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

CE UKCA

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

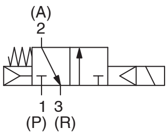
Can be used as a selector or divider valve (External pilot)

External Pilot

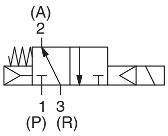
Use external pilot type in the following cases:
- For vacuum or for low pressure 0.2 MPa or less
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower

Symbol

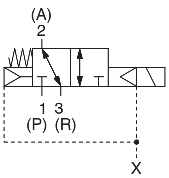
N.C.



N.O.



External pilot



How to Order

VG342 [ ] - 1 D [ ] - 04 [ ] A - [ ] - Q

Valve type

—	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

Electrical entry

D	DIN terminal

Light/Surge voltage suppressor

—	None
Z	With light/surge voltage suppressor

Port size

04	1/2
06	3/4
10	1

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Passage symbol

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

Pilot valve option

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

How to Order Pilot Valve Assembly

VO307 [ ] - 1 D [ ] 1 - X84 - Q

Pilot valve option

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

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

Electrical entry

D	DIN terminal

Light/Surge voltage suppressor

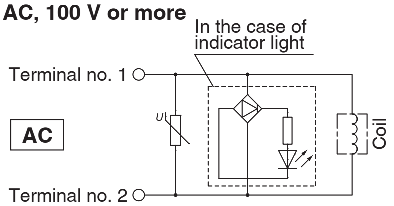
—	None
Z	With light/surge voltage suppressor

Pilot valve assembly for VG342

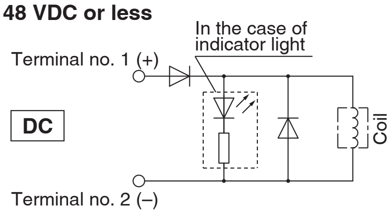
⚠ Caution

Light/Surge Voltage Suppressor

AC, 100 V or more

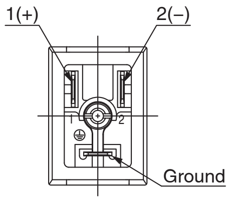


48 VDC or less

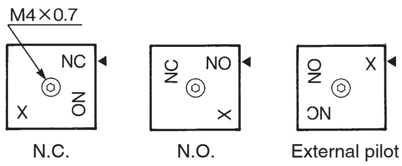


Electrical Connection

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 (1)	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	-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] (2)	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 energised and de-energised 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 energised and de-energised 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 [dm³/(s·bar)]	b	Cv	Q [l/min (ANR)]*1	C [dm³/(s·bar)]	b	Cv	Q [l/min (ANR)]*1	C [dm³/(s·bar)]	b	Cv	Q [l/min (ANR)]*1	C [dm³/(s·bar)]	b	Cv	Q [l/min (ANR)]*1
1/2	26	0.38	7.0	6973	27	0.37	7.4	7191	27	0.36	7.3	7142	25	0.37	6.8	6658
3/4	38	0.30	9.8	9662	38	0.32	9.8	9787	40	0.22	9.8	9691	40	0.20	9.6	9581

∗1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Port size	Effective area [mm²]	
	1 → 2 (P → A)	2 → 3 (A → R)
1	210	235

Pilot Valve Assembly Specifications

Electrical entry			DIN terminal (D)
Lead wire colour			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**	12.7 (50), 10.7 (60)
		Holding	7.6 (50), 5.4 (60)
Power consumption	**DC**		Without indicator light: 4 W 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 With indicator light: 2 W

Continuous duty type: VG342□-□□□-□□□-E-Q

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

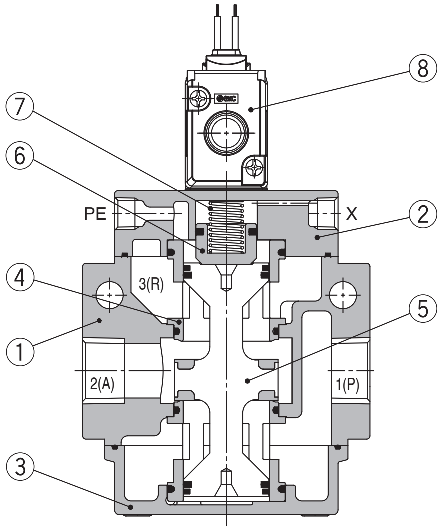
Specifications different from standard are as follows.

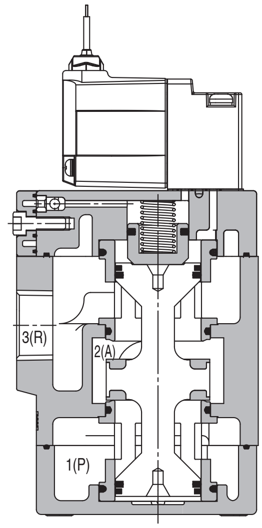
Apparent power VA (Hz)	AC	Inrush	7.9 (50), 6.2 (60)
		Holding	5.8 (50), 3.5 (60)
Power consumption	DC		Without indicator light: 1.8 W With indicator light: 2 W

DIN Connector part number

Standard	B1BO9-2A
CE-compliant	GM209NJ-B17

Construction





Component Parts

No.	Description	Material	Note
①	**Body**	Aluminium alloy	Colour: Platinum silver
②	**Adapter plate**		
③	**End plate**		
④	**Retainer**	Resin	
⑤	**Poppet valve**	Aluminium alloy/NBR	
⑥	**Piston**	Resin	
⑦	**Spring**	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 cover page.

⚠ Caution

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

⚠ Precautions

Be sure to read this before handling the products.
Refer to back page for Safety Instructions.

⚠ 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 energising 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 energising 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 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.)
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 ±15 %.
Note 2) Cable ⑦ outside diameter: Ø 6 to Ø 8 mm (Ø 4.5 to Ø 7 mm for CE-compliant products)

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 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 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 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.

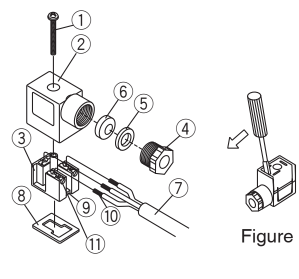
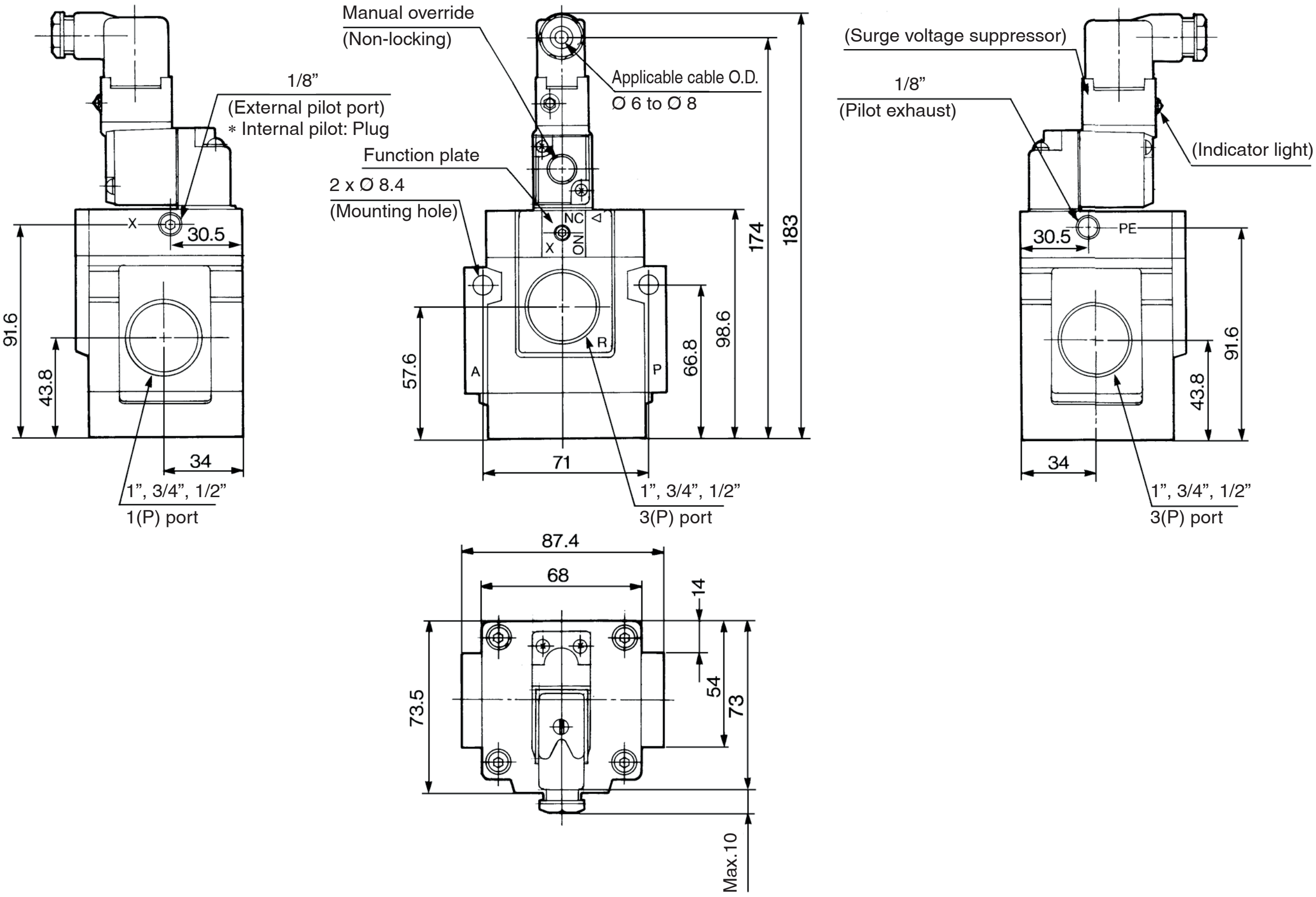


Figure (1)

Dimensions

DIN Terminal (D)



⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) 1), and other safety regulations.

⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. 2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

⚠ Safety Instructions	Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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