ORIGINAL INSTRUCTIONS

Installation and Maintenance Manual

Monitored valve for use in safety related systems

Product Names:

VG342-5DZ-06-X87, VG342-5DZ-06F-X87, VG342-5DZ-06N-X87, VG342-5DZ-06T-X87 VG342R-5DZ-06-X87, VG342R-5DZ-06F-X87, VG342R-5DZ-06N-X87, VG342R-5DZ-06T-X87

Safety component as defined by the Machinery Directive 2006/42/EC article 2c

The intended use of this valve is to vent a protected system to atmosphere when it is de-energised. When properly integrated into a suitable safety system the valve is compatible for use in Category 4 PL e systems as defined by EN ISO 13849-1:2008.

1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of “Caution”, “Warning” or “Danger”, followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

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

2 Safety Instructions (Continued)

Warning

- The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.
  Since the products specified here can be used in various operating conditions, their compatibility with the specific pneumatic system must be based on specifications or after analysis and/or tests to meet specific requirements.
- **Only trained personnel should operate pneumatically operated machinery and equipment.**
  Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced personnel.
- **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
  1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
  2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
  3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Supply air into the system gradually to create back pressure, i.e. incorporate a soft-start valve).
- **Do not use this product outside of the specifications. Contact SMC if it is to be used in any of the following conditions:**
  1) Conditions and environments beyond the given specifications.
  2) Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, press applications, or safety equipment.
  3) An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.
- This product is intended for use in a safety related part of a control system and is capable of providing the stated safety function to the category stated in the Declaration of Conformity, when correctly used. Any system using this product must be designed and validated by a properly qualified and responsible person, to meet the requirements of the relevant standards, laws and regulations applicable to the equipment in which it is installed.
- **Extended periods of continuous energisation**
  For applications such as mounting a valve on a control panel, incorporate measure to limit the heat radiation so that it is within the operating temperature range.
- **Do not disassemble the product or make any modifications, including additional machining. It may cause human injury and/or an accident.**

⚠ Caution

- Ensure that the air supply system is filtered to 5 μm or better.

2 Specifications

2.1 Specification

Type of actuation	Normally closed
Return method	Spring return
Fluid	Air
Proof pressure	1.05MPa
Operation pressure range	0.25 to 0.7 MPa
External pilot pressure	0.25 to 0.7 MPa (where applicable)[8]
Ambient & operating Fluid temp.	-10 to +50℃ [1] (No condensation)
Lubrication	Not required [2]
Operating frequency Max	30 cycles per minute
Operating frequency Min	1 cycle per week [3]
Response time	See 2.9.2.1
Vibration / Impact resistance	150/50 m/s^2 [4] & [5]
Ambient humidity	95%RH or less
Air quality	5 μm filtration or better
Environment	Indoor use only
Enclosure	IP 40
$B10_d$	900,000 cycles [6]
Mission time	900,000 cycles [7]
Weight	2.8 kg

2.1.1 Notes

1) Ensure moisture does not freeze.
2) If lubrication is used, use turbine oil Class 1 ISO VG32.
3) The valve must be cycled (energised and then de-energised) at least once per week. There is an additional functional check procedure in 5.3.
4) Shock resistance:
   - No malfunction resulted from the impact test using a drop impact tester.
   - The test was performed on the axis and right angle direction of the main valve and armature, for both energized and de-energized states.
5) Vibration resistance:
   - No malfunction occurred in a one-sweep test between 8.3 and 2000Hz.
   - Test was performed at both energized and de-energized state to the axis and right angles direction of the main valve and armature (valve in the initial stage).
6) According to the Safety Standard. See Note in Section 2.9.4.
7) According to the Safety Standard. See Note in Section 2.9.5.
8) Same as operating pressure or higher.

2.2 Flow Specifications

Passage:	1→2 (P→A)	2→3 (A→R)
Pressure, MPa	Flow, liter/min (ANR)	
0.25	3800	5200
0.5	7400	9400
0.7	10000	13000

Note that the air supply flow is from port 1 to port 2. The ports on the valve are clearly identified with the corresponding numbers.

2.3 Pilot valve specification

Electrical entry	DIN type industry standard B 11mm pitch connector
Coil rated voltage	24VDC
Allowable voltage fluctuation	-15% to + 10%
Power consumption	2.2W
Protection Circuit	With indicator light & surge suppressor

2.4 Limit switch specification

Electrical entry	M12 connector
Contact resistance	25mΩ or less
Minimum permissible load	5VDC 1mA (resistive load)
Rated voltage	24VDC + 10% max
Maximum permitted load current	50mA [1]
Maximum permitted load inductance	0.5H [1]
Rated insulation voltage	300V
Electric shock protection class	Class II (double insulation)
Pollution degree	3 (EN 60947-5-1)
Vibration / Impact resistance	See Note [2]

2 Specifications (Continued)

2.4.1 Notes

1) For the purposes of EN ISO 13849-2:2008 table D.2 the switch is de-rated from the figures specified by the switch manufacturer. The switch load must be limited in the application in order to maintain the specified safety performance, including the B10d and mission time.
2) The switch is subject to the following vibration and shock limitations specified by the manufacturer:
   - *Contact opening time should be less than a 1ms pulse under vibration of 0.75 single amplitude, 10 to 55 Hz, 10 cycles in each direction for 45 minutes.'*
   - *Shock: 300 m/s2 (Contact open time: 1ms maximum pulse)*

2.5 Safety specification

Safety function: When the valve is de-energised the protected circuit is vented to atmosphere.

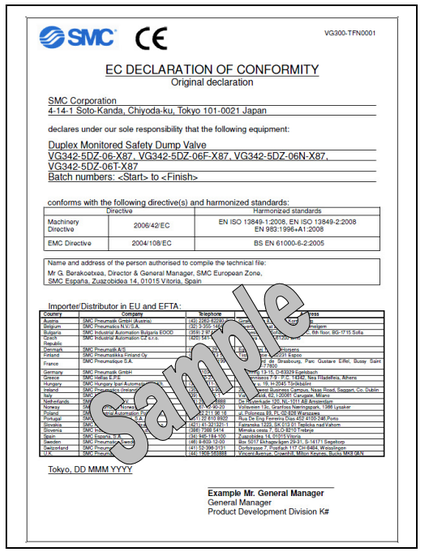
The product is capable of Category 4 PL e according to the Safety Standard when integrated into a suitable safety system.

In this section, ‘the Safety Standard’ refers to EN ISO 13849-1 and ‘the Validation Safety Standard’ refers to EN ISO 13849-2 as referenced in the Declaration of Conformity.

Information about compatibility with the Safety Standard is given in section 2.9.

2.6 Declaration of Conformity

The content of the Declaration of Conformity (DoC) used for this product is shown below as a sample. The actual DoC is supplied with each product.



SMC CE VG300-TFN0001

EC DECLARATION OF CONFORMITY
Original declaration

SMC Corporation
4-14-1 Soto-Kanda, Chiyoda-ku, Tokyo 101-0021 Japan

declares under our sole responsibility that the following equipment:

Duplex Monitored Safety Dump Valve
VG342-5DZ-06-X87, VG342-5DZ-06F-X87, VG342-5DZ-06N-X87,
VG342-5DZ-06T-X87
Batch numbers: <Start> to <Finish>

conforms with the following directive(s) and harmonized standards:

	Directive	Harmonized standards
Machinery Directive	2006/42/EC	EN ISO 13849-1:2008, EN ISO 13849-2:2008 EN 983:1996+A1:2008
EMC Directive	2004/108/EC	BS EN 61000-6-2:2005

Name and address of the person authorised to compile the technical file:
Mr G. Berakoetxea, Director & General Manager, SMC European Zone,
SMC España, Zuazobidea 14, 01015 Vitoria, Spain

Importer/Distributor in EU and EFTA:

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Belgium	SMC Pneumatics N.V./S.A.	(32) (3) 355-1464	Nijverheidsstraat 20, 2160 Wommelgem
Bulgaria	SMC Industrial Automation Bulgaria EOOD	(359) 2 97 44 00	Business Park Sofia, Building 8A, floor, BG-1715 Sofia
Czech Republic	SMC Industrial Automation CZ s.r.o.	(420) 541 426 611	Hudcova 78a, CZ-61200 Brno
Denmark	SMC Pneumatik A/S	(45) 70 25 29 00	Knudsminde 4B, DK-8300 Odder
Finland	SMC Pneumatiikka Finland Oy	(358) 207 513 513	PL 72, Tiistinniityntie 4, SF-02031 Espoo
France	SMC Pneumatique S.A.	(33) (0) 1 64 76 10 00	1, Boulevard de Strasbourg, Parc Gustave Eiffel, Bussy Saint Georges, F-77607 Marne-La-Vallée Cedex 3
Germany	SMC Pneumatik GmbH	(49) (2103) 4020	Boschring 13-15, D-63329 Egelsbach
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Norway	SMC Pneumatics Norway A/S	(47) 67 12 90 20	Vollsveien 13C, Granfoss Næringspark, 1366 Lysaker
Poland	SMC Industrial Automation Polska Sp. z o.o.	(48) 22 211 96 00	ul. Konstruktorska 11, PL-02-673 Warszawa
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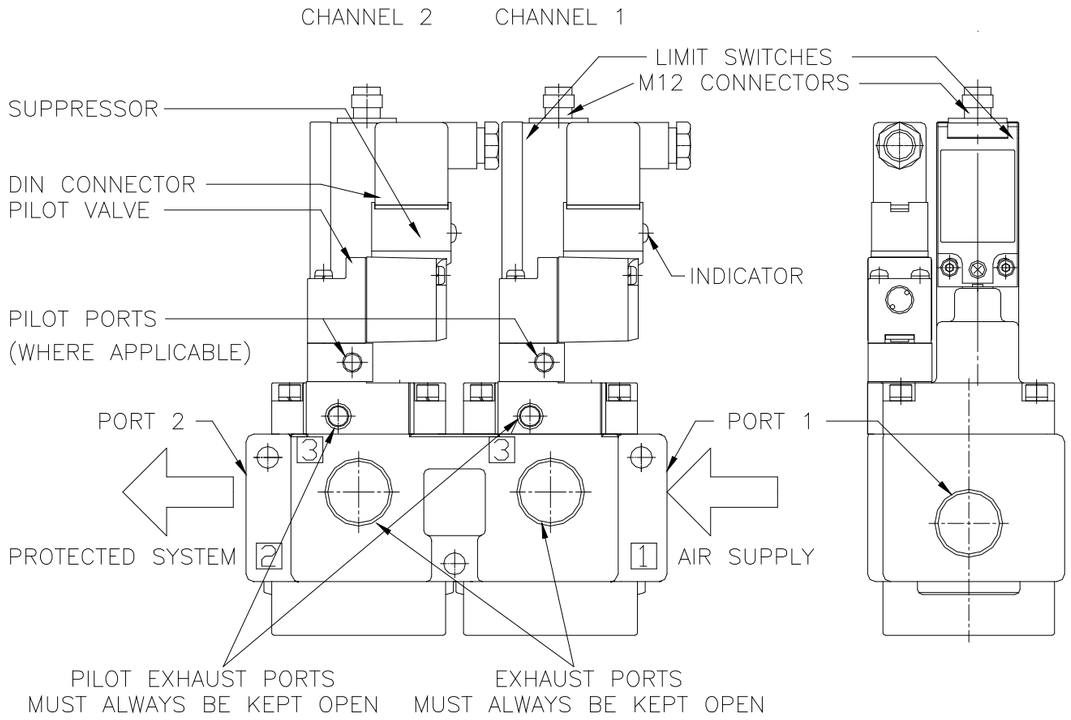
Slovakia	SMC Priemyselná Automatizácia, s.r.o.	(421) 2 444 56 725	Hudcova 78a, CZ-61200 Brno
Slovenia	SMC Industrijska Avtomatika d.o.o.	(386) 738 74 74	Mirnska cesta 7, SLO-8210 Trebnje
Spain	SMC España, S.A.	(34) 945 184 100	Zuazobidea 14, 01015 Vitoria
Sweden	SMC Pneumatics Sweden AB	(46) 8 603 12 00	Box 5077, Ekhagsvägen 29-31, S-14517 Segeltorp
Switzerland	SMC Pneumatik AG	(41) (0) 52 396 3131	Dorfstrasse 7, Postfach 117, CH-8484, Wiesendangen
U.K.	SMC Pneumatics (U.K.) Ltd.	(44) 1908 563888	Vincent Avenue, Crownhill, Milton Keynes, MK8 0AN

Tokyo, DD MMM YYYY

Example Mr. General Manager
General Manager
Product Development Division K#

2 Specifications (Continued)

2.7 Parts and connections



Main port threads are ¾" nominal size. The pilot supply ports are ⅛" where applicable.

Part number:

VG342 [ ] - 5DZ-06 [ ] -X87

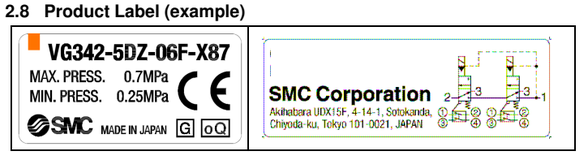
Pilot

Nil	Internal
R	External

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

2.8 Product Label (example)

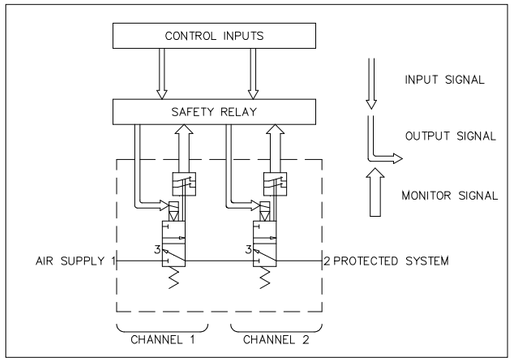


The batch code in the above label translates to construction year / month according to the following table (eg. "oU" = Jul 2010):

Construction Year / Month	Production Batch Codes											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	oo	oP	oQ	oR	oS	oT	oU	oV	oW	oX	oy	oZ
2011	Po	PP	PQ	PR	PS	PT	PU	PV	PW	PX	Py	PZ
…	…	…	…	…	…	…	…	…	…	…	…	…
2024	Co	CP	CQ	CR	CS	CT	CU	CV	CW	CX	Cy	CZ

2.9 Safety System

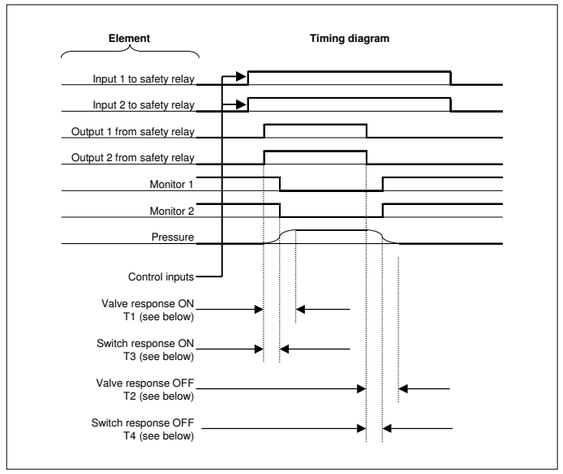
2.9.1 The System Interface



The diagram shows the valve in the dotted line box connected to a safety relay in dual channel mode following the principles of the Safety Standard.

2 Specifications (Continued)

2.9.2 Timing Diagram



Note: The monitor switches are Normally Closed, i.e closed when indicating the protected system is in the vented state. The monitor signals are therefore shown 'High' when the protected system is in this state. When the solenoids of both channels are energised by the output signals air is supplied to the protected system, the monitoring switch contacts open and the monitor signals go 'Low'.

2.9.2.1 Valve Response

- T1 depends on the supply and the volume of the protected system. T1 is not relevant to the safety function.
- T2 depends on the volume (V) and flow capacity of the protected system. The table below gives approximate values from 0.7 MPa to a cut-off pressure of 0.05 MPa.

Switch Response

- The approximate ON response time of the limit switch at 0.7MPa (T3) is shown in the table below.
- The approximate OFF response time of the limit switch at 0.7MPa (T4) is shown in the table below.

V, liter	T2, ms	T3, ms	T4, ms
3	420	45	100
10	1300		
20	2400		
30	3600		
40	4700		

⚠ Caution

- Exhaust times experienced on systems will be increased in the fault condition when only 1 channel is functioning.
- Exhaust times are based on tests under SMC conditions and are not guaranteed. Always observe the terms of 2.9.3.

2 Specifications (Continued)

2.9.3 Relationship of flow and response performance to safety function

The time taken for the air to vent and remove the hazard is a function of:

- The flow capacity of the valve.
- The flow restriction of silencers fitted to the valve
- The volume of the protected system
- The pressure of the air in the protected system
- The flow restrictions in air supply and the protected system

The end user is expected to establish the time taken to vent the application system by testing and ensure that this time is consistent with the requirement of the overall safety system. This includes the selection of suitable silencers.

The performance of the system should be validated by test after each installation to ensure that the actual performance of the valve is consistent with the safety function.

2.9.4 Mission time according to the Safety Standard

The operational life of the product should be limited to the mission time stated in section 2.1. The mission time is given in cycles, the user is expected to calculate an equivalent figure in time units based on the duty cycle of the application. After the mission time has expired for the component it should be replaced with a completely new unit.

2.9.5 MTTFd according to the Safety Standard

The B10d for the component given in section 2.1 is derived from product knowledge and based on specific life tests. The system integrator should use this data to determine MTTFd and the Performance Level (PL) of the system using the methods described in the Safety Standard.

2.9.6 Diagnostic Coverage according to the Safety Standard

This valve is fitted with 'direct monitoring' according to Table E1 of the Safety Standard. When properly integrated this valve contributes to a DC value of 99% for the safety function.

2.9.7 Common Cause Failures according to the Safety Standard

CCF analysis is the responsibility of the system integrator. This valve has 2 channels made of identical valves. The use of this valve might not allow the system calculation to include CCF points for diversity.

3 Installation

3.1 Installation

⚠ Warning

- Do not install the product unless the safety instructions have been read and understood.
- Do not install the product if it appears to have been damaged during transport.
- The valve must be protected from contamination from the downstream system when air is vented through the valve.
- Do not paint the product.
- Do not remove or cover up warnings or specifications printed or affixed to the product.
- Ensure sufficient space for maintenance activities. When installing the products, allow access for maintenance.
- Ensure that the connections of pipework and cables to the unit do not result in a residual trip hazard to system operators or maintainers.
- If air leakage increases or equipment does not operate properly, stop operation.
- Check mounting conditions when air and power supplies are connected. Initial function and leakage tests should be performed after installation.

3 Installation (Continued)

3.2 Environment

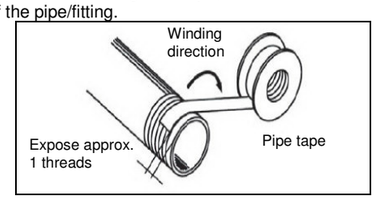
Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- Do not mount in a location exposed to radiant heat.
- Do not install in a location subject to strong magnetic fields.
- Do not install in an EMC environment other than 'industrial' according to the scope of standard listed on the Declaration of Conformity.
- If it is used in an environment where there is possible contact with oil, weld spatter, etc., exercise preventive measures.
- When the solenoid valve is mounted in a control panel or is energized for a long time, make sure ambient temperatures is within the specification of the valve.

3.3 Piping

Warning

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 to 2 threads exposed on the end of the pipe/fitting.



- Tighten fittings to the specified tightening torque.

Thread	Tightening Torque, N m
Rc/G/NPT/NPTF ⅛	7 to 9
Rc/G/NPT/NPTF ¾"	28 to 30

- The valve must be protected from contamination from the downstream system when air is vented through the valve.

3.4 Lubrication

Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, use turbine oil Class 1 (no additive), ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.

3 Installation (Continued)

3.5 Air Supply

Warning

- Type of fluids
  Please consult with SMC when using the product in applications other than compressed air.
- When there is a large amount of drainage.
  Compressed air containing a large amount of drainage can cause malfunction of pneumatic equipment. An air dryer or water separator should be installed upstream from filters.
- Drain flushing
  If condensation in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensation to enter the compressed air lines. It causes malfunction of pneumatic equipment.
  If the drain bowl is difficult to check and remove, installation of a drain bowl with an auto drain option is recommended.
- Use clean air
  Do not use compressed air that contains chemicals, synthetic oils including organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.
- External pilot
  The external pilot variant has 2 pilot ports – see diagram in section 2.7. Both pilot ports need to be connected to an air supply for the valve to function.

Caution

- When extremely dry air is used as the fluid, degradation of the lubrication properties inside the equipment may occur, resulting in reduced reliability (or reduced service life) of the equipment. Please consult with SMC.
- Install an air filter upstream near the valve. Select an air filter with a filtration size of 5 µm or smaller.
- Take measures to ensure air quality, such as by installing an aftercooler, air dryer, or water separator.
  Compressed air that contains a large amount of drainage can cause malfunction of pneumatic equipment such as valves.
- If excessive carbon powder is seen, install a mist separator on the upstream side of the valve.
  If excessive carbon dust is generated by the compressor it may adhere to the inside of a valve and cause it to malfunction.
- The supply should be DN19 minimum for the internal pilot variant. If DN19 is not possible, the external pilot variant should be used. When the external pilot variant is used, ensure the pilot supply is not subject to transient pressures that might interfere with the function of the valve.. Minimise the distance between the valve and the air supply and between the valve and the protected system. Do not place any devices between the valve and the protected system that might interfere with the safety function. The exhaust ports must remain open to vent the protected system but should be suitably connected to prevent the ingress of dirt and emission of noise.

3.6 Noise

Caution

The valve must be fitted with silencers to protect personnel from transient noise when the valve is de-energised. The recommended silencer is ANA1-06. The pressure drop of silencers must be taken into account during the design and testing of the application system to ensure that the safety function is maintained.
The valve will also create some transient noise when energised. The end user is responsible for installing the valve with silencers in a suitable location so that noise is not a hazard to personnel.

3 Installation (Continued)

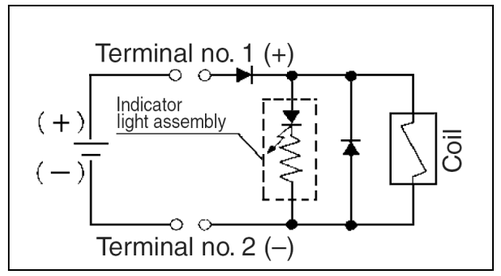
3.7 Electrical Connection

Caution

- When electric power is connected to a solenoid valve, be careful to apply the proper voltage. Improper voltage may cause malfunction or coil damage.
- Check if the connections are correct after completing all wiring.

3.7.1 Pilot Valve

3.7.1.1 Surge voltage suppression

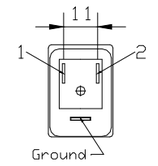


3.7.1.2 Pilot valve connections

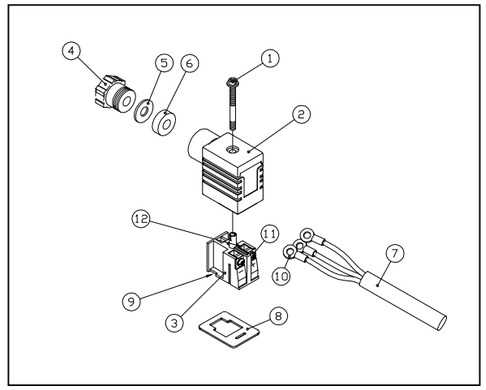
Terminals with lamp and surge protection have built in wiring connections. Connect as per figure

Terminal No.	1	2
Polarity	+	-
Applicable cable dia: Ø4.5 ~ Ø7 mm		

Connector terminals
View on valve side



3.7.1.3 Electrical connection to pilot valve



Disassembly
1) Loosen screw 1 and pull housing 2 directly upward to remove connector from the device.
2) Remove screw 1 from housing 2 and retain.
3) Notch 9 indicated by an arrow is at the bottom of terminal block 3. Insert screwdriver in the clearance between housing 2 and terminal block 3, and pry housing 2 off to remove terminal block 3.
4) Remove cable gland screw 4, and take out washer 5 and rubber gland 6.

3 Wiring
1) Pass cable gland screw 4, washer 5 and rubber gland 6 over cable 7 and insert into housing 2.
2) Peel off a correct length of the coating of cable 7 and connect the cable end with crimp-style terminal 10.
3) Remove screw 11 (or loosen Y-shaped terminal) from terminal block 3, mount crimp-style terminal 10 to terminal block 3 and tighten screw 11 securely. Note: Tighten screw with torque range of 0.5 N m+/-15%.

3 Installation (Continued)

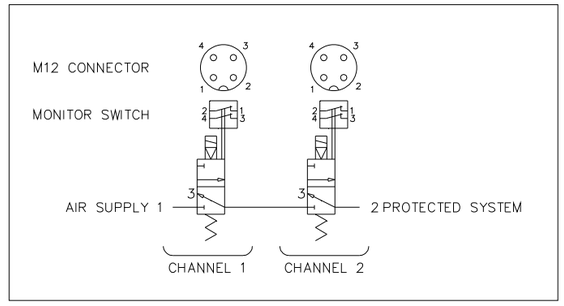
Remarks
- Wiring can be carried out with bare cables. If so, loosen screw (with washer) 11, insert lead wires in bracket 12 and tighten the screw.
- Maximum outer diameter of cable 7 should range from ø4.5mm to ø7.0mm.
- Applicable crimp-style terminals 10 are shown below.

'O' terminal: R1.25-4M (JIS C 2805 specification)
'Y' terminal: 1.25-3L (supplied by JST Mfg. Co., Ltd)
Stick terminal: Size 1.5 or shorter

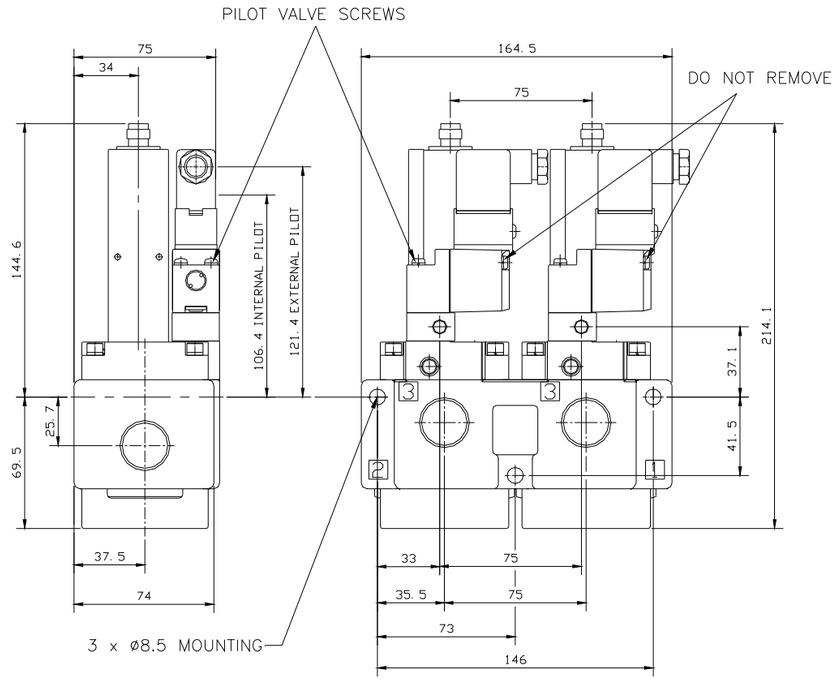
Assembly
1) Pass parts through cable 7 as follows: cable gland 4, washer 5, rubber packing 6 and housing 2. Connect cable 7 to terminal block 3. Then press terminal block 3 into housing 2 until it clicks in place.
2) Insert parts into the cable inlet of housing 2 as follows: rubber packing 6 and washer 5, and tighten cable gland 4 securely.
3) Place gasket 8 between the bottom part of terminal block 3 and plug or device. Insert and tighten screw 1 over the housing 2. Note: Tighten screw with torque range of 0.5 N m +/-20%.

Remark
- Connector orientation can be changed through an angle of 180 degrees depending on the assembly of housing 2 and terminal block 3.

3.7.2 Limit Switch: Omron D4N-9B31



4 Outline Dimensions (mm)



Notes
1. Do not remove 2x M4 screws holding each solenoid coil to pilot valve body
2. Each pilot valve secured by 2 x M4 screws

4.1 Mounting

- Installation orientation: free.
- The valve can be mounted using 3 x M8 bolts.
- Tighten bolts to achieve a secure mounting. Maximum torque 25 Nm.

5 Maintenance

5.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

5.2 Pilot Valve

Warning

- Under no circumstances attempt to change the solenoid of the pilot valve as this is an integral part of the valve and doing so will negate any such SMC warranty.
- Do not remove 2x M4 screws securing each solenoid coil to pilot valve body.

Caution

- Ensure that no contamination is introduced when the pilot valve is replaced.
- Only replace pilot valve with VO307E-5DOZ-X204-Q supplied by SMC for the purpose. Do not attempt to replace pilot valve with any other component that appears to provide the same function.

The pilot valve is available as a spare part and may be replaced. Remove M4 screws (See diagram) securing pilot valve to valve and carefully remove, ensuring gasket is not misplaced.

- Replace pilot valve ensuring gasket is correctly positioned.
- Tighten screws (See diagram) to torque of 1.35 to 1.45 Nm.

Warning

Replacing a pilot valve does not change the mission time restriction of the main valve assembly. When the pilot valve is replaced it is the end user's responsibility to ensure that the life history of the main valve assembly remains under control to ensure that the main valve assembly is not used beyond its mission time.

5.3 Periodic testing

The product should be tested for proper operation of the safety function once per month or whenever considered necessary for the purposes of the end user. The test should consist of operation of the safety system and observation of the following:
When the connected control system is energising the solenoids:

- Check that the solenoid indicator lamps are illuminated.
- Check that the connected downstream system is properly pressurised.
- Check that the switch contacts are open.
- Check that when only one channel (solenoid) is energised the protected system does not become pressurised. Check this for both channels.

When the connected control system is not energising the solenoids:

- Check that the solenoid indicator lamps are not illuminated.

5 Maintenance (Continued)

- Check that the connected downstream system is properly vented to atmosphere and ensure that the condition of the silencers is not causing an extension of the vent time.
- Check that the switch contacts are closed.
- Check that when only one channel (solenoid) is de-energised the protected system is vented to atmosphere. Check this for both channels.

Warning

The specification of the valve requires the valve to be cycled (energised and de-energised) at least once per week.

5.4 Silencers

Warning

Ensure that silencers fitted to the valve remain clean and uncontaminated in operation because blockage will affect the safety function. There are 2 silencers fitted to the pilot vent ports of the valve during manufacture and 2 silencers to be fitted to the main valve vent ports during installation by the end user.

Examine all the silencers at least once per month and more frequently if necessary due to the nature of the application environment.

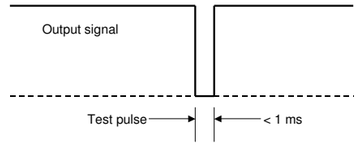
5.5 Troubleshooting guide

Symptom	Possible fault	Action
Valve does not open	Pilot valve is not energised	Check pilot solenoid indicator
	Supply pressure is too low	Check supply pressure
	Pilot valve has failed	Replace individual pilot valve(s)
Valve does not close	Pilot valve remains energised	Check pilot solenoid indicator
	Pilot valve is jammed	Replace individual pilot valve(s)
	Main valve is jammed	Replace whole valve
Switch contacts do not open	Switch has failed	Replace whole valve
Switch contacts do not close	Switch has failed	Replace whole valve
Valve operation is noisy or erratic	Supply flow is inadequate	Increase supply pressure and/or flow.
Valve is slow to pressurise protected system	Supply flow is inadequate	Increase supply pressure and/or flow.
	One channel of valve is not functioning	Check 'Valve does not open' symptoms above
Valve is slow to vent protected system	Inadequate flow area in protected system	Revise flow in protected system
	One channel of valve is not functioning	Check 'Valve does not close' symptoms above

6 Limitations of Use

Warning

If a safe output from a safety relay or PLC is used to operate this valve, ensure that any output test pulse duration is shorter than 1 ms to avoid the valve solenoid responding.



Caution

This product is CE marked as a safety component as defined under the Machinery Directive 2006/42/EC. For details please refer to the Declaration of Conformity supplied with the product.
The valve may only be used to provide the stated safety function for the supply and removal of pressure from all or part of a pneumatic system, under the total control of a supervisory device. The valve can only perform as a safety component when properly installed in a system conforming to the appropriate safety standards.
Any such use must be within the specified limits and application conditions for the product.
In order to meet a required performance level as defined by to the appropriate safety standards, the user must provide all the other necessary components to complete function of the safety system.
The user is responsible for the specification, design, implementation, validation and maintenance of the safety system.

7 Contacts

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