

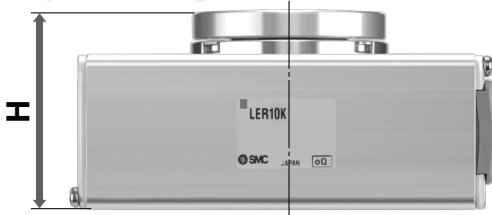
Electric Rotary Table

LER Series



Step Motor (Servo/24 VDC)

Low profile



Basic type [mm]

Model	H
LER10	42
LER30	53
LER50	68

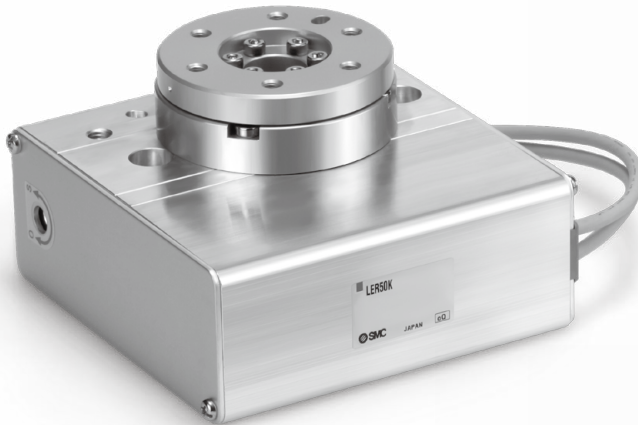
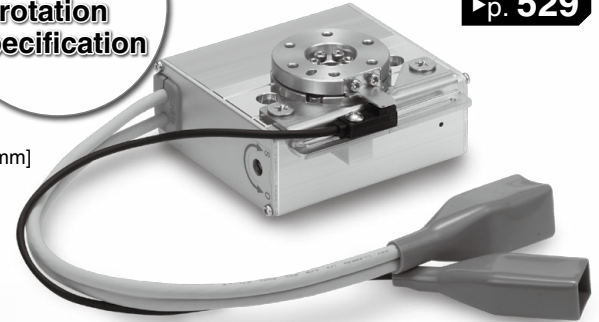
High-precision type [mm]

Model	H
LERH10	49
LERH30	62
LERH50	78

Continuous rotation specification

● **Rotation angle: 360°**

▶ p. 529



● Shock-less/High speed actuation

Max. speed: 420°/sec (7.33 rad/sec)
Max. acceleration/deceleration: 3000°/sec² (52.36 rad/sec²)

● Positioning repeatability: ±0.03° (High-precision type)

Repeatability at the end: ±0.01° (Pushing control/With external stopper)

● Rotation angle

360°, 320° (310°), 180°, 90°
The value indicated in brackets shows the value for the LER10.

● Can set speed, acceleration/deceleration, and position (Max. 64 points)

● Energy-saving product

Automatic 40% power reduction after the table has stopped.

Size	Rotating torque [N·m]		Max. speed [°/s]		Page
	Basic	High torque	Basic	High torque	
10	0.22	0.32			▶ p. 515
30	0.8	1.2	420	280	
50	6.6	10			

* Value when an external stopper is mounted.

Step Motor (Servo/24 VDC) Controllers/Drivers

▶ Step data input type

JXC51/61 Series

- 64 positioning points
- Input using controller setting kit or teaching box



▶ EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link/CC-Link direct input type

JXCE1/91/P1/D1/L1/M1 Series



▶ Programless type

LECP1 Series

- 14 positioning points
- Control panel setting



▶ Pulse input type

LECPA Series

- * Not applicable to the continuous rotation specification

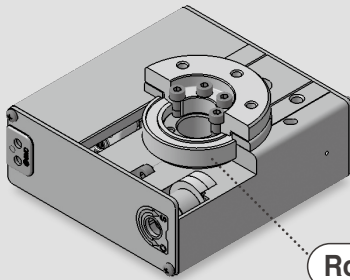


▶ p. 684

- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC
- JXC
- LECS
- LECS-T
- LECY
- Motorless
- LAT3

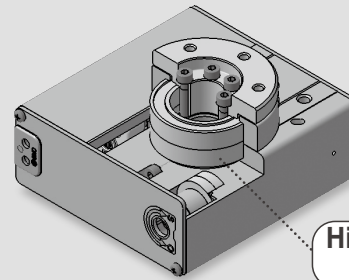
Basic and high-precision types are available.

Basic type/LER



Rolling bearing

High-precision type/LERH



High-precision bearing

The movement in the table's radial thrust direction is reduced.

Rotation angle

360°, 320°(310°), 180°, 90°

The value indicated in brackets shows the value for the LER10.

High torque

Output is **30** times with special worm gear. Special worm gear with reduced backlash is used.

Maximum rotation torque can be selected.

Belt deceleration ratio can be selected.

[N·m]

Model	Basic	High torque
LER10	0.22	0.32
LER30	0.8	1.2
LER50	6.6	10.0

Built-in step motor (Servo/24 VDC)

Space-saving

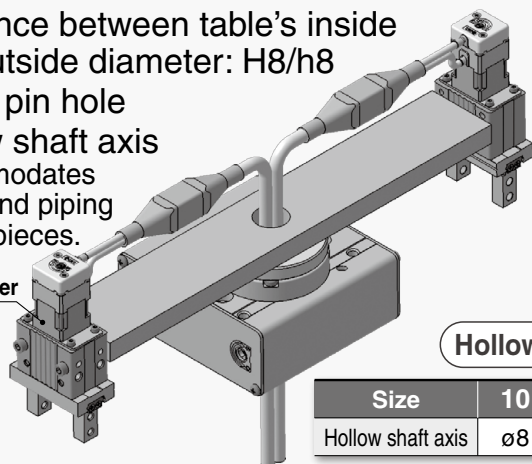
Manual override screw (Both sides)

Possible to rotate the table with power OFF by manual override.

Easy Mounting of Workpieces

- Tolerance between table's inside and outside diameter: H8/h8
- Dowel pin hole
- Hollow shaft axis
Accommodates wiring and piping of workpieces.

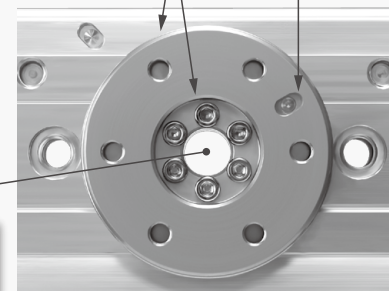
Electric gripper
LEH Series



For alignment of rotation center and workpiece

Dowel pin hole

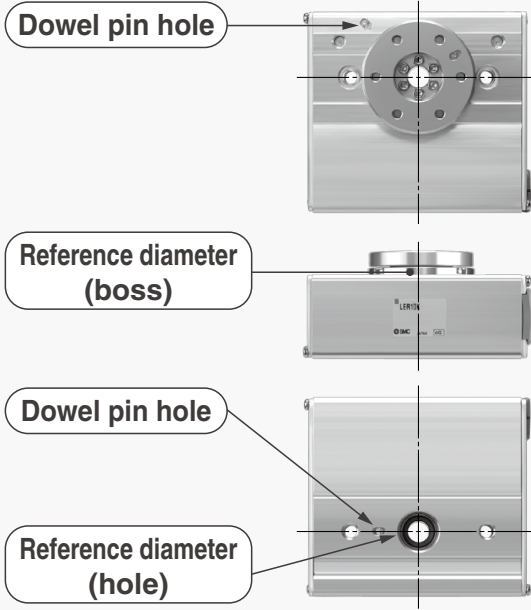
Positioning of rotating direction



Hollow shaft axis

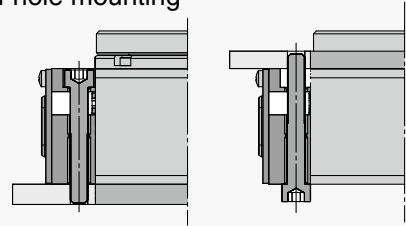
Size	10	30	50
Hollow shaft axis	ø8	ø17	ø20

Easy Mounting of the Main Body

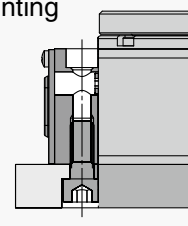


Mounting Variations

■ Through-hole mounting

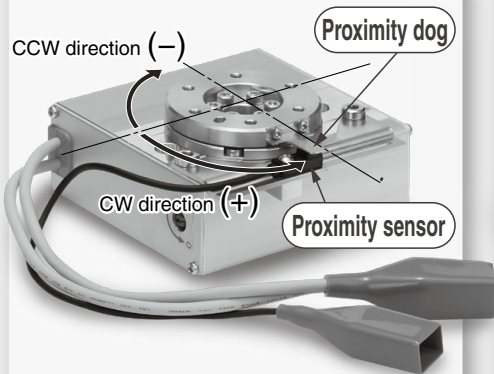


■ Body tapped mounting



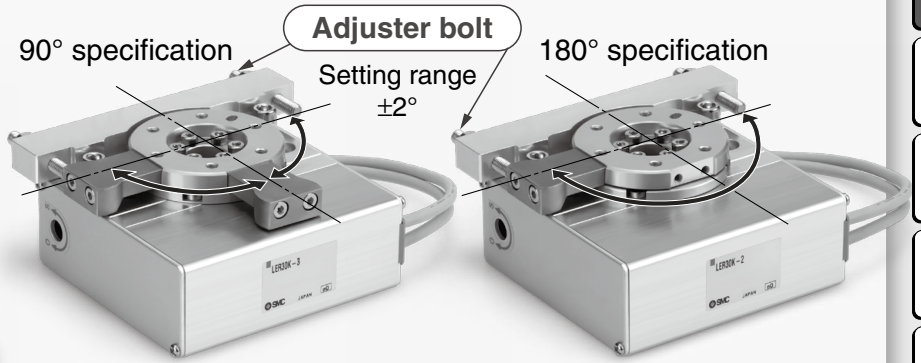
Continuous Rotation Specification

Rotation angle: 360°
Return to origin with proximity sensor

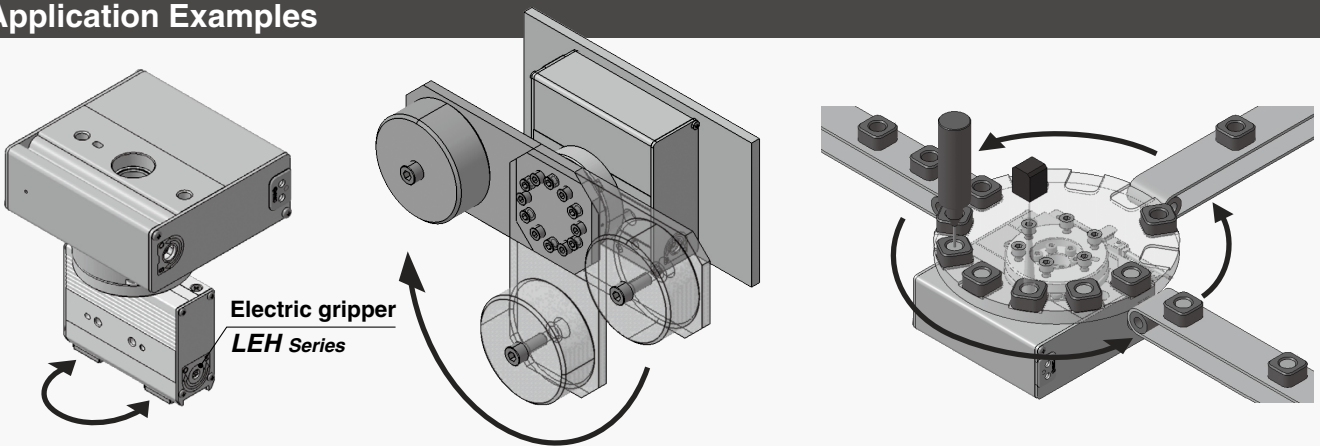


With External Stopper/Rotation Angle: 90°/180° Specification

Repeatability at the end: $\pm 0.01^\circ$



Application Examples



For rotation transfer after gripping in combination with a gripper

For vertical transfer: No change in speed due to load fluctuation

For continuous operation of multiple processes with 360° continuous rotation

- LEFS
- LEJB
- LEL
- LEM
- LEYG
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC
- JXC
- LECS
- LECS-T
- LECY
- Motorless
- LAT3

Model Selection p. 515

Step Motor (Servo/24 VDC)

Electric Rotary Table *LER Series*



How to Order p. 521
 Specifications p. 524
 Construction p. 525
 Dimensions p. 526

Step Motor (Servo/24 VDC)

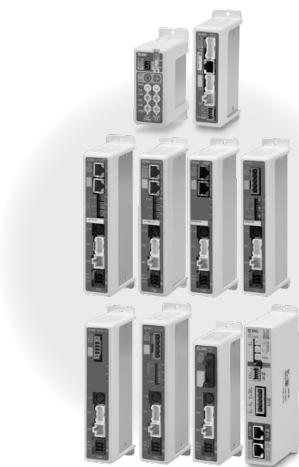
Continuous Rotation Specification Electric Rotary Table *LER Series*



How to Order p. 529
 Specifications p. 532
 Construction p. 533
 Dimensions p. 534

Specific Product Precautions p. 537

Step Motor (Servo/24 VDC) Controller



Step Data Input Type/*JXC51/61 Series* p. 706-1
 EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link/CC-Link
 Direct Input Type/*JXCE1/91/P1/D1/L1/M1 Series* p. 741
 Gateway Unit/*LEC-G Series* p. 715
 Programless Controller/*LECP1 Series* p. 719
 Step Motor Driver/*LECPA Series* p. 731

 Actuator Cable p. 758
 Communication Cable for Controller Setting/*LEC-W2A-□* p. 760
 Teaching Box/*LEC-T1* p. 761

3-Axis Step Motor Controller



EtherNet/IP™ Type/*JXC92 Series* p. 747

4-Axis Step Motor Controller (Servo/24 VDC)



Parallel I/O/*JXC73/83 Series* p. 749
 EtherNet/IP™ Type/*JXC93 Series* p. 749

Electric Rotary Table

LER Series

Step Motor (Servo/24 VDC)

p. 521



Continuous Rotation Specification p. 529



Step Motor/Servo Motor Controller/Driver p. 684

LEFS
LEFB

LEJS
LEJB

LEL

LEM

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS

11-LEJS

25A-

LEC

JXC

LECS
LECS-T

LECY

Motorless

LAT3

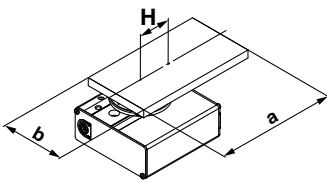
Model Selection



LER Series ▶ p. 521 Continuous Rotation Specification LER-1 Series ▶ p. 529

Selection Procedure

Operating conditions



Electric rotary table: LER30J
 Mounting position: Horizontal
 Load type: Inertial load T_a
 Configuration of load: 150 mm x 80 mm (Rectangular plate)
 Rotation angle θ : 180°

Angular acceleration/
 angular deceleration $\dot{\omega}$: 1000°/sec²
 Angular speed ω : 420°/sec
 Load mass [m]: 2.0 kg
 Distance between shaft and center of gravity H: 40 mm

Step 1 Moment of inertia—Angular acceleration/deceleration

① Calculation of moment of inertia

Formula

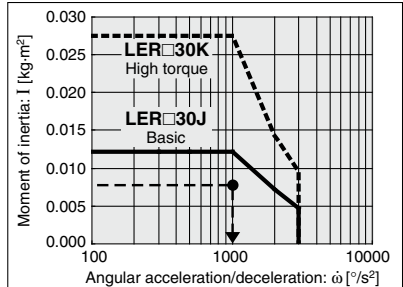
$$I = m \times (a^2 + b^2)/12 + m \times H^2$$

② **Moment of inertia—Check the angular acceleration/deceleration**
 Select a model based on the moment of inertia and angular acceleration and deceleration while referencing the (Moment of Inertia—Angular Acceleration/Deceleration graph).

Selection example

$$I = 2.0 \times (0.15^2 + 0.08^2)/12 + 2.0 \times 0.04^2 = 0.00802 \text{ kg}\cdot\text{m}^2$$

LER30



Step 2 Necessary torque

① Load type

- Static load: T_s
- Resistance load: T_f
- Inertial load: T_a

Formula

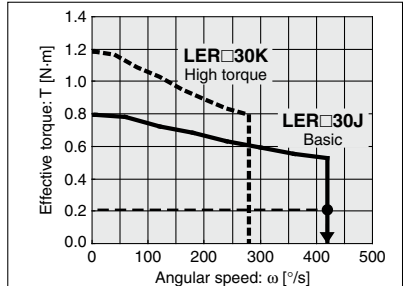
Effective torque $\geq T_s$
 Effective torque $\geq T_f \times 1.5$
 Effective torque $\geq T_a \times 1.5$

② **Check the effective torque**
 Confirm whether it is possible to control the speed based on the effective torque corresponding with the angular speed while referencing the (Effective Torque—Angular Speed graph).

Selection example

Inertial load: T_a
 $T_a \times 1.5 = I \times \dot{\omega} \times 2 \pi / 360 \times 1.5$
 $= 0.00802 \times 1000 \times 0.0175 \times 1.5$
 $= 0.21 \text{ N}\cdot\text{m}$

LER30



Step 3 Allowable load

① Check the allowable load

- Radial load
- Thrust load
- Moment

Formula

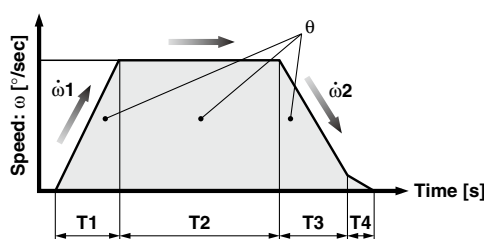
Allowable thrust load $\geq m \times 9.8$
 Allowable moment $\geq m \times 9.8 \times H$

Selection example

- Thrust load
 $2.0 \times 9.8 = 19.6 \text{ N} < \text{Allowable load OK}$
- Allowable moment
 $2.0 \times 9.8 \times 0.04 = 0.784 \text{ N}\cdot\text{m} < \text{Allowable moment OK}$

Step 4 Rotation time

① Calculation of cycle time (rotation time)



θ : Rotation angle [°]
 ω : Angular speed [°/sec]
 $\dot{\omega}1$: Angular acceleration [°/sec²]
 $\dot{\omega}2$: Angular deceleration [°/sec²]
 T1: Acceleration time [s]... Time until reaching the set speed
 T2: Constant speed time [s]... Time while the actuator is operating at a constant speed
 T3: Deceleration time [s]... Time from the beginning of the constant speed operation to stop
 T4: Settling time [s]... Time until positioning is completed

Formula

Angular acceleration time $T1 = \omega / \dot{\omega}1$
 Angular deceleration time $T3 = \omega / \dot{\omega}2$
 Constant speed time $T2 = \{\theta - 0.5 \times \omega \times (T1 + T3)\} / \omega$
 Settling time $T4 = 0.2 \text{ [s]}$
 Cycle time $T = T1 + T2 + T3 + T4$

Selection example

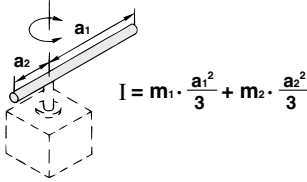
- Angular acceleration time $T1 = 420 / 1000 = 0.42 \text{ sec}$
- Angular deceleration time $T3 = 420 / 1000 = 0.42 \text{ sec}$
- Constant speed time
 $T2 = \{180 - 0.5 \times 420 \times (0.42 + 0.42)\} / 420 = 0.009 \text{ sec}$
- Cycle time
 $T = T1 + T2 + T3 + T4 = 0.42 + 0.009 + 0.42 + 0.2 = 1.049 \text{ [s]}$

Formulas for Moment of Inertia (Calculation of moment of inertia I)

I: Moment of inertia [kg·m²] m: Load mass [kg]

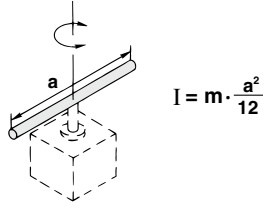
1. Thin bar

Position of rotation shaft:
Perpendicular to a bar through one end



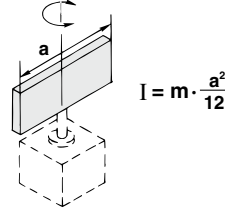
2. Thin bar

Position of rotation shaft:
Passes through the center of gravity of the bar.



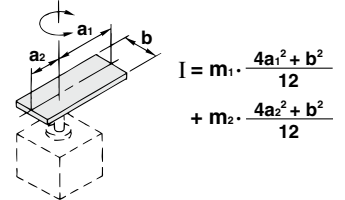
3. Thin rectangular plate (cuboid)

Position of rotation shaft: Passes through the center of gravity of a plate.



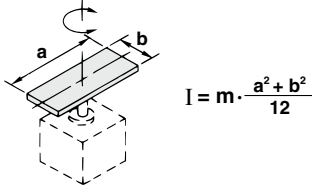
4. Thin rectangular plate (cuboid)

Position of rotation shaft: Perpendicular to the plate and passes through one end. (The same applies to thicker cuboids.)



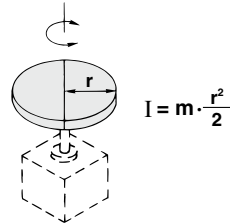
5. Thin rectangular plate (cuboid)

Position of the rotation shaft: Passes through the center of gravity of the plate and perpendicular to the plate. (The same applies to thicker cuboids.)



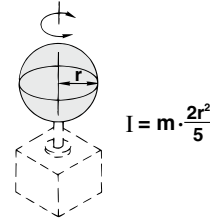
6. Cylindrical shape (including a thin disk)

Position of rotation shaft: Center axis



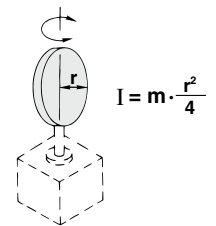
7. Sphere

Position of rotation shaft: Diameter

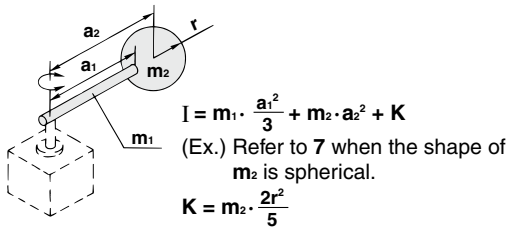


8. Thin disk (mounted vertically)

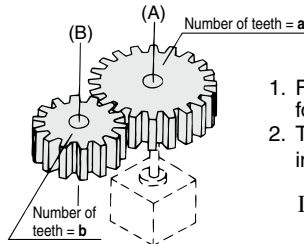
Position of rotation shaft: Diameter



9. When a load is mounted on the end of the lever



10. Gear transmission



1. Find the moment of inertia I_B for the rotation of shaft (B).
2. Then, replace the moment of inertia I_B around the shaft (A) by I_A ,

$$I_A = \left(\frac{a}{b}\right)^2 \cdot I_B$$

Load Type

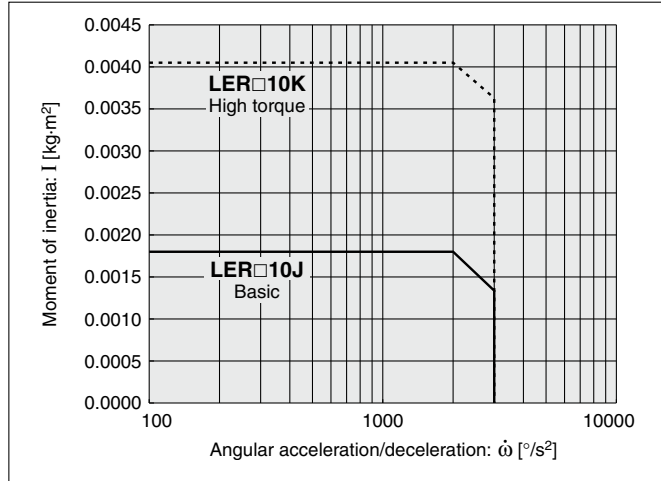
Load type		
Static load: T_s	Resistance load: T_f	Inertial load: T_a
Only pressing force is necessary. (e.g. for clamping)	Gravity or friction force is applied to rotating direction.	Rotate the load with inertia.
	Gravity is applied.	Center of rotation and center of gravity of the load are concentric.
	Friction force is applied.	Rotation shaft is vertical (up and down).
<p>$T_s = F \cdot L$</p> <p>T_s: Static load [N·m] F: Clamping force [N] L: Distance from the rotation center to the clamping position [m]</p>	<p>Gravity is applied to rotating direction. $T_f = m \cdot g \cdot L$</p> <p>Friction force is applied to rotating direction. $T_f = \mu \cdot m \cdot g \cdot L$</p> <p>$T_f$: Resistance load [N·m] m: Load mass [kg] g: Gravitational acceleration 9.8 [m/s²] L: Distance from the rotation center to the point of application of the gravity or friction force [m] μ: Friction coefficient</p>	<p>$T_a = I \cdot \dot{\omega} \cdot 2 \pi / 360$ $(T_a = I \cdot \dot{\omega} \cdot 0.0175)$</p> <p>$T_a$: Inertial load [N·m] I: Moment of inertia [kg·m²] $\dot{\omega}$: Angular acceleration/deceleration [°/sec²] ω: Angular speed [°/sec]</p>
Necessary torque: $T = T_s$	Necessary torque: $T = T_f \times 1.5^{*1}$	Necessary torque: $T = T_a \times 1.5^{*1}$
<p>• Resistance load: Gravity or friction force is applied to rotating direction. Ex. 1) Rotation shaft is horizontal (lateral), and the rotation center and the center of gravity of the load are not concentric. Ex. 2) Load moves by sliding on the floor. * The total of resistance load and inertial load is the necessary torque. $T = (T_f + T_a) \times 1.5$</p>	<p>• Not resistance load: Neither gravity or friction force is applied to rotating direction. Ex. 1) Rotation shaft is vertical (up and down). Ex. 2) Rotation shaft is horizontal (lateral), and rotation center and the center of gravity of the load are concentric. * Necessary torque is inertial load only. $T = T_a \times 1.5$</p>	
		*1 To adjust the speed, margin is necessary for T_f and T_a .

LEFS
LEJB
LEJ
LEM
LEY
LESH
LEPS
LER
LEH
LEY-X5
11-LEFS
11-LEJS
25A-
LEC
JXC
LECS
LECS-T
LECY
Motorless
LAT3

For Step Motor (Servo/24 VDC) JXC□1, LEC□1

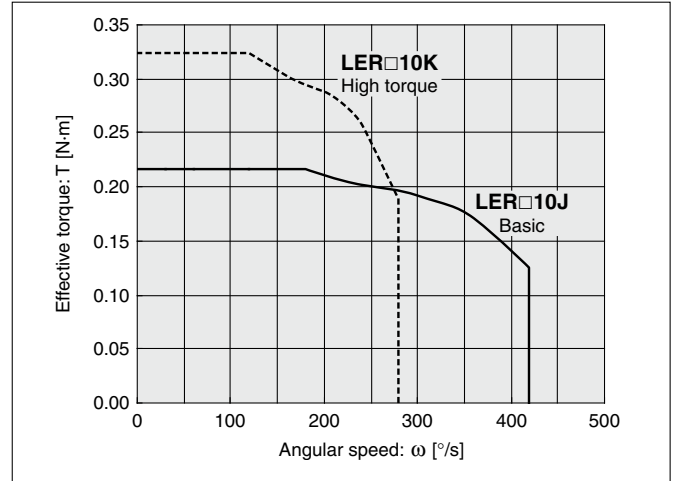
Moment of Inertia—Angular Acceleration/Deceleration

LER10

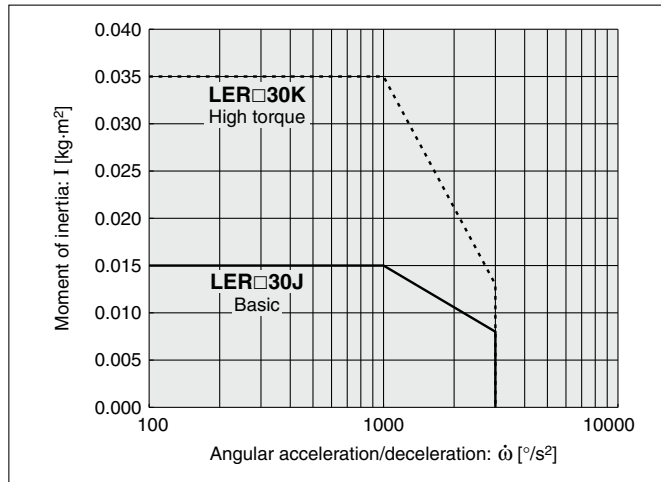


Effective Torque—Angular Speed

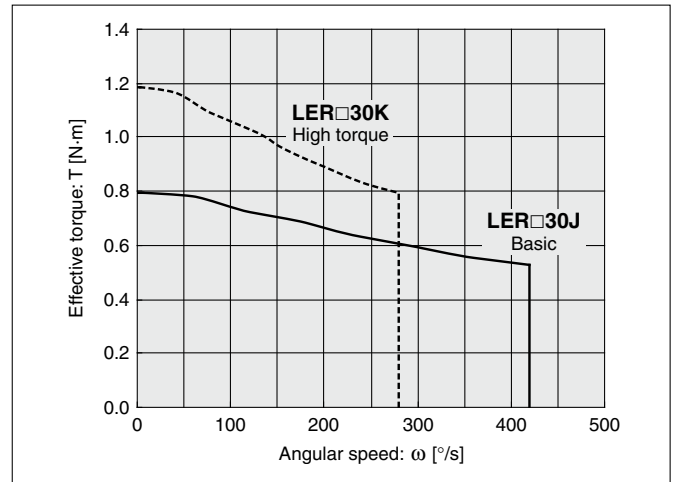
LER10



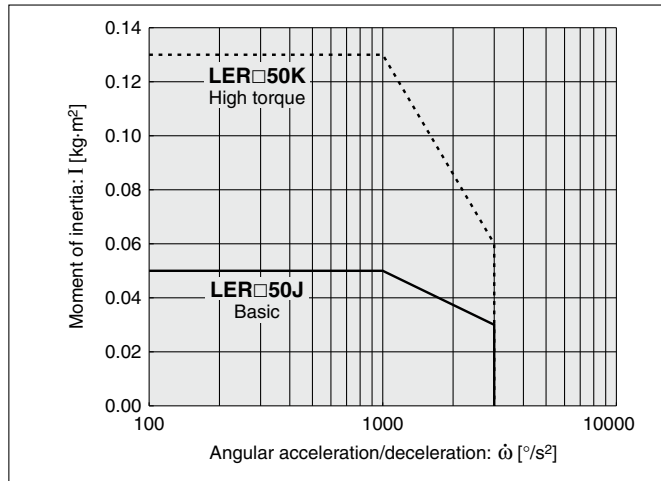
LER30



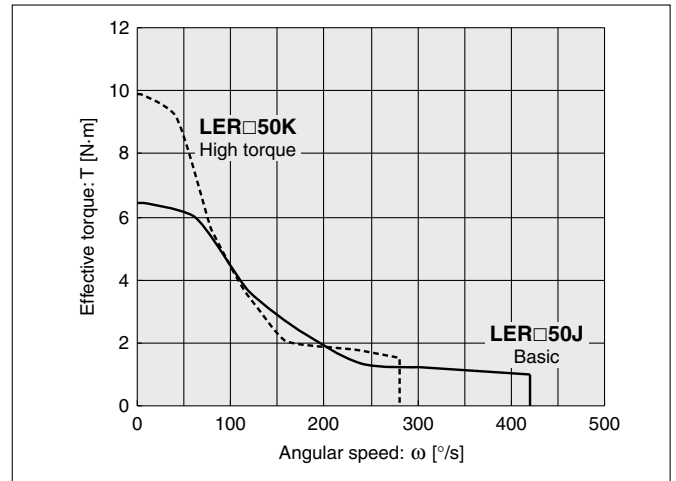
LER30



LER50



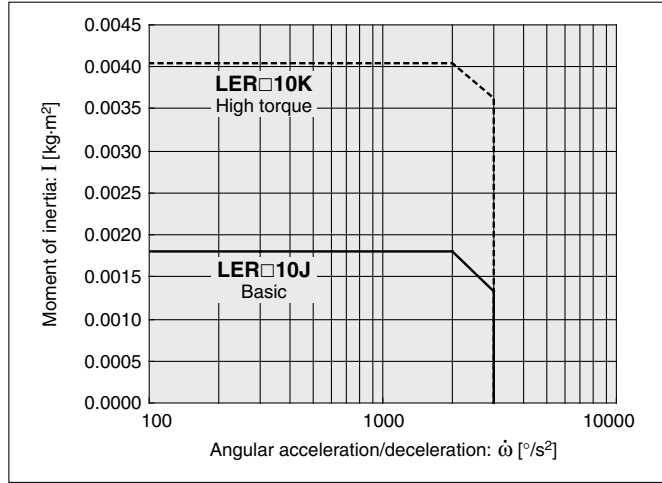
LER50



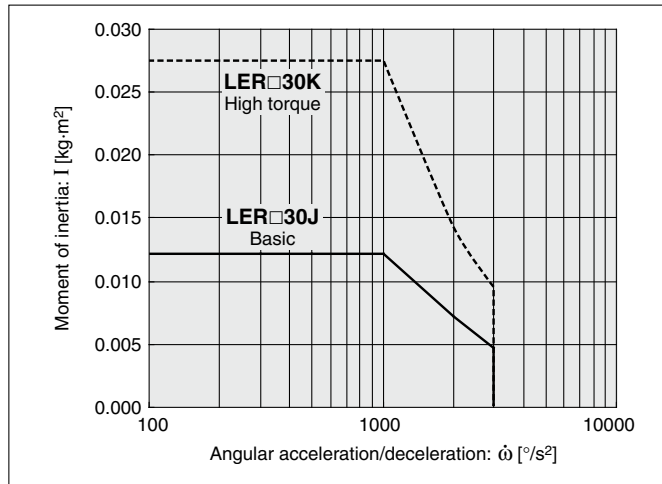
For Step Motor (Servo/24 VDC) LECPA, JXC□₃

Moment of Inertia—Angular Acceleration/Deceleration

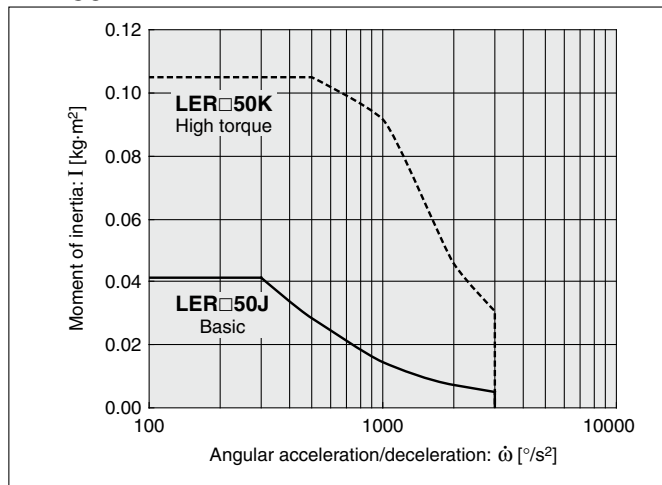
LER10



LER30

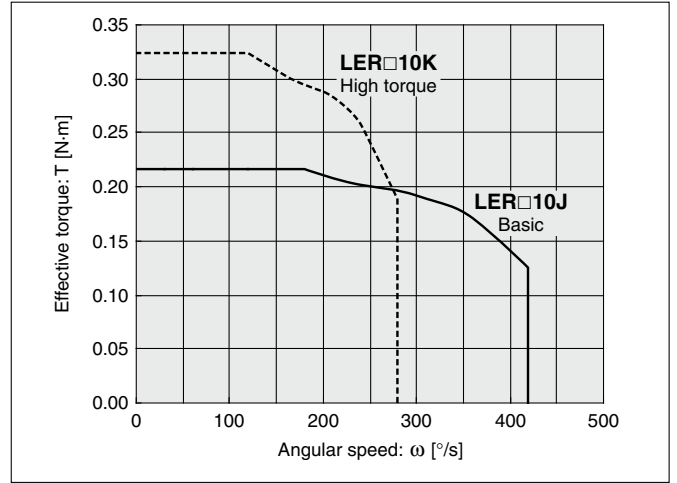


LER50

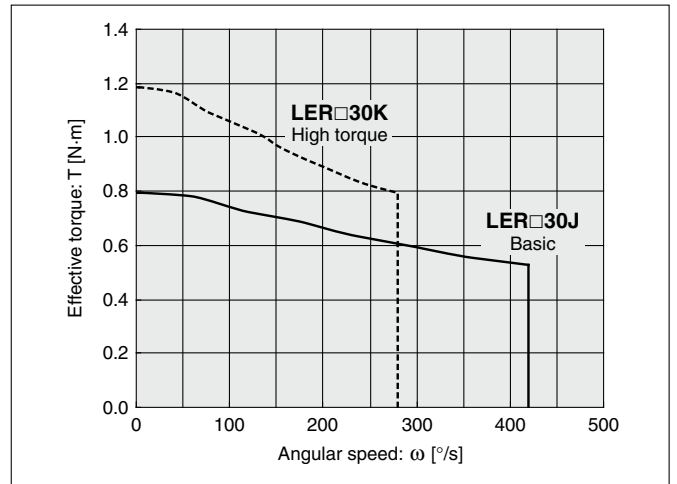


Effective Torque—Angular Speed

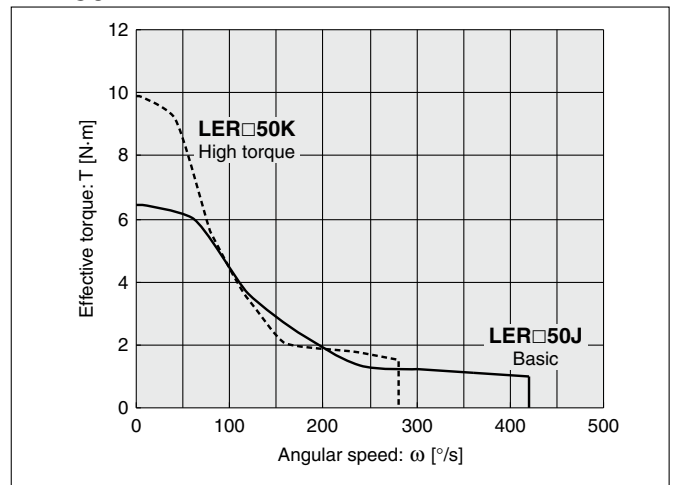
LER10



LER30



LER50



- LEFS
- LEFB
- LEJS
- LEJB
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- LEY
- LEYG
- LES
- LESH
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- LECS
- LECS-T
- LECY
- Motorless
- LAT3

LER Series

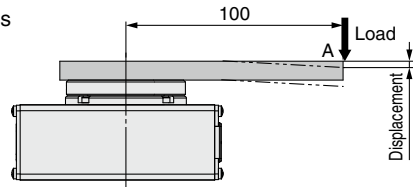
Step Motor (Servo/24 VDC)

Allowable Load

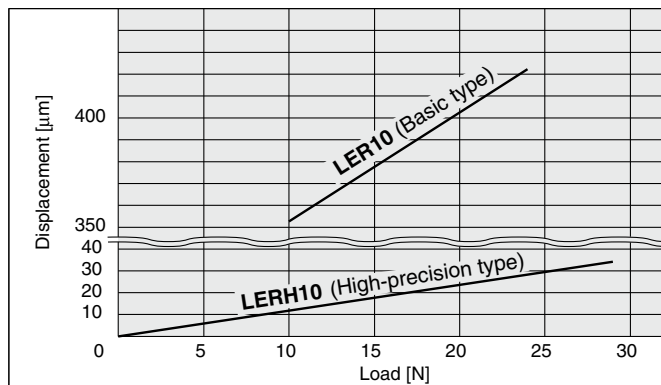
Size	Allowable radial load [N]		Allowable thrust load [N]				Allowable moment [N·m]	
	Basic type	High-precision type	(a)		(b)		Basic type	High-precision type
			Basic type	High-precision type	Basic type	High-precision type		
10	78	86	74		78	107	2.4	2.9
30	196	233	197		363	398	5.3	6.4
50	314	378	296		398	517	9.7	12.0

Table Displacement (Reference Value)

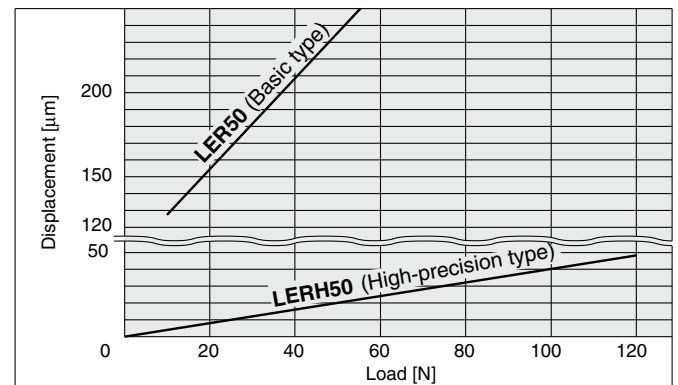
- Displacement at point A when a load is applied to point A 100 mm away from the rotation center.



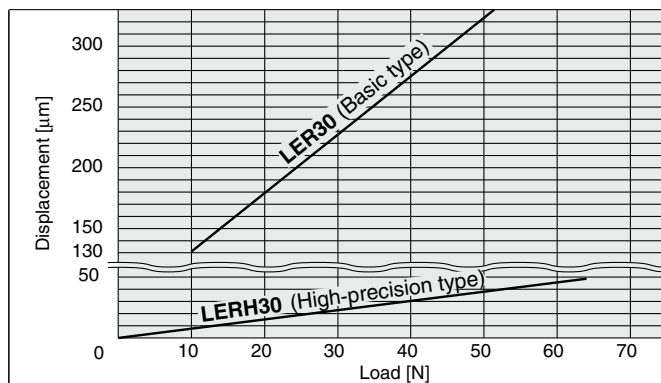
LER□10



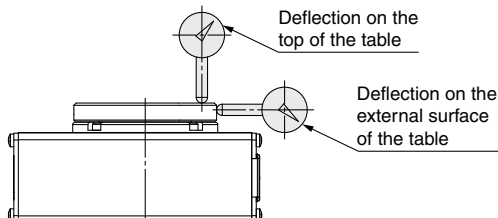
LER□50



LER□30



Deflection Accuracy: Displacement at 180° Rotation (Guide)



Measured part	LER (Basic type)	LERH (High-precision type)
Deflection on the top of the table	0.1	0.03
Deflection on the external surface of the table	0.1	0.03

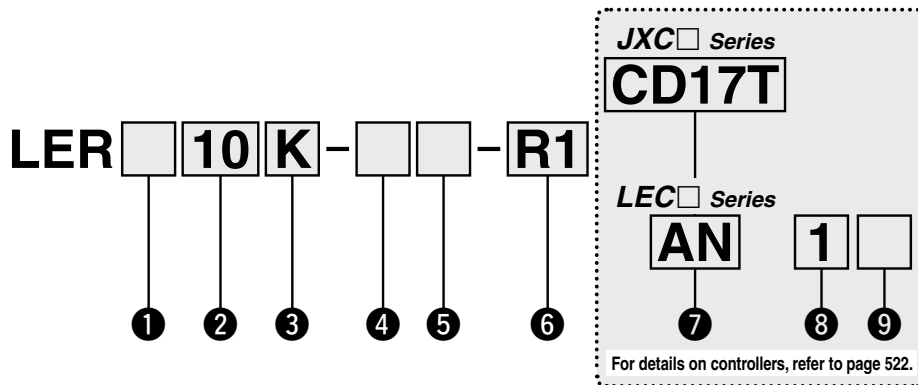
- LAT3
- Motorless
- LECY
- LECS JXC LEC
- LECS LEC -T
- 11-LEJS
- 11-LEFS
- LEY-X5
- LEH
- LER
- LEPY
LEPS
- LES
LESH
- LEY
LEYG
- LEM
- LEL
- LEJS
LEJB
- LEFS
LEFB

Electric Rotary Table

LER Series LER10, 30, 50



How to Order



1 Table accuracy

Nil	Basic type
H	High-precision type

2 Size

10
30
50

3 Max. rotating torque [N·m]

Symbol	Type	LER10	LER30	LER50
K	High torque	0.32	1.2	10
J	Basic	0.22	0.8	6.6

4 Rotation angle [°]

Symbol	LER10	LER30	LER50
Nil	310	320	
2	External stopper: 180		
3	External stopper: 90		

5 Motor cable entry

Nil	Basic type (entry on the right side)	
L	Entry on the left side	

6 Actuator cable type/length*2

Standard cable [m]		Robotic cable [m]			
Nil	None	R1	1.5	RA	10*1
S1	1.5	R3	3	RB	15*1
S3	3	R5	5	RC	20*1
S5	5	R8	8*1		

JXC Series (For details, refer to page 523.)

7 Controller

Nil	Without controller
C□1□□	With controller

C D 1 7 T

Interface (Communication protocol/Input/Output)

Symbol	Type	Number of axes, Special specification	
		Standard	With STO sub-function
5	Parallel input (NPN)	●	
6	Parallel input (PNP)	●	
E	EtherCAT	●	●
9	EtherNet/IP™	●	●
P	PROFINET	●	●
D	DeviceNet®	●	
L	IO-Link	●	●
M	CC-Link	●	

Mounting

7	Screw mounting
8*7	DIN rail

Number of axes, Special specification

Symbol	Number of axes	Specification
1	Single axis	Standard
F	Single axis	With STO sub-function

Communication plug connector I/O cable*8

Symbol	Type	Applicable interface
Nil	Without accessory	—
S	Straight type communication plug connector	DeviceNet™ CC-Link Ver1.10
T	T-branch type communication plug connector	DeviceNet™ CC-Link Ver1.10
1	I/O cable (1.5 m)	Parallel input (NPN) Parallel input (PNP)
3	I/O cable (3 m)	
5	I/O cable (5 m)	

LEC Series (For details, refer to page 523.)

A N 1 □

7 8 9

7 Controller/Driver type*3

Nil	Without controller/driver	
1N	LECP1	NPN
1P	(Programless type)	PNP
AN	LECPA*4	NPN
AP	(Pulse input type)	PNP

8 I/O cable length*5

Nil	Without cable (Without communication plug connector)
1	1.5 m
3	3 m*6
5	5 m*6

9 Controller/Driver mounting

Nil	Screw mounting
D	DIN rail*7

- *1 Produced upon receipt of order (Robotic cable only)
- *2 The standard cable should only be used on fixed parts.
For use on moving parts, select the robotic cable.
Refer to page 758 if only the actuator cable is required.
- *3 For details on controllers/drivers and compatible motors, refer to the compatible controllers/drivers on the next page.
- *4 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 736 separately.
- *5 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 724 (For LECP1), or page 736 (For LECPA) if I/O cable is required.

- *6 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector
- *7 The DIN rail is not included. It must be ordered separately.
- *8 Select "Nil" for anything other than DeviceNet™, CC-Link, or parallel input. Select "Nil," "S," or "T" for DeviceNet™ or CC-Link. Select "Nil," "1," "3," or "5" for parallel input.

⚠ Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LER series and the controller LEC/JXC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

[UL-compliant products (For the LEC series)]

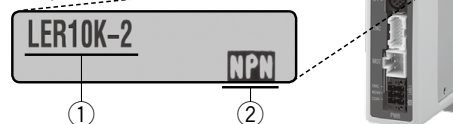
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

- ① Check the actuator label for the model number. This number should match that of the controller/driver.
- ② Check that the Parallel I/O configuration matches (NPN or PNP).






* Refer to the Operation Manual for using the products. Please download it via our website: <https://www.smcworld.com>











LEFS
LEJB
LEL
LEM
LEYG
LESH
LEPS
LER
LEH
LEY-X5
11-LEFS
11-LEJS
25A-
LEC
JXC
LECS
LECS-T
LECY
Motorless
LAT3

LER Series

Step Motor (Servo/24 VDC)

Compatible Controllers/Drivers

Type	Step data input type	Programless type	Pulse input type
			
Series	JXC51 JXC61	LECP1	LECPA
Features	Parallel I/O	Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)		
Max. number of step data	64 points	14 points	—
Power supply voltage	24 VDC		
Reference page	706-1	719	731

Type	EtherCAT direct input type	EtherCAT direct input type with STO sub-function	EtherNet/IP™ direct input type	EtherNet/IP™ direct input type with STO sub-function	PROFINET direct input type	PROFINET direct input type with STO sub-function	DeviceNet® direct input type	IO-Link direct input type	IO-Link direct input type with STO sub-function	CC-Link direct input type
										
Series	JXCE1	JXCEF	JXC91	JXC9F	JXCP1	JXCPF	JXCD1	JXCL1	JXCLF	JXCM1
Features	EtherCAT direct input	EtherCAT direct input with STO sub-function	EtherNet/IP™ direct input	EtherNet/IP™ direct input with STO sub-function	PROFINET direct input	PROFINET direct input with STO sub-function	DeviceNet® direct input	IO-Link direct input	IO-Link direct input with STO sub-function	CC-Link direct input
Compatible motor	Step motor (Servo/24 VDC)									
Max. number of step data	64 points									
Power supply voltage	24 VDC									
Reference page	741									

Specifications

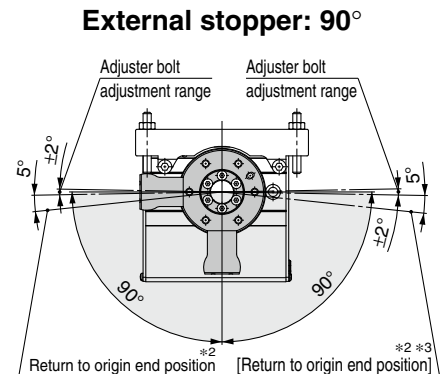
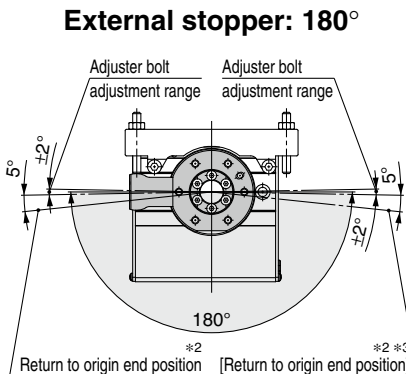
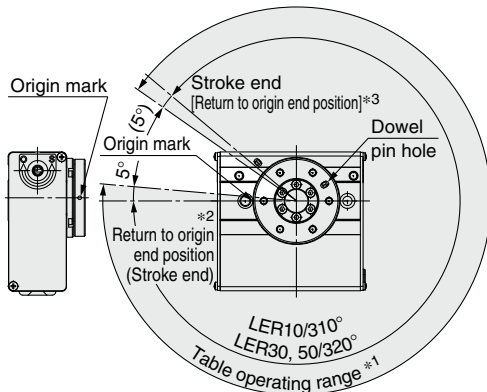


Step Motor (Servo/24 VDC)

Model		LER□10K	LER□10J	LER□30K	LER□30J	LER□50K	LER□50J	
Actuator specifications	Rotation angle [°]	310			320			
	Lead [°]	8	12	8	12	7.5	12	
	Max. rotating torque [N·m]	0.32	0.22	1.2	0.8	10	6.6	
	Max. pushing torque 40 to 50% [N·m]*1 *3	0.13 to 0.16	0.09 to 0.11	0.48 to 0.60	0.32 to 0.40	4.0 to 5.0	2.6 to 3.3	
	Max. moment of inertia [kg·m ²]*2 *3	JXC□1 LECP1	0.0040	0.0018	0.035	0.015	0.13	0.05
		LECPA JXC□ ₂ ₃			0.027	0.012	0.10	0.04
	Angular speed [°/sec]*2 *3	20 to 280	30 to 420	20 to 280	30 to 420	20 to 280	30 to 420	
	Pushing speed [°/sec]	20	30	20	30	20	30	
	Max. angular acceleration/deceleration [°/sec ²]	3000						
	Backlash [°]	Basic type	±0.3			±0.2		
High-precision type					±0.1			
Positioning repeatability [°]	Basic type	±0.05			±0.05			
	High-precision type				±0.03			
Lost motion [°]*4	Basic type	0.3 or less			0.3 or less			
	High-precision type				0.2 or less			
Impact/Vibration resistance [m/s ²]*5	150/30							
Actuation type	Special worm gear + Belt drive							
Max. operating frequency [c.p.m]	60							
Operating temp. range [°C]	5 to 40							
Operating humidity range [%RH]	90 or less (No condensation)							
Weight [kg]	Basic type	0.49		1.1		2.2		
	High-precision type	0.52		1.2		2.4		
External stopper type	Rotation angle [°]	-2/ arm (1 pc.)	180					
		-3/ arm (2 pcs.)	90					
	Repeatability at the end [°]/ with external stopper	±0.01						
	External stopper setting range [°]	±2						
Weight [kg]	-2/external arm (1 pc.)	Basic type	0.55		1.2		2.5	
		High-precision type	0.61		1.4		2.7	
	-3/external arm (1 pc.)	Basic type	0.57		1.2		2.6	
High-precision type	0.63		1.4		2.8			
Motor size	□20		□28		□42			
Motor type	Step motor (Servo/24 VDC)							
Encoder	Incremental							
Power supply voltage [V]	24 VDC ±10%							
Power [W]*6	Max. power 14		Max. power 42		Max. power 57			

- *1 Pushing force accuracy is LER10: ±30% (F.S.), LER30: ±25% (F.S.), LER50: ±20% (F.S.).
- *2 The angular acceleration, angular deceleration and angular speed may fluctuate due to variations in the moment of inertia. Refer to the "Moment of Inertia—Angular Acceleration/Deceleration, Effective Torque—Angular Speed" graphs on pages 517 and 518 for confirmation.
- *3 The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
- *4 A reference value for correcting an error in reciprocal operation
- *5 Impact resistance: No malfunction occurred when the slide table was tested with a drop tester in both an axial direction and a 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. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
- *6 Indicates the max. power during operation (including the controller)
This value can be used for the selection of the power supply.

Table Rotation Angle Range



- *1 This is the range within which the table can move when it returns to origin.
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
- *2 Position after returning to origin. The position varies depending on whether there is an external stopper.
- *3 [] for when the direction of return to origin has changed

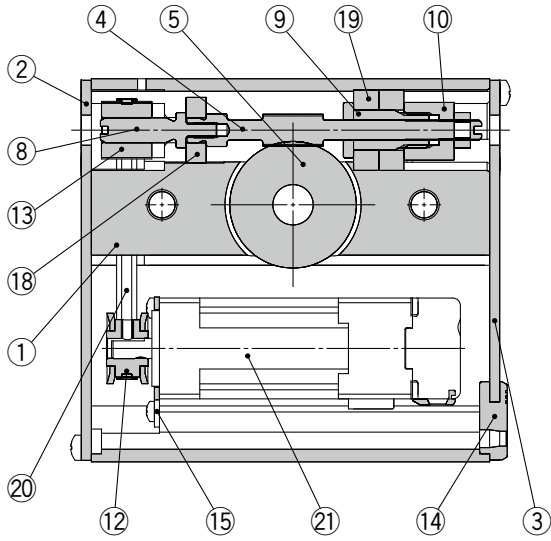
* The figures show the origin position for each actuator.

LEFS
LEFB
LEJS
LEJB
LEL
LEM
LEY
LEYG
LES
LESH
LEPY
LEPS
LER
LEH
LEY-X5
11-LEFS
11-LEJS
25A-
LEC
JXC
LECS
LECS-T
LECY
Motorless
LAT3

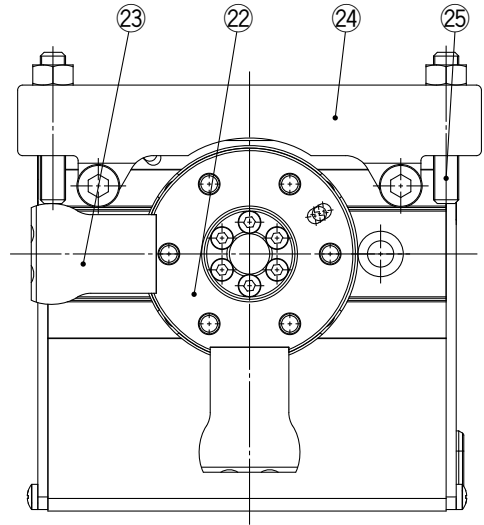
LER Series

Step Motor (Servo/24 VDC)

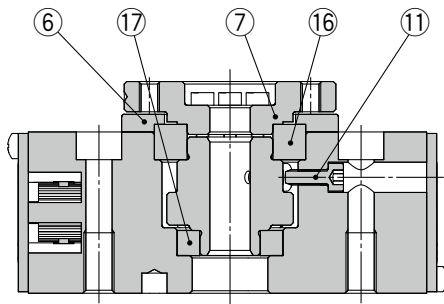
Construction



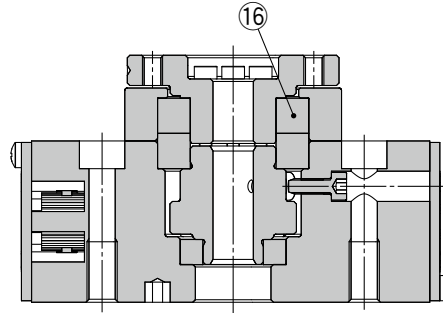
External stopper type



Basic type



High-precision type



Component Parts

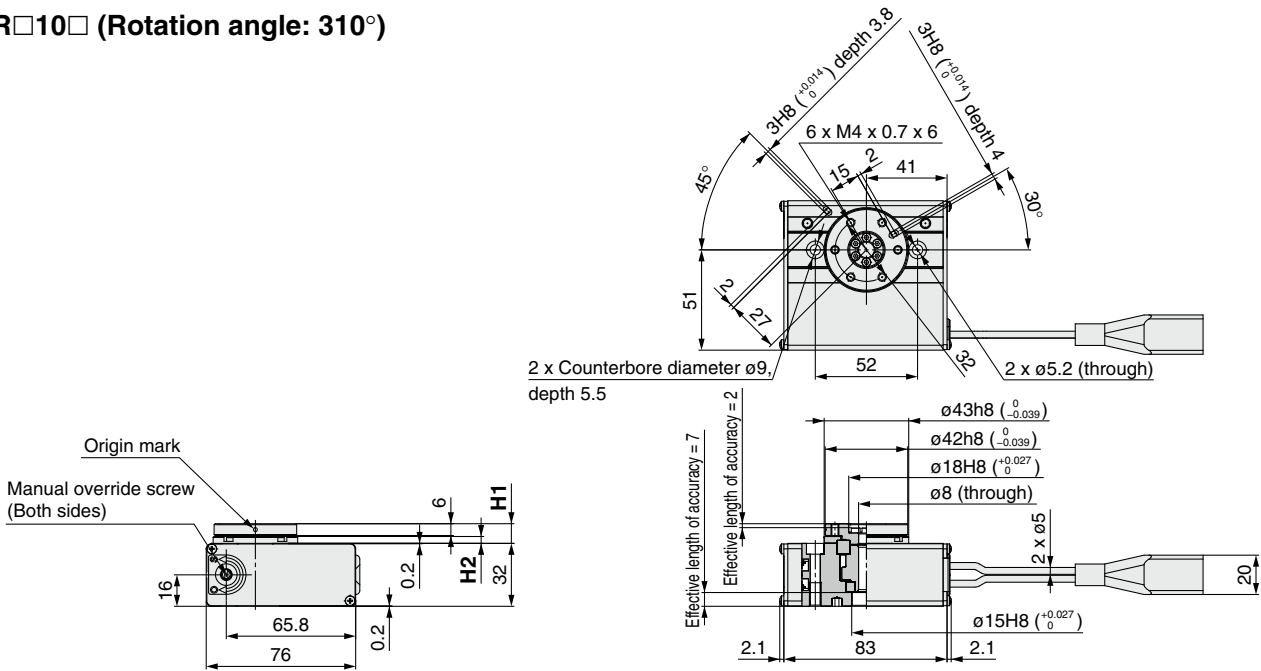
No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Side plate A	Aluminum alloy	Anodized
3	Side plate B	Aluminum alloy	Anodized
4	Worm screw	Stainless steel	Heat treatment + Special treatment
5	Worm wheel	Stainless steel	Heat treatment + Special treatment
6	Bearing cover	Aluminum alloy	Anodized
7	Table	Aluminum alloy	
8	Joint	Stainless steel	
9	Bearing holder	Alloy steel	
10	Bearing stopper	Alloy steel	
11	Origin bolt	Carbon steel	
12	Pulley A	Aluminum alloy	
13	Pulley B	Aluminum alloy	
14	Grommet	NBR	
15	Motor plate	Carbon steel	
16	Basic type High-precision type	Deep groove ball bearing Special ball bearing	—
17	Deep groove ball bearing	—	
18	Deep groove ball bearing	—	
19	Deep groove ball bearing	—	
20	Belt	—	
21	Step motor (Servo/24 VDC)	—	

Component Parts

No.	Description	Material	Note
22	Table	Aluminum alloy	Anodized
23	Arm	Carbon steel	Heat treatment + Electroless nickel treated
24	Holder	Aluminum alloy	Anodized
25	Adjuster bolt	Carbon steel	Heat treatment + Chromating

Dimensions

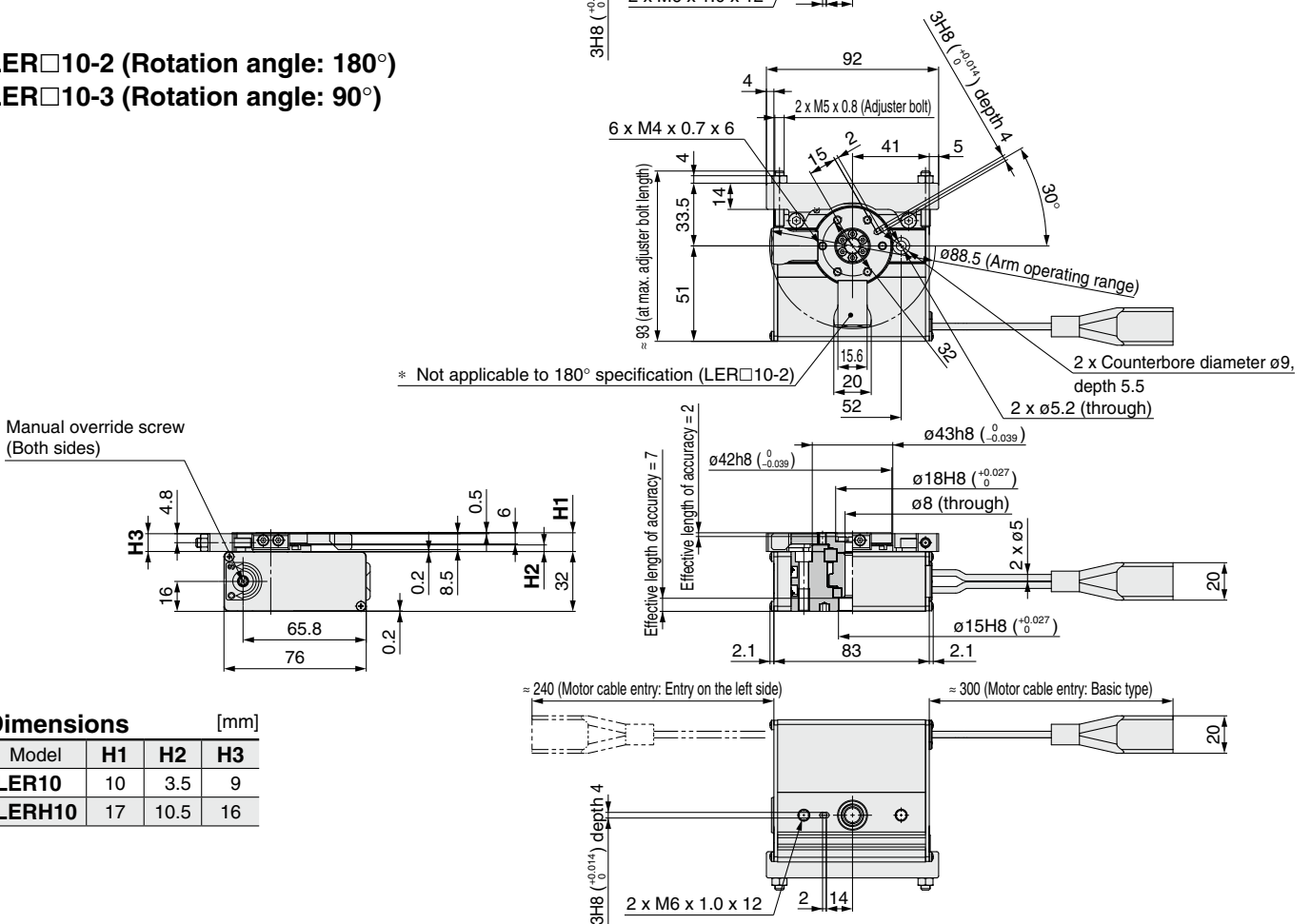
LER□10□ (Rotation angle: 310°)



Dimensions [mm]

Model	H1	H2
LER10	10	3.5
LERH10	17	10.5

LER□10-2 (Rotation angle: 180°) LER□10-3 (Rotation angle: 90°)



Dimensions [mm]

Model	H1	H2	H3
LER10	10	3.5	9
LERH10	17	10.5	16

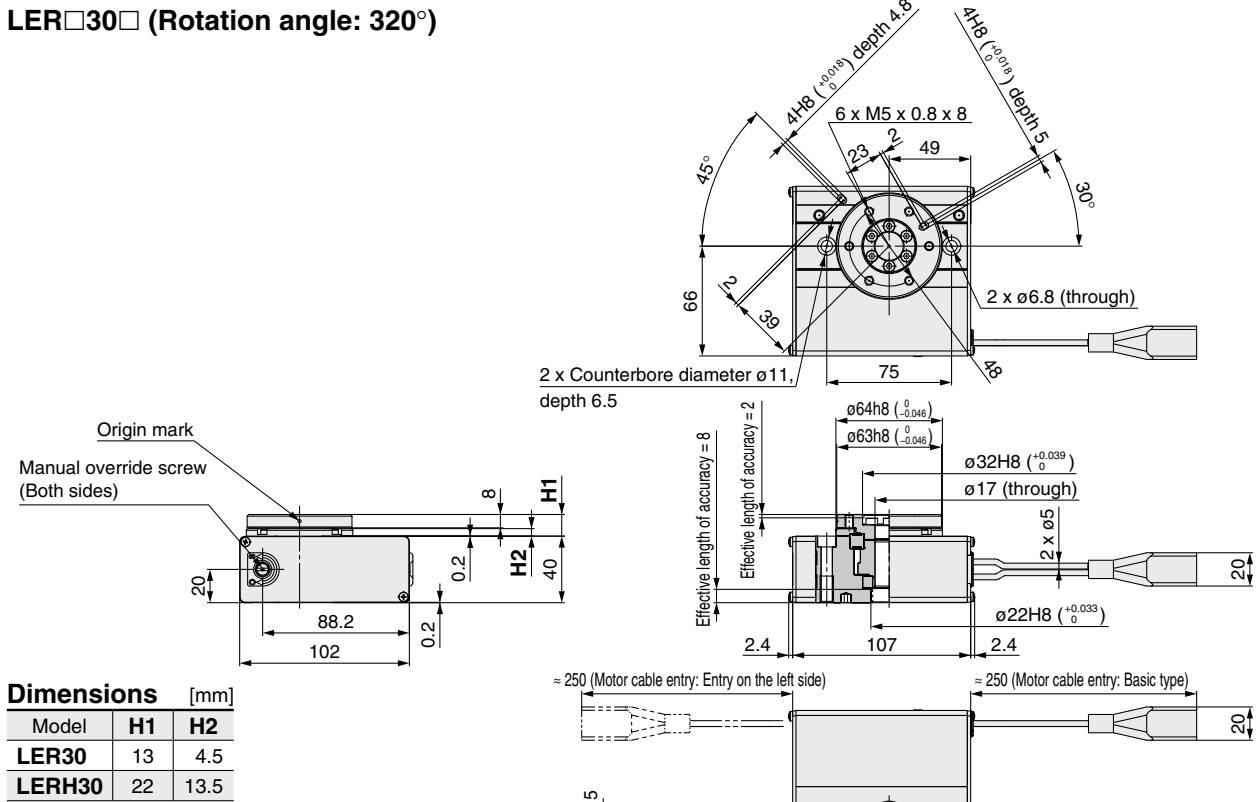
- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- JXC□
- LECS□
- LECS□-T
- LECY□
- Motorless
- LAT3

LER Series

Step Motor (Servo/24 VDC)

Dimensions

LER□30□ (Rotation angle: 320°)

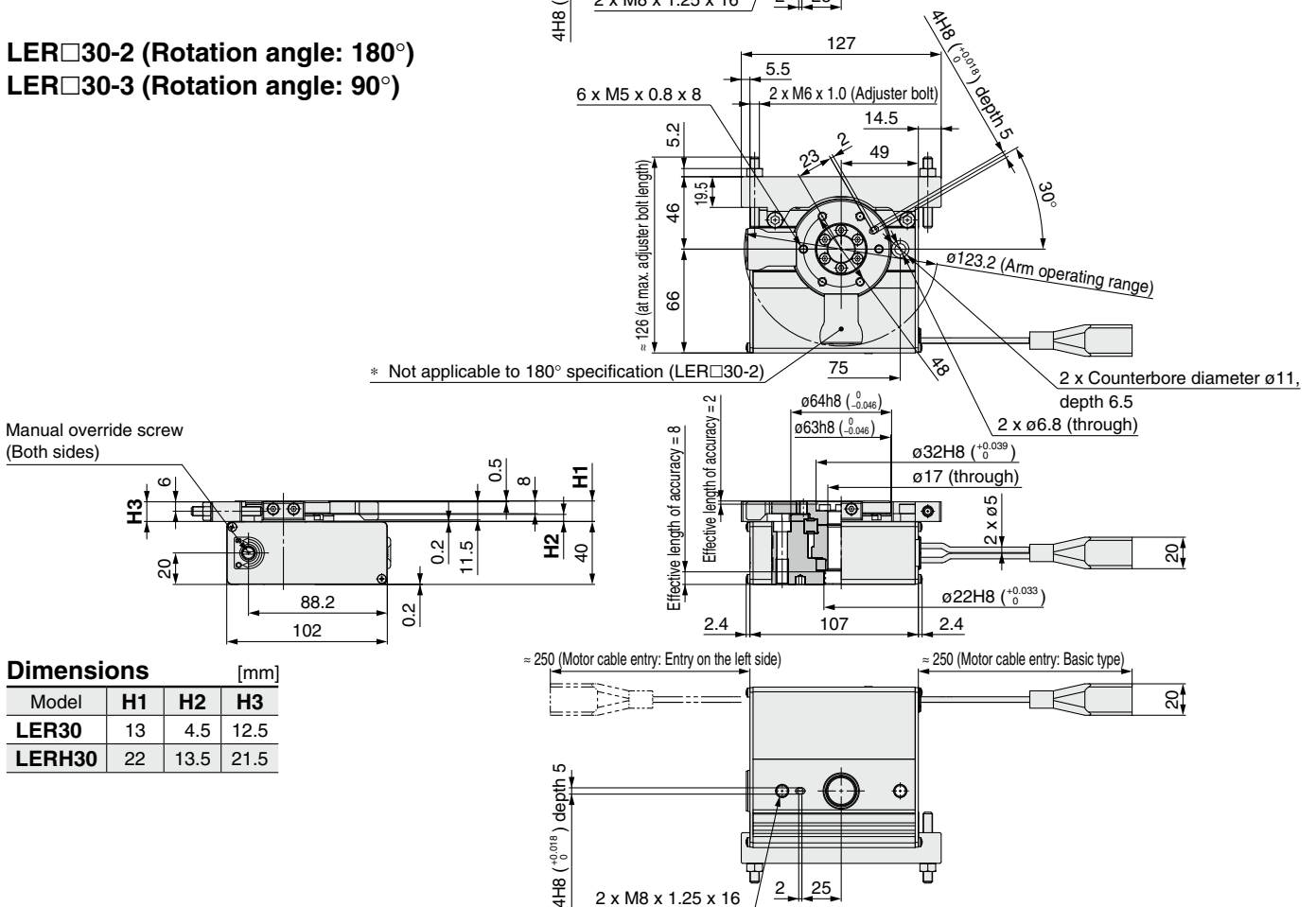


Dimensions [mm]

Model	H1	H2
LER30	13	4.5
LERH30	22	13.5

LER□30-2 (Rotation angle: 180°)

LER□30-3 (Rotation angle: 90°)

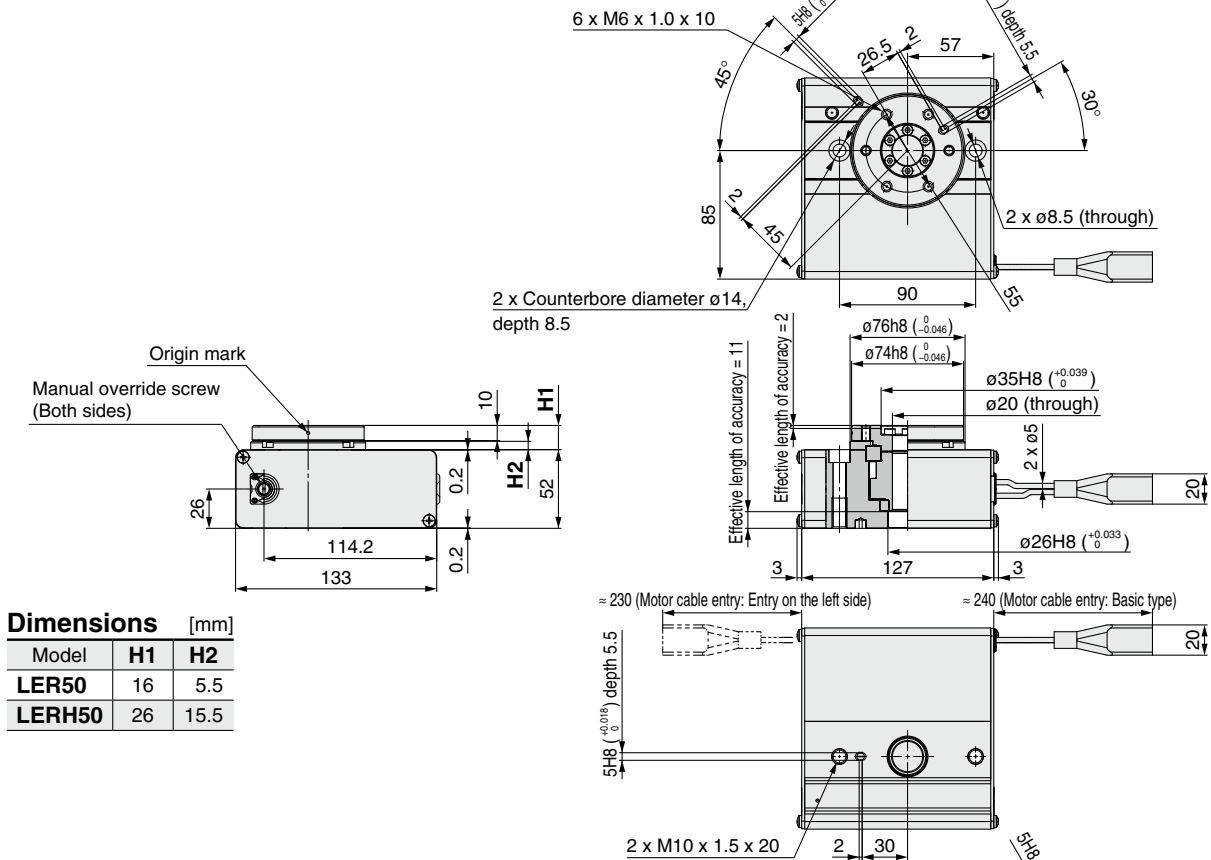


Dimensions [mm]

Model	H1	H2	H3
LER30	13	4.5	12.5
LERH30	22	13.5	21.5

Dimensions

LER□50□ (Rotation angle: 320°)

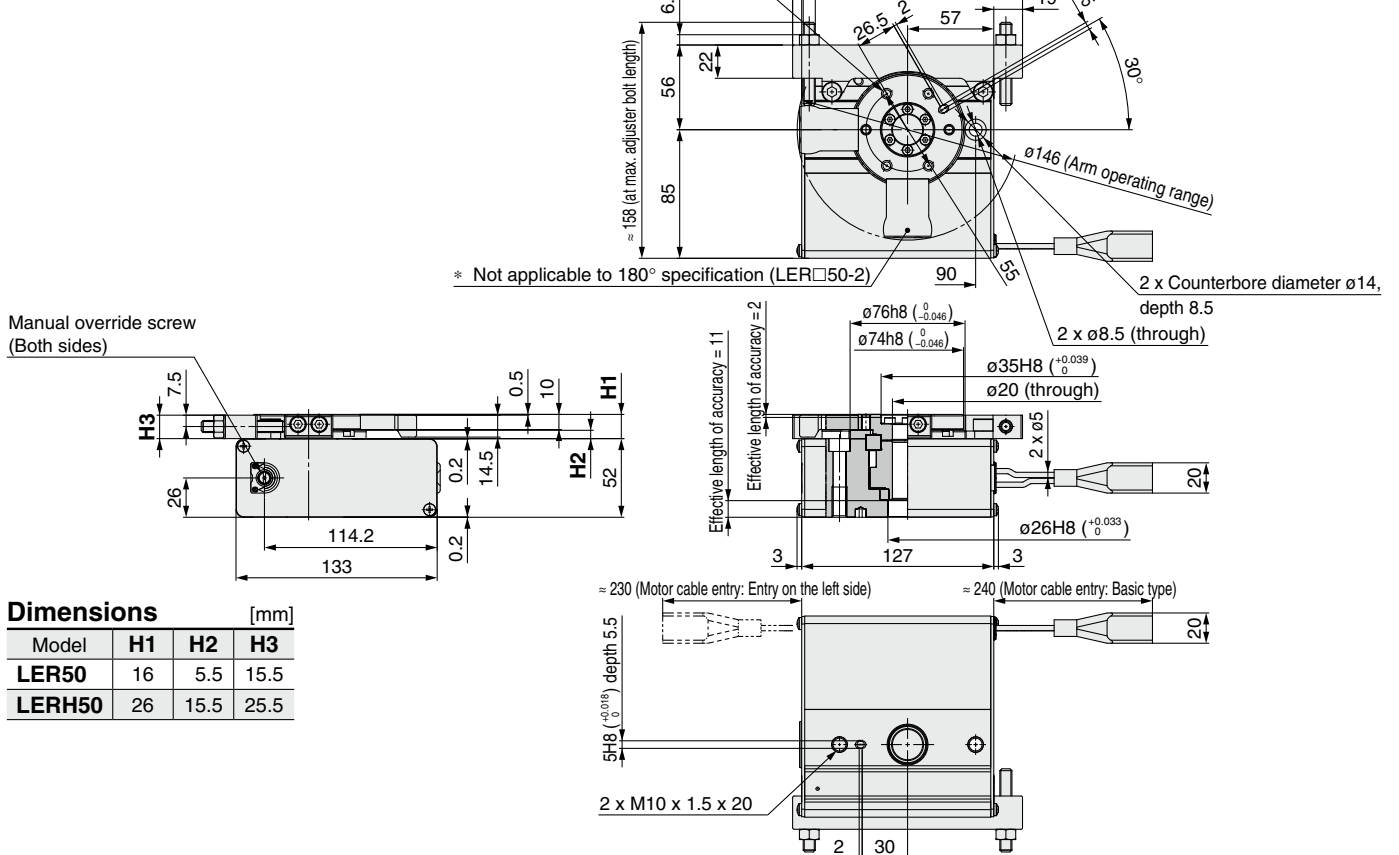


Dimensions [mm]

Model	H1	H2
LER50	16	5.5
LERH50	26	15.5

LER□50-2 (Rotation angle: 180°)

LER□50-3 (Rotation angle: 90°)



Dimensions [mm]

Model	H1	H2	H3
LER50	16	5.5	15.5
LERH50	26	15.5	25.5

* Not applicable to 180° specification (LER□50-2)

- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- JXC□
- LECS□
- LECS□-T
- LECY□
- Motorless
- LAT3

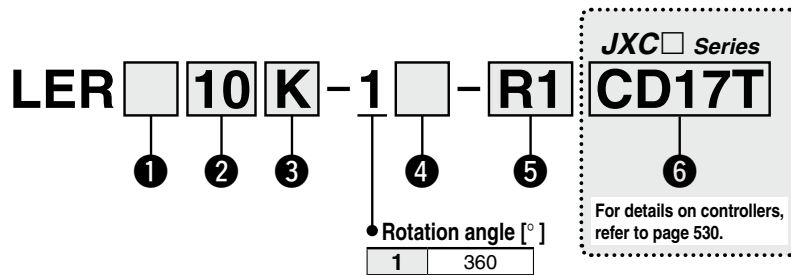
Continuous Rotation Specification

Electric Rotary Table

LER Series LER10, 30, 50



How to Order



① Table accuracy

Nil	Basic type
H	High-precision type

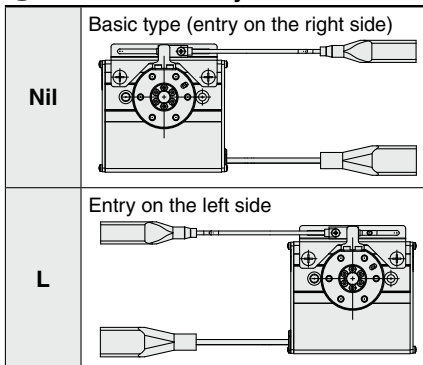
② Size

10
30
50

③ Max. rotating torque [N·m]

Symbol	Type	LER10	LER30	LER50
K	High torque	0.32	1.2	10
J	Basic	0.22	0.8	6.6

④ Motor cable entry



⑤ Actuator cable type/length*2

Standard cable [m]		Robotic cable [m]			
Nil	None	R1	1.5	RA	10*1
S1	1.5	R3	3	RB	15*1
S3	3	R5	5	RC	20*1
S5	5	R8	8*1		

JXC Series (For details, refer to page 531.)

6 Controller

Nil	Without controller
C□1□□	With controller

C D 1 7 T

Interface (Communication protocol/Input/Output)

Symbol	Type	Number of axes, Special specification	
		Standard	With STO sub-function
5	Parallel input (NPN)	●	
6	Parallel input (PNP)	●	
E	EtherCAT	●	●
9	EtherNet/IP™	●	●
P	PROFINET	●	●
D	DeviceNet®	●	
L	IO-Link	●	●
M	CC-Link	●	

Mounting

7	Screw mounting
8*3	DIN rail

Number of axes, Special specification

Symbol	Number of axes	Specification
1	Single axis	Standard
F	Single axis	With STO sub-function

Communication plug connector I/O cable*4

Symbol	Type	Applicable interface
Nil	Without accessory	—
S	Straight type communication plug connector	DeviceNet™ CC-Link Ver1.10
T	T-branch type communication plug connector	DeviceNet™ CC-Link Ver1.10
1	I/O cable (1.5 m)	Parallel input (NPN) Parallel input (PNP)
3	I/O cable (3 m)	
5	I/O cable (5 m)	

- *1 Produced upon receipt of order (Robotic cable only)
- *2 The standard cable should only be used on fixed parts.
For use on moving parts, select the robotic cable.
Refer to page 758 if only the actuator cable is required.
- *3 The DIN rail is not included. It must be ordered separately.

- *4 Select "Nil" for anything other than DeviceNet™, CC-Link, or parallel input.
Select "Nil," "S," or "T" for DeviceNet™ or CC-Link.
Select "Nil," "1," "3," or "5" for parallel input.

⚠ Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LER series and the controller LEC/JXC series.

The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

[UL-compliant products (For the LEC series)]

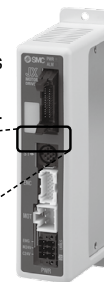
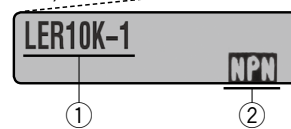
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

- ① Check the actuator label for the model number. This number should match that of the controller/driver.
- ② Check that the Parallel I/O configuration matches (NPN or PNP).




* Refer to the Operation Manual for using the products. Please download it via our website: <https://www.smcworld.com>











- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEJ
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- JXC□
- LECS□
- LECS□-T
- LECY□
- Motorless
- LAT3

LER Series

Step Motor (Servo/24 VDC)

Compatible Controllers

Type	<p>Step data input type</p> 
Series	<p>JXC51 JXC61</p>
Features	<p>Parallel I/O</p>
Compatible motor	<p>Step motor (Servo/24 VDC)</p>
Max. number of step data	<p>64 points</p>
Power supply voltage	<p>24 VDC</p>
Reference page	<p>706-1</p>

Type	EtherCAT direct input type	EtherCAT direct input type with STO sub-function	EtherNet/IP™ direct input type	EtherNet/IP™ direct input type with STO sub-function	PROFINET direct input type	PROFINET direct input type with STO sub-function	DeviceNet® direct input type	IO-Link direct input type	IO-Link direct input type with STO sub-function	CC-Link direct input type
										
Series	JXCE1	JXCEF	JXC91	JXC9F	JXCP1	JXCPF	JXCD1	JXCL1	JXCLF	JXCM1
Features	EtherCAT direct input	EtherCAT direct input with STO sub-function	EtherNet/IP™ direct input	EtherNet/IP™ direct input with STO sub-function	PROFINET direct input	PROFINET direct input with STO sub-function	DeviceNet® direct input	IO-Link direct input	IO-Link direct input with STO sub-function	CC-Link direct input
Compatible motor	Step motor (Servo/24 VDC)									
Max. number of step data	64 points									
Power supply voltage	24 VDC									
Reference page	741									

Specifications

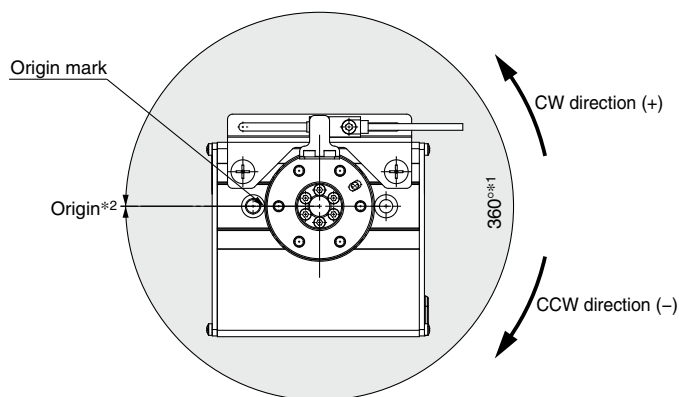


Step Motor (Servo/24 VDC)

Model		LER□10K	LER□10J	LER□30K	LER□30J	LER□50K	LER□50J
Rotation angle [°]		360					
Angle setting range [°]*7		±20000000					
Max. rotating torque [N·m]		0.32	0.22	1.2	0.8	10	6.6
Max. pushing torque 40 to 50 % [N·m]*1 *3		0.13 to 0.16	0.09 to 0.11	0.48 to 0.60	0.32 to 0.40	4.0 to 5.0	2.6 to 3.3
Max. moment of inertia [kg·m ²]*2 *3		0.0040	0.0018	0.035	0.015	0.13	0.05
Angular speed [°/sec]*2 *3		20 to 280	30 to 420	20 to 280	30 to 420	20 to 280	30 to 420
Pushing speed [°/sec]		20	30	20	30	20	30
Max. angular acceleration/deceleration [°/sec ²]*2		3000					
Actuator specifications	Backlash [°]	Basic type	±0.3		±0.2		
		High-precision type			±0.1		
	Positioning repeatability [°]	Basic type	±0.05		±0.05		
		High-precision type			±0.03		
	Lost motion [°]*4	Basic type	0.3 or less		0.3 or less		
		High-precision type			0.2 or less		
Impact/Vibration resistance [m/s ²]*5		150/30					
Actuation type		Special worm gear + Belt drive					
Max. operating frequency [c.p.m]		60					
Operating temperature range [°C]		5 to 40					
Operating humidity range [%RH]		90 or less (No condensation)					
Weight [kg]	Basic type	0.51		1.2		2.3	
	High-precision type	0.55		1.3		2.5	
Motor size		□20		□28		□42	
Motor type		Step motor (Servo/24 VDC)					
Encoder		Incremental					
Proximity sensor (for return to origin)/Input circuit		2-wire					
Proximity sensor (for return to origin)/Input point		1 input					
Power supply voltage [V]		24 VDC ±10%					
Power*6		Max. power 14		Max. power 42		Max. power 57	

- *1 Pushing force accuracy is LER10: ±30% (F.S.), LER30: ±25% (F.S.), LER50: ±20% (F.S.).
- *2 The angular acceleration, angular deceleration and angular speed may fluctuate due to variations in the moment of inertia. Refer to the "Moment of Inertia—Angular Acceleration/Deceleration, Effective Torque—Angular Speed" graphs on pages 517 and 518 for confirmation.
- *3 The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
- *4 A reference value for correcting an error in reciprocal operation
- *5 Impact resistance: No malfunction occurred when the slide table was tested with a drop tester in both an axial direction and a 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. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
- *6 Indicates the max. power during operation (including the controller)
This value can be used for the selection of the power supply.
- *7 The angle displayed on the monitor is automatically reset to 0° every 360°.
To set an angle (position), use the "Relative" movement mode.
If an angle of 360° or more is set using the "Absolute" movement mode, the correct operation cannot be performed.

Table Rotation Angle Range



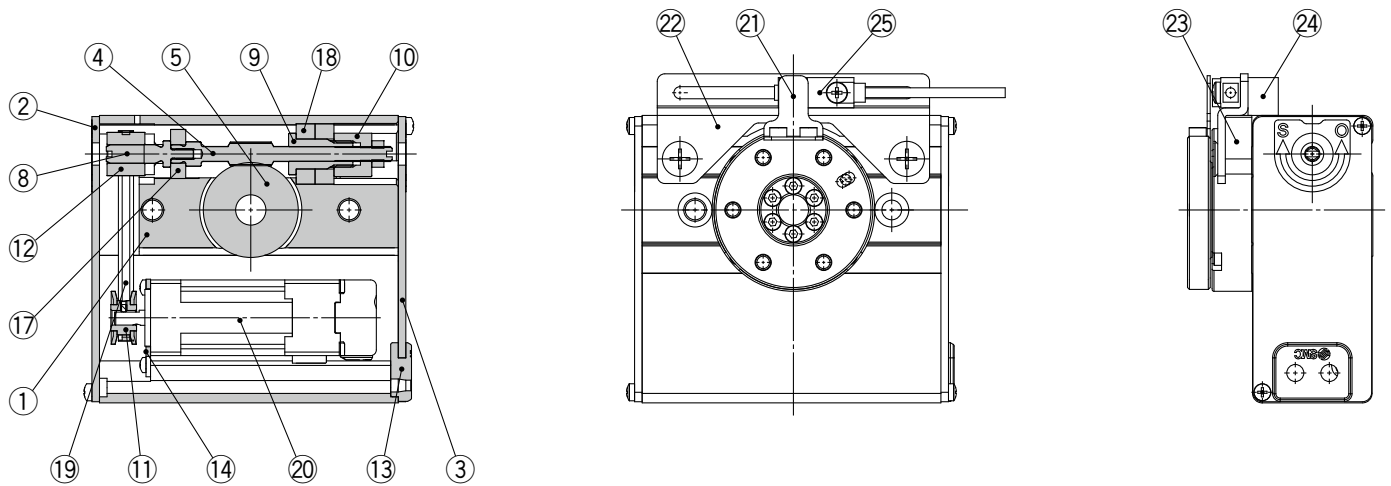
- *1 This is the range within which the table can move.
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
- *2 The sensor detection range is recognized as origin. When detecting the sensor, the table rotates in the reverse direction within the sensor detection range.

LEFS
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LEYG
LES
LESH
LEPY
LEPS
LER
LEH
LEY-X5
11-LEFS
11-LEJS
25A-
LEC□
JXC□
LECS□
LECS□-T
LECY□
Motorless
LAT3

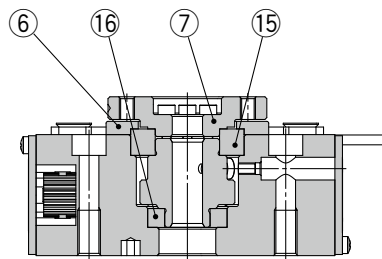
LER Series

Step Motor (Servo/24 VDC)

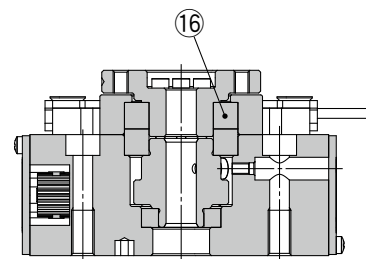
Construction



Basic type



High-precision type



Component Parts

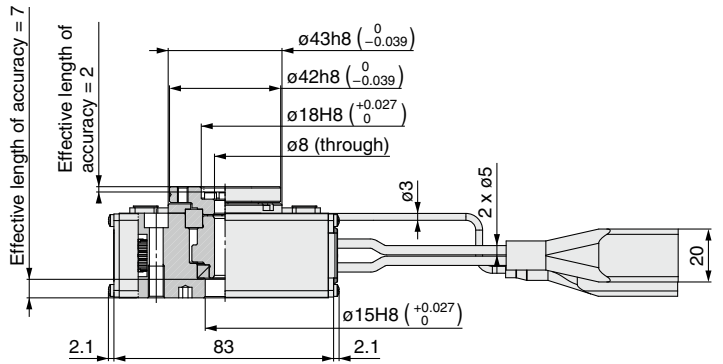
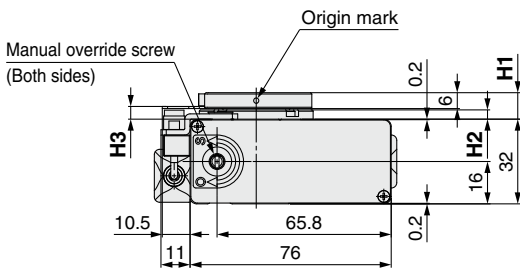
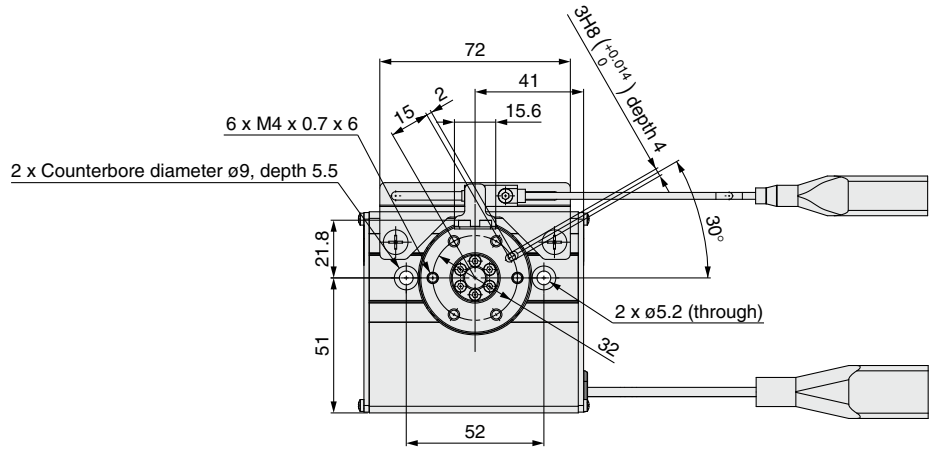
No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Side plate A	Aluminum alloy	Anodized
3	Side plate B	Aluminum alloy	Anodized
4	Worm screw	Stainless steel	Heat treatment + Special treatment
5	Worm wheel	Stainless steel	Heat treatment + Special treatment
6	Bearing cover	Aluminum alloy	Anodized
7	Table	Aluminum alloy	
8	Joint	Stainless steel	
9	Bearing holder	Aalloy steel	
10	Bearing stopper	Aalloy steel	
11	Pulley A	Aluminum alloy	
12	Pulley B	Aluminum alloy	
13	Grommet	NBR	
14	Motor plate	Carbon steel	
15	Basic type	Deep groove ball bearing	
	High-precision type	Special ball bearing	
16	Deep groove ball bearing	—	
17	Deep groove ball bearing	—	
18	Deep groove ball bearing	—	
19	Belt	—	
20	Step motor (Servo/24 VDC)	—	

Component Parts (360° type)

No.	Description	Material	Note
21	Proximity dog	Stainless steel	
22	Sensor holder	Carbon steel	Chromating
23	Sensor holder spacer	Aluminum alloy	Anodized (High-precision type can be used only)
24	Square nut	Aluminum alloy	
25	Proximity sensor assembly	—	

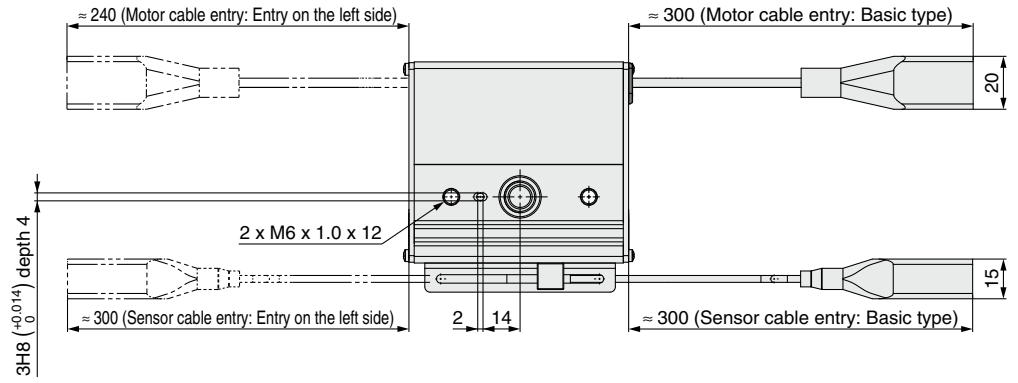
Dimensions

LER□10□



Dimensions [mm]

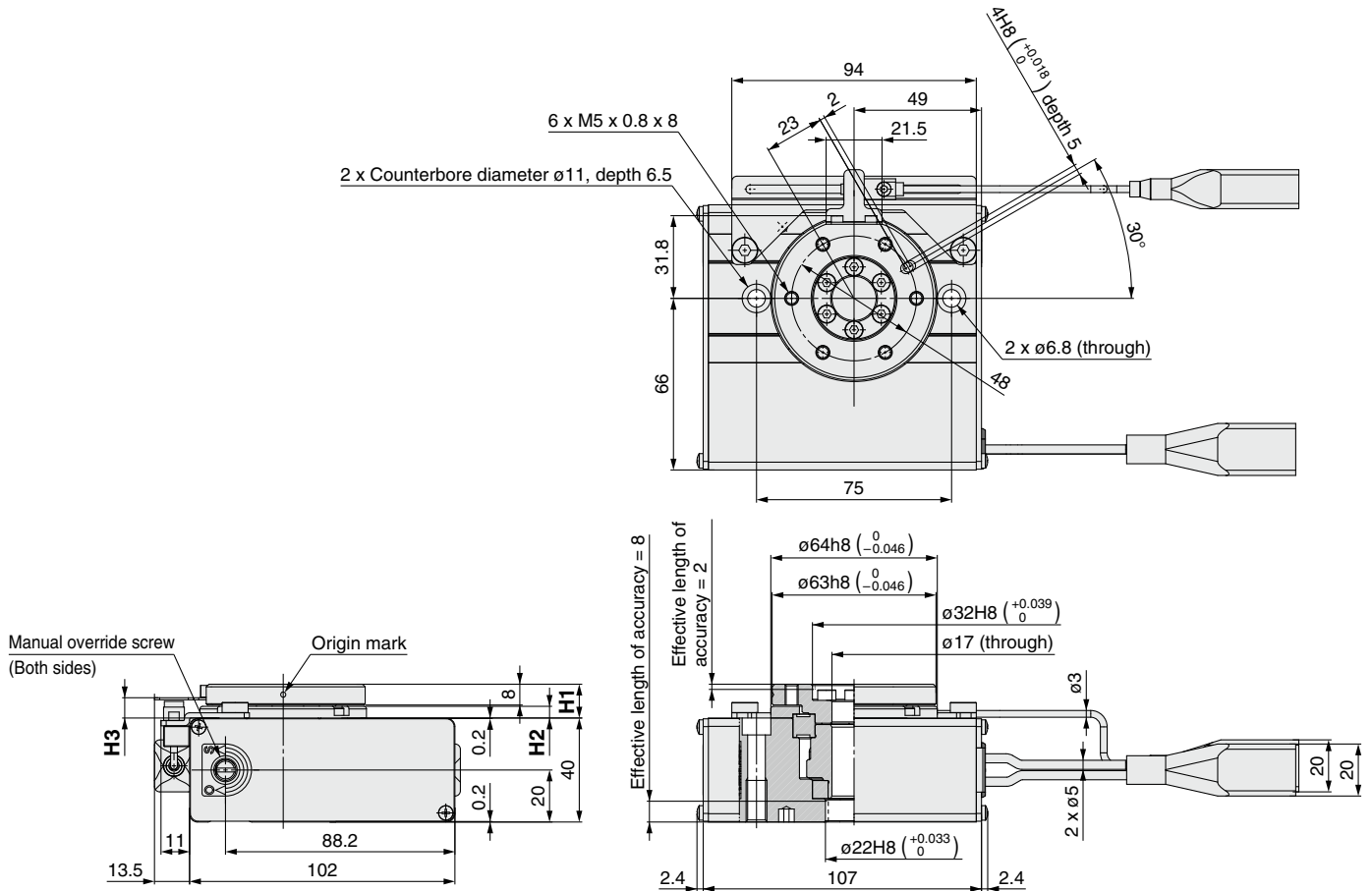
Model	H1	H2	H3
LER10	10	3.5	4.8
LERH10	17	10.5	11.8



- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER**
- LEH
- LEH
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- LEC□
- JXC□
- LECS□
- LECS□-T
- LECY□
- Motorless
- LAT3

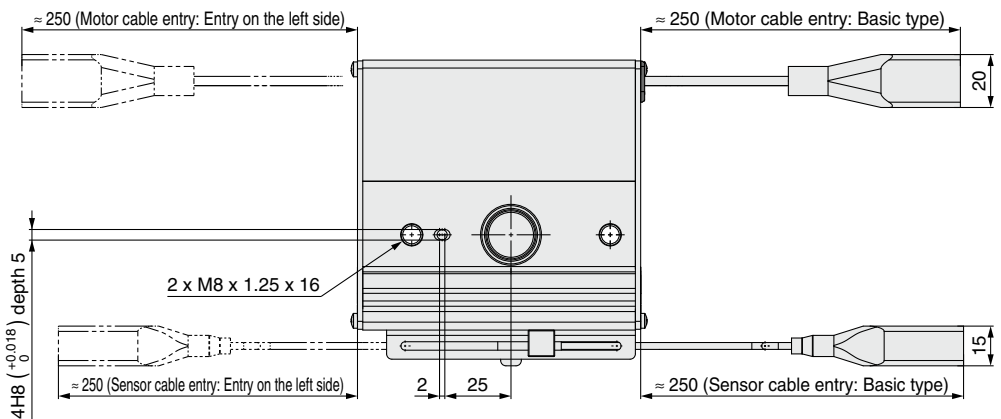
Dimensions

LER□30



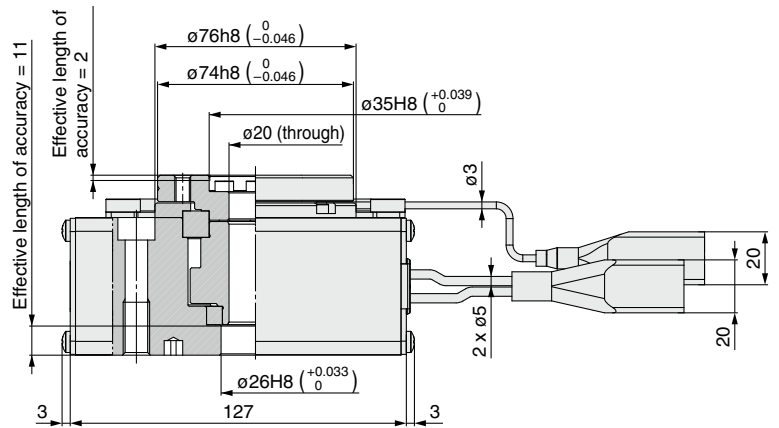
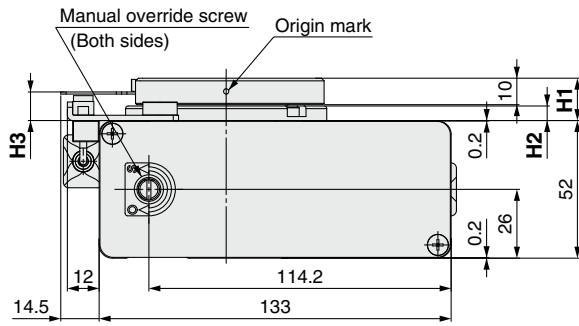
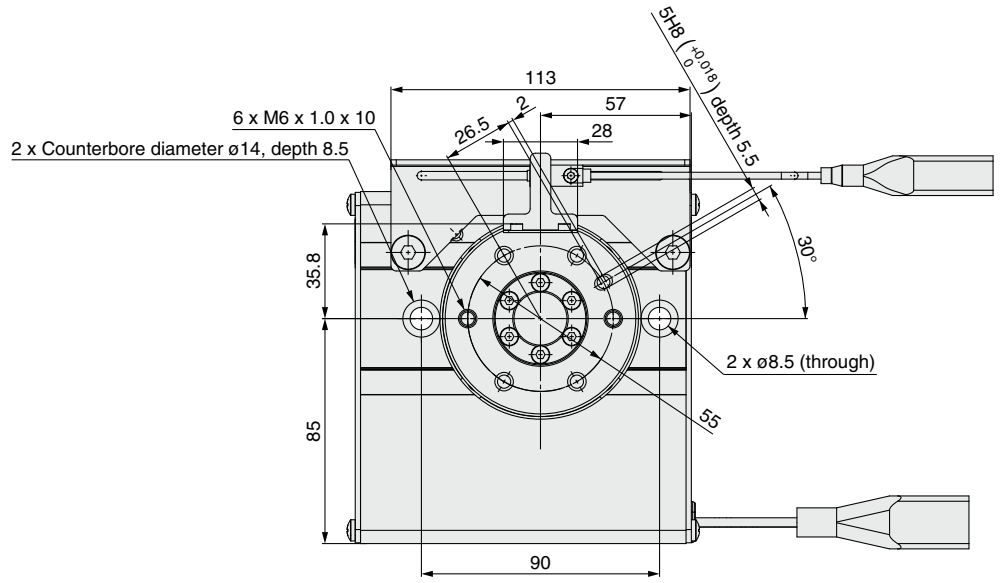
Dimensions [mm]

Model	H1	H2	H3
LER30	13	4.5	7.8
LERH30	22	13.5	16.8



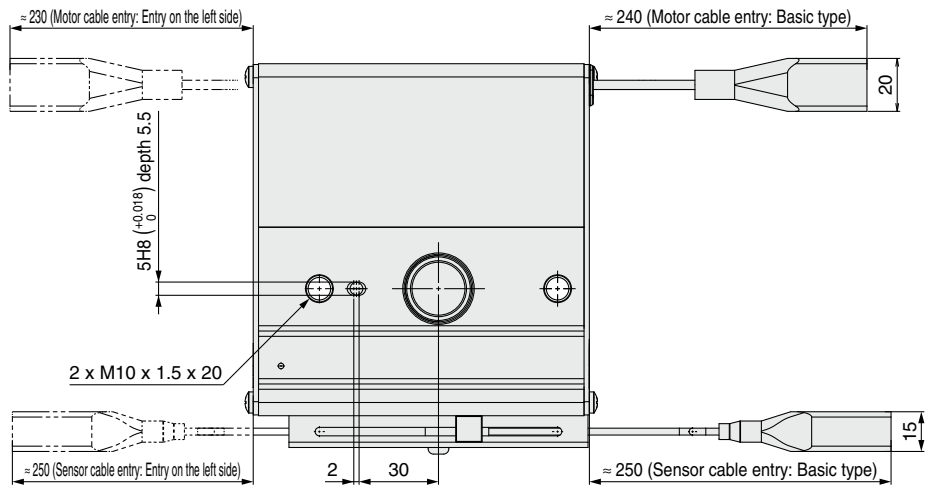
Dimensions

LER□50



Dimensions [mm]

Model	H1	H2	H3
LER50	16	5.5	10.8
LERH50	26	15.5	20.8



- LEFS
- LEFB
- LEJS
- LEJB
- LEL
- LEM
- LEY
- LEYG
- LES
- LESH
- LEPY
- LEPS
- LER
- LEH
- LEH-X5
- LEY-X5
- 11-LEFS
- 11-LEJS
- 25A-
- LEC□
- JXC□
- LECS□
- LECS□-T
- LECY□
- Motorless
- LAT3



LER Series Specific Product Precautions 1

Be sure to read this before handling the products. Refer to page 984 for safety instructions, pages 985 to 990 for electric actuator precautions.

Design / Selection

Warning

1. If the operating conditions involve load fluctuations, ascending/descending movements, or changes in the frictional resistance, ensure that safety measures are in place to prevent injury to the operator or damage to the equipment.
Failure to provide such measures could accelerate the operation speed, which may be hazardous to humans, machinery, and other equipment.
2. Power failure may result in a decrease in the pushing force; ensure that safety measures are in place to prevent injury to the operator or damage to the equipment.
When the product is used for clamping, the clamping force could be decreased due to power failure, potentially creating a hazardous situation in which the workpiece is released.

Caution

1. If the operating speed is set too fast and the moment of inertia is too large, the product could be damaged.
Set appropriate product operating conditions in accordance with the model selection procedure.
2. If more precise repeatability of the rotation angle is required, use the product with an external stopper, with repeatability of $\pm 0.01^\circ$ (180° and 90° with adjustment of $\pm 2^\circ$) or by directly stopping the workpiece using an external object utilizing the pushing operation.
3. When using the electric rotary table with an external stopper, or by directly stopping the load externally, be sure to set to [Pushing operation].
Also, ensure that the workpiece is not impacted externally during the positioning operation or in the range of positioning operation.

Mounting

Warning

1. Do not drop or hit the electric rotary table to avoid scratching and denting the mounting surfaces.
Even a slight deformation can cause the deterioration of accuracy and operation failure.
2. When mounting the load, tighten the mounting screws within the specified torque range.
Tightening the screws with a higher torque than recommended may result in a malfunction, while tightening with a lower torque can result in the displacement of the mounting position.

Mounting the workpiece to the electric rotary table

The load should be mounted with the torque specified in the following table by screwing the screw into the mounting female thread. If long screws are used, they can interfere with the body and cause a malfunction.

Model	Screw size	Thread length [mm]	Max. tightening torque [N·m]
LER□10	M4 x 0.7	6	1.4
LER□30	M5 x 0.8	8	3.0
LER□50	M6 x 1	10	5.0

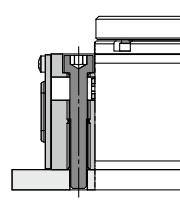
3. When mounting the electric rotary table, tighten the mounting screws within the specified torque range.
Tightening the screws with a higher torque than recommended may result in a malfunction, while tightening with a lower torque can result in the displacement of the mounting position.

Mounting

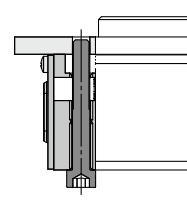
Warning

Through-hole mounting

Body mounting/Bottom



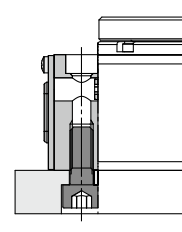
Body mounting/Top



Model	Screw size	Max. tightening torque [N·m]
LER□10	M5 x 0.8	3.0
LER□30	M6 x 1	5.0
LER□50	M8 x 1.25	12.0

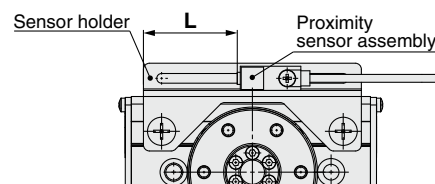
Body tapped mounting

Body mounting/Bottom



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LER□10	M6 x 1	5.0	12
LER□30	M8 x 1.25	12.0	16
LER□50	M10 x 1.5	25.0	20

4. The mounting face has holes and slots for positioning. Use them for accurate positioning of the electric rotary table if required.
5. If it is necessary to operate the electric rotary table when it is not energized, use the manual override screws.
When it is necessary to operate the product by the manual override screws, check the position of the manual override screws of the product, and leave necessary space. Do not apply excessive torque to the manual override screws. This may lead to damage and malfunction.
6. The 360° type proximity sensor for return to origin can be changed $\pm 30^\circ$. When changing the position of the proximity sensor for return to origin, tighten the screws with a tightening torque of 0.6 ± 0.1 [N·m].



Model	L [mm] (Initial setting) Cable entry: Basic type/Entry on the left side (Between the sensor holder end face and proximity sensor end face)
LER□10-1	31/31
LER□30-1	42/42
LER□50-1	51.5/51.5



LER Series Specific Product Precautions 2

Be sure to read this before handling the products. Refer to page 984 for safety instructions, pages 985 to 990 for electric actuator precautions.

Handling

⚠ Caution

1. When an external guide is used, connect it in such a way that no impact or load is applied to it.

Use a free moving connector (such as a coupling).

2. The moving force should be the initial value (100%).

If the moving force is set below the initial value, there may be variation in the cycle time, or an alarm may be generated.

3. INP output signal

1) Positioning operation

When the product comes within the set range of the step data [In position], the INP output signal will turn ON.

Initial value: Set to [0.50] or higher.

2) Pushing operation

When the effective force exceeds the [Trigger LV] value (including force during operation), the INP output signal will turn ON.

The [Trigger LV] should be set between 40% and [Pushing force].

a) To ensure that the clamping and external stop is achieved by [Pushing force], it is recommended that the [Trigger LV] be set to the same value as the [Pushing force].

b) When the [Trigger LV] and the [Pushing force] are set below the specified range, there is the possibility that the INP output signal will turn ON from the pushing start position.

<Pushing force and trigger LV range>

Model	Pushing force set value [%]	Trigger LV set value [%]
LER□	40 to 50	40 to 50

4. When using the electric rotary table with an external stopper, or by directly stopping the load externally, be sure to set to [Pushing operation].

Also, ensure that the workpiece is not impacted externally during the positioning operation or in the range of positioning operation.

If the product is used in the positioning operation mode, there may be galling or other problems when the product/workpiece comes into contact with the external stopper or external object.

5. When the table is stopped by the pushing operation mode (stopping/clamping), set the product to a position of at least 1° away from the workpiece. (This position is referred to as the pushing start position.)

If the pushing start position (stopping or clamping) is set to the same position as the external stop position, the following alarms may be generated and operation may become unstable.

a. "Posn failed"

The product cannot reach the pushing start position within the target time.

b. "Pushing ALM"

The product is pushed back from the pushing start position after starting to push.

c. "Deviation over flow"

Displacement exceeding the specified value is generated at the pushing start position.

6. There is no backlash effect when the product is stopped externally by pushing operation.

For the return to origin, the origin position is set by the pushing operation.

Handling

⚠ Caution

7. For the specification with an external stopper, an angle adjuster bolt is provided as standard.

The rotation angle adjustment range is $\pm 2^\circ$ from the angle rotation end.

If the angle adjustment range is exceeded, the rotation angle may change due to insufficient strength of the external stopper. One revolution of the adjuster bolt is approximately equal to 1° of rotation.

8. In case that gravity is added to the workpiece along the rotation direction when product is mounted vertically, the workpiece may fall down when "SVON" signal is OFF or EMG is not energizing.

9. When mounting the product, secure a bending diameter of 40 mm or longer for the motor cable.

10. The 360° type proximity sensor for return to origin responds when it approaches anything made of metal. For this reason, be sure to keep metal objects other than the proximity dog away from the sensor during return to origin.

Recommended distance: 5 mm or more

Maintenance

⚠ Danger

1. The high-precision type bearing is assembled by pressing into position. It is not possible to disassemble it.

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LEM

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LEYG

LES
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LEPY
LEPS

LER

LEH

LEY-X5

11-LEFS

11-LEJS

25A-

LEC□

JXC□

LECS□
LECS□-T

LECY□

Motorless

LAT3