The intended use of the valve is to control the external pilot air of other valves on the same valve manifold. This product is validated according to ISO 13849 basic and well-tried safety principles. Refer to Doc. NR: VQC20050V-SMP1002.

1 Safety Instructions
This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "DANGERS", "WARNING" or "CAUTION", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

Take care about the compliance with the relevant safety laws and standards.

2 Specifications

2.1 General specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Coil Voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Min. Operating Pressure</td>
<td>0.25 MPa</td>
</tr>
<tr>
<td>Max. Operating Pressure</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>1.05 MPa</td>
</tr>
<tr>
<td>Response Time</td>
<td>31 ms or less</td>
</tr>
<tr>
<td>Mass</td>
<td>105 g</td>
</tr>
<tr>
<td>Valve Body</td>
<td>30 x 20 x 10 cm</td>
</tr>
<tr>
<td>Coil Insulation Type</td>
<td>Class B or Equivalent</td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP67</td>
</tr>
<tr>
<td>Service Life</td>
<td>B</td>
</tr>
<tr>
<td>Rated Coil Voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>±10 % of Rated Voltage</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Flow-rate

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow-rate Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQC20050V-SMP1002</td>
<td>2.2, 0.28, 0.55, 3.2, 0.30, 0.80</td>
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</table>

Note 1: When the Air Supply is cut (port 1 (P)) the main valve returns to the original position.

Note 2: Values represented in this column are based on JIS B3835-1981 (operating with clean air and a supply pressure of 0.5 MPa equipped with light/surge voltage suppressor). Values vary depending on the pressure as well as the air quality. Tested with ports size C8 and without back pressure check valves.

3 Installation

3.1 Environment
1. Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.
2. Products with IP67 enclosures (based on IEC60529) are protected against dust and water, however, these products cannot be used in water.
3. Incorrect mounting of the product violates the IP67 rating. Be sure to read the precautions of mounting for each product.
4. Do not use in an explosive atmosphere.
5. The product should not be exposed to prolonged sunlight. Use a protective cover.
6. Do not mount the product in a location where it is subject to strong vibrations and/or shock. Check product specifications.
7. Do not mount the product in a location exposed to radiant heat.

3.2 Piping
1. Preparation before piping
2. Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting of and other debris from inside the pipe.
3. Install piping so that it does not apply pulling, pressing, bending or other forces on the valve body.
4. Do not service machinery/equipment or attempt to remove components until safety is confirmed.
5. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
6. When equipment is to be removed, confirm the safety process as mentioned above. Switch off all air and electrical supplies and exhaust all residual compressed air in the system.
7. Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Supply air into the system gradually to create back pressure, i.e. incorporate a soft start valve).
8. Do not use this product outside of the specifications. Contact SMC if it is to be used in any of the following conditions:
   a) Conditions and environments beyond the given specifications, or if the product is to be used outdoors.
   b) In installations in conjunction with atomic energy, railways, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, press applications, or safety equipment.
   c) An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.
   d) Effect of back pressure when using a manifold
   e) In the axial direction and at right angles to the main valve & armature.
   f) Operation in a low temperature condition
   g) It is possible to operate a valve in extreme temperature, as low as –10C. Take appropriate measures to avoid freezing of drainage, moisture etc. in low temperature.
   h) Do not disassemble the product or make any modifications

4 Setting

4.1 Manual override
Since connected equipment will operate when the manual override is activated, confirm that conditions are safe prior to activation. The non-locking push type (tool required) is standard.

4.2 Solenoid Valve Removal and Mounting (VQC2000)

---

**Figure 3**

Valve is only available as negative CCM Type (PNP).

---

**Figure 5**

The manual override will actuating the pilot valve and the pilot valve pressure will actuating the main valve movement.

---

**Figure 6**

Valve specifications:

- Non-locking push type (Tool required)
-にくい形状・ボックス型 (ツールが必要です)
- Max. operating pressure: 0.7 MPa
- Min. operating pressure: 0.25 MPa
- Proof pressure: 1.05 MPa
- Response time: 31 ms or less
- Mass: 105 g
- Valve body: 30 x 20 x 10 cm
- Coil insulation type: Class B or Equivalent
- Enclosure: IP67
- Service life: B
- Rated coil voltage: 24 VDC
- ±10 % of rated voltage

---

**Figure 4**

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1. Shut off the fluid supply and release the fluid pressure in the system.
2. In the case of air pilot or air-operated type, shut off the supply air source and discharge the compressed air inside the pilot piping.
3. Shut off the power supply.
4. Remove the product.

3. Low frequency operation.
Valves should be operated at least once every 30 days to prevent malfunction. (Use caution regarding the air supply.)
For optimum usage, conduct regular inspections every 6 months.

4. Manual override
When the manual override is operated, connected equipment will be actuated.

5. Do not disassemble the product.

### 4.2.1 Removal steps
1. Loosen the clamp screws until they turn freely.
(The screws do not come out.)
2. In the case of air pilot or air-operated type, shut off the supply air source and discharge the compressed air inside the pilot piping.
3. Clean strainers when the pressure drop reaches 0.1 MPa.

### 4.2.2 Mounting steps
1. Push the clamp screws. Clamp A opens. Now insert the end plate hook of the valve into clamp B at an angle.
2. Push the valve down into place. (When you release the screws, the valve will be locked into clamp A.)
3. Tighten the clamp screws with a tightening torque of 0.5 to 0.7 N·m

### CAUTION
Dust on the sealing surface of the gasket or solenoid valve can cause air leakage.
Take care that the pilot pressure is able to exhaust. Do not block the Exhaust Ports.

### 5 How to order
Order Number VQC2101NY-S-X10

### 6 Outline dimensions (mm)

### 7 Maintenance
1. Perform maintenance procedures shown in this instruction manual.
If handled improperly malfunction or damage of machinery/equipment may occur.

2. Removing the product
To avoid the risk of being burned, ensure that the valve has had sufficient time to cool before performing work.

### CAUTION
Dust on the sealing surface of the gasket or solenoid valve can cause air leakage.
Take care that the pilot pressure is able to exhaust. Do not block the Exhaust Ports.

### 8 Limitations of Use

#### DANGER
This Special Valve is developed for use only on a Special Manifold block Assembly:VVQC2000-1A-#-C0-X10

- # = S – single wiring
- # = D – double wiring

Use on other manifold block assemblies is not allowed. This can cause damage or malfunction.

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

1. Filters and strainers
1. Be careful regarding clogging of filters and strainers.
2. Replace filter elements after one year of use, or earlier if the pressure drop reaches 0.1 MPa.
3. Clean strainers when the pressure drop reaches 0.1 MPa.

2. Drain flushing
Remove drainage from air filters regularly. (Refer to the specifications.)

5.1 Replacing One-touch fittings

### CAUTION
Cylinder port fittings are available with cassette type manifolds and are easily replaced. Fittings are secured with a retaining clip that is inserted vertically from either the top or bottom of the manifold. After removing the valve, remove the clip with a flat head screwdriver to replace the fittings. To mount a fitting, insert the fitting assembly until it stops and reinsure the retaining clip to its designated position.

1. Be careful regarding clogging of filters and strainers.
2. Replace filter elements after one year of use, or earlier if the pressure drop reaches 0.1 MPa.
3. Clean strainers when the pressure drop reaches 0.1 MPa.

5. Do not disassemble the product.

### 6 Contacts

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#### ESTONIA
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#### FINLAND
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#### FRANCE
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#### GERMANY
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#### GREECE
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#### HUNGARY
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#### ROMANIA
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#### RUSSIA
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#### SPAIN
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