**3 Port Solenoid Valve**

*VV061 Series*

**Rubber Seal** Unit Manifold Valve

---

**6 mm width valve**

Mounting the V060 series

---

Valve, PCB, base and fittings are fully integrated, forming a single compact unit.

New concept unit manifold

---

* Photo shown depicts an 8-station unit manifold.

---

**Weight:**

- 8 stations: 75 g
- 4 stations: 47 g

* When a bracket is not included, barb fittings are included.
Unit Manifold

One-touch fitting and barb fitting can be selected.

Mounting

- Bracket mount
- Panel mount

Lead wire length

Connector cable
Length: 300 mm
600 mm
1000 mm

In case of 8 stations

Reduced environmental impact substance RoHS compliant
How to Order

VV061 - 08 40 - 5 H -

Valve stations
Symbol | Stations  
---|---  
04 | 4 stations  
08 | 8 stations

1/2/3 port size
Symbol | Port size  
---|---  
40 | Barb fitting (Applicable tubing ø4/ø2.5)  
C2 | ø2 One-touch fitting

Rated voltage
- 5 24 VDC  
- 6 12 VDC

Common specifications
- Nil Positive common  
- N Negative common

Coil specifications
- Nil Standard (With light/surge voltage suppressor)  
- T With power-saving circuit (Continuous duty type)

If the coil will be continuously energized for a long period, be sure to choose the coil with power-saving circuit. (See page 1328 for details.)

Note 1) Both the standard coil and the coil with power-saving circuit have light/surge voltage suppressor.  
Note 2) The wiring specification is positive common only.

Bracket
- Nil: Without bracket  
- F: With bracket

Connector cable
- Nil: Without connector cable  
- C1: With connector cable (Length 300 mm)  
- C2: With connector cable (Length 600 mm)  
- C3: With connector cable (Length 1000 mm)

Operating pressure range
- H Standard (0 to 0.7 MPa)  
- L High flow type (0 to 0.3 MPa)

Note) The applicable tube of the barb fitting shows the tube outside diameter/inside diameter.
### Unit Manifold Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>High flow type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0 to 0.7</td>
<td>0 to 0.3</td>
</tr>
<tr>
<td>Vacuum specification (MPa)</td>
<td>1(P) port</td>
<td>3(R) port</td>
</tr>
<tr>
<td>Standard</td>
<td>–100 kPa to 0.6</td>
<td>–100 kPa to 0</td>
</tr>
<tr>
<td>High flow type</td>
<td>–100 kPa to 0.2</td>
<td>–100 kPa to 0</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing)</td>
<td></td>
</tr>
<tr>
<td>Response speed (ms)</td>
<td>10 ms or less</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) [Note 2]</td>
<td>150/30</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test, JIS B8419: 2010. (Standard type: Coil temperature 20°C, at rated voltage.

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve and armature when pilot signal is ON and OFF. (Value in the initial state)

The impact/vibration resistance is 50/10 [m/s²] for the manifold with a power-saving circuit (0.23 W).

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Power-saving type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage</td>
<td>12, 24 VDC</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Allowable voltage fluctuation [Note 1]</td>
<td>–7% to +10%</td>
<td>–4% to +10%</td>
</tr>
<tr>
<td>Power-saving type</td>
<td>–5% to +10%</td>
<td>–6% to +10%</td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>Standard: 0.55</td>
<td>With power-saving circuit (Continuous duty type): 0.23[Note 2]</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode</td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) The voltage fluctuation should be within the above range because the internal circuit can cause voltage drop.

Note 2) Refer to page 1329 for details.

### Flow Rate Characteristics

<table>
<thead>
<tr>
<th>Type</th>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1(P)→2(A)</td>
</tr>
<tr>
<td>Standard</td>
<td>0.07</td>
</tr>
<tr>
<td>High flow type</td>
<td>0.16</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Stations</th>
<th>Port size</th>
<th>Weight (g) [Note]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 stations</td>
<td>Barb fitting</td>
<td>47 (56)</td>
</tr>
<tr>
<td>Barb fitting</td>
<td>ø2 One-touch fitting</td>
<td>53 (62)</td>
</tr>
<tr>
<td>8 stations</td>
<td>Barb fitting</td>
<td>75 (85)</td>
</tr>
<tr>
<td>Barb fitting</td>
<td>ø2 One-touch fitting</td>
<td>84 (94)</td>
</tr>
</tbody>
</table>

Note) [ ]: values with bracket
### Unit Manifold Internal Wiring

#### In case of 4 stations

- Groove (2 locations)
- Terminal no.
- Station 1
- Station 2
- Station 3
- Station 4
- Common

#### In case of 8 stations

- Groove (2 locations)
- Terminal no.
- Station 1
- Station 2
- Station 3
- Station 4
- Station 5
- Station 6
- Station 7
- Station 8
- Common

### Connector Cable Specifications

#### Connector Cable Color List of Each Terminal No.

<table>
<thead>
<tr>
<th>Terminal no.</th>
<th>Lead wire color</th>
<th>Terminal no.</th>
<th>Lead wire color</th>
</tr>
</thead>
<tbody>
<tr>
<td>In case of 4 stations</td>
<td>In case of 8 stations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Brown</td>
<td>1</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>2</td>
<td>Red</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>3</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>4</td>
<td>Yellow</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>5</td>
<td>Green</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
<td>6</td>
<td>Blue</td>
</tr>
<tr>
<td>7</td>
<td>Purple</td>
<td>7</td>
<td>Purple</td>
</tr>
<tr>
<td>8</td>
<td>Gray</td>
<td>8</td>
<td>Gray</td>
</tr>
<tr>
<td>9</td>
<td>White</td>
<td>9</td>
<td>White</td>
</tr>
<tr>
<td>10</td>
<td>Black</td>
<td>10</td>
<td>Black</td>
</tr>
</tbody>
</table>

### Construction

- **Component Parts**
  - No.
  - Description
  - Material
  - Note
  - 1
  - Solenoid valve: Unit assembly
  - 2
  - PCB assembly: 4 mounting screws M2 x 27 L are included.
  - 3
  - Cover: Resin
  - 4
  - Base: Resin
  - 5
  - Plate: Aluminum
  - Plate assembly
  - 6
  - Barb fitting: Aluminum

Note) As this drawing shows the internal construction, it is different from the actual product.
Replacement Parts

1. Unit Assembly Part No.
   **VV061-08 00 - 5 H**

   - **Valve stations**
     - Symbol: 04 (4 stations)
     - Symbol: 08 (8 stations)

   - **1/2/3 port size**
     - Symbol: 00 (Without plate assembly)

   - **Rated voltage**
     - 5: 24 VDC
     - 6: 12 VDC

   - **Coil specifications**
     - Nil: Standard (With light/surge voltage suppressor)
     - T: With power-saving circuit (Continuous duty type)

   - **Operating pressure range**
     - H: Standard (0 to 0.7 MPa)
     - L: High flow type (0 to 0.3 MPa)

   - *4 mounting screws (M2 x 27 L) and one gasket are included.

2. Plate Assembly Part No.
   - **Stations**
     - 4 stations: PV060-72-8A
     - 8 stations: PV060-72-9A

   - **Fitting**
     - Barb fitting
     - One-touch fitting

   - **Note**
     - Barb fitting is included.
     - One-touch fitting is mounted on the plate.

3. Fitting Part No.
   - **Description**
     - Barb fitting
     - One-touch fitting
   - **Part no.**
     - PV060-73-1A
     - KJS02-M3

   - *The minimum ordering quantity is 10 pcs.

4. Bracket Assembly Part No.
   - **Bracket**
     - (for 4 stations): PV060-80-2A (Mounting screw included)
     - (for 8 stations): PV060-80-1A (Mounting screw included)

   - **Description**
     - Bracket
     - Part no.

5. Connector Cable Part No.
   - **For 4 stations**
     - PV060-40-4A
   - **For 8 stations**
     - PV060-40-3A

   - **Connector cable length**
     - Nil: 300 mm
     - 6: 600 mm
     - 10: 1000 mm

---

**How to Mount Unit Assembly**

Fit the positioning pin on the unit assembly to the positioning hole on the plate, and assemble them.

**Caution**

Tightening torque: 0.12 N·m

---

**Verify the ordering information.**

- If only the fitting is needed, order with one of the part numbers below.
- The minimum ordering quantity is 10 pcs.
3 Port Solenoid Valve
Unit Manifold Valve
VV061 Series

Dimensions

**VV061-04**

- **Solenoid valve No.**
  - No. 4 No. 3
  - No. 2 No. 1
  - (For C2: 16)

- **Barb fitting**
  - [1(P), 2(A), 3(R) port]
  - Applicable tubing O.D. ø4, I.D. ø2.5,
  - Polyurethane tubing (made by SMC)
  - Soft nylon tubing (made by SMC)

- **Cut dimension for panel mount (mounting surface)**

**VV061-08**

- **Solenoid valve No.**
  - No. 8 No. 7
  - No. 6 No. 5
  - No. 4 No. 3
  - No. 2 No. 1
  - (For C2: 28)

- **Barb fitting**
  - [1(P), 2(A), 3(R) port]
  - Applicable tubing O.D. ø4, I.D. ø2.5,
  - Polyurethane tubing (made by SMC)
  - Soft nylon tubing (made by SMC)

- **Cut dimension for panel mount (mounting surface)**

**LED indicator**

- 2 x ø2.2 (Mounting hole)

**Connector**

- Groove side

**One-touch fitting**

- [1(P), 2(A), 3(R) port]
- Applicable tubing O.D. ø2,
- Polyurethane tubing (made by SMC)
**VV061 Series**

**Specific Product Precautions 1**

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

---

**Warning**

1. **Extended period of continuous energization**
   - If a valve will be continuously energized for an extended period of time, the temperature of the valve will increase due to the heat generated by the coil. This will likely adversely affect the performance of the solenoid valve and any nearby peripheral equipment. Therefore, when it is continuously energized or the energized period per day is longer than the de-energized period, use the valves with power-saving circuit.
   - For applications such as mounting a valve on a control panel, incorporate measure to limit the heat radiation so that it is within the operating temperature range.

---

**Caution**

1. **How to Use Plug Connector**
   1. **Attaching and detaching connectors**
      1. **1) To attach a connector**
         Insert the connector cable to the end of the socket with the insertion error checking ridge facing upward. Then gently pull the connector cable and check that it does not come out.
      2. **2) To detach a connector**
         Remove the socket from the unit manifold by gripping the socket of the connector cable. If excessive force is applied to the connector cable, the connector may come off. Do not apply a force of 20 N or more to the lead wire.

---

**Connector Cable Length**

**Warning**

1. **Selection**

---

**Surge Voltage Suppressor**

**Caution**

1. **<Positive common>**
   - Diode to prevent reserve current
   - Since 12 VDC voltage specification does not have diodes for polarity protection, be careful not to make errors in the polarity.
   - Please use caution regarding the allowable voltage fluctuation because there is about a 1 volt drop for a valve with polarity protection. (For details, refer to the solenoid specifications for the individual valve.)

---

**<Negative common>**

- Diode to prevent reserve current

---

**<Positive common>**

- Diode to prevent reserve current

---

**<Negative common>**

- Diode to prevent reserve current

---

1. **Connecting Method**
   - **1) Impact and vibration should not be more than 50/10 [m/s²].**
   - **2) Voltage fluctuation for 24 VDC should be within the range of −5% to +10% of the rated voltage, and for 12 VDC should be within the range of -6% to +10% of the rated voltage.**
VV061 Series
Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

Working Principle

\(\textbf{Caution}\)

1. With the above circuit, the current consumption when holding is reduced to save energy. Please refer to the electric wave data below.

(In case of VV061-\textsuperscript{V}V061-</textsuperscript{V}V061, the electric wave form of power-saving type)

\begin{itemize}
  \item Please be careful not to reverse the polarity, since a diode to prevent the reversed current is not provided for the 12 VDC specification.
  \item Please use caution regarding the allowable voltage fluctuation because there is about a 0.5 volt drop due to the transistor.
\end{itemize}

\(\textbf{Mounting}\)

\(\textbf{Caution}\)

1. Tightening the threaded portion of an M3 fitting
   For KJS02-M3 (One-touch fitting), tighten it with a tightening tool by approx. 1/6 rotation after screwing it in by hand. Screwing the fitting in too far will cause air leakage due to thread breakage and gasket deformation. Screwing the fitting not far enough will also cause air leakage due to the loose screw.

\(\textbf{One-touch Fittings Precautions}\)

\(\textbf{Caution}\)

1. Tubing insertion and removal from One-touch fittings
   1) Attaching of tubing
      (1) Cut the tubing perpendicularly, being careful not to damage the outside surface. Use an SMC tubing cutter “TK-1”, “TK-2” or “TK-3”. Do not cut the tube with pliers, nippers, scissors, etc. If cutting is done with tools other than tube cutters, there is the danger that the tube may be cut diagonally or become flattened, etc., making a secure installation impossible, and causing problems such as the tube pulling out after installation or air leakage. Also allow some extra length in the tube.
      (2) Grasp the tube, slowly push it into the One-touch fittings until it comes to a stop.
      (3) Pull the tubing back gently to make sure it has a positive seal. Insufficient installation may cause air to leak or the tube to release.
   2) Removing of tubing
      (1) Push flange evenly and push the release bushing sufficiently.
      (2) Pull out the tube while keeping the release button depressed. If the release bushing is not held down sufficiently, the tube cannot be withdrawn.
      (3) To reuse the tubing, remove the previously lodged portion of the tube. If the lodged portion is left on without being removed, it may result in air leakage and difficulty in removal of the tube.

\(\textbf{Other Tubing Brands}\)

\(\textbf{Caution}\)

1. When using other than SMC brand tubing, confirm that the following specifications are satisfied with respect to the outside diameter tolerance of the tubing.
   1) Soft nylon tubing within ±0.1 mm
   2) Polyurethane tubing within ±0.15 mm, within −0.2 mm.

Do not use tubing which does not meet these outside diameter tolerances. It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tubing pulling out after connection.