



Operation Manual

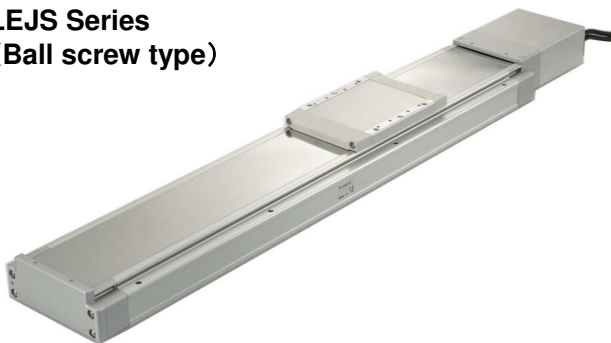
PRODUCT NAME

**Electric Actuator / High Rigidity Slider Type
《AC Servo Motor》**

MODEL / Series / Product number

**MODEL : LEJS, LEJB
Series : LEJ**

**LEJS Series
(Ball screw type)**



**LEJB Series
(Belt type)**



SMC Corporation

Contents

Safety Instructions	2
1. Procedure before operation	4
1.1 Preparation	4
1.2 Startup	6
1.3 Gain tuning	7
1.3.1 Procedure	7
1.3.2 The recommended the parameter for each driver	8
2. High rigidity slider type / LEJS series	14
2.1 Specification.....	14
2.2 How to order.....	15
2.3 Construction	16
3. Slider type / LEJB series	17
3.1 Specification.....	17
3.2 How to order.....	18
3.3 Construction	19
4. Product Outline	20
4.1 System construction	20
4.2 Function / Control mode	24
5. Wiring and cables / Common precautions.....	25
6. Electric actuators / Common precautions	26
6.1 Design and selection	26
6.2 Mounting.....	27
6.3 Handling	28
6.4 Operating environment	29
6.5 Maintenance	30
6.6 Precautions for actuator with lock	30
7. Electric actuators / Slider type Common precautions	31
7.1 Design.....	31
7.2 Selection.....	31
7.3 Handling	31
7.4 Plug and unplug the “Cable” and the “Motor cover”	33
7.5 Precaution on maintenance	34
8. Troubleshooting	36



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.

*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: Manipulating industrial robots -Safety.

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.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

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

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

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

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

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

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



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

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

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

***2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction(WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

1. Procedure before operation

1.1 Preparation

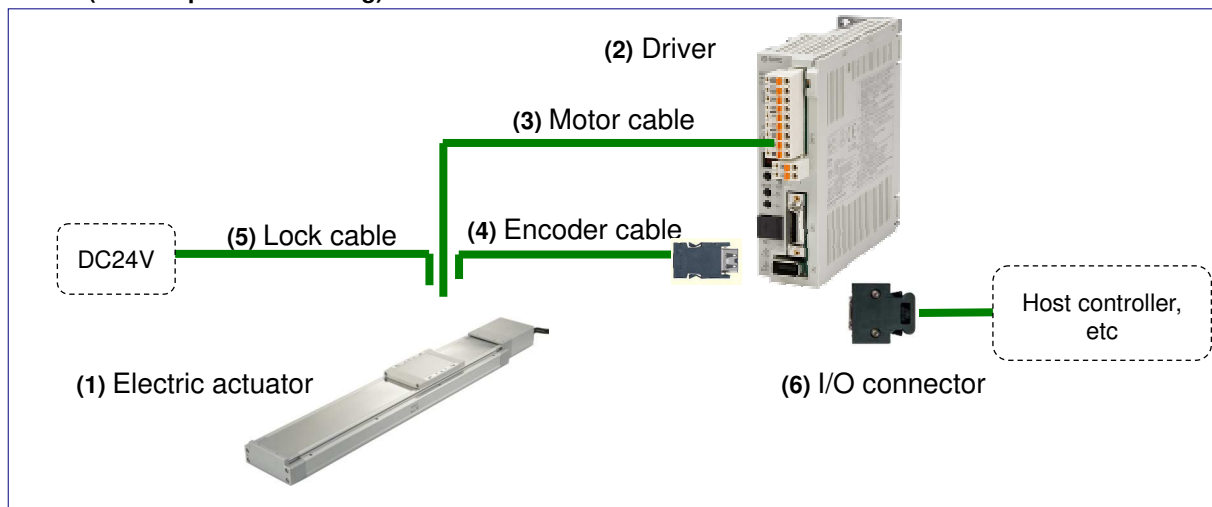
(1) Items to be prepared

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

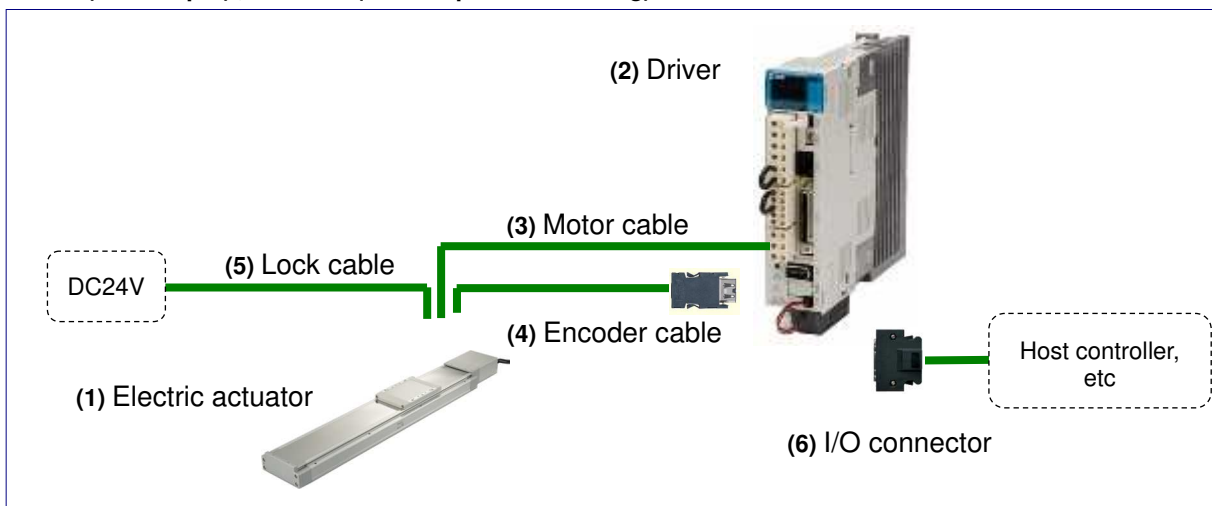
Table1-1. Components

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)

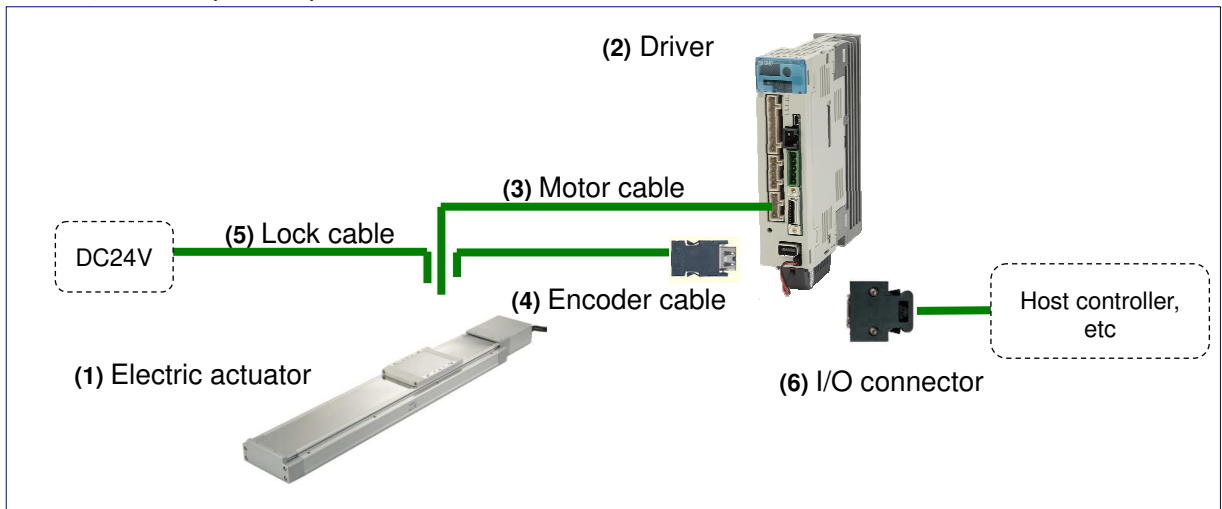
LECSA(Pulse input / Positioning)



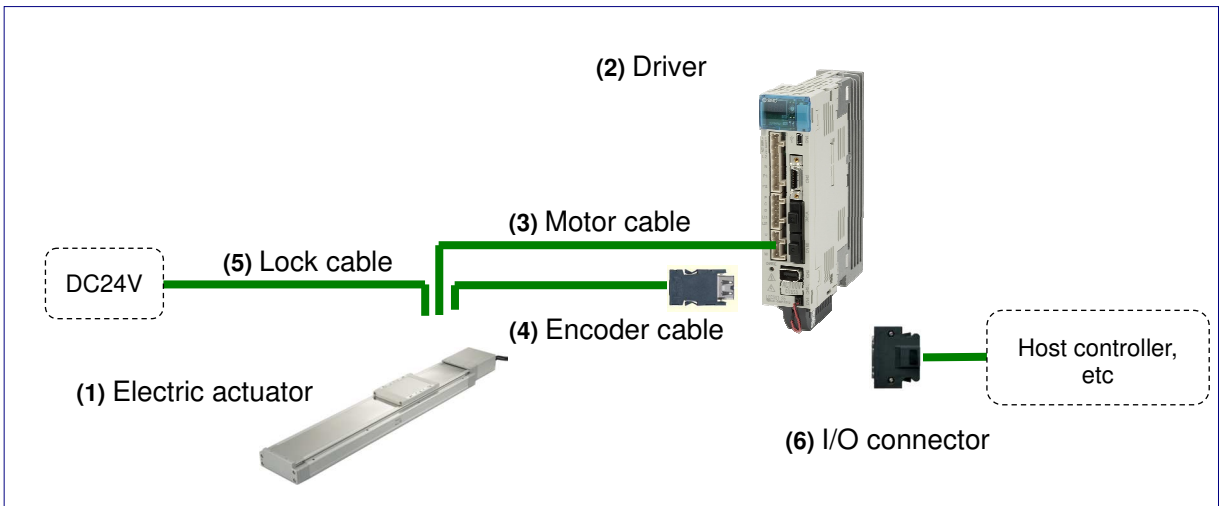
LECSB(Pulse input) , LECSB-T(Pulse input / Positioning)



LECSC , LECSC-T(CC-Link)

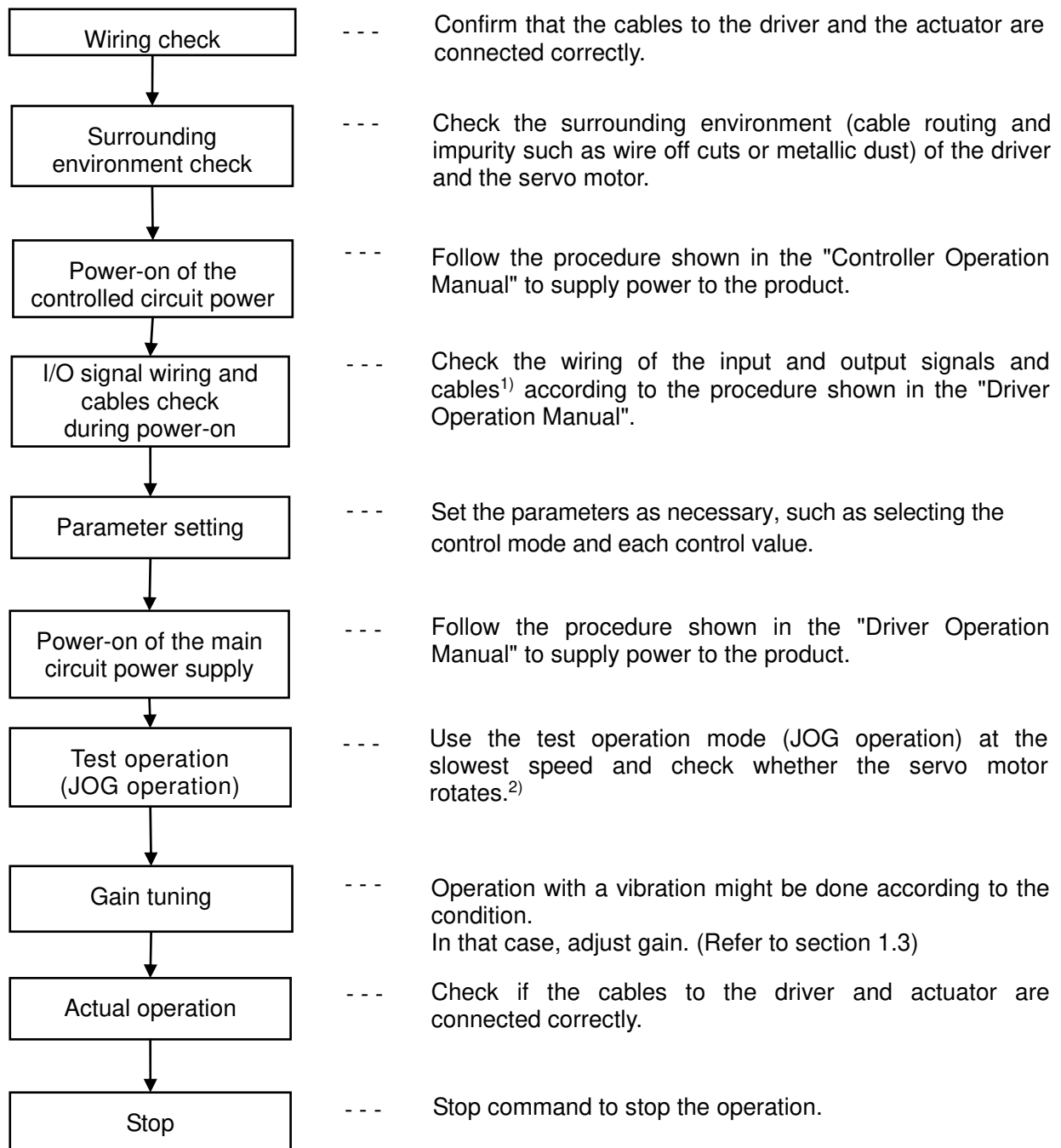


LECSS (SSCNET III) , LECSS-T (SSCNET III / H)



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.



1)CC-Link cable (LECSC, LECSC-T), SSCNETIII cable (LECSS, LECSS-T)

2)When using test operation mode (JOG operation), the LECSC, LECSS, LECSC-T, LECSS-T need 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 "□□", 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/LECSC-T(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 LECST(Pulse input / Positioning), 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].

[LECS]

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	
Feed 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.

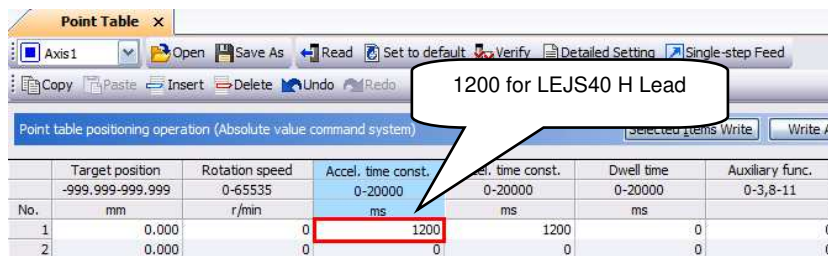
[LECSB-T]

Series	LEJS40			LEJS63			LEJB40	LEJB63		
	Lead symbol	H	A	B	H	A	B	T		
	Lead	24	16	8	30	20	10	27	42	
Parameter *1,*2	Para. No	Initial value	Recommended value							
Number of command input pulses per revolution *3.	PA05	10000	10000							
Electronic gear numerator *3.	PA06	1	262144							
Electronic gear denominator *3.	PA07	1	(Position control mode)							
			2400	1600	800	3000	2000	1000	2700	4200
			(Positioning mode)							
			24000	16000	8000	30000	20000	10000	27000	42000
Function selection A-3	PA21	0001	2001 (J3 electronic gear setting value compatibility mode)							
Feel length multiplication (STM) (Multiplier)	PT03	0000	0000 (<1000 stroke)/0001 (>1000 stroke)							
Home position return type	PT04	0010	□□□3 (Stopper type)							
Home position return direction	PT04	0010	□□1□ (Motor side)							
Home position return Speed (rpm)	PT05	500	75	113	225	60	90	180	133	86
Home position return position data (μm)	PT08	0	-2000 (<1000 stroke)/-200 (>1000 stroke)							
Stopper type home position return stopper time (msec)	PT10	100	200							
Stopper type home position return torque limit value (%)	PT11	15	24							
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 setting required. Differs to initial value
- *1. Parameter is set to the recommended value. Please set parameter according to customer application.
- *2. Mechanical resonance may occur depending on the shape or mounting orientation of the work piece. Please change this parameter during initial configuration.
(Parameter initial configuration ⇒ Set the recommended parameter value ⇒ Operation start)
- *3. Other than positioning mode: Actuator travel distance at 10 [μm/pulse] per pulse.
Positioning Mode: Minimum actuator travel distance of 1[μm].

[Recommended Value of acceleration time constant of Point table No.1 for LEJ]

Series	LEJS40			LEJS63			LEJB40	LEJB63	
	Lead symbol	H	A	B	H	A	B	T	
	Lead	24	16	8	30	20	10	27	42
Point table No.1	Initial value	Recommended value							
Home position return acceleration time constant (msec) *4	0	1200	800	400	1500	1000	500	1350	2100



- *4. Use the acceleration time constant of Point table No.1 as the acceleration time constant (msec) of Home position return. Set the recommended value in the above figure. Refer to "LECSB2-T□ Operation Manual (Simplified Edition)", section 5.7 for how to set the Point table.

[LECS-C-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 *1,*2	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	24								
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.

 Different from the initial value.

*1 Parameter is the recommended value. Please change the parameter to the appropriate value for the 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 minimum unit of the travel distance of the actuator should be 1 [μm].

[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 LECS, please set the electronic gear with PC, PLC etc. in your application.

2. High rigidity slider type / LEJS series

2.1 Specification

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

Model		LEJS40			LEJS63			
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 [°C]		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.						
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	[With LECSSB-T/LECSS-T]Absolute 22bit encoder (Resolution: 4194304 p/rev) [With LECSC-T]Absolute 18bit encoder (Resolution:262144 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			
Type ^{Note9)}		No excitation operating type						
Holding force [N]		67	101	203	220	330	660	
Power consumption [W] at 20°C ^{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)	S2:0.2 / S6:0.3 / T6:0.2									

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)	S3:0.4 / S7:0.7 / T7:0.4									

2.2 How to order

LEJS H 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

Type	Output [W]	Actuator size	Compatible controller
S2	100	40	LECSA□-S1
S3			
S6	100	40	LECS□□-S5
S7			
T6	100	40	LECS□2-T5
T7			

(4) Lead [mm]

	LEJS40	LEJS63
H	32	30
A	16	20
B	8	10

(5) Stroke [mm]

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

(6) Motor option

Nil	Without lock
B	With lock

(7) Cable type

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

(8) Cable length [m]

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

(9) Driver type

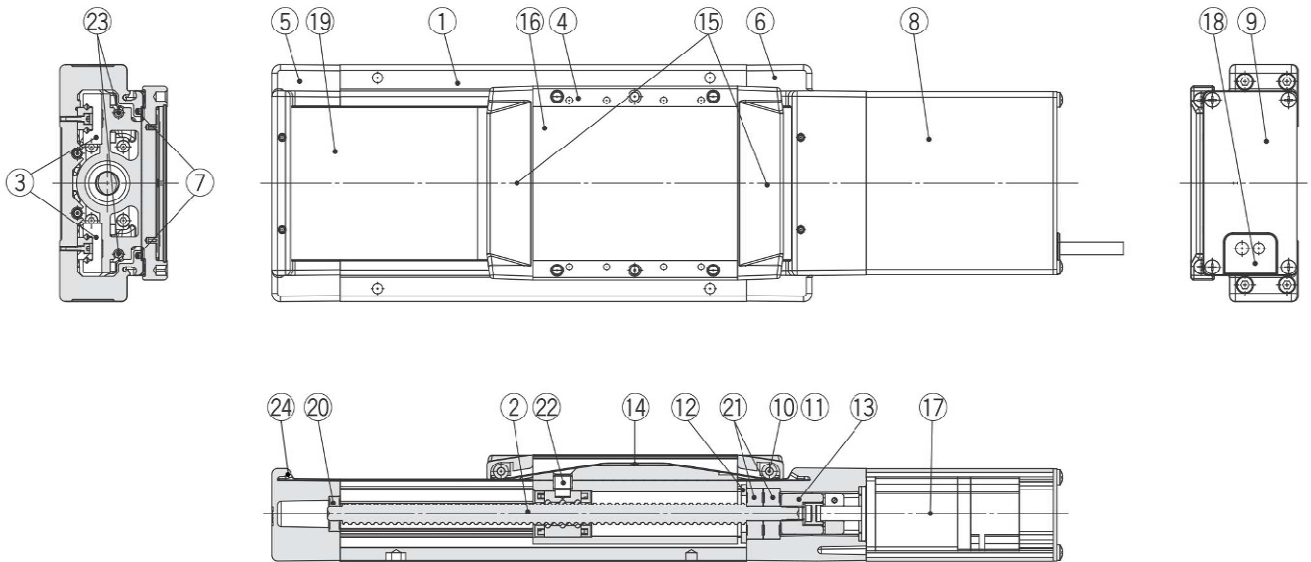
	Compatible driver	Power supply voltage [V]
Nil	Without driver	—
A1	LECSA1	100 to 120
A2	LECSA2	200 to 230
B1	LECSB1	100 to 120
B2	LECSB2-S□	200 to 230
	LECSB2-T□	200 to 240
C1	LECSC1	100 to 120
C2	LECSC2-S□	200 to 230
	LECSC2-T□	
S1	LECSS1	100 to 120
S2	LECSS2-S□	200 to 230
	LECSS2-T□	200 to 240

(10) I/O Connector

Nil	Without connector
H	With connector
1	1.5[m]

2.3 Construction

LEJS



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	-	
24	Seal band stopper	Stainless steel	

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)	
	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 [°C]	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	[With LECSB-T/LECSS-T]Absolute 22bit encoder (Resolution: 4194304 p/rev) [With LECSC-T]Absolute 18bit encoder (Resolution:262144 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°C ^{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)	S2:0.2 / S6:0.3 / T6:0.2											

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)	S3:0.4 / S7:0.7 / T7:0.4											

3.2 How to order

LEJB 40 S2 T — 500 □ — □ □ □ □

①
②
③
④
⑤
⑥
⑦
⑧
⑨

(1) Size

(2) Motor type

(3) Lead [mm]

40
63

	Type	Output [W]	Actuator size	Compatible controller
S2	AC servo motor (incremental encoder)	100	40	LECSA□-S1
		200	63	LECSA□-S3
S6	AC servo motor (absolute encoder)	100	40	LECS□□-S5
		200	63	LECS□□-S7
T6	AC servo motor (absolute encoder)	100	40	LECS□2-T5
		200	63	LECS□2-T7

	LEJB40	LEJB63
T	27	42

(4) Stroke [mm]

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

(5) Motor option

Nil	Without lock
B	With lock

(6) Cable type

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

(7) Cable length [m]

Nil	Without cable
2	2
5	5
A	10

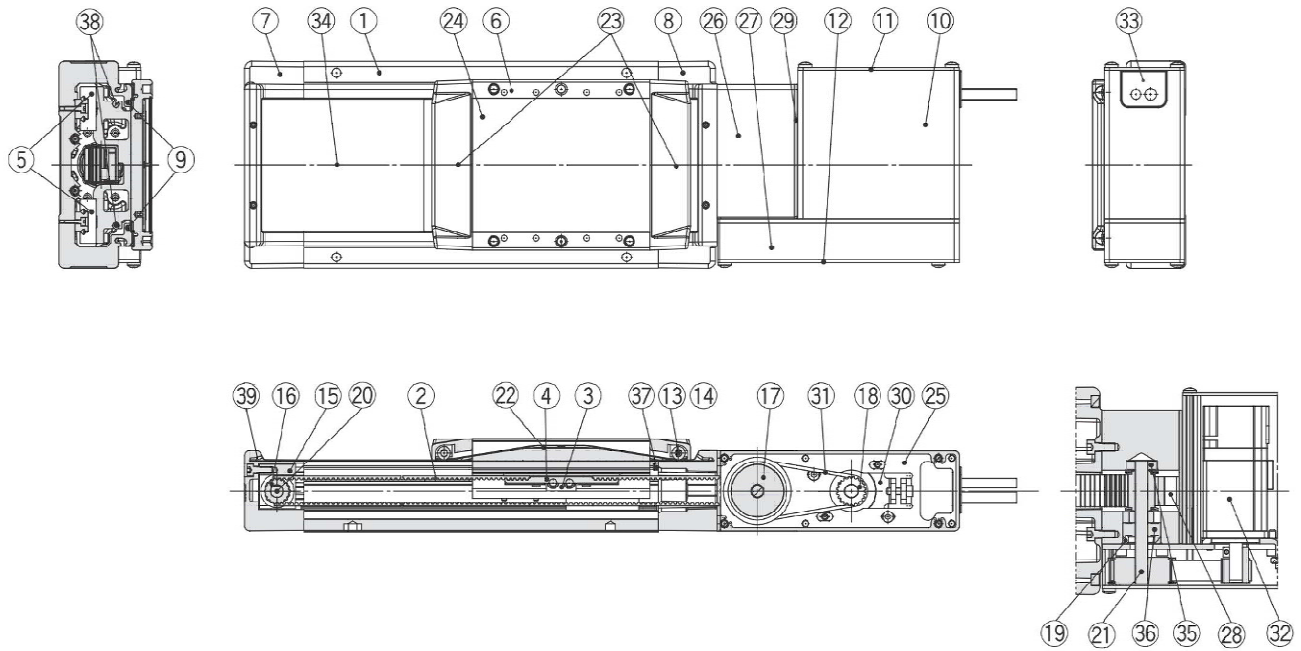
(8) Driver type

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

(9) I/O Connector

Nil	Without connector
H	With connector
1	1.5[m]

3.3 Construction LEJB



Motor details

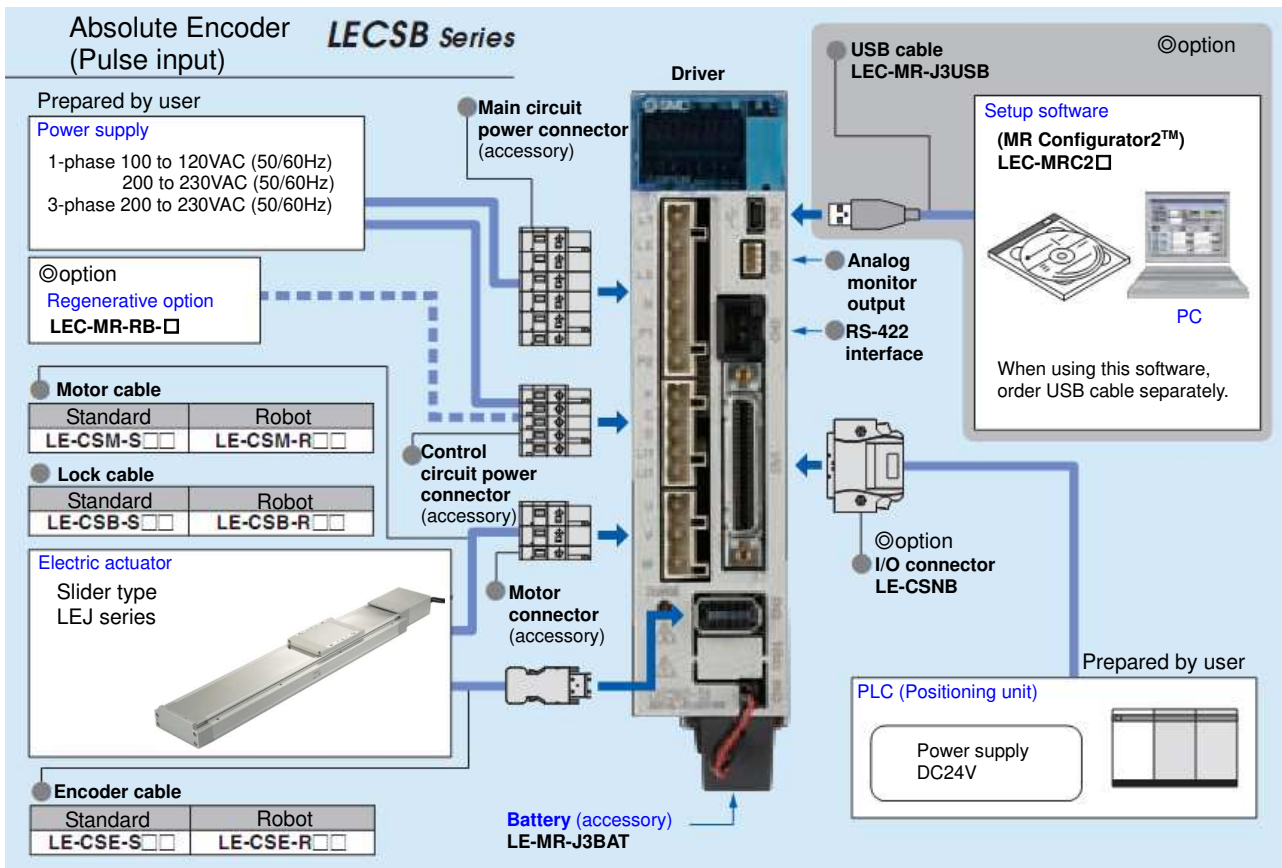
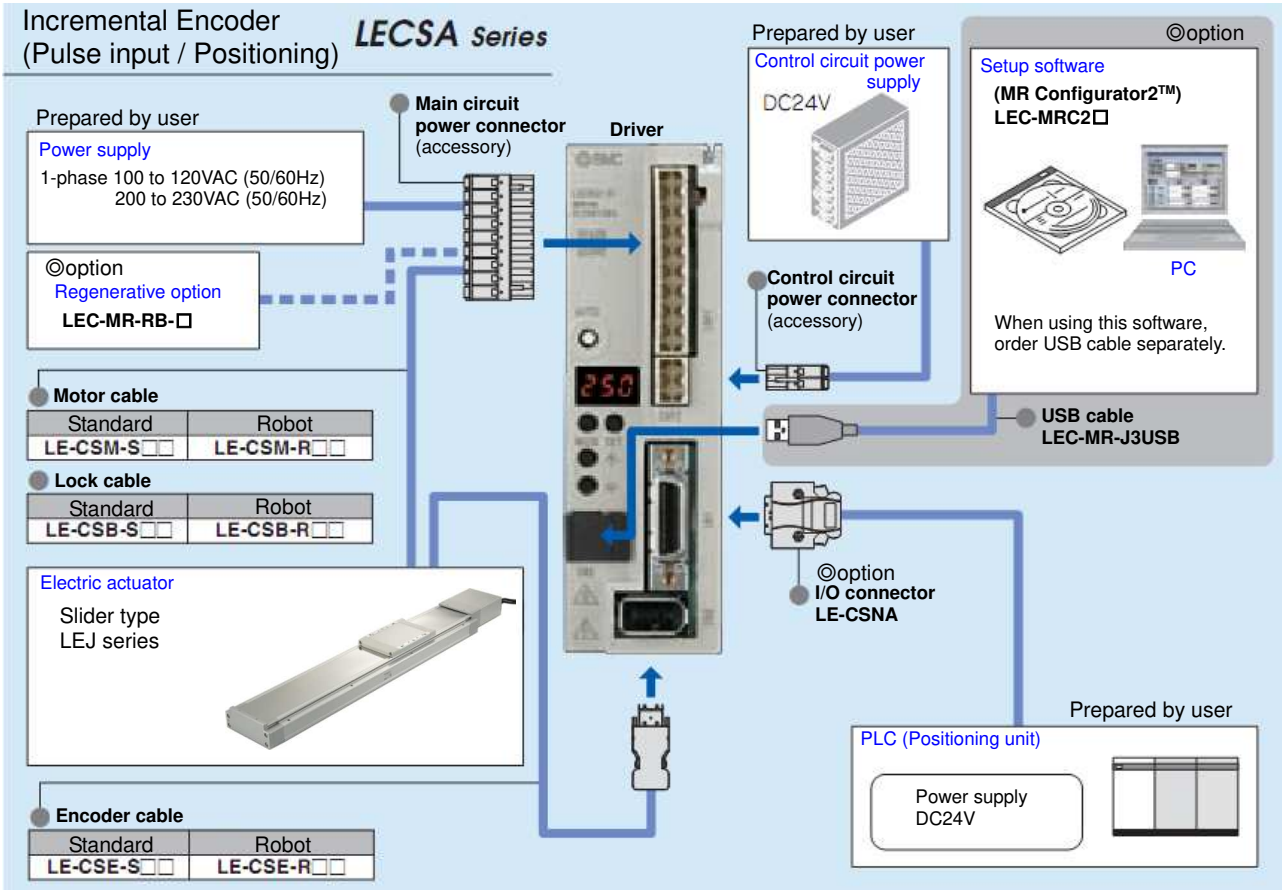
Component Parts

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	
20	Pulley shaft A	Stainless steel	

No.	Description	Material	Note
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	-	
39	Seal band stopper	Stainless steel	

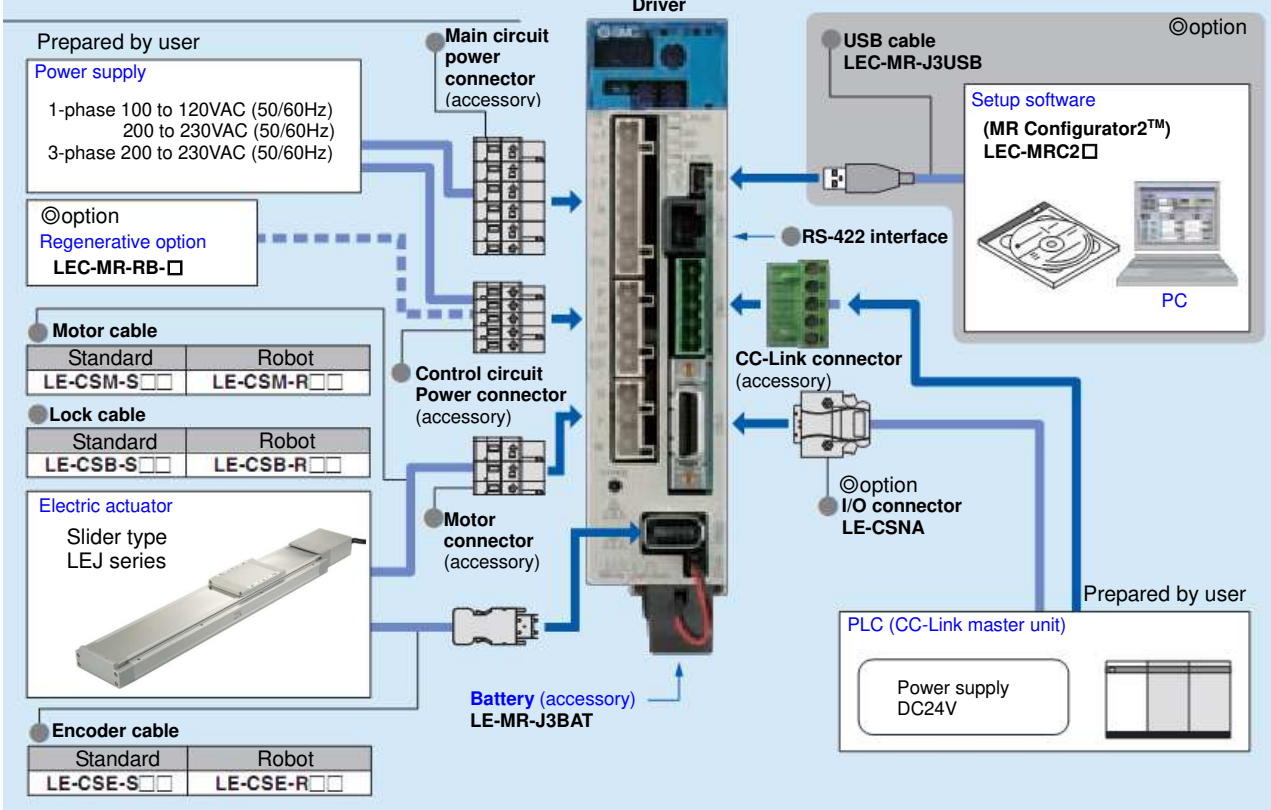
4. Product Outline

4.1 System construction

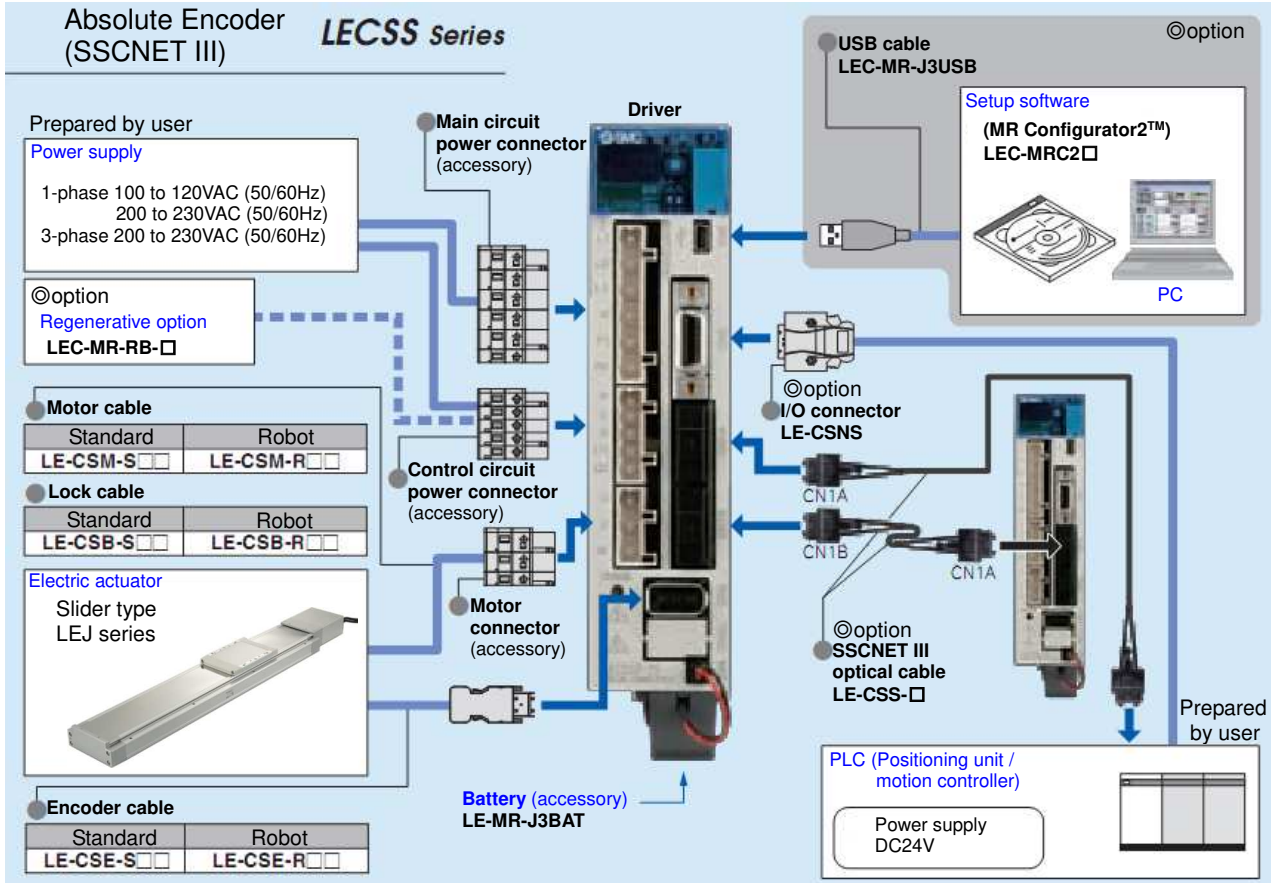


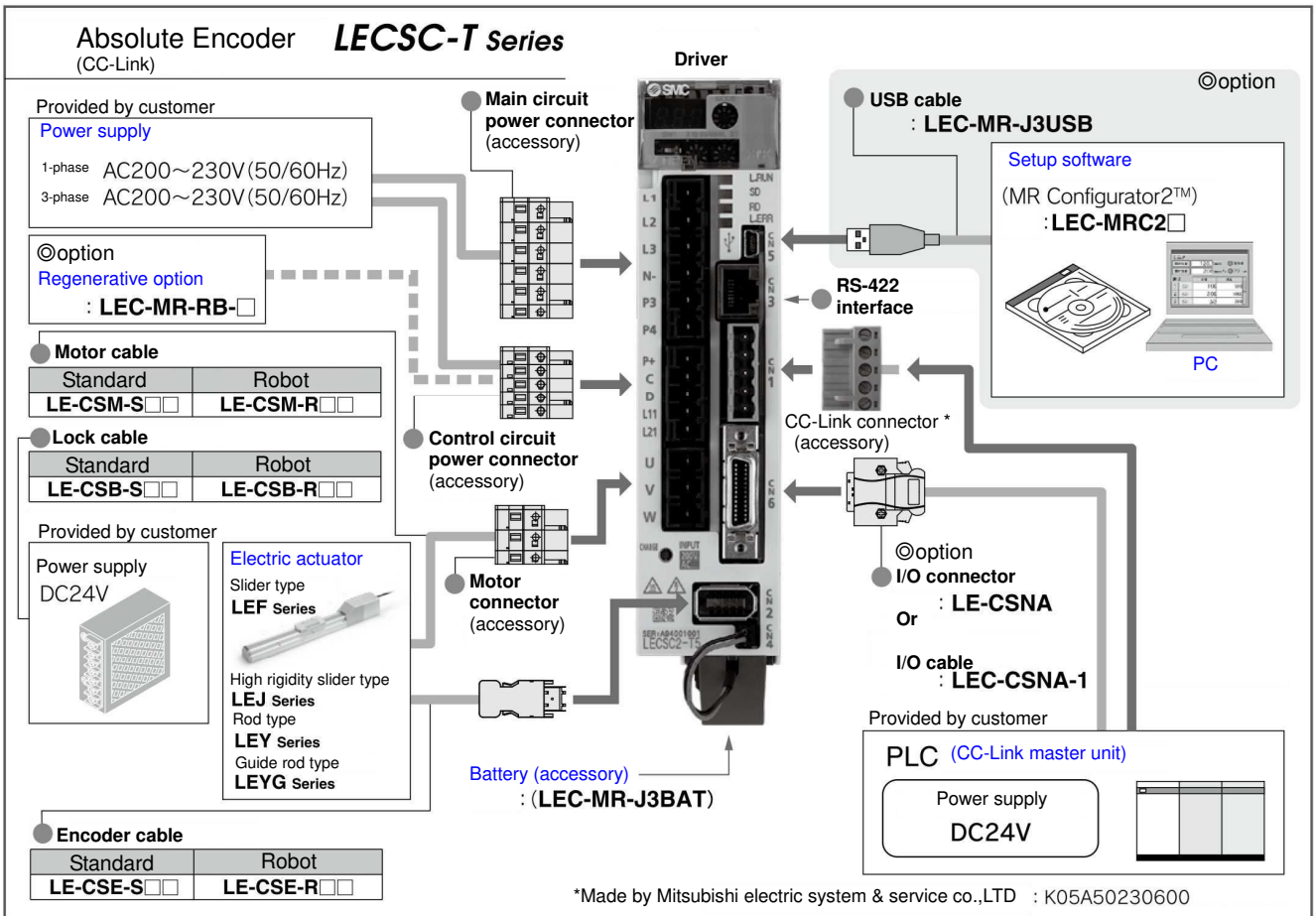
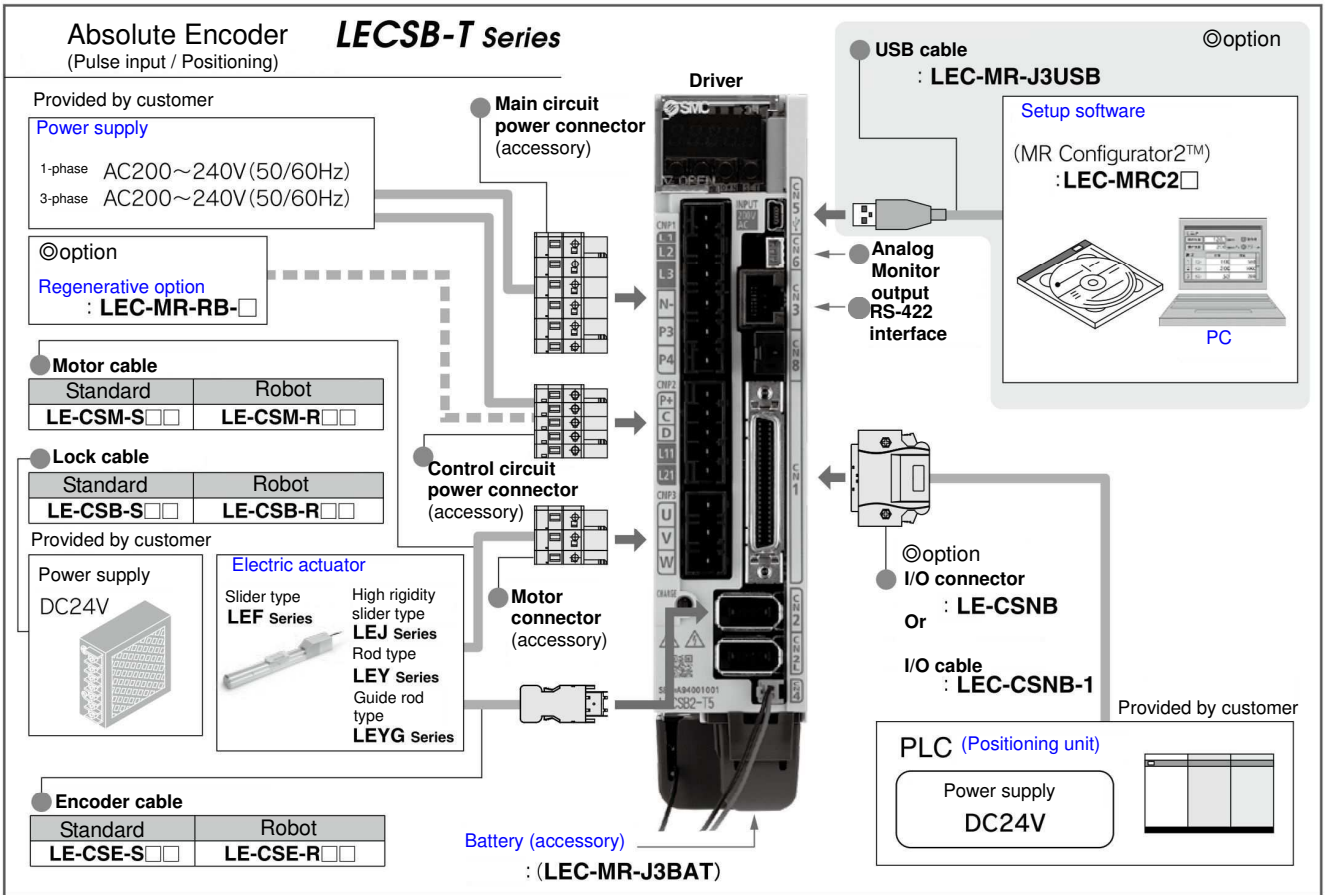
Absolute Encoder
(CC-Link)

LECSC Series



Absolute Encoder (SSCNET III) LECSS Series





*Made by Mitsubishi electric system & service co.,LTD : K05A50230600

Absolute Encoder **LECSS-T Series**



Provided by customer

Power supply
 1-phase AC200~240V (50/60Hz)
 3-phase AC200~240V (50/60Hz)

◎option
Regenerative option
 : LEC-MR-RB-□

● **Motor cable**

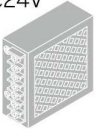
Standard	Robot
LE-CSM-S□□	LE-CSM-R□□

● **Lock cable**

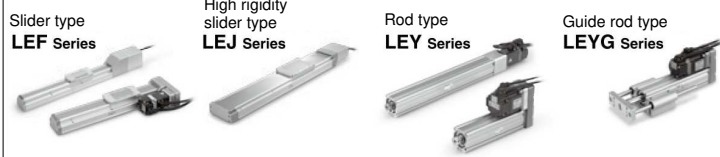
Standard	Robot
LE-CSB-S□□	LE-CSB-R□□

Provided by customer

Power supply
 DC24V



Electric actuator



Main circuit power connector
 (accessory)

Control circuit power connector
 (accessory)

Motor connector
 (accessory)


Encoder cable

Standard	Robot
LE-CSE-S□□	LE-CSE-R□□

Driver

Battery (accessory)
 : (LEC-MR-BAT6V1SET)

USB cable
 : LEC-MR-J3USB

◎option
Setup software
 (MR Configurator2™)
 : LEC-MRC2□

 PC

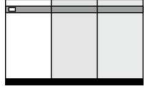
◎option
I/O connector
 : LE-CSNS
 or
I/O cable
 : LEC-CSNS-1

◎option
STO cable (3m)
 : LEC-MR-D05UDL3M

◎option
SSCNET III optical cable
 : LE-CSS-□

Provided by customer
PLC (Positioning unit / motion controller)

Power supply DC24V



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
LECSA (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)
LECSB-T (Pulse input / Positioning)	Pulse train	Absolute	ON/OFF signal 15 points (max. 255 points) ^{Note2)}	ON/OFF signal 16 programs (max. 256 Programs) ^{Note2)}	PA01
LECSA-T (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-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 Configurator2™ (Setup software Japanese version) / LEC-MRC2

-MR Configurator2™ (Setup software English version) / LEC-MRC2E

-MR Configurator2™ (Setup software Chinese version) / LEC-MRC2C

-USB cable for Setup software (3m) / LEC-MR-J3USB

Note4) The LECSA/LECSA-T 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. Never disassemble or modify (including additional machining) the product.**
An injury or failure can result. It will cause the loss of the product performance.
- 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.
- 10. Do not exceed product specification, even if work load is supported by external linear guides.**
The moment to actuator is reduced by external guide, but required ability for transport (relationship between speed and work load) is not reduced.

Caution

- 1. Operate within the limits of the maximum usable stroke.**
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 understanding its contents. Keep the manual in a safe place for 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, inspecting 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.**
8. **Do not apply impact/collision/resistance for mover of actuator in operation.**
It will cause decrease of product's life, damage to product, and so on.

[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. Contact SMC, in case of disassembly for the maintenance.
- 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 its 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 high 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. Or, lock sliding part performance and condition changes may be cause of lock release malfunction.
- 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 for length 500mm].**
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.

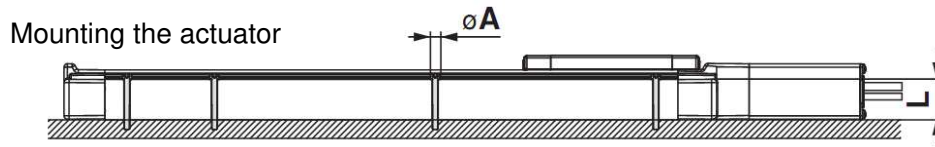
If all mounting holes are not used, it influences specifications. e.g. the amount of displacement of the table increases.

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.

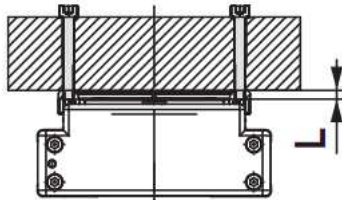
10. When mounting the actuator, use screws with adequate length and tighten them with adequate torque.

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.



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

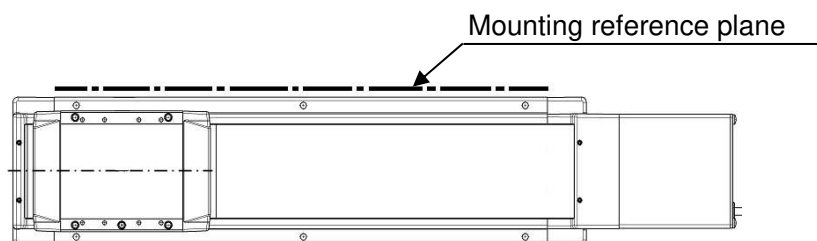
Use screws with adequate length, but at least 0.5mm shorter than the maximum thread depth. The use of screws that are too long can touch the body and cause malfunction.

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)



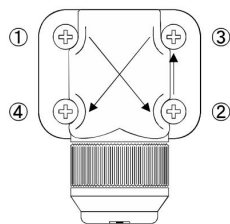
15. When the fluctuation of load is caused during operation, malfunction/noise/alarm may occur.(In case of AC servo motor)

The tuning of gain may not suit for fluctuation load. Adjust the gain properly by following the manual of driver.

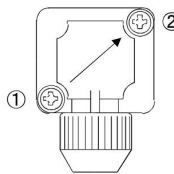
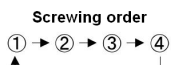
7.4 Plug and unplug the “Cable” and the “Motor cover”

⚠ Caution

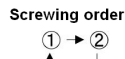
- Let each cable through the “Motor cover”, and insert connector. For LEJB series, please take care to make the direction of the cutout of the “Motor cover” in figure. When screwing the connector, gradually tighten the screws in a crisscross pattern.



Connector for motor
Connector for encoder



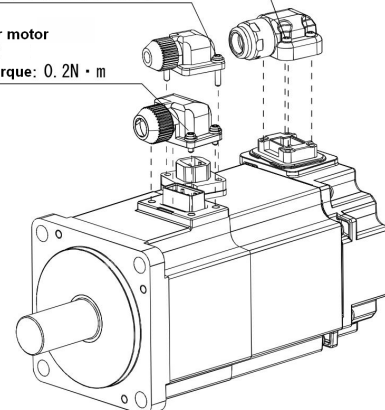
Connector for lock



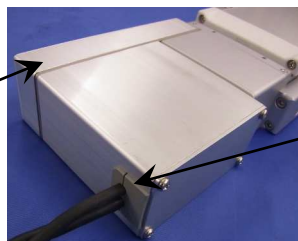
Connector for encoder
Bolt size : M2
Tightening torque : 0.1N · m

Connector for lock
Bolt size : M2
Tightening torque : 0.2N · m

Connector for motor
Bolt size : M2
Tightening torque : 0.2N · m

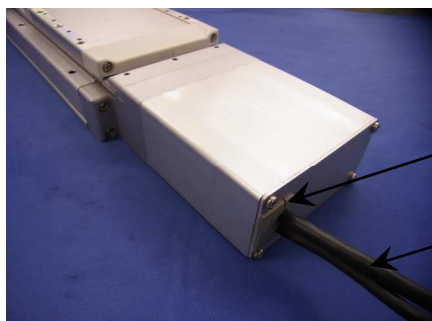


Pully cover



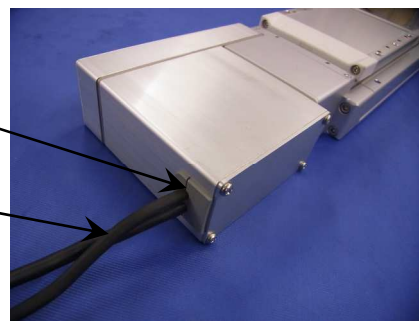
Cutout of the
“Motor cover”

- Insert each cable into the “Grommet”.

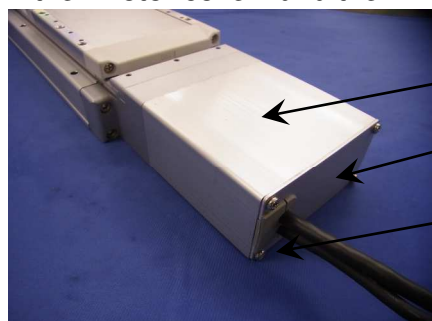


Grommet

Cable



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



Motor cover

End cover A

Fixing bolts of the cover
(Refer to Table 7-1)

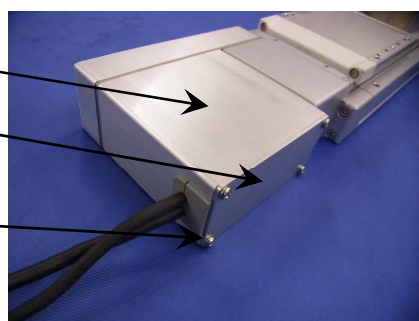


Table 7-1. The fixing bolts of the cover

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		

- 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".

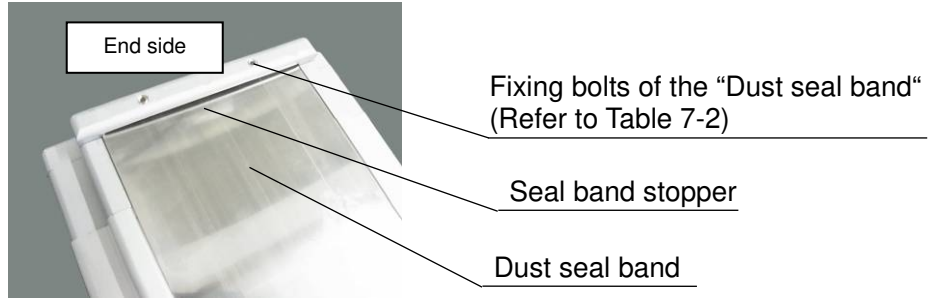


Table 7-2. The fixing bolts of the "Dust seal band"

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".

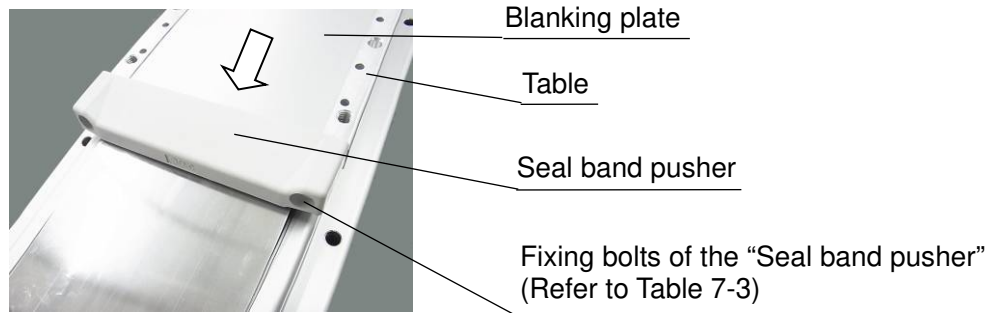
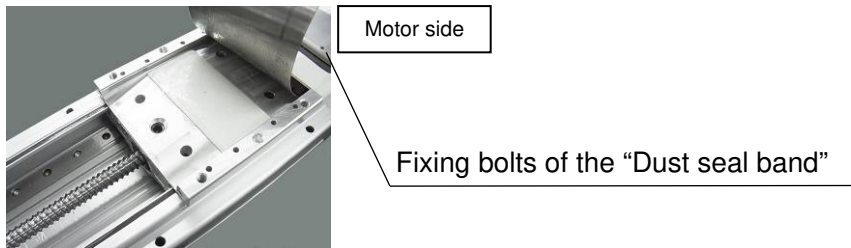


Table 7-3. The fixing bolts of the "Seal band pusher"

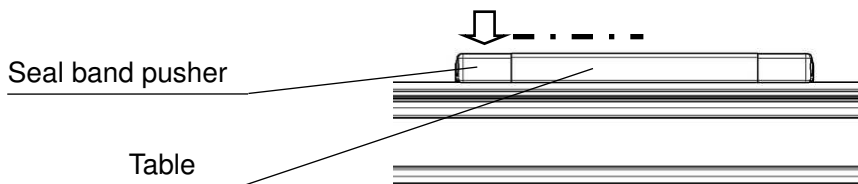
Bolt type	Bolt size	Recommended tightening torque (Nm)	Quantity
± recessed pan head screw	M4 x 25	0.9±0.1	2

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”.

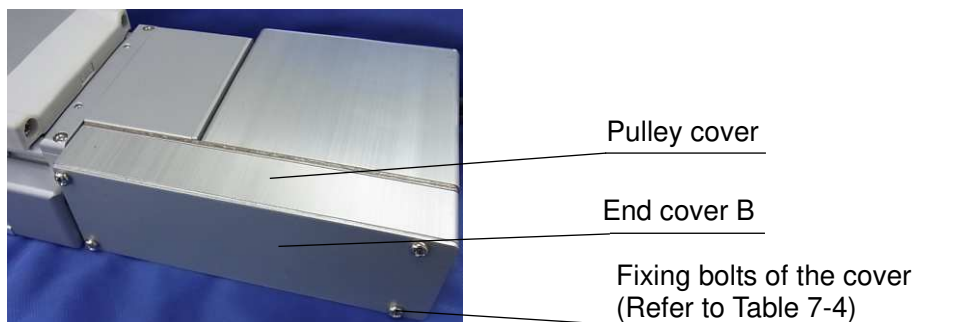
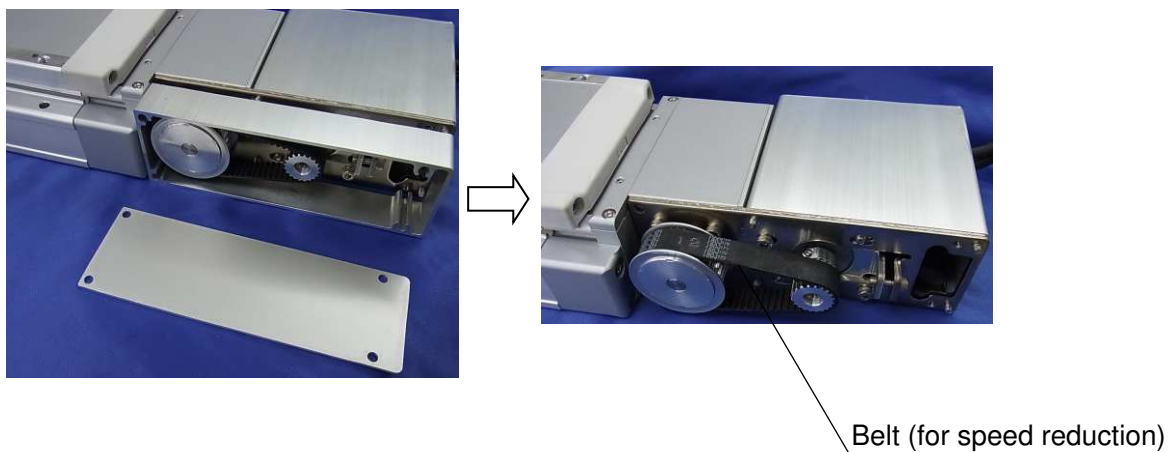


Table 7-4. The fixing bolts of cover

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

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.

Revision history

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Mar / 2013 Revision	Nov / 2016 Revision
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Nov / 2013 Revision	Jan / 2017 Revision
<u>No.LEJ-OM00204</u>	<u>No.LEJ-OM00210</u>
Jan / 2015 Revision	Dec / 2019 Revision
<u>No.LEJ-OM00205</u>	
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Apr / 2016 Revision	

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