



Series VX2/VX3/VXD/VXZ

2/3 Port Solenoid Valves for Fluid Control Specific Product Precautions 1

Be sure to read this before handling. For detailed precautions on each series, refer to the main text.

Selection

Warning

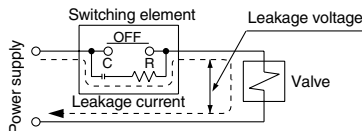
1. Minimum operating pressure differential (VXD, VXD)

Be aware that when the valve is closed, even if the pressure difference is above the min. operating pressure differential, the pressure difference may fall below the min. operating pressure differential when the valve opens depending on the ability of the supply source (pumps, compressors etc.) or pipe restrictors. Being used below the min. operating pressure differential creates an insufficient pressure differential, causing operational instability and inadequate opening/closing of the valve.

Caution

1. Leakage voltage

Particularly when using a resistor in parallel with a switching element and using a C-R element (surge voltage suppressor) to protect the switching element, take note that leakage current will flow through the resistor, C-R element, etc., creating a possible danger that the valve may not turn off.



AC/Class B built-in full-wave rectifier coil: 10% or less of rated voltage (VX3: 5% or less)

AC/Class B/H coil: 20% or less of rated voltage

DC coil: 2% or less of rated voltage

2. Selecting options

The fluid handled will differ depending on the valve options. Select optimal options for the fluid.

3. When the fluid is air. (VX2)

Please select the VCA series when using air because it is specifically designed for it. (The VCA series is limited to air to improve its function and service life.)

When you operate the VX series (AC spec) by air, select the built-in full-wave rectifier type.

- The special construction of the armature reduces abrasion, resulting in a longer service life.
- Reduced buzz noise

Best suited for medical equipment, low-noise environments, etc.

4. When the fluid is oil.

The dynamic viscosity of the fluid must not exceed 50 mm²/s.

The special construction of the armature adopted in the built-in full-wave rectifier type gives an improvement in OFF response by providing clearance on the absorbed surface when it is switched ON. Select the DC spec. or AC spec. built-in full-wave rectifier type when the dynamic viscosity is higher than water or when the OFF response is prioritized.

Piping

Caution

1. If a regulator and valve are connected directly, they may vibrate together and cause chattering. Do not connect directly.
2. If the cross-sectional area of piping for the fluid supply side is restricted, operation will become unstable due to inadequate pressure differential during valve operation. Use piping size for the fluid supply side that is suited to the port size.

Wiring

Caution

1. As a rule, 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.

Wiring

Caution

2. Use electrical circuits which do not generate chattering in their contacts.
3. Use voltage which is within $\pm 10\%$ of the rated voltage. In cases with a DC power supply where importance is placed on responsiveness, stay within $\pm 5\%$ of the rated value. The voltage drop is the value in the lead wire section connecting the coil.
4. When a surge from the solenoid affects the electrical circuitry, install a surge voltage suppressor, etc., in parallel with the solenoid. Or, adopt an option that comes with the surge voltage protection circuit. (However, a surge voltage occurs even if the surge voltage protection circuit is used. For details, please consult with us.)

Operating Precautions

Warning

1. Make sure when using pilot type 2-port solenoid valves that the flow direction is from 1 (IN) to 2 (OUT). The valve is designed based on a flow direction of 1 (IN) to 2 (OUT) and harnesses the fluid pressure of port 1 (IN) when the valve opens or closes. If reverse pressure (2 (OUT) to 1 (IN)) is applied, it may lead to a reduced service life or cause damage to parts early on due to chattering or pulses from the main valve (diaphragm, piston, etc.). If there is a possibility that reverse pressure will be applied, take countermeasures by installing the check valve, etc. at the downstream side.

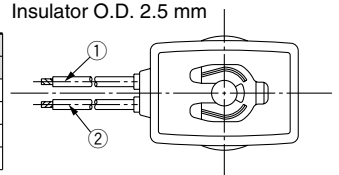
When installing the check valve, allow ample space between the valve and the check valve. If it is placed near the valve, it may cause chattering and pulses in the main valve.

Electrical Connections

Caution

Grommet Class H coil: AWG18 Insulator O.D. 2.2 mm
Class B coil: AWG20 Insulator O.D. 2.5 mm

Rated voltage	Lead wire color	
	①	②
DC (Class B only)	Black	Red
100 VAC	Blue	Blue
200 VAC	Red	Red
Other AC	Gray	Gray



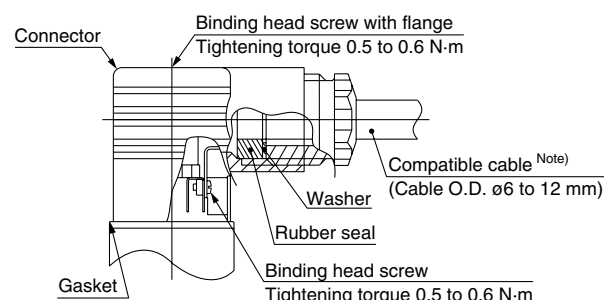
* There is no polarity. (For the power saving type, there is polarity.)

DIN terminal (Class B only)

Since internal connections are as shown below for the DIN terminal, make connections to the power supply accordingly.

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

- * There is no polarity.
- Use compatible heavy duty cords with cable O.D. of $\phi 6$ to 12 mm.
- Use the tightening torques below for each section.



Note) For an outside cable diameter of $\phi 9$ to 12 mm, remove the internal parts of the rubber seal before using.

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW



Series VX2/VX3/VXD/VXZ 2/3 Port Solenoid Valves for Fluid Control Specific Product Precautions 2

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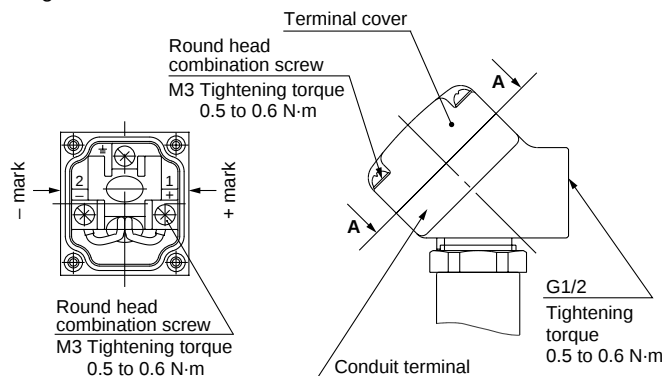
Electrical Connections

⚠ Caution

Conduit terminal

In the case of the conduit terminal, 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.



View A-A

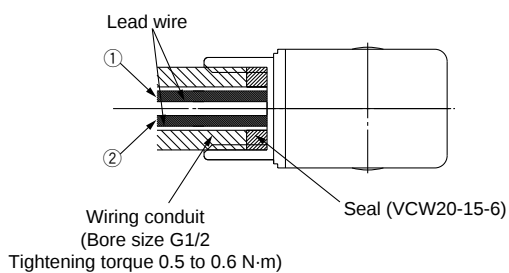
(Internal connection diagram)

Conduit

When used as an IP65 equivalent, use seal (part no. VCW20-15-6) to install the wiring conduit. Also, use the tightening torque below for the conduit.

Class H coil: AWG18 Insulator O.D. 2.2 mm

Class B coil: AWG20 Insulator O.D. 2.5 mm



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

* There is no polarity for DC. (For the power saving type, there is polarity.)

Description	Part no.
Seal	VCW20-15-6

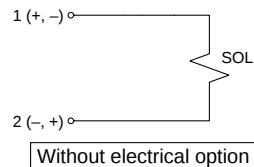
Note) Please order separately.

Electrical Circuits

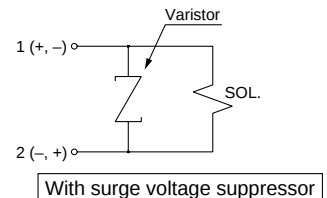
⚠ Caution

[DC circuit]

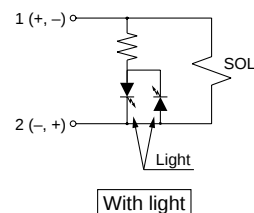
Grommet, Conduit,
Conduit terminal,
DIN type



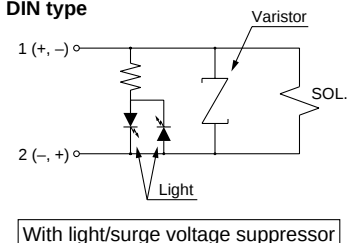
Grommet, Conduit terminal,
DIN type



Conduit terminal,
DIN type



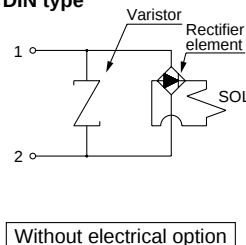
Conduit terminal,
DIN type



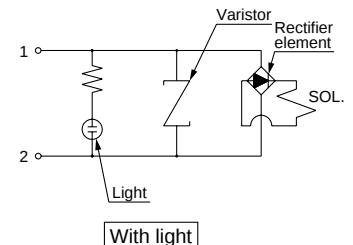
[AC, Class B (Built-in full wave rectifier type) Circuit]

* For AC/Class B, the standard product is equipped with surge voltage suppressor.

Grommet, Conduit,
Conduit terminal,
DIN type

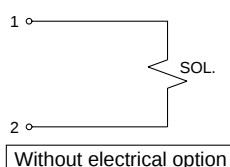


Conduit terminal,
DIN type

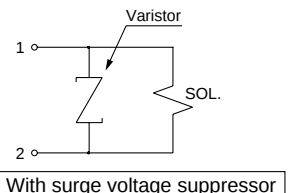


[AC, Class B/H Circuit]

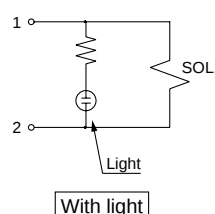
Grommet, Conduit,
Conduit terminal



Grommet,
Conduit terminal



Conduit terminal



Conduit terminal

