Continuous Rotation Specification

Electric Rotary Table

**Rotation angle:** 360°

- **Shock-less/High speed actuation**
  Max. speed: 420°/sec (7.33 rad/sec)
  Max. acceleration/deceleration: 3,000°/sec² (52.36 rad/sec²)

- **Positioning repeatability:** ±0.05°
- **Possible to set speed, acceleration/deceleration, and position. Max. 64 points**
- **Energy-saving product**
  Automatic 40% power reduction after the table has stopped.

**Application Examples**

- **Filling process**
  Rotates at intervals of 30°.

- **Inspection**
  Detects products.

- **Transfer**
  Moves products.

- **Discharges rejected products**

- **Discharges accepted products**

**Step Motor (Servo/24 VDC) Controller**

- **Step data input type**
  Series LECP6
  - 64 points positioning
  - Input using controller setting kit or teaching box

**Series LER**

<table>
<thead>
<tr>
<th>Size</th>
<th>Rotating torque [N-m]</th>
<th>Max. speed [°/s]</th>
<th>Positioning repeatability [°]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic</td>
<td>High torque</td>
<td>Basic</td>
</tr>
<tr>
<td>10</td>
<td>0.22</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>0.8</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>6.6</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Transfer**

- Rotation data at intervals of 30°

- Inspection process

- Rotation is stopped automatically after the table has stopped.
Electric Rotary Table
Series LER
Model Selection

Selection Procedure

Operating conditions

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

Angular acceleration/ angular deceleration ω·: 1,000°/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. Calculate the moment of inertia

Formula
\[ I = m \times (a^2 + b^2)/12 + m \times H^2 \]

Selection example
\[ I = 2.0 \times (0.15^2 + 0.08^2)/12 + 2.0 \times 0.04^2 = 0.00802 \text{ kg·m}^2 \]

Step 2
Necessary torque

1. Load type
   - Static load: Ts
   - Resistance load: Tf
   - Inertial load: Ta

2. Check the effective torque

Confirmation whether it is possible to control the speed based on the effective torque corresponding with the angular speed with reference to the (Effective Torque—Angular Speed graph).

Formula
Effective torque \( \geq \) Ts
Effective torque \( \geq \) Tf \( \times \) 1.5
Effective torque \( \geq \) Ta \( \times \) 1.5

Selection example
Inertial load: Ta
\[ Ta \times 1.5 = \frac{\theta}{\omega \cdot} \times \frac{\pi}{360} \times 1.5 \]
\[ = 0.00802 \times 1,000 \times 0.0175 \times 1.5 \]
\[ = 0.21 \text{ N·m} \]

Step 3
Allowable load

1. Check the allowable load
   - Radial load
   - Thrust load
   - Moment

Formula
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
\[ 2.0 \times 9.8 \times 0.04 = 0.784 \text{ N·m} < \text{Allowable moment OK} \]

Step 4
Rotation time

1. Calculate the cycle time (rotation time)

Formula
Angular acceleration time \( T_1 = \frac{\omega}{\omega \cdot 1} \)
Angular deceleration time \( T_3 = \frac{\omega}{\omega \cdot 2} \)
Constant speed time \( T_2 = (\theta - 0.5 \times \omega \times (T_1 + T_3))/\omega \)
Settling time \( T_4 = 0.2 \text{ (sec)} \)
Cycle time \( T = T_1 + T_2 + T_3 + T_4 \)

Selection example
Angular acceleration time \( T_1 = 420/1,000 = 0.42 \text{ sec} \)
Angular deceleration time \( T_3 = 420/1,000 = 0.42 \text{ sec} \)
Constant speed time \( T_2 = (180 - 0.5 \times 420 \times (0.42 + 0.42))/420 \)
\[ = 0.009 \text{ sec} \]
Cycle time \( T = T_1 + T_2 + T_3 + T_4 \)
\[ = 0.42 + 0.009 + 0.42 + 0.2 \]
\[ = 1.049 \text{ (sec)} \]
Formulas for Moment of Inertia (Calculation of moment of inertia I)

1. Thin bar
   Position of rotation shaft: Perpendicular to a bar through one end
   \[ I = m \frac{a^2}{3} + m \frac{a^2}{3} \]

2. Thin bar
   Position of rotation shaft: Passes through the center of gravity of the bar.
   \[ I = m \frac{a^2}{12} \]

3. Thin rectangular plate (cuboid)
   Position of rotation shaft: Passes through the center of gravity of a plate.
   \[ I = m \frac{a^2}{12} + m \frac{b^2}{12} + m \frac{a^2}{12} + m \frac{b^2}{12} \]

4. Thin rectangular plate (cuboid)
   Position of rotation shaft: Perpendicular to the plate and passes through one end.
   \( \text{(The same applies to thicker cuboids.)} \)
   \[ I = m \frac{a^2}{12} + m \frac{b^2}{12} + m \frac{a^2}{12} + m \frac{b^2}{12} \]

5. Thin rectangular plate (cuboid)
   Position of the rotation shaft: Passes through the center of gravity of the plate and perpendicular to the plate.
   \( \text{(The same applies to thicker cuboids.)} \)
   \[ I = m \frac{a^2 + b^2}{12} \]

6. Cylindrical shape (including a thin disk)
   Position of rotation shaft: Center axis
   \[ I = m \frac{a^2}{2} \]

7. Sphere
   Position of rotation shaft: Diameter
   \[ I = m \frac{4}{5} r^2 \]

8. Thin disk (mounted vertically)
   Position of rotation shaft: Diameter
   \[ I = m \frac{r^4}{4} \]

9. When a load is mounted on the end of the lever
   \[ I = m \frac{a^2}{3} + m \frac{a^2}{3} + K \]
   (Ex.) Refer to 7 when the shape of \( m \) is spherical.
   \[ K = m \frac{2r^2}{5} \]

10. Gear transmission
    Number of teeth = \( a \)
    \[ I = (a \text{ teeth}) \cdot I_B \]
    \( \text{Number of teeth} = b \)

Load Type

<table>
<thead>
<tr>
<th>Load Type</th>
<th>Static load: Ts</th>
<th>Resistance load: Tf</th>
<th>Inertial load: Ta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only pressing force is necessary. (e.g. for clamping)</td>
<td>Gravity or friction force is applied to rotating direction.</td>
<td>Friction force is applied to rotating direction.</td>
<td>Rotate the load with inertia.</td>
</tr>
</tbody>
</table>

\[ Ts = F \cdot L \]
\( Ts \): Static load (N·m)
\( F \): Clamping force (N)
\( L \): Distance from the rotation center to the clamping position (m)

Gravity is applied to rotating direction.

\[ Tf = m \cdot g \cdot L \]
\( Tf \): 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)

\( \mu \): Friction coefficient

\[ Ta = \frac{I \cdot \omega^2}{2 \pi^2} \times 360 \]
(\( Ta = I \cdot \omega^2 \cdot 0.0175 \))
\( Ta \): Inertial load (N·m)
\( I \): Moment of inertia (kg·m²)
\( \omega \): Angular acceleration/angular deceleration (/sec²)
\( \omega \): Angular speed (/sec)

Necessary torque \( T = Ts \times 1.5 \)

* Resistance load: Gravity or friction force is applied to rotating direction.
* Not resistance load: Neither 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.

\[ T = (Tf + Ta) \times 1.5 \]

Note 1) To adjust the speed, margin is necessary for \( Tf \) and \( Ta \).
Series LER

Moment of Inertia—Angular Acceleration/Deceleration

Effective Torque—Angular Speed

LER10

LER30

LER50

Effective torque: T (N·m)

Angular speed: $\omega$ (°/s)

Angular acceleration/angular deceleration: $\ddot{\omega}$ (°/s²)

Moment of Inertia: $\Theta$ (kg·m²)

LER 10K

High torque

LER 10J

Basic

LER 30K

High torque

LER 30J

Basic

LER 50K

High torque

LER 50J

Basic

LER 10K

High torque

LER 10J

Basic

LER 30K

High torque

LER 30J

Basic

LER 50K

High torque

LER 50J

Basic

Angular speed: $\omega$ (°/s)

Angular acceleration/angular deceleration: $\ddot{\omega}$ (°/s²)

Moment of Inertia: $\Theta$ (kg·m²)

Effective torque: T (N·m)

Angular speed: $\omega$ (°/s)

Angular acceleration/angular deceleration: $\ddot{\omega}$ (°/s²)

Moment of Inertia: $\Theta$ (kg·m²)
### Allowable Load

<table>
<thead>
<tr>
<th>Size</th>
<th>Allowable radial load (N)</th>
<th>Allowable thrust load (N)</th>
<th>Allowable moment (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic type</td>
<td>High precision type</td>
<td>Basic type</td>
</tr>
<tr>
<td>10</td>
<td>78</td>
<td>86</td>
<td>74</td>
</tr>
<tr>
<td>30</td>
<td>196</td>
<td>233</td>
<td>197</td>
</tr>
<tr>
<td>50</td>
<td>314</td>
<td>378</td>
<td>296</td>
</tr>
</tbody>
</table>

### Table Displacement (Reference Value)

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

### Deflection Accuracy: Displacement at 180° Rotation (Guide)

<table>
<thead>
<tr>
<th>Measured part</th>
<th>LER (Basic type)</th>
<th>LERH (High precision type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deflection on the top of the table</td>
<td>0.1</td>
<td>0.03</td>
</tr>
<tr>
<td>Deflection on the external surface of the table</td>
<td>0.1</td>
<td>0.03</td>
</tr>
</tbody>
</table>
# Electric Rotary Table

**Series LER**

**LER10, 30, 50**

## How to Order

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER</td>
<td>Electric Rotary Table</td>
</tr>
<tr>
<td>10K</td>
<td>High precision type</td>
</tr>
<tr>
<td>1</td>
<td>Without cable</td>
</tr>
<tr>
<td>S</td>
<td>Standard cable</td>
</tr>
<tr>
<td>16N</td>
<td>Robotic cable</td>
</tr>
<tr>
<td>1</td>
<td>Without cable</td>
</tr>
</tbody>
</table>

### Table accuracy
- **H**: High precision type
- **Nil**: Basic type

### Size
- **10**: 100 mm diameter
- **30**: 300 mm diameter
- **50**: 500 mm diameter

### Rotation angle [°]
- **1**: 360°

### Max. rotating torque [N·m]

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type</th>
<th>LER10</th>
<th>LER30</th>
<th>LER50</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>High</td>
<td>0.32</td>
<td>1.2</td>
<td>10</td>
</tr>
<tr>
<td>J</td>
<td>Basic</td>
<td>0.22</td>
<td>0.8</td>
<td>6.6</td>
</tr>
</tbody>
</table>

### Actuator cable type
- **Nil**: Without cable
- **S**: Standard cable
- **R**: Robotic cable (Flexible cable)

### Controller type
- **Nil**: Without controller
- **6N**: LECP6 (Step data input type)
- **6P**: LECP6 (Step data input type)

### Controller mounting
- **Nil**: Without controller
- **D**: DIN rail mounting

### Caution

**[CE-compliant products]**

- EMC compliance was tested by combining the electric actuator LER series and the controller LEC series.
- The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to 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 conformity to the EMC directive for the machinery and equipment as a whole.

**[UL-compliant products]**

- When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

---

## The actuator and controller are sold as a package.

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

<Check the following before use.>

1. Check the actuator label for model number. This matches the controller.
2. Check Parallel I/O configuration matches (NPN or PNP).

---

## Compatible Controller

<table>
<thead>
<tr>
<th>Type</th>
<th>Step data input type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td>LECP6</td>
</tr>
</tbody>
</table>

### Features
- Value (Step data) input
- Standard controller

### Compatible motor
- Step motor (Servo/24 VDC)

### Maximum number of step data
- 64 points

### Power supply voltage
- 24 VDC

---

* Refer to the operation manual for using the products.
* Please download it via our website, http://www.smcworld.com
### Specifications

#### Step Motor (Servo/24 VDC)

<table>
<thead>
<tr>
<th>Model</th>
<th>LER...10K</th>
<th>LER...10J</th>
<th>LER...30K</th>
<th>LER...30J</th>
<th>LER...50K</th>
<th>LER...50J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotation angle (°)</td>
<td>360</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angle setting range (°)</td>
<td>±20000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. rotating torque [N·m]</td>
<td>0.32</td>
<td>0.22</td>
<td>1.2</td>
<td>0.8</td>
<td>10</td>
<td>6.6</td>
</tr>
<tr>
<td>Max. pushing torque [N·m]</td>
<td>0.16</td>
<td>0.11</td>
<td>0.6</td>
<td>0.4</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>Max. moment of inertia [kg·m²]</td>
<td>0.0040</td>
<td>0.0018</td>
<td>0.027</td>
<td>0.012</td>
<td>0.10</td>
<td>0.04</td>
</tr>
<tr>
<td>Angular speed [°/sec]</td>
<td>20 to 280</td>
<td>30 to 420</td>
<td>20 to 280</td>
<td>30 to 420</td>
<td>20 to 280</td>
<td>30 to 420</td>
</tr>
<tr>
<td>Pushing speed [°/sec]</td>
<td>20</td>
<td>30</td>
<td>20</td>
<td>30</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Max. angular acceleration/deceleration [°/sec²]</td>
<td>3,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backlash (°)</td>
<td>±0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positioning repeatability (°)</td>
<td>±0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance [m²/sec²]</td>
<td>150/30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuator type</td>
<td>Special Worm Gear + Belt Drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency [c.p.m]</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range [°C]</td>
<td>5 to 40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating humidity range [%RH]</td>
<td>90 or less (No condensation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>Basic type</td>
<td>0.51</td>
<td>1.2</td>
<td>2.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High precision type</td>
<td>0.55</td>
<td>1.3</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor size</td>
<td>20</td>
<td>28</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor type</td>
<td>Step Motor (Servo/24 VDC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encoder</td>
<td>Incremental A/B phase (800 pulse/rotation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proximity sensor (for return to origin)/input circuit</td>
<td>2-wire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proximity sensor (for return to origin)/input point</td>
<td>1 input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply [V]</td>
<td>24 VDC ±10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption [W]</td>
<td>Note 5) 11</td>
<td>22</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby power consumption when operating [W]</td>
<td>Note 6) 7</td>
<td>12</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. instantaneous power consumption [W]</td>
<td>Note 7) 14</td>
<td>42</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Pushing force accuracy is LER10: ±30% (F.S.), LER30: ±25% (F.S.), LER50: ±20% (F.S.).

Note 2) The angular acceleration, angular deceleration and angular speed may fluctuate due to variations in the inertia moment. Refer to page 3 “Moment of Inertia—Angular Acceleration/Deceleration, Effective Torque—Angular Speed” graphs for confirmation.

Note 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%)

Note 4) 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. (Test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. (Test was performed with the actuator in the initial state.)

Note 5) The power consumption (including the controller) is for when the actuator is operating. The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during operation.

Note 6) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

Note 7) If an angle displayed on the monitor is automatically reset to 0° every 360°. To set an angle (position), use the INC (relative) operation method.

To set an angle (position), use the INC (relative) operation method.

#### Table Rotation Angle Range

Note 1) Range within which the table can move. Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.

Note 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.
**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>2</td>
<td>Side plate A</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>3</td>
<td>Side plate B</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>4</td>
<td>Worm screw</td>
<td>Stainless steel</td>
<td>Heat treated + Specially treated</td>
</tr>
<tr>
<td>5</td>
<td>Worm wheel</td>
<td>Stainless steel</td>
<td>Heat treated + Specially treated</td>
</tr>
<tr>
<td>6</td>
<td>Bearing cover</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>7</td>
<td>Table</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Joint</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Bearing holder</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bearing retainer</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pulley A</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Pulley B</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Grommet</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Motor plate</td>
<td>Carbon steel</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Basic type</td>
<td>Deep groove ball bearing</td>
<td>—</td>
</tr>
<tr>
<td>16</td>
<td>Deep groove ball bearing</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Deep groove ball bearing</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Deep groove ball bearing</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Belt</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Step motor (Servo/24 VDC)</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

**Component Parts (360° type)**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Proximity dog</td>
<td>Carbon steel</td>
<td>Chromate treated</td>
</tr>
<tr>
<td>22</td>
<td>Sensor holder</td>
<td>Carbon steel</td>
<td>Chromate treated</td>
</tr>
<tr>
<td>23</td>
<td>Sensor holder spacer</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>24</td>
<td>Square nut</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Proximity sensor assembly</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

**Construction**

![Basic type](image1)

![High precision type](image2)
Electric Rotary Table Series LER
Continuous Rotation Specification

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER10</td>
<td>10</td>
<td>3.5</td>
<td>4.8</td>
</tr>
<tr>
<td>LERH10</td>
<td>17</td>
<td>10.5</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Manual override screw (Both sides)

Origin mark

2 x ø5.2 (through)

2 x ø5 (through)

ø15H8

2 x M6 x 1.0 x 12

2 x ø9 depth of counterbore 5.5

2 x ø8 (through)

Effective length of accuracy = 7

Effective length of accuracy = 2

≈ 240 (Motor cable entry: Entry on the left side)

≈ 300 (Motor cable entry: Basic type)

≈ 300 (Sensor cable entry: Entry on the left side)

≈ 300 (Sensor cable entry: Basic type)
## Dimensions

### LER□30

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td><strong>H1</strong></td>
</tr>
<tr>
<td>LER30</td>
<td>13</td>
</tr>
<tr>
<td>LERH30</td>
<td>22</td>
</tr>
</tbody>
</table>
### Dimensions

**LER□50**

<table>
<thead>
<tr>
<th>Model</th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER50</td>
<td>16</td>
<td>5.5</td>
<td>10.8</td>
</tr>
<tr>
<td>LERH50</td>
<td>26</td>
<td>15.5</td>
<td>20.8</td>
</tr>
</tbody>
</table>

**Dimensions (mm)**

- Manual override screw (Both sides)
- Origin mark
- Effective length of accuracy = 2
- Effective length of accuracy = 11
- Effective length of accuracy = 2
- ø20 (through)
- ø74H8 (–0.046)
- ø76H8 (–0.046)
- ø26H8 (–0.033)

**Dimensions**

- 2 x M6 x 1.0 x 10
- 2 x ø14 depth of counterbore 8.5
- 2 x ø8.5 (through)
- 2 x ø6.8 (through)
- 2 x ø11 depth of counterbore 6.5
- 2 x M10 x 1.5 x 20
- ø63H8 (–0.046)
- ø32 x ø5
- ø35H8 (+0.039)
- ø76H8 (–0.046)

**Notes**

- Motor cable entry: Basic type
- Sensor cable entry: Basic type
- Sensor cable entry: Entry on the left side

**Model Specifications**

- Continuous Rotation Specification

**Electric Rotary Table Series LER**
Series **LER**

**Electric Rotary Table/ Specific Product Precautions**

Be sure to read before handling. Refer to “Handling Precautions for SMC Products” (M-E03-3) for Safety Instructions and the Operation Manual for Electric Actuator Precautions. Please download it via our website, http://www.smcworld.com

---

### Design/Selection

#### Warning

1. 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 ±0.01° (180° and 90° with adjustment of ±2°) 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, ensure that the [Pushing operation] is utilized. 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 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 cause malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position.

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 cause malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position.

#### Mounting

**Through-hole mounting**

<table>
<thead>
<tr>
<th>Model</th>
<th>Bolt</th>
<th>Max. tightening torque [N·m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER 10</td>
<td>M5 x 0.8</td>
<td>3.0</td>
</tr>
<tr>
<td>LER 30</td>
<td>M6 x 1</td>
<td>5.0</td>
</tr>
<tr>
<td>LER 50</td>
<td>M8 x 1.25</td>
<td>12.0</td>
</tr>
</tbody>
</table>

**Body tapped mounting**

<table>
<thead>
<tr>
<th>Model</th>
<th>Bolt</th>
<th>Max. tightening torque [N·m]</th>
<th>Max. screw-in depth [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER 10</td>
<td>M6 x 1</td>
<td>5.0</td>
<td>12</td>
</tr>
<tr>
<td>LER 30</td>
<td>M8 x 1.25</td>
<td>12.0</td>
<td>16</td>
</tr>
<tr>
<td>LER 50</td>
<td>M10 x 1.5</td>
<td>25.0</td>
<td>20</td>
</tr>
</tbody>
</table>

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 ±30°. 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].

---

**Body mounting/Bottom**

---

**Body mounting/Top**

---

**Model**

**Bolt**

**Thread length [mm]**

**Max. tightening torque [N·m]**

<table>
<thead>
<tr>
<th>Model</th>
<th>Bolt</th>
<th>Thread length [mm]</th>
<th>Max. tightening torque [N·m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER 10</td>
<td>M4 x 0.7</td>
<td>6</td>
<td>1.4</td>
</tr>
<tr>
<td>LER 30</td>
<td>M5 x 0.8</td>
<td>8</td>
<td>3.0</td>
</tr>
<tr>
<td>LER 50</td>
<td>M6 x 1</td>
<td>10</td>
<td>5.0</td>
</tr>
</tbody>
</table>

---

**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**

<table>
<thead>
<tr>
<th>Model</th>
<th>L [mm] (Initial setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LER 10-1</td>
<td>31/31</td>
</tr>
<tr>
<td>LER 30-1</td>
<td>42/42</td>
</tr>
<tr>
<td>LER 50-1</td>
<td>51.5/51.5</td>
</tr>
</tbody>
</table>

---

**Model**

**Sensor holder**

**Proximity sensor assembly**
### 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. **INP output signal**
   1) Positioning operation
      - When the product comes within the set range by 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 thrust 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 [Pushing force] and [Trigger LV] are set less than the specified range, the INP output signal will turn on from the pushing start position.

3. When the workpiece is to be stopped by the electric rotary actuator with an external stopper or directly by an external object, utilize the “pushing operation”. Do not stop the table with an external stopper or external object by using in the range of the “positioning operation mode”.

4. 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” alarm is generated. It is not possible to reach the pushing start position within the target time.
   - b. “Pushing ALM” alarm is generated. The product is pushed back from a pushing start position after starting to push.
   - c. “Deviation over flow” alarm is generated. Displacement exceeding the specified value is generated at the pushing start position.

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

6. For the specification with an external stopper, an angle adjustment bolt is provided as standard.
   - The rotation angle adjustment range is ±2° 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 adjustment bolt is approximately equal to 1° of rotation.

### Maintenance

### Caution
7. When mounting the product, keep a 40 mm or longer diameter for bends in the motor cable.