Electric Actuator

High Rigidity **Slider Type**

New

CE RoHS

Low-profile/Low centre of gravity

Height dimension reduced by approx. **36%** (Reduced by **32** mm)

Series	Work load [kg]	Speed [mm/s]	Motor output [W]
New **LEJS40**	55	600	100
(Existing model) **LJ1H20**	30	500	100



LEJS40

AC Servo Motor Type

Ball Screw Drive *Series LEJS*

Size: 40, 63

Max. work load: **85** kg

Positioning repeatability: ±**0.02** mm

Max. acceleration/deceleration: **20000** mm/s²



Belt Drive *Series LEJB*

Size: 40, 63

Max. stroke: **3000** mm

Max. speed: **3000** mm/s

Max. acceleration/deceleration: **20000** mm/s²



AC Servo Motor Driver

Incremental Type

Pulse input type/ Positioning type
Series LECSA



Absolute Type

Pulse input type
Series LECSB



CC-Link direct input type
Series LECSC



SSCNET III type
Series LECSS



Series LEJ

SMC

CAT.EUS100-104B-UK

●High precision/High rigidity

Double axis linear guide reduces deflection

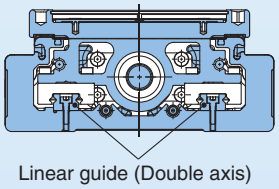
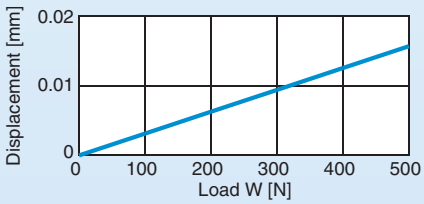
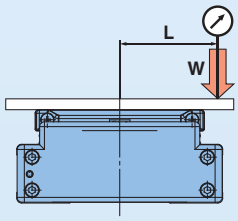


Table displacement

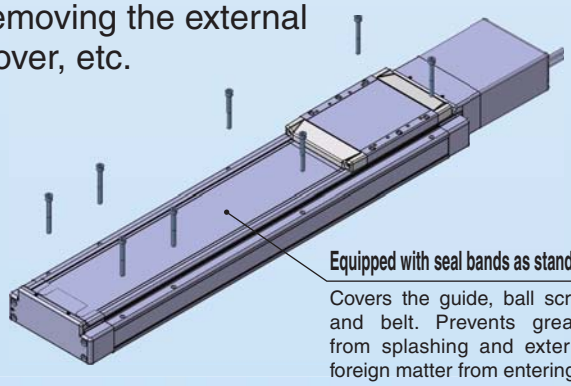
∗ LEJ□63: L = 64.5 mm





●Reduction of the installation labour

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



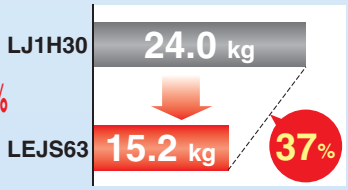
Equipped with seal bands as standard

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

●Weight reduction

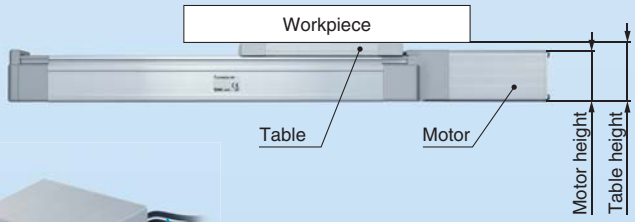
Weight reduced by approx. 37%

∗ Stroke: 600 mm



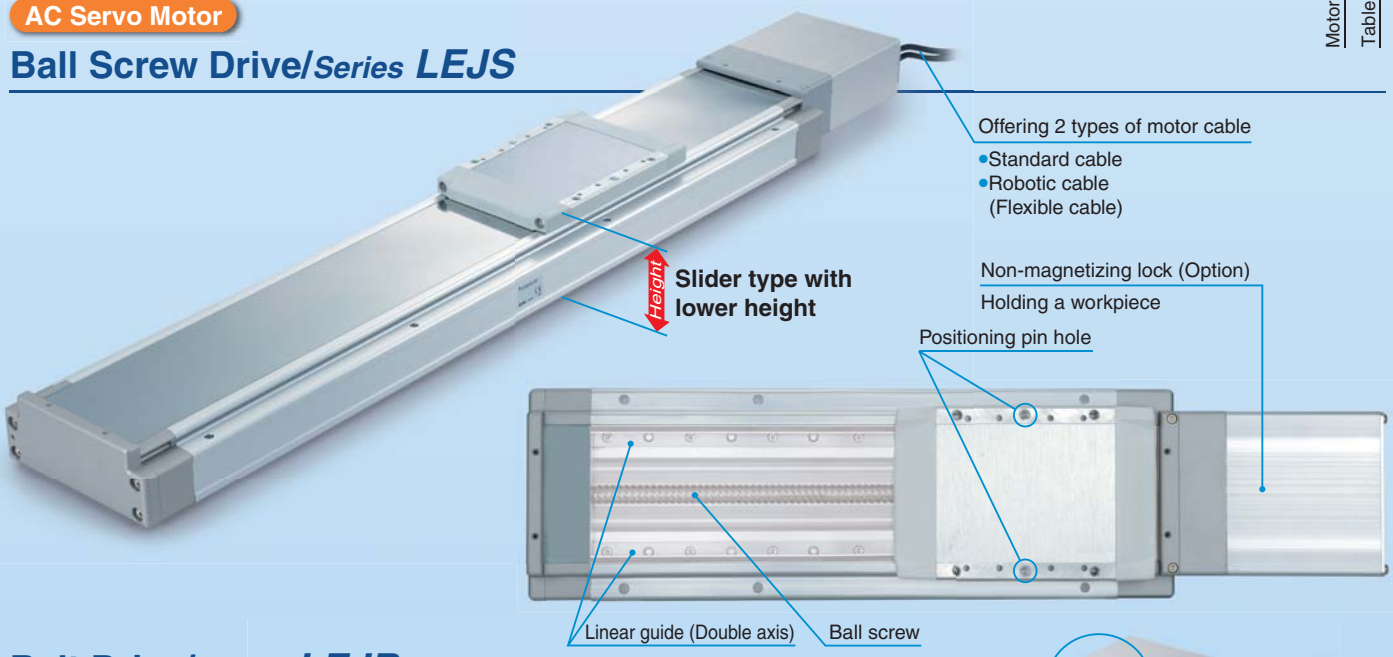
●Workpiece does not interfere with the motor

Table height > Motor height

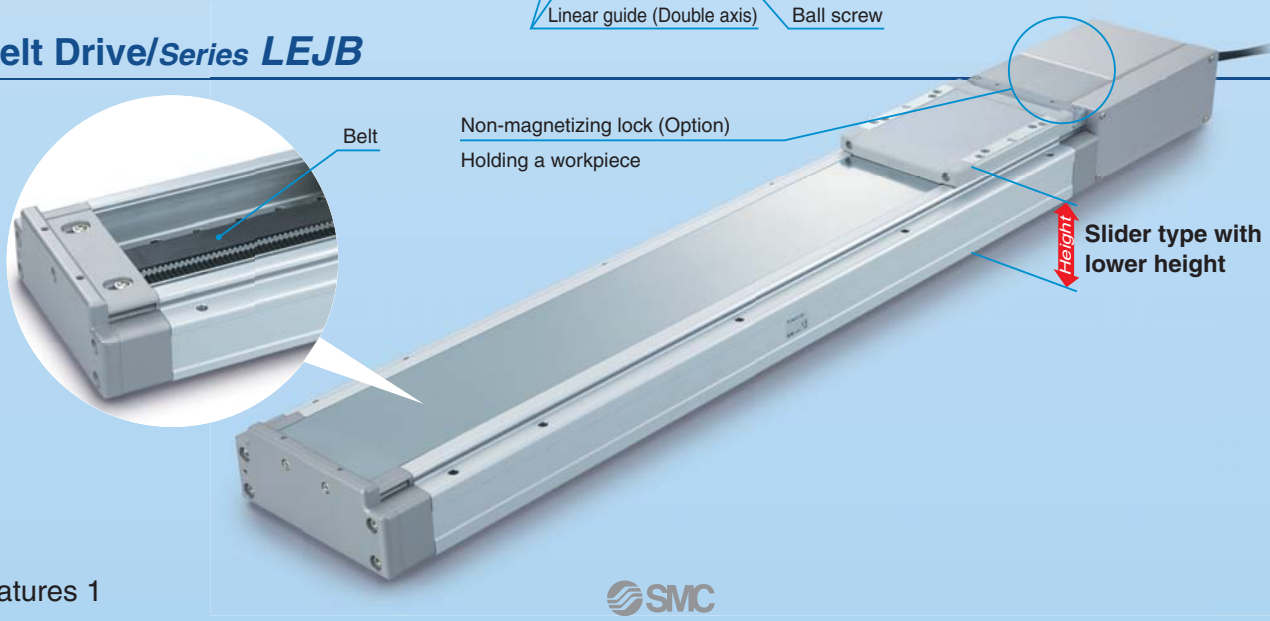


AC Servo Motor

Ball Screw Drive/*Series* LEJS



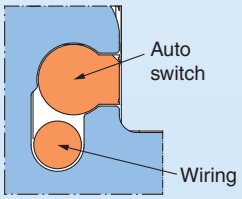
Belt Drive/*Series* LEJB



●Solid state auto switch can be mounted (For checking the limit and intermediate signal)

- Switch wiring can be placed in the body
- D-M9□W (2-colour indication), D-M9□



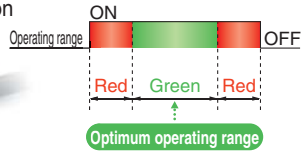


2-colour indication solid state auto switch

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

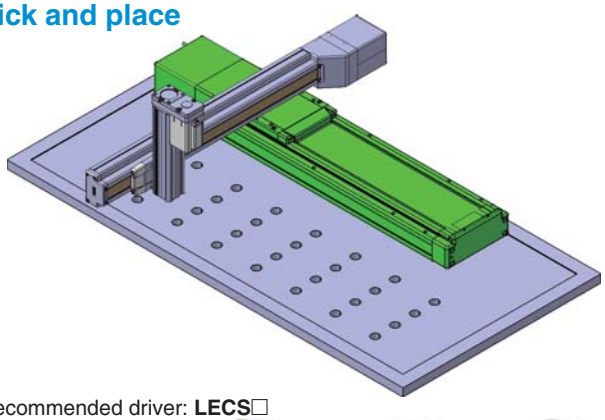
A green light lights up at the optimum operating range.





Application Examples

Pick and place

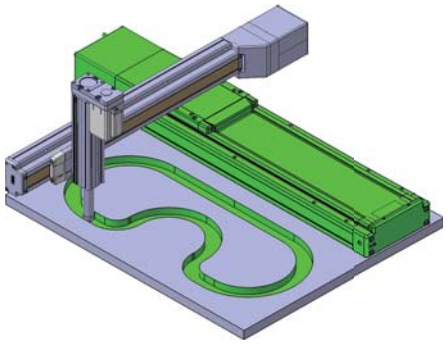


Recommended driver: **LECS□**



LECSA **LECSB** **LECSC** **LECSS**

Glue dispensing/High speed trajectory is available



Recommended driver: **LECSS** (SSCNET III)



Series Variations

Ball Screw Drive/Series LEJS

Size	Lead [mm]	Stroke [mm]*	Work load: Horizontal [kg] 10 20 30 40 50 60 70 80 90	Work load: Vertical [kg] 10 20 30	Speed [mm/s] 200 400 600 800 1000 1200	Page
40	8	200, 300, (400) 500, 600, (700) 800, (900) (1000), (1200)				Page 9
	16					
63	10	300, (400), 500 600, (700), 800 (900), 1000 (1200), (1500)				
	20					

* Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.

Belt Drive/Series LEJB

Size	Equivalent lead [mm]	Stroke [mm]*1	Work load: Horizontal [kg]*2 5 10 15 20 25 30	Speed [mm/s] 500 1000 1500 2000 2500 3000	Page
40	27	(200), 300, (400), 500, (600), (700), 800 (900), 1000, (1200), (1500), (2000)			Page 14
63	42	(300), (400), 500, (600), (700), 800 (900), 1000, 1200, (1500), (2000), (3000)			

*1 Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.
*2 The belt drive actuator cannot be used vertically for applications.

AC Servo Motor Driver

Series LECS□ list

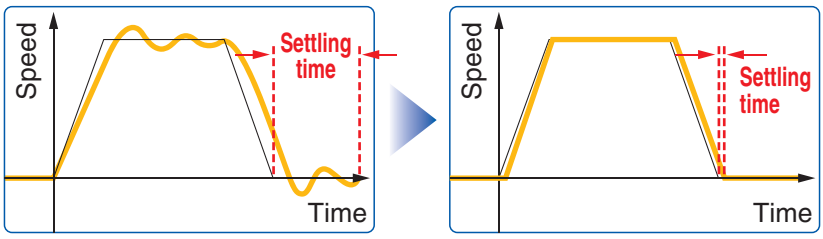
		Compatible motor (100/200 VAC)		Control method			Application/ Function	Compatible option
		100 W	200 W	Note 1) Positioning	Pulse	Network direct input	Note 2) Synchronous	Setup software LEC-MR-SETUP221
Incremental Type	 **LECSA** (Pulse input type/ Positioning type)	●	●	Up to 7 points ●	●			●
Absolute 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.

Servo adjustment using auto gain tuning

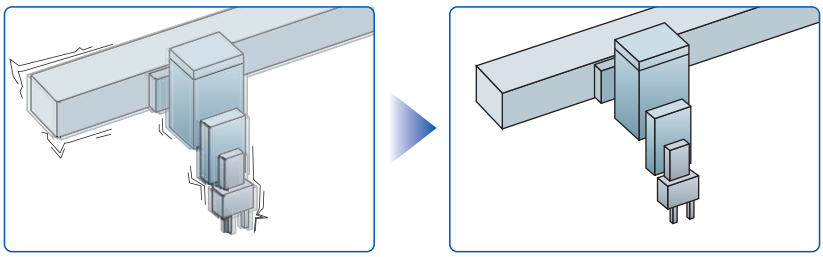
Auto resonant filter function

- Controls the difference in movement between command value and actual movement



Auto damping control function

- Automatically controls machine's low frequency vibrations (up to 100 Hz)



With display setting function

One-touch adjustment button

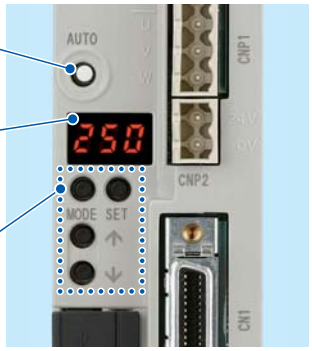
One-touch servo adjustment

Display

Displays the monitor, parameter and alarm.

Settings

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



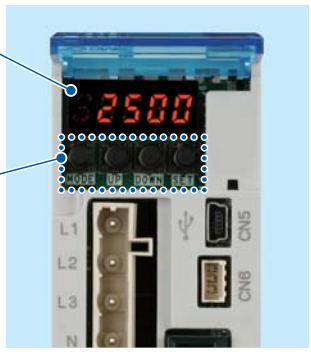
LECSA

Display

Displays the monitor, parameter and alarm.

Settings

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



(With the front cover opened)

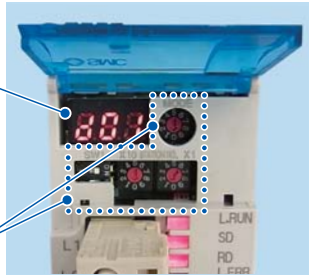
LECSB

Display

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

Settings

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



(With the front cover opened)

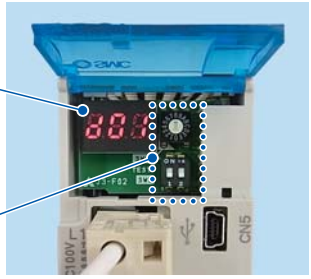
LECSC

Display

Displays 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 36
Regeneration option
Part no.: **LEC-MR-RB-□**

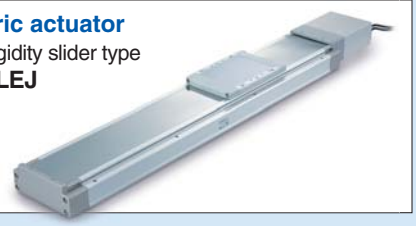
Motor cable Page 36

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

Lock cable Page 36

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

Electric actuator
High rigidity slider type
Series **LEJ**



Encoder cable Page 36

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

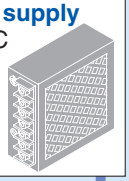
Main circuit power supply connector Page 30
(Accessory)

Driver



Provided by customer

Control circuit power supply
24 VDC



Control circuit power supply connector Page 30
(Accessory)

◎Option

Setup software Page 37
(MR Configurator™)
Part no.: **LEC-MR-SETUP221E**



PC

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

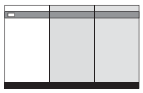
USB cable Page 37
Part no.: **LEC-MR-J3USB**

◎Option Page 36
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 36
Regeneration option
Part no.: **LEC-MR-RB-□**

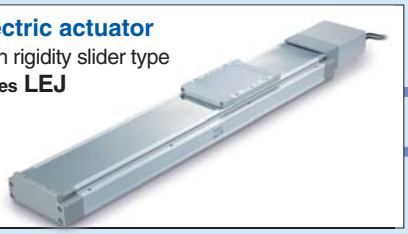
Motor cable Page 36

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

Lock cable Page 36

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

Electric actuator
High rigidity slider type
Series **LEJ**



Encoder cable Page 36

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

Main circuit power supply connector Page 31
(Accessory)

Control circuit power supply connector Page 31
(Accessory)

Motor connector Page 31
(Accessory)

Driver



Battery (Accessory) Page 37
Part no.: (**LEC-MR-J3BAT**)

USB cable Page 37
Part no.: **LEC-MR-J3USB**

◎Option

Setup software Page 37
(MR Configurator™)
Part no.: **LEC-MR-SETUP221E**



PC

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

Analogue monitor output

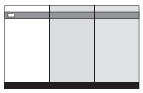
RS-422 communication

◎Option Page 36
I/O connector
Part no.: **LE-CSNB**

Provided by customer

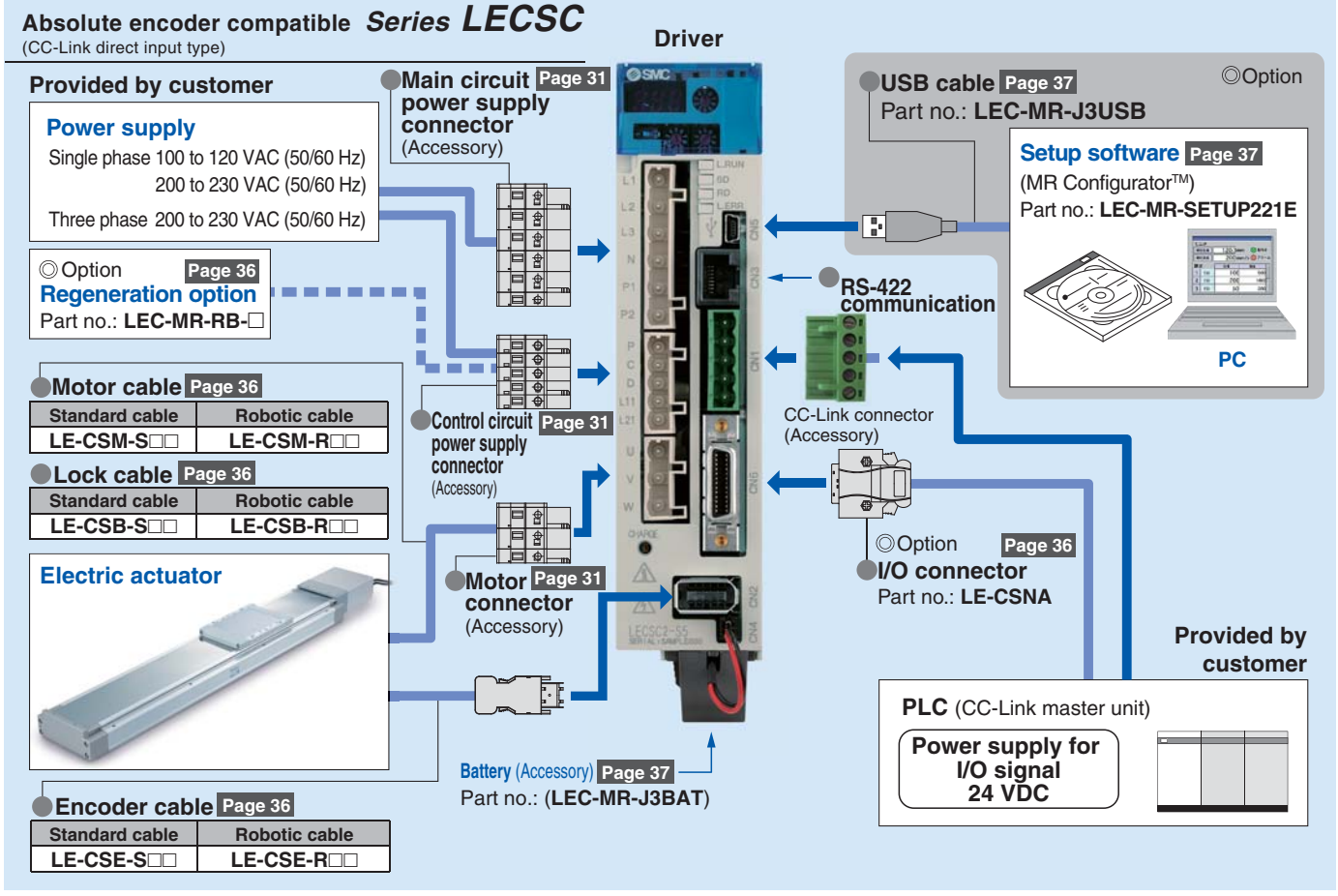
PLC (Positioning unit)

Power supply for I/O signal 24 VDC

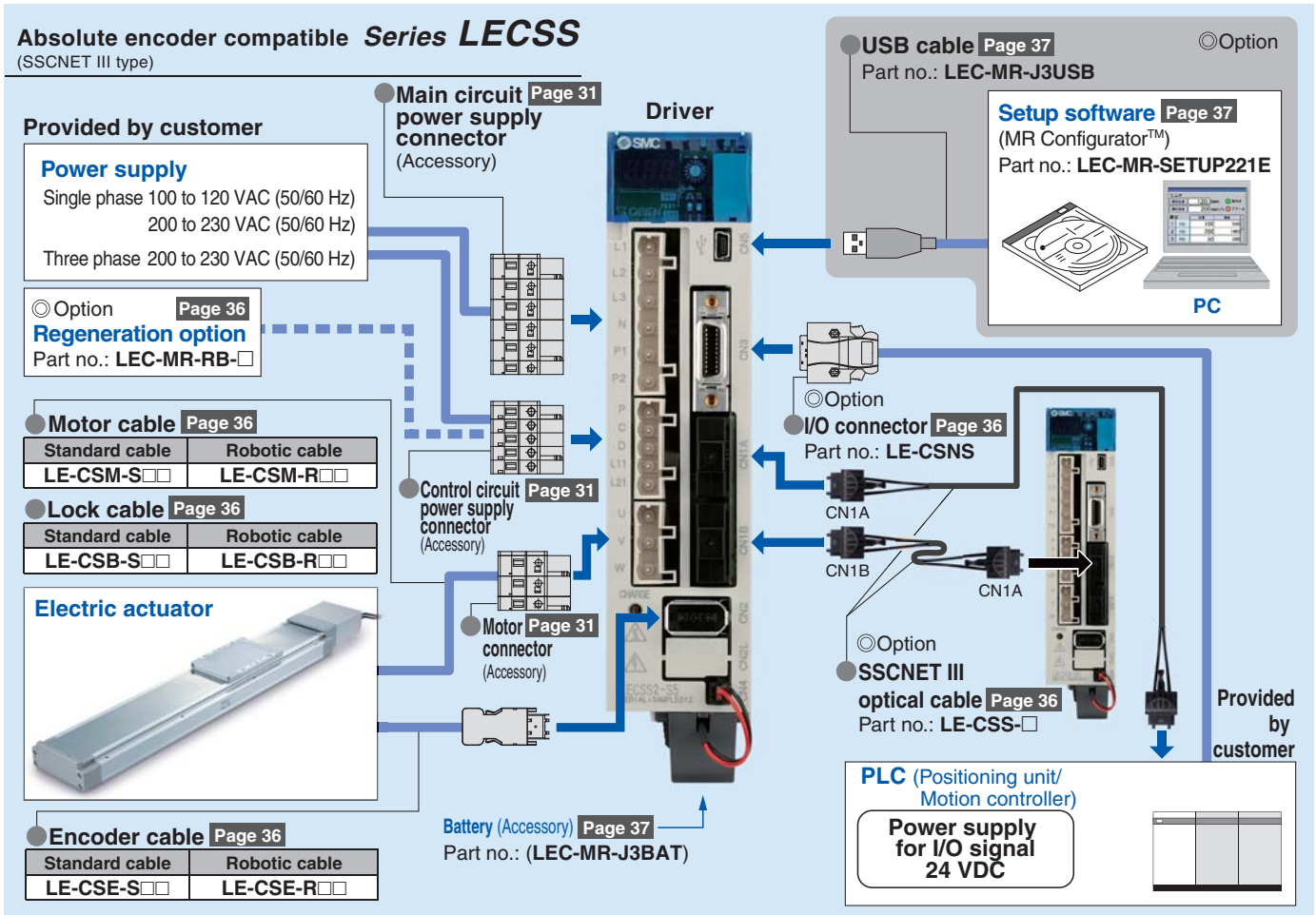


System Construction

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

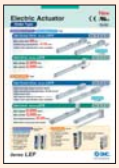


Absolute encoder compatible *Series* LECSS
(SSCNET III type)



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

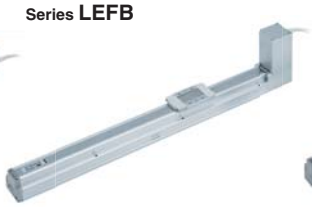
Clean room compatible



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



Series LEJS

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

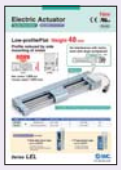
Belt drive
Series LEJB



Series LEJB

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

Guide Rod Slider
Step Motor (Servo/24 VDC)


CAT.ES100-101

Belt drive
Series LEL



Series LEL25M
Sliding bearing

Size	Max. work load [kg]	Stroke [mm]
25	3	Up to 1000

Series LEL25L
Ball bushing bearing

Size	Max. work load [kg]	Stroke [mm]
25	5	Up to 1000

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


CAT.ES100-83

Basic type
Series LEY

Dust/Drip proof compatible



Series LEY

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

In-line motor type
Series LEY□D

Dust/Drip proof compatible



Guide rod type
Series LEYG



Series LEYG

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

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



AC Servo Motor

Basic type
Series LEY

Dust/Drip proof compatible



Series LEY

Size	Pushing force [N]	Stroke [mm]
25	485	Up to 400
32	588	Up to 500

In-line motor type
Series LEY□D

Dust/Drip proof compatible



Series LEY

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

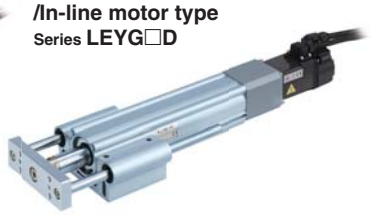
Guide rod type
Series LEYG



Series LEYG

Size	Pushing force [N]	Stroke [mm]
25	485	300
32	588	

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



Series LEYG

Size	Pushing force [N]	Stroke [mm]
25	485	300
32	736	

SMC Electric Actuators

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


CAT.ES100-78

Compact type Series LES

Basic type/R type
Series LES□R



Symmetrical type/L type
Series LES□L



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



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

High rigidity type Series LESH

Basic type/R type
Series LESH□R



Symmetrical type/L type
Series LESH□L



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



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

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)

INDEX

Electric Actuator AC Servo Motor Type

Model Selection ..... Page 1

◎Electric Actuator/High Rigidity Slider Type Ball Screw Drive
Series LEJS



How to Order ..... Page 9
Specifications ..... Page 10
Construction ..... Page 11
Dimensions ..... Page 12

◎Electric Actuator/High Rigidity Slider Type Belt Drive
Series LEJB



How to Order ..... Page 14
Specifications ..... Page 15
Construction ..... Page 16
Dimensions ..... Page 17
Auto Switch ..... Page 19
Specific Product Precautions ..... Page 21



◎AC Servo Motor Driver
Series LECSA/LECSB/LECSC/LECSS

..... Page 24
Specific Product Precautions ..... Page 38

Ball Screw Drive/*Series* LEJS Belt Drive/*Series* LEJB

Model Selection



Model Selection

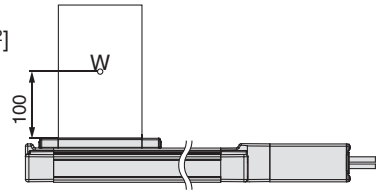
Step 1 Check the speed–work load. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 60 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s²]
- Stroke: 300 [mm]
- Mounting orientation: Horizontal
- Motor type: Incremental encoder
- External force: 10 [N]

• Workpiece mounting condition:

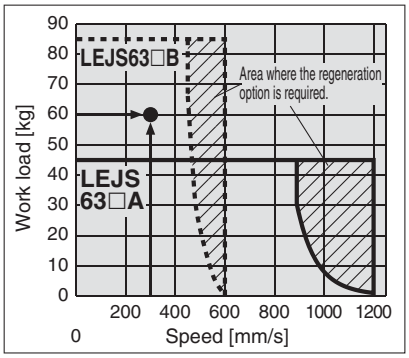


Step 1 Check the speed–work load.

Select the product by referring to "Speed-Work Load Graph" (Page 2).

Selection example) The **LEJS63S3B-300** is temporarily selected based on the graph shown on the right.

The regeneration option (LEC-MR-RB032) may be necessary. See the shaded area in the graph.



<Speed–Work load graph> (LEJS63)

Step 2 Check the cycle time.

Refer to method 1 for a rough estimate, and method 2 for a more precise value.

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

The graph is based on the maximum speed of each size.

Method 2: Calculation

Cycle time T can be found from the following equation.

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

- T1 and T3 can be obtained by the following equation.

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

The acceleration and deceleration values have upper limits depending on the workpiece mass and the duty ratio. Check that they do not exceed the upper limit, by referring to "Work load–Acceleration/Deceleration Graph (Guide)" (Page 4 and 5).

For the ball screw type, there is an upper limit of the speed depending on the stroke. Check that if it does not exceed the upper limit, by referring to the specifications (Page 10).

- T2 can be found from the following equation.

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

- T4 varies depending on the motor type and load. The value below is recommended.

$T4 = 0.05$ [s]

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

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

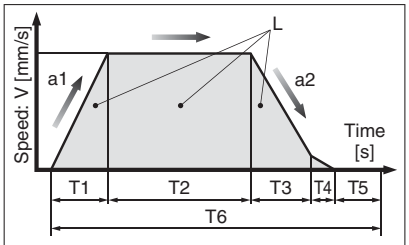
$T3 = V/a2 = 300/3000 = 0.1$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.90 \text{ [s]}$$

$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$
$= 0.1 + 0.90 + 0.1 + 0.05$
$=$ **1.15 [s]**



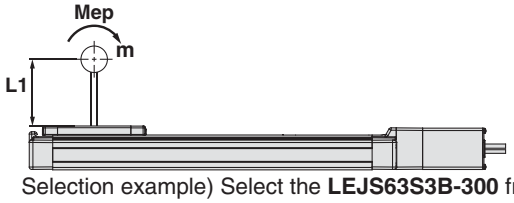
L : Stroke [mm]
V : Speed [mm/s]
a1: Acceleration [mm/s²]
a2: Deceleration [mm/s²]

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
T5: Resting time [s]
Time the product is not running
T6: Total time [s]
Total time from T1 to T5

Duty ratio: Ratio of T to T6
T ÷ T6 x 100

Step 3 Check the allowable moment.

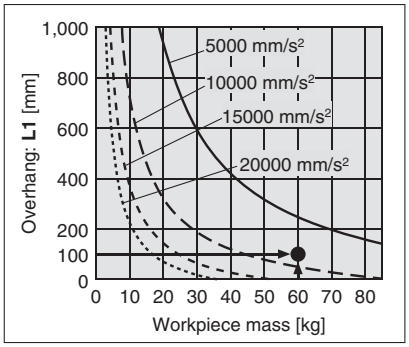
Refer to "Dynamic Allowable Moment" graphs (Pages 6, 7).



Selection example) Select the **LEJS63S3B-300** from the graph on the right.

Confirm that the external force is 20 [N] or less (Refer to the allowable external force on page 10.).

(The external force is the resistance due to cable duct, flexible trunking or air tubing.)

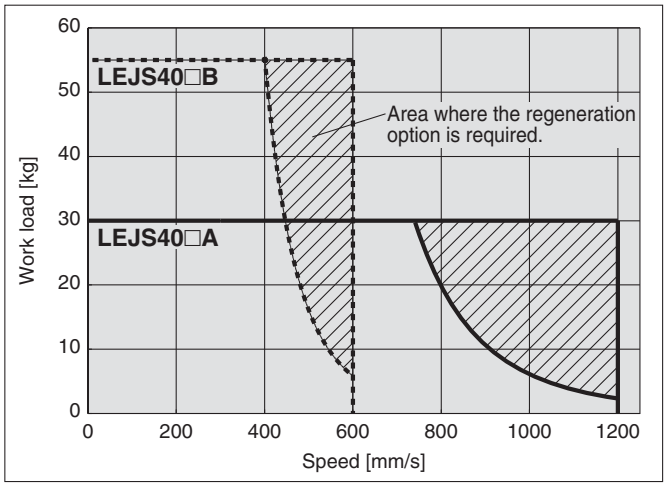


<Dynamic allowable moment> (LEJS63)

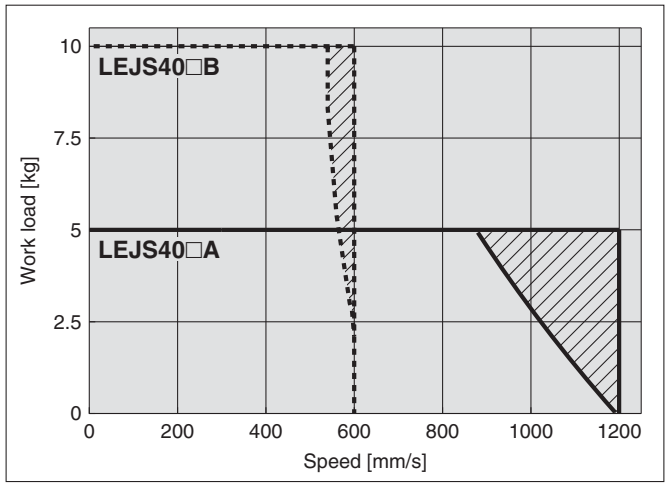
Speed–Work Load Graph (Guide)

LEJS40/Ball Screw Drive

Horizontal

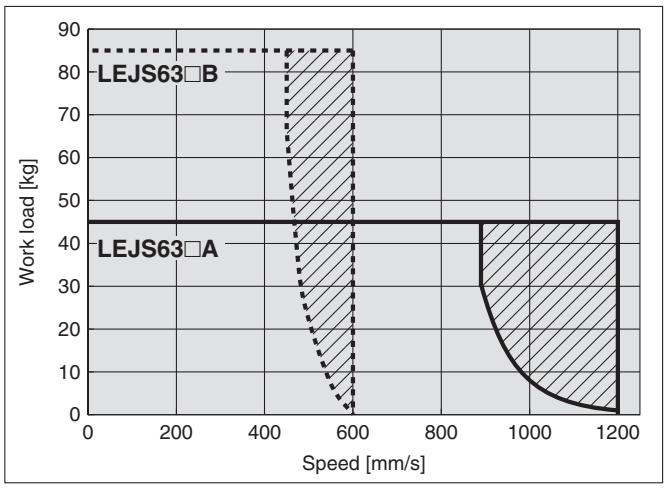


Vertical

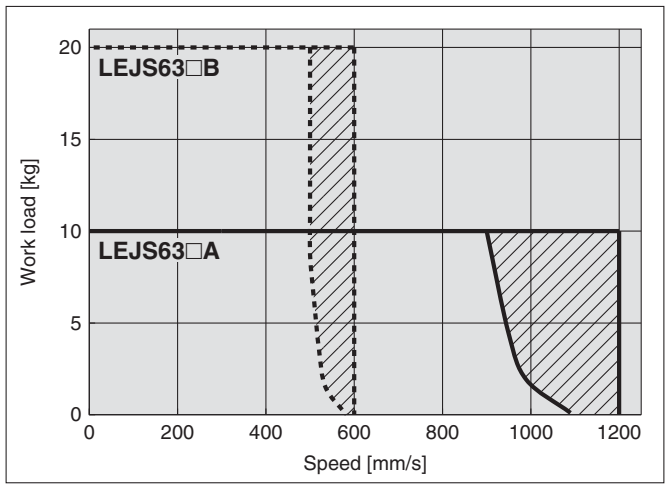


LEJS63/Ball Screw Drive

Horizontal

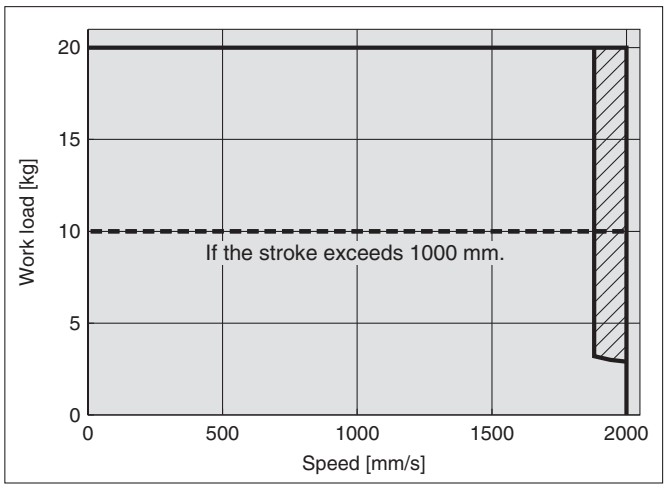


Vertical



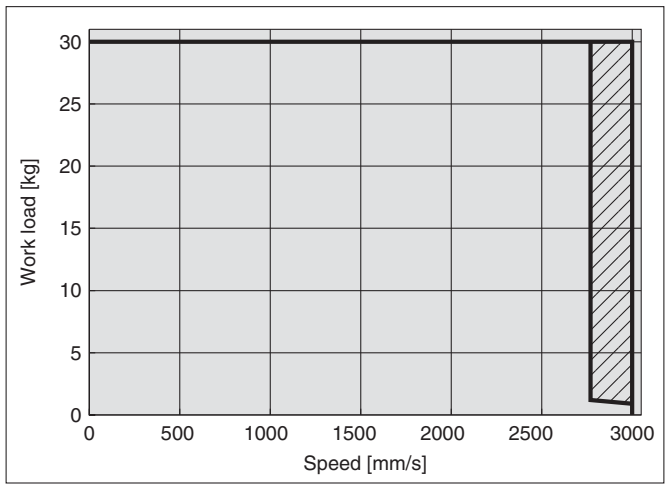
LEJB40/Belt Drive

Horizontal



LEJB63/Belt Drive

Horizontal

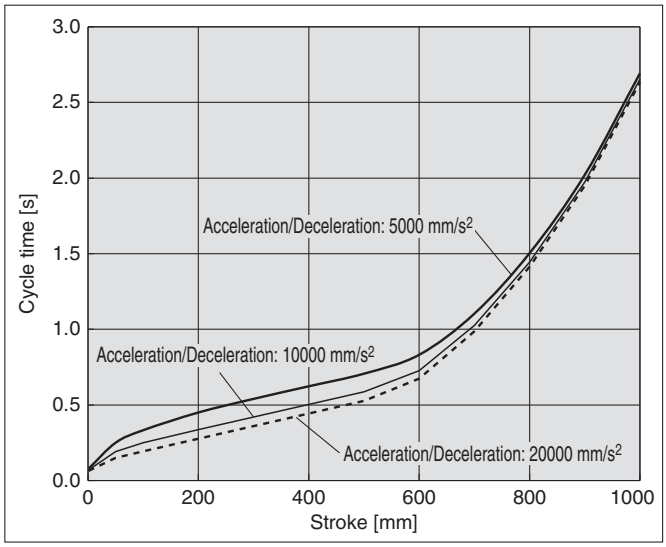


∗ When the stroke of the LEJB40 series exceeds 1000 mm, the work load is 10 kg.
∗ The shaded area in the graph requires the regeneration option (LEC-MR-RB032).
∗ The belt drive actuator cannot be used vertically for applications.

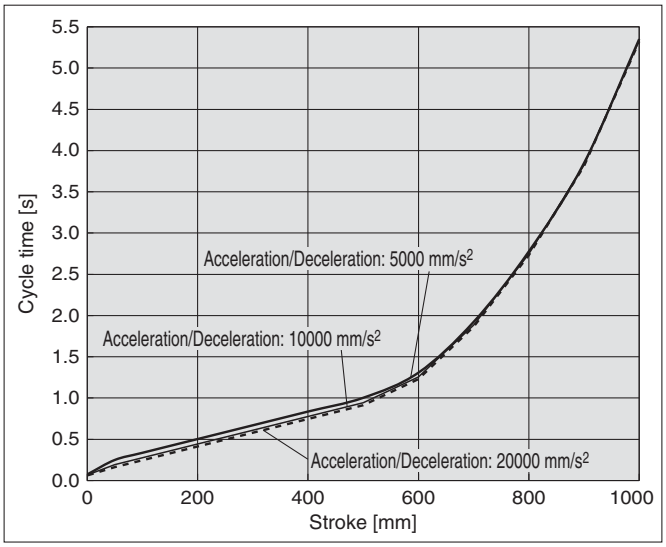
Cycle Time Graph (Guide)

LEJS40/Ball Screw Drive

LEJS40□A

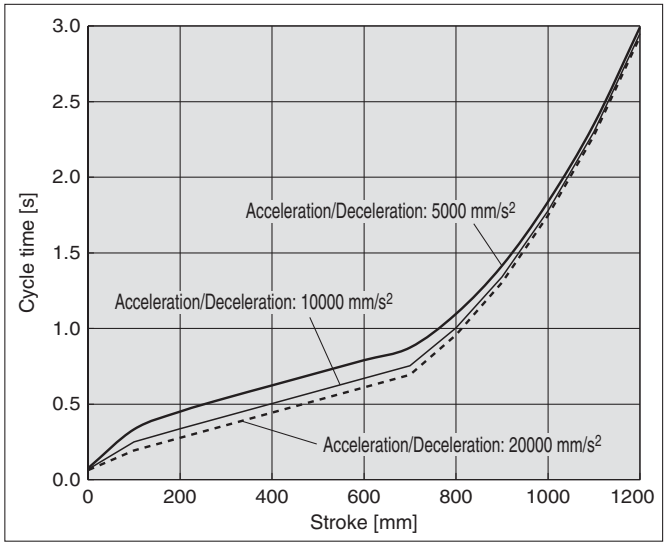


LEJS40□B

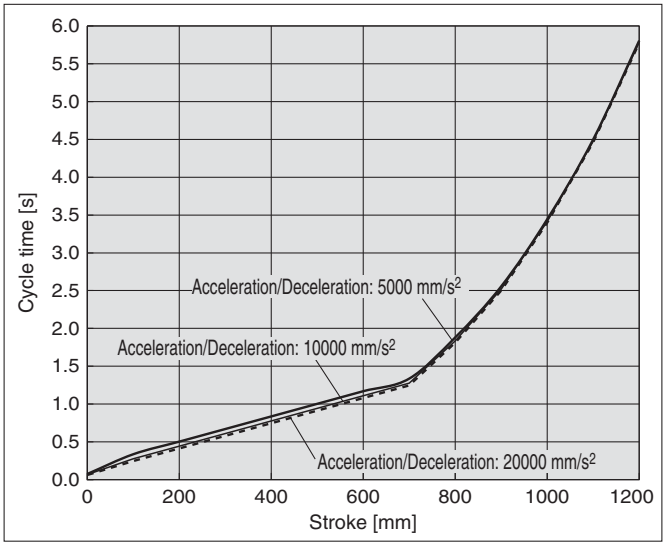


LEJS63/Ball Screw Drive

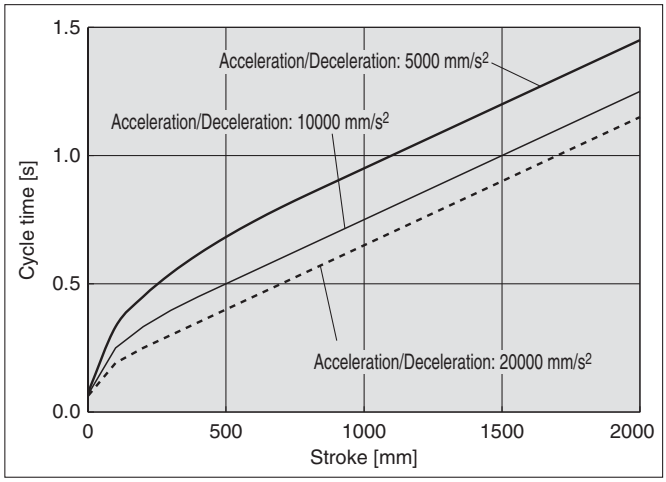
LEJS63□A



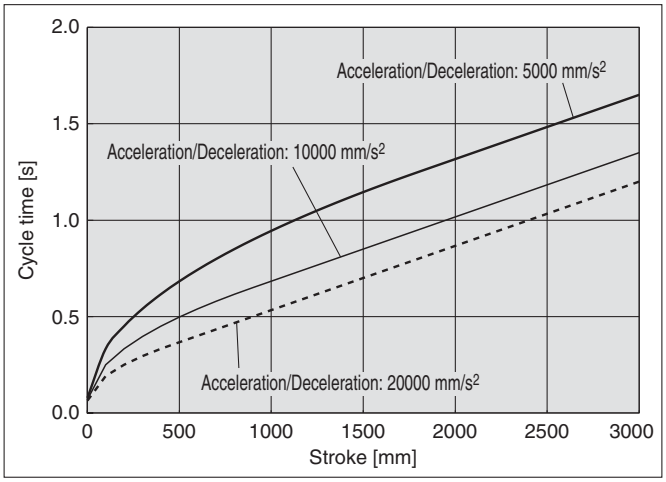
LEJS63□B



LEJB40/Belt Drive



LEJB63/Belt Drive

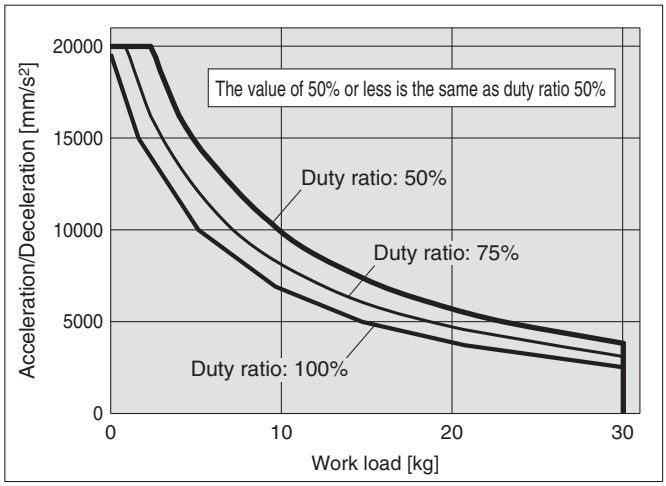


∗ Work load/acceleration/deceleration graph
∗ Maximum speed/acceleration/deceleration values graph for each stroke

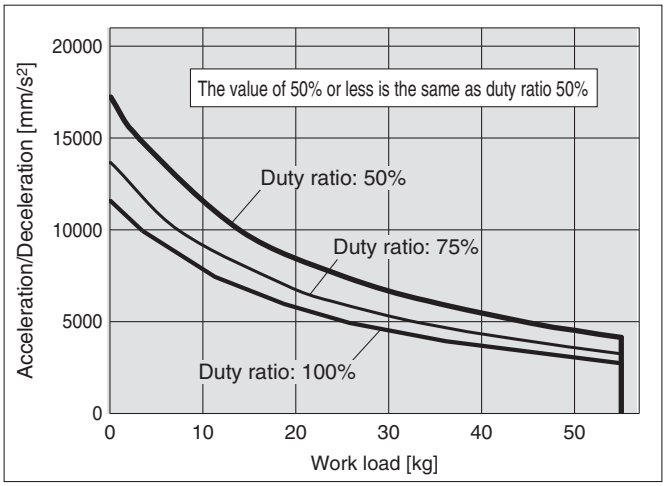
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS40/Ball Screw Drive: Horizontal

LEJS40□A

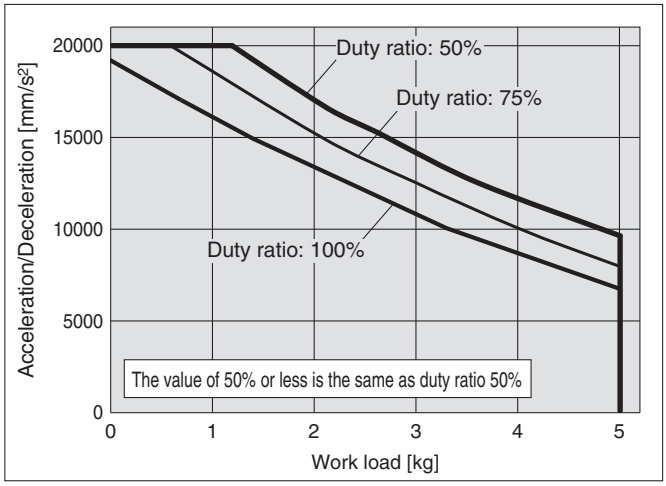


LEJS40□B

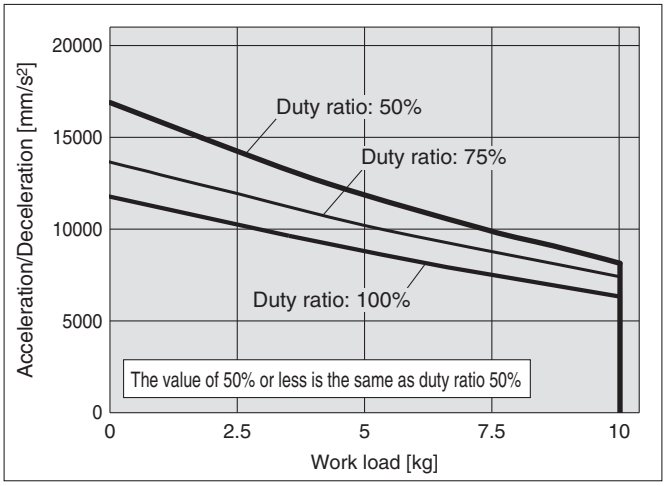


LEJS40/Ball Screw Drive: Vertical

LEJS40□A



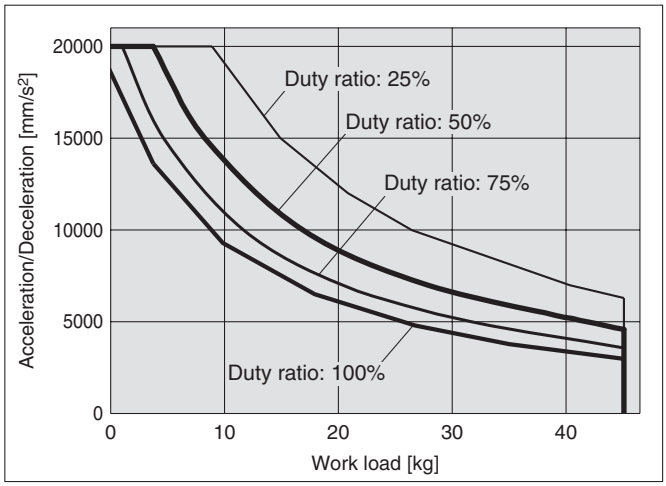
LEJS40□B



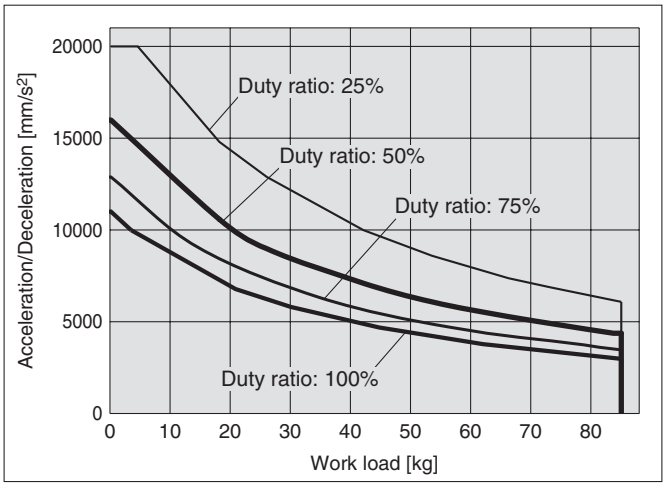
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS63/Ball Screw Drive: Horizontal

LEJS63□A

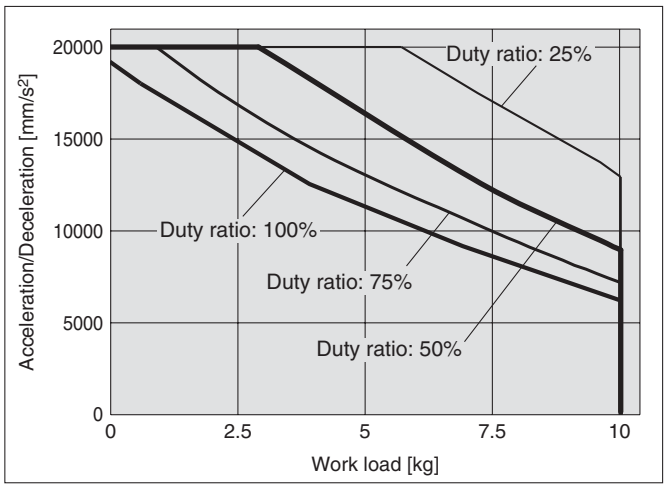


LEJS63□B

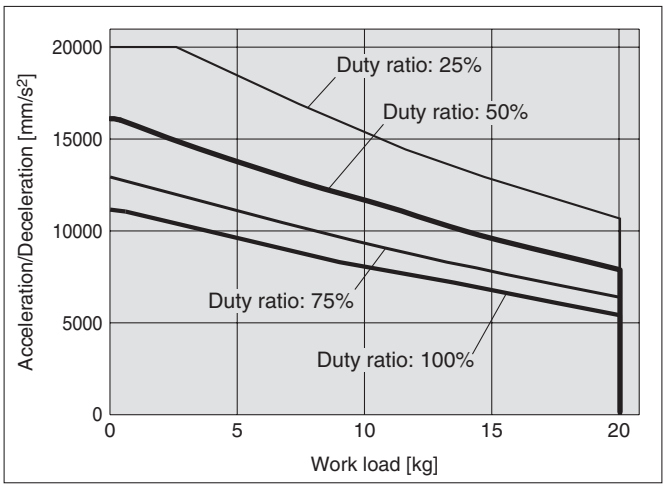


LEJS63/Ball Screw Drive: Vertical

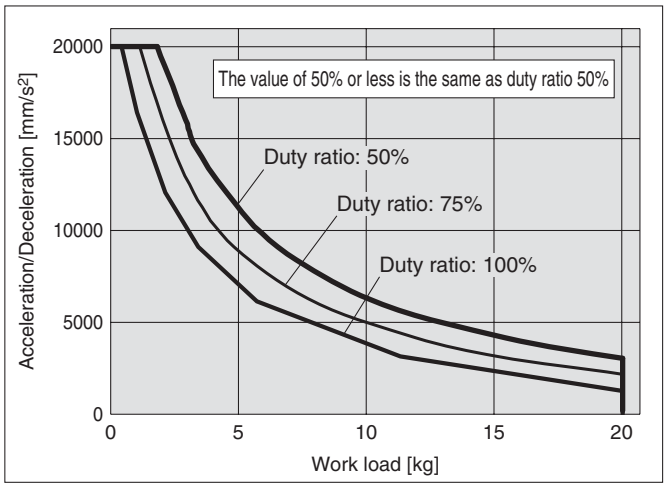
LEJS63□A



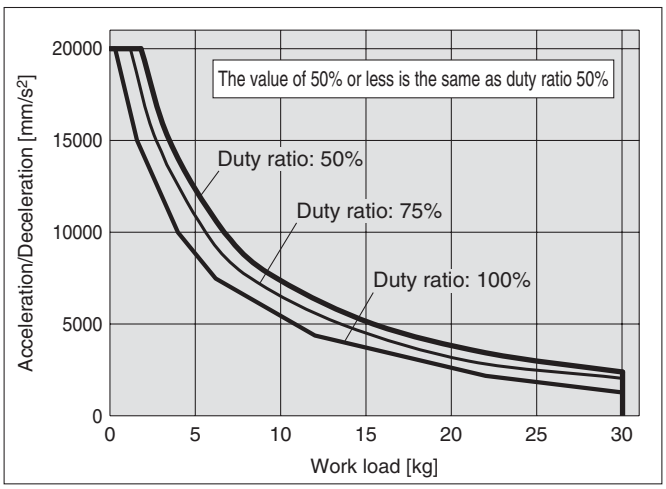
LEJS63□B



LEJB40/Belt Drive: Horizontal



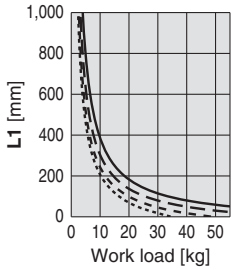
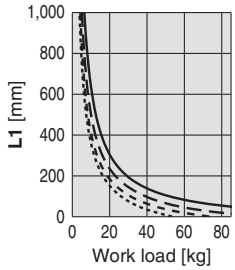
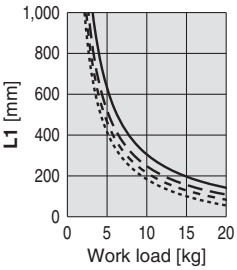
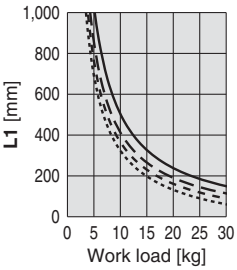
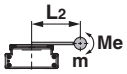
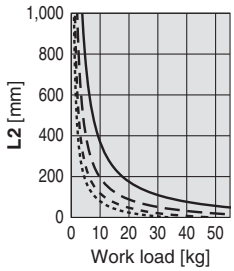
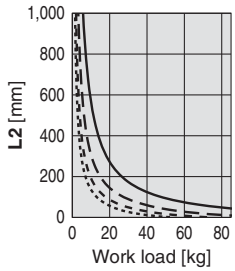
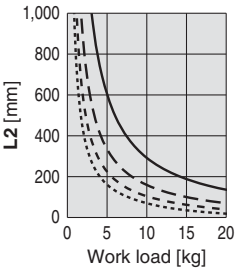
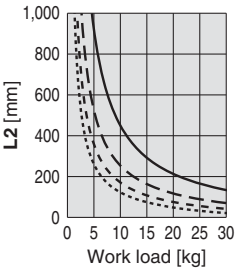
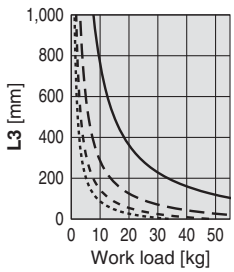
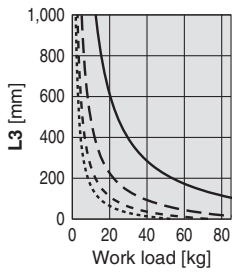
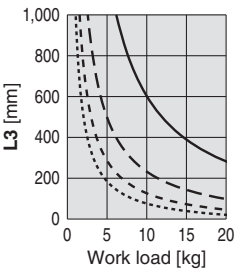
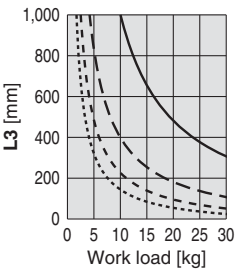
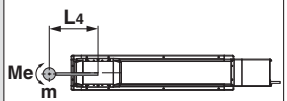
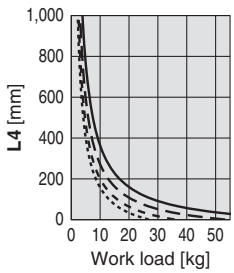
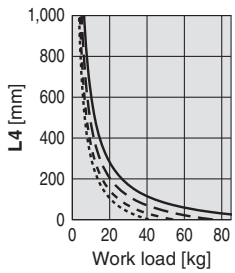
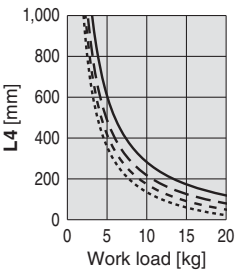
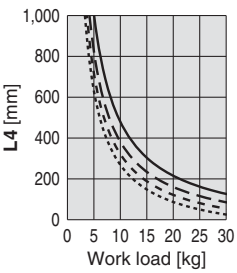
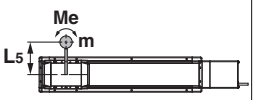
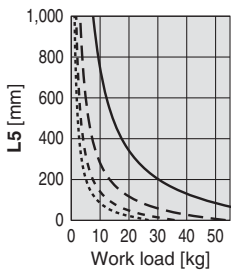
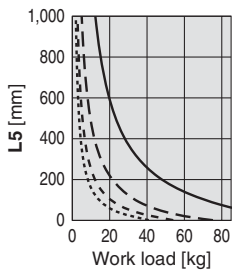
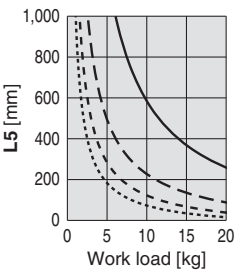
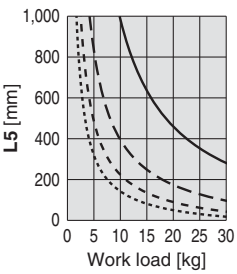
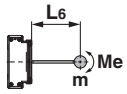
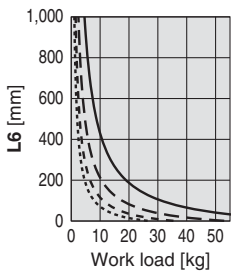
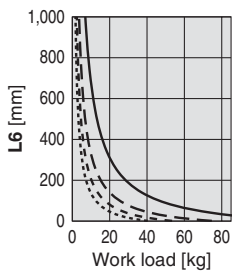
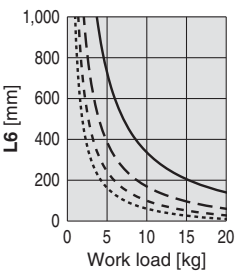
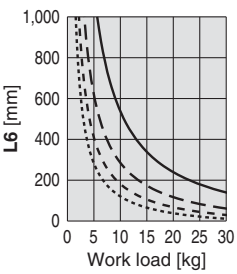
LEJB63/Belt Drive: Horizontal



Dynamic Allowable Moment

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

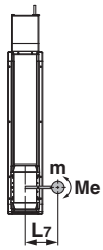
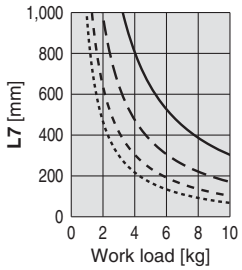
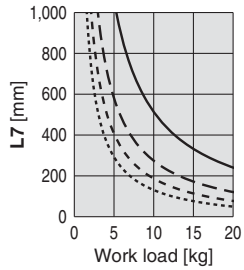
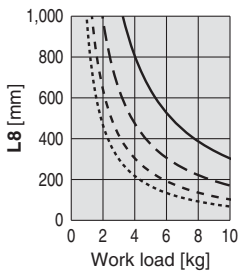
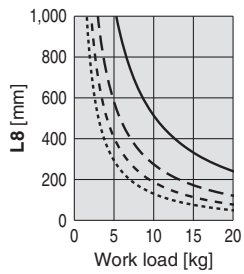
Acceleration/Deceleration —— 5,000 mm/s² – – – 10,000 mm/s² - - - - 15,000 mm/s² ····· 20,000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load centre of gravity [mm]		Model			
			LEJS40	**LEJS63**	**LEJB40**	**LEJB63**
Horizontal/Bottom		X				
		Y				
		Z				
Wall		X				
		Y				
		Z				

Dynamic Allowable Moment

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

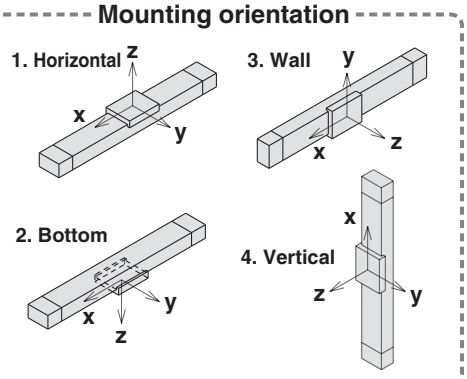
Acceleration/Deceleration —— 5,000 mm/s² – – – 10,000 mm/s² - - - - 15,000 mm/s² ····· 20,000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load centre of gravity [mm]		Model LEJS40	Model LEJS63
Vertical		Y		
		Z		

Calculation of Guide Load Factor

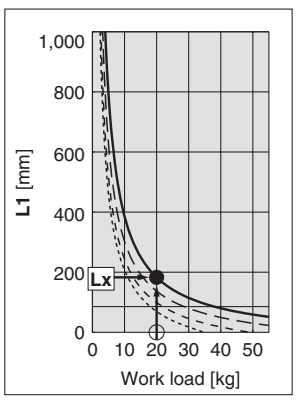
1. Decide operating conditions.
   Model: LEJS/LEJB
   Size: 40/63
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s²]: **a**
   Work load [kg]: **m**
   Work load centre position [mm]: **Xc/Yc/Zc**
2. Select the target graph with reference to the model, size and mounting orientation.
3. Based on the acceleration and work load, obtain the overhang [mm]: **Lx/Ly/Lz** from the graph.
4. Calculate the load factor for each direction.
   α**x = Xc/Lx**, α**y = Yc/Ly**, α**z = Zc/Lz**
5. Confirm the total of α**x**, α**y** and α**z** is 1 or less.
   α**x + αy + αz ≤1**
   When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load centre position and series.

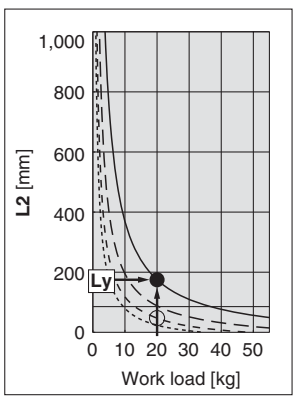
Mounting orientation



Example

1. Operating conditions
   Model: LEJS
   Size: 40
   Mounting orientation: Horizontal
   Acceleration [mm/s²]: 5000
   Work load [kg]: 20
   Work load centre position [mm]: **Xc = 0**, **Yc = 50**, **Zc = 200**
2. Select the graph on page 6, top and left side first row.
3. **Lx = 180 mm**, **Ly = 170 mm**, **Lz = 360 mm**
4. The load factor for each direction can be obtained as follows.
   α**x = 0/180 = 0**
   α**y = 50/170 = 0.29**
   α**z = 200/360 = 0.56**
5. α**x + αy + αz = 0.85 ≤1**





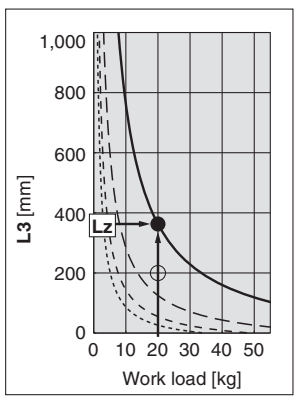
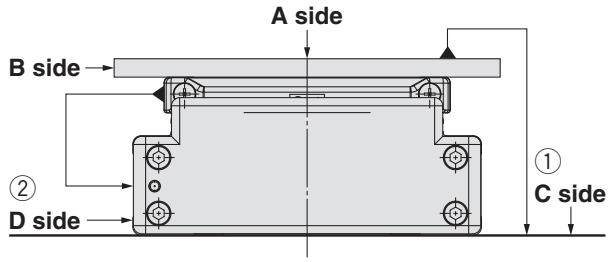


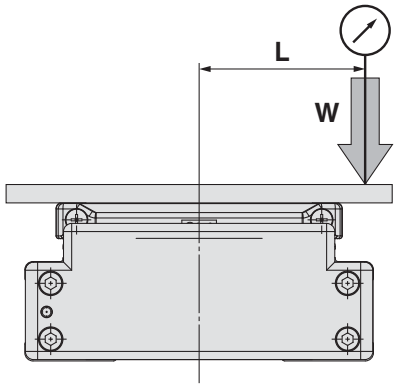
Table Accuracy (Reference Value)

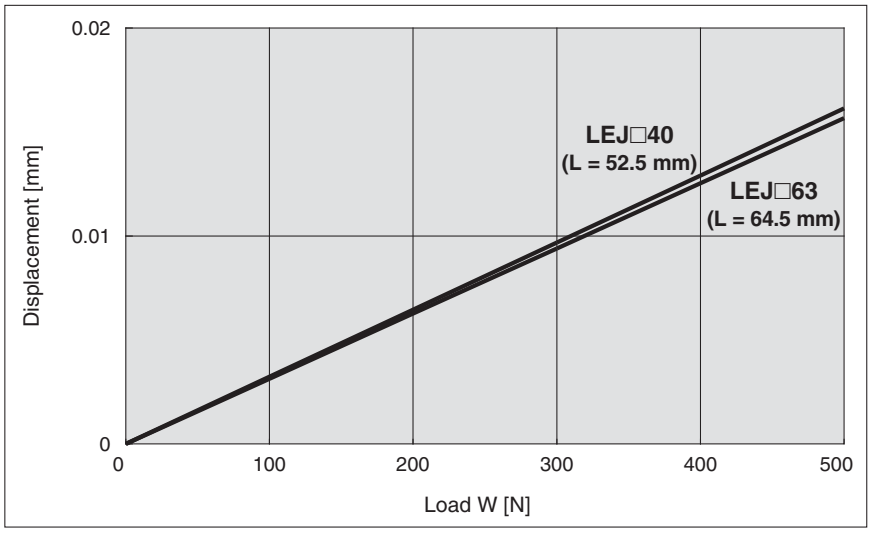


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEJ□40	0.05	0.03
LEJ□63	0.05	0.03

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

Table Displacement (Reference Value)





Note) This displacement is measured when a 15 mm aluminium plate is mounted and fixed on the table. (Table clearance is included.)

Electric Actuator/High Rigidity Slider Type
Ball Screw Drive AC Servo Motor
Series LEJS



How to Order

LEJS **40** **S2** **A** – **500** □ – □ □ □ □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶ Size

40
63

❷ Motor type*1

Symbol	Type	Output [W]	Actuator size	Compatible drivers*2
S2	AC servo motor (Incremental encoder)	100	40	LECSA□-S1
S3	AC servo motor (Incremental encoder)	200	63	LECSA□-S3
S6	AC servo motor (Absolute encoder)	100	40	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	63	LECSB□-S7 LECSC□-S7 LECSS□-S7

*1: For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
*2: For details of the driver, refer to page 26.

❸ Lead [mm]

Symbol	LEJS40	LEJS63
A	16	20
B	8	10

❹ Stroke [mm]*3

200
to
1500

*3: Refer to the table below for details.

❺ Motor option

—	Without option
B	With lock

❻ Cable type*5, *6, *7

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

*6: The motor and encoder cables are included. (The lock cable is included when the motor with lock option is selected.)
*7: Standard cable entry direction is "(A) Axis side". (Refer to page 36 for details.)

❼ Cable length [m]*5, *8

—	Without cable
2	2 m
5	5 m
A	10 m

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

❽ Driver type*5

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

❾ I/O connector

—	Without connector
H	With connector

Applicable Stroke Table*4

●Standard ○Produced upon receipt of order

Model \ Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200	1500
LEJS40	●	●	○	●	●	○	●	○	○	○	—
LEJS63	—	●	○	●	●	○	●	○	●	○	○

*4: Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.

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

For auto switches, refer to pages 19 and 20.

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	—
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	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 25			

Specifications

LEJS40/63 AC Servo Motor

Model				LEJS40S$^{2}_{6}$		LEJS63S$^{3}_{7}$	
Actuator specifications	Stroke [mm] Note 1)			200, 300, (400), 500, 600, (700), 800 (900), (1000), (1200)		300, (400), 500, 600, (700), 800, (900) 1000, (1200), (1500)	
	Work load [kg] Note 2)		Horizontal	30	55	45	85
			Vertical	5	10	10	20
	Speed Note 3) [mm/s]	Stroke range	Up to 500	1200	600	1200	600
			501 to 600	1050	520	1200	600
			601 to 700	780	390	1200	600
			701 to 800	600	300	930	460
			801 to 900	480	240	740	370
			901 to 1000	390	190	600	300
			1001 to 1100	320	160	500	250
			1101 to 1200	270	130	420	210
			1201 to 1300	—	—	360	180
			1301 to 1400	—	—	310	150
			1401 to 1500	—	—	270	130
	Max. acceleration/deceleration [mm/s^2]			20000 (Refer to pages 4 to 7 for limit according to work load and duty ratio.)			
	Positioning repeatability [mm] Note 4)			±0.02			
	Lead [mm]			16	8	20	10
	Impact/Vibration resistance [m/s^2] Note 5)			50/20			
	Actuation type			Ball screw			
	Guide type			Linear guide			
	Allowable external force [N]			20			
	Operating temperature range [°C]			5 to 40			
	Operating humidity range [%RH]			90 or less (No condensation)			
	Regeneration option			May be required depending on speed and work load. (Refer to page 36.)			
Electric specifications	Motor output [W]/Size [mm]			100/□40		200/□60	
	Motor type			AC servo motor (100/200 VAC)			
	Encoder			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)			
	Power consumption [W] Note 6)		Horizontal	65		80	
			Vertical	165		235	
	Standby power consumption when operating [W] Note 7)		Horizontal	2		2	
			Vertical	10		12	
	Max. instantaneous power consumption [W] Note 8)			445		725	
Lock unit specifications	Type Note 9)			Non-magnetizing lock			
	Holding force [N]			101	203	330	660
	Power consumption at 20°C [W] Note 10)			6.3		7.9	
	Rated voltage [V]			24 VDC $^{0}_{-10\%}$			

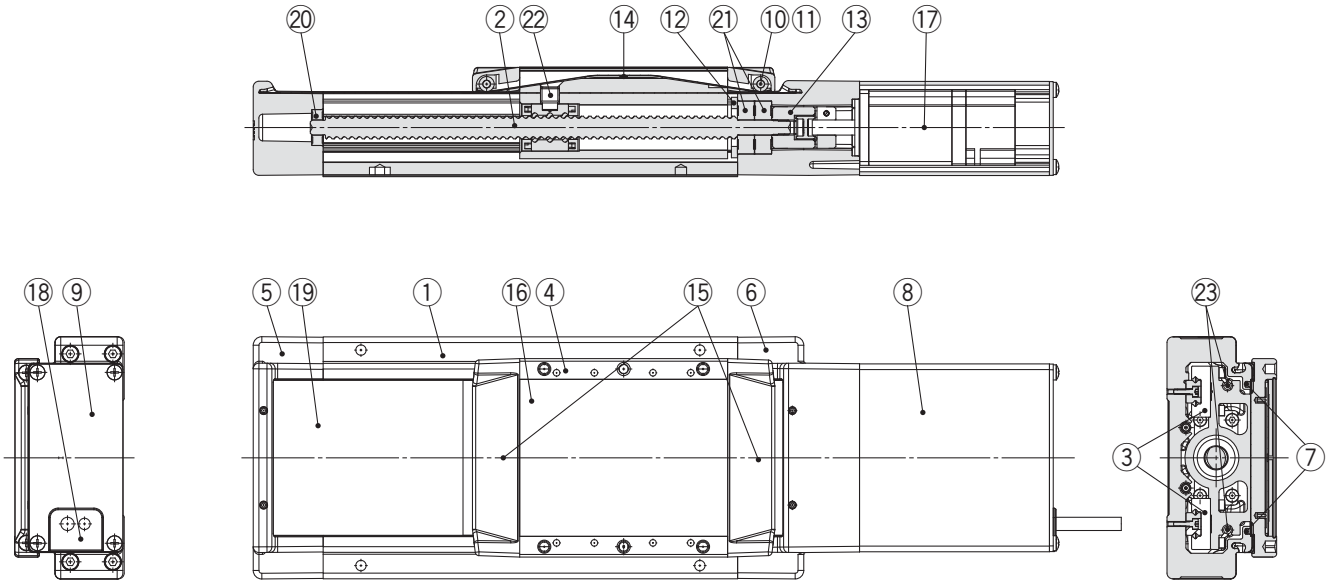
Note 1) Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.
Note 2) Check “Speed–Work Load Graph (Guide)” on page 2.
Note 3) The allowable speed changes according to the stroke.
Note 4) Conforming to JIS B 6191-1999
Note 5) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 6) The 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

Model	LEJS40									
Stroke [mm]	200	300	(400)	500	600	(700)	800	(900)	(1000)	(1200)
Product weight [kg]	5.6	6.4	7.1	7.9	8.7	9.4	10.2	11.0	11.7	13.3
Additional weight with lock [kg]	0.2 (Incremental encoder)/0.3 (Absolute encoder)									

Model	LEJS63									
Stroke [mm]	300	(400)	500	600	(700)	800	(900)	1000	(1200)	(1500)
Product weight [kg]	11.4	12.7	13.9	15.2	16.4	17.7	18.9	20.1	22.6	26.4
Additional weight with lock [kg]	0.4 (Incremental encoder)/0.7 (Absolute encoder)									

Construction



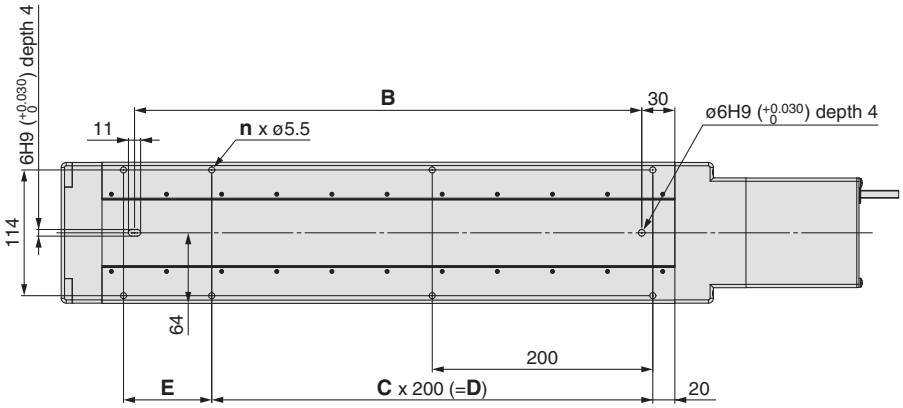
Component Parts

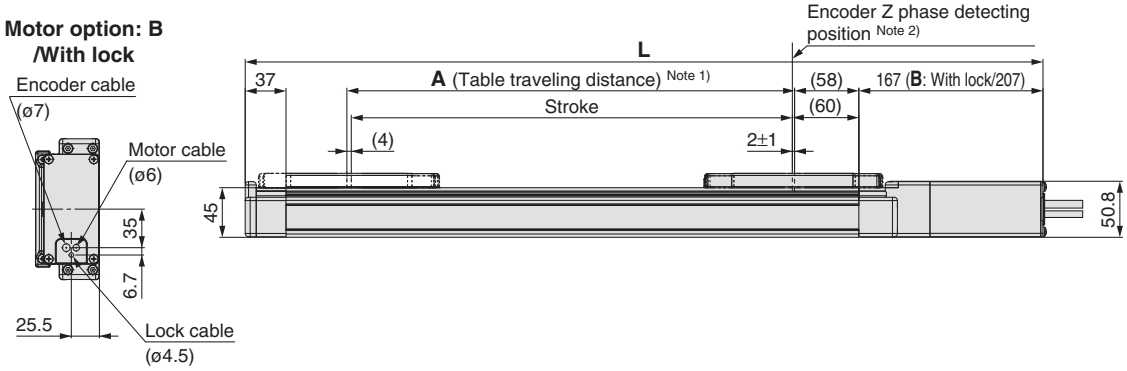
No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw assembly**	—	
3	**Linear guide assembly**	—	
4	**Table**	Aluminium alloy	Anodised
5	**Housing A**	Aluminium alloy	Coating
6	**Housing B**	Aluminium alloy	Coating
7	**Seal magnet**	—	
8	**Motor cover**	Aluminium alloy	Anodised
9	**End cover A**	Aluminium alloy	Anodised
10	**Roller shaft**	Stainless steel	
11	**Roller**	Synthetic resin	
12	**Bearing stopper**	Carbon steel	

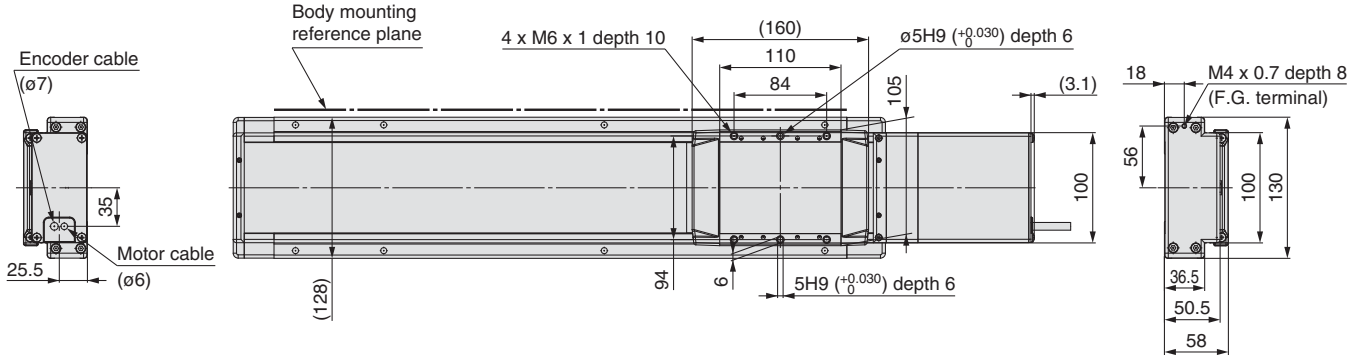
No.	Description	Material	Note
13	**Coupling**	—	
14	**Table cap**	Synthetic resin	
15	**Seal band stopper**	Synthetic resin	
16	**Blanking plate**	Aluminium alloy	Anodised
17	**Motor**	—	
18	**Grommet**	NBR	
19	**Dust seal band**	Stainless steel	
20	**Bearing**	—	
21	**Bearing**	—	
22	**Nut fixing pin**	Carbon steel	
23	**Magnet**	—	

Dimensions: Ball Screw Drive

LEJS40







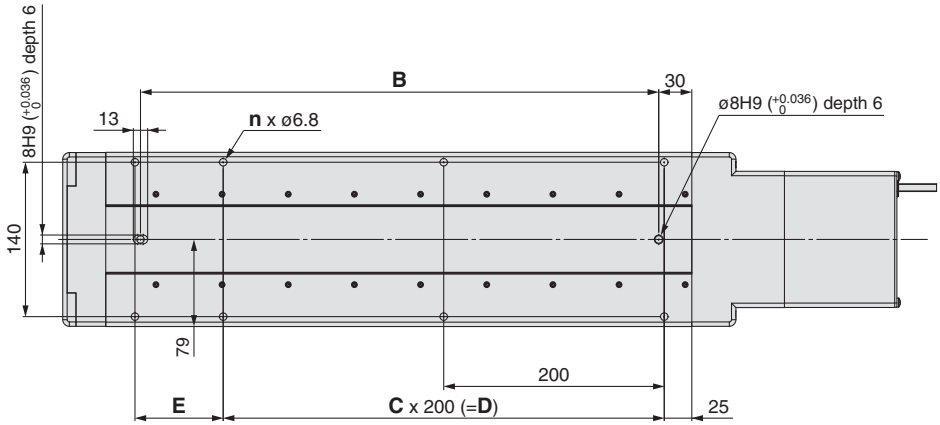
Note 1) Distance within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) The Z phase first detecting position from the stroke end of the motor side.
Note 3) Auto switch magnet is located in the table centre.

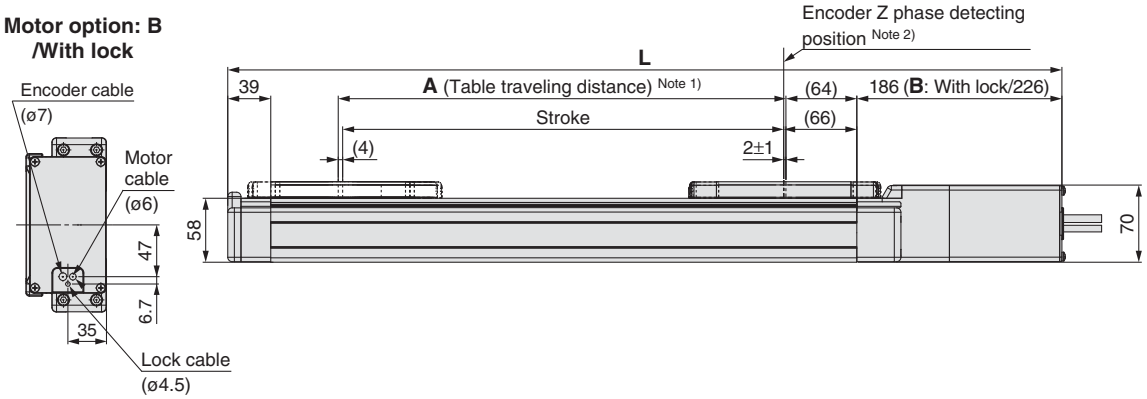
[mm]

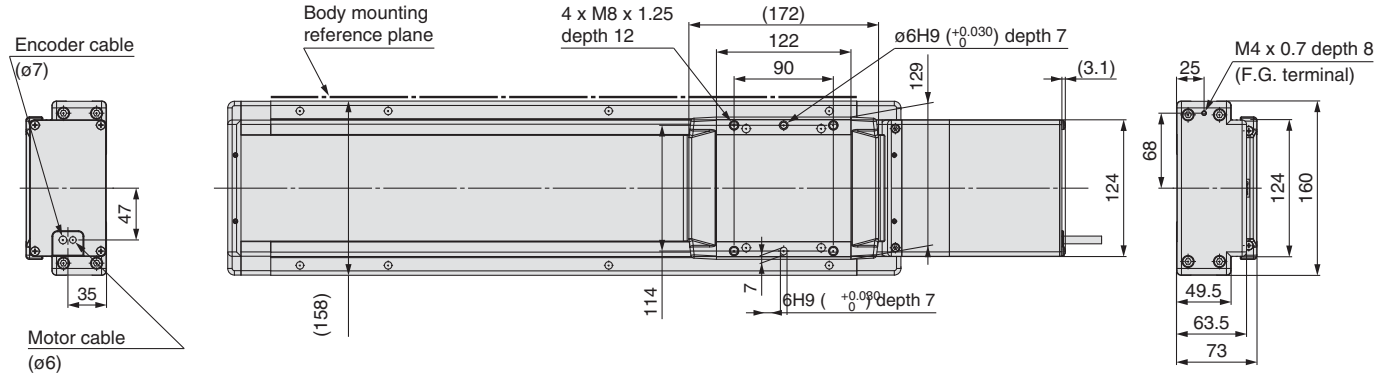
Model	L		A	B	n	C	D	E
	Without lock	With lock						
LEJS40S□□-200□-□□□□	523.5	563.5	206	260	6	1	200	80
LEJS40S□□-300□-□□□□	623.5	663.5	306	360	6	1	200	180
LEJS40S□□-400□-□□□□	723.5	763.5	406	460	8	2	400	80
LEJS40S□□-500□-□□□□	823.5	863.5	506	560	8	2	400	180
LEJS40S□□-600□-□□□□	923.5	963.5	606	660	10	3	600	80
LEJS40S□□-700□-□□□□	1023.5	1063.5	706	760	10	3	600	180
LEJS40S□□-800□-□□□□	1123.5	1163.5	806	860	12	4	800	80
LEJS40S□□-900□-□□□□	1223.5	1263.5	906	960	12	4	800	180
LEJS40S□□-1000□-□□□□	1323.5	1363.5	1006	1060	14	5	1000	80
LEJS40S□□-1200□-□□□□	1523.5	1563.5	1206	1260	16	6	1200	80

Dimensions: Ball Screw Drive

LEJS63







Note 1) 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 2) The Z phase first detecting position from the stroke end of the motor side.
Note 3) Auto switch magnet is located in the table centre.

[mm]

Model	L		A	B	n	C	D	E
	Without lock	With lock						
LEJS63S□□-300□-□□□□	656.5	696.5	306	370	6	1	200	180
LEJS63S□□-400□-□□□□	756.5	796.5	406	470	8	2	400	80
LEJS63S□□-500□-□□□□	856.5	896.5	506	570	8	2	400	180
LEJS63S□□-600□-□□□□	956.5	996.5	606	670	10	3	600	80
LEJS63S□□-700□-□□□□	1056.5	1096.5	706	770	10	3	600	180
LEJS63S□□-800□-□□□□	1156.5	1196.5	806	870	12	4	800	80
LEJS63S□□-900□-□□□□	1256.5	1296.5	906	970	12	4	800	180
LEJS63S□□-1000□-□□□□	1356.5	1396.5	1006	1070	14	5	1000	80
LEJS63S□□-1200□-□□□□	1556.5	1596.5	1206	1270	16	6	1200	80
LEJS63S□□-1500□-□□□□	1856.5	1896.5	1506	1570	18	7	1400	180

Electric Actuator/High Rigidity Slider Type
Belt Drive AC Servo Motor
Series LEJB



How to Order

LEJB **40** **S2** **T** – **500** □ – □ □ □ □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶ Size

40
63

❷ Motor type*1

Symbol	Type	Output [W]	Actuator size	Compatible drivers
S2	AC servo motor (Incremental encoder)	100	40	LECSA□-S1
S3	AC servo motor (Incremental encoder)	200	63	LECSA□-S3
S6	AC servo motor (Absolute encoder)	100	40	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	63	LECSB□-S7 LECSC□-S7 LECSS□-S7

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

❸ Lead [mm]

Symbol	LEJB40	LEJB63
T	27	42

❹ Stroke [mm]*2

200 to 3000

*2: Refer to the table below for details.

❺ Motor option

—	Without option
B	With lock

❻ Cable type*4, *5, *6

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

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

*6: Standard cable entry direction is "(A) Axis side". (Refer to page 36 for details.)

❼ Cable length [m]*4, *7

—	Without cable
2	2 m
5	5 m
A	10 m

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

❽ Driver type*4

	Compatible drivers	Power supply voltage [V]
—	Without driver	—
A1	LECSA1	100 to 120
A2	LECSA2	200 to 230
B1	LECSB1	100 to 120
B2	LECSB2	200 to 230
C1	LECSC1	100 to 120
C2	LECSC2	200 to 230
S1	LECSS1	100 to 120
S2	LECSS2	200 to 230

❾ I/O connector

—	Without connector
H	With connector

Applicable Stroke Table*3

●Standard ○Produced upon receipt of order

Model \ Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200	1500	2000	3000
LEJB40	○	●	○	●	○	○	●	○	●	○	○	○	—
LEJB63	—	○	○	●	○	○	●	○	●	●	○	○	○

*3: Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.

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

For auto switches, refer to pages 19 and 20.

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	—
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	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 25			

Specifications

LEJB40/63 AC Servo Motor

Model			LEJB40S$^{2}_{6}$	LEJB63S$^{3}_{7}$
Actuator specifications	Stroke [mm] Note 1)		(200), 300, (400), 500, (600), (700), 800 (900), 1000, (1200), (1500), (2000)	(300), (400), 500, (600), (700), 800 (900), 1000, 1200, (1500), (2000), (3000)
	Work load [kg]	Horizontal	20 (If the stroke exceeds 1000 mm: 10)	30
	Speed [mm/s] Note 2)		2000	3000
	Max. acceleration/deceleration [mm/s^2]		20000 (Refer to pages 4 to 7 for limit according to work load and duty ratio.)	
	Positioning repeatability [mm] Note 3)		±0.04	
	Lead [mm]		27	42
	Impact/Vibration resistance [m/s^2] Note 4)		50/20	
	Actuation type		Belt	
	Guide type		Linear guide	
	Allowable external force [N]		20	
	Operating temperature range [°C]		5 to 40	
	Operating humidity range [%RH]		90 or less (No condensation)	
	Regeneration option		May be required depending on speed and work load. (Refer to page 36.)	
Electric specifications	Motor output [W]/Size [mm]		100/□40	200/□60
	Motor type		AC servo motor (100/200 VAC)	
	Encoder		Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)	
	Power consumption [W] Note 5)	Horizontal	65	190
		Vertical	—	—
	Standby power consumption when operating [W] Note 6)	Horizontal	2	2
		Vertical	—	—
	Max. instantaneous power consumption [W] Note 7)		445	725
Lock unit specifications	Type Note 8)		Non-magnetizing lock	
	Holding force [N]		60	189
	Power consumption at 20°C [W] Note 9)		6.3	7.9
	Rated voltage [V]		24 VDC $^{0}_{-10\%}$	

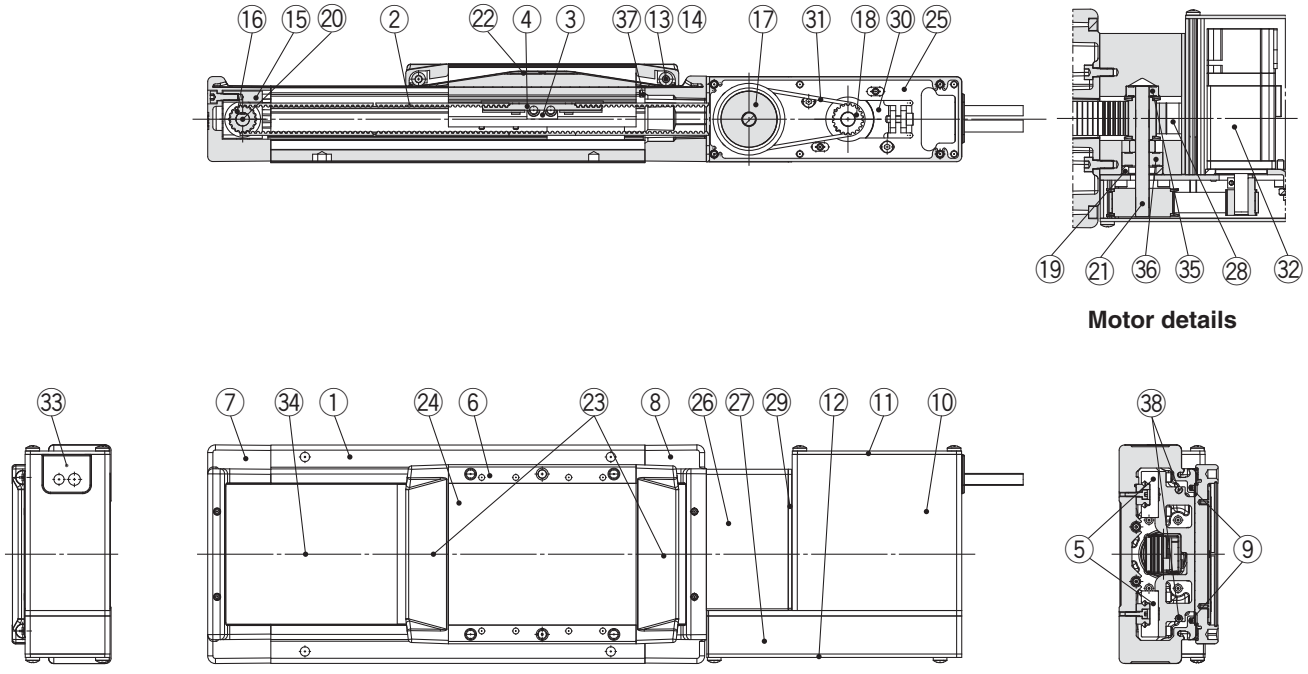
Note 1) Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders.
Note 2) Check “Speed–Work Load Graph (Guide)” on page 2.
Note 3) Conforming to JIS B 6191-1999
Note 4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester 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

Model	LEJB40											
Stroke [mm]	(200)	300	(400)	500	(600)	(700)	800	(900)	1000	(1200)	(1500)	(2000)
Product weight [kg]	5.7	6.4	7.1	7.7	8.4	9.1	9.8	10.5	11.2	12.6	14.7	18.1
Additional weight with lock [kg]	0.2 (Incremental encoder)/0.3 (Absolute encoder)											

Model	LEJB63											
Stroke [mm]	(300)	(400)	500	(600)	(700)	800	(900)	1000	1200	(1500)	(2000)	(3000)
Product weight [kg]	11.5	12.7	13.8	15.0	16.2	17.4	18.6	19.7	22.1	25.7	31.6	43.4
Additional weight with lock [kg]	0.4 (Incremental encoder)/0.7 (Absolute encoder)											

Construction



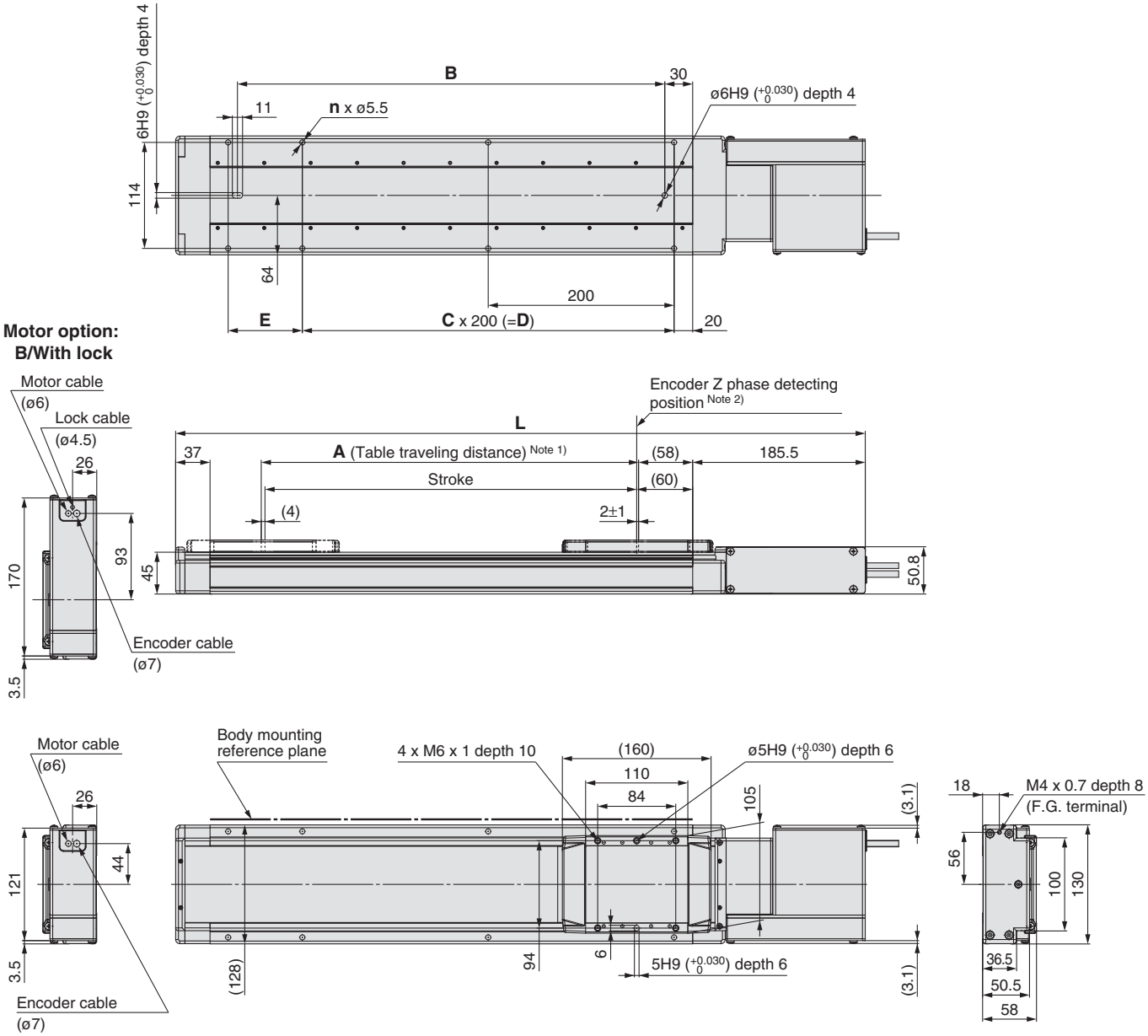
Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Belt**	—	
3	**Belt holder**	Carbon steel	
4	**Belt stopper**	Aluminium alloy	
5	**Linear guide assembly**	—	
6	**Table**	Aluminium alloy	Anodised
7	**Housing A**	Aluminium alloy	Coating
8	**Housing B**	Aluminium alloy	Coating
9	**Seal magnet**	—	
10	**Motor cover**	Aluminium alloy	Anodised
11	**End cover A**	Aluminium alloy	Anodised
12	**End cover B**	Aluminium alloy	Anodised
13	**Roller shaft**	Stainless steel	
14	**Roller**	Synthetic resin	
15	**Pulley holder**	Aluminium alloy	
16	**Drive pulley**	Aluminium alloy	
17	**Speed reduction pulley**	Aluminium alloy	
18	**Motor pulley**	Aluminium alloy	
19	**Spacer**	Aluminium alloy	

No.	Description	Material	Note
20	**Pulley shaft A**	Stainless steel	
21	**Pulley shaft B**	Stainless steel	
22	**Table cap**	Synthetic resin	
23	**Seal band stopper**	Synthetic resin	
24	**Blanking plate**	Aluminium alloy	Anodised
25	**Motor mount plate**	Carbon steel	
26	**Pulley block**	Aluminium alloy	Anodised
27	**Pulley cover**	Aluminium alloy	Anodised
28	**Belt stopper**	Aluminium alloy	
29	**Side plate**	Aluminium alloy	Anodised
30	**Motor plate**	Carbon steel	
31	**Belt**	—	
32	**Motor**	—	
33	**Grommet**	NBR	
34	**Dust seal band**	Stainless steel	
35	**Bearing**	—	
36	**Bearing**	—	
37	**Stopper pin**	Stainless steel	
38	**Magnet**	—	

Dimensions: Belt Drive

LEJB40



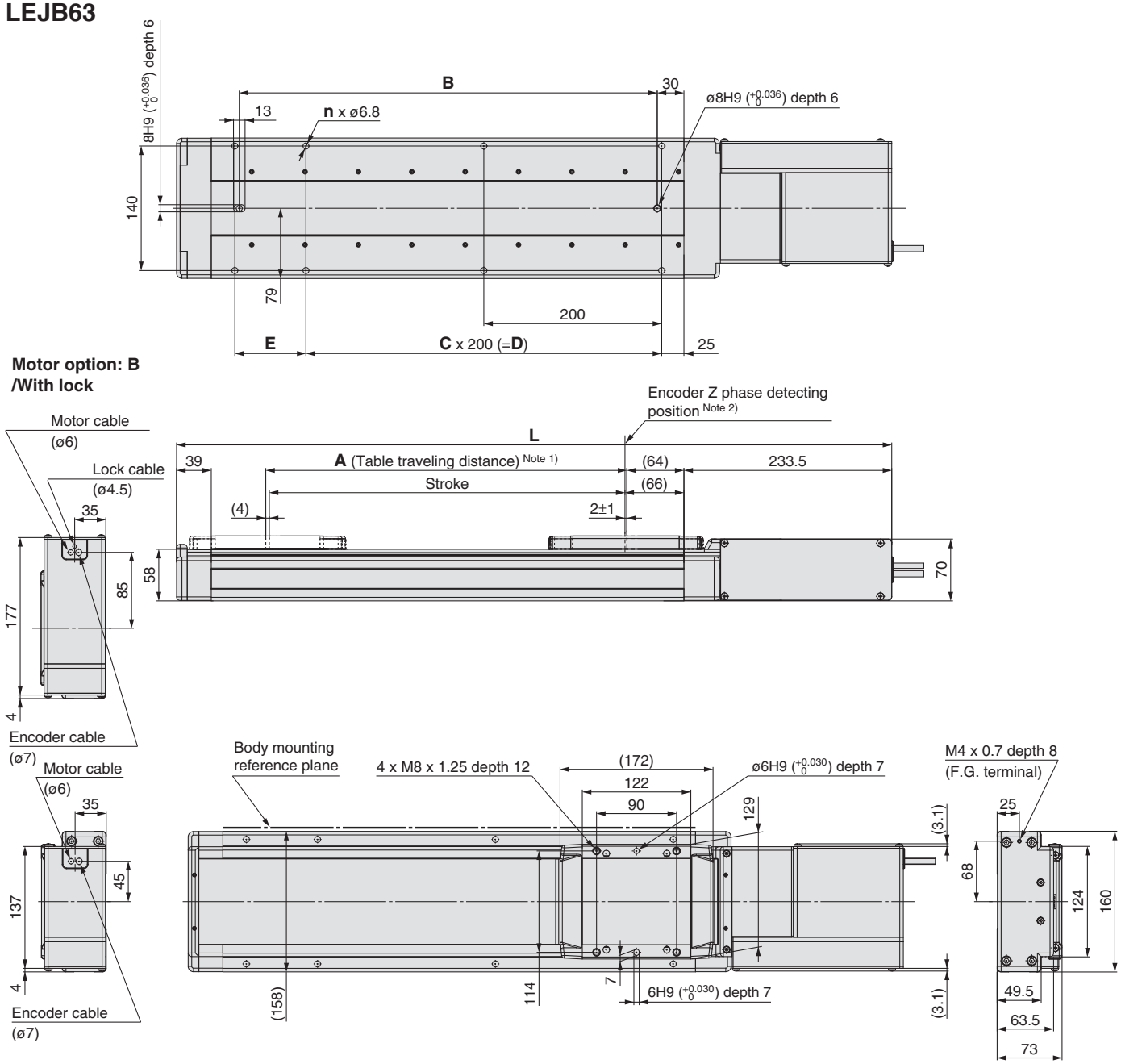
Note 1) Distance within which the table can move when it returns to origin. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) The Z phase first detecting position from the stroke end of the motor side.
Note 3) Auto switch magnet is located in the table centre.

[mm]

Model	L	A	B	n	C	D	E
LEJB40S□□-200□-□□□□	542	206	260	6	1	200	80
LEJB40S□□-300□-□□□□	642	306	360	6	1	200	180
LEJB40S□□-400□-□□□□	742	406	460	8	2	400	80
LEJB40S□□-500□-□□□□	842	506	560	8	2	400	180
LEJB40S□□-600□-□□□□	942	606	660	10	3	600	80
LEJB40S□□-700□-□□□□	1042	706	760	10	3	600	180
LEJB40S□□-800□-□□□□	1142	806	860	12	4	800	80
LEJB40S□□-900□-□□□□	1242	906	960	12	4	800	180
LEJB40S□□-1000□-□□□□	1342	1006	1060	14	5	1000	80
LEJB40S□□-1200□-□□□□	1542	1206	1260	16	6	1200	80
LEJB40S□□-1500□-□□□□	1842	1506	1560	18	7	1400	180
LEJB40S□□-2000□-□□□□	2342	2006	2060	24	10	2000	80

Dimensions: Belt Drive

LEJB63



Note 1) 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 2) The Z phase first detecting position from the stroke end of the motor side.
Note 3) Auto switch magnet is located in the table centre.

[mm]

Model	L	A	B	n	C	D	E
LEJB63S□□-300□-□□□□	704	306	370	6	1	200	180
LEJB63S□□-400□-□□□□	804	406	470	8	2	400	80
LEJB63S□□-500□-□□□□	904	506	570	8	2	400	180
LEJB63S□□-600□-□□□□	1004	606	670	10	3	600	80
LEJB63S□□-700□-□□□□	1104	706	770	10	3	600	180
LEJB63S□□-800□-□□□□	1204	806	870	12	4	800	80
LEJB63S□□-900□-□□□□	1304	906	970	12	4	800	180
LEJB63S□□-1000□-□□□□	1404	1006	1070	14	5	1000	80
LEJB63S□□-1200□-□□□□	1604	1206	1270	16	6	1200	80
LEJB63S□□-1500□-□□□□	1904	1506	1570	18	7	1400	180
LEJB63S□□-2000□-□□□□	2404	2006	2070	24	10	2000	80
LEJB63S□□-3000□-□□□□	3404	3006	3070	34	15	3000	80

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

CE RoHS

Grommet

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



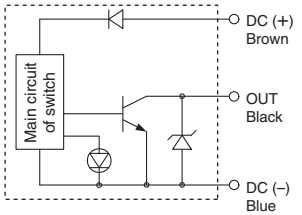
⚠Caution

Precautions

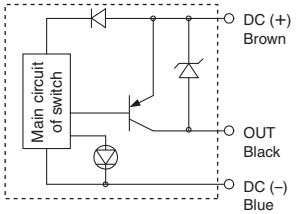
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

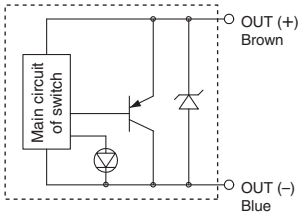
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

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

PLC: Programmable Logic Controller

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

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

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

Weight

[g]

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

How to Order

D-M9 N □ □

Series

Wiring/Output type

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

Electrical entry

—	In-line
V	Perpendicular

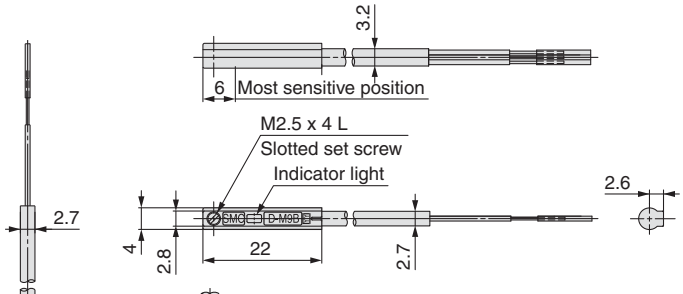
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

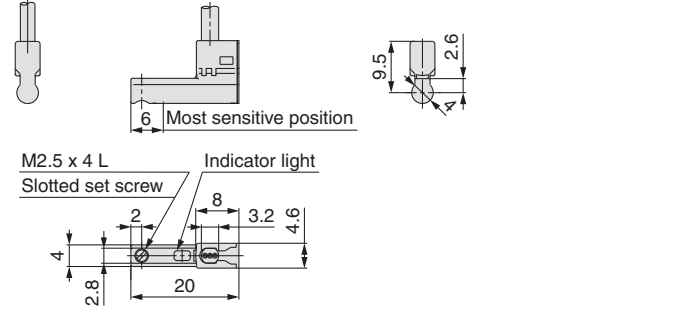
Dimensions

[mm]

D-M9□



D-M9□V



SMC

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

CE RoHS

Grommet

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



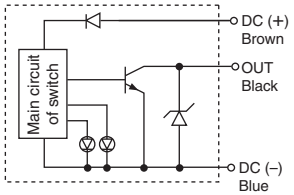
⚠Caution

Precautions

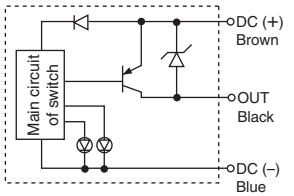
Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

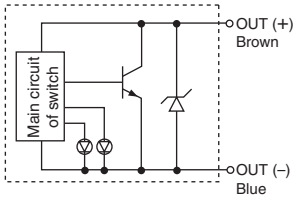
D-M9NW/M9NWV



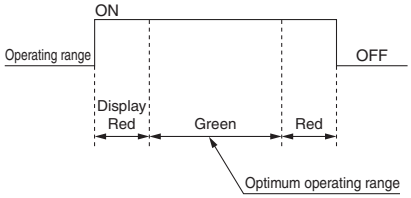
D-M9PW/M9PWV



D-M9BW/M9BWV



Indicator light/Indication method



Auto Switch Specifications

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

PLC: Programmable Logic Controller

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

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

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

Weight

[g]

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

How to Order

D-M9 N W V L

Series

Wiring/Output type

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

Electrical entry

—	In-line
V	Perpendicular

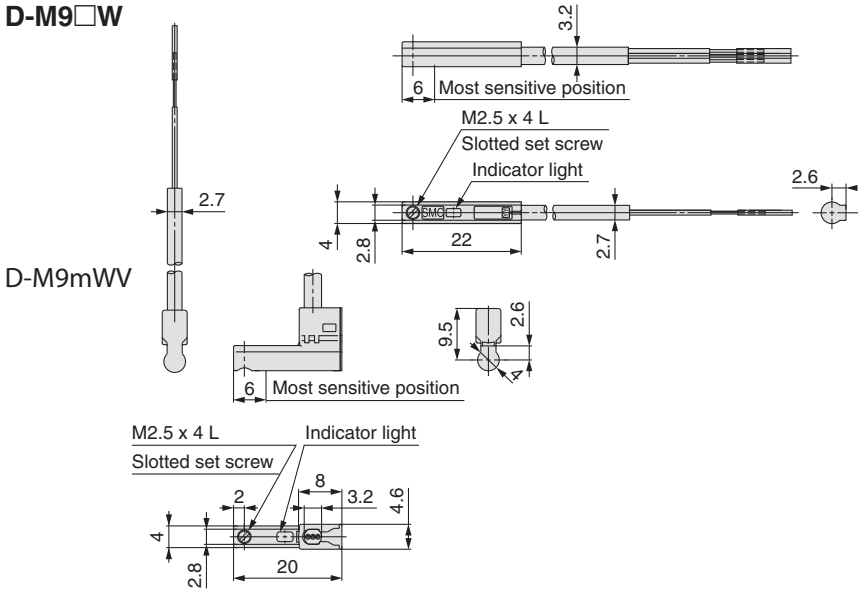
Lead wire length

—	0.5 m
M	1 m
L	3 m
Z	5 m

Dimensions

[mm]

D-M9□W



Series LEJ
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 maximum 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.

The product can be damaged.
The components including the motor are manufactured to precise tolerances. So that even a slight deformation may cause a malfunction or seizure.

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. When the product repeatedly cycles with partial strokes (100 mm or less), lubrication can run out. Operate it at a full stroke at least once a day or every 1000 strokes.

3. 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.

Handling

⚠Caution

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

It can cause damage to the actuator.



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 catalogue.

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.

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

5. Do not apply strong impact or an excessive moment while mounting the product or a workpiece.

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

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

Insufficient flatness of a workpiece or base mounted on the body of the product may cause play on the guide and increased sliding resistance.
In the case of overhang mounting (including cantilever), to avoid deflection of the actuator body, use a support plate or support guide.

7. When mounting the actuator, use all mounting holes.

If all mounting holes are not used, it influences the specifications, e.g., the amount of displacement of the table increases.

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

9. Do not apply external force to the dust seal band.

Particularly during the transportation.

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

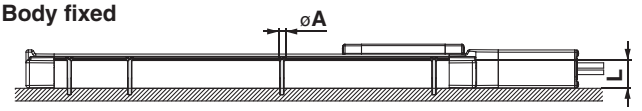
Handling

⚠Caution

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

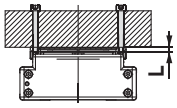
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



Model	Bolt	øA [mm]	L [mm]
LEJ□40	M5	5.5	36.5
LEJ□63	M6	6.8	49.5

Workpiece fixed



Model	Bolt	Max. tightening torque [N·m]	L (Max. screw-in depth) [mm]
LEJ□40	M6 x 1	5.2	10
LEJ□63	M8 x 1.25	12.5	12

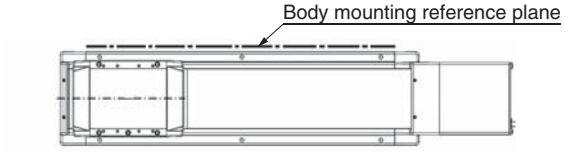
To prevent the workpiece fixing bolts from touching the body, use bolts that are 0.5 mm or shorter than the maximum screw-in depth. If long bolts are used, they can touch the body and cause a malfunction, etc.

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

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

13. Vibration may occur during operation, this could be caused by the operating conditions.
If it occurs, adjust response value of auto tuning of driver to be lower.
During the first auto tuning noise may occur, the noise will stop when the tuning is complete.

14. When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of chamfering. (Recommended height 6 mm)



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.
   * For lubrication, use lithium grease No. 2.
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

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 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

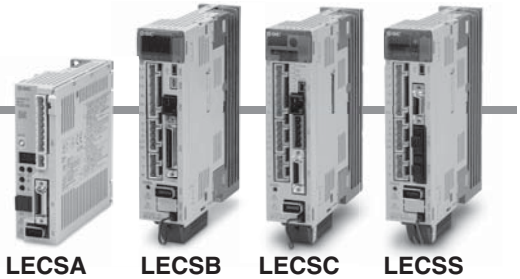
Incremental Type

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

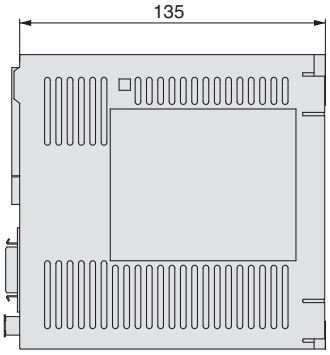
1	100 to 120 VAC, 50/60 Hz
2	200 to 230 VAC, 50/60 Hz

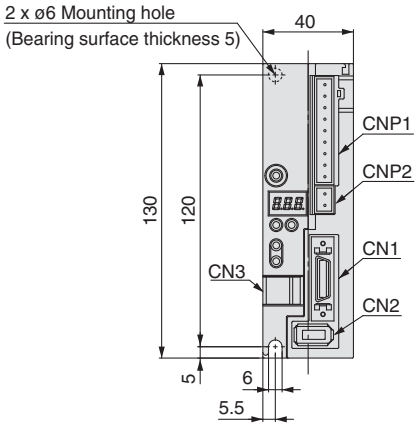
Compatible motor type

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

Dimensions

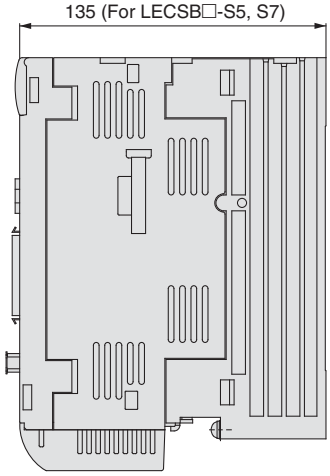
LECSA□



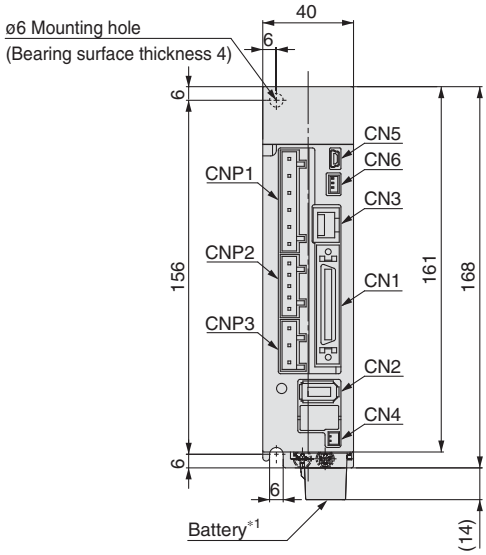


Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector

LECSB□



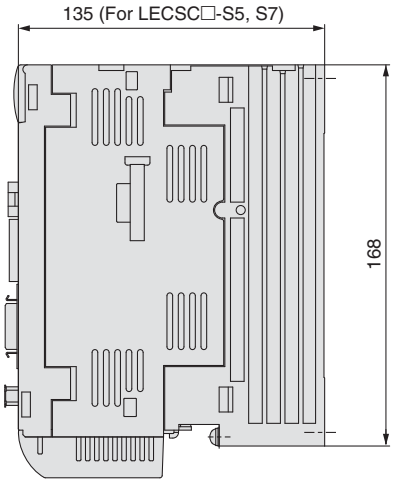
∗1 Battery included.

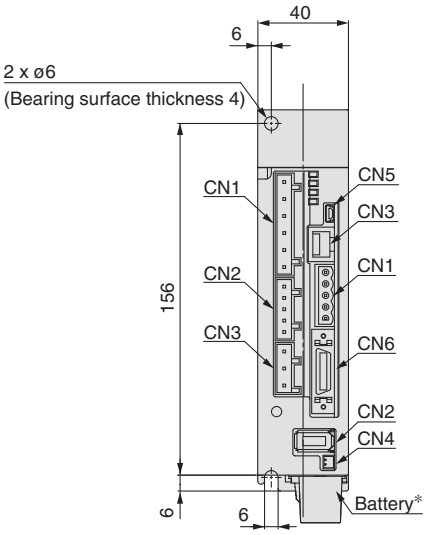


Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analog monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

Dimensions

LECSC□

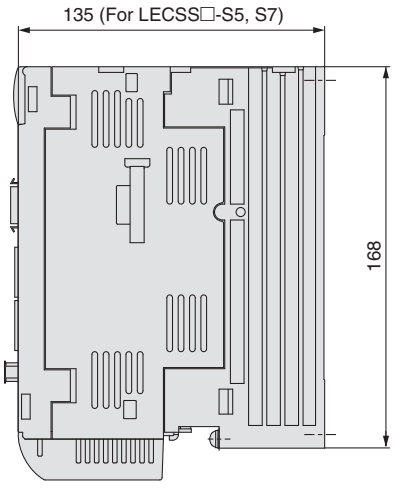


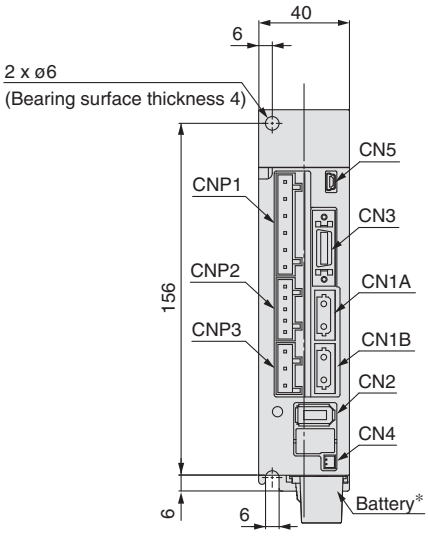


Connector name	Description
CN1	CC-Link connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	I/O signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗ Battery included.

LECSS□





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

∗ Battery included.

Specifications

Series LECSA

Model		LECSA1-S1	LECSA1-S3	LECSA2-S1	LECSA2-S3
Compatible motor capacity [W]		100	200	100	200
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
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			

Series LECSB

Model		LECSB1-S5	LECSB1-S7	LECSB2-S5	LECSB2-S7
Compatible motor capacity [W]		100	200	100	200
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
Control power supply	**Control power supply voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC	
	Rated current [A]	0.4		0.2	
Parallel input		10 inputs			
Parallel output		6 outputs			
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)			
Function	**In-position range setting [pulse]**	0 to ±10000 (Command pulse unit)			
	Error excessive	±3 rotations			
	Torque limit	Parameter setting or external 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			

*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
Compatible motor capacity [W]			100	200	100	200
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
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
		Maximum overall cable length [m]	1200	900	400	160
		Cable length between stations [m]	0.2 or more			
	I/O occupation area (Inputs/Outputs)		1 station occupied (Remote I/O 32 points/32 points)/(Remote register 4 words/4 words) 2 stations occupied (Remote I/O 64 points/64 points)/(Remote register 8 words/8 words)			
	Number of connectable drivers		Up to 42 (when 1 station is occupied by 1 driver), Up to 32 (when 2 stations are occupied by 1 driver), when there are only remote device stations.			
Command method	Remote register input		Available with CC-Link communication (2 stations occupied)			
	Point table No. input		Available with CC-Link communication, RS422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS422 communication: 255 points			
	Indexer positioning input		Available with CC-Link communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points			
Communication			USB communication, RS422 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			

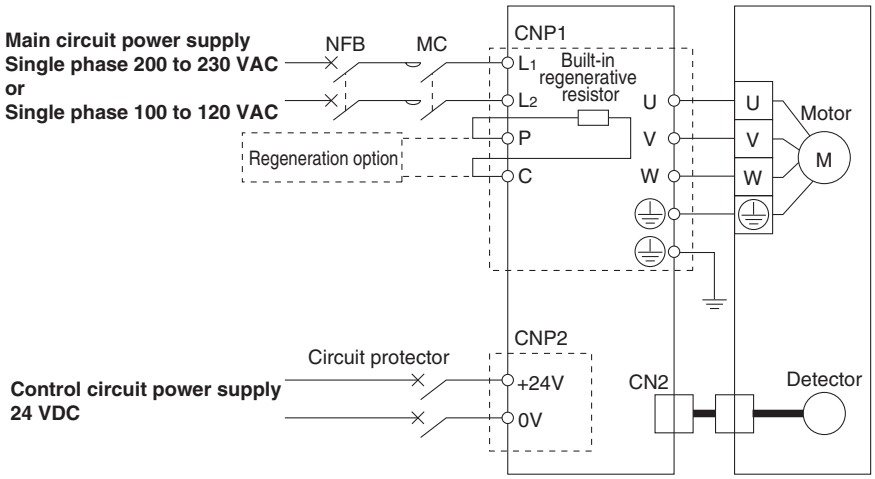
*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the cable extensions and the cable length between stations.
*2 USB communication and RS422 communication cannot be performed at the same time.

Series LECSS

Model		LECSS1-S5	LECSS1-S7	LECSS2-S5	LECSS2-S7
Compatible motor capacity [W]		100	200	100	200
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
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		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			

Power Supply Wiring Example: LECSA

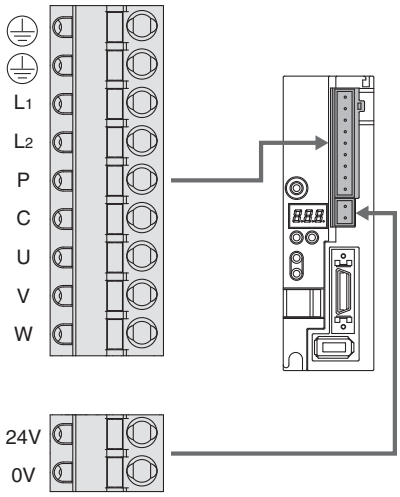
LECSA□-□



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: No need for connection 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)	



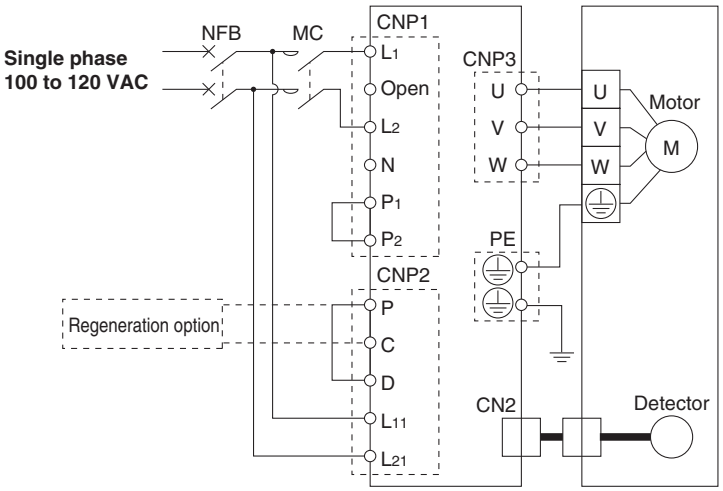
Control Circuit Power Supply Connector: CNP2

∗ 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

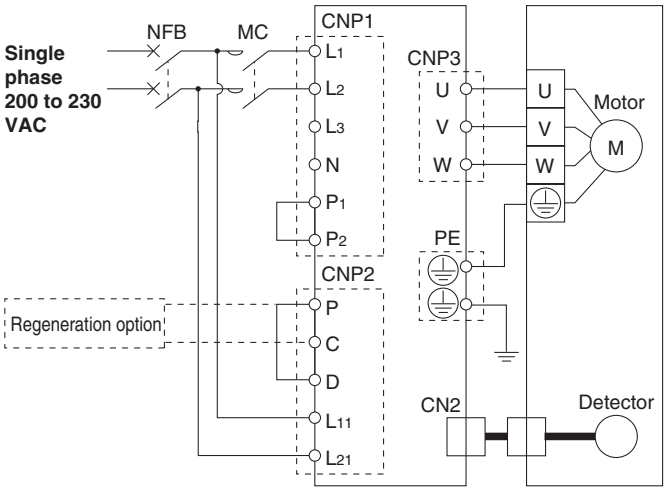
Power Supply Wiring Example: LECSB, LECSC, LECSS

LECSB1-□
LECSC1-□
LECSS1-□

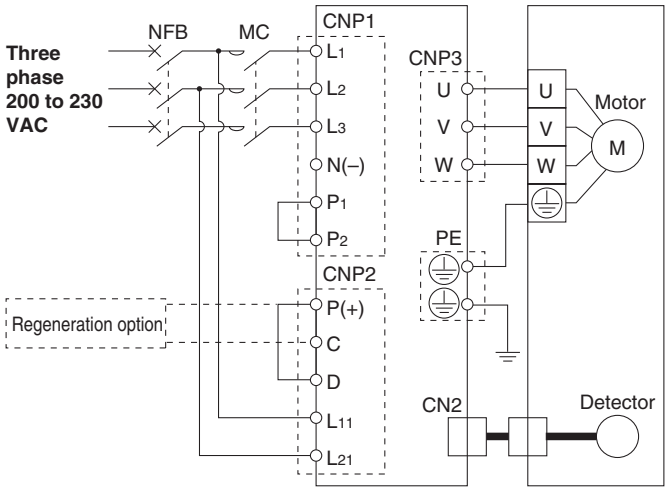


LECSB2-□
LECSC2-□
LECSS2-□

For single phase 200 VAC



For three phase 200 VAC



Note) For single phase 200 to 230 VAC, power supply should be connected to L1 and L2 terminals, with nothing connected to L3.

Main Circuit Power Supply Connector: CNP1 ∗ Accessory

Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L1,L2 LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1,L2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1,L2,L3
L2		
L3		
N	Do not connect.	
P1	Connect between P1 and P2. (Connected at time of shipping.)	
P2		

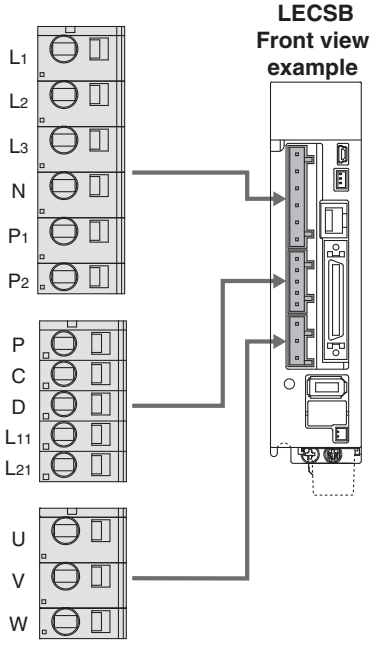
Control Circuit Power Supply Connector: CNP2 ∗ Accessory

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		
L11	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L11,L21 LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L11,L21 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L11,L21
L21		

Motor Connector: CNP3 ∗ Accessory

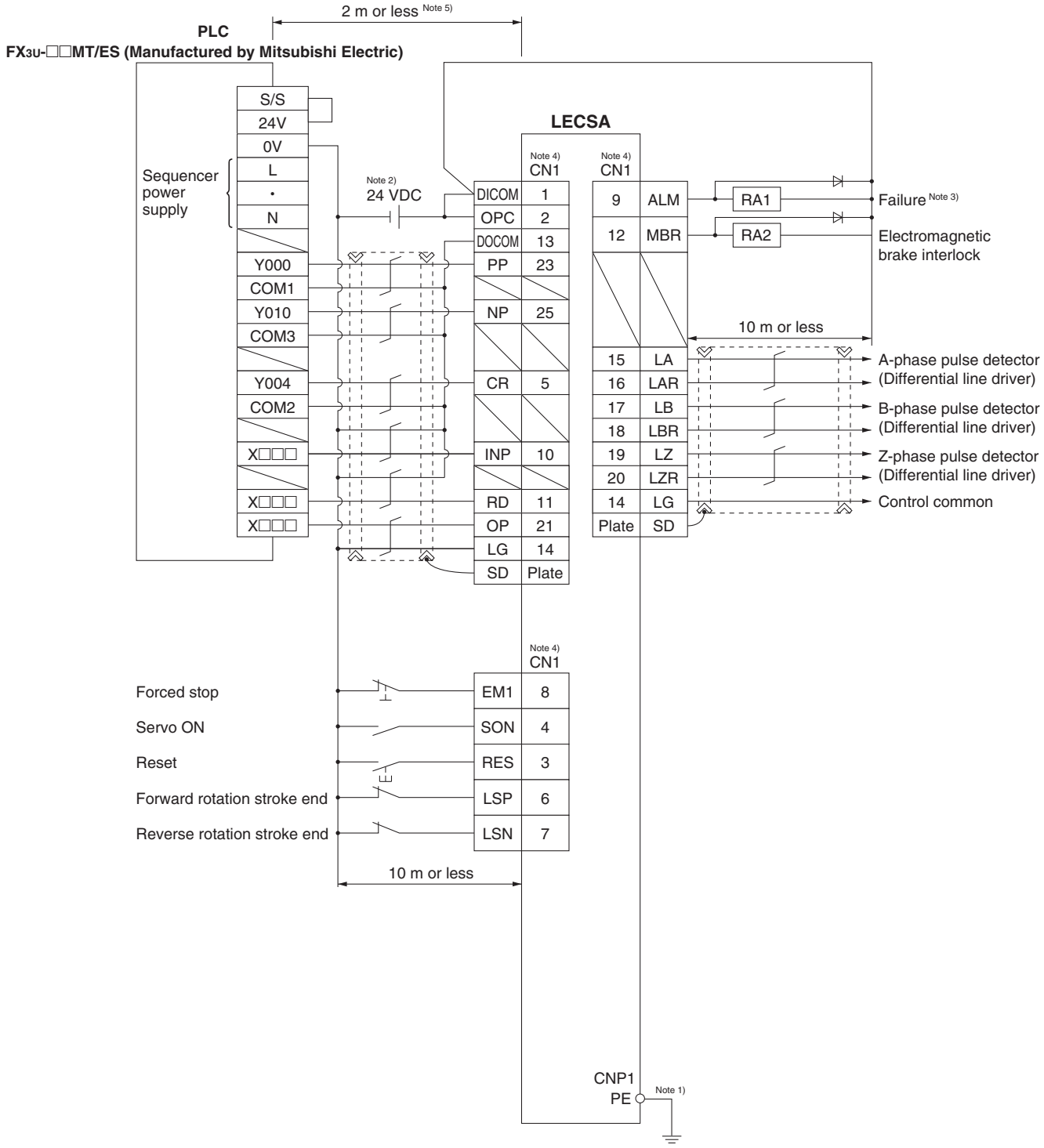
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W)
V	Servo motor power (V)	
W	Servo motor power (W)	

LECSB Front view example



Control Signal Wiring Example: LECSA

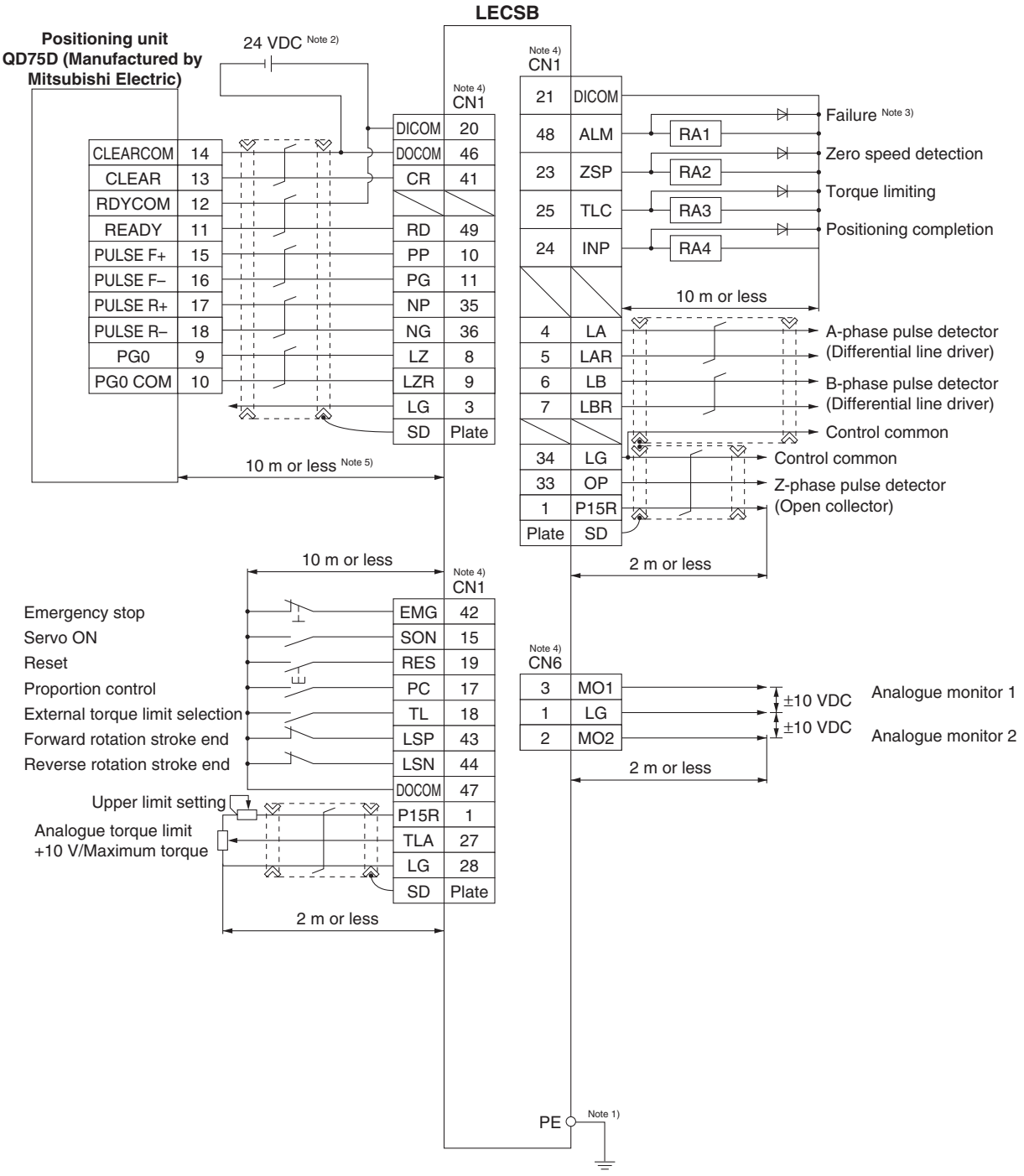
This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSA operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning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

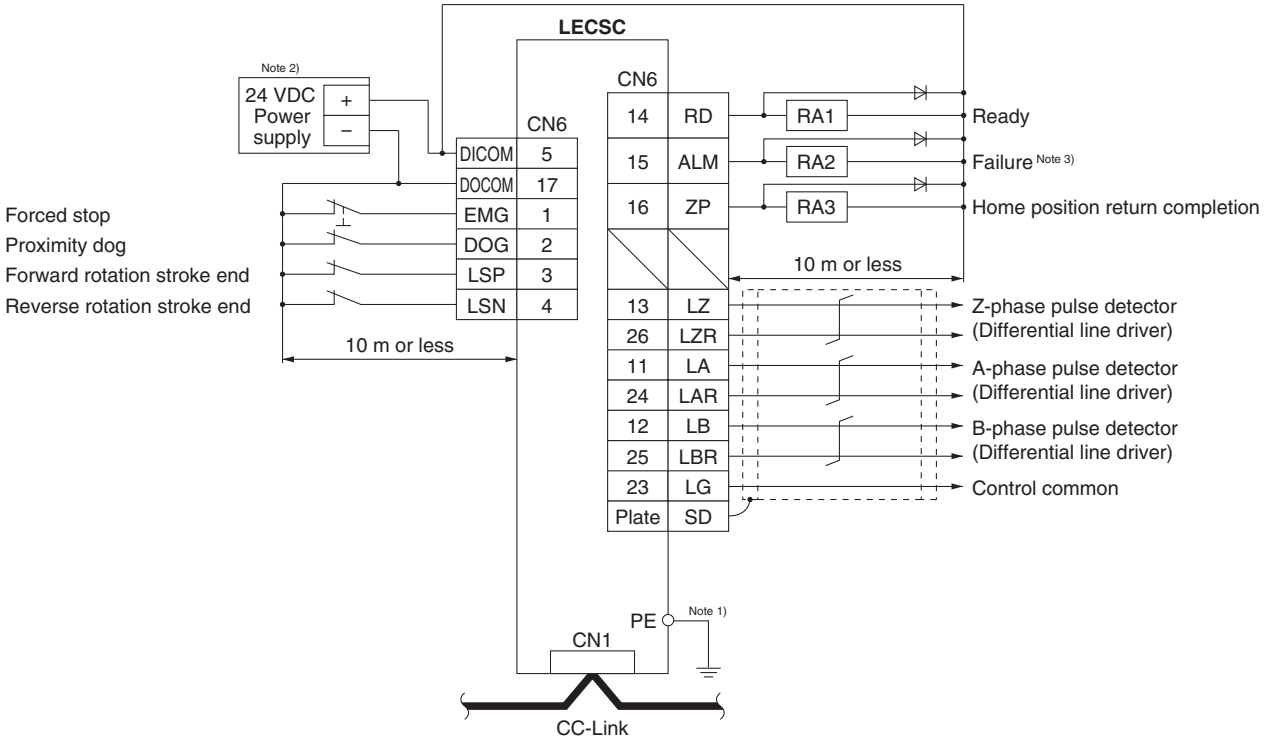
Control Signal Wiring Example: LECSB

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.



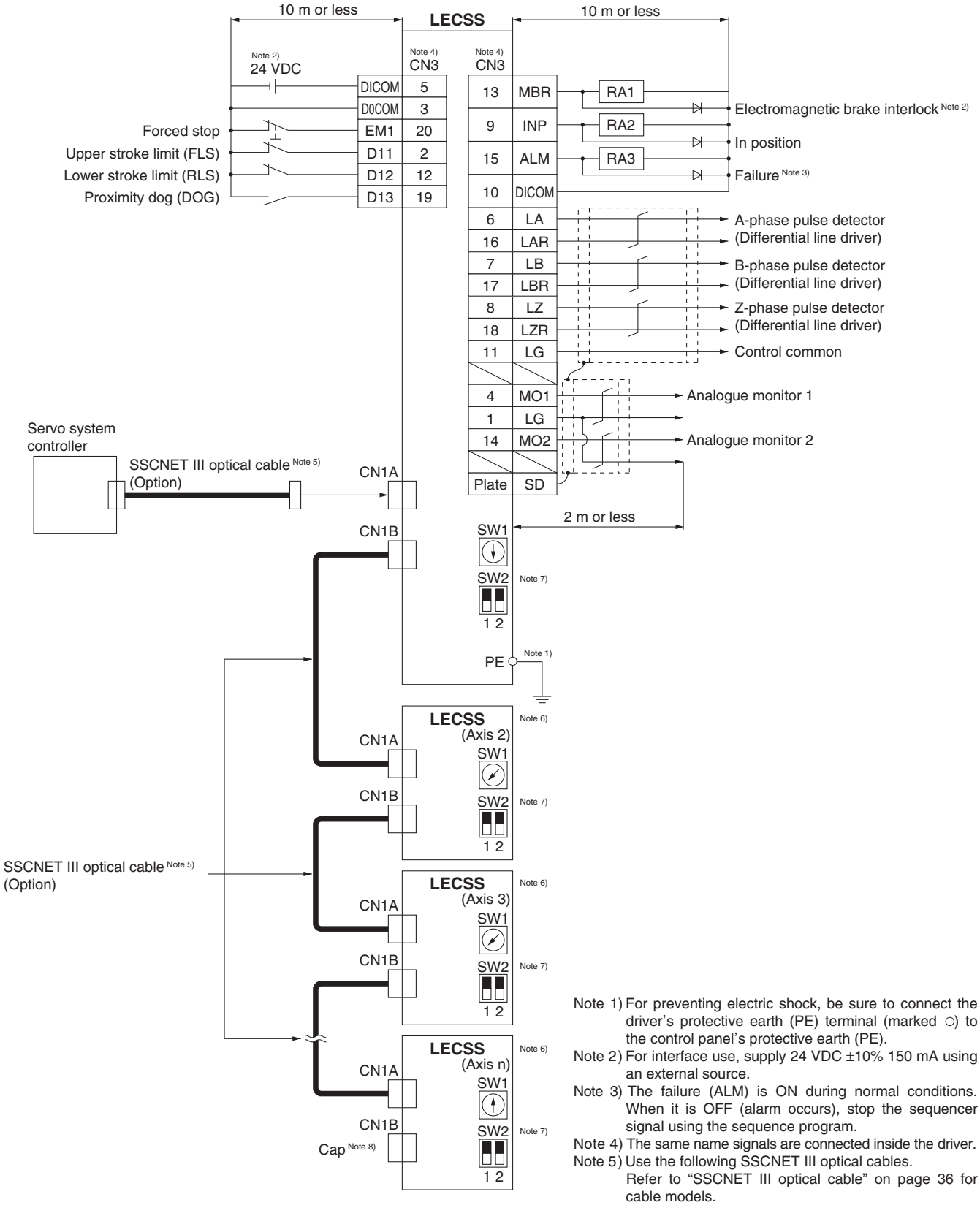
Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal to the control panel's protective earth (PE).
Note 2) For interface use, supply 24 VDC ±10% 300 mA using an external source.
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm 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 36 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

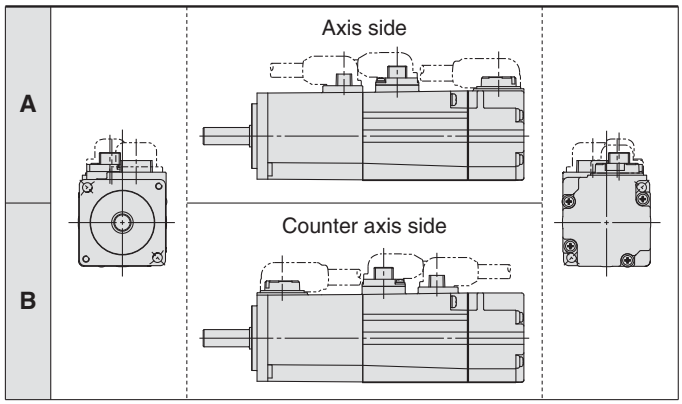
Cable type

S	Standard cable
R	Robotic cable

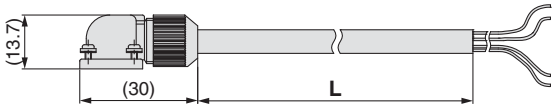
Cable length (L) [m]

2	2
5	5
A	10

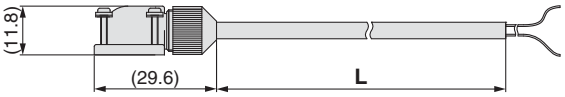
Direction of connector



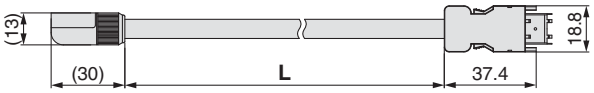
LE-CSM-□□: Motor cable



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.

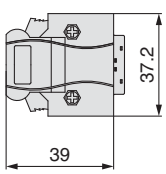
I/O connector

LE − CSN A

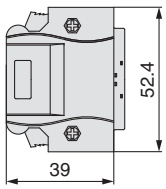
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□

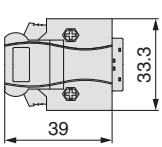
LE-CSNA



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.

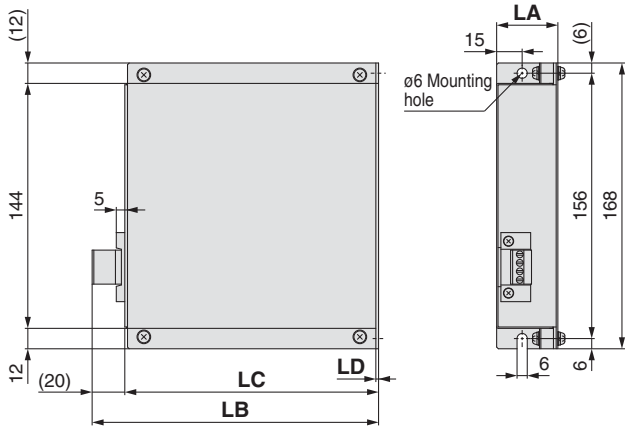
Regeneration option (LECS□ common)

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".



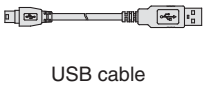
Dimensions [mm]

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




USB cable


PC


Setup software
(MR Configurator™)

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

LEC−MR−SETUP221E

Display language

—	Japanese version
E	English version

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

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

Compatible PC

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

Hardware Requirements

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

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

USB cable (3 m)

LEC−MR−J3USB

∗ MR-J3USB manufactured by Mitsubishi Electric.

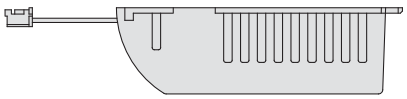
Cable for connecting PC and driver when using the setup software (MR Configurator™).
Do not use any cable other than this cable.

Battery (only for LECSB, LECSC or LECSS)

LEC−MR−J3BAT

∗ MR-J3BAT manufactured by Mitsubishi Electric.

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



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

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

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

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

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

Handling

⚠Warning

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

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

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

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

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

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

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

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

Handling

⚠Warning

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

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

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

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

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

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

15. Do not use the products in an environment where surges are generated.
Devices (solenoid type lifters, high frequency induction furnaces, motors, etc.) that generate a large amount of surge around the product may lead to deterioration or damage to the internal circuits of the products. Avoid supplies of surge generation and crossed lines.

16. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

17. When a surge generating load such as a relay or solenoid valve is directly driven, use a product that incorporates a surge absorption element.

Mounting

⚠Warning

1. Install the driver and its peripheral devices on fireproof material.
Direct installation on or near flammable material may cause fire.

2. Do not install these products in a place subject to vibration and impact.
Otherwise, a malfunction or failure can result.

3. The driver should be mounted on a vertical wall in a vertical direction.
Also, do not cover the driver's suction/exhaust ports.

4. Install the driver and its peripheral devices on a flat surface.
If the mounting surface is not flat or uneven, excessive force may be applied to the housing and other parts resulting in a malfunction.

Specific Product Precautions 2

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

Power Supply

⚠Caution

1. **Use a power supply with low noise between lines and between power and ground.**
   In cases where noise is high, use an isolation transformer.
2. **Take appropriate measures to prevent surges from lightning. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.**

Wiring

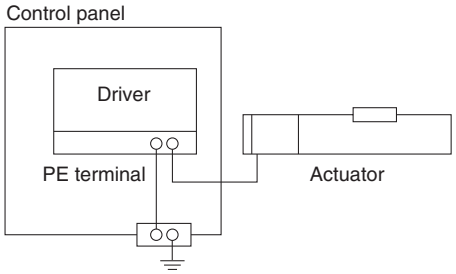
⚠Warning

1. **The driver will be damaged if a commercial power supply (100V/200V) is added to the driver's servo motor power (U, V, W). Be sure to check wiring such as wiring mistakes when the power supply is turned on.**
2. **Connect the ends of the U, V, W wires from the motor cable correctly to the phases (U, V, W) of the servo motor power. If these wires do not match up, it is unable to control the servo motor.**

Grounding

⚠Warning

1. **Make sure the product is grounded to ensure the noise tolerance of the driver.**
   For grounding actuator, connect the copper wire of the actuator to the driver's protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel's protective earth (PE) terminal.
   Do not connect them directly to the control panel's protective earth (PE) terminal.



2. **In the unlikely event that malfunction is caused by the ground, it may be disconnected.**

Maintenance

⚠Warning

1. **Perform maintenance checks periodically.**
   Confirm wiring and screws are not loose.
   Loose screws or wires may cause unexpected malfunction.
2. **Conduct an appropriate functional inspection and test after completed maintenance.**
   In case of any abnormalities (if the actuator does not move or the equipment does not operate properly, etc.), stop the operation of the system.
   Otherwise, unexpected malfunction may occur and safety cannot be assured.
   Conduct a test of the emergency stop to confirm the safety of the equipment.
3. **Do not disassemble, modify or repair the driver or its peripheral devices.**
4. **Do not put anything conductive or flammable inside the driver.**
   Otherwise, fire can result.
5. **Do not conduct an insulation resistance test or insulation withstand voltage test.**
6. **Reserve sufficient space for maintenance.**
   Design the system so that it allows required space for maintenance.

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
2. **Only personnel with appropriate training should operate machinery and equipment.**
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
3. **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
4. **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. **The product is provided for use in manufacturing industries.**
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
   If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, wichever is first.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC Corporation (Europe)

Austria	☎+43 (0)2262622800	www.smc.at	office@smc.at
Belgium	☎+32 (0)33551464	www.smcpneumatics.be	info@smcpneumatics.be
Bulgaria	☎+359 (0)2807670	www.smc.bg	office@smc.bg
Croatia	☎+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	☎+420 541424611	www.smc.cz	office@smc.cz
Denmark	☎+45 70252900	www.smcdk.com	smc@smcdk.com
Estonia	☎+372 6510370	www.smcpneumatics.ee	smc@smcpneumatics.ee
Finland	☎+358 207513513	www.smc.fi	smcfi@smc.fi
France	☎+33 (0)164761000	www.smc-france.fr	promotion@smc-france.fr
Germany	☎+49 (0)61034020	www.smc.de	info@smc.de
Greece	☎+30 210 2717265	www.smchellas.gr	sales@smchellas.gr
Hungary	☎+36 23511390	www.smc.hu	office@smc.hu
Ireland	☎+353 (0)14039000	www.smcpneumatics.ie	sales@smcpneumatics.ie
Italy	☎+39 0292711	www.smcitalia.it	mailbox@smcitalia.it
Latvia	☎+371 67817700	www.smclv.lv	info@smclv.lv
Lithuania	☎+370 5 2308118	www.smclt.lt	info@smclt.lt
Netherlands	☎+31 (0)205318888	www.smcpneumatics.nl	info@smcpneumatics.nl
Norway	☎+47 67129020	www.smc-norge.no	post@smc-norge.no
Poland	☎+48 (0)222119616	www.smc.pl	office@smc.pl
Portugal	☎+351 226166570	www.smc.eu	postpt@smc.smces.es
Romania	☎+40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Russia	☎+7 8127185445	www.smc-pneumatik.ru	info@smc-pneumatik.ru
Slovakia	☎+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	☎+386 (0)73885412	www.smc.si	office@smc.si
Spain	☎+34 902184100	www.smc.eu	post@smc.smces.es
Sweden	☎+46 (0)86031200	www.smc.nu	post@smc.nu
Switzerland	☎+41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	☎+90 212 489 0 440	www.smcpnomatik.com.tr	info@smcpnomatik.com.tr
UK	☎+44 (0)845 121 5122	www.smcpneumatics.co.uk	sales@smcpneumatics.co.uk

SMC CORPORATION Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN Phone: 03-5207-8249 FAX: 03-5298-5362

1st printing RQ printing RQ 00 Printed in Spain

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.