**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**

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

**Energy saving**

**With power saving circuit**

**Rubber material: HNBR**
Ozone-resistant specification

**The pilot valve poppet is made of FKM.**

**Strainer Series VF3000**

**Low wattage specification added**
- VF1000/3000

- **0.35 W** (Without light)
- **0.4 W** (With light)

**Series VF1000/3000/5000**

**New**
SmC
RoHS
## 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><strong>VF1000</strong></td>
<td><strong>0.76</strong></td>
<td>2-position single VF1000</td>
<td>M5 x 0.8</td>
<td>1/8</td>
<td>Grommet</td>
<td>DCFunctional</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A)2 (B)4 (P)</td>
<td></td>
<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EA)1 (E)2 (EB)3</td>
<td></td>
<td></td>
<td></td>
<td>■ With light/surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M-type plug connector</td>
<td>■ With surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DIN terminal</td>
<td>■ With light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>■ With light/surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td><strong>VF3000</strong></td>
<td><strong>4.0</strong></td>
<td>2-position double VF1000</td>
<td>1/8</td>
<td>1/4</td>
<td>M-type plug connector</td>
<td>DCFunctional</td>
<td>Push-turn locking slotted type</td>
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<tr>
<td></td>
<td></td>
<td>(A)2 (B)4 (P)</td>
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<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EA)1 (E)2 (EB)3</td>
<td></td>
<td></td>
<td>M-type plug connector</td>
<td>■ With light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>DIN terminal</td>
<td>■ With surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>■ With light/surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td><strong>VF5000</strong></td>
<td><strong>8.8</strong></td>
<td>3-position closed center VF1000</td>
<td>1/4</td>
<td>3/8</td>
<td>Conduit terminal</td>
<td>DCFunctional</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A)2 (B)4 (P)</td>
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<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
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</tr>
<tr>
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<td></td>
<td>(EA)1 (E)2 (EB)3</td>
<td></td>
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<td>Conduit terminal</td>
<td>■ With light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
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<td></td>
<td>■ With surge voltage suppressor</td>
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</tr>
<tr>
<td><strong>VF3000</strong></td>
<td><strong>3.1</strong></td>
<td>2-position single VF1000</td>
<td>M5 x 0.8</td>
<td>1/8</td>
<td>DIN (EN1753 01-803) terminal</td>
<td>DCFunctional</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A)2 (B)4 (P)</td>
<td></td>
<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EA)1 (E)2 (EB)3</td>
<td></td>
<td></td>
<td>DIN (EN1753 01-803) terminal</td>
<td>■ With light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td><strong>VF5000</strong></td>
<td><strong>9.4</strong></td>
<td>3-position closed center VF1000</td>
<td>M5 x 0.8</td>
<td>1/8</td>
<td>Conduit terminal</td>
<td>DCFunctional</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A)2 (B)4 (P)</td>
<td></td>
<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EA)1 (E)2 (EB)3</td>
<td></td>
<td></td>
<td>Conduit terminal</td>
<td>■ With light/surge voltage suppressor (Non-polar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>■ With surge voltage suppressor</td>
<td></td>
</tr>
</tbody>
</table>

**Low wattage specification**

From page 26  
Power consumption: 0.35 W (Without light)  0.4 W (With light)

Features 1
## Model Selection by Operating Conditions

### Manifold

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable valve</th>
<th>Applicable stations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VF1000</strong></td>
<td>Common EXH</td>
<td>VV5F1-30</td>
<td>VF1□30, VF1□33</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV5F1-31</td>
<td></td>
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</tr>
<tr>
<td><strong>VF3000</strong></td>
<td>Common EXH</td>
<td>VV5F3-30</td>
<td>VF3□30, VF3□33</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td><strong>VF5000</strong></td>
<td>Common EXH</td>
<td>VV5F5-20</td>
<td>VF5□20, VF5□23</td>
<td>2 to 10 stations</td>
</tr>
<tr>
<td></td>
<td>Common EXH</td>
<td>VV5F5-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VF3000</strong></td>
<td>Common EXH</td>
<td>VV5F3-40</td>
<td>VF3□40, VF3□43</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td><strong>VF5000</strong></td>
<td>Common EXH</td>
<td>VV5F5-40</td>
<td>VF5□44</td>
<td>2 to 10 stations</td>
</tr>
</tbody>
</table>

---

**Series VF1000/3000/5000**

**Body mounted**

**Base mounted**

---

Features 2
### Cylinder Speed Chart

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

#### Body Ported

<table>
<thead>
<tr>
<th>Series</th>
<th>Average speed (mm/s)</th>
<th>Bore size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series CJ2</td>
<td>Pressure 0.5 MPa</td>
<td>Series CM2</td>
</tr>
<tr>
<td></td>
<td>Load factor 50%</td>
<td>Series MB, CA2</td>
</tr>
<tr>
<td>Stroke 60 mm</td>
<td></td>
<td>Load factor 50%</td>
</tr>
<tr>
<td>Series CM2</td>
<td>Pressure 0.5 MPa</td>
<td>Series CS1</td>
</tr>
<tr>
<td>Stroke 300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series MB, CA2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke 500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series CS1</td>
<td>Pressure 0.5 MPa</td>
<td></td>
</tr>
<tr>
<td>Stroke 1000 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø6</td>
<td>1000</td>
<td>Ø6</td>
</tr>
<tr>
<td>Ø10</td>
<td>800</td>
<td>Ø10</td>
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<tr>
<td>Ø16</td>
<td>600</td>
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<td>Ø20</td>
<td>400</td>
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<tr>
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<td>200</td>
<td>Ø25</td>
</tr>
<tr>
<td>Ø32</td>
<td>0</td>
<td>Ø32</td>
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<tr>
<td>Ø40</td>
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<tr>
<td>Ø50</td>
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<td>Ø63</td>
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<tr>
<td>Ø80</td>
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<tr>
<td>Ø100</td>
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<tr>
<td>Ø125</td>
<td></td>
<td>Ø125</td>
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<td>Ø140</td>
<td></td>
<td>Ø140</td>
</tr>
<tr>
<td>Ø160</td>
<td></td>
<td>Ø160</td>
</tr>
</tbody>
</table>

* With ★: when using steel piping

#### Base Mounted

<table>
<thead>
<tr>
<th>Series</th>
<th>Average speed (mm/s)</th>
<th>Bore size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series CJ2</td>
<td>Pressure 0.5 MPa</td>
<td>Series CM2</td>
</tr>
<tr>
<td></td>
<td>Load factor 50%</td>
<td>Series MB, CA2</td>
</tr>
<tr>
<td>Stroke 60 mm</td>
<td></td>
<td>Load factor 50%</td>
</tr>
<tr>
<td>Series CM2</td>
<td>Pressure 0.5 MPa</td>
<td>Series CS1</td>
</tr>
<tr>
<td>Stroke 300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series MB, CA2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke 500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series CS1</td>
<td>Pressure 0.5 MPa</td>
<td></td>
</tr>
<tr>
<td>Stroke 1000 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø6</td>
<td>1000</td>
<td>Ø6</td>
</tr>
<tr>
<td>Ø10</td>
<td>800</td>
<td>Ø10</td>
</tr>
<tr>
<td>Ø16</td>
<td>600</td>
<td>Ø16</td>
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<td>Ø20</td>
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<td>Ø25</td>
<td>200</td>
<td>Ø25</td>
</tr>
<tr>
<td>Ø32</td>
<td>0</td>
<td>Ø32</td>
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<tr>
<td>Ø40</td>
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<td>Ø40</td>
</tr>
<tr>
<td>Ø50</td>
<td></td>
<td>Ø50</td>
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<td></td>
<td>Ø180</td>
</tr>
<tr>
<td>Ø200</td>
<td></td>
<td>Ø200</td>
</tr>
</tbody>
</table>

* With ★: when using steel piping

0.5 MPa = 73 psi
## Cylinder Speed Chart

### Conditions

#### 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>
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<td>—</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-06</td>
<td>AS3002F-08</td>
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<td>—</td>
</tr>
<tr>
<td>Silencer</td>
<td>AN101-01</td>
<td>—</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>VF3130-02</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
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<td>—</td>
</tr>
<tr>
<td>Silencer</td>
<td>AN110-01</td>
<td>—</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>VF5120-03</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>T1209 x 1 m</td>
<td>AN30-03</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
<td>AN302-03</td>
</tr>
<tr>
<td>Silencer</td>
<td>AN30-03</td>
<td>—</td>
<td></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>T1209 x 1 m</td>
<td>—</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
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</tr>
<tr>
<td>Silencer</td>
<td>AN30-03</td>
<td>—</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>VF5144-04</td>
<td>T0604 x 1 m</td>
<td>T1075 x 1 m</td>
<td>T1209 x 1 m</td>
<td>—</td>
</tr>
<tr>
<td>Speed controller</td>
<td>AS3002F-06</td>
<td>AS4002F-10</td>
<td>AS4002F-12</td>
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</tr>
<tr>
<td>Silencer</td>
<td>AN40-04</td>
<td>—</td>
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<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>

Use as a guide for selection. Please check the actual conditions with SMC Model Selection Program.
# Pilot Operated 5 Port Solenoid Valve

## Series VF1000/3000/5000

### Single Unit

**How to Order Valve**

### Body Ported

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Rate: 80 psi (0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 VF1000</td>
<td>2-position single</td>
<td>0.75 (With light only)</td>
</tr>
<tr>
<td>2 VF3000</td>
<td>2-position double</td>
<td>1.5 (With light: 1.75)</td>
</tr>
<tr>
<td>3 VF5000</td>
<td>3-position exhaust center</td>
<td>1.5 (With light: 1.55)</td>
</tr>
</tbody>
</table>

### Coil specifications

- N: Standard (102 psi (0.7 MPa))
- T: High-pressure type (145 psi (1 MPa))
- F: Pilot exhaust type
- G: With power saving circuit (DC only)

### Pressure specifications

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

### Thread type

- Nil: Without thread
- F: With thread

### Made to Order

- Without bracket
- With bracket

### Electrical entry

- G: Lead wire length 300 mm
- H: Lead wire length 600 mm
- LN: Without lead wire
- MN: Without lead wire
- LO: Without connector
- MO: Without connector
- DO: Without connector
- YO: Without connector

### CE compliant

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

### Note

- Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.
- CE compliant
- With L-type plug connector
- L-type plug connector
- M-type plug connector
- DIN terminal
- DIN (EN175301-803) terminal
- Conduit terminal
- Grommet
- L-type plug connector
- M-type plug connector
- DIN terminal
- DIN (EN175301-803) terminal
- Conduit terminal

**Caution**

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

<table>
<thead>
<tr>
<th>Model</th>
<th>VF1000</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td>Air</td>
<td>Air</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>2-position single/3-position</td>
<td>2-position double</td>
<td>2-position single/3-position</td>
</tr>
<tr>
<td>Standard high-pressure type</td>
<td>2-position single/3-position</td>
<td>2-position double</td>
<td>2-position single/3-position</td>
</tr>
<tr>
<td>2-position</td>
<td>22 to 102 psi (0.15 to 0.7 MPa)</td>
<td>15 to 102 psi (0.1 to 0.7 MPa)</td>
<td>22 to 145 psi (0.15 to 1.0 MPa)</td>
</tr>
<tr>
<td>3-position</td>
<td>15 to 102 psi (0.1 to 0.7 MPa)</td>
<td>15 to 145 psi (0.1 to 1.0 MPa)</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>14 to 122°F (–10 to 50°C) (No freezing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double</td>
<td>3-position</td>
<td></td>
</tr>
<tr>
<td>2-position</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>3-position</td>
<td>—</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking slider type</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust, ManFlt valve common exhaust (Except VF1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) (max)</td>
<td>300/50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65° for D, Y, T)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D)</th>
<th>DIN (EN175301-803) terminal (Y)</th>
<th>Conduit terminal (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G, H, L, M, D, Y, T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coil rated voltage (V)</th>
<th>DC (24, 12)</th>
<th>AC (50/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allowable voltage fluctuation</th>
<th>≤10% of rated voltage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light only)</td>
<td>1.5 (With light only)</td>
<td>1.5 (With light: 1.65)</td>
</tr>
<tr>
<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>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apparent power (VA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED (Non-polar type: Varistor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator light</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode (Non-polar type: Varistor)</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>Response time (ms) (at 73 psi (0.5 MPa))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Without light/surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position Single</td>
<td>Standard</td>
<td>22 to 102 psi (0.15 to 0.7)</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>15 to 102 psi (0.1 to 0.7)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 psi (0.15 to 1.0)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 to 145 psi (0.1 to 1.0)</td>
<td>15</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position Single</td>
<td>Standard</td>
<td>22 to 102 psi (0.15 to 0.7)</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>15 to 102 psi (0.1 to 0.7)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 psi (0.15 to 1.0)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 to 145 psi (0.1 to 1.0)</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3-position Single</td>
<td>Standard</td>
<td>22 to 102 psi (0.15 to 0.7)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>22 to 102 psi (0.15 to 0.7)</td>
<td>30</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position Single</td>
<td>Standard</td>
<td>22 to 102 psi (0.15 to 0.7)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>15 to 102 psi (0.1 to 0.7)</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 psi (0.15 to 1.0)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22 to 145 psi (0.1 to 1.0)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>3-position Single</td>
<td>Standard</td>
<td>15 to 145 psi (0.1 to 1.0)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>22 to 145 psi (0.1 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 (P, A, B)</td>
<td>4/2 → 5/3 (A/B → EA/EB)</td>
<td></td>
</tr>
<tr>
<td>VF1□□-M5</td>
<td>2-position Single</td>
<td>M5 x 0.8</td>
<td>0.49, 0.40, 0.13, 0.52</td>
<td>140, 176</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>M5 x 0.8</td>
<td>0.49, 0.40, 0.13, 0.52</td>
<td>200, 272</td>
</tr>
<tr>
<td>VF1□□-01</td>
<td>2-position Single</td>
<td>1/8</td>
<td>0.76, 0.22, 0.17, 0.53</td>
<td>136, 172</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>1/8</td>
<td>0.76, 0.22, 0.17, 0.53</td>
<td>196, 268</td>
</tr>
<tr>
<td>VF3□□-01</td>
<td>2-position Single</td>
<td>1/8</td>
<td>3.0, 0.38, 0.78, 2.8</td>
<td>243, 315</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>1/8</td>
<td>3.0, 0.38, 0.78, 2.8</td>
<td>182, 218</td>
</tr>
<tr>
<td>VF3□□-02</td>
<td>2-position Single</td>
<td>1/4</td>
<td>4.0, 0.36, 1.0, 3.1</td>
<td>178, 214</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>1/4</td>
<td>4.0, 0.36, 1.0, 3.1</td>
<td>239, 311</td>
</tr>
<tr>
<td>VF5□□-02</td>
<td>2-position Single</td>
<td>1/4</td>
<td>7.1, 0.46, 1.9, 7.7</td>
<td>313, 349</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>1/4</td>
<td>7.1, 0.46, 1.9, 7.7</td>
<td>368, 440</td>
</tr>
<tr>
<td>VF5□□-03</td>
<td>2-position Single</td>
<td>3/8</td>
<td>8.8, 0.44, 2.4, 10.0</td>
<td>299, 335</td>
</tr>
<tr>
<td></td>
<td>2-position Double</td>
<td>3/8</td>
<td>8.8, 0.44, 2.4, 10.0</td>
<td>354, 426</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
VF3000
VF5000

2-position double

Symbol
2-position single
VF1000
VF3000
VF5000

3-position closed center/exhaust center/pressure center

Symbol
3-position closed center
VF1000
VF3000
VF5000

3-position exhaust center

Symbol
3-position pressure center
VF1000
VF3000
VF5000

(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-castedVF1120-F)</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>
**Series VF1000/3000/5000**

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

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

Valve model: **VF[___]___-5GZ[___]__**

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

<table>
<thead>
<tr>
<th>Grommet or L/M-type</th>
</tr>
</thead>
<tbody>
<tr>
<td>V211</td>
</tr>
</tbody>
</table>

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

**Light/Surge voltage suppressor**

<table>
<thead>
<tr>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>S</td>
<td>With surge voltage suppressor</td>
</tr>
<tr>
<td>Z</td>
<td>With surge voltage suppressor</td>
</tr>
<tr>
<td>R</td>
<td>With surge voltage suppressor (Non-polar)</td>
</tr>
<tr>
<td>U</td>
<td>With surge voltage suppressor (Non-polar)</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**
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-[□][□]-1-M5□(-F)

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

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

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

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

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

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

**Dimensions: Series VF1000/Body Ported**

**(mm)**

### 2-position double

**Grommet (G) (H): VF1220-□□□□1-M5 □**

- Approx. 300 (Lead wire length)

- M5 x 0.8

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

- Manual override

- [1(P) port]

- M5 x 0.8, 1/8

- 1/8, 1/4

- (Indicator light)

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

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

- Approx. 300 (Lead wire length)

- 127.1

- 21.8

- G: Approx. 300

- H: Approx. 600

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

### Grommet (G) (H): VF1220-□□□□1-01 □

- Approx. 300 (Lead wire length)

- M5 x 0.8

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

- Manual override

- [1(P) port]

- M5 x 0.8, 1/8

- 1/8, 1/4

- (Indicator light)

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

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

- Approx. 300

- 120.3

- 110.1

- 55.5

- Approx. 300 (Lead wire length)

- Applicable cable O.D. ø4.5 to ø7

- Max. 10

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

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

- Approx. 300

- 81.7 (78.7)

- 78.7 (76.7)

- 68.9 (65.7)

- 68.9 (65.7)

- 51.3

- 31.5

- 67

- 26.7

- 17.5

- 15.8

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

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

- Approx. 300

- 126.8

- 120.3

- 111.8

- 105.5

- 101

- 98.3

- 21.5

- 20.3

- 19

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

### Grommet (G) (H)

- DC without light/surge voltage suppressor

- [0]: Without indicator light

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

2-position single

Grommet (G) (H): VF3130-□□□□1-□□□□□ (F)

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

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

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

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

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

Dimensions: Series VF3000/Body Ported

(mm)

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

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

Manuel override

2 x ø4.3
(For mounting)

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

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

2 x ø4.2
(For mounting)

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

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

L-type plug connector (L): VF3230-

21.8

162.6

Approx. 300
(Lead wire length)

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

M-type plug connector (M): VF3230-

55.5

145.8

Approx. 300
(Lead wire length)

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

DIN terminal (D) (Y): VF3230-

Max. 10

163.6

Applicable cable O.D.
ø4.5 to ø7

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

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

Conduit terminal (T): VF3230-

Max. 10

168.4

(Indicator light)

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 3/5 30-□□□1-□□-01-□□-02 □

Manual override

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

(Indicator light)

1/8, 1/4

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

2 x ø4.3
(For mounting)

[L-type plug connector (L): VF3 3/5 30-□□□1-□□-01-□□-02 □]

Approx. 300
(Lead wire length)

18.4 (18.4) [Distance between ports]

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

[ ] Without indicator light

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

DIN terminal (D) (Y): VF3 3/5 30-□□□1-□□-01-□□-02 □

Max. 10

Applicable cable O.D.
ø4.5 to ø7

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

Conduit terminal (T): VF3 3/5 30-□□□1-□□-01-□□-02 □

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 single

Grommet (G) (H): VF5120-GH1-02-

L-type plug connector (L): VF5120-L1-02-

M-type plug connector (M): VF5120-M1-02-

DIN terminal (D) (Y): VF5120-DY1-02-

Conduit terminal (T): VF5120-T1-02-

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

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

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

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

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

Approx. 300
Approx. 600

(Applicable cable O.D. ø4.5 to ø7)

Max. 10

(Indicator light)
### Dimensions: Series VF5000/Body Ported

#### 2-position double

**Grommet (G) (H): VF5220-□□□□□□1-□□□□□□**

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

(Lead wire length)

- Manual override
- 2 x ø4.3
  - (For mounting)
- 1/4, 3/8
  - [4(A), 2(B) port]

---

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

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

(Lead wire length)

- 1/4, 3/8
  - [1(P), 5(EA), 3(EB) port]
- 2 x ø2.3
  - (PE port)

---

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

- Approx. 300

(Lead wire length)

- 22.3
- 196

---

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

- Max. 10

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

---

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

- Approx. 300

(Lead wire length)

- 179.2
- 169

---

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

- Max. 10

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

---

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

[ ] Without indicator light

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

**Dimensions: Series VF5000/Body Ported**

(3 mm)

3-position closed center/exhaust center/pressure center

**Grommet (G) (H): VF5 3/5 20-□ 1-□ 02 □**

G: Approx. 300
H: Approx. 600

(Lead wire length)

[Diagram showing dimensions and layout of the grommet]

**Grommet (G) (H)**

DC without light/surge voltage suppressor

G: Approx. 300
H: Approx. 600

(Lead wire length)

[Diagram showing dimensions and layout of the grommet]

**L-type plug connector (L): VF5 3/5 20-L□1-□ 02 □**

Approx. 300

(Lead wire length)

[Diagram showing dimensions and layout of the L-type plug connector]

**DIN terminal (D) (Y): VF5 3/5 20-□ 1-□ 02 □**

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

[Diagram showing dimensions and layout of the DIN terminal]

**M-type plug connector (M): VF5 3/5 20-M□1-□ 02 □**

Approx. 300

(Lead wire length)

[Diagram showing dimensions and layout of the M-type plug connector]

**Conduit terminal (T): VF5 3/5 20-T□1-□ 02 □**

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

[Diagram showing dimensions and layout of the conduit terminal]

**Note:**
- Rated voltage: AC type only
- Combination with low wattage specification is not possible.
- Unless otherwise indicated, dimensions are the same as Grommet (G).
1 Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification

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

How to Order Valve

**VF3 301---X500**

- **Series**: 1 VF1000, 3 VF3000, 5 VF5000
- **Type of actuation**: 1 2-position single, 2 2-position double, 3 3-position closed center, 4 3-position exhaust center, 5 3-position pressure center
- **Body model**
- **Entry is the same as standard products. The specifications and performance are the same as those of standard products.**
- **Note**: Not available for the base mounted type.

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

2 TRIAC Output Specification

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

How to Order Valve

**VF3 -------X600**

- **Series**: 1 VF1000, 3 VF3000, 5 VF5000
- **Type of actuation**: 1 2-position single, 2 2-position double, 3 3-position closed center, 4 3-position exhaust center, 5 3-position pressure center
- **Note**: Rated voltage: AC type only
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>3</th>
<th>1</th>
<th>4</th>
<th>0</th>
<th>K</th>
<th>T</th>
<th>5</th>
<th>G</th>
<th>Z</th>
<th>D</th>
<th>1-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2-position single</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2-position double</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3-position closed center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3-position exhaust center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3-position pressure center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Body option

0. Pilot valve individual exhaust

<table>
<thead>
<tr>
<th>PE port</th>
<th>EA/EB port</th>
</tr>
</thead>
</table>

3. Main/Pilot valve common exhaust

<table>
<thead>
<tr>
<th>PE port</th>
<th>EA/EB port</th>
</tr>
</thead>
</table>

4. Pilot valve base exhaust

| PE port |

VF3000 | VF5000 |
---|---|
| ○ | — |
| ○ | — |
| — | ○ |
| — | ○ |

Body model

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.)

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

Rated voltage

- AC (50/60 Hz)
- DC

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>1/4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>03</td>
<td>3/8</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>04</td>
<td>1/2</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Thread type

- Nil | TRAC output specification (Refer to page 14.)

Port size (Sub-plate)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Without sub-plate</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Manual override

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

Light/Surge voltage suppressor

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

Electrical entry

<table>
<thead>
<tr>
<th>Grommet</th>
<th>L-type plug connector</th>
<th>M-type plug connector</th>
<th>DIN terminal</th>
<th>Conduit terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Lead wire length 300 mm</td>
<td>LN: Without lead wire</td>
<td>EN(T3531-803)</td>
<td>YO: Without connector</td>
</tr>
<tr>
<td>H</td>
<td>Lead wire length 600 mm</td>
<td>MO: Without lead wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Without light/surge voltage suppressor</td>
<td>MO: Without lead wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE compliant</td>
<td>DC</td>
<td>AC(Night)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

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

* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>VF3000</th>
<th>VF5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td>Air</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>2-position single/3-position 22 to 102 psi (0.15 to 0.7 MPa)</td>
<td>2-position single/3-position 22 to 102 psi (0.15 to 0.7 MPa)</td>
</tr>
<tr>
<td>High-pressure type</td>
<td>2-position double 15 to 102 psi (0.1 to 0.7 MPa)</td>
<td>2-position double 15 to 145 psi (0.1 to 1.0 MPa)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>14 to 144°F (–10 to 50°C) (No freezing)</td>
<td>14 to 144°F (–10 to 50°C) (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double 10</td>
<td>3-position 3</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type Push-turn locking slotted type Push-turn locking lever type</td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust, Main Pilot valve common exhaust Pilot valve base exhaust</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65* for D, Y, T)</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

## Solenoid Specifications

### Electrical entry

<table>
<thead>
<tr>
<th>Coil rated voltage (V)</th>
<th>DC</th>
<th>AC (50/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24, 12</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
</tr>
</tbody>
</table>

### Allowable voltage fluctuation

+10% of rated voltage±

### Power consumption (W)

<table>
<thead>
<tr>
<th>Power consumption (W)</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td></td>
</tr>
<tr>
<td>0.55 (With light only)</td>
<td>0.75 (With light only)</td>
<td></td>
</tr>
</tbody>
</table>

### Apparent power (VA°)

<table>
<thead>
<tr>
<th>Apparent power (VA°)</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.55 (With light: 1.65)</td>
<td>1.55 (With light: 1.7)</td>
</tr>
</tbody>
</table>

### Surge voltage suppressor

Diode (Non-polar type: Varistor)

### Indicator light

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

* 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: –10% to +10% 12 VDC: –10% to +10%

## Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Pressure specifications</th>
<th>Operating pressure psi (MPa)</th>
<th>Response time (ms) at 73 psi (0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Without light/surge voltage suppressor</td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position 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></td>
<td>15 to 150 (0.1 to 0.7)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 to 150 (0.1 to 1.0)</td>
<td>15</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position 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></td>
<td>15 to 150 (0.1 to 0.7)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 to 150 (0.1 to 1.0)</td>
<td>15</td>
</tr>
<tr>
<td>VF5000</td>
<td>2-position Single</td>
<td>Standard</td>
<td>22 to 102 (0.15 to 0.7)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td></td>
<td>15 to 150 (0.1 to 0.7)</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-pressure type</td>
<td>22 to 145 (0.15 to 1.0)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 to 150 (0.1 to 1.0)</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 characteristics¹</th>
<th>Weight (g)²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 → 4/2 (P → A/B)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4/2 → 5/3 (A/B → EA/EB)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/(s·bar)]  b  Cv</td>
<td>C [dm³/(s·bar)]  b  Cv</td>
</tr>
<tr>
<td><strong>VF3□40-02</strong></td>
<td>Single</td>
<td>1/4</td>
<td>2.8 0.14 0.64 2.5 0.18 0.57</td>
<td>2.8 0.14 0.64 2.5 0.18 0.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.1 0.22 0.49 1.6 0.26 0.41</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.3 0.21 0.53 2.8 [2.1] 0.23 [0.26] 0.66 [0.50]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.9 [1.1] 0.16 [0.45] 0.67 [0.32] 2.1 0.23 0.49</td>
<td></td>
</tr>
<tr>
<td><strong>VF3□40-03</strong></td>
<td>Single</td>
<td>3/8</td>
<td>3.1 0.24 0.76 2.6 0.23 0.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.1 0.24 0.76 2.6 0.23 0.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.6 0.27 0.61 2.8 [2.3] 0.30 [0.28] 0.68 [0.55]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.4 [1.3] 0.29 [0.48] 0.80 [0.38] 2.2 0.31 0.52</td>
<td></td>
</tr>
<tr>
<td><strong>VF5□44-02</strong></td>
<td>Single</td>
<td>1/4</td>
<td>7.3 0.49 2.1 7.3 0.50 2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.3 0.49 2.1 7.3 0.50 2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6.6 0.35 1.7 6.3 0.31 1.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.4 [2.9] 0.33 1.9 8.1 [7.4] 0.35 [0.34] 2.1 [1.9]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.0 [1.3] 0.35 [0.48] 2.1 [0.85] 5.6 0.31 1.5</td>
<td></td>
</tr>
<tr>
<td><strong>VF5□44-03</strong></td>
<td>Single</td>
<td>3/8</td>
<td>8.4 0.34 2.2 8.9 0.29 2.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.4 0.34 2.2 8.9 0.29 2.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.3 0.34 2.0 7.1 0.28 1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.1 [2.5] 0.27 2.0 14.0 [8.3] 0.26 [0.31] 3.4 [2.2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.1 [2.5] 0.33 [0.48] 2.0 [0.74] 5.7 0.31 1.4</td>
<td></td>
</tr>
<tr>
<td><strong>VF5□44-04</strong></td>
<td>Single</td>
<td>1/2</td>
<td>9.4 0.43 2.7 12.0 0.32 3.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9.4 0.43 2.7 12.0 0.32 3.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.1 0.41 2.1 7.4 0.32 2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.6 [2.6] 0.39 2.4 13.0 [8.9] 0.21 [0.40] 3.1 [2.5]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.0 [2.6] 0.18 [0.47] 2.6 [0.78] 6.1 0.35 1.6</td>
<td></td>
</tr>
</tbody>
</table>

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

**VF3000/5000**

### 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>HNBR</td>
</tr>
<tr>
<td>9</td>
<td>Sub-plate</td>
<td>1/4: VF3000-71-1□</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3/8: VF3000-71-2□</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2: VF5000-71-3□</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Round head combination screw</td>
<td>DXT031-44-1</td>
<td>For mounting valve</td>
</tr>
<tr>
<td></td>
<td>(1 pc.)</td>
<td>(M4 x 39.5, With spring washer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head cap</td>
<td>AXT620-32-1</td>
<td>For mounting valve</td>
</tr>
<tr>
<td></td>
<td>screw (1 pc.)</td>
<td>(M4 x 48, With spring washer)</td>
<td></td>
</tr>
</tbody>
</table>

**Warning**

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: 

```
VF[ ][ ][ ][ ][ ] 5[ ][ ] 1[ ]
```

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

### Grommet or L/M-type

- **V211** Pilot valve assembly

### DIN or Conduit type

- **V212** Pilot valve assembly

---

**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
- **LN** L-type plug connector
- **LO** L-type plug connector
- **M** M-type plug connector
- **MN** M-type plug connector
- **MO** M-type plug 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.

**Coil specifications**

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

* T type is available with DC mode only.

**Pressure specifications**

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

**Rated voltage**

<table>
<thead>
<tr>
<th>DC</th>
<th>5 24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>12 VDC</td>
</tr>
</tbody>
</table>

**AC (50/60 Hz)**

<table>
<thead>
<tr>
<th>1</th>
<th>100 VAC</th>
</tr>
</thead>
<tbody>
<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 VF3000/Base Mounted

2-position single
Grommet (G) (H):

L-type plug connector (L):
VF3140-L-1-02

M-type plug connector (M):
VF3140-M-1-02

DIN terminal (D) (Y):
VF3140-D-1-02

Conduit terminal (T):
VF3140-T-1-02

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

[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).
Series VF3000/5000

Dimensions: Series VF3000/Base Mounted (mm)

2-position double
Grommet (G) (H): VF3240-G □ H □ 1-□ 02 □ 03 □

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

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

Manual override

2 x PE port

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

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

Applicable cable O.D. ø4.5 to ø7

Max. 10

163.6

P1

113

104

33.8

Pg9

[ ]: Without indicator light

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

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

Approx. 300
(Lead wire length)

145.8

115.8

19.8

84

[ ]: Without indicator light

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

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

Max. 10

168.4

P9

117.2/107.2

107.2

36.2

(Indicator light)

[ ]: Without indicator light

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

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

Approx. 300
(Lead wire length)

162.6

50.3

33.3

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

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

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

Manual override

2 x PE port

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

Max. 10

184.4

52.2

107.2 [97.2]

117.2 [107.2]

(mmm)

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-□□□□□□□□□

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

L-type plug connector (L): VF3 340-□□□□□□□

Approx. 300
(Lead wire length)

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

DIN terminal (D) (Y): VF3 340-□□□□□□□

Max. 10

Applicable cable O.D.
ø4.5 to ø7

M-type plug connector (M): VF3 340-□□□□□□□

Approx. 300
(Lead wire length)

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

Conduit terminal (T): VF3 340-□□□□□□□

Max. 10

Applicable cable O.D.
ø4.5 to ø7

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

Dimensions: Series VF5000/Base Mounted

2-position single

Grommet (G) (H): VF5144-□ □ □ 1-03

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

2 x ø5.3 (2 x ø6.5)
(For mounting)

Manual override

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

2 x M5 x 0.8
(PE port)

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

L-type plug connector (L): VF5144-□ L □ □ 1-03

Approx. 300
(Lead wire length)

DIN terminal (D) (Y): VF5144-□ D □ □ 1-03

Applicable cable O.D.:
ø4.5 to ø7

Conduit terminal (T): VF5144-□ T □ □ 1-03

Applicable cable O.D.:
ø4.5 to ø7

Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.
### Dimensions: Series VF5000/Base Mounted

**2-position double**

Grommet (G) (H): VF5244-□□□□□□□□□□□

![Diagram](image)

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

#### L-type plug connector (L)

Approx. 300

- (Lead wire length)
  - 196
  - 51.3
  - 52
  - (48)

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

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

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

Approx. 300

- (Lead wire length)
  - 179.2
  - 130.5
  - (134.5)
  - 38.5
  - (34.5)

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

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

#### DIN terminal (D)

Max. 10

- 197
- 114
- (11.8)
- 105
- (10.9)
- 52.5
- (48.5)

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

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

#### Conduit terminal (T)

Max. 10

- 201.8
- 118.2
- (108.5)
- 162.2
- (152.2)
- 54.9
- (50.9)

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

[ ] Without indicator light

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-□□□02□□04

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

Grommet (G) (H)

- DC without light/surge voltage suppressor

**L-type plug connector (L): VF5 3/44-□□□1-□□□02□□04**

- Approx. 300 (Lead wire length)
- Unless otherwise indicated, dimensions are the same as Grommet (G).
- The dimensions in ( ) are for 1/2 piping port size.

**M-type plug connector (M): VF5 3/44-□□□1-□□□02□□04**

- Approx. 300 (Lead wire length)
- Unless otherwise indicated, dimensions are the same as Grommet (G).
- The dimensions in ( ) are for 1/2 piping port size.

**DIN terminal (D) (Y): VF5 3/44-□□□1-□□□02□□04**

- Max. 10
- Applicable cable O.D.: Ø4.5 to Ø7
- Unless otherwise indicated, dimensions are the same as Grommet (G).
- The dimensions in ( ) are for 1/2 piping port size.

**Conduit terminal (T): VF5 3/44-□□□1-□□□02□□04**

- Max. 10
- Applicable cable O.D.: Ø4.5 to Ø7
- (Indicator light)
- Unless otherwise indicated, dimensions are the same as Grommet (G).
- The dimensions in ( ) are for 1/2 piping port size.

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

---

**Base Mounted: VS336**

- Body Ported: VS336

- Only 1 and 2 are available with the VF1000.

**VF3000**

- VF3000 Body ported

- Available with LN and MN types are with 2 sockets.

**VF1000**

- VF1000 Body ported

- Refer to page 50 for details.

---

**Rated voltage**

- Low wattage type

- VF1000

- VF3000

- 12 VDC

- 220 VAC

- 110 VAC

- 200 VAC

- 100 VAC

---

**Applicable cable O.D.: Ø4.5 to Ø7**

- (Indicator light)

- Without indicator light

- Without lead wire

- With lead wire

- With light/surge voltage suppressor (DC only, Non-polar)

- With surge voltage suppressor (DC only, Non-polar)

---

**Electrical entry**

- Without connector

- With connector

---

**Mountable manifold**

- DO

- Y

---

**Without connector**

- Without lead wire

- With light/surge voltage suppressor

---

**With connector**

- With lead wire
**Low Wattage Specification**

**Series VF1000/3000 Single Unit**

**How to Order Valve**

<table>
<thead>
<tr>
<th>Series</th>
<th>1</th>
<th>VF1000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>VF3000</td>
</tr>
</tbody>
</table>

**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>Body model</th>
<th>Mountable manifold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>30 31 40</td>
</tr>
<tr>
<td>3 VF1000 Base mounted</td>
<td>Note 1</td>
</tr>
<tr>
<td>4 VF3000 Base mounted</td>
<td>Note 1</td>
</tr>
</tbody>
</table>

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

**Body option**

<table>
<thead>
<tr>
<th>Body option</th>
<th>VF1000</th>
<th>VF3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: Pilot valve individual exhaust</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**PE port**

<table>
<thead>
<tr>
<th>PE port</th>
<th>EA/EB port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1000</td>
<td>—</td>
</tr>
<tr>
<td>VF3000</td>
<td>—</td>
</tr>
</tbody>
</table>

**Low wattage type**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>1</th>
<th>100 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>200 VAC</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>110 VAC</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>220 VAC</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>24 VDC</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>12 VDC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>G</th>
<th>Lead wire length 300 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>Lead wire length 600 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>L</th>
<th>With lead wire length 300 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Without lead wire</td>
</tr>
</tbody>
</table>

**Version symbol**

<table>
<thead>
<tr>
<th>Version symbol</th>
<th>Light/Surge voltage suppressor and common specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Without light/surge voltage suppressor</td>
</tr>
<tr>
<td>R</td>
<td>With surge voltage suppressor (DC only, Non-polar)</td>
</tr>
<tr>
<td>U</td>
<td>With surge voltage suppressor (DC only, Non-polar)</td>
</tr>
<tr>
<td>S</td>
<td>With surge voltage suppressor (DC only)</td>
</tr>
<tr>
<td>Z</td>
<td>With surge voltage suppressor</td>
</tr>
</tbody>
</table>

**D and Y are not available**

**DOZ and YOZ are not available**

**Electronic entry**

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet</th>
<th>M-type plug connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC</td>
<td>G: Lead wire length 300 mm</td>
<td>M: With lead wire length 300 mm</td>
</tr>
<tr>
<td></td>
<td>H: Lead wire length 600 mm</td>
<td>L: With lead wire length 300 mm</td>
</tr>
<tr>
<td></td>
<td>N: Without lead wire</td>
<td>M: Without lead wire length 300 mm</td>
</tr>
<tr>
<td></td>
<td>L: Without lead wire</td>
<td>N: Without lead wire</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M-type plug connector</th>
<th>24 VDC, 12 VDC/100 VAC, 110 VAC, 200 VAC, 220 VAC</th>
<th>DIN terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>D: With connector</td>
<td>IP65 compatible</td>
<td></td>
</tr>
<tr>
<td>Y: With connector</td>
<td>IP65 compatible</td>
<td></td>
</tr>
</tbody>
</table>

**CE compliant**

<table>
<thead>
<tr>
<th>CE compliant</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* 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)
Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>VF1000</th>
<th>VF3000</th>
</tr>
</thead>
<tbody>
<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 single/3-position 22 to 102 psi (0.15 to 0.7 MPa)</td>
</tr>
<tr>
<td>2-position double 15 to 102 psi (0.1 to 0.7 MPa)</td>
<td>2-position double 15 to 102 psi (0.1 to 0.7 MPa)</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>14 to 122°F (–10 to 50°C) (No freezing)</td>
<td>14 to 122°F (–10 to 50°C) (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single/double 5</td>
<td>2-position single/double 5</td>
</tr>
<tr>
<td>3-position 3</td>
<td>3-position 3</td>
<td></td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td>Push-turn locking lever type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Main/Pilot valve common exhaust</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) (RMS)</td>
<td>150/30</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65* for DIN terminal)</td>
<td></td>
</tr>
</tbody>
</table>

* Based on IEC 60529.

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

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

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)</th>
<th>DIN terminal (D), (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G, H, L, M</td>
<td>D, Y</td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC 24, 12</td>
<td>AC (50/60 Hz) 100, 110, 200, 220</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC Standard 0.35 (With light: 0.4 (With light of DIN terminal: 0.45))</td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC 100 V 0.78 (With light: 0.81) 0.78 (With light: 0.87)</td>
<td>110 V 0.86 (With light: 0.89) [0.94 (With light: 0.97)] 0.86 (With light: 0.97) [0.94 (With light: 1.07)]</td>
</tr>
<tr>
<td>200 V 1.18 (With light: 1.22) 1.15 (With light: 1.30)</td>
<td>220 V 1.30 (With light: 1.34) [1.42 (With light: 1.46)] 1.27 (With light: 1.46) [1.39 (With light: 1.60)]</td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (DIN terminal, Non-polar type: Varistor)</td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light is used for AC mode of DIN terminal.)</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>VF1000</th>
<th>VF3000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response time (ms) (at 73 psi (0.5 MPa))</td>
<td>Without light/surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td>VF1000</td>
<td>2-position single</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>VF3000</td>
<td>2-position single</td>
<td>55</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>2-position double</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Series **VF1000/3000**

**Dimensions**

**VF1000**

- **L-type plug connector (L)**
- **M-type plug connector (M)**
- **DIN terminal (D) (Y)**

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

(16)  
(13.4)  
(1.6)  
(6)

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

**Distance between ports**

- 1.6
- 2.6
- 20
- 17.5
- 30
- 42.7

**Applicable cable O.D.**

- ø3.5 to ø7
- ø4.8 to ø5.5
- ø7.5 to ø12.5

**M5 x 0.8**

- [4(A), 2(B) port]
- [5(EA), 3(EB) port]

**Manual override**

- ø2.3

**Indicator light**

- ø19.6

**AC port**

- ø35 (E type)

**For mounting**

- ø2.3

**AC port**

- ø42 (4A)

**For mounting**

- ø52.1

**AC port**

- ø64.3

---

**Low Wattage Specification**  
Body Ported/Base Mounted/Single Unit
Series VF1000/3000

Dimensions

VF3000

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

---

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

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

Symbol

compliant

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200

201
Pilot Operated 5 Port Solenoid Valve

Series VF1000/3000/5000 Manifold

How to Order Manifold

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

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

VF 3 1 3 0 5 G 1 0 1

Rated voltage

Series

Type of actuation

Coil specifications

Pressure specifications

Light/Surge voltage suppressor

Made to order

Manual override

Electrical entry

Grommet

L-type plug connector

M-type plug connector

DIN terminal

DIN (EN175301-803) terminal

Conduit terminal

| G | Lead wire length 300 mm |
| H | Lead wire length 600 mm |
| L | Lead wire length 300 mm |
| M | Lead wire length 600 mm |
| N | Without lead wire |
| O | Without connector |

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

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.)

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

Note) In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

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

Note) In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

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

### Example (VV5F3-30)

- **Closed center (24 VDC)**
  - VFF3330-5GZ1-02 (1 set)
- **Double solenoid (24 VDC)**
  - VFF3230-5GZ1-02 (1 set)
- **Single solenoid (24 VDC)**
  - VFF3130-5GZ1-02 (3 sets)

**Manifold base (5 stations)**
- VFF5F3-30-051

#### Weight: W [g]
- Station: n
-VF1000: W = 29n + 21
-VF3000: W = 51n + 35
-VF5000: W = 63n + 64

**Applicable valve model**
- VF1000: VF1[]-30
- VF3000: VF3[]-30
- VF5000: VF5[]-20

**Applicable stations**
- VF1000: 2 to 20 stations
- VF3000: 2 to 20 stations
- VF5000: 2 to 15 stations

**Manifold base weight (g)**
- VF1000: W = 29n + 21
- VF3000: W = 51n + 35
- VF5000: W = 63n + 64

**Version**
- VF1000
- VF3000
- VF5000

**Port**
- EXH: Common EXH, Individual EXH

**Valve mounting screw**
- Round head combination screw
- Hexagon socket head cap screw

**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.

**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

- VF1000
- VF3000
- VF5000

- VFF5F3-30-051 —— 1 set (Type 30, 5-station manifold base part no.)
- VF3130-5GZ1-02 —— 3 sets (Single solenoid part no.)
- VF3230-5GZ1-02 —— 1 set (Double solenoid part no.)
- VF3330-5GZ1-02 —— 1 set (Closed center part no.)

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

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

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

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

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

- **Individual EXH spacer assembly**

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

**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.

**VF 3000-75-1A**

<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>

<table>
<thead>
<tr>
<th>Thread type</th>
<th>NPT</th>
<th>NPTF</th>
<th>G</th>
<th>Rc</th>
</tr>
</thead>
</table>
**Series VF1000/3000/5000**

### Dimensions: Series VF1000

(sm)

**Type 30/VV5F1-30-□□1-□□: Common exhaust**

**Grommet (G) (H)**

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

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

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

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

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

**Conduit terminal (T)**

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

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

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

<table>
<thead>
<tr>
<th>L: Dimensions</th>
<th>n: Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>2</td>
</tr>
<tr>
<td>L1</td>
<td>14.2 to 15.5</td>
</tr>
<tr>
<td>L2</td>
<td>42.2 to 43.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L: Dimensions</th>
<th>n: Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>15</td>
</tr>
<tr>
<td>L1</td>
<td>432</td>
</tr>
<tr>
<td>L2</td>
<td>422</td>
</tr>
</tbody>
</table>

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

Type 31/VVF1-31-[]-3-[]: Individual exhaust

Grommet (G) (H)

DC without light/
surge voltage suppressor

Grommet (G) (H)

Manual override

L-type plug connector (L)

L: Dimensions

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>74.5</td>
<td>102</td>
<td>129.5</td>
<td>157</td>
<td>184.5</td>
<td>212</td>
<td>239.5</td>
<td>267</td>
<td>294.5</td>
<td>322</td>
<td>349.5</td>
<td>377</td>
<td>404.5</td>
</tr>
<tr>
<td>L2</td>
<td>64.9</td>
<td>92</td>
<td>119.5</td>
<td>147</td>
<td>174.5</td>
<td>202</td>
<td>229.5</td>
<td>257</td>
<td>284.5</td>
<td>312</td>
<td>339.5</td>
<td>367</td>
<td>394.5</td>
</tr>
</tbody>
</table>

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

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

**Type 30/VV5F3-30-□□□1-□□□:** 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 VF3000

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

#### Grommet (G) (H)

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

**Grommet (G) (H)**
- DC without light/surge voltage suppressor
- Dimensions:
  - Series VF3000/3000/5000

**Manual override**

**Individual EXH spacer (VF3000-75-1A)**

**Indicator light**

#### L: Dimensions

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>138.5</td>
<td>166</td>
<td>193.5</td>
<td>221</td>
<td>248.5</td>
<td>276</td>
<td>303.5</td>
<td>331</td>
<td>358.5</td>
<td>386</td>
<td>413.5</td>
</tr>
<tr>
<td>L2</td>
<td>71.5</td>
<td>99</td>
<td>126.5</td>
<td>154</td>
<td>181.5</td>
<td>209</td>
<td>236.5</td>
<td>264</td>
<td>291.5</td>
<td>319</td>
<td>346.5</td>
<td>374</td>
<td>401.5</td>
</tr>
</tbody>
</table>

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

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

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

**Approx. 300**
- Lead wire length

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

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

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

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

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

#### Conduit terminal (T)

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

**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 VF5000

Type 20/VV5F5-20-□□1-□: Common exhaust
Grommet (G)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

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

L: Dimensions

n: Stations

<table>
<thead>
<tr>
<th>n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83</td>
<td>126</td>
<td>159</td>
<td>192</td>
<td>225</td>
<td>258</td>
<td>291</td>
<td>324</td>
<td>357</td>
</tr>
<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>

L-type plug connector (L)

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 VF5000**

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

**Grommet (G)**

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

**L: Dimensions**

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>L₁</td>
<td>83</td>
<td>126</td>
<td>159</td>
<td>192</td>
<td>225</td>
<td>258</td>
<td>291</td>
<td>324</td>
<td>367</td>
</tr>
<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)**

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

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

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

**Conduit terminal (T)**

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

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

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

**Grommet (G) (H)**

DC without light/surge voltage suppressor

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

**Notes:**
- Unless otherwise indicated, dimensions are the same as Grommet (G).
- Applicable cable O.D.: ø4.5 to ø7
- Without indicator light
Series VF1000/3000/5000

Dimensions: Series VF5000

Type 21/VV5F5-21-□□1-□□: Common exhaust

Grommet (G)

L: Dimensions

<table>
<thead>
<tr>
<th>n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
<th>8</th>
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<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>163</td>
<td>196</td>
<td>229</td>
<td>262</td>
<td>295</td>
<td>328</td>
<td>361</td>
<td>394</td>
<td>427</td>
<td>460</td>
<td>493</td>
<td>526</td>
<td>559</td>
<td>592</td>
</tr>
<tr>
<td>L2</td>
<td>128</td>
<td>161</td>
<td>194</td>
<td>227</td>
<td>260</td>
<td>293</td>
<td>326</td>
<td>359</td>
<td>392</td>
<td>425</td>
<td>458</td>
<td>491</td>
<td>524</td>
<td>557</td>
</tr>
</tbody>
</table>

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)

DIN terminal (D) (Y)

Conduit terminal (T)

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

Applicable cable O.D.

Max. 10

P = 33 (Pitch)

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

PE port

Manual override

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

1/4, 3/8

Distance between ports

| (Pitch) | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 |
|---------|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| P       | 33| 66| 99| 132| 165| 198| 231| 264| 297| 330| 363| 396| 429| 462| 495|

Approx. 300 (Lead wire length)

Applicable cable O.D.

Max. 10

Applicable cable O.D.

Max. 10

[ ] Without indicator light

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

Type 21/VV5F5-21-□□1-□: 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>
<th>7</th>
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<th>12</th>
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<th>15</th>
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</thead>
<tbody>
<tr>
<td>L1</td>
<td>163</td>
<td>196</td>
<td>229</td>
<td>262</td>
<td>296</td>
<td>328</td>
<td>361</td>
<td>394</td>
<td>427</td>
<td>460</td>
<td>493</td>
<td>526</td>
<td>559</td>
<td>592</td>
</tr>
<tr>
<td>L2</td>
<td>128</td>
<td>161</td>
<td>194</td>
<td>227</td>
<td>260</td>
<td>293</td>
<td>326</td>
<td>359</td>
<td>392</td>
<td>425</td>
<td>458</td>
<td>491</td>
<td>524</td>
<td>557</td>
</tr>
</tbody>
</table>

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

Approx. 300
(Lead wire length)

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

Max. 10

Applicable cable O.D. ø4.5 to ø7

L: Dimensions

Station n: Stations

L: Dimensions

Grommet (G) (H)

DC without light/surge voltage suppressor

Grommet (G) (H)

(approx. lead wire length)

**Conduit terminal (T)**

Max. 10

Applicable cable O.D. ø4.5 to ø7

[ ] Without indicator light

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VF3000</td>
</tr>
<tr>
<td>5</td>
<td>VF5000</td>
</tr>
</tbody>
</table>

* Not available with VF1000.

**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

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

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

**VF** 3 1 4 0 — 5 G 1 —

**Made to Order**

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

**Light/Surge voltage suppressor**

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

* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not 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>Grommet</th>
<th>L-type plug connector</th>
<th>M-type plug connector</th>
<th>DIN terminal</th>
<th>DIN (EN175301-803) terminal</th>
<th>Conduit terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Lead wire length 300 mm</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>H</td>
<td>Lead wire length 300 mm</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>L</td>
<td>Lead wire length 60 mm DC Without light/surge voltage suppressor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>LN</td>
<td>Without lead wire</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>M</td>
<td>With lead wire length 300 mm</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>MN</td>
<td>Without lead wire</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>LO</td>
<td>Without connector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>MO</td>
<td>Without connector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>DO</td>
<td>With connector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>YO</td>
<td>Without connector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>T</td>
<td>Condut terminal</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</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.
* 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.
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] Stations: n</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VV5F3-40</td>
<td>Common EXH</td>
<td>VF3□40, VF3□43</td>
<td>2 to 20 stations</td>
<td>W = 110n + 116</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF5000</td>
<td>VV5F5-40</td>
<td>Common EXH</td>
<td>VF5□44</td>
<td>2 to 10 stations</td>
<td>W = 161n + 128</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)

- 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.

Example (VV5F3-40-052-02)

- 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

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

#### For base mounted
Blanking plate assembly

**Series** | Blanking plate assembly part no.  
--- | ---  
VF3000 | DXT031-38-5A  
VF5000 | VF5000-70-2A

#### Individual EXH spacer assembly

**Series** | Valve mounting screw (1 pc.) | Gasket  
--- | --- | ---  
VF3000 | Round head combination screw DXT031-44-1 (M4 x 39.5, With spring washer) | DXT031-30-11  
VF5000 | Hexagon socket head cap screw AXT620-32-1 (M4 x 48, With spring washer) | DXT156-9-8

---

**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.
**Dimensions: Series VF3000**

**Type 40/VV5F3-□-□-0□□-□-□: Common exhaust**

**Grommet (G) (H)**

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

**L: Dimensions**

<table>
<thead>
<tr>
<th>n: Stations</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>113.5</td>
<td>143.5</td>
<td>173.5</td>
<td>203.5</td>
<td>233.5</td>
<td>263.5</td>
<td>293.5</td>
<td>323.5</td>
<td>353.5</td>
<td>383.5</td>
<td>413.5</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>71.5</td>
<td>101.5</td>
<td>131.5</td>
<td>161.5</td>
<td>191.5</td>
<td>221.5</td>
<td>251.5</td>
<td>281.5</td>
<td>311.5</td>
<td>341.5</td>
<td>371.5</td>
<td>401.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>n</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>441</td>
<td>461.5</td>
<td>481.5</td>
<td>501.5</td>
<td>521.5</td>
<td>541.5</td>
</tr>
<tr>
<td>L2</td>
<td>429</td>
<td>446.5</td>
<td>464.5</td>
<td>481.5</td>
<td>501.5</td>
<td>521.5</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).

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

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

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

**Dimensions: Series VF3000**

(\text{mm})

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

**Grommet (G) (H)**

**L: Dimensions**

\[
\begin{array}{cccccccccccc}
\text{Station n} & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 & 12 & 13 & 14 \\
\hline
\text{L1} & 83.5 & 111 & 138.5 & 166 & 193.5 & 221 & 248.5 & 276 & 303.5 & 331 & 358.5 & 386 & 413.5 \\
\text{L2} & 71.5 & 99 & 126.5 & 154 & 181.5 & 209 & 236.5 & 264 & 291.5 & 319 & 346.5 & 374 & 401.5 \\
\hline
\end{array}
\]

**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 VF5000

Type 40/VVF5-40-■-2-02■: Common exhaust

Grommet (G)

(Pitch) P = 33

4 x ø7

(For mounting)

Manual override

L1
6.5

L2

20.5

13

28

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

Indicator light

L: Dimensions

n: Stations

<table>
<thead>
<tr>
<th>n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>93</td>
<td>126</td>
<td>159</td>
<td>192</td>
<td>225</td>
<td>258</td>
<td>291</td>
<td>324</td>
<td>357</td>
</tr>
<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>

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

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).
Series VF3000/5000

Dimensions: Series VF5000

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

Grommet (G)

How to Use L/M-Type Plug Connector

Individual EXH spacer (VF5000-75-2A)

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D) (Y)

Conduit terminal (T)

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

Regardless of an electric signal for the solenoid valve, the manual override is used for switching the main valve. Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

- **Non-locking push type**

Push down on the manual override with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

- **Push-turn locking slotted type**

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

- **Push-turn locking lever type**

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

**Caution**

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

Do not apply excessive torque when turning the locking type manual override. (0.07 lbf·ft (0.1 N·m))

---

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

1. **Connector attachment/detachment**

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

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

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

3. **Socket with lead wire attachment/detachment**

   - **Attachment**
     Insert the sockets into the square holes of the connector (with +, – indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then, confirm that they are locked by pulling lightly on the lead wires.

   - **Detachment**
     To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.
**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>DC</th>
<th>100 VAC</th>
<th>200 VAC</th>
<th>Other AC voltages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V200-30-4A-</td>
<td>V200-30-1A-</td>
<td>V200-30-2A-</td>
<td>V200-30-3A-</td>
</tr>
<tr>
<td>Without lead wire (With a connector and 2 sockets)</td>
<td>V200-30-A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Lead wire length**
  - Nil: 300 mm
  - 6: 600 mm
  - 10: 1000 mm
  - 15: 1500 mm
  - 20: 2000 mm
  - 25: 2500 mm
  - 30: 3000 mm
  - 50: 5000 mm

**How to Order**
Specify the connector assembly part number together with the part number for the plug connector type solenoid valve without connector.

(Example) Lead wire length: 2000 mm

- **DC**
  - VF3130-5LO1-02
  - V200-30-4A-20

- **AC**
  - VF3130-1LO1-02
  - V200-30-1A-20

**How to Use DIN Terminal Connector**

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

**Caution**

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

In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires corresponding to the polarity (+ or –) that is printed on the terminal block.

4. Secure the cord by fastening the ground nut.

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

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

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

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

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

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

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

![Y type and D type diagrams](image)

**How to Order DIN Connector**

**Caution**

- Without indicator light
  - DC, AC, Common to all voltages: V200-\( \square \)-1

- With indicator light
  - DC
    - Polar type (\( \square \ Z \)): V200-\( \square \)-3
    - Non-polar type (\( \square \ U \)): V200-\( \square \)-5
  - AC (\( \square \ Z \))
    - Connector specifications:
      - D type: V200-\( \square \)-7
      - Y type: V200-\( \square \)-5
    - Rated voltage:
      - 05: 24 VDC
      - 06: 12 VDC

**Rated voltage**

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

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

**DC (\( \square \ Z \)) circuit diagram**

- LED: Light emitting diode
- D: Protective diode
- R: Resistor

**AC (\( \square \ Z \)) circuit diagram**

- NL: Neon light
- R: Resistor

**DC (\( \square \ U \)) 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.

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

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

**Applicable cable**

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

**Applicable crimped terminal**

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

* Use O terminal when a ground terminal is used.
Light/Surge Voltage Suppressor

**Caution**

*<DC>*

**Polar type**

With surge voltage suppressor (S)

![Diagram of polarity protection diode with red (+) and black (-) connections.]

- Grommet or L/M-type plug connector
  With light/surge voltage suppressor (Z)

- DIN or Conduit terminal
  With light/surge voltage suppressor (Z)

**Non-polar type**

With surge voltage suppressor (R)

![Diagram of polarity protection diode with colored connections.]

- Grommet or L/M-type plug connector
  With light/surge voltage suppressor (U)

- DIN or Conduit terminal
  With light/surge voltage suppressor (U)

- LED

- Varistor

- Diode

- Black (-) O

- Red (+) O

- For DIN type, installed in the connector

- Piping port

- Applicable tubing O.D.

- Applicable Fittings: Series

- Residual voltage of the surge voltage suppressor

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

- Note) LED for 24 VAC.

- 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.

- 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.

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

- Residual Voltage

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>DC 24 V</th>
<th>12 V</th>
<th>AC Approx. 1 V</th>
<th>Approx. 32 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>S, Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R, U</td>
<td>Approx. 47 V</td>
<td></td>
<td>Approx. 32 V</td>
<td></td>
</tr>
</tbody>
</table>

**<AC>**

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

- DIN or Conduit terminal
  With light/surge voltage suppressor (Z)

- Note) LED for 24 VAC.

- Residual Voltage

- Applicable Fittings: Series

- Specific Product Precautions 4

Be sure to read before handling.

Refer to back cover for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.
# 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>VF1□20□□1-M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>VF1□20□□1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>VF1□3□□□1-M5</td>
<td>4(A), 2(B)</td>
<td>M5</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>VF1□3□□□1-01</td>
<td>4(A), 2(B)</td>
<td>1/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 30 manifold base</td>
<td>1(P), 5/3(R)</td>
<td>1/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
<tr>
<td>Type 31 manifold base</td>
<td>1(P)</td>
<td>1/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Piping port</th>
<th>Port size</th>
<th>Applicable tubing O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF3000</td>
<td>VF3□3□□□1-01 &amp; 02</td>
<td>4(A), 2(B)</td>
<td>1/8 &amp; 1/4</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>VF3□4□□□1-01 &amp; 02</td>
<td>4(A), 2(B)</td>
<td>3/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 30 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/4</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Piping port</th>
<th>Port size</th>
<th>Applicable tubing O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF5000</td>
<td>VF5□2□□□1-02 &amp; 03</td>
<td>4(A), 2(B)</td>
<td>1/4 &amp; 3/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td></td>
<td>VF5□4□□□1-02 &amp; 03</td>
<td>4(A), 2(B)</td>
<td>1/4 &amp; 3/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
</tr>
<tr>
<td>Type 20 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>3/8</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
<tr>
<td>Type 21 manifold base</td>
<td>1(P), 5(R), 3(R)</td>
<td>1/2</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
<tr>
<td>Type 40 manifold base</td>
<td>4(A), 2(B)</td>
<td>1/4</td>
<td>Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16</td>
<td></td>
</tr>
</tbody>
</table>

---

Be sure to read before handling.
Refer to back cover for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.
**Low Wattage Specification (VF1000/3000)**

**Specific Product Precautions 6**

Be sure to read before handling.

Refer to back cover for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

---

### Manual Override

**Warning**

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

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

### Caution

When operating the D type, use a watchmakers' screwdriver and turn lightly.

[Torque: Less than 0.07 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.

---

### 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 L/M-Type Plug Connector

**Warning**

**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)

   ![Crimping Diagram](Diagram)

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.

---

**Diagram**

- [Diagram of Manual Override]
- [Diagram of Solenoid Valve]
- [Diagram of Connector Attachment/Detachment]
- [Diagram of Crimping Lead Wire and Socket Connection]
- [Diagram of Socket with Lead Wire Attachment/Detachment]
How to Use DIN Terminal

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>DIN Connector Part No.</th>
<th>Light/Surge Voltage Suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Use DIN Terminal</td>
<td></td>
</tr>
</tbody>
</table>

**Caution**

1. **L/M-type plug connector**

   ![Diagram of L/M-type plug connector]

   (<DC>)

   (<AC>)

   2. **DIN terminal**

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

      ![Diagram of DIN terminal with surge suppressor]

      (<DC>)

      (<AC>)

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

      ![Diagram of DIN terminal with light/surge suppressor]

      (<DC>)

      (<AC>)

   **Caution**

   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.

**Note**

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

**How to Use DIN Terminal**

1. ISO#: Conforming to EN-175301-803C (former DIN 43650C)
   (Distance between pins: 8 mm)

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

2. **Connection**

   1. Loosen the set screw and pull the connector out of the solenoid valve terminal block.

   2. After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.

   3. Loosen the terminal screws (slotted head screw) on the terminal block, insert the core of the lead wire into the terminal according to wiring connection, and attach securely with the terminal screws.

   4. Tighten the ground nut to secure the wire.

3. **Changing the entry direction**

   After separating the terminal block and housing, the cord entry direction can be changed by attaching the housing in a different direction (four directions at 90° intervals).

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

**DIN terminal (D)**

- **Without indicator light**: SY100-61-1
- **With indicator light**

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

**DIN terminal (Y)**

- **Without indicator light**: SY100-52-1
- **With indicator light**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-82-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-82-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-82-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-82-2-02</td>
</tr>
<tr>
<td>110 VAC (115VAC)</td>
<td>110 V</td>
<td>SY100-82-2-03</td>
</tr>
<tr>
<td>220 VAC (230 VAC)</td>
<td>220 V</td>
<td>SY100-82-2-04</td>
</tr>
</tbody>
</table>

**Circuit diagram with light**

**AC circuit diagram**

- NL: Neon light
- R: Resistor

**DC circuit diagram**

- LED: Light emitting diode
- R: Resistor
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:** Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

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

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

---

**Caution**

1. The product is provided for use in manufacturing industries. The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

**Limited warranty and Disclaimer/Compliance Requirements**

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

Read and accept them before using the product.

**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. 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.

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**Revision history**

<table>
<thead>
<tr>
<th>Edition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Addition of rated voltage 24 VAC to Series VF1000/3000/5000 OZ</td>
</tr>
<tr>
<td>C</td>
<td>Addition of low wattage specification to Series VF1000/3000 QX</td>
</tr>
</tbody>
</table>

---

**Safety Instructions**

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