Magnetic Field Resistant
2-Color Display Solid State Auto Switch

It is possible to use in an environment which generates a magnetic field disturbance (AC magnetic field).

For use with AC spot welders, which generate strong magnetic field.

If the current of the AC welding machine is 16000 A or lower, the switch can be used, even if the distance between the welding conductor and the cylinder/actuator or auto switch is 0 mm.

Volume is reduced by 70% (compared to existing switches)

RoHS compliant

Can be mounted on bore size Ø25 or Ø32 cylinder/actuator.

Miniaturization of the auto switch has made it possible to mount onto cylinders/actuators with small bore sizes (Ø25 and Ø32).

Series D-P3DW
When the AC welding current is 16000 A or less, the operational distance between the welding conductor and the cylinder/actuator or auto switch can be 0 mm.

For use with single-phase AC welders. If it is used for current inverter welders (including rectifying type) and condenser type welders, the magnetic field resistance is reduced. Please contact SMC regarding the performance.

Improvised maintenance ability
As an auto switch mounting bracket is fixed on the cylinder/actuator side, the position does not need to be readjusted when the auto switch is replaced.

For use with single-phase AC welders. If it is used for current inverter welders (including rectifying type) and condenser type welders, the magnetic field resistance is reduced. Please contact SMC regarding the performance.
### Applicable Cylinders/Actuators

<table>
<thead>
<tr>
<th>Applicable cylinder/actuator</th>
<th>Series</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamp cylinder</td>
<td>CKG1</td>
<td>25, 32, 40, 50, 63, 80, 100, 125</td>
</tr>
<tr>
<td>Clamp cylinder with lock</td>
<td>CLK2G</td>
<td></td>
</tr>
<tr>
<td>Compact cylinder</td>
<td>CDQS</td>
<td></td>
</tr>
<tr>
<td>Compact cylinder with lock</td>
<td>CDQ2</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder</td>
<td>CDLQ</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>MGP</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>MGPS</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder</td>
<td>MLGP</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>MDB</td>
<td></td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>CDA2</td>
<td></td>
</tr>
<tr>
<td>Air cylinder</td>
<td>MGP</td>
<td></td>
</tr>
<tr>
<td>Air cylinder with lock</td>
<td>CDA2</td>
<td></td>
</tr>
<tr>
<td>Air cylinder with lock</td>
<td>CDNA</td>
<td></td>
</tr>
<tr>
<td>Pin clamp cylinder</td>
<td>CDNA</td>
<td></td>
</tr>
<tr>
<td>Pin clamp cylinder with lock</td>
<td>C(L)KQG</td>
<td></td>
</tr>
</tbody>
</table>

- Newly available
- Already available with conventional models

### How to Order Cylinder/Actuator with Auto Switch (Example)

**CKG1A40-100Y-P3DWSC**

- **Auto switch**: Nil
- **Number of auto switches**:
  - Nil: 2 pcs.
  - S: 1 pc.
  - n: n pcs.

- **Lead wire length**:
  - SC: 0.3 m (M12 connector type: 3 to 4 pins)
  - SE: 0.3 m (M12 connector type: 1 to 4 pins)
  - Nil: 0.5 m
  - L: 3 m
  - Z: 5 m

*For auto switch model, refer to How to Order.*

### How to Order

**D-P3DW SC**

- **Lead wire length**:
  - SC: 0.3 m (M12 connector type: 3 to 4 pins)
  - SE: 0.3 m (M12 connector type: 1 to 4 pins)
  - Nil: 0.5 m
  - L: 3 m
  - Z: 5 m

*When cylinders/actuators are ordered with an auto switch, the cylinder/actuator, auto switch and auto switch mounting bracket (including screws) are enclosed.*

*When the auto switch is ordered on its own, the auto switch mounting bracket is not included. In that case, please order it separately.*

---

**Features 2**

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Magnetic Field Resistant 2-Color Display Solid State Auto Switch
D-P3DWSC/D-P3DWSE
(Electrical entry: Pre-wired connector)

Auto Switch Specifications

- **Auto switch model**
  - D-P3DWSC
  - D-P3DWSE
- **Applicable load**
  - 24 V relay, PLC
- **Load voltage**
  - 24 VDC (20 to 28 VDC)
- **Load current**
  - 6 to 40 mA
- **Internal voltage drop**
  - 5 V or less
- **Leakage current**
  - 1 mA or less at 24 VDC
- **Operating time**
  - 40 ms or less
- **Indicator light**
  - Operating range: Red LED illuminates.
  - Proper operating range: Green LED illuminates.
- **Standards**
  - CE marking, UL (CSA), RoHS

- **Precautions**
  - **Caution**
    - For single-phase AC welding machines
    - If it is used for current inverter welders (including rectifying type) and condenser type welders, the magnetic field resistance is reduced. Please contact SMC regarding the performance.

- **Auto Switch Internal Circuit**

- **Indicator light/Display method**
  - Operating range: ON
  - Proper operating range: OFF

- **Dimensions**
  - **Unit: mm**
    - **Auto switch model**
      - D-P3DWSC
      - D-P3DWSE
    - **Body**
      - **Mass**
        - **Unit: g**

- **Approved**

---

**Caution**

**Precautions**

For single-phase AC welding machines
If it is used for current inverter welders (including rectifying type) and condenser type welders, the magnetic field resistance is reduced. Please contact SMC regarding the performance.

**Auto Switch Internal Circuit**

**D-P3DWSC**

**D-P3DWSE**

**Indicator light/Display method**

- **Operating range**: ON
- **Proper operating range**: OFF

**Dimensions**

**Unit: mm**

**Body**

**Auto switch mounting bracket**

- **(For round groove mounting: BQ3-032S)**
- **(For square groove mounting: BMGS-025S)**

- **Connect pin assignment**

---

1. SMC

For details about certified products conforming to international standards, visit us at www.smcworld.com.

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Magnetic Field Resistant 2-Color Display Solid State Auto Switch
D-P3DW/L/Z
(Electrical entry: Grommet)

Auto Switch Specifications

<table>
<thead>
<tr>
<th>D-P3DW/L/Z (With indicator light)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto switch model</td>
<td>D-P3DW/L/Z</td>
</tr>
<tr>
<td>Applicable load</td>
<td>24 VDC relay, PLC</td>
</tr>
<tr>
<td>Load voltage</td>
<td>24 VDC (20 to 28 VDC)</td>
</tr>
<tr>
<td>Load current</td>
<td>6 to 40 mA</td>
</tr>
<tr>
<td>Internal voltage drop</td>
<td>5 V or less</td>
</tr>
<tr>
<td>Leakage current</td>
<td>1 mA or less at 24 VDC</td>
</tr>
<tr>
<td>Operating time</td>
<td>40 ms or less</td>
</tr>
<tr>
<td>Indicator light</td>
<td>Operating range — Red LED illuminates. Proper operating range — Green LED illuminates.</td>
</tr>
</tbody>
</table>

- Lead wire — Oilproof heavy-duty vinyl cable, ø4.8, 0.5 mm², 2 cores, D-P3DW: 0.5 m, D-P3DLW: 3 m, D-P3DWZ: 5 m
- Impact resistance — Switch: 1000 m/s²
- Insulation resistance — 50 MΩ or more at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC for 1 minute (between lead wire and case)
- Ambient temperature — –10 to 60°C
- Enclosure — IEC60529 standard IP67
- Polarity: Non-polar

Magnetic Field Resistance
If the current of the AC welding machine is 16000 A or lower, the auto switch can be used, even if the distance between the welding conductor (gun cable) and the cylinder/axulator or auto switch is 0 mm. Please contact SMC when the AC welding current exceeds 16000 A.

Mass

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>D-P3DW/L/Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead wire length (m)</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>102</td>
</tr>
<tr>
<td>5</td>
<td>168</td>
</tr>
</tbody>
</table>

Dimensions

Body

- Indicator light
- ø2.8 mounting hole
- ø5.0 (3000, 5000)
- 10.5
- 29
- Most sensitive position

Approved

Auto switch mounting bracket (For round groove mounting: BQ3-032S)

Auto switch mounting bracket (For square groove mounting: BMG5-025S)

- When the auto switch is ordered on its own, the auto switch mounting bracket is not enclosed. In that case, please order it separately.
**Series D-P3DW**

Auto Switch Proper Mounting Position and Its Mounting Height

**CKG1, CLK2G**
- $\phi 40$ to $\phi 63$

**MDB, MDNB**
- $\phi 32$ to $\phi 63$
- $\phi 80$ to $\phi 125$

**CDQS, CDQ2, CDLQ**
- $\phi 25$
- $\phi 32$ to $\phi 100$

**CDA2, CDNA**
- $\phi 40$, $\phi 50$
- $\phi 63$ to $\phi 100$

**MGP, MLGP, MGPS**
- $\phi 25$ to $\phi 63$
- $\phi 80$, $\phi 100$

**CKQG, CLKQG**
- $\phi 50$

---

Courtesy of Steven Engineering, Inc. - 230 Ryan Way, South San Francisco, CA 94080-6370 - Main Office: (650) 588-9200 - Outside Local Area: (800) 258-9200 - www.stevenengineering.com
### CKG1, CLK2G

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>10.5</td>
<td>23.5</td>
<td>43.5</td>
</tr>
<tr>
<td>50</td>
<td>7</td>
<td>30</td>
<td>49.5</td>
</tr>
<tr>
<td>63</td>
<td>7</td>
<td>30</td>
<td>56.5</td>
</tr>
</tbody>
</table>

### MDB, MDNB

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
<th>Ht</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>6</td>
<td>3</td>
<td>34</td>
<td>23</td>
</tr>
<tr>
<td>40</td>
<td>6</td>
<td>3</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>50</td>
<td>6</td>
<td>4</td>
<td>42</td>
<td>31</td>
</tr>
<tr>
<td>63</td>
<td>6</td>
<td>4</td>
<td>50</td>
<td>36</td>
</tr>
<tr>
<td>80</td>
<td>4</td>
<td>2.5</td>
<td>56</td>
<td>45</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>2.5</td>
<td>63.5</td>
<td>53.5</td>
</tr>
<tr>
<td>125</td>
<td>6.5</td>
<td>6.5</td>
<td>74.5</td>
<td>64.5</td>
</tr>
</tbody>
</table>

### CDQ2

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>2.5</td>
<td>0</td>
<td>34.5</td>
</tr>
<tr>
<td>40</td>
<td>6.5</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>50</td>
<td>4.5</td>
<td>4.5</td>
<td>44</td>
</tr>
<tr>
<td>63</td>
<td>7</td>
<td>7.5</td>
<td>47.5</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>12</td>
<td>57.5</td>
</tr>
<tr>
<td>100</td>
<td>14.5</td>
<td>17.5</td>
<td>67.5</td>
</tr>
</tbody>
</table>

### CDLQ

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>32.5</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>32</td>
<td>34.5</td>
<td>0</td>
<td>34.5</td>
</tr>
<tr>
<td>40</td>
<td>40.5</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>50</td>
<td>39.5</td>
<td>4.5</td>
<td>44</td>
</tr>
<tr>
<td>63</td>
<td>46</td>
<td>7.5</td>
<td>47.5</td>
</tr>
<tr>
<td>80</td>
<td>53</td>
<td>12</td>
<td>57.5</td>
</tr>
<tr>
<td>100</td>
<td>64.5</td>
<td>17.5</td>
<td>67.5</td>
</tr>
</tbody>
</table>

### MGP, MLGP

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
<th>Ht</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.5</td>
<td>5</td>
<td>30</td>
<td>—</td>
</tr>
<tr>
<td>32</td>
<td>2.5</td>
<td>4</td>
<td>33</td>
<td>—</td>
</tr>
<tr>
<td>40</td>
<td>6.5</td>
<td>6.5</td>
<td>37</td>
<td>—</td>
</tr>
<tr>
<td>50</td>
<td>4.5</td>
<td>8.5</td>
<td>42.5</td>
<td>—</td>
</tr>
<tr>
<td>63</td>
<td>7</td>
<td>11</td>
<td>49.5</td>
<td>—</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>15.5</td>
<td>48</td>
<td>78.5</td>
</tr>
<tr>
<td>100</td>
<td>14.5</td>
<td>20.5</td>
<td>58</td>
<td>90</td>
</tr>
</tbody>
</table>

### CDQGS

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>B</th>
<th>Hs</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.5</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>32</td>
<td>34.5</td>
<td>0</td>
<td>34.5</td>
</tr>
<tr>
<td>40</td>
<td>40.5</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>50</td>
<td>39.5</td>
<td>4.5</td>
<td>44</td>
</tr>
<tr>
<td>63</td>
<td>46</td>
<td>7.5</td>
<td>47.5</td>
</tr>
<tr>
<td>80</td>
<td>53</td>
<td>12</td>
<td>57.5</td>
</tr>
<tr>
<td>100</td>
<td>64.5</td>
<td>17.5</td>
<td>67.5</td>
</tr>
</tbody>
</table>

### Note

The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.
## Minimum Stroke for Auto Switch Mounting

### CKG1, CLK2G

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>ø40 to ø63</th>
<th>1 pc.</th>
<th>2 pcs. (Different sides)</th>
<th>2 pcs. (Same side)</th>
</tr>
</thead>
</table>

Note: The standard strokes of the CKG1 and CLK2G are 50, 75, 100, 125 and 150 mm. When two auto switches are mounted onto a cylinder with stroke 50 mm, mount the auto switches on different sides.

### CDQS, CDQ2, CDLQ, CKQG, CLKQG

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>CDQS ø25</th>
<th>CDQ2 ø32 to ø100</th>
<th>CDLQ ø25 to ø100</th>
<th>CKQG, CLKQG ø50</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc.</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 pcs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MGP, MLGP, MGPS

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>MGP ø25 to ø100</th>
<th>MLGP ø25 to ø100</th>
<th>MGPS ø50, ø80</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc.</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 pcs.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MDB

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>Support brackets other than center trunnion</th>
<th>Center trunnion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ø32 to ø125</td>
<td>ø32</td>
</tr>
</tbody>
</table>

### MNB

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>Support brackets (No center trunnion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ø32 to ø100</td>
</tr>
</tbody>
</table>

### CDA2

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>Support brackets other than center trunnion</th>
<th>Center trunnion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ø40 to ø100</td>
<td>ø40 to ø100</td>
</tr>
</tbody>
</table>

### CDNA

<table>
<thead>
<tr>
<th>Number of auto switches</th>
<th>Support brackets other than center trunnion</th>
<th>Center trunnion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ø40 to ø63</td>
<td>ø80</td>
</tr>
</tbody>
</table>

Note: When a shorter stroke than the minimum feasible stroke is required for cylinder/actuator with built-in magnet, the stroke conforms to the feasible cylinder/actuator stroke.
## Operating Range of Auto Switch

<table>
<thead>
<tr>
<th>Series</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>63</th>
<th>80</th>
<th>100</th>
<th>125</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKG1</td>
<td>—</td>
<td>—</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CLK2G</td>
<td>—</td>
<td>—</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CDQS</td>
<td>5.5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CDQ2</td>
<td>—</td>
<td>6.5</td>
<td>6.5</td>
<td>5.5</td>
<td>7.5</td>
<td>7</td>
<td>8.5</td>
<td>—</td>
</tr>
<tr>
<td>CDLQ</td>
<td>4.5</td>
<td>4.5</td>
<td>6.5</td>
<td>5.5</td>
<td>7.5</td>
<td>7</td>
<td>8.5</td>
<td>—</td>
</tr>
<tr>
<td>MGP</td>
<td>6</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>6.5</td>
<td>7.5</td>
<td>7.5</td>
<td>—</td>
</tr>
<tr>
<td>MGPS</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>5.5</td>
<td>—</td>
<td>7.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MNB</td>
<td>—</td>
<td>4.5</td>
<td>5</td>
<td>5</td>
<td>5.5</td>
<td>4</td>
<td>6.5</td>
<td>8.5</td>
</tr>
<tr>
<td>CDA2</td>
<td>—</td>
<td>—</td>
<td>4.5</td>
<td>5</td>
<td>5</td>
<td>5.5</td>
<td>6</td>
<td>—</td>
</tr>
<tr>
<td>CDNA</td>
<td>—</td>
<td>—</td>
<td>5.5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion.) Value may greatly change depending on the surrounding environment.
Series D-P3DW

Mounting and Moving Method of Auto Switch

Direct Mounting to the Round Groove

<table>
<thead>
<tr>
<th>Applicable cylinder/actuator</th>
<th>Auto switch mounting bracket part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact cylinder</td>
<td>CDQS ø25</td>
</tr>
<tr>
<td>Compact cylinder with lock</td>
<td>BQ3-032S</td>
</tr>
<tr>
<td>Pin clamp cylinder</td>
<td>CKQG ø50</td>
</tr>
<tr>
<td>Pin clamp cylinder with lock</td>
<td>CLKQG ø50</td>
</tr>
</tbody>
</table>

Note: When the auto switch is mounted onto the CDQS2 end lock type, please contact SMC.

Mounting and Moving Method of D-P3DW (1)

1. Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket and fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.
2. Insert the temporarily tightened mounting bracket into the mating groove of the cylinder/actuator, and slide the auto switch onto the cylinder/actuator through the groove.
3. Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L). If the detecting position is changed, go back to step 2.
   - The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder/actuator. This enables the replacement of the auto switch without adjusting the auto switch position.

Caution for the Cylinder/Actuator Mounting

- When mounting the D-P3DW onto a cylinder/actuator with ø32 to ø50, to avoid mutual interference, use a fitting with width across flats 12 mm or less for ø32 and ø40, and use a fitting with width across flats 14 mm or less for ø50. Also, if the corner of the fitting interferes with the housing of the auto switch, adjust the tightening of the fitting to eliminate the interference. In the case of interference with an elbow type fitting, direct the port of the fitting away from the auto switch. Such interference must be avoided especially when a speed controller and speed exhaust controller with a fitting are selected.

- The hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L) is 0.2 to 0.3 N·m.

Direct Mounting to the Square Groove

<table>
<thead>
<tr>
<th>Applicable cylinder/actuator</th>
<th>Auto switch mounting bracket part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact guide cylinder</td>
<td>MGP ø25 to ø100</td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>MGPS ø50, ø80</td>
</tr>
<tr>
<td>Compact guide cylinder with lock</td>
<td>MLGP ø25 to ø100</td>
</tr>
</tbody>
</table>

Note: For the MGP end lock type, as the auto switch cannot be mounted onto the mechanism face, mount it to the groove on the bottom of the lock mechanism face.

Mounting and Moving Method of D-P3DW (2)

1. Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket and fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.
2. Insert the temporarily tightened mounting bracket into the mating groove of the cylinder/actuator, and slide the auto switch onto the cylinder/actuator through the groove.
3. Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L).

4. If the detecting position is changed, go back to step 2.
   - The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder/actuator. This enables the replacement of the auto switch without adjusting the auto switch position.

Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch.

Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L) is 0.2 to 0.3 N·m.

Note 3) Tighten the hexagon socket head cap screws evenly.

Approved

Approved

Note: When the auto switch mounting bracket is ordered by its part number, it includes the bracket and screws in the dashed line.
Mounting and Moving Method of D-P3DW

1. Insert the protrusion on the bottom of the auto switch into the mating part of the mounting bracket and fix the auto switch by tightening the hexagon socket head cap screw (M2.5 x 9 L).

2. Install the mounting bracket on which the auto switch is mounted to the switch mounting rod, and move it to find the detecting position while keeping firm contact between the bottom of the auto switch mounting bracket and the cylinder tube.

3. After checking the detecting position, fix the auto switch mounting bracket to the detecting position with the cone points of hexagon socket head cap screw (M4 x 8 L). If the detecting position is changed, go back to step 1.

4. If the detecting position is changed, go back to step 1 or 3.

Note 1) Ensure that the auto switch is covered with the mating groove by a minimum of 15 mm to protect the auto switch.

Note 2) The torque for tightening the hexagon socket head cap screw (M4 x 8 L) is 0.2 to 0.3 N·m.

Note 3) Tighten the hexagon socket head cap screws evenly.

Note 4) Tighten the hexagon socket head cap screws evenly.

Auto Switch Mounting Bracket Part No. for CK Series (Including Bracket and Screws)

<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKG1</td>
<td>40, 50, 63</td>
</tr>
<tr>
<td>CLKG2</td>
<td></td>
</tr>
</tbody>
</table>

Auto Switch Mounting Bracket Part No. for CA Series (Including Bracket and Screws)

<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA2</td>
<td>40, 50, 63, 80, 100</td>
</tr>
<tr>
<td>CDNA</td>
<td></td>
</tr>
</tbody>
</table>

Applicable cylinder/actuator

- Clamp cylinder
- Air cylinder
- Air cylinder with lock
- Cone points of hexagon socket head cap screw (M2.5 x 9 L)
- Hexagon socket head cap screw (M4 x 8 L)
- BMB8-050S
- Switch mounting rod

Mounting and Moving Method of D-P3DW

1. Install the auto switch mounting bracket 2 to the tie-rod, and fix it to the approximate mounting position with the cone points of hexagon socket head cap screw (M4 x 8 L) while keeping firm contact between the bottom of the auto switch mounting bracket 2 and the cylinder tube.

2. Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket 1 and fix the auto switch and the auto switch mounting bracket 1 temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.

3. Insert the temporarily tightened mounting bracket 1 to the mating groove of the mounting bracket 2, and fix the auto switch by tightening the hexagon socket head cap screw (M2.5 x 6 L and M2.5 x 9 L) after checking the detecting position.

4. If the detecting position is changed, go back to step 1 or 3.

Note 1) Ensure that the auto switch is covered with the matching groove by a minimum of 15 mm to protect the auto switch.

Note 2) When tightening the cone points of hexagon socket head cap screw (M4 x 8 L), keep the tightening torque within 1 to 1.2 N·m.

Note 3) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L and M2.5 x 9 L) is 0.2 to 0.3 N·m.

Note 4) Tighten the hexagon socket head cap screws evenly.

Auto Switch Mounting Bracket Part No. for MB Series (Including Bracket and Screws)

<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDB</td>
<td>32, 40, 50, 63, 80, 100, 125</td>
</tr>
<tr>
<td>MDNB</td>
<td>BMB8-050S, BA7T-063S, BA7T-080S</td>
</tr>
</tbody>
</table>

Applicable cylinder/actuator

- Air cylinder
- Air cylinder with lock

Note) When the auto switch mounting bracket is ordered by its part number, it includes the bracket and screws in the dashed line.

Note) When the auto switch mounting bracket is ordered by its part number, it includes the bracket and screws in the dashed line.

Note) Differences in color and glossiness of the metal surface treatment do not affect the performance. Due to the characteristics of the chromate treatment (trivalent) applied to the whole body of the auto switch mounting bracket, the color may be slightly different between manufacturing lots. However, this will not reduce the corrosion resistance.
Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC), Japan Industrial Standards (JIS)*1) and other safety regulations*2).

* 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
   ISO 4413: Hydraulic fluid power – General rules relating to systems.
   IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
   JIS B 8370: General rules for pneumatic equipment.
   JIS B 8361: General rules for hydraulic equipment.
   JIS B 9960-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
   etc.

* 2) Labor Safety and Sanitation Law, etc.

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution: Operator error could result in injury or equipment damage.

Warning: Operator error could result in serious injury or loss of life.

Danger: In extreme conditions, there is a possibility of serious injury or loss of life.
Safety Instructions

⚠️ Caution

The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Limited Warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited Warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited Warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.
   * 3) Vacuum pads are excluded from this 1 year warranty.
   A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
   Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).
Design / Selection

⚠️ Warning

1. Confirm the specifications.
   Read the specifications carefully and use this product appropriately. The product may be damaged or malfunction if it is used outside the specification range for load current, voltage, temperature, or impact, etc.

2. Cautions for use in an interlock circuit
   When a magnetic field resistant 2-color display solid state auto switch is used for an interlock signal requiring high reliability, provide a mechanical function or device a double interlock system by using another switch (sensor) together with the auto switch to avoid trouble. Also, perform periodic maintenance and confirm proper operation.

⚠️ Caution

1. Do not use a load that generates surge voltage.
   Although a surge protection varistor is connected to the output of the magnetic field resistance 2-color display solid state auto switch, it may be damaged if surge is repeatedly applied. When loads such as relay or solenoid valves that generate surge are directly operated, use loads that incorporate a surge absorption element.

2. Take precautions when multiple cylinders/actuators are used close together.
   When multiple magnetic field resistant 2-color display solid state auto switch cylinders/actuators are used in close proximity, magnetic field interference may cause the auto switches to malfunction. Maintain a minimum cylinder separation of 40 mm. (When the allowable interval is specified for each cylinder series, use the indicated value.) The auto switches may malfunction due to the interference from magnetic fields.

3. Pay attention to the internal voltage drop of the auto switch.
   Generally, the internal voltage drop will be greater when "n" auto switches are connected in parallel.
   • In the same way, when operating under a specified voltage, although an auto switch may operate normally, the load may not operate. Therefore, the formula below should be satisfied after confirming the minimum operating voltage of the load.
     Supply – Internal voltage = Minimum operating voltage of auto switch – Voltage of load

4. Pay attention to leakage current.
   <Solid state/2-wire type>
   Current (leakage current) flows to the load to operate the internal circuit even when in the OFF state.
   Operating current of load (OFF condition) > Leakage current
   If the criteria given in the above formula are not met, it will not reset correctly (stays ON). Moreover, leakage current flow to the load will be "n" times larger when "n" auto switches are connected in parallel.

5. Ensure sufficient clearance for maintenance activities.
   When designing an application, be certain to allow sufficient clearance for maintenance.

Mounting / Adjustment

⚠️ Caution

1. Do not drop or bump.
   Do not drop, bump or apply excessive impacts (1000 m/s\(^2\) or more) while handling. Although the body of the auto switch may not be damaged, the inside of the auto switch could be damaged and cause malfunction.

2. Observe the proper tightening torque for mounting an auto switch.
   When an auto switch is tightened beyond the range of tightening torque, auto switch mounting screws, auto switch mounting brackets or auto switch may be damaged. On the other hand, tightening below the range of tightening torque may allow the auto switch to slip out of position.

3. Do not carry a cylinder/actuator by the auto switch lead wires.
   Never carry a cylinder/actuator by its lead wires. This may not only cause broken lead wires, but it may cause internal elements of the auto switch to be damaged by the stress.

Wiring

⚠️ Caution

1. Confirm proper insulation of wiring.
   Be certain that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

2. Do not wire with power lines or high voltage lines.
   Wire separately from power lines or high voltage lines, avoiding parallel wiring or wiring in the same conduit with these lines. Control circuits containing auto switches may malfunction due to noise from these other lines.

3. Avoid repeatedly bending or stretching lead wires.
   Broken lead wires will result from repeatedly applying bending stress or stretching force to the lead wires.

4. Do not allow the load to be short circuited.
   A protective circuit shuts off the output when overcurrent flows to load short circuit, etc. In that case, shut off the power supply and eliminate the cause of the overcurrent. Then, apply the power supply again.

Back page 3

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Warning
1. Never use in an atmosphere of explosive gases.
The structure of magnetic field resistant 2-color display solid state auto switches is not intended to prevent explosion. Never use in an atmosphere with an explosive gas since this may cause a serious explosion, and therefore, should absolutely not be used under these conditions.

Caution
1. Do not use around direct current welders.
Magnetic field resistant 2-color display solid state auto switches will malfunction or magnets inside cylinders/actuators will become demagnetized.
2. Do not use in an environment where the auto switch will be continually exposed to water.
Although the sensor unit of magnetic field resistant 2-color display solid state auto switches satisfies IEC standard IP67 construction, do not use auto switches in applications where continually exposed to water splash or spray. Poor insulation or swelling of the potting resin inside auto switches may cause malfunction.
3. Do not use in an environment with oil or chemicals.
Please consult with SMC if auto switches will be used in an environment with coolant, cleaning solvent, various oils or chemicals. If magnetic field resistant 2-color display solid state auto switches are used under these conditions for even a short time, they may be adversely affected by improper insulation, malfunction due to swelling of the potting resin, or hardening of the lead wires.
4. Do not use in an environment with temperature cycles.
Please consult with SMC if magnetic field resistant 2-color display solid state auto switches are used where there are temperature cycles other than normal temperature changes, as there may be adverse effects inside the auto switches.
5. Do not use in an area where surges are generated.
When there are units (solenoid type lifter, high frequency induction furnace, motor, etc.) which generate a large amount of surge in the area around cylinders/actuators with magnetic field resistant 2-color display solid state auto switches, this may cause deterioration or damage to the auto switch’s internal circuit elements. Avoid sources of surge generation and disorganized lines.
6. Avoid accumulation of iron waste or close contact with magnetic substances.
When a large amount of iron waste such as machining chips or spatter is accumulated, or a magnetic substance (something attracted by a magnet) is brought into close proximity with a cylinder/actuator with auto switches, it may cause the magnetic field resistant 2-color display solid state auto switch to malfunction due to a loss of the magnetic force inside the cylinder/actuator.

Maintenance
1. Perform the following maintenance periodically in order to prevent possible danger due to unexpected magnetic field resistant 2-color display solid state auto switch malfunction.
1) Secure and tighten magnetic field resistant 2-color display solid state auto switch mounting screws. If screws become loose or the mounting position is dislocated, retighten them after readjusting the mounting position.
2) Confirm that there is no damage to lead wires.
To prevent faulty insulation, replace auto switches or repair lead wires, etc., if damage is discovered.

Caution
1. Leakage current is larger than the conventional models.
When this auto switch is used to replace a conventional model, input devices sometimes cannot detect the OFF of the auto switch.
■ When OFF current of PLC is less than the auto switch leakage current 1 [mA]
Example) PLC that cannot use 2-wire type
2. Please contact SMC for information about water resistance and flexibility of lead wires.
3. The resin case may discolor depending on the operating environment.
Although the resin case may be discolored by sunlight due to the characteristics of its material, it does not affect the strength and other characteristics.

Others

Approved
SMC’S GLOBAL MANUFACTURING, DISTRIBUTION AND SERVICE NETWORK