Electric Actuators

Rod Type **Guide Rod Type**

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

Rod Type *Series LEY*

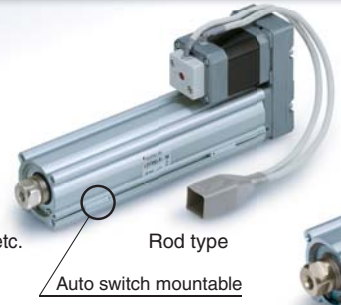
Size: 16, 25, 32, 40

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 equivalent): **-X5**

∗ Size: 25, 32

Rod type/
In-line motor type

Guide Rod Type *Series LEYG*

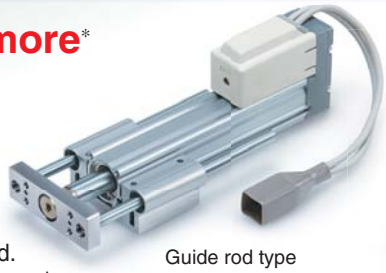
Size: 16, 25, 32, 40

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 equivalent): **-X5**

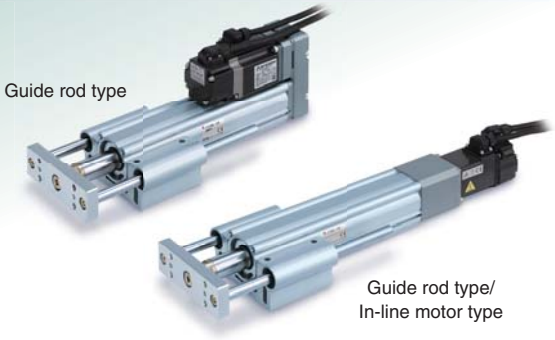
Rod type

Rod type/
In-line motor type

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

Guide Rod Type *Series LEYG*

Size: 25, 32



Guide rod type/
In-line motor type

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

- **Step data input type**
  Series **LECP6/LECA6**
- **Step data input type**
  Series **JXC73/83**
- **Programless type**
  Series **LECP1**
- **Pulse input type**
  Series **LECPA**
- **Fieldbus compatible Network**
  Series **JXC□1**
  Series **JXC92/93**

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**
  - **SSCNET III/H type**
    Series **LECSS-T**
  - **MECHATROLINK type**
    Series **LECY□**

- **For incremental encoder**
  - **Pulse input type/ Positioning type**
    Series **LECSA**

Series LEY

SMC

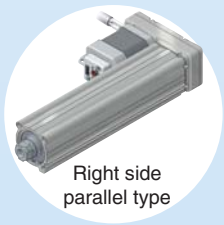
Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC) Type

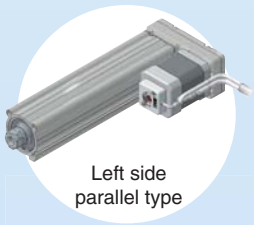
Rod Type *Series LEY* /Size: 16, 25, 32, 40

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

Motor mounting position selectable

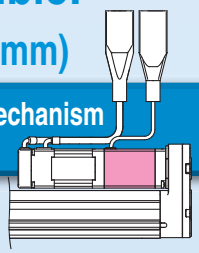
Top mounting type is the standard product.


Right side parallel type


Left side parallel type


In-line motor type

Non-magnetizing lock mechanism (Option)

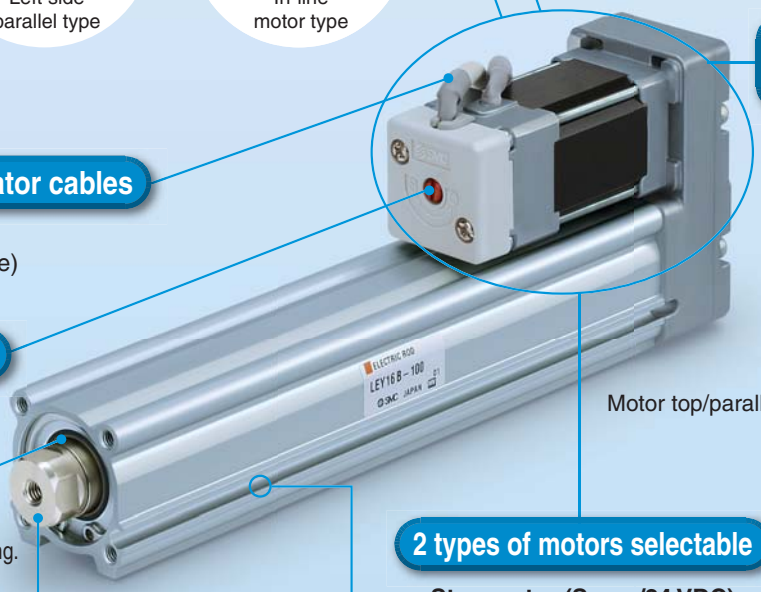


Prevents a workpiece from dropping. (Holding)

Motor cover available (Option)

Offering 2 types of actuator cables

- Standard cable
- Robotic cable (Flexible cable)



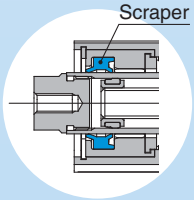
Motor top/parallel type

Manual override screw

For manual piston rod operation
Adjustment operation possible when power OFF

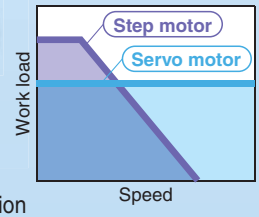
Scraper

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

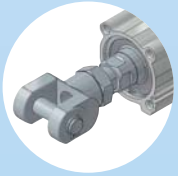


Pages 25, 26

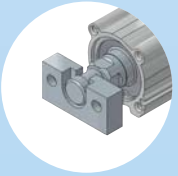
Rod end brackets

Single knuckle joint

Double knuckle joint



Simple joint



Groove for auto switch

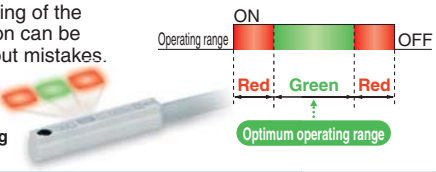
For checking the limit and intermediate signal
Applicable to the D-M9□ and D-M9□W (2-colour indication)

∗ The auto switches should be ordered separately. Refer to pages 27 and 28 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.

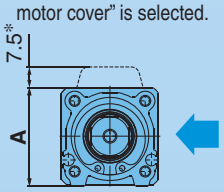


In-line motor type

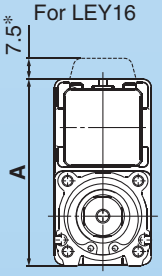
Height dimension shortened by up to 49 %

For LEY16D

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



For LEY16



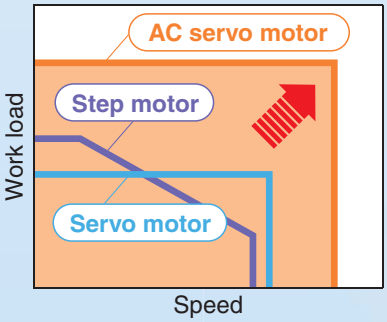
A Dimension [mm]

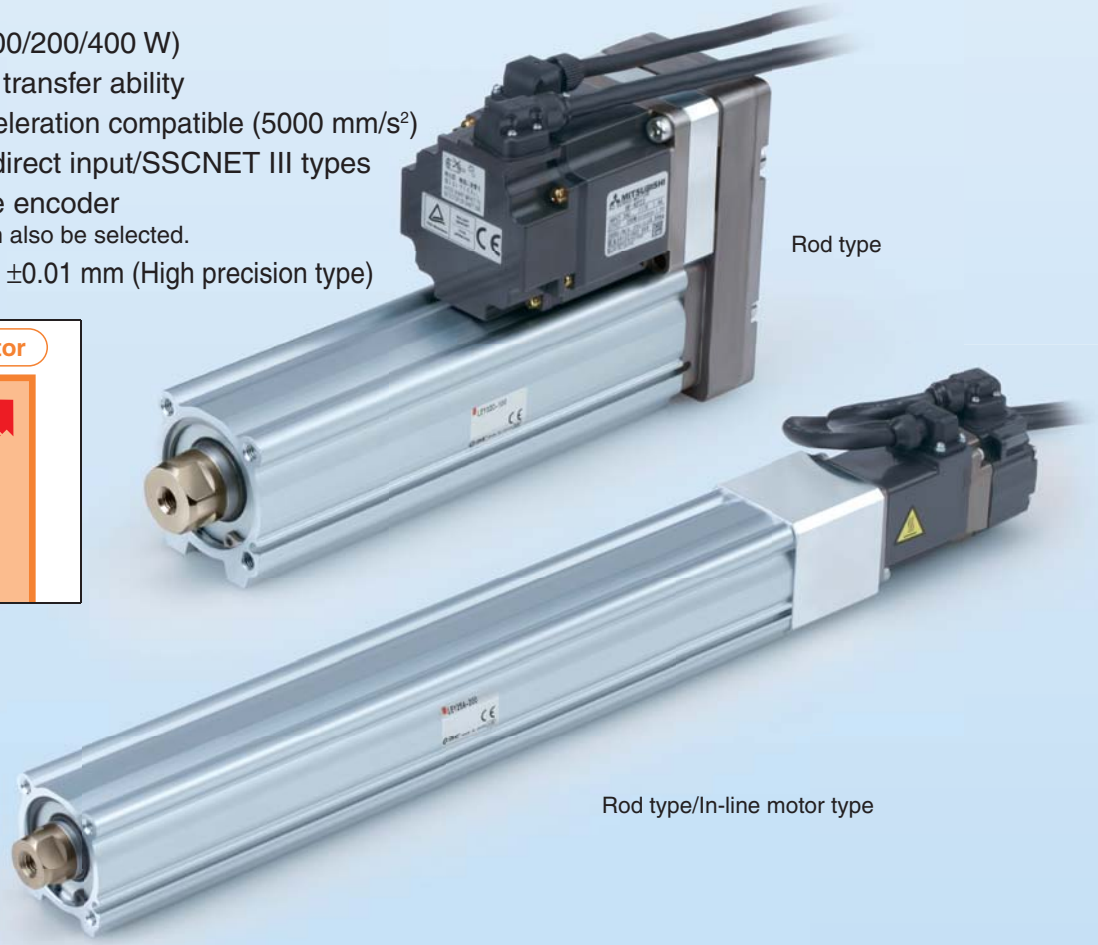
Size	In-line motor	Motor top mounting
16	35.5	67.5
25	46.5	92
32, 40	61	118

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.
- Positioning repeatability ±0.01 mm (High precision type)





Rod type

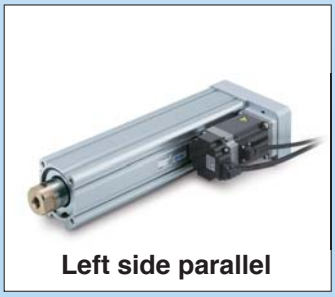
Rod type/In-line motor type

Large bore size 63

Motor mounting position can be selected from 4 directions!

Top mounting

Right side parallel



Left side parallel

In-line

●Max. work load (kg)

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

●Max. force (N)

Top/Parallel	3343
In-line	1910

●High output motor: 400 w

●Max. speed: 1000 mm/s

∗ 500 mm stroke

●Dust/Drip proof (IP65 equivalent)

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

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

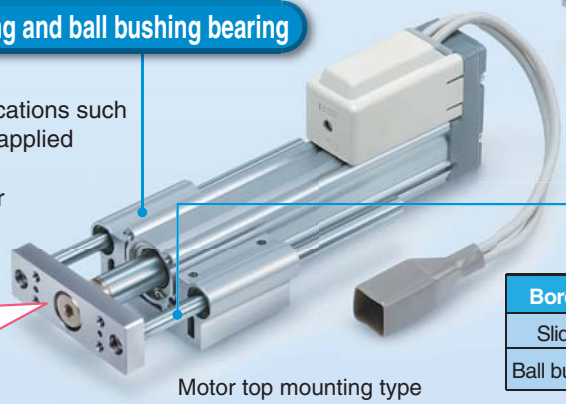
Compact integrated guide rods

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

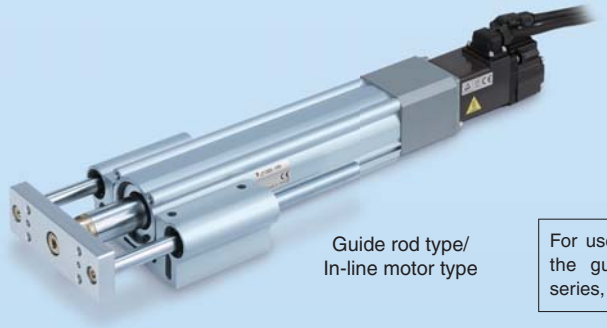
Bore size [mm]	16	25	32	40
Sliding bearing	±0.06°		±0.05°	
Ball bushing bearing	±0.05°	±0.04°		

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

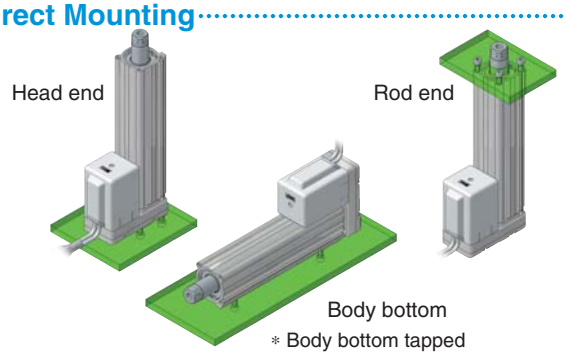


Guide rod type/
In-line motor type

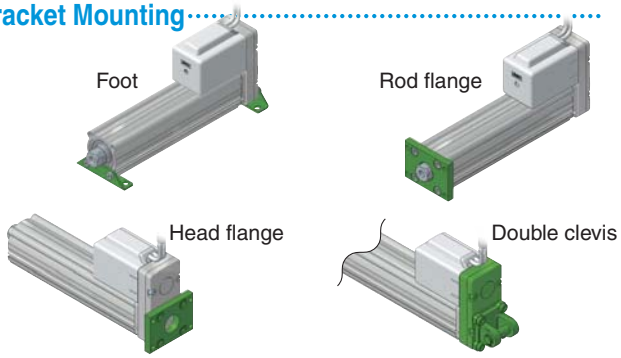
For use of auto switches for the guide rod type LEYG series, refer to page 169.

Mounting Variations

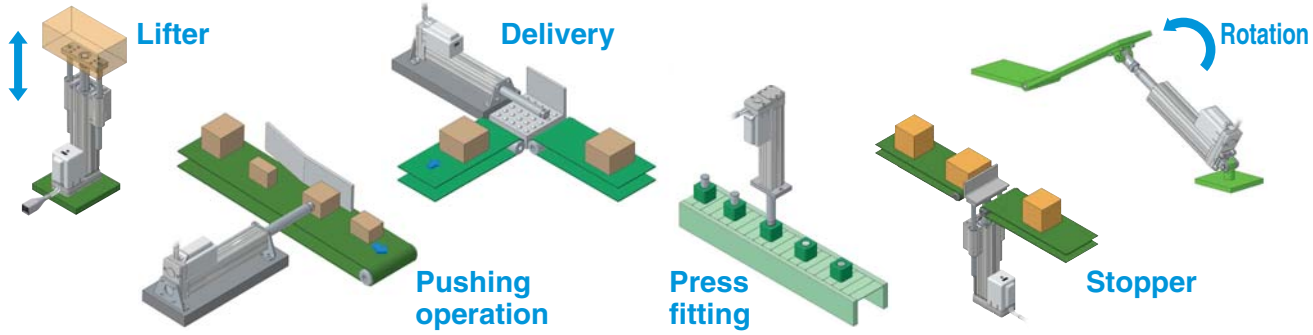
Direct Mounting



Bracket Mounting



Application Examples

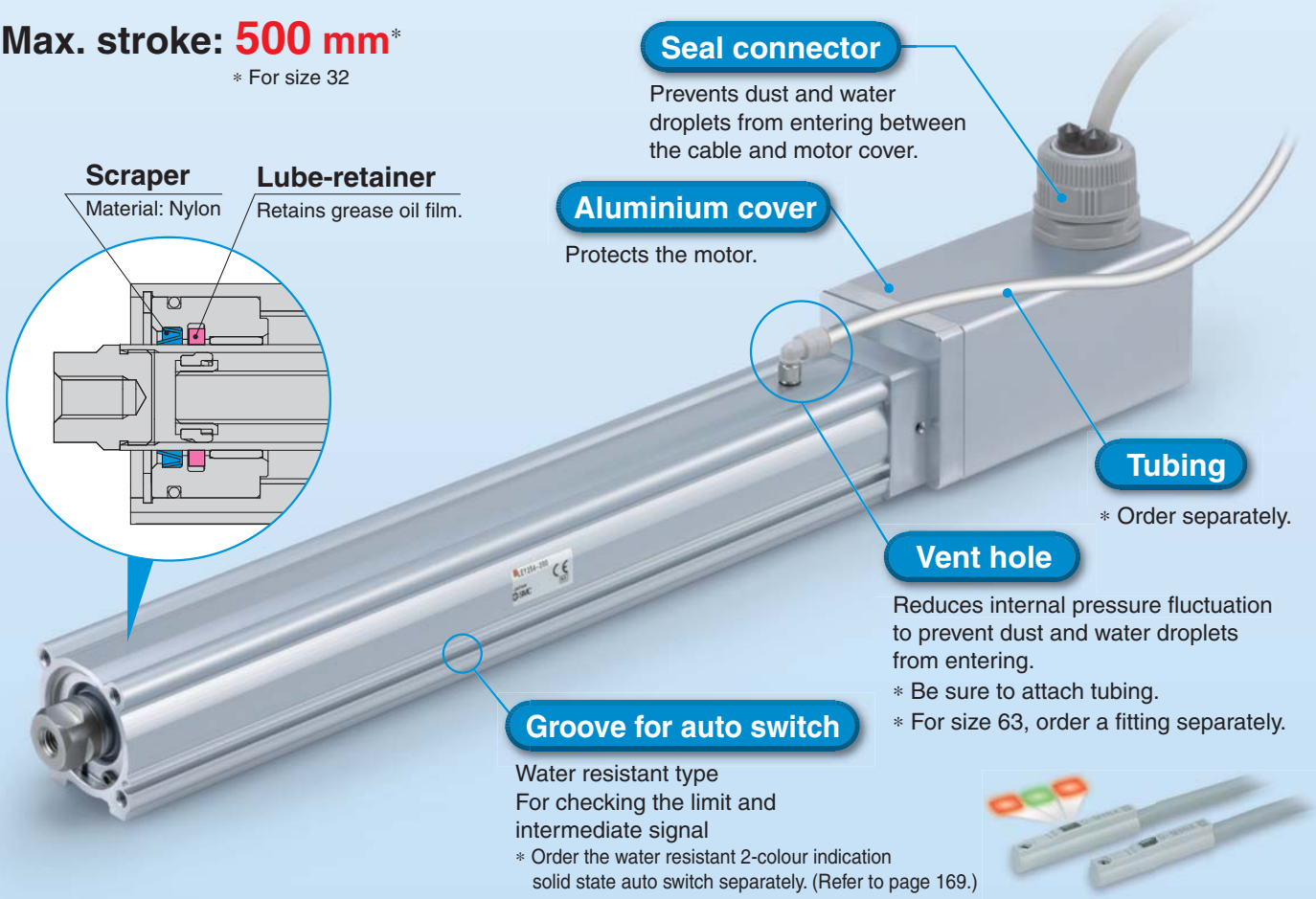


Dust/Drip proof (IP65 equivalent)

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

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

* For size 32

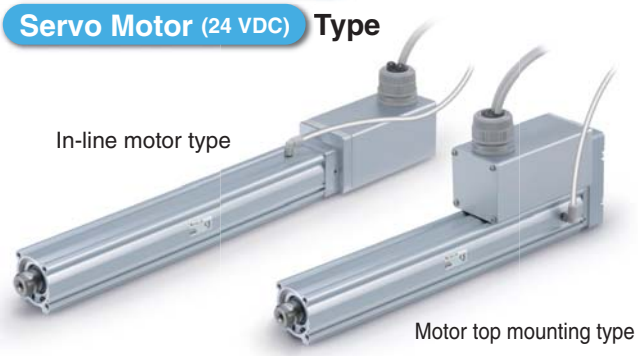


LEY-X5 (Made to Order) (Refer to page 30)

Size: 25, 32

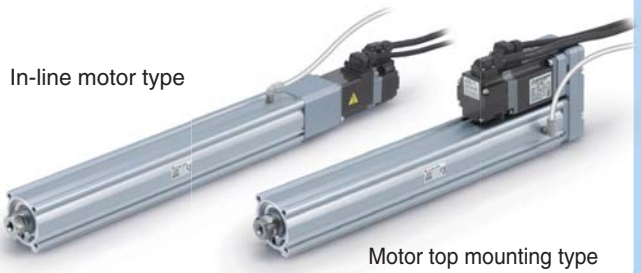
Step Motor (Servo/24 VDC) Type

Servo Motor (24 VDC) Type



LEY-X5 (Refer to page 150.)

AC Servo Motor (100/200 W) Type



LEY63D□□-□P

(Refer to page 143./Option)

Size: 63

AC Servo Motor (400 W) Type

Simple Setting to Use Straight Away

◎Easy Mode for Simple Setting

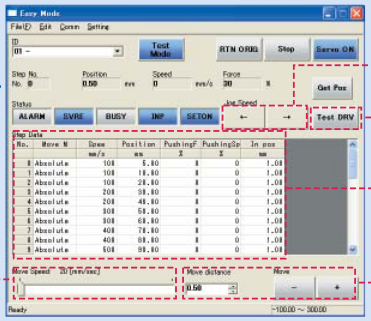
If you want to use it right away, select "Easy Mode."

Step motor (Servo/24 VDC) **LECP6**

Servo motor (24 VDC) **LECA6**

<When a PC is used> Controller setting software

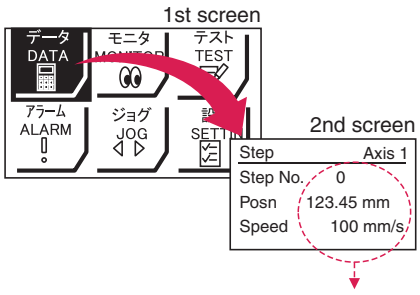
- Step data setting, test operation, move jog and move for the constant rate can be set and operated on one screen.



<When a TB (teaching box) is used>

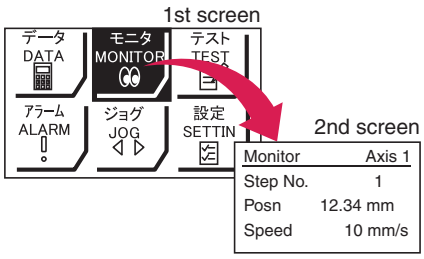
- Simple screen without scrolling promotes ease of setting and operating.
- Pick up an icon from the first screen to select a function.
- Set up the step data and check the monitor on the second screen.

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.

Fieldbus Network

Fieldbus-compatible Gateway (GW) Unit

Series LEC-G

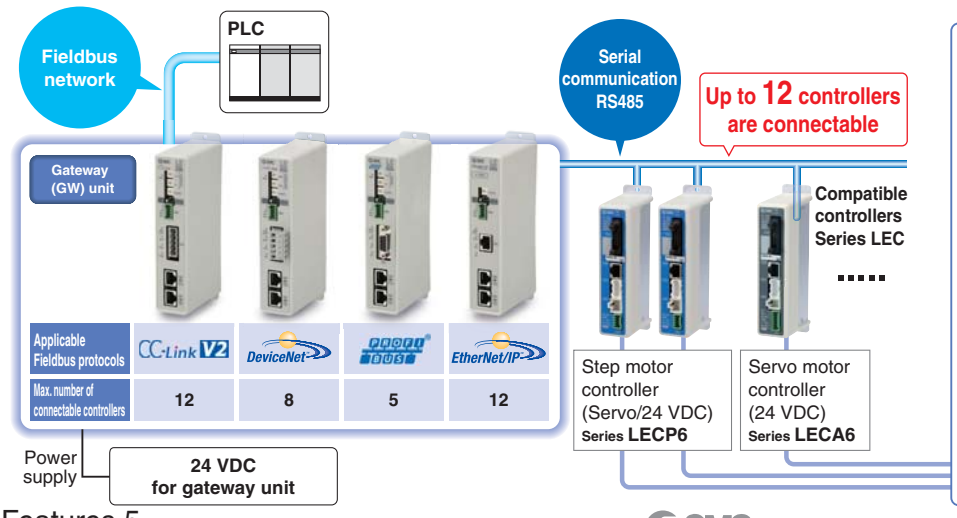
◎Conversion unit for Fieldbus network and LEC serial communication

◎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.

◎Values such as position, speed can be checked on 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**

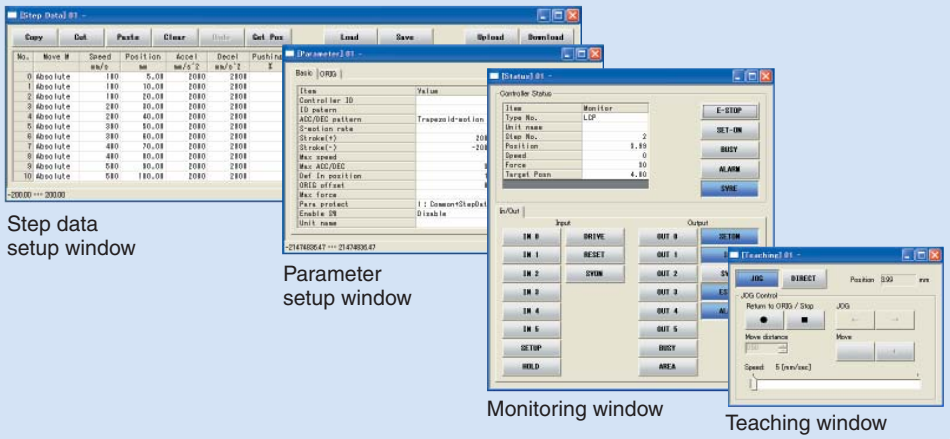
◎Normal Mode for Detailed Setting

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.

Main menu screen

Step data setup screen

Test screen

Monitoring screen

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

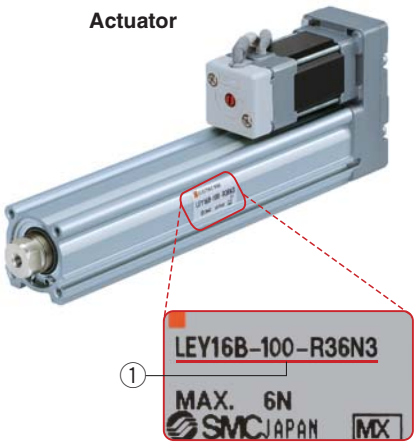
Confirm that the combination of the controller and the actuator is correct.

<Check the following before use.>

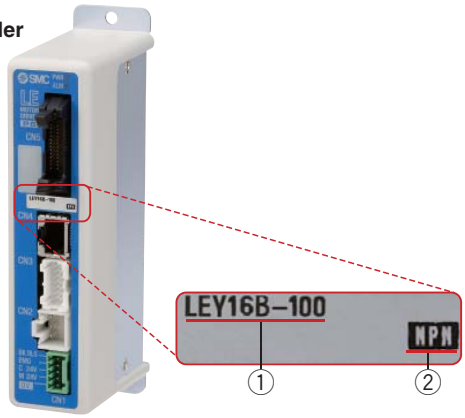
① Check the actuator labell for model number. This matches the controller.

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

Actuator



Controller



Programless Type *Series LECP1*

Step motor
(Servo/24 VDC)
LECP1

No Programming

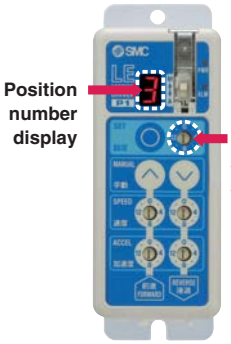
Capable of setting up an electric actuator operation without using a PC or teaching box

1 Setting position number → **2 Setting a stop position** → **3 Registration**

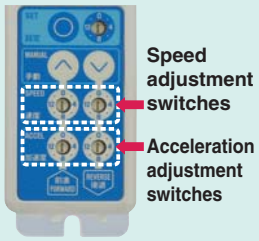
Setting a registered number for the stop position
Maximum 14 points

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

Registering the stop position using SET button

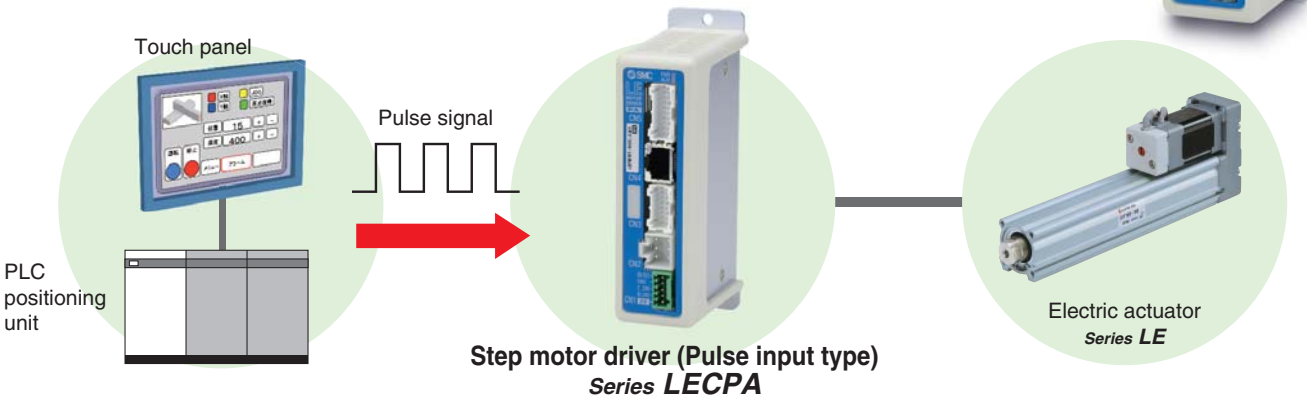


Speed/Acceleration 16-level adjustment



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.**



Step motor driver (Pulse input type)
Series LECPA

- **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	×	×	●	Set in units of 1 mm/s	Set in units of 1 mm/s	No setting required
	ORIG ACC	Acceleration during return to origin	×	×	●	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)

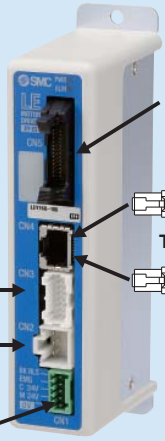
●I/O cable Pages 73, 86

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

●Controller* Page 64

Programless type Page 80
LECP1

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



To CN5

To CN4

To CN3

To CN2

To CN1

Provided by customer

Power supply for controller
24 VDC Note)

Step data input type
LECP6/LECA6
Page 65

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

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

●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.

GOT2000 Series
Mitsubishi Electric Corporation

GOT2000
Graphic Operation Terminal

Sample screens for monitoring and changing the current value and the set value of the electric actuator can be downloaded free via the Mitsubishi Electric website.

●Actuator cable* Pages 71,85

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-□

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

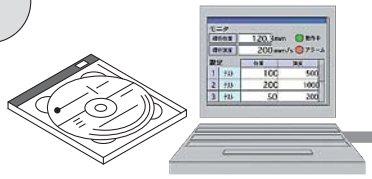
Options

●Teaching box Page 75
(With 3 m cable)
LEC-T1-3EG□

Or

●Controller setting kit Page 74
Controller setting kit
(Communication cable, conversion unit and USB cable are included.)
LEC-W2

Communication cable●
(3 m)



●USB cable
(A-mini B type)
(0.3 m)

PC

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

System Construction/Pulse Signal

●Electric actuator/
Rod type

Page 93

●Current limit resistor
LEC-PA-R-□

＊The current limit resistor is used when the pulse signal output of the positioning unit is open collector output.

Provided by customer

PLC

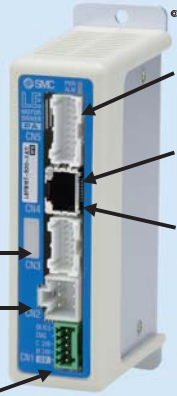
Power supply for I/O signal
24 VDC Note)

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

●Driver＊ Page 97

●I/O cable Page 93

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 92

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.

Options

●Teaching box Page 95
(With 3 m cable)
LEC-T1-3EG□

Or

●Controller setting software Page 94
Communication cable (With conversion unit) and USB cable are included.
LEC-W2

Communication cable

●USB cable
(A-mini B 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 77

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™

To CN2

To CN1

Page 75

Page 77

●Communication cable
LEC-CG1-□

●Cable between branches
LEC-CG2-□

●Branch connector Page 85
LEC-CGD

●Terminating resistor connector 120 Ω
LEC-CGR

●Communication cable Page 77
LEC-CG1-□

●Controller Page 65

To CN4

●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Controller Page 65

●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Electric actuator/ Rod type

Options

●Controller setting software Page 74
(Communication cable and USB cable are included.)
LEC-W2

●Communication cable

●USB cable
(A-mini B type)

PC
(Provided by customer)

Or

●Teaching box Page 75
(With 3 m cable)
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 Controller

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 UL 1 3 1 0 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 MRC2E
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 Configurator2™) LEC-MRC2E is required.
Note 2) Available when the Mitsubishi motion controller is used for the master equipment.

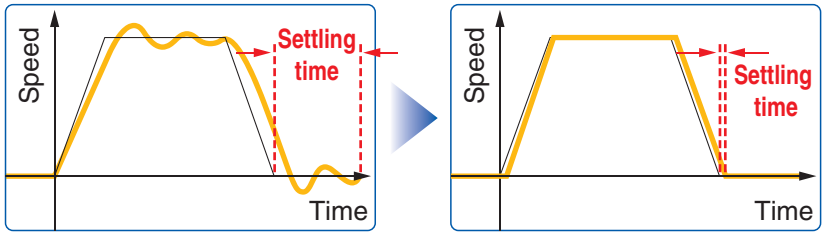
AC Servo Motor Driver — Series LECS□

Servo adjustment using auto gain tuning

Auto resonant filter function

- Control the difference between command value and actual action.

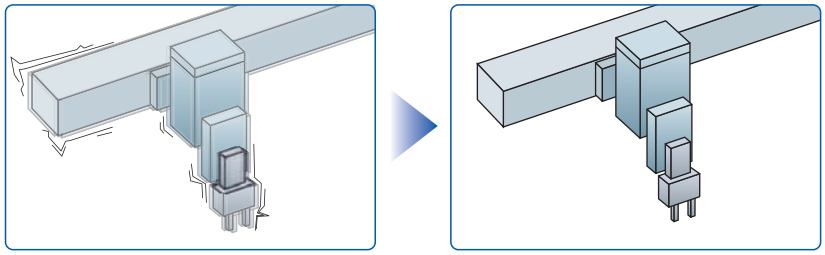
  ∗ High-speed positioning is possible since gains etc., are adjusted automatically!



Auto damping control function

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

  ∗ Can be set automatically by auto tuning.



With display setting function

One-touch adjustment button

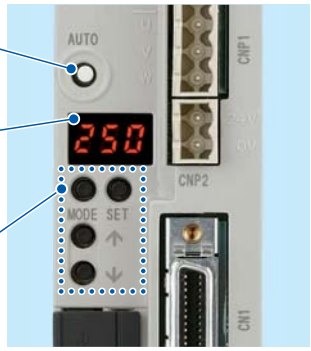
One-touch servo adjustment

Display

Display the monitor, parameter and alarm.

Settings

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



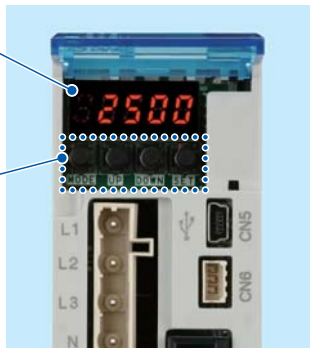
LECSA

Display

Display the monitor, parameter and alarm.

Settings

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



(With the front cover open)

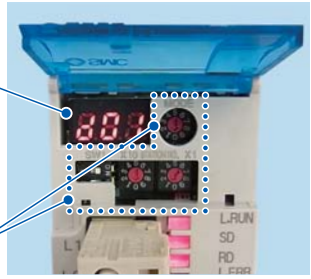
LECSB

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 open)

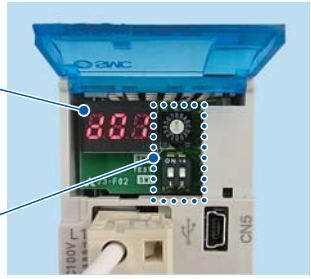
LECSC

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 open)

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 Page 187
Regeneration option
LEC-MR-RB-□

Main circuit power supply connector (Accessory) Page 179

Driver

Control circuit power supply
24 VDC

Control circuit power supply connector (Accessory) Page 179

◎Option

Setup software Page 188
(MR Configurator2™)
LEC-MRC2E

PC

* Order USB cable (LEC-MR-J3USB) separately to use this software.

USB cable Page 188
LEC-MR-J3USB

Motor cable Page 185

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

Lock cable Page 185

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

Electric actuator
Rod type
Series LEY

Guide rod type/
In-line motor type
Series LEYG

◎Option Page 185
I/O connector
LE-CSNA

Encoder cable Page 185

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

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 Page 187
Regeneration option
LEC-MR-RB-□

Main circuit power supply connector (Accessory) Page 180

Driver

USB cable Page 188
LEC-MR-J3USB

◎Option

Setup software Page 188
(MR Configurator2™)
LEC-MRC2E

PC

* Order USB cable (LEC-MR-J3USB) separately to use this software.

Analogue monitor output

RS-422 communication

Motor cable Page 185

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

Lock cable Page 185

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

Control circuit power supply connector (Accessory) Page 180

Electric actuator
Rod type
Series LEY

Guide rod type/
In-line motor type
Series LEYG

Motor connector (Accessory) Page 180

◎Option Page 185
I/O connector
LE-CSNB

Encoder cable Page 185

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

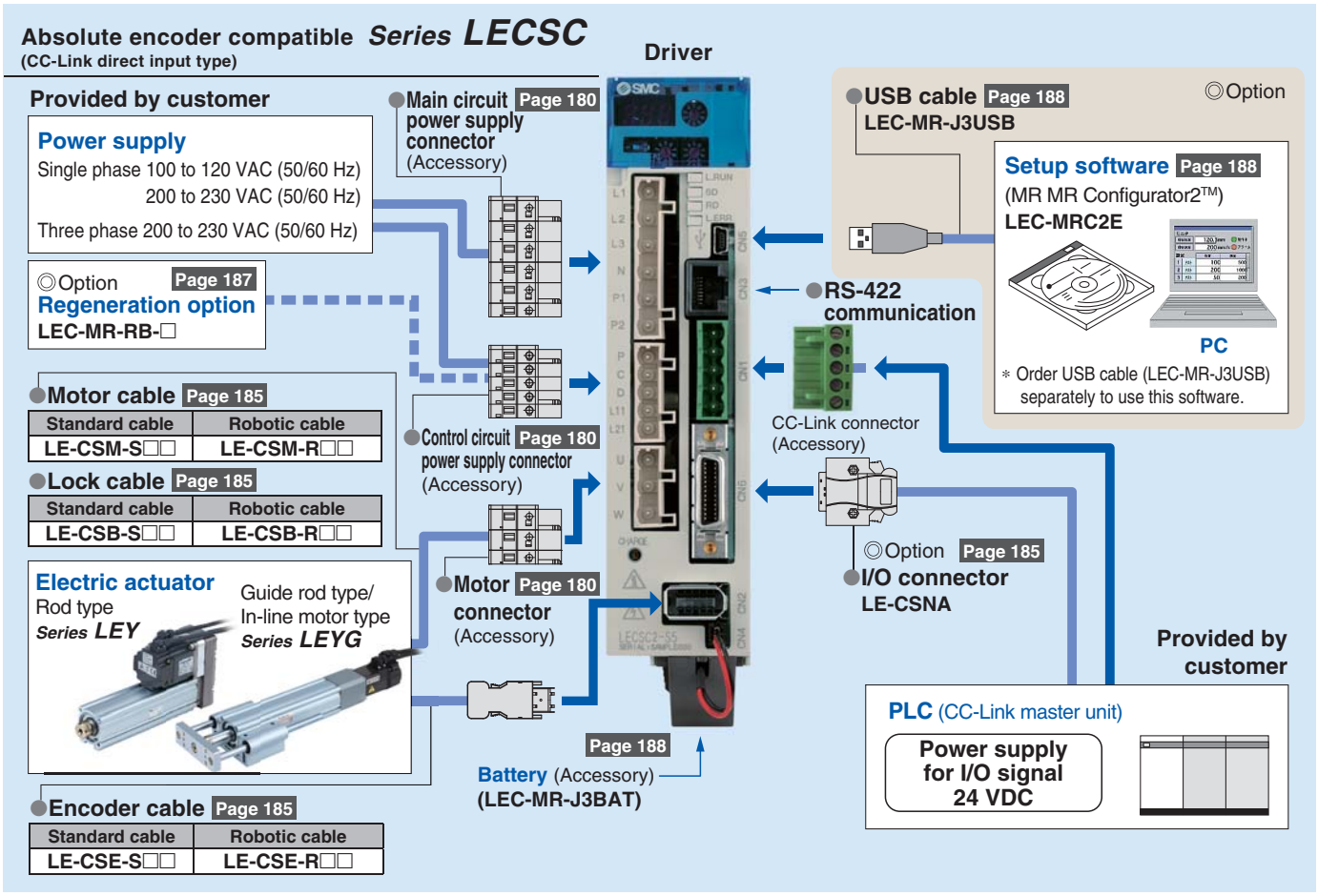
Battery (Accessory) Page 188
(LEC-MR-J3BAT)

Provided by customer

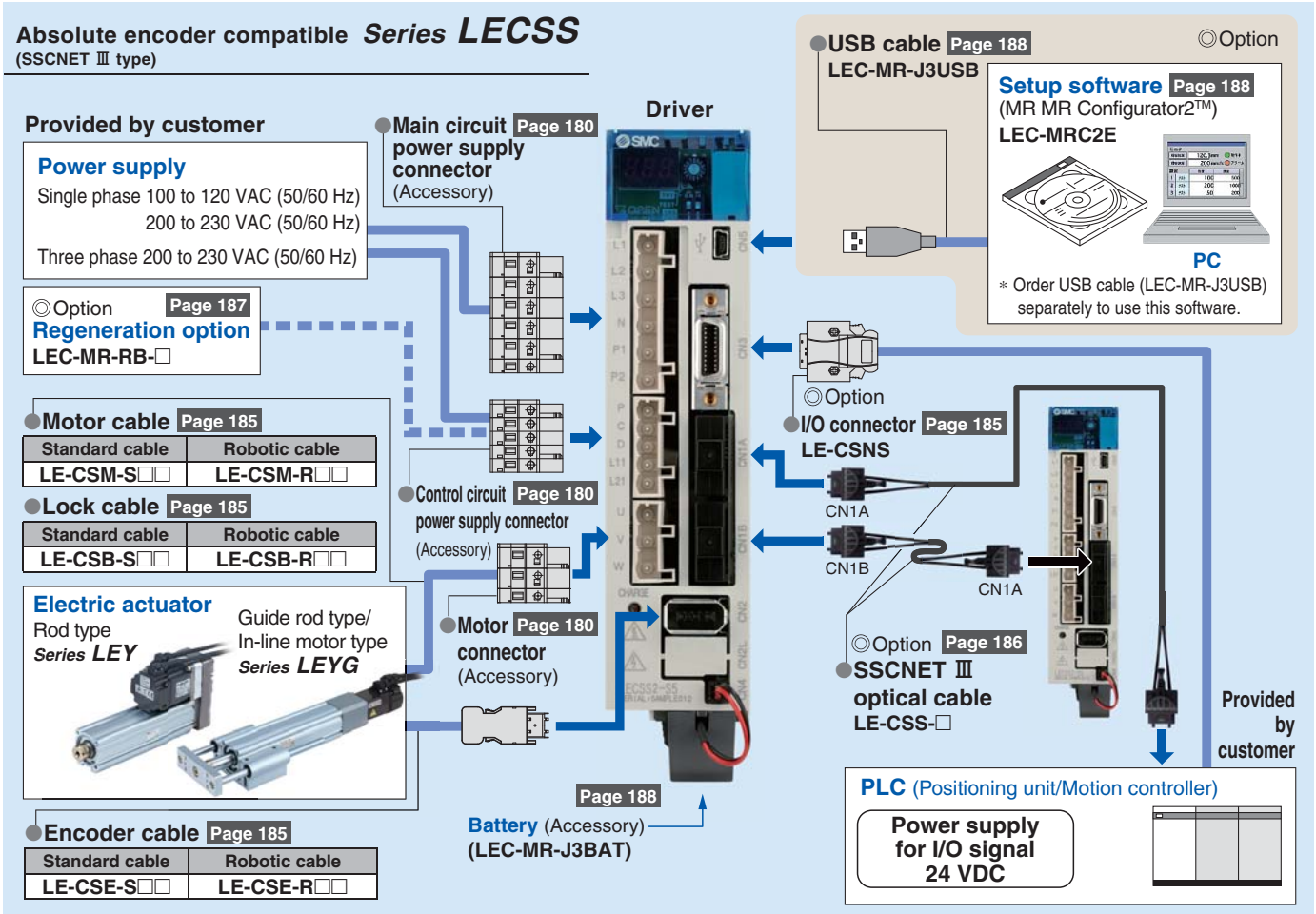
PLC (Positioning unit)
Power supply for I/O signal 24 VDC

System Construction

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



Absolute encoder compatible Series LECSS
(SSCNET Ⅲ type)



System Construction

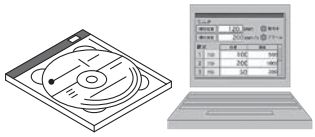
Absolute encoder compatible *Series* LECSS-T

SSCNET III/H
SERVO SYSTEM CONTROLLER NETWORK

Provided by customer

Power supply
Single phase 200 to 240 VAC (50/60 Hz)
Three phase 200 to 240 VAC (50/60 Hz)

◎Option
Setup software Page 195
(MR Configurator2™)
Part no.: **LEC-MRC2□**



PC

∗ Order USB cable (LEC-MR-J3USB) separately to use this software.

USB cable Page 196
Part no.: **LEC-MR-J3USB**

Main circuit power supply connector Page 190
(Accessory)

Driver

◎Option Page 194
Regeneration option
Part no.: **LEC-MR-RB-□**

Motor cable Page 192

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

Lock cable Page 192

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

Control circuit power supply connector Page 190
(Accessory)

Motor connector Page 190
(Accessory)

CN3

◎Option
I/O connector Page 192
Part no.: **LE-CSNS**

◎Option
STO cable (3 m) Page 196
Part no.: **LEC-MR-D05UDL3M**

CN1A

◎Option Page 193
SSCNET Ⅲ optical cable
Part no.: **LE-CSS-□**

CN1B

CN1A

Battery (Accessory) Page 196
Part no.: **(LEC-MR-BAT6V1SET)**

Encoder cable Page 192

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

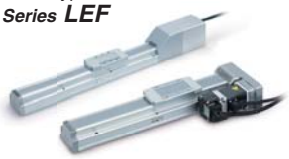
Provided by customer

PLC
(Positioning unit/Motion controller)

Power supply for I/O signal 24 VDC

Electric actuator

Slider type
***Series* LEF**



High rigidity slider type
***Series* LEJ**

Rod type
***Series* LEY**

Guide rod type
***Series* LEYG**

∗ The LECSS2-T□ cannot be used with the LEC-MR-SETUP221□.

SMC Electric Actuators

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

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

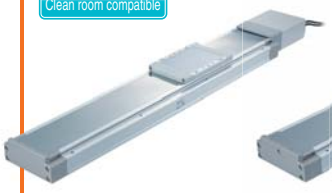
Size	Max. work load [Kg]	Stroke [mm]
25	5	Up to 2000
32	15	Up to 2500
40	25	Up to 3000

CAT.ES100-87

High Rigidity Slider Type
AC Servo Motor

Ball screw drive
Series LEJS

Clean room compatible



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

CAT.ES100-104

Guide Rod Slider
Step Motor (Servo/24 VDC)

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

CAT.E102

Low Profile Slider Type
Step Motor (Servo/24 VDC)

Basic type
Series LEMB

Series LEMB

Size	Max. work load [Kg]	Stroke [mm]
25	6	Up to 2000
32	11	Up to 2000

Cam follower guide type
Series LEMC

Series LEMC

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 2000
32	20	Up to 2000

Linear guide single axis type
Series LEMH

Series LEMH

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 1000
32	20	Up to 1500

Linear guide double axis type
Series LEMHT

Series LEMHT

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 1000
32	20	Up to 1500

CAT.ES100-98

SMC Electric Actuators

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

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

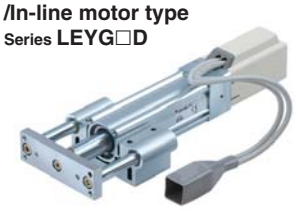
Dust/Drip proof compatible

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



CAT.E102

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	

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

Series LES

Basic type/R type
Series LES□R

Symmetrical type/L type
Series LES□L

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

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

Series LESH

Basic type/R type
Series LESH□R

Symmetrical type/L type
Series LESH□L

Size	Max. work load [Kg]	Stroke [mm]
8	2	50, 75
16	6	50, 100
25	9	50, 100 150

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

CAT.E102

Miniature Step Motor (Servo/24 VDC)

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

CAT.E102

Rotary Table Step Motor (Servo/24 VDC)

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	0.22	0.32	420	280
30	0.8	1.2		
50	6.6	10		

CAT.E102

SMC Electric Actuators

Gripper Step Motor (Servo/24 VDC)

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/ diameter [mm]
	Basic	Compact	
10	5.5	3.5	4
20	22	17	6
32	90	—	8
40	130	—	12

CAT.E102

Controllers/Driver

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

Step Data Input Type
Series LECP6
Series LECA6

- 64 points positioning
- Input using controller setting kit or teaching box

Step Data Input Type
Series JXC73/83

Step Motor (Servo/24 VDC)

Programless Type
Series LECP1

- 14 points positioning
- Control panel setting (PC is not required.)

Programless Type (With Stroke Study)
Series LECP2

- End to end operation similar to an air cylinder
- 2 stroke end points + 12 intermediate points positioning

Specialized for Series LEM

Step Motor (Servo/24 VDC)

Pulse Input Type
Series LECPA

Fieldbus-compatible Network Controller/Gateway Unit

Series JXC□1

PROFIBUS
EtherCAT
DeviceNet
EtherNet/IP

Series JXC92

EtherNet/IP

Series JXC93

EtherNet/IP

Series LEC-G

PROFIBUS
CC-Link V2
DeviceNet
EtherNet/IP

AC Servo Motor

Pulse Input Type
Series LECSA
Series LECSB

- Absolute encoder (LECSB)
- Built-in positioning function (LECSA)

Series LECSA ***Series LECSB***

CC-Link Direct Input Type
Series LECSC

CC-Link

SSCNETⅢ Type
Series LECSS

SSCNETⅢ
SERVO SYSTEM CONTROLLER NETWORK

MECHATROLINKⅡ Type
Series LECYM

MECHATROLINK-Ⅱ

MECHATROLINKⅢ Type
Series LECYU

MECHATROLINK-Ⅲ

SSCNETⅢ/H Type
Series LECSS-T

SSCNETⅢ/H
SERVO SYSTEM CONTROLLER NETWORK

Series Variations

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 3
			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 127
			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 64
	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)	—	

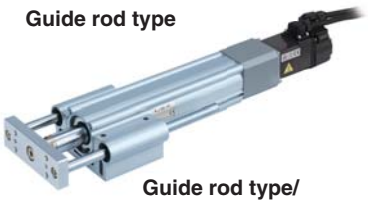
Series Variations

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 40
			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 157
			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 173
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

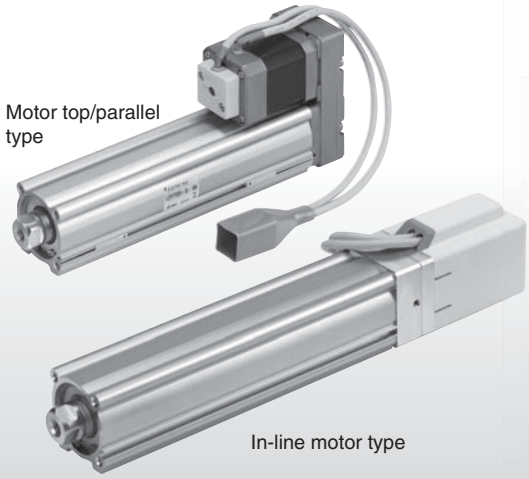
AC Servo Motor Type

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

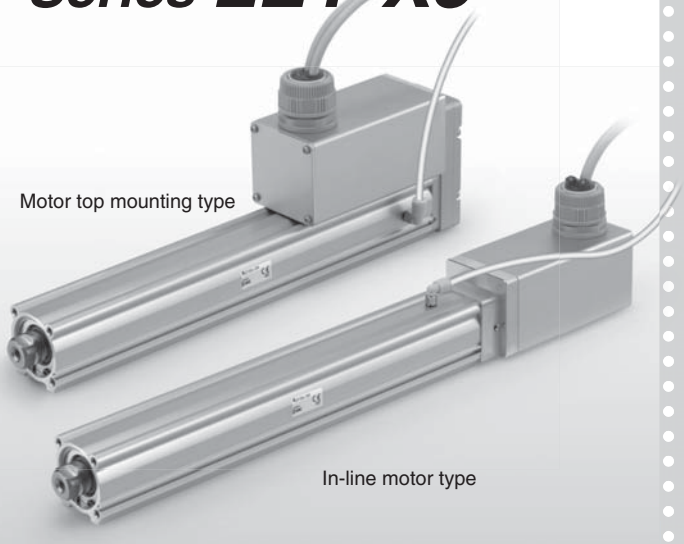
Rod Type Page 3

Series LEY



Dust/Drip proof (IP65 equivalent) Page 30

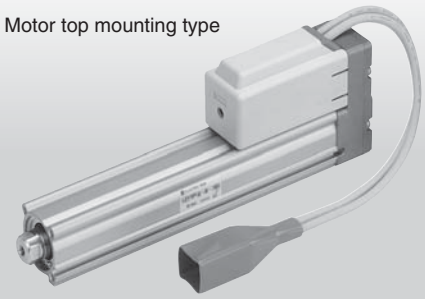
Series LEY-X5



Rod Type Page 37

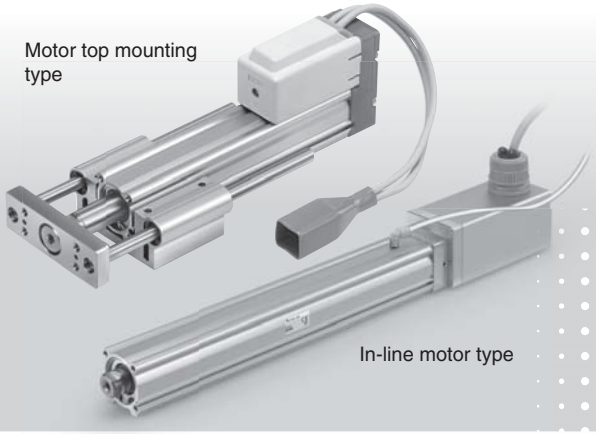
Secondary Batteries Compatible

Series 25A-LEY



Guide Rod Type Page 40

Series LEYG



Step Motor/Servo Motor Controller Page 64

Step Motor Driver

Series LECP6/LECA6
Series LEC-G
Series LECP1
Series LECPA
Series JXC□1
Series JXC73/83/92/93

Series LEY
Model Selection

Selection Procedure

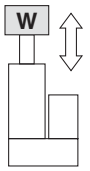
Positioning Control Selection Procedure

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

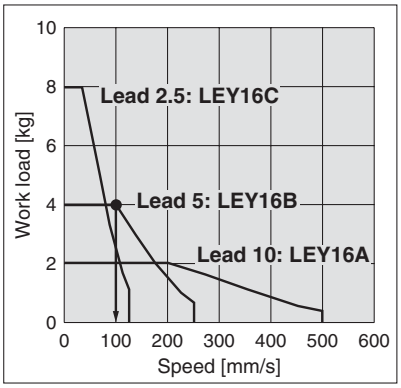


Step 1 **Check the work load–speed. <Speed–Vertical work load graph>**

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 15 for the horizontal work load in the specifications, and page 59 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.

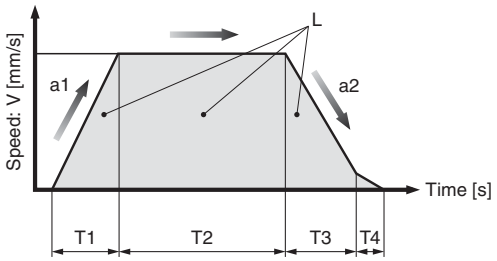
  $T1 = V/a1$ [s] $T3 = V/a2$ [s]

- 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

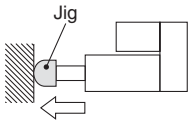
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

∗ 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>.

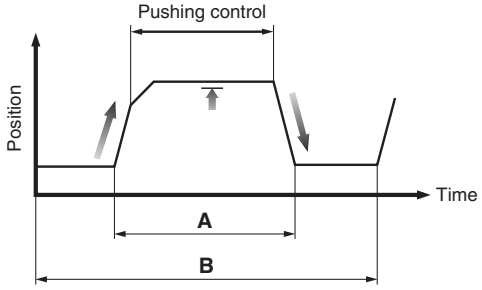
Selection example)
Based on the table below,
- Duty ratio: 20 [%]

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.



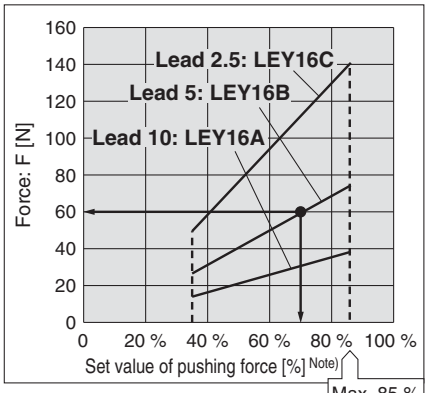
Duty ratio = A/B x 100 [%]

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.

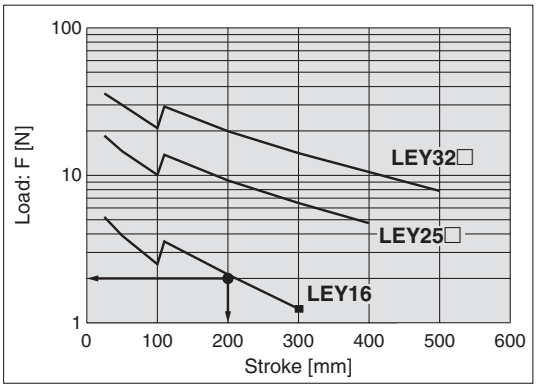
<Graph of allowable lateral load on the rod end>

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.

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

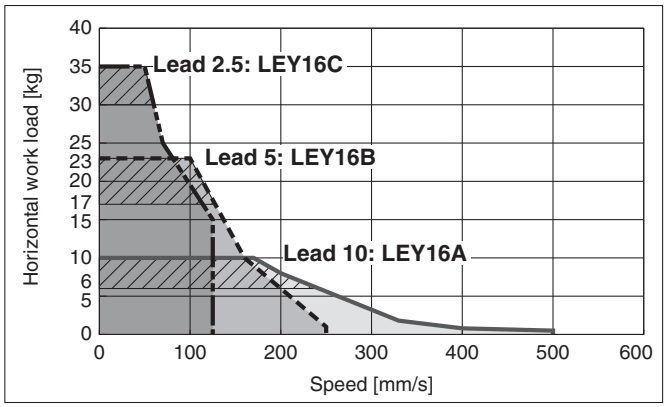


<Graph of allowable lateral load on the rod end>

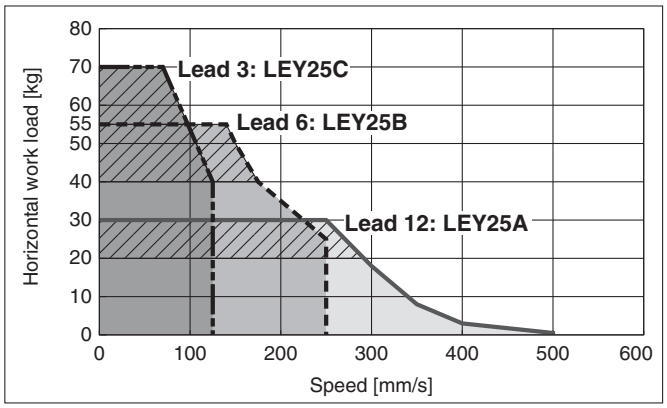
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECP6, LECP1, JXCE1/91/P1/D1/L1

Horizontal

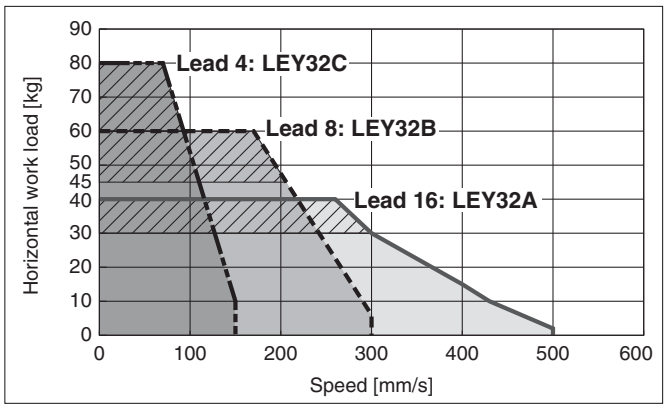
LEY16□



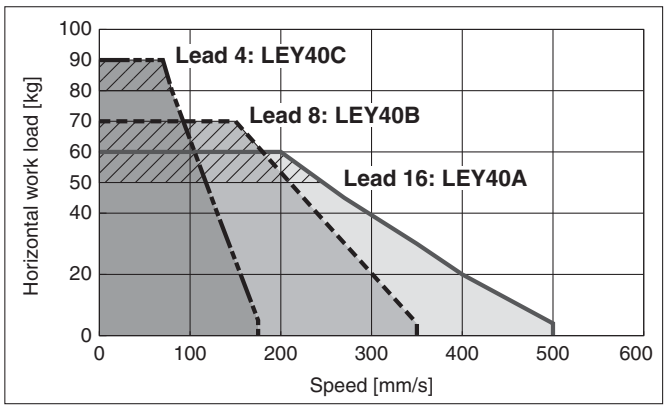
LEY25□



LEY32□

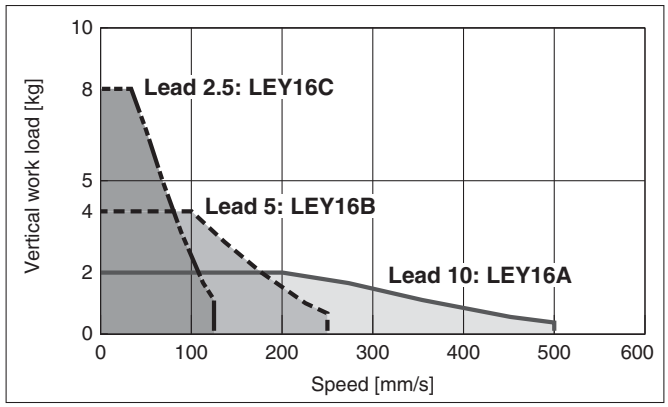


LEY40□

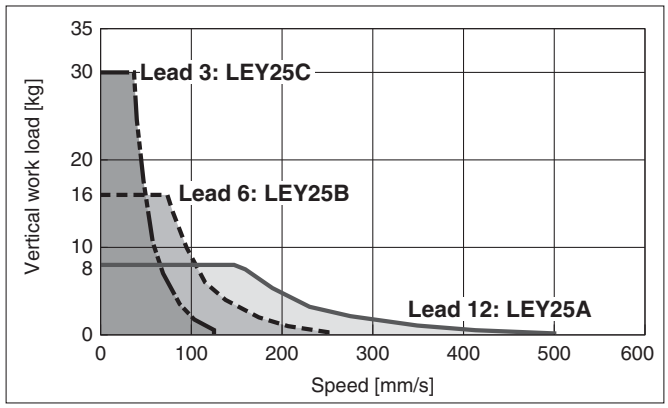


Vertical

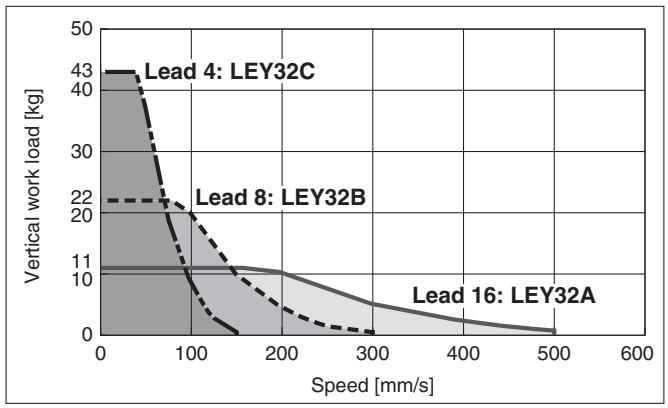
LEY16□



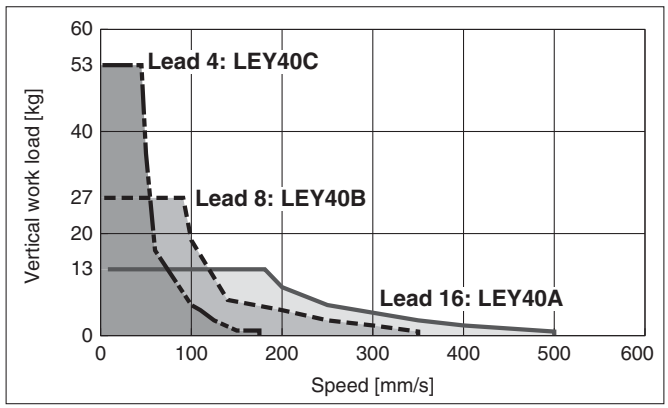
LEY25□



LEY32□



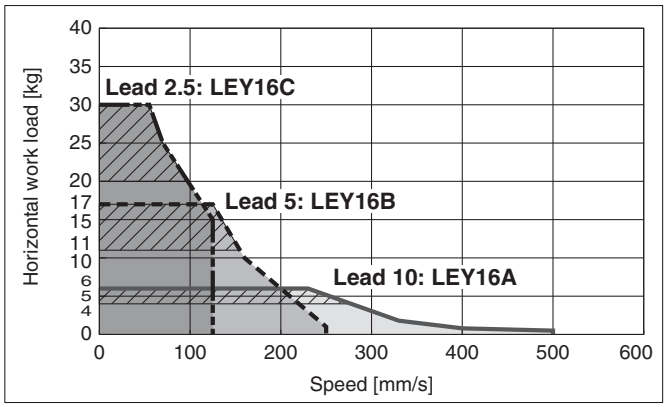
LEY40□



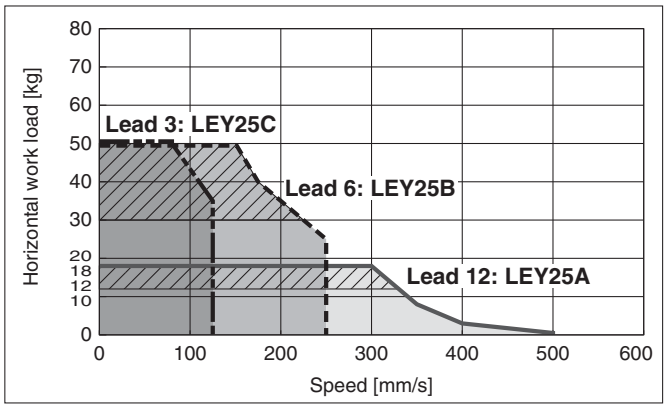
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC73/83/92/93

Horizontal

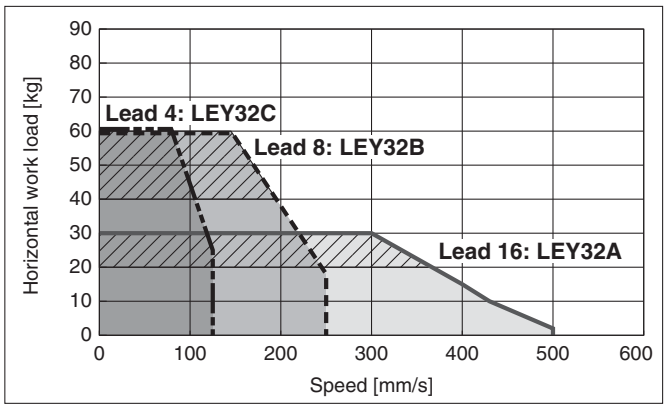
LEY16□



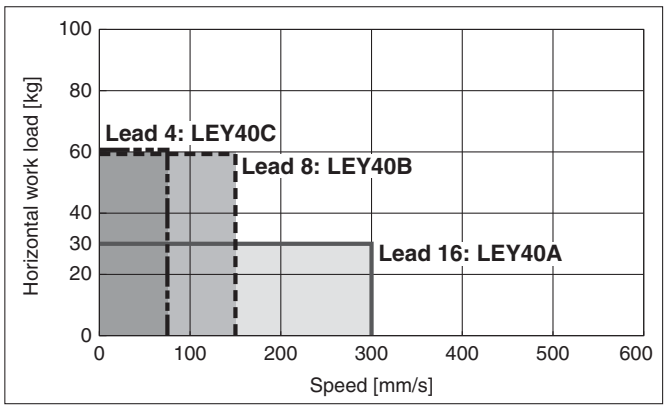
LEY25□



LEY32□

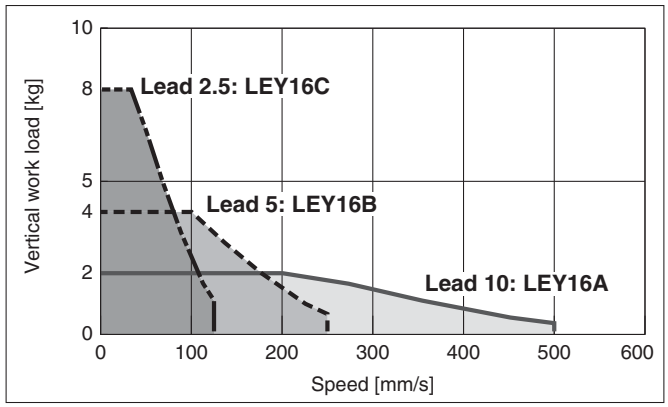


LEY40□

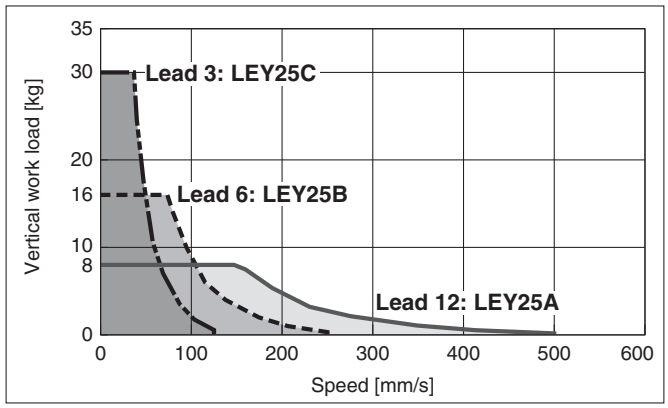


Vertical

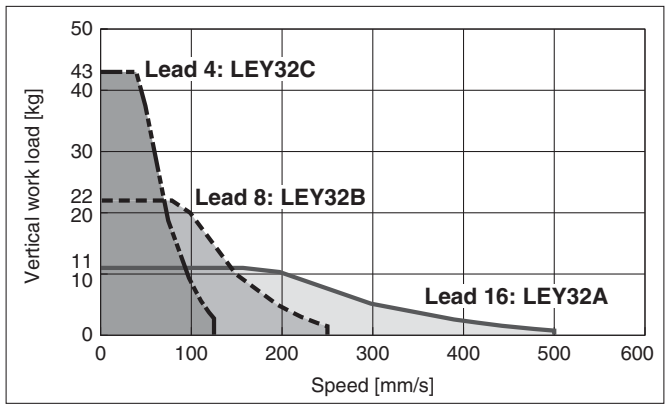
LEY16□



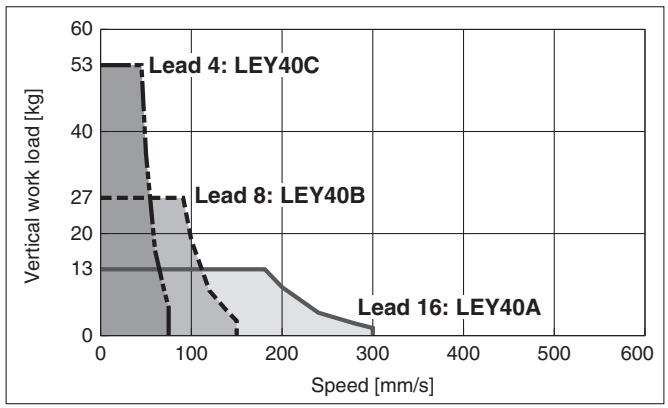
LEY25□



LEY32□



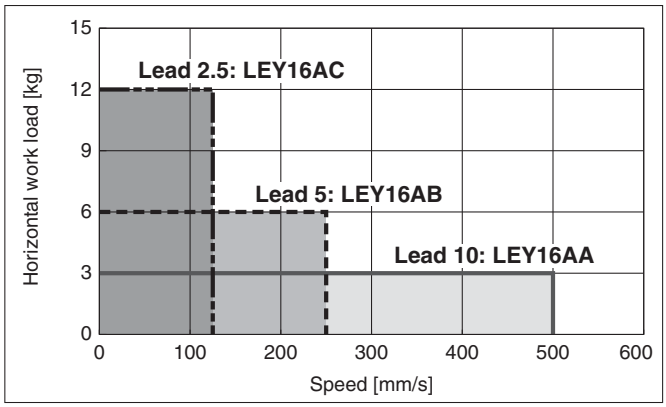
LEY40□



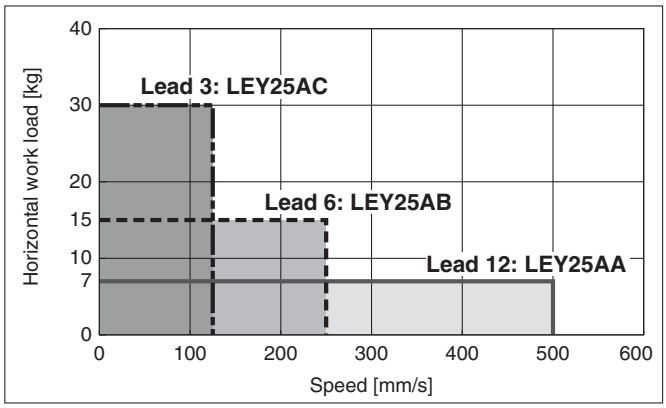
Speed–Work Load Graph (Guide)
For Servo Motor (24 VDC) LECA6

Horizontal

LEY16A□

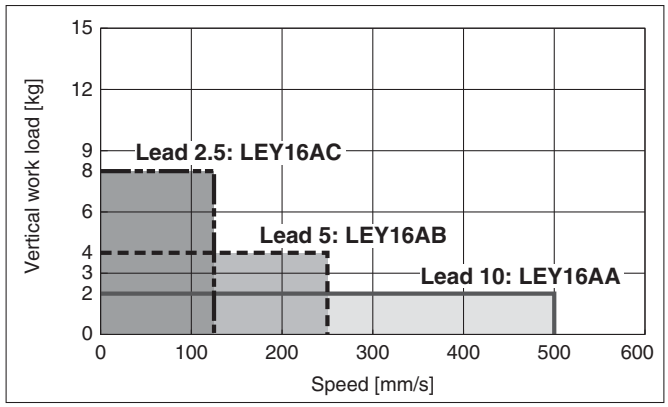


LEY25A□

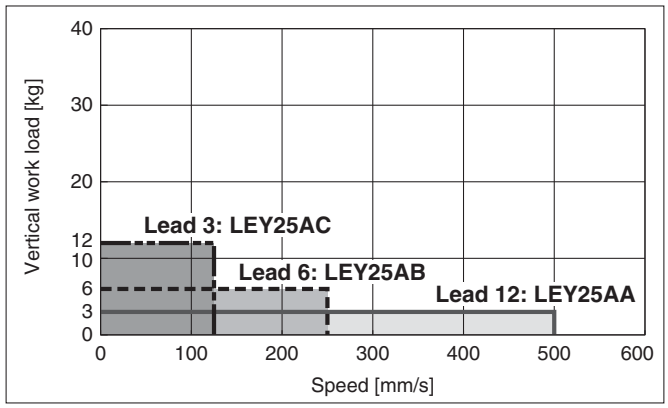


Vertical

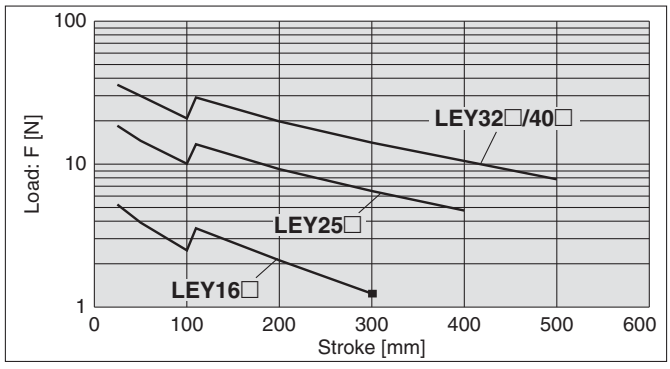
LEY16A□



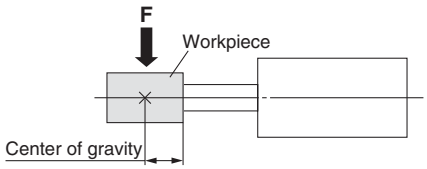
LEY25A□



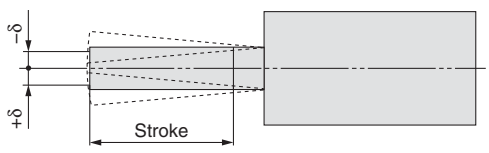
Graph of Allowable Lateral Load on the Rod End (Guide)



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



Rod Displacement: δ



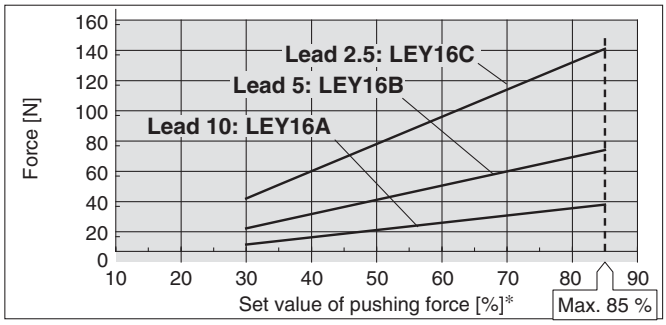
[mm]

Size	Stroke [mm]										
	30	50	100	150	200	250	300	350	400	450	500
16	±0.4	±0.5	±0.9	±0.8	±1.1	±1.3	±1.5	—	—	—	—
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±0.5	—	—
32,40	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8

Force Conversion Graph (Guide)

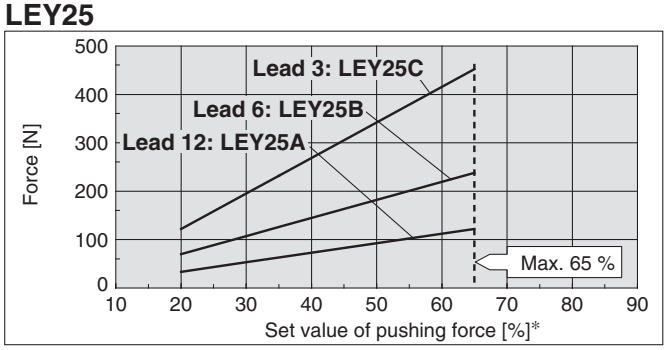
Step Motor (Servo/24 VDC)

LEY16



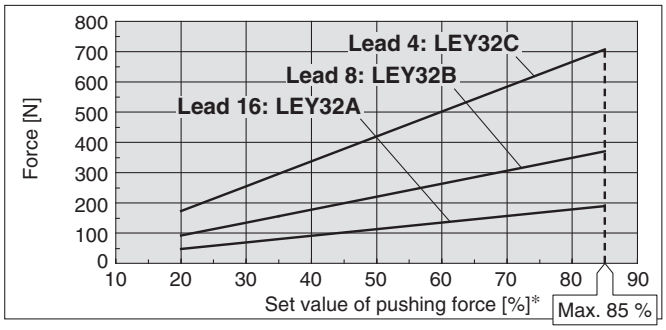
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEY25



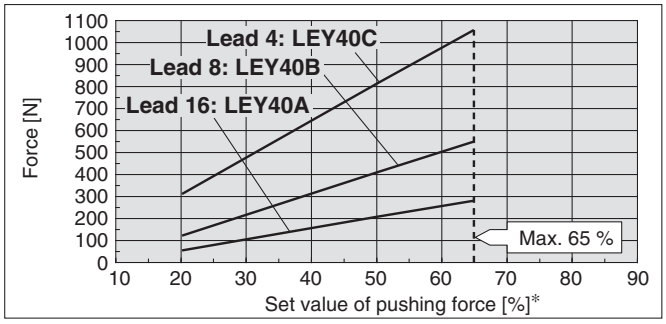
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

LEY32



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

LEY40

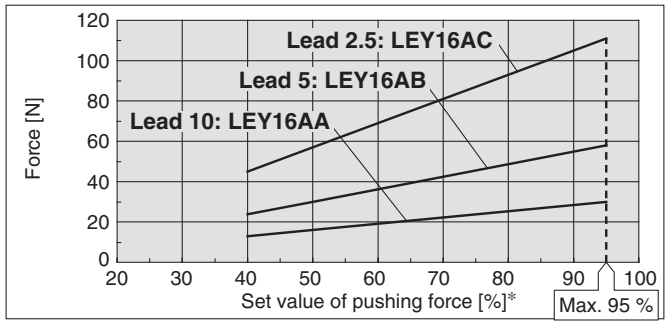


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

∗ Set values for the controller.

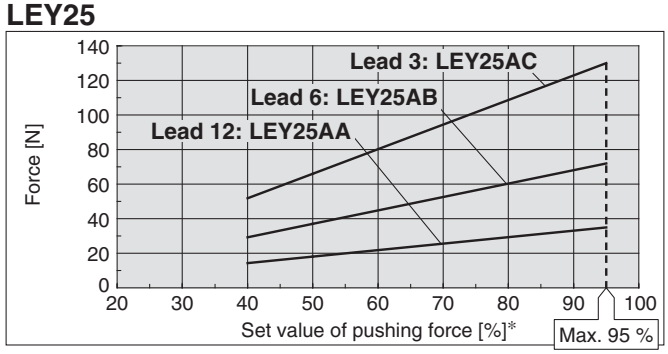
Servo Motor (24 VDC)

LEY16



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

LEY25



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

<Pushing Force and Trigger Level Range> Without Load

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

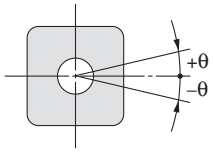
Model	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16□A	1 to 4	40 % to 95 %
	5 to 20	60 % to 95 %
	21 to 50	80 % to 95 %
LEY25□A	1 to 4	40 % to 95 %
	5 to 20	60 % to 95 %
	21 to 35	80 % to 95 %

<Set values for vertical upward transfer pushing operation>

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	

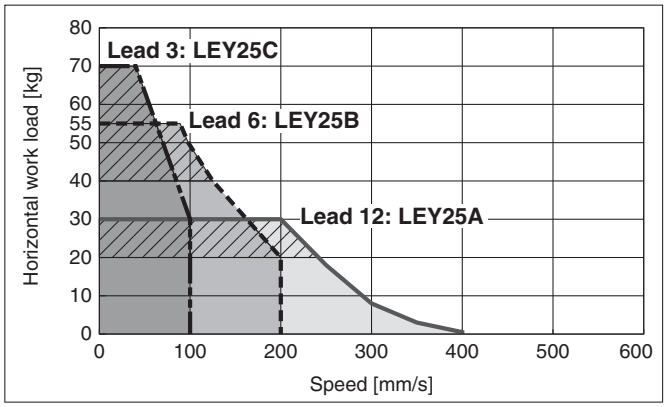
∗ Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause deformation of the non-rotating guide, abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

Model Selection

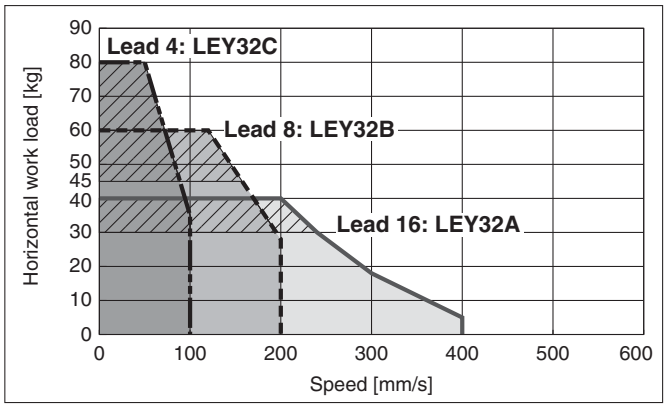
Speed–Work Load Graph (Guide) for Step Motor (Servo/24 VDC) LECP6, LECP1, JXCE1/91/P1/D1/L1

Horizontal

LEY25□

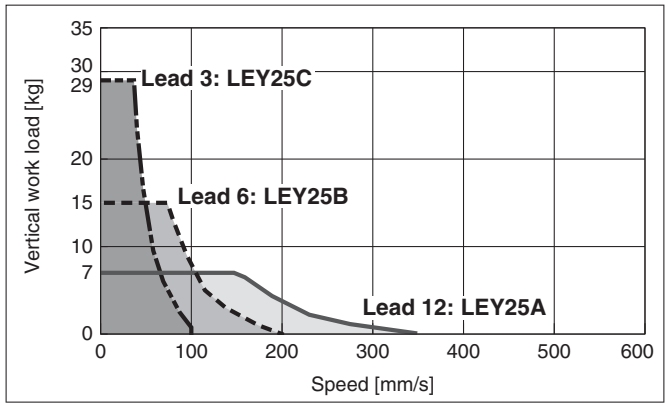


LEY32□

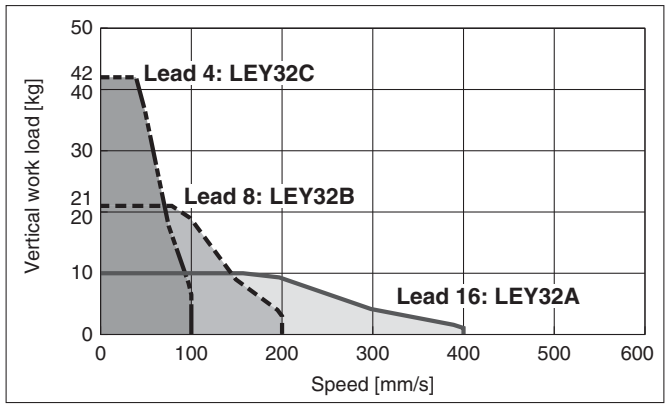


Vertical

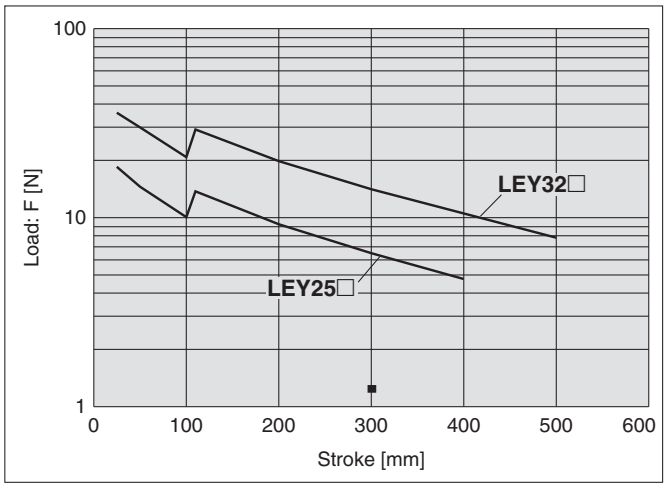
LEY25□



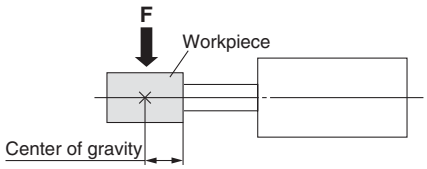
LEY32□



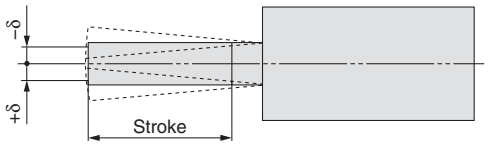
Graph of Allowable Lateral Load on the Rod End (Guide)



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



Rod Displacement: δ



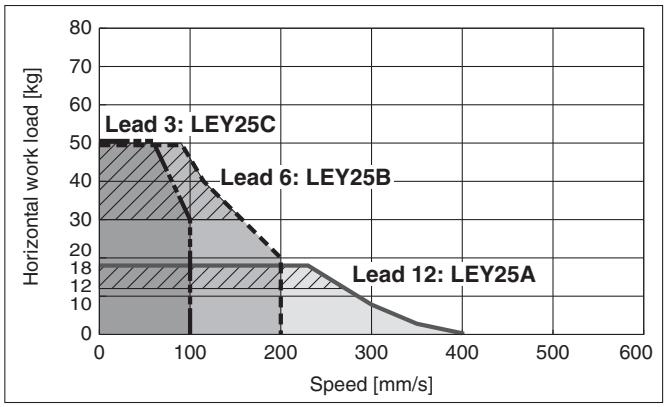
[mm]

Size	Stroke [mm]										
	30	50	100	150	200	250	300	350	400	450	500
16	±0.4	±0.5	±0.9	±0.8	±1.1	±1.3	±1.5	—	—	—	—
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±0.5	—	—
32,40	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8

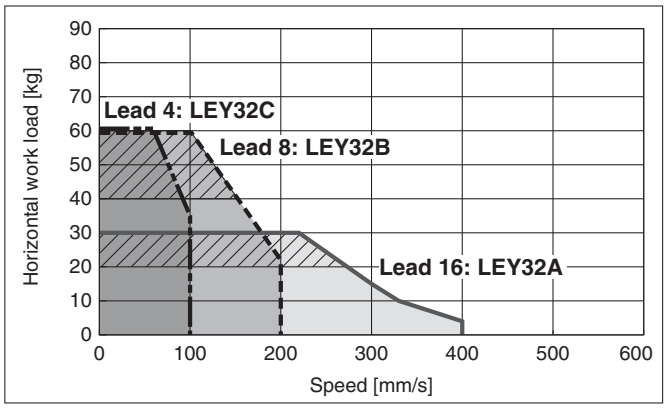
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC73/83/92/93

Horizontal

LEY25□

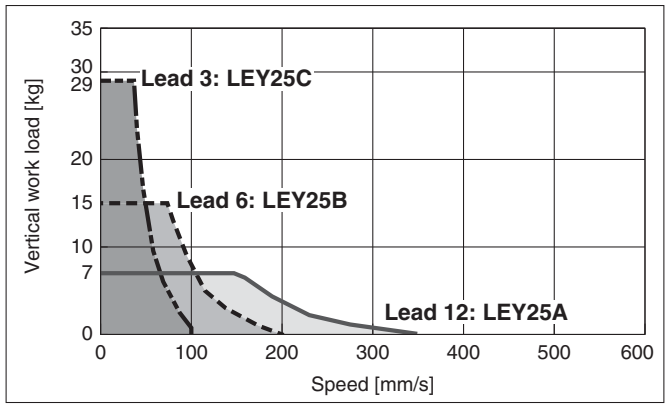


LEY32□

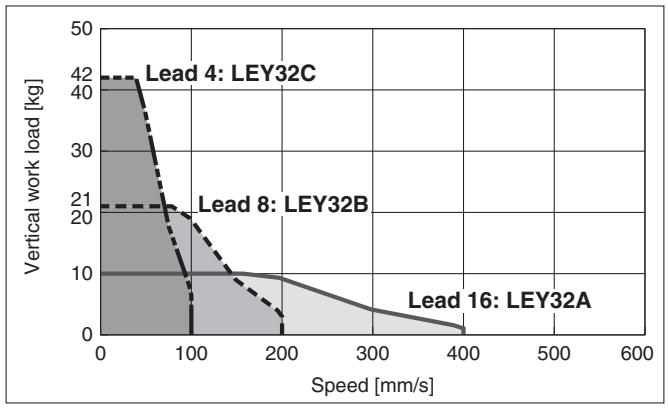


Vertical

LEY25□



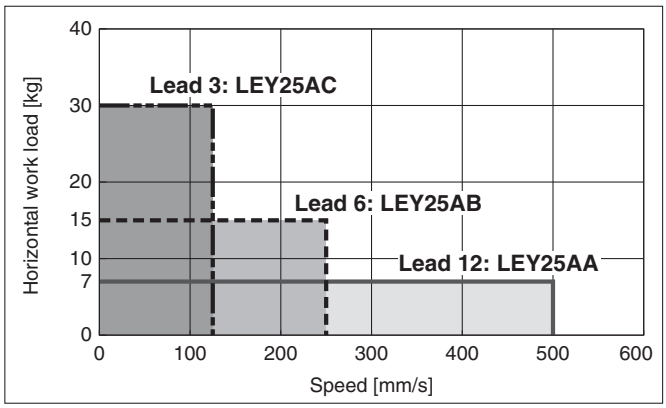
LEY32□



For Servo Motor (24 VDC) LECA6

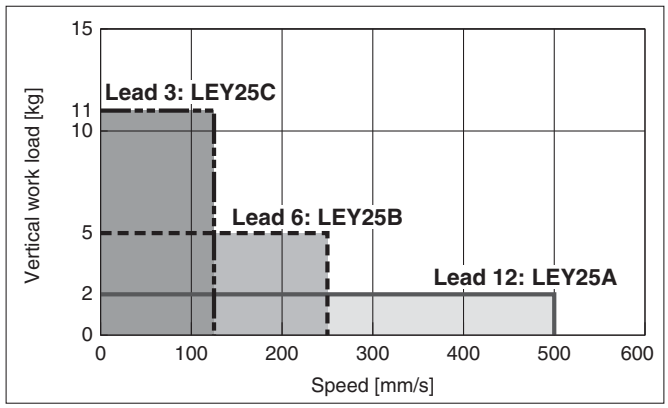
Horizontal

LEY25A□



Vertical

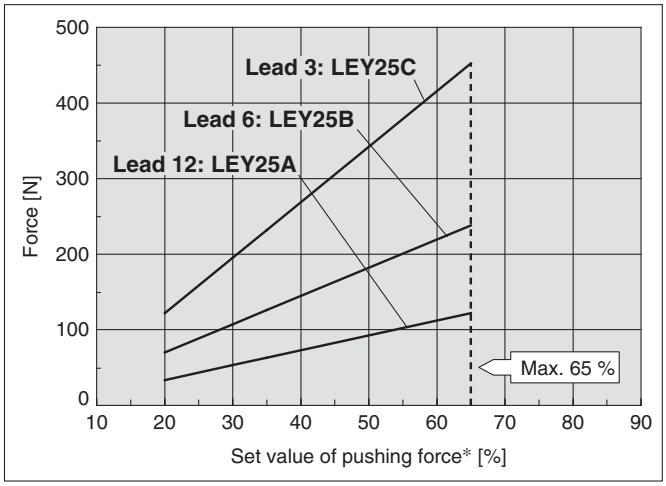
LEY25□



Force Conversion Graph

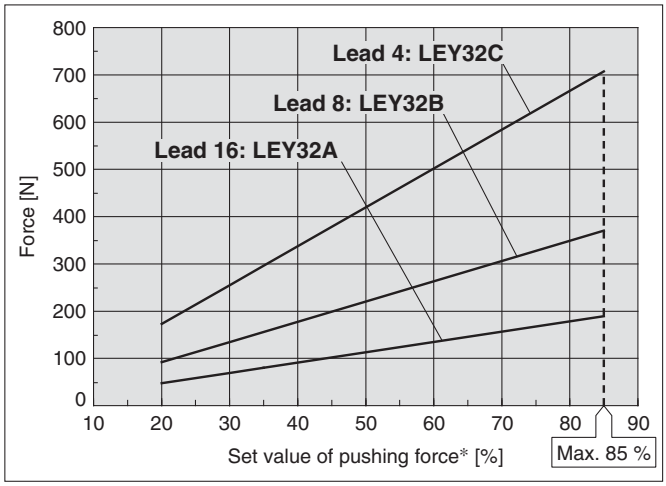
Step Motor (Servo/24 VDC)

LEY25



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

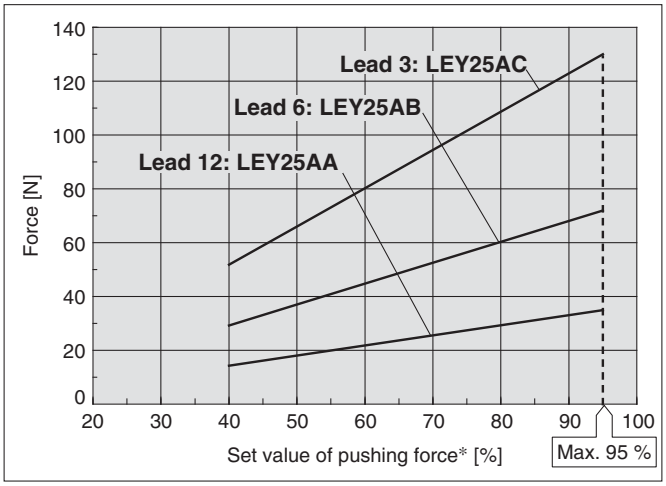
LEY32



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

Servo Motor (24 VDC)

LEY25



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

<Pushing Force and Trigger Level Range> Without Load

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

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

<Set values for vertical upward transfer pushing operation>

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

EtherNet/IP™ DeviceNet™ PROFINET EtherCAT® Compatible ▶Page 99

Multi-Axis Step Motor Controller Compatible ▶Page 108

How to Order

LEY 16 ❶ ❷ ❸ B ❹ – 30 ❺ ❻ ❼ ❽ – S ❾ 1 ❿ 6P ⓫ 1 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]

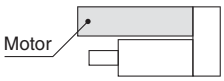
30	30
to	to
500	500

∗ 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 16/40 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 73 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 27 and 28.

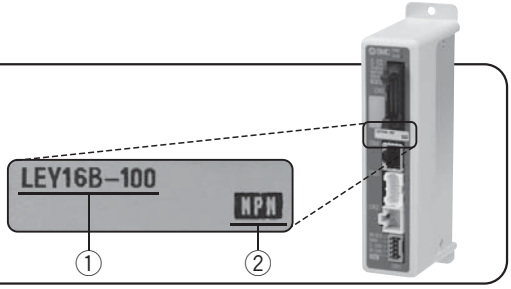
The actuator and controller/driver are sold as a package.

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

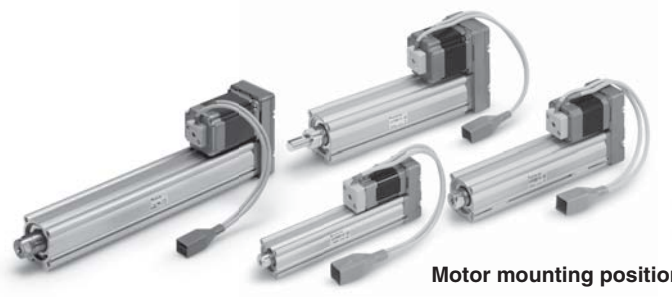
<Check the following before use.>

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

❽ Mounting*1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
・LEY25: 200 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 Rod flange is not available for the LEY16/40 with stroke 30 mm and motor option "With lock", "With lock/motor cover".
*5 Head flange is not available for the LEY32/40.

❾ Actuator cable type*1

—	Without cable
S	Standard cable*2
R	Robotic cable (Flexible cable)*3

*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."
*3 Fix the motor cable protruding from the actuator to keep it unmovable. For details about fixing method, refer to Wiring/Cables in the Electric Actuators Precautions.

❿ 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 13.

⓫ 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, *3 (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."
*3 When pulse signals are open collector, order the current limiting resistor separately.

⓬ I/O cable length [m]*1, Communication plug

—	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 73 (For LECP6/LECA6), page 86 (For LECP1) or page 93 (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*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 65	Page 65	Page 80	Page 87

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 (LECP6, LECP1, LECPMJ)	(3000 [mm/s²])	6	17	30	20	40	60	30	45	60	50	60	80
			(2000 [mm/s²])	10	23	35	30	55	70	40	60	80	60	70	90
		Horizontal (LECPA)	(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)	LECP6/LECP1/LECPMJ		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 300	6 to 150	24 to 500	12 to 350	6 to 175
		LECPA									12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/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											
	Lost motion [mm] Note 7)			0.1 or less											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s²] Note 8)			50/20											
	Actuation type			Ball screw + Belt (LEY□)/Ball screw (LEY□D)											
	Guide type			Sliding bushing (Piston rod)											
	Operating temperature range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
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 9)			23			40			50			50		
	Standby power consumption when operating [W] Note 10)			16			15			48			48		
	Max. instantaneous power consumption [W] Note 11)			43			48			104			106		
Lock unit specifications	Type Note 12)			Non-magnetizing lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W] Note 13)			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10 %											

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check “Model Selection” on pages 5 and 6.
Vertical: Speed changes according to the work load. Check “Model Selection” on pages 5 and 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 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 8.
Note 5) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10 % for each 5 m. (At 15 m: Reduced by up to 20 %)
Note 6) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 7) A reference value for correcting an error in reciprocal operation.
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) The power consumption (including the controller) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 11) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 12) With lock only
Note 13) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model			LEY16A			LEY25A		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150 200, 250, 300			30, 50, 100, 150, 200 250, 300, 350, 400		
	Work load [kg] Note 2)	Horizontal (3000 [mm/s²])	3	6	12	7	15	30
		Vertical (3000 [mm/s²])	2	4	8	3	6	12
	Pushing force [N] Note 3) 4)		16 to 30	30 to 58	57 to 111	18 to 35	37 to 72	66 to 130
	Speed [mm/s]		1 to 500	1 to 250	1 to 125	2 to 500	1 to 250	1 to 125
	Max. acceleration/deceleration [mm/s²]		3000					
	Pushing speed [mm/s] Note 5)		50 or less			35 or less		
	Positioning repeatability [mm]		±0.02					
	Lost motion [mm] Note 6)		0.1 or less					
	Screw lead [mm]		10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²] Note 7)		50/20					
	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 8)		40			86		
	Standby power consumption when operating [W] Note 9)		4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 10)		59			96		
Lock unit specifications	Type Note 11)		Non-magnetizing lock					
	Holding force [N]		20	39	78	78	157	294
	Power consumption [W] Note 12)		2.9			5		
	Rated voltage [V]		24 VDC ±10 %					

Note 1) 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 7 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 8.
Note 5) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The power consumption (including the controller) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 11) With lock only
Note 12) For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top/Parallel Type

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

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

Weight: In-line Motor Type

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

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

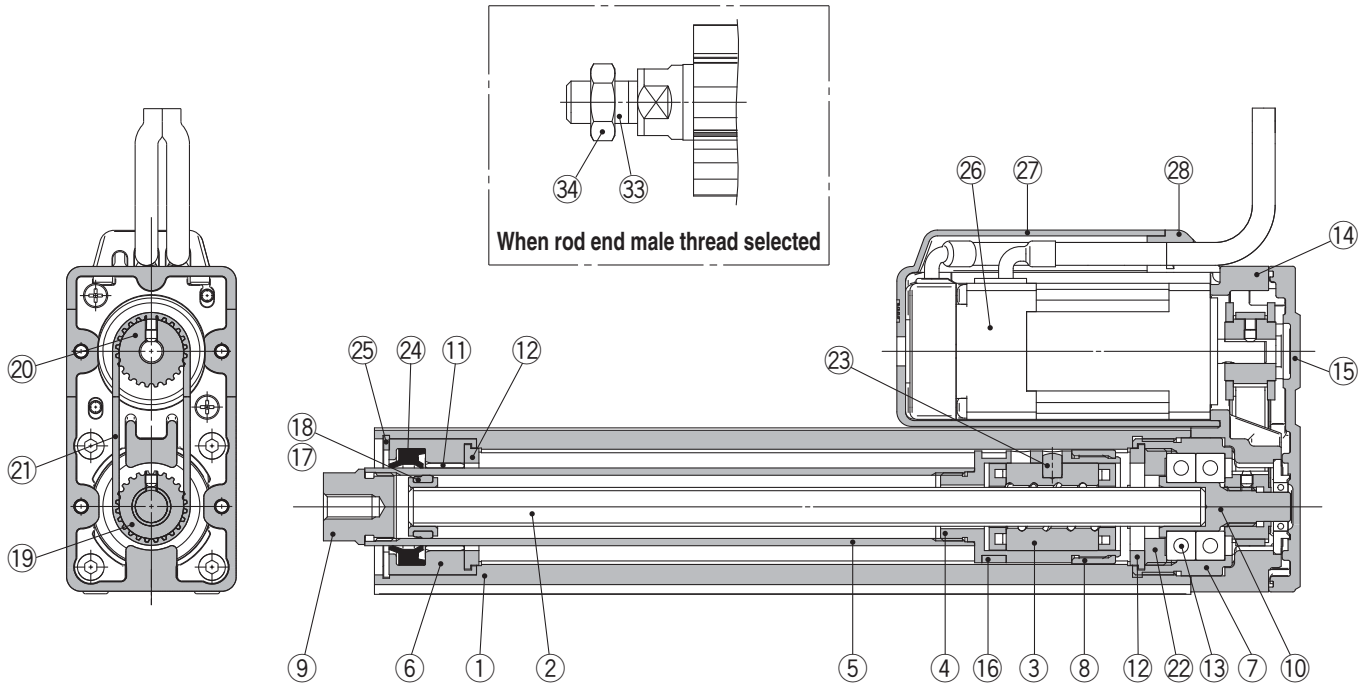
Additional Weight

[kg]

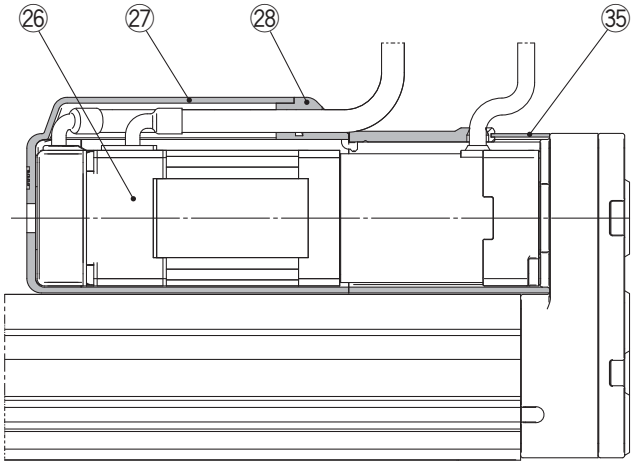
Size		16	25	32	40
Lock		0.12	0.26	0.53	0.53
Motor cover		0.02	0.03	0.04	0.05
Rod end male thread	Male thread	0.01	0.03	0.03	0.03
	Nut	0.01	0.02	0.02	0.02
Foot (2 sets including mounting bolt)		0.06	0.08	0.14	0.14
Rod flange (including mounting bolt)		0.13	0.17	0.20	0.20
Head flange (including mounting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

Construction

Motor top mounting type: LEY 16 25 32 40

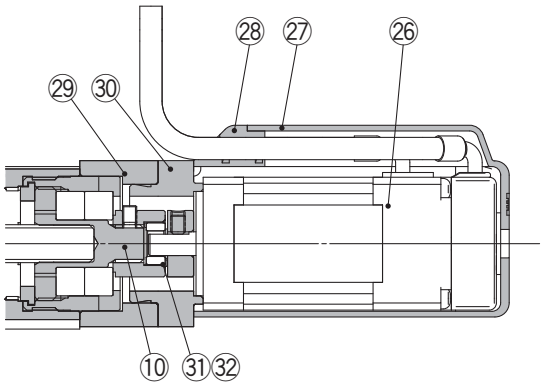


Motor top/parallel type
With lock/motor cover

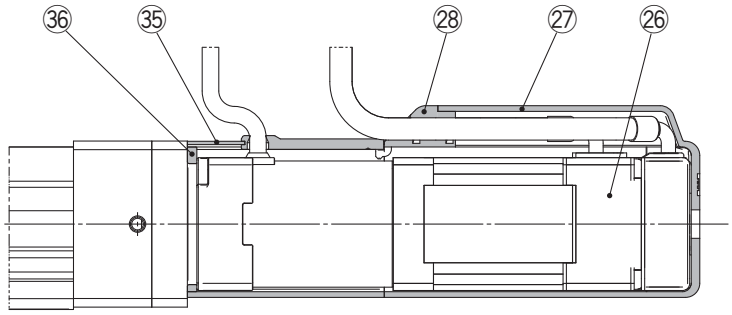


Construction

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



In-line motor type: With lock/motor cover



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 plating
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Lead bronze cast	
12	**Bumper**	Urethane	
13	**Bearing**	—	
14	**Return box**	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	
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**	—	
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 plating
34	**Nut**	Alloy steel	
35	**Motor cover with lock**	Aluminium alloy	Only "With lock/motor cover"
36	**Cover support**	Aluminium alloy	Only "With lock/motor cover"

Replacement Parts (Top/Parallel only)/Belt

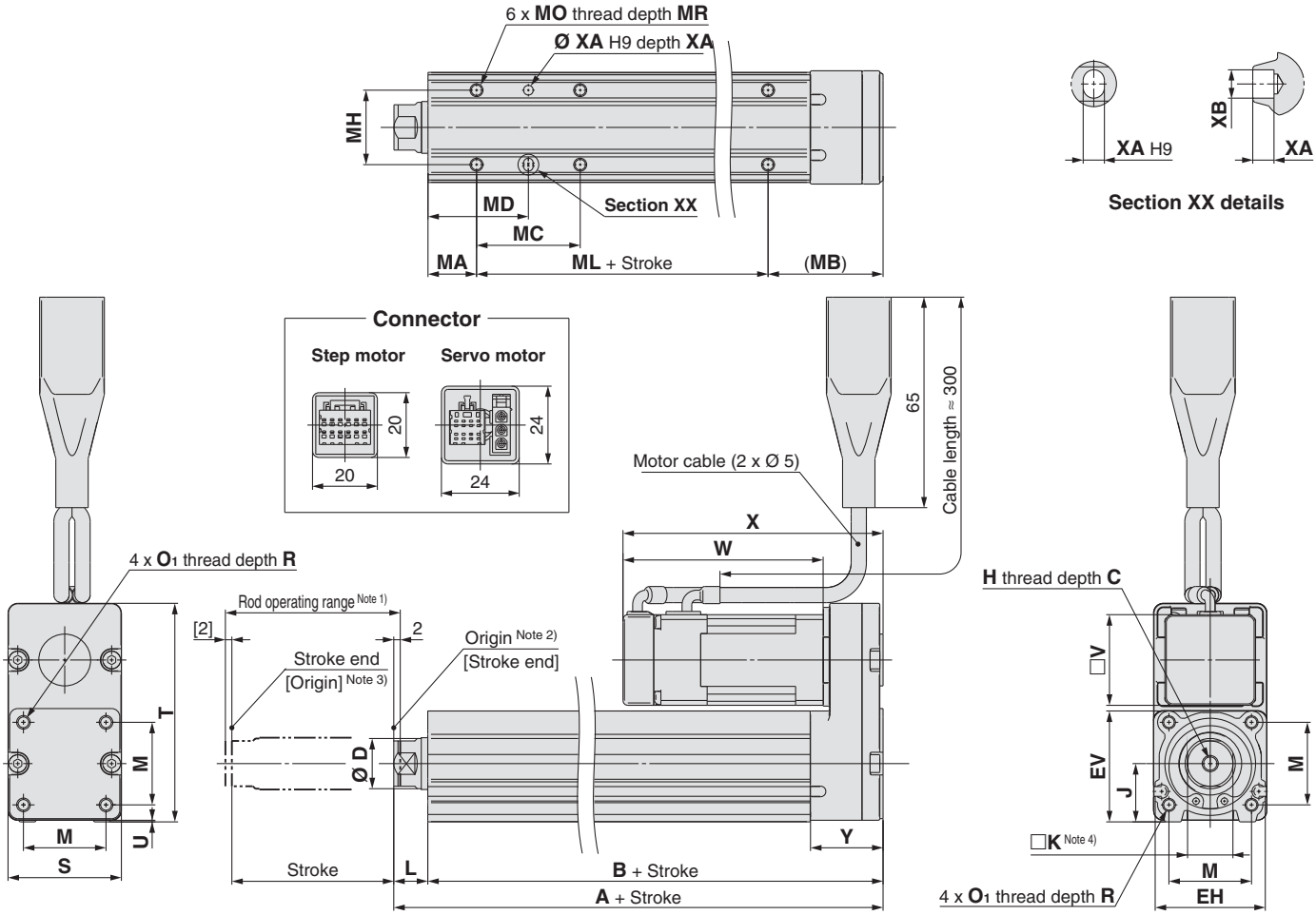
No.	Size	Order no.
21	**16**	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Replacement Parts/Grease Pack

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

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

Dimensions: Motor Top/Parallel



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

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U	V	Step motor 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																				

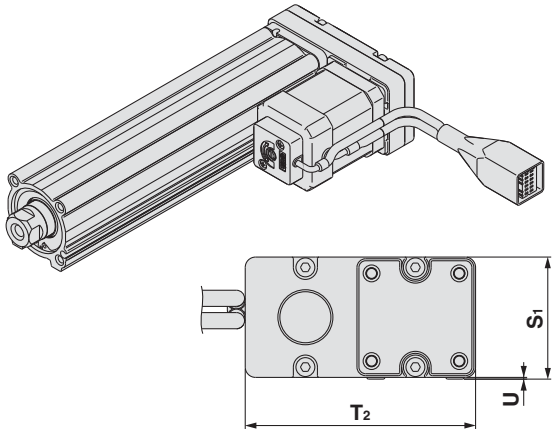
Body Bottom Tapped

[mm]

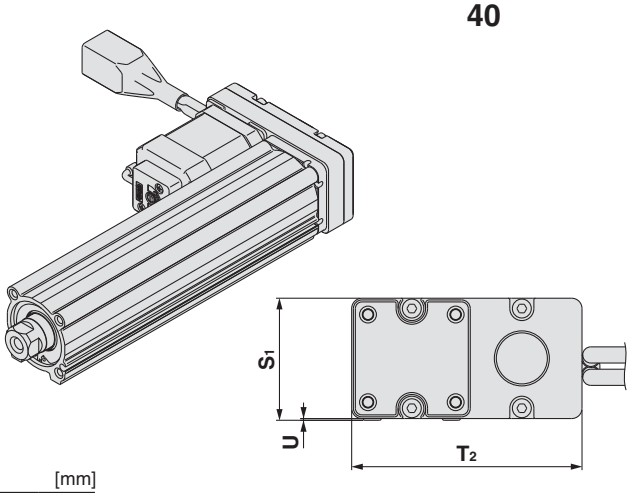
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
16	10 to 39	15	35.5	17	23.5	23	40	M4 x 0.7	5.5	3	4
	40 to 100			32	31						
	101 to 300			62	46		60				
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58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

Dimensions: Motor Top/Parallel

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



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

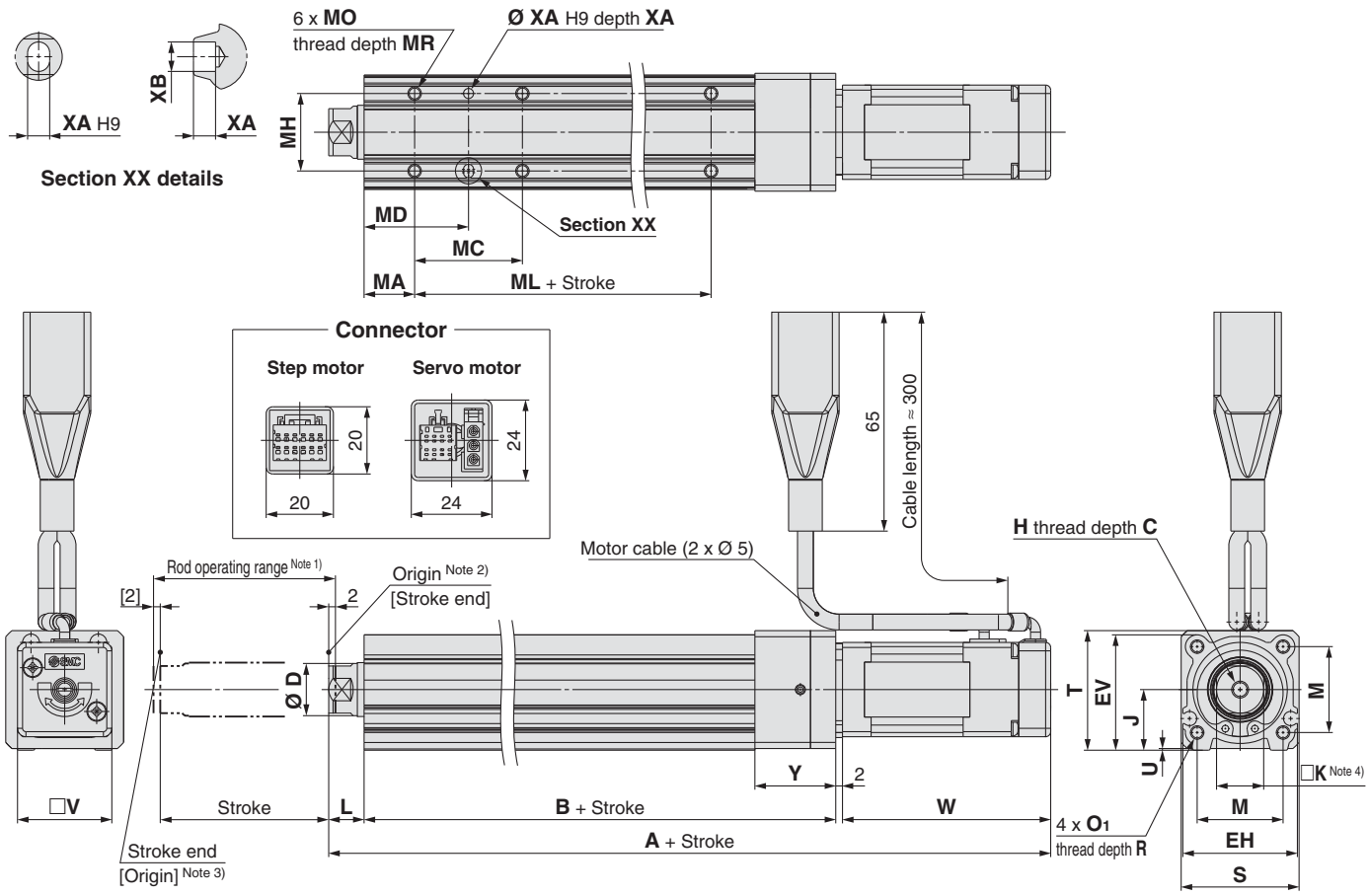


[mm]

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) [ ] for when the direction of return to origin has changed.
Note 4) The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	Step motor	Servo motor	B	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U	V	Step motor	Servo motor	Y
		A																		W		
16	10 to 100	166.3	167	92	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	35.5	0.5	28	61.8	62.5	24
	101 to 300	186.3	187	112																		
25	15 to 100	195.4	191.6	115.5	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	42	63.4	59.6	26
	101 to 400	220.4	216.6	140.5																		
32	20 to 100	216.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	68.4	—	32
	101 to 500	246.9	—	158																		
40	20 to 100	238.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	90.4	—	32
	101 to 500	268.9	—	158																		

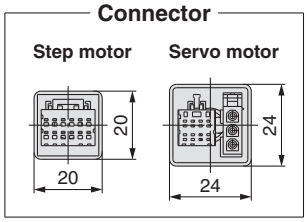
Body Bottom Tapped

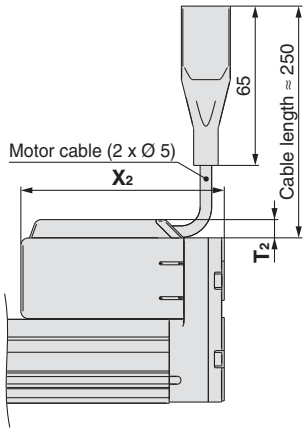
[mm]

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

Dimensions

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



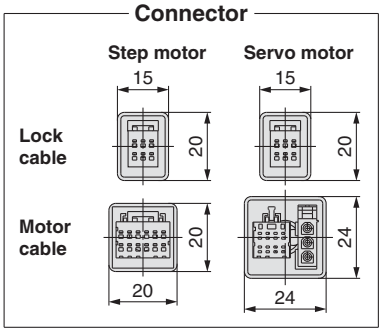


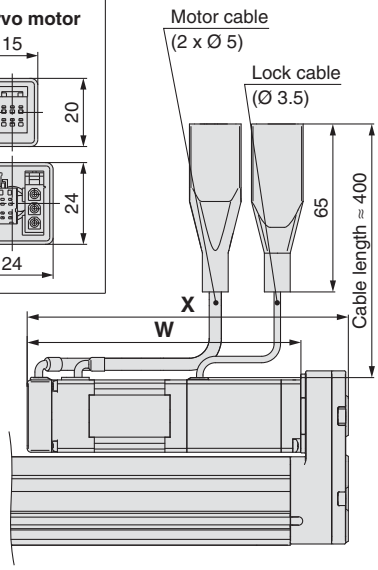
[mm]

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

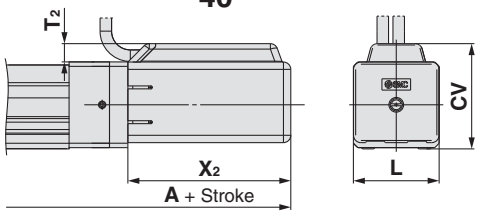




[mm]

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	—	—

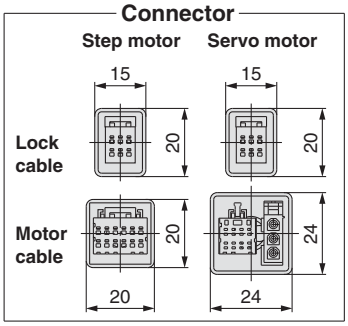
In-line motor type
With motor cover: LEY16/25/32/40D□ A/B/C-□C

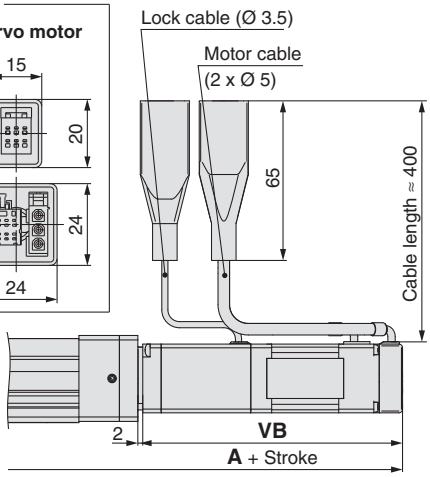


[mm]

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: LEY16/25/32/40D□ A/B/C-□B

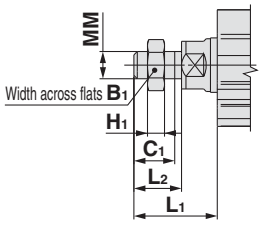




[mm]

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	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	—		

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



∗ Refer to page 25 for details about the rod end nut and mounting bracket.
Note) Refer to the "Handling" precautions on pages 59 to 60 when mounting end brackets such as knuckle joint or workpieces.

[mm]

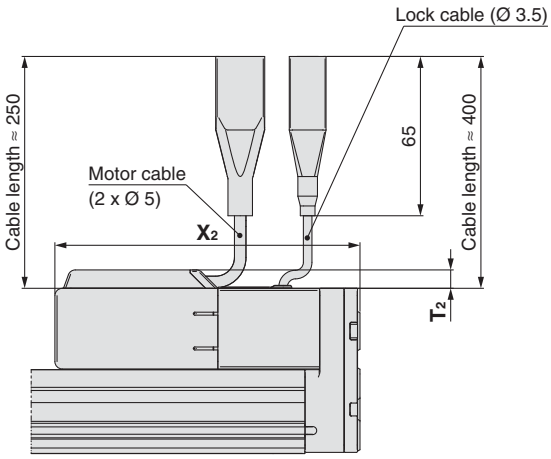
Size	B1	C1	H1	L1	L2	MM
16	13	12	5	24.5	14	M8 x 1.25
25	22	20.5	8	38	23.5	M14 x 1.5
32, 40	22	20.5	8	42.0	23.5	M14 x 1.5

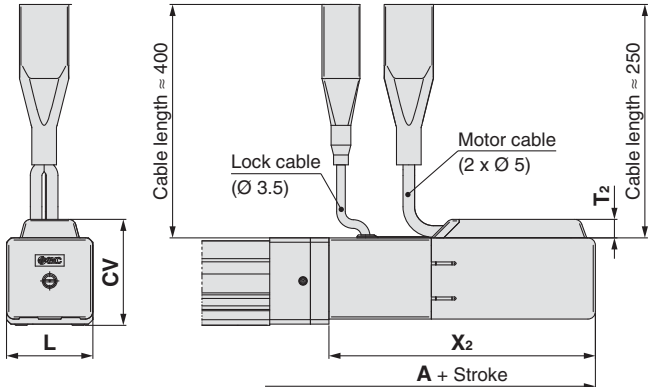
∗ The L1 measurement is when the unit is in the original position. At this position, 2 mm at the end.

Dimensions

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

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





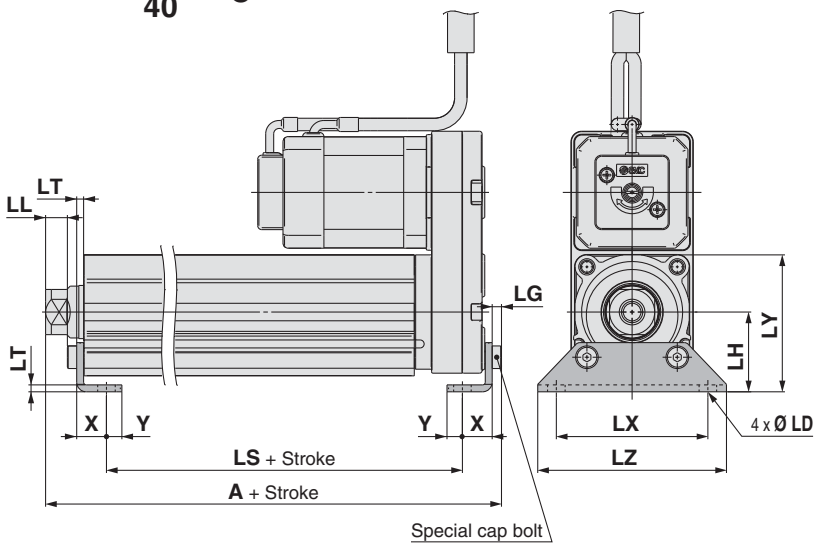
[mm]

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

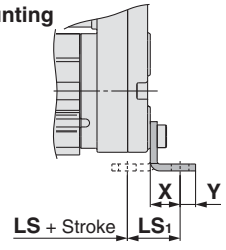
[mm]

Size	Stroke range	A	T2	X2	L	CV
16	100st or less	210.5	7.5	108	35	43
	101st or more, 300st or less	230.5				
25	100st or less	239	7.5	109	46	54.4
	101st or more, 400st or less	264				
32	100st or less	263	7.5	116.5	60	68.5
	101st or more, 500st or less	293				
40	100st or less	285	7.5	138.5	60	68.5
	101st or more, 500st or less	315				

Foot: LEY 16/25/32/40 □□ A/B/C -□□□L



Outward mounting



Included parts
- Foot
- Body mounting bolt

Foot

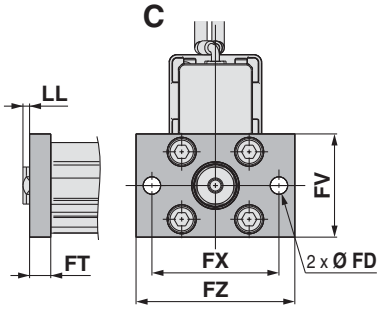
[mm]

Size	Stroke range [mm]	A	LS	LS1	LL	LD	LG
16	10 to 100	106.1	76.7	16.1	5.4	6.6	2.8
	101 to 300	126.1	96.7				
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5
	101 to 400	161.6	123.8				
32	20 to 100	155.7	114	19.2	11.3	6.6	4
40	101 to 500	185.7	144				

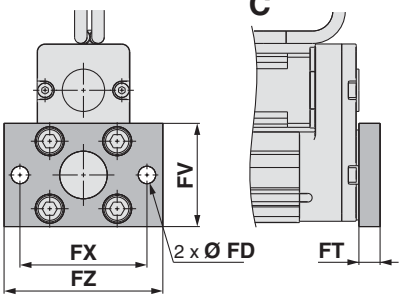
Size	Stroke range [mm]	LH	LT	LX	LY	LZ	X	Y
16	10 to 100	24	2.3	48	40.3	62	9.2	5.8
	101 to 300							
25	15 to 100	30	2.6	57	51.5	71	11.2	5.8
	101 to 400							
32	20 to 100	36	3.2	76	61.5	90	11.2	7
40	101 to 500							

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

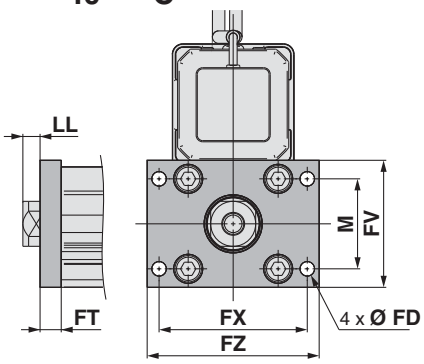
Rod flange: LEY16□□A/B/C-□□□F



Head flange: LEY16□□A/B/C-□□□G

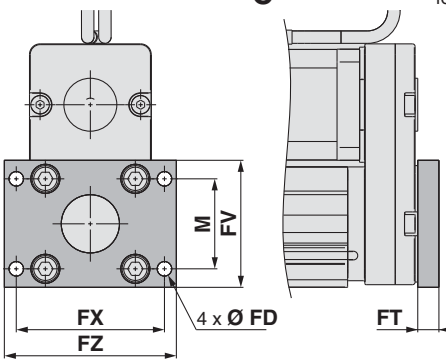


Rod flange: LEY32□□25/40A/B/C-□□□F



Head flange: LEY25□□A/B/C-□□□G

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



Included parts
- Flange
- Body mounting bolt

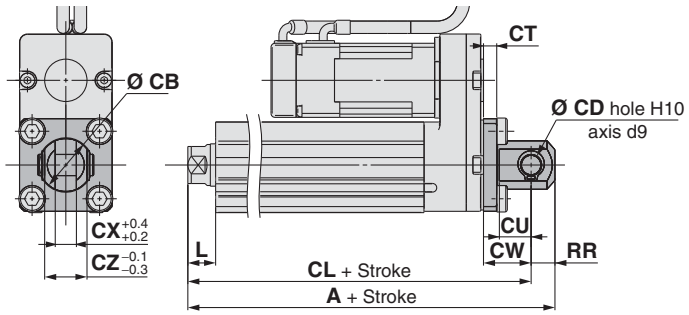
Rod/Head Flange

[mm]

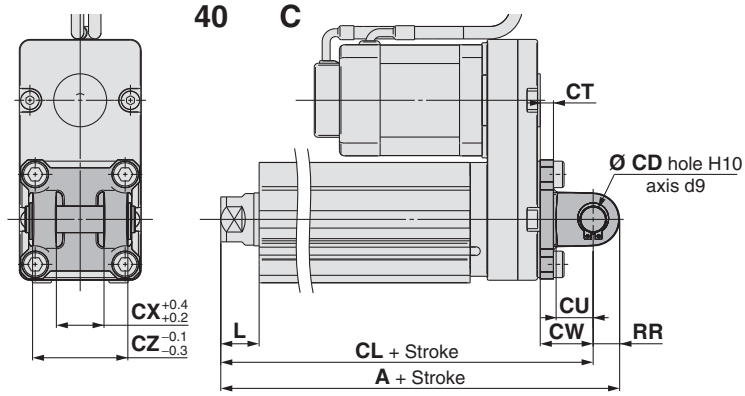
Size	FD	FT	FV	FX	FZ	LL	M
16	6.6	8	39	48	60	2.5	—
25	5.5	8	48	56	65	6.5	34
32, 40	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plated)

Double clevis: LEY16□□A/B/C-□□□D



Double clevis: LEY32□□25/40A/B/C-□□□D



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

∗ Refer to page 25 for details about the rod end nut and mounting bracket.

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.

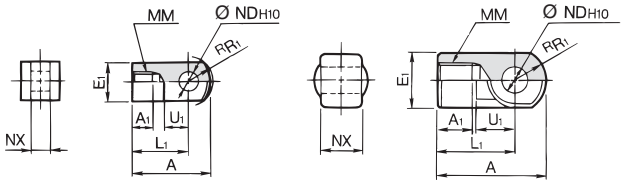
Accessory Mounting Brackets

Accessory Brackets/Support Brackets

Single Knuckle Joint

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

I-G02 **I-G04**



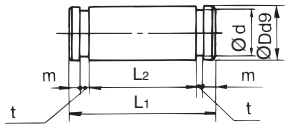
Material: Carbon steel
Surface treatment: Nickel plated

Material: Cast iron
Surface treatment: Nickel plated

[mm]

Part no.	Applicable size	A	A_1	E_1	L_1	MM	R_1	U_1	ND_{H10}	NX
I-G02	**16**	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{-0.2}_{-0.4}$
I-G04	**25, 32, 40**	42	14	Ø 22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{-0.3}_{-0.5}$
I-G05	**63**	56	18	Ø 28	40	M18 x 1.5	16	20	$14^{+0.058}_{0}$	$22^{-0.3}_{-0.5}$

Knuckle Pin (Common with double clevis pin)



Material: Carbon steel
[mm]

Part no.	Applicable size	Dd9	L_1	L_2	d	m	t	Retaining ring
IY-G02	**16**	$8^{-0.040}_{-0.076}$	21	16.2	7.6	1.5	0.9	Type C retaining ring 8
IY-G04	**25, 32, 40**	$10^{-0.040}_{-0.076}$	41.6	36.2	9.6	1.55	1.15	Type C retaining ring 10

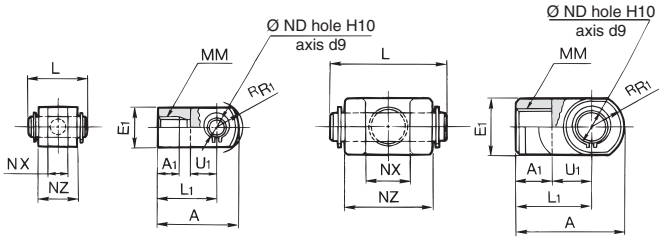
Mounting Brackets/Part No.

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

∗ When ordering foot brackets, order 2 pieces per 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 **Y-G04**



Material: Carbon steel
Surface treatment: Nickel plated

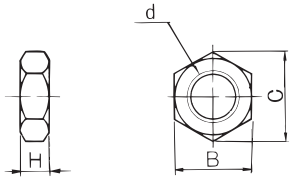
Material: Cast iron
Surface treatment: Nickel plated

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

Part no.	Applicable size	A	A_1	E_1	L_1	MM	R_1
Y-G02	**16**	34	8.5	□16	25	M8 x 1.25	10.3
Y-G04	**25, 32, 40**	42	16	Ø 22	30	M14 x 1.5	12
Y-G05	**63**	56	20	Ø 28	40	M18 x 1.5	16

Part no.	Applicable size	U_1	ND_{H10}	NX	NZ	L	Applicable pin part no.
Y-G02	**16**	11.5	$8^{+0.058}_{0}$	$8^{+0.4}_{+0.2}$	16	21	**IY-G02**
Y-G04	**25, 32, 40**	14	$10^{+0.058}_{0}$	$18^{+0.5}_{+0.3}$	36	41.6	**IY-G04**
Y-G05	**63**	20	$14^{+0.058}_{0}$	$22^{+0.5}_{+0.3}$	44	50.6	**IY-G05**

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
NT-05	**63**	M18 x 1.5	11	27	31.2

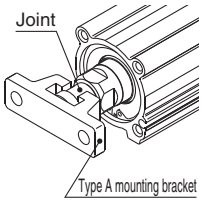
Simple Joint Brackets
* The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

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

Joint **LEY-U025**

Applicable size

025	25, 32, 40



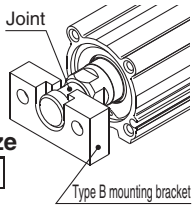
Mounting bracket **YA-03**

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		

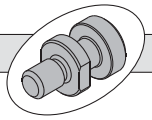
<How to Order>
- The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

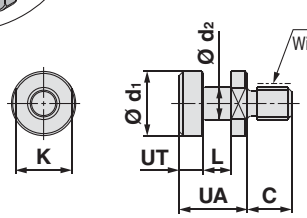
Example) Order no.
- Joint LEY-U025
- Type A mounting bracket YA-03

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

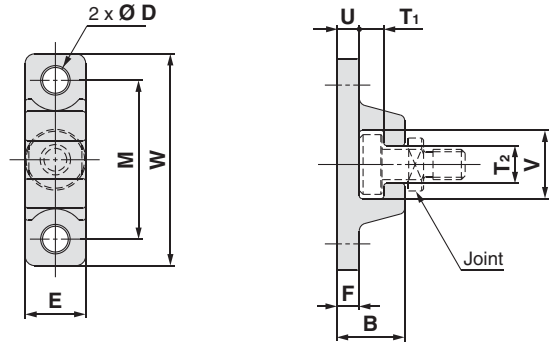




Material: Stainless steel
[mm]

Part no.	Applicable size	UA	C	d_1	d_2	H	K	L	UT	Weight [g]
LEY-U025	**25, 32, 40**	17	11	16	8	M8 x 1.25	14	7	6	22

Type A Mounting Bracket

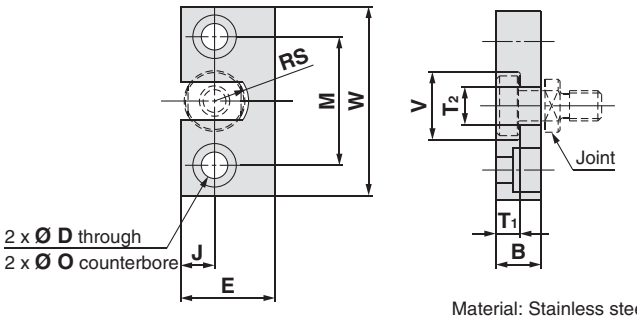


Material: Chromium molybdenum steel (Nickel plated)
[mm]

Part no.	Applicable size	B	D	E	F	M	T_1	T_2	U
YA-03	**25, 32, 40**	18	6.8	16	6	42	6.5	10	6

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

Type B Mounting Bracket



Material: Stainless steel
[mm]

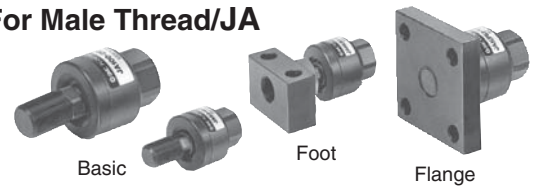
Part no.	Applicable size	B	D	E	J	M	Ø O
YB-03	**25, 32, 40**	12	7	25	9	34	11.5 depth 7.5

Part no.	Applicable size	T_1	T_2	V	W	RS	Weight [g]
YB-03	**25, 32, 40**	6.5	10	18	50	9	80

Floating Joints
(Refer to 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

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.**

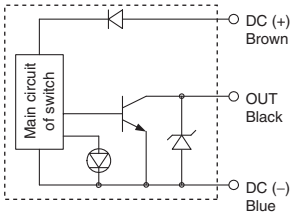
⚠Caution

Precautions

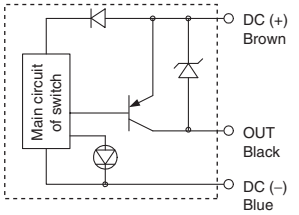
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

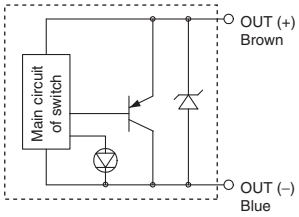
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

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

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: Ø 2.7 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

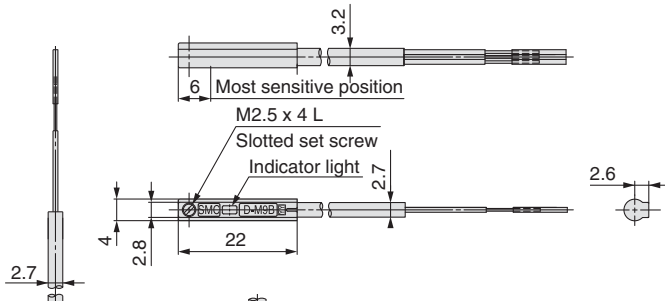
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

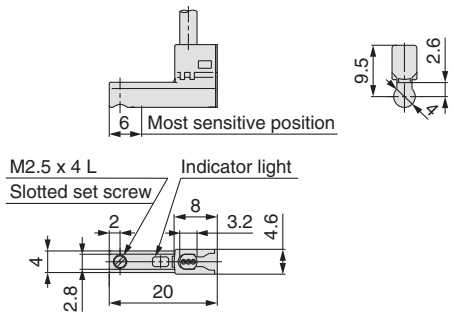
Dimensions

[mm]

D-M9□



D-M9□V



SMC

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)**

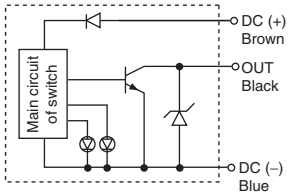
⚠Caution

Precautions

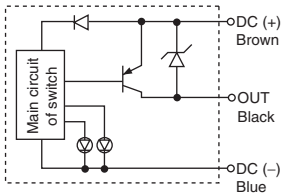
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

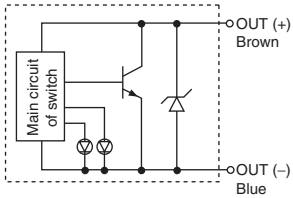
D-M9NW/M9NWV



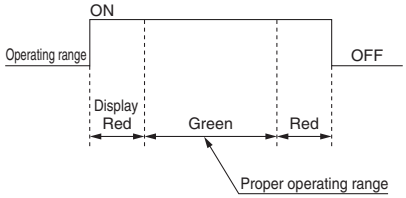
D-M9PW/M9PWV



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: Ø 2.7 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

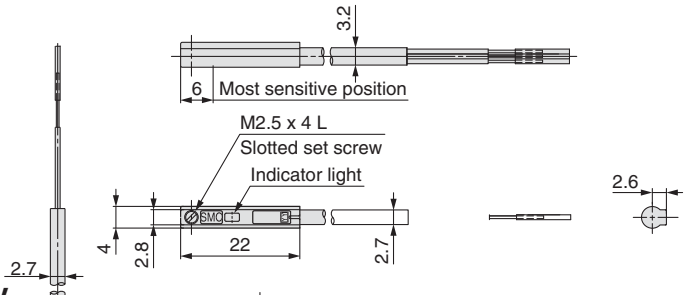
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

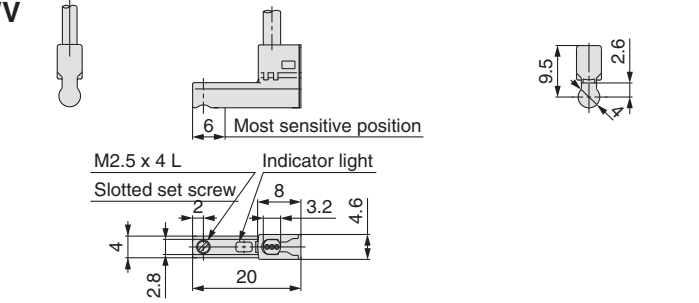
Dimensions

[mm]

D-M9□W



D-M9□WV



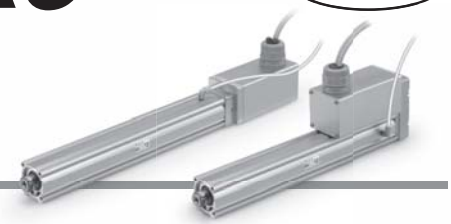
Electric Actuator/Rod Type

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

Series LEY-X5

Size: 25, 32

Dust/Drip proof (IP65 equivalent)



EtherNet/IP DeviceNet EtherCAT Compatible ▶ Page 99

Multi-Axis Step Motor Controller Compatible ▶ Page 108

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.)

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		

∗ Produced upon receipt of order. Refer to the specifications Note 5) on page 7.

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”.

⓭ Controller/Driver mounting

—	Screw mounting∗
D	DIN rail mounting∗

❽ Mounting∗1

Symbol	Type	Motor mounting position: Top mounting	Motor mounting position: In-line
—	Ends tapped (Standard)∗2	●	●
L	Foot	●	—
F	Rod flange∗2	●∗3	●
G	Head flange∗2	●∗4	—

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

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 73 (For LECP6/LECA6), page 86 (For LECP1) or page 93 (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.

⚠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 73 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

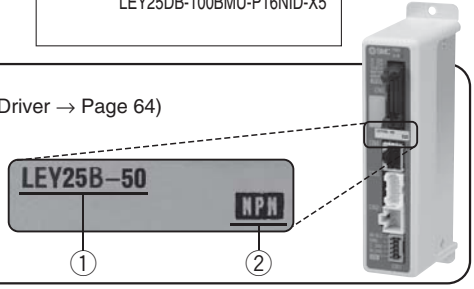
∗ Consult with SMC for non-standard strokes as they are produced as special orders.

∗ For auto switches, refer to page 36.
∗ “-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 64)

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	For LECP6 LECP1	(3000 [mm/s²])	20	40	60	30	45	60
				(2000 [mm/s²])	30	60	70	40	60	80
			For LECPA	(3000 [mm/s²])	12	30	30	20	40	40
				(2000 [mm/s²])	18	50	50	30	60	60
		Vertical Note 15)		(3000 [mm/s²])	7	15	29	10	21	42
	Pushing force [N] Note 3) Note 4) Note 5)				63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707
	Speed [mm/s] Note 5)				18 to 400	9 to 200	5 to 100	24 to 400	12 to 200	6 to 100
	Max. acceleration/deceleration [mm/s²]				3000					
	Pushing speed [mm/s] Note 6)				35 or less			30 or less		
	Positioning repeatability [mm]				±0.02					
	Lost motion [mm] Note 7)				0.1 or less					
	Screw lead [mm]				12	6	3	16	8	4
	Impact/Vibration resistance [m/s²] Note 8)				50/20					
	Actuation type				Ball screw + Belt (LEY□) Ball screw (LEY□D)					
	Guide type				Sliding bushing (Piston rod)					
	Enclosure Note 9)				IP65 equivalent					
	Operating temperature range [°C]				5 to 40					
	Operating humidity range [%RH]				90 or less (No condensation)					
Electric specifications	Motor size				□42			□56.4		
	Motor type				Step motor (Servo/24 VDC)					
	Encoder				Incremental A/B phase (800 pulse/rotation)					
	Rated voltage [V]				24 VDC ±10 %					
	Power consumption [W] Note 10)				40			50		
	Standby power consumption when operating [W] Note 11)				15			48		
	Max. instantaneous power consumption [W] Note 12)				48			104		
Lock unit specifications	Type Note 13)				Non-magnetizing lock					
	Holding force [N]				78	157	294	108	216	421
	Power consumption [W] Note 14)				5			5		
	Rated voltage [V]				24 VDC ±10 %					

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check “Model Selection” on page 9.
Vertical: Speed changes according to the work load. Check “Model Selection” on page 9.
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 10.
Note 5) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10 % for each 5 m. (At 15 m: Reduced by up to 20 %)
Note 6) The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
Note 7) A reference value for correcting an error in reciprocal operation.
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures. .
Note 10) The power consumption (including the controller) is for when the actuator is operating.
Note 11) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 12) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 13) With lock only
Note 14) For an actuator with lock, add the power consumption for the lock.
Note 15) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Specifications

Servo Motor (24 VDC)

	Model			LEY25A		
Actuator specifications	Stroke [mm] Note 1)			30, 50, 100, 150, 200 250, 300, 350, 400		
	Work load [kg] Note 2)	Horizontal	(3000 [mm/s²])	7	15	30
		Vertical Note 14)	(3000 [mm/s²])	2	5	11
	Pushing force [N] Note 3) Note 4)			18 to 35	37 to 72	66 to 130
	Speed [mm/s]			2 to 400	1 to 200	1 to 100
	Max. acceleration/deceleration [mm/s²]			3000		
	Pushing speed [mm/s] Note 5)			35 or less		
	Positioning repeatability [mm]			±0.02		
	Lost motion [mm] Note 6)			0.1 or less		
	Screw lead [mm]			12	6	3
	Impact/Vibration resistance [m/s²] Note 7)			50/20		
	Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)		
	Guide type			Sliding bushing (Piston rod)		
	Enclosure Note 8)			IP65 equivalent		
	Operating temperature range [°C]			5 to 40		
	Operating humidity range [%RH]			90 or less (No condensation)		
Electric specifications	Motor size			□42		
	Motor type			Servo motor (24 VDC)		
	Encoder			Incremental A/B phase (800 pulse/rotation)/Z-phase		
	Rated voltage [V]			24 VDC ±10 %		
	Power consumption [W] Note 9)			86		
	Standby power consumption when operating [W] Note 10)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 11)			96		
Lock unit specifications	Type Note 12)			Non-magnetizing lock		
	Holding force [N]			78	157	294
	Power consumption [W] Note 13)			5		
	Rated voltage [V]			24 VDC ±10 %		

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

Weight

Weight: Motor Top Mounting Type

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

Weight: In-line Motor Type

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

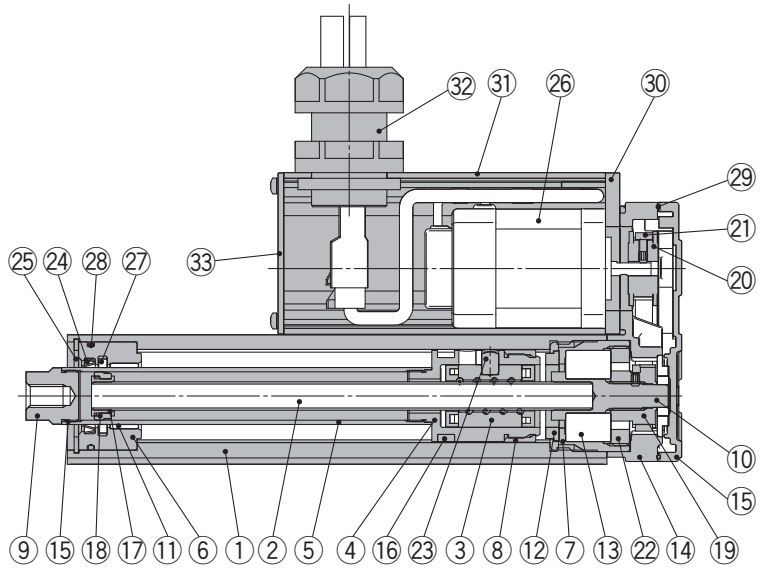
Additional Weight

[kg]

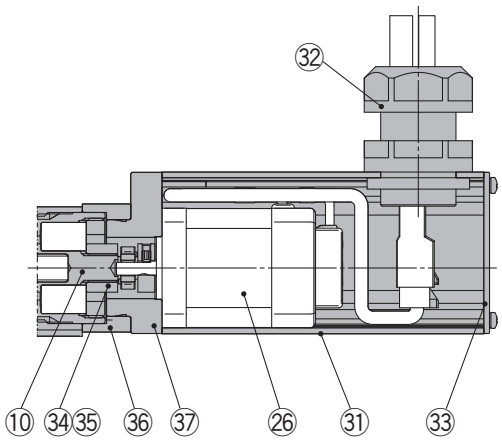
Size		25	32
Lock		0.33	0.63
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

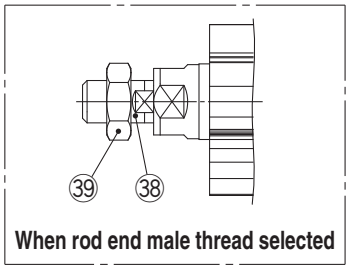
Construction

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



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





When rod end male thread selected

Component Parts

No.	Description	Material	Note
1	**Body**	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

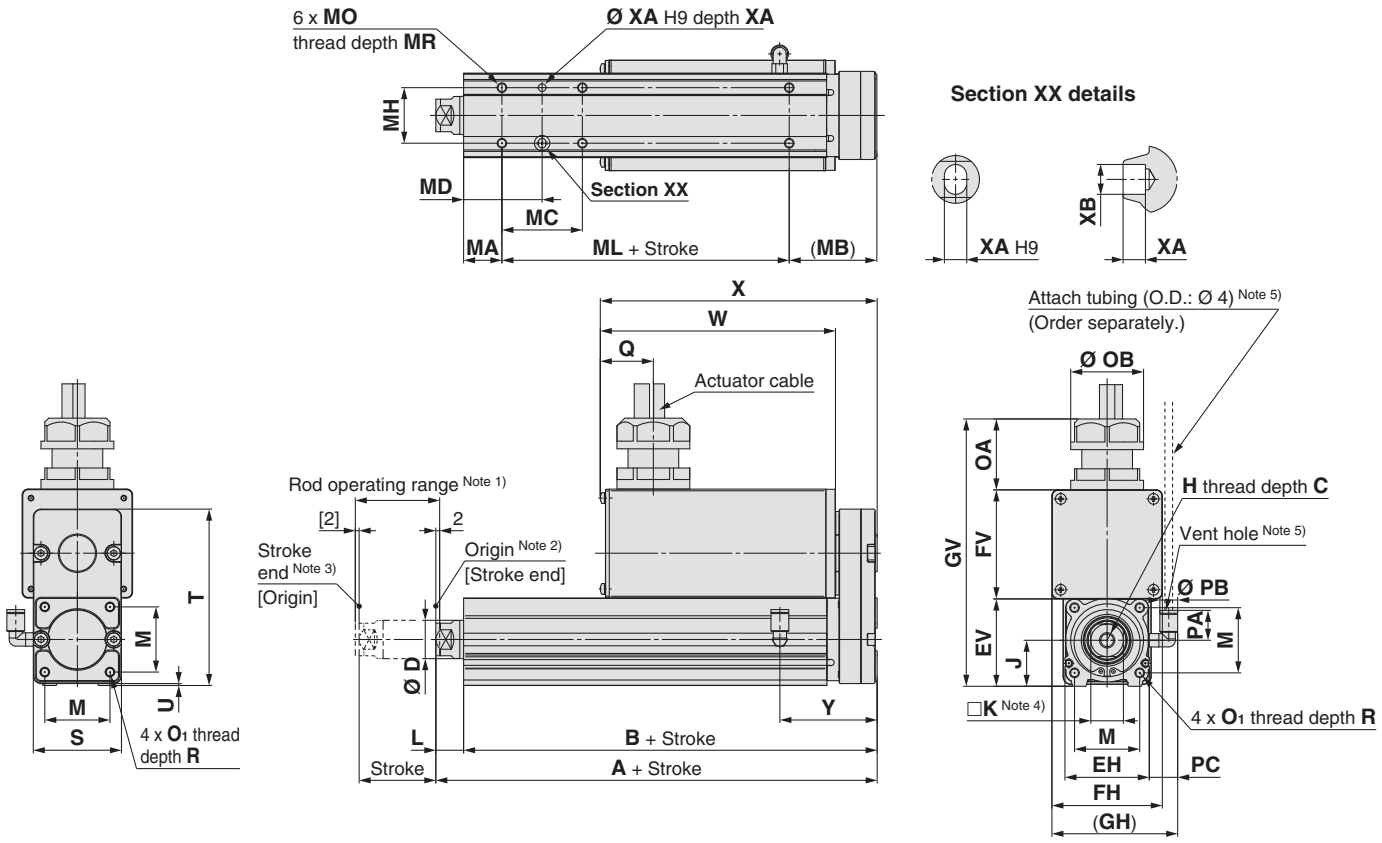
Replacement Parts/Grease Pack

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



[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	FH	FV	GH	GV	H	J	K	L	M	O_1
25	15 to 100	130.5	116	13	20	44	45.5	57.6	56.8	66.2	139.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	69.6	78.6	76.2	173.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0
	101 to 500	178.5	160														

Size	Stroke range [mm]	R	OA	OB	PA	PB	Q	S	T	U	PC	W		X		Y
												Without lock	With lock	Without lock	With lock	
25	15 to 100	8	37	38	15.4	8.2	28	46	92	1	15.4	123	173	145	195	51
	101 to 400															
32	20 to 100	10	37	38	15.4	8.2	28	60	118	1	15.9	123	173	150	200	61
	101 to 500															

Body Bottom Tapped

[mm]

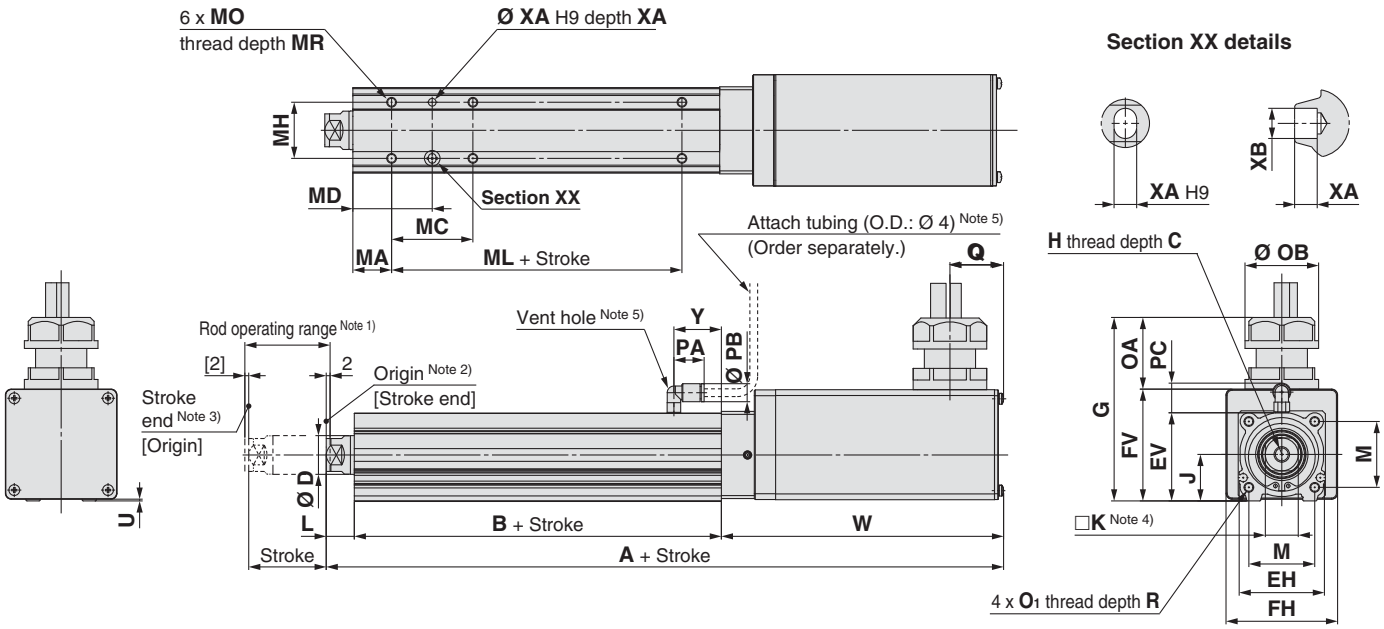
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125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

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

For the rod end male thread, refer to page 22. For the mounting bracket dimensions, refer to page 26.

Dimensions

In-line motor type



[mm]

Size	Stroke range [mm]	A		B	C	D	EH	EV	FH	FV	G	H	J	K	L
		Without lock	With lock												
25	15 to 100	250	300	89.5	13	20	44	45.5	57.6	57.7	94.7	M8 x 1.25	24	17	14.5
	101 to 400	275	325	114.5											
32	20 to 100	265.5	315.5	96	13	25	51	56.5	69.6	79.6	116.6	M8 x 1.25	31	22	18.5
	101 to 500	295.5	345.5	126											

Size	Stroke range [mm]	M	O_1	R	OA	OB	PA	PB	Q	U	PC	W		Y
												Without lock	With lock	
25	15 to 100	34	M5 x 0.8	8	37	38	15.4	8.2	28	0.9	15.9	146	196	24.5
	101 to 400													
32	20 to 100	40	M6 x 1.0	10	37	38	15.4	8.2	28	1	15.9	151	201	27
	101 to 500													

Body Bottom Tapped

[mm]

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

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

For the rod end male thread, refer to page 22. For the mounting bracket dimensions, refer to page 26.

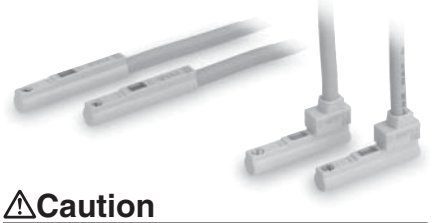
Water Resistant 2-Colour Indication Solid State Auto Switch: Direct Mounting Style

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

CE RoHS

Grommet

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



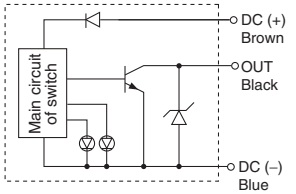
⚠Caution

Precautions

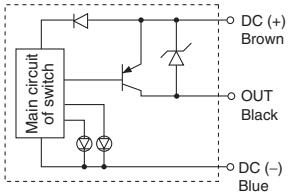
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

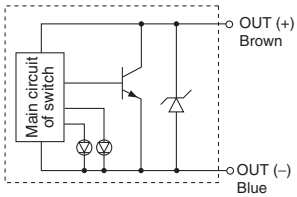
D-M9NA/M9NAV



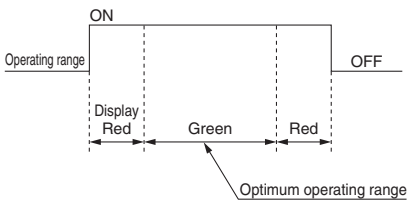
D-M9PA/M9PAV



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: Ø 2.7 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

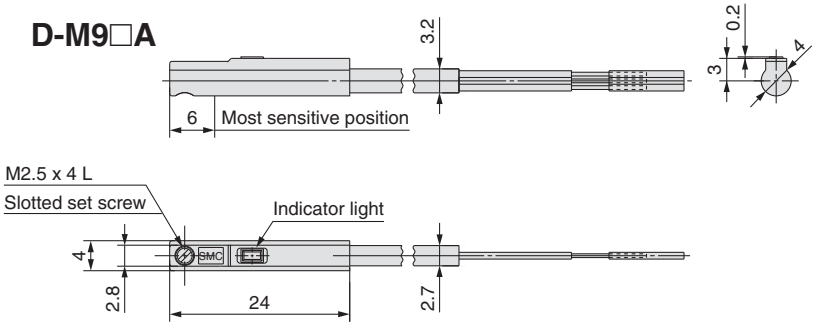
[g]

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

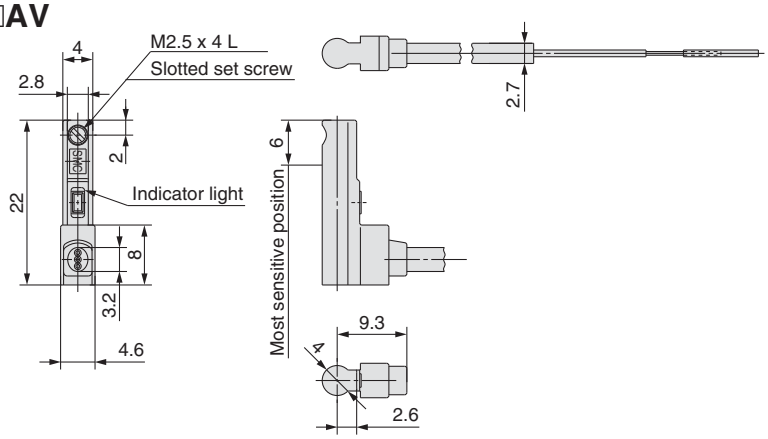
Dimensions

[mm]

D-M9□A



D-M9□AV



Electric Actuator/Rod Type

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

Series 25A-LEY

LEY16, 25, 32, 40

RoHS

EtherNet/IP DeviceNet PROFINET EtherCAT Compatible ▶ Page 99

Multi-Axis Step Motor Controller Compatible ▶ Page 108

How to Order

25A-LEY 16 ❶ | ☐ ❷ | ☐ ❸ | B ❹ – 100 ❺ | C ❻ | ☐ ❼ | ☐ ❽ – S ❾ | 1 ❿ | 6P ⓫ | 1 ⓬ | ☐ ⓭

Series compatible with secondary batteries

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

C	With motor cover
W	With lock/motor cover

∗ When "With lock/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

—	Female rod end
M	Male rod end (1 rod end nut is included.)

Mounting Bracket Part No. for Series 25A-

Applicable size	Foot ∗1	Flange	Double clevis
16	25-LEY-L016	25-LEY-F016	25-LEY-D016
25	25-LEY-L025	25-LEY-F025	25-LEY-D025
32, 40	25-LEY-L032	25-LEY-F032	25-LEY-D032
Surface treatment	RAYDENT®	RAYDENT®	Coating (Size 16: Electroless nickel plating)

∗1 When ordering foot brackets, order 2 pieces per actuator.

∗2 Parts belonging to each bracket are as follows.
Foot, Flange: Body mounting bolt, Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

⚠ Caution

[CE-compliant products]

①EMC 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.

②For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to **the website www.smc.eu** 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 details about auto switches, refer to "Series Compatible with Secondary Batteries".

Applicable auto switches

D-M9N(V)-900, D-M9P(V)-900, D-M9B(V)-900
D-M9NW(V)-900, D-M9PW(V)-900, D-M9BW(V)-900

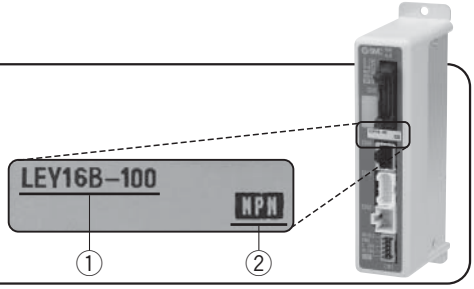
The actuator and controller/driver are sold as a package.

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

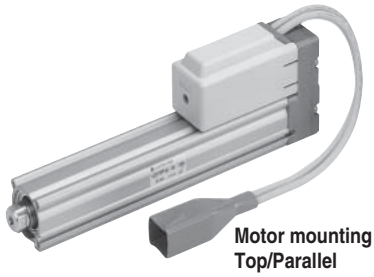
<Check the following before use.>

①Check the actuator label for model number (after "25A-"). This matches the controller/driver.

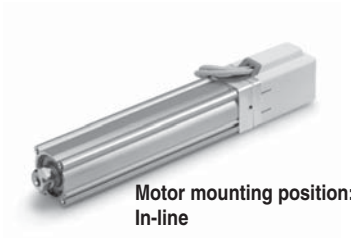
②Check Parallel I/O configuration matches (NPN or PNP)



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



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	●	●
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.

⑬ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*1

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

⑨ Actuator cable type*1

—	Without cable
S	Standard cable*2
R	Robotic cable (Flexible cable)*3

*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".
*3 Fix the motor cable protruding from the actuator to keep it unmovable. For details about fixing method, refer to Wiring/Cables in the Electric Actuators Precautions.

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***3 (Pulse input type)	NPN
AP		PNP

*1 For details about controllers/driver and compatible motors, refer to the compatible controllers/driver below.
*2 Only available for the motor type "Step motor".
*3 When pulse signals are open collector, order the current limit resistor (LEC-PA-R-□) separately.

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)

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

—	Without cable (Without communication plug connector)
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 LEY catalogue 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.

* Specifications and dimensions for the 25A-series are the same as standard products.

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			

* Copper and zinc materials are used for the motors, cables, controllers/drivers.

Series 25A-LE□
Precautions
Be sure to read before handling.

Handling

⚠Caution

■Change of material

Series 25A- are copper- and zinc-free products, however, some parts including coils for motors, cables, drivers and auto switches, and connector pins and lead wires, whose material can not be changed, are made of copper.

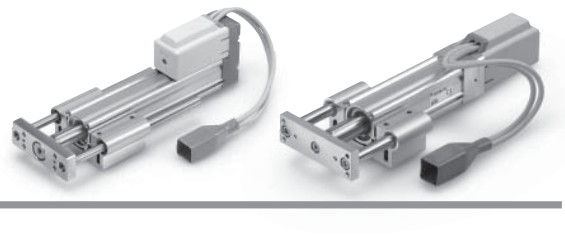
■Chemical environment

Refrain from using the products in such environments as exposed to chemicals. Otherwise, resin parts may deteriorate.
If you want SMC to test the products for the effects of chemicals attached to them, send the products back to SMC after thoroughly cleaning them. Consult your SMC sales representative for further details.

■Trademark
DeviceNet™ is a trademark of ODVA.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

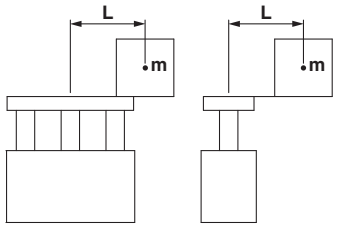
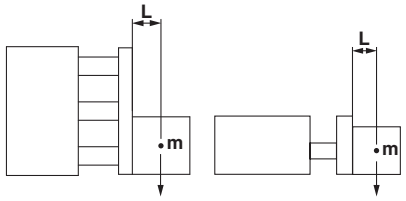
Be sure to read “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before using.

Series LEYG
Model Selection



Moment Load Graph

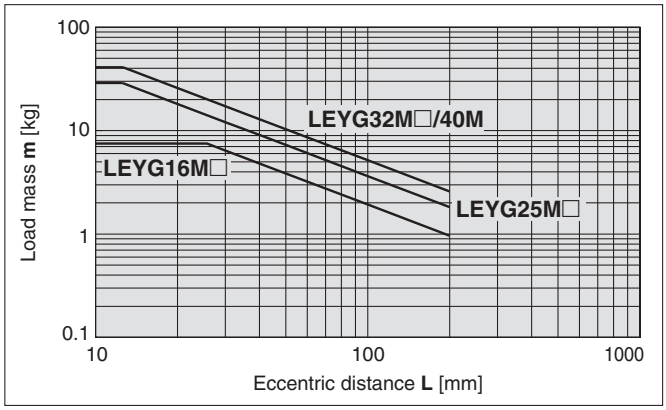
Selection conditions

	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

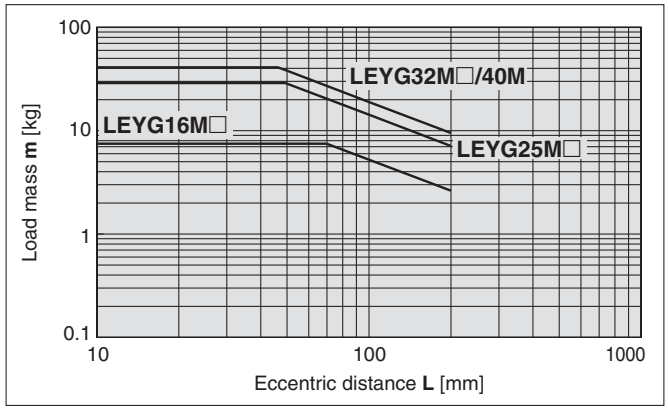
* For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 stroke or less



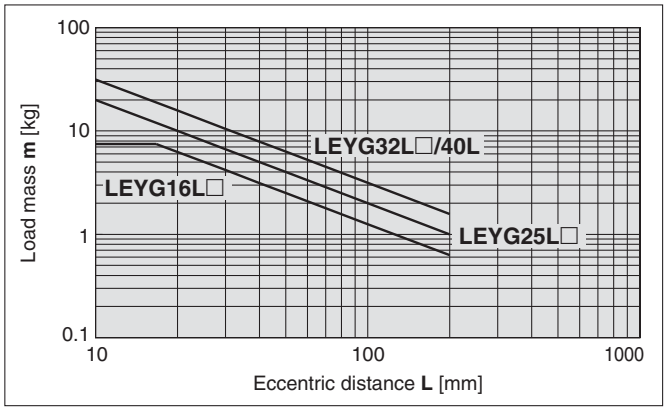
② Over 75 stroke



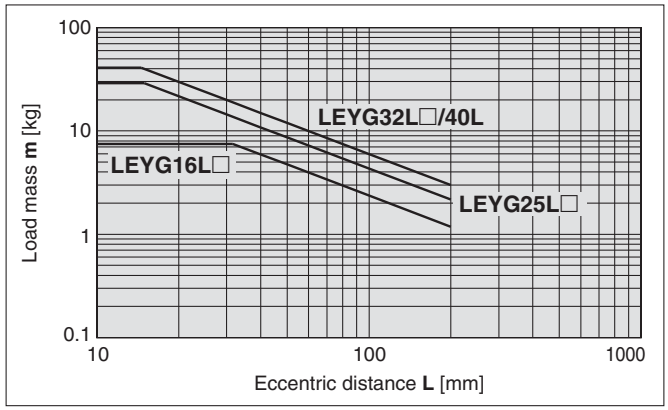
* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 42.

Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



④ Over 40 stroke

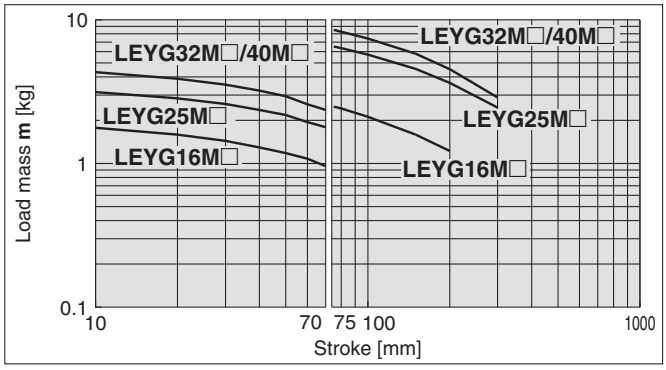


* The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 42.

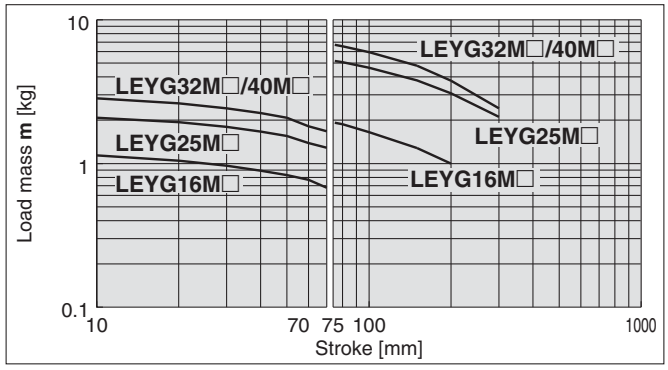
Moment Load Graph

Horizontal Mounting, Sliding Bearing

⑤ **L = 50 mm**



⑥ **L = 100 mm**



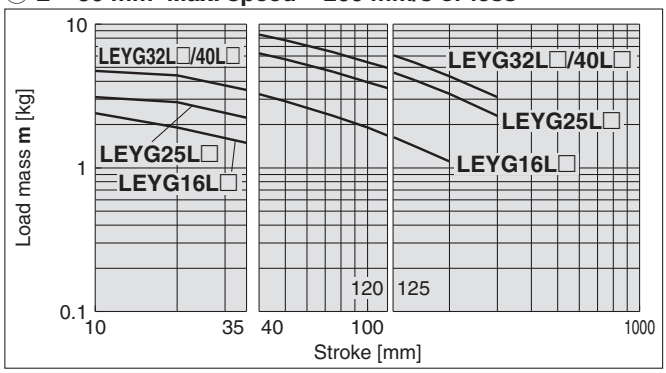
∗ Set the speed to less than or equal to the values shown below.

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

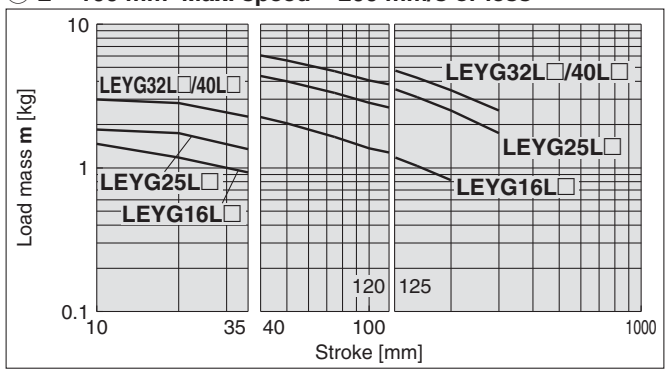
∗ For the specifications below, operate the system at the "load mass" shown in the graph x 80 %.
• LEYG25MAA/Servo motor (24 VDC), Lead 12

Horizontal Mounting, Ball Bushing Bearing

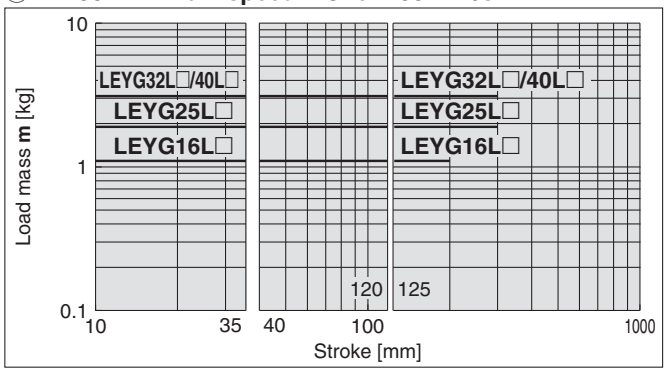
⑦ **L = 50 mm Max. speed = 200 mm/s or less**



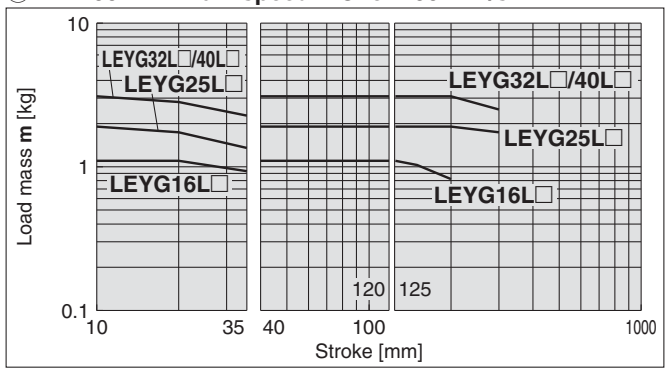
⑧ **L = 100 mm Max. speed = 200 mm/s or less**



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

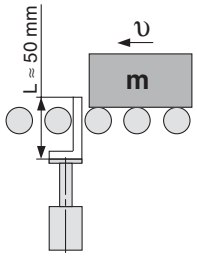


⑩ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

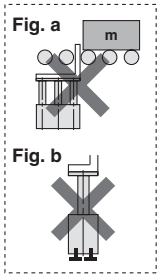
Handling Precautions

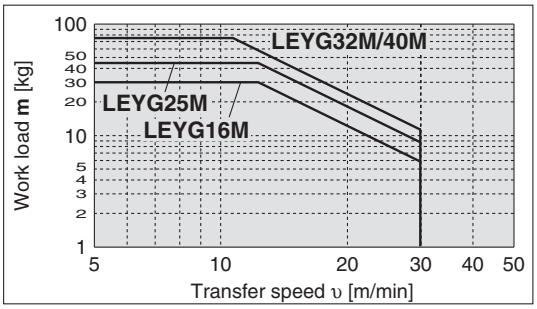
Note 1) When used as a stopper, select a model with 30 stroke or less.

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

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

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

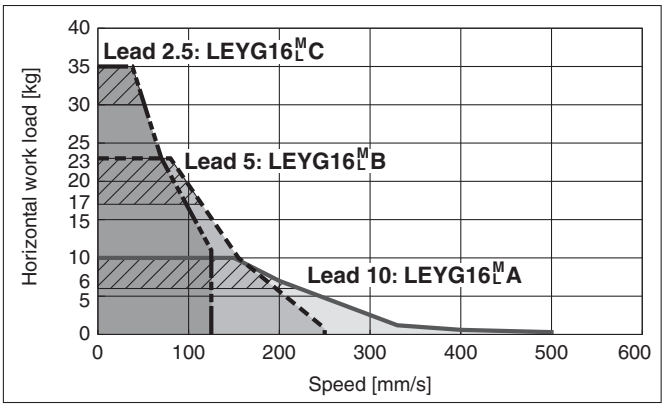




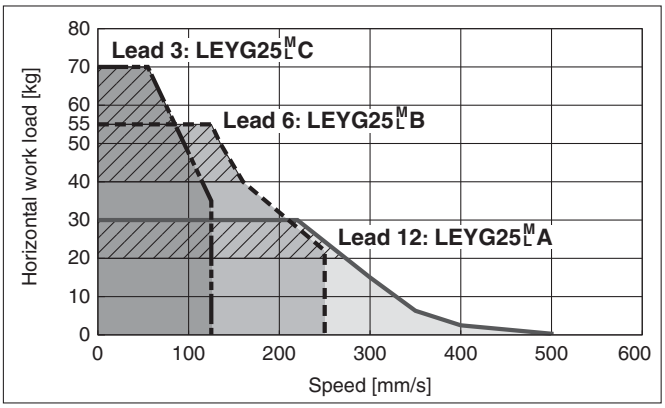
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECP6, LECP1, JXCE1/91/P1/D1/L1

Horizontal

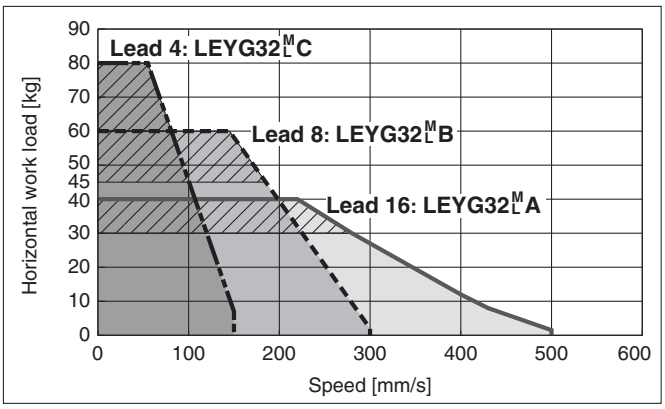
LEYG16$^{M}_{L}$□



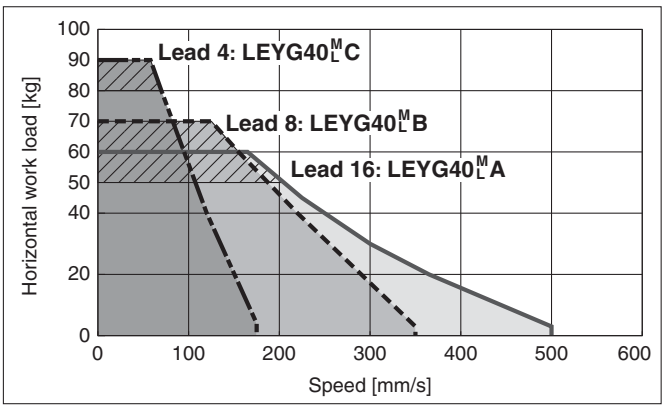
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□

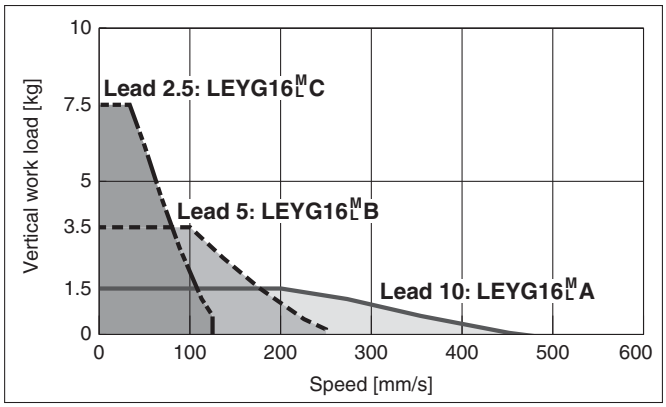


LEYG40$^{M}_{L}$□

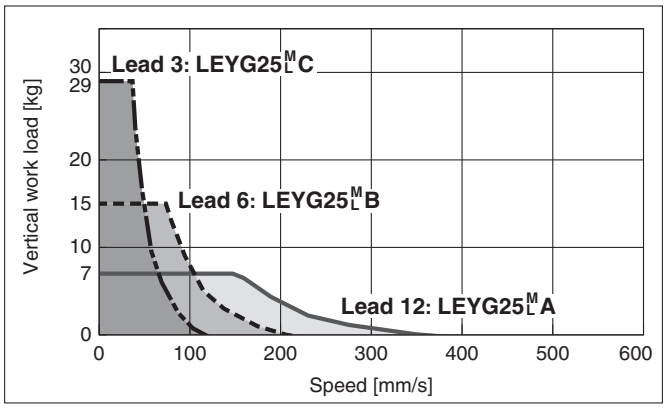


Vertical

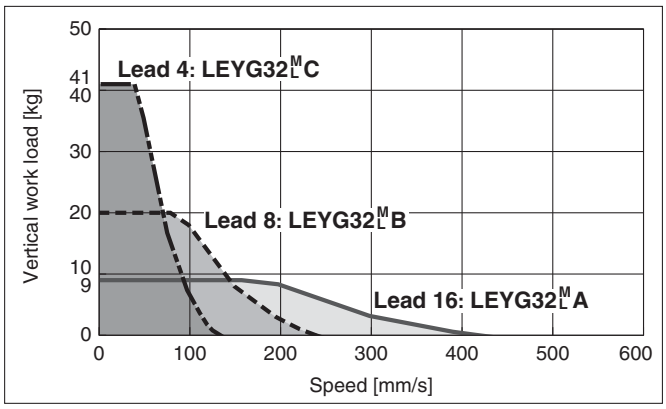
LEYG16$^{M}_{L}$□



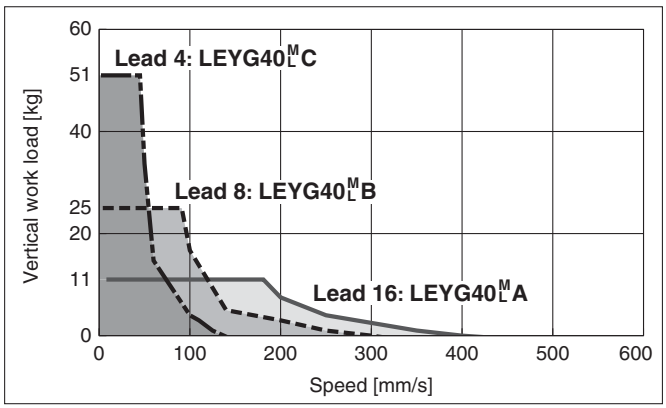
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□



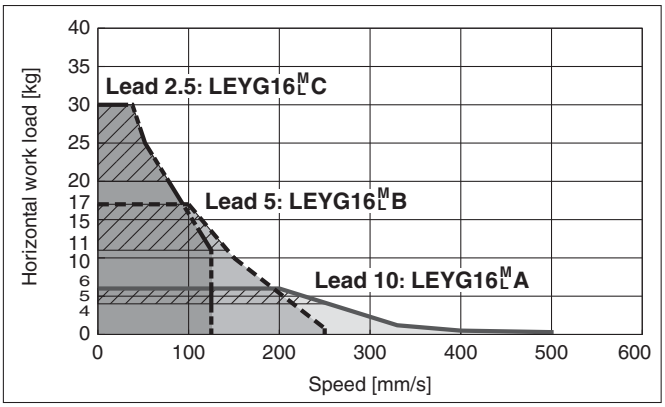
LEYG40$^{M}_{L}$□



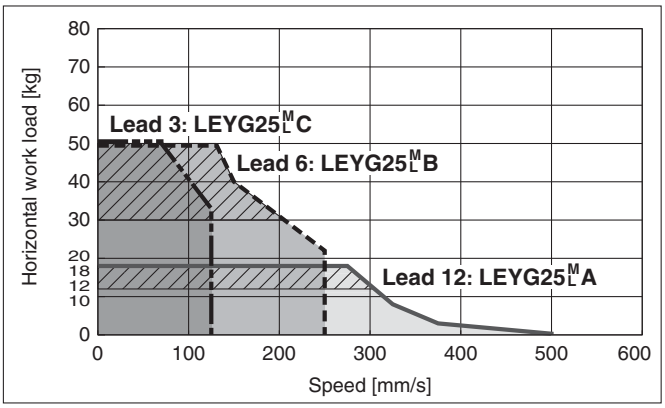
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC73/83/92/93

Horizontal

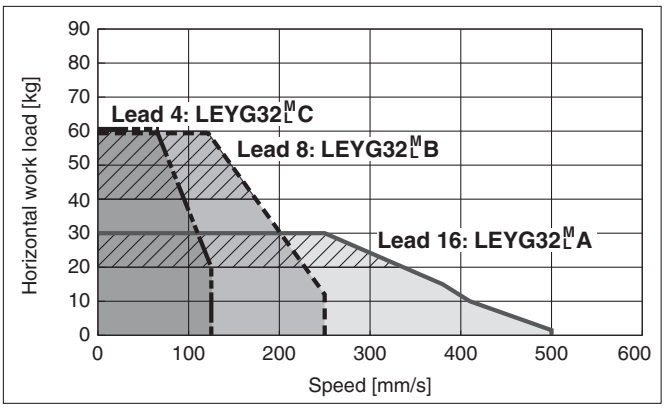
LEYG16$^{M}_{L}$□ ▨ for acceleration/deceleration: 2000 mm/s²



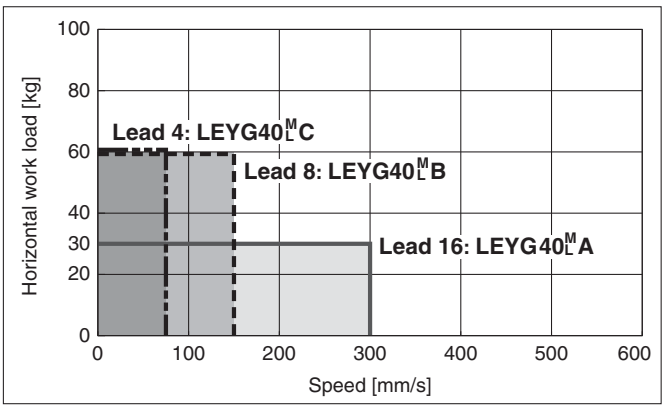
LEYG25$^{M}_{L}$□ ▨ for acceleration/deceleration: 2000 mm/s²



LEYG32$^{M}_{L}$□ ▨ for acceleration/deceleration: 2000 mm/s²

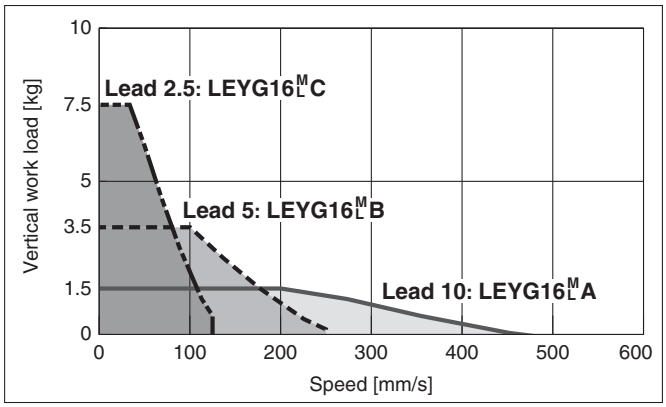


LEYG40$^{M}_{L}$□

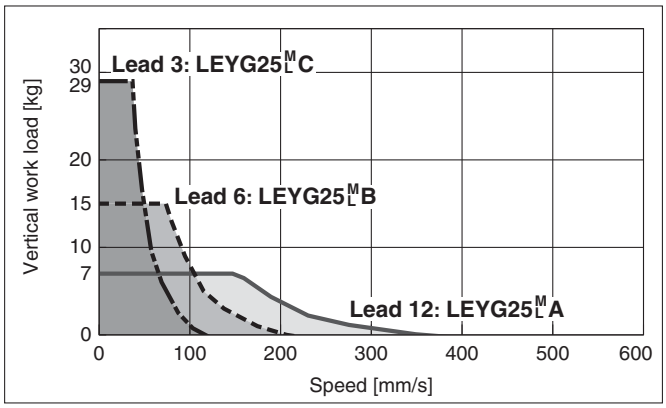


Vertical

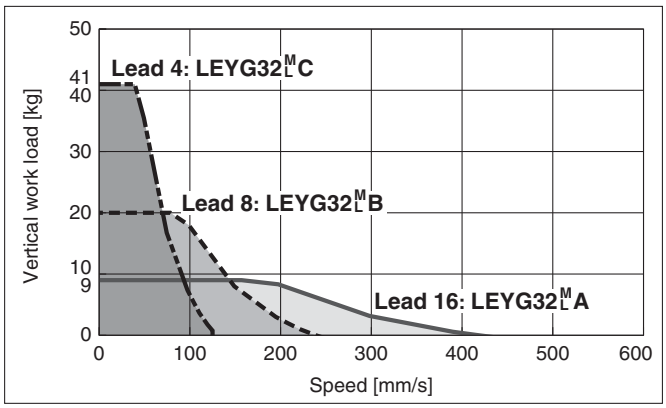
LEYG16$^{M}_{L}$□



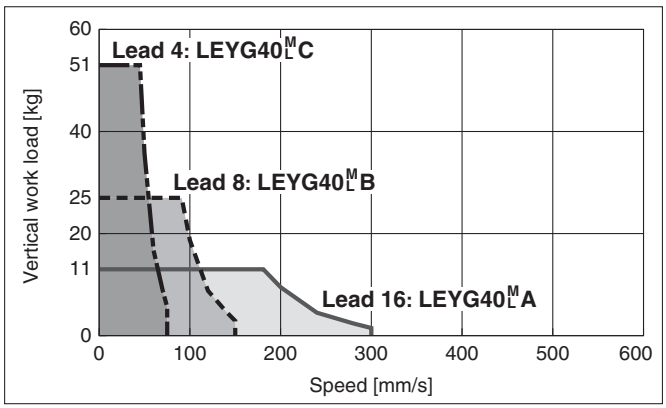
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□



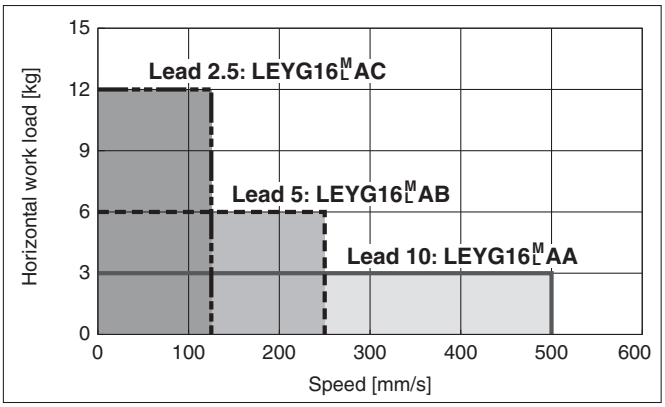
LEYG40$^{M}_{L}$□



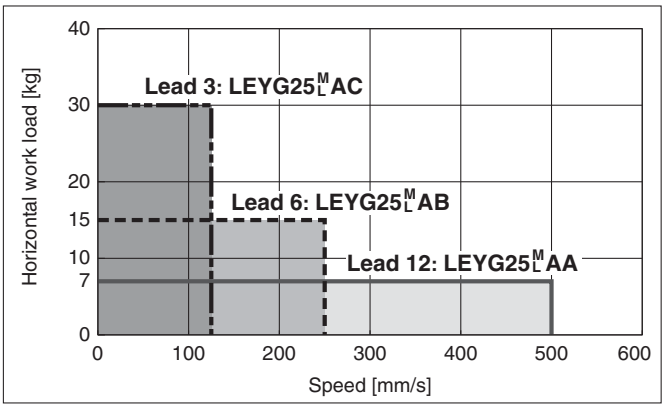
Speed–Work Load Graph (Guide)
For Servo Motor (24 VDC) LECA6

Horizontal

LEYG16$^{M}_{L}$A□

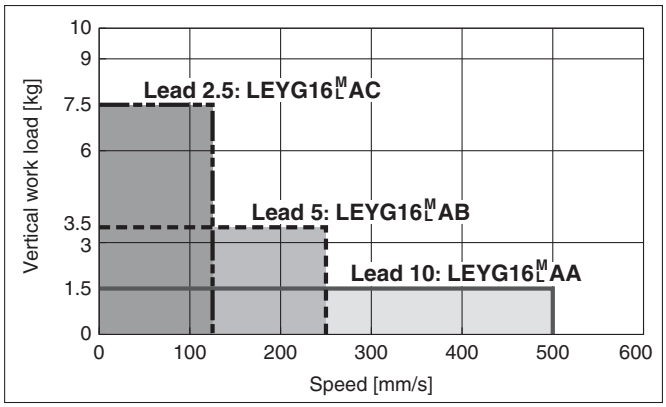


LEYG25$^{M}_{L}$A□

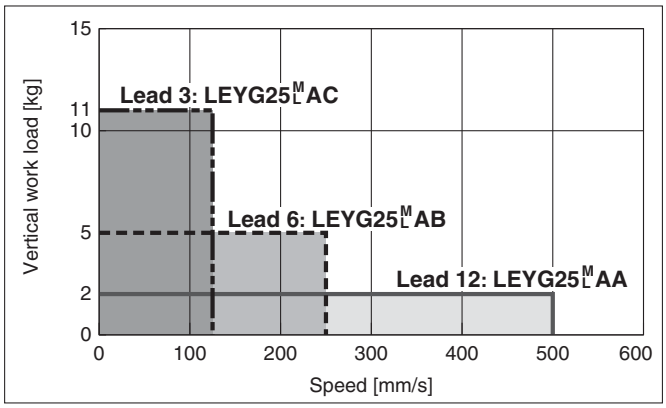


Vertical

LEYG16$^{M}_{L}$A□



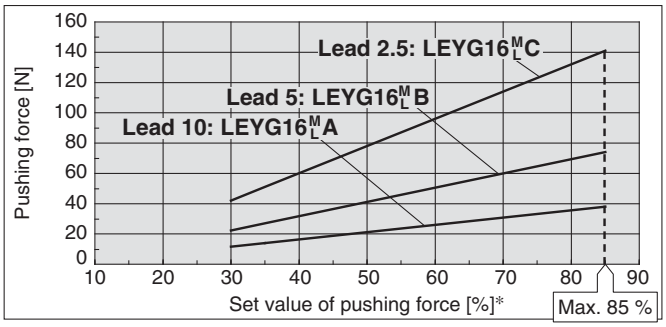
LEYG25$^{M}_{L}$A□



Force Conversion Graph (Guide)

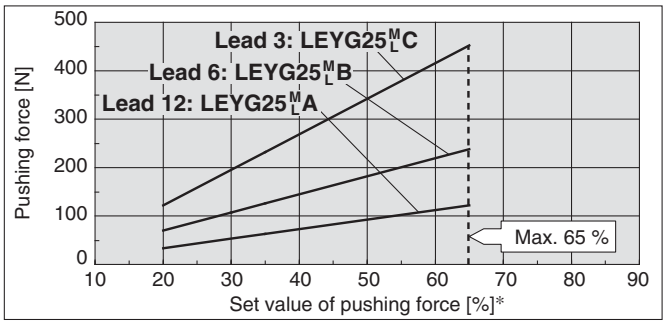
Step Motor (Servo/24 VDC)

LEYG16$^{M}_{L}$□



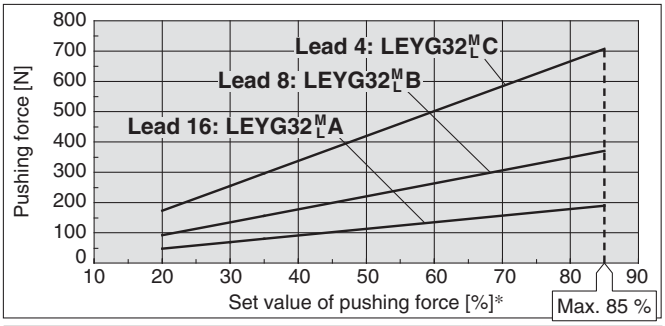
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEYG25$^{M}_{L}$□



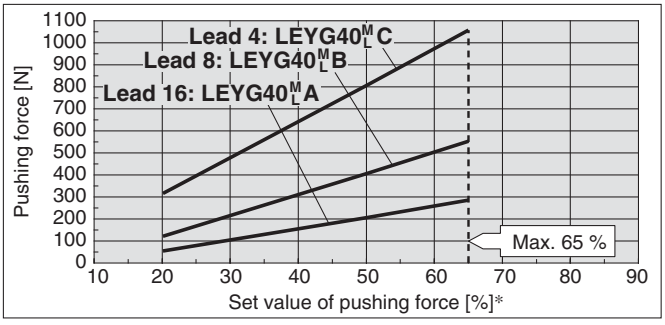
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

LEYG32$^{M}_{L}$□



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

LEYG40$^{M}_{L}$□

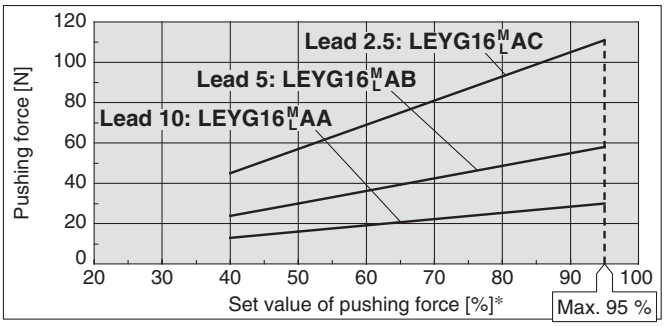


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

∗ Set values for the controller.

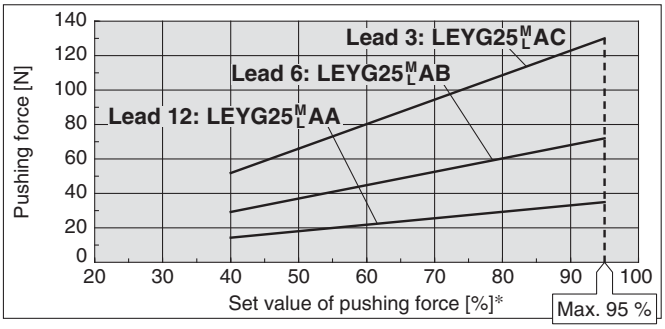
Servo Motor (24 VDC)

LEYG16$^{M}_{L}$A□



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

LEYG25$^{M}_{L}$A□



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)
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 %

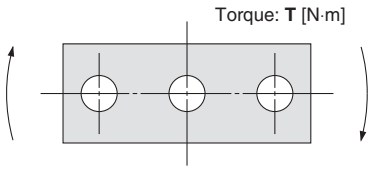
∗ The pushing force in the table shows the range within which the completion signal [INP] is normally output. If the product is operated outside this range (low pushing force), the [INP] signal may be output when the actuator is moving (before pushing).

<Set Values for Vertical Upward Transfer Pushing Operation>

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

Model	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 %		

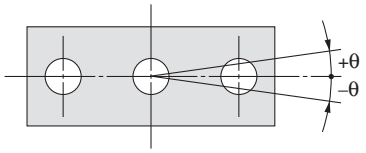
Allowable Rotational Torque of Plate



T [N·m]

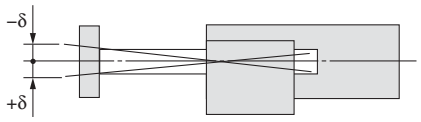
Model	Stroke [mm]				
	30	50	100	200	300
LEYG16M	0.70	0.57	1.05	0.56	—
LEYG16L	0.82	1.48	0.97	0.57	—
LEYG25M	1.56	1.29	3.50	2.18	1.36
LEYG25L	1.52	3.57	2.47	2.05	1.44
LEYG32M	2.55	2.09	5.39	3.26	1.88
LEYG32L	2.80	5.76	4.05	3.23	2.32
LEYG40M	2.55	2.09	5.39	3.26	1.88
LEYG40L	2.80	5.76	4.05	3.23	2.32

Non-rotating Accuracy of Plate



Size	Non-rotating accuracy θ	
	LEYG□M	**LEYG□L**
16	0.06°	0.05°
25		0.04°
32	0.05°	
40		

Plate Displacement: δ



[mm]

Model	Stroke [mm]				
	30	**50**	**100**	**200**	**300**
LEYG16M	±0.20	±0.25	±0.24	±0.27	—
LEYG16L	±0.13	±0.12	±0.17	±0.19	—
LEYG25M	±0.26	±0.31	±0.25	±0.38	±0.36
LEYG25L	±0.13	±0.13	±0.17	±0.20	±0.23
LEYG32M	±0.23	±0.29	±0.23	±0.36	±0.34
LEYG32L	±0.11	±0.11	±0.15	±0.19	±0.22

Electric Actuator/Guide Rod Type

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

Series LEYG

LEYG16, 25, 32, 40

EtherNet/IP™ PROFINET DeviceNet™ EtherCAT® Compatible ▶Page 99

Multi-Axis Step Motor Controller Compatible ▶Page 108

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 40.

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

∗ When "With lock" or "With lock/motor cover" are selected for the top mounting type, the motor body will stick out of the end of the body for size 16/40 with stroke 30 mm or less. Check for interference with workpieces before selecting a model.

❽ Guide option

—	Without option
F	With grease retaining function

∗ Only available for size 25, 32 and 40 sliding bearings. (Refer to "Construction" on page 51.)

⚠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 73 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 27 and 28.

∗ 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.

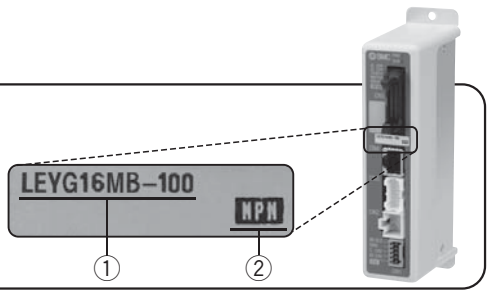
The actuator and controller/driver are sold as a package.

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

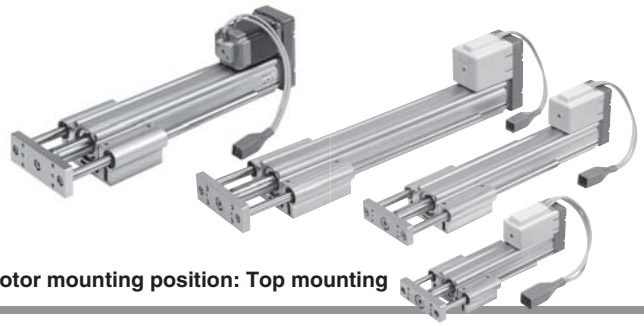
<Check the following before use.>

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

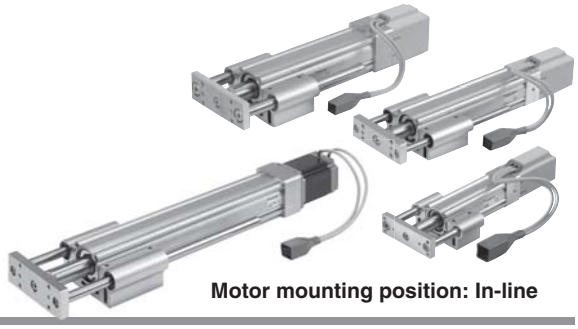
② Check Parallel I/O configuration matches (NPN or PNP).



∗ 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)*3

*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".
*3 Fix the motor cable protruding from the actuator to keep it unmovable. For details about fixing method, refer to Wiring/Cables in the Electric Actuators Precautions.

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 49.

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, *3 (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".
*3 When pulse signals are open collector, order the current limiting resistor separately.

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 73 (For LECP6/LECA6), page 86 (For LECP1) or page 93 (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 Only available for the controller/driver types "6N" and "6P".

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 65	Page 65	Page 80	Page 87

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 (LECP6, LECP1, LECPMJ)	Acceleration/Deceleration at 3000 [mm/s²]	6	17	30	20	40	60	30	45	60	50	60	80
			Acceleration/Deceleration at 2000 [mm/s²]	10	23	35	30	55	70	40	60	80	60	70	90
		Horizontal (LECPA)	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)	LECP6/LECP1		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 300	6 to 150	24 to 500	12 to 350	6 to 175
		LECPA									12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/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											
	Lost motion [mm] Note 7)			0.1 or less											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s²] Note 8)			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 9)			23			40			50			50		
	Standby power consumption when operating [W] Note 10)			16			15			48			48		
	Max. instantaneous power consumption [W] Note 11)			43			48			104			106		
Lock unit specifications	Type Note 12)			Non-magnetizing lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W] Note 13)			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10 %											

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Horizontal: An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check “Model Selection” on pages 42 and 43.
Vertical: Speed changes according to the work load. Check “Model Selection” on pages 42 and 43.
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 45.
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 40.
Note 6) The allowable speed for the pushing operation.
Note 7) A reference value for correcting an error in reciprocal operation.
Note 8) 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 9) The power consumption (including the controller) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation.
Note 11) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 12) With lock only
Note 13) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

	Model			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					
	Lost motion [mm] Note 6)			0.1 or less					
	Screw lead [mm]			10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²] Note 7)			50/20					
	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 8)			40			86		
	Standby power consumption when operating [W] Note 9)			4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W] Note 10)			59			96		
Lock unit specifications	Type Note 11)			Non-magnetizing lock					
	Holding force [N]			20	39	78	78	157	294
	Power consumption [W] Note 12)			2.9			5		
	Rated voltage [V]			24 VDC ±10 %					

Note 1) 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 44 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 45.
Note 5) The allowable speed for the pushing operation.
Note 6) A reference value for correcting an error in reciprocal 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.

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—

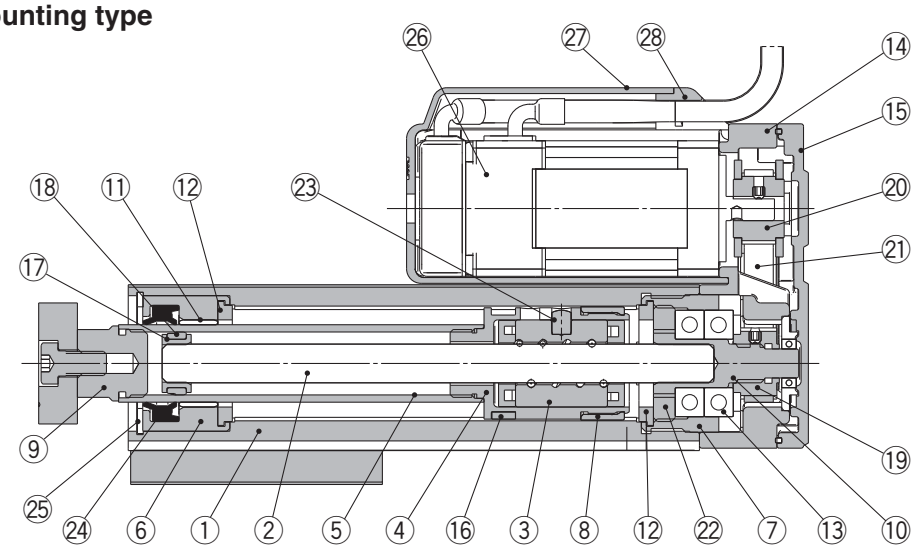
Additional Weight

[kg]

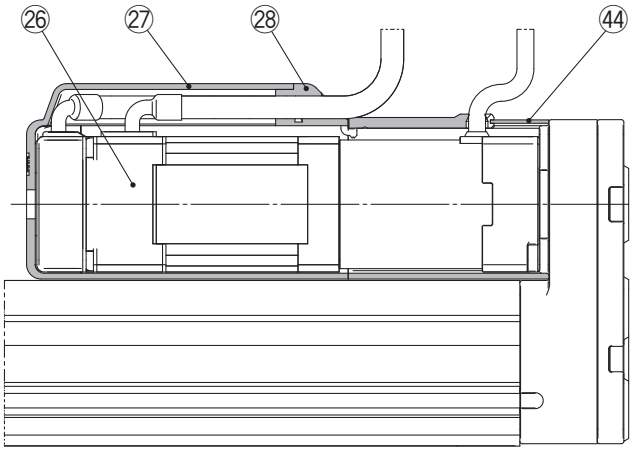
Size	16	25	32	40
Lock	0.12	0.26	0.53	0.53
Motor cover	0.02	0.03	0.04	0.05
Lock/Motor cover	0.16	0.32	0.61	0.62

Construction

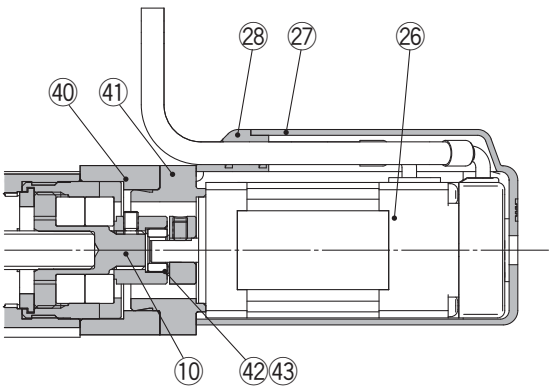
Motor top mounting type



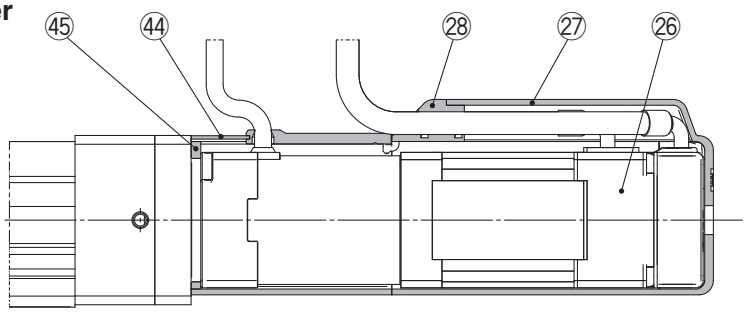
Motor top mounting type
With lock/motor cover



In-line motor type

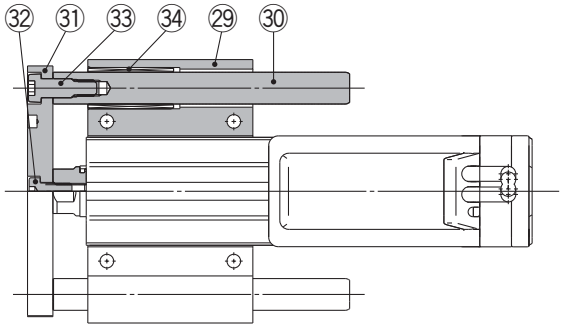


In-line motor type
With lock/motor cover

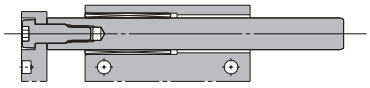


Construction

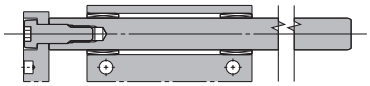
LEYG□M



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

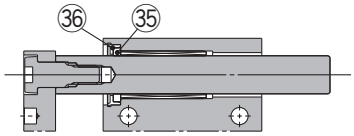


LEYG$^{16}_{25}_{32}_{40}$M: Over 50st



When grease retaining function selected

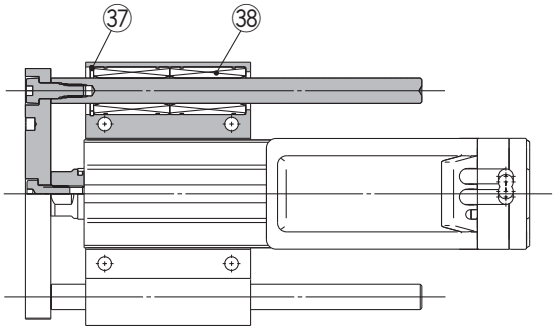
LEYG$^{25}_{32}_{40}$M□□$^{A}_{B}_{C}$-□□F: 50st or less



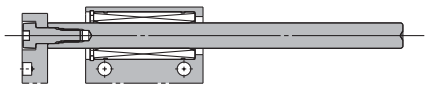
LEYG$^{25}_{32}_{40}$M□□$^{A}_{B}_{C}$-□□F: Over 50st

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.

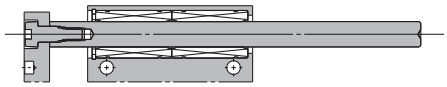
LEYG□L



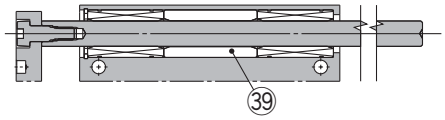
LEYG16L: 30st or less
LEYG$^{25}_{32}_{40}$L: 100st or less



LEYG16L: Over 30st, 100st or less



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



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 plating
6	**Rod cover**	Aluminium alloy	
7	**Housing**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Lead bronze cast	
12	**Bumper**	Urethane	
13	**Bearing**	—	
14	**Return box**	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	
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**	—	
27	**Motor cover**	Synthetic resin	Only "With motor cover"
28	**Grommet**	Synthetic resin	Only "With motor cover"

No.	Description	Material	Note
29	**Guide attachment**	Aluminium alloy	Anodised
30	**Guide rod**	Carbon steel	
31	**Plate**	Aluminium alloy	Anodised
32	**Plate mounting cap screw**	Carbon steel	Nickel plating
33	**Guide cap screw**	Carbon steel	Nickel plating
34	**Sliding bearing**	—	
35	**Lube-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	
44	**Motor cover with lock**	Aluminium alloy	Only "With lock/motor cover"
45	**Cover support**	Aluminium alloy	Only "With lock/motor cover"

Replacement Parts/Belt

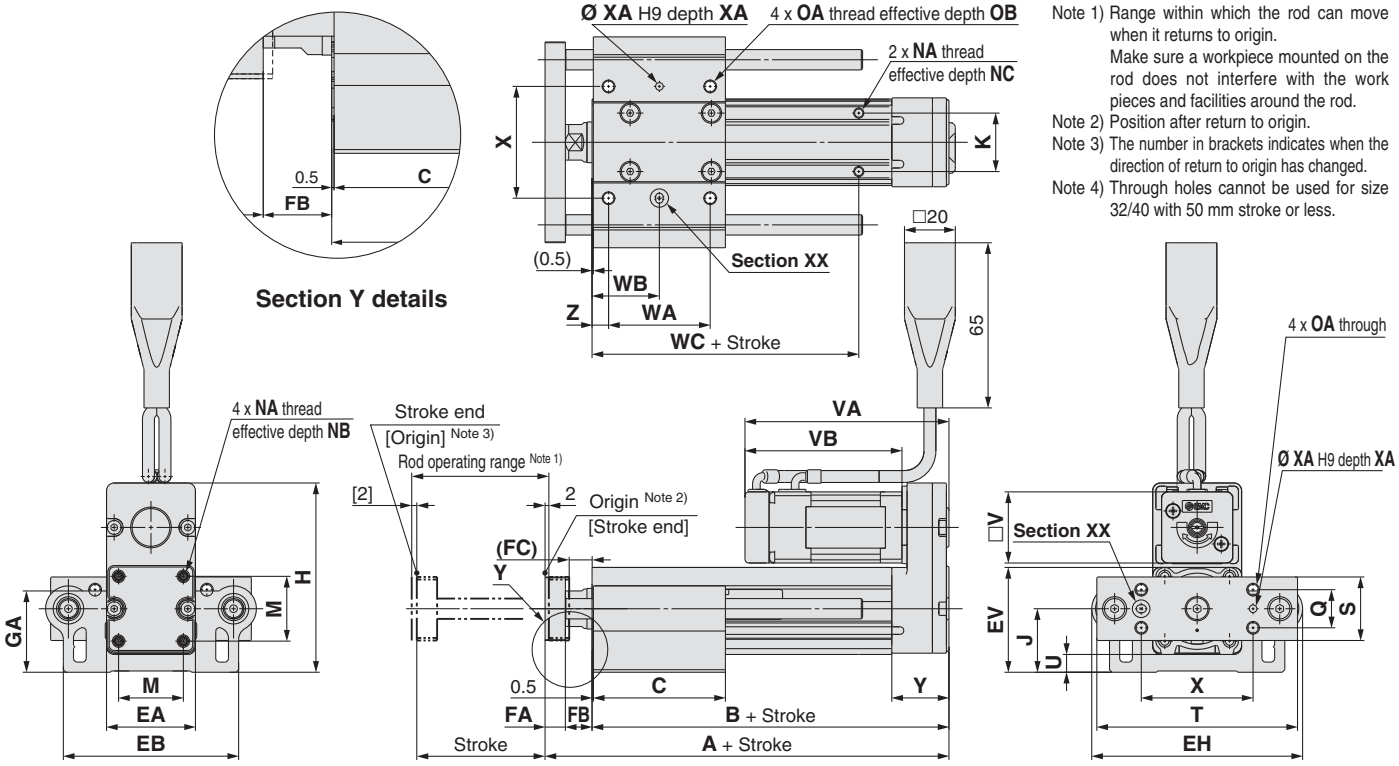
No.	Size	Order no.
21	**16**	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Replacement Parts/Grease Pack

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

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

Dimensions: Motor Top Mounting

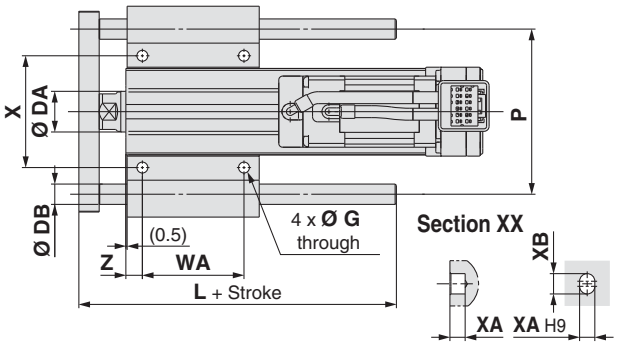


Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the work pieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) Through holes cannot be used for size 32/40 with 50 mm stroke or less.

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	

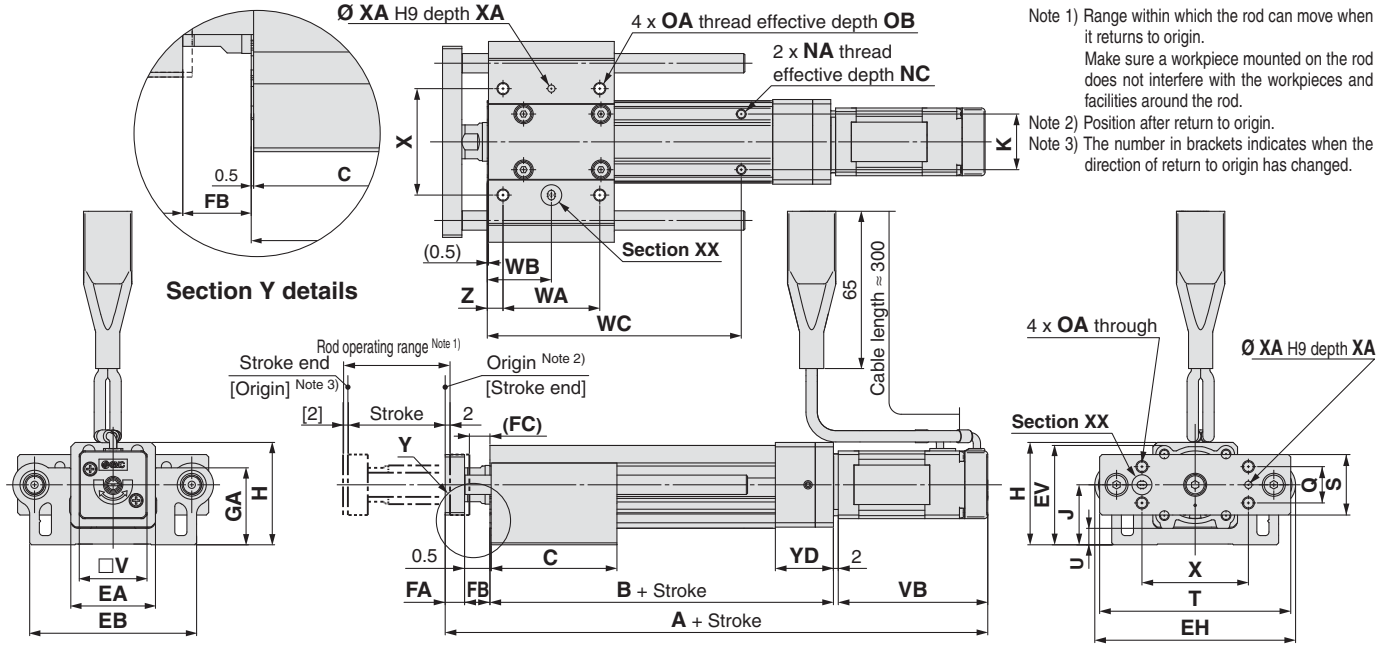
LEYG□M, LEYG□L Common

[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	74.3	24.3	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	98.8	30.8	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	125.3	38.3	30	40	M6 x 1.0	10	8.5
	40st or more, 100st or less			68																	
	101st or more, 124st or less																				
	125st or more, 200st or less	190.5	160	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	6.8	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	6.8	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													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	7.3	56.4	95.4	68.4	—	—	40	28.5	75	64	5	6	34	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	7.3	56.4	117.4	90.4	—	—	40	28.5	75	64	5	6	34	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: In-line Motor

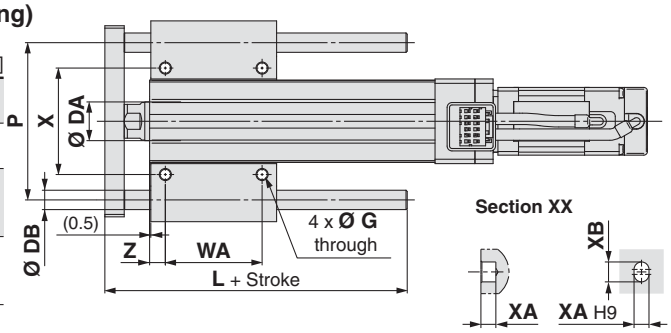


Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin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

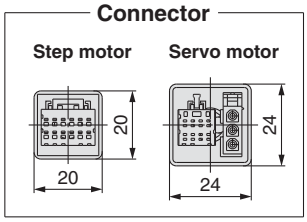
Size	Stroke range	Step motor A	Servo motor A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
16	39st or less	174.3	175	92	37	16	35	69	83	41.3	8	10.5	8.5	4.3	32	42.3	24.8	23	M4 x 0.7	5.5
	40st or more, 100st or less				52															
	101st or more, 200st or less	194.3	195	112	82															
25	39st or less	206.4	202.6	115.5	50	20	45	85	103	52.5	11	14.5	12.5	5.4	40.5	53.3	38.8	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	68.3	38.3	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	68.3	38.3	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															

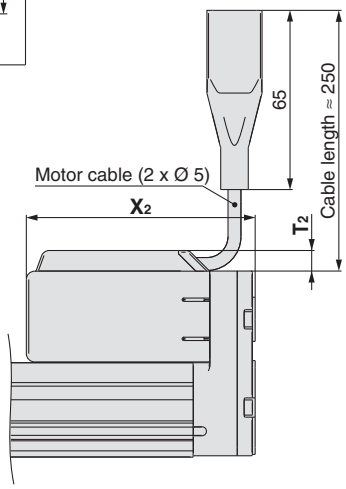
Size	Stroke range	OA	OB	P	Q	S	T	U	V	VB Step motor	VB Servo motor	WA	WB	WC	X	XA	XB	YD	Z
16	39st or less	M5 x 0.8	10	65	15	25	79	6.8	28	61.8	62.5	25	19	55	44	3	4	24	6.5
	40st or more, 100st or less											40	26.5						
	101st or more, 200st or less											70	41.5	75					
25	39st or less	M6 x 1.0	12	80	18	30	95	6.8	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	7.3	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: LEYG16/25/32/40□□A/B/C-□C



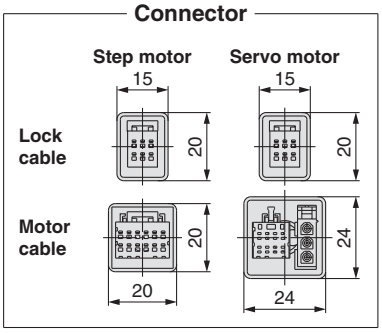


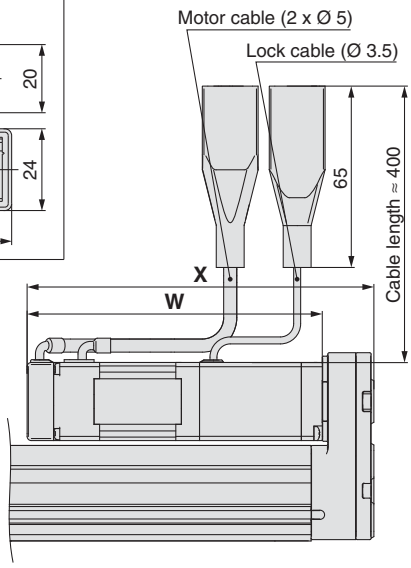
[mm]

Size	T_2	X_2
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material:
Synthetic resin

With lock: LEYG16/25/32/40□□A/B/C-□B



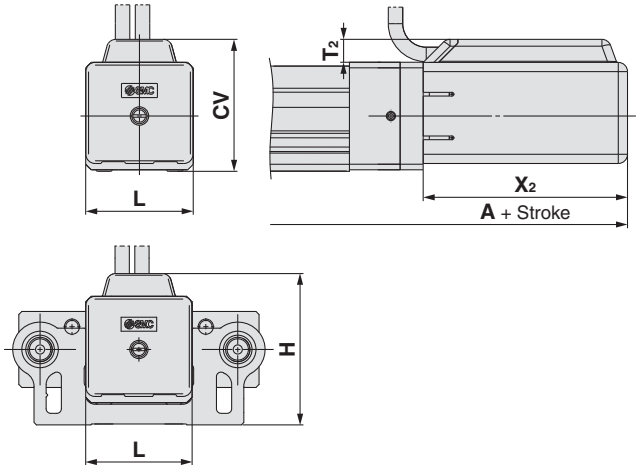


[mm]

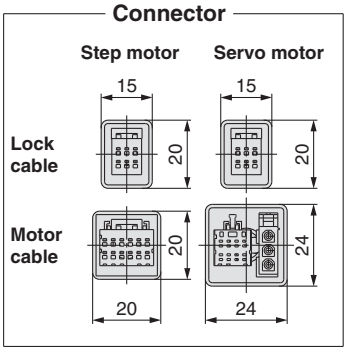
Size	Step motor		Servo motor	
	W	X	W	X
16	103.3	121.8	104.0	122.5
25	103.9	125.9	100.1	122.1
32	111.4	138.4	—	—
40	133.4	160.4	—	—

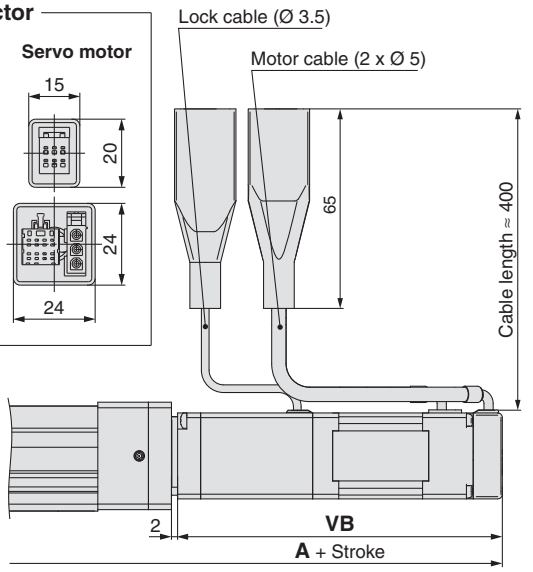
In-line motor type

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



With lock: LEYG16/25/32/40□D□A/B/C-□B





[mm]

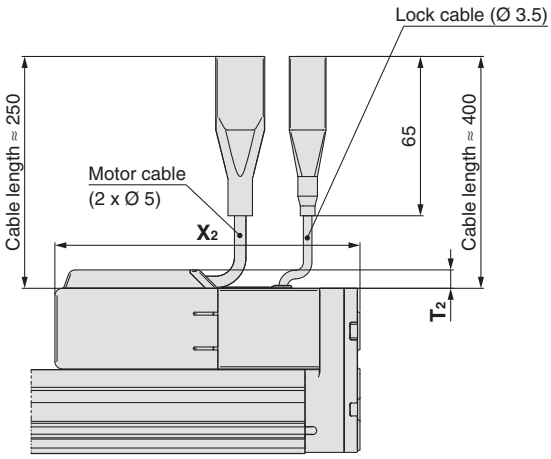
Size	Stroke range	A	T_2	X_2	L	H	CV
16	100st or less	177	7.5	66.5	35	49.8	43
	101st or more, 200st or less	197					
25	100st or less	209.5	7.5	68.5	46	61.3	54.5
	101st or more, 300st or less	234.5					
32	100st or less	232	7.5	73.5	60	75.8	68.5
	101st or more, 300st or less	262					
40	100st or less	254	7.5	95.5	60	75.8	68.5
	101st or more, 300st or less	284					

[mm]

Size	Stroke range	A		VB	
		Step motor	Servo motor	Step motor	Servo motor
16	100st or less	215.8	216.5	103.3	104
	101st or more, 200st or less	235.8	236.5		
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	—		

Dimensions

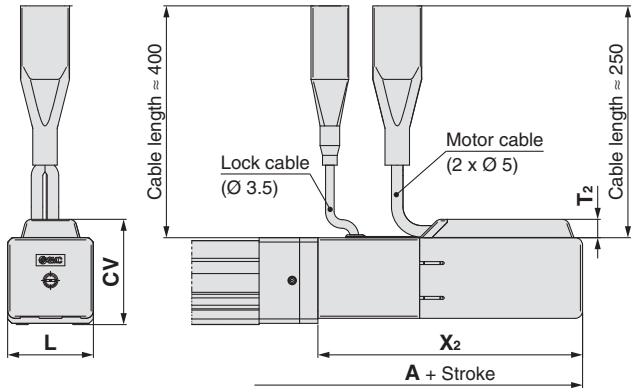
Motor top mounting type
With lock/motor cover: LEYG 16/25/32/40 □□ A/B/C -□W

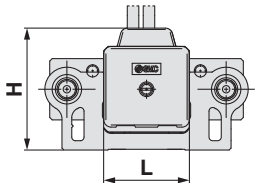


[mm]

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

In-line motor type
With lock/motor cover: LEYG 16/25/32/40 D□ A/B/C -□W





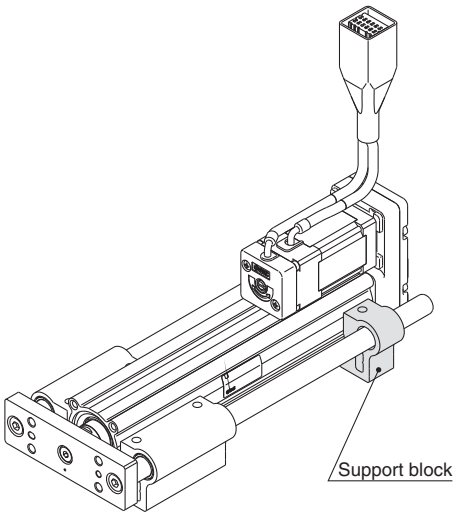
[mm]

Size	Stroke range	A	T2	X2	L	H	CV
16	100st or less	218.5	7.5	108	35	49.8	43
	101st or more, 300st or less	238.5					
25	100st or less	250	7.5	109	46	61.3	54.4
	101st or more, 300st or less	275					
32	100st or less	275	7.5	116.5	60	75.8	68.5
	101st or more, 300st or less	305					
40	100st or less	297	7.5	138.5	60	75.8	68.5
	101st or more, 300st or less	327					

Support Block

●Guide for support block application

When the stroke exceeds 100 mm and the mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

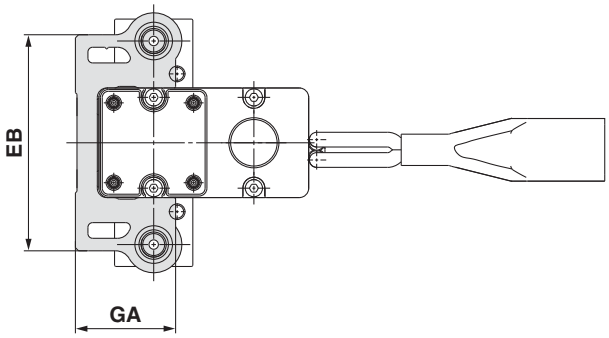


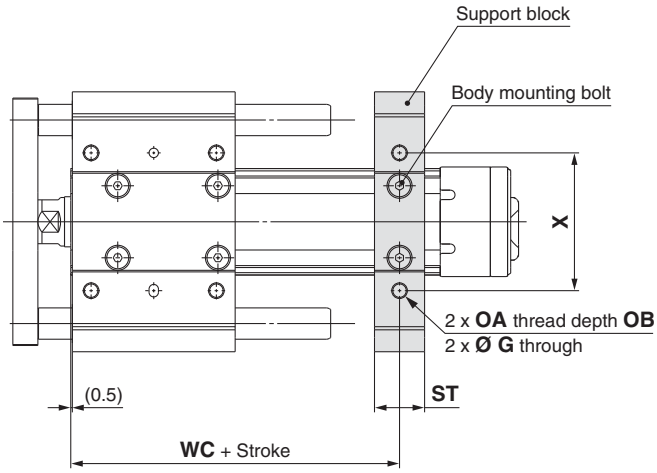
Support Block Model

LEYG-S016

●**Size**

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





⚠Caution

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

[mm]

Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
16	**LEYG-S016**	100st or less	69	4.3	31.8	M5 x 0.8	10	16	55	44
		101st or more, 200st or less							75	
25	**LEYG-S025**	100st or less	85	5.4	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32 40	**LEYG-S032**	100st or less	101	5.4	50.3	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

∗ Two body mounting screws are included with the support block.
∗ The through holes of the LEYG-S032 cannot be used. Use taps on the bottom.

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.smc.eu

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" for a stroke of 30 mm or less.

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 %

<Set values for Vertical Upward Transfer Pushing Operation>

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

Model	LEY16□			LEY25□			LEY32□			LEY40□		
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.smc.eu

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. When an actuator is operated with one end fixed and the other free (ends tapped or 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 at the stroke end. Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.

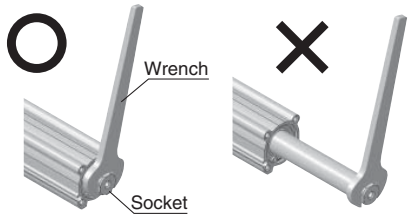
11. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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□

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

LEY40□

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	—

• Servo motor (24 VDC)

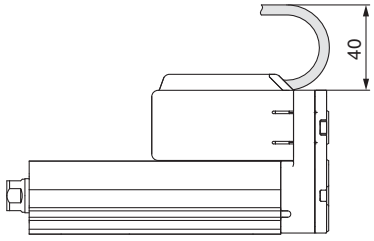
LEY16A□

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

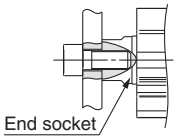
⚠Caution

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.

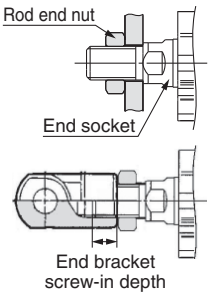
<Series LEY>

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.)

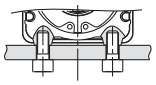


Model	Thread size	Max. tightening torque [N·m]	Effective thread length [mm]	End socket width across flats [mm]
LEY16	M8 x 1.25	12.5	12	14
LEY25	M14 x 1.5	65.0	20.5	17
LEY32/40	M14 x 1.5	65.0	20.5	22

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

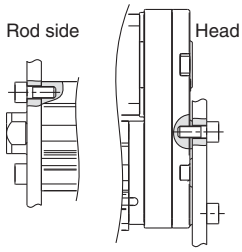
∗ Rod end nut is an accessary.

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

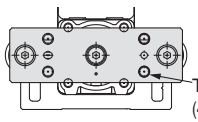


Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY16	M4 x 0.7	1.5	7
LEY25	M5 x 0.8	3.0	8
LEY32/40	M6 x 1.0	5.2	10

∗ Except the LEY□D.

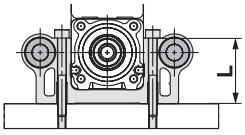
<Series LEYG>

Workpiece fixed/Plate tapped style



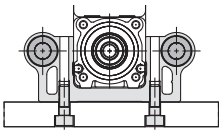
Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	11
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	12

Body fixed/Top mounting



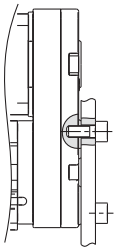
Model	Bolt	Max. tightening torque [N·m]	Length: L [mm]
LEYG16$^{M}_{L}$	M4 x 0.7	1.5	31.8
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	40.3
LEYG$^{32M}_{40L}$	M5 x 0.8	3.0	50.3

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

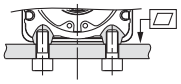
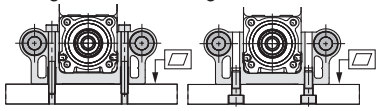
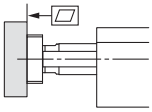
Body fixed/Head side tapped style



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 	0.02 mm or less
LEYG□	Top mounting/Bottom mounting 	0.02 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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Please download it via our website, http://www.smc.eu

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

• 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

• 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 65**

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Gateway Unit ····· **Page 77**

Series LEC-G

Programless Type ····· **Page 80**

Step Motor (Servo/24 VDC)

Series LECP1

Pulse Input Type ····· **Page 87**

Step Motor (Servo/24 VDC)

Series LECPA

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 LE 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 73 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

Part number except cable specifications and actuator options
Example: Enter "**LEY16B-100**" for the LEY16B-100B-R16N1.

BC	Blank controller Note)

Note) The dedicated software (LEC-BCW) is required.

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.

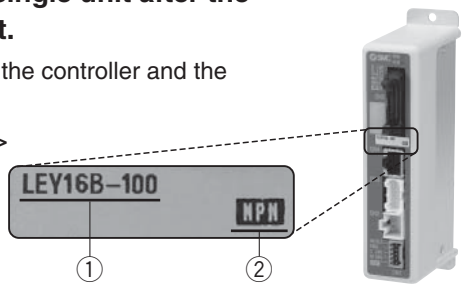
The controller is sold as single unit after the compatible actuator is set.

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.smc.eu

Precautions on blank controller (LEC□6□□-BC)

Blank controller is a controller to which the customer can write the data of the actuator to be combined and used. Use the dedicated software (LEC-BCW) for data writing.

- Please download the dedicated software (LEC-BCW) via our website.
- Order the controller setting kit (LEC-W2) separately to use this software.

SMC website
http://www.smc.eu

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 % Note 2) [Including motor drive power, control power, stop, lock release]	Power voltage: 24 VDC ±10 % 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 (800 pulse/rotation)/Z phase
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)	

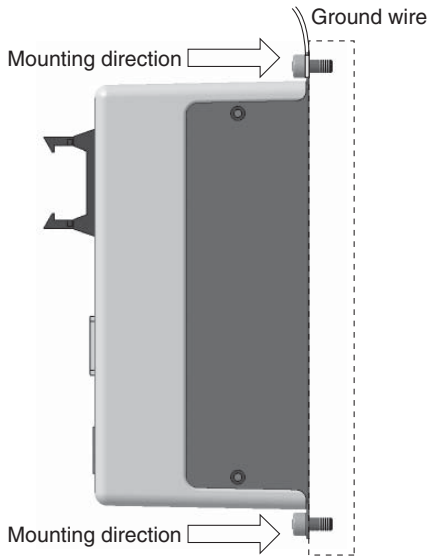
Note 1) Do not use the power supply of "inrush current prevention type" for the controller power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

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

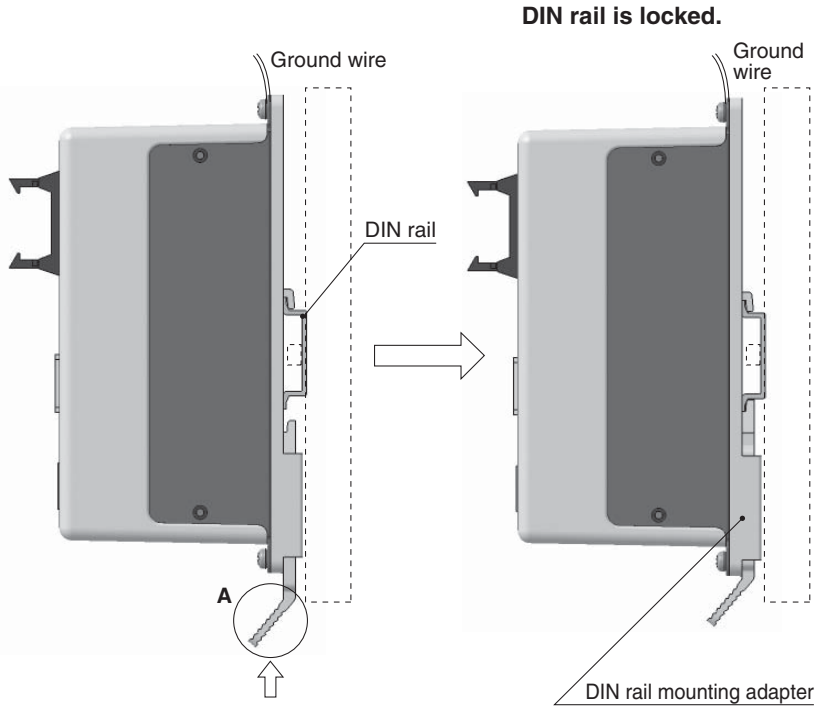
Note 3) Applicable to non-magnetizing lock.

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)

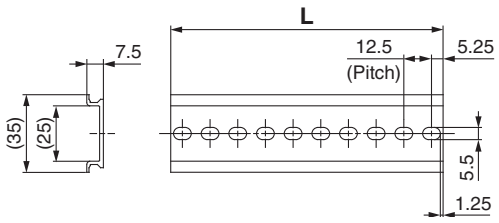


Hook the controller on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

Note) When size 25 or more of the LE 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 67 for the mounting dimensions.



L Dimension [mm]

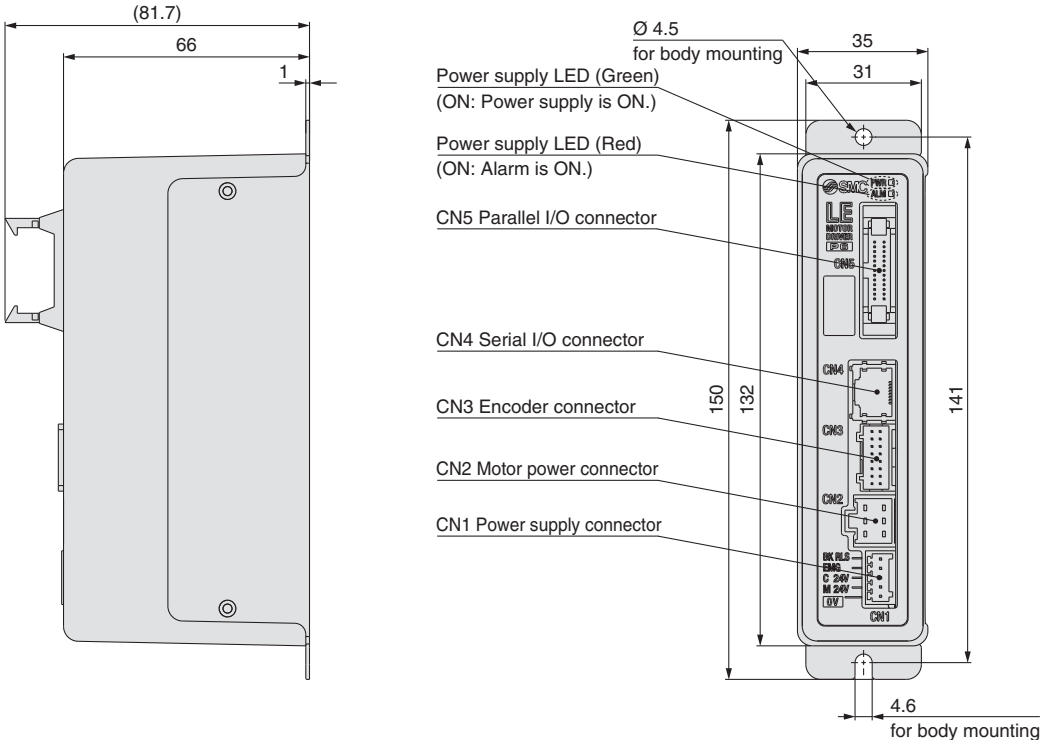
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

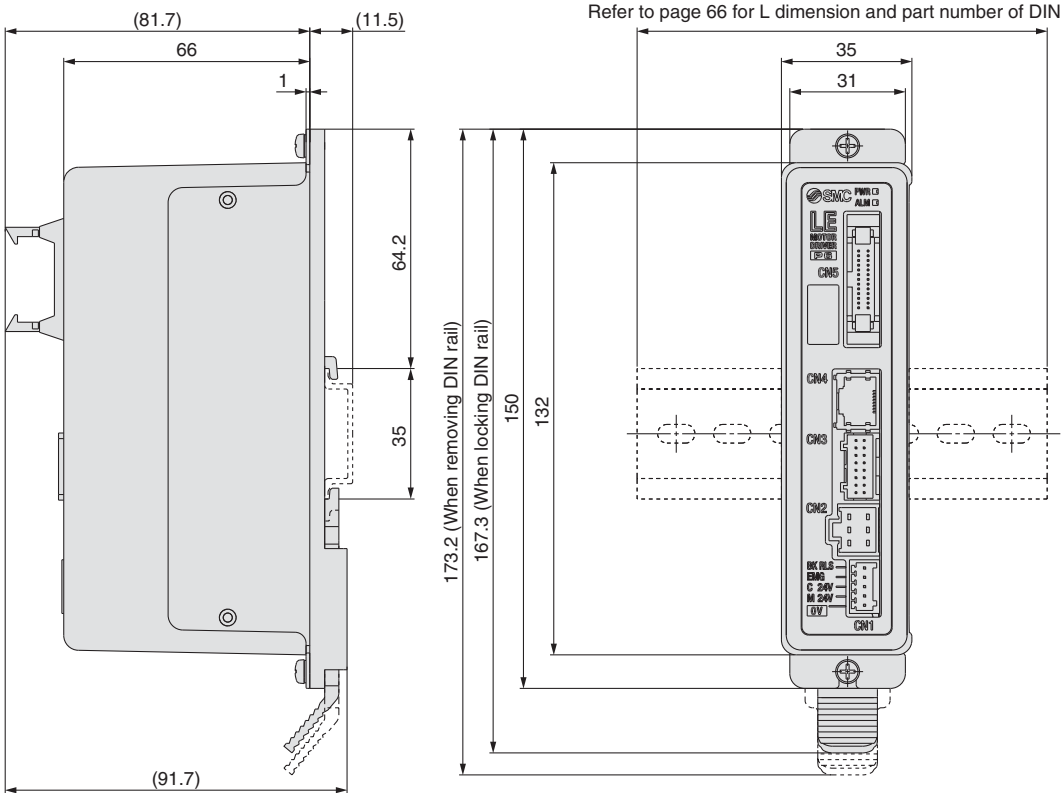
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type controller afterward.

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.

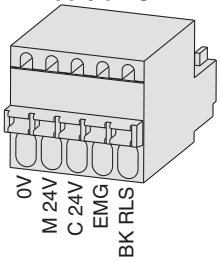
CN1 Power Supply Connector Terminal for LECP6 (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M 24V terminal/C 24V terminal/EMG terminal/BK RLS terminal are common (–).
M 24V	Motor power supply (+)	Motor power supply (+) supplied to the controller
C 24V	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

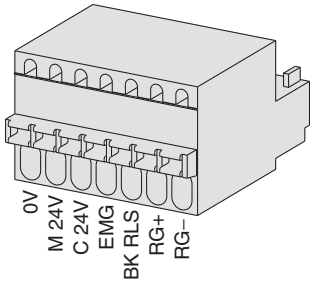
CN1 Power Supply Connector Terminal for LECA6 (PHOENIX CONTACT FK-MC0.5/7-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M 24V terminal/C 24V terminal/EMG terminal/BK RLS terminal are common (–).
M 24V	Motor power supply (+)	Motor power supply (+) supplied to the controller
C 24V	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
RG–	Regenerative output 2	(Not necessary to connect them in the combination with the LE series standard specifications.)

Power supply plug for LECP6



Power supply plug for LECA6



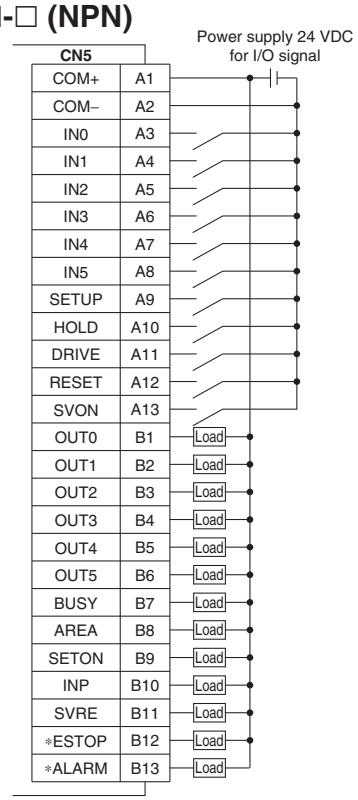
Wiring Example 2

Parallel I/O Connector: CN5

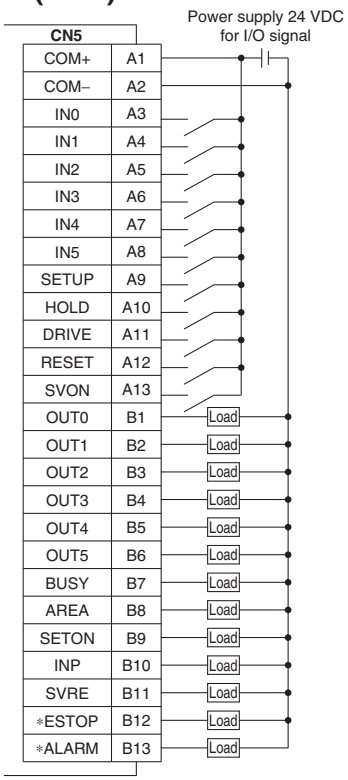
∗ When you connect a PLC etc., to the CN5 parallel I/O connector, use the I/O cable (LEC-CN5-□).
∗ The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

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

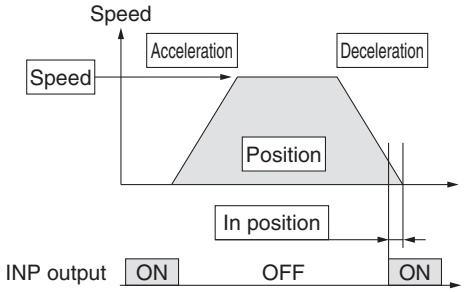
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or 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.



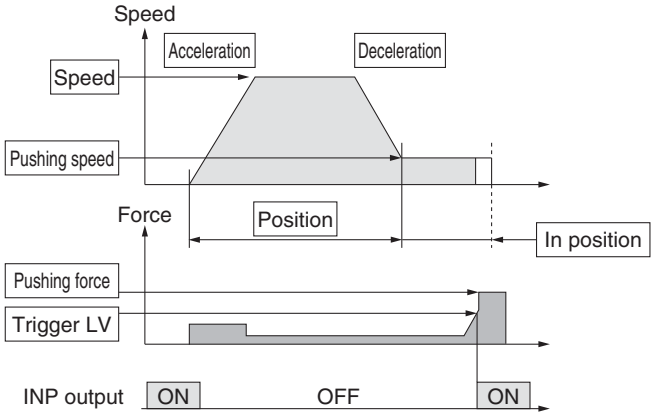
◎: Need to be set.
○: Need to be adjusted as required.
—: Setting is not required.

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.



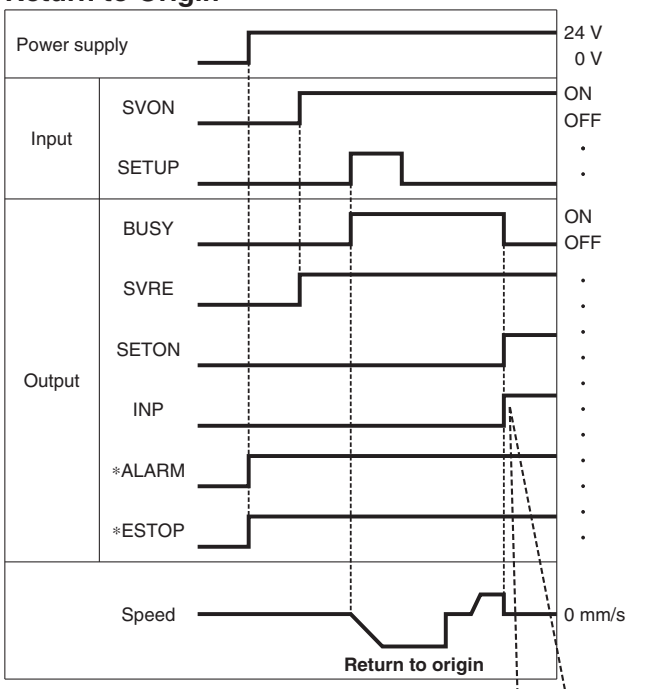
◎: Need to be set.
○: Need to be adjusted as required.

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 work pieces 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

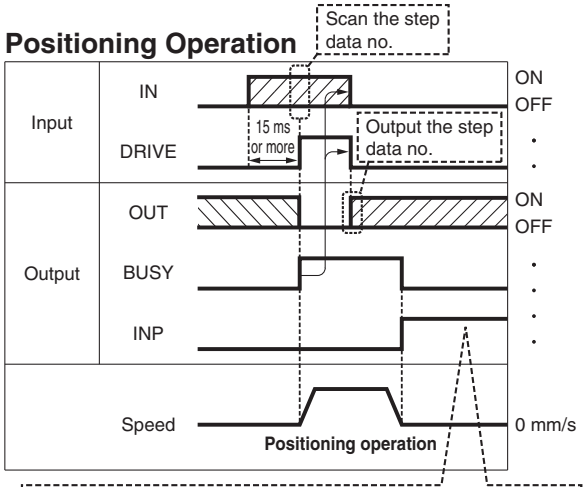
Return to Origin



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.

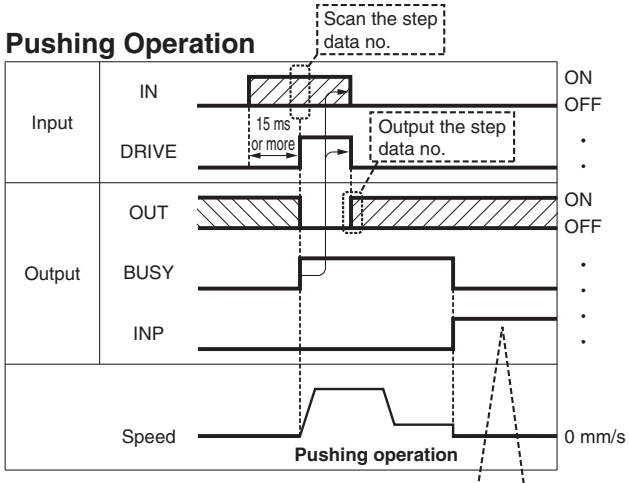
Positioning Operation



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

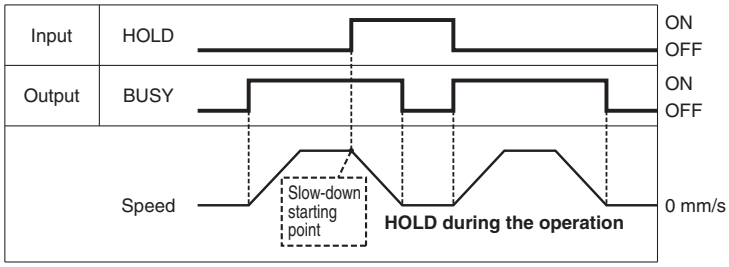
∗ "OUT" is output when "DRIVE" is changed from ON to OFF. (When power supply is applied, "DRIVE" or "RESET" is turned ON or "∗ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation



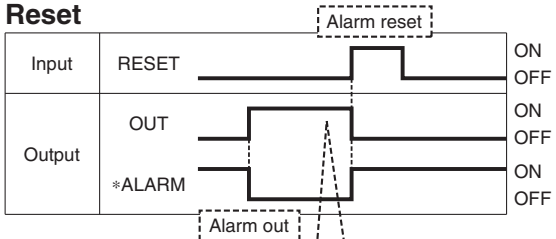
If the current pushing force exceeds the "trigger LV" value of the step data, INP signal will turn ON.

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

LE – CP – 1 – ☐

Cable length (L) [m]

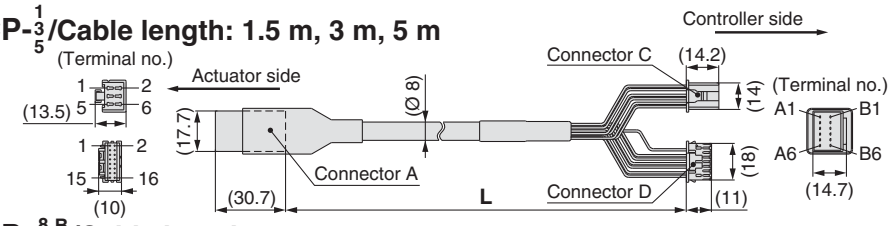
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

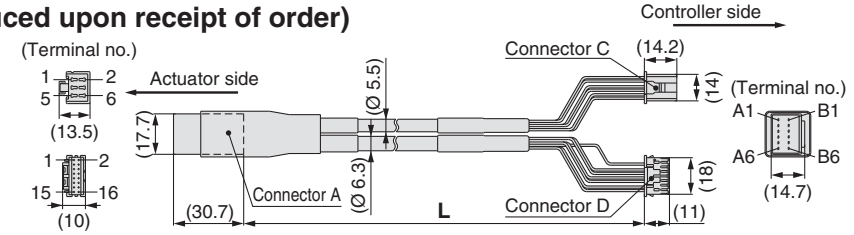
Cable type

—	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)



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

LE – CP – 1 – B – ☐

Cable length (L) [m]

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

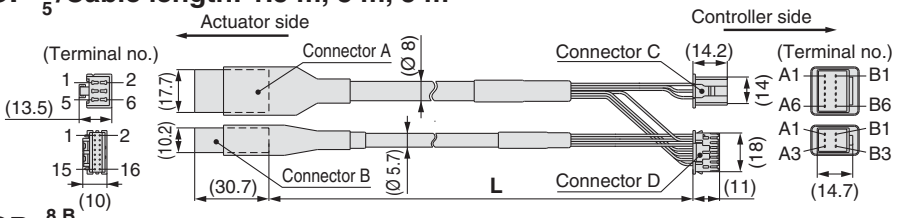
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

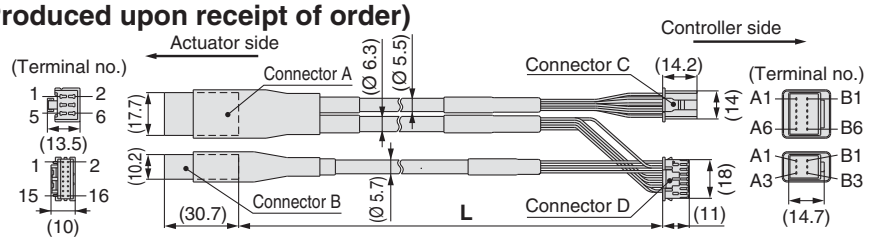
Cable type

—	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)



Signal	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

Signal	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

[Robotic cable for servo motor (24 VDC)]

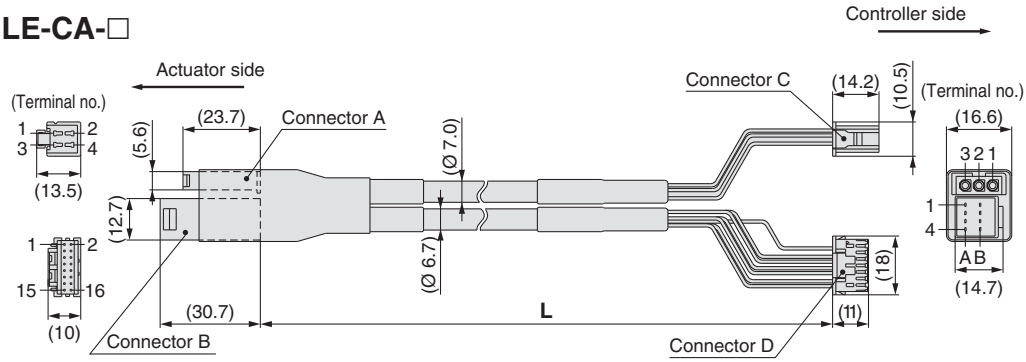
LE − CA − 1

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-□



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

Signal	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

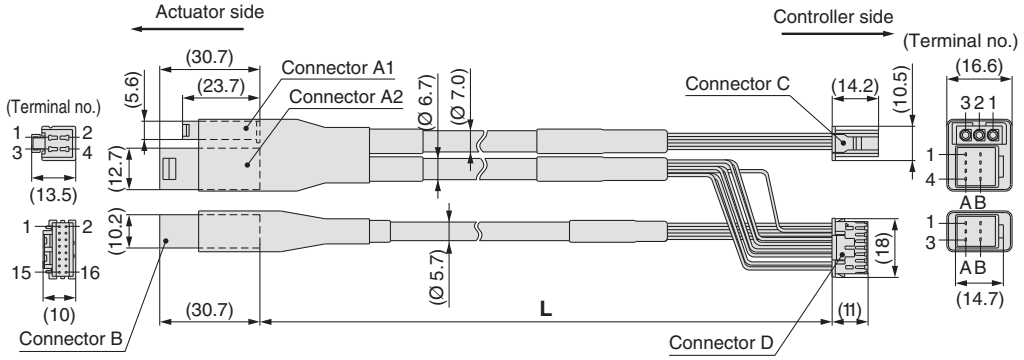
Cable length (L) [m]

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



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

Signal	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

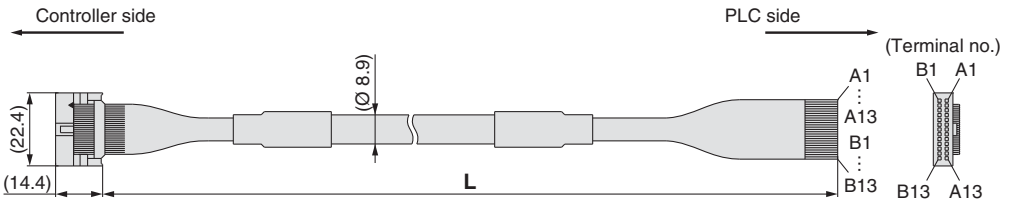
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Black	2

Option: I/O Cable

LEC − CN5 − 1

Cable length (L) [m]

1	1.5
3	3
5	5



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

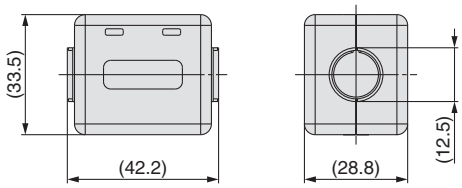
Connector pin no.	Insulation colour	Dot mark	Dot colour
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Grey	■ ■	Black
B5	Grey	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green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

∗ Conductor size: AWG28

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

LEC − NFA

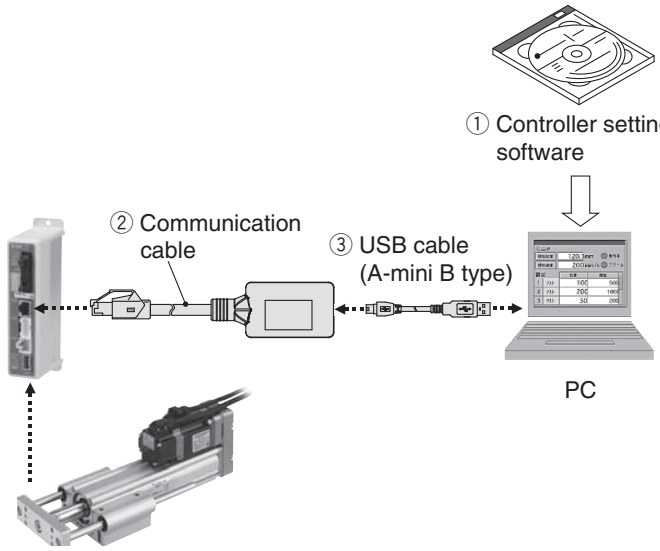
Contents of the set: 2 noise filters (Manufactured by WURTH ELEKTRONIK: 74271222)



∗ Refer to the LECA6 series Operation Manual for installation.

Series LEC Controller Setting Kit/LEC-W2

Windows®XP, Windows®7 compatible



How to Order

LEC – W2

Controller setting kit
(Japanese and English are available.)

Contents

	Description	Model*
①	Controller setting software (CD-ROM)	LEC-W2-S
②	Communication cable	LEC-W2-C
③	USB cable (between the PC and the communication cable)	LEC-W2-U

* Can be ordered separately.

Compatible Controller/Driver

Step data input type — ***Series LECP6/Series LECA6***
Pulse input type — ***Series LECPA***

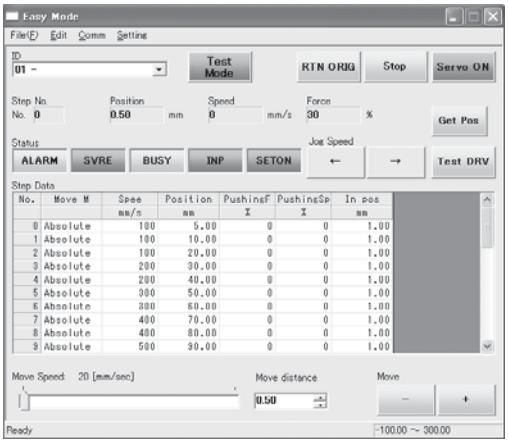
Hardware Requirements

OS	IBM PC/AT compatible machine running Windows®XP (32-bit), Windows®7 (32-bit and 64-bit), Windows®8.1 (32-bit and 64-bit).
Communication interface	USB 1.1 or USB 2.0 ports
Display	XGA (1024 x 768) or more

* Windows®XP, Windows®7 and Windows®8.1 are registered trademarks of Microsoft Corporation in the United States.
* Refer to SMC website for version upgrade information, http://www.smc.eu

Screen Example

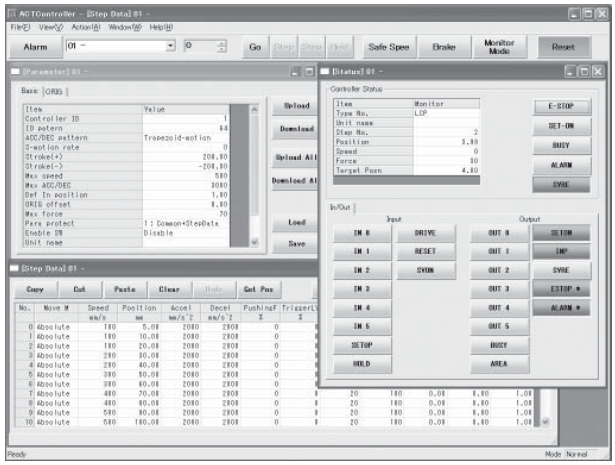
Easy mode screen example



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 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
Reconnect (Ver. 1.∗∗)
Japanese/English (Ver. 2.∗∗)
Easy/Normal
Set item

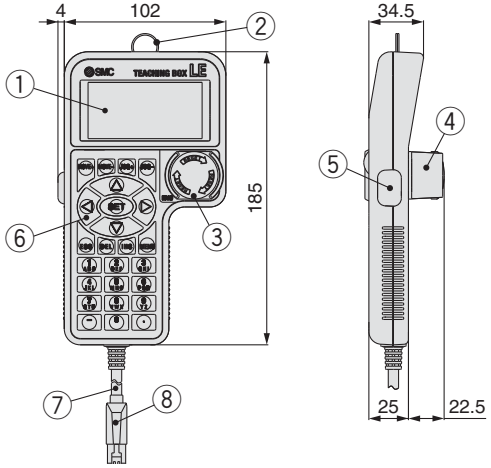
Normal Mode

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 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.

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

Branch connector LEC-CGD

Branch connector

Cable between branches

Terminating resistor LEC-CGR

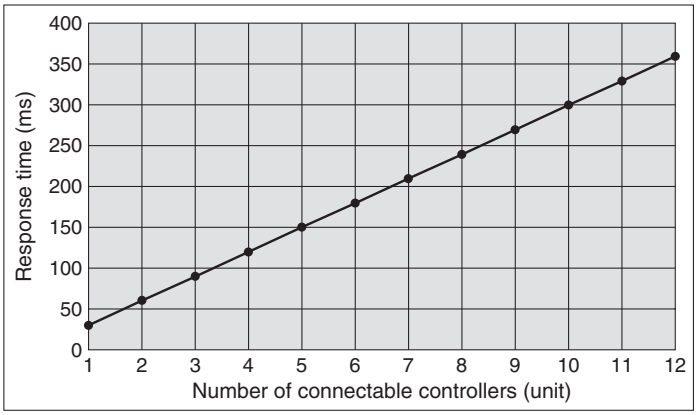
Specifications

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 Output 200 bytes	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.smc.eu
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.

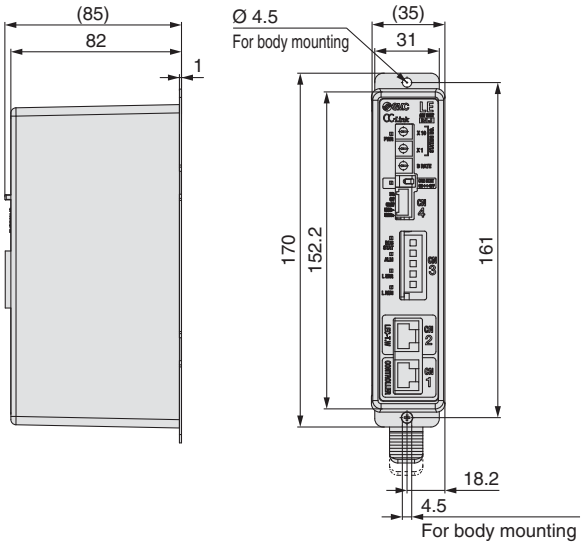


* This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

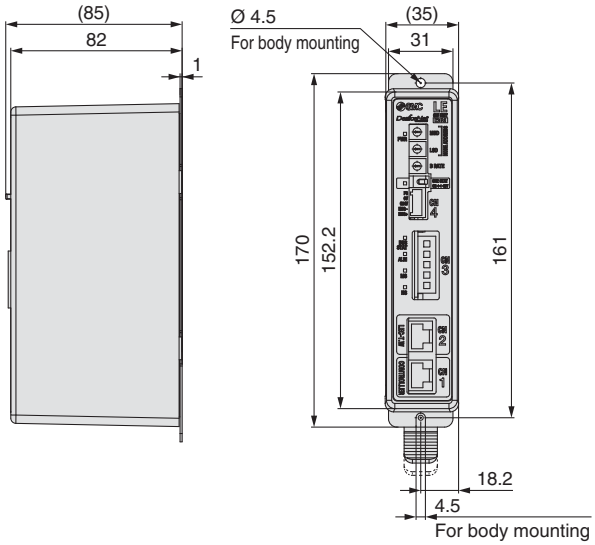
Dimensions

Screw mounting (LEC-G□□□)

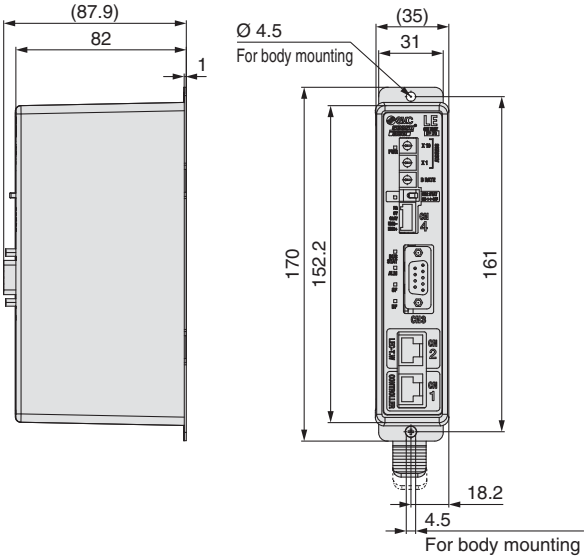
Applicable Fieldbus protocol: CC-Link Ver. 2.0



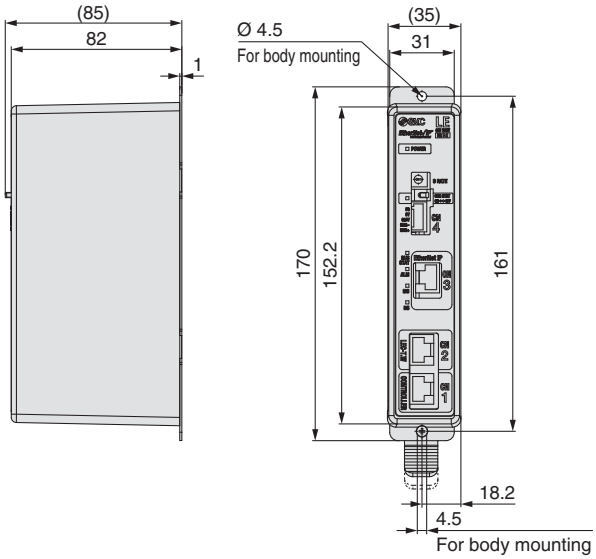
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

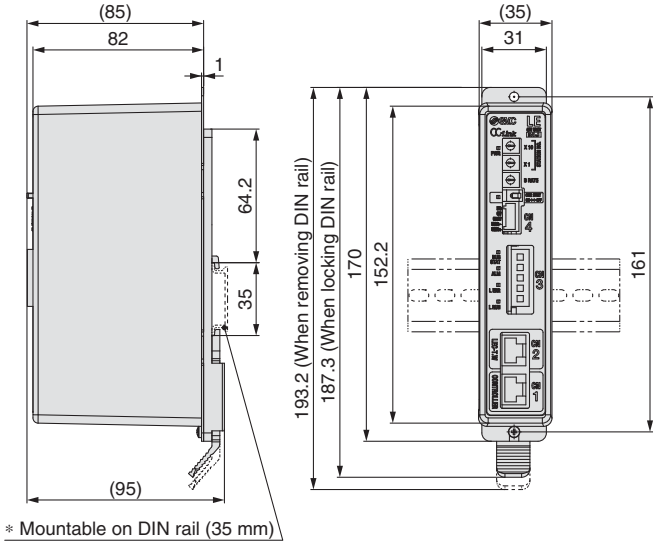


■ **Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

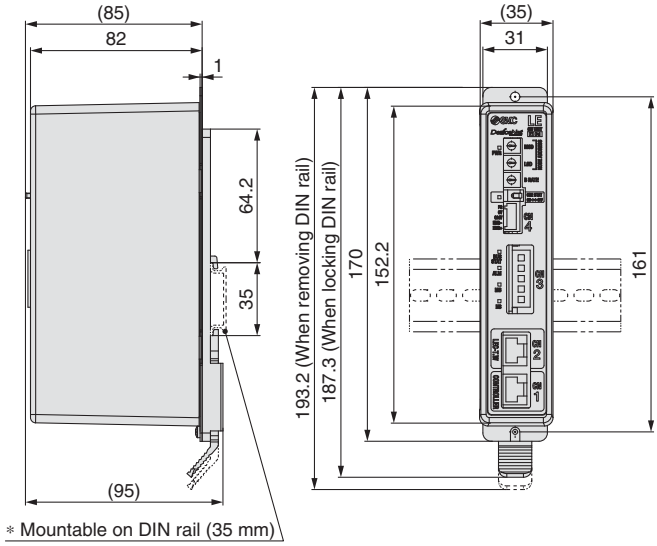
Dimensions

DIN rail mounting (LEC-G□□□D)

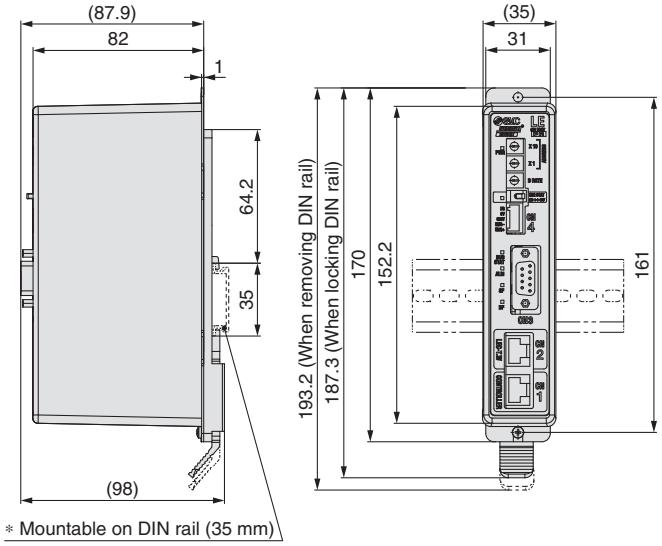
Applicable Fieldbus protocol: CC-Link Ver. 2.0



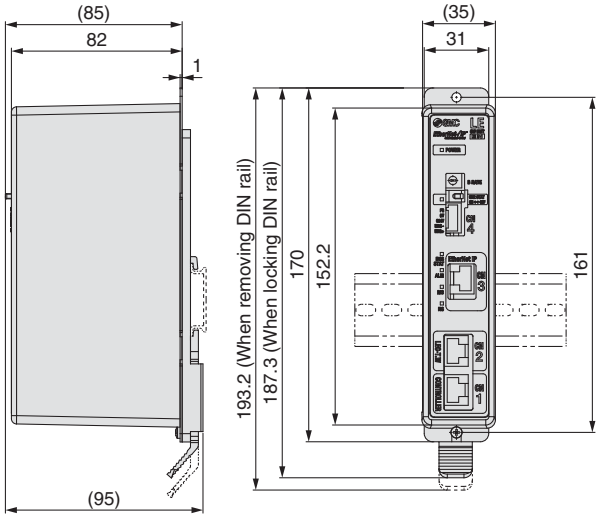
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP

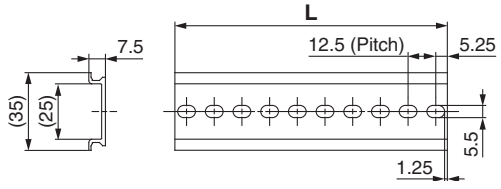


Applicable Fieldbus protocol: EtherNet/IP™



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 specification and actuator options)
Example: Enter "LEY16B-100" for the LEY16B-100B-R11N1.

∗ **When controller equipped type (-□1N□/-□1P□) 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 LEF 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.smc.eu

Specifications

Basic Specifications

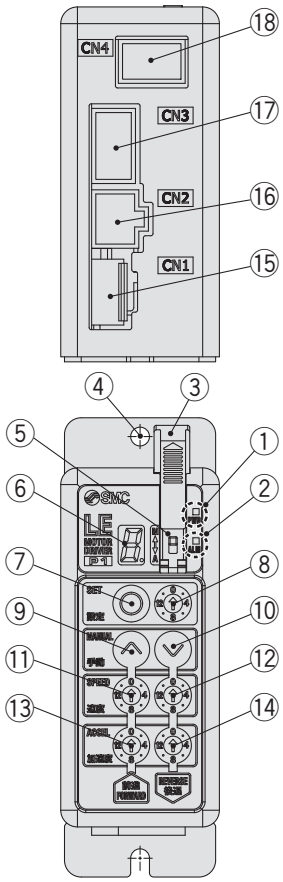
Item	LECP1
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power supply voltage: 24 VDC ±10 %, Max. current consumption: 3A (Peak 5A) Note 2) [Including the motor drive power, control power supply, stop, lock release]
Parallel input	6 inputs (Photo-coupler isolation)
Parallel output	6 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



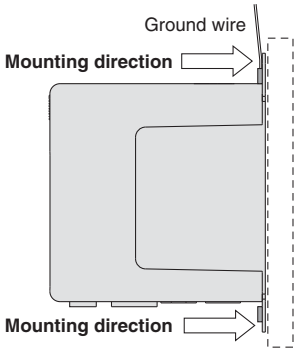
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing 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.

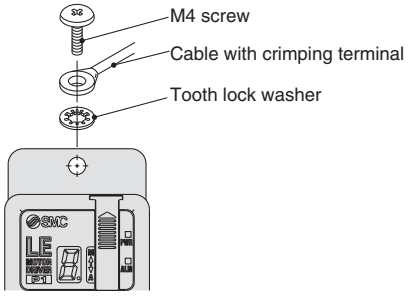
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

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



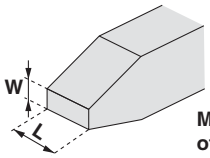
Controller

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

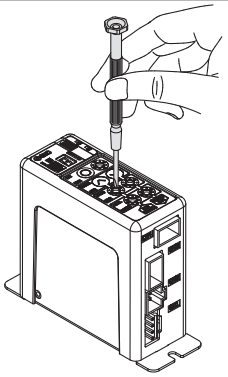
⚠Caution

- 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]

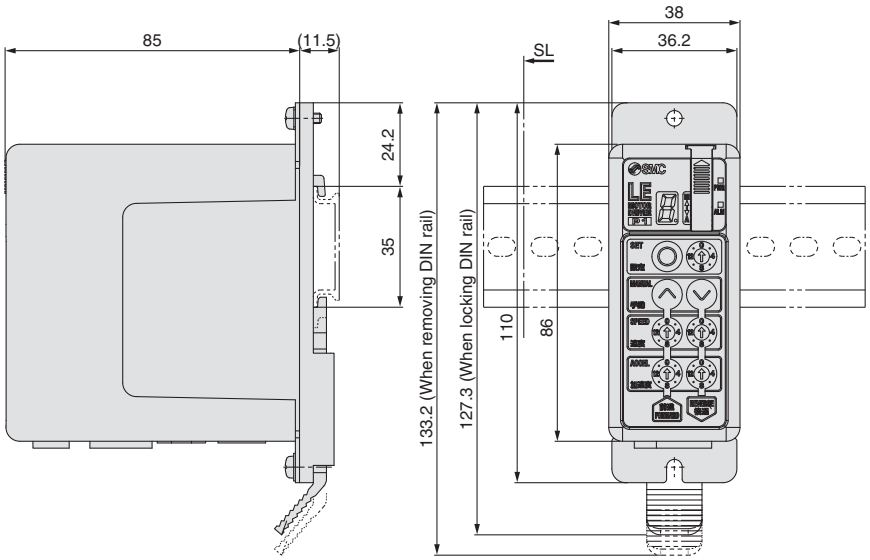


Magnified view of the end of the screwdriver



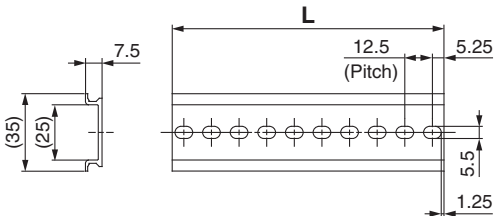
Dimensions

DIN rail mounting (LEC□1□□D-□)



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	21
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	273

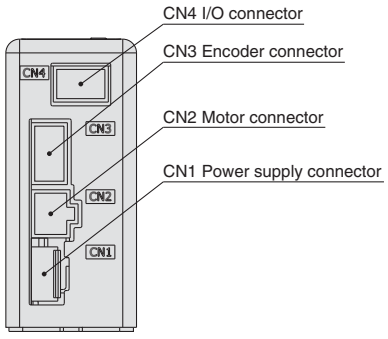
No.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

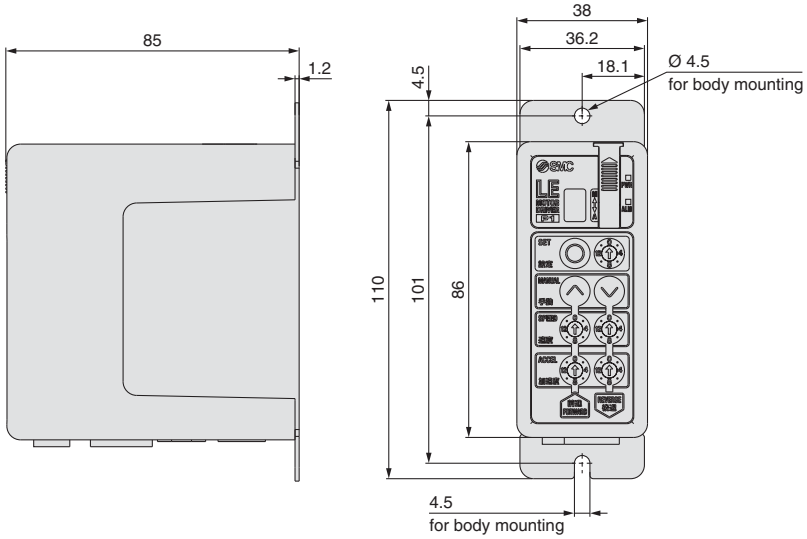
DIN rail mounting adapter

LEC-1-D0 (with 2 mounting screws)

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

Screw mounting (LEC□1□□-□)





Wiring Example 1

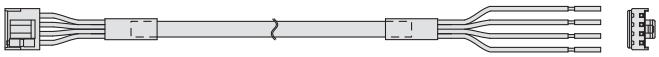
Power Supply Connector: CN1

* When you connect a CN1 power supply connector, 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 (–)	M 24V terminal/C 24V terminal/BK RLS terminal are common (–).
M 24V	White	Motor power supply (+)	Motor power supply (+) supplied to the controller
C 24V	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)

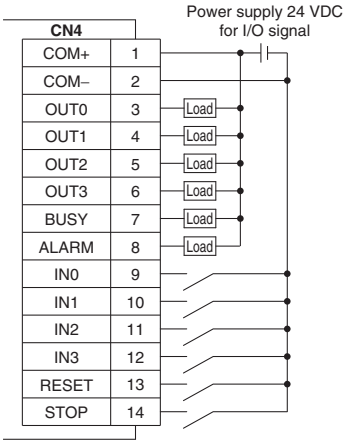


Wiring Example 2

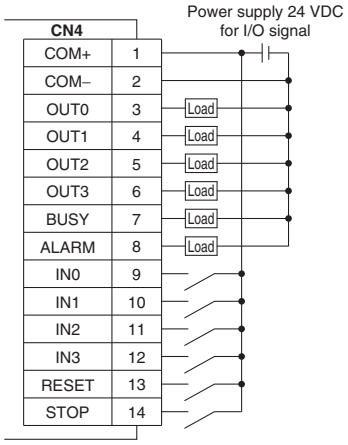
Parallel I/O Connector: CN4

* When you connect a PLC etc., to the CN4 parallel I/O connector, 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

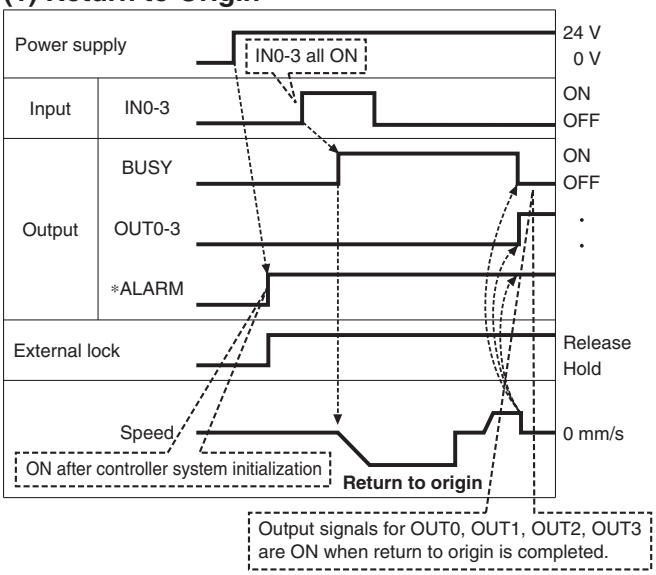
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Return to origin	●	●	●	●

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)	●	●	●	○
Return to origin	●	●	●	●

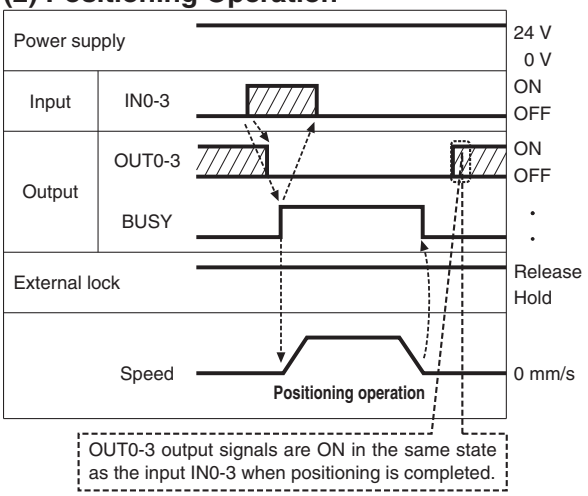
Signal Timing

(1) Return to Origin

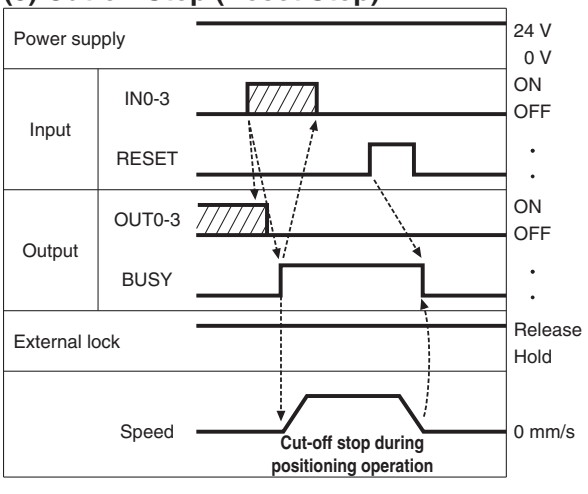


∗ "∗ALARM" is expressed as negative-logic circuit.

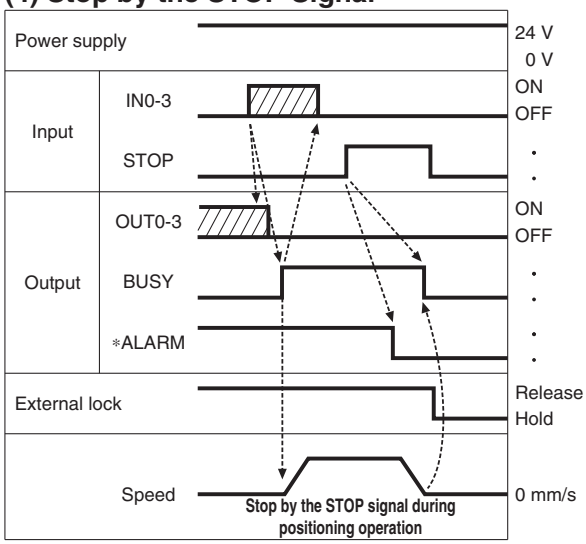
(2) Positioning Operation



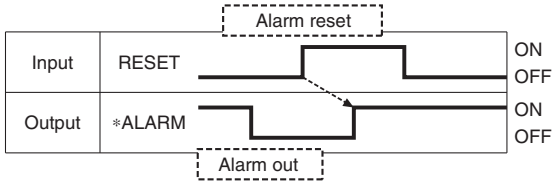
(3) Cut-off Stop (Reset Stop)



(4) Stop by the STOP Signal



(5) Alarm Reset



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

Options: Actuator Cable

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

LE – CP – 1 – □

Cable length (L) [m]

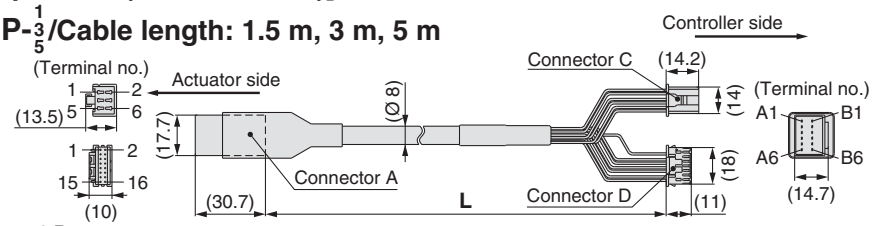
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

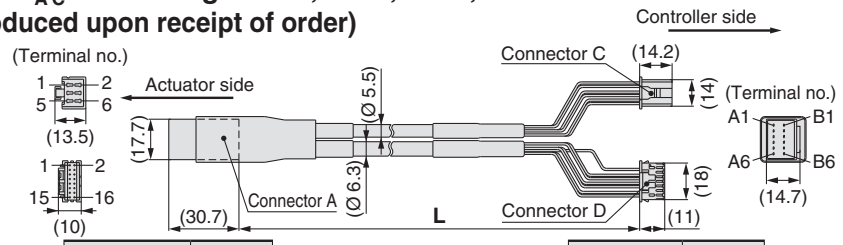
Cable type

—	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)



Signal	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	
Vcc	B-4	Brown	12
GND	A-4	Black	13
A	B-5	Red	7
A	A-5	Black	6
B	B-6	Orange	9
B	A-6	Black	8
		—	3

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

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

LE – CP – 1 – B – □

Cable length (L) [m]

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

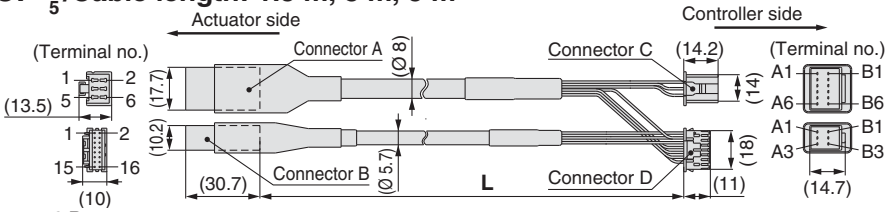
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

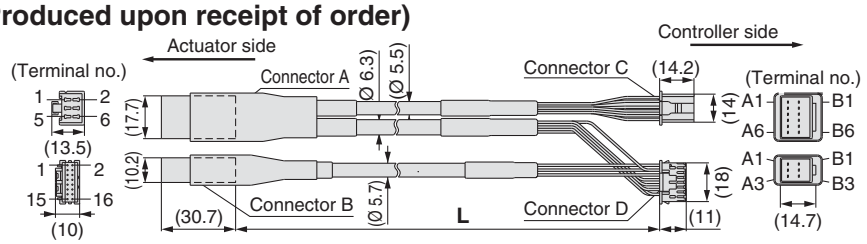
Cable type

—	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)



Signal	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	
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

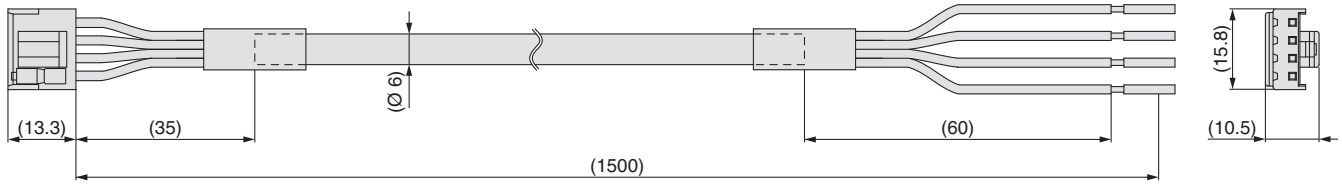
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Blue	2

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

Options

[Power supply cable]

LEC−CK1−1



Terminal name	Covered colour	Function
0V	Blue	Common supply (–)
M 24V	White	Motor power supply (+)
C 24V	Brown	Control power supply (+)
BK RLS	Black	Lock release (+)

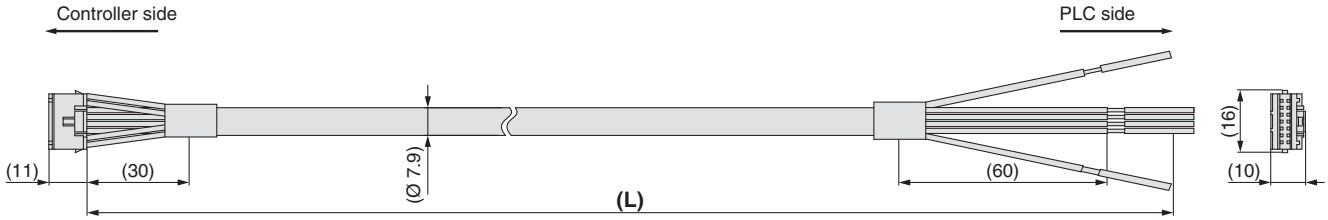
∗ Conductor size: AWG20

[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.

Pulse Input Type
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 87 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

Part number except cable specifications and actuator options
Example: Enter "**LEY16B-100**" for the LEY16B-100B-R1AN1D.

BC	Blank controller Note)

Note) The dedicated software (LEC-BCW) is required.

* When controller equipped type is selected when ordering the LE series, you do not need to order this driver.
* When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) separately.

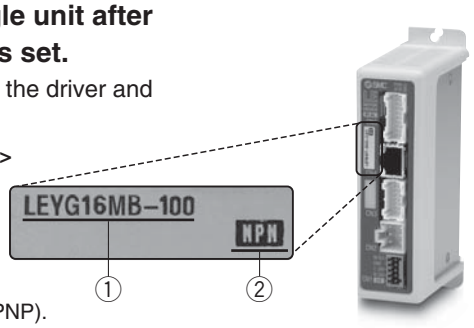
The driver is sold as single unit after the compatible actuator is set.

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.smc.eu

Precautions on blank controller (LECPA□□-BC)

Blank controller is a controller to which the customer can write the data of the actuator to be combined and used. Use the dedicated software (LEC-BCW) for data writing.

- Please download the dedicated software (LEC-BCW) via our website.
- Order the controller setting kit (LEC-W2) separately to use this software.

SMC website
http://www.smc.eu

Specifications

Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10 % 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)

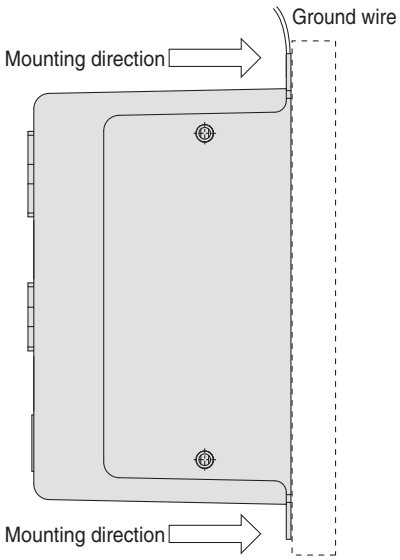
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

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

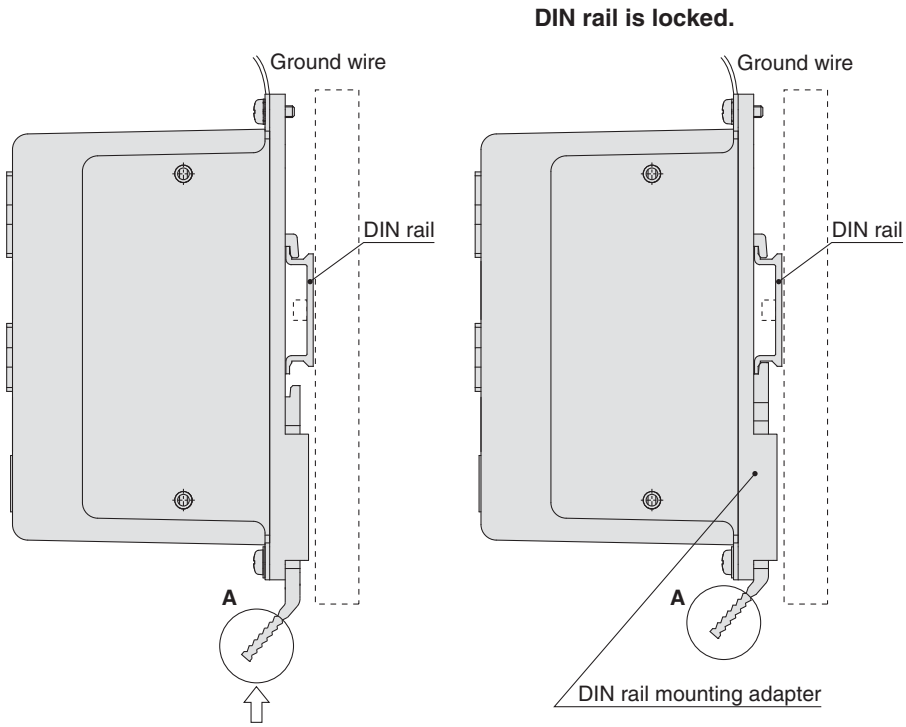
Note 3) Applicable to non-magnetizing lock.

How to Mount

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



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

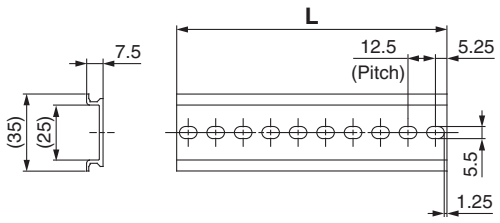


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

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 89 for the mounting dimensions.



L Dimension [mm]

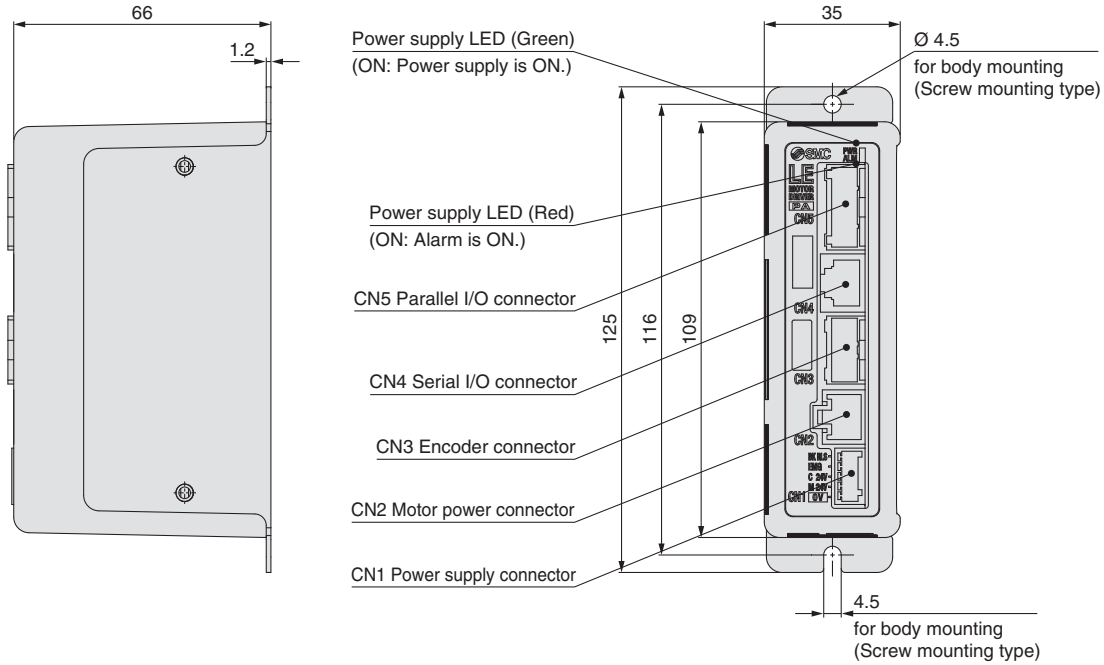
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

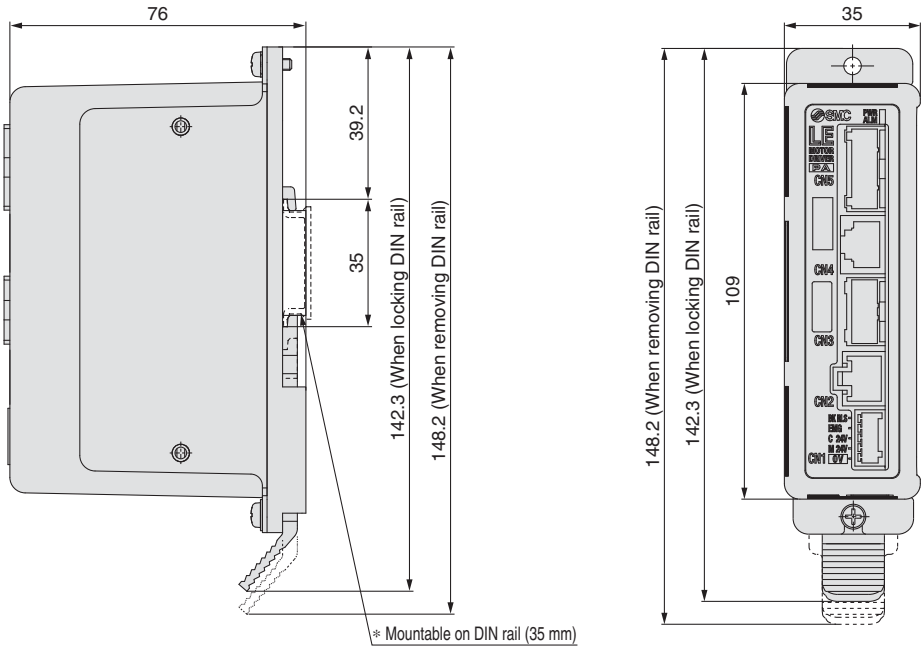
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterward.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



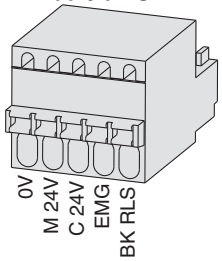
Wiring Example 1

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 (–)	M 24V terminal/C 24V terminal/EMG terminal/BK RLS terminal are common (–).
M 24V	Motor power supply (+)	Motor power supply (+) supplied to the driver
C 24V	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



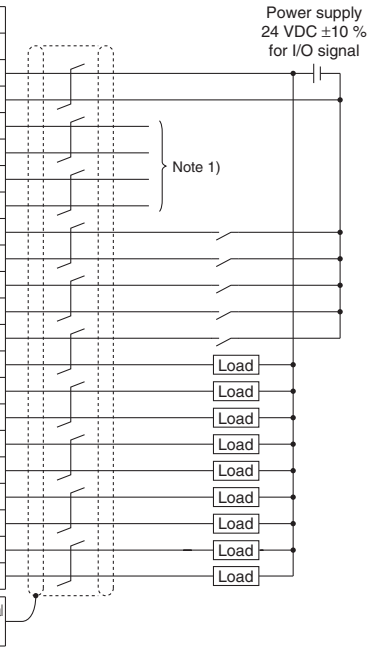
Wiring Example 2

Parallel I/O Connector: CN5

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

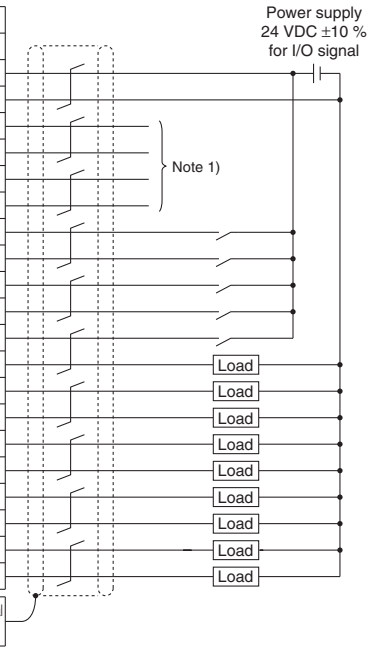
LECPAN□□-□ (NPN)

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

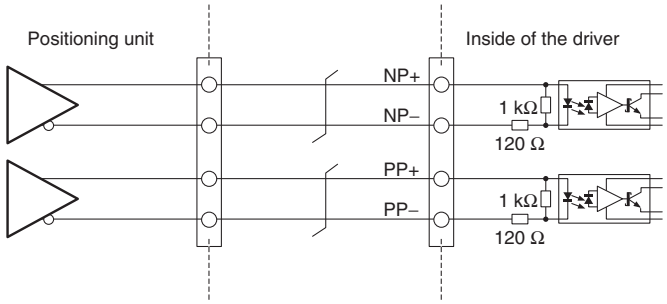
Output Signal

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

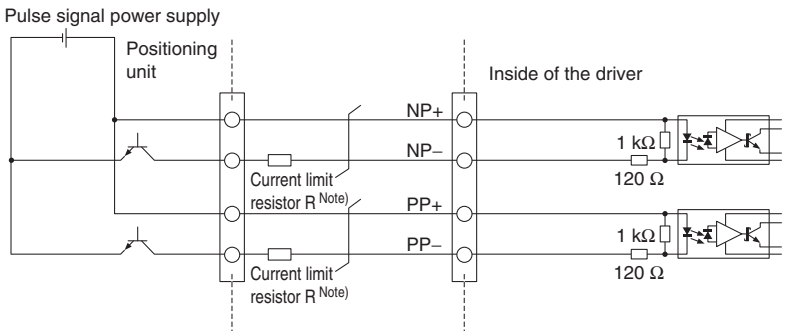
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

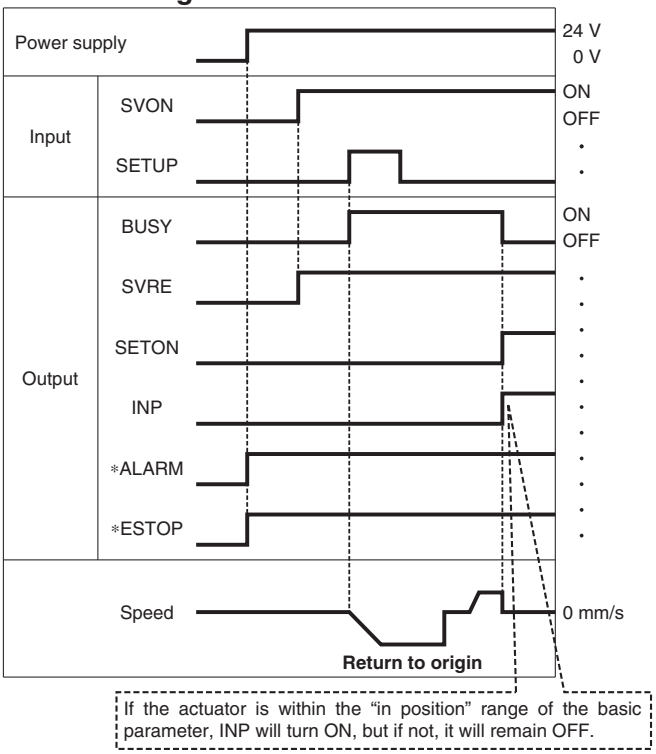


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

Pulse signal power supply voltage	Current limit resistor R specifications	Current limit resistor part no.
24 VDC ±10 %	3.3 kΩ ±5 % (0.5 W or more)	LEC-PA-R-332
5 VDC ±5 %	390 Ω ±5 % (0.1 W or more)	LEC-PA-R-391

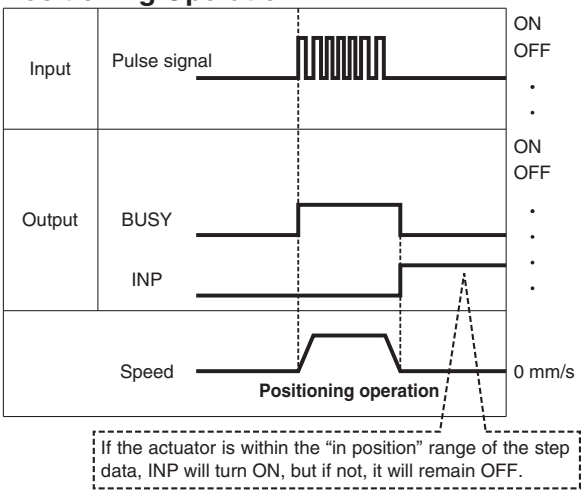
Signal Timing

Return to Origin

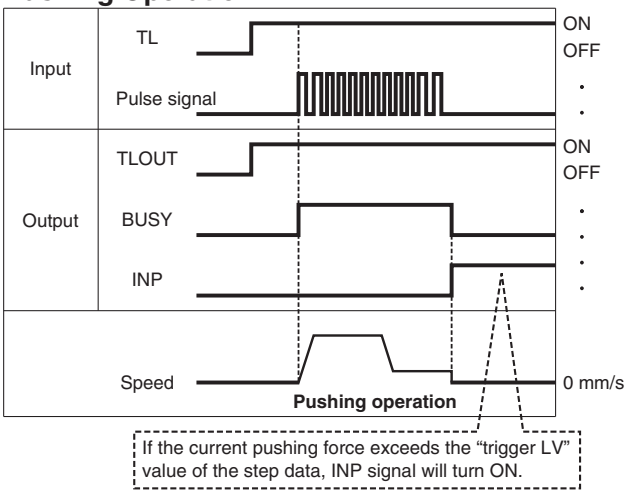


∗ “∗ALARM” and “∗ESTOP” are expressed as negative-logic circuit.

Positioning Operation

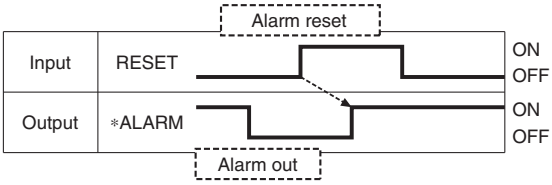


Pushing Operation



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

LE – CP – 1 – ☐

Cable length (L) [m]

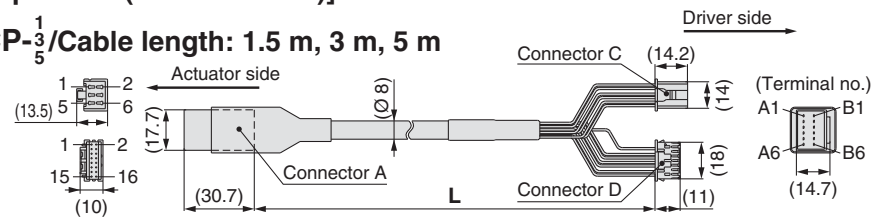
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

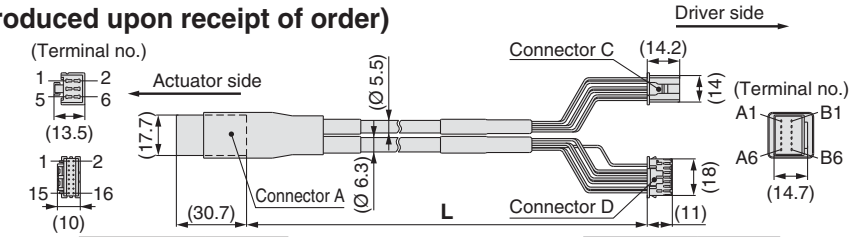
—	Robotic cable (Flexible cable)
S	Standard cable

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)



Signal	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			
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

	Connector D terminal no.
Cable colour	

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

LE – CP – 1 – B – ☐

Cable length (L) [m]

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

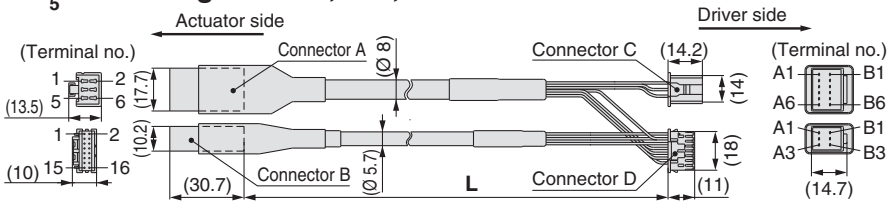
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

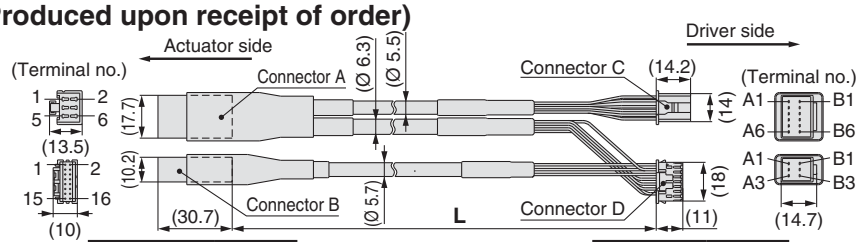
—	Robotic cable (Flexible cable)
S	Standard cable

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)



Signal	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			
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

	Connector D terminal no.
Cable colour	

Signal	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

Options

[I/O cable]

LEC-C L5-1

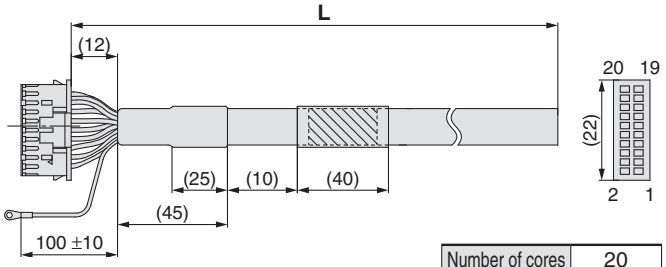
I/O cable type

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

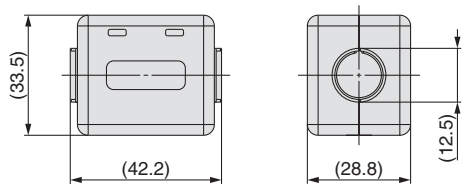
Pin no.	Insulation colour	Dot mark	Dot colour
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Grey	■■	Black
18	Grey	■■	Red
19	White	■■	Black
20	White	■■	Red

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.

[Current limit resistor]

This optional resistor (LEC-PA-R-□) is used when the pulse signal output of the positioning unit is open collector output.

LEC-PA-R-□

Current limit resistor

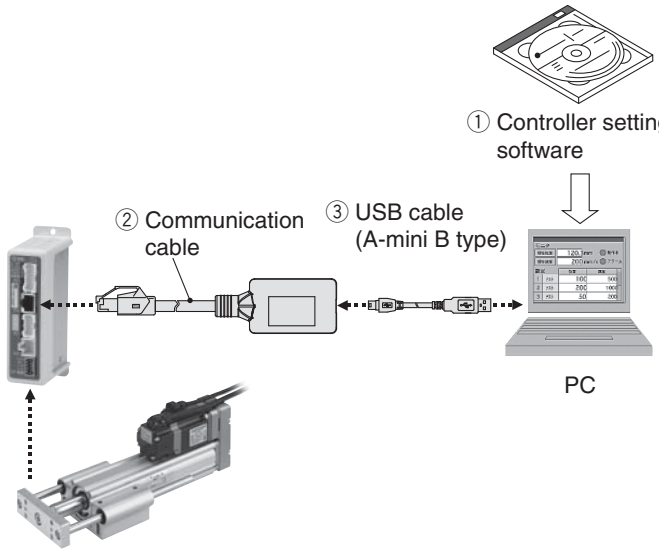
Symbol	Resistance	Pulse signal power supply voltage
332	3.3 kΩ ±5 %	24 VDC ±10 %
391	390 Ω ±5 %	5 VDC ±5 %

* Select a current limit resistor that corresponds to the pulse signal power supply voltage.
* For the LEC-PA-R-□, two pieces are shipped as a set.

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

	Description	Model*
①	Controller setting software (CD-ROM)	LEC-W2-S
②	Communication cable	LEC-W2-C
③	USB cable (between the PC and the communication cable)	LEC-W2-U

* Can be ordered separately.

Compatible Controller/Driver

Step data input type — ***Series LECP6/Series LECA6***

Pulse input type — ***Series LECPA***

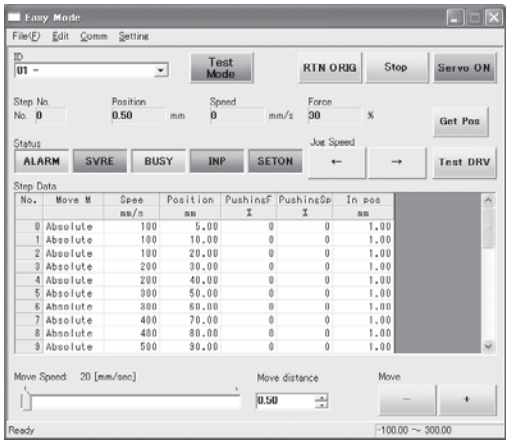
Hardware Requirements

OS	IBM PC/AT compatible machine running Windows®XP (32-bit), Windows®7 (32-bit and 64-bit), Windows®8.1 (32-bit and 64-bit).
Communication interface	USB 1.1 or USB 2.0 ports
Display	XGA (1024 x 768) or more

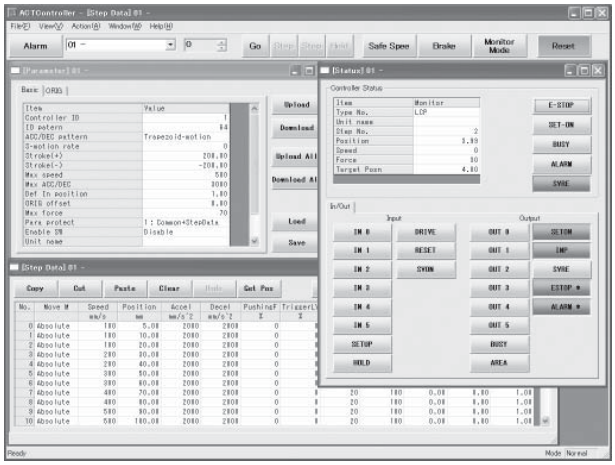
* Windows®XP, Windows®7 and Windows®8.1 are registered trademarks of Microsoft Corporation in the United States.
* Refer to SMC website for version upgrade information, http://www.smc.eu

Screen Example

Easy mode screen example



Normal 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.

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
Reconnect (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

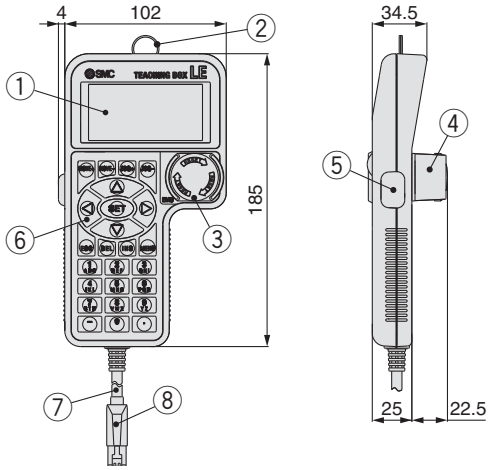
- **File**
  - Data saving
  - Load to driver
  - File deletion
  - File protection (Ver. 2.**)

- **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 compatible with LECPA with TB Ver. 2.10 or newer.
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

Step Motor Controller

5 types of communication protocols

New IO-Link　EtherCAT　PROFINET　DeviceNet™　EtherNet/IP™

Application

Communication protocol

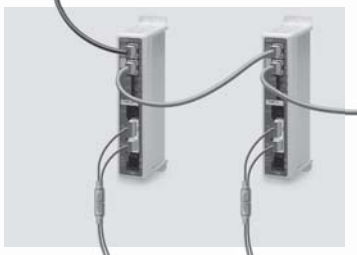
EtherCAT　EtherNet/IP™　PROFINET　DeviceNet™　IO-Link

PLC

Both air and electric systems can be established under the same protocol.

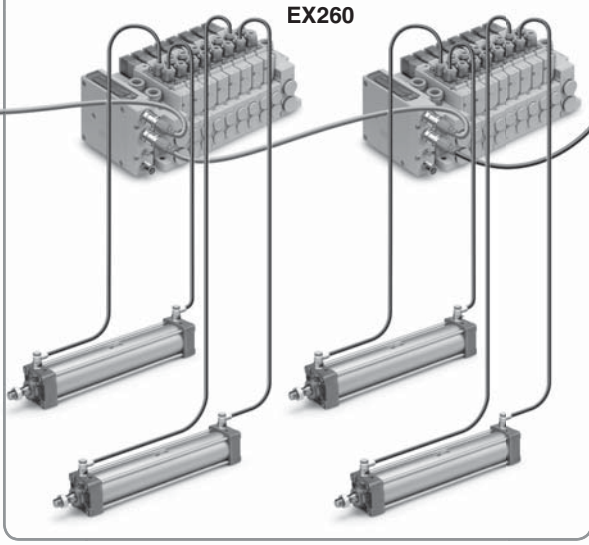
Can be additionally installed in an existing network

Electric Actuators



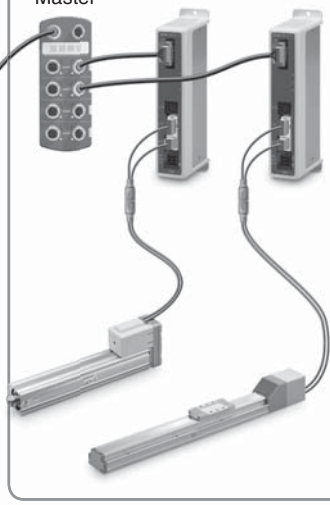
Air Cylinders

EX260

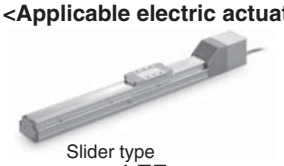


IO-Link Communication

IO-Link Master



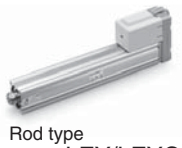
<Applicable electric actuators>



Slider type
Series LEF

Low-profile slider type
Series LEM

Guide rod slider
Series LEL



Rod type
Series LEY/LEYG

Slide table
Series LES/LESH

Miniature type
Series LEPY/LEPS

Gripper
Series LEH

Rotary table
Series LER

Series JXCE1/91/P1/D1/L1

Two types of operation command

Step no. defined operation: Operate using the preset step data in the controller.
Numerical data defined operation: The actuator operates using values such as position and speed from the PLC.

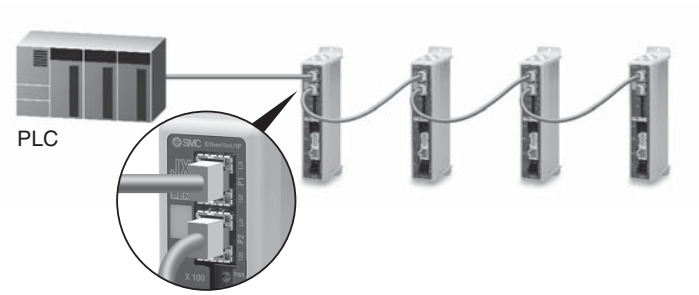
Numerical monitoring available

Numerical information, such as the current speed, current position, and alarm codes, can be monitored on the PLC.

Transition wiring of communication cables

Two communication ports are provided.

* For the DeviceNet™ type, transition wiring is possible using a branch connector.
* 1 to 1 in the case of IO-Link

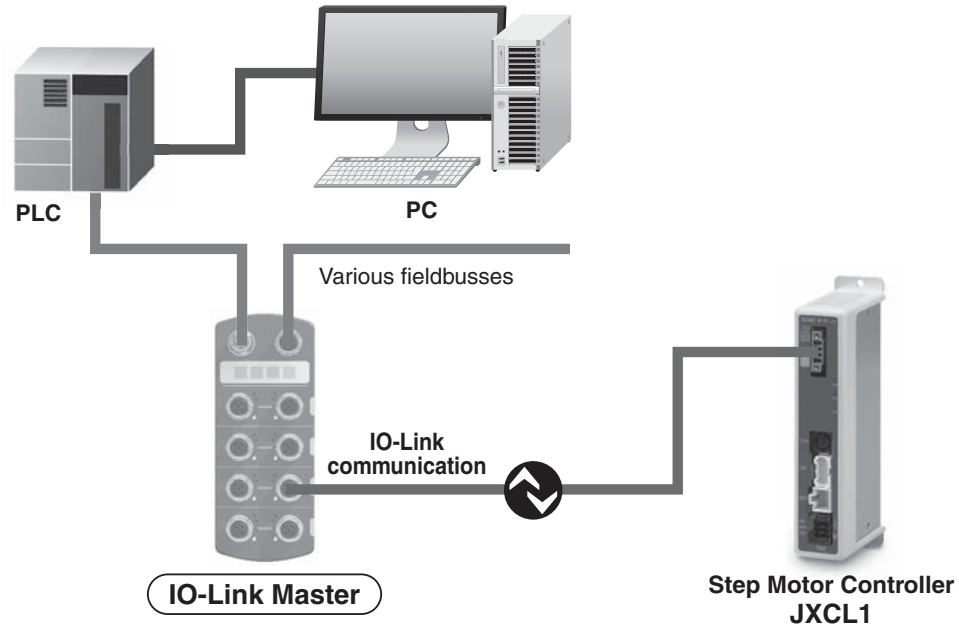


IO-Link communication can be performed.

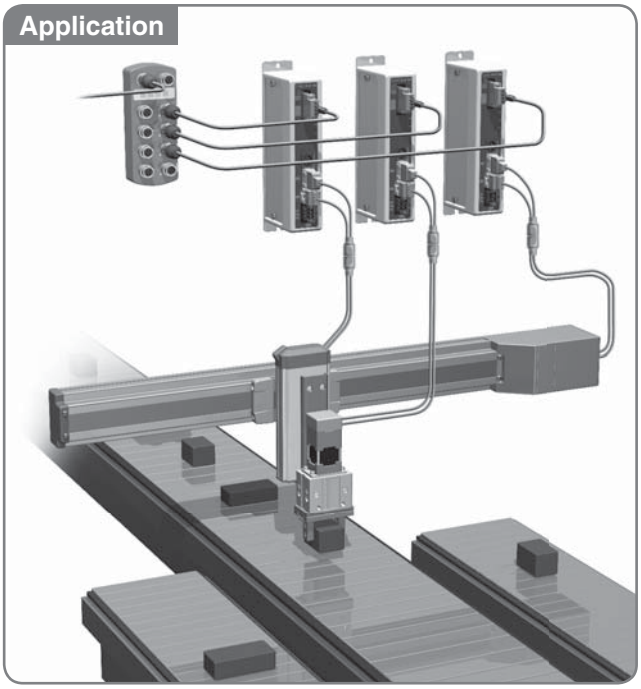
The data storage function eliminates the need for troublesome resetting of step data and parameters when changing over the controller.

IO-Link

IO-Link is an open communication interface technology between the sensor/actuator and the I/O terminal that is an international standard, IEC61131-9.



Application



● Step data and parameters can be set from the master side.

Step data and parameters can be set or changed by means of IO-Link communication.

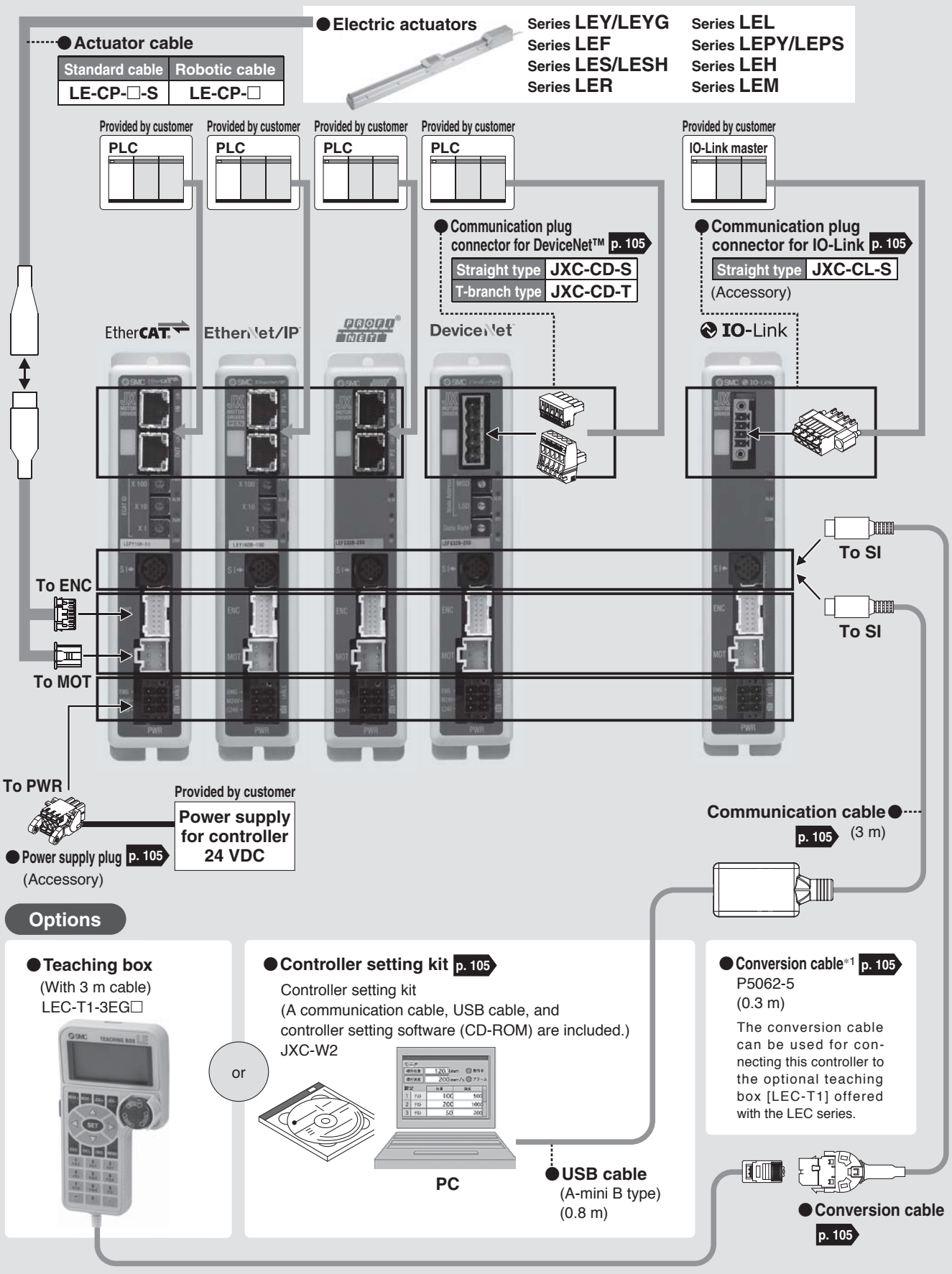
● Data storage function

When the controller is changed, the parameters and step data for the actuator are automatically set.*1

● 4-wire unshielded cables can be used.

*1 The “basic parameter” and the “return to origin parameter” are automatically set as the actuator parameters, and the 3 items of data consisting of No. 0 to 2 are automatically set as the step data.

System Construction



Options

Teaching box
(With 3 m cable)
LEC-T1-3EG□

or

Controller setting kit p. 105
Controller setting kit
(A communication cable, USB cable, and controller setting software (CD-ROM) are included.)
JXC-W2

PC

USB cable
(A-mini B type)
(0.8 m)

Conversion cable*1 p. 105
P5062-5
(0.3 m)
The conversion cable can be used for connecting this controller to the optional teaching box [LEC-T1] offered with the LEC series.

Conversion cable
p. 105

*1 A conversion cable is also required for connecting the controller to the LEC-W2. (A conversion cable is not required for the JXC-W2.)

Step Motor Controller

Series JXCE1/91/P1/D1/L1

How to Order

Actuator + Controller **LEY16B-100 – R1 CD17T**

Actuator type

Refer to "How to Order" in the actuator catalogue available at www.smc.eu.
For compatible actuators, refer to the table below. Example: LEY16B-100B-R1C917

Compatible actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER	
Electric Actuator/Guide Rod Slider Series LEL	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper Series LEH	
Electric Actuator/Low-Profile Slider Series LEM	

∗ Only the step motor type is applicable.

Controller

—	Without controller
C□1□□	With controller

C D 1 7 T

Communication protocol

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
D	DeviceNet™
L	IO-Link

For single axis

Mounting

7	Screw mounting
8∗1	DIN rail

∗1 The DIN rail is not included. It must be ordered separately. (Refer to page 105.)

Actuator cable type/length

—	Without cable
S1	Standard cable 1.5 m
S3	Standard cable 3 m
S5	Standard cable 5 m
R1	Robotic cable 1.5 m
R3	Robotic cable 3 m
R5	Robotic cable 5 m
R8	Robotic cable 8 m∗1
RA	Robotic cable 10 m∗1
RB	Robotic cable 15 m∗1
RC	Robotic cable 20 m∗1

∗1 Produced upon receipt of order (Robotic cable only)
∗ The standard cable should only be used on fixed parts. For use on moving parts, select the robotic cable.

Option

—	Without option
S	With straight type DeviceNet™ communication plug for JXCD1
T	With T-branch type DeviceNet™ communication plug for JXCD1

∗ Select "—" for anything other than JXCD1.

⚠Caution
[CE-compliant products]
EMC compliance was tested by combining the electric actuator LE series and the JXCE1/91/P1/D1/L1 series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with 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 compliance with the EMC directive for the machinery and equipment as a whole.

When selecting an electric actuator, refer to the model selection chart of each actuator. Also, for the "Speed–Work Load" graph of the actuator, refer to the LECP6 section on the model selection page of the electric actuators **Web Catalogue**.

Controller **JXC D 1 7 T – LEY16B-100**

Precautions for blank controllers (JXC□1□□-BC)
A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. Use the dedicated software (JXC-BCW) for data writing.
- Please download the dedicated software (JXC-BCW) via our website.
- Order the controller setting kit (LEC-W 2) separately to use this software.

SMC website
http://www.smc.eu

Communication protocol

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
D	DeviceNet™
L	IO-Link

For single axis

Mounting

7	Screw mounting
8∗1	DIN rail

∗1 The DIN rail is not included. It must be ordered separately. (Refer to page 105.)

Actuator part number

Without cable specifi cations and actuator options
Example: Enter "**LEY16B-100**" for the LEY16B-100B-S1□□.

BC	Blank controller∗1

∗1 Requires dedicated software (JXC-BCW)

Option

—	Without option
S	With straight type DeviceNet™ communication plug for JXCD1
T	With T-branch type DeviceNet™ communication plug for JXCD1

∗ Select "—" for anything other than JXCD1.

When selecting an electric actuator, refer to the model selection chart of each actuator. Also, for the "Speed–Work Load" graph of the actuator, refer to the LECP6 section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

Model			JXCE1	JXC91	JXCP1	JXCD1	JXCL1
Network			EtherCAT®	EtherNet/IP™	PROFINET	DeviceNet™	IO-Link
Compatible motor			Step motor (Servo/24 VDC)				
Power supply			Power voltage: 24 VDC ±10 %				
Current consumption (Controller)			200 mA or less	130 mA or less	200 mA or less	100 mA or less	100 mA or less
Compatible encoder			Incremental A/B phase (800 pulse/rotation)				
Communication specifications	Applicable system	**Protocol**	EtherCAT®*2	EtherNet/IP™*2	PROFINET*2	DeviceNet™	IO-Link
		Version*1	Conformance Test Record V.1.2.6	Volume 1 (Edition 3.14) Volume 2 (Edition 1.15)	Specification Version 2.32	Volume 1 (Edition 3.14) Volume 3 (Edition 1.13)	Version 1.1 Port Class A
	Communication speed		100 Mbps*2	10/100 Mbps*2 (Automatic negotiation)	100 Mbps*2	125/250/500 kbps	230.4 kbps (COM3)
	Configuration file*3		ESI file	EDS file	GSDML file	EDS file	IODD file
	I/O occupation area		Input 20 bytes Output 36 bytes	Input 36 bytes Output 36 bytes	Input 36 bytes Output 36 bytes	Input 4, 10, 20 bytes Output 4, 12, 20, 36 bytes	Input 14 bytes Output 22 bytes
	Terminating resistor		Not included				
Memory			EEPROM				
LED indicator			PWR, RUN, ALM, ERR	PWR, ALM, MS, NS	PWR, ALM, SF, BF	PWR, ALM, MS, NS	PWR, ALM, COM
Cable length [m]			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)				
Insulation resistance [MΩ]			Between all external terminals and the case 50 (500 VDC)				
Weight [g]			220 (Screw mounting) 240 (DIN rail mounting)	210 (Screw mounting) 230 (DIN rail mounting)	220 (Screw mounting) 240 (DIN rail mounting)	210 (Screw mounting) 230 (DIN rail mounting)	190 (Screw mounting) 210 (DIN rail mounting)

*1 Please note that versions are subject to change.
*2 Use a shielded communication cable with CAT5 or higher for the PROFINET, EtherNet/IP™, and EtherCAT®.
*3 The files can be downloaded from the SMC website: http://www.smc.eu

■Trademark
EtherNet/IP™ is a trademark of ODVA.
DeviceNet™ is a trademark of ODVA.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Example of Operation Command

In addition to the step data input of 64 points maximum in each communication protocol, the changing of each parameter can be performed in real time via numerical data defined operation.
* Numerical values other than “Moving force,” “Area 1,” and “Area 2” can be used to perform operation under numerical instructions from JXCL1.

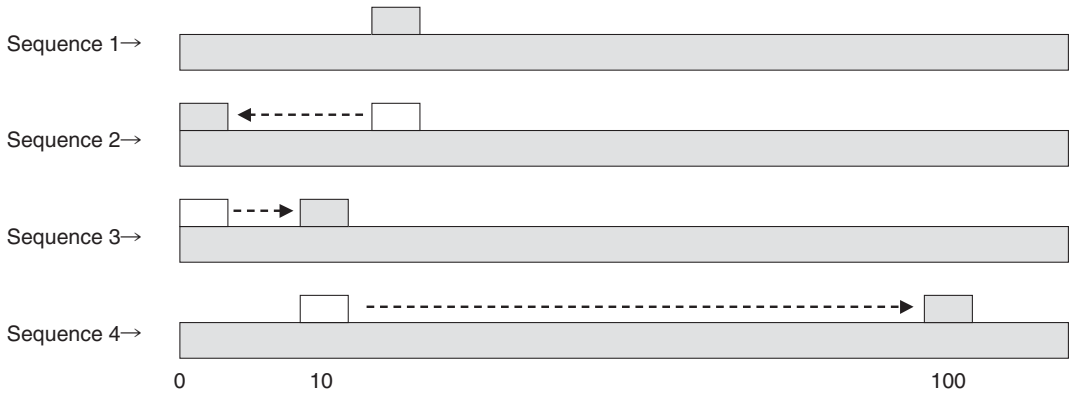
<Application example> Movement between 2 points

No.	Movement mode	Speed	Position	Acceleration	Deceleration	Pushing force	Trigger LV	Pushing speed	Moving force	Area 1	Area 2	In position
0	1: Absolute	100	10	3000	3000	0	0	0	100	0	0	0.50
1	1: Absolute	100	100	3000	3000	0	0	0	100	0	0	0.50

<Step no. defined operation>
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 to input the DRIVE signal.
Sequence 4: Specify step data No. 1 after the DRIVE signal has been temporarily turned OFF to input the DRIVE signal.

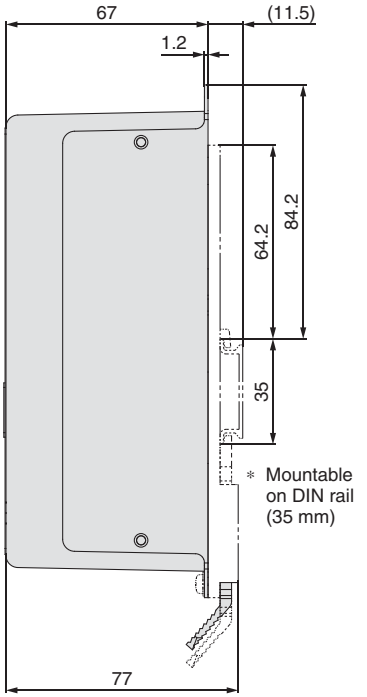
<Numerical data defined operation>
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 and turn ON the input instruction flag (position). Input 10 in the target position. Subsequently the start flag turns ON.
Sequence 4: Turn ON step data No. 0 and the input instruction flag (position) to change the target position to 100 while the start flag is ON.

The same operation can be performed with any operation command.

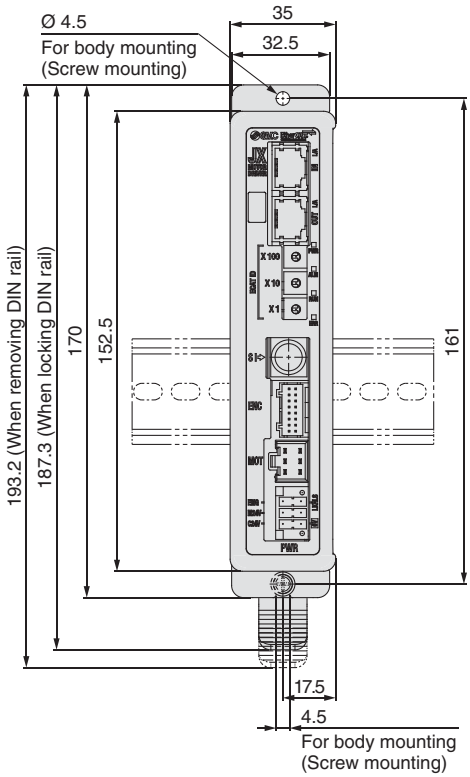


Dimensions

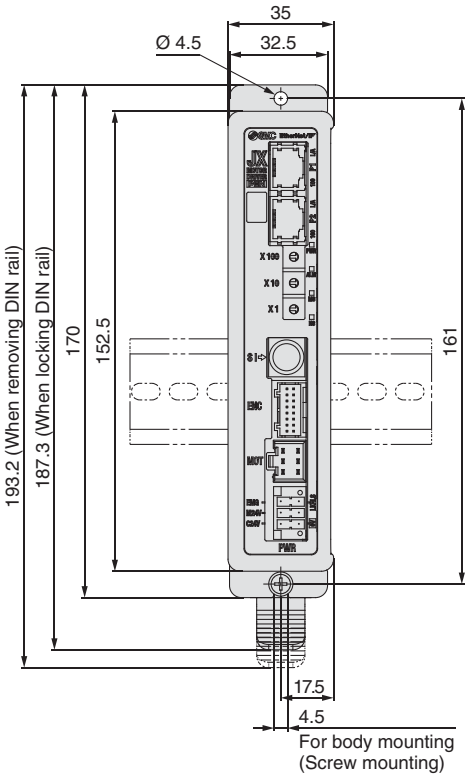
JXCE1/JXC91



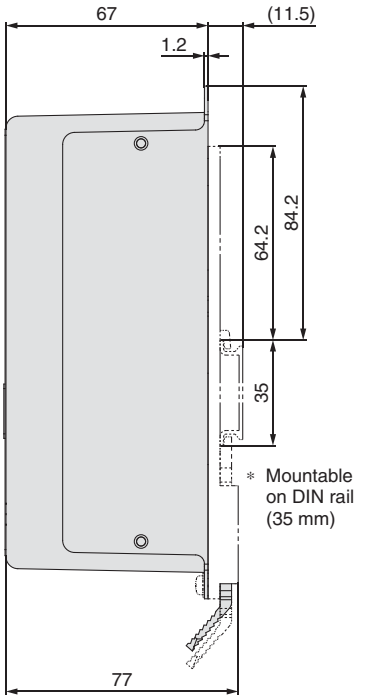
JXCE1



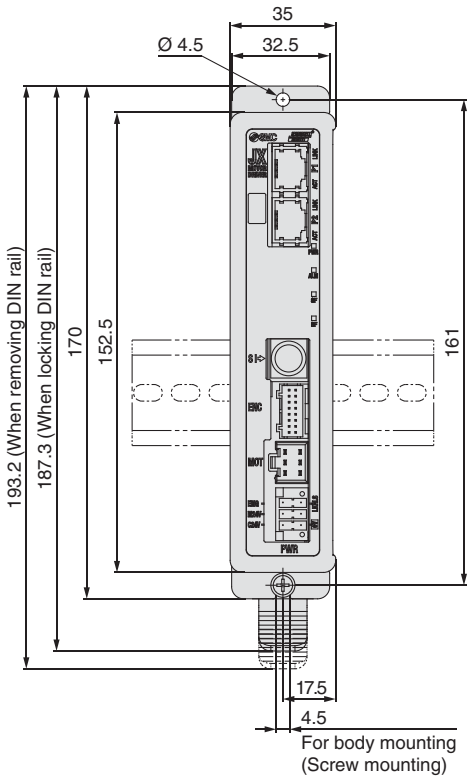
JXC91



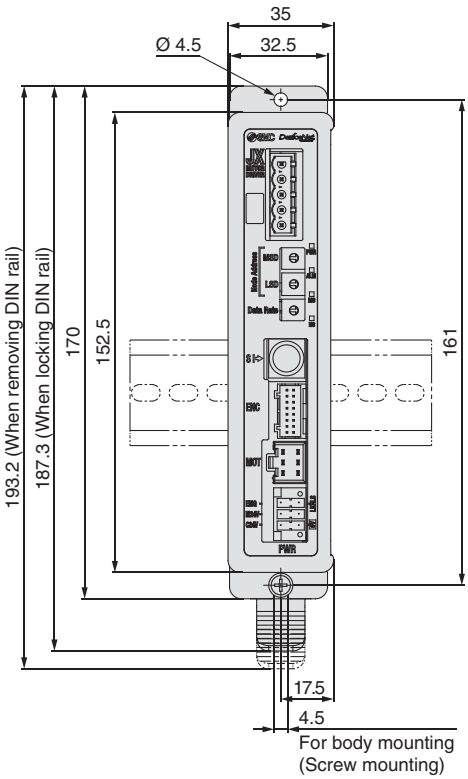
JXCP1/JXCD1



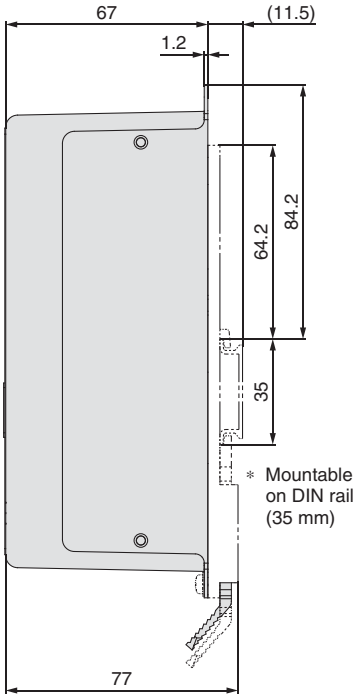
JXCP1



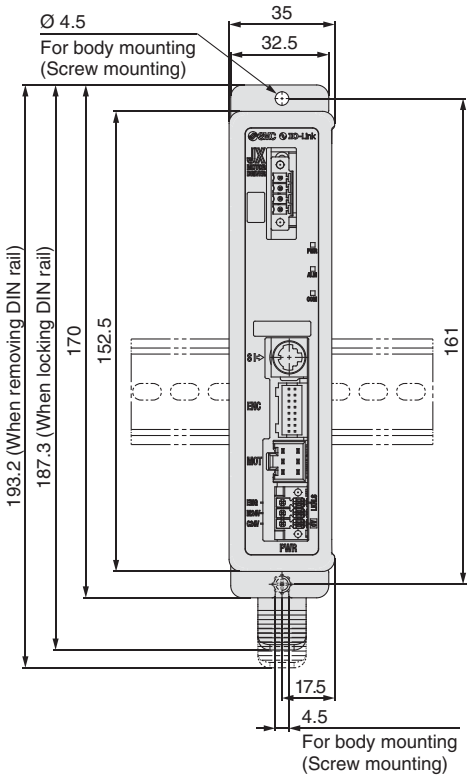
JXCD1



Dimensions

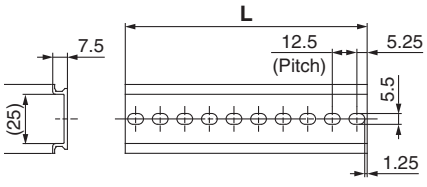


JXCL1



DIN rail
AXT100-DR-□

* For □, enter a number from the "No." line in the table below.



L Dimensions [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

Options

■ Controller setting kit JXC-W2

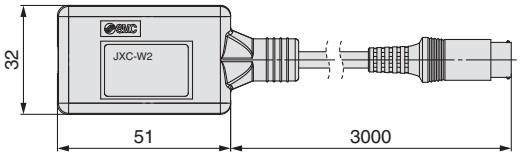
[Contents]
① Communication cable
② USB cable
③ Controller setting software
∗ A conversion cable (P5062-5) is not required.

JXC − W2 − □

Contents

—	A kit includes: Communication cable, USB cable, Controller setting software
C	Communication cable
U	USB cable
S	Controller setting software (CD-ROM)

① Communication cable JXC-W2-C

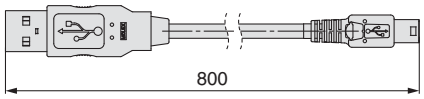


∗ It can be connected to the controller directly.

② USB cable JXC-W2-U

③ Controller setting software JXC-W2-S

∗ CD-ROM



■ DIN rail mounting adapter LEC-3-D0

∗ With 2 mounting screws

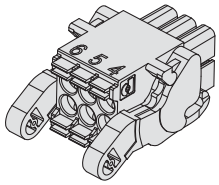
This should be used when a DIN rail mounting adapter is mounted onto a screw mounting type controller afterwards.

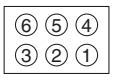
■ DIN rail AXT100-DR-□

∗ For □, enter a number from the No. line in the table on page 104. Refer to the dimension drawings on page 104 for the mounting dimensions.

■ Power supply plug JXC-CPW

∗ The power supply plug is an accessory.





① C24V ④ 0V
② M24V ⑤ N.C.
③ EMG ⑥ LK RLS

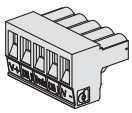
Power supply plug

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/ LK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) of the controller
C24V	Control power supply (+)	Control power supply (+) of the controller
EMG	Stop (+)	Connection terminal of the external stop circuit
LK RLS	Lock release (+)	Connection terminal of the lock release switch

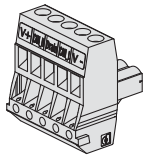
■ Communication plug connector

For DeviceNet™

Straight type
JXC-CD-S



T-branch type
JXC-CD-T

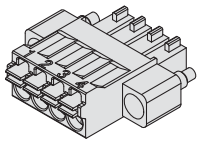


Communication plug connector for DeviceNet™

Terminal name	Details
V+	Power supply (+) for DeviceNet™
CAN_H	Communication wire (High)
Drain	Grounding wire/Shielded wire
CAN_L	Communication wire (Low)
V–	Power supply (–) for DeviceNet™

For IO-Link

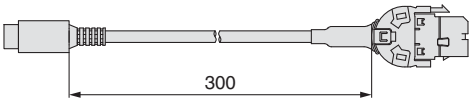
Straight type
JXC-CL-S



Communication plug connector for IO-Link

Terminal no.	Terminal name	Details
1	L+	+24 V
2	NC	N/A
3	L–	0 V
4	C/Q	IO-Link signal

■ Conversion cable P5062-5 (Cable length: 300 mm)



∗ To connect the teaching box (LEC-T1-3□G□) or controller setting kit (LEC-W2) to the controller, a conversion cable is required.

Series JXCE1/91/P1/D1
Precautions Related to Differences in Controller Versions

As the controller version of the JXC series differs, the internal parameters are not compatible.

■ Do not use a version V2.0 or S2.0 or higher controller with parameters lower than version V2.0 or S2.0.
Do not use a version V2.0 or S2.0 or lower controller with parameters higher than version V2.0 or S2.0.

■ Please use the latest version of the JXC-BCW (parameter writing tool).

∗ The latest version is Ver. 2.0 (as of December 2017).

Identifying Version Symbols

For versions lower than V2.0 and S2.0:

Do not use with controller parameters higher than V2.0 or S2.0.

VZ V1.8

Applicable models

Series JXC91□

VZ S1.3 T1.0

Applicable models

Series JXCD1□
Series JXCP1□
Series JXCE1□

For versions higher than V2.0 and S2.0:

Do not use with controller parameters lower than V2.0 or S2.0.

VZ V2.0

Applicable models

Series JXC91□

VZ S2.0 T1.0

Applicable models

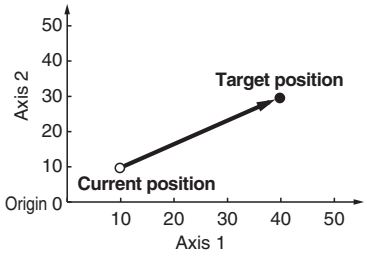
Series JXCD1□
Series JXCP1□
Series JXCE1□

Multi-Axis Step Motor Controller

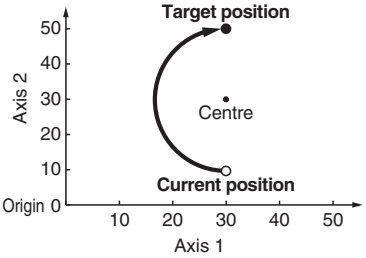
CE RoHS

- **Speed tuning control** *1
  (3 Axes: JXC92 4 Axes: JXC73/83/93)
- **Linear/circular interpolation**

Linear interpolation



Circular interpolation



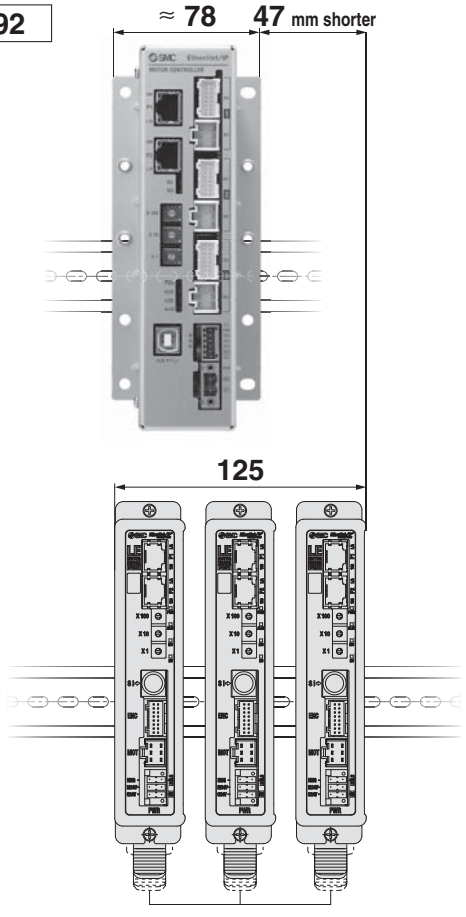
- **Positioning/pushing operation**
- **Step data input (Max. 2048 points)**
- **Space saving, reduced wiring**
- **Absolute/relative position coordinate instructions**

*1 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.

For 3 Axes *Series JXC92*

- **EtherNet/IP™ Type**
- **Width: Approx. 38 % reduction**

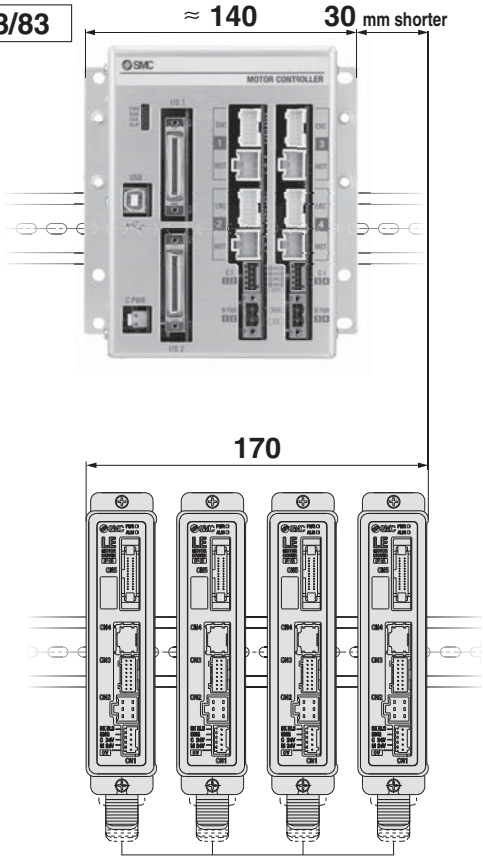
JXC92



For 4 Axes *Series JXC73/83/93*

- **Parallel I/O/ EtherNet/IP™ Type**
- **Width: Approx. 18 % reduction**

JXC73/83



* For LE□, size 25 or larger

Step Data Input: Max. 2048 points

For 3 Axes

3-axis operation can be set collectively in one step.

Step	Axis	Movement mode	Speed	Position	Acceleration	Deceleration	Pushing force	Trigger LV	Pushing speed	Moving force	Area 1	Area 2	In position	Comments
			mm/s	mm	mm/s²	mm/s²					mm	mm	mm	
0	Axis 1	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
	Axis 2	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
	Axis 3	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
1	Axis 1	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
	Axis 2	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
	Axis 3	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	
2046	Axis 1	SYN-I	500	100.00	3000	3000	0	0	0	100.0	0	0	0.5	
	Axis 2	SYN-I	0	0.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 3	SYN-I	0	0.00	0	0	0	0	0	100.0	0	0	0.5	
2047	Axis 1	CIR-R	500	0.00	3000	3000	0	0	0	100.0	0	0	0.5	
	Axis 2	CIR-R	0	50.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 3 ∗1		0	0.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 4 ∗1		0	25.00	0	0	0	0	0	100.0	0	0	0.5	

∗1 When circular interpolation (CIR-R, CIR-L, CIR-3) is selected in the movement mode, input the X and Y coordinates in the rotation centre position or input the X and Y coordinates in the passing position.

Movement mode	Pushing operation	Details
Blank	×	Invalid data (Invalid process)
ABS	○	Moves to the absolute coordinate position based on the origin of the actuator
INC	○	Moves to the relative coordinate position based on the current position
LIN-A	×	Moves to the absolute coordinate position based on the origin of the actuator by linear interpolation
LIN-I	×	Moves to the relative coordinate position based on the current position by linear interpolation
CIR-R∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Rotation centre position X Axis 4 ∗1: Rotation centre position Y
CIR-L∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the counter-clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Rotation centre position X Axis 4 ∗1: Rotation centre position Y
SYN-I	×	Moves to the relative coordinate position based on the current position by speed tuning control ∗3
CIR-3∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves based on the three specified points by circular interpolation. The target position and passing position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Passing position X Axis 4 ∗1: Passing position Y

∗2 Performs a circular operation on a plane using Axis 1 and Axis 2

∗3 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.

For 4 Axes

4-axis operation can be set collectively in one step.

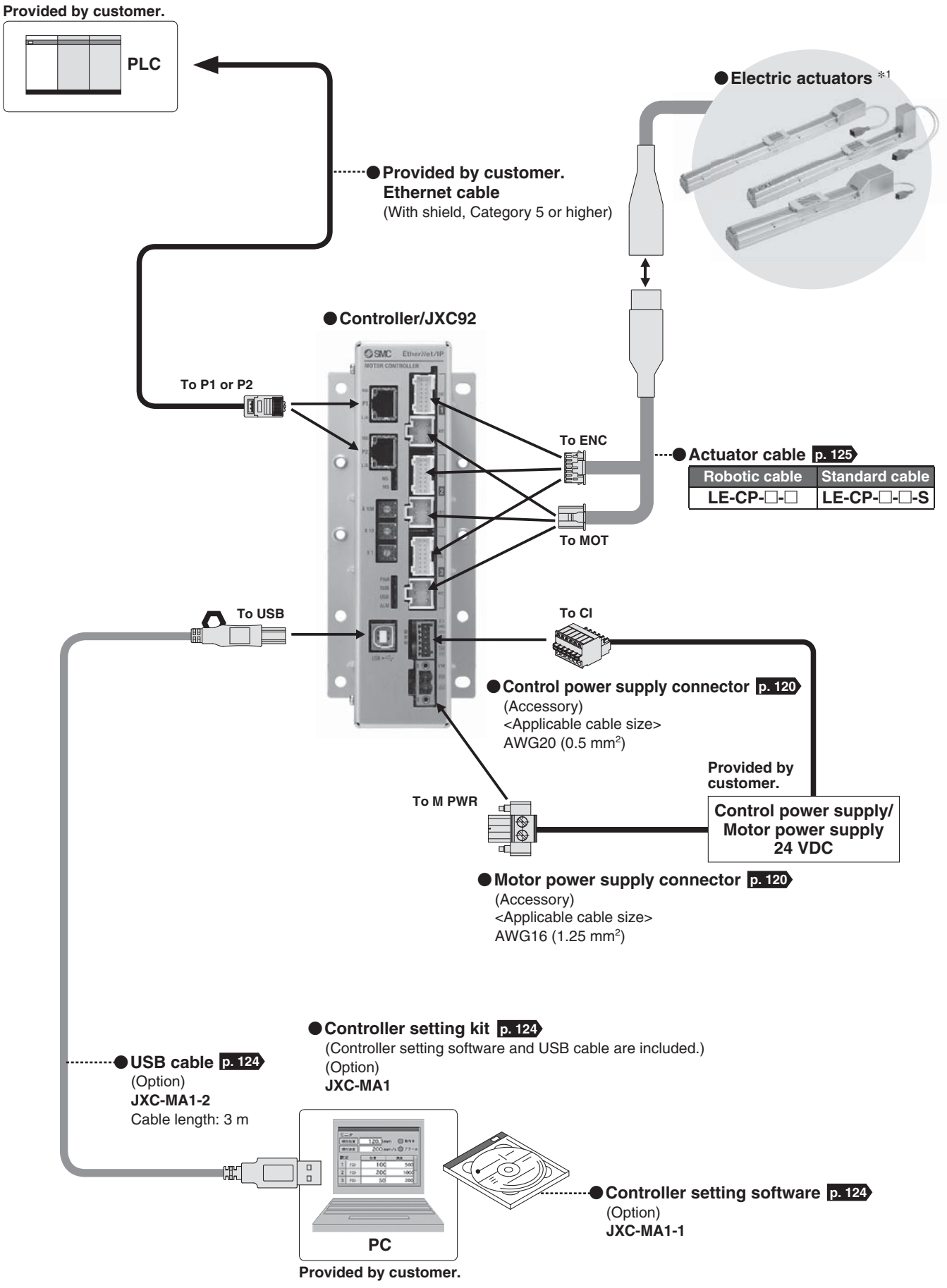
Step	Axis	Movement mode	Speed	Position	Acceleration	Deceleration	Positioning/ Pushing	Area 1	Area 2	In position	Comments
			mm/s	mm	mm/s²	mm/s²		mm	mm	mm	
0	Axis 1	ABS	100	200.00	1000	1000	0	6.0	12.0	0.5	
	Axis 2	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	Axis 3	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	Axis 4	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
1	Axis 1	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 2	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 3	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 4	INC	500	250.00	1000	1000	1	0	0	20.0	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
2046	Axis 4	ABS	200	700	500	500	0	0	0	0.5	
2047	Axis 1	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 2	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 3	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 4	ABS	500	0.00	3000	3000	0	0	0	0.5	

Movement mode	Pushing operation	Details
Blank	×	Invalid data (Invalid process)
ABS	○	Moves to the absolute coordinate position based on the origin of the actuator
INC	○	Moves to the relative coordinate position based on the current position
LIN-A	×	Moves to the absolute coordinate position based on the origin of the actuator by linear interpolation
LIN-I	×	Moves to the relative coordinate position based on the current position by linear interpolation
CIR-R*1	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3: Rotation centre position X Axis 4: Rotation centre position Y
CIR-L*1	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the counter-clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3: Rotation centre position X Axis 4: Rotation centre position Y
SYN-I	×	Moves to the relative coordinate position based on the current position by speed tuning control *2

*1 Performs a circular operation on a plane using Axis 1 and Axis 2

*2 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.

For 3 Axes System Construction/EtherNet/IP™ Type (JXC92)



*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 114.)

For 4 Axes System Construction/Parallel I/O (JXC73/83)

Provided by customer.

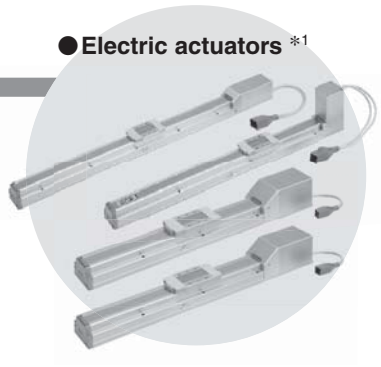
PLC

Power supply for I/O signal
24 VDC

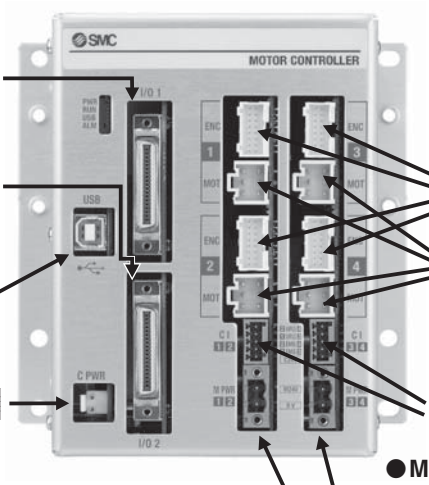
● I/O cable p. 123
(Option)

Part no.
JXC-C2-□

● Electric actuators *1



● Controller/JXC73/83



To I/O

To ENC

To MOT

● Actuator cable p. 125

Robotic cable	Standard cable
LE-CP-□-□	LE-CP-□-□-S

To USB

To C PWR

To CI

● Motor control power supply connector p. 120
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

● Cable with main control power supply connector p. 123
Cable length: 1.5 m (Accessory)

Part no.
JXC-C1

Provided by customer.
Motor control power supply/
Motor power supply
24 VDC

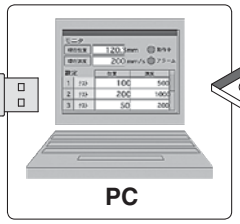
To M PWR

Provided by customer.
Main control power supply
24 VDC

● Motor power supply connector p. 120
(Accessory)
<Applicable cable size>
AWG16 (1.25 mm²)

● Controller setting kit p. 124
(Controller setting software and USB cable are included.)
(Option)
JXC-W1

● USB cable p. 124
(Option)
JXC-W1-2
Cable length: 3 m



PC

Provided by customer.

● Controller setting software p. 124
(Option)
JXC-W1-1

*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 116.)

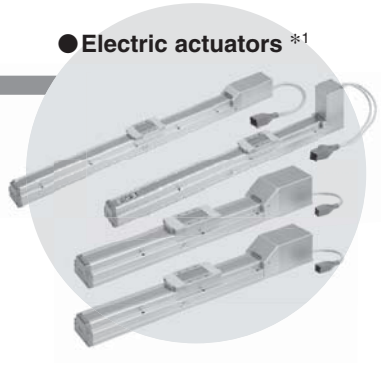
For 4 Axes System Construction/EtherNet/IP™ Type (JXC93)

Provided by customer.

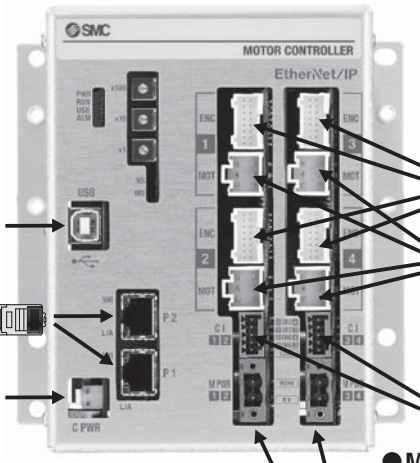
PLC

●Provided by customer.
Ethernet cable
(With shield, Category 5 or higher)

●Electric actuators *1



●Controller/JXC93



●Actuator cable p. 125

Robotic cable	Standard cable
LE-CP-□-□	LE-CP-□-□-S

●Cable with main control power supply connector p. 123
Cable length: 1.5 m (Accessory)

Part no.
JXC-C1

●Motor control power supply connector p. 120
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

Provided by customer.
Main control power supply
24 VDC

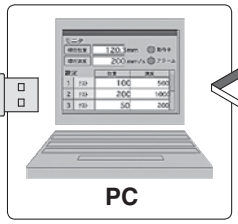
To M PWR

Provided by customer.
Motor control power supply/
Motor power supply
24 VDC

●Motor power supply connector p. 120
(Accessory)
<Applicable cable size>
AWG16 (1.25 mm²)

●Controller setting kit p. 124
(Controller setting software and USB cable are included.)
(Option)
JXC-W1

●USB cable p. 124
(Option)
JXC-W1-2
Cable length: 3 m



PC

Provided by customer.

●Controller setting software p. 124
(Option)
JXC-W1-1

*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 116.)

3-Axis Step Motor Controller
(EtherNet/IP™ Type)
Series JXC92

CE RoHS

How to Order

■ EtherNet/IP™ Type (JXC92)

Controller

JXC 9 2 7

- EtherNet/IP™ type: 9
- 3-axis type: 2
- Mounting: 7

Symbol	Mounting
7	Screw mounting
8	DIN rail

Applicable Actuators

Applicable actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper (2-Finger Type, 3-Finger Type) Series LEH	

∗ Order the actuator separately, including the actuator cable. (Example: LEFS16B-100B-S1)

∗ For the "Speed–Work Load" graph of the actuator, refer to the LECPA section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

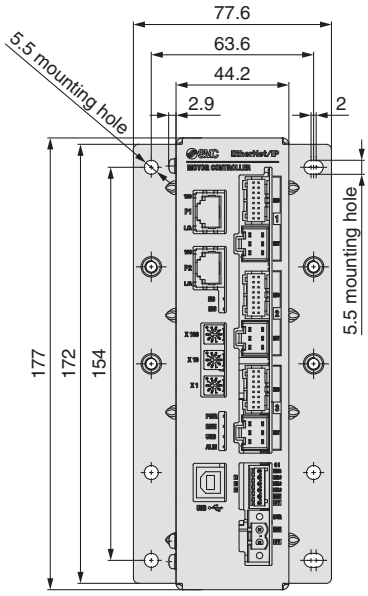
EtherNet/IP™ Type (JXC92)

Item		Specifications
Number of axes		Max. 3 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply ∗1		Control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 500 mA Motor power supply Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator ∗2
Communication	**Protocol**	EtherNet/IP™ ∗3
	Communication speed	10 Mbps/100 Mbps (automatic negotiation)
	Communication method	Full duplex/Half duplex (automatic negotiation)
	Configuration file	EDS file
	Occupied area	Input 16 bytes/Output 16 bytes
	IP address setting range	Manual setting by switches: From 192.168.1.1 to 254, Via DHCP server: Arbitrary address
	Vendor ID	7 h (SMC Corporation)
	Product type	2 Bh (Generic Device)
	Product code	DEh
Serial communication		USB2.0 (Full Speed 12 Mbps)
Memory		Flash-ROM
LED indicator		PWR, RUN, USB, ALM, NS, MS, L/A, 100
Lock control		Forced-lock release terminal ∗4
Cable length		Actuator cable: 20 m or less
Cooling system		Natural air cooling
Operating temperature range		0 °C to 40 °C (No freezing)
Operating humidity range		90 % RH or less (No condensation)
Storage temperature range		-10 °C to 60 °C (No freezing)
Storage humidity range		90 % RH or less (No condensation)
Insulation resistance		Between all external terminals and the case: 50 MΩ (500 VDC)
Weight		600 g (Screw mounting), 650 g (DIN rail mounting)

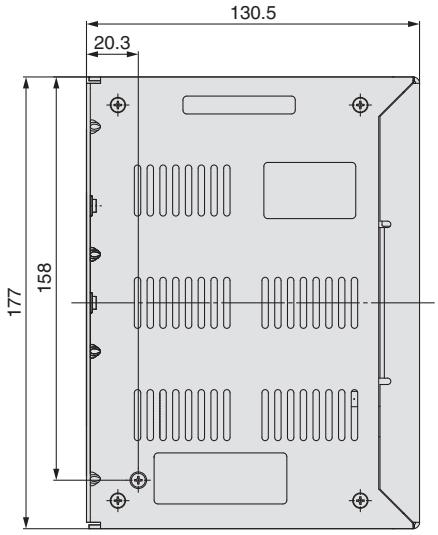
∗1 Do not use a power supply with inrush current protection for the motor drive power supply.
∗2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
∗3 EtherNet/IP™ is a trademark of ODVA.
∗4 Applicable to non-magnetising locks

Dimensions

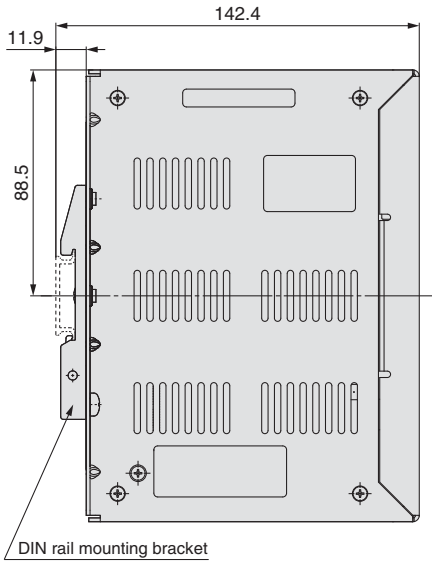
EtherNet/IP™ Type JXC92



Screw mounting

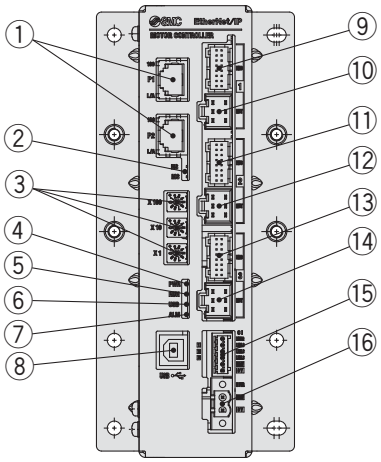


DIN rail mounting



Controller Details

EtherNet/IP™ Type JXC92



No.	Name	Description	Details
①	**P1, P2**	EtherNet/IP™ communication connector	Connect Ethernet cable.
②	**NS, MS**	Communication status LED	Displays the status of the EtherNet/IP™ communication
③	**X100** **X10** **X1**	IP address setting switches	Switch to set the 4th byte of the IP address by X1, X10 and X100.
④	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
⑤	**RUN**	Operation LED (Green)	Running in EtherNet/IP™: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
⑥	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
⑦	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑧	**USB**	Serial communication connector	Connect to a PC via the USB cable.
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑭	**MOT** 3	Motor power connector (6 pins)	
⑮	**CI**	Control power supply connector ∗1	Control power supply (+), All axes stop (+), Axis 1 lock release (+), Axis 2 lock release (+), Axis 3 lock release (+), Common (–)
⑯	**M PWR**	Motor power supply connector ∗1	Motor power supply (+), Motor power supply (–)

∗1 Connectors are included. (Refer to page 120.)

4-Axis Step Motor Controller
(Parallel I/O/EtherNet/IP™ Type)
Series JXC73/83/93

CE RoHS

How to Order

■ **Parallel I/O (JXC73/83)**

Controller

JXC 8 3 2

I/O type

Symbol	I/O type
7	NPN
8	PNP

4-axis type

I/O cable, mounting

Symbol	I/O cable	Mounting
1	1.5 m	Screw mounting
2	1.5 m	DIN rail
3	3 m	Screw mounting
4	3 m	DIN rail
5	5 m	Screw mounting
6	5 m	DIN rail
7	None	Screw mounting
8	None	DIN rail

∗ Two I/O cables are included.

■ **EtherNet/IP™ Type (JXC93)**

Controller

JXC 9 3 8

EtherNet/IP™ type

4-axis type

Mounting

Symbol	Mounting
7	Screw mounting
8	DIN rail

Applicable Actuators

Applicable actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER ∗1	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper (2-Finger Type, 3-Finger Type) Series LEH	

∗1 Except the continuous rotation (360°) specification.

∗ Order the actuator separately, including the actuator cable. (Example: LEFS16B-100B-S1)

∗ For the "Speed–Work Load" graph of the actuator, refer to the LECPA section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

Parallel I/O (JXC73/83)

Item	Specifications
Number of axes	Max. 4 axes
Compatible motor	Step motor (Servo/24 VDC)
Compatible encoder	Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply *1	Main control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 300 mA Motor power supply, Motor control power supply (Common) Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator *2
Parallel input	16 inputs (Photo-coupler isolation)
Parallel output	32 outputs (Photo-coupler isolation)
Serial communication	USB2.0 (Full Speed 12 Mbps)
Memory	Flash-ROM/EEPROM
LED indicator	PWR, RUN, USB, ALM
Lock control	Forced-lock release terminal *3
Cable length	I/O cable: 5 m or less, Actuator cable: 20 m or less
Cooling system	Natural air cooling
Operating temperature range	0 °C to 40 °C (No freezing)
Operating humidity range	90 % RH or less (No condensation)
Storage temperature range	-10 °C to 60 °C (No freezing)
Storage humidity range	90 % RH or less (No condensation)
Insulation resistance	Between all external terminals and the case: 50 MΩ (500 VDC)
Weight	1050 g (Screw mounting), 1100 g (DIN rail mounting)

*1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
*2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
*3 Applicable to non-magnetising locks

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

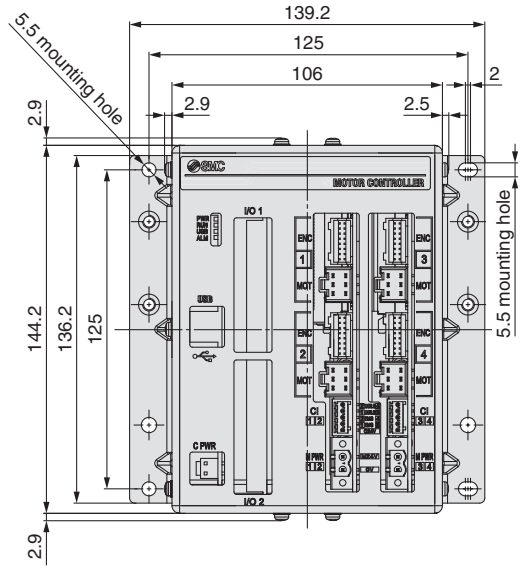
EtherNet/IP™ Type (JXC93)

Item		Specifications
Number of axes		Max. 4 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply *1		Main control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 350 mA Motor power supply, Motor control power supply (Common) Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator *2
Communication	**Protocol**	EtherNet/IP™ *4
	Communication speed	10 Mbps/100 Mbps (automatic negotiation)
	Communication method	Full duplex/Half duplex (automatic negotiation)
	Configuration file	EDS file
	Occupied area	Input 16 bytes/Output 16 bytes
	IP address setting range	Manual setting by switches: From 192.168.1.1 to 254, Via DHCP server: Arbitrary address
	Vendor ID	7 h (SMC Corporation)
	Product type	2 Bh (Generic Device)
	Product code	DCh
Serial communication		USB2.0 (Full Speed 12 Mbps)
Memory		Flash-ROM/EEPROM
LED indicator		PWR, RUN, USB, ALM, NS, MS, L/A, 100
Lock control		Forced-lock release terminal *3
Cable length		Actuator cable: 20 m or less
Cooling system		Natural air cooling
Operating temperature range		0° C to 40 °C (No freezing)
Operating humidity range		90 % RH or less (No condensation)
Storage temperature range		-10 °C to 60 °C (No freezing)
Storage humidity range		90 % RH or less (No condensation)
Insulation resistance		Between all external terminals and the case: 50 MΩ (500 VDC)
Weight		1050 g (Screw mounting), 1100 g (DIN rail mounting)

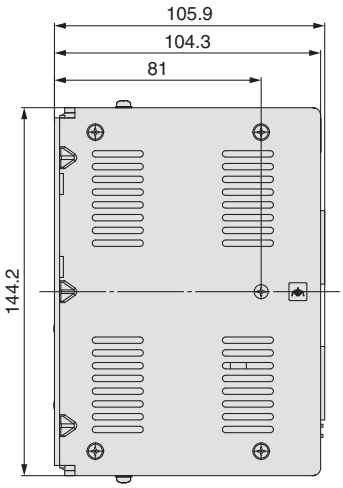
*1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
*2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
*3 Applicable to non-magnetising locks
*4 EtherNet/IP™ is a trademark of ODVA.

Dimensions

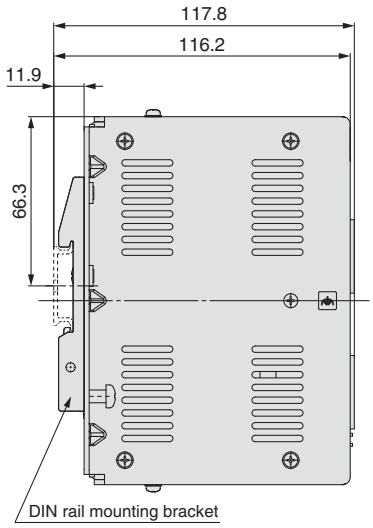
Parallel I/O JXC73/83



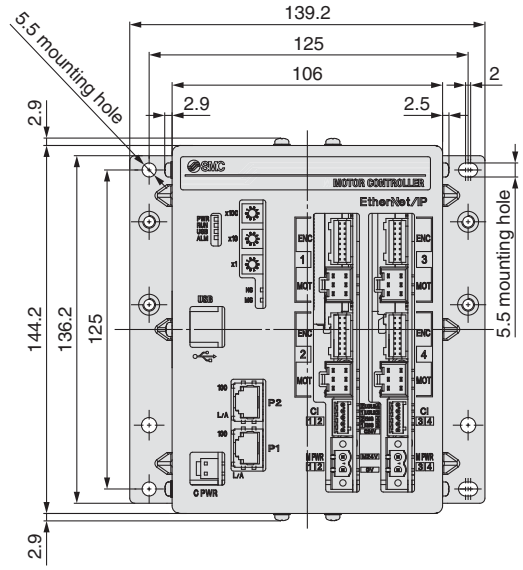
Screw mounting



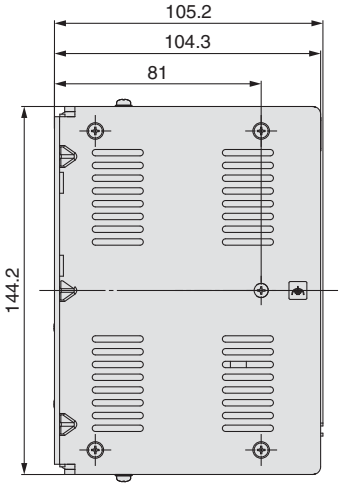
DIN rail mounting



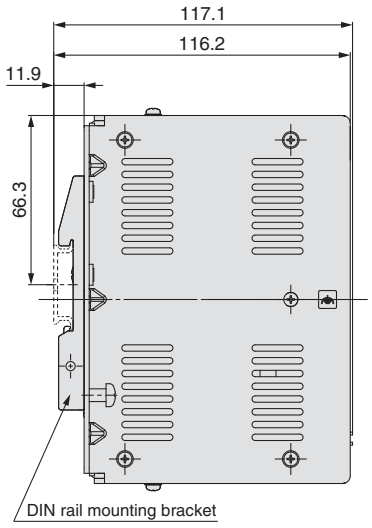
EtherNet/IP™ Type JXC93



Screw mounting

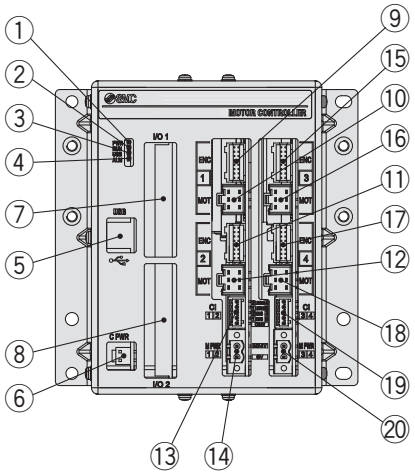


DIN rail mounting



Controller Details

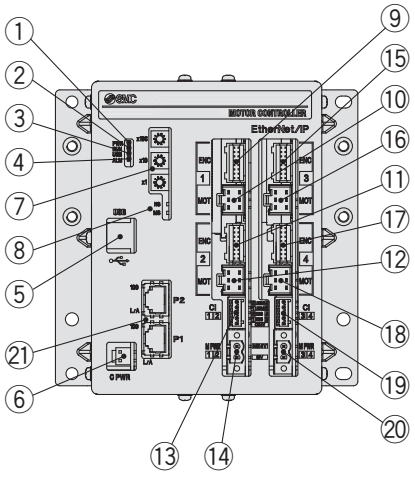
Parallel I/O JXC73/83



No.	Name	Description	Details
①	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
②	**RUN**	Operation LED (Green)	Running in parallel I/O: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
③	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
④	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑤	**USB**	Serial communication	Connect to a PC via the USB cable.
⑥	**C PWR**	Main control power supply connector (2 pins) *1	Main control power supply (+) (–)
⑦	**I/O 1**	Parallel I/O connector (40 pins)	Connect to a PLC via the I/O cable.
⑧	**I/O 2**	Parallel I/O connector (40 pins)	Connect to a PLC via the I/O cable.
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**CI** 1 2	Motor control power supply connector *1	Motor control power supply (+), Axis 1 stop (+), Axis 1 lock release (+), Axis 2 stop (+), Axis 2 lock release (+)
⑭	**M PWR** 1 2	Motor power supply connector *1	For Axis 1, 2. Motor power supply (+), Common (–)
⑮	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑯	**MOT** 3	Motor power connector (6 pins)	
⑰	**ENC** 4	Encoder connector (16 pins)	Axis 4: Connect the actuator cable.
⑱	**MOT** 4	Motor power connector (6 pins)	
⑲	**CI** 3 4	Motor control power supply connector *1	Motor control power supply (+), Axis 3 stop (+), Axis 3 lock release (+), Axis 4 stop (+), Axis 4 lock release (+)
⑳	**M PWR** 3 4	Motor power supply connector *1	For Axis 3, 4. Motor power supply (+), Common (–)

*1 Connectors are included. (Refer to page 120.)

EtherNet/IP™ Type JXC93



No.	Name	Description	Details
①	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
②	**RUN**	Operation LED (Green)	Running in EtherNet/IP™: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
③	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
④	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑤	**USB**	Serial communication	Connect to a PC via the USB cable.
⑥	**C PWR**	Main control power supply connector (2 pins) *1	Main control power supply (+) (–)
⑦	**x100** **x10** **x1**	IP address setting switches	Switch to set the 4th byte of the IP address by X1, X10 and X100.
⑧	**MS, NS**	Communication status LED	Displays the status of the EtherNet/IP™ communication
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**CI** 1 2	Motor control power supply connector *1	Motor control power supply (+), Axis 1 stop (+), Axis 1 lock release (+), Axis 2 stop (+), Axis 2 lock release (+)
⑭	**M PWR** 1 2	Motor power supply connector *1	For Axis 1, 2. Motor power supply (+), Common (–)
⑮	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑯	**MOT** 3	Motor power connector (6 pins)	
⑰	**ENC** 4	Encoder connector (16 pins)	Axis 4: Connect the actuator cable.
⑱	**MOT** 4	Motor power connector (6 pins)	
⑲	**CI** 3 4	Motor control power supply connector *1	Motor control power supply (+), Axis 3 stop (+), Axis 3 lock release (+), Axis 4 stop (+), Axis 4 lock release (+)
⑳	**M PWR** 3 4	Motor power supply connector *1	For Axis 3, 4. Motor power supply (+), Common (–)
㉑	**P1, P2**	EtherNet/IP™ communication connector	Connect Ethernet cable.

*1 Connectors are included. (Refer to page 120.)

Wiring Example 1

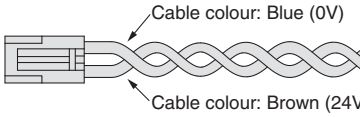
Cable with Main Control Power Supply Connector (For 4 Axes)*1: C PWR 1 pc.

For 4 Axes: JXC73/83/93

Terminal name	Function	Details
+24V	Main control power supply (+)	Power supply (+) supplied to the main control
24–0V	Main control power supply (–)	Power supply (–) supplied to the main control

*1 Part no.: JXC-C1 (Cable length: 1.5 m)

Cable with main control power supply connector



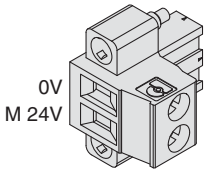
Motor Power Supply Connector (For 3/4 Axes)*2: M PWR 2 pcs.*3

For 3 Axes: JXC92; For 4 Axes: JXC73/83/93

Terminal name	Function	Details	Note
0V	Motor power supply (–)	Power supply (–) supplied to the motor power	For 3 axes JXC92
		The M 24V terminal, C 24V terminal, EMG terminal, and LKRLS terminal are common (–).	For 4 axes JXC73/83/93
M 24V	Motor power supply (+)	Power supply (+) supplied to the motor power	

*2 Manufactured by PHOENIX CONTACT (Part no.: MSTB2, 5/2-STF-5, 08)
*3 1 pc. for 3 axes (JXC92)

Motor power supply connector



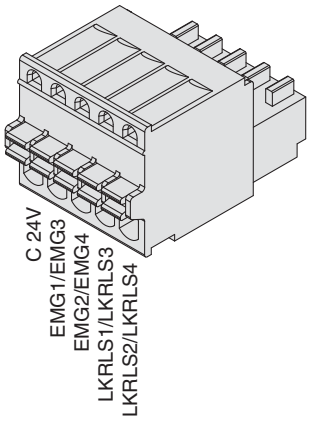
Motor Control Power Supply Connector (For 4 Axes)*4: CI 2 pcs.

For 4 Axes: JXC73/83/93

Terminal name	Function	Details
C 24V	Motor control power supply (+)	Power supply (+) supplied to the motor control
EMG1/EMG3	Stop (+)	Axis 1/Axis 3: Input (+) for releasing the stop
EMG2/EMG4	Stop (+)	Axis 2/Axis 4: Input (+) for releasing the stop
LKRLS1/LKRLS3	Lock release (+)	Axis 1/Axis 3: Input (+) for releasing the lock
LKRLS2/LKRLS4	Lock release (+)	Axis 2/Axis 4: Input (+) for releasing the lock

*4 Manufactured by PHOENIX CONTACT (Part no.: FK-MC0, 5/5-ST-2, 5)

Motor control power supply connector



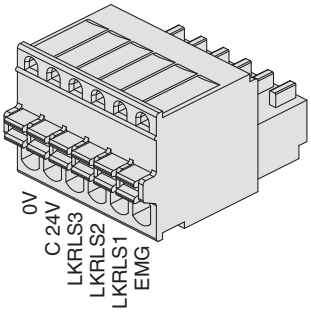
Control Power Supply Connector (For 3 Axes)*5: CI 1 pc.

For 3 Axes: JXC92

Terminal name	Function	Details
0V	Control power supply (–)	The C 24V terminal, LKRLS terminal, and EMG terminal are common (–).
C 24V	Control power supply (+)	Power supply (+) supplied to the control
LKRLS3	Lock release (+)	Axis 3: Input (+) for releasing the lock
LKRLS2	Lock release (+)	Axis 2: Input (+) for releasing the lock
LKRLS1	Lock release (+)	Axis 1: Input (+) for releasing the lock
EMG	Stop (+)	All axes: Input (+) for releasing the stop

*5 Manufactured by PHOENIX CONTACT (Part no.: FK-MC0, 5/6-ST-2, 5)

Control power supply connector



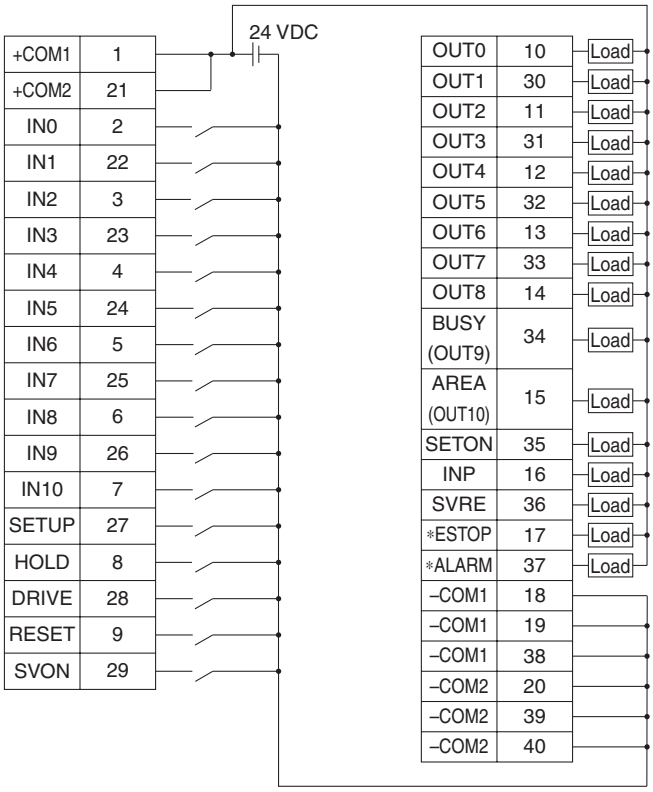
Wiring Example 2

Parallel I/O Connector

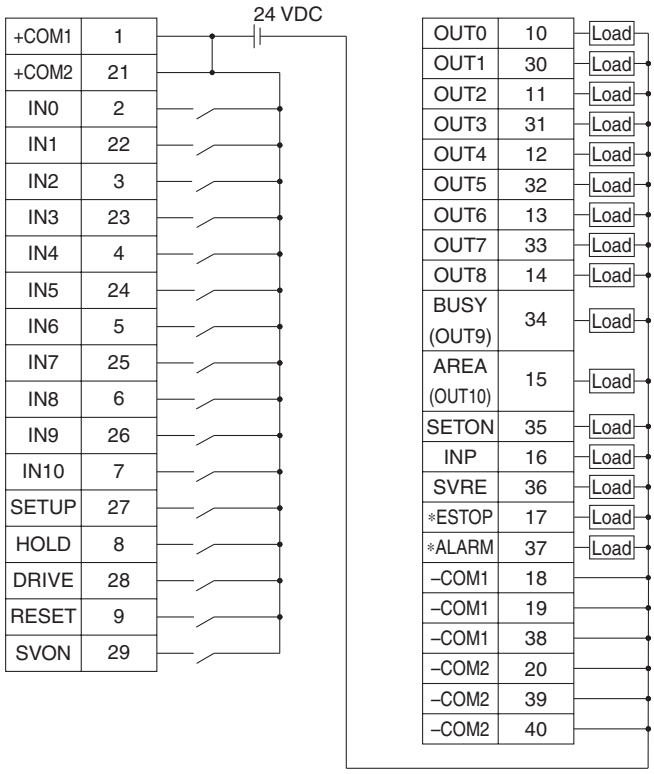
* When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
* The wiring changes depending on the type of the parallel I/O (NPN or PNP).

I/O 1 Wiring example

NPN JXC73



PNP JXC83



I/O 1 Input Signal

Name	Details
+COM1 +COM2	Connects the power supply 24 V for input/output signal
IN0 to IN8	Step data specified Bit No. (Standard: When 512 points are used)
IN9 IN10	Step data specified extension Bit No. (Extension: When 2048 points are used)
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

I/O 1 Output Signal

Name	Details
OUT0 to OUT8	Outputs the step data no. during operation
BUSY (OUT9)	Outputs when the operation of the actuator is in progress
AREA (OUT10)	Outputs when all actuators are within the area output range
SETON	Outputs when the return to origin of all actuators is completed
INP	Outputs when the positioning or pushing of all actuators is completed
SVRE	Outputs when servo is ON
*ESTOP *1	Not output when EMG stop is instructed
*ALARM *1	Not output when alarm is generated
–COM1 –COM2	Connects the power supply 0 V for input/output signal

*1 Negative-logic circuit signal

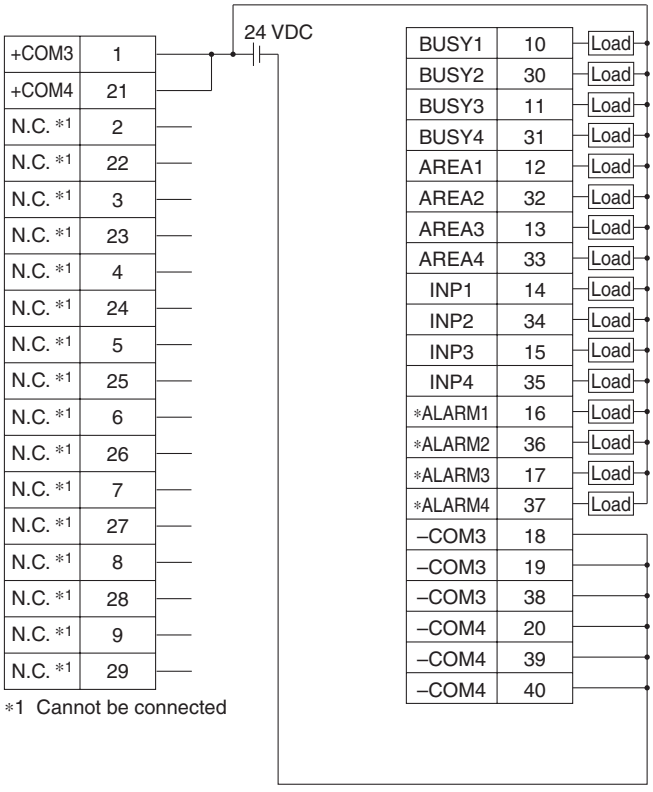
Wiring Example 2

Parallel I/O Connector

* When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
* The wiring changes depending on the type of the parallel I/O (NPN or PNP).

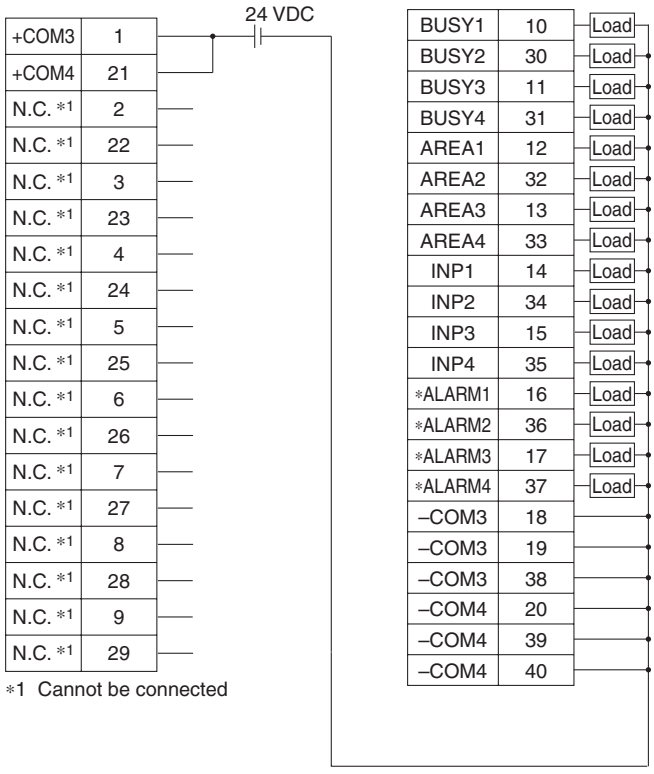
I/O 2 Wiring example

NPN JXC73



*1 Cannot be connected

PNP JXC83



*1 Cannot be connected

I/O 2 Input Signal

Name	Details
+COM3 +COM4	Connects the power supply 24 V for input/output signal
N.C.	Cannot be connected

I/O 2 Output Signal

Name	Details
BUSY1	Busy signal for axis 1
BUSY2	Busy signal for axis 2
BUSY3	Busy signal for axis 3
BUSY4	Busy signal for axis 4
AREA1	Area signal for axis 1
AREA2	Area signal for axis 2
AREA3	Area signal for axis 3
AREA4	Area signal for axis 4
INP1	Positioning or pushing completion signal for axis 1
INP2	Positioning or pushing completion signal for axis 2
INP3	Positioning or pushing completion signal for axis 3
INP4	Positioning or pushing completion signal for axis 4
*ALARM1 *2	Alarm signal for axis 1
*ALARM2 *2	Alarm signal for axis 2
*ALARM3 *2	Alarm signal for axis 3
*ALARM4 *2	Alarm signal for axis 4
–COM3 –COM4	Connects the power supply 0 V for input/output signal

*2 Negative-logic circuit signal

Options

Cable with main control power supply connector

For 4 Axes
JXC73/83/93

JXC − C1

Cable length: 1.5 m (Accessory)

Number of cores	2
AWG size	AWG20

I/O cable (1 pc.)

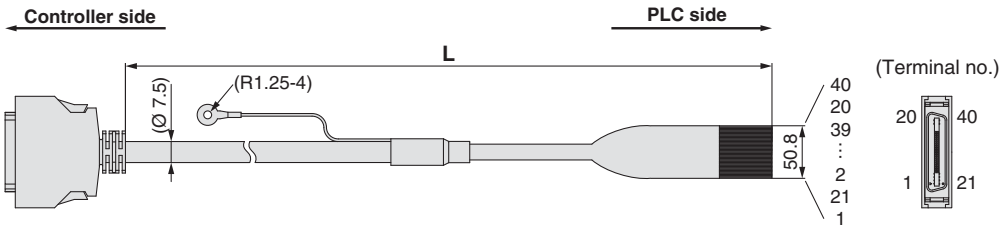
For 4 Axes
JXC73/83

JXC − C2 − □

Cable length (L) [m]

1	1.5
3	3
5	5

Number of cores	40
AWG size	AWG28



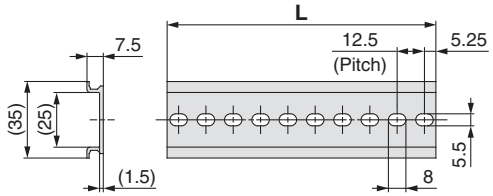
Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour
1	Orange (Black 1)	6	Orange (Black 2)	11	Orange (Black 3)	16	Orange (Black 4)
21	Orange (Red 1)	26	Orange (Red 2)	31	Orange (Red 3)	36	Orange (Red 4)
2	Grey (Black 1)	7	Grey (Black 2)	12	Grey (Black 3)	17	Grey (Black 4)
22	Grey (Red 1)	27	Grey (Red 2)	32	Grey (Red 3)	37	Grey (Red 4)
3	White (Black 1)	8	White (Black 2)	13	White (Black 3)	18	White (Black 4)
23	White (Red 1)	28	White (Red 2)	33	White (Red 3)	38	White (Red 4)
4	Yellow (Black 1)	9	Yellow (Black 2)	14	Yellow (Black 3)	19	Yellow (Black 4)
24	Yellow (Red 1)	29	Yellow (Red 2)	34	Yellow (Red 3)	39	Yellow (Red 4)
5	Pink (Black 1)	10	Pink (Black 2)	15	Pink (Black 3)	20	Pink (Black 4)
25	Pink (Red 1)	30	Pink (Red 2)	35	Pink (Red 3)	40	Pink (Red 4)

DIN rail

For 3 Axes
JXC92
For 4 Axes
JXC73/83/93

AXT100 − DR − □

∗ For □, enter a number from the No. line in the table below. Refer to the dimension drawings on pages 115 and 118 for the mounting dimensions.



L Dimension

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 bracket (with 6 mounting screws)

For 3 Axes
JXC92
For 4 Axes
JXC73/83/93

JXC − Z1

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

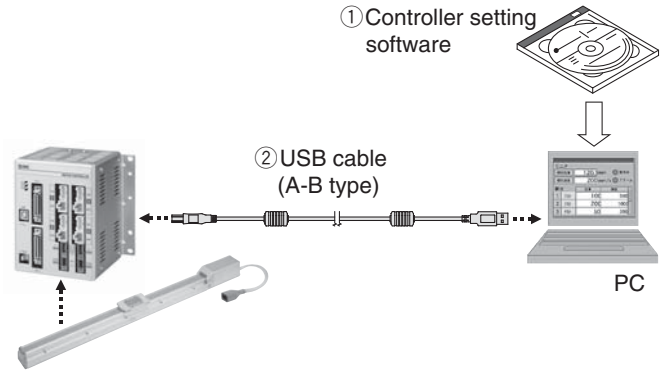
Options

Controller setting kit

For 4 Axes
JXC73/83/93

JXC − W1

Controller setting kit
(Japanese and English are available.)



Contents

①Controller setting software (CD-ROM)
②USB cable (Cable length: 3 m)

Description		Model
①	Controller setting software	JXC-W1-1
②	USB cable	JXC-W1-2

∗ Can be ordered separately

Hardware Requirements

PC/AT compatible machine with Windows 7 or Windows 8.1 and USB1.1 or USB2.0 port

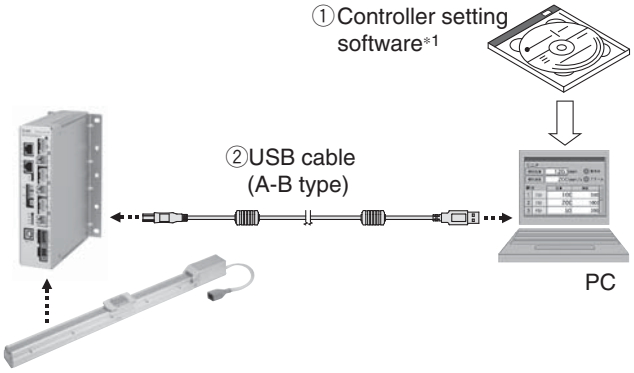
∗ Windows® is a registered trademark of Microsoft Corporation in the United States.

Controller setting kit

For 3 Axes
JXC92

JXC − MA1∗1

Controller setting kit
(Japanese and English are available.)



Contents

①Controller setting software (CD-ROM)∗1
②USB cable (Cable length: 3 m)

Description		Model
①	Controller setting software	JXC-MA1-1
②	USB cable	JXC-MA1-2

∗ Can be ordered separately

Hardware Requirements

PC/AT compatible machine with Windows 7 or Windows 8.1 and USB1.1 or USB2.0 port

∗1 The controller setting software also includes software dedicated for 4 axes.
∗ Windows® is a registered trademark of Microsoft Corporation in the United States.

Options: Actuator Cable

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

For 3 Axes	For 4 Axes
JXC92	JXC73/83/93

LE − CP − 1 − □

Cable length (L) [m]

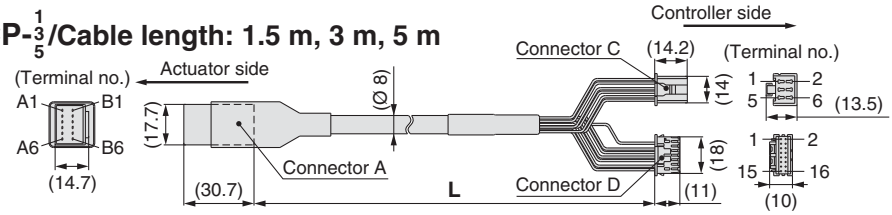
1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

*1 Produced upon receipt of order (Robotic cable only)

Cable type

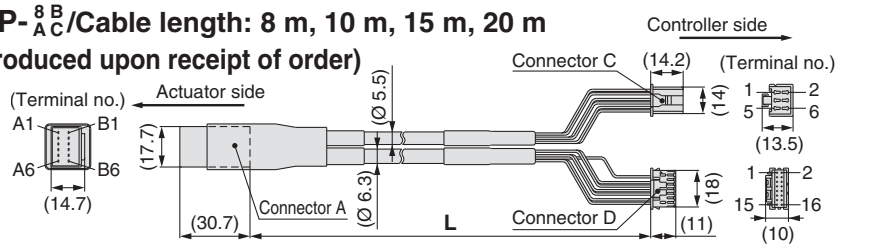
—	Robotic cable (Flexible cable)
S	Standard cable

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

(*1 Produced upon receipt of order)



Signal	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	
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

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

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

For 3 Axes	For 4 Axes
JXC92	JXC73/83/93

LE − CP − 1 − B − □

Cable length (L) [m]

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

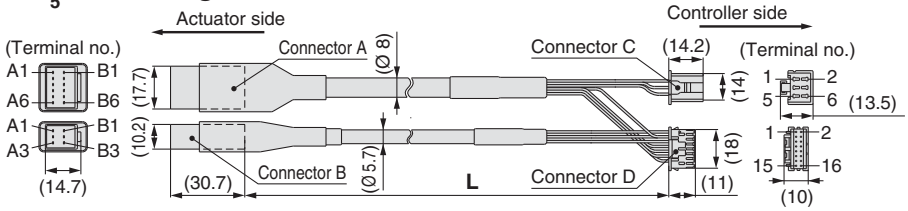
*1 Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

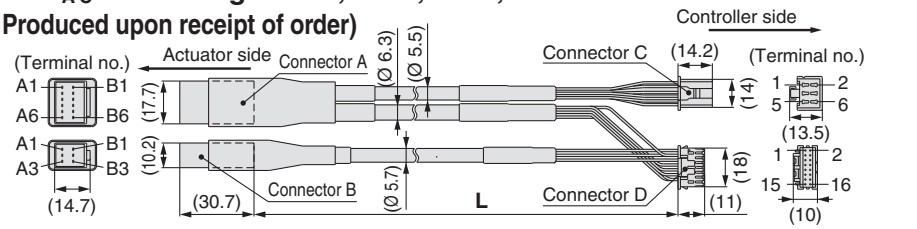
—	Robotic cable (Flexible cable)
S	Standard cable

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

(*1 Produced upon receipt of order)



Signal	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	
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

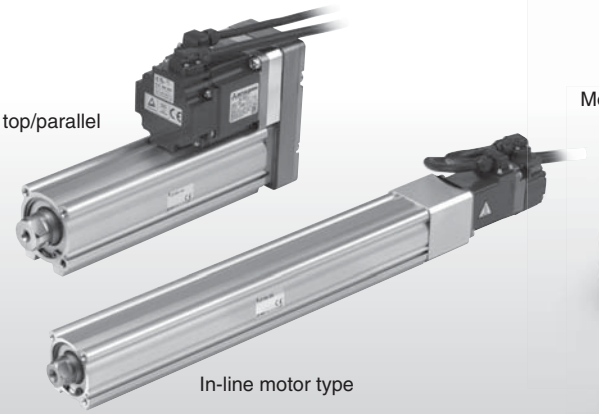
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (–)	A-3	Blue	2

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

AC Servo Motor

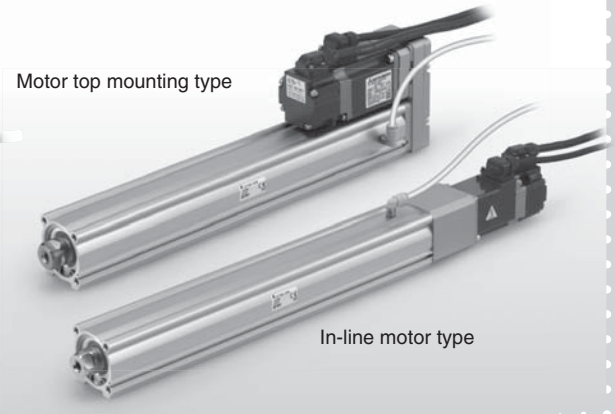
Rod Type Page 127

Series LEY



Dust/Drip proof (IP65 equivalent) Page 150

Series LEY-X5

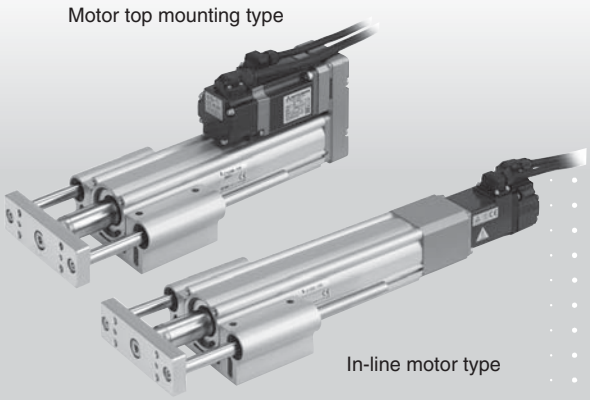


Rod Type Page 155 Secondary Batteries Compatible

Series 25A-LEY

Guide Rod Type Page 157

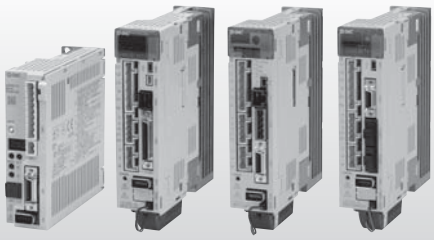
Series LEYG



AC Servo Motor Driver

Series LECS□

Page 173



Series LECSS-T

Page 189

Series LECY□

Page 200

Model Selection

Selection Procedure

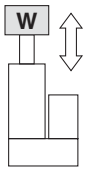
Positioning Control Selection Procedure

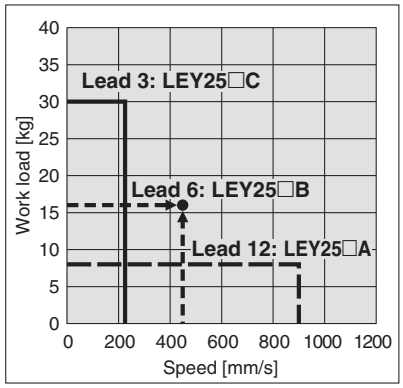
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

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 135, 144 and 151 for the horizontal work load in the specifications, and page 169 for the precautions.

The regeneration option may be necessary. Refer to pages 129, 130 and 131 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.

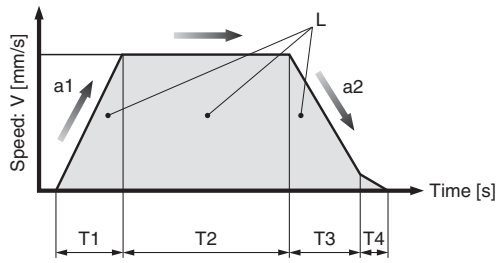
$$T1 = V/a1 \ [s] \qquad T3 = V/a2 \ [s]$$

- 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

Force Control Selection Procedure

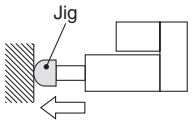
Step 1 Check the duty ratio. → **Step 2** Check the force. → **Step 3** Check the lateral load on the rod end.

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

Selection Example

Operating conditions

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



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

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

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

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

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

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

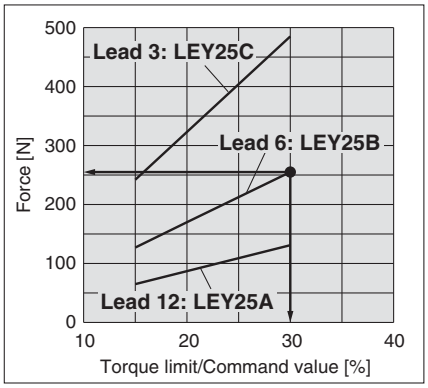
∗ [Torque limit/Command value [%]] is the set value for the driver.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.

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

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

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

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



<Force conversion graph>
(LEY25)

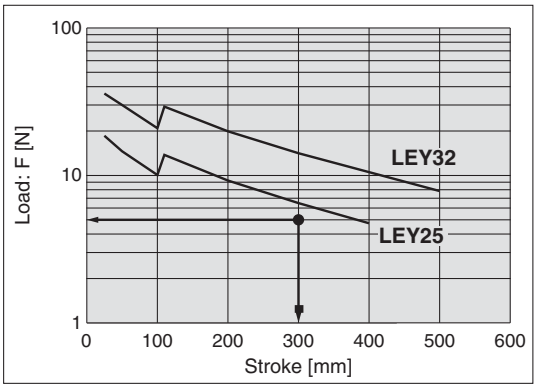
Step 3 **Check the lateral load on the rod end.**
<Graph of allowable lateral load on the rod end>

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

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

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

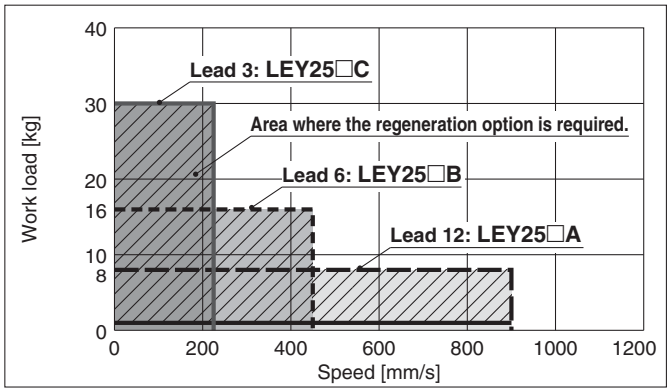
Based on the above calculation result, the LEY25B-300 is selected.



<Graph of allowable lateral load on the rod end>

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

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



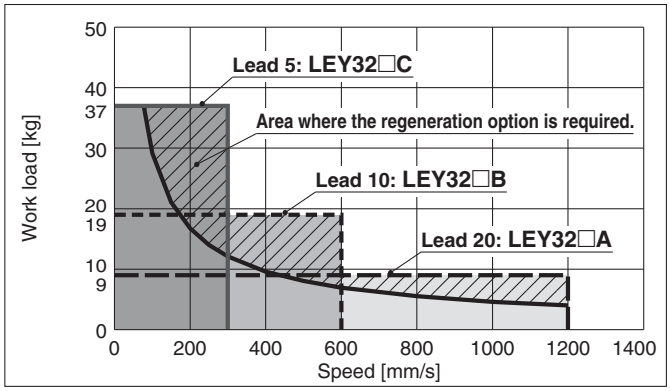
Required conditions for "Regeneration option"

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

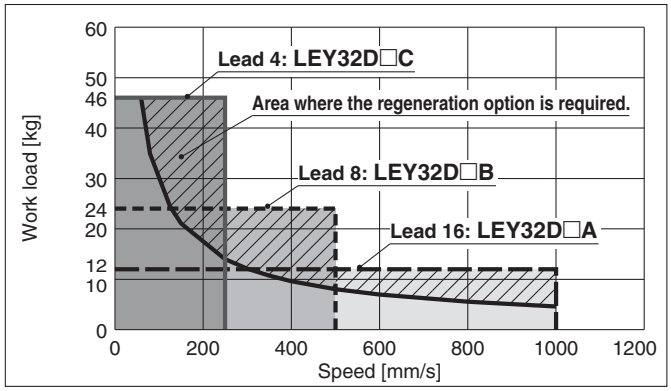
"Regeneration Option" Models

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

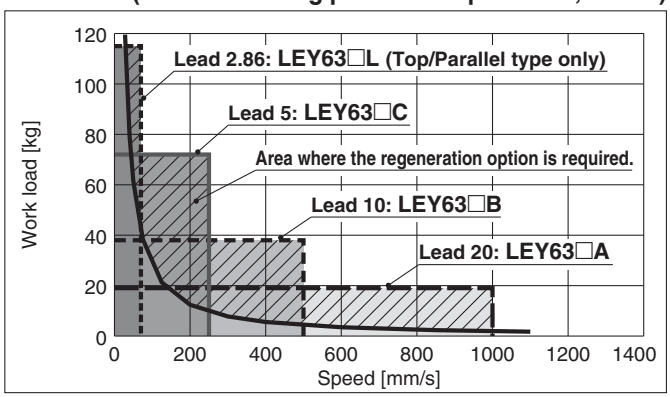
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)

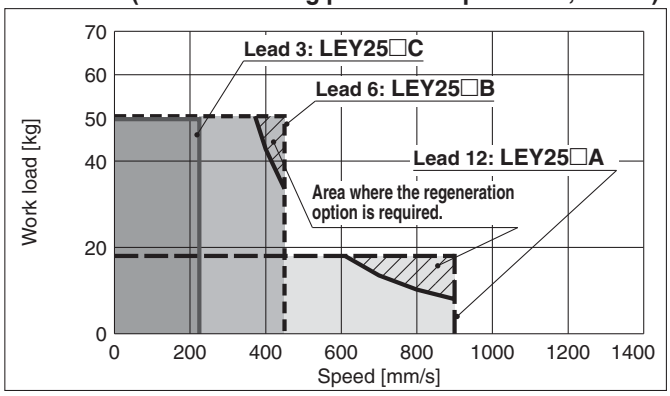


LEY63□ (Motor mounting position: Top/Parallel, In-line)



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

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



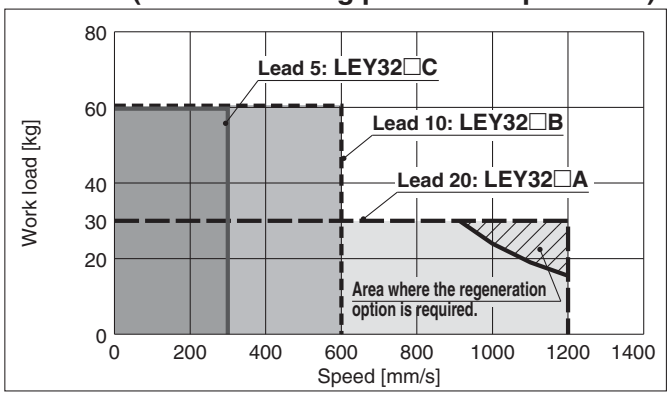
Required conditions for "Regeneration option"

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

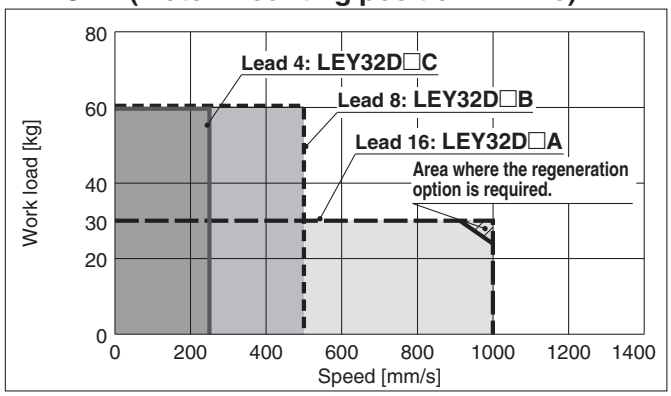
"Regeneration Option" Models

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

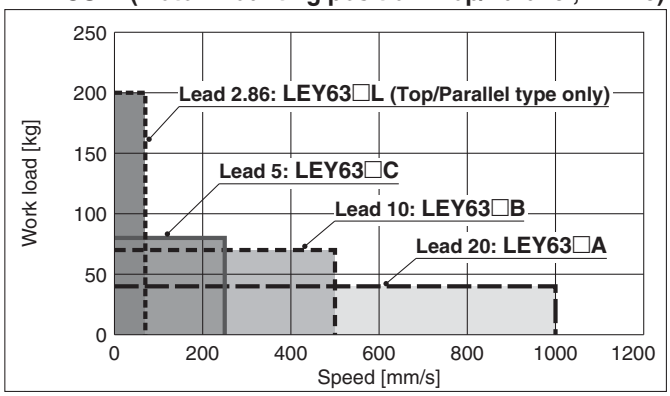
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



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



Allowable Stroke Speed

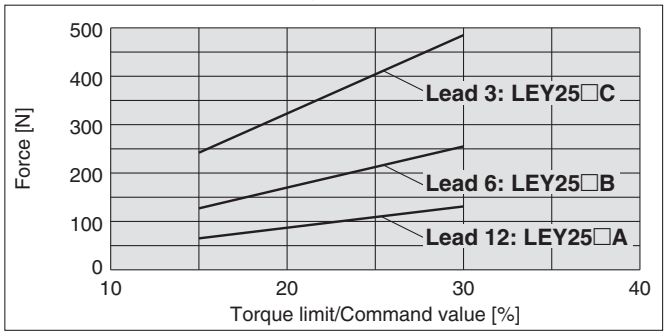
[mm/s]

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

∗ Top/Parallel type only

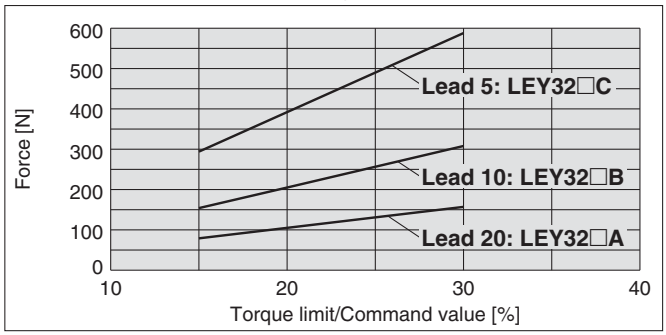
Force Conversion Graph (Guide)

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



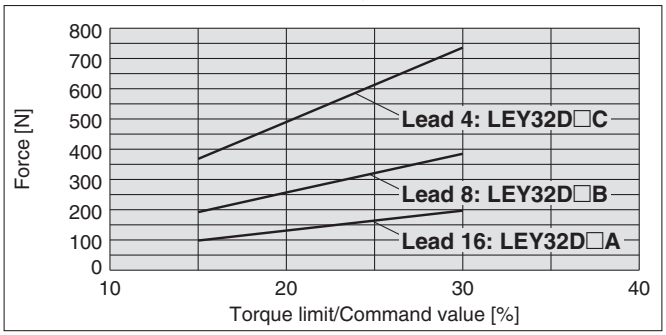
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32□ (Motor mounting position: Top/Parallel)



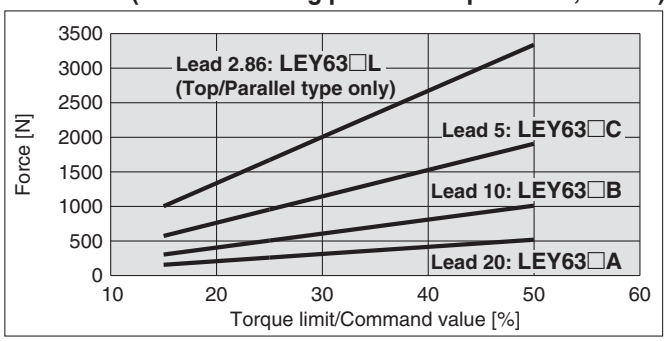
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32D□ (Motor mounting position: In-line)



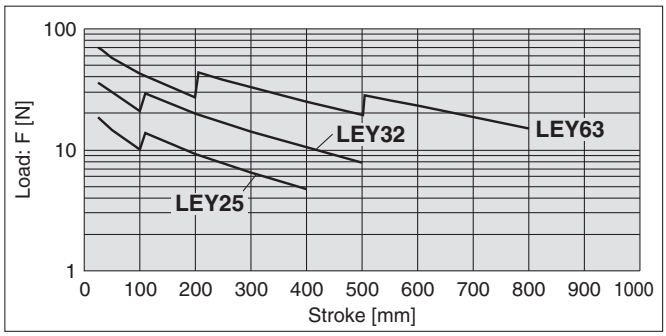
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

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

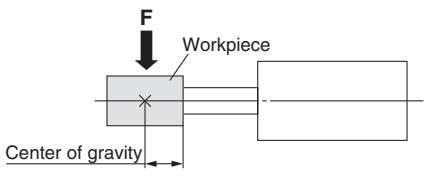


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5
40	30	0.5
50	20	0.16

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



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



Electric Actuator/ Rod Type

Series LEY LEY25, 32

Size 25, 32

CE RoHS

MECHATROLINK Compatible ▶Page 200

How to Order

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

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

25
32

❸ Motor mounting position

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

❹ Motor type*1, 2

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
T6	AC servo motor (Absolute encoder)	100	25	LECSS2-T5
T7		200	32	LECSS2-T7

*1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
*2 For motor type T6, the compatible driver part number suffix is T5.
*3 For details about the driver, refer to page 173.

❺ 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])

❻ Stroke [mm]

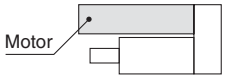
30	30
to	to
500	500

* Refer to the applicable stroke table for details.

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



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

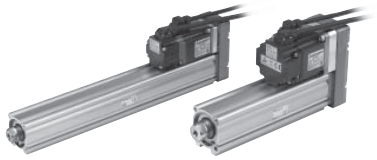
*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
・LEY25: 200 mm or less ・LEY32: 100 mm or less
*3 For mounting with the double clevis, use the actuator within the following stroke range.
・LEY25: 200 mm or less ・LEY32: 200 mm or less
*4 Rod flange is not available for the LEY25 with stroke 30 mm and motor option "With lock".
*5 Head flange is not available for the LEY32.

* Applicable stroke table ●: Standard

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

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

For auto switches, refer to pages 27 and 28.



Motor mounting position: Top/Parallel

Motor mounting position: In-line

⑩ 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 185 for details.)

⑪ Cable length* [m]

—	Without cable
2	2
5	5
A	10

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

⑫ Driver type*

	Compatible driver	Power supply voltage [V]
—	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
	LECSS2-T□	200 to 240

* 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

⑬ I/O cable length [m]*

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

* When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
  Refer to page 186 if I/O cable is required.
  (Options are shown on page 186.)

Compatible Driver

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET Ⅲ type	SSCNET Ⅲ/H Type
					
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**	**LECSS-T**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—	—
Pulse input	○	○	—	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ	SSCNET Ⅲ/H
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication	USB communication
Power supply voltage [V]	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)				200 to 240 VAC (50/60 Hz)
Reference page	Page 173				Page 189

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
	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]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02								
		High precision type	±0.01								
	Lost motion [mm] Note 6)	Basic type	0.1 or less								
		High precision type	0.05 or less								
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)		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)					
	Regeneration option Note 8)		May be required depending on speed and work load (refer to pages 129 and 130)								
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 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) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph" on page 131. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 4) The allowable speed changes according to the stroke. Set the number of rotations according to speed.
Note 5) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 7) 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 129 and 130.
Note 9) The power consumption (including the driver) is for when the actuator is operating.
Note 10) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 11) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 12) Only when motor option "With lock" is selected.
Note 13) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY25S□ (Motor mounting position: Top/Parallel)									LEY32S□ (Motor mounting position: Top/Parallel)									
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

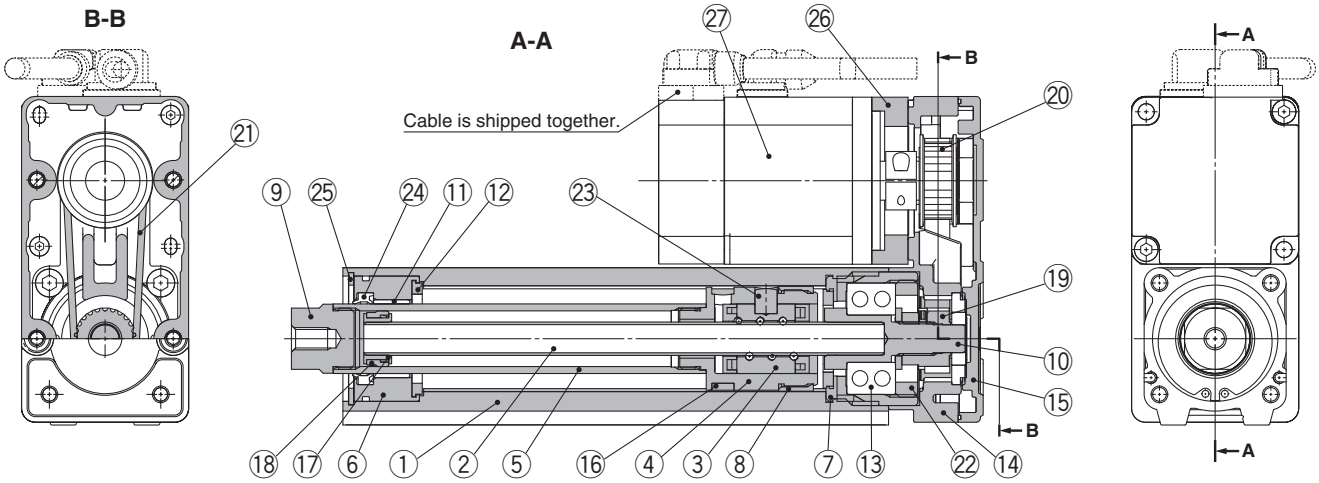
Additional Weight

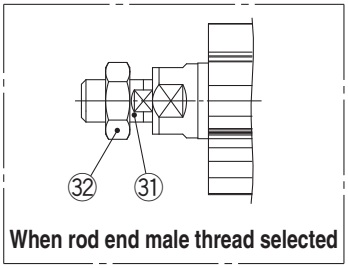
[kg]

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

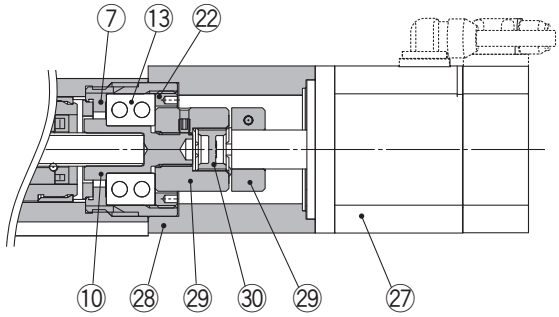
Construction

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	
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

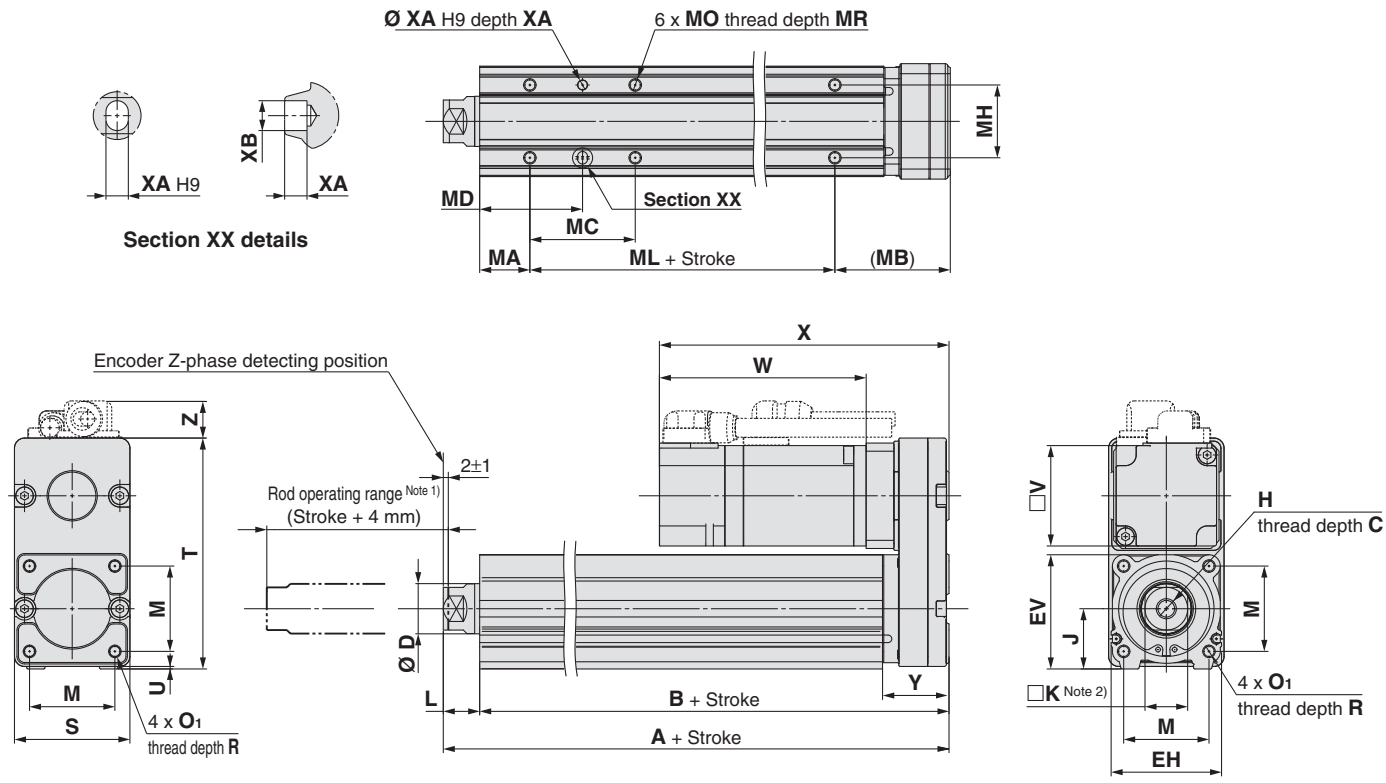
No.	Size	Order no.
21	**25**	LE-D-2-2
	32	LE-D-2-4

Replacement Parts/Grease Pack

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

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

Dimensions: Motor Top/Parallel



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

[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																

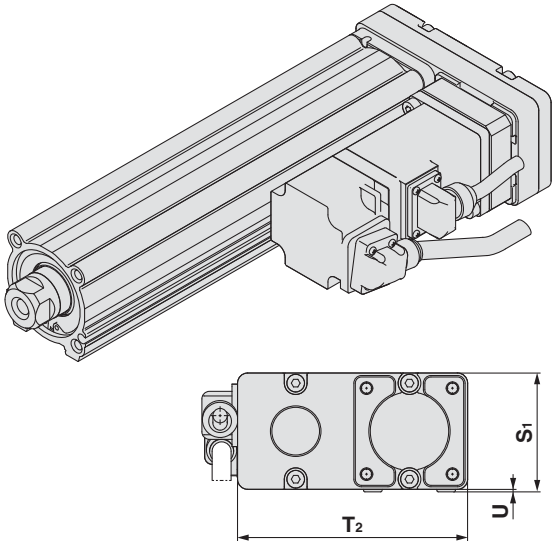
Body Bottom Tapped

[mm]

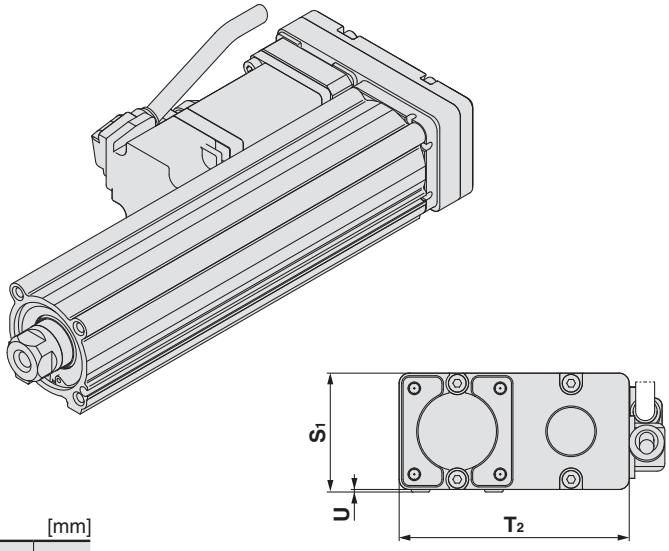
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125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

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY$^{25}_{32}$L



Motor right side parallel type: LEY$^{25}_{32}$R

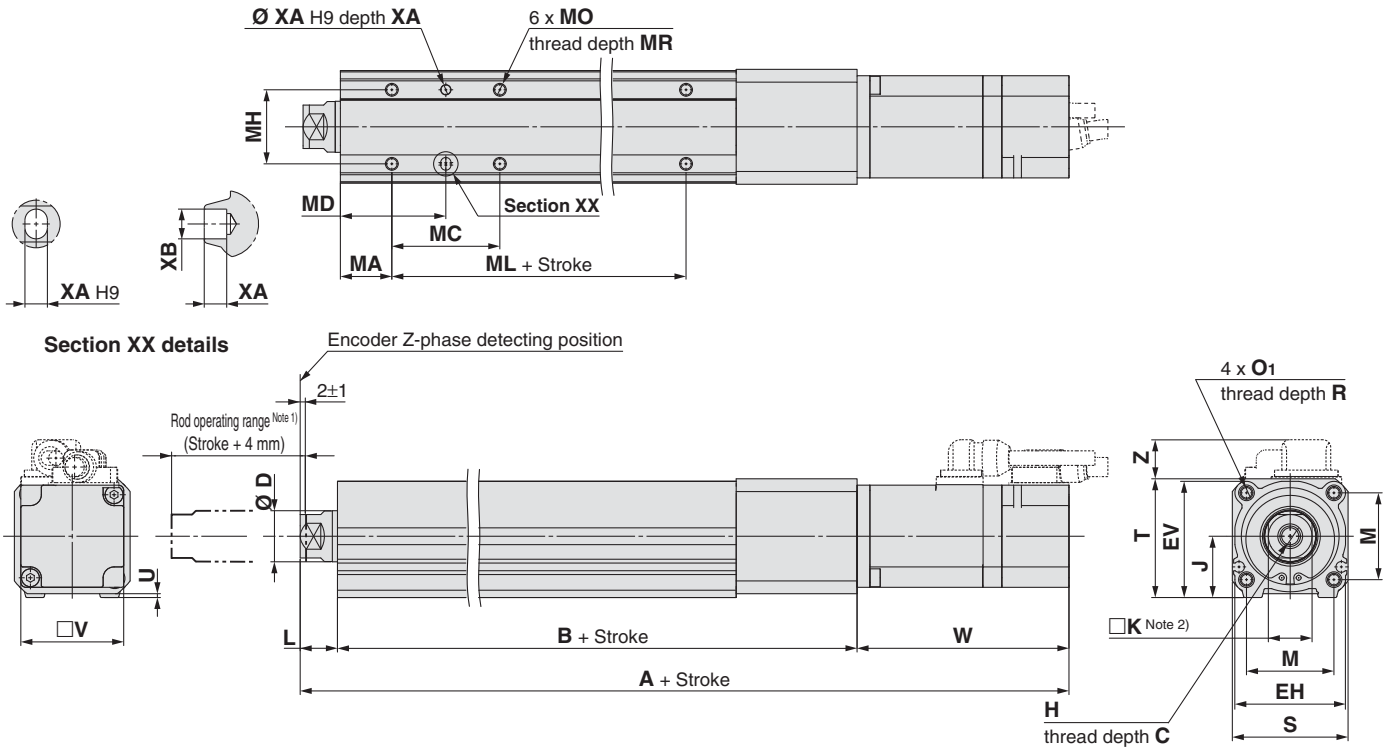


[mm]

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		

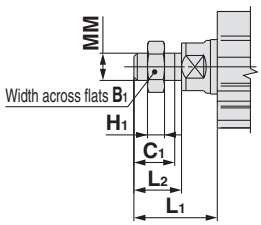
Body Bottom Tapped

[mm]

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

Dimensions

End male thread: LEY$^{25}_{32}$□□$^{A}_{B}$-□□M$^{}_{C}$



∗ Refer to page 25 for details about the rod end nut and mounting bracket.
Note) Refer to the precautions on page 169 when mounting end brackets such as knuckle joint or workpieces.

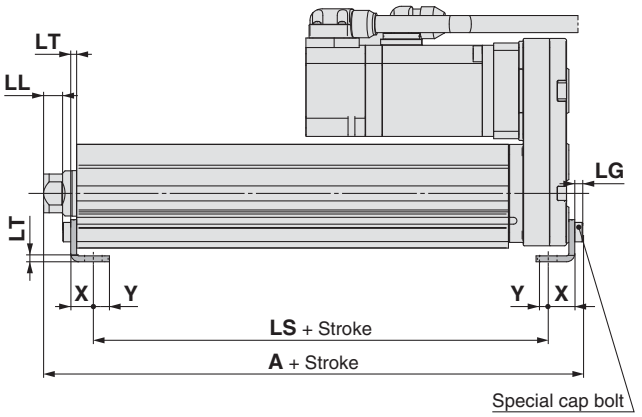
[mm]

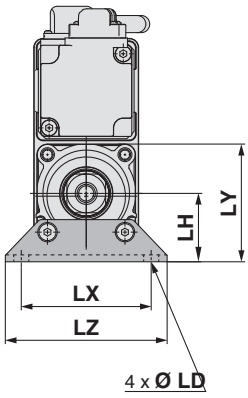
Size	B1	C1	H1	L1	L2	MM
25	22	20.5	8	38	23.5	M14 x 1.5
32	22	20.5	8	42.0	23.5	M14 x 1.5

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

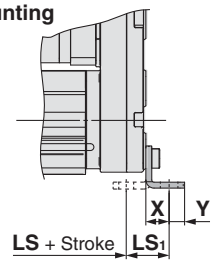
Foot: LEY$^{25}_{32}$□□$^{A}_{B}$-□□□L$^{}_{C}$

Included parts
・Foot
・Body mounting bolt





Outward mounting



Foot

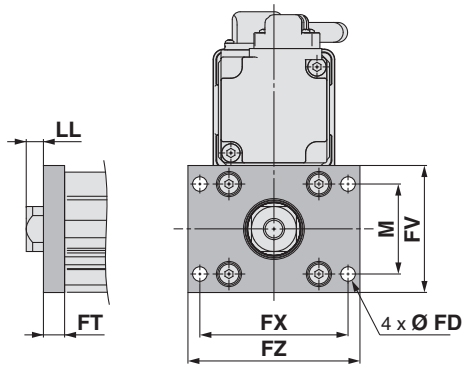
[mm]

Size	Stroke range [mm]	A	LS	LS1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	123.8											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

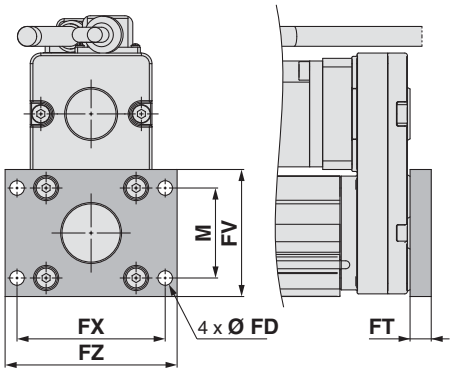
Material: Carbon steel (Chromate treated)
∗ The A measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end.
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Dimensions

Rod flange: LEY25/32□□A/B/C-□□□F



Head flange: LEY25□□A/B/C-□□□G



∗ Head flange is not available for the LEY32.

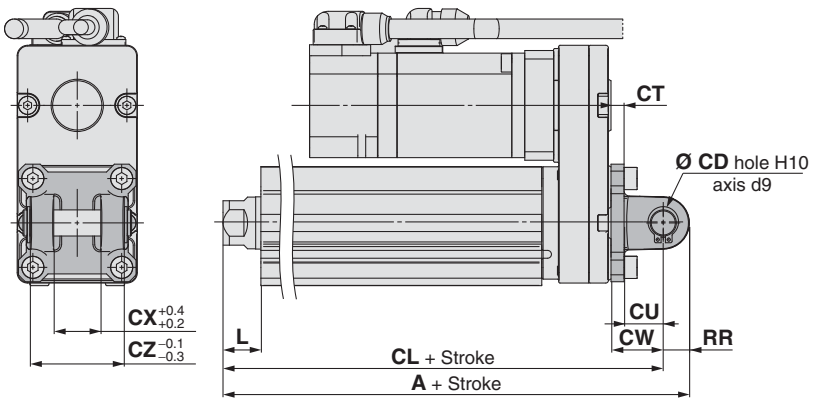
Included parts
- Flange
- Body mounting bolt

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 25 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

Dust/Drip proof (IP65 equivalent)

∗ Select options

Series LEY LEY63 Size 63

CE RoHS

How to Order

LEY H 63 □ S4 B – 200 □ □ □ □ – S 2 A2 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭ ⓮

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

63

❸ Motor mounting position

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

❹ Motor type∗1

Symbol	Type	Output [W]	Actuator size	Compatible driver
S4	AC servo motor (Incremental encoder)	400	63	LECSA2-S4
S8	AC servo motor (Absolute encoder)	400	63	LECSB2-S8 LECSC2-S8 LECSS2-S8
T8	AC servo motor (Absolute encoder)	400	63	LECSS2-T8

❺ Lead [mm]

Symbol	LEY63
A	20
B	10
C	5
L	2.86∗

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

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

❻ Stroke [mm]

100	100
to	to
800	800

❽ Motor option

—	Without option
B	With lock

❼ Dust-tight/Water-jet-proof

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

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

∗ The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

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

❾ Rod end thread

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

⓬ Cable length Note 2) [m]

—	Without cable
2	2
5	5
A	10

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

❿ Mounting∗1

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

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

∗2 For horizontal cantilever mounting with the rod flange and ends tapped, use the actuator within the following stroke range.
• LEY63: 400 mm or less

∗3 For mounting with the double clevis, use the actuator within the following stroke range.
• LEY63: 300 mm or less

⓫ Cable type Note 1)

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

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

∗ Standard cable entry direction is
• Top/Parallel: (A) Axis side
• In-line: (B) Counter axis side
(Refer to page 185 for details.)

⓮ I/O cable length [m]∗

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

∗ When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 186 if I/O cable is required. (Options are shown on page 186.)

⓭ Driver type

	Compatible driver	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/SSCNETⅢ (Absolute encoder)	200 V to 230 V
	LECSS2-T□/SSCNETⅢ/H (Absolute encoder)	200 V to 240 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

∗ Applicable stroke table

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

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

Specifications

Model				LEY63S$^{4}_{8}$□ (Top/Parallel)				LEY63DS$^{4}_{8}$□ (In-line)		
Actuator specifications	Stroke [mm] Note 1)			100, 200, 300, 400, 500, 600, 700, 800						
	Work load [kg]		Horizontal Note 2)	40	70	80	200	40	70	80
			Vertical Note 9)	19	38	72	115	19	38	72
	Force [N]/Set value Note 3) : 15 to 50 % Note 4)			156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910
	Max. speed Note 5) [mm/s]	Stroke range	Up to 500	1000	500	250	70	1000	500	250
			505 to 600	800	400	200		800	400	200
			605 to 700	600	300	150		600	300	150
			705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s] Note 6)			30 or less						
	Max. acceleration/deceleration [mm/s²]			5000			3000	5000		
	Positioning repeatability [mm]		Basic type	±0.02						
			High precision type	±0.01						
	Lost motion [mm] Note 7)		Basic type	0.1 or less						
			High precision type	0.05 or less						
	Screw lead [mm] (including pulley ratio)			20	10	5	5 (2.86)	20	10	5
	Impact/Vibration resistance [m/s²] Note 8)			50/20						
	Actuation type			Ball screw			Ball screw + Belt (Pulley ratio 4.7)	Ball screw		
	Guide type			Sliding bushing (Piston rod)						
	Operating temperature range [°C]			5 to 40						
	Operating humidity range [%RH]			90 or less (No condensation)						
	Regeneration option			May be required depending on speed and work load. (Refer to LEY catalogue conditions for "Regeneration Option")						
Electric specifications	Motor output/Size			400 W/□60						
	Motor type			AC servo motor (200 VAC)						
	Encoder			Motor type S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)						
	Power consumption [W] Note 10)		Horizontal	210						
			Vertical	230						
	Standby power consumption when operating [W] Note 11)		Horizontal	2						
			Vertical	18						
	Max. instantaneous power consumption [W] Note 12)			1275						
Lock unit specifications	Type Note 13)			Non-magnetizing lock						
	Holding force [N]			313	607	1146	2006	313	607	1146
	Power consumption [W] at 20 °C Note 14)			7.9						
	Rated voltage [V]			24 VDC$^{0}_{-10\ \%}$						

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) Set values for the driver.
Note 4) The force setting range (set values for the driver) for the force control with the torque control mode. The force and duty ratio change according to the set value. Set it with reference to "Force Conversion Graph" on page 131. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 5) The allowable speed changes according to the stroke. Set the number of rotations according to speed.
Note 6) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 7) A reference value for correcting an error in reciprocal operation.
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.
Note 10) The power consumption (including the driver) is for when the actuator is operating.
Note 11) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 12) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 13) Only when motor option "With lock" is selected.
Note 14) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

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

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

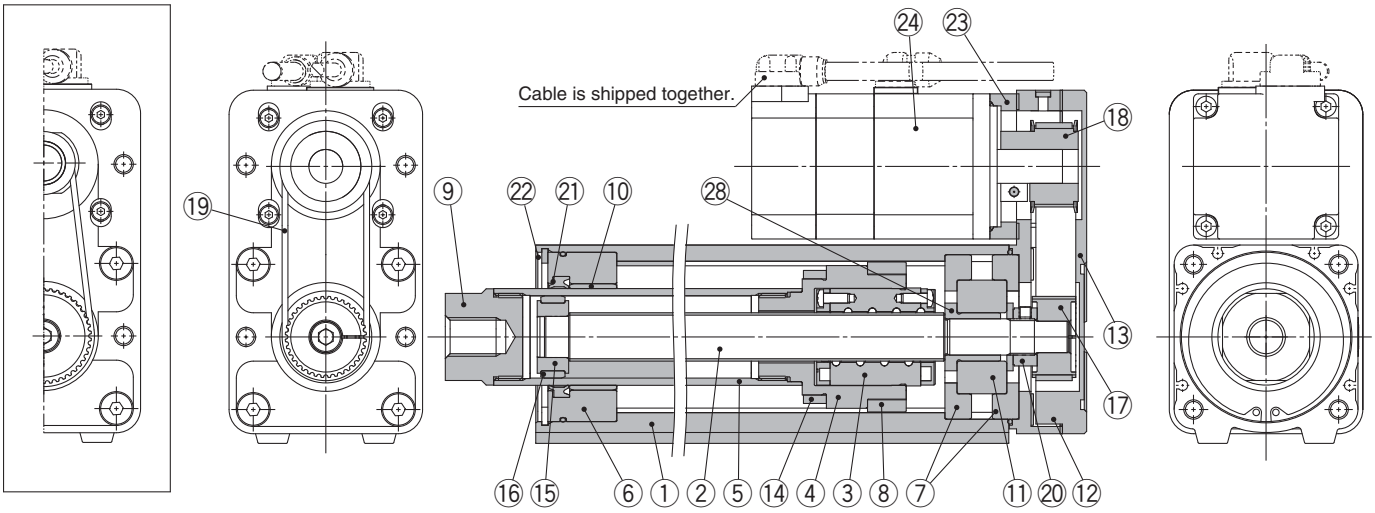
Additional Weight

[kg]

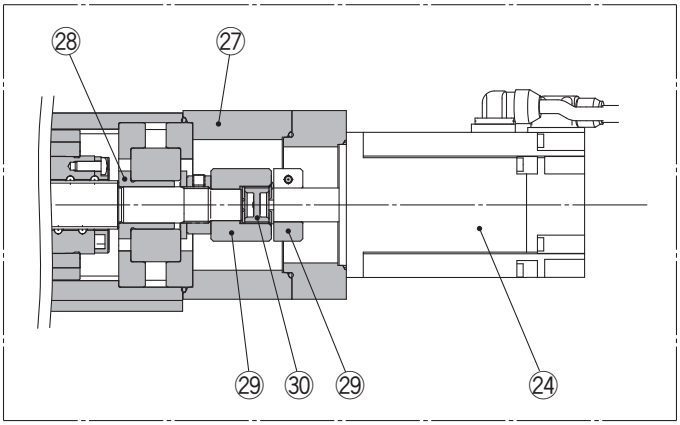
Size		63
Lock	Incremental encoder	0.4
	Absolute encoder	0.6
Rod end male thread	Male thread	0.12
	Nut	0.04
Foot (2 sets including mounting bolt)		0.26
Rod flange (including mounting bolt)		0.51
Double clevis (including pin, retaining ring and mounting bolt)		0.58

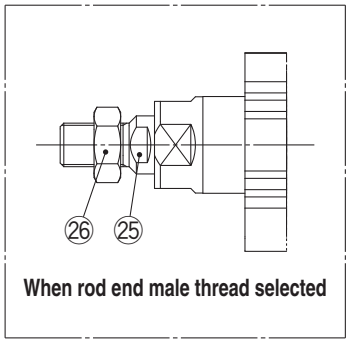
Construction

Motor top mounting type: LEY63



In-line motor type: LEY63D





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 plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	Resin	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Bushing**	Lead bronze cast	
11	**Bearing**	—	
12	**Return box**	Aluminium alloy	Coating
13	**Return plate**	Aluminium alloy	Coating
14	**Magnet**	—	
15	**Wear ring holder**	Stainless steel	

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

Replacement Parts (Top/Parallel only)/Belt

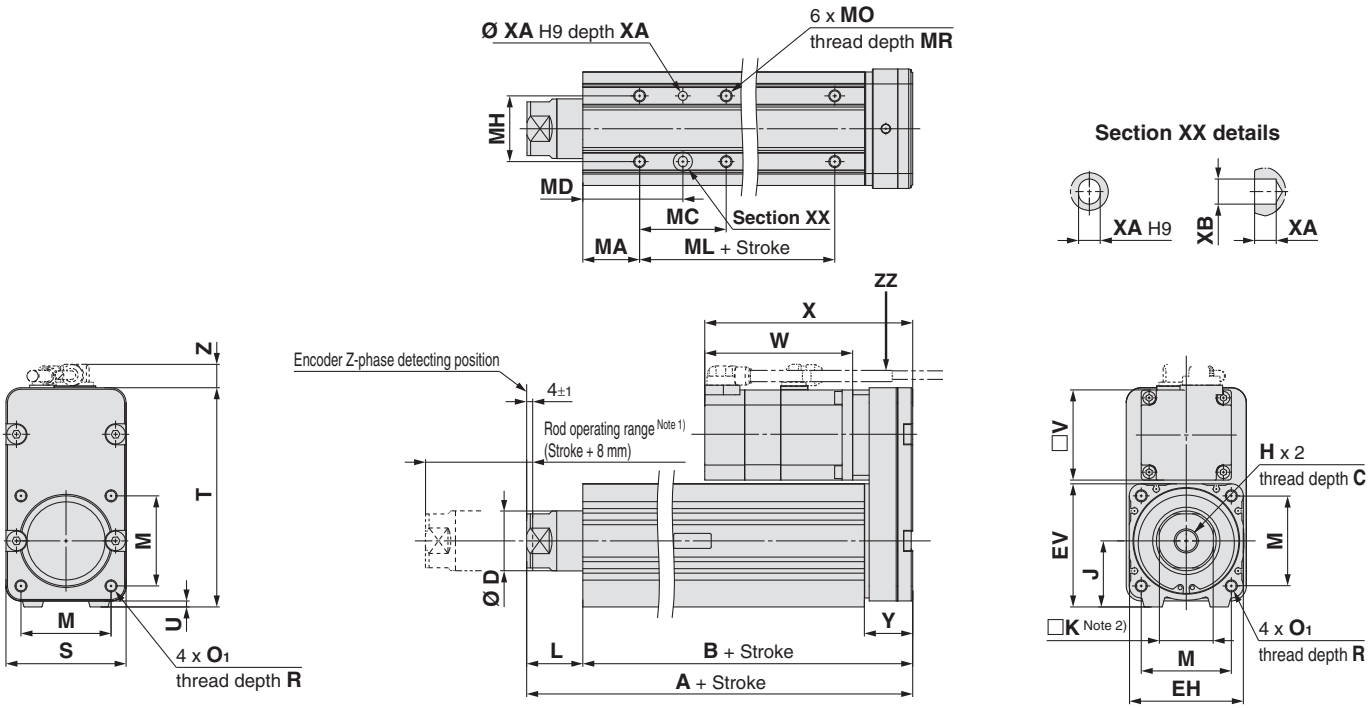
No.	Size	Lead	Order no.
19	**63**	A/B/C	LE-D-2-5
		L	LE-D-2-6

Replacement Parts/Grease Pack

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

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

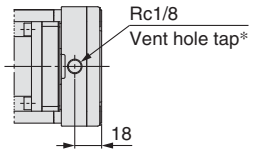
Dimensions: Motor Top/Parallel



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

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

(View ZZ)



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

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O_1	R	S	Y
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	32.2
	205 to 500	227.6	190.2													
	505 to 800	262.6	225.2													

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

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

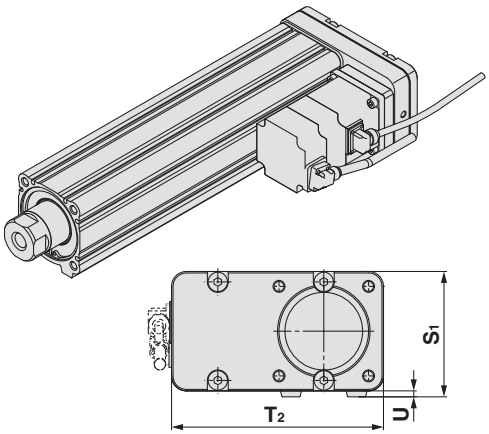
Body Bottom Tapped

[mm]

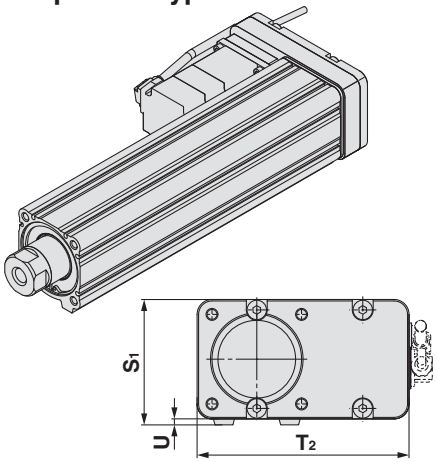
Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY63L



Motor right side parallel type: LEY63R



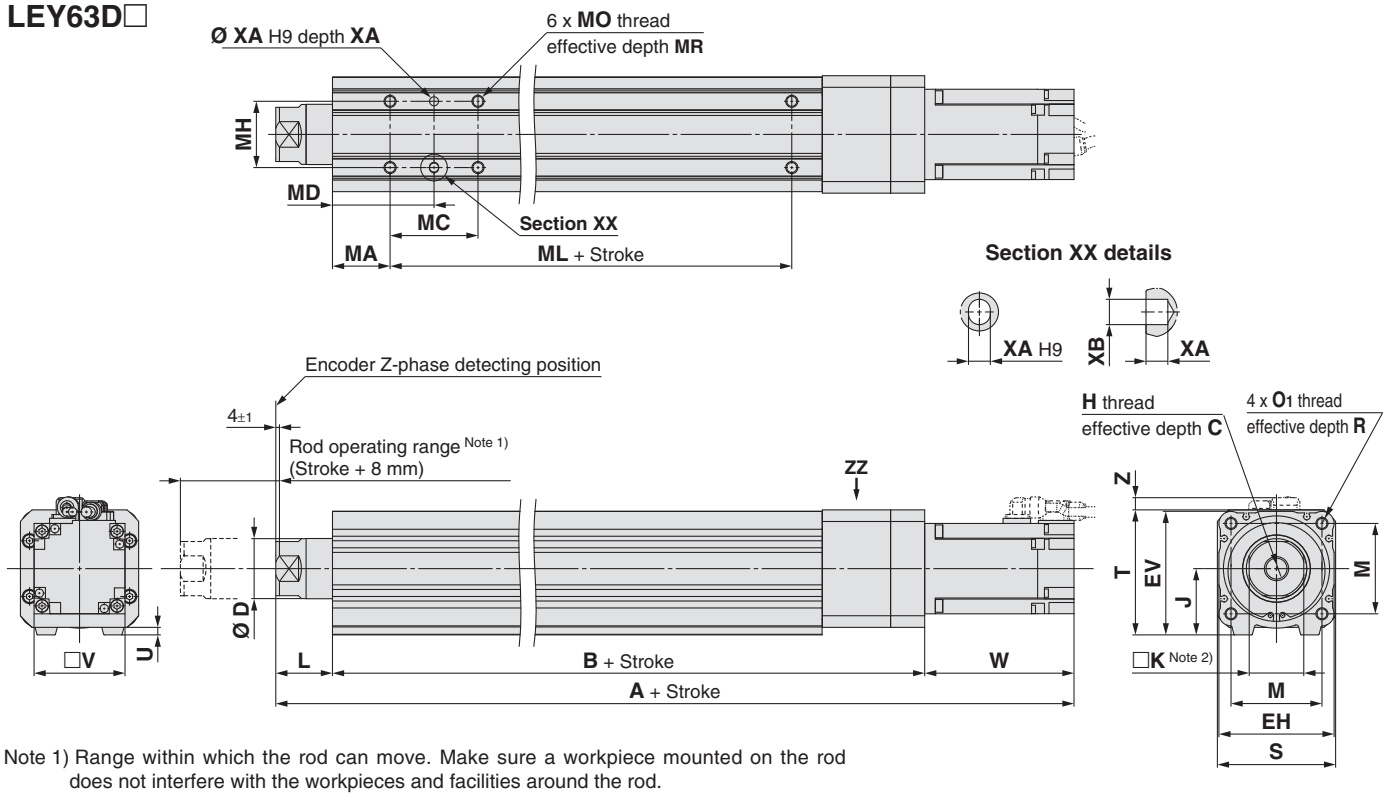
[mm]

Size	S_1	T_2	U
63	84	142	4

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

Dimensions: In-line Motor

LEY63D□



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

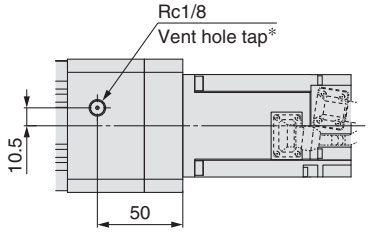
Size	Stroke range [mm]	B	V	Incremental encoder						Absolute encoder					
				Without lock			With lock			Without lock			With lock		
				A	W	Z	A	W	Z	A	W	Z	A	W	Z
63	Up to 200	190.7	60	338.3	110.2	8.1	366.9	138.8	8.1	326.6	98.5	8.1	366.1	138	8.1
	205 to 500	225.7		373.3			401.9			361.6			401.1		
	505 to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

Body Bottom Tapped

[mm]

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

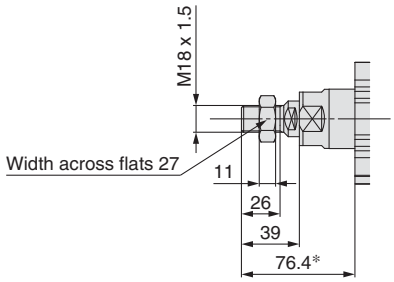
IP65 equivalent (Dust-tight/Water-jet-proof): LEY63D□□-□P
(View ZZ)



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

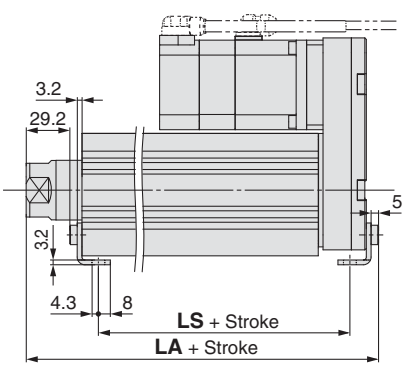
Dimensions

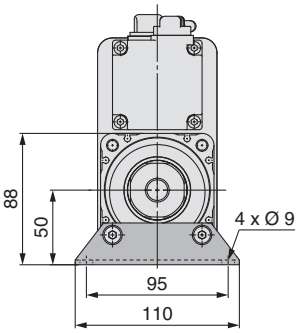
End male thread: LEY63□□□-□□M



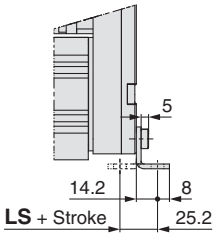
∗ The measurement 76.4 is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Foot: LEY63□□□-□□L





Outward mounting



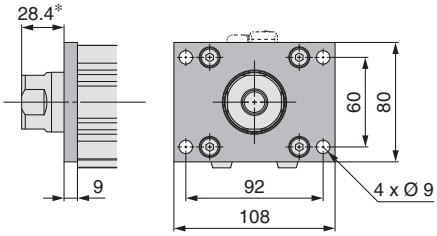
Included parts
• Foot
• Body mounting bolt

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

[mm]

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

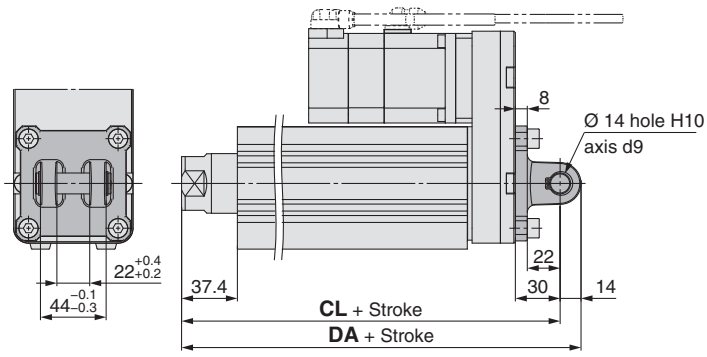
Rod flange: LEY63□□□-□□F



Included parts
• Flange
• Body mounting bolt

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

Double clevis: LEY63□□□-□□D



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

[mm]

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

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

Electric Actuator/ Rod Type

Dust/Drip proof (IP65 Equivalent)

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

RoHS

How to Order

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

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

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

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
D	In-line

❹ Motor type*

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

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

❺ Lead [mm]

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

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

❻ Stroke [mm]

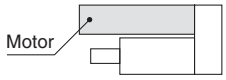
30	30
to	to
500	500

* Refer to the applicable stroke table.

❼ Motor option

—	Without option
B	With lock*

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



❽ Rod end thread

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

❾ Mounting*1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
・LEY25: 200 mm or less
・LEY32: 100 mm or less
*3 Rod flange is not available for the LEY25 with stroke 30 mm and motor option "With lock".
*4 Head flange is not available for the LEY32.

❿ Cable type*

—	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 185 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 driver	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

⓭ I/O cable length [m]*

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

* When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 186 if I/O cable is required. (Options are shown on page 186.)

* Applicable Stroke Table

●: Standard

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

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

* For auto switches, refer to page 36.

Specifications

Model				LEY25S$^{2}_{6}$/LEY25DS$^{2}_{6}$			LEY32S$^{3}_{7}$ (Top mounting)			LEY32DS$^{3}_{7}$ (In-line)		
Actuator specifications	Stroke [mm] Note 1)			30, 50, 100, 150, 200 250, 300, 350, 400			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500		
	Work load [kg]	Horizontal Note 2)		18	50	50	30	60	60	30	60	60
		Vertical Note 10)		8	16	30	9	19	37	12	24	46
	Force [N] Note 3) (Set value: 15 to 30 %)			65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed Note 4) [mm/s]	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s] Note 5)			35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]			5000			5000					
	Positioning repeatability [mm]		Basic type	±0.02								
			High precision type	±0.01								
	Lost motion [mm] Note 6)		Basic type	0.1 or less								
			High precision type	0.05 or less								
	Lead [mm]			12	6	3	20 Note 7)	10 Note 7)	5 Note 7)	16	8	4
	Impact/Vibration resistance [m/s²] Note 8)			50/20			50/20					
	Actuation type			Ball screw + Belt/Ball screw			Ball screw + Belt			Ball screw		
	Guide type			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Enclosure Note 9)			IP65 equivalent								
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option			May be required depending on speed and work load. (Refer to LEY catalogue conditions for "Regeneration Option")								
Electric specifications	Motor output/Size			100 W/□40			200 W/□60					
	Motor type			AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)					
	Encoder			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute/incremental dual 18-bit encoder (Resolution: 262144 p/rev)								
	Power consumption [W] Note 11)		Horizontal	45			65			65		
			Vertical	145			175			175		
	Standby power consumption when operating [W] Note 12)		Horizontal	2			2			2		
			Vertical	8			8			8		
	Max. instantaneous power consumption [W] Note 13)			445			724			724		
Lock unit specifications	Type Note 14)			Non-magnetizing lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20 °C Note 15)			6.3			7.9			7.9		
	Rated voltage [V]			24 VDC								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph" on page 131. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 4) The allowable speed changes according to the stroke. Set the number of rotations according to speed.
Note 5) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 7) Equivalent lead which includes the pulley ratio [1.25:1]
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take suitable protective measures.
Note 10) When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.
Note 11) The power consumption (including the driver) is for when the actuator is operating.
Note 12) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 13) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 14) Only when motor option "With lock" is selected.
Note 15) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

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

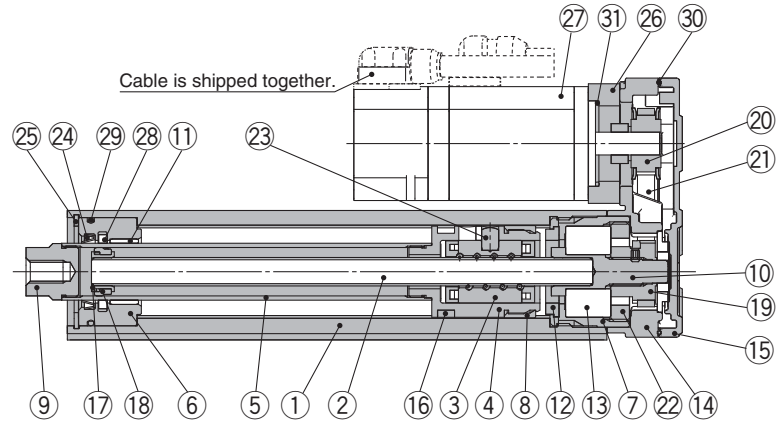
Additional Weight

[kg]

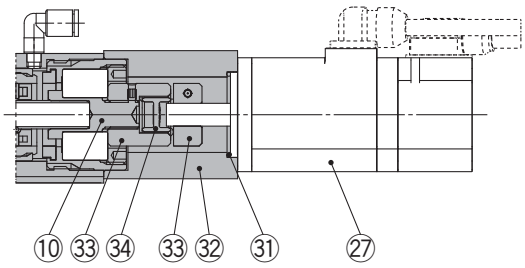
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

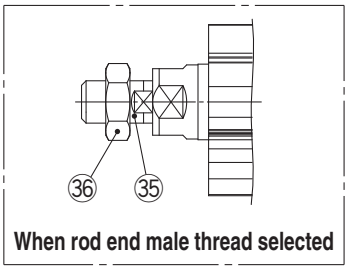
Construction

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

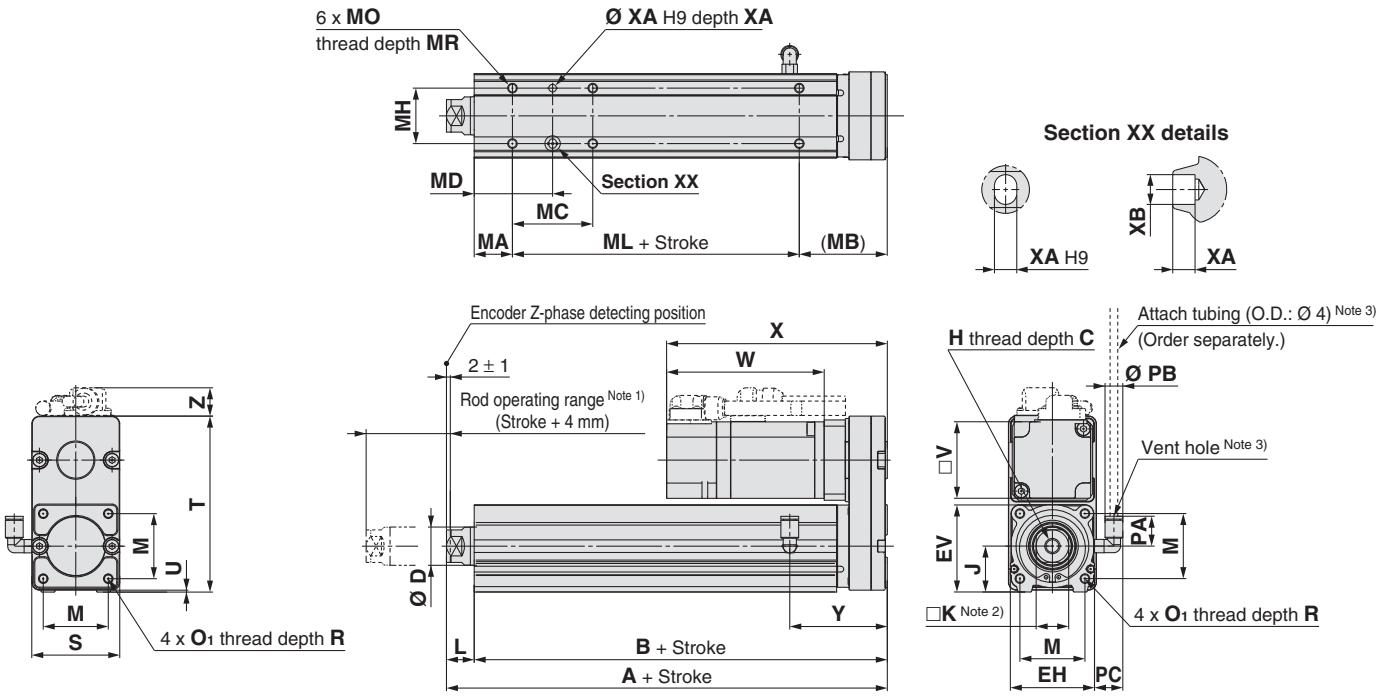
Replacement Parts/Grease Pack

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$^{25}_{32}$



[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	PA	PB	V
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60
	101 to 500	178.5	160														

Size	Stroke range [mm]	S	T	U	PC	Incremental encoder						Absolute encoder						Y
						Without lock			With lock			Without lock			With lock			
						W	X	Z	W	X	Z	W	X	Z	W	X	Z	
25	15 to 100	46	92	1	15.4	87	120	14.1	123.9	156.9	15.8	82.4	115.4	14.1	123.5	156.5	15.8	51
	101 to 400																	
32	20 to 100	60	118	1	15.9	88.2	128.2	17.1	116.8	156.8	17.1	76.6	116.6	17.1	116.1	156.1	17.1	61
	101 to 500																	

Body Bottom Tapped

[mm]

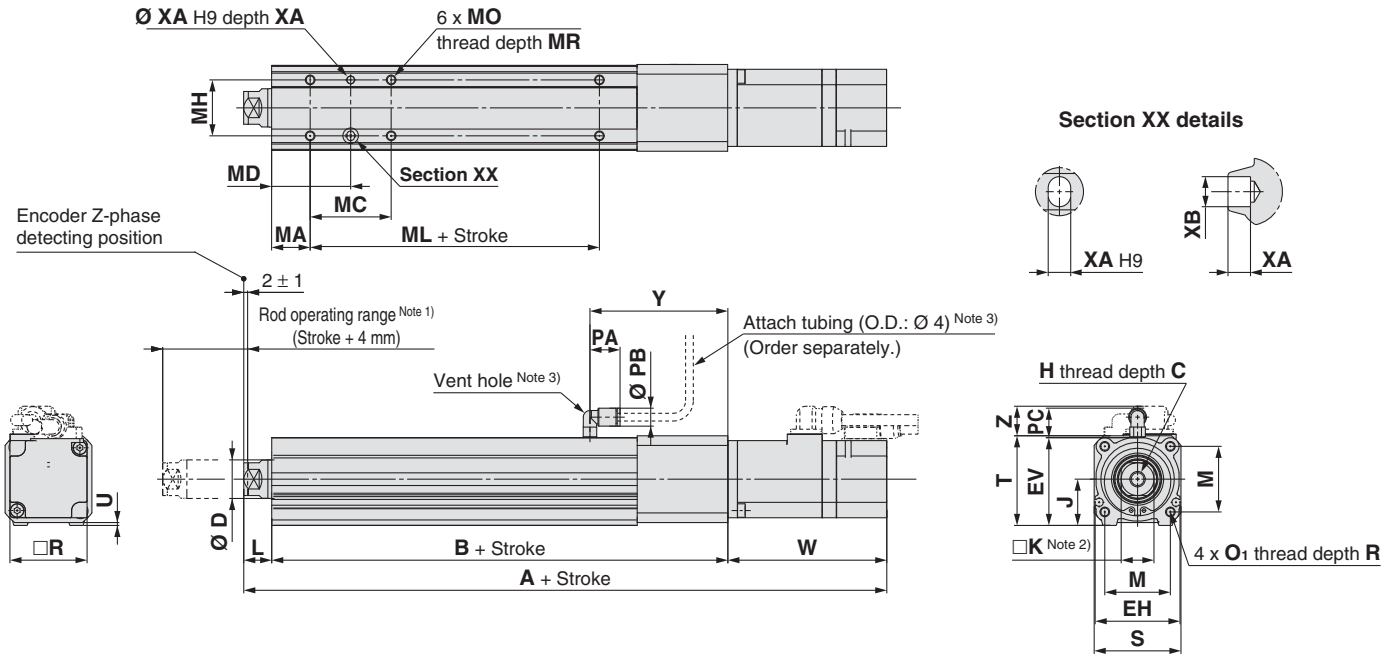
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125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

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

For the rod end male thread, refer to page 138. For the mounting bracket dimensions, refer to page 25.

Dimensions

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



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

Size	Stroke range [mm]	H	J	K	L	M	O1	R	PA	PB	V	S	T	U	PC	Y
25	15 to 100	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40	45	46.5	1.5	15.9	71.5
	101 to 400															
32	20 to 100	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60	60	61	1	15.9	87
	101 to 500															

Body Bottom Tapped

[mm]

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

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

For the rod end male thread, refer to page 138. For the mounting bracket dimensions, refer to page 25.

Electric Actuator/Rod Type

AC Servo Motor

Series 25A-LEY

LEY25, 32 Size 25, 32

How to Order

25A-LEY **H** **25** **□** **S2** **B** – **100** **□** **□** **□** – **S** **2** **A1** **□**

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

Series compatible with secondary batteries

❶ Accuracy

—	Basic Type
H	High precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
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 **the website www.smc.eu**.

❺ 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])

❻ Stroke [mm]

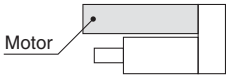
30	30
to	to
500	500

* Refer to the table below for details.

❼ 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.



❽ Rod end thread

—	Female rod end
M	Male rod end (1 rod end nut is included.)

❾ Mounting*1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the rod flange, head flange and ends tapped, use the actuator within the following stroke range.
· LEY25: 200 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 Rod flange is not available for the LEY25 with stroke 30 and motor option "With lock".
*5 Head flange is not available for the LEY32.

Mounting Bracket Part No. for Series 25A-

Applicable size	Foot*1	Flange	Double clevis
25	25-LEY-L025	25-LEY-F025	25-LEY-D025
32	25-LEY-L032	25-LEY-F032	25-LEY-D032
Surface treatment	RAYDENT®	RAYDENT®	Coating (Size 16: Electroless nickel plating)

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

* Applicable stroke table

● Standard

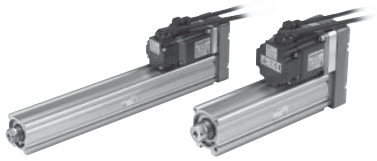
Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range [mm]
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

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

For details about auto switches, refer to "Series Compatible with Secondary Batteries" .

Applicable auto switches
D-M9N(V)-900, D-M9P(V)-900, D-M9B(V)-900
D-M9NW(V)-900, D-M9PW(V)-900, D-M9BW(V)-900

SMC



Motor mounting position: Top/Parallel

Motor mounting position: In-line

⑩ 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

⑪ Cable length* [m]

—	Without cable
2	2
5	5
A	10

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

⑫ Driver type*

	Compatible drivers	Power supply voltage [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

⑬ I/O Cable length [m]*

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

* When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to **the WEB LEY** if I/O cable is required.

* Specifications and dimensions for the 25A-series are the same as standard products.

Compatible Drivers

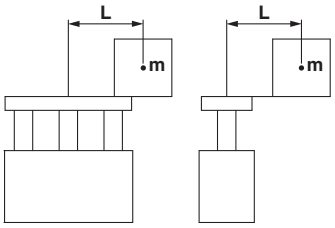
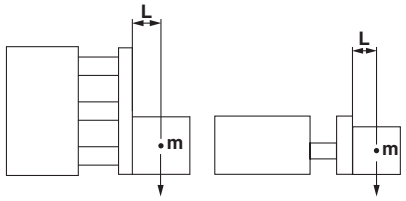
Driver type	Pulse input type/ Positioning type	Pulse input type	CC-Link direct input type	SSCNETⅢ type
				
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNETⅢ
Control encoder	Incremental 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)			

* Copper and zinc materials are used for the motors, cables, controllers/drivers.

Series LEYG
Model Selection

Moment Load Graph

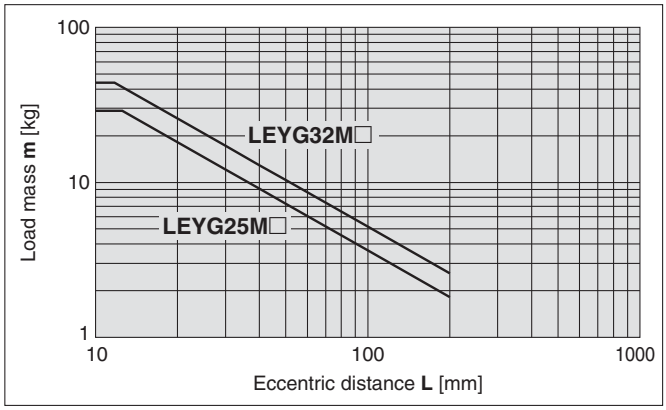
Selection conditions

	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*	⑦, ⑧
Graph (Ball bushing bearing type)	③, ④	⑨, ⑩	⑪, ⑫

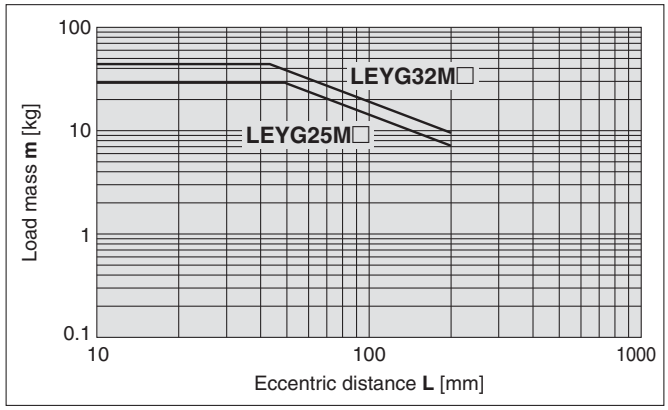
∗ For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 stroke or less



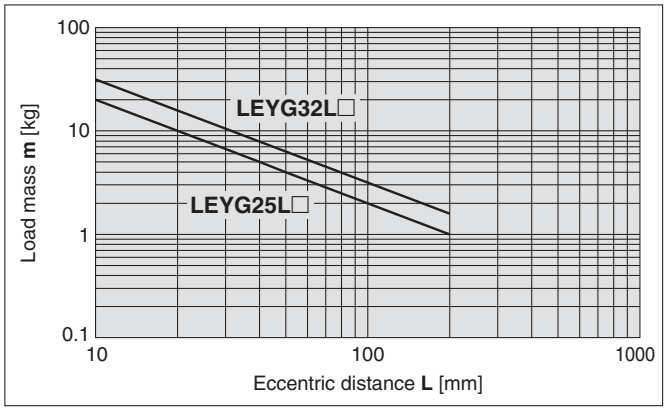
② Over 75 stroke



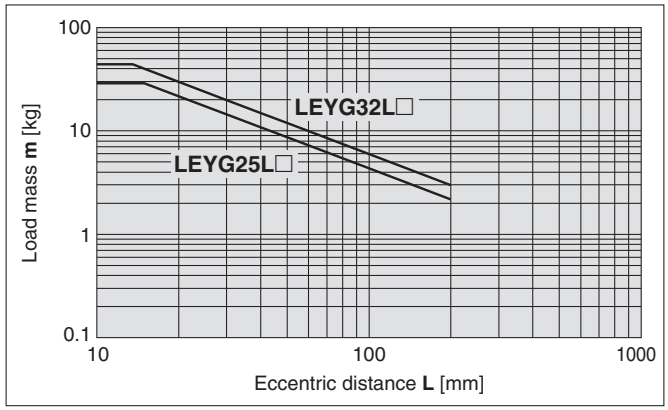
∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 159.

Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



④ Over 40 stroke

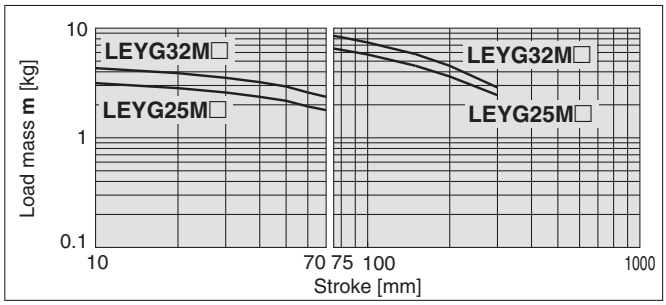


∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Vertical Work Load Graph" on page 159.

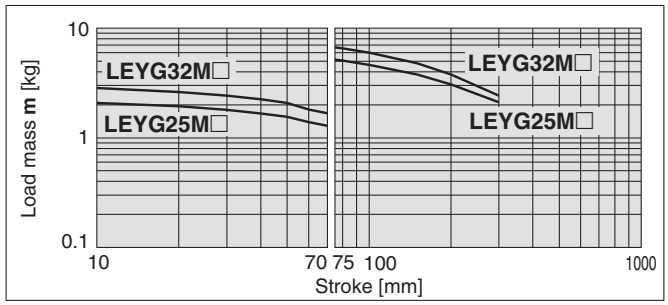
Moment Load Graph

Horizontal Mounting, Sliding Bearing

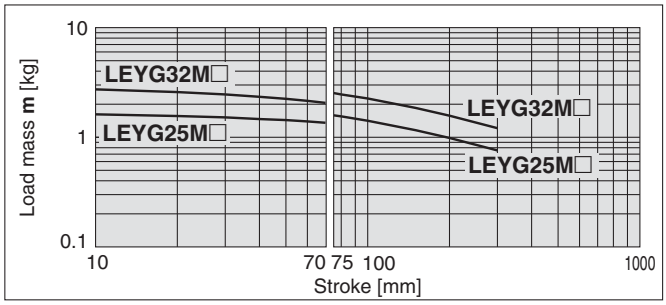
⑤ **L = 50 mm Max. speed = 200 mm/s or less**



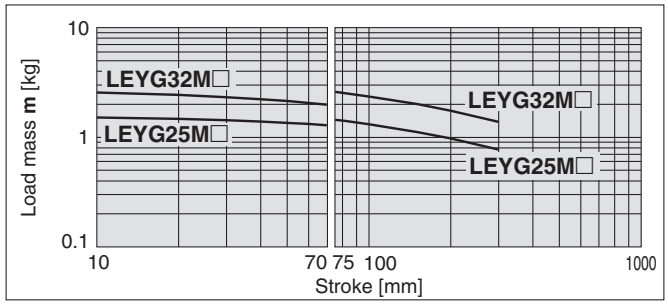
⑥ **L = 100 mm Max. speed = 200 mm/s or less**



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

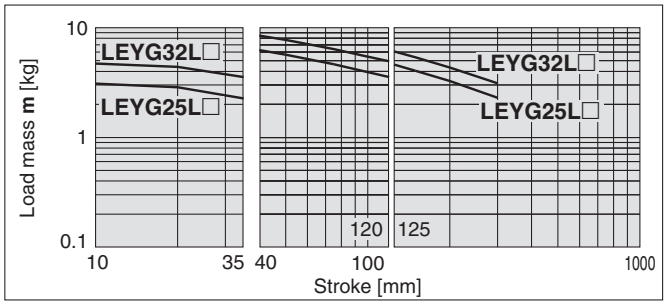


⑧ **L = 100 mm Max. speed = Over 200 mm/s**

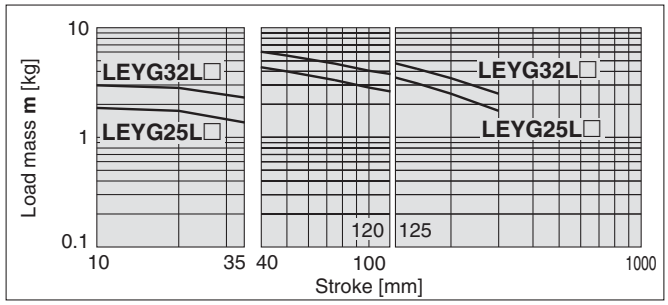


Horizontal Mounting, Ball Bushing Bearing

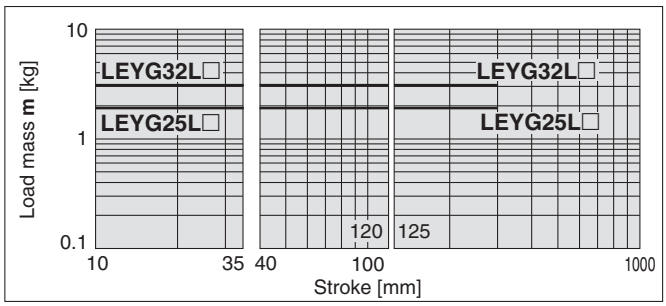
⑨ **L = 50 mm Max. speed = 200 mm/s or less**



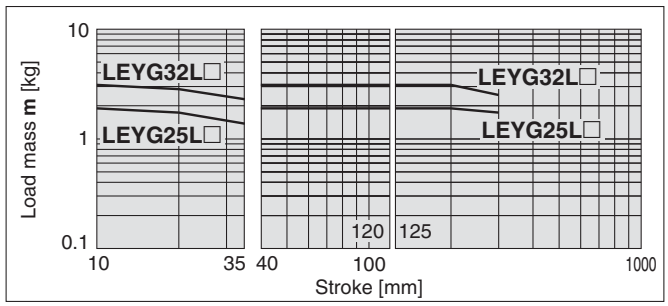
⑩ **L = 100 mm Max. speed = 200 mm/s or less**



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

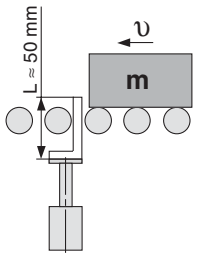


⑫ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

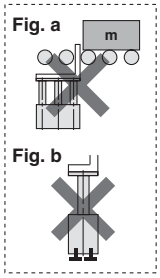
Handling Precautions

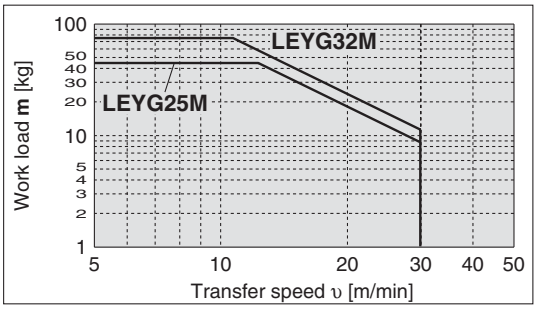
Note 1) When used as a stopper, select a model with 30 stroke or less.

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**).

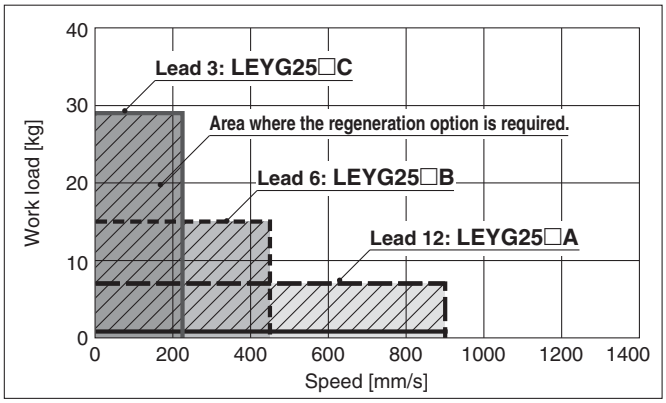
Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).





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

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



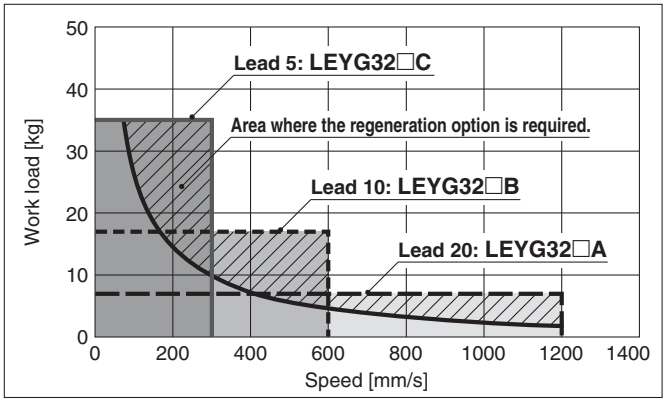
Required conditions for "Regeneration option"

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

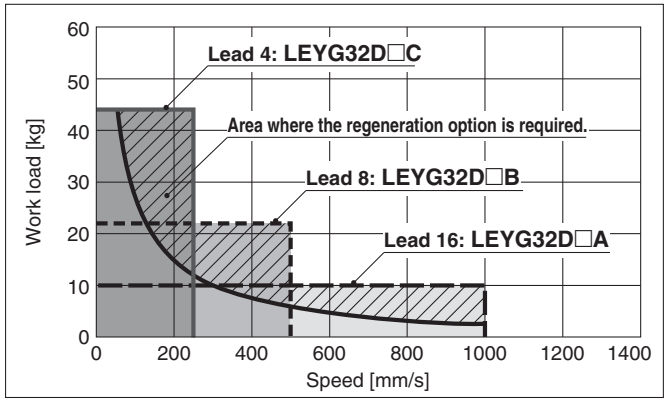
"Regeneration Option" Models

Size	Model
LEYG25□	LEC-MR-RB-032
LEYG32□	LEC-MR-RB-032

LEYG32□ (Motor mounting position: Top mounting)

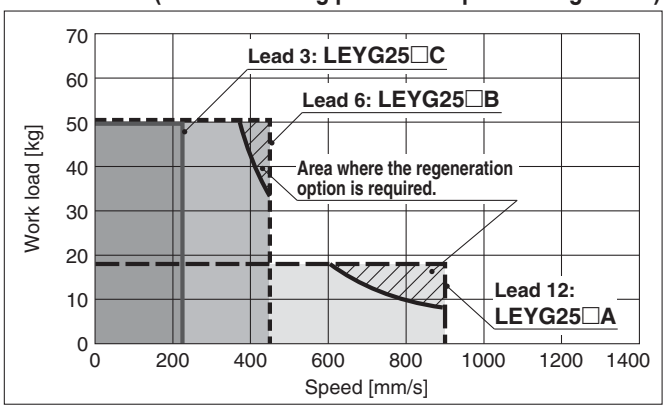


LEYG32D (Motor mounting position: In-line)



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

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



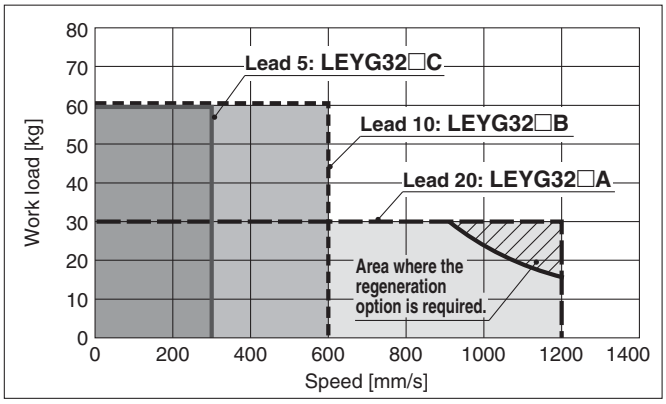
Required conditions for "Regeneration option"

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

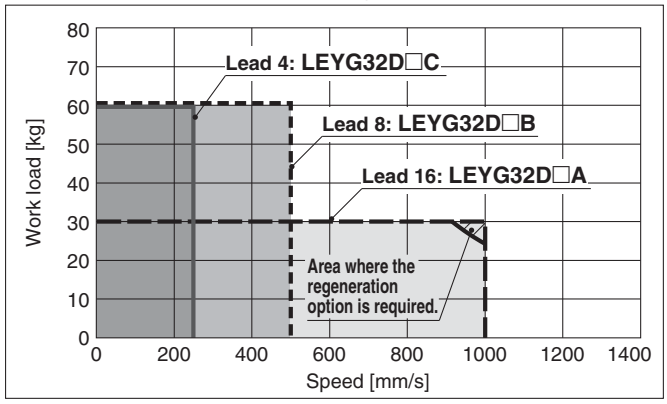
"Regeneration Option" Models

Size	Model
LEYG25□	LEC-MR-RB-032
LEYG32□	LEC-MR-RB-032

LEYG32□ (Motor mounting position: Top mounting)

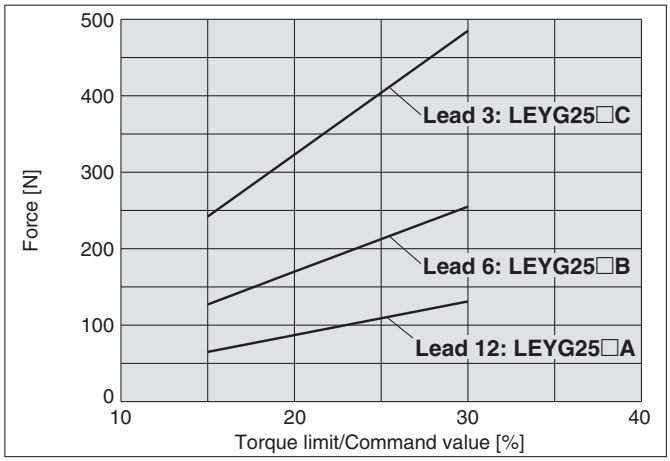


LEYG32D (Motor mounting position: In-line)



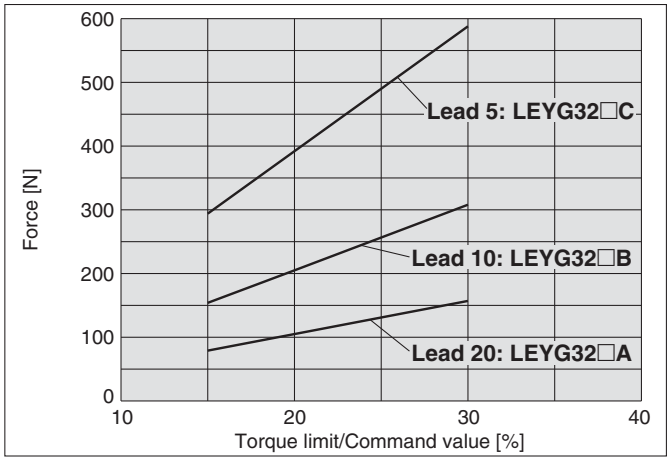
Force Conversion Graph

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



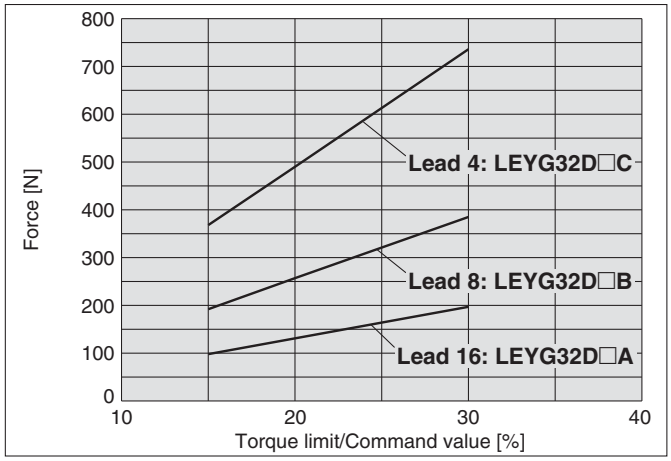
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEYG32□ (Motor mounting position: Top mounting)



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

LEYG32D (Motor mounting position: In-line)



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

Electric Actuator/ Guide Rod Type

Series LEYG LEYG25, 32

CE RoHS

MECHATROLINK Compatible ▶Page 200

How to Order

LEY H G 25 M ☐ S2 B – 100 ☐ ☐ – S 2 A1 ☐

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

25	
32	

❸ Bearing type

M	Sliding bearing
L	Ball bushing bearing

❹ Motor mounting position

—	Top mounting
D	In-line

❺ Motor type*1, 2

Symbol	Type	Output [W]	Actuator size	Compatible driver*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
T6	AC servo motor (Absolute encoder)	100	25	LECSS2-T5
T7		200	32	LECSS2-T7

*1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
*2 For motor type T6, the compatible driver part number suffix is T5.
*3 For details about the driver, refer to page 173.

❻ 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])

❼ Stroke [mm]

30	30
to	to
300	300

* Refer to the applicable stroke table.
* There is a limit for mounting size 3 2 top mounting type and 5 0 mm stroke or less. Refer to the dimensions.

❽ Motor option

—	Without option
B	With lock

❾ Guide option

—	Without option
F	With grease retaining function

* Only available for size 25 and 32 sliding bearings. (Refer to “Construction” on page 165.)

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
  • Top mounting: (A) Axis side
  • In-line: (B) Counter axis side
  (Refer to page 185 for details.)

⓫ Cable length* [m]

—	Without cable
2	2
5	5
A	10

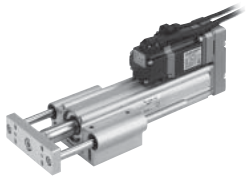
* The length of the encoder, motor and lock cables are the same.

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

For auto switches, refer to pages 27 and 28.



Motor mounting position: Top mounting

Motor mounting position: In-line

⑫ Driver type*

	Compatible driver	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
	LECSS2-T□	200 to 240

* 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

⑬ I/O cable length [m]*

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

* When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 186 if I/O cable is required.
(Options are shown on page 186.)

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.
· Please consult with SMC when using auto switch on the rod stick out side, as it is produced as a special order.

Compatible Driver

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET Ⅲ type	SSCNET Ⅲ/H Type
					
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**	**LECSS-T**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—	—
Pulse input	○	○	—	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ	SSCNET Ⅲ/H
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication	USB communication
Power supply voltage [V]	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)				200 to 240 VAC (50/60 Hz)
Reference page	Page 173				Page 189

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
	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]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02								
		High precision type	±0.01								
	Lost motion Note 5) [mm]	Basic type	0.1 or less								
		High precision type	0.05 or less								
	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 [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)					
	Regeneration option Note 7)		May be required depending on speed and work load (refer to page 159)								
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			Non-magnetizing lock					
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption at 20 °C [W] Note 12)		6.3			7.9			7.9		
	Rated Voltage [V]		24 VDC								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph" on page 158. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
Note 4) The allowable collision speed for collision with the workpiece with the torque control mode.
Note 5) A reference value for correcting an error in reciprocal operation.
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 page 157.
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 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

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

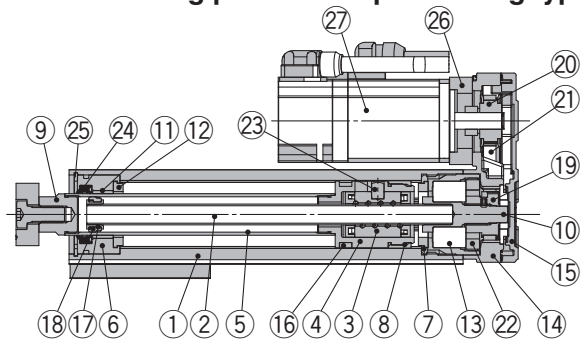
Additional Weight

[kg]

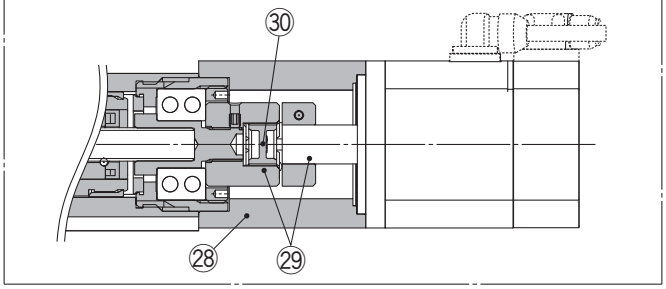
Size		**25**	**32**
Lock	**Incremental encoder**	0.20	0.40
	Absolute encoder	0.30	0.66

Construction

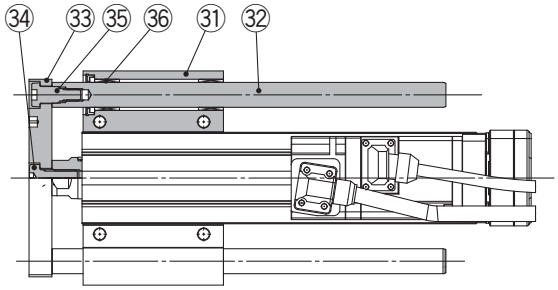
Motor mounting position: Top mounting type



Motor mounting position: In-line type



LEYG□M

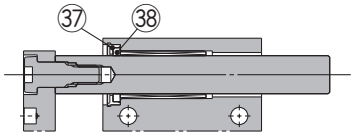


LEYG25/32: 50st or less

LEYG25/32: Over 50st

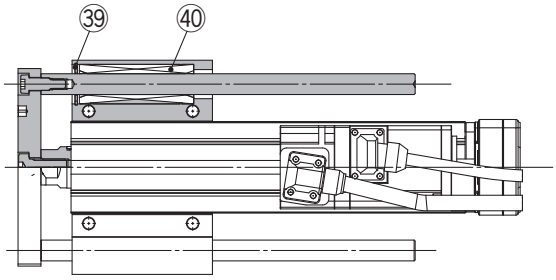
When grease retaining function selected

LEYG25/32: 50st or less

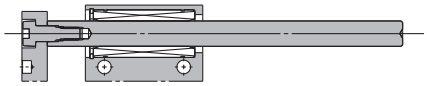


LEYG25/32: Over 50st

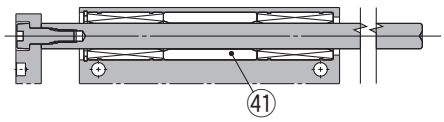
LEYG□L



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	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	
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**	—	

No.	Description	Material	Note
28	**Motor block**	Aluminium alloy	Coating
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

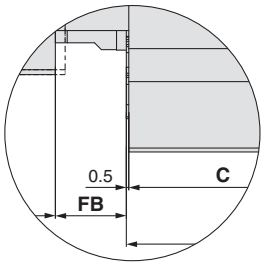
Size	Order no.
25	LE-D-2-2
32	LE-D-2-4

Replacement Parts/Grease Pack

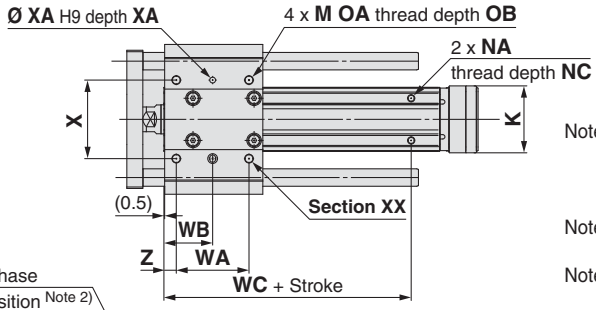
Applied portion	Order no.
Piston rod Guide rod	GR-S-010 (10 g) GR-S-020 (20 g)

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

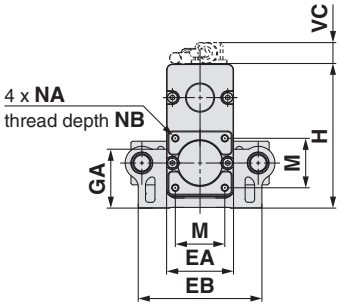
Dimensions: Top Mounting

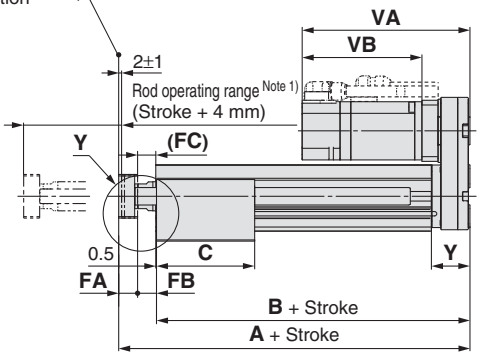


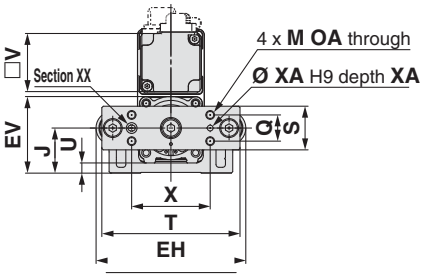
Section Y details

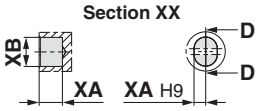


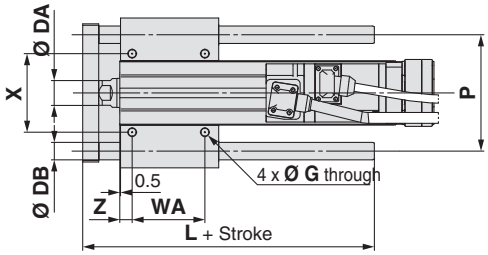
Note 1) Range within which the rod can move. Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) The Z phase first detecting position from the stroke end of the motor side.
Note 3) Through holes cannot be used for size 32 with 50 mm stroke or less.











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	

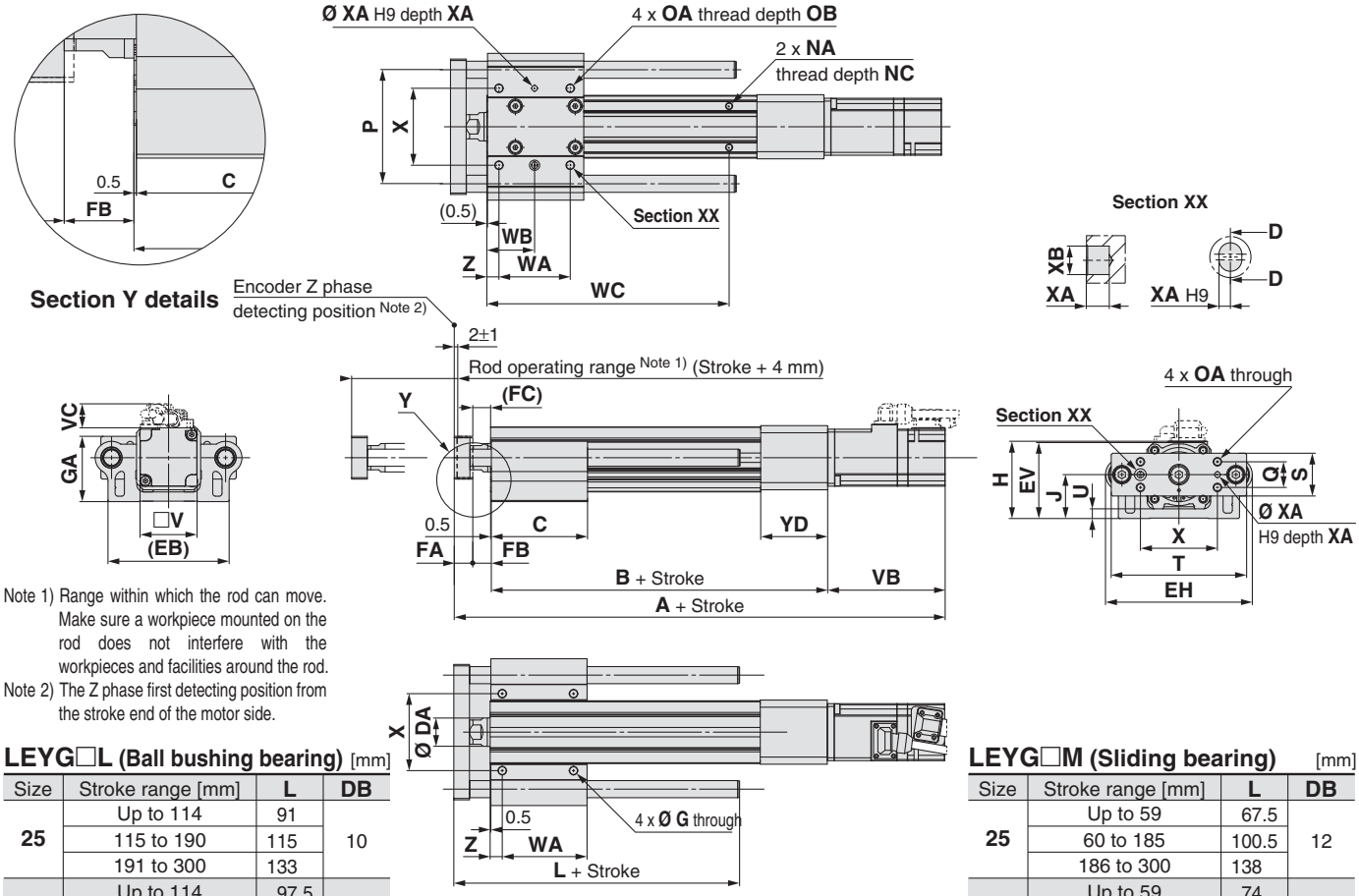
LEYG□M, LEYG□L Common [mm]

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	52.3	11	14.5	12.5	5.4	40.3	98.8	30.8	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	63.8	12	18.5	16.5	5.4	50.3	125.8	38.3	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	6.8	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	7.3	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	136.5	50	20	46	85	103	52.3	11	14.5	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8	6.5
	40 to 100		67.5															
	101 to 124	161.5																
	125 to 200		84.5															
	201 to 300		102															
32	Up to 39	156	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40 to 100		68															
	101 to 124	186																
	125 to 200		85															
	201 to 300		102															

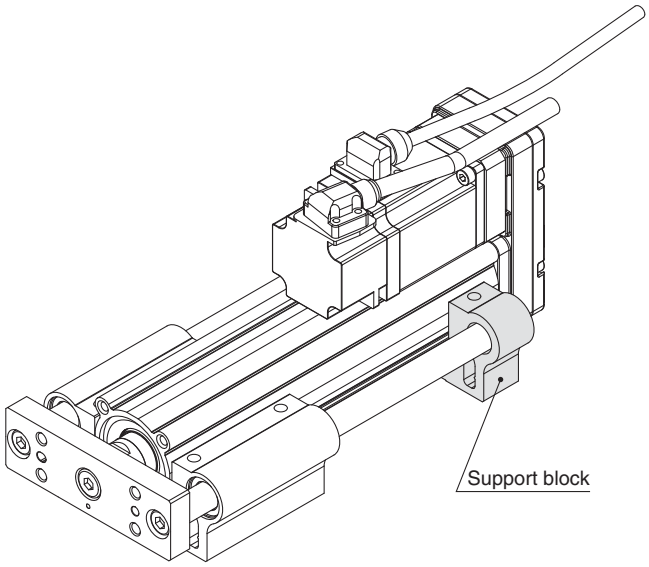
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z
25	Up to 39	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	47	8.5
	40 to 100									50	33.5						
	101 to 124											95					
	125 to 200									70	43.5						
	201 to 300									85	51						
32	Up to 39	M6 x 1.0	12	95	28	40	117	7.3	60	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 mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

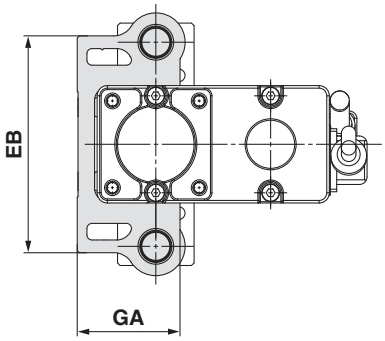


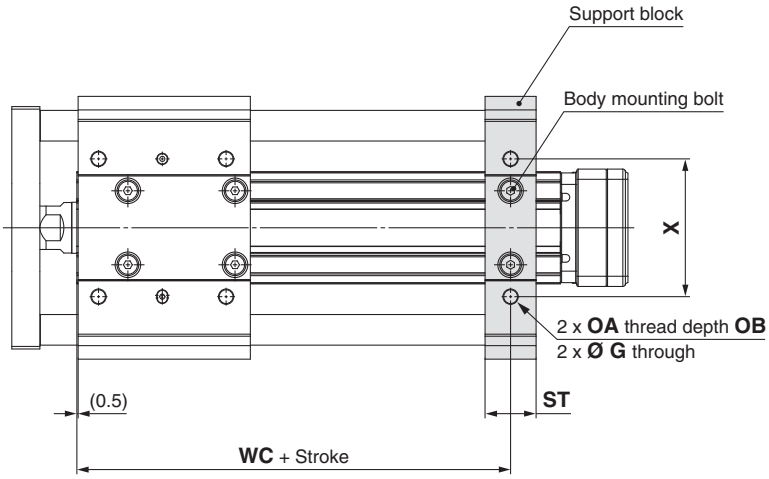
Support Block Model

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	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32	**LEYG-S032**	100st or less	101	5.4	50.3	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

∗ Two body mounting bolts are included with the support block.
∗ The through holes of the LEYG-S032 cannot be used. Use taps on the bottom.

Series LEY/LEYG
Electric Actuators/ Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

Design/Selection

⚠Warning

1. Do not apply a load in excess of the specification limits.

Select a suitable actuator by work load and allowable lateral load on the rod end. If the product is used outside of the specification limits, 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" for a stroke of 30 mm or less.

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

It may lead to damage and malfunction.

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

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

3. 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.

4. 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).

5. 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

6. When an actuator is operated with one end fixed and the other free (ends tapped or 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 at the stroke end.

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

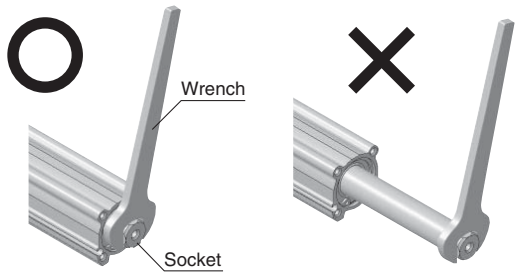
7. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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

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□□	LEY63
	1.1	1.4	2.8

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.



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

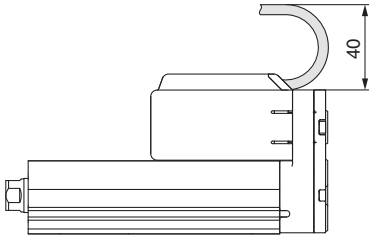
This may cause deformation of the guide rod and bushing, play in the guide or an increase in the sliding resistance.

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

Handling

⚠Caution

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



10. 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.

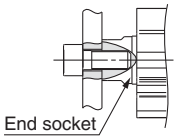
This may cause abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

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

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

<Series LEY>

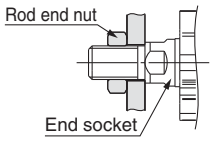
Workpiece fixed/Rod end female thread



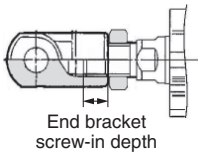
Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]	End socket width across flats [mm]
LEY25	M8 x 1.25	12.5	13	17
LEY32	M8 x 1.25	12.5	13	22
LEY63	M16 x 2	106	21	36

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
LEY63	M18 x 1.5	97.0	26	36



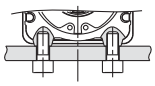
Model	Rod end nut		End bracket
	Width across flats [mm]	Length [mm]	screw-in depth [mm]
LEY25	22	8	8 or more
LEY32	22	8	8 or more
LEY63	27	11	18

∗ Rod end nut is an accessary.

⚠Caution

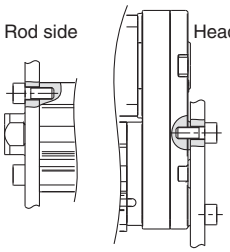
Body fixed/Body bottom tapped style

(When "Body bottom tapped" is selected.)



Model	Screw size	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
LEY63	M8 x 1.25	12.5	10

Body fixed/Rod side/Head side tapped style

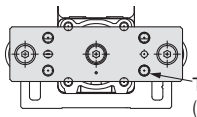


Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY25	M5 x 0.8	3.0	8
LEY32	M6 x 1.0	5.2	10
LEY63	M8 x 1.25	12.5	16

∗ Except the LEY□D.

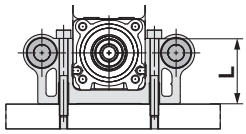
<Series LEYG>

Workpiece fixed/Plate tapped style



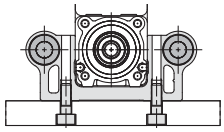
Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	11
LEYG32$^{M}_{L}$	M6 x 1.0	5.2	12

Body fixed/Top mounting



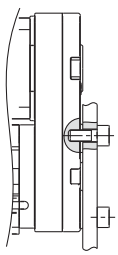
Model	Screw size	Max. tightening torque [N·m]	Length: L [mm]
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	40.3
LEYG32$^{M}_{L}$	M5 x 0.8	3.0	50.3

Body fixed/Bottom mounting



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	12
LEYG32$^{M}_{L}$	M6 x 1.0	5.2	12

Body fixed/Head side tapped style



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG32$^{M}_{L}$	M6 x 1.0	5.2	10

Electric Actuators/ Specific Product Precautions 3

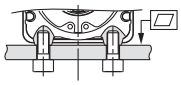
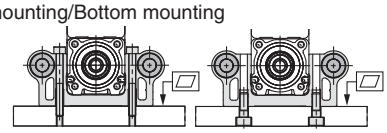
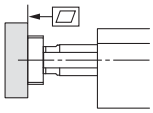
Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

Handling

⚠Caution

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

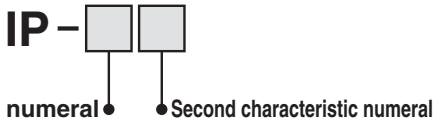
Unevenness of a workpiece or base mounted on the body of the product may cause an increase in the sliding resistance.

Model	Mounting position	Flatness
LEY□	Body/Body bottom 	0.02 mm or less
LEYG□	Top mounting/Bottom mounting 	0.02 mm or less
	Workpiece/Plate mounting 	0.05 mm or less

13. 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.
- The auto switches with perpendicular electrical entry cannot be used.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Please consult with SMC when using auto switch on the rod stick out side.

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) IP65: Dust-tight, Water-jet-proof type
"Water-jet-proof type" means that no water intrudes inside an equipment that could hinder from operating normally by means of applying water for 3 minutes in the prescribed manner. Take appropriate protection measures, since a device is not usable in an environment where a droplet of water is splashed constantly.

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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 first.

- **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**

SSCNETIII/H SERVO SYSTEM CONTROLLER NETWORK **Type**

Absolute Type
***Series* LECSS-T**

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)

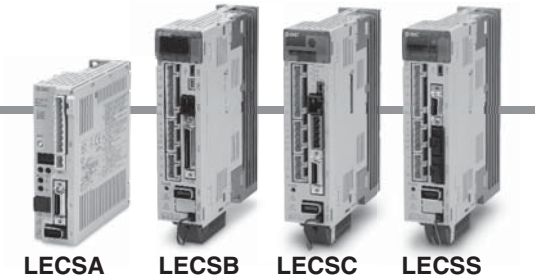
CC-Link

- **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. one-way 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)



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

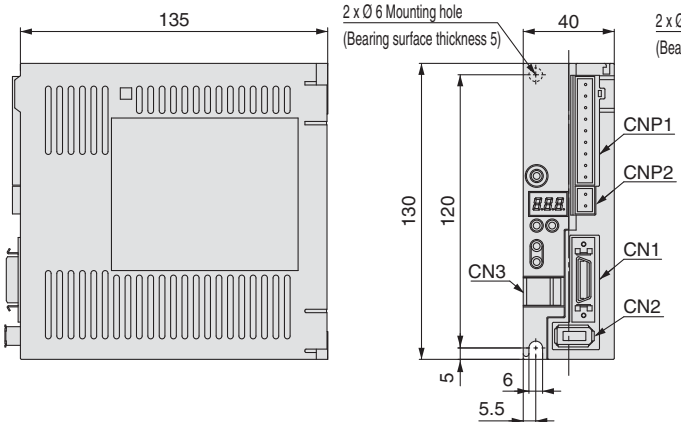
Symbol	Type	Capacity	Encoder
S1	AC servo motor (S2)	100 W	Incremental
S3	AC servo motor (S3)	200 W	
S4	AC servo motor (S4)*	400 W	
S5	AC servo motor (S6)	100 W	Absolute
S7	AC servo motor (S7)	200 W	
S8	AC servo motor (S8)*	400 W	

* Only available for power supply voltage “200 to 230 VAC”.

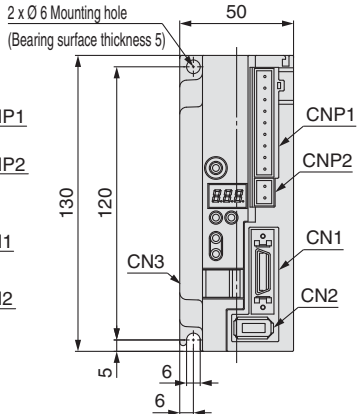
Dimensions

LECSA□

For LECSA□-S1,S3

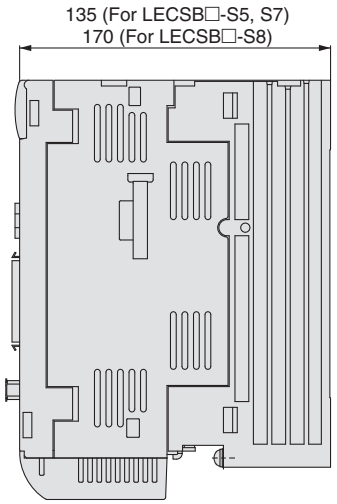


For LECSA□-S4

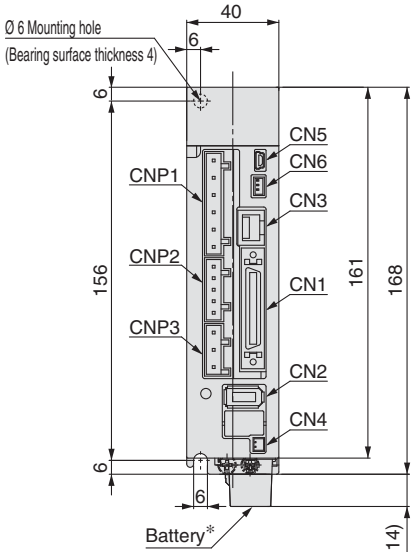


Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector

LECSB□



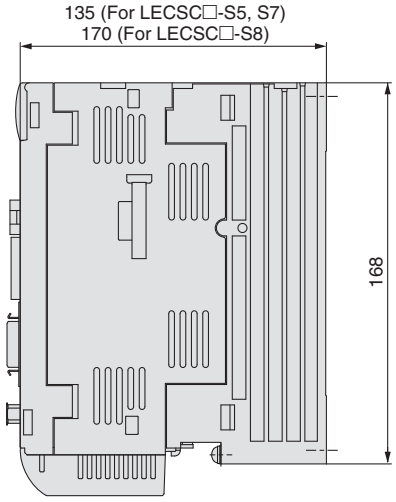
*Battery included.

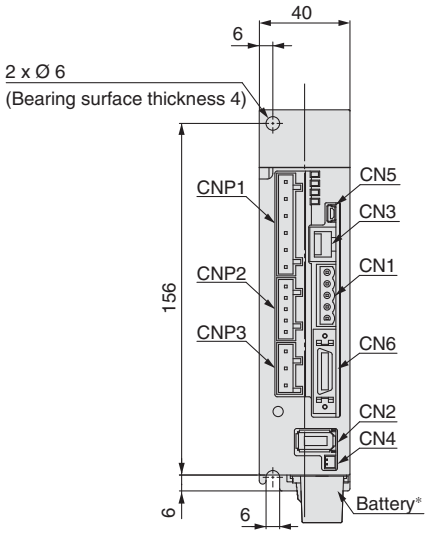


Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analogue monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

Dimensions

LECSC□

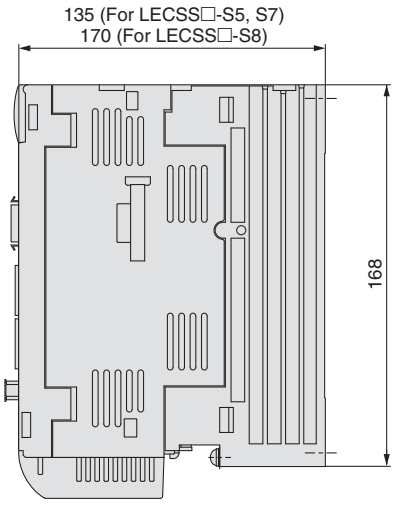


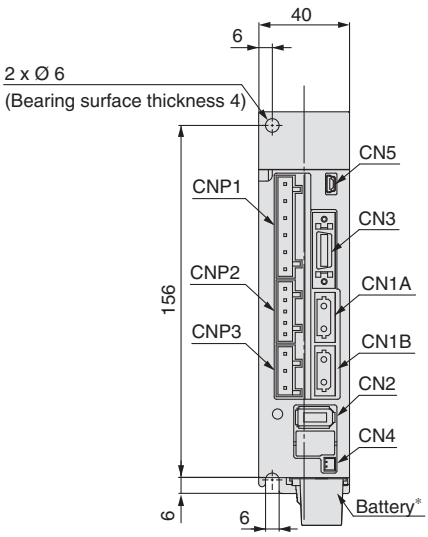


Connector name	Description
CN1	CC-Link connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	I/O signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ 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)*2				
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)		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		
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.
*2 If the command pulse train input is open collector method, it supports only to the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

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, RS422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS422 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

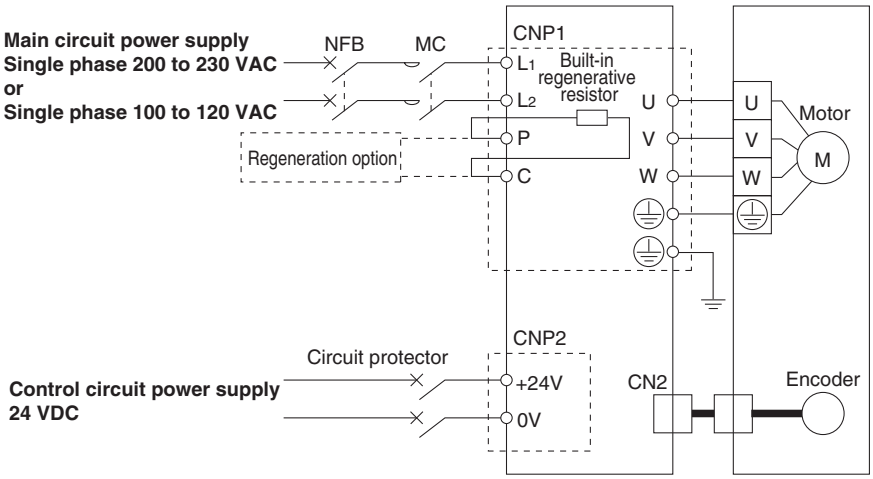
*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the overall cable length and the cable length between stations.
*2 USB communication and RS422 communication cannot be performed at the same time.

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

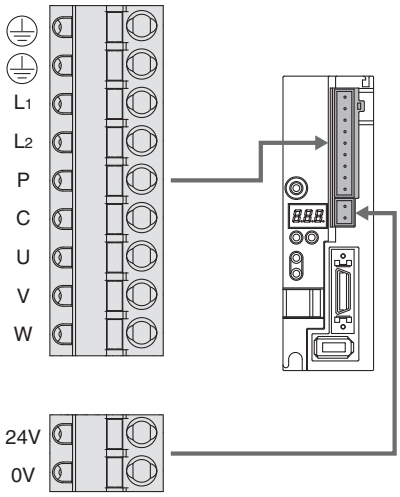
LECSA□-□



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)	



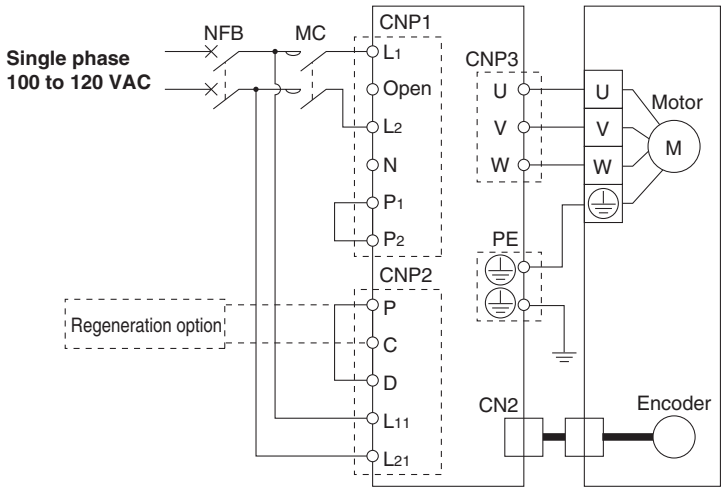
Control Circuit Power Supply Connector: CNP2

∗ 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

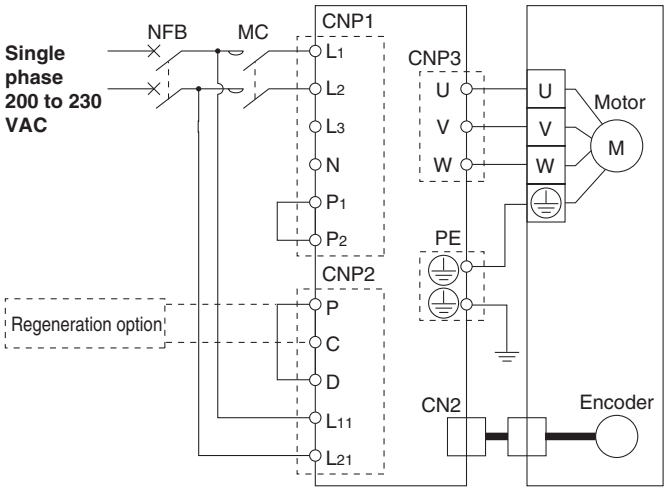
Power Supply Wiring Example: LECSB, LECSC, LECSS

LECSB1-□
LECSC1-□
LECSS1-□

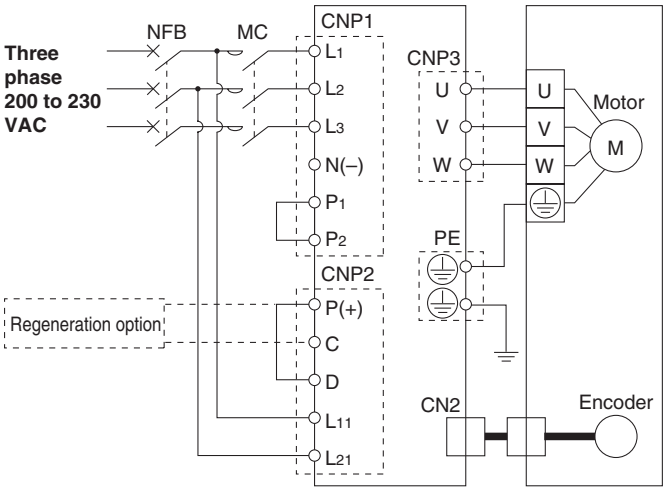


LECSB2-□
LECSC2-□
LECSS2-□

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

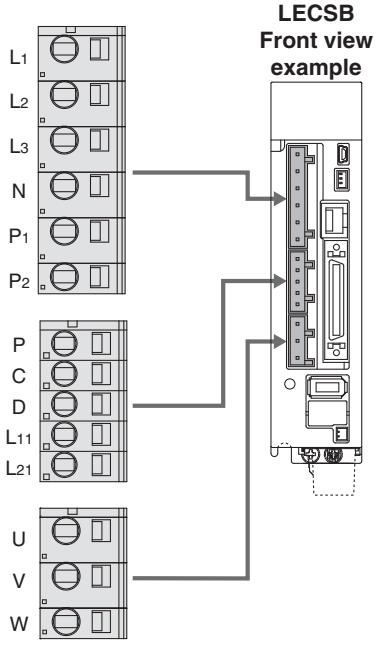
Terminal name	Function	Details
P	Regeneration option	Connect between P and D. (Connected at time of shipping.) ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECSC1/LECSS1: 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

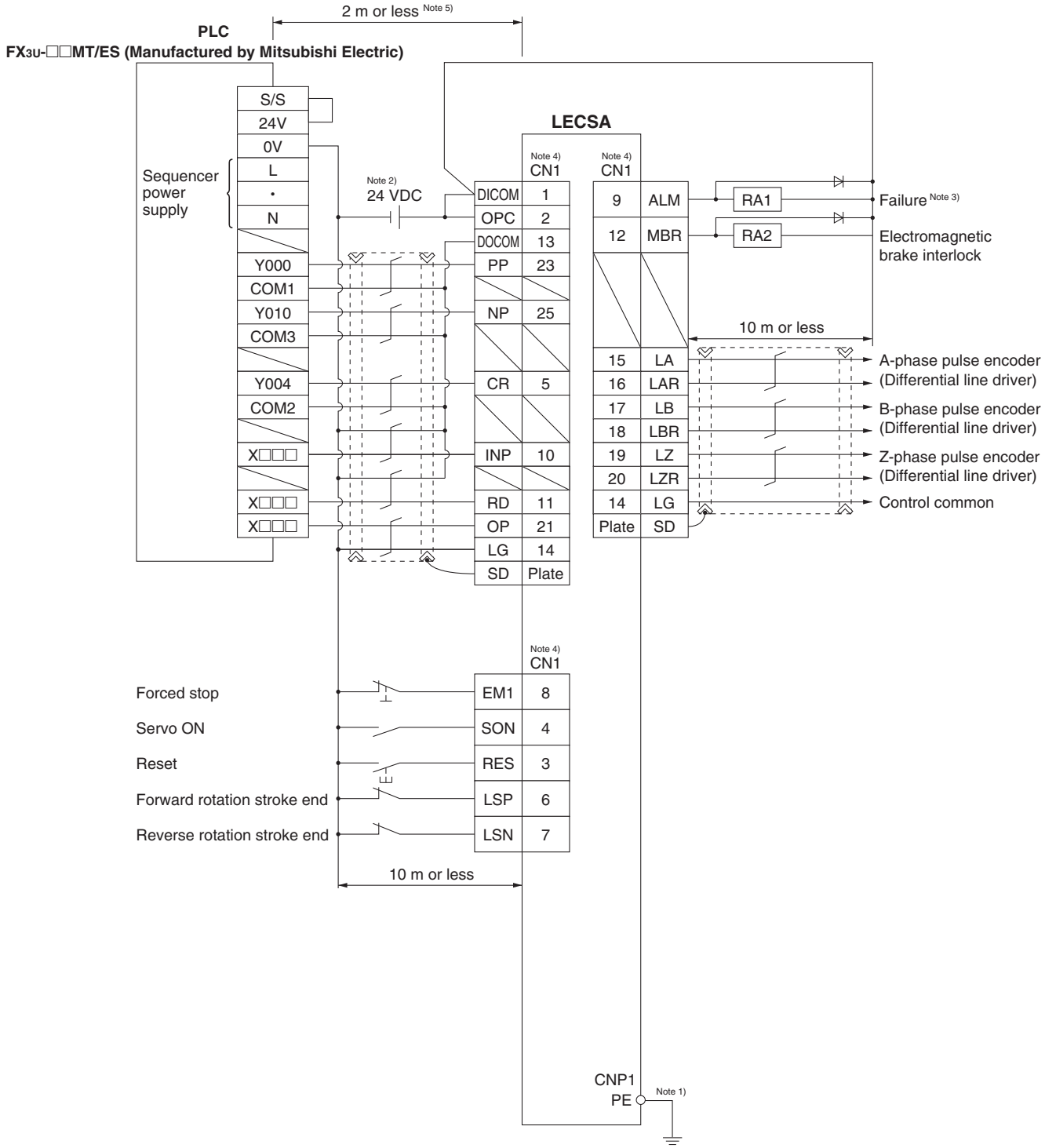
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W)
V	Servo motor power (V)	
W	Servo motor power (W)	

LECSB Front view example



Control Signal Wiring Example: LECSA

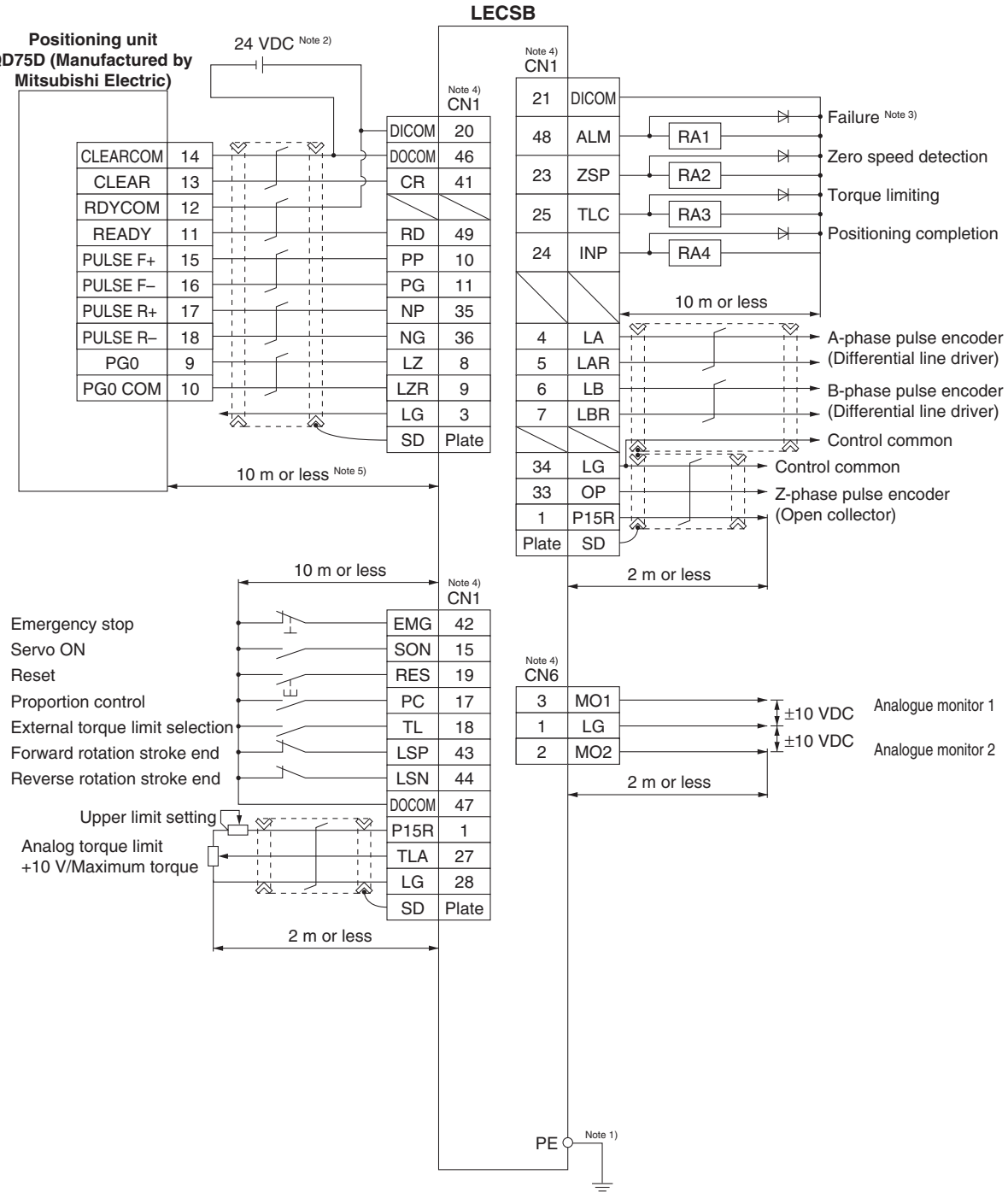
This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSA operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal (marked ⏚) 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.
Note 6) If the command pulse train input is open collector method, it supports only to the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

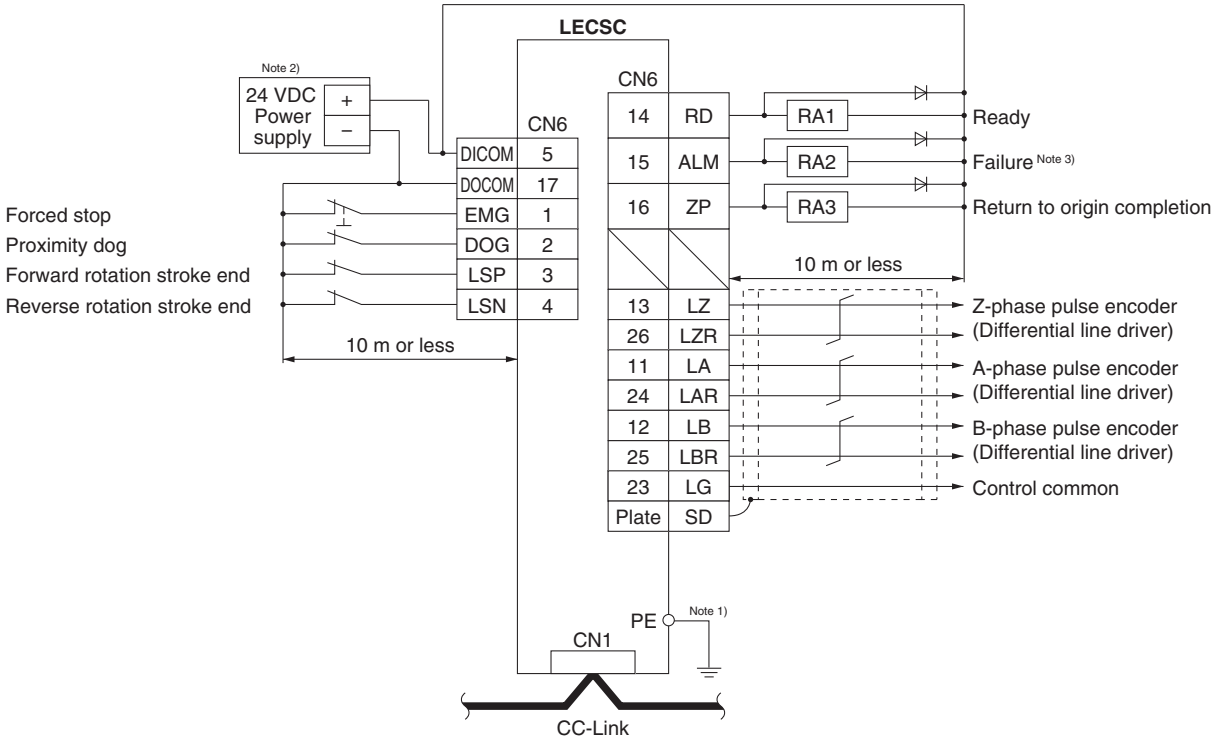
Control Signal Wiring Example: LECSB

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.



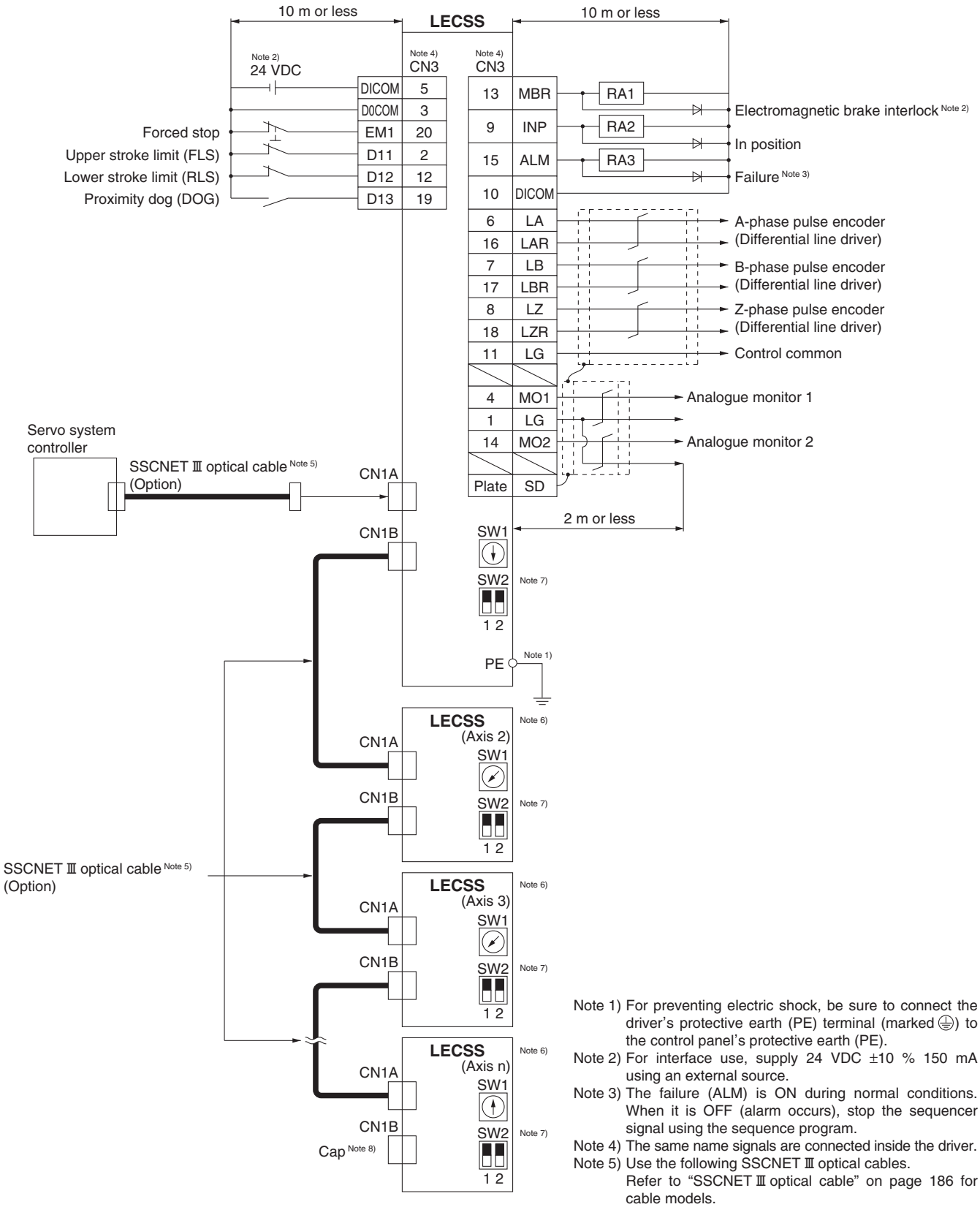
Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⏚) to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10 % 300 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When 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.
Note 6) If the command pulse train input is open collector method, it supports only to the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

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 186 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

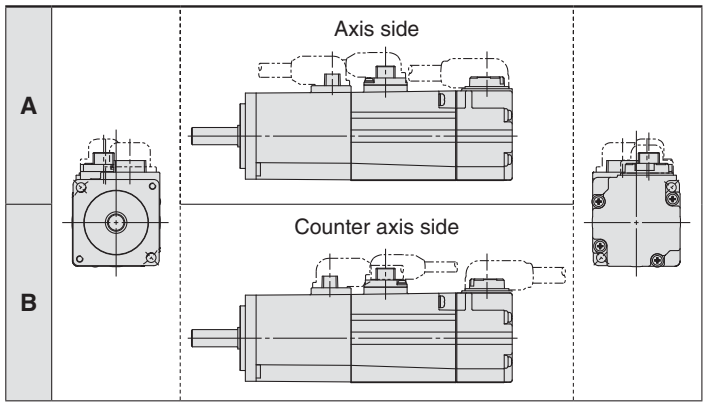
Cable type

S	Standard cable
R	Robotic cable

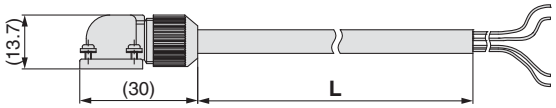
Cable length (L) [m]

2	2
5	5
A	10

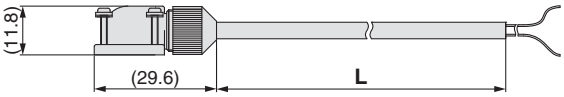
Direction of connector



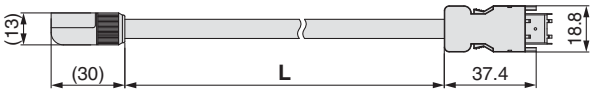
LE-CSM-□□: Motor cable



LE-CSB-□□: Lock cable



LE-CSE-□□: Encoder cable



Product no.	Ø D
LEC-CSM-S□A	6.2
LEC-CSM-S□B	
LEC-CSM-R□A	5.7
LEC-CSM-R□B	
LEC-CSB-S□A	4.7
LEC-CSB-S□B	
LEC-CSB-R□A	4.5
LEC-CSB-R□B	

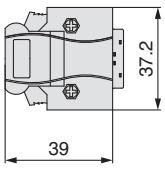
I/O connector (Without cable, Connector only)

LE − CSN A

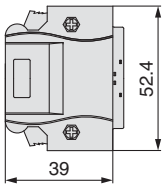
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□

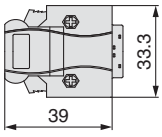
LE-CSNA



LE-CSNB



LE-CSNS



∗ LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
∗ Applicable conductor size: AWG24 to 30

Options

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 Corporation.

I/O cable

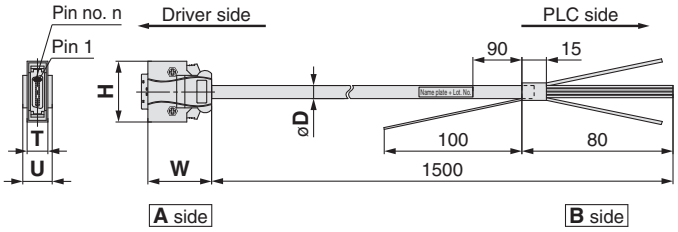
LEC − CSN A − 1

Driver type

A	**LECSA□, LECSC□**
B	**LECSB□**
S	**LECSS□**

Cable length (L) [m]

1	1.5



∗ LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LEC-CSNB-1: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LEC-CSNS-1: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
∗ Conductor size: AWG24

Dimensions/Pin No.

Product no.	W	H	T	U	Pin no. n
LEC-CSNA-1	39	37.2	12.7	14	14
LEC-CSNB-1		52.4		18	26
LEC-CSNS-1		33.3		14	21

Wiring

LEC-CSNA-1: Pin no. 1 to 26
LEC-CSNB-1: Pin no. 1 to 50
LEC-CSNS-1: Pin no. 1 to 20

A side					
1	1	Orange	▬	Red
2			▬	Black
3	2	Light grey	▬	Red
4			▬	Black
5	3	White	▬	Red
6			▬	Black
7	4	Yellow	▬	Red
8			▬	Black
9	5	Pink	▬	Red
10			▬	Black
11	6	Orange	▬ ▬	Red
12			▬ ▬	Black
13	7	Light grey	▬ ▬	Red
14			▬ ▬	Black
15	8	White	▬ ▬	Red
16			▬ ▬	Black
17	9	Yellow	▬ ▬	Red
18			▬ ▬	Black

A side					
19	10	Pink	▬ ▬	Red
20			▬ ▬	Black
21	11	Orange	▬ ▬ ▬	Red
22			▬ ▬ ▬	Black
23	12	Light Grey	▬ ▬ ▬	Red
24			▬ ▬ ▬	Black
25	13	White	▬ ▬ ▬	Red
26			▬ ▬ ▬	Black
27	14	Yellow	▬ ▬ ▬	Red
28			▬ ▬ ▬	Black
29	15	Pink	▬ ▬ ▬	Red
30			▬ ▬ ▬	Black
31	16	Orange	▬ ▬ ▬ ▬	Red
32			▬ ▬ ▬ ▬	Black
33	17	Light Grey	▬ ▬ ▬ ▬	Red
34			▬ ▬ ▬ ▬	Black

A side					
35	18	White	▬ ▬ ▬ ▬	Red
36			▬ ▬ ▬ ▬	Black
37	19	Yellow	▬ ▬ ▬ ▬	Red
38			▬ ▬ ▬ ▬	Black
39	20	Pink	▬ ▬ ▬ ▬	Red
40			▬ ▬ ▬ ▬	Black
41	21	Orange	▬ ▬ ▬ ▬ ▬	Red
42			▬ ▬ ▬ ▬ ▬	Black
43	22	Light grey	▬ ▬ ▬ ▬ ▬	Red
44			▬ ▬ ▬ ▬ ▬	Black
45	23	White	▬ ▬ ▬ ▬ ▬	Red
46			▬ ▬ ▬ ▬ ▬	Black
47	24	Yellow	▬ ▬ ▬ ▬ ▬	Red
48			▬ ▬ ▬ ▬ ▬	Black
49	25	Pink	▬ ▬ ▬ ▬ ▬	Red
50			▬ ▬ ▬ ▬ ▬	Black

Options

Regeneration option (LECS□ common)

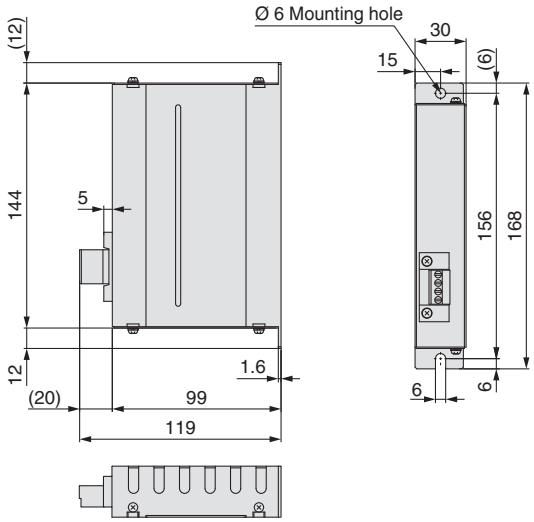
LEC − MR − RB − 12

Regeneration option type

032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

∗ Confirm regeneration option to be used in “Model Selection”.

LEC-MR-RB-032

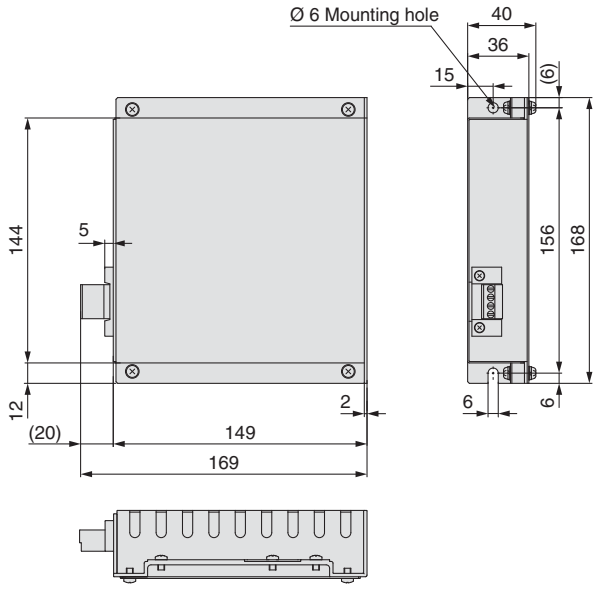


Weight

Model	Weight [kg]
LEC-MR-RB-032	0.5

∗ MR-RB032 manufactured by Mitsubishi Electric Corporation.

LEC-MR-RB-12

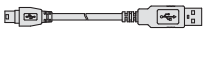


Weight

Model	Weight [kg]
LEC-MR-RB-12	1.1

∗ MR-RB12 manufactured by Mitsubishi Electric Corporation.

Options



Setup software (MR Configurator2™) (LECSA, LECSB, LECSC, LECSS common)

LEC−MRC2 E

Display language

—	Japanese version
E	English version
C	Chinese version

∗ SW1DNC-MRC2-□ manufactured by Mitsubishi Electric Corporation.
Refer to Mitsubishi Electric Corporation's website for operating environment and version upgrade information.
MR Configurator2™ is a registered trademark or trademark of Mitsubishi Electric Corporation.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator2™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator2™) **LEC-MRC2□**
Note 1) 2) 3) 4) 5) 6) 7) 9) PC	OS	Microsoft® Windows®8 Enterprise Operating System Microsoft® Windows®8 Pro Operating System Microsoft® Windows®8 Operating System Microsoft® Windows®7 Enterprise Operating System Microsoft® Windows®7 Ultimate Operating System Microsoft® Windows®7 Professional Operating System Microsoft® Windows®7 Home Premium Operating System Microsoft® Windows®7 Starter Operating System Microsoft® Windows Vista® Enterprise Operating System Microsoft® Windows Vista® Ultimate Operating System Microsoft® Windows Vista® Business Operating System Microsoft® Windows Vista® Home Premium Operating System Microsoft® Windows Vista® Home Basic Operating System Microsoft® Windows®XP Professional Operating System, Service Pack 2 or later Microsoft® Windows®XP Home Edition Operating System, Service Pack 2 or later Microsoft® Windows®2000 Professional Operating System, Service Pack 4 or later
	Available HD space	1 GB or more
	Communication interface	Use USB port.
Display		Resolution 1024 x 768 or more Must be capable of high color (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 Note 8)		LEC-MR-J3USB

Note 1) Before using a PC for setting LECSA point table method/program operation method, upgrade to version 1.18U (Japanese version)/ version 1.19V (English version) or later. Refer to Mitsubishi Electric Corporation's website for version upgrade information.
Note 2) Windows® and Windows Vista® are registered trademarks of Microsoft Corporation in the United States and other countries.
Note 3) On some PCs, setup software (MR Configurator2™) may not run properly.
Note 4) When Windows®XP or later is used, the following functions cannot be used.
· Windows Program Compatibility mode
· Fast User Switching
· Remote Desktop
· Large Fonts Mode (Display property)
· DPI settings other than 96 DPI (Display property)
· 64-bit OSs are not supported, except for Microsoft® Windows®7 or later.
Note 5) When Windows®7 is used, the following functions cannot be used.
· Windows XP Mode
· Windows Touch
Note 6) When using this software with Windows Vista® or later, log in as a user having USER authority or higher.
Note 7) When Windows®8 is used, the following functions cannot be used.
· Hyper-V
· Modern UI style
Note 8) Order USB cable separately.
Note 9) Using a PC for setting Windows®8.1, upgrade to version 1.25B or later. Refer to Mitsubishi Electric Corporation's website for version upgrade information.

Setup Software Compatible Driver

Compatible driver	Setup software MR Configurator2™ LEC-MRC2□
LECSA	○
LECSB	○
LECSC	○
LECSS□-S□	○
LECSS2-T□	○

USB cable (3 m)

LEC−MR−J3USB

∗ MR-J3USBCBL3M manufactured by Mitsubishi Electric Corporation.

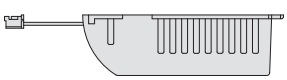
Cable for connecting PC and driver when using the setup software (MR Configurator2™).
Do not use any cable other than this cable.

Battery (only for LECSB, LECSC or LECSS)

LEC−MR−J3BAT

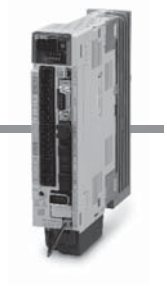
∗ MR-J3BAT manufactured by Mitsubishi Electric Corporation.

Battery for replacement.
Absolute position data is maintained by installing the battery to the driver.



AC Servo Motor Driver
Absolute Type

Series LECSS-T
(SSCNETIII/H Type)



How to Order

Driver LECS S 2 – T5

Driver type

S	SSCNET Ⅲ/H type (For absolute encoder)

Power supply voltage

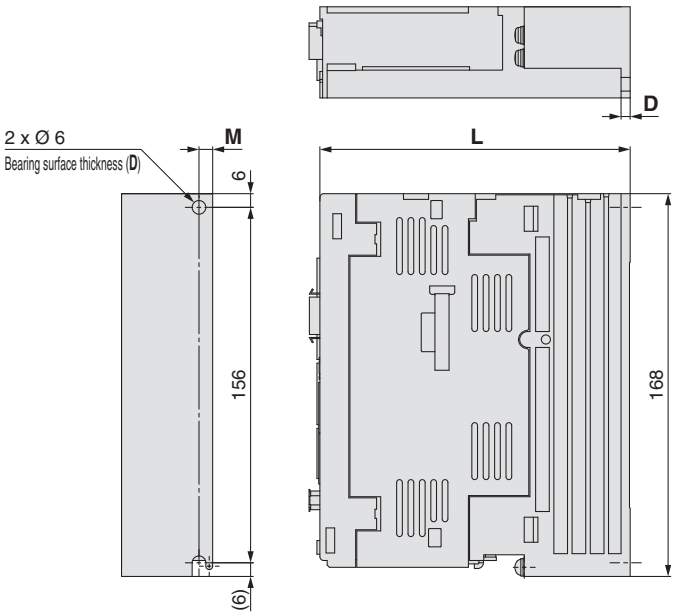
2	200 to 240 VAC, 50/60 Hz

Compatible motor type

Symbol	Type	Capacity	Encoder
T5	AC servo motor (T6)	100 W	Absolute
T7	AC servo motor (T7)	200 W	
T8	AC servo motor (T8)	400 W	

Dimensions

LECSS2-T□



Connector name	Description
CN1A	Front axis connector for SSCNET Ⅲ/H
CN1B	Rear axis connector for SSCNET Ⅲ/H
CN2	Encoder connector
CN3	I/O signal connector
CN4	Battery connector
CN5	USB communication connector
CN8	STO input signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

Dimensions [mm]

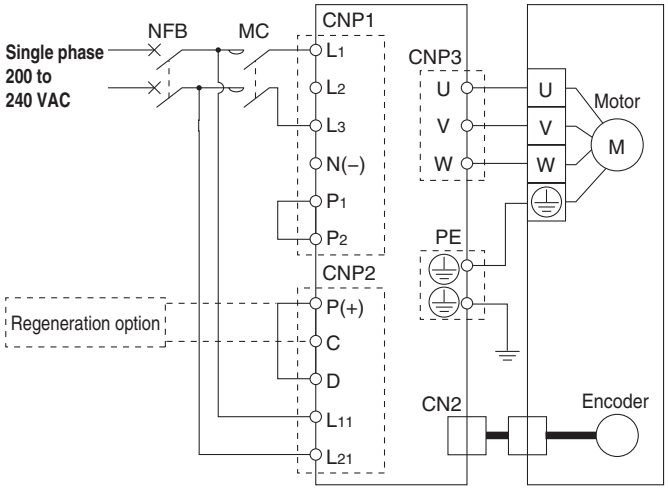
Model	W	L	D	M
LECSS2-T5	40	135	4	6
LECSS2-T7				
LECSS2-T8		170	5	

Specifications

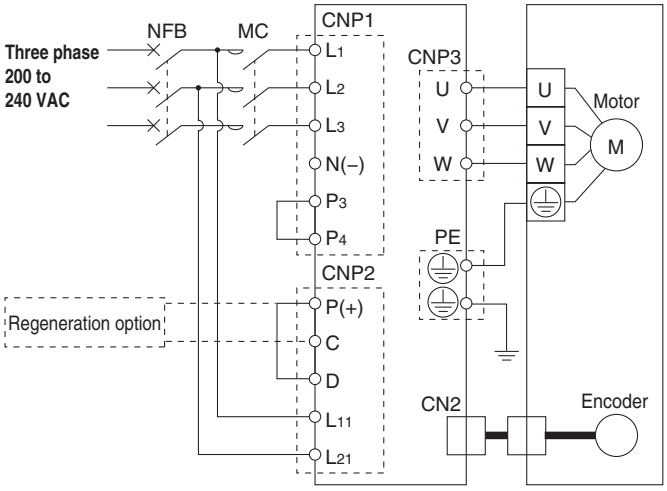
Model		LECSS2-T5	LECSS2-T7	LECSS2-T8
Compatible motor capacity [W]		100	200	400
Compatible encoder		Absolute 22-bit encoder (Resolution: 4194304 p/rev)		
Main power supply	**Power voltage [V]**	Three phase 200 to 240 VAC (50/60 Hz), Single phase 200 to 240 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Three phase 170 to 264 VAC (50/60 Hz), Single phase 170 to 264 VAC (50/60 Hz)		
	Rated current [A]	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**	Single phase 200 to 240 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 170 to 264 VAC		
	Rated current [A]	0.2		
Applicable Fieldbus protocol		SSCNET Ⅲ/H (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: LECSS2-T□

For single phase 200 VAC



For three phase 200 VAC



Note) For single phase 200 to 240 VAC, power supply should be connected to L_1 and L_3 terminals, with nothing connected to L_2.

Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
L_1	Main circuit power supply	Connect the main circuit power supply. LECSS2: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_1,L_3 Three phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_1,L_2,L_3
L_2		
L_3		
N(–)	Do not connect.	
P_3	Connect between P_3 and P_4. (Connected at time of shipping.)	
P_4		

Control Circuit Power Supply Connector: CNP2

∗ Accessory

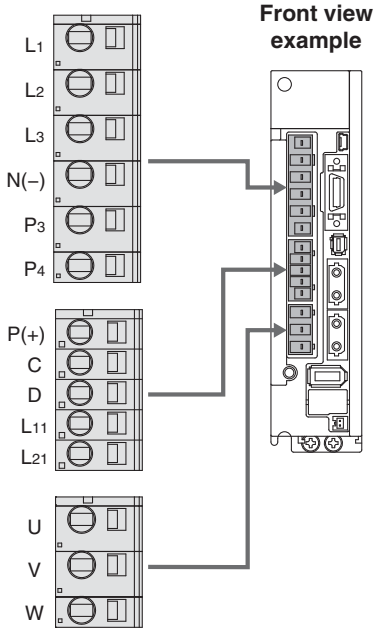
Terminal name	Function	Details
P(+)	Regeneration option	Connect between P(+) and D. (Connected at time of shipping.) ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSS2: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_{11},L_{21} Three phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_{11},L_{21}
L_{21}		

Motor Connector: CNP3

∗ Accessory

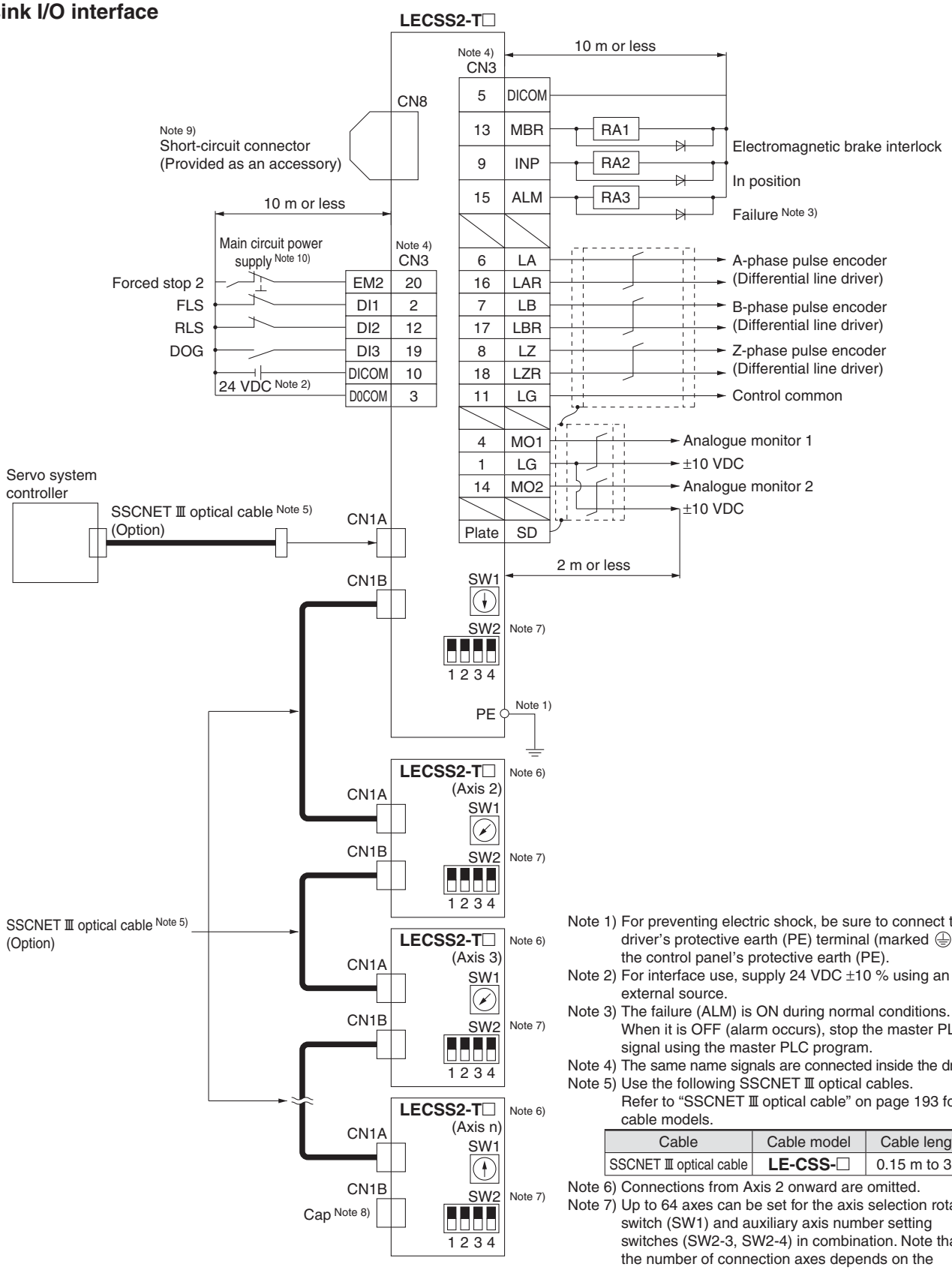
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power [V]	
W	Servo motor power [W]	

LECSS2-T□ Front view example



Control Signal Wiring Example: LECSS2-T□

For sink I/O interface



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 % using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the master PLC signal using the master PLC 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 193 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 64 axes can be set for the axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-3, SW2-4) in combination. Note that the number of connection axes depends on the specifications of the master PLC.
Note 8) Be sure to place a cap on unused CN1A/CN1B.
Note 9) When not using the STO function, use the driver with the short-circuit connector (provided as an accessory) inserted.
Note 10) Configure a circuit to turn off EM2 when the main circuit power is turned off to prevent an unexpected restart of the driver.

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

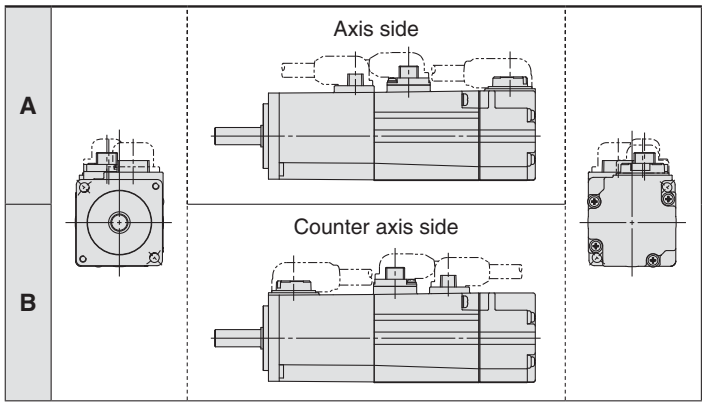
Cable type

S	Standard cable
R	Robotic cable

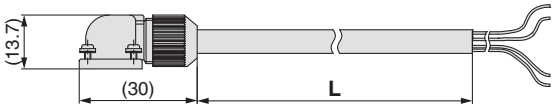
Cable length (L) [m]

2	2
5	5
A	10

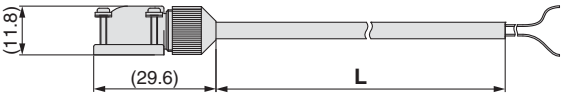
Direction of connector



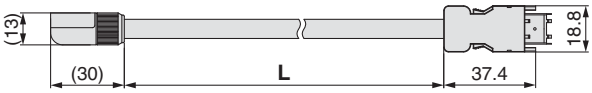
LE-CSM-□□: Motor cable



LE-CSB-□□: Lock cable



LE-CSE-□□: Encoder cable



Product no.	Ø D
LEC-CSM-S□A	6.2
LEC-CSM-S□B	
LEC-CSM-R□A	5.7
LEC-CSM-R□B	
LEC-CSB-S□A	4.7
LEC-CSB-S□B	
LEC-CSB-R□A	4.5
LEC-CSB-R□B	

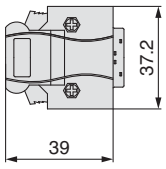
I/O connector (Without cable, Connector only)

LE − CSN A

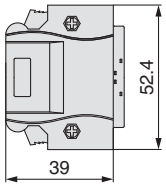
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□-S□, LECSS2-T□

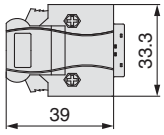
LE-CSNA



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.
∗ Conductor size: AWG24 to 30

Options

SSCNET Ⅲ optical cable (LECSS□-S□, LECSS2-T□)

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 Corporation.

I/O cable

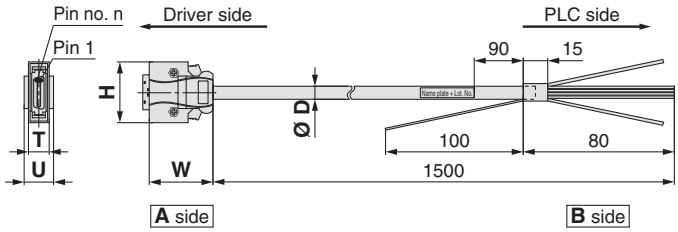
LEC − CSN A − 1

Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□-S□, LECSS2-T□

Cable length (L) [m]

1	1.5



∗ LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LEC-CSNB-1: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
LEC-CSNS-1: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
∗ Conductor size: AWG24

Cable O.D.

Product no.	Ø D
LEC-CSNA-1	11.1
LEC-CSNB-1	13.8
LEC-CSNS-1	9.1

Dimensions/Pin No.

Product no.	W	H	T	U	Pin no. n
LEC-CSNA-1	39	37.2	12.7	14	14
LEC-CSNB-1		52.4		18	26
LEC-CSNS-1		33.3		14	21

Wiring

LEC-CSNA-1: Pin no. 1 to 26
LEC-CSNB-1: Pin no. 1 to 50
LEC-CSNS-1: Pin no. 1 to 20

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	1	1	Orange	▬	Red
	2			▬	Black
	3	2	Light Grey	▬	Red
	4			▬	Black
	5	3	White	▬	Red
	6			▬	Black
	7	4	Yellow	▬	Red
	8			▬	Black
	9	5	Pink	▬	Red
	10			▬	Black
	11	6	Orange	▬ ▬	Red
	12			▬ ▬	Black
	13	7	Light Grey	▬ ▬	Red
	14			▬ ▬	Black
	15	8	White	▬ ▬	Red
	16			▬ ▬	Black
	17	9	Yellow	▬ ▬	Red
	18			▬ ▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	19	10	Pink	▬ ▬	Red
	20			▬ ▬	Black
	21	11	Orange	▬ ▬ ▬	Red
	22			▬ ▬ ▬	Black
	23	12	Light Grey	▬ ▬ ▬	Red
	24			▬ ▬ ▬	Black
	25	13	White	▬ ▬ ▬	Red
	26			▬ ▬ ▬	Black
	27	14	Yellow	▬ ▬ ▬	Red
	28			▬ ▬ ▬	Black
	29	15	Pink	▬ ▬ ▬	Red
	30			▬ ▬ ▬	Black
	31	16	Orange	▬ ▬ ▬ ▬	Red
	32			▬ ▬ ▬ ▬	Black
	33	17	Light Grey	▬ ▬ ▬ ▬	Red
	34			▬ ▬ ▬ ▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	35	18	White	▬ ▬ ▬ ▬	Red
	36			▬ ▬ ▬ ▬	Black
	37	19	Yellow	▬ ▬ ▬ ▬	Red
	38			▬ ▬ ▬ ▬	Black
	39	20	Pink	▬ ▬ ▬ ▬	Red
	40			▬ ▬ ▬ ▬	Black
	41	21	Orange	▬ ▬ ▬ ▬ ▬	Red
	42			▬ ▬ ▬ ▬ ▬	Black
	43	22	Light Grey	▬ ▬ ▬ ▬ ▬	Red
	44			▬ ▬ ▬ ▬ ▬	Black
	45	23	White	▬ ▬ ▬ ▬ ▬	Red
	46			▬ ▬ ▬ ▬ ▬	Black
	47	24	Yellow	▬ ▬ ▬ ▬ ▬	Red
	48			▬ ▬ ▬ ▬ ▬	Black
	49	25	Pink	▬ ▬ ▬ ▬ ▬	Red
	50			▬ ▬ ▬ ▬ ▬	Black

Options

Regeneration option (LECS□ common)

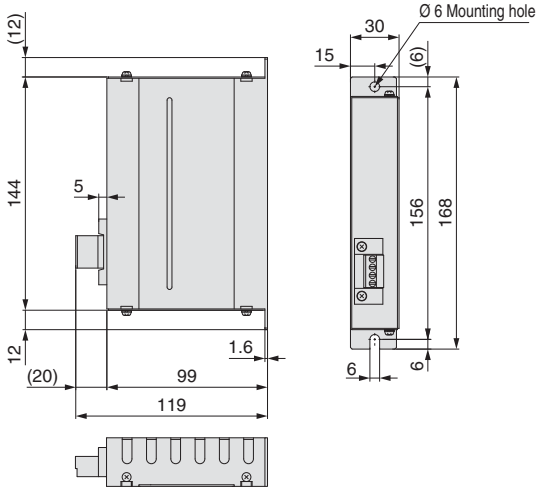
LEC − MR − RB − 12

Regeneration option type

032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

∗ Confirm regeneration option to be used in “Model Selection”.

LEC-MR-RB-032

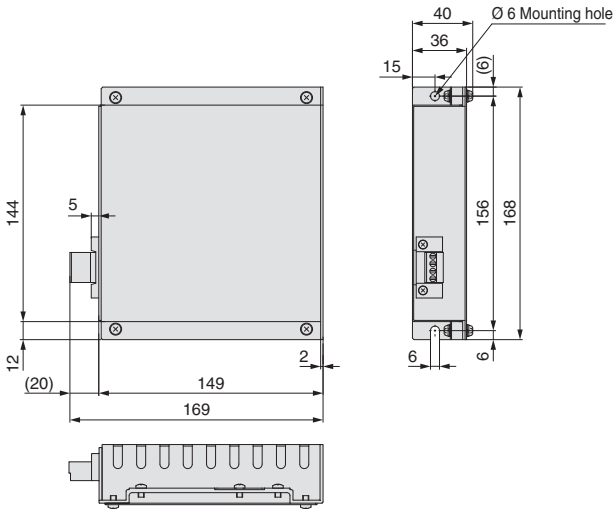


Weight

Model	Weight [kg]
LEC-MR-RB-032	0.5

∗ MR-RB032 manufactured by Mitsubishi Electric Corporation.

LEC-MR-RB-12

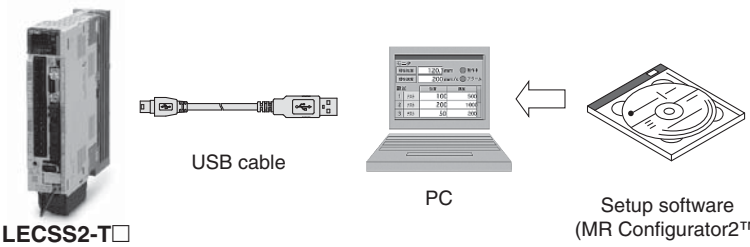


Weight

Model	Weight [kg]
LEC-MR-RB-12	1.1

∗ MR-RB12 manufactured by Mitsubishi Electric Corporation.

Options



LECSS2-T□

Setup software (MR Configurator2™) (LECSA, LECSB, LECSC, LECSS common)

LEC−MRC2 E

Display language

—	Japanese version
E	English version
C	Chinese version

* SW1DNC-MRC2-□ manufactured by Mitsubishi Electric Corporation.
Refer to Mitsubishi Electric Corporation's website for operating environment and version upgrade information.
MR Configurator2™ is a registered trademark or trademark of Mitsubishi Electric Corporation.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator2™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator2™) LEC-MRC2□
Note 1) 2) 3) 4) 5) 6) 7) 9) PC	OS	Microsoft® Windows®8.1 Enterprise Operating System Microsoft® Windows®8.1 Pro Operating System Microsoft® Windows®8.1 Operating System Microsoft® Windows®8 Enterprise Operating System Microsoft® Windows®8 Pro Operating System Microsoft® Windows®8 Operating System Microsoft® Windows®7 Ultimate Operating System Microsoft® Windows®7 Enterprise Operating System Microsoft® Windows®7 Professional Operating System Microsoft® Windows®7 Home Premium Operating System Microsoft® Windows®7 Starter Operating System Microsoft® Windows Vista® Ultimate Operating System Microsoft® Windows Vista® Enterprise Operating System Microsoft® Windows Vista® Business Operating System Microsoft® Windows Vista® Home Premium Operating System Microsoft® Windows Vista® Home Basic Operating System Microsoft® Windows®XP Professional Operating System, Service Pack 2 or later Microsoft® Windows®XP Home Edition Operating System, Service Pack 2 or later
	Available HD space	1 GB or more
	Communication interface	Use USB port.
Display		Resolution 1024 x 768 or more Must be capable of high color (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 Note 8)		LEC-MR-J3USB

Note 1) Before using a PC for setting LECSA point table method/program method, upgrade to version 1.18U (Japanese version)/version 1.19V (English version). Refer to Mitsubishi Electric Corporation's website for version upgrade information.
Note 2) Windows and Windows Vista are registered trademarks of Microsoft Corporation in the United States and other countries.
Note 3) On some PCs, MR Configurator2 may not run properly.
Note 4) When Windows®XP or later is used, the following functions cannot be used.
· Windows Program Compatibility mode
· Fast User Switching
· Remote Desktop
· Large Fonts Mode (Display property)
· DPI settings other than 96 DPI (Display property)
For 64-bit operating system, this software is compatible with Windows®7 and Windows®8.
Note 5) When Windows®7 is used, the following functions cannot be used.
· Windows XP Mode
· Windows Touch
Note 6) When using this software with Windows Vista® or later, log in as a user having USER authority or higher.
Note 7) When Windows®8 is used, the following functions cannot be used.
· Hyper-V
· Modern UI style
Note 8) Order USB cable separately.
Note 9) Using a PC for setting Windows®8.1, upgrade to version 1.25B or later. Refer to Mitsubishi Electric Corporation's website for version upgrade information.

Setup Software Compatible Driver

Compatible driver	Setup software MR Configurator2™ LEC-MRC2□
LECSA	○
LECSB	○
LECSC	○
LECSS□-S□	○
LECSS2-T□	○

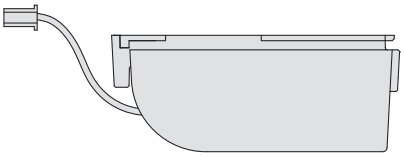
Options

Battery (only for LECSS2-T□)

LEC−MR−BAT6V1SET

∗ MR-BAT6V1SET manufactured by Mitsubishi Electric Corporation.

Battery for replacement.
Absolute position data is maintained by installing the battery to the driver.



Note) The LEC-MR-BAT6V1SET is an assembled battery that uses lithium metal battery 2CR17335A. When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organization (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organization (IMO). If a customer is transporting products such as shown above, it is necessary to confirm the latest regulations, or the laws and regulations of the country of transport on your own, in order to apply the proper measures. Please contact SMC sales representative for details.

USB cable (3 m)

LEC−MR−J3USB

∗ MR-J3USB manufactured by Mitsubishi Electric Corporation.

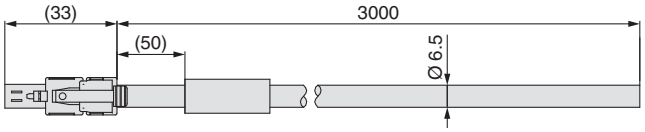
Cable for connecting PC and driver when using the setup software (MR Configurator2™).
Do not use any cable other than this cable.

STO cable (3 m)

LEC−MR−D05UDL3M

∗ MR-D05UDL3M manufactured by Mitsubishi Electric Corporation.

Cable for connecting the driver and device, when using the safety function.
Do not use any cable other than this cable.



Series LECS□
Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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.

6. The parameters of the driver are set to initial values. Please change parameters according to the specifications of the customer's equipment before use.
Refer to the operation manual for details of parameters.

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.

Series LECS□
Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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

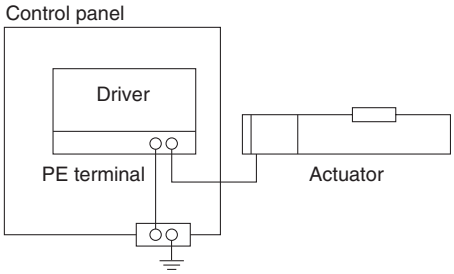
⚠Warning

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.

MECHATROLINK Compatible

AC Servo Motor Driver

RoHS CE

Power supply voltage (V)
200 to 230 VAC

Motor capacity (W)
100/200/400

- **Position control, speed control and torque control can be used.**
- **Control encoder: Absolute 20-bit encoder (Resolution: 1048576 p/rev)**

MECHATROLINK-Ⅱ Type — Series LECYM

- **Applicable Fieldbus protocol: MECHATROLINK-Ⅱ**
- **Number of connectable drivers: 30 units (Transmission distance: Max. 50 m in total)**

Max. communication speed: **10 Mbps**

Min. communication cycle: **250 μs**

MECHATROLINK-Ⅲ Type — Series LECYU

- **Applicable Fieldbus protocol: MECHATROLINK-Ⅲ**
- **Number of connectable drivers: 62 units (Transmission distance: Max. 75 m between stations)**

Max. communication speed: **100 Mbps**

Min. communication cycle: **125 μs**

Compatible Actuators

Rod Type

Basic type
Series LEY

Secondary battery compatible
Dust/Drip proof compatible

Size	Pushing force [N]	Stroke [mm]
25	485	Up to 400
32	588	Up to 500
63	3343	Up to 800

In-line motor type
Series LEY□D

Secondary battery compatible
Dust/Drip proof compatible

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

Guide Rod Type

Guide rod type
Series LEYG

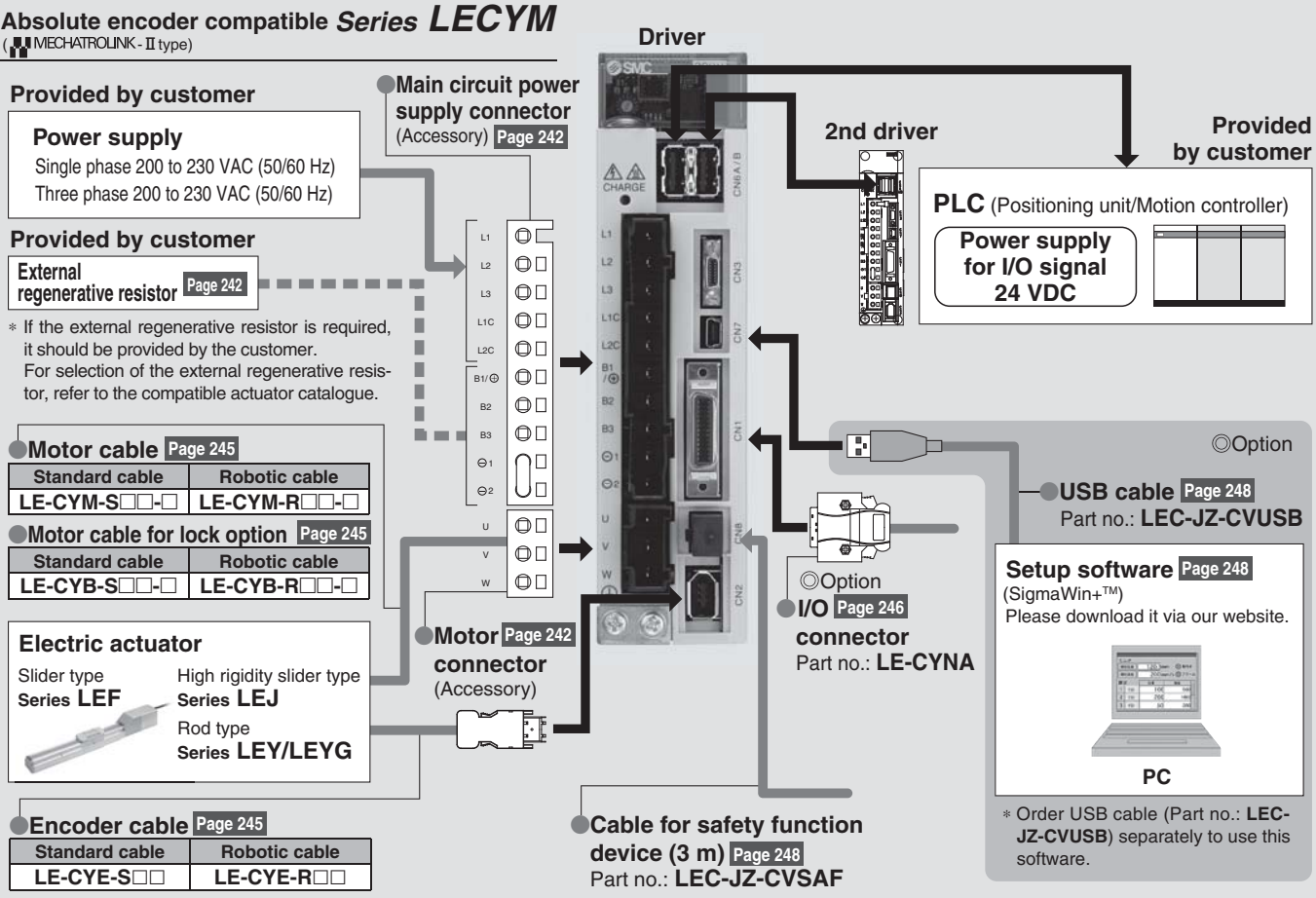
Size	Pushing force [N]	Stroke [mm]
25	485	Up to 300
32	588	

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

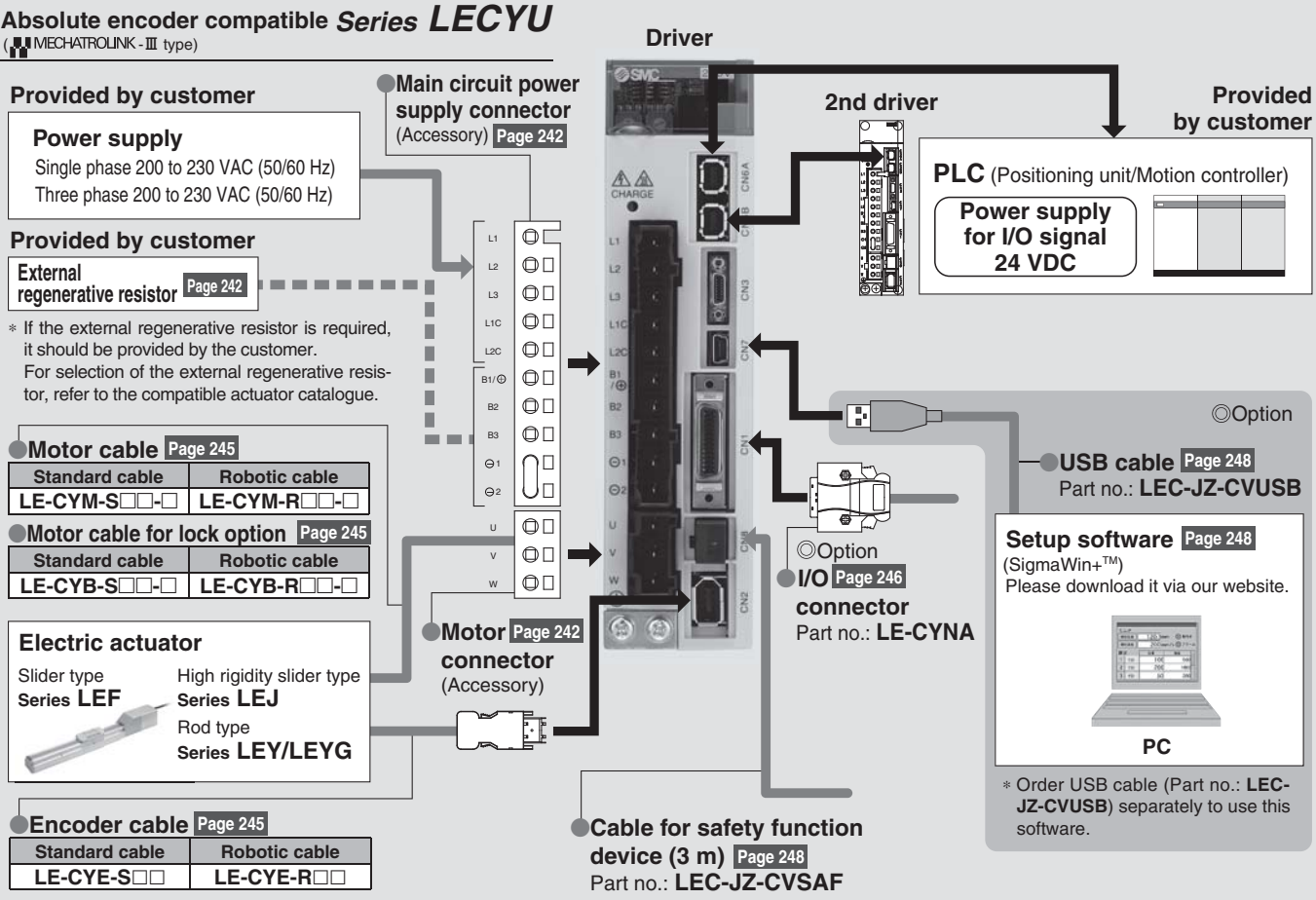
Size	Pushing force [N]	Stroke [mm]
25	485	Up to 300
32	736	

System Construction

Absolute encoder compatible Series LECYM
(MECHATROLINK - II type)

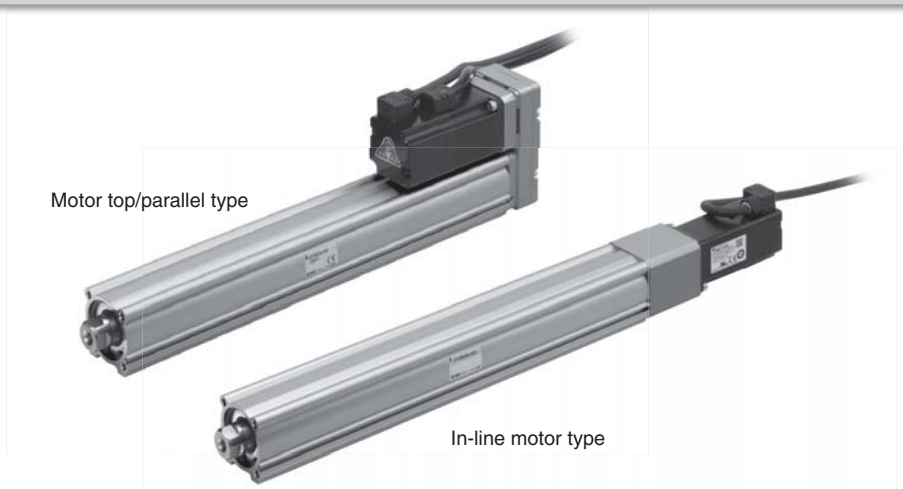


Absolute encoder compatible Series LECYU
(MECHATROLINK - III type)

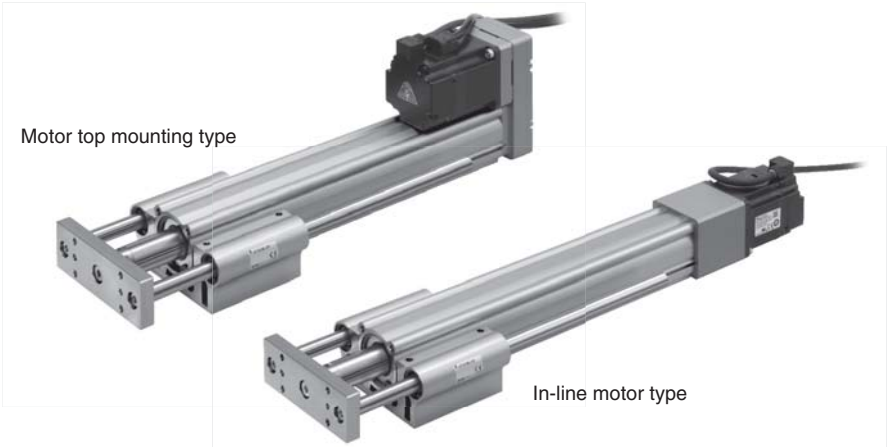


AC Servo Motor

Rod Type *Series LEY*

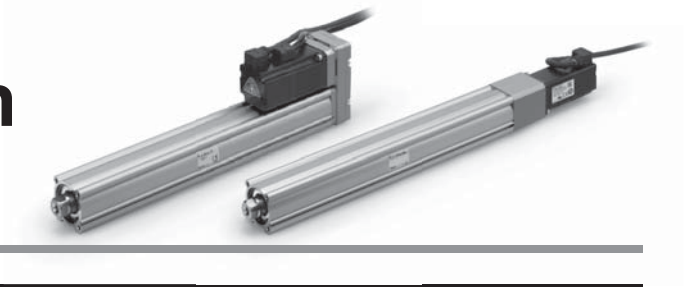


Guide Rod Type *Series LEYG*



AC Servo Motor Driver *Series LECYM/LECYU*

Model Selection



Selection Procedure

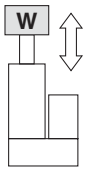
Positioning Control Selection Procedure

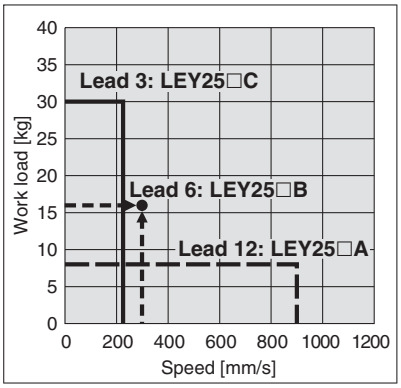
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

Selection Example

Operating conditions

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





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

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

Select the target model based on the workpiece weight 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 211 and 212 for the horizontal work load in the specifications, and page 234 for the precautions.

The regenerative resistor may be necessary. Refer to pages 205 and 206 for "Conditions for Regenerative Resistor (Guide)".

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.

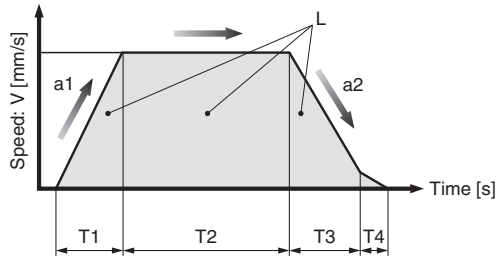
$$T1 = V/a1 \ [s] \qquad T3 = V/a2 \ [s]$$

- 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

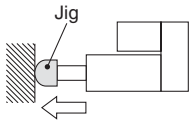
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

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

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Pushing force: 255 [N]
- Duty ratio: 60 [%]
- Pushing speed: 35 [mm/s]
- Stroke: 300 [mm]



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

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

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

Therefore, the set value of pushing force will be 90 [%].

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

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

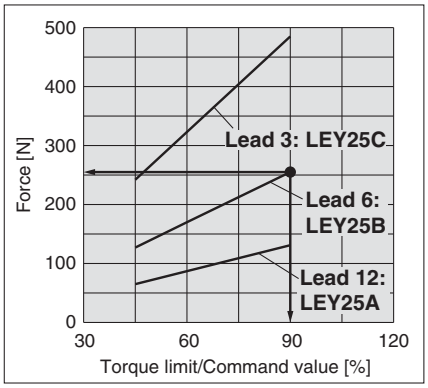
∗ [Set value of pushing force] is one of the data input to the driver.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.

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

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

Selection example)
Based on the graph shown on the right side,
- Torque limit/Command value: 90 [%]
- Pushing force: 255 [N]

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



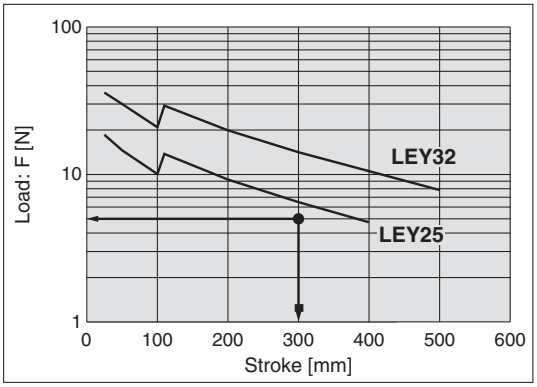
<Force conversion graph>
(LEY25)

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

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

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

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



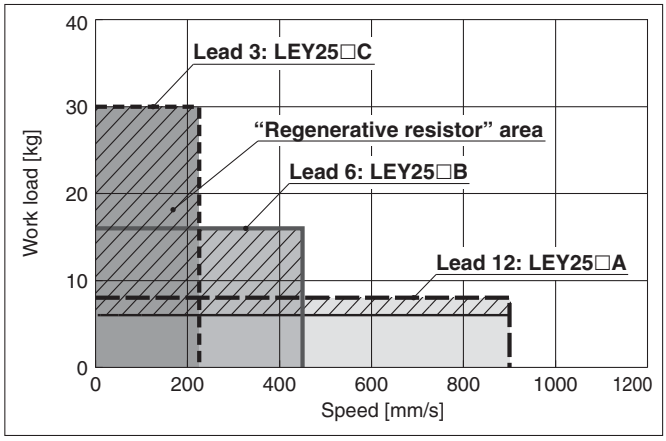
<Graph of allowable lateral load on the rod end>

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

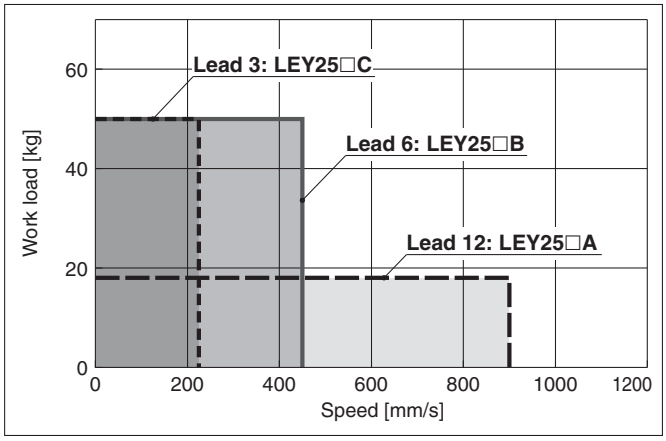
Speed–Work Load Graph/Conditions for "Regenerative Resistor" (Guide)

LEY25□V6 (Motor mounting position: Top/Parallel, In-line)

Vertical

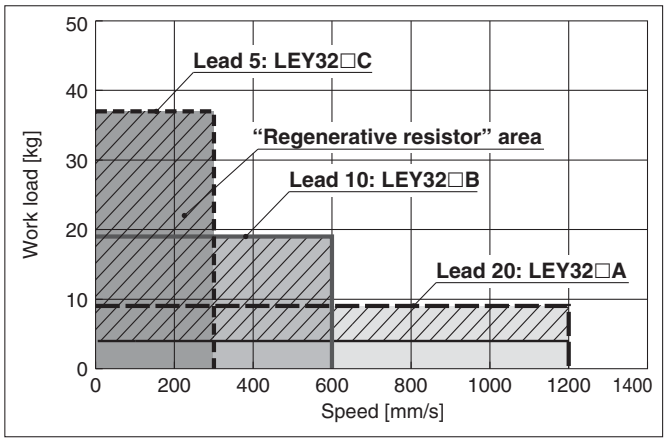


Horizontal

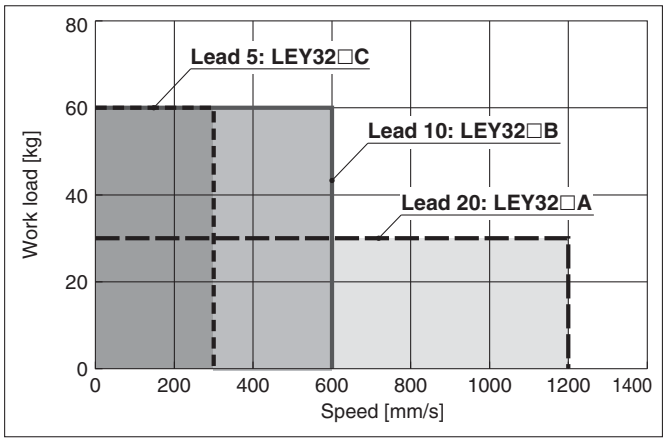


LEY32□V7 (Motor mounting position: Top/Parallel)

Vertical

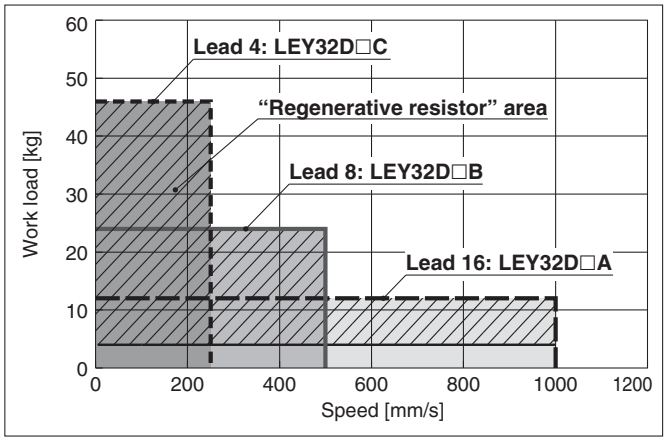


Horizontal

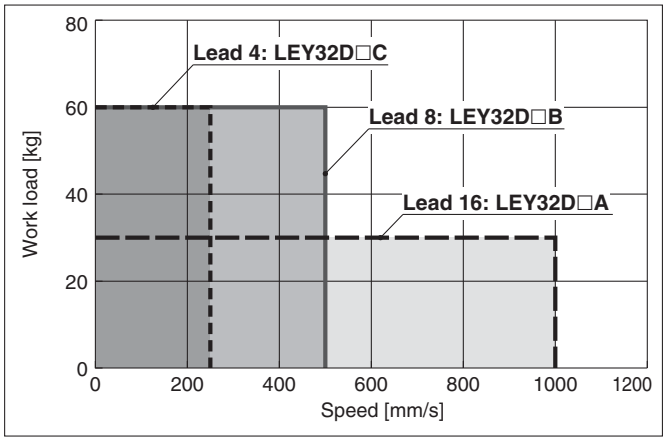


LEY32DV7 (Motor mounting position: In-line)

Vertical



Horizontal



"Regenerative resistor" area

* When using the actuator in the "Regenerative resistor" area, download the "AC servo capacity selection program/SigmaJunmaSize+" from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.
* Regenerative resistor should be provided by the customer.

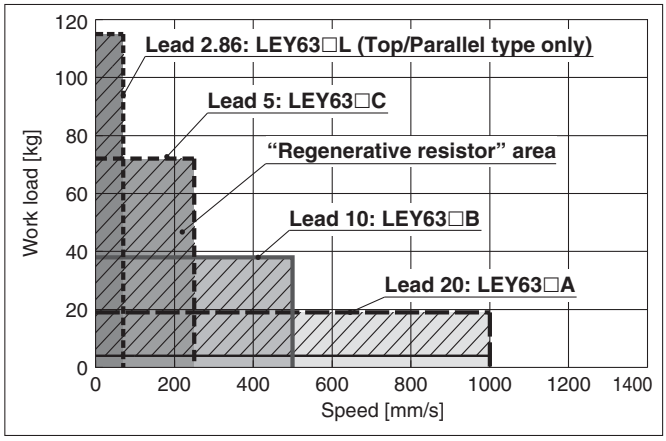
Applicable Motor/Driver

Model	Applicable model	
	Motor	Servopack (SMC driver)
LEY25□	SGMJV-01A3A	SGDV-R90A11□ (LECYM2-V5) SGDV-R90A21□ (LECYU2-V5)
LEY32□	SGMJV-02A3A	SGDV-1R6A11□ (LECYM2-V7) SGDV-1R6A21□ (LECYU2-V7)

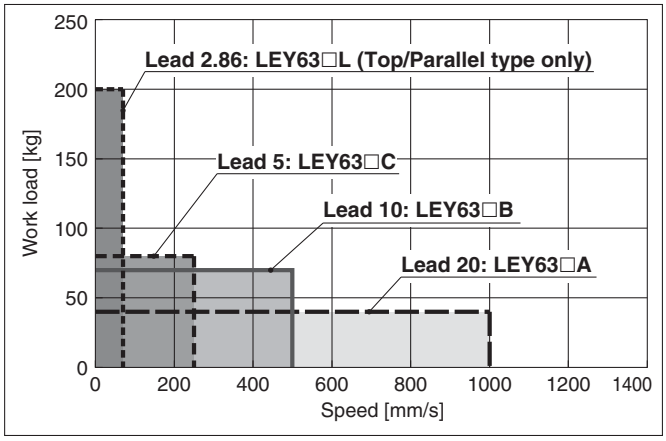
Speed–Work Load Graph/Conditions for "Regenerative Resistor" (Guide)

LEY63□V8 (Motor mounting position: Top/Parallel, In-line)

Vertical



Horizontal



"Regenerative resistor" area

∗ When using the actuator in the "Regenerative resistor" area, download the "AC servo capacity selection program/SigmaJunmaSize+" from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.
∗ Regenerative resistor should be provided by the customer.

Applicable Motor/Driver

Product no.	Applicable model	
	Motor	Servopack (SMC driver)
LEY63□	SGMJV-04A3A	SGDV-2R8A11□ (LECYM2-V8) SGDV-2R8A21□ (LECYU2-V8)

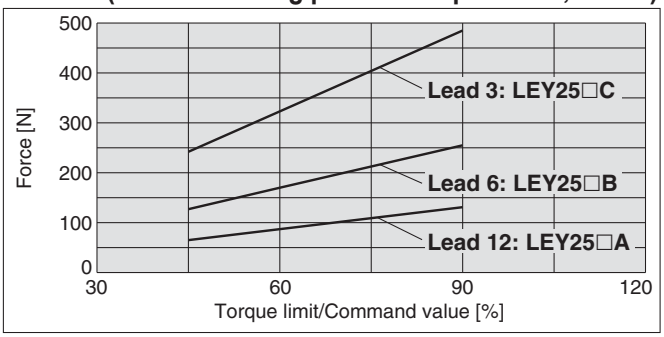
Allowable Stroke Speed

[mm/s]

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

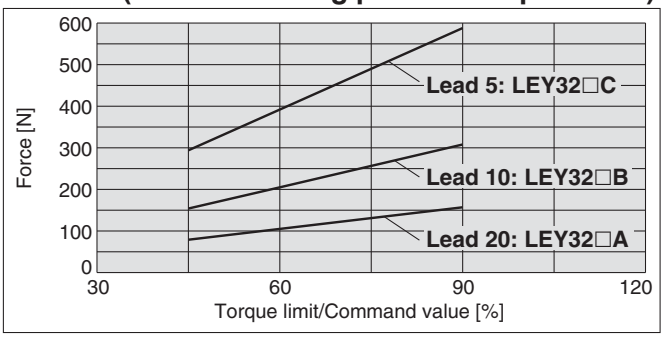
Force Conversion Graph (Guide)

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



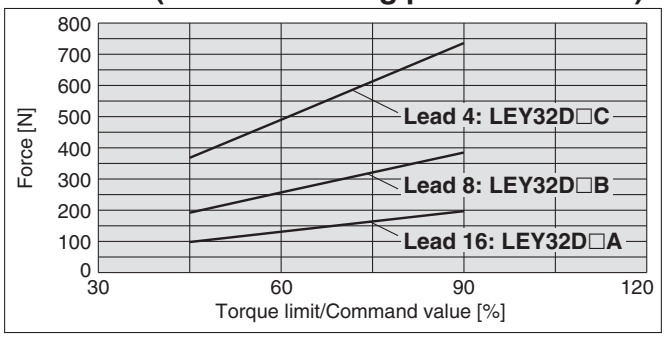
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEY32□ (Motor mounting position: Top/Parallel)



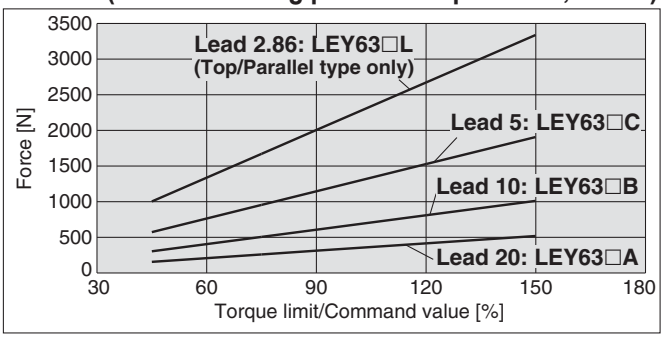
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEY32D□ (Motor mounting position: In-line)



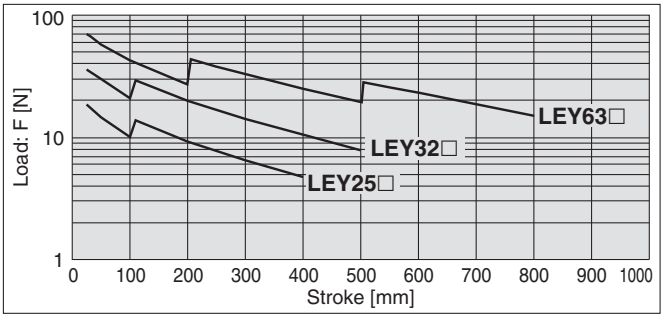
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

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

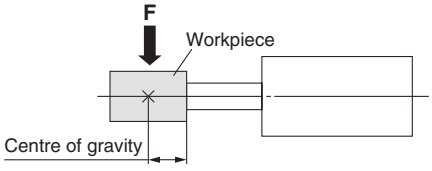


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5
120	30	0.5
150	20	0.16

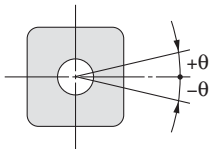
Graph of Allowable Lateral Load on the Rod End (Guide)



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

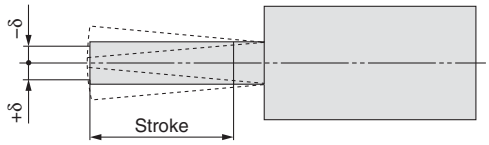


Non-rotating Accuracy: θ



Size	Non-rotating accuracy θ
25	±0.8°
32	±0.7°
63	±0.6°

Rod Displacement: δ



[mm]

Size	Stroke [mm]													
	30	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**600**	**700**	**800**
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—	—	—	—
32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8	—	—	—
63	—	—	±1.0	—	±1.7	—	±1.3	—	±1.7	—	±2.1	±1.7	±2.0	±2.2

Electric Actuator/Rod Type

AC Servo Motor

Series LEY

LEY25, 32, 63

RoHS

Please contact SMC for dust-tight/water-jet-proof (IP65 equivalent) and the models compatible with secondary batteries.

How to Order

LEY H 25 □ V6 B – 200 □ □ □ □ – S 3 M2 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭ ⓮

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

25
32
63

❸ Motor mounting position

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

❹ Motor type

Symbol	Type	Output [W]	Size	Compatible driver
V6	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7
V8		400	63	LECYM2-V8 LECYU2-V8

❺ Lead [mm]

Symbol	LEY25	LEY32 *1	LEY63
A	12	16 (20)	20
B	6	8 (10)	10
C	3	4 (5)	5
L	—	—	2.86 *2

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

∗2 Only available for top mounting and right/left side parallel types. (Equivalent lead which includes the pulley ratio [4:7])

❻ Stroke [mm]

30	30
to	to
800	800

∗ Refer to the applicable stroke table.

❼ Dust-tight/Water-jet-proof (Only available for LEY63)

Symbol	LEY25/32	LEY63
—	IP4x equivalent	IP5x equivalent (Dust-protected)
P	—	IP65 equivalent (Dust-tight/ Water-jet-proof)/With vent hole tap

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

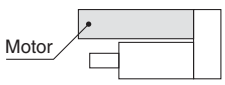
∗ The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

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

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



❾ Rod end thread

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

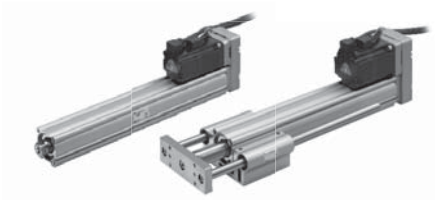
Applicable Stroke Table

●: Standard

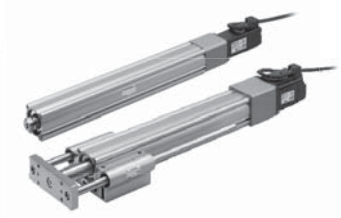
Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	600	700	800	Manufacturable stroke range
LEY25	●	●	●	●	●	●	●	●	●	—	—	—	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	—	—	—	20 to 500
LEY63	—	—	●	—	●	—	●	—	●	—	●	●	●	●	50 to 800

∗ Please consult with SMC for the manufacture of intermediate strokes.

For auto switches, refer to pages 232 and 233.



Motor mounting position: Top/Parallel



Motor mounting position: In-line

⑩ Mounting *1

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

*1 Mounting bracket is shipped together, (but not assembled).
*2 For horizontal cantilever mounting with the ends tapped and rod/head flange, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 100 mm or less · LEY63: 400 mm or less
*3 For mounting with the double clevis, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 200 mm or less · LEY63: 300 mm or less
*4 Rod flange is not available for the LEY25 with strokes 30 mm and motor option "With lock".
*5 Head flange is not available for the LEY32/LEY63.

⑪ Cable type

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

⑫ Cable length [m]

—	Without cable
3	3
5	5
A	10
C	20

⑬ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

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

⑭ I/O cable length [m] *

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

* When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to Page 246 if I/O cable is required.
(Options are shown on Page 246.)

Compatible Drivers

Driver type	MECHATROLINK-Ⅱ type	MECHATROLINK-Ⅲ type
		
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	Page 239	

Specifications

Model			LEY25 (Top/Parallel)/LEY25D (In-line)			LEY32 (Top/Parallel)			LEY32D (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
	Force [N] Note 3) (Set value: 45 to 90 %)		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
		Stroke range: 305 to 400	600	300	150						
		Stroke range: 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]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02			±0.02					
		High precision type	±0.01			±0.01					
	Lost motion Note 6) [mm]	Basic type	0.1 or less			0.1 or less					
		High precision type	0.05 or less			0.05 or less					
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²] Note 7)		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)					
	Conditions for "Regenerative resistor" [kg] Note 8)	Horizontal	Not required			Not required					
		Vertical	6 or more			4 or more					
Electric specifications	Motor output/Size		100 W/□40			200 W/□60					
	Motor type		AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 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)		5.5			6			6		
	Rated voltage [V]		24 VDC $^{0}_{-10\ \%}$								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph (Guide)" on page 207.
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) A reference value for correcting an error in reciprocal operation.
Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The work load conditions which require "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %). Order the regenerative resistor separately. For details, refer to "Conditions for Regenerative Resistor (Guide)" on pages 205 and 206.
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	LEY25□ (Motor mounting position: Top/Parallel)									LEY32□ (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
Weight [kg]	1.2	1.3	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.0	4.3	4.6	4.9	5.2

Series	LEY25D□ (Motor mounting position: In-line)									LEY32D□ (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
Weight [kg]	1.2	1.3	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.1	4.3	4.6	4.9	5.2

Additional Weight

[kg]

Size		25	32
Lock		0.30	0.60
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

Specifications

Model			LEY63□ (Top/Parallel)				LEY63D□ (In-line)		
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400, 500, 600, 700, 800						
	Work load [kg]	Horizontal Note 2)	40	70	80	200	40	70	80
		Vertical	19	38	72	115	19	38	72
	Force [N]/Set value Note 3) : 45 to 150 % Note 4)		156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910
	Max. speed [mm/s] Note 5)	Stroke range: Up to 500	1000	500	250	70	1000	500	250
		505 to 600	800	400	200		800	400	200
		605 to 700	600	300	150		600	300	150
		705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s] Note 6)		30 or less						
	Max. acceleration/deceleration [mm/s²]		5000			3000	5000		
	Positioning repeatability [mm]	Basic type	±0.02						
		High precision type	±0.01						
	Lost motion [mm] Note 7)	Basic type	0.1 or less						
		High precision type	0.05 or less						
	Screw lead [mm] (including pulley ratio)		20	10	5	5 (2.86)	20	10	5
	Impact/Vibration resistance [m/s²] Note 8)		50/20						
	Actuation type		Ball screw			Ball screw + Belt (Pulley ratio 4:7)	Ball screw		
	Guide type		Sliding bushing (Piston rod)						
	Operating temperature range [°C]		5 to 40						
	Operating humidity range [%RH]		90 or less (No condensation)						
	Conditions for "Regenerative resistor" [kg] Note 9)	Horizontal	Not required						
		Vertical	2.5 or more						
Electric specifications	Motor output/Size		400 W/□60						
	Motor type		AC servo motor (200 VAC)						
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 p/rev)						
	Power consumption [W] Note 10)	Horizontal	210						
		Vertical	230						
	Standby power consumption when operating [W] Note 11)	Horizontal	2						
		Vertical	18						
	Max. instantaneous power consumption [W] Note 12)		1275						
Lock unit specifications	Type Note 13)		Non-magnetizing lock						
	Holding force [N]		313	607	1146	2006	313	607	1146
	Power consumption [W] at 20 °C Note 14)		6						
	Rated voltage [V]		24 VDC $^{0}_{-10\ \%}$						

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) Set values for the driver.
Note 4) The force setting range (set values for the driver) for the pushing operation with the torque control mode etc. The pushing force and duty ratio change according to the set value. Set it with reference to "Force Conversion Graph (Guide)" on page 207.
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) A reference value for correcting an error in reciprocal operation.
Note 8) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 9) The work load conditions which require "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %).
Note 10) The power consumption (including the driver) is for when the actuator is operating.
Note 11) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 12) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 13) Only when motor option "With lock" is selected.
Note 14) For an actuator with lock, add the power consumption for the lock.

Weight

[kg]

Product Weight

[kg]

Series	LEY63□ (Motor mounting position: Top/Parallel)							
Stroke [mm]	100	200	300	400	500	600	700	800
Weight [kg]	5.3	6.5	8.2	9.3	10.4	12.1	13.3	14.4

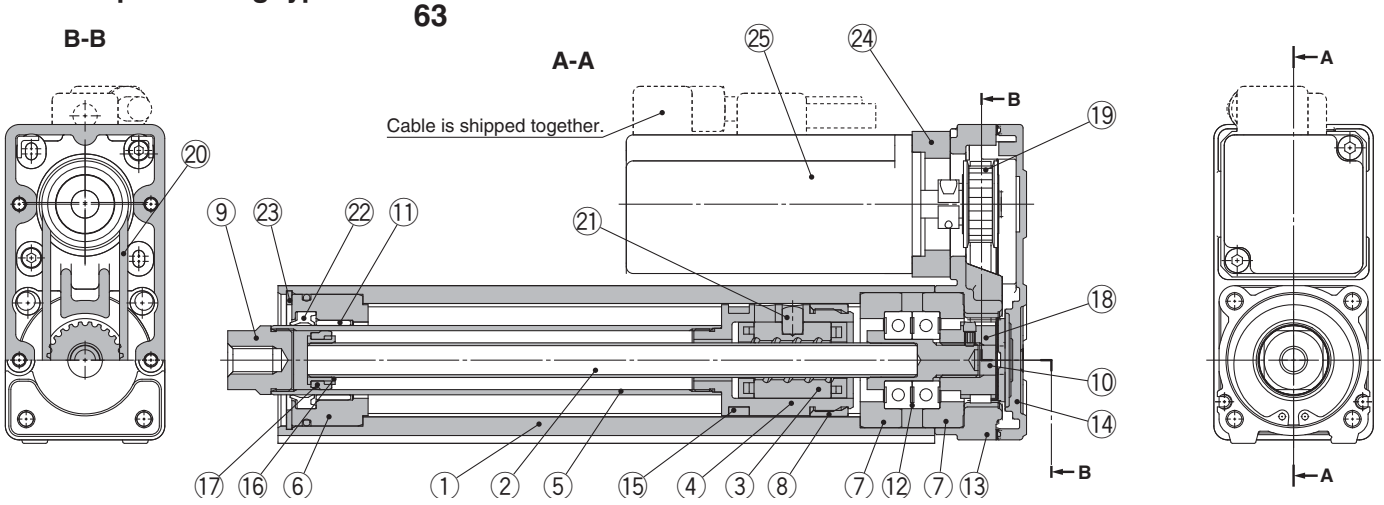
Series	LEY63D□ (Motor mounting position: In-line)							
Stroke [mm]	100	200	300	400	500	600	700	800
Weight [kg]	5.5	6.6	8.3	9.5	10.6	12.3	13.4	14.6

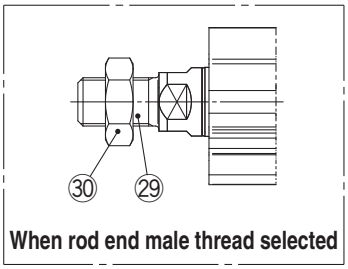
Additional Weight

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

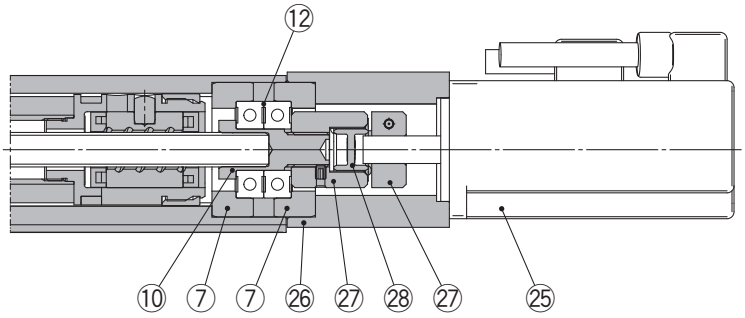
Construction

Motor top mounting type: LEY25/32/63





In-line motor type: LEY25/32/63D



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 plated
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	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	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	

No.	Description	Material	Note
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Coating
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
29	**Socket (Male thread)**	Free cutting carbon steel	Nickel plated
30	**Nut**	Alloy steel	Zinc chromated

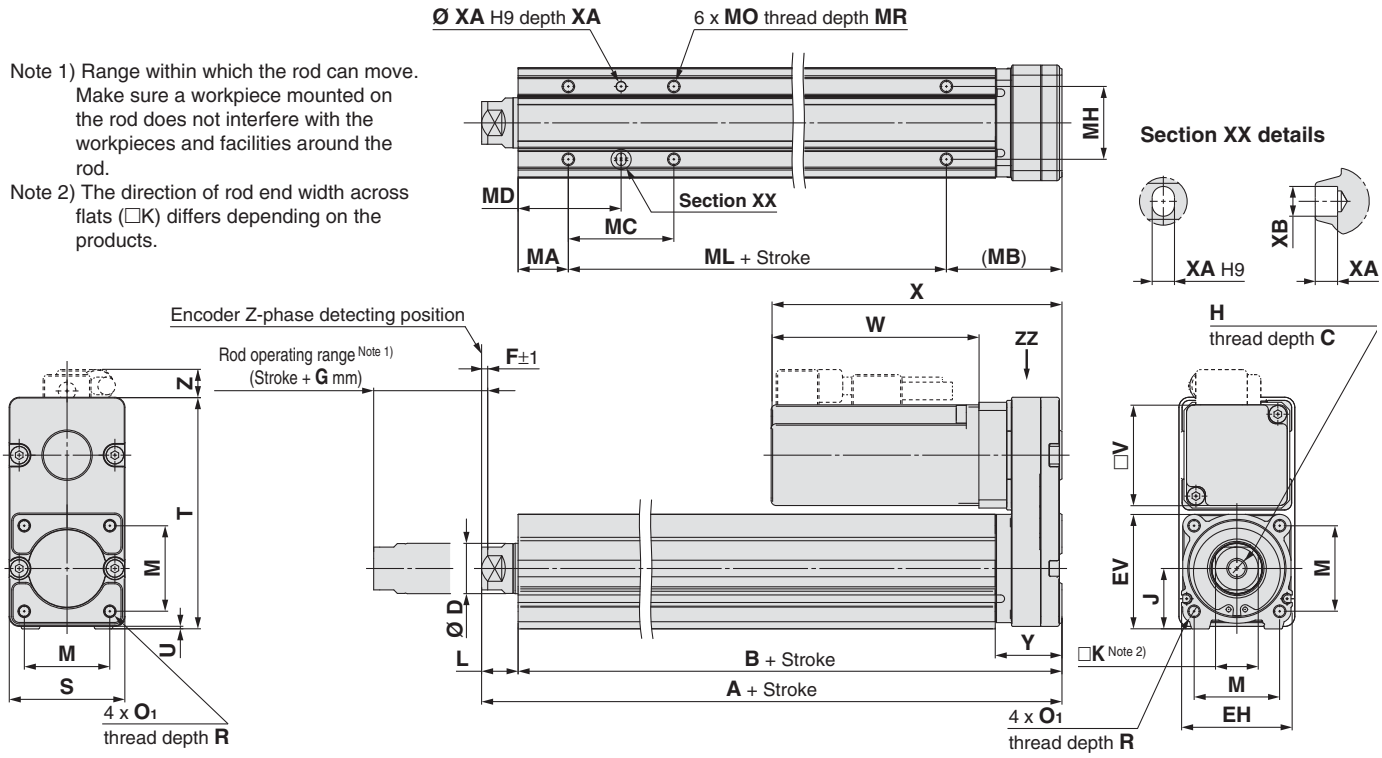
Replacement Parts (Top/Parallel only)/Belt

No.	Size	Order no.
20	**25**	LE-D-2-2
	32	LE-D-2-4

No.	Size	Lead	Order no.
20	**63**	A/B/C	LE-D-2-5
		L	LE-D-2-6

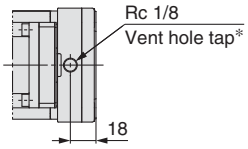
Dimensions: Motor Top/Parallel

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



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

(View ZZ)



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

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	Y	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	46	92	1	26.5	40
	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	118	1	34	60
	105 to 500	178.5	160																
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	146	4	32.2	60
	205 to 500	227.6	190.2																
	505 to 800	262.6	225.2																

Size	Stroke range [mm]	Without lock			With lock			F	G
		W	X	Z	W	X	Z		
25	15 to 100	82.5	115.5	11	127.5	160.5	11	2	4
	105 to 400								
32	20 to 100	80	120	14	120	160	14	2	4
	105 to 500								
63	50 to 200	98.5	138.5	12.5 (13.5)*	138.5	178.5	12.5 (13.5)*	4	8
	205 to 500								
	505 to 800								

* L lead

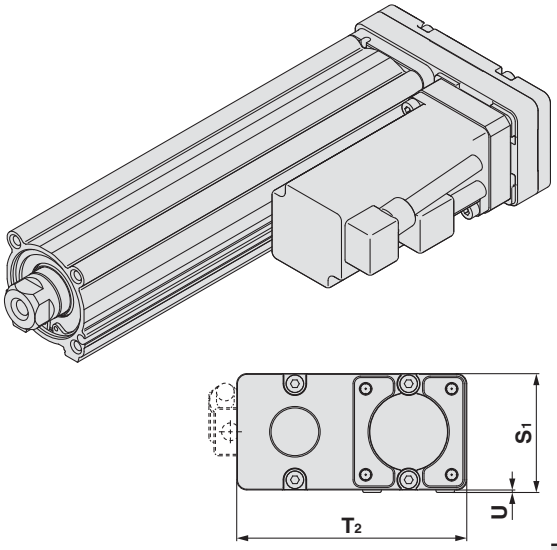
Body Bottom Tapped

[mm]

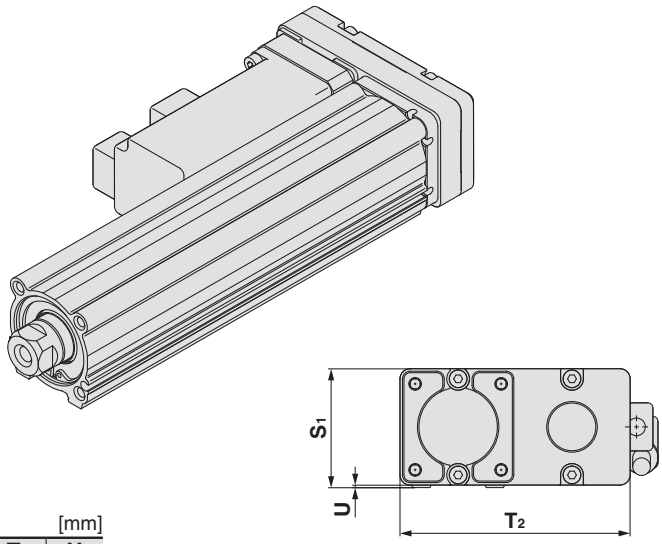
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 35	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	105 to 120						75				
	125 to 200			59	49.5						
	205 to 400			76	58						
32	20 to 35	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	105 to 120						80				
	125 to 200			53	51.5						
	205 to 500			70	60						
63	50 to 70	38	52.2	24	50	44	65	M8 x 1.25	10	6	7
	75 to 120			45	60.5						
	125 to 200			58	67						
	205 to 500			86	81		100				
	505 to 800						135				

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY 25 32 63 L



Motor right side parallel type: LEY 25 32 63 R

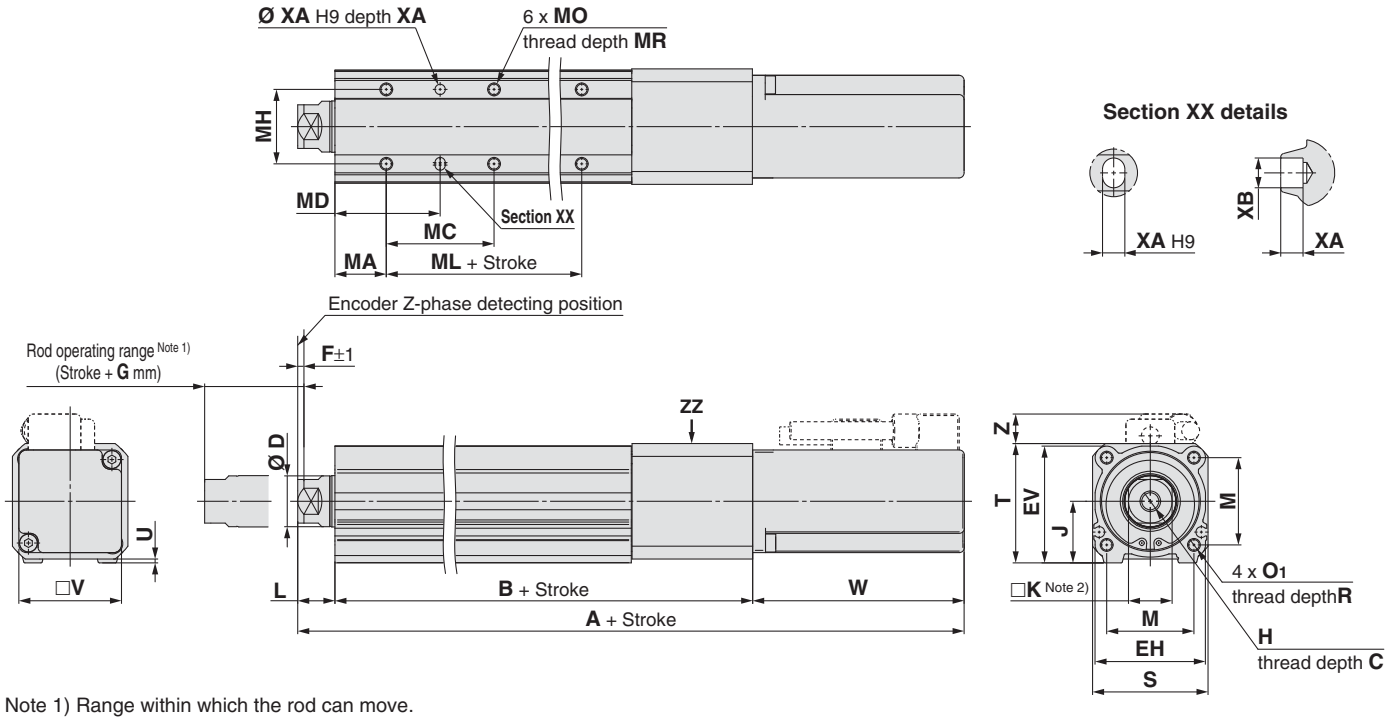


[mm]

Size	S_1	T_2	U
25	47	91	1
32	61	117	1
63	84	142	4

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

Dimensions: In-line Motor



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	B	V
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	136.5	40
	105 to 400															161.5	
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	156	60
	105 to 500															186	
63	50 to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5	190.7	60
	205 to 500															225.7	
	505 to 800															260.7	

Size	Stroke range [mm]	Without lock			With lock			F	G
		A	W	Z	A	W	Z		
25	15 to 100	233.5	82.5	11.5	278.5	127.5	11.5	2	4
	105 to 400	258.5			303.5				
32	20 to 100	254.5	80	14	294.5	120	14	2	4
	105 to 500	284.5			324.5				
63	50 to 200	326.6	98.5	5	366.6	138.5	5	4	8
	205 to 500	361.6			401.6				
	505 to 800	396.6			436.6				

Body Bottom Tapped

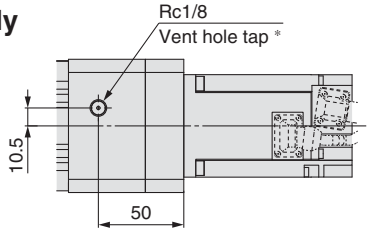
[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 35	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	105 to 120					75				
	125 to 200		59	49.5						
	205 to 400		76	58						
32	20 to 35	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	105 to 120					80				
	125 to 200		53	51.5						
	205 to 500		70	60						
63	50 to 70	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 120		45	60.5						
	125 to 200		58	67						
	205 to 500		86	81		100				
	505 to 800					135				

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

(View ZZ)

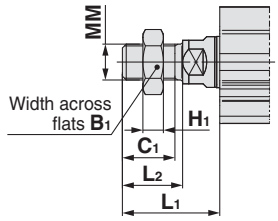
∗LEY63 only



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

Dimensions

End male thread: LEY 25/32/63 □□ A/B/C/L -□□M



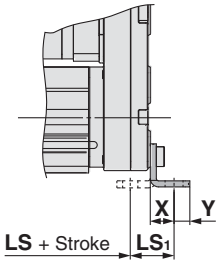
∗ Refer to page 25 for details about the rod end nut and mounting bracket.
Note) Refer to the "Mounting" precautions on pages 235 and 236 when mounting end brackets such as knuckle joint or workpieces.

[mm]

Size	B_1	C_1	H_1	L_1*	L_2	MM
25	22	20.5	8	38	23.5	M14 x 1.5
32	22	20.5	8	42.0	23.5	M14 x 1.5
63	27	26	11	76.4	39	M18 x 1.5

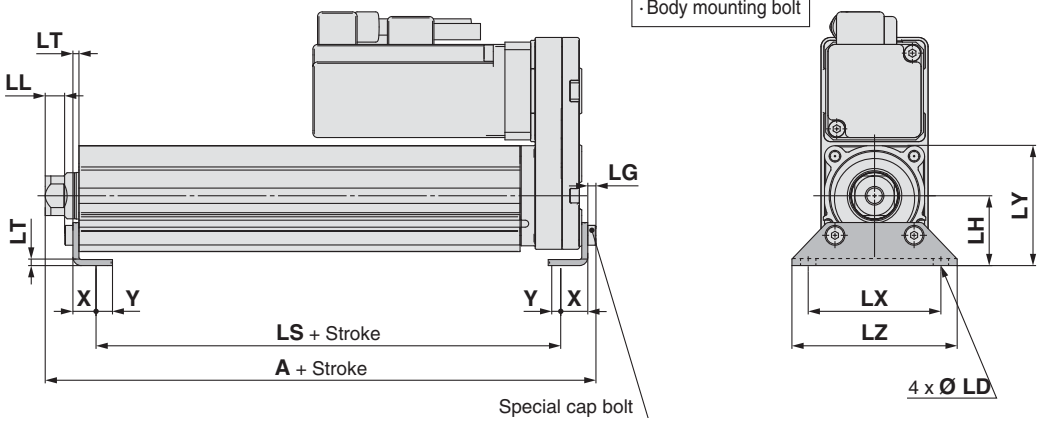
∗ The L_1 measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

Foot: LEY 25/32/63 □□ -□□□L



Outward mounting

Included parts
· Foot
· Body mounting bolt



Foot

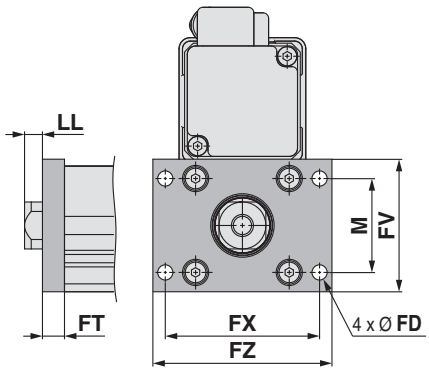
[mm]

Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	105 to 400	161.6	123.8											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	105 to 500	185.7	144											
63	50 to 200	200.8	133.2	25.2	29.2	8.6	5	50	3.2	95	88	110	14.2	8
	205 to 500	235.8	168.2											
	505 to 800	270.8	203.2											

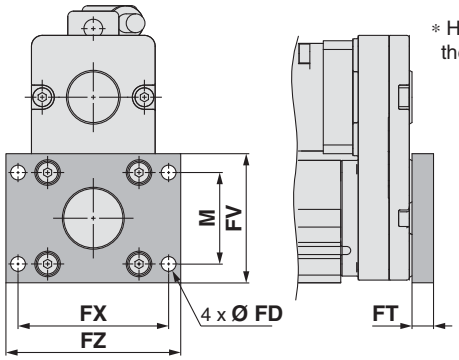
Material: Carbon steel (Chromate treated)
∗ The A measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outwards.

Dimensions

Rod flange: LEY 25/32/63 □□ A/B/C/L -□□□F



Head flange: LEY 25/32/63 □□ A/B/C/L -□□□G



∗ Head flange is not available for the LEY32/LEY63.

Included parts
· Flange
· Body mounting bolt

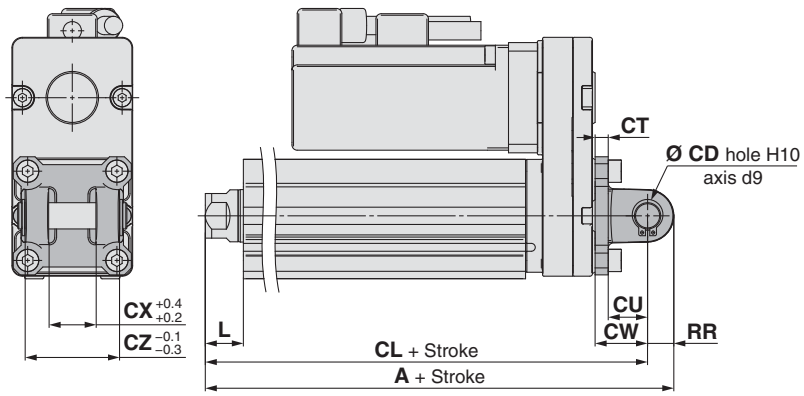
Rod/Head Flange [mm]

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
63	9	9	80	92	108	28.4	60

Material: Carbon steel (Nickel plated)

∗ The LL measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

Double clevis: LEY 25/32/63 □□ A/B/C/L -□□□D



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

∗ Refer to Electric Actuators catalogue (CAT.E102) for details about the rod end nut and mounting bracket.

Double Clevis [mm]

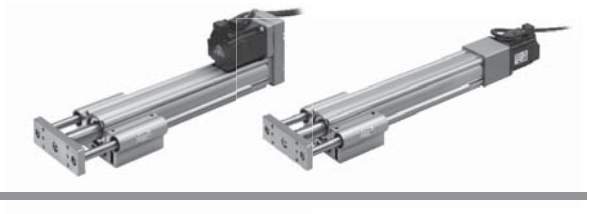
Size	Stroke range [mm]	A	CL	CD	CT
25	15 to 100	160.5	150.5	10	5
	105 to 200	185.5	175.5		
32	20 to 100	180.5	170.5	10	6
	105 to 200	210.5	200.5		
63	50 to 200	236.6	222.6	14	8
	205 to 500	271.6	257.6	—	—
	505 to 800	306.6	292.6	—	—

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
25	15 to 100	14	20	18	36	14.5	10
	105 to 200						
32	20 to 100	14	22	18	36	18.5	10
	105 to 200						
63	50 to 200	22	30	22	44	37.4	14
	205 to 500						
	505 to 800						

Material: Cast iron (Coating)

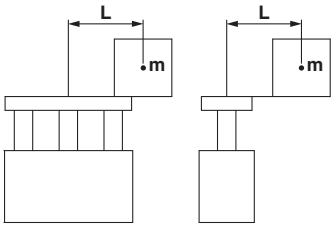
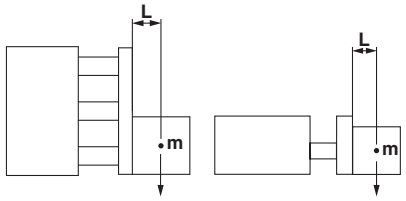
∗ The A and CL measurements are when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

Series LEYG
Model Selection



Moment Load Graph

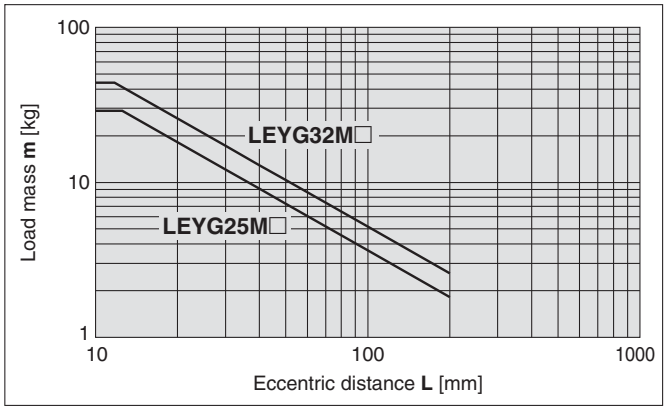
Selection conditions

	Vertical	Horizontal	
Mounting position			
Max. speed [mm/s]	"Speed–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

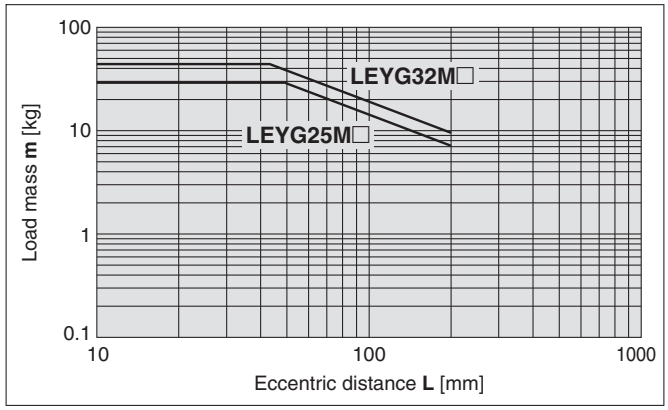
∗ For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 stroke or less



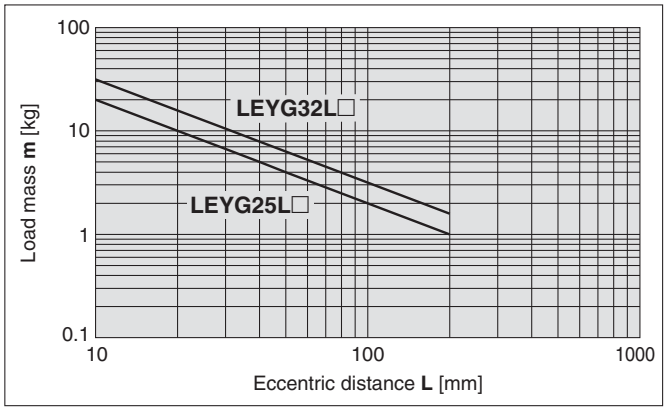
② Over 75 stroke



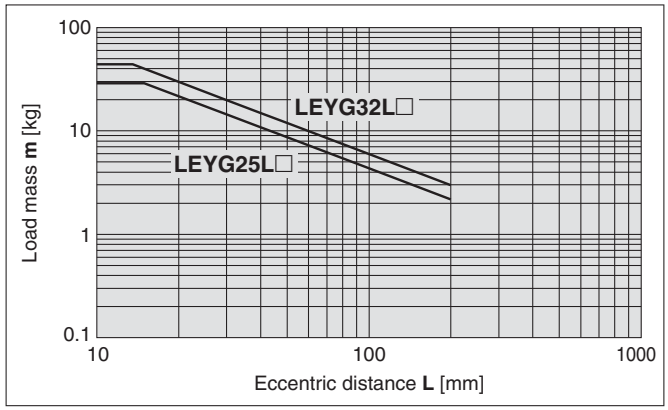
∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Work Load Graph" on page 221.

Vertical Mounting, Ball Bushing Bearing

③ 35 stroke or less



④ Over 40 stroke

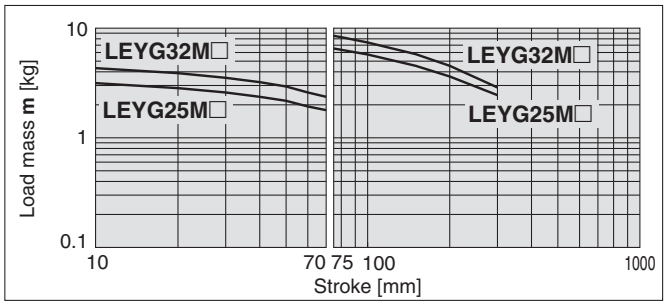


∗ The limit of vertical load mass varies depending on "lead" and "speed".
Check "Speed–Work Load Graph" on page 221.

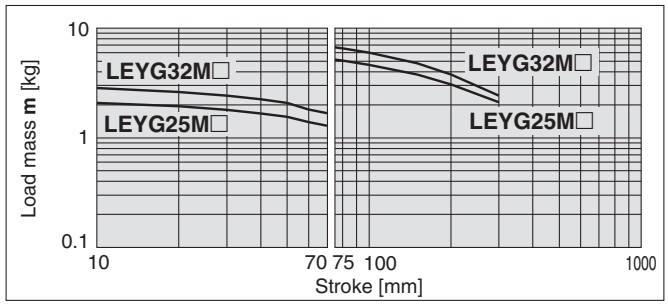
Moment Load Graph

Horizontal Mounting, Sliding Bearing

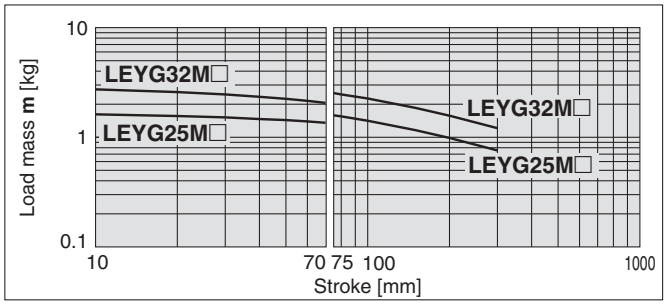
⑤ **L = 50 mm Max. speed = 200 mm/s or less**



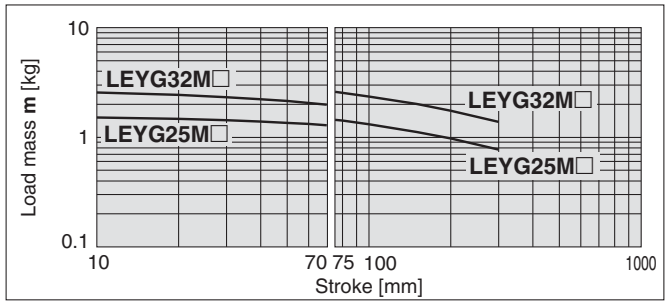
⑥ **L = 100 mm Max. speed = 200 mm/s or less**



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

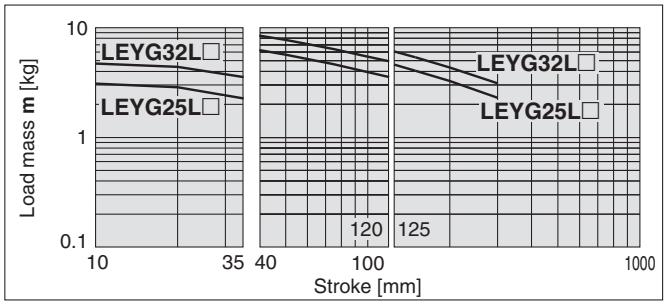


⑧ **L = 100 mm Max. speed = Over 200 mm/s**

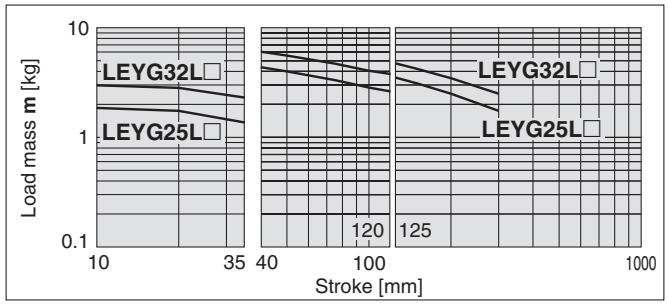


Horizontal Mounting, Ball Bushing Bearing

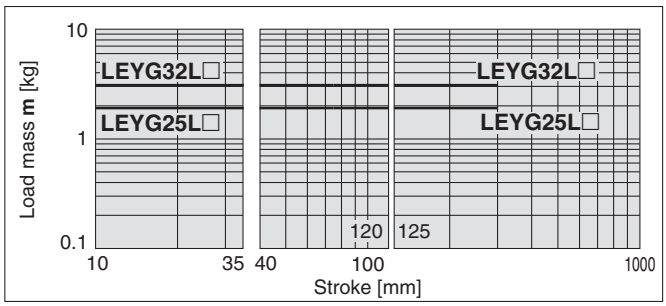
⑨ **L = 50 mm Max. speed = 200 mm/s or less**



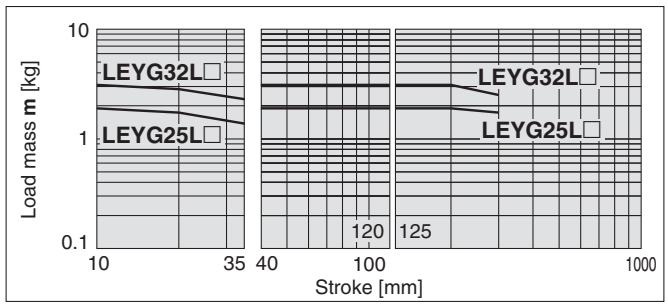
⑩ **L = 100 mm Max. speed = 200 mm/s or less**



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

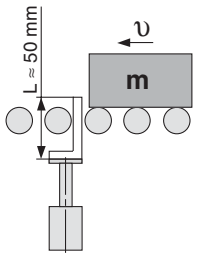


⑫ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

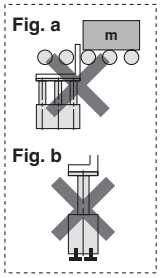
Handling Precautions

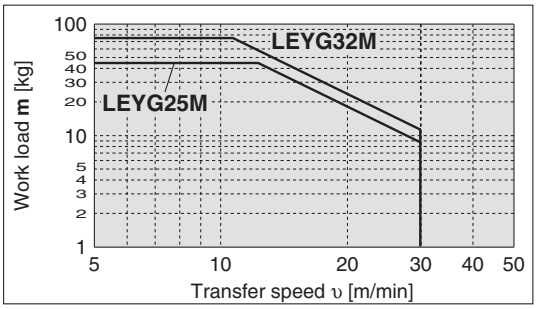
Note 1) When used as a stopper, select a model with 30 stroke or less.

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**).

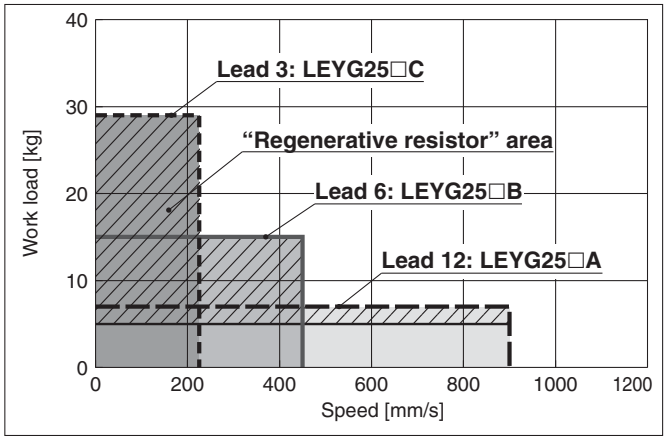




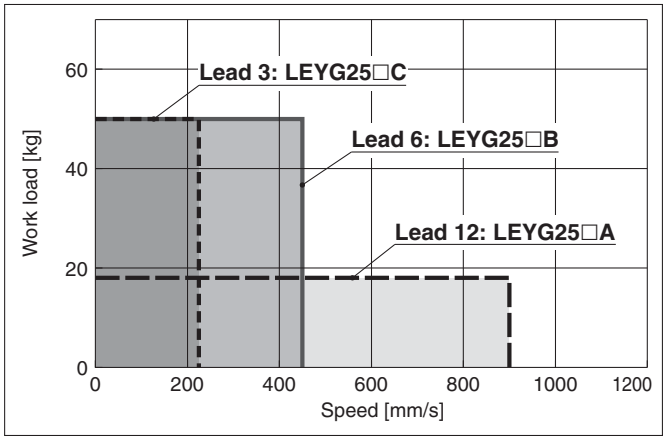
Speed–Work Load Graph/Conditions for "Regenerative Resistor" (Guide)

LEYG25□V6 (Motor mounting position: Top mounting/In-line)

Vertical

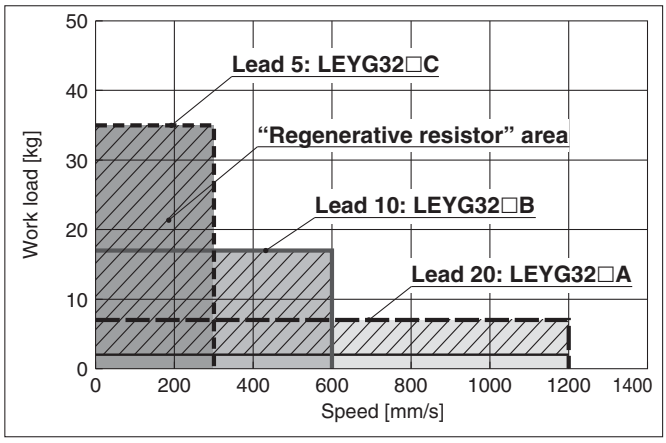


Horizontal

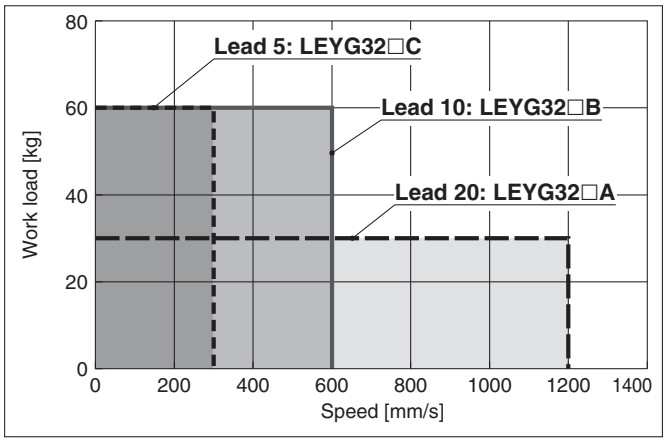


LEYG32□V7 (Motor mounting position: Top mounting)

Vertical

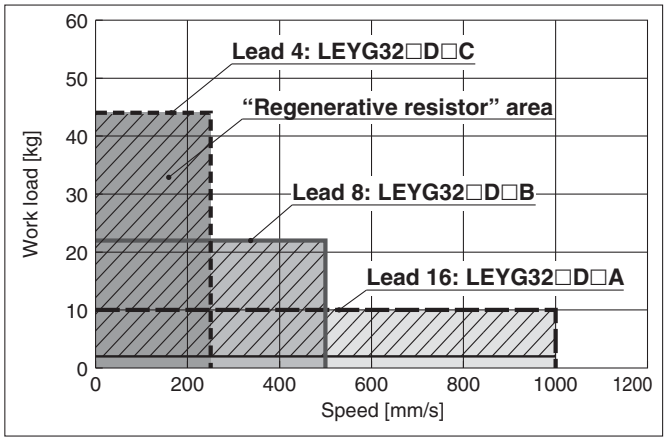


Horizontal

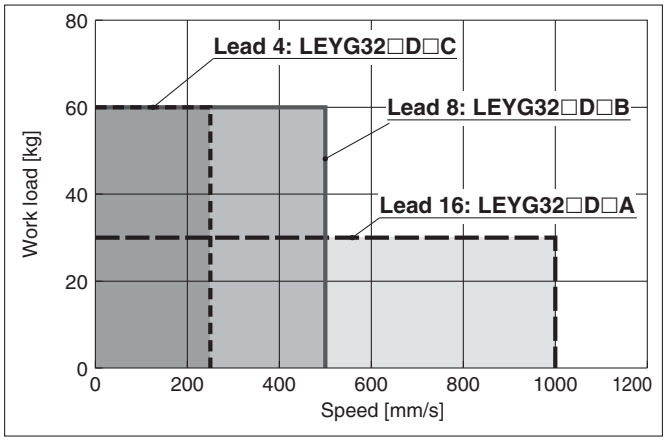


LEYG32□DV7 (Motor mounting position: In-line)

Vertical



Horizontal



"Regenerative resistor" area

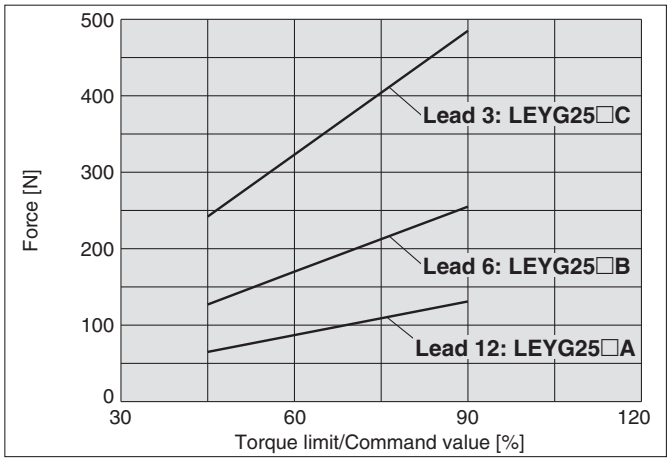
* When using the actuator in the "Regenerative resistor" area, download the "AC servo capacity selection program/SigmaJunmaSize+" from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.
* Regenerative resistor should be provided by the customer.

Applicable Motor/Driver

Model	Applicable model	
	Motor	Servopack (SMC driver)
LEYG25□	SGMJV-01A3A	SGDV-R90A11□ (LECYM2-V5) SGDV-R90A21□ (LECYU2-V5)
LEYG32□	SGMJV-02A3A	SGDV-1R6A11□ (LECYM2-V7) SGDV-1R6A21□ (LECYU2-V7)

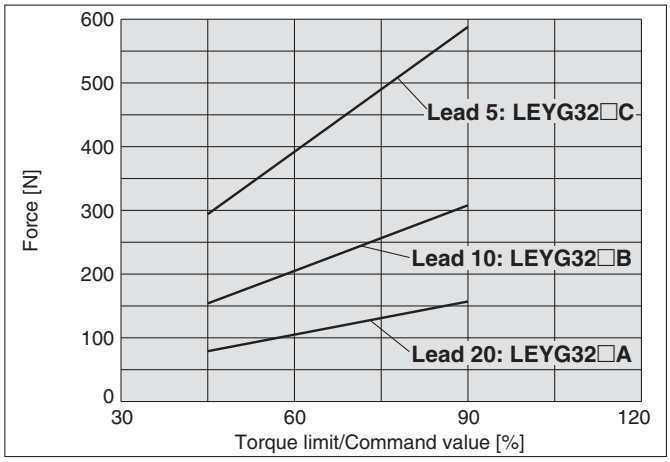
Force Conversion Graph

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



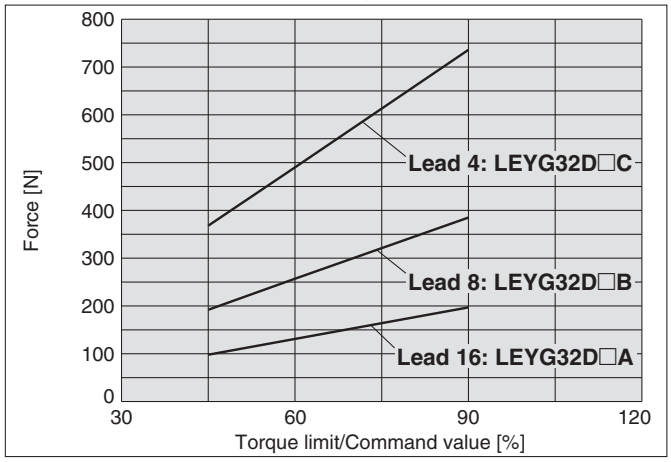
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEYG32□ (Motor mounting position: Top mounting)



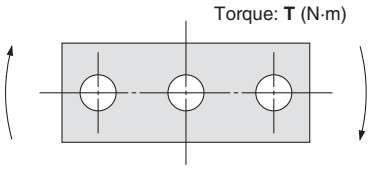
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEYG32D (Motor mounting position: In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

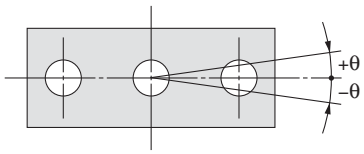
Allowable Rotational Torque of Plate: T



T [N·m]

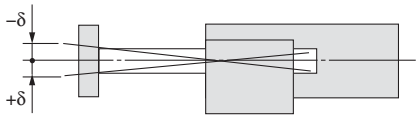
Model	Stroke [mm]				
	30	50	100	200	300
LEYG25M	1.56	1.29	3.50	2.18	1.36
LEYG25L	1.52	3.57	2.47	2.05	1.44
LEYG32M	2.55	2.09	5.39	3.26	1.88
LEYG32L	2.80	5.76	4.05	3.23	2.32

Non-rotating Accuracy of Plate: θ



Size	LEYG□M	LEYG□L
25	±0.05°	±0.04°
32		

Plate Displacement: δ



[mm]

Model	Stroke [mm]				
	30	50	100	200	300
LEYG25M	±0.26	±0.31	±0.25	±0.38	±0.36
LEYG25L	±0.13	±0.13	±0.17	±0.20	±0.23
LEYG32M	±0.23	±0.29	±0.23	±0.36	±0.34
LEYG32L	±0.11	±0.11	±0.15	±0.19	±0.22

Electric Actuator/Guide Rod Type

AC Servo Motor

Series LEYG

LEYG25, 32

RoHS

How to Order

LEY H G 25 M ☐ V6 B – 200 ☐ ☐ – S 3 M2 ☐

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Accuracy

—	Basic type
H	High precision type

❷ Size

25	
32	

❸ Bearing type

M	Sliding bearing
L	Ball bushing bearing

❹ Motor mounting position

—	Top mounting
D	In-line

❺ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver
V6	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7

❻ 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 top mounting type. (Equivalent lead which includes the pulley ratio [1.25:1])

❼ Stroke [mm]

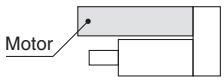
30	30
to	to
300	300

* Refer to the applicable stroke table.
* There is a limit for mounting size 3 2 top mounting type and 50 mm stroke or less. Refer to the dimensions.

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



❾ Guide option

—	Without option
F	With grease retaining function

* Only available for the sliding bearing.

❿ Cable type

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

⓫ Cable length [m]

—	Without cable
3	3
5	5
A	10
C	20

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

* Please consult with SMC for the manufacture of intermediate strokes.

For auto switches, refer to pages 232 and 233.

Motor mounting position: Top mounting

Motor mounting position: In-line

⓬ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

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

⓭ I/O cable length [m] ∗

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

∗ When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to Page 246 if I/O cable is required.
(Options are shown on Page 246.)

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	MECHATROLINK-Ⅱ type 	MECHATROLINK-Ⅲ type 
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	Page 239	

Specifications

Model			LEYG25$^{M}_{L}$ (Top mounting) LEYG25$^{M}_{L}$D (In-line)			LEYG32$^{M}_{L}$ (Top mounting)			LEYG32$^{M}_{L}$D (In-line)		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 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
	Force [N] Note 3) (Set value: 45 to 90 %)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s] Note 4)		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02			±0.02					
		High precision type	±0.01			±0.01					
	Lost motion [mm]	Basic type	0.1 or less			0.1 or less					
		High precision type	0.05 or less			0.05 or less					
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/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)					
	Conditions for Note 6) "Regenerative resistor" [kg]	Horizontal	Not required			Not required					
		Vertical	5 or more			2 or more					
Electric specifications	Motor output/Size		100 W/□40			200 W/□60					
	Motor type		AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 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)		5.5			6			6		
	Rated voltage [V]		24 VDC $^{0}_{-10\ \%}$								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Please confirm using actual device.
Note 3) The force setting range (set values for the driver) for the pushing operation with the torque control mode, etc. Set it with reference to "Force Conversion Graph" on page 222.
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 "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %). Order the regenerative resistor separately. For details, refer to "Conditions for Regenerative Resistor (Guide)" on page 221.
Note 7) The power consumption (including the driver) is for when the actuator is operating.
Note 8) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during operation.
Note 9) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 10) Only when motor option "With lock" is selected.
Note 11) For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight: Top Mounting Type

[kg]

Series	LEYG25M							LEYG32M						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	1.9	2.2	2.6	3.0	3.3	3.6	3.1	3.4	4.0	4.7	5.3	5.7	6.2

Series	LEYG25L							LEYG32L						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	1.9	2.2	2.6	2.9	3.2	3.4	3.1	3.4	3.8	4.5	5.0	5.5	5.9

Product 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
Weight [kg]	1.7	1.9	2.2	2.6	3.0	3.3	3.6	3.2	3.4	4.0	4.7	5.3	5.8	6.2

Series	LEYG25LD							LEYG32LD						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	2.0	2.2	2.6	2.9	3.2	3.4	3.2	3.4	3.8	4.6	5.0	5.5	5.9

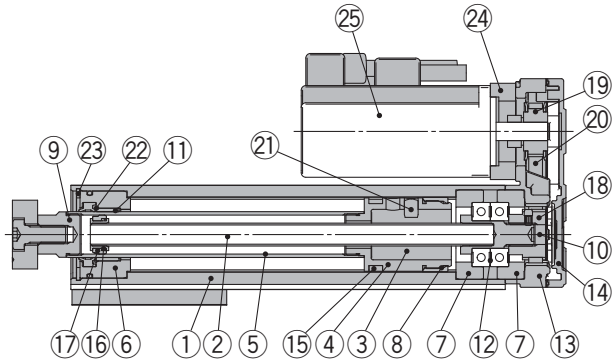
Additional Weight

[kg]

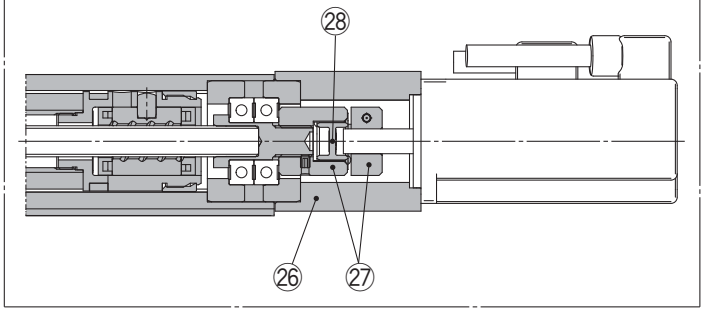
Size	25	32
Lock	0.3	0.6

Construction

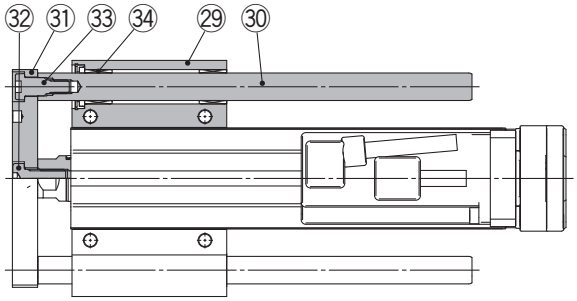
Motor mounting position: Top mounting type



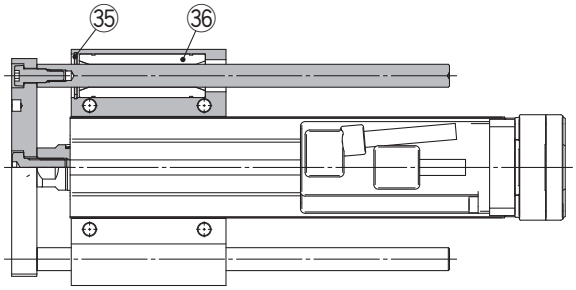
Motor mounting position: In-line type



LEYG□M



LEYG□L



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 plated
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	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	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Trivalent chromated
14	**Return plate**	Aluminium die-cast	Trivalent chromated
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	

No.	Description	Material	Note
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Anodised
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Anodised
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
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	**Retaining ring**	Steel for spring	Phosphate coated
36	**Ball bushing**	—	

Support Block

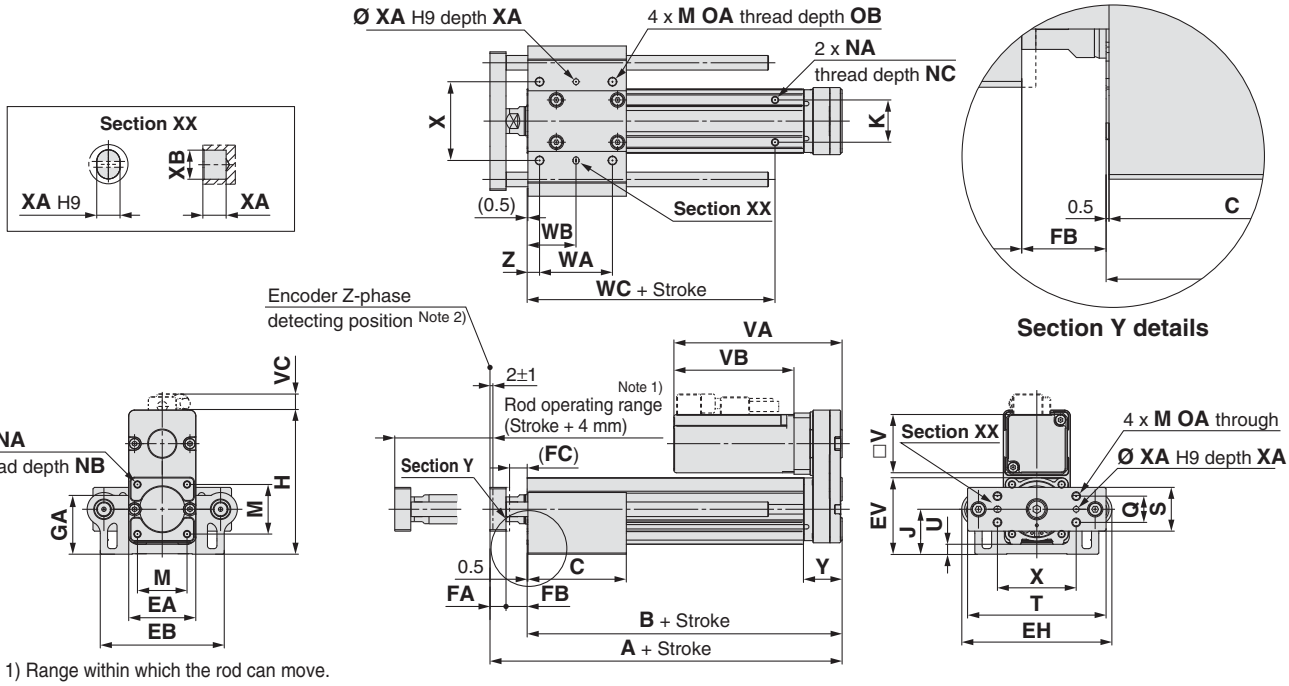
Size	Order no.
25	LEYG-S025
32	LEYG-S032

∗ 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	15 to 110	91	10
	115 to 190	115	
	195 to 300	133	
32	20 to 110	97.5	13
	115 to 190	116.5	
	195 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	15 to 55	67.5	12
	60 to 185	100.5	
	190 to 300	138	
32	20 to 55	74	16
	60 to 185	107	
	190 to 300	144	

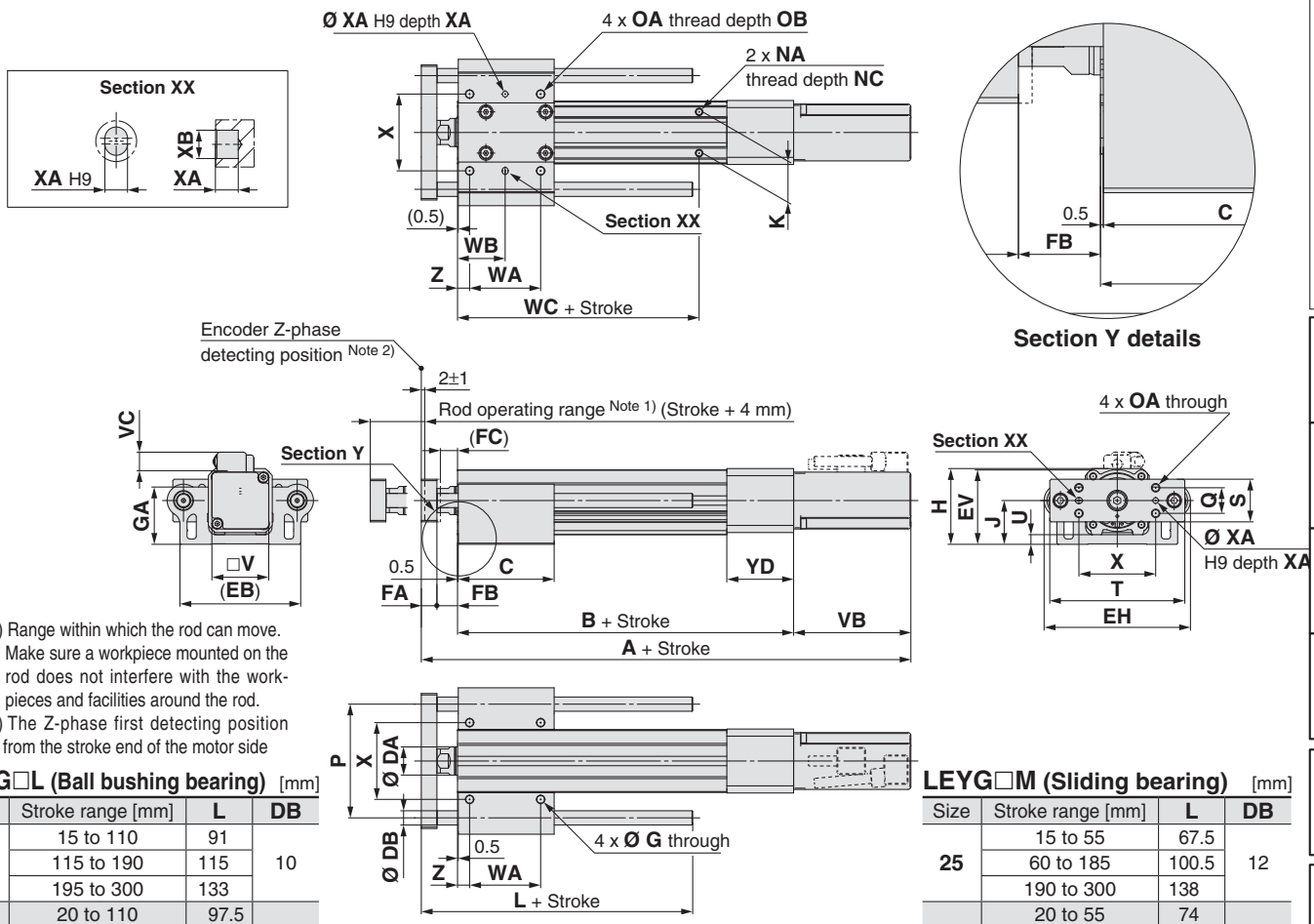
LEYG□M, LEYG□L Common [mm]

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	15 to 35	141.5	116	50	20	46	85	103	52.3	11	14.5	12.5	5.4	40.3	98.8	30.8	29	34	M5 x 0.8	8	6.5
	40 to 100			67.5																	
	105 to 120	166.5	141																		
	125 to 200			84.5																	
	205 to 300			102																	
32	20 to 35	160.5	130	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	125.8	38.3	30	40	M6 x 1.0	10	8.5
	40 to 100			68																	
	105 to 120	190.5	160																		
	125 to 200			85																	
	205 to 300			102																	

Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	Y	Z
25	15 to 35	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	26.5	8.5
	40 to 100									50	33.5						
	105 to 120											95					
	125 to 200									70	43.5						
	205 to 300									85	51						
32	20 to 35	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	34	8.5
	40 to 100									50	33.5						
	105 to 120											105					
	125 to 200									70	43.5						
	205 to 300									85	51						

Size	Without lock			With lock		
	VA	VB	VC	VA	VB	VC
25	115.5	82.5	11	160.5	127.5	11
32	120	80	14	160	120	14

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	15 to 110	91	10
	115 to 190	115	
	195 to 300	133	
32	20 to 110	97.5	13
	115 to 190	116.5	
	195 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	15 to 55	67.5	12
	60 to 185	100.5	
	190 to 300	138	
32	20 to 55	74	16
	60 to 185	107	
	190 to 300	144	

LEYG□M, LEYG□L Common [mm]

Size	Stroke range [mm]	B	C	DA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
25	15 to 35	136.5	50	20	85	103	52.3	11	14.5	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8	6.5
	40 to 100		67.5														
	105 to 120	161.5															
	125 to 200		84.5														
	205 to 300		102														
32	20 to 35	156	55	25	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40 to 100		68														
	105 to 120	186															
	125 to 200		85														
	205 to 300		102														

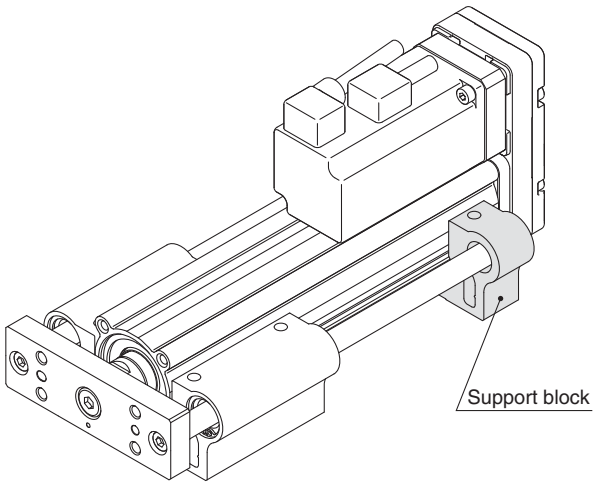
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z
25	15 to 35	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	47	8.5
	40 to 100									50	33.5						
	105 to 120											95					
	125 to 200									70	43.5						
	205 to 300									85	51						
32	20 to 35	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	60	8.5
	40 to 100									50	33.5						
	105 to 120											105					
	125 to 200									70	43.5						
	205 to 300									85	51						

Size	Stroke range [mm]	Without lock			With lock		
		A	VB	VC	A	VB	VC
25	15 to 100	255.5	82.5	11.5	300.5	127.5	11.5
	105 to 300	280.5			325.5		
32	15 to 100	266.5	80	14	306.5	120	14
	105 to 300	296.5			336.5		

Support Block

Guide for support block application

When the stroke exceeds 100 mm and the mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

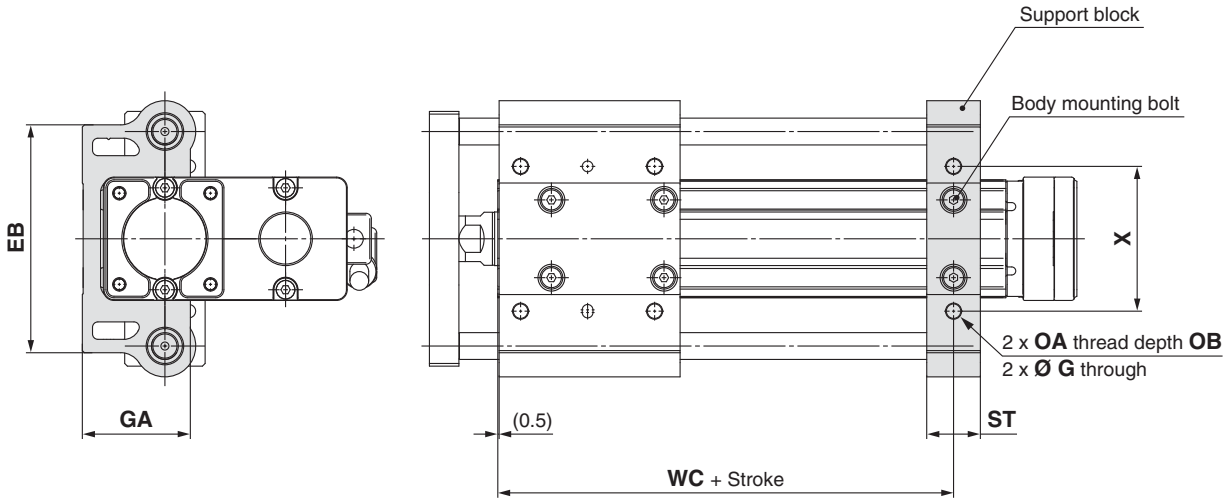


Support Block Model

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**	15 to 100	85	5.4	40.3	M6 x 1.0	12	20	70	54
		105 to 300							95	
32	**LEYG-S032**	20 to 100	101	5.4	50.3	M6 x 1.0	12	22	75	64
		105 to 300							105	

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

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

⚠Caution

Precautions

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

Auto Switch Specifications

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

PLC: Programmable Logic Controller

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

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N□	D-M9P□	D-M9B□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	Ø 0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	Ø 0.05		
Minimum bending radius [mm] (Reference value)		20		

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

Weight

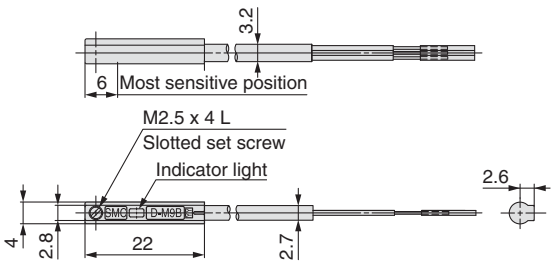
[g]

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

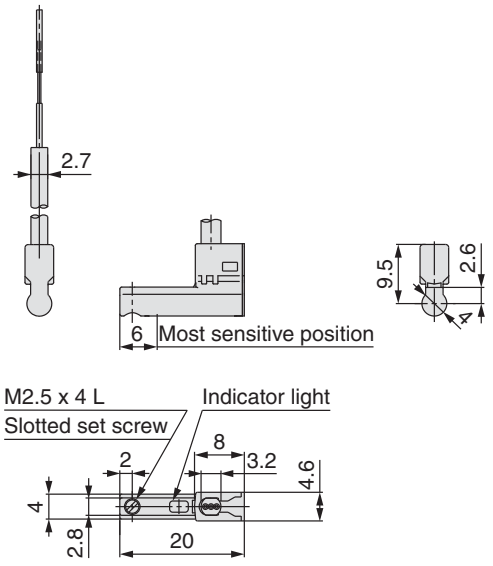
Dimensions

[mm]

D-M9□



D-M9□V



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

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

Grommet

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

PLC: Programmable Logic Controller

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

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW□	D-M9PW□	D-M9BW□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	Ø 0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	Ø 0.05		
Minimum bending radius [mm] (Reference value)		20		

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

Weight

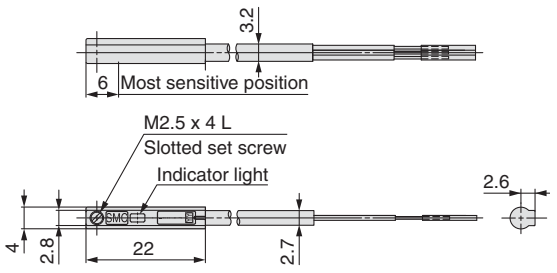
[g]

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

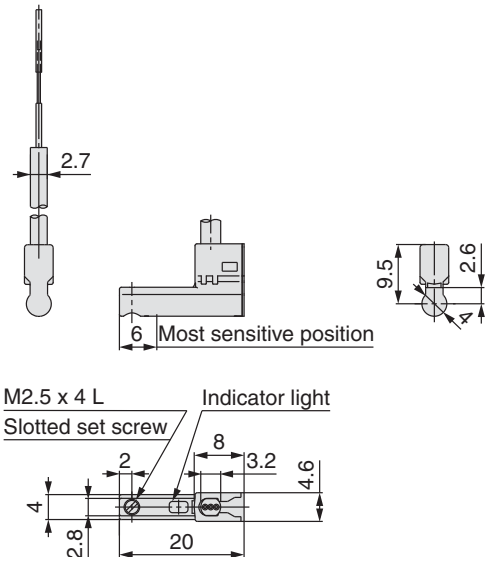
Dimensions

[mm]

D-M9□W



D-M9□WV



Series LEY/LEYG
Electric Actuators/ Specific Product Precautions 1

Be sure to read this before handling. For Safety Instructions and Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

Design/Selection

⚠Warning

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

Select a suitable actuator by work 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" for a stroke of 30 mm or less.

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. 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 limit or the external torque limit (LECY) should be set to 90 % or less. (150 % or less only for the LEY63)

It may lead to damage and malfunction.

3. The forward/reverse torque limit is set to 800 % as default.

When the product is operated with a smaller value than 300 %, 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.

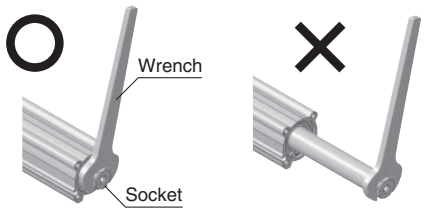
10. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

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	LEY63
	1.1	1.4	2.8

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.
- The auto switches with perpendicular electrical entry cannot be used.
- 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 this before handling. For Safety Instructions and Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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) IP65: Dust-tight, Water-jet-proof type
"Water-jet-proof type" means that no water intrudes inside an equipment that could hinder from operating normally by means of applying water for 3 minutes in the prescribed manner. Take appropriate protection measures, since a device is not usable in an environment where a droplet of water is splashed constantly.

Mounting

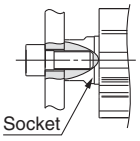
⚠Caution

1. When mounting workpieces or jigs to the piston rod end, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.
This may cause abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

2. When mounting the product and/or a workpiece, tighten the mounting screws within the specified torque range.
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

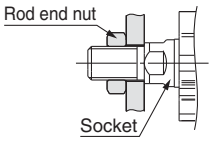
<Series LEY>

Workpiece fixed/Rod end female thread

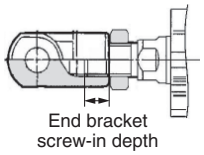


Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]	End socket width across flats [mm]
LEY25	M8 x 1.25	12.5	13	17
LEY32	M8 x 1.25	12.5	13	22
LEY63	M16 x 2	106	21	36

Workpiece fixed/Rod end male thread



Model	Bolt	Max. tightening torque [N·m]	Effective thread length [mm]	End socket width across flats [mm]
LEY25	M14 x 1.5	50	20.5	17
LEY32	M14 x 1.5	50	20.5	22
LEY63	M18 x 1.5	97	26	36



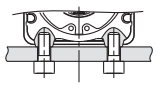
Model	Rod end nut		End bracket
	Width across flats [mm]	Length [mm]	screw-in depth [mm]
LEY25	22	8	14
LEY32	22	8	14
LEY63	27	11	18

∗ Rod end nut is an accessory.

Mounting

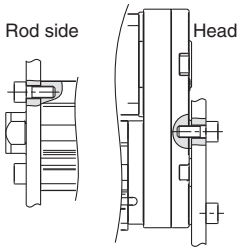
⚠Caution

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
LEY63	M8 x 1.25	12.5	10

Body fixed/Rod side/Head side tapped style

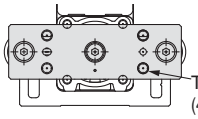


Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY25	M5 x 0.8	3.0	8
LEY32	M6 x 1.0	5.2	10
LEY63	M8 x 1.25	12.5	16

∗ Except the LEY□D.

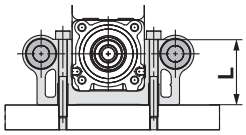
<Series LEYG>

Workpiece fixed/Plate tapped style



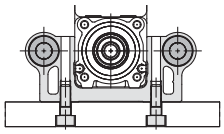
Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	11
LEYG32$^{M}_{L}$	M6 x 1.0	5.2	12

Body fixed/Top mounting



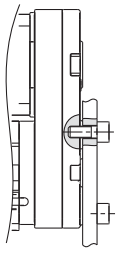
Model	Bolt	Max. tightening torque [N·m]	Length: L [mm]
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	40.3
LEYG32$^{M}_{L}$	M5 x 0.8	3.0	50.3

Body fixed/Bottom mounting



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	12
LEYG32$^{M}_{L}$	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]
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG32$^{M}_{L}$	M6 x 1.0	5.2	10

Electric Actuators/ Specific Product Precautions 3

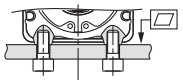
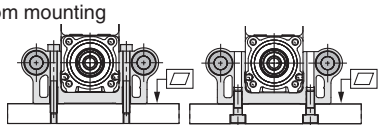
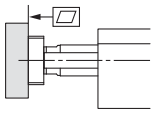
Be sure to read this before handling. For Safety Instructions and Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

Mounting

⚠Caution

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
LEYG□	Bottom mounting 	0.02 mm or less
	Workpiece/Plate mounting 	0.02 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

MECHATROLINK Compatible AC Servo Motor Driver

Absolute Type *Series LECYM*

MECHATROLINK-Ⅱ Type

Absolute Type *Series LECYU*

MECHATROLINK-Ⅲ Type

MECHATROLINK Compatible

AC Servo Motor Driver

Absolute Type

Series LECYM/LECYU

(MECHATROLINK-Ⅱ Type) (MECHATROLINK-Ⅲ Type)

RoHS

LECYM LECYU

How to Order

Driver **LECY M 2 –** ☐

Driver type

M	MECHATROLINK-Ⅱ type (For absolute encoder)
U	MECHATROLINK-Ⅲ type (For absolute encoder)

Power supply voltage

2	200 to 230 VAC, 50/60 Hz

Compatible motor type

Symbol	Type	Capacity	Encoder
V5	AC servo motor (V6 ∗2)	100 W	Absolute
V7	AC servo motor (V7 ∗2)	200 W	
V8	AC servo motor (V8 ∗2)	400 W	

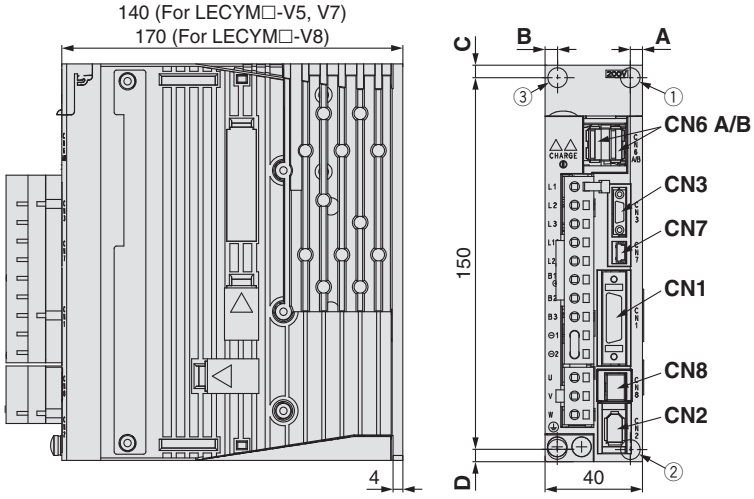
∗1 If the I/O signal connector (CN 1) is required, order the part number "LE-CYNA" separately.

∗2 The symbol shows the motor type (actuator).

Dimensions

MECHATROLINK-Ⅱ type

LECYM2-V☐



Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3 Note)	Digital operator connector
CN6A	MECHATROLINK-Ⅱ communication connector
CN6B	MECHATROLINK-Ⅱ communication connector
CN7	PC connector
CN8	Safety connector

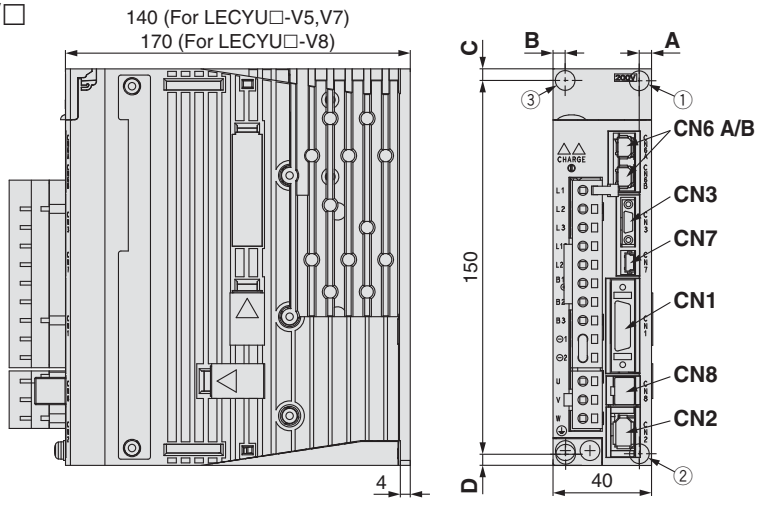
Note) Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions A	B	C	D	Mounting hole
V5 (100 W)	①②	5	—	5	5	Ø 5
V7 (200 W)	①②	5	—	5	5	
V8 (400 W)	②③	5	5	5	5	

∗ The mounting hole position varies depending on the motor capacity.

MECHATROLINK-Ⅲ type

LECYU2-V☐



Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3 Note)	Digital operator connector
CN6A	MECHATROLINK-Ⅲ communication connector
CN6B	MECHATROLINK-Ⅲ communication connector
CN7	PC connector
CN8	Safety connector

Note) Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions A	B	C	D	Mounting hole
V5 (100 W)	①②	5	—	5	5	Ø 5
V7 (200 W)	①②	5	—	5	5	
V8 (400 W)	②③	5	5	5	5	

∗ The mounting hole position varies depending on the motor capacity.

SMC

Specifications

MECHATROLINK-Ⅱ Type

Model			LECYM2-V5	LECYM2-V7	LECYM2-V8
Compatible motor capacity [W]			100	200	400
Compatible encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)		
Main circuit power supply	**Power voltage [V]**		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Three phase 170 to 253 VAC		
Control power supply	**Power voltage [V]**		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 170 to 253 VAC		
Power supply capacity (at rated output) [A]			0.91	1.6	2.8
Input circuit			NPN (Sink circuit)/PNP (Source circuit)		
Parallel input (7 inputs)	**Number of optional allocations**	**7 inputs**	[Initial allocation] · Homing deceleration switch (/DEC) · External latch (/EXT 1 to 3) · Forward run prohibited (P-OT), reverse run prohibited (N-OT) [Can be allocated by setting the parameters.] · Forward external torque limit (/P-CL), reverse external torque limit (/N-CL) Signal allocations can be performed, and positive and negative logic can be changed.		
Parallel output (4 outputs)	Number of fixed allocations	**1 output**	· Servo alarm (ALM)		
	Number of optional allocations	**3 outputs**	[Initial allocation] · Lock (/BK) [Can be allocated by setting the parameters.] · Positioning completion (/COIN) · Speed limit detection (/VLT) · Speed coincidence detection (/V-CMP) · Rotation detection (/TGON) · Warning (/WARN) · Servo ready (/S-RDY) · Near (/NEAR) · Torque limit detection (/CLT) Signal allocations can be performed, and positive and negative logic can be changed.		
MECHATROLINK communication	**Communication protocol**		MECHATROLINK-Ⅱ		
	Station address		41H to 5FH		
	Communication speed		10 Mbps		
	Communication cycle		250 μs, 0.5 ms to 4 ms (Multiples of 0.5 ms)		
	Number of transmission bytes		17 bytes, 32 bytes		
	Max. number of stations		30		
	Cable length		Overall cable length: 50 m or less, Cable length between the stations: 0.5 m or more		
Command method	**Control method**		Position, speed, or torque control with MECHATROLINK-Ⅱ communication		
	Command input		MECHATROLINK-Ⅱ command (Motion, data setting, monitoring or adjustment)		
Function	**Gain adjustment**		Tuning-less/Advanced autotuning/One-parameter tuning		
	Communication setting		USB communication, RS-422 communication		
	Torque limit		Internal torque limit, external torque limit, and torque limit by analogue command		
	Encoder output		Phase A, B, Z: Line driver output		
	Emergency stop		CN8 Safety function		
	Overtravel		Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT		
	Alarm		Alarm signal, MECHATROLINK-Ⅱ command		
Operating temperature range [°C]			0 to 55 (No freezing)		
Operating humidity range [%RH]			90 or less (No condensation)		
Storage temperature range [°C]			-20 to 85 (No freezing)		
Storage humidity range [%RH]			90 or less (No condensation)		
Insulation resistance [MΩ]			10 MΩ (500 VDC)		
Weight [g]			900		1000

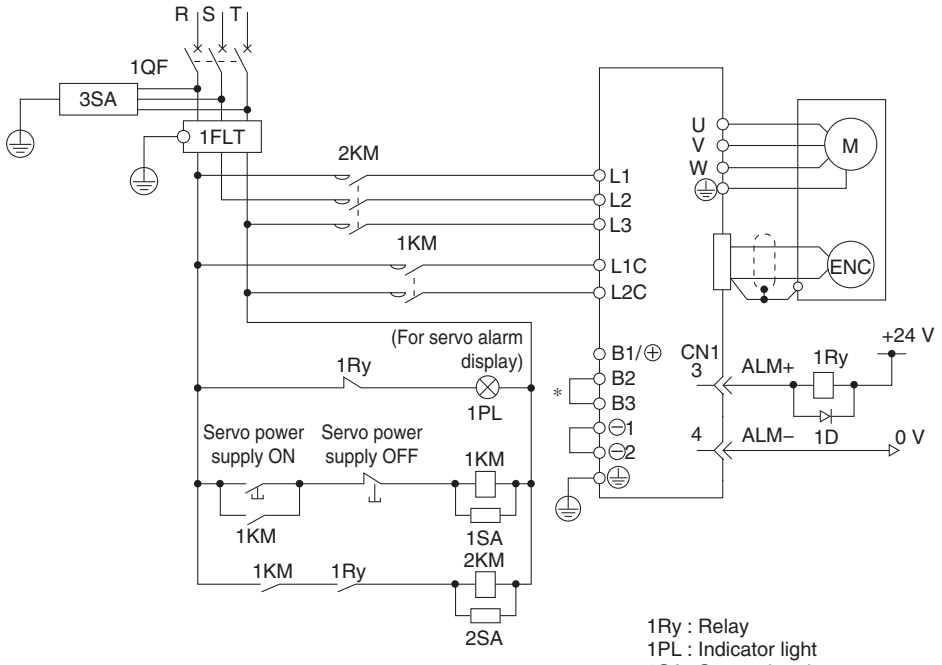
Specifications

MECHATROLINK-Ⅲ Type

Model			LECYU2-V5	LECYU2-V7	LECYU2-V8
Compatible motor capacity [W]			100	200	400
Compatible encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)		
Main circuit power supply	Power voltage [V]		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Three phase 170 to 253 VAC		
Control power supply	Power voltage [V]		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 170 to 253 VAC		
Power supply capacity (at rated output) [A]			0.91	1.6	2.8
Input circuit			NPN (Sink circuit)/PNP (Source circuit)		
Parallel input (7 inputs)	Number of optional allocations	7 inputs	[Initial allocation] · Homing deceleration switch (/DEC) · External latch (/EXT 1 to 3) · Forward run prohibited (P-OT), reverse run prohibited (N-OT) [Can be allocated by setting the parameters.] · Forward external torque limit (/P-CL), reverse external torque limit (/N-CL) Signal allocations can be performed, and positive and negative logic can be changed.		
Parallel output (4 outputs)	Number of fixed allocations	1 output	· Servo alarm (ALM)		
	Number of optional allocations	3 outputs	[Initial allocation] · Lock (/BK) [Can be allocated by setting the parameters.] · Positioning completion (/COIN) · Speed limit detection (/VLT) · Speed coincidence detection (/V-CMP) · Rotation detection (/TGON) · Warning (/WARN) · Servo ready (/S-RDY) · Near (/NEAR) · Torque limit detection (/CLT) Signal allocations can be performed, and positive and negative logic can be changed.		
MECHATROLINK communication	Communication protocol		MECHATROLINK-Ⅲ		
	Station address		03H to EFH		
	Communication speed		100 Mbps		
	Communication cycle		125 μs, 250 μs, 500 μs, 750 μs, 1 ms to 4 ms (Multiples of 0.5 ms)		
	Number of transmission bytes		16 bytes, 32 bytes, 48 bytes,		
	Max. number of stations		62		
	Cable length		Cable length between the stations: 0.5 m or more, 75 m or less		
Command method	Control method		Position, speed, or torque control with MECHATROLINK-Ⅲ communication		
	Command input		MECHATROLINK-Ⅲ command (Motion, data setting, monitoring or adjustment)		
Function	Gain adjustment		Tuning-less/Advanced autotuning/One-parameter tuning		
	Communication setting		USB communication, RS-422 communication		
	Torque limit		Internal torque limit, external torque limit, and torque limit by analogue command		
	Encoder output		Phase A, B, Z: Line driver output		
	Emergency stop		CN8 Safety function		
	Overtravel		Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT		
	Alarm		Alarm signal, MECHATROLINK-Ⅲ command		
Operating temperature range [°C]			0 to 55 (No freezing)		
Operating humidity range [%RH]			90 or less (No condensation)		
Storage temperature range [°C]			–20 to 85 (No freezing)		
Storage humidity range [%RH]			90 or less (No condensation)		
Insulation resistance [MΩ]			10 MΩ (500 VDC)		
Weight [g]			900		1000

Power Supply Wiring Example: LECY□

■Three phase 200 V LECYM2-□ LECYU2-□



1QF : Molded-case circuit breaker
1FLT: Noise filter
1KM : Magnetic contactor (for control power supply)
2KM : Magnetic contactor (for main circuit power supply)

1Ry : Relay
1PL : Indicator light
1SA : Surge absorber
2SA : Surge absorber
3SA : Surge absorber
1D : Flywheel diode

* For the LECY□2-V5, LECY□2-V7 and LECY□2-V8, terminals B2 and B3 are not short-circuited. Do not short-circuit these terminals.

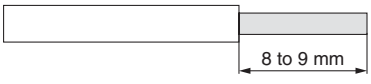
Main Circuit Power Supply Connector * Accessory

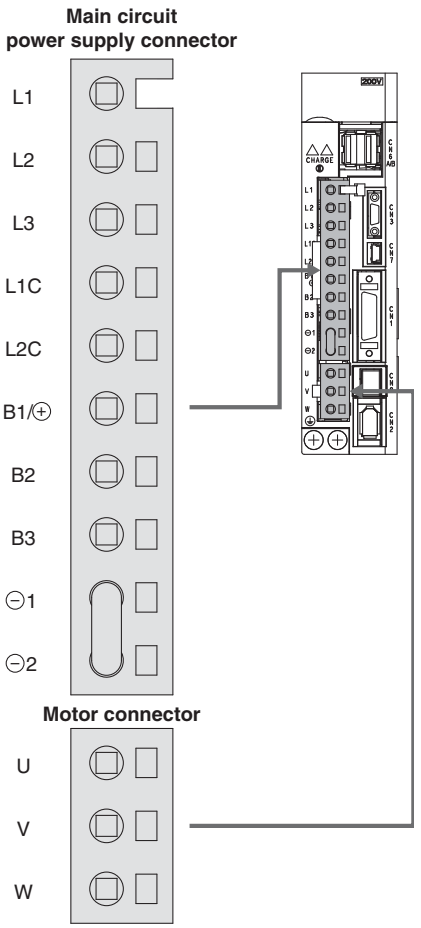
Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2, L3
L2		
L3		
L1C	Control power supply	Connect the control power supply. Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1C, L2C
L2C		
B1/⊕	External regenerative resistor connection terminal	When the regenerative resistor is required, connect it between terminals B1⊕ and B2.
B2		
B3		
⊖1	Main circuit negative terminal	⊖1 and ⊖2 are connected at shipment.
⊖2		

Motor Connector * Accessory

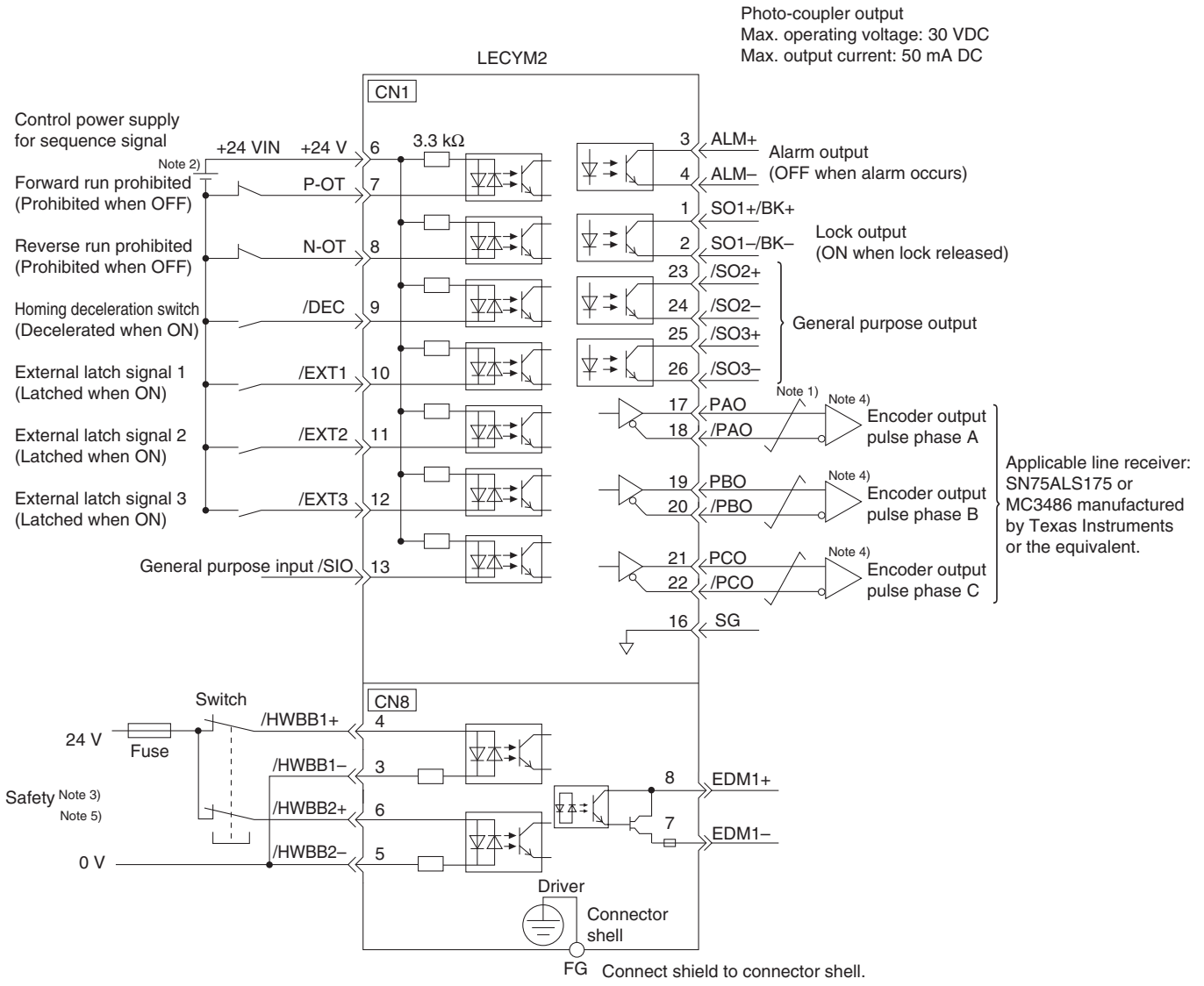
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

Power Supply Wire Specifications

Item	Specifications
Applicable wire size	L1, L2, L3, L1C, L2C Single wire, Twisted wire, AWG14 (2.0 mm^2)
Stripped wire length	

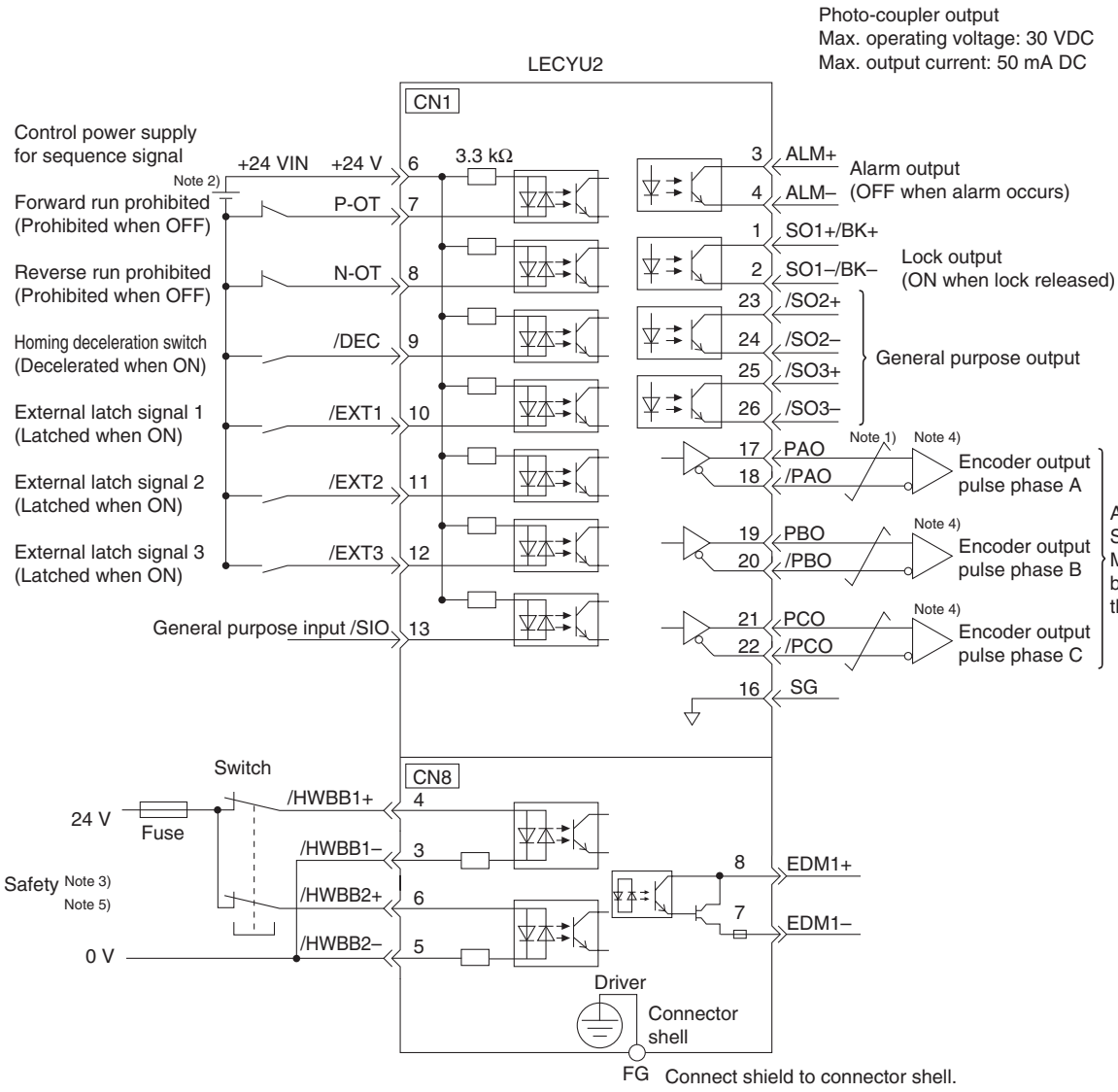


Control Signal Wiring Example: LECYM



Note 1) ⫫ shows twisted-pair wires.
Note 2) The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.
Note 3) When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.
Note 4) Always use line receivers to receive the output signals.
* The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT1, /EXT2 and /EXT3, and the output signals /SO1, /SO2 and /SO3 can be changed by setting the parameters.
Note 5) Compatible with the HWBB function (STO function (IEC61800-5-2)).

Control Signal Wiring Example: LECYU



Note 1) ⫫ shows twisted-pair wires.
Note 2) The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.
Note 3) When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.
Note 4) Always use line receivers to receive the output signals.
∗ The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT1, /EXT2 and /EXT3, and the output signals /SO1, /SO2 and /SO3 can be changed by setting the parameters.
Note 5) Compatible with the HWBB function (STO function (IEC61800-5-2)).

Options

Motor cable, Motor cable for lock option, Encoder cable (LECYM/LECYU common)

LE − CY M − S 5 A − 5

Motor type

Y	AC servo motor

Motor capacity

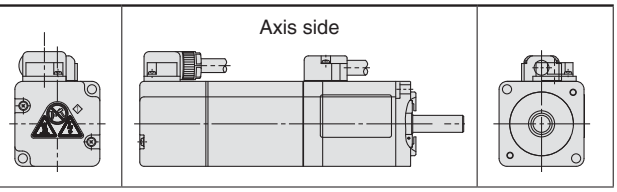
5	100 W
7	200/400 W

∗ For encoder cable, the suffix "–□" (Motor capacity) is not necessary.

Cable description

M	Motor cable
B	Motor cable for lock option
E	Encoder cable (With battery case)

Direction of connector

A	

∗ The cable entry direction is axis side only.

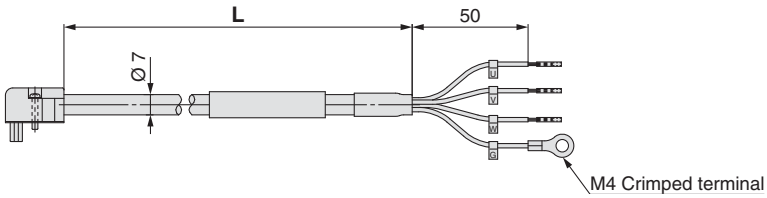
Cable type

S	Standard cable
R	Robotic cable

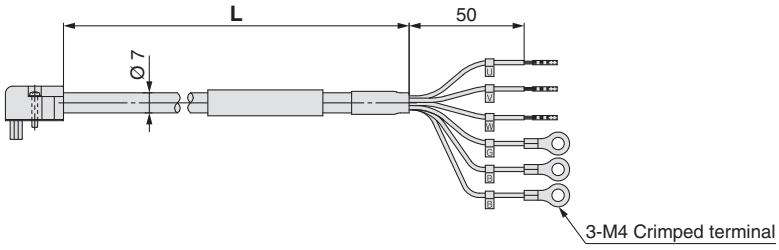
Cable length (L) [m]

3	3
5	5
A	10
C	20

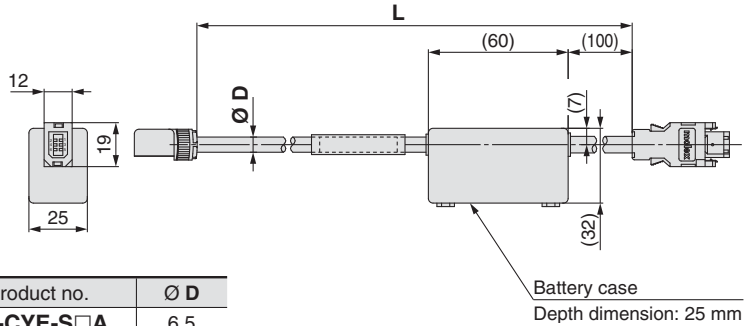
LE-CYM-□□A-□: Motor cable



LE-CYB-□□A-□: Motor cable for lock option



LE-CYE-□□A: Encoder cable



Product no.	Ø D
LE-CYE-S□A	6.5
LE-CYE-R□A	6.8

∗ LE-CYM-S□A-□ is JZSP-CSM0□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYB-S□A-□ is JZSP-CSM1□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYE-S□A is JZSP-CSP05-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYM-R□A-□ is JZSP-CSM2□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYB-R□A-□ is JZSP-CSM3□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYE-R□A is JZSP-CSP25-□□-E manufactured by YASKAWA CONTROLS CO., LTD.

Options

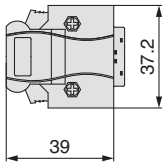
I/O connector

LE − CYN A

Driver type

A	**LECYM2, LECYU2**

LE-CYNA



∗ LE-CYNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
∗ Conductor size: AWG24 to 30.

I/O cable

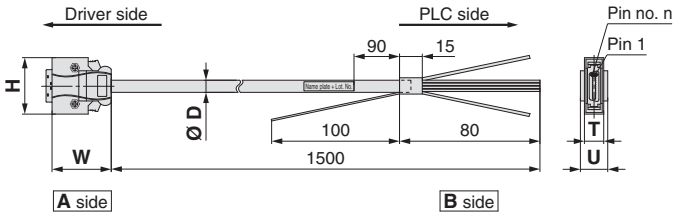
LEC − CSN A − 1

Driver type

A	**LECYM2, LECYU2**

Cable length (L) [m]

1	1.5



∗ LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by Sumitomo 3M Limited or equivalent item.
∗ Conductor size: AWG24

Wiring

LEC-CSNA-1: Pin no. 1 to 26

Connector pin no.		Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	1	1	Orange	▬	Red
	2			▬	Black
	3	2	Light grey	▬	Red
	4			▬	Black
	5	3	White	▬	Red
	6			▬	Black
	7	4	Yellow	▬	Red
	8			▬	Black
	9	5	Pink	▬	Red
	10			▬	Black

Connector pin no.		Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	11	6	Orange	▬ ▬	Red
	12			▬ ▬	Black
	13	7	Light grey	▬ ▬	Red
	14			▬ ▬	Black
	15	8	White	▬ ▬	Red
	16			▬ ▬	Black
	17	9	Yellow	▬ ▬	Red
	18			▬ ▬	Black
	19	10	Pink	▬ ▬	Red
	20			▬ ▬	Black

Connector pin no.		Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	21	11	Orange	▬ ▬ ▬	Red
	22			▬ ▬ ▬	Black
	23	12	Light grey	▬ ▬ ▬	Red
	24			▬ ▬ ▬	Black
	25	13	White	▬ ▬ ▬	Red
	26			▬ ▬ ▬	Black

Cable O.D.

Product no.	Ø D
LEC-CSNA-1	11.1

Dimensions/Pin No.

Product no.	W	H	T	U	Pin no. n
LEC-CSNA-1	39	37.2	12.7	14	14

Options

MECHATROLINK cable type

LEC−CY M − 1

Motor type

Y	AC servo motor

Cable description

M	MECHATROLINK-Ⅱ cable
U	MECHATROLINK-Ⅲ cable

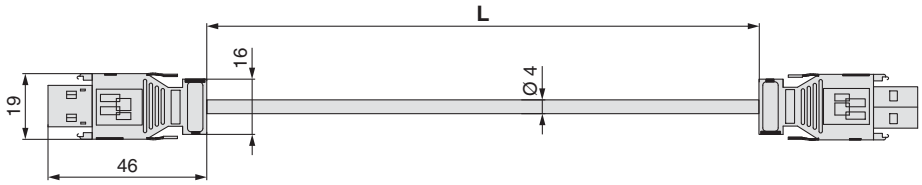
Cable length (L)

L*	0.2 m
J	0.5 m
1	1 m
3	3 m

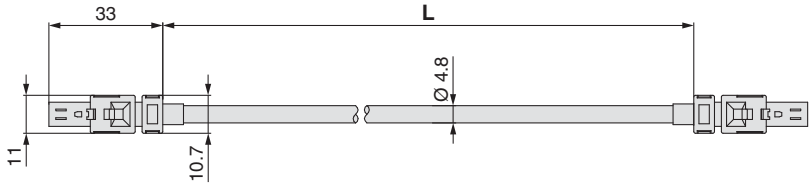
* Not available for the MECHATROLINK-Ⅱ cable.

* LEC-CYM-□ is JEPMC-W6002-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
* LEC-CYU-□ is JEPMC-W6012-□□-E manufactured by YASKAWA CONTROLS CO., LTD.

MECHATROLINK-Ⅱ cable



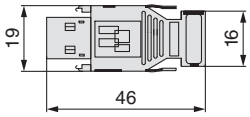
MECHATROLINK-Ⅲ cable



Terminating connector for MECHATROLINK-Ⅱ

LEC−CYRM

* LEC-CYRM is JEPMC-W6022-E manufactured by YASKAWA CONTROLS CO., LTD.



Options

LECYM2 LECYU2
Drivers

USB cable

PC

Setup software (SigmaWin+™) (LECYM/LECYU common)

∗ Please download the SigmaWin+™ via our website.
SigmaWin+™ is a registered trademark or trademark of YASKAWA Electric Corporation.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (SigmaWin+™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (SigmaWin+™)
PC Note 1) 2) 3) 4)	OS	Windows® XP Note 5), Windows Vista®, Windows® 7 (32-bit/64-bit)
	Available HD space	350 MB or more (When the software is installed, 400 MB or more is recommended.)
	Communication interface	Use USB port.
Display		XVGA monitor (1024 x 768 or more, "The small font is used.") 256 colour or more (65536 colour or more is recommended.) 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-JZ-CVUSB Note 6)
Other		Adobe Reader Ver. 5.0 or higher (∗ Except Ver. 6.0)

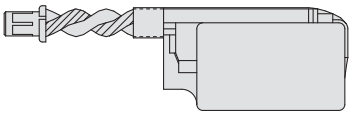
Note 1) Windows, Windows Vista®, Windows® 7 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
Note 2) On some PCs, this software may not run properly.
Note 3) Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®.
Note 4) For Windows® XP, please use it by the administrator authority (When installing and using it.).
Note 5) In PC that uses the program to correct the problem of HotfixQ328310, it is likely to fail in the installation. In that case, please use the program to correct the problem of HotfixQ329623.
Note 6) Order USB cable separately.

Battery (LECYM/LECYU common)

LEC−JZ−CVBAT

∗ JZSP-BA01 manufactured by YASKAWA CONTROLS CO., LTD.

Battery for replacement.
Absolute position data is maintained by installing the battery to the battery case of the encoder cable.

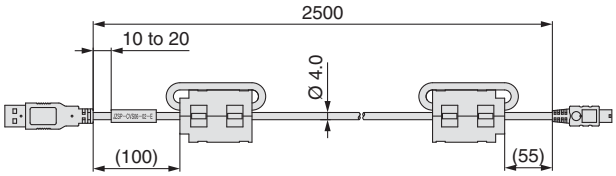


USB cable (2.5 m)

LEC−JZ−CVUSB

∗ JZSP-CVS06-02-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting PC and driver when using the setup software (SigmaWin+™).
Do not use any cable other than this cable.

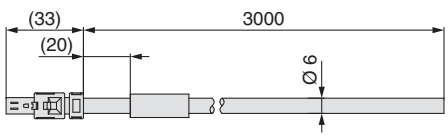


Cable for safety function device (3 m)

LEC−JZ−CVSAF

∗ JZSP-CVH03-03-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting the driver and device when using the safety function.
Do not use any cable other than this cable.



Series LECYM/LECYU
AC Servo Motor Driver/ Specific Product Precautions 1

Be sure to read this before handling. For Safety Instructions and Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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 before 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 energised 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.

Series LECYM/LECYU
AC Servo Motor Driver/ Specific Product Precautions 2

Be sure to read this before handling. For Safety Instructions and Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smc.eu

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

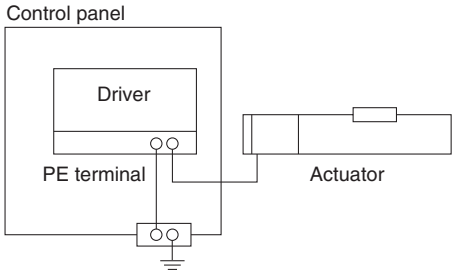
⚠Warning

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, wichever is first.*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.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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