



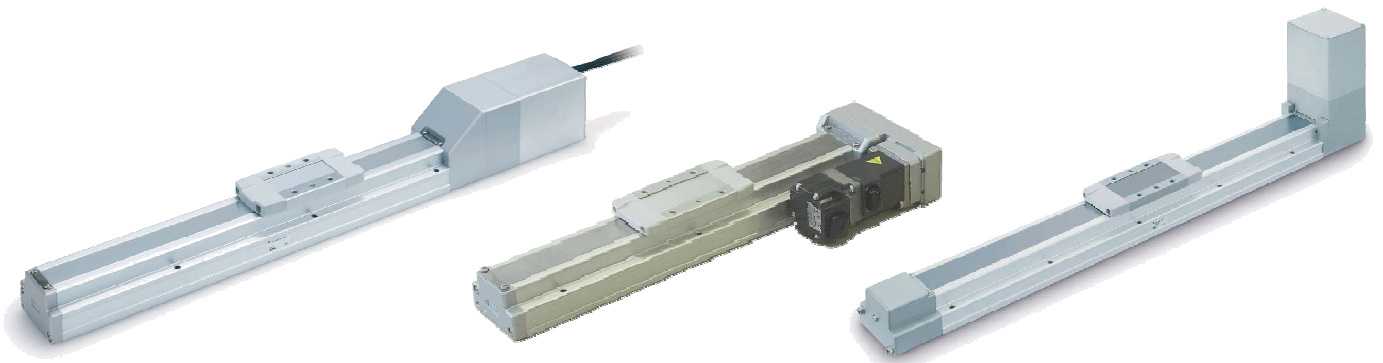
# Operation Manual

PRODUCT NAME

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

MODEL / Series / Product Number

**MODEL : LEFS, LEFB  
Series : LEF**



**SMC Corporation**

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# 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

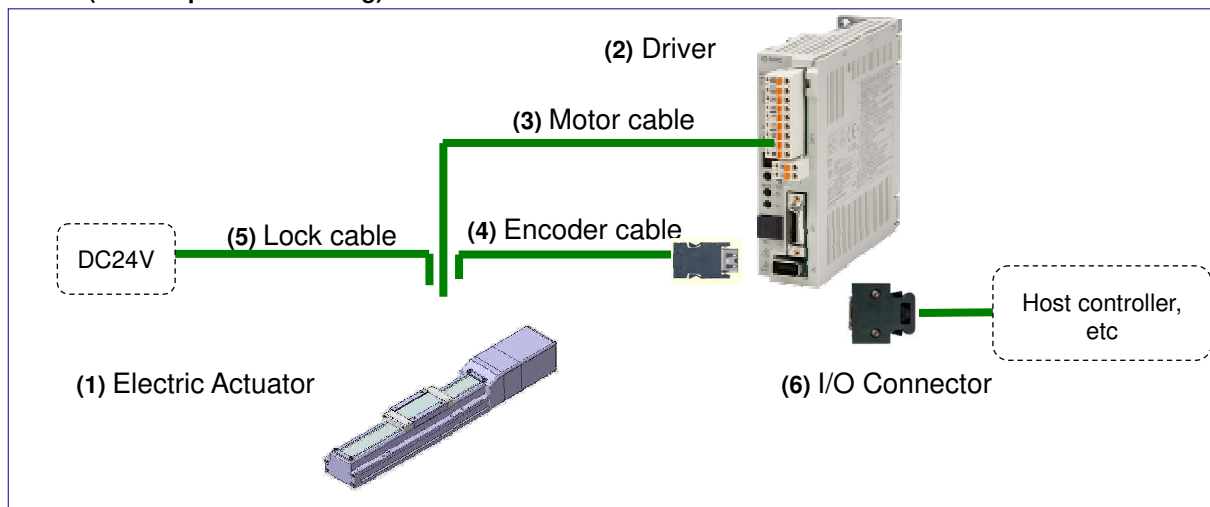
### (1) Items to be prepared

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

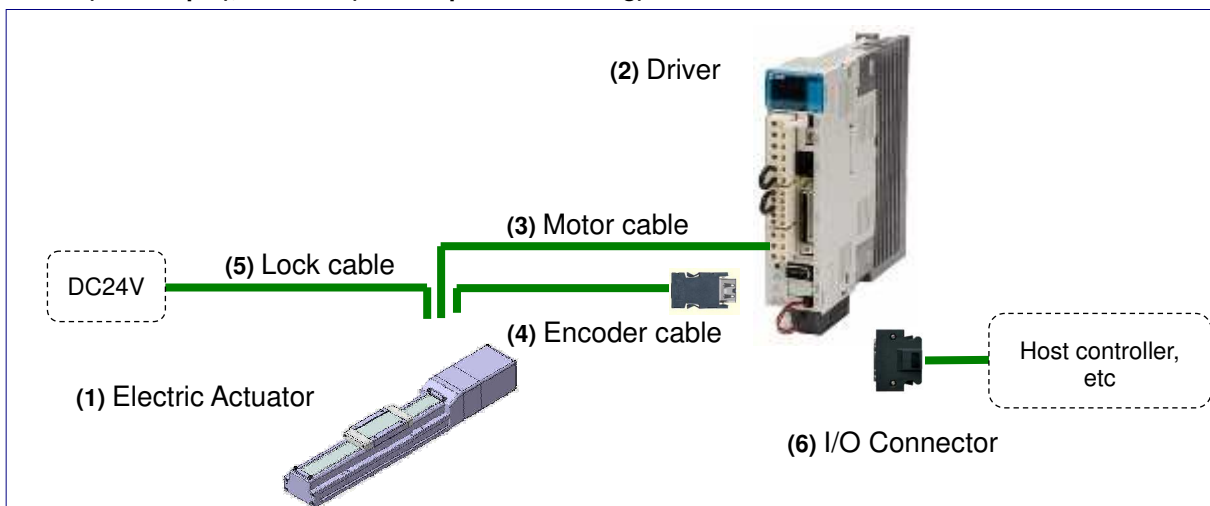
Table 1. Components

No.	Part name	Qty
(1)	Electric Actuator / LEF 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)

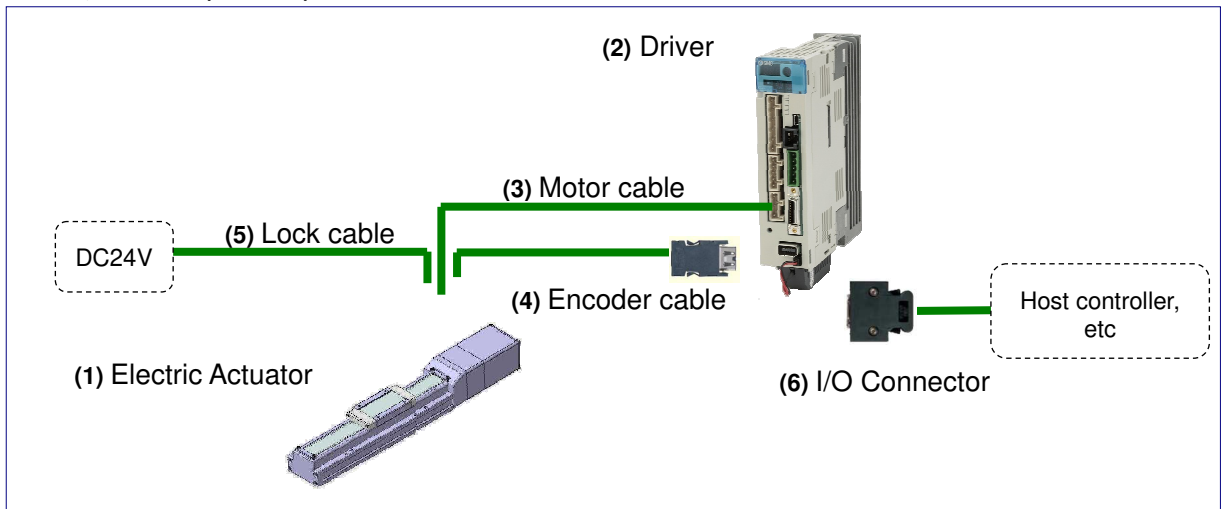
### LECSA(Pulse input / Positioning)



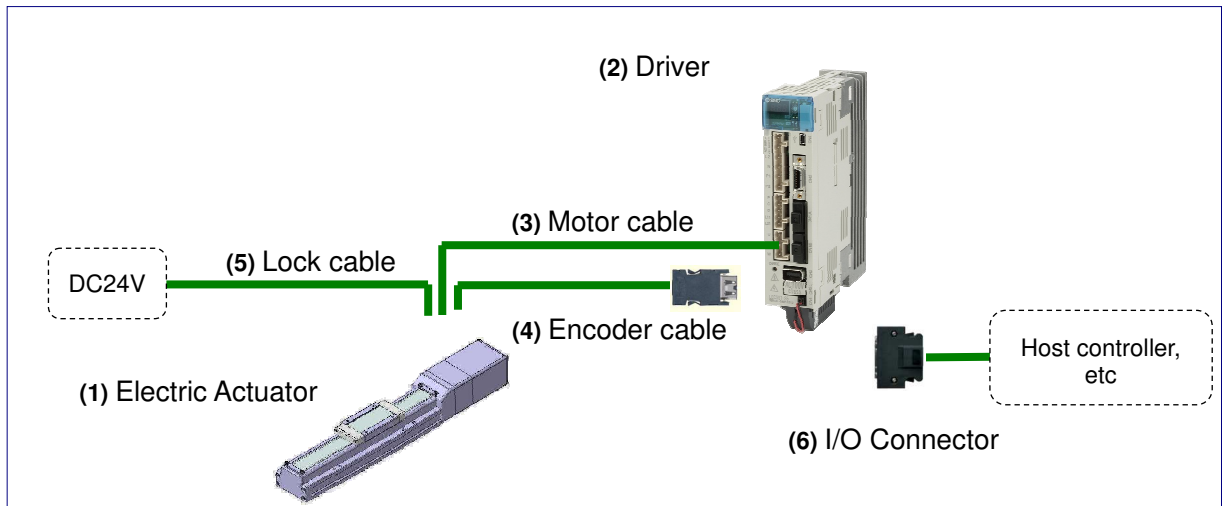
### LECSB(Pulse input), LECSB-T(Pulse input / Positioning)



**LECSC, LECSC-T(CC-Link)**



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

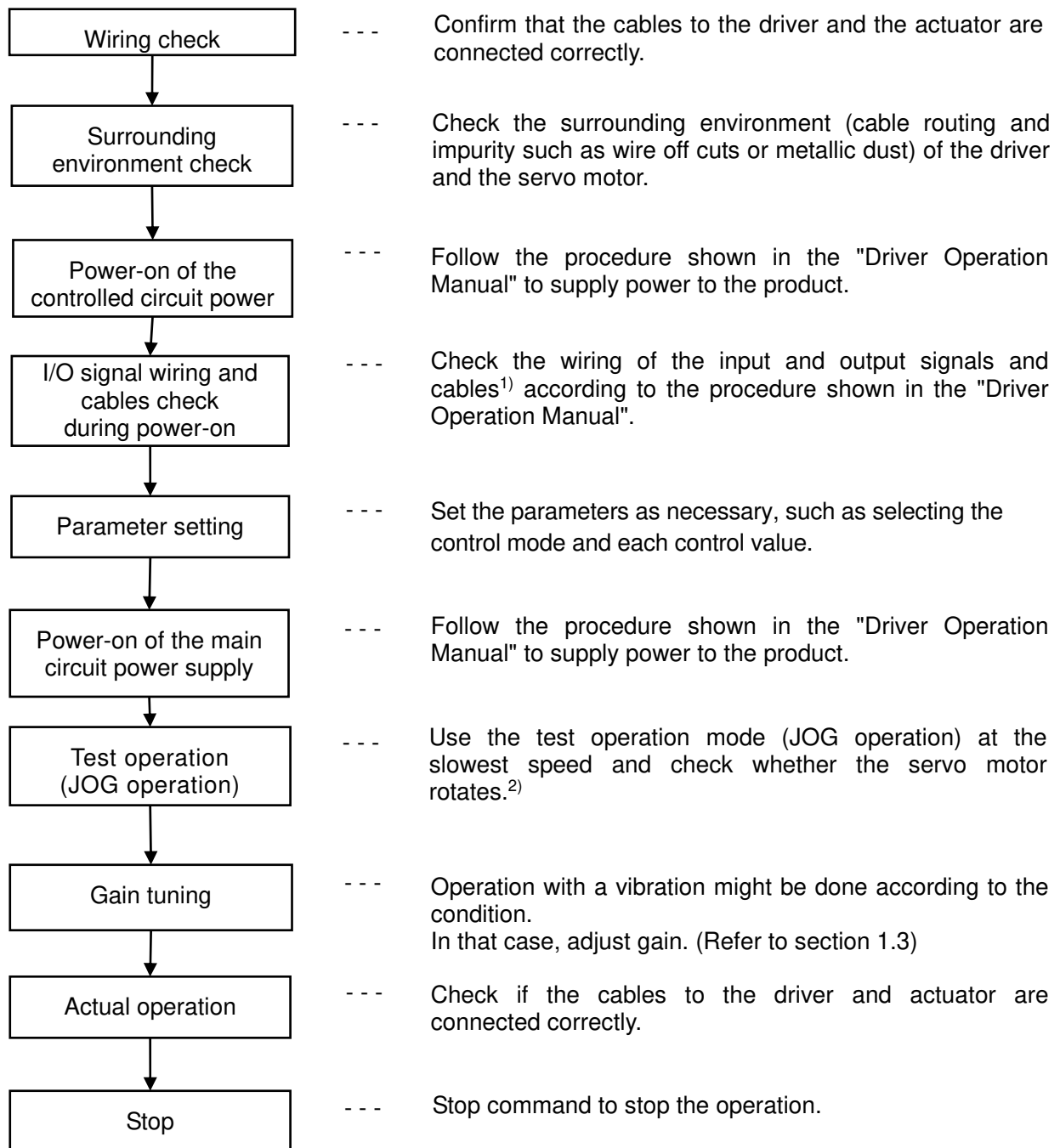


## 1.2 Startup

When switching the power on for the first time, follow the startup procedure below.

Settings may be required for LEFB25S, refer to section 1.3.2.

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) <sup>1)</sup>

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) <sup>1)</sup>

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 and the rate of load inertia moment is adjusted automatically.

● For LECSB-T(Pulse input / Positioning), LECSS-T(SSCNETIII/H)

A. Auto tuning (Mode1) <sup>1)</sup>

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 and the rate of load inertia moment is adjusted automatically.

B. Robust filter

Set parameter No.PE41 "0001". Afterwards, operate.

⇒The filter is setted 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			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
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	20	12	6	24	16	8	30	20	10
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	90	150	300	75	113	225	60	90	180
Home position return/JOG operation acceleration/deceleration time constants (msec)	PE07	100	1000	600	300	1200	800	400	1500	1000	500
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)								
Rotation direction selection	PA14	0	1(+ : Counter motors side)								
Adaptive tuning mode	PB01	000	000								
Load to motor inertia moment ratio	PB06	7	7								
Machine resonance suppression filter 1	PB13	4500	4500								
Notch shape selection 1	PB14	000	000								

\*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].

【LECSA】

Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
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	54					
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	33					
Home position return/JOG operation acceleration/deceleration time constants (msec)	PE07	100	2700					
Home position return position data (μm)	PE08	0	-3000(Less than stroke 1000)/ -300(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)					
Rotation direction selection	PA14	0	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)
★Adaptive tuning mode	PB01	000	002		000			
★Load to motor inertia moment ratio	PB06	7	50					
★Machine resonance suppression filter 1	PB13	4500	400		4500			
★Notch shape selection 1	PB14	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			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
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								
Electronic gear denominator *3	PA07	1	250	150	75	300	200	100	375	250	125
Regenerative option	PA02	0000	0000(Non) / 0002(LEC-MR-RB-032)								
Rotation direction selection	PA14	0	1(+: Counter motors side)								
Adaptive tuning mode	PB01	0000	0000								
Load to motor inertia moment ratio	PB06	7	7								
Machine resonance suppression filter 1	PB13	4500	4500								
Notch shape selection 1	PB14	0000	0000								

**【LECSB】**

Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
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					
Electronic gear denominator *3	PA07	1	675					
Regenerative option	PA02	0000	0000(Non) / 0002(LEC-MR-RB-032)					
Rotation direction selection	PA14	0	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)
★Adaptive tuning mode	PB01	0000	0002			0000		
★Load to motor inertia moment ratio	PB06	7	50					
★Machine resonance suppression filter 1	PB13	4500	400			4500		
★Notch shape selection 1	PB14	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			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
Parameter	Para. No.	Initial value	Recommended value								
Electronic gear numerator *3	PA06	1	<b>32768</b>								
Electronic gear denominator *3	PA07	1	<b>2500</b>	<b>1500</b>	<b>750</b>	<b>3000</b>	<b>2000</b>	<b>1000</b>	<b>3750</b>	<b>2500</b>	<b>1250</b>
Feel length multiplication (STM) (Multiplier)	PA05	0000	<b>0000(Less than stroke 1000)/ 0001(Stroke 1000 or more)</b>								
Home position return type	PC02	0000	<b>□□□3(Stopper type)</b>								
Home position return direction	PC03	0001	<b>□□□1 (Motor side)</b>								
Home position return Speed (rpm)	PC04	500	<b>90</b>	<b>150</b>	<b>300</b>	<b>75</b>	<b>113</b>	<b>225</b>	<b>60</b>	<b>90</b>	<b>180</b>
Home position return position data (μm)	PC07	0	<b>-2000(Less than stroke 1000)/ -200(Stroke 1000 or more)</b>								
Stopper type home position return stopper time (msec)	PC09	100	<b>200</b>								
Stopper type home position return torque limit value (%)	PC10	15	<b>30</b>								
Regenerative option	PA02	0000	<b>0000(Non) / 0002(LEC-MR-RB-032)</b>								
Rotation direction selection	PA14	0	<b>1(+ : Counter motors side)</b>								
Adaptive tuning mode	PB01	0000	0000								
Load to motor inertia moment ratio	PB06	7	7								
Machine resonance suppression filter 1	PB13	4500	4500								
Notch shape selection 1	PB14	0000	0000								

\*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			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
Parameter	Para. No.	Initial value	Recommended value					
Electronic gear numerator *3	PA06	1	<b>32768</b>					
Electronic gear denominator *3	PA07	1	<b>6750</b>					
Feel length multiplication (STM) (Multiplier)	PA05	0000	<b>0000(Less than stroke 1000)/ 0001(Stroke 1000 or more)</b>					
Home position return type	PC02	0000	<b>□□□3(Stopper type)</b>					
Home position return direction	PC03	0001	<b>□□□1 (Motor side)</b>					
Home position return Speed (rpm)	PC04	500	<b>33</b>					
Home position return position data (μm)	PC07	0	<b>-3000(Less than stroke 1000)/ -300(Stroke 1000 or more)</b>					
Stopper type home position return stopper time (msec)	PC09	100	<b>200</b>					
Stopper type home position return torque limit value (%)	PC10	15	<b>30</b>					
Regenerative option	PA02	0000	<b>0000(Non) / 0002(LEC-MR-RB-032)</b>					
Rotation direction selection	PA14	0	<b>1(+: Counter motors side)</b>	0(+: Counter motors side)	<b>1(+: Counter motors side)</b>	0(+: Counter motors side)	<b>1(+: Counter motors side)</b>	0(+: Counter motors side)
★Adaptive tuning mode	PB01	0000	<b>0002</b>		0000			
★Load to motor inertia moment ratio	PB06	7	<b>50</b>					
★Machine resonance suppression filter 1	PB13	4500	<b>400</b>		4500			
★Notch shape selection 1	PB14	0000	<b>0030</b>		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	Lead symbol		LEFS25			LEFS32			LEFS40		
	Lead		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
Parameter	Para. No.	Initial value	Recommended value								
Regenerative option	PA02	0000	<b>0000(Non) / 0002(LEC-MR-RB-032)</b>								
Rotation direction selection	PA14	0	<b>1(+ : Counter motors side)</b>								
Adaptive tuning mode	PB01	0000	0000								
Load to motor inertia moment ratio	PB06	7	7								
Machine resonance suppression filter 1	PB13	4500	4500								
Notch shape selection 1	PB14	0000	0000								

**【LECSS】**

Series	Lead symbol		LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead		S					
	Lead		54					
Parameter	Para. No.	Initial value	Recommended value					
Regenerative option	PA02	0000	<b>0000(Non) / 0002(LEC-MR-RB-032)</b>					
Rotation direction selection	PA14	0	<b>1(+ : Counter motors side)</b>	0(+ : Counter motors side)	<b>1(+ : Counter motors side)</b>	0(+ : Counter motors side)	<b>1(+ : Counter motors side)</b>	0(+ : Counter motors side)
★Adaptive tuning mode	PB01	0000	<b>0002</b>		0000			
★Load to motor inertia moment ratio	PB06	7	<b>50</b>					
★Machine resonance suppression filter 1	PB13	4500	<b>400</b>		4500			
★Notch shape selection 1	PB14	0000	<b>0030</b>		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.

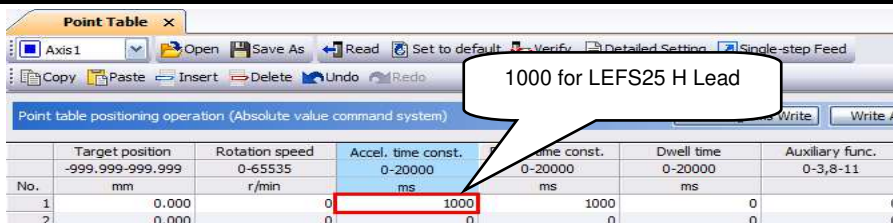
【LECSB-T】

Series			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
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)								
			2000	1200	600	2400	1600	800	3000	2000	1000
			(Positioning mode)								
			20000	12000	6000	24000	16000	8000	30000	20000	10000
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	90	150	300	75	113	225	60	90	180
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)								
Rotation direction selection *4	PA14	0	1 (+:Counter motors side)								
Load to motor inertia moment ratio	PB06	7	7								
Function selection E-3	PE41	0000	0000								

- \*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].
- \*4. When the motor mounting position is right side parallel (LEFS\*R) or left side parallel (LEFS\*L), the rotation direction selection is 0(+: Counter motors side).

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

Series			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
Point table No.1	Initial value		Recommended Value								
Home position return acceleration time constant (msec) *5	0		1000	600	300	1200	800	400	1500	1000	500



- \*5. 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.

**【LECSB-T】**

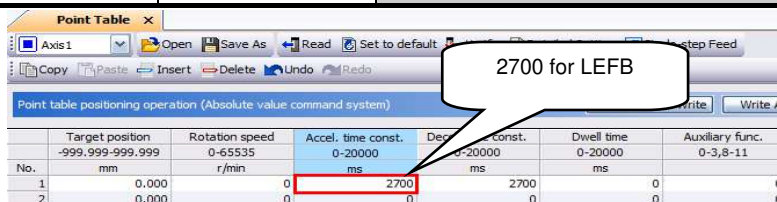
Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
Parameter *1,*2	Para No	Initial value	Recommended value					
Number of command input pulses per revolution *3.	PA05	10000	10000					
Electronic gear numerator *3.	PA06	1	262144					
Electronic gear denominator *3.	PA07	1	<b>(Position control mode)</b>					
			5400					
			<b>(Positioning mode)</b>					
			54000					
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	33					
Home position return position data (μm)	PT08	0	-3000 (<1000 stroke)/-300 (>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)					
Rotation direction selection	PA14	0	1 (+: Counter motors side)	0 (+: Counter motors side)	1 (+: Counter motors side)	0 (+: Counter motors side)	1 (+: Counter motors side)	0 (+: Counter motors side)
★ Load to motor inertia moment ratio	PB06	7	50					
★ Function selection E-3	PE41	0000	0001 (Robust filter enabled)					

★ Parameter setting required.

- \*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 [LEF]**

Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
Point table No.1	Initial value		Recommended value					
Home position return acceleration time constant (msec) *4	0		2700					



- \*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	Lead symbol		LEFS25			LEFS32			LEFS40		
	Lead		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
Parameter *1,*2	Para. No.	Initial value	Recommended value								
Electronic gear numerator *3	PA06	1	<b>32768</b>								
Electronic gear denominator *3	PA07	1	<b>2500</b>	<b>1500</b>	<b>750</b>	<b>3000</b>	<b>2000</b>	<b>1000</b>	<b>3750</b>	<b>2500</b>	<b>1250</b>
Feel length multiplication (STM) (Multiplier)	PA05	0000	<b>0000(Less than stroke 1000)/ 0001(Stroke 1000 or more)</b>								
Home position return type	PC02	0000	<b>□□□3(Stopper type)</b>								
Home position return direction	PC03	0001	<b>□□□1 (Motor side)</b>								
Home position return Speed (rpm)	PC04	500	<b>90</b>	<b>150</b>	<b>300</b>	<b>75</b>	<b>113</b>	<b>225</b>	<b>60</b>	<b>90</b>	<b>180</b>
Home position return position data (μm)	PC07	0	<b>-2000(Less than stroke 1000) / -200(Stroke 1000 or more)</b>								
Stopper type home position return stopper time (msec)	PC09	100	<b>200</b>								
Stopper type home position return torque limit value (%)	PC10	15	<b>24</b>								
Regenerative option	PA02	0000	<b>0000(Non) / 0002(LEC-MR-RB-032)</b>								
Rotation direction selection *4	PA14	0	<b>1(+ : Counter motors side)</b>								
Adaptive tuning mode	PB01	0000	0000								
Load to motor inertia moment ratio	PB06	7	7								
Machine resonance suppression filter 1	PB13	4500	4500								
Notch shape selection 1	PB14	0000	0000								

- \*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].
- \*4. When the motor mounting position is right side parallel (LEFS\*R) or left side parallel (LEFS\*L), the rotation direction PA14 selection is 0(+: Counter motors side).

【LESC-T】

Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
Parameter *1,*2	Para. No.	Initial value	Recommended value					
Electronic gear numerator *3	PA06	1	32768					
Electronic gear denominator *3	PA07	1	6750					
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	33					
Home position return position data (μm)	PC07	0	-3000(Less than stroke 1000) / -300(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)					
Rotation direction selection	PA14	0	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)	1(+: Counter motors side)	0(+: Counter motors side)
★ Adaptive tuning mode	PB01	0000	0002		0000			
★ Load to motor inertia moment ratio	PB06	7	50					
★ Machine resonance suppression filter 1	PB13	4500	400		4500			
★ Notch shape selection 1	PB14	0000	0030		0000			

★ Parameter should be changed.

- \*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			LEFS25			LEFS32			LEFS40		
	Lead symbol		H	A	B	H	A	B	H	A	B
	Lead		20	12	6	24	16	8	30	20	10
Parameter	Para No.	Initial value	Recommended value								
Regenerative option	PA02	0000	<b>0000(Non)/0002(LEC-MR-RB-032) 0003(LEC-MR-RB-12)</b>								
Rotation direction selection	PA14	0	<b>1(+:Counter motors side)</b>								

**【LECSS-T】**

Series			LEFB25	LEFB25U	LEFB32	LEFB32U	LEFB40	LEFB40U
	Lead symbol		S					
	Lead		54					
Parameter	Para No.	Initial value	Recommended value					
Regenerative option	PA02	0000	<b>0000(Non)/0002(LEC-MR-RB-032) /0003(LEC-MR-RB-12)</b>					
Rotation direction selection	PA14	0	<b>1 (+: Counter motors side)</b>	0 (+: Counter motors side)	<b>1 (+: Counter motors side)</b>	0 (+: Counter motors side)	<b>1 (+: Counter motors side)</b>	0 (+: Counter motors side)
★Load to motor inertia moment ratio	PB06	7	<b>50</b>					
Function selection E-3	PE41	0000	<b>0001 (Robust filter Enabled)</b>					

★ : 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-T, please set the electronic gear with PC, PLC etc. in your application.

## 2. Slider type LEFS series

### 2.1 Specification

#### LEFS25,32,40 AC servo motor (100W / 200W/400W/)

Model		LEFS25			LEFS32			LEFS40				
Actuator specification	Stroke [mm] <sup>Note 1)</sup>	50~800			50~1000			150~1200				
	Work load [kg] <sup>Note 2)</sup>	Work load [kg]	10	20	20	30	40	45	30	50	60	
		Vertical	4	8	15	5	10	20	7	15	30	
	Maximum Speed <sup>Note 3)</sup> [mm/s]	Stroke range [mm]	~ 400	1500	900	450	1500	1000	500	1500	1000	500
			401 ~ 500	1200	720	360	1500	1000	500	1500	1000	500
			501 ~ 600	900	540	270	1200	800	400	1500	1000	500
			601 ~ 700	700	420	210	930	620	310	1410	940	470
			701 ~ 800	550	330	160	750	500	250	1140	760	380
			801 ~ 900	-	-	-	610	410	200	930	620	310
			901 ~ 1000	-	-	-	510	340	170	780	520	260
			1001 ~ 1100	-	-	-	-	-	-	500	440	220
	1101 ~ 1200	-	-	-	-	-	-	500	380	190		
	Acceleration/deceleration [mm/s <sup>2</sup> ]	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]	Basic type:0.1 or less/High precision type: 0.05 or less											
Lead [mm]	20	12	6	24	16	8	30	20	10			
Impact resistance/vibration Resistance [m/s <sup>2</sup> ] <sup>Note 4)</sup>	50/20											
Drive method	Ball screw(LEFS□), Ball screw + Belt(LEFS□ <sup>L</sup> <sub>R</sub> )											
Guide type	Liner guide											
Operating temperature range [°C]	5 to 40											
Operating humidity range [%RH]	90 or less (No condensation)											
Electric specification	Motor output [W] / size [mm]	100/□40			200/□60			400/□60				
	Type of Motor	AC servo motor (100/200VAC)										
	Encoder	[Type of Motor: S2,S3,S4]	Incremental 17bit encoder (Resolution: 131072 p/rev)									
		[Type of Motor: S6,S7,S8]	Absolute 18bit encoder (Resolution: 262144 p/rev)									
[Type of Motor: T6,T7,T8]		[With LECSB-T/LECSS-T] Absolute 22bit encoder (Resolution: 4194304 p/rev) [With LECSB-T] Absolute 18bit encoder (Resolution: 262144 p/rev)										
Lock unit	Type <sup>Note 5)</sup>	No excitation operating type										
	Holding force [N]	78	131	255	131	197	385	220	330	660		
	Power consumption [W] at 20 <sup>Note 6)</sup>	6.3			7.9			7.9				
	Rated voltage [VDC]	24 <sup>0</sup> <sub>-10%</sub>										

#### Product Weight [kg]

Series		LEFS25															
Stroke[mm]		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Motor type	S2	2.00	2.14	2.28	2.44	2.56	2.69	2.84	2.99	3.12	3.24	3.40	3.54	3.68	3.82	3.96	4.14
	S6	2.06	2.20	2.34	2.50	2.62	2.75	2.90	3.05	3.18	3.30	3.46	3.60	3.74	3.88	4.02	4.20
	T6	2.04	2.18	2.32	2.48	2.60	2.73	2.88	3.03	3.16	3.28	3.44	3.58	3.72	3.86	4.00	4.18
Additional weight for lock[kg]		S2:0.2/S6:0.3/T6:0.3															

Series		LEFS32																			
Stroke[mm]		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Motor type	S3	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20
	S7	3.34	3.54	3.74	3.94	4.14	4.34	4.54	4.74	4.94	5.14	5.34	5.54	5.74	5.94	6.14	6.34	6.54	6.74	6.94	7.14
	T7	3.31	3.51	3.71	3.91	4.11	4.31	4.51	4.71	4.91	5.11	5.31	5.51	5.71	5.91	6.11	6.31	6.51	6.71	6.91	7.11
Additional weight for lock[kg]		S3:0.4/S7:0.7/T7:0.5																			

Series		LEFS40																			
Stroke[mm]		150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Motor type	S4	5.82	6.10	6.38	6.65	6.95	7.25	7.51	7.80	8.07	8.25	8.63	8.90	9.20	9.45	9.76	10.05	10.32	10.60	11.16	11.72
	S8	5.92	6.20	6.48	6.75	7.05	7.35	7.61	7.90	8.17	8.35	8.73	9.00	9.30	9.55	9.86	10.15	10.42	10.70	11.26	11.82
	T8	5.91	6.19	6.47	6.74	7.04	7.34	7.60	7.89	8.16	8.34	8.72	8.99	9.29	9.54	9.85	10.14	10.41	10.69	11.25	11.81
Additional weight for lock[kg]		S4:0.5/S8:0.7/T8:0.5																			

Note 1) The middle stroke other than the above are produced upon receipt of order.

Note 2) About detail, see [Speed-Work Load graph] in catalog.

Note 3) The allowable speed changes by the stroke.

Note 4) 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.)

Note 5) Only when the motor option, "with lock", is selected.

Note 6) For an actuator with lock, add the power consumption for the lock.

## 2.2 How to Order

LEFS **H** **32** **R** **S3** **B** — **200** **C** **N** **K** — **S** **2** **A2**

①    ②    ③    ④    ⑤                      ⑥    ⑦    ⑧    ⑨    ⑩                      ⑪    ⑫    ⑬    ⑭

### ① Accuracy

Nil	Basic type
H	High precision type

### ② Size

25
32
40

### ③ Motor mounting position

Nil	In-line
R	Right side parallel
L	Left side parallel

### ④ Motor type

symbol	type	Output [W]	Actuator size	Compatible driver
S2	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3		200	32	LECSA□-S3
S4		400	40	LECSA2-S4
S6	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECS□-S5 LECSS□-S5
S7		200	32	LECSB□-S7 LECS□-S7 LECSS□-S7
S8		400	40	LECSB2-S8 LECS□-S8 LECSS2-S8
T6	AC servo motor (Absolute encoder)	100	25	LECSB2-T5 LECS□-T5 LECSS2-T5
T7		200	32	LECSB2-T7 LECS□-T7 LECSS2-T7
T8		400	40	LECSB2-T8 LECS□-T8 LECSS2-T8

### ⑤ Lead [mm]

Symbol	LEFS25	LEFS32	LEFS40
H	20	24	30
A	12	16	20
B	6	8	10

### ⑥ Stroke [mm]

50	50
to	to
1200	1200

### ⑦ Motor option

Nil	Without option
B	With lock

### ⑧ Auto switch available

Nil	Disable
C	Enable (mounting bracket 1 pc./Accessory)

### ⑨ Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

### ⑩ Positioning pin hole

Nil	Housing B bottom
K	Body bottom 2 locations

### ⑪ Cable type

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

### ⑫ Cable length [m]

Nil	Without cable
2	2
5	5
A	10

### ⑬ Driver type

	Compatible driver	Power supply voltage (V)	Size		
			25	32	40
Nil	Without driver	-	●	●	●
A1	LECSA1-S□	100~120	●	●	-
A2	LECSA2-S□	200~230	●	●	●
B1	LECSB1-S□	100~120	●	●	-
	LECSB2-S□	200~230	●	●	●
B2	LECSB2-T□	200~240	●	●	●
	LECSB2-T□	200~240	●	●	●
C1	LECS□-S□	100~120	●	●	-
C2	LECS□-S□	200~230	●	●	●
	LECS□-T□	200~230	●	●	●
S1	LECSS1-S□	100~120	●	●	-
S2	LECSS2-S□	200~230	●	●	●
	LECSS2-T□	200~240	●	●	●

### ⑭ I/O cable length [m]

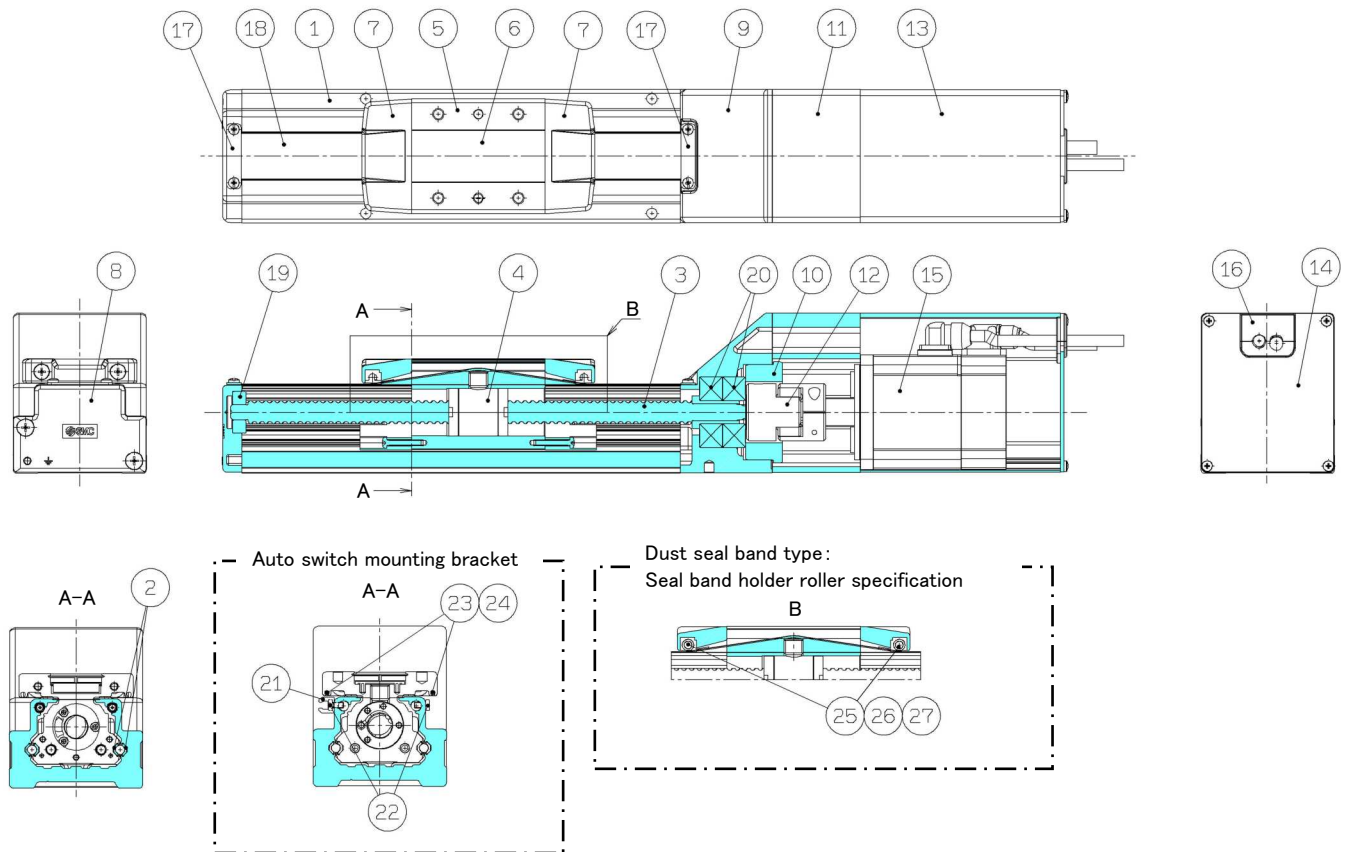
Nil	Without cable
H	Without cable (Connector only)
1	1.5

Applicable Stroke Table

	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	
LEFS25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-	-
LEFS32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-
LEFS40	-	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

## 2.3 Construction

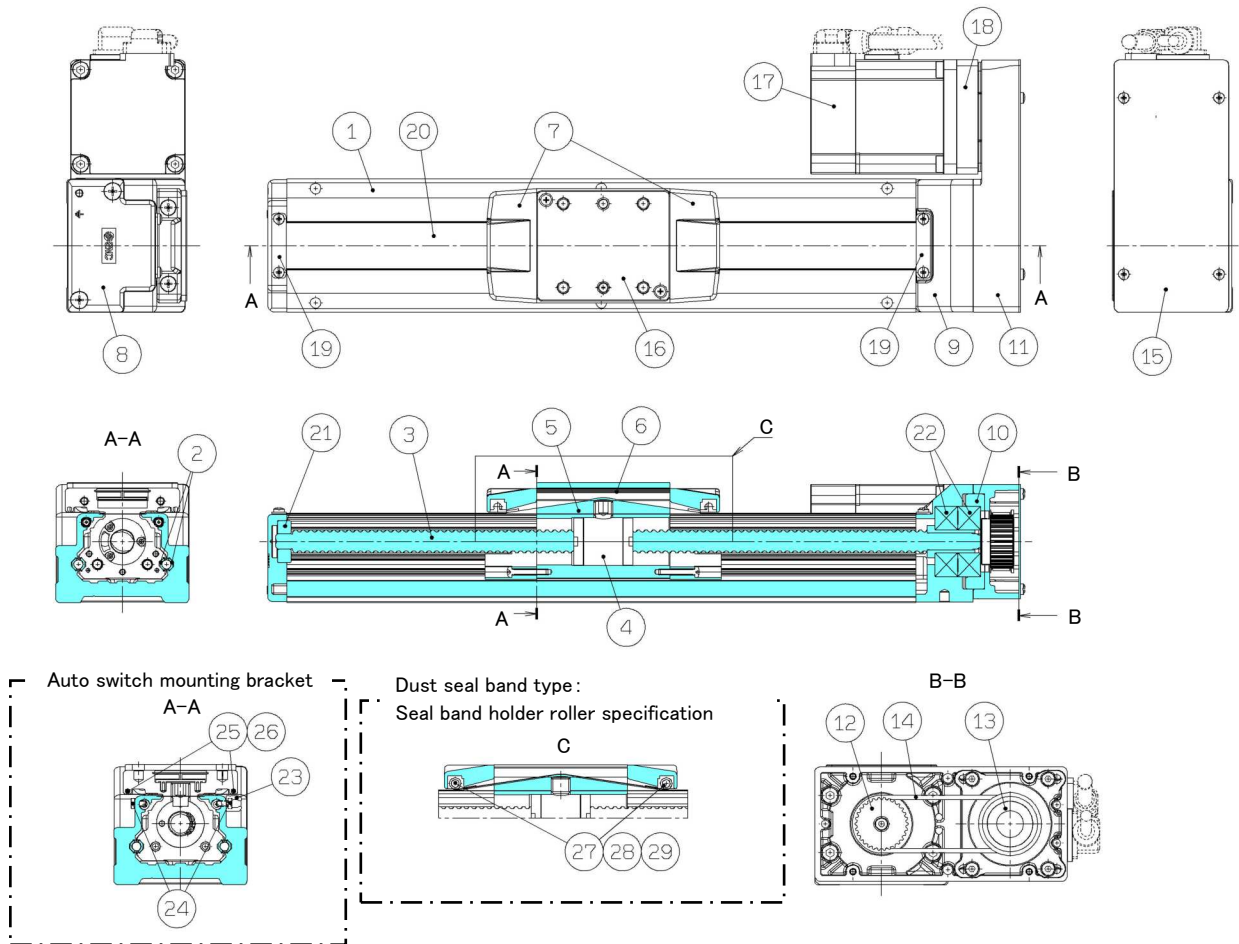
### LEFS <AC servo motor / In-line mouting>



No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	-	
3	<b>Ball screw shaft</b>	-	
4	<b>Ball screw nut</b>	-	
5	<b>Table</b>	Aluminum alloy	Anodized
6	<b>Blanking plate</b>	Aluminum alloy	Anodized
7	<b>Seal band holder</b>	Synthetic resin	
8	<b>Housing A</b>	Aluminum die-cast	Coating
9	<b>Housing B</b>	Aluminum die-cast	Coating
10	<b>Bearing holder</b>	Aluminum alloy	
11	<b>Motor mount</b>	Aluminum alloy	Coating
12	<b>Coupling</b>	-	
13	<b>Motor cover</b>	Aluminum alloy	Anodized
14	<b>Motor end cover</b>	Aluminum alloy	Anodized

番号	部品名	材質	備考
15	<b>Motor</b>	-	
16	<b>Grommet</b>	NBR	
17	<b>Band holder</b>	Stainless steel	
18	<b>Dust seal band</b>	Stainless steel	
19	<b>Sliding bearing</b>	Synthetic resin	
20	<b>Bearing</b>	-	
21	<b>Auto switch mounting bracket</b>	Aluminum alloy	Anodized
22	<b>Auto switch mounting bracket fixing bolt</b>	Carbon steel	Chromating
23	<b>Magnet</b>	-	
24	<b>Magnet holder</b>	Stainless steel	
25	<b>Roller shaft</b>	Stainless steel	
26	<b>Roller</b>	Synthetic resin	
27	<b>Bearing</b>	-	

# LEFS <AC servo motor / Parallel mounting>



No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	-	
3	<b>Ball screw shaft</b>	-	
4	<b>Ball screw nut</b>	-	
5	<b>Table</b>	Aluminum alloy	Anodized
6	<b>Blanking plate</b>	Aluminum alloy	Anodized
7	<b>Seal band holder</b>	Synthetic resin	
8	<b>Housing A</b>	Aluminum die-casted	Coating
9	<b>Housing B</b>	Aluminum die-casted	Coating
10	<b>Bearing holder</b>	Aluminum alloy	
11	<b>Return plate</b>	Aluminum die-casted	Coating
12	<b>Pulley</b>	Aluminum alloy	
13	<b>Pulley</b>	Aluminum alloy	
14	<b>Belt</b>	-	
15	<b>Cover plate</b>	Aluminum alloy	Anodized

No.	Description	Material	Note
16	<b>Table spacer</b>	Aluminum alloy	Only LEFS32
17	<b>Motor</b>	-	
18	<b>Motor adaptor</b>	Aluminum alloy	Coating
19	<b>Band holder</b>	Stainless steel	
20	<b>Dust seal band</b>	Stainless steel	
21	<b>Sliding bearing</b>	Synthetic resin	
22	<b>Bearing</b>	-	
23	<b>Auto switch mounting bracket</b>	Aluminum alloy	Anodized
24	<b>Auto switch mounting bracket fixing bolt</b>	Carbon steel	Chromating
25	<b>Magnet</b>	-	
26	<b>Magnet holder</b>	Stainless steel	
27	<b>Roller shaft</b>	Stainless steel	
28	<b>Roller</b>	Synthetic resin	
29	<b>Bearing</b>	-	



### 3. Slider type LEFB series

#### 3.1 Specification

##### LEFB25,32,40 AC servo motor (100W / 200W/400W/)

Model		LEFB25	LEFB32	LEFB40	
Actuator specification	Stroke [mm] <sup>Note 1)</sup>	300,400,500,600,700,800,900,1000,(1100),1200,(1300,1400),1500,(1600,1700,1800,1900),2000	300,400,500,600,700,800,900,1000,(1100),1200,(1300,1400),1500,(1600,1700,1800,1900),2000,2500	300,400,500,600,700,800,900,1000,(1100),1200,(1300,1400),1500,(1600,1700,1800,1900),2000,2500,3000	
	Work load [kg]	Horizontal <sup>Note 2)</sup>			
		5	15	25	
	Maximum Speed <sup>Note3)</sup> [mm/s]	2,000	2,000	2,000	
	Acceleration/deceleration [mm/s <sup>2</sup> ]	20,000 <sup>Note3)</sup>			
	Positioning repeatability [mm]	±0.06			
	Lost motion [mm]	0.1 or less			
	Lead [mm]	54	54	54	
	Impact resistance/vibration Resistance [m/s <sup>2</sup> ] <sup>Note 4)</sup>	50 / 20			
	Drive method	Belt			
	Guide type	Liner guide			
	Operating temperature range [°C]	5 to 40			
Operating humidity range [%RH]	90 or less (No condensation)				
Electric specification	Motor output/size	100W / □40	200W/□60	400W/□60	
	Type of Motor	AC servo motor (100/200VAC)			
	Encoder	[Type of Motor: S2,S3,S4]	Incremental 17bit encoder (Resolution: 131072 p/rev)		
		[Type of Motor: S6,S7,S8]	Absolute 18bit encoder (Resolution: 262144 p/rev)		
Lock specification	[Type of Motor: T6,T7,T8]	[With LECSB-T/LECSS-T] Absolute 22bit encoder (Resolution: 4194304 p/rev) [With LECSB-T] Absolute 18bit encoder (Resolution: 262144 p/rev)			
	Type <sup>Note 5)</sup>	No excitation operating type			
	Holding force [N]	27	54	110	
Power consumption [W] at 20°C <sup>Note 6)</sup>	6.3	7.9	7.9		
Rated voltage [VDC]	24 <sup>0-10%</sup>				

#### Product Weight [kg]

Model	LEFB25																		
Stroke [mm]	300	400	500	600	700	800	900	1000	(1100)	1200	(1300)	(1400)	1500	(1600)	(1700)	(1800)	(1900)	2000	
Motor type	S2	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	6.75	7.00	7.25
	S6	3.06	3.31	3.56	3.81	4.06	4.31	4.56	4.81	5.06	5.31	5.56	5.81	6.06	6.31	6.56	6.81	7.06	7.31
	T6	3.04	3.29	3.54	3.79	4.04	4.29	4.54	4.79	5.04	5.29	5.54	5.79	6.04	6.29	6.54	6.79	7.04	7.29
Additional weight for lock(kg)	S2:0.2/S6:0.3/T6:0.3																		

Model	LEFB32																			
Stroke [mm]	300	400	500	600	700	800	900	1000	(1100)	1200	(1300)	(1400)	1500	(1600)	(1700)	(1800)	(1900)	2000	2500	
Motor type	S3	4.90	5.25	5.60	5.95	6.30	6.65	7.00	7.35	7.70	8.05	8.40	8.75	9.10	9.45	9.80	10.15	10.50	10.85	12.60
	S7	4.84	5.19	5.54	5.81	6.24	6.59	6.94	7.29	7.64	7.99	8.34	8.69	9.04	9.39	9.74	10.09	10.44	10.79	12.54
	T7	4.81	5.16	5.51	5.78	6.21	6.56	6.91	7.26	7.61	7.96	8.31	8.66	9.01	9.36	9.71	10.06	10.41	10.76	12.51
Additional weight for lock(kg)	S3:0.4/S7:0.7/T7:0.5																			

Model	LEFB40																				
Stroke [mm]	300	400	500	600	700	800	900	1000	(1100)	1200	(1300)	(1400)	1500	(1600)	(1700)	(1800)	(1900)	2000	2500	3000	
Motor type	S4	7.10	7.55	8.00	8.45	8.90	9.35	9.80	10.25	10.70	11.15	11.60	12.05	12.50	12.95	13.40	13.85	14.30	14.75	17.00	19.25
	S8	7.20	7.65	8.10	8.55	9.00	9.45	9.90	10.35	10.80	11.25	11.70	12.15	12.60	13.05	13.50	13.95	14.40	14.85	17.10	19.35
	T8	7.19	7.64	8.09	8.54	8.99	9.44	9.89	10.34	10.79	11.24	11.69	12.14	12.59	13.04	13.49	13.94	14.39	14.84	17.09	19.34
Additional weight for lock(kg)	S4:0.5/S8:0.7/T8:0.5																				

Note 1) The middle stroke other than the above are produced upon receipt of order.

Note 2) About detail, see [Speed-Work Load graph] in catalog.

Note 3) The allowable speed changes by the stroke.

Note 4) 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.)

Note 5) Only when the motor option, "with lock", is selected.

Note 6) For an actuator with lock, add the power consumption for the lock.



### 3.2 How to Order

LEFB **40** **S4** S- **300** **C** **K** - **S** **2** **A2**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

#### ① Size

25
32
40

#### ② Motor mounting position

Nil	Top mounting
U	Bottom mounting

#### ③ Motor type

symbol	type	Output [W]	Actuator size	Compatible driver
S2	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3		200	32	LECSA□-S3
S4		400	40	LECSA2-S4
S6	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECS□-S5 LECSS□-S5
S7		200	32	LECSB□-S7 LECS□-S7 LECSS□-S7
S8		400	40	LECSB2-S8 LECS□2-S8 LECSS2-S8
T6	AC servo motor (Absolute encoder)	100	25	LECSB2-T5 LECS□2-T5 LECSS2-T5
T7		200	32	LECSB2-T7 LECS□2-T7 LECSS2-T7
T8		400	40	LECSB2-T8 LECS□2-T8 LECSS2-T8

#### ④ Equivalent lead

S	54
---	----

#### ⑤ Stroke [mm]

300	300
to	to
3000	3000

#### ⑥ Motor option

Nil	Without option
B	With lock

#### ⑦ Auto switch available

Nil	Disable
C	Enable (mounting bracket 1 pc./Accessory)

#### ⑧ Positioning pin hole

Nil	Housing B bottom
K	Body bottom 2 locations

#### ⑨ Cable type

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

#### ⑩ Cable length [m]

Nil	Without cable
2	2
5	5
A	10

#### ⑪ Driver type

	Compatible driver	Power supply voltage (V)	Size		
			25	32	40
Nil	Without driver	-	●	●	●
A1	LECSA1-S□	100~120	●	●	-
A2	LECSA2-S□	200~230	●	●	●
B1	LECSB1-S□	100~120	●	●	-
B2	LECSB2-S□	200~230	●	●	●
	LECSB2-T□	200~240	●	●	●
C1	LECS□1-S□	100~120	●	●	-
C2	LECS□2-S□	200~230	●	●	●
	LECS□2-T□	200~230	●	●	●
S1	LECSS1-S□	100~120	●	●	-
S2	LECSS2-S□	200~230	●	●	●
	LECSS2-T□	200~240	●	●	●

#### ⑫ I/O cable length [m]

Nil	Without cable
H	Without cable (Connector only)
1	1.5

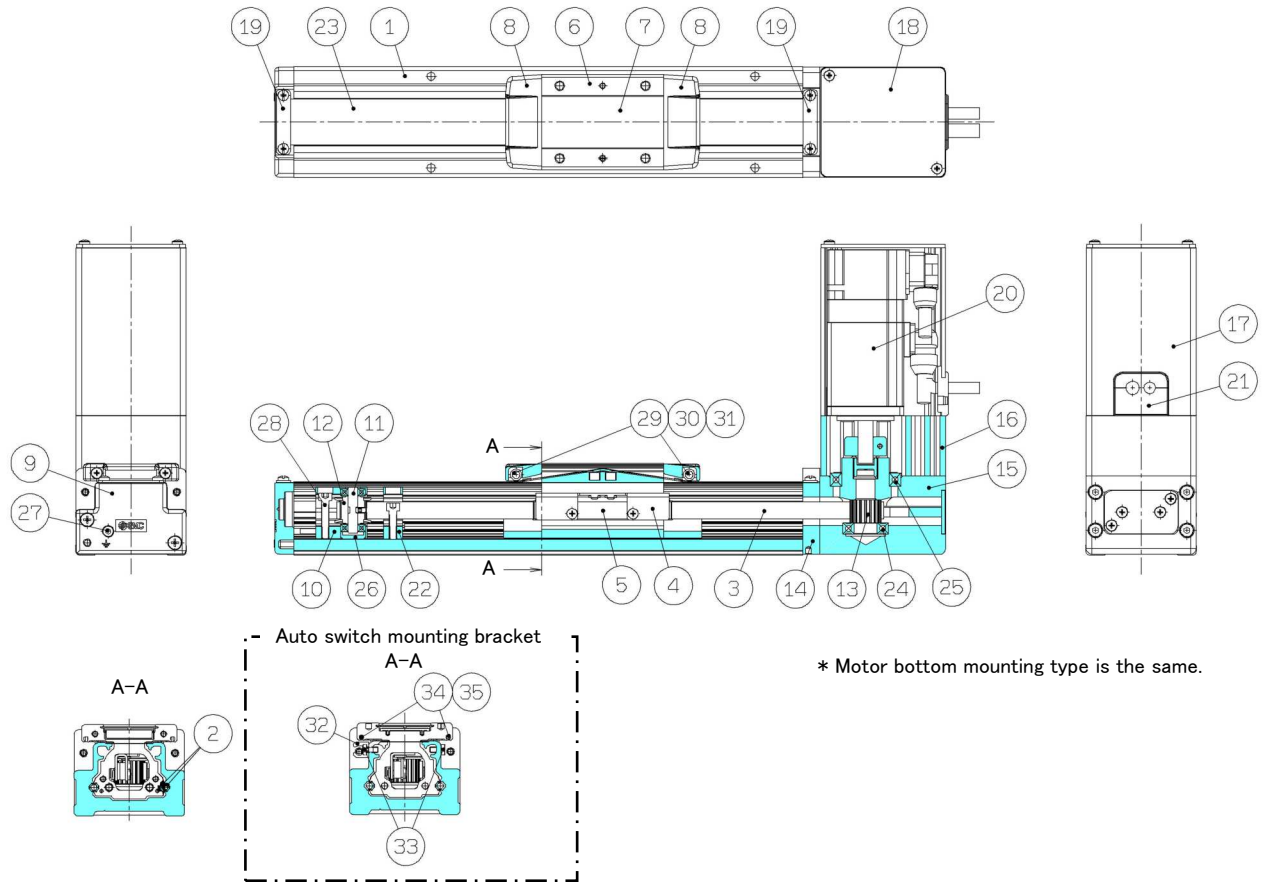
Applicable Stroke Table

●:Standard / ○:Produce upon receipt of order

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

### 3.3 Construction

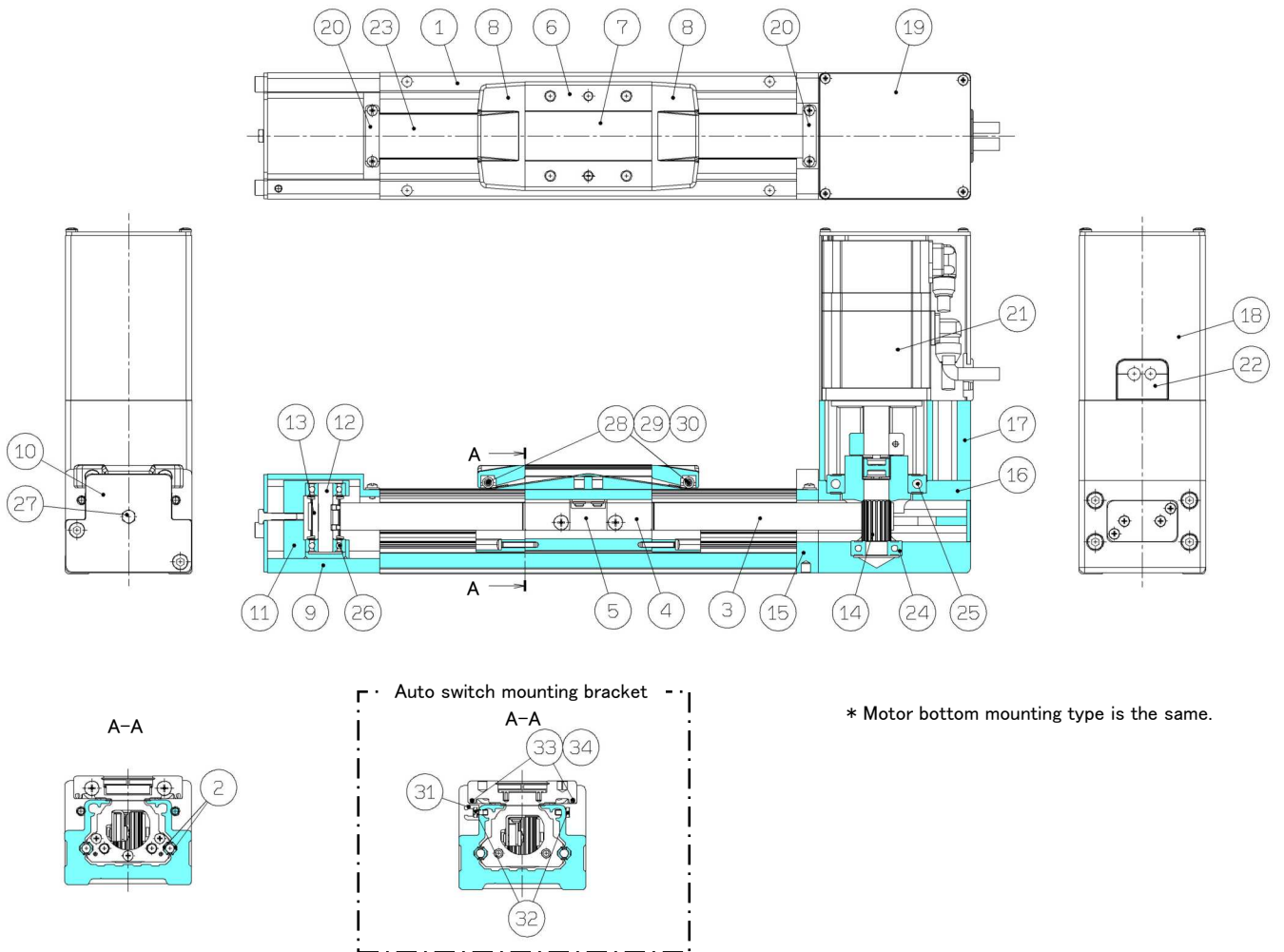
#### LEFB25 <AC servo motor>



No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	-	
3	<b>Belt</b>	-	
4	<b>Belt holder</b>	Carbon steel	Chromating
5	<b>Belt stopper</b>	Aluminum alloy	Anodized
6	<b>Table</b>	Aluminum alloy	Anodized
7	<b>Blanking plate</b>	Aluminum alloy	Anodized
8	<b>Seal band holder</b>	Synthetic resin	
9	<b>Housing A</b>	Aluminum die-casted	Coating
10	<b>Pulley holder</b>	Aluminum alloy	
11	<b>Pulley shaft</b>	Stainless steel	
12	<b>End pulley</b>	Aluminum alloy	Anodized
13	<b>Motor pulley</b>	Aluminum alloy	Anodized
14	<b>Return flange</b>	Aluminum alloy	Coating
15	<b>Housing</b>	Aluminum alloy	Coating
16	<b>Motor mount</b>	Aluminum alloy	Coating
17	<b>Motor cover</b>	Aluminum alloy	Anodized
18	<b>Motor end cover</b>	Aluminum alloy	Anodized

No.	Description	Material	Note
19	<b>Band holder</b>	Stainless steel	
20	<b>Motor</b>	-	
21	<b>Grommet</b>	NBR	
22	<b>Stopper</b>	Aluminum alloy	
23	<b>Dust seal band</b>	Stainless steel	
24	<b>Bearing</b>	-	
25	<b>Bearing</b>	-	
26	<b>Spacer</b>	Aluminum alloy	
27	<b>Tension adjustment bolt</b>	Carbon steel	Chromating
28	<b>Pulley fixing bolt</b>	Carbon steel	Chromating
29	<b>Roller shaft</b>	Stainless steel	
30	<b>Roller</b>	Synthetic resin	
31	<b>Bearing</b>	-	
32	<b>Auto switch mounting bracket</b>	Aluminum alloy	Anodized
33	<b>Auto switch mounting bracket fixing bolt</b>	Carbon steel	Chromating
34	<b>Magnet</b>	-	
35	<b>Magnet holder</b>	Stainless steel	

# LEFB32/40 <AC servo motor>

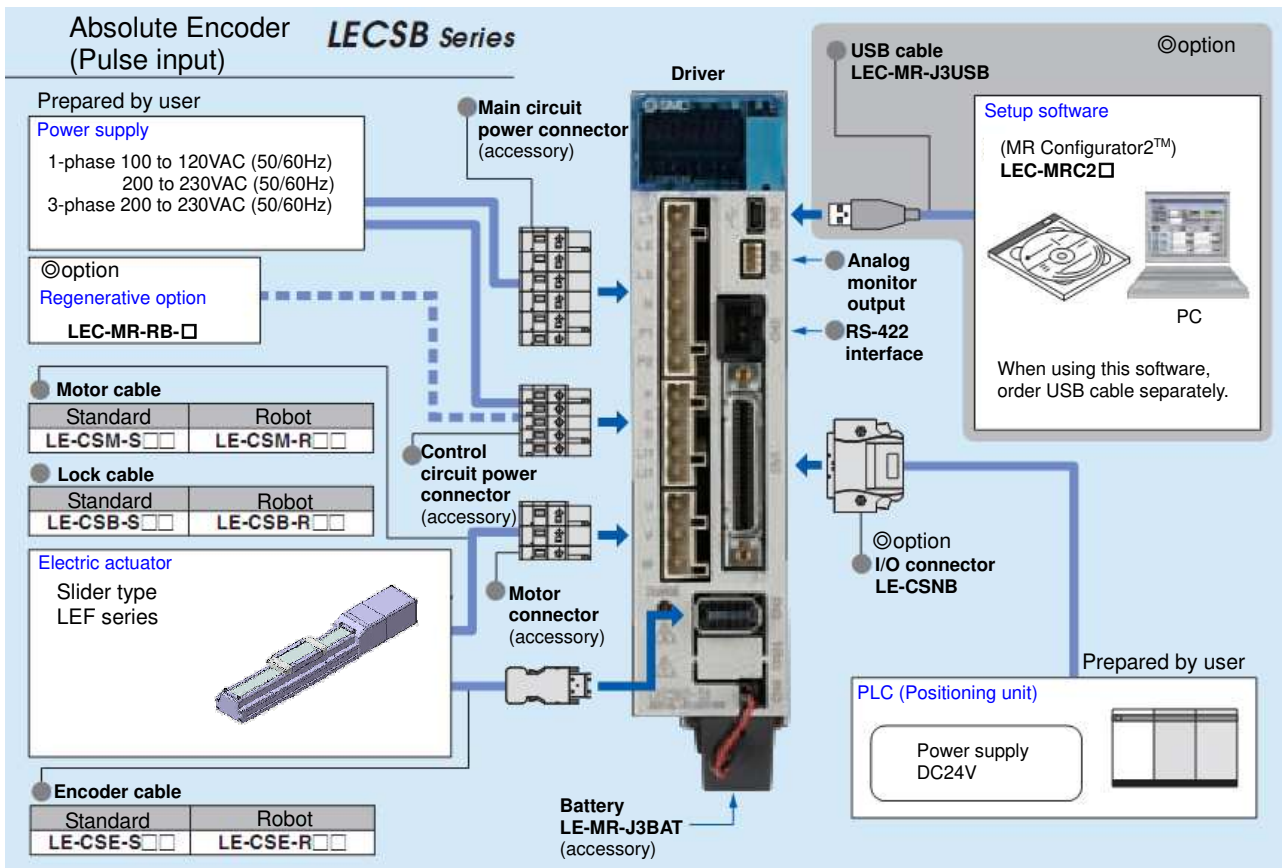
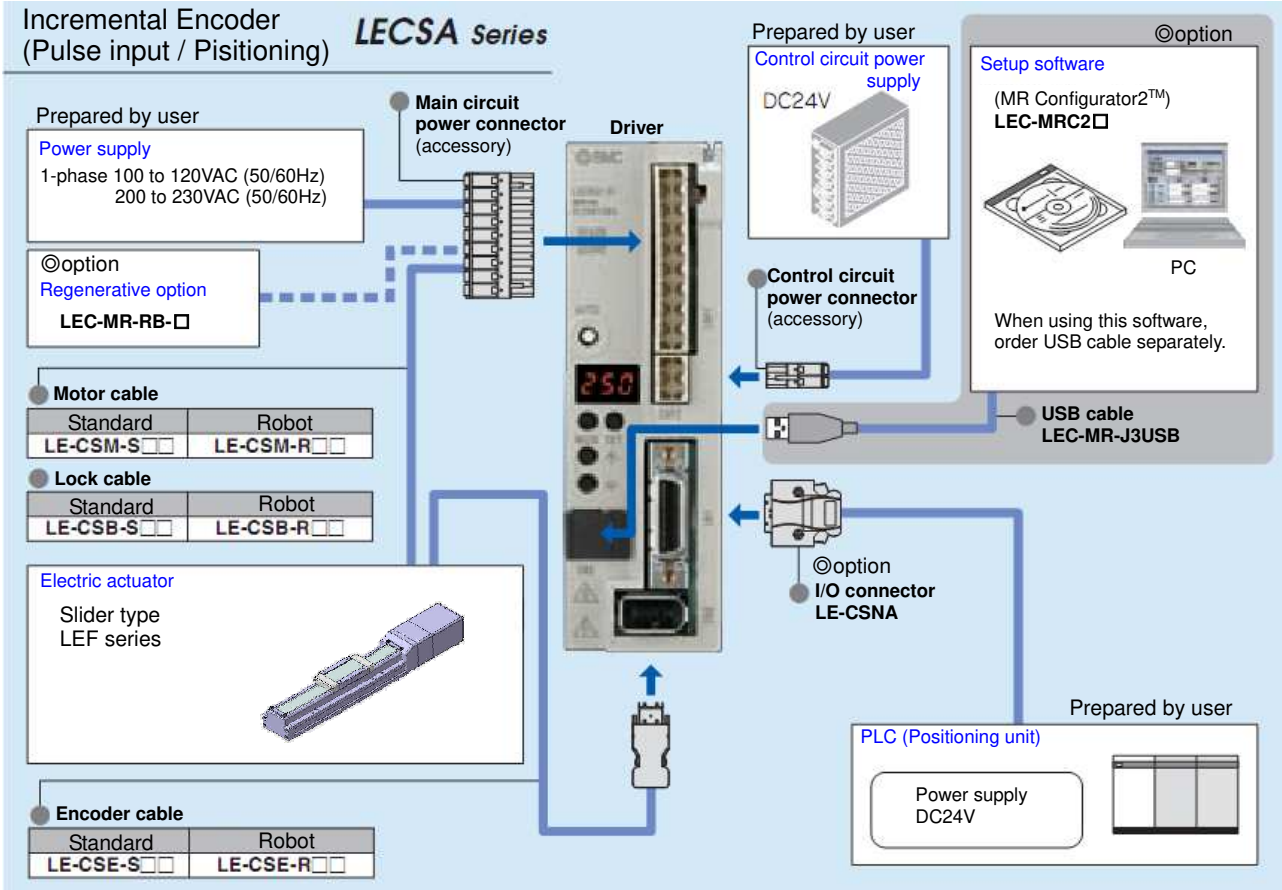


No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	-	
3	<b>Belt</b>	-	
4	<b>Belt holder</b>	Carbon steel	Chromating
5	<b>Belt stopper</b>	Aluminum alloy	Anodized
6	<b>Table</b>	Aluminum alloy	Anodized
7	<b>Blanking plate</b>	Aluminum alloy	Anodized
8	<b>Seal band holder</b>	Synthetic resin	
9	<b>End block</b>	Aluminum alloy	Coating
10	<b>End block cover</b>	Aluminum alloy	Anodized
11	<b>Pulley holder</b>	Aluminum alloy	
12	<b>Pulley shaft</b>	Stainless steel	
13	<b>End pulley</b>	Aluminum alloy	Anodized
14	<b>Motor pulley</b>	Aluminum alloy	Anodized
15	<b>Return flange</b>	Aluminum alloy	Coating
16	<b>Housing</b>	Aluminum alloy	Coating
17	<b>Motor mount</b>	Aluminum alloy	Coating
18	<b>Motor cover</b>	Aluminum alloy	Anodized

No.	Description	Material	Note
19	<b>Motor end cover</b>	Aluminum alloy	Anodized
20	<b>Band holder</b>	Stainless steel	
21	<b>Motor</b>	-	
22	<b>Grommet</b>	NBR	
23	<b>Dust seal band</b>	Stainless steel	
24	<b>Bearing</b>	-	
25	<b>Bearing</b>	-	
26	<b>Bearing</b>	-	
27	<b>Tension adjustment bolt</b>	Carbon steel	Chromating
28	<b>Roller shaft</b>	Stainless steel	
29	<b>Roller</b>	Synthetic resin	
30	<b>Bearing</b>	-	
31	<b>Auto switch mounting bracket</b>	Aluminum alloy	Anodized
32	<b>Auto switch mounting bracket fixing bolt</b>	Carbon steel	Chromating
33	<b>Magnet</b>	-	
34	<b>Magnet holder</b>	Stainless steel	

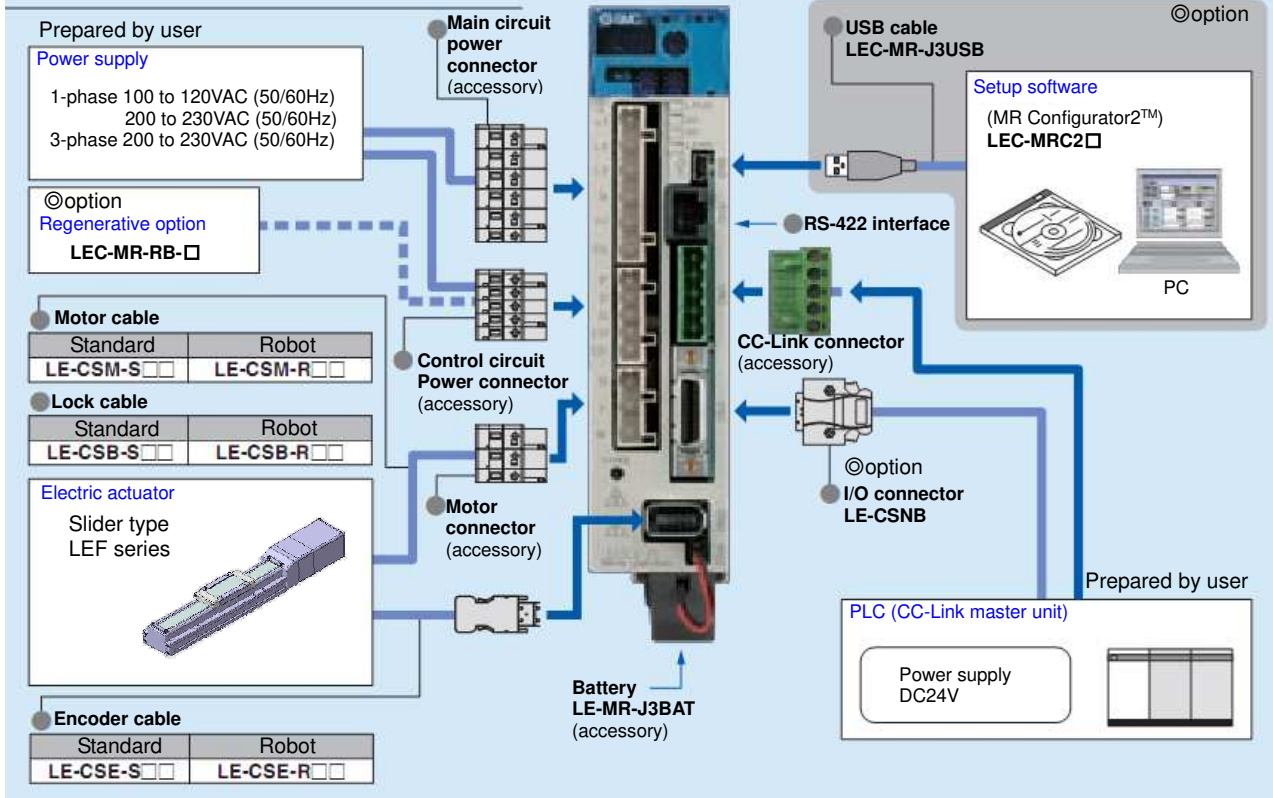
# 4. Product Outline

## 4.1 System construction

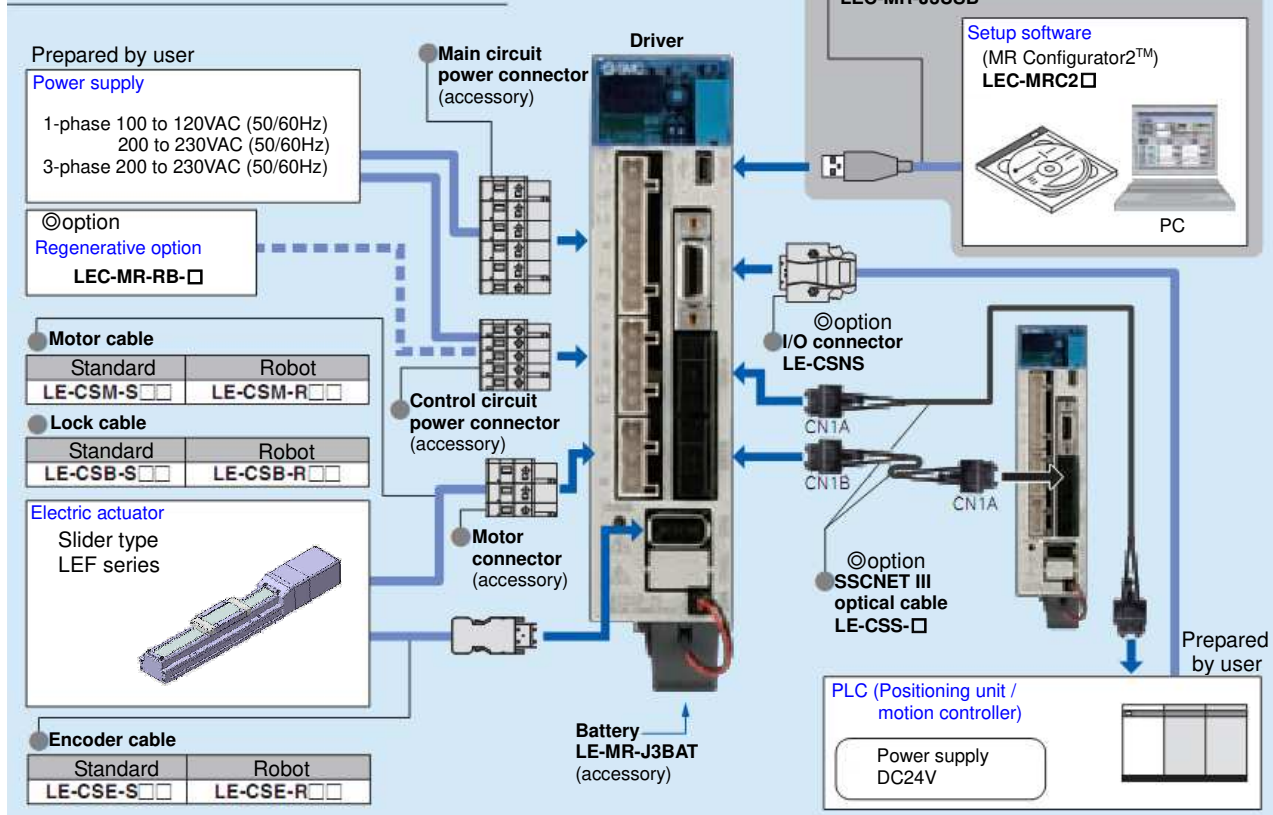


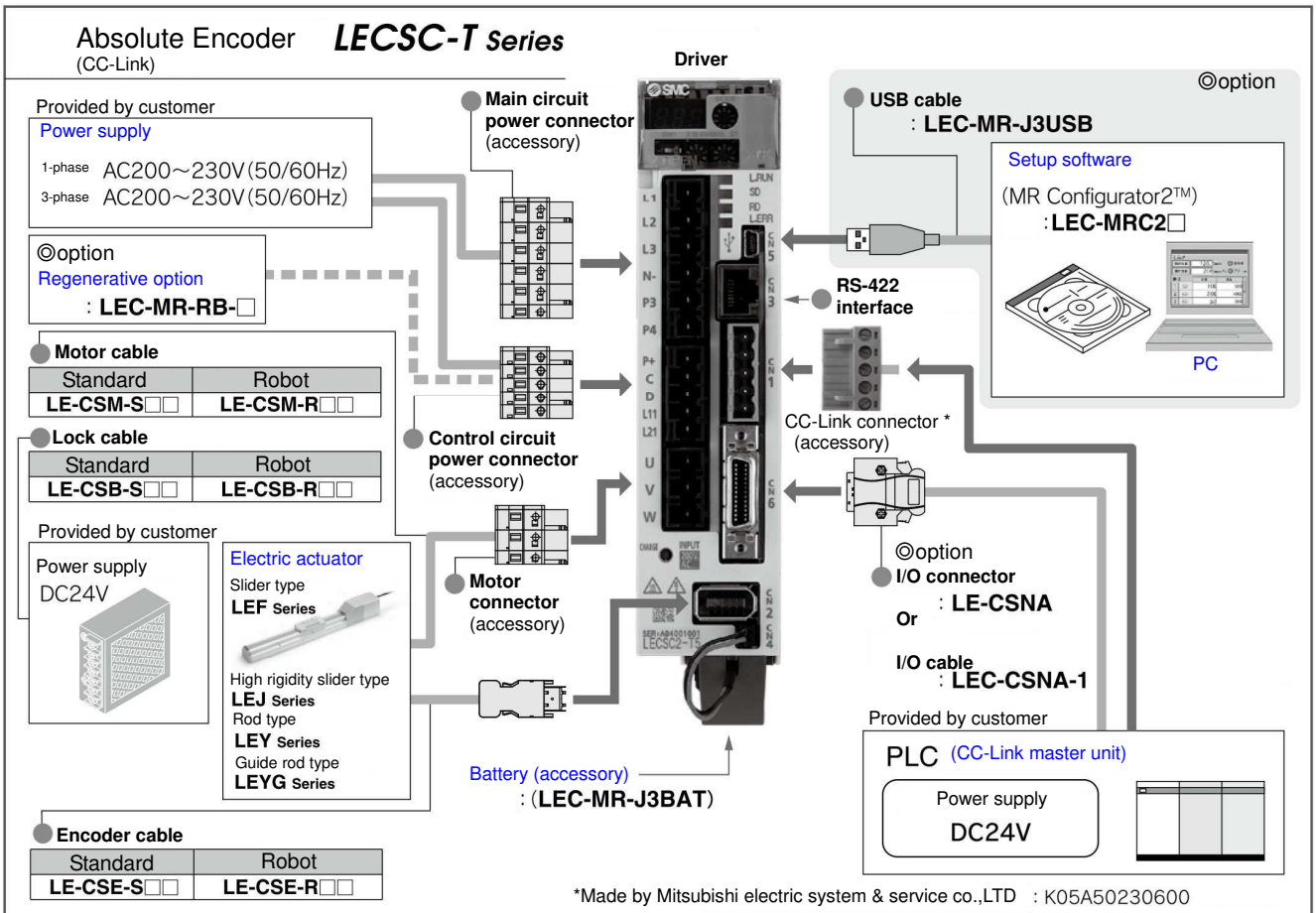
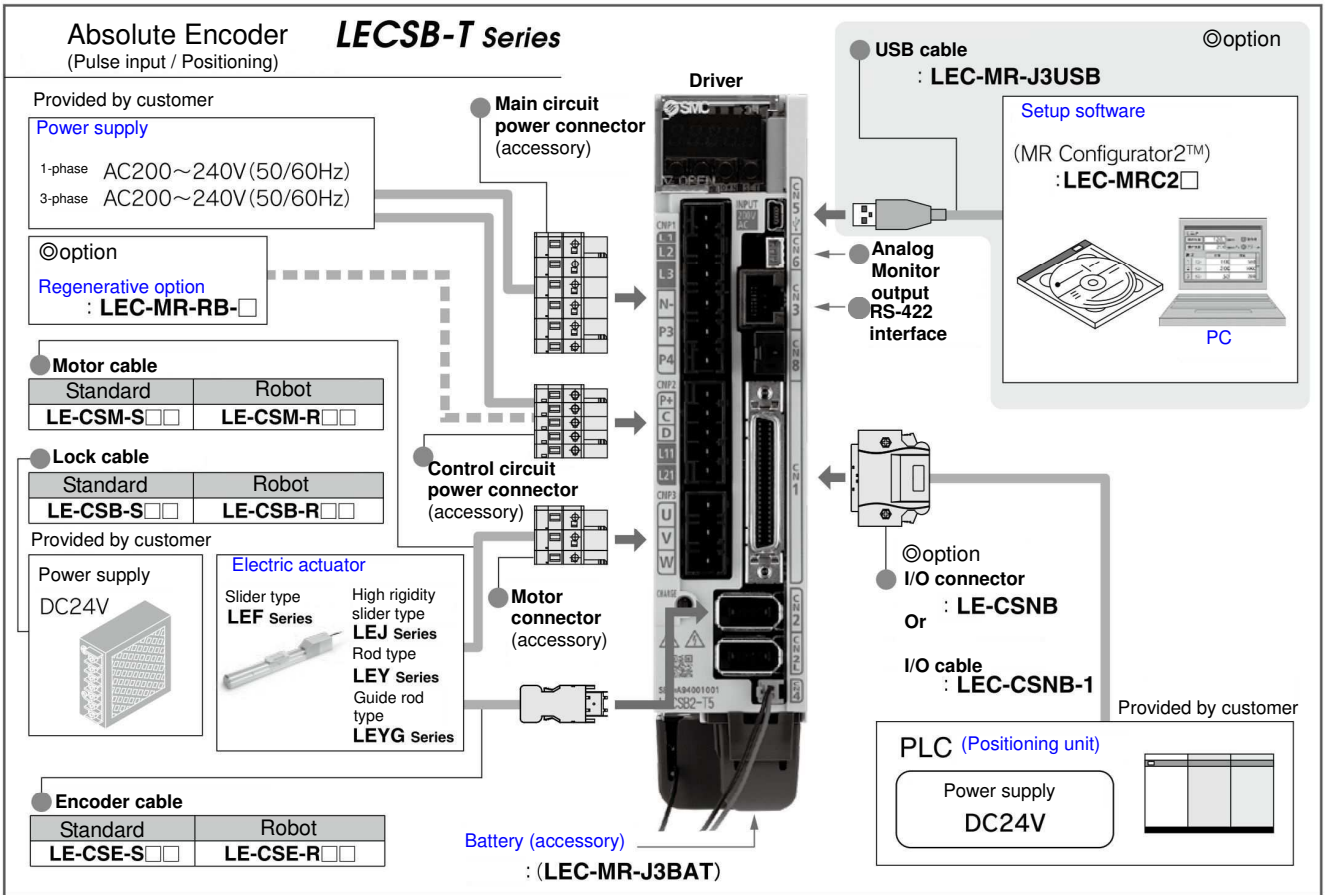


## Absolute Encoder (CC-Link) *LECS Series*



## Absolute Encoder (SSCNET III) *LECS 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**

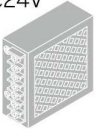
Standard	Robot
LE-CSM-S□□	LE-CSM-R□□

● **Lock cable**

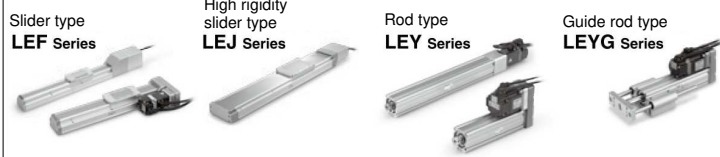
Standard	Robot
LE-CSB-S□□	LE-CSB-R□□

Provided by customer

**Power supply**  
 DC24V



**Electric actuator**



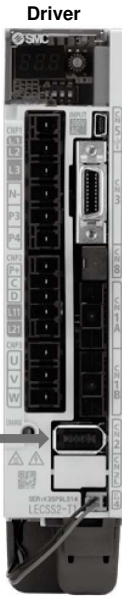
**Main circuit power connector**  
 (accessory)

**Control circuit power connector**  
 (accessory)

**Motor connector**  
 (accessory)


**Encoder cable**

Standard	Robot
LE-CSE-S□□	LE-CSE-R□□



**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/Configuration

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 <sup>Note1)</sup>	Encoder	Positioning		Parameter select
	Position control		Point table method	Program method <sup>Note3)</sup>	
<b>LECSA</b> (Pulse input / Positioning)	Pulse train	Incremental	ON/OFF signal 3 points (max. 7 points) <sup>Note2)</sup>	ON/OFF signal 4 programs (max. 8 Programs) <sup>Note2)</sup>	PA01
<b>LECSB</b> (Pulse input)	Pulse train	Absolute	-	-	PA01
<b>LECSA</b> (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
<b>LECSS</b> (SSCNET III)	SSCNET III	Absolute	-	-	Note4)
<b>LECSB-T</b> (Pulse input / Positioning)	Pulse train	Absolute	ON/OFF signal 15 points (max. 255 points) <sup>Note2)</sup>	ON/OFF signal 16 programs (max. 256 Programs) <sup>Note2)</sup>	PA01
<b>LECSA-T</b> (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
<b>LECSS-T</b> (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 Configurator2<sup>TM</sup> is necessary to control by the program method. Order separately.

-MR Configurator2<sup>TM</sup> (Setup software Japanese version) / LEC-MRC2

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

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

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

Note4) The LECSS/LECSS-T is set by upper positioning unit or motion controller.



## 5. Wiring of 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 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.
- 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, operate it at a full stroke at least once every 10 strokes.**  
Otherwise, lubrication can run out.
- 3. Do not use the product in applications where excessive external force or impact force is applied to it.**  
The product can be damaged.
- 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 attaching 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 driver /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. **Please do the earth construction surely.**
2. **Please 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.**  
Contact SMC if lubrication will be applied.

## 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 higher 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 reduced 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 and selection

#### Warning

- 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 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.
- 3. Do not use the product in applications where excessive external force or impact force is applied to it.**  
This can lead to premature failure of the product.
- 4. When the product repeatedly cycles with partial strokes (see the table below), operate it at a full stroke at least once every 10 strokes.**  
Otherwise, lubrication can run out.

Model	Partial stroke
LEF□25	65mm or less
LEF□32	70mm or less
LEF□40	105mm or less

- 5. Actuator sizing is necessary with the total workload including the external force if external force is added on the actuator table.**  
When mounting cable-duct to actuator, the resistance of actuator table may increase. It causes an overload alarm, so pay attention to the resistance.

### 7.2 Handling

#### Caution

- 1. Do not use the lock as a safety lock or a control that requires a locking force.**
  - 1) Positioning operation**  
When the product comes within the set range by step data [In positon], output signal will be turned on. Set to [0.50] for LEFS and [1] for LEFB, or higher.
- 2. Do not change the positioning force from initial setting.**  
If the positioning force is changed, it may cause a decrease in performance.
- 3. Do not operate by fixing the table and moving the actuator body.**  
An excessive load will be applied to the table, which could lead to damage to the actuator and reduced accuracy and reduced product life.
- 4. Belt drive actuator cannot be used for vertically mounted applications.**
- 5. Check the specification for the minimum speed of each actuator.**
- 6. In the case of the belt driven actuator, vibration may occur during operation at speeds within the actuator specification, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.**
- 7. 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.
- 8. Set fileter parameter surely for LEFB25. (Refer to 7.6 section.)**

### 7.3 Mounting

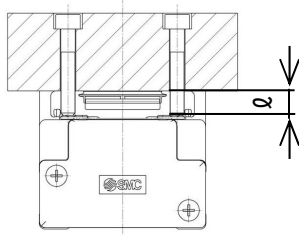
#### Caution

- 1. Keep the flatness of mounting surace to within [0.1mm or less for length 500mm].**  
Insufficient flatness of the work piece or the surface onto which the actuator body is to be mounted can cause play in the guide and increased sliding resistance.

**2. When mounting the workpiece or other device to the actuator tighten the fixing screws with adequate torque within the specified torque range**

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 in extreme conditions detaching of the work piece.

Work piece mounting



Model	Bolt size	Maximum tightening torque [Nm]	ℓ (Maximum thread depth [mm])
LEF□25	M5x0.8	3	8
LEF□32	M6x1	5.2	9
LEF□40	M8x1.25	12.5	14

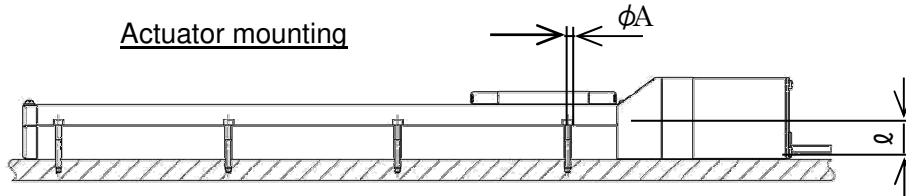
Use screws with adequate length, but with length less than the maximum thread depth.

The use of screws that are too long can touch the body and cause malfunction.

**3. When mounting the actuator, use screws with adequate length and tighten them to the adequate torque. And use all mounting holes to maintain the catalogue performance.**

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

Actuator mounting



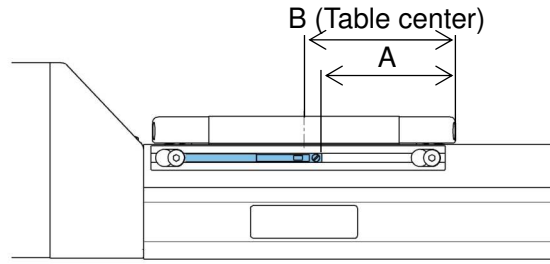
Model	Bolt size	φA (mm)	ℓ (mm)
LEF□25	M4	4.5	24
LEF□32	M5	5.5	30
LEF□40	M6	6.6	31



## 7.4 Auto Switch Mounting

### ⚠ Caution

#### ① Auto Switch Proper Mounting Position



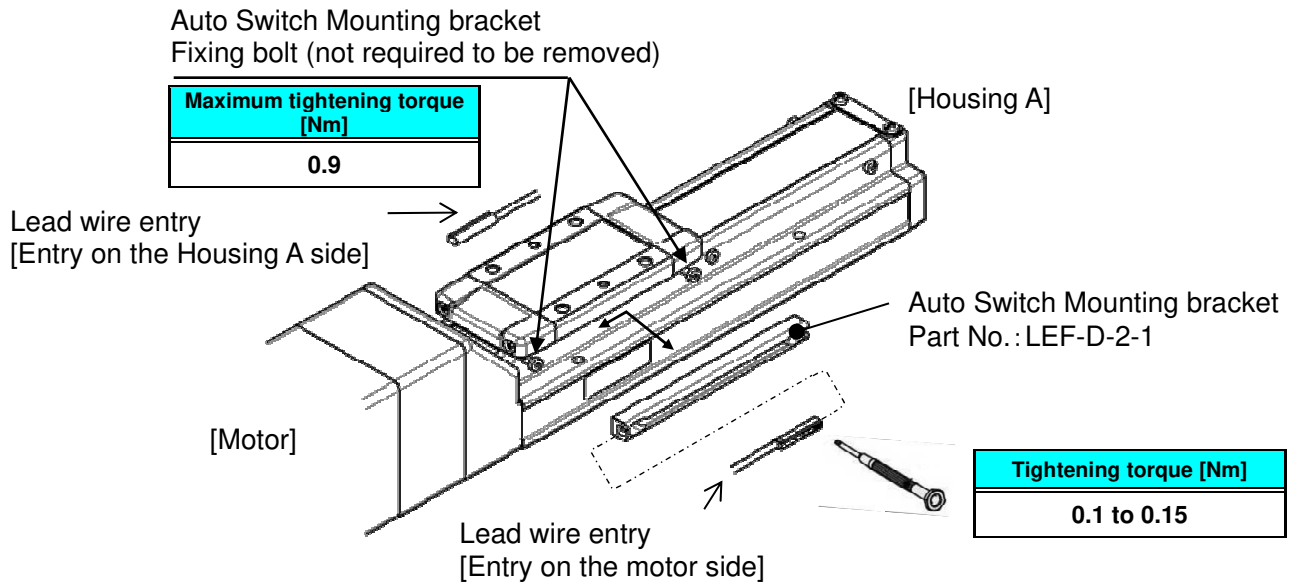
Model	Size	A	B	Operating Range
LEFS LEFB	25	45	51	4.9
	32	55	61	3.9
	40	79	85	5.3

1. The applicable auto switches are D-M9 series.
2. The operating ranges which include hysteresis are for guideline purposes only, they are not guaranteed. There may be the case it will vary substantially depending on an ambient environment.
3. In the actual setting ,adjust the auto switch after confirming the auto switch is properly activated.

#### ② Auto Switch Mounting

Rotate the bolts for auto switch mounting bracket three to four times to loosen them (It is not required to remove them), and slide and remove the auto switch mounting bracket. Then, insert a switch into the groove on the mounting bracket. As the mounting bolts for installing the actuator body interfere with the auto switch mounting bracket, mount the auto switch mounting bracket after installing the actuator body. After installing actuator body, tighten the bolts for auto switch mounting bracket.

Confirm the position of the auto switch, then tighten the auto switch mounting screw using a flat blade screwdriver to firmly mount the auto switch.



1. The applicable auto switches are D-M9 series.
2. The direction of the lead wire entry is specified. If it is mounted in opposite direction, the auto switch may malfunction.
3. Tighten the auto switch mounting screws (provided together with the auto switch), using a precision screwdriver with a handle diameter of approximately 5 to 6 mm.
4. If more than two auto switch mounting brackets are required, please order them separately. All eight bolts for mounting the auto switch mounting bracket at the stroke end are tightened into the body when the product is shipped.  
For 50-mm stroke type, only four bolts are tightened on the motor side.

## 7.5 Precaution on maintenance

### Warning

1. Turn off the power supply before maintenance and replacement of the product..
2. Put on protective goggles when applying grease.

#### [Maintenance frequency]

Perform maintenance according to the table below. Contact SMC if any abnormality is found.

Frequency	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 on moving parts
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.

SMC will exchange belt for repair correspondence.

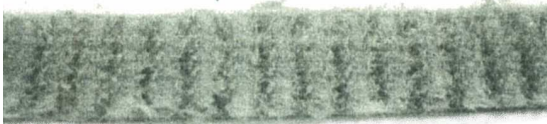
(When exchanging the belt yourself, contact SMC. Because it is difficult, adjustment for the motor origin, adjustment of the belt tension, etc. is accompanied, the repair correspondence is recommended.)

##### 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.

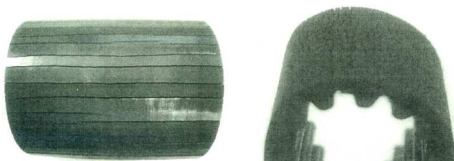
Foreign matter is caught in the teeth other than the cut part causes flaw.

##### 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



## 7.6 How to detach and attach the dust seal band

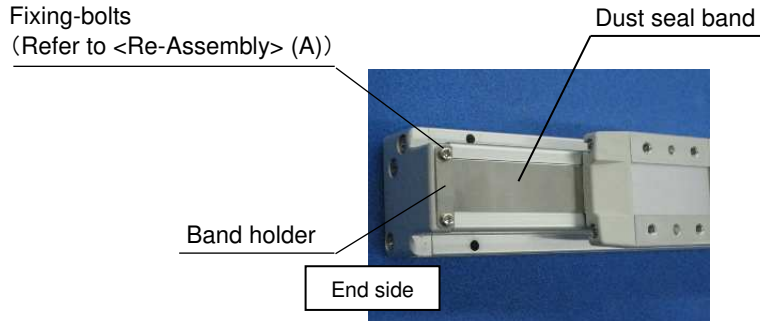
For the internal-check as the maintenance, the method of detaching and attaching the dust seal band is shown as the following.

### <Dis-assembly>

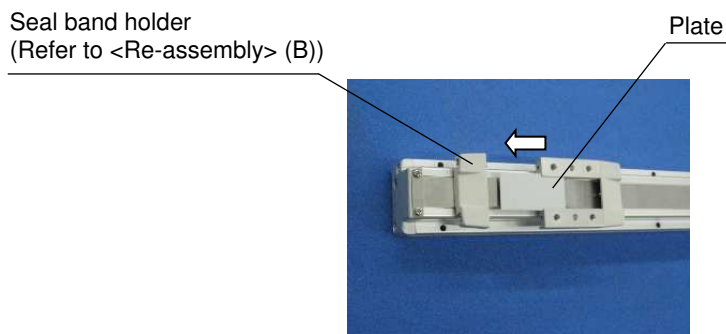
1. Loosen the fixing bolts of end side of the "Band holder".  
(The picture shows LEFB, but LEFS is same instruction as LEFB.)

Pay attention to not cut hand on the edges of the "Dust seal band".

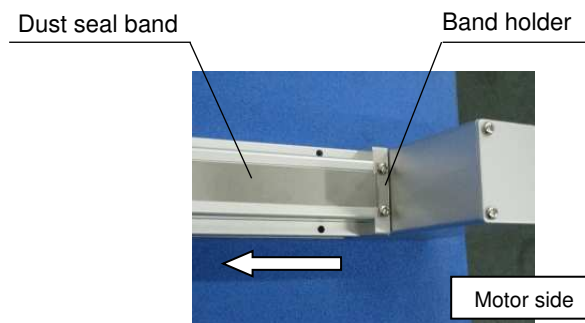
Note: The "Dust seal band" can only be removed by loosening the "Band holder" bolts.



2. Remove the "Seal band holder" and the "plate" as shown.



3. Loosen the fixing bolts of motor side of the "Band holder" and then remove the "Dust seal band".



### <Re-assembly>

The re-assembly is completed by the reverse procedure of "Dis-assembly" sections 1, 2 and 3.

(A)

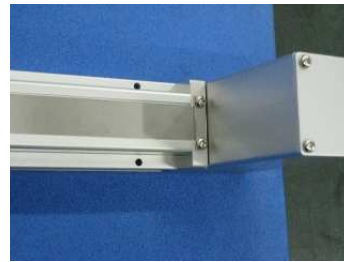
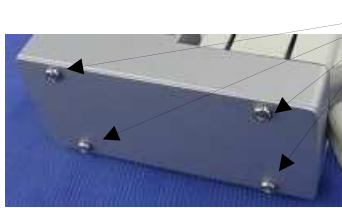
Model	Type of bolt	Bolt size
LEF□25	Round head combination screw	M3x6
LEF□32	Round head combination screw	M3x6
LEFS40	Round head combination screw	M3x6

(B)

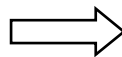
Model	Type of bolt	Bolt size
LEF□25	Cross recessed round head screw	M3x20
LEF□32	Cross recessed round head screw	M4x30
LEFS40	Round head combination screw	M4x35

## 7.7 Replacement of belt

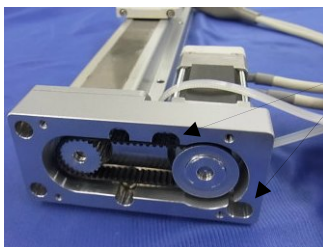
1. After Bolt is removed, "Pulley plate" is removed.



2. "Motor cover" and "Grommet" are removed. (Only "With motor cover")

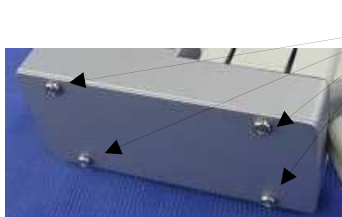


3. After "Belt" is installed, and the bearing support is obtained, the root of "Motor" is pulled in a string or a long banding band. With tensile force adjusted, tighten the bolts which fix the actuator to the motor. (See the table below)



Size	Belt Part number	Belt tension (N)
LEF25	LE-D-6-2	19.6
LEF32	LE-D-6-3	49.0
LEF40	LE-D-6-4	98.1

4. "Pulley plate" is installed.



Size	Tightening torque (Nm)
M3	0.63 ± 10%
M4	1.5 ± 10%
M5	3 ± 10%

## 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

No.LEF-OM00402

Sep/ 2011 Revision

No.LEF-OM00402

Jul/ 2012 Revision

No.LEF-OM00403

Mar / 2013 Revision

•Addition / Side parallel type

No.LEF-OM00404

Nov / 2013 Revision

•Addition / lead H for ball screw drive

No.LEF-OM00405

May / 2015 Revision

•Addition / Stroke for ball screw drive

No.LEF-OM00406

Jul / 2015 Revision

No.LEF-OM00407

Jul/ 2016 Revision

No.LEF-OM00408

Dec/ 2016 Revision

No.LEF-OM00409

Mar/ 2017 Revision

No.LEF-OM00410

Dec/ 2019 Revision

## SMC Corporation

4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021 JAPAN

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362

URL <http://www.smcworld.com>

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

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