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.

Electrical power waveform with power saving circuit

- With power saving circuit
- Standard

- Applied voltage
- 24 V
- 0 V
- 1.55 W
- 0.55 W
- 0 W
- 40 ms

■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 → 1.55 VA

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

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

Air operated valve
VFA1000/3000/5000 P.1495
## VF1000/3000/5000 Series

### Model Selection by Operating Conditions

#### Solenoid Valve: Single Unit

<table>
<thead>
<tr>
<th>Series</th>
<th>Sonic conductance C [dm³/(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>12 VDC</td>
<td>DC</td>
<td>Grommet</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>VF3000</td>
<td>4.0</td>
<td>2-position double</td>
<td>1/8</td>
<td>24 VAC</td>
<td>M-type plug connector</td>
<td>DC</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td>VF5000</td>
<td>8.8</td>
<td>3-position closed center</td>
<td>1/4</td>
<td>100 VAC</td>
<td>DIN terminal</td>
<td>DIN (EN1753 01-803) terminal</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td>VF1000/3000</td>
<td>3.1</td>
<td>2-position single</td>
<td>1/4</td>
<td>240 VAC</td>
<td>Conduit terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>9.4</td>
<td>3-position exhaust center</td>
<td>1/4</td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-position pressure center</td>
<td>3/8</td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Low wattage specification**

*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><strong>VF1000</strong></td>
<td>Common EXH</td>
<td>VV5F1-30</td>
<td>VF1□30 VF1□33</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV5F1-31</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VF3000</strong></td>
<td>Common EXH</td>
<td>VV5F3-30</td>
<td>VF3□30 VF3□33</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>Common EXH</td>
<td>VV5F3-40</td>
<td>VF3□40 VF3□43</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td><strong>VF5000</strong></td>
<td>Common EXH</td>
<td>VV5F5-20</td>
<td>VF5□20 VF5□23</td>
<td>2 to 10 stations</td>
</tr>
<tr>
<td></td>
<td>Common EXH</td>
<td>VV5F5-40</td>
<td>VF5□44</td>
<td>2 to 10 stations</td>
</tr>
</tbody>
</table>

**VF3000** Body ported

**VF5000** Base mounted
## Cylinder Speed Chart

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

### 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></td>
<td>ø6 ø10 ø16 ø20 ø25 ø32 ø40</td>
<td>ø40 ø50 ø63 ø80 ø100</td>
</tr>
<tr>
<td>VF1120-01</td>
<td>1000</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>200</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></td>
<td>ø6 ø10 ø16 ø20 ø25 ø32 ø40</td>
<td>ø40 ø50 ø63 ø80 ø100</td>
</tr>
<tr>
<td>VF3140-03</td>
<td>1000</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>

* With ⭐ when using steel piping
Cylinder Speed Chart

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>Speed controller</td>
<td>AS3002F-06</td>
<td>AS3002F-08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td>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>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td>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>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td>AN30-03</td>
<td></td>
<td>AN30-03</td>
<td>AN302-03</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>Speed controller</td>
<td>AS420-03</td>
</tr>
<tr>
<td>Silencer</td>
<td>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>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td>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>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td>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>Speed controller</td>
<td>AS420-03</td>
</tr>
<tr>
<td>Silencer</td>
<td>AN30-03</td>
</tr>
<tr>
<td>VF5144-04</td>
<td>SGP15A x 1 m</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS420-04</td>
</tr>
<tr>
<td>Silencer</td>
<td>AN40-04</td>
</tr>
</tbody>
</table>
Pilot Operated 5 Port Solenoid Valve
VF1000/3000/5000 Series
Single Unit

How to Order Valve

Body ported

Series
VF 3 1 3 0 - 5 G 1 01

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

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

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

Evaluation voltage
DC (50/60 Hz)

AC (50/60 Hz)
100 VAC
200 VAC
110 VAC (115 VAC)
220 VAC (230 VAC)
74 VAC
24 VAC

Thread type
Nil: Without bracket
F: With bracket

Bracket
Without bracket
With bracket

Made to Order
X500
Pilot exhaust port with piping thread (M3) specification (Refer to page 311.)
X600
TRIAC output specification (Refer to page 311.)

A, B port size

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

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

RoHS

Body option
PE port* EA/EB port

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
G: Lead wire length 300 mm
H: Lead wire length 600 mm
DC: Without light/surge voltage suppressor

CE RoHS DC AC

L: With lead wire (length 300 mm)
M: With lead wire (length 300 mm)
D: With connector
Y: With connector
T: Conduit terminal

Nil

* 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.
* Only 1 and 2 are available with the VF1000.
* Refer to "Made to Order" (Page 311) when piping to PE port is required.

Caution
When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.
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>2-position single/3-position</td>
<td>0.15 to 0.7</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>0.1 to 0.7</td>
<td>0.1 to 0.7</td>
</tr>
<tr>
<td></td>
<td>2-position single/3-position</td>
<td>0.15 to 0.7</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>0.1 to 1.0</td>
<td>0.1 to 1.0</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50</td>
<td>(No freezing)</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>3</td>
<td>3</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/Pilot valve common exhaust (Except VF1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) (Note)</td>
<td>300/50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65 for D, Y, T)</td>
<td></td>
<td></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>DIN terminal (D)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G, H, L, M</td>
<td>DIN (EN175301-803) terminal (Y)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduit terminal (T)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coil rated voltage (V)</th>
<th>DC</th>
<th>AC (50/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24</td>
<td>24, 100, 110, 200, 220, 240</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC</td>
<td>AC (50/60 Hz)</td>
</tr>
<tr>
<td></td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
</tr>
<tr>
<td></td>
<td>[Starting 1.55 Holding 0.55]</td>
<td>[Starting 1.75 Holding 0.75]</td>
</tr>
<tr>
<td>Apparent power (VA)</td>
<td>AC</td>
<td>24 V</td>
</tr>
<tr>
<td></td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
</tr>
<tr>
<td></td>
<td>100 V</td>
<td>1.55 (With light: 1.65)</td>
</tr>
<tr>
<td></td>
<td>110 V (115 V)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>220 V (230 V)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>240 V</td>
<td></td>
</tr>
</tbody>
</table>

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>Response time (ms) (at 0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Without light/surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</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>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 to 1.0</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>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</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>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 to 1.0</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>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 to 1.0</td>
<td>15</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 0.7</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>0.15 to 0.7</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 1.0</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.15 to 1.0</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 to 1.0</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.15 to 1.0</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>VF1□□-M5</td>
<td>2-position</td>
<td>Single</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF1□□-01</td>
<td>2-position</td>
<td>Single</td>
<td>1/8</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3□□-01</td>
<td>2-position</td>
<td>Single</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Closed center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3□□-02</td>
<td>2-position</td>
<td>Single</td>
<td>1/4</td>
<td>1/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Closed center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5□□-02</td>
<td>2-position</td>
<td>Single</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Closed center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5□□-03</td>
<td>2-position</td>
<td>Single</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Closed center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) [ ] Normal position
Note 2) Values without bracket
## 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, VF1120-F: 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 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.

Valve model: \( VF \) \( 2 \) \( 1 \) \( 1 \) \( -5 \) \( G \) \( Z \) \( 1 \) - \( \) - 

* Select from the below in accordance with the valve used.

Grommet or L/M-type

V211 Pilot valve assembly

Light/Surge voltage suppressor

<table>
<thead>
<tr>
<th>Type</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>S</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Z</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>R</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>U</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Note) S type is not available with AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

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

Electrical entry

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Grommet (Lead wire length 300 mm)</td>
</tr>
<tr>
<td>H</td>
<td>Grommet (Lead wire length 600 mm)</td>
</tr>
<tr>
<td>L</td>
<td>L-type plug connector</td>
</tr>
<tr>
<td>LN</td>
<td>L-type plug connector With lead wire</td>
</tr>
<tr>
<td>LO</td>
<td>L-type plug connector Without lead wire</td>
</tr>
<tr>
<td>M</td>
<td>M-type plug connector</td>
</tr>
<tr>
<td>MN</td>
<td>M-type plug connector With lead wire</td>
</tr>
<tr>
<td>MO</td>
<td>M-type plug connector Without lead wire</td>
</tr>
</tbody>
</table>

* 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.

DIN or Conduit type

V212 Pilot valve assembly

Pressure specifications

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

Coil specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Standard</td>
</tr>
<tr>
<td>T</td>
<td>With power saving circuit (DC only)</td>
</tr>
</tbody>
</table>

* T type is available with DC mode only.

⚠️ Caution
For V212 (DIN or Conduit type), the coil specifications and voltage (including light/surge voltage suppressor) cannot be changed by replacing the pilot valve assembly.

⚠️ Caution
Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m
Dimensions: VF1000 Series/Body Ported

2-position single

Grommet (G) (H): VF1120-□□□□1-M5□□(-F)

Grommet (G) (H): VF1120-□□□□1-01□□(-F)

L-type plug connector (L): VF1120-□□□□1-M5□□(-F)

DIN terminal (D) (Y): VF1120-□□□□1-M5□□(-F)

M-type plug connector (M): VF1120-□□□□1-M5□□(-F)

Conduit terminal (T): VF1120-□□□□1-M5□□(-F)

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

Dimensions: VF1000 Series/Body Ported

2-position double

Grommet (G) (H): VF1220-□□□1-M5□

* Manual override

G: Approx. 300
H: Approx. 600

(Lead wire length)

Grommet (G) (H): VF1220-□□□1-01□

* Manual override

G: Approx. 300
H: Approx. 600

(Lead wire length)

Grommet (G) (H)

DC without light/surge voltage suppressor

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

DIN terminal (D) (Y): VF1220-□□□1-M5□

Conduit terminal (T): VF1220-□□□1-M5□

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: VF3000 Series/Body Ported

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

G: Approx. 300
H: Approx. 600

(Approx. 300)

(Approx. 600)

(DC without light/surge voltage suppressor)

Applicable cable O.D.: Ø4.5 to Ø7

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

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

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

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

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

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

Dimensions: VF3000 Series/Body Ported

2-position double
Grommet (G) (H): VF3230-□□□□1-□□□□□□□□

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

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

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

Approx. 300
(Lead wire length)

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

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

Approx. 300
(Lead wire length)

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

DIN terminal (D) (Y): VF3230-□□□□□□□□

Max. 10

Applicable cable O.D.
ø4.5 to ø7

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

Conduit terminal (T): VF3230-□□□□□□□□

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\(\frac{3}{5}\)30-□□□1-□□□

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

L-type plug connector (L): VF3\(\frac{3}{5}\)30-□□□1-□□□

M-type plug connector (M): VF3\(\frac{3}{5}\)30-□□□1-□□□

DIN terminal (D) (Y): VF3\(\frac{3}{5}\)30-□□□1-□□□

Conduit terminal (T): VF3\(\frac{3}{5}\)30-□□□1-□□□

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

(Distance between ports)

Manual override

1/4, 3/8

(For mounting)

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

ø2.3

(PE port)

52

100.8

0.4

50.5

4A

2B

1/4, 3/8

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

142.2

103.7

28.5

44

28.2

22

12

1/4, 3/8

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

ø2.3

(PE port)

52

100.8

0.4

50.5

4A

2B

1/4, 3/8

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

143.4

16.3

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

G: Approx. 300
H: Approx. 600

(Lead wire length)

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

Approx. 300

(Lead wire length)

148.5

52

22.3

3 x ø4.3

(For mounting)

1/4, 3/8

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

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

Max. 10

149

149

85

76

Pg9

Applicable cable O.D.
ø4.5 to ø7

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

Max. 10

151.4

151.4

89.2 (79.2)

Pg9

Applicable cable O.D.
ø4.5 to ø7

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).

[ ]: Without indicator light

[ ]: Without indicator light

Unapplicable cable O.D.
ø4.5 to ø7

[ ]: Without indicator light

Unapplicable cable O.D.
ø4.5 to ø7

[ ]: Without indicator light
Dimensions: VF5000 Series/Body Ported

2-position double

Grommet (G) (H): VF5220-□□□□1-□□□

- G: Approx. 300
- H: Approx. 600

(Lead wire length)

Manual override:

2 x ø4.3
(For mounting)

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

22
4A
2B
1/4, 3/8
[4(A), 2(B) port]

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

- G: Approx. 300
- H: Approx. 600

(Lead wire length)

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

- Approx. 300

(Load wire length)

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

- Max. 10

Applicable cable 0.2
ø4.5 to ø7

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

- Approx. 300

(Load wire length)

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

- Max. 10

Applicable cable 0.2
ø4.5 to ø7

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-\[ \text{G, approx. 300} \]
\[ \text{H, approx. 600} \]

(Load wire length)

![Grommet (G) (H) Diagram]

**Manual override**

2 x ø4.3

(For mounting)

28

1/4, 3/8

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

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

DC without light/surge voltage suppressor

G: Approx. 300

H: Approx. 600

(Load wire length)

![Grommet (G) (H) Diagram]

**L-type plug connector (L): VF5 \( \frac{3}{5} \) 20-\[ \text{L, approx. 102} \]

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

Approx. 300

(Load wire length)

98

215

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

**DIN terminal (D) (Y): VF5 \( \frac{3}{5} \) 20-\[ \text{Y, approx. 102} \]

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

Max. 10

Applicable cable: 0.5-2mm², ø4.5 to ø7

**M-type plug connector (M): VF5 \( \frac{3}{5} \) 20-\[ \text{M, approx. 102} \]

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

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

**Conduit terminal (T): VF5 \( \frac{3}{5} \) 20-\[ \text{T, approx. 102} \]

![Conduit terminal (T) Diagram]

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**

**Series**

1. VF1000  
2. VF3000  
3. 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 model**

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

**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**

**Series**

1. VF1000  
2. VF3000  
3. 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:** Not available for the base mounted type.

---

**VF1000/3000/5000 Series**  
*Made to Order*

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

**VF3000/5000 Series**

**Single Unit**

#### How to Order Valve

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Body model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VF3000</td>
<td>VF 3 1 4 0 K T - 5 G Z D 1-02 -</td>
</tr>
</tbody>
</table>

#### Base mounted

- **VF1000**: Not available

#### Pressure specifications

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

#### Coil specifications

- **Nil**: Standard
- **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.

- **T** type is available with DC mode only. When **T** is selected, only **Z** type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

#### Body option

- **0**: Pilot valve individual exhaust
- **3**: Main/Pilot valve common exhaust
- **4**: Pilot valve base exhaust

#### Made to Order

- **Nil**: X600 TRIAC output specification (Refer to page 311.)

#### Thread type

- **Nil**: —
- **F**: G
- **N**: NPT
- **T**: NPTF

#### Port size (Sub-plate)

<table>
<thead>
<tr>
<th>Symbol Port size</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>02</td>
<td>1/2</td>
<td>0</td>
</tr>
<tr>
<td>03</td>
<td>3/8</td>
<td>0</td>
</tr>
<tr>
<td>04</td>
<td>1/2</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Without the sub-plate, two mounting screws and a gasket are included.**

#### Manual override

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

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

#### Light/Surge voltage suppressor

<table>
<thead>
<tr>
<th>Symbol Light/Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

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

**Caution**

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

**Note:** S type is not available with AC mode, since a rectifier prevents surge voltage generation.

**Caution**

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

**Note:** LN and MN types are with 2 sockets.

**Note:** Refer to page 346 when different length of lead wire for L/M-type plug connector is required.

**Note:** 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>Air</td>
</tr>
<tr>
<td>Operating pressure (MPa)</td>
<td>2-position single/3-position 0.15 to 0.7</td>
<td>2-position single/3-position 0.15 to 0.7</td>
</tr>
<tr>
<td>High pressure type</td>
<td>2-position double 0.1 to 0.7</td>
<td>2-position double 0.1 to 1.0</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing)</td>
<td>–10 to 50 (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double 40</td>
<td>3-position 3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust</td>
<td>Pilot valve base exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Enclosure</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. 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 or pilot valve base exhaust type.

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC 24, 12</td>
<td>AC (50/60 Hz) 240, 100, 110, 200, 220, 240</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC 1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
</tr>
<tr>
<td>With power saving circuit</td>
<td>0.75 (With light only) (Starting 1.55 Holding 0.55)</td>
<td>0.75 (With light only) (Starting 1.75 Holding 0.75)</td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC 24 V 1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.7)</td>
</tr>
<tr>
<td>110 V [115 V]</td>
<td>1.55 (With light: 1.65)</td>
<td></td>
</tr>
<tr>
<td>200 V</td>
<td>1.55 (With light: 1.7)</td>
<td></td>
</tr>
<tr>
<td>220 V [230 V]</td>
<td>1.55 (With light: 1.7)</td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (Non-polar type: Varistor)</td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light is used for AC mode of D, Y, T.)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Power consumption is 100% + 5% of the rated voltage for 110 VAC or 230 VAC. Allowable voltage fluctuation shall be within the following range. 24 VDC: –10% to +10% 12 VDC: –10% to +10% References to page 346 for details.

### 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 (ms)</th>
<th>With light/surge voltage suppressor (ms)</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>23</td>
<td>45</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>VF3000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 1.0</td>
<td>20</td>
<td>23</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 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 1.0</td>
<td>30</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.1 to 1.0</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>0.15 to 1.0</td>
<td>30</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>0.1 to 1.0</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Standard</td>
<td>0.15 to 0.7</td>
<td>30</td>
<td>33</td>
<td>55</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>
</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>1 → 4/2 (P → A/B)</th>
<th>4/2 → 5/3 (A/B → EA/EB)</th>
<th>Weight (g) Note 2</th>
<th>Grommet</th>
<th>DIN terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/(s·bar)] b</td>
<td>Cv</td>
<td>C [dm³/(s·bar)] b</td>
<td>Cv</td>
<td></td>
</tr>
<tr>
<td>VF3□40-02</td>
<td>2-position</td>
<td>Single</td>
<td>2.8 0.14 0.64</td>
<td>2.5 0.18 0.57</td>
<td>344 (192)</td>
<td>380 (228)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>2.8 0.14 0.64</td>
<td>2.5 0.18 0.57</td>
<td>405 (252)</td>
<td>477 (324)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>2.1 0.22 0.49</td>
<td>1.6 0.26 0.41</td>
<td>422 (270)</td>
<td>494 (342)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>2.3 0.21 0.53</td>
<td>2.8 [2.1] 0.23 [0.26]</td>
<td>422 (270)</td>
<td>494 (342)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>2.9 [1.1] 0.16 [0.45] 0.67 [0.32]</td>
<td>2.1 0.23 0.49</td>
<td>422 (270)</td>
<td>494 (342)</td>
<td></td>
</tr>
<tr>
<td>VF3□40-03</td>
<td>2-position</td>
<td>Single</td>
<td>3.1 0.24 0.76</td>
<td>2.6 0.23 0.62</td>
<td>327 (192)</td>
<td>363 (228)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>3.1 0.24 0.76</td>
<td>2.6 0.23 0.62</td>
<td>388 (252)</td>
<td>460 (324)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>2.2 0.33 0.57</td>
<td>1.6 0.34 0.40</td>
<td>405 (270)</td>
<td>477 (342)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>2.6 0.27 0.61</td>
<td>2.8 [2.3] 0.30 [0.28]</td>
<td>405 (270)</td>
<td>477 (342)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>3.4 [1.3] 0.29 [0.48] 0.80 [0.38]</td>
<td>2.2 0.31 0.52</td>
<td>405 (270)</td>
<td>477 (342)</td>
<td></td>
</tr>
<tr>
<td>VF5□44-02</td>
<td>2-position</td>
<td>Single</td>
<td>7.3 0.49 2.1</td>
<td>7.3 0.50 2.0</td>
<td>486 (297)</td>
<td>522 (333)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>7.3 0.49 2.1</td>
<td>7.3 0.50 2.0</td>
<td>541 (352)</td>
<td>613 (424)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>6.6 0.35 1.7</td>
<td>6.3 0.31 1.6</td>
<td>578 (390)</td>
<td>650 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>7.4 0.33 1.9</td>
<td>8.1 [7.4] 0.35 [0.34]</td>
<td>578 (390)</td>
<td>650 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>8.0 [2.9] 0.35 [0.48] 2.1 [0.85]</td>
<td>5.6 0.31 1.5</td>
<td>578 (390)</td>
<td>650 (462)</td>
<td></td>
</tr>
<tr>
<td>VF5□44-03</td>
<td>2-position</td>
<td>Single</td>
<td>8.4 0.34 2.2</td>
<td>8.9 0.29 2.3</td>
<td>473 (297)</td>
<td>509 (333)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>8.4 0.34 2.2</td>
<td>8.9 0.29 2.3</td>
<td>529 (352)</td>
<td>601 (424)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>7.3 0.34 2.0</td>
<td>7.1 0.28 1.8</td>
<td>566 (390)</td>
<td>638 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>8.1 0.27 2.0</td>
<td>14.0 [8.3] 0.26 [0.31]</td>
<td>566 (390)</td>
<td>638 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>8.1 [2.5] 0.33 [0.48] 2.0 [0.74]</td>
<td>5.7 0.31 1.4</td>
<td>566 (390)</td>
<td>638 (462)</td>
<td></td>
</tr>
<tr>
<td>VF5□44-04</td>
<td>2-position</td>
<td>Single</td>
<td>9.4 0.43 2.7</td>
<td>12.0 0.32 3.0</td>
<td>545 (297)</td>
<td>561 (333)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>9.4 0.43 2.7</td>
<td>12.0 0.32 3.0</td>
<td>600 (352)</td>
<td>672 (424)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>7.1 0.41 2.1</td>
<td>7.4 0.32 2.0</td>
<td>638 (390)</td>
<td>710 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>8.6 0.39 2.4</td>
<td>13.0 [8.9] 0.21 [0.40]</td>
<td>638 (390)</td>
<td>710 (462)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>11.0 [2.6] 0.18 [0.47] 2.6 [0.78]</td>
<td>6.1 0.35 1.6</td>
<td>638 (390)</td>
<td>710 (462)</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** [ ] Normal position

**Note 2:** ( ) Values without sub-plate
## Construction: Base Mounted

### VF3000/5000

**Symbol**

- 2-position single
- 2-position double
- 3-position closed center
- 3-position exhaust center
- 3-position pressure center

**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

**VF3000/5000**

<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>VF3000</td>
<td>Built-in strainer</td>
</tr>
<tr>
<td>8</td>
<td>Gasket</td>
<td>DXT031-30-11</td>
<td>DXT156-9-8 HNBR</td>
</tr>
<tr>
<td>9</td>
<td>Sub-plate</td>
<td>1/4: VF3000-71-1</td>
<td>1/4: VF5000-71-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2: VF3000-71-3</td>
<td>1/2: VF5000-71-3</td>
</tr>
<tr>
<td></td>
<td>Round head combination screw (1 pc.)</td>
<td>DXT031-44-1</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head cap screw (1 pc.)</td>
<td>—</td>
<td>For mounting valve</td>
</tr>
</tbody>
</table>

**Sub-plate part no.**

- **VF 3 000-71-1**
- **VF 3 000-71-2**
- **VF 3 000-71-3**

**Thread type**

- Nil
- F
- G
- N
- NPT
- T

**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.

  **Valve model:** \[\text{VF} \square \square \square \square \square \square - \text{5GZ} \square 1 - \square \square\]

  - Select from the below in accordance with the valve used.

  - **Grommet or L/M-type**
    - V211
    - "Pilot valve assembly"
    - "\[\text{VF} \square \square \square \square \square \square - \text{5GZ} \square 1 - \square \square\]"

  - **DIN or Conduit type**
    - DIN connector
    - "(Refer to page 347.)"
    - "\[\text{VF} \square \square \square \square \square \square - \text{5GZ} \square 1 - \square \square\]"

- **Warning**
  For V212 (DIN or Conduit type), the coil specifications and voltage (including light/surge voltage suppressor) cannot be changed by replacing the pilot valve assembly.

  **Caution**
  Tightening torque of the pilot valve assembly mounting screw
  M2.5: 0.32 N·m

---

**Electrical entry**

| \(\text{G}\) | Grommet (Lead wire length 300 mm) |
| \(\text{H}\) | Grommet (Lead wire length 600 mm) |
| \(\text{L}\) | L-type plug connector |
| \(\text{LN}\) | With lead wire |
| \(\text{LO}\) | Without lead wire |
| \(\text{M}\) | M-type plug connector |
| \(\text{MN}\) | With lead wire |
| \(\text{MO}\) | Without lead wire |

- 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.

**Light/Surge voltage suppressor**

| \(\text{Nil}\) | Without light/surge voltage suppressor | AC |
| \(\text{S}\) | With surge voltage suppressor | DC |
| \(\text{Z}\) | With light/surge voltage suppressor | DC |
| \(\text{R}\) | With surge voltage suppressor (Non-polar) | — |
| \(\text{U}\) | With light/surge voltage suppressor (Non-polar) | — |

- Note: S type is not available with AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

**Safety specifications**

- DC: 24 VDC
- AC (50/60 Hz):
  - 1: 100 VAC
  - 2: 200 VAC
  - 3: 110 VAC [115 VAC]
  - 4: 220 VAC [230 VAC]
  - 7: 240 VAC
  - B: 24 VAC

---

**Coil specifications**

| \(\text{Nil}\) | Standard (0.7 MPa) |
| \(\text{K}\) | High-pressure type (1 MPa) |
| \(\text{T}\) | With power saving circuit (DC only) |

- T type is available with DC mode only.
Dimensions: VF3000 Series/Base Mounted

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

L-type plug connector (L): VF3140-[□□□□]

DIN terminal (D) (Y): VF3140-[□□□□]

M-type plug connector (M): VF3140-[□□□□]

Conduit terminal (T): VF3140-[□□□□]

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-□□□1-□□□

M-type plug connector (M): VF3240-□□□1-□□□

DIN terminal (D) (Y): VF3240-□□□1-□□□

Conduit terminal (T): VF3240-□□□1-□□□
**Dimensions: VF3000 Series/Base Mounted**

3-position closed center/exhaust center/pressure center

**Grommet (G) (H):** VF3\(\frac{3}{5}\)40-\(\frac{1}{2}\)02\(\frac{1}{03}\)

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

**Manual override**

- 2 x ø4.3 (For mounting)
- 84.5
- 84.5
- 4.5
- 43

**Grommet (G) (H)**

- DC without light/surge voltage suppressor

**L-type plug connector (L):** VF3\(\frac{3}{5}\)40-\(\frac{1}{2}\)02\(\frac{1}{03}\)

- Approx. 300
- Lead wire length:
  - 50.3
  - 49.3

**DIN terminal (D) (Y):** VF3\(\frac{3}{5}\)40-\(\frac{1}{2}\)02\(\frac{1}{03}\)

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

**M-type plug connector (M):** VF3\(\frac{3}{5}\)40-\(\frac{1}{2}\)02\(\frac{1}{03}\)

- Approx. 300
- Lead wire length:
  - 84

**Conduit terminal (T):** VF3\(\frac{3}{5}\)40-\(\frac{1}{2}\)02\(\frac{1}{03}\)

- 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-□□□□-02□□

  - G: Approx. 300
  - H: Approx. 600

- **Manual override**

  - 2 x ø5.3 (2 x ø6.5)
  - (For mounting)

- **(Indicator light)**

  - G: Approx. 300
  - H: Approx. 600

- **(Lead wire length)**

- **2 x M5 x 0.8**
  - (PE port)

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

- **1.2**

- **20.5 (24.5)**

- **74**

- **143.4**

- **51.3**

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

- **L-type plug connector (L):** VF5144-□□□□-02□□

  - Approx. 300

  - Lead wire length:
    - 51.3
    - 45.3

- **DIN terminal (D) (Y):** VF5144-□□□□-02□□

  - Applicable cable O.D.: ø4.5 to ø7

  - Max. 10

- **Conduit terminal (T):** VF5144-□□□□-02□□

  - Applicable cable O.D.: ø4.5 to ø7

  - Max. 10

### 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-□□□□-02□□

  - Approx. 300

  - Lead wire length:
    - 140.1
    - 135

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

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

2-position double

Grommet (G) (H): VF5244-□□□1-□□□

L-type plug connector (L): VF5244-□□□1-□□□

M-type plug connector (M): VF5244-□□□1-□□□

DIN terminal (D) (Y): VF5244-□□□1-□□□

Conduit terminal (T): VF5244-□□□1-□□□

Unless otherwise indicated, dimensions are the same as Grommet (G).
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\(^3\)\(^5\) \[44\] \[3\] \[1\] \[02\] \[03\] \[04\]

1/4, 3/8, 1/2

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\(^3\)\(^5\) \[44\] \[3\] \[1\] \[02\] \[03\] \[04\]

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): VF5\(^3\)\(^5\) \[44\] \[3\] \[1\] \[02\] \[03\] \[04\]

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): VF5\(^3\)\(^5\) \[44\] \[3\] \[1\] \[02\] \[03\] \[04\]

Max. 10

Applicable cable: ø4.5 to ø7

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

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

Conduit terminal (T): VF5\(^3\)\(^5\) \[44\] \[3\] \[1\] \[02\] \[03\] \[04\]

Max. 10

Applicable cable: ø4.5 to ø7

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

The dimensions in (   ) are for 1/2 piping port size.
Low Wattage Specification
VF1000/3000 Series
Single Unit

How to Order Valve

VF 3 1 3 0 Y - 5 G [ ] 1 - 02 -

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
2 VF1000 Body ported
3 VF1000 Body ported (For manifold)
4 VF3000 Body ported
5 VF3000 Base mounted

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

Body model
VF1000
VF3000

Body option
0: Pilot valve individual exhaust
PE port EA/EB port

VF1000
VF3000

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

VF1000
VF3000

* Only available for body ported (for manifold) type.

Body ported
VF1000
VF3000

Base mounted
VF1000
VF3000

Bracket
Nil Without bracket
F With bracket Available with the VF1120, VF1220 and VF3130 only.

Thread type
Nil Rc, MS
F G
N NPT
T NPTF

<Body ported> A, B port size
M5 M5 x 0.8 (VF1000)
1/8 (VF1000, VF3000)
1/4 (VF1000, VF3000)

<Base mounted> Sub-plate port size
Nil Without sub-plate
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
02 and Y02 are not available

Electrical entry
24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC
24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC

Grommet
C-type plug connector
M-type plug connector
DIN terminal

D: Lead wire length 300 mm
L: Lead wire length 300 mm
M: Lead wire length 300 mm
MN: Without lead wire
N: Without lead wire
L0: Without connector
M0: Without connector
D0: Without connector
Y0: Without connector

Ce compliant
DC
AC

* 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>0.15 to 0.7</td>
<td>0.1 to 0.7</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>5</td>
<td>5</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push 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)</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>Model</td>
<td>VF1000</td>
<td>VF3000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical entry</td>
<td>G, H, L, M</td>
<td>D, Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>24, 12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>DC</td>
<td>AC (50/60 Hz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>100 V</td>
<td>200 V</td>
<td>220 V</td>
<td>110 V</td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>[115 V]</td>
<td>[230 V]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>DC Standard</td>
<td>AC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 V</td>
<td>0.78 (With light: 0.81)</td>
<td>0.78 (With light: 0.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 V</td>
<td>0.86 (With light: 0.89)</td>
<td>0.86 (With light: 0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[115 V]</td>
<td>[0.94 (With light: 0.97)]</td>
<td>[0.94 (With light: 1.07)]</td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>220 V</td>
<td>1.30 (With light: 1.34)</td>
<td>1.27 (With light: 1.46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[230 V]</td>
<td>[1.42 (With light: 1.46)]</td>
<td>[1.39 (With light: 1.60)]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (DIN terminal, Non-polar type: Varistor)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light is used for AC mode of DIN terminal.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

** Note:** Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.

* Since voltage drops due to the internal circuit in S and Z types, the allowable voltage fluctuation should be within the following range:

12 VDC: –4% to +10% 24 VDC: –7% to +10%

Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Without surge voltage suppressor</th>
<th>With surge voltage suppressor</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>2-position single</td>
<td>45</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position single</td>
<td>55</td>
<td>63</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>14</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>100</td>
<td>100</td>
<td>90</td>
</tr>
</tbody>
</table>

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

** Note:** Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.

** Note:** Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.

** Note:** Since voltage drops due to the internal circuit in S and Z types, the allowable voltage fluctuation should be within the following range:

12 VDC: –4% to +10% 24 VDC: –7% to +10%
**Low Wattage Specification**

**VF1000/3000 Series**

**Dimensions**

**VF1000**

- **G**: Approx. 300
- **H**: Approx. 600

(Lead wire length)

- **AC**: 67.6

**Manual override**

- (1.6)

**Distance between ports**

- (13.4)

**Indicator light**

- (19.6)

**A, B port size: M5 x 0.8**

**Distance between ports**

- (16.6)

**Applicable cable O.D.**

- ø3.5 to ø7

**Max. 10**

**52.1**

**20**

**A**, **B port size: M5 x 0.8**

**Indicator light**

- (19.6)

**2 x Ø5.5**

(For mounting)

**Distance between ports**

- (16)

**AC: 67.6**

**Body Ported/Base Mounted/Single Unit**

**L-type plug connector (L)**

**M-type plug connector (M)**

**DIN terminal (D) (Y)**

- **AC**: 67.6

**PE port**

- M5 x 0.8

**For mounting**

- 2 x M4 x 0.7 thread depth 5

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

(Lead wire length)

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

(Lead wire length)
Pilot Operated 5 Port Solenoid Valve
VF1000/3000/5000 Series

Manifold

How to Order Manifold

Common exhaust

<table>
<thead>
<tr>
<th>Series</th>
<th>VF5F</th>
<th>1-30</th>
<th>04</th>
<th>1-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VF1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>VF3000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Individual exhaust (VF1000 only)

<table>
<thead>
<tr>
<th>Thread type</th>
<th>Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>02</td>
</tr>
<tr>
<td>Rc</td>
<td>20</td>
</tr>
</tbody>
</table>

How to Order Valve

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

Type of actuation

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-position single</td>
</tr>
<tr>
<td>3</td>
<td>2-position double</td>
</tr>
<tr>
<td>5</td>
<td>3-position closed center</td>
</tr>
<tr>
<td>7</td>
<td>3-position exhaust center</td>
</tr>
<tr>
<td>9</td>
<td>3-position pressure center</td>
</tr>
</tbody>
</table>

Coil specifications

<table>
<thead>
<tr>
<th>Coil specifications</th>
<th>Nil</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td></td>
<td>Power saving circuit (DC only)</td>
</tr>
</tbody>
</table>

Body model

DC

<table>
<thead>
<tr>
<th>Port size</th>
<th>5</th>
<th>24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 VAC</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>200 VAC</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>110 VAC</td>
<td></td>
</tr>
</tbody>
</table>

AC (50/60 Hz)

<table>
<thead>
<tr>
<th>Port size</th>
<th>4</th>
<th>220 VAC (230 VAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>220 VAC</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

Pressure specifications

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

Rated voltage

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>M5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>12 VDC</td>
</tr>
</tbody>
</table>

Grommet

- L: Lead wire length 300 mm
- M: Lead wire length 300 mm
- N: Lead wire length 600 mm
- R: DC suppressor
- S: Light/surge voltage suppressor
- T: Manual override
- U: Light/surge voltage suppressor
- V: Lead wire
- W: Grommet

Manual override

<table>
<thead>
<tr>
<th>Manual override</th>
<th>D: Push-turn locking slotted type</th>
</tr>
</thead>
</table>

Light/Surge voltage suppressor

<table>
<thead>
<tr>
<th>Light/Surge voltage suppressor</th>
<th>Nil</th>
<th>Without light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td>With surge voltage suppressor</td>
</tr>
<tr>
<td>Z</td>
<td></td>
<td>With surge voltage suppressor (Non-polar)</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>With surge voltage suppressor (Non-polar)</td>
</tr>
</tbody>
</table>

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

SV SYJ SZ VF VP4 VQ 1/2 VQ 4/5 VQC 1/2 VQC 4/5 VQZ SQ VFS VFR VQ7

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 328 for details.
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>VF5F1-30</td>
<td>VF5F3-30</td>
<td>VF5F5-21</td>
</tr>
<tr>
<td>1(P) port</td>
<td>4(A), 2(B) port</td>
<td>4(A), 2(B) port</td>
<td>1(P) port</td>
</tr>
<tr>
<td>1/8</td>
<td>1/8, 3/8</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>5(R), 3(R) port</td>
<td>1/4, 3/8</td>
<td>1/2</td>
<td></td>
</tr>
<tr>
<td>5(EA), 3(EB) port</td>
<td>M5 x 0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W = 29n + 21</td>
<td>W = 51n + 35</td>
<td>W = 139n + 550</td>
<td></td>
</tr>
</tbody>
</table>

EXH port type
- Common EXH
- Individual EXH

Applicable valve model
- VF1-30
- VF1-33
- VF3-30
- VF3-33
- VF5-20
- VF5-23

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

Weight: W [g]
- W = 29n + 21
- W = 51n + 35
- W = 63n + 64
- W = 97n + 80

Stations: n
- 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)
  - VF3230-5GZ1-02 (1 set)
- Single solenoid (24 VDC)
  - VF3130-5GZ1-02 (3 sets)

- Manifold base (5 stations)
  - VV5P3-30-051

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.

<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>

- Individual EXH spacer assembly

Warning

- 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.

VF 3000-75-1 A

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Series</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VF3000</td>
<td>1/8</td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td>1/4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thread type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>G</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>NPT</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>NPTF</td>
</tr>
</tbody>
</table>
**VF1000/3000/5000 Series**

**Dimensions: VF1000 Series**

Type 30/VVF1-30-□□□1-□: Common exhaust

Grommet (G) (H)

DC without light/
surge voltage suppressor

_Grommet (G) (H)_

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

**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>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>
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<tr>
<td>L2</td>
<td>64.5</td>
<td>92</td>
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<td>147</td>
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<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)**

Approx. 10

Pg9

Max. 10

Applicable cable O.D.

ø4.5 to ø6

**Conduit terminal (T)**

Approx. 10

Pg9

Max. 10

Applicable cable O.D.

ø4.5 to ø6

[ ]: Without indicator light

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: VF1000 Series

Type 31/VVF1-31-□□□□: Individual exhaust
Grommet (G) (H)

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

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

PE port

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

L: Dimensions

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

Applicable cable

[, ] Without indicator light

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

**Dimensions: VF3000 Series**

Type 30/VV5F3-30-□□1□: Common exhaust

Grommet (G) (H)

**DC without light/ surge voltage suppressor**

Grommet (G) (H)

**L-type plug connector (L)**

**M-type plug connector (M)**

**DIN terminal (D) (Y)**

**Conduit terminal (T)**

(Station n) (Station 1)

(indicator light)

---

**L: Dimensions**

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>138.5</td>
<td>166</td>
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<td>358.5</td>
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<tr>
<td>L2</td>
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<td>319</td>
<td>346.5</td>
<td>374</td>
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**L: Dimensions**

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<th>20</th>
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<tbody>
<tr>
<td>L1</td>
<td>441</td>
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<td>551</td>
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<tr>
<td>L2</td>
<td>429</td>
<td>466.5</td>
<td>484</td>
<td>511.5</td>
<td>539</td>
</tr>
</tbody>
</table>

---

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

Type 30/VV5F3-30-□□□1-□: 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>n</th>
<th>0</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>413.5</td>
<td></td>
</tr>
<tr>
<td>L2</td>
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<td>99</td>
<td>126.5</td>
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<td>181.5</td>
<td>209</td>
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<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-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 20/VVF5-20-□□□□□□□: 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-[ ]-1-[ ]: Common exhaust
Grommet (G)

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

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

L: Dimensions

L1 4 5 6 7 8 9 10 11 12 13 14 15
163 262 328 394 427 460 493 526 559 592
128 227 293 359 392 425 458 491 524 557

L1 4 5 6 7 8 9 10 11 12 13 14 15
202.3 22.2 53.2 52.2 110 125 183.3
91.7 53.2 28.2 110 125 183.3

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: Dimensions

<table>
<thead>
<tr>
<th>n</th>
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<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
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<td>128</td>
</tr>
<tr>
<td>2</td>
<td>196</td>
<td>161</td>
</tr>
<tr>
<td>3</td>
<td>229</td>
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<td>592</td>
<td>589</td>
</tr>
<tr>
<td>15</td>
<td>625</td>
<td>623</td>
</tr>
</tbody>
</table>

Individual EXH spacer
(VF5000-75-1A)

(Indicator light)

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.

**Thread type**

<table>
<thead>
<tr>
<th>Stations</th>
<th>Nil</th>
<th>F</th>
<th>G</th>
<th>Rc</th>
<th>N</th>
<th>NPT</th>
<th>NPTF</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>2</td>
<td></td>
<td></td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Up to 10 stations for VV5F5.

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

* For low wattage specification, refer to “How to Order Valve” on page 323.

**VF 3 1 4 0 5 G 1**

**Body model**

- Body option

  - 0: Pilot valve individual exhaust
    - PE port EA/EB port
    - VF3000: VF5000
  - 3: Main/Pilot valve common exhaust
    - PE port EA/EB port
    - VF3000: VF5000
  - 4: Pilot valve base exhaust
    - PE port
    - VF3000: VF5000

**Serial type**

- Series
  - 3: VF3000
  - 5: VF5000
  - Not available with the VF1000.

### Pressure specifications

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

### Rated voltage

<table>
<thead>
<tr>
<th>Type</th>
<th>DC (50/60 Hz)</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>24 VDC</td>
<td>100 VAC</td>
</tr>
<tr>
<td>6</td>
<td>12 VDC</td>
<td>200 VAC</td>
</tr>
<tr>
<td>3</td>
<td>110 VAC (115 VAC)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>220 VAC (230 VAC)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>240 VAC</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>24 VAC</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical entry

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

* LN and MN types are with 2 sockets.
* Refer to page 348 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.

**Notes**

1. When using IP65, select the main/pilot valve common exhaust or pilot valve base exhaust type.
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>Manifold base model</th>
<th>EXH port type</th>
<th>Applicable valve model</th>
<th>Applicable stations</th>
<th>Manifold base Weight: W [g] Stations: n</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VV5F3-40</td>
<td>5(R), 3(R) port 1/4</td>
<td>Common EXH</td>
<td>VF3□□40 VF3□□43</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(P) port 1/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4(A), 2(B) port 1/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VV5F5-40</td>
<td>PE port 5(R), 3(R) port 3/8</td>
<td>Common EXH</td>
<td>VF5□□44</td>
<td>2 to 10 stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(P) port 3/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4(A), 2(B) port 1/4</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.**
  - [Image of valve mounting screw and gasket]

<table>
<thead>
<tr>
<th>Series</th>
<th>Blanking plate assembly part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>DXT031-38-SA</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.

---

### Series Symbol

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Series</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VF3000</td>
<td>1/8</td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td>1/4</td>
</tr>
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</table>

### Thread type

<table>
<thead>
<tr>
<th>Nil</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td>NPT</td>
</tr>
<tr>
<td>T</td>
<td></td>
<td>NPTF</td>
</tr>
</tbody>
</table>
Dimensions: VF3000 Series

Type 40/VV5F3-40-□□2-02□: Common exhaust
Grommet (G) (H)

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

L: Dimensions

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: VF3000 Series

Type 40/VVF3-40-□□□□2-02□: When the individual EXH spacer (VF3000-75-2A) is mounted.

Grommet (G) (H)

Manual override

(Station n) 
(Indicator light)

Individual EXH spacer
(VF3000-75-2A)

L: Dimensions

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>L1</td>
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<tr>
<td>L2</td>
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<td>566.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M-type plug connector (M)

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

DIN terminal (D) (Y)

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

Conduit terminal (T)

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

VF3000/5000 Series

Dimensions: VF5000 Series

Type 40/VV5F5-40-□□-□□-02□□: Common exhaust
Grommet (G)

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).

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

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

SMC
VF3000/5000 Series

Dimensions: VF5000 Series

Type 40/VV5F5-40-[□□□2-02□]: When the individual EXH spacer (VF5000-75-2A) is mounted.

Grommet (G)

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

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

(Station n) (Station 1)

(Indicator light)

L-type plug connector (L)

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

M-type plug connector (M)

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

DIN terminal (D) (Y)

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

Conduit terminal (T)

![Diagram of Conduit terminal (T)](image)

Grommet (G) (H)

DC without light/surge voltage suppressor

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

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

L: Dimensions

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>L1</td>
<td>93</td>
<td>126</td>
<td>159</td>
<td>192</td>
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<td>278</td>
<td>311</td>
<td>344</td>
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</tbody>
</table>

Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

L: Dimensions

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Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

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Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

L: Dimensions

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Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

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Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)

(Station n) (Station 1)

(Indicator light)

Individual EXH spacer (VF5000-75-2A)

![Diagram of Individual EXH spacer](image)

L: Dimensions

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</table>

Pitch: P = 33

(For mounting)

Manual override

(1[P], 5[R], 3[R] port)

MS x 0.8 (PE port)
**VF Series**

**Specific Product Precautions 1**

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

---

**Manual Override**

### 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**

### 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

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.
**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>
<th>300 mm</th>
<th>600 mm</th>
<th>1000 mm</th>
<th>1500 mm</th>
<th>2000 mm</th>
<th>2500 mm</th>
<th>3000 mm</th>
<th>5000 mm</th>
</tr>
</thead>
</table>

**How to Order Connector Assembly**

DC : V200-30-4A-  
100 VAC : V200-30-1A-  
200 VAC : V200-30-2A-  
Other AC voltages : V200-30-3A-  
Without lead wire : V200-30-A  
(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.
   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.
4) 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).
   Tighten the ground nut and set screw within the specified range of torque.

**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.
* Make sure not to damage elements, etc., with the lead wires of the cord.

**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.

### How to Order DIN Connector

**Caution**

- **Without indicator light**
  
  DC, AC, Common to all voltages: V200-1

- **With indicator light**
  
  DC
  - Polar type (□Z): V200-3
  - Non-polar type (□U): V200-5

  AC (□Z): V200-7

  **Connector specifications**

<table>
<thead>
<tr>
<th>DIN</th>
<th>D type</th>
<th>Y type</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>100/110 VAC [115 VAC]</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>200/220 VAC [230 VAC]</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

  **Rated voltage**

<table>
<thead>
<tr>
<th>DIN</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>24 VDC</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>12 VDC</td>
<td></td>
</tr>
</tbody>
</table>

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

### How to Use Conduit Terminal

**Caution**

**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.

In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires to terminal 1 and 2 corresponding to the polarity (+ or –) as shown on the right figure.

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).

Tighten the ground nut and set screw within the specified range of torque.

---

**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.*
VF Series
Specific Product Precautions 4

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.

<table>
<thead>
<tr>
<th>Light/Surge Voltage Suppressor</th>
</tr>
</thead>
</table>

**Caution**

**<DC>**

- **Polar type**
  - With surge voltage suppressor (□S)
    - Red (+)
    - Black (–)
    - Polarity protection diode
    - Diode
    - Coil

- Grommet or L/M-type plug connector
  - With light/surge voltage suppressor (□Z)
    - Red (+)
    - Black (–)
    - Polarity protection diode
    - LED
    - Diode
    - Coil

- DIN or Conduit terminal
  - With light/surge voltage suppressor (□Z)
    - (+)
    - For DIN type, installed in the connector
    - Polarity protection diode
    - LED
    - Diode
    - Coil

- **Non-polar type**
  - With surge voltage suppressor (□R)
    - (+, –)
    - Varistor
    - Coil

- Grommet or L/M-type plug connector
  - With light/surge voltage suppressor (□U)
    - (+)
    - Varistor
    - LED
    - Coil

- DIN or Conduit terminal
  - With light/surge voltage suppressor (□U)
    - (+, –)
    - Varistor
    - LED
    - Coil
    - For DIN type, installed in the connector

- With 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 the electrical power waveform as shown below.

**<Electrical power waveform of energy saving type>**

- Since the voltage will drop by approx. 0.5 V due to the transistor, pay attention to the allowable voltage fluctuation. (For details, refer to the solenoid specifications of each type of valve.)

**<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)

- Residual voltage of the surge voltage suppressor
  - 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>12 V</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>VF1000-1-M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VF1000</td>
<td>VF1000-01</td>
<td>5(EA), 3(EB)</td>
<td>M5</td>
<td></td>
</tr>
<tr>
<td>VF1000</td>
<td>VF1000-1-M5</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>VF1000</td>
<td>VF1000-01</td>
<td>5(EA), 3(EB)</td>
<td>M5</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>5(EA), 3(EB)</td>
<td>M5</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Piping port</th>
<th>Port size</th>
<th>Applicable tubing O.D.</th>
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</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VF3000-1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>VF3000-02</td>
<td>5(EA), 3(EB)</td>
<td>P: 1/8, EA, EB: 1/8</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>VF3000-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>VF3000-03</td>
<td>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>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<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>VF5000</td>
<td>VF5000-1-02</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5000-03</td>
<td>5(EA), 3(EB)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5000-03</td>
<td>4(A), 2(B)</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VF5000-03</td>
<td>5(EA), 3(EB)</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>Type 20 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 21 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
<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>
Low Wattage Specification (VF1000/3000)  
Specific Product Precautions 6

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.

---

### 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.

---

### 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.
**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>Length</th>
<th>DC: SY100-30-4A-</th>
<th>100 VAC: SY100-30-1A-</th>
<th>200 VAC: SY100-30-2A-</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How to Order Connector Assembly**

- DC: SY100-30-4A-
- 100 VAC: SY100-30-1A-
- 200 VAC: SY100-30-2A-

**Without lead wire: SY100-30-A**

(With a connector and 2 sockets)

**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>Lead wire length</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500 mm</td>
<td></td>
<td></td>
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<tr>
<td>3000 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5000 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Light/Surge Voltage Suppressor**

**Caution**

1. L/M-type plug connector

   <DC>

   ![Diagram](image1)

   - With surge voltage suppressor (DS, DOS, YS, YOS)

   <AC>

   ![Diagram](image2)

   - With indicator light (DZ, YZ)

   - With light/surge voltage suppressor (DZ, YZ)

2. DIN terminal

   <DC>

   ![Diagram](image3)

   - With surge voltage suppressor (DS, DOS, YS, YOS)

   <AC>

   ![Diagram](image4)

   - With indicator light (DZ, YZ)

   - With light/surge voltage suppressor (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>Without indicator light</th>
<th>SY100-61-1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With indicator light</td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>Voltage symbol</td>
<td>Part no.</td>
</tr>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-61-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>110 VAC</td>
<td>110 V</td>
<td>SY100-61-2-03</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
<td>SY100-61-2-04</td>
</tr>
</tbody>
</table>

DIN terminal (Y)

<table>
<thead>
<tr>
<th>Without indicator light</th>
<th>SY100-82-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>With indicator light</td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>Voltage symbol</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>
<td>200 V</td>
</tr>
<tr>
<td>110 VAC (115VAC)</td>
<td>110 V</td>
</tr>
<tr>
<td>220 VAC (230VAC)</td>
<td>220 V</td>
</tr>
</tbody>
</table>

Circuit diagram with light

<table>
<thead>
<tr>
<th>AC circuit diagram</th>
<th>DC circuit diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="AC circuit diagram" /></td>
<td><img src="image" alt="DC circuit diagram" /></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.