Micro Clamp Cylinder

Compact Width 20 mm
(Base type, Tandem type)

Lightweight 250 g
(Base type)

Maximum clamping force 200 N
(Tandem type) * Operating pressure: 0.6 MPa

Maximum holding force 300 N
(Base type, Tandem type) * When operating pressure of 0.2 to 0.6 MPa is applied.

Flat clamping characteristics
Outputs constant clamping force for workpiece thickness up to 3.5 mm. * Figure 1
- Easy adjustment of clamping position during assembly
- When thickness of workpiece differs, adjustment is not required if within range.

Relationship between reference plane distance and clamping force
(Arm length: 25 mm, 0.6 MPa)

- Holding force
- Tandem type
- Base type

Reduction of design assembly labor by unitization
Arm assembly Mounting assembly added to clamp cylinder.

CKZM16 -X2800 (Base type) -X2900 (Tandem type)
**Easy mounting**  2 types of mounting possible

- **Basic mounting**
  Press the mounting bracket against surface A, and fix it with the work clamping base. Using a bolt to support the mounting bracket is recommended.

- **Non-rotating mounting**
  The work clamping base can be used as a parallel key to prevent rotation. Using a bolt to support the mounting bracket is recommended.

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**Auto switch mountable**

Magnetic field resistant auto switch  D-P3DWA
Compact auto switch  D-M9  D-A9

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**Dust resistant construction**

Fully closed structure prevents dust from entering easily.

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**Application examples**

- **Clamping of workpiece**
  Clamps edges of panels which do not require a long arm.

- **Gripper handling workpiece**
  Micro Clamp Cylinder
### Micro Clamp Cylinder

**CKZM16-X2800 -X2900**

#### How to Order

**CKZM16 - 68 - M9BW - X2800**

**Auto switch type**
- Nil
- Without auto switch

**Number of auto switches**
- Nil
- 2 pcs.
- 1 pc.
- "n" pcs.

#### Auto Switch Model
Refer to the WEB catalog or Best Pneumatics No. 3 for further information on auto switches.

### Compact auto switch (-X2800 and -X2900 types only)

<table>
<thead>
<tr>
<th>Type</th>
<th>Special function</th>
<th>Electrical entry</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>M9NV</td>
<td>5 V, 12 V</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Diagnostic indication (2-color indication)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M9NV</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Water resistant (2-color indication)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M9NV</td>
<td>24 V</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Reed switch</td>
<td>—</td>
<td>Grommet</td>
<td>Yes</td>
<td>2-wire</td>
<td>A96</td>
<td>5 V</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>A96</td>
<td>100 V</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

*1 Water resistant type auto switches can be mounted on the above models, but in such a case SMC cannot guarantee water resistance.

*2 Lead wire length symbols:
- 0.5 m: ··········· Nil (Example) M9NWV
- 1 m: ··········· M (Example) M9NWVM
- 3 m: ··········· Z (Example) M9NWVZ

* Solid state auto switches marked with "O" are produced upon receipt of order.

* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 2.

### Magnetic field resistant auto switch (-X2900 type only)

<table>
<thead>
<tr>
<th>Type</th>
<th>Auto switch model</th>
<th>Applicable magnetic field</th>
<th>Electrical entry</th>
<th>Indicator light</th>
<th>Wiring (Pin no. in use)</th>
<th>Load voltage</th>
<th>Lead wire length [m]</th>
<th>Pre-wired connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-P3DWASC</td>
<td>AC magnetic field</td>
<td>Pre-wired connector</td>
<td>2-color indication</td>
<td>2-wire (3 – 4)</td>
<td>24 VDC</td>
<td>0.3 m</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>D-P3DWASE</td>
<td>(Single-phase AC welding magnetic field)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>D-P3DWA</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.5 m</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>D-P3DWAL</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3 m</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>D-P3DWAZ</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>5 m</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Base type (-X2800)</th>
<th>Tandem type (-X2900)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.2 to 0.6 MPa</td>
<td></td>
</tr>
<tr>
<td>Appropriate workpiece thickness range</td>
<td>3.5 mm or less</td>
<td></td>
</tr>
<tr>
<td>Maximum holding force</td>
<td>300 N</td>
<td></td>
</tr>
<tr>
<td>Cylinder bore size</td>
<td>16 mm</td>
<td></td>
</tr>
<tr>
<td>Cylinder stroke</td>
<td>27 mm</td>
<td>25 mm x 2</td>
</tr>
<tr>
<td>Arm length</td>
<td>25 mm</td>
<td></td>
</tr>
<tr>
<td>Arm opening angle</td>
<td>68 degrees</td>
<td></td>
</tr>
<tr>
<td>Clamping force</td>
<td>Refer to page 3</td>
<td></td>
</tr>
<tr>
<td>Appropriate workpiece insert length</td>
<td>8 mm (Refer to page 4)</td>
<td>8 mm (Refer to page 5)</td>
</tr>
<tr>
<td>Weight</td>
<td>250 g</td>
<td>330 g</td>
</tr>
</tbody>
</table>

Note) The maximum holding force is 300 N when a pressure of 0.2 to 0.6 MPa is supplied. The clamping state is not maintained while operating air is exhausted.
Clamping Force Characteristics (Reference Plane Distance and Clamping Force)

Arm length: 25 mm

Base type (-X2800)

Tandem type (-X2900)

Note 1) The clamping operating range is 3.5 mm upward from the reference plane, and 0.5 mm downward from the reference plane when the work clamping base is removed.

Note 2) When the height is changed by inserting a shim between the work clamping base and the mounting bracket, the "clamping force characteristics/reference plane distance" becomes narrower only for the height changed.
Hexagon socket head cap screw
(Proper hex key across flat—2 mm)

Manual window cover
(Manual window)

Unclamp
(Arm opening angle: 68 degrees)

Hexagon nut
(Note 1)

Width across flats 9

Work clamping base
(Note 3)

Note 1) The hexagon nut is installed to prevent detachment of the work clamping base before the shipment. Remove the hexagon nut when the product is installed to the equipment.

Note 3) If the clamping base is used to clamp the workpiece, the torque range is 5.2 to 6.7 [N·m].
CKZM16-X2800

Dimensions/Tandem Type (-X2900)

Hexagon socket head cap screw
(Proper hex key across flat—2 mm)

Manual window cover
(Manual window)

Unclamp side port
M5

Clamp side port
M5

Auto switch groove
(Note 2)

Width across flats 9

Work clamping base
(Note 3)

Hexagon nut
(Note 1)

M6 x 1.0 through

Hexagon nut
(Note 1)

M6 x 1.0

Note 1) The hexagon nut is installed to prevent detachment of the work clamping base before the shipment.
Remove the hexagon nut when the product is installed to the equipment.

Note 3) If the clamping base is used to clamp the workpiece, the torque range is 5.2 to 6.7 [N·m].

Note 2) The maximum possible clamping depth.
Auto Switch Proper Mounting Position (Detection at Stroke End) and its Mounting Height

Auto switch mounting position is the most sensitive position for when the arm positions are clamping and unclamping. The clamp side switch position is when the workpiece thickness 0 mm.

Base type (-X2800)

D-M9
D-A9

⚠️ Caution
- The auto switch mounting position on the clamp side changes with the workpiece thickness. It cannot be mounted in a position which detects the overall workpiece thickness of 0 to 3.5 mm.
- 2 switches can not be installed in one switch groove.

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9</td>
<td>45</td>
<td>18.8</td>
</tr>
<tr>
<td>D-A9</td>
<td>49</td>
<td>22.8</td>
</tr>
</tbody>
</table>

Tandem type (-X2900)

D-P3DWA
D-M9
D-A9

⚠️ Caution
- The auto switch mounting position on the clamp side changes with the workpiece thickness. It cannot be mounted in a position which detects the overall workpiece thickness of 0 to 3.5 mm.
Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

Warning

1. If multiple cylinders are operated adjacent to each other, the magnets that are enclosed in the adjacent cylinders could affect the operation of the auto switches, causing the switches to malfunction. Therefore, make sure that the mounting pitch of the cylinders is at least that indicated in the table below.

Base type (-X2800)

Cylinder minimum mounting pitch

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>L</th>
<th>Without shielding plate</th>
<th>With shielding plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9.</td>
<td>25</td>
<td>35</td>
<td>5</td>
</tr>
<tr>
<td>D-A9.</td>
<td>21</td>
<td>21</td>
<td>1</td>
</tr>
</tbody>
</table>

Tandem type (-X2900)

Cylinder minimum mounting pitch

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>L</th>
<th>Without shielding plate</th>
<th>With shielding plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9.</td>
<td>25</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>D-A9.</td>
<td>21</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>D-P3DWA</td>
<td>21</td>
<td>35</td>
<td>1</td>
</tr>
</tbody>
</table>

How to manually unclamp while the operating air is exhausted.

Caution

1. Absolutely do not release the lock until the safety is ensured.
2. Loosen the hexagon socket head cap screw for “manual window cover”. And rotate the window.
3. Insert a long stick-like object into the “manual window” and push the joint inside down.
4. Confirm “manual window” is completely covered with the “manual window cover”. Then tighten the hexagon socket head cap screw.

Warning

1. Do not attach any load, including a jig, onto the end of the arm assembly (moving part).

Note for Loads on End of Arm Assembly (Moving Part)

Warning

If cylinders are used with a mounting pitch less than that shown on the left, they must be shielded with iron plates or the separately sold magnetic shielding plate (part no.: MU-S025). Please contact SMC for further information.

Material: Ferrite stainless steel
Thickness: 0.3 mm
Since the back side is treated with adhesive, it is possible to attach to the cylinder.

How to use

In order to prevent the auto switch mounted on cylinder B adjacent to the magnetic force of cylinder A, use a shielding plate to block the magnetic force.

2. The magnetic field resistant auto switch (D-P3DWA) cannot be used in environments with DC magnetic fields. Even under AC magnetic fields, if a magnetic body structure is placed very close to the cylinder, it will be affected by magnetization. Use the auto switch at a sufficient distance.

Warning

1. Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.