5 Port Solenoid Valve: Base Mounted
Metal Seal/Rubber Seal

Series VQ4000

Space and capacity saving
Pilot valve is gathered at one side.
Space saving design which does not have any protrusions.
Space saving — 40% less
Capacity saving — 50% less
(In house comparison)

Compact design with
Large flow capacity
(Suitable for cylinders up to ø140)

Built-in One-touch fitting
for easier piping

High speed & Long life
(Metal seal, with light and surge suppressor)
VQ4100 17mS
(Single)
VQ4200 12mS
(Double)
100 million cycles
* According to SMC life test conditions
Dispersion accuracy ±3mS

Various centralized wiring options
<Plug-in>
F kit (D-sub connector)
T kit (Terminal box)
L kit (Lead wire)
S kit (Serial transmission)

Optional IP65 is available.
Dust-tight, Jet-proof

Individual wiring style
<Plug lead>
C kit (Connector)

Cylinder operation speed

<table>
<thead>
<tr>
<th>Valve width mm</th>
<th>Cv Rubber seal (Metal seal)</th>
<th>Cylinder speed mm/s</th>
<th>Cylinder bore size mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.5</td>
<td>2.2 (2.0)</td>
<td></td>
<td>40 50 63 80 100 125 140</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>600</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>750</td>
<td></td>
</tr>
</tbody>
</table>

Pressure: 0.5MPa, Load rate: 50%
Note) Cylinder speed varies according to piping construction equipment.
So this Table is for your reference only.
Performance value shown on catalog is typical value, this is not for performance guarantee.

Enclosure:
Optional IP65 rating

1.11-1
**Caution 1: Series VQ4000**

Be sure to read before use. Refer to p. 0-33 to 0-36 for Safety Instruction and common precautions.

**Warning**

**Manual Override**

When manual override is used, the connected equipment starts operating. Make sure that there is no danger. Non-locking style (push style) is available as standard, locking slotted style is optional style.

Non-locking push style

Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

Locking slotted style

Push down on the manual override button with a small screwdriver until it stops. While down, turn clockwise by 90° to lock it. Turn it counterclockwise to release it.

**Caution**

**Valve Mounting**

After confirming the gasket is correctly placed under the valve, tighten the mounting screws with the appropriate torque listed below.

<table>
<thead>
<tr>
<th>Suitable tightening torque Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8 to 1.2</td>
</tr>
</tbody>
</table>

**Caution**

**Changing the One-touch Fittings**

The built-in fittings on the manifold can be changed easily. Simply remove the corresponding valve and take out the fitting clip underneath. Then remove the affected fitting and replace with a new one. Finally, replace the fitting clip and remount the valve.

---

**Note**

1) Not polar, possible to use as –COM.

2) Double wiring is used on sub-plate VQ410.

---

**Caution**

**Connection of Lead Wire**

Plug-in sub-plate (With terminal block)

- Remove junction cover 1 of sub-plate where terminal block box 2 is mounted.

Markings shown below are on terminal block box, connect each power supply.

<table>
<thead>
<tr>
<th>Terminal block marking</th>
<th>A</th>
<th>COM</th>
<th>B</th>
<th>↑</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ410</td>
<td>A side</td>
<td>COM</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VQ420</td>
<td>A side</td>
<td>COM</td>
<td>B side</td>
<td>—</td>
</tr>
<tr>
<td>VQ4 3/01</td>
<td>A side</td>
<td>COM</td>
<td>B side</td>
<td>—</td>
</tr>
</tbody>
</table>

Note 1) Not polar, possible to use as –COM.

Note 2) Double wiring is used on sub-plate VQ410.

---

**Plug lead: Grommet**

Connect each corresponding wire.

- SOL A: Black
- SOL B: White
- COM: Red

---

**Lead wire color**

- Single solenoid
  - Black: A side solenoid
  - Red: COM
  - White: B side solenoid

- Double solenoid
  - Black: A side solenoid
  - Red: COM
  - White: B side solenoid

---

**Note**

- No polarity. Possible to use as –COM.

---

**Standard**

- Black: A side solenoid
- Red: COM
- White: B side solenoid

---

**Enclosure (IP65)**

- Black: A side solenoid
- Red: COM
- White: B side solenoid

(Not used in case of single.)

- Green: (It is not used in case of either single or double.)
**Caution**

Installation/Removal of Light Cover

**Removal**
Open the cover by inserting a small flat head screwdriver into the slot on the side of the pilot assembly (see drawing below), lift the cover out about 1 mm and then pull off. (If the cover is pulled off at a angle, damage could be done to the O ring and/or the pilot valve.)

**Installation**
Insert the cover straight onto the pilot assembly making sure not to contact the pilot valve and lock into place.

---

**Caution**

Changing the Pilot Valve

**Removal of Pilot Valve**
1. Remove the light cover. (See above) Then remove the mounting screws that attach the valve to the pilot assembly.
2. Remove the light circuit board by pulling it straight off the connector pins.

**Installing Pilot Valve**
1. Insert the light circuit board onto the connector pins on the pilot valve.
2. Confirm that the gasket is on the pilot valve and tighten the mounting screws with the torque listed below.

<table>
<thead>
<tr>
<th>Light circuit No.</th>
<th>Suitable tightening torque Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOL A</td>
<td>0.1 to 0.13</td>
</tr>
<tr>
<td>SOL B</td>
<td></td>
</tr>
</tbody>
</table>

Note) Pilot valves can be mounted on either direction. Make sure that the light circuit board is mounted correctly on the pilot valve. It is marked with an “A” or “B”. (A side is orange and B side is green.) If mounted on the wrong side, the light will be darker.

---

**Caution**

Internal Wiring Specifications

DC: Single

- A side light circuit ass'y (Orange)
- B side light circuit ass'y (Green)

DC: Double

- A side light circuit ass'y (Orange)
- B side light circuit ass'y (Green)

AC: Single

- A side light circuit ass'y (Orange)
- B side light circuit ass'y (Green)

AC: Double

---

**Caution**

Enclosure IP65

Wires, cables, connectors, etc. used for models conforming to IP65 should also have enclosures equivalent to or stricter rating than IP65.
## Standard Specifications

### Seal

<table>
<thead>
<tr>
<th>Seal</th>
<th>Metal seal</th>
<th>Rubber seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air, Inert gas</td>
<td>0.15MPa</td>
<td>0.20MPa</td>
</tr>
<tr>
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<td>0.15MPa</td>
<td>0.20MPa</td>
</tr>
<tr>
<td>Air, Inert gas</td>
<td>0.15MPa</td>
<td>0.20MPa</td>
</tr>
</tbody>
</table>

### Max. operating pressure

- Single: 1.0MPa
- Double: 0.8MPa
- 3 position: 0.6MPa

### Min. operating pressure

- Single: 0.5MPa
- Double: 0.5MPa
- 3 position: 0.5MPa

### Ambient and fluid temperature

- Single: –10 to 50˚C
- Double: –10 to 50˚C
- 3 position: –10 to 50˚C

### Lubrication

- Single: Not required
- Double: Not required
- 3 position: Not required

### Manual override

- Single: Locking push style
- Double: Locking slotted style
- 3 position: Non-locking push style

### Shock/Vibration resistance

- Single: 150/30 m/s²
- Double: 150/30 m/s²
- 3 position: 150/30 m/s²

### Enclosure

- Single: Dust proof (Available IP65 style)
- Double: Dust proof (Available IP65 style)
- 3 position: Dust proof (Available IP65 style)

### Coil rated voltage

- Single: 24V DC, 12V DC
- Double: 24V DC, 12V DC
- 3 position: 24V DC, 12V DC

### Allowable voltage

- Single: ±10% of rated voltage
- Double: ±10% of rated voltage
- 3 position: ±10% of rated voltage

### Coil insulation

- Single: Class B or equivalent
- Double: Class B or equivalent
- 3 position: Class B or equivalent

### Power consumption (Current value)

- Single: 24V DC
- Double: 24V DC
- 3 position: 24V DC

### Note 1

- Use dry air to prevent condensation when operating at low temperatures.

### Note 2

- Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle direction of the main valve and armature, for both energized and de-energized states. (Value in the initial stage.)

- Vibration resistance: No malfunction occurred in a one-sweep test between 9.3 and 2,000 Hz. Test was performed at both energize and de-energized states to the axis and right angle direction of the main valve and armature. (Value in the initial stage.)

### Note 3

- Values in case of low power consumption model (0.5W).
How to Order Valve

Body style

0: Plug-in Sub-plate

Plug-in

Plug lead

VQ4 1 0 0

VQ4 2 5 1

Configuration

1 2 position single

3 position closed center

2 2 position double

3 position exhaust center

3 2 position double

3 position pressure center

4 2 position double

3 position double check

5: Plug lead Sub-plate

Body style

Piping

Side piping

B: Bottom piping

Port size

Without sub-plate (for manifold)

02 Rc1/4

03 Rc3/8

Enclosure

Dust-proof

Dust tight, Jet proof

Manual override

: Non-locking push style

B: Locking slotted style

Light and surge voltage suppressor

With

W: No light/With surge suppressor

Coil voltage

1 100V AC (50/60Hz)

2 200V AC (50/60Hz)

3 110V AC (50/60Hz)

4 220V AC (50/60Hz)

5 24V DC

6 12V DC

Electrical entry

G: Lead wire length 0.5m

H: Lead wire length 1.5m

Function

V: Standard (1W)

R: Low wattage (0.5W)

Note 1) Applicable to DC specification.

Note 2) Refer to p.1.11-46 for external pilot specification. Combination of external pilot and perfect interface is not possible.

Note 3) When specifying more than one option, indicate symbols alphabetically.

Seal

0: Metal seal

1: Rubber seal

How to Order Sub-plate

VQ4000

Electrical entry

P: Plug-in conduit terminal

S: Plug lead

Enclosure

Dust proof

Dust tight, Jet proof

Port size

02 Rc1/4

03 Rc3/8

Piping

Side piping

B: Bottom piping

How to replace pilot valve ass'y (Voltage)

Refer to p.1.11-42 and p.1.11-43 for part no. of pilot valve ass'y

Refer to p.1.11-3 for “How to Replace”.
Series VQ4000

Plug-in

Conduit terminal

2 position single: VQ410

3 position closed center: VQ430

3 position exhaust center: VQ440

3 position pressure center: VQ450

2 position double: VQ420

3 position double check: VQ460

2- ø5.6 Mounting hole

Bottom piping

1.11-6