

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



## Low power consumption

4.8 W DC (Standard type)  
2 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:

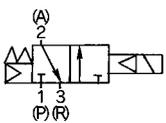
## N.C., N.O., or external pilot

## Can be used as a selector or divider valve (External pilot)

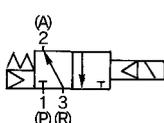


### JIS Symbol

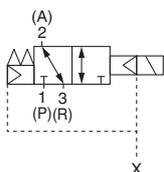
N.C.



N.O.



External pilot



## How to Order

VG342  - 1 G  - 04  A -  -

### Valve option

Nil	Internal pilot
R	External pilot

### Rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option

### Electrical entry

G	Grommet
D	DIN terminal
E	Grommet terminal
T	Conduit terminal

### Light/Surge voltage suppressor

Nil	None
S	With surge voltage suppressor (Only grommet type is available.)
Z	With light/surge voltage suppressor (Except grommet type)

### CE-compliant

Nil	—
Q	CE-compliant*

\* Electrical entry: D only

### Pilot valve option

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

\* Option

### Passage symbol

Nil	External pilot
A	N.C. (Normally closed)
B	N.O. (Normally open)

### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

### Port size

04	1/2
06	3/4
10	1

## How to Order Pilot Valve Assembly

VO307  - 1 G  - X84 -

### Valve option

Nil	Standard type
Y*	Energy-saving type
E*	Continuous duty type

\* Option

### Rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option

### CE-compliant

Nil	—
Q	CE-compliant*

\* Electrical entry: D only

### Pilot valve assembly for VG342

### Light/Surge voltage suppressor

Nil	None
S	With surge voltage suppressor (Only grommet type is available.)
Z	With light/surge voltage suppressor (Except grommet type)

### Electrical entry

G	Grommet
D	DIN terminal
E	Grommet terminal
T	Conduit terminal

SYJ

VQZ

VP

VG

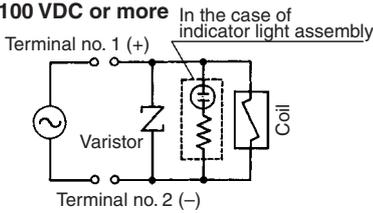
VP3□

# Series VG342

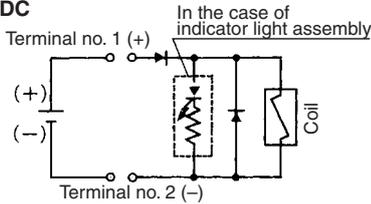
## ⚠ Caution

### Light/Surge Voltage Suppressor

AC, 100 VDC or more



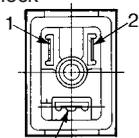
48 VDC



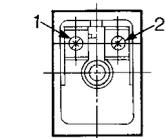
### Electrical Connection

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

With DIN terminal block

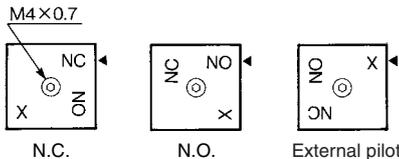


With terminal block



Terminal no.	1	2
DIN terminal	+	-
Terminal	+	-

### 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.	
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 pressure	—	Equivalent 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/30 days based on JIS B 8374-1981)	
Ambient and fluid temperature	Max. 50°C	
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)	
Manual override	Push type (Non-locking)	
Mounting orientation	Unrestricted	
Shock/Vibration resistance (m/s <sup>2</sup> ) <sup>(2)</sup>	150/50	
Mass	1.1 kg *	



\* For grommet type

Note 1) Based on dynamic performance test JIS B 8374-1981. (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 Characteristics

Port size	Flow characteristics											
	1 → 2 (P → A)			2 → 3 (A → R)			2 → 1 (A → P)			3 → 2 (R → A)		
	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	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), Grommet terminal (E), Conduit terminal (T), 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) <sup>Note)</sup>	AC	Inrush	12.7 (50), 10.7 (60)
		Holding	7.6 (50), 5.4 (60)
Power consumption <sup>Note)</sup>	DC	4.8 W, 5 W (With indicator light)	



\* Option

Note) At rated voltage

## Option

### Energy-saving type: VG342□-□□□-□□□-Y (-Q)

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

Specifications different from standard are as follows.

Power consumption	2 W DC, 2.2 W (With indicator light)
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### Continuous duty type: VG342□-□□□-□□□-E (-Q)

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

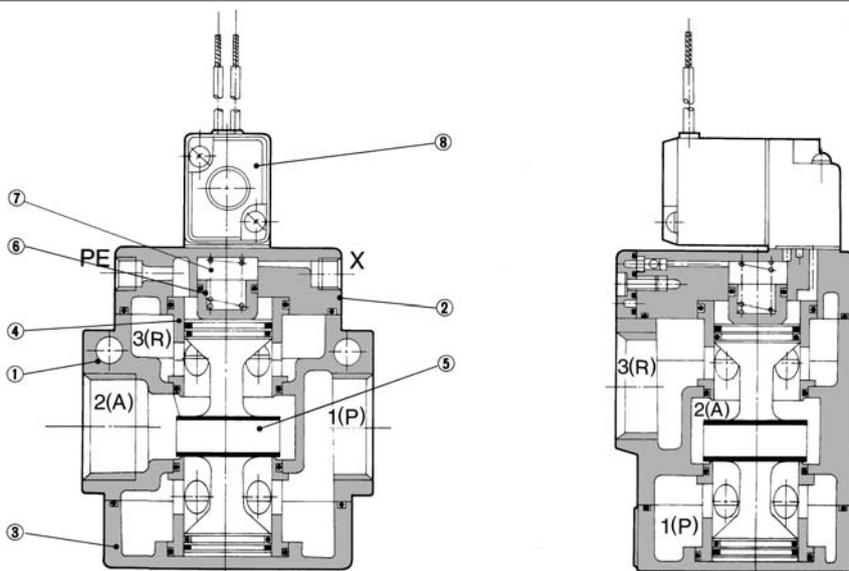
Specifications different from standard are as follows.

Apparent power VA (Hz) <sup>Note)</sup>	AC	Inrush	7.9 (50), 6.2 (60)
		Holding	5.8 (50), 3.5 (60)
Power consumption <sup>Note)</sup>	DC	2 W, 2.2 W (With indicator light)	



Note) At rated voltage

## 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>	Brass	
⑤	<b>Spool valve</b>	Aluminum alloy/NBR	
⑥	<b>Piston</b>	Resin	
⑦	<b>Spring</b>	Stainless steel	

### Component Parts

No.	Description	Material	Part no.
⑧	<b>Pilot valve assembly</b>	—	VO307□-□□□-X84(-Q)*



\* For "How to Order Pilot Valve Assembly", refer to page 1489.



## Caution



**Mounting Screw Tightening Torques M4: 1.4 N·m**

## ⚠ Precautions

**Be sure to read before handling.**

**Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.**

### ⚠ Caution Precautions

- Since PE port is the exhaust port of the pilot valve, do not attach a plug or reduce the port diameter.
- 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.
- The manual portion contains a breather hole for the core. Take proper measures to prevent dust or foreign matter from accumulating in this area.

### Continuous Duty

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

- 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.
- 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 matters 44 to 47.

### How to Use DIN Terminal

#### 1. Disassembly

- 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.).
- Pull the screw (1) out of the housing (2).
- On the bottom part of the terminal block (3), there's a cut-off part (9). 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).)
- Remove the cable gland (4) and plain washer (5) and rubber seal (6).

#### 2. Wiring

- 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).
- 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 ±15%.

Note 2) Cable (7) external: 6 to 8 mm

#### 3. Assembly

- 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 (3). After that, set the terminal block (3) on the housing (2). (Push it down until you hear the click sound.)

- 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.
- Insert the gasket (8) or between the bottom part of terminal block (3) 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 (3).

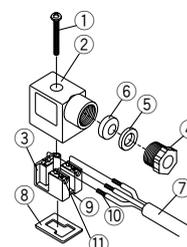


Figure (1)

SYJ

VQZ

VP

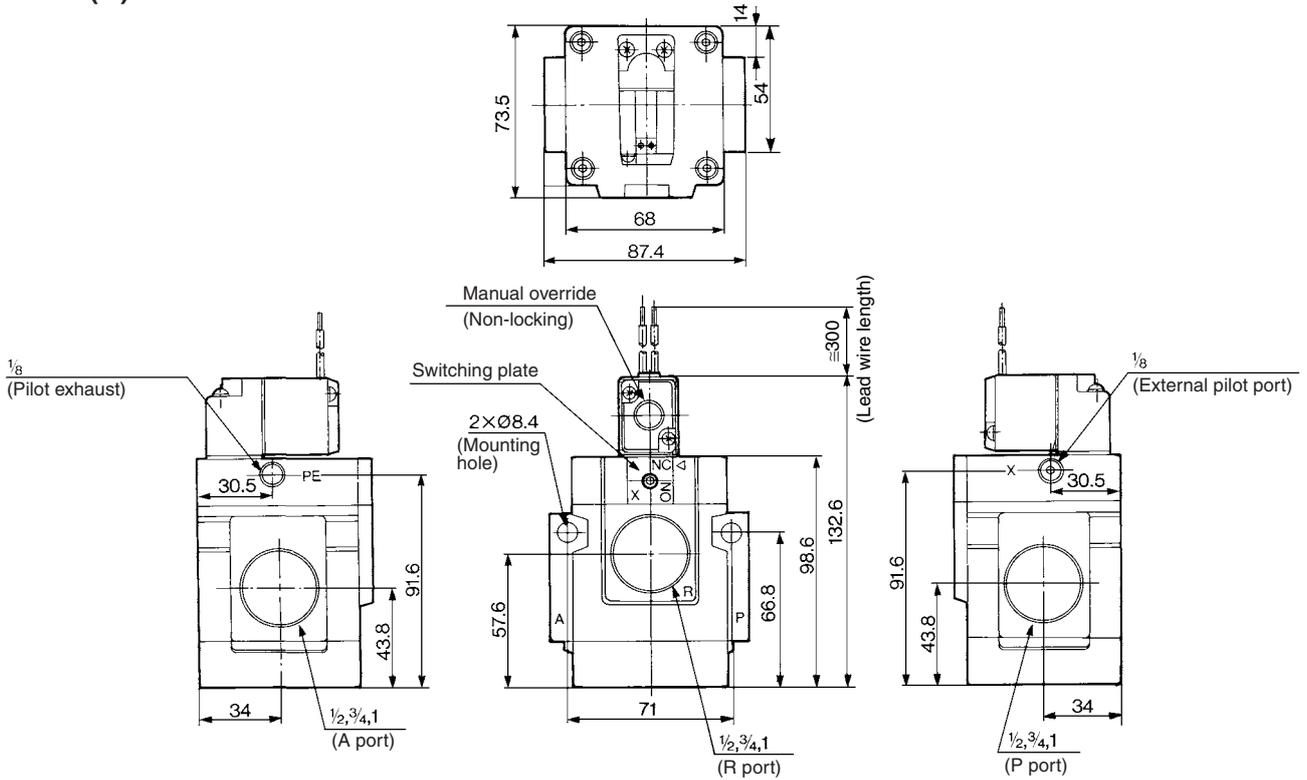
VG

VP3□

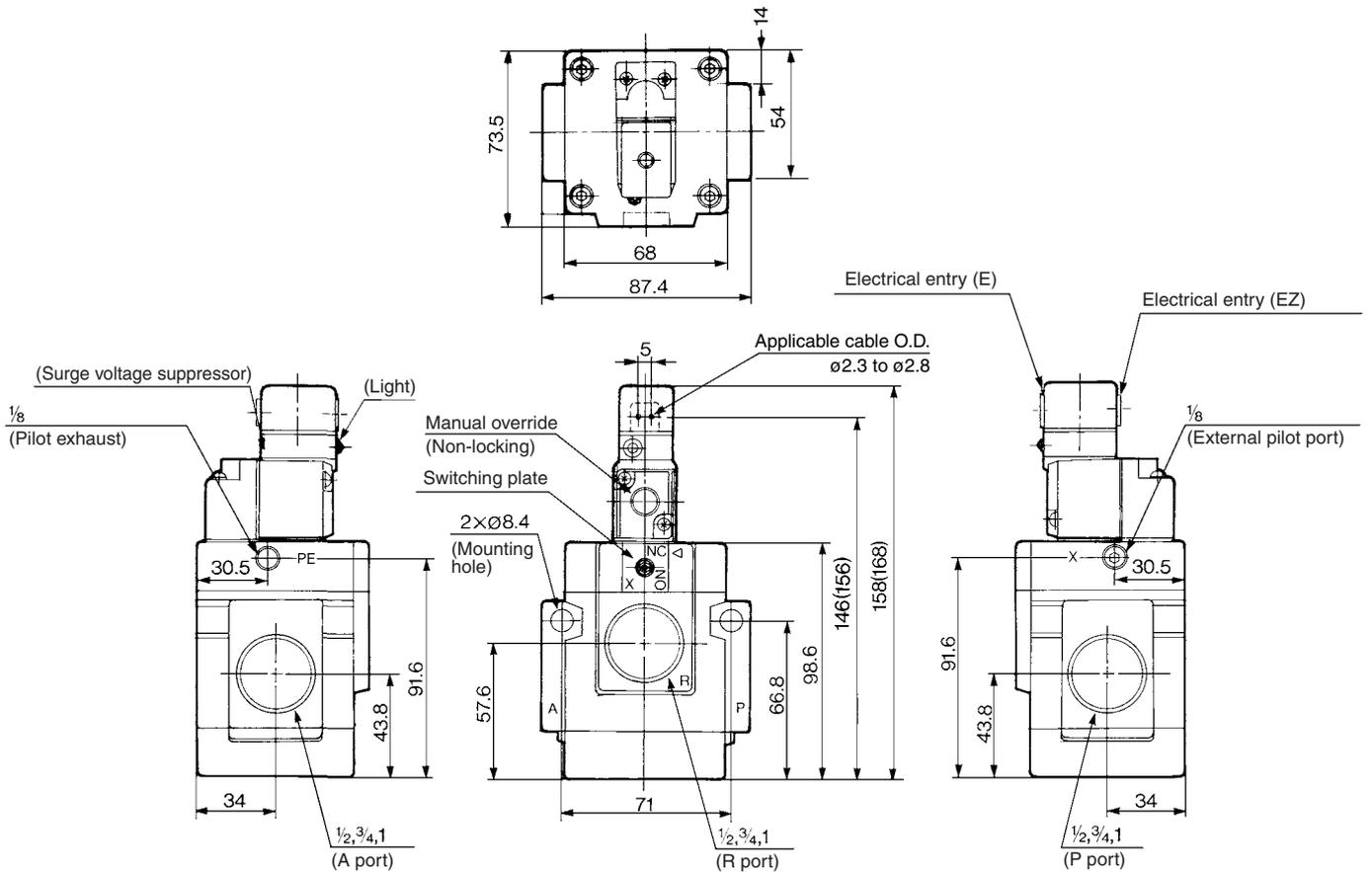
# Series VG342

## Dimensions

### Grommet (G)



### Grommet terminal (E)

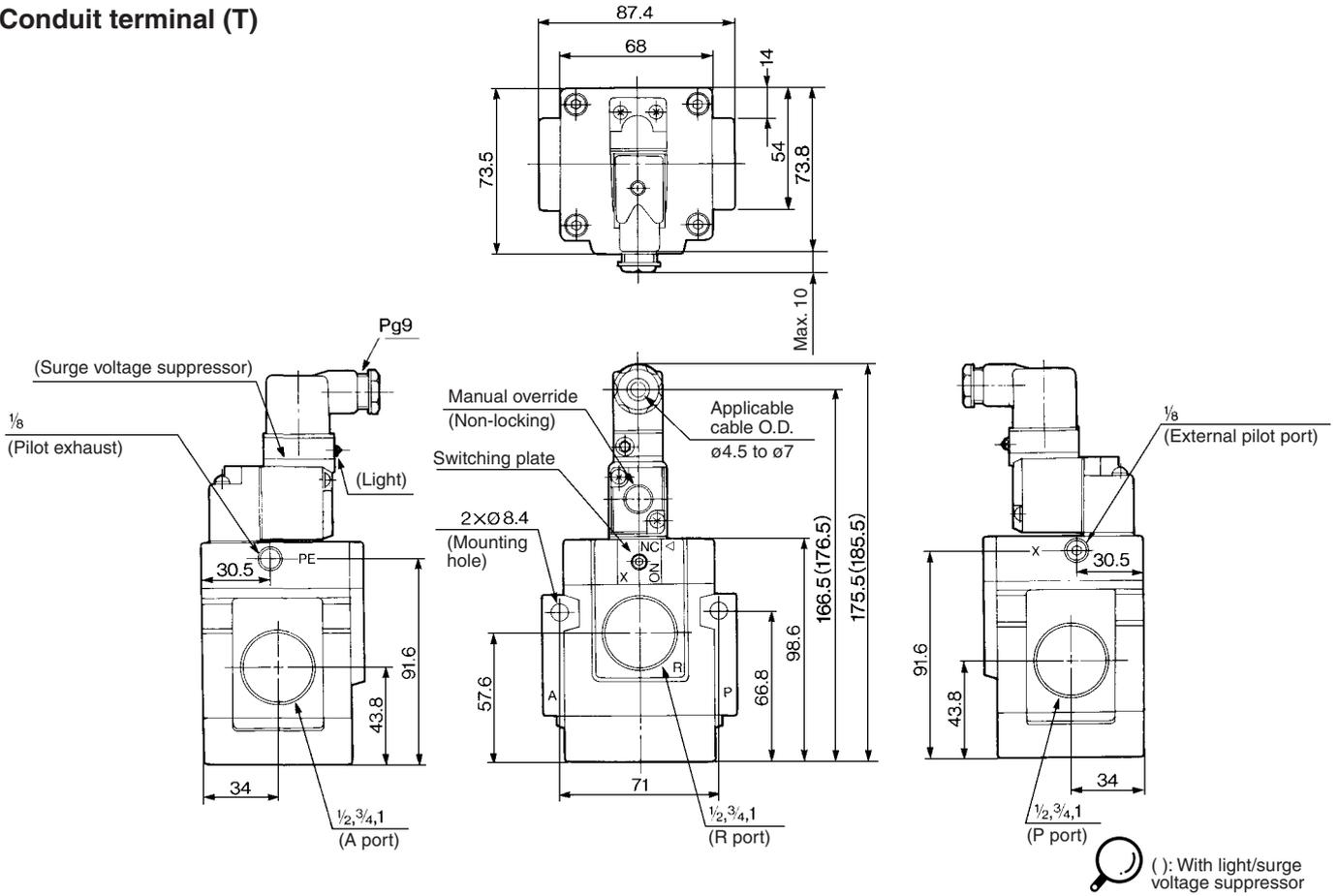


( ): With light/surge voltage suppressor

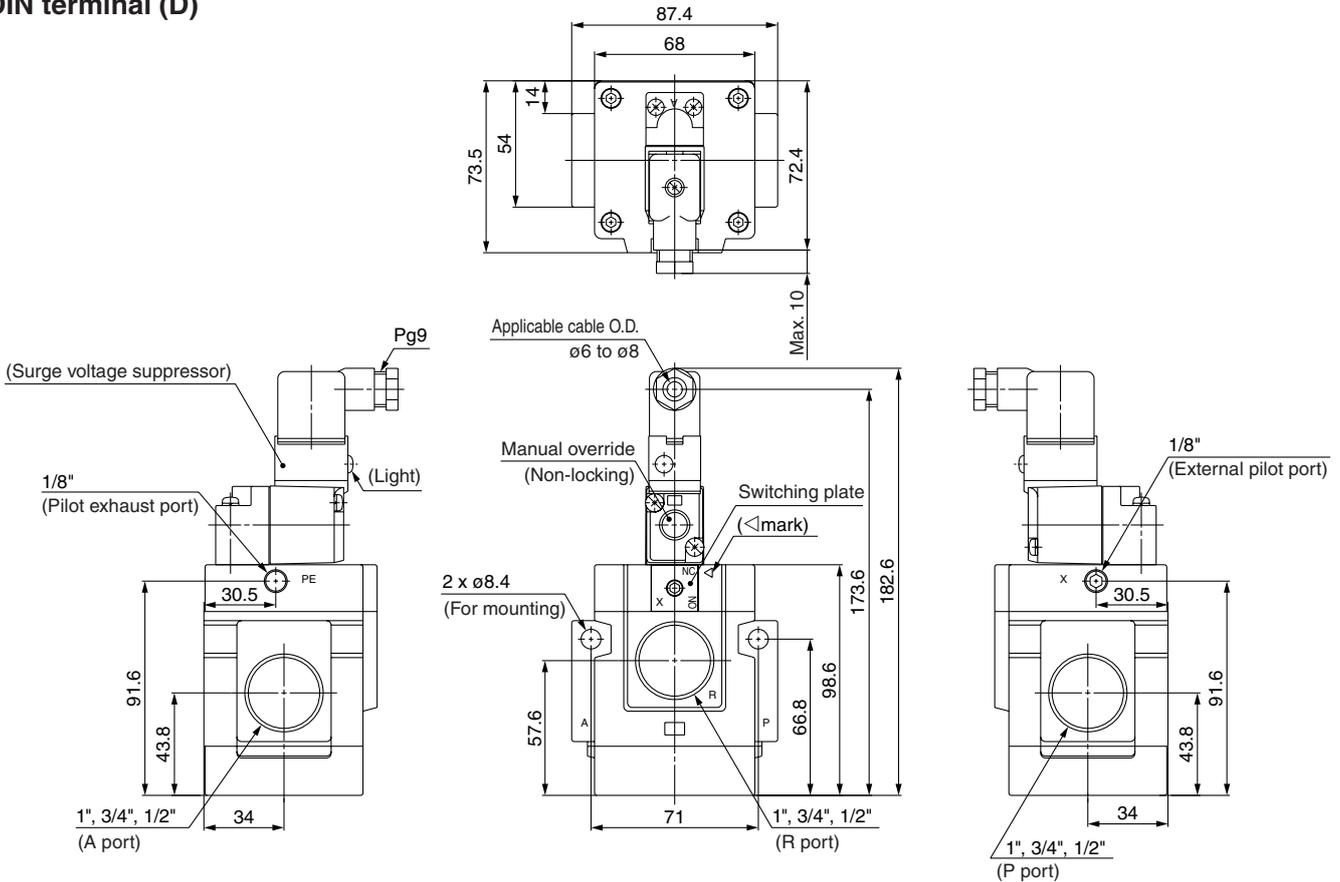
# 3 Port Solenoid Valve Pilot Operated Poppet Type **Series VG342**

## Dimensions

### Conduit terminal (T)



### DIN terminal (D)



SYJ

VQZ

VP

VG

VP3□

 Contact our sales office regarding a delivery date or a price since this is a special model.

SP111X-005E  
P: PX

 **P.G.Information** (Specialized Product)

## Safety controller system 3 port solenoid valve/VG342 (R)-X87

SMC CORPORATION  
4-14-1, SOTO-KANDA,  
CHIYODA-KU,  
TOKYO 101-0021, JAPAN  
URL: <http://www.smcworld.com>

### ■ Features:

Safety standard ISO13849-1 for category 3 and 4\*

Dual residual pressure release valve with detection of main valve position.

- It is possible to detect the on/off positions of the main valves.

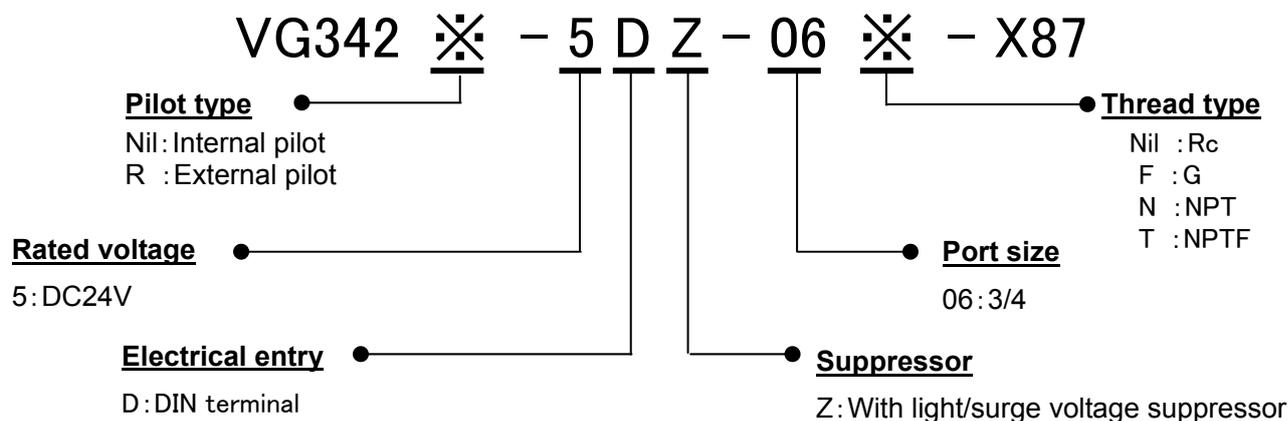


VG342-X87

Model	Application
VG342-X87	Safety standards ISO13849-1 Category 3 and 4 Compliant with performance level e

\* This product is component which is a part of a safety system and safety equipment is not guaranteed by this single unit alone.

### ■ How to Order:



**■Specifications:**  
**< Valve Specifications >**

	VG342-X87*	VG342R-X87
Fluid	Air	
Type of actuation	NC (Return spring)	
Operating pressure range	0.25 to 0.7MPa	
Operation	Internal pilot type	External pilot type
External pilot pressure	-	0.25~0.7MPa (Same as operating pressure)
Max.operating frequency	30 times/min.	
Min. operating frequency	1time/week	
Ambient and fluid temperature	-10 to 50°C (No freezing)	
Ambient	95%RH or less (No freezing)	
Lubrication	No required	
Shock/Vibration	150 / 50 m/s <sup>2</sup>	
Enclosure	IP40	
Operating environment	Indoors	
Weight	2.8kg	2.9kg
B10 (MTTFd Calculation)	900,000 times	

\* If there is not enough air supply at P port or the supply pressure for valves decreases to 0.25MPa or less of the min. operating pressure, the valves may not switch correctly. In this case, please utilize the external pilot type (VG342R-X87) and supply enough air pressure to the external port.

## <Fluid> \*

Operating pressure	1→2 (P→A) [L/min(ANR)]	2→3 (A→R) [L/min(ANR)]
0.25 MPa	3,800	5,200
0.5 MPa	7,400	9,400
0.7 MPa	10,000	13,000

\* These values are just for reference. (Flow rate changes with piping conditions)

## <Solenoid Specifications>

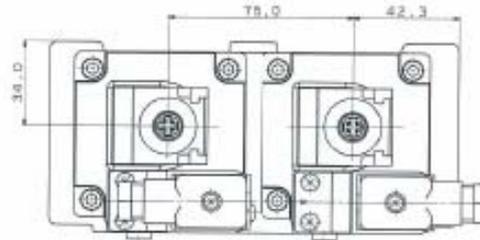
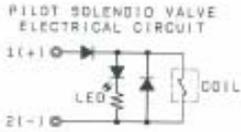
Electrical entry	DIN terminal
Rated voltage	DC24V
Allowable voltage Fluctuation	-15% to +10% of rated voltage
Power Consumption	2.2W
Suppressor	Light/surge voltage suppressor

## <Limit switch Specifications>

Electrical wiring	M12 connector
Contact resistance	25mΩ or less
Min. applicable load	DC5V 1mA (Load resistance)
Max. Voltage	DC24V
Max. load current	50mA
Max. load inductance	0.5H
Insulation voltage	300V
Protection against electric shock	Class II (EN60947-5-1:2004)

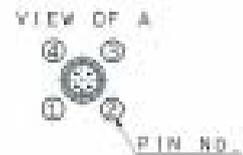
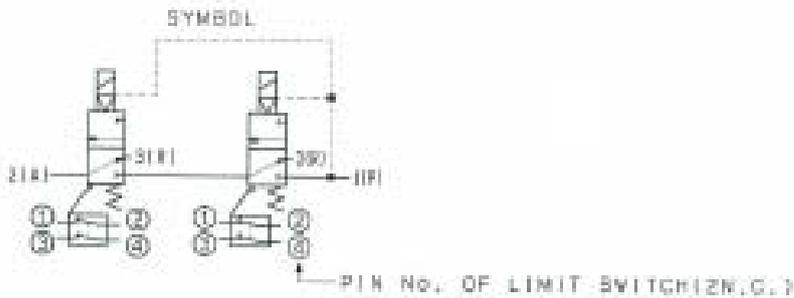
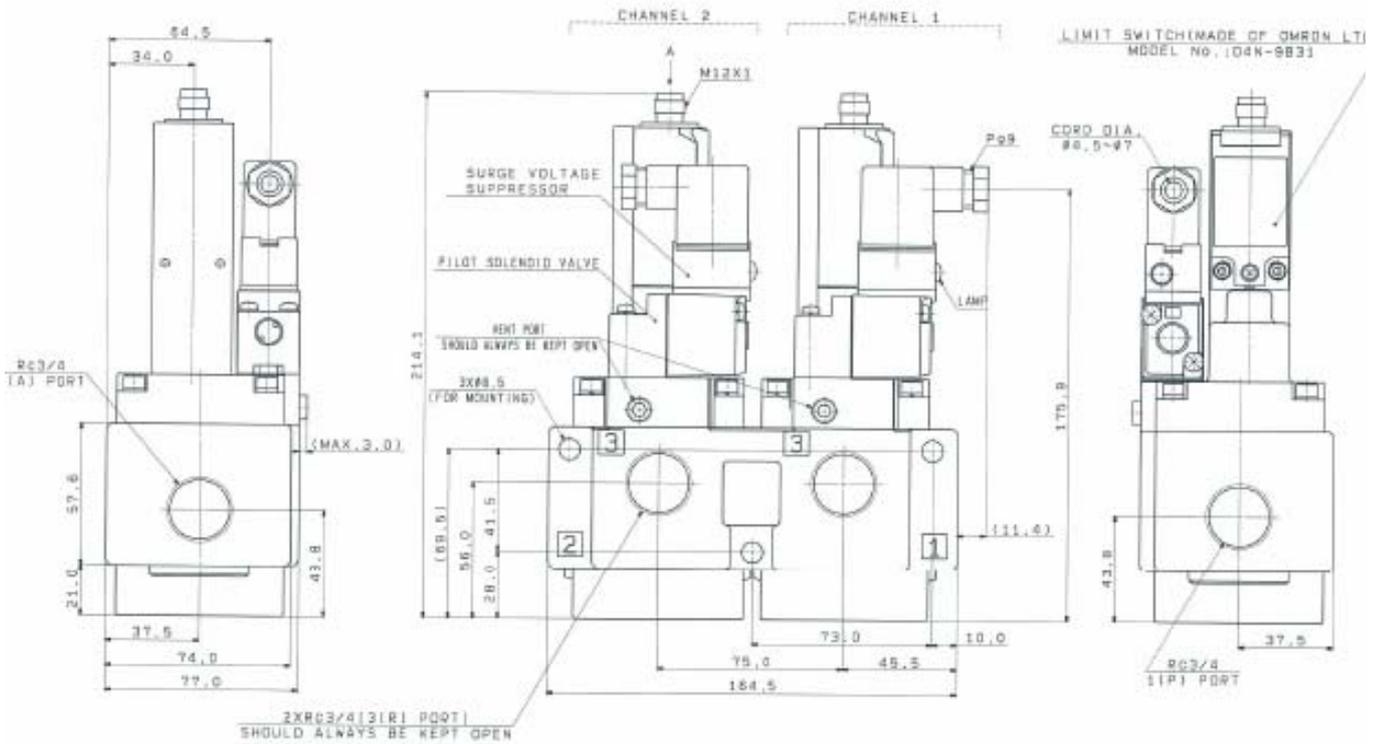
# ■ Dimensions: mm

## ◇ VG342-X87



MODEL No.  
VG342-502-06a-X87

THREAD TYPE
NIL:RC
F :S
M :NPT
T :NPTF
RATED VOLTAGE



**⚠ Caution** To ensure the safest possible operation of this product, please be sure to read thoroughly the "Safety Instructions" in our "Best Pneumatics" catalog before use.