3 Port Solenoid Valve
Pilot Operated Poppet Type
VG342 Series
Rubber Seal

### Specifications

- **Low power consumption**
  - 4 W DC (Standard type)
  - 1.8 W DC (Energy-saving type)
- **No lubrication required**
- **Possible to use in vacuum or under low pressures**
  - Vacuum: Up to \(-101.2\) kPa
  - Low pressure: 0 to 0.2 MPa
- **Changeable actuation:**
  - N.C., N.O., or external pilot
- **Can be used as a selector or divider valve** (External pilot)

#### How to Order

##### VG342

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Nil</th>
<th>Internal pilot</th>
<th>R</th>
<th>External pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>1</td>
<td>100 VAC, 50/60 Hz</td>
<td>2</td>
<td>200 VAC, 50/60 Hz</td>
</tr>
</tbody>
</table>

- **Pilot valve option**
  - Nil | Standard type | Y | Energy-saving type (DC only) | E | Continuous duty type |
- **Passage symbol**
  - Nil | External pilot | A | N.C. (Normally closed) | B | N.O. (Normally open) |
- **Thread type**
  - Nil | Rc | F | G | N | NPT |
  - Nil | Rc | T | N | NPTF |
- **Port size**
  - 04 | 1/2 |
  - 06 | 3/4 |
  - 10 | 1 |

##### VO307

<table>
<thead>
<tr>
<th>Pilot valve option</th>
<th>Nil</th>
<th>Standard type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>1</td>
<td>100 VAC, 50/60 Hz</td>
</tr>
</tbody>
</table>

- **Light/Surge voltage suppressor**
  - Nil | None |
  - S | With surge voltage suppressor (Only grommet type is only available.) |
  - Z | With light/surge voltage suppressor (Except grommet type) |

### Additional Information

- **Energy-saving type (DC only)**
  - Y
- **Standard type**
  - Nil
- **Continuous duty type**
  - E

### Notes
- CE-compliant: For DIN terminal only
- Applicable only for DIN terminal type

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**How to Order Pilot Valve Assembly**

<table>
<thead>
<tr>
<th>Pilot valve option</th>
<th>Nil</th>
<th>Standard type</th>
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---

**Symbol**

- N.C.
  - (A) 2
  - (P) R
- N.O.
  - (A) 2
  - (P) R
- External pilot
  - (A) 2
  - (P) R

---

**Low power consumption**

4 W DC (Standard type)  
1.8 W DC (Energy-saving type)

**No lubrication required**

Possible to use in vacuum or under low pressures

External pilot

Vacuum: Up to \(-101.2\) kPa  
Low pressure: 0 to 0.2 MPa

**Changeable actuation:**

- N.C., N.O., or external pilot
- Can be used as a selector or divider valve (External pilot)
**VG342 Series**

**Caution**

**Light/Surge Voltage Suppressor**

- **AC, 100 V or more**
  - Terminal no. 1: In the case of indicator light
  - Terminal no. 2: AC

- **48 VDC or less**
  - Terminal no. 1: (+)
  - Terminal no. 2: (−)

**Electrical Connection**

In the case of DIN terminal (with light/surge voltage suppressor), the connection is as follows. Connect each to the power supply side.

**How to Change Passage State**

M4×0.7

- **N.C.**
- **N.O.**
- **External pilot**

When changing the passage state, confirm that pressure has been removed from the valve. Unscrew the M4 x 0.7 hexagon socket head cap screw in the changeover plate and match the ▲ mark on the adapter plate with the character on the changeover plate. Piping is as follows.

**Mounting Screw Tightening Torques**

- **M4: 1.4 N·m**

**Piping**

- **N.C.**
  - Exhaust side (Plug, in case of 2 port valve)
- **N.O.**
  - Exhaust side (Plug, in case of 2 port valve)
- **External**
  - Universal porting (Piping of inlet pressure side is possible anywhere)

**Specifications**

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>In common between N.C. and N.O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Operation</td>
<td>Internal pilot type</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>0.2 to 0.9 MPa</td>
</tr>
<tr>
<td>External pilot type</td>
<td></td>
</tr>
<tr>
<td>Pressure</td>
<td>0.2 to 0.9 MPa</td>
</tr>
<tr>
<td>Response time</td>
<td>30 ms or less (at the pressure of 0.5 MPa)</td>
</tr>
<tr>
<td>Max. operating frequency</td>
<td>5 c/s (Min. operating frequency: 1 c/30 days based on JIS B 8374-1981)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 50°C (No freezing)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)</td>
</tr>
<tr>
<td>Manual override</td>
<td>Push type (Non-locking)</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>150/50</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 kg</td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test JIS B 8419: 2010. (Coil temperature 20°C, at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester 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 1000 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)

**Flow Rate Characteristics**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow rate characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>26</td>
</tr>
<tr>
<td>3/4</td>
<td>38</td>
</tr>
</tbody>
</table>

**Pilot Valve Assembly Specifications**

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), DIN terminal (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead wire color</td>
<td>100 VAC: Blue, 200 VAC: Red, 24 VDC: Red/Black</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustlight</td>
</tr>
<tr>
<td>Coil rated voltage (V)</td>
<td>AC (50/60 Hz)</td>
</tr>
<tr>
<td></td>
<td>DC</td>
</tr>
<tr>
<td></td>
<td>100, 200, 110, 220, 240</td>
</tr>
<tr>
<td></td>
<td>24, 12</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>–15 to +10% of rated voltage</td>
</tr>
<tr>
<td>Apparent power VA (Hz)</td>
<td>AC</td>
</tr>
<tr>
<td></td>
<td>Inrush</td>
</tr>
<tr>
<td></td>
<td>12.7 (50), 10.7 (60)</td>
</tr>
<tr>
<td></td>
<td>Holding</td>
</tr>
<tr>
<td></td>
<td>7.6 (50), 5.4 (60)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>DC</td>
</tr>
<tr>
<td></td>
<td>Without indicator light: 4 W</td>
</tr>
<tr>
<td></td>
<td>With indicator light: 4.2 W</td>
</tr>
</tbody>
</table>

**Energy-saving type: VG342□-□□□-□□□-Y (–Q)**

Use “Energy-saving type” if low power consumption is required for electronic control. DC only

Specifications different from standard are as follows.

- **Power consumption**
  - DC
  - Without indicator light: 1.8 W
  - With indicator light: 2 W

**Continuous duty type: VG342□-□□□-□□□-□□□-□□□□-□□□□-□□□□-E (–Q)**

Use “Continuous duty type” if energizing the valve for a long time.

Specifications different from standard are as follows.

- **Apparent power VA (Hz)**
  - AC
  - Inrush: 7.9 (50), 6.2 (60)
  - Holding: 5.8 (50), 3.5 (60)

- **Power consumption**
  - DC
  - Without indicator light: 1.8 W
  - With indicator light: 2 W

**DIN Connector part number**

- **Standard**
  - B1B09-2A
- **CE-compliant**
  - GM209NJ-B17
### Construction

**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 alloy</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Adapter plate</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>End plate</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Retainer</td>
<td>Aluminum alloy/NBR</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Poppet valve</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Pilot valve assembly</td>
<td>VO307E-1-X84(-Q)</td>
<td></td>
</tr>
</tbody>
</table>

### 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.

**Caution**

1. Since PE port is the exhaust port of the pilot valve, do not attach a plug or reduce the port diameter.
2. X port is the pressure supply port of the pilot valve and PE port is the exhaust port of the pilot valve. Avoid mismatching when piping.

**Continuous Duty**

If energizing the valve for a long time, use “VG342-□□□□□□□□□□□□-E” (Pilot valve assembly: “VO307E-□□□□□□-X84”).

1. This model is for continuous duty, not for high cycle rates. But even in low cycle rates, if energizing the valve more than once a day, please consult with SMC.
2. Make sure to cycle valve at least once every 30 days.

**How to Use DIN Terminal**

1. **Disassembly**
   1. After loosening the screw 1, then if the housing 2 is pulled in the direction of the screw, the connector will be removed from the body of equipment (solenoid, etc.).
   2. Pull the screw 1 out of the housing 2.
   3. On the bottom part of the terminal block 8, there’s a cut-off part 9. If a small flat head screwdriver is inserted between the opening in the bottom, terminal block 8 will be removed from the cover 2. (Refer to Figure 1.)
4. Remove the cable gland 4 and plain washer 5 and rubber seal 6.
2. **Wiring**
   1. Pass them through the cable 7 in the order of cable ground 4, washer 5, rubber seal 6, and then insert into the housing 2.
   2. From the terminal block 8, loosen the screw 1, then pass the lead wire 1 through, then again tighten the screw 1.

   Note 1) Tighten within the tightening torque of 0.5 N·m ±15%.
   
   Note 2) Connector orientation can be changed by 180 degrees depending on how to assemble the housing 2 and the terminal block 8.

3. **Assembly**
   1. Passing through the cable 7, the cable gland 4, plain washer 5, and rubber seal 6, housing 2 in this order, and then connect with the terminal block 8. After that, set the terminal block 8 on the housing 2. (Push it down until you hear the click sound.)
   2. Putting rubber seal 6, plain washer 5, in this order into the cable introducing slit on the housing 2, then further tighten the cable gland 4 securely.
   3. Insert the gasket 9 or between the bottom part of terminal block 8 and a plug attached to equipment, and then screw 1 in from the top of the housing 2 to tighten it.

   **Note** 1) Tighten within the tightening torque of 0.5 N·m ±20%.
   
   Note 2) Connector orientation can be changed by 180 degrees depending on how to assemble the housing 2 and the terminal block 8.

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VG342 Series

Dimensions

Grommet (G)

- Manual override (Non-locking)
- Internal pilot: Plug
- Lead wire length: ≈ 300

Dimensions:

- 1/8" Pilot exhaust
- 2 x ø8.4 Mounting hole

Function plate:

- 1", 3/4", 1/2" 2(A) port
- 1", 3/4", 1/2" 3(R) port
- 1", 3/4", 1/2" 1(P) port

- 73.5 x 73.5 x 14
- 54 x 54 x 12
- 87.4 x 68 x 14

- 57.6 x 71 x 14
- 57.6 x 71 x 14
- 57.6 x 71 x 14

1304
3 Port Solenoid Valve
Pilot Operated Poppet Type VG342 Series

Dimensions

DIN terminal (D)

(Surge voltage suppressor)  Πg9

(Light)  1/8"  (Pilot exhaust)

Applicable cable O.D.  ø6 to ø8

Manual override  (Non-locking)

Function plate

2 x ø8.4  (Mounting hole)

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

34  43.8  51.6

1", 3/4", 1/2"  3(F) port

30.5  57.6  71

1/8"  (External pilot port)  +  Internal pilot: Plug

Applicable cable O.D.  ø6 to ø8

1", 3/4", 1/2"  3(R) port

91.6  181.1

1/8"  (External pilot port)  +  Internal pilot: Plug

1", 3/4", 1/2"  1(P) port

66.8  91.6

SYJ  VQZ  VP  VG  VP3