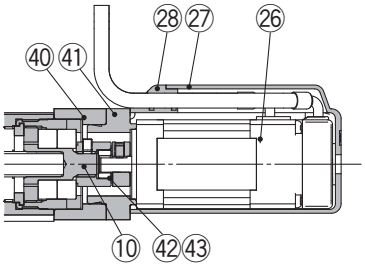
[kg]

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

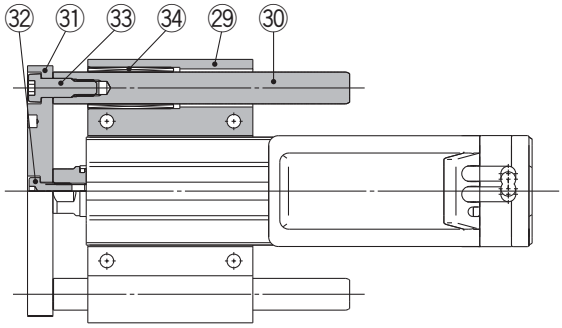
Construction



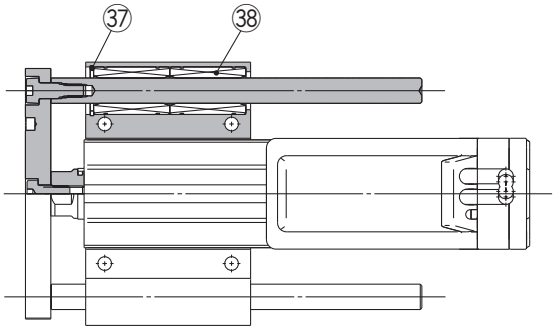
For in-line motor



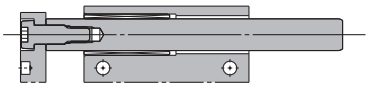
LEYG□M



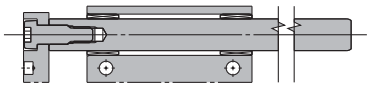
LEYG□L



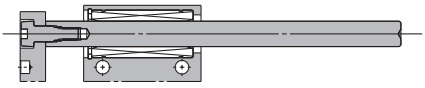
LEYG$^{16}_{25}_{32}_{40}$M: 50st or less



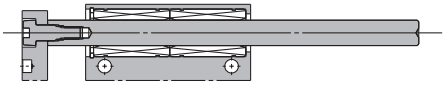
LEYG$^{16}_{25}_{32}_{40}$M: Over 50st



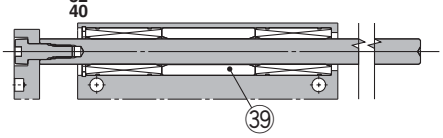
LEYG16L: 30st or less
LEYG$^{25}_{32}_{40}$L: 100st or less



LEYG16L: Over 30st, 100st or less

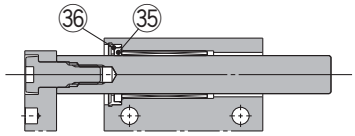


LEYG$^{16}_{25}_{32}_{40}$L: Over 100st



When grease retaining function selected

LEYG$^{25}_{32}_{40}$M□□$^{A}_{B}_{C}$-□□F: 50st or less



LEYG$^{25}_{32}_{40}$M□□$^{A}_{B}_{C}$-□□F: Over 50st

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

Replacement Parts/Belt

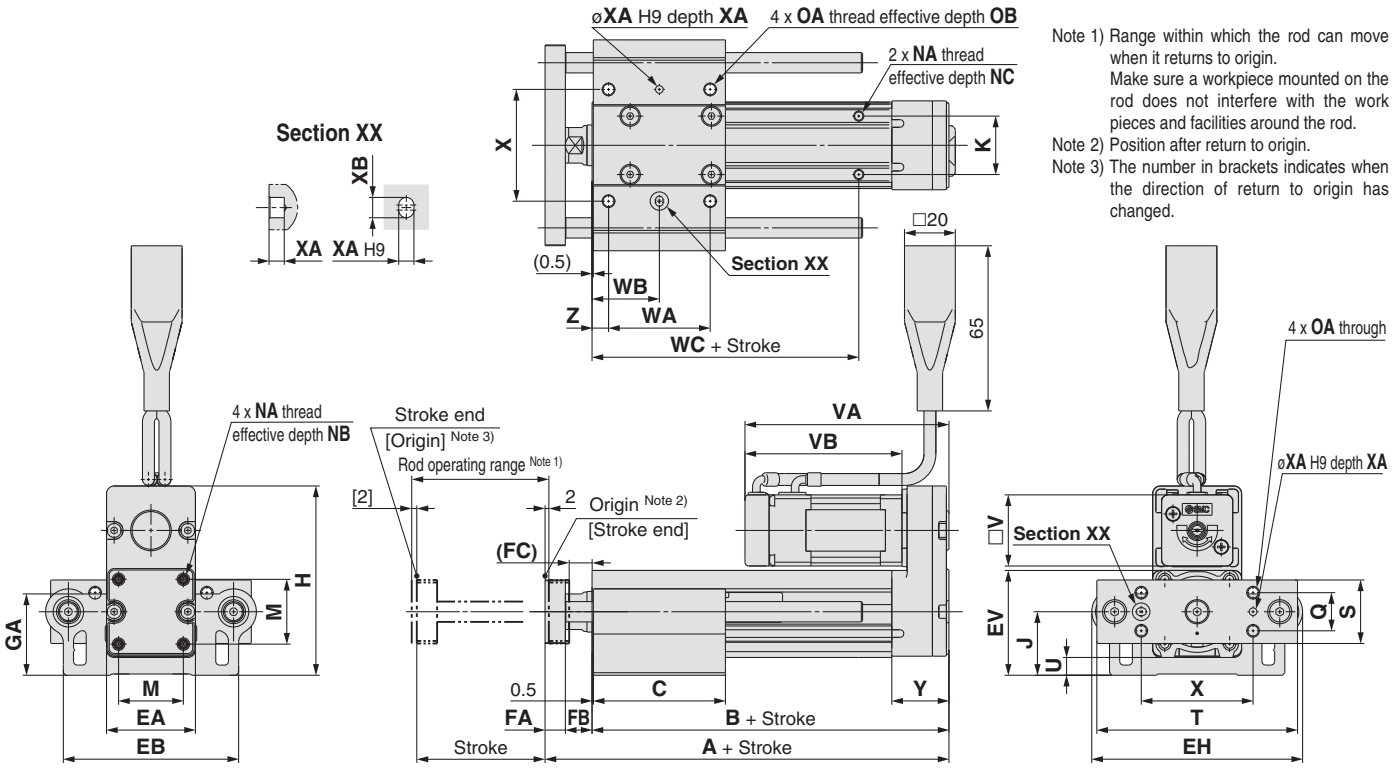
No.	Size	Order no.
21	16	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Component Parts

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

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

Dimensions: Motor Top Mounting

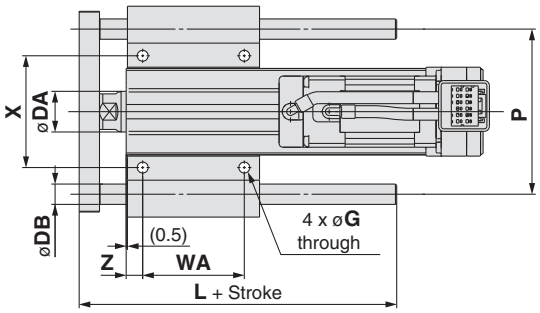


Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the work pieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.

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

[mm]

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



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

[mm]

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

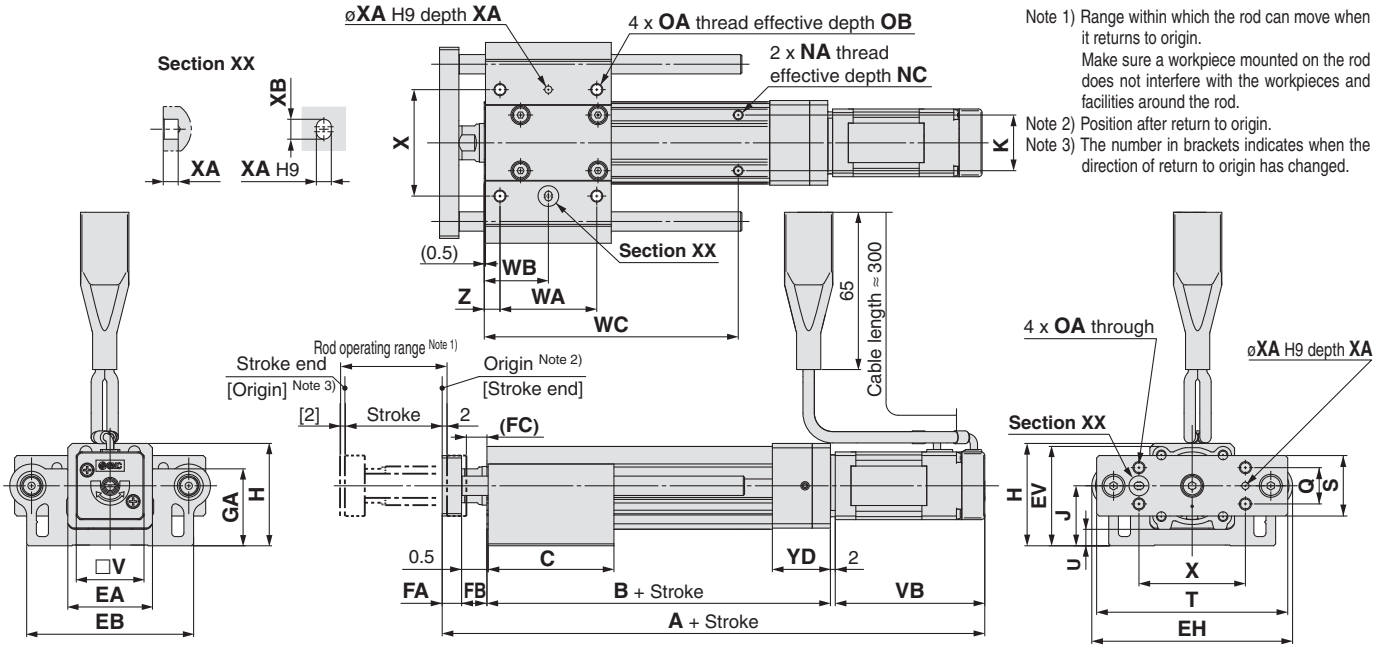
LEYG□M, LEYG□L Common

[mm]

Size	Stroke range	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
16	39st or less	109	90.5	37	16	35	69	83	41.3	8	10.5	8.5	4.3	32	74.5	25	23	25.5	M4 x 0.7	7	5.5
	40st or more, 100st or less			52																	
	101st or more, 200st or less	129	110.5	82																	
25	39st or less	141.5	116	50	20	46	85	103	52.5	11	14.5	12.5	5.4	40.5	99	31	29	34	M5 x 0.8	8	6.5
	40st or more, 100st or less			67.5																	
	101st or more, 124st or less																				
	125st or more, 200st or less	166.5	141	84.5																	
	201st or more, 300st or less			102																	
32 40	39st or less	160.5	130	55	25	60	101	123	64	12	18.5	16.5	5.4	50.5	125.5	38.5	30	40	M6 x 1.0	10	8.5
	40st or more, 100st or less			68																	
	101st or more, 124st or less	190.5	160																		
	125st or more, 200st or less			85																	
	201st or more, 300st or less			102																	

Size	Stroke range	OA	OB	P	Q	S	T	U	V	Step motor VA	Step motor VB	Servo motor VA	Servo motor VB	WA	WB	WC	X	XA	XB	Y	Z
16	39st or less	M5 x 0.8	10	65	15	25	79	7	28	80.3	61.8	81	62.5	25	19	55	44	3	4	22.5	6.5
	40st or more, 100st or less													40	26.5						
	101st or more, 200st or less													70	41.5	75					
25	39st or less	M6 x 1.0	12	80	18	30	95	7	42	85.4	63.4	81.6	59.6	35	26	70	54	4	5	26.5	8.5
	40st or more, 100st or less																				
	101st or more, 124st or less													50	33.5						
	125st or more, 200st or less													70	43.5	95					
	201st or more, 300st or less													85	51						
32	39st or less	M6 x 1.0	12	95	28	40	117	7.5	56.4	95.4	68.4	—	—	40	28.5	75	64	5	6	34	8.5
	40st or more, 100st or less																				
	101st or more, 124st or less													50	33.5						
	125st or more, 200st or less													70	43.5	105					
	201st or more, 300st or less													85	51						
40	39st or less	M6 x 1.0	12	95	28	40	117	7.5	56.4	117.4	90.4	—	—	40	28.5	75	64	5	6	34	8.5
	40st or more, 100st or less																				
	101st or more, 124st or less													50	33.5						
	125st or more, 200st or less													70	43.5	105					
	201st or more, 300st or less													85	51						

Dimensions: In-line Motor

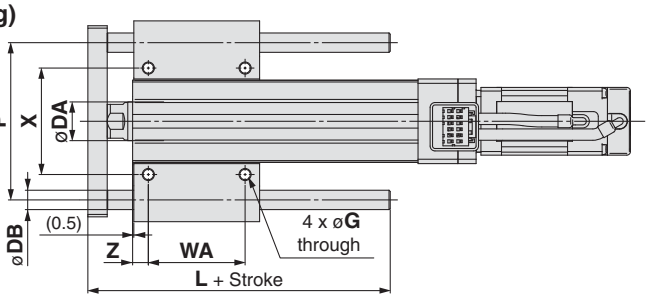


Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin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

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

[mm]

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



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

[mm]

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

LEYG□M, LEYG□L Common

[mm]

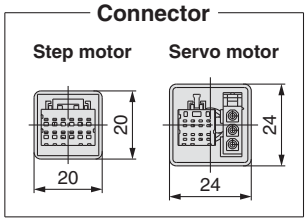
Size	Stroke range	A: Step motor	A: Servo motor	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
16	39st or less	174.3	175	92	37	16	35	69	83	41.3	8	10.5	8.5	4.3	32	42.5	25	23	M4 x 0.7	5.5
	40st or more, 100st or less				52															
	101st or more, 200st or less	194.3	195	112	82															
25	39st or less	206.4	202.6	115.5	50	20	45	85	103	52.5	11	14.5	12.5	5.4	40.5	53.5	31	29	M5 x 0.8	6.5
	40st or more, 100st or less				67.5															
	101st or more, 124st or less	231.4	227.6	140.5																
	125st or more, 200st or less				84.5															
	201st or more, 300st or less				102															
32	39st or less	228.9	—	128	55	25	60	101	123	64	12	18.5	16.5	5.4	50.5	68.5	38.5	30	M6 x 1.0	8.5
	40st or more, 100st or less				68															
	101st or more, 124st or less	258.9	—	158																
	125st or more, 200st or less				85															
	201st or more, 300st or less				102															
40	39st or less	250.9	—	128	55	25	60	101	123	64	12	18.5	16.5	5.4	50.5	68.5	38.5	30	M6 x 1.0	8.5
	40st or more, 100st or less				68															
	101st or more, 124st or less	280.9	—	158																
	125st or more, 200st or less				85															
	201st or more, 300st or less				102															

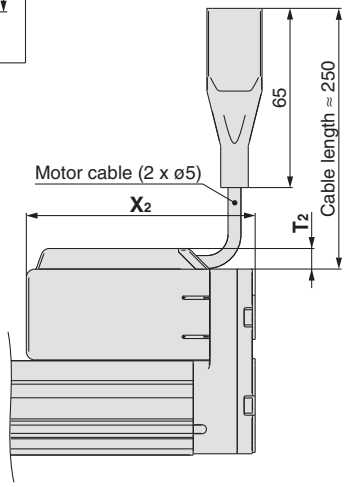
Size	Stroke range	OA	OB	P	Q	S	T	U	V	VB: Step motor	VB: Servo motor	WA	WB	WC	X	XA	XB	YD	Z
16	39st or less	M5 x 0.8	10	65	15	25	79	7	28	61.8	62.5	25	19	55	44	3	4	24	6.5
	40st or more, 100st or less											40	26.5						
	101st or more, 200st or less											70	41.5	75					
25	39st or less	M6 x 1.0	12	80	18	30	95	7	42	63.4	59.6	35	26	70	54	4	5	26	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													95					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						
32	39st or less	M6 x 1.0	12	95	28	40	117	7.5	56.4	68.4	—	40	28.5	75	64	5	6	32	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													105					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						
40	39st or less	M6 x 1.0	12	95	28	40	117	7.5	56.4	90.4	—	40	28.5	75	64	5	6	32	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													105					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						

Dimensions

Motor top mounting type

With motor cover: LEYG 16/25/32/40 □□ A/B/C -□C



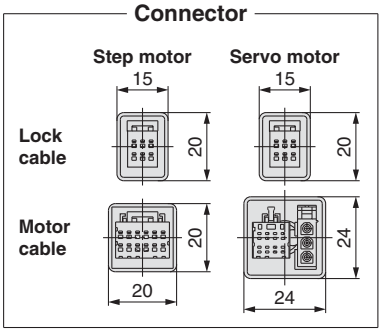


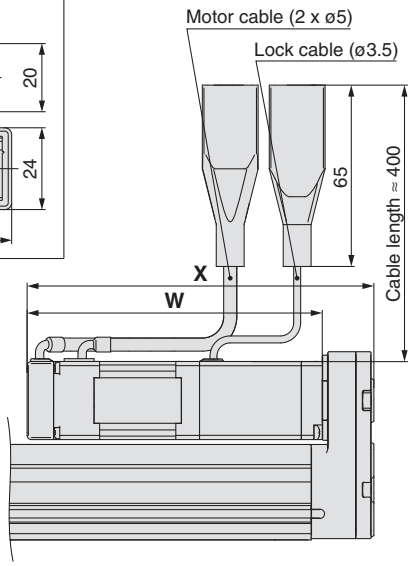
[mm]

Size	T2	X2
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material:
Synthetic resin

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

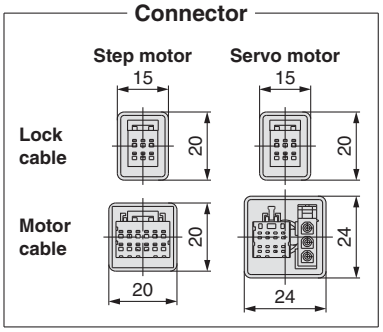


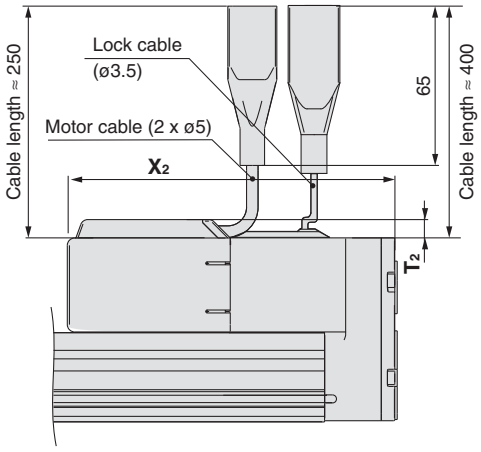


[mm]

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

With lock and cover: LEYG 16/25/32/40 □□ A/B/C -□W



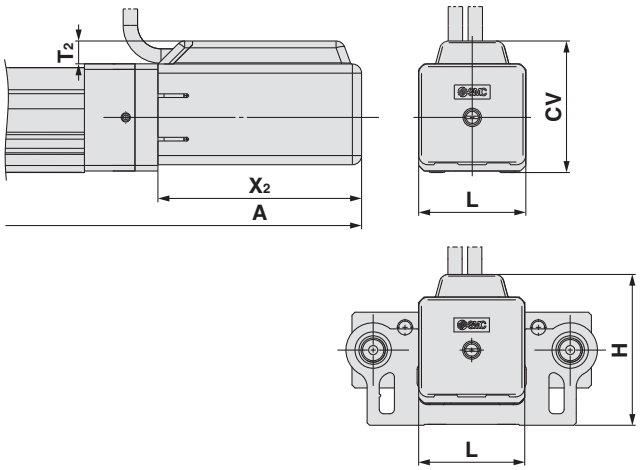


[mm]

Size	T2	X2
16	7.5	124.5
25	7.5	129
32	7.5	141.5
40	7.5	163.5

Dimensions

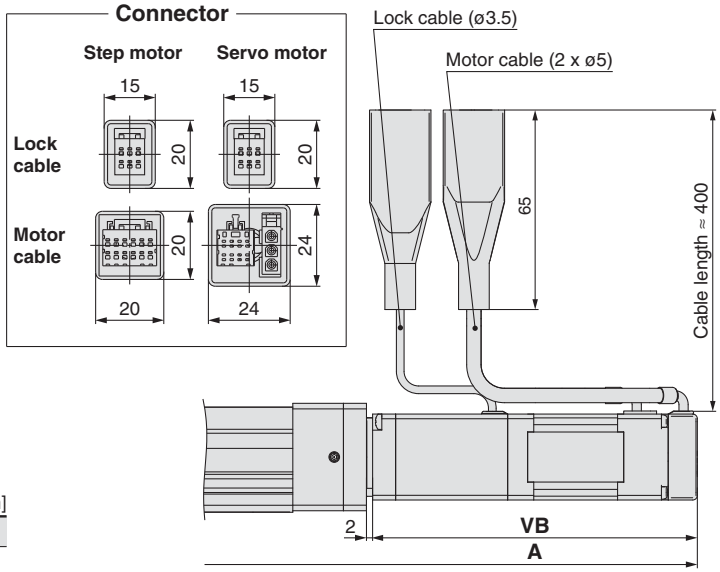
In-line motor type
With motor cover: LEYG16/25/32/40□D□A/B/C-□C



[mm]

Size	Stroke range	A	T2	X2	L	H	CV
16	100st or less	177	7.5	66.5	35	50	43
	101st or more, 200st or less	197					
25	100st or less	209.5	7.5	68.5	46	61.5	54.5
	101st or more, 300st or less	234.5					
32	100st or less	232	7.5	73.5	60	76	68.5
	101st or more, 300st or less	262					
40	100st or less	254	7.5	95.5	60	76	68.5
	101st or more, 300st or less	284					

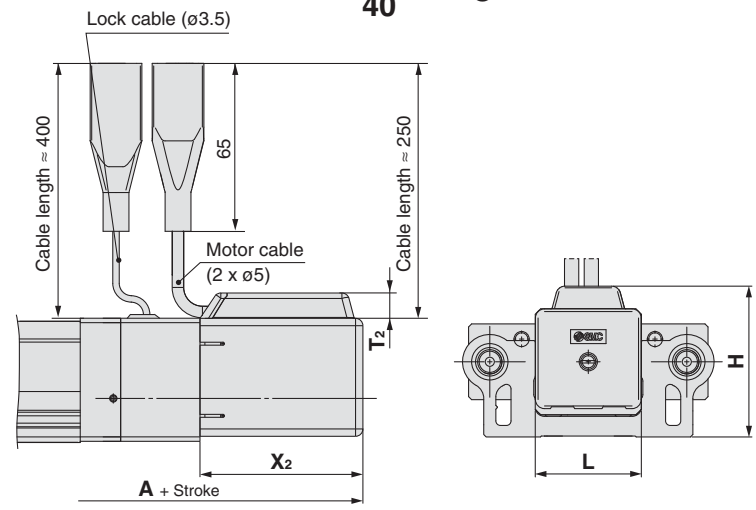
With lock: LEYG16/25/32/40□D□A/B/C-□B



[mm]

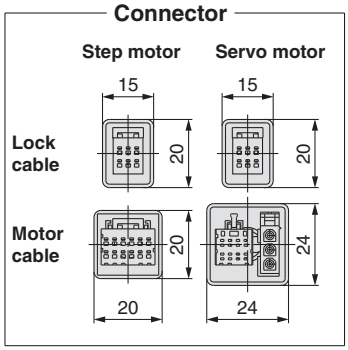
Size	Stroke range	Step motor	Servo motor	Step motor	Servo motor
		A		VB	
16	100st or less	207.8	208.5	103.3	104
	101st or more, 200st or less	227.8	228.5		
25	100st or less	246.9	243.1	103.9	100.1
	101st or more, 300st or less	271.9	268.1		
32	100st or less	271.9	—	111.4	—
	101st or more, 300st or less	301.9	—		
40	100st or less	293.9	—	133.4	—
	101st or more, 300st or less	323.9	—		

With lock and cover: LEYG16/25/32/40□D□A/B/C-□C



[mm]

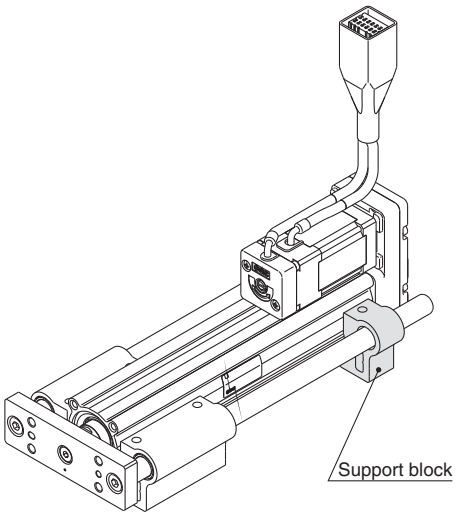
Size	Stroke range	A	T2	X2	L	CV
16	100st or less	210.5	7.5	108	35	43
	101st to 300st	230.5				
25	100st or less	239	7.5	109	46	54.5
	101st to 400 st	264				
32	100st or less	263	7.5	116.5	60	68.5
	101st to 500 st	293				
40	100st or less	285	7.5	138.5	60	68.5
	101st to 500 st	315				



Support Block

●Guide for support block application

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

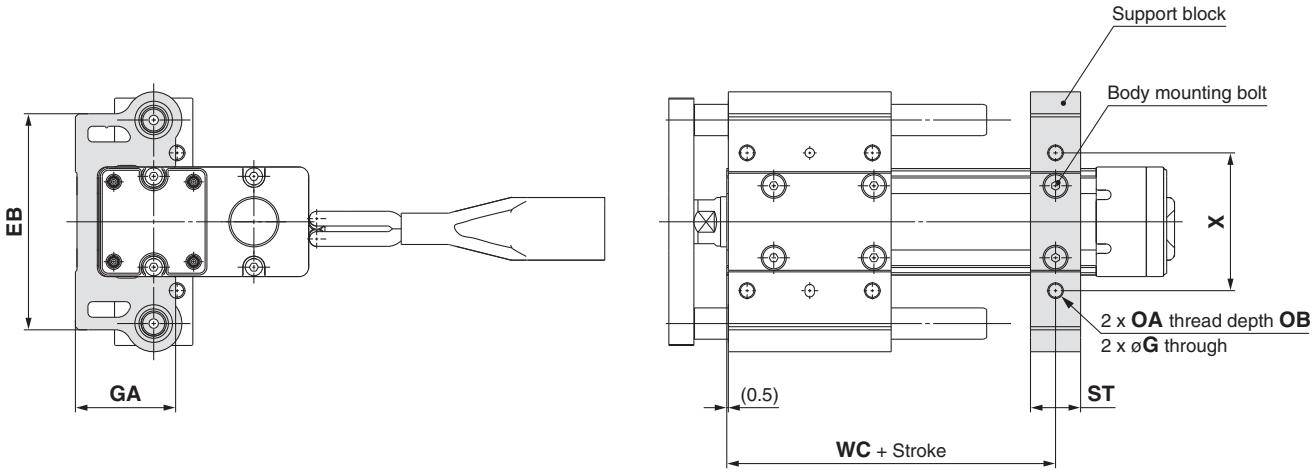


Support Block Model

LEYG-S016

●**Size**

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



⚠Caution

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

[mm]

Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
16	**LEYG-S016**	100st or less	69	4.3	32	M5 x 0.8	10	16	55	44
		101st or more, 200st or less							75	
25	**LEYG-S025**	100st or less	85	5.4	40.5	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32 **40**	**LEYG-S032**	100st or less	101	5.4	50.5	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

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

Series LEY/LEYG
Electric Actuators/ Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Design/Selection

⚠Warning

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

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

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

This can cause failure.

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

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

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

Handling

⚠Caution

1. INP output signal

1) Positioning operation
When the product comes within the set range by step data [In position], the INP output signal will turn on.
Initial value: Set to [0.50] or higher.

2) Pushing operation
When the effective force exceeds step data [Trigger LV], the INP output signal will turn on.
Use the product within the specified range of [Pushing force] and [Trigger LV].
a) To ensure that the actuator pushes the workpiece with the set [Pushing force], it is recommended that the [Trigger LV] be set to the same value as the [Pushing force].
b) When the [Pushing force] and [Trigger LV] are set less than the specified range, the INP output signal will turn on from the pushing start position.

Handling

⚠Caution

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

Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY□16□	1 to 4	30% to 85%
	5 to 20	35% to 85%
	21 to 50	60% to 85%
LEY□25□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 35	50% to 65%
LEY□32□	1 to 4	20% to 85%
	5 to 20	35% to 85%
	21 to 30	60% to 85%
LEY□40□	1 to 4	20% to 65%
	5 to 20	35% to 65%
	21 to 30	50% to 65%

Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY□16□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 50	80% to 95%
LEY□25□A	1 to 4	40% to 95%
	5 to 20	60% to 95%
	21 to 35	80% to 95%

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

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

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

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

Model	LEYG16$^{M}_{L}$□A			LEYG25$^{M}_{L}$□A		
Lead	A	B	C	A	B	C
Work load [kg]	0.5	1	2.5	0.5	1.5	4
Pushing force	95%			95%		

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

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

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

It may lead to damage and malfunction.

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

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

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

Check the model selection section of the catalogue.

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

Otherwise, the origin can be displaced since it is based on detected motor torque.

Electric Actuators/ Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Handling

⚠Caution

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

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

a. "Posn failed" alarm is generated.

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

b. "Pushing ALM" alarm is generated.

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

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

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

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

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

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

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

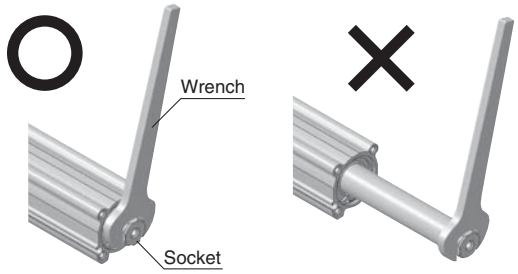
11. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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

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

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

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



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

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

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

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

• Step motor (Servo/24 VDC)

LEY16□

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

LEY25□

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

LEY32□/40□

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

• Servo motor (24 VDC)

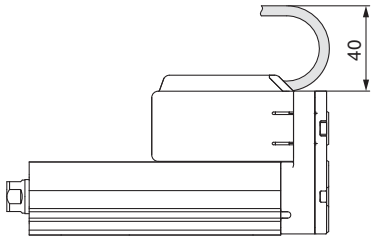
LEY16A□

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

LEY25A□

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

14. When mounting the product, keep the 40 mm or more for bending the cable.



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

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

Electric Actuators/ Specific Product Precautions 3

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Handling

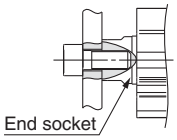
⚠Caution

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

Tightening with higher torque than the specified range may cause malfunction while the tightening with lower torque can cause the displacement of gripping position or dropping a workpiece.

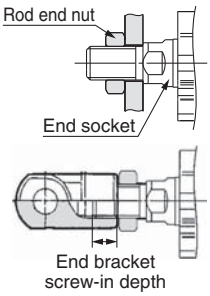
<Series LEY>

Workpiece fixed/Rod end female thread



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

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

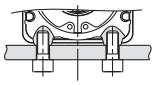


Model	Thread size	Max. tightening torque [N·m]	Effective thread length [mm]	End socket width across flats [mm]
LEY16	M8 x 1.25	12.5	12	14
LEY25	M14 x 1.5	65.0	20.5	17
LEY32/40	M14 x 1.5	65.0	20.5	22

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

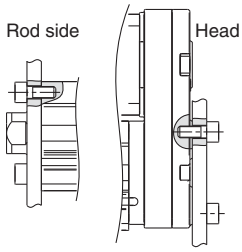
∗ Rod end nut is an accessary.

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



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

Body fixed/Rod side/Head side tapped style

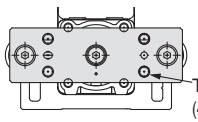


Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY16	M4 x 0.7	1.5	7
LEY25	M5 x 0.8	3.0	8
LEY32/40	M6 x 1.0	5.2	10

∗ Except the LEY□D.

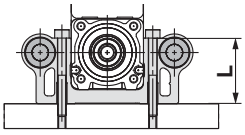
<Series LEYG>

Workpiece fixed/Plate tapped style



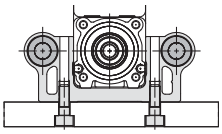
Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	11
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	12

Body fixed/Top mounting



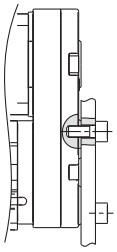
Model	Bolt	Max. tightening torque [N·m]	Length: L [mm]
LEYG16$^{M}_{L}$	M4 x 0.7	1.5	32
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	40.5
LEYG$^{32M}_{40L}$	M5 x 0.8	3.0	50.5

Body fixed/Bottom mounting



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M5 x 0.8	3.0	10
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	12
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	12

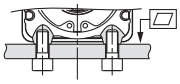
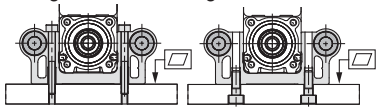
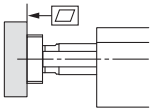
Body fixed/Head side tapped style



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M4 x 0.7	1.5	7
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	10

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

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

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

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

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

Electric Actuators/ Specific Product Precautions 4

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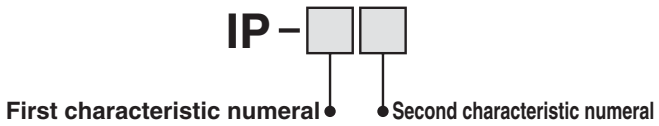
Enclosure



• First Characteristics:
Degrees of protection against solid foreign objects

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

• Second Characteristics:
Degrees of protection against water

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

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

Maintenance

⚠Warning

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

• Maintenance frequency
Perform maintenance according to the table below.

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

∗ Select whichever comes sooner.

• Items for visual appearance check
1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

• Belt replacement (Guide)
It is recommended that the belt be replaced after being in service for 2 years, or before reaching the following distance.

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

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

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

a. Tooth shape canvas is worn out
Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt
Belt corner becomes round and frayed thread sticks out.

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

d. Vertical line of belt teeth
Flaw which is made when the belt runs on the flange.

e. Rubber back of the belt is softened and sticky

f. Crack on the back of the belt

Controller/Driver

Step Data Input Type ····· **Page 49**

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Gateway Unit ····· **Page 62**

Series LEC-G

Programless Type ····· **Page 65**

Step Motor (Servo/24 VDC)

Series LECP1

Pulse Input Type ····· **Page 72**

Step Motor (Servo/24 VDC)

Series LECPA

Controller (Step Data Input Type)

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Series ***LECP6*** *Series* ***LECA6***

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEY series and the controller LEC series. The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the LECA6 series (servo motor controller), EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 58 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

LE C P 6 P □ □ – □

Controller

Compatible motor

P	Step motor (Servo/24 VDC)
A	Servo motor (24 VDC)

Number of step data (Points)

6	64

Parallel I/O type

N	NPN
P	PNP

I/O cable length [m]

—	Without cable
1	1.5
3	3
5	5

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEY16B-100" for the LEY16B-100B-R16N1.

Option

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

∗ When controller equipped type is selected when ordering the LE series, you do not need to order this controller.

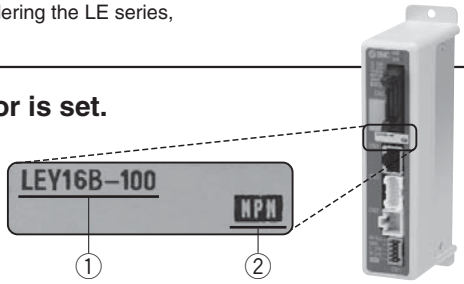
The controller is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

① Check the actuator label for model number. This matches the controller.

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

Specifications

Basic Specifications

Item	LECP6	LECA6
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10% Current consumption: 3 A (Peak 5 A) Note 2) [Including motor drive power, control power, stop, lock release]	Power voltage: 24 VDC ±10% Current consumption: 3 A (Peak 10 A) Note 2) [Including motor drive power, control power, stop, lock release]
Parallel input	11 inputs (Photo-coupler isolation)	
Parallel output	13 outputs (Photo-coupler isolation)	
Compatible encoder	Incremental A/B phase (800 pulse/rotation)	Incremental A/B/Z phase (800 pulse/rotation)
Serial communication	RS485 (Modbus protocol compliant)	
Memory	EEPROM	
LED indicator	LED (Green/Red) one of each	
Lock control	Forced-lock release terminal Note 3)	
Cable length [m]	I/O cable: 5 or less, Actuator cable: 20 or less	
Cooling system	Natural air cooling	
Operating temperature range [°C]	0 to 40 (No freezing)	
Operating humidity range [%RH]	90 or less (No condensation)	
Storage temperature range [°C]	−10 to 60 (No freezing)	
Storage humidity range [%RH]	90 or less (No condensation)	
Insulation resistance [MΩ]	Between the housing and SG terminal 50 (500 VDC)	
Weight [g]	150 (Screw mounting) 170 (DIN rail mounting)	

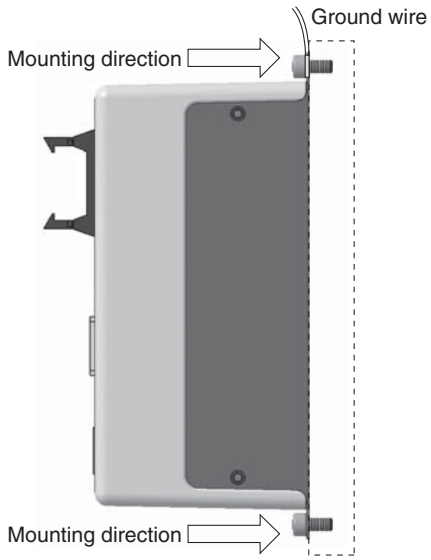
Note 1) Do not use the power supply of "inrush current prevention type" for the controller power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.

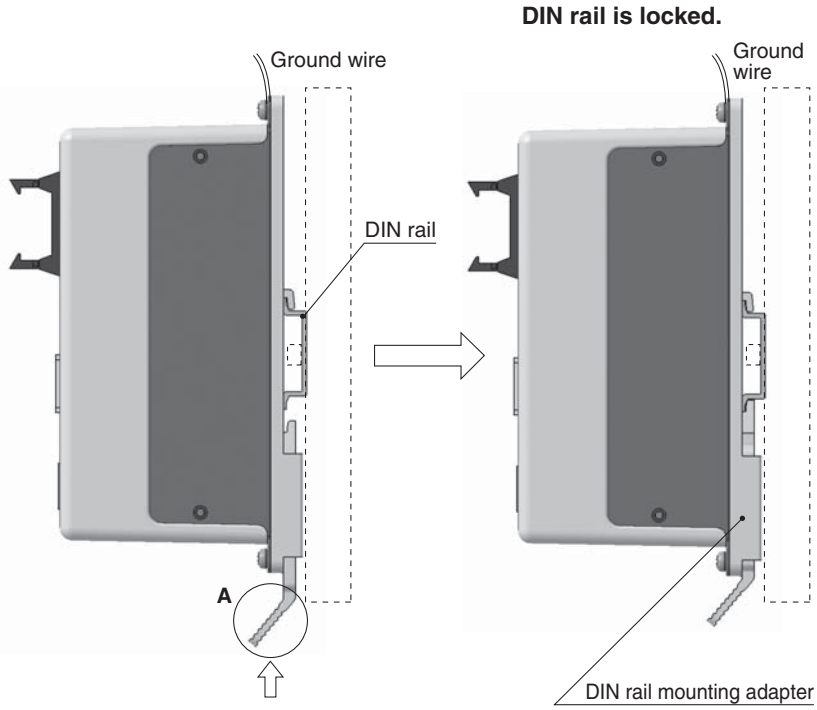
Note 3) Applicable to non-magnetizing lock.

How to Mount

a) Screw mounting (LEC□6□□-□)
(Installation with two M4 screws)



b) DIN rail mounting (LEC□6□□D-□)
(Installation with the DIN rail)

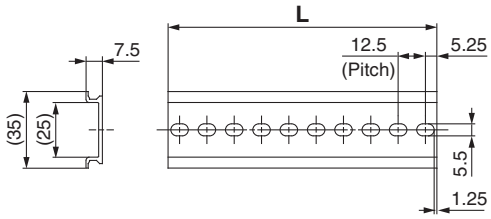


Hook the controller on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

Note) When size 25 or more of the LEY series are used, the space between the controllers should be 10 mm or more.

DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions on page 52 for the mounting dimensions.



L Dimension [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

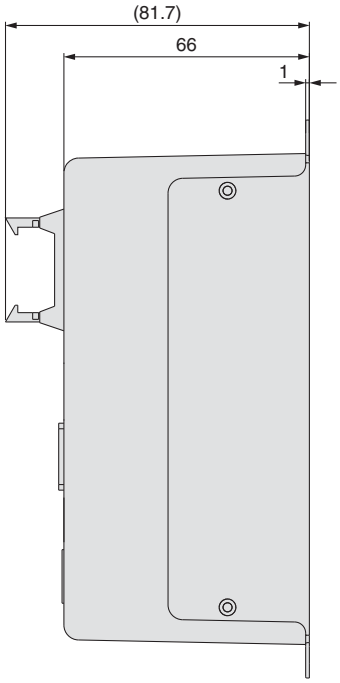
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

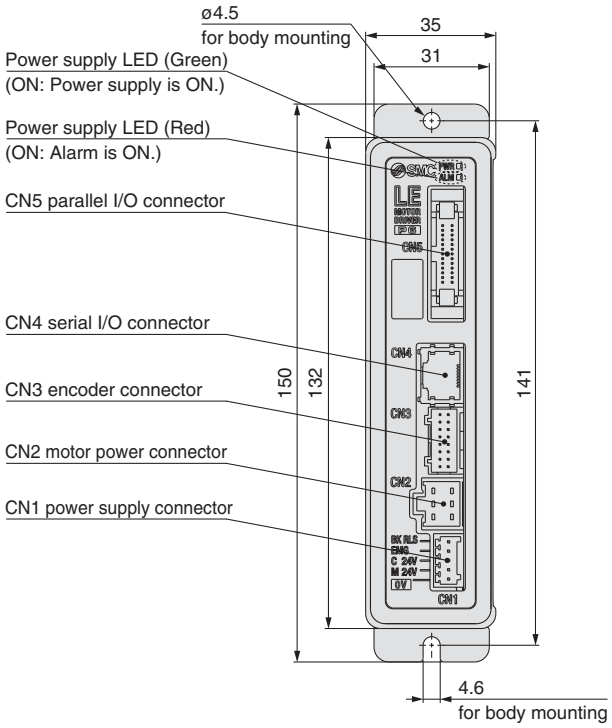
DIN rail mounting adapter
LEC-D0 (with 2 mounting screws)

This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type controller afterwards.

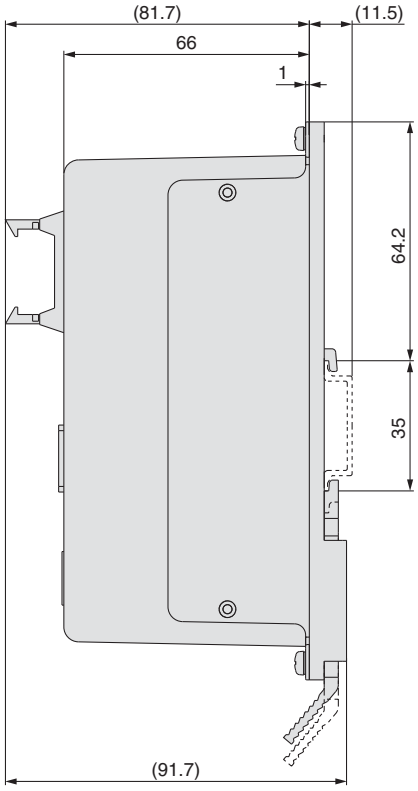
Dimensions

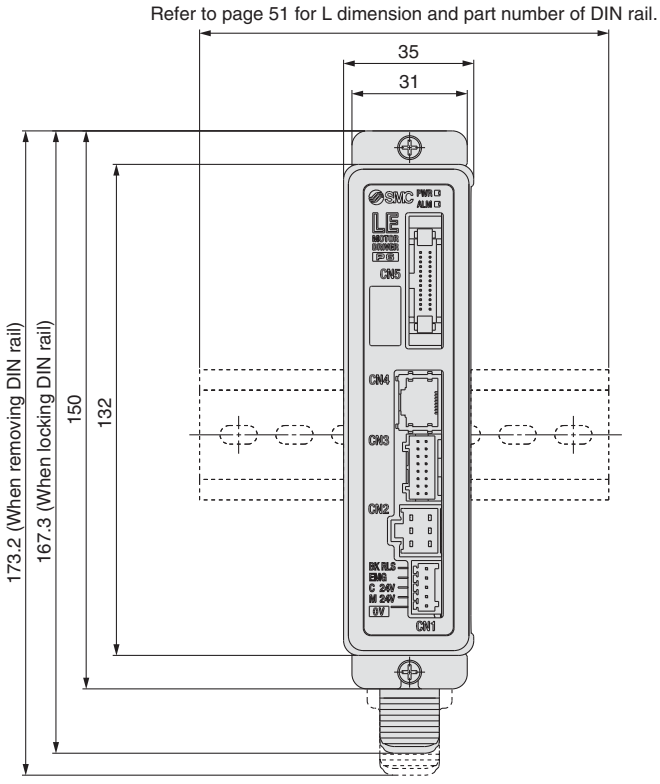
a) Screw mounting (LEC□6□□-□)





b) DIN rail mounting (LEC□6□□D-□)





Wiring Example 1

Power Supply Connector: CN1

∗ Power supply plug is an accessory.

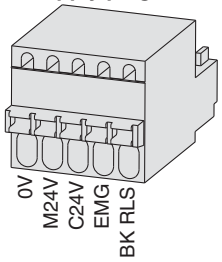
CN1 Power Supply Connector Terminal for LECP6 (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/BK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) supplied to the controller
C24V	Control power supply (+)	Control power supply (+) supplied to the controller
EMG	Stop (+)	Input (+) for releasing the stop
BK RLS	Lock release (+)	Input (+) for releasing the lock

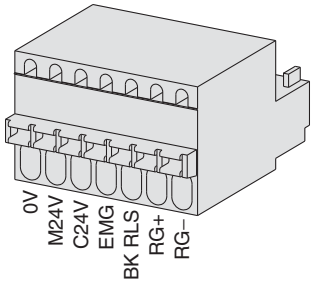
CN1 Power Supply Connector Terminal for LECA6 (PHOENIX CONTACT FK-MC0.5/7-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/BK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) supplied to the controller
C24V	Control power supply (+)	Control power supply (+) supplied to the controller
EMG	Stop (+)	Input (+) for releasing the stop
BK RLS	Lock release (+)	Input (+) for releasing the lock
RG+	Regenerative output 1	Regenerative output terminals for external connection (Not necessary to connect them in the combination with the LE series standard specifications.)
RG–	Regenerative output 2	

Power supply plug for LECP6



Power supply plug for LECA6



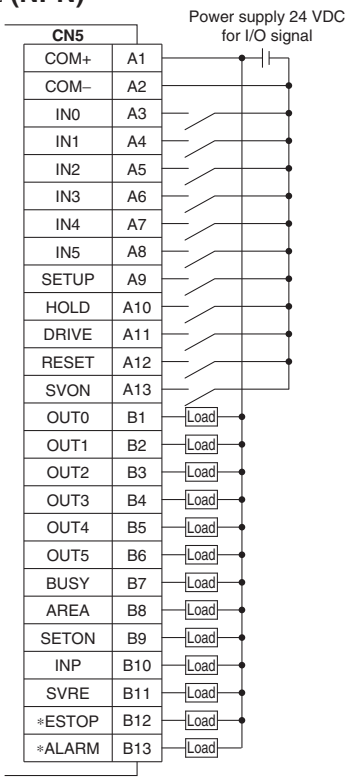
Wiring Example 2

Parallel I/O Connector: CN5

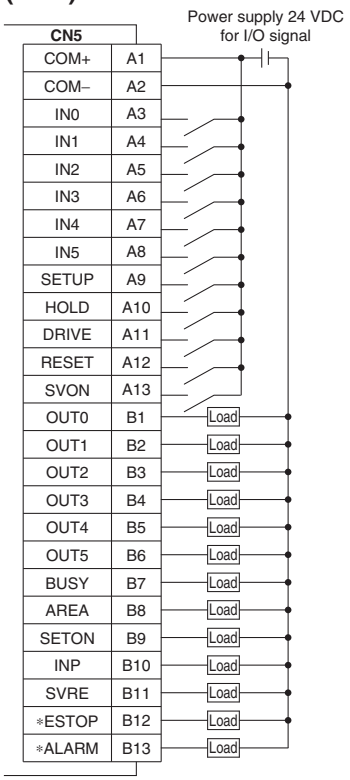
∗ When you connect a PLC, etc., to the CN5 parallel I/O connector, please use the I/O cable (LEC-CN5-□).
∗ The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

Wiring diagram

LEC□6N□□-□ (NPN)



LEC□6P□□-□ (PNP)



Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM–	Connects the power supply 0 V for input/output signal
IN0 to IN5	Step data specified Bit No. (Input is instructed in the combination of IN0 to 5.)
SETUP	Instruction to return to origin
HOLD	Operation is temporarily stopped
DRIVE	Instruction to drive
RESET	Alarm reset and operation interruption
SVON	Servo ON instruction

Output Signal

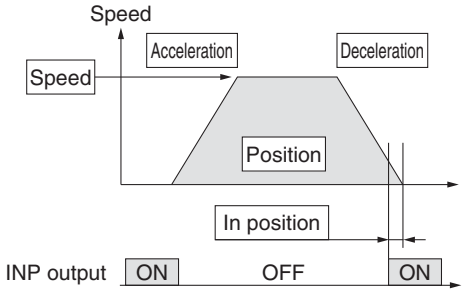
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or pushing is completed.)
SVRE	Outputs when servo is on
∗ESTOP Note)	Not output when EMG stop is instructed
∗ALARM Note)	Not output when alarm is generated

Note) Signal of negative-logic circuit (N.C.)

Step Data Setting

1. Step data setting for positioning

In this setting, the actuator moves toward and stops at the target position.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



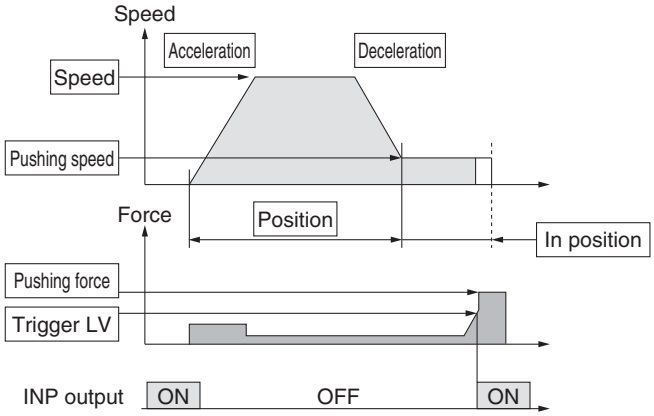
◎: Need to be set.
○: Need to be adjusted as required.
—: Setting is not required.

Step Data (Positioning)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the target position
◎	Position	Target position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Set 0. (If values 1 to 100 are set, the operation will be changed to the pushing operation.)
—	Trigger LV	Setting is not required.
—	Pushing speed	Setting is not required.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
○	In position	Condition that turns on the INP output signal. When the actuator enters the range of [in position], the INP output signal turns on. (It is unnecessary to change this from the initial value.) When it is necessary to output the arrival signal before the operation is completed, make the value larger.

2. Step data setting for pushing

The actuator moves toward the pushing start position, and when it reaches that position, it starts pushing with the set force or less.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



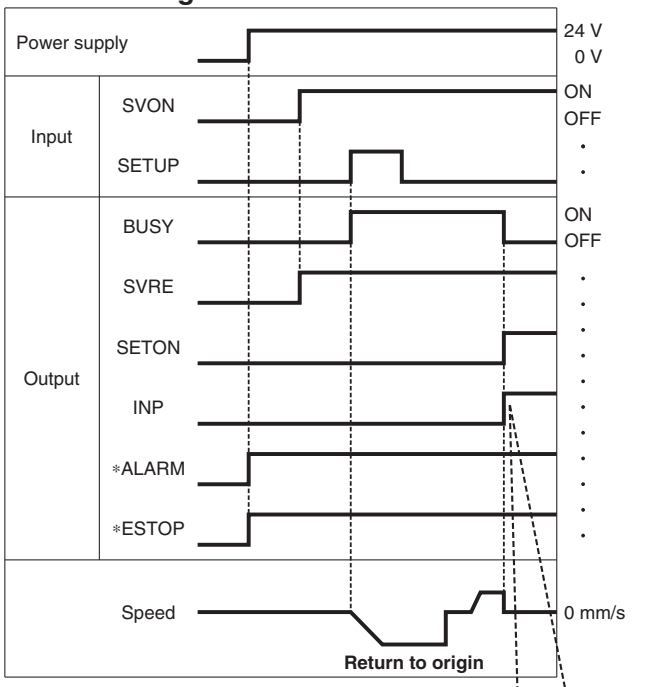
◎: Need to be set.
○: Need to be adjusted as required.

Step Data (Pushing)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the pushing start position
◎	Position	Pushing start position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Pushing force ratio is defined. The setting range differs depending on the electric actuator type. Refer to the operation manual for the electric actuator.
◎	Trigger LV	Condition that turns on the INP output signal. The INP output signal turns on when the generated force exceeds the value. Trigger level should be the pushing force or less.
○	Pushing speed	Pushing speed during pushing. When the speed is set fast, the electric actuator and workpieces might be damaged due to the impact when they hit the end, so this set value should be smaller. Refer to the operation manual for the electric actuator.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
◎	In position	Transfer distance during pushing. If the transferred distance exceeds the setting, it stops even if it is not pushing. If the transfer distance is exceeded, the INP output signal will not turn on.

Signal Timing

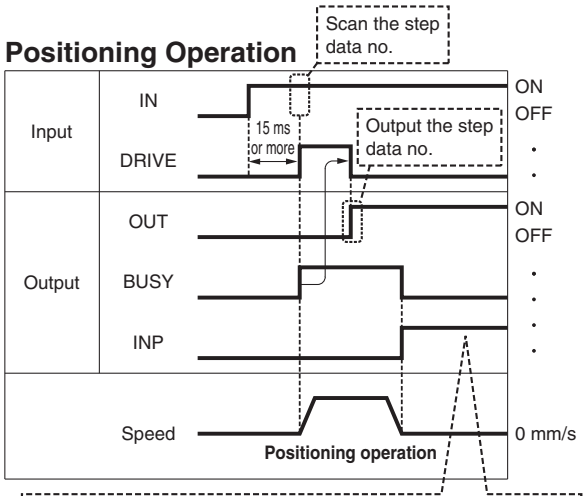
Return to Origin



If the actuator is within the "in position" range of the basic parameter, INP will turn ON, but if not, it will remain OFF.

∗ "∗ALARM" and "∗ESTOP" are expressed as negative-logic circuit.

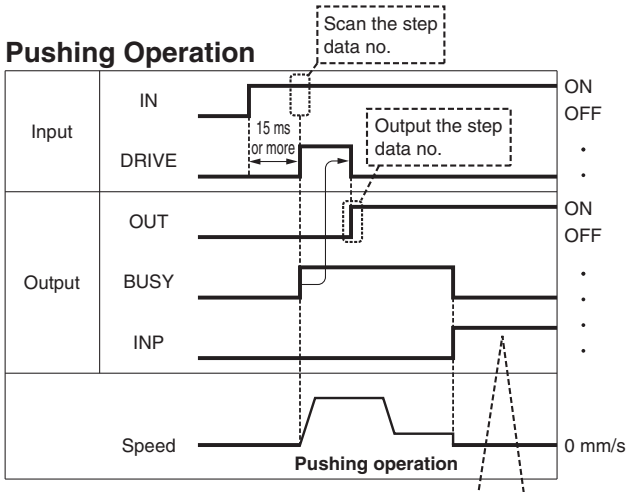
Positioning Operation



If the actuator is within the "in position" range of the step data, INP will turn ON, but if not, it will remain OFF.

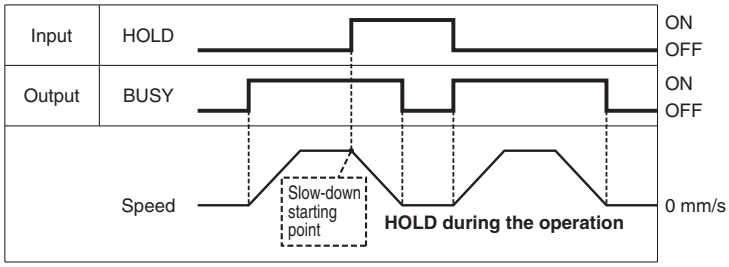
∗ "OUT" is output when "DRIVE" is changed from ON to OFF. (When power supply is applied, "DRIVE" or "RESET" is turned ON or "∗ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation



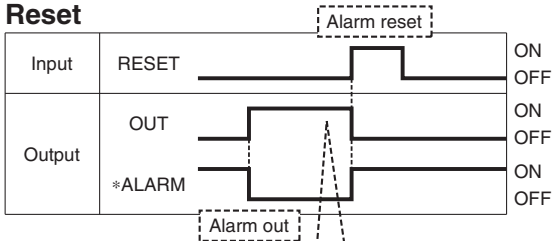
If the current pushing force exceeds the "trigger LV" value of the step data, INP signal will turn ON.

HOLD



∗ When the actuator is in the positioning range in the pushing operation, it does not stop even if HOLD signal is input.

Reset



It is possible to identify the alarm group by the combination of OUT signals when the alarm is generated.

∗ "∗ALARM" is expressed as negative-logic circuit.

Options: Actuator Cable

[Robotic cable for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – □

Cable length (L)[m]

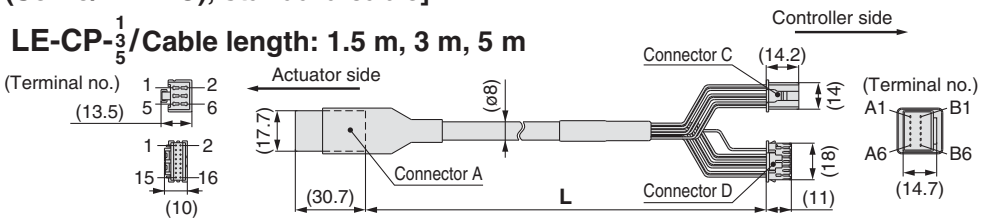
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

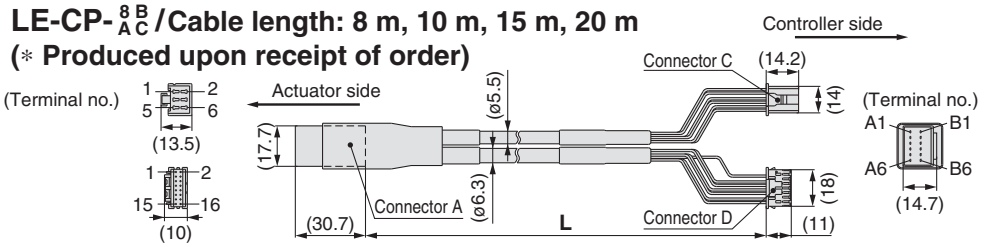
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\begin{smallmatrix}1\\3\\5\end{smallmatrix}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\begin{smallmatrix}8\\A\\C\end{smallmatrix}\begin{smallmatrix}B\\\\\end{smallmatrix}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.
A	B-1
$\overline{A}$	A-1
B	B-2
$\overline{B}$	A-2
COM-A/COM	B-3
COM-B/–	A-3
Vcc	B-4
GND	A-4
$\overline{A}$	B-5
A	A-5
$\overline{B}$	B-6
B	A-6

Shield

Cable colour	Connector C terminal no.
Brown	2
Red	1
Orange	6
Yellow	5
Green	3
Blue	4

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

[Robotic cable with lock and sensor for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – B – □

Cable length (L)[m]

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

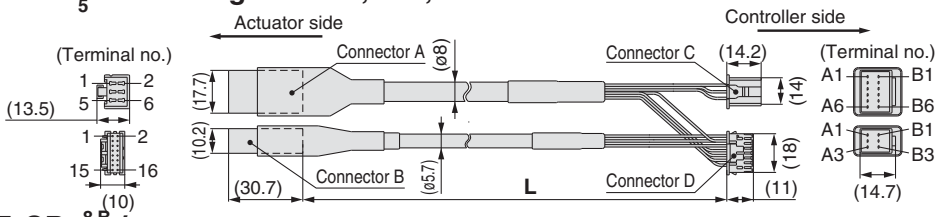
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

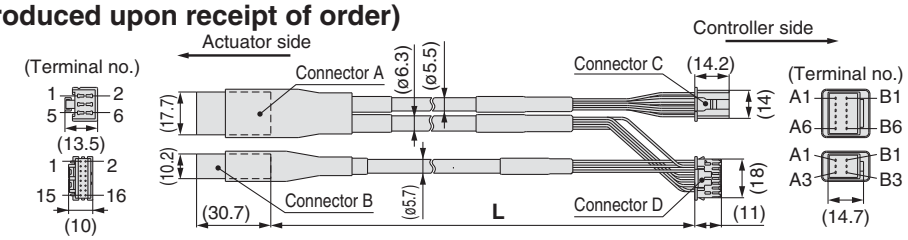
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\begin{smallmatrix}1\\3\\5\end{smallmatrix}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\begin{smallmatrix}8\\A\\C\end{smallmatrix}\begin{smallmatrix}B\\\\\end{smallmatrix}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.
A	B-1
$\overline{A}$	A-1
B	B-2
$\overline{B}$	A-2
COM-A/COM	B-3
COM-B/–	A-3
Vcc	B-4
GND	A-4
$\overline{A}$	B-5
A	A-5
$\overline{B}$	B-6
B	A-6

Shield

Cable colour	Connector C terminal no.
Brown	2
Red	1
Orange	6
Yellow	5
Green	3
Blue	4

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

Circuit	Connector B terminal no.
Lock (+)	B-1
Lock (–)	A-1
Sensor (+) Note)	B-3
Sensor (–) Note)	A-3

Cable colour	
Red	4
Black	5
Brown	1
Blue	2

Note) Not used for the LE series.

[Robotic cable for servo motor (24 VDC)]

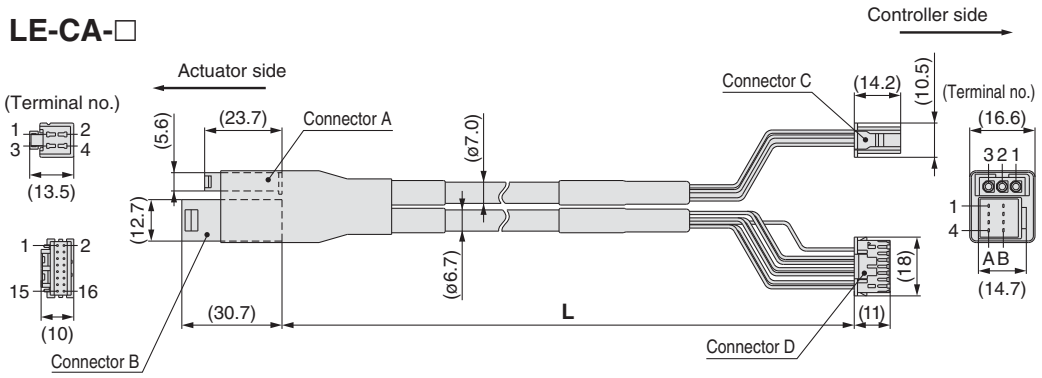
LE − CA − 1

Cable length (L)[m]

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

* Produced upon receipt of order

LE-CA-□



Circuit	Connector A terminal no.	Cable colour	Connector C terminal no.
U	1	Red	1
V	2	White	2
W	3	Black	3

Circuit	Connector B terminal no.	Cable colour	Connector D terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\overline{A}$	B-2	Red	7
A	A-2	Black	6
$\overline{B}$	B-3	Orange	9
B	A-3	Black	8
$\overline{Z}$	B-4	Yellow	11
Z	A-4	Black	10
		—	3

Shield

Connection of shield material

[Robotic cable with lock and sensor for servo motor (24 VDC)]

LE − CA − 1 − B

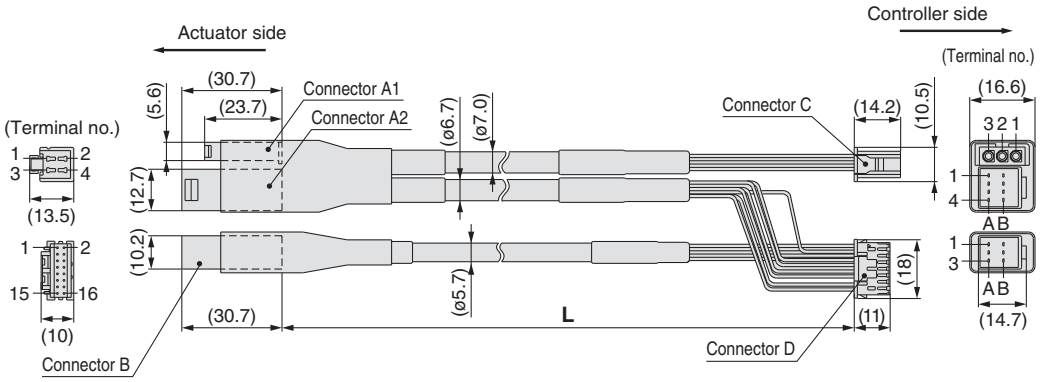
Cable length (L)[m]

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

* Produced upon receipt of order

With lock and sensor

LE-CA-□-B



Circuit	Connector A1 terminal no.	Cable colour	Connector C terminal no.
U	1	Red	1
V	2	White	2
W	3	Black	3

Circuit	Connector A2 terminal no.	Cable colour	Connector D terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\overline{A}$	B-2	Red	7
A	A-2	Black	6
$\overline{B}$	B-3	Orange	9
B	A-3	Black	8
$\overline{Z}$	B-4	Yellow	11
Z	A-4	Black	10
		—	3

Shield

Connection of shield material

Circuit	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Black	2

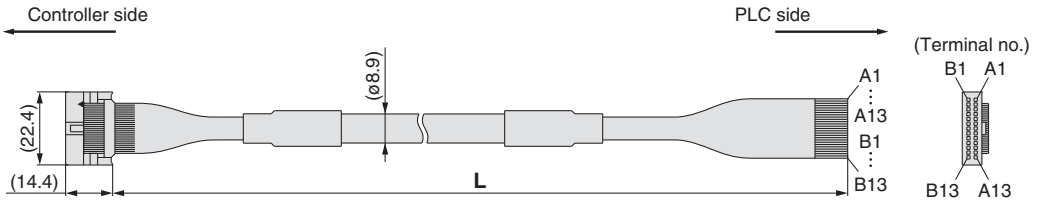
Note) Not used for the LE series.

Option: I/O Cable

LEC − CN5 − 1

Cable length (L) [m]

1	1.5
3	3
5	5



∗ Conductor size: AWG28

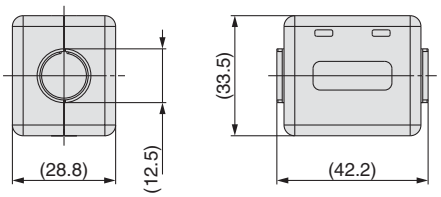
Connector pin No.	Insulation colour	Dot mark	Dot colour
A1	Light brown	■	Black
A2	Light brown	■	Red
A3	Yellow	■	Black
A4	Yellow	■	Red
A5	Light green	■	Black
A6	Light green	■	Red
A7	Grey	■	Black
A8	Grey	■	Red
A9	White	■	Black
A10	White	■	Red
A11	Light brown	■ ■	Black
A12	Light brown	■ ■	Red
A13	Yellow	■ ■	Black

Connector pin No.	Insulation colour	Dot mark	Dot colour
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Grey	■ ■	Black
B5	Grey	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green	■ ■ ■	Black
B13	Light green	■ ■ ■	Red
—	Shield		

Option: Noise Filter Set for Servo Motor (24 VDC)

LEC − NFA

Contents of the set: 2 noise filters (Produced by WURTH ELEKTRONIK: 74271222)

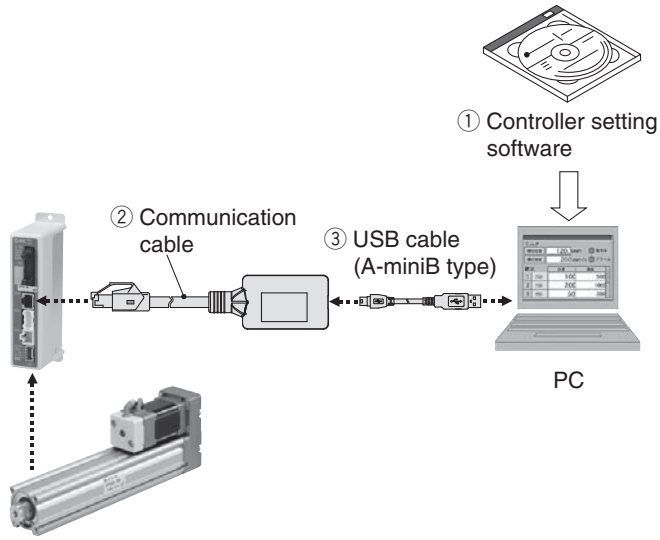


∗ Refer to the LECA6 series Operation Manual for installation.

Series LEC

Windows®XP, Windows®7 compatible

Controller Setting Kit/LEC-W2



How to Order

LEC – W2

Controller setting kit
(Japanese and English are available.)

Contents

① **Controller setting software (CD-ROM)**
② **Communication cable**
③ **USB cable**
(Cable between the PC and the conversion unit)

Compatible Controllers/Driver

Step motor controller (Servo/24 VDC)	**Series LECP6**
Servo motor controller (24 VDC)	**Series LECA6**
Step motor driver (Pulse input type)	**Series LECPA**

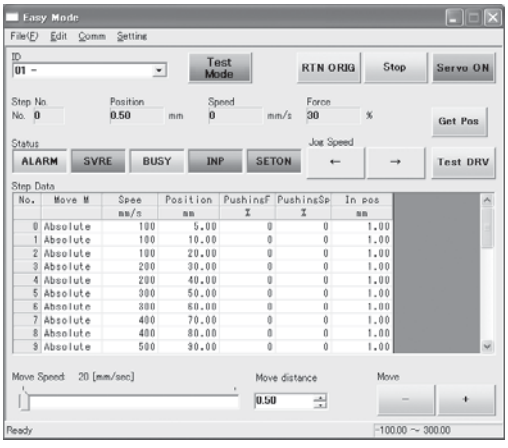
Hardware Requirements

OS	IBM PC/AT compatible machine running Windows®XP (32-bit), Windows®7 (32-bit and 64-bit).
Communication interface	USB 1.1 or USB 2.0 ports
Display	XGA (1024 x 768) or more

∗ Windows® and Windows®7 are registered trademarks of Microsoft Corporation in the United States.
∗ Refer to SMC website for version update information, http://www.smcworld.com

Screen Example

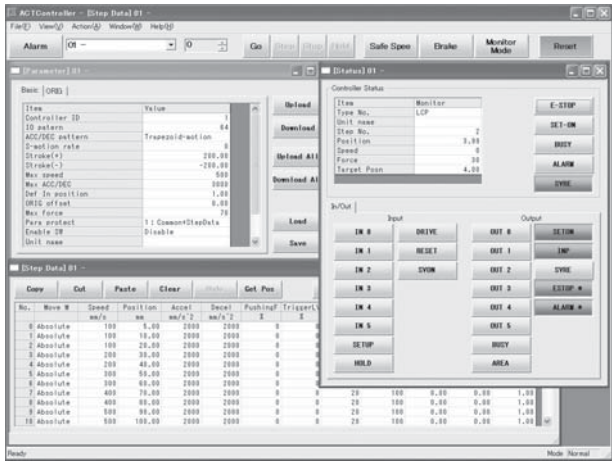
Easy mode screen example



Easy operation and simple setting

- Allowing to set and display actuator step data such as position, speed, force, etc.
- Setting of step data and testing of the drive can be performed on the same page.
- Can be used to jog and move at a constant rate.

Normal mode screen example



Detailed setting

- Step data can be set in detail.
- Signals and terminal status can be monitored.
- Parameters can be set.
- JOG and constant rate movement, return to origin, test operation and testing of forced output can be performed.

Series LEC
Teaching Box/LEC-T1

Standard functions
- **Chinese character display**
- **Stop switch is provided.**

Option
- **Enable switch is provided.**

How to Order

LEC-T1-3EG

Teaching box

Cable length [m]

3	3

Initial language

J	Japanese
E	English

∗ The displayed language can be changed to English or Japanese.

Stop switch

G	Equipped with stop switch

Enable switch

—	None
S	Equipped with enable switch

∗ Interlock switch for jog and test function

Specifications

Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

[CE-compliant products]
The EMC compliance of the teaching box was tested with the LECP6 series step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Easy Mode

Function	Details
Step data	• Setting of step data
Jog	• Jog operation • Return to origin
Test	• 1 step operation • Return to origin
Monitor	• Display of axis and step data no. • Display of two items selected from Position, Speed, Force.
ALM	• Active alarm display • Alarm reset
TB setting	• Reconnection of axis (Ver. 1.∗∗) • Displayed language setting (Ver. 2.∗∗) • Setting of easy/normal mode • Setting step data and selection of items from easy mode monitor

Menu Operations Flowchart

Menu
Data
Monitor
Jog
Test
ALM
TB setting

Data
Step data no.
Setting of two items selected below
Ver. 1.∗∗:
Position, Speed, Force, Acceleration, Deceleration
Ver. 2.∗∗:
Position, Speed, Pushing force, Acceleration, Deceleration, Movement MOD, Trigger LV, Pushing speed, Moving force, Area 1, Area 2, In position

Monitor
Display of step no.
Display of two items selected below
(Position, Speed, Force)

Jog
Return to origin
Jog operation

Test
1 step operation

ALM
Active alarm display
Alarm reset

TB setting
Reconnection of axis (Ver. 1.∗∗)
Japanese/English (Ver. 2.∗∗)
Easy/Normal
Set item

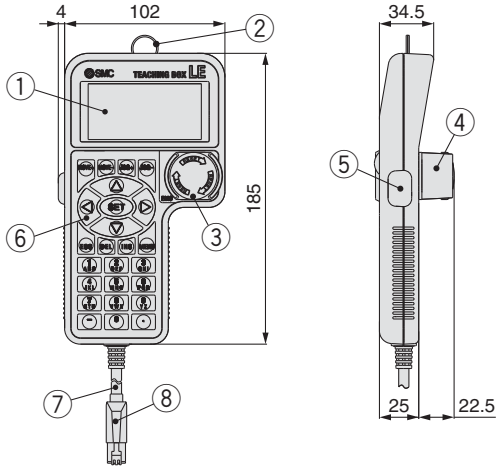
Normal Mode

Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output)
Monitor	• Drive monitor • Output signal monitor • Input signal monitor • Output terminal monitor • Input terminal monitor
ALM	• Active alarm display (Alarm reset) • Alarm log record display
File	• Data saving Save the step data and parameters of the controller which is being used for communication (it is possible to save four files, with one set of step data and parameters defined as one file). • Load to controller Loads the data which is saved in the teaching box to the controller which is being used for communication. • Delete the saved data. • File protection (Ver. 2.**)
TB setting	• Display setting (Easy/Normal mode) • Language setting (Japanese/English) • Backlight setting • LCD contrast setting • Beep sound setting • Max. connection axis • Distance unit (mm/inch)
Reconnect	• Reconnection of axis

Menu Operations Flowchart

- **Menu**: Step data / Parameter / Monitor / Test / ALM / File / TB setting / Reconnect
- **Step data**: Step data no. / Movement MOD / Speed / Position / Acceleration / Deceleration / Pushing force / Trigger LV / Pushing speed / Moving force / Area 1, 2 / In position
- **Parameter**: Basic / ORIG
  - **Basic setting**
  - **ORIG setting**
- **Monitor**: Drive / Output signal / Input signal / Output terminal / Input terminal
  - **DRV monitor**: Position, Speed, Torque / Step no. / Last step no.
  - **Output signal monitor**
  - **Input signal monitor**
  - **Output terminal monitor**
  - **Input terminal monitor**
- **Test**: JOG/MOVE / Return to ORIG / Test drive / Forced output
- **ALM**: Status / ALM Log record
  - **Status**: Active alarm display / Alarm reset
  - **ALM Log record display**: Log entry display
- **File**: Data saving / Load to controller / File deletion / File protection (Ver. 2.**)
- **TB setting**: Easy/Normal / Language / Backlight / LCD contrast / Beep / Max. connection axis / Password / Distance unit
- **Reconnect**

Dimensions



No.	Description	Function
1	**LCD**	A screen of liquid crystal display (with backlight)
2	**Ring**	A ring for hanging the teaching box
3	**Stop switch**	When switch is pushed in, the switch locks and stops. The lock is released when it is turned to the right.
4	**Stop switch guard**	A guard for the stop switch
5	**Enable switch (Option)**	Prevents unintentional operation (unexpected operation) of the jog test function. Other functions such as data change are not covered.
6	**Key switch**	Switch for each input
7	**Cable**	Length: 3 meters
8	**Connector**	A connector connected to CN4 of the controller

Gateway Unit
Series LEC-G

How to Order

⚠Caution

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

[UL-compliant products]
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Gateway unit **LEC-G MJ2 □**

Applicable Fieldbus protocols

MJ2	CC-Link Ver. 2.0
DN1	DeviceNet™
PR1	PROFIBUS DP
EN1	EtherNet/IP™

Mounting

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

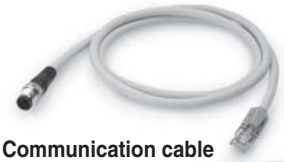
Cable **LEC-CG 1 - L**

Cable type

1	Communication cable
2	Cable between branches

Cable length

K	0.3 m
L	0.5 m
1	1 m



Communication cable

Cable between branches

Branch connector **LEC-CGD**

Branch connector

Terminating resistor **LEC-CGR**

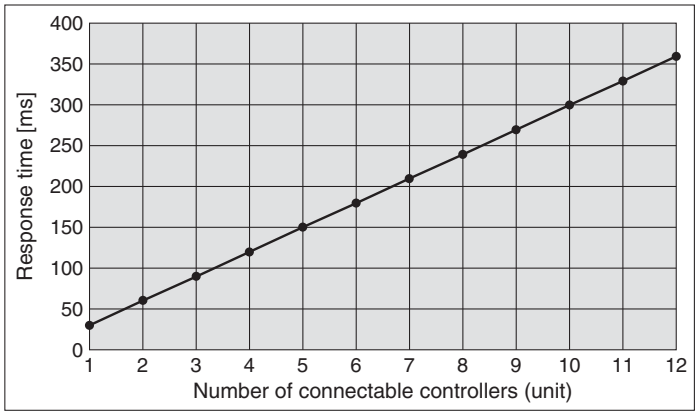
Specifications

Model			LEC-GMJ2□	LEC-GDN1□	LEC-GPR1□	LEC-GEN1□
Communication specifications	Applicable system	Fieldbus	CC-Link	DeviceNet™	PROFIBUS DP	EtherNet/IP™
		Version Note 1)	Ver. 2.0	Release 2.0	V1	Release 1.0
	Communication speed [bps]		156 k/625 k/2.5 M /5 M/10 M	125 k/250 k/500 k	9.6 k/19.2 k/45.45 k/ 93.75 k/187.5 k/500 k/ 1.5 M/3 M/6 M/12 M	10 M/100 M
	Configuration file Note 2)		—	EDS file	GSD file	EDS file
	I/O occupation area		4 stations occupied (8 times setting) Input 896 points 108 words Output 896 points 108 words	Input 200 bytes (186 used) Output 200 bytes (182 used)	Input 57 words Output 57 words	Input 256 bytes Output 256 bytes
	Power supply for communication	Power supply voltage [V] Note 6)	—	11 to 25 VDC	—	—
		Internal current consumption [mA]	—	100	—	—
	Communication connector specifications		Connector (Accessory)	Connector (Accessory)	D-sub	RJ45
	Terminating resistor		Not included	Not included	Not included	Not included
Power supply voltage [V] Note 6)			24 VDC ±10%			
Current consumption [mA]	Not connected to teaching box		200			
	Connected to teaching box		300			
EMG output terminal			30 VDC 1 A			
Controller specifications	Applicable controllers		Series LECP6, Series LECA6			
	Communication speed [bps] Note 3)		115.2 k/230.4 k			
	Max. number of connectable controllers Note 4)		12	8 Note 5)	5	12
Accessories			Power supply connector, communication connector		Power supply connector	
Operating temperature range [°C]			0 to 40 (No freezing)			
Operating humidity range [%RH]			90 or less (No condensation)			
Storage temperature range [°C]			−10 to 60 (No freezing)			
Storage humidity range [%RH]			90 or less (No condensation)			
Weight [g]			200 (Screw mounting), 220 (DIN rail mounting)			

Note 1) Please note that the version is subject to change.
Note 2) Each file can be downloaded from the SMC website, http://www.smcworld.com
Note 3) When using a teaching box (LEC-T1-□), set the communication speed to 115.2 kbps.
Note 4) A communication response time for 1 controller is approximately 30 ms.
Refer to "Communication Response Time Guideline" for response times when several controllers are connected.
Note 5) For step data input, up to 12 controllers connectable.
Note 6) When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Communication Response Time Guideline

Response time between gateway unit and controllers depends on the number of controllers connected to the gateway unit. For response time, refer to the graph below.

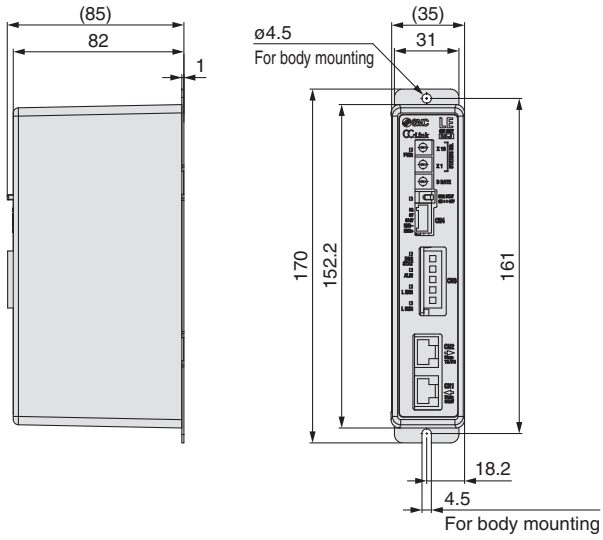


∗ This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

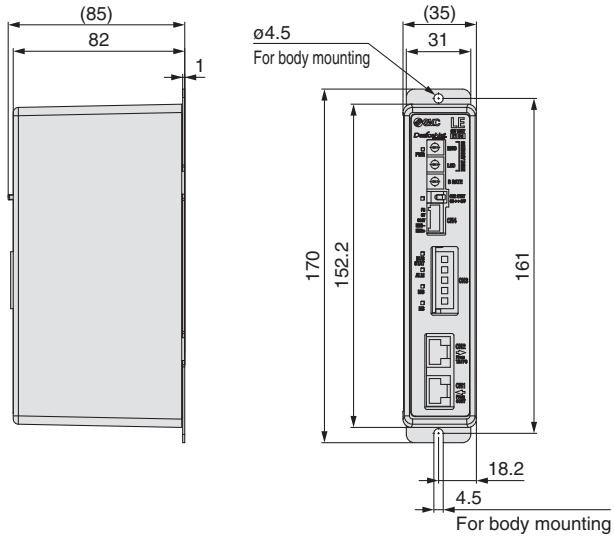
Dimensions

Screw mounting (LEC-G□□□)

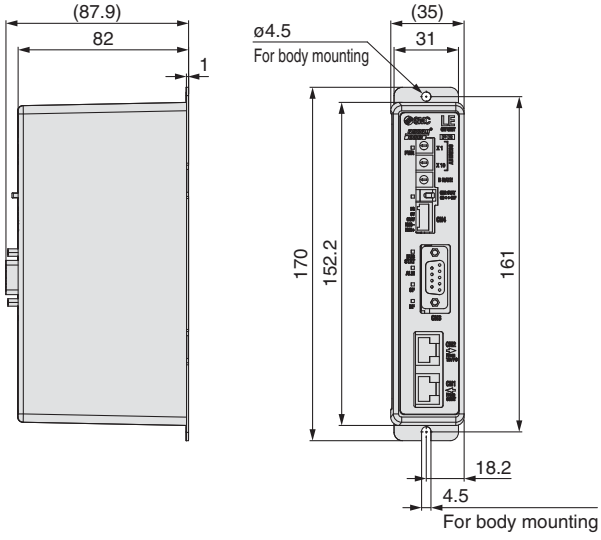
Applicable Fieldbus protocol: CC-Link Ver. 2.0



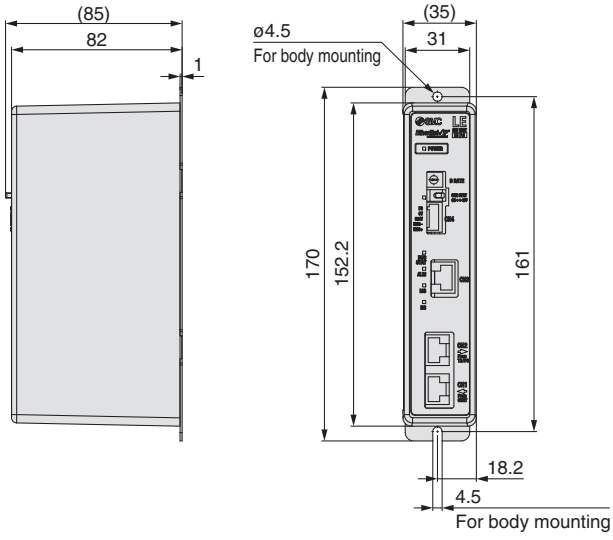
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

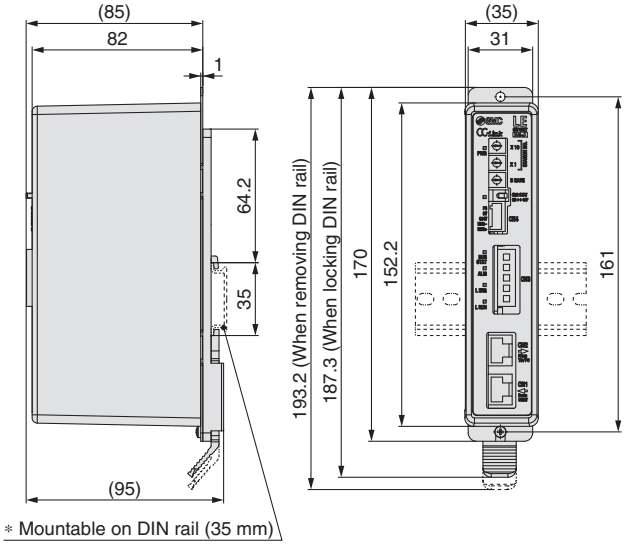


■**Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

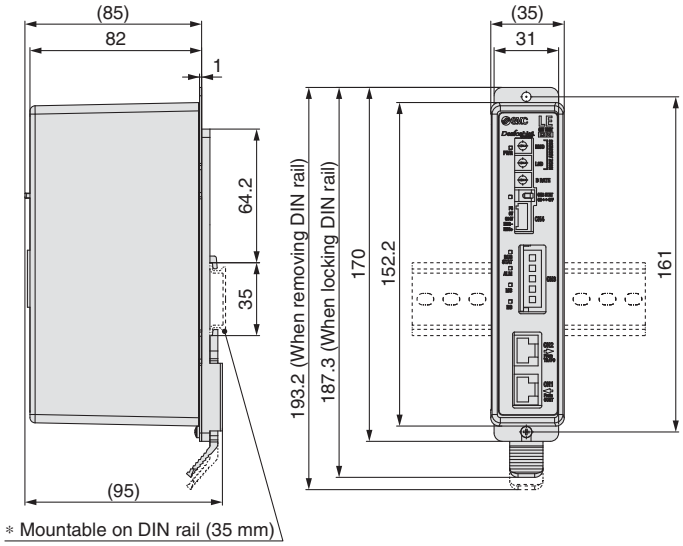
Dimensions

DIN rail mounting (LEC-G□□□D)

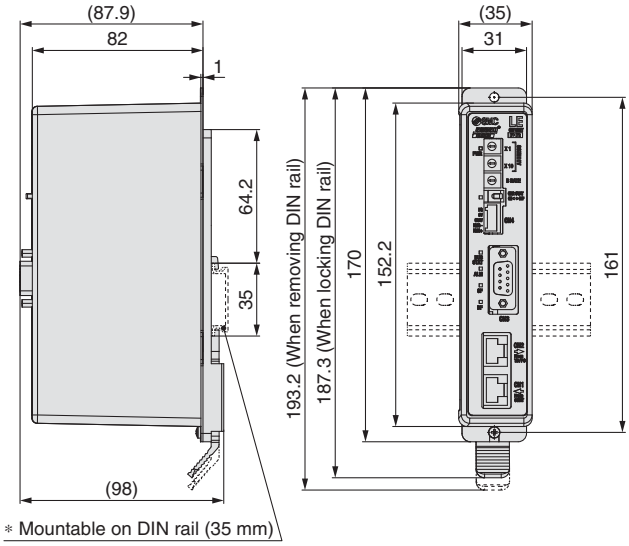
Applicable Fieldbus protocol: CC-Link Ver. 2.0



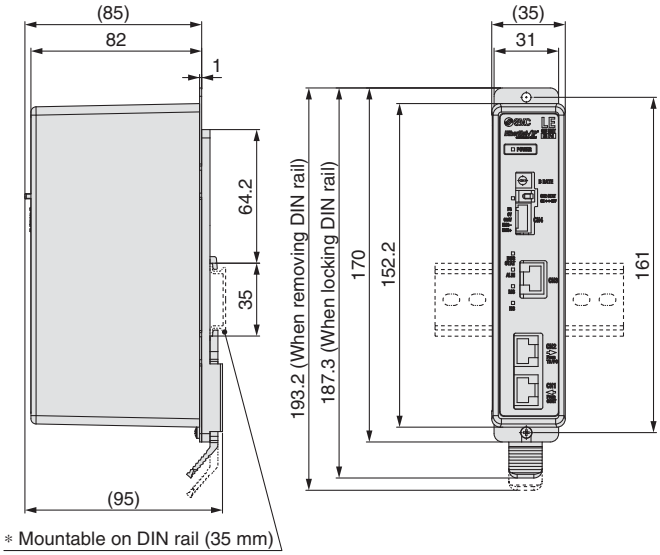
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP

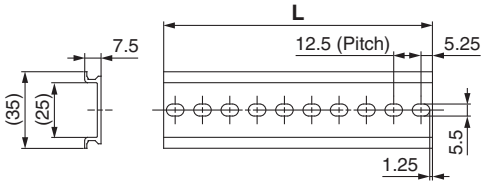


Applicable Fieldbus protocol: EtherNet/IP™



DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions above for the mounting dimensions.



L Dimension [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

Programless Controller
Series LECP1

How to Order

LE C P 1 P 1 [ ] – LEY16B-100

Controller

Compatible motor

P	Step motor (Servo/24 VDC)

Number of step data (Points)

1	14 (Programless)

Parallel I/O type

N	NPN
P	PNP

I/O cable length [m]

—	Without cable
1	1.5
3	3
5	5

Option

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEY16B-100" for the LEY16B-100B-R11N1.

∗ **When controller equipped type is selected when ordering the LE series, you do not need to order this controller.**

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator LEY series and the controller LEC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

The controller is sold as single unit after the compatible actuator is set.
Confirm that the combination of the controller and the actuator is correct.

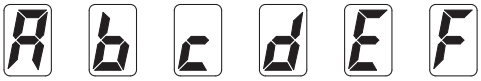
∗ Refer to the operation manual for using the products. Please download it via our website, http://www.smcworld.com

Specifications

Basic Specifications

Item	LECP1
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power supply voltage: 24 VDC ±10%, Max. current consumption: 3A (Peak 5A) Note 2) [Including the motor drive power, control power supply, stop, lock release]
Parallel input	6 inputs (Photo-coupler isolation)
Parallel output	6 outputs (Photo-coupler isolation)
Stop points	14 points (Position number 1 to 14(E))
Compatible encoder	Incremental A/B phase (800 pulse/rotation)
Memory	EEPROM
LED indicator	LED (Green/Red) one of each
7-segment LED display Note 3)	1 digit, 7-segment display (Red) Figures are expressed in hexadecimal ("10" to "15" in decimal number are expressed as "A" to "F")
Lock control	Forced-lock release terminal Note 4)
Cable length [m]	I/O cable: 5 or less, Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 40 (No freezing)
Operating humidity range [%RH]	90 or less (No condensation)
Storage temperature range [°C]	–10 to 60 (No freezing)
Storage humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between the housing and SG terminal: 50 (500 VDC)
Weight [g]	130 (Screw mounting), 150 (DIN rail mounting)

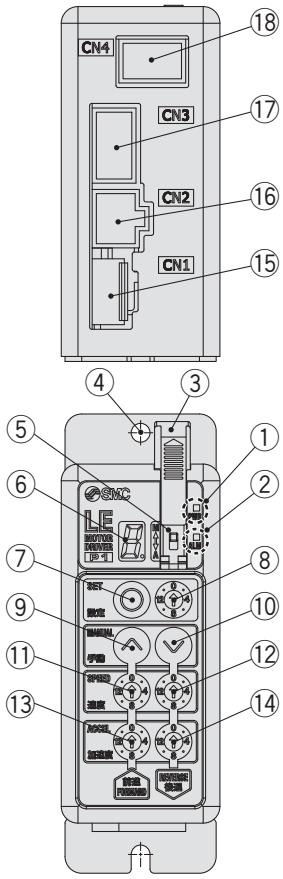
Note 1) Do not use the power supply of "inrush current prevention type" for the controller input power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the each actuator's operation manual etc. for details.
Note 3) "10" to "15" in decimal number are displayed as follows in the 7-segment LED.



Decimal display	10	11	12	13	14	15
Hexadecimal display	A	b	c	d	E	F

Note 4) Applicable to non-magnetizing lock.

Controller Details



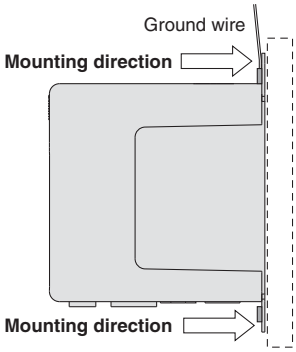
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing switch)
④	—	FG	Frame ground (Tighten the bolt with the nut when mounting the controller. Connect the ground wire.)
⑤	—	Mode switch	Switch the mode between manual and auto.
⑥	—	7-segment LED	Stop position, the value set by ⑧ and alarm information are displayed.
⑦	**SET**	Set button	Decide the settings or drive operation in Manual mode.
⑧	—	Position selecting switch	Assign the position to drive (1 to 14), and the origin position (15).
⑨	**MANUAL**	Manual forward button	Perform forward jog and inching.
⑩		Manual reverse button	Perform reverse jog and inching.
⑪	**SPEED**	Forward speed switch	16 forward speeds are available.
⑫		Reverse speed switch	16 reverse speeds are available.
⑬	**ACCEL**	Forward acceleration switch	16 forward acceleration steps are available.
⑭		Reverse acceleration switch	16 reverse acceleration steps are available.
⑮	**CN1**	Power supply connector	Connect the power supply cable.
⑯	**CN2**	Motor connector	Connect the motor connector.
⑰	**CN3**	Encoder connector	Connect the encoder connector.
⑱	**CN4**	I/O connector	Connect I/O cable.

How to Mount

Controller mounting shown below.

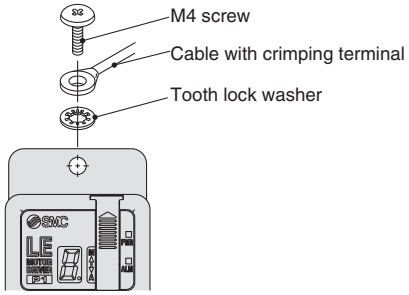
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

Tighten the bolt with the nut when mounting the ground wire as shown below.



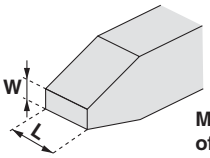
Controller

Note) When size 25 or more of the LEY series are used, the space between the controllers should be 10 mm or more.

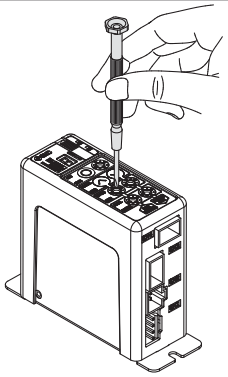
⚠Caution

- M4 screws, cable with crimping terminal and tooth lock washer are not included. Be sure to carry out grounding earth in order to ensure the noise tolerance.
- Use a watchmaker's screwdriver of the size shown below when changing position switch ⑧ and the set value of the speed/acceleration switch ⑪ to ⑭.

Size
End width **L**: 2.0 to 2.4 [mm]
End thickness **W**: 0.5 to 0.6 [mm]

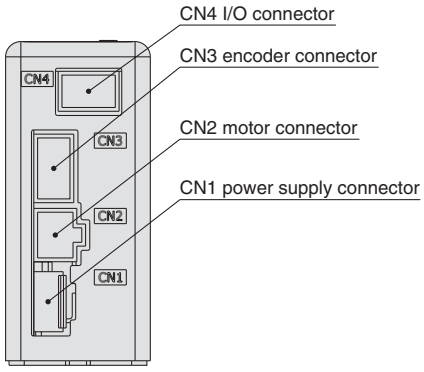


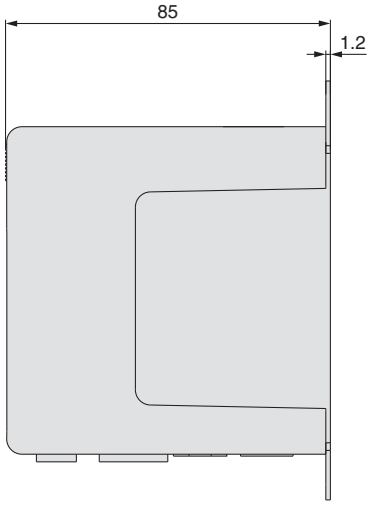
Magnified view of the end of the screwdriver

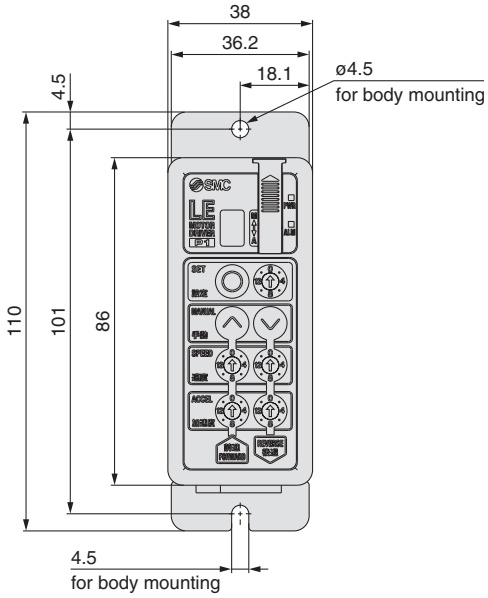


Dimensions

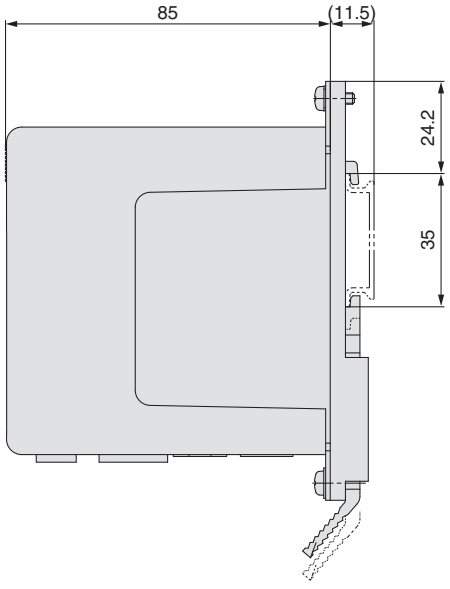
Screw mounting (LEC□1□□-□)

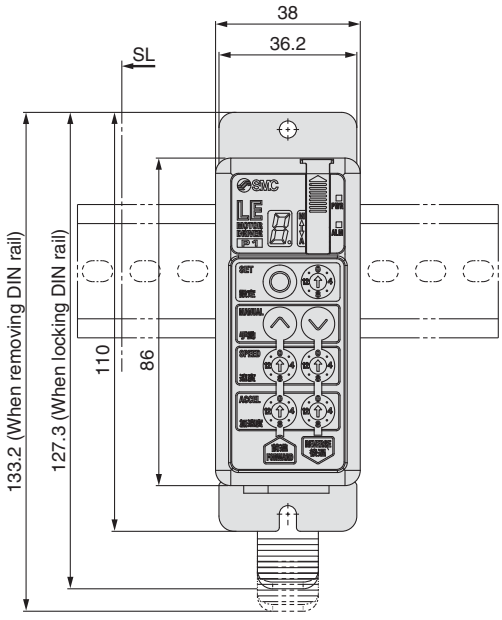






DIN rail mounting (LEC□1□□D-□)





Wiring Example 1

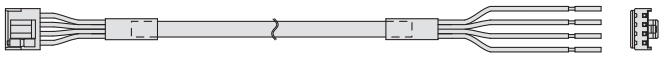
Power Supply Connector: CN1

* When you connect a CN1 power supply connector, please use the power supply cable (LEC-CK1-1).
* Power supply cable (LEC-CK1-1) is an accessory.

CN1 Power Supply Connector Terminal for LECP1

Terminal name	Cable colour	Function	Details
0V	Blue	Common supply (–)	M24V terminal/C24V terminal/BK RLS terminal are common (–).
M24V	White	Motor power supply (+)	Motor power supply (+) supplied to the controller
C24V	Brown	Control power supply (+)	Control power supply (+) supplied to the controller
BK RLS	Black	Lock release (+)	Input (+) for releasing the lock

Power supply cable for LECP1 (LEC-CK1-1)

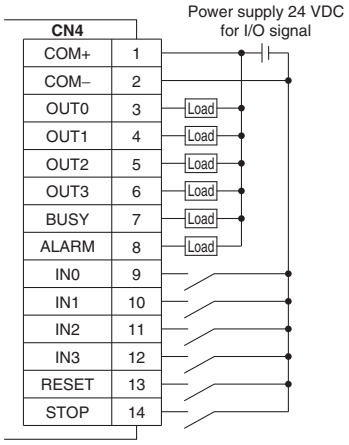


Wiring Example 2

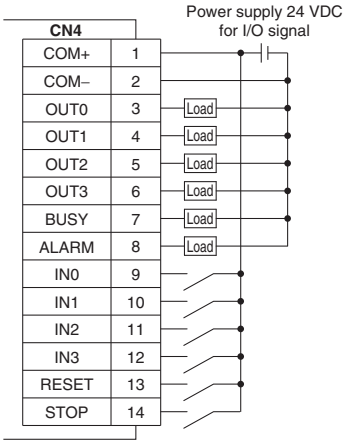
Parallel I/O Connector: CN4

* When you connect a PLC, etc., to the CN4 parallel I/O connector, please use the I/O cable (LEC-CK4-□).
* The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

■NPN



■PNP



Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM–	Connects the power supply 0 V for input/output signal
IN0 to IN3	• Instruction to drive (input as a combination of IN0 to IN3) • Instruction to return to origin (IN0 to IN3 all ON simultaneously) Example - (instruction to drive for position no. 5) IN3: OFF, IN2: ON, IN1: OFF, IN0: ON
RESET	Alarm reset and operation interruption During operation: deceleration stop from position at which signal is input (servo ON maintained) While alarm is active: alarm reset
STOP	Instruction to stop (after maximum deceleration stop, servo OFF)

Output Signal

Name	Details
OUT0 to OUT3	Turns on when the positioning or pushing is completed. (Output is instructed in the combination of OUT0 to 3.) Example - (operation complete for position no. 3) OUT3: OFF, OUT2: OFF, OUT1: ON, OUT0: ON
BUSY	Outputs when the actuator is moving
*ALARM Note)	Not output when alarm is active or servo OFF

Note) Signal of negative-logic circuit (N.C.)

Input Signal [IN0 - IN3] Position Number Chart ○: OFF ●: ON

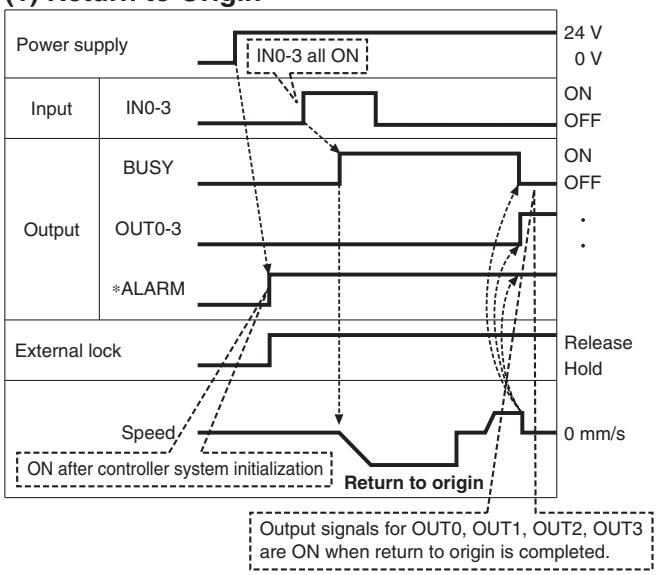
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Retun to origin	●	●	●	●

Output Signal [OUT0 - OUT3] Position Number Chart ○: OFF ●: ON

Position number	OUT3	OUT2	OUT1	OUT0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Retun to origin	●	●	●	●

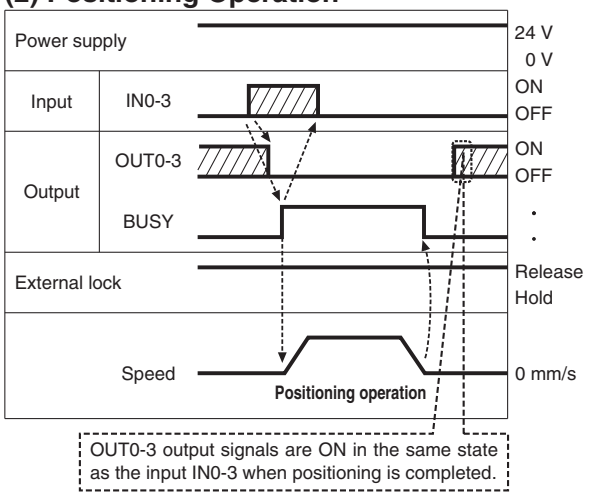
Signal Timing

(1) Return to Origin

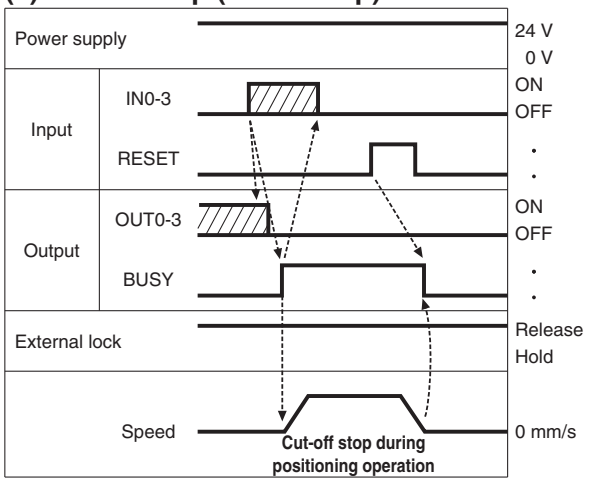


∗ "∗ALARM" is expressed as negative-logic circuit.

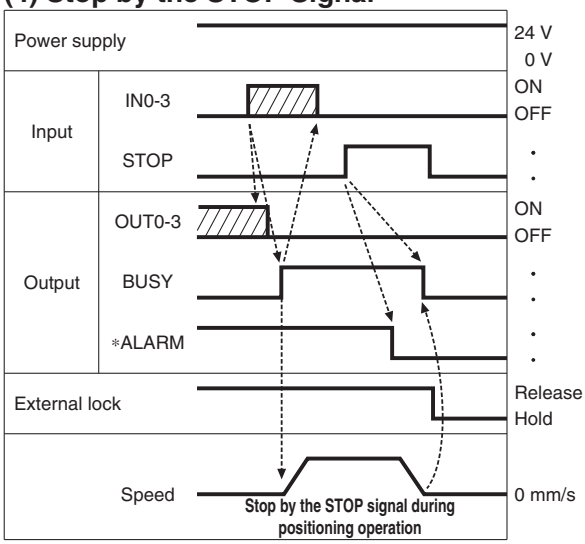
(2) Positioning Operation



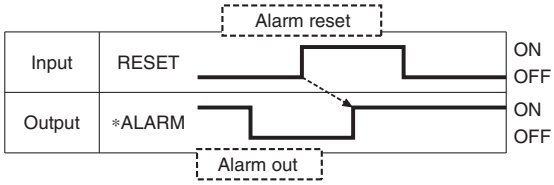
(3) Cut-off Stop (Reset Stop)



(4) Stop by the STOP Signal



(5) Alarm Reset



∗ "∗ALARM" is expressed as negative-logic circuit.

Options: Actuator Cable

[Robotic cable for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – □

Cable length (L)[m]

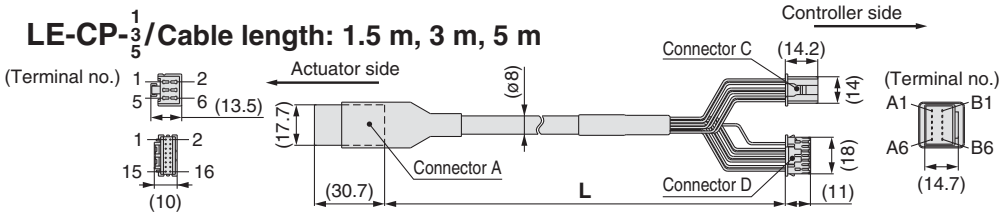
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

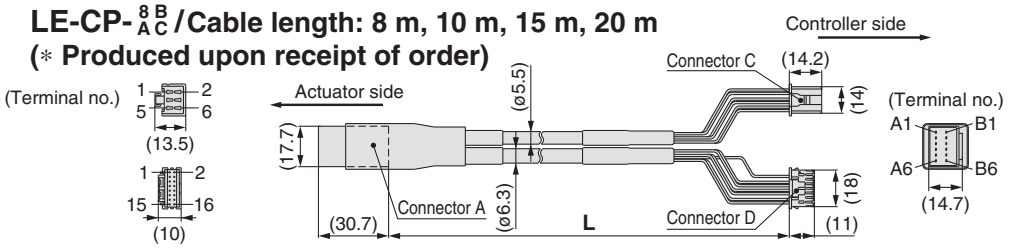
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$^{1}_{3}$$_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$^{8}_{A}$$^{B}_{C}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/–	A-3	Blue	4

Shield

Circuit	Connector A terminal no.	Cable colour	Connector D terminal no.
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

[Robotic cable with lock and sensor for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – B – □

Cable length (L)[m]

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

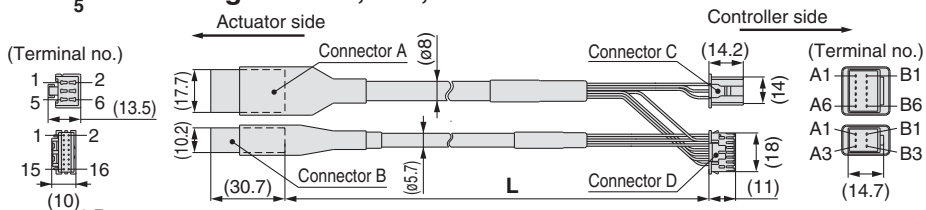
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

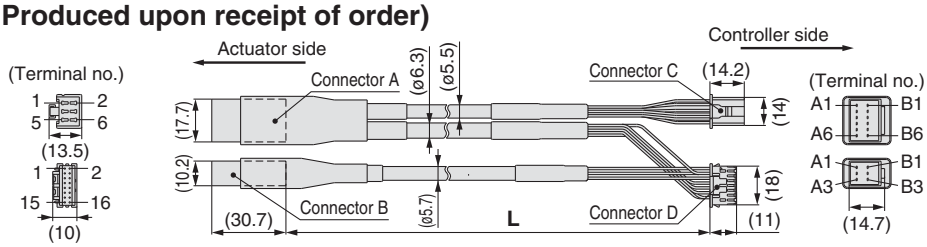
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$^{1}_{3}$$_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$^{8}_{A}$$^{B}_{C}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/–	A-3	Blue	4

Shield

Circuit	Connector A terminal no.	Cable colour	Connector D terminal no.
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

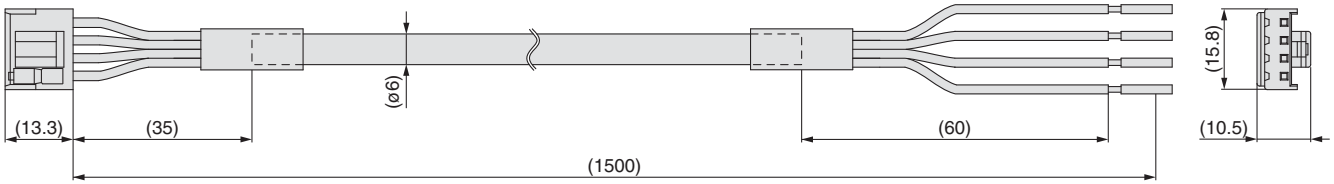
Circuit	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Blue	2

Note) Not used for the LE series.

Options

[Power supply cable]

LEC−CK1−1



Terminal name	Covered colour	Function
0V	Blue	Common supply (–)
M24V	White	Motor power supply (+)
C24V	Brown	Control power supply (+)
BK RLS	Black	Lock release (+)

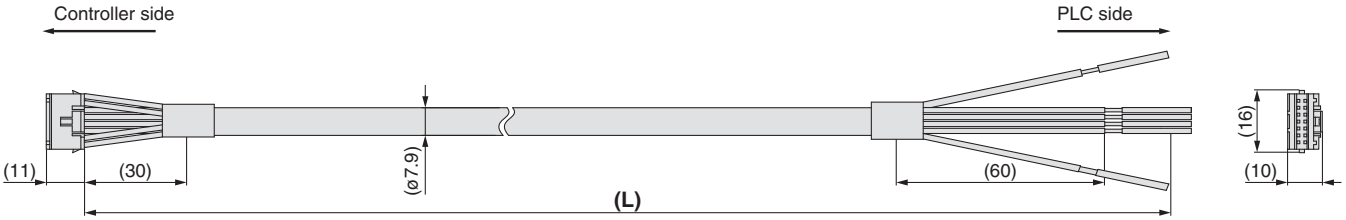
∗ Conductor size: AWG20

[I/O cable]

LEC−CK4−□

Cable length (L) [m]

1	1.5
3	3
5	5



Terminal no.	Insulation colour	Dot mark	Dot colour	Function
1	Light brown	■	Black	COM+
2	Light brown	■	Red	COM–
3	Yellow	■	Black	OUT0
4	Yellow	■	Red	OUT1
5	Light green	■	Black	OUT2
6	Light green	■	Red	OUT3
7	Grey	■	Black	BUSY
8	Grey	■	Red	ALARM
9	White	■	Black	IN0
10	White	■	Red	IN1
11	Light brown	■■	Black	IN2
12	Light brown	■■	Red	IN3
13	Yellow	■■	Black	RESET
14	Yellow	■■	Red	STOP

∗ Conductor size: AWG26

∗ Parallel I/O signal is valid in auto mode. While the test function operates at manual mode, only the output is valid.

Step Motor Driver
Series LECPA

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LE series and the LECPA series. The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the LECPA series (step motor driver), EMC compliance was tested by installing a noise filter set (LEC-NFA).
Refer to page 78 for the noise filter set. Refer to the LECPA Operation Manual for installation.

[UL-compliant products]

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

LECP AP 1 ☐ – LEY16B-100

Driver type

AN	Pulse input type (NPN)
AP	Pulse input type (PNP)

I/O cable length [m]

—	None
1	1.5
3	3*
5	5*

* Pulse input usable only with differential. Only 1.5 m cables usable with open collector.

Driver mounting

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEY16B-100" for the LEY16B-100B-R1AN1D.

* When controller equipped type is selected when ordering the LE series, you do not need to order this driver.

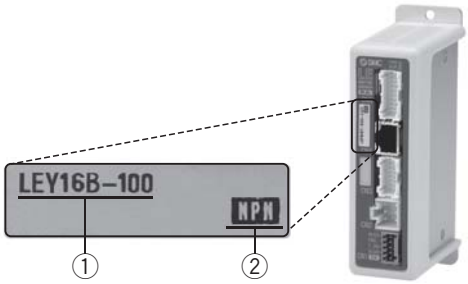
The driver is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

① Check the actuator label for model number. This matches the 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

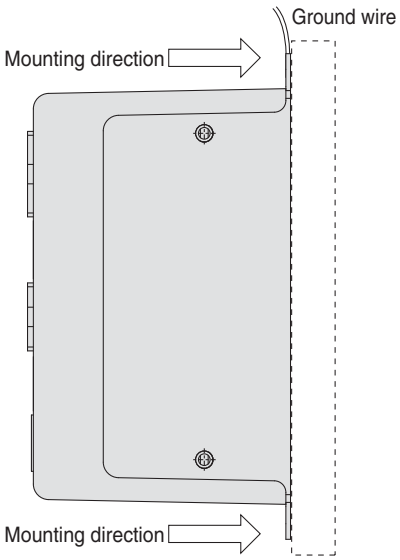
Specifications

Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10% Maximum current consumption: 3 A (Peak 5 A) Note 2) [Including motor drive power, control power, stop, lock release]
Parallel input	5 inputs (Except photo-coupler isolation, pulse input terminal, COM terminal)
Parallel output	9 outputs (Photo-coupler isolation)
Pulse signal input	Maximum frequency: 60 kpps (Open collector), 200 kpps (Differential) Input method: 1 pulse mode (Pulse input in direction), 2 pulse mode (Pulse input in differing directions)
Compatible encoder	Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Serial communication	RS485 (Modbus protocol compliant)
Memory	EEPROM
LED indicator	LED (Green/Red) one of each
Lock control	Forced-lock release terminal Note 3)
Cable length [m]	I/O cable: 1.5 or less (Open collector), 5 or less (Differential) Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 40 (No freezing)
Operating humidity range [%RH]	90 or less (No condensation)
Storage temperature range [°C]	–10 to 60 (No freezing)
Storage humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between the housing and SG terminal: 50 (500 VDC)
Weight [g]	120 (Screw mounting), 140 (DIN rail mounting)

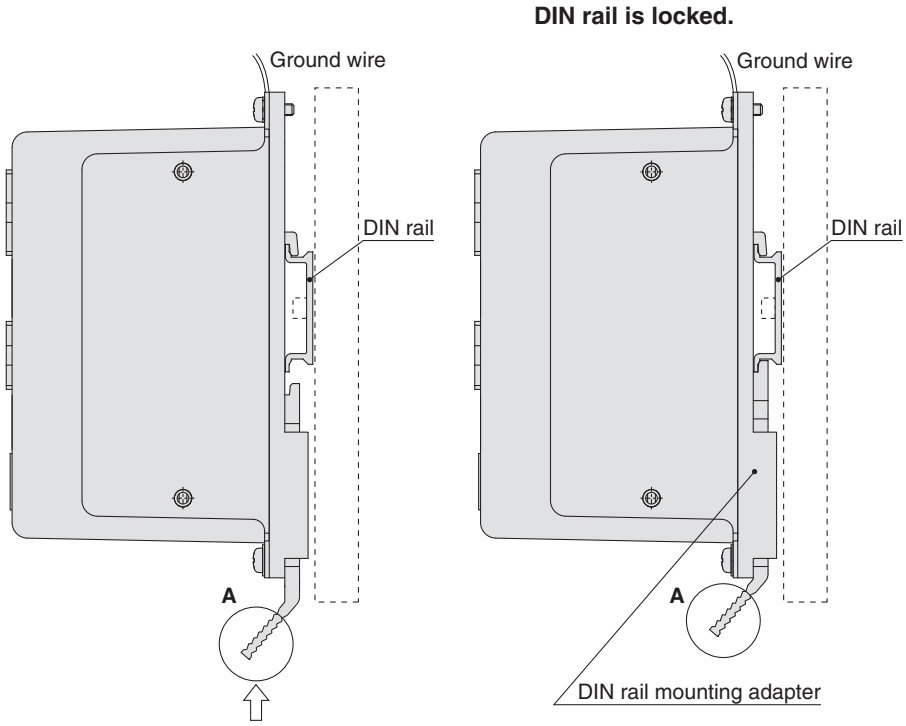
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.
Note 3) Applicable to non-magnetizing lock.

How to Mount

a) Screw mounting (LECPA□□-□)
(Installation with two M4 screws)



b) DIN rail mounting (LECPA□□D-□)
(Installation with the DIN rail)

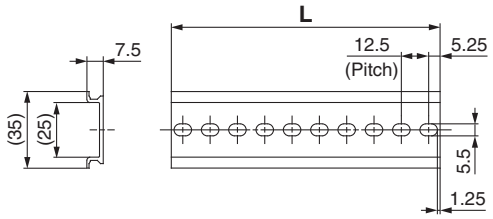


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

Note) The space between the drivers should be 10 mm or more.

DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions on page 74 for the mounting dimensions.



L Dimension [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

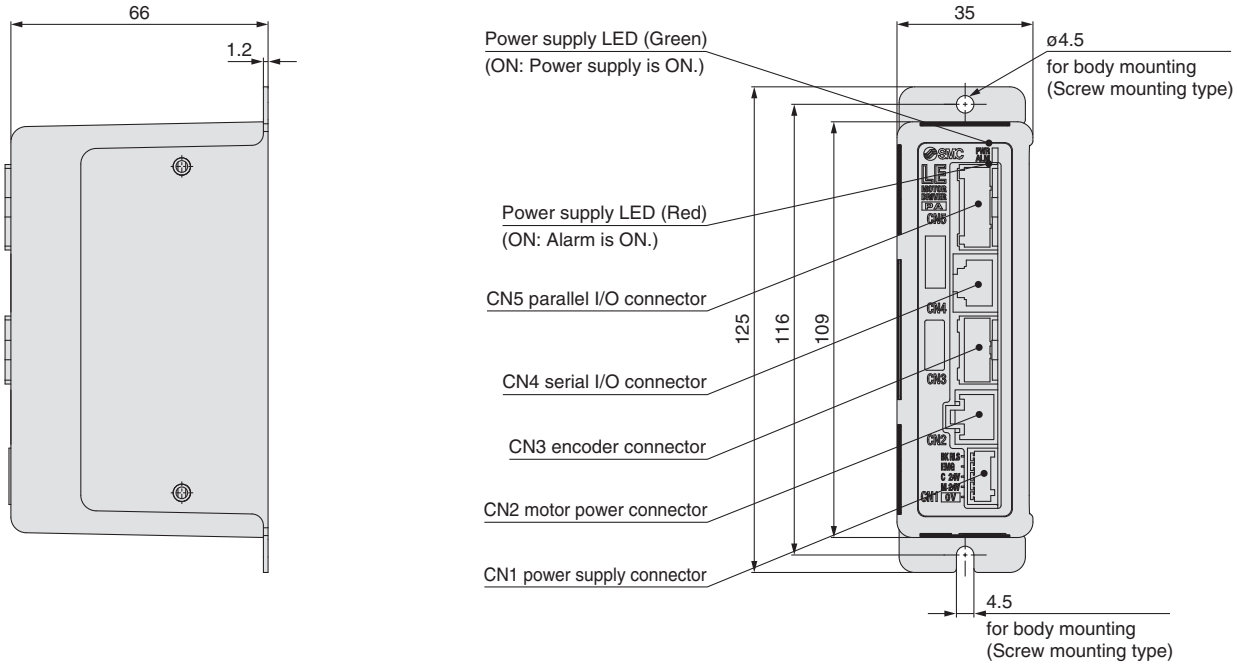
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

DIN rail mounting adapter
LEC-2-D0 (with 2 mounting screws)

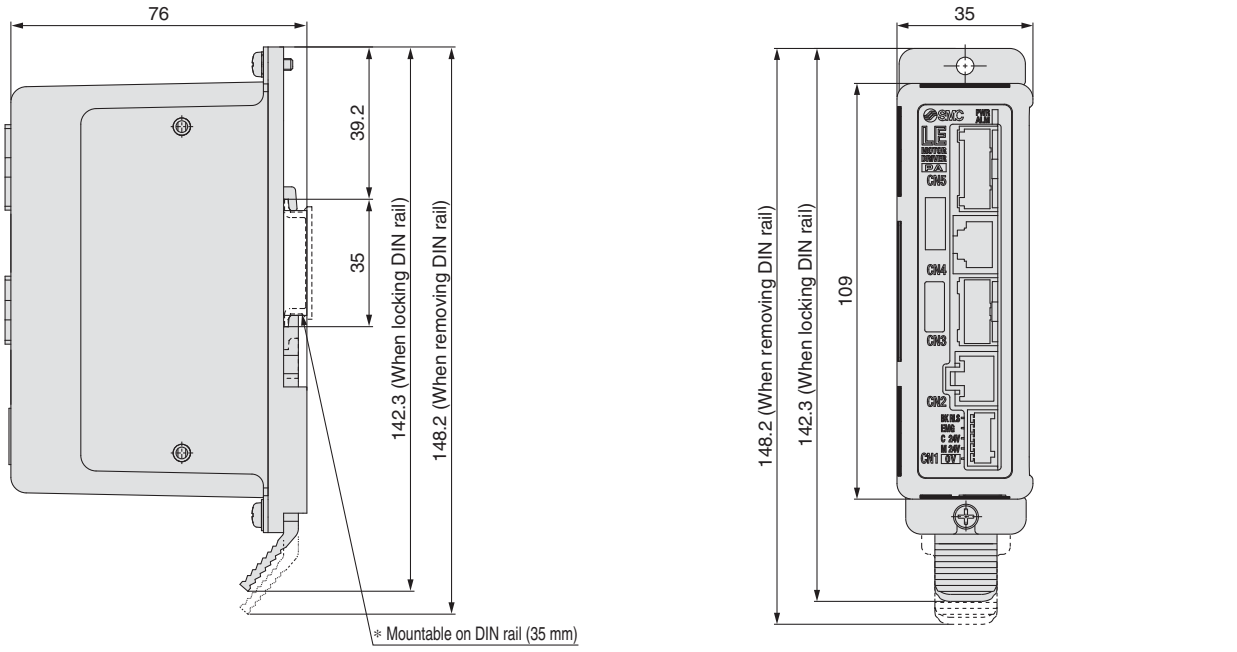
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterwards.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



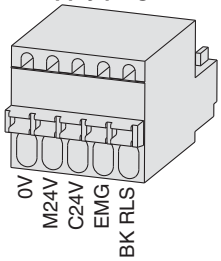
Wiring Example 1

Power Supply Connector: CN1 * Power supply plug is an accessory.

CN1 Power Supply Connector Terminal for LECPA (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/BK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) supplied to the driver
C24V	Control power supply (+)	Control power supply (+) supplied to the driver
EMG	Stop (+)	Input (+) for releasing the stop
BK RLS	Lock release (+)	Input (+) for releasing the lock

Power supply plug for LECPA



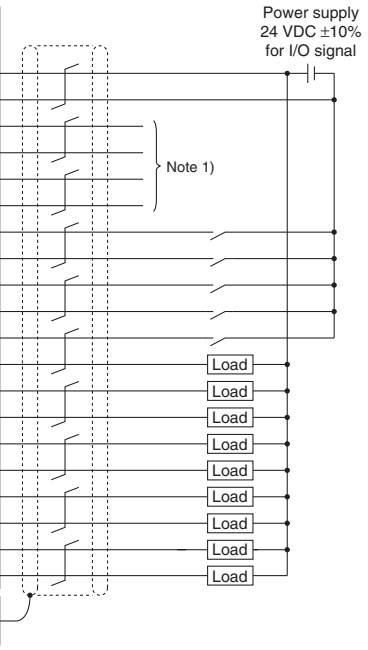
Wiring Example 2

Parallel I/O Connector: CN5

* When you connect a PLC, etc., to the CN5 parallel I/O connector, please use the I/O cable (LEC-CL5-□).
* The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

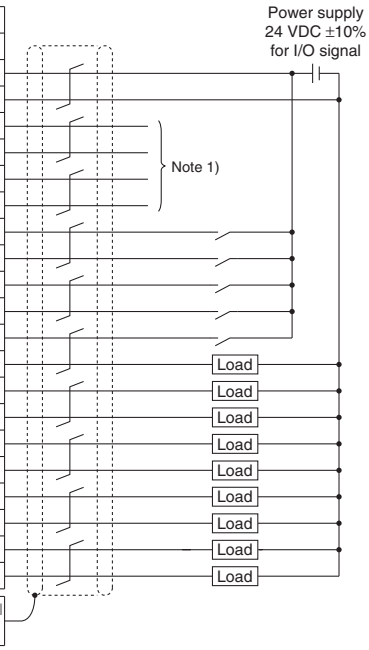
LECPAN□□-□ (NPN)

CN5		
Terminal name	Function	Pin no.
COM+	24 V	1
COM–	0 V	2
NP+	Pulse signal	3
NP–	Pulse signal	4
PP+	Pulse signal	5
PP–	Pulse signal	6
SETUP	Input	7
RESET	Input	8
SVON	Input	9
CLR	Input	10
TL	Input	11
TLOUT	Output	12
WAREA	Output	13
BUSY	Output	14
SETON	Output	15
INP	Output	16
SVRE	Output	17
∗ESTOP Note 2)	Output	18
∗ALARM Note 2)	Output	19
AREA	Output	20
FG	Round terminal	0.5-5



LECPAP□□-□ (PNP)

CN5		
Terminal name	Function	Pin no.
COM+	24 V	1
COM–	0 V	2
NP+	Pulse signal	3
NP–	Pulse signal	4
PP+	Pulse signal	5
PP–	Pulse signal	6
SETUP	Input	7
RESET	Input	8
SVON	Input	9
CLR	Input	10
TL	Input	11
TLOUT	Output	12
WAREA	Output	13
BUSY	Output	14
SETON	Output	15
INP	Output	16
SVRE	Output	17
∗ESTOP Note 2)	Output	18
∗ALARM Note 2)	Output	19
AREA	Output	20
FG	Round terminal	0.5-5



Note 1) For pulse signal wiring method, refer to "Pulse Signal Wiring Details".
Note 2) Output when the power supply of the driver is ON. (N.C.)

Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM–	Connects the power supply 0 V for input/output signal
SETUP	Instruction to return to origin
RESET	Alarm reset
SVON	Servo ON instruction
CLR	Deviation reset
TL	Instruction to pushing operation

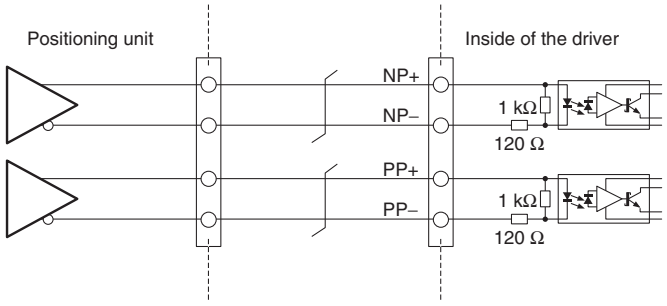
Output Signal

Name	Details
BUSY	Outputs when the actuator is operating
SETON	Outputs when returning to origin
INP	Outputs when target position is reached
SVRE	Outputs when servo is on
∗ESTOP Note 3)	Not output when EMG stop is instructed
∗ALARM Note 3)	Not output when alarm is generated
AREA	Outputs within the area output setting range
WAREA	Outputs within W-AREA output setting range
TLOUT	Outputs during pushing operation

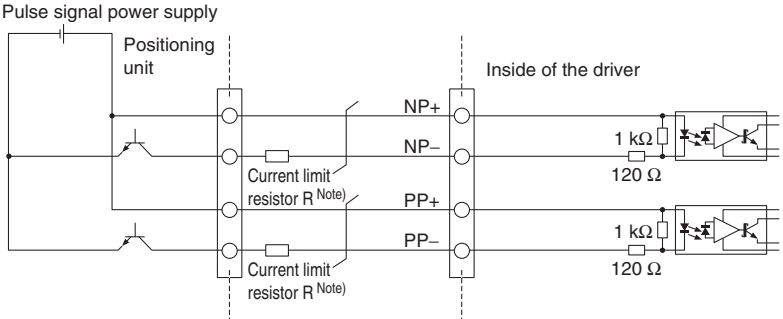
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

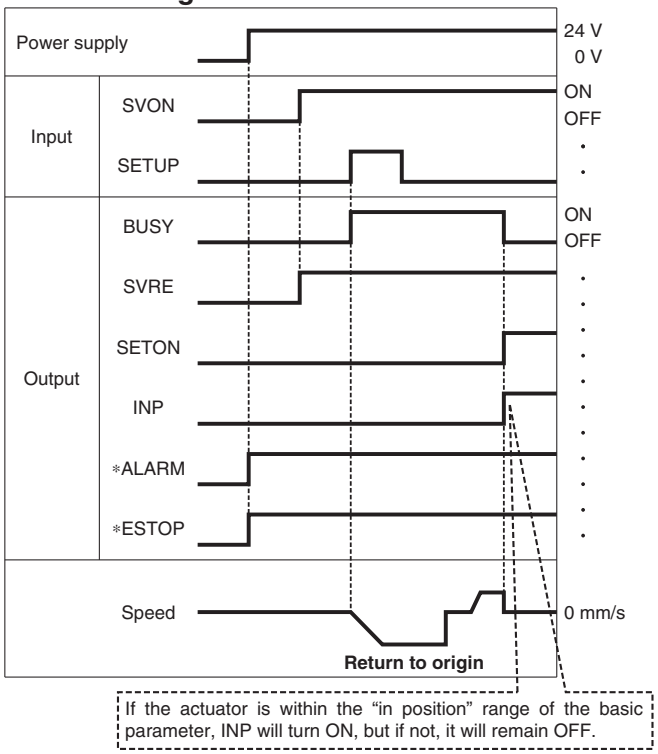


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

Pulse signal power supply voltage	Current limit resistor R specifications
24 VDC ±10%	3.3 kΩ ±5% (0.5 W or more)
5 VDC ±5%	390 Ω ±5% (0.1 W or more)

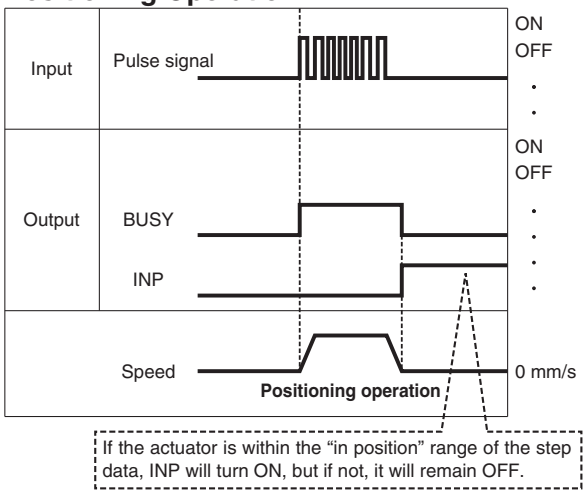
Signal Timing

Return to Origin

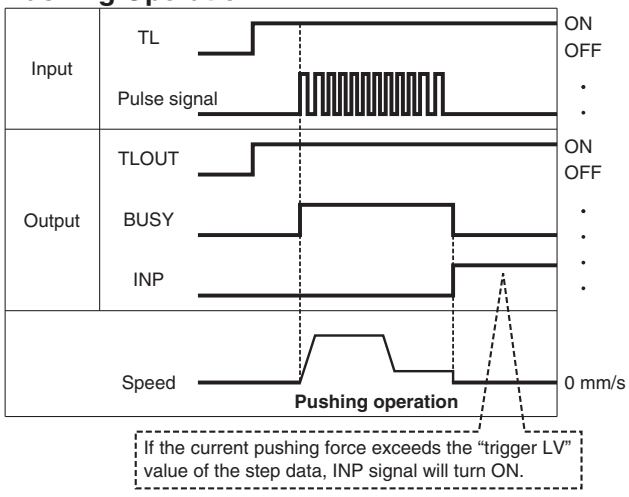


∗ “∗ALARM” and “∗ESTOP” are expressed as negative-logic circuit.

Positioning Operation

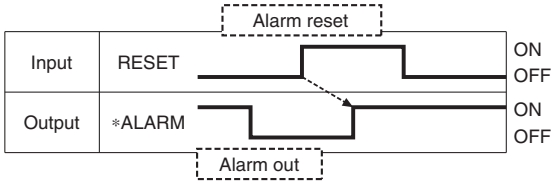


Pushing Operation



Note) If pushing operation is stopped when there is no pulse deviation, the moving part of the actuator may pulsate.

Alarm Reset



∗ “∗ALARM” is expressed as negative-logic circuit.

Options: Actuator Cable

[Robotic cable for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – □

Cable length (L)[m]

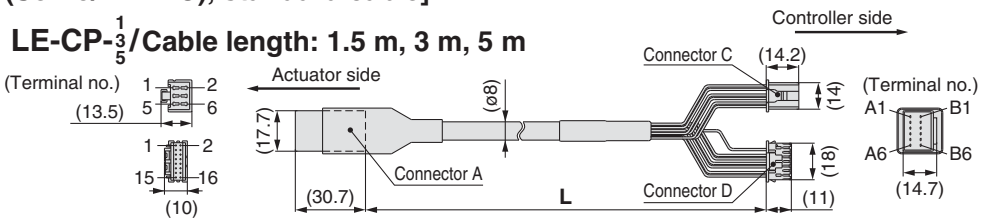
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

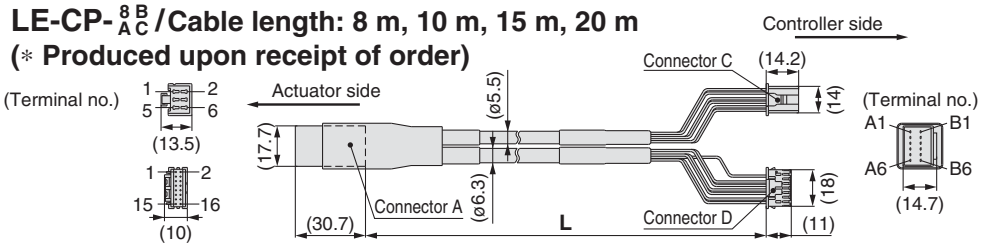
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\frac{1}{3}_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.
A	B-1
$\overline{A}$	A-1
B	B-2
$\overline{B}$	A-2
COM-A/COM	B-3
COM-B/–	A-3
Vcc	B-4
GND	A-4
$\overline{A}$	B-5
A	A-5
$\overline{B}$	B-6
B	A-6

Shield

Cable colour	Connector C terminal no.
Brown	2
Red	1
Orange	6
Yellow	5
Green	3
Blue	4

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

[Robotic cable with lock and sensor for step motor (Servo/24 VDC), standard cable]

LE – CP – 1 – B – □

Cable length (L)[m]

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

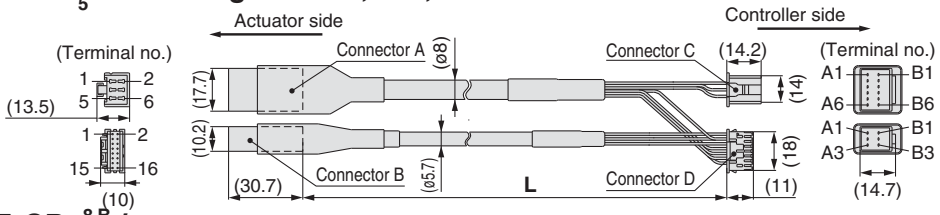
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

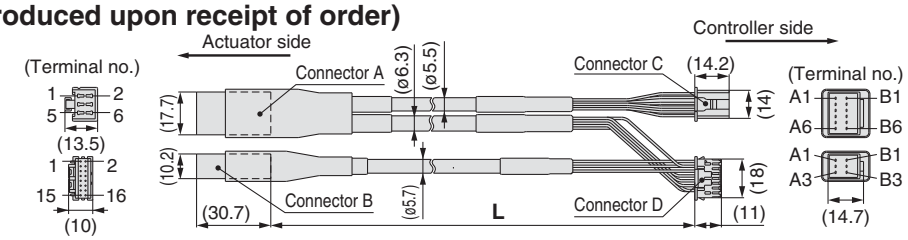
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\frac{1}{3}_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



Circuit	Connector A terminal no.
A	B-1
$\overline{A}$	A-1
B	B-2
$\overline{B}$	A-2
COM-A/COM	B-3
COM-B/–	A-3
Vcc	B-4
GND	A-4
$\overline{A}$	B-5
A	A-5
$\overline{B}$	B-6
B	A-6

Shield

Cable colour	Connector C terminal no.
Brown	2
Red	1
Orange	6
Yellow	5
Green	3
Blue	4

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

Circuit	Connector B terminal no.
Lock (+)	B-1
Lock (–)	A-1
Sensor (+) Note)	B-3
Sensor (–) Note)	A-3

Red	4
Black	5
Brown	1
Blue	2

Note) Not used for the LE series.

Options

[I/O cable]

LEC-C L5-1

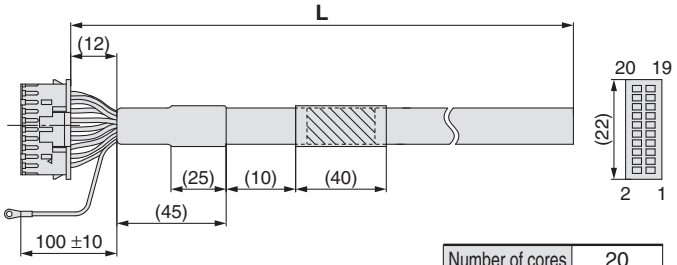
I/O cable type

L5	For LECPA

I/O cable length (L)

1	1.5 m
3	3 m*
5	5 m*

* Pulse input usable only with differential. Only 1.5 m cables usable with open collector.



Number of cores	20
AWG size	24

Pin no.	Insulation colour	Dot mark	Dot colour
1	Light brown	■	Black
2	Light brown	■	Red
3	Yellow	■	Black
4	Yellow	■	Red
5	Light green	■	Black
6	Light green	■	Red
7	Grey	■	Black
8	Grey	■	Red
9	White	■	Black
10	White	■	Red
11	Light brown	■■	Black

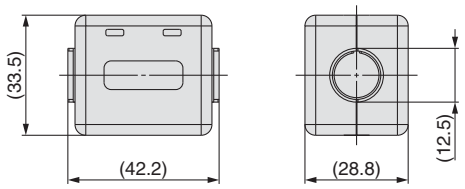
Pin no.	Insulation colour	Dot mark	Dot colour
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Grey	■■	Black
18	Grey	■■	Red
19	White	■■	Black
20	White	■■	Red

Round terminal 0.5-5	Green

[Noise filter set]
Step Motor Driver (Pulse Input Type)

LEC-NFA

Contents of the set: 2 noise filters
(Manufactured by WURTH ELEKTRONIK: 74271222)

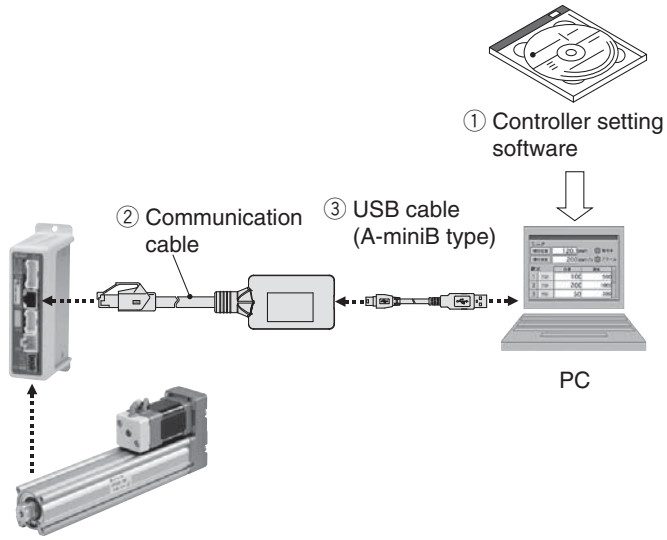


* Refer to the LECPA series Operation Manual for installation.

Series LEC

Windows®XP, Windows®7 compatible

Controller Setting Kit/LEC-W2



How to Order

LEC – W2

Controller setting kit
(Japanese and English are available.)

Contents

① Controller setting software (CD-ROM)
② Communication cable
③ USB cable
(Cable between the PC and the conversion unit)

Compatible Controllers/Driver

Step motor controller (Servo/24 VDC)	**Series LECP6**
Servo motor controller (24 VDC)	**Series LECA6**
Step motor driver (Pulse input type)	**Series LECPA**

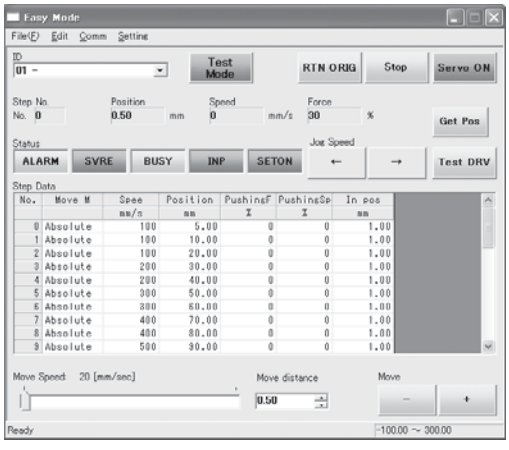
Hardware Requirements

OS	IBM PC/AT compatible machine running Windows®XP (32-bit), Windows®7 (32-bit and 64-bit).
Communication interface	USB 1.1 or USB 2.0 ports
Display	XGA (1024 x 768) or more

∗ Windows® and Windows®7 are registered trademarks of Microsoft Corporation in the United States.
∗ Refer to SMC website for version update information, http://www.smcworld.com

Screen Example

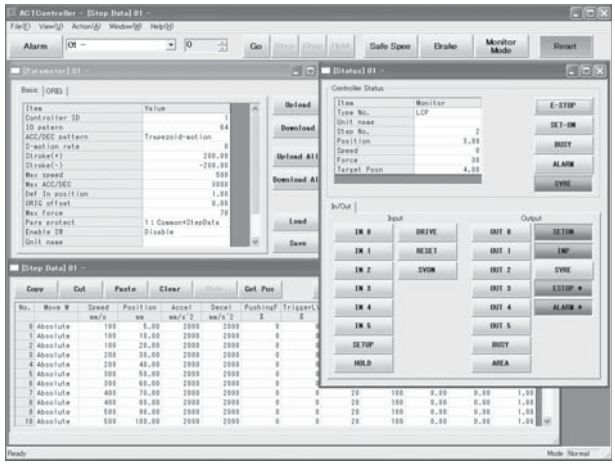
Easy mode screen example



Easy operation and simple setting

- Allowing to set and display actuator step data such as position, speed, force, etc.
- Setting of step data and testing of the drive can be performed on the same page.
- Can be used to jog and move at a constant rate.

Normal mode screen example



Detailed setting

- Step data can be set in detail.
- Signals and terminal status can be monitored.
- Parameters can be set.
- JOG and constant rate movement, return to origin, test operation and testing of forced output can be performed.

Series LEC
Teaching Box/LEC-T1

How to Order

LEC-T1-3EG

Teaching box

Cable length [m]

3	3

Initial language

J	Japanese
E	English

∗ The displayed language can be changed to English or Japanese.

Stop switch

G	Equipped with stop switch

Enable switch

—	None
S	Equipped with enable switch

∗ Interlock switch for jog and test function

Standard functions
- **Chinese character display**
- **Stop switch is provided.**

Option
- **Enable switch is provided.**

Specifications

Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

[CE-compliant products]
The EMC compliance of the teaching box was tested with the LECP6 series step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

Easy Mode

Function	Details
Step data	• Setting of step data
Jog	• Jog operation • Return to origin
Test	• 1 step operation Note 1) • Return to origin
Monitor	• Display of axis and step data no. • Display of two items selected from Position, Speed, Force.
ALM	• Active alarm display • Alarm reset
TB setting	• Reconnection of axis (Ver. 1.∗∗) • Displayed language setting (Ver. 2.∗∗) • Setting of easy/normal mode • Setting step data and selection of items from easy mode monitor

Menu Operations Flowchart

Menu
Data
Monitor
Jog
Test
ALM
TB setting

Data
Step data no.
Setting of two items selected below
Ver. 1.∗∗:
Position, Speed, Force, Acceleration, Deceleration
Ver. 2.∗∗:
Position, Speed, Pushing force, Acceleration, Deceleration, Movement MOD, Trigger LV, Pushing speed, Moving force, Area 1, Area 2, In position

Monitor
Display of step no.
Display of two items selected below
(Position, Speed, Force)

Jog
Return to origin
Jog operation

Test Note 1)
1 step operation

ALM
Active alarm display
Alarm reset

TB setting
Reconnection of axis (Ver. 1.∗∗)
Japanese/English (Ver. 2.∗∗)
Easy/Normal
Set item

Note 1) Not compatible with the LECPA.

Normal Mode

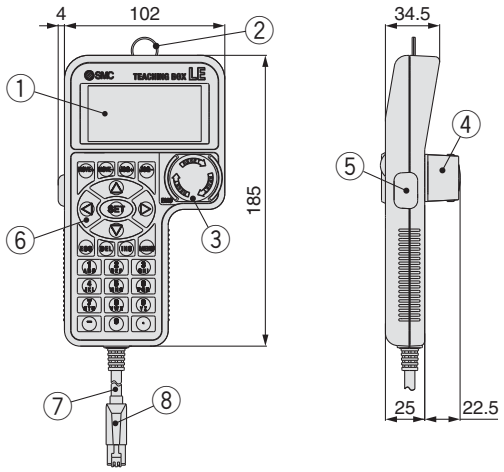
Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive Note 1) (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output) Note 2)
Monitor	• Drive monitor • Output signal monitor Note 2) • Input signal monitor Note 2) • Output terminal monitor • Input terminal monitor
ALM	• Active alarm display (Alarm reset) • Alarm log record display
File	• Data saving Save the step data and parameters of the driver which is being used for communication (it is possible to save four files, with one set of step data and parameters defined as one file). • Load to driver Loads the data which is saved in the teaching box to the driver which is being used for communication. • Delete the saved data. • File protection (Ver. 2.**)
TB setting	• Display setting (Easy/Normal mode) • Language setting (Japanese/English) • Backlight setting • LCD contrast setting • Beep sound setting • Max. connection axis • Distance unit (mm/inch)
Reconnect	• Reconnection of axis

Menu Operations Flowchart

- **Menu**: Step data / Parameter / Monitor / Test / ALM / File / TB setting / Reconnect
- **Step data**: Step data no. / Movement MOD / Speed / Position / Acceleration / Deceleration / Pushing force / Trigger LV / Pushing speed / Moving force / Area 1, 2 / In position
- **Parameter**: Basic / ORIG
  - **Basic setting**
  - **ORIG setting**
- **Monitor**: Drive / Output signal Note 2) / Input signal Note 2) / Output terminal / Input terminal
  - **DRV monitor**: Position, Speed, Torque / Step no. / Last step no.
  - **Output signal monitor**
  - **Input signal monitor**
  - **Output terminal monitor**
  - **Input terminal monitor**
- **Test**: JOG/MOVE / Return to ORIG / Test drive Note 1) / Forced output Note 2)
- **ALM**: Status / ALM Log record
  - **Status**: Active alarm display / Alarm reset
  - **ALM Log record display**: Log entry display
- **File**: Data saving / Load to driver / File deletion / File protection (Ver. 2.**)
- **TB setting**: Easy/Normal / Language / Backlight / LCD contrast / Beep / Max. connection axis / Password / Distance unit
- **Reconnect**

Note 1) Not compatible with the LECPA.
Note 2) The following signals are not compatible with the LECPA.
Input: CLR, TL
Output: TLOUT

Dimensions

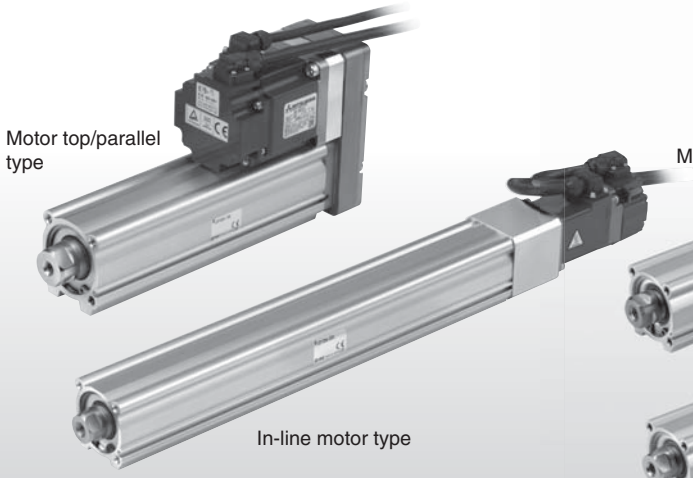


No.	Description	Function
1	**LCD**	A screen of liquid crystal display (with backlight)
2	**Ring**	A ring for hanging the teaching box
3	**Stop switch**	When switch is pushed in, the switch locks and stops. The lock is released when it is turned to the right.
4	**Stop switch guard**	A guard for the stop switch
5	**Enable switch (Option)**	Prevents unintentional operation (unexpected operation) of the jog test function. Other functions such as data change are not covered.
6	**Key switch**	Switch for each input
7	**Cable**	Length: 3 meters
8	**Connector**	A connector connected to CN4 of the driver

AC Servo Motor

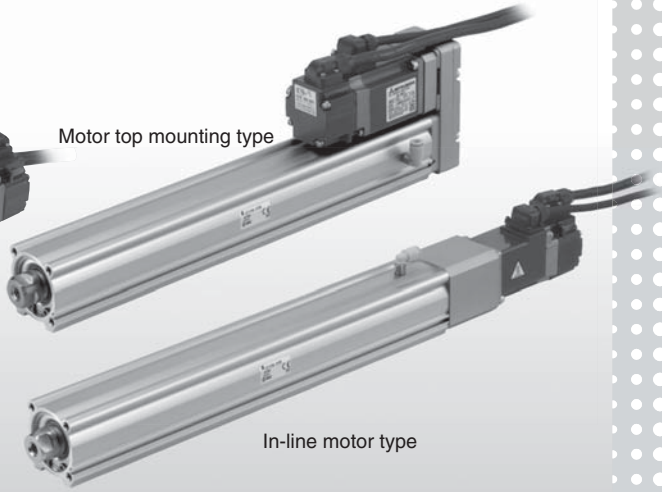
Rod Type Page 84

Series LEY



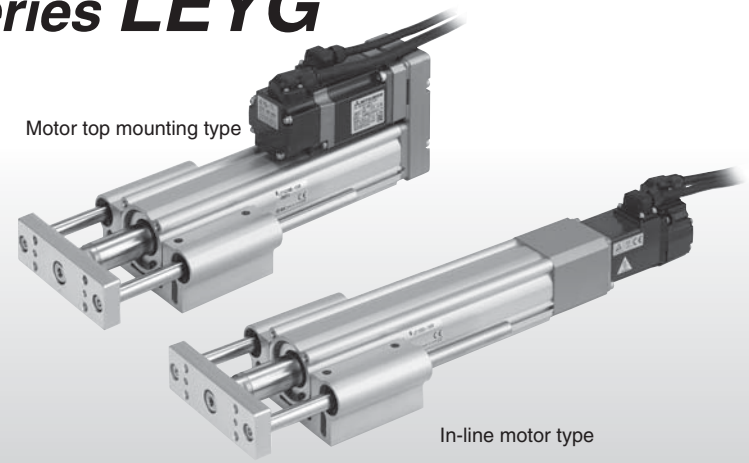
Dust/Drip proof (IP65) specification Page 103

Series LEY-X5



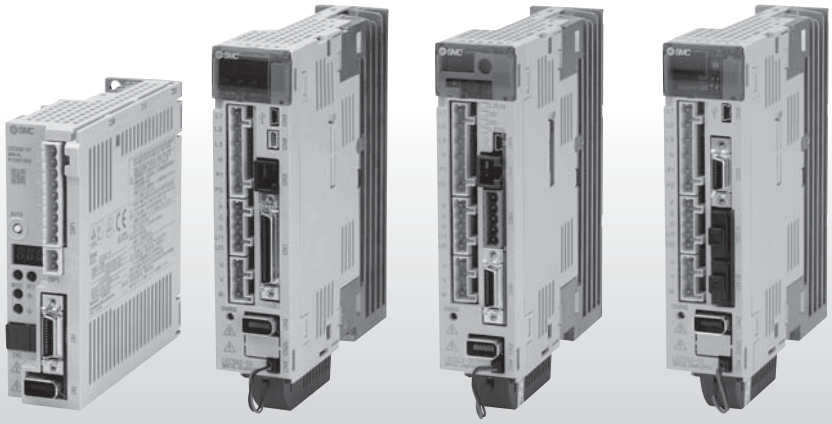
Guide Rod Type Page 107

Series LEYG



AC Servo Motor Driver Page 120

Series LECS□



Model Selection

Selection Procedure

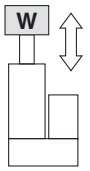
Positioning Control Selection Procedure

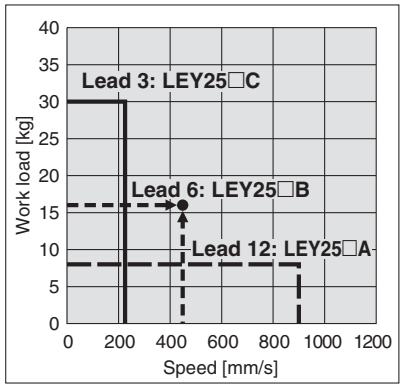
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

Selection Example

Operating conditions

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





<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 **LEY25□B** is temporarily selected based on the graph shown on the right side.

∗ It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to pages 92, 99 and 104 for the horizontal work load in the specifications, and page 118 for the precautions.

The regeneration option may be necessary. Refer to pages 86, 87 and 89 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.

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

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

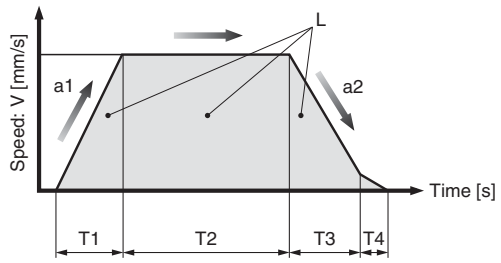
$$T1 = V/a1 \ [s] \qquad T3 = V/a2 \ [s]$$

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

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

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

$$T4 = 0.05 \ [s]$$



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

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

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]

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

$T4 = 0.05$ [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 LEY25□B-300 is selected.

Selection Procedure

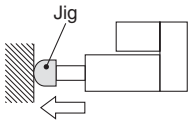
Pushing Control Selection Procedure

Step 1 Check the pushing force. → **Step 2** Check the lateral load on the rod end.

Selection Example

Operating conditions

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

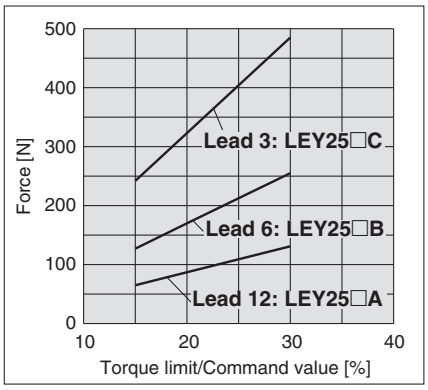


Step 1 **Check the pushing force. <Force conversion graph>**

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

Selection example)
Based on the graph shown on the right side,
- Torque limit/Command value: 24 [%]
- Pushing force: 200 [N]

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



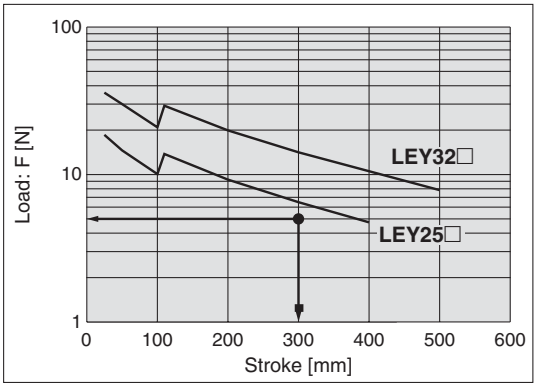
<Force conversion graph> (LEY25□)

Step 2 **Check the lateral load on the rod end. <Graph of allowable lateral load on the rod end>**

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

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

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

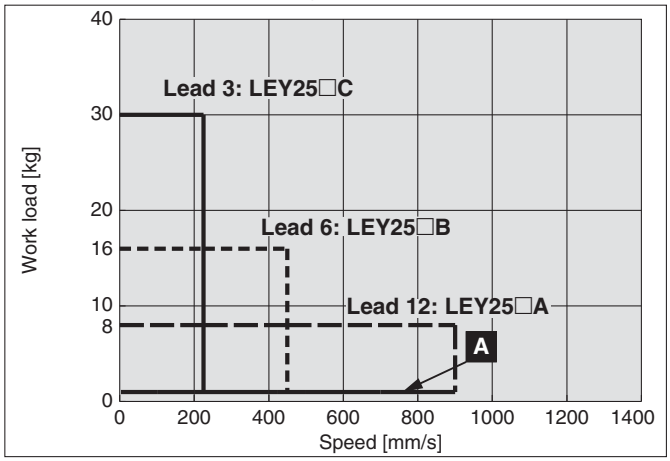


<Graph of allowable lateral load on the rod end>

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

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

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



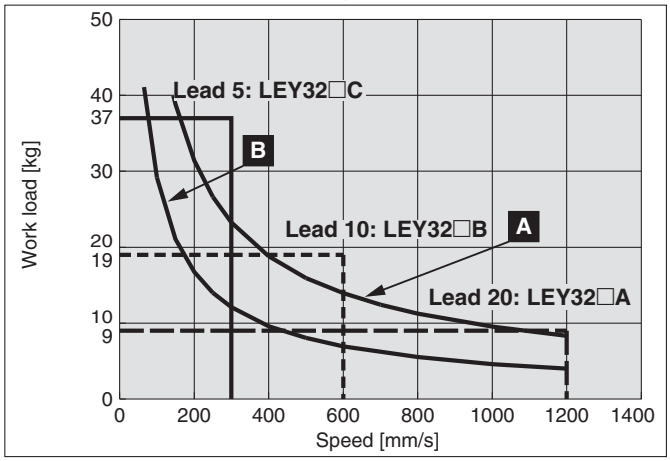
Required conditions for "Regeneration option"

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

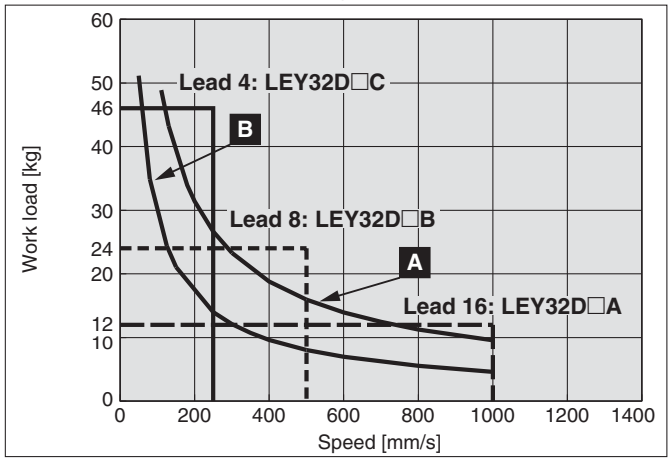
"Regeneration Option" Models

Operating conditions	Regenerative conditions	Vertical transfer
A	Duty ratio 50% or more	LEC-MR-RB032
B	Duty ratio 100%	

LEY32□ (Motor mounting position: Top/Parallel)

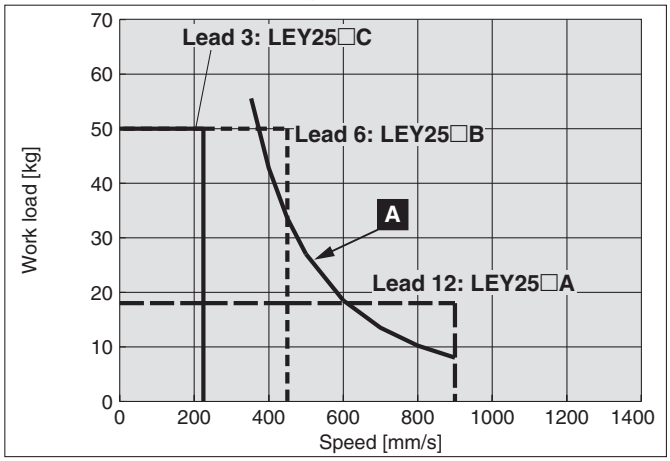


LEY32D (Motor mounting position: In-line)



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

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



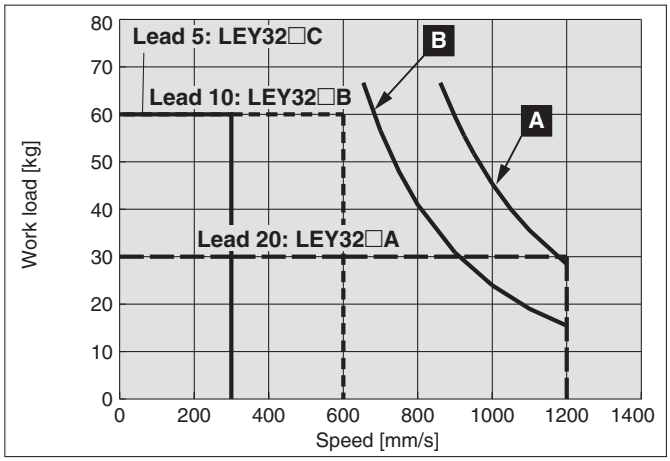
Required conditions for "Regeneration option"

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

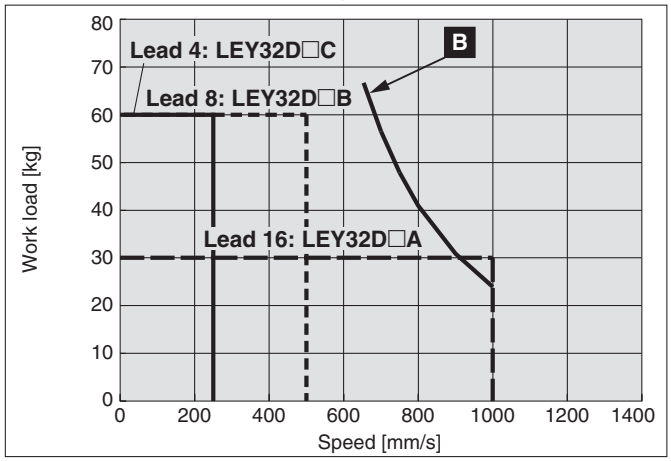
"Regeneration Option" Models

Operating conditions	Regenerative conditions	Horizontal transfer
A	Duty ratio 50% or more	LEC-MR-RB032
B	Duty ratio 100%	

LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



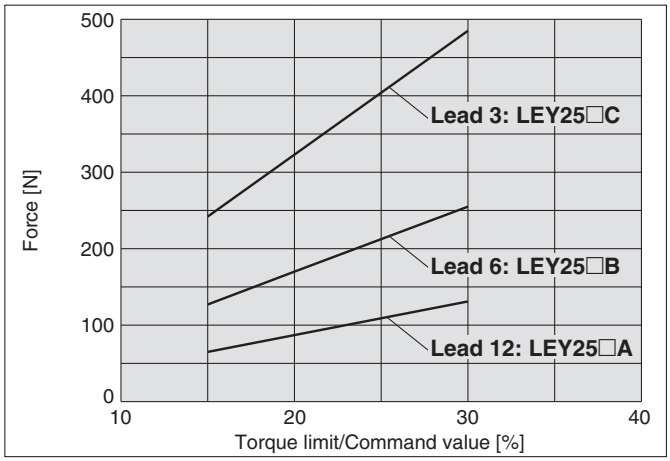
Allowable Stroke Speed

[mm/s]

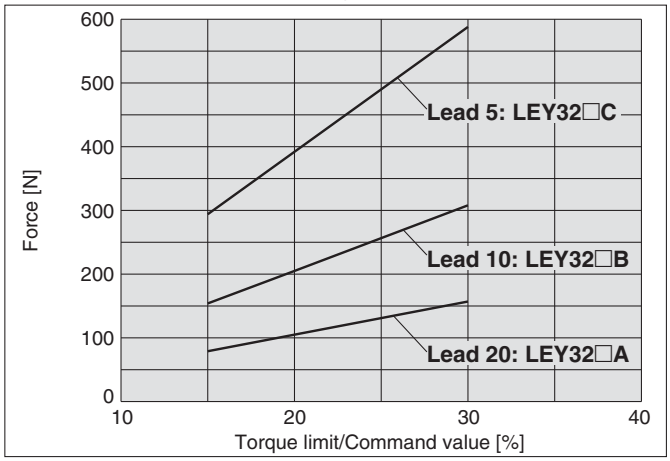
Model	AC servo motor	Lead		Stroke [mm]										
		Symbol	[mm]	30	50	100	150	200	250	300	350	400	450	500
LEY25□ (Motor mounting position: Top/Parallel, In-line)	100 W /□40	**A**	12	900							600		—	—
		B	6	450							300		—	—
		C	3	225							150		—	—
		(Motor rotation speed)		(4500 rpm)							(3000 rpm)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

Force Conversion Graph (Guide)

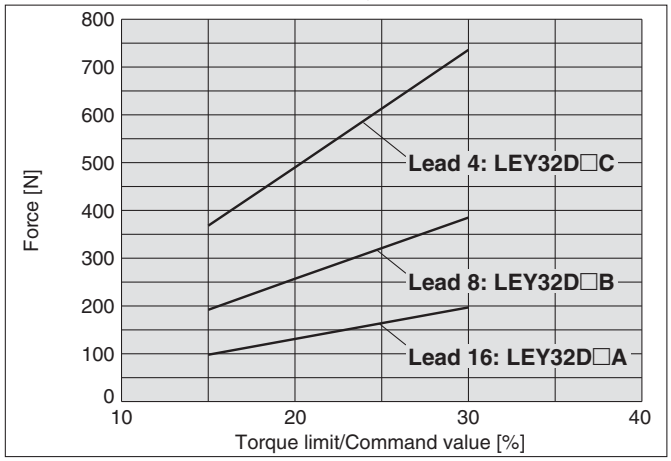
LEY25□ (Motor mounting position: Top/Parallel, In-line)



LEY32□ (Motor mounting position: Top/Parallel)

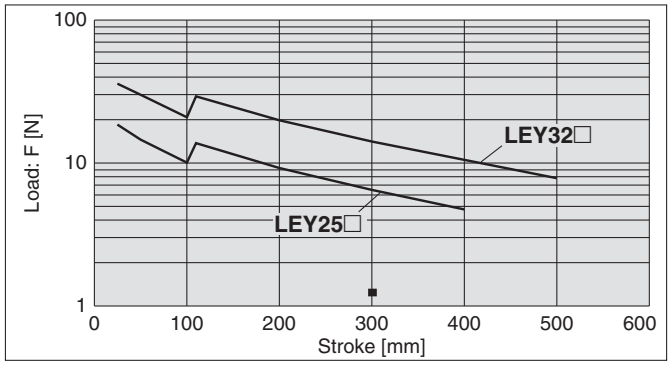


LEY32D□ (Motor mounting position: In-line)

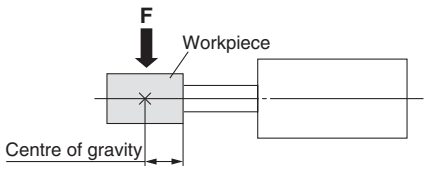


∗1 Motor type: When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 30% or less.
∗2 Motor type: When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analogue torque should be set 30% or less.

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

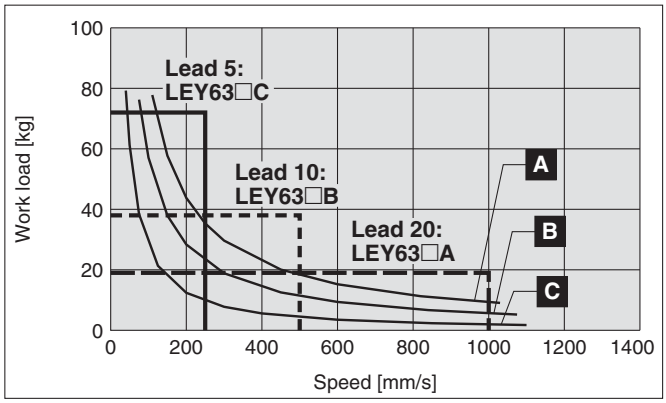


[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]

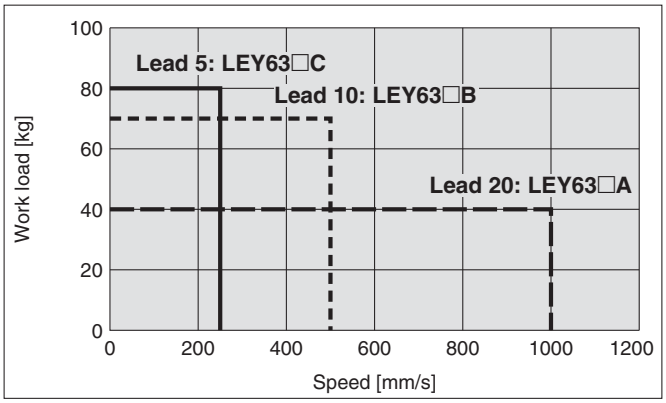


Speed–Work Load Graph/Required Conditions for "Regeneration Option"

Vertical transfer
LEY63□



Horizontal transfer
LEY63□



Required conditions for "Regeneration option"

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

"Regeneration Option" Models

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

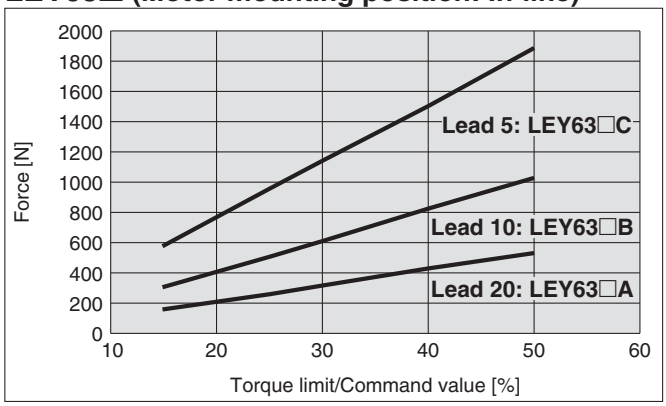
Allowable Stroke Speed

[mm/s]

Model	AC servo motor	Lead		Stroke [mm]							
		Symbol	[mm]	100	200	300	400	500	600	700	800
LEY63□	400 W/□60	A	20	1000					800	600	500
		B	10	500					400	300	250
		C	5	250					200	150	125
		(Motor rotation speed)		(3000 rpm)					(2400 rpm)	(1800 rpm)	(1500 rpm)

Force Conversion Graph

LEY63□ (Motor mounting position: In-line)



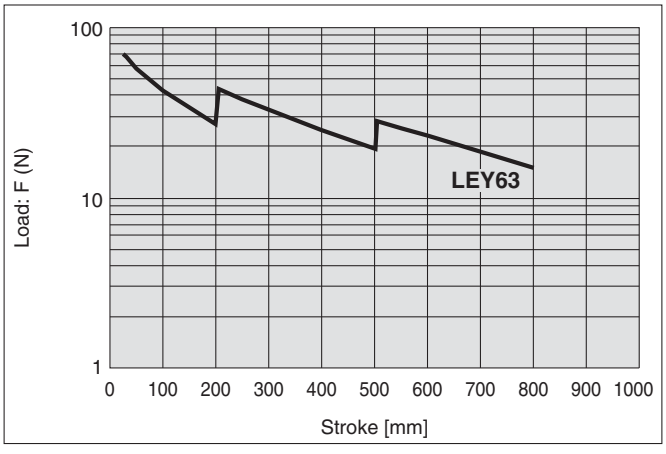
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	100 (60)	— (1.5)
40	50 (30)	1.5 (0.5)
50	30 (20)	0.5 (0.16)

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

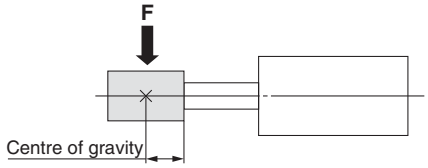
∗2 Motor type: When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 50% or less.

∗3 Motor type: When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analogue torque should be set 50% or less.

Graph of Allowable Lateral Load on the Rod End



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



Electric Actuator/Rod Type

AC Servo Motor

Series LEY

LEY25, 32 Size 25, 32

CE RoHS

How to Order

LEY 25 ❶ S2 ❸ B ❹ – 100 ❺ ❻ ❼ ❽ – S ❾ 2 ❿ A1 ⓫ ⓬

❶ Size

25
32

❷ Motor mounting position

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

❸ Motor type*1

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

*1: For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
*2: For details about the driver, refer to page 121.

❹ Lead [mm]

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

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

❺ Stroke [mm]

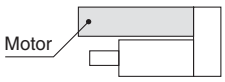
30	30
to	to
500	500

* Refer to the table below for details.

❻ Motor option

—	Without option
B	With lock*

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



❼ Rod end thread

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

❽ Mounting*1

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

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

* Applicable stroke table

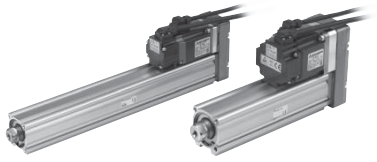
●Standard

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

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

For auto switches, refer to pages 21 and 22.

SMC



Motor mounting position: Top/Parallel

Motor mounting position: In-line

⑨ Cable type*

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

* The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
* Standard cable entry direction is
  • Top/Parallel: (A) Axis side
  • In-line: (B) Counter axis side
  (Refer to page 132 for details.)

⑩ Cable length* [m]

—	Without cable
2	2
5	5
A	10

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

⑪ Driver type*

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

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

⑫ I/O connector

—	Without connector
H	With connector

Compatible Drivers

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET III type
				
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage (V)	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)			
Reference page	Page 121			

Specifications

Model			LEY25S$^{2}_{6}$ (Top/Parallel)/LEY25DS$^{2}_{6}$ (In-line)			LEY32S$^{3}_{7}$ (Top/Parallel)			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	8	16	30	9	19	37	12	24	46
	Pushing force [N] Note 3) (Set value: 15 to 30%)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s] Note 4)	Stroke range: Up to 300	900	450	225	1200	600	300	1000	500	250
		305 to 400	600	300	150						
		405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s²] Note 5)		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5,000			5,000					
	Positioning repeatability [mm]		±0.02			±0.02					
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²] Note 6)		50/20			50/20					
	Actuation type		Ball screw + Belt (LEY□)/Ball screw (LEY□D)			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type		Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Required conditions for "Regeneration option" [kg] Note 7)	Horizontal	8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required
		Vertical	3 or more	2 or more	2 or more	6 or more	7 or more	11 or more	6 or more	7 or more	12 or more
Electric specifications	Motor output/Size		100 W/□40			200 W/□60					
	Motor type		AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)					
	Encoder		Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)								
	Power consumption [W] Note 8)	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W] Note 9)	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W] Note 10)		445			724			724		
Lock unit specifications	Type Note 11)		Non-magnetizing lock								
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20°C Note 12)		6.3			7.9			7.9		
	Rated voltage [V]		24 VDC $^{0}_{-10\%}$								

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph" on page 88.
Note 4) The allowable speed changes according to the stroke.
Note 5) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 6) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 7) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%). Order the regeneration option separately. For details and order numbers, refer to "Required Conditions for Regeneration Option" on pages 86 and 87.
Note 8) The power consumption (including the driver) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 10) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 11) Only when motor option "With lock" is selected.
Note 12) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY25S□ (Motor mounting position: Top/Parallel)									LEY32S□ (Motor mounting position: Top/Parallel)									
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

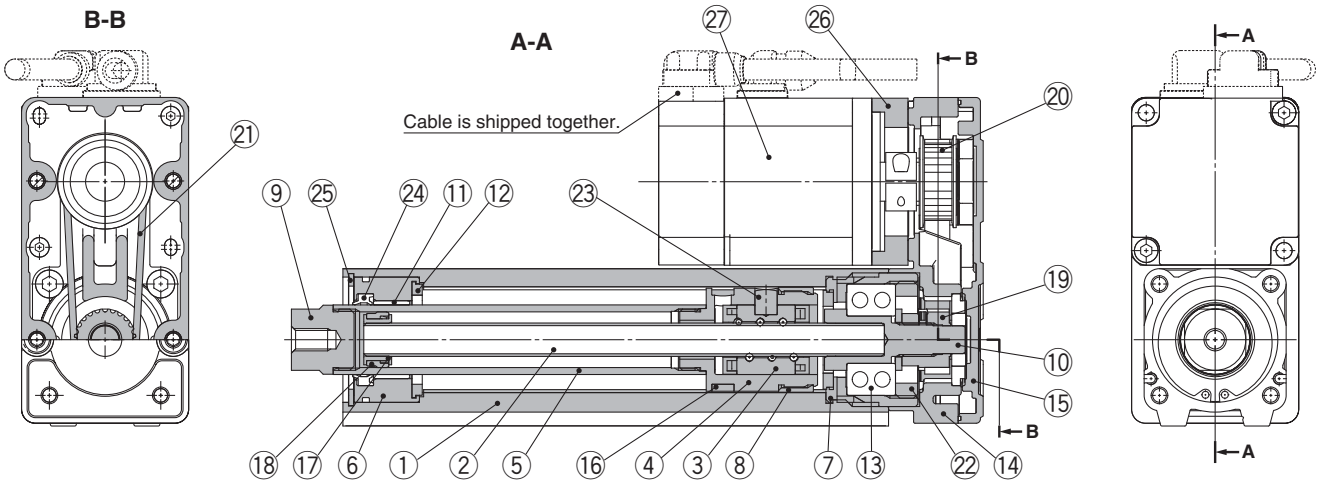
Additional Weight

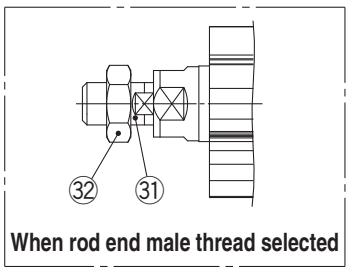
[kg]

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)			
Double clevis (including pin, retaining ring and mounting bolt)		0.16	0.22

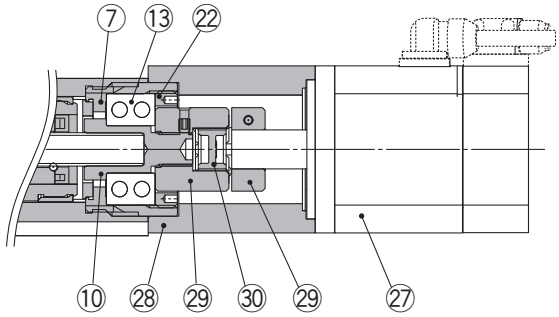
Construction

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





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



Component Parts

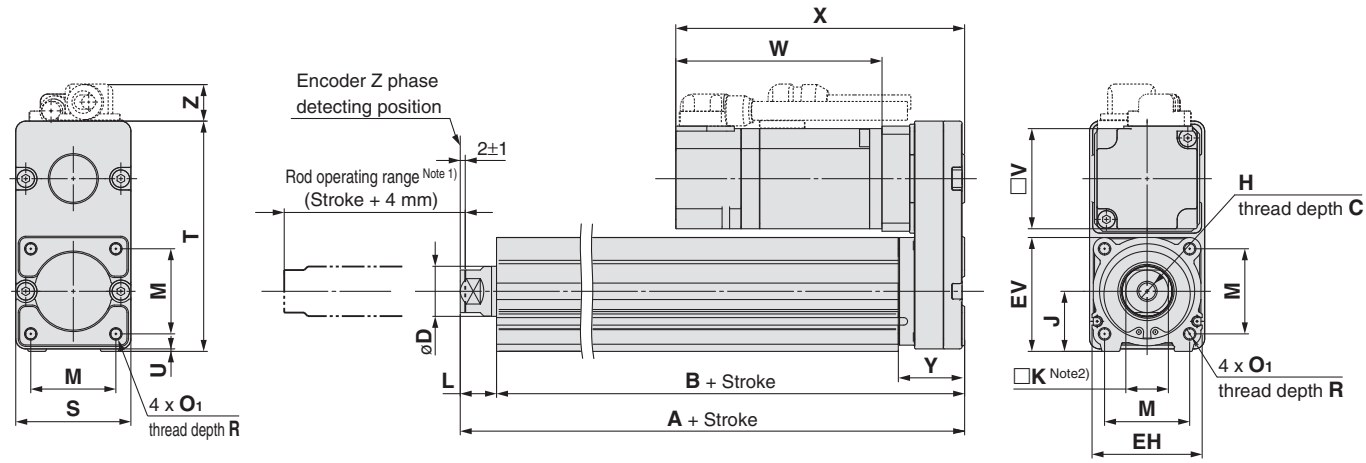
No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw (shaft)**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome Anodised
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation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

No.	Description	Material	Note
20	**Motor pulley**	Aluminium alloy	
21	**Belt**	—	
22	**Bearing stopper**	Aluminium alloy	
23	**Parallel pin**	Stainless steel	
24	**Seal**	NBR	
25	**Retaining ring**	Steel for spring	Phosphate coated
26	**Motor adapter**	Aluminium alloy	Coating
27	**Motor**	—	
28	**Motor block**	Aluminium alloy	Coating
29	**Hub**	Aluminium alloy	
30	**Spider**	Urethane	
31	**Socket (Male thread)**	Free cutting carbon steel	Nickel plated
32	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Top/Parallel only)/Belt

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

Dimensions: Motor Top/Parallel



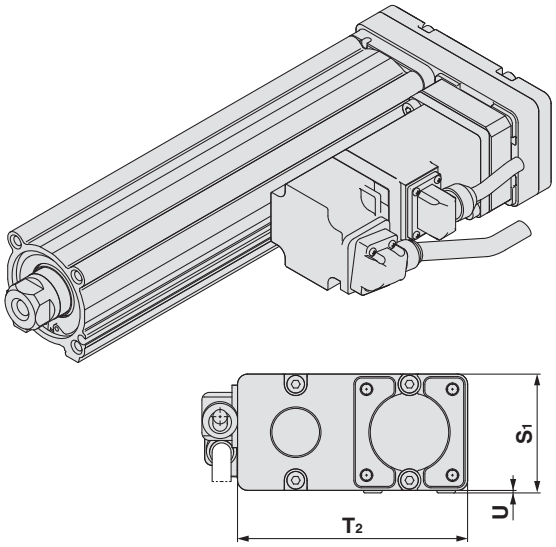
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

[mm]

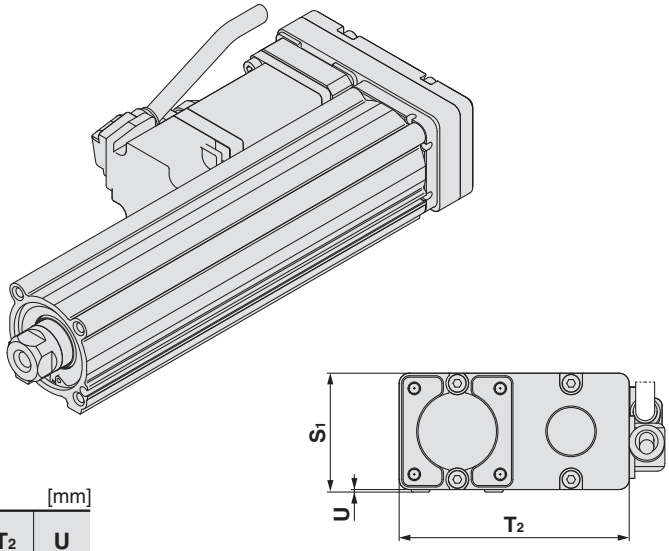
Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O_1	R	S
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46
	105 to 400	155.5	141												
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60
	105 to 500	178.5	160												

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

Motor left side parallel type: LEY$^{25}_{32}$L



Motor right side parallel type: LEY$^{25}_{32}$R

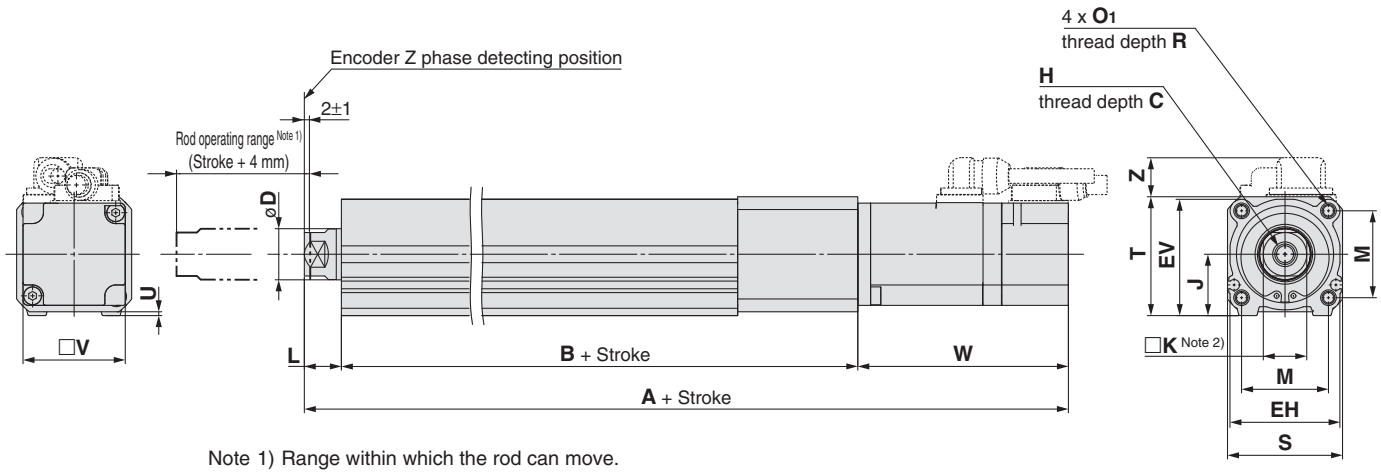


[mm]

Size	S_1	T_2	U
25	47	91	1
32	61	117	1

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

Dimensions: In-line Motor



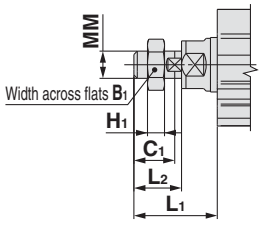
Note 1) Range within which the rod can move.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U
25	15 to 100	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5
	105 to 400														
32	20 to 100	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	61	1
	105 to 500														

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

End male thread: LEY$^{25}_{32}$□□$^{A}_{B}$-□□M



∗ Refer to page 19 for details about the rod end nut and mounting bracket.
Note) Refer to the “Handling” precautions on page 119 when mounting end brackets such as knuckle joint or work pieces.

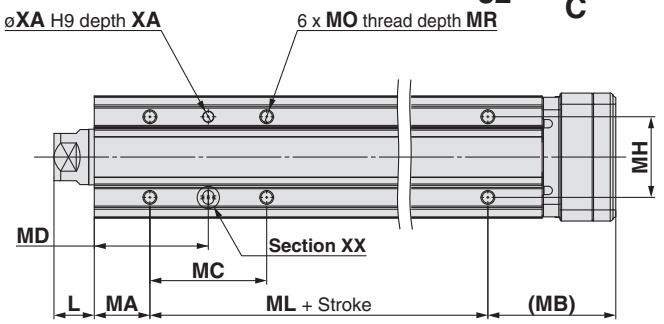
[mm]

Size	B1	C1	H1	L1	L2	MM
25	22	20.5	8	38	23.5	M14 x 1.5
32	22	20.5	8	42.0	23.5	M14 x 1.5

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

Dimensions

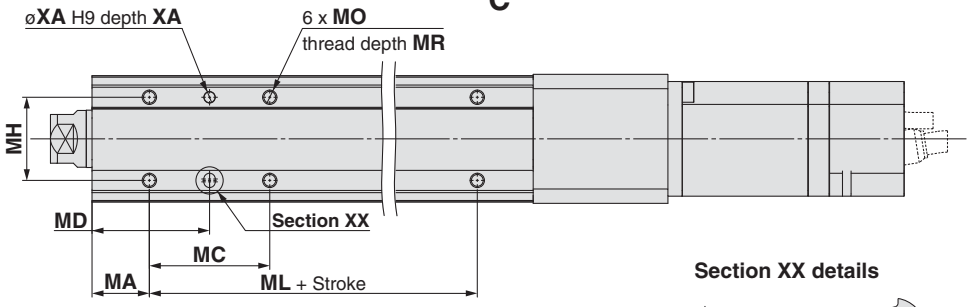
Body bottom tapped
Motor top/parallel: LEY$^{25}_{32}$$^{A}_{B}$-^{C}□□□U



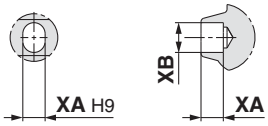
Body Bottom Tapped [mm]

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

Body bottom tapped
In-line motor: LEY$^{25}_{32}$D□$^{A}_{B}$-^{C}□□□U



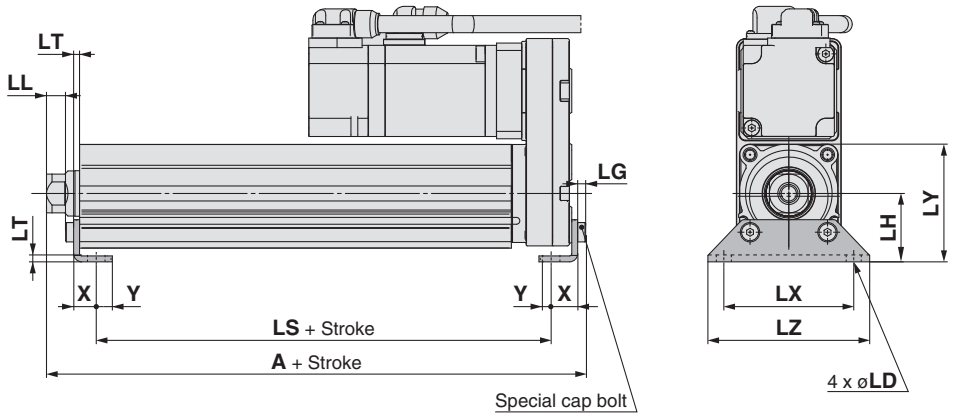
Section XX details



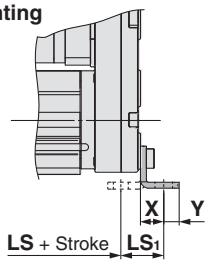
Size	Stroke range [mm]	MO	MR	XA	XB
25	15 to 39	M5 x 0.8	6.5	4	5
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 400				
32	20 to 39	M6 x 1	8.5	5	6
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 500				

Foot: LEY$^{25}_{32}$□□$^{A}_{B}$-^{C}□□□L

Included parts
- Foot
- Body mounting bolt



Outward mounting



Foot [mm]

Size	Stroke range [mm]	A	LS	LS1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	99	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	124											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

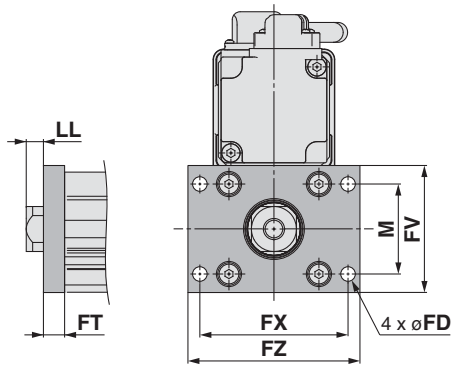
Material: Carbon steel (Chromate treated)

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

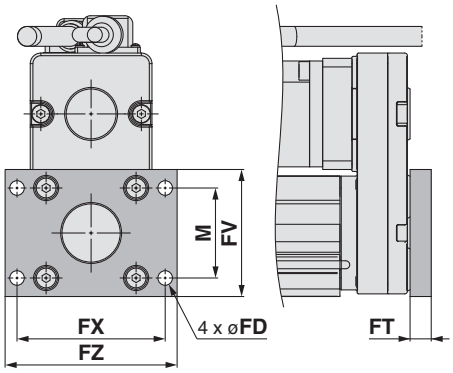
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Dimensions

Rod flange: LEY25/32□□A/B/C-□□□F



Head flange: LEY25□□A/B/C-□□□G



∗ Head flange is not available for the LEY32.

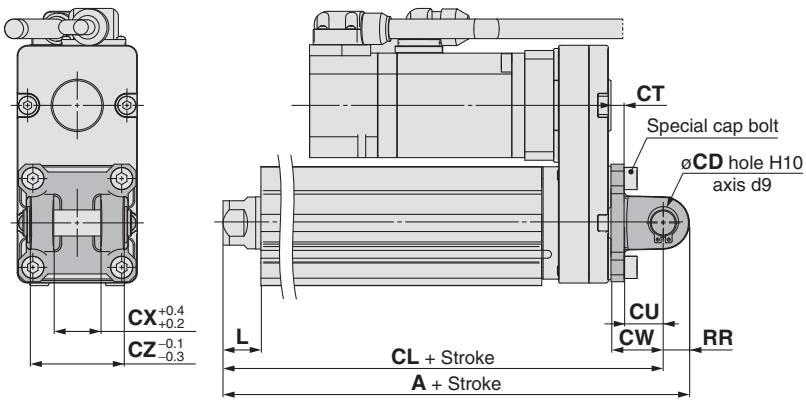
Included parts
- Flange
- Body mounting bolt

Rod/Head Flange [mm]

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

Material: Carbon steel (Nickel plated)

Double clevis: LEY25/32□□A/B/C-□□□D



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

∗ Refer to page 19 for details about the rod end nut and mounting bracket.

Double Clevis [mm]

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

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

Material: Cast iron (Coating)

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

Electric Actuator/Rod Type

AC Servo Motor

Series LEY

LEY63

Size 63 | Dust/Drip proof (IP65) specification

(Select options)

RoHS

How to Order

LEY 63 D S4 B – 200 □ □ □ □ – S 2 A2 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Size

63

❷ Motor mounting position

D	In-line

❸ Motor type

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

❹ Lead [mm]

Symbol	LEY63
A	20
B	10
C	5

❺ Stroke [mm]

100	100
to	to
800	800

❻ Dust/Drip proof

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

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

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

❼ Motor option

—	Without option
B	With lock

❽ Rod end thread

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

❾ Mounting∗1

Symbol	Type	Motor mounting position
		In-line
—	Ends tapped (Standard)∗2	●
U	Body bottom tapped	●
F	Rod flange∗2	●

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

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

• LEY63: 100 or less

❿ Cable type∗

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

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

∗ Standard cable entry direction is "(B) Counter axis side". (Refer to page 132 for details.)

⓫ Cable length∗ [m]

—	Without cable
2	2
5	5
A	10

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

⓬ Driver type∗

	Compatible drivers	Power supply voltage
—	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)

— : Without cable and driver

●Standard

⓭ I/O connector

—	Without connector
H	With connector

∗ Applicable stroke table

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

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

Specifications

Model			LEY63DS$^{4}_{8}$□		
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400, 500, 600, 700, 800		
	Work load [kg]	Horizontal Note 2)	40	70	80
		Vertical	19	38	72
	Pushing force [N]/Set value Note 3): 15 to 50% Note 4)		156 to 521	304 to 1,012	573 to 1,910
	Max. speed [mm/s] Note 5) — Stroke range	Up to 500	1000	500	250
		505 to 600	800	400	200
		605 to 700	600	300	150
		705 to 800	500	250	125
	Pushing speed [mm/s] Note 6)		30 or less		
	Max. acceleration/deceleration [mm/s²]		5,000		
	Positioning repeatability [mm]		±0.02		
	Screw lead [mm] (including pulley ratio)		20	10	5
	Impact/Vibration resistance [m/s²] Note 7)		50/20		
	Actuation type		Ball screw + Belt [1:1]/Ball screw		
	Guide type		Sliding bushing (Piston rod)		
	Operating temperature range [°C]		5 to 40		
	Operating humidity range [%RH]		90 or less (No condensation)		
	Required conditions for "Regeneration option" [kg] Note 8)	Horizontal	Not required	Not required	Not required
		Vertical	2 or more	5 or more	12 or more
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 9)	Horizontal	210		
		Vertical	230		
	Standby power consumption when operating [W] Note 10)	Horizontal	2		
		Vertical	18		
	Max. instantaneous power consumption [W] Note 11)		1275		
Lock unit specifications	Type Note 12)		Non-magnetizing lock		
	Holding force [N]		313	607	1146
	Power consumption [W] at 20°C Note 13)		7.9		
	Rated voltage [V]		24 VDC $^{0}_{-10\%}$		

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) Set values for the driver.
Note 4) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. The pushing force and duty ratio change according to the set value. Set it with reference to "Force Conversion Graph" on page 89.
Note 5) The allowable speed changes according to the stroke.
Note 6) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%).
Note 9) The power consumption (including the driver) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 11) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 12) Only when motor option "With lock" is selected.
Note 13) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

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

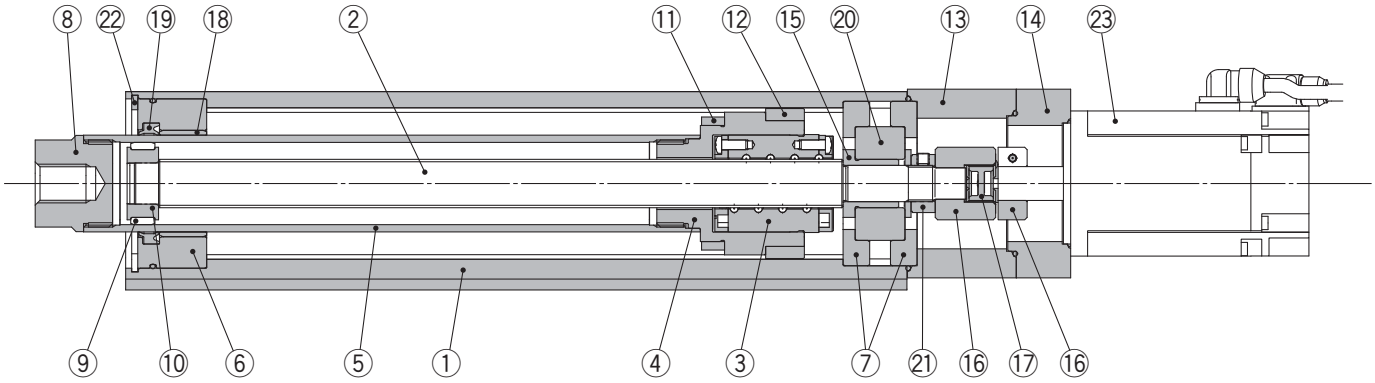
Additional Weight

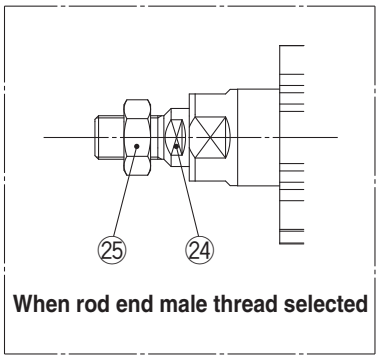
[kg]

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

Construction

In-line motor type: LEY63





When rod end male thread selected

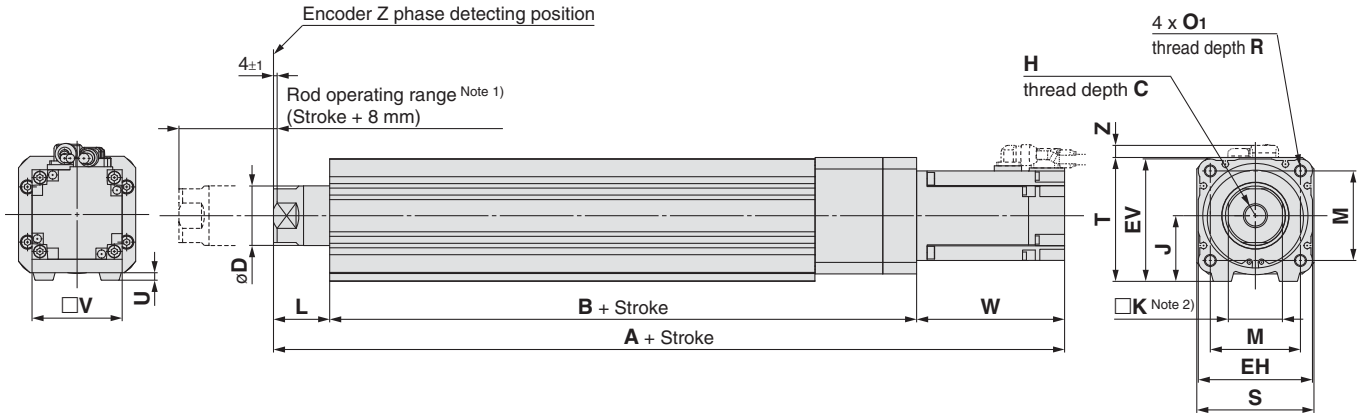
Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome Anodised
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Socket**	Free cutting carbon steel	Nickel plated
9	**Wear ring**	Resin	
10	**Wear ring holder**	Stainless steel	
11	**Magnet**	—	
12	**Rotation stopper**	Resin	
13	**Motor block**	Aluminium alloy	Coating

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

Dimensions: In-line Motor

LEY63D□



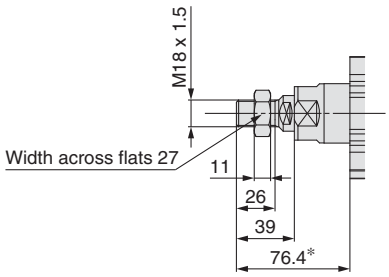
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U
63	Up to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5
	205 to 500														
	505 to 800														

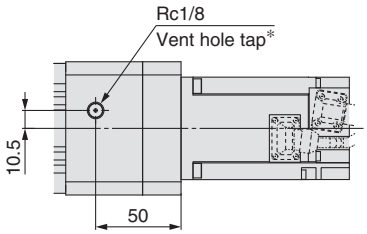
Size	Stroke range [mm]	B	V	Incremental encoder						Absolute encoder					
				Without lock			With lock			Without lock			With lock		
				A	W	Z	A	W	Z	A	W	Z	A	W	Z
63	Up to 200	190.7	60	338.3	110.2	8.1	366.9	138.8	8.1	326.6	98.5	8.1	366.1	138	8.1
	205 to 500	225.7		373.3			401.9			361.6			401.1		
	505 to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

End male thread: LEY63□□□-□□M



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

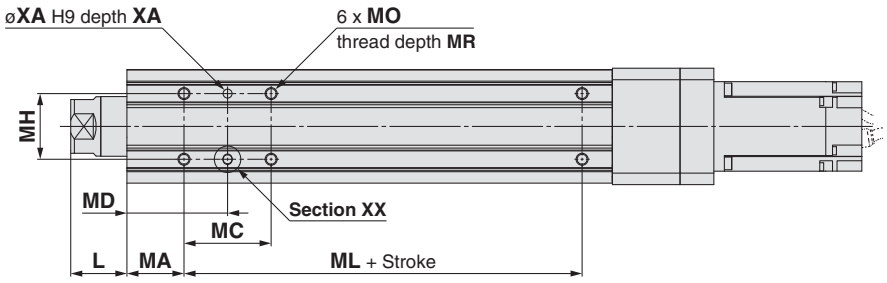
IP65 (Dust/Drip proof specification): LEY63D□□-□P

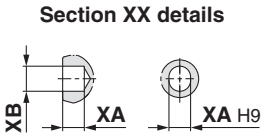


* When using the dust/drip proof (IP65), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: ø4 or more, Connection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

Dimensions: In-line Motor

Body bottom tapped: LEY63□□□-□□U

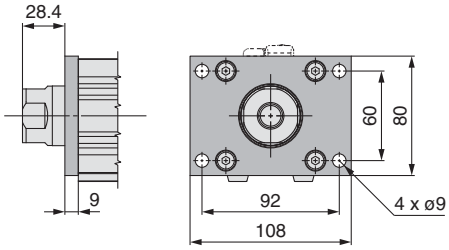




[mm]

Size	Stroke range [mm]	L	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	20 to 74	37.4	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124			45	60.5						
	125 to 200			58	67						
	201 to 500			86	81		100				
	501 to 800						135				

Rod flange: LEY63□□□-□□F



Included parts
- Flange
- Body mounting bolt

Material: Carbon steel (Nickel plated)

Electric Actuator/Rod Type

AC Servo Motor

Series LEY-X5

LEY25, 32

Dust/Drip proof (IP65) specification

How to Order

LEY 25 ❑ S2 B – 100 ❑ ❑ ❑ – S 2 A1 ❑ – X5

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬

● Dust/Drip proof specification

❶ Size

25	
32	

❷ Motor mounting position

—	Top mounting
D	In-line

❸ Motor type*

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

❹ 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.

❺ Stroke [mm]

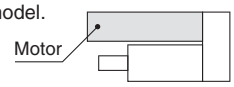
30	30
to	to
500	500

* Refer to the applicable stroke table.

❻ Motor option

—	Without option
B	With lock*

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



❼ Rod end thread

—	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	In-line
—	Ends tapped (Standard)*2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange*2	●	●
G	Head flange*2	●*3	—

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

*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
- LEY25: 200 or less
- LEY32: 100 or less

*3 Head flange is not available for the LEY32.

❾ Cable type*

—	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 132 for details.)

❿ Cable length [m]*

—	Without cable
2	2
5	5
A	10

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

⓫ Driver type*

	Compatible drivers	Power supply voltage [V]
—	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)
— : Without cable and driver

⓬ I/O connector

—	Without connector
H	With connector

* Applicable stroke table ●Standard

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

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

* For auto switches, refer to page 28.

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		8	16	30	9	19	37	12	24	46
	Pushing force [N] Note 3) (Set value: 15 to 30%)			65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s] Note 4)	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	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/s²]			5,000			5,000					
	Positioning repeatability [mm]			±0.02			±0.02					
	Lead [mm]			12	6	3	20 Note 6)	10 Note 6)	5 Note 6)	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)			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			IP65								
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Required conditions for Note 8) "Regeneration option" [kg]	Horizontal		8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required
		Vertical		3 or more	2 or more	2 or more	6 or more	7 or more	11 or more	6 or more	7 or more	12 or more
Electric specifications	Motor output/Size			100 W/□40			200 W/□60					
	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 9)	Horizontal		45			65			65		
		Vertical		145			175			175		
	Standby power consumption when operating [W] Note 10)	Horizontal		2			2			2		
		Vertical		8			8			8		
	Max. instantaneous power consumption [W] Note 11)			445			724			724		
Lock unit specifications	Type Note 12)			Non-magnetizing lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20°C Note 13)			6.3			7.9			7.9		
	Rated voltage [V]			24 VDC $^{0}_{-10\%}$								

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph" on page 88.
Note 4) The allowable speed changes according to the stroke.
Note 5) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 6) Equivalent lead which includes the pulley ratio [1.25:1]
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%). Order the regeneration option separately. For details and order numbers, refer to "Required Conditions for Regeneration Option" on pages 86 and 87.
Note 9) The power consumption (including the driver) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 11) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 12) Only when motor option "With lock" is selected.
Note 13) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY25S□ (Motor mounting position: Top 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

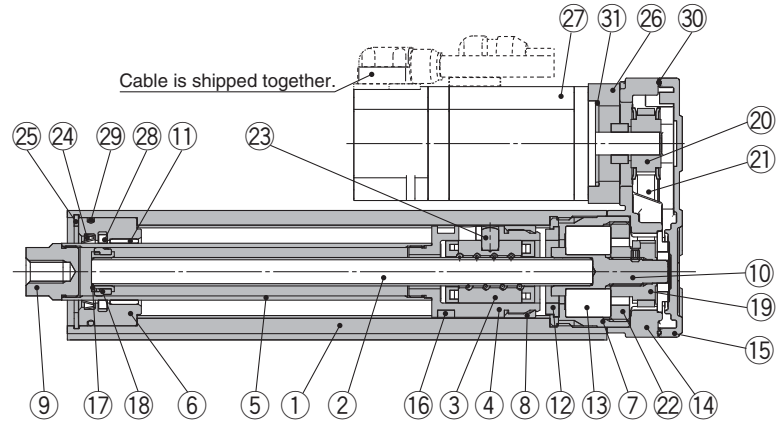
Additional Weight

[kg]

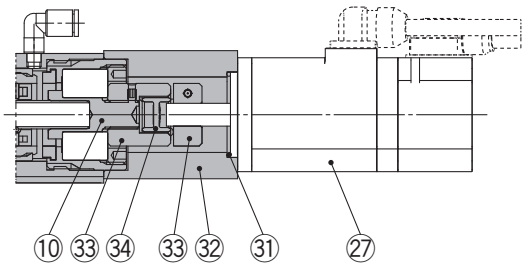
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

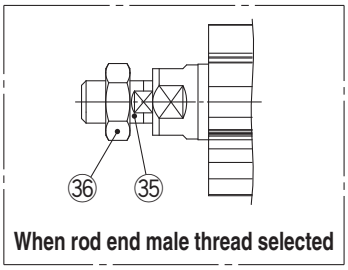
Construction

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**	Aluminium alloy	Anodised
2	**Ball screw (shaft)**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome Anodised
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plated
10	**Connected shaft**	Free cutting carbon steel	Nickel plated
11	**Bushing**	Lead bronze cast	
12	**Bumper**	Urethane	
13	**Bearing**	—	
14	**Return box**	Aluminium die-cast	Coating
15	**Return plate**	Aluminium 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**	Aluminium alloy	
20	**Motor pulley**	Aluminium alloy	
21	**Belt**	—	
22	**Bearing stopper**	Aluminium alloy	
23	**Parallel pin**	Stainless steel	
24	**Scraper**	Nylon	
25	**Retaining ring**	Steel for spring	Nickel plated
26	**Motor adapter**	Aluminium alloy	Coating
27	**Motor**	—	
28	**Lub-retainer**	Felt	
29	**O-ring**	NBR	
30	**Gasket**	NBR	
31	**O-ring**	NBR	
32	**Motor block**	Aluminium alloy	Coating
33	**Hub**	Aluminium alloy	
34	**Spider**	Urethane	
35	**Socket (Male thread)**	Free cutting carbon steel	Nickel plated
36	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Top mounting only)/Belt

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

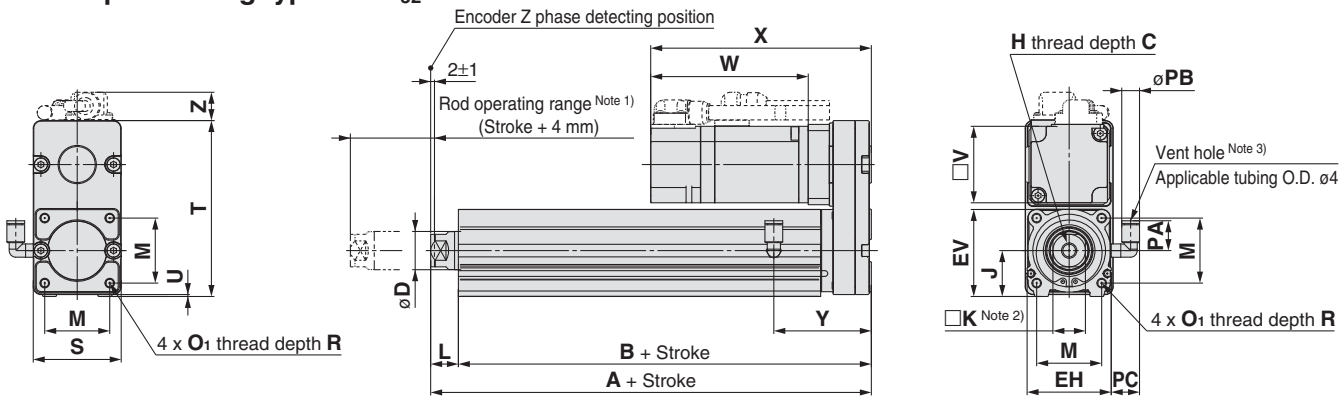
Replacement Parts/Grease Pack

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

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

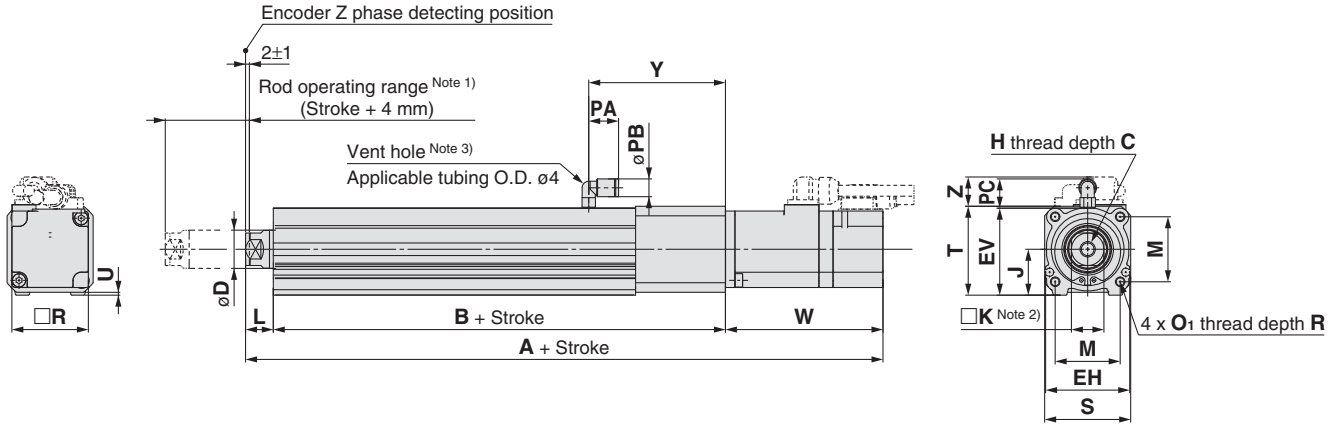
Dimensions

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



Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O_1	R	PA	PB	V
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.6	9.3	40
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.6	9.3	60
	101 to 500	178.5	160														

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



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

Size	Stroke range [mm]	H	J	K	L	M	O_1	R	PA	PB	V	S	T	U	PC	Y
25	15 to 100	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.6	9.3	40	45	46.5	1.5	15.3	71.5
	101 to 400															
32	20 to 100	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.6	9.3	60	60	61	1	15.3	87
	101 to 500															

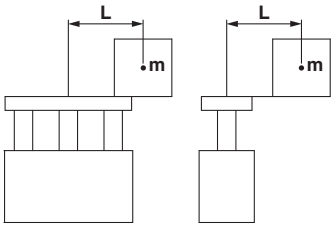
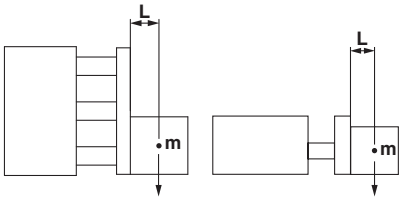
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.
Note 3) The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 95.
For the mounting dimensions, refer to page 19.

Model Selection

Moment Load Graph

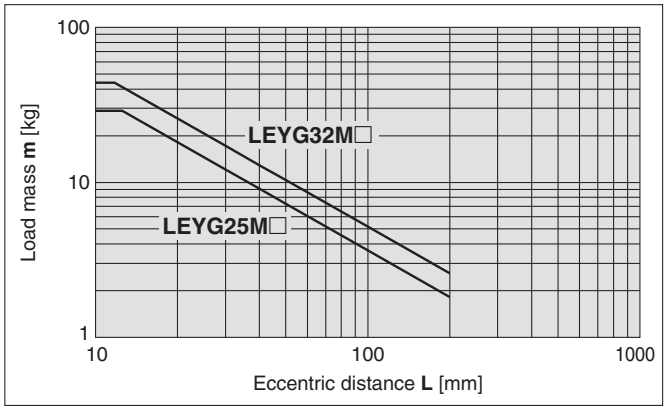
Selection conditions

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

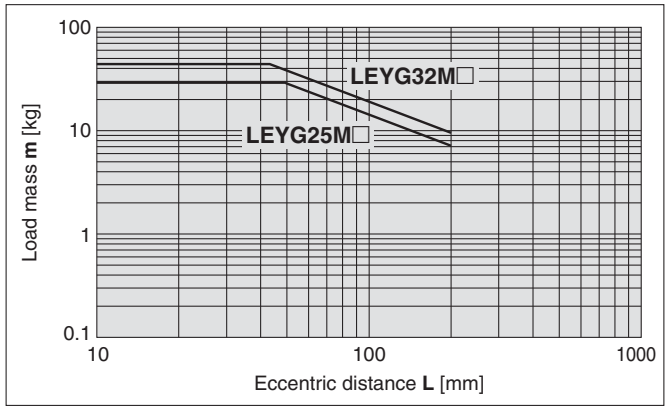
∗ For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 stroke or less



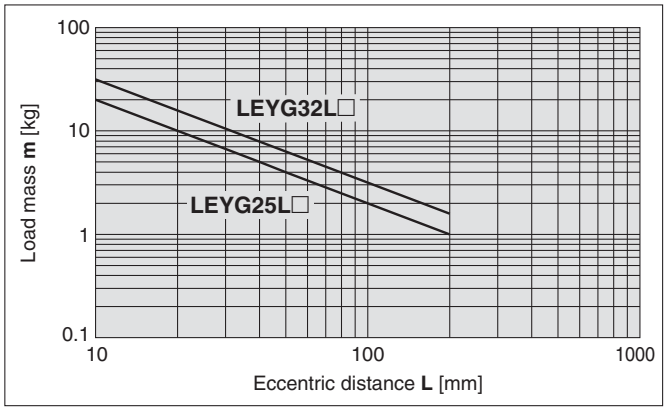
② Over 75 stroke



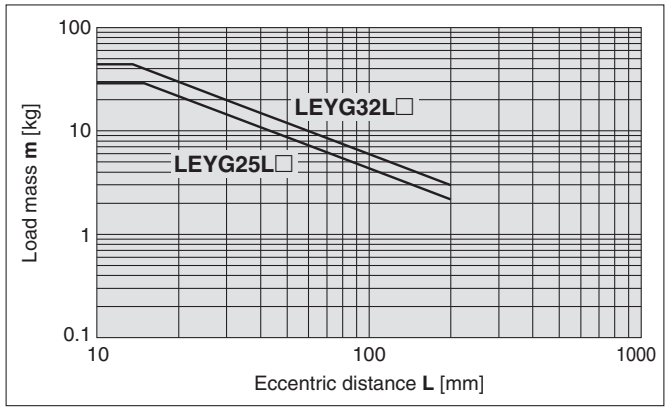
∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 109.

Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



④ Over 40 stroke

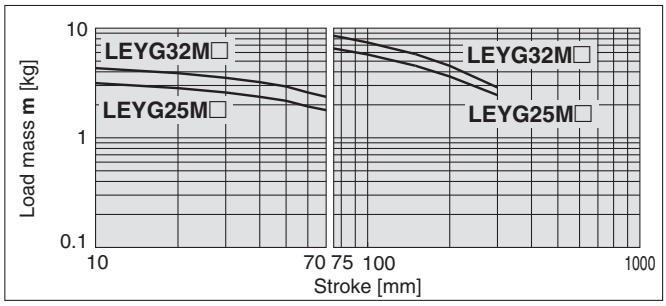


∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 109.

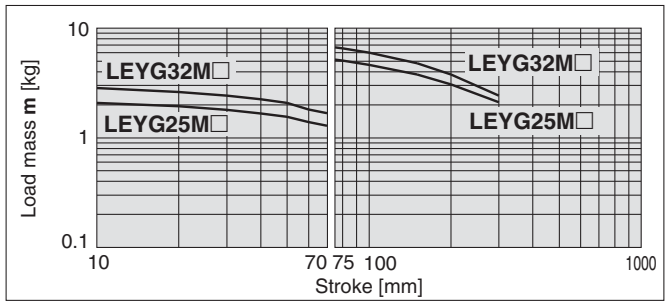
Moment Load Graph

Horizontal Mounting, Sliding Bearing

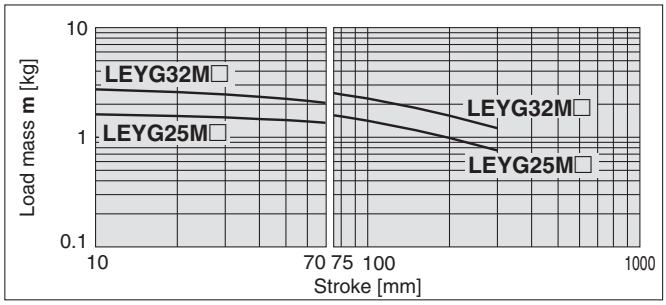
⑤ **L = 50 mm Max. speed = 200 mm/s or less**



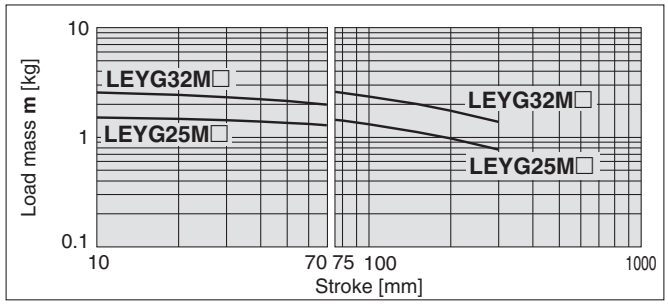
⑥ **L = 100 mm Max. speed = 200 mm/s or less**



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

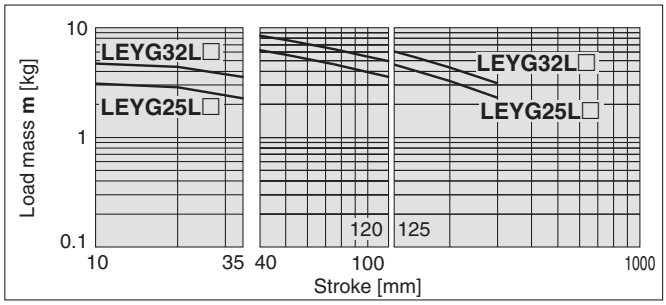


⑧ **L = 100 mm Max. speed = Over 200 mm/s**

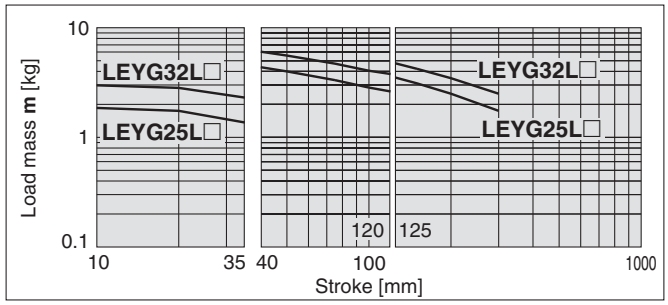


Horizontal Mounting, Ball Bushing Bearing

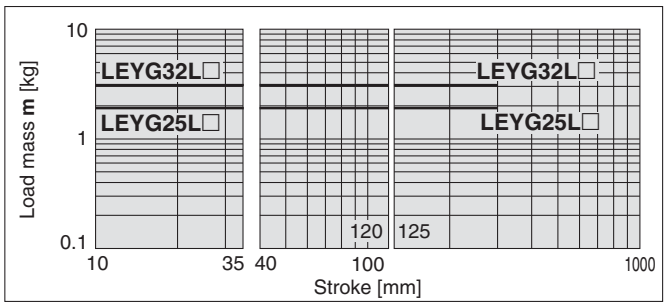
⑨ **L = 50 mm Max. speed = 200 mm/s or less**



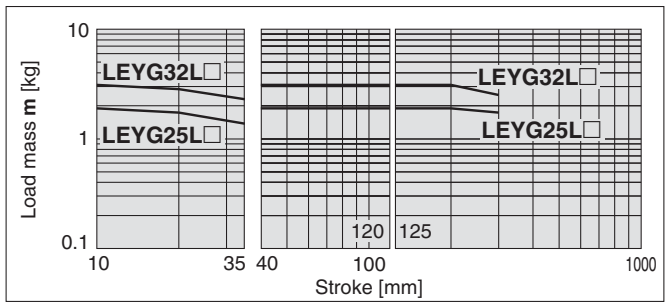
⑩ **L = 100 mm Max. speed = 200 mm/s or less**



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

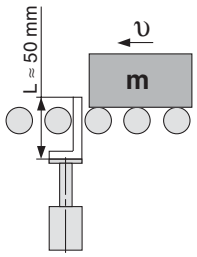


⑫ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

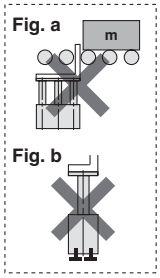
Handling Precautions

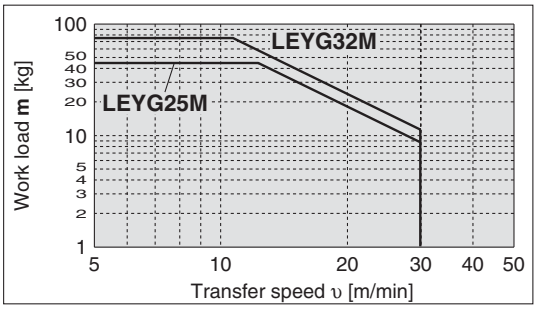
Note 1) When used as a stopper, select a model with 30 stroke or less.

Note 2) LEYG□L (ball bushing bearing) cannot be used as a stopper.

Note 3) Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).

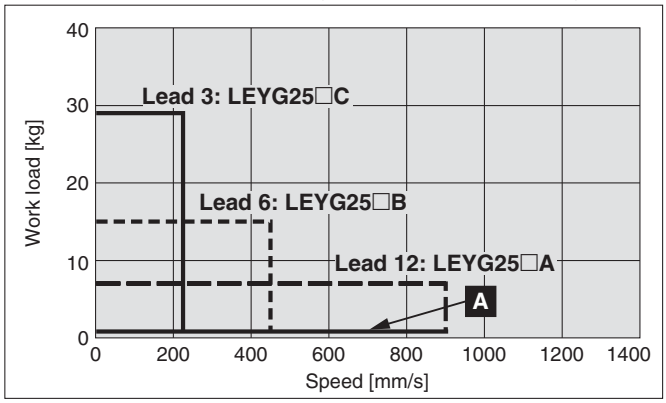
Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).





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

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



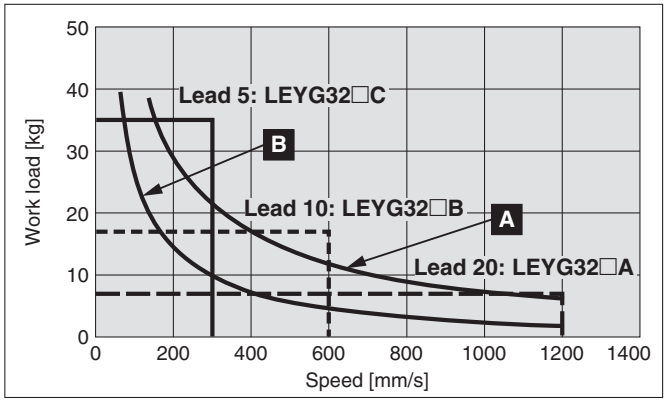
Required conditions for "Regeneration option"

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

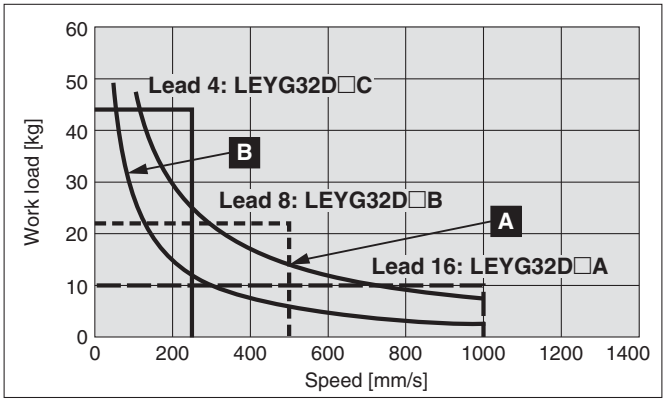
"Regeneration Option" Models

Operating conditions	Regenerative conditions	Vertical transfer
A	Duty ratio 50% or more	LEC-MR-RB032
B	Duty ratio 100%	

LEYG32□ (Motor mounting position: Top mounting)

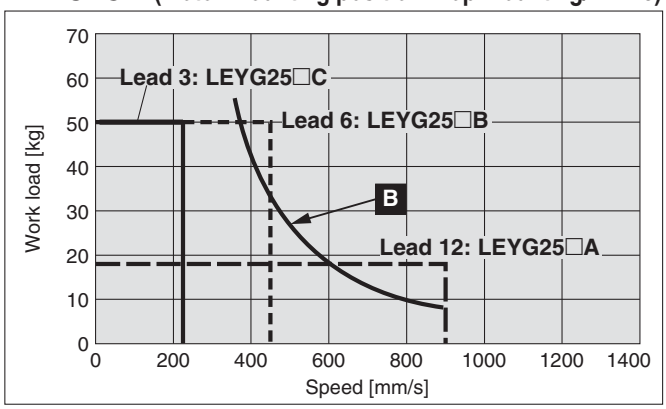


LEYG32D (Motor mounting position: In-line)



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

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



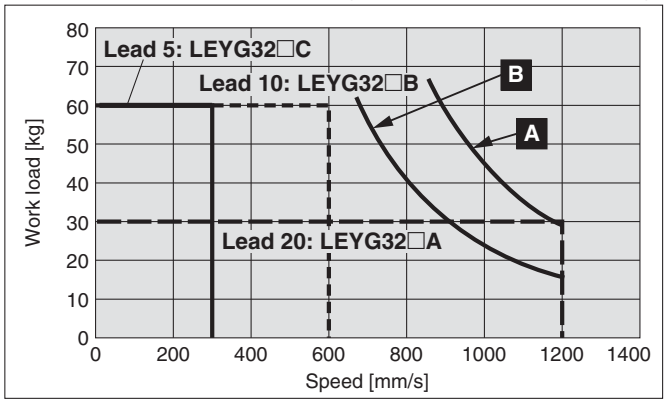
Required conditions for "Regeneration option"

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

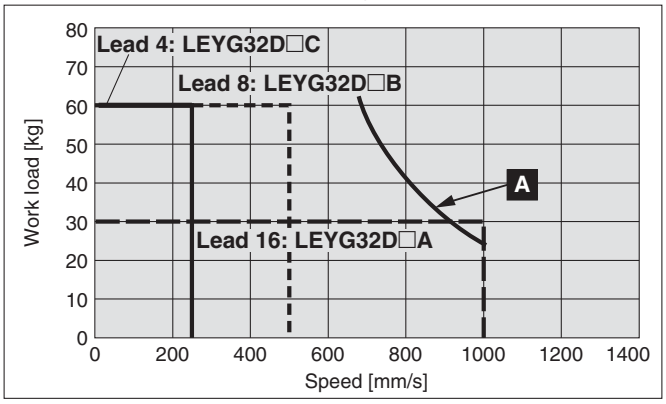
"Regeneration Option" Models

Operating conditions	Regenerative conditions	Horizontal transfer
A	Duty ratio 50% or more	LEC-MR-RB032
B	Duty ratio 100%	

LEYG32□ (Motor mounting position: Top mounting)

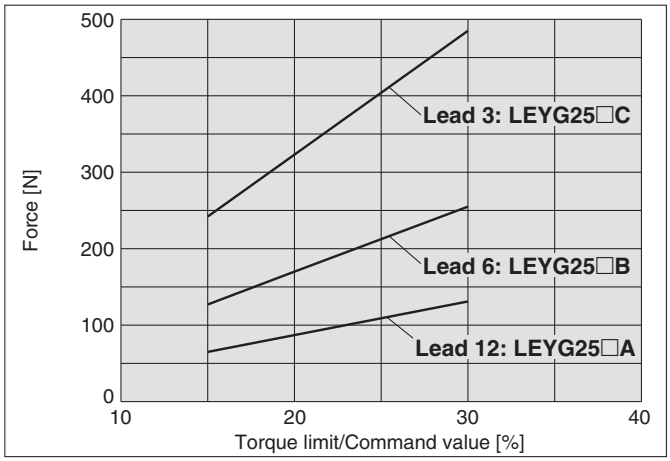


LEYG32D (Motor mounting position: In-line)

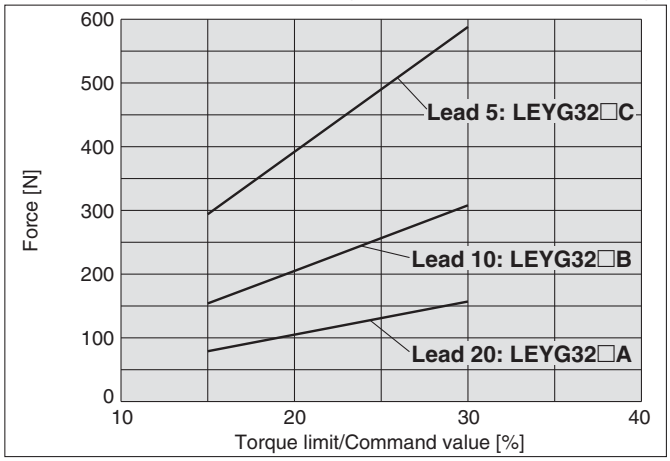


Force Conversion Graph

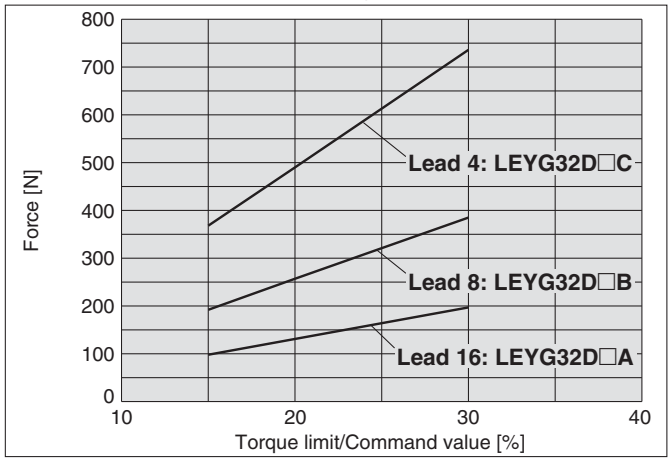
LEYG25□ (Motor mounting position: Top mounting/In-line)



LEYG32□ (Motor mounting position: Top mounting)



LEYG32D (Motor mounting position: In-line)



∗1 Motor type: When limiting torque with incremental encoder, parameter No. PC12/the value of the internal torque command should be set 30% or less.
∗2 Motor type: When limiting torque with absolute encoder, parameter No. PC13/the value of the maximum output command for analogue torque should be set 30% or less.

Electric Actuator/Guide Rod Type

AC Servo Motor

Series LEYG

LEYG25, 32

RoHS

How to Order

LEYG 25 M □ S2 B – 100 □ □ – S 2 A1 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬

❶ Size

25
32

❷ Bearing type

M	Sliding bearing
L	Ball bushing bearing

❸ Motor mounting position

—	Top mounting
D	In-line

❹ Motor type[*1]

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

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

∗2: For details about the driver, refer to page 121.

❺ Lead [mm]

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

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

❻ Stroke [mm]

30	30
to	to
300	300

∗ Refer to the table below for details.

❼ Motor option

—	Without option
B	With lock

❽ Guide option

—	Without option
F	With grease retaining function

∗ Only available for size 25 and 32 sliding bearings. (Refer to “Construction” on page 114.)

❾ Cable type∗

—	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 132 for details.)

❿ Cable length∗ **[m]**

—	Without cable
2	2
5	5
A	10

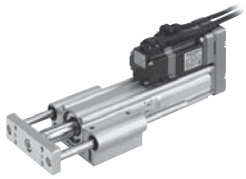
∗ The length of the encoder, motor and lock cables are the same.

∗ Applicable stroke table ●Standard

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

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

For auto switches, refer to pages 21 and 22.



Motor mounting position: Top mounting

Motor mounting position: In-line

⓫ Driver type*

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

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

⓬ I/O connector

—	Without connector
H	With connector

Use of auto switches for the guide rod type LEYG series
· Insert the auto switch from the front side with rod (plate) sticking out.
· For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
· Consult with SMC when using auto switch on the rod stick out side.

Compatible Drivers

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET III type
				
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III type
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage (V)	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)			
Reference page	Page 121			

Specifications

Model			LEYG25□S$^{2}_{6}$ (Top mounting) LEYG25□DS$^{2}_{6}$ (In-line)			LEYG32□S$^{3}_{7}$ (Top mounting)			LEYG32□DS$^{3}_{7}$ (In-line)		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150, 200, 250, 300			30, 50, 100, 200, 250, 300			30, 50, 100, 200, 250, 300		
	Work load [kg]	Horizontal Note 2)	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	Pushing force [N] Note 3) (Set value: 15 to 30%)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s²] Note 4)		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5,000			5,000					
	Positioning repeatability [mm]		±0.02			±0.02					
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²] Note 5)		50/20			50/20					
	Actuation type		Ball screw + Belt [1:1]/Ball screw			Ball screw + Belt [1:1.25]			Ball screw		
	Guide type		Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)								
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Required conditions for "Regeneration option" [kg] Note 6)	Horizontal	8 or more	31 or more	Not required	15 or more	Not required	Not required	23 or more	Not required	Not required
		Vertical	2 or more	1 or more	1 or more	4 or more	5 or more	9 or more	4 or more	5 or more	9 or more
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 18-bit encoder (Resolution: 262144 p/rev)								
	Power consumption [W] Note 7)	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W] Note 8)	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W] Note 9)		445			724			724		
Lock unit specifications	Type Note 10)		Non-magnetizing lock			Non-magnetizing lock					
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption at 20°C [W] Note 11)		6.3			7.9			7.9		
	Rated voltage [V]		24 VDC $^{0}_{-10\%}$								

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes accoding to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph" on page 110.
Note 4) The allowable collision speed for the pushing operation with the torque control mode, etc.
Note 5) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 6) The work load conditions which require "Regeneration option" when operating at the maximum speed (Duty ratio: 100%). Order the regeneration option separately. For details and order numbers, refer to "Required Conditions for Regeneration Option" on page 109.
Note 7) The power consumption (including the driver) is for when the actuator is operating.
Note 8) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during operation.
Note 9) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating.
Note 10) Only when motor option "With lock" is selected.
Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Top Mounting Type

[kg]

Series		LEYG25M							LEYG32M						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.80	1.99	2.31	2.73	3.07	3.41	3.67	3.24	3.50	4.05	4.80	5.35	5.83	6.28
	Absolute encoder	1.86	2.05	2.37	2.79	3.13	3.47	3.73	3.18	3.44	3.99	4.74	5.29	5.77	6.22

Series		LEYG25L							LEYG32L						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.81	2.02	2.26	2.69	2.95	3.27	3.51	3.24	3.51	3.9	4.64	5.06	5.56	5.96
	Absolute encoder	1.87	2.08	2.32	2.75	3.01	3.33	3.57	3.18	3.45	3.84	4.58	5.00	5.50	5.90

Weight: In-line Motor Type

[kg]

Series		LEYG25MD							LEYG32MD						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.83	2.02	2.34	2.76	3.10	3.44	3.70	3.26	3.52	4.07	4.82	5.37	5.85	6.30
	Absolute encoder	1.89	2.08	2.40	2.82	3.16	3.50	3.76	3.20	3.46	4.01	4.76	5.31	5.79	6.24

Series		LEYG25LD							LEYG32LD						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.84	2.05	2.29	2.72	2.98	3.30	3.54	3.26	3.53	3.92	4.66	5.08	5.58	5.98
	Absolute encoder	1.90	2.11	2.35	2.78	3.04	3.36	3.60	3.20	3.47	3.86	4.60	5.02	5.52	5.92

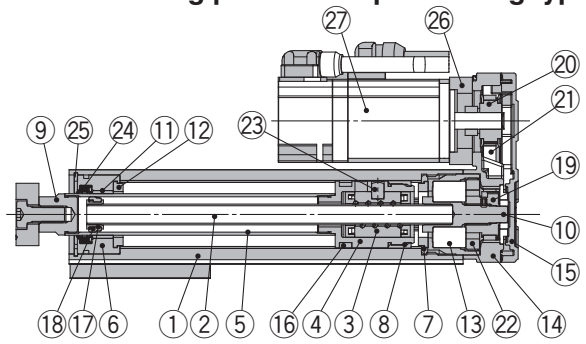
Additional Weight

[kg]

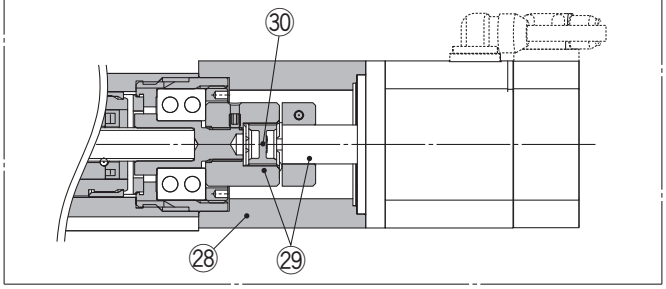
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66

Construction

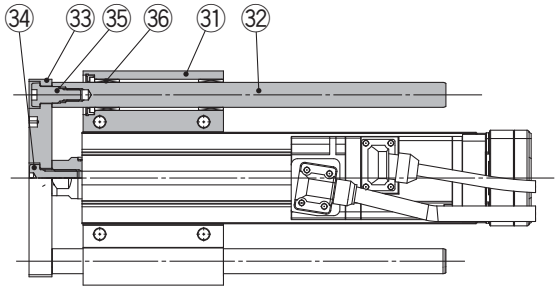
Motor mounting position: Top mounting type



Motor mounting position: In-line type



LEYG□M

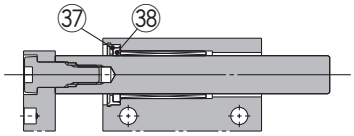


LEYG25/32: 50st or less

LEYG25/32: Over 50st

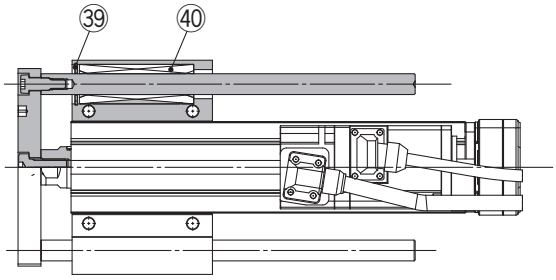
When grease retaining function selected

LEYG25/32: 50st or less

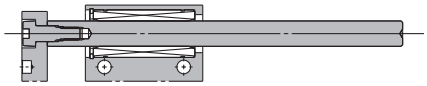


LEYG25/32: Over 50st

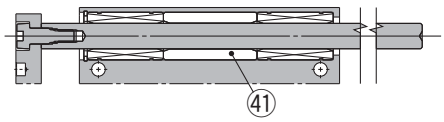
LEYG□L



LEYG25/32L: 100st or less



LEYG25/32: Over 100st



Component Parts

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

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

Support Block

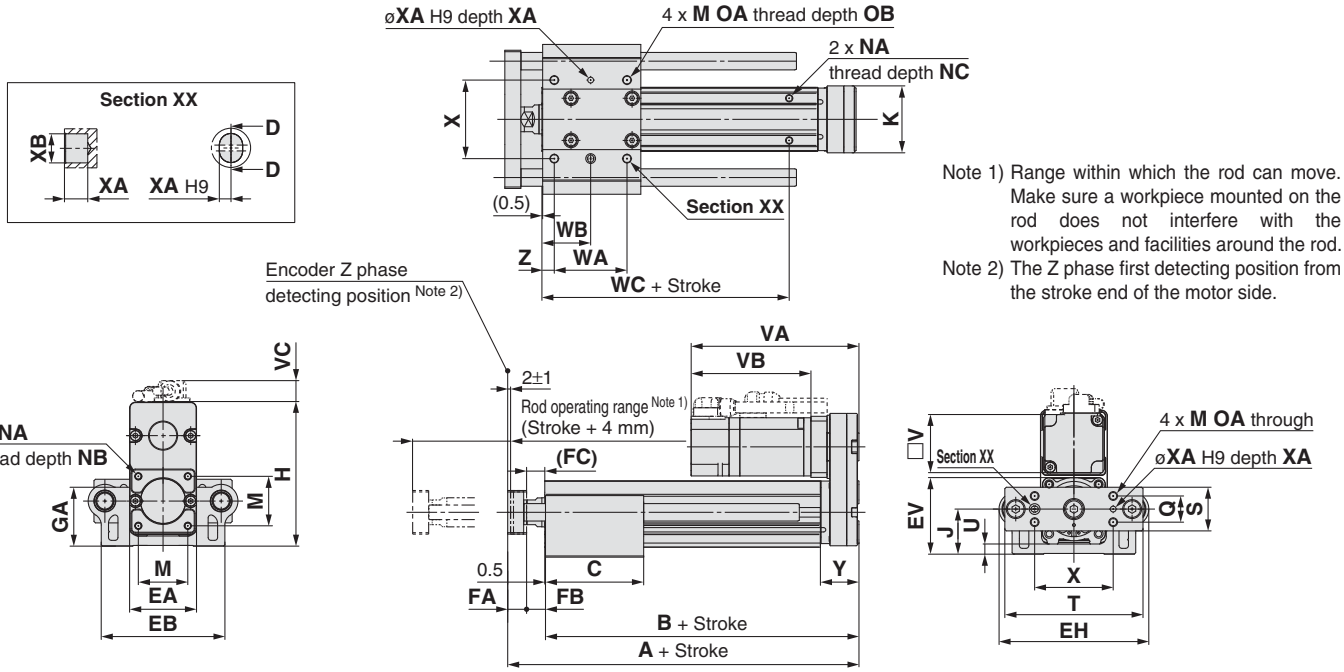
Size	Order no.
25	LEYG-S025
32	LEYG-S032

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

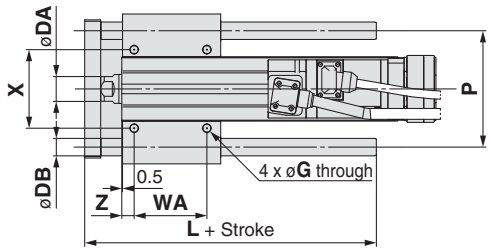
Replacement Parts /Belt

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

Dimensions: Top Mounting



Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The Z phase first detecting position from the stroke end of the motor side.



LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	34	

LEYG□M (Sliding bearing) [mm]

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

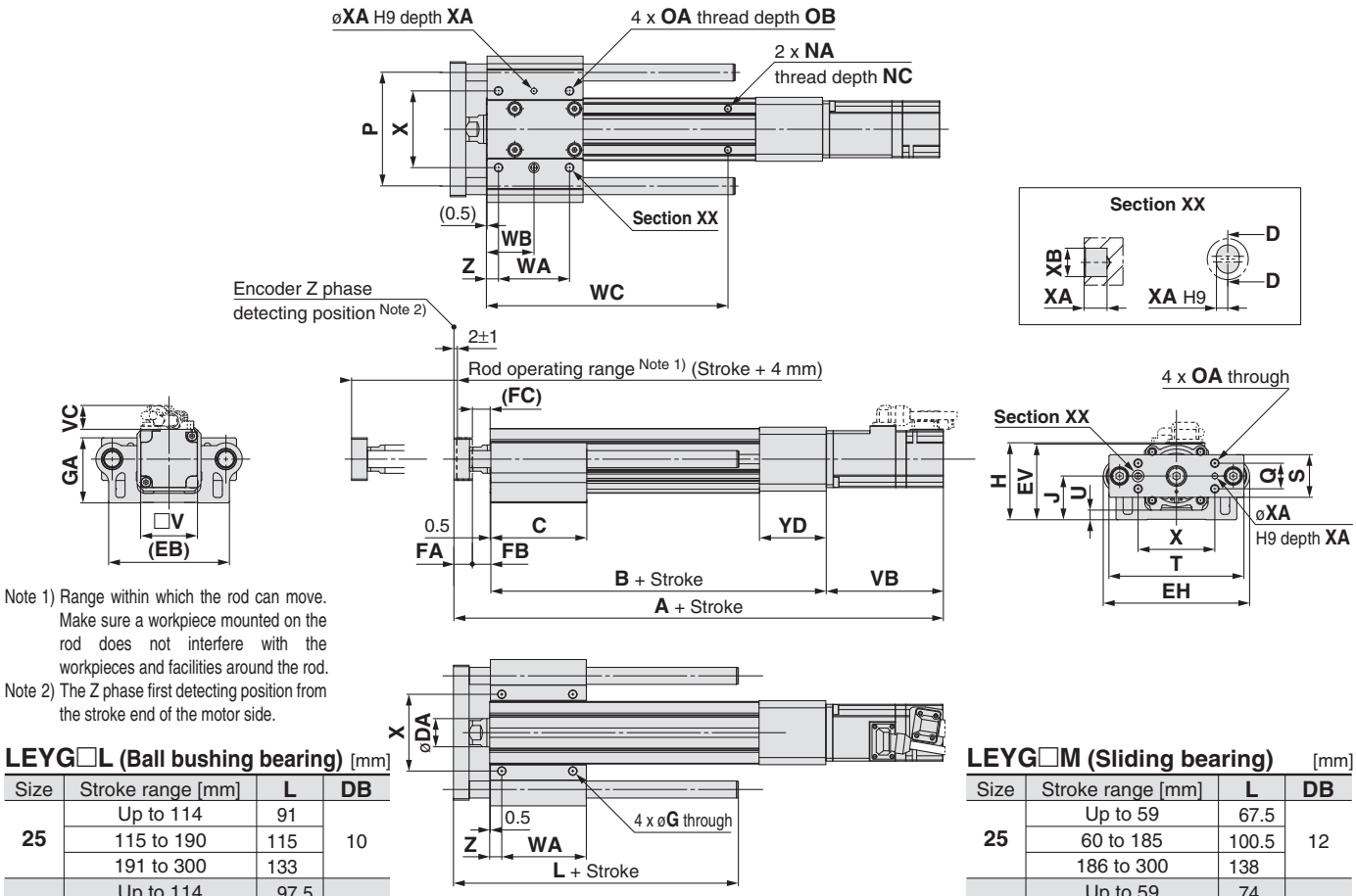
LEYG□M, LEYG□L Common [mm]

Size	Stroke range [mm]	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
25	Up tp 39	141.5	116	50	20	46	85	103	52.5	11	14.5	12.5	5.4	41	99	31	29	34	M5 x 0.8	8	6.5
	40 to 100			67.5																	
	101 to 124	166.5	141																		
	125 to 200			84.5																	
	201 to 300			102																	
32	Up tp 39	160.5	130	55	25	60	101	123	64	12	18.5	16.5	5.4	50.5	126	38.5	30	40	M6 x 1.0	10	8.5
	40 to 100			68																	
	101 to 124	190.5	160																		
	125 to 200			85																	
	201 to 300			102																	

Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	Y	Z
25	Up tp 39	M6 x 1.0	12	80	18	30	95	7	40	35	26	70	54	4	5	26.5	8.5
	40 to 100									50	33.5						
	101 to 124											95					
	125 to 200									70	43.5						
	201 to 300									85	51						
32	Up tp 39	M6 x 1.0	12	95	28	40	117	7.5	60	40	28.5	75	64	5	6	34	8.5
	40 to 100									50	33.5						
	101 to 124											105					
	125 to 200									70	43.5						
	201 to 300									85	51						

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

Dimensions: In-line Motor



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

Note 2) The Z phase first detecting position from the stroke end of the motor side.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	34	

LEYG□M (Sliding bearing) [mm]

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

LEYG□M, LEYG□L Common

[mm]

Size	Stroke range [mm]	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
25	Up to 39	115.5	50	20	46	85	103	52.5	11	14.5	12.5	5.4	40.5	53.5	31	29	M5 x 0.8	6.5
	40 to 100		67.5															
	101 to 124	140.5																
	125 to 200		84.5															
	201 to 300		102															
32	Up to 39	128	55	25	60	101	123	64	12	18.5	16.5	5.4	50.5	68.5	38.5	30	M6 x 1.0	8.5
	40 to 100		68															
	101 to 124	158																
	125 to 200		85															
	201 to 300		102															

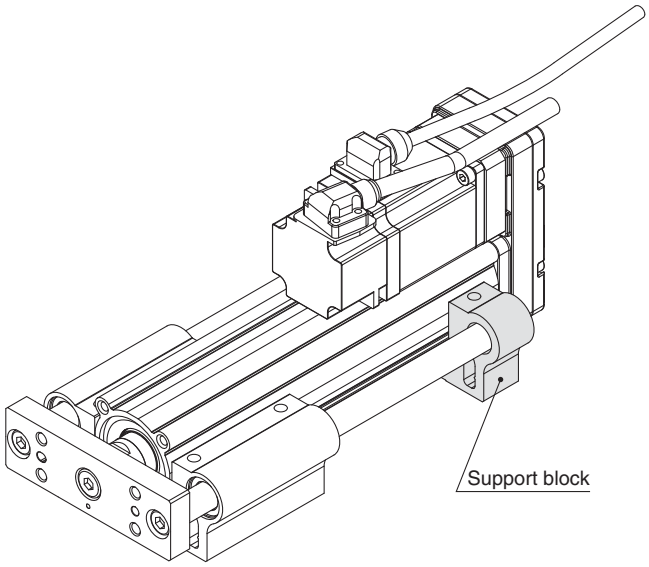
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z
25	Up to 39	M6 x 1.0	12	80	18	30	95	7	40	35	26	70	54	4	5	47	8.5
	40 to 100									50	33.5						
	101 to 124											95					
	125 to 200									70	43.5						
	201 to 300									85	51						
32	Up to 39	M6 x 1.0	12	95	28	40	117	7.5	60	40	28.5	75	64	5	6	60	8.5
	40 to 100									50	33.5						
	101 to 124											105					
	125 to 200									70	43.5						
	201 to 300									85	51						

Size	Stroke range [mm]	Incremental encoder						Absolute encoder					
		Without lock			With lock			Without lock			With lock		
		A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC
25	15 to 100	249	87	14.6	285.9	123.9	16.3	244.4	82.4	14.6	285.5	123.5	16.3
	105 to 300	274			310.9			269.4			315.5		
32	15 to 100	274.7	88.2	17.1	303.3	116.8	17.1	263.1	76.6	17.1	302.6	116.1	17.1
	105 to 300	304.7			333.3			293.1			332.6		

Support Block

●Guide for support block application

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

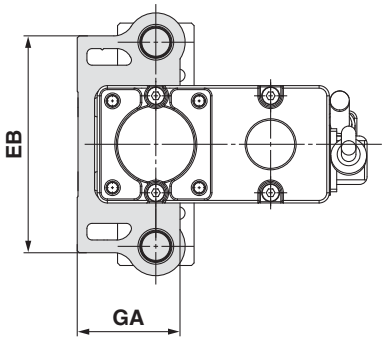


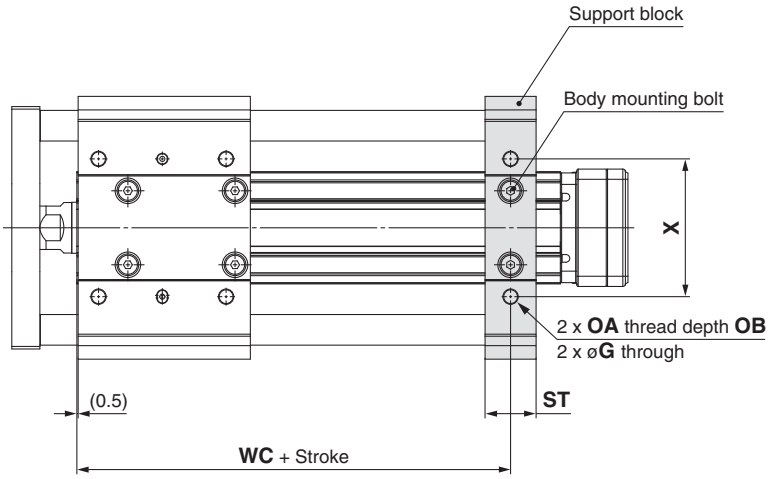
Support Block Model

LEYG−S025

●**Size**

025	For size 25
032	For size 32





⚠Caution

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

[mm]

Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
25	**LEYG-S025**	100st or less	85	5.4	40.5	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32	**LEYG-S032**	100st or less	101	5.4	50.5	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

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

Series LEY/LEYG
Electric Actuators/ Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Design/Selection

⚠Warning

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

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

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

This can cause failure.

3. Do not use as a stopper.

Handling

⚠Caution

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

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

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

It may lead to damage and malfunction.

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

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

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

Check the model selection section of the catalogue.

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

Additional force will cause the displacement of the origin position.

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

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

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

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

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

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

Handling

⚠Caution

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

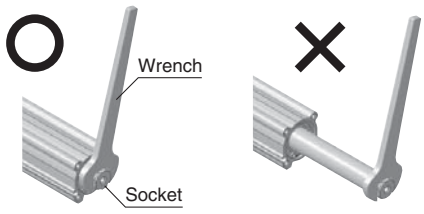
Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.

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

This may cause deformation of the non-rotating guide, abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.
Refer to the table below for the approximate values of the allowable range of rotational torque.

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

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



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

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

Enclosure

IP – □□

First characteristic numeral ● ● **Second characteristic numeral**

- **First Characteristics:**
  Degrees of protection against solid foreign objects

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

Electric Actuators/ Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Enclosure

- **Second Characteristics: Degrees of protection against water**

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

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

Mounting

⚠Caution

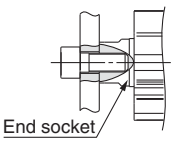
1. When mounting workpieces or jigs to the piston rod end, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.

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

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

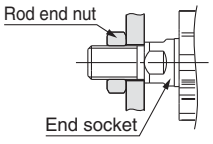
Tightening with higher torque than the specified range may cause malfunction while the tightening with lower torque can cause the displacement of gripping position or dropping a workpiece.

Workpiece fixed/Rod end female thread

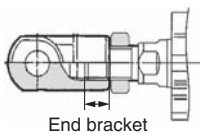


Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth [mm]	End socket width across flats [mm]
LEY25	M8 x 1.25	12.5	13	17
LEY32	M8 x 1.25	12.5	13	22

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



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



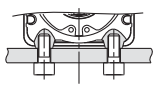
Model	Rod end nut		End bracket
	Width across flats [mm]	Length [mm]	screw-in depth [mm]
LEY25	22	8	8 or more
LEY32	22	8	8 or more

∗ Rod end nut is an accessory.

Mounting

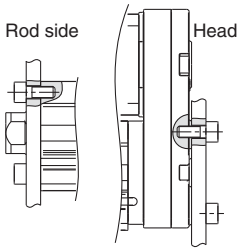
⚠Caution

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



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

Body fixed/Rod side/Head side tapped style

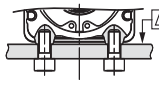


Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY25	M5 x 0.8	3.0	8
LEY32	M6 x 1.0	5.2	10

∗ Except the LEY□D.

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

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

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

Maintenance

⚠Warning

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

- **Maintenance frequency**

Perform maintenance according to the table below.

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

∗ Select whichever comes sooner.

- **Items for visual appearance check**

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

- **Items for belt check**

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

a. Tooth shape canvas is worn out
Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt
Belt corner becomes round and frayed thread sticks out.

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

d. Vertical line of belt teeth
Flaw which is made when the belt runs on the flange.

e. Rubber back of the belt is softened and sticky

f. Crack on the back of the belt

AC Servo Motor Driver
Series LECS□

Pulse Input Type/
Positioning Type

Incremental Type

Series LECSA

Pulse Input Type

Absolute Type

Series LECSB

CC-Link Direct Input Type

Absolute Type

Series LECSC

SSCNET III Type

Absolute Type

Series LECSS

AC Servo Motor Driver
Series LECS□

Power supply voltage	100 to 120 VAC 200 to 230 VAC
Motor capacity	100/200/400 W

Incremental Type

Series LECSA (Pulse input type/Positioning type)

- **Up to 7 positioning points by point table**
- **Input type:** Pulse input
- **Control encoder:** Incremental 17-bit encoder (Resolution: 131072 pulse/rev)
- **Parallel input:** 6 inputs
  output: 4 outputs

Absolute Type

Series LECSB (Pulse input type)

- **Input type:** Pulse input
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)
- **Parallel input:** 10 inputs
  output: 6 outputs

Series LECSC (CC-Link Direct Input Type)

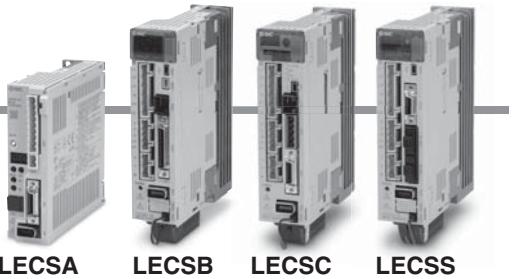
CC-Link

- **Position data/speed data setting and operation start/stop**
- **Positioning by up to 255 point tables (when 2 stations occupied)**
- **Up to 32 drivers connectable (when 2 stations occupied) with CC-Link communication**
- **Applicable Fieldbus protocol:** CC-Link (Ver. 1.10, max. communication speed: 10 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)

Series LECSS (SSCNET III Type)

- **Compatible with Mitsubishi Electric's servo system controller network**
- **Reduced wiring and SSCNET III optical cable for one-touch connection**
- **SSCNET III optical cable provides enhanced noise resistance**
- **Up to 16 drivers connectable with SSCNET III communication**
- **Applicable Fieldbus protocol:** SSCNET III
  (High-speed optical communication, max. bidirectional communication speed: 100 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)

AC Servo Motor Driver
Incremental Type
Series LECSA (Pulse Input Type/Positioning Type)
Absolute Type
Series LECSB/LECSC/LECSS
(Pulse Input Type) (CC-Link Direct Input Type) (SSCNET III Type)


LECSA LECSB LECSC LECSS

How to Order

Driver LECS **A** **1** – **S1**

Driver type

A	Pulse input type/Positioning type (For incremental encoder)
B	Pulse input type (For absolute encoder)
C	CC-Link direct input type (For absolute encoder)
S	SSCNET III type (For absolute encoder)

Power supply voltage

1	100 to 120 VAC, 50/60 Hz
2	200 to 230 VAC, 50/60 Hz

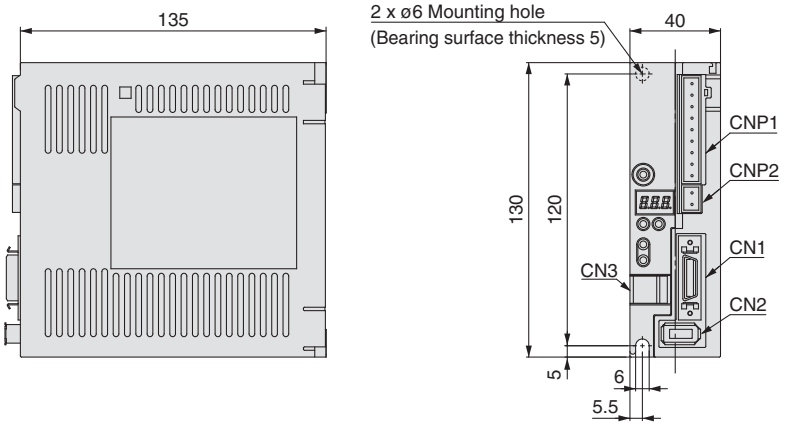
Compatible motor type

Symbol	Type	Capacity	Encoder
S1	AC servo motor (S2)	100 W	Incremental
S3	AC servo motor (S3)	200 W	
S4	AC servo motor (S4)*	400 W	
S5	AC servo motor (S6)	100 W	Absolute
S7	AC servo motor (S7)	200 W	
S8	AC servo motor (S8)*	400 W	

* Only available for power supply voltage "200 to 230 VAC".

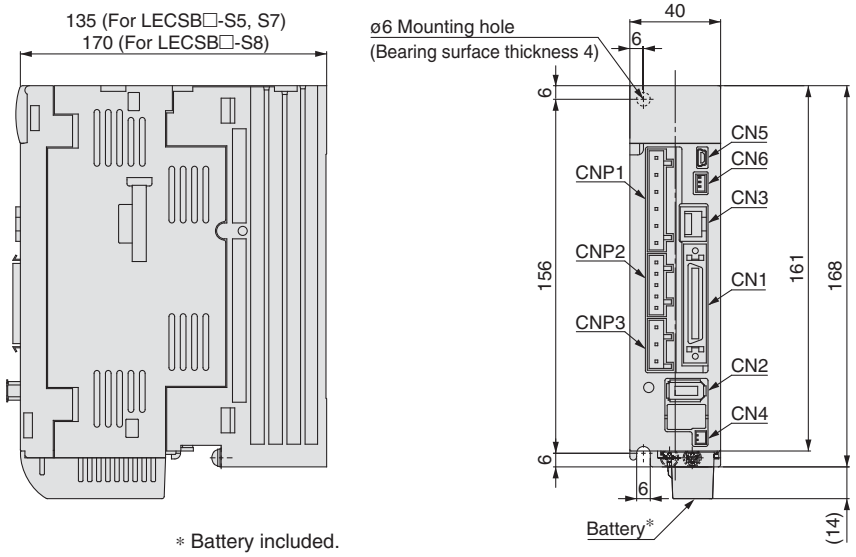
Dimensions

LECSA□



Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector

LECSB□

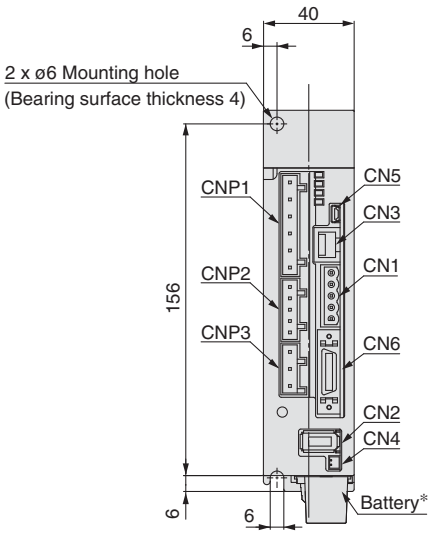


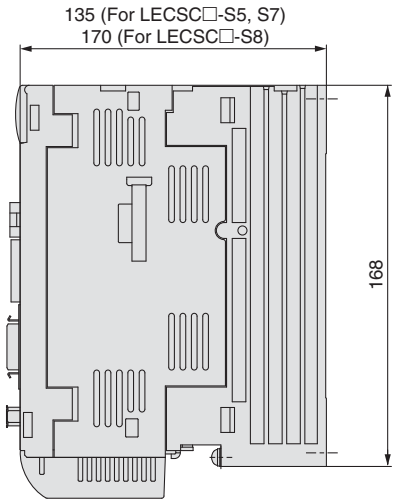
* Battery included.

Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analogue monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

Dimensions

LECSC□

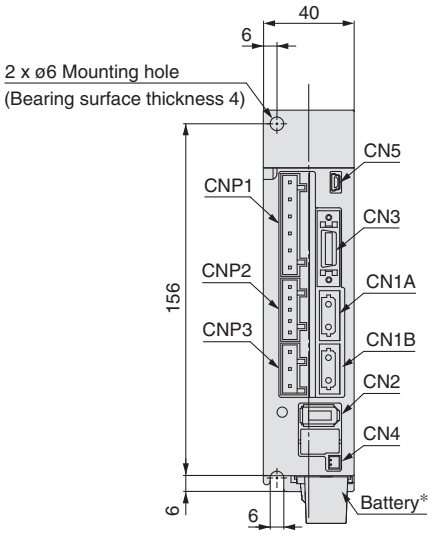


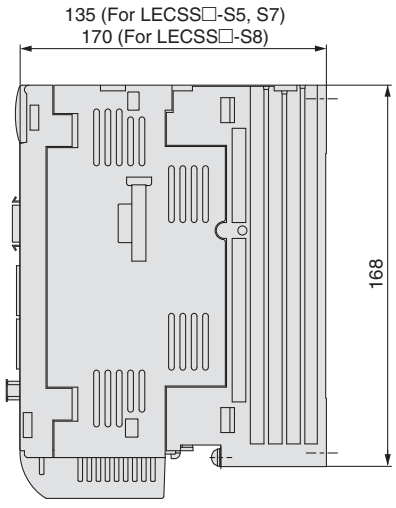


Connector name	Description
CN1	CC-Link connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	I/O signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ Battery included.

LECSS□





Connector name	Description
CN1A	Front axis connector for SSCNET III optical cable
CN1B	Rear axis connector for SSCNET III optical cable
CN2	Encoder connector
CN3	I/O signal connector
CN4	Battery connector
CN5	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ Battery included.

Specifications

Series LECSA

Model		LECSA1-S1	LECSA1-S3	LECSA2-S1	LECSA2-S3	LECSA2-S4
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Incremental 17-bit encoder (Resolution: 131072 p/rev)				
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	1.5	2.4	4.5
Control power supply	Control power supply voltage [V]	24 VDC				
	Allowable voltage fluctuation [V]	21.6 to 26.4 VDC				
	Rated current [A]	0.5				
Parallel input		6 inputs				
Parallel output		4 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)				
Function	In-position range setting [pulse]	0 to ±65535 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting				
	Communication	USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		−20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		600				700

Series LECSB

Model		LECSB1-S5	LECSB1-S7	LECSB2-S5	LECSB2-S7	LECSB2-S8
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	Control power supply voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Parallel input		10 inputs				
Parallel output		6 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)				
Function	In-position range setting [pulse]	0 to ±10000 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting or external analogue input setting (0 to 10 VDC)				
	Communication	USB communication, RS422 communication*1				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		−20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

*1 USB communication and RS422 communication cannot be performed at the same time.

Specifications

Series LECSC

Model			LECSC1-S5	LECSC1-S7	LECSC2-S5	LECSC2-S7	LECSC2-S8
Compatible motor capacity [W]			100	200	100	200	400
Compatible encoder			Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	**Power voltage [V]**		Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Three phase 170 to 253 VAC, Single phase 170 to 253 VAC		
	Rated current [A]		3.0	5.0	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**		Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]		0.4		0.2		
Communication specifications	**Applicable Fieldbus protocol (Version)**		CC-Link communication (Ver. 1.10)				
	Connection cable		CC-Link Ver. 1.10 compliant cable (Shielded 3-core twisted pair cable)*1				
	Remote station number		1 to 64				
	Cable length	**Communication speed [bps]**	16 k	625 k	2.5 M	5 M	10 M
		Maximum overall cable length [m]	1200	900	400	160	100
		Cable length between stations [m]	0.2 or more				
	I/O occupation area (Inputs/Outputs)		1 station occupied (Remote I/O 32 points/32 points)/(Remote register 4 words/4 words) 2 stations occupied (Remote I/O 64 points/64 points)/(Remote register 8 words/8 words)				
	Number of connectable drivers		Up to 42 (when 1 station is occupied by 1 driver), Up to 32 (when 2 stations are occupied by 1 driver), when there are only remote device stations.				
Command method	**Remote register input**		Available with CC-Link communication (2 stations occupied)				
	Point table No. input		Available with CC-Link communication, RS-422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS-422 communication: 255 points				
	Indexer positioning input		Available with CC-Link communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points				
Communication function			USB communication, RS-422 communication*2				
Operating temperature range [°C]			0 to 55 (No freezing)				
Operating humidity range [%RH]			90 or less (No condensation)				
Storage temperature range [°C]			–20 to 65 (No freezing)				
Storage humidity range [%RH]			90 or less (No condensation)				
Insulation resistance [MΩ]			Between the housing and SG: 10 (500 VDC)				
Weight [g]			800				1000

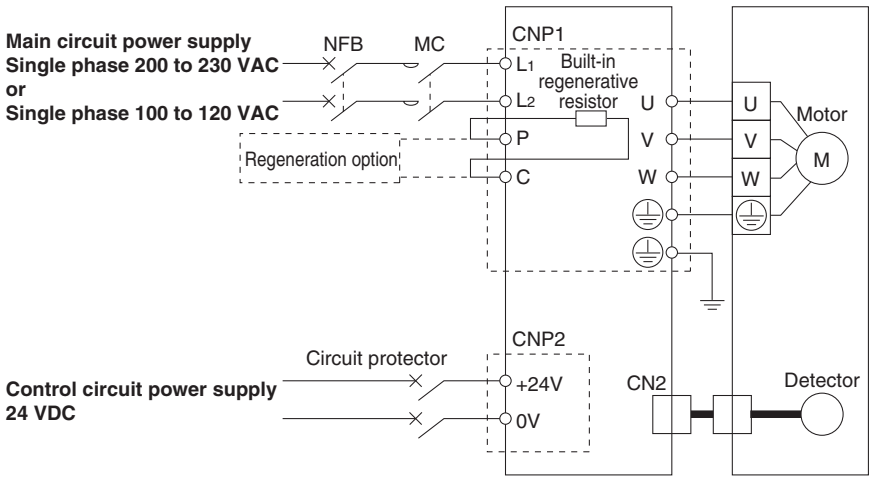
*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the cable extensions and the cable length between stations.
*2 USB communication and RS422 communication cannot be performed at the same time.

Series LECSS

Model		LECSS1-S5	LECSS1-S7	LECSS2-S5	LECSS2-S7	LECSS2-S8
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	**Power voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC, Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Applicable Fieldbus protocol		SSCNET III (High-speed optical communication)				
Communication function		USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

Power Supply Wiring Example: LECSA

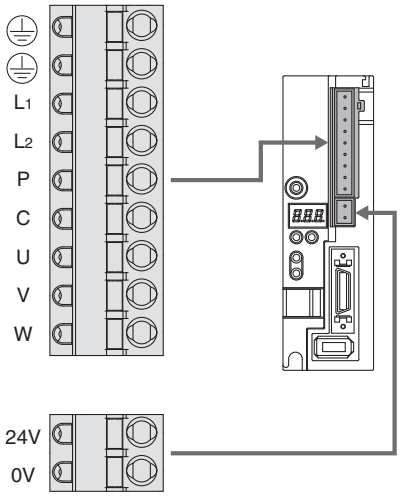
LECSA□-□



Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
⏚	Protective earth (PE)	Should be grounded by connecting the servo motor's earth terminal and the control panel's protective earth (PE).
L_1	Main circuit power supply	Connect the main circuit power supply. LECSA1: Single phase 100 to 120 VAC, 50/60 Hz LECSA2: Single phase 200 to 230 VAC, 50/60 Hz
L_2		
P	Regeneration option	Terminal to connect regeneration option LECSA□-S1: Not connected at time of shipping. LECSA□-S3, S4: Connected at time of shipping. ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	



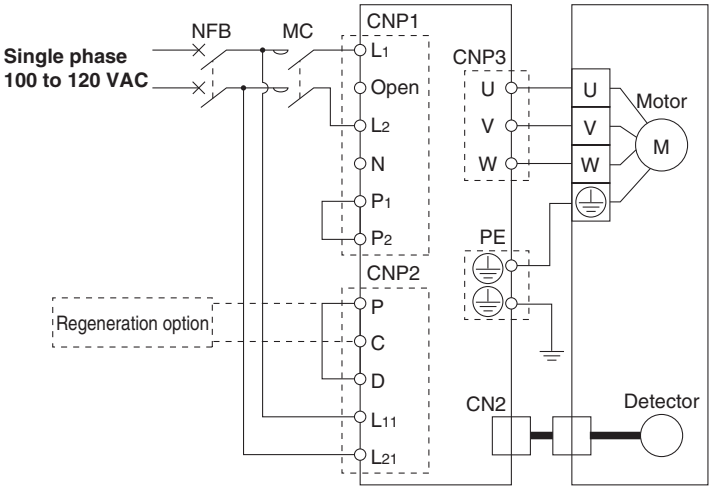
Control Circuit Power Supply Connector: CNP2

∗ Accessory

Terminal name	Function	Details
24V	Control circuit power supply (24 V)	24 V side of the control circuit power supply (24 VDC) supplied to the driver
0V	Control circuit power supply (0 V)	0 V side of the control circuit power supply (24 VDC) supplied to the driver

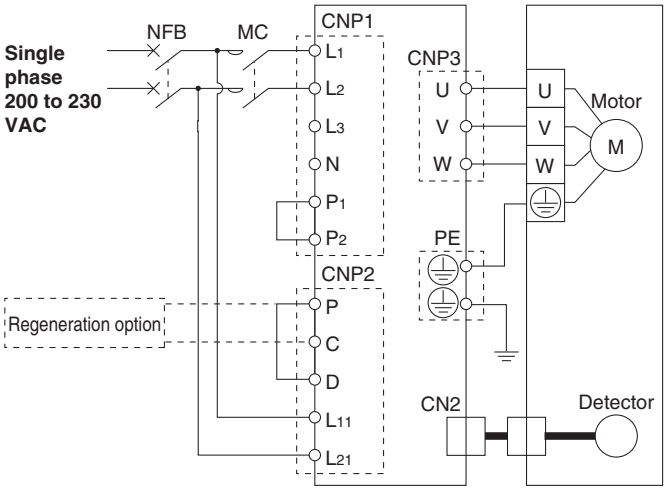
Power Supply Wiring Example: LECSB, LECSC, LECSS

LECSB1-□
LECSC1-□
LECSS1-□

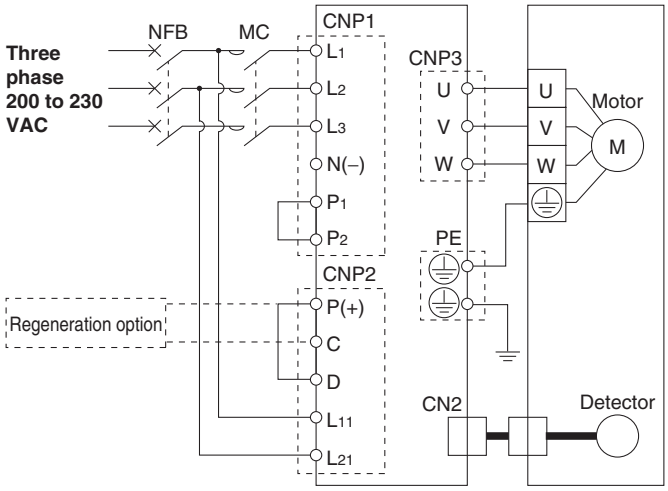


LECSB2-□
LECSC2-□
LECSS2-□

For single phase 200 VAC



For three phase 200 VAC



Note) For single phase 200 to 230 VAC, power supply should be connected to L_1 and L_2 terminals, with nothing connected to L_3.

Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
L_1	Main circuit power supply	Connect the main circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_1,L_2 LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1,L_2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1,L_2,L_3
L_2		
L_3		
N	Do not connect.	
P_1	Connect between P_1 and P_2. (Connected at time of shipping.)	
P_2		

Control Circuit Power Supply Connector: CNP2

∗ Accessory

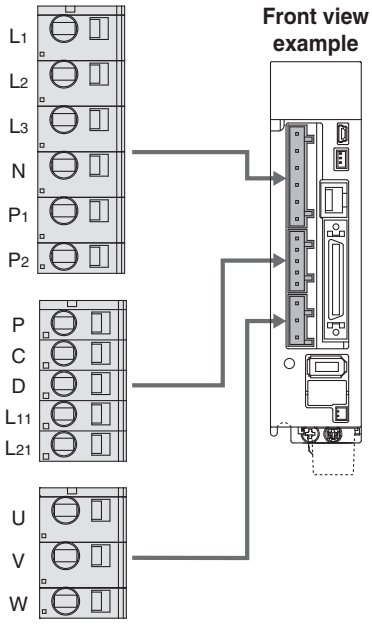
Terminal name	Function	Details
P	Regeneration option	Connect between P and D. (Connected at time of shipping.) ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_{11},L_{21} LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11},L_{21} Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11},L_{21}
L_{21}		

Motor Connector: CNP3

∗ Accessory

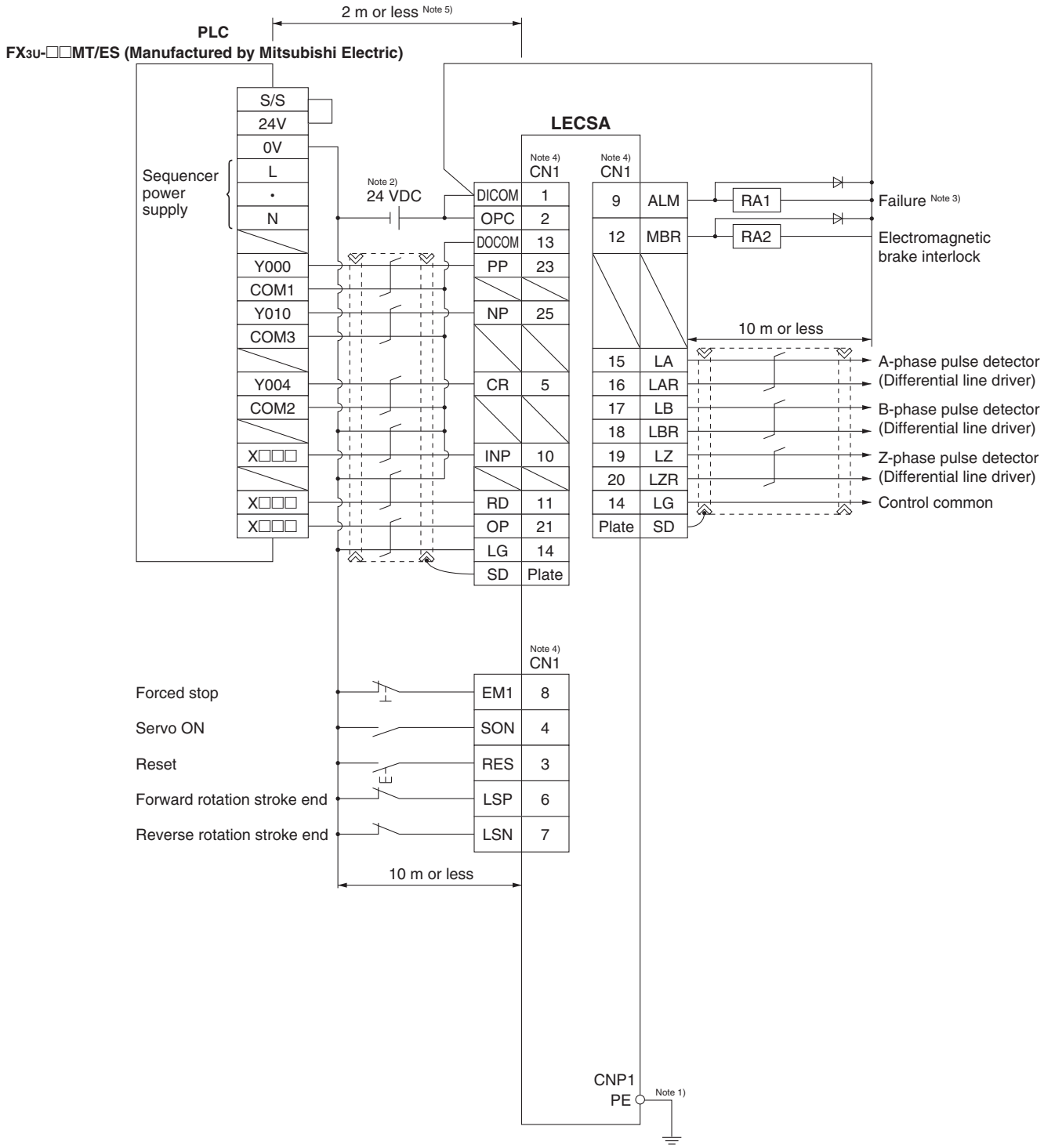
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

LECSB
Front view example



Control Signal Wiring Example: LECSA

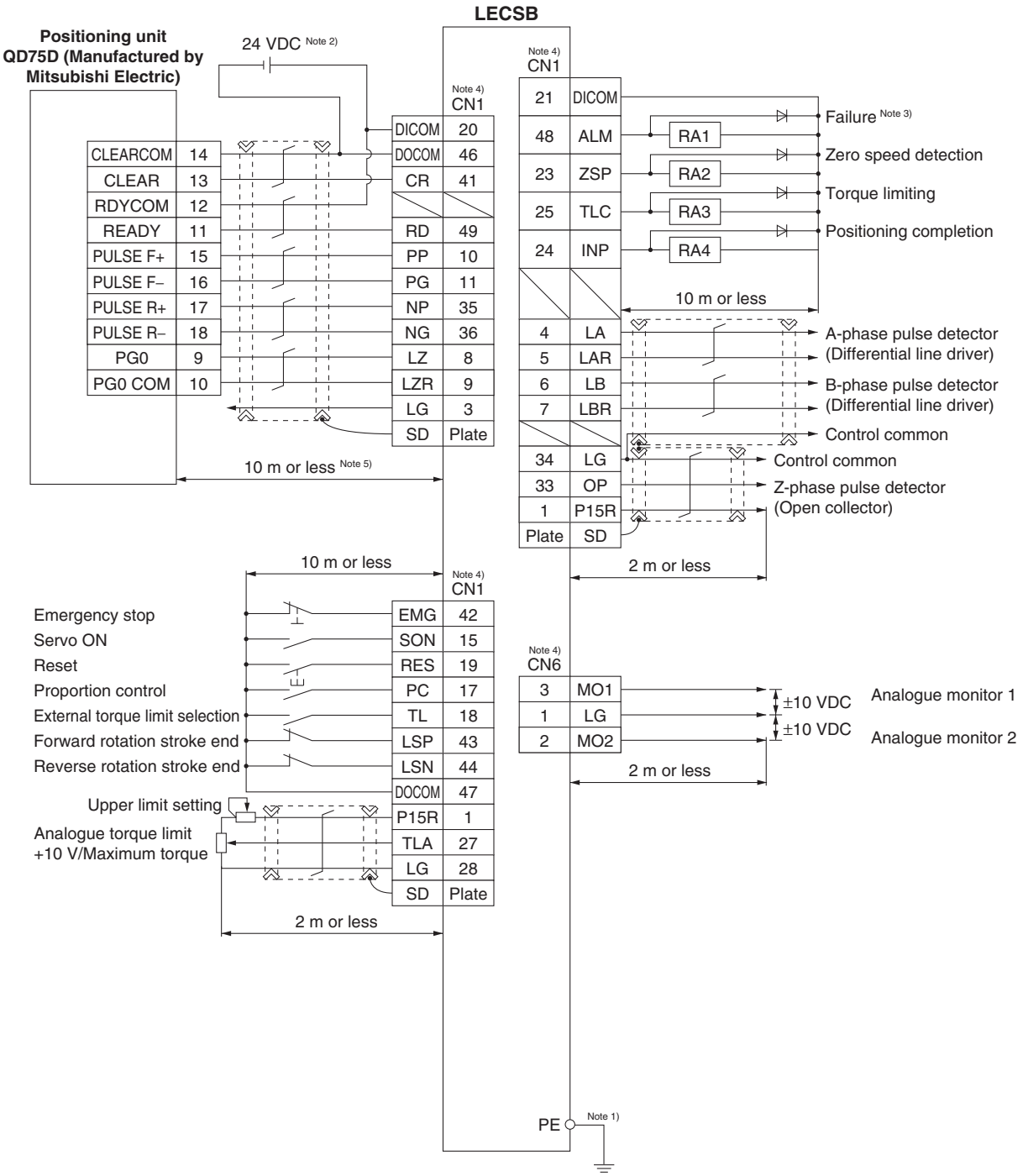
This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSA operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 200 mA using an external source. 200 mA is the value when all I/O command signals are used and reducing the number of inputs/outputs can decrease current capacity. Refer to "Operation Manual" for required current for interface.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.
Note 4) The same name signals are connected inside the driver.
Note 5) For command pulse input with an open collector method. When a positioning unit loaded with a differential line driver method is used, it is 10 m or less.

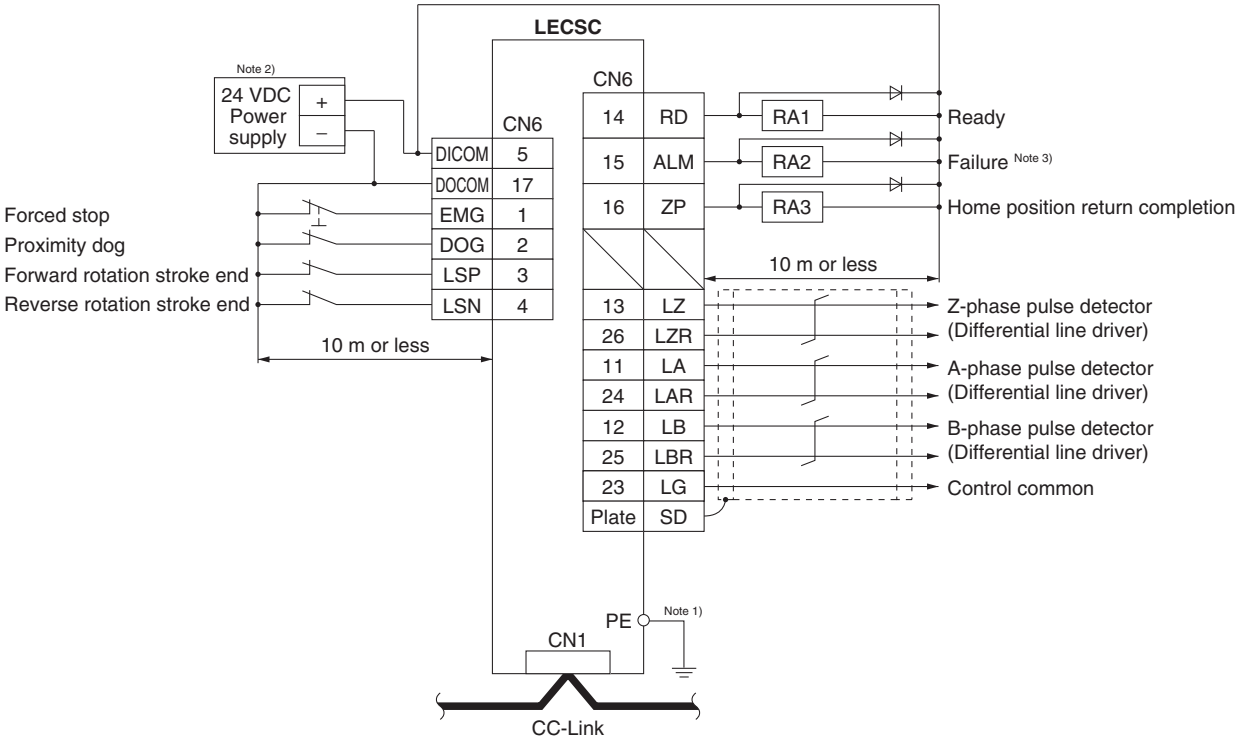
Control Signal Wiring Example: LECSB

This wiring example shows connection with a positioning unit (QD75D) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSB operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



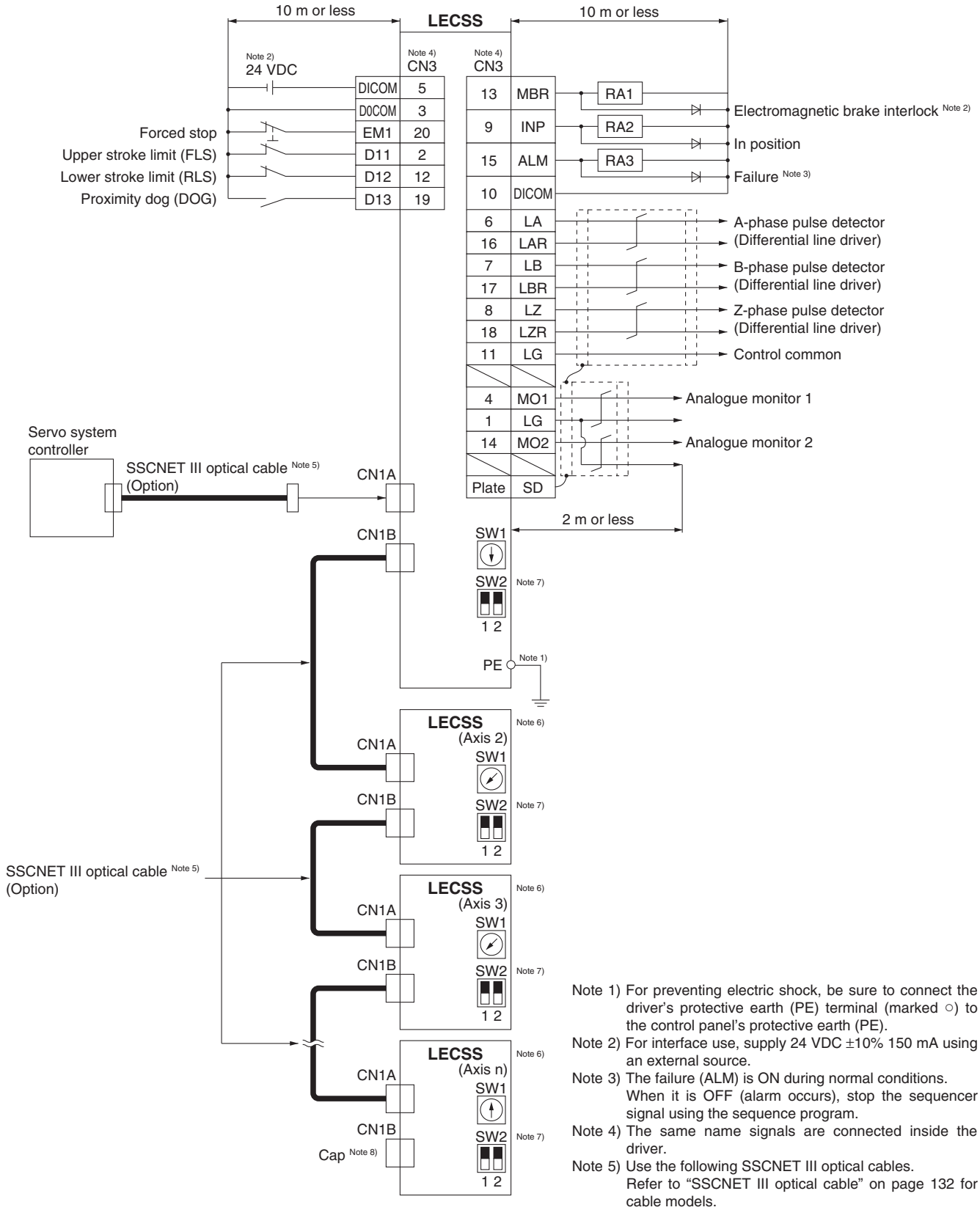
Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 300 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.
Note 4) The same name signals are connected inside the driver.
Note 5) For command pulse input with a differential line driver method. For open collector method, it is 2 m or less.

Control Signal Wiring Example: LECSC



Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ○) to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 150 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Control Signal Wiring Example: LECSS



Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ○) to the control panel's protective earth (PE).

Note 2) For interface use, supply 24 VDC ±10% 150 mA using an external source.

Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Note 4) The same name signals are connected inside the driver.

Note 5) Use the following SSCNET III optical cables. Refer to "SSCNET III optical cable" on page 132 for cable models.

Cable	Cable model	Cable length
SSCNET III optical cable	**LE-CSS-□**	0.15 m to 3 m

Note 6) Connections from Axis 2 onward are omitted.

Note 7) Up to 16 axes can be set.

Note 8) Be sure to place a cap on unused CN1A/CN1B.

Options

Motor cable, Lock cable, Encoder cable (LECS□ common)

LE−CS M − S 5 A

Motor type

S	AC servo motor

Cable description

M	Motor cable
B	Lock cable
E	Encoder cable

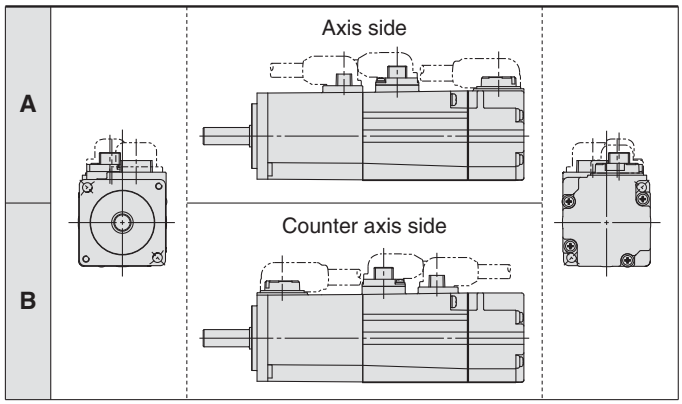
Cable type

S	Standard cable
R	Robotic cable

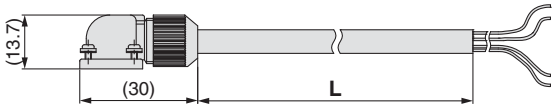
Cable length (L) [m]

2	2
5	5
A	10

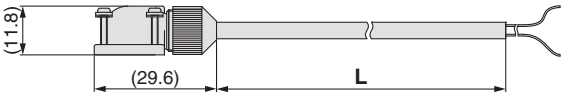
Direction of connector



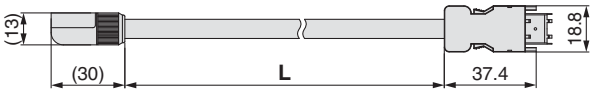
LE-CSM-□□: Motor cable



LE-CSB-□□: Lock cable



LE-CSE-□□: Encoder cable



∗ LE-CSM-S□□ is MR-PWS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSB-S□□ is MR-BKS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSE-S□□ is MR-J3ENCBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSM-R□□ is MR-PWS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSB-R□□ is MR-BKS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSE-R□□ is MR-J3ENCBL□M-A□-H manufactured by Mitsubishi Electric.

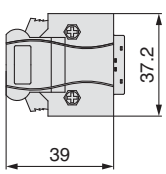
I/O connector

LE−CSN A

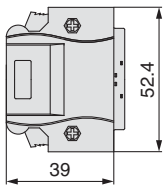
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□

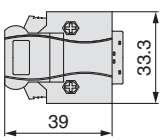
LE-CSNA



LE-CSNB



LE-CSNS



∗ LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M or equivalent item.
LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M or equivalent item.
LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M or equivalent item.

SSCNET III optical cable

LE−CSS − 1

Motor type

S	AC servo motor

Cable description

S	SSCNET III optical cable

Cable length

L	0.15 m
K	0.3 m
J	0.5 m
1	1 m
3	3 m

∗ LE-CSS-□ is MR-J3BUS□M manufactured by Mitsubishi Electric.

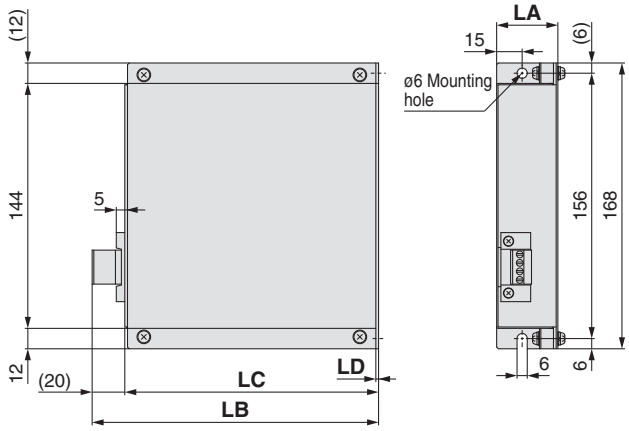
Regeneration option (LECS□ common)

LEC−MR−RB−□

Regeneration option type

032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

∗ Confirm regeneration option to be used in “Model Selection”.

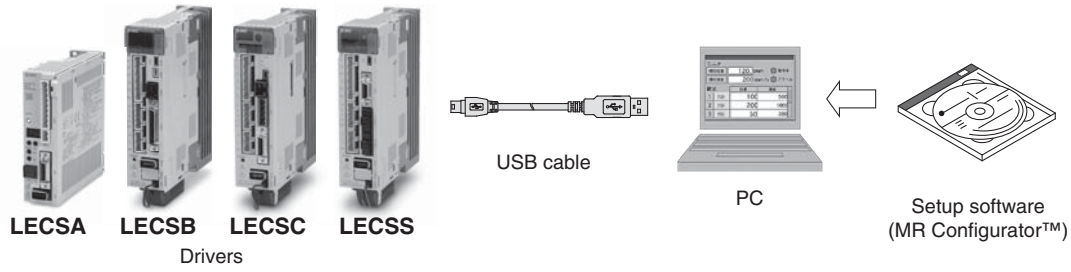


Dimensions [mm]

Model	LA	LB	LC	LD
LEC-MR-RB-032	30	119	99	1.6
LEC-MR-RB-12	40	169	149	2

∗ MR-RB-□ manufactured by Mitsubishi Electric.

Options



Setup software (MR Configurator™) (LECSA, LECSB, LECSC, LECSS common)

LEC−MR−SETUP221 E

Display language

—	Japanese version
E	English version

∗ MRZJW3-SETUP221 manufactured by Mitsubishi Electric.
Refer to Mitsubishi Electric's website for operating environment and version update information.
MR Configurator™ is a registered trademark or trademark of Mitsubishi Electric.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator™) **LEC-MR-SETUP221□**
Note 1) Note 2) Note 3) PC	OS	Windows®98, Windows®Me, Windows®2000 Professional, Windows®XP Professional / Home Edition, Windows Vista® Home Basic / Home Premium / Business / Ultimate / Enterprise Windows®7 Starter / Home Premium / Professional / Ultimate / Enterprise
	Available HD space	130 MB or more
	Communication interface	Use USB port
Display		Resolution 1024 x 768 or more Must be capable of high colour (16-bit) display. The connectable with the above PC
Keyboard		The connectable with the above PC
Mouse		The connectable with the above PC
Printer		The connectable with the above PC
USB cable		LEC-MR-J3USB Note 4, 5)

Note 1) Before using a PC for setting LECSA point table method/program method or LECSC point table No. input, upgrade to version C5 (Japanese version) /version C4 (English version). Refer to Mitsubishi Electric's website for version upgrade information.
Note 2) Windows, Windows Vista, Windows 7 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
Note 3) This software may not run correctly depending on the PC that you are using.
Note 4) Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®.
Note 5) Order USB cable separately.

USB cable (3 m)

LEC−MR−J3USB

∗ MR-J3USB manufactured by Mitsubishi Electric.

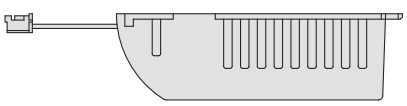
Cable for connecting PC and driver when using the setup software (MR Configurator™).
Do not use any cable other than this cable.

Battery (only for LECSB, LECSC or LECSS)

LEC−MR−J3BAT

∗ MR-J3BAT manufactured by Mitsubishi Electric.

Battery for replacement.
Absolute position data is maintained by installing the battery to the driver.



Series LECS□
Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Design/Selection

⚠Warning

1. Use the specified voltage.
If the applied voltage is higher than the specified voltage, malfunction and damage to the driver may result. If the applied voltage is lower than the specified voltage, there is a possibility that the load cannot be moved due to internal voltage drop. Check the operating voltage prior to start. Also, confirm that the operating voltage does not drop below the specified voltage during operation.

2. Do not use the products outside the specifications.
Otherwise, fire, malfunction or damage to the driver/actuator can result. Check the specifications prior to use.

3. Install an emergency stop circuit.
Install an emergency stop outside the enclosure in easy reach to the operator so that the operator can stop the system operation immediately and intercept the power supply.

4. To prevent danger and damage due to a breakdown or malfunction of these products, which may occur at a certain probability, a backup system should be arranged in advance by using a multiple-layered structure or by making a fail-safe equipment design, etc.

5. If there is a risk of fire or personal injury due to abnormal heat generation, sparking, smoke generated by the product, etc., cut off the power supply from this product and the system immediately.

Handling

⚠Warning

1. Never touch the inside of the driver and its peripheral devices.
Otherwise, electric shock or failure can result.

2. Do not operate or set up this equipment with wet hands.
Otherwise, electric shock can result.

3. Do not use a product that is damaged or missing any components.
Electric shock, fire or injury can result.

4. Use only the specified combination between the electric actuator and driver.
Otherwise, it may cause damage to the driver or to the other equipment.

5. Be careful not to touch, get caught or hit by the workpiece while the actuator is moving.
An injury can result.

6. Do not connect the power supply or power up the product until it is confirmed that the workpiece can be moved safely within the area that can be reached by the workpiece.
Otherwise, the movement of the workpiece may cause an accident.

7. Do not touch the product when it is energized and for some time after the power has been disconnected, as it is very hot.
Otherwise, it may cause burns due to the high temperature.

8. Check the voltage using a tester at least 5 minutes after power-off when performing installation, wiring and maintenance.
Otherwise, electric shock, fire or injury can result.

Handling

⚠Warning

9. Static electricity may cause a malfunction or damage the driver. Do not touch the driver while power is supplied to it.
Take sufficient safety measures to eliminate static electricity when it is necessary to touch the driver for maintenance.

10. Do not use the products in an area where they could be exposed to dust, metallic powder, machining chips or splashes of water, oil or chemicals.
Otherwise, a failure or malfunction can result.

11. Do not use the products in a magnetic field.
Otherwise, a malfunction or failure can result.

12. Do not use the products in an environment where flammable, explosive or corrosive gases, liquids or other substances are present.
Otherwise, fire, explosion or corrosion can result.

13. Avoid heat radiation from strong heat sources, such as direct sunlight or a hot furnace.
Otherwise, it will cause a failure to the driver or its peripheral devices.

14. Do not use the products in an environment with cyclic temperature changes.
Otherwise, it will cause a failure to the driver or its peripheral devices.

15. Do not use the products in an environment where surges are generated.
Devices (solenoid type lifters, high frequency induction furnaces, motors, etc.) that generate a large amount of surge around the product may lead to deterioration or damage to the internal circuits of the products. Avoid supplies of surge generation and crossed lines.

16. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

17. When a surge generating load such as a relay or solenoid valve is directly driven, use a product that incorporates a surge absorption element.

Mounting

⚠Warning

1. Install the driver and its peripheral devices on fireproof material.
Direct installation on or near flammable material may cause fire.

2. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

3. The driver should be mounted on a vertical wall in a vertical direction.
Also, do not cover the driver's suction/exhaust ports.

4. Install the driver and its peripheral devices on a flat surface.
If the mounting surface is not flat or uneven, excessive force may be applied to the housing and other parts resulting in a malfunction.

Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smcworld.com

Power Supply

⚠Caution

1. **Use a power supply with low noise between lines and between power and ground.**
   In cases where noise is high, use an isolation transformer.
2. **Take appropriate measures to prevent surges from lightning. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.**

Wiring

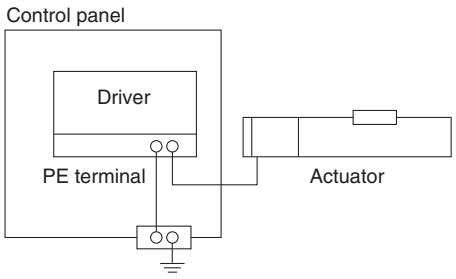
⚠Warning

1. **The driver will be damaged if a commercial power supply (100V/200V) is added to the driver's servo motor power (U, V, W). Be sure to check wiring such as wiring mistakes when the power supply is turned on.**
2. **Connect the ends of the U, V, W wires from the motor cable correctly to the phases (U, V, W) of the servo motor power. If these wires do not match up, it is unable to control the servo motor.**

Grounding

⚠Warning

1. **For grounding actuator, connect the copper wire of the actuator to the driver's protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel's protective earth (PE) terminal.**
   Do not connect them directly to the control panel's protective earth (PE) terminal.



2. **In the unlikely event that malfunction is caused by the ground, it may be disconnected.**

Maintenance

⚠Warning

1. **Perform maintenance checks periodically.**
   Confirm wiring and screws are not loose.
   Loose screws or wires may cause unexpected malfunction.
2. **Conduct an appropriate functional inspection and test after completed maintenance.**
   In case of any abnormalities (if the actuator does not move or the equipment does not operate properly, etc.), stop the operation of the system.
   Otherwise, unexpected malfunction may occur and safety cannot be assured.
   Conduct a test of the emergency stop to confirm the safety of the equipment.
3. **Do not disassemble, modify or repair the driver or its peripheral devices.**
4. **Do not put anything conductive or flammable inside the driver.**
   Otherwise, fire can result.
5. **Do not conduct an insulation resistance test or insulation withstand voltage test.**
6. **Reserve sufficient space for maintenance.**
   Design the system so that it allows required space for maintenance.

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
2. **Only personnel with appropriate training should operate machinery and equipment.**
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
3. **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
4. **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. **The product is provided for use in manufacturing industries.**
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
   If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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