

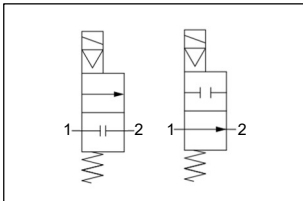


ORIGINAL INSTRUCTIONS

Instruction Manual

Pilot Operated 2 Port Solenoid Valve

Series VXD



The intended use of this product is to control the downstream fluid supply.

1 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)^{*)}, and other safety regulations.

*)ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components.

IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements

ISO 10218-1: Robotics - Safety requirements - Part 1: Industrial robots

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

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

Warning

- **Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Caution

- The product is provided for use in manufacturing industries only. This product must not be used in residential areas.

2 Specifications

2.1 Valve specifications

Valve construction	Pilot operated diaphragm
Body material	Resin, Aluminium, Brass (C37), Stainless steel, Bronze (CAC408)
Fluid	Air, Water, Oil, Heated water, High temperature oil
Withstand pressure [MPa]	2.0 (Resin body type 1.5)
Seal material	NBR, FKM, EPDM
Ambient and fluid temperature [°C]	Refer to 2.3
Flow characteristics	Refer to catalogue
Min. operating frequency	1 cycle / 30 days
Lubrication	Not required
Impact/Vibration resistance [m/s ²] <small>Note 1)</small>	150/30

2 Specifications - continued

Enclosure (based on IEC60529)	IP65 (IP40 with flat terminal)
Mounting orientation	Coil upwards
Weight	Refer to catalogue

Table 1.

Note 1) Impact resistance: No malfunction occurred when it was tested with a drop tester in the axial direction and at right angles to the main valve and armature; in both energized and de-energised states and for every time in each condition. (Values quoted are for a new valve)

Vibration resistance: No malfunction occurred in a one-sweep test between 5 and 200 Hz. Tests are performed at both energized and de-energized states in the axial direction and at right angles to the main valve and armature. (Values quoted are for a new valve).

2.1.1 Fluid and model specification

Fluid	Model
Air	VXD2#0
Water	VXD2#2
Oil	VXD2#3
Heated water	VXD2#5
High temperature oil	VXD2#6

Table 2.

2.2 Solenoid specifications

Coil rated voltage	AC [VAC]	100, 110, 200, 230, (24, 48, 220, 240) ^{Note 1)}
	DC [VDC]	24, (12) ^{Note 1)}
Electrical entry	Grommet, DIN terminal, Conduit terminal, Conduit, Flat terminal	
Coil insulation class	B, H	
Allowable voltage fluctuation	±10% of rated voltage	
Apparent power [VA]	See section 2.2.1	
Power consumption [W]		
Allowable leakage voltage	AC	5% or less of rated voltage
	DC	2% or less of rated voltage

Table 3.

Note 1) Voltage in () indicates special voltage.

2.2.1 Solenoid power consumption and temperature rise

2.2.1.1 DC specification

Voltage type	Coil insulation class	Valve type	Model	Power consumption [W] <small>Note 1)</small>	Temperature rise [°C] <small>Note 2)</small>
DC	B	NC	VXD23 to 25	4.5	50
			VXD26, 27	7	55
			VXD28, 29	10.5	65
		NO	VXD2A to 2C	7.5	60
			VXD2D, 2E	8.5	70
			VXD2F, 2G	12.5	70
	H	NC	VXD23 to 25	9	100
			VXD26, 27	12	
			VXD28, 29	15	
		NO	VXD2A to 2C	9	
			VXD2D, 2E	12	
			VXD2F, 2G	15	

Table 4.

Note 1) Power consumption: The value at ambient temperature of 20°C and when the rated voltage is applied. (Variation: ±10%)

Note 2) The value at ambient temperature of 20°C and when the rated voltage is applied. The value depends on the ambient environment. This is for reference.

2 Specifications - continued

2.2.1.2 AC specification

Voltage type	Coil insulation class	Valve type	Model	Apparent power [VA] <small>Note 1) 2)</small>	Temperature rise [°C] <small>Note 3)</small>
AC	B	NC	VXD23 to 25	7	60
			VXD26, 27	9.5	70
			VXD28, 29	12	70
		NO	VXD2A to 2C	9	60
			VXD2D, 2E	10	70
			VXD2F, 2G	14	70
	H	NC	VXD23 to 25	9	100
			VXD26, 27	12	
			VXD28, 29	15	
		NO	VXD2A to 2C	9	
			VXD2D, 2E	12	
			VXD2F, 2G	15	

Table 5.

Note 1) Apparent power: The value at ambient temperature of 20°C and when the rated voltage is applied. (Variation: ±10%)

Note 2) There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC

Note 3) The value at ambient temperature of 20°C and when the rated voltage is applied. The value depends on the ambient environment. This is for reference.

2.3 Fluid and ambient temperature specifications

Fluid	Fluid Temperature [°C]	Ambient Temperature [°C]
Air ^{Note 1)}	-10 to 60	-20 to 60
Water ^{Note 2)}	1 to 60	
Oil ^{Note 3)}	-5 to 60	
Heated water ^{Note 2)}	1 to 99	
High temperature oil ^{Note 3)}	-5 to 100	

Table 6.

Note 1) Dew point temperature: -10°C or less.

Note 2) No freezing.

Note 3) Kinematic viscosity: 50 mm²/s or less.

2.4 Valve leakage

2.4.1 Internal leakage

Fluid	Seal material	Leakage rate [cm ³ /min] <small>Note 1)</small>			
		VXD23 to 26	VXD2A to 2D	VXD27 to 29	VXD2E to 2G
Air	NBR (FKM)	15 or less (Aluminium, resin body type)		10 or less	
		2 or less (C37/SUS body type)			
Water	FKM	0.2 or less		1 or less	
Oil					
Heated water	EPDM	0.2 or less		1 or less	
High temperature oil	FKM				

Table 7.

Note 1) Leakage is the value at ambient temperature 20°C.

2.4.2 External leakage

Fluid	Seal material	Leakage rate [cm ³ /min] ^{Note 1)}			
		VXD23 to 26	VXD2A to 2D	VXD27 to 29	VXD2E to 2G
Air	NBR (FKM)	15 or less (Aluminium/Resin body type)		1 or less	
		1 or less (C37/SUS body type)			
Water	FKM	0.1 or less			
Oil					
Heated water	EPDM				
High temperature oil	FKM				

Table 8.

Note 1) Leakage is the value at ambient temperature 20°C.

2 Specifications - continued

2.5 Model/Valve specifications

Be aware that even if the pressure differential is above the minimum operating pressure differential when the valve is closed, the pressure differential may fall below the minimum operating pressure differential when the valve opens, depending on the power of the supply source (pumps, compressors, etc.,) or the type of pipe restrictions.

2.5.1 Air

Body material	Orifice dia. [mm]	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]			
			N.C.		N.O.	
			AC	DC	AC	DC
Resin	10	0.02	0.9	0.7	0.6	0.4
Aluminium						
SUS, C37			15			
	20					
	25					
CAC408	35	0.03	1.0	1.0	0.7	0.7
	40					
	50					

Table 9.

2.5.2 Water/ Heated water

Body material	Orifice dia. [mm]	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]			
			N.C.		N.O.	
			AC	DC	AC	DC
SUS, C37	10	0.02	0.7	0.5	0.4	0.3
	15		1.0	1.0	0.7	0.7
	20					
	25					
35						
CAC408	40	0.03				
	50					

Table 10.

2.5.3 Oil/High temperature oil

Body material	Orifice dia. [mm]	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]			
			N.C.		N.O.	
			AC	DC	AC	DC
SUS, C37	10	0.02	0.5	0.4	0.4	0.3
	15		0.7	0.7	0.6	0.6
	20					
	25					
35						
CAC408	40	0.03				
	50					

Table 11.

2.6 Special products

Warning

Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

3 Installation

3.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.

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 in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

3 Installation - continued

- Products compliant with IP65 enclosures are protected against dust and water, however, these products cannot be used in water.
- Products compliant with IP65 enclosures satisfy the specifications by mounting each product properly. Be sure to read the Specific Product Precautions for each product.

3.3 Piping

Caution

- Before connecting 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 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

Port	Tightening torque [N·m]
1/8	3 to 5
1/4	8 to 12
3/8	15 to 20
1/2	20 to 25
3/4	28 to 30
1	36 to 38
1 1/4	40 to 42
1 1/2, 2	48 to 50

Table 12 .

3.3.1 Recommended piping conditions

Caution

- When connecting tubes using One-touch fittings, provide some spare tube length shown in Fig. 1.
- Do not apply external force to the fittings when binding tubes with bands.

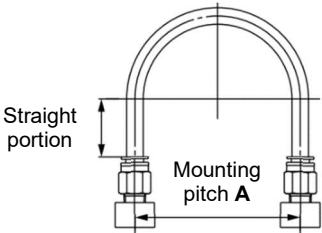


Figure 1.

Tube size	Mounting pitch A [mm]			Straight portion length [mm]
	Nylon tube	Soft nylon tube	Polyurethane tube	
ø2	-	-	13 or more	10 or more
ø3.2, 1/8"	44 or more	35 or more	25 or more	16 or more
ø4, 5/32"	56 or more	44 or more	26 or more	20 or more
ø3/16"	67 or more	52 or more	38 or more	24 or more
ø6	84 or more	66 or more	39 or more	30 or more
ø1/4"	89 or more	70 or more	57 or more	32 or more
ø8, 5/16"	112 or more	88 or more	52 or more	40 or more
ø10	140 or more	110 or more	69 or more	50 or more
ø3/8"	134 or more	105 or more	69 or more	48 or more
ø12	168 or more	132 or more	88 or more	60 or more
ø1/2"	178 or more	140 or more	93 or more	64 or more
ø16	224 or more	176 or more	114 or more	80 or more

Table 13.

- Bind tubes as per figure below.
-

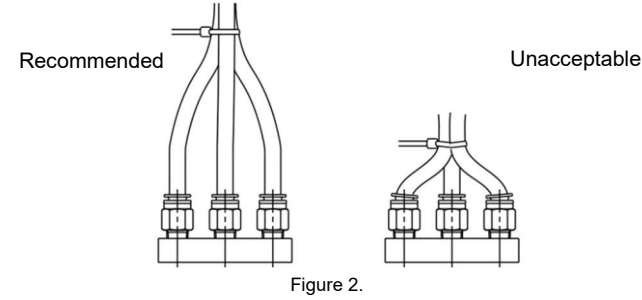


Figure 2.

3 Installation - continued

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, refer to catalogue for details.

3.5 Fluid supply

Warning

- The use of a fluid that contains foreign matter can cause problems, such as malfunction and seal failure by promoting the wear of the valve seat and armature, by sticking to the sliding parts of the armature, etc.
- Install a suitable filter (strainer) immediately upstream of the valve.
- Select a filter with a filtration size of 5 µm or smaller for air, and 100 mesh for water.
- Select an appropriate valve with reference to the table below for the general fluid. Before using a fluid, check whether it is compatible with the materials of each model by referring to the fluids listed in this catalogue. Use a fluid with a kinematic viscosity of 50 mm²/s or less.

For Air	Air
For Water	Air/Water
For Oil	Air/Water/Oil
For Heated water	Air (up to 99°C)/Water/Heated water
For High temperature oil	Air (up to 99°C)/Water/High temperature oil

Table 14.

- Do not use the product with combustion-supporting or flammable fluids.
- Do not use the product with corrosive fluids, as it will lead to cracks by stress corrosion or result in other incidents.
- Depending on water quality, a brass body can cause corrosion and internal leakage may occur. If such abnormalities occur, exchange the product for a stainless steel body.
- Use an oil-free specification when any oily particle must not enter the passage.
- Applicable fluid on the list may not be used depending on the operating condition. Give adequate confirmation, and then determine a model, just because the compatibility list shows the general case.
- If there is a possibility of reverse pressure being applied to the valve,

take countermeasures such as mounting a check valve on the downstream side of the valve.

- When the pilot type 2 port solenoid valve is closed, and pressure is applied suddenly due to the starting of fluid supply source such as pump and compressor, the valve may open momentarily and fluid may leak.

3.5.1 Air

Warning

- Use clean air. If the compressed air supply includes chemicals, synthetic materials (including organic solvents), salinity, corrosive gas etc., it can lead to damage or malfunction.

Caution

- Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after cooler, etc.
- If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause a malfunction. Install mist separators upstream of the valves to eliminate it.
- When operating fluid air with a dew point of -70°C or lower, the inside of the valve may wear and the product life will be shortened.

3.5.2 Water

Warning

- Be aware that rust stains, chloride separation, etc., from the piping may cause malfunction, leakage, or, in worse case scenarios, damage due to corrosion. Also, such damage may result in the spraying of fluids or scattering of parts. Please be sure to have protective measures in place in case such incidents should occur.
- In the case that water contains substances such as calcium and magnesium, which generate hard scale and sludge, install water softening equipment and a filter (strainer) directly upstream from the valve to remove these substances, as this scale and sludge can cause the valve to malfunction.
- The water pressure of tap water is usually 0.4 MPa or less, but the pressure can sometimes increase to 1.0 MPa in tall buildings. Therefore, pay attention to the max. operating pressure differential.

3 Installation - continued

3.5.3 Oil

Warning

- Generally, FKM is used as seal material, as it is resistant to oil. However, the resistance of the seal material may deteriorate depending on the type of oil, manufacturer, or additives. Check the resistance before using.
- The kinematic viscosity of fluid must not exceed 50 mm²/s.

3.6 Mounting

Warning

- After mounting is completed, confirm that it has been done correctly by performing a suitable function test.
- Do not install with the coil downwards. If a valve is mounted with the coil positioned downwards, foreign objects in the fluid will adhere to the core/armature leading to a malfunction.
- Do not apply external force to the coil section. When tightening is performed, apply a wrench or other tool to the outside of the piping connection parts.
- Do not warm the coil assembly with a heat insulator etc. Use tape, heaters, etc., for freeze prevention on the piping and body only. They can cause the coil to burn out.
- Secure with brackets, except in the case of steel piping and copper fittings.
- Avoid sources of vibration or adjust the arm from the body to the minimum length so that resonance will not occur.

3.7 Electrical circuits

Caution

Surge suppression should be specified by using the appropriate part number. If a valve type without suppression (Type 'A, Y') is used, suppression must be provided by the host controller as close as possible to the valve.

3.7.1 DC circuits

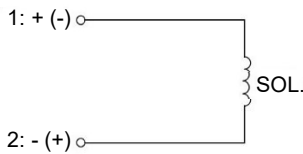


Figure 3. Grommet / Flat terminal without electrical option

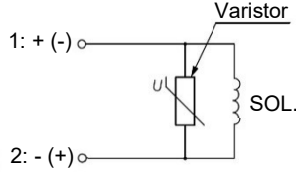


Figure 4. Grommet / DIN terminal / Conduit terminal / Conduit with surge voltage suppressor

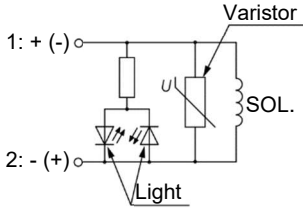


Figure 5. DIN terminal / Conduit terminal with light/surge voltage suppressor

3 Installation - continued

3.7.2 AC circuits

For AC, the standard product is equipped with surge voltage suppressor.

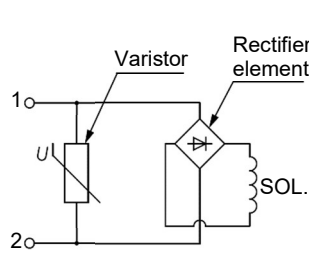


Figure 6. Grommet / DIN terminal / Conduit terminal / Conduit without electrical option

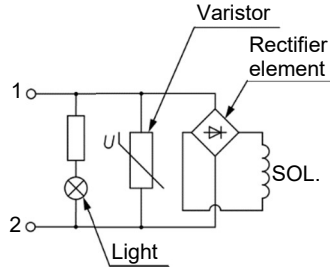


Figure 7. DIN terminal / Conduit terminal with light/surge voltage suppressor

Note 1) Coil for DIN terminal H type with AC voltage does not have full-wave rectifier. Full-wave rectifier is built in the DIN connector.

3.8 Electrical connectors

Warning

- The solenoid valve is an electrical product. For safety, install an appropriate fuse and circuit breaker before use. When using multiple solenoid valves, it is not sufficient to merely install one fuse on the inlet side. In order to ensure the safety of the devices, select and install a fuse for each circuit.
- Do not apply AC voltage to Class "H" coil AC type unless it is built in full-wave rectifier, or the coil will be damaged.

Caution

- Use electrical wire with a cross sectional area of 0.5 to 1.25 mm² for wiring. Furthermore, do not allow excessive force to be applied to the lines.
- Use electrical circuits which do not generate chattering in their contacts.

3.8.1 Grommet

Class B coil: AWG20 Insulator O.D. 2.6mm
Class H coil: AWG18 Insulator O.D. 2.1mm

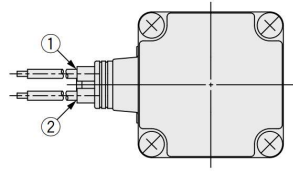


Figure 8.

Rated voltage	Lead wire colour	
	1	2
DC	Black	Red
100 VAC	Blue	Blue
200 VAC	Red	Red
Other AC	Gray	Gray

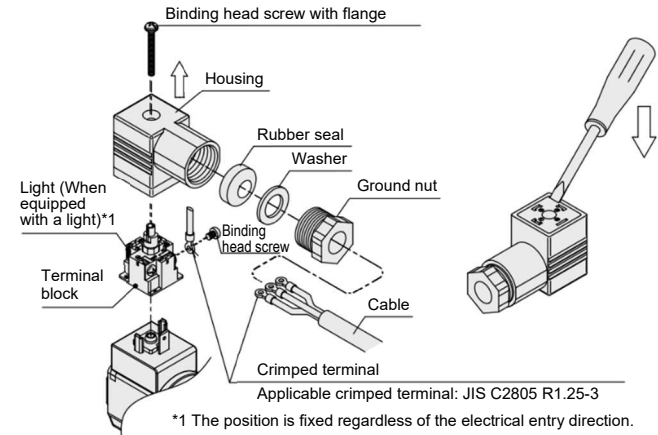
Table 15.

Note) There is no polarity.

3.8.2 DIN terminal

- Tighten the screw to a torque of between 0.5 and 0.6 N·m.
- Cable O.D.: ø6 to ø12 mm.
- For an outside cable diameter of ø9 to 12 mm, remove the internal parts of the rubber seal before using.
- The orientation of the connector can be changed in steps of 90° by changing the method of assembling the housing and the terminal block.

3 Installation - continued



- Internal connections are shown below. Make connections to the power supply accordingly.

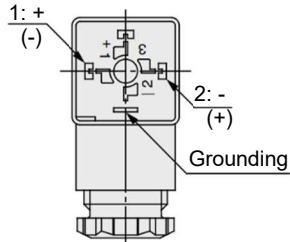


Figure 10.

Note) There is no polarity.

Terminal No.	1	2
DIN terminal	+ (-)	- (+)

Table 16.

3.8.2.1 DIN (EN175301-803) terminal

- This DIN terminal corresponds to the Form A DIN connector with an 18 mm terminal pitch, which complies with EN175301-803B.

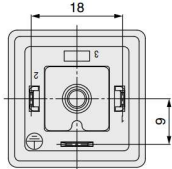


Figure 11.

Warning

The ground terminal is connected to the coil assembly only and does not provide a protective earth for the body of the valve.

3.8.3 Conduit terminal

- Tighten the screw to a torque of between 0.5 and 0.6 N·m.
- When changing the orientation by applying additional tightening force to the conduit terminal from the factory-set position, turn no more than one half a turn.

3 Installation - continued

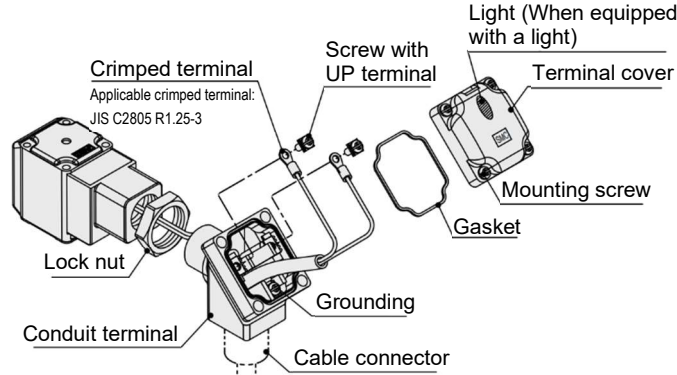


Figure 12.

Make connections according to the marks shown below.

- Use the tightening torques below for each section.
- Properly seal the terminal connection (G1/2) with the special wiring conduit etc.

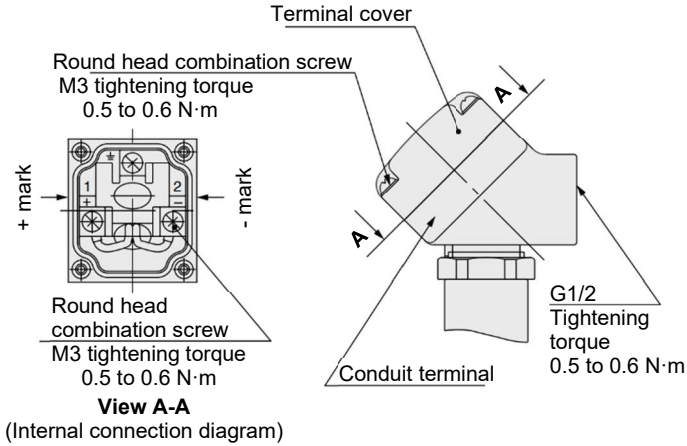


Figure 13.

3.8.4 Conduit

When used as an IP65 equivalent, use seal to install the wiring conduit. Also, use the tightening torque below for the conduit.
Class B coil: AWG20 Insulator O.D. 2.5 mm
Class H coil: AWG18 Insulator O.D. 2.1 mm

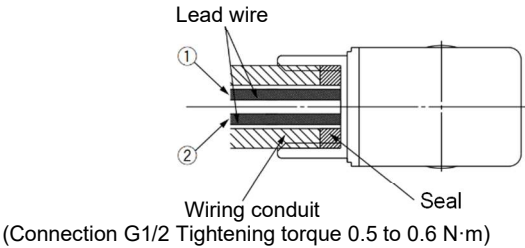


Figure 14.

3 Installation - continued

Rated voltage	Lead wire colour	
	1	2
DC	Black	Red
100 VAC	Blue	Blue
200 VAC	Red	Red
Other AC	Gray	Gray

Note) There is no polarity.

Description	Part no.
Seal	VCW20-15-6

Note) Please order separately.

Table 17.

Table 18.

3.9 Residual voltage

Caution

- If a varistor voltage suppressor is used, the suppressor arrests the back EMF voltage from the coil to a level in proportion to the rated voltage.
- Ensure the transient voltage is within the specification of the host controller.

3.10 Countermeasure for surge voltage

Caution

- At times of sudden interruption of the power supply, the energy stored in a large inductive device may cause non-polar type valves in a de-energised state to switch.
- When installing a breaker circuit to isolate the power, consider a valve with polarity (with polarity protection diode), or install a surge absorption diode across the output of the breaker.

3.11 Extended period of continuous energization

Warning

- The solenoid coil will generate heat when continuously energized so avoid installing in an enclosed space. Install the valve in a well-ventilated area.
- Do not touch the coil while it is being energized or immediately after energization.

4 How to Order

Refer to drawings or catalogue for 'How to Order'.

5 Outline Dimensions

Refer to drawings or catalogue for outline dimensions.

6 Maintenance

6.1 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.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Removing the product The valve will reach a high temperature when used with high temperature fluids. Confirm that the valve temperature has dropped sufficiently before performing work. If touched inadvertently, there is a danger of being burned.
 - Shut off the fluid supply and release the fluid pressure in the system.
 - Shut off the power supply.
 - Dismount the product.
- Switch valves at least once every 30 days to prevent malfunction. Also, in order to use it under the optimum state, conduct a regular inspection once a half year.

6 Maintenance - continued

- Periodic maintenance of filter and strainer
 - Replace filter element every 1 year or when the pressure drop becomes 0.1 MPa, whichever comes first.
 - Wash strainer when the pressure drop becomes 0.1 MPa.
- When using after lubricating, never forget to lubricate continuously.
- Storage In case of long term storage after use, thoroughly remove all moisture to prevent rust and deterioration of rubber materials, etc.
- Exhaust the drainage from the air filter periodically.

6.2 Replacement parts

See the catalogue for replacement parts.

6.3 Change of electrical entry direction

Caution

- Before disassembling, be sure to shut off the power supply and pressure supply, and then release the residual pressure.

6.3.1 Disassembly

6.3.1.1 N.C.

1) Loosen the mounting screws.

The coil assembly, stopper, return spring, armature assembly and body can be removed.

6.3.1.2 N.O.

1) Loosen the mounting screws.

The coil assembly, push rod assembly, O-rings, adapter and body can be removed.

6.3.2 Assembly

6.3.2.1 Common to N.C. and N.O.

1) Mount the components on the body in the reverse order of disassembly.

2) Push the coil assembly against the body and tighten the screws two or more rounds diagonally (Fig. 6) in the status that there are no gaps between the coil assembly and body (Fig. 17).
Tighten the screws in the order of "1→2→3→4→1→2→3→4".

Tightening torque [N·m]	
VXD2(3/A)	0.5
VXD2(4/B)	
VXD2(5/C)	
VXD2(6/D)	0.7
VXD2(7/E)	
VXD2(8/F)	
VXD2(9/G)	

Table 19.

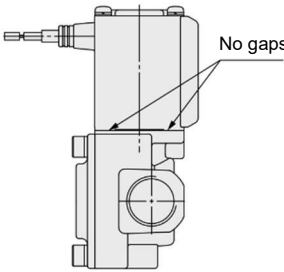


Figure 15.

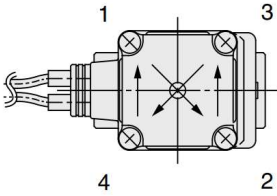


Figure 16.

- After tightening the screws, make sure that there are no gaps between the coil and body (Fig. 15).
- After the disassembly and assembly have been completed, make sure that no leak occurs from the seal. Additionally, when restarting the valve, ensure the valve operates correctly and that there are no problems.

6 Maintenance - continued

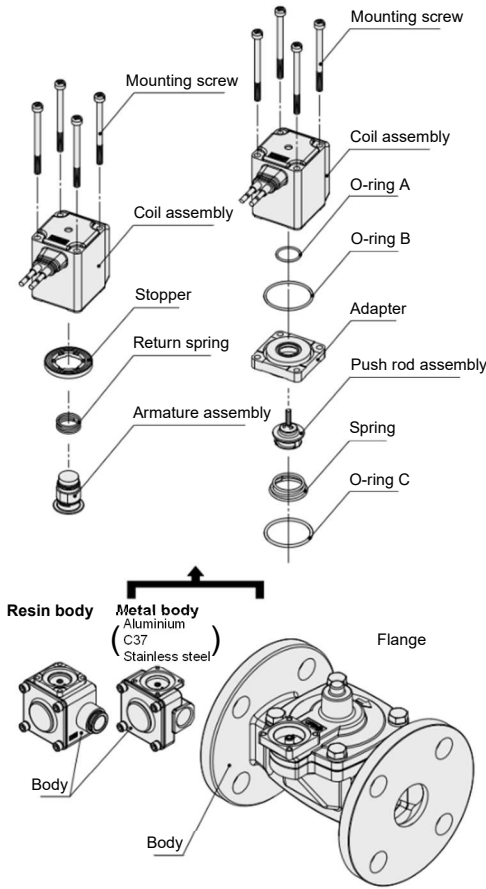


Figure 17.

6.4 Storage

Caution

In the case of long term storage, thoroughly remove all moisture to prevent rust and deterioration of rubber materials, etc.

7 Limitations of Use

7.1 Limited warranty and disclaimer/compliance requirements

Refer to Handling Precautions for SMC Products.

Warning

7.2 Effect of energy loss on valve switching

Fluid supply present, electrical supply cut	Pilot valve returns to the initial de-energised position by spring force. Main valve closes by spring force for N.C. type. Main valve remains open for N.O. type.
Electrical supply present, fluid supply cut	Pilot valve remains in the energised position. Main valve closes by spring force.

Table 20.

7.3 Low temperature operation

- The valve can be used in an ambient temperature of -20°C. However, take measures to prevent freezing or solidification of impurities, etc.
- When using valves for water application in cold climates, take appropriate countermeasures to prevent the water from freezing in tubing after cutting the water supply from the pump, by draining the water, etc. When warming by a heater, etc., be careful not to expose the coil portion to a heater. Installation of a dryer, heat retaining of the body is recommended to prevent freezing condition in which the dew point temperature is high and the ambient temperature is low, and the high flow runs.

7 Limitations of Use - continued

Warning

7.4 Fluids

- The compatibility of the components of this product with the fluid used may vary depending on the type of fluid, additives, concentration, temperature, etc. Check the compatibility with the actual machine before use.
- Take measures to prevent static electricity since some fluids can cause static electricity.
- Do not use the product with the fluids listed below:
 - Fluids that are harmful to the human body.
 - Combustible or flammable fluids.
 - Corrosive gas and fluid.
 - Sea water, saline.

7.5 Holding of pressure

Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a system.

7.6 Cannot be used as an emergency shut-off valve

This product is not designed for safety applications such as an emergency shut-off valve. If the valves are used in this type of system, other reliable safety assurance measures should be adopted.

7.7 Closed circuit

In a closed circuit, when liquid is static, pressure could rise due to changes in temperature. This pressure rise could cause malfunction and damage to components such as valves. To prevent this, install a relief valve in the system.

7.8 Impact by rapid pressure fluctuation

When an impact caused by the rapid pressure fluctuation, such as water hammer etc., is applied, the solenoid valve may be damaged. Install water hammer relief equipment (accumulator, etc.), or use a SMC water hammer relief valve (e.g. VXR series).

Caution

7.9 Leakage voltage

Ensure that any leakage voltage caused by the leakage current when the switching element is OFF causes ≤ 2% (for DC coils) or ≤ 5% (for AC coils) of the rated voltage across the valve.

7.10 EMC restrictions

7.10.1 Class and group description

- This product is group 1, class A equipment according to EN55011.
- Group 1 equipment does not intentionally generate radio-frequency energy in the range 9kHz to 400 GHz.
- Class A equipment is equipment suitable for use in all locations other than those allocated in residential environments and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
- This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

8 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

9 Return of Product

If the product to be returned is contaminated or is possibly contaminated with substances that are harmful to humans, for safety reasons, please contact SMC beforehand and then employ a specialist cleaning company to decontaminate the product. After the decontamination prescribed above has been carried out, submit a Product Return Request Sheet or the Detoxification/Decontamination Certificate to SMC and await SMC's approval and further instructions before attempting to return the item. Please refer to the International Chemical Safety Cards (ICSC) for a list of harmful substances.

10 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor/importer.

SMC Corporation

URL : [https:// www.smcworld.com](https://www.smcworld.com) (Global) [https:// www.smc.eu](https://www.smc.eu) (Europe)
SMC Corporation, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN
Specifications are subject to change without prior notice from the manufacturer.
© SMC Corporation All Rights Reserved.
Template DKP50047-F-085N