5 Port Solenoid Valve
VF1000/3000/5000 Series

Reduced power consumption:

0.55 W [With power saving circuit]
[Starting 1.55 w Holding 0.55 w]
1.55 W [Standard]
(Current: 2.0 W) * With DC light

Power consumption is reduced by power saving circuit.

Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 40 ms at 24 VDC.) Refer to electrical power waveform as shown below.

- **Built-in full-wave rectifier (AC)**
  - **Noise reduction**
    Noise is considerably reduced by changing it to DC mode with a full-wave rectifier.
  - **Reduced apparent power**
    Current: 5.6 VA \(\rightarrow\) 1.55 VA

- **Built-in strainer in the pilot valve**
  Unexpected troubles due to foreign matter can be prevented.
  Note) Be sure to mount an air filter on the inlet side.

Electrical power waveform with power saving circuit

Applied voltage

24 V
0 V
1.55 W
0.55 W
0 W

Standard

Energy saving
With power saving circuit

40 ms

Low wattage specification added
* VF1000/3000
Power consumption
0.35 w (Without light)
0.4 w (With light)

RoHS

Rubber material: HNBR
Ozone-resistant specification
* The pilot valve poppet is made of FKM.

Air operated valve
VFA1000/3000/5000 P.1495

VFA1000/3000/5000 Series
**VF1000/3000/5000 Series**

**Model Selection by Operating Conditions**

**Solenoid Valve: Single Unit**

<table>
<thead>
<tr>
<th>Series</th>
<th>Sonic conductance [C [dm^3/(s·bar)]]</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Voltage</th>
<th>Electrical entry</th>
<th>Light/Surge voltage suppressor</th>
<th>Manual override</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>0.76</td>
<td>2-position single</td>
<td>M5 x 0.8</td>
<td>1/8</td>
<td>DC</td>
<td>Grommet</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VF1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VF3000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VF5000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>4.0</td>
<td>2-position double</td>
<td>1/8</td>
<td>1/4</td>
<td>L-type plug connector</td>
<td>DC with surge voltage suppressor</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td>Body mounted</td>
<td></td>
<td>3-position closed center</td>
<td>1/4</td>
<td>3/8</td>
<td>M-type plug connector</td>
<td>DC with surge voltage suppressor (Non-polar)</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td>VF5000</td>
<td>8.8</td>
<td>3-position exhaust center</td>
<td>1/4</td>
<td>12 VDC</td>
<td>DIN terminal</td>
<td>AC with surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-position pressure center</td>
<td>2/8</td>
<td>24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>3.1</td>
<td>2-position single</td>
<td>1/4</td>
<td>3/8</td>
<td>DIN (EN1753 01-803) terminal</td>
<td>AC with light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td>Base mounted</td>
<td></td>
<td>2-position double</td>
<td>1/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>9.4</td>
<td>3-position closed center</td>
<td>1/4</td>
<td>1/2</td>
<td>Conduit terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-position exhaust center</td>
<td>2/8</td>
<td>220 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-position pressure center</td>
<td>2/8</td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Low wattage specification: page 323*  
*Power consumption: 0.35 W (Without light) 0.4 W (With light)*
### VF1000/3000/5000 Series

#### Model Selection by Operating Conditions

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable valve</th>
<th>Applicable stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>Common EXH</td>
<td>VV5F1-30</td>
<td>VF1□30</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV5F1-31</td>
<td>VF1□33</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>Common EXH</td>
<td>VV5F3-30</td>
<td>VF3□30</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>Common EXH</td>
<td>VV5F5-20</td>
<td>VF5□20</td>
<td>2 to 10 stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV5F5-21</td>
<td>VF5□23</td>
<td>2 to 15 stations</td>
</tr>
<tr>
<td>VF5000</td>
<td></td>
<td>VV5F3-40</td>
<td>VF3□40</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV5F5-40</td>
<td>VF5□44</td>
<td>2 to 10 stations</td>
</tr>
</tbody>
</table>

**Series**

- VF1000
- VF3000
- VF5000

**EXH port type**

- Common EXH
- Individual EXH

**Manifold base model**

- VV5F1-30
- VV5F1-31
- VV5F3-30
- VV5F5-20
- VV5F5-21
- VV5F3-40
- VV5F5-40

**Applicable valve**

- VF1□30
- VF1□33
- VF3□30
- VF3□33
- VF5□20
- VF5□23
- VF3□40
- VF3□43
- VF5□44

**Applicable stations**

- 2 to 20 stations
- 2 to 10 stations
- 2 to 15 stations

**Part Numbers**

- VF3000, VF3000/3000/5000 Series
- VF3000/3000/5000 Series
- SV, SYJ, SZ, VF, VQ, VP4, VQ 1/2, VQ 4/5, VQC 1/2, VQC 4/5, VQZ, SQ, VFS, VFR, VQ7
Cylinder Speed Chart

Body Ported

<table>
<thead>
<tr>
<th>Series</th>
<th>Average speed (mm/s)</th>
<th>Bore size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CJ2 series</td>
<td>CM2 series</td>
</tr>
<tr>
<td></td>
<td>Pressure 0.5 MPa</td>
<td>Pressure 0.5 MPa</td>
</tr>
<tr>
<td></td>
<td>Load factor 50%</td>
<td>Load factor 50%</td>
</tr>
<tr>
<td></td>
<td>Stroke 60 mm</td>
<td>Stroke 300 mm</td>
</tr>
<tr>
<td>VF1120-01</td>
<td>1000</td>
<td>Ø6, Ø10, Ø16, Ø20, Ø25, Ø32, Ø40, Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø140, Ø160</td>
</tr>
<tr>
<td>VF3130-02</td>
<td>1000</td>
<td>Ø6, Ø10, Ø16, Ø20, Ø25, Ø32, Ø40, Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø140, Ø160</td>
</tr>
<tr>
<td>VF5120-03</td>
<td>1000</td>
<td>Ø6, Ø10, Ø16, Ø20, Ø25, Ø32, Ø40, Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø140, Ø160</td>
</tr>
</tbody>
</table>

* With ★: when using steel piping

Base Mounted

<table>
<thead>
<tr>
<th>Series</th>
<th>Average speed (mm/s)</th>
<th>Bore size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CJ2 series</td>
<td>CM2 series</td>
</tr>
<tr>
<td></td>
<td>Pressure 0.5 MPa</td>
<td>Pressure 0.5 MPa</td>
</tr>
<tr>
<td></td>
<td>Load factor 50%</td>
<td>Load factor 50%</td>
</tr>
<tr>
<td></td>
<td>Stroke 60 mm</td>
<td>Stroke 300 mm</td>
</tr>
<tr>
<td>VF3140-03</td>
<td>1000</td>
<td>Ø6, Ø10, Ø16, Ø20, Ø25, Ø32, Ø40, Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø140, Ø160, Ø200</td>
</tr>
<tr>
<td>VF5144-04</td>
<td>1000</td>
<td>Ø6, Ø10, Ø16, Ø20, Ø25, Ø32, Ø40, Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø140, Ø160, Ø200</td>
</tr>
</tbody>
</table>

* With ★: when using steel piping

Use as a guide for selection. Please check the actual conditions with SMC Model Selection Program.
### Conditions

#### Body Ported

<table>
<thead>
<tr>
<th>Body ported</th>
<th>CJ2 series</th>
<th>CM2 series</th>
<th>MB, CA2 series</th>
<th>CS1 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1120-01</td>
<td>T0604 x 1 m</td>
<td>T0806 x 1 m</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS3002F-06</td>
<td>AS3002F-08</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN101-01</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF3130-02</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS3002F-06</td>
<td>AS4002F-10</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN110-01</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF5120-03</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>T1209 x 1 m</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN30-03</td>
<td>AN30-03</td>
<td>AN302-03</td>
<td>—</td>
</tr>
</tbody>
</table>

#### Body Ported [when using SGP (Steel Piping)]

<table>
<thead>
<tr>
<th>Body ported</th>
<th>CS1 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF5120-03</td>
<td>SGP10A x 1 m</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS420-03</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN30-03</td>
</tr>
</tbody>
</table>

#### Base Mounted

<table>
<thead>
<tr>
<th>Base mounted</th>
<th>CJ2 series</th>
<th>CM2 series</th>
<th>MB, CA2 series</th>
<th>CS1 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3140-03</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>T1209 x 1 m</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN30-03</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF5144-04</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>T1209 x 1 m</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN40-04</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

#### Base Mounted [when using SGP (Steel Piping)]

<table>
<thead>
<tr>
<th>Base mounted</th>
<th>CS1 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3140-03</td>
<td>SGP10A x 1 m</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS420-03</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN30-03</td>
</tr>
<tr>
<td>VF5144-04</td>
<td>SGP15A x 1 m</td>
</tr>
<tr>
<td></td>
<td>Speed controller: AS420-04</td>
</tr>
<tr>
<td></td>
<td>Silencer: AN40-04</td>
</tr>
</tbody>
</table>

---

Use as a guide for selection. Please check the actual conditions with SMC Model Selection Program.
Pilot Operated 5 Port Solenoid Valve
VF1000/3000/5000 Series

Body Ported

**Single Unit**

### How to Order Valve

#### Body ported

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VF1000</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>VF3000</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td></td>
</tr>
</tbody>
</table>

#### Body model

- PE port: EA/EB port
- Main/Pilot valve common exhaust

#### Body option

- **A**: Pilot valve individual exhaust
- **B**: Pilot valve individual exhaust

#### Pressure specifications

<table>
<thead>
<tr>
<th>Nil</th>
<th>Standard (0.7 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>High-pressure type (1 MPa)</td>
</tr>
</tbody>
</table>

#### Coil specifications

- **T**: With power saving circuit (DC only)

Note: Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to page 348 for details.)

- **K**: High-pressure type (1 MPa)

#### Made to Order

- **A, B port size**
  - Symbol
  - Port size: VF1000, VF3000, VF5000
  - **M5**: 5 x 0.8
  - **01**: 1/8
  - **02**: 1/4
  - **03**: 3/8

#### Electrical entry

- **Grommet**
- **L-type plug connector**
- **M-type plug connector**
- **DIN terminal**
- **DIN (EN175301-803) terminal**
- **Conduit terminal**

#### Thread type

- **Nil**
- **F**: Push type
- **G**: Push type
- **N**: Slotted type
- **T**: Slotted type

#### Bracket

- **F**: Without bracket
- **M5**: With bracket

#### Electrical entry

- **Grommet**
- **L-type plug connector**
- **M-type plug connector**
- **DIN terminal**
- **DIN (EN175301-803) terminal**
- **Conduit terminal**

#### Note

- Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.
- RoHS compliant

---

**Caution**

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

---

**Symbol**

- **Grommet**
- **L-type plug connector**
- **M-type plug connector**
- **DIN terminal**
- **DIN (EN175301-803) terminal**
- **Conduit terminal**

---

**Light/Surge voltage suppressor**

- **Symbol**
- **Light/Surge voltage suppressor**
- **DC**
- **AC**

### Made to Order

- **A, B port size**
- **Symbol**
- **Port size**
- **VF1000**
- **VF3000**
- **VF5000**

---

**Notes**

- LN and MN types are with 2 sockets.
- Refer to page 346 when different length of lead wire for L/M-type plug connector is required.
- Refer to page 347 for details on the DIN (EN175301-803) terminal.
**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>VF1000</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td>Air</td>
<td>Air</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.15 to 0.7</td>
<td>0.15 to 1.0</td>
<td>0.15 to 1.0</td>
</tr>
<tr>
<td>Type</td>
<td>2-position single/3-position</td>
<td>2-position single/3-position</td>
<td>2-position single/3-position</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>2-position double</td>
<td>2-position double</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 80 (No freezing)</td>
<td>–10 to 80 (No freezing)</td>
<td>–10 to 80 (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>3-position</td>
<td>3-position</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking slotted type</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust, Main/Port valve common exhaust (Except VF1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td>Not required</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>300/50</td>
<td>300/50</td>
<td>300/50</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65 for D, Y, T)</td>
<td>Dustproof (IP65 for D, Y, T)</td>
<td>Dustproof (IP65 for D, Y, T)</td>
</tr>
</tbody>
</table>

**Note** Impact resistance: No malfunction occurred when it is tested 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 2000 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)

* Based on IEC 60529. When using IP65, select the main/pilot valve common exhaust type.

**Solenoid Specifications**

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D)</th>
<th>DIN (EN175301-803) terminal (Y)</th>
<th>Conduit terminal (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC 24, V</td>
<td>AC (50/60 Hz) 24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC With power saving circuit</td>
<td>0.55 (With light only)</td>
<td>0.75 (With light only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC 24 V 1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (Non-polar type: Varistor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Indication light** LED (Neon light is used for AC mode of D, Y, T.)

* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

**Response Time**

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Operating pressure range (MPa)</th>
<th>Response time (ms)</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>0.15 to 0.7</td>
<td>20</td>
</tr>
<tr>
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<td></td>
<td>Double</td>
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<td>0.1 to 1.0</td>
<td>12</td>
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<tr>
<td>VF3000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>0.15 to 0.7</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td>0.1 to 1.0</td>
<td>12</td>
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<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>Standard</td>
<td>0.15 to 0.7</td>
<td>30</td>
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<td>Double</td>
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<td>0.15 to 1.0</td>
<td>23</td>
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<tr>
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<td>2-position</td>
<td>Single</td>
<td>High-pressure type</td>
<td>0.15 to 0.7</td>
<td>33</td>
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<td></td>
<td>Double</td>
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<td>0.1 to 1.0</td>
<td>15</td>
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<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>0.15 to 0.7</td>
<td>30</td>
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<td></td>
<td></td>
<td>Double</td>
<td></td>
<td>0.1 to 1.0</td>
<td>15</td>
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<td>3-position</td>
<td>Single</td>
<td>High-pressure type</td>
<td>0.15 to 0.7</td>
<td>50</td>
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<td></td>
<td>Double</td>
<td></td>
<td>0.15 to 1.0</td>
<td>33</td>
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<td>2-position</td>
<td>Single</td>
<td>High-pressure type</td>
<td>0.15 to 0.7</td>
<td>18</td>
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<td>Double</td>
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<td>0.1 to 1.0</td>
<td>15</td>
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<td></td>
<td>3-position</td>
<td>Single</td>
<td>High-pressure type</td>
<td>0.15 to 0.7</td>
<td>53</td>
</tr>
</tbody>
</table>

**Note** Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage)
## Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow rate characteristics</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 → 4/2 (P → A/B)</td>
<td>4/2 → 5/3 (A/B → EA/EB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1, 4, 2 (P, A, B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF1□20-M5</td>
<td>2-position</td>
<td>M5 x 0.8</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
<tr>
<td>VF1□20-01</td>
<td>2-position</td>
<td>1/8</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
<tr>
<td>VF3□30-01</td>
<td>2-position</td>
<td>1/8</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
<tr>
<td>VF3□30-02</td>
<td>3-position</td>
<td>1/4</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
<tr>
<td>VF5□20-02</td>
<td>2-position</td>
<td>1/4</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
<tr>
<td>VF5□20-03</td>
<td>3-position</td>
<td>3/8</td>
<td>C [dm³/(s·bar)]</td>
<td>Cv</td>
</tr>
</tbody>
</table>

**Note 1)** [ ] Normal position

**Note 2)** Values without bracket

### VF1□20-M5
- **Type of actuation:** Single
- **Port size:** M5 x 0.8
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 0.49, 0.40, 0.13
    - 0.49, 0.40, 0.13
    - 0.76, 0.22, 0.17
    - 0.76, 0.22, 0.17

### VF1□20-01
- **Type of actuation:** Single
- **Port size:** 1/8
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 3.0, 0.38, 0.78
    - 2.4, 0.31, 0.64
    - 2.6, 0.37, 0.70
    - 3.0, 0.42, 0.83

### VF3□30-01
- **Type of actuation:** Single
- **Port size:** 1/8
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 4.0, 0.36, 1.0
    - 2.4, 0.45, 0.68
    - 3.0, 0.42, 0.82
    - 5.5, 0.37, 1.4

### VF3□30-02
- **Type of actuation:** Single
- **Port size:** 1/4
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 7.1, 0.46, 1.9
    - 6.7, 0.46, 1.3
    - 6.8, 0.51, 2.0
    - 8.8, 0.44, 2.4

### VF5□20-02
- **Type of actuation:** Single
- **Port size:** 1/4
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 7.1, 0.46, 1.9
    - 7.1, 0.46, 1.9
    - 7.5, 0.43, 2.0
    - 8.3, 0.40, 2.2

### VF5□20-03
- **Type of actuation:** Single
- **Port size:** 3/8
- **Flow rate characteristics:**
  - C [dm³/(s·bar)]:
    - 8.8, 0.44, 2.4
    - 8.8, 0.44, 2.4
    - 7.3, 0.50, 2.6
    - 9.2, 0.50, 2.6
Construction: Body Ported

2-position single

Symbol

2-position single
VF1000

VF3000
VF5000

2-position double

Symbol

2-position single
VF1000

VF3000
VF5000

3-position closed center/exhaust center/pressure center

Symbol

3-position closed center

3-position exhaust center

3-position pressure center

(Drawing shows a closed center type.)

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>White</td>
</tr>
<tr>
<td>2</td>
<td>Adapter plate</td>
<td>Resin</td>
<td>Gray</td>
</tr>
<tr>
<td>3</td>
<td>End plate</td>
<td>Resin (VF313C::F: Aluminum die-casted)</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Spool valve</td>
<td>Aluminum, HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Pilot valve assembly</td>
<td>Refer to “How to Order Pilot Valve Assembly” on page 302.</td>
<td>Built-in strainer</td>
</tr>
</tbody>
</table>

Bracket Assembly Part No.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket (for VF1000 double)</td>
<td>DXT144-8-1A (With 2 mounting screws)</td>
</tr>
</tbody>
</table>
How to Order Pilot Valve Assembly (With a gasket and two mounting screws)

⚠️ **Caution**
When only the pilot valve assembly is replaced, it is not possible to change from V211 (Grommet or L/M-type) to V212 (DIN or Conduit type), or vice versa.

Dimensions: VF1000 Series/Body Ported

2-position single

Grommet (G) (H): VF1120-□□□□□□□□□□□□□□□□\(-\text{F}\)

Grommet (G) (H): VF1120-□□□□□□□□□□□□□□□□\(-\text{F}\)

L-type plug connector (L): VF1120-□□□□□□□□□□□□□□\(-\text{F}\)

DIN terminal (D) (Y): VF1120-□□□□□□□□□□□□□□\(-\text{F}\)

M-type plug connector (M): VF1120-□□□□□□□□□□□□□□\(-\text{F}\)

Conduit terminal (T): VF1120-□□□□□□□□□□□□□□\(-\text{F}\)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF1000 Series/Body Ported

2-position double

Grommet (G) (H): VF1220-□□□□1-M5□

Grommet (G) (H): VF1220-□□□□1-01□

L-type plug connector (L): VF1220-□□□□1-M5□

DIN terminal (D) (Y): VF1220-□□□□1-M5□

M-type plug connector (M): VF1220-□□□□1-M5□

Conduit terminal (T): VF1220-□□□□1-M5□

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF3000 Series/Body Ported

2-position single
Grommet (G) (H): VF3130-□□□1-□□□□ (-F)

Grommet (G) (H): DC without light/surge voltage suppressor

L-type plug connector (L): VF3130-□□□1-□□□□ (-F)

DIN terminal (D) (Y): VF3130-□□□1-□□□□ (-F)

M-type plug connector (M): VF3130-□□□1-□□□□ (-F)

Conduit terminal (T): VF3130-□□□1-□□□□ (-F)

Unless otherwise indicated, dimensions are the same as Grommet (G).

[ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

[ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).
**Dimensions: VF3000 Series/Body Ported**

2-position double

Grommet (G) (H): VF3230-□□□□1-□□□□

G: Approx. 300
H: Approx. 600
(Lead wire length)

Manual override

1/8, 1/4
[4(A), 2(B) port]

2 x ø4.3
(For mounting)

149.9

21.8

10

73

17

1.7

Grommet (G) (H)

DC without light/surge voltage suppressor

G: Approx. 300
H: Approx. 600
(Lead wire length)

1/8, 1/4
[5(EA), 3(EB) port]

18.4 (18.4)
(Distance between ports)

76.8

6.3

2 x ø2.2
(PE port)

L-type plug connector (L): VF3230-□□□□1-□□□□

Approx. 300
(Lead wire length)

162.6

1.7

DIN terminal (D) (Y): VF3230-□□□□1-□□□□

Max. 10

163.6

84.5

75.5

4 [EA, 3(EB) port]

2 x ø4.2
(For mounting)

20.5

1/8, 1/4
[1(P) port]

2 x ø4.3
(For mounting)

149.9

73

17

1.7

Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3230-□□□□1-□□□□

Approx. 300
(Lead wire length)

145.8

135.6

55.5

Conduit terminal (T): VF3230-□□□□1-□□□□

Max. 10

168.4

88.7 (88.7)

78.7 (78.7)

[ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF3000 Series/Body Ported

3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF3\( \frac{3}{5} \times 30 \times \text{□□□} \times 1 \times \text{□□□} \times 01 \times 02 \)

Unless otherwise indicated, dimensions are the same as Grommet (G).

L-type plug connector (L): VF3\( \frac{3}{5} \times 30 \times \text{□□□} \times 01 \times 02 \)

Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3\( \frac{3}{5} \times 30 \times \text{□□□} \times 01 \times 02 \)

Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3\( \frac{3}{5} \times 30 \times \text{□□□} \times 01 \times 02 \)

Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF3\( \frac{3}{5} \times 30 \times \text{□□□} \times 01 \times 02 \)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series/Body Ported

2-position single
Grommet (G) (H): VF5120-□□□1-□-□□□

- G: Approx. 300
- H: Approx. 600
  (Lead wire length)

- 142.2
- 103.7
- 44
- 28.5
- (28.2)
- (Distance between ports)
- 28
- 36.5
- 32
- 22

Manual override

2 x ø4.3
(For mounting)

1/4, 3/8
[4(A), 2(B) port]

- ø2.3
- PE port

- 52

- 50.5

Grommet (G) (H)
DC without light/surge voltage suppressor

- G: Approx. 300
- H: Approx. 600
  (Lead wire length)

L-type plug connector (L): VF5120-□□□1-□-□□□

- Approx. 300
  (Lead wire length)

- 148.5

DIN terminal (D) (Y): VF5120-□□□1-□-□□□

- Max. 10

- 149

- 85

- 76

M-type plug connector (M): VF5120-□□□1-□-□□□

- Approx. 300
  (Lead wire length)

- 140.1

Conduit terminal (T): VF5120-□□□1-□-□□□

- Max. 10

- 151.4

- 89.2 (79.2)

- 79.2 (69.2)

Unless otherwise indicated, dimensions are the same as Grommet (G).

[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series/Body Ported

2-position double
Grommet (G) (H): VF5220-□□□□1-□□□□  

![Diagram of Grommet (G) (H)]

- G: Approx. 300
- H: Approx. 600
- Lead wire length: 183.3
- [Distance between ports: 20.2]
- Manual override
- 2 x ø4.3
  
For mounting

L-type plug connector (L): VF5220-L□□□□1-□□□□  

![Diagram of L-type plug connector (L)]

- Applicable cable O.D.: ø4.5 to ø7
- Lead wire length: 196
- Max. 10

DIN terminal (D) (Y): VF5220-D□□□□1-□□□□  

![Diagram of DIN terminal (D) (Y)]

- Applicable cable O.D.: ø4.5 to ø7
- Max. 10
- PG9

M-type plug connector (M): VF5220-M□□□□1-□□□□  

![Diagram of M-type plug connector (M)]

- Applicable cable O.D.: ø4.5 to ø7
- Max. 10

Conduit terminal (T): VF5220-T□□□□1-□□□□  

![Diagram of Conduit terminal (T)]

- Max. 10
- PG9
- [ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series/Body Ported

3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF5\(\frac{3}{5}\)20-1

G: Approx. 300
H: Approx. 600

(Distance between ports)

[4(A), 2(B) port]

Manual override

2 x ø4.3
(For mounting)

(Indicator light)

2 x ø2.3
(PE port)

L-type plug connector (L): VF5\(\frac{3}{5}\)20-L

Approx. 300
(Lead wire length)

DIN terminal (D) (Y): VF5\(\frac{3}{5}\)20-Y

Max. 10

Applicable cable 0.5, ø4.5 to ø7

[ ]: Without indicator light

M-type plug connector (M): VF5\(\frac{3}{5}\)20-M

Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF5\(\frac{3}{5}\)20-T

Max. 10

Applicable cable 0.5, ø4.5 to ø7

[ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).
**VF1000/3000/5000 Series**

**Made to Order**

Please contact SMC for detailed dimensions, specifications and lead times.

---

**1 Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification**

In this specification, piping to the pilot exhaust port (PE port) is available when the valve is used in an environment where the exhaust from the pilot valve is not allowable, or intrusion of ambient dust should be prevented. Combination with low wattage specification is not possible.

**How to Order Valve**

**VF 3 0 - - 1 - - - X500**

- **Series**
  - 1 VF1000
  - 3 VF3000
  - 5 VF5000

- **Type of actuation**
  - 1 2-position single
  - 2 2-position double
  - 3 3-position closed center
  - 4 3-position exhaust center
  - 5 3-position pressure center

- **Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification**

**PILOT EXHAUST PORT (PE PORT)**

- **M3 x 0.5**

**Note**

- Entry is the same as standard products.
- The specifications and performance are the same as those of standard products.

- **2-position single**

- **2-position double**

- **3-position closed center/exhaust center/pressure center**

---

**2 TRIAC Output Specification**

For AC type valve, use this specification when the pilot valve is not recovered even though valve power supply is turned OFF at the equipment using output unit with large leakage voltage over 8% of the rated voltage (TRIAC output such as PLC or SSR, etc.). Combination with low wattage specification is not possible.

**How to Order Valve**

**VF 3 - - - - 1 - - - - X600**

- **Series**
  - 1 VF1000
  - 3 VF3000
  - 5 VF5000

- **Type of actuation**
  - 1 2-position single
  - 2 2-position double
  - 3 3-position closed center
  - 4 3-position exhaust center
  - 5 3-position pressure center

**Note**

- Entry is the same as standard products.
-Rated voltage: AC type only

---

**Note**

- Not available for the base mounted type.

---

**Specifications and Performance**

- **VF1000**
  - L1: 34.5
  - L2: 4.2
  - L3: 29.5
  - L4: 3.45
  - L5: 45.5

- **VF3000**
  - L1: 60
  - L2: 4.2
  - L3: 59
  - L4: 44.5
  - L5: 63.5

- **VF5000**
  - L1: 95
  - L2: 3.45
  - L3: 89
  - L4: 44.5
  - L5: 63.5
Pilot Operated 5 Port Solenoid Valve
VF3000/5000 Series
Single Unit

Base Mounted

How to Order Valve

VF 3 1 4 0 K T - 5 G Z D 1 - 02

Type of actuation
1 2 2-position single 2-position double
3 4 5 3-position closed center 3-position exhaust center 3-position pressure center

Body model
VF3000 — VF5000

Pressure specifications
Nil Standard (0.7 MPa)
K High-pressure type (1 MPa)

Coil specifications
Nil Standard
T With power saving circuit (DC only)

Thread type
Nil G F Rc N NPT T NPTF

Port size (Sub-plate)
Nil Without sub-plate
02 1/2
03 3/8
04 —

Light/Surge voltage suppressor
Nil Without light/surge voltage suppressor
S With light/surge voltage suppressor
T With light/surge voltage suppressor (Non-polar)
U With light/surge voltage suppressor (Non-polar)

Rated voltage
DC 24 VDC
AC (50/60 Hz) 100 VAC 200 VAC 110 VAC [115 VAC] 220 VAC [230 VAC] 240 VAC 24 VAC

Electrical entry
Grommet L-type plug connector M-type plug connector DIN terminal DIN (EN175301-803) terminal Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm L: With lead wire (length 300 mm) M: With lead wire (length 300 mm) D: With connector Y: With connector T: Conduit terminal

Made to Order
Nil — X600 TRIAC output specification (Refer to page 311.)

Manual override
Nil: Non-locking push type D: Push-turn locking slotted type E: Push-turn locking lever type

Light/Surge voltage suppressor
Symbol Light/Surge voltage suppressor DC AC Note 2) — — — —
Nil Without light/surge voltage suppressor — —
S With light/surge voltage suppressor — —
T With light/surge voltage suppressor (Non-polar) — —
U With light/surge voltage suppressor (Non-polar) — —

Note 1) When using IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.
Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.

Caution
When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

* LN and MN types are with 2 sockets.
* Refer to page 346 when different length of lead wire for L/M-type plug connector is required.
* Refer to page 347 for details on the DIN (EN175301-803) terminal.
Note 1) When using IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.
Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.
## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>2-position single/3-position</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>0.1 to 0.7</td>
</tr>
<tr>
<td></td>
<td>3-position single/3-position</td>
<td>0.15 to 1.0</td>
</tr>
<tr>
<td></td>
<td>3-position double</td>
<td>0.1 to 1.0</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing)</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust, Main/PILOT valve common exhaust</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)</td>
<td>300/50</td>
<td></td>
</tr>
</tbody>
</table>

### Solenoid Specifications

**Electrical entry**

- DC: 24, 12
- AC (50/60 Hz): 240, 110, 120, 220, 240

**Allowable voltage fluctuation**

±10% of rated voltage

**Power consumption (W)**

- DC: With power saving circuit 0.55 (With light only) [Starting 1.55 Holding 0.55]
- AC: 1.5 (With light: 1.75)

**Apparent power (VA)**

- AC: 110 V [115 V]: 1.55 (With light: 1.65)
- 240 V: 1.55 (With light: 1.7)

**Surge voltage suppressor**

- Diode (Non-polar type: Varistor)

**Indicator light**

- LED (Neon light is used for AC mode of D, Y, T)

### Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Operating pressure range (MPa)</th>
<th>Without light/surge voltage suppressor</th>
<th>With light/surge voltage suppressor</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>20</td>
<td>45</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>23</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>20</td>
<td>45</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>30</td>
<td>55</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>33</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>30</td>
<td>55</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>50</td>
<td>75</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>33</td>
<td>58</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 1.0</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>53</td>
<td>78</td>
<td>56</td>
</tr>
</tbody>
</table>

Note: Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)
# VF3000/5000 Series

## Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow rate characteristics Note 1</th>
<th>Weight (g) Note 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1→4/2 (P→A/B)</td>
<td>4/2→5/3 (A/B→EA/EB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/(s·bar)]</td>
<td>b</td>
</tr>
<tr>
<td>VF3□40-02</td>
<td>Single 2-position</td>
<td>1/4</td>
<td>2.8</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Double 2-position</td>
<td></td>
<td>2.8</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Closed center 3-position</td>
<td>1/4</td>
<td>2.1</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>Exhaust center 3-position</td>
<td></td>
<td>2.3</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>Pressure center 3-position</td>
<td></td>
<td>2.9</td>
<td>0.16</td>
</tr>
<tr>
<td>VF3□40-03</td>
<td>Single 2-position</td>
<td>3/8</td>
<td>3.1</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>Double 2-position</td>
<td></td>
<td>3.1</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>Closed center 3-position</td>
<td>3/8</td>
<td>2.2</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Exhaust center 3-position</td>
<td></td>
<td>2.6</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Pressure center 3-position</td>
<td></td>
<td>3.4</td>
<td>0.29</td>
</tr>
<tr>
<td>VF5□44-02</td>
<td>Single 2-position</td>
<td>1/4</td>
<td>7.3</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>Double 2-position</td>
<td></td>
<td>7.3</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>Closed center 3-position</td>
<td>1/4</td>
<td>6.6</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Exhaust center 3-position</td>
<td></td>
<td>7.4</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Pressure center 3-position</td>
<td></td>
<td>8.0</td>
<td>0.35</td>
</tr>
<tr>
<td>VF5□44-03</td>
<td>Single 2-position</td>
<td>3/8</td>
<td>8.4</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Double 2-position</td>
<td></td>
<td>8.4</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Closed center 3-position</td>
<td>3/8</td>
<td>7.3</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Exhaust center 3-position</td>
<td></td>
<td>8.1</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Pressure center 3-position</td>
<td></td>
<td>8.1</td>
<td>0.33</td>
</tr>
<tr>
<td>VF5□44-04</td>
<td>Single 2-position</td>
<td>1/2</td>
<td>9.4</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Double 2-position</td>
<td></td>
<td>9.4</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Closed center 3-position</td>
<td>1/2</td>
<td>7.1</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>Exhaust center 3-position</td>
<td></td>
<td>8.6</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Pressure center 3-position</td>
<td></td>
<td>11.0</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note 1) [ ] Normal position
Note 2) ( ) Values without sub-plate
**Construction: Base Mounted**

**VF3000/5000**

**Symbol 2-position single**

**Symbol 2-position double**

**Symbol 3-position closed center**

**3-position exhaust center**

**3-position pressure center**

(Drawing shows a closed center type.)

**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>White</td>
</tr>
<tr>
<td>2</td>
<td>Adapter plate</td>
<td>Resin</td>
<td>Gray</td>
</tr>
<tr>
<td>3</td>
<td>End plate</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Spool valve</td>
<td>Aluminum, HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

**Replacement Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Pilot valve assembly</td>
<td>Refer to “How to Order Pilot Valve Assembly” on page 316.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gasket</td>
<td>DXT031-30-11</td>
<td>Built-in strainer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DXT156-9-8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Sub-plate</td>
<td>1/4: VF3000-71-1</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3/8: VF3000-71-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2: VF5000-71-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Round head combination screw</td>
<td>DXT031-44-1</td>
<td>For mounting valve</td>
</tr>
<tr>
<td></td>
<td>(1 pc.)</td>
<td>(M4 x 39.5, With spring washer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head cap</td>
<td>AXT620-32-1</td>
<td>For mounting valve</td>
</tr>
<tr>
<td></td>
<td>screw (1 pc.)</td>
<td>(M4 x 48, With spring washer)</td>
<td></td>
</tr>
</tbody>
</table>

**Sub-plate part no.**

VF3000-71-1

**Thread type**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Prc</th>
<th>F</th>
<th>G</th>
<th>N</th>
<th>NPT</th>
<th>T</th>
<th>NPTF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Caution**

Tightening Torque for Mounting Valve

M4: 1.4 N·m
How to Order Pilot Valve Assembly (With a gasket and two mounting screws)

**Caution**
When only the pilot valve assembly is replaced, it is not possible to change from V211 (Grommet or L/M-type) to V212 (DIN or Conduit type), or vice versa.

Dimensions: VF3000 Series/Base Mounted

2-position single
Grommet (G) (H): VF3140-□□□1-□□□

L-type plug connector (L): VF3140-□□□1-□□□

M-type plug connector (M): VF3140-□□□1-□□□

DIN terminal (D) (Y): VF3140-□□□1-□□□

Conduit terminal (T): VF3140-□□□1-□□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
**Dimensions: VF3000 Series/Base Mounted**

2-position double
Grommet (G) (H): VF3240-□□□1-□□□□

**L-type plug connector (L): VF3240-□□□□□□□□**

Approx. 300
(Lead wire length)

**DIN terminal (D) (Y): VF3240-□□□□□□□□**

Max. 10

Applicable cable O.D.
ø4.5 to ø7

**M-type plug connector (M): VF3240-□□□□□□□□**

Approx. 300
(Lead wire length)

**Conduit terminal (T): VF3240-□□□□□□□□**

Max. 10

Applicable cable O.D.
ø4.5 to ø7

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF3000 Series/Base Mounted

3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF3\(^{\frac{3}{5}}\) 40-□□□1-□□□□

Unless otherwise indicated, dimensions are the same as Grommet (G).

L-type plug connector (L): VF3\(^{\frac{3}{5}}\) 40-□□□1-□□□□

Approx. 300

(Lead wire length)

DIN terminal (D) (Y): VF3\(^{\frac{3}{5}}\) 40-□□□1-□□□□

Max. 10

Applicable cable O.D.
ø4.5 to ø7

Conduit terminal (T): VF3\(^{\frac{3}{5}}\) 40-□□□1-□□□□

Max. 10

Applicable cable O.D.
ø4.5 to ø7

Unless otherwise indicated, dimensions are the same as Grommet (G).
VF3000/5000 Series

Dimensions: VF5000 Series/Base Mounted

2-position single

Grommet (G) (H): VF5144-□□□1-□□□

(Indicator light)

Manual override

G: Approx. 300
H: Approx. 600

(Lead wire length)

The dimensions in ( ) are for 1/2 piping port size.

L-type plug connector (L): VF5144-□□□1-□□□

Approx. 300

(Lead wire length)

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

M-type plug connector (M): VF5144-□□□1-□□□

Approx. 300

(Lead wire length)

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

DIN terminal (D) (Y): VF5144-□□□1-□□□

Applicable cable O.D.
ø4.5 to ø7

1.2

The dimensions in ( ) are for 1/2 piping port size.

Conduit terminal (T): VF5144-□□□1-□□□

Applicable cable O.D.
ø4.5 to ø7

Unless otherwise indicated, dimensions are the same as Grommet (G).
[ ]: Without indicator light
The dimensions in ( ) are for 1/2 piping port size.
Dimensions: VF5000 Series/Base Mounted

2-position double

Grommet (G) (H): VF5244-

L-type plug connector (L): VF5244-

M-type plug connector (M): VF5244-

DIN terminal (D) (Y): VF5244-

Conduit terminal (T): VF5244-

Unless otherwise indicated, dimensions are the same as Grommet (G). The dimensions in ( ) are for 1/2 piping port size.

The dimensions in ( ) are for 1/2 piping port size.
Dimensions: VF5000 Series/Base Mounted

3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF5 44-□□□□1-□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

L-type plug connector (L): VF5 44-□□□□1-□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

M-type plug connector (M): VF5 44-□□□□1-□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

DIN terminal (D) (Y): VF5 44-□□□□1-□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

Conduit terminal (T): VF5 44-□□□□1-□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
[ ] Without indicator light
The dimensions in ( ) are for 1/2 piping port size.
**Low Wattage Specification**

**VF1000/3000 Series**

**Single Unit**

**How to Order Valve**

**Series**

| 1 | VF1000 |
| 3 | VF3000 |

**Type of actuation**

1. 2-position single
2. 2-position double
3. 3-position closed center
4. 3-position exhaust center
5. 3-position pressure center

* Only 1 and 2 are available with the VF1000.

**Mountable manifold**

<table>
<thead>
<tr>
<th>30</th>
<th>31</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000 Body ported</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF1000 Body ported (For manifold)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF3000 Body ported</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>VF3000 Base mounted</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note 1) Refer to page 327.
Note 2) Refer to page 338.

**Body option**

0: Pilot valve individual exhaust
1: Main/Pilot valve common exhaust

**Low wattage type**

| 1 | 100 VAC |
| 2 | 200 VAC |
| 3 | 110 VAC |
| 4 | 220 VAC |
| 5 | 24 VDC |
| 6 | 12 VDC |

**Thread type**

- Nil: Without bracket
- F: Available with the VF1120, VF1220 and VF3130 only.

**<Body ported> A, B port size**

- M5 x 0.8 (VF1000)
- 1/8 (VF1000, VF3000)
- 1/4 (VF3000)

**<Base mounted> Sub-plate port size**

- 02: Port size: 1/4
- 03: Port size: 3/8

**Version symbol**

- Nil: Non-locking push type
- D: Push-turn locking slotted type
- E: Push-turn locking lever type

**Light/Surge voltage suppressor and common specifications**

- Nil: Without light/surge voltage suppressor
- R: With surge voltage suppressor (DC only, Non-polar)
- U: With light/surge voltage suppressor (DC only, Non-polar)
- S: With surge voltage suppressor (DC only)
- Z: With light/surge voltage suppressor

* D and Y are not available
* D and Y are not available
* Y type DIN terminal complies with EN-175301-803C (former DIN 43650C). Refer to page 347 for details.
* When using IP65, select the main/pilot valve common exhaust type. (Except VF1000)

**Electrical entry**

- G: Lead wire length 300 mm
- G: Lead wire length 600 mm
- L: Without lead wire
- D: Without connector

* LN and MN types are with 2 sockets.
* Y type DIN terminal complies with EN-175301-803C (former DIN 43650C). Refer to page 347 for details.
* When using IP65, select the main/pilot valve common exhaust type. (Except VF1000)
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>VF1000</th>
<th>VF3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal pilot operating pressure range (MPa)</td>
<td>2-position single/3-position</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>2-position double</td>
<td>0.1 to 0.7</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push-turn locking slotted type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push-turn locking lever type</td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Main/Pilot valve common exhaust</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)</td>
<td>150/30</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65* for DIN terminal)</td>
<td></td>
</tr>
</tbody>
</table>

* Based on IEC 60529.

**Note:** Impact resistance: No malfunction occurred when it is tested 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 2000 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

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D), (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G, H, L, M</td>
<td></td>
<td></td>
<td>D, Y</td>
</tr>
</tbody>
</table>

#### Electrical entry

<table>
<thead>
<tr>
<th>Coil rated voltage (V)</th>
<th>DC</th>
<th>AC (50/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>24, 12</td>
<td></td>
</tr>
<tr>
<td>100 V</td>
<td>100, 110, 200, 220</td>
<td></td>
</tr>
<tr>
<td>220 V</td>
<td>230 V</td>
<td></td>
</tr>
</tbody>
</table>

#### Apparent power (VA)*

<table>
<thead>
<tr>
<th>Power consumption (W)</th>
<th>DC Standard</th>
<th>0.35 (With light: 0.4 (With light of DIN terminal: 0.45))</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 V</td>
<td>0.78 (With light: 0.81)</td>
<td>0.78 (With light: 0.87)</td>
</tr>
<tr>
<td>[115 V]</td>
<td>0.86 (With light: 0.89)</td>
<td>0.86 (With light: 0.97)</td>
</tr>
<tr>
<td>[94 (With light: 0.97)]</td>
<td>[94 (With light: 1.07)]</td>
<td></td>
</tr>
<tr>
<td>200 V</td>
<td>1.18 (With light: 1.22)</td>
<td>1.15 (With light: 1.30)</td>
</tr>
<tr>
<td>[230 V]</td>
<td>1.30 (With light: 1.34)</td>
<td>1.27 (With light: 1.46)</td>
</tr>
<tr>
<td>[142 (With light: 1.46)]</td>
<td>[139 (With light: 1.60)]</td>
<td></td>
</tr>
</tbody>
</table>

#### Surge voltage suppressor

- Diode (DIN terminal, Non-polar type: Varistor)

#### Indicator light

- LED (Neon light is used for AC mode of DIN terminal.)

#### Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Response time (ms) at 0.5 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position single</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>12</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position single</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>100</td>
</tr>
</tbody>
</table>
Low Wattage Specification
Body Ported/Base Mounted/Single Unit VF1000/3000 Series

Dimensions
VF1000

1P

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

- Dimensions
  VF1000

- VF1000/3000 Series

- Low Wattage Specification

- Body Ported/Base Mounted/Single Unit

- L-type plug connector (L)

- M-type plug connector (M)

- DIN terminal (D) (Y)

- Manual override

- Lead wire length

- Indicator light

- Max. 10

- Applicable cable O.D.

- ø3.5 to ø7

- Pg7

- SMC
VF1000/3000 Series

Dimensions

VF3000

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

G: Approx. 300
H: Approx. 600

(Applicable cable O.D.
ø3.5 to ø7

Manual override

1/8”, 1/4”

[4(A), 2(B) port]

[5(EA), 3(EB) port]

1/8”

(PE port)

1/8”, 1/4”

[1(P) port]

(Indicator light)

(For mounting)

(For mounting)

(Approx. 300)

(Approx. 600)

(Lead wire length)

(AC: 93.1)
Pilot Operated 5 Port Solenoid Valve

VF1000/3000/5000 Series

Manifold

How to Order Manifold

**Common exhaust**

**Series**

1. VF1000
2. VF3000
3. VF5000

**Manifold model**

- VV5F1-30-041-

- Stations
  - 02: 2 stations
  - 20: 20 stations

- Thread type
  - Nil: Standard
  - Rc: With surge voltage suppressor

- **Note)** Manifold only.

**Individual exhaust (VF1000 only)**

- Stations
  - 02: 2 stations
  - 03: 1/4
  - 04: 20 stations

- Thread type
  - Nil: Standard
  - Rc: With surge voltage suppressor

- **Note)** Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

How to Order Valve

**VF 3 1 3 0 - 5 G 1-01 -**

- **Series**
  - 1: VF1000
  - 3: VF3000
  - 5: VF5000

- **Type of actuation**
  - 1: 2-position single
  - 2: 2-position double
  - 3: 3-position closed center
  - 4: 3-position exhaust center
  - 5: 3-position pressure center

- **Coil specifications**
  - Nil: Standard
  - T: With surge voltage suppressor (DC mode only)

- **Pressure specifications**
  - Nil: Standard (0.7 MPa)
  - K: High-pressure type (1 MPa)

- **Rated voltage**
  - DC: 24 VDC
  - AC (50/60 Hz): 100 VAC, 220 VAC, 240 VAC

- **Body model**
  - DC: 24 VDC
  - AC (50/60 Hz): 100 VAC, 220 VAC, 240 VAC

- **Light/Surge voltage suppressor**
  - Nil: Non-locking push type

- **Manual override**
  - Nil: Non-locking push type

**Electrical entry**

- **Grommet**
  - G: Lead wire length 200 mm
  - H: Lead wire length 600 mm

- **L-type plug connector**
  - L: With lead wire length 300 mm
  - M: Without lead wire

- **M-type plug connector**
  - N: Without lead wire
  - P: Without connector

- **DIN terminal**
  - IP65 compatible

- **Conduit terminal**
  - IP65 compatible

**Caution**

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

---

Note 1) When using IP65, select the main/pilot valve common exhaust type.

Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.
## Manifold Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>VF1000</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold base model</td>
<td>VV5F1-30</td>
<td>VV5F3-30</td>
<td>VV5F5-20</td>
</tr>
<tr>
<td>1(P) port</td>
<td>1/8</td>
<td>1/4</td>
<td>1/2</td>
</tr>
<tr>
<td>4(A), 2(B) port</td>
<td>1/8</td>
<td>1/4</td>
<td>3/8</td>
</tr>
<tr>
<td>5/3(R) port</td>
<td>1/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5(EA), 3(EB) port M5 x 0.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1(P) port</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXH port type</th>
<th>Common EXH</th>
<th>Individual EXH</th>
<th>Common EXH</th>
<th>Common EXH</th>
<th>Common EXH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable valve model</td>
<td>VF1□30</td>
<td>VF3□30</td>
<td>VF5□20</td>
<td>VF5□23</td>
<td></td>
</tr>
<tr>
<td>Applicable stations</td>
<td>2 to 20 stations</td>
<td>2 to 20 stations</td>
<td>2 to 10 stations</td>
<td>2 to 15 stations</td>
<td></td>
</tr>
<tr>
<td>Manifold base Weight: W [g] Stations: n</td>
<td>W = 29n + 21</td>
<td>W = 51n + 35</td>
<td>W = 63n + 64</td>
<td>W = 97n + 80</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>W = 139n + 550</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

### How to Order Manifold Assembly

**Example (VV5F3-30)**

- Closed center (24 VDC)  
  VF3330-5GZ1-02 (1 set)
- Double solenoid (24 VDC)  
  VF3330-5GZ1-02 (1 set)
- Single solenoid (24 VDC)  
  VF3310-5GZ1-02 (3 sets)
- Manifold base (5 stations)  
  VV5F3-30-051

- VV5F3-30-051 -------------- 1 set (Type 30, 5-station manifold base part no.)
- • VF3310-5GZ1-02 -------------- 3 sets (Single solenoid part no.)
- • VF3330-5GZ1-02 -------------- 1 set (Double solenoid part no.)
- • VF3330-5GZ1-02 -------------- 1 set (Closed center part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Under the manifold base part number, state the valves to be mounted in order from the 1st station as shown in the figure above. If the arrangement becomes complicated, specify on the manifold specification sheet.
**Manifold Options**

- **For body ported**
  - Blanking plate assembly

- **Mounting screw, gasket part no.**

- **Individual EXH spacer assembly**

<table>
<thead>
<tr>
<th>Series</th>
<th>Blanking plate assembly part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>DXT144-13-3A</td>
</tr>
<tr>
<td>VF3000</td>
<td>DXT031-38-5A</td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5000-70-1A</td>
</tr>
</tbody>
</table>

**Valve mounting screw**

<table>
<thead>
<tr>
<th>Series</th>
<th>Valve mounting screw (1 pc.)</th>
<th>Gasket</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>Round head combination screw</td>
<td>DXT144-12-2</td>
</tr>
<tr>
<td></td>
<td>DXT031-44-1</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>(M4 x 39.5, With spring washer)</td>
<td>DXT155-25-7</td>
</tr>
<tr>
<td>VF5000</td>
<td>Hexagon socket head cap screw</td>
<td>DXT156-9-6</td>
</tr>
<tr>
<td></td>
<td>AXT620-32-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(M4 x 48, With spring washer)</td>
<td></td>
</tr>
</tbody>
</table>

**Warning**

When mounting a valve or spacer on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in a malfunction. Refer to the dimensions for mounting.

**Caution**

Tightening Torque for Mounting Screw

M4: 1.4 N·m
VF1000/3000/5000 Series

Dimensions: VF1000 Series

Type 30/VV5F1-30-□□-□-□-□-□: Common exhaust
Grommet (G) (H)

Grommet (G) (H)
DC without light/
surge voltage suppressor

Grommet (G) (H)

L: Dimensions

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF1000 Series

Type 31/VV5F1-31-□□-□: Individual exhaust

Grommet (G) (H)
DC without light/
surge voltage suppressor

Grommet (G) (H)

M5 x 0.8
([4(A), 2(B) port])

(Station 1)----------------- (Station n)

L: Dimensions

<table>
<thead>
<tr>
<th>1</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>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>74.5</td>
<td>102</td>
<td>129.5</td>
<td>157</td>
<td>184.5</td>
<td>212</td>
<td>239.5</td>
<td>267</td>
<td>294.5</td>
<td>322</td>
<td>349.5</td>
<td>377</td>
<td>404.5</td>
</tr>
<tr>
<td>L2</td>
<td>64.5</td>
<td>92</td>
<td>119.5</td>
<td>147</td>
<td>174.5</td>
<td>202</td>
<td>229.5</td>
<td>257</td>
<td>284.5</td>
<td>312</td>
<td>339.5</td>
<td>367</td>
<td>394.5</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

Approx. 300
(Lead wire length)

DIN terminal (D) (Y)

Applicable cable
O.D.
ø4.5 to ø7

Conduit terminal (T)

Applicable cable
O.D.
ø4.5 to ø7

Unless otherwise indicated, dimensions are the same as Grommet (G).
### Dimensions: VF3000 Series

#### Type 30/VVF3-30-□-□-□: Common exhaust

**Grommet (G) (H)**
- DC without light/surge voltage suppressor

#### L: Dimensions

<table>
<thead>
<tr>
<th>n</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>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>138.5</td>
<td>166</td>
<td>193.5</td>
<td>221</td>
<td>248.5</td>
<td>276</td>
<td>303.5</td>
<td>331</td>
<td>358.5</td>
<td>386</td>
<td>413.5</td>
</tr>
<tr>
<td>L2</td>
<td>71.5</td>
<td>99</td>
<td>126.5</td>
<td>154</td>
<td>181.5</td>
<td>209</td>
<td>236.5</td>
<td>264</td>
<td>291.5</td>
<td>319</td>
<td>346.5</td>
<td>374</td>
<td>401.5</td>
</tr>
</tbody>
</table>

#### M-type plug connector (M)

- Approx. 300 (Lead wire length)

#### DIN terminal (D) (Y)

- Approx. 10 (Max.)

#### Conduit terminal (T)

- Approx. 10

---

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF3000 Series

Type 30/VV5F3-30-□□□□□□□□□□□: When the individual EXH spacer (VF3000-75-1A) is mounted.

Grommet (G) (H)

DC without light/surge voltage suppressor

L: Dimensions

<table>
<thead>
<tr>
<th>Station</th>
<th>1</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>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>138.5</td>
<td>166</td>
<td>193.5</td>
<td>221</td>
<td>248.5</td>
<td>276</td>
<td>303.5</td>
<td>331</td>
<td>358.5</td>
<td>386</td>
<td>413.5</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>71.5</td>
<td>99</td>
<td>126.5</td>
<td>154</td>
<td>181.5</td>
<td>209</td>
<td>236.5</td>
<td>264</td>
<td>291.5</td>
<td>319</td>
<td>346.5</td>
<td>374</td>
<td>401.5</td>
<td></td>
</tr>
</tbody>
</table>

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
VF1000/3000/5000 Series

Dimensions: VF5000 Series

Type 20/VV5F5-20-□□□-□: Common exhaust
Grommet (G)

Grommet (G) (H)
DC without light/
surge voltage suppressor

L: Dimensions

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>93</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>126</td>
<td>113</td>
</tr>
<tr>
<td>4</td>
<td>159</td>
<td>146</td>
</tr>
<tr>
<td>5</td>
<td>192</td>
<td>179</td>
</tr>
<tr>
<td>6</td>
<td>225</td>
<td>212</td>
</tr>
<tr>
<td>7</td>
<td>258</td>
<td>245</td>
</tr>
<tr>
<td>8</td>
<td>289</td>
<td>278</td>
</tr>
<tr>
<td>9</td>
<td>324</td>
<td>311</td>
</tr>
<tr>
<td>10</td>
<td>357</td>
<td>344</td>
</tr>
</tbody>
</table>

Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series

Type 20/VV5F5-20-□□□: When the individual EXH spacer (VF5000-75-1A) is mounted.

Grommet (G)

Grommet (G) (H)
DC without light/surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
VF1000/3000/5000 Series

Dimensions: VF5000 Series

Type 21/VV5F5-21-□□□□□□: Common exhaust
Grommet (G)

Grommet (G) (H)
DC without light/surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).

Unless otherwise indicated, dimensions are the same as Grommet (G).

Unless otherwise indicated, dimensions are the same as Grommet (G).

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series

Type 21/VV5F5-21-□-□-□: When the individual EXH spacer (VF5000-75-1A) is mounted.

Grommet (G)

Grommet (G) (H)
DC without light/surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Pilot Operated 5 Port Solenoid Valve

**VF3000/5000 Series**

Manifold

**How to Order Manifold**

**Common exhaust**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Series</th>
<th>P, R port size</th>
<th>A, B port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VF3000</td>
<td>1/4</td>
<td>1/4</td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td>3/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

* The A and B ports are made on the bottom.

**How to Order Valve (With a gasket and two mounting screws)**

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Rated voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2-position single</td>
<td>Standard (0.7 MPa)</td>
<td>DC</td>
</tr>
<tr>
<td>5</td>
<td>3-position closed center</td>
<td>High-pressure type (1 MPa)</td>
<td>AC (50/60 Hz)</td>
</tr>
</tbody>
</table>

**Body option**

0: Pilot valve individual exhaust

1: Main/Pilot valve common exhaust

2: Pilot valve base exhaust

**Body model**

**Pressure specifications**

- Standard (0.7 MPa)
- High-pressure type (1 MPa)

**Body option**

0: Pilot valve individual exhaust

1: Main/Pilot valve common exhaust

2: Pilot valve base exhaust

**Electric entry**

- Grommet: IP65 compatible
- L-type plug connector: IP65 compatible
- M-type plug connector: IP65 compatible
- DIN terminal: IP65 compatible
- DIN EN (EN175301-803) terminal: IP65 compatible
- Conduit terminal: IP65 compatible

**Coil specifications**

- Standard: DC only

**Light/Surge voltage suppressor**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Light/Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Without light/surge voltage suppressor</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>S</td>
<td>With surge voltage suppressor</td>
<td>○</td>
<td>—</td>
</tr>
<tr>
<td>Z</td>
<td>With light/surge voltage suppressor</td>
<td>○</td>
<td>—</td>
</tr>
<tr>
<td>R</td>
<td>With surge voltage suppressor (Non-polar)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>With light/surge voltage suppressor (Non-polar)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Manual override**

- Non-locking: D
- Push-turn locking slotted type: E
- Push-turn locking lever type: Q

**Caution**

- When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

**How to Order Valve**

**VF3 1 4 0 5 G 1**

**Made to Order**

Refer to page 311 for details. Combination with low wattage specification is not possible.

**Coil specifications**

- Standard: With power saving circuit (DC only)

**Note**

- Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.
- Up to 10 stations for VV5F5.
- Up to 2 positions for VV5F3.
- Up to 3 positions for VV5F4.
- Up to 4 positions for VV5F5.

**Electrical entry**

- LN and MN types are with 2 sockets.
- Refer to page 348 for details.
- Refer to page 347 for details on the DIN (EN175301-803) terminal.

- LN and MN types are with 2 sockets.
- Refer to page 348 for details when different length of lead wire for L/M-type plug connector is required.
- S type is not available with AC mode, since a rectifier prevents surge voltage generation.

**Body option**

0: Pilot valve individual exhaust

1: Main/Pilot valve common exhaust

2: Pilot valve base exhaust

**Body model**

**Pressure specifications**

- Standard (0.7 MPa)
- High-pressure type (1 MPa)

**Body option**

0: Pilot valve individual exhaust

1: Main/Pilot valve common exhaust

2: Pilot valve base exhaust

**Coil specifications**

- Standard: DC only

**Light/Surge voltage suppressor**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Light/Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Without light/surge voltage suppressor</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>S</td>
<td>With surge voltage suppressor</td>
<td>○</td>
<td>—</td>
</tr>
<tr>
<td>Z</td>
<td>With light/surge voltage suppressor</td>
<td>○</td>
<td>—</td>
</tr>
<tr>
<td>R</td>
<td>With surge voltage suppressor (Non-polar)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>With light/surge voltage suppressor (Non-polar)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Manual override**

- Non-locking: D
- Push-turn locking slotted type: E
- Push-turn locking lever type: Q

**Caution**

- When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.
Manifold Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Manifold base model</th>
<th>EXH port type</th>
<th>Applicable valve model</th>
<th>Applicable stations</th>
<th>Weight: W [g]</th>
<th>Stations: n</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VV5F3-40</td>
<td>5(R), 3(R) port</td>
<td>Common EXH</td>
<td>VF3∥340</td>
<td>2 to 20 stations</td>
<td>W = 110n + 116</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(P) port</td>
<td>VF3∥343</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4(A), 2(B) port</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VV5F5-40</td>
<td>PE port</td>
<td>Common EXH</td>
<td>VF5∥344</td>
<td>2 to 10 stations</td>
<td>W = 161n + 128</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(P) port</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4(A), 2(B) port</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

How to Order Manifold Assembly

Example (VV5F3-40)

Closed center (24 VDC)
VF3340-5GZ1 (1 set)

Double solenoid (24 VDC)
VF3240-5GZ1 (1 set)

Single solenoid (24 VDC)
VF3140-5GZ1 (3 sets)

Manifold base (5 stations)
VV5F3-40-052-02

VV5F3-40-052-02 ----- 1 set (Type 40, 5-station manifold base part no.)
- VF3140-5GZ1 --------- 3 sets (Single solenoid part no.)
- VF3240-5GZ1 --------- 1 set (Double solenoid part no.)
- VF3340-5GZ1 --------- 1 set (Closed center part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Under the manifold base part number, state the valves to be mounted in order from the 1st station as shown in the figure above. If the arrangement becomes complicated, specify on the manifold specification sheet.
VF3000/5000 Series

Manifold Options

- For base mounted
  Blanking plate assembly

- Mounting screw, gasket part no.

<table>
<thead>
<tr>
<th>Series</th>
<th>Blanking plate assembly part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>DXT031-38-5A</td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5000-70-2A</td>
</tr>
</tbody>
</table>

- Individual EXH spacer assembly

<table>
<thead>
<tr>
<th>Series</th>
<th>Valve mounting screw (1 pc.)</th>
<th>Gasket</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>Round head combination screw DXT031-44-1 (M4 x 39.5, With spring washer)</td>
<td>DXT031-30-11</td>
</tr>
<tr>
<td>VF5000</td>
<td>Hexagon socket head cap screw AXT620-32-1 (M4 x 48, With spring washer)</td>
<td>DXT156-9-8</td>
</tr>
</tbody>
</table>

⚠️ Caution

**Tightening Torque for Mounting Screw**

M4: 1.4 N·m

⚠️ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in a malfunction. Refer to the dimensions for mounting.
Dimensions: VF3000 Series

Type 40/VVF3-40-□□2-02□: Common exhaust
Grommet (G) (H)

Grommet (G) (H)
DC without light/ surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF3000 Series

Type 40/VV5F3-40-□□□□□□□-□□□□□□□-□□□: When the individual EXH spacer (VF3000-75-2A) is mounted.

Grommet (G) (H)

L: Dimensions

<table>
<thead>
<tr>
<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>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>138.5</td>
<td>166</td>
<td>193.5</td>
<td>221</td>
<td>248.5</td>
<td>276</td>
<td>303.5</td>
<td>331</td>
<td>358.5</td>
<td>386</td>
<td>413.5</td>
</tr>
<tr>
<td>L2</td>
<td>71.5</td>
<td>98</td>
<td>128.5</td>
<td>154</td>
<td>181.5</td>
<td>209</td>
<td>236.5</td>
<td>264</td>
<td>291.5</td>
<td>319</td>
<td>346.5</td>
<td>374</td>
<td>401.5</td>
</tr>
<tr>
<td>L1</td>
<td>441</td>
<td>468.5</td>
<td>496</td>
<td>523.5</td>
<td>551</td>
<td>578.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>429</td>
<td>466.5</td>
<td>484</td>
<td>511.5</td>
<td>539</td>
<td>566.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grommet (G) (H)
DC without light/surge voltage suppressor

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as Grommet (G).
Dimensions: VF5000 Series

Type 40/VV5F5-40-□□-02□: Common exhaust

Grommet (G)

Grommet (G) (H)
DC without light/
surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Unless otherwise indicated, dimensions are the same as
Grommet (G).

Unless otherwise indicated, dimensions are the same as
Grommet (G).

Unless otherwise indicated, dimensions are the same as
Grommet (G).
Dimensions: VF5000 Series

Type 40/VV5F5-40-□□□□-□□□□: When the individual EXH spacer (VF5000-75-2A) is mounted.

Grommet (G)

Grommet (G) (H)
DC without light/surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

 Unless otherwise indicated, dimensions are the same as Grommet (G).
**Warning**
Regardless of an electric signal for the solenoid valve, the manual override is used for switching the main valve. Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

- Non-locking push type
  Push down on the manual override with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

- Push-turn locking slotted type
  Push down on the manual override with a small flat head screwdriver until it stops. Turn it clockwise by 90° to lock it. Turn it counterclockwise to release it.

- Push-turn locking lever type
  After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking push type.

**Caution**
When locking the manual override on the push-turn locking type (D or E type), be sure to push it down before turning. Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc. Do not apply excessive torque when turning the locking type manual override. (0.1 N·m)

---

**How to Use L/M-Type Plug Connector**

1. **Connector attachment/detachment**
   - To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
   - To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

2. **Crimping lead wire and socket connection**
   Not necessary if ordering the lead wire pre-connected model. Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area. (Please contact SMC for details on the crimping tool.)

3. **Socket with lead wire attachment/detachment**
   - **Attachment**
     Insert the sockets into the square holes of the connector (with +, – indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then, confirm that they are locked by pulling lightly on the lead wires.
   - **Detachment**
     To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.
VF 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.

Plug Connector Lead Wire Length

⚠️ Caution
Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

<table>
<thead>
<tr>
<th>Lead Wire Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

How to Order Connector Assembly

<table>
<thead>
<tr>
<th>DC</th>
<th>V200-30-4A-</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>V200-30-1A-</td>
</tr>
<tr>
<td>200 VAC</td>
<td>V200-30-2A-</td>
</tr>
<tr>
<td>Other AC voltages</td>
<td>V200-30-3A-</td>
</tr>
<tr>
<td>Without lead wire</td>
<td>V200-30-A</td>
</tr>
</tbody>
</table>

(With a connector and 2 sockets)

How to Use DIN Terminal Connector

The DIN terminal with an IP65 (enclosure) is protected against dust and water, however, it must not be used in water.

⚠️ Caution

Connection
1) Loosen the set screw and pull the connector out of the solenoid valve terminal block.
2) After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3) Loosen the terminal screws on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
4) In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires corresponding to the polarity (+ or −) that is printed on the terminal block.

Changing the entry direction
After separating the terminal block and housing, the cord entry direction can be changed by attaching the housing in the opposite direction.

Precautions
Plug in and pull out the connector vertically without tilting to one side.

Applicable cable
Cable O.D.: ø4.5 to ø7
(Reference) 0.5 mm² to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

Applicable crimped terminal
O terminal: R1.25-4M that is specified in JIS C 2805
Y terminal: 1.25-3L, which is released by JST Mfg. Co., Ltd.
Stick terminal: Size 1.5 or shorter
**VF Series**

**Specific Product Precautions 3**

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.

---

**DIN (EN175301-803) Terminal**

Y type DIN terminal corresponds to the DIN connector with terminal pitch 10 mm, which complies with EN175301-803B. Since the terminal pitch is different from the D type DIN connector, these two types are not interchangeable.

![Diagram of Y type and D type terminals]

**How to Order DIN Connector**

**Caution**

- **Without indicator light**
  DC, AC, Common to all voltages: V200-

- **With indicator light**
  DC
  Polar type (Z): V200-
  Non-polar type (U): V200-
  AC (Z): V200-

**Connector specifications**

<table>
<thead>
<tr>
<th>D type</th>
<th>Y type</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>63</td>
</tr>
</tbody>
</table>

**Rated voltage**

- 05 24 VDC
- 06 12 VDC
- 07 240 VAC

**Note** For 24 VAC, the part no. is V200-61-5-B.

**Circuit diagram with light (Built-in connector)**

**DC (Z) circuit diagram**

- LED
- R
- D
- NL: Neon light, R: Resistor

**DC (U) circuit diagram**

- LED
- R

**Connection**

1) Loosen the set screw and remove the terminal block cover from the terminal block.
2) Loosen the terminal screws on the terminal block, insert the core of the lead wire or crimped terminal into the terminal, and attach securely with the terminal screws.
3) Secure the cord by fastening the ground nut.

In the case of connecting wires, select cabtire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure).

**Applicable cable**

- Cable O.D.: ø4.5 to ø7
- (Reference) 0.5 mm² to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

**Applicable crimped terminal**

- O terminal: Equivalent to R1.25-3 that is specified in JIS C 2805
- Y terminal: Equivalent to 1.25-3, which is released by JST Mfg. Co., Ltd.
  - Use O terminal when a ground terminal is used.

---

**How to Use Conduit Terminal**

**Caution**

- **Connection**
  - Set screw
  - Tightening torque 0.5 to 0.6 N·m
  - Terminal block cover
  - Ground terminal screw
  - Tightening torque 0.5 to 0.6 N·m
  - Terminal screw (2 locations)
  - Tightening torque 0.5 to 0.6 N·m

**Applicable cable**

- Cable O.D.: ø4.5 to ø7
- (Reference) 0.5 mm² to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

---

**SV**

**SYJ**

**SZ**

**VF**

**VP4**

**VQ 1/2**

**VQ 4/5**

**VQC 1/2**

**VQC 4/5**

**VQZ**

**SQ**

**VFS**

**VFR**

**VQ7**

---

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**Caution**

*<DC>*

- **Polar type**
  - With surge voltage suppressor (S)
    - Polarity protection diode
      - Red (+)
      - Black (-)
  - Grommet or L/M-type plug connector
    - With light/surge voltage suppressor (Z)
      - Polarity protection diode
        - Red (+)
        - Black (-)

- **Non-polar type**
  - With surge voltage suppressor (R)
    - Varistor
      - (+, -)
      - (-, +)
  - Grommet or L/M-type plug connector
    - With light/surge voltage suppressor (U)
      - Varistor
        - (+, -)
        - (-, +)
  - DIN or Conduit terminal
    - With light/surge voltage suppressor (U)
      - Varistor
        - (+, -)
        - (-, +)
      - For DIN type, installed in the connector

*Note)*

- Please connect correctly the lead wires to + (positive) and – (negative) indications on the connector. (For non-polar type, the lead wires can be connected to either one.)
- When the valve with polarity protection diode is used, the voltage will drop by approx. 1 V. Therefore, pay attention to the allowable voltage fluctuation (For details, refer to the solenoid specifications of each type of valve).
- Solenoids, whose lead wires have been pre-wired: + (positive) side red and – (negative) side black.

*<AC>*

- **S type** is not available, since a rectifier prevents surge voltage generation.
- Grommet or L/M-type plug connector
  - With light/surge voltage suppressor (Z)
  - DIN or Conduit terminal
    - With light/surge voltage suppressor (Z)

*Note)*

- LED for 24 VAC.

**Residual voltage of the surge voltage suppressor**

*Note)* If a varistor or diode surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, refer to the table below and pay attention to the surge voltage protection on the controller side. Also, since the response time does change, refer to the specifications on pages 299 and 313.

**Residual Voltage**

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>S, Z</td>
<td>24 V</td>
<td></td>
</tr>
<tr>
<td>R, U</td>
<td>Approx. 1 V</td>
<td>Approx. 1 V</td>
</tr>
</tbody>
</table>

**Continuous Duty**

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. Furthermore, do not touch it while it is being energized or right after it is energized.
One-touch Fittings Precautions

Caution
When fittings are used, they may interfere with one another depending on their types and sizes. Therefore, the dimensions of the fittings to be used should first be confirmed in their respective catalogs.

Fittings whose compliance with the VF series is already confirmed are stated below. If the fitting within the applicable range is selected, there will not be any interference.

### Applicable Fittings: KQ2H, KQ2S Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Piping port</th>
<th>Port size</th>
<th>Applicable tubing O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>VF1-20-1-M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td></td>
<td>VF1-20-1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF1-3-1-M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF1-3-1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>Type 30 manifold base</td>
<td>1(P), 5/3(R)</td>
<td>1/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 31 manifold base</td>
<td>1(P)</td>
<td>1/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>M5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>VF3-3-1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF3-3-1-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF3-4-1-01</td>
<td>1(P), 5(EA), 3(EB)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF3-4-1-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VF3-4-1-03</td>
<td>1(P), 5(EA), 3(EB)</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>Type 30 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/4</td>
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<tr>
<td>Type 40 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/4</td>
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<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5-2-1-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
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<tr>
<td></td>
<td>VF5-2-1-03</td>
<td>4(A), 2(B)</td>
<td>3/8</td>
<td></td>
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<tr>
<td></td>
<td>VF5-44-1-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
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<tr>
<td></td>
<td>VF5-44-1-03</td>
<td>1(P), 5(EA), 3(EB)</td>
<td>1/4</td>
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<td>VF5-44-1-04</td>
<td>4(A), 2(B)</td>
<td>1/2</td>
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<tr>
<td>Type 20 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>3/8</td>
<td></td>
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<tr>
<td>Type 21 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/2</td>
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<td></td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>3/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Manual Override

⚠️ Warning
1. Non-locking push type [Standard]
   Press in the direction of the arrow.

2. Push-turn locking slotted type [D type]
   After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking push type.

⚠️ Caution
When operating the D type, use a watchmakers’ screwdriver and turn lightly.
[Torque: Less than 0.1 N-m]

3. Push-turn locking lever type [E type]
   After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking push type.

⚠️ Caution
When locking the manual override with the push-turn locking type (D or E type), be sure to push it down before turning. Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc.

How to Use L/M-Type Plug Connector

⚠️ Caution
1. Connector attachment/detachment
   • To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever’s pawl is pushed into the groove and locks.
   • To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

2. Crimping lead wire and socket connection
   Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.
   (Please contact SMC for the dedicated crimping tools.)

3. Socket with lead wire attachment/detachment
   • Attachment
     Insert the sockets into the square holes of the connector (with +, – indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then, confirm that they are locked by pulling lightly on the lead wires.
   • Detachment
     To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.

Solenoid Valve for 200/220 VAC Specification

⚠️ Warning
AC specification solenoid valves with grommet or L/M-type plug connector have a built-in rectifier circuit in the pilot section to operate the DC coil. With 200/220VAC specification pilot valves, this built-in rectifier generates heat when energized. The surface may become hot depending on the energized condition; therefore, do not touch the solenoid valves.
Low Wattage Specification (VF1000/3000) 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.

Plug Connector Lead Wire Length

⚠️ Caution
Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

How to Order Connector Assembly

<table>
<thead>
<tr>
<th>DC:</th>
<th>SY100-30-4A-</th>
<th>100 VAC:</th>
<th>SY100-30-1A-</th>
<th>200 VAC:</th>
<th>SY100-30-2A-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other AC voltages:</td>
<td>SY100-30-3A-</td>
<td>Without lead wire:</td>
<td>SY100-30-A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to Order
Specify the connector assembly part number together with the part number for the plug connector type solenoid valve without connector.
(Example) Lead wire length: 2000 mm

<table>
<thead>
<tr>
<th>DC</th>
<th>VF3130Y-5LO1-02</th>
<th>VF3130Y-1LO1-02</th>
<th>SY100-30-4A-20</th>
<th>SY100-30-1A-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Light/Surge Voltage Suppressor

⚠️ Caution

1. L/M-type plug connector
   <DC>

2. DIN terminal
   <DC>
   With surge voltage suppressor (DS, DOS, YS, YOS)

   <AC>
   With light/surge voltage suppressor (DZ, YZ)

   <AC>
   With indicator light (DZ, YZ)

Note) If a varistor surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, pay attention to the surge voltage protection on the controller side.
How to Use DIN Terminal

1. ISO#: Conforming to EN-175301-803C (former DIN 43650C) (Distance between pins: 8 mm)
   The DIN terminal type with an IP65 (enclosure) is protected against dust and water, however, it must not be used in water.

2. Connection
   1) Loosen the set screw and pull the connector out of the solenoid valve terminal block.
   2) After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
   3) Loosen the terminal screws (slotted head screw) on the terminal block, insert the core of the lead wire into the terminal according to wiring connection, and attach securely with the terminal screws.
   4) Tighten the ground nut to secure the wire.

3. Changing the entry direction
   After separating the terminal block and housing, the cord entry direction can be changed by attaching the housing in a different direction (four directions at 90° intervals).
   * Make sure not to damage a light, etc., with the lead wires of the cord.

4. Precautions
   Plug in and pull out the connector vertically without tilting to one side.

5. Applicable cable
   Cable O.D. ø3.5 to ø7
   (Reference) 0.5 mm², 2-core or 3-core, equivalent to JIS C 3306

DIN Connector Part No.

<table>
<thead>
<tr>
<th>DIN terminal (D)</th>
<th>DIN terminal (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Without indicator light</strong></td>
<td><strong>Without indicator light</strong></td>
</tr>
<tr>
<td><strong>With indicator light</strong></td>
<td><strong>With indicator light</strong></td>
</tr>
<tr>
<td><strong>Rated voltage</strong></td>
<td><strong>Voltage symbol</strong></td>
</tr>
<tr>
<td>24 VDC</td>
<td>24 V</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
</tr>
<tr>
<td>200 VAC</td>
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<tr>
<td>110 VAC</td>
<td>110 V</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
</tr>
</tbody>
</table>

**Caution**

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.

**Low Wattage Specification (VF1000/3000)**
Specific Product Precautions 8

**AC circuit diagram**
- NL: Neon light
- R: Resistor

**DC circuit diagram**
- LED: Light emitting diode
- R: Resistor