

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



[Option]  
Note) CE/UKCA-compliant:  
For DIN terminal only

## 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)**

### External Pilot

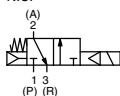
Use external pilot type in the following cases:

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

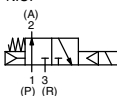


### Symbol

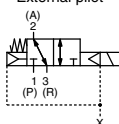
N.C.



N.O.



External pilot



## How to Order

**VG342**    - **1** **G**    - **04**    **A** -    -   

### Valve type

|            |                |
|------------|----------------|
| <b>NII</b> | Internal pilot |
| <b>R</b>   | External pilot |

### Rated voltage

|          |                   |
|----------|-------------------|
| <b>1</b> | 100 VAC, 50/60 Hz |
| <b>2</b> | 200 VAC, 50/60 Hz |
| <b>3</b> | 110 VAC, 50/60 Hz |
| <b>4</b> | 220 VAC, 50/60 Hz |
| <b>5</b> | 24 VDC            |
| <b>6</b> | 12 VDC            |
| <b>7</b> | 240 VAC, 50/60 Hz |

### Electrical entry

|          |              |   |
|----------|--------------|---|
| <b>G</b> | Grommet      | — |
| <b>D</b> | DIN terminal | ● |

### Light/Surge voltage suppressor

|            |                                                                         |
|------------|-------------------------------------------------------------------------|
| <b>NII</b> | None                                                                    |
| <b>S</b>   | With surge voltage suppressor<br>(Only grommet type is only available.) |
| <b>Z</b>   | With light/surge voltage suppressor<br>(Except grommet type)            |

### CE/UKCA-compliant

|            |                                        |
|------------|----------------------------------------|
| <b>NII</b> | —                                      |
| <b>Q</b>   | CE/UKCA-compliant <small>Note)</small> |

Note) Applicable only for DIN terminal type

### Pilot valve option

|            |                              |
|------------|------------------------------|
| <b>NII</b> | Standard type                |
| <b>Y</b>   | Energy-saving type (DC only) |
| <b>E</b>   | Continuous duty type         |

### Passage symbol

|            |                        |
|------------|------------------------|
| <b>NII</b> | External pilot         |
| <b>A</b>   | N.C. (Normally closed) |
| <b>B</b>   | N.O. (Normally open)   |

### Thread type

|            |      |
|------------|------|
| <b>NII</b> | Rc   |
| <b>F</b>   | G    |
| <b>N</b>   | NPT  |
| <b>T</b>   | NPTF |

### Port size

|           |     |
|-----------|-----|
| <b>04</b> | 1/2 |
| <b>06</b> | 3/4 |
| <b>10</b> | 1   |

## How to Order Pilot Valve Assembly

**VO307**    - **1** **G**    **1** - **X84** -   

### Pilot valve option

|            |                              |
|------------|------------------------------|
| <b>NII</b> | Standard type                |
| <b>Y</b>   | Energy-saving type (DC only) |
| <b>E</b>   | Continuous duty type         |

### Rated voltage

|          |                   |
|----------|-------------------|
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| <b>3</b> | 110 VAC, 50/60 Hz |
| <b>4</b> | 220 VAC, 50/60 Hz |
| <b>5</b> | 24 VDC            |
| <b>6</b> | 12 VDC            |
| <b>7</b> | 240 VAC, 50/60 Hz |

### CE/UKCA-compliant

|            |                                        |
|------------|----------------------------------------|
| <b>NII</b> | —                                      |
| <b>Q</b>   | CE/UKCA-compliant <small>Note)</small> |

Note) Applicable only for DIN terminal type

### Pilot valve assembly for VG342

### Light/Surge voltage suppressor

|            |                                                                    |
|------------|--------------------------------------------------------------------|
| <b>NII</b> | None                                                               |
| <b>S</b>   | With surge voltage suppressor<br>(Only grommet type is available.) |
| <b>Z</b>   | With light/surge voltage suppressor<br>(Except grommet type)       |

### Electrical entry

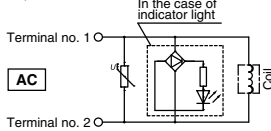
|          |              |   |
|----------|--------------|---|
| <b>G</b> | Grommet      | — |
| <b>D</b> | DIN terminal | ● |

# VG342 Series

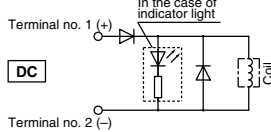
## ⚠ Caution

### Light/Surge Voltage Suppressor

#### AC, 100 V or more

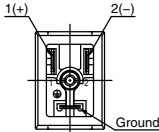


#### 48 VDC or less

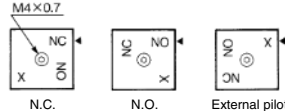


### Electrical Connection

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



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

| Passage Port | P                                                                      | A      | R                                            |
|--------------|------------------------------------------------------------------------|--------|----------------------------------------------|
| N.C.         | Inlet                                                                  | Outlet | Exhaust side (Plug, in case of 2 port valve) |
| N.O.         | Exhaust side (Plug, in case of 2 port valve)                           | Outlet | Inlet                                        |
| External     | 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 R 1/8 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.

## Specifications

| Type of actuation                                              | In common between N.C. and N.O.                                          |                                               |
|----------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| 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                        | —                                                                        | Same as the operating pressure (Min. 0.2 MPa) |
| Response time <sup>(1)</sup>                                   | 30 ms or less (at the pressure of 0.5 MPa)                               |                                               |
| Max. operating frequency                                       | 5 c/s (Min. operating frequency: 1 c/s 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/s <sup>2</sup> ) <sup>(2)</sup> | 150/50                                                                   |                                               |
| Weight                                                         | 1.0 kg                                                                   |                                               |

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

| Port size | Flow rate characteristics |      |     |                          |      |     |                          |      |               |                          |      |     |
|-----------|---------------------------|------|-----|--------------------------|------|-----|--------------------------|------|---------------|--------------------------|------|-----|
|           | 1 → 2 (P → A)             |      |     | 2 → 3 (A → R)            |      |     | 2 → 1 (A → P)            |      | 3 → 2 (R → A) |                          |      |     |
|           | C [dm <sup>3</sup> /sec]  | b    | Cv  | C [dm <sup>3</sup> /sec] | b    | Cv  | C [dm <sup>3</sup> /sec] | b    | Cv            | C [dm <sup>3</sup> /sec] | b    | Cv  |
| 1/2       | 26                        | 0.38 | 7.0 | 27                       | 0.37 | 7.4 | 27                       | 0.36 | 7.3           | 25                       | 0.37 | 6.8 |
| 3/4       | 38                        | 0.30 | 9.8 | 38                       | 0.32 | 9.8 | 40                       | 0.22 | 9.8           | 40                       | 0.20 | 9.6 |

| Port size | Effective area (mm <sup>2</sup> ) |               |
|-----------|-----------------------------------|---------------|
|           | 1 → 2 (P → A)                     | 2 → 3 (A → R) |
| 1         | 210                               | 235           |

## 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                     | Dusttight                                      |                                                             |
| Coil rated voltage (V)        | AC (50/60 Hz)                                  | 100, 200, 110, 220, 240                                     |
|                               | DC                                             | 24, 12                                                      |
| Allowable voltage fluctuation | -15 to +10% of rated voltage                   |                                                             |
| Apparent power VA (Hz)        | AC                                             | Inrush<br>Holding                                           |
|                               |                                                | 12.7 (50), 10.7 (60)<br>7.6 (50), 5.4 (60)                  |
| Power consumption             | DC                                             | Without indicator light: 4 W<br>With indicator light: 4.2 W |

## 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<br>With indicator light: 2 W |
|-------------------|----|-------------------------------------------------------------|

## Continuous duty type: VG342□-□□□-□□□-E (-Q)

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

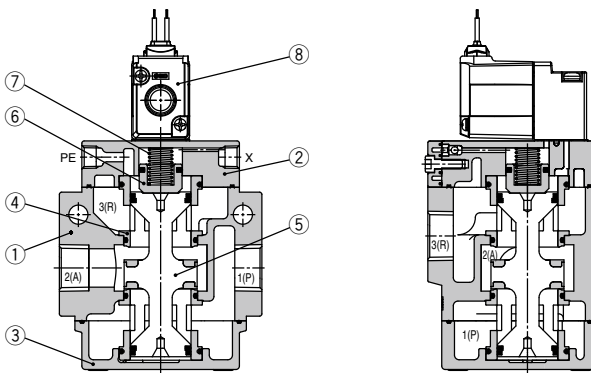
Specifications different from standard are as follows.

|                        |    |                                                             |                    |
|------------------------|----|-------------------------------------------------------------|--------------------|
| 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<br>With indicator light: 2 W |                    |

## DIN Connector part number

|                   |             |
|-------------------|-------------|
| Standard          | B1B09-2A    |
| CE/UKCA-compliant | GM209NJ-B17 |

## Construction



## Component Parts

| No. | Description          | Material           | Note                   |
|-----|----------------------|--------------------|------------------------|
| ①   | <b>Body</b>          | Aluminum alloy     | Color: Platinum silver |
| ②   | <b>Adapter plate</b> |                    |                        |
| ③   | <b>End plate</b>     |                    |                        |
| ④   | <b>Retainer</b>      | Resin              |                        |
| ⑤   | <b>Poppet valve</b>  | Aluminum alloy/NBR |                        |
| ⑥   | <b>Piston</b>        | Resin              |                        |
| ⑦   | <b>Spring</b>        | Stainless steel    |                        |

## Component Parts

| No. | Description          | Material | Part no.             |
|-----|----------------------|----------|----------------------|
| ⑧   | Pilot valve assembly | —        | VO307□-□□□1-X84(-Q)* |

\*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□-□□□-□□□-E" (Pilot valve assembly: "VO307E-□□□1-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 Calculate the Flow Rate

For obtaining the flow rate, refer to front matter.

## 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 ⑪, then pass the lead wire ⑩ through, then again tighten the screw ⑪.

- Note 1) Tighten within the tightening torque of 0.5 N·m  $\pm$ 15%.
- Note 2) Cable ⑦ outside diameter:  $\phi$ 6 to  $\phi$ 8 mm ( $\phi$ 4.5 to  $\phi$ 7 mm for CE-compliant products)

### 3. Assembly

- 1) Passing through the cable ⑦, the cable gland ④, plain washer ⑤, and

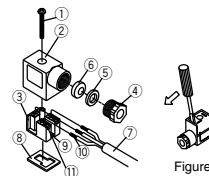


Figure (1)

SYJ

VQZ

VP

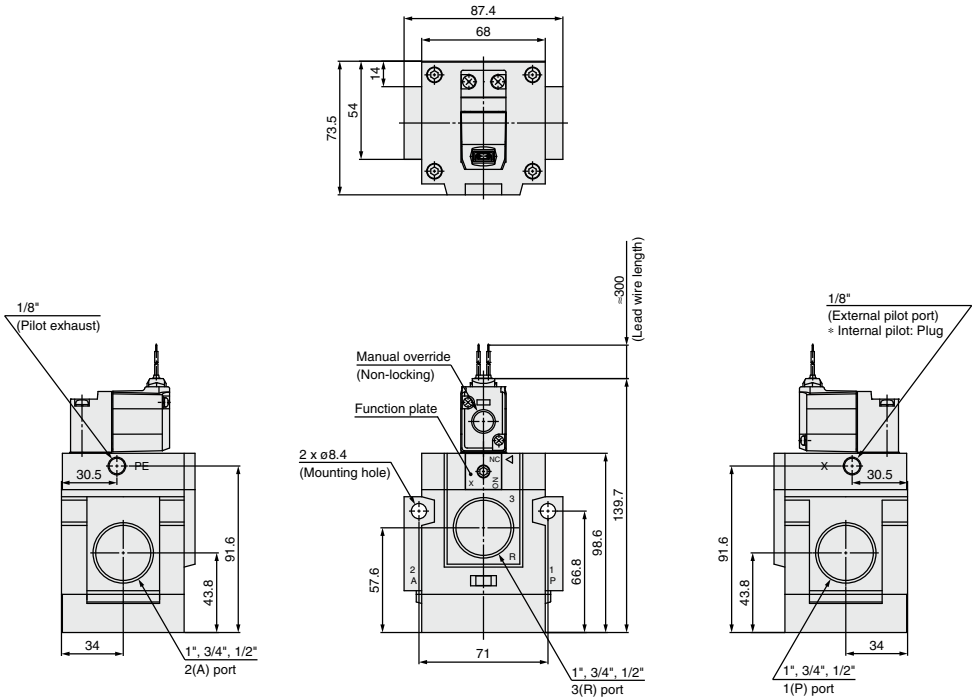
VG

**VP3**

# VG342 Series

## Dimensions

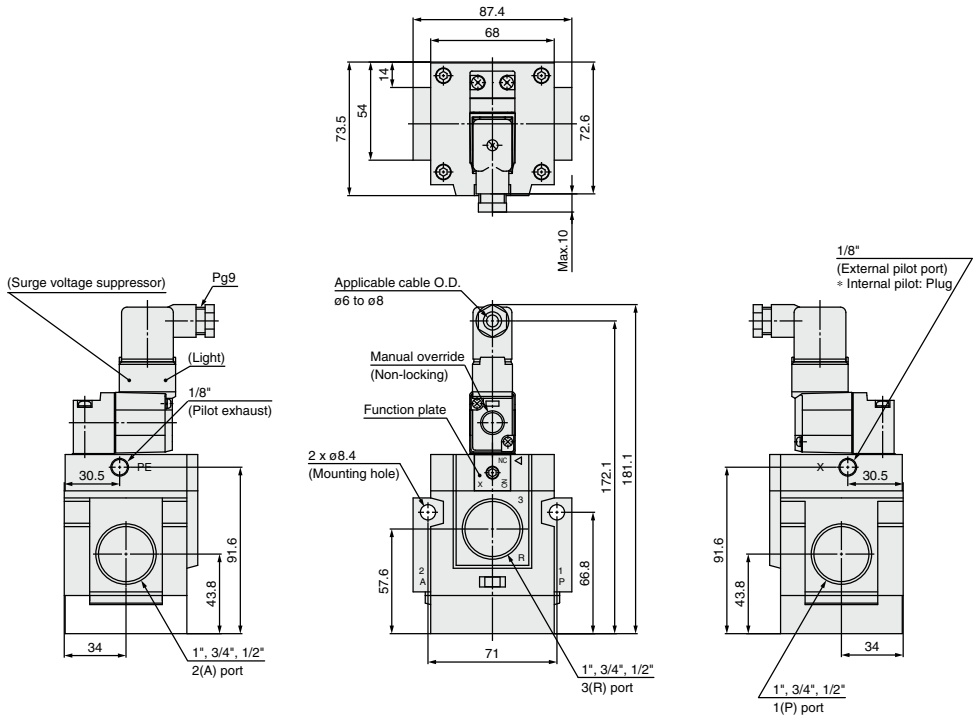
### Grommet (G)



# 3 Port Solenoid Valve Pilot Operated Poppet Type **VG342 Series**

## Dimensions

### DIN terminal (D)



SYJ

VQZ

VP

VG

VP3