New

Electric Actuator

Slider Type

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

Ball Screw Drive *Series* LEFS

Size: 16, 25, 32, 40

Max. work load: **60** kg
Positioning repeatability: ±**0.02** mm
Clean room specification also available

Clean room specification
11-LEFS

Belt Drive *Series* LEFB

Size: 16, 25, 32

Max. stroke: **2,000** mm
Max. speed: **2,000** mm/s

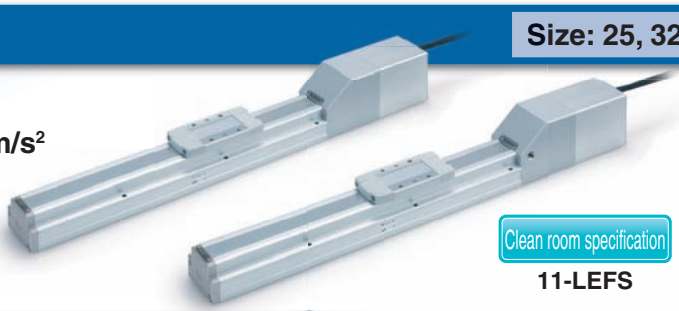
AC Servo Motor Type

∗ Not applicable to UL.

Ball Screw Drive *Series* LEFS

Size: 25, 32, 40

Improved high speed transfer ability
High acceleration/deceleration: 20,000 mm/s²
Pulse input type
With internal absolute encoder (For LECSB/C/S)
Clean room specification also available

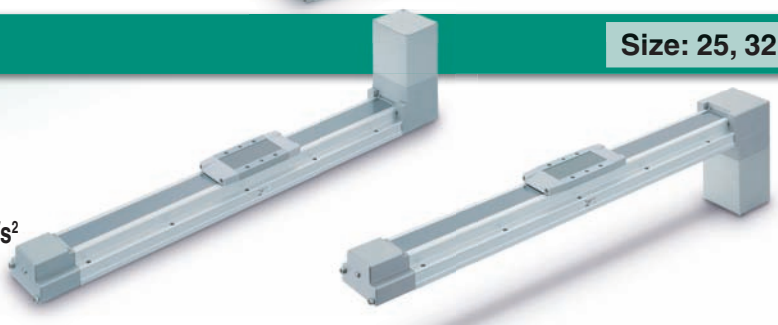


Clean room specification
11-LEFS

Belt Drive *Series* LEFB

Size: 25, 32, 40

Max. speed: **2,000** mm/s
Max. stroke: **3,000** mm
Max. acceleration/deceleration: **20,000** mm/s²
Motor bottom mounting type also available



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

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

AC Servo Motor Driver

∗ Not applicable to UL.

For absolute encoder

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

For incremental encoder

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

Series LEF

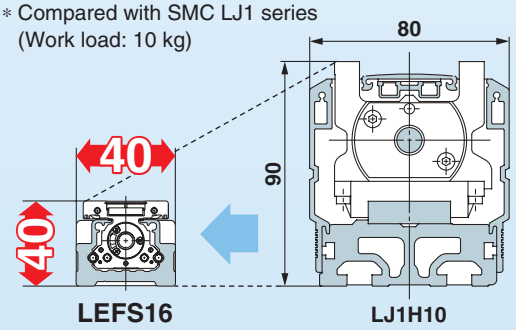
SMC

CAT.ES100-87D

●Compact

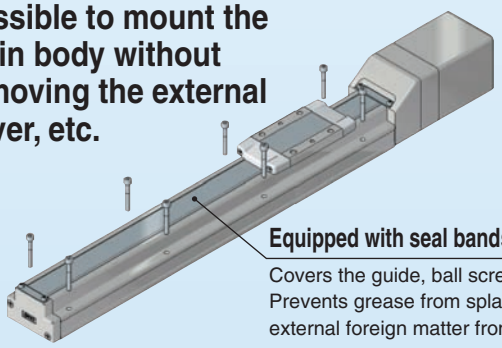
Height/width dimensions reduced by approx. 50%

＊Compared with SMC LJ1 series
(Work load: 10 kg)



●Easy mounting of the body/Reduction of the installation labor

Possible to mount the main body without removing the external cover, etc.



Equipped with seal bands as standard

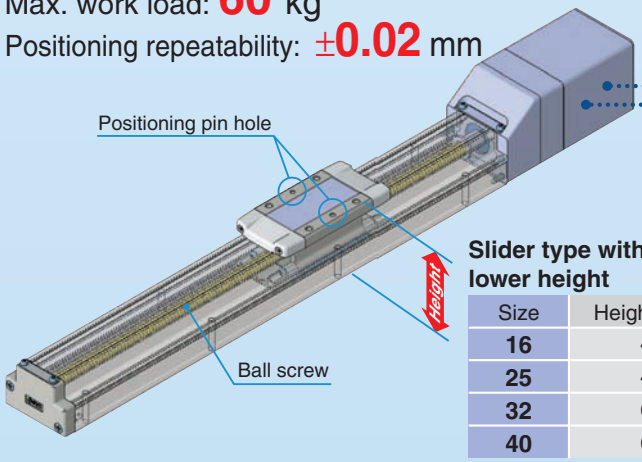
Covers the guide, ball screw and belt. Prevents grease from splashing and external foreign matter from entering.

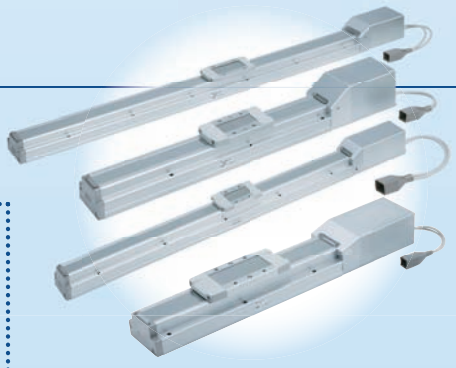
Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC)

Ball Screw Drive/*Series* LEFS

Size: 16, 25, 32, 40

Max. work load: **60** kg
Positioning repeatability: ±**0.02** mm





Slider type with lower height

Size	Height (mm)
16	40
25	48
32	60
40	68

Non-magnetizing lock mechanism (Option)

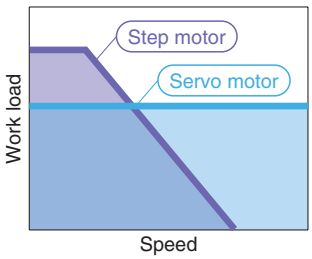
Drop prevention in case of power failure (Maintained)＊

＊The belt drive actuator LEFB cannot be used vertically for applications.

Compatible motors

●Step motor (Servo/24 VDC)
Ideal for transfer of high load at a low speed

●Servo motor (24 VDC)
Stable at a high speed and silent operation



Slider type with lower height

Belt Drive/*Series* LEFB

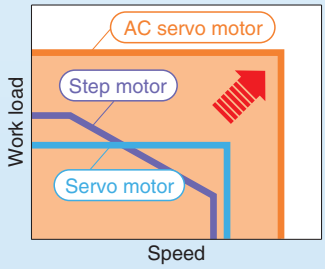
Size: 16, 25, 32

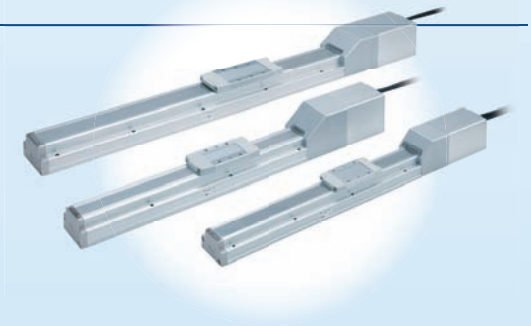
Max. stroke: **2,000** mm
Max. speed: **2,000** mm/s

AC Servo Motor

Ball Screw Drive/*Series* *LEFS* Size: 25, 32, 40

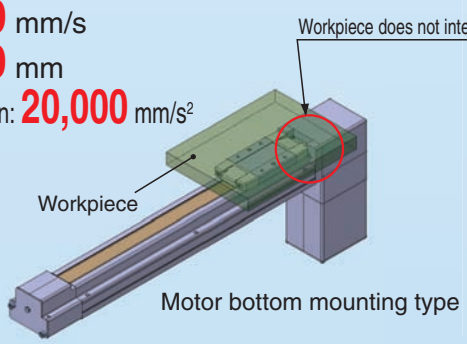
High output motor (100/200/400 W)
Improved high speed transfer ability
High acceleration/deceleration compatible: 20,000 mm/s^2
Pulse input type
With internal absolute encoder (For LECSB/C/S)

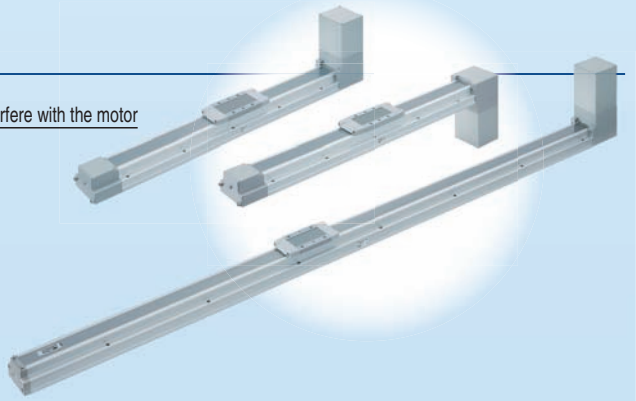




Belt Drive/*Series* *LEFB* Size: 25, 32, 40

Max. speed: **2,000** mm/s
Max. stroke: **3,000** mm
Max. acceleration/deceleration: **20,000** mm/s^2





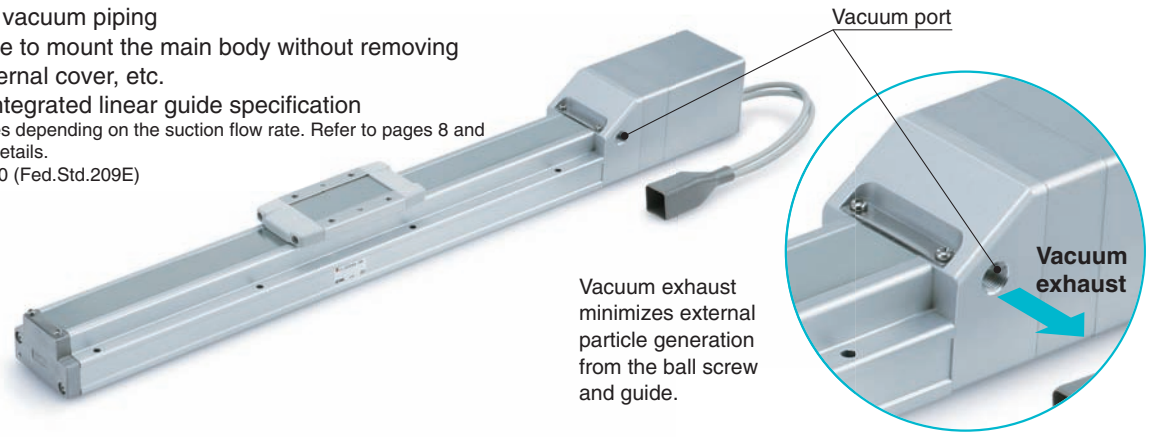
Clean room specification

Ball Screw Drive/*Series* *11-LEFS*

ISO Class 4[*1, *2] (ISO14644-1)!

- Built-in vacuum piping
- Possible to mount the main body without removing the external cover, etc.
- Body-integrated linear guide specification

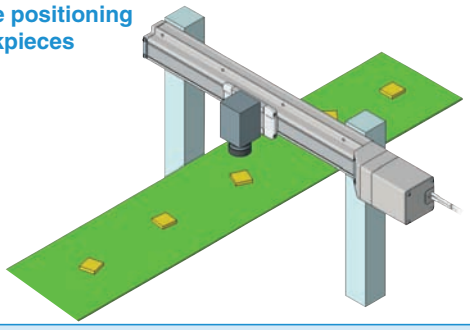
*1 Changes depending on the suction flow rate. Refer to pages 8 and 77 for details.
*2 Class 10 (Fed.Std.209E)



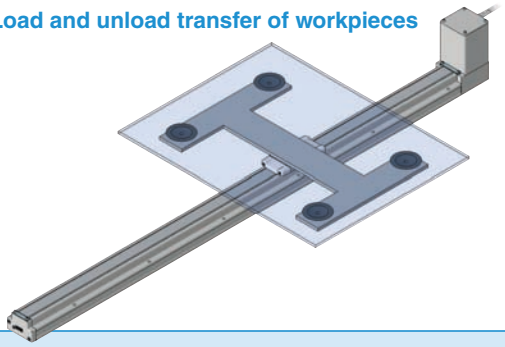
Vacuum exhaust minimizes external particle generation from the ball screw and guide.

Application Examples

Precise positioning of workpieces



Load and unload transfer of workpieces



Series Variations

Ball Screw Drive/Series LEFS

Type	Size *1	Lead (mm)	Stroke (mm)*2
Step motor (Servo/24 VDC) *3 Clean room compatible	16	5	100, 200, 300, 400
		10	
	25	6	100, 200, 300, 400, 500, 600
		12	
	32	8	100, 200, 300, 400, 500, 600, 700, 800
		16	
	40	10	200, 300, 400, 500, 600, 700, 800, 900, 1000
		20	
Servo motor (24 VDC) *3 Clean room compatible	16	5	100, 200, 300, 400
		10	
	25	6	100, 200, 300, 400, 500, 600
		12	
AC servo motor *3 Clean room compatible	25	6	100, 200, 300, 400, 500, 600
		12	
	32	8	100, 200, 300, 400, 500, 600, 700, 800
		16	
	40	10	200, 300, 400, 500, 600, 700, 800, 900, 1000
		20	

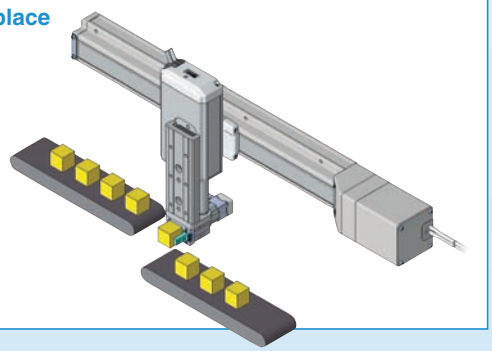
∗1 The size corresponds to the bore of the air cylinder with an equivalent force. (For the ball screw drive)
∗2 Consult with SMC for non-standard strokes as they are produced as special orders.
∗3 For clean room specification, refer to pages 20 and 92.

Belt Drive/Series LEFB

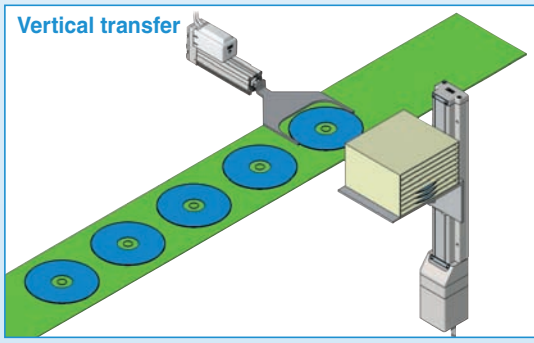
Type	Size *1	Equivalent lead (mm)	Stroke (mm)*2
Step motor (Servo/24 VDC)	16	48	300, 500, 600, 700, 800, 900, 1000
	25	48	300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000
	32	48	300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000
Servo motor (24 VDC)	16	48	300 ,500 ,600, 700, 800, 900, 1000
	25	48	300, 500 ,600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000
AC servo motor	25	54	300, 400, 500, 600, 700, 800, 900, 1000, (1100), 1200, (1300), (1400), 1500, (1600), (1700), (1800), (1900), 2000
	32	54	300, 400, 500, 600, 700, 800, 900, 1000, (1100), 1200, (1300), (1400), 1500, (1600), (1700), (1800), (1900), 2000, 2500
	40	54	300, 400, 500, 600, 700, 800, 900, 1000, (1100), 1200, (1300), (1400), 1500, (1600), (1700), (1800), (1900), 2000, 2500, 3000

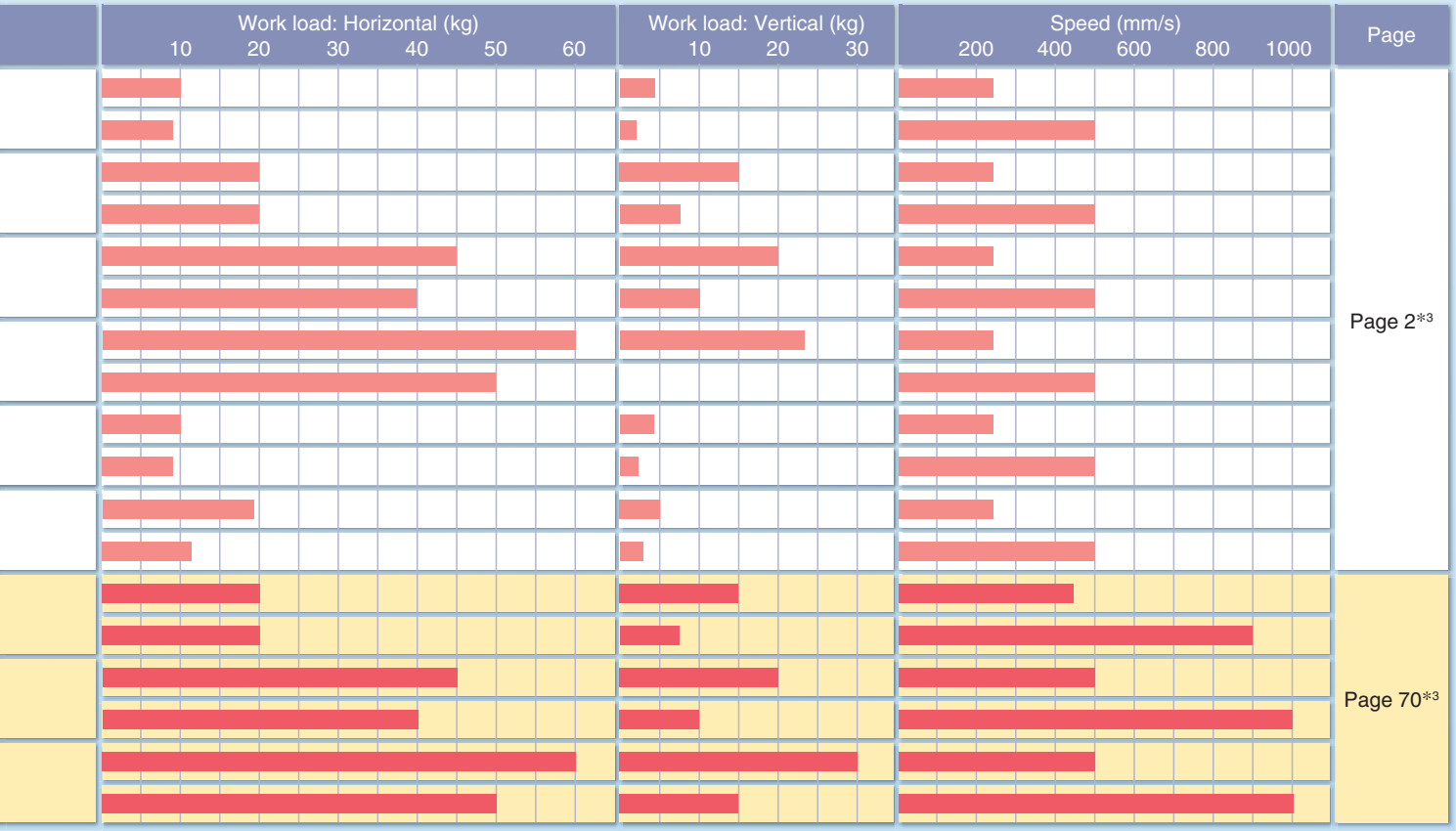
∗1 The size corresponds to the bore of the air cylinder with an equivalent force. (For the ball screw drive)
∗2 Consult with SMC for non-standard strokes as they are produced as special orders.
∗3 The belt drive actuator cannot be used vertically for applications.

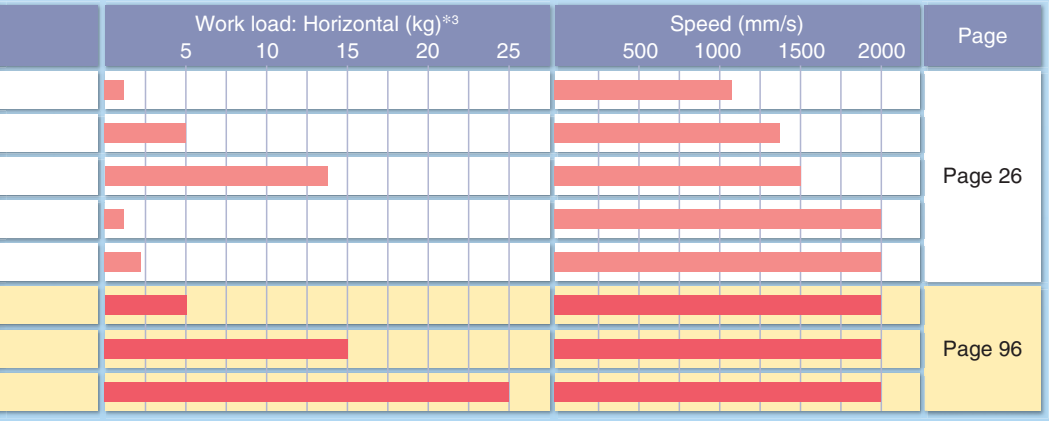
Pick and place



Vertical transfer







Step Data Input Type Series LECP6/LECA6

Simple Setting to Use Straight Away

◎Easy Mode for Simple Setting

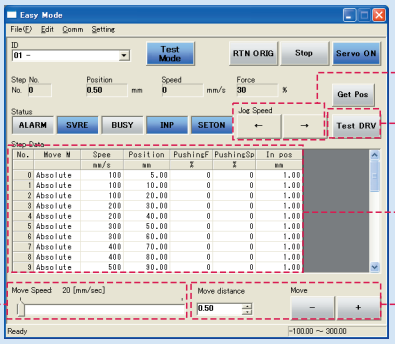
If you want to use it right away, select "Easy Mode."

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

Servo motor (24 VDC) **LECA6**

<When a PC is used>
Controller setting software

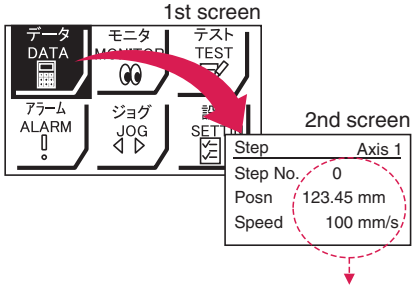
- Step data setting, test operation, move jog and move for the constant rate can be set and operated on one screen.



<When a TB (teaching box) is used>

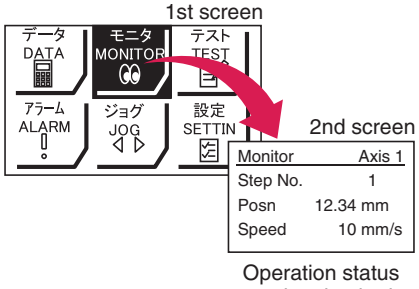
- Simple screen without scrolling promotes ease of setting and operating.
- Pick up an icon from the first screen to select a function.
- Set up the step data and check the monitor on the second screen.

Example of setting the step data



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

Example of checking the operation status



Operation status can be checked.

Teaching box screen

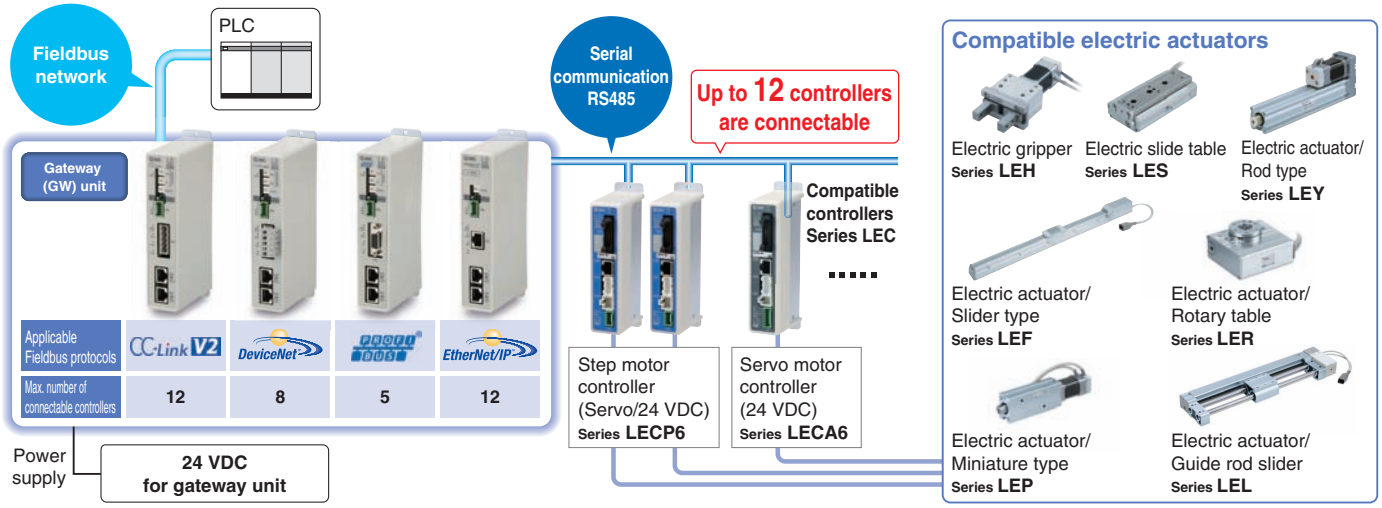
- **Data can be set with position and speed.** (Other conditions are already set.)

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

Gateway Unit Series LEC-G

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



Compatible electric actuators

Electric gripper **Series LEH**

Electric slide table **Series LES**

Electric actuator/ Rod type **Series LEY**

Electric actuator/ Slider type **Series LEF**

Electric actuator/ Rotary table **Series LER**

Electric actuator/ Miniature type **Series LEP**

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

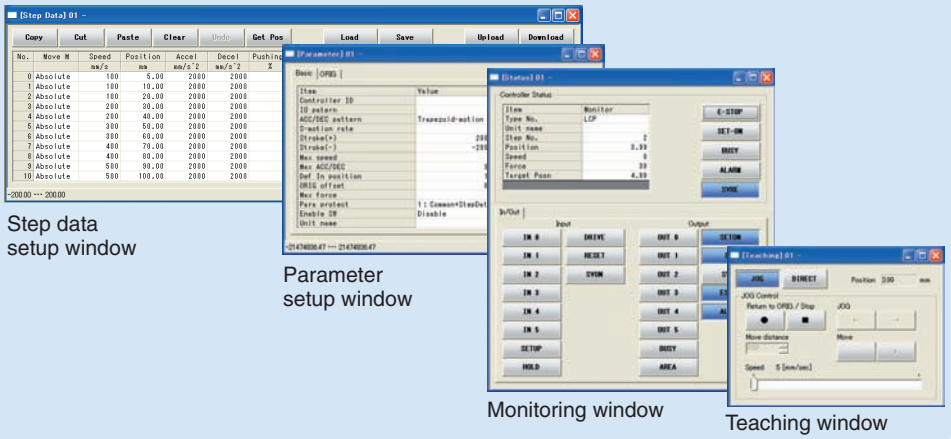
◎Normal Mode for Detailed Setting

Select normal mode when detailed setting is required.

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

<When a PC is used> Controller setting software

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



Step data setup window

Parameter setup window

Monitoring window

Teaching window

<When a TB (teaching box) is used>

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

Teaching box screen

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

Main menu screen

Step data setup screen

Test screen

Monitoring screen

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

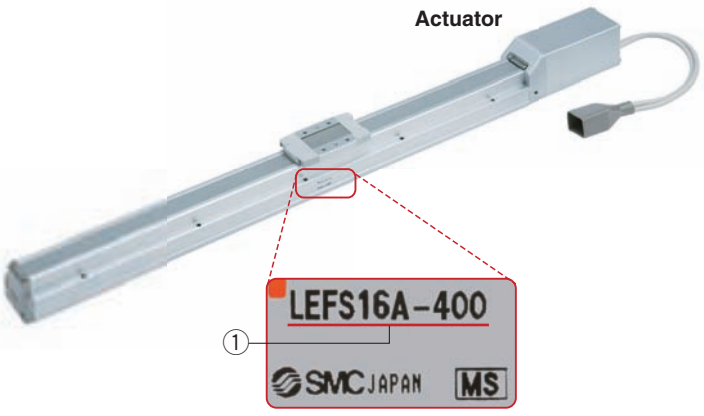
Confirm that the combination of the controller and the actuator is correct.

<Check the following before use.>

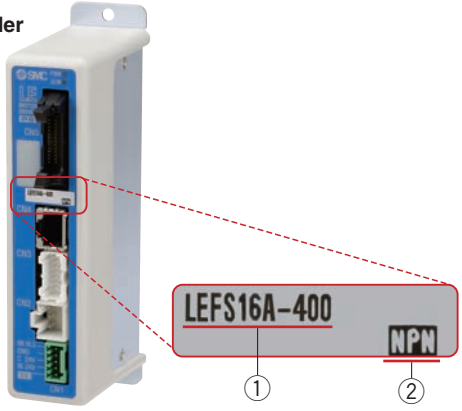
① Check the actuator label for model number. This matches the controller.

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

Actuator



Controller



Programless Type Series LECP1

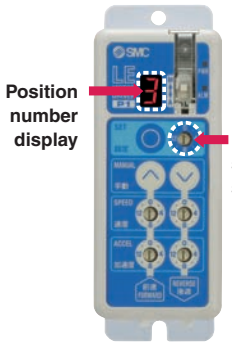
Step motor
(Servo/24 VDC)
LECP1

No programming

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

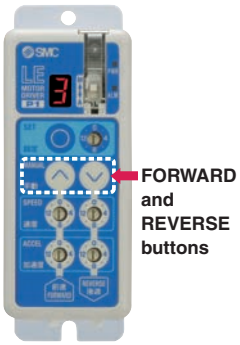
1 Setting position number

Setting a registered number for the stop position
Maximum 14 points



2 Setting a stop position

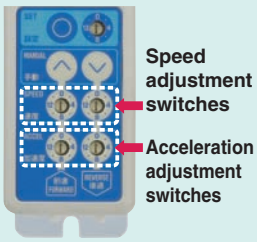
Moving the actuator to a stop position using FORWARD and REVERSE buttons



3 Registration

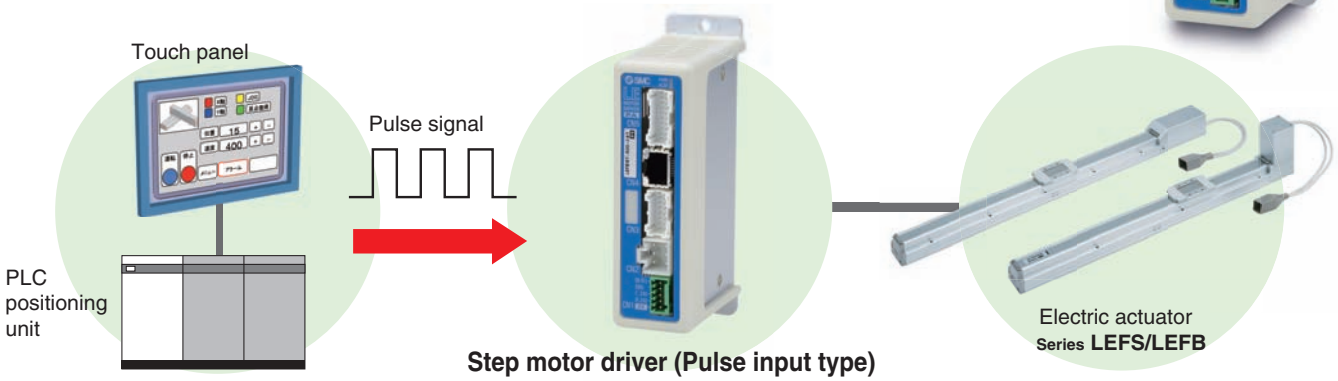
Registering the stop position using SET button

Speed/Acceleration
16-level adjustment



Pulse Input Type Series LECPA

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



Step motor driver (Pulse input type)
Series LECPA

●Return-to-origin command signal

Enables automatic return-to-origin action.

●With force limit function (Pushing force/Gripping force operation available)

Pushing force/Positioning operation possible by switching signals.

Function

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

Setting Items

TB: Teaching box PC: Controller setting software

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

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

System Construction/General Purpose I/O

●Electric actuator/
Slider type

Provided by customer

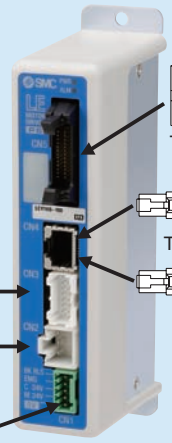
PLC

Power supply for I/O signal
24 VDC Note)

●I/O cable Pages 44, 57

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

●Controller* Page 35



To CN5

To CN4

To CN3

To CN2

To CN1

Step data input type
LECP6/LECA6

Programless type
LECP1
Page 51

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

Provided by customer

Power supply for controller
24 VDC Note)

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

●Power supply plug Page 36

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

●Actuator cable* Pages 42, 56

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

●Touch Operator Interface (Provided by customer)

GP4501T/GP3500T
Manufactured by Digital Electronics Corp.

Pro-face
for the best interface

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

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

Option

●Teaching box Page 46

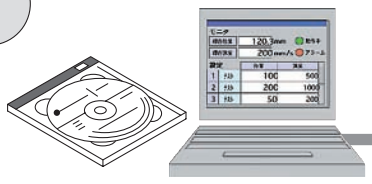
(With 3 m cable)
Part no.: LEC-T1-3JG□

Or

●Controller setting kit Page 45

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

Communication cable●
(3 m)



●USB cable
(A-miniB type)
(0.3 m)

PC

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

System Construction/Pulse Signal

●Electric actuator/
Slider type

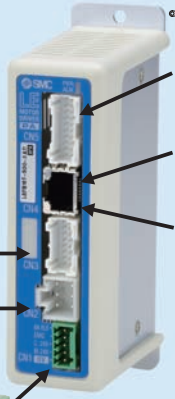
Provided by customer

PLC

Power supply for I/O signal
24 VDC Note)

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

●Driver* Page 58



To CN5

To CN4

To CN3

To CN2

To CN1

●I/O cable Page 64

Driver type	Part no.
LECPA	LEC-CL5-□

Provided by customer

Power supply for driver
24 VDC Note)

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

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

●Actuator cable* Page 63

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

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

Option

●Teaching box Page 66
(With 3 m cable)
Part no.: LEC-T1-3JG□

Or

●Controller setting software Page 65
Communication cable (With conversion unit) and USB cable are included.
Part no.: LEC-W2

Communication cable●

●USB cable
(A-miniB type)

PC

System Construction/Fieldbus Network

PLC
(Provided by customer)

Power supply for gateway unit
24 VDC Note 1)

Power supply

Fieldbus network

Gateway (GW) unit Page 48

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 48
●Communication cable
LEC-CG1-□

Page 48
●Cable between branches
LEC-CG2-□

●Branch connector Page 48
LEC-CGD

●Terminating resistor connector 120Ω
LEC-CGR

Page 48
●Communication cable
LEC-CG1-□

●Controller Page 36

●Controller Page 36

To CN4

●Power supply connector (Accessory) — To CN1

Controller input power supply Note 1)

●Power supply connector (Accessory) — To CN1

Controller input power supply Note 1)

●Electric actuator/ Slider type

Option

●Controller setting software Page 45
(Communication cable and USB cable are included.)
Part no.: LEC-W2

●Communication cable

●USB cable (A-miniB type)

PC (Provided by customer)

Or

●Teaching box Page 46
(With 3 m cable)
Part no.: LEC-T1-3JG□

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

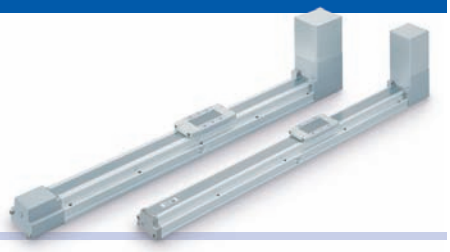
Compatible controllers

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

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

AC Servo Motor Driver

Series LECS□



Series LECS□ list

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

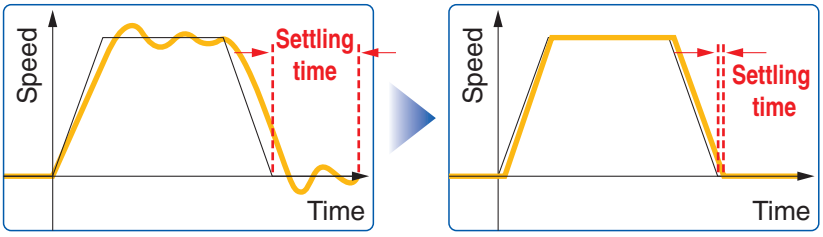
Note 1) For positioning type, setting needs to be changed to use with maximum set values.
Setup software (MR Configurator) LEC-MR-SETUP221 is required.
Note 2) Available when the Mitsubishi motion controller is used for the master equipment.

AC Servo Motor Driver — Series LECS□

Servo adjustment using auto gain tuning

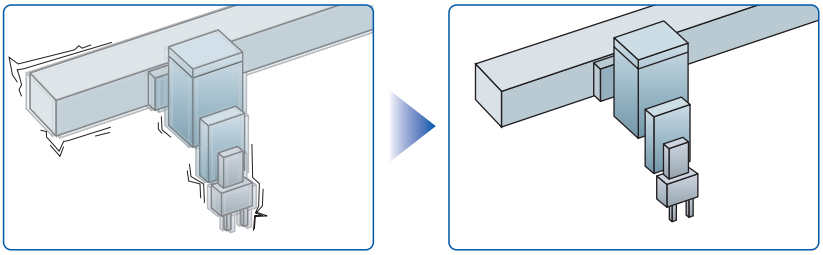
Auto resonant filter function

- Control the difference between command value and actual action



Auto damping control function

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



With display setting function

One-touch adjustment button

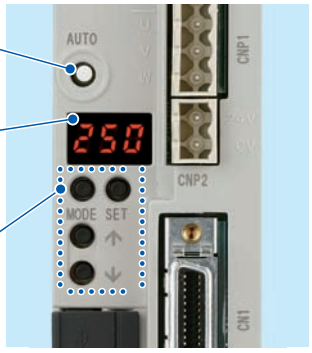
One-touch servo adjustment

Display

Display the monitor, parameter and alarm.

Settings

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



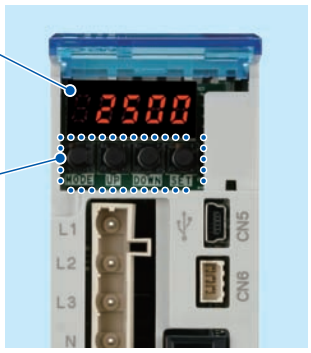
LECSA

Display

Display the monitor, parameter and alarm.

Settings

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



(With the front cover opened)

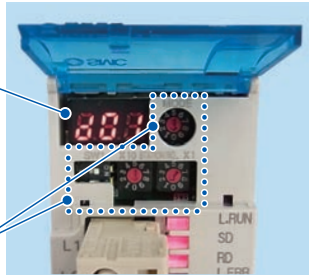
LECSB

Display

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

Settings

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



(With the front cover opened)

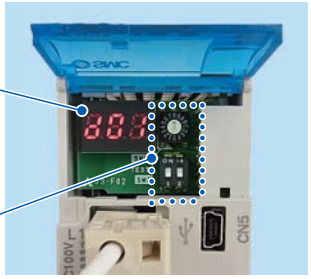
LECSC

Display

Display the communication status with the driver and the alarm.

Settings

Switches for selecting axis and switching to the test operation



(With the front cover opened)

LECSS

System Construction

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

Provided by customer

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

◎Option Page 119
Regeneration option
Part no.: **LEC-MR-RB-□**

Main circuit power supply connector Page 113
(Accessory)

Driver

Motor cable Page 119

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

Lock cable Page 119

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

Electric actuator
Linear guide type Pages 84, 96
Ball screw drive **Series LEFS**
Belt drive **Series LEFB**

Encoder cable Page 119

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

Provided by customer

Control circuit power supply
24 VDC

Control circuit power supply connector Page 113
(Accessory)

◎Option

Setup software Page 120
(MR Configurator™)
Part no.: **LEC-MR-SETUP221□**

PC

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

USB cable Page 120
Part no.: **LEC-MR-J3USB**

◎Option Page 119
I/O connector
Part no.: **LE-CSNA**

Provided by customer

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

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

Provided by customer

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

◎Option Page 119
Regeneration option
Part no.: **LEC-MR-RB-□**

Main circuit power supply connector Page 114
(Accessory)

Driver

Motor cable Page 119

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

Lock cable Page 119

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

Control circuit power supply connector Page 114
(Accessory)

Electric actuator
Linear guide type Pages 84, 96
Ball screw drive **Series LEFS**
Belt drive **Series LEFB**

Motor connector Page 114
(Accessory)

Encoder cable Page 119

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

Battery (Accessory) Page 120
Part no.: (**LEC-MR-J3BAT**)

USB cable Page 120
Part no.: **LEC-MR-J3USB**

◎Option

Setup software Page 120
(MR Configurator™)
Part no.: **LEC-MR-SETUP221□**

PC

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

Analog monitor output

RS-422 communication

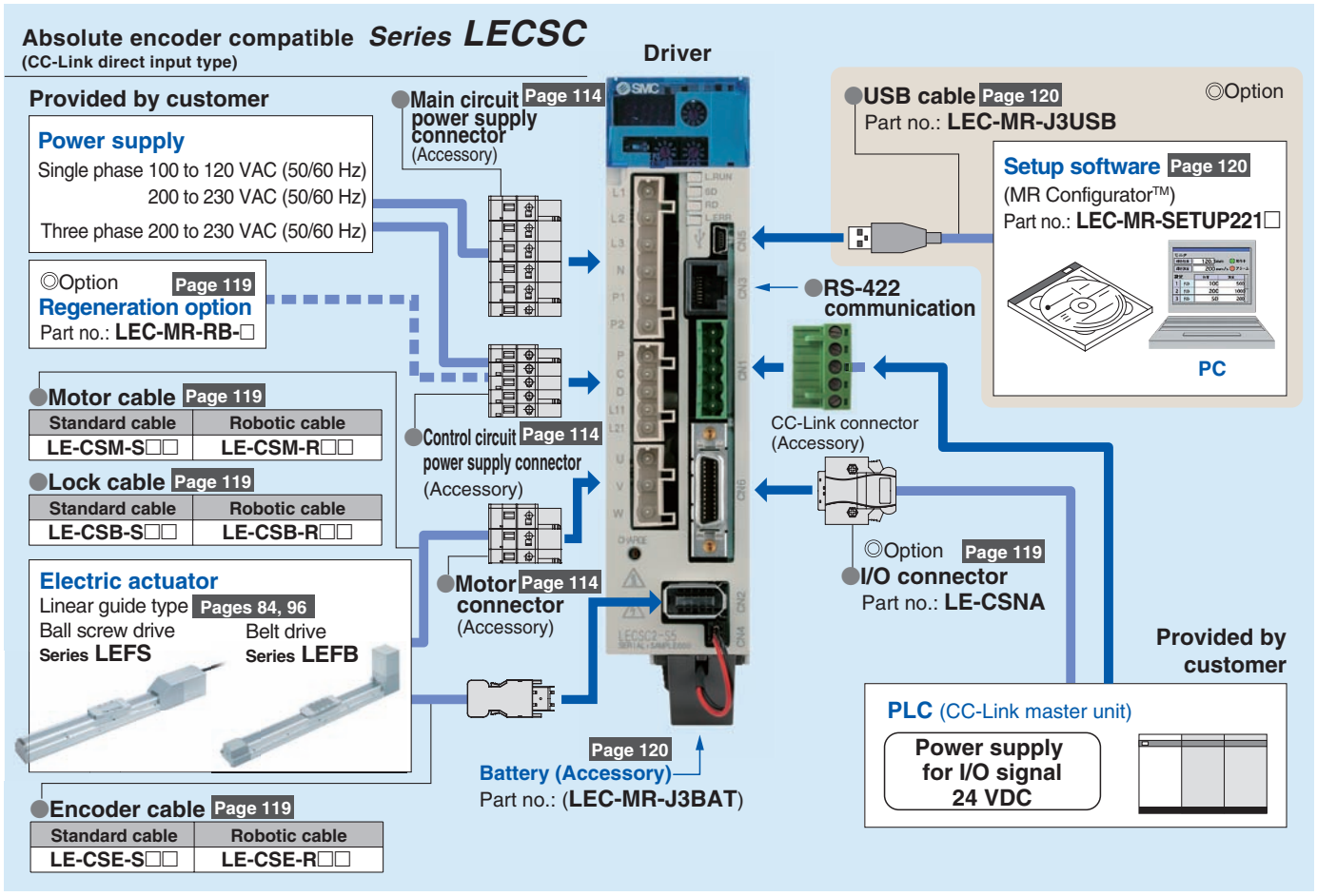
◎Option Page 119
I/O connector
Part no.: **LE-CSNB**

Provided by customer

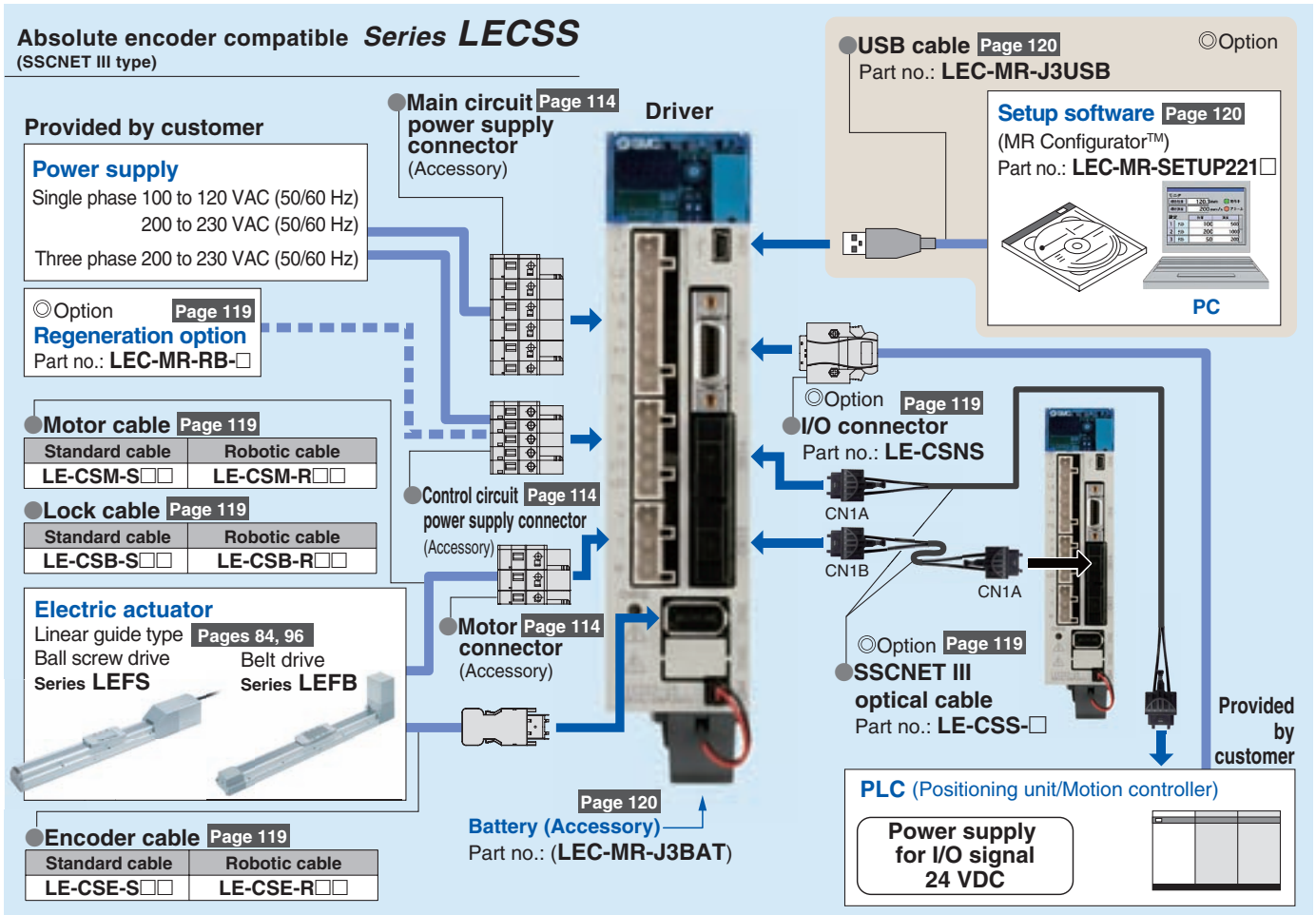
PLC (Positioning unit)
Power supply for I/O signal 24 VDC

System Construction

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



Absolute encoder compatible Series LECSS
(SSCNET III type)



SMC Electric Actuators

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


CAT.ES100-87

Ball screw drive
Series LEFS

Clean room compatible

Series LEFS

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

Belt drive
Series LEFB

Series LEFB

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

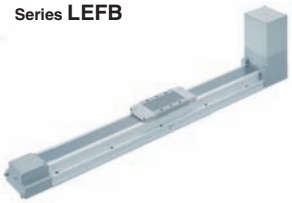
Ball screw drive
Series LEFS

Clean room compatible

Series LEFS

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

Belt drive
Series LEFB



Series LEFB

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

High Rigidity Slider Type
AC Servo Motor


CAT.ES100-104

Ball screw drive
Series LEJS

Belt drive
Series LEJB

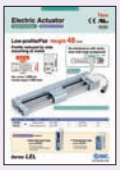
Series LEJS

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

Series LEJB

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

Guide Rod Slider
Step Motor (Servo/24 VDC)


CAT.ES100-101

Belt drive
Series LEL

Series LEL25M
Sliding bearing

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

Series LEL25L
Ball bushing bearing

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

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


CAT.ES100-83

Basic type
Series LEY

Dust/Drip proof compatible

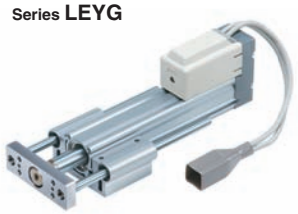
Series LEY

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

In-line motor type
Series LEY□D

Dust/Drip proof compatible

Guide rod type
Series LEYG



Series LEYG

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

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

AC Servo Motor

Basic type
Series LEY

Dust/Drip proof compatible

Series LEY

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

In-line motor type
Series LEY□D

Dust/Drip proof compatible

Series LEY

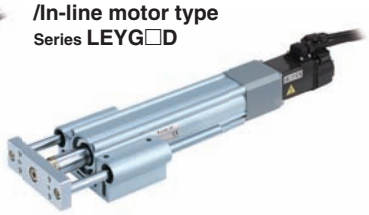
Size	Pushing force (N)	Stroke (mm)
25	485	Up to 400
32	736	Up to 500
63	1910	Up to 800

Guide rod type
Series LEYG

Series LEYG

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

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

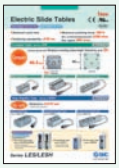


Series LEYG

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

SMC Electric Actuators

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


CAT.ES100-78

Compact type Series LES

Basic type/R type
Series LES□R

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

Symmetrical type/L type
Series LES□L

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

High rigidity type Series LESH

Basic type/R type
Series LESH□R

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

Symmetrical type/L type
Series LESH□L

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

Miniature
Step Motor (Servo/24 VDC)


CAT.ES100-92

Rod type
Series LEPY

Series LEPY

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

Slide table type
Series LEPS

Series LEPS

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

Rotary Table
Step Motor (Servo/24 VDC)


CAT.ES100-94

Basic type
Series LER

High precision type
Series LERH

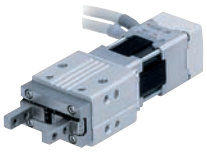
Series LER

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

Gripper
Step Motor (Servo/24 VDC)


CAT.ES100-77

2-finger type
Series LEHZ



Series LEHZ

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

2-finger type
With dust cover
Series LEHZJ

Series LEHZJ

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

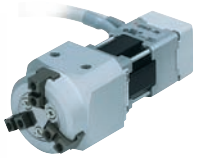
2-finger type
Long stroke
Series LEHF

Series LEHF

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

Note) ( ): Long stroke

3-finger type
Series LEHS



Series LEHS

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

Controller/Driver

Controller

Step data input type
For step motor
Series LECP6

Control motor
Step motor (Servo/24 VDC)

Step data input type
For servo motor
Series LECA6

Control motor
Servo motor (24 VDC)

Programless type
Series LECP1

Control motor
Step motor (Servo/24 VDC)

Driver

Pulse input type
Series LECPA

Control motor
Step motor (Servo/24 VDC)

Gateway Unit

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

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

Driver

AC Servo Motor Driver

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

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

Pulse input type
Series LECSB
(Absolute type)

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

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

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

SSCNET III type
Series LECSS
(Absolute type)

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

Electric Actuator Slider Type *Series* LEF

Drive method	Specifications	Series	Stroke (mm)	Work load (kg)		Speed (mm/s)	Screw lead (mm)	Positioning repeatability (mm)	Controller /Driver series	Page
				Horizontal	Vertical					
Ball screw drive (Clean room compatible)	Step motor (Servo/24 VDC)	LEFS16	100 to 400	9	2	10 to 500	10	±0.02	Series LECP6 / Series LECP1 / Series LECPA	Page 2
				10	4	5 to 250	5			
		LEFS25	100 to 600	20	7.5	12 to 500	12			
				20	15	6 to 250	6			
		LEFS32	100 to 800	40	10	16 to 500	16			
				45	20	8 to 250	8			
		LEFS40	200 to 1000	50	—	20 to 500	20			
				60	23	10 to 250	10			
	Servo motor (24 VDC)	LEFS16A	100 to 400	7	2	10 to 500	10		Series LECA6	
				10	4	5 to 250	5			
		LEFS25A	100 to 600	11	2.5	12 to 500	12			
				18	5	6 to 250	6			
Belt drive	Step motor (Servo/24 VDC)	LEFB16	300 to 1000	1	—	48 to 1100	48	±0.1	Series LECP6 / Series LECP1 / Series LECPA	Page 26
		LEFB25	300 to 2000	5		48 to 1400				
		LEFB32	300 to 2000	14		48 to 1500				
	Servo motor (24 VDC)	LEFB16A	300 to 1000	1	—	48 to 2000	48		Series LECA6	
		LEFB25A	300 to 2000	2						

Controller/Driver *LEC*

LECP6

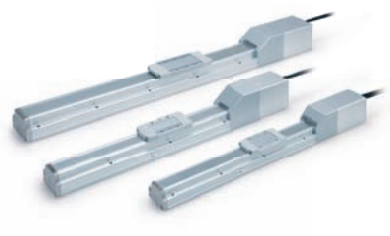
LECA6

LECP1

LECPA

Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	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 35
	LECA6	Servo motor (24 VDC)					
Programless type	LECP1	Step motor (Servo/24 VDC)	24 VDC ±10%	6 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	14	
Pulse input type	LECPA	Step motor (Servo/24 VDC)	24 VDC ±10%	5 inputs (Photo-coupler isolation)	9 outputs (Photo-coupler isolation)	—	

Electric Actuator Slider Type *Series* LEF



Drive method	Specifications	Series	Stroke (mm)	Work load (kg)		Speed (mm/s)	Screw lead (mm)	Positioning repeatability (mm)	Controller /Driver series	Page
				Horizontal	Vertical					
Ball screw drive (Clean room compatible)	AC servo motor	LEFS25S	100 to 600	20	8	MAX. 900	12	±0.02	Series LECSA / Series LECSB / Series LECSC	Page 70
				20	15	MAX. 450	6			
		LEFS32S	100 to 800	40	10	MAX. 1000	16			
				45	20	MAX. 500	8			
		LEFS40S	200 to 1000	50	15	MAX. 1000	20			
				60	30	MAX. 500	10			
Belt drive		LEFB25S	300 to 2000	5	—	MAX. 2000	54	±0.08	Series LECSS	Page 96
		LEFB32S	300 to 2500	15						
		LEFB40S	300 to 3000	25						

Driver *LEC*

LECSA

LECSB

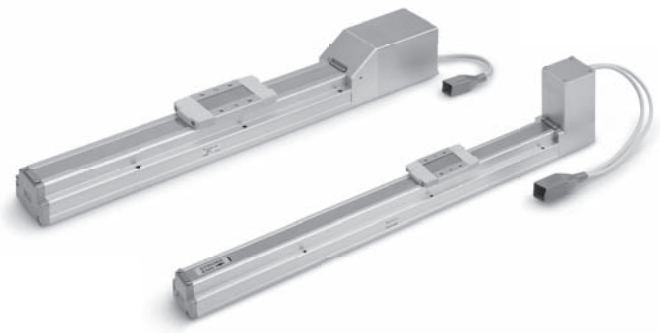
LECSC

LECSS

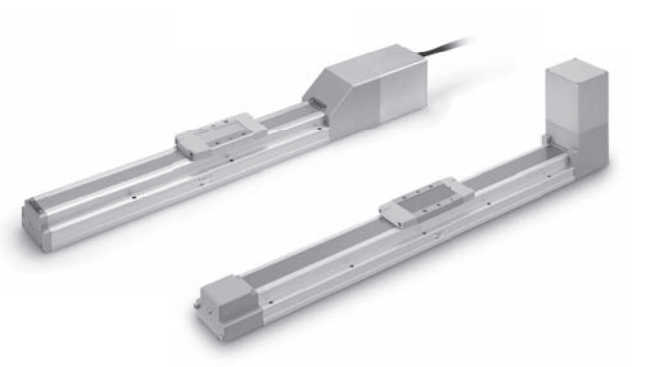
Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	Page
				Input	Output		
Pulse input type (For incremental encoder)	LECSA	AC servo motor (100/200/400 W)	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)	6 inputs (Photo-coupler isolation)	4 outputs (Photo-coupler isolation)	7	Page 108
Pulse input type (For absolute encoder)	LECSB			10 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	—	
CC-Link direct input type (For absolute encoder)	LECSC			4 inputs (Photo-coupler isolation)	3 outputs (Photo-coupler isolation)	255	
SSCNET III type (For absolute encoder)	LECSS			4 inputs (Photo-coupler isolation)	3 outputs (Photo-coupler isolation)	—	

INDEX

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



AC Servo Motor Type



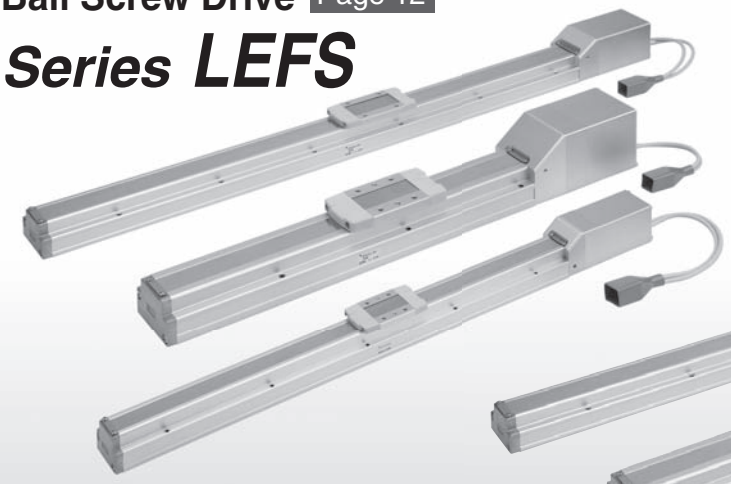
SMC

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

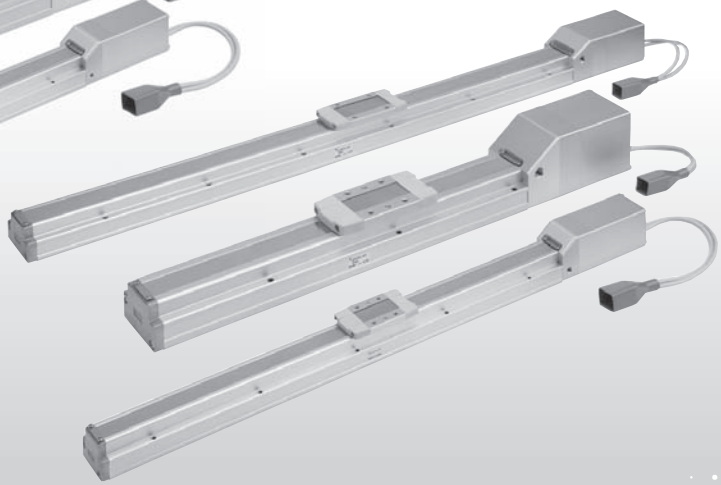
Ball Screw Drive Page 12

Series LEFS



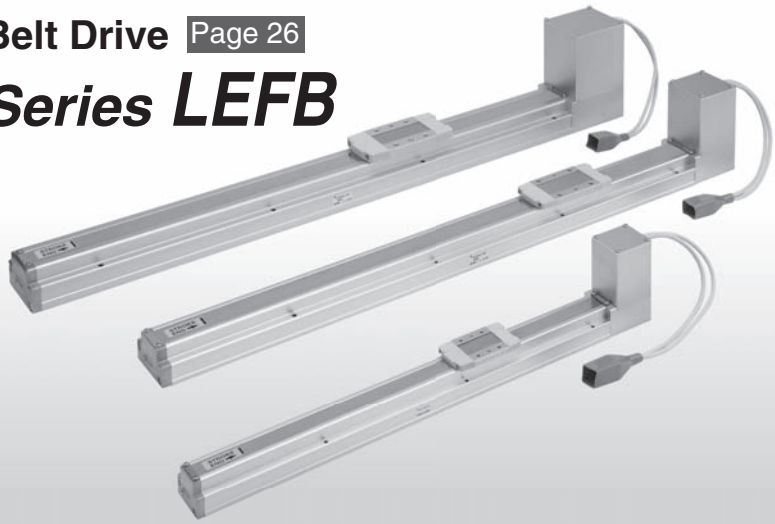
Clean room specification Page 20

Series 11-LEFS



Belt Drive Page 26

Series LEFB

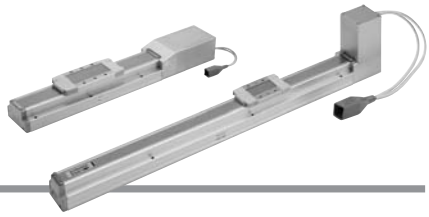


Step Motor/Servo Motor Controller Page 35

Step Motor Driver

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

Model Selection



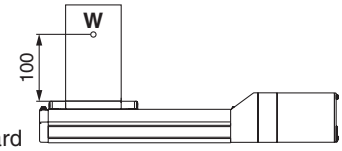
Selection Procedure

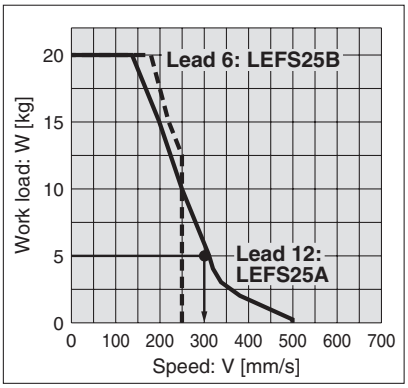
Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 5 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 200 [mm]
- Mounting orientation: Horizontal upward
- Workpiece mounting condition:





<Speed–Work load graph> (LEFS25/Step motor)

Step 1 Check the work load–speed. <Speed–Work load graph> (Pages 3 and 4)

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

Selection example) The **LEFS25A-200** is temporarily selected based on the graph shown on the right side.

Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

Cycle time:

T can be found from the following equation.

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

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

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

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

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

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

$$T4 = 0.2 \text{ [s]}$$

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

$T1 = V/a1 = 300/3000 = 0.1$ [s],

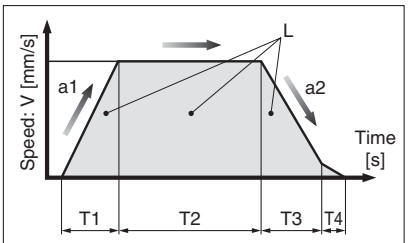
$T3 = V/a2 = 300/3000 = 0.1$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

$T4 = 0.2$ [s]

Therefore, the cycle time can be obtained as follows.

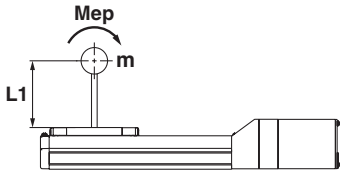
$T = T1 + T2 + T3 + T4$
$= 0.1 + 0.57 + 0.1 + 0.2$
$=$ **0.97 [s]**

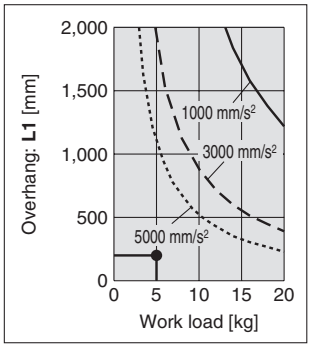


L : Stroke [mm]
··· (Operating condition)
V : Speed [mm/s]
··· (Operating condition)
a1: Acceleration [mm/s^2]
··· (Operating condition)
a2: Deceleration [mm/s^2]
··· (Operating condition)

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

Step 3 Check the guide moment.





Based on the above calculation result, the LEFS25A-200 is selected.

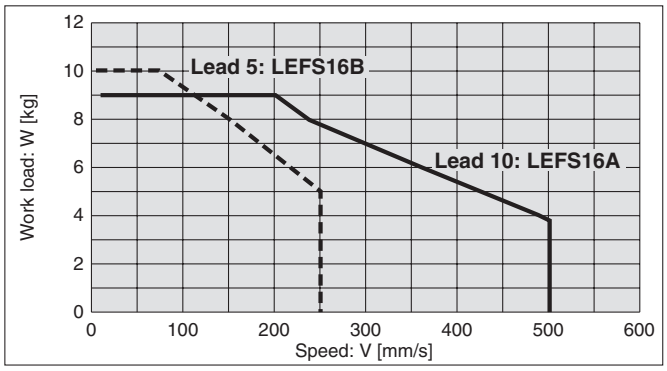
∗ If the step motor and servo motors do not met your specifications, please also consider the AC servo specifications (Page 69).

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

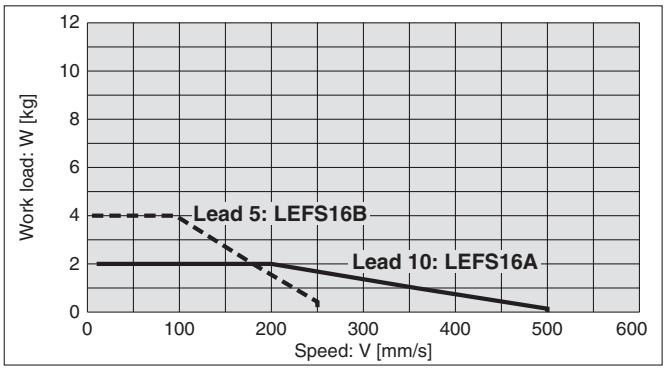
∗ The following graph shows the values when moving force is 100%.

LEFS16/Ball Screw Drive

Horizontal

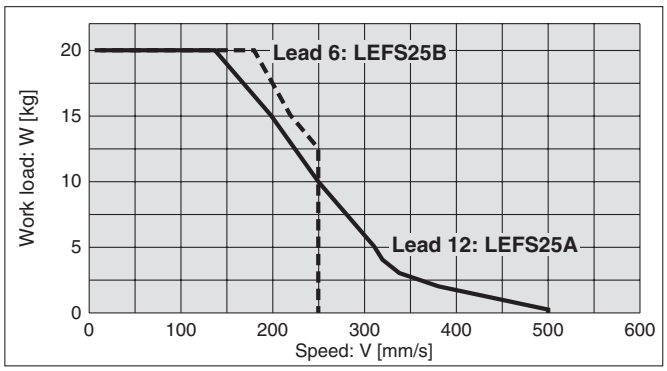


Vertical

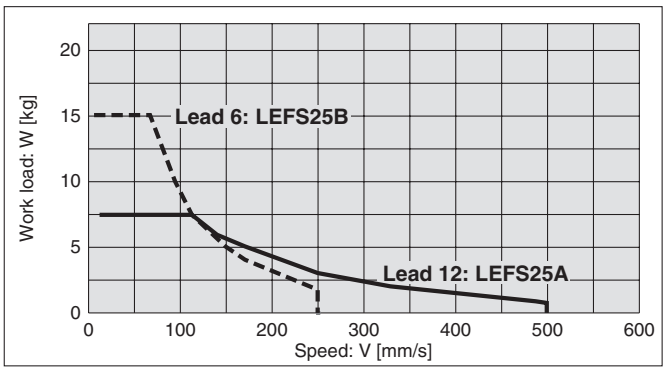


LEFS25/Ball Screw Drive

Horizontal

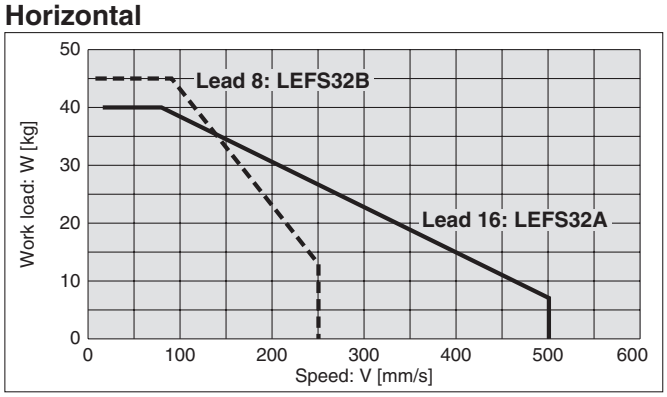


Vertical

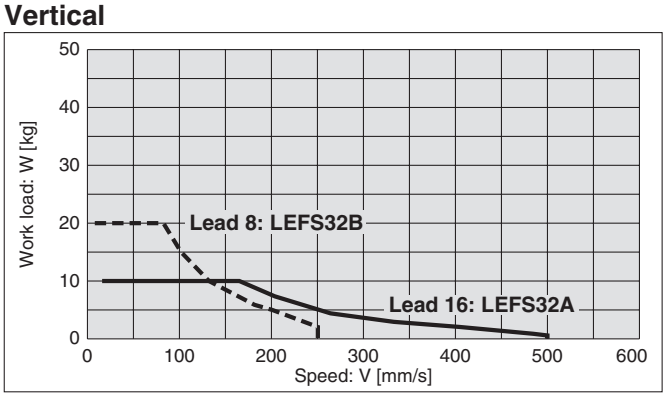


LEFS32/Ball Screw Drive

Horizontal

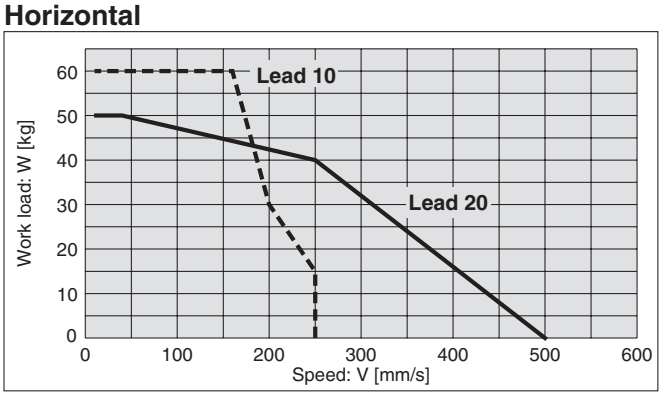


Vertical

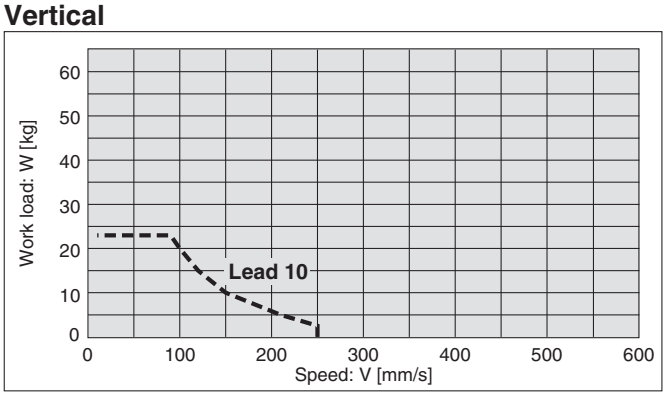


LEFS40/Ball Screw Drive

Horizontal



Vertical

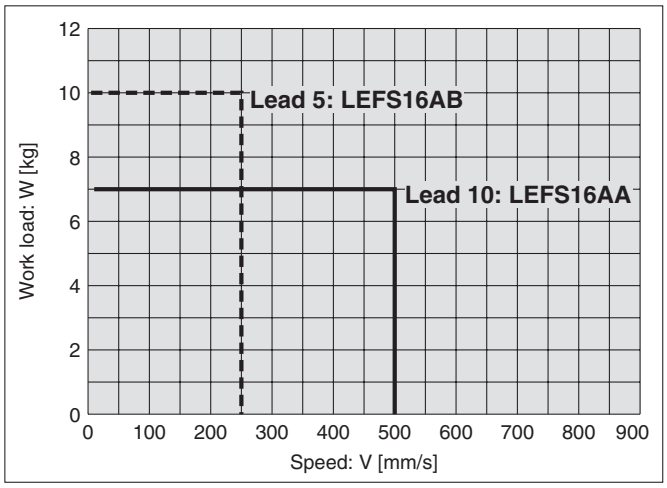


Speed–Work Load Graph (Guide)
Servo Motor (24 VDC)

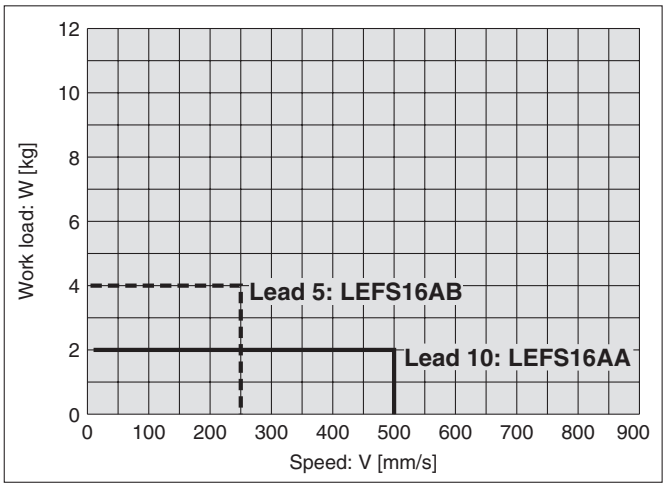
∗ The following graph shows the values when moving force is 250%.

LEFS16A/Ball Screw Drive

Horizontal

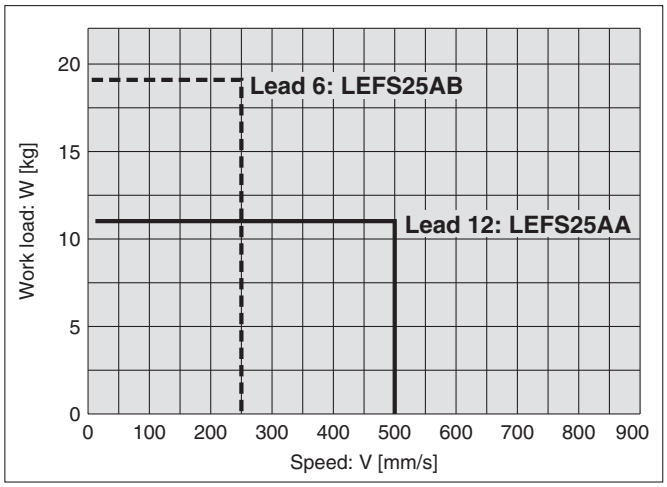


Vertical

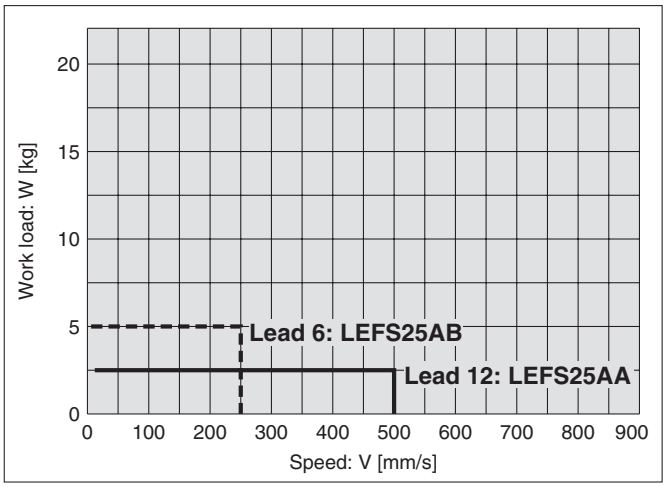


LEFS25A/Ball Screw Drive

Horizontal



Vertical

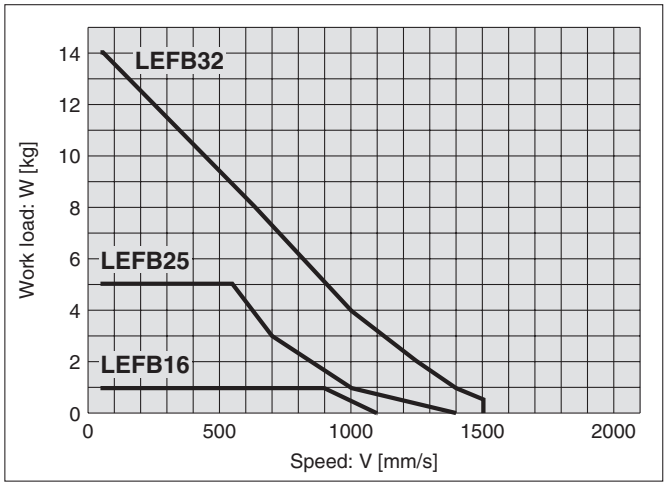


Step Motor (Servo/24 VDC)

LEFB/Belt Drive

∗ When moving force is 100%

Horizontal

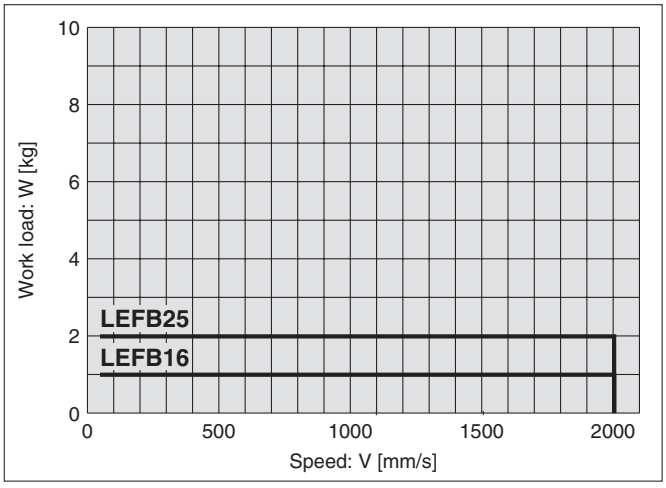


Servo Motor (24 VDC)

LEFB/Belt Drive

∗ When moving force is 250%

Horizontal



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 —— 1,000 mm/s² – – – 3,000 mm/s² ····· 5,000 mm/s²

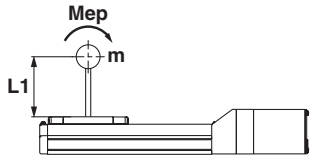
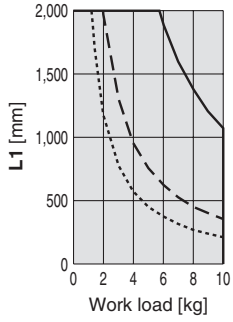
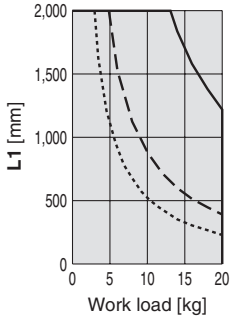
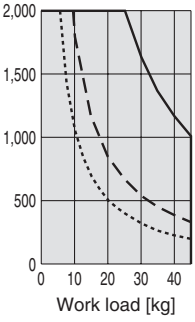
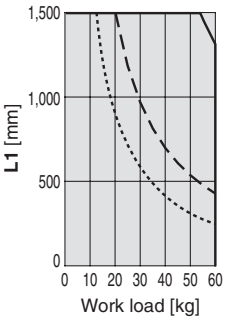
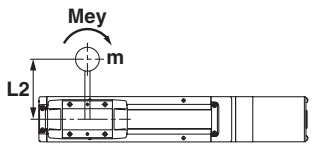
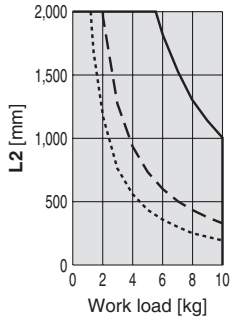
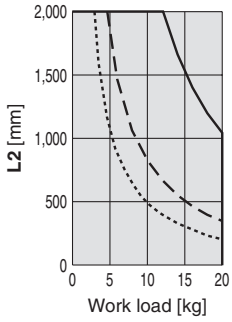
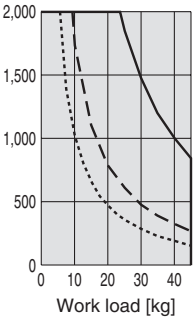
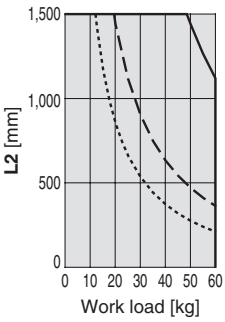
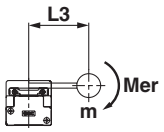
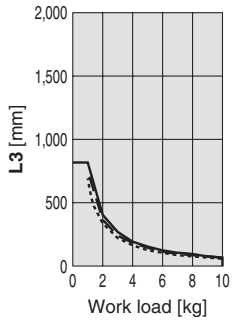
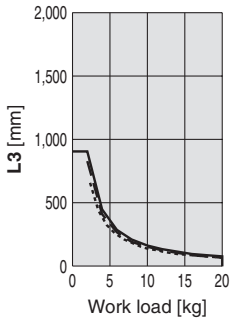
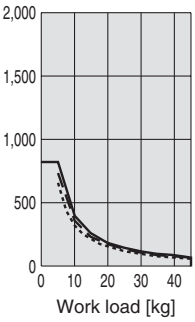
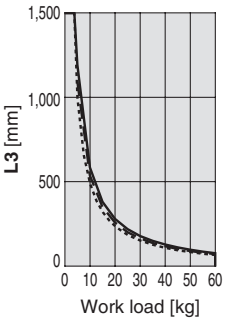
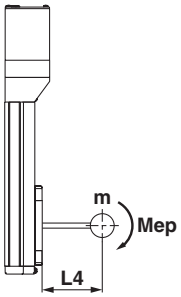
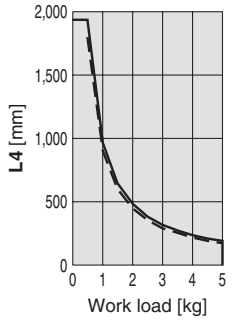
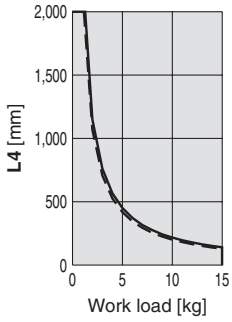
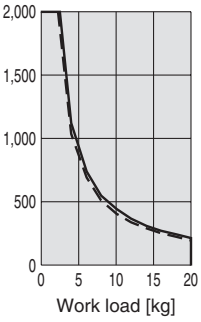
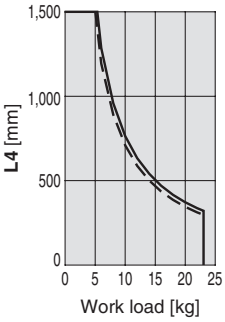
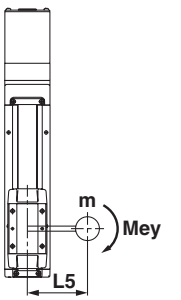
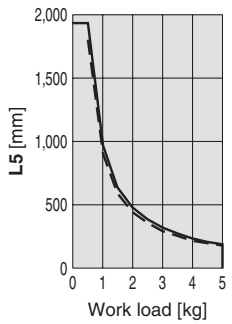
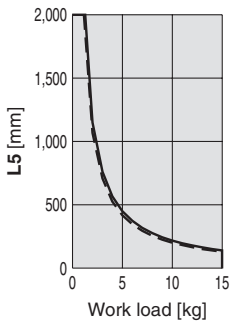
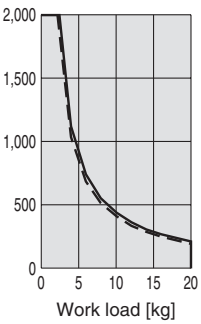
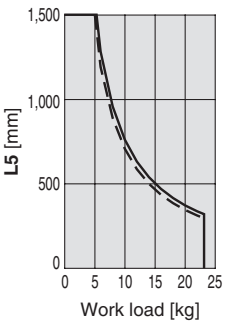
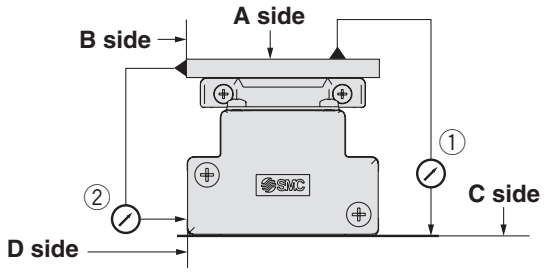
Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model			
			LEF16	**LEF25**	**LEF32**	**LEFS40**
Horizontal		Pitching				
		Yawing				
		Rolling				
Vertical		Pitching				
		Yawing				

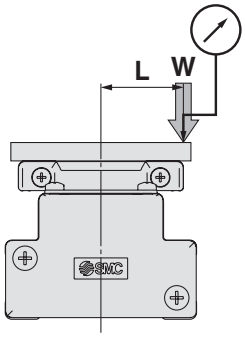
Table Accuracy

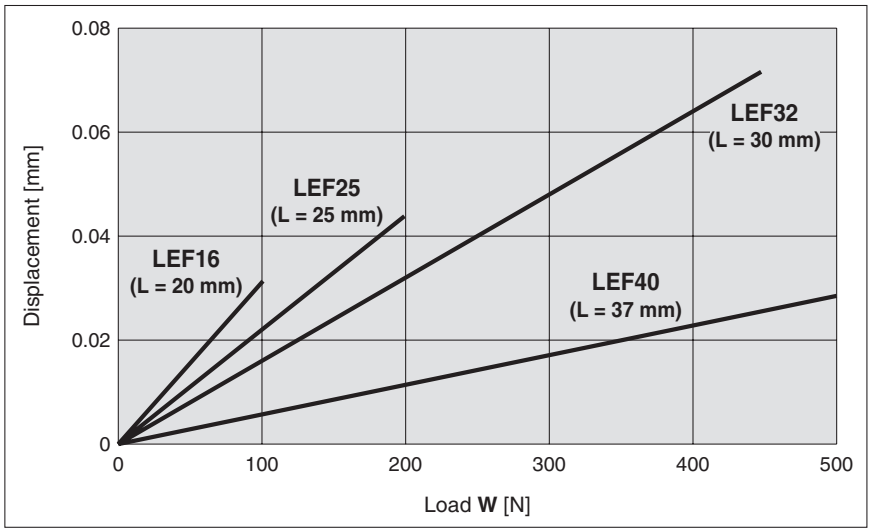


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEF16	0.05	0.03
LEF25	0.05	0.03
LEF32	0.05	0.03
LEF40	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

Table Displacement (Reference Value)





Note 1) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
Note 2) Please confirm the clearance and play of the guide separately.

Particle Generation Characteristics

Particle Generation Measuring Method

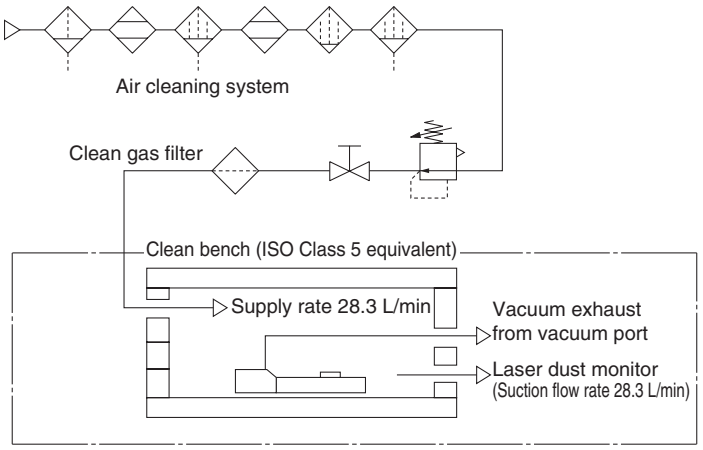
The particle generation data for SMC Clean Series are measured in the following test method.

■Test Method (Example)

Place the specimen in the acrylic resin chamber and operate it while supplying the same flow rate of clean air as the suction flow rate of the measuring instrument (28.3 L/min). Measure the changes of the particle concentration over time until the number of cycles reaches the specified point.
The chamber is placed in an ISO Class 5 equivalent clean bench.

■Measuring Conditions

Chamber	Internal volume	28.3 L
	Supply air quality	Same quality as the supply air for driving
Measuring instrument	Description	Laser dust monitor (Automatic particle counter by lightscattering method)
	Minimum measurable particle diameter	0.1 μm
	Suction flow rate	28.3 L/min
Setting conditions	Sampling time	5 min
	Interval time	55 min
	Sampling air flow	141.5 L



Particle generation measuring circuit

■Evaluation Method

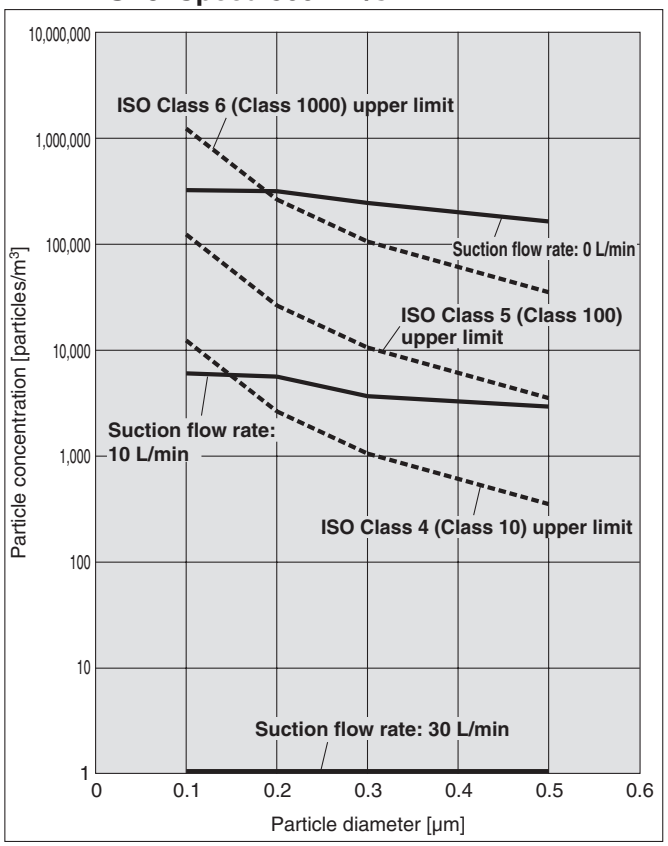
To obtain the measured values of particle concentration, the accumulated value Note 1) of particles captured every 5 minutes, by the laser dust monitor, is converted into the particle concentration in every 1 m^3.
When determining particle generation grades, the 95% upper confidence limit of the average particle concentration (average value), when each specimen is operated at a specified number of cycles Note 2) is considered.
The plots in the graphs indicate the 95% upper confidence limit of the average particle concentration of particles with a diameter within the horizontal axis range.

Note 1) Sampling air flow rate: Number of particles contained in 141.5 L of air
Note 2) Actuator: 1 million cycles

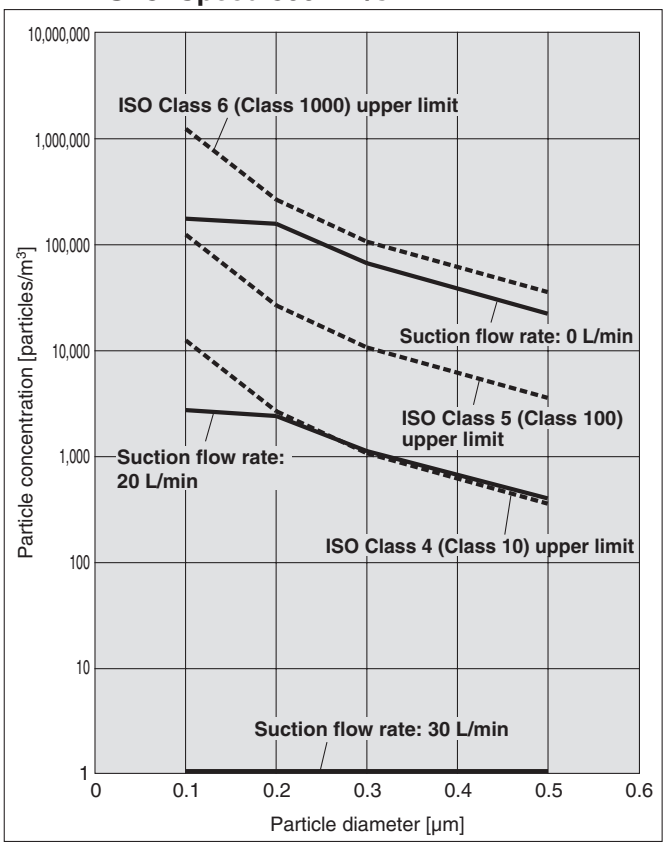
Clean room specification

Particle Generation Characteristics
Step Motor (Servo/24 VDC), Servo Motor (24 VDC)

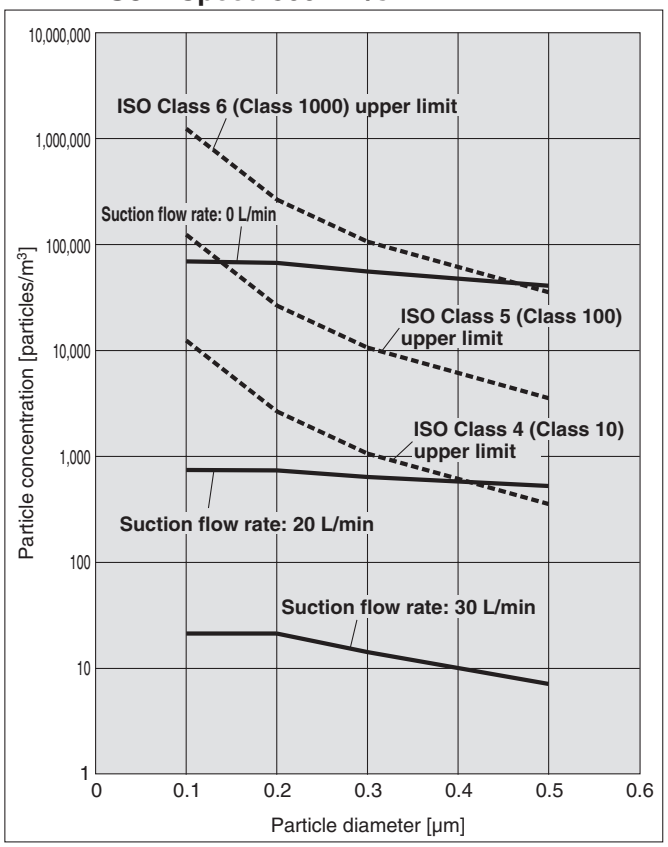
11-LEFS16 Speed 500mm/s



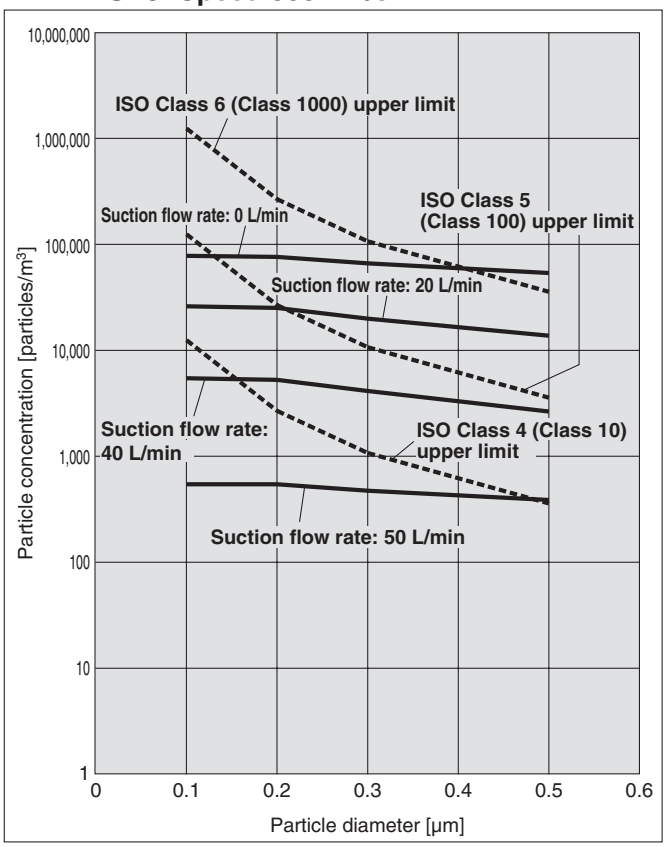
11-LEFS25 Speed 500mm/s



11-LEFS32 Speed 500mm/s



11-LEFS40 Speed 500mm/s



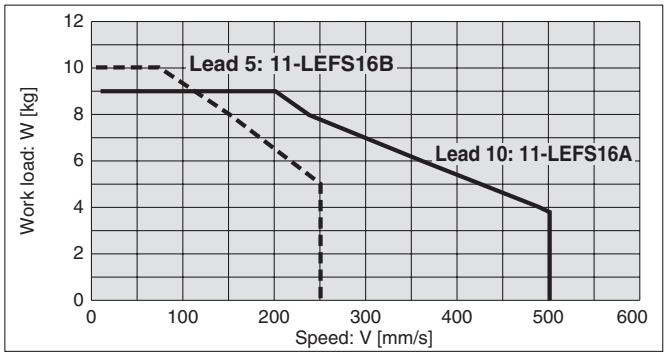
Model Selection

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

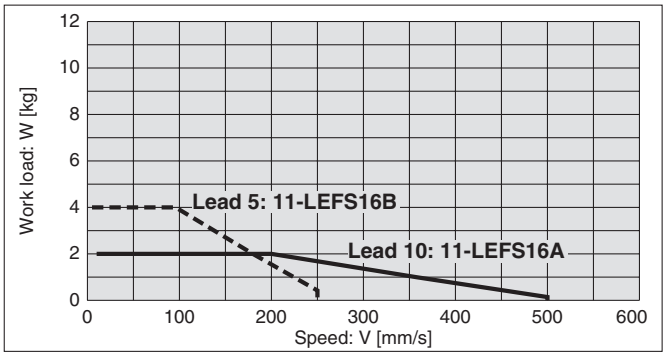
∗ The following graph shows the values when moving force is 100%.

11-LEFS16/Ball Screw Drive

Horizontal

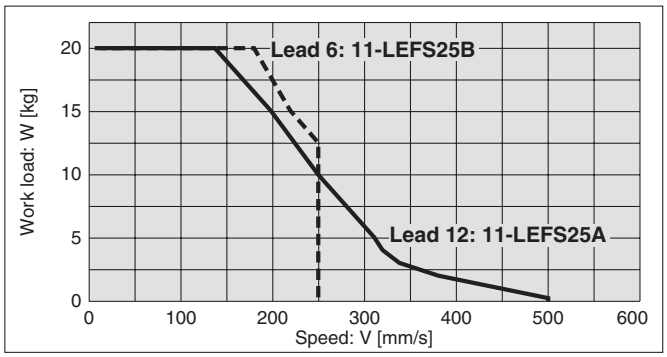


Vertical

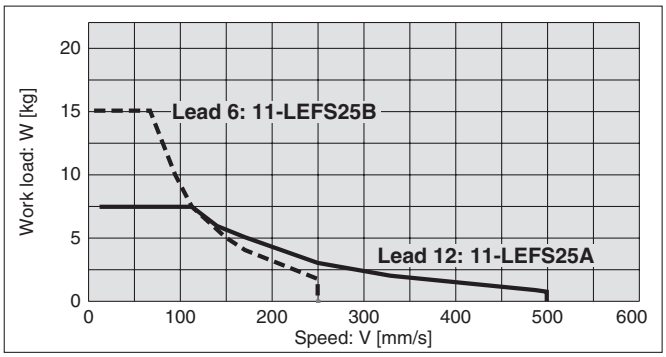


11-LEFS25/Ball Screw Drive

Horizontal

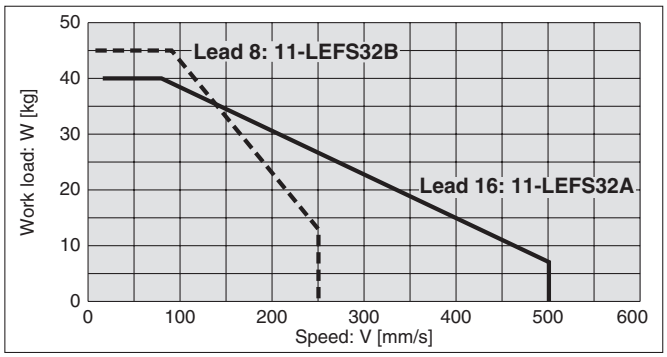


Vertical

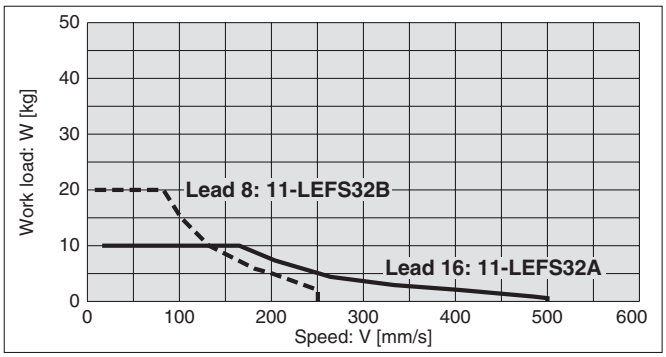


11-LEFS32/Ball Screw Drive

Horizontal

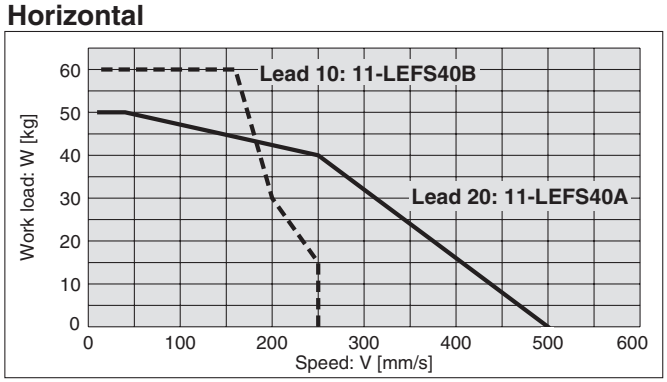


Vertical

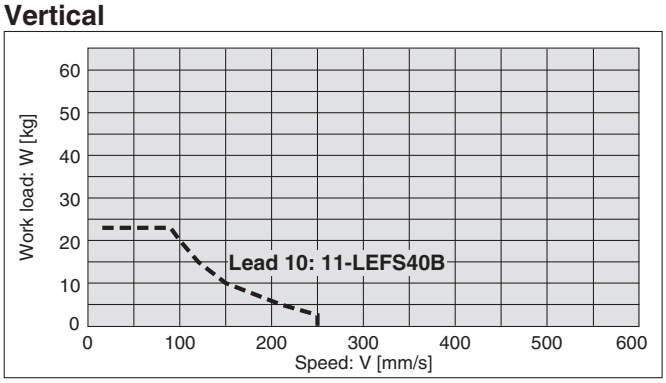


11-LEFS40/Ball Screw Drive

Horizontal



Vertical



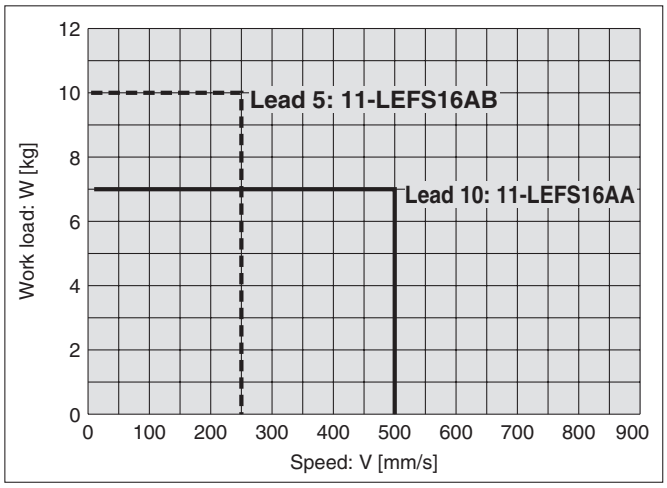
Clean room specification

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

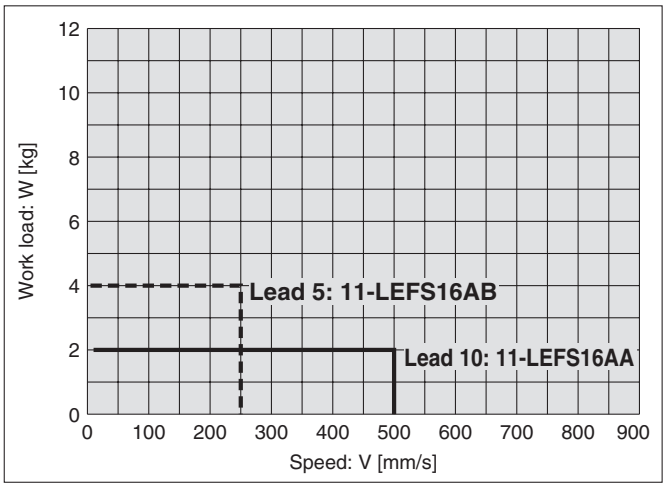
∗ The following graph shows the values when moving force is 250%.

11-LEFS16A/Ball Screw Drive

Horizontal

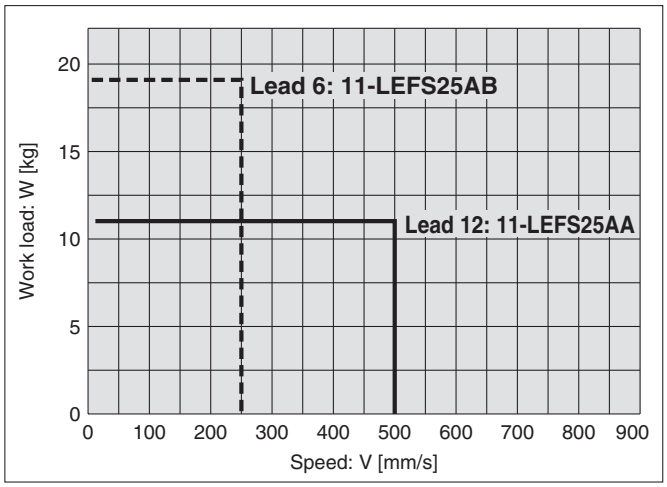


Vertical

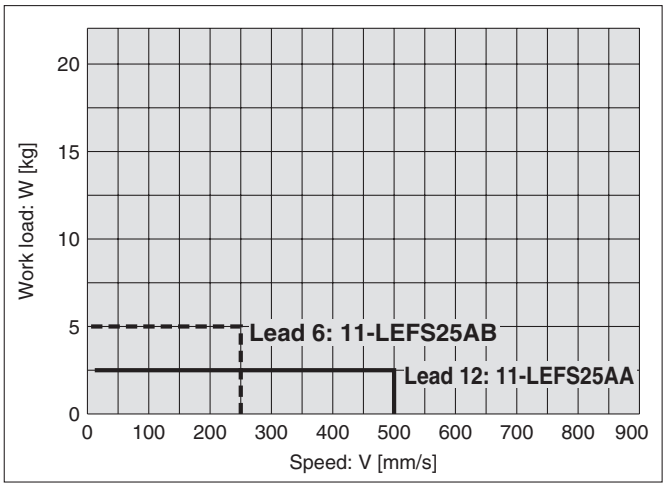


11-LEFS25A/Ball Screw Drive

Horizontal



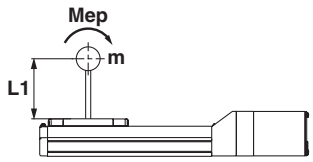
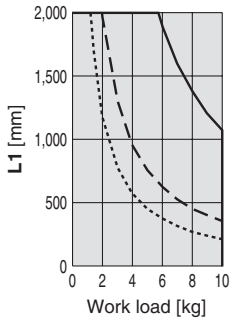
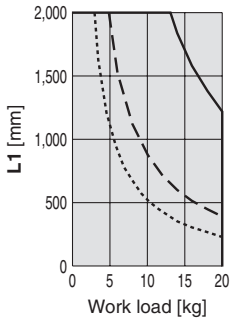
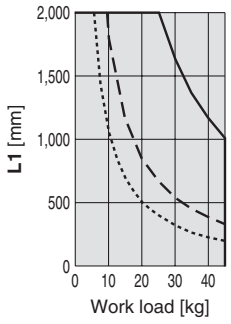
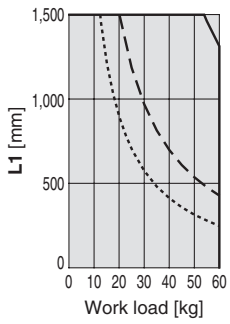
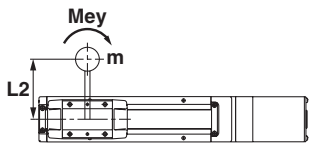
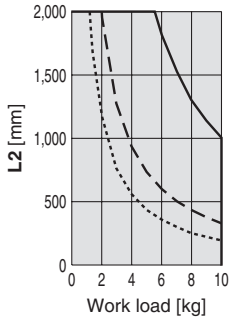
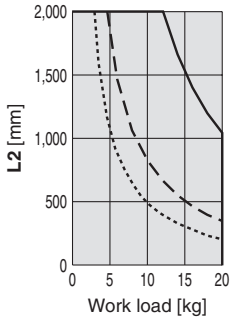
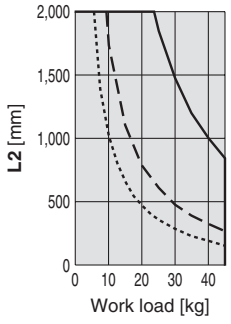
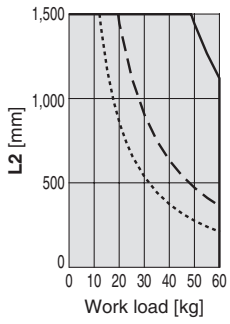
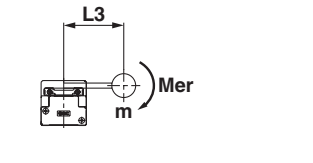
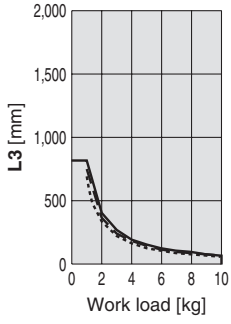
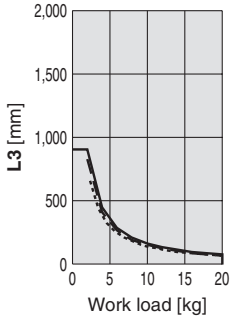
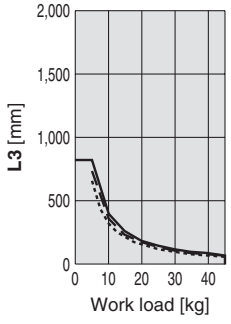
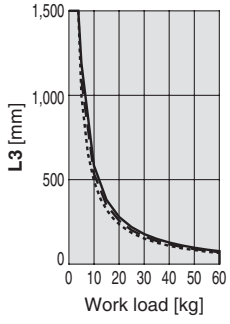
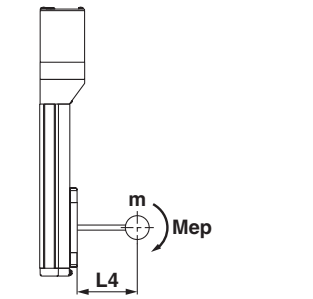
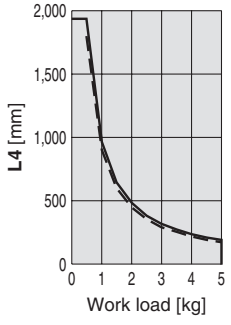
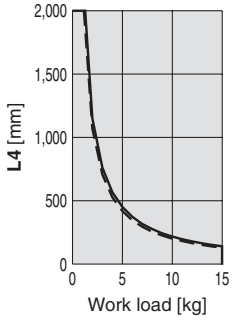
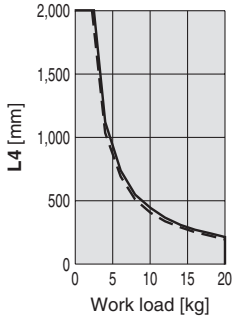
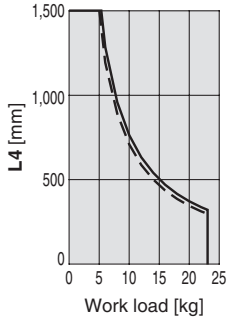
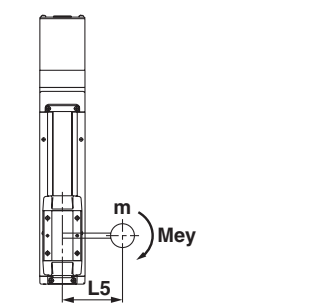
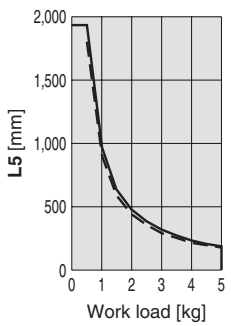
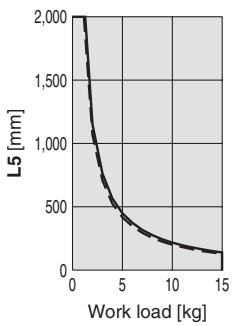
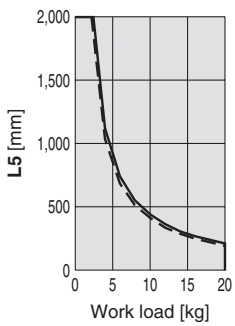
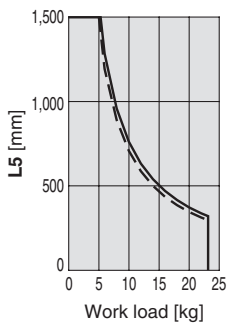
Vertical



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 ——1,000 mm/s² – – –3,000 mm/s² ·····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			
			11-LEFS16	**11-LEFS25**	**11-LEFS32**	**11-LEFS40**
Horizontal		Pitching				
		Yawing				
		Rolling				
Vertical		Pitching				
		Yawing				

Electric Actuator/Slider Type
Ball Screw Drive

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

Series LEFS

LEFS16, 25, 32, 40

How to Order

LEFS 16 ❶ B ❷ – 100 ❸ ❹ – S ❺ 1 ❻ 6N ❼ 1 ❽ ❾

❶ Size

16
25
32
40

❷ Motor type

Symbol	Type	Applicable size				Compatible controllers/driver
		LEFS16	LEFS25	LEFS32	LEFS40	
Nil	Step motor (Servo/24 VDC)	●	●	●	●	LECP6 LECP1 LECPA
A	Servo motor (24 VDC)	●	●	—	—	LECA6

❸ Lead [mm]

Symbol	LEFS16	LEFS25	LEFS32	LEFS40
A	10	12	16	20
B	5	6	8	10

❹ Stroke [mm]

100	100
to	to
1000	1000

∗ Refer to the applicable stroke table.

⚠Caution

[CE-compliant products]

① 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.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 44 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

Applicable stroke table

●Standard

Model \ Stroke	100	200	300	400	500	600	700	800	900	1000	Manufacturable stroke range [mm]
LEFS16	●	●	●	●	—	—	—	—	—	—	100 to 400
LEFS25	●	●	●	●	●	●	—	—	—	—	100 to 600
LEFS32	●	●	●	●	●	●	●	●	—	—	100 to 800
LEFS40	—	●	●	●	●	●	●	●	●	●	200 to 1000

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

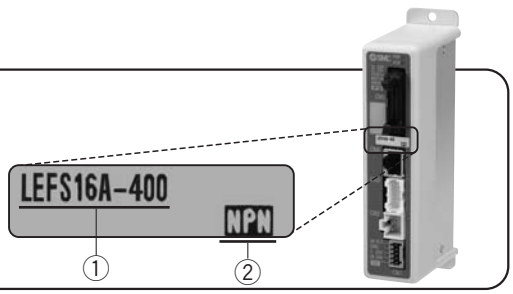
The actuator and controller/driver are sold as a package.

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

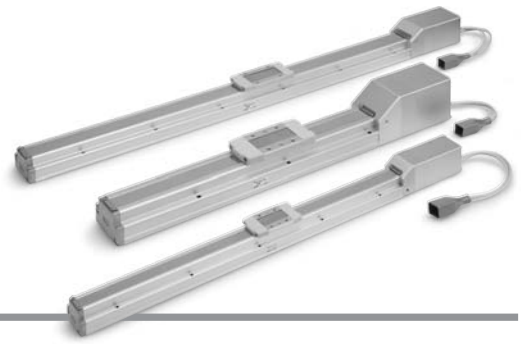
<Check the following before use.>

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

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



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



❺ Motor option

Nil	Without option
B	With lock

❻ Actuator cable type*1

Nil	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."

❼ Actuator cable length [m]

Nil	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 2) on pages 14 and 15.

❽ Controller/Driver type*1

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

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

❾ I/O cable length [m]*1

Nil	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 44 (For LECP6/LECA6), page 57 (For LECP1) or page 64 (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.

❿ Controller/Driver mounting

Nil	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

Compatible Controllers/Driver

Type	**Step data input type** 	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECA6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points		14 points	—
Power supply voltage	24 VDC			
Reference page	Page 36	Page 36	Page 51	Page 58

Specifications

Step Motor (Servo/24 VDC)

Model			LEFS16		LEFS25		LEFS32		LEFS40	
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400		100, 200, 300 400, 500, 600		100, 200, 300, 400 500, 600, 700, 800		200, 300, 400, 500, 600 700, 800, 900, 1000	
	Work load [kg] Note 2)	Horizontal	9	10	20	20	40	45	50	60
		Vertical	2	4	7.5	15	10	20	—	23
	Speed [mm/s] Note 2)		10 to 500	5 to 250	12 to 500	6 to 250	16 to 500	8 to 250	20 to 500	10 to 250
	Max. acceleration/deceleration [mm/s²]		3,000							
	Positioning repeatability [mm]		±0.02							
	Lead [mm]		10	5	12	6	16	8	20	10
	Impact/Vibration resistance [m/s²] Note 3)		50/20							
	Actuation type		Ball screw							
	Guide type		Linear guide							
	Operating temperature range [°C]		5 to 40							
	Operating humidity range [%RH]		90 or less (No condensation)							
Electric specifications	Motor size		□28		□42		□56.4			
	Motor type		Step motor (Servo/24 VDC)							
	Encoder		Incremental A/B phase (800 pulse/rotation)							
	Rated voltage [V]		24 VDC ±10%							
	Power consumption [W] Note 4)		22		38		50		100	
	Standby power consumption when operating [W] Note 5)		18		16		44		43	
	Max. instantaneous power consumption [W] Note 6)		51		57		123		141	
Lock unit specifications	Type Note 7)		Non-magnetizing lock							
	Holding force [N]		20	39	78	157	108	216	113	225
	Power consumption [W] Note 8)		2.9		5		5		5	
	Rated voltage [V]		24 VDC ±10%							

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 3.
Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The power consumption (including the controller) is for when the actuator is operating.
Note 5) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation.
Note 6) 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 7) With lock only
Note 8) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model			LEFS16A		LEFS25A	
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400		100, 200, 300 400, 500, 600	
	Work load [kg] Note 2)	Horizontal	7	10	11	18
		Vertical	2	4	2.5	5
	Speed [mm/s] Note 2)		10 to 500	5 to 250	12 to 500	6 to 250
	Max. acceleration/deceleration [mm/s²]		3,000			
	Positioning repeatability [mm]		±0.02			
	Lead [mm]		10	5	12	6
	Impact/Vibration resistance [m/s²] Note 3)		50/20			
	Actuation type		Ball screw			
	Guide type		Linear guide			
	Operating temperature range [°C]		5 to 40			
	Operating humidity range [%RH]		90 or less (No condensation)			
Electric specifications	Motor size		□28		□42	
	Motor output [W]		30		36	
	Motor type		Servo motor (24 VDC)			
	Encoder		Incremental A/B (800 pulse/rotation)/Z phase			
	Rated voltage [V]		24 VDC ±10%			
	Power consumption [W] Note 4)		63		102	
	Standby power consumption when operating [W] Note 5)		Horizontal 4/Vertical 9		Horizontal 4/Vertical 9	
	Max. instantaneous power consumption [W] Note 6)		70		113	
Lock unit specifications	Type Note 7)		Non-magnetizing lock			
	Holding force [N]		20	39	78	157
	Power consumption [W] Note 8)		2.9		5	
	Rated voltage [V]		24 VDC ±10%			

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Check "Speed–Work Load Graph (Guide)" on page 4 for details.
Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The power consumption (including the controller) is for when the actuator is operating.
Note 5) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation.
Note 6) 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 7) With lock only
Note 8) For an actuator with lock, add the power consumption for the lock.

Weight

Model	LEFS16			
Stroke [mm]	100	200	300	400
Product weight [kg]	0.90	1.05	1.20	1.35
Additional weight with lock [kg]	0.12			

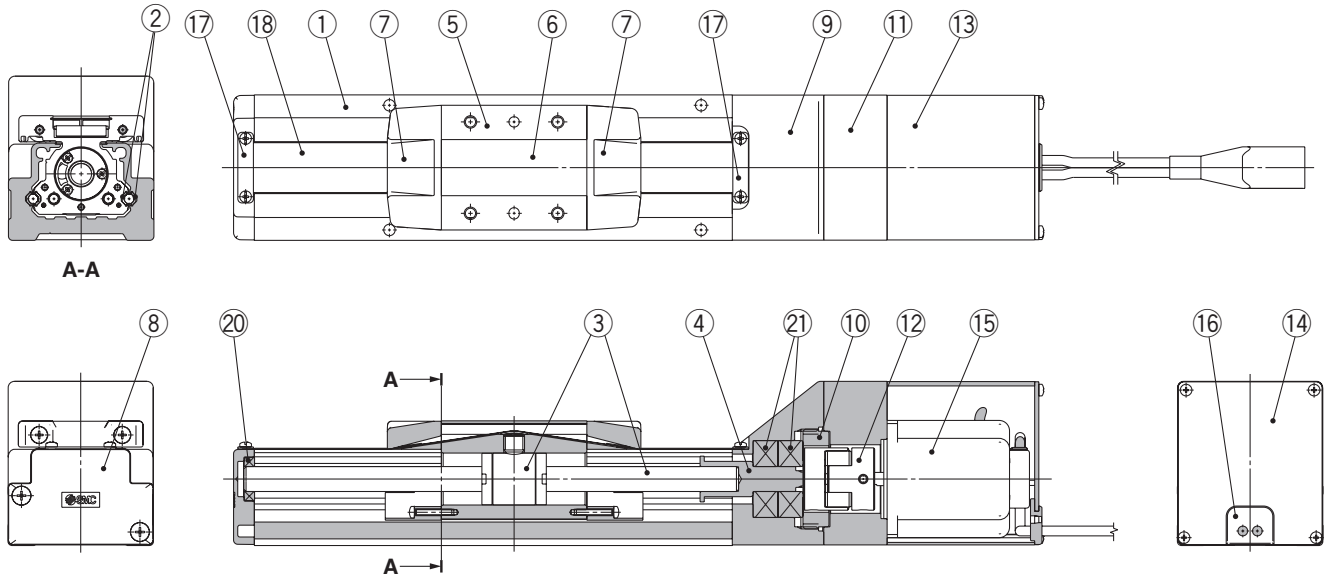
Model	LEFS25					
Stroke [mm]	100	200	300	400	500	600
Product weight [kg]	1.84	2.12	2.40	2.68	2.96	3.24
Additional weight with lock [kg]	0.26					

Model	LEFS32							
Stroke [mm]	100	200	300	400	500	600	700	800
Product weight [kg]	3.35	3.75	4.15	4.55	4.95	5.35	5.75	6.15
Additional weight with lock [kg]	0.53							

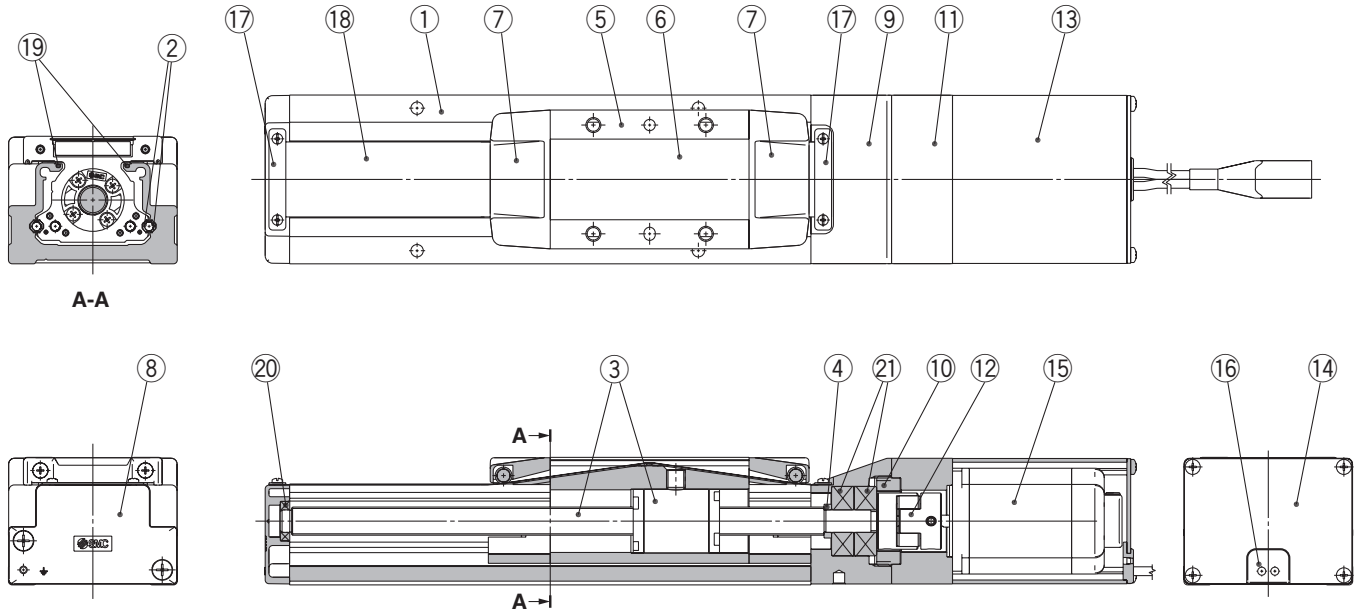
Model	LEFS40								
Stroke [mm]	200	300	400	500	600	700	800	900	1000
Product weight [kg]	5.65	6.21	6.77	7.33	7.89	8.45	9.01	9.57	10.13
Additional weight with lock [kg]	0.53								

Construction

LEFS16, 25, 32



LEFS40

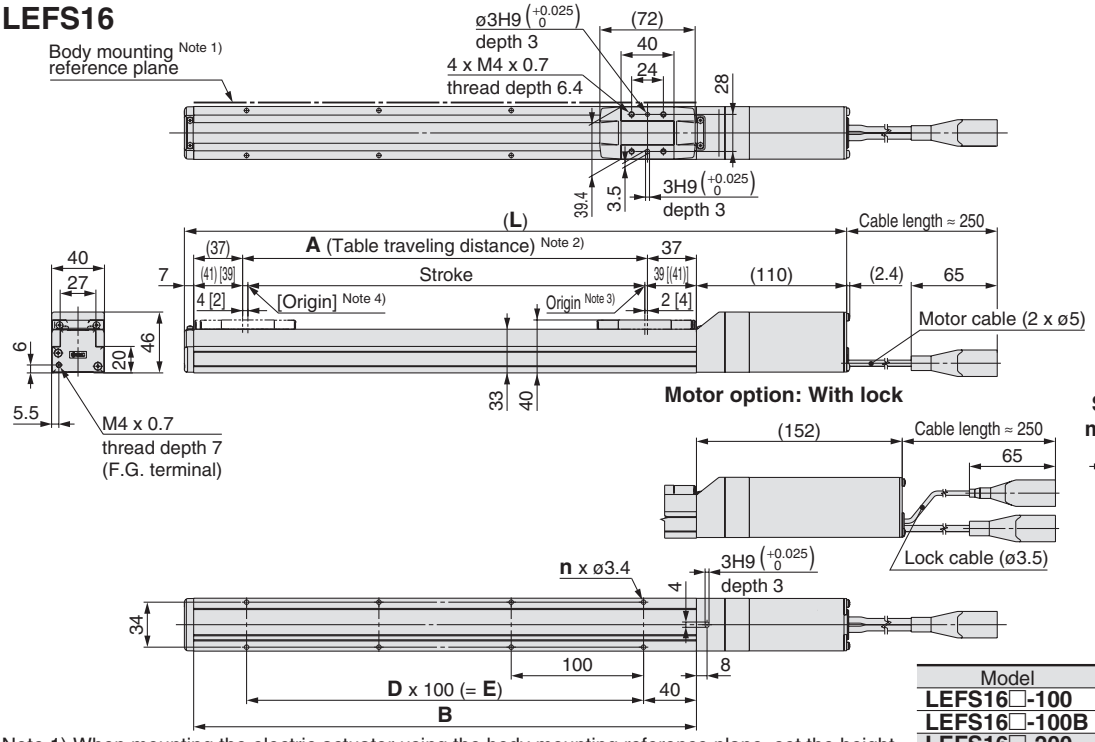


No.	Description		Material	Note
1	**Body**		Aluminum alloy	Anodized
2	**Rail guide**		—	
3	**Ball screw assembly**		—	
4	Connected shaft	LEFS16, 25, 32	—	
	Spacer	**LEFS40**		
5	**Table**		Aluminum alloy	Anodized
6	**Blanking plate**		Aluminum alloy	Anodized
7	**Seal band stopper**		Synthetic resin	
8	**Housing A**		Aluminum die-casted	Coating
9	**Housing B**		Aluminum die-casted	Coating
10	**Bearing stopper**		Aluminum alloy	

No.	Description	Material	Note
11	**Motor mount**	Aluminum alloy	Coating
12	**Coupling**	—	
13	**Motor cover**	Aluminum alloy	Anodized
14	**End cover**	Aluminum alloy	Anodized
15	**Motor**	—	
16	**Rubber bushing**	NBR	
17	**Band stopper**	Stainless steel	
18	**Dust seal band**	Stainless steel	
19	**Seal magnet**	—	
20	**Bearing**	—	
21	**Bearing**	—	

Dimensions: Ball Screw Drive

LEFS16

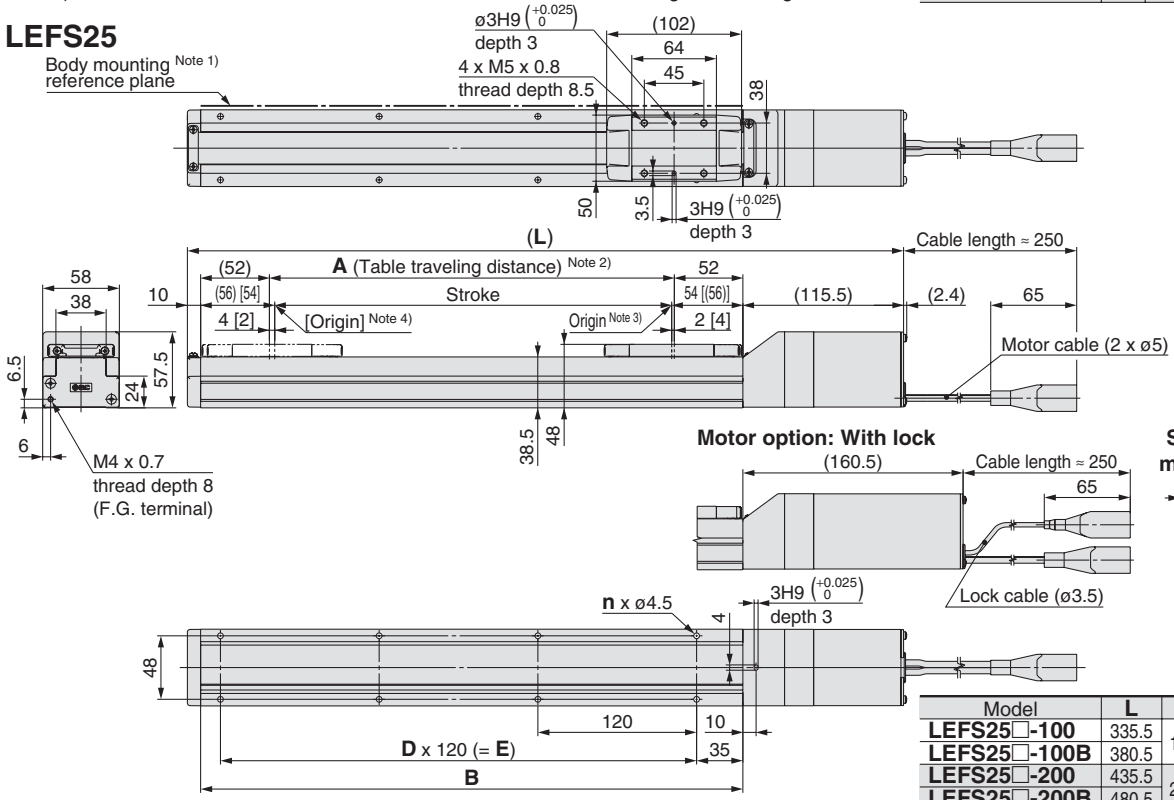


[mm]

Model	L	A	B	n	D	E
LEFS16□-100	297	106	180	4	—	—
LEFS16□-100B	339					
LEFS16□-200	397	206	280	6	2	200
LEFS16□-200B	439					
LEFS16□-300	497	306	380	8	3	300
LEFS16□-300B	539					
LEFS16□-400	597	406	480	10	4	400
LEFS16□-400B	639					

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 2 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

LEFS25



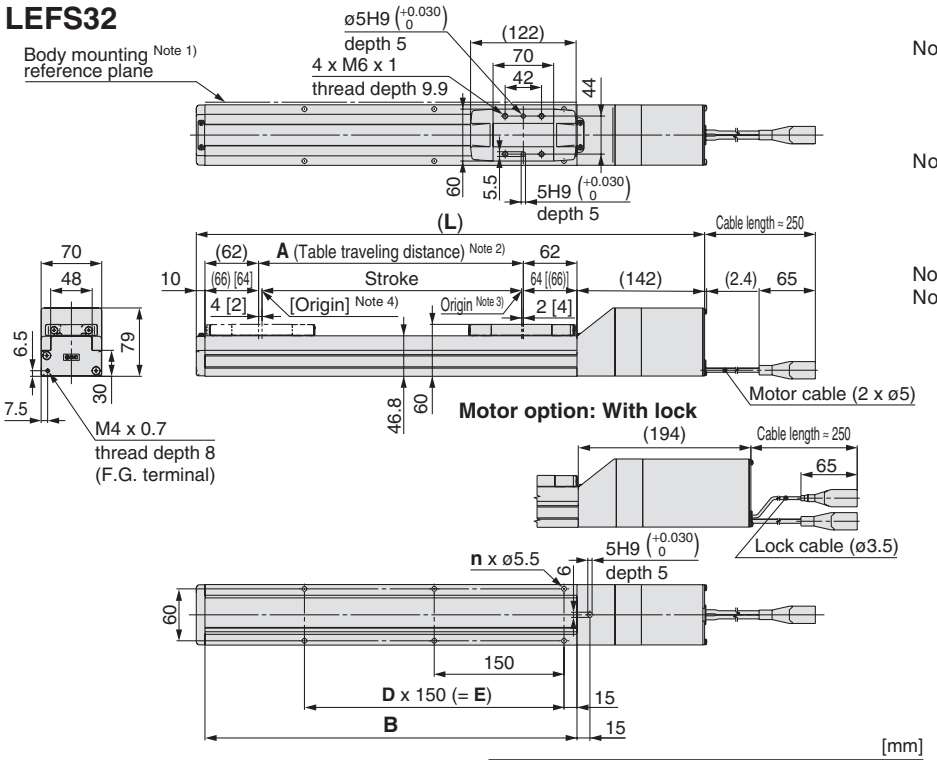
[mm]

Model	L	A	B	n	D	E
LEFS25□-100	335.5	106	210	4	—	—
LEFS25□-100B	380.5					
LEFS25□-200	435.5	206	310	6	2	240
LEFS25□-200B	480.5					
LEFS25□-300	535.5	306	410	8	3	360
LEFS25□-300B	580.5					
LEFS25□-400	635.5	406	510	8	3	360
LEFS25□-400B	680.5					
LEFS25□-500	735.5	506	610	10	4	480
LEFS25□-500B	780.5					
LEFS25□-600	835.5	606	710	12	5	600
LEFS25□-600B	880.5					

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

Dimensions: Ball Screw Drive

LEFS32

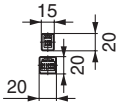


Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

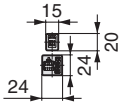
[mm]

Model	L	A	B	n	D	E
LEFS32□-100	387.5	106	230	4	—	—
LEFS32□-100B	439.5					
LEFS32□-200	487.5	206	330	6	2	300
LEFS32□-200B	539.5					

Step motor



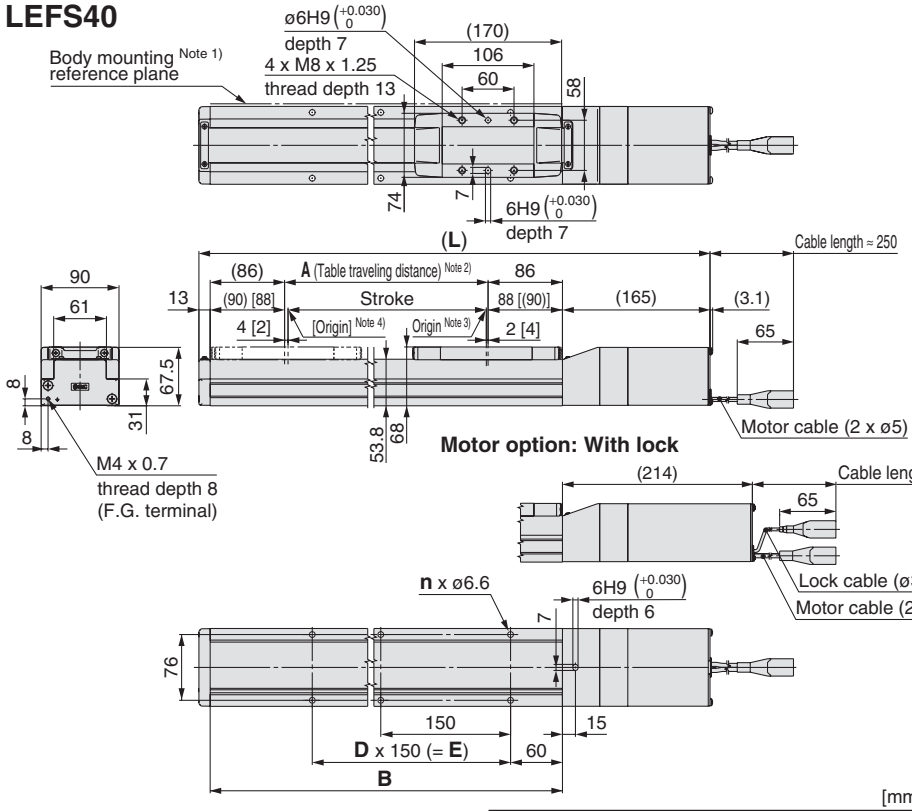
Servo motor



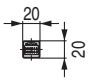
[mm]

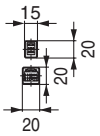
Model	L	A	B	n	D	E
LEFS32□-300	582	306	430	6	2	300
LEFS32□-300B	634					
LEFS32□-400	682	406	530	8	3	450
LEFS32□-400B	734					
LEFS32□-500	782	506	630	10	4	600
LEFS32□-500B	834					
LEFS32□-600	882	606	730	10	4	600
LEFS32□-600B	934					
LEFS32□-700	982	706	830	12	5	750
LEFS32□-700B	1034					
LEFS32□-800	1082	806	930	14	6	900
LEFS32□-800B	1134					

LEFS40



Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.





[mm]

Model	L	A	B	n	D	E
LEFS40□-200	556	206	378	6	2	300
LEFS40□-200B	605					
LEFS40□-300	656	306	478	6	2	300
LEFS40□-300B	705					
LEFS40□-400	756	406	578	8	3	450
LEFS40□-400B	805					

[mm]

Model	L	A	B	n	D	E
LEFS40□-500	856	506	678	10	4	600
LEFS40□-500B	905					
LEFS40□-600	956	606	778	10	4	600
LEFS40□-600B	1005					
LEFS40□-700	1056	706	878	12	5	750
LEFS40□-700B	1105					
LEFS40□-800	1156	806	978	14	6	900
LEFS40□-800B	1205					
LEFS40□-900	1256	906	1078	14	6	900
LEFS40□-900B	1305					
LEFS40□-1000	1356	1006	1178	16	7	1050
LEFS40□-1000B	1405					

Electric Actuator/Slider Type
Ball Screw Drive

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

Clean room specification

Series 11-LEFS

LEFS16, 25, 32, 40

How to Order

11 – LEFS 16 ❑ B – 100 ❑ ❑ – S 1 6N 1 ❑

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

Clean series

11	Vacuum type

❶ Size

16
25
32
40

❷ Motor type

Symbol	Type	Applicable size				Compatible controllers/driver
		11-LEFS16	11-LEFS25	11-LEFS32	11-LEFS40	
Nil	Step motor (Servo/24 VDC)	●	●	●	●	LECP6 LECP1 LECPA
A	Servo motor (24 VDC)	●	●	–	–	LECA6

❸ Lead [mm]

Symbol	11-LEFS16	11-LEFS25	11-LEFS32	11-LEFS40
A	10	12	16	20
B	5	6	8	10

❹ Stroke [mm]

100	100
to	to
1000	1000

∗ Refer to the applicable stroke table.

⚠Caution

[CE-compliant products]

① 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.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 44 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

Applicable stroke table ●Standard

Model \ Stroke	100	200	300	400	500	600	700	800	900	1000	Manufacturable stroke range [mm]
11-LEFS16	●	●	●	●	–	–	–	–	–	–	100 to 400
11-LEFS25	●	●	●	●	●	●	–	–	–	–	100 to 600
11-LEFS32	●	●	●	●	●	●	●	●	–	–	100 to 800
11-LEFS40	–	●	●	●	●	●	●	●	●	●	200 to 1000

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

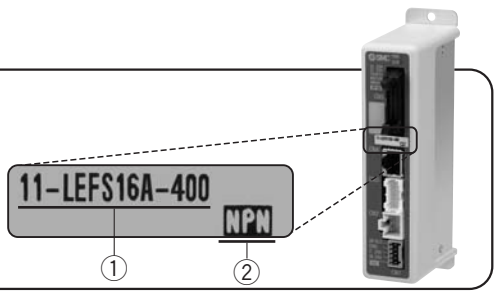
The actuator and controller/driver are sold as a package.

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

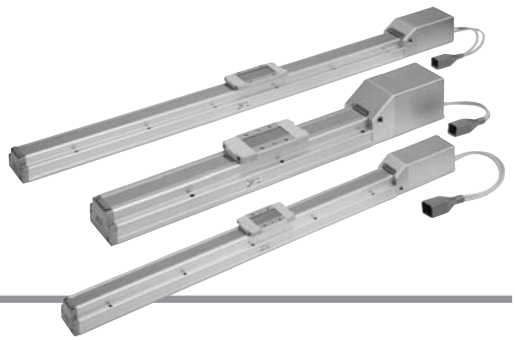
<Check the following before use.>

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

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



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

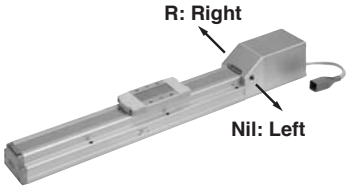


❺ Motor option

Nil	Without option
B	With lock

❻ Vacuum port

Nil	Left
R	Right



❼ Actuator cable type*1

Nil	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."

❽ Actuator cable length [m]

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

* Produced upon receipt of order (Robotic cable only) Refer to the specifications Note 2) on pages 22 and 23.

❾ Controller/Driver type*1

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

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

❿ I/O cable length [m]*1

Nil	Without cable
1	1.5 m
3	3 m*2
5	5 m*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 44 (For LECP6/LECA6), page 57 (For LECP1) or page 64 (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.

⓫ Controller/Driver mounting

Nil	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

Compatible Controllers/Driver

Type	**Step data input type** 	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECA6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points		14 points	—
Power supply voltage	24 VDC			
Reference page	Page 36	Page 36	Page 51	Page 58

Specifications

Step Motor (Servo/24 VDC)

Model			11-LEFS16		11-LEFS25		11-LEFS32		11-LEFS40	
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400		100, 200, 300 400, 500, 600		100, 200, 300, 400 500, 600, 700, 800		200, 300, 400, 500, 600 700, 800, 900, 1000	
	Work load [kg] Note 2)	Horizontal	9	10	20	20	40	45	50	60
		Vertical	2	4	7.5	15	10	20	—	23
	Speed [mm/s] Note 2)		10 to 500	5 to 250	12 to 500	6 to 250	16 to 500	8 to 250	20 to 500	10 to 250
	Max. acceleration/deceleration [mm/s²]		3,000							
	Positioning repeatability [mm]		±0.02							
	Lead [mm]		10	5	12	6	16	8	20	10
	Impact/Vibration resistance [m/s²] Note 3)		50/20							
	Actuation type		Ball screw							
	Guide type		Linear guide							
	Operating temperature range [°C]		5 to 40							
	Operating humidity range [%RH]		90 or less (No condensation)							
	Cleanliness class Note 4)		ISO Class 4 (ISO 14644-1) Class 10 (Fed.Std.209E)							
	Grease	Ball screw /Linear guide portion	Low particle generation grease							
Electric specifications	Motor size		□28		□42		□56.4			
	Motor type		Step motor (Servo/24 VDC)							
	Encoder		Incremental A/B phase (800 pulse/rotation)							
	Rated voltage [V]		24 VDC ±10%							
	Power consumption [W] Note 5)		22		38		50		100	
	Standby power consumption when operating [W] Note 6)		18		16		44		43	
	Max. instantaneous power consumption [W] Note 7)		51		57		123		141	
Lock unit specifications	Type Note 8)		Non-magnetizing lock							
	Holding force [N]		20	39	78	157	108	216	113	225
	Power consumption [W] Note 9)		2.9		5		5		5	
	Rated voltage [V]		24 VDC ±10%							

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 9.
Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The amount of particle generation changes according to the operating conditions and suction flow rate. Refer to the particle generation characteristics for details.
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.
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.

Specifications

Servo Motor (24 VDC)

Model			11-LEFS16A		11-LEFS25A	
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400		100, 200, 300 400, 500, 600	
	Work load [kg] Note 2)	Horizontal	7	10	11	18
		Vertical	2	4	2.5	5
	Speed [mm/s] Note 2)		10 to 500	5 to 250	12 to 500	6 to 250
	Max. acceleration/deceleration [mm/s²]		3,000			
	Positioning repeatability [mm]		±0.02			
	Lead [mm]		10	5	12	6
	Impact/Vibration resistance [m/s²] Note 3)		50/20			
	Actuation type		Ball screw			
	Guide type		Linear guide			
	Operating temperature range [°C]		5 to 40			
	Operating humidity range [%RH]		90 or less (No condensation)			
	Cleanliness class Note 4)		ISO Class 4 (ISO 14644-1) Class 10 (Fed.Std.209E)			
	Grease	Ball screw /Linear guide portion	Low particle generation grease			
Electric specifications	Motor size		□28		□42	
	Motor output [W]		30		36	
	Motor type		Servo motor (24 VDC)			
	Encoder		Incremental A/B (800 pulse/rotation)/Z phase			
	Rated voltage [V]		24 VDC ±10%			
	Power consumption [W] Note 5)		63		102	
	Standby power consumption when operating [W] Note 6)		Horizontal 4/Vertical 9		Horizontal 4/Vertical 9	
	Max. instantaneous power consumption [W] Note 7)		70		113	
Lock unit specifications	Type Note 8)		Non-magnetizing lock			
	Holding force [N]		20	39	78	157
	Power consumption [W] Note 9)		2.9		5	
	Rated voltage [V]		24 VDC ±10%			

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Check "Speed–Work Load Graph (Guide)" on page 10 for details. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The amount of particle generation changes according to the operating conditions and suction flow rate. Refer to the particle generation characteristics for details.
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 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

Model	11-LEFS16			
Stroke [mm]	100	200	300	400
Product weight [kg]	0.90	1.05	1.20	1.35
Additional weight with lock [kg]	0.12			

Model	11-LEFS25					
Stroke [mm]	100	200	300	400	500	600
Product weight [kg]	1.84	2.12	2.40	2.68	2.96	3.24
Additional weight with lock [kg]	0.26					

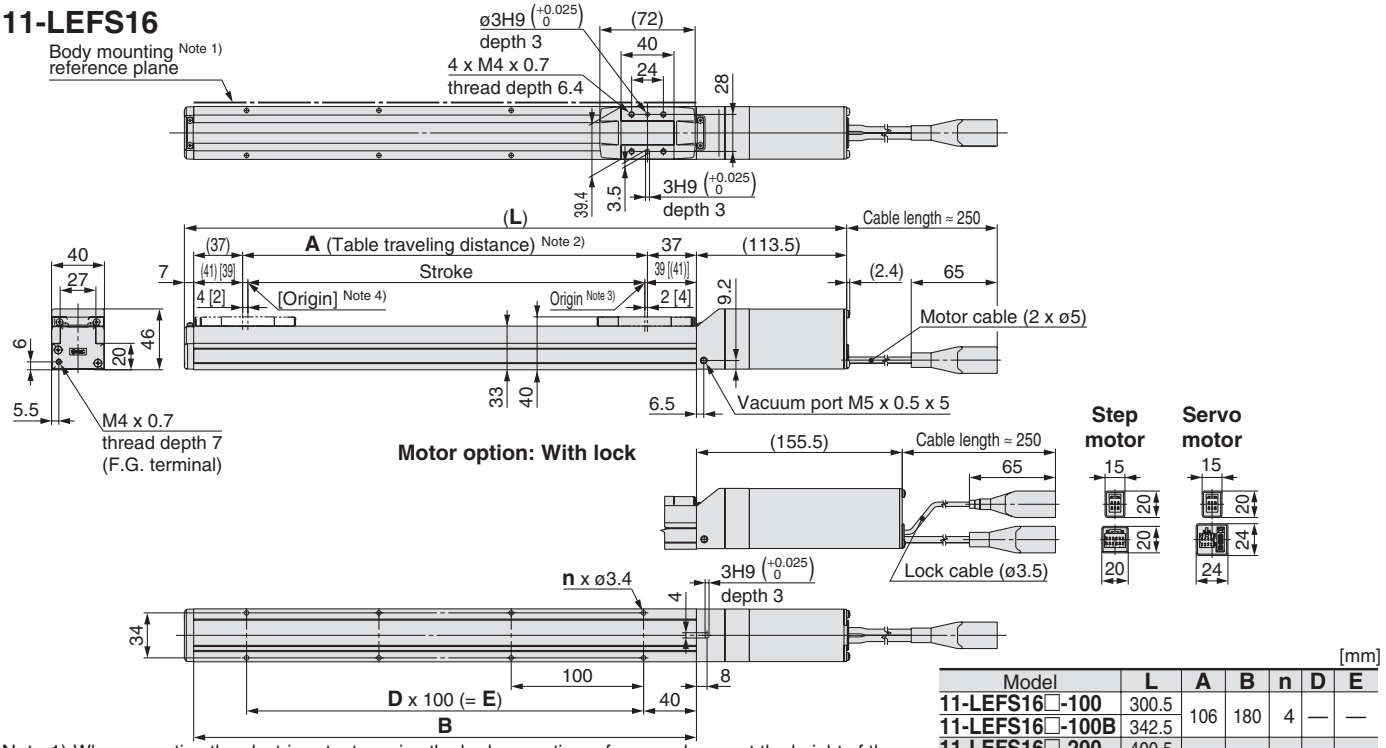
Model	11-LEFS32							
Stroke [mm]	100	200	300	400	500	600	700	800
Product weight [kg]	3.35	3.75	4.15	4.55	4.95	5.35	5.75	6.15
Additional weight with lock [kg]	0.53							

Model	11-LEFS40								
Stroke [mm]	200	300	400	500	600	700	800	900	1000
Product weight [kg]	5.65	6.21	6.77	7.33	7.89	8.45	9.01	9.57	10.13
Additional weight with lock [kg]	0.53								

Clean room specification

Dimensions: Ball Screw Drive

11-LEFS16

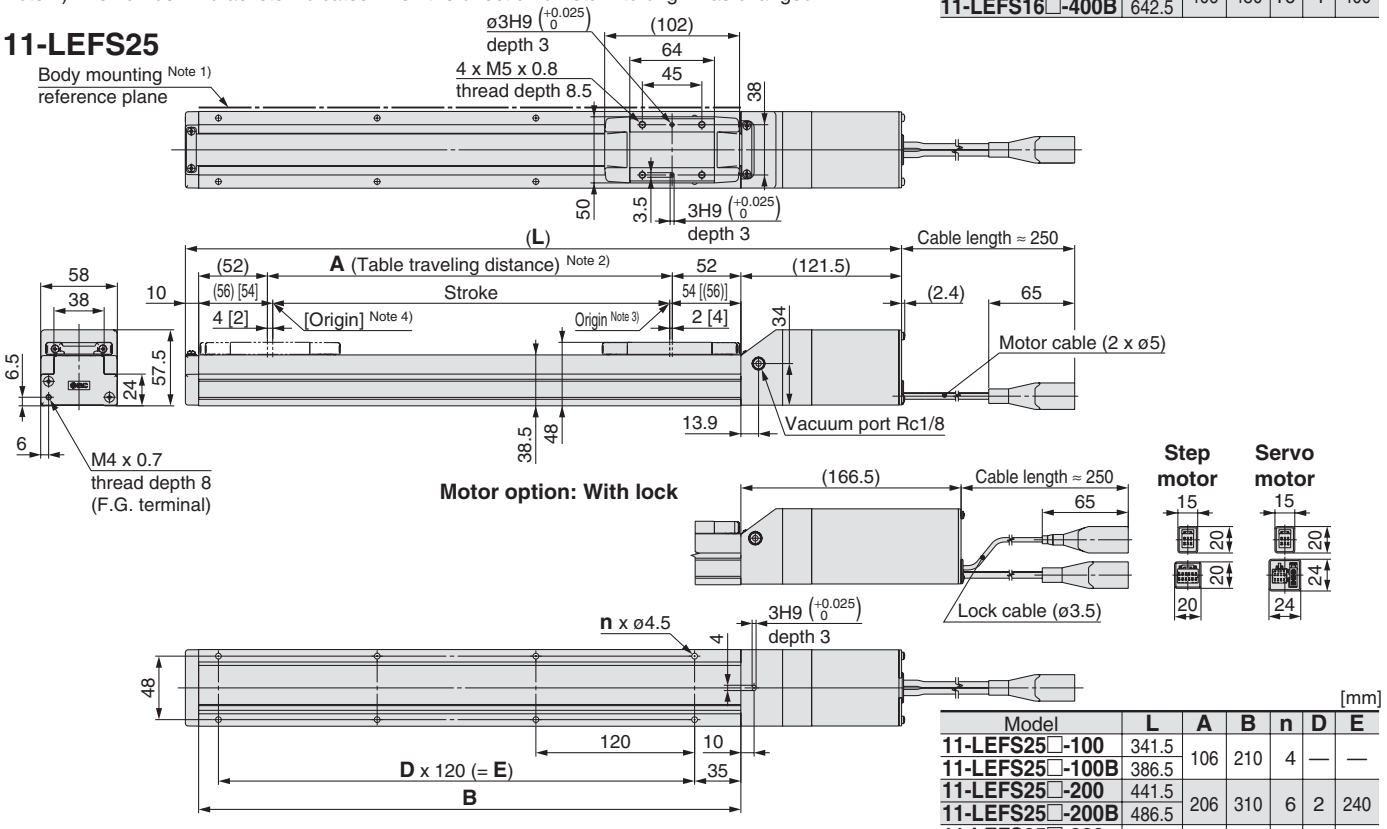


[mm]

Model	L	A	B	n	D	E
11-LEFS16□-100	300.5	106	180	4	—	—
11-LEFS16□-100B	342.5					
11-LEFS16□-200	400.5	206	280	6	2	200
11-LEFS16□-200B	442.5					
11-LEFS16□-300	500.5	306	380	8	3	300
11-LEFS16□-300B	542.5					
11-LEFS16□-400	600.5	406	480	10	4	400
11-LEFS16□-400B	642.5					

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 2 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

11-LEFS25



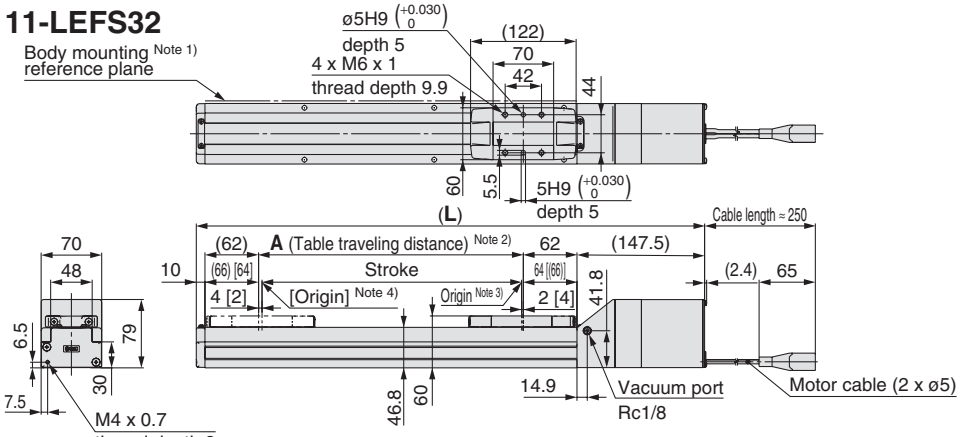
[mm]

Model	L	A	B	n	D	E
11-LEFS25□-100	341.5	106	210	4	—	—
11-LEFS25□-100B	386.5					
11-LEFS25□-200	441.5	206	310	6	2	240
11-LEFS25□-200B	486.5					
11-LEFS25□-300	541.5	306	410	8	3	360
11-LEFS25□-300B	586.5					
11-LEFS25□-400	641.5	406	510	8	3	360
11-LEFS25□-400B	686.5					
11-LEFS25□-500	741.5	506	610	10	4	480
11-LEFS25□-500B	786.5					
11-LEFS25□-600	841.5	606	710	12	5	600
11-LEFS25□-600B	886.5					

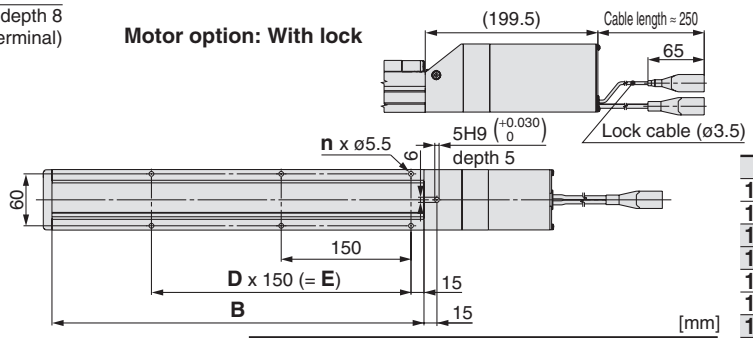
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

Dimensions: Ball Screw Drive

11-LEFS32



Motor option: With lock

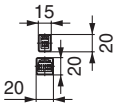


[mm]

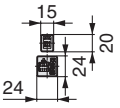
Model	L	A	B	n	D	E
11-LEFS32□-100	387.5	106	230	4	—	—
11-LEFS32□-100B	439.5					
11-LEFS32□-200	487.5	206	330	6	2	300
11-LEFS32□-200B	539.5					

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

Step motor



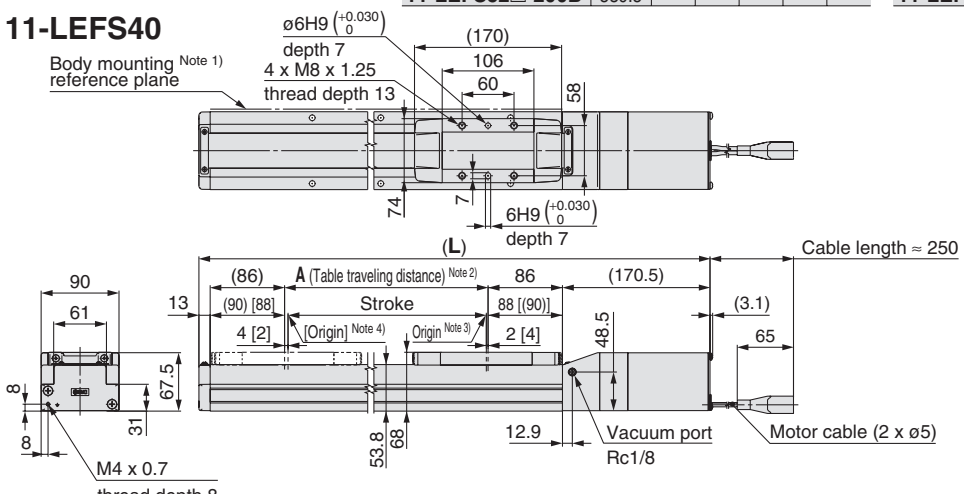
Servo motor



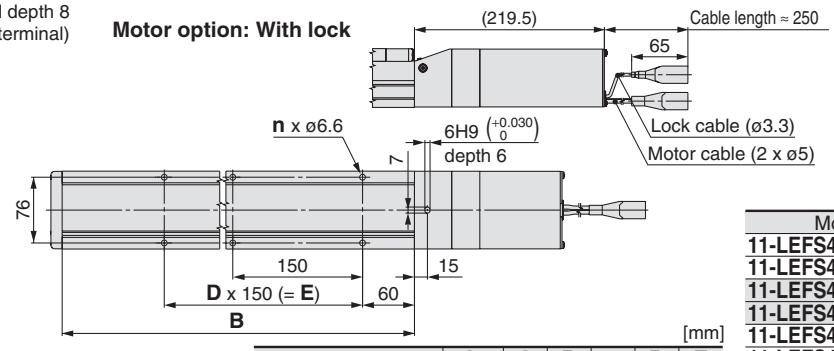
[mm]

Model	L	A	B	n	D	E
11-LEFS32□-300	587.5	306	430	6	2	300
11-LEFS32□-300B	639.5					
11-LEFS32□-400	687.5	406	530	8	3	450
11-LEFS32□-400B	739.5					
11-LEFS32□-500	787.5	506	630	10	4	600
11-LEFS32□-500B	839.5					
11-LEFS32□-600	887.5	606	730	10	4	600
11-LEFS32□-600B	939.5					
11-LEFS32□-700	987.5	706	830	12	5	750
11-LEFS32□-700B	1039.5					
11-LEFS32□-800	1087.5	806	930	14	6	900
11-LEFS32□-800B	1139.5					

11-LEFS40



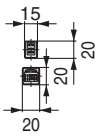
Motor option: With lock



[mm]

Model	L	A	B	n	D	E
11-LEFS40□-200	561.5	206	378	6	2	300
11-LEFS40□-200B	610.5					
11-LEFS40□-300	661.5	306	478	6	2	300
11-LEFS40□-300B	710.5					
11-LEFS40□-400	761.5	406	578	8	3	450
11-LEFS40□-400B	810.5					

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.



[mm]

Model	L	A	B	n	D	E
11-LEFS40□-500	861.5	506	678	10	4	600
11-LEFS40□-500B	910.5					
11-LEFS40□-600	961.5	606	778	10	4	600
11-LEFS40□-600B	1010.5					
11-LEFS40□-700	1061.5	706	878	12	5	750
11-LEFS40□-700B	1110.5					
11-LEFS40□-800	1161.5	806	978	14	6	900
11-LEFS40□-800B	1210.5					
11-LEFS40□-900	1261.5	906	1078	14	6	900
11-LEFS40□-900B	1310.5					
11-LEFS40□-1000	1361.5	1006	1178	16	7	1050
11-LEFS40□-1000B	1410.5					

Electric Actuator/Slider Type
Belt Drive

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

Series LEFB
LEFB16, 25, 32

The belt drive actuator cannot be used vertically for applications.

How to Order

LEFB 16 ❶ T ❸ – 500 ❹ ❺ – R ❻ 1 ❼ 6N ❽ 1 ❾ ❿

❶ Size

16
25
32

❷ Motor type

Symbol	Type	Applicable size			Compatible controllers/driver
		LEFB16	LEFB25	LEFB32	
Nil	Step motor (Servo/24 VDC)	●	●	●	LECP6 LECP1 LECPA
A	Servo motor (24 VDC)	●	●	—	LECA6

❸ Equivalent lead [mm]

T	48

❹ Stroke [mm]

300	300
to	to
2000	2000

∗ Refer to the applicable stroke table.

⚠Caution

[CE-compliant products]

① 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.

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 44 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

Applicable stroke table

●Standard

Model \ Stroke	300	500	600	700	800	900	1000	1200	1500	1800	2000
LEFB16	●	●	●	●	●	●	●	—	—	—	—
LEFB25	●	●	●	●	●	●	●	●	●	●	●
LEFB32	●	●	●	●	●	●	●	●	●	●	●

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

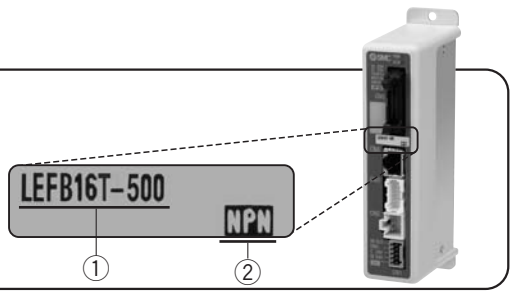
The actuator and controller/driver are sold as a package.

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

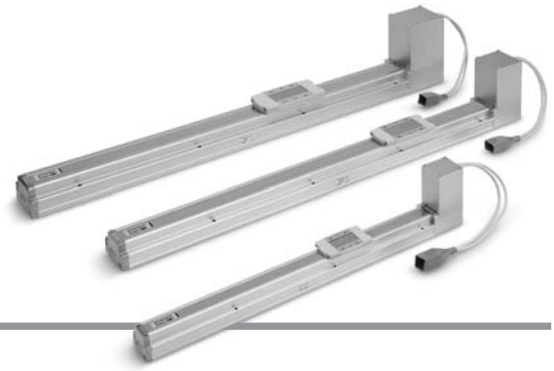
<Check the following before use.>

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

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



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



❺ Motor option

Nil	Without option
B	With lock

❻ Actuator cable type*1

Nil	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."

❼ Actuator cable length [m]

Nil	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 2) on pages 28 and 29.

❽ Controller/Driver type*1

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

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

❾ I/O cable length [m]*1

Nil	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 44 (For LECP6/LECA6), page 57 (For LECP1) or page 64 (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.

❿ Controller/Driver mounting

Nil	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

Compatible Controllers/Driver

Type	**Step data input type** 	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECA6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller		Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points		14 points	—
Power supply voltage	24 VDC			
Reference page	Page 36	Page 36	Page 51	Page 58

Specifications

Step Motor (Servo/24 VDC)

Model			LEFB16	LEFB25	LEFB32
Actuator specifications	Stroke [mm] Note 1)		300, 500, 600, 700 800, 900, 1000	300, 500, 600, 700, 800, 900 1000, 1200, 1500, 1800, 2000	300, 500, 600, 700, 800, 900 1000, 1200, 1500, 1800, 2000
	Work load [kg] Note 2)	Horizontal	1	5	14
	Speed [mm/s] Note 2)		48 to 1100	48 to 1400	48 to 1500
	Max. acceleration/deceleration [mm/s^2]		3,000		
	Positioning repeatability [mm]		±0.1		
	Equivalent lead [mm]		48	48	48
	Impact/Vibration resistance [m/s^2] Note 3)		50/20		
	Actuation type		Belt		
	Guide type		Linear guide		
	Operating temperature range [°C]		5 to 40		
	Operating humidity range [%RH]		90 or less (No condensation)		
Electric specifications	Motor size		□28	□42	□56.4
	Motor type		Step motor (Servo/24 VDC)		
	Encoder		Incremental A/B phase (800 pulse/rotation)		
	Rated voltage [V]		24 VDC ±10%		
	Power consumption [W] Note 4)		24	32	52
	Standby power consumption when operating [W] Note 5)		18	16	44
	Max. instantaneous power consumption [W] Note 6)		51	60	127
Lock unit specifications	Type Note 7)		Non-magnetizing lock		
	Holding force [N]		4	19	36
	Power consumption [W] Note 8)		2.9	5	5
	Rated voltage [V]		24 VDC ±10%		

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 4.
Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The power consumption (including the controller) is for when the actuator is operating.
Note 5) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation.
Note 6) 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 7) With lock only
Note 8) For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model		LEFB16A	LEFB25A
Actuator specifications	Stroke [mm] Note 1)	300, 500, 600, 700 800, 900, 1000	300, 500, 600, 700, 800, 900 1000, 1200, 1500, 1800, 2000
	Work load [kg] Note 2) Horizontal	1	2
	Speed [mm/s] Note 2)	48 to 2000	48 to 2000
	Max. acceleration/deceleration [mm/s²]	3,000	
	Positioning repeatability [mm]	±0.1	
	Equivalent lead [mm]	48	48
	Impact/Vibration resistance [m/s²] Note 3)	50/20	
	Actuation type	Belt	
	Guide type	Linear guide	
	Operating temperature range [°C]	5 to 40	
	Operating humidity range [%RH]	90 or less (No condensation)	
Electric specifications	Motor size	□28	□42
	Motor output [W]	30	36
	Motor type	Servo motor (24 VDC)	
	Encoder	Incremental A/B (800 pulse/rotation)/Z phase	
	Rated voltage [V]	24 VDC ±10%	
	Power consumption [W] Note 4)	78	69
	Standby power consumption when operating [W] Note 5)	Horizontal 4	Horizontal 5
	Max. instantaneous power consumption [W] Note 6)	87	120
Lock unit specifications	Type Note 7)	Non-magnetizing lock	
	Holding force [N]	4	19
	Power consumption [W] Note 8)	2.9	5
	Rated voltage [V]	24 VDC ±10%	

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Check “Speed–Work Load Graph (Guide)” on page 4 for details. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 4) The power consumption (including the controller) is for when the actuator is operating.
Note 5) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation.
Note 6) 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 7) With lock only
Note 8) For an actuator with lock, add the power consumption for the lock.

Weight

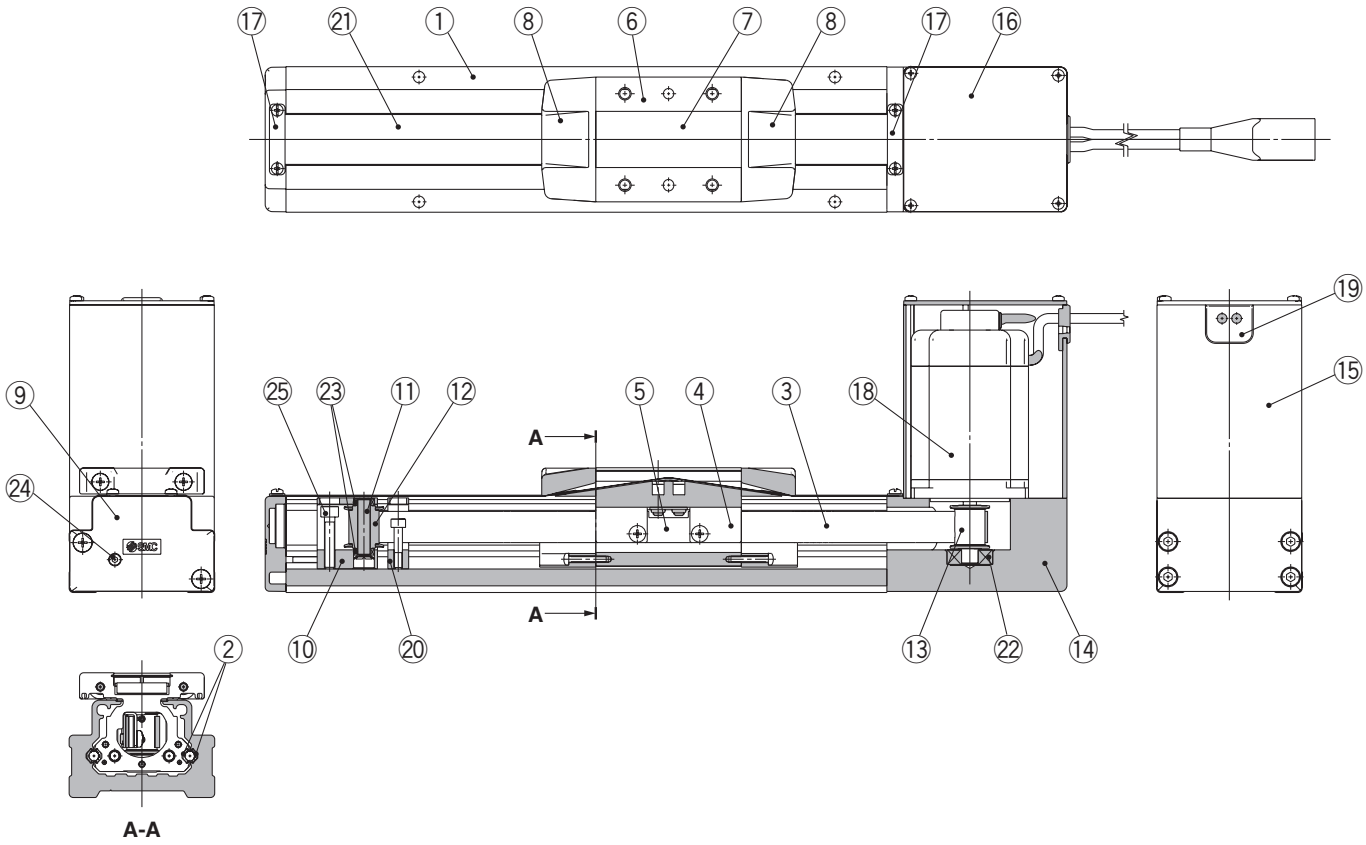
Series	LEFB16						
Stroke [mm]	300	500	600	700	800	900	1000
Product weight [kg]	1.19	1.45	1.58	1.71	1.84	1.97	2.10
Additional weight with lock [kg]	0.12						

Series	LEFB25										
Stroke [mm]	300	500	600	700	800	900	1000	1200	1500	1800	2000
Product weight [kg]	2.39	2.85	3.08	3.31	3.54	3.77	4.00	4.46	5.15	5.84	6.30
Additional weight with lock [kg]	0.26										

Series	LEFB32										
Stroke [mm]	300	500	600	700	800	900	1000	1200	1500	1800	2000
Product weight [kg]	4.12	4.80	5.14	5.48	5.82	6.16	6.50	7.18	8.20	9.22	9.90
Additional weight with lock [kg]	0.53										

Construction

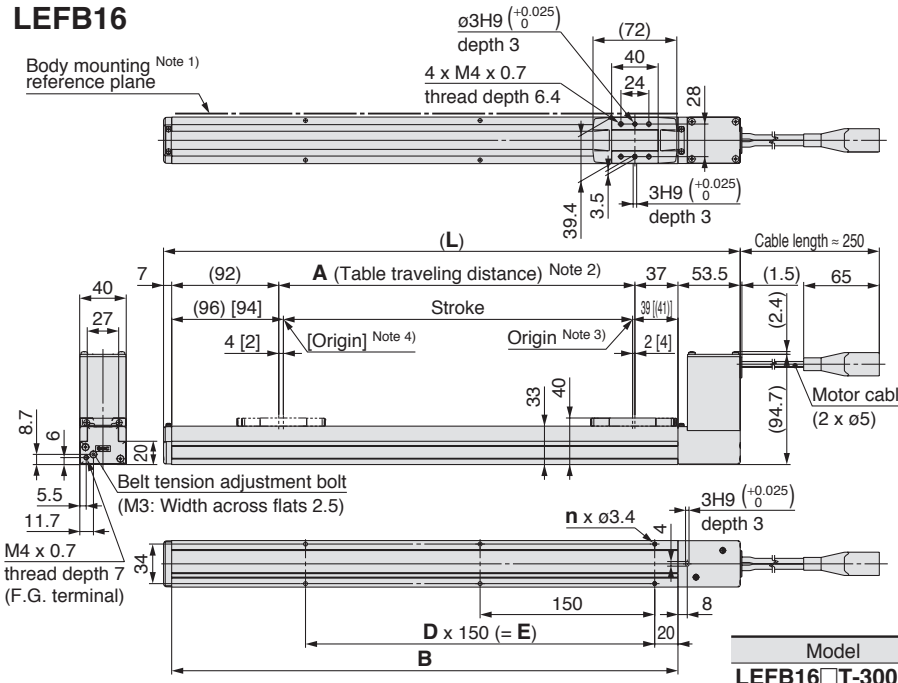
Series LEFB

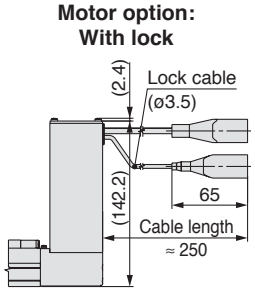


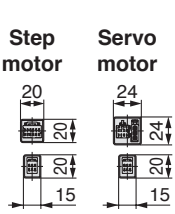
No.	Description	Material	Note
1	**Body**	Aluminum alloy	Anodized
2	**Rail guide**	—	
3	**Belt**	—	
4	**Belt holder**	Carbon steel	Chromate treated
5	**Belt stopper**	Aluminum alloy	Anodized
6	**Table**	Aluminum alloy	Anodized
7	**Blanking plate**	Aluminum alloy	Anodized
8	**Seal band stopper**	Synthetic resin	
9	**Housing A**	Aluminum die-cast	Coating
10	**Pulley holder**	Aluminum alloy	
11	**Pulley shaft**	Stainless steel	
12	**End pulley**	Aluminum alloy	Anodized
13	**Motor pulley**	Aluminum alloy	Anodized
14	**Motor mount**	Aluminum alloy	Anodized
15	**Motor cover**	Aluminum alloy	Anodized
16	**End cover**	Aluminum alloy	Anodized
17	**Band stopper**	Stainless steel	
18	**Motor**	—	
19	**Rubber bushing**	NBR	
20	**Stopper**	Aluminum alloy	
21	**Dust seal band**	Stainless steel	
22	**Bearing**	—	
23	**Bearing**	—	
24	**Tension adjustment bolt**	Chromium molybdenum steel	Chromate treated
25	**Pulley fixing bolt**	Chromium molybdenum steel	Chromate treated

Dimensions: Belt Drive

LEFB16





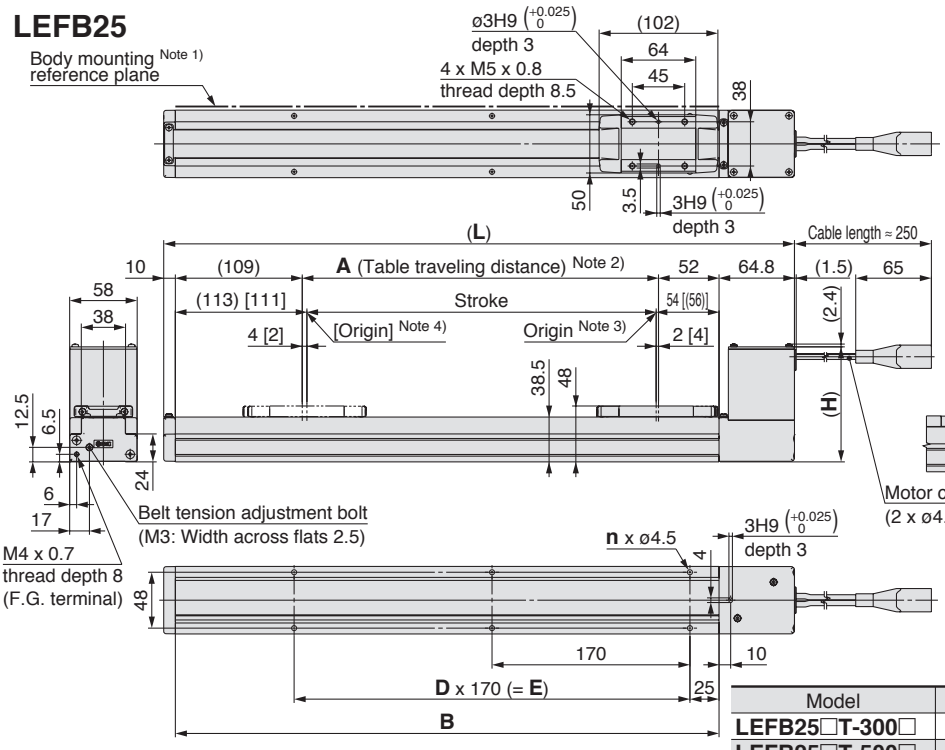


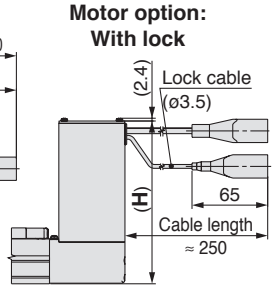
[mm]

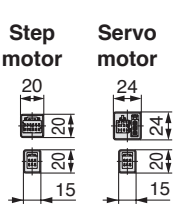
Model	L	A	B	n	D	E
LEFB16□T-300□	495.5	306	435	6	2	300
LEFB16□T-500□	695.5	506	635	10	4	600
LEFB16□T-600□	795.5	606	735	10	4	600
LEFB16□T-700□	895.5	706	835	12	5	750
LEFB16□T-800□	995.5	806	935	14	6	900
LEFB16□T-900□	1095.5	906	1035	14	6	900
LEFB16□T-1000□	1195.5	1006	1135	16	7	1050

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 2 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

LEFB25







[mm]

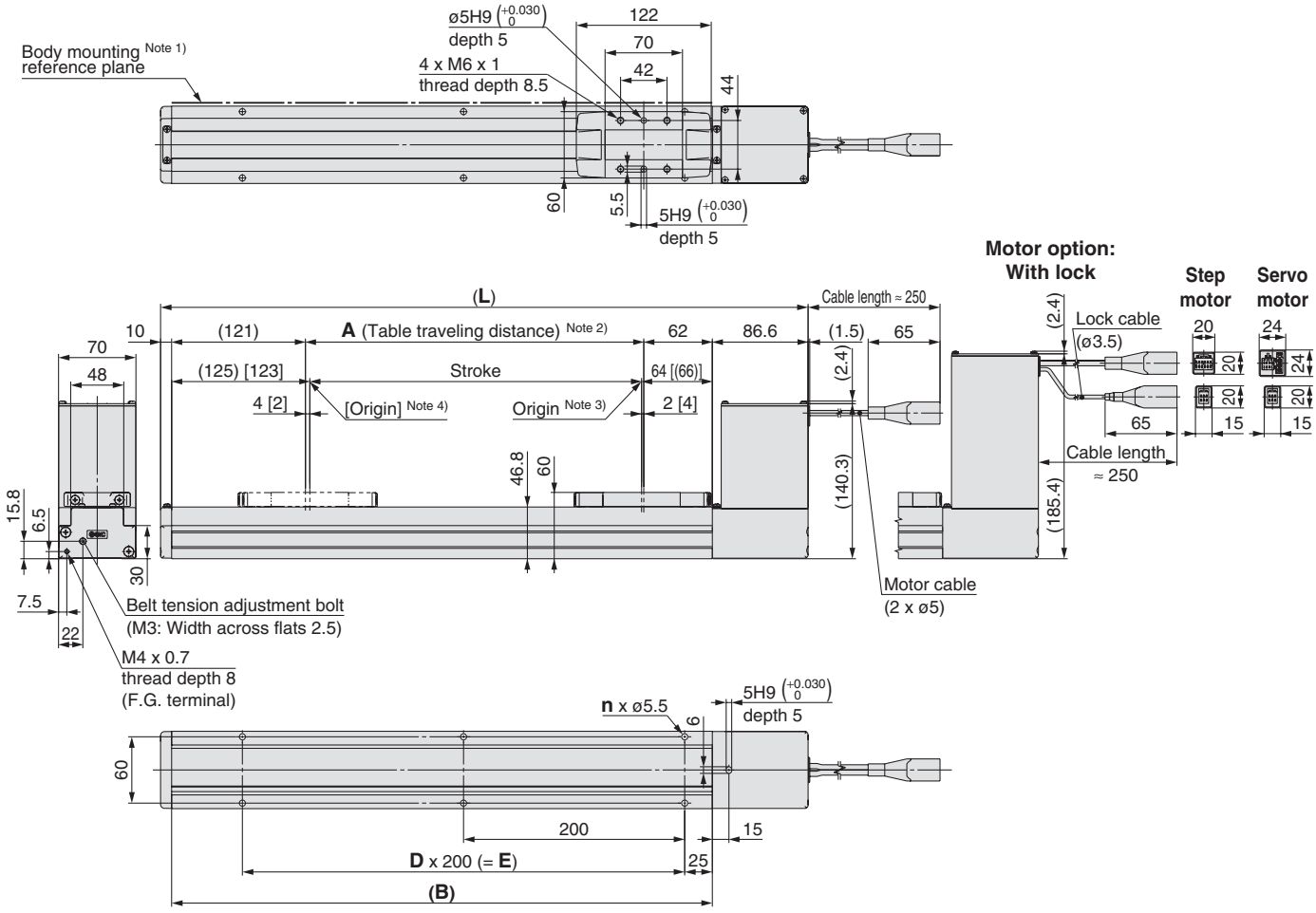
Model	H
LEFB25T-ST	115.8
LEFB25T-STB	158.8
LEFB25AT-ST	98.8
LEFB25AT-STB	139.8

Model	L	A	B	n	D	E
LEFB25□T-300□	541.8	306	467	6	2	340
LEFB25□T-500□	741.8	506	667	8	3	510
LEFB25□T-600□	841.8	606	767	10	4	680
LEFB25□T-700□	941.8	706	867	10	4	680
LEFB25□T-800□	1041.8	806	967	12	5	850
LEFB25□T-900□	1141.8	906	1067	14	6	1020
LEFB25□T-1000□	1241.8	1006	1167	14	6	1020
LEFB25□T-1200□	1441.8	1206	1367	16	7	1190
LEFB25□T-1500□	1741.8	1506	1667	20	9	1530
LEFB25□T-1800□	2041.8	1806	1967	24	11	1870
LEFB25□T-2000□	2241.8	2006	2167	26	12	2040

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

Dimensions: Belt Drive

LEFB32



[mm]

Model	L	A	B	n	D	E
LEFB32□T-300□	585.6	306	489	6	2	400
LEFB32□T-500□	785.6	506	689	8	3	600
LEFB32□T-600□	885.6	606	789	8	3	600
LEFB32□T-700□	985.6	706	889	10	4	800
LEFB32□T-800□	1085.6	806	989	10	4	800
LEFB32□T-900□	1185.6	906	1089	12	5	1000
LEFB32□T-1000□	1285.6	1006	1189	12	5	1000
LEFB32□T-1200□	1485.6	1206	1389	14	6	1200
LEFB32□T-1500□	1785.6	1506	1689	18	8	1600
LEFB32□T-1800□	2085.6	1806	1989	20	9	1800
LEFB32□T-2000□	2285.6	2006	2189	22	10	2000

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) Position after return to origin.
Note 4) The number in brackets indicates when the direction of return to origin has changed.

Electric Actuator/ 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.

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

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

This can cause failure.

Handling

⚠Caution

1. Set the position determination width in the step data to at least 0.5 (at least 1 for the belt type).

Otherwise, completion signal of in position may not be output.

2. INP output signal

1) Positioning operation

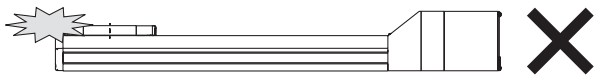
When the product comes within the set range by step data [In position], the INP output signal will turn on.
Initial value: Set to [0.50] or higher.

Handling

⚠Caution

3. Never hit at the stroke end except during return to origin.

The internal stopper can be broken.



Handle the actuator with care, especially when it is used in the vertical direction.

4. The moving force should be the initial value.

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

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

Check the model selection section of the catalog.

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

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

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

This may cause unevenness in the mounting surface, play in the guide or an increase in the sliding resistance.

8. 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 play in the guide or an increase in the sliding resistance.

9. Keep the flatness of mounting surface 0.1 mm or less.

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

10. When mounting the product, keep a 40 mm or longer diameter for bends in the cable.

11. Do not hit the table with the workpiece in the positioning operation and positioning range.

Electric Actuator/ 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

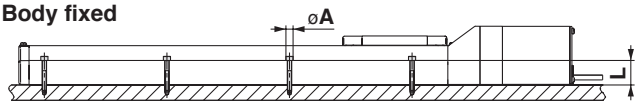
Handling

⚠Caution

12. When mounting the product, use screws with adequate length and tighten them with adequate torque.

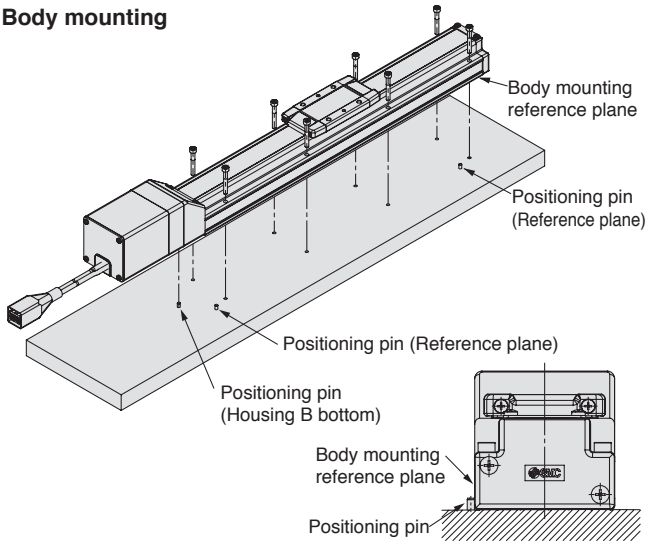
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



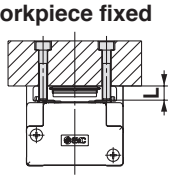
Model	Bolt	øA (mm)	L (mm)
LEF□16	M3	3.5	20
LEF□25	M4	4.5	24
LEF□32	M5	5.5	30
LEFS40	M6	6.6	31

Body mounting



The travelling parallelism is the reference plane for the body mounting reference plane.
If the traveling parallelism for a table is required, set the reference plane against parallel pins, etc.

Workpiece fixed



Model	Bolt	Max. tightening torque (N·m)	L (Max. screw-in depth) (mm)
LEF□16	M4 x 0.7	1.5	6
LEF□25	M5 x 0.8	3.0	8
LEF□32	M6 x 1	5.2	9
LEFS40	M8 x 1.25	12.5	13

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

13. Do not operate by fixing the table and moving the actuator body.

14. The belt drive actuator cannot be used vertically for applications.

15. Check the specifications for the minimum speed of each actuator.

Otherwise, unexpected malfunctions, such as knocking, may occur.

16. In the case of the belt drive actuator, vibration may occur during operation at speeds within the actuator specifications, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.

Maintenance

⚠Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	○	—	—
Inspection every 6 months/1000 km/ 5 million cycles*	○	○	○

* Select whichever comes sooner.

- **Items for visual appearance check**
  1. Loose set screws, Abnormal dirt
  2. Check of flaw and cable joint
  3. Vibration, Noise
- **Items for internal check**
  1. Lubricant condition on moving parts.
  2. Loose or mechanical play in fixed parts or fixing screws.
- **Items for belt check**

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

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

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

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

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

e. Rubber back of the belt is softened and sticky.

f . Crack on the back of the belt

Controller/Driver

Step Data Input Type ····· Page 36

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Gateway Unit ····· Page 48

Series LEC-G

Programless Type ····· Page 51

Step Motor (Servo/24 VDC)

Series LECP1

Pulse Input Type ····· Page 58

Step Motor (Servo/24 VDC)

Series LECPA

Controller (Step Data Input Type)

Step Motor (Servo/24 VDC)

Series LECP6

Servo Motor (24 VDC)

Series LECA6

Series LECP6 Series LECA6

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator 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.

② For the LECA6 series (servo motor controller), EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 44 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 N □ □ – □

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]

Nil	Without cable
1	1.5
3	3
5	5

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEFS16A-400" for the LEFS16A-400B-R16N1.

Option

Nil	Screw mounting
D Note)	DIN rail mounting

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

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

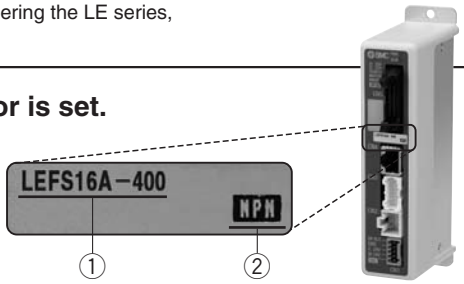
The controller is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

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

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



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

Specifications

Basic Specifications

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

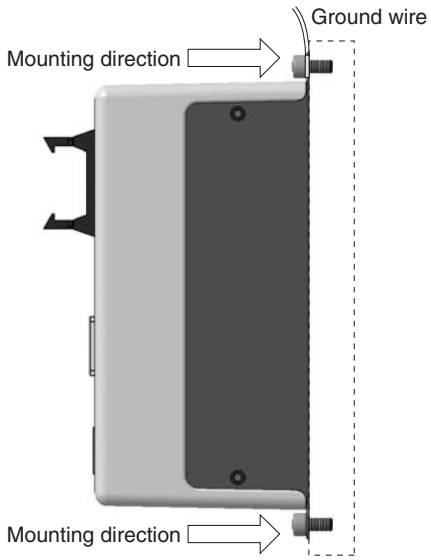
Note 1) Do not use the power supply of "inrush current prevention type" for the controller power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

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

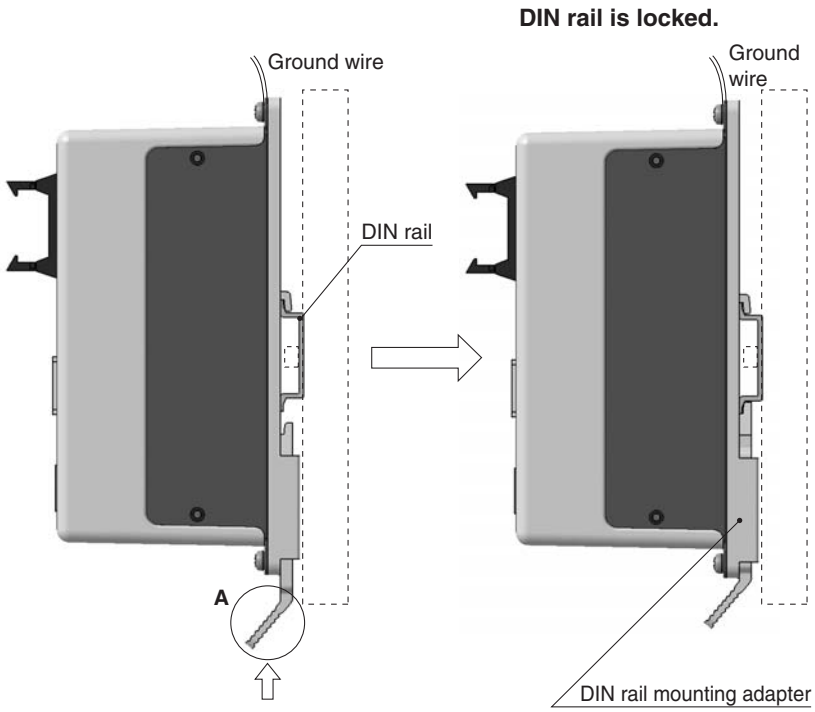
Note 3) Applicable to non-magnetizing lock.

How to Mount

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



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

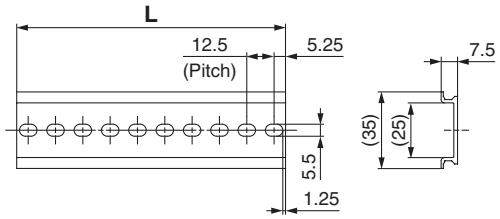


Hook the controller on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

Note) When size 25 or more of the LEF 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 38 for the mounting dimensions.



L Dimension [mm]

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

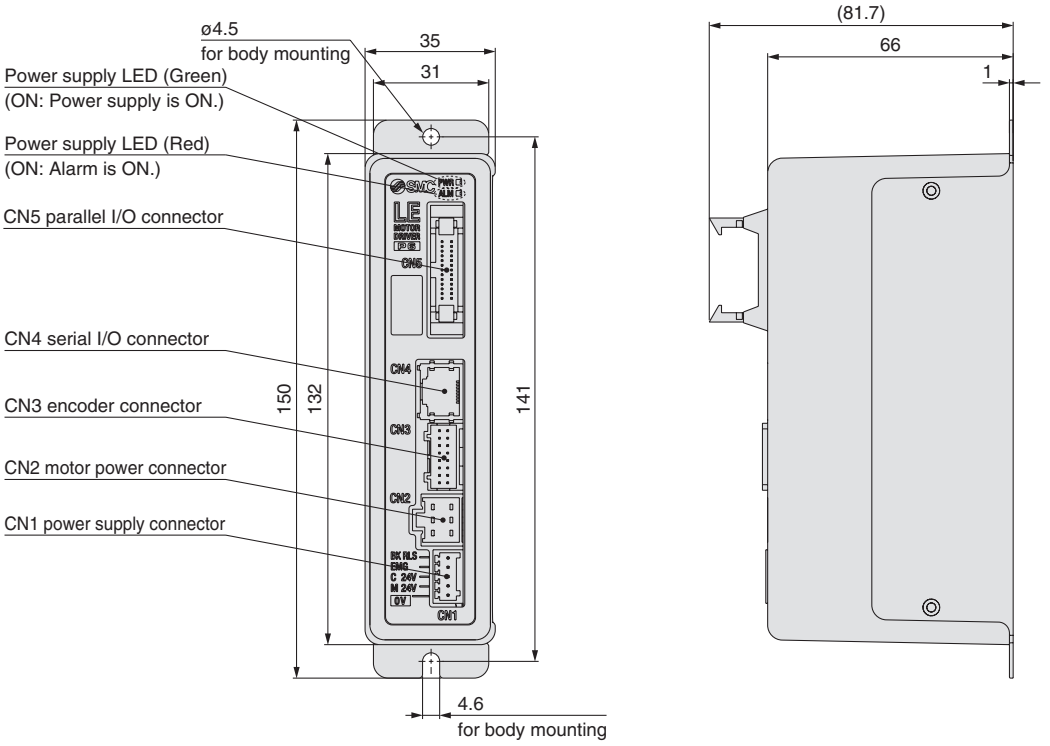
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

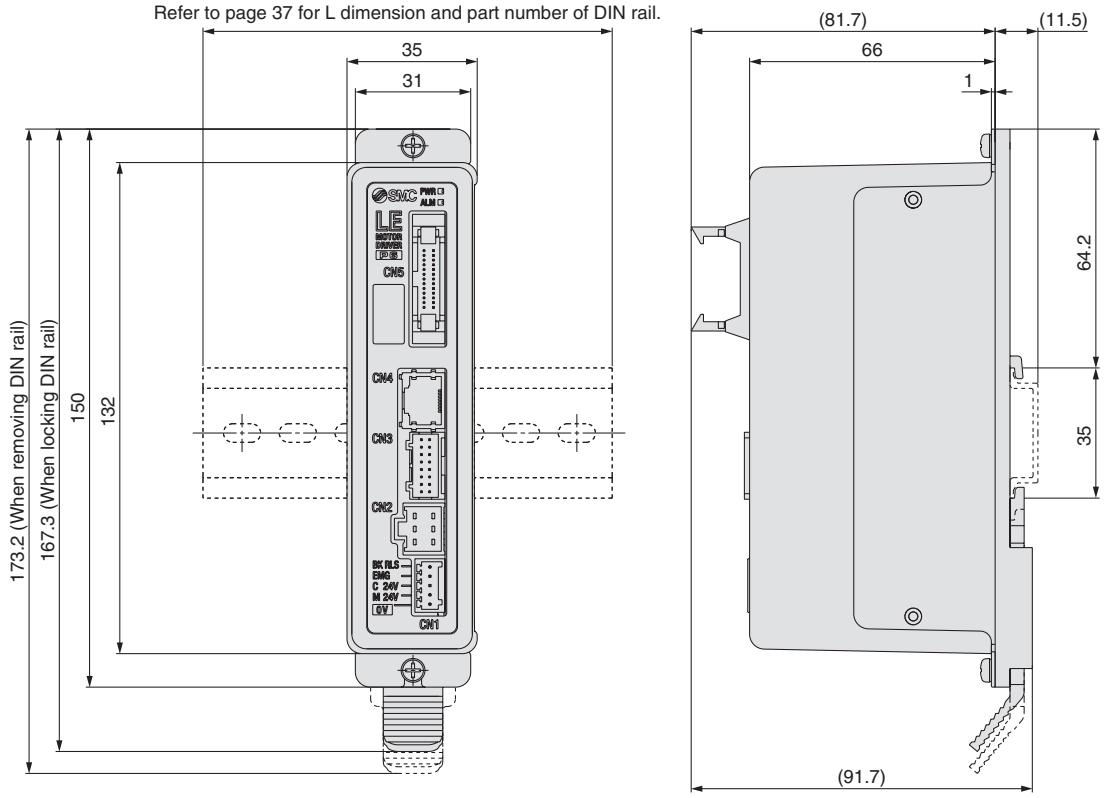
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type controller afterwards.

Dimensions

a) Screw mounting (LEC□6□□-□)



b) DIN rail mounting (LEC□6□□D-□)



Wiring Example 1

Power Supply Connector: CN1

∗ Power supply plug is an accessory.

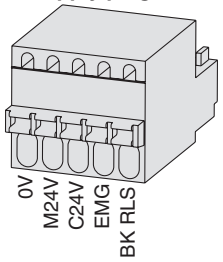
CN1 Power Supply Connector Terminal for LECP6 (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

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

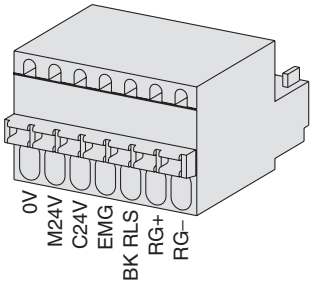
CN1 Power Supply Connector Terminal for LECA6 (PHOENIX CONTACT FK-MC0.5/7-ST-2.5)

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

Power supply plug for LECP6



Power supply plug for LECA6



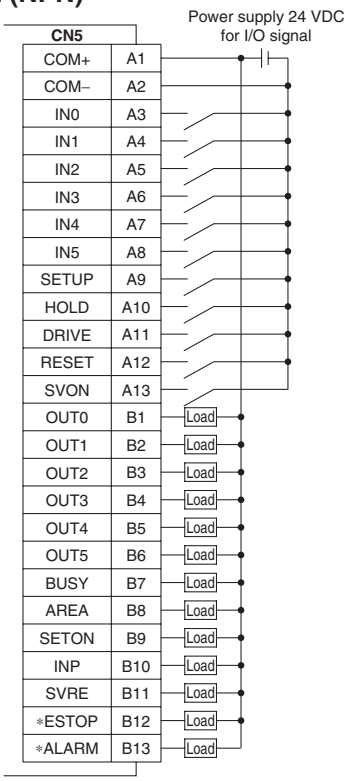
Wiring Example 2

Parallel I/O Connector: CN5

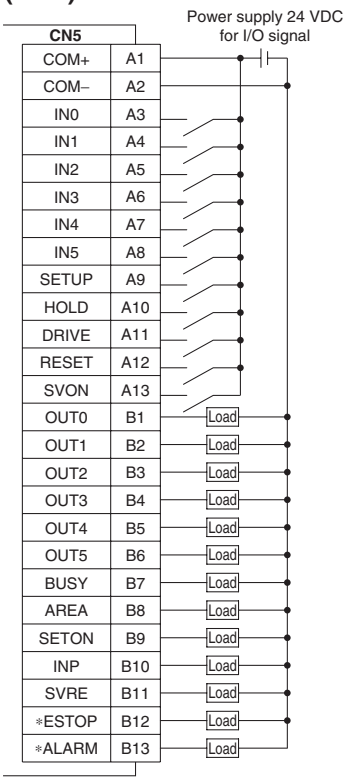
∗ When you connect a PLC, etc., to the CN5 parallel I/O connector, please use the I/O cable (LEC-CN5-□).
∗ The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

Wiring diagram

LEC□6N□□-□ (NPN)



LEC□6P□□-□ (PNP)



Input Signal

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

Output Signal

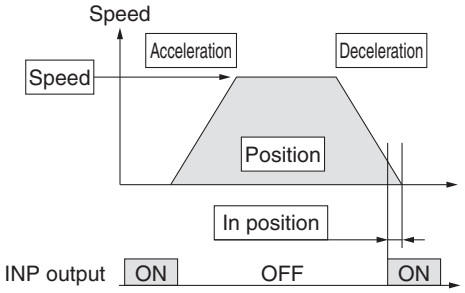
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or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

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

Step Data Setting

1. Step data setting for positioning

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



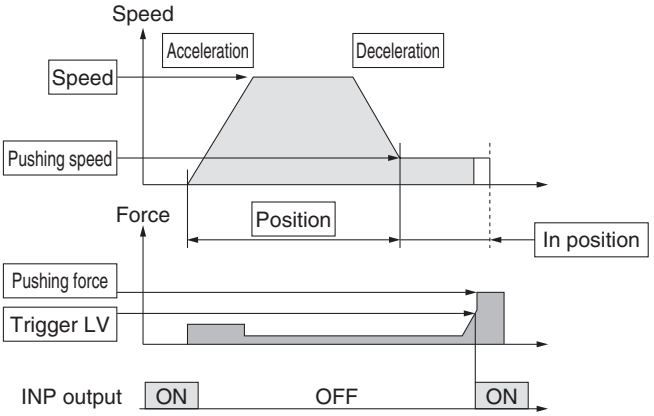
◎: Need to be set.
○: Need to be adjusted as required.
—: Setting is not required.

Step Data (Positioning)

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

2. Step data setting for pushing

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



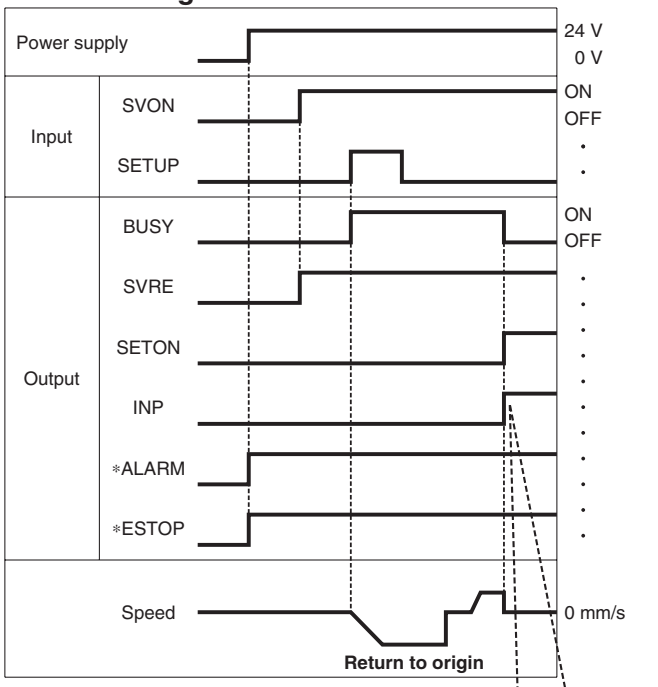
◎: Need to be set.
○: Need to be adjusted as required.

Step Data (Pushing)

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

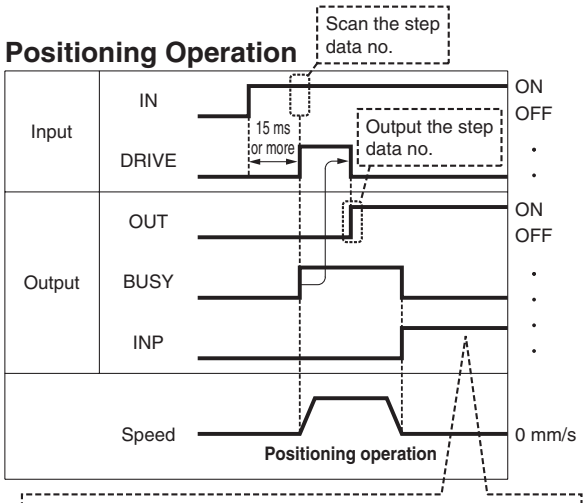
Signal Timing

Return to Origin



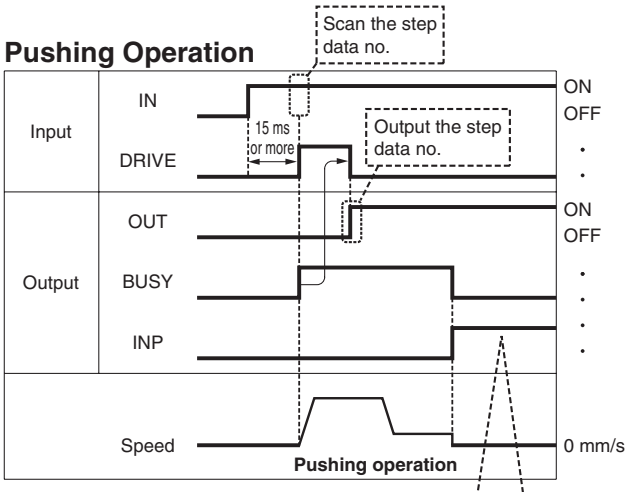
∗ "∗ALARM" and "∗ESTOP" are expressed as negative-logic circuit.

Positioning Operation

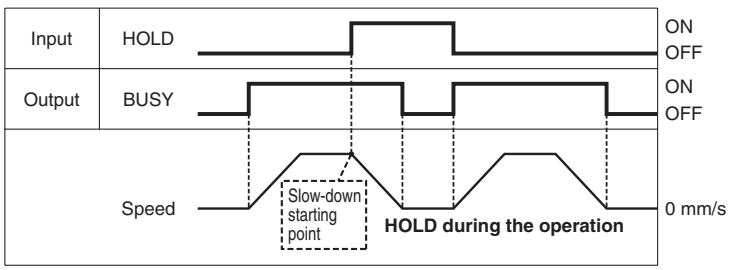


∗ "OUT" is output when "DRIVE" is changed from ON to OFF.
(When power supply is applied, "DRIVE" or "RESET" is turned ON or "∗ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation

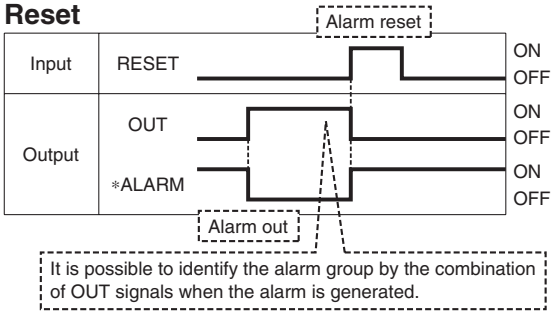


HOLD



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

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]

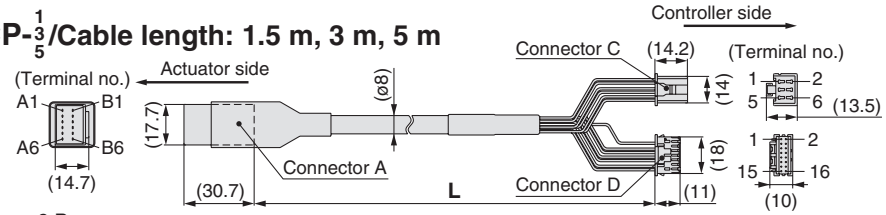
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

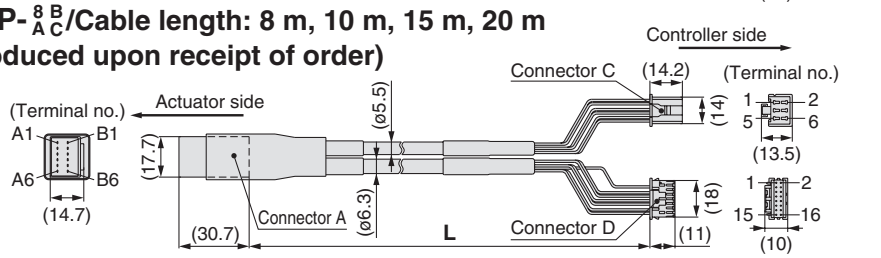
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

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



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



Signal	Connector A terminal no.	Cable color	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 color	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*

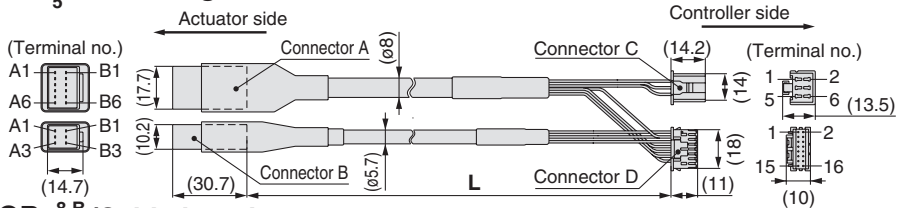
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

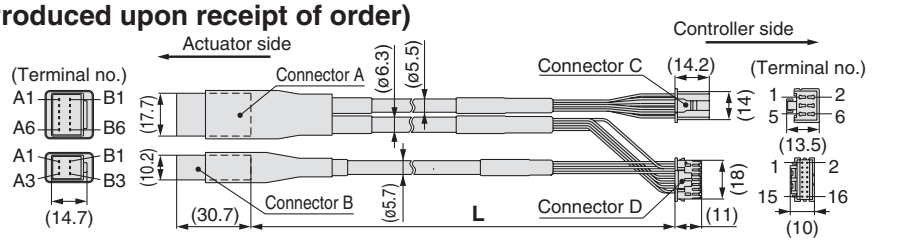
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

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



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



Signal	Connector A terminal no.	Cable color	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

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

Note) Not used for the LE series.

[Robotic cable for servo motor (24 VDC)]

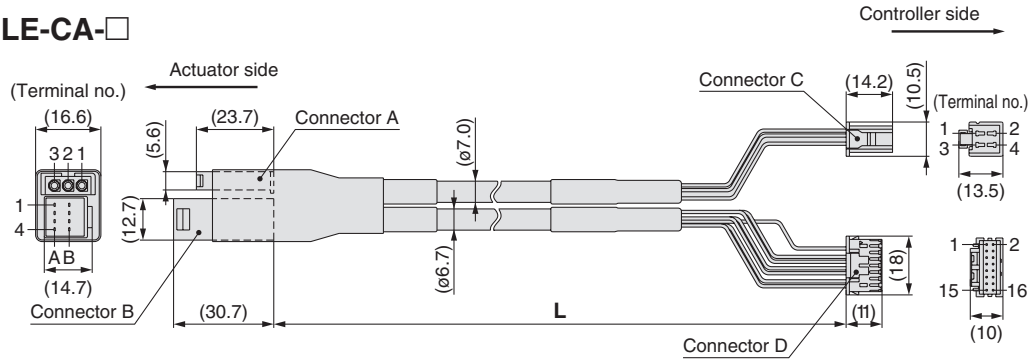
LE − CA − 1

Cable length (L) [m]

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

* Produced upon receipt of order

LE-CA-□



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

Signal	Connector B terminal no.	Cable color	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

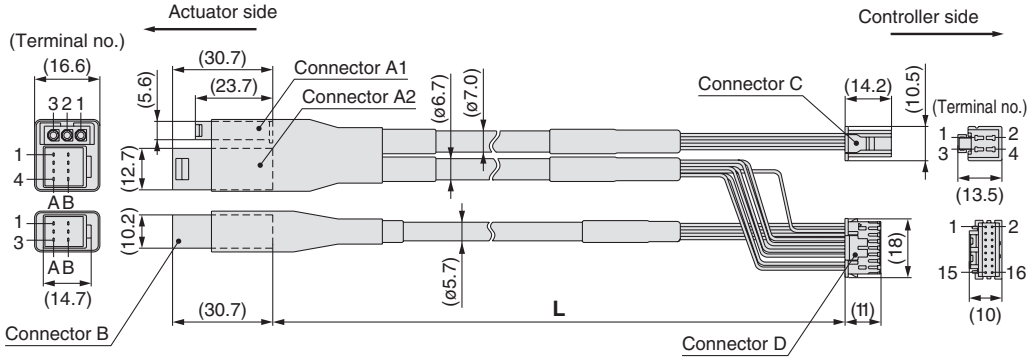
Cable length (L) [m]

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 color	Connector C terminal no.
U	1	Red	1
V	2	White	2
W	3	Black	3

Signal	Connector A2 terminal no.	Cable color	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

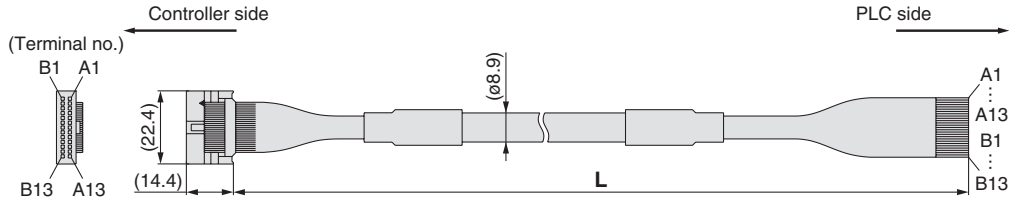
Note) Not used for the LE series.

Option: I/O Cable

LEC − CN5 − 1

Cable length (L) [m]

1	1.5
3	3
5	5



∗ Conductor size: AWG28

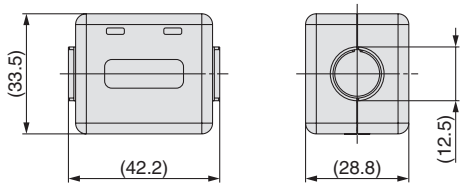
Connector pin no.	Insulation color	Dot mark	Dot color
A1	Light brown	■	Black
A2	Light brown	■	Red
A3	Yellow	■	Black
A4	Yellow	■	Red
A5	Light green	■	Black
A6	Light green	■	Red
A7	Gray	■	Black
A8	Gray	■	Red
A9	White	■	Black
A10	White	■	Red
A11	Light brown	■ ■	Black
A12	Light brown	■ ■	Red
A13	Yellow	■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

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

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

LEC − NFA

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

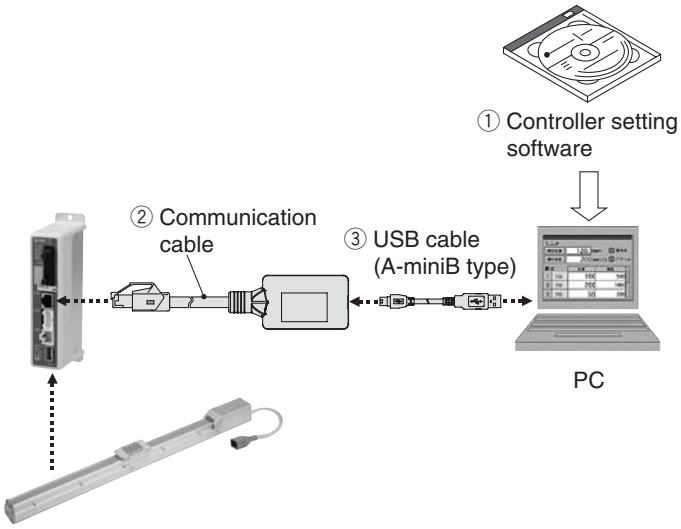


∗ Refer to the LECA6 series Operation Manual for installation.

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

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

Compatible Controllers/Driver

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

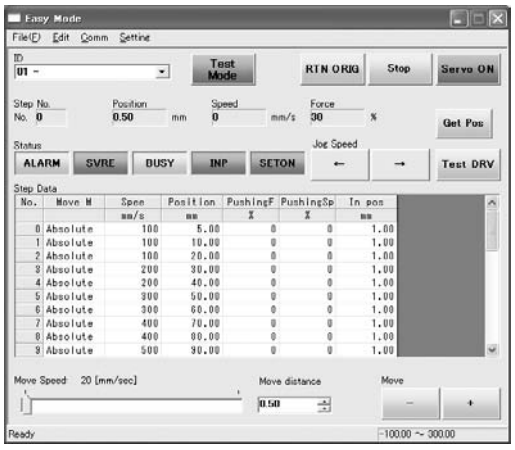
Hardware Requirements

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

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

Screen Example

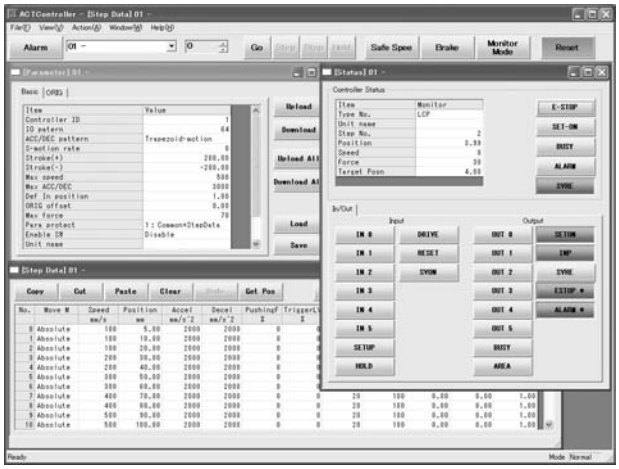
Easy mode screen example



Easy operation and simple setting

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

Normal mode screen example



Detailed setting

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

Series LEC
Teaching Box/LEC-T1

How to Order

LEC-T1-3JG

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

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

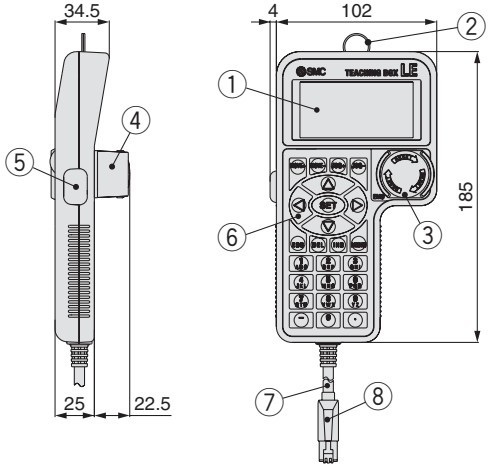
Normal Mode

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

Menu Operations Flowchart

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

Dimensions



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

Gateway Unit
Series LEC-G

How to Order

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator 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.

Gateway unit **LEC-G MJ2 □**

Applicable Fieldbus protocols

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

Mounting

Nil	Screw mounting
D Note)	DIN rail mounting

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

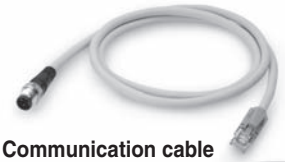
Cable **LEC-CG 1-L**

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**

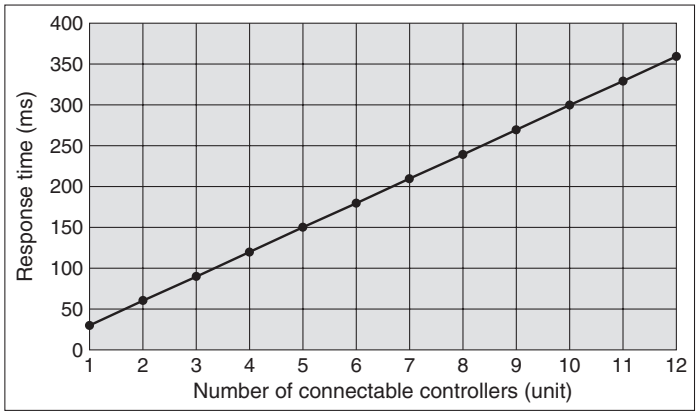
Specifications

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

Communication Response Time Guideline

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

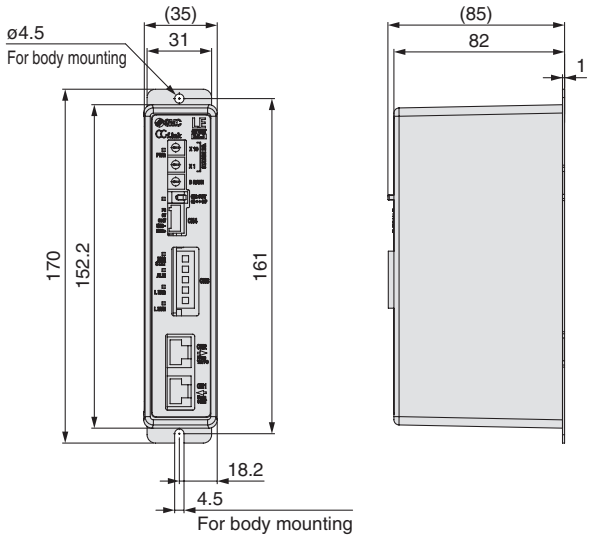


∗ This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

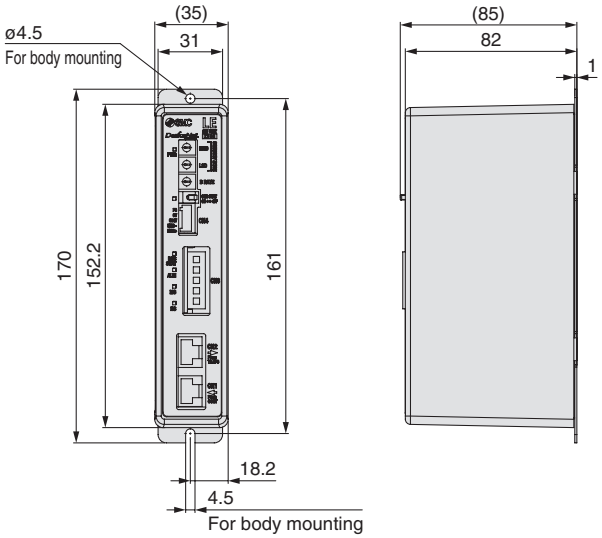
Dimensions

Screw mounting (LEC-G□□□)

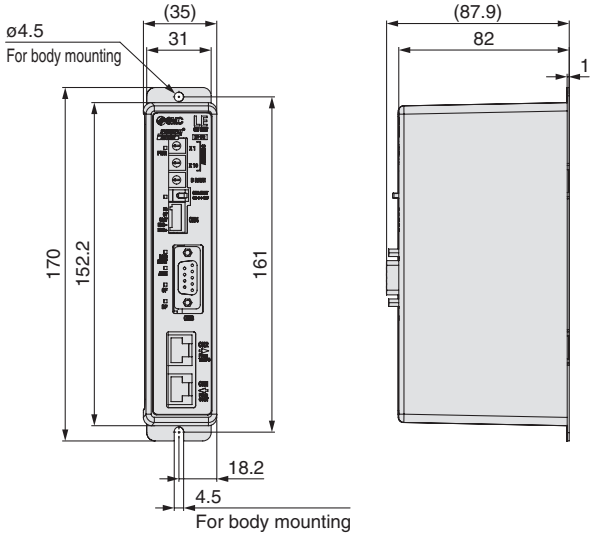
Applicable Fieldbus protocol: CC-Link Ver. 2.0



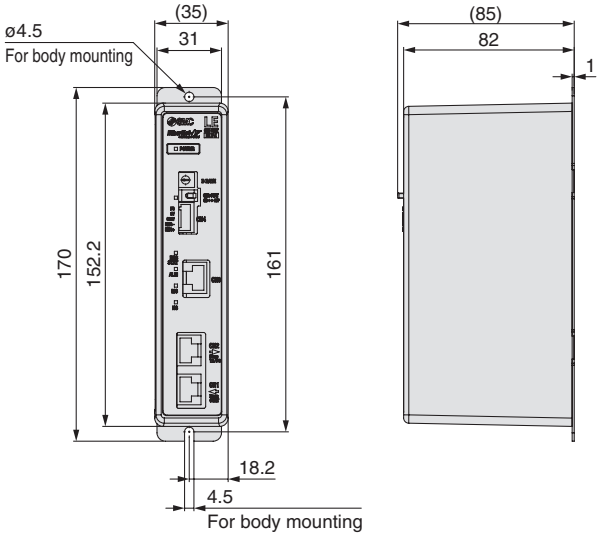
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

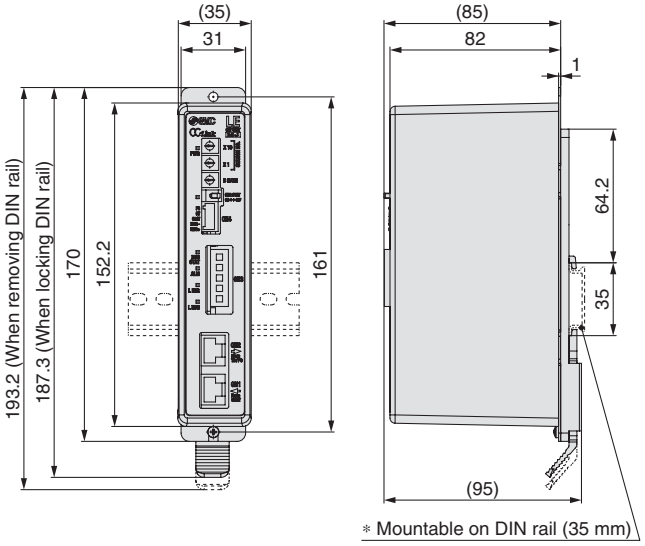


■**Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

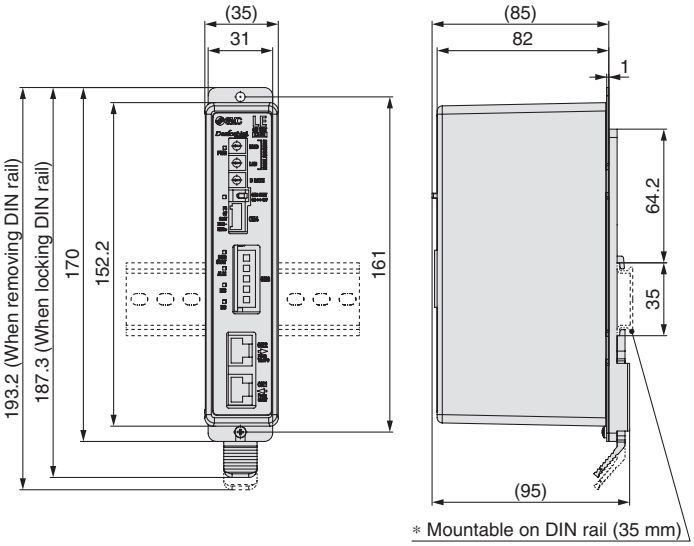
Dimensions

DIN rail mounting (LEC-G□□□D)

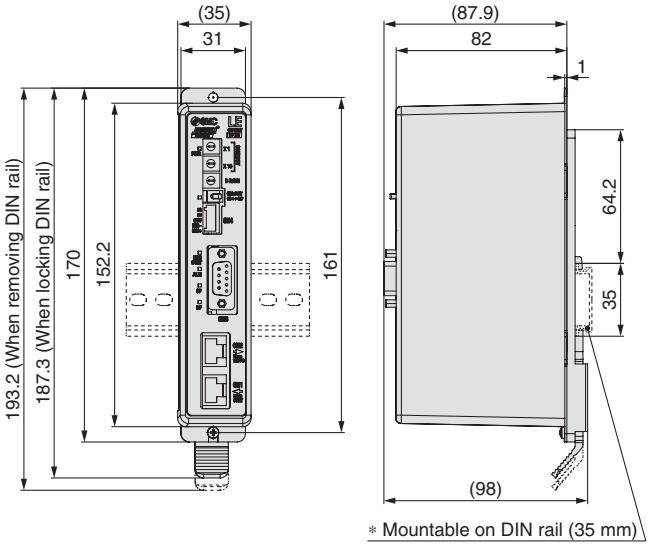
Applicable Fieldbus protocol: CC-Link Ver. 2.0



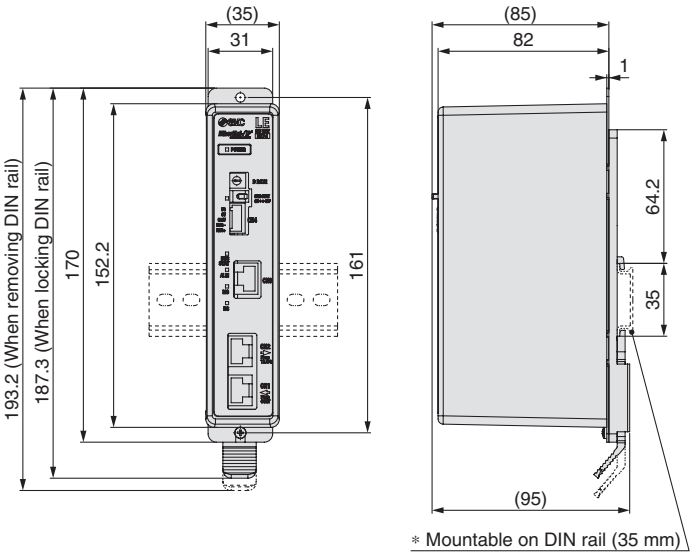
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP

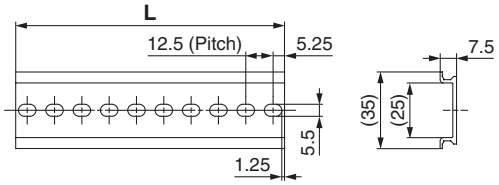


Applicable Fieldbus protocol: EtherNet/IP™



DIN rail
AXT100-DR-□

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



L Dimension [mm]

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

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

Programless Controller
Series LECP1

How to Order

LE C P 1 N 1 ☐ – LEFS16A-400

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]

Nil	Without cable
1	1.5
3	3
5	5

Option

Nil	Screw mounting
D Note)	DIN rail mounting

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

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEFS16A-400" for the LEFS16A-400B-R17N1.

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

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator 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.

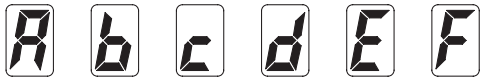
* Refer to the operation manual for using the products. Please download it via our website, http://www.smcworld.com

Specifications

Basic Specifications

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

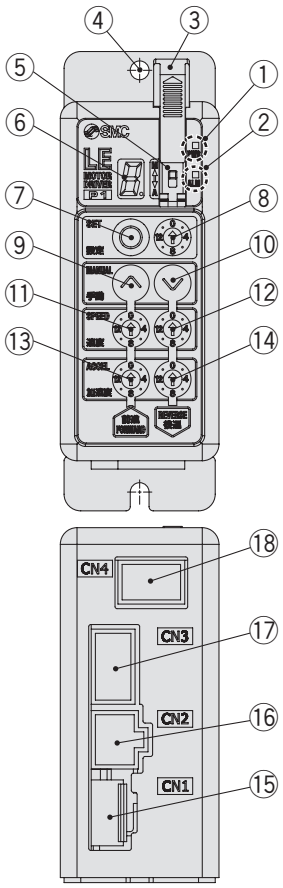
Note 1) Do not use the power supply of "inrush current prevention type" for the controller input power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model.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



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

Note 4) Applicable to non-magnetizing lock.

Controller Details



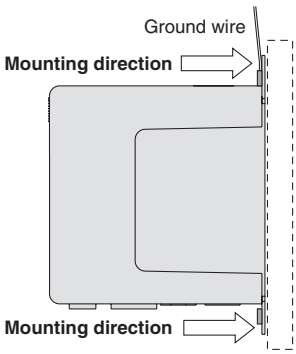
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing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

How to Mount

Controller mounting shown below.

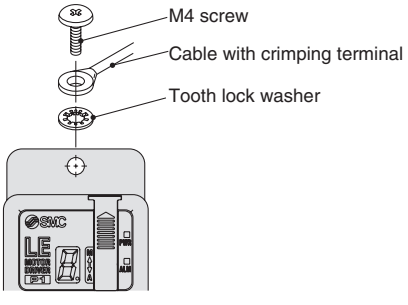
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

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

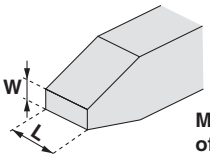


Note) When size 25 or more of the LEF series are used, the space between the controllers should be 10 mm or more.

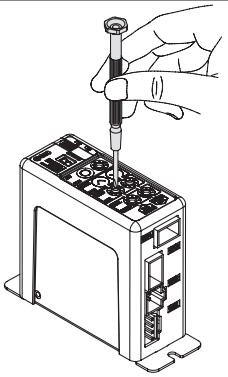
⚠Caution

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

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

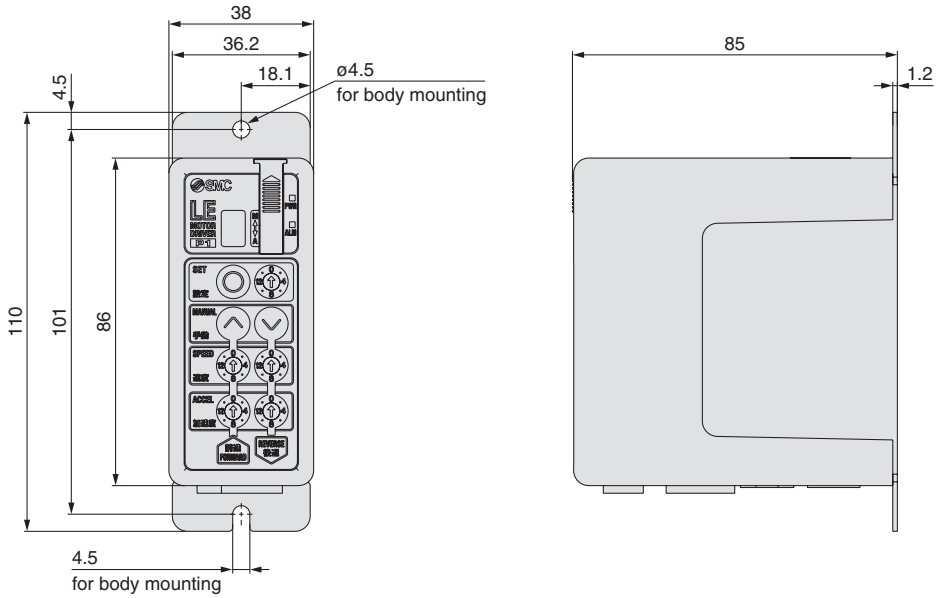


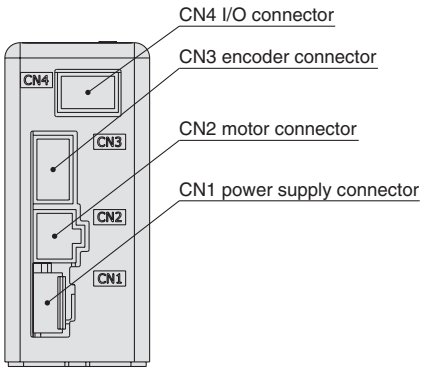
Magnified view of the end of the screwdriver



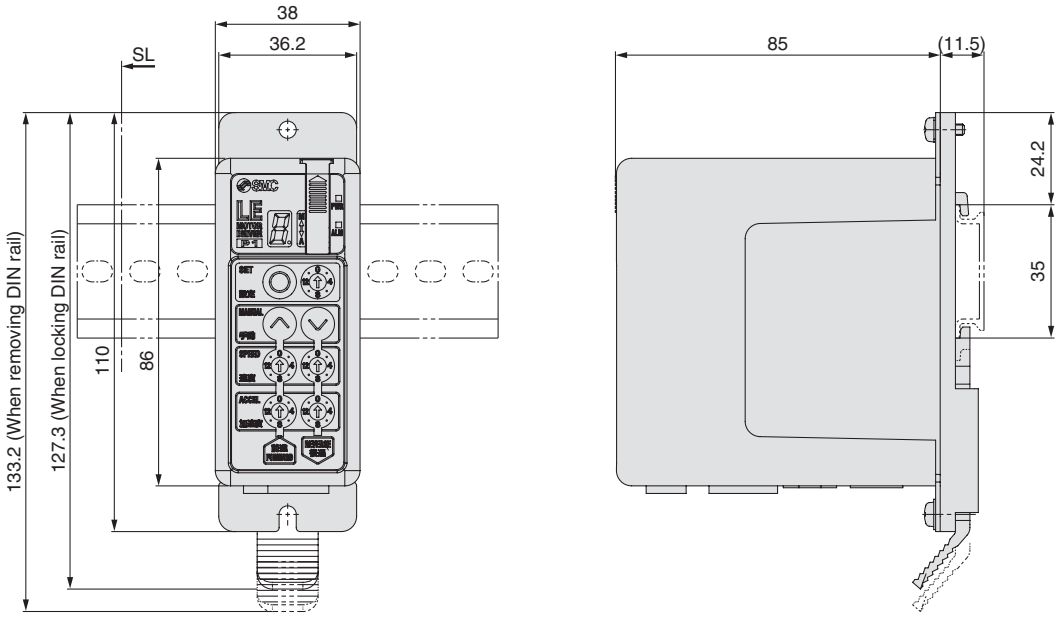
Dimensions

Screw mounting (LEC□1□□-□)





DIN rail mounting (LEC□1□□D-□)



Wiring Example 1

Power Supply Connector: CN1

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

CN1 Power Supply Connector Terminal for LECP1

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

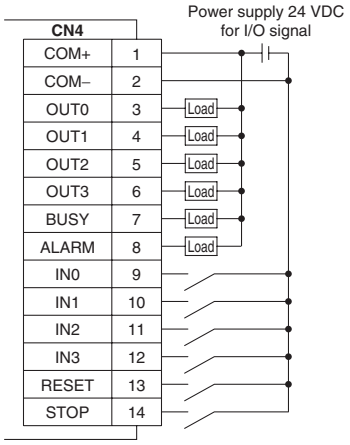
Power supply cable for LECP1 (LEC-CK1-1)

Wiring Example 2

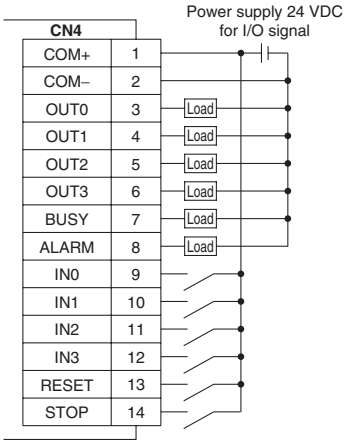
Parallel I/O Connector: CN4

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

■NPN



■PNP



Input Signal

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

Output Signal

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

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

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

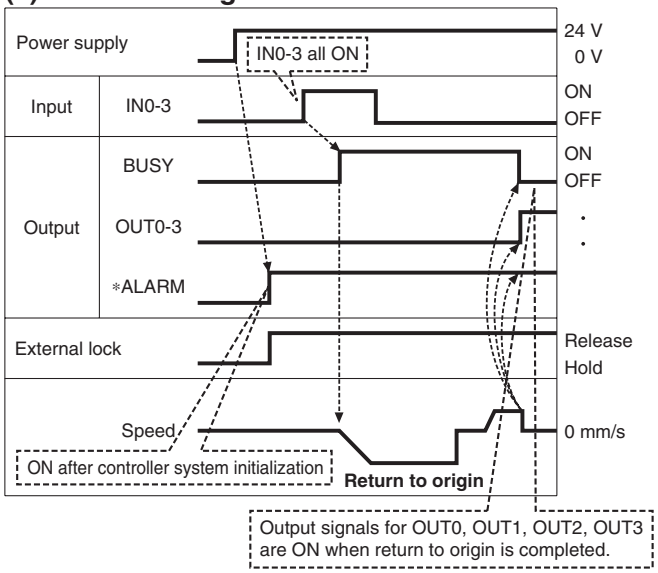
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Retun to origin	●	●	●	●

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

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

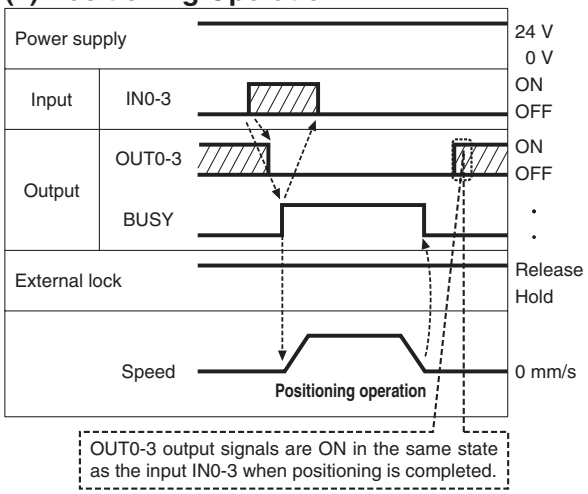
Signal Timing

(1) Return to Origin

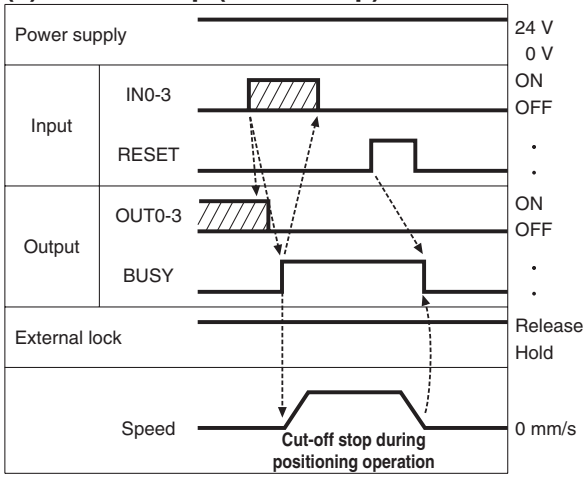


∗ "∗ALARM" is expressed as negative-logic circuit.

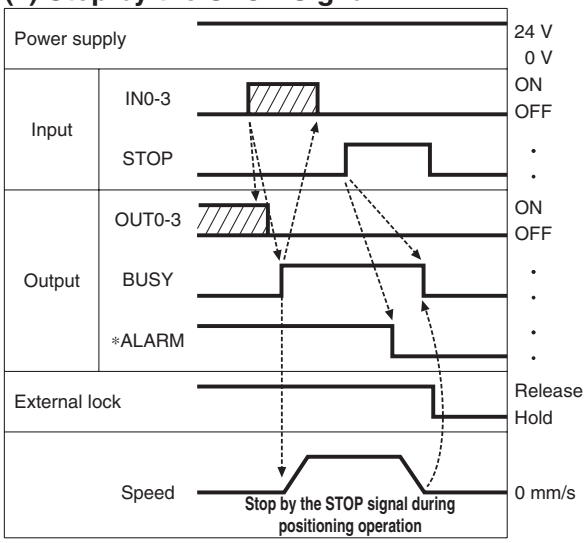
(2) Positioning Operation



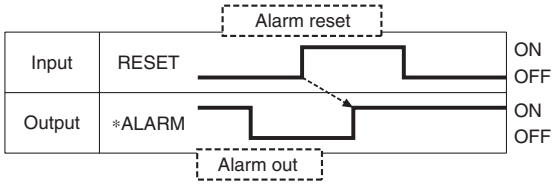
(3) Cut-off Stop (Reset Stop)



(4) Stop by the STOP Signal



(5) Alarm Reset



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

Options: Actuator Cable

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

LE – CP – 1 – □

Cable length (L) [m]

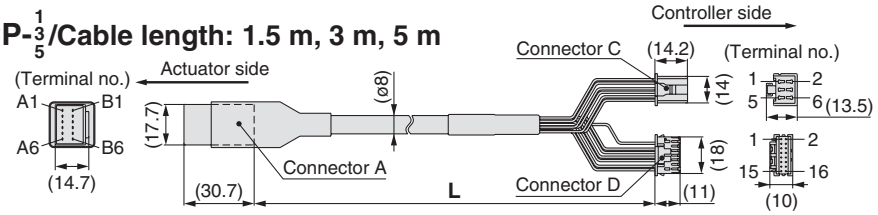
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

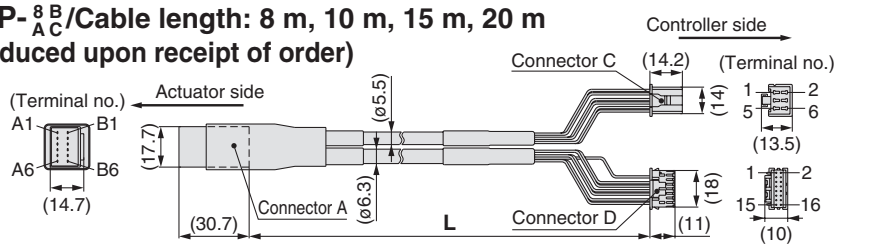
Cable type

Nil	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 color	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 color	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*

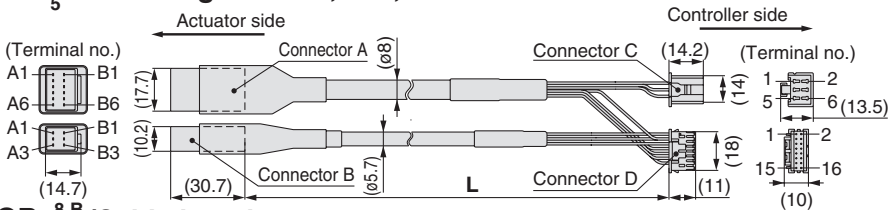
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

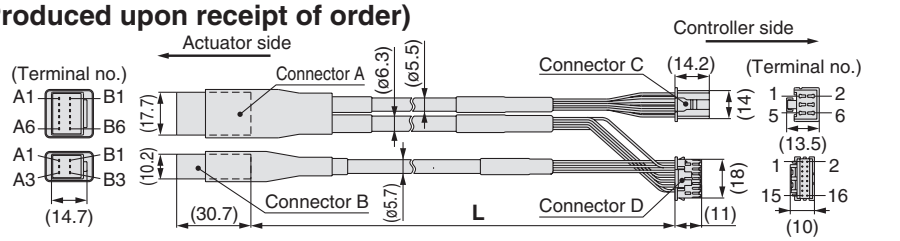
Cable type

Nil	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 color	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

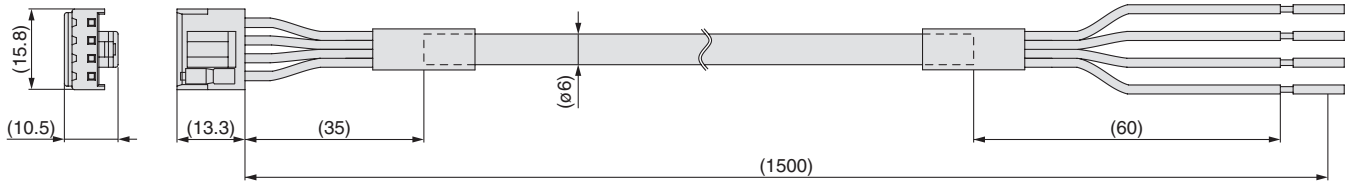
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+) Note)	B-3	Brown	1
Sensor (–) Note)	A-3	Blue	2

Note) Not used for the LE series.

Options

[Power supply cable]

LEC−CK1−1



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

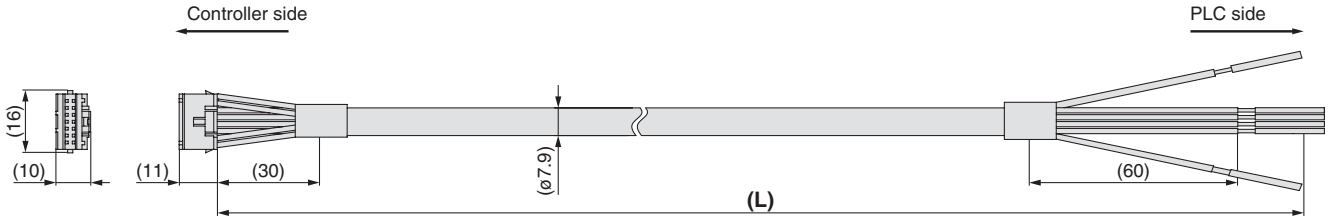
∗ Conductor size: AWG20

[I/O cable]

LEC−CK4−□

Cable length (L) [m]

1	1.5
3	3
5	5



∗ Conductor size: AWG26

Terminal no.	Insulation color	Dot mark	Dot color	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	Gray	■	Black	BUSY
8	Gray	■	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

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

Step Motor Driver
Series LECPA

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEF 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 64 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 AN 1 ☐ – LEFS16B-100

Driver type

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

Driver mounting

Nil	Screw mounting
D Note)	DIN rail mounting

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

I/O cable length [m]

Nil	None
1	1.5
3	3*
5	5*

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

Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEFS16B-100" for the LEFS16B-100B-R1AN1D.

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

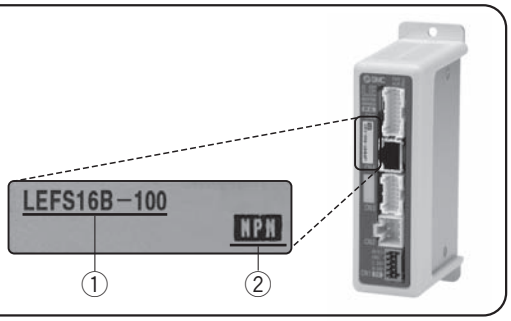
The driver is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

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

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



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

Specifications

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

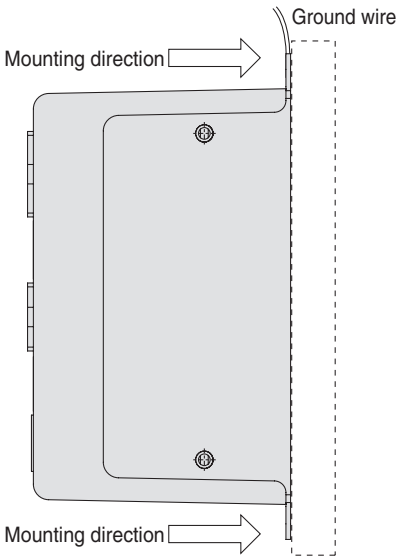
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

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

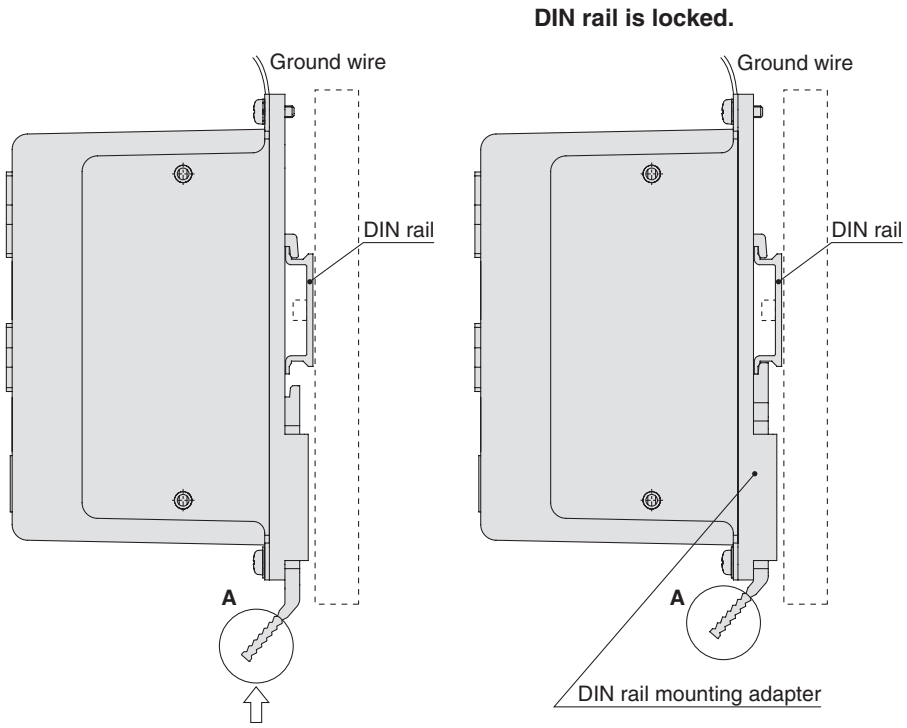
Note 3) Applicable to non-magnetizing lock.

How to Mount

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



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

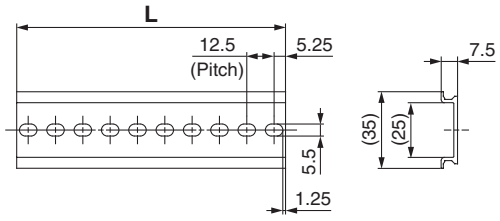


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

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 60 for the mounting dimensions.



L Dimension [mm]

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

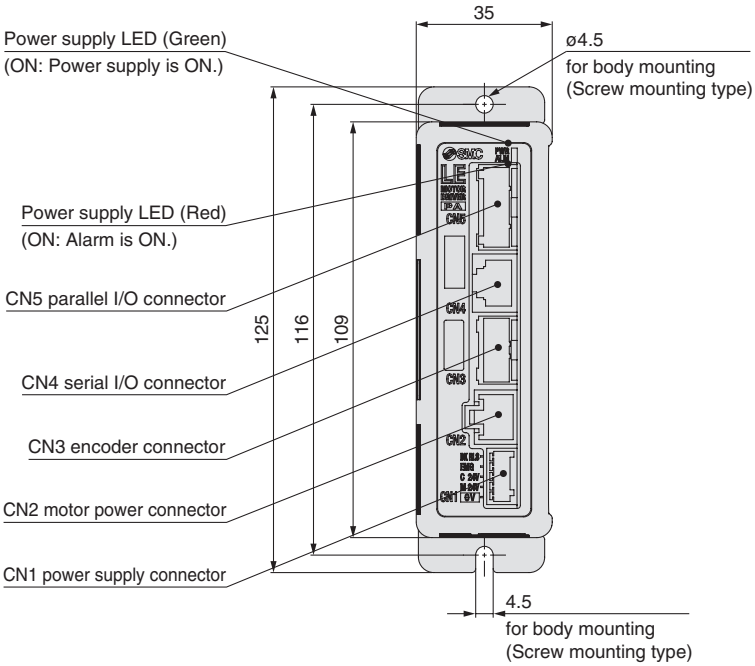
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

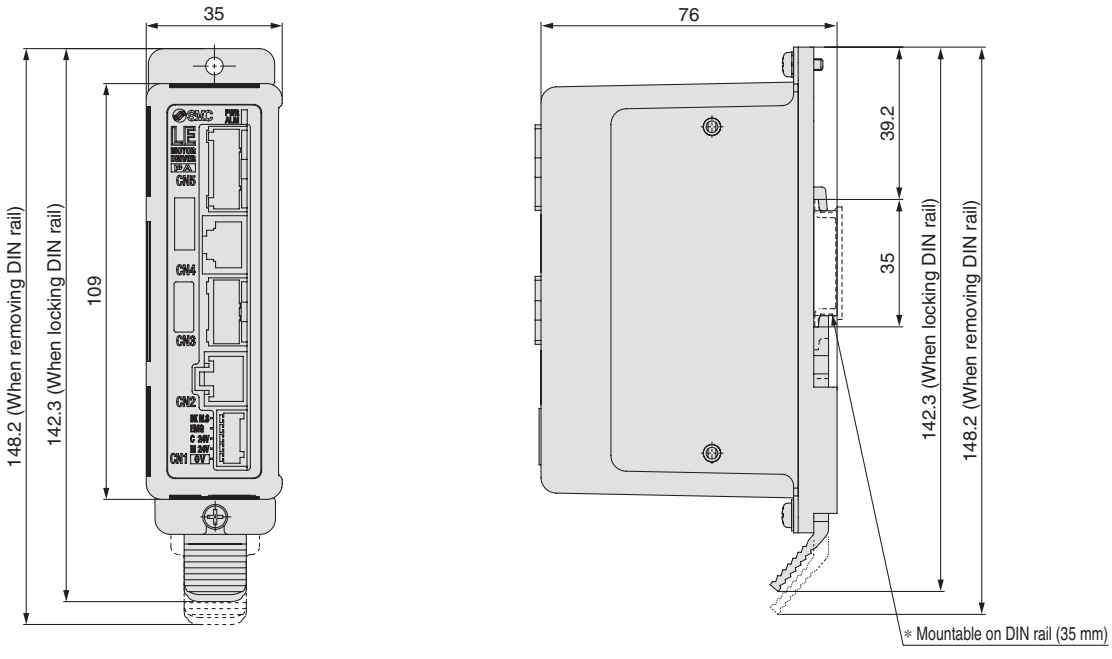
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterwards.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



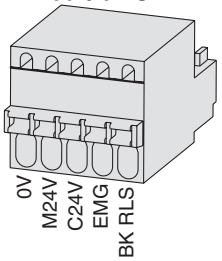
Wiring Example 1

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

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

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

Power supply plug for LECPA



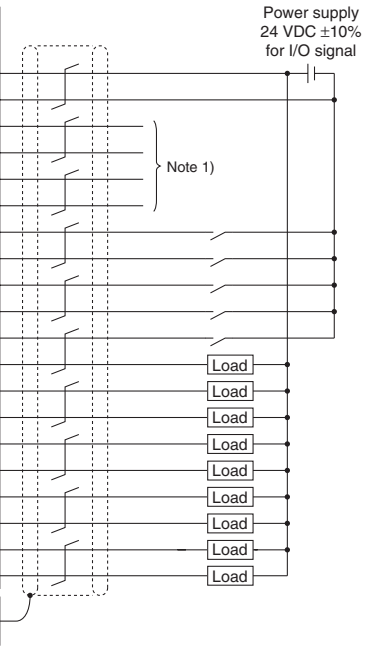
Wiring Example 2

Parallel I/O Connector: CN5

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

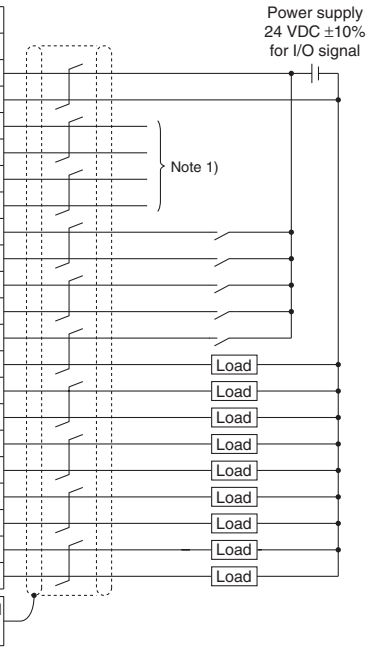
LECPAN□□-□ (NPN)

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



LECPAP□□-□ (PNP)

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



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

Input Signal

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

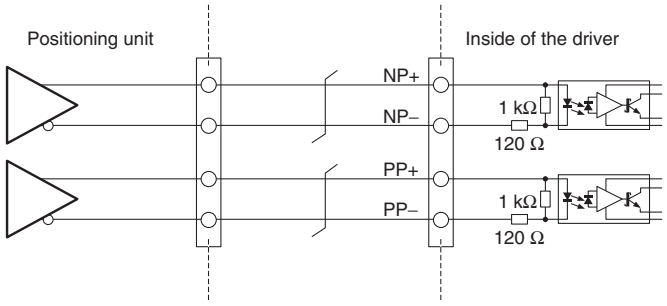
Output Signal

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

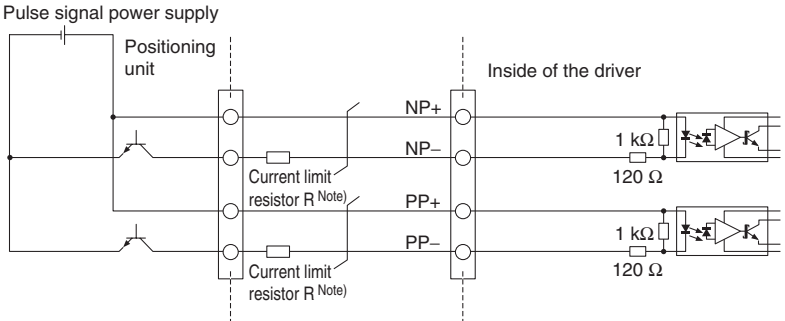
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

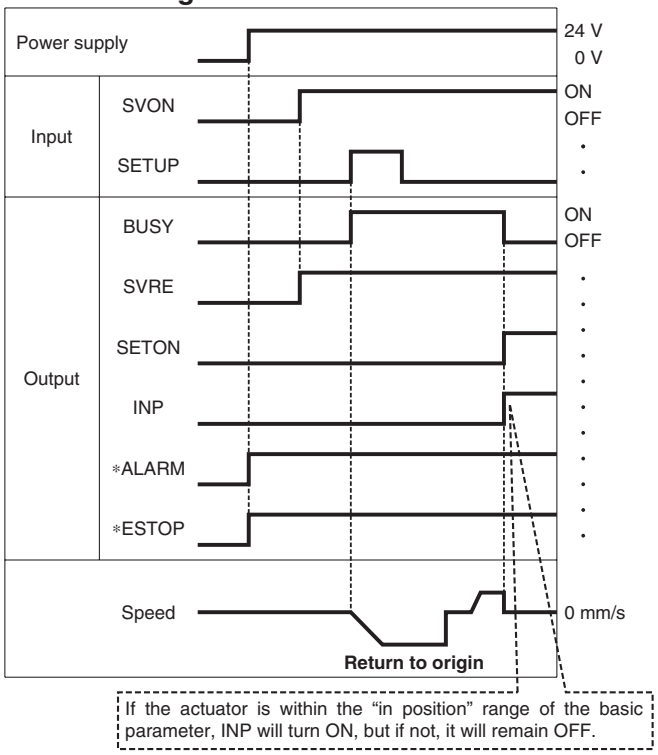


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

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

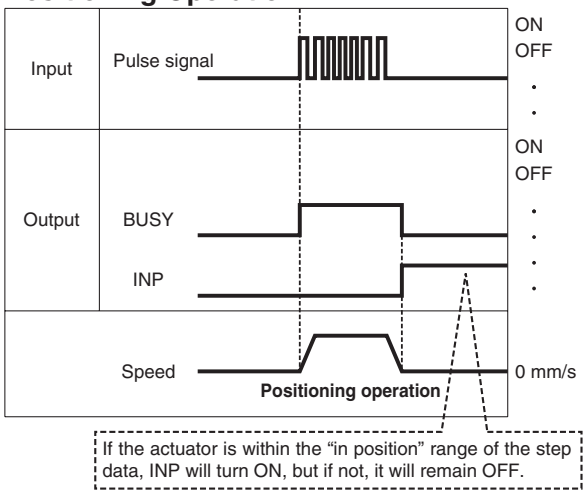
Signal Timing

Return to Origin

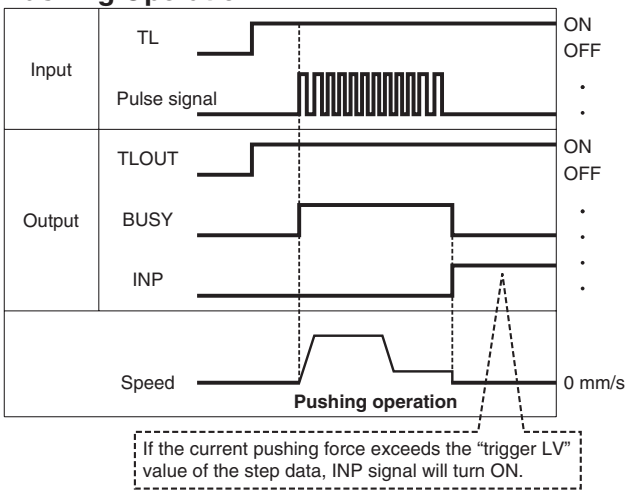


∗ "∗ALARM" and "∗ESTOP" are expressed as negative-logic circuit.

Positioning Operation

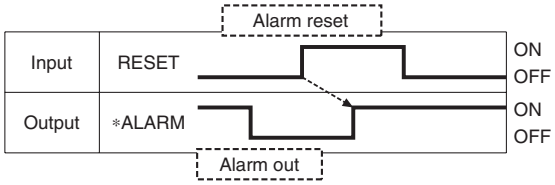


Pushing Operation



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

Alarm Reset



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

Options: Actuator Cable

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

LE – CP – 1 – □

Cable length (L) [m]

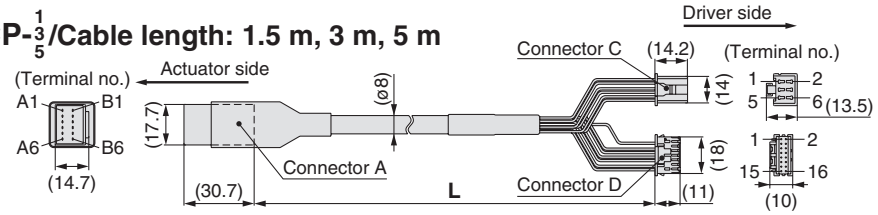
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

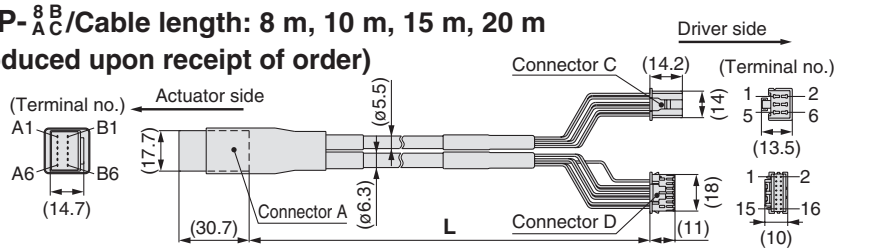
Nil	Robotic cable (Flexible cable)
S	Standard cable

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



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m

(* Produced upon receipt of order)



Signal	Connector A terminal no.	Cable color	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 color	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*

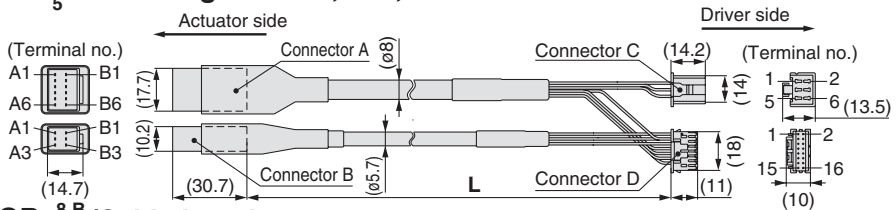
* Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

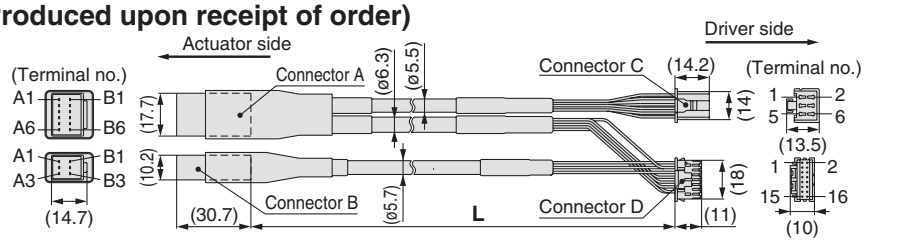
Nil	Robotic cable (Flexible cable)
S	Standard cable

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



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m

(* Produced upon receipt of order)



Signal	Connector A terminal no.	Cable color	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

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

Note) Not used for the LE series.

Options

[I/O cable]

LEC-C L5-1

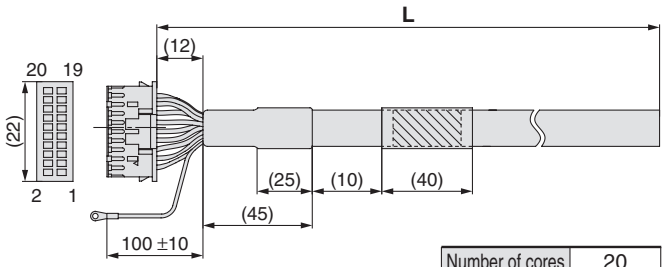
I/O cable type

L5	For LECPA

I/O cable length (L)

1	1.5 m
3	3 m*
5	5 m*

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



Number of cores	20
AWG size	24

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

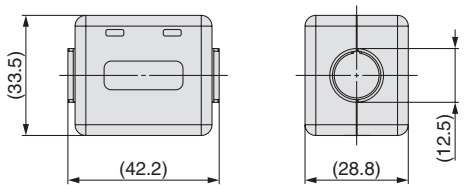
Pin no.	Insulation color	Dot mark	Dot color
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Gray	■■	Black
18	Gray	■■	Red
19	White	■■	Black
20	White	■■	Red

Round terminal 0.5-5	Green

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

LEC-NFA

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

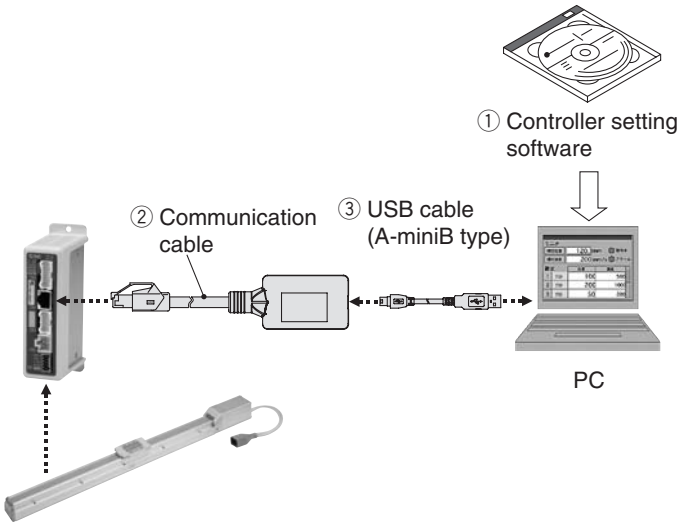


* Refer to the LECPA series Operation Manual for installation.

Series LEC

Windows®XP, Windows®7 compatible

Controller Setting Kit/LEC-W2



How to Order

LEC – W2

Controller setting kit
(Japanese and English are available.)

Contents

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

Compatible Controllers/Driver

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

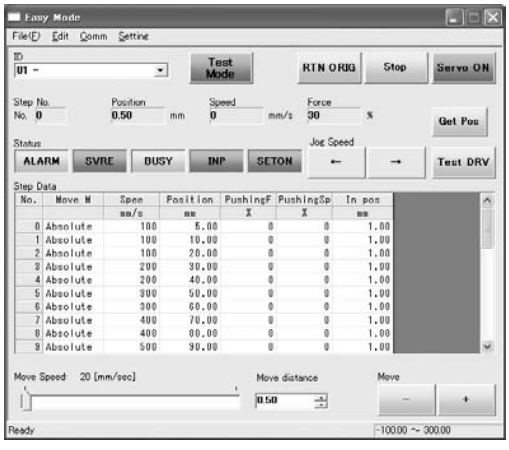
Hardware Requirements

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

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

Screen Example

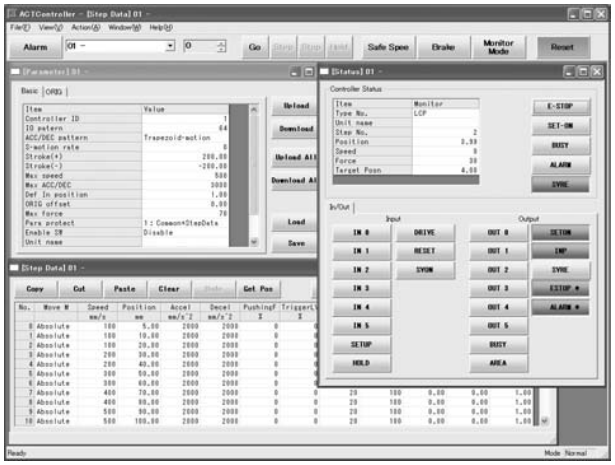
Easy mode screen example



Easy operation and simple setting

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

Normal mode screen example



Detailed setting

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

Series LEC
Teaching Box/LEC-T1

How to Order

LEC – T1 – 3 J G □

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

Nil	None
S	Equipped with enable switch

∗ Interlock switch for jog and test function

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

Option
- **Enable switch is provided.**

Specifications

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

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

Easy Mode

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

Menu Operations Flowchart

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

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

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

Jog
Return to origin
Jog operation

Test Note 1)
1 step operation

ALM
Active alarm display
Alarm reset

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

Note 1) Not compatible with the LECPA.

Normal Mode

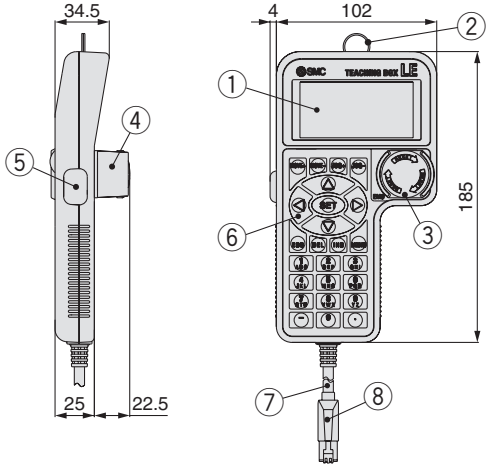
Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive Note 1) (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output) Note 2)
Monitor	• Drive monitor • Output signal monitor Note 2) • Input signal monitor Note 2) • Output terminal monitor • Input terminal monitor
ALM	• Active alarm display (Alarm reset) • Alarm log record display
File	• Data saving Save the step data and parameters of the driver which is being used for communication (it is possible to save four files, with one set of step data and parameters defined as one file). • Load to driver Loads the data which is saved in the teaching box to the driver which is being used for communication. • Delete the saved data. • File protection (Ver. 2.**)
TB setting	• Display setting (Easy/Normal mode) • Language setting (Japanese/English) • Backlight setting • LCD contrast setting • Beep sound setting • Max. connection axis • Distance unit (mm/inch)
Reconnect	• Reconnection of axis

Menu Operations Flowchart

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

Note 1) Not compatible with the LECPA.
Note 2) The following signals are not compatible with the LECPA.
Input: CLR, TL
Output: TLOUT

Dimensions

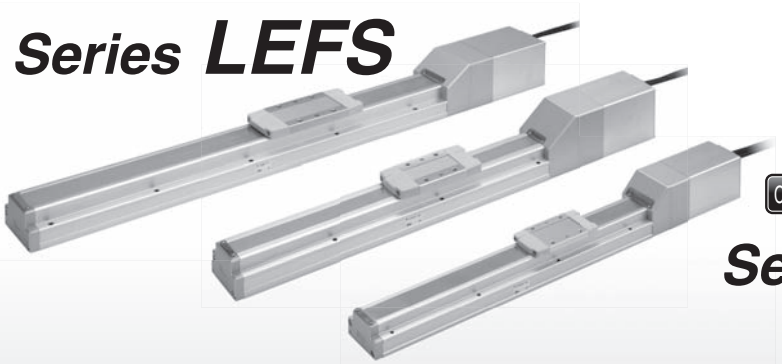


No.	Description	Function
1	**LCD**	A screen of liquid crystal display (with backlight)
2	**Ring**	A ring for hanging the teaching box
3	**Stop switch**	When switch is pushed in, the switch locks and stops. The lock is released when it is turned to the right.
4	**Stop switch guard**	A guard for the stop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

AC Servo Motor

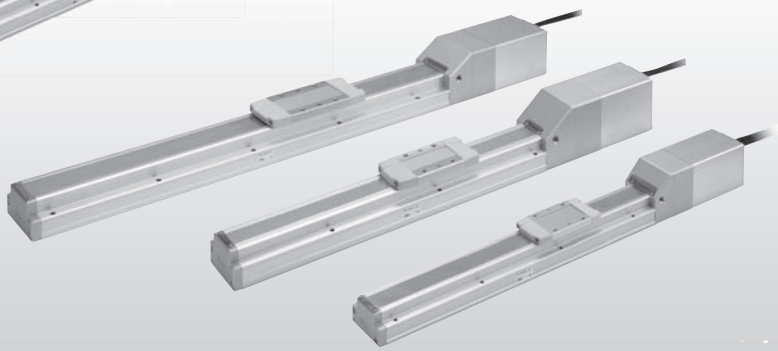
Ball Screw Drive Page 84

Series LEFS



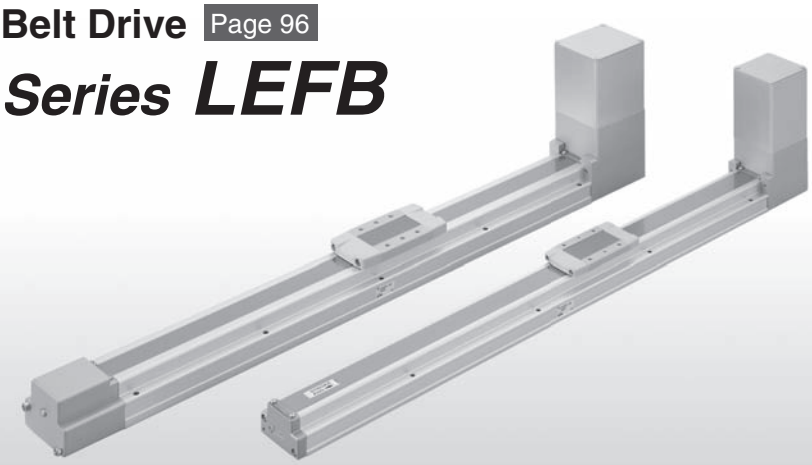
Clean room specification Page 92

Series 11-LEFS



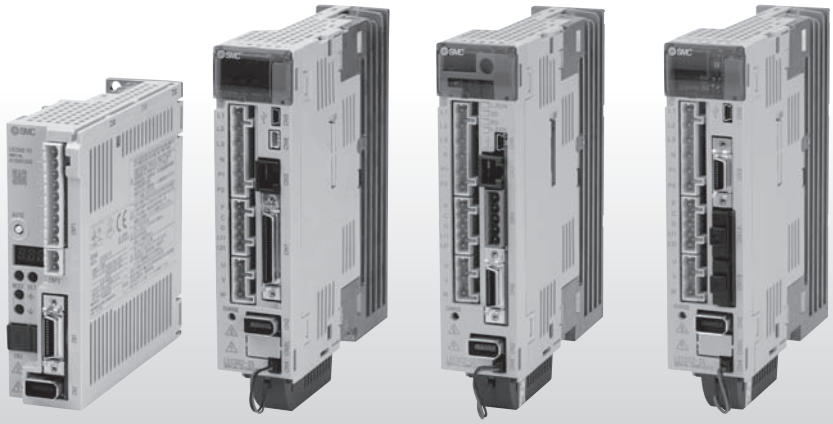
Belt Drive Page 96

Series LEFB



AC Servo Motor Driver Page 107

Series LECS□



Model Selection

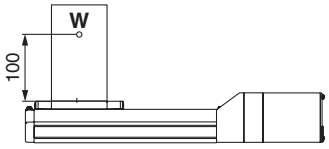
Selection Procedure

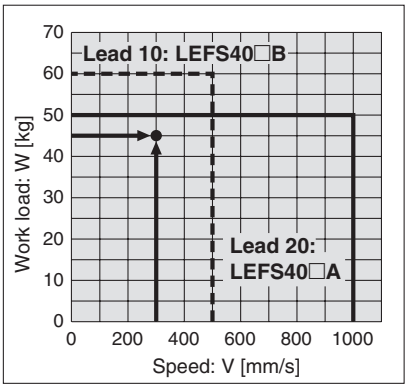
Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 45 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 200 [mm]
- Mounting position: Horizontal upward
- Workpiece mounting condition:





<Speed–Work load graph> (LEFS40)

Step 1 Check the work load–speed. <Speed–Work load graph> (Page 71)

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

Selection example) The **LEFS40S4B-200** is temporarily selected based on the graph shown on the right side.

Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

Cycle time:

T can be found from the following equation.

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

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

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

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

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

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

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

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

$T1 = V/a1 = 300/3000 = 0.1$ [s],

$T3 = V/a2 = 300/3000 = 0.1$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

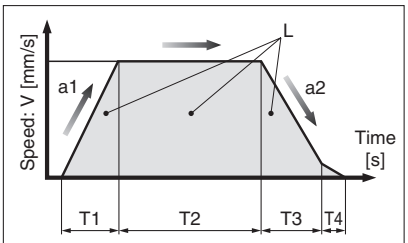
$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$

$= 0.1 + 0.57 + 0.1 + 0.05$

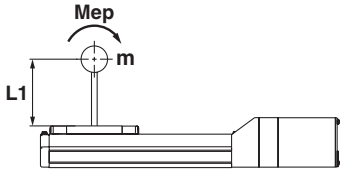
$=$ **0.82 [s]**

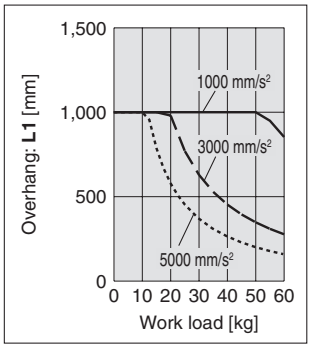


L : Stroke [mm]
··· (Operating condition)
V : Speed [mm/s]
··· (Operating condition)
a1: Acceleration [mm/s^2]
··· (Operating condition)
a2: Deceleration [mm/s^2]
··· (Operating condition)

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

Step 3 Check the guide moment.





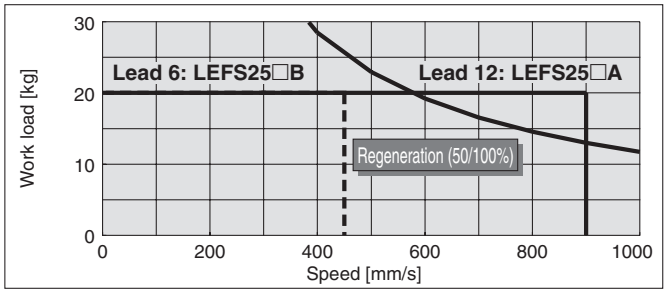
Based on the above calculation result, the LEFS40S4B-200 is selected.

Speed–Work Load Graph (Guide)

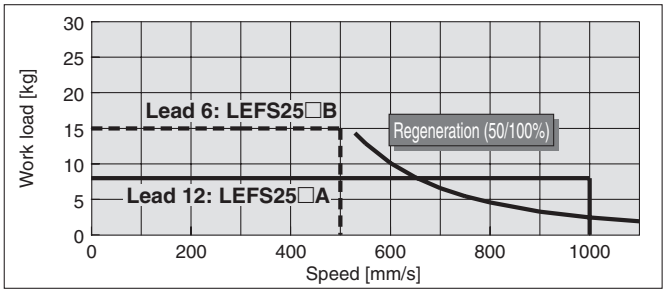
∗ The allowable speed is restricted depending on the stroke. Select it by referring to "Allowable Stroke Speed" below.

LEFS25/Ball Screw Drive

Horizontal

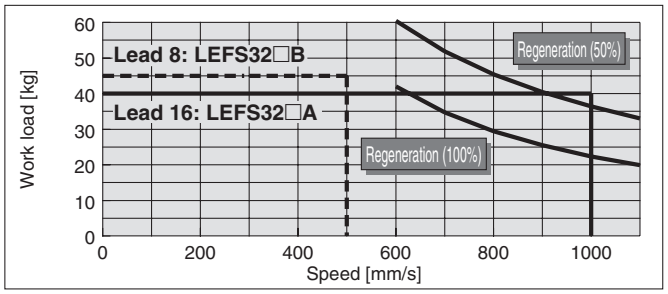


Vertical

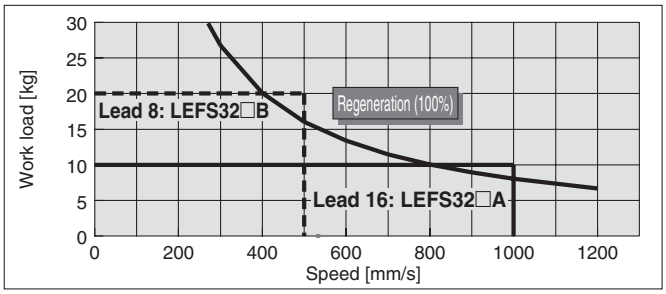


LEFS32/Ball Screw Drive

Horizontal

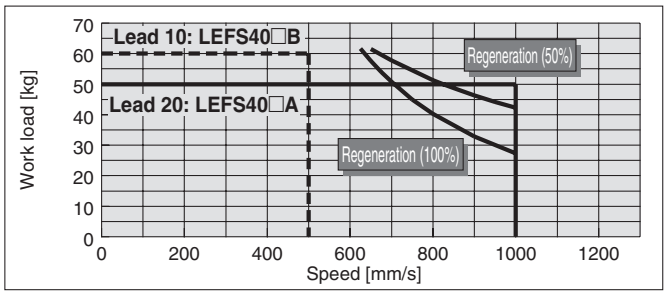


Vertical

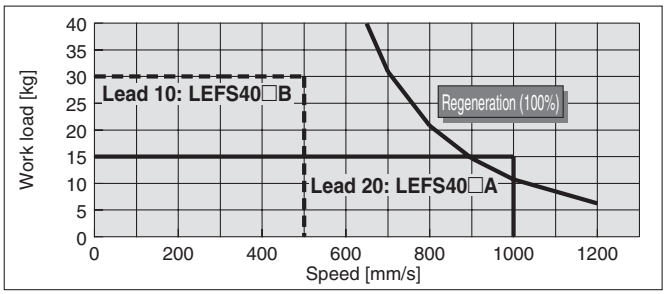


LEFS40/Ball Screw Drive

Horizontal



Vertical



Required conditions for "Regeneration Option"

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

[How to read the graph]
Required conditions change depending on operating conditions.
Regeneration (50%) : Duty ratio 50% or more
Regeneration (100%): Duty ratio 100%

"Regeneration Option" Models

Size	Model
LEFS25□	LEC-MR-RB032
LEFS32□	LEC-MR-RB032
LEFS40□	LEC-MR-RB032

Allowable Stroke Speed

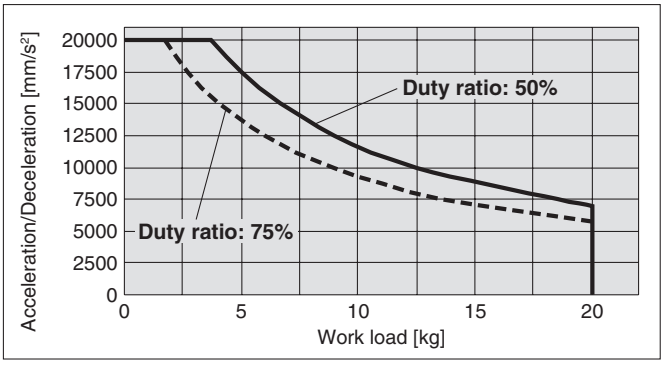
[mm/s]

Model	AC servo motor	Lead		Stroke [mm]									
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600	Up to 700	Up to 800	Up to 900	Up to 1000
LEFS25	100 W /□40	A	12	900				720	540	—	—	—	—
		B	6	450				360	270	—	—	—	—
		(Motor rotation speed)		(4500 rpm)				(3650 rpm)	(2700 rpm)	—	—	—	—
LEFS32	200 W /□60	A	16	1000	1000	1000	1000	1000	800	620	500	—	—
		B	8	500	500	500	500	500	400	310	250	—	—
		(Motor rotation speed)		(3750 rpm)					(3000 rpm)	(2325 rpm)	(1875 rpm)	—	—
LEFS40	400 W /□60	A	20	—	1000					940	760	620	520
		B	10	—	500					470	380	310	260
		(Motor rotation speed)		—	(3000 rpm)					(2820 rpm)	(2280 rpm)	(1860 rpm)	(1560 rpm)

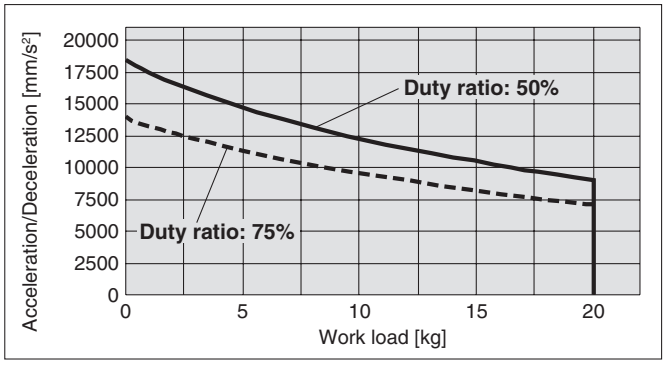
Work Load–Acceleration/Deceleration Graph (Guide)

LEFS25/Ball Screw Drive: Horizontal

LEFS25S□A

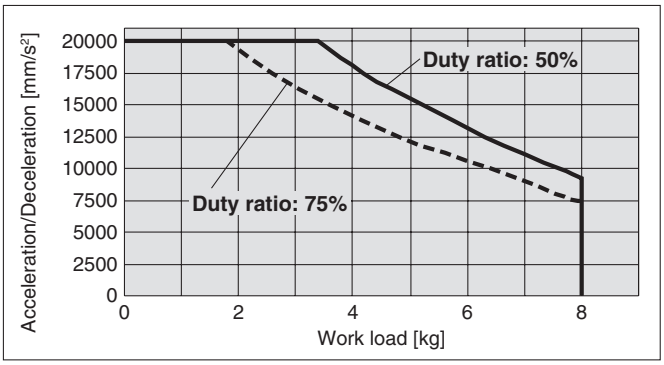


LEFS25S□B

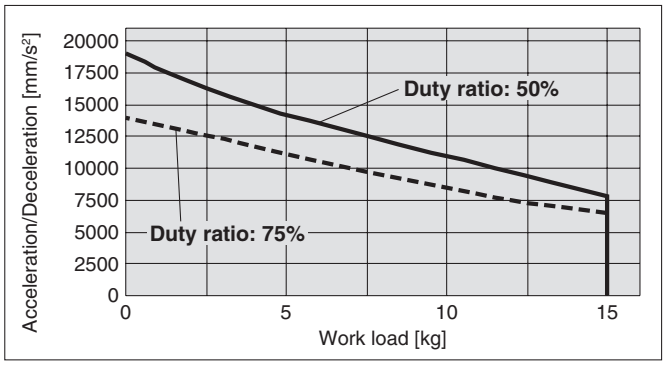


LEFS25/Ball Screw Drive: Vertical

LEFS25S□A

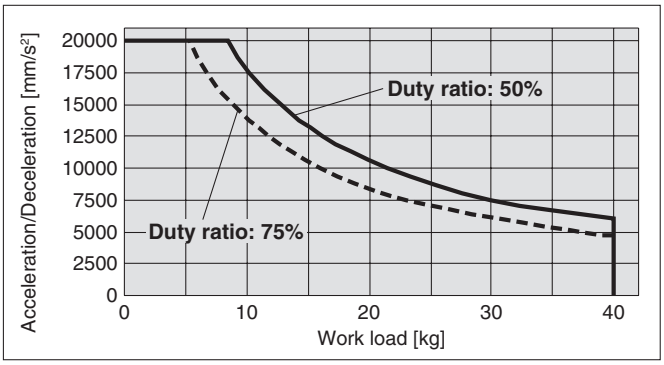


LEFS25S□B

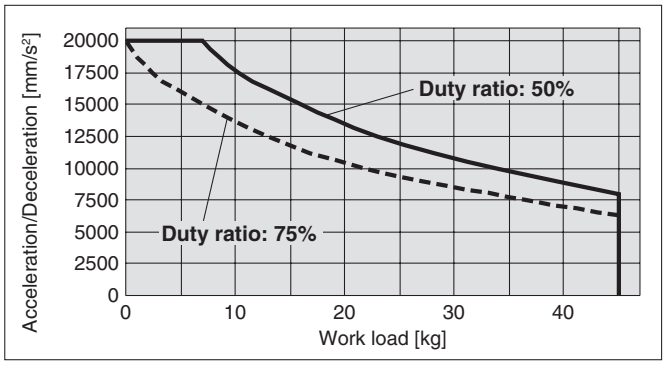


LEFS32/Ball Screw Drive: Horizontal

LEFS32S□A

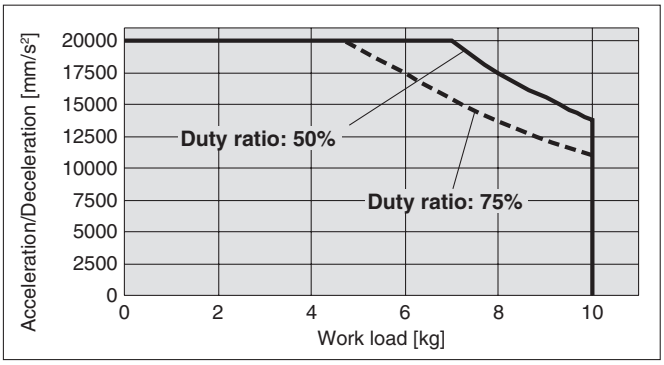


LEFS32S□B

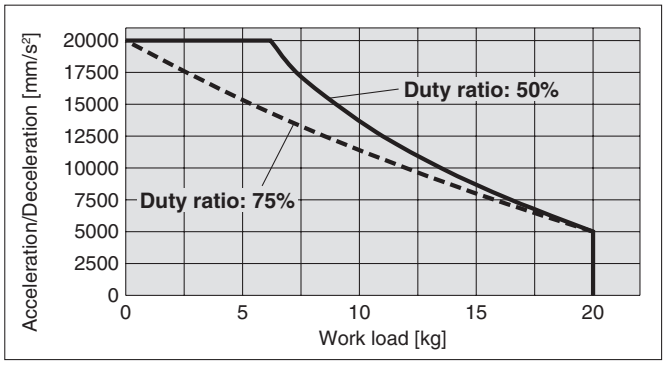


LEFS32/Ball Screw Drive: Vertical

LEFS32S□A



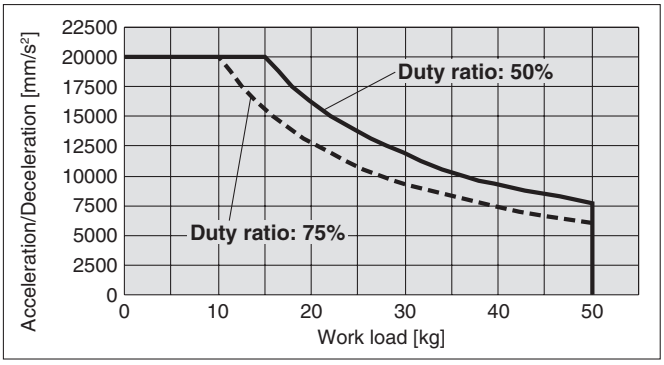
LEFS32S□B



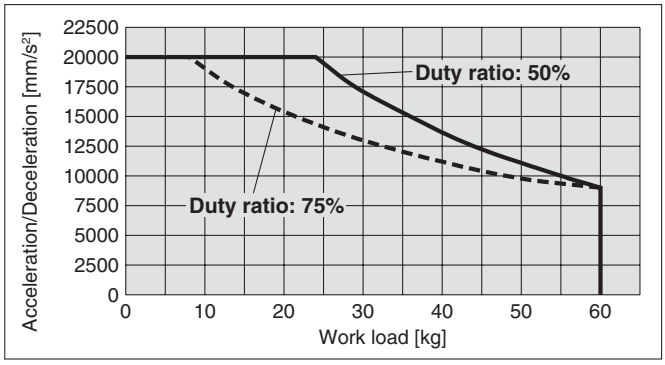
Work Load–Acceleration/Deceleration Graph (Guide)

LEFS40/Ball Screw Drive: Horizontal

LEFS40S□A

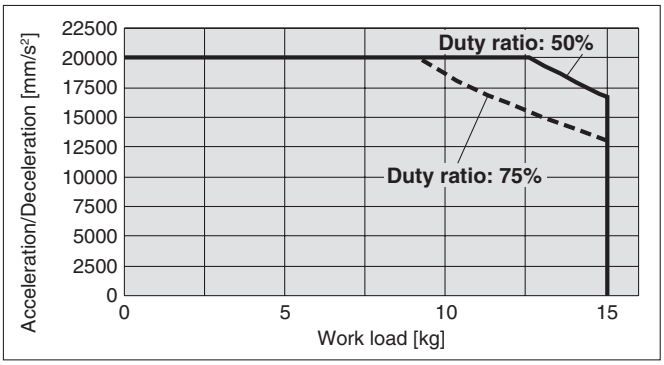


LEFS40S□B

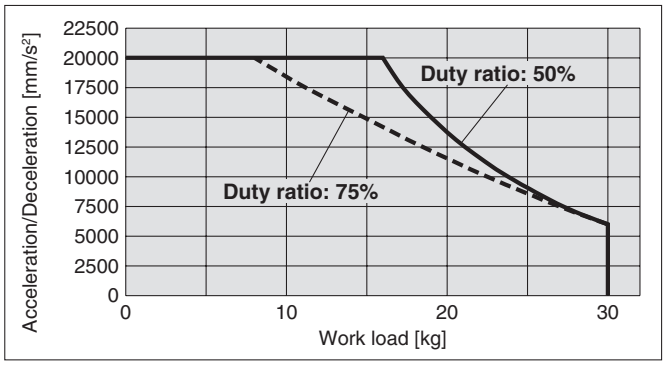


LEFS40/Ball Screw Drive: Vertical

LEFS40S□A



LEFS40S□B



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 ——1,000 mm/s² — — —3,000 mm/s² ·····5,000 mm/s² —·—·—10,000 mm/s² - - - - 20,000 mm/s²

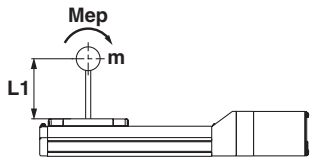
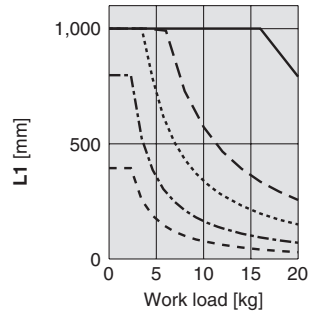
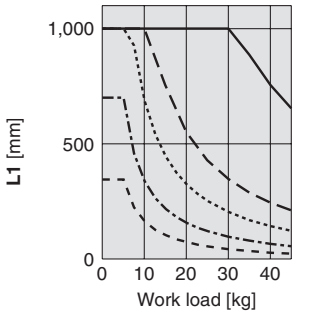
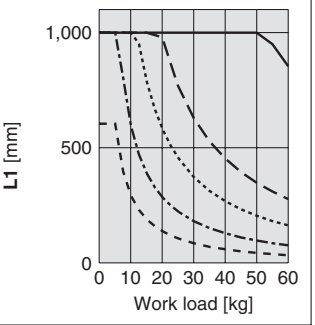
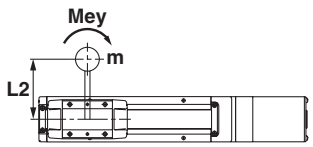
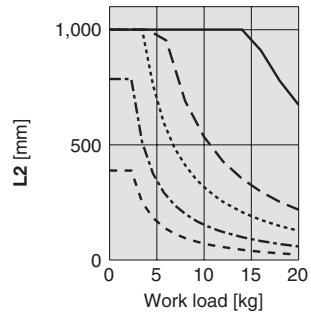
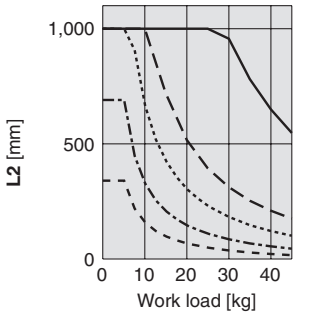
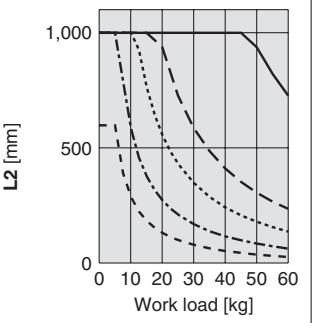
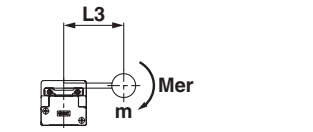
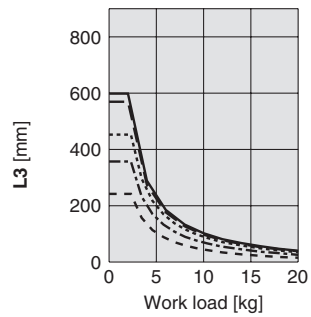
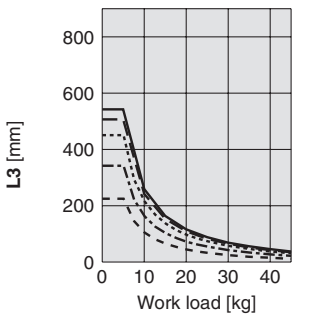
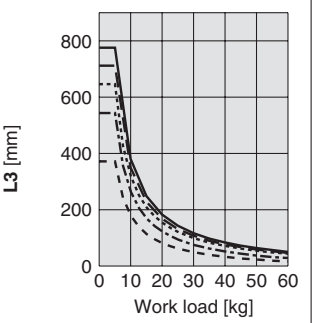
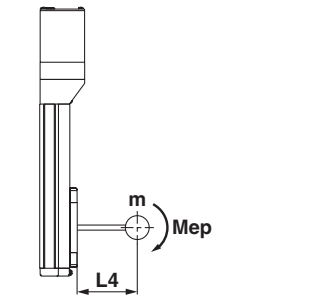
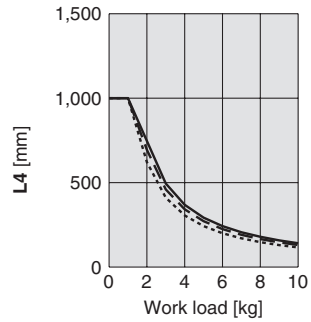
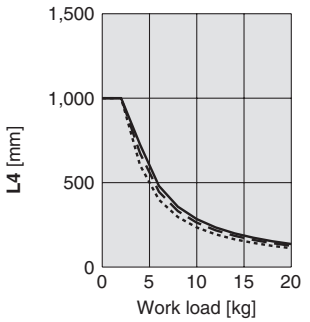
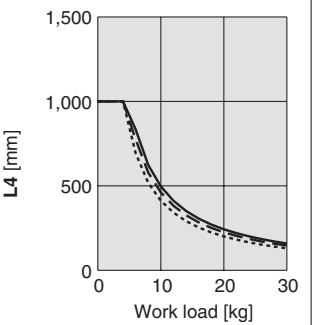
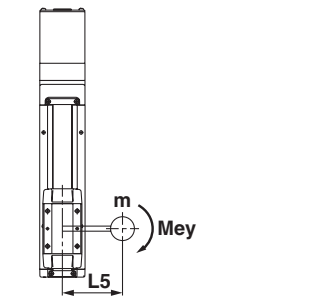
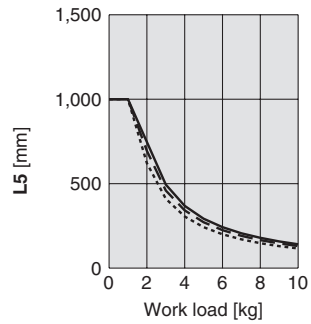
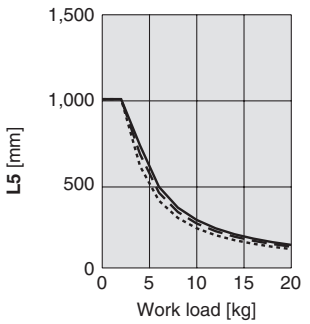
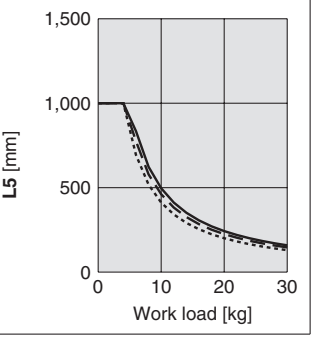
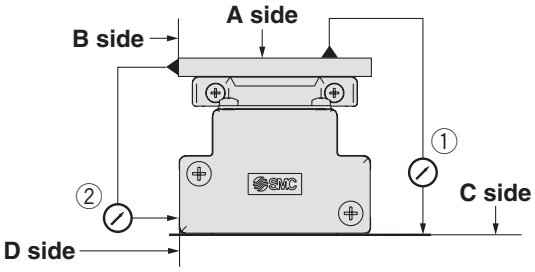
Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model		
			LEFS25S□	**LEFS32S□**	**LEFS40S□**
Horizontal		Pitching			
		Yawing			
		Rolling			
Vertical		Pitching			
		Yawing			

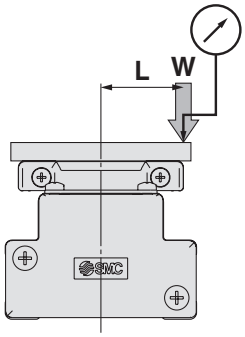
Table Accuracy

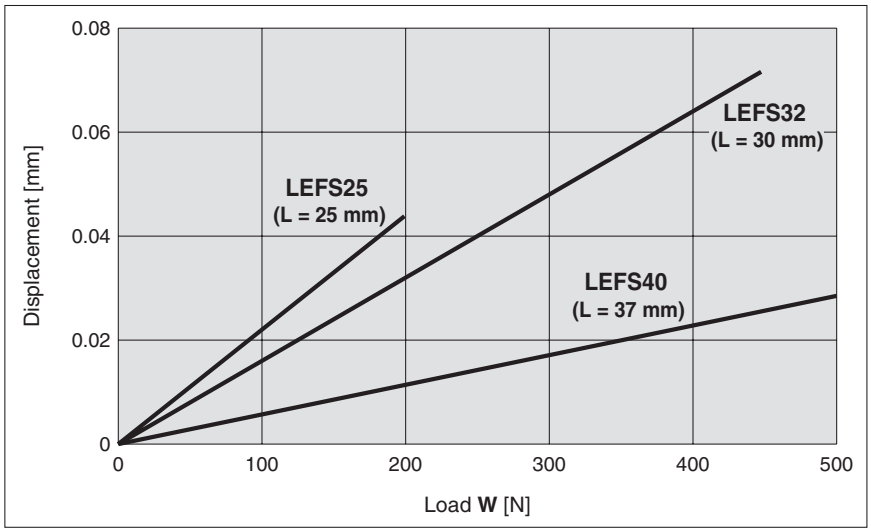


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEFS25	0.05	0.03
LEFS32	0.05	0.03
LEFS40	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

Table Displacement (Reference Value)





Note 1) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
Note 2) Please confirm the clearance and play of the guide separately.

Particle Generation Characteristics

Particle Generation Measuring Method

The particle generation data for SMC Clean Series are measured in the following test method.

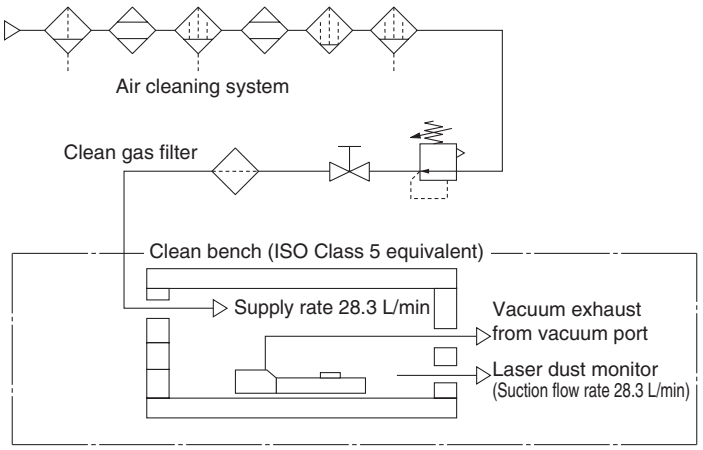
■Test Method (Example)

Place the specimen in the acrylic resin chamber and operate it while supplying the same flow rate of clean air as the suction flow rate of the measuring instrument (28.3 L/min). Measure the changes of the particle concentration over time until the number of cycles reaches the specified point.

The chamber is placed in an ISO Class 5 equivalent clean bench.

■Measuring Conditions

Chamber	Internal volume	28.3 L
	Supply air quality	Same quality as the supply air for driving
Measuring instrument	Description	Laser dust monitor (Automatic particle counter by lightscattering method)
	Minimum measurable particle diameter	0.1 μm
	Suction flow rate	28.3 L/min
Setting conditions	Sampling time	5 min
	Interval time	55 min
	Sampling air flow	141.5 L



Particle generation measuring circuit

■Evaluation Method

To obtain the measured values of particle concentration, the accumulated value Note 1) of particles captured every 5 minutes, by the laser dust monitor, is converted into the particle concentration in every 1 m^3.

When determining particle generation grades, the 95% upper confidence limit of the average particle concentration (average value), when each specimen is operated at a specified number of cycles Note 2) is considered.

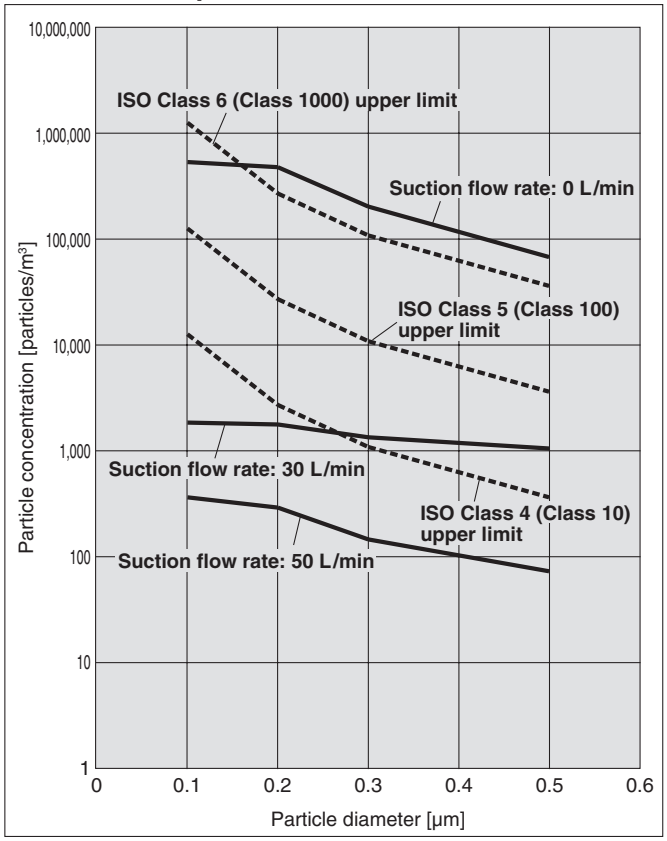
The plots in the graphs indicate the 95% upper confidence limit of the average particle concentration of particles with a diameter within the horizontal axis range.

Note 1) Sampling air flow rate: Number of particles contained in 141.5 L of air

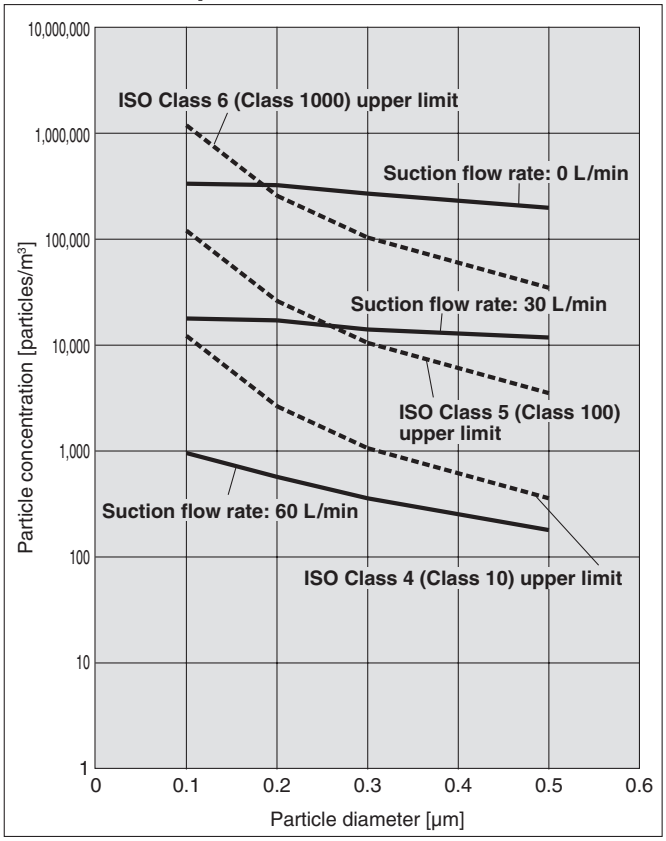
Note 2) Actuator: 1 million cycles

Particle Generation Characteristics
AC Servo Motor (100/200/400 W)

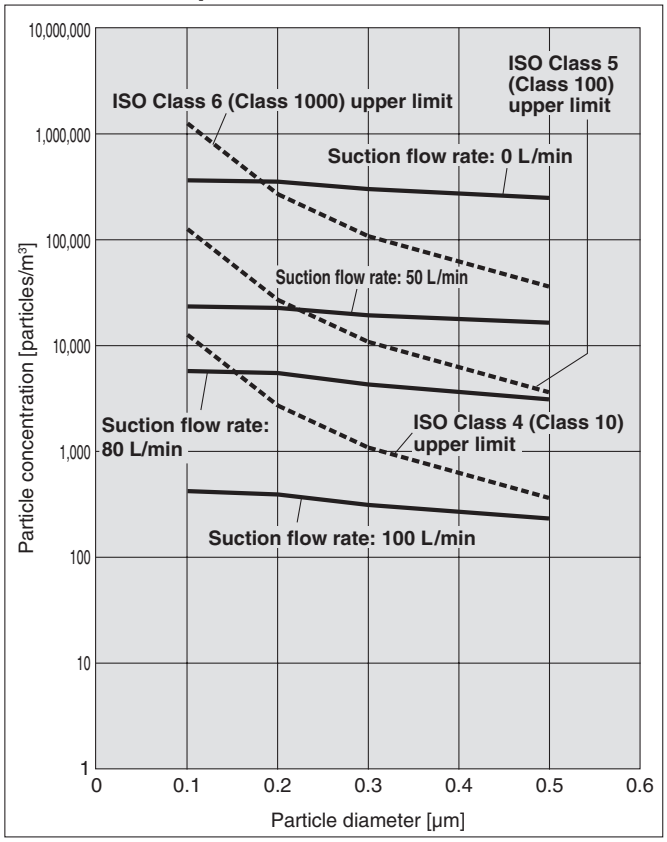
11-LEFS25 Speed 900 mm/s



11-LEFS32 Speed 1000 mm/s



11-LEFS40 Speed 1000 mm/s



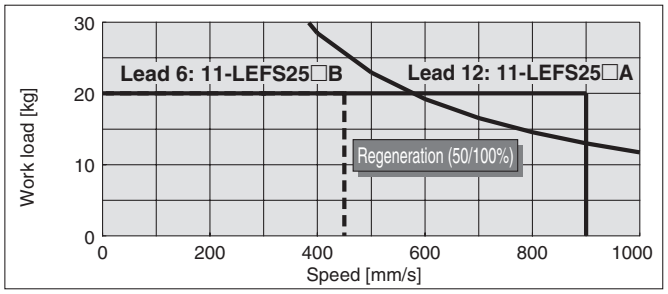
Model Selection

Speed–Work Load Graph (Guide)
AC Servo Motor

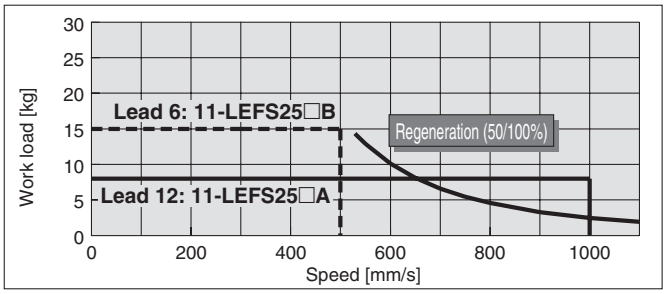
∗ The allowable speed is restricted depending on the stroke.
Select it by referring to “Allowable Stroke Speed” below.

11-LEFS25/Ball Screw Drive

Horizontal

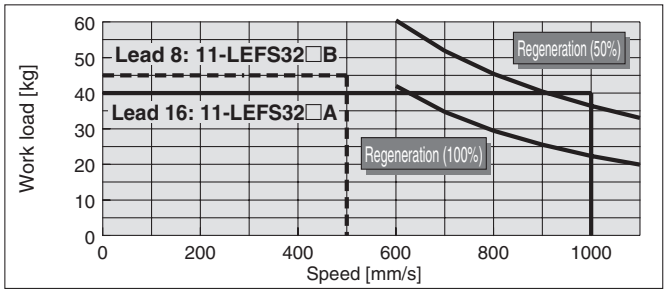


Vertical

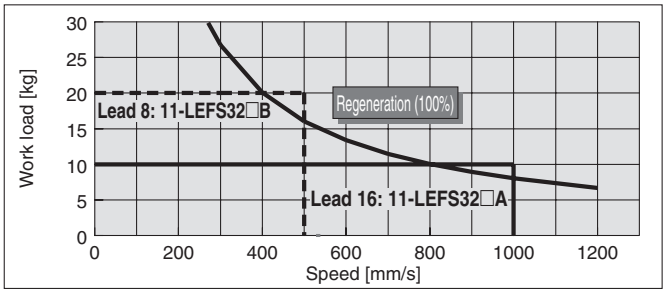


11-LEFS32/Ball Screw Drive

Horizontal

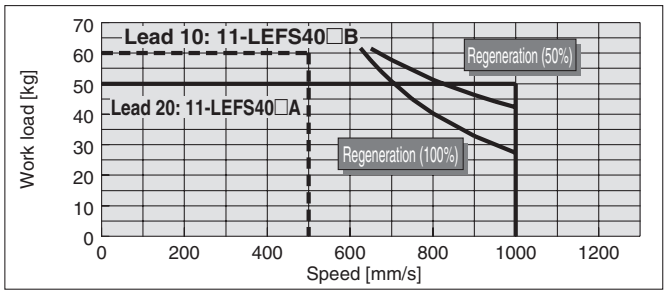


Vertical

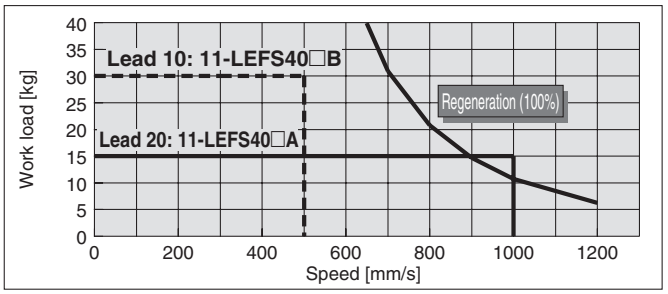


11-LEFS40/Ball Screw Drive

Horizontal



Vertical



Required conditions for “Regeneration Option”

∗ Regeneration option required when using product above “Regeneration” line in graph. (Order separately)
[How to read the graph]
Required conditions change depending on operating conditions.
Regeneration (50%) : Duty ratio 50% or more
Regeneration (100%): Duty ratio 100%

“Regeneration Option” Models

Size	Model
11-LEFS25□	LEC-MR-RB032
11-LEFS32□	LEC-MR-RB032
11-LEFS40□	LEC-MR-RB032

Allowable Stroke Speed

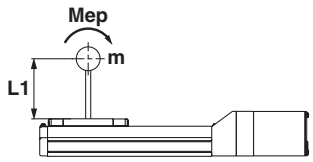
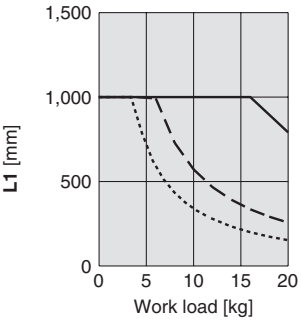
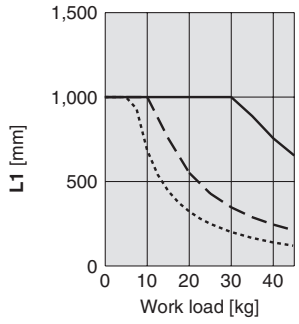
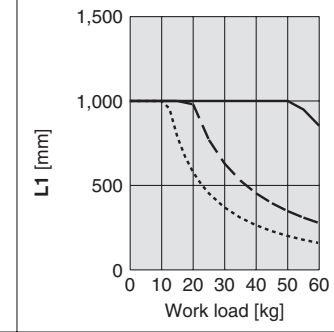
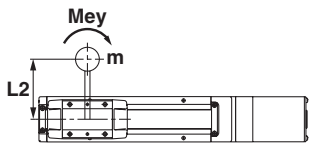
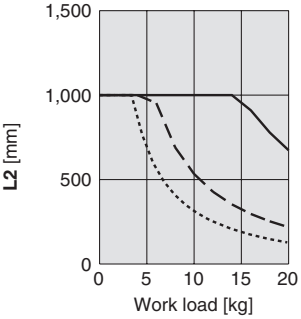
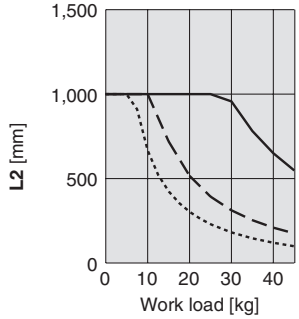
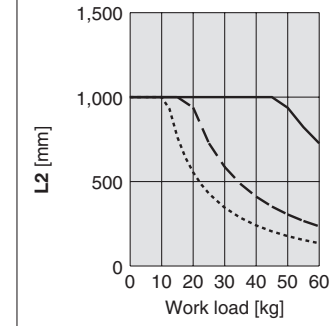
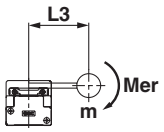
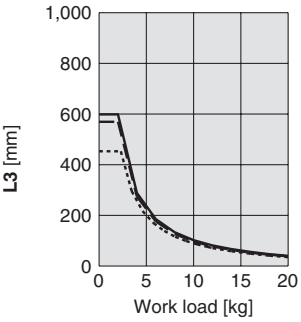
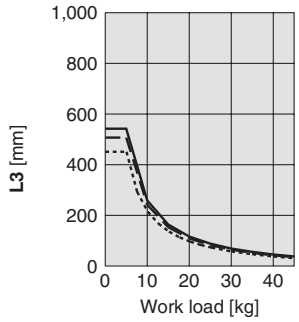
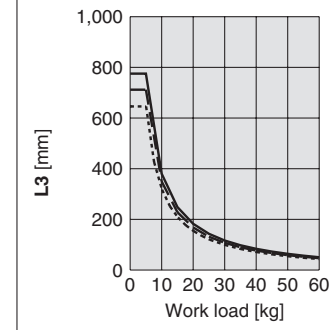
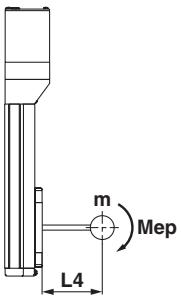
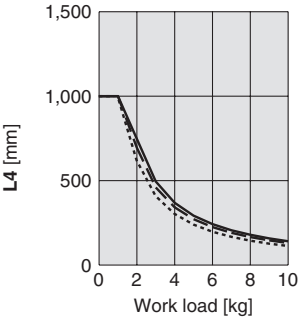
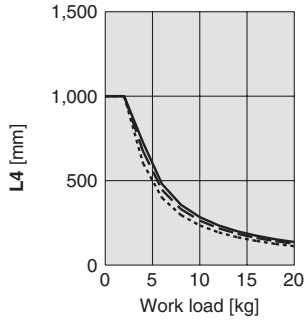
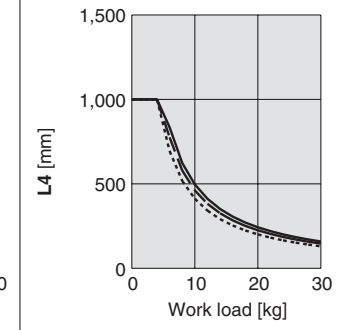
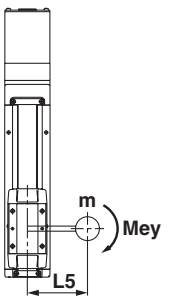
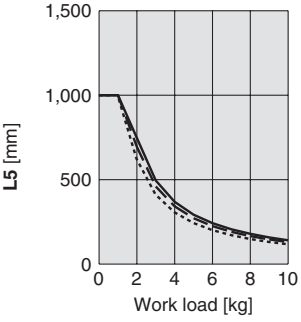
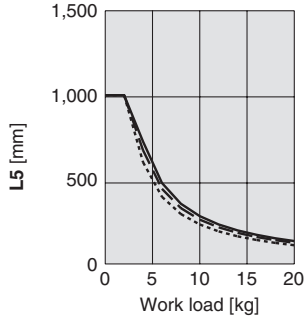
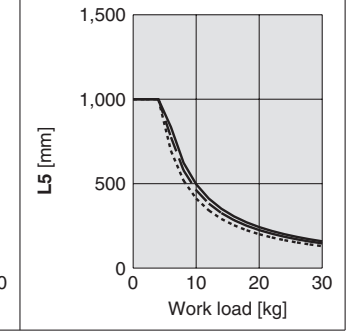
[mm/s]

Model	AC servo motor	Lead		Stroke [mm]									
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600	Up to 700	Up to 800	Up to 900	Up to 1000
11-LEFS25	100 W /□40	A	12	900				720	540	—	—	—	—
		B	6	450				360	270	—	—	—	—
		(Motor rotation speed)		(4500 rpm)				(3650 rpm)	(2700 rpm)	—	—	—	—
11-LEFS32	200 W /□60	A	16	1000	1000	1000	1000	1000	800	620	500	—	—
		B	8	500	500	500	500	500	400	310	250	—	—
		(Motor rotation speed)		(3750 rpm)					(3000 rpm)	(2325 rpm)	(1875 rpm)	—	—
11-LEFS40	400 W /□60	A	20	—	1000					940	760	620	520
		B	10	—	500					470	380	310	260
		(Motor rotation speed)		—	(3000 rpm)					(2820 rpm)	(2280 rpm)	(1860 rpm)	(1560 rpm)

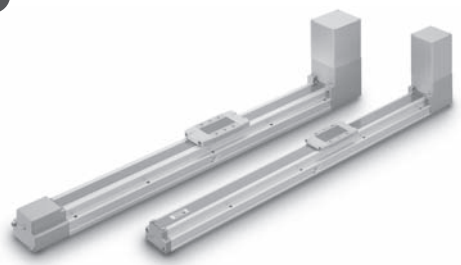
Dynamic Allowable Moment
AC Servo Motor

* 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 —— 1,000 mm/s² – – – 3,000 mm/s² ····· 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 **11-LEFS25S□**	Model **11-LEFS32S□**	Model **11-LEFS40S□**
Horizontal		Pitching			
		Yawing			
		Rolling			
Vertical		Pitching			
		Yawing			

Model Selection



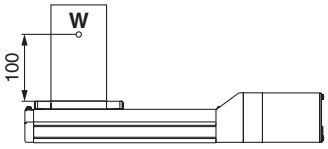
Selection Procedure

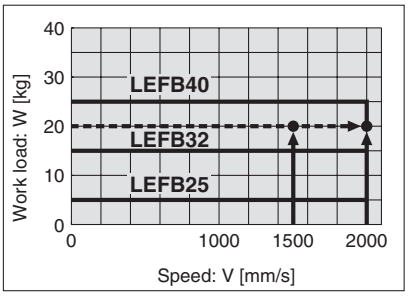
Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 20 [kg]
- Speed: 1,500 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 2,000 [mm]
- Mounting position: Horizontal upward
- Workpiece mounting condition:





<Speed–Work load graph> (LEFB40)

Step 1 **Check the work load–speed. <Speed–Work load graph>** (Page 81)

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

Selection example) The **LEFB40S4S-2000** is temporarily selected based on the graph shown on the right side.

Step 2 **Check the cycle time.**

Calculate the cycle time using the following calculation method.

Cycle time:

T can be found from the following equation.

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

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

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

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

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

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

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

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

$T1 = V/a1 = 1500/3000 = 0.5$ [s],

$T3 = V/a2 = 1500/3000 = 0.5$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{2000 - 0.5 \cdot 1500 \cdot (0.5 + 0.5)}{1500} = 0.83 \text{ [s]}$$

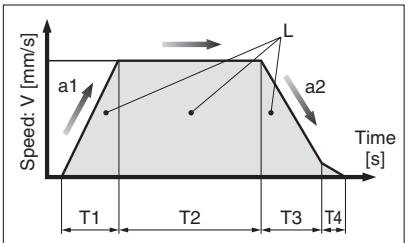
$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$

$= 0.5 + 0.83 + 0.5 + 0.05$

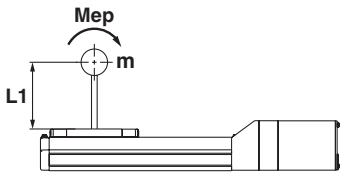
$=$ **1.88 [s]**

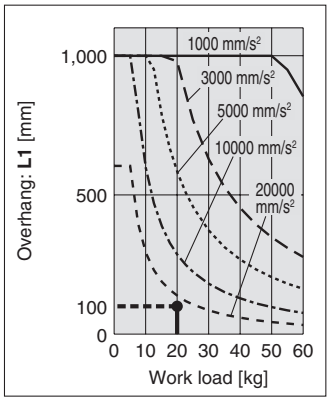


L : Stroke [mm]
··· (Operating condition)
V : Speed [mm/s]
··· (Operating condition)
a1: Acceleration [mm/s^2]
··· (Operating condition)
a2: Deceleration [mm/s^2]
··· (Operating condition)

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

Step 3 **Check the guide moment.**

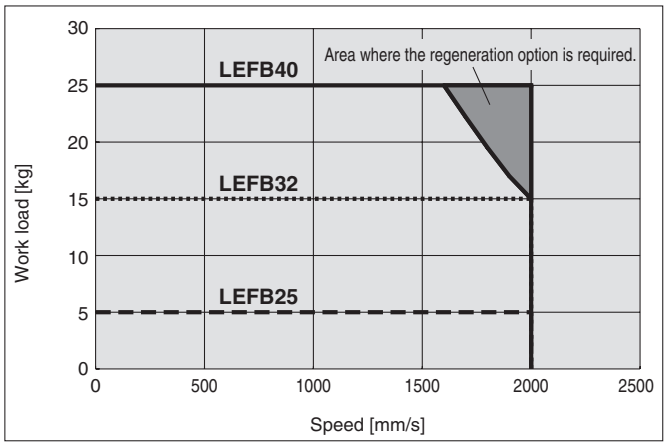




Based on the above calculation result, the LEFB40S4S-2000 is selected.

Speed–Work Load Graph (Guide)

LEFB□/Belt Drive

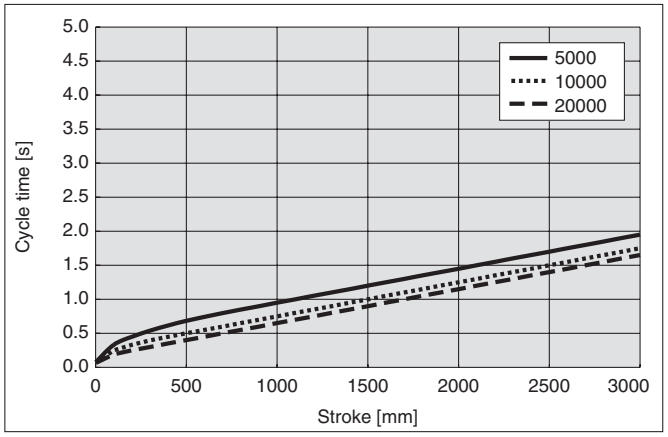


∗ The shaded area in the graph requires the regeneration option (LEC-MR-RB032).

Cycle Time Graph (Guide)

LEFB□/Belt Drive

LEFB25/32/40

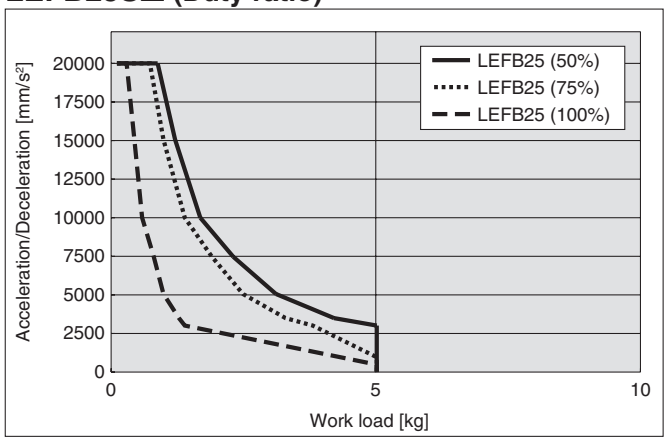


∗ Cycle time is for when maximum speed.
∗ Maximum stroke: LEFB25: 2000 mm
LEFB32: 2500 mm
LEFB40: 3000 mm

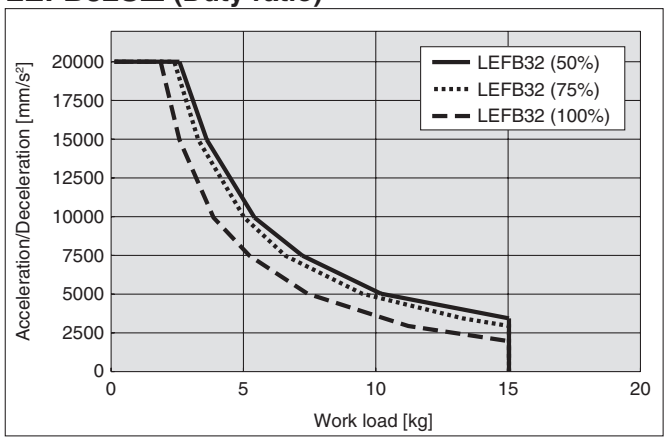
Work Load–Acceleration/Deceleration Graph (Guide)

LEFB□/Belt Drive

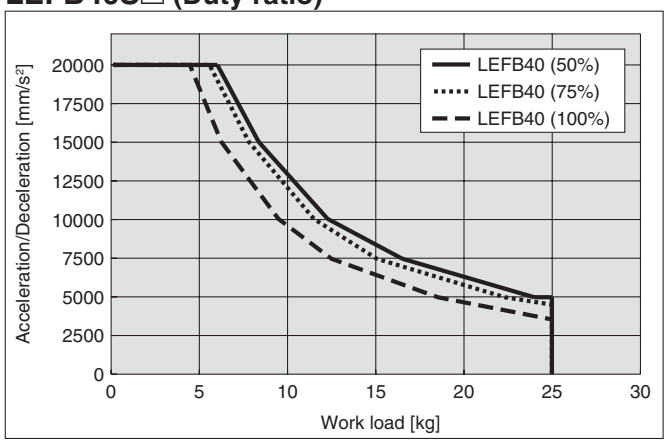
LEFB25S□ (Duty ratio)



LEFB32S□ (Duty ratio)



LEFB40S□ (Duty ratio)



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 ——1,000 mm/s² — — —3,000 mm/s² ·····5,000 mm/s² —·—·—10,000 mm/s² - - - - 20,000 mm/s²

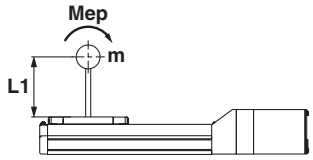
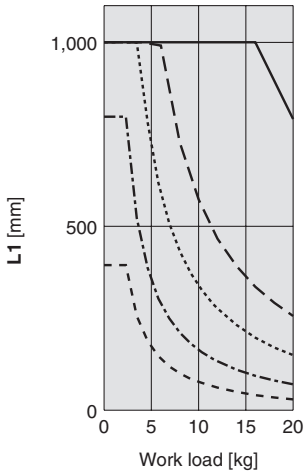
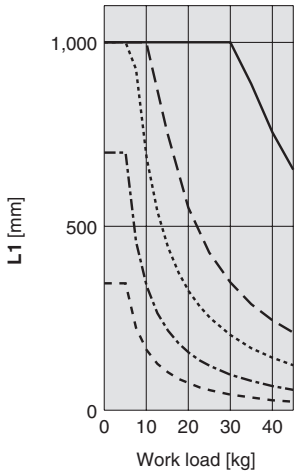
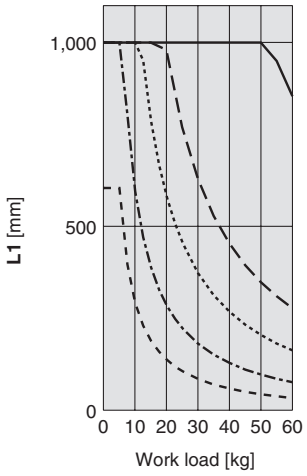
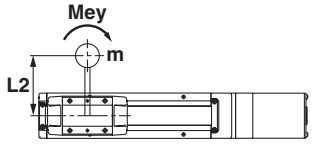
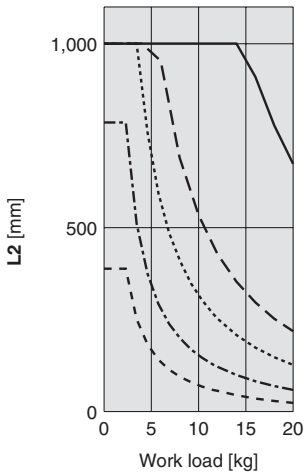
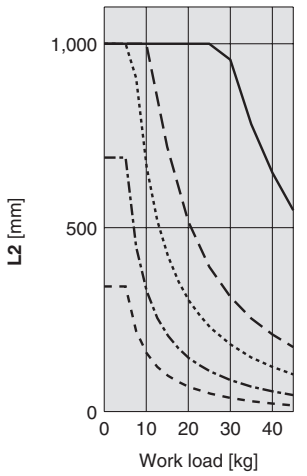
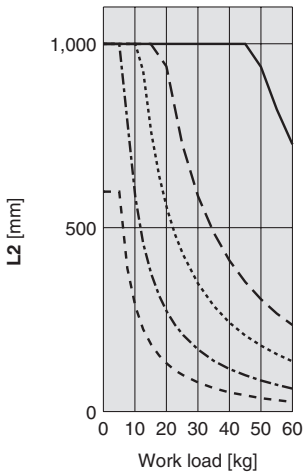
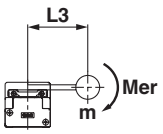
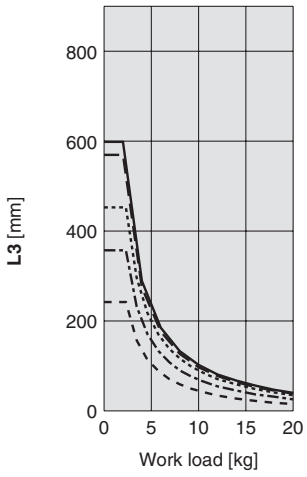
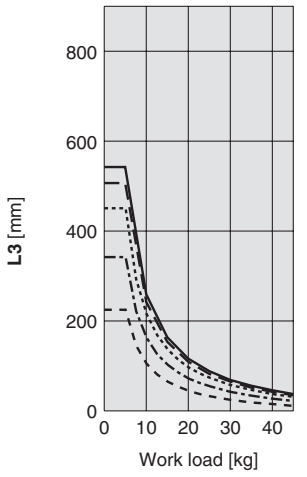
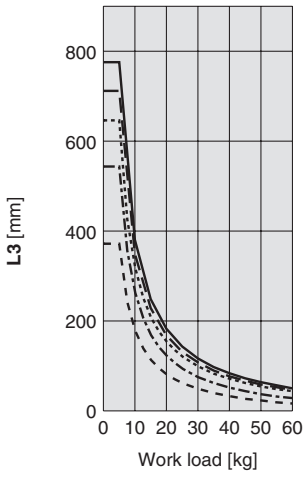
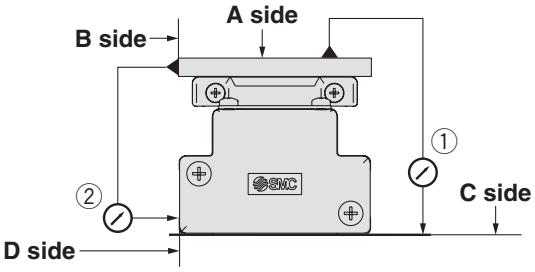
Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model LEFB25S□	Model LEFB32S□	Model LEFB40S□
Horizontal		Pitching			
		Yawing			
		Rolling			

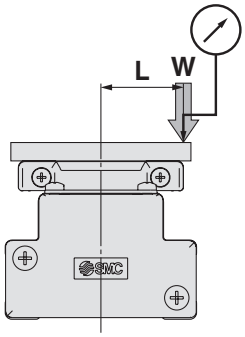
Table Accuracy

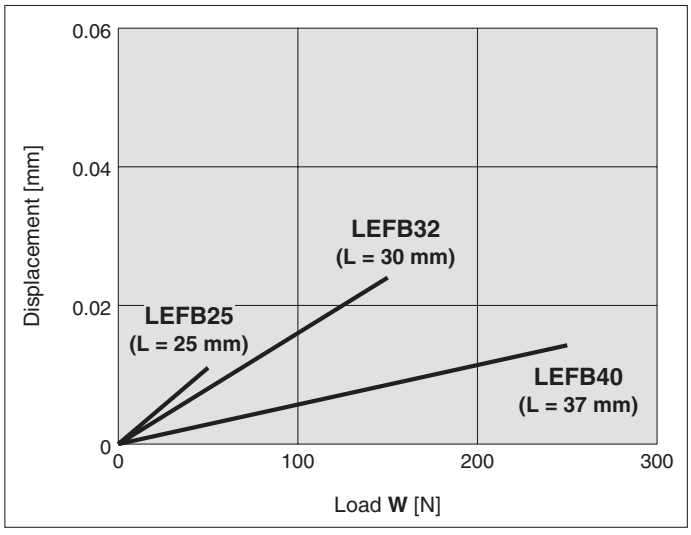


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEFB25	0.05	0.03
LEFB32	0.05	0.03
LEFB40	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

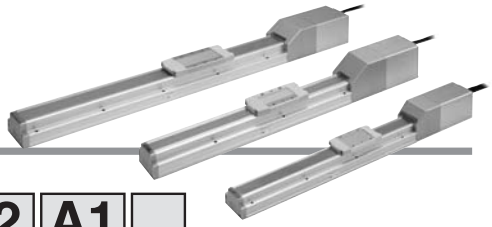
Table Displacement (Reference Value)





Note 1) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
Note 2) Please confirm the clearance and play of the guide separately.

Electric Actuator/Slider Type
Ball Screw Drive AC Servo Motor
Series LEFS
LEFS25, 32, 40



How to Order

LEFS **25** **S2** **B** – **100** **□** – **S** **2** **A1** **□**

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶ Size

25
32
40

❷ Motor type

Symbol	Type	Output (W)	Actuator size	Compatible drivers
S2*	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3		200	32	LECSA□-S3
S4		400	40	LECSA2-S4
S6*	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7		200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7
S8		400	40	LECSB2-S8 LECSC2-S8 LECSS2-S8

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

❸ Lead [mm]

Symbol	LEFS25	LEFS32	LEFS40
A	12	16	20
B	6	8	10

❹ Stroke [mm]

100
to
1000

* Refer to the table below for details.

❺ Motor option

Nil	Without option
B	With lock

❻ Cable type Note 1)

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

Note 1) Motor cable and encoder cable are included. (Lock cable is also included if motor option "With lock" is selected.)
Note 2) Standard cable entry direction is "(B) Counter axis side". (Refer to page 119 for details.)

❼ Cable length Note 3) [m]

Nil	Without cable
2	2
5	5
A	10

Note 3) The length of the encoder, motor and lock cables are the same.

❾ I/O connector

Nil	Without connector
H	With connector

❽ Driver type

	Compatible drivers	Power supply voltage (V)	Size 25	32	40
Nil	Without driver	—	●	●	●
A1	LECSA1-S□	100 to 120	●	●	—
A2	LECSA2-S□	200 to 230	●	●	●
B1	LECSB1-S□	100 to 120	●	●	—
B2	LECSB2-S□	200 to 230	●	●	●
C1	LECSC1-S□	100 to 120	●	●	—
C2	LECSC2-S□	200 to 230	●	●	●
S1	LECSS1-S□	100 to 120	●	●	—
S2	LECSS2-S□	200 to 230	●	●	●

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

* Applicable stroke table ●Standard

Model \ Stroke (mm)	100	200	300	400	500	600	700	800	900	1000
LEFS25	●	●	●	●	●	●	—	—	—	—
LEFS32	●	●	●	●	●	●	●	●	—	—
LEFS40	—	●	●	●	●	●	●	●	●	●

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

Compatible Drivers

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET III type
				
Series	LECSA	LECSB	LECSC	LECSS
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage (V)	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)			
Reference page	Page 108			

Specifications

LEFS25, 32, 40 AC Servo Motor

Model			LEFS25S$^{2}_{6}$		LEFS32S$^{3}_{7}$		LEFS40S$^{4}_{8}$	
Actuator specifications	**Stroke [mm]** Note 1)		100, 200, 300, 400 500, 600		100, 200, 300, 400 500, 600, 700, 800		200, 300, 400, 500 600, 700, 800, 900 1000	
	Work load [kg] Note 2)	**Horizontal**	20	20	40	45	50	60
		Vertical	8	15	10	20	15	30
	Max. speed [mm/s] Note 3) — **Stroke range**	**Up to 400**	900	450	1000	500	1000	500
		401 to 500	720	360	1000	500	1000	500
		501 to 600	540	270	800	400	1000	500
		601 to 700	—	—	620	310	940	470
		701 to 800	—	—	500	250	760	380
		801 to 900	—	—	—	—	620	310
		901 to 1000	—	—	—	—	520	260
	Max. acceleration/deceleration [mm/s^2]		20,000 (Refer to page 71 for limit according to work load and duty ratio.)					
	Positioning repeatability [mm]		±0.02					
	Lead [mm]		12	6	16	8	20	10
	Impact/Vibration resistance [m/s^2] Note 4)		50/20					
	Actuation type		Ball screw					
	Guide type		Linear guide					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range[%RH]		90 or less (No condensation)					
Electric specifications	**Motor output/Size**		100 W/□40		200 W/□60		400 W/□60	
	Motor type		AC servo motor (100/200 VAC)					
	Encoder		Motor type S2, S3, S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7, S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)					
	Power consumption [W] Note 5)	**Horizontal**	45		65		210	
		Vertical	145		175		230	
	Standby power consumption when operating [W] Note 6)	**Horizontal**	2		2		2	
		Vertical	8		8		18	
	Max. instantaneous power consumption [W] Note 7)		445		725		1275	
Lock unit specifications	**Type** Note 8)		Non-magnetizing lock					
	Holding force [N]		131	255	197	385	330	660
	Power consumption at 20°C [W] Note 9)		6.3		7.9		7.9	
	Rated voltage [V]		24 VDC$^{0}_{-10\%}$					

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) For details, refer to “Speed–Work Load Graph (Guide)” on page 71.
Note 3) The allowable speed changes according to the stroke.
Note 4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and aperpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 5) The power consumption (including the driver) is for when the actuator is operating.
Note 6) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 7) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 8) Only when motor option “With lock” is selected.
Note 9) For an actuator with lock, add the power consumption for the lock.

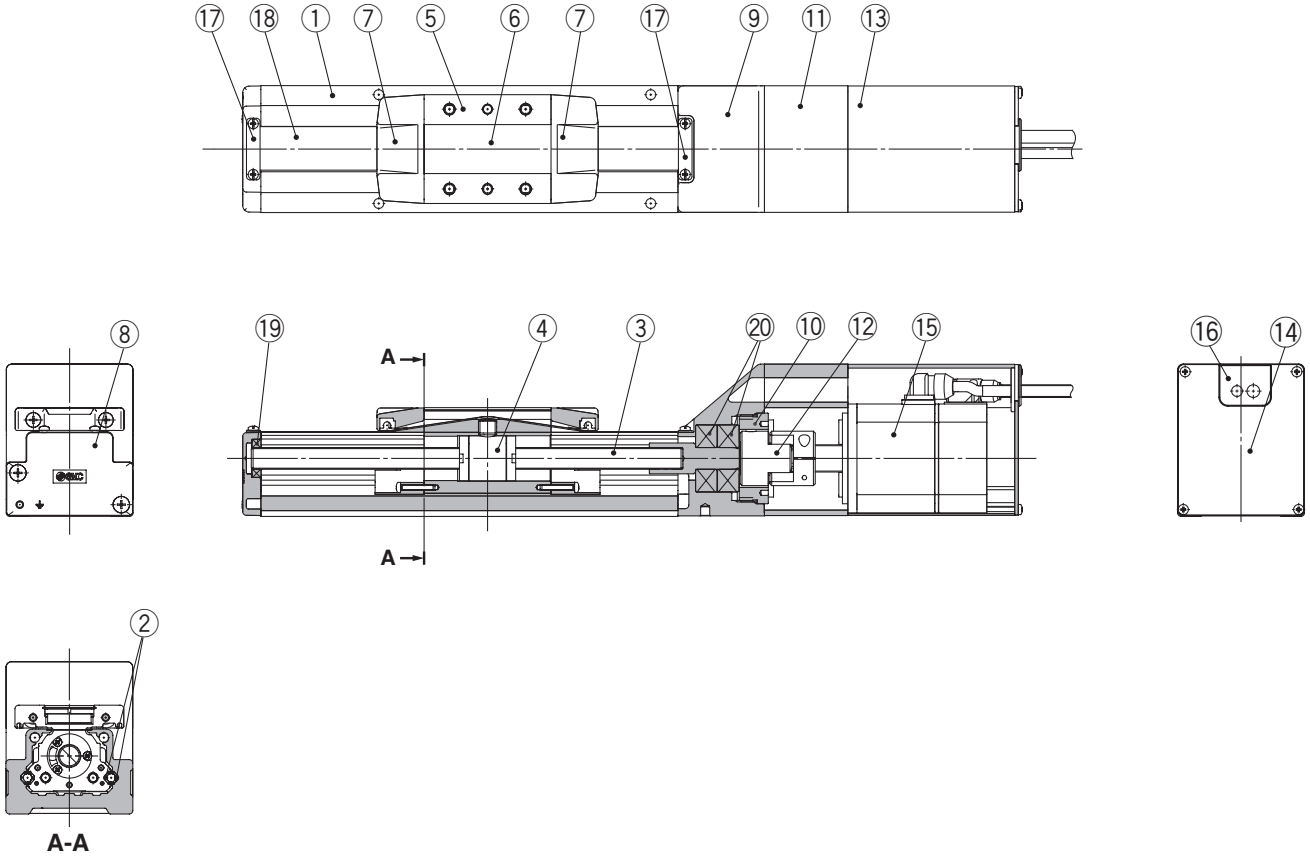
Weight

Series	LEFS25					
Stroke [mm]	100	200	300	400	500	600
Product weight [kg]	2.20	2.50	2.75	3.05	3.30	3.60
Additional weight with lock [kg]	0.35					

Series	LEFS32							
Stroke [mm]	100	200	300	400	500	600	700	800
Product weight [kg]	3.60	4.00	4.40	4.80	5.20	5.60	6.00	6.40
Additional weight with lock [kg]	0.70							

Series	LEFS40								
Stroke [mm]	200	300	400	500	600	700	800	900	1000
Product weight [kg]	6.20	6.75	7.35	7.90	8.35	9.00	9.55	10.15	10.70
Additional weight with lock [kg]	0.70								

Construction



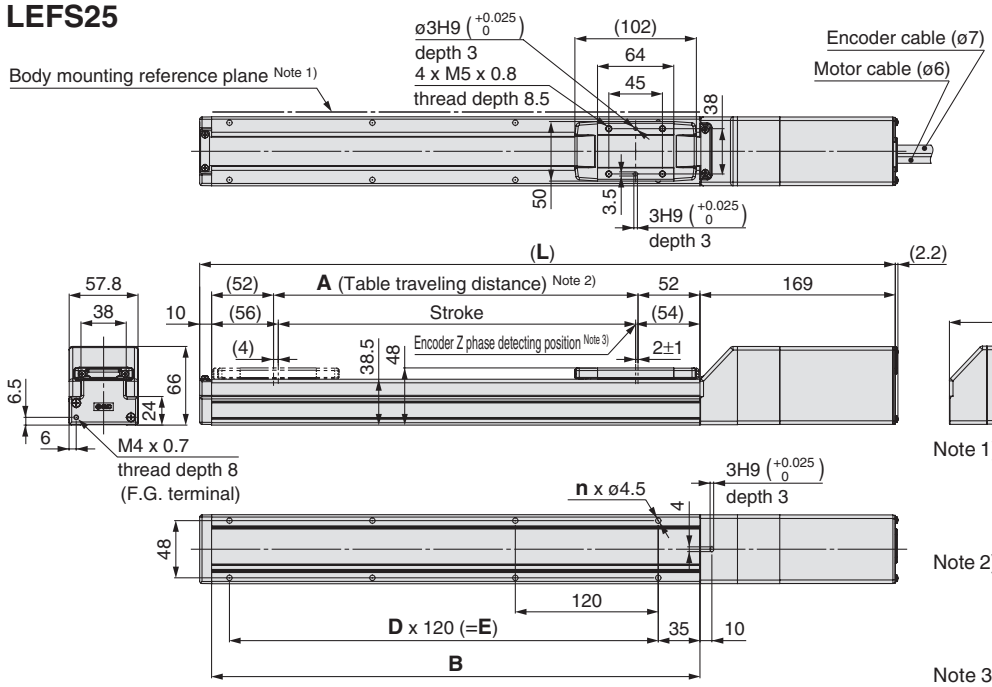
Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	Anodized
2	**Rail guide**	—	
3	**Ball screw shaft**	—	
4	**Ball screw nut**	—	
5	**Table**	Aluminum alloy	Anodized
6	**Blanking plate**	Aluminum alloy	Anodized
7	**Seal band stopper**	Synthetic resin	
8	**Housing A**	Aluminum die-cast	Coating
9	**Housing B**	Aluminum die-cast	Coating
10	**Bearing stopper**	Aluminum alloy	

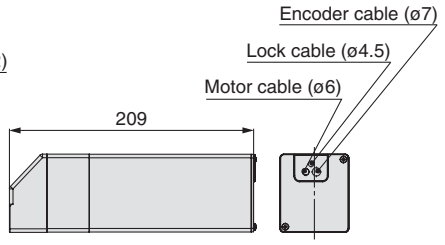
No.	Description	Material	Note
11	**Motor mount**	Aluminum alloy	Coating
12	**Coupling**	—	
13	**Motor cover**	Aluminum alloy	Anodized
14	**Motor end cover**	Aluminum alloy	Anodized
15	**Motor**	—	
16	**Grommet**	NBR	
17	**Band stopper**	Stainless steel	
18	**Dust seal band**	Stainless steel	
19	**Bearing**	—	
20	**Bearing**	—	

Dimensions: Ball Screw Drive

LEFS25



Motor option: With lock



Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

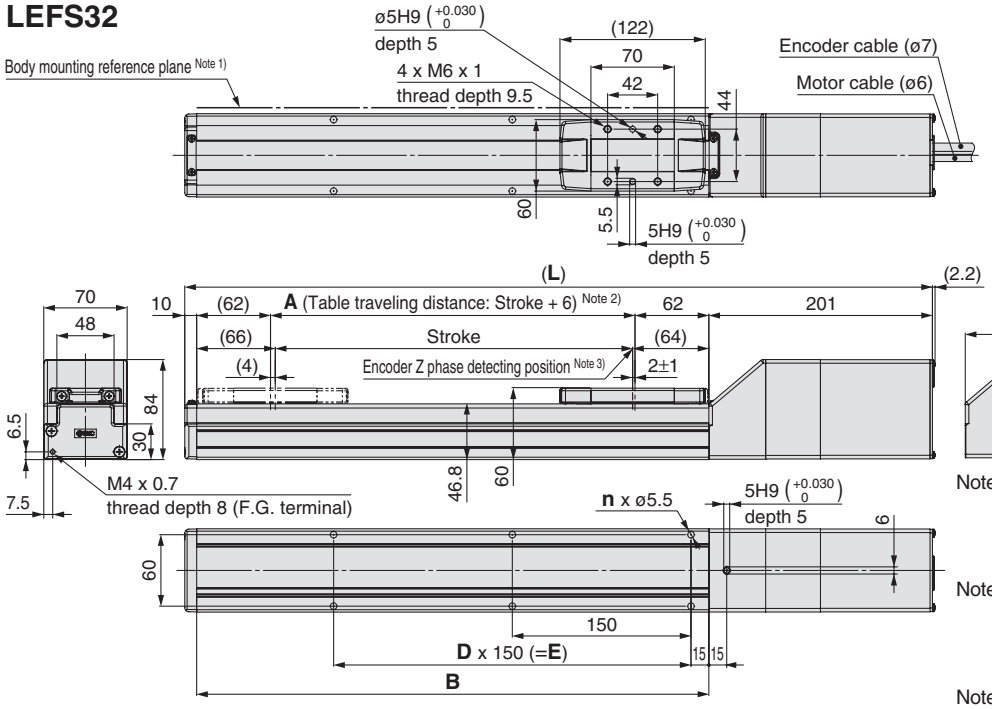
[mm]

Model	L	A	B	n	D	E
LEFS25□□-100-□□□□	389	106	210	4	—	—
LEFS25□□-100B-□□□□	429					
LEFS25□□-200-□□□□	489	206	310	6	2	240
LEFS25□□-200B-□□□□	529					
LEFS25□□-300-□□□□	589	306	410	8	3	360
LEFS25□□-300B-□□□□	629					

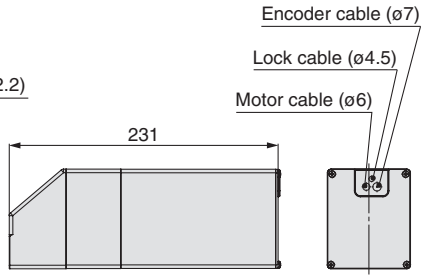
[mm]

Model	L	A	B	n	D	E
LEFS25□□-400-□□□□	689	406	510	8	3	360
LEFS25□□-400B-□□□□	729					
LEFS25□□-500-□□□□	789	506	610	10	4	480
LEFS25□□-500B-□□□□	829					
LEFS25□□-600-□□□□	889	606	710	12	5	600
LEFS25□□-600B-□□□□	929					

LEFS32



Motor option: With lock



Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)
Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

[mm]

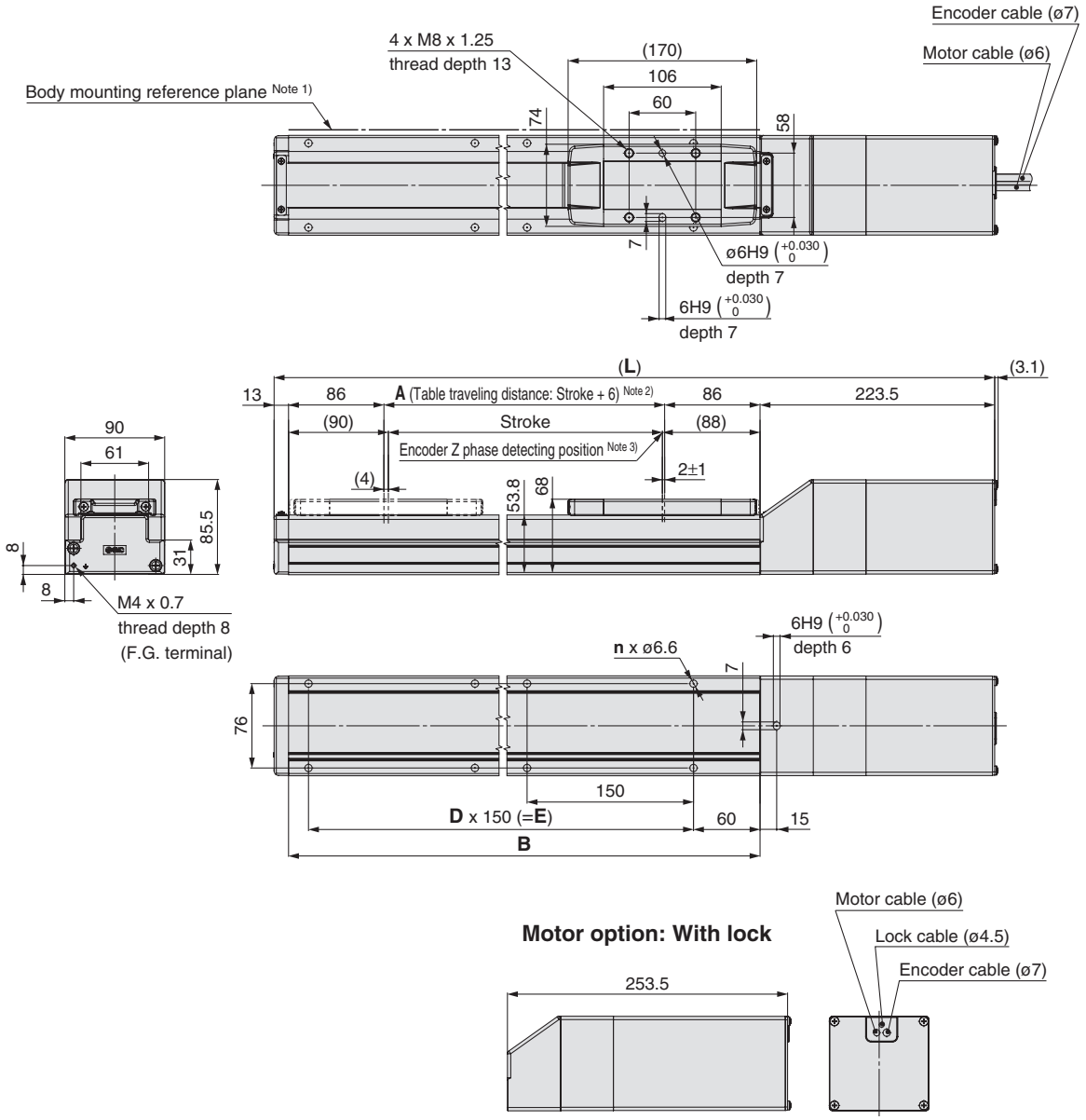
Model	L	A	B	n	D	E
LEFS32□□-100-□□□□	441	106	230	4	—	—
LEFS32□□-100B-□□□□	471					
LEFS32□□-200-□□□□	541	206	330	6	2	300
LEFS32□□-200B-□□□□	571					
LEFS32□□-300-□□□□	641	306	430	6	2	300
LEFS32□□-300B-□□□□	671					
LEFS32□□-400-□□□□	741	406	530	8	3	450
LEFS32□□-400B-□□□□	771					

[mm]

Model	L	A	B	n	D	E
LEFS32□□-500-□□□□	841	506	630	10	4	600
LEFS32□□-500B-□□□□	871					
LEFS32□□-600-□□□□	941	606	730	10	4	600
LEFS32□□-600B-□□□□	971					
LEFS32□□-700-□□□□	1041	706	830	12	5	750
LEFS32□□-700B-□□□□	1071					
LEFS32□□-800-□□□□	1141	806	930	14	6	900
LEFS32□□-800B-□□□□	1171					

Dimensions: Ball Screw Drive

LEFS40



Motor option: With lock

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

[mm]

Model	L	A	B	n	D	E
LEFS40□□-200-□□□□	614.5	206	378	6	2	300
LEFS40□□-200B-□□□□	644.5					
LEFS40□□-300-□□□□	714.5	306	478	6	2	300
LEFS40□□-300B-□□□□	744.5					
LEFS40□□-400-□□□□	814.5	406	578	8	3	450
LEFS40□□-400B-□□□□	844.5					
LEFS40□□-500-□□□□	914.5	506	678	10	4	600
LEFS40□□-500B-□□□□	944.5					
LEFS40□□-600-□□□□	1014.5	606	778	10	4	600
LEFS40□□-600B-□□□□	1044.5					
LEFS40□□-700-□□□□	1114.5	706	878	12	5	750
LEFS40□□-700B-□□□□	1144.5					
LEFS40□□-800-□□□□	1214.5	806	978	14	6	900
LEFS40□□-800B-□□□□	1244.5					
LEFS40□□-900-□□□□	1314.5	906	1078	14	6	900
LEFS40□□-900B-□□□□	1344.5					
LEFS40□□-1000-□□□□	1414.5	1006	1178	16	7	1050
LEFS40□□-1000B-□□□□	1444.5					

Electric Actuator/ 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.

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

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

This can cause failure.

Selection

⚠Warning

1. Do not increase the speed in excess of the operating limit.

Select a suitable actuator by the relationship of the allowable work load and speed, and the allowable speed of each stroke. If the product is used outside of the operating limit, it will have adverse effects such as creating noise, degrading accuracy and shortening the life of the product.

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

This can cause failure.

3. When the product repeatedly cycles with partial strokes (see the table below), operate it at a full stroke at least once every 10 strokes.

Otherwise, lubrication can run out.

Model	Partial stroke
LEFS25	65 mm or less
LEFS32	70 mm or less
LEFS40	105 mm or less

4. When external force is applied to the table, it is necessary to add external force to the work load as the total carried 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.

5. The forward/reverse torque limit is set to 100% (3 times the motor rated torque) as default.

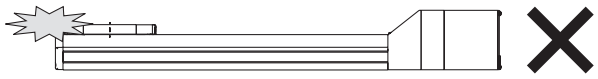
This value is the maximum torque (the limit value) in the “Position control mode”, “Speed control mode” or “Positioning mode”. When the product is operated with a smaller value than the default, acceleration when driving can decrease. Set the value after confirming the actual device to be used.

Handling

⚠Caution

1. Do not allow the table to hit the end of stroke.

The internal stopper can be broken.



Handle the actuator with care, especially when it is used in the vertical direction.

2. The actual speed of this actuator is affected by the work load and stroke.

Check specifications with reference to the model selection section of the catalog.

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

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

This may cause unevenness in the mounting surface, play in the guide or an increase in the sliding resistance.

5. 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 play in the guide or an increase in the sliding resistance.

6. Keep the flatness of mounting surface 0.1 mm or less.

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

7. When mounting the product, keep a 40 mm or longer diameter for bends in the cable.

8. Do not hit the table with the workpiece in the positioning operation and positioning range.

Electric Actuator/ 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

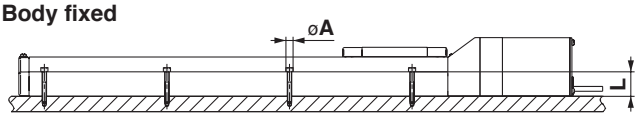
Handling

⚠Caution

9. When mounting the product, use screws with adequate length and tighten them with adequate torque.

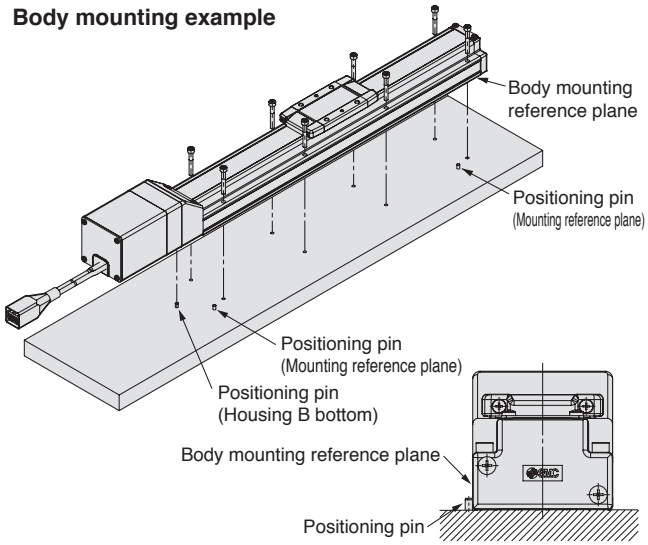
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



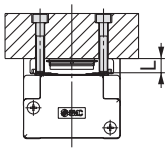
Model	Bolt	øA (mm)	L (mm)
LEFS25	M4	4.5	24
LEFS32	M5	5.5	30
LEFS40	M6	6.6	31

Body mounting example



The travelling parallelism is the reference plane for the body mounting reference plane. If the traveling parallelism for a table is required, set the reference plane against parallel pins, etc.

Workpiece fixed



Model	Bolt	Max. tightening torque (N·m)	L (Max. screw-in depth) (mm)
LEFS25	M5 x 0.8	3.0	8
LEFS32	M6 x 1	5.2	9
LEFS40	M8 x 1.25	12.5	13

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

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

11. Check the specifications for the minimum speed of each actuator.

Otherwise, unexpected malfunctions, such as knocking, may occur.

Maintenance

⚠Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check
Inspection before daily operation	○	–
Inspection every 6 months/1000 km/ 5 million cycles*	○	○

* Select whichever comes sooner.

• Items for visual appearance check

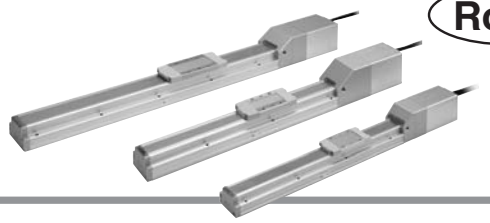
1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

• Items for internal check

1. Lubricant condition on moving parts.
2. Loose or mechanical play in fixed parts or fixing screws.

Electric Actuator/Slider Type
Ball Screw Drive AC Servo Motor Clean room specification
Series 11-LEFS
LEFS25, 32, 40

RoHS



How to Order

11 – LEFS 25 S2 B – 100 □ □ – S 2 A1 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

Clean series

11	Vacuum type

❶ Size

25
32
40

❷ Motor type

Symbol	Type	Output (W)	Actuator size	Compatible drivers
S2*	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3		200	32	LECSA□-S3
S4		400	40	LECSA2-S4
S6*	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7		200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7
S8		400	40	LECSB2-S8 LECSC2-S8 LECSS2-S8

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

❸ Lead [mm]

Symbol	11-LEFS25	11-LEFS32	11-LEFS40
A	12	16	20
B	6	8	10

❹ Stroke [mm]

100	100
to	to
1000	1000

* Refer to the applicable stroke table.

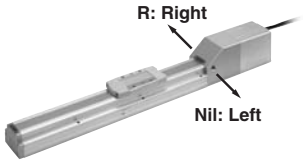
❺ Motor option

Nil	Without option
B	With lock

❻ Vacuum port*

Nil	Left
R	Right
D	Both left and right

* Select "D" for the vacuum port for suction of 50 L/min (ANR) or more.



❼ Cable type Note 1) Note 2)

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

Note 1) The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
Note 2) Standard cable entry direction is "(B) Counter axis side". (Refer to page 119 for details.)

❽ Cable length Note 3)

Nil	Without cable
2	2 m
5	5 m
A	10 m

Note 3) The length of the encoder, motor and lock cables are the same.

❿ I/O connector

Nil	Without connector
H	With connector

❾ Driver type

	Compatible drivers	Power supply voltage (V)	Size 25	32	40
Nil	Without driver	—	●	●	●
A1	LECSA1-S□	100 to 120	●	●	—
A2	LECSA2-S□	200 to 230	●	●	●
B1	LECSB1-S□	100 to 120	●	●	—
B2	LECSB2-S□	200 to 230	●	●	●
C1	LECSC1-S□	100 to 120	●	●	—
C2	LECSC2-S□	200 to 230	●	●	●
S1	LECSS1-S□	100 to 120	●	●	—
S2	LECSS2-S□	200 to 230	●	●	●

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

* Applicable stroke table ●Standard

Model \ Stroke (mm)	100	200	300	400	500	600	700	800	900	1000
11-LEFS25	●	●	●	●	●	●	—	—	—	—
11-LEFS32	●	●	●	●	●	●	●	●	—	—
11-LEFS40	—	●	●	●	●	●	●	●	●	●

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

Compatible Drivers

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET III type
				
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage (V)	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)			
Reference page	Page 108			

Specifications

11-LEFS25, 32, 40 AC Servo Motor

Model			11-LEFS25S$^{2}_{6}$		11-LEFS32S$^{3}_{7}$		11-LEFS40S$^{4}_{8}$	
Actuator specifications	Stroke [mm] Note 1)		100, 200, 300, 400 500, 600		100, 200, 300, 400 500, 600, 700, 800		200, 300, 400, 500, 600 700, 800, 900, 1000	
	Work load [kg] Note 2)	Horizontal	20	20	40	45	50	60
		Vertical	8	15	10	20	15	30
	Max. speed [mm/s] Note 3) — Stroke range	Up to 400	900	450	1000	500	1000	500
		401 to 500	720	360	1000	500	1000	500
		501 to 600	540	270	800	400	1000	500
		601 to 700	—	—	620	310	940	470
		701 to 800	—	—	500	250	760	380
		801 to 900	—	—	—	—	620	310
		901 to 1000	—	—	—	—	520	260
	Max. acceleration/deceleration [mm/s^2]		5,000 (Refer to page 78 for limit according to work load and duty ratio.)					
	Positioning repeatability [mm]		±0.02					
	Lead [mm]		12	6	16	8	20	10
	Impact/Vibration resistance [m/s^2] Note 4)		50/20					
	Actuation type		Ball screw					
	Guide type		Linear guide					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
	Cleanliness class Note 5)		ISO Class 4 (ISO 14644-1) Class 10 (Fed.Std.209E)					
	Grease — Ball screw /Linear guide portion		Low particle generation grease					
Electric specifications	Motor output/Size		100 W/□40		200 W/□60		400 W/□60	
	Motor type		AC servo motor (100/200 VAC)					
	Encoder		Motor type S2, S3, S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7, S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)					
	Power consumption [W] Note 6)	Horizontal	45		65		210	
		Vertical	145		175		230	
	Standby power consumption when operating [W] Note 7)	Horizontal	2		2		2	
		Vertical	8		8		18	
	Max. instantaneous power consumption [W] Note 8)		445		725		1275	
Lock unit specifications	Type Note 9)		Non-magnetizing lock					
	Holding force [N]		131	255	197	385	330	660
	Power consumption at 20°C [W] Note 10)		6.3		7.9		7.9	
	Rated voltage [V]		24 VDC$^{0}_{-10\%}$					

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) For details, refer to "Speed–Work Load Graph (Guide)" on page 78.
Note 3) The allowable speed changes according to the stroke.
Note 4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 5) The amount of particle generation changes according to the operating conditions and suction flow rate. Refer to the particle generation characteristics for details.
Note 6) The power consumption (including the driver) is for when the actuator is operating.
Note 7) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 8) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 9) Only when motor option "With lock" is selected.
Note 10) For an actuator with lock, add the power consumption for the lock.

Weight

Series	11-LEFS25					
Stroke [mm]	100	200	300	400	500	600
Product weight [kg]	2.20	2.50	2.75	3.05	3.30	3.60
Additional weight with lock [kg]	0.35					

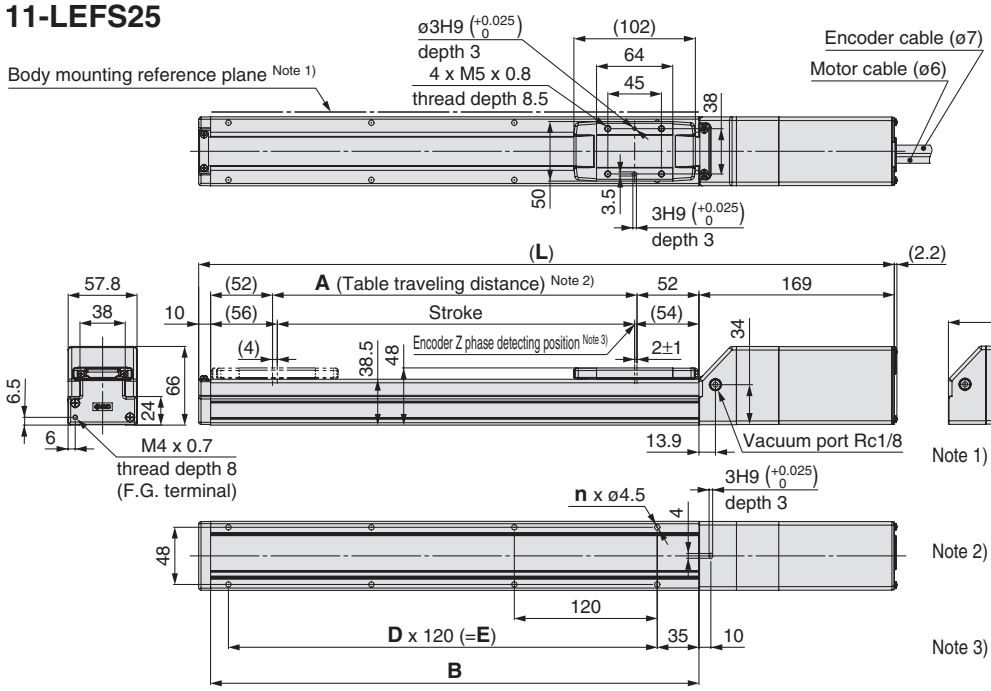
Series	11-LEFS32							
Stroke [mm]	100	200	300	400	500	600	700	800
Product weight [kg]	3.60	4.00	4.40	4.80	5.20	5.60	6.00	6.40
Additional weight with lock [kg]	0.70							

Series	11-LEFS40								
Stroke [mm]	200	300	400	500	600	700	800	900	1000
Product weight [kg]	6.20	6.75	7.35	7.90	8.35	9.00	9.55	10.15	10.70
Additional weight with lock [kg]	0.70								

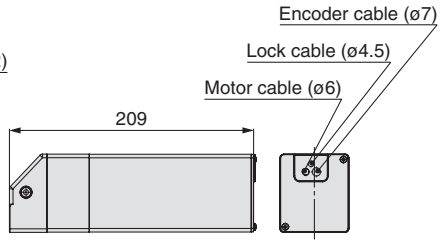
Clean room specification

Dimensions: Ball Screw Drive

11-LEFS25



Motor option: With lock



Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

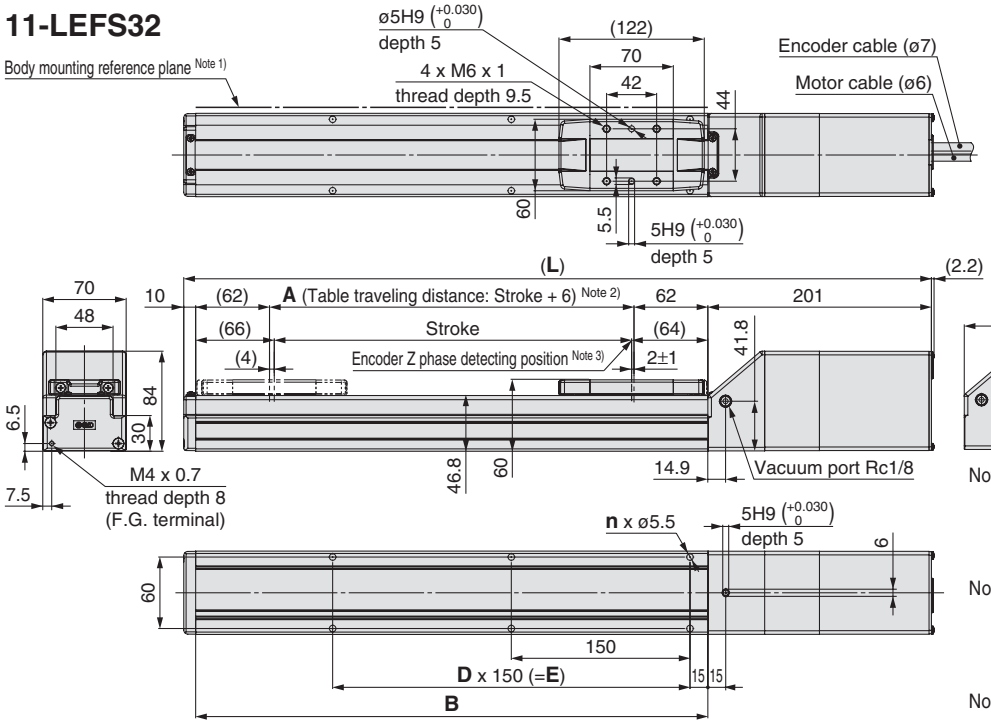
[mm]

Model	L	A	B	n	D	E
11-LEFS25□□-100-□□□□	389	106	210	4	—	—
11-LEFS25□□-100B-□□□□	429					
11-LEFS25□□-200-□□□□	489	206	310	6	2	240
11-LEFS25□□-200B-□□□□	529					
11-LEFS25□□-300-□□□□	589	306	410	8	3	360
11-LEFS25□□-300B-□□□□	629					

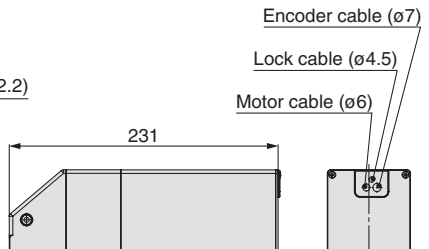
[mm]

Model	L	A	B	n	D	E
11-LEFS25□□-400-□□□□	689	406	510	8	3	360
11-LEFS25□□-400B-□□□□	729					
11-LEFS25□□-500-□□□□	789	506	610	10	4	480
11-LEFS25□□-500B-□□□□	829					
11-LEFS25□□-600-□□□□	889	606	710	12	5	600
11-LEFS25□□-600B-□□□□	929					

11-LEFS32



Motor option: With lock



Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

[mm]

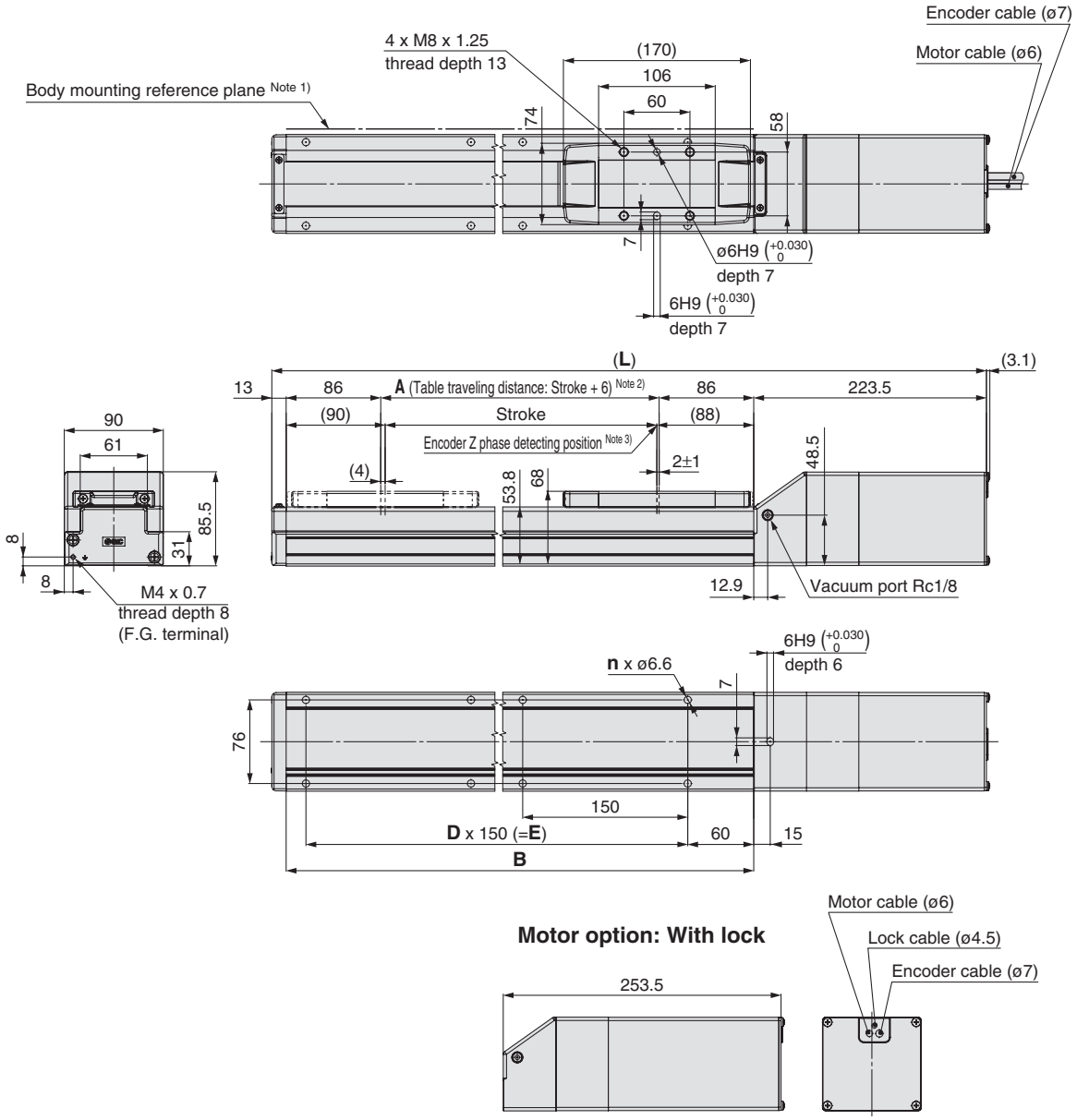
Model	L	A	B	n	D	E
11-LEFS32□□-100-□□□□	441	106	230	4	—	—
11-LEFS32□□-100B-□□□□	471					
11-LEFS32□□-200-□□□□	541	206	330	6	2	300
11-LEFS32□□-200B-□□□□	571					
11-LEFS32□□-300-□□□□	641	306	430	6	2	300
11-LEFS32□□-300B-□□□□	671					
11-LEFS32□□-400-□□□□	741	406	530	8	3	450
11-LEFS32□□-400B-□□□□	771					

[mm]

Model	L	A	B	n	D	E
11-LEFS32□□-500-□□□□	841	506	630	10	4	600
11-LEFS32□□-500B-□□□□	871					
11-LEFS32□□-600-□□□□	941	606	730	10	4	600
11-LEFS32□□-600B-□□□□	971					
11-LEFS32□□-700-□□□□	1041	706	830	12	5	750
11-LEFS32□□-700B-□□□□	1071					
11-LEFS32□□-800-□□□□	1141	806	930	14	6	900
11-LEFS32□□-800B-□□□□	1171					

Dimensions: Ball Screw Drive

11-LEFS40



Motor option: With lock

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

[mm]

Model	L	A	B	n	D	E
11-LEFS40□□-200-□□□□	614.5	206	378	6	2	300
11-LEFS40□□-200B-□□□□	644.5					
11-LEFS40□□-300-□□□□	714.5	306	478	6	2	300
11-LEFS40□□-300B-□□□□	744.5					
11-LEFS40□□-400-□□□□	814.5	406	578	8	3	450
11-LEFS40□□-400B-□□□□	844.5					
11-LEFS40□□-500-□□□□	914.5	506	678	10	4	600
11-LEFS40□□-500B-□□□□	944.5					
11-LEFS40□□-600-□□□□	1014.5	606	778	10	4	600
11-LEFS40□□-600B-□□□□	1044.5					
11-LEFS40□□-700-□□□□	1114.5	706	878	12	5	750
11-LEFS40□□-700B-□□□□	1144.5					
11-LEFS40□□-800-□□□□	1214.5	806	978	14	6	900
11-LEFS40□□-800B-□□□□	1244.5					
11-LEFS40□□-900-□□□□	1314.5	906	1078	14	6	900
11-LEFS40□□-900B-□□□□	1344.5					
11-LEFS40□□-1000-□□□□	1414.5	1006	1178	16	7	1050
11-LEFS40□□-1000B-□□□□	1444.5					

Electric Actuator/Slider Type
Belt Drive AC Servo Motor
Series LEFB
LEFB25, 32, 40

CE RoHS

How to Order

LEFB 40 ❶ ☐ ❷ S4 ❸ S ❹ – 300 ❺ ☐ ❻ – S ❼ 2 ❽ A1 ❾ ☐ ❿

❶ Size

25	
32	
40	

❷ Motor mounting position

Nil	Top mounting
U	Bottom mounting

❸ Motor type

Symbol	Type	Output (W)	Actuator size	Compatible drivers
S2*	AC servo motor (Incremental encoder)	100	25	LECSA☐-S1
S3		200	32	LECSA☐-S3
S4		400	40	LECSA2-S4
S6*	AC servo motor (Absolute encoder)	100	25	LECSB☐-S5 LECSC☐-S5 LECSS☐-S5
S7		200	32	LECSB☐-S7 LECSC☐-S7 LECSS☐-S7
S8		400	40	LECSB2-S8 LECSC2-S8 LECSS2-S8

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

❹ Equivalent lead

S	54 mm

❺ Stroke

300	300 mm
to	to
3000	3000 mm

* Refer to the applicable stroke table.

❻ Motor option

Nil	Without option
B	With lock

❼ Cable type Note 1) Note 2)

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

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

Note 2) Standard cable entry direction is "(A) Axis side". (Refer to page 119 for details.)

❽ Cable length

Nil	Without cable
2	2 m
5	5 m
A	10 m

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

❾ Driver type

	Compatible drivers	Power supply voltage	Size 25	32	40
Nil	Without driver	—	●	●	●
A1	LECSA1-S☐	100 to 120	●	●	—
A2	LECSA2-S☐	200 to 230	●	●	●
B1	LECSB1-S☐	100 to 120	●	●	—
B2	LECSB2-S☐	200 to 230	●	●	●
C1	LECSC1-S☐	100 to 120	●	●	—
C2	LECSC2-S☐	200 to 230	●	●	●
S1	LECSS1-S☐	100 to 120	●	●	—
S2	LECSS2-S☐	200 to 230	●	●	●

❿ I/O connector

Nil	Without connector
H	With connector

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

* Applicable stroke table

●Standard/○Produced upon receipt of order

	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000
LEFB25	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	—	—
LEFB32	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	●	—
LEFB40	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	●	●

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

Compatible Drivers

Driver type	Pulse input type /Positioning type	Pulse input type	CC-Link direct input type	SSCNET III type
				
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage (V)	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)			
Reference page	Page 108			

Specifications

LEFB25, 32, 40 AC Servo Motor

Model			LEFB25S$^{2}_{6}$	LEFB32S$^{3}_{7}$	LEFB40S$^{4}_{8}$
Actuator specifications	Stroke [mm] Note 1)		300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000	300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000 2500	300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000 2500, 3000
	Work load [kg] Note 2)	Horizontal	5	15	25
	Max. speed [mm/s]		2,000	2,000	2,000
	Max. acceleration/deceleration [mm/s^2]		20,000 (Refer to page 81 for limit according to work load and duty ratio.) Note 3)		
	Positioning repeatability [mm]		±0.08		
	Equivalent lead [mm]		54		
	Impact/Vibration resistance [m/s^2] Note 4)		50/20		
	Actuation type		Belt		
	Guide type		Linear guide		
	Operating temperature range [°C]		5 to 40		
	Operating humidity range [%RH]		90 or less (No condensation)		
Electric specifications	Motor output/Size		100 W/□40	200 W/□60	400 W/□60
	Motor type		AC servo motor (100/200 VAC)		
	Encoder		Motor type S2, S3, S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7, S8: Absolute 18-bit encoder (Resolution: 262144 p/rev)		
	Power consumption [W] Note 5)	Horizontal	29	41	72
		Vertical	—	—	—
	Standby power consumption when operating [W] Note 6)	Horizontal	2	2	2
		Vertical	—	—	—
	Max. instantaneous power consumption [W] Note 7)		445	725	1275
Lock unit specifications	Type Note 8)		Non-magnetizing lock		
	Holding force [N]		27	54	110
	Power consumption at 20°C [W] Note 9)		6.3	7.9	7.9
	Rated voltage [V]		24 VDC $^{0}_{-10\%}$		

Note 1) Consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) For details, refer to “Speed–Work Load Graph (Guide)” on page 81.
Note 3) Maximum acceleration/deceleration changes according to the work load. Check “Work Load–Acceleration/Deceleration Graph” of the catalog.
Note 4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 5) The power consumption (including the driver) is for when the actuator is operating.
Note 6) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 7) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note 8) Only when motor option “With lock” is selected.
Note 9) For an actuator with lock, add the power consumption for the lock.

Weight

Series	LEFB25S□S																	
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Product weight [kg]	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	6.75	7.00	7.25
Additional weight with lock [kg]	0.35																	

Series	LEFB32S□S																		
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500
Product weight [kg]	4.90	5.25	5.60	5.95	6.30	6.65	7.00	7.35	7.70	8.05	8.40	8.75	9.10	9.45	9.80	10.15	10.50	10.85	12.60
Additional weight with lock [kg]	0.75																		

Series	LEFB40S□S																			
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000
Product weight [kg]	7.10	7.55	8.00	8.45	8.90	9.35	9.80	10.25	10.70	11.15	11.60	12.05	12.50	12.95	13.40	13.85	14.30	14.75	17.00	19.25
Additional weight with lock [kg]	0.7																			

Handling

⚠Caution

1. The belt drive actuator cannot be used vertically for applications.

2. In the case of the belt drive actuator, vibration may occur during operation at speeds within the actuator specifications, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.

Maintenance

⚠Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	○	—	—
Inspection every 6 months/1000 km/ 5 million cycles∗	○	○	○

∗ Select whichever comes sooner.

• Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

Maintenance

⚠Warning

• Items for internal check

1. Lubricant condition on moving parts.
2. Loose or mechanical play in fixed parts or fixing screws.

• Items for belt check

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

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

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

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

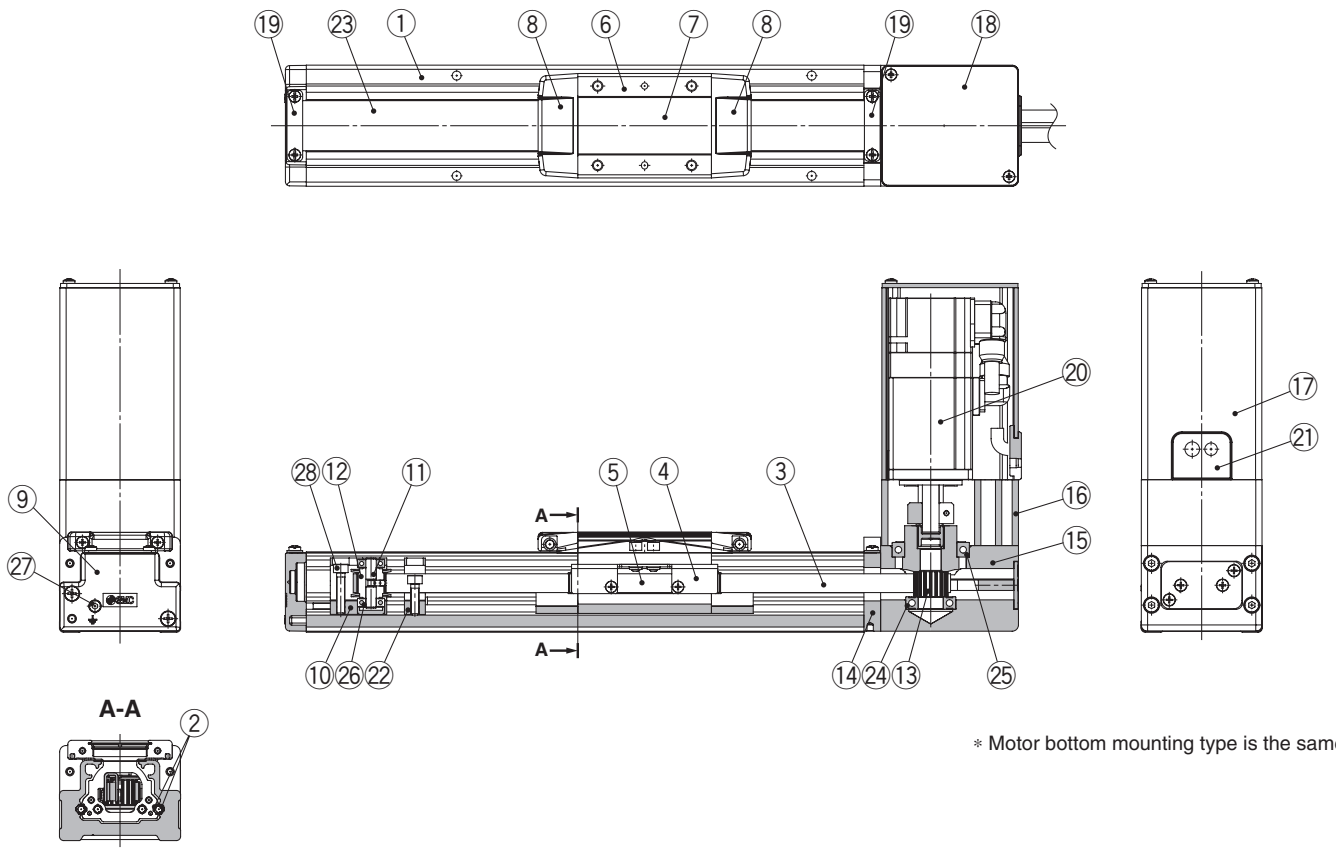
d. Vertical line of belt teeth
Flaw which is made when the belt runs on the flange.

e. Rubber back of the belt is softened and sticky.

f . Crack on the back of the belt

Construction

LEFB25S□S



∗ Motor bottom mounting type is the same.

Component Parts

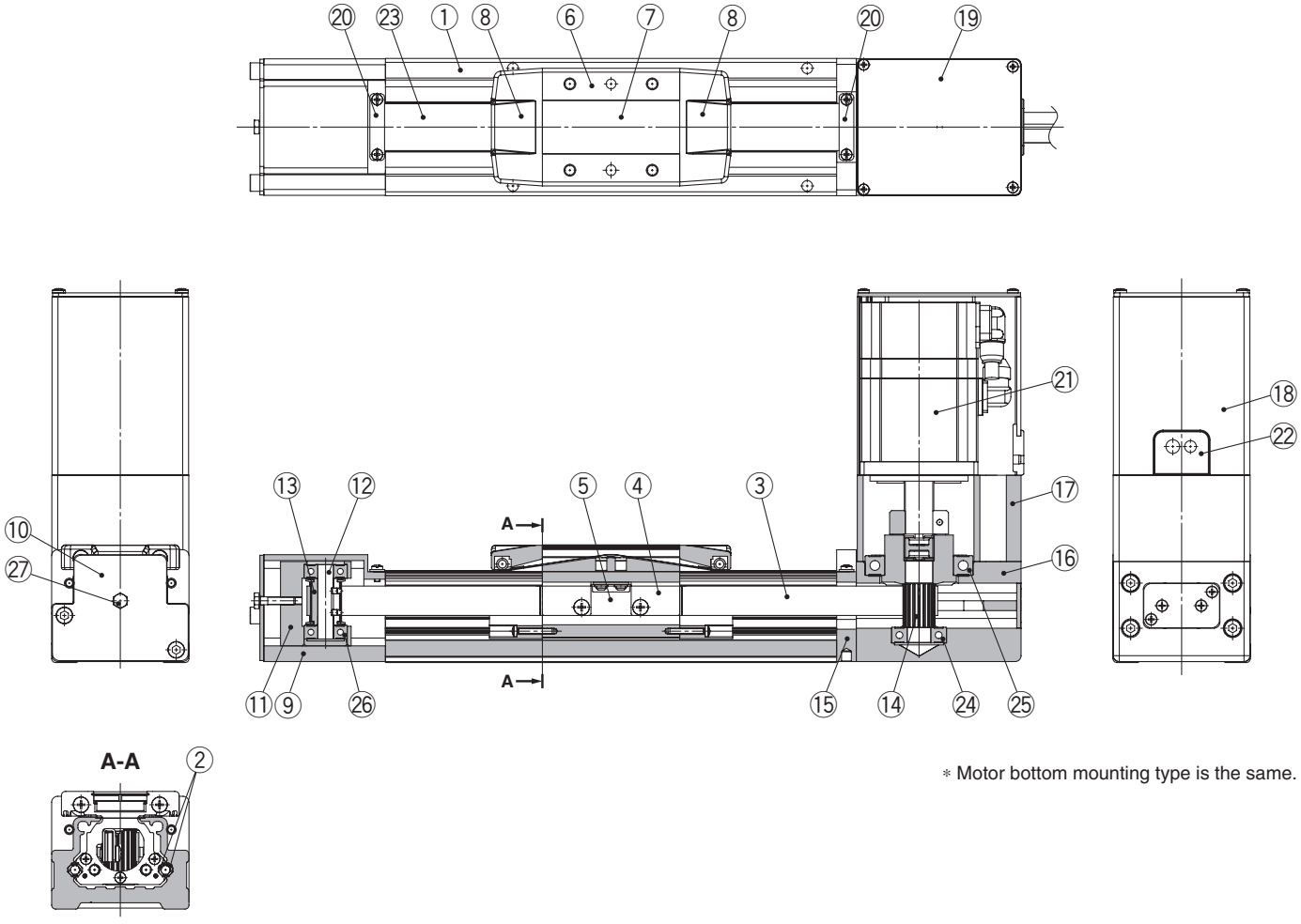
No.	Description	Material	Note
1	**Body**	Aluminum alloy	Anodized
2	**Rail guide**		
3	**Belt**		
4	**Belt holder**	Carbon steel	Chromate treated
5	**Belt stopper**	Aluminum alloy	Anodized
6	**Table**	Aluminum alloy	Anodized
7	**Blanking plate**	Aluminum alloy	Anodized
8	**Seal band stopper**	Synthetic resin	
9	**Housing A**	Aluminum die-cast	Coating
10	**Pulley holder**	Aluminum alloy	
11	**Pulley shaft**	Stainless steel	
12	**End pulley**	Aluminum alloy	Anodized
13	**Motor pulley**	Aluminum alloy	Anodized
14	**Return flange**	Aluminum alloy	Coating

Component Parts

No.	Description	Material	Note
15	**Housing**	Aluminum alloy	Coating
16	**Motor mount**	Aluminum alloy	Coating
17	**Motor cover**	Aluminum alloy	Anodized
18	**Motor end cover**	Aluminum alloy	Anodized
19	**Band stopper**	Stainless steel	
20	**Motor**		
21	**Rubber bushing**	NBR	
22	**Stopper**	Aluminum alloy	
23	**Dust seal band**	Stainless steel	
24	**Bearing**		
25	**Bearing**		
26	**Spacer**	Stainless steel	
27	**Tension adjustment bolt**	Chromium molybdenum steel	Chromate treated
28	**Pulley fixing bolt**	Chromium molybdenum steel	Chromate treated

Construction

LEFB32/40S□S



∗ Motor bottom mounting type is the same.

Component Parts

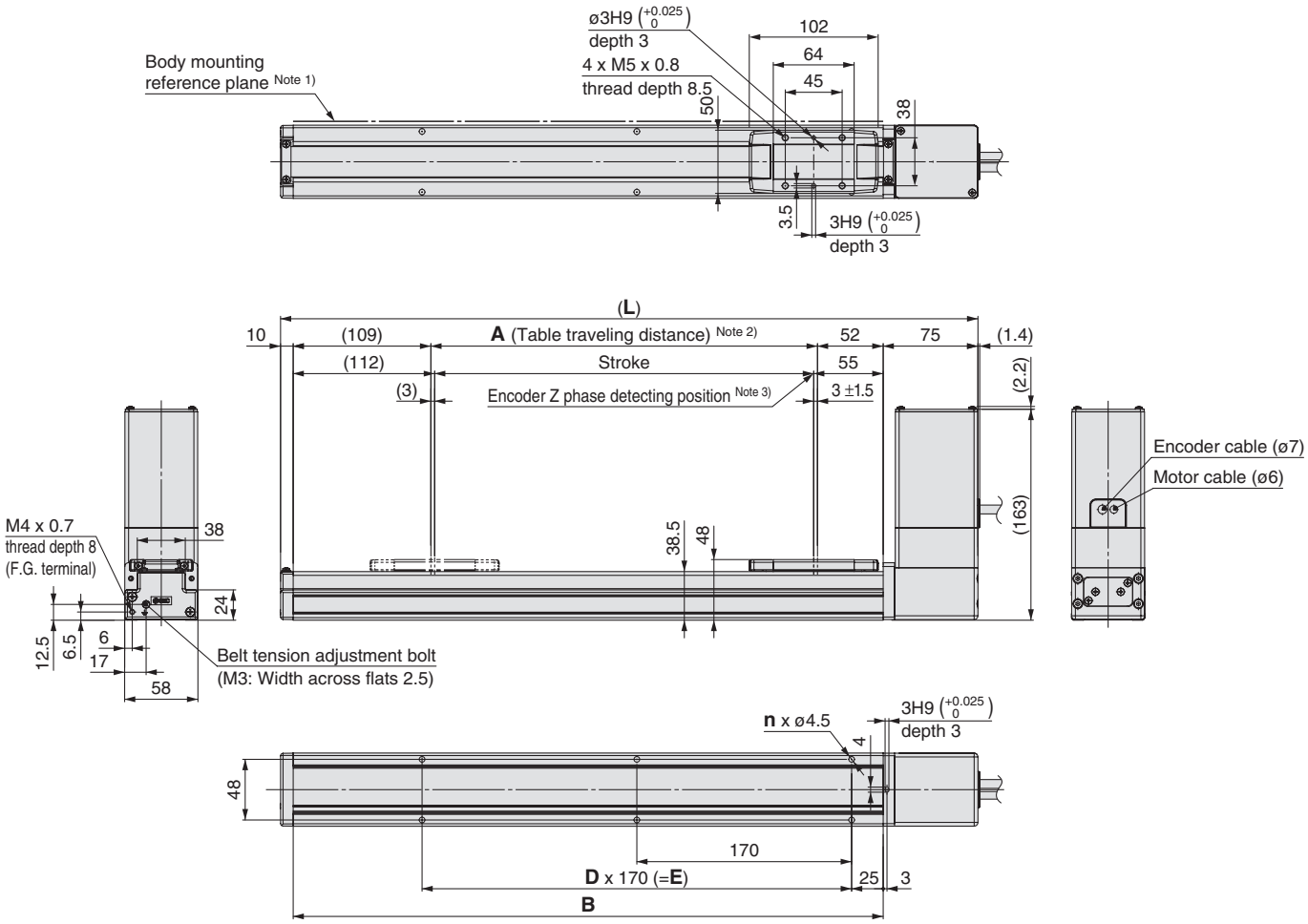
No.	Description	Material	Note
1	**Body**	Aluminum alloy	Anodized
2	**Rail guide**		
3	**Belt**		
4	**Belt holder**	Carbon steel	Chromate treated
5	**Belt stopper**	Aluminum alloy	Anodized
6	**Table**	Aluminum alloy	Anodized
7	**Blanking plate**	Aluminum alloy	Anodized
8	**Seal band stopper**	Synthetic resin	
9	**End block**	Aluminum alloy	Coating
10	**End block cover**		
11	**Pulley holder**	Aluminum alloy	
12	**Pulley shaft**	Stainless steel	
13	**End pulley**	Aluminum alloy	Anodized
14	**Motor pulley**	Aluminum alloy	Anodized

Component Parts

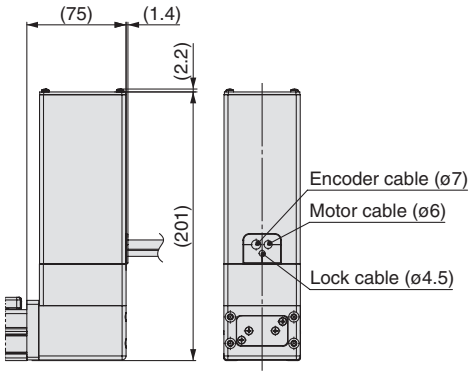
No.	Description	Material	Note
15	**Return flange**	Aluminum alloy	Coating
16	**Housing**	Aluminum alloy	Coating
17	**Motor mount**	Aluminum alloy	Coating
18	**Motor cover**	Aluminum alloy	Anodized
19	**Motor end cover**	Aluminum alloy	Anodized
20	**Band stopper**	Stainless steel	
21	**Motor**		
22	**Rubber bushing**	NBR	
23	**Dust seal band**	Stainless steel	
24	**Bearing**		
25	**Bearing**		
26	**Bearing**		
27	**Tension adjustment bolt**	Chromium molybdenum steel	Chromate treated

Dimensions: Belt Drive

LEFB25/Motor top mounting type



Motor option: With lock



Dimensions [mm]

Stroke	L	A	B	n	D	E
300	552	306	467	6	2	340
400	652	406	567	8	3	510
500	752	506	667	8	3	510
600	852	606	767	10	4	680
700	952	706	867	10	4	680
800	1052	806	967	12	5	850
900	1152	906	1067	14	6	1020
1000	1252	1006	1167	14	6	1020
1100	1352	1106	1267	16	7	1190
1200	1452	1206	1367	16	7	1190
1300	1552	1306	1467	18	8	1360
1400	1652	1406	1567	20	9	1530
1500	1752	1506	1667	20	9	1530
1600	1852	1606	1767	22	10	1700
1700	1952	1706	1867	22	10	1700
1800	2052	1806	1967	24	11	1870
1900	2152	1906	2067	24	11	1870
2000	2252	2006	2167	26	12	2040

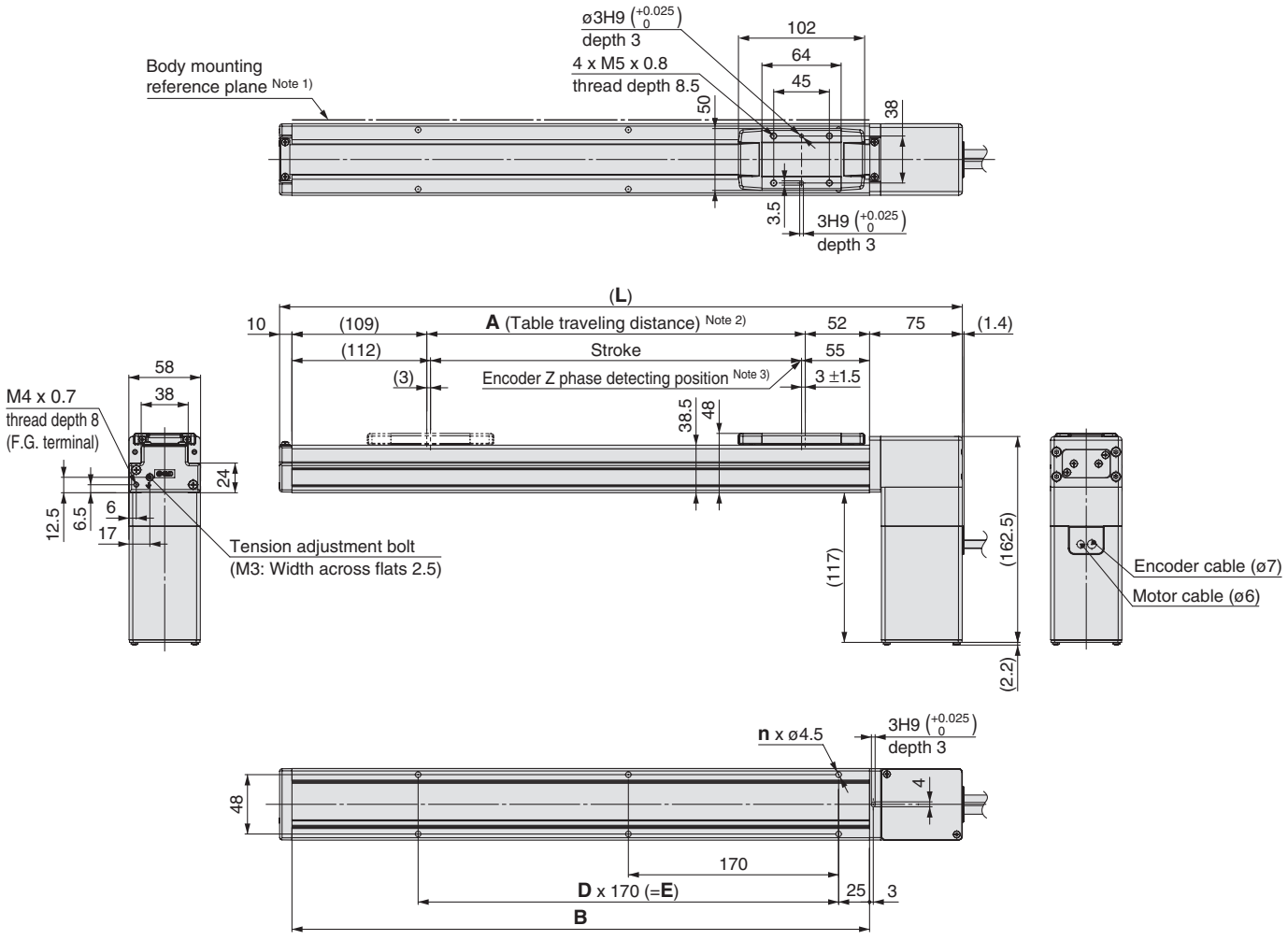
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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.

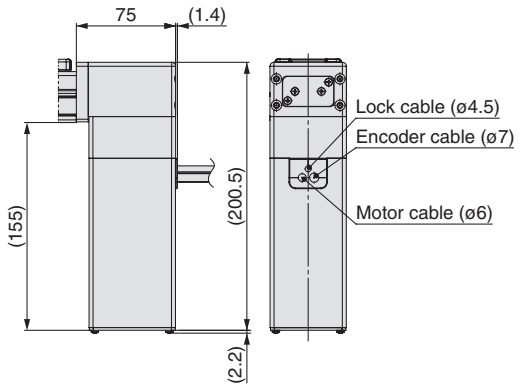
Note 3) The Z phase first detecting position from the stroke end of the motor side.

Dimensions: Belt Drive

LEFB25U/Motor bottom mounting type



Motor option: With lock



Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	552	306	467	6	2	340
400	652	406	567	8	3	510
500	752	506	667	8	3	510
600	852	606	767	10	4	680
700	952	706	867	10	4	680
800	1052	806	967	12	5	850
900	1152	906	1067	14	6	1020
1000	1252	1006	1167	14	6	1020
1100	1352	1106	1267	16	7	1190
1200	1452	1206	1367	16	7	1190
1300	1552	1306	1467	18	8	1360
1400	1652	1406	1567	20	9	1530
1500	1752	1506	1667	20	9	1530
1600	1852	1606	1767	22	10	1700
1700	1952	1706	1867	22	10	1700
1800	2052	1806	1967	24	11	1870
1900	2152	1906	2067	24	11	1870
2000	2252	2006	2167	26	12	2040

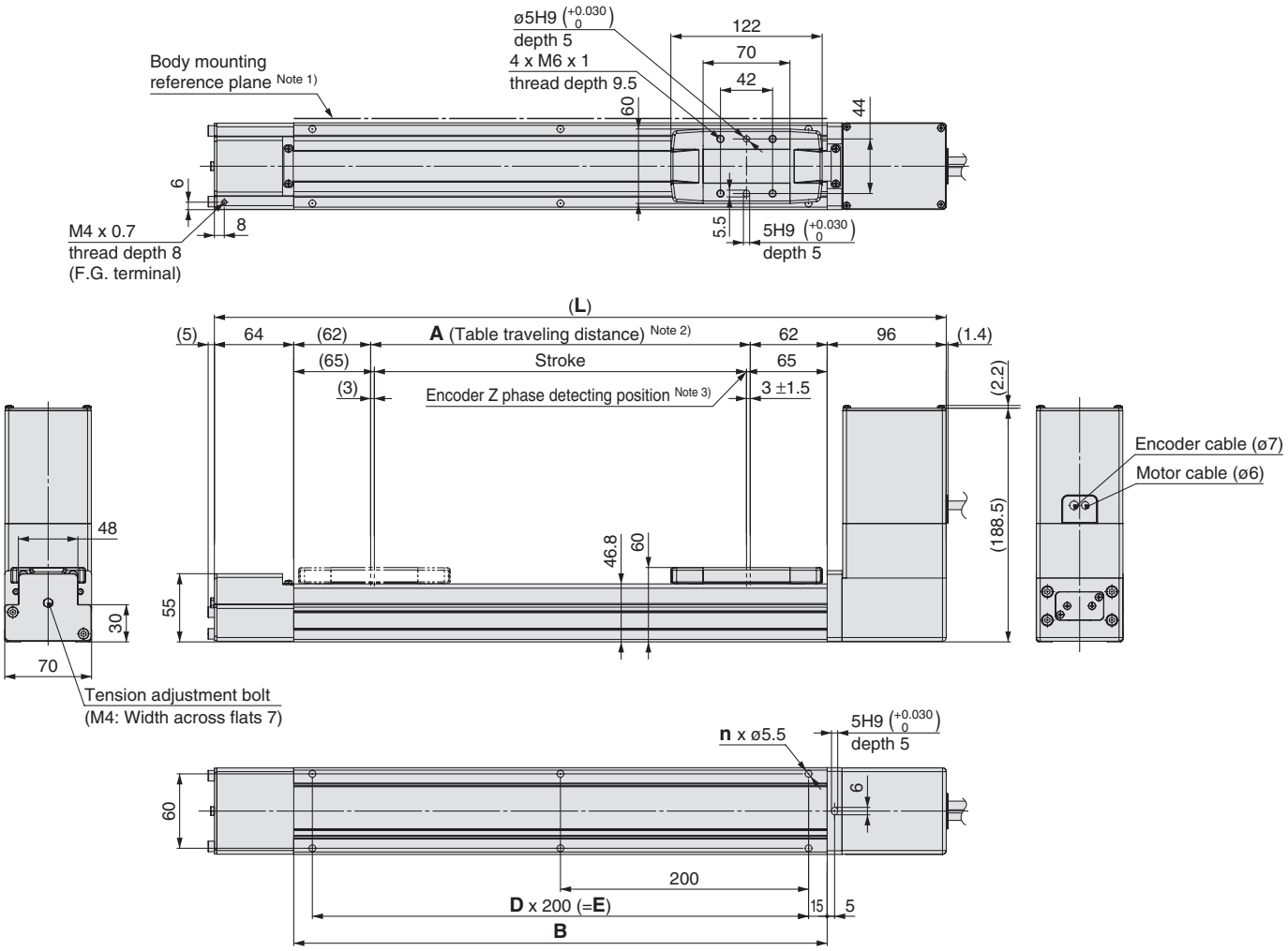
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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.

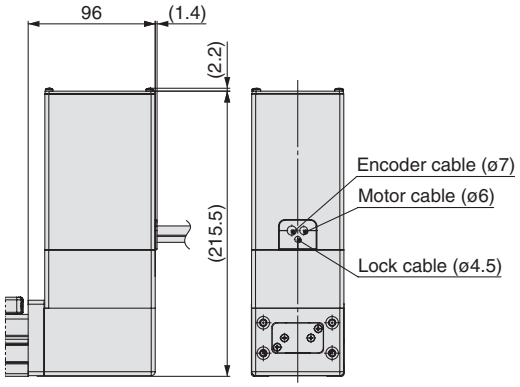
Note 3) The Z phase first detecting position from the stroke end of the motor side.

Dimensions: Belt Drive

LEFB32/Motor top mounting type



Motor option: With lock



Dimensions [mm]

Stroke	L	A	B	n	D	E
300	590	306	430	6	2	400
400	690	406	530	6	2	400
500	790	506	630	8	3	600
600	890	606	730	8	3	600
700	990	706	830	10	4	800
800	1090	806	930	10	4	800
900	1190	906	1030	12	5	1000
1000	1290	1006	1130	12	5	1000
1100	1390	1106	1230	14	6	1200
1200	1490	1206	1330	14	6	1200
1300	1590	1306	1430	16	7	1400
1400	1690	1406	1530	16	7	1400
1500	1790	1506	1630	18	8	1600
1600	1890	1606	1730	18	8	1600
1700	1990	1706	1830	20	9	1800
1800	2090	1806	1930	20	9	1800
1900	2190	1906	2030	22	10	2000
2000	2290	2006	2130	22	10	2000
2500	2790	2506	2630	28	13	2600

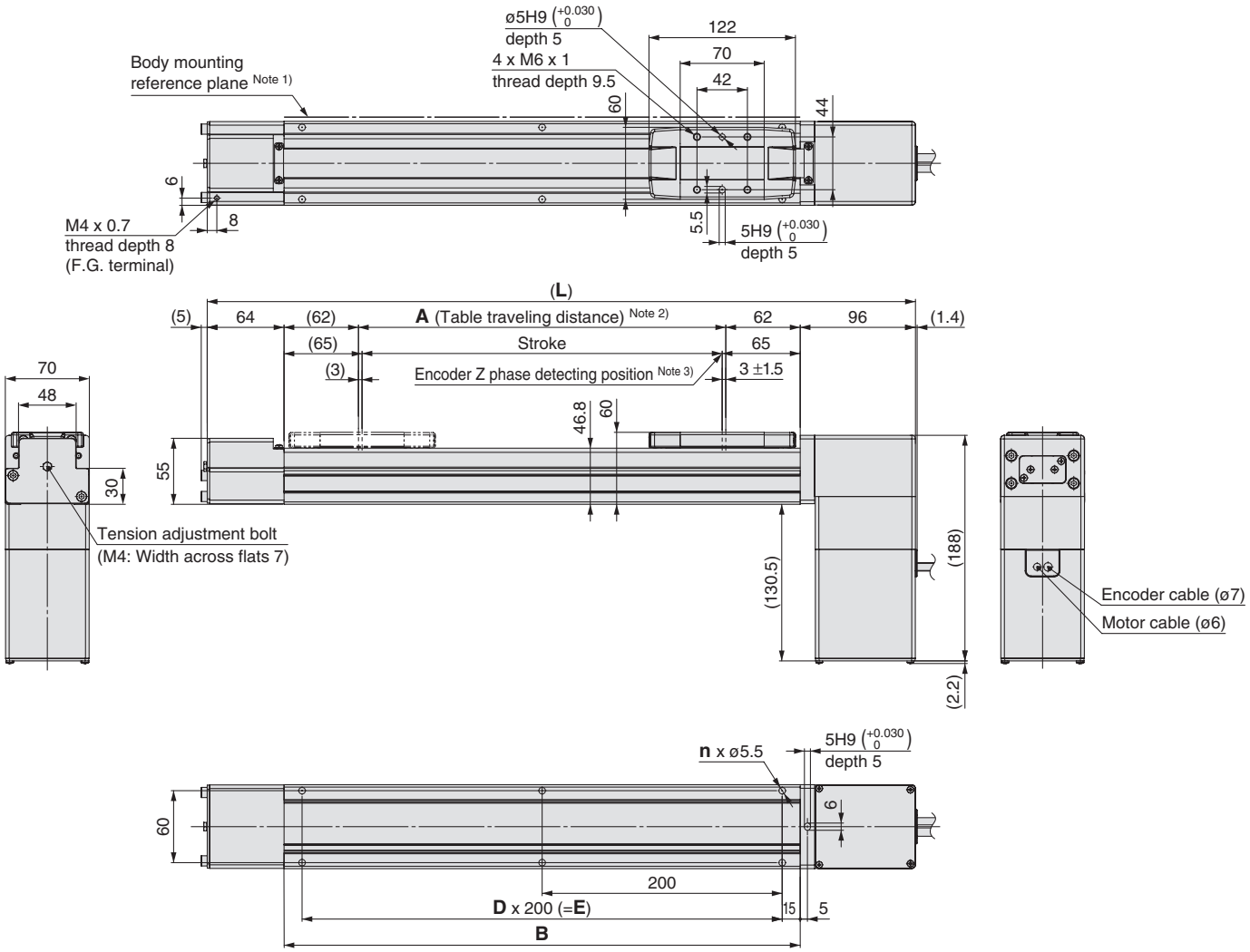
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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.

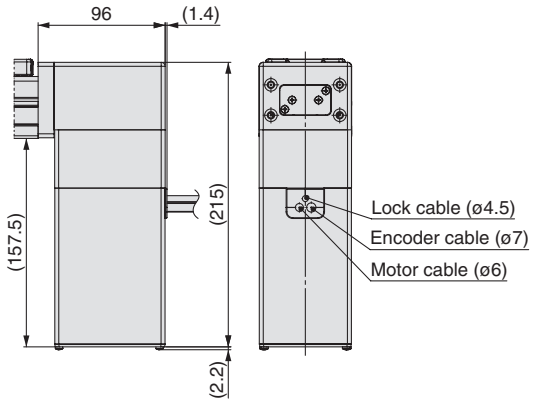
Note 3) The Z phase first detecting position from the stroke end of the motor side.

Dimensions: Belt Drive

LEFB32U/Motor bottom mounting type



Motor option: With lock



Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	590	306	430	6	2	400
400	690	406	530	6	2	400
500	790	506	630	8	3	600
600	890	606	730	8	3	600
700	990	706	830	10	4	800
800	1090	806	930	10	4	800
900	1190	906	1030	12	5	1000
1000	1290	1006	1130	12	5	1000
1100	1390	1106	1230	14	6	1200
1200	1490	1206	1330	14	6	1200
1300	1590	1306	1430	16	7	1400
1400	1690	1406	1530	16	7	1400
1500	1790	1506	1630	18	8	1600
1600	1890	1606	1730	18	8	1600
1700	1990	1706	1830	20	9	1800
1800	2090	1806	1930	20	9	1800
1900	2190	1906	2030	22	10	2000
2000	2290	2006	2130	22	10	2000
2500	2790	2506	2630	28	13	2600

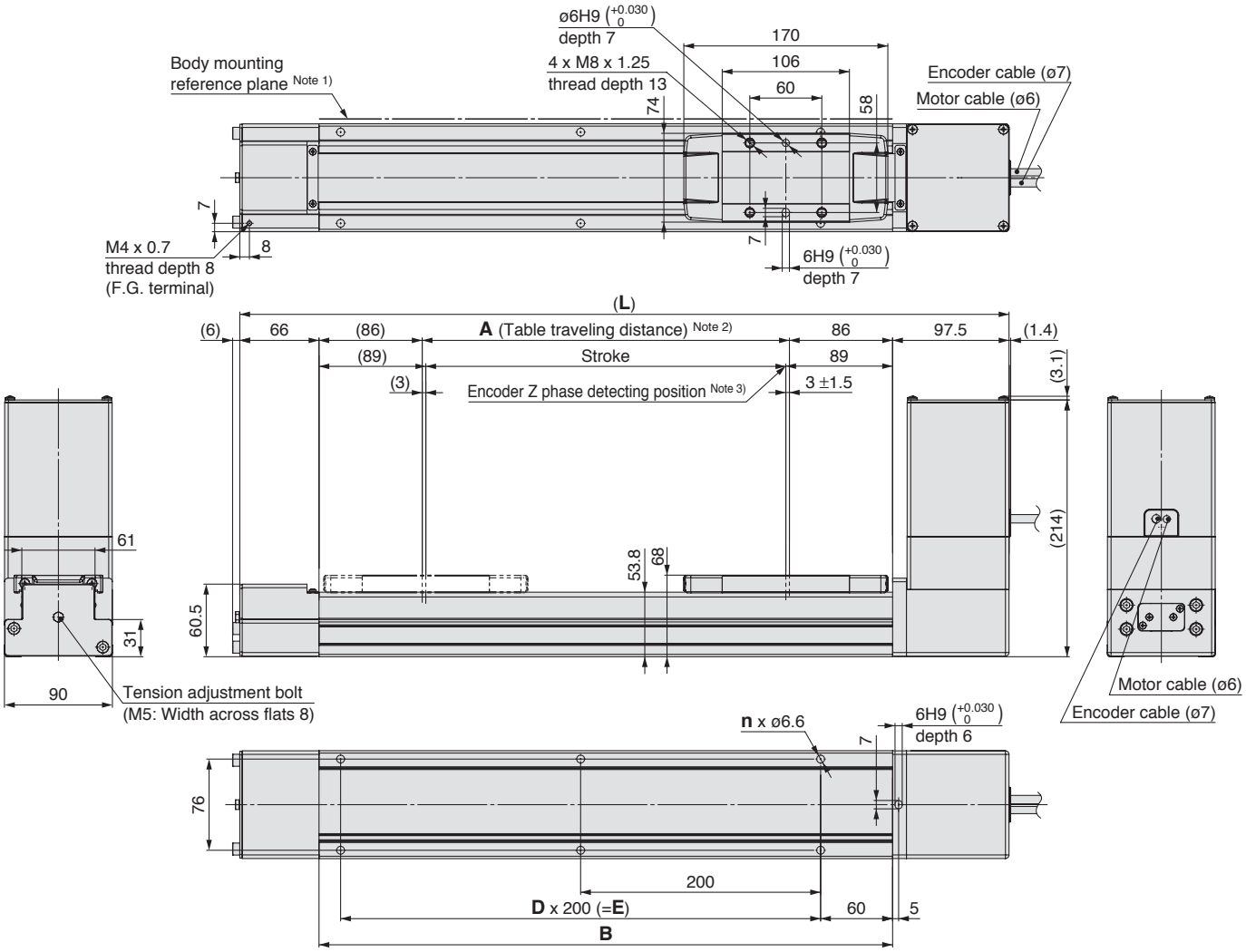
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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.

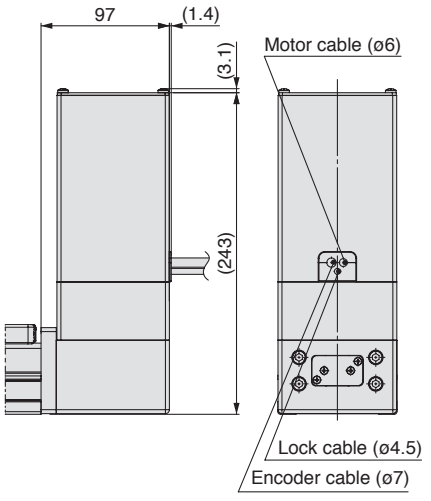
Note 3) The Z phase first detecting position from the stroke end of the motor side.

Dimensions: Belt Drive

LEFB40/Motor top mounting type



Motor option: With lock



Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	641.5	306	478	6	2	400
400	741.5	406	578	6	2	400
500	841.5	506	678	8	3	600
600	941.5	606	778	8	3	600
700	1041.5	706	878	10	4	800
800	1141.5	806	978	10	4	800
900	1241.5	906	1078	12	5	1000
1000	1341.5	1006	1178	12	5	1000
1100	1441.5	1106	1278	14	6	1200
1200	1541.5	1206	1378	14	6	1200
1300	1641.5	1306	1478	16	7	1400
1400	1741.5	1406	1578	16	7	1400
1500	1841.5	1506	1678	18	8	1600
1600	1941.5	1606	1778	18	8	1600
1700	2041.5	1706	1878	20	9	1800
1800	2141.5	1806	1978	20	9	1800
1900	2241.5	1906	2078	22	10	2000
2000	2341.5	2006	2178	22	10	2000
2500	2841.5	2506	2678	28	13	2600
3000	3341.5	3006	3178	32	15	3000

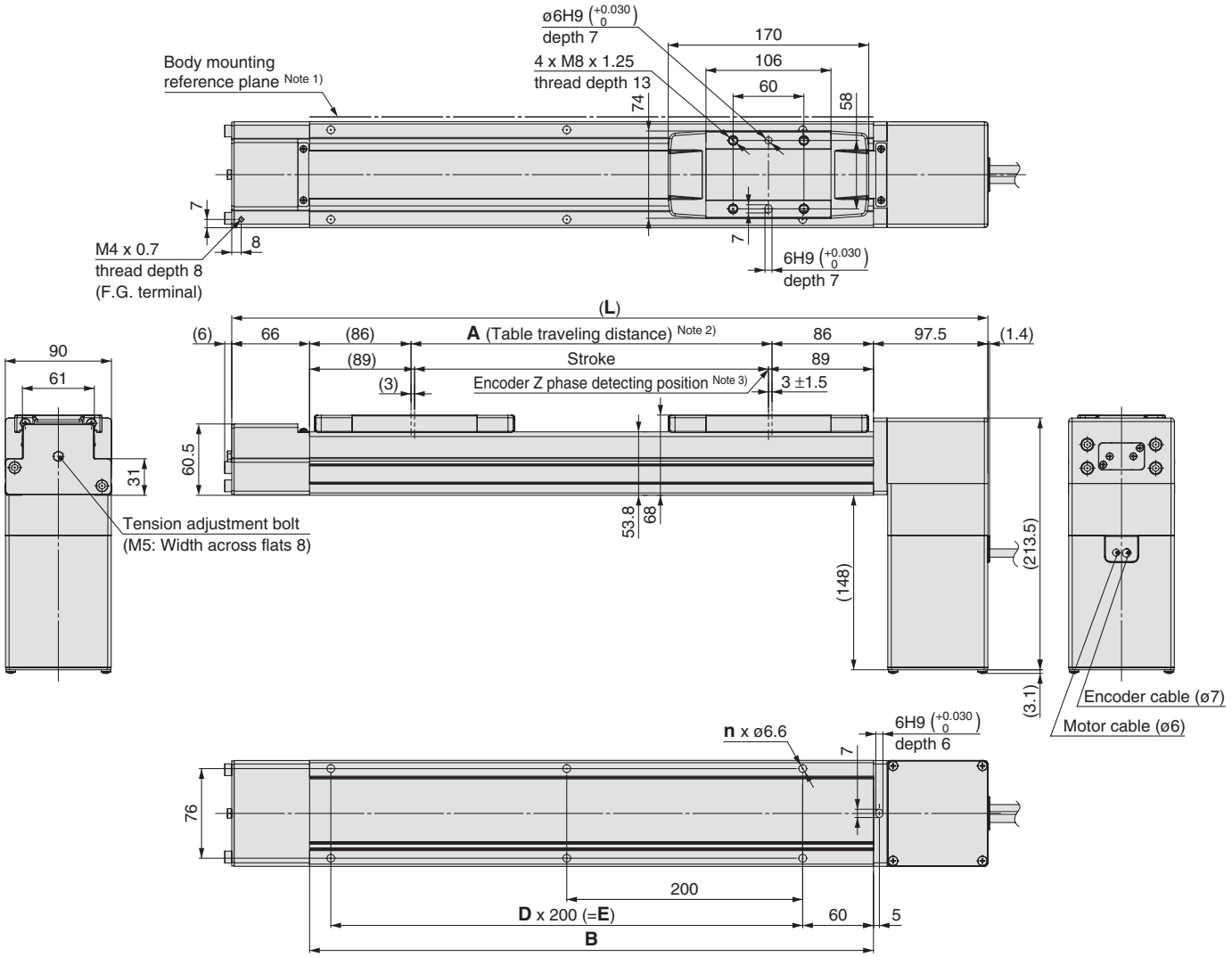
Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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.

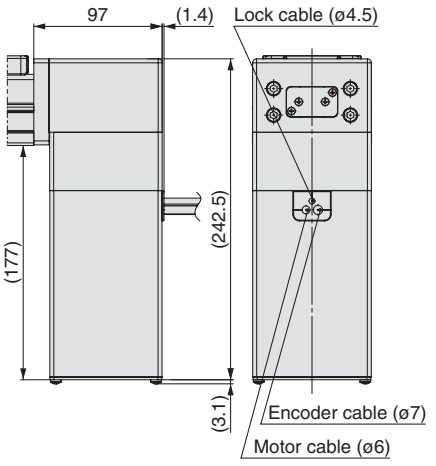
Note 3) The Z phase first detecting position from the stroke end of the motor side.

Dimensions: Belt Drive

LEFB40U/Motor bottom mounting type



Motor option: With lock



Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	641.5	306	478	6	2	400
400	741.5	406	578	6	2	400
500	841.5	506	678	8	3	600
600	941.5	606	778	8	3	600
700	1041.5	706	878	10	4	800
800	1141.5	806	978	10	4	800
900	1241.5	906	1078	12	5	1000
1000	1341.5	1006	1178	12	5	1000
1100	1441.5	1106	1278	14	6	1200
1200	1541.5	1206	1378	14	6	1200
1300	1641.5	1306	1478	16	7	1400
1400	1741.5	1406	1578	16	7	1400
1500	1841.5	1506	1678	18	8	1600
1600	1941.5	1606	1778	18	8	1600
1700	2041.5	1706	1878	20	9	1800
1800	2141.5	1806	1978	20	9	1800
1900	2241.5	1906	2078	22	10	2000
2000	2341.5	2006	2178	22	10	2000
2500	2841.5	2506	2678	28	13	2600
3000	3341.5	3006	3178	32	15	3000

Note 1) When mounting the electric actuator using the body mounting reference plane, set the height of the opposite surface or pin to 3 mm or more because of R chamfering. (Recommended height: 5 mm)

Note 2) Distance 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 3) The Z phase first detecting position from the stroke end of the motor side.

AC Servo Motor Driver
Series LECS□

Pulse Input Type/ Positioning Type

Incremental Type

Series LECSA

Pulse Input Type

Absolute Type

Series LECSB

CC-Link Direct Input Type

Absolute Type

Series LECSC

SSCNET III Type

Absolute Type

Series LECSS

AC Servo Motor Driver
Series LECS□

Power supply voltage	100 to 120 VAC 200 to 230 VAC
Motor capacity	100/200/400 W

Incremental Type

Series LECSA (Pulse input type/Positioning type)

- **Up to 7 positioning points by point table**
- **Input type:** Pulse input
- **Control encoder:** Incremental 17-bit encoder (Resolution: 131072 pulse/rev)
- **Parallel input:** 6 inputs
  output: 4 outputs

Absolute Type

Series LECSB (Pulse input type)

- **Input type:** Pulse input
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)
- **Parallel input:** 10 inputs
  output: 6 outputs

Series LECSC (CC-Link direct input type)

CC-Link

- **Position data/speed data setting and operation start/stop**
- **Positioning by up to 255 point tables (when 2 stations occupied)**
- **Up to 32 drivers connectable (when 2 stations occupied) with CC-Link communication**
- **Applicable Fieldbus protocol:** CC-Link (Ver. 1.10, max. communication speed: 10 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)

Series LECSS (SSCNET III type)

- **Compatible with Mitsubishi Electric's servo system controller network**
- **Reduced wiring and SSCNET III optical cable for one-touch connection**
- **SSCNET III optical cable provides enhanced noise resistance**
- **Up to 16 drivers connectable with SSCNET III communication**
- **Applicable Fieldbus protocol:** SSCNET III
  (High-speed optical communication, max. bidirectional communication speed: 100 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 pulse/rev)

AC Servo Motor Driver

Incremental Type

Series LECSA (Pulse Input Type/Positioning Type)

Absolute Type

Series LECSB/LECSC/LECSS

(Pulse Input Type) (CC-Link Direct Input Type) (SSCNET III Type)

LECSA LECSB LECSC LECSS

How to Order

Driver

LECS A 1 – S1

Driver type

A	Pulse input type/Positioning type (For incremental encoder)
B	Pulse input type (For absolute encoder)
C	CC-Link direct input type (For absolute encoder)
S	SSCNET III type (For absolute encoder)

Power supply voltage

1	100 to 120 VAC, 50/60 Hz
2	200 to 230 VAC, 50/60 Hz

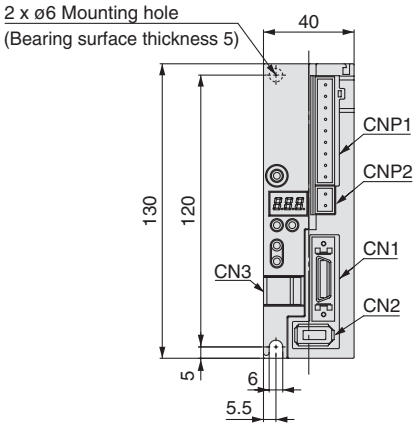
Compatible motor type

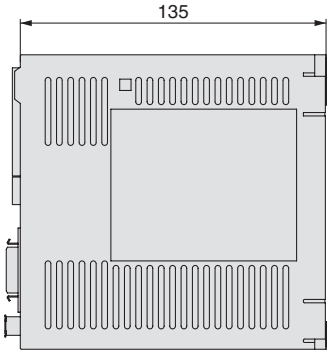
Symbol	Type	Capacity	Encoder
S1	AC servo motor (S2)	100 W	Incremental
S3	AC servo motor (S3)	200 W	
S4	AC servo motor (S4)*	400 W	
S5	AC servo motor (S6)	100 W	Absolute
S7	AC servo motor (S7)	200 W	
S8	AC servo motor (S8)*	400 W	

* Only available for power supply voltage "200 to 230 VAC".

Dimensions

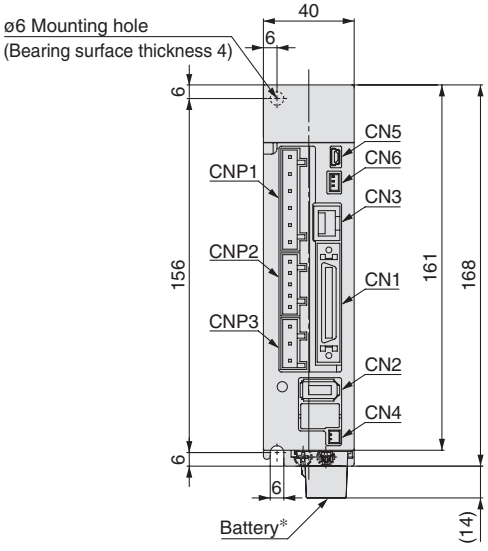
LECSA□

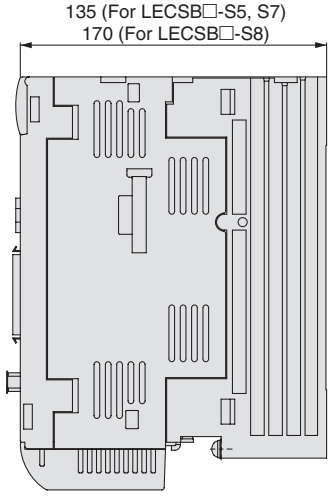




Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector

LECSB□



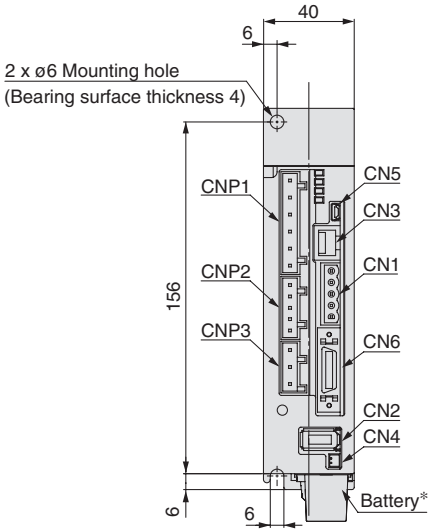


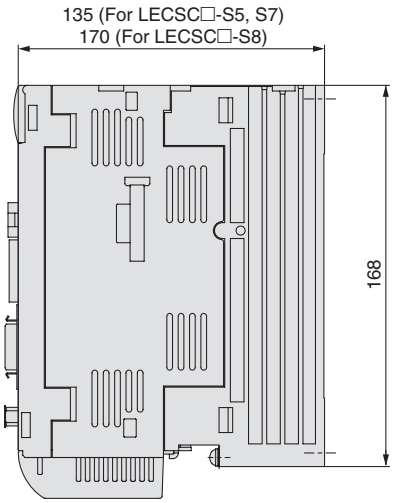
Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analog monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

* Battery included.

Dimensions

LECSC□

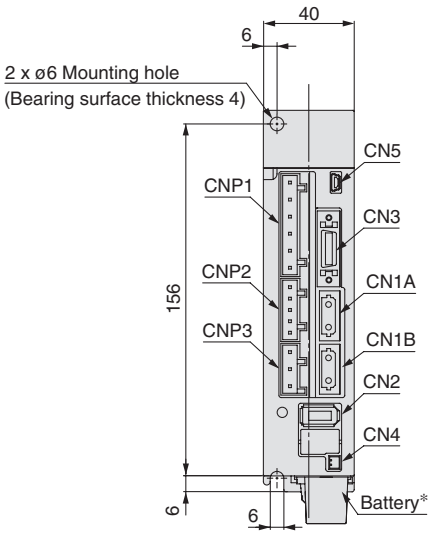


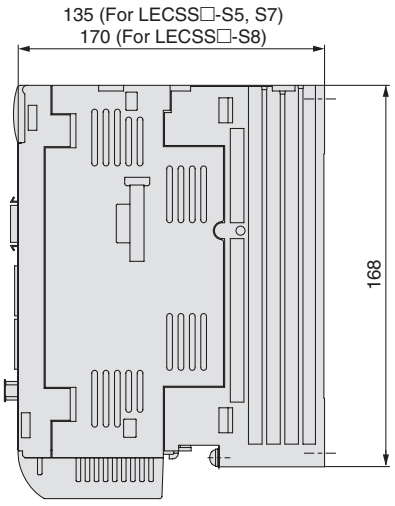


Connector name	Description
CN1	CC-Link connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	I/O signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ Battery included.

LECSS□





Connector name	Description
CN1A	Front axis connector for SSCNET III optical cable
CN1B	Rear axis connector for SSCNET III optical cable
CN2	Encoder connector
CN3	I/O signal connector
CN4	Battery connector
CN5	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ Battery included.

Specifications

Series LECSA

Model		LECSA1-S1	LECSA1-S3	LECSA2-S1	LECSA2-S3	LECSA2-S4
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Incremental 17-bit encoder (Resolution: 131072 p/rev)				
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	1.5	2.4	4.5
Control power supply	Control power supply voltage [V]	24 VDC				
	Allowable voltage fluctuation [V]	21.6 to 26.4 VDC				
	Rated current [A]	0.5				
Parallel input		6 inputs				
Parallel output		4 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)				
Function	In-position range setting [pulse]	0 to ±65535 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting				
	Communication	USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		600				700

Series LECSB

Model		LECSB1-S5	LECSB1-S7	LECSB2-S5	LECSB2-S7	LECSB2-S8
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	Control power supply voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Parallel input		10 inputs				
Parallel output		6 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)				
Function	In-position range setting [pulse]	0 to ±10000 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting or external analog input setting (0 to 10 VDC)				
	Communication	USB communication, RS422 communication*1				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

*1 USB communication and RS422 communication cannot be performed at the same time.

Specifications

Series LECSC

Model			LECSC1-S5	LECSC1-S7	LECSC2-S5	LECSC2-S7	LECSC2-S8
Compatible motor capacity [W]			100	200	100	200	400
Compatible encoder			Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	Power voltage [V]		Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Three phase 170 to 253 VAC, Single phase 170 to 253 VAC		
	Rated current [A]		3.0	5.0	0.9	1.5	2.6
Control power supply	Control power supply voltage [V]		Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]		0.4		0.2		
Communication specifications	Applicable Fieldbus protocol (Version)		CC-Link communication (Ver. 1.10)				
	Connection cable		CC-Link Ver. 1.10 compliant cable (Shielded 3-core twisted pair cable)*1				
	Remote station number		1 to 64				
	Cable length	Communication speed [bps]	16 k	625 k	2.5 M	5 M	10 M
		Maximum overall cable length [m]	1200	900	400	160	100
		Cable length between stations [m]	0.2 or more				
	I/O occupation area (Inputs/Outputs)		1 station occupied (Remote I/O 32 points/32 points)/(Remote register 4 words/4 words) 2 stations occupied (Remote I/O 64 points/64 points)/(Remote register 8 words/8 words)				
	Number of connectable drivers		Up to 42 (when 1 station is occupied by 1 driver), Up to 32 (when 2 stations are occupied by 1 driver), when there are only remote device stations.				
Command method	Remote register input		Available with CC-Link communication (2 stations occupied)				
	Point table No. input		Available with CC-Link communication, RS-422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS-422 communication: 255 points				
	Indexer positioning input		Available with CC-Link communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points				
Communication function			USB communication, RS-422 communication*2				
Operating temperature range [°C]			0 to 55 (No freezing)				
Operating humidity range [%RH]			90 or less (No condensation)				
Storage temperature range [°C]			−20 to 65 (No freezing)				
Storage humidity range [%RH]			90 or less (No condensation)				
Insulation resistance [MΩ]			Between the housing and SG: 10 (500 VDC)				
Weight [g]			800				1000

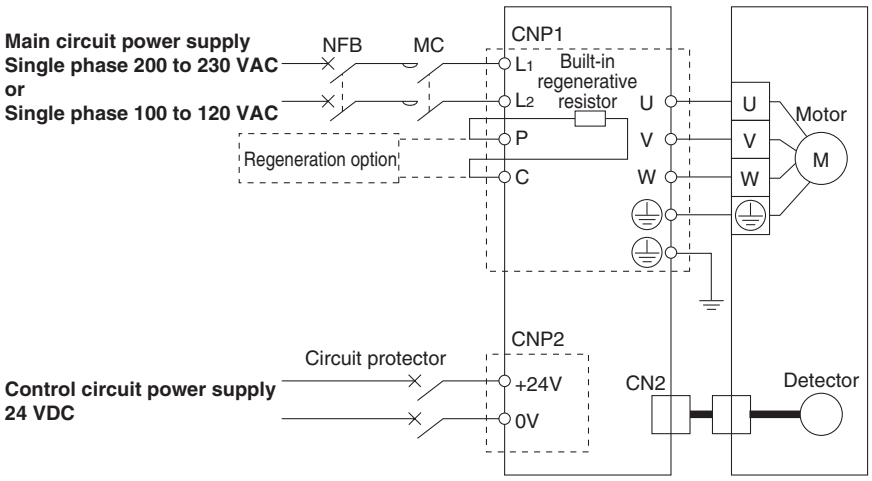
*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the cable extensions and the cable length between stations.
*2 USB communication and RS422 communication cannot be performed at the same time.

Series LECSS

Model		LECSS1-S5	LECSS1-S7	LECSS2-S5	LECSS2-S7	LECSS2-S8
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC, Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	Control power supply voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Applicable Fieldbus protocol		SSCNET III (High-speed optical communication)				
Communication function		USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		−20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

Power Supply Wiring Example: LECSA

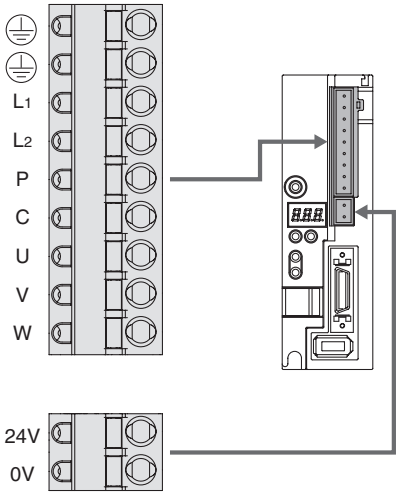
LECSA□-□



Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
⏚	Protective earth (PE)	Should be grounded by connecting the servo motor's earth terminal and the control panel's protective earth (PE).
L_1	Main circuit power supply	Connect the main circuit power supply. LECSA1: Single phase 100 to 120 VAC, 50/60 Hz LECSA2: Single phase 200 to 230 VAC, 50/60 Hz
L_2		
P	Regeneration option	Terminal to connect regeneration option LECSA□-S1: Not connected at time of shipping. LECSA□-S3, S4: Connected at time of shipping. ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	



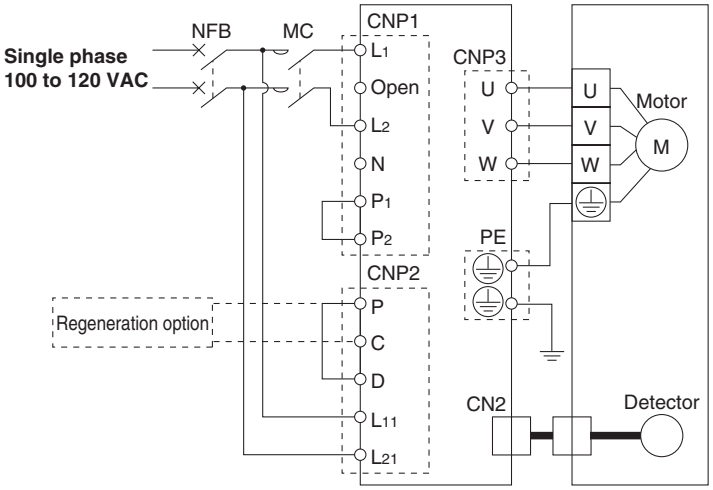
Control Circuit Power Supply Connector: CNP2

∗ Accessory

Terminal name	Function	Details
24V	Control circuit power supply (24 V)	24 V side of the control circuit power supply (24 VDC) supplied to the driver
0V	Control circuit power supply (0 V)	0 V side of the control circuit power supply (24 VDC) supplied to the driver

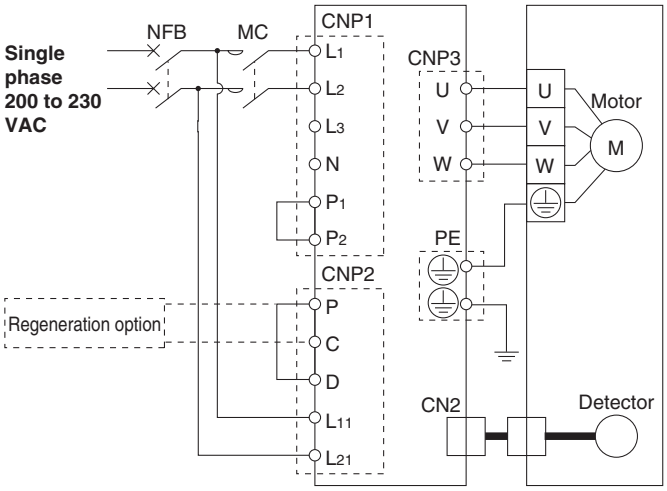
Power Supply Wiring Example: LECSB, LECSC, LECSS

LECSB1-□
LECSC1-□
LECSS1-□

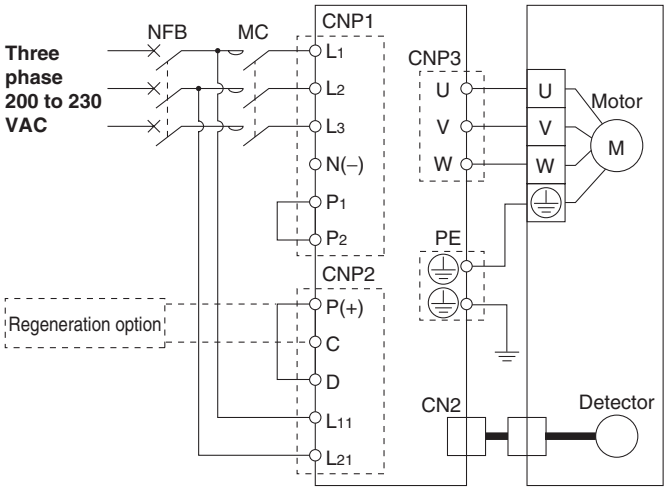


LECSB2-□
LECSC2-□
LECSS2-□

For single phase 200 VAC



For three phase 200 VAC



Note) For single phase 200 to 230 VAC, power supply should be connected to L_1 and L_2 terminals, with nothing connected to L_3.

Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
L_1	Main circuit power supply	Connect the main circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_1,L_2 LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1,L_2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1,L_2,L_3
L_2		
L_3		
N	Do not connect.	
P_1	Connect between P_1 and P_2. (Connected at time of shipping.)	
P_2		

Control Circuit Power Supply Connector: CNP2

∗ Accessory

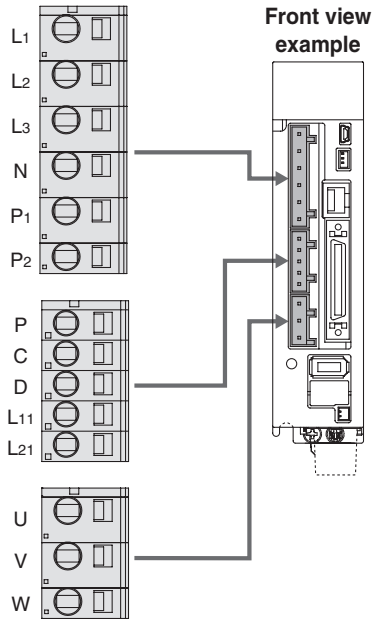
Terminal name	Function	Details
P	Regeneration option	Connect between P and D. (Connected at time of shipping.) ∗ If regeneration option is required for "Model Selection", connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_{11},L_{21} LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11},L_{21} Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11},L_{21}
L_{21}		

Motor Connector: CNP3

∗ Accessory

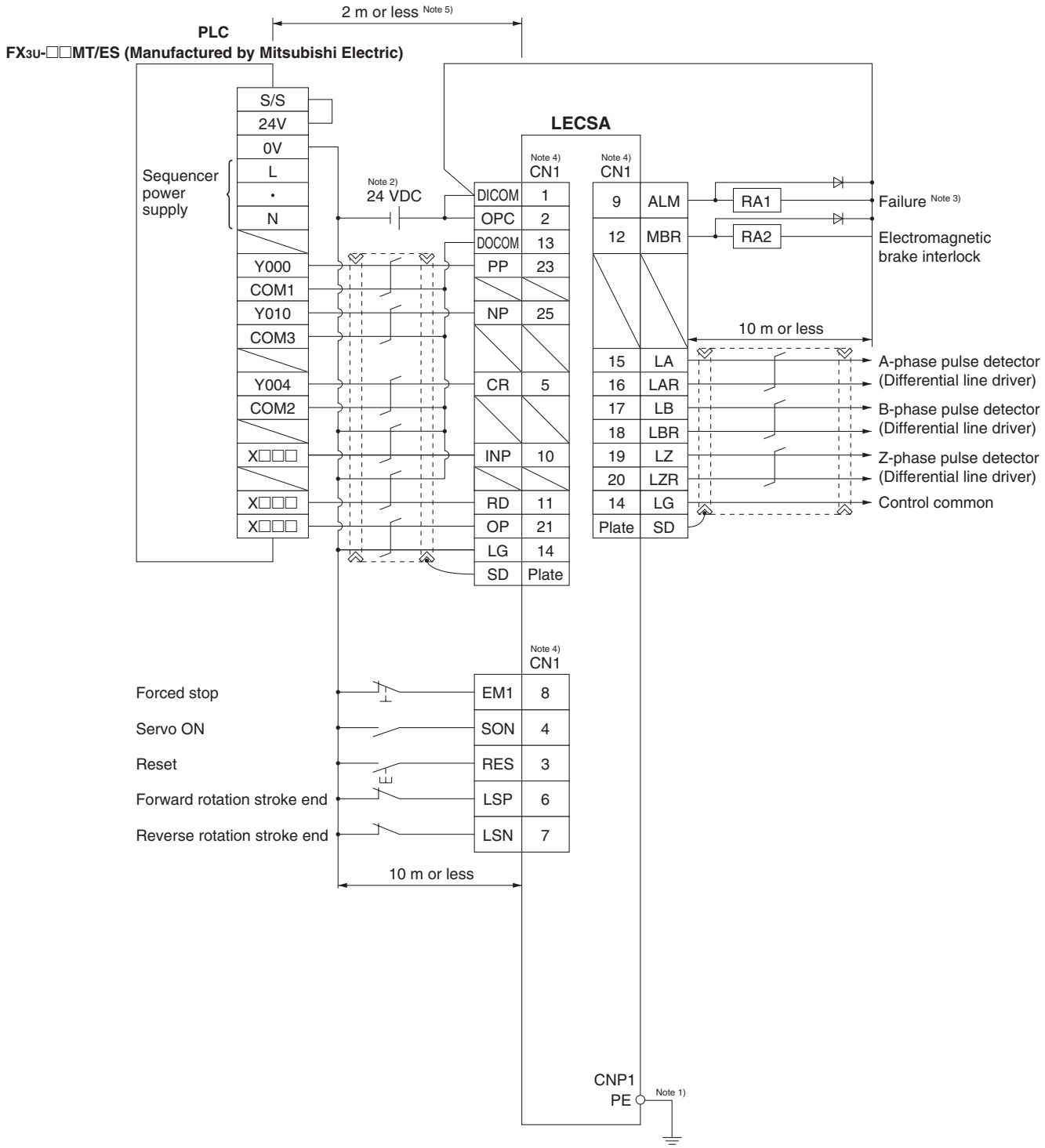
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

LECSB Front view example



Control Signal Wiring Example: LECSA

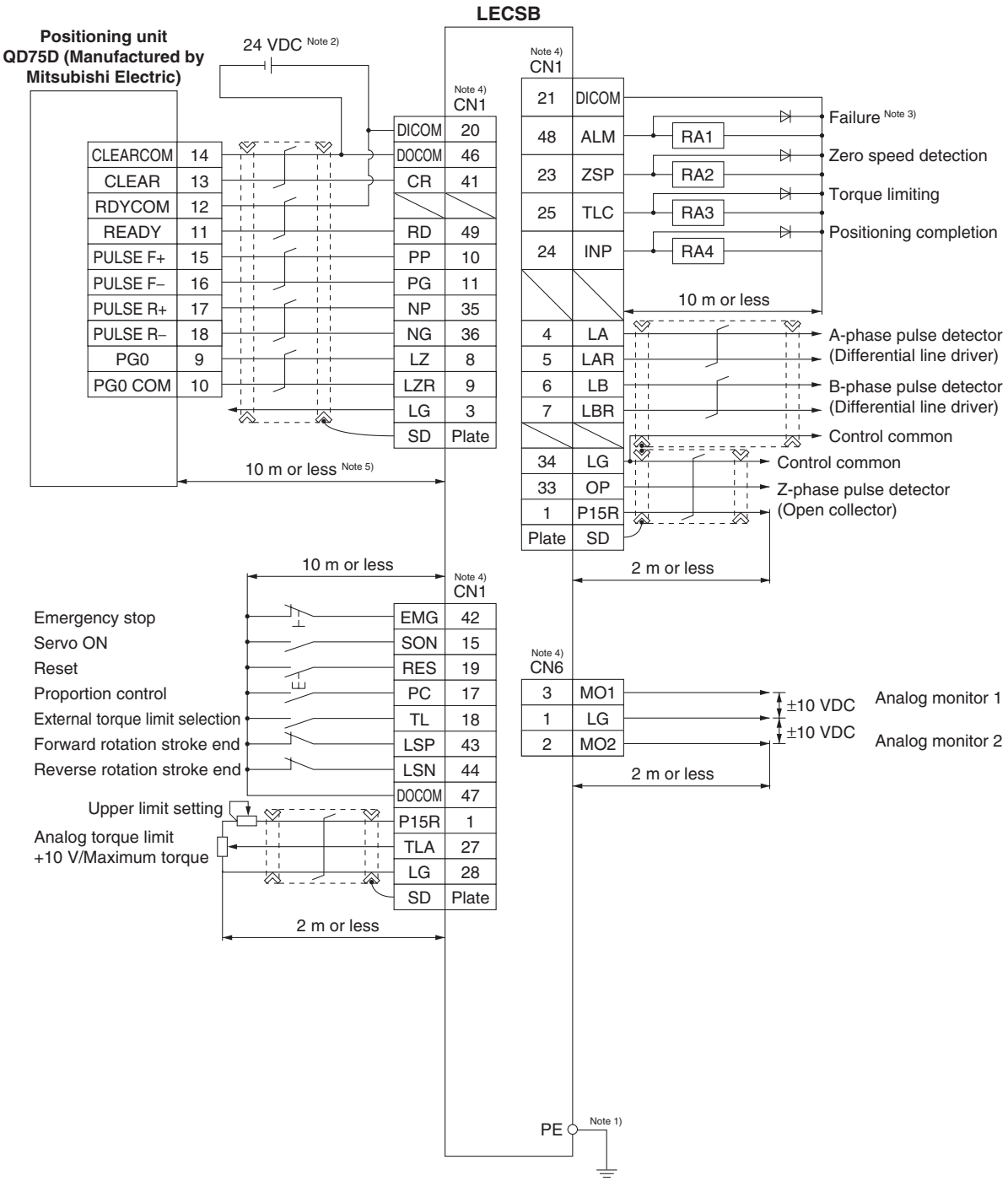
This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSA operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 200 mA using an external source. 200 mA is the value when all I/O command signals are used and reducing the number of inputs/outputs can decrease current capacity. Refer to "Operation Manual" for required current for interface.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.
Note 4) The same name signals are connected inside the driver.
Note 5) For command pulse input with an open collector method. When a positioning unit loaded with a differential line driver method is used, it is 10 m or less.

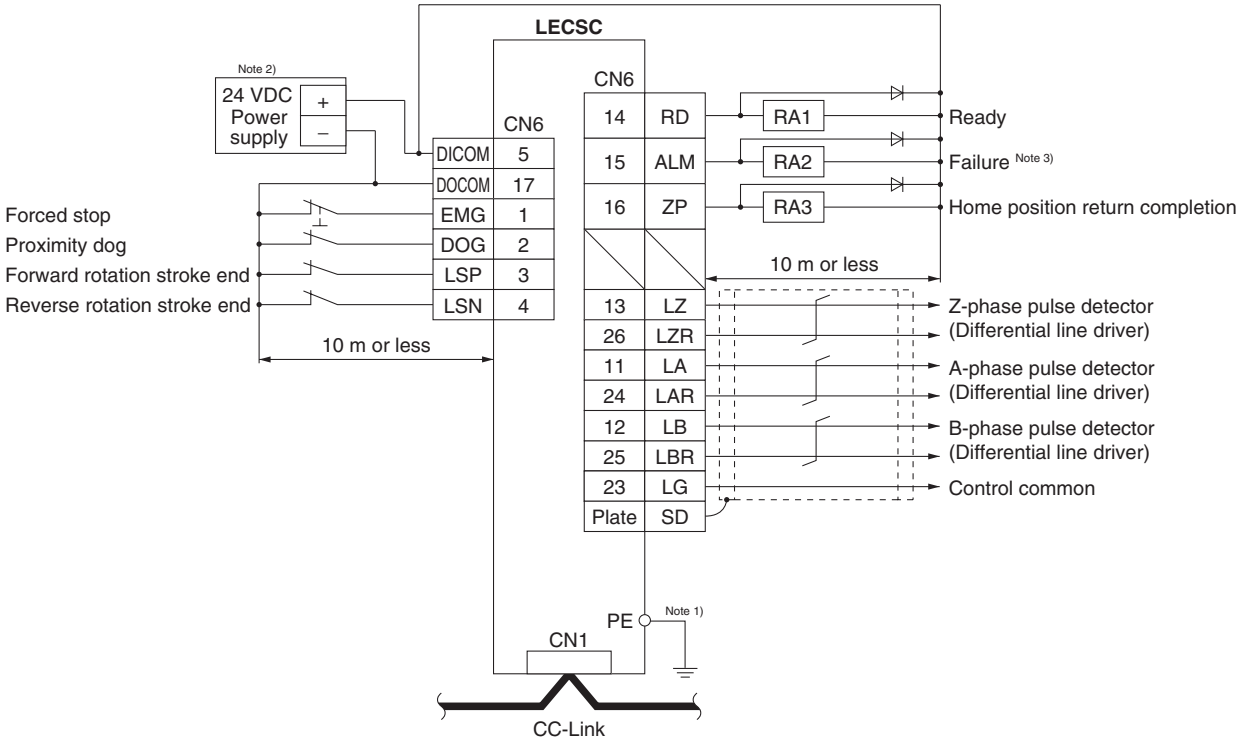
Control Signal Wiring Example: LECSB

This wiring example shows connection with a positioning unit (QD75D) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSB operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



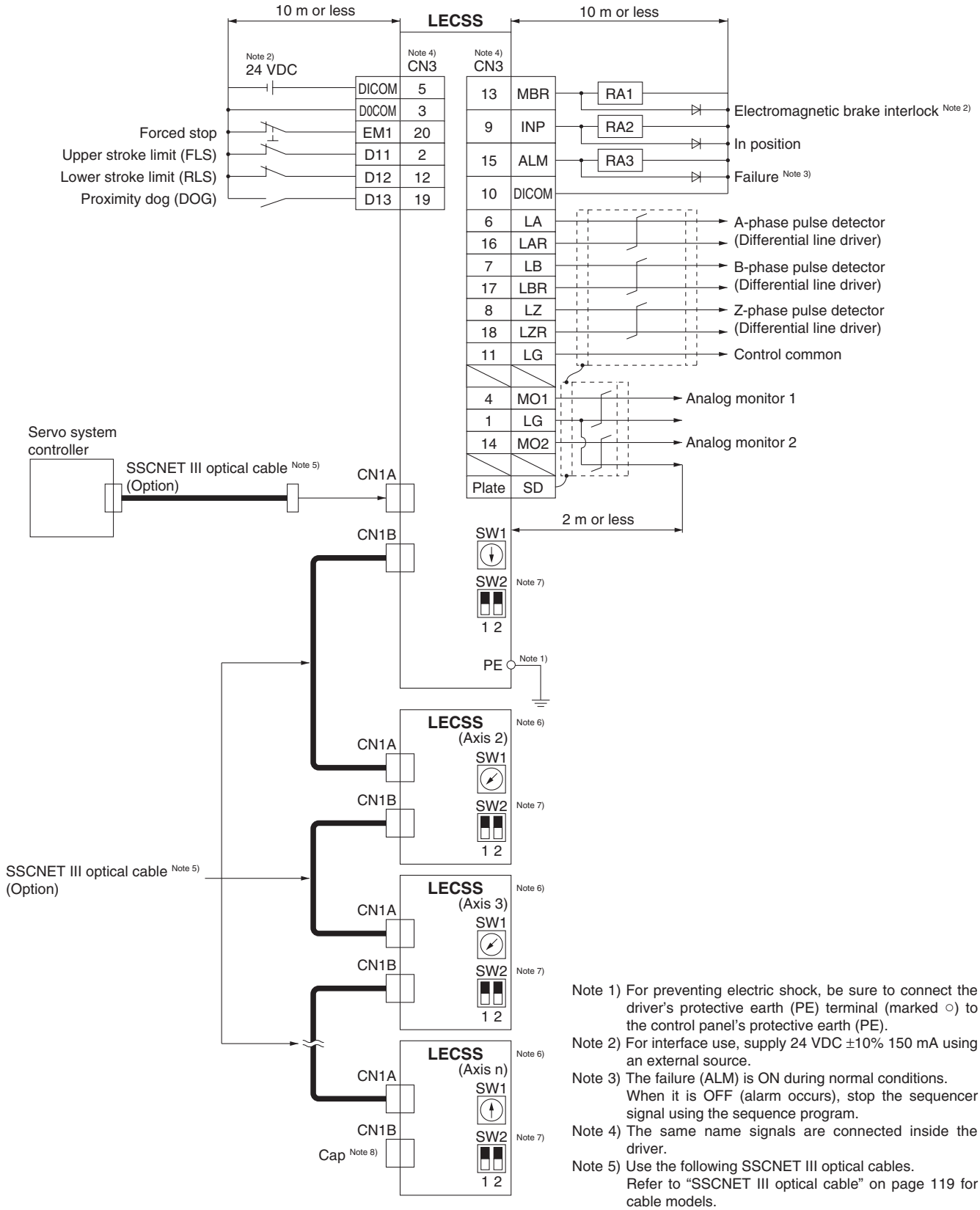
Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 300 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.
Note 4) The same name signals are connected inside the driver.
Note 5) For command pulse input with a differential line driver method. For open collector method, it is 2 m or less.

Control Signal Wiring Example: LECSC



Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ○) to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 150 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Control Signal Wiring Example: LECSS



Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ○) to the control panel's protective earth (PE).

Note 2) For interface use, supply 24 VDC ±10% 150 mA using an external source.

Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Note 4) The same name signals are connected inside the driver.

Note 5) Use the following SSCNET III optical cables. Refer to "SSCNET III optical cable" on page 119 for cable models.

Cable	Cable model	Cable length
SSCNET III optical cable	**LE-CSS-□**	0.15 m to 3 m

Note 6) Connections from Axis 2 onward are omitted.

Note 7) Up to 16 axes can be set.

Note 8) Be sure to place a cap on unused CN1A/CN1B.

Options

Motor cable, Lock cable, Encoder cable (LECS□ common)

LE−CS M − S 5 A

Motor type

S	AC servo motor

Cable description

M	Motor cable
B	Lock cable
E	Encoder cable

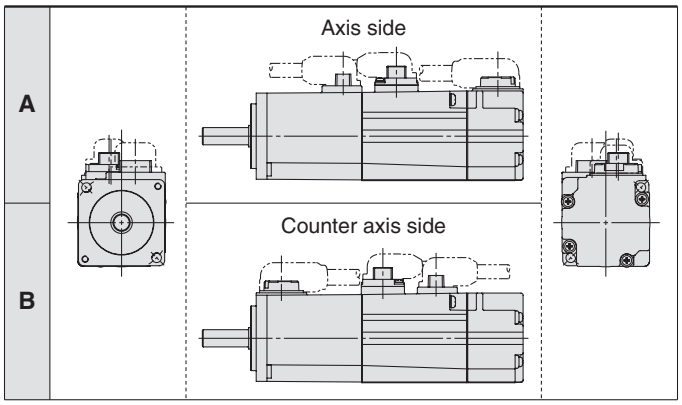
Cable type

S	Standard cable
R	Robotic cable

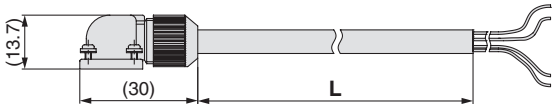
Cable length (L) [m]

2	2
5	5
A	10

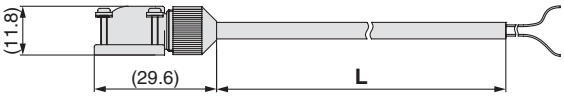
Direction of connector



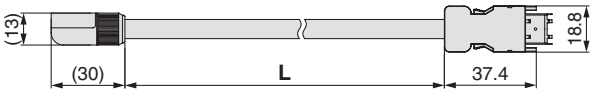
LE-CSM-□□: Motor cable



LE-CSB-□□: Lock cable



LE-CSE-□□: Encoder cable



∗ LE-CSM-S□□ is MR-PWS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSB-S□□ is MR-BKS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSE-S□□ is MR-J3ENCBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSM-R□□ is MR-PWS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSB-R□□ is MR-BKS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSE-R□□ is MR-J3ENCBL□M-A□-H manufactured by Mitsubishi Electric.

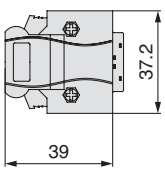
I/O connector

LE−CSN A

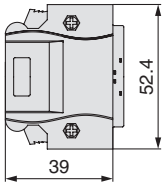
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□

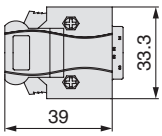
LE-CSNA



LE-CSNB



LE-CSNS



∗ LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M or equivalent item.
LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M or equivalent item.
LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M or equivalent item.

SSCNET III optical cable

LE−CSS − 1

Motor type

S	AC servo motor

Cable description

S	SSCNET III optical cable

Cable length

L	0.15 m
K	0.3 m
J	0.5 m
1	1 m
3	3 m

∗ LE-CSS-□ is MR-J3BUS□M manufactured by Mitsubishi Electric.

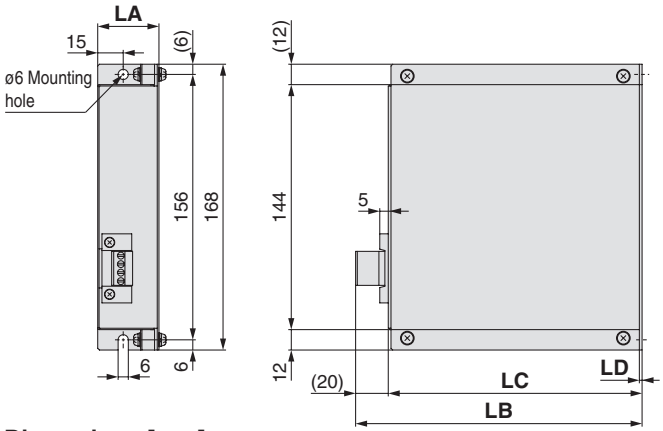
Regeneration option (LECS□ common)

LEC−MR−RB−□

Regeneration option type

032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

∗ Confirm regeneration option to be used in “Model Selection”.

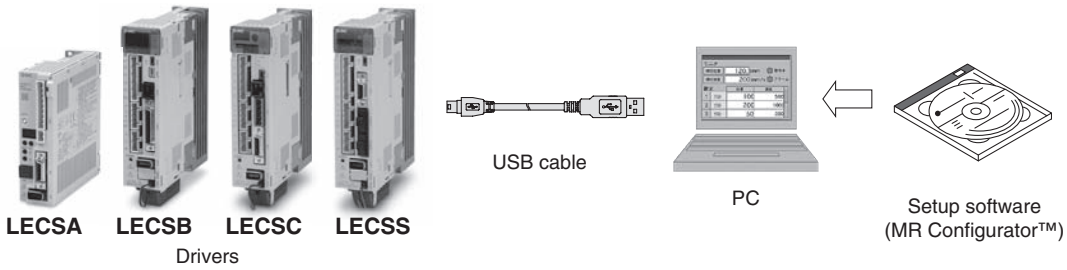


Dimensions [mm]

Model	LA	LB	LC	LD
LEC-MR-RB-032	30	119	99	1.6
LEC-MR-RB-12	40	169	149	2

∗ MR-RB-□ manufactured by Mitsubishi Electric.

Options



Setup software (MR Configurator™) (LECSA, LECSB, LECSC, LECSS common)

LEC−MR−SETUP221□

Display language

Nil	Japanese version
E	English version

∗ MRZJW3-SETUP221 manufactured by Mitsubishi Electric.
Refer to Mitsubishi Electric's website for operating environment and version update information.
MR Configurator™ is a registered trademark or trademark of Mitsubishi Electric.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator™) **LEC-MR-SETUP221□**
Note 1) Note 2) Note 3) PC	OS	Windows®98, Windows®Me, Windows®2000 Professional, Windows®XP Professional / Home Edition, Windows Vista® Home Basic / Home Premium / Business / Ultimate / Enterprise Windows®7 Starter / Home Premium / Professional / Ultimate / Enterprise
	Available HD space	130 MB or more
	Communication interface	Use USB port
Display		Resolution 1024 x 768 or more Must be capable of high color (16-bit) display. The connectable with the above PC
Keyboard		The connectable with the above PC
Mouse		The connectable with the above PC
Printer		The connectable with the above PC
USB cable		LEC-MR-J3USB Note 4, 5)

Note 1) Before using a PC for setting LECSA point table method/program method or LECSC point table No. input, upgrade to version C5 (Japanese version) /version C4 (English version). Refer to Mitsubishi Electric's website for version upgrade information.
Note 2) Windows, Windows Vista, Windows 7 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
Note 3) This software may not run correctly depending on the PC that you are using.
Note 4) Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®.
Note 5) Order USB cable separately.

USB cable (3 m)

LEC−MR−J3USB

∗ MR-J3USB manufactured by Mitsubishi Electric.

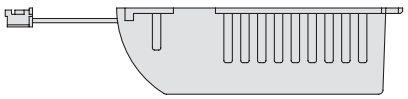
Cable for connecting PC and driver when using the setup software (MR Configurator™).
Do not use any cable other than this cable.

Battery (only for LECSB, LECSC or LECSS)

LEC−MR−J3BAT

∗ MR-J3BAT manufactured by Mitsubishi Electric.

Battery for replacement.
Absolute position data is maintained by installing the battery to the driver.



Series LECS□
Specific Product Precautions 1

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

Design/Selection

⚠Warning

1. Use the specified voltage.
If the applied voltage is higher than the specified voltage, malfunction and damage to the driver may result. If the applied voltage is lower than the specified voltage, there is a possibility that the load cannot be moved due to internal voltage drop. Check the operating voltage prior to start. Also, confirm that the operating voltage does not drop below the specified voltage during operation.

2. Do not use the products outside the specifications.
Otherwise, fire, malfunction or damage to the driver/actuator can result. Check the specifications prior to use.

3. Install an emergency stop circuit.
Install an emergency stop outside the enclosure in easy reach to the operator so that the operator can stop the system operation immediately and intercept the power supply.

4. To prevent danger and damage due to a breakdown or malfunction of these products, which may occur at a certain probability, a backup system should be arranged in advance by using a multiple-layered structure or by making a fail-safe equipment design, etc.

5. If there is a risk of fire or personal injury due to abnormal heat generation, sparking, smoke generated by the product, etc., cut off the power supply from this product and the system immediately.

Handling

⚠Warning

1. Never touch the inside of the driver and its peripheral devices.
Otherwise, electric shock or failure can result.

2. Do not operate or set up this equipment with wet hands.
Otherwise, electric shock can result.

3. Do not use a product that is damaged or missing any components.
Electric shock, fire or injury can result.

4. Use only the specified combination between the electric actuator and driver.
Otherwise, it may cause damage to the driver or to the other equipment.

5. Be careful not to touch, get caught or hit by the workpiece while the actuator is moving.
An injury can result.

6. Do not connect the power supply or power up the product until it is confirmed that the workpiece can be moved safely within the area that can be reached by the workpiece.
Otherwise, the movement of the workpiece may cause an accident.

7. Do not touch the product when it is energized and for some time after the power has been disconnected, as it is very hot.
Otherwise, it may cause burns due to the high temperature.

8. Check the voltage using a tester at least 5 minutes after power-off when performing installation, wiring and maintenance.
Otherwise, electric shock, fire or injury can result.

Handling

⚠Warning

9. Static electricity may cause a malfunction or damage the driver. Do not touch the driver while power is supplied to it.
Take sufficient safety measures to eliminate static electricity when it is necessary to touch the driver for maintenance.

10. Do not use the products in an area where they could be exposed to dust, metallic powder, machining chips or splashes of water, oil or chemicals.
Otherwise, a failure or malfunction can result.

11. Do not use the products in a magnetic field.
Otherwise, a malfunction or failure can result.

12. Do not use the products in an environment where flammable, explosive or corrosive gases, liquids or other substances are present.
Otherwise, fire, explosion or corrosion can result.

13. Avoid heat radiation from strong heat sources, such as direct sunlight or a hot furnace.
Otherwise, it will cause a failure to the driver or its peripheral devices.

14. Do not use the products in an environment with cyclic temperature changes.
Otherwise, it will cause a failure to the driver or its peripheral devices.

15. Do not use the products in an environment where surges are generated.
Devices (solenoid type lifters, high frequency induction furnaces, motors, etc.) that generate a large amount of surge around the product may lead to deterioration or damage to the internal circuits of the products. Avoid supplies of surge generation and crossed lines.

16. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

17. When a surge generating load such as a relay or solenoid valve is directly driven, use a product that incorporates a surge absorption element.

Mounting

⚠Warning

1. Install the driver and its peripheral devices on fireproof material.
Direct installation on or near flammable material may cause fire.

2. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

3. The driver should be mounted on a vertical wall in a vertical direction.
Also, do not cover the driver's suction/exhaust ports.

4. Install the driver and its peripheral devices on a flat surface.
If the mounting surface is not flat or uneven, excessive force may be applied to the housing and other parts resulting in a malfunction.

Series LECS□

Specific Product Precautions 2

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

Power Supply

⚠Caution

1. **Use a power supply with low noise between lines and between power and ground.**
   In cases where noise is high, use an isolation transformer.
2. **Take appropriate measures to prevent surges from lightning. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.**

Wiring

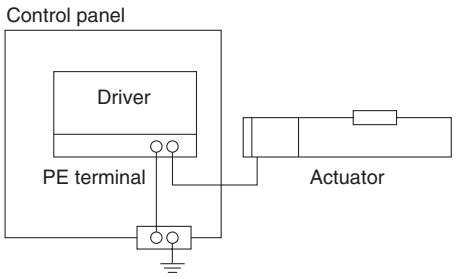
⚠Warning

1. **The driver will be damaged if a commercial power supply (100V/200V) is added to the driver's servo motor power (U, V, W). Be sure to check wiring such as wiring mistakes when the power supply is turned on.**
2. **Connect the ends of the U, V, W wires from the motor cable correctly to the phases (U, V, W) of the servo motor power. If these wires do not match up, it is unable to control the servo motor.**

Grounding

⚠Warning

1. **For grounding actuator, connect the copper wire of the actuator to the driver's protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel's protective earth (PE) terminal.**
   Do not connect them directly to the control panel's protective earth (PE) terminal.



2. **In the unlikely event that malfunction is caused by the ground, it may be disconnected.**

Maintenance

⚠Warning

1. **Perform maintenance checks periodically.**
   Confirm wiring and screws are not loose.
   Loose screws or wires may cause unexpected malfunction.
2. **Conduct an appropriate functional inspection and test after completed maintenance.**
   In case of any abnormalities (if the actuator does not move or the equipment does not operate properly, etc.), stop the operation of the system.
   Otherwise, unexpected malfunction may occur and safety cannot be assured.
   Conduct a test of the emergency stop to confirm the safety of the equipment.
3. **Do not disassemble, modify or repair the driver or its peripheral devices.**
4. **Do not put anything conductive or flammable inside the driver.**
   Otherwise, fire can result.
5. **Do not conduct an insulation resistance test or insulation withstand voltage test.**
6. **Reserve sufficient space for maintenance.**
   Design the system so that it allows required space for maintenance.

Revision history

Edition C	* Addition of size 40	
	* Addition of programless controller, LECP1 series	
	* Addition of standard cable to actuator cable type	
	* Addition of AC servo motor (100/200/400 W) type	
	* Addition of AC servo motor driver, LECSA/LECSB series	
	* Number of pages from 44 to 80	PY
Edition D	* Addition of AC servo motor belt drive type, LEFB series	
	* Addition of clean room specification ball screw drive type, 11-LEFS series	
	* Addition of step motor driver, LECPA series	
	* Addition of gateway unit, LEC-G series	
	* Addition of AC servo motor driver, LECSC/LECSS series	
	* Addition of UL-compliant products	
	* Change of controller setting kit, LEC-W2 series	
	* Number of pages from 80 to 148	RP

⚠ 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 catalog 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 catalog.
   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, whichever 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 catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC Corporation
Akihabara UDX 15F,
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: 03-5207-8249 Fax: 03-5298-5362
http://www.smcworld.com

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.

D-SZ

1st printing NZ printing RP 8150SZ Printed in Japan.