

Safety Instructions (continued)

**WARNING**

1. The compatibility of pneumatic equipment is the responsibility of the user, regardless of the specific pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove component until safety is confirmed:

1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.

2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off power and release exhaust and air pressure inside the system.

3) When inspection is carried out, ensure all safety measures to prevent sudden movement of actuators etc. (Supply air into the system gradually to create backpressure, i.e. incorporate a soft-start valve).

4) Contact SMC if the product is to be used in any of the following conditions:

- Conditions and environments beyond the given specifications, or if product is used outdoors.
- Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage or recreation equipment.

**Design and selection**

1) Confirm the specifications

Read the specifications carefully and use the product accordingly. The product may be damaged if it is used outside the range of specifications for load current, voltage, temperature or impact.

2) Take precautions when multiple actuators are used close together.

To eliminate the possibility of magnetic interference between switches, please ensure that, when two or more actuators are used in parallel, they are kept at a least 0.5 mm apart.

When the allowable interval is specified for each actuator series, use the interval as specified.

3) Keep wiring as short as possible

As the length of the wire to a load gets longer, the in-rush current at switching ON becomes greater, and this shortens the product’s life (the switch will stay ON at the time).

4) Pay attention to the internal voltage drop of the switch

- If auto switches are connected in series as shown below, take note that there will be a large voltage drop because of the internal resistance of the LED. (Refer to internal resistance drop of auto switch specifications)

  [The voltage drop will be smaller than that of series wiring when only one auto switch is connected.]

- Even though an auto switch operates normally, the load may not operate.

**Operating Environment (continued)**

6) Do not use in an environment where there is excessive shock.

When excessive impact (30 m/s2 or more) is applied to a led switch during operation, the contact point will malfunction or cut off a signal momentarily (1 ms or less). Consult SMC regarding the need to use a solid state auto switch depending upon the environment.

A) 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 (such as an iron magnet) is brought into close proximity with an auto switch cylinder, it may cause the auto switch to malfunction due to a loss of the magnetic force inside the actuator.

**Maintenance**

1) Perform the following maintenance periodically in order to prevent possible danger due to unexpected auto switch malfunction.

- Securely tighten switch mounting screws. If screws become loose or the mounting position is dislocated, relight them after re-adjusting the mounting position.

- Confirm that there is no damage to load wires. To prevent a sudden movement, replace switches or repair load wires, etc., if damage is discovered.

Others:

1) For durability against water, flexible durability of the wire, application in a wetting site, please consult SMC.

2) If ON and OFF position (hysteresis) cause problems, please consult SMC.

**Design and selection (continued)**

7) Ensure sufficient clearance for maintenance.

When designing an application, be sure to allow sufficient clearance for maintenance and inspection.

**Mounting / Adjustment**

1) Do not drop or bump the auto switch.

Do not drop, bump or apply excessive impacts (300 m/s2 or more). Although the body of the auto switch may not be damaged, the inside of the switch could be damaged and cause a malfunction.

2) Do not apply excessive impacts by the auto switch lead wires.

Never carry an actuator by its lead wires. This may not only cause broken lead wires, but may cause internal damages of the auto switch to be damaged by the stress.

3) Mount switches using the correct tightening torque.

If an auto switch is tightened to a specified tightening torque, the mounting screws, mounting brackets or switch may be damaged. On the other hand, tightening below the specified tightening torque may cause auto switch malfunction due to slip out of the correct detection position.

4) Make a switch at the center of the operating range.

Adjust the mounting position of an auto switch so that the piston stops at the center of the operating range.

5) Mount a switch at the center of the operating range (around the borderline of ON and OFF), operation may be unstable.

**Wiring**

1) Avoid repeatedly bending or stretching the lead wires.

Broken lead wires can result from wiring applications which repeatedly applies bending stress or tensile force to the load wires.

2) Be sure to connect the load before power is applied.

When an auto switch is connected without a load to the power source and the auto switch is switched ON, the switch will be instantly damaged because of excess current.

3) Do not supply current to the wiring of the switch.

- Be sure 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.

4) Do not wire with power or high voltage cables.

Wire separately from power or high voltage cables, avoiding parallel wiring in the same conduit. Control circuits containing auto switches may malfunction due to noise from these cables.

5) Do not allow short circuits of loads.

If the power is turned ON with a load in a short circuited condition, the switch will be instantly damaged because of excess current flow into the switch.

6) Avoid incorrect wiring.

A 24 VDC switch with indicator LED has polarity. The brown lead wire is (+) and the blue lead wire is (-). [The indications are reversed, the switch will operate, however the LED will not turn ON.]

Also note that a current greater than that specified will damage the LED and it will no longer operate.

**Specifications**

<table>
<thead>
<tr>
<th>Model number</th>
<th>D-A73</th>
<th>D-A73H</th>
<th>D-A76H</th>
<th>D-A80/D-A80H</th>
</tr>
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<tbody>
<tr>
<td>Application Relay, PLC</td>
<td>IC, Relay, PLC</td>
<td></td>
<td></td>
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<tr>
<td>Load voltage</td>
<td>24 V DC</td>
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<td>Load current</td>
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<tr>
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<td>Load current</td>
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<td>Internal voltage drop</td>
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<td>Contact protection circuit</td>
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<tr>
<td>Indicating time</td>
<td>1.2 ms</td>
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<tr>
<td>Indicator LED</td>
<td>Red LED lights when ON</td>
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<td>Impact strength</td>
<td>300 m/s2</td>
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<td>Insulation resistance</td>
<td>50 MΩ or more at 500 VDC mega</td>
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<td>1500 VAC for 1 minute (between lead wire and case)</td>
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Programmable Logic Controller (PLC)
**Names and Function of Parts**

D-A73 / D-A80
Mounting hole
Indicator lamp
Lead wire

D-A73H / D-A76H / D-A80H
Mounting hole
Indicator lamp
Lead wire

**Installation (continued)**

1) Slide the auto switch mounting nut into the mounting rail and set it at the auto switch mounting position.
2) Fit the convex part of the auto switch mounting arm into the concave part of the mounting rail. Then slide the switch over the nut. (Series CDQ2/CDQ2 (Old model): Fit the convex part of the auto switch mounting arm through the auto switch spacer into the concave part of auto switch mounting rail).
3) Push the auto switch mounting screw lightly into the mounting nut through the hole in the auto switch mounting arm.
4) After reconfirming the detecting position, tighten the mounting screw to secure the auto switch.

(Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)

5) Modification of the detecting position should be made in the condition of 3.

**Internal Circuit and Wiring**

D-A73 / D-A73H
D-A80 / D-A80H

**Troubleshooting**

When detection failure occurs (stay ON / OFF), please check based on the following flow chart.

**Limitations of Use**

Any use in an EN ISO 13849 system must be within the specified limits and application conditions. The user is responsible for the specification, design, implementation, validation and maintenance of the safety system (SRP/PCS).

**Installation**

How to mount / Mounting bracket

Each actuator has a specified mounting bracket for mounting the auto switch.

“How to mount / Mounting bracket” depends on the actuator type and the tube I.D. Please refer to the actuator catalogue. When an auto switch is mounted for the first time, ensure that the actuator is a type including a built in magnet, and select a bracket corresponding to the actuator.

**Outline with Dimensions (mm)**

D-A73 / D-A80
D-A73H / D-A76H
D-A80H

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**Batch Marking**

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**Contacts**

AUSTRIA (43) 2262 62280-0
BELGIUM (32) 3 355 1464
BULGARIA (359) 2 974 4492
CZECH REP. (420) 541 424 811
DENMARK (45) 7025 2860
ESTONIA (372) 601 0207
FINLAND (358) 207 513513
FRANCE (33) 1 4716 1000
GERMANY (49) 8103 4020
GREAT BRITAIN (44) 1908 563888
IRELAND (353) 1 403 9000
ITALY (39) 02 92711
JAPAN (81) 3 485 2272
LITHUANIA (370) 5 268 8588
LUXEMBURG (352) 648 2210
NETHERLANDS (31) 20 531 8888
PORTUGAL (351) 21 471 1880
POLAND (48) 22 211 9600
ROMANIA (40) 21 320 5111
SWEDEN (46) 8 603 1200
SLOVAKIA (421) 2 444 565725
SLOVENIA (386) 73 885 412
SWITZERLAND (41) 52 396 3131
UNITED KINGDOM (44) 1908 563888

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**SMC Corporation**

SMC Corporation, Akishinbora RUO/15F, 4-14-1, Seto-shi, Chiyoda-ku, Tokyo 101-0021

URL: http://www.smcworld.com (Global)  http://www.smceu.com (Europe)

(31) 20 531 8888