It can be operated like an air cylinder.

**LZB Series**

**LZC Series**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. thrust</th>
<th>Max. speed</th>
<th>Lead screw</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>LZB</td>
<td>196 N</td>
<td>200 mm/s</td>
<td>Slide screw: ø8, ø12  Lead: 2, 6, 12</td>
<td>25, 40, 50, 100, 200</td>
</tr>
<tr>
<td>LZC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- System Chart P.926
- Model Selection P.927
- Electric Cylinder/LZB P.928
- Electric Cylinder/LZC P.934
- LZB/C Vertical Application Specifications P.938
- Accessories P.939
- Auto Switch Proper Mounting Position (Detection at Stroke End) and It’s Mounting Height P.941
- Mounting and Moving Auto Switches P.942
**LZ Series System Chart**

- **PLC (Terminal box type)** (Supplied by customer)
- **Directional control driver for electric cylinder LC3F2 Series**
- **24 VDC power supply** (Supplied by customer)
- **Cable for control terminal LC3F2-1-C2-□-1** (Option) (See page 948.)
- **Auto switch D-M9□** (Option)
- **Terminal box** (Supplied by customer)
- **AC power supply** Noise filter, Insulator, Relay, etc. (Supplied by customer)
- **Cable for motor output terminal LC3F2-1-C3-□-1** (Option) (See page 948.)
- **Cable for power supply terminal LC3F2-1-C1-□-1** (Option) (See page 948.)
- **Electric cylinder LZB/LZC Series**
**LZB/LZC Series**

**Model Selection**

Note: These graphs are made using actual data. Therefore, these graphs are to be used as a reference and are not a guarantee of product's performance in any case. The graphs may change depending on the operating condition or environment.

### Horizontal Motion of Pressing Force

**Model selection condition 1)**
- Used as a force-pressing. 50 N or greater pressing force is required.

**Model selection condition 2)**
- Used as a transfer. 60 N transfer thrust and 40 mm/s transfer speed are required.

**Graph 1** LZB/C3: [Speed-Thrust] Relationship Graph

**Model selection result 1)**
- From Graph 1, LZB/C3's lead 2 is applicable. (Pressing force: 80 N)

**Model selection result 2)**
- From Graph 2, LZB/C5's lead 6 mm and lead 12 mm are applicable. But, speed at the end with 60 N load will be 100 mm/s for lead 6 mm and 60 mm/s for lead 12 mm. Select a suitable product in accordance with the customer's equipment.

### Horizontal Transfer

**Model selection condition 1)**
- Used as a force-pressing. 50 N or greater pressing force is required.

**Model selection condition 2)**
- Used as a transfer. 60 N transfer thrust and 40 mm/s transfer speed are required.

**Graph 2** LZB/C5: [Speed-Thrust] Relationship Graph

**Model selection result 1)**
- From Graph 1, LZB/C3's lead 2 is applicable. (Pressing force: 80 N)
**Electric Cylinder**

**LZB Series**

### How to Order

#### LZB

- B 3 L - 100 A 3
- Built-in magnet
- Mounting type: B (Basic type), L (Axial foot type), F (Rod flange type), U (Rod trunnion type)
- Cylinder size:
  - 3: Equivalent to ø16 cylinder
  - 5: Equivalent to ø25 cylinder
- Note: Equivalent to 0.4 MPa, theoretical output (lead 2)
- For details, refer to page 927 "Speed – Thrust Graph"

#### LDZB

- B 3 L - 100 A 3 - M9B
- Number of auto switches
  - Nil
  - S 2 pcs.
  - n 1 pc.
- Auto switch
  - Nil (Without auto switch (Built-in magnet))
  - Refer to the table below for auto switch model numbers.
  - Auto switches are shipped together (not assembled).
- Rod end thread
  - Nil (Female)
  - L (Male)
- Stroke (mm)
  - Refer to “Standard Stroke” table.

#### How to Order

**Applicable Auto Switches**

- For detailed auto switch specifications, refer to page 944.

<table>
<thead>
<tr>
<th>Type</th>
<th>Special function</th>
<th>Electrical entry</th>
<th>Stroke type</th>
<th>Wiring (Output)</th>
<th>Load voltage</th>
<th>Auto switch model</th>
<th>Lead wire length (m)</th>
<th>Pre-wired connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid state auto switch</td>
<td>—</td>
<td>Grommet</td>
<td>Yes</td>
<td>3-wire (NPN)</td>
<td>24 V</td>
<td>5 V</td>
<td>M9N</td>
<td>0.5 (Nil)</td>
<td>IC circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (PNP)</td>
<td>12 V</td>
<td>12 V</td>
<td>M9P</td>
<td>1 M</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-wire</td>
<td>12 V</td>
<td>12 V</td>
<td>M9B</td>
<td>3 L</td>
<td>—</td>
</tr>
</tbody>
</table>

- Lead wire length symbols: 0.5 m — (Nil) 1 m — M 3 m — L 5 m — Z
- Solid state auto switches marked “□” are produced upon receipt of order.

#### Standard Stroke

<table>
<thead>
<tr>
<th>Cylinder size</th>
<th>Standard stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 5</td>
<td>25, 40, 50, 100, 200</td>
</tr>
</tbody>
</table>

- Other intermediate strokes can be manufactured upon receipt of order.
- Maximum manufacturable stroke: 200 mm
- Conditions for using a trunnion bracket are as follows:
  - Maximum stroke: 150 mm
  - Thread lead L (lead 2 mm) only

#### Motor size

- 3: Applicable cylinder size 3
- 5: Applicable cylinder size 5

#### Motor type

- A: DC motor

#### Applicable Auto Switches

- Refer to page 927 “Speed – Thrust Graph”.
1. Do not apply any lateral load to the rod of the LZB series. When applying a lateral load, use a guide to avoid the load from being applied to the rod.

2. Auto switch mounting
There are 4 grooves on the outside surface of the cylinder tube, indicating the auto switch installation range. Mount the auto switches within the range shown below.

![Diagram of auto switch installation range]

* Refer to page 942 for information on mounting an auto switch.

![Diagram showing guide and auto switch installation]

**Specific Product Precautions**

1. Do not apply any lateral load to the rod of the LZB series. When applying a lateral load, use a guide to avoid the load from being applied to the rod.

2. Auto switch mounting
There are 4 grooves on the outside surface of the cylinder tube, indicating the auto switch installation range. Mount the auto switches within the range shown below.

![Diagram of auto switch installation range]

* Refer to page 942 for information on mounting an auto switch.

---

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>LZB3L</th>
<th>LZB3M</th>
<th>LZB3H</th>
<th>LZB5L</th>
<th>LZB5M</th>
<th>LZB5H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>3 (Equivalent to ø16 cylinder)</td>
<td>5 (Equivalent to ø25 cylinder)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead screw</td>
<td>Thread diameter (lead mm)</td>
<td>Ø8</td>
<td>Ø12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated speed with no load (mm/s)</td>
<td></td>
<td>33</td>
<td>100</td>
<td>200</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td></td>
<td>80</td>
<td>43</td>
<td>24</td>
<td>196</td>
<td>117</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>25, 40, 50, 100, 200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main body (kg)*</td>
<td>0.67 + (0.07/50 stroke)</td>
<td>1.74 + (0.16/50 stroke)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature (°C)</td>
<td>5 to 40 (No condensation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable tolerance of stroke</td>
<td>+1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>DC motor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable directional control driver model</td>
<td>LC3F212-5A3</td>
<td>LC3F212-5A5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable auto switch model</td>
<td>D-M9N, M9P, M9B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Equivalent to 0.4 MPa, theoretical output (lead 2)
Note 2) In the table speeds are shown without a load, as rated speed, and thrusts are shown as rated thrust based on the pressure force.
Note 3) Speed will vary as they are affected by a load. Refer to page 927 for model selection.
+ Refer to page 939 for mounting bracket weight.
Dimensions

Note) Grounding must be performed. For details, refer to the back of page 5.

L(D)ZBB3

Axial foot type/L(D)ZBL3

Rod flange type/L(D)ZBF3
Caution for using a trunnion bracket

In the event of mounting a trunnion bracket, fix it to the position illustrated below before using.

* Conditions for using a trunnion bracket are as follows:
  * Maximum stroke: 150 mm
  * Thread lead L (lead 2 mm) only

Dimensions

Rod trunnion type/L(D)ZBU3

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexagon width across flats 13</td>
<td>ø13</td>
</tr>
<tr>
<td>Hexagon width across flats 26</td>
<td>ø26</td>
</tr>
<tr>
<td>Hexagon width across flats 27</td>
<td>ø27</td>
</tr>
<tr>
<td>Width across flats 26</td>
<td>19</td>
</tr>
<tr>
<td>Width across flats 27</td>
<td>19</td>
</tr>
<tr>
<td>M30 x 1.5</td>
<td>19</td>
</tr>
<tr>
<td>ø8e9</td>
<td>-0.025</td>
</tr>
<tr>
<td>ø10</td>
<td>-0.061</td>
</tr>
</tbody>
</table>

Electric Cylinder LZB Series
Dimensions

Note) Grounding must be performed. For details, refer to the back of page 5.

L(D)ZBB5

Axial foot type/L(D)ZBL5

Rod flange type/L(D)ZBF5

Dimenion notes:
- The electrical entry direction is different depending on a product.
- Lead wire: UL1007 AWG22 (Red-Blue) or equivalent
- J.S.T. Mfg Co., Ltd.-made, ring terminal insulated with nylon
- N1.25-M4 or equivalent
- J.S.T. Mfg Co., Ltd.-made, ring terminal insulated with nylon
- N1.25-M4 or equivalent

Motor side mounting nut
(Part no.: NT-03)

Motor side mounting nut
(Part no.: LZ-NT45)

Motor side mounting nut
(Part no.: LZ-NT45)
**Dimensions**

**Rod trunnion type/L(D)ZBU5**

![Diagram of trunnion type/L(D)ZBU5 dimensions]

- **Hexagon width across flats 41**
- **Width across flats 36**
- **Width across flats 38**
- **M45 x 1.5**
- **16**
- **285.5 + Stroke**
- **131.5 + Stroke**

**Conditions for using a trunnion bracket**

In the event of mounting a trunnion bracket, fix it to the position illustrated below before using.

- **Auto switch installation range**
- **4 x grooves**

* Conditions for using a trunnion bracket are as follows:
  - Maximum stroke: 150 mm
  - Thread lead L (lead 2 mm) only
**Electric Cylinder**

**LZC Series**

### How to Order

#### With auto switch

- **LZC**
  - B 3 L - 100 A 3
- **LDZC**
  - B 3 L - 100 A 3 H - M9B

#### Built-in magnet

- **Mounting type**
  - B: Basic type
  - L: Axial foot type

#### Cylinder size

- **3**: Equivalent to ø16 cylinder (Note)
- **5**: Equivalent to ø25 cylinder (Note)

**Note:** Equivalent to 0.4 MPa, theoretical output (lead 2)

#### Thread lead (mm)

- **L**: Lead 2
- **M**: Lead 6
- **H**: Lead 12

#### Stroke (mm)

Refer to “Standard Stroke” table.

#### Motor type

- **A**: DC motor

#### Cover specification

- **Nil**
- **H**: Partially covered
- **F**: Fully covered

#### Number of auto switches

- **Nil**: 2 pcs.
- **S**: 1 pc.
- **n**: n pcs.

#### Auto switch

- **Nil**: Without auto switch (Built-in magnet)

- **Note:** Refer to the table below for auto switch model numbers.
- **Auto switches are shipped together (not assembled).**

#### Rod end thread

- **Nil**: Female
- **L**: Male

* Rod end male thread is shipped together.

#### Motor size

- **3**: Applicable cylinder size 3
- **5**: Applicable cylinder size 5

### Standard Stroke

<table>
<thead>
<tr>
<th>Cylinder size</th>
<th>Standard stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 5</td>
<td>25, 40, 50, 100, 200</td>
</tr>
</tbody>
</table>

* Other intermediate strokes can be manufactured upon receipt of order.

(Maximum manufacturable stroke: 200 mm)

### Applicable Auto Switches

For detailed auto switch specifications, refer to page 944.

<table>
<thead>
<tr>
<th>No.</th>
<th>Auto switch</th>
<th>Load wire length (m)</th>
<th>Pre-wired connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (Nil)</td>
<td>M9N</td>
<td>5 V 12 V</td>
<td>—</td>
<td>IC circuit</td>
</tr>
<tr>
<td>1 (M)</td>
<td>M9P</td>
<td>5 V 12 V</td>
<td>—</td>
<td>Relay PLC</td>
</tr>
<tr>
<td>3 (L)</td>
<td>M9B</td>
<td>5 V 12 V</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5 (Z)</td>
<td>—</td>
<td>5 V 12 V</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Lead wire length symbols: 0.5 m ———— Nil (Example) M9B
  - 1 m ———— M  M9BM
  - 3 m ———— L  M9BL
  - 5 m ———— Z  M9BZ

* Solid state auto switches marked “C” are produced upon receipt of order.
## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>LZC3L</th>
<th>LZC3M</th>
<th>LZC3H</th>
<th>LZC5L</th>
<th>LZC5M</th>
<th>LZC5H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>3 (Equivalent to ø16 cylinder)</td>
<td>5 (Equivalent to ø25 cylinder)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead screw</td>
<td>Thread diameter</td>
<td>Ø8</td>
<td>Ø12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead (mm)</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Rated speed with no load (mm/s)</td>
<td>33</td>
<td>60</td>
<td>200</td>
<td>33</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>80</td>
<td>43</td>
<td>24</td>
<td>196</td>
<td>117</td>
<td>72</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>25, 40, 50, 100, 200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main body (kg)*</td>
<td>0.72 + (0.03/50 stroke)</td>
<td>1.72 + (0.16/50 stroke)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral load for rod end (at maximum stroke) (kg)</td>
<td>0.1</td>
<td>0.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature (°C)</td>
<td>5 to 40 (No condensation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable tolerance of stroke</td>
<td>±0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>DC motor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable directional control driver model</td>
<td>LC3F212-5A3□</td>
<td>LC3F212-5A5□</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable auto switch model</td>
<td>D-M9N, M9P, M9B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Equivalent to 0.4 MPa, theoretical output (lead 2)

Note 2) In the table speeds are shown without a load, as rated speed, and thrusts are shown as rated thrust based on the pressure force.

Note 3) Speed will vary as they are affected by a load. Refer to page 927 for model selection.

* Refer to page 939 for mounting bracket weight.

## Allowable Lateral Load for Rod End

![Graph showing Allowable Lateral Load for Rod End](image-url)
LZC Series

Dimensions
Note) Grounding must be performed. For details, refer to the back of page 5.

L(D)ZCB3

- Axial foot type: L
- Foot (Rod cover side):
  - 2 x ø4.5
- Foot (Housing side):
  - 2 x ø4.5

**Cover specification**
- Fully covered: F
- Partially covered: H
- Auto switch mounting groove

**View A**
- J.S.T. Mfg Co., Ltd.-made, ring terminal insulated with nylon N1.25-M4 or equivalent
- Lead wire UL1007 AWG22 (Red-Blue)
- 2 x M4 x 0.7 Depth 3 (For GND connection) Note)

**Foot (Rod cover side)**
- 2 x ø4.5
- 45
- 53
- 11.5
- 7.5

**Foot (Housing side)**
- 2 x ø4.5
- 45
- 53
- 86.5 + Stroke (Mounting pitch)

*Note: 5 mm + Stroke (Mounting pitch)*

*Note: When extended When retracted*
Dimensions

Note) Grounding must be performed. For details, refer to the back of page 5.

L(D)ZCB5

Axial foot type: L

Cover specification

Fully covered: F
Partially covered: H

Foot (Rod cover side)

Foot (Housing side)

J.S.T. Mfg Co., Ltd.-made, ring terminal insulated with nylon N1.25-M4 or equivalent

Lead wire UL1007 AWG22 (Red-Blue)
LZB/C Vertical Application Specifications

Some of the LZ series can be used in vertical applications.
However, please check before using vertically.

Never apply a force exceeding the prescribed force.
When a force exceeding the transfer thrust is applied, the cylinder and directional control driver (LC3F2) may be damaged.

Model which can be used vertically
• L(D)ZB□3L-□A3□□☐
• L(D)ZC□3L-□A3□□☐
• L(D)ZB□5L-□A5□□☐
• L(D)ZC□5L-□A5□□☐

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>L(D)ZB□3L</th>
<th>L(D)ZC□3L</th>
<th>L(D)ZB□5L</th>
<th>L(D)ZC□5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (mm/s)</td>
<td>P.927</td>
<td>Refer to the graph on speed – thrust.</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Transfer thrust (Vertically) (N)</td>
<td>40</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holding force <em>(N)</em></td>
<td>40</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard stroke (mm)</td>
<td>25, 40, 50, 100, 200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature (°C)</td>
<td>5 to 40 (No condensation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>DC motor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable directional control driver model</td>
<td>LC3F212-5A3☐</td>
<td>LC3F212-5A5☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable auto switch model</td>
<td>D-M9N, D-M9P, D-M9B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Holding force

Holding force means the force which cannot be dropped even if a load should be applied vertically when a cylinder is stopped. Therefore, for example, holding is not possible when turning off the power supply once a cylinder has been activated. Additionally, a load may be dropped due to external impacts or vibrations.
### Accessories

#### LZB

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>With auto switch</td>
<td>Switch mounting band, switch mounting bracket (one included per one switch)</td>
</tr>
<tr>
<td>Foot type</td>
<td>Rod side foot bracket, motor side foot bracket</td>
</tr>
<tr>
<td></td>
<td>Rod side mounting nut, motor side mounting nut</td>
</tr>
<tr>
<td>Flange type</td>
<td>Flange bracket, rod side mounting nut</td>
</tr>
<tr>
<td>Trunnion type</td>
<td>Trunnion bracket, Rod side mounting nut (designed for trunnion)</td>
</tr>
</tbody>
</table>

#### LZC

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot type</td>
<td>Rod side foot bracket, motor side foot bracket</td>
</tr>
<tr>
<td></td>
<td>Foot bracket mounting bolts (6)</td>
</tr>
</tbody>
</table>

### Accessory Bracket

#### Mounting nut

- **Part no.**
  - SN-020B: LZB3
  - LZ-NT30: LZB3
  - SN-040B: LZB5
  - LZ-NT45: LZB5
- **Applicable series:**
  - Rod side mounting nut
  - Motor side mounting nut
- **Dimensions:**
  - B: 26, 38, 41, 60 (mm)
  - C: 30, 42, 47.3, 64 (mm)
  - D: 25.5, 38, 40.5, 60 (mm)
  - d: M20 x 1.5, M30 x 1.5, M32 x 2.0, M45 x 1.5 (mm)
  - H: 8, 10, 10, 10 (mm)

#### Rod end nut

- **Part no.**
  - NT-015A: LZC3
  - NT-03: LZC5
- **Applicable series:**
  - Motor-less
- **Dimensions:**
  - B: 10, 17, 19.6, 25 (mm)
  - C: 11.5, 19.6, 16.5, 25 (mm)
  - D: 10, 17, 16.5, 25 (mm)
  - d: M6 x 1.0, M10 x 1.25, M10 x 1.25, M10 x 1.25 (mm)
  - H: 5, 6, 5, 6 (mm)

### Mounting Bracket/Part No.

#### Series

<table>
<thead>
<tr>
<th>Series</th>
<th>LZB3</th>
<th>LZB5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rod side foot</td>
<td>LZB-LR3 (64 g)</td>
<td>LZB-LR5 (112 g)</td>
</tr>
<tr>
<td>Motor side foot</td>
<td>LZB-LM3 (64 g)</td>
<td>LZB-LM5 (126 g)</td>
</tr>
<tr>
<td>Flange</td>
<td>LZB-F3 (40 g)</td>
<td>LZB-F5 (120 g)</td>
</tr>
<tr>
<td>Rod side trunnion</td>
<td>CM-T020B (40 g)</td>
<td>CM-T040B (100 g)</td>
</tr>
</tbody>
</table>

#### Lzc3

<table>
<thead>
<tr>
<th>Series</th>
<th>Lzc3</th>
<th>Lzc5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rod side foot</td>
<td>Lzc-LR3 (21 g)</td>
<td>Lzc-LR5 (71 g)</td>
</tr>
<tr>
<td>Motor side foot</td>
<td>Lzc-LM3 (10 g)</td>
<td>Lzc-LM5 (27 g)</td>
</tr>
</tbody>
</table>

( ) : Weight for bracket

Note: Bracket mounting nuts are not included. Please purchase mounting nuts matched to each bracket separately.
Auto Switches Mounting

Auto Switch Hysteresis

Hysteresis is the distance between the position at which slider movement operates an auto switch to the position at which reverse movement turns the switch off. This hysteresis is included in part of the operating range (one side).

Note) Hysteresis may fluctuate due to the operating environment. Please contact SMC if hysteresis causes an operational problem.
Auto Switch Proper Mounting Position (Detection at Stroke End) and It's Mounting Height

Solid state auto switch
D-M9
LDZB

Auto Switch Mounting Position/Height

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZB-3</td>
<td>20</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>LDZB-5</td>
<td>33</td>
<td>33</td>
<td>32</td>
</tr>
</tbody>
</table>

LDZC

Auto Switch Mounting Position for Stroke End Detection

<table>
<thead>
<tr>
<th>Model</th>
<th>A1</th>
<th>A2</th>
<th>B1</th>
<th>B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZC-3</td>
<td>4.5</td>
<td>17.5</td>
<td>41.5</td>
<td>28</td>
</tr>
<tr>
<td>LDZC-5</td>
<td>7</td>
<td>57</td>
<td>20</td>
<td>44</td>
</tr>
</tbody>
</table>

Operating Range of Auto Switch

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZB-3</td>
<td>3</td>
</tr>
<tr>
<td>LDZB-5</td>
<td>5</td>
</tr>
</tbody>
</table>

Operating Range of Auto Switch

<table>
<thead>
<tr>
<th>Model</th>
<th>1 pc.</th>
<th>2 pcs. (Different sides)</th>
<th>2 pcs. (Same sides)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZB-3</td>
<td>10</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>LDZB-5</td>
<td>10</td>
<td>15</td>
<td>45</td>
</tr>
</tbody>
</table>

Minimum Stroke for Auto Switch Mounting

<table>
<thead>
<tr>
<th>Model</th>
<th>1 pc.</th>
<th>2 pcs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZC-3</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>LDZC-5</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

* The operating range is a guide including hysteresis, but is not guaranteed. There may be substantial variation depending on the surrounding environment (assuming approximately ±30% dispersion).
Mounting and Moving Auto Switches (Series LDZB Only)

⚠️ Caution
1. Tighten the screw under the specified torque when mounting the auto switch.
2. Set the auto switch mounting band perpendicularly to cylinder tube.

Correctly attached  Incorrectly attached

Mounting the Auto Switch
1. Attach a switch bracket to the switch holder. (Fit the switch bracket to the switch holder.)
2. Mount an auto switch mounting band to the cylinder tube.
3. Set the switch holder (1.) between the reinforcing plates of the band mounted to the cylinder.
4. Insert an auto switch mounting screw in the hole of the reinforcing plate through the auto switch holder, and thread it into the other plate. Tighten the screw temporarily.
5. Remove the set screw attached to the auto switch.
6. Attach a switch spacer to the auto switch.
7. Insert the auto switch with the switch spacer from the back of the switch holder. (Insert the auto switch with an angle of approximately 10 to 15°. See figure 1.)
8. To secure the auto switch, tighten the switch mounting screw with the specified torque (0.8 N·m to 1.0 N·m).

Adjusting the Auto Switch Position
1. Unloosen the auto switch mounting screw 3 turns to adjust the auto switch set position.
2. Tighten the auto switch mounting screw as described above (8.) after adjustment.

Removing the Auto Switch
1. Remove the auto switch mounting screw from the switch holder.
2. Move the auto switch back towards the position where it stops at the lead wire side.
3. Hold up the lead wire side of the auto switch at the angle of around 45°.
4. Maintain the angle, and pull back the auto switch obliquely at the same angle.

Auto Switch Mounting Bracket/Part No.

<table>
<thead>
<tr>
<th>Applicable series</th>
<th>Mounting bracket</th>
<th>Mounting band</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDZB3</td>
<td>BJ3-1 (Switch holder)</td>
<td>BM2-025</td>
</tr>
<tr>
<td>LDZB5</td>
<td>Switch spacer Switch bracket</td>
<td>L1ZB45-0318</td>
</tr>
</tbody>
</table>

Order one auto switch mounting bracket and one auto switch mounting band per one auto switch.
Prior to Use
Auto Switch Connection and Example

Sink Input Specifications

<table>
<thead>
<tr>
<th>3-wire, NPN</th>
<th>2-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto switch</td>
<td>Auto switch</td>
</tr>
<tr>
<td>Brown</td>
<td>Brown</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>COM</td>
<td>COM</td>
</tr>
</tbody>
</table>

2-wire OR connection
(Using relays)

Example of AND (Series) and OR (Parallel) Connection

- When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

3-wire AND connection for NPN output
(Using relays)

3-wire AND connection for PNP output
(Using relays)

2-wire AND connection

Load voltage at ON = Power supply voltage – Residual voltage \( \times 2 \) pcs.
= 24 V – 4 V \( \times 2 \) pcs.
= 16 V

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

Source Input Specifications

<table>
<thead>
<tr>
<th>3-wire, PNP</th>
<th>2-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto switch</td>
<td>Auto switch</td>
</tr>
<tr>
<td>Brown</td>
<td>Brown</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>COM</td>
<td>COM</td>
</tr>
</tbody>
</table>

2-wire OR connection
(Performed with auto switches only)

3-wire OR connection for NPN output
(Performed with auto switches only)

3-wire OR connection for PNP output
(Performed with auto switches only)

Load voltage at OFF = Leakage current \( \times 2 \) pcs. \( \times 3 \) kΩ
= 1 mA \( \times 2 \) pcs. \( \times 3 \) kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Leakage current from auto switch is 1 mA.

(Solid state) When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

(Reed) Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.
## Auto Switches

### Solid State Auto Switch

#### Applicable Actuators

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>D-M9N</th>
<th>D-M9P</th>
<th>D-M9B</th>
<th>D-F9G</th>
<th>D-F9H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>N.O. (A contact)</td>
<td>N.C. (B contact)</td>
<td>N.C. (B contact)</td>
<td>N.O. (A contact)</td>
<td>N.O. (A contact)</td>
</tr>
<tr>
<td>Electrical entry direction</td>
<td>In-line</td>
<td>In-line</td>
<td>In-line</td>
<td>In-line</td>
<td>In-line</td>
</tr>
<tr>
<td>Wiring type</td>
<td>3-wire</td>
<td>2-wire</td>
<td>2-wire</td>
<td>3-wire</td>
<td>3-wire</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN</td>
<td>PNP</td>
<td>—</td>
<td>NPN</td>
<td>PNP</td>
</tr>
<tr>
<td>Applicable load</td>
<td>IC circuit, Relay, PLC</td>
<td>24 VDC relay, PLC</td>
<td>IC circuit, Relay, PLC</td>
<td>24 VDC relay, PLC</td>
<td>24 VDC relay, PLC</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>5, 12, 24 VDC (4.5 to 28 V)</td>
<td>—</td>
<td>5, 12, 24 VDC (4.5 to 28 V)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Current consumption</td>
<td>10 mA or less</td>
<td>—</td>
<td>10 mA or less</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Load voltage</td>
<td>28 VDC or less</td>
<td>—</td>
<td>24 VDC (10 to 28 V)</td>
<td>28 VDC or less</td>
<td>—</td>
</tr>
<tr>
<td>Load current</td>
<td>40 mA or less</td>
<td>2.5 to 40 mA</td>
<td>40 mA or less</td>
<td>80 mA or less</td>
<td>80 mA or less</td>
</tr>
<tr>
<td>Internal voltage drop</td>
<td>0.8 V or less at 10 mA (2 V or less at 40 mA)</td>
<td>4 V or less</td>
<td>1.5 V or less (0.8 V or less at 10 mA load current)</td>
<td>0.8 V or less</td>
<td></td>
</tr>
<tr>
<td>Leakage current</td>
<td>100 µA or less at 24 VDC</td>
<td>0.8 mA or less</td>
<td>100 µA or less at 24 VDC</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Indicator light</td>
<td>Red LED illuminates when turned ON.</td>
<td>Red LED illuminates when turned OFF.</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard</td>
<td>CE marking</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note:**
- Lead wires — Oilproof heavy-duty vinyl cord: ø2.7 x 3.2 ellipse (D-M9C)/ø2.7 (D-F9C)/ø3.4 (D-Y7C), 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue).
- Insulation resistance — Over 50 MΩ at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC 1 minute (between lead wire and between case)
- Ambient temperature — –10 to 60°C
- Operating time — 1 ms or less
- Impact resistance — 1000 m/s²

* For details, refer to Best Pneumatics No. 2-1.

With pre-wired connector is also available.
**LZB Series**

Specific Product Precautions

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 3 to 13 for Electric Actuators/Cylinders and Auto Switches Precautions.

⚠️ **Caution**

1. **Mount the auto switches at the center of the operating range.**
   Check ON and OFF points before setting auto switches so that positions can be detected at the center of the operating range. If mounted at the end of the operating range, the signal detection will be unstable.

2. **Be aware of the environment temperature and thermal cycle.**
   Operate auto switches and auto switch cylinders within the operating temperature range. The reliability of the auto switches may be adversely affected, especially, when they are exposed to thermal shock, severe temperature and humidity cycle etc.

3. **Be aware of the suitability of oil, chemicals etc.**
   Resin and rubber materials are used for the auto switches and auto switch mounting brackets. Therefore, if there are chemicals such as oil or organic solvents in the environment, the resin and rubber materials may be adversely affected.

4. **During maintenance, securely tighten the switch mounting screws periodically.**
   Use auto switch mounting brackets with the proper tightening torque. In addition, securely tighten the auto switch mounting screws periodically.

5. **Be careful not to pull or strain the lead wires.**
   Be careful not to apply excess tensile force (over 10 N) to the auto switches. Also, adjust the position of the auto switches by sufficiently loosening the auto switch mounting screws (3 turns or more).

6. **Do not use the auto switches in environments with strong vibration and impact.**
   Do not use the auto switches in environments where excess vibration and impact force outside of the specifications are applied.

7. **Be sure to use a switch spacer and a switch bracket.**
   Confirm that a switch spacer is mounted to the end of the auto switch before fastening the auto switch. If the switch bracket is not mounted, the auto switch may move after installation.