Doc. No. LEJ-OM00204

Operation Manual

PRODUCT NAME

Electric Actuator / Slider Type

《 AC Servo Motor 》

MODEL / Series / Product number

LEJ Series

Applicable models: LEJS / LEJB

LEJS Series
(Ball screw type)

LEJB Series
(Belt type)

AC Servo Motor Driver
LECS Series

LECSA
(Pulse input / Positioning)

LECSC
(CC-Link)

LECSB
(Pulse input)

LECSS
(SSCNET III)
(SSCNET III / H)

SMC Corporation

Contents

Safety Instructions 2

1. Procedure before operation 4
   1.1 Preparation 4
   1.2 Startup 6
   1.3 Gain tuning 7

2. Slider type / LEJS series 12
   2.1 Specification 12
   2.2 How to order 13
   2.3 Construction 14

3. Slider type / LEJB series 15
   3.1 Specification 15
   3.2 How to order 16
   3.3 Construction 17

4. Product Outline 18
   4.1 System construction 18
   4.2 Function / Control mode 21

5. Wiring and cables / Common precautions 22

6. Electric actuators / Common precautions 23
   6.1 Design and selection 23
   6.2 Mounting 24
   6.3 Handling 25
   6.4 Operating environment 26
   6.5 Maintenance 27
   6.6 Precautions for actuator with lock 27

7. Electric actuators / Slider type Common precautions 28
   7.1 Design 28
   7.2 Selection 28
   7.3 Handling 28
   7.4 Plug and unplug the “Cable” and the “Motor cover” 30
   7.5 Precaution on maintenance 31

8. Troubleshooting 34
   8.1 Alarms and Warning 34

LEJ Series / Slider type 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), Japan Industrial Standards (JIS)*1) and other safety regulations*2).

*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 10218-1992: Manipulating industrial robots -- Safety
JIS B 8370: General rules for pneumatic equipment.
JIS B 8361: General rules for hydraulic equipment.
JIS B 9960-1: Safety of machinery – Electrical equipment for machines. (Part 1: General requirements)
JIS B 8433-1993: Manipulating industrial robots - Safety. etc.

*2) Labor Safety and Sanitation Law, etc.

⚠ **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.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly.

The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery / equipment until safety is confirmed.

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.

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.

Before machinery / equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1) Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2) Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3) An application which could have negative effects on people, property, or animals requiring special safety analysis.

4) Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

LEJ Series / Slider type Safety Instructions

⚠ Caution

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

The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*3) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

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.

Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***3) 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

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).

1. Procedure before operation

1.1 Preparation

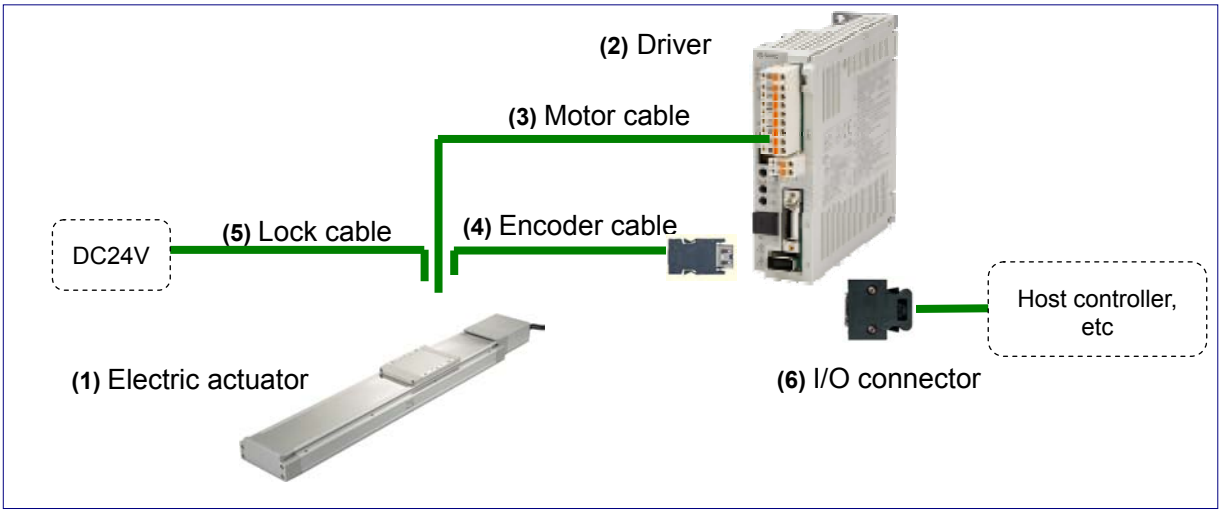
(1) Items to be prepared

Please check on the label, and the quantity of accessories, to confirm that it is the product that was ordered.

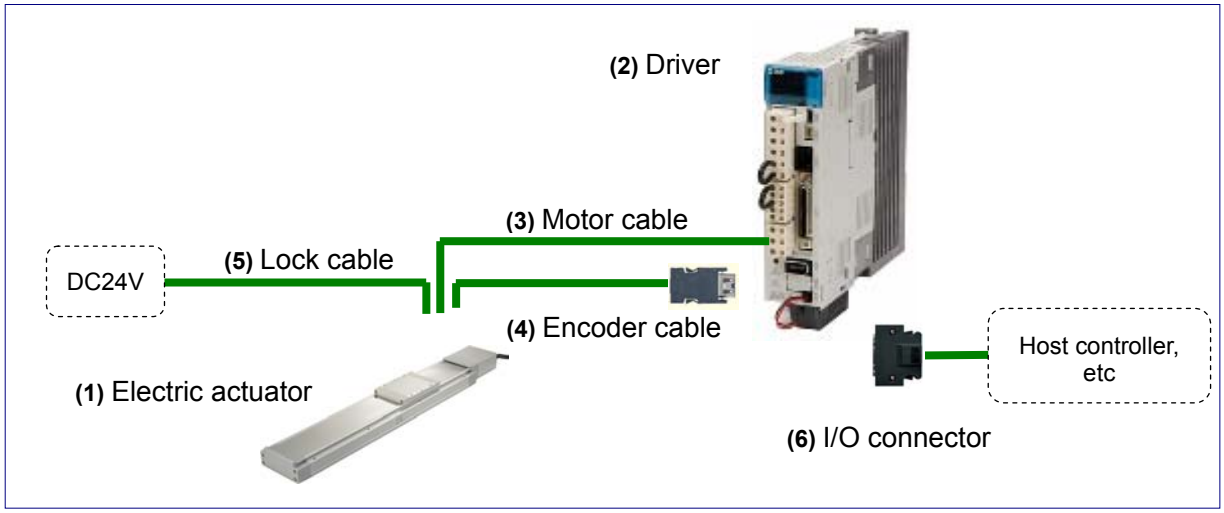
Table1-1. Components

No.	Part name	Qty
(1)	Electric Actuator / LEJ Series	1
(2)	Driver / LECS Series	1(in case with driver)
(3)	Motor cable	Pre-installed (1) (in case with cable)
(4)	Encoder cable	
(5)	Lock cable	
(6)	I/O Connector	1(in case with I/O connector)

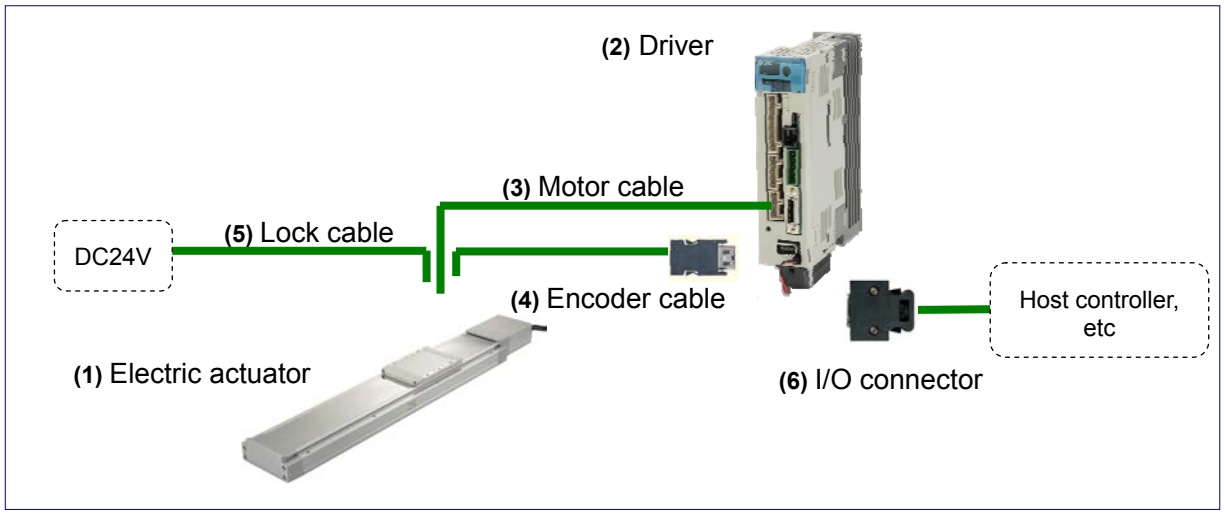
LECSA(Pulse input / Positioning)



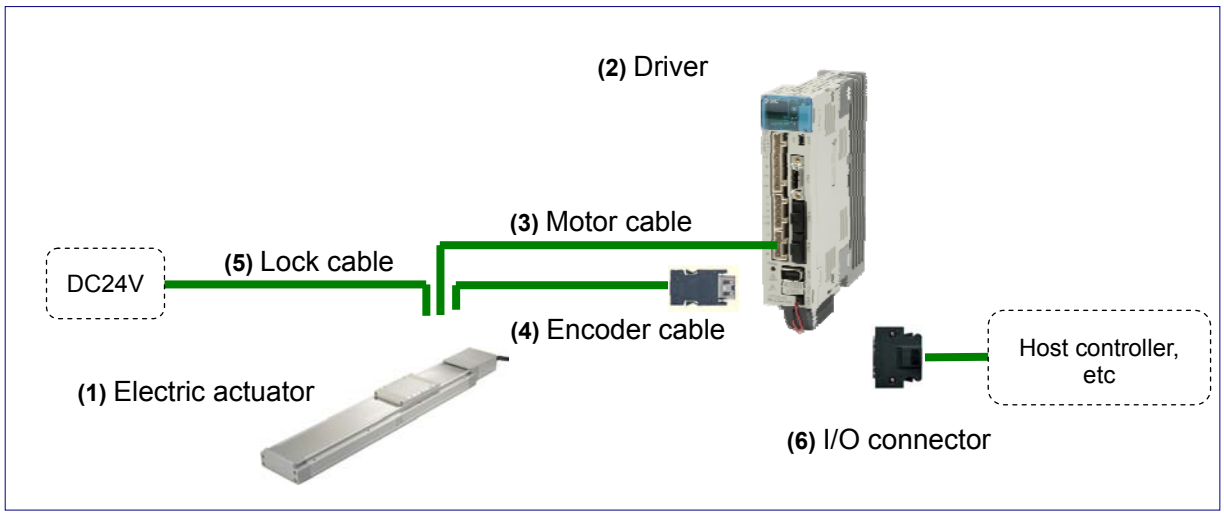
LECSB(Pulse input)



LECSC(CC-Link)

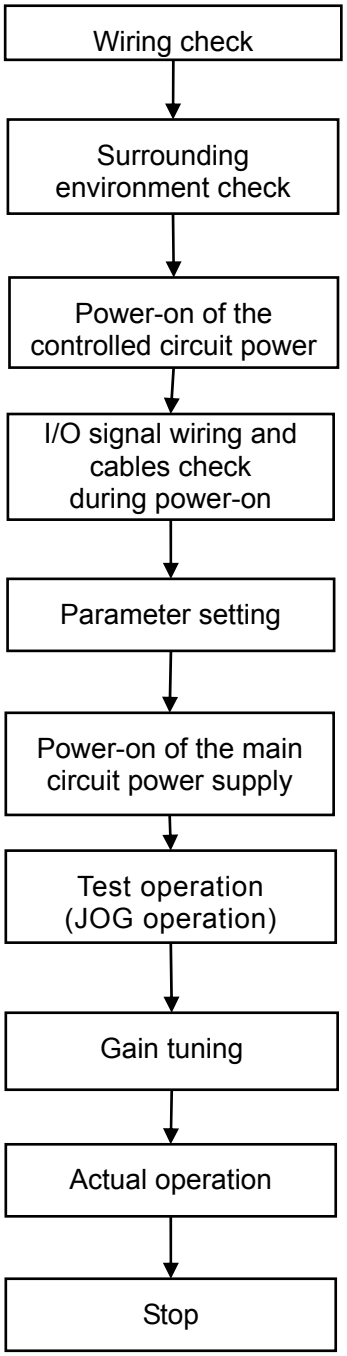


LECSS (SSCNET III) , LECSS-T (SSCNET III / H)



1.2 Startup

When switching the power on for the first time, follow the startup procedure below.
Refer to the “Driver operation manual” for wiring method and detailed procedure.



- - - Confirm that the cables to the driver and the actuator are connected correctly.

- - - Check the surrounding environment (cable routing and impurity such as wire off cuts or metallic dust) of the driver and the servo motor.

- - - Follow the procedure shown in the "Controller Operation Manual" to supply power to the product.

- - - Check the wiring of the input and output signals and cables[1)] according to the procedure shown in the "Driver Operation Manual".

- - - Set the parameters as necessary, such as selecting the control mode and each control value.

- - - Follow the procedure shown in the "Driver Operation Manual" to supply power to the product.

- - - Use the test operation mode (JOG operation) at the slowest speed and check whether the servo motor rotates.[2)]

- - - Operation with a vibration might be done according to the condition.
In that case, adjust gain. (Refer to section 1.3)

- - - Check if the cables to the driver and actuator are connected correctly.

- - - Stop command to stop the operation.

1)CC-Link cable (LECSC), SSCNETIII cable (LECSS)
2)When using test operation mode (JOG operation), the LECSC and LECSS need the MR-Configurator, the LECSS-T needs the MR-Configurator2.

1.3 Gain tuning

1.3.1 Procedure

Here are the steps for basic gain tuning.
Refer to the “Driver operation manual” for details and for tuning methods other than shown below.

●For LECSA (Pulse input / Positioning)

A. One-touch tuning

During motor driving, push “AUTO” button on the front of the driver for three seconds.
When display panel becomes “ﾊｲ”, push “AUTO” button again.
⇒The gain (including filter, etc) is adjusted automatically.
When the error occurs, refer to the “Driver operation manual”.

B. Auto tuning (Mode1)

Do this operation, if you are not satisfied with the result of “One-touch tuning”.
Set parameter No.PA08 “001”. Afterwards, do 1 and 2 alternately.

1. Reduce value of parameter No.PA09 to be less than present value.
2. Operate and ascertain the situation.

⇒The gain is adjusted automatically.

●For LECSB (Pulse input), LECSC (CC-Link), LECSS(SSCNETIII)

A. Adaptive filter II

Set parameter No.PB01 “0001” and drive the motor.
⇒The filter is adjusted automatically.

B. Auto tuning (Mode1)

Do this operation, if you are not satisfied with the result of “Adaptive filter II”.
Set parameter No.PA08 “0001”. Afterwards, do 1 and 2 alternately.

1. Reduce value of parameter No.PA09 to be less than present value.
2. Operate and ascertain the situation.

⇒The gain is adjusted automatically.

●For LECSS-T(SSCNET III/H)

A. Auto tuning (Mode1)

Set parameter No.PA08 “0001”. Afterwards, do 1 and 2 alternately.

1. Reduce value of parameter No.PA09 to be less than present value.
2. Operate and ascertain the situation.

⇒The gain is adjusted automatically.

B. Robust filter

Do this operation, if you are not satisfied with the result of “Auto tuning”.
Set parameter No.PE41 “0001” and drive the motor.
⇒The filter is adjusted automatically.

⚠ Warning

A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the appropriate parameter in the initial setting.
Refer to "The recommended the parameter for each driver" for the parameter.

1) The auto tuning mode 1 may not be performed properly if the following conditions are not satisfied.

・Time to reach 2,000rpm is the acceleration/deceleration time constant of 5[s] or less.
・Speed is 150rpm or higher.
・Load to motor inertia is 100 times or less.
・The acceleration/deceleration is 10% or more of the rated torque.

1.3.2 The recommended the parameter for each driver

The recommended the parameter for each driver. Please change the parameter values by use of the customer.
Please refer to the manual of the driver for more details.

[LECSA]

Series			LEJS40			LEJS63			LEJB40	LEJB63
	Lead symbol		H	A	B	H	A	B	T	
	Lead		24	16	8	30	20	10	27	42
Parameter	Para. No	Initial value	Recommended value							
Number of command input pulses per revolution *3	PA05	100	**100**							
Electronic gear numerator *3	PA06	1	**100(Positioning mode: 10)**							
Electronic gear denominator *3	PA07	1	**24**	**16**	**8**	**30**	**20**	**10**	**27**	**42**
Feel length multiplication (STM) (Multiplier)	PE02	0000	**0000(Less than stroke 1000)/ 0001(Stroke 1000 or more)**							
Home position return type	PE03	0010	**□□□3（Stopper type）**							
Home position return direction	PE03	0010	□□1□ (Motor side)							
Home position return Speed (rpm)	PE04	500	**75**	**113**	**225**	**60**	**90**	**180**	**133**	**86**
Home position return/JOG operation acceleration/deceleration time constants (msec)	PE07	100	**1200**	**800**	**400**	**1500**	**1000**	**500**	**1350**	**2100**
Home position return position data (μm)	PE08	0	**-2000(Less than stroke 1000) / -200(Stroke 1000 or more)**							
Stopper type home position return stopper time (msec)	PE10	100	**200**							
Stopper type home position return torque limit value (%)	PE11	15	**30**							
Regenerative option	PA02	000	**000(Non) / 002(LEC-MR-RB-032) / 003(LEC-MR-RB-12)**							
Rotation direction selection	PA14	0	**1 (+：Counter motors side)**						0 (+：Counter motors side)	
★Adaptive tuning mode	PB01	000	000						**002**	000
★Load to motor inertia moment ratio	PB06	7	7						**50**	
★Machine resonance suppression filter 1	PB13	4500	4500						**400**	4500
★Notch shape selection 1	PB14	000	000						**030**	000

★：Parameter should be changed.
*1 Parameter is the recommended value. Please change the parameter to make appropriate value for your operating method.
*2 A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the parameter in the initial setting.
*3 When the positioning mode is not set: The travel distance of the actuator per 1 pulse should be 10 [μm/pulse].
When the positioning mode is set: The minimum unit of the travel distance of the actuator should be 1 [μm].

[LECSB]

Series			LEJS40			LEJS63			LEJB40	LEJB63
	Lead symbol		H	A	B	H	A	B	T	
	Lead		24	16	8	30	20	10	27	42
Parameter	Para. No.	Initial value	Recommended value							
Number of command input pulses per revolution *3	PA05	0	0							
Electronic gear numerator *3	PA06	1	**32768**						**65536**	**32768**
Electronic gear denominator *3	PA07	1	**300**	**200**	**100**	**375**	**250**	**125**	**675**	**525**
Regenerative option	PA02	0000	**0000(Non) / 0002(LEC-MR-RB-032) / 0003(LEC-MR-RB-12)**							
Rotation direction selection	PA14	0	**1 (+:Counter motors side)**						0 (+:Counter motors side)	
★Adaptive tuning mode	PB01	0000	0000						**0002**	0000
★Load to motor inertia moment ratio	PB06	7	7						**50**	
★Machine resonance suppression filter 1	PB13	4500	4500						**400**	4500
★Notch shape selection 1	PB14	0000	0000						**0030**	0000

★:Parameter should be changed.

*1 Parameter is the recommended value. Please change the parameter to make appropriate value for your operating method.
*2 A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the parameter in the initial setting.
*3 The travel distance of the actuator per 1 pulse should be 10 [μm/pulse].

[LECSC]

Series			LEJS40			LEJS63			LEJB40	LEJB63
	Lead symbol		H	A	B	H	A	B	T	
	Lead		24	16	8	30	20	10	27	42
Parameter	Para. No.	Initial value	Recommended value							
Electronic gear numerator *3	PA06	1	**32768**							
Electronic gear denominator *3	PA07	1	**3000**	**2000**	**1000**	**3750**	**2500**	**1250**	**3375**	**5250**
Feel length multiplication (STM) (Multiplier)	PA05	0000	**0000(Less than stroke 1000)/ 0001(Stroke 1000 or more)**							
Home position return type	PC02	0000	**□□□3（Stopper type）**							
Home position return direction	PC03	0001	□□1□ (Motor side)							
Home position return Speed (rpm)	PC04	500	**75**	**113**	**225**	**60**	**90**	**180**	**133**	**86**
Home position return position data (μm)	PC07	0	**-2000(Less than stroke 1000) / -200(Stroke 1000 or more)**							
Stopper type home position return stopper time (msec)	PC09	100	**200**							
Stopper type home position return torque limit value (%)	PC10	15	**30**							
Regenerative option	PA02	0000	**0000(Non) / 0002(LEC-MR-RB-032) / 0003(LEC-MR-RB-12)**							
Rotation direction selection	PA14	0	**1 (+：Counter motors side)**						0 (+：Counter motors side)	
★Adaptive tuning mode	PB01	0000	0000						**0002**	0000
★Load to motor inertia moment ratio	PB06	7	7						**50**	
★Machine resonance suppression filter 1	PB13	4500	4500						**400**	4500
★Notch shape selection 1	PB14	0000	0000						**0030**	0000

★：Parameter should be changed.

*1 Parameter is the recommended value. Please change the parameter to make appropriate value for your operating method.
*2 A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the parameter in the initial setting.
*3 The travel distance of the actuator per 1 pulse should be 10 [μm/pulse].

[LECSS]

Series			LEJS40			LEJS63			LEJB40	LEJB63
	Lead symbol		H	A	B	H	A	B	T	
	Lead		24	16	8	30	20	10	27	42
Parameter	Para. No.	Initial value	Recommended value							
Regenerative option	PA02	0000	**0000(Non) / 0002(LEC-MR-RB-032) / 0003(LEC-MR-RB-12)**							
Rotation direction selection	PA14	0	**1 (+:Counter motors side)**						0 (+:Counter motors side)	
★Adaptive tuning mode	PB01	0000	0000						**0002**	0000
★Load to motor inertia moment ratio	PB06	7	7						**50**	
★Machine resonance suppression filter 1	PB13	4500	4500						**400**	4500
★Notch shape selection 1	PB14	0000	0000						**0030**	0000

★:Parameter should be changed.

*1 Parameter is the recommended value. Please change the parameter to make appropriate value for your operating method.
*2 A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the parameter in the initial setting.

* For LECSS, please set the electronic gear with PC, PLC etc. in your application.

[LECSS-T]

Series			LEJS40			LEJS63			LEJB40	LEJB63
	Lead symbol		H	A	B	H	A	B	T	
	Lead		24	16	8	30	20	10	27	42
Parameter	Para. No.	Initial value	Recommended value							
Regenerative option	PA02	0000	**0000 (Non) / 0002 (LEC-MR-RB-032) / 0003 (LEC-MR-RB-12)**							
Rotation direction selection	PA14	0	**1 (+:Counter motors side)**						0 (+:Counter motors side)	
★Load to motor inertia moment ratio	PB06	7	7						**50**	
Function selection E-3	PE41	0000	0000						**0001 (Robust filter Enabled)**	

★:Parameter should be changed.

*1 Parameter is the recommended value. Please change the parameter to make appropriate value for your operating method.
*2 A mechanical resonance may occur depending on the configuration or the mounting orientation of the transferred object. Please change the parameter in the initial setting.

* For LECSS, please set the electronic gear with PC, PLC etc. in your application.

2. Slider type / LEJS series

2.1 Specification

LEJS40-63 AC servo motor (100W / 200W)

Model				LEJS40			LEJS63		
Actuator specification	Stroke [mm] Note1)			200,300,400,500,600, 700,800,900,1000,1200			300,400,500,600,700, 800,900,1000,1200,1500		
	Work load [kg] Note2)		Horizontal	15	30	55	30	45	85
			Vertical	3	5	10	6	10	20
	Speed [mm/s] Note3)	Stroke range	Up to 500	1800	1200	600	1800	1200	600
			501 to 600	1580	1050	520	1800	1200	600
			601 to 700	1170	780	390	1800	1200	600
			701 to 800	910	600	300	1390	930	460
			801 to 900	720	480	240	1110	740	370
			901 to 1000	580	390	190	900	600	300
			1001 to 1100	480	320	160	750	500	250
			1101 to 1200	410	270	130	630	420	210
			1201 to 1300	-	-	-	540	360	180
			1301 to 1400	-	-	-	470	310	150
			1401 to 1500	-	-	-	410	270	130
	Maximum acceleration / deceleration [mm/s^2]			20000 (Refer catalog about limit according to work load and duty rate.)					
	Positioning repeatability [mm]		Basic type	±0.02					
			High precision type	±0.01					
	Lost motion [mm] Note4)		Basic type	0.1 or less					
			High precision type	0.05 or less					
	Lead [mm]			24	16	8	30	20	10
	Impact / Vibration resistance [m/s^2] Note5)			50 / 20					
	Drive method			Ball screw					
	Guide type			Liner guide					
	Acceptable external resistance [N]			20					
	Operating temperature range [℃]			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)					
	Regenerative option			It may be required by speed and work load. Refer to catalog.					
Electric specification	Motor output [W] / size [mm]			100 / □40			200 / □60		
	Type of Motor			AC servo motor (100/200VAC)					
	Encoder			Type of Motor S2,S3:Incremental 17bit encoder (Resolution:131072 p/rev) Type of Motor S6,S7:Absolute 18bit encoder (Resolution:262144 p/rev) Type of Motor T6,T7:Absolute 22bit encoder (Resolution: 4194304 p/rev)					
	Power consumption[W] Note6)		Horizontal	65			80		
			Vertical	165			235		
	Standby power consumption when operating[W] Note7)		Horizontal	2			2		
			Vertical	10			12		
	Max. instantaneous power consumption[W] Note8)			445			725		
Lock specification	Type Note9)			No excitation operating type					
	Holding force [N]			67	101	203	220	330	660
	Power consumption [W] at 20℃ Note10)			6.3			7.9		
	Rated voltage [VDC]			24 $^{0}_{-10\%}$					

Note1) Strokes other than standard are available as special order, so please contact with our company.
Note2) Details are shown in “Speed-Work load graph (indication)” of catalog.
Note3) The allowable speed changes by the stroke.
Note4) A reference value for correcting an error in reciprocal operation.
Note5) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Note6) The power consumption (including the driver) is for when the actuator is operating.
Note7) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note8) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note9) Only applies to actuators supplied with a lock.
Note10) For the actuator with lock, please add the power consumption for the lock.
Note11) Sensor magnet position is located in the table center.
Note12) Do not allow collisions at either end of the table travelling distance.
Additionally, when running the positioning operation, do not set within 2mm of both ends.
Note13) Consult with SMC for the manufacture of intermediate strokes.
(Manufacturable stroke range: LEJS40/ 200 to 1200mm, LEJS63/ 300 to 1500mm)

Product Weight

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

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

2.2 How to order

LEJS □ 40 S2 A – 500 □ – □ □ □ □

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(1) Accuracy

Nil	Basic type
H	High precision type

(2) Size

40
63

(3) Motor type *1

	Type	Output [W]	Actuator size	Compatible Drivers
S2	AC servo motor (Incremental encoder)	100	40	LECSA□-S1
S3		200	63	LECSA□-S3
S6	AC servo motor (absolute encoder)	100	40	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7		200	63	LECSB□-S7 LECSC□-S7 LECSS□-S7
T6	AC servo motor (absolute encoder)	100	40	LECSS2-T5
T7		200	63	LECSS2-T7

*1: For motor type S2 and S6, T6, the compatible driver part number suffix are S1 and S5, T5 respectively.

(4) Lead [mm]

	LEJS40	LEJS63
H	24	30
A	16	20
B	8	10

(5) Stroke [mm] *2

200
to
1500

*2: Refer to the table below for details.

(6) Motor option

Nil	Without option
B	With lock

(7) Cable type *4 *5

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

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

(8) Cable length [m] *4 *6

Nil	Without cable
2	2
5	5
A	10

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

(9) Driver type *4

	Compatible drivers	Power supply voltage[V]
Nil	Without driver	–
A1	LECSA1-S□	100 to 120
A2	LECSA2-S□	200 to 230
B1	LECSB1-S□	100 to 120
B2	LECSB2-S□	200 to 230
C1	LECSC1-S□	100 to 120
C2	LECSC2-S□	200 to 230
S1	LECSS1-S□	100 to 120
S2	LECSS2-S□	200 to 230
	LECSS2-T□	200 to 240

*4: When the driver type is selected, the cable is included. Select cable type and cable length.

(10) I/O cable length *7

Nil	Without cable
H	Without cable (Connector only)
1	1.5 [m]

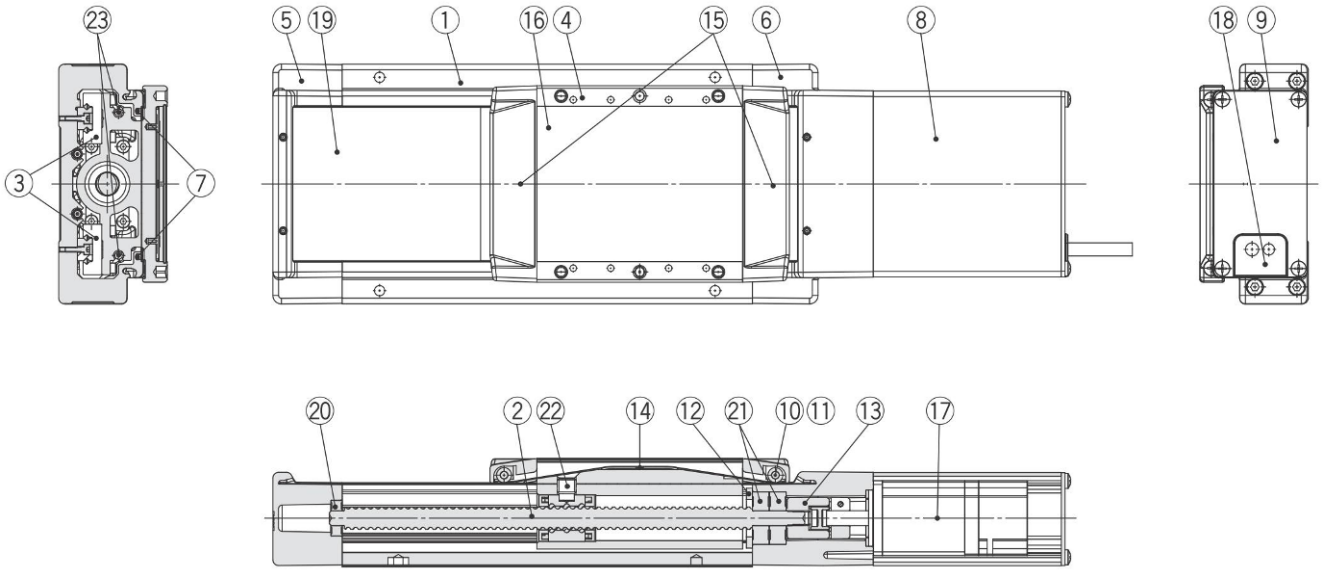
*7: When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected.

Applicable stroke table *3

	200	300	400	500	600	700	800	900	1000	1200	1500
LEJS40	●	●	●	●	●	●	●	●	●	●	–
LEJS63	–	●	●	●	●	●	●	●	●	●	●

*3: Consult with SMC as all non-standard are produced as special orders.

2.3 Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw ass'y	-	
3	Linear guide ass'y	-	
4	Table	Aluminum alloy	Anodized
5	Housing A	Aluminum alloy	Coating
6	Housing B	Aluminum alloy	Coating
7	Seal magnet	-	
8	Motor cover	Aluminum alloy	Anodized
9	End cover	Aluminum alloy	Anodized
10	Roller shaft	Stainless steel	
11	Roller	Synthetic resin	
12	Bearing pusher	Carbon steel	

No.	Description	Material	Note
13	Coupling	-	
14	Table cap	Synthetic resin	
15	Seal band pusher	Synthetic resin	
16	Blanking plate	Aluminum alloy	Anodized
17	Motor	-	
18	Grommet	NBR	
19	Dust seal band	Stainless steel	
20	Bearing	-	
21	Bearing	-	
22	Nut fixed pin	Carbon steel	
23	Magnet	-	

3. Slider type / LEJB series

3.1 Specification

LEJB40-63 AC servo motor (100W / 200W)

	Model		LEJB40	LEJB63
Actuator specification	Stroke [mm] Note1)		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(10 The stroke over 1000mm)	30
	Speed [mm/s] Note2)		2000	3000
	Maximum acceleration / deceleration [mm/s^2]		20000 (Refer catalog about limit according to work load and duty rate.)	
	Positioning repeatability [mm]		±0.04	
	Lost motion [mm] Note3)		0.1 or less	
	Lead [mm]		27	42
	Impact / Vibration resistance [m/s^2] Note4)		50 / 20	
	Drive method		Belt	
	Guide type		Liner guide	
	Acceptable external resistance [N]		20	
	Operating temperature range [℃]		5 to 40	
	Operating humidity range [%RH]		90 or less (No condensation)	
	Regenerative option		It may be required by speed and work load. Refer to catalog.	
Electric specification	Motor output [W] / size [mm]		100 / □40	200 / □60
	Type of Motor		AC servo motor (100/200VAC)	
	Encoder		Type of Motor S2,S3:Incremental 17bit encoder (Resolution:131072 p/rev) Type of Motor S6,S7:Absolute 18bit encoder (Resolution:262144 p/rev) Type of Motor T6,T7:Absolute 22bit encoder (Resolution: 4194304 p/rev)	
	Power consumption[W] Note5)	Horizontal	65	190
		Vertical	-	-
	Standby power consumption when operating[W] Note6)	Horizontal	2	2
		Vertical	-	-
	Max. instantaneous power consumption[W] Note7)		445	725
Lock specification	Type Note8)		No excitation operating type	
	Holding force [N]		60	189
	Power consumption [W] at 20℃ Note9)		6.3	7.9
	Rated voltage [VDC]		24 $^{0}_{-10\%}$	

Note1) Strokes other than standard is available as special order, so please contact with our company
Note2) Details are shown in “Speed-Work load graph (indication)” of catalog.
Note3) A reference value for correcting an error in reciprocal operation.
Note4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an sending direction and perpendicular direction to the belt. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both an sending direction and a perpendicular direction to the belt. (The test was performed with the actuator in the initial state.)
Note5) The power consumption (including the driver) is for when the actuator is operating.
Note6) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note7) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
Note8) Only applies to actuators supplied with a lock.
Note9) For the actuator with lock, please add the power consumption for the lock.
Note10) Sensor magnet position is located in the table center.
Note11) Do not allow collisions at either end of the table travelling distance.
Additionally, when running the positioning operation, do not set within 2mm of both ends.
Note12) Consult with SMC for the manufacture of intermediate strokes.
(Manufacturable stroke range:LEJB40/ 200 to 2000mm, LEJB63/ 300 to 3000mm)

Product Weight

Series	LEJB40											
Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200	1500	2000
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
Extra weight of lock (kg)	0.2 (Incremental encoder) / 0.3 (Absolute encoder)											

Series	LEJB63											
Stroke [mm]	300	400	500	600	700	800	900	1000	1200	1500	2000	3000
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
Extra weight of lock (kg)	0.4 (Incremental encoder) / 0.7 (Absolute encoder)											

3.2 How to order

LEJB 40 S2 A – 500 □ – □ □ □ □

(1) (2) (3) (4) (5) (6) (7) (8) (9)

(1) Size

40
63

(2) Motor type *1

	Type	Output [W]	Actuator size	Compatible Drivers
S2	AC servo motor (Incremental encoder)	100	40	LECSA□-S1
S3		200	63	LECSA□-S3
S6	AC servo motor (absolute encoder)	100	40	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7		200	63	LECSB□-S7 LECSC□-S7 LECSS□-S7
T6	AC servo motor (absolute encoder)	100	40	LECSS2-T5
T7		200	63	LECSS2-T7

*1: For motor type S2 and S6, T6, the compatible driver part number suffix are S1 and S5, T5 respectively.

(3) Lead [mm]

	LEJB40	LEJB63
T	27	42

(4) Stroke [mm] *2

200
to
3000

*2: Refer to the table below for details.

(5) Motor option

Nil	Without option
B	With lock

(6) Cable type *4 *5

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

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

(7) Cable length [m] *4 *6

Nil	Without cable
2	2
5	5
A	10

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

(8) Driver type *4

	Compatible drivers	Power supply voltage[V]
Nil	Without driver	–
A1	LECSA1-S□	100 to 120
A2	LECSA2-S□	200 to 230
B1	LECSB1-S□	100 to 120
B2	LECSB2-S□	200 to 230
C1	LECSC1-S□	100 to 120
C2	LECSC2-S□	200 to 230
S1	LECSS1-S□	100 to 120
S2	LECSS2-S□	200 to 230
	LECSS2-T□	200 to 240

*4: When the driver type is selected, the cable is included. Select cable type and cable length.

(9) I/O cable length *7

Nil	Without cable
H	Without cable (Connector only)
1	1.5 [m]

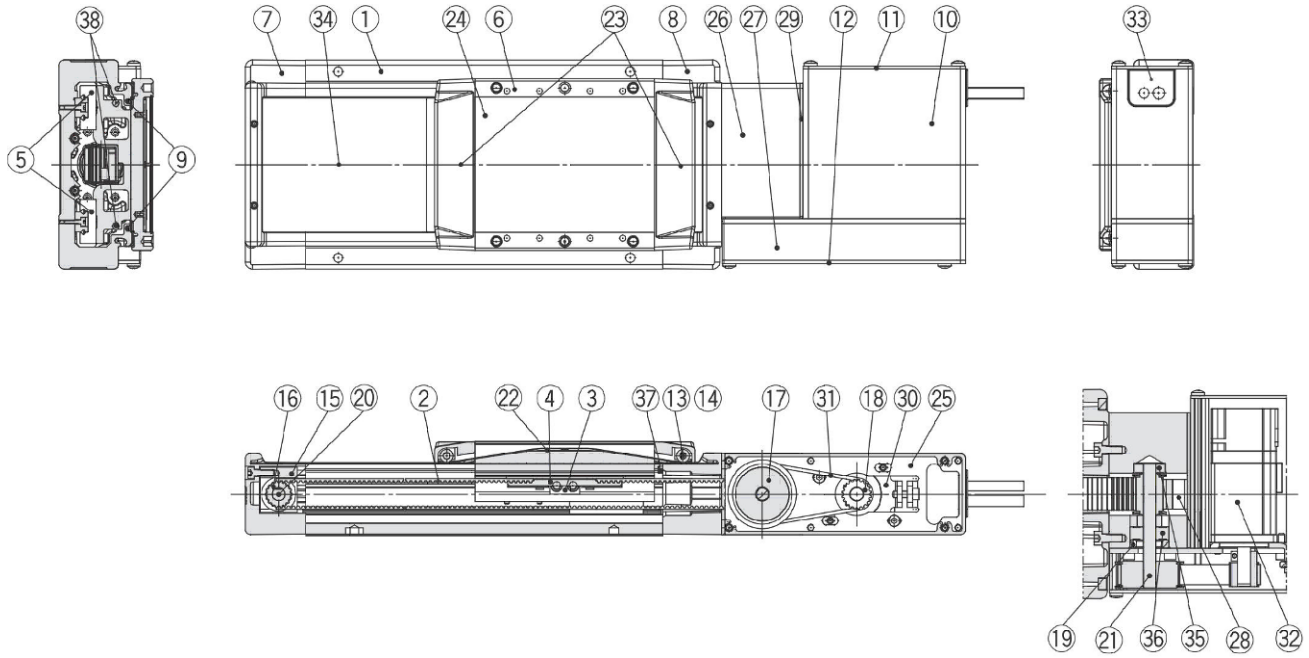
*7: When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected.

Applicable stroke table *3

	200	300	400	500	600	700	800	900	1000	1200	1500	2000	3000
LEJB40	●	●	●	●	●	●	●	●	●	●	●	●	–
LEJB63	–	●	●	●	●	●	●	●	●	●	●	●	●

*3: Consult with SMC as all non-standard are produced as special orders.

3.3 Construction



Motor details

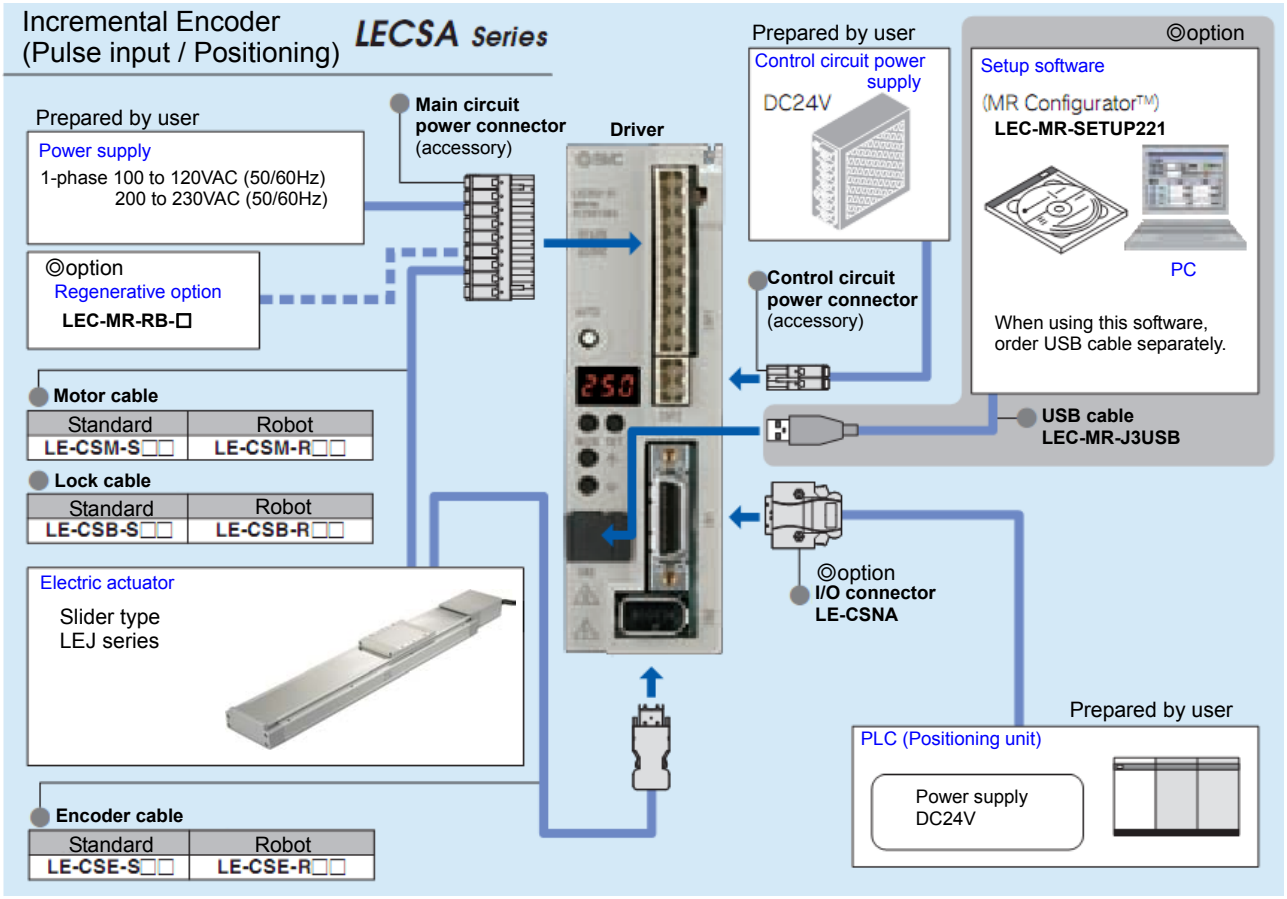
Component Parts

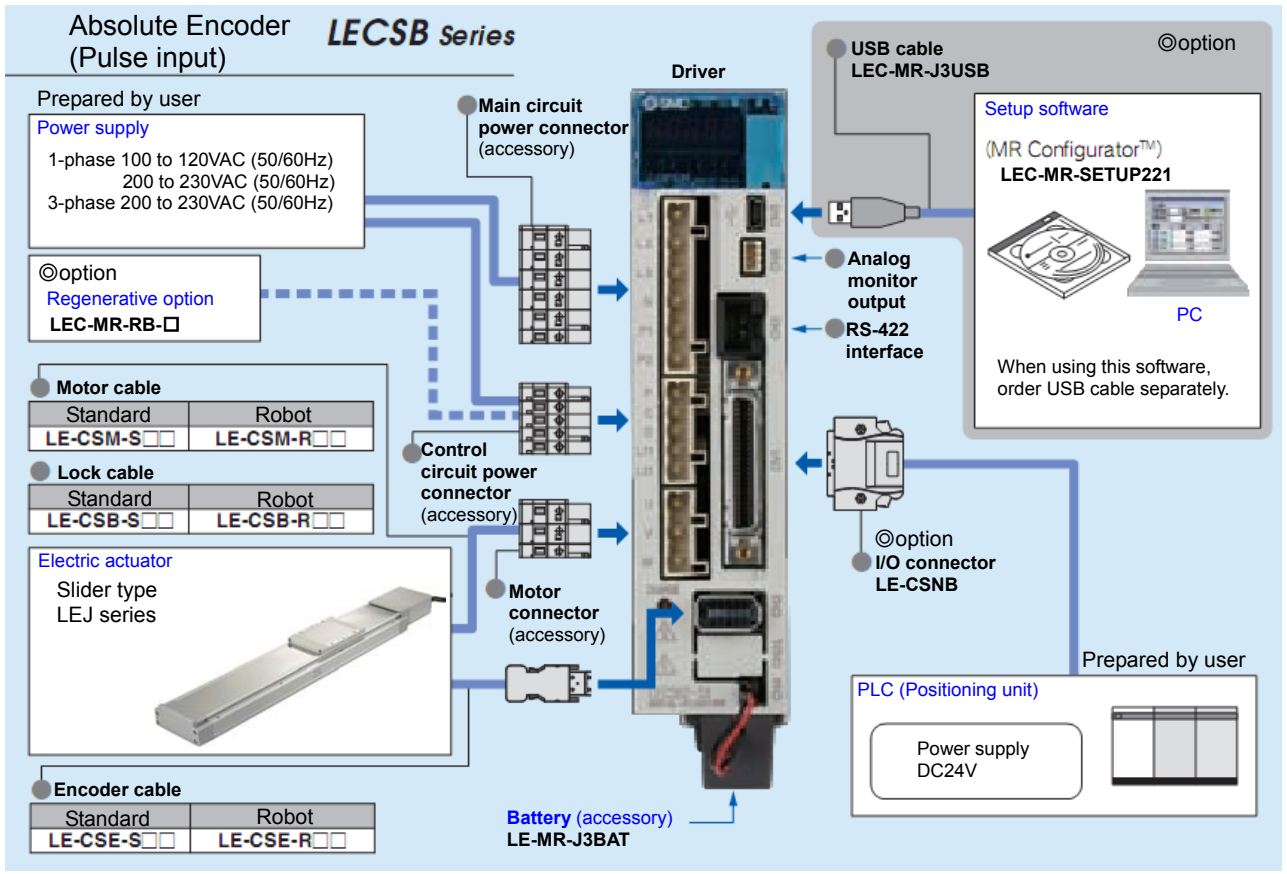
No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Belt	-	
3	Belt holder	Carbon steel	
4	Belt pusher	Aluminum alloy	
5	Linear guide ass'y	-	
6	Table	Aluminum alloy	Anodized
7	Housing A	Aluminum alloy	Coating
8	Housing B	Aluminum alloy	Coating
9	Seal magnet	-	
10	Motor cover	Aluminum alloy	Anodized
11	End cover A	Aluminum alloy	Anodized
12	End cover B	Aluminum alloy	Anodized
13	Roller shaft	Stainless steel	
14	Roller	Synthetic resin	
15	Pulley holder	Aluminum alloy	
16	Driving pulley	Aluminum alloy	
17	Driven pulley	Aluminum alloy	
18	Motor pulley	Aluminum alloy	
19	Spacer	Aluminum 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 pusher	Synthetic resin	
24	Blanking plate	Aluminum alloy	Anodized
25	Motor mount plate	Carbon steel	
26	Pulley block	Aluminum alloy	Anodized
27	Pulley cover	Aluminum alloy	Anodized
28	Belt stopper	Aluminum alloy	
29	Side plate	Aluminum alloy	Anodized
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	-	

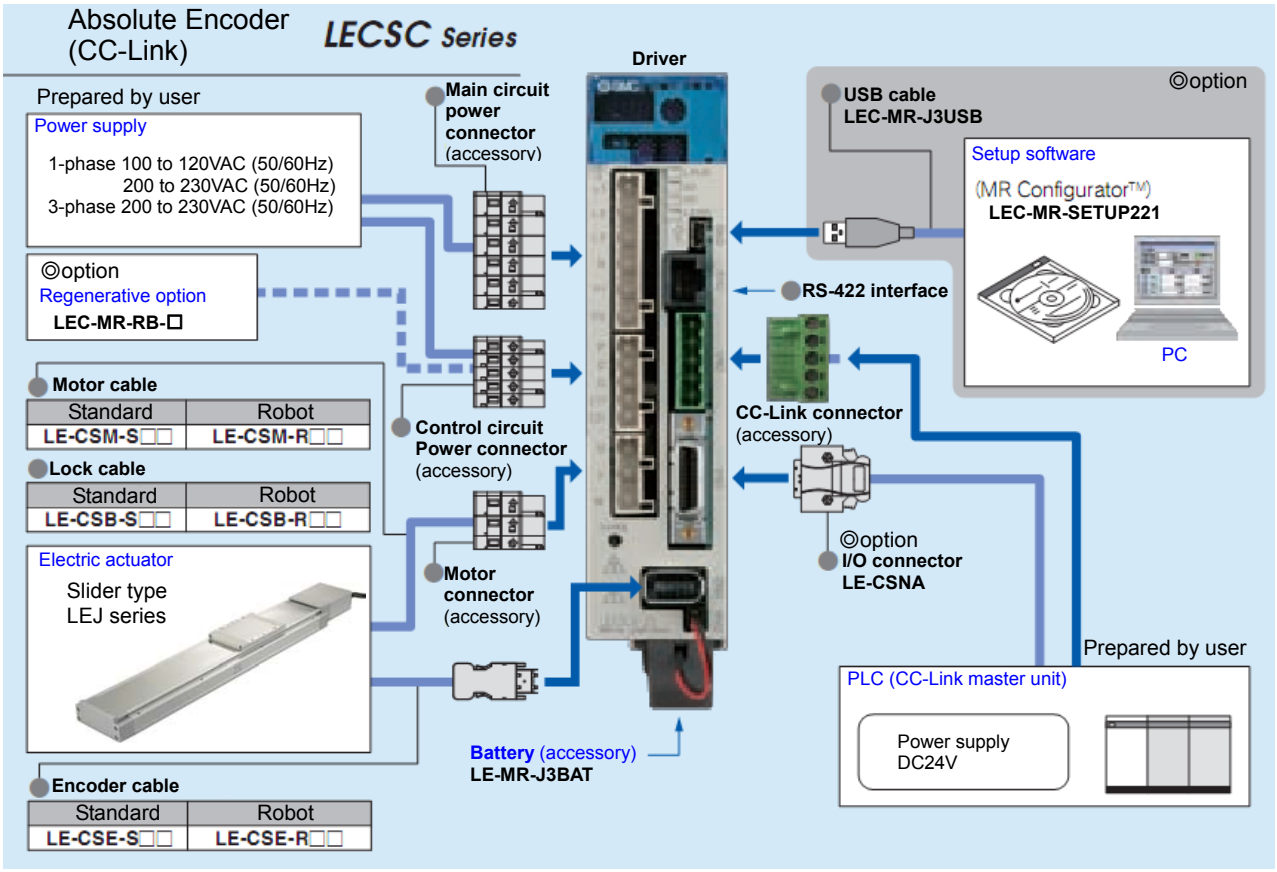
4. Product Outline

4.1 System construction

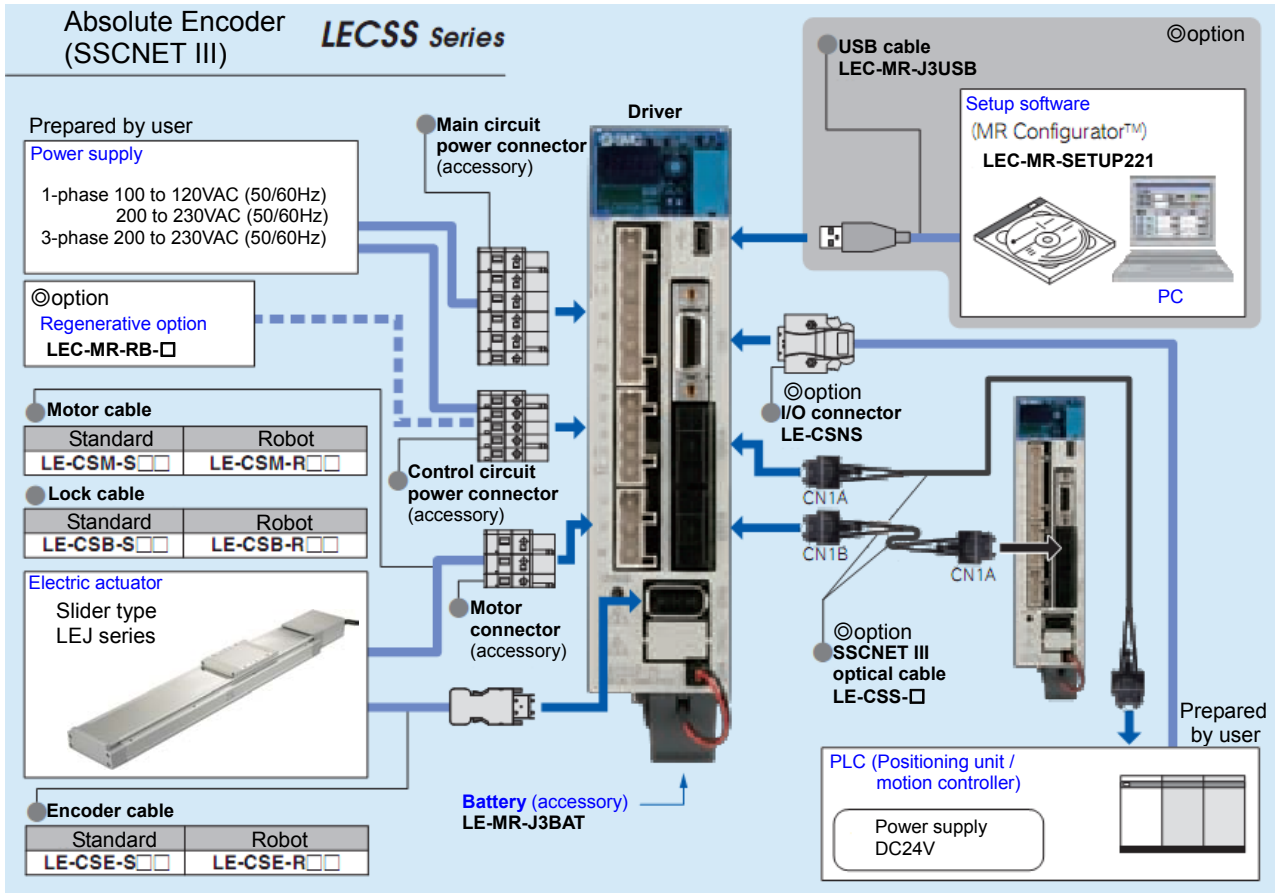


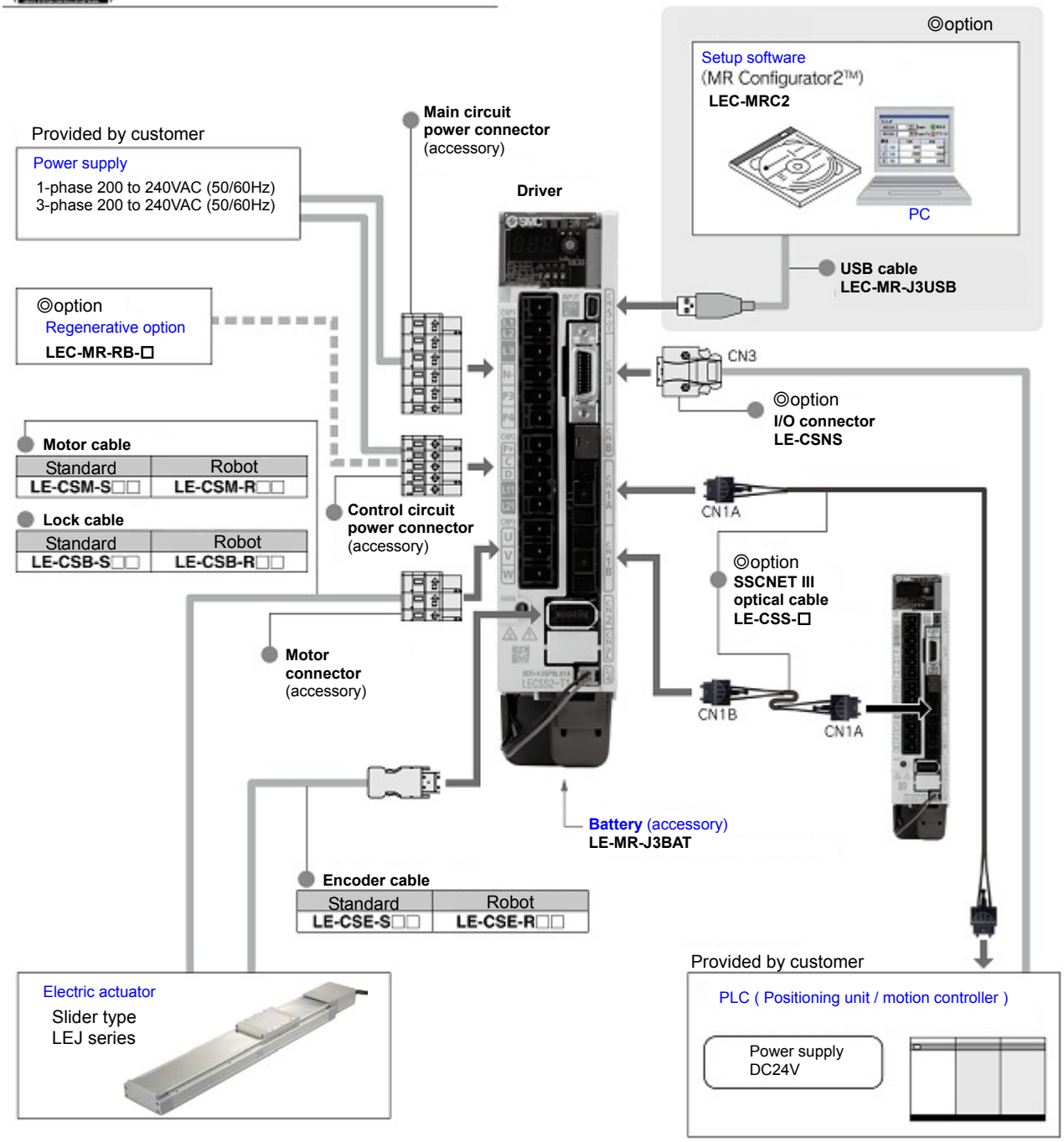


Absolute Encoder (CC-Link) *LECSC Series*



Absolute Encoder (SSCNET III) *LECSS Series*




◎option
Setup software
(MR Configurator2™)
LEC-MRC2
PC
USB cable
LEC-MR-J3USB
Provided by customer
Power supply
1-phase 200 to 240VAC (50/60Hz)
3-phase 200 to 240VAC (50/60Hz)
Main circuit
power connector
(accessory)
Driver
◎option
Regenerative option
LEC-MR-RB-□
CN3
◎option
I/O connector
LE-CSNS
Motor cable
Standard
Robot
LE-CSM-S□□
LE-CSM-R□□
Lock cable
Standard
Robot
LE-CSB-S□□
LE-CSB-R□□
Control circuit
power connector
(accessory)
CN1A
◎option
SSCNET III
optical cable
LE-CSS-□
Motor
connector
(accessory)
CN1B
CN1A
Battery (accessory)
LE-MR-J3BAT
Encoder cable
Standard
Robot
LE-CSE-S□□
LE-CSE-R□□
Provided by customer
PLC (Positioning unit / motion controller)
Power supply
DC24V
Electric actuator
Slider type
LEJ series

4.2 Function / Control mode

The following control mode can be selected for applicable drivers.
Refer to the “Driver Operation Manual” about wiring and parameter setting.

Table4-1. Applicable control mode

Driver	Control mode[Note1)]	Encoder	Positioning		Parameter select
	Position control		Point table method	Program method[Note3)]	
LECSA (Pulse input / positioning)	Pulse train	Incremental	ON/OFF signal 3 points (max. 7 points)[Note2)]	ON/OFF signal 4 programs (max. 8 Programs)[Note2)]	PA01
LECSB (Pulse input)	Pulse train	Absolute	-	-	PA01
LECSC (CC-Link)	CC-Link (When 2 stations are occupied)	Absolute	CC-Link 31 points(When 1 station is occupied) 255 points(When 2 stations are occupied)	-	PC30
LECSS (SSCNET III)	SSCNET III	Absolute	-	-	Note4)
LECSS-T (SSCNET III / H)	SSCNET III / H	Absolute	-	-	Note4)
Operation method	Positioning operation	-	Positioning operation by point table No. setting	Positioning operation by program No. setting	-

Note1) Only the position control can be used.
Note2) To set the maximum value for the each method, it is necessary to change the setting.
Please refer “Driver Operation Manual”.
Note3) The MR Configurator is necessary to control by the program method.
Order separately.
-MR Configurator (Setup software Japanese version) / LEC-MR-STUP221
-MR Configurator (Setup software English version) / LEC-MR-SETUP221E
-USB cable for Setup software (3m) / LEC-MR-J3USB
Note4) The LECSS is set by upper positioning unit or motion controller.

5. Wiring and cables / Common precautions

⚠ **Warning**

1. **Adjusting, mounting or wiring change should never be done before shutting off the power supply to the product.**
   Electrical shock, malfunction and damaged can result.
2. **Never disassemble the cable.**
   Use only specified cables.
3. **Never connect or disconnect the cable or connector with power on.**

⚠ **Caution**

1. **Wire the connector securely.**
   Do not apply any voltage to the terminals other than those specified in the product manual.
2. **Wire the connector securely.**
   Check for correct connector wiring and polarity.
3. **Take appropriate measures against noise.**
   Noise in a signal line may cause malfunction.
   As a countermeasure, separate high voltage and low voltage cables, and shorten wiring lengths, etc.
4. **Do not route wires and cables together with power or high voltage cables.**
   The product can malfunction due to interference of noise and surge voltage from power and high voltage cables to the signal line.
   Route the wires of the product separately from power or high voltage cables.
5. **Take care that actuator movement does not catch cables.**
6. **Operate with cables secured.**
   Avoid bending cables at sharp angles where they enter the product.
7. **Avoid twisting, folding, rotating or applying an external force to the cable.**
   Risk of electric shock, wire break, contact failure and loss of control for the product can happen.
8. **Select "Robotic type cables" in case of inflecting cable (encoder / motor / rock) repeatedly.**
   Refer to the "Driver operation manual" for the bending life of the bending radius of the cable.
9. **Confirm proper wiring of the product.**
   Poor insulation (interference with other circuits, poor insulation between terminals and etc.) can apply excessive voltage or current to the product causing damage.

[Transportation]

⚠ **Caution**

1. **Do not carry or swing the product by the motor or cable.**

6. Electric actuators / Common precautions

6.1 Design and selection

⚠ **Warning**

1. **Be sure to read the Operation Manual (this manual and the one for the driver: LEC series).**
   Handling or usage/operation other than that specified in the Operation Manual may lead to breakage and operation failure of the product.
   Any damage attributed to the use beyond the specifications is not guaranteed.
2. **There is a possibility of dangerous sudden action by the product if sliding parts of machinery are twisted due to external forces etc.**
   In such cases, human injury may occur, such as by catching hands or feet in the machinery, or damage to the machinery itself may occur.
   Design the machinery should be designed to avoid such dangers.
3. **A protective cover is recommended to minimize the risk of personal injury.**
   If a driven object and moving parts of the product are in close proximity, personal injury may occur.
   Design the system to avoid contact with the human body.
4. **Securely tighten all stationary parts and connected parts so that they will not become loose.**
   When the product operates with high frequency or is installed where there is a lot of vibration, ensure that all parts remain secure.
5. **Consider a possible loss of power source.**
   Take measures to prevent injury and equipment damage even in the case of a power source failure.
6. **Consider behavior of emergency stop of whole system.**
   Design the system so that human injury and/or damage to machinery and equipment will not be caused, when it is stopped by a safety device for abnormal conditions such as a power outage or a manual emergency stop of whole system.
7. **Consider the action when operation is restarted after an emergency stop or abnormal stop of whole system.**
   Design the system so that human injury or equipment damage will not occur upon restart of operation of whole system.
8. **Disassembly and modification is prohibited**
   Do not modify or reconstruct (including additional machining) the product.
   An injury or failure can result.
9. **When using it for vertical application, it is necessary to build in a safety device.**
   The rod may fall due to the weight of work.
   The safety device should not interfere with normal operation of the machine.

⚠ **Caution**

1. **Operate within the limits of the maximum usable stoke.**
   The product will be damaged if it is used with the stroke which is over the maximum stroke.
   Refer to the specifications of the product.
2. **When the product repeatedly cycles with partial strokes, lubrication can run out.**
   Operate it at a full stroke at least once a day or every 1000 strokes.
3. **Do not use the product in applications where excessive external force or impact force is applied to it.**
   The product can be damaged.
   Each component that includes motor is made with accurate tolerance.
   So even slightly deformed or miss-alignment of component may lead operation failure of the product.
4. **Refer to a common auto switch /matter (Best Pneumatics No 2) when an auto switch is built in and used.**

6.2 Mounting

⚠ **Warning**

1. **Install and operate the product only after reading the Operation Manual carefully and under standing its contents.**
   Keep the manual in a safe place future reference.
2. **Observe the tightening torque for screws.**
   Tighten the screws to the recommended torque for mounting the product.
3. **Do not make any alterations to this product.**
   Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to human injury and damage to other equipment and machinery.
4. **When using external guide, the guide axis should be parallel to the actuator axis.**
   There will be damage/excessive wear on the lead screw if the external guide is not parallel.
5. **When an external guide is used, connect the moving parts of the product and the load in such a way that there is no interference at any point within the stroke.**
   Do not scratch or dent the sliding parts of the product tube or piston rod etc., by striking or grasping them with other objects.
   Components are manufactured to precise tolerances, so that even a slight deformation may cause faulty operation.
6. **Prevent the seizure of rotating parts.**
   Prevent the seizure of rotating parts (pins, etc.) by applying grease.
7. **Do not use the product until you verify that the equipment can operate properly.**
   After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted properly.
8. **Cantilever**
   When the actuator is operated at high speed while it is fixed at one end and free at the other end (flange type, foot type, double clevis type, direct mount type), a bending moment may act on the actuator due to vibration generated at the stroke end, which can damage the actuator.
   In such a case, install a support bracket to suppress the vibration of the actuator body or reduce the speed so that the actuator does not vibrate.
   Use a support bracket also when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.
9. **When mounting the actuator or attaching the work piece, do not apply strong impact or large moment.**
   If an external force over the allowable moment is applied, it may cause looseness in the guide unit, an increase in sliding resistance or other problems.
10. **Maintenance space**
    Allow sufficient space for maintenance and inspection.

6.3 Handling

⚠ **Warning**

1. **If abnormal heating, smoking or fire, etc., occurs in the product, immediately shut off the power supply.**
2. **Immediately stop operation if abnormal operation noise or vibration occurs.**
   If abnormal operation noise or vibration occurs, the product may have been mounted incorrectly.
   Unless operation of the product is stopped for inspection, the product can be seriously damaged.
3. **Never touch the rotating part of the motor or moving part of the actuator while in operation.**
   Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to human injury and damage to other equipment and machinery.
4. **When installing, adjusting, inapecting or performing maintenance on the product, driver and related equipment, be sure to shut off the power supply to them.**
   Then, lock it so that no one other than the person working can turn the power on, or implement measures such as a safety plug.

⚠ **Caution**

1. **Keep the driver and product combined as delivered for use.**
   The product is set in parameters for shipment.
   If it is combined with a different parameter, failure can result.
2. **Check the product for the following points before operation.**
   a) Damage to power supply line and signal line.
   b) Looseness of the connector to each power line and signal line.
   c) Looseness of the actuator /cylinder and controller /driver mounting.
   d) Abnormal operation.
   e) Emergency stop of the total system.
3. **When more than one person is performing work, decide on the procedures, signals, measures and resolution for abnormal conditions before beginning the work.**
   Also, designate a person to supervise work other than those performing work.
4. **Actual speed of the product will be changed by the workload.**
   Before selecting a product, check the catalog for the instructions regarding selection and specifications.
5. **Do not apply a load, impact or resistance in addition to a transferred load during return to origin.**
   In the case of the return to origin by pushing force, additional force will cause displacement of the origin position since it is based on detected motor torque.
6. **Do not remove the nameplate.**
7. **Operation test should be done by low speed.**
   Start operation by predefined speed after confirming there is no trouble.

[Ground]

⚠ **Warning**

1. **Do the earth construction surely.**
2. **Refer to the driver manual for the grounding procedure and notes.**

[Unpackaging]

⚠ **Caution**

1. **Check the received product is as ordered**
   If the different product is installed from the one ordered, injury or damage can result.

6.4 Operating environment

⚠ **Warning**

1. **Avoid use in the following environments.**
   a. Locations where a large amount of dusts and cutting chips are airborne.
   b. Locations where the ambient temperature is outside the range of the temperature specification (refer to specifications).
   c. Locations where the ambient humidity is outside the range of the humidity specification (refer to specifications).
   d. Locations where corrosive gas, flammable gas, sea water, water and steam are present.
   e. Locations where strong magnetic or electric fields are generated.
   f. Locations where direct vibration or impact is applied to the product.
   g. Areas that are dusty, or are exposed to splashes of water and oil drops.
   h. Areas exposed to direct sunlight (ultraviolet ray).
2. **Do not use in an environment where the product is directly exposed to liquid, such as cutting oils.**
   If cutting oils, coolant or oil mist contaminates the product, failure or increased sliding resistance can result.
3. **Install a protective cover when the product is used in an environment directly exposed to foreign matters such as dust, cutting chips and spatter.**
   Play or increased sliding resistance can result.
4. **Shade the sunlight in the place where the product is applied with direct sunshine.**
5. **Shield the product if there is a heat source nearby.**
   When there is a heat source surrounding the product, the radiated heat from the heat source can increase the temperature of the product beyond the operating temperature range.
   Protect it with a cover, etc.
6. **Grease oil can be decreased due to external environment and operating conditions, and it deteriorates lubrication performance to shorten the life of the product.**

[Storage]

⚠ **Warning**

1. **Do not store the product in a place in direct contact with rain or water drops or is exposed to harmful gas or liquid.**
2. **Store in an area that is shaded from direct sunlight and has a temperature and humidity within the specified range (-10°C to 60°C and 90%RH or less No condensation or freezing).**
3. **Do not apply vibration and impact to the product during storage.**

6.5 Maintenance

⚠ **Warning**

1. **Do not disassemble or repair the product.**
   Fire or electric shock can result.
2. **Before modifying or checking the wiring, the voltage should be checked with a tester 5 minutes after the power supply is turned off.**
   Electrical shock can result.

⚠ **Caution**

1. **Maintenance should be performed according to the procedure indicated in the Operating Manual.**
   Incorrect handling can cause an injury, damage or malfunction of equipment and machinery.
2. **Removal of product.**
   When equipment is serviced, first confirm that measures are in place to prevent dropping of work pieces and run-away of equipment, etc, and then cut the power supply to the system.
   When machinery is restarted, check that operation is normal with actuators in the proper positions.

[Lubrication]

⚠ **Caution**

1. **The product has been lubricated for life at manufacturer, and does not require lubrication in service.**
   In case that the product requires lubrication according to condition of use, refer to chapter 7.

6.6 Precautions for actuator with lock

⚠ **Warning**

1. **Do not use the lock as a safety lock or a control that requires a locking force.**
   The lock used for the product with a lock is designed to prevent dropping of work piece.
2. **For vertical mounting, use the product with a lock.**
   If the product is not equipped with a lock, the product will move and drop the work piece when the power is removed.
3. **"Measures against drops" means preventing a work piece from dropping due to its weight when the product operation is stopped and the power supply is turned off.**
4. **Do not apply an impact load or strong vibration while the lock is activated.**
   If an external impact load or strong vibration is applied to the product, the lock will lose it's holding force and damage to the sliding part of the lock or reduced lifetime can result.
   The same situations will happen when the lock slips due to a force hight than its holding force, as this will accelerate the wear to the lock.
5. **Do not apply liquid or oil and grease to the lock or its surrounding.**
   When liquid or oil and grease is applied to the sliding part of the lock, its holding force will be reduce significantly.
6. **Take measures against drops and check that safety is assured before mounting, adjustment and inspection of the product.**
   If the lock is released with the product mounted vertically, a work piece can drop due to its weight.

7. Electric actuators / Slider type Common precautions

7.1 Design

⚠ **Caution**

1. **Do not apply a load in excess of the actuator specification.**
   A product should be selected based on the maximum work load and allowable moment.
   If the product is used outside of the operating specification, eccentric load applied to the guide will become excessive and have adverse effects such as creating play in the guide, reduced accuracy and reduced product life.
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 faulty operation or seizure.

7.2 Selection

⚠ **Warning**

1. **Do not exceed the speed limit of the actuator specification.**
   Select a suitable actuator by the relationship of allowable work load and speed.
   Noise or reduction of accuracy may occur if the actuator is operated in excess of its specification and could lead to reduced accuracy and reduced product file.
2. **When the product repeatedly cycles with partial strokes (100mm), lubrication can run out.**
   Operate it at a full stroke at least once a day or every 1000 strokes.
3. **In case that external force is applied, select the actuator at total work load including external force.**
   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.

7.3 Handling

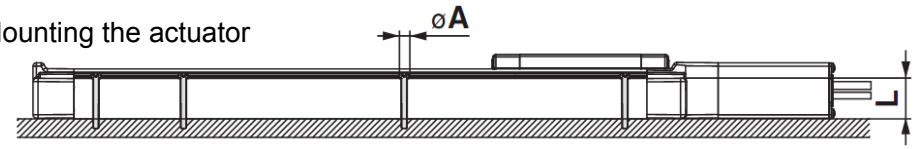
⚠ **Caution**

1. **Do not allow the table to hit the end of stroke.**
   It can cause damage to the actuator.

2. **The actual speed of this actuator is affected by the work load and stroke.**
   Check specifications with reference to the model selection section of the catalog.
3. **Do not apply a load, impact or resistance in addition to a transferred load during return to origin.**
   In the case of return to origin by pushing force, additional force will cause displacement of the origin position since it is based on detected motor torque.
4. **Do not scratch or gouge the body or the table.**
   The flatness of the mounting surface will be deteriorated and it can cause play in the guide and increased sliding resistance.
5. **Do not apply strong impact and too much moment.**
   When external force that exceeds the allowable moment is applied, it can cause play in the guide and increased sliding resistance.
6. **Keep the flatness of mounting surface to within 0.1mm or less.**
   Insufficient flatness of the workpiece or the surface onto which the actuator body is to be mounted can cause play in 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.

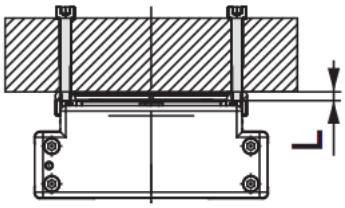
7. **When mounting the actuator, use all mounting holes.**
   If all mounting holes are not used, it influences specifications.
   e.g. the amount of displacement of the table increases.
8. **Do not allow the table to hit the workpiece in the positioning operation and positioning area.**
9. **Do not apply external force to dust seal band, particularly during the actuators movement.**
10. **When mounting the actuator, use screws with adequate length and tighten them with adequate torque.**
    Tightening the screws with a higher torque than the maximum may cause malfunction, whilst tightening with a lower torque can cause the displacement of the mounting position or fall.

Mounting the actuator



Model	Bolt size	Maximum Tightening torque(Nm)	φA(mm)	L(mm)
LEJ□40	M5	3.0	5.5	36.5
LEJ□63	M6	5.2	6.8	49.5

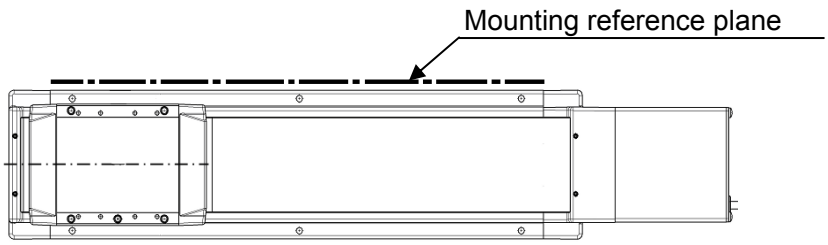
Mounting the workpiece



Model	Bolt size	Maximum Tightening torque(Nm)	L(Maximum thread depth: mm)
LEJ□40	M6 x 1	5.2	10
LEJ□63	M8 x 1.25	12.5	12

Use screws with adequate length, but at least 0.5mm shorter than the maximum thread depth.
The use of screws that are too long can touch the body and cause malfunction.

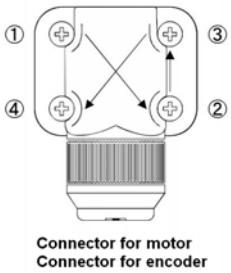
11. **Do not operate by fixing the table and moving the actuator body.**
12. **The belt drive actuator cannot be used for vertically mounted applications.**
13. **Vibration may occur during operation, this could be caused by the operating conditions.**
    If it occurs, adjust response value of autotuning of driver to be lower.
    During the autotuning noise may occur, the noise will stop when the tuning is complete.
14. **When mounting the actuator using the body mounting reference plane, use the pin.**
    And set the height of the pin to be 5mm or more because of R chamfering.
    (Recommended height:6mm)

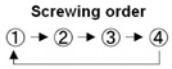


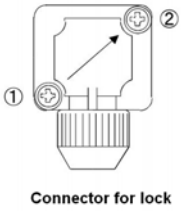
7.4 Plug and unplug the “Cable” and the “Motor cover”

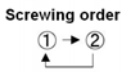
⚠Caution

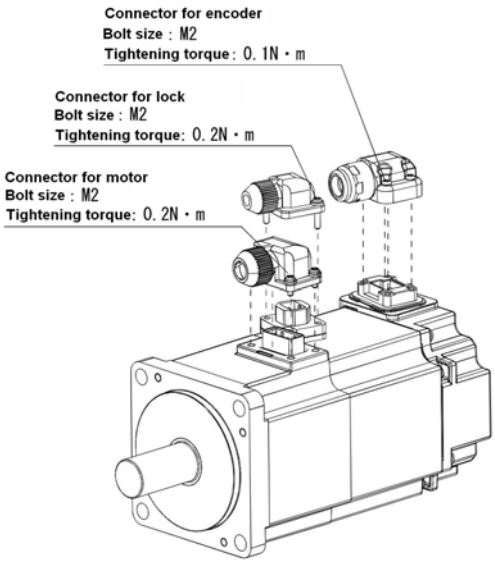
1. Let each cable through the “Motor cover”, and insert connector. For LEJB series, please take care to make the direction of the cutout of the “Motor cover” in figure. When screwing the connector, gradually tighten the screws in a crisscross pattern.

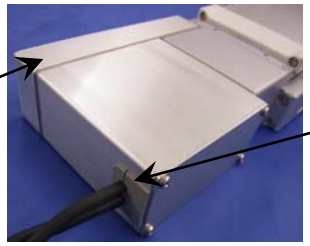




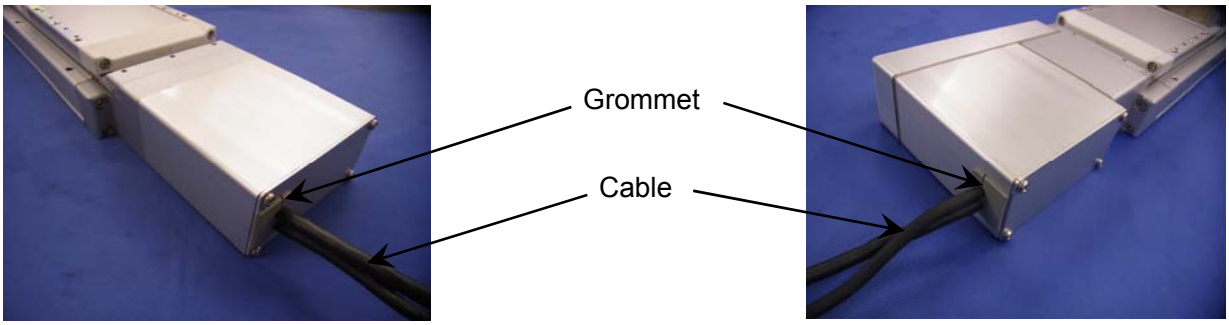








2. Insert each cable into the “Grommet”.



3. Fix the “Motor cover” and the “End cover A”.

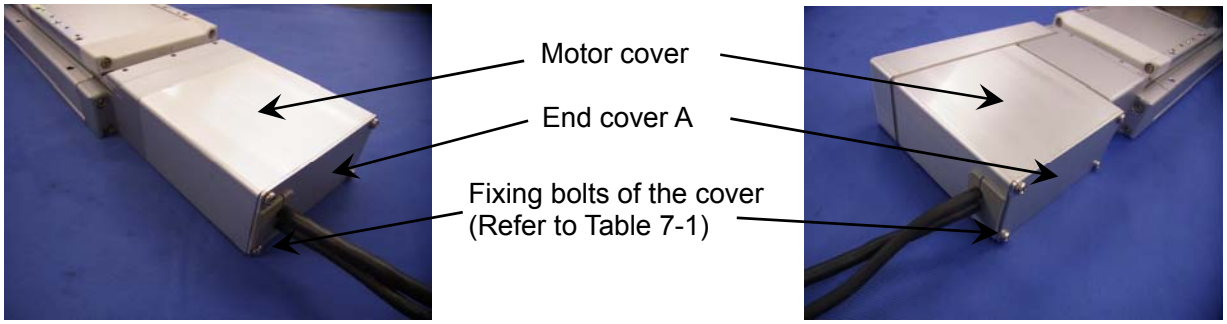


Table 7-1. The fixing bolts of the cover

Motor option	Bolt type	Bolt size	Recommended tightening torque (Nm)	Quantity
Without lock	Cross recessed pan head screw	M4×110	0.9±0.1	4
With lock		M4×150		

4. When unplug the “Cable” and the “Motor cover”, follow the reverse order of 1～3.

7.5 Precaution on maintenance

⚠ **Warning**

1. Turn off the power supply and remove the workpiece before maintenance and replacement of the product.

[Maintenance frequency]

Perform maintenance according to the table below.

Contact SMC if any abnormality is found.

Frequency	Visual appearance check	Internal check	Belt check
Inspection before daily operation	○		
Inspection every six months / 1000km / 5million cycle *	○	○	○

*Whichever occurs first.

[Items for visual appearance check]

1. Loose screws. Abnormal dirt.
2. Check of flaws/faults and cable connections.
3. Vibration, noise.

[Items for internal check]

1. Lubricant condition and dirt 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 when the belt appears to be like malfunction shown in the pictures below.
If it occurs in the first stage of use, confirm it is within the range of the product specification, the system requirements and conditions of use.
Return the actuator to SMC for the belt to be replaced.
(When replacing the belt, please contact SMC for the instruction manual.
Adjustment of the motor origin and adjustment of the belt tension etc. is difficult.
Therefore we recommend returning the actuator to SMC for the belt to be replaced.)

a. Wear-out of tooth shape canvas

Canvas fiber becomes fuzzy.
Rubber is removed and the fiber becomes whitish.
Lines of fiber become unclear.

b. Peeling off or wearing of the side of the belt

Belt corner becomes round and frayed threads stick out.

c. Belt partially cut

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

d. Vertical line of belt teeth

Flaw, which is made when the belt runs on the flange.

e. The rubber back of the belt is softened and sticky.

f. Crack on the back of the belt

2. For internal check, follow the below procedure.

a. Loosen the bolts of the band holder on the end side of the actuator.

Please take care to not cut hand on the edges of the “Dust seal band”.

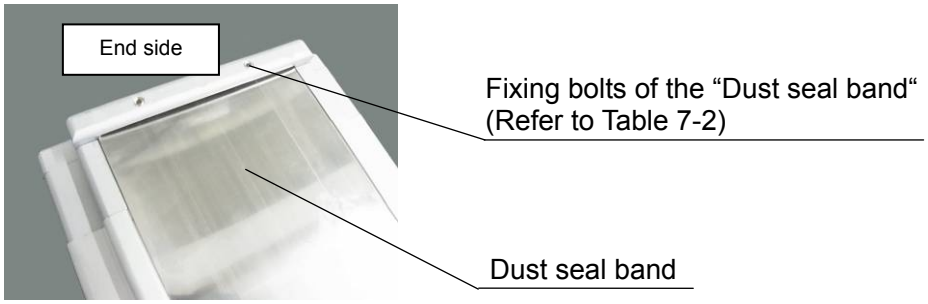


Table 7-2. The fixing bolts of the “Dust seal band”

Bolt type	Bolt size	Recommended tightening torque (Nm)	Quantity
Hexagon socket set screw	M4 x 5	0.4±0.1	2

b. Remove the “Seal band pusher” and the “Blanking plate”.

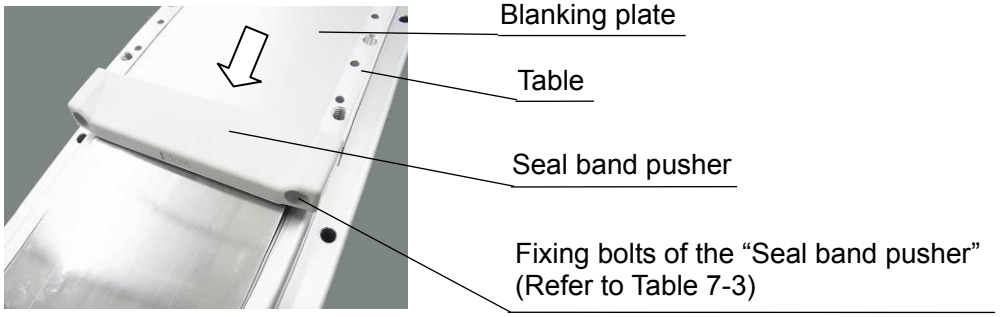
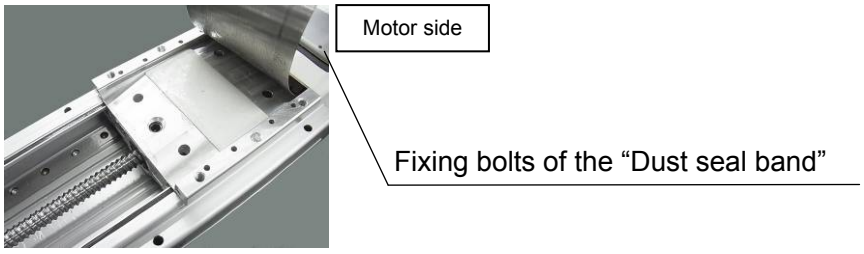


Table 7-3. The fixing bolts of the “Seal band pusher”

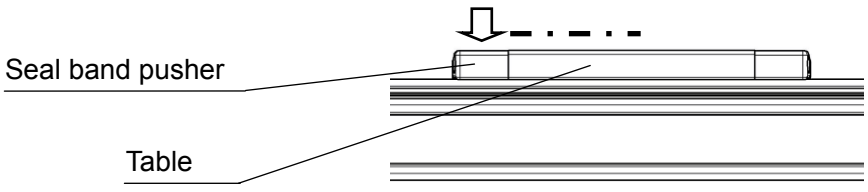
Bolt type	Bolt size	Recommended tightening torque (Nm)	Quantity
± recessed pan head screw	M4 x 25	0.9±0.1	2

Attention: Do not loosen the fixing bolts of the motor side of the stroke.



c. Re-assembly: Follow the reverse order of a-b.

At the time, the surface of the “Seal band pusher” must be under the surface of the “Table”.



3. For belt (for speed reduction) follow the procedure below.

*This is not a procedure for belt change. Refer to [Items for belt check] on P.25.

a. Remove the fixing bolts of “End cover B” and “Pulley cover”.

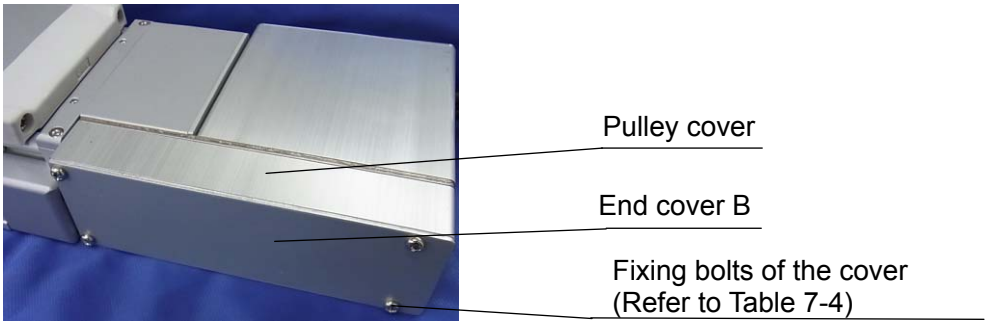
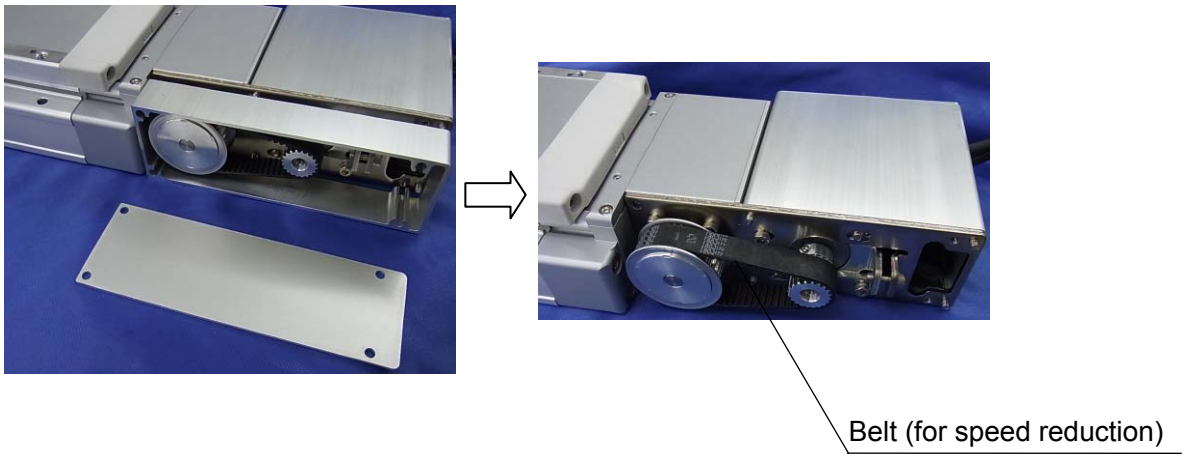


Table 7-4. The fixing bolts of cover

Bolt type	Bolt size	Recommended tightening torque (Nm)	Quantity
Cross recessed pan head screw	M4 x 35 (LEJ□40) M4 x 40 (LEJ□63)	0.9±0.1	4

b. Remove “End cover B” and “Pulley cover”.



c. Re-assembly: Follow the reverse order of a-b.

8. Troubleshooting

8.1 Alarms and Warning

When a fault occurs during the operation, the corresponding alarm or warning is displayed.
If any alarm or warning has occurred, refer to 「Driver Operation Manual」and take the appropriate action.
After removing the cause of the alarm, the alarm can be deactivated in any of the methods marked ○ in the alarm deactivation column.

・LECSA(Pulse input / Positioning)

	Display	Name	Alarm deactivation		
			Power OFF→ON	Press "SET" on current alarm screen.	Alarm reset (RES)
Alarms	A.10	Undervoltage	○	○	○
	A.12	Memory error 1 (RAM)	○	-	-
	A.13	Clock error	○	-	-
	A.15	Memory error 2 (EEP-ROM)	○	-	-
	A.16	Encoder initial communication error1	○	-	-
	A.17	Board error	○	-	-
	A.19	Memory error 3 (Flash-ROM)	○	-	-
	A.1A	Motor combination error	○	-	-
	A.1C	Software combination error	○	-	-
	A.1E	Encoder initial communication error 2	○	-	-
	A.1F	Encoder initial communication error 3	○	-	-
	A.20	Encoder normal communication error 1	○	-	-
	A.21	Encoder normal communication error 2	○	-	-
	A.24	Main circuit error	○	○	○
	A.30	Regenerative error	○(Note1)	○(Note1)	○(Note1)
	A.31	Overspeed	○	○	○
	A.32	Overcurrent	○	-	-
	A.33	Overvoltage	○	○	○
	A.35	Command frequency error	○	○	○
	A.37	Parameter error	○	-	-
	A.39	Program error	○	-	-
	A.45	Main circuit device overheat	○(Note1)	○(Note1)	○(Note1)
	A.46	Servo motor overheat	○(Note1)	○(Note1)	○(Note1)
	A.50	Overload 1	○(Note1)	○(Note1)	○(Note1)
	A.51	Overload 2	○(Note1)	○(Note1)	○(Note1)
	A.52	Error excessive	○	○	○
	A.61	Operation alarm	○	○	○
	A.8E	USB communication error	○	○	○
	888	Watchdog	○	-	-

	Display	Name
Warning	A.90	Amplifier overheat warning
	A.91	Stroke limit warning
	A.96	Excessive regeneration warning
	A.97	Overload warning 1
	A.98	Servo forced stop warning
	A.99	Main circuit off warning
	A.E0	Overload warning 2
	A.E1	Output watt excess warning
	A.E6	Tough drive warning
	A.E9	Amplifier overheat warning
	A.EC	Stroke limit warning
	A.ED	Excessive regeneration warning
	A.F0	Overload warning 1

Note1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.

・LECSB(Pulse input)

	Display	Name	Alarm deactivation		
			Power OFF→ON	Press "SET" on current alarm screen.	Alarm reset (RES)
Alarms	AL.10	Undervoltage	○	○	○
	AL.12	Memory error 1 (RAM)	○	-	-
	AL.13	Clock error	○	-	-
	AL.15	Memory error 2 (EEP-ROM)	○	-	-
	AL.16	Encoder error 1(At power on)	○	-	-
	AL.17	Board error	○	-	-
	AL.19	Memory error 3(Flash-ROM)	○	-	-
	AL.1A	Motor combination error	○	-	-
	AL.20	Encoder error 2(during runtime)	○	-	-
	AL.21	Encoder error 3(during runtime)	○	-	-
	AL.24	Main circuit error	○	○	○
	AL.25	Absolute position erase	○	-	-
	AL.30	Regenerative error	○(Note1)	○(Note1)	○(Note1)
	AL.31	Overspeed	○	○	○
	AL.32	Overcurrent	○	-	-
	AL.33	Overvoltage	○	○	○
	AL.35	Command pulse frequency alarm	○	○	○
	AL.37	Parameter error	○	-	-
	AL.45	Main circuit device overheat	○(Note1)	○(Note1)	○(Note1)
	AL.46	Servo motor overheat	○(Note1)	○(Note1)	○(Note1)
	AL.47	Cooling fan alarm	○	-	-
	AL.50	Overload 1	○(Note1)	○(Note1)	○(Note1)
	AL.51	Overload 2	○(Note1)	○(Note1)	○(Note1)
	AL.52	Error excessive	○	○	○
	AL.8A	Serial communication time-out error	○	○	○
	AL.8E	Serial communication error	○	○	○
	88888	Watchdog	○	-	-

	Display	Name
Warning	A.92	Battery cable disconnection warning
	A.96	Home position setting error
	A.99	Stroke limit warning
	A.9F	Battery warning
	A.E0	Excessive regeneration warning
	A.E1	Overload warning 1
	A.E3	Absolute position counter warning
	A.E5	ABS time-out warning
	A.E6	Servo emergency stop warning
	A.E8	Cooling fan speed reduction warning
	A.E9	Main circuit off warning
	A.EA	ABS servo on warning
	A.EC	Overload warning 2
	A.ED	Output watt excess warning

Note1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.

・LECSC(CC-Link)

	Display	Name	Alarm deactivation		
			Power OFF→ON	MR Configuratior parameter unit(Note3)	Alarm reset (Note2)
Alarms	A10	Undervoltage	○	○	○
	A12	Memory error 1 (RAM)	○	-	-
	A13	Clock error	○	-	-
	A15	Memory error 2 (EEP-ROM)	○	-	-
	A16	Encoder error 1(At power on)	○	-	-
	A17	Board error	○	-	-
	A19	Memory error 3(Flash-ROM)	○	-	-
	A1A	Motor combination error	○	-	-
	A20	Encoder error 2	○	-	-
	A24	Main circuit error	○	○	○
	A25	Absolute position erase	○	-	-
	A30	Regenerative error	○(Note1)	○(Note1)	○(Note1)
	A31	Overspeed	○	○	○
	A32	Overcurrent	○	-	-
	A33	Overvoltage	○	○	○
	A35	Command pulse frequency alarm	○	○	○
	A37	Parameter error	○	-	-
	A45	Main circuit device overheat	○(Note1)	○(Note1)	○(Note1)
	A46	Servo motor overheat	○(Note1)	○(Note1)	○(Note1)
	A47	Cooling fan alarm	○	-	-
	A50	Overload 1	○(Note1)	○(Note1)	○(Note1)
	A51	Overload 2	○(Note1)	○(Note1)	○(Note1)
	A52	Error excessive	○	○	○
	A61	Operation alarm	○	○	○
	A8A	Serial communication time-out	○	○	○
	A8D	CC-Link alarm	○	○	○
	A8E	Serial communication error	○	○	○
	888	Watchdog	○	-	-

	Display	Name
Warning	A90	Home positioning incomplete warning
	A92	Open battery cable warning
	A96	Home position setting error
	A97	Next station warning
	A99	Stroke limit warning
	A9D	CC-Link warning 1
	A9E	CC-Link warning 2
	A9F	Battery warning
	AE0	Excessive regeneration warning
	AE1	Overload warning 1
	AE3	Absolute position counter warning
	AE6	Servo emergency stop warning
	AE8	Cooling fan speed reduction warning
	AE9	Main circuit off warning
	AEC	Overload warning 2
	AED	Output watt excess warning

Note1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.

Note2. Turns on RY(n+1)A or RY(n+3)A.

Note3. Clicking the “Alarm reset” button on the “Alarm display” screen of MR Configurator allows an alarm to be deactivated.
Pressing the “STOP RESET” key of the parameter unit allows an alarm to be deactivated.

・LECSS(SSCNET III)

	Display	Name	Alarm deactivation		
			Power OFF→ON	Error reset	CPU reset
Alarms	10	Undervoltage	○	○	○
	12	Memory error 1 (RAM)	○	-	-
	13	Clock error	○	-	-
	15	Memory error 2 (EEP-ROM)	○	-	-
	16	Encoder error 1(At power on)	○	-	-
	17	Board error	○	-	-
	19	Memory error 3(Flash-ROM)	○	-	-
	1A	Motor combination error	○	-	-
	20	Encoder error 2(during runtime)	○	-	-
	21	Encoder error 3(during runtime)	○	-	-
	24	Main circuit error	○	○	○
	25	Absolute position erase	○	-	-
	30	Regenerative error	○(Note1)	○(Note1)	○(Note1)
	31	Overspeed	○	○	○
	32	Overcurrent	○	-	-
	33	Overvoltage	○	○	○
	34	Receive error 1	○	○(Note2)	○
	35	Command pulse frequency alarm	○	○	○
	36	Receive error 2	○	○	○
	37	Parameter error	○	-	-
	3D	Driver communication parameter setting error	○	-	○
	45	Main circuit device overheat	○(Note1)	○(Note 1)	○(Note1)
	46	Servo motor overheat	○(Note1)	○(Note 1)	○(Note1)
	47	Cooling fan alarm	○	-	-
	50	Overload 1	○(Note1)	○(Note1)	○(Note1)
	51	Overload 2	○(Note1)	○(Note1)	○(Note1)
	52	Error excessive	○	○	○
	82	Master/Slave operation alarm	○	○(Note2)	○
	8A	USB communication time-out error	○	○	○
	8E	USB communication error	○	○	○
	888	Watchdog	○	-	-

	Display	Name
Warning	92	Battery cable disconnection warning
	96	Home position setting error
	9F	Battery warning
	E0	Excessive regeneration warning
	E1	Overload warning 1
	E3	Absolute position counter warning
	E4	Parameter warning
	E6	Servo forced stop warning
	E7	Controller forced stop warning
	E8	Cooling fan speed reduction warning
	E9	Main circuit off warning
	EC	Overload warning 2
	ED	Output watt excess warning

Note1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.

Note2. In some controller communication status, the alarm factor may not be removed.

▪LECSS-T(SSCNET III / H)

	No.	Name	Detail display	Detail name	Stop method (Note 3, 4)	Alarm reset		
						Error reset	CPU reset	Power off → on
Alarm	10	Undervoltage	10.1	Voltage drop in the control circuit power	EDB	○	○	○
			10.2	Voltage drop in the main circuit power	SD	○	○	○
	12	Memory error 1 (RAM)	12.1	RAM error 1	DB	-	-	○
			12.2	RAM error 2	DB	-	-	○
			12.3	RAM error 3	DB	-	-	○
			12.4	RAM error 4	DB	-	-	○
			12.5	RAM error 5	DB	-	-	○
	13	Clock error	13.1	Clock error 1	DB	-	-	○
			13.2	Clock error 2	DB	-	-	○
	14	Control process error	14.1	Control process error 1	DB	-	-	○
			14.2	Control process error 2	DB	-	-	○
			14.3	Control process error 3	DB	-	-	○
			14.4	Control process error 4	DB	-	-	○
			14.5	Control process error 5	DB	-	-	○
			14.6	Control process error 6	DB	-	-	○
			14.7	Control process error 7	DB	-	-	○
			14.8	Control process error 8	DB	-	-	○
			14.9	Control process error 9	DB	-	-	○
			14.A	Control process error 10	DB	-	-	○
	15	Memory error 2 (EEP-ROM)	15.1	EEP-ROM error at power on	DB	-	-	○
			15.2	EEP-ROM error during operation	DB	-	-	○
	16	Encoder initial communication error 1	16.1	Encoder initial communication - Receive data error 1	DB	-	-	○
			16.2	Encoder initial communication - Receive data error 2	DB	-	-	○
			16.3	Encoder initial communication - Receive data error 3	DB	-	-	○
			16.5	Encoder initial communication - Transmission data error 1	DB	-	-	○
			16.6	Encoder initial communication - Transmission data error 2	DB	-	-	○
			16.7	Encoder initial communication - Transmission data error 3	DB	-	-	○
			16.A	Encoder initial communication - Process error 1	DB	-	-	○
			16.B	Encoder initial communication - Process error 2	DB	-	-	○
			16.C	Encoder initial communication - Process error 3	DB	-	-	○
			16.D	Encoder initial communication - Process error 4	DB	-	-	○
			16.E	Encoder initial communication - Process error 5	DB	-	-	○
			16.F	Encoder initial communication - Process error 6	DB	-	-	○
	17	Board error	17.1	Board error 1	DB	-	-	○
			17.3	Board error 2	DB	-	-	○
			17.4	Board error 3	DB	-	-	○
			17.5	Board error 4	DB	-	-	○
			17.6	Board error 5	DB	-	-	○
			17.8	Board error 6 (Note 5)	EDB	-	-	○
	19	Memory error 3 (FLASH-ROM)	19.1	Flash-ROM error 1	DB	-	-	○
			19.2	Flash-ROM error 2	DB	-	-	○
	1A	Servo motor combination error	1A.1	Servo motor combination error	DB	-	-	○
			1A.2	Servo motor control mode combination error	DB	-	-	○
	1E	Encoder initial communication error 2	1E.1	Encoder malfunction	DB	-	-	○
			1E.2	Load-side encoder malfunction	DB	-	-	○

	No.	Name	Detail display	Detail name	Stop method (Note 3, 4)	Alarm reset		
						Error reset	CPU reset	Power off → on
Alarm	1F	Encoder initial communication error 3	1F.1	Incompatible encoder	DB	-	-	○
			1F.2	Incompatible load-side encoder	DB	-	-	○
	20	Encoder normal communication error 1	20.1	Encoder normal communication - Receive data error 1	EDB	-	-	○
			20.2	Encoder normal communication - Receive data error 2	EDB	-	-	○
			20.3	Encoder normal communication - Receive data error 3	EDB	-	-	○
			20.5	Encoder normal communication - Transmission data error 1	EDB	-	-	○
			20.6	Encoder normal communication - Transmission data error 2	EDB	-	-	○
			20.7	Encoder normal communication - Transmission data error 3	EDB	-	-	○
			20.9	Encoder normal communication - Receive data error 4	EDB	-	-	○
			20.A	Encoder normal communication - Receive data error 5	EDB	-	-	○
	21	Encoder normal communication error 2	21.1	Encoder data error 1	EDB	-	-	○
			21.2	Encoder data update error	EDB	-	-	○
			21.3	Encoder data waveform error	EDB	-	-	○
			21.4	Encoder non-signal error	EDB	-	-	○
			21.5	Encoder hardware error 1	EDB	-	-	○
			21.6	Encoder hardware error 2	EDB	-	-	○
			21.9	Encoder data error 2	EDB	-	-	○
	24	Main circuit error	24.1	Ground fault detected by hardware detection circuit	DB	-	-	○
			24.2	Ground fault detected by software detection function	DB	○	○	○
	25	Absolute position erased	25.1	Servo motor encoder - Absolute position erased	DB	-	-	○
	27	Initial magnetic pole detection error	27.1	Magnetic pole detection - Abnormal termination	DB	-	-	○
			27.2	Magnetic pole detection - Time out error	DB	-	-	○
			27.3	Magnetic pole detection - Limit switch error	DB	-	-	○
			27.4	Magnetic pole detection - Estimated error	DB	-	-	○
			27.5	Magnetic pole detection - Position deviation error	DB	-	-	○
			27.6	Magnetic pole detection - Speed deviation error	DB	-	-	○
			27.7	Magnetic pole detection - Current error	DB	-	-	○
	28	Linear encoder error 2	28.1	Linear encoder - Environment error	EDB	-	-	○
	2A	Linear encoder error 1	2A.1	Linear encoder error 1-1	EDB	-	-	○
			2A.2	Linear encoder error 1-2	EDB	-	-	○
			2A.3	Linear encoder error 1-3	EDB	-	-	○
			2A.4	Linear encoder error 1-4	EDB	-	-	○
			2A.5	Linear encoder error 1-5	EDB	-	-	○
			2A.6	Linear encoder error 1-6	EDB	-	-	○
			2A.7	Linear encoder error 1-7	EDB	-	-	○
			2A.8	Linear encoder error 1-8	EDB	-	-	○
	2B	Encoder counter error	2B.1	Encoder counter error 1	EDB	-	-	○
			2B.2	Encoder counter error 2	EDB	-	-	○
	30	Regenerative error (Note 1)	30.1	Regeneration heat error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			30.2	Regeneration signal error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			30.3	Regeneration feedback signal error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)

	No.	Name	Detail display	Detail name	Stop method (Note 3, 4)	Alarm reset		
						Error reset	CPU reset	Power off → on
Alarm	30	Regenerative error (Note 1)	30.1	Regeneration heat error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			30.2	Regeneration signal error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			30.3	Regeneration feedback signal error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	31	Overspeed	31.1	Abnormal motor speed	SD	○	○	○
	32	Overcurrent	32.1	Overcurrent detected at hardware detection circuit (during operation)	DB	-	-	○
			32.2	Overcurrent detected at software detection function (during operation)	DB	○	○	○
			32.3	Overcurrent detected at hardware detection circuit (during a stop)	DB	-	-	○
			32.4	Overcurrent detected at software detection function (during a stop)	DB	○	○	○
	33	Overvoltage	33.1	Main circuit voltage error	EDB	○	○	○
						-	-	
	34	SSCNET receive error 1	34.1	SSCNET receive data error	SD	○	○ (Note 2)	○
			34.2	SSCNET connector connection error	SD	○	○	○
			34.3	SSCNET communication data error	SD	○	○	○
			34.4	Hardware error signal detection	SD	○	○	○
	35	Command frequency error	35.1	Command frequency error	SD	○	○	○
	36	SSCNET receive error 2	36.1	Continuous communication data error	SD	○	○	○
	37	Parameter error	37.1	Parameter setting range error	DB	-	○	○
			37.2	Parameter combination error	DB	-	○	○
	3A	Inrush current suppression circuit error	3A.1	Inrush current suppression circuit error	EDB	-	-	○
	3E	Operation mode error	3E.1	Operation mode error	DB	-	-	○
	42	Servo control error (for linear servo motor and direct drive motor)	42.1	Servo control error by position deviation	EDB	○ (Note 3)	○ (Note 3)	○
			42.2	Servo control error by speed deviation	EDB	○ (Note 3)	○ (Note 3)	○
			42.3	Servo control error by torque/thrust deviation	EDB	○ (Note 3)	○ (Note 3)	○
		Fully closed loop control error (during fully closed loop control)	42.8	Fully closed loop control error by position deviation	EDB	○ (Note 3)	○ (Note 3)	○
			42.9	Fully closed loop control error by speed deviation	EDB	○ (Note 3)	○ (Note 3)	○
			42.A	Fully closed loop control error by position deviation during command stop	EDB	○ (Note 3)	○ (Note 3)	○
	45	Main circuit device overheat (Note 1)	45.1	Main circuit device overheat error	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
	46	Servo motor overheat (Note 1)	46.1	Abnormal temperature of servo motor 1	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			46.2	Abnormal temperature of servo motor 2	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			46.3	Thermistor disconnected	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			46.5	Abnormal temperature of servo motor 3	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			46.6	Abnormal temperature of servo motor 4	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	47	Cooling fan error	47.1	Cooling fan stop error	SD	-	-	○
			47.2	Cooling fan speed reduction error	SD	-	-	○
	50	Overload 1 (Note 1)	50.1	Thermal overload error 1 during operation	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			50.2	Thermal overload error 2 during operation	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)

	No.	Name	Detail display	Detail name	Stop method (Note 3, 4)	Alarm reset		
						Error reset	CPU reset	Power off → on
Alarm	50	Overload 1 (Note 1)	50.3	Thermal overload error 4 during operation	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			50.4	Thermal overload error 1 during a stop	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			50.5	Thermal overload error 2 during a stop	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
			50.6	Thermal overload error 4 during a stop	SD	○ (Note 1)	○ (Note 1)	○ (Note 1)
	51	Overload 2 (Note 1)	51.1	Thermal overload error 3 during operation	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
			51.2	Thermal overload error 3 during a stop	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	52	Error excessive	52.1	Excess droop pulse 1	SD	○	○	○
			52.3	Excess droop pulse 2	SD	○	○	○
			52.4	Error excessive during 0 torque limit	SD	○	○	○
			52.5	Excess droop pulse 3	EDB	○	○	○
	54	Oscillation detection	54.1	Oscillation detection error	EDB	○	○	○
	56	Forced stop error	56.2	Over speed during forced stop	EDB	○	○	○
			56.3	Estimated distance over during forced stop	EDB	○	○	○
	63	STO timing error	63.1	STO1 off	DB	○	○	○
			63.2	STO2 off	DB	○	○	○
	70	Load-side encoder initial communication error 1	70.1	Load-side encoder initial communication - Receive data error 1	DB	-	-	○
			70.2	Load-side encoder initial communication - Receive data error 2	DB	-	-	○
			70.3	Load-side encoder initial communication - Receive data error 3	DB	-	-	○
			70.5	Load-side encoder initial communication - Transmission data error 1	DB	-	-	○
	70	Load-side encoder initial communication error 1	70.6	Load-side encoder initial communication - Transmission data error 2	DB	-	-	○
			70.7	Load-side encoder initial communication - Transmission data error 3	DB	-	-	○
			70.A	Load-side encoder initial communication - Process error 1	DB	-	-	○
			70.B	Load-side encoder initial communication - Process error 2	DB	-	-	○
			70.C	Load-side encoder initial communication - Process error 3	DB	-	-	○
			70.D	Load-side encoder initial communication - Process error 4	DB	-	-	○
			70.E	Load-side encoder initial communication - Process error 5	DB	-	-	○
			70.F	Load-side encoder initial communication - Process error 6	DB	-	-	○
	71	Load-side encoder normal communication error 1	71.1	Load-side encoder communication - Receive data error 1	EDB	-	-	○
			71.2	Load-side encoder communication - Receive data error 2	EDB	-	-	○
			71.3	Load-side encoder communication - Receive data error 3	EDB	-	-	○
			71.5	Load-side encoder communication - Transmission data error 1	EDB	-	-	○
			71.6	Load-side encoder communication - Transmission data error 2	EDB	-	-	○
			71.7	Load-side encoder communication - Transmission data error 3	EDB	-	-	○
			71.9	Load-side encoder communication - Transmission data error 4	EDB	-	-	○
			71.A	Load-side encoder communication - Transmission data error 5	EDB	-	-	○

	No.	Name	Detail display	Detail name	Stop method (Note 3, 4)	Alarm reset		
						Error reset	CPU reset	Power off → on
Alarm	72	Load-side encoder normal communication error 2	72.1	Load-side encoder data error 1	EDB	-	-	○
			72.2	Load-side encoder data update error	EDB	-	-	○
			72.3	Load-side encoder data waveform error	EDB	-	-	○
			72.4	Load-side encoder non-signal error	EDB	-	-	○
			72.5	Load-side encoder hardware error 1	EDB	-	-	○
			72.6	Load-side encoder hardware error 2	EDB	-	-	○
			72.9	Load-side encoder data error 2	EDB	-	-	○
	8A	USB communication time-out error	8A.1	USB communication time-out error	SD	○	○	○
	8E	USB communication error	8E.1	USB communication receive error	SD	○	○	○
			8E.2	USB communication checksum error	SD	○	○	○
			8E.3	USB communication character error	SD	○	○	○
			8E.4	USB communication command error	SD	○	○	○
			8E.5	USB communication data number error	SD	○	○	○
	888	Watchdog	88._	Watchdog	DB	-	-	○

Note 1. Leave for about 30 minutes of cooling time after removing the cause of occurrence.

2. In some controller communication status, the alarm factor may not be removed.

3. Stop method indicates as follows:

   ・DB: Stops with dynamic brake. (Coasts for the driver without dynamic brake.)

   ・EDB: Stops with electronic dynamic brake for 400 W or less drivers

   Stops with dynamic brake for 750 W drivers

   ・SD: Forced stop deceleration

4. This is applicable when [Pr. PA04] is set to the initial value. The stop system of SD can be changed to DB using [Pr. PA04].

5. This alarm will occur only in the J3 compatibility mode.

	No.	Name	Detail display	Detail name	Stop method (Note 2, 3)
Warning	91	Servo amplifier overheat warning (Note 1)	91.1	Main circuit device overheat warning	-
	92	Battery cable disconnection warning	92.1	Encoder battery cable disconnection warning	-
			92.3	Battery degradation	-
	95	STO warning	95.1	STO1 off detection	DB
			95.2	STO2 off detection	DB
	96	Home position setting warning	96.1	In-position warning at home positioning	-
			96.2	Command input warning at home positioning	-
	9F	Battery warning	9F.1	Low battery	-
			9F.2	Battery degradation warning	-
	E0	Excessive regeneration warning (Note 1)	E0.1	Excessive regeneration warning	-
	E1	Overload warning 1 (Note 1)	E1.1	Thermal overload warning 1 during operation	-
			E1.2	Thermal overload warning 2 during operation	-
			E1.3	Thermal overload warning 3 during operation	-
			E1.4	Thermal overload warning 4 during operation	-
			E1.5	Thermal overload error 1 during a stop	-
			E1.6	Thermal overload error 2 during a stop	-
			E1.7	Thermal overload error 3 during a stop	-
			E1.8	Thermal overload error 4 during a stop	-
	E2	Servo motor overheat warning	E2.1	Servo motor temperature warning	-
	E3	Absolute position counter warning	E3.2	Absolute position counter warning	-
			E3.5	Encoder absolute positioning counter warning	-
	E4	Parameter warning	E4.1	Parameter setting range error warning	-
	E6	Servo forced stop warning	E6.1	Forced stop warning	SD
	E7	Controller forced stop warning	E7.1	Controller forced stop warning	SD
	E8	Cooling fan speed reduction warning	E8.1	Decreased cooling fan speed warning	-
			E8.2	Cooling fan stop	-
	E9	Main circuit off warning	E9.1	Servo-on signal on during main circuit off	DB
			E9.2	Bus voltage drop during low speed operation	DB
			E9.3	Ready-on signal on during main circuit off	DB
	EC	Overload warning 2 (Note 1)	EC.1	Overload warning 2	-
	ED	Output watt excess warning	ED.1	Output watt excess warning	-
	F0	Tough drive warning	F0.1	Instantaneous power failure tough drive warning	-
			F0.3	Vibration tough drive warning	-
	F2	Drive recorder - Miswriting warning	F2.1	Drive recorder - Area writing time-out warning	-
			F2.2	Drive recorder - Data miswriting warning	-
	F3	Oscillation detection warning	F3.1	Oscillation detection warning	-

Note 1. Leave for about 30 minutes of cooling time after removing the cause of occurrence.
Note 2. Stop method indicates as follows:
DB: Stops with dynamic brake. (Coasts for the driver without dynamic brake.)
SD: Decelerates to a stop
Note 3. This is applicable when [Pr. PA04] is set to the initial value. The stop system of SD can be changed to DB using [Pr. PA04].

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