Selective power consumption!

0.4 w
[Low wattage specification]

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

[Starting 1.55 W, Holding 0.55 W] + Current model: 2.0 W
With DC light

Power consumption is reduced by power saving circuit.

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

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

Longer life expectancy: 50 million cycles or more
(Current: 20 million cycles) * Based on SMC test conditions.

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>Power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
<td>Standard</td>
</tr>
<tr>
<td>0 V</td>
<td>Energy saving</td>
</tr>
<tr>
<td>1.55 W</td>
<td>0.55 w With power saving circuit</td>
</tr>
<tr>
<td>0 W</td>
<td>0.4 w (With light)</td>
</tr>
</tbody>
</table>

40 ms

Built-in strainer in the pilot valve

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

Air Operated Valve

VPA300/500/700 Series

P.1555
## 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</td>
<td>1/8</td>
<td>12 VDC</td>
<td>DIN terminal</td>
<td>DC</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C.</td>
<td></td>
<td>24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2(A)</td>
<td></td>
<td>100 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P) 1 3(R)</td>
<td></td>
<td>200 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>220 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP500</td>
<td>8.9</td>
<td>N.O.</td>
<td>1/4</td>
<td>12 VDC</td>
<td>M-type plug connector</td>
<td>DC</td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2(A)</td>
<td></td>
<td>24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P) 1 3(R)</td>
<td></td>
<td>200 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>220 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP700</td>
<td>15.3</td>
<td>External pilot</td>
<td>3/8</td>
<td>12 VDC</td>
<td>DIN (EN1753 01-803) terminal</td>
<td>DC</td>
<td>Push-turn locking lever type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C./N.O.</td>
<td></td>
<td>24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2(A)</td>
<td></td>
<td>100 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P) 1 3(R)</td>
<td></td>
<td>200 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>220 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Low wattage specification

- From page 1278
- Power consumption: 0.35 W (Without light) 0.4 W (With light)
### VP300/500/700 Series

#### Model Selection by Operating Conditions

**Solenoid Valve: Manifold**

<table>
<thead>
<tr>
<th>Series</th>
<th>EXH port type</th>
<th>Manifold base model</th>
<th>Applicable stations Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP300</td>
<td>Common EXH</td>
<td>VV3P3-41</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>3(R) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP500</td>
<td>Common EXH</td>
<td>VV3P5-41</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>3(R) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP700</td>
<td>Common EXH</td>
<td>VV3P7-41</td>
<td>2 to 20 stations</td>
</tr>
<tr>
<td></td>
<td>3(R) port 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P3-42</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3(R) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P5-42</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3(R) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual EXH</td>
<td>VV3P7-42</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3(R) port 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(P) port 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(A) port 1/2</td>
<td></td>
<td></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

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Series</th>
<th>Pilot type</th>
<th>Pressure specification</th>
<th>Thread type</th>
<th>Bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP</td>
<td>VP300</td>
<td>Nil</td>
<td>Standard (0.7 MPa)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>VP500</td>
<td>VP500</td>
<td>Internal pilot</td>
<td>Standard (0.7 MPa)</td>
<td>R</td>
<td>Without bracket</td>
</tr>
<tr>
<td>VP700</td>
<td>VP700</td>
<td>External pilot</td>
<td>Standard (0.7 MPa)</td>
<td>G</td>
<td>With bracket</td>
</tr>
</tbody>
</table>

### Rated voltage

- **DC**:
  - 5: 24 VDC
  - 6: 12 VDC
- **AC (50/60 Hz)**:
  - 1: 100 VAC
  - 2: 200 VAC
  - 3: 110 VAC (115 VAC)
  - 4: 220 VAC (230 VAC)
  - 7: 240 VAC

### Coil specification

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

### Electrical entry

<table>
<thead>
<tr>
<th>Grommet</th>
<th>L-type plug connector</th>
<th>M-type plug connector</th>
<th>DIN terminal (IP65 compatible)</th>
<th>DIN terminal (EN175301-803) terminal</th>
<th>Conduit terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>L: With lead wire (length 300 mm)</td>
<td>M: With lead wire (length 300 mm)</td>
<td>Y: With connector</td>
<td>Y: With connector</td>
<td>T: Conduit terminal</td>
</tr>
<tr>
<td>H</td>
<td>Lead wire (length 600 mm)</td>
<td>Without lead wire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LN</td>
<td>Without lead wire</td>
<td>MO: Without connector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MN</td>
<td>Without lead wire</td>
<td>DO: Without connector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO</td>
<td>Without connector</td>
<td>MO: Without connector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO</td>
<td>Without connector</td>
<td>DO: Without connector</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Type of actuation

- **A**: N.C. (Normally closed)
- **B**: N.O. (Normally open)

### Manual override

- **D**: Push-turn locking slotted type
- **E**: Push-turn locking lever type

### Light/surge voltage suppressor

- **DC**: Without light/surge voltage suppressor
- **S**: With surge voltage suppressor
- **Z**: With surge voltage suppressor (Non-polar)
- **R**: With surge voltage suppressor (Non-polar)

### Made to Order

- **X500**: Pilot exhaust port with piping thread (M3) specification (Refer to page 1291).
- **X505**: Interchangeable specification with the previous valve mounting hole pitch type (Refer to page 1291).
- **X600**: Triac output specification (Refer to page 1291).

### Note

- LN and MN types are with 2 sockets.
- Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.
- Refer to page 1295 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 marking compliant.

### Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1300 for details.
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Type of actuation</th>
<th>Air</th>
<th>N.C. or N.O. (Convertible)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal pilot</td>
<td></td>
<td>0.2 to 0.7</td>
</tr>
<tr>
<td></td>
<td>Operating pressure range (MPa)</td>
<td></td>
<td>High-pressure type 0.2 to 1.0</td>
</tr>
<tr>
<td></td>
<td>External pilot</td>
<td></td>
<td>–100 kPa to 0.7</td>
</tr>
<tr>
<td></td>
<td>Operating pressure range (MPa)</td>
<td></td>
<td>High-pressure type –100 kPa to 1.0</td>
</tr>
<tr>
<td></td>
<td>Pilot pressure range</td>
<td></td>
<td>Same as operating pressure (Min. 0.2 MPa)</td>
</tr>
<tr>
<td></td>
<td>Ambient and fluid temperature (°C)</td>
<td></td>
<td>–10 to 50 (No freezing)</td>
</tr>
<tr>
<td></td>
<td>Max. operating frequency (Hz)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Manual override</td>
<td></td>
<td>Non-locking push type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Push-turn locking slotted type</td>
</tr>
<tr>
<td></td>
<td>Pilot exhaust type</td>
<td></td>
<td>Individual exhaust</td>
</tr>
<tr>
<td></td>
<td>Lubrication</td>
<td></td>
<td>Unrestricted</td>
</tr>
<tr>
<td></td>
<td>Mounting orientation</td>
<td></td>
<td>Dust-tight (IP65 for D, Y, T)</td>
</tr>
<tr>
<td></td>
<td>Impact/Vibration resistance (m/s²)</td>
<td></td>
<td>300/50</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>AC (50/60 Hz)</td>
<td>DC</td>
<td>24, 12</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Allowable voltage fluctuation</td>
<td></td>
<td>±10% of rated voltage*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Power consumption (W) | DC | 1.5 (With light: 1.55) | 1.5 (With light: 1.75) |
|                      |    | (Starting 1.55, Holding 0.55) | (Starting 1.75, Holding 0.75) |
| Apparent power (VA)* | AC | 1.5 (With light: 1.65) | 1.5 (With light: 1.7) |
|                      |    | (200 V) (230 V)       |                           |
| Surge voltage suppressor | Diode (Non-polar type: Varistor) |
| Indicator light      | LED (Neon bulb is used for AC mode of D, Y, T.) |

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

### Response Time

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure specifications</th>
<th>Response time ms (at 0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP342</td>
<td>Standard (0.2 to 0.7)</td>
<td>Without light/surge voltage suppressor 13 or less 38 or less 16 or less 38 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>With light/surge voltage suppressor 17 or less 42 or less 20 or less 42 or less</td>
</tr>
<tr>
<td>VP542</td>
<td>Standard (0.2 to 0.7)</td>
<td>Without light/surge voltage suppressor 14 or less 39 or less 17 or less 39 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>With light/surge voltage suppressor 18 or less 43 or less 21 or less 43 or less</td>
</tr>
<tr>
<td>VP742</td>
<td>Standard (0.2 to 0.7)</td>
<td>Without light/surge voltage suppressor 19 or less 44 or less 22 or less 44 or less</td>
</tr>
<tr>
<td></td>
<td>High-pressure type (0.2 to 1.0)</td>
<td>With light/surge voltage suppressor 22 or less 47 or less 25 or less 47 or less</td>
</tr>
</tbody>
</table>

Note: Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage)
**VP300/500/700 Series**

**Flow Rate Characteristics/Weight**

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>$1 \leftrightarrow 2 \ (P \leftrightarrow A)$</th>
<th>$2 \leftrightarrow 3 \ (A \leftrightarrow R)$</th>
<th>Weight (g) Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP342</td>
<td>1/8</td>
<td>C = 3.5 b = 0.26 Cv = 0.8</td>
<td>C = 3.6 b = 0.26 Cv = 0.9</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>4.2 b = 0.22 Cv = 1.0</td>
<td>4.2 b = 0.23 Cv = 1.0</td>
<td>145</td>
</tr>
<tr>
<td>VP542</td>
<td>1/4</td>
<td>7.9 b = 0.21 Cv = 1.8</td>
<td>7.2 b = 0.27 Cv = 1.8</td>
<td>249</td>
</tr>
<tr>
<td></td>
<td>3/8</td>
<td>8.8 b = 0.17 Cv = 2.2</td>
<td>8.9 b = 0.20 Cv = 2.1</td>
<td>241</td>
</tr>
<tr>
<td>VP742</td>
<td>3/8</td>
<td>11.9 b = 0.21 Cv = 2.7</td>
<td>11.8 b = 0.20 Cv = 2.7</td>
<td>484</td>
</tr>
<tr>
<td></td>
<td>1/2</td>
<td>15.1 b = 0.21 Cv = 3.6</td>
<td>15.3 b = 0.22 Cv = 3.7</td>
<td>467</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

<table>
<thead>
<tr>
<th>Pilot type</th>
<th>N.C.</th>
<th>N.O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal pilot</td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td>External pilot</td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**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></td>
<td>Built-in strainer</td>
</tr>
</tbody>
</table>

Refer to “How to Order Pilot Valve Assembly” on page 1267.
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**
  
  V 2 1 1 [ ] [ ] [ ] [ ] - 5 [ ] [ ] [ ] Z

- **DIN or Conduit type**
  
  V 2 1 2 [ ] [ ] [ ] [ ] - 5

**Light/surge voltage suppressor**

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

*Note*) 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 1300 for details.

**Electrical entry**

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

* LN and MN types are with 2 sockets.

* Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.

**Pressure specification**

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

**Coil specification**

- T: With power saving circuit (DC only)

* T type is only available for DC mode.

**Rated voltage**

- DC:
  - 5: 24 VDC
  - 6: 12 VDC
- AC (50/60 Hz):
  - 1: 100 VAC
  - 2: 200 VAC
  - 3: 110 VAC [115 VAC]
  - 4: 220 VAC [230 VAC]
  - 7: 240 VAC
  - B: 24 VAC

**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
Approx. 300 (Lead wire length)

**VP300/500/700 Series**

**VP300 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).
VP500 Series/Body Ported/Dimensions

Grommet (G)

(Approx. 300 (Lead wire length)

L-type plug connector (L)  
M-type plug connector (M)  
DIN terminal (D, Y)  
Conduit terminal (T)

* Refer to page 1291 separately when piping to PE port is required.

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

Grommet (G)

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

<table>
<thead>
<tr>
<th>Series</th>
<th>Pilot type</th>
<th>Pressure specification</th>
<th>Type of actuation</th>
<th>Thread type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP300</td>
<td>R</td>
<td>N.C. (Normally closed)</td>
<td>A</td>
<td>F</td>
</tr>
<tr>
<td>VP500</td>
<td>R</td>
<td>N.O. (Normally open)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP700</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical entry

<table>
<thead>
<tr>
<th>G</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></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Rated voltage

<table>
<thead>
<tr>
<th>DC</th>
<th>5</th>
<th>6</th>
<th>100 VDC</th>
<th>200 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (50/60 Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>110 VAC</td>
<td>(15 VAC)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>220 VAC</td>
<td>(230 VAC)</td>
</tr>
</tbody>
</table>

#### Manual override

- D: Push-turn locking push type
- E: Push-turn locking slotted type
- F: Push-turn locking lever type

#### Light/surge voltage suppressor

- DC | 0 | 0 |
- AC | 0 | 0 |

#### Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1300 for details.

---

* LN and MN types are with 2 sockets.

* Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.

* Refer to page 1295 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 marking compliant.

* LN and MN types are with 2 sockets.

* Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.

* Refer to page 1295 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 marking compliant.

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

---

* LN and MN types are with 2 sockets.

* Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.

* Refer to page 1295 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 marking compliant.
Low power consumption 1.5 W (DC)
Possible to use as either a selector or divider valve
Possible to change from N.C. to N.O.
• Refer to page 1300 for changing the type of actuation.
Possible to use in vacuum applications
Up to –100 kPa

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 0.2 to 0.7</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>High-pressure type 0.2 to 1.0</td>
</tr>
<tr>
<td>External pilot</td>
<td>Standard –100 kPa to 0.7</td>
</tr>
<tr>
<td>Operating pressure range (MPa)</td>
<td>High-pressure type –100 kPa to 1.0</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>Push-turn locking slotted type</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>
</tbody>
</table>

Enclosure Dust-tight (IP65 for D, Y, T)

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 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 V</td>
<td>24, 100, 110, 200, 220, 240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power consumption (W)

<table>
<thead>
<tr>
<th>DC</th>
<th>With power saving circuit</th>
<th>0.55 Note) (With light only)</th>
<th>Without light</th>
<th>0.75 Note) (With light only)</th>
<th>0.75 Note) (With light only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
</tr>
<tr>
<td>110 V</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
<td>1.5 (With light: 1.55)</td>
</tr>
<tr>
<td>220 V</td>
<td>1.5 (With light: 1.65)</td>
<td>1.5 (With light: 1.65)</td>
<td>1.5 (With light: 1.65)</td>
<td>1.5 (With light: 1.65)</td>
<td>1.5 (With light: 1.65)</td>
</tr>
</tbody>
</table>

Apparent power (VA)²

<table>
<thead>
<tr>
<th>AC</th>
<th>100 V</th>
<th>110 V [115 V]</th>
<th>200 V</th>
<th>220 V [230 V]</th>
<th>240 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 or less</td>
<td>16 or less</td>
<td>16 or less</td>
<td>16 or less</td>
<td>16 or less</td>
<td>16 or less</td>
</tr>
<tr>
<td>38 or less</td>
<td>42 or less</td>
<td>42 or less</td>
<td>42 or less</td>
<td>42 or less</td>
<td>42 or less</td>
</tr>
</tbody>
</table>

Surge voltage suppressor Diode (Non-polar type: Varistor)

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

<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></td>
<td>S, Z type</td>
<td>R, U type</td>
</tr>
<tr>
<td>VP344</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>VP544</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>VP744</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) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage)

Note)

¹ It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
² Allowable voltage fluctuation is ±15% to ±5% of the rated voltage for 115 VAC or 230 VAC.
³ 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 1296 for details.

Response Time
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>3.5 0.24 0.8</td>
<td>216 (149) 252 (185)</td>
</tr>
<tr>
<td>VP544</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>VP744</td>
<td>3/8</td>
<td>8.8 0.07 2.0</td>
<td>8.8 0.13 2.0</td>
<td>370 (245) 406 (281)</td>
</tr>
<tr>
<td></td>
<td>1/2</td>
<td>12.9 0.10 2.9</td>
<td>13.3 0.24 3.1</td>
<td>676 (459) 712 (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 (Exhaust center)

Construction

Base mounted

Symbol

Pilot type | N.C. | N.O. |
-----------|------|------|
Internal pilot | (P) 3 (R) 2 (A) | (P) 3 (R) 2 (A) |
External pilot | (P) 3 (R) 2 (A) | (P) 3 (R) 2 (A) |

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>VP300-202-0, VP500-202-0, VP700-202-0</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td></td>
<td>Hexagon socket head bolt (1 pc.)</td>
<td>VP300-224-1 (M3 x 35), 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 | 300 – 202 – 1 |

Series

Thread type

Port size

M3: 0.8 N·m
M4: 1.4 N·m
M5: 2.9 N·m

Caution

Tightening Torque of Mounting Screw

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 G Z - 1
* Select from the below in accordance with the valve used.

- **Grommet or L-type**
  - V211 Pilot valve assembly

- **DIN or Conduit type**
  - DIN connector
  - Refer to page 1285.

### Pressure specification
| Nil | Standard (0.7 MPa) |
|LN  | High-pressure type (1 MPa) |

### Coil specification
| Nil | Standard |
|LN  | With power saving circuit (DC only) |

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

Note) 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 1300 for details.

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

* LN and MN types are with 2 sockets.
* Refer to page 1394 when different length of lead wire for L/M-type plug connector is required.

#### Rated voltage
| DC  | 24 VDC |
| 5   | 12 VDC |

| AC (50/60 Hz) | 100 VAC |
| 1             | 200 VAC |
| 3             | 110 VAC [115 VAC] |
| 4             | 220 VAC [230 VAC] |
| 7             | 240 VAC |
| B             | 24 VAC |

⚠️ 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)

Approx. 300 (Lead wire length)

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D, Y)

Conduit terminal (T)

* Refer to page 1291 separately when piping to PE port is required.

Unless otherwise indicated, dimensions are the same as Grommet (G).
VP300/500/700 Series

VP500 Series/Base Mounted/Dimensions

Grommet (G)

Approx. 300 (Lead wire length)

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).

Refer to page 1291 separately when piping to PE port is required.
# Low Wattage Specification

## VP300/500 Series

### How to Order Valve

<table>
<thead>
<tr>
<th>Series</th>
<th>VP300</th>
<th>VP500</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Body type

- **Body ported**
- **Base mounted**

#### Mountable manifold

- 41
- 42

#### Pilot type

- **Nil**
- **R**

#### Low wattage type

- **Internal pilot**
- **External pilot**

#### Rated voltage

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

#### Electrical entry

<table>
<thead>
<tr>
<th>Grommet</th>
<th>M-type plug connector</th>
<th>DIN terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Lead wire length 300 mm</td>
<td>M: Without lead wire (Length 300 mm)</td>
<td>G: IP65 compatible</td>
</tr>
<tr>
<td>L: With lead wire (Length 300 mm)</td>
<td>M: Without lead wire</td>
<td>Y: With connector</td>
</tr>
<tr>
<td>MN: Without lead wire</td>
<td>D: With connector</td>
<td>M: IP65 compatible</td>
</tr>
</tbody>
</table>

#### Type of actuation

- **A**: N.C. (Normally closed)
- **B**: N.O. (Normally open)

#### Port size

**Body Ported**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>VP300</th>
<th>VP500</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
<td>☑</td>
<td>—</td>
</tr>
<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>
</tbody>
</table>

**Base Mounted**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>VP300</th>
<th>VP500</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
<td>—</td>
<td>—</td>
</tr>
<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>
</tbody>
</table>

* **With a gasket and two mounting bolts.**

#### Manual override

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

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

<table>
<thead>
<tr>
<th>Nil</th>
<th>Without light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>With surge voltage suppressor (DC only, Non-polar)</td>
</tr>
<tr>
<td>U</td>
<td>With light/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 light/surge voltage suppressor (00Z and Y0Z are not available)</td>
</tr>
</tbody>
</table>

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

* LN and MN types are with 2 sockets.
* Y type DIN terminal complies with EN-175301-803C (former DIN 43650C). Refer to page 1299 for details.
* When using IP65, select the main/pilot valve common exhaust type. (Except VF1000)
## 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>Pilot pressure range</td>
<td>Equivalent to operating pressure (Min. 0.2)</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>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)

## 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 (43650B) terminal (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>G, H, L, M, D, Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC (50/60 Hz)</td>
<td>24, 12</td>
<td></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>
</tr>
</tbody>
</table>

### Power consumption (W)

<table>
<thead>
<tr>
<th>Voltage (V)</th>
<th>DC  Standard</th>
<th>0.78 (With light: 0.81)</th>
<th>0.78 (With light: 0.87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 V</td>
<td>0.86 (With light: 0.89)</td>
<td>0.86 (With light: 0.97)</td>
<td>0.94 (With light: 1.07)</td>
</tr>
<tr>
<td>200 V</td>
<td>1.18 (With light: 1.22)</td>
<td>1.15 (With light: 1.30)</td>
<td></td>
</tr>
<tr>
<td>220 V</td>
<td>1.30 (With light: 1.34)</td>
<td>1.27 (With light: 1.46)</td>
<td>1.39 (With light: 1.60)</td>
</tr>
<tr>
<td>230 V</td>
<td>1.42 (With light: 1.46)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Surge voltage suppressor

- Diode (DIN terminal, Non-polar type: Varistor)
- LED (Neon bulb is used for AC mode of D and Y)

### 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></td>
<td>Without light/surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S, Z type</td>
</tr>
<tr>
<td>VP300</td>
<td>VP342Y</td>
<td>16</td>
</tr>
<tr>
<td>VP300</td>
<td>VP344Y</td>
<td>16</td>
</tr>
<tr>
<td>VP500</td>
<td>VP542Y</td>
<td>31</td>
</tr>
<tr>
<td>VP500</td>
<td>VP544Y</td>
<td>31</td>
</tr>
</tbody>
</table>

### Note)
- Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)
VP300/500 Series

Dimensions

VP342Y

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

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

VP300/500 Series

Dimensions

VP342Y

L-type plug connector (L)  M-type plug connector (M)  DIN terminal (D,Y)
Rubber Seal/3 Port/Pilot Poppet Type Manifold
Common Exhaust Type 41 / Individual Exhaust Type 42
VP300/500/700 Series

How to Order Manifold

Type 41/Common exhaust
VV3P 3 - 41 - 04 1 - 02

- Series
  3 VP300
  5 VP500
  7 VP700

- Pilot type
  NNil Internal pilot
  R External pilot

Note) When the external pilot type manifold is selected, external pilot type valves are mounted.

- Thread type
  NNil Rc
  F G
  T NPT
  NPTF

- Port size
  Symbol Port size Applicable series
  02 1/4 VP300
  03 3/8 VP500
  04 1/2 VP700

- Stations
  02 2 stations
  4 4 stations
  20 20 stations

Type 42/Individual exhaust
VV3P 3 - 42 - 04 3 - 02

- Series
  3 VP300
  5 VP500
  7 VP700

- Pilot type
  NNil Internal pilot
  R External pilot

Note) When the external pilot type manifold is selected, external pilot type valves are mounted.

- Thread type
  NNil Rc
  F G
  T NPT
  NPTF

- Port size
  Symbol Port size Applicable series
  02 1/4 VP300
  03 3/8 VP500
  04 1/2 VP700

- Stations
  02 2 stations
  4 4 stations
  20 20 stations
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
DC AC
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
5 24 VDC
6 12 VDC

AC (50/60 Hz)
1 100 VAC
2 200 VAC
3 110 VAC (115 VAC)
4 220 VAC (230 VAC)
7 240 VAC

Electrical entry
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 1300 for details.

Made to Order
Nil
X500: Pilot exhaust port with piping thread (M3) specification (Refer to page 1291)
X600: Triac output specification (Refer to page 1291)

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

For low wattage specification, refer to “How to Order Valve” on page 1278.

LN and MN types are with 2 sockets.

Refer to page 1294 when different length of lead wire for L/M-type plug connector is required.

Refer to page 1295 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 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 1300 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</td>
<td>1/4</td>
<td>VP344</td>
<td>2 to 20 stations: W = 110n + 90</td>
</tr>
<tr>
<td>VP3P-42</td>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP500</td>
<td>VP3P-51</td>
<td>Common</td>
<td>3/8</td>
<td>VP544</td>
<td>2 to 20 stations: W = 190n + 150</td>
</tr>
<tr>
<td>VP3P-42</td>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP700</td>
<td>VP3P-71</td>
<td>Common</td>
<td>1/2</td>
<td>VP744</td>
<td>2 to 20 stations: W = 410n + 380</td>
</tr>
<tr>
<td>VP3P-42</td>
<td>Individual</td>
<td></td>
<td></td>
<td></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 (With a gasket and two mounting bolts)</td>
<td>VP300-25-1A</td>
<td>VP3P3</td>
</tr>
<tr>
<td></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 (VV3P-41)

- VP344-5GZ1-B ···················· 1 set (Type 41, 5-station manifold base part no.)
- VP300-25-1A ····················· 1 set (Blanking plate assembly part no.)
- VP344-5GZ1-A ···················· 2 sets (N.C. type part no.)
- VP344-5GZ1-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)

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

* Refer to page 1291 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 Series/Dimensions

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

**Grommet (G)**

**Common external pilot port**
(External pilot specification: R)

<table>
<thead>
<tr>
<th>(Station n)</th>
<th>(Station 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>L2</td>
</tr>
<tr>
<td>83.5</td>
<td>68.5</td>
</tr>
<tr>
<td>111</td>
<td>96</td>
</tr>
<tr>
<td>136.5</td>
<td>123.5</td>
</tr>
<tr>
<td>166</td>
<td>151</td>
</tr>
<tr>
<td>193.5</td>
<td>178.5</td>
</tr>
<tr>
<td>221</td>
<td>206</td>
</tr>
<tr>
<td>248.5</td>
<td>233.5</td>
</tr>
<tr>
<td>276</td>
<td>261</td>
</tr>
<tr>
<td>303.5</td>
<td>286.5</td>
</tr>
<tr>
<td>331</td>
<td>316</td>
</tr>
<tr>
<td>358.5</td>
<td>343.5</td>
</tr>
<tr>
<td>386</td>
<td>371</td>
</tr>
<tr>
<td>413.5</td>
<td>398.5</td>
</tr>
<tr>
<td>441</td>
<td>426</td>
</tr>
<tr>
<td>468.5</td>
<td>453.5</td>
</tr>
<tr>
<td>496</td>
<td>481</td>
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<tr>
<td>533.5</td>
<td>508.5</td>
</tr>
<tr>
<td>561</td>
<td>538</td>
</tr>
<tr>
<td>587.5</td>
<td>563.5</td>
</tr>
</tbody>
</table>

### L-type plug connector (L)

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>10</th>
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<th>13</th>
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<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>136.5</td>
<td>166</td>
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<td>358.5</td>
<td>386</td>
<td>413.5</td>
<td>441</td>
<td>468.5</td>
<td>496</td>
<td></td>
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<tr>
<td>L2</td>
<td>68.5</td>
<td>96</td>
<td>123.5</td>
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<td>178.5</td>
<td>206</td>
<td>233.5</td>
<td>261</td>
<td>286.5</td>
<td>316</td>
<td>343.5</td>
<td>371</td>
<td>398.5</td>
<td>426</td>
<td>453.5</td>
<td>481</td>
<td></td>
</tr>
</tbody>
</table>

### M-type plug connector (M)

Approx. 300 (Lead wire length)

### DIN terminal (D, Y)

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>14</th>
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<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>83.5</td>
<td>111</td>
<td>136.5</td>
<td>166</td>
<td>193.5</td>
<td>221</td>
<td>248.5</td>
<td>276</td>
<td>303.5</td>
<td>331</td>
<td>358.5</td>
<td>386</td>
<td>413.5</td>
<td>441</td>
<td>468.5</td>
<td>496</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>68.5</td>
<td>96</td>
<td>123.5</td>
<td>151</td>
<td>178.5</td>
<td>206</td>
<td>233.5</td>
<td>261</td>
<td>286.5</td>
<td>316</td>
<td>343.5</td>
<td>371</td>
<td>398.5</td>
<td>426</td>
<td>453.5</td>
<td>481</td>
<td></td>
</tr>
</tbody>
</table>

### Conduit terminal (T)

<table>
<thead>
<tr>
<th></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>
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<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>83.5</td>
<td>111</td>
<td>136.5</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>
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<td>386</td>
<td>413.5</td>
<td>441</td>
<td>468.5</td>
<td>496</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>68.5</td>
<td>96</td>
<td>123.5</td>
<td>151</td>
<td>178.5</td>
<td>206</td>
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<td>398.5</td>
<td>426</td>
<td>453.5</td>
<td>481</td>
<td></td>
</tr>
</tbody>
</table>

**Grommet (G)**

DC without light/surge voltage suppressor

* Refer to page 1291 separately when piping to PE port is required.

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-type plug connector (L)

M-type plug connector (M)

DIN terminal (D, Y)

Conduit terminal (T)

Grommet (G)
DC without light/surge voltage suppressor

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

Type 42/Individual exhaust: VV3P5-42□[Stations]3-03

Grommet (G)

- Refer to page 1291 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).
VP700 Series/Dimensions

Type 41/Common exhaust: VV3P7-41
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).
VP300/500/700 Series

VP700 Series/Dimensions

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

Grommet (G)

L-type plug connector (L)

M-type plug connector (M)

DIN terminal (D, Y)

Conduit terminal (T)

Grommet (G)
DC without light/surge voltage suppressor

[ ]: Without indicator light

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**

\[ VP_{542} - 1 - X500 \]

- 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**

\[ VP_{542} - 1 - X505 \]

- 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**

\[ VP_{54} - 1 - X600 \]

- 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

30-VP 3 4 4 - 1 D B - 01 A - F - Q

- Conforming to CSA standard
- VP series solenoid valve
- Body size
  - 3: 1/4 standard
  - 5: 3/8 standard
  - 7: 1/2 standard
- Type of actuation
  - 4: In common between N.C. and N.O. (Pilot type)
- Body type
  - 2: Body ported
  - 4: Base mounted
- Valve option
  - Nil: Standard (Internal pilot)
  - R*: External pilot
- Rated voltage
  - 1: 100 VAC, 50/60 Hz
  - 2: 200 VAC, 50/60 Hz
  - 3: 110 to 120 VAC, 50/60 Hz
  - 4: 220 VAC, 50/60 Hz
  - 5: 24 VDC
  - 6*: 12 VDC
  - 7*: 240 VAC, 50/60 Hz
- Electrical entry
  - D: DIN terminal (With connector)
  - DO: DIN terminal (Without connector)
- CE-compliant
  - Nil
  - Q: CE-compliant
- Option
  - Nil: Without bracket
  - F: With bracket
- Passage symbol
  - A: Normally closed
  - B: Normally open
- Thread type
  - Nil: Rc
  - F: G
  - N: NPT
  - T: NPTF
- Port size
  - Symbol: 30-VP342, 30-VP344, 30-VP542, 30-VP544, 30-VP742, 30-VP744
  - Port size: 30-VP44, 30-VP44
  - 01: 1/8
  - 02: 1/4
  - 03: 3/8
  - 04: 1/2
- Manual override
  - Nil
  - B*: Locking slotted type
  - C*: Locking lever type
- Light/Surge voltage suppressor
  - Nil
  - Z: With light/surge voltage suppressor

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 back page 50 for Safety Instructions and pages 3 to 9 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 (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.

   - **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.
VP Series
Specific Product Precautions 2

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

Plug Connector Lead Wire Length

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

<table>
<thead>
<tr>
<th>Lead wire length</th>
<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

| DC | V200-30-4A- |
| 100 VAC | V200-30-1A- |
| 200 VAC | V200-30-2A- |
| AC other voltages | V200-30-3A- |
| Without lead wire | V200-30-A |

(With connector and 2 pcs. of socket)

**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

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 |

Ground nut
Tightening torque 2.5 to 3.75 N·m

Set screw
Tightening torque 0.5 to 0.6 N·m

Washer

Grommet
(Rubber)

Housing

Terminal block

3 locations
Tightening torque 0.4 to 0.5 N·m

(Voltage symbol)

(Location for light mounting)

(Polarity indication)
VP Series
Specific Product Precautions 3

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

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

How to Order DIN Connector

Caution
● Without indicator light
  DC, AC, Other voltages: V200- -1

● With indicator light
  DC
  Polar type (□Z): V200- -3-
  Non-polar type (□U): V200- -5-
  AC (□Z): V200- -7-

Connector specification
- Rated voltage
  D type: 01 100/110 VAC [115 VAC]
  Y type: 02 200/220 VAC [230 VAC]
  07 240 VAC

Note) Order no. for 24 VAC specification is V200-65-5-B.

Circuit with indicator light (Built-in connector)
DC (□U) circuit
LED: Light emitting diode, R: Resistor

AC (□Z) circuit
NL: Neon bulb R: Resistor

Note) The 24 VAC specifications are the same as those in the DC (□U) circuit diagram.

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.
VP Series
Specific Product Precautions 4

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

Light/Surge Voltage Suppressor

Caution

<DC>

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

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

- DIN or Conduit terminal
  With light/surge voltage suppressor (□Z)
  Polarity protection diode
  (+)  (-)
  LED
  Diode
  Coil

- 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

<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.

NL: Neon bulb

Note) : For DIN terminal (D,Y), Conduit terminal.
Low Wattage Specification (VP300/500)
Specific Product Precautions 5

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

---

**Manual Override**

⚠️ **Warning**

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

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

⚠️ **Caution**

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

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

⚠️ **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.

---

**Solenoïd 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.

---

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

⚠️ **Caution**

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

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

3. Socket with lead wire attachment/detachment
   ● **Attachment**
   Insert the sockets into the square holes of the connector (with 🎁, 🤝 indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector.
   (When they are pushed in, their hooks open and they are locked automatically.) Then, confirm that they are locked by pulling lightly on the lead wires.
   
   ● **Detachment**
   To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.
Low Wattage Specification (VP300/500) Specific Product Precautions

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

### Plug Connector Lead Wire Length

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

#### How to Order Connector Assembly

<table>
<thead>
<tr>
<th>DC: SY100 – 30 – 4A</th>
<th>100 VAC: SY100 – 30 – 1A</th>
<th>200 VAC: SY100 – 30 – 2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC: SY100 – 30 – 3A</td>
<td>300 mm</td>
<td>Other AC voltages: SY100 – 30 – 3A</td>
</tr>
<tr>
<td>300 mm</td>
<td>600 mm</td>
<td>1500 mm</td>
</tr>
<tr>
<td>2000 mm</td>
<td>2500 mm</td>
<td>3000 mm</td>
</tr>
<tr>
<td>5000 mm</td>
<td>1000 mm</td>
<td>15</td>
</tr>
</tbody>
</table>

#### Light/Surge Voltage Suppressor

**Caution**

- **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)

---

1298

SMC
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 pages 1265 and 1272.

Residual Voltage

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Varistor</td>
<td>Approx. 1 V</td>
<td>Approx. 1 V</td>
</tr>
<tr>
<td></td>
<td>Approx. 47 V</td>
<td>Approx. 32 V</td>
</tr>
</tbody>
</table>
How to Use DIN Connector

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

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

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

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

5. Applicable cable
   Cable O.D: φ3.5 to φ7
   (Reference) 0.5 mm², 2-core or 3-core, equivalent to JIS C 3306

DIN Connector Part No.

<table>
<thead>
<tr>
<th>DIN terminal (D)</th>
<th>Without indicator light</th>
<th>SY100-61-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>With indicator light</td>
<td>Rated voltage</td>
<td>Voltage symbol</td>
</tr>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-61-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>110 VAC</td>
<td>110 V</td>
<td>SY100-61-2-03</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
<td>SY100-61-2-04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIN terminal (Y)</th>
<th>Without indicator light</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>With indicator light</td>
<td>Rated voltage</td>
<td>Voltage symbol</td>
</tr>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-62-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-62-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-62-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-62-2-02</td>
</tr>
<tr>
<td>110 VAC</td>
<td>110 V</td>
<td>SY100-62-2-03</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
<td>SY100-62-2-04</td>
</tr>
</tbody>
</table>

Circuit diagram with light

AC circuit diagram

DC circuit diagram

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.
**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 1265 and 1272.

<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>12</td>
</tr>
<tr>
<td>R, U</td>
<td>Approx. 1 V</td>
<td>Approx. 1 V</td>
</tr>
<tr>
<td></td>
<td>Approx. 47 V</td>
<td>Approx. 32 V</td>
</tr>
</tbody>
</table>

**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.

**Manifold model no.**

<table>
<thead>
<tr>
<th>New VP</th>
<th>Old VP</th>
</tr>
</thead>
<tbody>
<tr>
<td>VV3P</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>VV3P</td>
<td>Internal pilot</td>
</tr>
<tr>
<td></td>
<td>(External pilot)</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**

   - 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.
   - 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**

   - 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.
   - 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>Port</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>
<td></td>
</tr>
<tr>
<td>N.O.</td>
<td>Exhaust side</td>
<td>Outlet side</td>
<td>Inlet side</td>
<td></td>
</tr>
</tbody>
</table>

**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 1265 and 1272.

<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>12</td>
</tr>
<tr>
<td>R, U</td>
<td>Approx. 1 V</td>
<td>Approx. 1 V</td>
</tr>
<tr>
<td></td>
<td>Approx. 47 V</td>
<td>Approx. 32 V</td>
</tr>
</tbody>
</table>

**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. 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**

   - 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.

**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>
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<tr>
<td>VP(A)300</td>
<td>X</td>
<td>1/8, 1/4</td>
<td>e3.2 e4 e8 e10 e12 e16</td>
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<td>X</td>
<td>1/4, 3/8</td>
<td>e3.2 e4 e8 e10 e12 e16</td>
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<td>X</td>
<td>3/8</td>
<td>e3.2 e4 e8 e10 e12 e16</td>
</tr>
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<td>VV3P(A)7</td>
<td>X</td>
<td>1/2</td>
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</tr>
</tbody>
</table>

**One-touch Fittings**

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.