5 Port Solenoid Valve

Reduced power consumption:

0.55 W [With power saving circuit]
1.55 W [Standard]

(Conventional: 2.0 W) [With DC light]

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

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

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

Electrical power waveform with power saving circuit

- Energy saving
- Standard

Series VF1000/3000/5000

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

Low wattage specification added
VF1000/3000
Power consumption
0.35 W (Without light)
0.4 W (With light)
### Series VF1000/3000/5000

#### Model Selection by Operating Conditions

**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>Grommet</td>
<td>DC With surge voltage suppressor</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 VDC</td>
<td>M-type plug connector</td>
<td>With light/surge voltage suppressor</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, 200 VAC</td>
<td>DIAN (EN1753 01-803) terminal</td>
<td>With surge voltage suppressor (Non-polar)</td>
<td>Push-turn locking lever type</td>
</tr>
</tbody>
</table>

**New**

Low wattage specification

Power consumption: 0.35 W (Without light) 0.4 W (With light)
### Model Selection by Operating Conditions ②

#### Manifold

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable valve</th>
<th>Applicable stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>Common EXH</td>
<td>VV5F1-30</td>
<td>VF1□30 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>VF3000</td>
<td>Common EXH</td>
<td>VV5F3-30</td>
<td>VF3□30 VF3□33</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td>VF5000</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></td>
<td>VV5F5-21</td>
<td></td>
<td>2 to 15 stations</td>
</tr>
<tr>
<td>VF3000</td>
<td>Common EXH</td>
<td>VV5F3-40</td>
<td>VF3□40 VF3□43</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td>VF5000</td>
<td>Common EXH</td>
<td>VV5F5-40</td>
<td>VF5□44</td>
<td>2 to 10 stations</td>
</tr>
</tbody>
</table>

---

**Series VF1000/3000/5000**

**Manifold**

**Model Selection by Operating Conditions**

**Body mounted**

**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>
<th>0.5 MPa = 73 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series CJ2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 60 mm</td>
</tr>
<tr>
<td>Series CM2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 300 mm</td>
</tr>
<tr>
<td>Series MB, CA2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 500 mm</td>
</tr>
<tr>
<td>Series CS1</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 1000 mm</td>
</tr>
<tr>
<td>VF1120-01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF3130-02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5120-03</td>
<td></td>
<td></td>
<td></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>
<th>0.5 MPa = 73 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series CJ2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 60 mm</td>
</tr>
<tr>
<td>Series CM2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 300 mm</td>
</tr>
<tr>
<td>Series MB, CA2</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 500 mm</td>
</tr>
<tr>
<td>Series CS1</td>
<td>Pressure 0.5 MPa</td>
<td>Load factor 50%</td>
<td>Stroke 1000 mm</td>
</tr>
<tr>
<td>VF3140-03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5144-04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* With ★: when using steel piping
# Cylinder Speed Chart

**Conditions**

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

## Body Ported

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Series CJ2</th>
<th>Series CM2</th>
<th>Series MB, CA2</th>
<th>Series CS1</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1120-01</td>
<td>T0604 x 1 m</td>
<td>T0806 x 1 m</td>
<td>AS3002F-06</td>
<td>AN101-01</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td></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>AS3002F-06</td>
<td>AN110-01</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS4002F-10</td>
<td>AN101-01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td></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>AS3002F-06</td>
<td>AN30-03</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS4002F-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td></td>
<td></td>
<td>AN30-03</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Series CS1</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>Series CJ2</th>
<th>Series CM2</th>
<th>Series MB, CA2</th>
<th>Series CS1</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3140-03</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>AS3002F-06</td>
<td>AN30-03</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS4002F-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td></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>AS3002F-06</td>
<td>AN40-04</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS4002F-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silencer</td>
<td></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>Series CS1</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**

**Series VF1000/3000/5000**

**Single Unit**

---

### Body Ported

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

<table>
<thead>
<tr>
<th>Body ported</th>
<th>VF 3 1 3 0 5 G 1-01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series</strong></td>
<td>1 VF1000 3 VF3000 5 VF5000</td>
</tr>
<tr>
<td><strong>Type of actuation</strong></td>
<td>1 2-position single 2 2-position double 3 3-position closed center 4 3-position exhaust center 5 3-position pressure center</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Only 1 and 2 are available with the VF1000.</td>
</tr>
</tbody>
</table>

#### Made to Order

- **VF1000**
  - Double type only
  - Not available with the VF5000.

#### Electrical entry

- **Grommet**
  - L-type plug connector
  - M-type plug connector
- **DIN terminal**
  - [IP65 compatible]
  - [IP65 compatible]
  - [IP65 compatible]
- **Conduit terminal**
  - Nil
  - T
  - With power saving circuit (DC only)

#### Pressure specifications

- Nil: Standard (102 psi (0.7 MPa))
- K: High-pressure type (145 psi (1 MPa))

#### Coil specifications

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

#### Rated voltage

- DC 24 VDC
- AC (50/60 Hz)
  - 5 100 VAC
  - 6 200 VAC

#### Manual override

- **X500**
  - Pilot exhaust port with piping thread (M3) specification (Refer to page 14.)
- **X600**
  - TRAC output specification (Refer to page 14.)

#### A, B port size

- **Symbol**
  - Port size: VF1000 VF3000 VF5000
- **Model**
  - M5 M5 x 0.8

#### Light/Surge voltage suppressor

- **Symbol**
  - Nil
  - S: Without surge voltage suppressor
  - Z: With surge voltage suppressor
  - R: With surge voltage suppressor (Non-polar)
  - U: With surge voltage suppressor (Non-polar)

#### Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 51 for details.
Specifications

<table>
<thead>
<tr>
<th>Specification</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</td>
<td>2-position single/3-position</td>
<td>2-position single/3-position</td>
<td>2-position single/3-position</td>
</tr>
<tr>
<td>High-pressure type</td>
<td>2-position double</td>
<td>2-position double</td>
<td>2-position double</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>VF1000</td>
<td>VF3000</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Response time (ms)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust</td>
<td>Individual exhaust</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td>Not required</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>30/50</td>
<td>30/50</td>
<td>30/50</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65)</td>
<td>Dustproof (IP65)</td>
<td>Dustproof (IP65)</td>
</tr>
</tbody>
</table>

Note: Made to Order (Refer to page 14 for details.)

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>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC 24, 12</td>
<td>AC (50/60 Hz) 24, 100, 110, 200, 220, 240</td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
<td>±10% of rated voltage</td>
<td></td>
</tr>
<tr>
<td>Power (W) consumption</td>
<td>DC 1.5 (With light: 1.55)</td>
<td>DC 1.5 (With light: 1.75)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC 1.5 (With light: 1.55)</td>
<td>AC 1.5 (With light: 1.75)</td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC 1.55 (With light: 1.65)</td>
<td>AC 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>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light is used for AC mode of D, Y, T)</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.
* 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, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.
24 VDC: –7% to +10%  12 VDC: –4% to +10%

Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Operating pressure range psi (MPa)</th>
<th>Without light/surge voltage suppressor</th>
<th>With light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>53</td>
</tr>
</tbody>
</table>

Note: Based on dynamic performance test, JIS B 8375-1981. ( Coil temperature: 68°F (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) Note 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1, 4, 2</td>
<td>4/2 → 5/3 (A/B → EA/EB)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P, A, B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5, 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EA, EB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/s (l/s)·bar] b Cv</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF1□20-M5</td>
<td>2-position</td>
<td>Single</td>
<td>1/4 M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.49 0.40 0.13 0.52 0.35 0.13</td>
<td>140 176</td>
</tr>
<tr>
<td>VF1□20-01</td>
<td>2-position</td>
<td>Single</td>
<td>1/8 M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.76 0.22 0.17 0.53 0.28 0.13</td>
<td>136 172</td>
</tr>
<tr>
<td>VF3□30-01</td>
<td>2-position</td>
<td>Single</td>
<td>1/8 1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.0 0.38 0.78 2.8 0.30 0.67</td>
<td>182 218</td>
</tr>
<tr>
<td>VF3□30-02</td>
<td>2-position</td>
<td>Single</td>
<td>1/4 1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.0 0.36 1.0 3.1 0.32 0.75</td>
<td>178 214</td>
</tr>
<tr>
<td>VF5□20-02</td>
<td>2-position</td>
<td>Single</td>
<td>1/4 1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.1 0.46 1.9 7.7 0.51 2.2</td>
<td>313 349</td>
</tr>
<tr>
<td>VF5□20-03</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></td>
<td></td>
<td>8.8 0.44 2.4 10.0 0.49 2.9</td>
<td>299 335</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) [ ] Normal position
Note 2) Values without bracket

(1 g = 0.035 oz)
**Construction: Body Ported**

### 2-position single

**Symbol**

2-position single

**VF1000**

```
    7 2 4
   (B) (A)
   1 3

VF3000
VF5000
```

**VF3000/5000**

```
    7 2 5
   (A) (B)
   1 3

VF1000
```

### 2-position double

**Symbol**

2-position single

**VF1000**

```
    7 2 4
   (B) (A)
   1 3

VF3000
VF5000
```

**VF3000/5000**

```
    7 2 5
   (A) (B)
   1 3

VF1000
```

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

**Symbol**

3-position closed center

```
   7 2 4
  (B) (A)
  1 3
```

3-position exhaust center

```
   7 2 4
  (B) (A)
  1 3
```

3-position pressure center

```
   7 2 4
  (B) (A)
  1 3
```

(Drawing shows a closed center type.)

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Adapter plate</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>End plate</td>
<td>Resin (VF313△-F: Aluminum die-casted)</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Spool valve</td>
<td>Aluminum, HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Pilot valve assembly</td>
<td>Refer to “How to Order Pilot Valve Assembly” on page 5.</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:  
\[
\begin{array}{c}
V & F & [\text{Valve Series}] & G & Z & [\text{Valve Type}] & 1 \\
\end{array}
\]

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

- **Grommet or L/M-type**

\[
\begin{array}{c}
V & 2 & 1 & 1 & - & 5 & G & Z \\
\end{array}
\]

- **DIN or Conduit type**

\[
\begin{array}{c}
V & 2 & 1 & 2 & - & 5 & G & Z \\
\end{array}
\]

- **Light/Surge voltage suppressor**

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

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 51 for details.

- **Electrical entry**

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

* LN and MN types are with 2 sockets.  
* Refer to page 49 when different length of lead wire for L/M-type plug connector is required.

- **Rated voltage**

<table>
<thead>
<tr>
<th>DC</th>
<th>24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (50/60 Hz)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100 VAC</td>
</tr>
<tr>
<td>2</td>
<td>200 VAC</td>
</tr>
<tr>
<td>3</td>
<td>110 VAC (115 VAC)</td>
</tr>
<tr>
<td>4</td>
<td>220 VAC (230 VAC)</td>
</tr>
<tr>
<td>7</td>
<td>240 VAC</td>
</tr>
<tr>
<td>B</td>
<td>24 VAC</td>
</tr>
</tbody>
</table>

**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: 0.24 lbf-ft (0.32 N·m)
Dimensions: Series VF1000/Body Ported

2-position single

Grommet (G) (H): VF1120-G□□1-M5□□(-F)

Grommet (G) (H): VF1120-H□□1-01□□(-F)

L-type plug connector (L): VF1120-L□□1-M5□□01□□(-F)

DIN terminal (D) (Y): VF1120-D□□1-M5□□01□□(-F)

M-type plug connector (M): VF1120-M□□1-M5□□01□□(-F)

Conduit terminal (T): VF1120-T□□1-M5□□01□□(-F)

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

Dimensions: Series VF1000/Body Ported

(mmm)

2-position double
Grommet (G) (H): VF1220-

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

Grommet (G) (H): VF1220-

DC without light/surge voltage suppressor

L-type plug connector (L): VF1220-

Approx. 300
(Lead wire length)

M-type plug connector (M): VF1220-

Approx. 300
(Lead wire length)

DIN terminal (D) (Y): VF1220-

Approx. 300

Conduit terminal (T): VF1220-

Approx. 600

M5 x 0.8
[5(EA), 3(EB) port]

M5 x 0.8, 1/8
[4(A), 2(B) port]

M5 x 0.8, 1/8
[1(P) port]

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

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

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

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

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

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

Approx. 300
(Lead wire length)

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

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

Max. 10

Applicable cable O.D. ø4.5 to ø7

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

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

Approx. 300
(Lead wire length)

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

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

Max. 10

Applicable cable O.D. ø4.5 to ø7

[ ] Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).
Series VF1000/3000/5000

Dimensions: Series VF3000/Body Ported

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

L-type plug connector (L): VF3230-

M-type plug connector (M): VF3230-

DIN terminal (D) (Y): VF3230-

Conduit terminal (T): VF3230-

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

3-position closed center/exhaust center/pressure center

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

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

L-type plug connector (L): VF3 \( \frac{3}{5} \) 30-□□□1-□□-01-□□-02 □

DIN terminal (D) (Y): VF3 \( \frac{3}{5} \) 30-□□□1-□□-01-□□-02 □

M-type plug connector (M): VF3 \( \frac{3}{5} \) 30-□□□1-□□-01-□□-02 □

Conduit terminal (T): VF3 \( \frac{3}{5} \) 30-□□□1-□□-01-□□-02 □

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

Dimensions: Series VF5000/Body Ported

2-position single

Grommet (G) (H): VF5120-□□□□□□

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

(Lead wire length)

Manaul override

2 x Ø4.3
(For mounting)

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

1/4, 3/8
[1(P), 5(EA), 3(EB) 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-□□□□□□

Approx. 300
(Lead wire length)

DIN terminal (D) (Y): VF5220-□□□□□□

Max. 10

Applicable cable O.D.
Ø4.5 to Ø7

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

Max. 10

Applicable cable O.D.
Ø4.5 to Ø7

Conduit terminal (T): VF5120-□□□□□□

Max. 10

(Applicable cable O.D.
Ø4.5 to Ø7

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

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

- Approx. 300
- Approx. 600

(Lead wire length)

183.3
106.4
(28.2)
(Indicator light)

1/4, 3/8
2 x ø4.3
[4(A), 2(B) port]

Manual override

44
28

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

1/4, 3/8
2 x ø2.3
(PE port)

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

- Approx. 300
- Approx. 600

(Lead wire length)

186.7
100.6

3 x ø4.3
(For mounting)

L-type plug connector (L): VF5220

- Approx. 300

(Lead wire length)

196

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

M-type plug connector (M): VF5220

- Approx. 300

(Lead wire length)

179.2
169

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

DIN terminal (D) (Y): VF5220

Max. 10

Applicable cable O.D.
ø4.5 to ø7

Conduit terminal (T): VF5220

Max. 10

Applicable cable O.D.
ø4.5 to ø7
Series VF1000/3000/5000

Dimensions: Series VF5000/Body Ported

(3mm)

3-position closed center/exhaust center/pressure center

Grommet (G) (H):VF5 \( \frac{3}{5} \) 20-□ □ □ 1-□ 02□

G: Approx. 300
H: Approx. 600

(Lead wire length)

L-type plug connector (L):VF5 \( \frac{3}{5} \) 20-L □ □ □ 1-02□

DIN terminal (D) (Y): VF5 \( \frac{3}{5} \) 20-□ □ □ 1-02□

M-type plug connector (M):VF5 \( \frac{3}{5} \) 20-M □ □ □ 1-02□

Conduit terminal (T):VF5 \( \frac{3}{5} \) 20-T □ □ □ 1-02□

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

<table>
<thead>
<tr>
<th>Series</th>
<th>1</th>
<th>3</th>
<th>0</th>
<th>1-</th>
<th>-</th>
<th>-</th>
<th>X500</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VF1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>VF3000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Entry is the same as standard products.**
- **Body model**
  - Symbol: VF1000, VF3000, VF5000
  - 2: ○ --- ○
  - 3: --- ○ ---
  - Note: Not available for the base mounted type.

**2-position single**

**2-position double**

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

**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**

<table>
<thead>
<tr>
<th>Series</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>34.5</td>
<td>4.2</td>
<td>33.4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>VF3000</td>
<td>60</td>
<td>4.2</td>
<td>59</td>
<td>29.5</td>
<td>45.5</td>
</tr>
<tr>
<td>VF5000</td>
<td>95</td>
<td>3.45</td>
<td>89</td>
<td>44.5</td>
<td>63.5</td>
</tr>
</tbody>
</table>
Pilot Operated 5 Port Solenoid Valve

Series VF3000/5000

Single Unit

How to Order Valve

Base mounted (VF1000: Not available)

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

Pressure specifications

- Nil: Standard 102 psi (0.7 MPa)
- K: High-pressure type 145 psi (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 51 for details.)

VF3000 VF5000

PE port EA/EB port

VF3000 VF5000

PE port EA/EB port

VF3000 VF5000

PE port

Pressure specifications

- Nil: Standard 102 psi (0.7 MPa)
- K: High-pressure type 145 psi (1 MPa)

Coil specifications

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

Rated voltage

- DC: 24 VDC
- AC (50/60 Hz): 12 VDC

Electrical entry

<table>
<thead>
<tr>
<th>Symbol</th>
<th>L-type plug connector</th>
<th>M-type plug connector</th>
<th>DIN terminal (EN175301-803) terminal</th>
<th>Conduit terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>LN: Without lead wire</td>
<td>MN: Without lead wire</td>
<td>IP65 compatible (IP65 compatible)</td>
<td>IP65 compatible</td>
</tr>
<tr>
<td>H</td>
<td>LN: Without lead wire</td>
<td>MN: Without lead wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LO: Without connector</td>
<td>MO: Without connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DO: Without connector</td>
<td>YO: Without connector</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grommet

- G: Lead wire length 300 mm
- H: Lead wire length 600 mm

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)

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 51 for details.

- LN and MN types are with 2 sockets.
- Refer to page 49 when different length of lead wire for L/M-type plug connector is required.
- Refer to page 50 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) When using IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.
### 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 range</td>
<td>2-position single/3-position</td>
<td>2-position double</td>
</tr>
<tr>
<td>High-pressure type</td>
<td>2-position single/3-position</td>
<td>2-position double</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-position single/3-position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>14 to 144°F (–10 to 50°C) (No freezing)</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double</td>
<td>3-position</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td></td>
<td>Push-turn locking lever type</td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust, Main/ Pilot valve common exhaust</td>
<td>Pilot valve base exhaust</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>Note)</td>
<td>300/50</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65* for D, Y, T)</td>
<td></td>
</tr>
</tbody>
</table>

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 68°F (20°C), at rated voltage)

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>M-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D)</th>
<th>DIN (EN175301-803) terminal (Y)</th>
<th>Condut terminal (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC</td>
<td>24, 12</td>
<td>AC (50/60 Hz)</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With power saving circuit</td>
<td>0.55 (With light only)</td>
<td>0.75 (With light only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC</td>
<td>24 V</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 V</td>
<td>1.55 (With light: 1.65)</td>
<td>1.55 (With light: 1.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (Non-polar type: Varistor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light is used for AC mode of D, Y, T)</td>
<td></td>
<td></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.

**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, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.**
24 VDC: –7% to +10% 12 VDC: –4% to +10%

### Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Operating range psi (MPa)</th>
<th>Without light/surge voltage suppressor</th>
<th>With light/surge voltage suppressor</th>
<th>Response time (ms) (at 73psi (0.5 MPa))</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>45</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>48</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>Standard</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position</td>
<td>Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>Standard</td>
<td>15 to 102 (0.1 to 0.7)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>High-pressure type</td>
<td>15 to 145 (0.1 to 1.0)</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 68°F (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&lt;sup&gt;Note 1&lt;/sup&gt;</th>
<th>Weight (g)&lt;sup&gt;Note 2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 → 4/2 (P → A/B)</td>
<td>4/2 → 5/3 (A/B → EA/EB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/s (s-bar)]</td>
<td>b</td>
</tr>
<tr>
<td>VF3□40-02</td>
<td>2-position</td>
<td>1/4</td>
<td>2.8</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.8</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.1</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.3</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.9</td>
<td>0.16</td>
</tr>
<tr>
<td>VF3□40-03</td>
<td>2-position</td>
<td>3/8</td>
<td>3.1</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.1</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.6</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.4</td>
<td>0.29</td>
</tr>
<tr>
<td>VF5□44-02</td>
<td>2-position</td>
<td>1/4</td>
<td>7.3</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.3</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6.6</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.4</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.0</td>
<td>0.35</td>
</tr>
<tr>
<td>VF5□44-03</td>
<td>2-position</td>
<td>3/8</td>
<td>8.4</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.4</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.3</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.1</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.1</td>
<td>0.30</td>
</tr>
<tr>
<td>VF5□44-04</td>
<td>2-position</td>
<td>1/2</td>
<td>9.4</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9.4</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.1</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.6</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.0</td>
<td>0.18</td>
</tr>
</tbody>
</table>

<sup>Note 1</sup> | []: Normal position
<sup>Note 2</sup> | ( ): Values without sub-plate
Pilot Operated 5 Port Solenoid Valve
Base Mounted/Single Unit
Series VF3000/5000

Construction: Base Mounted

VF3000/5000

2-position single

2-position double

3-position closed center/exhaust center/pressure center

(Drawing shows a closed center type.)

Sub-plate part no.

VF 3000 – 71– 1

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Adapter plate</td>
<td>Resin</td>
<td>Gray</td>
</tr>
<tr>
<td>3</td>
<td>End plate</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Spool valve</td>
<td>Aluminum, HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Pilot valve assembly</td>
<td>Refer to “How to Order Pilot Valve Assembly” on page 19.</td>
<td>Built-in strainer</td>
</tr>
<tr>
<td>8</td>
<td>Gasket</td>
<td>DXT031-30-11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DXT156-9-8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Sub-plate</td>
<td>1/4: VF3000-71-1</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3/8: VF3000-71-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2: VF5000-71-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Round head combination screw (1 pc.)</td>
<td>DXT031-44-1 (M4 x 39.5, With spring washer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head cap screw (1 pc.)</td>
<td>AXT620-32-1 (M4 x 48, With spring washer)</td>
<td></td>
</tr>
</tbody>
</table>

Thread type

<table>
<thead>
<tr>
<th>Port size</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3/8</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>1/2</td>
<td>―</td>
<td>○</td>
</tr>
</tbody>
</table>

Caution

Tightening Torque for Mounting Valve
M4: 10.3 lbf-ft (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:  

V211, V212

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

- **Grommet or L/M-type**

- **DIN or Conduit type**

**Pressure specifications**

- Nil: Standard (102 psi (0.7 MPa))
- K: High-pressure type (145 psi (1 MPa))

**Coil specifications**

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

**Rated voltage**

- **DC**
  - 5: 24 VDC
  - 6: 12 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

**Light/Surge voltage suppressor**

<table>
<thead>
<tr>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil: Without light/surge voltage suppressor</td>
<td>O</td>
</tr>
<tr>
<td>S: With surge voltage suppressor</td>
<td>O</td>
</tr>
<tr>
<td>Z: With light/surge voltage suppressor</td>
<td>O</td>
</tr>
<tr>
<td>R: With surge voltage suppressor (Non-polar)</td>
<td>O</td>
</tr>
<tr>
<td>U: With light/surge voltage suppressor (Non-polar)</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 51 for details.

**Electrical entry**

- **G**: Grommet (Lead wire length 300 mm)
- **H**: Grommet (Lead wire length 600 mm)
- **L**: L-type plug connector
  - With lead wire
  - Without lead wire
- **LN**: Without connector
- **LO**: Without connector
- **M**: M-type plug connector
  - With lead wire
  - Without lead wire
- **MN**: Without connector
- **MO**: Without connector

* LN and MN types are with 2 sockets.
* Refer to page 49 when different length of lead wire for L/M-type plug connector is required.

**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: 0.24 lbf-ft (0.32 N-m)
Dimensions: Series VF3000/Base Mounted

2-position single

Grommet (G) (H): VF3140-GH1-02

L-type plug connector (L): VF3140-L1-02

M-type plug connector (M): VF3140-M1-02

DIN terminal (D) (Y): VF3140-DY1-02

Conduit terminal (T): VF3140-T1-02

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

Dimensions: Series VF3000/Base Mounted

2-position double

Grommet (G) (H): VF3240-G H 1-02 03

L-type plug connector (L): VF3240-L 1-02 03

DIN terminal (D) (Y): VF3240-D Y 1-02 03

M-type plug connector (M): VF3240-M 1-02 03

Conduit terminal (T): VF3240-T 1-02 03

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: Series VF3000/Base Mounted

3-position closed center/exhaust center/pressure center

**Grommet (G) (H): VF3 40-□□□□□□□□□□□□□□□□□□□□□□**

- Approx. 300 (Lead wire length)
- Approx. 600

**Indicator light**

**Manual override**

**2 x PE port**

1/4, 3/8

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

**L-type plug connector (L): VF3 3□□□□□□□□□□□□□□□□□□□□**

- Approx. 300 (Lead wire length)

**DIN terminal (D) (Y): VF3 3□□□□□□□□□□□□□□□□□□□□**

- Max. 10
- 179.6

- Applicable cable O.D.
- ø4.5 to ø7

**Conduit terminal (T): VF3 3□□□□□□□□□□□□□□□□□□□□**

- Max. 10
- 184.4

- Applicable cable O.D.
- ø4.5 to ø7

- [ ] Without indicator light

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

### Manual override

- 2 x ø5.3 (2 x ø6.5) (For mounting)

### Grommet (G) (H): VF5144-

- DC without light/surge voltage suppressor
- Approx. 300
- Approx. 600

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

**Series VF3000/5000**

**Dimensions: Series VF5000/Base Mounted**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet (G) (H)</td>
<td></td>
<td>2-position single</td>
</tr>
<tr>
<td>L-type plug connector (L)</td>
<td>148.5</td>
<td>Unless otherwise indicated, dimensions are the same as Grommet (G).</td>
</tr>
<tr>
<td>M-type plug connector (M)</td>
<td>140.1</td>
<td>Unless otherwise indicated, dimensions are the same as Grommet (G).</td>
</tr>
<tr>
<td>DIN terminal (D) (Y)</td>
<td></td>
<td>149</td>
</tr>
<tr>
<td>Conduit terminal (T)</td>
<td>151.4</td>
<td>unless otherwise indicated, dimensions are the same as Grommet (G).</td>
</tr>
</tbody>
</table>
Dimensions: Series VF5000/Base Mounted (mm)

2-position double

Grommet (G) (H): VF5244- [4(A), 2(EA), 3(EB) port] 02 03 04

L-type plug connector (L): VF5244- 02 03 04

M-type plug connector (M): VF5244- 02 03 04

DIN terminal (D) (Y): VF5244- 02 03 04

Conduit terminal (T): VF5244- 02 03 04

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

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

The dimensions in ( ) are for 1/2 piping port size.
**Series VF3000/5000**

### Dimensions: Series VF5000/Base Mounted

#### (mm)

3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF5 3 44-□ 1-03 □

<table>
<thead>
<tr>
<th>L-type plug connector (L): VF5 3 44-L□ 1-03 □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. 300</td>
</tr>
<tr>
<td>(Lead wire length)</td>
</tr>
<tr>
<td>215</td>
</tr>
<tr>
<td>51.3</td>
</tr>
<tr>
<td>(55)</td>
</tr>
<tr>
<td>71</td>
</tr>
<tr>
<td>(67)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>DIN terminal (D) (Y): VF5 3 44-Y□ 1-03 □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 10</td>
</tr>
<tr>
<td>216</td>
</tr>
<tr>
<td>114</td>
</tr>
<tr>
<td>(118)</td>
</tr>
<tr>
<td>105</td>
</tr>
<tr>
<td>(109)</td>
</tr>
<tr>
<td>71.5</td>
</tr>
<tr>
<td>(67.5)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>M-type plug connector (M): VF5 3 44-M□ 1-03 □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. 300</td>
</tr>
<tr>
<td>(Lead wire length)</td>
</tr>
<tr>
<td>198.2</td>
</tr>
<tr>
<td>(134.5)</td>
</tr>
<tr>
<td>57.5</td>
</tr>
<tr>
<td>(53.5)</td>
</tr>
<tr>
<td>62.6</td>
</tr>
<tr>
<td>(58.6)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Conduit terminal (T): VF5 3 44-T□ 1-03 □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 10</td>
</tr>
<tr>
<td>220.8</td>
</tr>
<tr>
<td>118.2 (138.2)</td>
</tr>
<tr>
<td>(132.2)</td>
</tr>
<tr>
<td>105.2 (125.2)</td>
</tr>
<tr>
<td>(120.2)</td>
</tr>
<tr>
<td>73.9</td>
</tr>
<tr>
<td>(69.9)</td>
</tr>
</tbody>
</table>

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

**Series VF1000/3000**

**Single Unit**

How to Order Valve

**VF**

1  VF1000  
2  VF1000 Base mounted  
3  VF3000  
4  VF3000 Base mounted  

**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.

**Body model**

<table>
<thead>
<tr>
<th>Mountable manifold</th>
<th>30</th>
<th>31</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>2: VF1000 Body ported</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3: VF1000 Base mounted</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4: VF3000 Body ported</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5: VF3000 Base mounted</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note 1) Refer to page 30.
Note 2) Refer to page 41.

**Body option**

0: Pilot valve individual exhaust

PE port EA/EB port

2: Main/Pilot valve common exhaust

PE port EA/EB port

**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.

**Thread type**

- Nil
- Rc, MS
- F
- G
- N
- NPT
- T
- NPTF

**Bracket**

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

**<Body ported> Sub-plate port size**

- Nil: Without sub-plate
- 02: Port size: 1/4
- 03: Port size: 3/8

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

- Nil: Without sub-plate
- 02: Port size: 1/4
- 03: Port size: 3/8

**Thread type**

- Nil
- Rc, MS
- F
- G
- N
- NPT
- T
- NPTF

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

- M5: M5 x 0.8 (VF1000)
- 01: 1/8 (VF1000, VF3000)
- 02: 1/4 (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) | D and Y are not available |
| U | With surge voltage suppressor (DC only, Non-polar) | D and Y are not available |
| S | With surge voltage suppressor (DC only) | — |
| Z | With light/surge voltage suppressor | DOZ and YOZ are not available |

**Electrical entry**

<table>
<thead>
<tr>
<th>24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC</th>
<th>24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Lead wire length 300 mm</td>
<td>G: Lead wire length 300 mm</td>
</tr>
<tr>
<td>L: Lead wire length 300 mm</td>
<td>L: Lead wire length 300 mm</td>
</tr>
<tr>
<td>M: With lead wire (length 300 mm)</td>
<td>M: With lead wire (length 300 mm)</td>
</tr>
<tr>
<td>H: Lead wire length 600 mm</td>
<td>H: Lead wire length 600 mm</td>
</tr>
<tr>
<td>LN: Without lead wire</td>
<td>LN: Without lead wire</td>
</tr>
<tr>
<td>LO: Without connector</td>
<td>LO: Without connector</td>
</tr>
<tr>
<td>MO: Without connector</td>
<td>MO: Without connector</td>
</tr>
<tr>
<td>DO: Without connector</td>
<td>DO: Without connector</td>
</tr>
<tr>
<td>YO: Without connector</td>
<td>YO: Without connector</td>
</tr>
</tbody>
</table>

**Rated voltage**

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

**CE compliant**

- DC: CE compliant
- AC: CE compliant

* LN and MN types are with 2 sockets.
* Y type DIN terminal complies with EN-175301-803C (former DIN 43650C). Refer to page 50 for details.
* When using IP65, select the main/pilot valve common exhaust type. (Except VF1000)
Series VF1000/3000

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VF1000</th>
<th>VF3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Internal pilot operating pressure range</td>
<td>2-position single/3-position 22 to 102 psi (0.15 to 0.7 MPa)</td>
<td>2-position double 15 to 102 psi (0.1 to 0.7 MPa)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>14 to 122°F (–10 to 50°C) (No freezing)</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double 5</td>
<td>3-position 3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking slotted type</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) (Rms)</td>
<td>150/30</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65)</td>
<td></td>
</tr>
</tbody>
</table>

* Based on IEC 60529.

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

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D), (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC</td>
<td>AC (50/60 Hz)</td>
<td>DC</td>
<td>DIN terminal (D), (Y)</td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>24, 12</td>
<td>100, 110, 200, 220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC</td>
<td>Standard</td>
<td>0.35 (With light: 0.4 (With light of DIN terminal: 0.45))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC</td>
<td>100 V</td>
<td>0.78 (With light: 0.81)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>110 V [115 V]</td>
<td>0.86 (With light: 0.89)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 V</td>
<td>1.18 (With light: 1.22)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>220 V [230 V]</td>
<td>1.30 (With light: 1.34)</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.

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

Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Response time (ms) (at 73 psi (0.5 MPa))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Without light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S, Z type</td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position single</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>12</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position single</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>100</td>
</tr>
</tbody>
</table>
Low Wattage Specification
Body Ported/Base Mounted/Single Unit Series VF1000/3000

Dimensions
VF1000

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

<table>
<thead>
<tr>
<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>42 (AC)</td>
<td>53.1 (AC)</td>
<td>Max. 10</td>
</tr>
<tr>
<td>19.6</td>
<td>46.1</td>
<td>52.1</td>
</tr>
<tr>
<td>45.3</td>
<td>30.5</td>
<td>30</td>
</tr>
<tr>
<td>47.5</td>
<td>35.5</td>
<td>(AC)</td>
</tr>
<tr>
<td>(AC)</td>
<td>(AC)</td>
<td>Pg7</td>
</tr>
<tr>
<td>(AC)</td>
<td>37.7</td>
<td></td>
</tr>
</tbody>
</table>

Applicable cable O.D.:
ø3.5 to ø7

Series VF1000/3000

G: Approx. 300
H: Approx. 600

Distance between ports:
11.7 (mm)

A, B port size: M5 x 0.8

Manual override

Sensor port

Indicator light

For mounting

180°

M5 x 0.8

E type

A, B port sizes:
M5 x 0.8

PE port

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

11.5, 12

(1/8"

[M5 x 0.8 [4(EA), 3(EB) port]

35

11.8

12

30

2 x Ø5.5 (For mounting)

2 x M4 x 0.7 thread depth 5 (For mounting)

ø2.3 (PE port)

G: Approx. 300
H: Approx. 600

(Lead wire length)

Distance between ports:
11.7 (mm)

A, B port size: M5 x 0.8

Manual override

Sensor port

Indicator light

For mounting

180°

M5 x 0.8

E type

A, B port sizes:
M5 x 0.8

PE port

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

11.5, 12

(1/8"

[M5 x 0.8 [4(EA), 3(EB) port]

35

11.8

12

30

2 x Ø5.5 (For mounting)

2 x M4 x 0.7 thread depth 5 (For mounting)

ø2.3 (PE port)
How to Order Valve (With a gasket and two mounting screws)

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

- **Series**:
  1. VF1000
  2. VF3000
  3. VF5000

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

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

- **Rated voltage**:
  - **50/60 Hz**
  - **24 VDC**: 100 VAC
  - **12 VDC**: 200 VAC
  - **110 VAC**: 200 VAC

- **Body model**:
  - VF1000
  - VF3000
  - VF5000

- **Pressure specifications**:
  - **Nil**: Standard
  - **K**: High-pressure type (145 psi (1 MPa))

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

- **Light/Surge voltage suppressor**:
  - **Nil**: Standard
  - **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)

- **Made to order**:
  - Refer to page 14 for details.

**How to Order Manifold**

**VVF 1 - 30 - 04 1**

- **Series**:
  1. VF1000
  2. VF3000
  3. VF5000

- **Manifold model**:
  - 30: 1/8
  - 20: 3/8
  - 21: 1/2

- **Thread type**:
  - Nil: Rc
  - 00F: G
  - 00N: NPT
  - 00T: NPTF

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

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

**How to Order Valve**

- For low wattage specification, refer to “How to Order Valve” on page 26.

**VF1000/3000/5000**

- **Series**:
  1. VF1000
  2. VF3000
  3. VF5000

- **Manifold only**.

- **Electrical entry**:
  - **DP65 compatible**
  - **IP65 compatible**

- **Grommet**
  - L-type plug connector
  - M-type plug connector

- **DIN terminal**
  - **DIN (EN175301-803) terminal**

- **Conduit terminal**
  - **DO**
  - **YO**

- **Caution**
  - When using the surge voltage suppressor type, residual voltage will remain. Refer to page 51 for details.

- LN and MN types are with 2 sockets.
- Refer to page 49 when different length of lead wire for L-M type plug connector is required.
- Refer to page 50 for details on the DIN (EN175301-803) terminal.
- When using IP65, select the main/pilot valve common exhaust type.
- With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.
**Manifold Specifications**

**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)**
- VV5F3-30-051

---

**How to Order Manifold Assembly**

- **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)

---

**Table**

<table>
<thead>
<tr>
<th>Series</th>
<th>VF1000</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold base model</td>
<td>VV5F1-30</td>
<td>VV5F3-30</td>
<td>VV5F5-21</td>
</tr>
<tr>
<td>EXH port type</td>
<td>Common EXH</td>
<td>Individual EXH</td>
<td>Common EXH</td>
</tr>
<tr>
<td>Applicable valve model</td>
<td>VF1□30</td>
<td>VF3□30</td>
<td>VF5□20</td>
</tr>
<tr>
<td>Applicable stations</td>
<td>2 to 20 stations</td>
<td>2 to 20 stations</td>
<td>2 to 10 stations</td>
</tr>
<tr>
<td>Manifold base model</td>
<td>VV5F1-31</td>
<td>VV5F5-20</td>
<td></td>
</tr>
<tr>
<td>Weight: W [g]</td>
<td>W = 29n + 21</td>
<td>W = 51n + 35</td>
<td>W = 63n + 64</td>
</tr>
<tr>
<td>Stations: n</td>
<td></td>
<td></td>
<td>W = 97n + 80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W = 139n + 550</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).

---

**Warning**

- **Caution**

**Tightening Torque for Mounting Screw**

- **M4**: 1.03 lbf·ft (1.4 N·m)

---

**Manifold Options**

- **Blanking plate assembly**
  - VF1000: DXT144-13-3A
  - VF3000: DXT031-38-5A
  - VF5000: VF5000-70-1A

---

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.

---

**Valve mounting screw**

- **Round head combination screw**
  - DXT031-44-1 (M4 x 39.5, With spring washer)
  - DXT144-12-2
  - DXT155-25-7
  - DXT156-9-6

- **Hexagon socket head cap screw**
  - AXT620-32-1 (M4 x 48, With spring washer)
  - DXT156-9-6

---

**Valve model**

- **VF1□30**
- **VF3□30**
- **VF5□20**

---

**Port size**

- **VF1□30**: 1/8
- **VF3□30**: 1/8, 1/4
- **VF5□20**: 3/8

---

**Thread type**

- **VF1□30**: Nil
- **VF3□30**: F
- **VF5□20**: Rc

---

**Symbol**

- **VF1□30**: N
- **VF3□30**: NPT
- **VF5□20**: NPTF

---

**Weight of manifold**

- **VF1□30**: W = 29n + 21
- **VF3□30**: W = 51n + 35
- **VF5□20**: W = 63n + 64

---

**Weight of manifold base model**

- **VF1□30**: W = 97n + 80
- **VF3□30**: W = 139n + 550

---

**Stations**

- **VF1□30**: 2 to 20 stations
- **VF3□30**: 2 to 20 stations
- **VF5□20**: 2 to 10 stations

---

**Stations**

- **VF1□30**: 2 to 15 stations
- **VF3□30**: 2 to 15 stations
- **VF5□20**: 2 to 15 stations

---

**Applicable valve model**

- **VF1□30**
- **VF3□30**
- **VF5□20**

---

**Applicable stations**

- **VF1□30**: 2 to 20 stations
- **VF3□30**: 2 to 20 stations
- **VF5□20**: 2 to 10 stations

---

**Applicable stations**

- **VF1□30**: 2 to 15 stations
- **VF3□30**: 2 to 15 stations
- **VF5□20**: 2 to 15 stations

---

**Series**

- **VF1□30**
- **VF3□30**
- **VF5□20**
Manifold Options

For body ported
- Blanking plate assembly

Mounting screw, gasket part no.

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

Individual EXH spacer assembly

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

VF [Series] 75-1A

<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>

Thread type

- Nil
- Rc
- NPT
- NPTF
- F
- G

Caution

Tightening Torque for Mounting Screw
M4: 1.03 lbf·ft (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 VF1000/3000/5000

Dimensions: Series VF1000

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

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

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

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

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

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

Type 31/VV5F1-31-□□□3-□: Individual exhaust

Grommet (G) (H)

DC without light/
surge voltage suppressor

Grommet (G) (H)

Manual override

(Station 1) ......... (Station n)

L: Dimensions

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>3</th>
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<td>74.5</td>
<td>102</td>
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<td>477</td>
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<td>532</td>
<td>559.5</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

Approx. 300
(Lead wire length)

DIN terminal (D) (Y)

Applicable cable
O.D.
ø4.5 to ø7

Conduit terminal (T)

Applicable cable
O.D.
ø4.5 to ø7

L-type plug connector (L)

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

Dimensions: Series VF3000

Type 30/VV5F3-30-□□□1-□: Common exhaust

Grommet (G) (H)

DIN terminal (D) (Y)

Conduit terminal (T)

L: Dimensions

<table>
<thead>
<tr>
<th>L</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
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<td>L2</td>
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<td>181.5</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>
</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).
Dimensions: Series VF3000

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

Grommet (G) (H)

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

L-type plug connector (L)

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

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).
Series VF1000/3000/5000

Dimensions: Series VF5000 (mm)

Type 20/VV5F5-20-□□1-□□□: Common exhaust

Grommet (G)

1/4, 3/8

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

L: Dimensions

<table>
<thead>
<tr>
<th>n</th>
<th>L1</th>
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<td>311</td>
</tr>
<tr>
<td>10</td>
<td>357</td>
<td>344</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

Approx. 300 (Lead wire length)

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

DIN terminal (D) (Y)

Max. 10

Applicable cable O.D. ø4.5 to ø7

Conduit terminal (T)

Max. 10

Applicable cable O.D. ø4.5 to ø7

Grommet (G) (H)

DC without light/
surge voltage suppressor

L-type plug connector (L)

Approx. 300 (Lead wire length)

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

Pilot Operated 5 Port Solenoid Valve

Manual override

(Indicator light)

(Station 1)
Dimensions: Series VF5000

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

Grommet (G)

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

L: Dimensions

<table>
<thead>
<tr>
<th>L1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>L2</td>
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<td>212</td>
<td>245</td>
<td>278</td>
<td>311</td>
<td>344</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

Max. 10
(Indicator light)

DIN terminal (D) (Y)

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

Conduit terminal (T)

Max. 10
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).

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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).
**Series VF1000/3000/5000**

**Dimensions: Series VF5000** (mm)

Type 21/VVF5-21-□□1-□: 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).
Dimensions: Series VF5000

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

Grommet (G)

L: Dimensions

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>L1</td>
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<td>229</td>
<td>262</td>
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<td>361</td>
<td>394</td>
<td>427</td>
<td>460</td>
<td>493</td>
<td>526</td>
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<td>L2</td>
<td>128</td>
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</table>

L-style plug connector (L)

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).

Approx. 300 (Lead wire length)
Pilot Operated 5 Port Solenoid Valve
Series VF3000/5000
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.

Series

| 
| --- |
| 3  | VF3000 |
| 5  | VF5000 |

* Not available with the VF1000.

Type of actuation

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

Made to Order

Refer to page 14 for details. Combination with low wattage specification is not possible.

Pressure specifications

- Nil: Standard (102 psi (0.7 MPa))
- K: High-pressure type (145 psi (1 MPa))

Rated voltage

DC: 12 VDC
AC: 50/60 Hz
- S: 24 VDC
- 1: 100 VAC
- 2: 200 VAC
- 3: 110 VAC (115 VAC)
- 4: 220 VAC (230 VAC)
- 240 VAC
- 24 VAC

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)

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 51 for details.

Electrical entry

- LN and MN types are with 2 sockets. Refer to page 49 when different length of lead wire for L/M-type plug connector is required.
- Refer to page 50 for details on the DIN (EN175301-803) terminal.

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

* CE 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>Weight: W [g]</th>
<th>Stations: n</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VV5F3-40</td>
<td>Common EXH</td>
<td>VF3340-5GZ1</td>
<td>2 to 20 stations</td>
<td>W = 110n + 116</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VF3240-5GZ1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VF3140-5GZ1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VF3000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VV5F5-40</td>
<td>Common EXH</td>
<td>VF5344</td>
<td>2 to 10 stations</td>
<td>W = 161n + 128</td>
<td></td>
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<tr>
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<td></td>
<td></td>
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<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**
- 1 set (Type 40, 5-station manifold base part no.)
- VF3140-5GZ1 (3 sets)
- VF3240-5GZ1 (1 set)
- VF3340-5GZ1 (1 set)

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 base mounted
  - Blanking plate assembly

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

- Individual EXH spacer assembly

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

**Warning**

- Tightening Torque for Mounting Screw
  - M4: 1.03 lbf-ft (1.4 N·m)

**Caution**

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

Type 40/VV5F3-40-□-□-□-□-□-□: Common exhaust

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).
Type 40/VV5F3-40-□□-2-02□: When the individual EXH spacer (VF3000-75-2A) is mounted.

Grommet (G) (H)

Dimensions: Series VF3000

L: Dimensions

<table>
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<tr>
<th>n</th>
<th>2</th>
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<td>413.5</td>
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<tr>
<td>L2</td>
<td>71.5</td>
<td>99</td>
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<td>154</td>
<td>181.5</td>
<td>209</td>
<td>236.5</td>
<td>264</td>
<td>291.5</td>
<td>319</td>
<td>346.5</td>
<td>374</td>
<td>401.5</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

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

Type 40/VV5F5-40[n-2-02]: Common exhaust

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>
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<th>10</th>
</tr>
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<tbody>
<tr>
<td>L1</td>
<td>93</td>
<td>126</td>
<td>159</td>
<td>192</td>
<td>225</td>
<td>258</td>
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<td>357</td>
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<tr>
<td>L2</td>
<td>80</td>
<td>113</td>
<td>146</td>
<td>179</td>
<td>212</td>
<td>245</td>
<td>278</td>
<td>311</td>
<td>344</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

Approx. 300
(Lead wire length)

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

**Grommet (G) (H)**

DC without light/
surge voltage suppressor

L-type plug connector (L)

Approx. 300
(Lead wire length)

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

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

Max. 10

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

**Conduit terminal (T)**

Max. 10

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

**Caution**

**Dimensions: Series VF5000**

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

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

- L: Dimensions
  - n: Stations
  - L1
    - 2: 93
    - 3: 126
    - 4: 159
    - 5: 192
    - 6: 225
    - 7: 258
    - 8: 291
    - 9: 324
    - 10: 357
  - L2
    - 2: 80
    - 3: 113
    - 4: 146
    - 5: 179
    - 6: 212
    - 7: 245
    - 8: 278
    - 9: 311
    - 10: 344

- Approx. 300
  - (Lead wire length)

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

- Max. 10
  - Ø4.5 to Ø7
  - 134.5
  - 143.5

**Conduit terminal (T)**

- Max. 10
  - 134.7
  - 147.7

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

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

**Grommet (G) (H)**

- DC without light/
  - surge voltage suppressor

**1. Connector attachment/detachment**

- To detach a connector, remove the pawl from the groove by 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.
  - To detach a socket from a connector, pull out the lead wire while automatically.) Then, confirm that they are locked by pulling lightly (When they are pushed in, their hooks open and they are locked indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector.
  - Insert the sockets into the square holes of the connector (with +, – DC polarity indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector.

**2. Crimping lead wire and socket connection**

- For crimping lead wire length, do not enter the core wire crimping area. (Please contact SMC for tool. When this is done, take care that the coverings of the lead wires override. (0.07 lbf·ft (0.1 N·m))
- Do not apply excessive torque when turning the locking type manual override and other trouble such as air leakage, etc.
- Turning without first pushing it down can cause damage to the manual override.
- When locking the manual override on the push-turn locking type (D or E type), be sure to push it down before turning.
- Do not apply excessive torque when turning the locking type manual override.
  - After pushing down, turn in the direction of the arrow. If it is not turned, override. (0.07 lbf·ft (0.1 N·m))

**L: Dimensions**

- n: Stations
  - L1
    - 2: 93
    - 3: 126
    - 4: 159
    - 5: 192
    - 6: 225
    - 7: 258
    - 8: 291
    - 9: 324
    - 10: 357
  - L2
    - 2: 80
    - 3: 113
    - 4: 146
    - 5: 179
    - 6: 212
    - 7: 245
    - 8: 278
    - 9: 311
    - 10: 344

**Individual EXH spacer (VF5000-75-2A)**

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

**Manual override**

- (Indicator light)
### 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. (0.07 lbf·ft (0.1 N·m))

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

**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.

#### 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.
**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>How to Order Connector Assembly</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC : V200-30-4A-</td>
<td></td>
</tr>
<tr>
<td>100 VAC : V200-30-1A-</td>
<td></td>
</tr>
<tr>
<td>200 VAC : V200-30-2A-</td>
<td></td>
</tr>
<tr>
<td>Other AC voltages : V200-30-3A-</td>
<td></td>
</tr>
<tr>
<td>Without lead wire : V200-30-A</td>
<td></td>
</tr>
<tr>
<td>(With a connector and 2 sockets)</td>
<td></td>
</tr>
</tbody>
</table>

---

**How to Use DIN Terminal Connector**

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

**Caution**

**Connection**
1) Loosen the set screw and pull the connector out of the solenoid valve terminal block.
2) After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3) Loosen the terminal screws on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
4) 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
**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:

| 61 | D type |
| 63 | Y type |

*Rated voltage*

- **05**: 24 VDC
- **06**: 12 VDC
- **01**: 100/110 VAC [115 VAC]
- **02**: 200/220 VAC [230 VAC]
- **07**: 240 VAC

Note: For 24 VAC, the part no. is V200-63-5-B.

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

- **DC (□Z) circuit diagram**
  - LED: Light emitting diode
  - D: Protective diode
  - R: Resistor

- **AC (□Z) circuit diagram**
  - NL: Neon light
  - R: Resistor

- **DC (□U) circuit diagram**
  - LED: Light emitting diode
  - R: Resistor

**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.
3) Secure the cord by fastening the ground nut.

In the case of connecting wires, select cable/tire 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.
### Caution

**<DC>**

- **Polar type**
  - With surge voltage suppressor ([S])
  
  ![Diagram of Polar type with surge voltage suppressor]

- **Non-polar type**
  - With surge voltage suppressor ([R])
  
  ![Diagram of Non-polar type with surge voltage suppressor]

- Grommet or L/M-type plug connector
  - With light/surge voltage suppressor ([Z])
  
  ![Diagram of Grommet or L/M-type plug connector with light/surge voltage suppressor]

- DIN or Conduit terminal
  - With light/surge voltage suppressor ([J])
  
  ![Diagram of DIN or Conduit terminal with light/surge voltage suppressor]

**<AC>**

- S type is not available, since a rectifier prevents surge voltage generation.

  ![Diagram of S type with surge voltage suppressor]

- DIN or Conduit terminal
  - With light/surge voltage suppressor ([Z])
  
  ![Diagram of DIN or Conduit terminal with light/surge voltage suppressor]

**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 2 and 16.

**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. 47 V</td>
<td>Approx. 32 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.

---

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

---

#### Electrical power waveform of energy saving type

- 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 diagram]
## 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: Series KQ2H, KQ2S

<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>M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>VF1000</td>
<td>M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>VF1000</td>
<td>1/8</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>Type 30 manifold base</td>
<td>1(P), 5/3(R)</td>
<td>1/8</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 31 manifold base</td>
<td>1(P)</td>
<td>1/8</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
</tbody>
</table>

### Series VF3

<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>VF3000</td>
<td>1/8</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>1/4</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>VF3000</td>
<td>3/8</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</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>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/4</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
</tbody>
</table>

### Series VF5

<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>1/4</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>1/4</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>3/8</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>1/2</td>
<td>4(A), 2(B)</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>5(EA), 3(EB)</td>
<td>4(A), 2(B)</td>
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<tr>
<td>Type 20 manifold base</td>
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<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
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<tr>
<td>Type 21 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/2</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
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<tr>
<td></td>
<td>1(P), 5(R), 3(R)</td>
<td>3/8</td>
<td></td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
</tbody>
</table>
**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 0.07 lbf·ft (0.1 N·m)]

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

**Caution**

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

---

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

**Caution**

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

2. Crimping lead wire and socket connection
   Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.
   (Crimping tool: Part no. DXT170-75-1)

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.
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

<table>
<thead>
<tr>
<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>12 V</td>
<td>SY100-61-3-06</td>
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<tr>
<td>100 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>200 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>110 V</td>
<td>SY100-61-2-03</td>
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<tr>
<td>220 V</td>
<td>SY100-61-2-04</td>
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<table>
<thead>
<tr>
<th>Voltage symbol</th>
<th>Part no.</th>
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<tbody>
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<td>24 V</td>
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<td>220 V</td>
<td>SY100-62-2-04</td>
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</table>

DIN Connector Part No.

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<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
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<tr>
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<td>SY100-81-6</td>
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<tr>
<td>100 V</td>
<td>SY100-81-2-01</td>
</tr>
<tr>
<td>200 V</td>
<td>SY100-81-2-02</td>
</tr>
<tr>
<td>110 V</td>
<td>SY100-81-2-03</td>
</tr>
<tr>
<td>220 V</td>
<td>SY100-81-2-04</td>
</tr>
</tbody>
</table>

How to Use DIN Terminal

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

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

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

Caution

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

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

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

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

DIN Connector Part No.

<table>
<thead>
<tr>
<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
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<tbody>
<tr>
<td>24 V</td>
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<tr>
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<tr>
<td>100 V</td>
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<td>SY100-61-2-03</td>
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<td>220 V</td>
<td>SY100-61-2-04</td>
</tr>
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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.
Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1, and other safety regulations.

Caution: Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning: Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Danger: Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications. Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment. The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries. The product herein described is basically provided for peaceful use in manufacturing industries.

2. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. *2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

   *2) Vacuum pads are excluded from this 1 year warranty.
   A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
   Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Revision history

Edition B = Addition of rated voltage 24 VAC to Series VF1000/3000/5000
Edition C = Addition of low wattage specification to Series VF1000/3000

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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