# 3 Port Solenoid Valve

## Pilot Operated Poppet Type

### VG342 Series

#### Rubber Seal

**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)

### How to Order

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Nil</th>
<th>Internal pilot</th>
<th>External pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>1 100 VAC, 50/60 Hz</td>
<td>2 200 VAC, 50/60 Hz</td>
<td>3 110 VAC, 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>4 220 VAC, 50/60 Hz</td>
<td>5 24 VDC</td>
<td>6 12 VDC</td>
</tr>
<tr>
<td></td>
<td>7 240 VAC, 50/60 Hz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Electrical entry**
- G Grommet
- D DIN terminal

**Light/Surge voltage suppressor**
- Nil
- S With surge voltage suppressor (Only grommet type is only available.)
- Z With light/surge voltage suppressor (Except grommet type)

**Thread type**
- Rc
- G
- F
- N
- T
- NPT
- NPTF

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

**Pilot valve option**
- Nil
- Y Energy-saving type (DC only)
- E Continuous duty type

**Pilot valve assembly for VO307**

<table>
<thead>
<tr>
<th>Port size</th>
<th>04</th>
<th>06 3/4</th>
<th>10 1</th>
</tr>
</thead>
</table>

**SYJ**

**VQZ**

**VP**

**VG**

**VP3**

**SYJ**

**VQZ**

**VP**

**VG**

**VP3**
VG342 Series

**Light/Surge VoltageSuppressor**

**AC, 100 V or more**

- **Terminal no. 1**
  - AC
- **Terminal no. 2**
  - DC

**48 VDC or less**

- **Terminal no. 1 (+)**
  - In the case of indicator light
- **Terminal no. 2 (–)**
  - In the case of indicator light

**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 × 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**

<table>
<thead>
<tr>
<th>Connection</th>
<th>P</th>
<th>A</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.C.</td>
<td>Inlet</td>
<td>Exhaust side (Plug, in case of 2 port valve)</td>
<td></td>
</tr>
<tr>
<td>N.O.</td>
<td>Exhaust side (Plug, in case of 2 port valve)</td>
<td>Outlet</td>
<td></td>
</tr>
</tbody>
</table>

**Universal porting**

Piping of inlet pressure side is possible anywhere.

**Note 1)** In the case of internal pilot, confirm that a plug is inserted to X port. If not, insert a R1/8 plug.

**Note 2)** In the case of external pilot, supply air pressure from X port.

Confirm the safety sufficiently and conduct carefully when changing the passage state or restarting after changes.

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**Specifications**

**Type of actuation**

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>N.C. and N.O.</th>
</tr>
</thead>
</table>

**Fluid**

| Air |

**Operation**

| Internal pilot type | External pilot type |

**Operating pressure range**

| 0.2 to 0.9 MPa | –101.2 kPa to 0.9 MPa |

**External pilot**

| Operating pressure range | 101.2 kPa to 0.9 MPa | –101.2 kPa to 11.2 kPa | 0.2 MPa |

**Equivalent operating pressure**

| –10 to 50°C (No freezing) |

**Max. operating frequency**

| 5 c/s (Min. operating frequency: 1 c/30 days based on JIS B 8374-1981) |

**Ambient and fluid temperature**

| –10 to 50°C (No freezing) |

**Lubrication**

| Not required (Use turbine oil Class 1 ISO VG32, if lubricated.) |

**Manual override**

| Push type (Non-locking) |

**Mounting orientation**

| Unrestricted |

**Impact/Vibration resistance (m/s²)**

| –15 to +10% of rated voltage |

**Weight**

| 1.0 kg |

**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. (Values at the initial period) |

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

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

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

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

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**Flow Rate Characteristics**

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

**Pilot Valve Assembly Specifications**

**Electrical entry**

| Grommet (G), DIN terminal (D) |

**Lead wire color**

| 100 VAC: Blue, 200 VAC: Red, 24 VDC: Red/Black |

**Enclosure**

| Dustlight |

**Coil rated voltage (V)**

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

**Allowable voltage fluctuation**

| –15 to +10% of rated voltage |

**Apparent power VA (Hz)**

| AC Inrush Holding | 12.7 (50), 10.7 (60) |
| DC Without indicator light | 7.6 (50), 5.4 (60) |
| DC With indicator light | 4 W |

**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 |

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3 Port Solenoid Valve
Pilot Operated Poppet Type VG342 Series

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>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Poppet valve</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston</td>
<td>Aluminum alloy</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

Color: Platinum silver

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Pilot valve assembly</td>
<td>VO307E-X84(-Q)</td>
<td></td>
</tr>
</tbody>
</table>

* For "How to Order Pilot Valve Assembly", refer to page 1301.

⚠️ Caution

Mounting Screw Tightening Torques M4: 1.4 N·m

⚠️ 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

Precautions
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-X030-XXX-E” (Pilot valve assembly: VO307E-X84-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 ③, there’s a cut-off part ④. If a small flat head screwdriver is inserted between the opening in the bottom, terminal block ③ 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 ③, loosen the screw ④, then pass the lead wire ⑫ through, then again tighten the screw ④.

3. Assembly
   1) Passing through the cable ⑦, the cable gland ⑧, plain washer ⑨, and rubber seal ⑥, housing ② in this order, and then connect with the terminal block ③. After that, set the terminal block ③ on the housing ②. (Push it down until you hear the click sound.)
   2) Putting rubber seal ④, 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 ③ and a plug attached to equipment, and then screw ⑨ 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 ③.

How to Calculate the Flow Rate

For obtaining the flow rate, refer to front matter.

Figure (1)
VG342 Series

Dimensions

Grommet (G)

1/8" (Pilot exhaust)

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

2 x ø8.4 (Mounting hole)

57.6

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

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

Function plate

Manual override (Non-locking)

≈ 300 (Lead wire length)

1304
3 Port Solenoid Valve
Pilot Operated Poppet Type VG342 Series

Dimensions

DIN terminal (D)

(Surge voltage suppressor)  
(Light)  
(Pilot exhaust)

Applicable cable O.D.  
ø6 to ø8

Manual override  
(Non-locking)

Function plate

2 x ø8.4  
(Mounting hole)

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

SYJ  
VQZ  
VP  
VG  
VP3

1305