## 3 Port Solenoid Valve
**Direct Operated Poppet Type**

### VT317 Series

**Rubber Seal**

### Compact yet provides a large flow capacity
- Dimensions (W x H x D): 45 x 89.5 x 45 (Grommet)
- C: 2.6 dm³/(s·bar) (Passage 2 → 3)

**Suitable for use in vacuum applications**
- ~101.2 kPa
- (For vacuum specifications: VT/VO317V)

**A single valve with 6 valve functions**
- (Universal porting type)
- Selective porting can provide 6 valve functions, such as N.C. valve, N.O. valve, Divider valve, Selector valve etc.

### How to Order

<table>
<thead>
<tr>
<th>V</th>
<th>T</th>
<th>317</th>
<th>1</th>
<th>G</th>
<th>02</th>
</tr>
</thead>
</table>

**Body type**
- T: Body ported
- O: Manifold

**Valve option**
- Nil: Standard type
- E: Continuous duty type
- V: For vacuum

### Rated voltage

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 VAC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>200 VAC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>110 VAC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>220 VAC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>12 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>240 VAC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1)** CE-compliant: Electrical entry is applicable only for the DIN terminal.

**Note 2)** For other rated voltages, please consult with SMC.

### Electrical entry

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>CE-compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Grommet, 300 mm lead wire</td>
<td>Nil</td>
</tr>
<tr>
<td>H: Grommet, 600 mm lead wire</td>
<td>Nil</td>
</tr>
<tr>
<td>C: Conduit</td>
<td>Nil</td>
</tr>
<tr>
<td>T: Conduit terminal</td>
<td>Nil</td>
</tr>
<tr>
<td>D: DIN terminal</td>
<td>CE-compliant</td>
</tr>
</tbody>
</table>

### Light/Surge voltage suppressor

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>CE-compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Grommet, 300 mm lead wire</td>
<td>Nil</td>
</tr>
<tr>
<td>H: Grommet, 600 mm lead wire</td>
<td>Nil</td>
</tr>
<tr>
<td>C: Conduit</td>
<td>Nil</td>
</tr>
<tr>
<td>T: Conduit terminal</td>
<td>Nil</td>
</tr>
<tr>
<td>D: DIN terminal</td>
<td>CE-compliant</td>
</tr>
</tbody>
</table>

**S:** With surge voltage suppressor

**Z:** With light/surge voltage suppressor

### Surge voltage suppressor mounting part (For "G")

### Manifold

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable manifold type</th>
<th>Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>VO317(-Q)</td>
<td>Common or individual exhaust</td>
<td>O-ring (KA00066, 4 pcs.)</td>
</tr>
</tbody>
</table>

**Note:** It is not applied to "Continuous duty type". Refer to the accessaries on page 1444.
**VT317 Series**

### Standard Specifications

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Direct operated type 2 position single solenoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>0 to 0.9 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 50°C (No freezing.)</td>
</tr>
<tr>
<td>Response time (1)</td>
<td>30 ms or less (at the pressure of 0.5 MPa)</td>
</tr>
<tr>
<td>Max. operating frequency</td>
<td>10 Hz</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required (Use turbine oil class 1 ISO VG32, if lubricated )</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (2)</td>
<td>150/50 m/s²</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof</td>
</tr>
<tr>
<td>Electrical entry</td>
<td>Grommet, Conduit, Conduit terminal, DIN terminal</td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>AC (50/60 Hz)</td>
</tr>
<tr>
<td></td>
<td>DC</td>
</tr>
<tr>
<td></td>
<td>100, 200, 110, 220, 240 °</td>
</tr>
<tr>
<td></td>
<td>24, 12 °</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>–15 to +10% of rated voltage</td>
</tr>
<tr>
<td>Apparent power (3)</td>
<td>AC Inrush Holding</td>
</tr>
<tr>
<td></td>
<td>DC</td>
</tr>
<tr>
<td></td>
<td>19 VA (50 Hz), 16 VA (60 Hz)</td>
</tr>
<tr>
<td></td>
<td>11 VA (50 Hz), 7 VA (60 Hz)</td>
</tr>
<tr>
<td>Power consumption (3)</td>
<td>AC Varistor, Neon bulb</td>
</tr>
<tr>
<td></td>
<td>DC Varistor, LED (Neon bulb for 100 V or more)</td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

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. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 1000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

### Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Flow rate characteristics</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 → 2 (P → A)</td>
<td>2 → 3 (A → R)</td>
</tr>
<tr>
<td>VT317</td>
<td>2.4</td>
<td>0.26</td>
</tr>
<tr>
<td>VT317V (Vacuum spec. type)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VT317E (Continuous duty type)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Values for a single valve unit. It differs in the manifold case. Refer to manifold specifications on page 1444.

### Valve Options

**Continuous duty type: VT317E**

Exclusive use of VT317E is recommended for continuous duty with long time loading.

**Caution**

1. This model is for continuous duty, not for high cycle rates. But even in low cycle rates, if energizing the valve more than once a day, please consult with SMC.

2. Energizing solenoid should be done at least once in 30 days.

**Vacuum spec. type: VT317V**

This vacuum model has less air leakage than the standard model under low pressure. It is recommended for vacuum application.

**Caution**

1. Since this valve has slight air leakage, it cannot be used for vacuum holding (including positive pressure holding) in the pressure container.

Specifications different from standard are as follows.

- Operating pressure range: –101.2 kPa to 0.1 MPa.

### Construction

**De-energized**

- Spool valve ② is pushed upward by the return spring ③, port ② is closed, and port ① and port ④ are opened.

**Energized**

- When an electric current is applied to the molded coil ④, the armature ⑤ is attracted to the core ⑥, and through the push rod ⑦, it pushes down the spool valve ②. Then, port ① and port ④ are connected. At this time, there will be gaps between the armature ⑤ and the core ⑥, but the armature will be magnetically attracted to the core ⑥.

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>Color, Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Spool valve</td>
<td>Aluminum, NBR</td>
<td></td>
</tr>
</tbody>
</table>
### Dimensions

**Grommet: VT317-G**
- **Coil fitting position**: 4 positions per 90°
- **Manual override**: Non-locking
- **2 x M6 mounting hole**
  - For top mounting (M4)

**Conduit: VT317-C**
- **Coil fitting position**: 4 positions per 90°
- **Manual override**: Non-locking
- **2 x M6 mounting hole**
  - For top mounting (M4)

**Conduit terminal: VT317-T**
- **Coil fitting position**: 4 positions per 90°
- **Manual override**: Non-locking
- **2 x M6 x 1 for bottom mounting**

**DIN terminal: VT317-D**
- **Coil fitting position**: 4 positions per 90°
- **Manual override**: Non-locking
- **2 x M6 x 1 for bottom mounting**

Note) There is also “VT317-H” (Lead wire length: 600 mm).

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**Applicable cable O.D.**
- ø6 to ø12

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**3 Port Solenoid Valve**
- **Direct Operated Poppet Type**

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**SMC**

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**VT317 Series**
**VT317 Series**

**Manifold Specifications**

**VT317 manifold** is B mount type and available both as a common exhaust and individual exhaust model.

**How to Order Manifold**

**Ordering example:**

VV317-02-051-02-A······· 1 pc.  
(5-station manifold base)

VO317-1G···················· 4 pcs.  
(Blanking plate)

**Valve stations**

- **02**: 2 stations (Max. 20 stations)
- **20**: 20 stations

**Symbol**

- **P**: Passage
- **R**: Porting specifications
- **A**: Base
- **Q**: CE-compliant

**Thread type**

- **Nil**
- **F**: Rc
- **G**: G
- **N**: NPT
- **T**: NPT

**A port size (Base piping)**

1/4

**Manifold Specifications**

<table>
<thead>
<tr>
<th>Manifold type</th>
<th>Max. number of stations</th>
<th>B mount (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20 stations</td>
</tr>
</tbody>
</table>

**Applicable solenoid valve**

- VO317 (Vacuum spec. type)
- VO317V (Continuous duty type)

**Exhaust port**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type</th>
<th>P Port location</th>
<th>A Port location</th>
<th>R Port location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Common (2)</td>
<td>Base (Side)</td>
<td>Base (Side)</td>
<td>Base (Side)</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Individual</td>
<td>Base (Side)</td>
<td>Base (Side)</td>
<td>Base (Side)</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
<td></td>
</tr>
</tbody>
</table>

**Note**

1) For more than 3 stations, supply air both sides of P port. The common exhaust type should exhaust from both of the R port.

2) In the case of common exhaust type, R and P ports size can be Rc 3/8 by using a mounting adaptor.

3) Can also be applied to VVT320 series manifold.

**Accessory for Applicable Solenoid**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-ring</td>
<td>KA00066 (P10)</td>
<td>4</td>
<td>Standard type vacuum spec. type</td>
</tr>
<tr>
<td></td>
<td>KA00098 (P10F)</td>
<td></td>
<td>Continuous duty type</td>
</tr>
<tr>
<td>Hexagon socket head screw</td>
<td>XT012-25C#1(M4×0.7×20)</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Option**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanking plate (With screw, O-ring)</td>
<td>PVT317-53-1A</td>
</tr>
<tr>
<td>Mounting bracket assembly (With screw)</td>
<td>DXT010-07-4.3A</td>
</tr>
</tbody>
</table>

**Flow Rate Characteristics/Weight**

<table>
<thead>
<tr>
<th>Valve model</th>
<th>1 → 2 (P → A)</th>
<th>2 → 3 (A → R)</th>
<th>3 → 2 (R → A)</th>
<th>2 → 1 (A → P)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>VO317</td>
<td>2.0</td>
<td>0.11</td>
<td>0.47</td>
<td>0.12</td>
<td>0.49</td>
</tr>
<tr>
<td>VO317V (Vacuum spec. type)</td>
<td>2.0</td>
<td>0.11</td>
<td>0.47</td>
<td>0.12</td>
<td>0.49</td>
</tr>
<tr>
<td>VO317E (Continuous duty type)</td>
<td>2.0</td>
<td>0.11</td>
<td>0.47</td>
<td>0.12</td>
<td>0.49</td>
</tr>
</tbody>
</table>

**Option**

- Thread type (Refer to "How to Order").
Dimensions: Common Exhaust (Interchangeable with VVT320 for mounting)

Without mounting bracket: VV317-02-□1-02  
A single valve unit port location

With mounting adaptor: VV317-02-□1-02-A

<table>
<thead>
<tr>
<th>L Dimension</th>
<th>n: Stations</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td></td>
<td>121</td>
<td>167</td>
<td>213</td>
<td>259</td>
<td>305</td>
<td>351</td>
<td>397</td>
<td>443</td>
<td>489</td>
<td>L1 = 46 x n + 29</td>
</tr>
<tr>
<td>L2</td>
<td></td>
<td>106</td>
<td>152</td>
<td>198</td>
<td>244</td>
<td>290</td>
<td>336</td>
<td>382</td>
<td>428</td>
<td>474</td>
<td>L2 = 46 x n + 14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L Dimension</th>
<th>n: Stations</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td></td>
<td>181</td>
<td>227</td>
<td>273</td>
<td>319</td>
<td>365</td>
<td>411</td>
<td>457</td>
<td>503</td>
<td>549</td>
<td>L1 = 46 x n + 89</td>
</tr>
<tr>
<td>L2</td>
<td></td>
<td>151</td>
<td>197</td>
<td>243</td>
<td>289</td>
<td>335</td>
<td>381</td>
<td>427</td>
<td>473</td>
<td>519</td>
<td>L2 = 46 x n + 59</td>
</tr>
</tbody>
</table>

Applicable cable O.D. ø6 to ø12
Manual override (Non-locking)

VV61  
V100  
S070  
VQD  
VQD-V  
VK  
VT
### Precautions

**Warning**
1. When mounting valves on the manifold base, the mounting orientation is decided. If it is mounted in the wrong direction, connected equipment may malfunction. Mount it by referring to how to switch over from N.C. to N.O. specifications.

**Caution**
1. Each valve is fixed to the manifold base with two M4 mounting screws. Tighten the screws evenly when re-mounting. Tightening torque of the mounting screw (M4): 1.4 N·m
2. For mounting, tighten M4 or equivalent screws evenly into the mounting holes of the manifold base.

**Changing from N.C. to N.O.**

Universal porting permits convertibility N.C./N.O. by a simple 180 degree rotation. Mounting conditions for N.C. and N.O. is indicated as below figure.

<table>
<thead>
<tr>
<th>Exhaust port type</th>
<th>Valve</th>
<th>N.C.</th>
<th>N.O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common exhaust</td>
<td><img src="image" alt="Common exhaust N.C." /></td>
<td><img src="image" alt="Common exhaust N.O." /></td>
<td></td>
</tr>
<tr>
<td>Individual exhaust</td>
<td><img src="image" alt="Individual exhaust N.C." /></td>
<td><img src="image" alt="Individual exhaust N.O." /></td>
<td></td>
</tr>
</tbody>
</table>

* Changing from N.C. to N.O.

This product is delivered as N.C. valve. If N.O. valve is needed, remove mounting screws of the required valve and turn the valve at 180° degrees. (Make sure that there are O-rings fixed on 4 positions of the valve surface.) Then, tighten the mounting screws to fix the valve to the manifold base.
How to Use DIN Terminal

Disassembly
1. After loosening the screw ①, then if the housing ④ is pulled in the direction of the screw ②, the connector will be removed from the body of equipment (solenoid, etc.).
2. Pull out the screw ①, then remove the gasket ③ or ⑤.
3. On the bottom part of the terminal block ③, there’s a cut-off part (indication of an arrow) ⑥. If a small flat head screwdriver is inserted between the opening in the bottom, terminal block ③ will be removed from the housing ④.
4. Remove the cable gland ⑤ and plain washer ⑥ and rubber seal ⑦.

Wiring
1. Pass the cable ⑧ through the cable gland ⑥, rubber seal ⑦, in this order and then insert them into the housing ④.
2. Dimensions of the cable ⑧ are as shown in the right figure. Skin the cable and crimp the cramped terminal ⑨ to the edges.
3. Remove the screw with washer ⑪ from the bracket ⑫. (Loosen in the case of Y-shape type terminal.) As shown in the right figure, mount a cramped terminal ⑨, and then again tighten the screw ⑪. (Refer to graph at right.)
4. On the bottom part of the terminal block ③ and a plug on an equipment, screw in ① on top of the housing ④ and tighten it.

Comparison between the Product Model No. and the Coil Part No.

<table>
<thead>
<tr>
<th>Product model no.</th>
<th>Coil no.</th>
<th>Coil assembly with terminal part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT/OS17C-G(02)</td>
<td>PVT317-001GB-**</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-G5(02)</td>
<td>PVT317-**G</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-H(02)</td>
<td>PVT317-001GB-**L06</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-H5(02)</td>
<td>PVT317-**G-06</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-C(02)</td>
<td>PVT317-001CB-**</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-CS(02)</td>
<td>PVT317-**C</td>
<td></td>
</tr>
<tr>
<td>VT/OS17C-CT(02)</td>
<td>____</td>
<td>PVT317-001TBTS-**</td>
</tr>
<tr>
<td>VT/OS17C-CTZ(02)</td>
<td>____</td>
<td>PVT317-001TBTSZ-**</td>
</tr>
<tr>
<td>VT/OS17C-CD(02)</td>
<td>PVT317-001DB-**</td>
<td>PVT317-001DBTS-**</td>
</tr>
<tr>
<td>VT/OS17C-CD5(02)</td>
<td>PVT317-001DB-**</td>
<td>PVT317-001DBTS-**</td>
</tr>
<tr>
<td>VT/OS17C-CDZ(02)</td>
<td>PVT317-001DB-**</td>
<td>PVT317-001DBTSZ-**</td>
</tr>
</tbody>
</table>

Note 1) * mark in the product model numbers denotes the rated voltage.
Note 2) □ mark denotes the valve option.
Note 3) * mark and ++ mark are for coil part number and coil assembly with terminal the rated voltage.

Connector for DIN Terminal

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Without light/surge voltage suppressor (D)</th>
<th>With surge voltage suppressor (DS)</th>
<th>Light/Surge voltage suppressor (DZ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>GDM2A</td>
<td>GDM2A-S1</td>
<td>GDM2A-Z1</td>
</tr>
<tr>
<td>200 VAC</td>
<td>GDM2A</td>
<td>GDM2A-S2</td>
<td>GDM2A-Z2</td>
</tr>
<tr>
<td>24 VDC</td>
<td>GDM2A</td>
<td>GDM2A-S6</td>
<td>GDM2A-Z5</td>
</tr>
</tbody>
</table>

Caution
When the rated voltage is AC and if it is assembled with the coil for DC, response may be delayed and occur malfunction. Also, for DC valves, when the coil for AC is assembled, it occurs malfunction. For AC valves, assemble the coil for AC, and for DC valves, assemble the coil for DC.
VT317 Series
Specific Product Precautions

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.

Caution
1. A bleed port for the main valve is located at the bottom of the solenoid valve. Since blocking it causes malfunction, do not block it.
   - Ordinarily, when the solenoid valve is mounted on a metal surface, it can breathe through the breather hole, via the breather groove. However, in particular, if the surface to be mounted is made of the rubber, the rubber could deform and block the hole.
2. Make sure that dust and/or other foreign materials should not enter the valve from the unused port (e.g. exhaust port). Also, since there is a bleed port for the armature in the manual override, do not allow accumulation of dust and/or other foreign materials to block bleed port.

Change of Electrical Entry Angle
1. The VT317 series can change electrical entry angle. (4 positions)
2. How to change: Loosen the nut (1), remove the coil (2) from the body assembly (3), place the positioning pin (4) at the required place, put back the coil (2) to its place, and tighten sufficiently with lock nut (1).

Caution
Lock Nut
If the lock nut comes off due to insufficient tightening, vibration, etc., the position of the coil may deviate, causing it to burn out. To prevent such occurrences, periodically check whether the lock nut has loosened.

How to Calculate the Flow Rate
For obtaining the flow rate, refer to front matter.

Lead Wire Color (Grommet)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>Blue</td>
</tr>
<tr>
<td>200 VAC</td>
<td>Red</td>
</tr>
<tr>
<td>DC</td>
<td>Red (+), Black (–)</td>
</tr>
<tr>
<td>Other</td>
<td>Gray</td>
</tr>
</tbody>
</table>

Light/Surge Voltage Suppressors

Protection circuit for light/surge voltage suppressor is not the polarity type.

Electrical Connection
DIN terminal is connected inside as in the figure below. Connect to the corresponding power supply.
Compact yet provides a large flow capacity
Dimensions (W x H x D)····55 x 118 x 53
(Grommet)
C: 0.61 dm³/(s·bar)
(Rc 3/8 (Passage 2 → 3))
A single valve with 6 valve functions
(Effective porting type)
Six valve functions can be attained by selecting the piping ports. (Enabling the N.C. valve, N.O. valve, divider valve, selector valve, etc. to be used as desired.)
Suitable for use in vacuum applications
–101.2 kPa
(For vacuum specifications type: VT/VO325V)

How to Order

VT325

For manifold:
Enter “VO”,
Valve option
Nil Standard

Grommet
Non-locking type

With surge voltage suppressor
Surge voltage suppressor

AC: Can be attached to Grommet, Conduit, Conduit terminal.
DC: Can be attached to Grommet, Conduit, Conduit terminal.

Thread type
CE-compliant

Electrical entry
CE-compliant

Grommet, Lead wire length 200 mm
Conduit
DIN terminal
Conduit terminal

Terminal with indicator light

Solenoid Specifications

Type of actuation
Direct operated type 2 position single solenoid

Fluid
Air

Operating pressure range
0 to 1.0 MPa

Ambient and fluid temperature
5 to 50°C

Max. operating frequency
5 Hz

Response time (1)
30 ms or less (at the pressure of 0.5 MPa)

Lubrication
Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)

Manual override
Non-locking push type

Impact/Vibration resistance (2)
150/50 m/s²

Enclosure
Dustproof

Note 1) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

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. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 1000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

How to Order

VT325

Model
VO325-00[Q](-Q)

Applicable manifold
B mount common exhaust type

Accessory
Gasket (DXT083-13-1)
Bolts (DXT083-19-1, 2 pcs.)

Specifications

Type of actuation
Direct operated type 2 position single solenoid

Fluid
Air

Operating pressure range
0 to 1.0 MPa

Ambient and fluid temperature
5 to 50°C

Max. operating frequency
5 Hz

Response time (1)
30 ms or less (at the pressure of 0.5 MPa)

Lubrication
Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)

Manual override
Non-locking push type

Impact/Vibration resistance (2)
150/50 m/s²

Enclosure
Dustproof

Note 1) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

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. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 1000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

Electrical entry
Grommet, Conduit, DIN terminal, Conduit terminal

Coil rated voltage
100, 200 VAC, 50/60 Hz, 24 VDC

Allowable voltage fluctuation
–15 to +10% of rated voltage

Apparent power (2)
AC:
Inrush 50 Hz 75 VA
60 Hz 60 VA
Holding 50 Hz 27 VA
60 Hz 17 VA

DC:
12 W

Note 3) At rated voltage

1449
VT325 Series

Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Port size</th>
<th>Flow rate characteristics</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT325</td>
<td>1/4</td>
<td>C [dm³/(s·bar)] 5.5 b Cv 1.4</td>
<td>Grommet 0.55 kg (For AC)</td>
</tr>
<tr>
<td>VT325 (Vacuum spec. type)</td>
<td>1/4</td>
<td>C [dm³/(s·bar)] 5.9 b Cv 1.5</td>
<td>Grommet 0.60 kg (For DC)</td>
</tr>
<tr>
<td>VT325</td>
<td>3/8</td>
<td>C [dm³/(s·bar)] 6.1 b Cv 1.6</td>
<td>Grommet 0.57 b Cv 1.4</td>
</tr>
<tr>
<td>VT325 (Vacuum spec. type)</td>
<td>3/8</td>
<td>C [dm³/(s·bar)] 6.6 b Cv 1.5</td>
<td>Grommet 0.25 kg (For AC)</td>
</tr>
</tbody>
</table>

Note) Values for a single valve unit. It differs in the manifold case. Refer to manifold specifications on page 1452.

Valve Option

1. For vacuum
   - Pressure range: −101.2 kPa to 0.1 MPa
   - This vacuum model has less air leakage than the standard model under low pressure. It is recommended for vacuum application.

   **Caution**
   1) Since this valve has slight air leakage, it cannot be used for holding vacuum (including positive pressure holding) in the pressure container.

2. With surge voltage suppressor, with indicator light

Surge Voltage Suppressor

<table>
<thead>
<tr>
<th>Grommet type</th>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet (GS)</td>
<td>Varistor Red (+)</td>
<td>Black (-)</td>
</tr>
<tr>
<td>Conduit (CS)</td>
<td>Varistor</td>
<td></td>
</tr>
<tr>
<td>Conduit terminal (TS)</td>
<td>Varistor</td>
<td></td>
</tr>
</tbody>
</table>

Circuit for Indicator Light

<table>
<thead>
<tr>
<th>Terminal type</th>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN terminal with indicator light (DL)</td>
<td>Neon bulb</td>
<td>Neon bulb</td>
</tr>
<tr>
<td>Conduit terminal with indicator light (TL)</td>
<td>Neon bulb</td>
<td></td>
</tr>
</tbody>
</table>

- Grommet type

Surge voltage suppressor

3. Manual override with lock
   1) Using a screwdriver, push the manual override button that is located in the head portion of the solenoid valve in order to directly push the spool valve downward, thus causing the valve to switch.
   2) With the button remaining pushed down, turn it approximately 90° clockwise or counterclockwise to maintain the manual override locked state.
   3) To revert to the original state, keep the button pushed down and turn it approximately 90° clockwise.

Operation principle

**De-energized**

The spool ③ is pushed upward by the force of the spring ⑤ and the air passage between port ① and port ② is opened and port ⑩ is blocked.

Air flow direction: ① ← Block, ② ← ③

**Energized**

When the coil ⑥ is energized the plunger ⑦ is pulled down depressing the spool ③ via the overtravel assembly ⑧ and the air passage between port ① and port ② is opened and port ⑩ is blocked.

Air flow direction: ① ← ②, ③ ← Block

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>Aluminum die-casted</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>3</td>
<td>Spool valve</td>
<td>Aluminum, NBR</td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

Grommet (G)

DIN terminal (D)

Conduit (C)

With locking manual override

Conduit terminal (T)

Conduit terminal with indicator light (TL)

- **Manual override** (Non-locking)
- **Applicable cable O.D.** ø6 to ø12
- **Connector**
- **2 x mounting groove**
- **Width across flats**

- **Manual override** (Non-locking)
- **Lead wire length 180**
- **2 x mounting groove**
- **Width across flats**

- **Manual override** (Non-locking)
- **180°**
- **2 x mounting groove**
- **Width across flats**

- **Manual override** (Non-locking)
- **180°**
- **2 x mounting groove**
- **Width across flats**
How to Order Manifold

VT325 Series
Manifold Specifications

The VT325 series Manifold Model has a B mount type with common exhaust.

How to Order Manifold

VVT34 0 05 1

Porting specifications

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Porting direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Side</td>
</tr>
<tr>
<td>A</td>
<td>Side</td>
</tr>
<tr>
<td>R</td>
<td>Side</td>
</tr>
<tr>
<td>0</td>
<td>Side</td>
</tr>
<tr>
<td>1</td>
<td>Bottom</td>
</tr>
</tbody>
</table>

Valve stations:

- 02: 2 stations
- 17: 17 stations

Exhaust port type:

- 1: Common exhaust

CE-compliant

Nil Q CE-compliant

Thread type

Nil F Rc

Nil Q G

Nil F NPT

Nil F NPTF

Manifold Specifications

<table>
<thead>
<tr>
<th>Manifold type</th>
<th>B mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. number of stations</td>
<td>17 stations (Recommended)</td>
</tr>
<tr>
<td>Applicable solenoid valve</td>
<td>VO325-00□□□□-(Q)</td>
</tr>
</tbody>
</table>

Exhaust port type:

<table>
<thead>
<tr>
<th>Port location/Port size</th>
<th>Port direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>P Side</td>
<td>Side</td>
</tr>
<tr>
<td>A Side/Bottom</td>
<td>Side/Bottom</td>
</tr>
<tr>
<td>R Side</td>
<td>Side</td>
</tr>
<tr>
<td>Base</td>
<td>Side/Bottom</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Blanking plate (With gasket, screw)</th>
<th>DXT083-21A</th>
</tr>
</thead>
</table>

Note: If there are more than 4 stations, supply air from both P ports and exhaust from both R ports.

Accessory for Applicable

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold gasket</td>
<td>DXT083-13-1</td>
<td>1 pc.</td>
</tr>
<tr>
<td>Hexagon socket head screw</td>
<td>DXT083-19-1</td>
<td>2 pcs.</td>
</tr>
</tbody>
</table>

Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Flow rate characteristics</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 → 2 (P → A)</td>
<td>2 → 3 (A → R)</td>
</tr>
<tr>
<td>VO325</td>
<td>C [dm³/s·bar]</td>
<td>b</td>
</tr>
<tr>
<td>VO325V (Vacuum spec. type)</td>
<td>4.1</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Precautions

⚠️ Warning

When mounting valves on the manifold base, the mounting orientation is decided. If it is mounted in the wrong direction, connected equipment may malfunction. Mount it by referring to external dimensions on page 1453. Besides, the external dimensions are showing the case of N.C. specifications.

⚠️ Caution

Changing from N.C. to N.O.

The valves are assembled as N.C. valves at the time of shipment. By removing the two retaining screws from the desired valves, and rotating each valve body 180° and reassembling it on the manifold base, it is possible to reassemble an N.C. valve as an N.O. valve. (When doing so, make sure that a gasket is attached to the mounting surface of the valve.) Properly tighten the screws.

The tightening torque of the retaining screws is 3 N·m.
3 Port Solenoid Valve
Direct Operated Poppet Type **VT325 Series**

**Dimensions**

**Common exhaust**

![Diagram](image)

- **Pitch**
  - 2 x ø9 mounting hole
  - 4 x Rc 1/4, 3/8

- **Blanking plate**
  - Pitch 2 x ø9 mounting hole
  - Blanking plate

- **Formula**: \( L_1 = 46n + 39, L_2 = 46n + 19 \)

- **Port locations**
  - Port (1)
  - Port (2)
  - Port (3)

**Table**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>131</td>
<td>177</td>
<td>223</td>
<td>289</td>
<td>315</td>
<td>361</td>
<td>407</td>
<td>453</td>
<td>499</td>
</tr>
<tr>
<td>L2</td>
<td>111</td>
<td>157</td>
<td>203</td>
<td>249</td>
<td>295</td>
<td>341</td>
<td>387</td>
<td>433</td>
<td>479</td>
</tr>
</tbody>
</table>

**Schematic**

- **Top view**
- **Side view**
- **Bottom view**

**Symbols**

- Grommet (G)
- Conduit (T)
- Blanking plate
- DIN terminal (D)
- Conduit (C)

**A single valve unit port location**
VT325 Series
Specific Product Precautions

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.

**Caution**

1. The bottom of the solenoid valve has a breather hole for the main valve. Take proper measures to prevent this hole from being blocked as this will lead to a malfunction.

   - Ordinarily, when the solenoid valve is mounted on a metal surface, it can breathe through the breather hole, via the breather groove. However, in particular, if the surface to be mounted is made of the rubber, the rubber could deform and block the hole.

2. Make sure that dust and/or other foreign materials do not enter the valve from the unused port (e.g. exhaust port).

   The grommet portion contains a breather hole for the core. Take proper measures to prevent dust or foreign matter from accumulating in this area.

**How to Use DIN Terminal**

**Disassembly**

1) After loosening the screw ①, then if the housing ② is pulled in the direction of the screw ①, the connector will be removed from the body of equipment (solenoid, etc.).

2) Pull the screw ①, and then remove gasket ③ or ④.

3) On the bottom part of the terminal block ⑤, there's a cut-off part (indication of an arrow) ⑥. If a small flat head screwdriver is inserted between the opening in the bottom, terminal block ⑤ will be removed from the housing ④. (Refer to the figure below.)

4) Remove the cable gland ⑦ and plain washer ⑧ and rubber seal ⑨.

**Wiring**

1) Pass the cable ⑩ through the cable gland ⑪, washer ⑫, rubber seal ⑬ in this order, and then insert them into the housing ⑭.

2) Dimensions of the cable ⑩ are the figure as below. Skin the cable and crimp the crimped terminal ⑮ to the edges.

3) Remove the screw with washer ⑯ from the bracket ⑰. (Loosen in the case of Y shape type terminal.) As shown in the below figure, mount a crimped terminal ⑳, and then again tighten the screw ⑲.

   Note) Tighten within the tightening torque of 0.5 N·m ±15%.

   Note: a) It is possible to wire even in the state of bare wire. In that case, loosen the screw with washer ② and place a lead wire into the bracket ③, and then tighten it once again.

   b) The maximum size for the round terminal ④ is 1.25 mm²—3.5 and for the Y terminal is 1.25 mm²—4.

   c) Cable ⑩ outside diameter: ④6 to ④12 mm

   Note) For the one with the outside diameter ranging between ②9 to ③2 remove the inside parts of the rubber seal ⑨ before using.

**Assembly**

1) Terminal box ③ connected with housing ④ should be reinstated. (Push it down until you hear the click sound.)

2) Putting rubber seal ⑦, plain washer ⑧, in this order into the cable introducing slit on the housing ④, then further tighten the cable gland ⑥ securely.

3) By inserting gasket ② or ③ between the bottom part of the terminal box ⑤ and a plug on an equipment, screw in ① on top of the housing ④ and tighten it.

   Note) Tighten within the tightening torque of 0.5 N·m ±20%.

   Note: The orientation of a connector can be changed arbitrarily, depending on the combination of a housing ④ and a terminal box ③.

**How to Calculate the Flow Rate**

For obtaining the flow rate, refer to front matter.