Selective power consumption!

0.4 w
[Low wattage specification]

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

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

- **Built-in full-wave rectifier** (AC)
  - **Noise reduction**
    Noise is considerably reduced by changing it to DC mode with a full-wave rectifier.

- **Reduced apparent power**
  - **Current** 5.6 VA → 1.55 VA [Standard]

- **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 of energy saving type

<table>
<thead>
<tr>
<th>Applied voltage</th>
<th>24 V</th>
<th>0 V</th>
<th>1.55 W (Energy saving)</th>
<th>0.55 W (With power saving circuit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
<td>40 ms</td>
</tr>
</tbody>
</table>

Built-in full-wave rectifier (AC)

- **Noise reduction**
  Noise is considerably reduced by changing it to DC mode with a full-wave rectifier.

- **Reduced apparent power**
  - **Current** 5.6 VA → 1.55 VA [Standard]

- **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.

Rubber material: HNBR
Ozone-resistant specification
The pilot valve poppet is made of FKM.
## VP300/500/700 Series

### Model Selection by Operating Conditions

#### Solenoid Valve: Single Unit

<table>
<thead>
<tr>
<th>Series</th>
<th>Sonic conductance C [dm³/(s·bar)]</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Voltage</th>
<th>Electrical entry</th>
<th>Light/surge voltage suppressor</th>
<th>Manual override</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP300</td>
<td>4.2</td>
<td>Internal pilot N.C.</td>
<td>1/8</td>
<td>12 VDC, 24 VDC, 24 VAC</td>
<td>Grommet</td>
<td>L-type plug connector</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>VP500</td>
<td>8.9</td>
<td>N.O.</td>
<td>1/4</td>
<td>100 VAC, 200 VAC, 220 VAC</td>
<td>L-type plug connector</td>
<td>M-type plug connector</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td>VP700</td>
<td>15.3</td>
<td>External pilot N.C./N.O.</td>
<td>3/8</td>
<td>100 VAC, 200 VAC, 220 VAC, 240 VAC</td>
<td>DIN terminal</td>
<td>DIN (EN1753 01-803) terminal</td>
<td>Push-turn locking lever type</td>
</tr>
</tbody>
</table>

#### Low wattage specification

Power consumption: 0.35 W (Without light) 0.4 W (With light)

From page 1073
### Model Selection by Operating Conditions

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP300</td>
<td>Common EXH</td>
<td>VV3P3-41</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P3-42</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-41</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-42</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-41</td>
<td>3(R) port 1/2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-42</td>
<td>3(R) port 1/2</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

---

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP500</td>
<td>Common EXH</td>
<td>VV3P3-41</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P3-42</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-42</td>
<td>3(R) port 1/2</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

---

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP700</td>
<td>Common EXH</td>
<td>VV3P3-41</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P3-42</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-41</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-42</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>3(R) port 1/2</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>3(R) port 1/2</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

---

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>VV3P3-41</td>
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</tr>
<tr>
<td></td>
<td></td>
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</tr>
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<td></td>
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<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-42</td>
<td>3(R) port 3/8</td>
</tr>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-42</td>
<td>3(R) port 1/2</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

---

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>VV3P3-41</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P3-42</td>
<td>3(R) port 1/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-41</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P5-42</td>
<td>3(R) port 3/8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-41</td>
<td>3(R) port 1/2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VV3P7-42</td>
<td>3(R) port 1/2</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.
Rubber Seal
3 Port/Pilot Poppet Type
Body Ported/Single Unit

VP300/500/700 Series

How to Order

Series

Body ported

Pilot type

Pressure specification

Coil specification

Rated voltage

Electrical entry

Thread type

Bracket

Type of actuation

Port size

Made to Order

Manual override

Light/surge voltage suppressor

Caution

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time. (Refer to page 1088 for details.)

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.)

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

* LN and MN types are with 2 sockets.
* Refer to page 1087 for details on the DIN (EN175301-803) terminal.

AC (50/60 Hz) Note)

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only

Only applies to X500 and X505 for made-to-order specifications

RoHS

UL-compliant
Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C. or N.O. (Convertible)</td>
</tr>
<tr>
<td>Internal pilot</td>
<td>Standard</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.2 to 0.7 (High-pressure type)</td>
</tr>
<tr>
<td>External pilot</td>
<td>Standard</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>–100 kPa to 0.7 (High-pressure type) (Same as operating pressure (Min. 0.2 MPa))</td>
</tr>
<tr>
<td>Pilot pressure range</td>
<td>–10 to 50 (No freezing)</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) (Note)</td>
<td>300/50</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust-tight (IP65 for D, Y, T)</td>
</tr>
</tbody>
</table>

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

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

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H)</th>
<th>L-type plug connector (L)</th>
<th>M-type plug connector (M)</th>
<th>DIN terminal (D)</th>
<th>DIN (EN175301-803) terminal (Y)</th>
<th>Conduit terminal (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC (50/60 Hz)</td>
<td>24, 12</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power consumption (W)</th>
<th>DC</th>
<th>1.5 (With light: 1.55)</th>
<th>1.5 (With light: 1.75)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC</td>
<td>0.55 Note) (With light only)</td>
<td>0.75 Note) (With light only)</td>
</tr>
<tr>
<td></td>
<td>24 V</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.75)</td>
</tr>
<tr>
<td></td>
<td>100 V</td>
<td>1.55 (With light: 1.65)</td>
<td>1.55 (With light: 1.7)</td>
</tr>
<tr>
<td></td>
<td>110 V [115 V]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>220 V [230 V]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>240 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (Non-polar type: Varistor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon bulb is used for AC mode of D, Y, T.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage)

Response Time

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure specifications</th>
<th>Response time ms (at 0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without light/surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td>VP342</td>
<td>Standard (0.2 to 0.7)</td>
<td>13 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>17 or less</td>
</tr>
<tr>
<td>VP542</td>
<td>Standard (0.2 to 0.7)</td>
<td>14 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>18 or less</td>
</tr>
<tr>
<td>VP742</td>
<td>Standard (0.2 to 0.7)</td>
<td>19 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>22 or less</td>
</tr>
</tbody>
</table>

Note) Made to Order (Refer to page 1083 for details.)

External Pilot

Use external pilot type in the following cases:
- For vacuum or for low pressure 0.2 MPa or less
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower

VP300 Series

VP500 Series

VP700 Series

Made to Order

X500 Pilot exhaust port with piping thread (M3) specification

X505 Interchangeable specification with the previous valve mounting hole pitch type

X600 Triac output specification

Note) Impact resistance: 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%

Note) Refer to page 1088 for details.

1057
VP300/500/700 Series

Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>1 ↔ 2 (P ↔ A) C [dm³/s·bar] b</th>
<th>1 ↔ 2 (P ↔ A) Cv</th>
<th>2 ↔ 3 (A ↔ R) C [dm³/s·bar] b</th>
<th>2 ↔ 3 (A ↔ R) Cv</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP342</td>
<td>1/8</td>
<td>3.5</td>
<td>0.26</td>
<td>0.8</td>
<td>3.6</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>4.2</td>
<td>0.22</td>
<td>1.0</td>
<td>4.2</td>
<td>0.23</td>
</tr>
<tr>
<td>VP542</td>
<td>1/4</td>
<td>7.9</td>
<td>0.21</td>
<td>1.8</td>
<td>7.2</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>3/8</td>
<td>8.9</td>
<td>0.16</td>
<td>2.2</td>
<td>8.9</td>
<td>0.20</td>
</tr>
<tr>
<td>VP742</td>
<td>3/8</td>
<td>11.9</td>
<td>0.21</td>
<td>2.7</td>
<td>11.8</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Note) Values without bracket

Application Example

1) Blow-off valve
2) Pressure release valve
3) Selector valve
4) Valve for vacuum
5) Divider valve
6) Single-acting cylinder drive
7) Double-acting cylinder drive
8) Double-acting cylinder drive (Exhaust center)

Construction

Body ported

Symbol

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>Poppet valve</td>
<td>Aluminum/HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Retainer</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

Bracket Assembly Part No.

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket (With 2 screws)</td>
<td>VP342</td>
<td>VP300-227-1A</td>
</tr>
<tr>
<td></td>
<td>VP542</td>
<td>VP500-227-1A</td>
</tr>
<tr>
<td></td>
<td>VP742</td>
<td>VP700-227-1A</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>8</td>
<td>Pilot valve assembly</td>
<td>Refer to “How to Order Pilot Valve Assembly” on page 1059.</td>
<td>Built-in strainer</td>
</tr>
</tbody>
</table>
How to Order Pilot Valve Assembly

**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: **VP [ ] [ ] [ ] [ ] - 5 [ ] [ ] Z 1 - [ ] [ ]**
* Select from the below in accordance with the valve used.

**Grommet or L/M-type**

- **V211**: [ ] [ ] [ ] [ ] - 5 [ ] [ ] Z

**DIN or Conduit type**

- **V212**: [ ] [ ] - 5

**Light/surge voltage suppressor**

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

Note: There is no S option for AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

**Caution**
When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1093 for details.

**Electrical entry**

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

* LN and MN types are with 2 sockets.
* Refer to page 1068 when different length of lead wire for L/M-type plug connector is required.

**Pressure specification**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Standard (0.7 MPa)</td>
</tr>
<tr>
<td>K</td>
<td>High-pressure type (1.0 MPa)</td>
</tr>
</tbody>
</table>

**Coil specification**

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Standard</td>
</tr>
<tr>
<td>T</td>
<td>With power saving circuit (DC only)</td>
</tr>
</tbody>
</table>

* T type is only available for DC mode.

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

**Caution**
Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m
VP300/500/700 Series

VP300 Series/Body Ported/Dimensions

Grommet (G)

Approx. 300 (Lead wire length)

(Max. 10)

102.4

76.9

88.9

20

42.7

(M5 x 0.8)

(External pilot port)

(External pilot specification: R)

(Applicable cable O.D.

ø4.5 to ø7)

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).

[ ]: Without indicator light

* Refer to page 1083 separately when piping to PE port is required.
VP300/500/700 Series

VP700 Series/Body Ported/Dimensions

Grommet (G)

Grommet (G)
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).
Rubber Seal
3 Port/Pilot Poppet Type
Base Mounted/Single Unit

VP300/500/700 Series

How to Order

Base mounted

Series

VP 3 4 4 5 G 1 A

Pilot type

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</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>VP300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
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</tbody>
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Pressure specification

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</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Standard (0.7 MPa)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>High-pressure type (1.0 MPa)</td>
<td></td>
<td></td>
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</tbody>
</table>

Coil specification

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

Rated voltage

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

AC (50/60 Hz) Note)

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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>200 VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>110 VAC (115 VAC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>220 VAC (230 VAC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>24 VAC</td>
<td></td>
<td></td>
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</tbody>
</table>

Note) For triac output, refer to the made-to-order specifications (X600).

Electrical entry

Grommet

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

L-type plug connector

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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>With lead wire (length 300 mm)</td>
<td></td>
<td></td>
<td></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>
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</tbody>
</table>

M-type plug connector

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</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>With connector (IP65 compatible)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>With connector (IP65 compatible)</td>
<td></td>
<td></td>
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</table>

DIN terminal

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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Without connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO</td>
<td>Without connector</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

DIN (EN175301-803) terminal

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Without connector</td>
<td></td>
<td></td>
<td></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>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Conduit terminal

<p>| | | | | | | | | |</p>
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<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Push-turn locking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Lever type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Made to Order

<p>| | | | | | | | | |</p>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>L-type plug connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Without sub-plate</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Port size (Sub-plate)

<p>| | | | | | | | | |</p>
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<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X500</td>
<td>Pilot exhaust port with piping thread (M3) specification (Refer to page 1083)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X600</td>
<td>Triac output specification (Refer to page 1083)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
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Manual override

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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Non-locking push type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Push-turn locking slotted type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Push-turn locking lever type</td>
<td></td>
<td></td>
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</tbody>
</table>

Light/surge voltage suppressor

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

Note) For triac output, refer to the made-to-order specifications (X600).

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1093 for details.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only
Only applies to X500 and X505 for made-to-order specifications

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time.
(Refer to page 1088 for details.)

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

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only
Only applies to X500 and X505 for made-to-order specifications

Note) LN and MN types are with 2 sockets.

Note) Refer to page 1086 when different length of lead wire for L/M-type plug connector is required.

Note) Refer to page 1087 for details on the DIN (EN175301-803) terminal.

Note) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE/UKCA marking compliant.

1063
Use external pilot type in the following cases:
- For vacuum or for low pressure 0.2 MPa or less
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower
- If manifold, external pilot piping can be centralized in manifold base.

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C. or N.O. (Convertible)</td>
</tr>
<tr>
<td>Internal pilot</td>
<td>Standard</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.2 to 0.7</td>
</tr>
<tr>
<td>External pilot</td>
<td>Standard</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>-100 kPa to 0.7</td>
</tr>
<tr>
<td>Pilot pressure range</td>
<td>Same as operating pressure (Min. 0.2 MPa)</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>-10 to 50 (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>300/50</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust-tight (IP65 for D, Y, T)</td>
</tr>
</tbody>
</table>

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

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

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>DC (50/60 Hz)</td>
<td>24, 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC (50/60 Hz)</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>±10% of rated voltage*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparent power (VA)*</td>
<td>AC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (Non-polar type: Varistor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon bulb is used for AC mode of D, Y, T.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Made to Order
(Refer to page 1083 for details.)

X500 Pilot exhaust port with piping thread (M3) specification
X600 Triac output specification

Response Time

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure specifications</th>
<th>Without light/surge voltage suppressor</th>
<th>With light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP344</td>
<td>Standard (0.2 to 0.7)</td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>17 or less</td>
<td>13 or less</td>
</tr>
<tr>
<td>VP544</td>
<td>Standard (0.2 to 0.7)</td>
<td>14 or less</td>
<td>12 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>18 or less</td>
<td>13 or less</td>
</tr>
<tr>
<td>VP744</td>
<td>Standard (0.2 to 0.7)</td>
<td>19 or less</td>
<td>14 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>22 or less</td>
<td>17 or less</td>
</tr>
</tbody>
</table>

Note) Made to Order
(Refer to page 1083 for details.)

X500 Pilot exhaust port with piping thread (M3) specification
X600 Triac output specification

Response time ms (at 0.5 MPa)

Note) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage)
Flow Rate Characteristics/Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>1 ↔ 2 (P ↔ A)</th>
<th>2 ↔ 3 (A ↔ R)</th>
<th>Weight (g) Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP344</td>
<td>1/8</td>
<td>3.6 0.22 0.8</td>
<td>3.6 0.24 0.8</td>
<td>216 (149) 252 (185)</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>3.9 0.22 0.9</td>
<td>3.8 0.14 0.9</td>
<td>211 (149) 247 (185)</td>
</tr>
<tr>
<td>VP544</td>
<td>1/4</td>
<td>7.5 0.16 1.7</td>
<td>7.3 0.20 1.7</td>
<td>370 (245) 406 (281)</td>
</tr>
<tr>
<td></td>
<td>3/8</td>
<td>8.8 0.07 2.0</td>
<td>8.8 0.13 2.0</td>
<td>362 (245) 396 (281)</td>
</tr>
<tr>
<td>VP744</td>
<td>3/8</td>
<td>12.9 0.10 2.9</td>
<td>13.3 0.24 3.1</td>
<td>676 (459) 712 (495)</td>
</tr>
<tr>
<td></td>
<td>1/2</td>
<td>14.7 0.05 3.3</td>
<td>15.0 0.17 3.4</td>
<td>658 (459) 694 (495)</td>
</tr>
</tbody>
</table>

Note) ( ): Values without sub-plate

Application Example

1. Blow-off valve
2. Pressure release valve
3. Selector valve
4. Valve for vacuum
5. Divider valve
6. Single-acting cylinder drive
7. Double-acting cylinder drive
8. Double-acting cylinder drive (Exhaust center)

Construction

Base mounted

Symbol

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>Poppet valve</td>
<td>Aluminum/HNBR</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Retainer</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>7</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>8</td>
<td>Pilot valve assembly</td>
<td>VP344, VP544, VP744</td>
<td>Built-in strainer</td>
</tr>
<tr>
<td>9</td>
<td>Gasket</td>
<td>VP300-217-1, VP500-217-1, VP700-217-1</td>
<td>HNBR</td>
</tr>
<tr>
<td>10</td>
<td>Sub-plate</td>
<td>VP300-202-1, VP500-202-1, VP700-202-1</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head bolt (1 pc.)</td>
<td>VP300-224-1 (M3 x 36), VP500-224-1 (M4 x 46), VP700-224-1 (M5 x 66)</td>
<td>For valve mounting</td>
</tr>
</tbody>
</table>

How to Order Sub-plate

VP | 00 - 202 - 1

Series

Thread type

Port size

<table>
<thead>
<tr>
<th>Port size</th>
<th>VP344</th>
<th>VP544</th>
<th>VP744</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>0.8 N·m</td>
<td>1.4 N·m</td>
<td>2.9 N·m</td>
</tr>
<tr>
<td>M4</td>
<td>1.4 N·m</td>
<td>2.9 N·m</td>
<td>5.2 N·m</td>
</tr>
<tr>
<td>M5</td>
<td>2.9 N·m</td>
<td>5.2 N·m</td>
<td>9.9 N·m</td>
</tr>
</tbody>
</table>

Note) These specifications are common to the internal and external pilots.

Caution

Tightening Torque of Mounting Screw

Symbol

Port size

<table>
<thead>
<tr>
<th>Port size</th>
<th>VP344</th>
<th>VP544</th>
<th>VP744</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>0.8 N·m</td>
<td>1.4 N·m</td>
<td>2.9 N·m</td>
</tr>
<tr>
<td>M4</td>
<td>1.4 N·m</td>
<td>2.9 N·m</td>
<td>5.2 N·m</td>
</tr>
<tr>
<td>M5</td>
<td>2.9 N·m</td>
<td>5.2 N·m</td>
<td>9.9 N·m</td>
</tr>
</tbody>
</table>

Note) These specifications are common to the internal and external pilots.
How to Order Pilot Valve Assembly

⚠️ 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: VP □ □ □ □ - 5 □ □ □ □
* Select from the below in accordance with the valve used.

- Grommet or L/M-type
  - V211 - 5 □ □ □
  - Light/surge voltage suppressor
    - Nil: Without light/surge voltage suppressor
    - S: With surge voltage suppressor
    - Z: With light/surge voltage suppressor
  - Coil specification
    - Nil: Standard
    - T: With power saving circuit (DC only)
  - Pressure specification
    - Nil: Standard (0.7 MPa)
    - K: High-pressure type (1.0 MPa)

- DIN or Conduit type
  - V212 - 5 □ □ □
  - Light/surge voltage suppressor
    - Nil: Without light/surge voltage suppressor
    - S: With surge voltage suppressor
    - Z: With light/surge voltage suppressor
  - Coil specification
    - Nil: Standard
    - T: With power saving circuit (DC only)
  - Pressure specification
    - Nil: Standard (0.7 MPa)
    - K: High-pressure type (1.0 MPa)

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

⚠️ Caution
Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N-m
VP300 Series/Base Mounted/Dimensions

Grommet (G)

1/8, 1/4
2(A) port

43.7
18.5

(Approx. 300
(Lead wire length)

2 x ø4.2
(For mounting)

1.3

30
11.2

Manual override

57.6
6.7

96.1

(Approx. 300
(Lead wire length)

M5 x 0.8
External pilot port

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

19.5
34

39

* Refer to page 1083 separately when piping to PE port is required.

DC without light/surge voltage suppressor

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D, Y)

Conduit terminal (T)

(Applicable cable O.D.
ø4.5 to ø7)

Indicator light

GC

VC

[ ] Without indicator light

[ ] Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).
VP500 Series/Base Mounted/Dimensions

Grommet (G)

1/4, 3/8
2(A) port

28.5
50.5

2 x ø5.2
(For mounting)

47
122.3

1/4, 3/8
3(R) port

12.6

Manual override

83.8

NO 2A
1P NC
NC

Approx. 300
(Lead wire length)

84.5

1/8
(External pilot port)

23
6.5

1/4, 3/8
1(P) port

23

X

73.5

PE port*
 ø3.8

57

2 x ø5.2
(For mounting)

47

122.3

1/4, 3/8
2(A) port

28.5

Ref. to page 1083 separately when piping to PE port is required.

Approx. 300
(Lead wire length)

(Applicable cable O.D. ø4.5 to ø7)

Grommet (G)
DC without light/surge voltage suppressor

VP500 Series/Base Mounted/Dimensions

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).
VP700 Series/Base Mounted/Dimensions

Grommet (G)

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).
Low Wattage Specification

VP300/500 Series

How to Order Valve

Series
3 VP300
5 VP500

Body type
2 Body ported
4 Base mounted

Mountable manifold
41 42

Pilot type
Nil Internal pilot
R External pilot

Low wattage type

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

Electrical entry

Grommet
Q: Lead wire length 300 mm
H: Lead wire length 600 mm
L: With lead wire (Length 300 mm)
M: With lead wire (Length 300 mm)
N: Without lead wire

M-type plug connector
DIN terminal

Type of actuation
A N.C. (Normally closed)
B N.O. (Normally open)

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

Bracket
Nil Without bracket
F With bracket

Body Ported

Symbol Port size VP300 VP500
01 1/8 0 0
02 1/4 0 0
03 3/8 0 0

Base Mounted

Symbol Port size VP300 VP500
Nil Without sub-plate 0 0
01 1/8 0 0
02 1/4 0 0
03 3/8 0 0

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

Electrical entry for G, H, L, M
Nil Without light/surge voltage suppressor
S With surge voltage suppressor
Z With light/surge voltage suppressor (Non-polar type)
R With surge voltage suppressor (Non-polar type)
U With light/surge voltage suppressor (Non-polar type)

Electrical entry for D, Y
Nil Without light/surge voltage suppressor
S With surge voltage suppressor (Non-polar type)
Z With surge voltage suppressor (Non-polar type)

Light/Surge voltage suppressor

For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.

For “R” and “U”, DC voltage is only available.

Note) AC-type models that are CE/UKCA-compliant have DIN terminals only. Refer to the electrical entry for details.

RoHS

∗ LN and MN types are with 2 sockets.
∗ Y type DIN terminal complies with EN-175301-803C (former DIN 43650C). Refer to page 1092 for details.
∗ For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
∗ For “R” and “U”, DC voltage is only available.

∗ DOZ and YOZ are not available.
∗ For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
## Specifications

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C. or N.O. (Convertible)</td>
</tr>
<tr>
<td>Internal pilot operating pressure range (MPa)</td>
<td>0.2 to 0.7</td>
</tr>
<tr>
<td>External pilot operating pressure range (MPa)</td>
<td>–100 KPa to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type Push-turn locking slotted type Push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust type</td>
<td>Individual exhaust</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) Note)</td>
<td>G, H, L, M D, Y</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (IP65 for D and Y)</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)

### Electrical entry

<table>
<thead>
<tr>
<th>Coil rated voltage (V)</th>
<th>DC</th>
<th>24, 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (50/60 Hz)</td>
<td>100, 110, 200, 220</td>
<td></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</td>
<td>0.35 (With light: 0.4 (With light of DIN terminal: 0.45))</td>
</tr>
<tr>
<td>AC</td>
<td>0.78 (With light: 0.81)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.86 (With light: 0.89)</td>
<td></td>
</tr>
<tr>
<td>110 V</td>
<td>0.86 (With light: 0.97)</td>
<td></td>
</tr>
<tr>
<td>200 V</td>
<td>1.18 (With light: 1.22)</td>
<td></td>
</tr>
<tr>
<td>220 V</td>
<td>1.30 (With light: 1.34)</td>
<td></td>
</tr>
<tr>
<td>[230 V]</td>
<td>1.39 (With light: 1.46)</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 bulb is used for AC mode of D and Y.)</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.  
* For details, refer to page 1090.

### Response Time

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Response time ms (at 0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without light/surge voltage suppressor</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td>VP300</td>
<td>VP342Y</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>VP344Y</td>
<td>16</td>
</tr>
<tr>
<td>VP500</td>
<td>VP542Y</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>VP544Y</td>
<td>31</td>
</tr>
</tbody>
</table>

Note) Based on dynamic performance test, JIS B 8419: 2010.  
(Coil temperature: 20°C, at rated voltage)
Low Wattage Specification
Body Ported/Base Mounted **VP300/500 Series**

**Dimensions**

**VP542Y**

---

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

- M5 mounting groove
- (Indicator light)
- ø3.8 PE port
- 1/4, 3/8 (1(P), 3(R) port)
- 2 x ø4.2 (For mounting)
- G: Approx. 300
- H: Approx. 600

---

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

- 1/4, 3/8 (1(P), 3(R) port)
- 2 x ø4.2 (For mounting)

---

**DIN terminal (D,Y)**

- Max. 10
- Pg7
- Applicable cable O.D. ø3.5 to ø7

---

**Page 1073**
How to Order Manifold

**Type 41/Common exhaust**

- **VV3P 3-41-04 1-02**
- **Series**
  - 3: VP300
  - 5: VP500
  - 7: VP700
- **Pilot type**
  - Nil
  - R: Internal pilot
  - Other options as well
- **Thread type**
  - Nil
  - Rc
  - F
  - N
  - Other options as well
- **Port size**
  - Symbol: 02
  - Port size: 1/4
  - Applicable series: VP300
  - Symbol: 03
  - Port size: 3/8
  - Applicable series: VP500
  - Symbol: 04
  - Port size: 1/2
  - Applicable series: VP700
- **Stations**
  - 02: 2 stations
  - 20: 20 stations

**Type 42/Individual exhaust**

- **VV3P 3-42-04 3-02**
- **Series**
  - 3: VP300
  - 5: VP500
  - 7: VP700
- **Pilot type**
  - Nil
  - R: Internal pilot
  - Other options as well
- **Thread type**
  - Nil
  - Rc
  - F
  - N
  - Other options as well
- **Port size**
  - Symbol: 02
  - Port size: 1/4
  - Applicable series: VP300
  - Symbol: 03
  - Port size: 3/8
  - Applicable series: VP500
  - Symbol: 04
  - Port size: 1/2
  - Applicable series: VP700
- **Stations**
  - 02: 2 stations
  - 20: 20 stations

Note: When the external pilot type manifold is selected, external pilot type valves are mounted.
Pilot Poppet Type
Common Exhaust Type 41/Individual Exhaust Type 42

VP300/500/700 Series

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

VP 3 4 4 - 5 G 1 A

Series
3: VP300
5: VP500
7: VP700

Type of actuation
A: N.C. (Normally closed)
B: N.O. (Normally open)

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

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

Pressure specification
Nil: Standard (0.7 MPa)
K: High-pressure type (1.0 MPa)

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

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

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

Made to Order
X500: Pilot exhaust port with piping thread (M3)
X600: Triac output specification (Refer to page 1083)

RoHS

UL-compliant

Caution
When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1093 for details.

Note) For triac output, refer to the made-to-order specifications (X600).

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

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

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only. Only applies to X500 and X605 for made-to-order specifications.

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time. (Refer to page 1086 for details.)

∗ T type is only available for DC mode. 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.)

∗ There is no S option for 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.

∗ LN and MN types are with 2 sockets.

∗ Refer to page 1086 when different length of lead wire for L/M-type plug connector is required.

∗ Refer to page 1087 for details on the DIN (EN175301-803) terminal.

∗ With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE/UKCA marking compliant.
Piping is concentrated on the base side.

All external pilots are gathered in the base. Common external pilot port allows one piping.

2 types of exhaust ports

Common or individual exhaust type are available. For individual exhaust type, exhaust can be restricted.

Easy to change between N.C. and N.O.

Type of actuation can be easily changed from normally closed to normally open by changing the direction of a valve and end-plate only 180°.

• Refer to page 1093 for changing the type of actuation.

Manifold Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Base model</th>
<th>Piping specifications</th>
<th>Applicable valve</th>
<th>Applicable stations</th>
<th>Manifold base Weight: W [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP300</td>
<td>VP3P-41</td>
<td>Common 1/4</td>
<td>VP344</td>
<td>2 to 20 stations</td>
<td>W = 110n + 90</td>
</tr>
<tr>
<td>VP300</td>
<td>VP3P-42</td>
<td>Individual 1/4</td>
<td>VP344</td>
<td>2 to 20 stations</td>
<td>W = 190n + 150</td>
</tr>
<tr>
<td>VP500</td>
<td>VP3P-41</td>
<td>Common 3/8</td>
<td>VP544</td>
<td>2 to 20 stations</td>
<td>W = 410n + 380</td>
</tr>
<tr>
<td>VP500</td>
<td>VP3P-42</td>
<td>Individual 3/8</td>
<td>VP544</td>
<td>2 to 20 stations</td>
<td></td>
</tr>
<tr>
<td>VP700</td>
<td>VP3P-41</td>
<td>Individual 1/2</td>
<td>VP744</td>
<td>2 to 20 stations</td>
<td></td>
</tr>
</tbody>
</table>

Note) Supply pressure to 1(P) ports and exhaust pressure from 3(R) ports on both sides for 10 stations or more.

Manifold Option

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Applicable manifold base model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanking plate assembly</td>
<td>VP300-25-1A</td>
<td>VP3P3</td>
</tr>
<tr>
<td>(With a gasket and two mounting bolts)</td>
<td>VP500-25-1A</td>
<td>VP3P5</td>
</tr>
<tr>
<td></td>
<td>VP700-25-1A</td>
<td>VP3P7</td>
</tr>
</tbody>
</table>

How to Order Manifold Assembly (Example)

Ordering example (VV3P3-41)

- VP334-5GZ1-B ................................... 1 set (Type 41, 5-station manifold base part no.)
- VP300-25-1A ................................... 1 set (Blanking plate assembly part no.)
- VP334-5GZ1-A ................................... 2 sets (N.C. type part no.)
- VP334-5GZ1-B ................................... 2 sets (N.O. type part no.)

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

* Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing.
VP300 Series/Dimensions

Type 41/Common exhaust: VV3P3-41—Stations 1-02

Grommet (G)

Automatic override
2 x ø6.5
(For mounting)

M5 x 0.8
Common external pilot port
(External pilot specification: R)

L1

L2

(Station n) ——— (Station 1)

1/4
2(A) port

(Pitch)

P = 27.5

 Approx. 300

(Lead wire length)

(Indicator light)

Grommet (G)
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).
VP300/500/700 Series

VP300 Series/Dimensions

Type 42/Individual exhaust: VV3P3-42□-[Stations]3-02

Grommet (G)

Grommet (G)
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).
VP500 Series/Dimensions

Type 41/Common exhaust: VV3P5-41- Stations 1-03
Grommet (G)

*L Refer to page 1083 separately when piping to PE port is required.

Grommet (G)
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).
VP300/500/700 Series

VP500 Series/Dimensions

Type 42/Individual exhaust: VV3P5-42□-□-□/Series

Grommet (G)

DC without light/surge voltage suppressor

Unless otherwise indicated, dimensions are the same as Grommet (G).
VP700 Series/Dimensions

Type 41/Common exhaust: VV3P7-41-\{Stations\}1-04
Grommet (G)

1/8

Common external pilot port
(External pilot specification: R)

1/2

1(P), 3(R) port
PE port*
(a4)

* Refer to page 1083 separately when piping to PE port is required.

Grommet (G)
DC without light/surge voltage suppressor

| Stations | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|    |
| L1       | 115| 156| 197| 238| 279| 320| 361| 402| 443| 484| 525| 566| 607| 648| 689| 730| 771| 812| 853|
| L2       | 99 | 140| 181| 222| 263| 304| 345| 386| 427| 468| 509| 550| 591| 632| 673| 714| 755| 796| 837|

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).
VP700 Series/Dimensions

Type 42/Individual exhaust: VV3P7-42□-[Stations]3-04

Grommet (G)

<table>
<thead>
<tr>
<th>Station</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>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>115</td>
<td>156</td>
<td>197</td>
<td>238</td>
<td>279</td>
<td>320</td>
<td>361</td>
<td>402</td>
<td>443</td>
<td>484</td>
<td>525</td>
<td>566</td>
<td>607</td>
<td>648</td>
<td>689</td>
<td>730</td>
<td>771</td>
</tr>
<tr>
<td>L2</td>
<td>99</td>
<td>140</td>
<td>181</td>
<td>222</td>
<td>263</td>
<td>304</td>
<td>345</td>
<td>386</td>
<td>427</td>
<td>468</td>
<td>509</td>
<td>550</td>
<td>591</td>
<td>632</td>
<td>673</td>
<td>714</td>
<td>755</td>
</tr>
</tbody>
</table>

Unless otherwise indicated, dimensions are the same as Grommet (G).
1 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.

How to Order Valve

VP\textsuperscript{3}4\textsubscript{2} \quad – \quad \textsuperscript{1} \quad – \quad \textsuperscript{X500}

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

2 Body Ported Interchangeable Specification with the Previous Valve Mounting Hole Pitch Type

The mounting hole has been changed to the long type in order to provide interchangeability with the previous VP300/500 series.

How to Order Valve

VP\textsuperscript{3}42 \quad – \quad \textsuperscript{1} \quad – \quad \textsuperscript{X505}

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

Note) VP742 is not available because the mounting hole pitch is the same as the previous type.

3 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

VP\textsuperscript{3}4\textsubscript{2} \quad – \quad \textsuperscript{1} \quad – \quad  \textsuperscript{X600}

- Entry is the same as standard products.

Note) Rated voltage: AC type only
# Rubber Seal
## 3 Port/Pilot Poppet Type
### VP300/500/700 Series

How to Order

<table>
<thead>
<tr>
<th>Conforming to</th>
<th>VP series solenoid valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA standard</td>
<td>VP300/500/700</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body size</th>
<th>Type of actuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1/4 standard</td>
</tr>
<tr>
<td>5</td>
<td>3/8 standard</td>
</tr>
<tr>
<td>7</td>
<td>1/2 standard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>In common between N.C. and N.O. (Pilot type)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body type</th>
<th>Valve option</th>
<th>Rated voltage</th>
<th>Electrical entry</th>
<th>Option</th>
<th>Passage symbol</th>
<th>Thread type</th>
<th>Port size</th>
<th>Manual override</th>
<th>Light/Surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Nil Standard (Internal pilot)</td>
<td>100 VAC, 50/60 Hz</td>
<td>D</td>
<td>CE/UKCA-compliant</td>
<td>A</td>
<td>Nil Rc</td>
<td>Symbol Port size 30-VP342</td>
<td>Nil (Without sub-plate)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>External pilot</td>
<td>200 VAC, 50/60 Hz</td>
<td>DO</td>
<td>Without bracket</td>
<td>B</td>
<td>F G</td>
<td>30-VP542</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>110 to 120 VAC, 50/60 Hz</td>
<td></td>
<td>With bracket</td>
<td>C</td>
<td>N NPT</td>
<td>30-VP544</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>220 VAC, 50/60 Hz</td>
<td></td>
<td>30-VP742, 542, and 742 only</td>
<td>D</td>
<td>T NPTF</td>
<td>30-VP744</td>
<td>1/2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 VDC</td>
<td></td>
<td>30-VP344, 544, and VP744 only</td>
<td>E</td>
<td>R</td>
<td>Nil Z</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 VDC</td>
<td></td>
<td>Without light/surge voltage suppressor</td>
<td>F</td>
<td>Z</td>
<td>With light/surge voltage suppressor</td>
<td>Nil (None)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>240 VAC, 50/60 Hz</td>
<td></td>
<td>Semi-standard</td>
<td>G</td>
<td>—</td>
<td>30-VP342, 542, and 742 only</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>30-VP344, 544, and VP744 only</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1/8</td>
</tr>
<tr>
<td>DO</td>
<td>3/8</td>
</tr>
<tr>
<td></td>
<td>1/2</td>
</tr>
</tbody>
</table>

**Caution**

For safety instructions, specific product precautions, product specifications, dimensions, and model selection, refer to the individual product catalog (discontinued products). However, note that the DIN connector differs from the standard product.
VP Series
Specific Product Precautions 1
Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

Manual Override

⚠️ Warning
Without 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 button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

- Push-turn locking slotted type

Push the manual override button with a small flat head screwdriver until it stops. Turn it in the clockwise direction at 90° to lock the manual. 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 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. Do not apply excessive torque when turning the locking type manual override. (0.1 N·m)

How to Use L/M-Type Plug Connector

⚠️ Caution

1. Attaching and detaching connectors
   - 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 wires and sockets
   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. Attaching and detaching sockets with lead wire
   - Attaching
     Insert the sockets into the square holes of the connector, 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.
   - Detaching
     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.
How to Use DIN Terminal

The DIN terminal type 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) Tighten the ground nut to secure the wire.
   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 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

---

Caution

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

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

How to Order Connector Assembly

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Lead Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>V200-30-4A</td>
</tr>
<tr>
<td>100 VAC</td>
<td>V200-30-1A</td>
</tr>
<tr>
<td>200 VAC</td>
<td>V200-30-2A</td>
</tr>
<tr>
<td>AC other voltages</td>
<td>V200-30-3A</td>
</tr>
</tbody>
</table>

Without lead wire : V200-30-A
(With connector and 2 pcs. of socket)

How to Order
Include the connector assembly part number together with the part number for the plug connector’s solenoid valve without connector.

(Example) 2000 mm lead wire length

DC   | AC
---  |---
VP342-5LO1-01A | VP342-1LO1-01A
V200-30-4A-20  | V200-30-1A-20

---

Diagram:
- Ground nut: Tightening torque 2.5 to 3.75 N·m
- Washer
- Grommet (Rubber)
- Housing
- Terminal block
- Terminal screw
- 3 locations
- Tightening torque 0.4 to 0.5 N·m
- (Location for light mounting)
- (Polarity indication)
VP Series
Specific Product Precautions 3

Be sure to read this before handling the products. Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

DIN (EN175301-803) Terminal

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

How to 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 cable/tire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure). Tighten the ground nut and set screw within the specified range of torque.

Circuit with indicator light (Built-in connector)

**Note**) Order no. for 24 VAC specification is V200-61-5-B.

---

**How to Order DIN Connector**

**Caution**

- Without indicator light
  DC, AC, Other voltages: V200- -1
- With indicator light
  DC
    - Polar type (□Z): V200- -3-
    - Non-polar type (□U): V200- -5-
  AC (□Z)
    - Connector specification
    - Rated voltage
      - D type
        - 01 100/110 VAC [115 VAC]
        - 02 200/220 VAC [230 VAC]
        - 07 240 VAC
      - Y type
        - 05 24 VDC
        - 06 12 VDC

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.

---

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

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

---

**How to Use Conduit Terminal**

**Caution**

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

---

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

**Applicable crimped terminal**
O terminal: Equivalent to R1.25-3 that is specified in JIS C 2805
Y terminal: Equivalent to 1.25-3, which is released by JST Mfg. Co., Ltd.
* Use O terminal when a ground terminal is used.
**VP Series**  
**Specific Product Precautions 4**

Be sure to read this before handling the products. Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

### Caution

**<DC>**

- **Polar type**
  - With surge voltage suppressor (□S)
  - 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)
    - Grommet or L/M-type plug connector
      - With light/surge voltage suppressor (□U)
  - DIN or Conduit terminal
    - With light/surge voltage suppressor (□U)

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

### With power saving circuit

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

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

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

**<AC>**

There is no S option, since a rectifier prevents surge voltage generation.

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

**Note:** LED for 24 VAC.
Warning

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

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

Caution

When operating the D type, use a watchmakers' screwdriver and turn lightly.
[Torque: Less than 0.1 N·m]

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

Caution

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

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 200/220 VAC specification pilot valves, this built-in rectifier generates heat when energized. The surface may become hot depending on the energized condition; therefore, do not touch the solenoid valves.
Low Wattage Specification (VP300/500) Specific Product Precautions 6

Be sure to read this before handling the products. Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

Plug Connector Lead Wire Length

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

How to Order Connector Assembly

<table>
<thead>
<tr>
<th>DC: SY100–30–4A</th>
<th>100 VAC: SY100–30–1A</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 VAC: SY100–30–2A</td>
<td></td>
</tr>
</tbody>
</table>

Other AC voltages: SY100–30–3A

Without lead wire: SY100–30–A (With a connector and 2 sockets)

Light/Surge Voltage Suppressor

Caution

<DC>

Grommet or L/M-type plug connector

Polar type
With surge voltage suppressor (S)

Non-polar type
With surge voltage suppressor (R)

DIN terminal

Non-polar type
With surge voltage suppressor (S)

With light/surge voltage suppressor (U)

With light/surge voltage suppressor (Z)

Built-in connector
**Light/Surge Voltage Suppressor**

**Caution**

<AC>

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

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

  With light/surge voltage suppressor (Z)

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

- **DIN terminal**

  With light/surge voltage suppressor (Z)

  ![Diagram of DIN terminal]

  Note) LED for 24 VAC.

**Residual voltage of the surge voltage suppressor**

Note) If a varistor or diode surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, refer to the table below and pay attention to the surge voltage protection on the controller side. Also, since the response time does change, refer to the specifications on page 1071.

**Residual Voltage**

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode</td>
<td>Approx. 1 V</td>
<td>Approx. 1 V</td>
</tr>
<tr>
<td>Varistor</td>
<td>Approx. 47 V</td>
<td>Approx. 32 V</td>
</tr>
</tbody>
</table>
Low Wattage Specification (VP300/500)
Specific Product Precautions 8

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

---

How to Use DIN Terminal

**Caution**

**Connection**
1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding 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 screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the gland nut.

**Caution**
When making connections, take note that using other than the supported size (e3.5 to e7) heavy duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the gland nut and holding screw within their specified torque ranges.

**Changing the entry direction**
After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).
* When equipped with a light, be careful not to damage the light with the cord's lead wires.

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

**Compatible cable**
Cord O.D.: e3.5 to e7
(Reference) 0.5mm², 2-core or 3-core, equivalent to JIS C 3306

---

DIN Connector Part No.

**DIN terminal (D)**

<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>SY100-61-1</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-61-3-06</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>110 VAC</td>
<td>110 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
<td>SY100-61-2-04</td>
</tr>
</tbody>
</table>

**DIN terminal (Y)**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-61-1</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-61-3-06</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>110 VAC (115 VAC)</td>
<td>110 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>220 VAC (230 VAC)</td>
<td>220 V</td>
<td>SY100-61-2-03</td>
</tr>
</tbody>
</table>

**Circuit diagram with light**

**AC circuit diagram**

**DC circuit diagram**

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**Pilot Valve**
The mounting of the low wattage type pilot valve is not interchangeable with that of the standard type. Additionally, be aware that the pilot valve cannot be replaced.

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*DIN connector type Y is a DIN connector that confirms to the DIN pitch 8-mm standard.*

- *D type DIN connector with 9.4 mm pitch between terminals is not interchangeable.*
- *To distinguish from the D type DIN connector, "N" is listed at the end of voltage symbol. (For connector parts without lights, "N" is not indicated. Please refer to the name plate to distinguish.)*
- *Dimensions are completely the same as D type DIN connector.*
**Light/Surge Voltage Suppressor**

**Caution**

**Residual voltage of the surge voltage suppressor**

Note) If a varistor or diode surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, refer to the table below and pay attention to the surge voltage protection on the controller side. Also, since the response time does change, refer to the specifications on pages 1057 and 1064.

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

**Type of Actuation Changing**

**Warning**

When changing the actuation or restarting the valve after the change, make sure that safety is fully assured and pay great attention.

Example: Changing from N.C. to N.O.

1) **Base mounted**

   <N.C.>
   ![Image of N.C. connection]
   <N.O.>
   ![Image of N.O. connection]

   1. Remove the body from the sub-plate and reset the “▼” mark on the body corresponding to the “N.O.” mark on the sub-plate as shown in the figure above.
   2. Remove the end plate from the body and rotate the end plate by 180° so that the “N.O.” mark on the end plate is at the top of the valve.

   * It is not necessary to change the piping when this is done.

2) **Body ported**

   <N.C.>
   ![Image of N.C. connection]
   <N.O.>
   ![Image of N.O. connection]

   ● Remove the end plate from the body and rotate the end plate by 180° to correspond the “N.O.” mark on the end plate to the top of the valve.

   * Piping should be arranged as follows.

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>1P</th>
<th>2A</th>
<th>3R</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.C.</td>
<td>Inlet side</td>
<td>Outlet side</td>
<td>Exhaust side</td>
</tr>
<tr>
<td>N.O.</td>
<td>Exhaust side</td>
<td>Outlet side</td>
<td>Inlet side</td>
</tr>
</tbody>
</table>

**Precautions when replacing the old VP series with new VP series**

**Caution**

When replacing the built-in valve with the new VP series if the old VP series uses the external pilot manifold, be aware that the valve selection becomes different.

<table>
<thead>
<tr>
<th>Manifold model no.</th>
<th>Mounting valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>VV3P</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VP(A)300</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VP(A)500</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VP(A)700</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VV3P(A)3</td>
<td>External pilot</td>
</tr>
<tr>
<td>Manifold base</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VP(A)5</td>
<td>M5</td>
</tr>
<tr>
<td>VP(A)7</td>
<td>M5</td>
</tr>
<tr>
<td>VV3P(A)3</td>
<td>M5</td>
</tr>
<tr>
<td>VV3P(A)5</td>
<td>M5</td>
</tr>
<tr>
<td>VV3P(A)7</td>
<td>M5</td>
</tr>
</tbody>
</table>

<How to distinguish the external pilot manifold>

When the piping is connected to the external pilot port, this manifold is the external pilot manifold.

**One-touch Fittings**

**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 VP series is already confirmed are stated below. If the fitting within the applicable range is selected, there will not be any interference.

**Applicable Fittings: KQ2H, KQ2S series**

<table>
<thead>
<tr>
<th>Series</th>
<th>Piping port</th>
<th>Port size</th>
<th>Applicable tubing O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP(A)300</td>
<td>1P, 2A, 3R</td>
<td>1/8, 1/4</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VP(A)500</td>
<td>1P, 2A, 3R</td>
<td>1/4, 3/8</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VP(A)700</td>
<td>1P, 2A, 3R</td>
<td>1/8</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VV3P(A)3</td>
<td>1P, 2A, 3R</td>
<td>1/4</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VV3P(A)5</td>
<td>1P, 2A, 3R</td>
<td>3/8</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
<tr>
<td>VV3P(A)7</td>
<td>1P, 2A, 3R</td>
<td>1/2</td>
<td>ø3.2 ø4 ø6 ø8 ø10 ø12 ø16</td>
</tr>
</tbody>
</table>

Be sure to read this before handling the products. Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.