Low profile compact cylinder utilizes a large concentric guiding sleeve to provide excellent eccentric load resistance.

- **Mounting height greatly reduced**
  
  Low profile cylinder enables compact machine design.

- **Built-in non-rotating mechanism**
  Rotation of top table is prevented by non-rotating pin located inside the cylinder.

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Non-rotating accuracy θ</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>±0.08°</td>
</tr>
<tr>
<td>63</td>
<td>±0.06°</td>
</tr>
<tr>
<td>100</td>
<td>±0.05°</td>
</tr>
</tbody>
</table>

- **With T-slot**
  T-slots are provided on 3 faces of the body (except port face), allowing mounting for various brackets. (Not suitable for mounting the cylinder.)

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Standard stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF 40</td>
<td>40</td>
<td>30 50 75 100</td>
</tr>
<tr>
<td>MGF 63</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>MGF100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
Low profile compact cylinder utilizes a large concentric guiding sleeve to provide excellent eccentric load resistance

Large concentric guiding sleeve
(Eccentric load resistant)

Thick guide sleeve rod enables the cylinder to be resistant against eccentric loads from any direction within a 360° radius.

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Allowable moment (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>63</td>
<td>40</td>
</tr>
<tr>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

Value at a cylinder speed of 100mm/s

Auto switch can be mounted on 4 faces of the body.

Mounting from 2 directions is possible.

Typical applications
- Change of transfer direction
- Positioning

Mounting from top
Mounting from bottom
Selection

Caution

1. Use the cylinder within its load limitation.
Select a model taking into consideration horizontal allowables loads, rotation torque and eccentric loads. When used in excess of the applicable limit, eccentric loads applied to the tube guide will cause wear of the guide, decrease of life of the cylinder, and damage of the mounting bolts.

2. Do not allow any dents, scratches, etc. on the mounting faces of either the plate or end plate.
Mounting face may deteriorate and cause decrease of the life of the cylinder, increase of sliding resistance, etc.

3. Do not allow hand, fingers, etc. near the cylinder during cylinder operation.
Your fingers may be caught between the body and the plate. If you need come near to the cylinder, install a cover, etc. on the cylinder.

4. Do not locate near objects which will be affected by magnets.
Since a magnet is built in the cylinder, do not place near magnetic disks, magnetic cards, magnetic tapes, etc. Data may be lost.

5. If the cylinder is operated vertically with heavy loads, a measure must be taken to prevent rapid advancement of the piston rod when starting to operate in the downward direction.
If the cylinder is operated vertically with heavy loads at the same pressure for both upward and downward directions, starting speed in the downward direction may be over the speed controlled with a speed controller. In this case, use a dual pressure control circuit for air circuit.

Example)

Mounting

Caution

1. For mounting the cylinder, use screws with appropriate length and tighten the screws less than the max. clamping torque.

Mounting from top

Mounting from bottom

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable screw</th>
<th>Max. clamping torque (Nm)</th>
<th>l (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF 40</td>
<td>M6x1</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>MGF 63</td>
<td>M8x1.25</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>MGF100</td>
<td>M10x1.5</td>
<td>51</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable screw</th>
<th>Max. clamping torque (Nm)</th>
<th>l (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF 40</td>
<td>M8x1.25</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>MGF 63</td>
<td>M10x1.5</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>MGF100</td>
<td>M12x1.75</td>
<td>65</td>
<td>10</td>
</tr>
</tbody>
</table>

2. When mounting a workpiece to the cylinder, do so when the piston is retracted. Also, make sure that a rotational torque that exceeds the allowable torque (given on p. 2-497) is not applied to the cylinder body. (This will damage the non-rotating mechanism and lead to a malfunction.)
### How to Order

**MGF**

<table>
<thead>
<tr>
<th>Bore size/ Standard stroke (mm)</th>
<th>Number of auto switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø40 30, 50, 75, 100</td>
<td>Nil</td>
</tr>
<tr>
<td>ø63 30, 50, 75, 100</td>
<td>S 1 pc.</td>
</tr>
<tr>
<td>ø100 30, 50, 75, 100</td>
<td>n &quot;n&quot; pcs.</td>
</tr>
</tbody>
</table>

- **Number of auto switches**
  - Nil: Without auto switch (Built-in magnet)
  - S: 1 pc.
  - n: "n" pcs.

**Guide Table**

<table>
<thead>
<tr>
<th>Type</th>
<th>Special function</th>
<th>Electrical entry</th>
<th>Wiring (Output)</th>
<th>DC</th>
<th>AC</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>Grommet</td>
<td>3-wire (NPN)</td>
<td>5 V, 12 V</td>
<td></td>
<td></td>
<td>M9NV, M9N</td>
<td>0.5</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>3-wire (PNP)</td>
<td>5 V, 12 V</td>
<td></td>
<td></td>
<td>M9PV, M9P</td>
<td>1</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>2-wire (NPN)</td>
<td>12 V</td>
<td></td>
<td></td>
<td>M9BV, M9B</td>
<td>3</td>
<td>—</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>3-wire (NPN)</td>
<td>5 V, 12 V</td>
<td></td>
<td></td>
<td>M9NWV, M9NW</td>
<td>5</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>3-wire (PNP)</td>
<td>12 V</td>
<td></td>
<td></td>
<td>M9PWV, M9PW</td>
<td>5</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>2-wire (NPN)</td>
<td>12 V</td>
<td></td>
<td></td>
<td>M9BWV, M9BW</td>
<td>5</td>
<td>—</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>3-wire (NPN)</td>
<td>5 V, 12 V</td>
<td></td>
<td></td>
<td>M9NAV, M9NA</td>
<td>5</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>3-wire (PNP)</td>
<td>12 V</td>
<td></td>
<td></td>
<td>M9PAV, M9PA</td>
<td>5</td>
<td>—</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>2-wire (NPN)</td>
<td>12 V</td>
<td></td>
<td></td>
<td>M9BAV, M9BA</td>
<td>5</td>
<td>—</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Reed auto switch</td>
<td>Grommet</td>
<td>3-wire (NPN equiv.)</td>
<td>5 V</td>
<td></td>
<td></td>
<td>Z76</td>
<td>100</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td>Reed auto switch</td>
<td>No</td>
<td>2-wire</td>
<td>24 V, 12 V</td>
<td></td>
<td></td>
<td>Z73</td>
<td>100</td>
<td>—</td>
<td>Relay, PLC</td>
</tr>
</tbody>
</table>

**Applicable Auto Switches**

- Select applicable auto switches from the table below.

- **Diagnostic indication** (2-colour indication)
- **Water resistant** (2-colour indication)

**Series MGF**

**ø40, ø63, ø100**

- **Guide Table**
- **Auto switch**

---

* Since there are other applicable auto switches than listed, refer to page 2-502 for details.
* For details about auto switches with pre-wired connector, refer to Auto Switch Guide.
* Auto switches are shipped together (not assembled).
### Specifications

<table>
<thead>
<tr>
<th>Action</th>
<th>Double acting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Proof pressure</td>
<td>1.5 MPa</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.1 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 60°C</td>
</tr>
<tr>
<td>Operating piston speed</td>
<td>20 to 200 mm/s</td>
</tr>
<tr>
<td>Cushion</td>
<td>Rubber bumper at both ends</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Stroke allowable tolerance</td>
<td>+1.0 mm</td>
</tr>
</tbody>
</table>

### Standard Stroke

<table>
<thead>
<tr>
<th>Model</th>
<th>Standard stroke (mm)</th>
<th>Intermediate stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF 40</td>
<td>30, 50, 75, 100</td>
<td>Intermediate strokes (increments of 5mm) other than standard strokes are available with a spacer of 5, 10, 15, 20, and 25mm. Example MGF63-15 A spacer of 15mm is installed in the MGF63-30. Therefore, the total length is same as that of 30mm stroke.</td>
</tr>
<tr>
<td>MGF 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGF100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Theoretical Force

<table>
<thead>
<tr>
<th>Bore (mm)</th>
<th>Rod dia. (mm)</th>
<th>Operating direction</th>
<th>Piston area (mm²)</th>
<th>Operating pressure (MPa)</th>
<th>OUT(N)</th>
<th>IN(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>25</td>
<td>OUT</td>
<td>1256</td>
<td>0.2</td>
<td>765</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN</td>
<td>251</td>
<td>0.3</td>
<td>376</td>
<td>229</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>502</td>
<td>0.4</td>
<td>628</td>
<td>306</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>628</td>
<td>0.5</td>
<td>753</td>
<td>382</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>753</td>
<td>0.6</td>
<td>879</td>
<td>459</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>879</td>
<td>0.7</td>
<td>1004</td>
<td>535</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1004</td>
<td>0.8</td>
<td>1130</td>
<td>612</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1130</td>
<td>0.9</td>
<td>1256</td>
<td>688</td>
</tr>
<tr>
<td>63</td>
<td>36</td>
<td>OUT</td>
<td>3117</td>
<td>0.2</td>
<td>623</td>
<td>935</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN</td>
<td>634</td>
<td>0.3</td>
<td>839</td>
<td>509</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1246</td>
<td>0.4</td>
<td>1558</td>
<td>839</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1558</td>
<td>0.5</td>
<td>1870</td>
<td>1049</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1870</td>
<td>0.6</td>
<td>2182</td>
<td>1469</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2182</td>
<td>0.7</td>
<td>2493</td>
<td>1679</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2493</td>
<td>0.8</td>
<td>2805</td>
<td>1889</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2805</td>
<td>0.9</td>
<td>3117</td>
<td>2099</td>
</tr>
<tr>
<td>100</td>
<td>36</td>
<td>OUT</td>
<td>7853</td>
<td>0.2</td>
<td>1570</td>
<td>2356</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN</td>
<td>1367</td>
<td>0.3</td>
<td>2050</td>
<td>2734</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3141</td>
<td>0.4</td>
<td>3926</td>
<td>4101</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3926</td>
<td>0.5</td>
<td>4711</td>
<td>4784</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4711</td>
<td>0.6</td>
<td>5497</td>
<td>5468</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5497</td>
<td>0.7</td>
<td>6282</td>
<td>6151</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6282</td>
<td>0.8</td>
<td>7067</td>
<td>6835</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7067</td>
<td>0.9</td>
<td>7853</td>
<td></td>
</tr>
</tbody>
</table>

Note) Theoretical force=Pressure X Piston area

### Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Standard stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF 40</td>
<td>40</td>
<td>2.0, 2.4, 3.0, 3.6</td>
</tr>
<tr>
<td>MGF 63</td>
<td>63</td>
<td>4.1, 4.8, 5.7, 6.6</td>
</tr>
<tr>
<td>MGF100</td>
<td>100</td>
<td>6.2, 7.2, 8.4, 9.6</td>
</tr>
</tbody>
</table>
Series MGF
How to Select a Model

Operating Conditions
1. Cylinder bore size: øD (mm)
2. Operating pressure: P (MPa)
3. Weight of total loads: Wo (kg)
   \[ Wo = \text{Load weight: WA} - \text{Jig weight: WB} \]
4. Operating piston speed: \( v \) (mm/s)

Calculate required output \( FA \)
\[ FA = \frac{9.8 \times Wo}{\eta} \]

<table>
<thead>
<tr>
<th>Operating pressure (MPa)</th>
<th>( \eta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>0.4 or more</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Check Theoretical Output \( FO \)
\( FO \): Refer to "Theoretical Output" on page 2-495

Calculate required output \( FA \)

Check eccentric distance \( L \)
m: Refer to "Operating Conditions (Allowable eccentric load)" on page 2-497

Model selected

Allowable rotational torque

Non-rotating accuracy

Deflection angle of plate for eccentric load

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>63</td>
<td>22</td>
</tr>
<tr>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Non-rotating accuracy (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>± 0.08°</td>
</tr>
<tr>
<td>63</td>
<td>± 0.06°</td>
</tr>
<tr>
<td>100</td>
<td>± 0.05°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Deflection angle (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>± 0.35° or less</td>
</tr>
<tr>
<td>63</td>
<td>± 0.3° or less</td>
</tr>
<tr>
<td>100</td>
<td>± 0.3° or less</td>
</tr>
</tbody>
</table>

Note) The value given for the non-rotating accuracy is applicable below the allowable rotational torque. If a greater rotational torque is applied, the non-rotating rod (page 2-498 (B)) bends, exceeding the value of the non-rotating accuracy.
Operating Conditions

Allowable horizontal direction load

The maximum value of load which can be applied at an eccentric position at a distance of \( \ell \) (mm) from the cylinder center.

How to read the graph

1) When the load weight is 70kg, eccentric distance is 60mm, and the maximum speed is 150mm/s Select MGF100 from Graph 7.
2) When MGF63 is operated with a load weight 30kg and 100mm eccentric distance From Graph 6, the cylinder can be used at a maximum speed of 100mm/s or less.
Parts list

<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>Clear anodized</td>
</tr>
<tr>
<td>2</td>
<td>Tube</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>3</td>
<td>Rod cover</td>
<td>Aluminum alloy</td>
<td>Clear anodized</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Aluminum alloy</td>
<td>Chromated</td>
</tr>
<tr>
<td>5</td>
<td>Piston rod</td>
<td>Carbon steel</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>6</td>
<td>Plate</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>7</td>
<td>End plate</td>
<td>Aluminum alloy</td>
<td>Anodized</td>
</tr>
<tr>
<td>8</td>
<td>Non-rotating rod</td>
<td>Stainless steel</td>
<td>Hard chrome plated</td>
</tr>
<tr>
<td>9</td>
<td>Bushing</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bushing (for non-rotating rod)</td>
<td>Lead-bronze casting</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Bumper</td>
<td>Urethane rubber</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hexagon socket head cap screw A</td>
<td>Carbon steel</td>
<td>Nickel plated</td>
</tr>
</tbody>
</table>

Replacement parts: Seal kits

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Order no.</th>
<th>Kit components</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>MGF40-PS</td>
<td>Items 19 through 23 from the table above.</td>
</tr>
<tr>
<td>63</td>
<td>MGF63-PS</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>MGF100-PS</td>
<td></td>
</tr>
</tbody>
</table>

Sequence MGF

When the cylinder is extended

When the cylinder is retracted

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Hexagon socket head cap screw B</td>
<td>Carbon steel</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>14</td>
<td>Hexagon socket head cap screw C</td>
<td>Carbon steel</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>15</td>
<td>Magnet</td>
<td>Magnet</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Plug</td>
<td>Carbon steel</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Element</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Snap ring</td>
<td>Spring steel</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Rod seal</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Piston seal</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>O-ring A</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>O-ring B</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>O-ring C</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Reinforcement ring</td>
<td>Carbon steel</td>
<td>Electroless nickel plated</td>
</tr>
</tbody>
</table>

Seal kit is not compatible with the clean series.
Seal kit includes 3 to 8. Order the seal kit based on each bore size.
Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-L-010 (10g)
MGF40

Dimensions Ø 40

Guide Table Series MGF

When the cylinder is extended.

2-1/8 Port for extending cylinder

Bleed hole for guide (with element)

Port for retracting cylinder

4-M8x1.25 Through hole

6-K (6 places)
Series MGF

Dimensions ø 63

MGF63

When the cylinder is extended.

2-1/4 Port for extending cylinder
Port for retracting cylinder

Bleed hole for guide (with element)

4-M10x1.5 Through hole

M6: T-slot for hex. bolt

6-K (6 places)
When the cylinder is extended.

2-1/4 Port for extending cylinder
Port for retracting cylinder

Bleed hole for guide (with element)

4-M12x1.75 Through hole

6-M T-slot for hex. bolt

6-K (6 places)
## Series MGF
### Auto Switch Mounting

#### Minimum Auto Switch Mounting Stroke

<table>
<thead>
<tr>
<th>No. of auto switches mounted</th>
<th>Applicable auto switch model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mm)</td>
</tr>
<tr>
<td>1 pc.</td>
<td>D-M9□V, D-M9□W, D-M9□AV</td>
</tr>
<tr>
<td></td>
<td>5, 10, 15, 20</td>
</tr>
<tr>
<td>2 pcs.</td>
<td>D-M9□V, D-M9□W, D-M9□AV</td>
</tr>
<tr>
<td></td>
<td>10, 20, 10, 15</td>
</tr>
</tbody>
</table>

#### Auto Switch Proper Mounting Position (Detection at Stroke End)

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9□V</td>
<td>40</td>
</tr>
<tr>
<td>D-M9□W</td>
<td>63</td>
</tr>
<tr>
<td>D-M9□AV</td>
<td>100</td>
</tr>
<tr>
<td>D-Z7□Z80</td>
<td>6</td>
</tr>
<tr>
<td>D-Y69□/Y7PV</td>
<td>10</td>
</tr>
<tr>
<td>D-Y7P/Y7WW</td>
<td>5</td>
</tr>
<tr>
<td>D-Y7BA</td>
<td>15</td>
</tr>
<tr>
<td>D-Y7PW</td>
<td>4</td>
</tr>
<tr>
<td>D-Y7BW</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Operating Range

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9□V</td>
<td>40</td>
</tr>
<tr>
<td>D-M9□W</td>
<td>63</td>
</tr>
<tr>
<td>D-M9□AV</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Auto Switch Mounting Bracket: Part No.

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9□V</td>
<td>ø40, ø63, ø100</td>
</tr>
<tr>
<td>D-M9□W</td>
<td>BMG2-012</td>
</tr>
<tr>
<td>D-M9□AV</td>
<td>BMG2-012</td>
</tr>
</tbody>
</table>

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion) There may be the case it will vary substantially depending on an ambient environment.

---

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to pages 1903 to 2007.

<table>
<thead>
<tr>
<th>Auto switch type</th>
<th>Model</th>
<th>Electrical entry (Fetching direction)</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid state</td>
<td>D-Y69A, Y69B, Y7PV</td>
<td>Grommet (Perpendicular)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>D-Y7NW, Y7PW, Y7BW</td>
<td>Grommet (In-line)</td>
<td>Diagnostic indication (2-color indication)</td>
</tr>
<tr>
<td></td>
<td>D-Y59A, Y59B, Y7P</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>D-Y7NW, Y7PW, Y7BW</td>
<td></td>
<td>Diagnostic indication (2-color indication)</td>
</tr>
</tbody>
</table>

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1960 and 1961 for details.

* Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H/Y7G/Y7H type) are also available. For details, refer to pages 1911 and 1913.