Electric Slide Tables

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

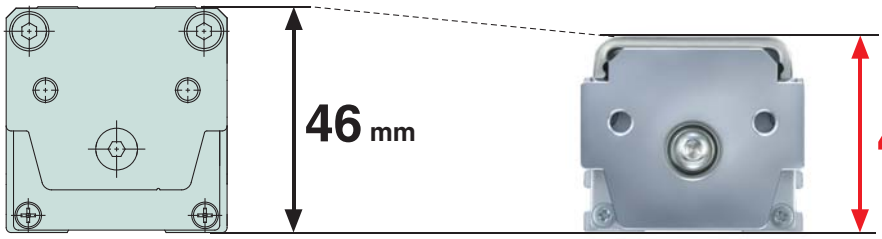
RoHS

- **Reduced cycle time**
- **Positioning repeatability: ±0.05 mm**
- **Max. pushing force: 180 N**
  Max. acceleration/deceleration: 5000 mm/s²
  Max. speed: 400 mm/s

Compact Type *Series LES*

Size: 8, 16, 25

Compared with the LESH, **Workpiece mounting surface height: Reduced by up to 12 %**



LESH16D

New Compact type
LES16D

Compact

Basic type/R type

Symmetrical type/L type

In-line motor type/D type

High Rigidity Type *Series LESH*

Size: 8, 16, 25

High rigidity

Deflection: 0.016 mm*

* LESH16-50 Load: 25 N

Basic type/R type

Series LESH□R

Symmetrical type/L type

Series LESH□L

In-line motor type/D type

Series LESH□D

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

Series LES/LESH

SMC

CAT.EUS100-78Ee-UK

Compact Type *Series LES*

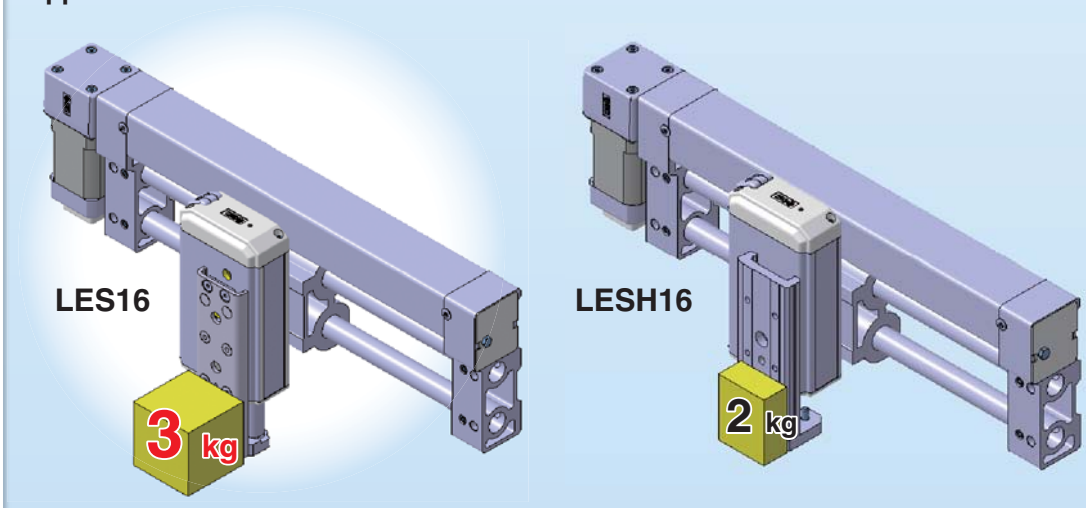
Vertical work load

Increased by up to 50 %*

* By reducing weight of the moving parts
* Compared with the LESH16

Model	Vertical work load [kg]
LES16	3.0
LESH16	2.0

Applications



Light weight

Reduced by up to 29 %

Model	Weight [kg]	Reduction amount
LES16D-100	1.20	Reduced by 0.50 kg
LESH16D-100	1.70	

- **Max. pushing force: 180 N**
- **Positioning repeatability: ±0.05 mm**
- **Possible to reduce cycle time**
  Max. acceleration/deceleration: 5000 mm/s²
  Max. speed: 400 mm/s
- **2 types of motors selectable/Step motor (Servo/24 VDC), Servo motor (24 VDC)**

Basic type/R type
Series LES□R

Symmetrical type/L type
Series LES□L

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

High Rigidity Type *Series LESH*

High rigidity **Deflection: 0.016 mm*** * LESH16-50 Load: 25 N

Integration of the guide rail and the table Uses a circulating linear guide.

Positioning pin hole
Improved workpiece mounting reproducibility

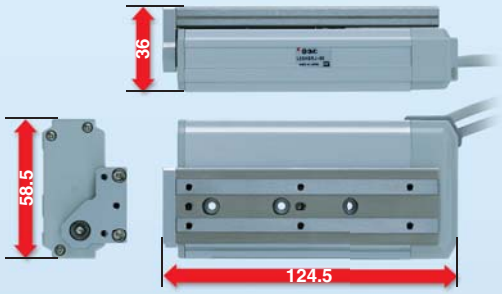
Body mounting through-hole
Can be mounted from the top.

Workpiece mounting tap

Integration of the guide rail and the table

◎Compact, Space-saving

For LESH8 R/L, 50 mm stroke

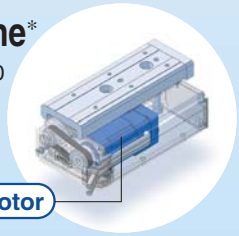


◎Reduced by 61% in volume*

* Compared with the LESH16-50/LXSH-50
* For R/L type

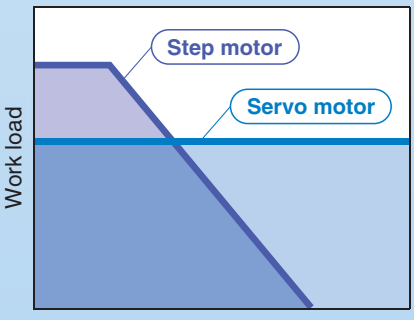
◎Motor integrated into the body

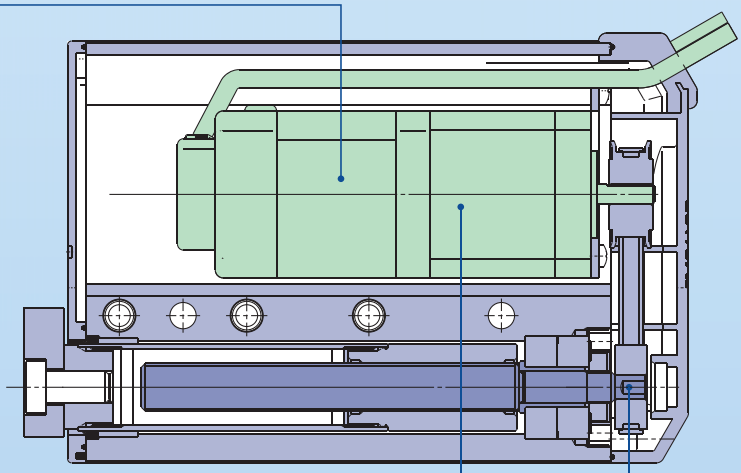
Built-in motor



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



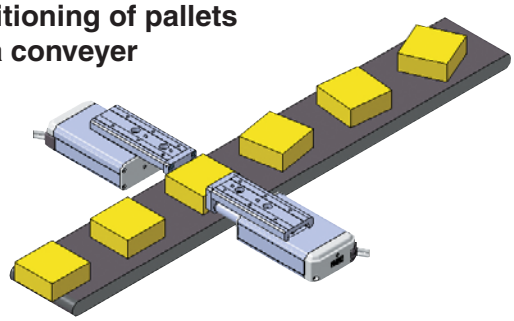


Non-magnetizing lock mechanism (Option)
Prevents workpieces from dropping (holding)

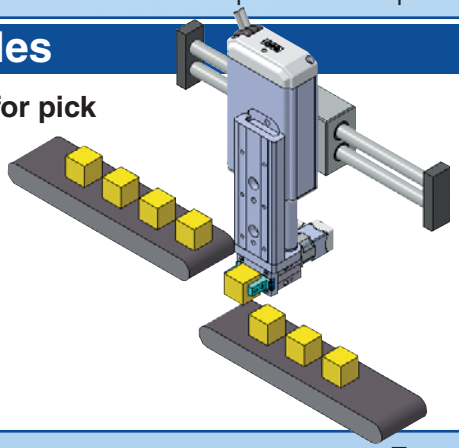
Manual override screw
Adjustment operation possible when power OFF

Application Examples

Positioning of pallets on a conveyer

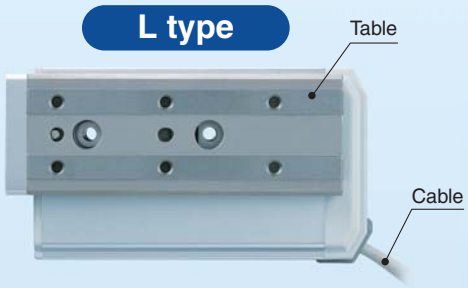


Z motion for pick and place



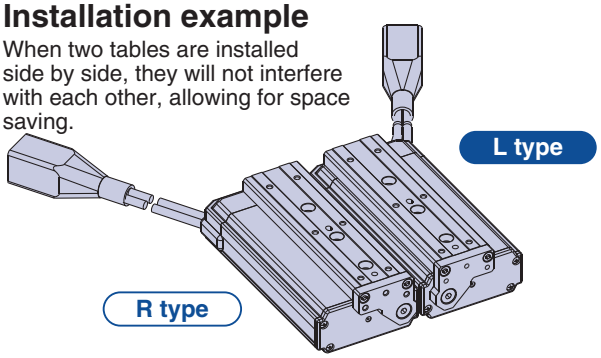
Symmetrical Type/L Type

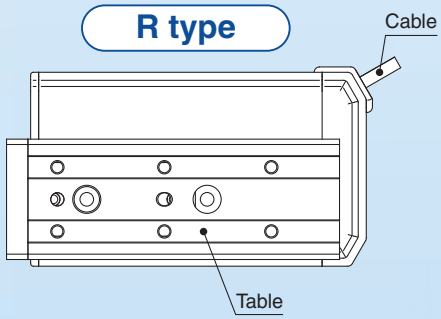
The locations of the table and cable are opposite those of the basic type (R type), expanding design applications.



Installation example

When two tables are installed side by side, they will not interfere with each other, allowing for space saving.



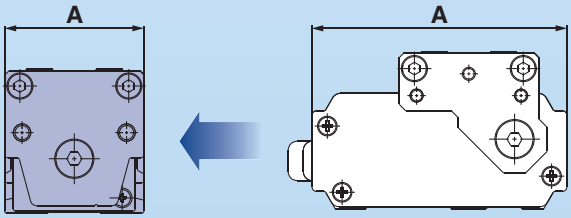


In-line Motor Type/D Type

Width dimension shortened by up to 45 %

D type

R type

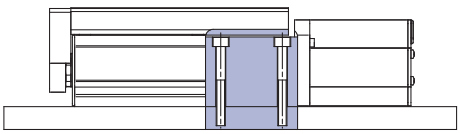


A Dimension [mm]

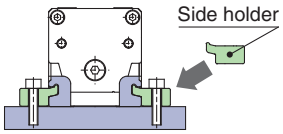
Size	D type	R/L type
8	32	58.5
16	45	72.5
25	61	106

How to Mount

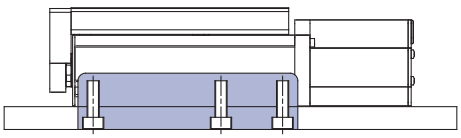
Through-hole mounting
(R/L/D type)



Side holder mounting
(D type)



Body tapped mounting
(R/L/D type)



Simple Setting to Use Straight Away

◎Easy Mode for Simple Setting

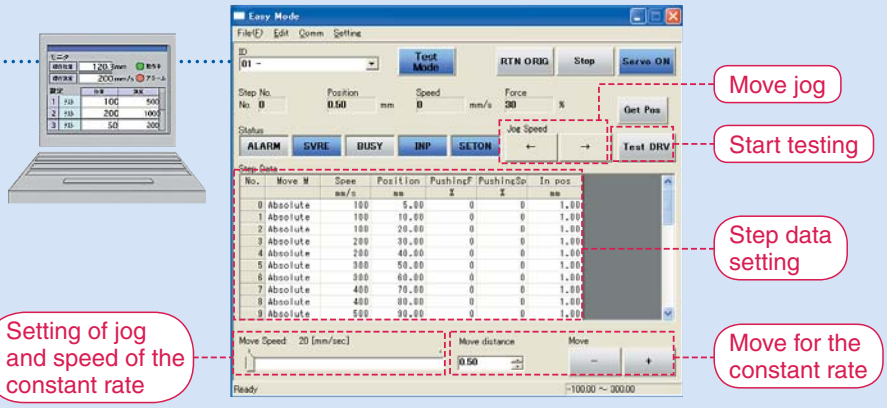
If you want to use it right away, select "Easy Mode."

Step motor
(Servo/24 VDC)
LECP6

Servo motor
(24 VDC)
LECA6

<When a PC is used>
Controller setting software

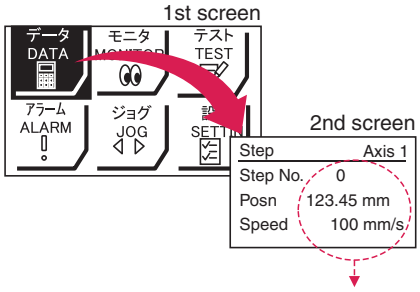
- Step data setting, test operation, move jog and move for the constant rate can be set and operated on one screen.



<When a TB (teaching box) is used>

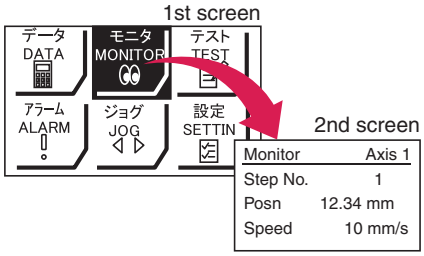
- Simple screen without scrolling promotes ease of setting and operating.
- Pick up an icon from the first screen to select a function.
- Set up the step data and check the monitor on the second screen.

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.

Teaching box screen

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

Step	Axis 1
Step No.	0
Posn	50.00 mm
Speed	200 mm/s

Step	Axis 1
Step No.	1
Posn	80.00 mm
Speed	100 mm/s

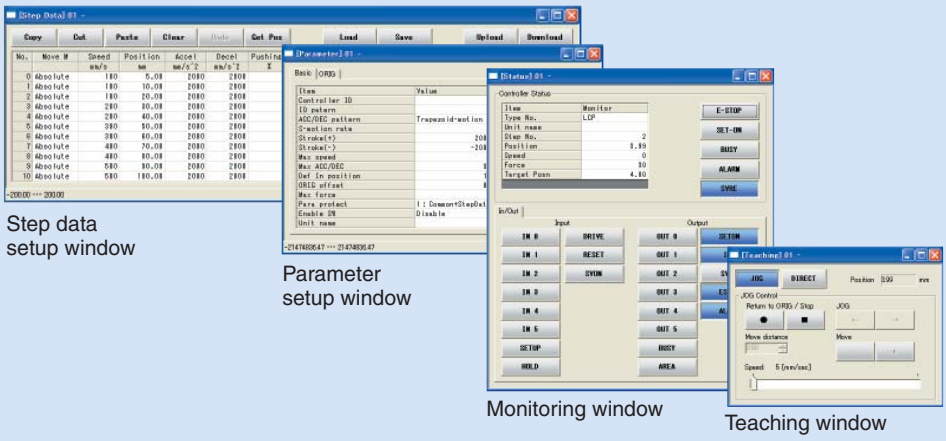
◎Normal Mode for Detailed Setting

Select normal mode when detailed setting is required.

- 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.

<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

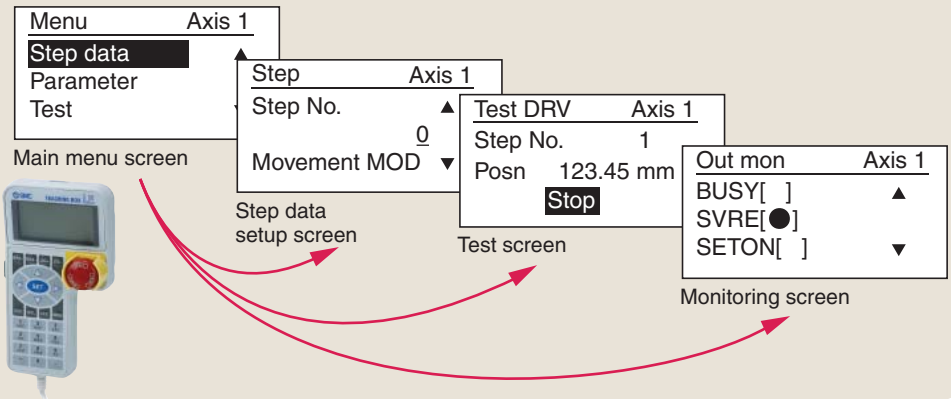
Teaching window

<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.)

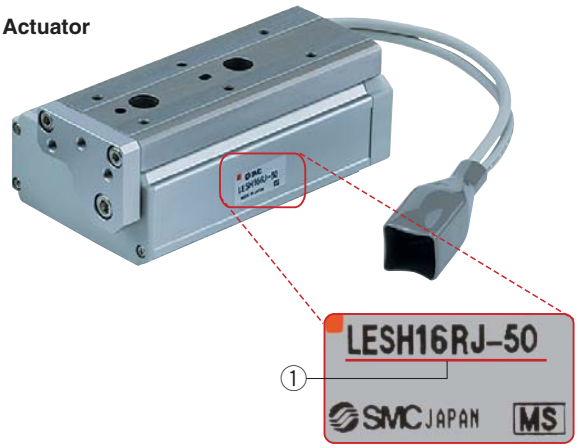
Confirm that the combination of the controller and the actuator is correct.

<Check the following before use.>

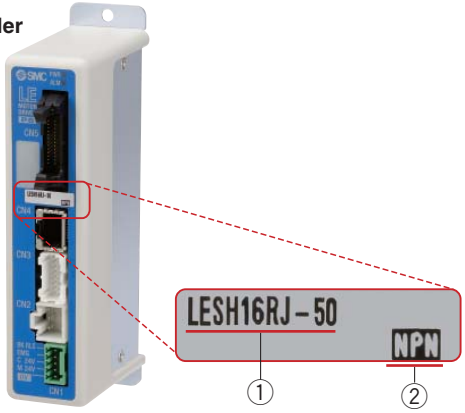
① Check the actuator labell for model number. This matches the controller.

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

Actuator



Controller



Fieldbus-compatible Gateway (GW) Unit

Series LEC-G

◎ **Conversion unit for Fieldbus network and LEC serial communication**

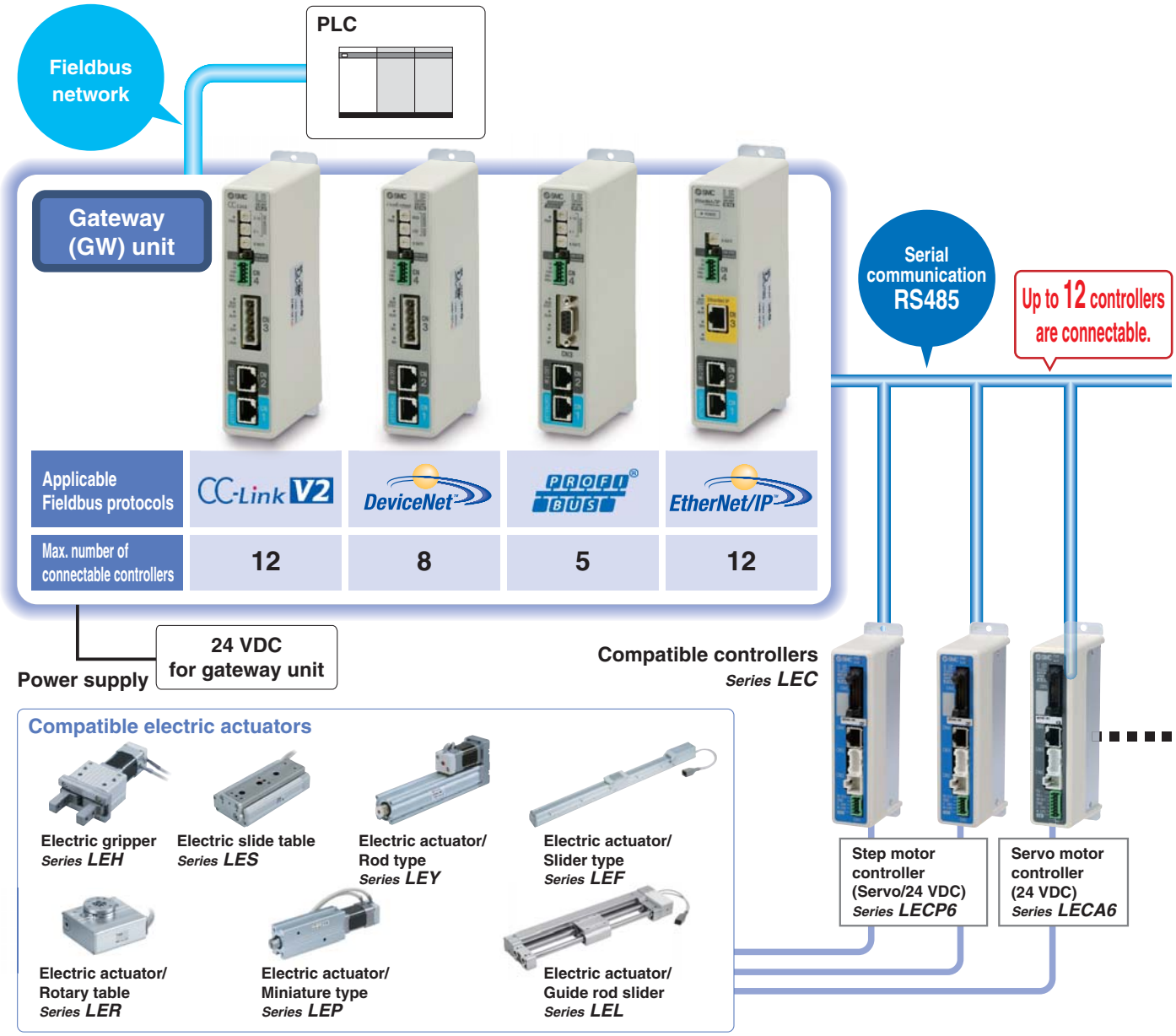
Applicable Fieldbus protocols: CC-Link V2, DeviceNet™, PROFIBUS®, EtherNet/IP™

◎ **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.**



Programless Type *Series LECP1*

Step motor
(Servo/24 VDC)
LECP1

No Programming

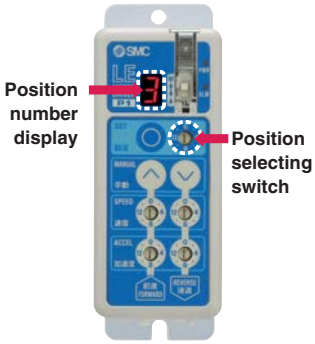
Capable of setting up an electric actuator operation without using a PC or teaching box

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

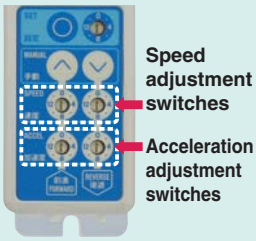
Setting a registered number for the stop position
Maximum 14 points

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

Registering the stop position using SET button

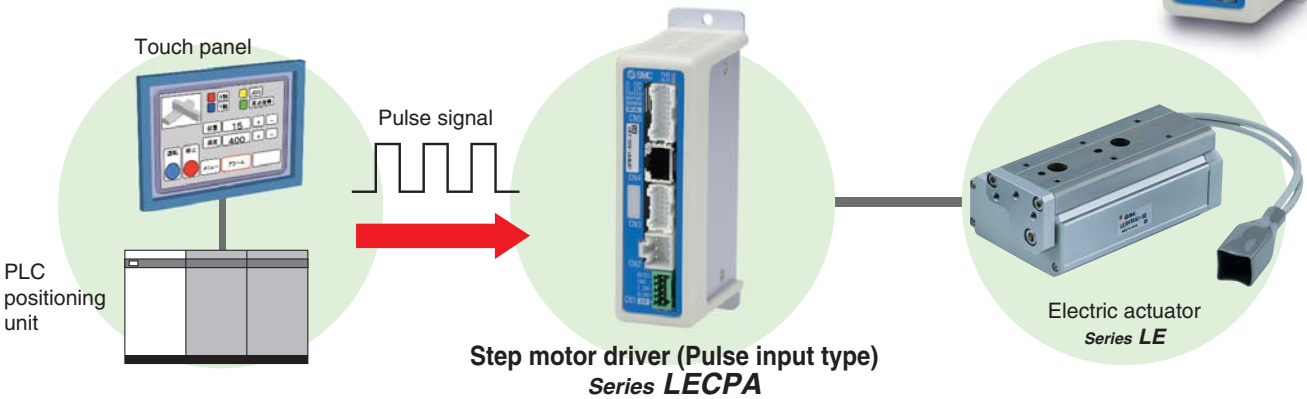


Speed/Acceleration 16-level adjustment



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 Slide Table

Provided by customer

PLC

Power supply for I/O signal
24 VDC Note)

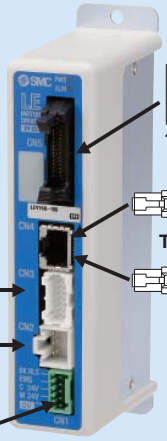
●I/O cable Pages 61, 74

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

●Controller* Page 52

Programless type Page 68
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 53

●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 59, 73

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.

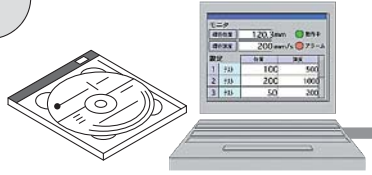
Options

●Teaching box Page 63
(With 3 m cable)
LEC-T1-3EG□

Or

●Controller setting kit Page 62
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 Slide Table

Page 81

●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. For details, refer to page 102.

Provided by customer

PLC

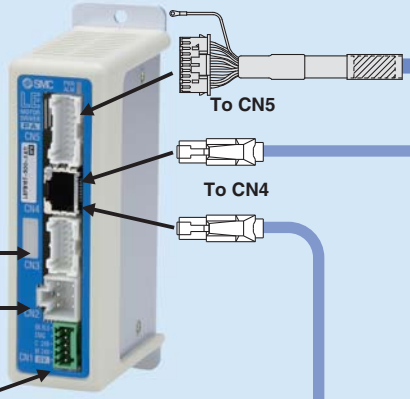
Power supply for I/O signal 24 VDC Note)

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

●Driver* Page 75

●I/O cable Page 81

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 UL 1 3 1 0 Class 2 power supply.

●Power supply plug (Accessory)

<Applicable cable size>

AWG20 (0.5 mm²)

●Actuator cable* Page 80

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 83

(With 3 m cable)

LEC-T1-3EG□

Or

●Controller setting software Page 82

Communication cable 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 65

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 65

●Communication cable
LEC-CG1-□

Page 65

●Cable between branches
LEC-CG2-□

●Branch connector Page 65
LEC-CGD

●Terminating resistor connector 120 Ω
LEC-CGR

●Communication cable Page 85
LEC-CG1-□

●Controller Page 53

To CN4

●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Controller Page 53

●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Electric Slide Table

Options

●Controller setting software Page 62
(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 63
(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.

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

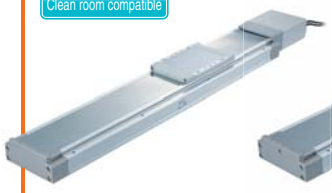
Size	Max. work load [Kg]	Stroke [mm]
25	5	Up to 2000
32	15	Up to 2500
40	25	Up to 3000

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**

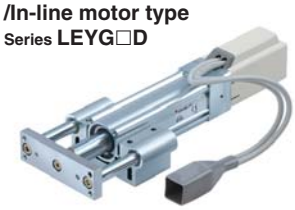
Dust/Drip proof compatible

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 Slide Table/Compact Type *Series LES*

Basic type/
R Type

Symmetrical
type/L Type

In-line motor type/D Type

Specifications	Series	Stroke [mm]	Work load [kg]		Speed [mm/s]	Screw lead [mm]	Controller /Driver series	Reference page
			Horizontal	Vertical				
Step motor (Servo/24 VDC)	LES8□	30, 50, 75	1	0.5	10 to 200	4	Series LECP6	Page 1
			1	0.25	20 to 400	8		
	LES16□	30, 50 75, 100	3	3	10 to 200	5	Series LECP1	
			3	1.5	20 to 400	10		
	LES25□	30, 50, 75 100, 125, 150	5	5	10 to 200	8	Series LECPA	
			5	2.5	20 to 400	16		
Servo motor (24 VDC)	LES8□A	30, 50, 75	1	1	10 to 200	4	Series LECA6	
			1	0.5	20 to 400	8		
	LES16□A	30, 50 75, 100	3	3	10 to 200	5		
			3	1.5	20 to 400	10		
	LES25$^{R}_{L}$A	30, 50, 75 100, 125, 150	5	4	10 to 200	8		
			5	2	20 to 400	16		

Electric Slide Table/High Rigidity Type *Series LESH*

Basic type/
R type

Symmetrical type/
L type

In-line motor type/D type

Specifications	Series	Stroke [mm]	Work load [kg]		Speed [mm/s]	Screw lead [mm]	Controller /Driver series	Reference page
			Horizontal	Vertical				
Step motor (Servo/24 VDC)	LESH8□	50, 75	2	0.5	10 to 200	4	Series LECP6	Page 25
			1	0.25	20 to 400	8		
	LESH16□	50, 100	6	2	10 to 200	5	Series LECP1	
			4	1	20 to 400	10		
	LESH25□	50, 100 150	9	4	10 to 150	8	Series LECPA	
			6	2	20 to 400	16		
Servo motor (24 VDC)	LESH8□A	50, 75	2	0.5	10 to 200	4	Series LECA6	
			1	0.25	20 to 400	8		
	LESH16□A	50, 100	5	2	10 to 200	5		
			2.5	1	20 to 400	10		
	LESH25$^{R}_{L}$A	50, 100 150	6	2.5	10 to 150	8		
			4	1.5	20 to 400	16		

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 52
	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)	—	

INDEX

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

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◎Electric Slide Table/High Rigidity Type Series LESH

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

Step Data Input Type/Series **LECP6/LECA6** ..... Page 53
Controller Setting Kit/**LEC-W2** ..... Page 62
Teaching Box/**LEC-T1** ..... Page 63
Gateway Unit/Series **LEC-G** ..... Page 65
Programless Controller/Series **LECP1** ..... Page 68
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Direct Input Type Controller/Series **JXC□1** ..... Page 86
Multi-Axis Step Motor Controller/Series **JXC73/83/92/93** ..... Page 96

Electric Slide Table/Compact Type Step Motor (Servo/24 VDC) Servo Motor (24 VDC)

Series LES
Model Selection 1

Selection Procedure

For the high rigidity type LESH series, refer to page 25.

Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Step 1 **Check the work load–speed. <Speed–Work load graph>** (Page 2)

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

Selection example) The **LES16□J-50** is temporarily selected based on the graph shown on the right side.

Step 2 **Check the cycle time.**

It is possible to obtain an approximate cycle time by using method 1, but if a more detailed cycle time is required, use method 2.

Method 1: Check the cycle time graph. (Page 3)

Method 2: Calculation <Speed–Work load graph> (Page 2)

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.

$T4 = 0.15$ [s]

Calculation example)

T1 to T4 can be calculated as follows.

$T1 = V/a1 = 220/5000 = 0.04$ [s],

$T3 = V/a2 = 220/5000 = 0.04$ [s]

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

$$= \frac{50 - 0.5 \cdot 220 \cdot (0.04 + 0.04)}{220}$$

$= 0.19$ [s]

$T4 = 0.15$ [s]

Therefore, the cycle time can be obtained as follows.

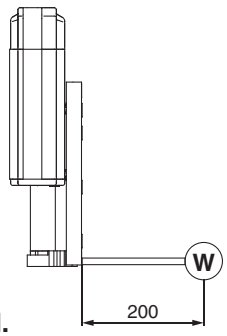
$T = T1 + T2 + T3 + T4$

$= 0.04 + 0.19 + 0.04 + 0.15$

$=$ **0.42 [s]**

Step 3 **Check the allowable moment.** **<Static allowable moment>** (Page 3) **<Dynamic allowable moment>** (Page 4)

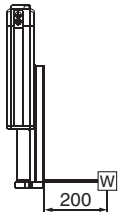
Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



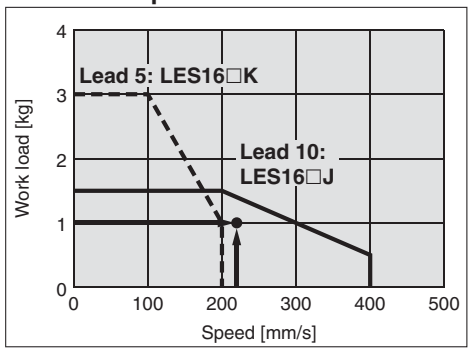
Based on the above calculation result, the LES16□J-50 is selected.

Operating conditions

- Workpiece mass: 1 [kg]
- Speed: 220 [mm/s]
- Mounting orientation: Vertical
- Stroke: 50 [mm]
- Acceleration/Deceleration: 5,000 [mm/s²]
- Cycle time: 0.5 seconds
- Workpiece mounting condition:

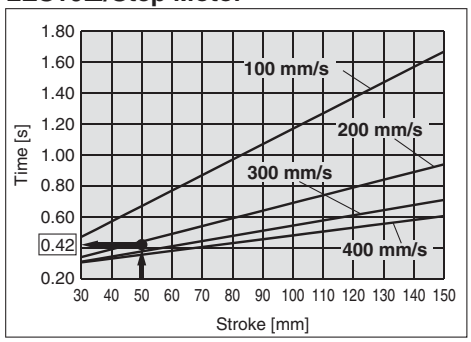


LES16□/Step Motor Vertical



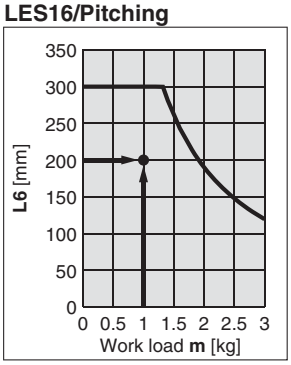
<Speed–Work load graph>

LES16□/Step Motor



<Cycle time>

LES16/Pitching



<Dynamic allowable moment>

SMC

Speed–Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

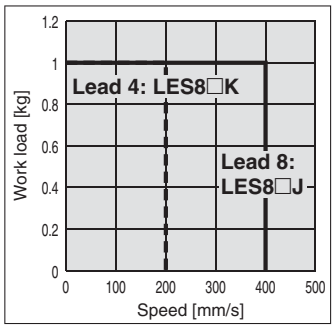
∗ The following graph shows the values when moving force is 100 %.

Servo Motor (24 VDC)

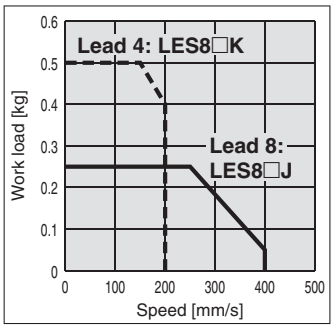
∗ The following graph shows the values when moving force is 250 %.

LES8□

Horizontal

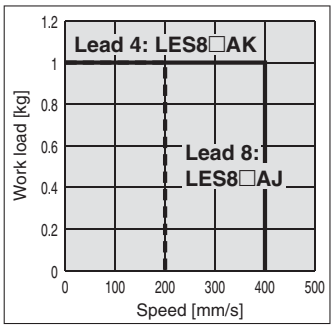


Vertical

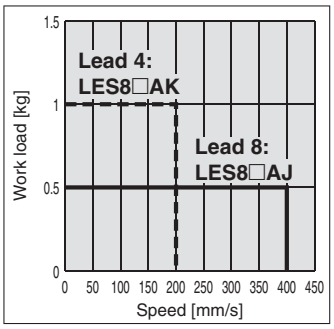


LES8□A

Horizontal

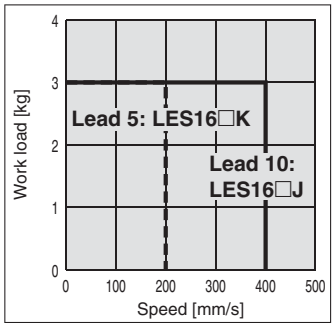


Vertical

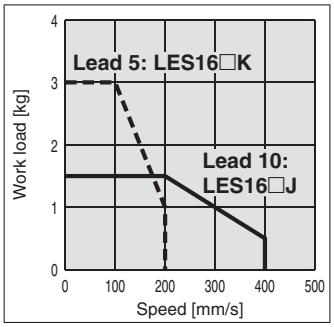


LES16□

Horizontal

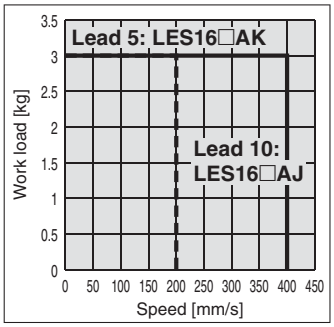


Vertical

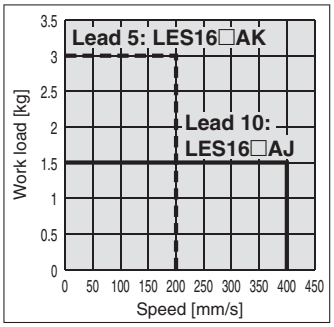


LES16□A

Horizontal

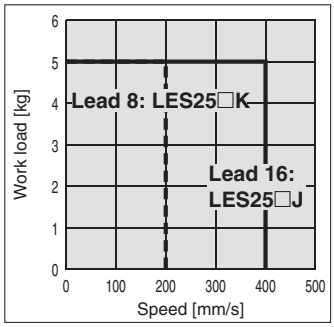


Vertical



LES25□

Horizontal



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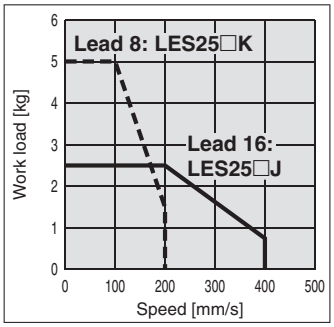
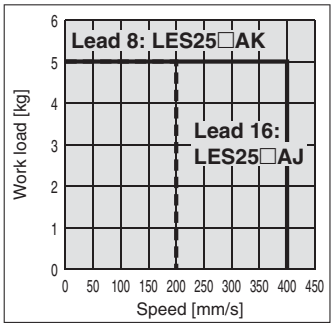


LES25$^{R}_{L}$A

Horizontal



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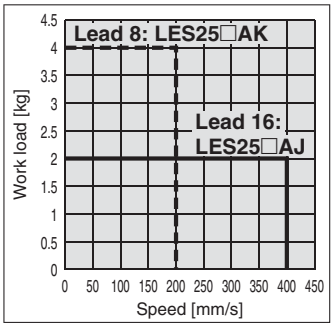
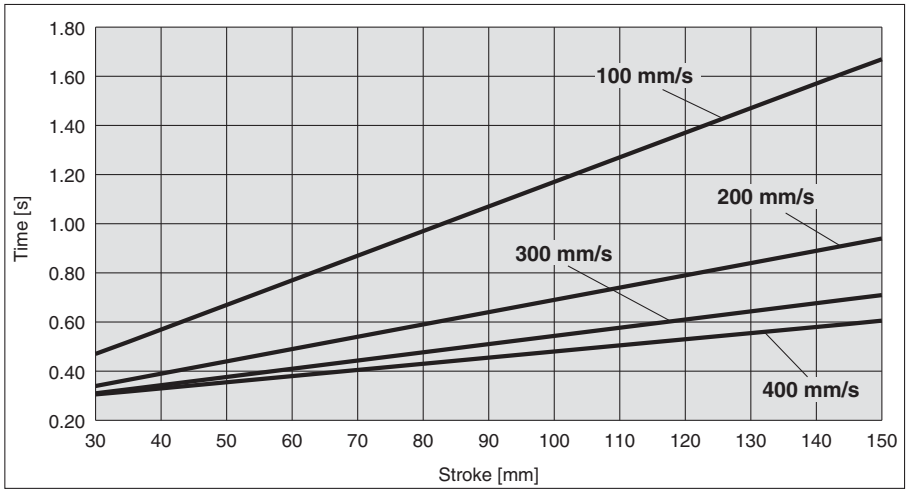


Cycle Time (Guide)



Operating Conditions

Acceleration/Deceleration: 5,000 mm/s^2

In position: 0.5

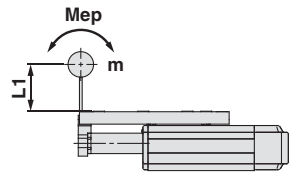
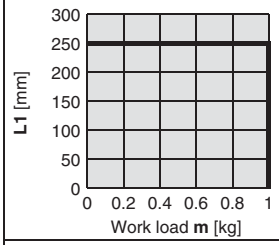
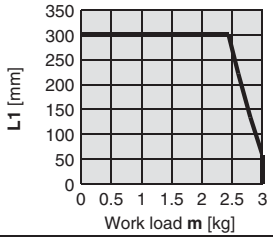
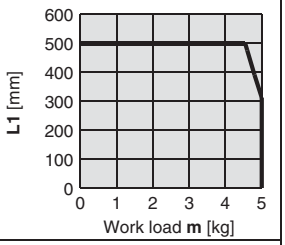
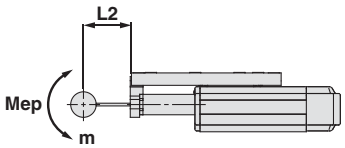
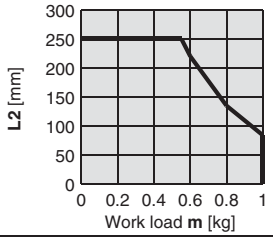
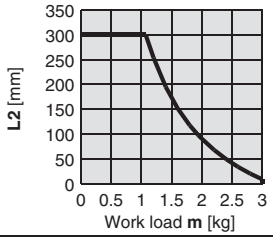
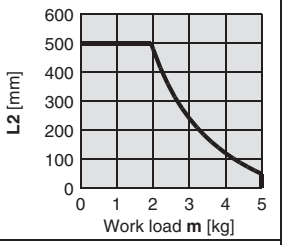
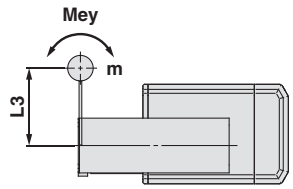
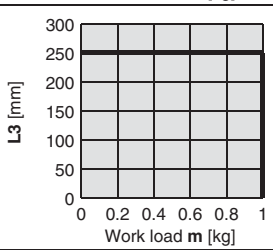
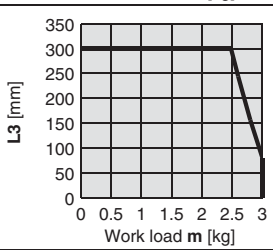
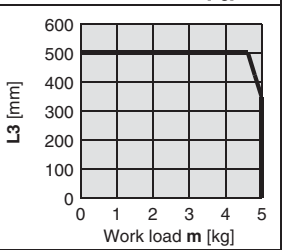
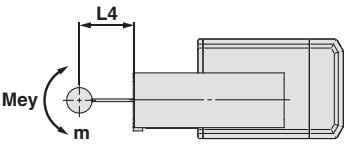
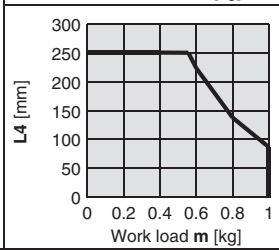
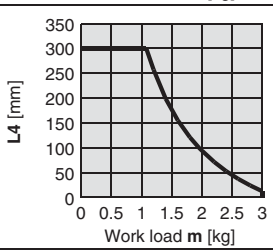
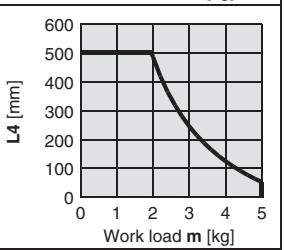
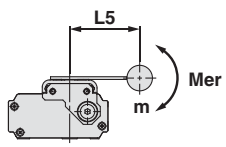
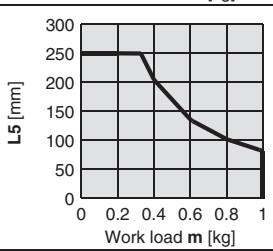
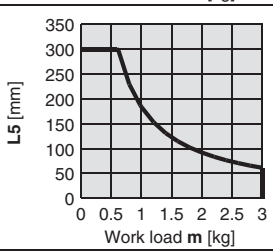
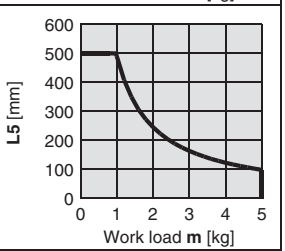
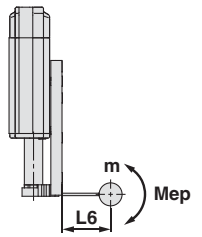
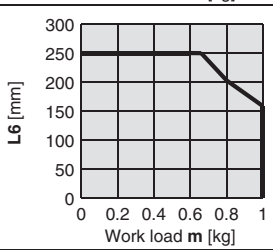
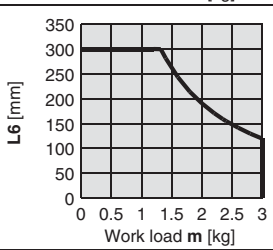
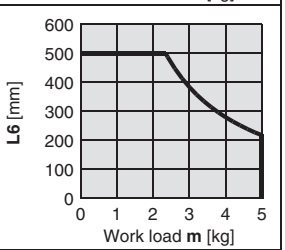
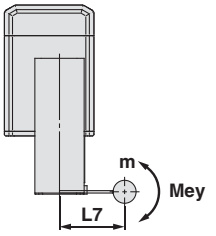
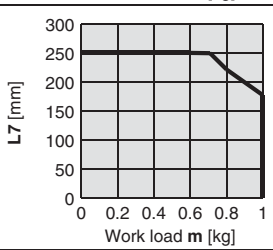
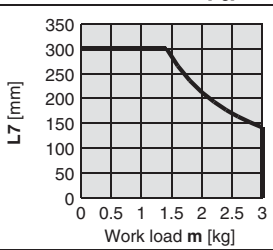
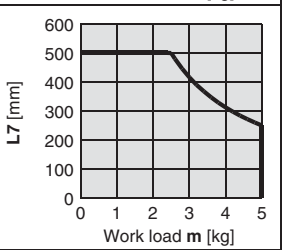
Static Allowable Moment

Model		LES8	LES16	LES25
Pitching	[N·m]	2	4.8	14.1
Yawing	[N·m]	2	4.8	14.1
Rolling	[N·m]	0.8	1.8	4.8

Dynamic Allowable Moment

Note 1) This graph shows the amount of allowable overhang when the centre of gravity of the workpiece overhangs in one direction. When the centre of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation.
Note 2) For static moment as well, use a product below the range in the graph. http://www.smcworld.com

Acceleration/Deceleration —— 5,000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load centre of gravity [mm]		Model LES8	Model LES16	Model LES25
Horizontal		Pitching			
					
		Yawing			
					
		Rolling			
Vertical		Pitching			
		Yawing			

Series LES
Model Selection 2

Selection Procedure

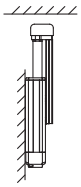
For the high rigidity type LESH series, refer to page 29.

Step 1 Check the required force. → **Step 2** Check the set value of pushing force. → **Step 3** Check the duty ratio.

Selection Example

Operating conditions

- Pushing force: 90 [N]
- Workpiece mass: 1 [kg]
- Speed: 100 [mm/s]
- Stroke: 100 [mm]
- Mounting orientation: Vertical upward
- Pushing time + Operation (A): 1.5 seconds
- All cycle time (B): 6 seconds



Step 1 Check the required force.

Calculate the approximate required force for pushing operation.
Selection example) •Pushing force: 90 [N]
•Workpiece mass: 1 [kg]
Therefore, the approximate required force can be obtained as 90 + 10 = 100 [N].
Select the target model based on the approximate required force with reference to the specifications (Pages 11 and 12).
Selection example) Based on the specifications,
•Approximate required force: 100 [N]
•Speed: 100 [mm/s]
Therefore, the **LES25□** is temporarily selected.
Then, calculate the required force for pushing operation.
If the mounting position is vertical upward, add the actuator table weight.
Selection example) Based on the <Table weight>,
•**LES25□** table weight: 0.5 [kg]
Therefore, the required force can be obtained as 100 + 5 = 105 [N].

Step 2 Check the set value of pushing force.

<Set value of pushing force–Force graph> (Page 6)
Select the target model based on the required force with reference to the <Set value of pushing force–Force graph>, and confirm the set value of pushing force.
Selection example) Based on the graph shown on the right side,
•Required force: 105 [N]
Therefore, the **LES25□K** is temporarily selected.
This set value of pushing force is 40 [%].

Step 3 Check the duty ratio.

Confirm the allowable duty ratio based on the set value of pushing force with reference to the <Allowable duty ratio>.
Selection example) Based on the <Allowable duty ratio>,
•Set value of pushing force: 40 [%]
Therefore, the allowable duty ratio can be obtained as 30 [%].
Calculate the duty ratio for operating conditions, and confirm it does not exceed the allowable duty ratio.
Selection example) •Pushing time + Operation (A): 1.5 seconds
•All cycle time (B): 6 seconds
Therefore, the duty ratio can be obtained as 1.5/6 x 100 = 25 [%], and this is the allowable range.

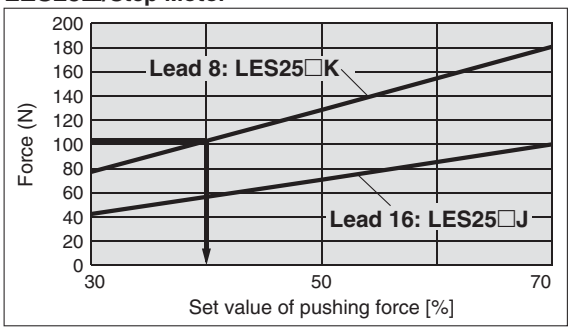
Based on the above calculation result, the LES25□K-100 is selected.
For allowable moment, the selection procedure is the same as the positioning control.

Table Weight [kg]

Model	Stroke [mm]					
	30	50	75	100	125	150
LES8	0.06	0.08	0.10	—	—	—
LES16	0.10	0.13	0.18	0.20	—	—
LES25	0.25	0.30	0.36	0.50	0.55	0.59

∗ If the mounting position is vertical upward, add the table weight.

LES25□/Step Motor



<Set value of pushing force–Force graph>

Allowable Duty Ratio

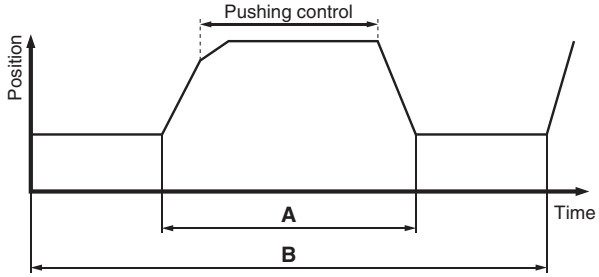
Step Motor (Servo/24 VDC)

Set value of pushing force (%)	Duty ratio (%)	Continuous pushing time (minute)
30	—	—
50 or less	30 or less	5 or less
70 or less	20 or less	3 or less

Servo Motor (24 VDC)

Set value of pushing force (%)	Duty ratio (%)	Continuous pushing time (minute)
50	—	—
75 or less	30 or less	5 or less
100 or less	20 or less	3 or less

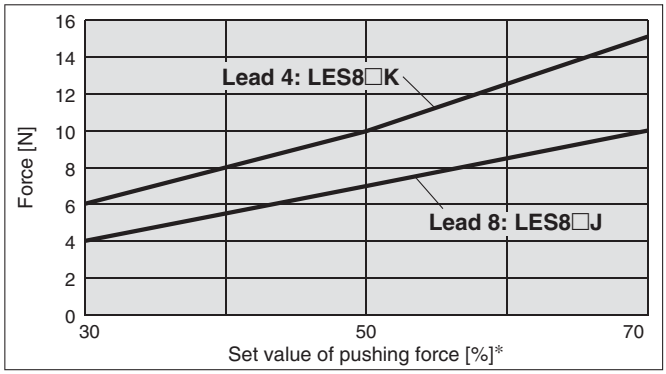
∗ The pushing force of the LES8□A is up to 75 %.



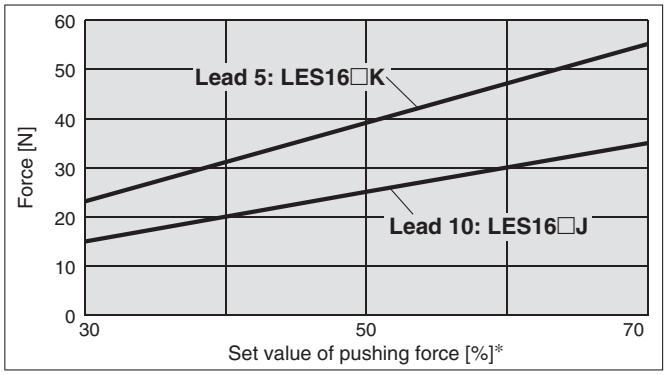
Set Value of Pushing Force–Force Gragh

Step Motor (Servo/24 VDC)

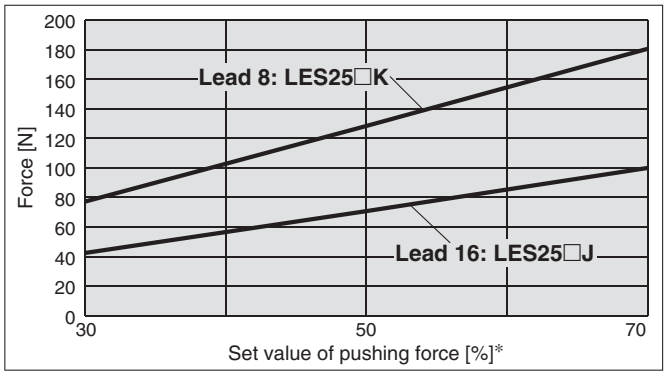
LES8□



LES16□

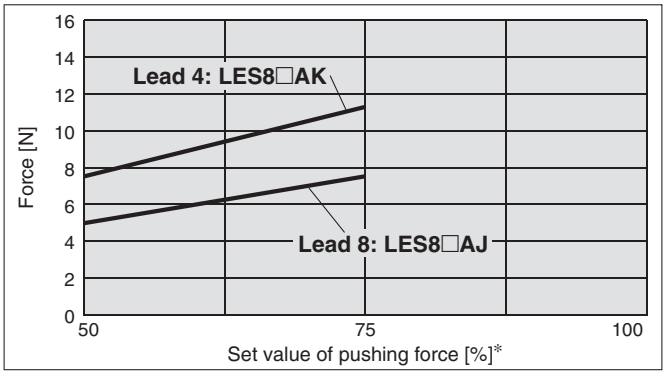


LES25□

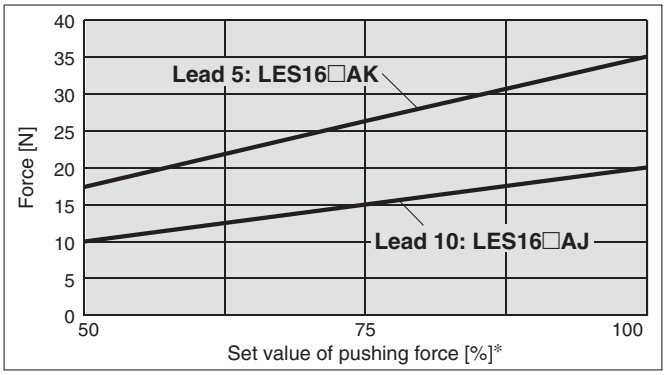


Servo Motor (24 VDC)

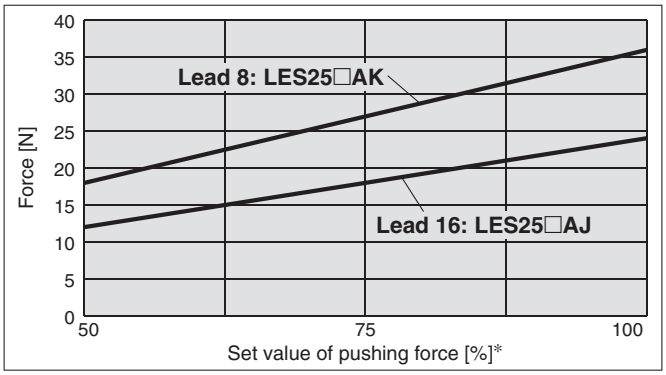
LES8□A



LES16□A



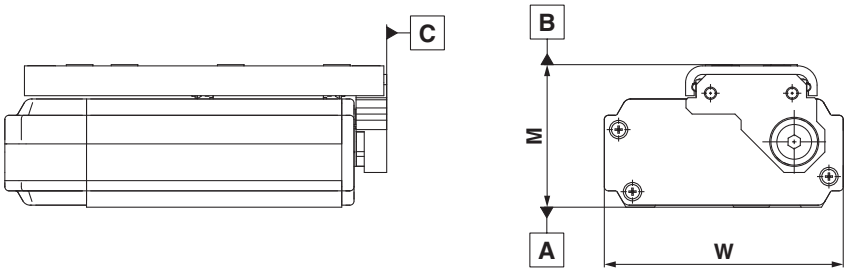
LES25$^{R}_{L}$A



∗ Set values for the controller.

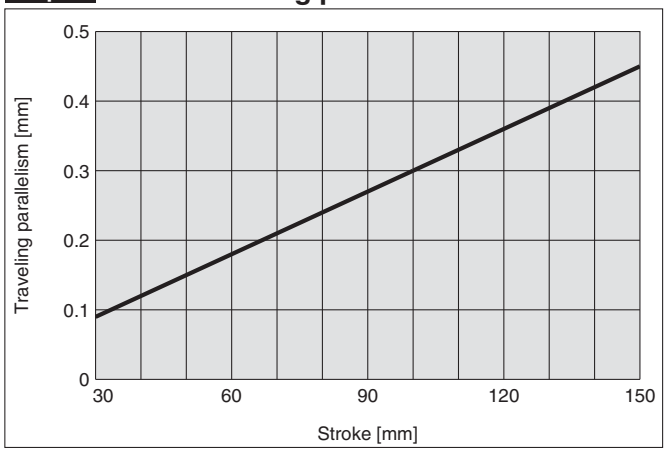
Table Accuracy

∗ These values are initial guideline values.



Model	LES8	LES16	LES25
B side parallelism to A side	0.4 mm		
B side traveling parallelism to A side	Refer to Graph 1.		
C side perpendicularity to A side	0.2 mm		
M dimension tolerance	±0.3 mm		
W dimension tolerance	±0.2 mm		

Graph 1 **B side traveling parallelism to A side**



Traveling parallelism:
The amount of deflection on a dial gauge when the table travels a full stroke with the body secured on a reference base surface

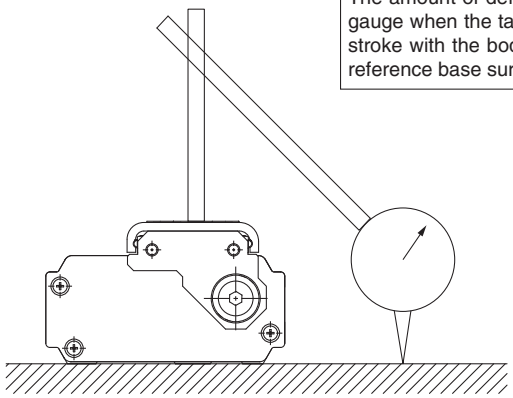
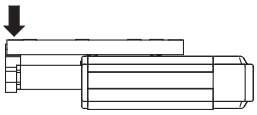


Table Deflection (Reference Value)

∗ These values are initial guideline values.

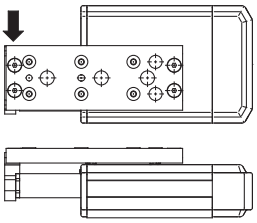
Pitching moment

Table displacement due to pitch moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.



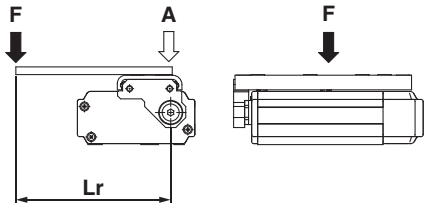
Yawing moment

Table displacement due to yaw moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.

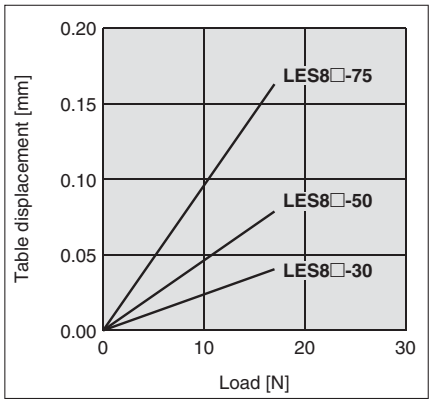


Rolling moment

Table displacement due to roll moment load
Table displacement of section A when loads are applied to the section F with the slide table retracted.



LES8



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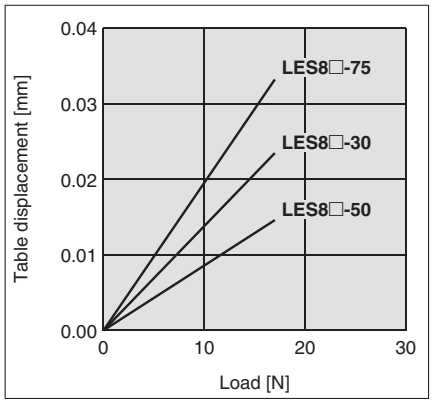
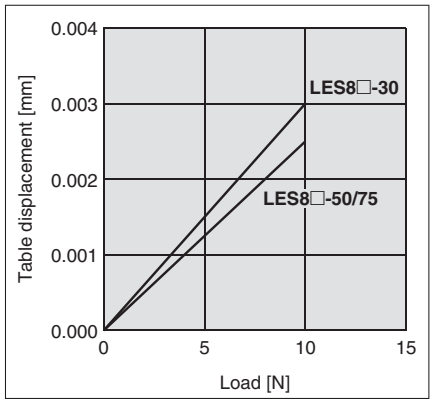
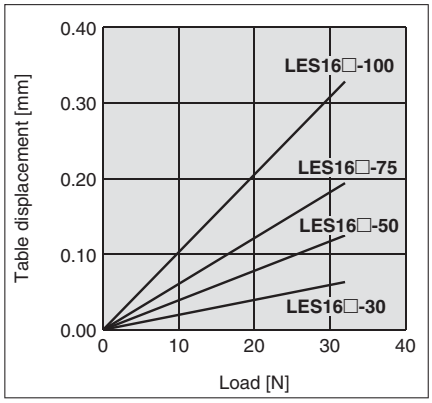


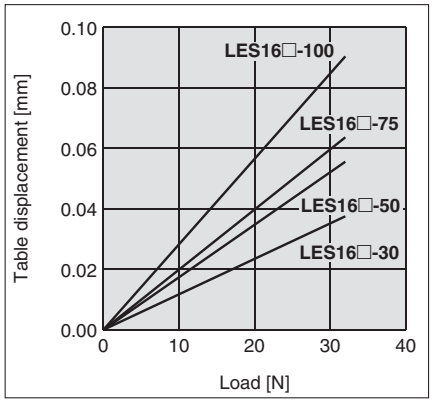
LES8 **Lr** = 80 mm



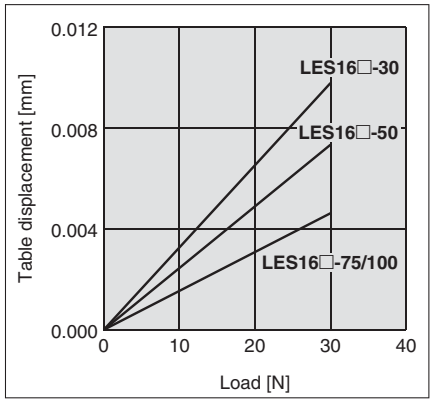
LES16



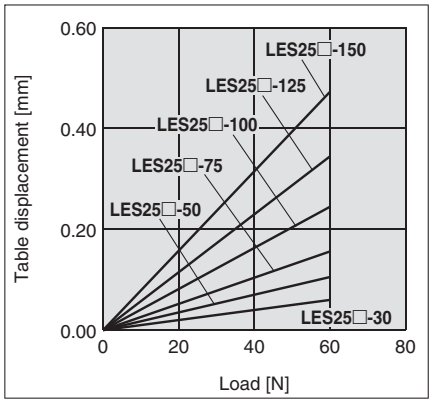
LES16



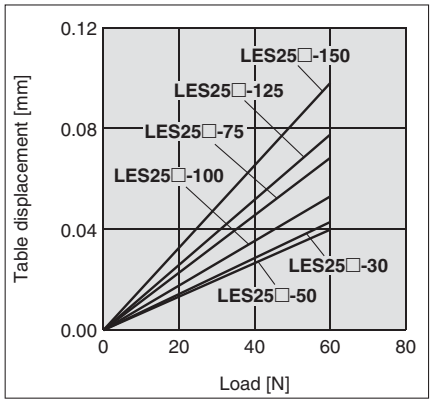
LES16 **Lr** = 60 mm



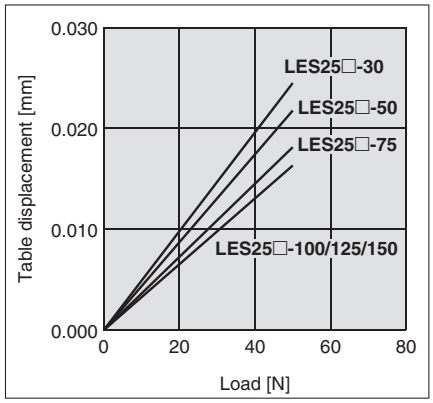
LES25



LES25



LES25 **Lr** = 100 mm



Electric Slide Table/Compact Type

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

Series LES

LES8, 16, 25

EtherNet/IP™ DeviceNet™ IO-Link PROFINET EtherCAT® Compatible ▶Page 86

Multi-Axis Step Motor Controller Compatible ▶Page 96

How to Order

LES 8 R ☐ J – 30 ☐ ☐ ☐ – S 1 6P 1 ☐

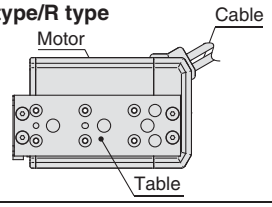
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Size

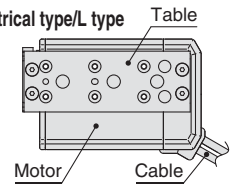
8
16
25

❷ Motor mounting position

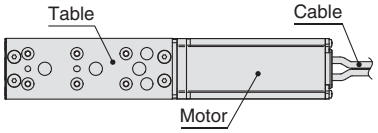
R — Basic type/R type



L — Symmetrical type/L type



D — In-line motor type/D type



❸ Motor type

Symbol	Type	Compatible controllers/ driver
—	Step motor (Servo/24 VDC)	LECP6 LECP1 LECPA
A	Servo motor* (24 VDC)	LECA6

* LES25DA is not available.

❹ Lead [mm]

Symbol	LES8	LES16	LES25
J	8	10	16
K	4	5	8

❺ Stroke [mm]

Model \ Stroke	30	50	75	100	125	150
LES8	●*	●*	●	—	—	—
LES16	●*	●*	●	●	—	—
LES25	●*	●	●	●	●	●

* R/L type with lock is not available.

❻ Motor option

—	Without option
B	With lock

❼ Body option

—	Without option
S	Dust-protected*

* For R/L type (IP5X equivalent), a scraper is mounted on the rod cover, and gaskets are mounted on both the end covers. For D type, a scraper is mounted on the rod cover.

⚠ Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LES 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 61 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.

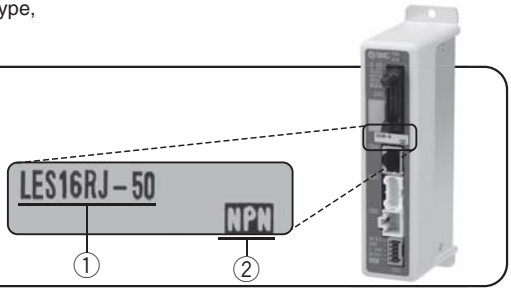
The actuator and controller/driver are sold as a package.

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

<Check the following before use.>

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

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



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

SMC

Basic type (R type)

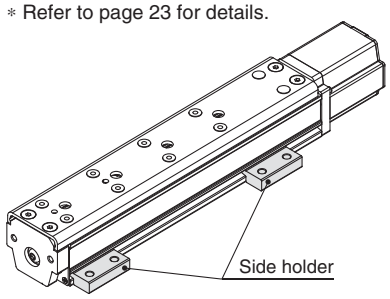
Symmetrical type (L type)

In-line motor type (D type)

❽ Mounting*

Symbol	Mounting	R type L type	D type
—	Without side holder	●	●
H	With side holder (4 pcs.)	—	●

* Refer to page 23 for details.



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 3) on page 11.

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 (Pulse input type)	NPN
AP		PNP

*1 Refer to page 52 for the detailed specifications of the controller/driver.
*2 Only available for the motor type "Step motor."

⓬ I/O cable length [m]*1

—	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 61 (For LECP6/LECA6), page 74 (For LECP1) or page 81 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

⓭ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately. Refer to page 54 for details.

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 53		Page 68	Page 75

Specifications

Step Motor (Servo/24 VDC)

Model			LES8□		LES16□		LES25□	
Actuator specifications	Stroke [mm]		30, 50, 75		30, 50, 75, 100		30, 50, 75, 100, 125, 150	
	Work load [kg] Note 1)	Horizontal	1		3		5	
		Vertical	0.5	0.25	3	1.5	5	2.5
	Pushing force 30 to 70 % [N] Note 2) 3)		6 to 15	4 to 10	23.5 to 55	15 to 35	77 to 180	43 to 100
	Speed [mm/s] Note 1) 3)		10 to 200	20 to 400	10 to 200	20 to 400	10 to 200	20 to 400
	Pushing speed [mm/s]		10 to 20	20	10 to 20	20	10 to 20	20
	Max. acceleration/deceleration [mm/s²]		5,000					
	Positioning repeatability [mm]		±0.05					
	Lost motion [mm] Note 4)		0.3 or less					
	Screw lead [mm]		4	8	5	10	8	16
	Impact/Vibration resistance [m/s²] Note 5)		50/20					
	Actuation type		Slide screw + Belt (R/L type), Slide screw (D type)					
	Guide type		Linear guide (Circulating type)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Electric specifications	Motor size		□20		□28		□42	
	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 6)		18		69		45	
	Standby power consumption when operating [W] Note 7)		7		15		13	
	Max. instantaneous power consumption [W] Note 8)		35		69		67	
Lock unit specifications	Type	Note 9)	Non-magnetizing lock					
	Holding force [N]		24	2.5	300	48	500	77
	Power consumption [W] Note 10)		3.5		2.9		5	
	Rated voltage [V]		24 VDC ±10 %					

Note 1) Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 2.
Note 2) Pushing force accuracy is ±20 % (F.S.).
Note 3) 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 4) A reference value for correcting an error in reciprocal operation.
Note 5) 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.)
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.)
Note 6) The power consumption (including the controller) is for when the actuator is operating.
Note 7) 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 8) 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 9) With lock only
Note 10) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model			LES8□A		LES16□A		LES25$^{R}_{L}$A Note 1)	
Actuator specifications	Stroke [mm]		30, 50, 75		30, 50, 75, 100		30, 50, 75, 100, 125, 150	
	Work load [kg]	Horizontal	1		3		5	
		Vertical	1	0.5	3	1.5	4	2
	Pushing force 50 to 100 % [N] Note 2)		7.5 to 11	5 to 7.5	17.5 to 35	10 to 20	18 to 36	12 to 24
	Speed [mm/s]		10 to 200	20 to 400	10 to 200	20 to 400	10 to 200	20 to 400
	Pushing speed [mm/s]		10 to 20	20	10 to 20	20	10 to 20	20
	Max. acceleration/deceleration [mm/s^2]		5,000					
	Positioning repeatability [mm]		±0.05					
	Lost motion [mm] Note 3)		0.3 or less					
	Screw lead [mm]		4	8	5	10	8	16
	Impact/Vibration resistance [m/s^2] Note 4)		50/20					
	Actuation type		Slide screw + Belt (R/L type), Slide screw (D type)					
	Guide type		Linear guide (Circulating type)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Electric specifications	Motor size		□20		□28		□42	
	Motor output [W]		10		30		36	
	Motor type		Servo motor (24 VDC)					
	Encoder (Angular displacement sensor)		Incremental A/B/Z phase (800 pulse/rotation)					
	Rated voltage [V]		24 VDC ±10 %					
	Power consumption [W] Note 5)		42		68		97	
	Standby power consumption when operating [W] Note 6)		8 (Horizontal)/19 (Vertical)		9 (Horizontal)/23 (Vertical)		16 (Horizontal)/32 (Vertical)	
	Max. instantaneous power consumption [W] Note 7)		71		102		111	
Lock unit specifications	Type	Note 8)	Non-magnetizing lock					
	Holding force [N]	Note 8)	24	2.5	300	48	500	77
	Power consumption [W] Note 9)	Note 8)	3.5		2.9		5	
	Rated voltage [V]	Note 8)	24 VDC ±10 %					

Note 1) LES25DA is not available.
Note 2) The pushing force values for LES8□A is 50 to 75 %. Pushing force accuracy is ±20 % (F.S.).
Note 3) A reference value for correcting an error in reciprocal operation.
Note 4) 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.)
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.)
Note 5) The power consumption (including the controller) is for when the actuator is operating.
Note 6) 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 7) 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 8) With lock only
Note 9) For an actuator with lock, add the power consumption for the lock.

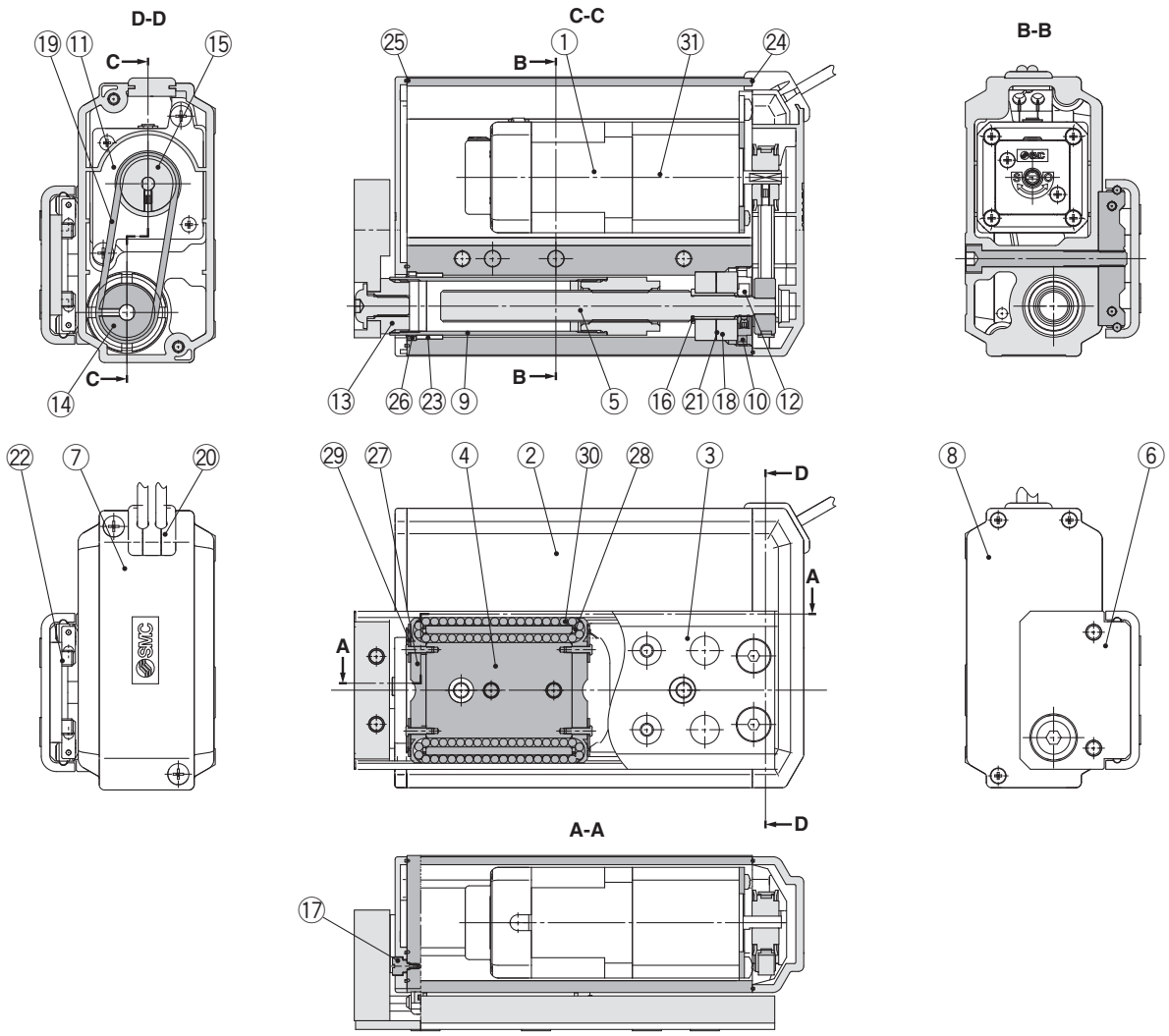
Weight

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

[kg]

		Without lock						With lock					
Stroke [mm]		30	50	75	100	125	150	30	50	75	100	125	150
Model	LES8$^{R}_{L}$(A)	0.45	0.54	0.59	—	—	—	—	—	0.66	—	—	—
	LES16$^{R}_{L}$(A)	0.91	1.00	1.16	1.24	—	—	—	—	1.29	1.37	—	—
	LES25$^{R}_{L}$(A)	1.81	2.07	2.41	3.21	3.44	3.68	—	2.34	2.68	3.48	3.71	3.95
	LES8D(A)	0.40	0.52	0.58	—	—	—	0.47	0.59	0.65	—	—	—
	LES16D(A)	0.77	0.90	1.11	1.20	—	—	0.90	1.03	1.25	1.33	—	—
	LES25D	1.82	2.05	2.35	3.07	3.27	3.47	2.08	2.31	2.61	3.33	3.53	3.74

Construction: Basic Type/R Type, Symmetrical Type/L Type



Component Parts

No.	Description	Material	Note
1	**Motor**	—	—
2	**Body**	Aluminium alloy	Anodised
3	**Table**	Stainless steel	Heat treatment + Electroless nickel plated
4	**Guide block**	Stainless steel	Heat treatment
5	**Lead screw**	Stainless steel	Heat treatment + Specially treated
6	**End plate**	Aluminium alloy	Anodised
7	**Pulley cover**	Synthetic resin	—
8	**End cover**	Synthetic resin	—
9	**Rod**	Stainless steel	—
10	**Bearing stopper**	Structural steel	Electroless nickel plated
		Brass	Electroless nickel plated (LES25R/L□ only)
11	**Motor plate**	Structural steel	—
12	**Lock nut**	Structural steel	Chromate treated
13	**Socket**	Structural steel	Electroless nickel plated
14	**Lead screw pulley**	Aluminium alloy	—
15	**Motor pulley**	Aluminium alloy	—
16	**Spacer**	Stainless steel	LES25R/L□ only
17	**Origin stopper**	Structural steel	Electroless nickel plated
18	**Bearing**	—	—
19	**Belt**	—	—

No.	Description	Material	Note
20	**Grommet**	Synthetic resin	—
21	**Sim ring**	Structural steel	—
22	**Stopper**	Structural steel	—
23	**Bushing**	—	Dustproof specification only
24	**Pulley gasket**	NBR	Dustproof specification only
25	**End gasket**	NBR	Dustproof specification only
26	**Scraper**	NBR	Dustproof specification only
27	**Cover**	Synthetic resin	—
28	**Return guide**	Synthetic resin	—
29	**Cover support**	Stainless steel	—
30	**Steel ball**	Special steel	—
31	**Lock**	—	With lock only

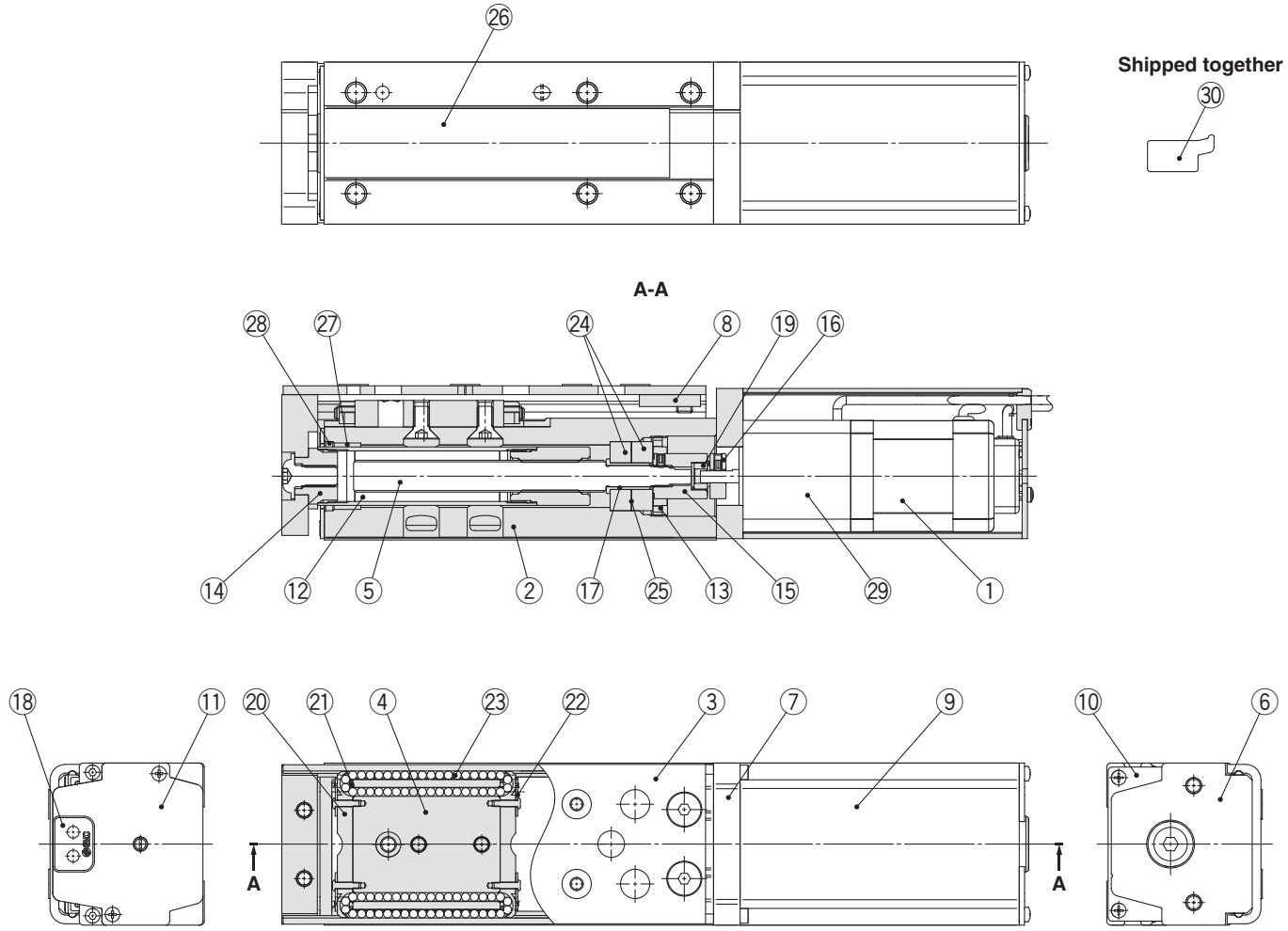
Replacement Parts/Belt

Size	Order no.	Note
LES8□	LE-D-1-1	Without manual override screw
LES16□	LE-D-1-2	—
LES25□	LE-D-1-3	—
LES25□A	LE-D-1-4	—
LES8□	LE-D-1-5	With manual override screw

Replacement Parts/Grease Pack

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

Construction: In-line Motor Type/D Type



Component Parts

No.	Description	Material	Note
1	**Motor**	—	—
2	**Body**	Aluminium alloy	Anodised
3	**Table**	Stainless steel	Heat treatment + Electroless nickel plated
4	**Guide block**	Stainless steel	Heat treatment
5	**Lead screw**	Stainless steel	Heat treatment + Specially treated
6	**End plate**	Aluminium alloy	Anodised
7	**Motor flange**	Aluminium alloy	Anodised
8	**Stopper**	Structural steel	—
9	**Motor cover**	Aluminium alloy	Anodised
10	**End cover**	Aluminium alloy	Anodised
11	**Motor end cover**	Aluminium alloy	Anodised
12	**Rod**	Stainless steel	—
13	**Bearing stopper**	Structural steel	Electroless nickel plated
		Brass	Electroless nickel plated (LES25D□ only)
14	**Socket**	Structural steel	Electroless nickel plated
15	**Hub (Lead screw side)**	Aluminium alloy	—
16	**Hub (Motor side)**	Aluminium alloy	—
17	**Spacer**	Stainless steel	LES25D□ only
18	**Grommet**	NBR	—
19	**Spider**	NBR	—
20	**Cover**	Synthetic resin	—

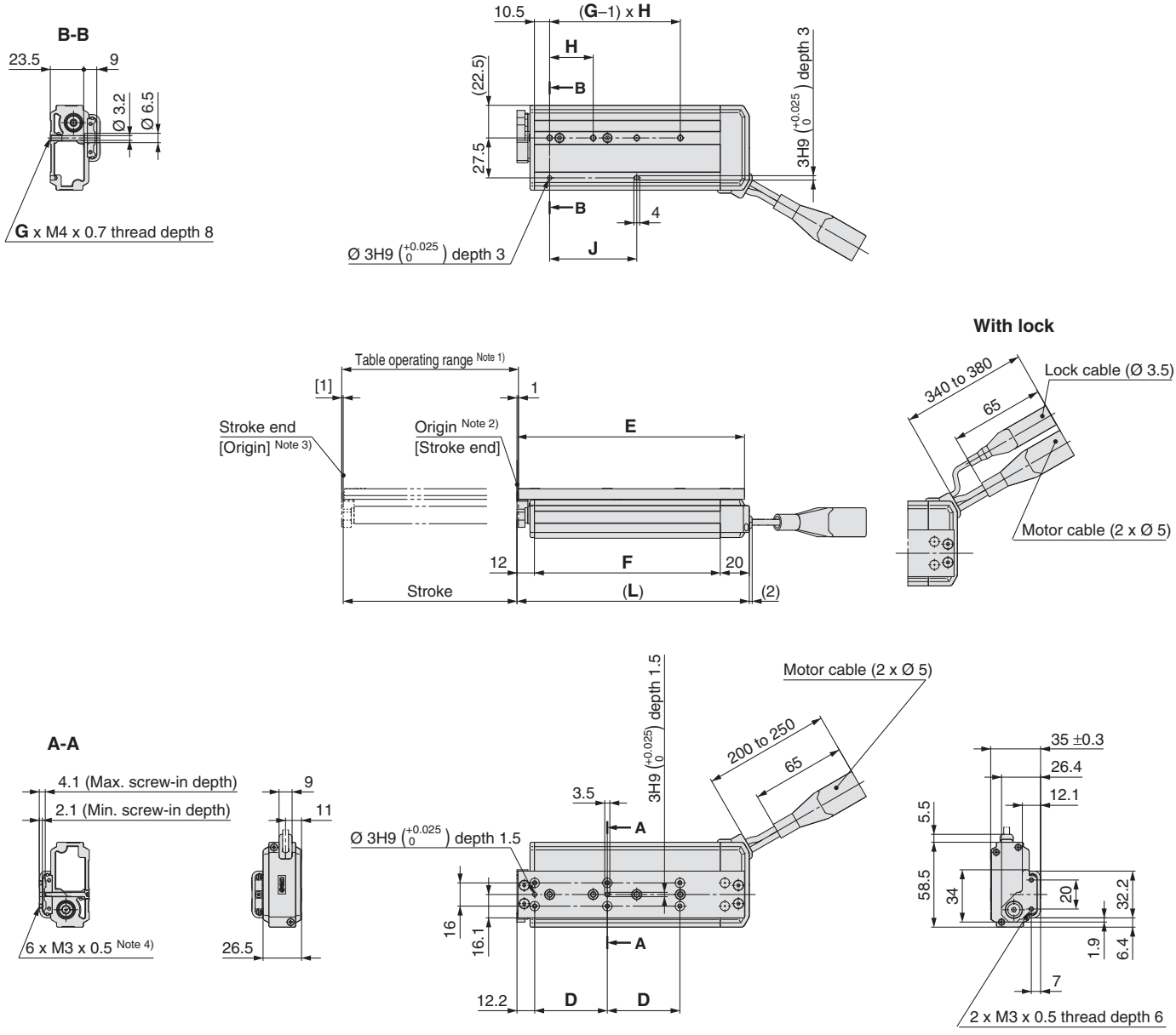
No.	Description	Material	Note
21	**Return guide**	Synthetic resin	—
22	**Cover support**	Stainless steel	—
23	**Steel ball**	Special steel	—
24	**Bearing**	—	—
25	**Sim ring**	Structural steel	—
26	**Masking tape**	—	—
27	**Bushing**	—	Dustproof specification only
28	**Scraper**	NBR	Dustproof specification only
29	**Lock**	—	With lock only
30	**Side holder**	Aluminium alloy	Anodised

Optional Parts/Side Holder

Model	Order no.
LES8D	LE-D-3-1
LES16D	LE-D-3-2
LES25D	LE-D-3-3

Dimensions: Basic Type/R Type

LES8R



Connector		
	Step motor	Servo motor
Motor cable		
Lock cable		

Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
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) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

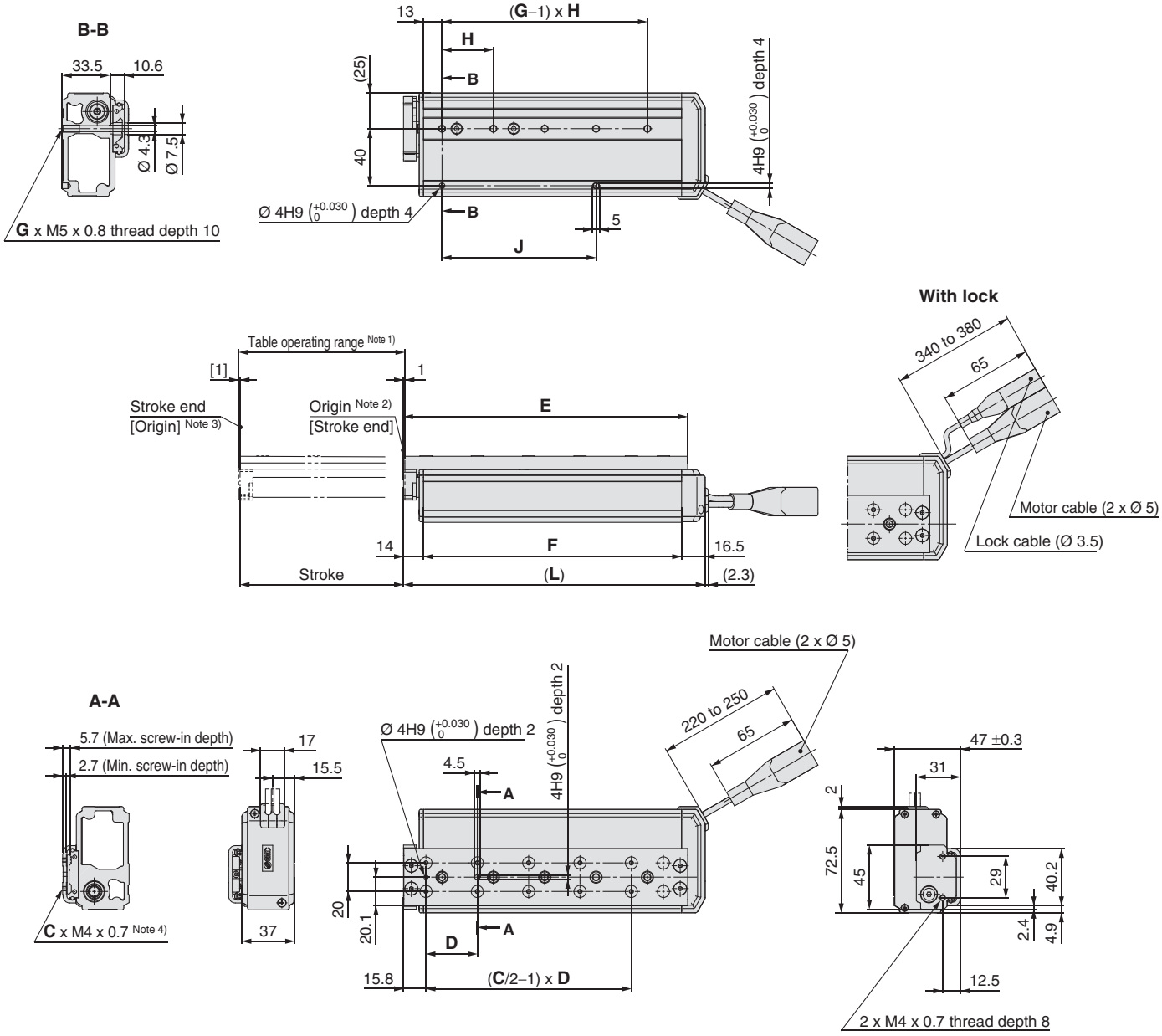
Dimensions

[mm]

Model	L	D	E	F	G	H	J
LES8R□□-30□□-□□□□□	94.5	26	88.7	62.5	2	27	27
LES8R□□-50□□-□□□□□	137.5	46	131.7	105.5	3	29	58
LES8R□□-75□□-□□□□□	162.5	50	156.7	130.5	4	30	60

Dimensions: Basic Type/R Type

LES16R



Connector

	Step motor	Servo motor
Motor cable	20 × 20	24 × 24
Lock cable	20 × 15	20 × 15

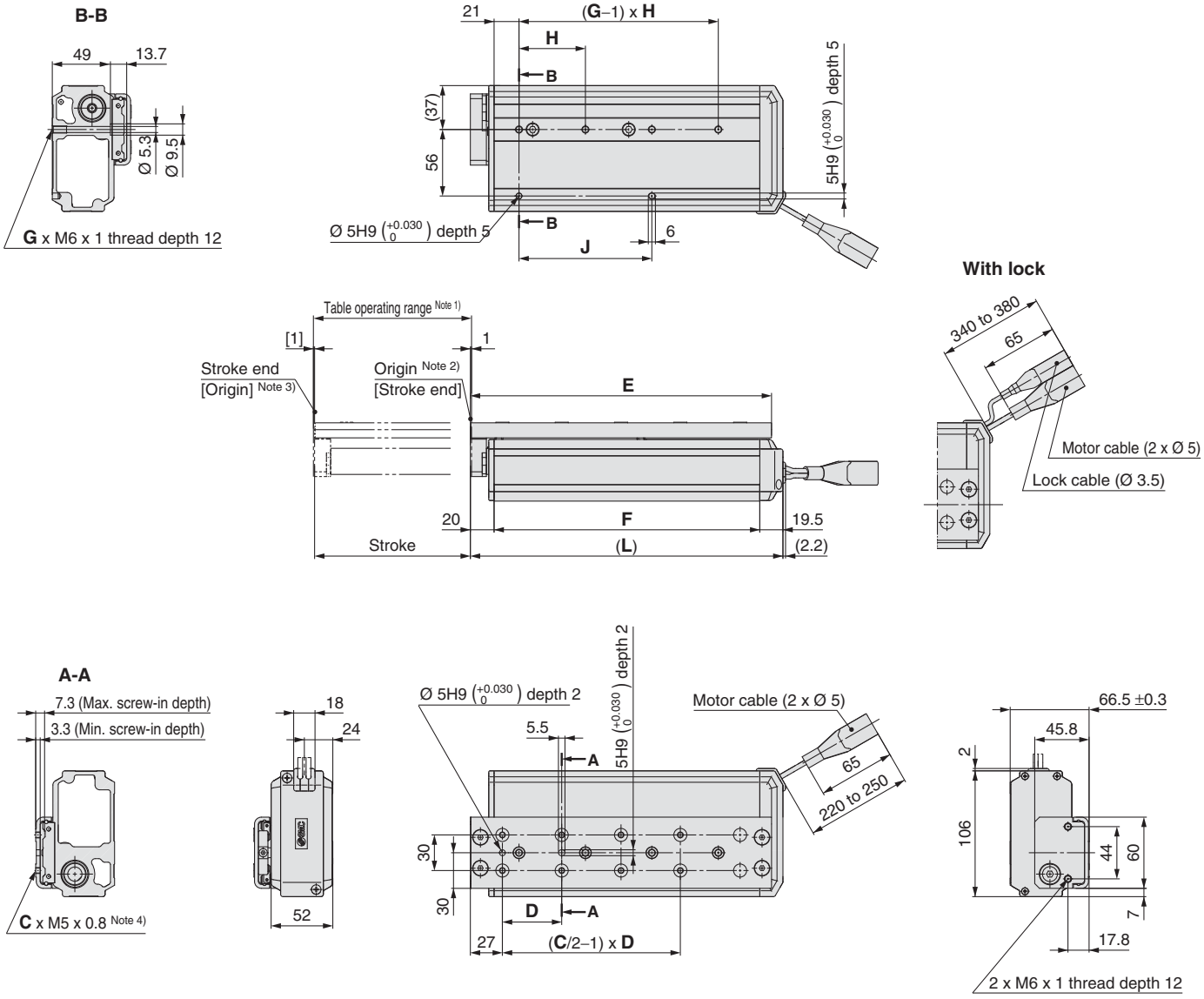
Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions [mm]

Model	L	C	D	E	F	G	H	J
LES16R□□-30□□-□□□□□	108.5	4	38	102.3	78	2	40	40
LES16R□□-50□□-□□□□□	136.5	6	34	130.3	106	2	78	78
LES16R□□-75□□-□□□□□	180.5	8	36	174.3	150	4	36	72
LES16R□□-100□□-□□□□□	205.5	10	36	199.3	175	5	36	108

Dimensions: Basic Type/R Type

LES25R



Connector		
	Step motor	Servo motor
Motor cable	20 / 20	24 / 24
Lock cable	20 / 15	20 / 15

Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
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) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

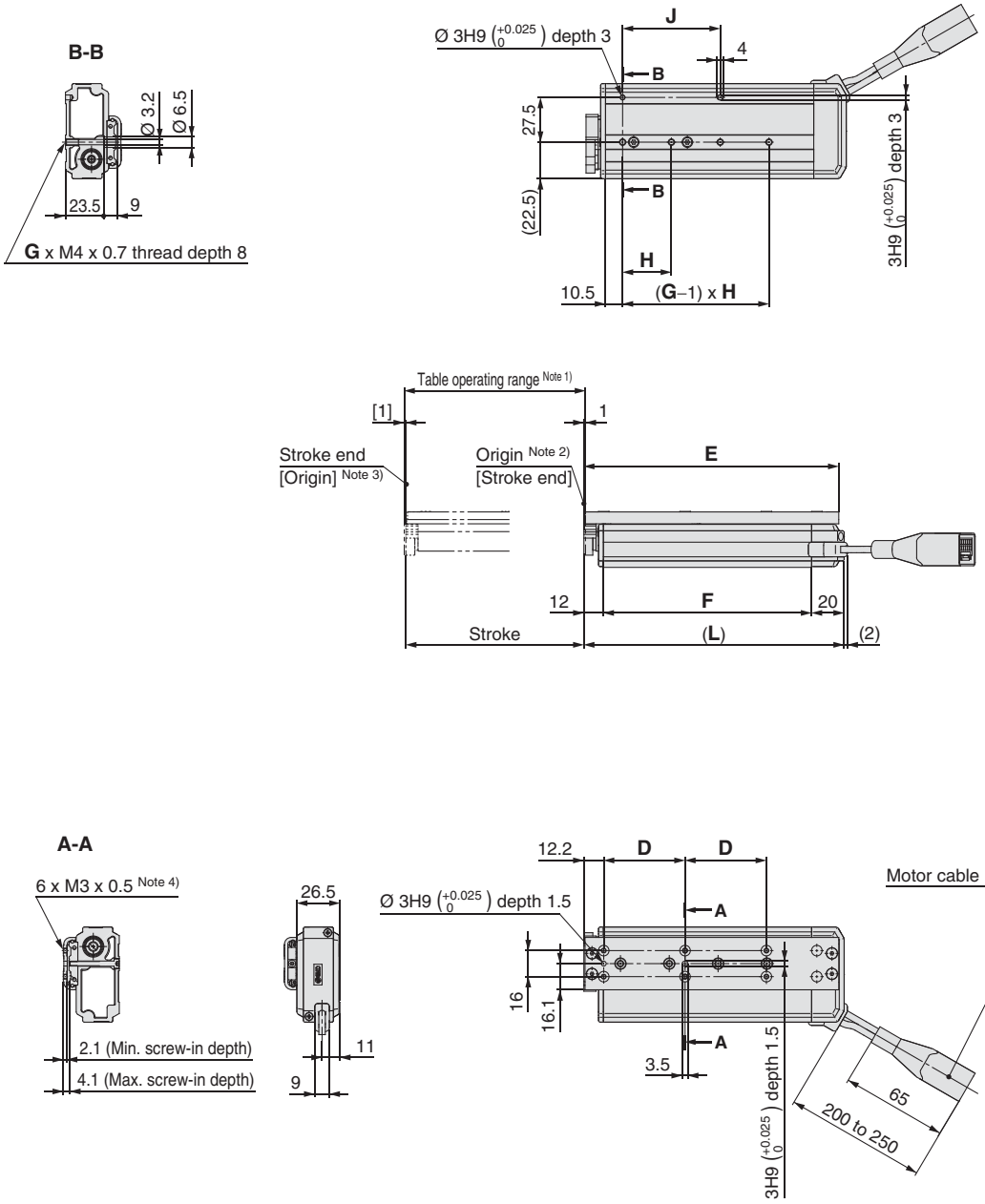
Dimensions

[mm]

Model	L	C	D	E	F	G	H	J
LES25R□□-30□□-□□□□□	144.5	4	48	133.5	105	2	46	46
LES25R□□-50□□-□□□□□	170.5	6	42	159.5	131	2	84	84
LES25R□□-75□□-□□□□□	204.5	6	55	193.5	165	2	112	112
LES25R□□-100□□-□□□□□	277.5	8	50	266.5	238	4	56	112
LES25R□□-125□□-□□□□□	302.5	8	55	291.5	263	4	59	118
LES25R□□-150□□-□□□□□	327.5	8	62	316.5	288	4	62	124

Dimensions: Symmetrical Type/L Type

LES8L



Connector		
	Step motor	Servo motor
Motor cable	20 / 20	24 / 24
Lock cable	20 / 15	20 / 15

Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
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) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

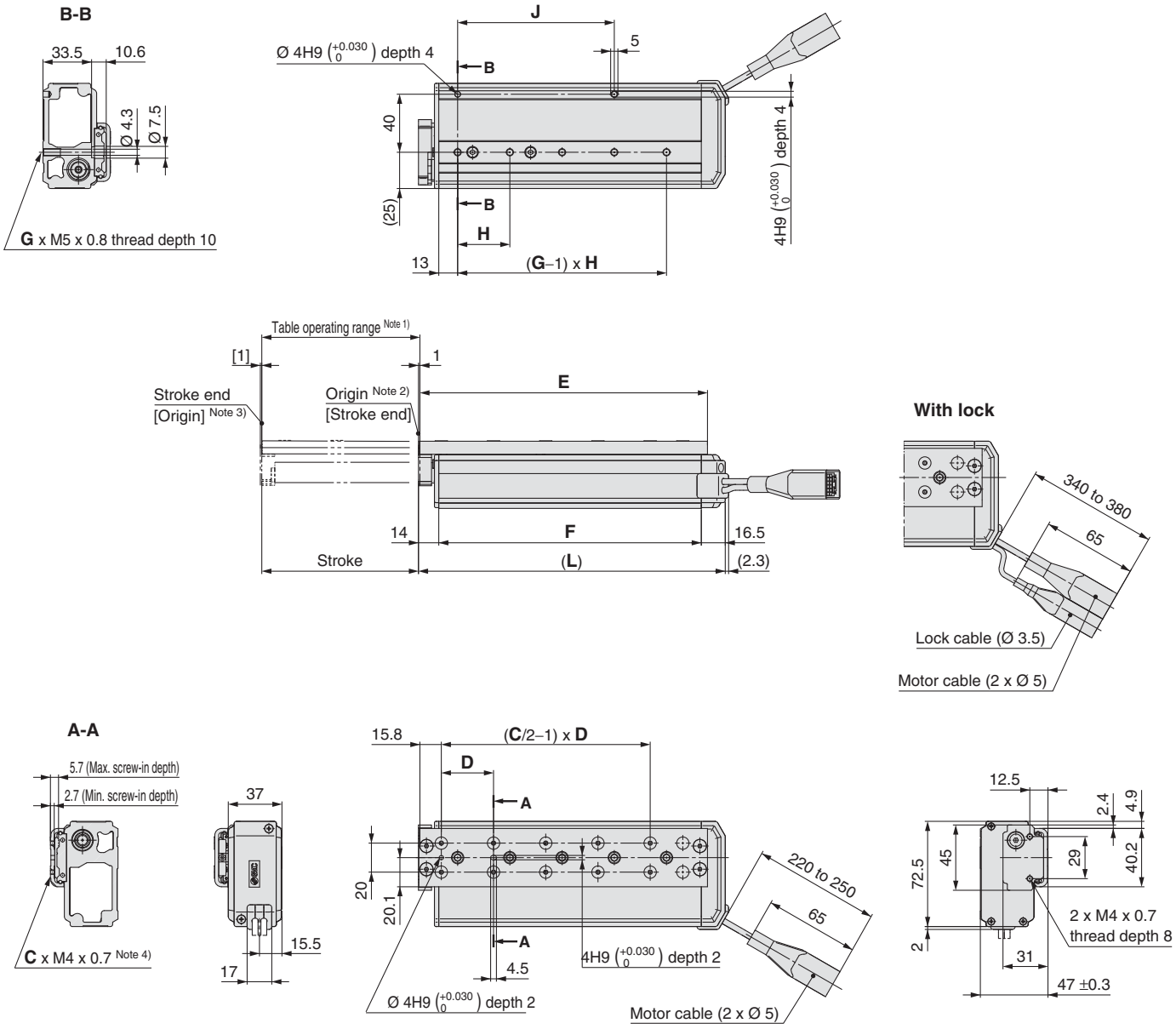
Dimensions

[mm]

Model	L	D	E	F	G	H	J
LES8L□□-30□□-□□□□□	94.5	26	88.7	62.5	2	27	27
LES8L□□-50□□-□□□□□	137.5	46	131.7	105.5	3	29	58
LES8L□□-75□□-□□□□□	162.5	50	156.7	130.5	4	30	60

Dimensions: Symmetrical Type/L Type

LES16L



Connector		
	Step motor	Servo motor
Motor cable		
Lock cable		

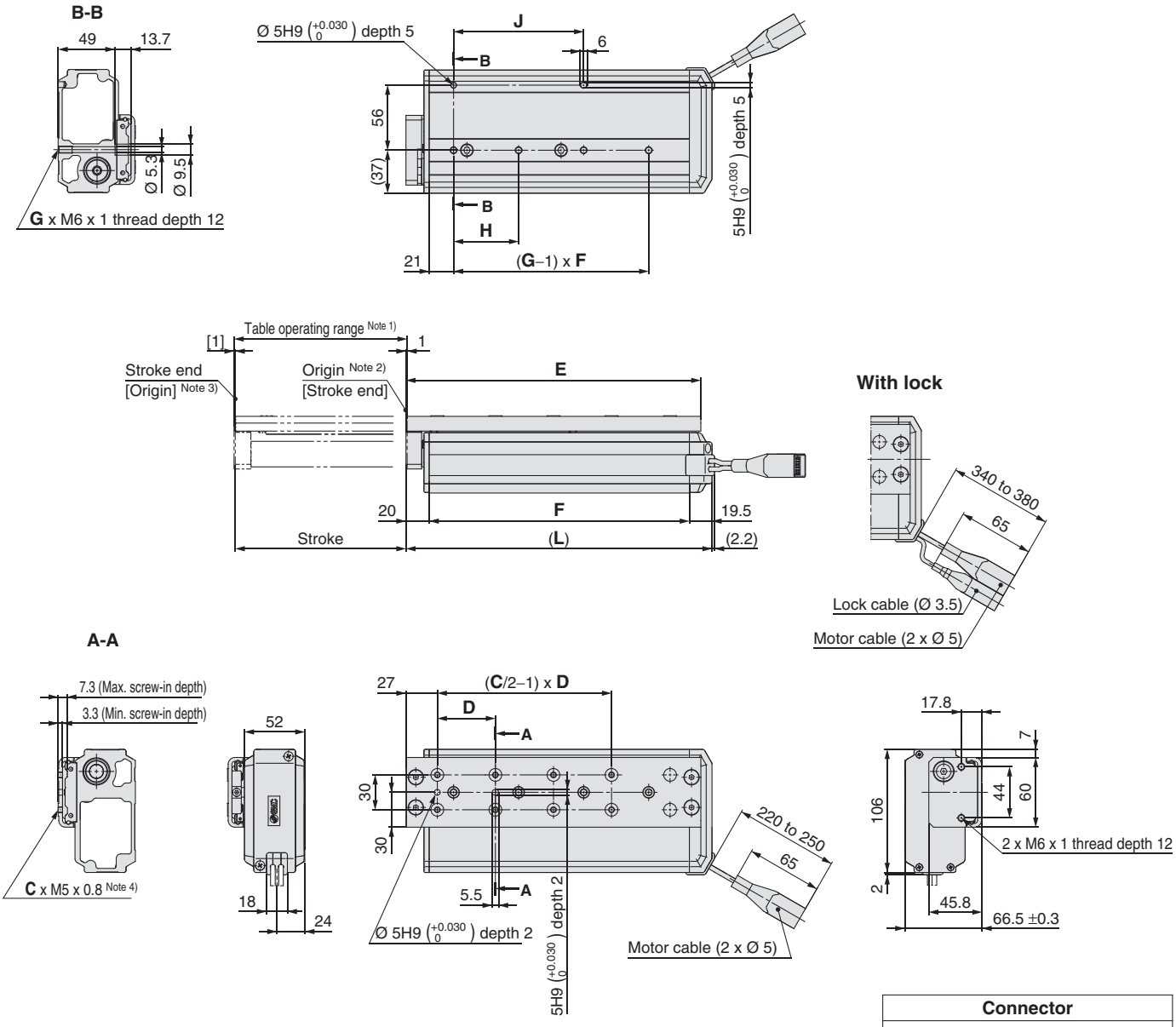
Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions [mm]

Model	L	C	D	E	F	G	H	J
LES16L□□-30□□-□□□□□	108.5	4	38	102.3	78	2	40	40
LES16L□□-50□□-□□□□□	136.5	6	34	130.3	106	2	78	78
LES16L□□-75□□-□□□□□	180.5	8	36	174.3	150	4	36	72
LES16L□□-100□□-□□□□□	205.5	10	36	199.3	175	5	36	108

Dimensions: Symmetrical Type/L Type

LES25L



Connector		
	Step motor	Servo motor
Motor cable	20 / 20	24 / 24
Lock cable	20 / 15	20 / 15

Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
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) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

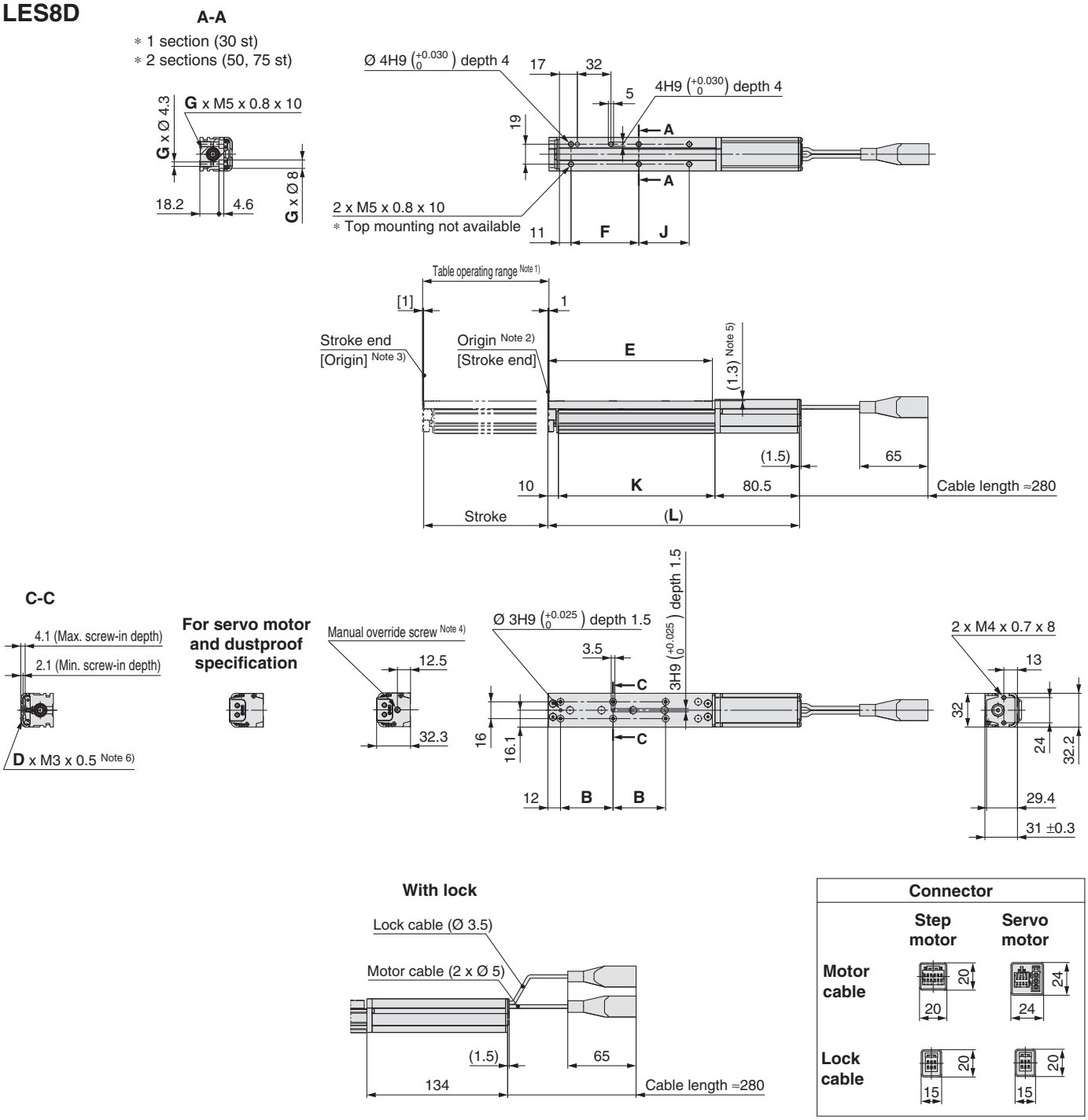
Dimensions

[mm]

Model	L	C	D	E	F	G	H	J
LES25L□□-30□□-□□□□□	144.5	4	48	133.5	105	2	46	46
LES25L□□-50□□-□□□□□	170.5	6	42	159.5	131	2	84	84
LES25L□□-75□□-□□□□□	204.5	6	55	193.5	165	2	112	112
LES25L□□-100□□-□□□□□	277.5	8	50	266.5	238	4	56	112
LES25L□□-125□□-□□□□□	302.5	8	55	291.5	263	4	59	118
LES25L□□-150□□-□□□□□	327.5	8	62	316.5	288	4	62	124

Dimensions: In-line Motor Type/D Type

LES8D



Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 16 mm. The motor end cover hole size is Ø 5.5.
Note 5) The table is lower than the motor cover. Make sure it does not interfere with the workpiece.
Note 6) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc.
Use bolts that are between the maximum and minimum screw-in depths in length.

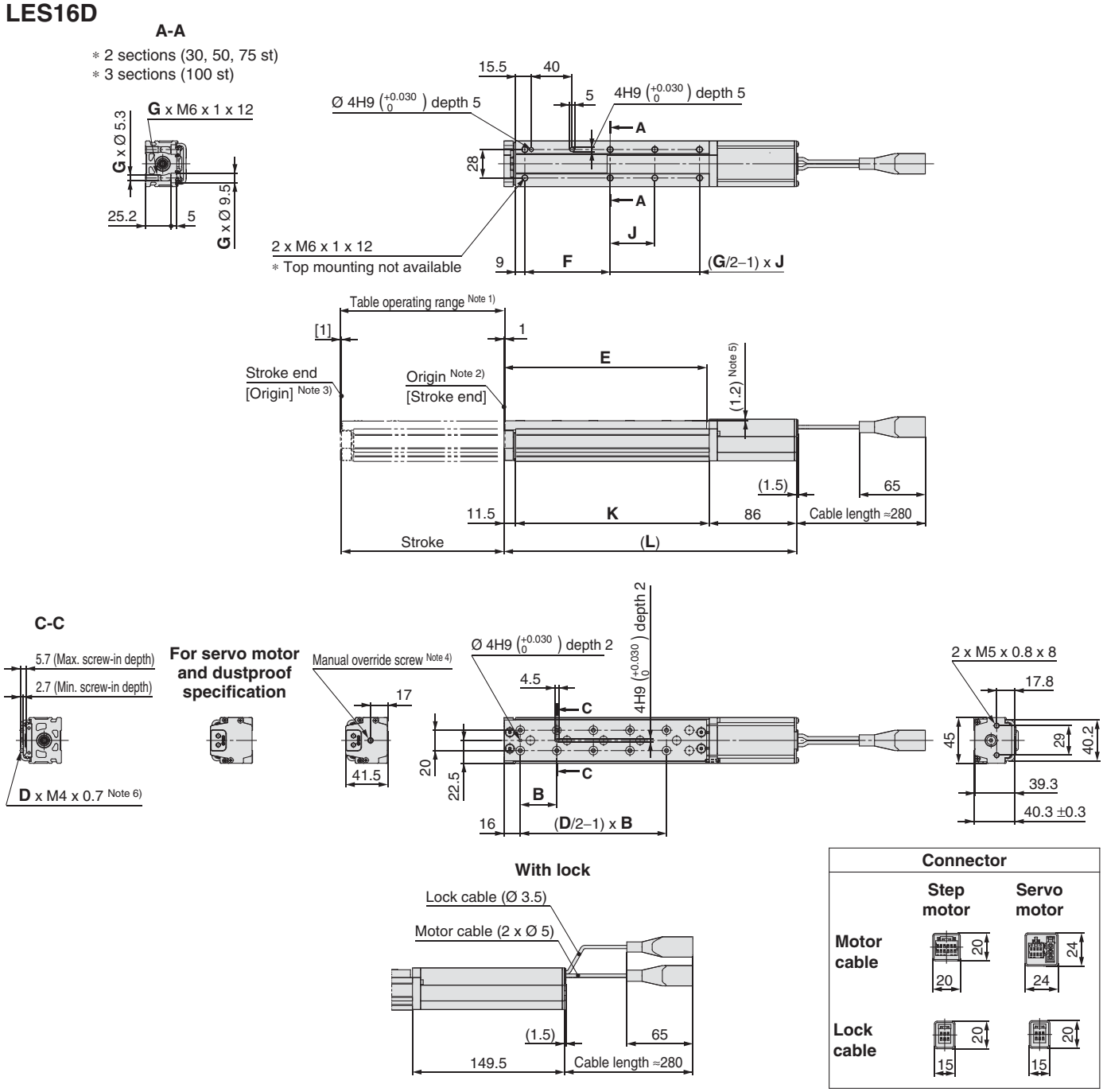
Dimensions

[mm]

Model	(L)	B	D	E	F	G	J	K
LES8D□□-30□□-□□□□□	171.5	26	6	88.5	44.5	2	—	81
LES8D□□-30B□□-□□□□□	225							
LES8D□□-50□□-□□□□□	214.5	46	6	131.5	64.5	4	23	124
LES8D□□-50B□□-□□□□□□	268							
LES8D□□-75□□-□□□□□	239.5	50	6	156.5	64.5	4	48	149
LES8D□□-75B□□-□□□□□	293							

Dimensions: In-line Motor Type/D Type

LES16D



Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 17 mm. The motor end cover hole size is Ø 5.5.
Note 5) The table is lower than the motor cover. Make sure it does not interfere with the workpiece.
Note 6) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc.
Use bolts that are between the maximum and minimum screw-in depths in length.

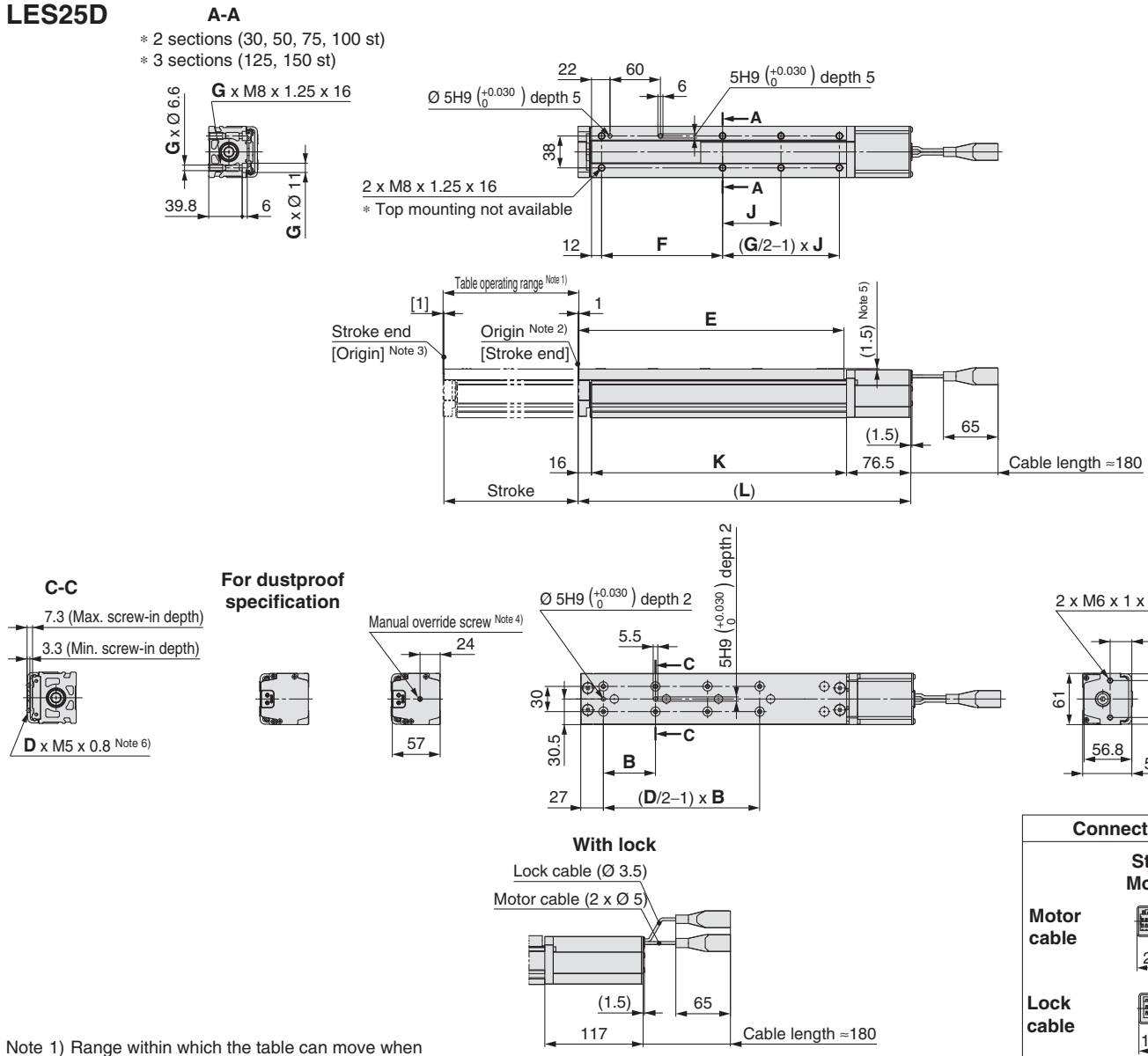
Dimensions

[mm]

Model	(L)	B	D	E	F	G	J	K
LES16D□□-30□□-□□□□□	193	38	4	102.5	56.5	4	18.5	95.5
LES16D□□-30B□□-□□□□□	256.5							
LES16D□□-50□□-□□□□□	221	34	6	130.5	65	4	38	123.5
LES16D□□-50B□□-□□□□□	284.5							
LES16D□□-75□□-□□□□□	265	36	8	174.5	84	4	63	167.5
LES16D□□-75B□□-□□□□□	328.5							
LES16D□□-100□□-□□□□□	290	36	10	199.5	84	6	44	192.5
LES16D□□-100B□□-□□□□□	353.5							

Dimensions: In-line Motor Type/D Type

LES25D



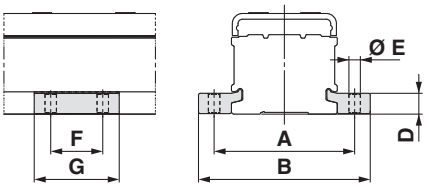
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 4 mm. The motor end cover hole size is Ø 5.5.
Note 5) The table is lower than the motor cover.
Note 6) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions

[mm]

Model	(L)	B	D	E	F	G	J	K
LES25D□-30□□-□□□□□	214	48	4	133.5	81	4	19	121.5
LES25D□-30B□□-□□□□□	254.5							
LES25D□-50□□-□□□□□	240	42	6	159.5	87	4	39	147.5
LES25D□-50B□□-□□□□□	280.5							
LES25D□-75□□-□□□□□	274	55	6	193.5	96	4	64	181.5
LES25D□-75B□□-□□□□□	314.5							
LES25D□-100□□-□□□□□	347	50	8	266.5	144	4	89	254.5
LES25D□-100B□□-□□□□□	387.5							
LES25D□-125□□-□□□□□	372	55	8	291.5	144	6	57	279.5
LES25D□-125B□□-□□□□□	412.5							
LES25D□-150□□-□□□□□	397	62	8	316.5	144	6	69.5	304.5
LES25D□-150B□□-□□□□□	437.5							

Side Holder



[mm]

Part no. Note)	A	B	D	E	F	G	Applicable model
LE-D-3-1	45	57.6	6.7	4.5	20	33	**LES8D**
LE-D-3-2	60	74	8.3	5.5	25	40	**LES16D**
LE-D-3-3	81	99	12	6.6	30	49	**LES25D**

Note) Model numbers for 1 side holder.

Series LESH
Model Selection 1

Selection Procedure

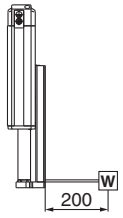
For the compact type LES series, refer to page 1.

Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 1 [kg]
- Speed: 220 [mm/s]
- Mounting orientation: Vertical
- Stroke: 50 [mm]
- Acceleration/Deceleration: 5,000 [mm/s²]
- Cycle time: 0.5 seconds
- Workpiece mounting condition:

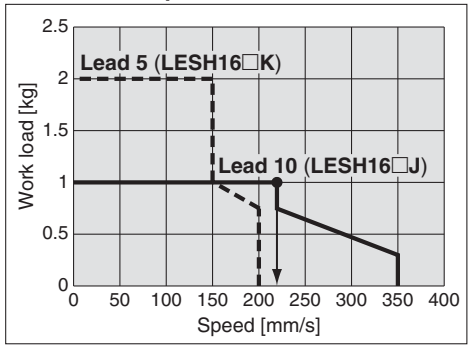


Step 1 Check the work load–speed. <Speed–Work load graph> (Page 26)

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

Selection example) The **LESH16□J-50** is temporarily selected based on the graph shown on the right side.

LESH16□/Step Motor Vertical



<Speed–Work load graph>

Step 2 Check the cycle time.

It is possible to obtain an approximate cycle time by using method 1, but if a more detailed cycle time is required, use method 2.

∗ Although it is possible to make a suitable selection by using method 1, this calculation is based on a maximum load condition. Therefore, if a more detailed selection for each load is required, use method 2.

Method 1: Check the cycle time graph. (Page 27)

Method 2: Calculation <Speed–Work load graph> (Page 26)

Calculate the cycle time using the following calculation method.

Cycle time:

T can be found from the following equation.

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

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

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

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

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

- T4: Settling time varies depending on the 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.

$T4 = 0.15$ [s]

Calculation example)

T1 to T4 can be calculated as follows.

$T1 = V/a1 = 220/5000 = 0.04$ [s],

$T3 = V/a2 = 220/5000 = 0.04$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{50 - 0.5 \cdot 220 \cdot (0.04 + 0.04)}{220} = 0.19 \text{ [s]}$$

$T4 = 0.15$ [s]

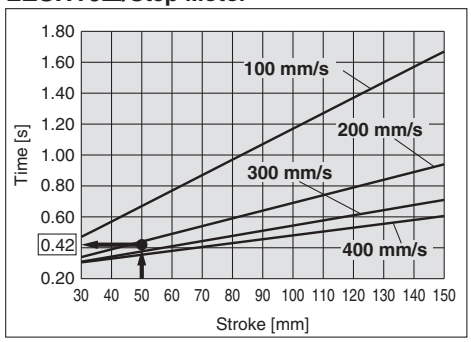
Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$

$= 0.04 + 0.19 + 0.04 + 0.15$

$=$ **0.42 [s]**

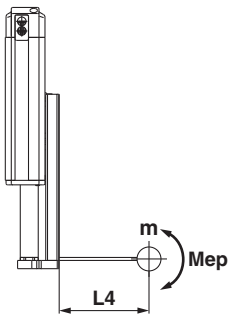
LESH16□/Step Motor



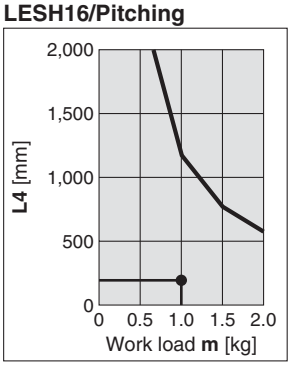
<Cycle time>

Step 3 Check the allowable moment. <Static allowable moment> (Page 27) <Dynamic allowable moment> (Page 28)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



LESH16/Pitching



<Dynamic allowable moment>

Based on the above calculation result, the LESH16□J-50 is selected.

Speed–Work Load Graph (Guide)

Step Motor (Servo/24 VDC)

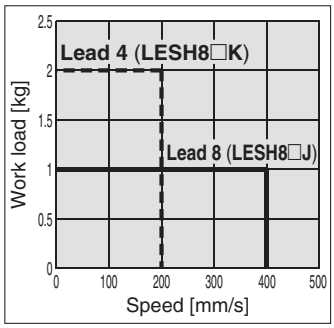
∗ The following graph shows the values when moving force is 100 %.

Servo Motor (24 VDC)

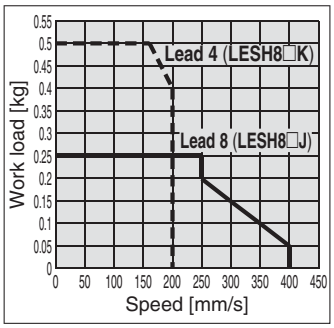
∗ The following graph shows the values when moving force is 250 %.

LESH8□

Horizontal

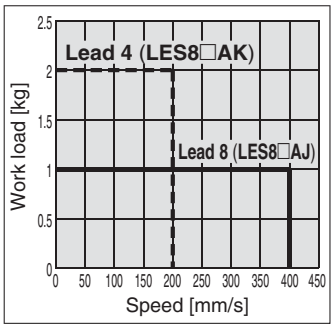


Vertical

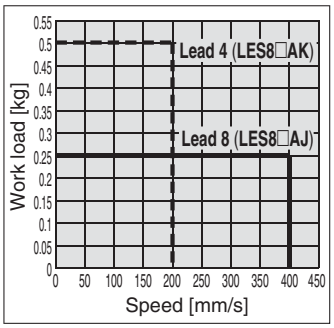


LESH8□A

Horizontal

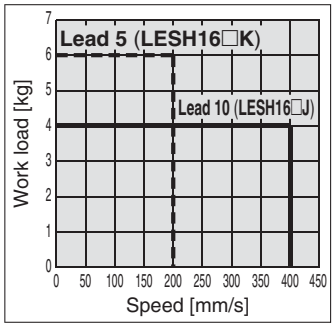


Vertical

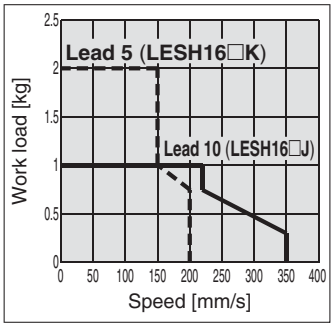


LESH16□

Horizontal

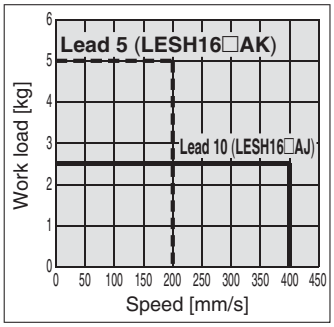


Vertical

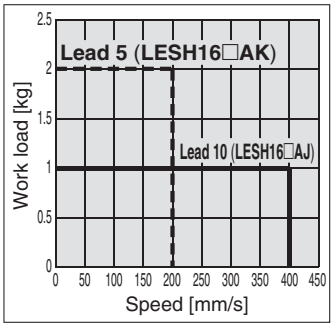


LESH16□A

Horizontal

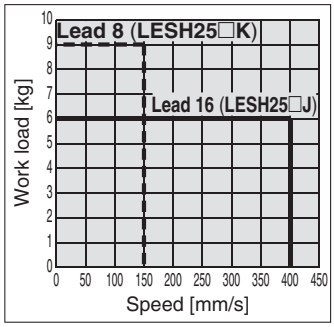


Vertical



LESH25□

Horizontal



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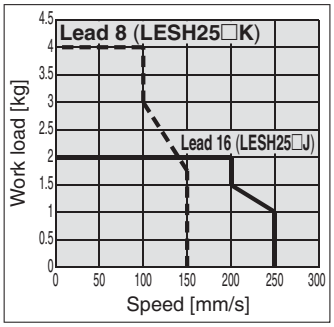
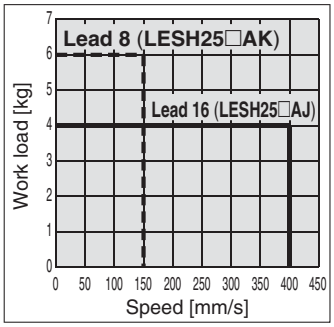


LESH25$^{R}_{L}$A

Horizontal



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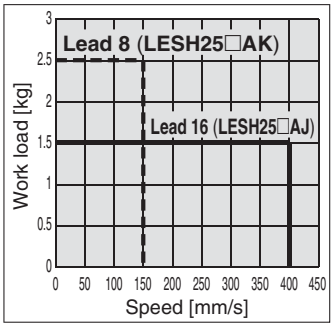
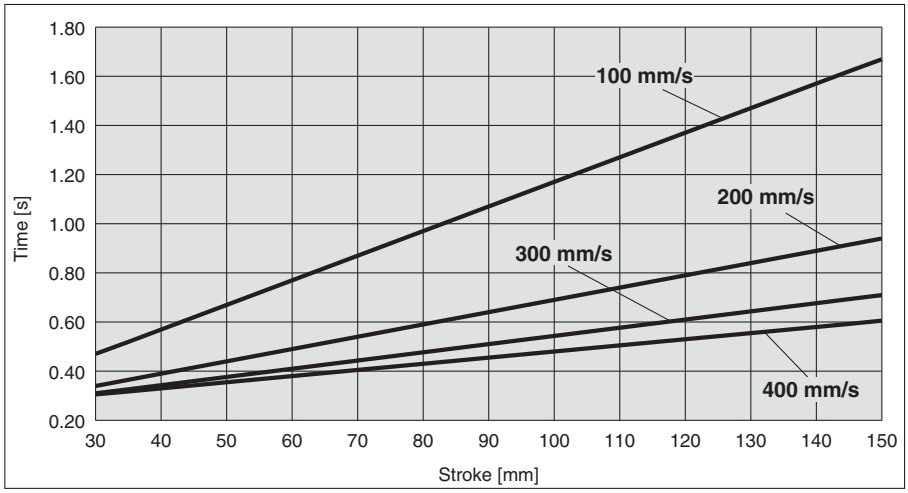


Cycle Time (Guide)



Operating Conditions

Acceleration/Deceleration: 5,000 mm/s^2
In position: 0.5

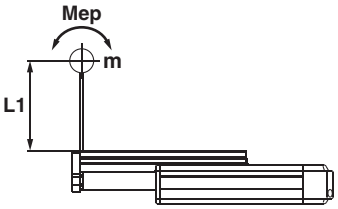
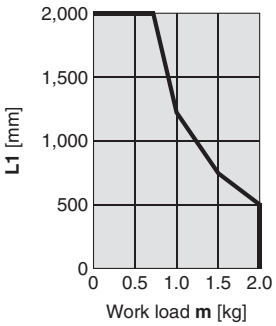
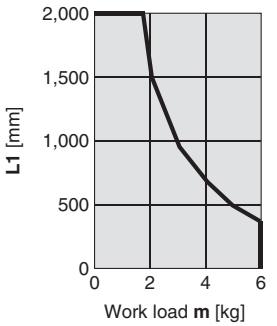
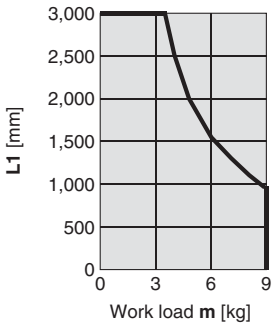
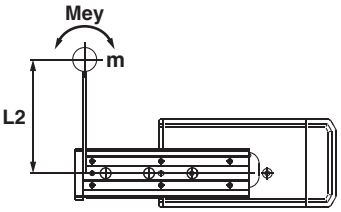
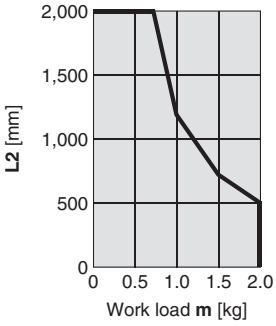
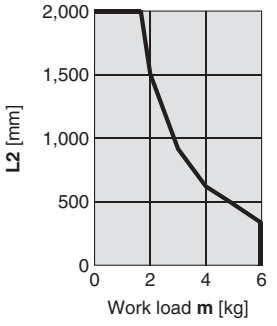
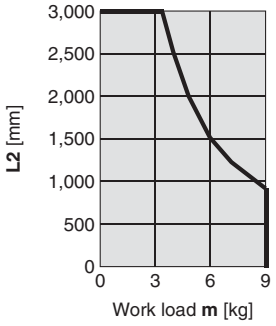
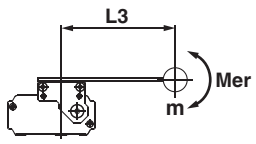
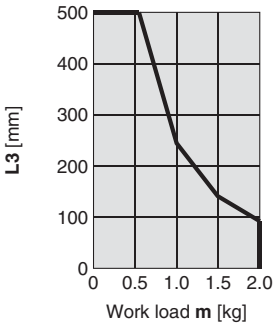
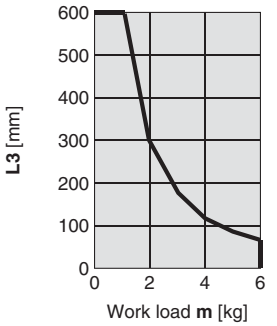
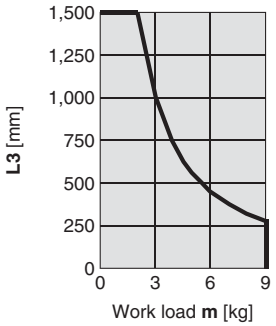
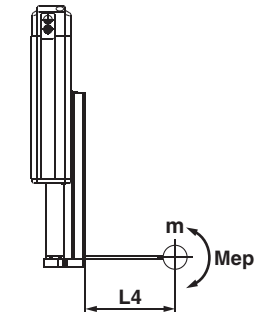
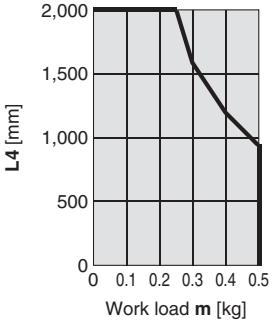
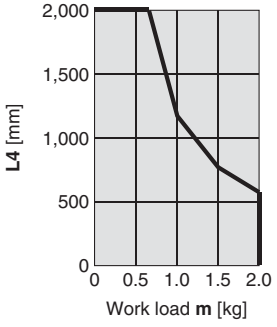
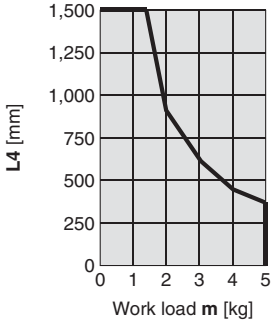
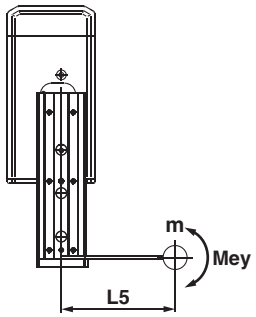
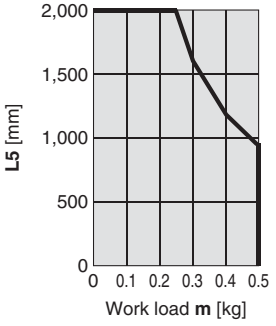
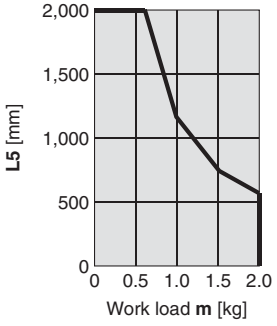
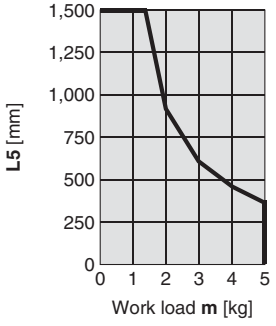
Static Allowable Moment

Model		LESH8		LESH16		LESH25		
Stroke	[mm]	50	75	50	100	50	100	150
Pitching	[N·m]	11		26	43	77	112	155
Yawing	[N·m]	11						
Rolling	[N·m]	12		48		146	177	152

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang when the center of gravity of the workpiece overhangs in one direction. When the center of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation. http://www.smcworld.com

Acceleration/Deceleration —— 5,000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model LESH8	Model LESH16	Model LESH25
Horizontal		Pitching Mep			
		Yawing Mey			
		Rolling Mer			
Vertical		Pitching Mep			
		Yawing Mey			

Series LESH
Model Selection 2

Selection Procedure

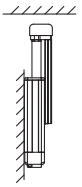
For the compact type LES series, refer to page 5.

Step 1 Check the required force. → **Step 2** Check the set value of pushing force. → **Step 3** Check the duty ratio.

Selection Example

Operating conditions

- Pushing force: 90 [N]
- Workpiece mass: 1 [kg]
- Speed: 100 [mm/s]
- Stroke: 100 [mm]
- Mounting orientation: Vertical upward
- Pushing time + Operation (A): 1.5 seconds
- All cycle time (B): 6 seconds



Step 1 Check the required force.

Calculate the approximate required force for pushing operation.
Selection example) • Pushing force: 90 [N]
• Workpiece mass: 1 [kg]
Therefore, the approximate required force can be obtained as 90 + 10 = 100 [N].
Select the target model based on the approximate required force with reference to the specifications (Pages 35 and 36).
Selection example) Based on the specifications,
• Approximate required force: 100 [N]
• Speed: 100 [mm/s]
Therefore, the **LESH25□** is temporarily selected.
Then, calculate the required force for pushing operation.
If the mounting position is vertical upward, add the actuator table weight.
Selection example) Based on the <Table weight>,
• **LESH25□** table weight: 1.3 [kg]
Therefore, the required force can be obtained as 100 + 13 = 113 [N].

Step 2 Check the set value of pushing force.

<Set value of pushing force–Force graph> (Page 30)

Select the target model based on the required force with reference to the <Set value of pushing force–Force graph>, and confirm the set value of pushing force.
Selection example) Based on the graph shown on the right side,
• Required force: 113 [N]
Therefore, the **LESH25□K** is temporarily selected.
This set value of pushing force is 40 [%].

Step 3 Check the duty ratio.

Confirm the allowable duty ratio based on the set value of pushing force with reference to the <Allowable duty ratio>.
Selection example) Based on the <Allowable duty ratio>,
• Set value of pushing force: 40 [%]
Therefore, the allowable duty ratio can be obtained as 30 [%].
Calculate the duty ratio for operating conditions, and confirm it does not exceed the allowable duty ratio.
Selection example) • Pushing time + Operation (A): 1.5 seconds
• All cycle time (B): 6 seconds
Therefore, the duty ratio can be obtained as 1.5/6 x 100 = 25 [%], and this is the allowable range.

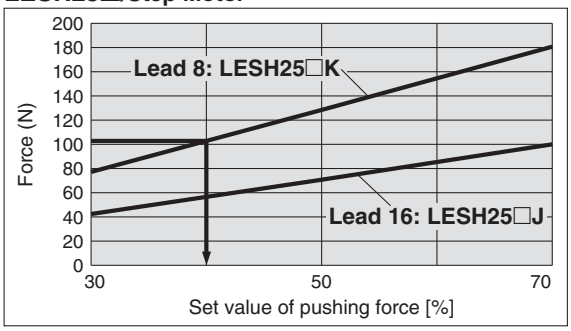
Based on the above calculation result, the LESH25□K-100 is selected.
For allowable moment, the selection procedure is the same as the positioning control.

Table Weight [kg]

Model	Stroke [mm]			
	50	75	100	150
LESH8	0.2	0.3	—	—
LESH16	0.4	—	0.7	—
LESH25	0.9	—	1.3	1.7

∗ If the mounting position is vertical upward, add the table weight.

LESH25□/Step Motor



<Set value of pushing force–Force graph>

Allowable Duty Ratio

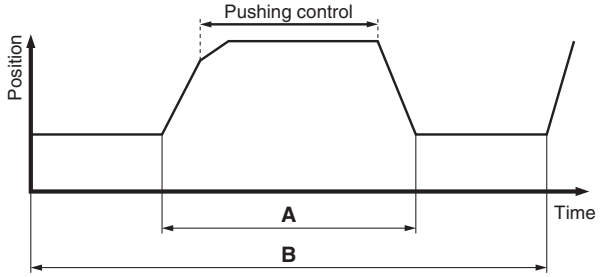
Step Motor (Servo/24 VDC)

Set value of pushing force (%)	Duty ratio (%)	Continuous pushing time (minute)
30	—	—
50 or less	30 or less	5 or less
70 or less	20 or less	3 or less

Servo Motor (24 VDC)

Set value of pushing force (%)	Duty ratio (%)	Continuous pushing time (minute)
50	—	—
75 or less	30 or less	5 or less
100 or less	20 or less	3 or less

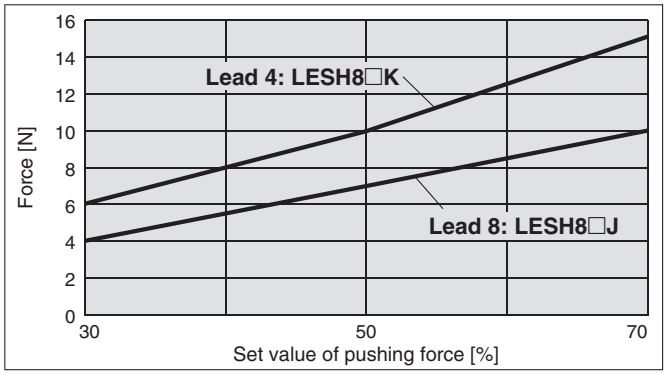
∗ The pushing force of the LESH8□A is up to 75 %.



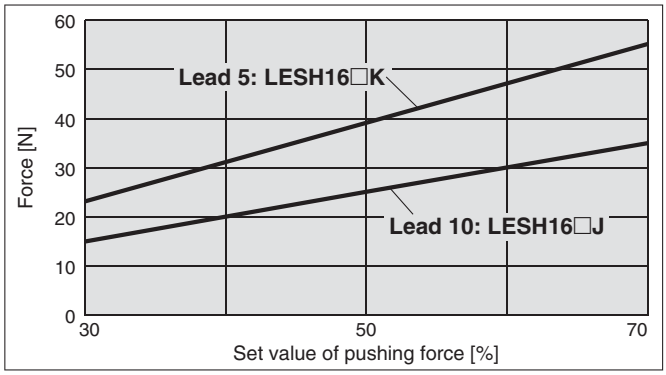
Set Value of Pushing Force–Force Graph

Step Motor (Servo/24 VDC)

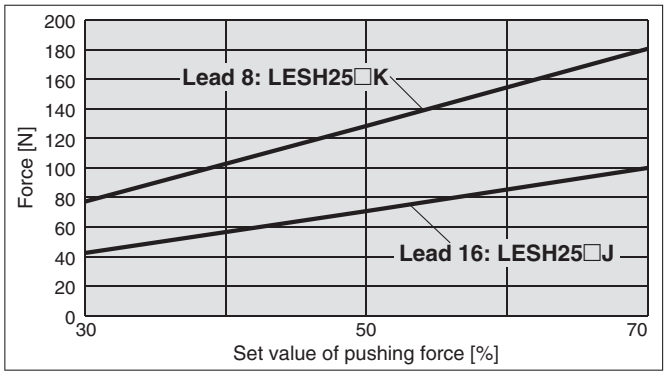
LESH8□



LESH16□

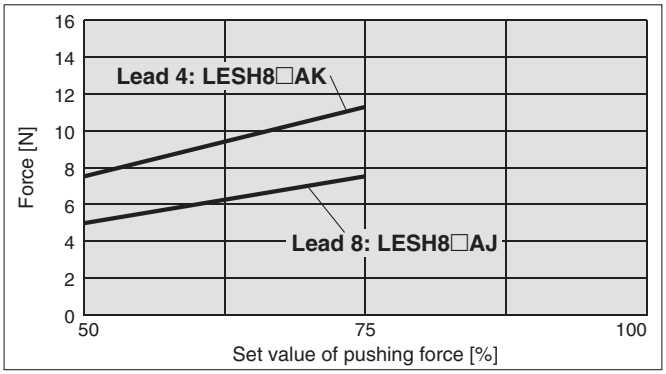


LESH25□

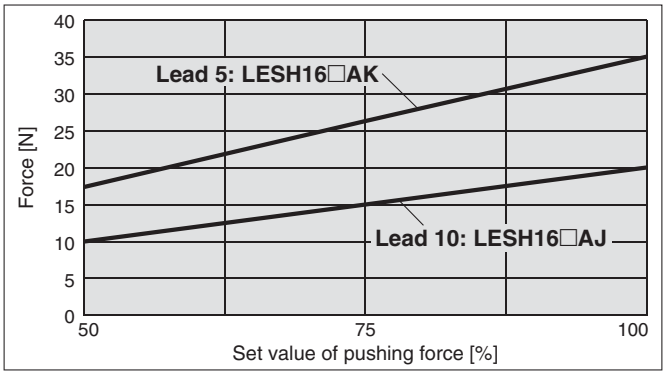


Servo Motor (24 VDC)

LESH8□A



LESH16□A



LESH25$^{R}_{L}$A

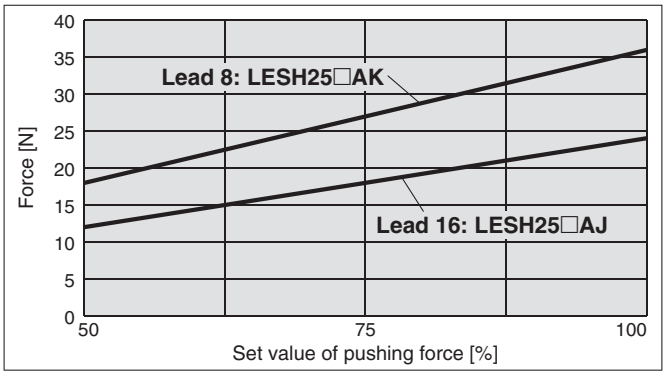
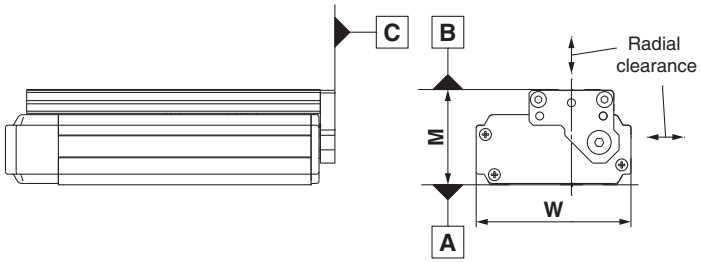


Table Accuracy

* These values are initial guideline values.

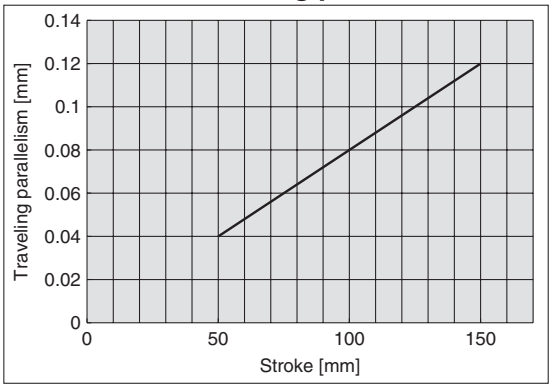


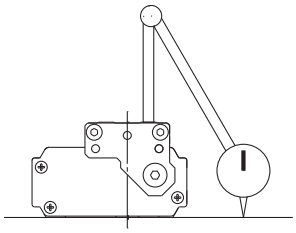
Model	LESH8	LESH16	LESH25
B side parallelism to A side [mm]	Refer to Table 1.		
B side traveling parallelism to A side [mm]	Refer to Graph 1.		
C side perpendicularity to A side [mm]	0.05	0.05	0.05
M dimension tolerance [mm]	±0.3		
W dimension tolerance [mm]	±0.2		
Radial clearance [μm]	−4 to 0	−10 to 0	−14 to 0

Table 1 B side parallelism to A side

Model	Stroke [mm]			
	50	75	100	150
LESH8	0.055	0.065	—	—
LESH16	0.05	—	0.08	—
LESH25	0.06	—	0.08	0.125

Graph 1 B side traveling parallelism to A side





Traveling parallelism:
The amount of deflection on a dial gauge when the table travels a full stroke with the body secured on a reference base surface

Table Deflection (Reference Value)

* These values are initial guideline values.

Table displacement due to pitch moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.

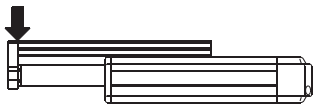


Table displacement due to yaw moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.

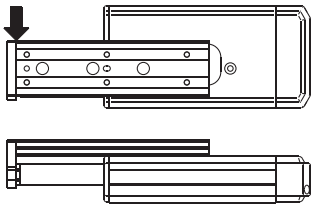
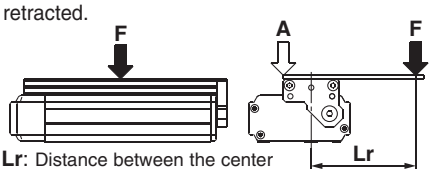
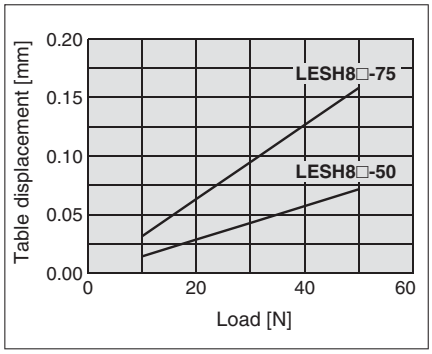


Table displacement due to roll moment load
Table displacement of section A when loads are applied to the section F with the slide table retracted.

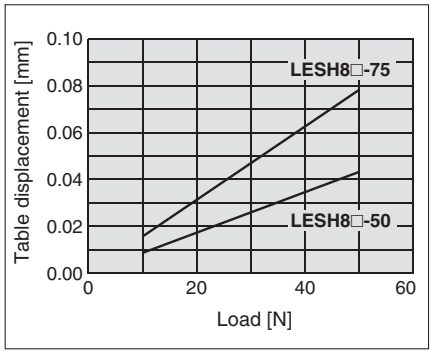


Lr: Distance between the center of the table and the work load center of gravity

LESH8

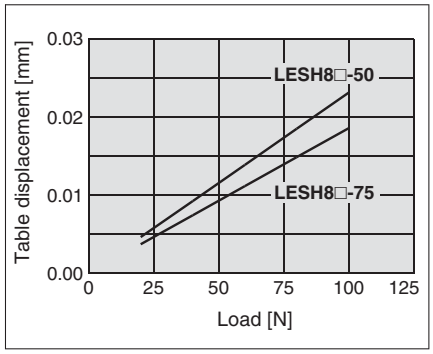


LESH8

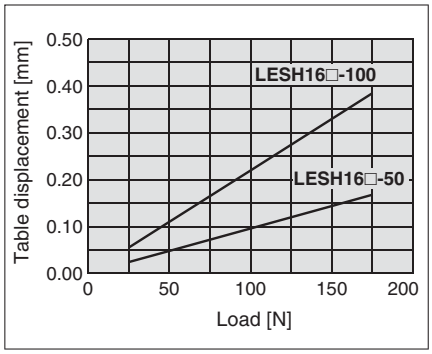


LESH8

Lr = 70 mm



LESH16



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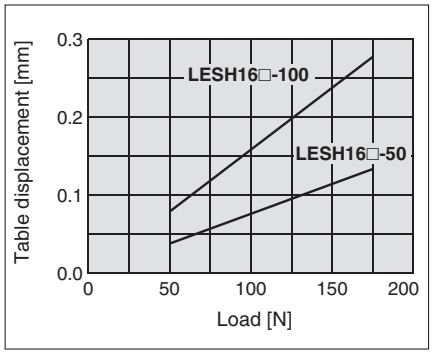
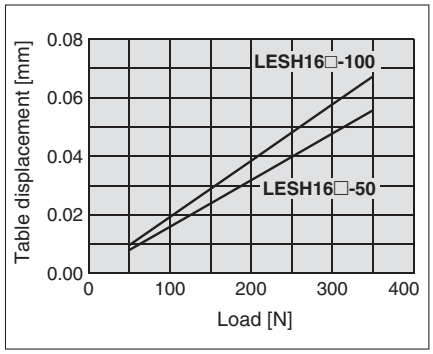
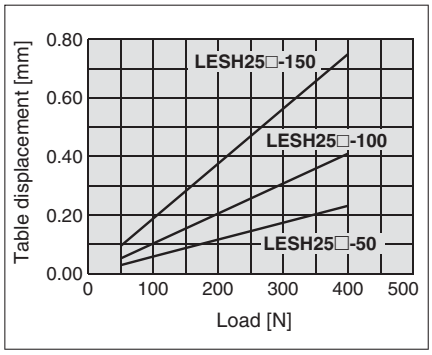


LESH16

Lr = 120 mm



LESH25



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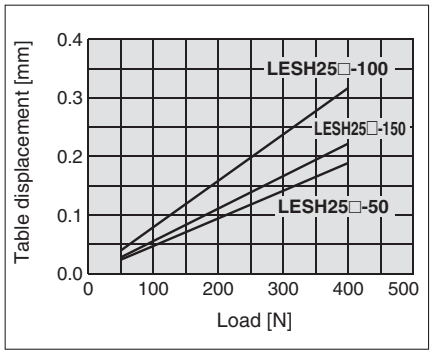
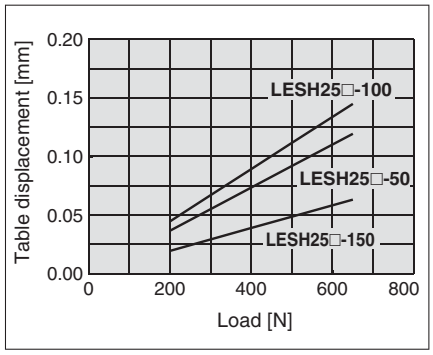


LESH25

Lr = 200 mm



Electric Slide Table/High Rigidity Type

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

Series LESH

LESH8, 16, 25

EtherNet/IP™ DeviceNet™ IO-Link PROFINET EtherCAT® Compatible ▶Page 86

Multi-Axis Step Motor Controller Compatible ▶Page 96

How to Order

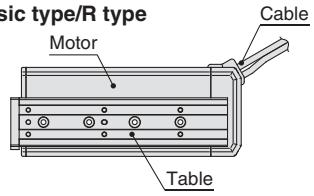
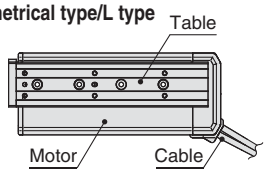
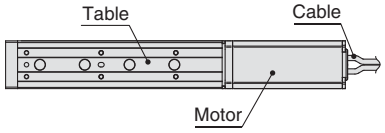
LESH 8 R ☐ J – 50 ☐ ☐ ☐ – S 1 6P 1 ☐

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

❶ Size

8
16
25

❷ Motor mounting position

R	Basic type/R type	
L	Symmetrical type/L type	
D	In-line motor type/D type	

❸ Motor type

Symbol	Type	Compatible controllers/ driver
—	Step motor (Servo/24 VDC)	LECP6 LECP1 LECPA
A	Servo motor* (24 VDC)	LECA6

* LESH25DA is not available.

❹ Lead [mm]

Symbol	LESH8	LESH16	LESH25
J	8	10	16
K	4	5	8

❺ Stroke [mm]

Model \ Stroke	50	75	100	150
LESH8	●*	●	—	—
LESH16	●*	—	●	—
LESH25	●	—	●	●

* R/L type with lock is not available.

❻ Motor option

—	Without option
B	With lock

❼ Body option

—	Without option
S	Dustproof specification*

* For R/L type (IP5X equivalent), a scraper is mounted on the rod cover, and gaskets are mounted on both the end covers. For D type, a scraper is mounted on the rod cover.

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LES 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 61 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.

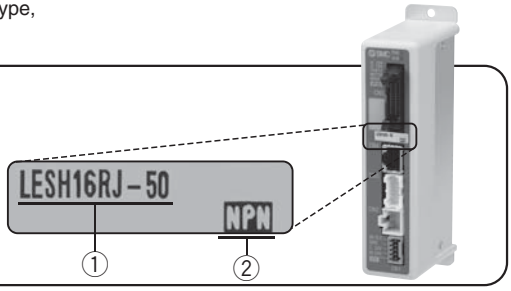
The actuator and controller/driver are sold as a package.

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

<Check the following before use.>

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

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



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

SMC

Basic type (R type)

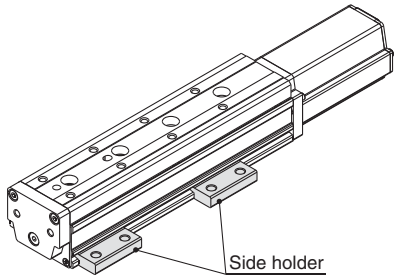
Symmetrical type (L type)

In-line motor type (D type)

❽ Mounting*

Symbol	Mounting	R type L type	D type
—	Without side holder	●	●
H	With side holder (4 pcs.)	—	●

* Refer to page 48 for details.



❾ Actuator cable type*1

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

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

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 3) on page 35.

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 (Pulse input type)	NPN
AP		PNP

*1 Refer to page 52 for the detailed specifications of the controller/driver.
*2 Only available for the motor type "Step motor."

⓬ I/O cable length [m]*1

—	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 61 (For LECP6/LECA6), page 74 (For LECP1) or page 81 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

⓭ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately. Refer to page 54 for details.

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 53		Page 68	Page 75

Specifications

Step Motor (Servo/24 VDC)

Model			LESH8□		LESH16□		LESH25□	
Actuator specifications	Stroke [mm]		50, 75		50, 100		50, 100, 150	
	Work load [kg] Note 1) 3)	Horizontal	2	1	6	4	9	6
		Vertical	0.5	0.25	2	1	4	2
	Pushing force [N] 30 % to 70 % Note 2) 3)		6 to 15	4 to 10	23.5 to 55	15 to 35	77 to 180	43 to 100
	Speed [mm/s] Note 1) 3)		10 to 200	20 to 400	10 to 200	20 to 400	10 to 150	20 to 400
	Pushing speed [mm/s]		10 to 20	20	10 to 20	20	10 to 20	20
	Max. acceleration/deceleration [mm/s²]		5,000					
	Positioning repeatability [mm]		±0.05					
	Lost motion [mm] Note 4)		0.15 or less					
	Screw lead [mm]		4	8	5	10	8	16
	Impact/Vibration resistance [m/s²] Note 5)		50/20					
	Actuation type		Slide screw + Belt (R/L type), Slide screw (D type)					
	Guide type		Linear guide (Circulating type)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Electric specifications	Motor size		□20		□28		□42	
	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 6)		20		43		67	
	Standby power consumption when operating [W] Note 7)		7		15		13	
	Max. instantaneous power consumption [W] Note 8)		35		60		74	
Lock unit specifications	Type	Note 9)	Non-magnetizing lock					
	Holding force [N]		24	2.5	300	48	500	77
	Power consumption [W] Note 10)		3.5		2.9		5	
	Rated voltage [V]		24 VDC ±10 %					

Note 1) Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 26.
Note 2) Pushing force accuracy is ±20 % (F.S.).
Note 3) 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 4) A reference value for correcting an error in reciprocal operation.
Note 5) 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.)
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.)
Note 6) The power consumption (including the controller) is for when the actuator is operating.
Note 7) 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 8) 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 9) With lock only
Note 10) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model			LESH8□A		LESH16□A		LESH25$^{R}_{L}$A Note 1)	
Actuator specifications	Stroke [mm]		50, 75		50, 100		50, 100, 150	
	Work load [kg]	Horizontal	2	1	5	2.5	6	4
		Vertical	0.5	0.25	2	1	2.5	1.5
	Pushing force 50 to 100 % [N] Note 2)		7.5 to 11	5 to 7.5	17.5 to 35	10 to 20	18 to 36	12 to 24
	Speed [mm/s]		10 to 200	20 to 400	10 to 200	20 to 400	10 to 150	20 to 400
	Pushing speed [mm/s] Note 2)		1 to 20					
	Max. acceleration/deceleration [mm/s^2]		5,000					
	Positioning repeatability [mm]		±0.05					
	Lost motion [mm] Note 3)		0.15 or less					
	Screw lead [mm]		4	8	5	10	8	16
	Impact/Vibration resistance [m/s^2] Note 4)		50/20					
	Actuation type		Slide screw + Belt (R/L type), Slide screw (D type)					
	Guide type		Linear guide (Circulating type)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Electric specifications	Motor size		□20		□28		□42	
	Motor output [W]		10		30		36	
	Motor type		Servo motor (24 VDC)					
	Encoder		Incremental A/B/Z phase (800 pulse/rotation)					
	Rated voltage [V]		24 VDC ±10 %					
	Power consumption [W] Note 5)		58		84		144	
	Standby power consumption when operating [W] Note 6)		4 (Horizontal)/7 (Vertical)		2 (Horizontal)/15 (Vertical)		4 (Horizontal)/43 (Vertical)	
	Max. instantaneous power consumption [W] Note 7)		84		124		158	
Lock unit specifications	Type	Note 8)	Non-magnetizing lock					
	Holding force [N]		24	2.5	300	48	500	77
	Power consumption [W] Note 9)		3.5		3.6		5	
	Rated voltage [V]		24 VDC ±10 %					

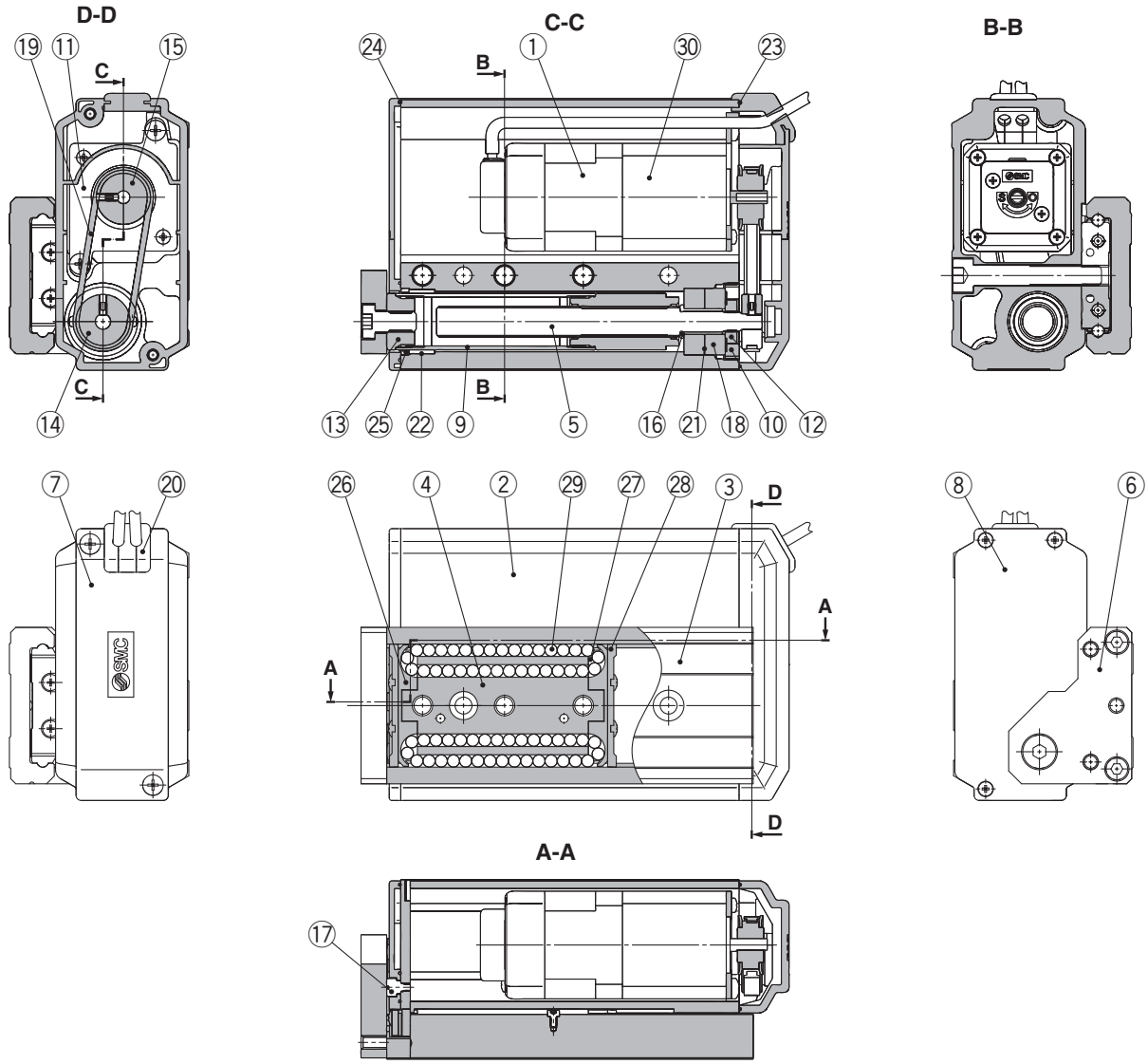
Note 1) LESH25DA is not available.
Note 2) The pushing force values for LESH8□A is 50 % to 75 %. Pushing force accuracy is ±20 % (F.S.).
Note 3) A reference value for correcting an error in reciprocal operation.
Note 4) Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 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.)
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.)
Note 5) The power consumption (including the controller) is for when the actuator is operating.
Note 6) 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 7) 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 8) With lock only
Note 9) For an actuator with lock, add the power consumption for the lock.

Weight

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

Model		Basic type/R type, Symmetrical type/L type							In-line motor type/D type						
		LESH8$^{R}_{L}$(A)		LESH16$^{R}_{L}$(A)		LESH25$^{R}_{L}$(A)			LESH8D(A)		LESH16D(A)		LESH25D		
Stroke [mm]		50	75	50	100	50	100	150	50	75	50	100	50	100	150
Product weight [kg]	Without lock	0.55	0.70	1.15	1.60	2.50	3.30	4.26	0.57	0.70	1.25	1.70	2.52	3.27	3.60
	With lock	—	0.76	—	1.71	2.84	3.64	4.60	0.63	0.76	1.36	1.81	2.86	3.61	3.94

Construction: Basic Type/R Type, Symmetrical Type/L Type



Component Parts

No.	Description	Material	Note
1	**Motor**	—	—
2	**Body**	Aluminium alloy	Anodised
3	**Table**	Stainless steel	Heat treatment + Electroless nickel plated
4	**Guide block**	Stainless steel	Heat treatment
5	**Lead screw**	Stainless steel	Heat treatment + Specially treated
6	**End plate**	Aluminium alloy	Anodised
7	**Pulley cover**	Synthetic resin	—
8	**End cover**	Synthetic resin	—
9	**Rod**	Stainless steel	—
10	**Bearing stopper**	Structural steel	Electroless nickel plated
		Brass	Electroless nickel plated (LESH25R/L□ only)
11	**Motor plate**	Structural steel	
12	**Lock nut**	Structural steel	Chromate treated
13	**Socket**	Structural steel	Electroless nickel plated
14	**Lead screw pulley**	Aluminium alloy	—
15	**Motor pulley**	Aluminium alloy	—
16	**Spacer**	Stainless steel	LESH25R/L□ only
17	**Origin stopper**	Structural steel	Electroless nickel plated
18	**Bearing**	—	—
19	**Belt**	—	—
20	**Grommet**	Synthetic resin	—
21	**Sim ring**	Structural steel	—

No.	Description	Material	Note
22	**Bushing**	—	Dustproof specification only
23	**Pulley gasket**	NBR	Dustproof specification only
24	**End gasket**	NBR	Dustproof specification only
25	**Scraper**	NBR	Dustproof specification only/Rod
26	**Cover**	Synthetic resin	—
27	**Return guide**	Synthetic resin	—
28	**Scraper**	Stainless steel + NBR	Linear guide
29	**Steel ball**	Special steel	—
30	**Lock**	—	With lock only

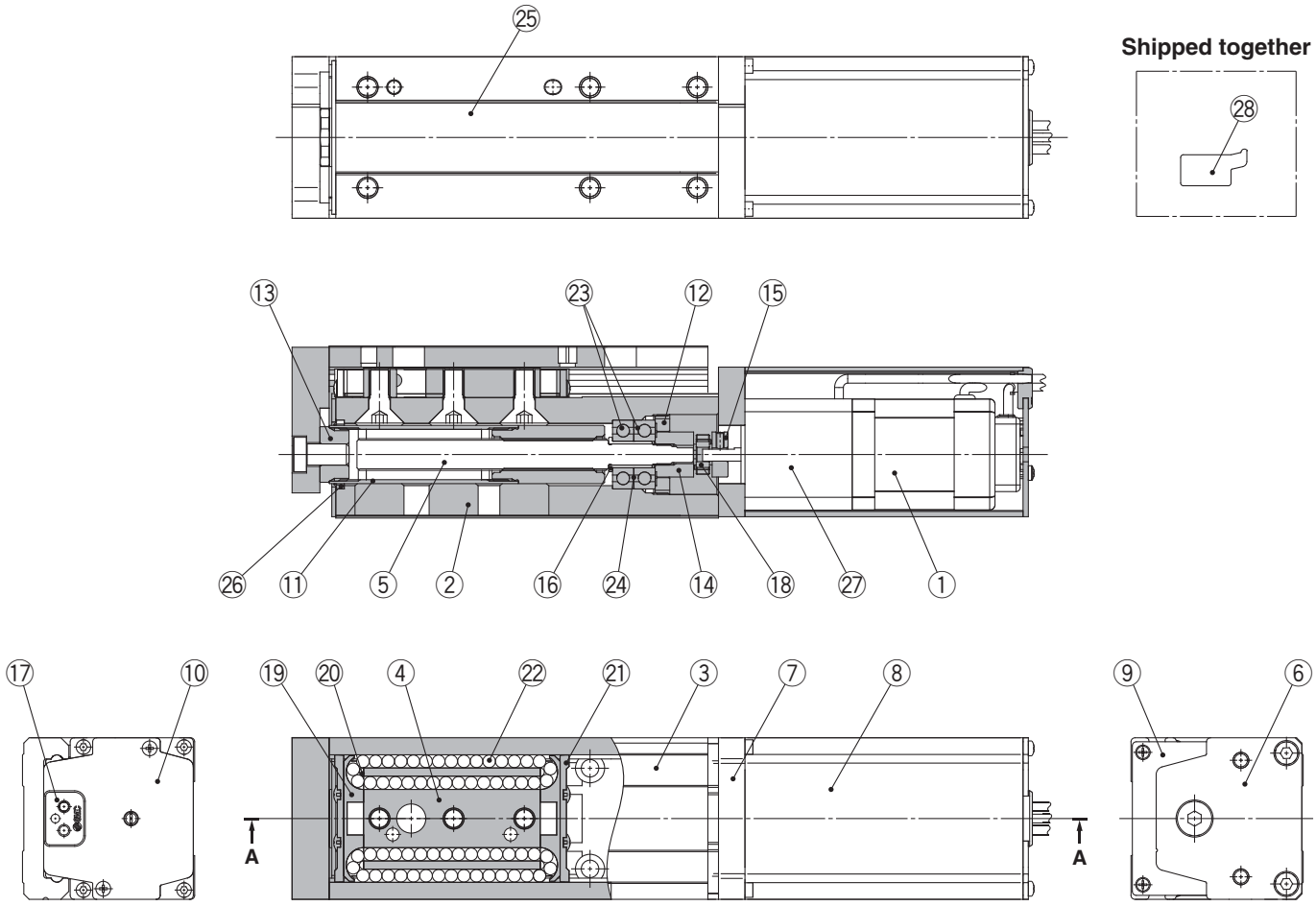
Replacement Parts/Belt

Model	Order no.
LESH8□	LE-D-1-1
LESH16□	LE-D-1-2
LESH25□	LE-D-1-3
LESH25□A	LE-D-1-4

Replacement Parts/Grease Pack

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

Construction: In-line Motor Type/D Type



Component Parts

No.	Description	Material	Note
1	**Motor**	—	—
2	**Body**	Aluminium alloy	Anodised
3	**Table**	Stainless steel	Heat treatment + Electroless nickel plated
4	**Guide block**	Stainless steel	Heat treatment
5	**Lead screw**	Stainless steel	Heat treatment + Specially treated
6	**End plate**	Aluminium alloy	Anodised
7	**Motor flange**	Aluminium alloy	Anodised
8	**Motor cover**	Aluminium alloy	Anodised
9	**End cover**	Aluminium alloy	Anodised
10	**Motor end cover**	Aluminium alloy	Anodised
11	**Rod**	Stainless steel	—
12	**Bearing stopper**	Structural steel	Electroless nickel plated
		Brass	Electroless nickel plated (LESH25D□ only)
13	**Socket**	Structural steel	Electroless nickel plated
14	**Hub (Lead screw side)**	Aluminium alloy	—
15	**Hub (Motor side)**	Aluminium alloy	—
16	**Spacer**	Stainless steel	LESH25D□ only
17	**Grommet**	NBR	—
18	**Spider**	NBR	—
19	**Cover**	Synthetic resin	—
20	**Return guide**	Synthetic resin	—
21	**Scraper**	Stainless steel + NBR	Linear guide
22	**Steel ball**	Special steel	—
23	**Bearing**	—	—
24	**Sim ring**	Structural steel	—
25	**Masking tape**	—	—
26	**Scraper**	NBR	Dustproof specification only/ Rod
27	**Lock**	—	With lock only
28	**Side holder**	Aluminium alloy	Anodised

Optional Parts/Side Holder

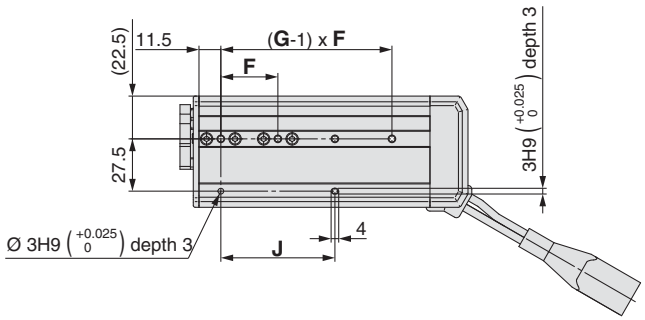
Model	Order no.
LESH8D	LE-D-3-1
LESH16D	LE-D-3-2
LESH25D	LE-D-3-3

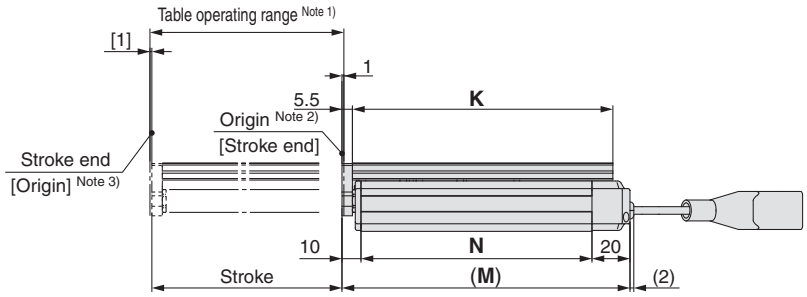
Replacement Parts/Grease Pack

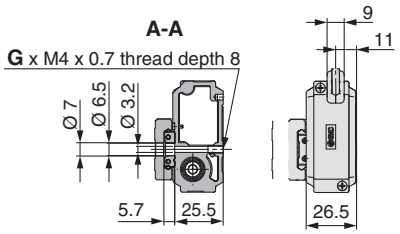
Applied portion	Order no.
Guide unit	GR-S-010 (10 g) GR-S-020 (20 g)

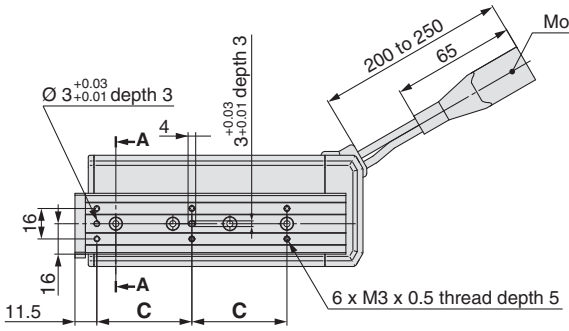
Dimensions: Basic Type (R Type)

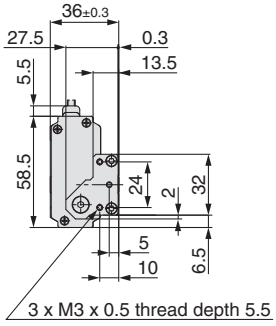
LESH8R



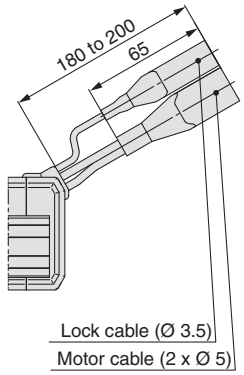




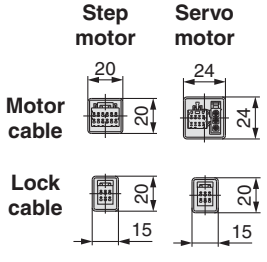




With lock



Cable



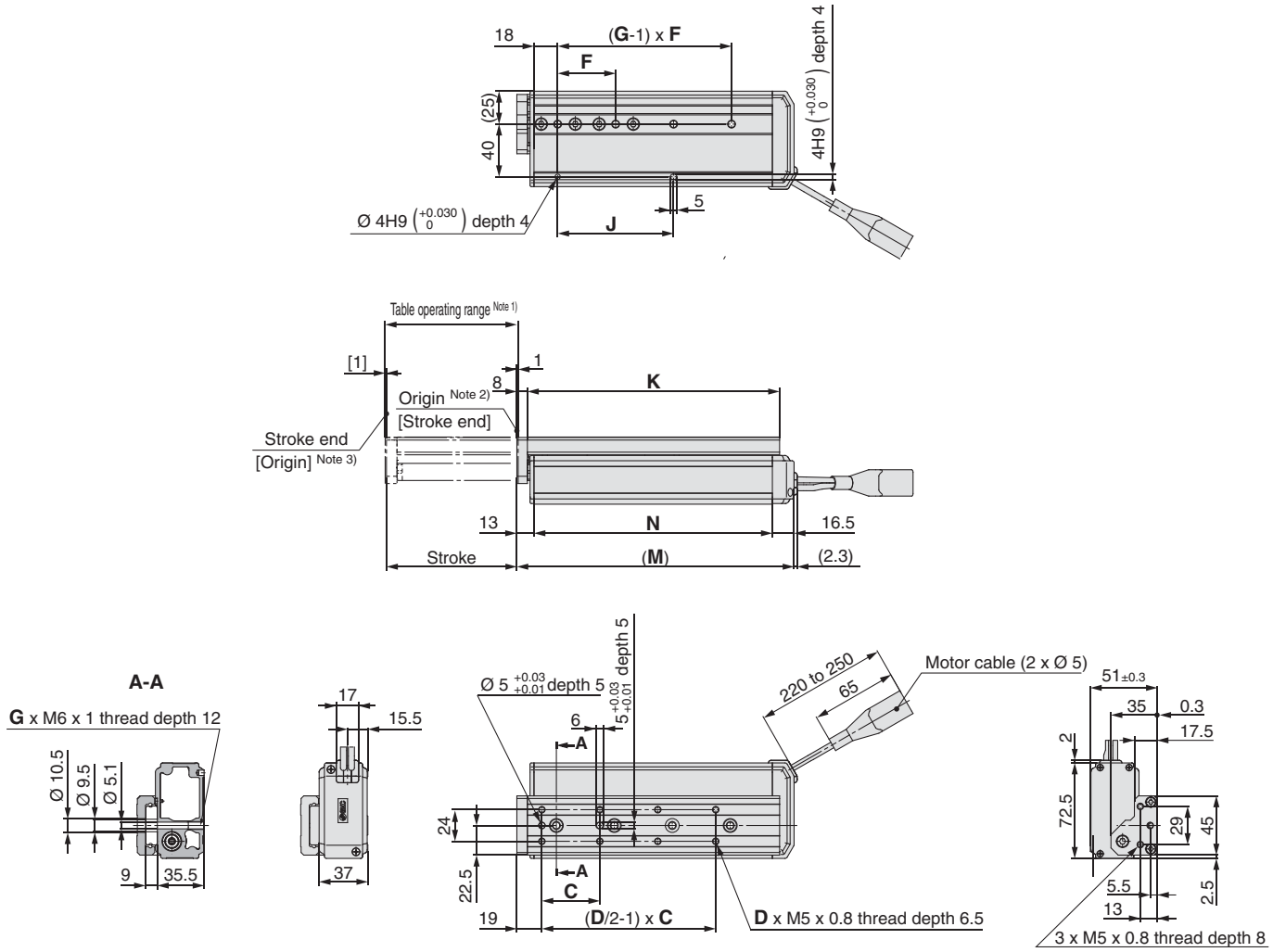
[mm]

Model	C	F	G	J	K	M	N
LESH8R□□-50□□-□□□□□	46	29	3	58	111	125.5	95.5
LESH8R□□-75□□-□□□□□	50	30	4	60	137	151.5	121.5

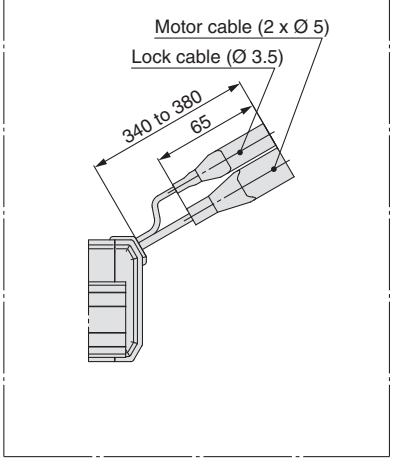
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the work pieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to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

Dimensions: Basic Type/R Type

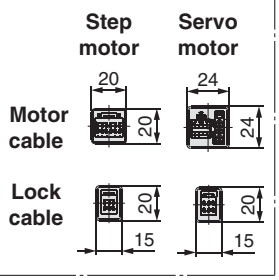
LESH16R



With lock



Connector



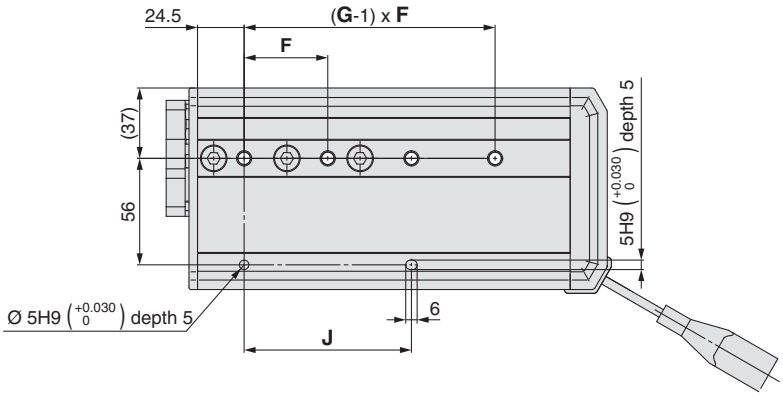
[mm]

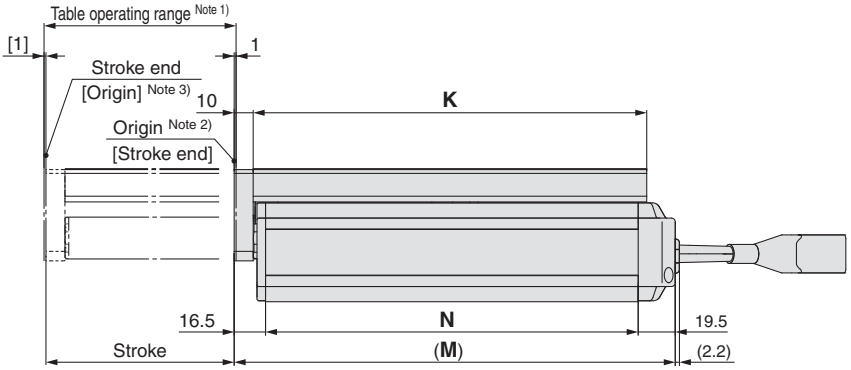
Model	C	D	F	G	J	K	M	N
LESH16R□□-50□□-□□□□□	40	6	45	2	45	116.5	135.5	106
LESH16R□□-100□□-□□□□□	44	8	44	4	88	191.5	210.5	181

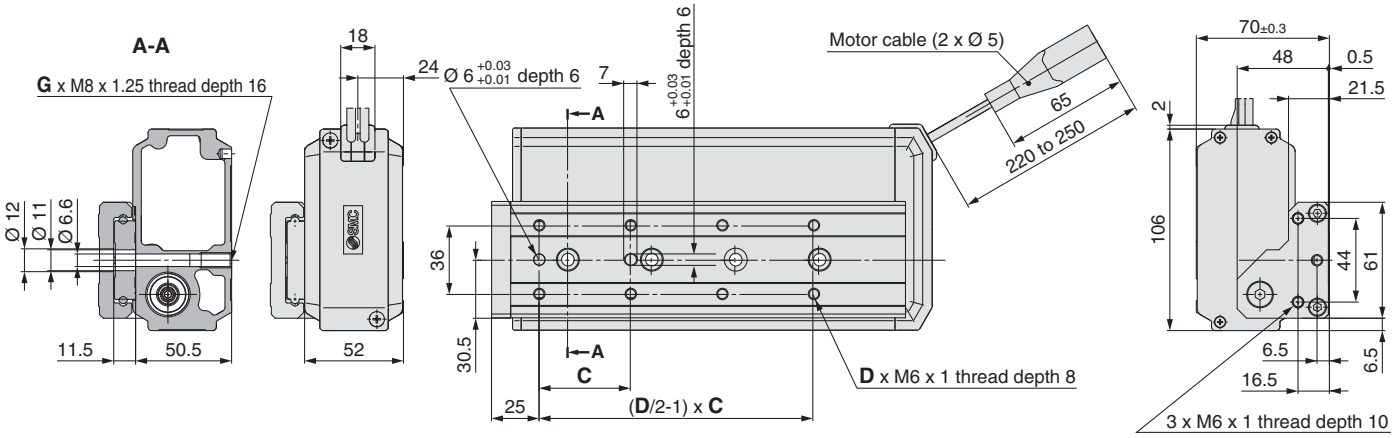
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: Basic Type/R Type

LESH25R







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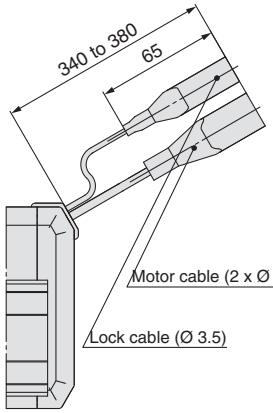
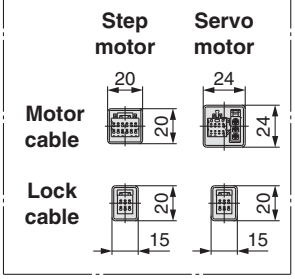


Connector



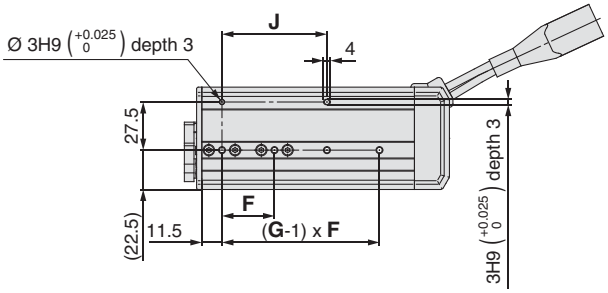
[mm]

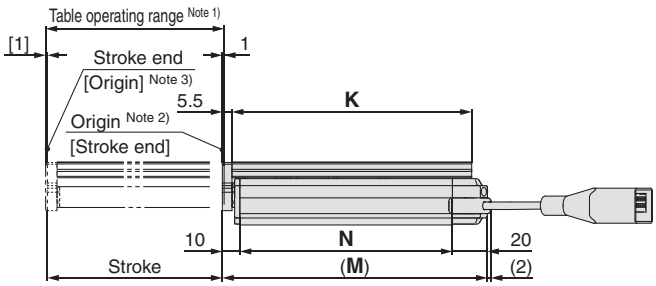
Model	C	D	F	G	J	K	M	N
LESH25R□□-50□□-□□□□□	75	4	80	2	80	143	168	132
LESH25R□□-100□□-□□□□□	48	8	44	4	88	207	232	196
LESH25R□□-150□□-□□□□□	65	8	66	4	132	285	310	274

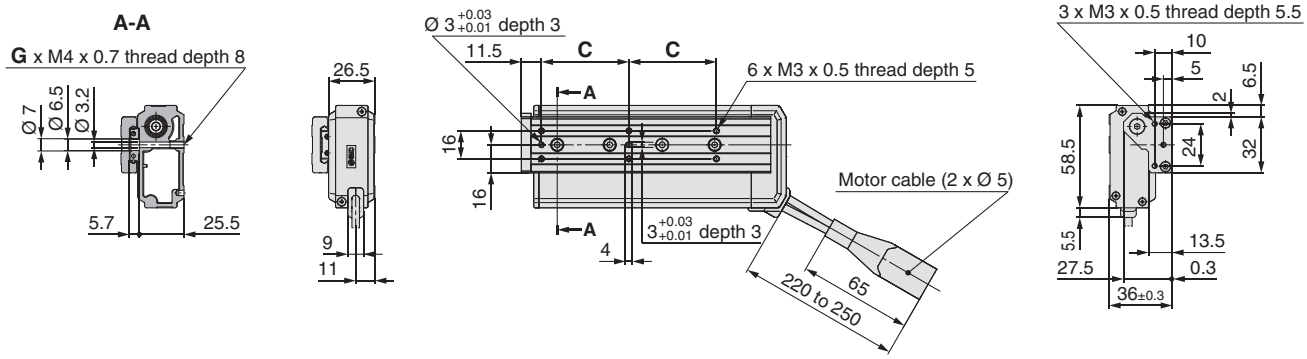
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: Symmetrical Type/L Type

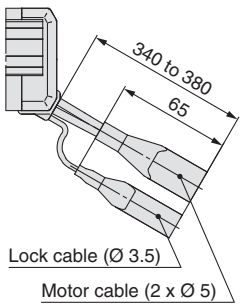
LESH8L



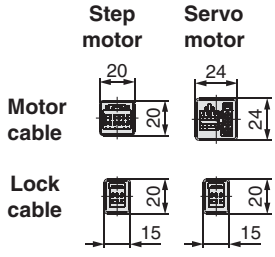




With lock



Connector



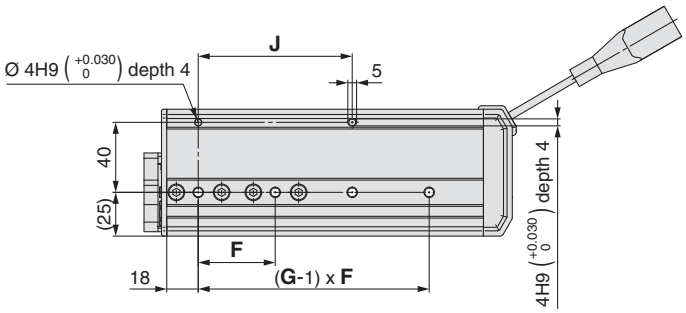
[mm]

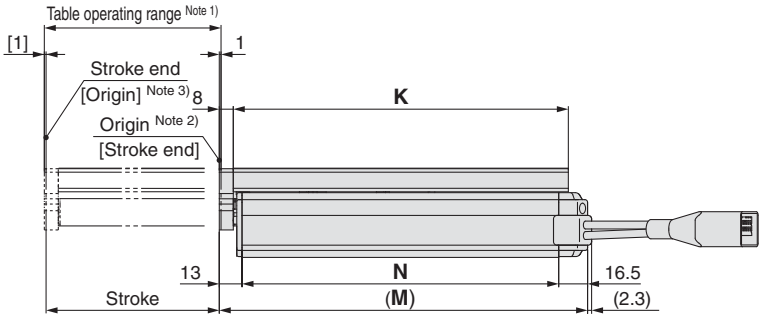
Model	C	F	G	J	K	M	N
LESH8L□□-50□□-□□□□□	46	29	3	58	111	125.5	95.5
LESH8L□□-75□□-□□□□□	50	30	4	60	137	151.5	121.5

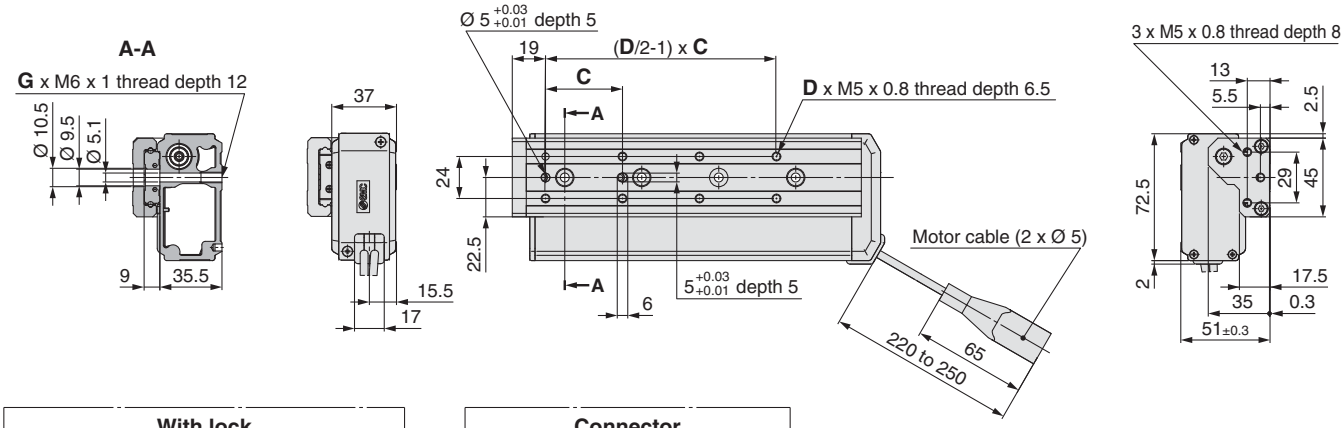
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

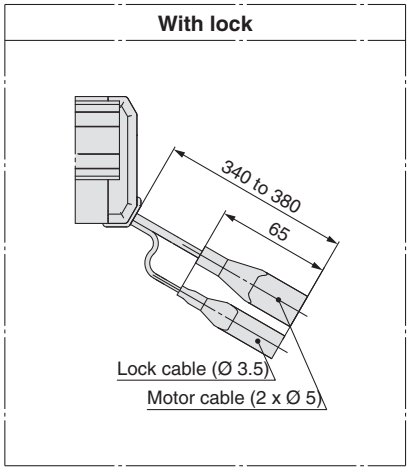
Dimensions: Symmetrical Type/L Type

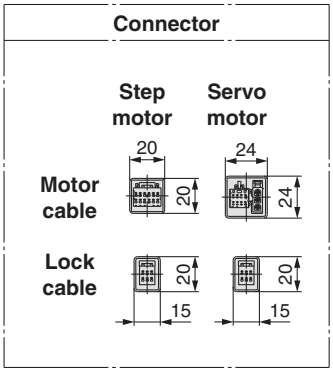
LESH16L











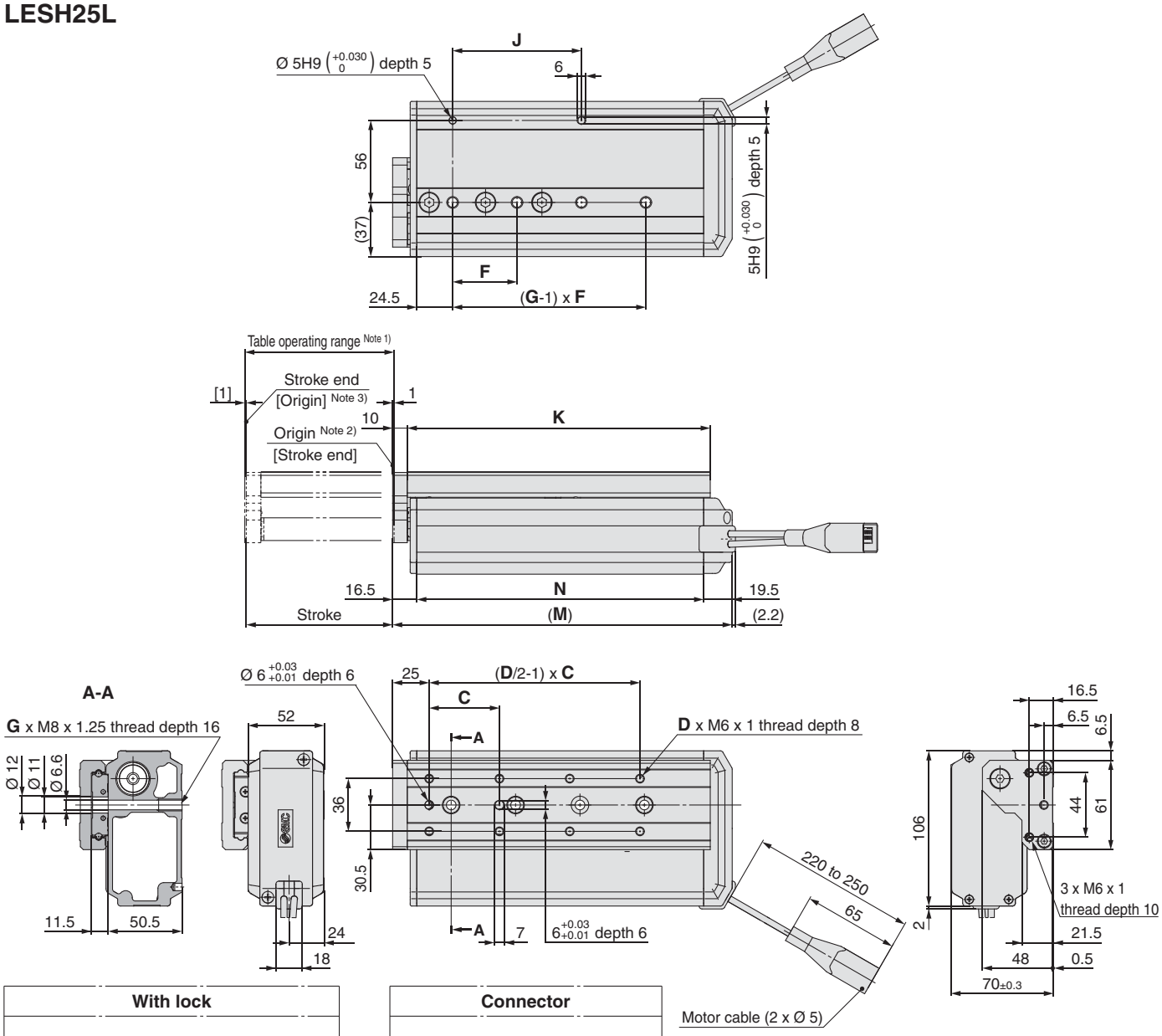
[mm]

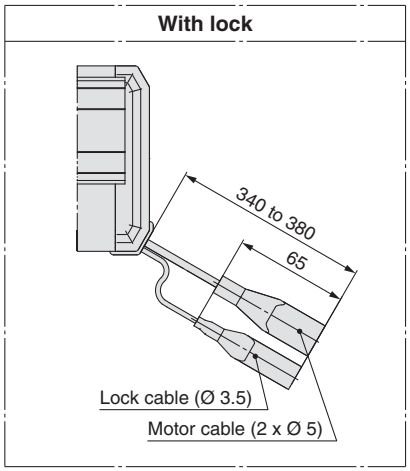
Model	C	D	F	G	J	K	M	N
LESH16L□□-50□□-□□□□□	40	6	45	2	45	116.5	135.5	106
LESH16L□□-100□□-□□□□□	44	8	44	4	88	191.5	210.5	181

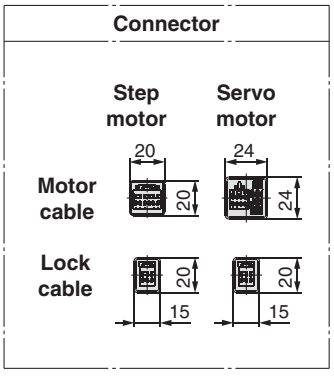
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: Symmetrical Type/L Type

LESH25L







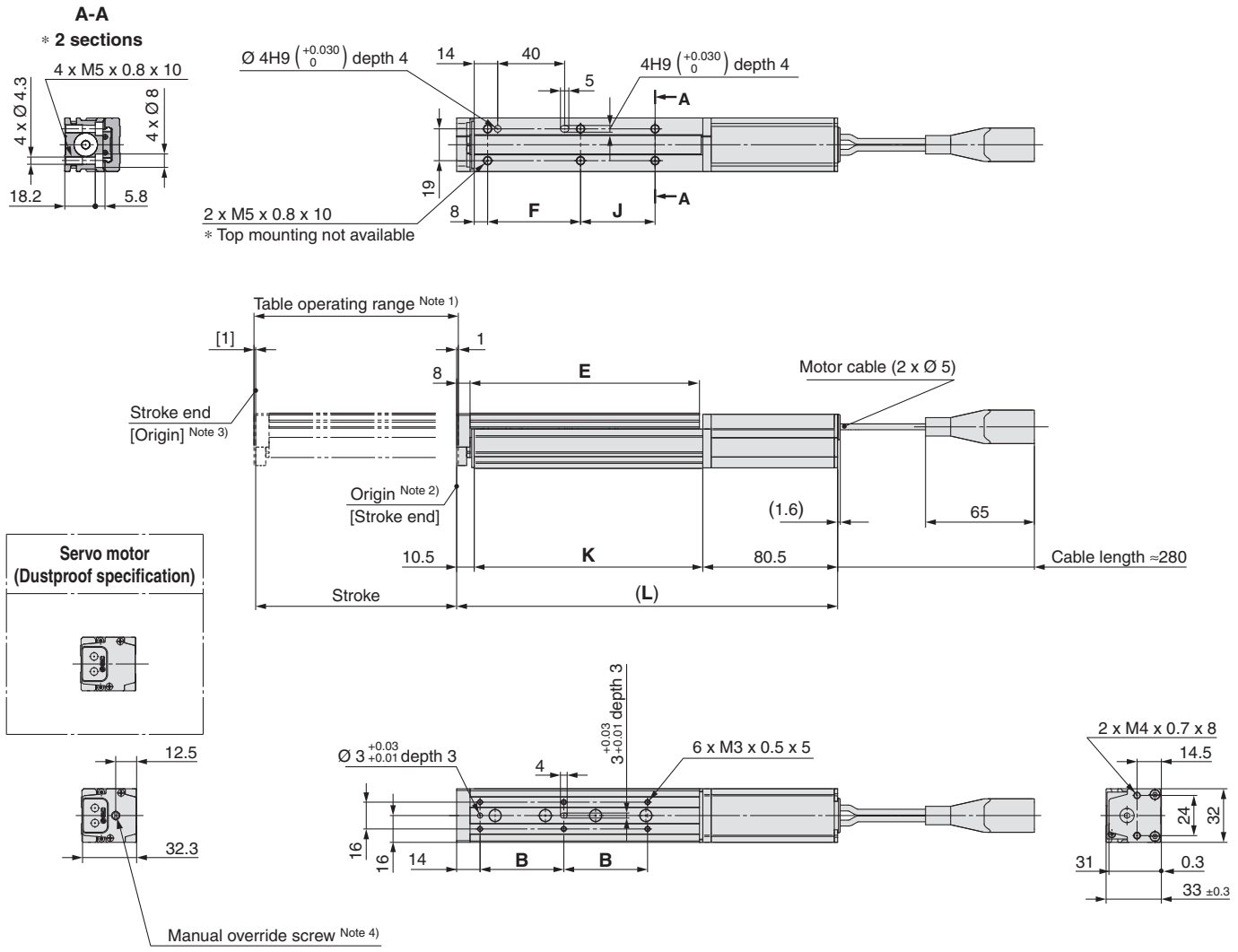
[mm]

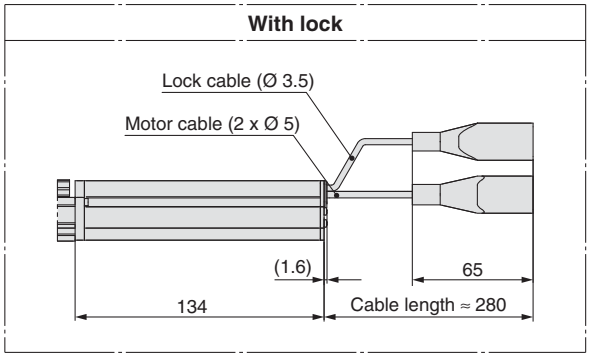
Model	C	D	F	G	J	K	M	N
LESH25L□□-50□□-□□□□□	75	4	80	2	80	143	168	132
LESH25L□□-100□□-□□□□□	48	8	44	4	88	207	232	196
LESH25L□□-150□□-□□□□□	65	8	66	4	132	285	310	274

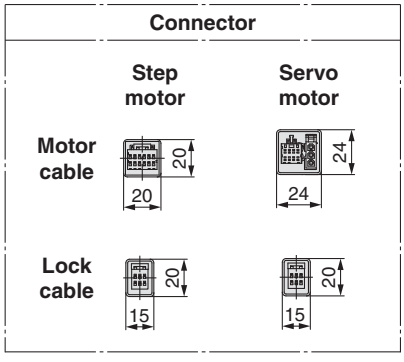
Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: In-line Motor Type/D Type

LESH8D







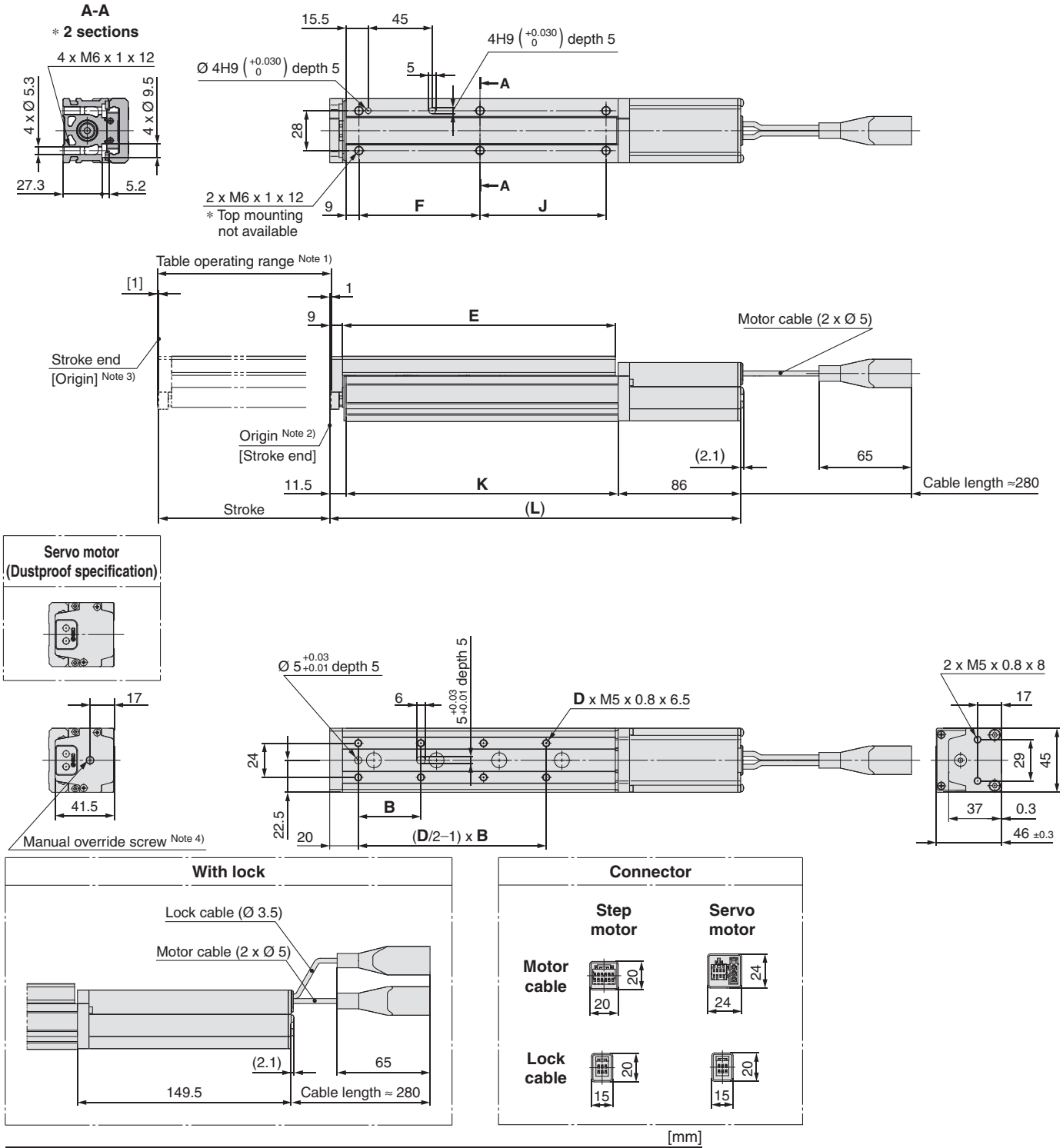
[mm]

Model	L	B	E	F	J	K
LESH8D□□-50□□-□□□□□	201.5	46	111	54.5	19.5	110.5
LESH8D□□-50B□□-□□□□□	255					
LESH8D□□-75□□-□□□□□	227.5	50	137	55.5	44.5	136.5
LESH8D□□-75B□□-□□□□□	281					

Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 16 mm. The motor end cover hole size is Ø 5.5.
Note 5) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: In-line Motor Type/D Type

LESH16D



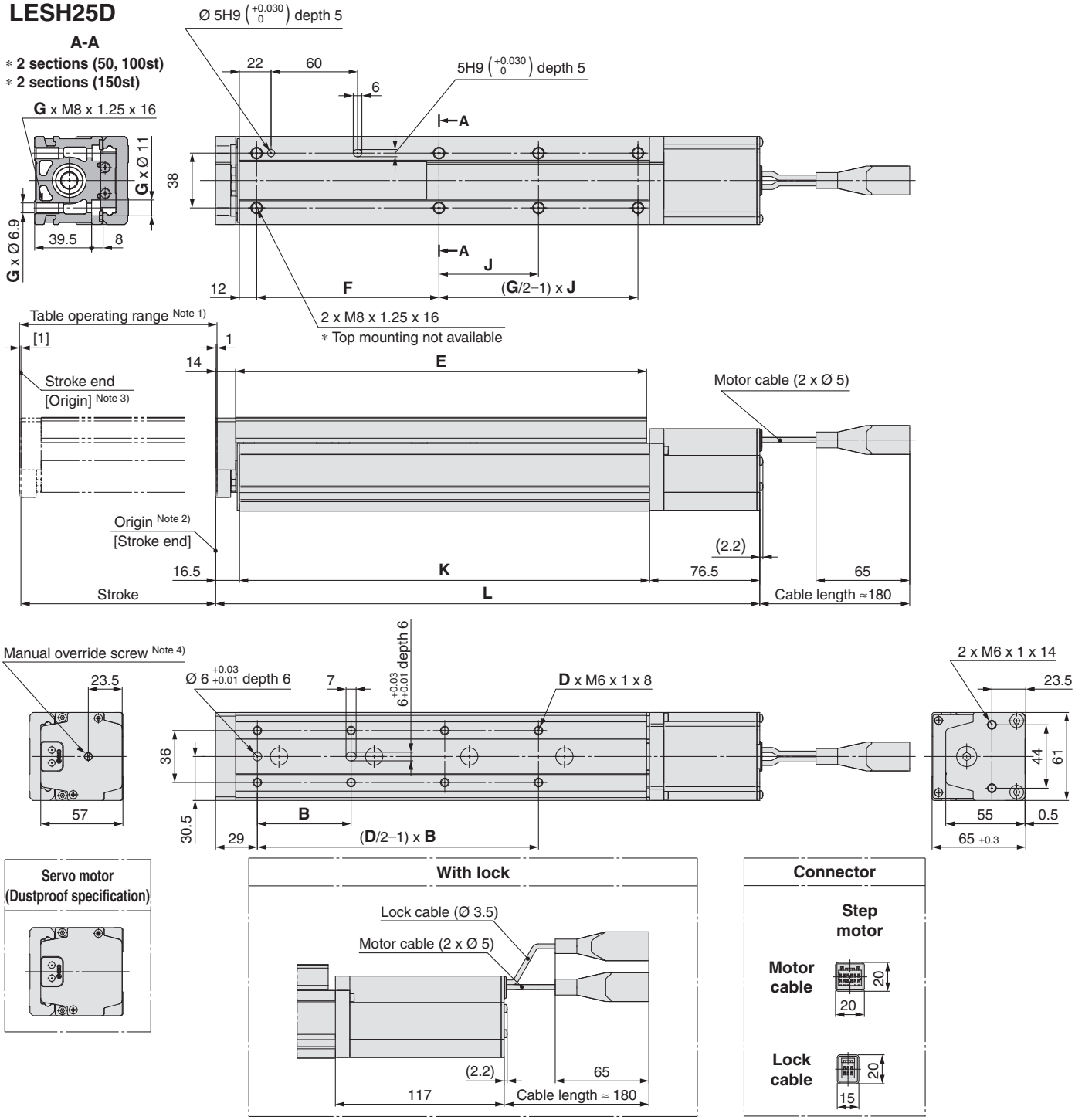
[mm]

Model	L	B	D	E	F	J	K
LESH16D□□-50□□-□□□□□	219.5	40	6	116.5	65	39.5	122
LESH16D□□-50B□□-□□□□□	283						
LESH16D□□-100□□-□□□□□	288.5	44	8	191.5	85	88.5	191
LESH16D□□-100B□□-□□□□□	352						

Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 17 mm. The motor end cover hole size is Ø 5.5.
Note 5) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Dimensions: In-line Motor Type/D Type

LESH25D

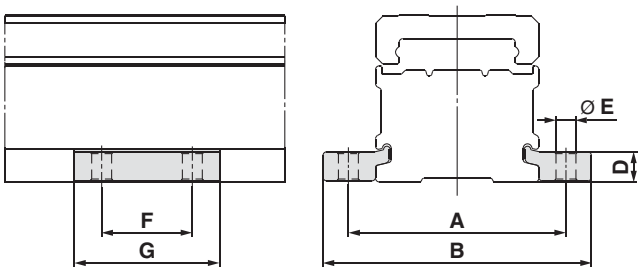


[mm]

Model	L	B	D	E	F	G	J	K
LESH25D□-50□□-□□□□□	237.5	75	4	143	84	4	40.5	144.5
LESH25D□-50B□□-□□□□□	278							
LESH25D□-100□□-□□□□□	299.5	48	8	207	98.5		88	206.5
LESH25D□-100B□□-□□□□□	340							
LESH25D□-150□□-□□□□□	377.5	65		285	126.5	6	69	284.5
LESH25D□-150B□□-□□□□□	418							

Note 1) Range within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) The distance between the motor end cover and the manual override screw is up to 4 mm. The motor end cover hole size is Ø 5.5.
Note 5) If workpiece fixing bolts are too long, they can touch the guide block and cause a malfunction, etc. Use bolts that are between the maximum and minimum screw-in depths in length.

Side Holder (In-line Motor Type/D Type)



[mm]

Part no. Note)	A	B	D	E	F	G	Applicable model
LE-D-3-1	45	57.6	6.7	4.5	20	33	**LESH8D**
LE-D-3-2	60	74	8.3	5.5	25	40	**LESH16D**
LE-D-3-3	81	99	12	6.6	30	49	**LESH25D**

Note) Model numbers for 1 side holder.

Series LES/LESH
Electric Slide Tables/ Specific Product Precautions 1

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

Design

⚠Caution

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

A product should be selected based on the maximum load and allowable moment. If the product is used outside of the operating limit, eccentric load applied to the guide will become excessive and have adverse effects such as creating play at the guide, degraded accuracy and shortened product life.

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

This can cause failure.

Handling

⚠Caution

1. INP output signal

1) Positioning operation

When the product comes within the set range by step data [In position], output signal will be turned on. Initial value: Set to [0.50] or higher.

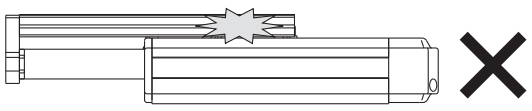
2) Pushing operation

When the effective force exceeds the [Trigger LV] value, the INP output signal will be turned on. Set the [Pushing force] and [Trigger LV] within the limitation range.

To ensure that the actuator pushes the workpiece with the set [Pushing force], it is recommended that the [Pushing force] and [Trigger LV] are set to the same value.

2. When pushing control is used, be sure to set to [Pushing operation]. Never hit at the stroke end other than returning to the original position.

It may damage or malfunction. The internal stopper can be broken by collision with the stroke end.



3. Do not use the following values for the positioning force.

- Step motor (Servo 24 VDC): 100 %
- Servo motor (24 VDC): 250 %

If the positioning force is set below the above-mentioned values, the cycle time will vary, which may cause an alarm.

4. Actual speed of the product can be changed by load.

When selecting a product, check the catalog for the instructions regarding selection and specifications.

5. Do not apply a load, impact or resistance in addition to a transferred load during returning to the original position.

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

Handling

⚠Caution

6. The table and guide block are made of special stainless steel. There can be rust on the product in an environment exposed to water drops.

7. Do not dent, scratch or cause other damage to the body, table and end plate mounting surfaces.

It may cause a loss of parallelism in the mounting surfaces, looseness in the guide unit, an increase in sliding resistance or other problems.

8. Do not dent, scratch or cause other damage to the surface over which the rail and guide will move.

Increased sliding resistance and play can result.

9. When attaching a workpiece, do not apply strong impact or large moment.

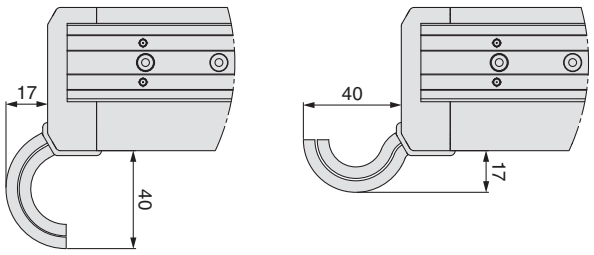
If an external force over the allowable moment is applied, it may cause looseness in the guide unit, an increase in sliding resistance or other problems.

10. Keep the flatness of mounting surface 0.02 mm or less.

Insufficient flatness of a workpiece or base mounted on the body of the product can cause play at the guide and increased sliding resistance.

11. Do not drive the main body with the table fixed.

12. When mounting the product, for R/L type fixed cable, keep more than the bending dimension as shown below. For D type, keep the 40 mm or more for bending the cable.



Electric Slide Tables/ Specific Product Precautions 2

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

Handling

⚠Caution

13. When mounting the product, use screws with adequate length and tighten them to the maximum torque or less.

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.

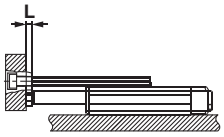
Body fixed/ Side mounting (Body tapped)

Model	Bolt	Max. tightening torque [N·m]	L (Max. screw-in depth mm)
LES□8R/L	M4 x 0.7	1.5	8
LES□8D	M5 x 0.8	3	10
LES16R/L			
LES16D	M6 x 1	5.2	12
LESH16□			
LES25R/L			
LES25D	M8 x 1.25	10	16
LESH25□			

Body fixed/ Side mounting (Through-hole)

Model	Bolt	Max. tightening torque [N·m]	L [mm]
LES8R/L	M3 x 0.5	0.63	23.5
LESH8R/L			25.5
LES□8D	M4 x 0.7	1.5	18.2
LES16R/L			33.5
LES16D	M5 x 0.8	3	25.2
LESH16R/L			35.5
LESH16D			27.3
LES25R/L			49
LES25D	M6 x 1	5.2	39.8
LESH25R/L			50.5
LESH25D			39.5

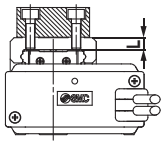
Workpiece fixed/ Front mounting



Model	Bolt	Max. tightening torque [N·m]	L [mm]
LES8R/L	M3 x 0.5	0.63	6
LESH8R/L			5.5
LES□8D	M4 x 0.7	1.5	8
LES16R/L			
LES16D	M5 x 0.8	3	
LESH16□			
LES25R/L	M6 x 1	5.2	12
LESH25R/L			10
LES□25D			14

To prevent the workpiece fixing bolts from penetrating the end plate, use bolts that are 0.5 mm or shorter than the maximum screw-in depth. If long bolts are used, they can touch the end plate and cause a malfunction, etc.

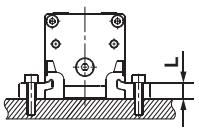
Workpiece fixed/ Top mounting



Model	Bolt	Max. tightening torque [N·m]	L (Min. to Max. screw-in depth mm)
LES8□	M3 x 0.5	0.63	2.1 to 4.1
LESH8□			5 (Max.)
LES16□	M4 x 0.7	1.5	2.7 to 5.7
LESH16□	M5 x 0.8	3	6.5 (Max.)
LES25□			3.3 to 7.3
LESH25□	M6 x 1	5.2	8 (Max.)

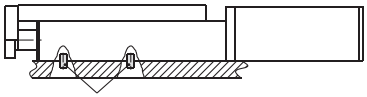
To prevent the workpiece fixing bolts from touching the guide block, use bolts that are 0.5 mm or shorter than the maximum screw-in depth. If long bolts are used, they can touch the guide block and cause a malfunction, etc.

Body fixed/Side mounting (Side holder)



Model	Bolt	Max. tightening torque [N·m]	L [mm]
LES□8D	M4 x 0.7	1.5	6.7
LES□16D	M5 x 0.8	3	8.3
LES□25D	M6 x 1	5.2	12

When using the side holders to install the actuator, be sure to use the positioning pin. It can be displaced when vibration or excessive external force is applied.



14. In pushing operation, set the product to a position of at least 0.5 mm away from a workpiece. (This position is referred to as a pushing start position.)

If the product is set to the same position as a workpiece, 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 width of workpieces.

b. "Pushing ALM" alarm is generated.

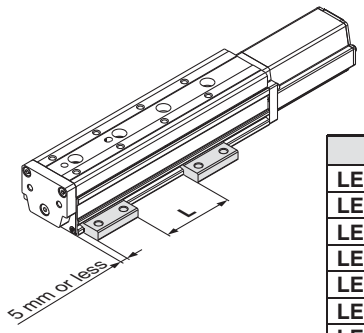
The product is pushed back from a pushing start position after starting to push.

15. When external force is applied to the table, it is necessary to reduce the work load for the sizing.

When a cable duct or flexible moving tube is attached to the actuator, the sliding resistance of the table increases and may lead to operational failure of the product.

16. When using the side holders to install the actuator, use within the dimension range below.

Otherwise, installation balance will deteriorate and cause loosening.

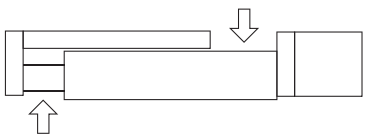


Model	L [mm]
LES□8D□-30	5 to 10
LES□8D□-50	20 to 30
LES□8D□-75	50 to 60
LES□16D□-30	5 to 10
LES□16D□-50	20 to 30
LES□16D□-75	60 to 75
LES□16D□-100	85 to 100
LES□25D□-30	5 to 15
LES□25D□-50	25 to 35
LES□25D□-75	60 to 75
LES□25D□-100	70 to 100
LES□25D□-125	155 to 170
LES□25D□-150	160 to 180

17. For the LES□□D, do not grasp or peel off a masking tape on the bottom of the body.

The masking tape may peel off and foreign matter may get inside the actuator.

18. For the LES□□D, a gap will form between the motor flange and table when the table moves (marked with the arrow below). Be careful not to put hands or fingers in a gap.



Electric Slide Tables/ Specific Product Precautions 3

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

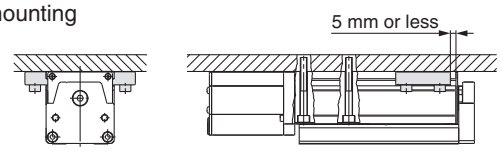
Handling

⚠Caution

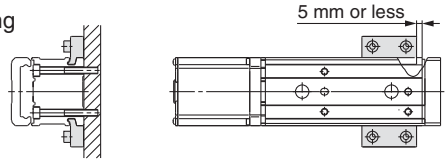
19. When mounting the body with through-holes in the mounting orientations below, make sure to use two side holders as shown in the figures.

Otherwise, installation balance will deteriorate and cause loosening.

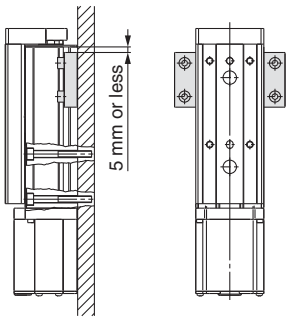
Bottom mounting



Wall mounting

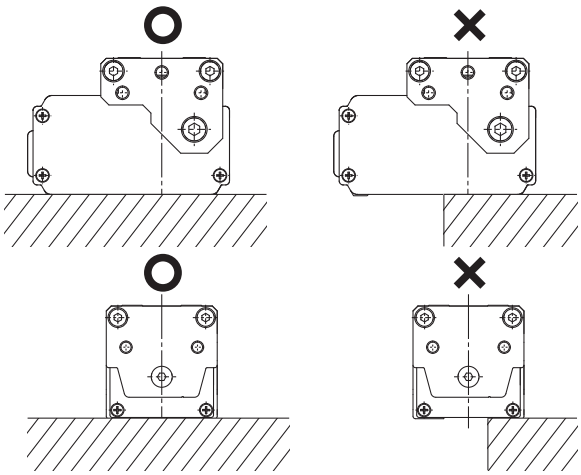


Vertical mounting



20. Install the body as shown below with the ○.

Since the product support becomes unstable, it may cause a malfunction, irregular noise and deflection.



21. Even with the same product number, the table of some products can be moved by hand and the table of some products cannot be moved by hand. However, there is no abnormality with these products. (Without lock)

This difference is caused because there is a little variation with the positive efficiency (when the table is moved by the motor) and there is a large variation with the reverse-efficiency (when the table is moved manually) due to the product characteristics. There is hardly any difference among products when they are operated by the motor.

Maintenance

⚠Warning

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

2. For lubrication, wear protective glasses.

3. Perform maintenance according to the following requirements.

- **Maintenance frequency**

Perform maintenance according to the table below.

Frequency	Appearance check	Belt check
Inspection before daily operation	○	—
Inspection every 6 months*	—	○
Inspection every 250 km*	—	○
Inspection every 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 (R/L type only)**

Stop operation immediately and replace the belt when belt appear to be below.

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

Controller/Driver

Step Data Input Type ····· **Page 53**

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Gateway Unit ····· **Page 65**

Series LEC-G

Programless Type ····· **Page 68**

Pulse Input Type ····· **Page 75**

Step Motor (Servo/24 VDC)

Series LECP1

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 61 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 "**LESH8RJ-50**" for the LESH8RJ-50B-R16N1.

BC	Blank controller Note)

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

Option

—	Screw mounting
D Note)	DIN rail mounting

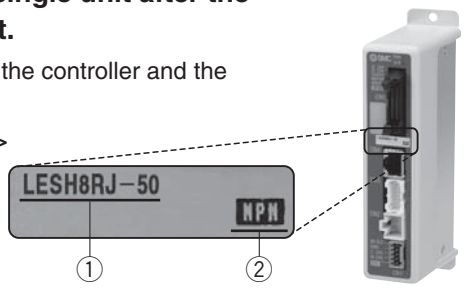
Note) DIN rail is not included. Order it separately.

∗ 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

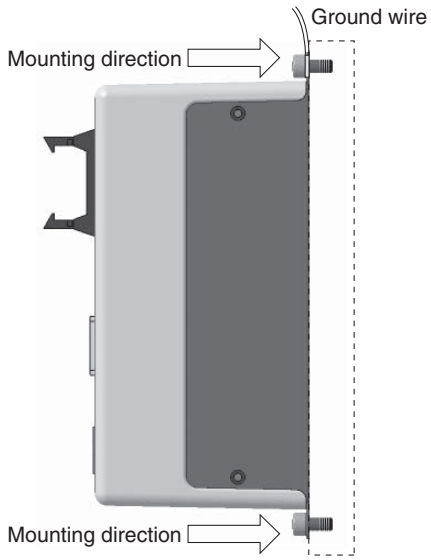
Basic Specifications

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)	

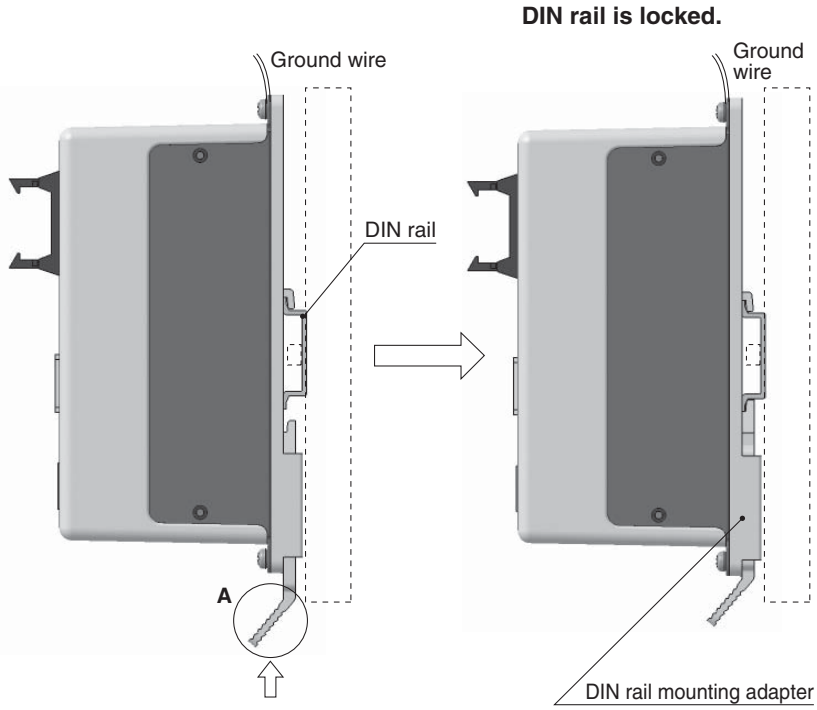
Note 1) Do not use the power supply of "inrush current prevention type" for the controller power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. Refer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

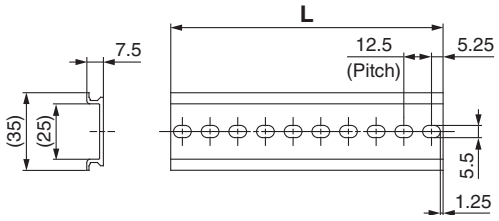


Hook the controller on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

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 55 for the mounting dimensions.



L Dimension [mm]

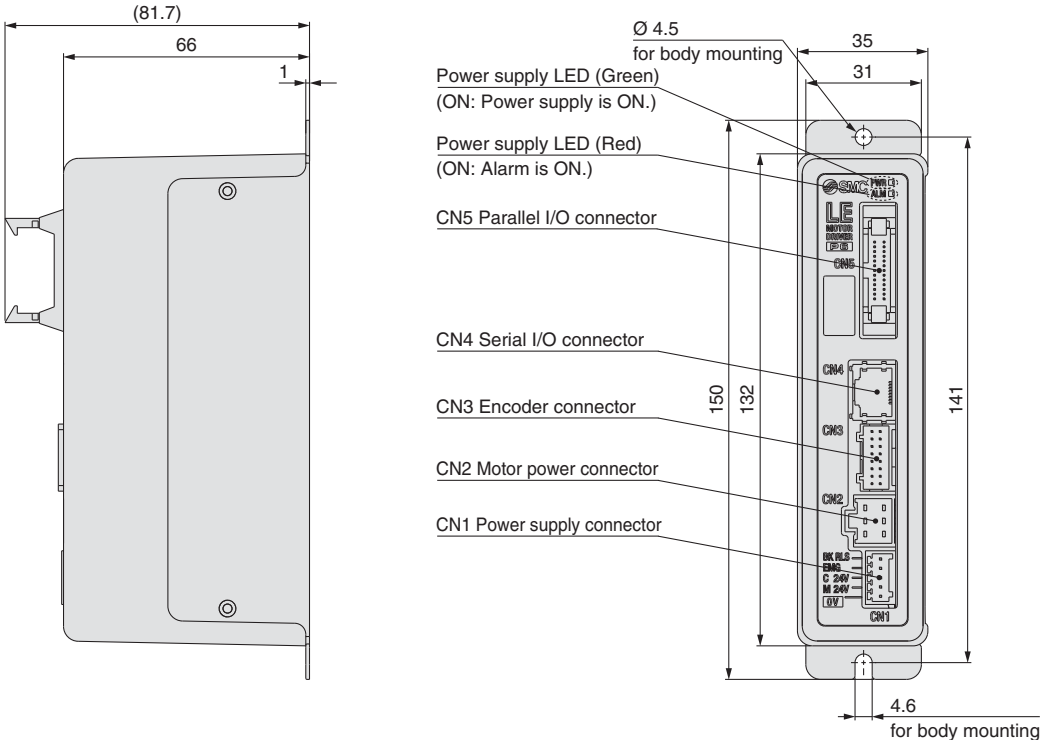
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5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

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

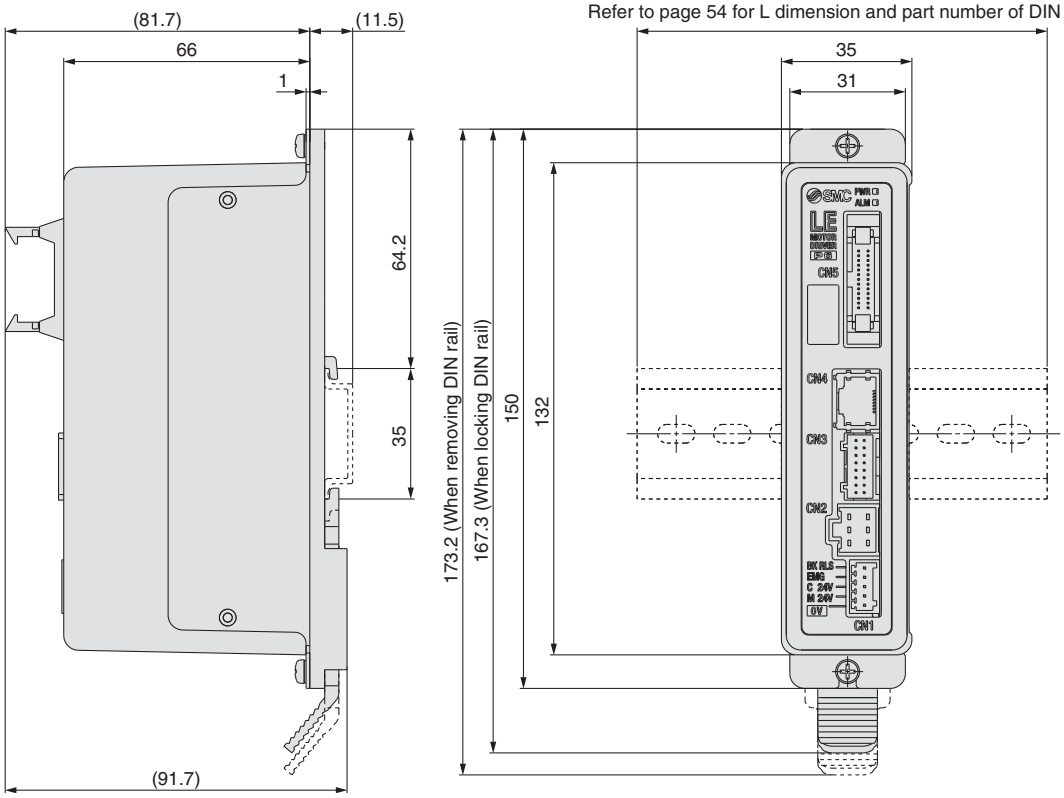
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type controller afterward.

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.

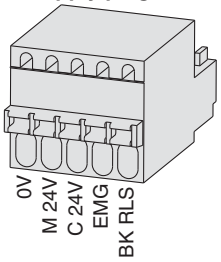
CN1 Power Supply Connector Terminal for LECP6 (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

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

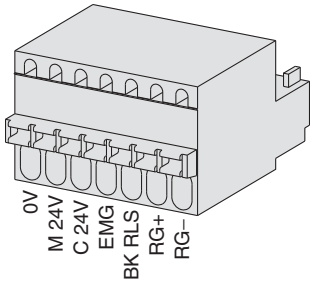
CN1 Power Supply Connector Terminal for LECA6 (PHOENIX CONTACT FK-MC0.5/7-ST-2.5)

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



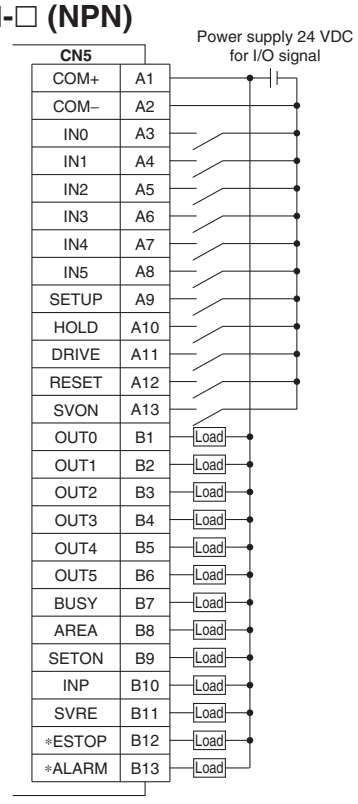
Wiring Example 2

Parallel I/O Connector: CN5

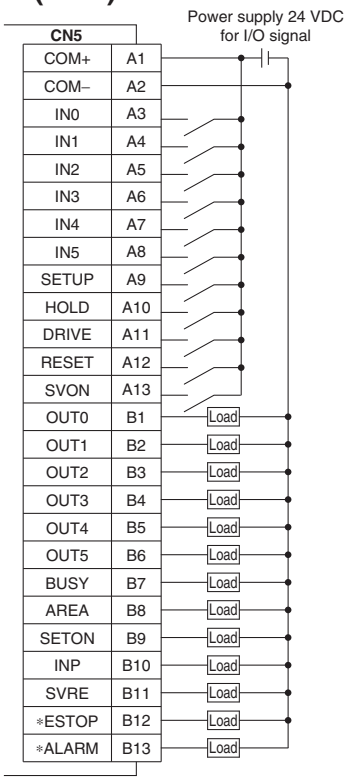
∗ When you connect a PLC etc., to the CN5 parallel I/O connector, use the I/O cable (LEC-CN5-□).
∗ The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

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

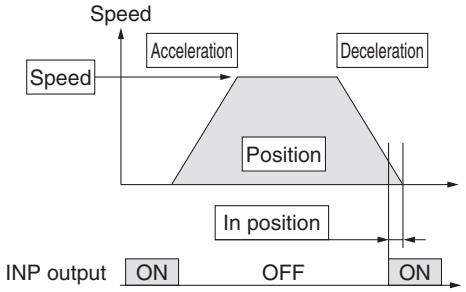
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or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



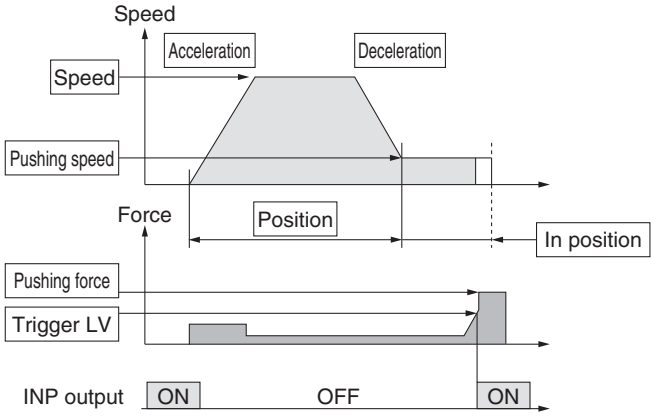
◎: Need to be set.
○: Need to be adjusted as required.
—: Setting is not required.

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.



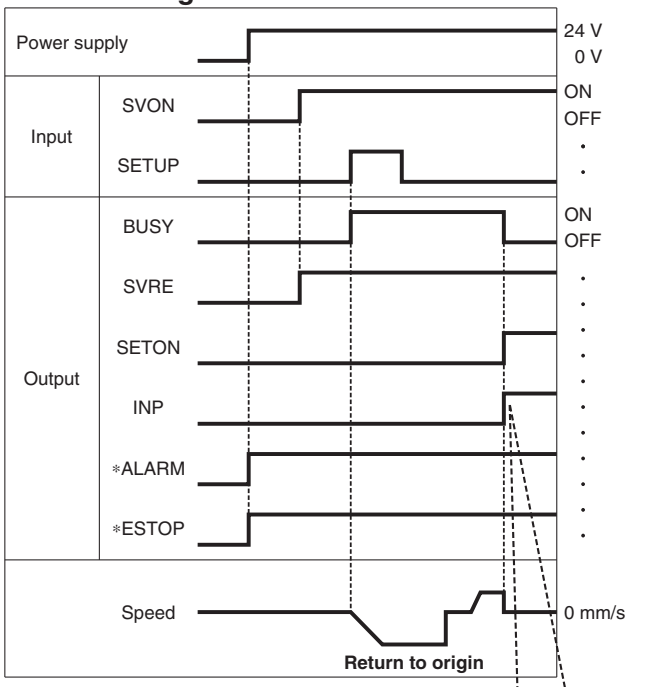
◎: Need to be set.
○: Need to be adjusted as required.

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

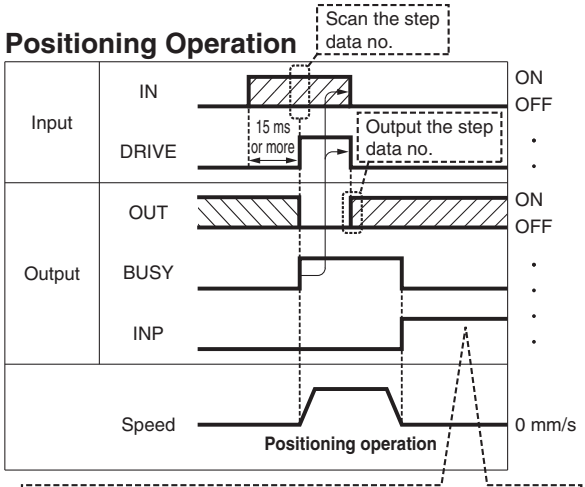
Return to Origin



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.

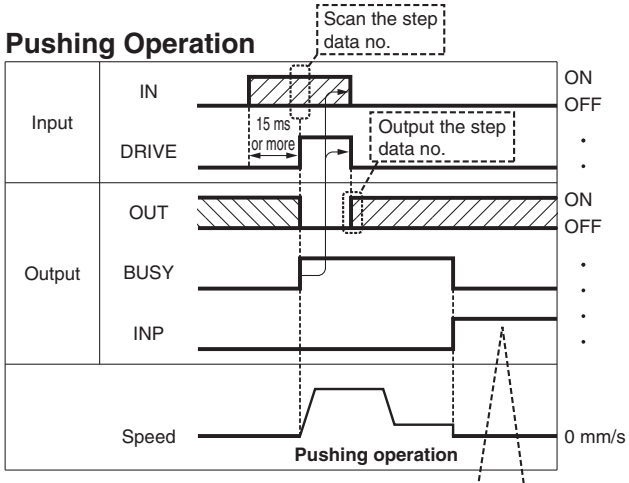
Positioning Operation



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

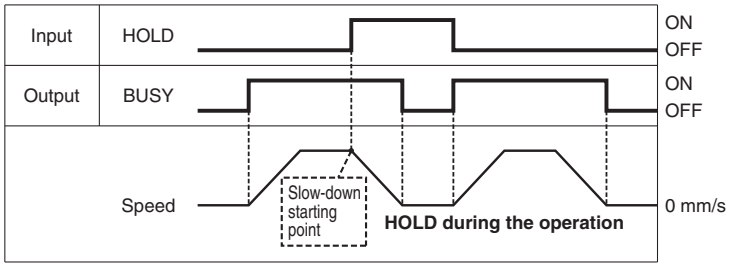
∗ "OUT" is output when "DRIVE" is changed from ON to OFF.
(When power supply is applied, "DRIVE" or "RESET" is turned ON or "∗ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation



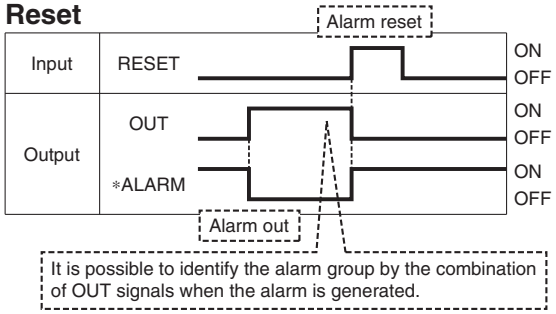
If the current pushing force exceeds the "trigger LV" value of the step data, INP signal will turn ON.

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]

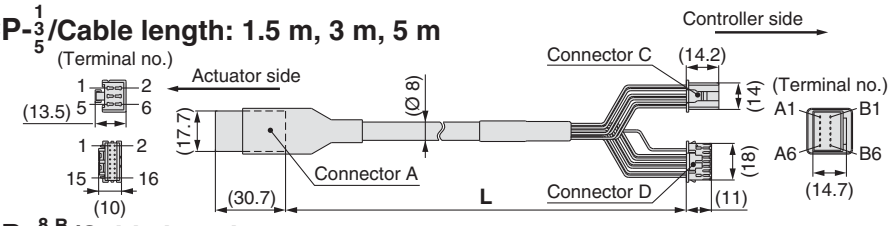
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

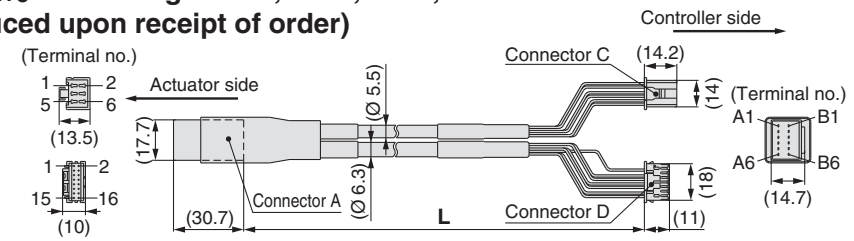
Cable type

—	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.	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)]

LE – CP – 1 – B – □

Cable length (L) [m]

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

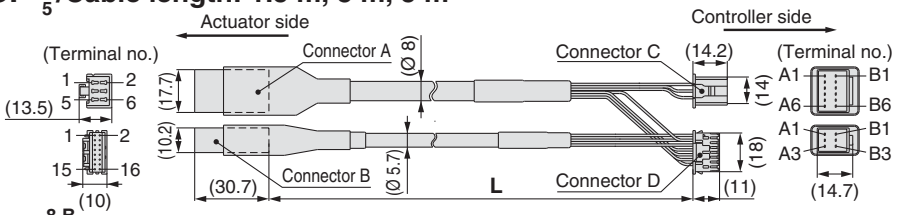
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

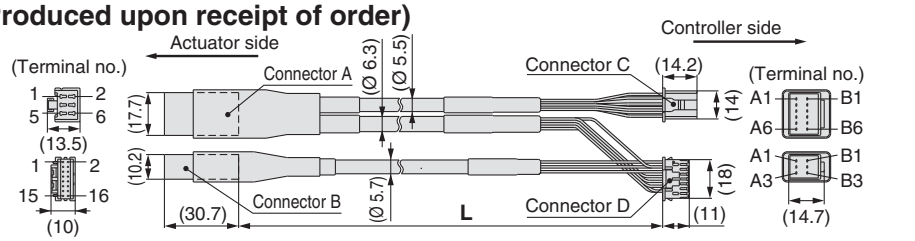
Cable type

—	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

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

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

Cable colour	Connector B terminal no.
Red	4
Black	5
Brown	1
Blue	2

[Robotic cable for servo motor (24 VDC)]

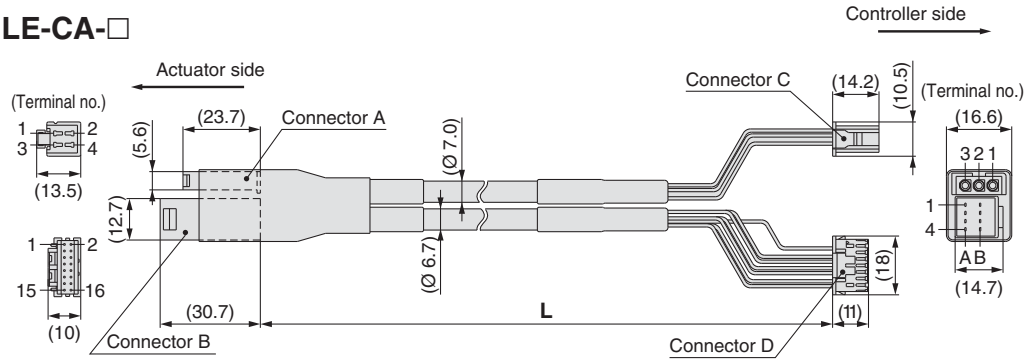
LE − CA − 1

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

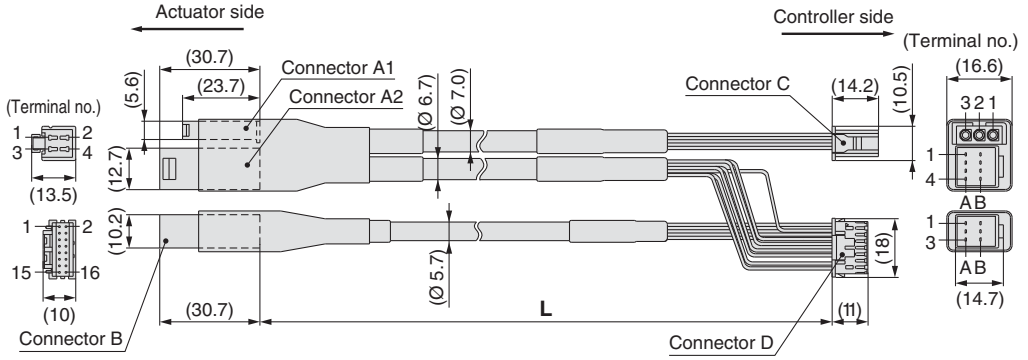
Cable length (L) [m]

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

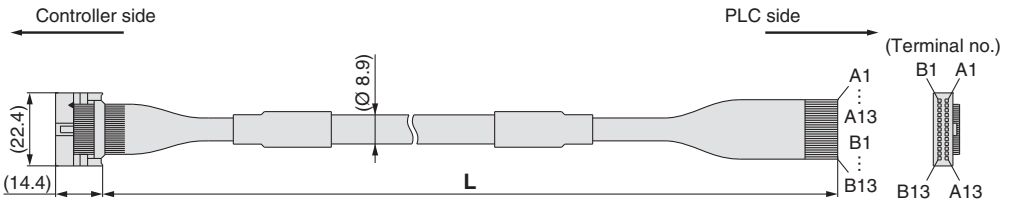
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Black	2

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

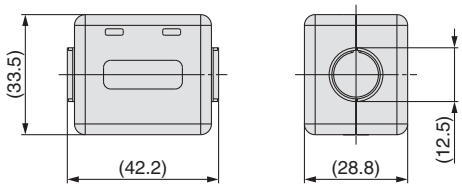
Connector pin no.	Insulation colour	Dot mark	Dot colour
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Grey	■ ■	Black
B5	Grey	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green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

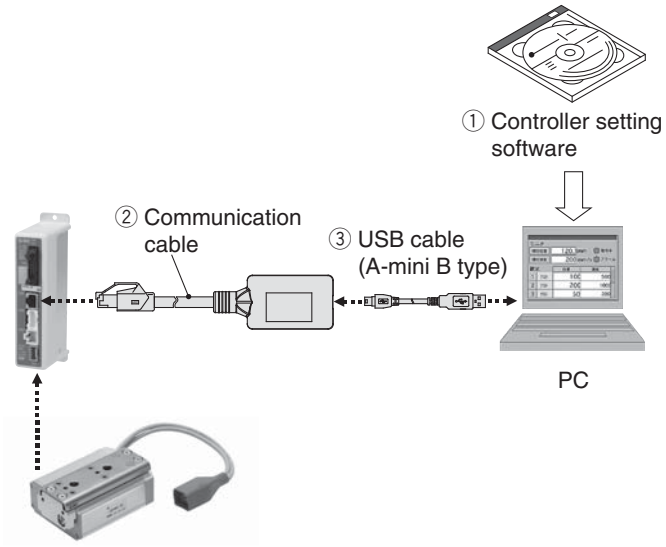


∗ Refer to the LECA6 series Operation Manual for installation.

Series LEC

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***

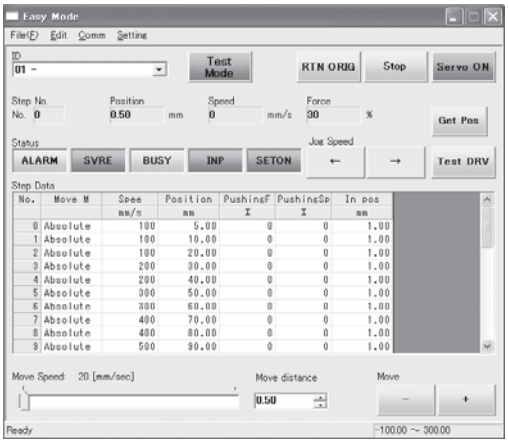
Hardware Requirements

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

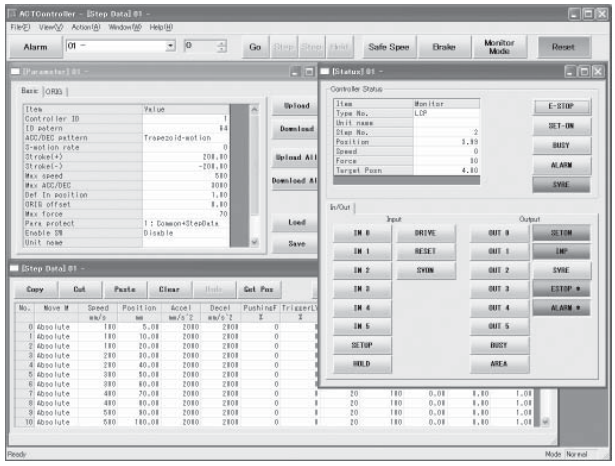
* Windows®XP, Windows®7 and Windows®8.1 are registered trademarks of Microsoft Corporation in the United States.
* Refer to SMC website for version upgrade information, http://www.smc.eu

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 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

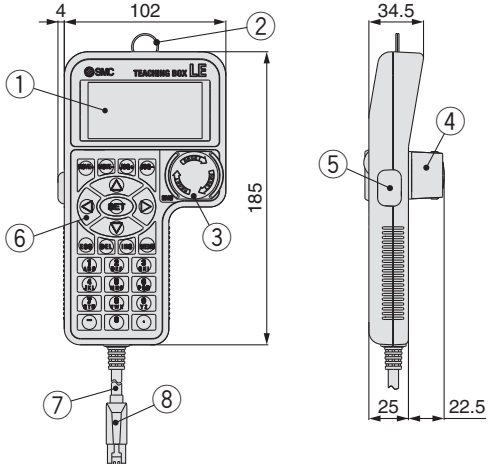
Normal Mode

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.

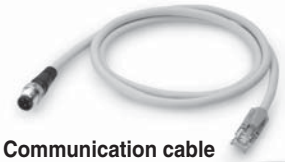
Cable **LEC-CG 1-L**

Cable type

1	Communication cable
2	Cable between branches

Cable length

K	0.3 m
L	0.5 m
1	1 m



Communication cable

Cable between branches

Branch connector **LEC-CGD**

Branch connector

Terminating resistor **LEC-CGR**

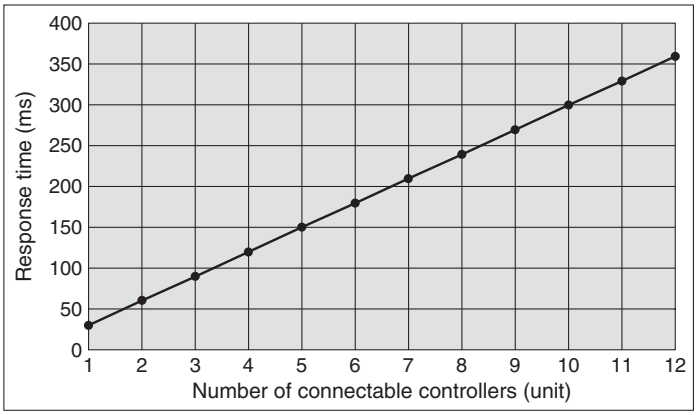
Specifications

Model			LEC-GMJ2□	LEC-GDN1□	LEC-GPR1□	LEC-GEN1□
Communication specifications	Applicable system	Fieldbus	CC-Link	DeviceNet™	PROFIBUS DP	EtherNet/IP™
		Version Note 1)	Ver. 2.0	Release 2.0	V1	Release 1.0
	Communication speed [bps]		156 k/625 k/2.5 M /5 M/10 M	125 k/250 k/500 k	9.6 k/19.2 k/45.45 k/ 93.75 k/187.5 k/500 k/ 1.5 M/3 M/6 M/12 M	10 M/100 M
	Configuration file Note 2)		—	EDS file	GSD file	EDS file
	I/O occupation area		4 stations occupied (8 times setting) Input 896 points 108 words Output 896 points 108 words	Input 200 bytes 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.

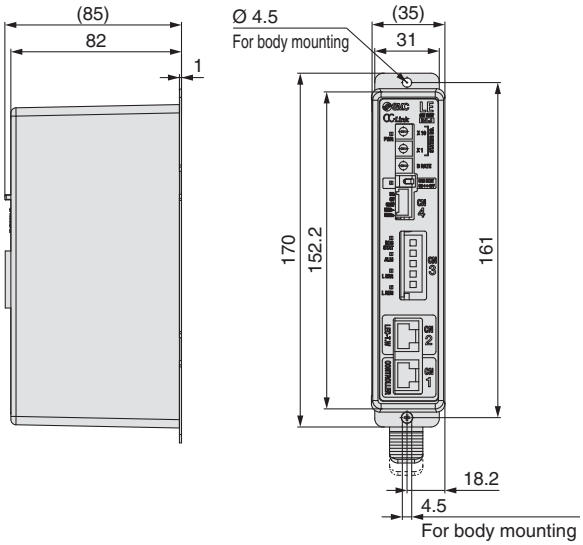


* This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

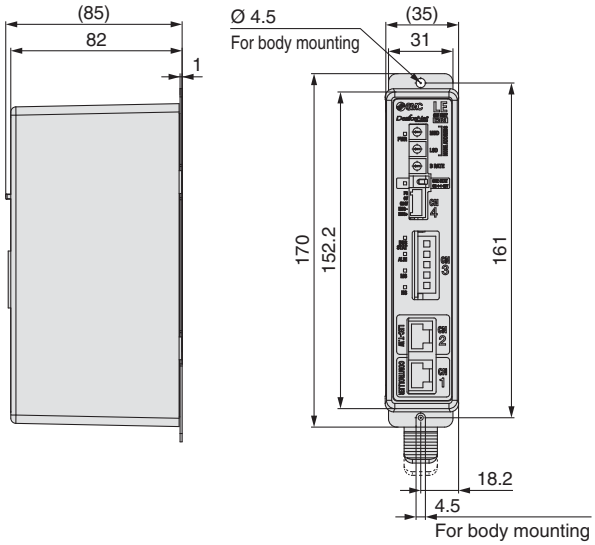
Dimensions

Screw mounting (LEC-G□□□)

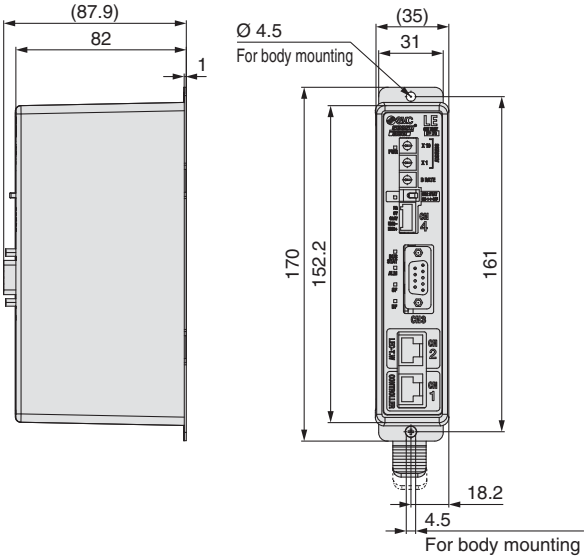
Applicable Fieldbus protocol: CC-Link Ver. 2.0



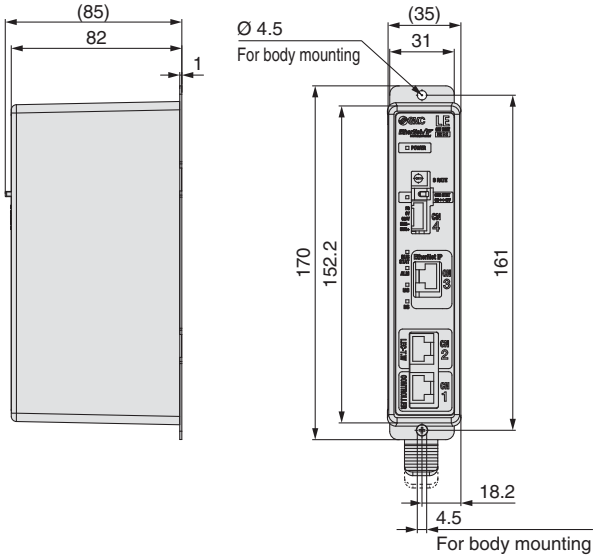
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

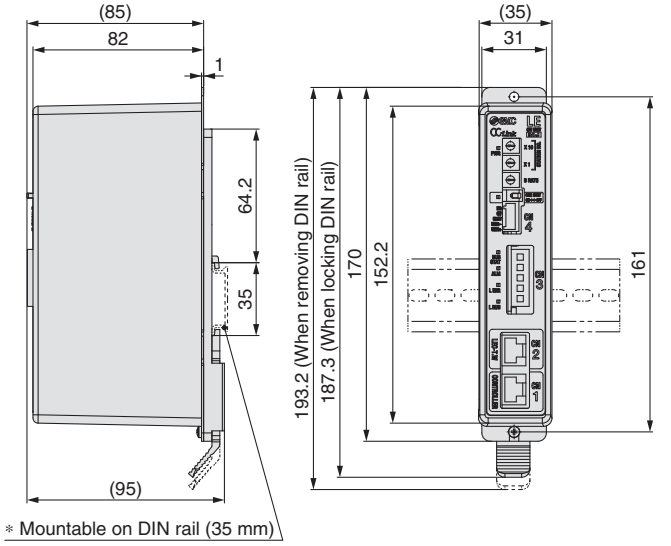


■ **Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

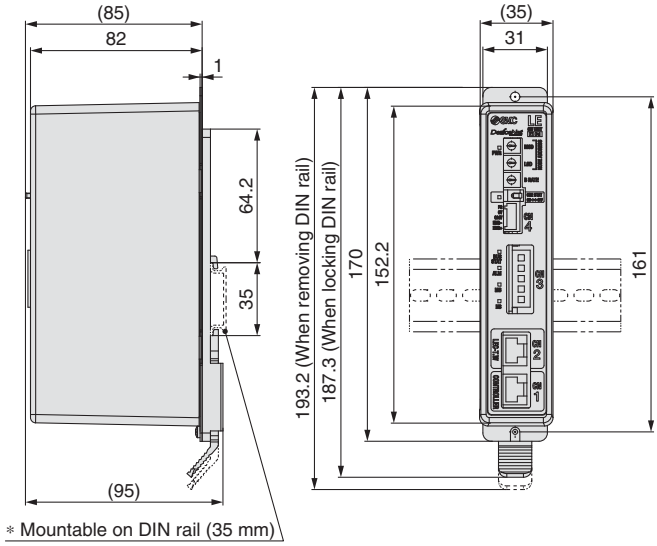
Dimensions

DIN rail mounting (LEC-G□□□D)

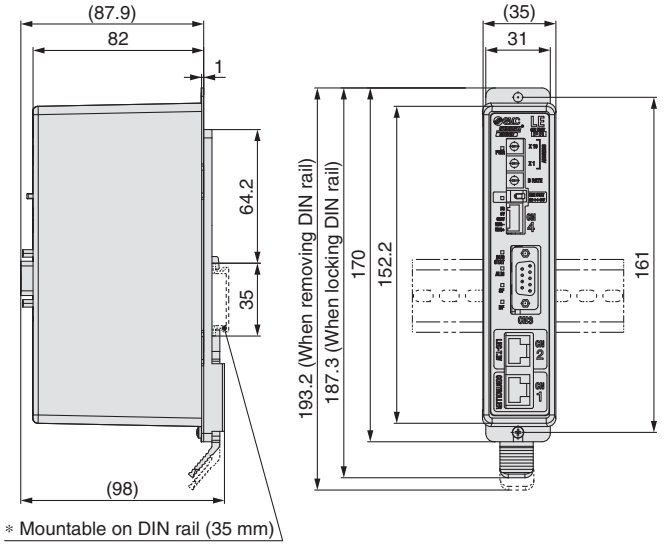
Applicable Fieldbus protocol: CC-Link Ver. 2.0



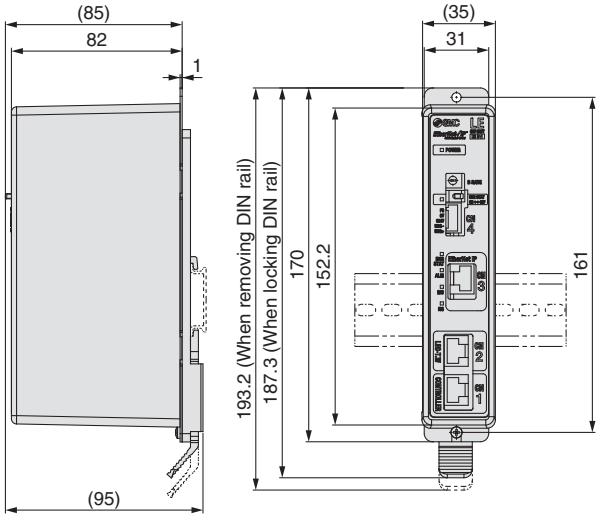
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP

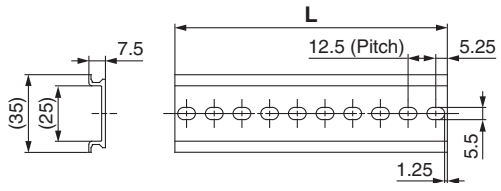


Applicable Fieldbus protocol: EtherNet/IP™



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

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

Programless Controller
Series LECP1

How to Order

LE C P 1 P 1 [ ] – LESH8RJ-50

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 "**LESH8RJ-50**" for the LESH8RJ-50B-R16N1.

∗ **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.

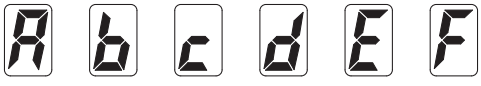
∗ Refer to the Operation Manual for using the products. Please download it via our website, http://www.smc.eu

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)

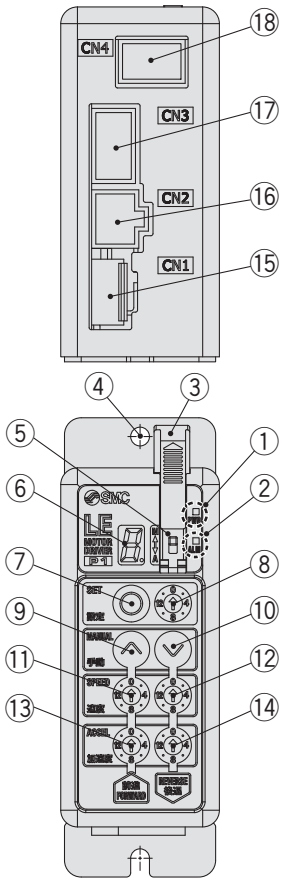
Note 1) Do not use the power supply of "inrush current prevention type" for the controller input power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model.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



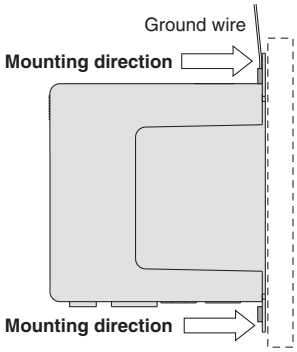
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing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

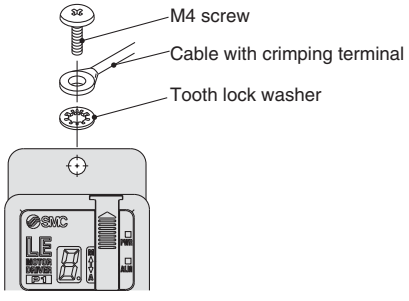
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

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



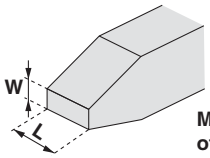
Controller

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

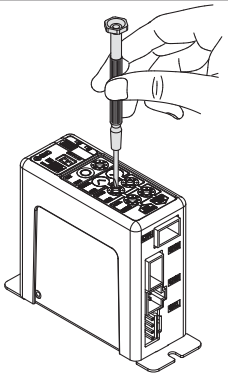
⚠Caution

- 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]

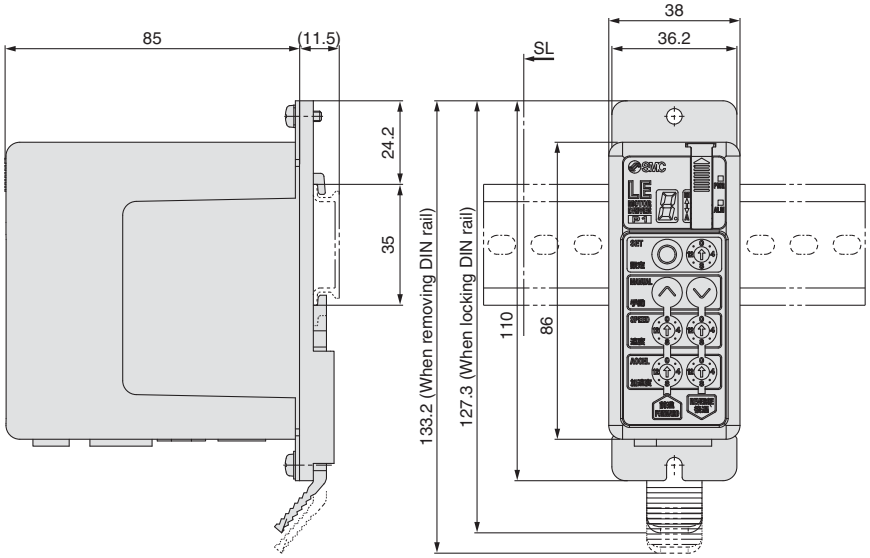


Magnified view of the end of the screwdriver



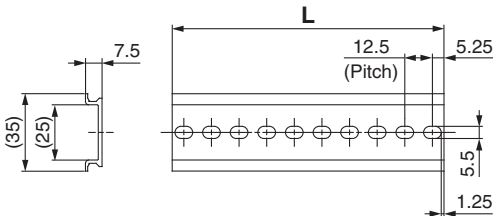
Dimensions

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

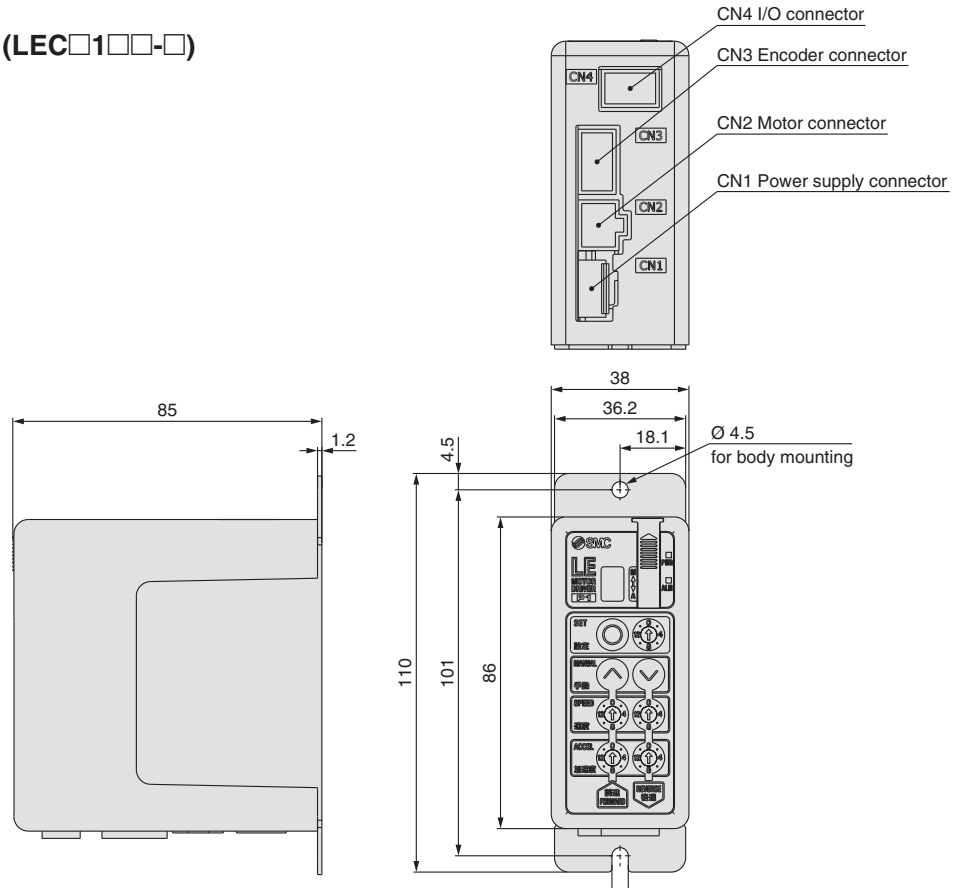
No.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

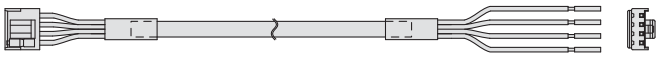
Power Supply Connector: CN1

* 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)

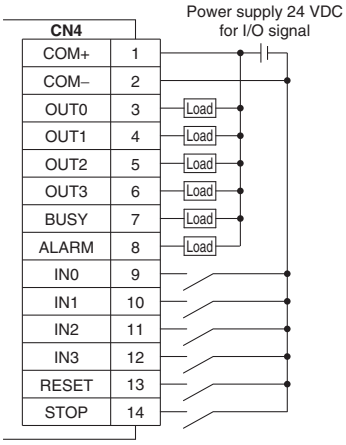


Wiring Example 2

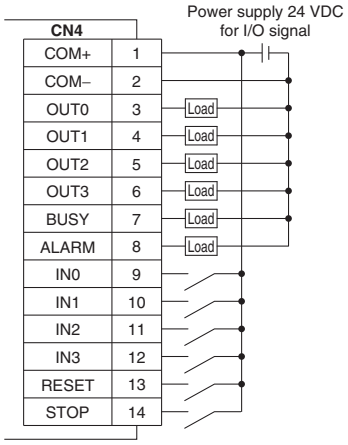
Parallel I/O Connector: CN4

* 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

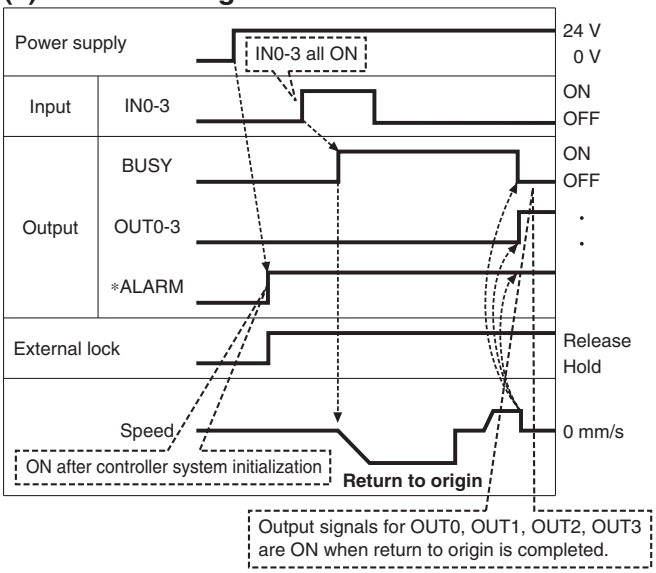
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Return to origin	●	●	●	●

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	●	●	●	●

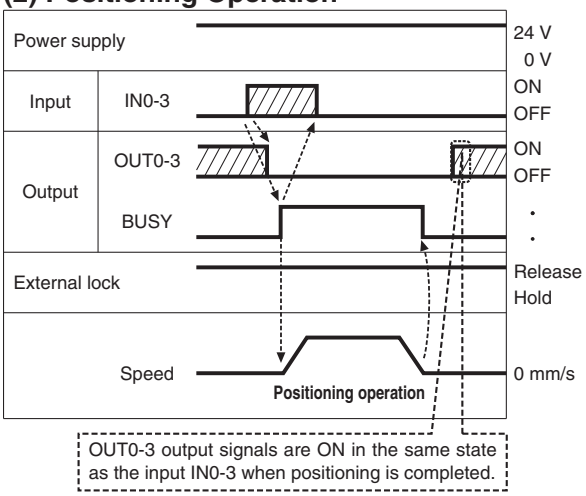
Signal Timing

(1) Return to Origin

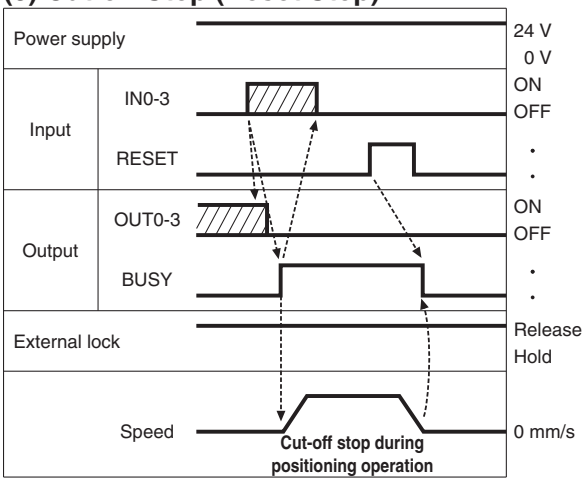


∗ "∗ALARM" is expressed as negative-logic circuit.

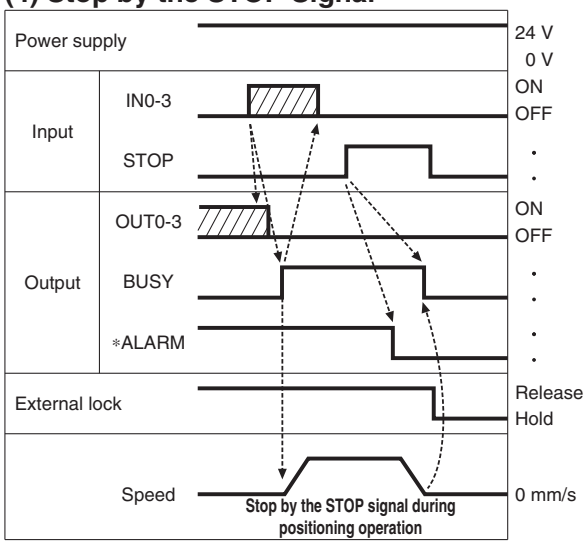
(2) Positioning Operation



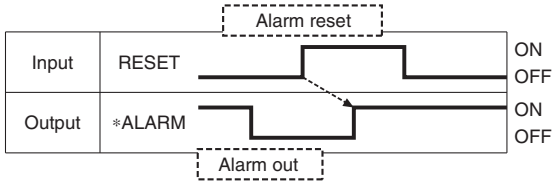
(3) Cut-off Stop (Reset Stop)



(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]

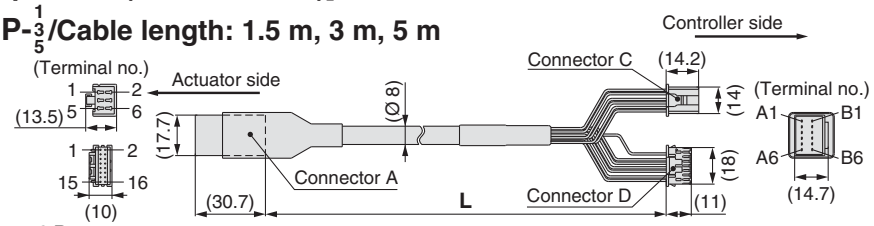
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

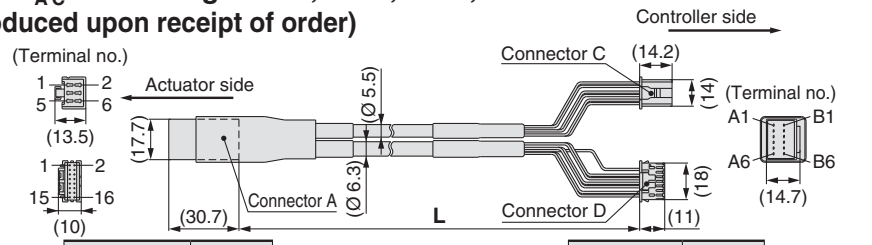
—	Robotic cable (Flexible cable)
S	Standard cable

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	Cable colour	Connector D terminal no.
GND	A-4	Brown	12
A	B-5	Black	13
$\overline{A}$	A-5	Red	7
B	B-6	Black	6
$\overline{B}$	A-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*

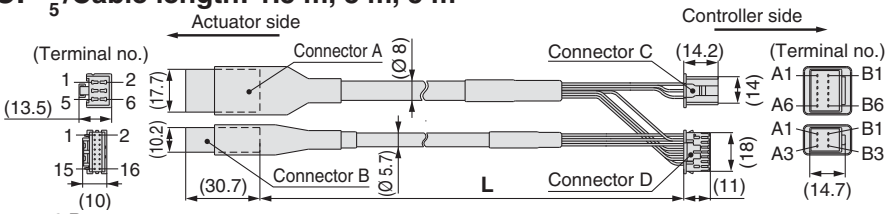
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

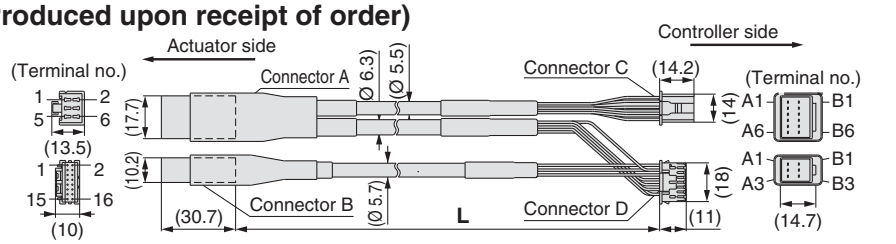
—	Robotic cable (Flexible cable)
S	Standard cable

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)



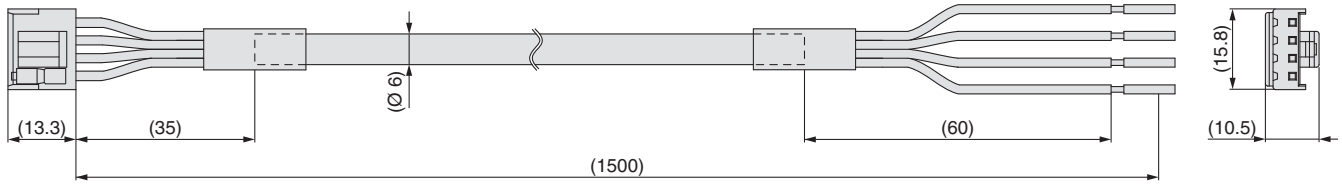
Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Cable colour	Connector D terminal no.
GND	A-4	Brown	12
$\overline{A}$	B-5	Black	13
A	A-5	Red	7
$\overline{B}$	B-6	Black	6
B	A-6	Orange	9
		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

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 (+)

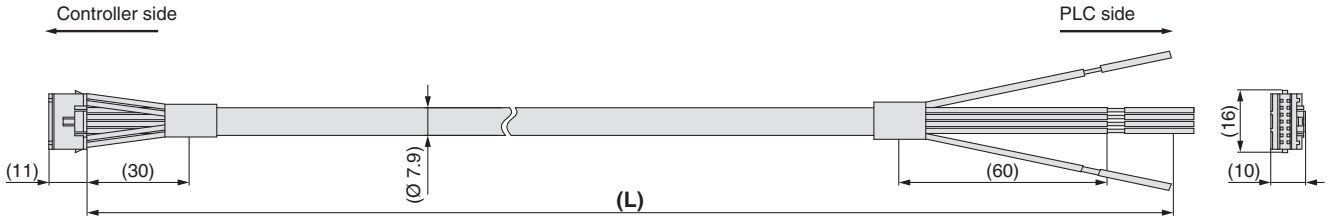
∗ Conductor size: AWG20

[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 81 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 ☐ – LESH8RJ-50

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 "**LESH8RJ-50**" for the LESH8RJ-50B-R16N1.

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.

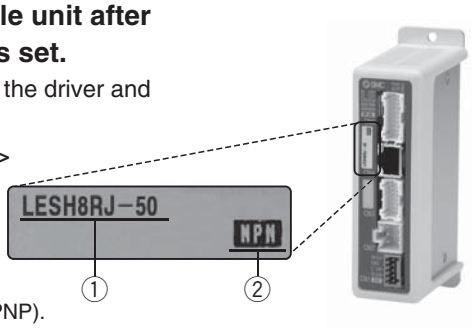
The driver is sold as single unit after the compatible actuator is set.

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)

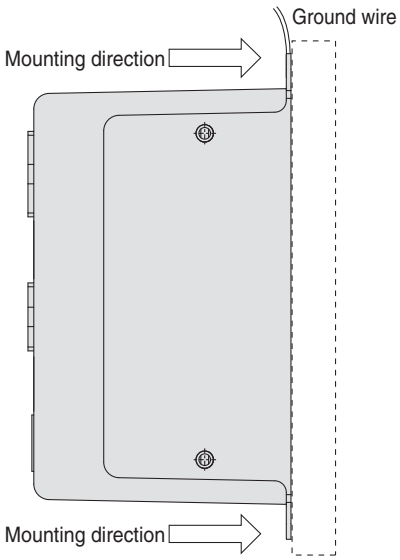
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

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

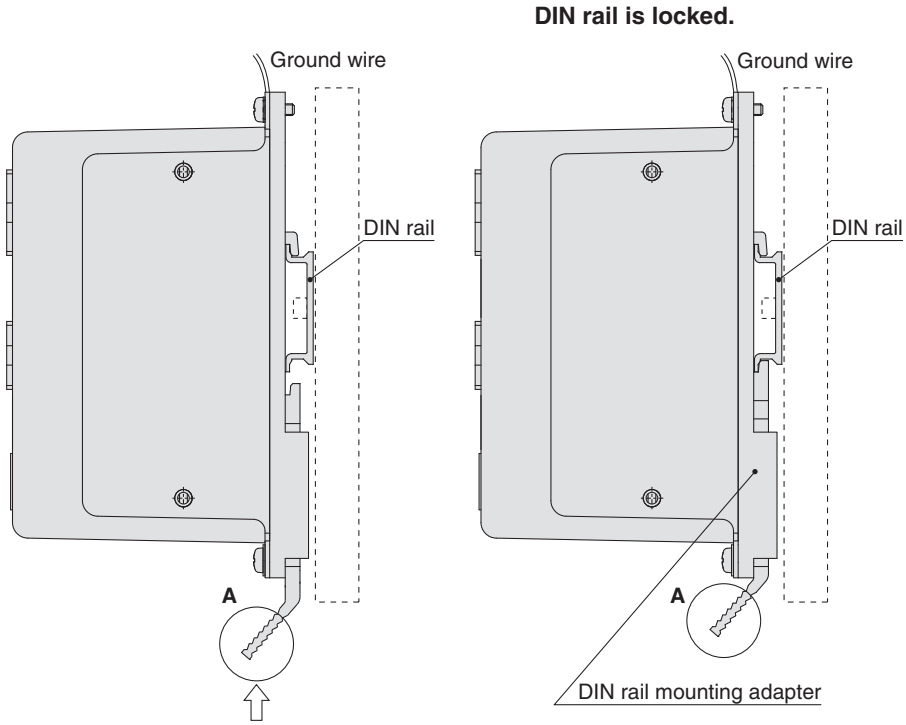
Note 3) Applicable to non-magnetizing lock.

How to Mount

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



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

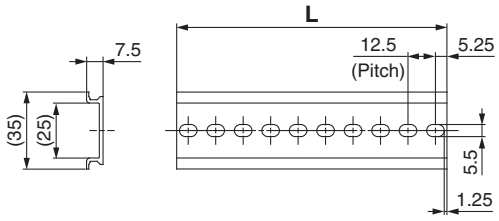


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

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 77 for the mounting dimensions.



L Dimension [mm]

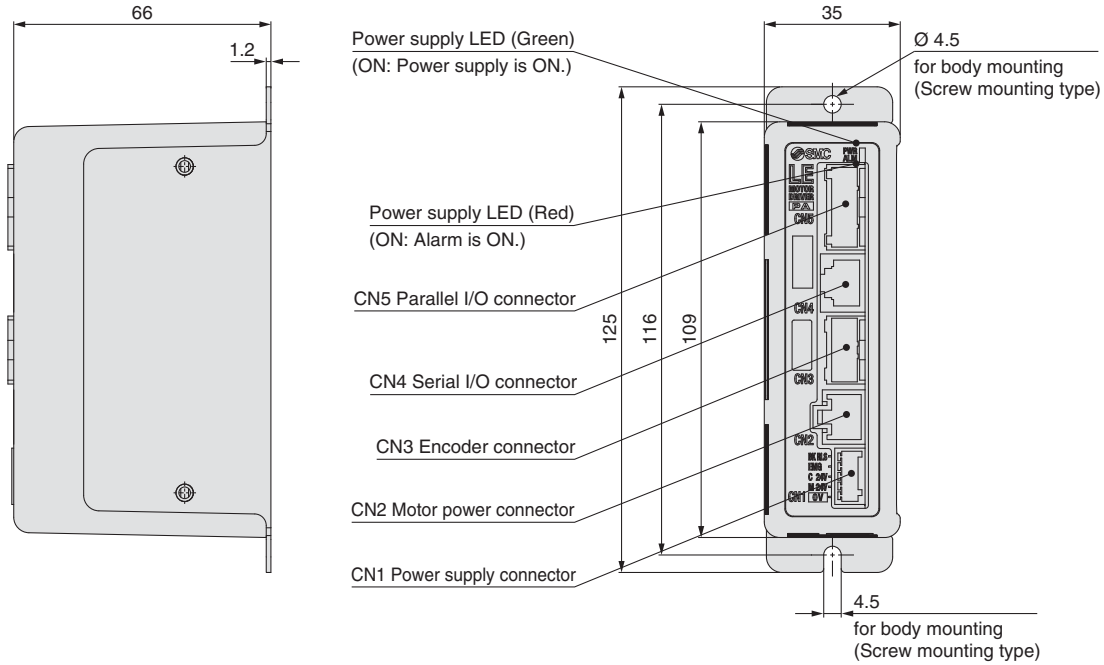
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5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

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

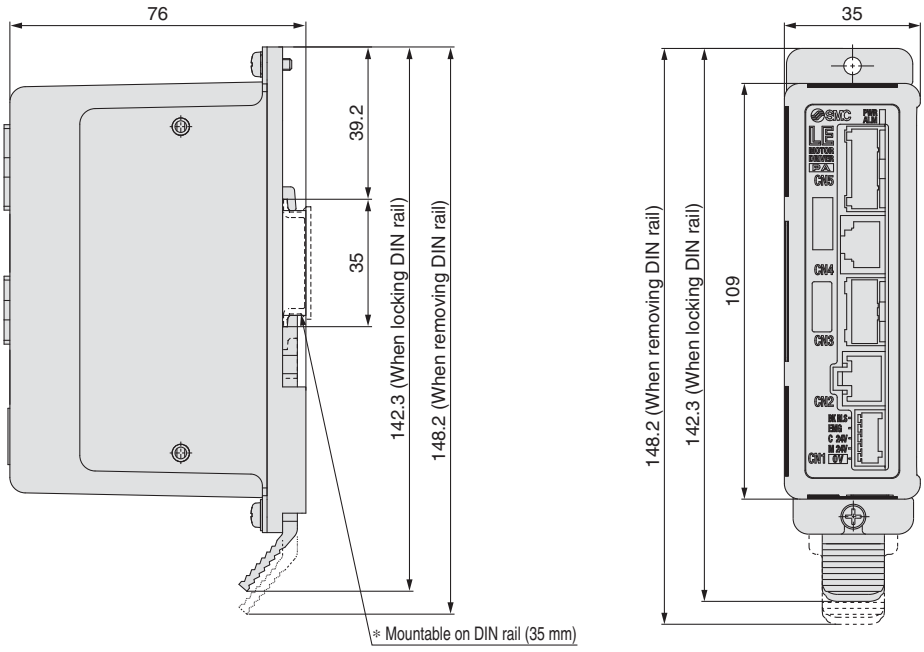
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterward.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



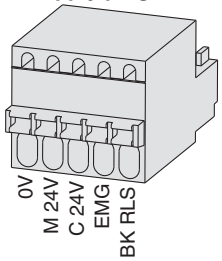
Wiring Example 1

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



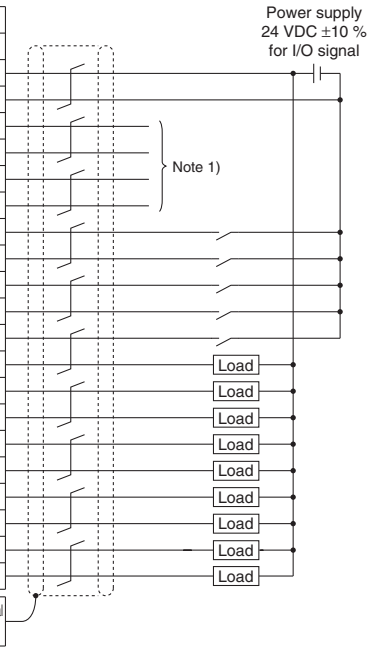
Wiring Example 2

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).

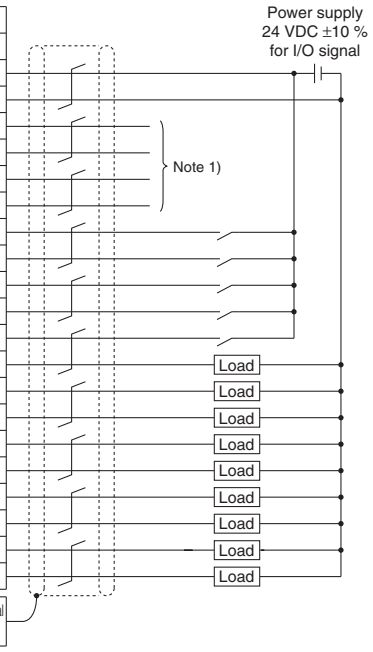
LECPAN□□-□ (NPN)

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

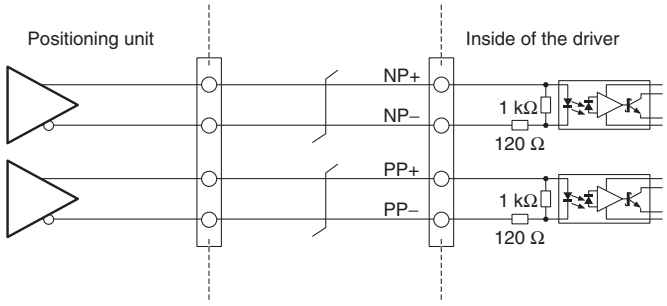
Output Signal

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

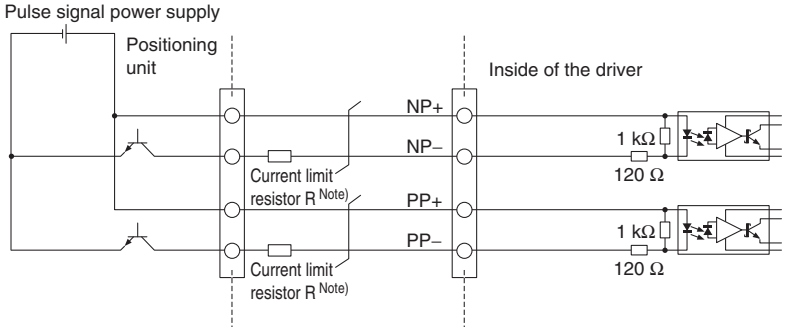
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

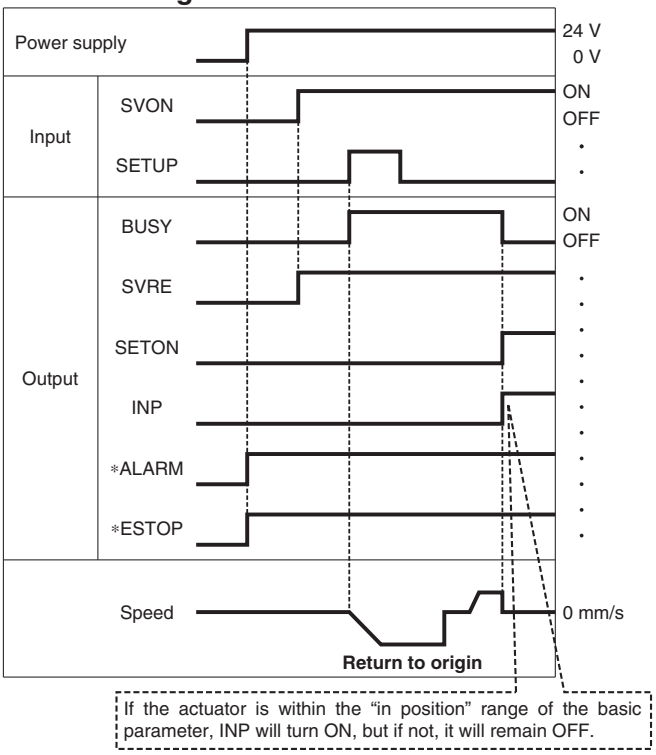


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

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

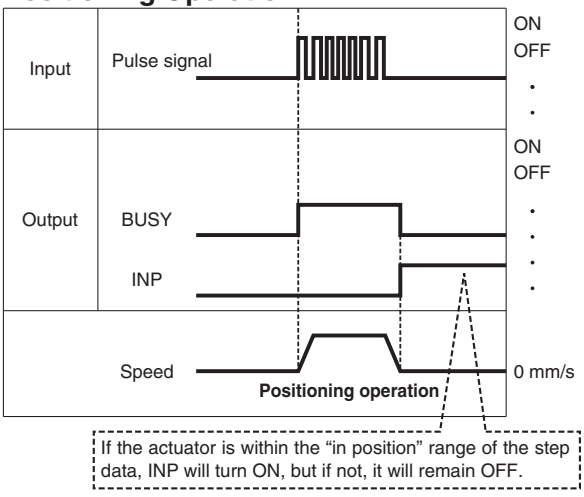
Signal Timing

Return to Origin

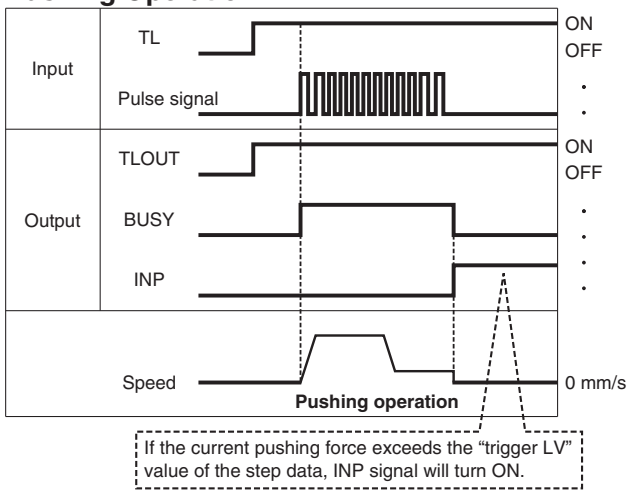


∗ “∗ALARM” and “∗ESTOP” are expressed as negative-logic circuit.

Positioning Operation

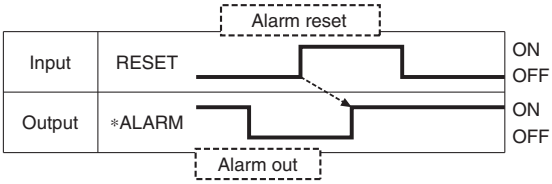


Pushing Operation



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]

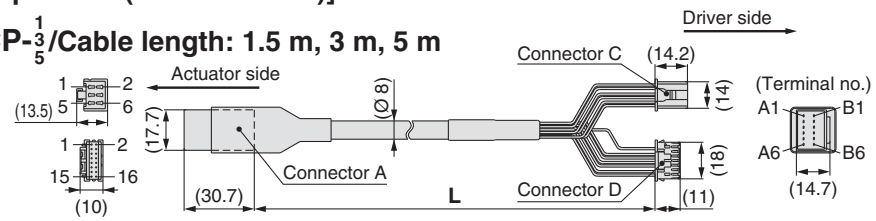
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

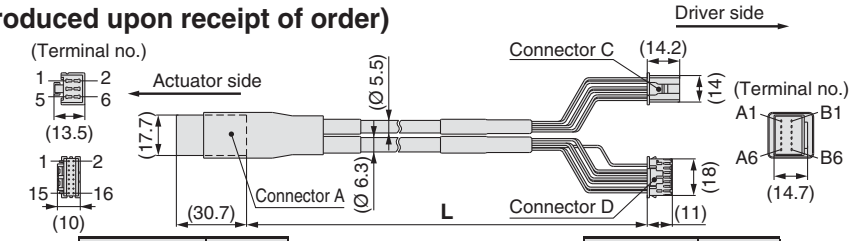
—	Robotic cable (Flexible cable)
S	Standard cable

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.
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*

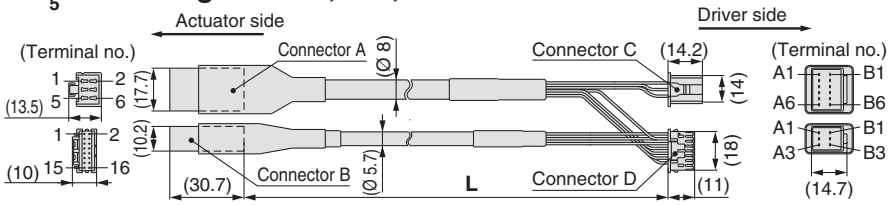
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

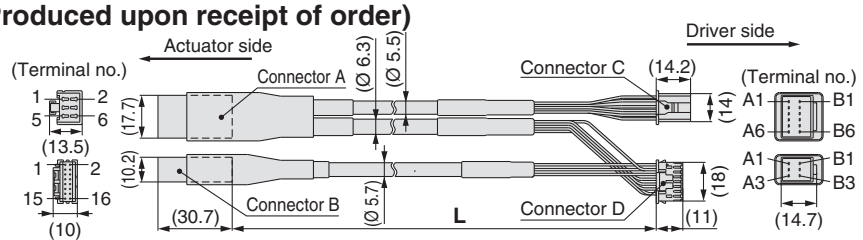
—	Robotic cable (Flexible cable)
S	Standard cable

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

Options

[I/O cable]

LEC-C L5-1

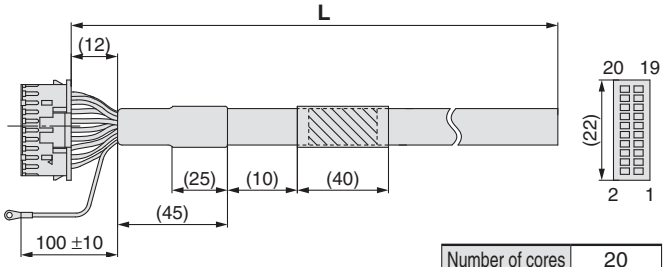
I/O cable type

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

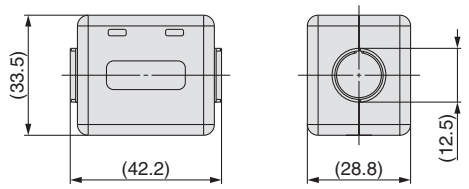
Pin no.	Insulation colour	Dot mark	Dot colour
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Grey	■■	Black
18	Grey	■■	Red
19	White	■■	Black
20	White	■■	Red

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-□

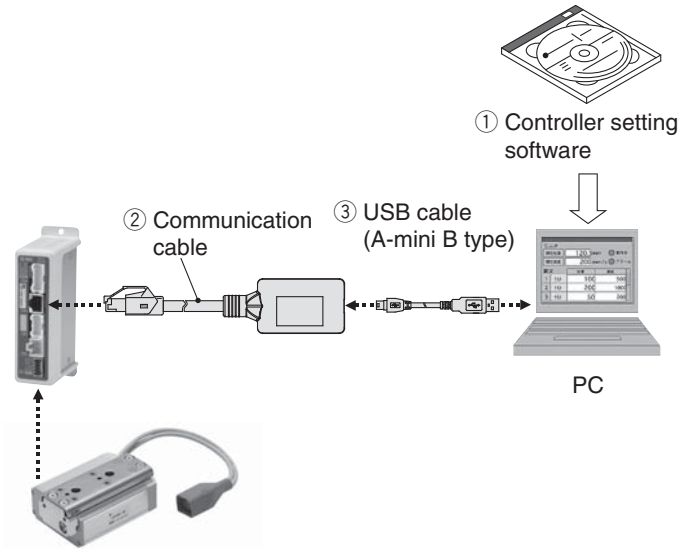
Current limit resistor

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.

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***

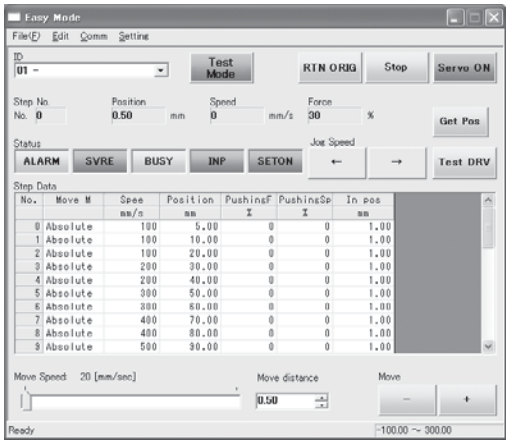
Hardware Requirements

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

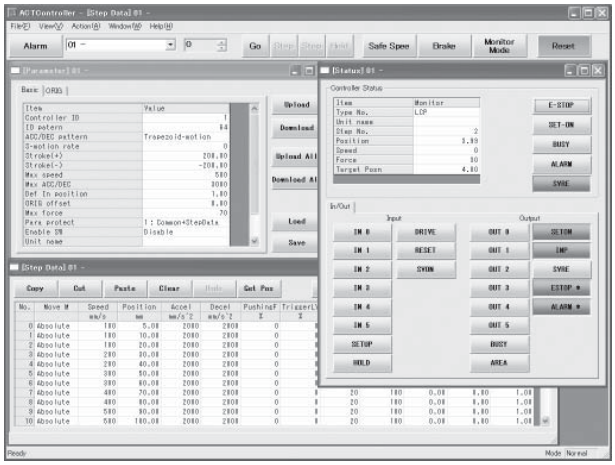
Easy mode screen example



Easy operation and simple setting

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

Normal mode screen example



Detailed setting

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

Series LEC
Teaching Box/LEC-T1

How to Order

LEC-T1-3EG□

Teaching box

Cable length [m]

3	3

Initial language

J	Japanese
E	English

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

Stop switch

G	Equipped with stop switch

Enable switch

—	None
S	Equipped with enable switch

∗ Interlock switch for jog and test function

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

Option
- **Enable switch is provided.**

Specifications

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

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

Easy Mode

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

Menu Operations Flowchart

Menu
- Data
- Monitor
- Jog
- Test
- ALM
- TB setting

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

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

Jog
Return to origin
Jog operation

Test Note 1)
1 step operation

ALM
Active alarm display
Alarm reset

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

Note 1) Not compatible with the LECPA.

Normal Mode

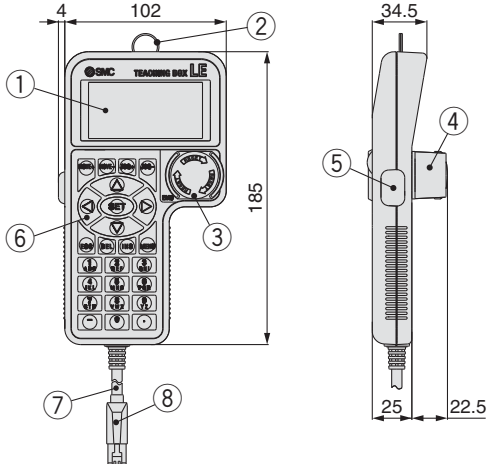
Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive Note 1) (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output) Note 2)
Monitor	• Drive monitor • 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

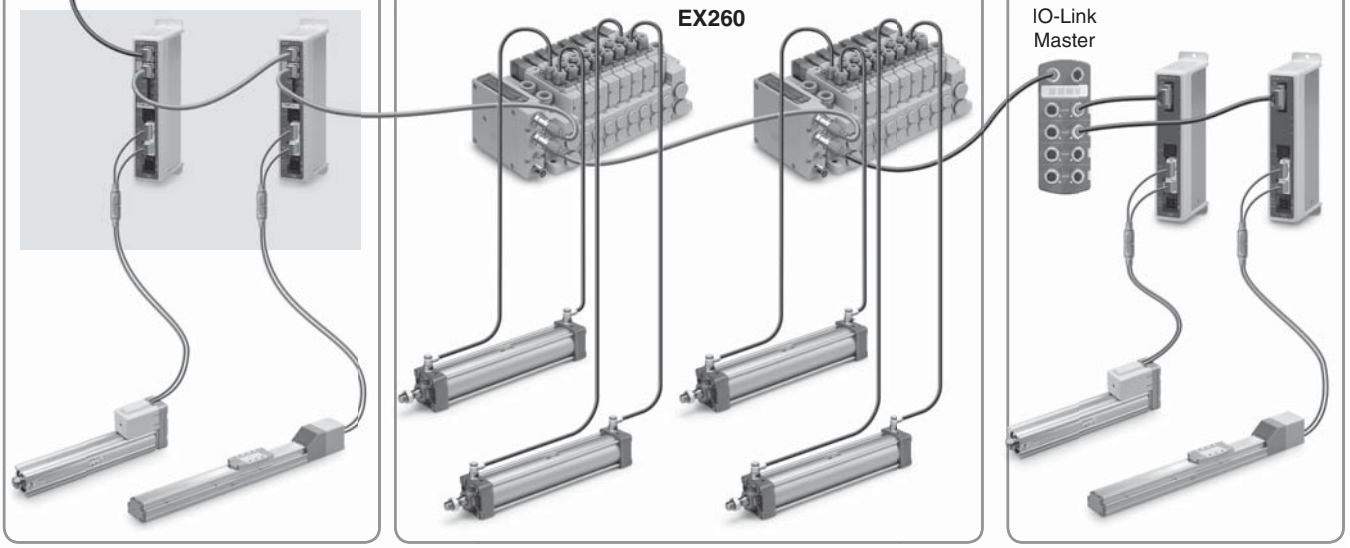
Electric Actuators

Air Cylinders

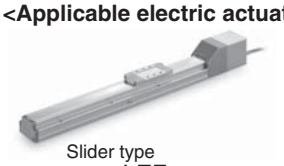
EX260

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.

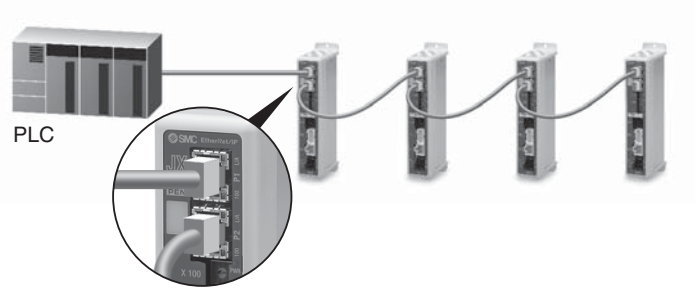
Numerical monitoring available

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.

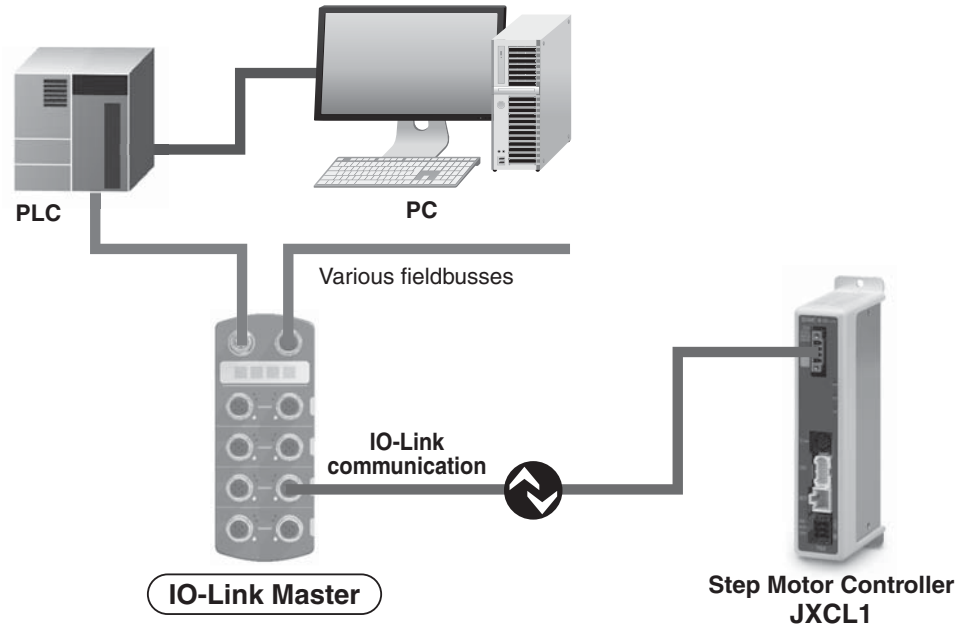
* For the DeviceNet™ type, transition wiring is possible using a branch connector.
* 1 to 1 in the case of IO-Link



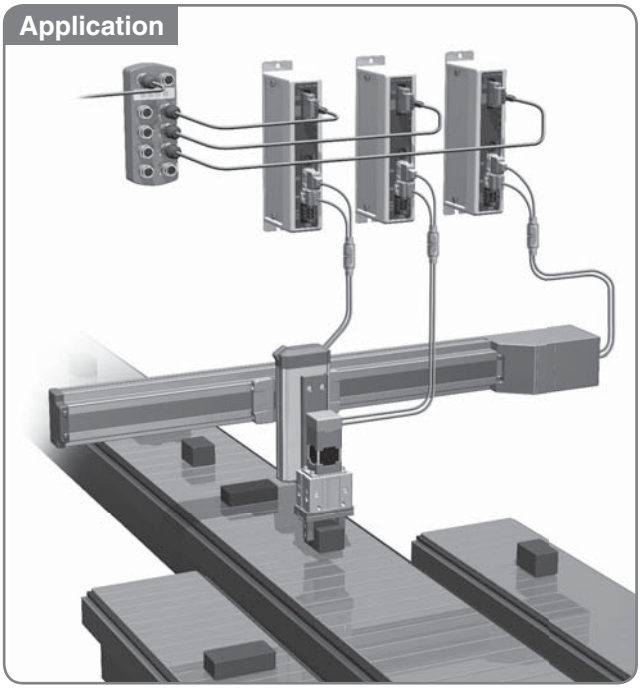
IO-Link communication can be performed.

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

IO-Link 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.

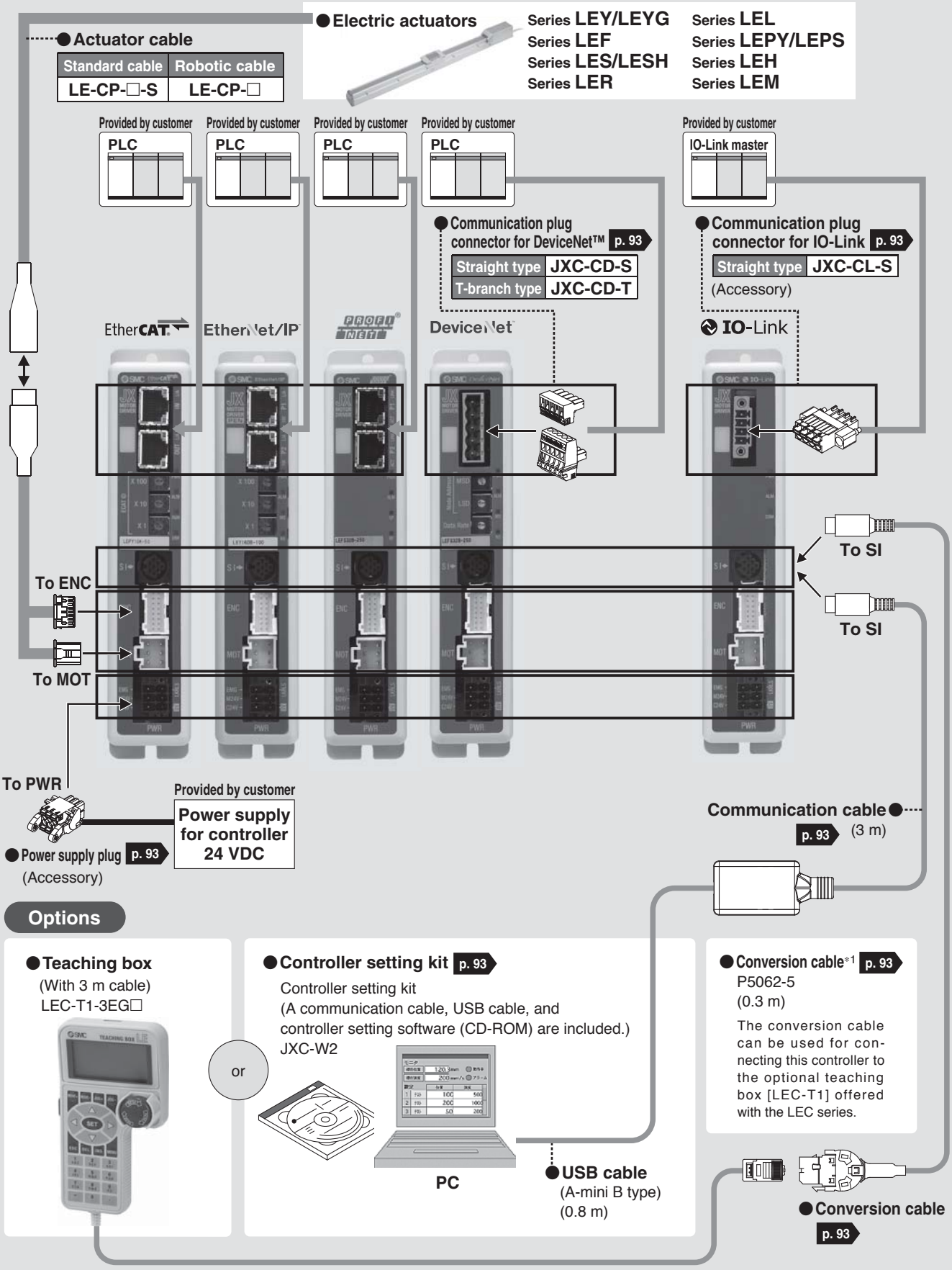
● Data storage function

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. 93
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. 93
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. 93

*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

LES16B-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: LES16B-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 93.)

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 "Nil" 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 – LES16B-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 93.)

Actuator part number

Without cable specifications and actuator options
Example: Enter "**LES16B-100**" for the LES16B-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 "Nil" 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.

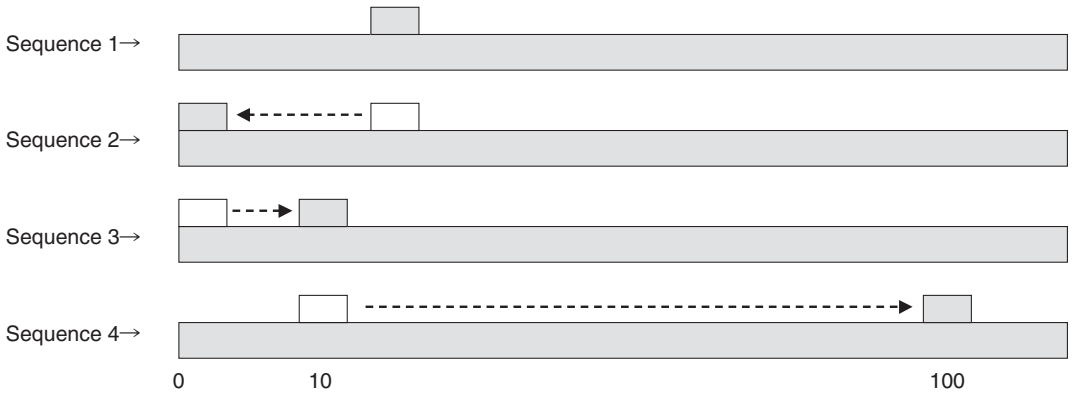
<Application example> Movement between 2 points

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.

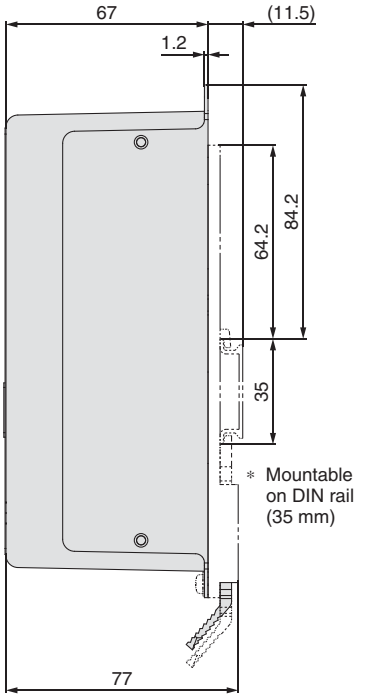
<Numerical data defined operation>
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 and turn ON the input instruction flag (position). Input 10 in the target position. Subsequently the start flag turns ON.
Sequence 4: Turn ON step data No.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

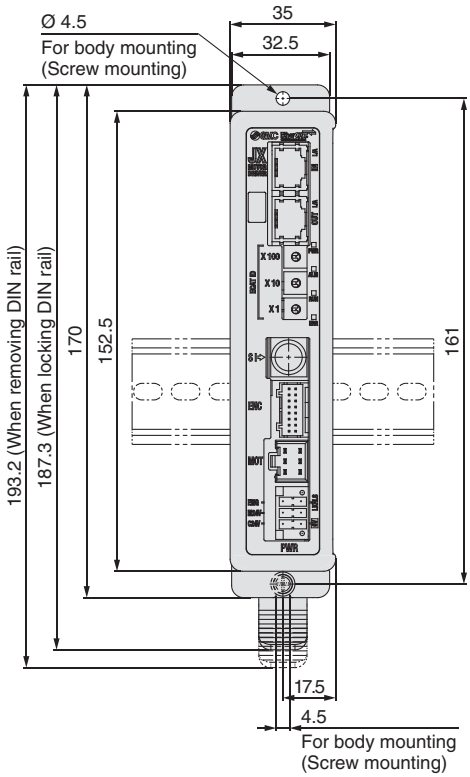


Dimensions

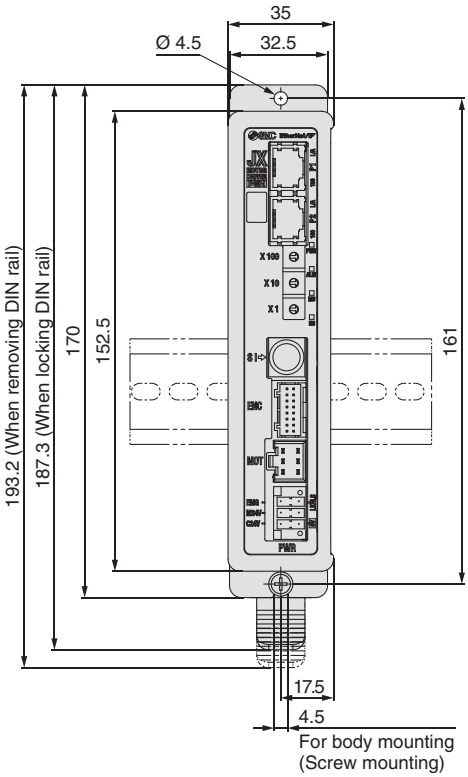
JXCE1/JXC91



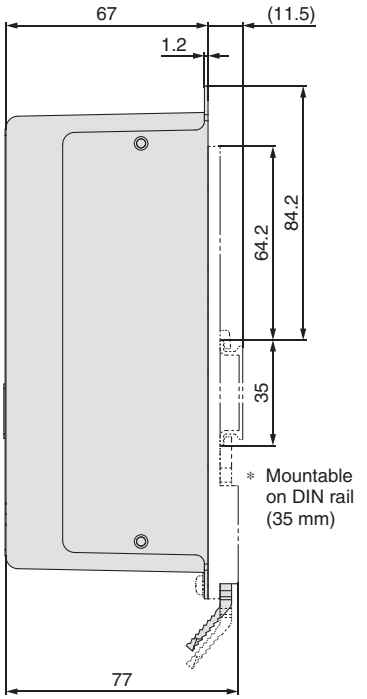
JXCE1



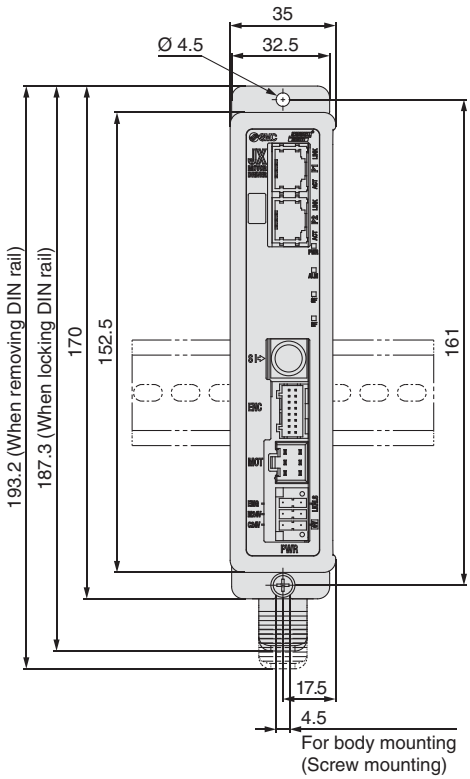
JXC91



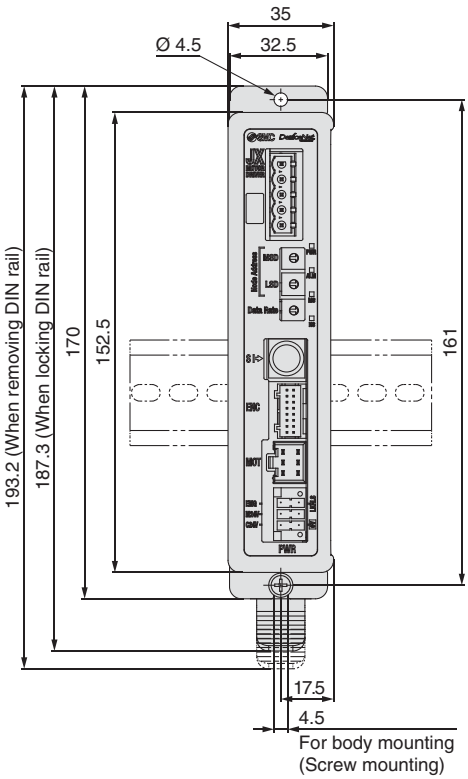
JXCP1/JXCD1



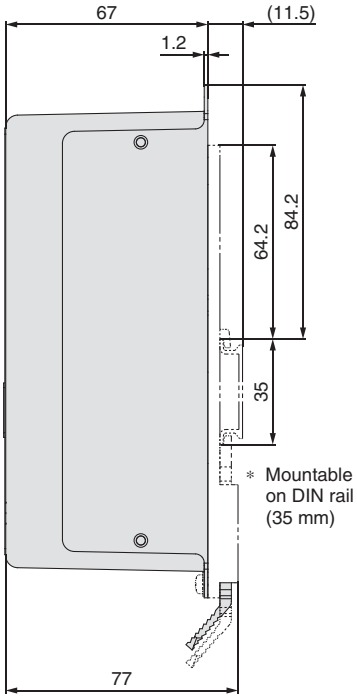
JXCP1



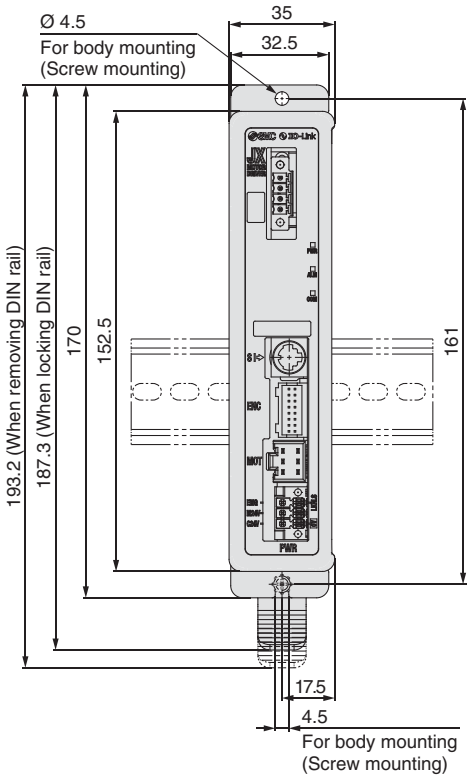
JXCD1



Dimensions

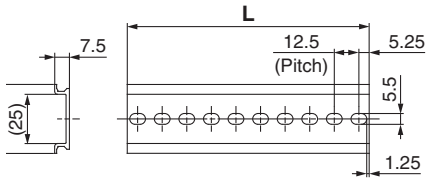


JXCL1



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

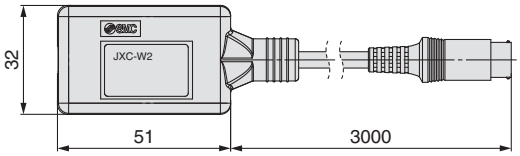
[Contents]
① Communication cable
② USB cable
③ Controller setting software
∗ A conversion cable (P5062-5) is not required.

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

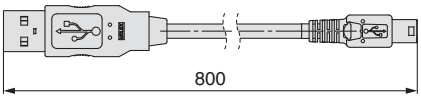


∗ It can be connected to the controller directly.

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

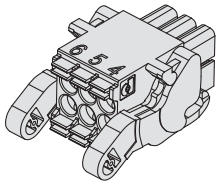
This should be used when a DIN rail mounting adapter is mounted onto a screw mounting type controller afterwards.

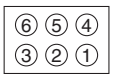
■ DIN rail AXT100-DR-□

∗ For □, enter a number from the No. line in the table on page 92. Refer to the dimension drawings on page 92 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

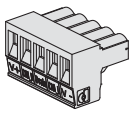
Power supply plug

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

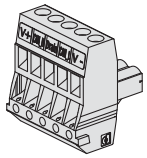
■ Communication plug connector

For DeviceNet™

Straight type
JXC-CD-S



T-branch type
JXC-CD-T

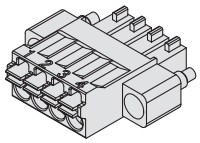


Communication plug connector for DeviceNet™

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

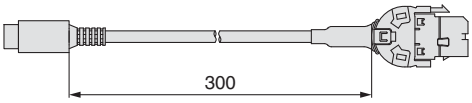
Straight type
JXC-CL-S



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

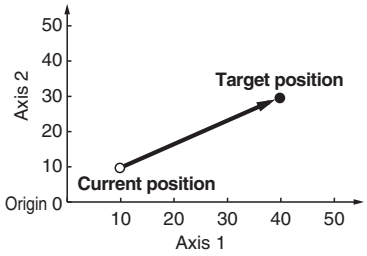
Series JXCD1□
Series JXCP1□
Series JXCE1□

Multi-Axis Step Motor Controller

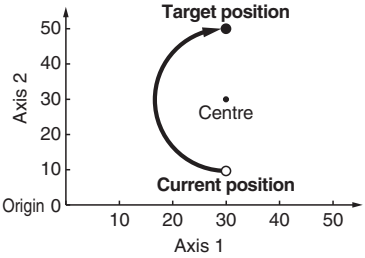
CE RoHS

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

Linear interpolation



Circular interpolation



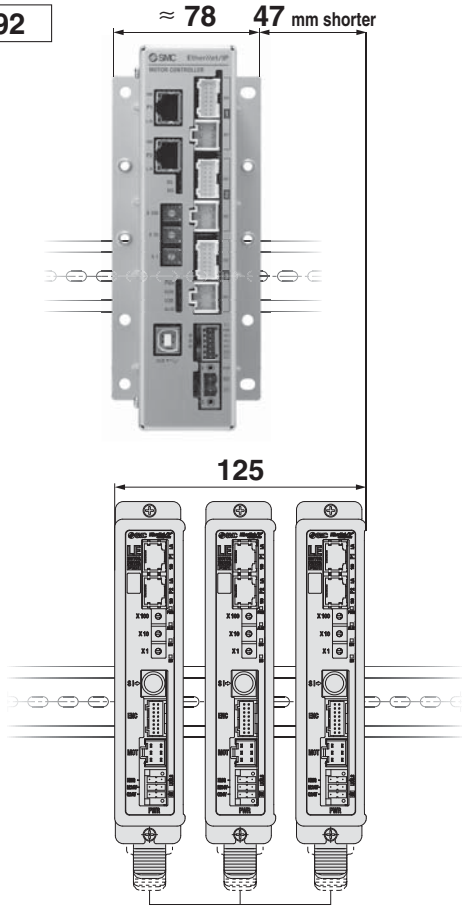
- **Positioning/pushing operation**
- **Step data input (Max. 2048 points)**
- **Space saving, reduced wiring**
- **Absolute/relative position coordinate instructions**

*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**

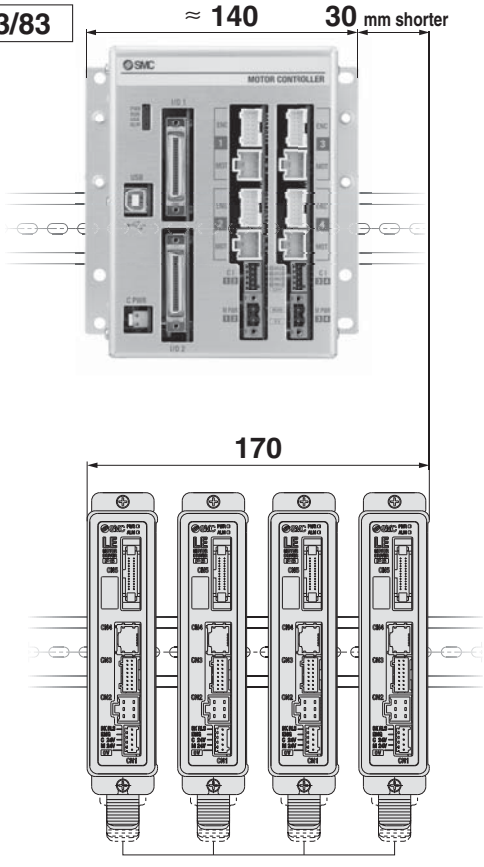
JXC92



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.

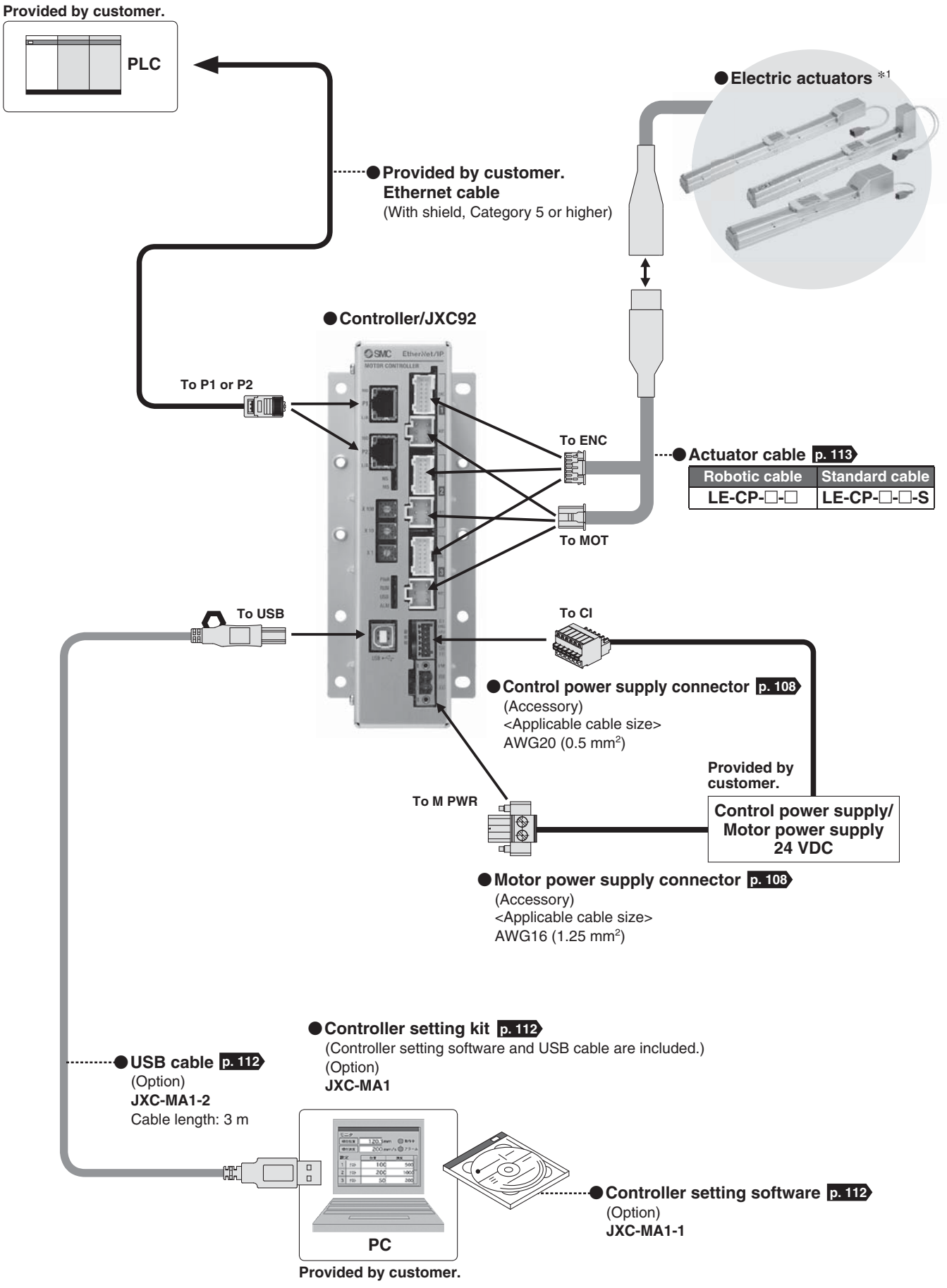
Step	Axis	Movement mode	Speed	Position	Acceleration	Deceleration	Positioning/ Pushing	Area 1	Area 2	In position	Comments
			mm/s	mm	mm/s²	mm/s²		mm	mm	mm	
0	Axis 1	ABS	100	200.00	1000	1000	0	6.0	12.0	0.5	
	Axis 2	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	Axis 3	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	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 102.)

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

Provided by customer.

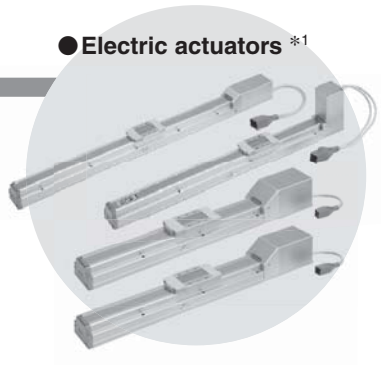
PLC

Power supply for I/O signal
24 VDC

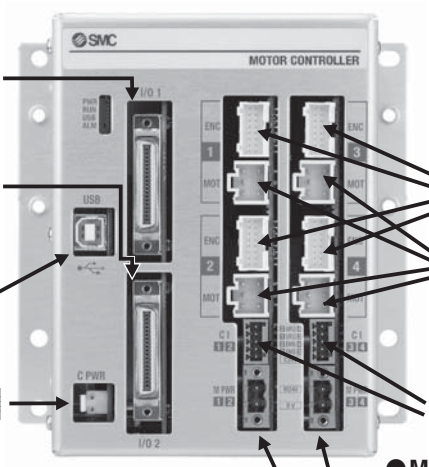
● I/O cable p. 111
(Option)

Part no.
JXC-C2-□

● Electric actuators *1



● Controller/JXC73/83



To I/O

To USB

To C PWR

To ENC

To MOT

To CI

● Actuator cable p. 113

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

● Motor control power supply connector p. 108
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

● Cable with main control power supply connector p. 111
Cable length: 1.5 m (Accessory)

Part no.
JXC-C1

Provided by customer.
Main control power supply
24 VDC

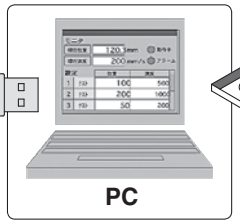
To M PWR

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. 112
(Controller setting software and USB cable are included.)
(Option)
JXC-W1

● USB cable p. 112
(Option)
JXC-W1-2
Cable length: 3 m



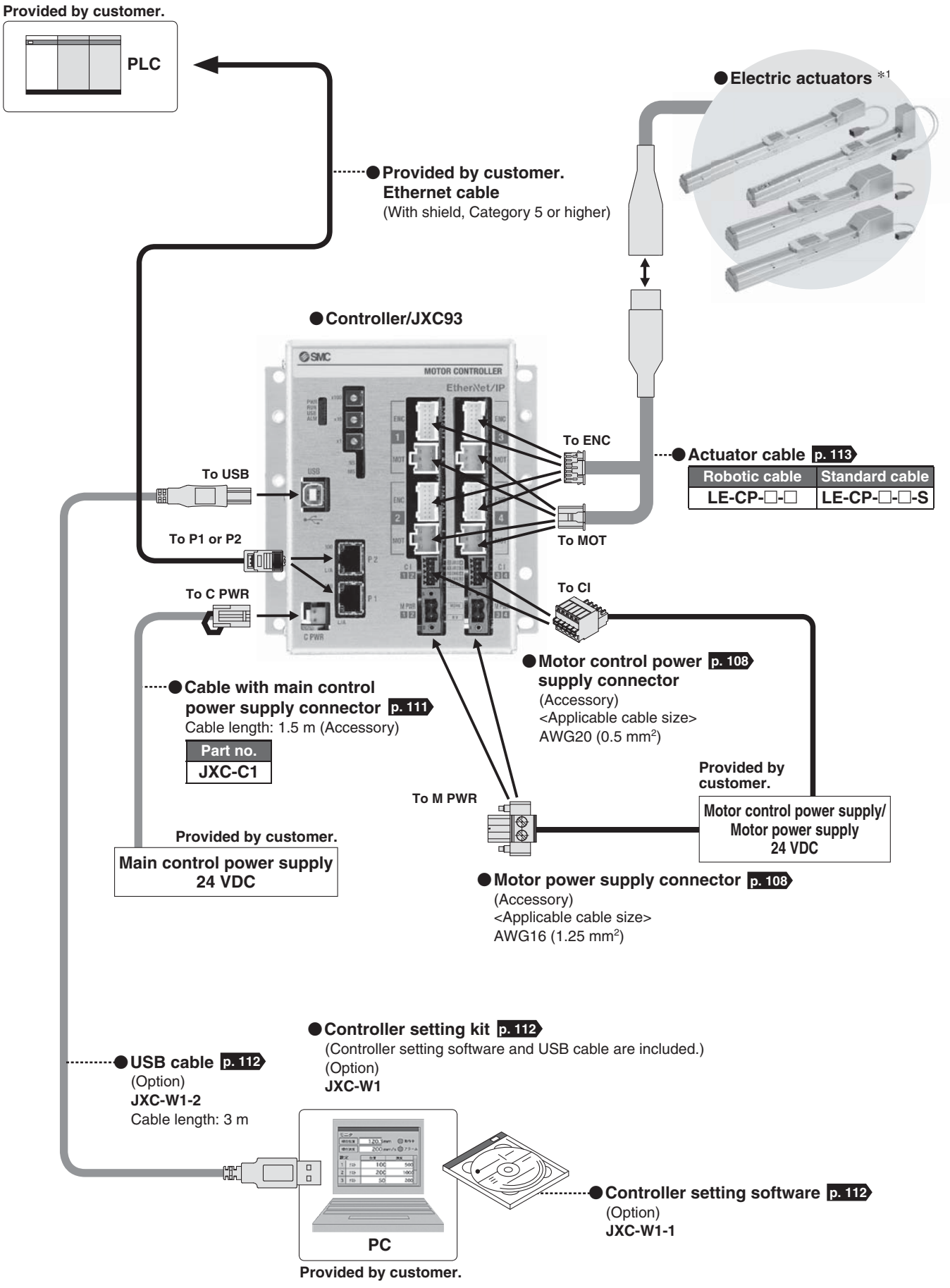
PC

Provided by customer.

● Controller setting software p. 112
(Option)
JXC-W1-1

*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 104.)

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



*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 104.)

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)

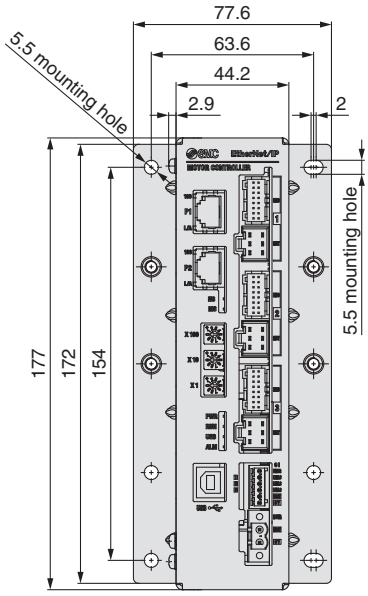
EtherNet/IP™ Type (JXC92)

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)

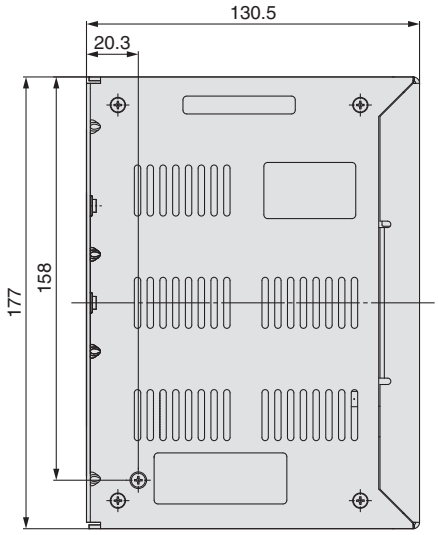
∗1 Do not use a power supply with inrush current protection for the motor drive power supply.
∗2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
∗3 EtherNet/IP™ is a trademark of ODVA.
∗4 Applicable to non-magnetising locks

Dimensions

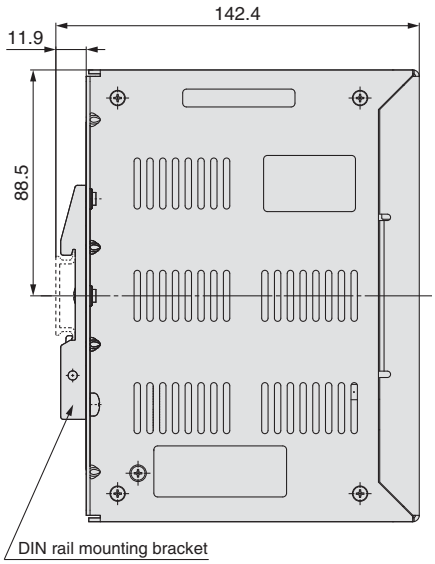
EtherNet/IP™ Type JXC92



Screw mounting

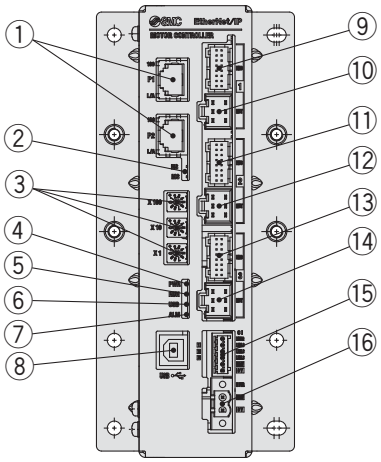


DIN rail mounting



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 108.)

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)

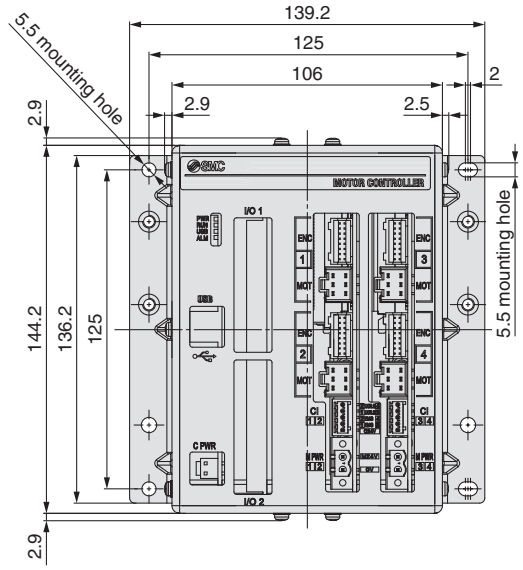
EtherNet/IP™ Type (JXC93)

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)

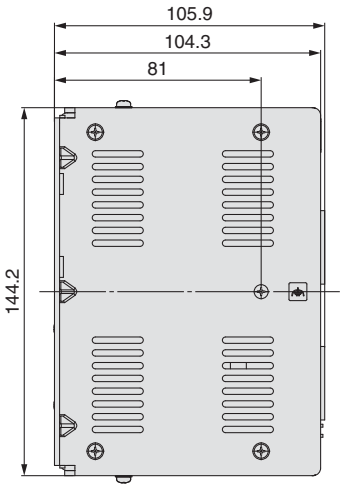
∗1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
∗2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
∗3 Applicable to non-magnetising locks
∗4 EtherNet/IP™ is a trademark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

Dimensions

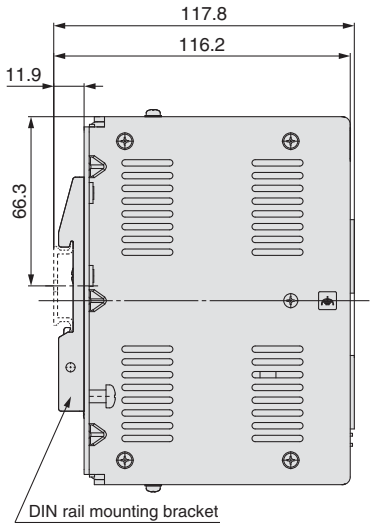
Parallel I/O JXC73/83



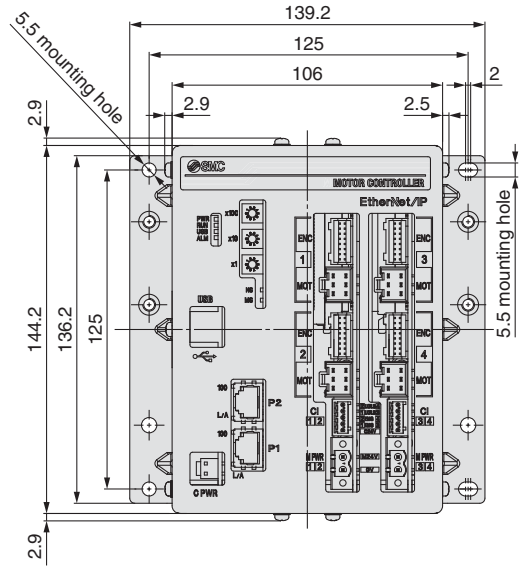
Screw mounting



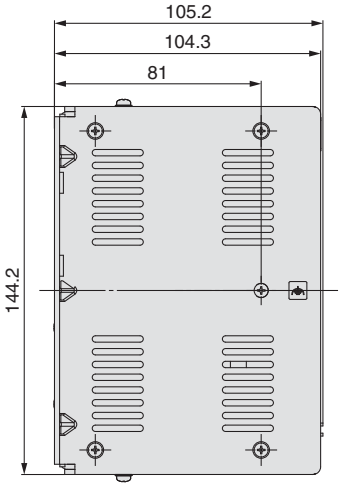
DIN rail mounting



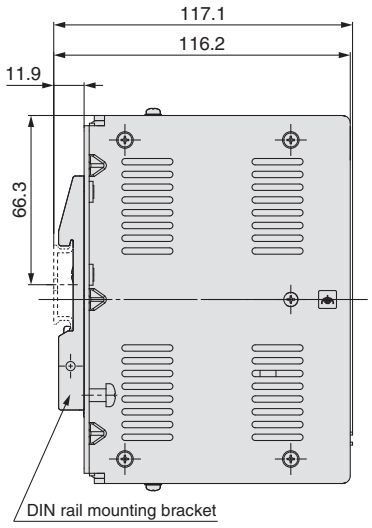
EtherNet/IP™ Type JXC93



Screw mounting

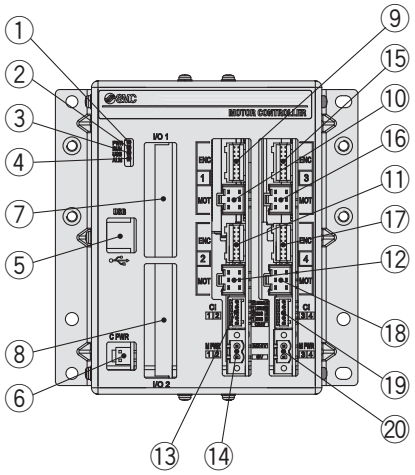


DIN rail mounting



Controller Details

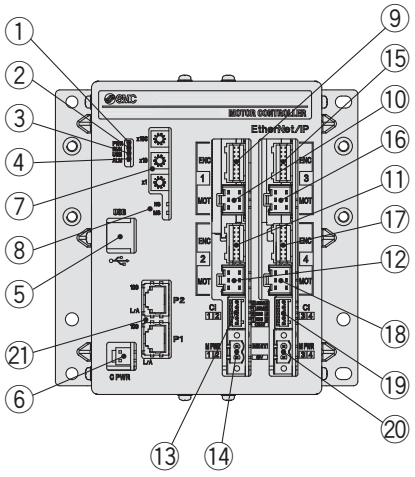
Parallel I/O JXC73/83



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 108.)

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 108.)

Wiring Example 1

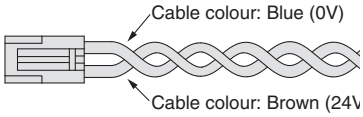
Cable with Main Control Power Supply Connector (For 4 Axes)*1: C PWR 1 pc.

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



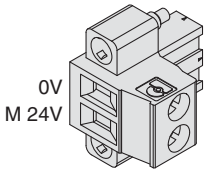
Motor Power Supply Connector (For 3/4 Axes)*2: M PWR 2 pcs.*3

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



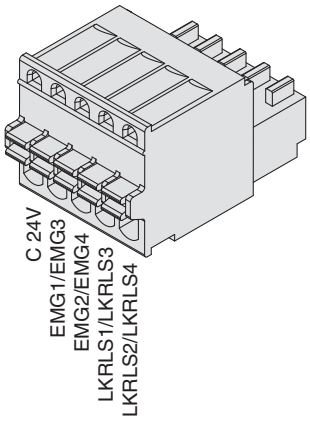
Motor Control Power Supply Connector (For 4 Axes)*4: CI 2 pcs.

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



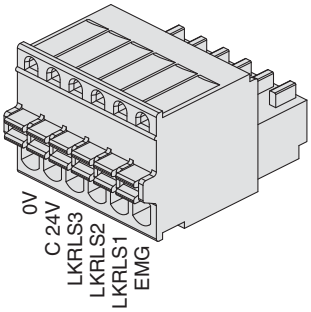
Control Power Supply Connector (For 3 Axes)*5: CI 1 pc.

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



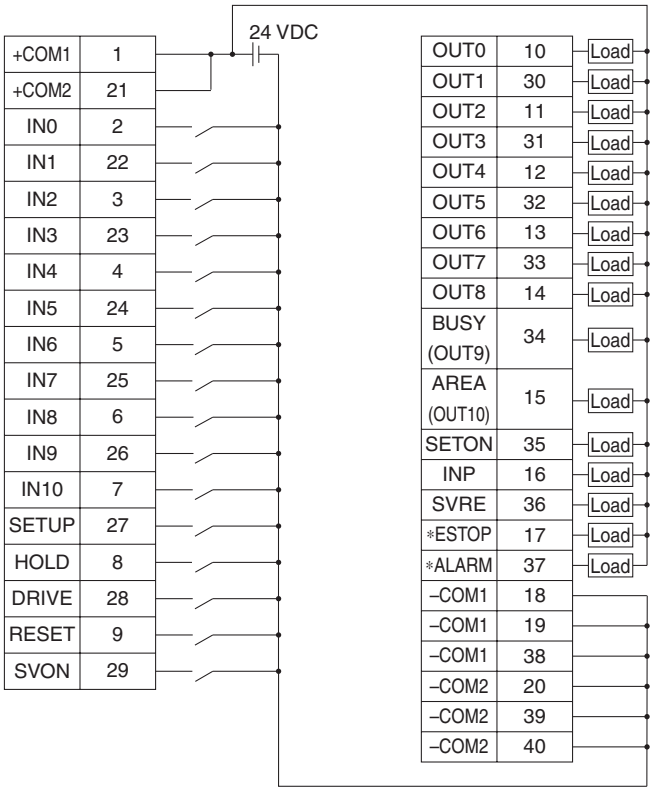
Wiring Example 2

Parallel I/O Connector

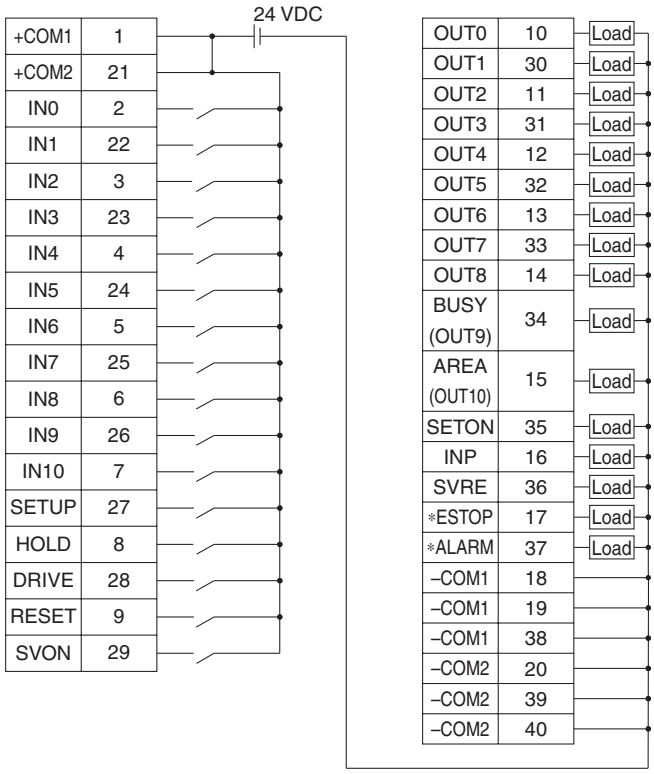
* When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
* The wiring changes depending on the type of the parallel I/O (NPN or PNP).

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

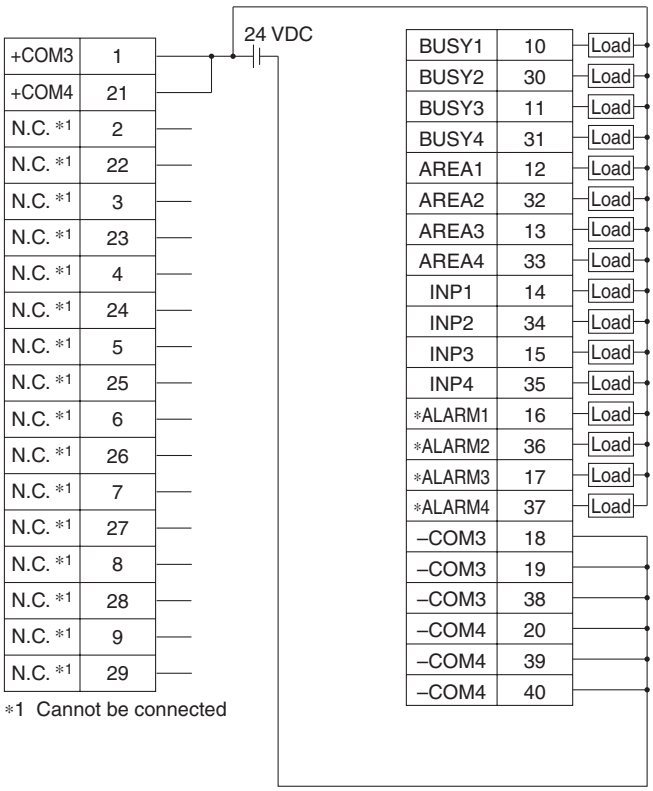
Wiring Example 2

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).

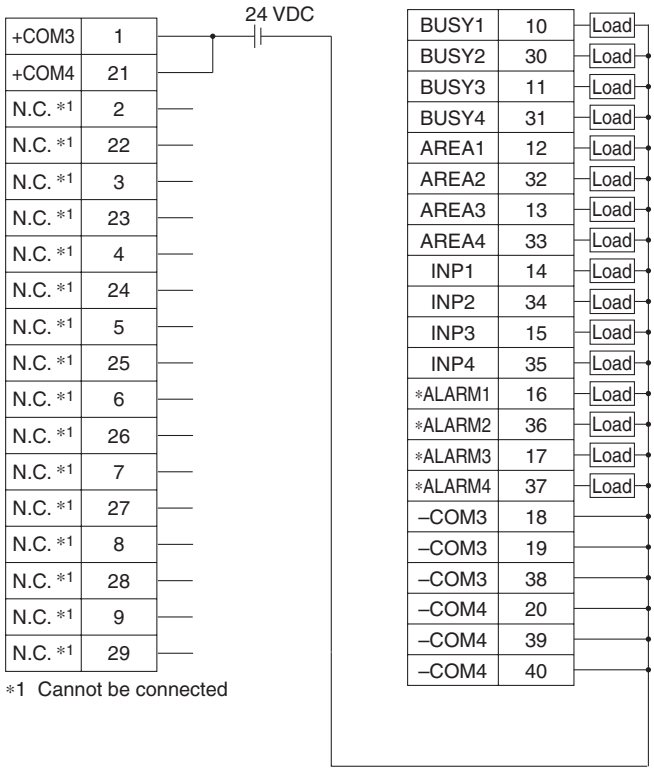
I/O 2 Wiring example

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.)

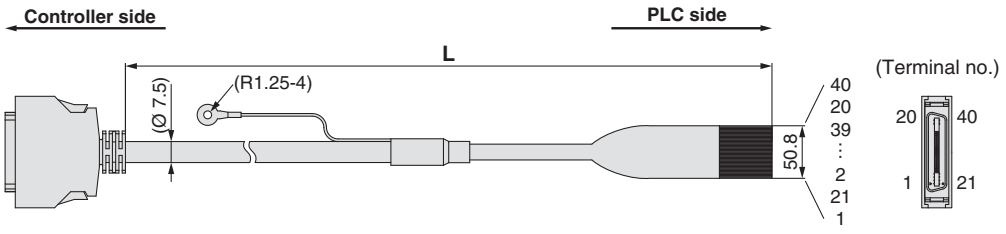
For 4 Axes
JXC73/83

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)

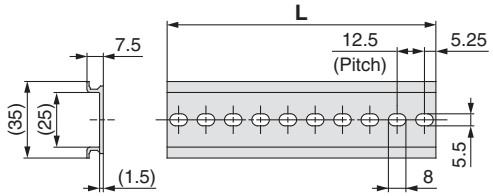
DIN rail

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 103 and 106 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.

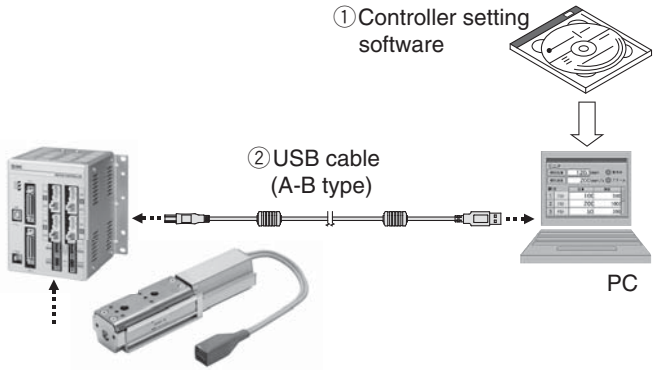
Options

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

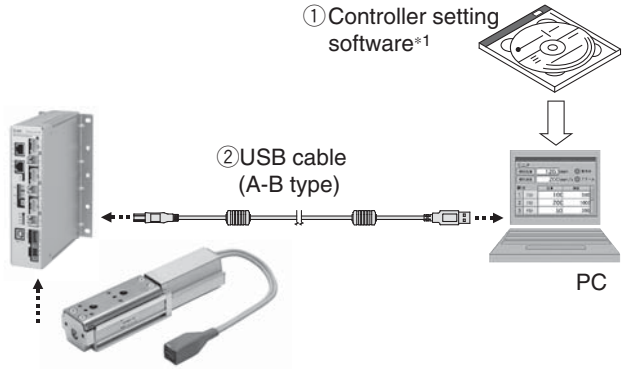
∗ Windows® is a registered trademark of Microsoft Corporation in the United States.

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]

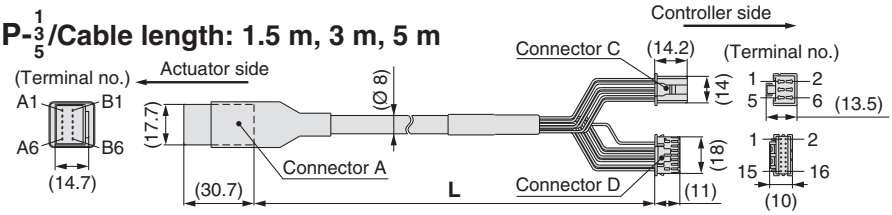
1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

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

Cable type

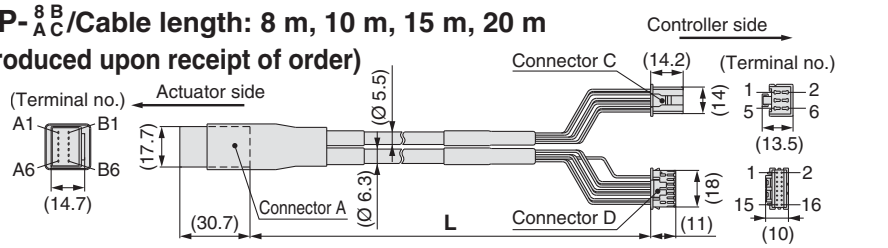
—	Robotic cable (Flexible cable)
S	Standard cable

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

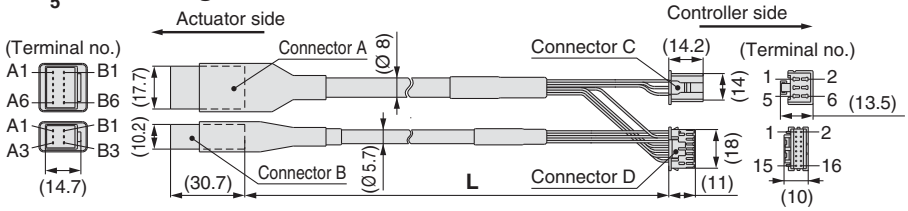
*1 Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

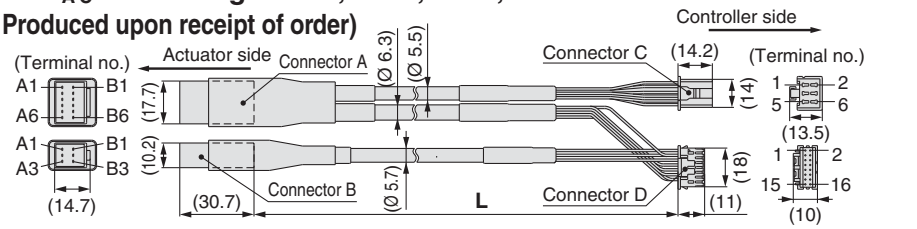
—	Robotic cable (Flexible cable)
S	Standard cable

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

⚠ 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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