



Installation and Maintenance Manual
VX21/22/23 Direct Operated
2 Port Solenoid Valve
For Air, Water, Oil, Steam



EMC Directive 89/336/EEC
EN61000-6-2:2001: Electromagnetic Compatibility (EMC) - Immunity
EN61000-6-3:2001: Electromagnetic Compatibility (EMC) - Emission

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 "DANGER", "WARNING" or "CAUTION", followed by important safety information which must be carefully followed.
- To ensure safety ISO4414: Pneumatic fluid power and JIS B 8370: Pneumatic system axiom must be observed, along with other relevant safety practices.

DANGER	In extreme conditions, there is a possibility of serious injury or loss of life.
WARNING	If instructions are not followed there is a possibility of serious injury or loss of life.
CAUTION	If instructions are not followed there is a possibility of injury or equipment damage.

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).
- **Contact SMC if it is to be used in any of the following conditions:**
 - 1) Conditions and environments beyond the given specifications, or if the product is to be used outdoors.
 - 2) Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, 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.

1 Safety Instructions (continued)

CAUTION

- Ensure that the air supply system is filtered to 5 microns.

1.2 Conformity to standard

This product is certified to and complies with the following standards:

EMC Directive 89/336/EEC	EN 61000-6-2, EN 55011
Low Voltage Directive 93/68/EEC	DIN VDE 0580

2 Specifications (continued)

2.2 Coil specifications

Normally Closed (N.C.)

DC Specification

Model	Power consumption (W)	Temperature rise (C°) ^{Note)}
VX21	4.5	45
VX22	7	45
VX23	10.5	60

AC Specification (Class B coil, Built-in full-wave rectifier type)

Model	Apparent power (VA)*	Temperature rise (C°) ^{Note)}
VX21	7	55
VX22	9.5	60
VX23	12	65

* There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC (Class B coil, built-in full-wave rectifier type).

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

Normally Open (N.O.)

DC Specification

Model	Power consumption (W)	Temperature rise (C°) ^{Note)}
VX21	4.5	45
VX22	7	45
VX23	10.5	60

AC Specification (Class B coil, Built-in full-wave rectifier type)

Model	Apparent power (VA)*	Temperature rise (C°) ^{Note)}
VX21	7	55
VX22	9.5	60
VX23	12	65

* There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC (Class B coil, built-in full-wave rectifier type).

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

2 Specifications (continued)

2.3 Model/Valve specifications

FOR AIR (Inert gas, Non-leak, Medium vacuum) / SINGLE UNIT

Normally closed (N.C.)

Port size	Orifice size (mmØ)	Model	Max. operating pressure differential (Mpa)	Flow characteristics			Max. system pressure (MPa)	Weight (g)	
				C[dm³/(s.bar)]	b	Cv			
1/8 (6A)	2	VX2110-01	1.5	0.59	0.48	0.18	3.0	300	
	3	VX2120-01	0.6	1.2	0.45	0.33			
	4.5	VX2130-01	0.2	2.3	0.46	0.61			
	2	VX2110-02	1.5	0.59	0.48	0.18			
1/4 (8A)	3	VX2120-02	0.6	1.2	0.45	0.33		470	
		VX2220-02	1.5						620
		VX2320-02	3.0						
	4.5	VX2130-02	0.2	2.3	0.46	0.61		300	
		VX2230-02	0.35						470
		VX2330-02	0.9						
	6	VX2240-02	0.15	4.1	0.30	1.10	470		
		VX2340-02	0.35					620	
	8	VX2250-02	0.08	6.4	0.30	1.60	560		
		VX2350-02	0.2					700	
	10	VX2260-02	0.03	8.8	0.30	2.00	560		
		VX2360-02	0.07					700	
	3/8 (10A)	3	VX2220-03	1.5	1.2	0.45	0.33		470
			VX2320-03	3.0				620	
4.5		VX2230-03	0.35	2.3	0.46	0.61	470		
		VX2330-03	0.9					620	
6		VX2240-03	0.15	4.1	0.30	1.10	470		
		VX2340-03	0.35					620	
8		VX2250-03	0.08	6.4	0.30	1.60	560		
		VX2350-03	0.2					700	
10		VX2260-03	0.03	11	0.30	2.20	560		
		VX2360-03	0.07					700	
1/2 (15A)	10	VX2260-04	0.03	11	0.30	2.20	560		
		VX2360-04	0.07					700	

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Normally Open (N.O.)

Port size	Orifice size (mmØ)	Model	Max. operating pressure differential (Mpa)	Flow characteristics			Max. system pressure (MPa)	Weight (g)		
				C[dm³/(s.bar)]	b	Cv				
1/8 (6A)	2	VX2112-01	1.5	0.59	0.48	0.18	3.0	320		
	3	VX2122-01	0.7	1.2	0.45	0.33				
	4.5	VX2132-01	0.3	2.3	0.46	0.61				
1/4 (8A)	2	VX2112-02	1.5	0.59	0.48	0.18		3.0	500	
	3	VX2122-02	0.7	1.2	0.45	0.33				660
		VX2222-02	1.0							
		VX2322-02	1.6							
	4.5	VX2132-02	0.3	2.3	0.46	0.61			320	
		VX2232-02	0.45							500
		VX2332-02	0.8							
	6	VX2242-02	0.25	4.1	0.30	1.10	500			
		VX2342-02	0.45						660	
	3/8 (10)	3	VX2222-03	1.0	1.2	0.45	0.33			3.0
VX2322-03			1.6	660						
4.5		VX2232-03	0.45		2.3	0.46	0.61	500		
		VX2332-03	0.8	660						
6		VX2242-03	0.25		4.1	0.30	1.10	500		
		VX2342-03	0.45	660						

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Ambient and fluid temperature

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
Nil, G	V, M	
-10 ^{Note)} to 60	-10 ^{Note)} to 60	-20 to 60

2 Specifications (continued)

FOR WATER / SINGLE UNIT

Normally Closed (N.C.)

Port size	Orifice size (mmØ)	Model	Max. operating Pressure differential (Mpa)		Flow characteristics		Max. system pressure (MPa)	Weight (g)
			AC	DC (Built-in full-wave rectifier type)	Av x 10 ⁻⁶ m³	Cv converted		
1/8 (6A)	2	VX2110-01	2.0	1.5	4.1	0.17		300
	3	VX2120-01	0.9	0.5	7.9	0.33		
	4.5	VX2130-01	0.4	0.2	15.0	0.61		
1/4 (8A)	2	VX2110-02	2.0	1.5	4.1	0.17	3.0	
	3	VX2120-02	0.9	0.5	7.9	0.33		
		VX2220-02	1.7	1.5				
		VX2320-02	2.5	3.0				
	4.5	VX2130-02	0.4	0.2	15.0	0.61		
		VX2230-02	0.6	0.35				
		VX2330-02	0.85	0.9				
	6	VX2240-02	0.35	0.15	26.0	1.10		
		VX2340-02	0.55	0.3				
		VX2250-02	0.13	0.08				
	8	VX2350-02	0.17	0.2	38.0	1.60		
		VX2260-02	0.08	0.03				
		VX2360-02	0.1	0.07				
	3/8 (10A)	3	VX2220-03	1.7	1.5	7.9	0.33	3.0
VX2320-03			2.5	3.0				
4.5		VX2230-03	0.6	0.35	15.0	0.61		
		VX2330-03	0.85	0.9				
		VX2240-03	0.35	0.15				
6		VX2340-03	0.55	0.3	26.0	1.10		
		VX2250-03	0.13	0.08				
		VX2350-03	0.17	0.2				
8		VX2260-03	0.08	0.03	38.0	1.60		
		VX2360-03	0.1	0.07				
		VX2260-03	0.08	0.03				
1/2 (15A)		10	VX2360-04	0.1	0.07	53.0	2.20	
	VX2260-04		0.08	0.03				

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Normally Open (N.O.)

Port size	Orifice size (mmØ)	Model	Max. operating pressure differential (Mpa)	Flow characteristics		Max. system pressure (MPa)	Weight (g)
				AV x 10 ⁻⁶ m³	Cv converted		
1/8 (6A)	2	VX2112-01	0.9	4.1	0.17	3.0	320
	3	VX2122-01	0.45	7.9	0.33		
	4.5	VX2132-01	0.2	15.0	0.61		
1/4 (8A)	2	VX2112-02	0.9	4.1	0.17		500
	3	VX2122-02	0.45	7.9	0.33		
		VX2222-02	0.8				
		VX2322-02	1.2				
	4.5	VX2132-02	0.2	15.0	0.61		
		VX2232-02	0.3				
		VX2332-02	0.6				
	6	VX2242-02	0.15	26.0	1.10		
		VX2342-02	0.35				
3/8 (10)	3	VX2222-03	0.8	7.9	0.33		500
		VX2322-03	1.2				
	4.5	VX2232-03	0.3	15.0	0.61		
		VX2332-03	0.6				
	6	VX2242-03	0.15	26.0	1.10		
		VX2342-03	0.35				

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Ambient and fluid temperature

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
Nil, G, L	E, P	
1 to 60	1 to 99	-20 to 60

Note) With no freezing

2 Specifications (continued)

FOR OIL / SINGLE UNIT

Normally Closed (N.C.)

Port size	Orifice size (mmØ)	Model	Max. operating Pressure differential (Mpa)		Flow characteristics		Max. system pressure (MPa)	Weight (g)	
			AC	DC AC (Built-in full-wave rectifier type)	Av x 10 ⁻⁶ m³	Cv converted			
1/8 (6A)	2	VX2110-01	1.5	1.5	4.1	0.17	3.0	300	
	3	VX2120-01	0.5	0.5	7.9	0.33			
	4.5	VX2130-01	0.2	0.15	15	0.61			
2	VX2110-02	1.5	1.5	4.1	0.17				
3	VX2120-02	0.5	0.5	7.9	0.33				
	VX2220-02	1.2	1.2						
	VX2320-02	1.7	2.0						
1/4 (8A)	4.5	VX2130-02	0.2	0.15	15	0.61			
		VX2230-02	0.35	0.3					
		VX2330-02	0.55	0.85					
	6	VX2240-02	0.2	0.1	26	1.10			
		VX2340-02	0.35	0.3					
		VX2250-02	0.1	0.08					
	8	VX2350-02	0.14	0.2	38	1.60			
		VX2260-02	0.05	0.03					
		VX2360-02	0.08	0.07					
	3/8 (10A)	3	VX2220-03	1.2	1.2	7.9	0.33	3.0	470
VX2320-03			1.7	2.0					
VX2230-03			0.35	0.3					
4.5		VX2330-03	0.55	0.85	15	0.61			
		VX2240-03	0.2	0.1					
		VX2340-03	0.35	0.3					
6		VX2250-03	0.1	0.08	26	1.10			
		VX2350-03	0.14	0.2					
		VX2260-03	0.05	0.03					
8		VX2360-03	0.08	0.07	53	2.20			
		10	VX2260-04	0.05			0.03	53	2.20
			VX2360-04	0.08			0.07		
1/2 (15A)	10		VX2260-04	0.05	0.03	53	2.20		
VX2360-04	0.08	0.07							

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Normally Open (N.O.)

Port size	Orifice size (mmØ)	Model	Max. operating pressure differential (Mpa)	Flow characteristics		Max. system pressure (MPa)	Weight (g)
				AV x 10 ⁻⁶ m³	Cv converted		
1/8 (6A)	2	VX2112-01	0.8	4.1	0.17	3.0	320
	3	VX2122-01	0.45	7.9	0.33		
	4.5	VX2132-01	0.2	15	0.61		
1/4 (8A)	2	VX2112-02	0.8	4.1	0.17		
	3	VX2122-02	0.45	7.9	0.33		
		VX2222-02	0.7				
		VX2322-02	1.0				
	4.5	VX2132-02	0.2	15	0.61		
		VX2232-02	0.3				
		VX2332-02	0.6				
	6	VX2242-02	0.15	26	1.10		
		VX2342-02	0.35				
3/8 (10)	3	VX2222-03	0.7	7.9	0.33		
		VX2322-03	1.0				
		VX2232-03	0.3				
	4.5	VX2332-03	0.6	15	0.61		
		VX2242-03	0.15				
		VX2342-03	0.35				
6	VX2242-03	0.15	26	1.10			
	VX2342-03	0.35					

Note) Weight of grommet type. Add 10g for conduit type, 30g for DIN terminal type, 60g for conduit terminal type respectively.

Ambient and fluid temperature

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
A, H	D, N	
-5 ^{Note)} to 60	-5 ^{Note)} to 120	-20 to 60

Note) Dynamic viscosity: 50mm²/s or less

2 Specifications (continued)

FOR STEAM / SINGLE UNIT

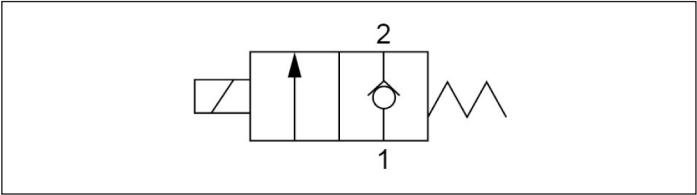
Normally Closed (N.C.)

Port size	Orifice size (mmØ)	Model	Max. operating Pressure differential (Mpa)	Flow characteristics		Max. system pressure (MPa)	Weight (g)
			AC	Av x 10 ⁻⁶ m³	Cv converted		
1/8 (6A)	2	VX2110-01	1.0	4.1	0.17	1.0	300
	3	VX2120-01	1.0	7.9	0.33		
	4.5	VX2130-01	0.45	15	0.61		
1/4 (8A)	2	VX2110-02	1.0	4.1	0.17		
	3	VX2120-02	1.0	7.9	0.33		
	4.5	VX2130-02	0.45	15	0.61		
		VX2230-02	0.75				
		VX2330-02	1.0				
6	VX2240-02	0.4	26	1.10			
	VX2340-02	0.5					
1/4 (8A)	8	VX2250-02	0.15	38	1.60		
		VX2350-02	0.2				
	10	VX2260-02	0.08	46	1.90		
		VX2360-02	0.1				
	3/8 (10A)	3	VX2220-03	1.0	7.9	0.33	1.0
4.5		VX2230-03	0.75	15	0.61		
		VX2330-03	1.0				
6		VX2240-03	0.4	26	1.10		
		VX2340-03	0.5				
8		VX2250-03	0.15	38	1.60		
		VX2350-03	0.2				
10		VX2260-03	0.08	53	2.20		
		VX2360-03	0.1				
1/2 (15A)		10	VX2260-04	0.08	53	2.20	
	VX2360-04		0.1				

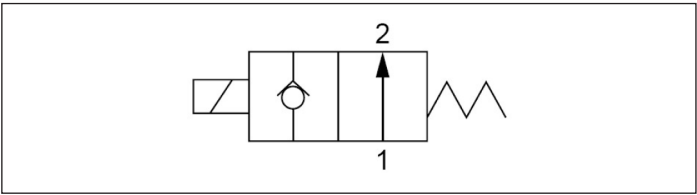
2 Specifications (continued)

2.4 Circuit Symbols

(N.C.)



(N.O.)

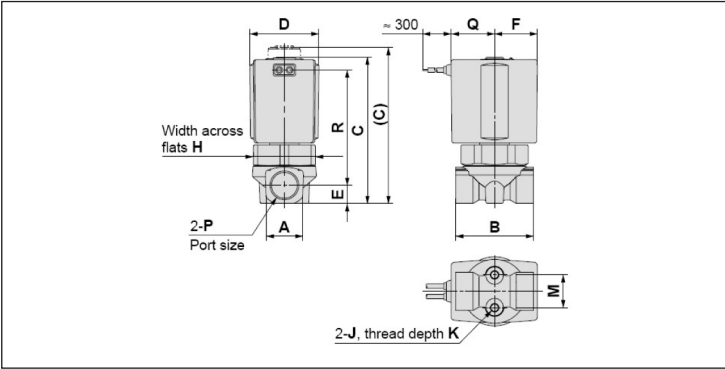


3 Installation (continued)

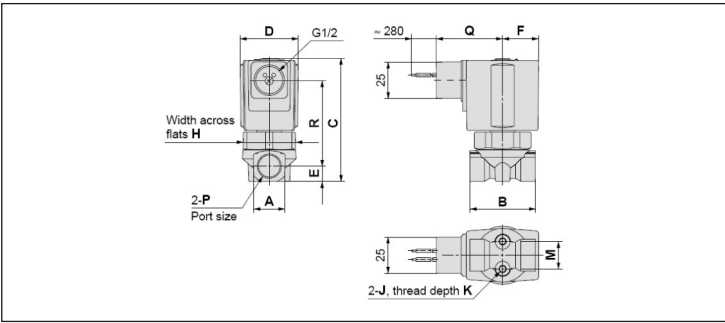
Connection threads	Proper tightening torque N•m
Rc 1/8	7 to 9
Rc 1/4	12 to 14
Rc 3/8	22 to 24
Rc 1/2	28 to 30

3.3 Dimensions

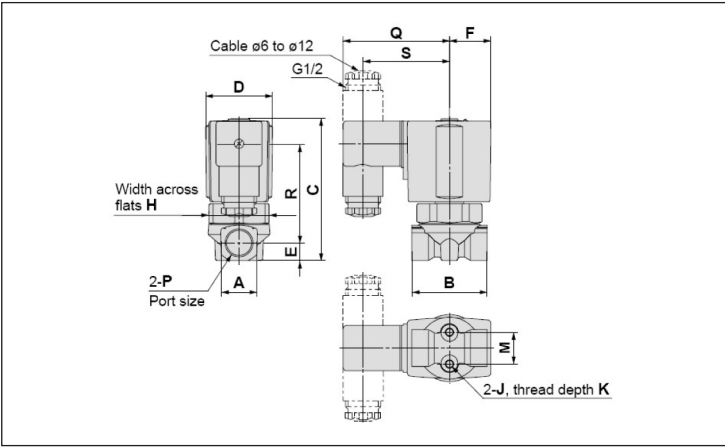
GROMMET



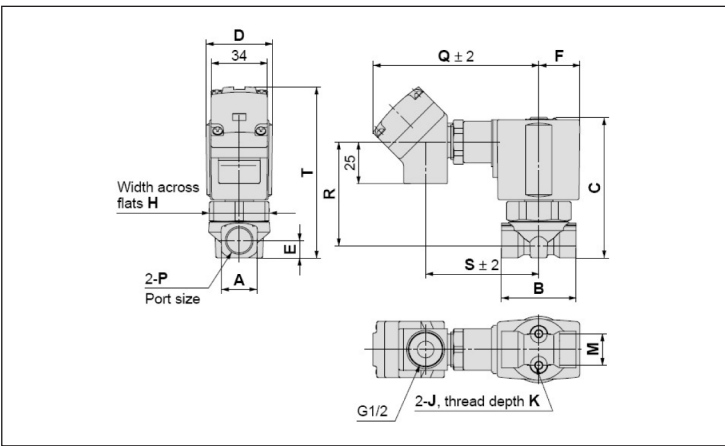
CONDUIT



DIN terminal



Conduit terminal



3 Installation (continued)

Model		Orifice size	Port size P	A	B	C	D	E	F	H	Bracket mounting		
N.C.	N.O.					Note 1)					J	K	M
VX21□0	VX21□2	Ø2, Ø3, Ø4.5	1/8, 1/4	18	40	68 (76)	30	9	19.5	27	M4	6	12.8
VX22□0	VX22□2	Ø3, Ø4.5, Ø6	1/4, 3/8	22	45	78 (86)		10.5	22.5	32	M5	8	19
VX22□0	-	Ø8, Ø10	1/4, 3/8, 1/2	30	50	85	-	14			M5	8	23
VX23□0	VX23□2	Ø3, Ø4.5, Ø6	1/4, 3/8	22	45	85.5 (93)		10.5	25	36	M5	8	19
VX23□0	-	Ø8, Ø10	1/4, 3/8, 1/2	30	50	92	-	14			M5	8	23

Electrical entry ^{Note 2)}

Model		Orifice size	Port size P	Grommet		Conduit		DIN terminal			Conduit terminal			
N.C.	N.O.			Q	R	Q	R	Q	R	S	Q	R	S	T
VX21□0	VX21□2	Ø2, Ø3, Ø4.5	1/8, 1/4	19.5	50	40	42.5	58.5	42	46.5	92	42.5	61	83.5
VX22□0	VX22□2	Ø3, Ø4.5, Ø6	1/4, 3/8	22.5	60	43	52.5	61.5	52	49.5	95	52.5	64	95
VX22□0	-	Ø8, Ø10	1/4, 3/8, 1/2		63		55.5		55			55.5		101.5
VX23□0	VX23□2	Ø3, Ø4.5, Ø6	1/4, 3/8	25.5	66	46	58.5	64	58	52	98	58.5	66.5	101
VX23□0	-	Ø8, Ø10	1/4, 3/8, 1/2		69		61.5		61			61.5		107.5

Electrical entry (Built-in full-wave rectifier type) ^{Note 2)}

Model		Orifice size	Port size P	Grommet		Conduit		DIN terminal			Conduit terminal			
N.C.	N.O.			Q	R	Q	R	Q	R	S	Q	R	S	T
VX21□0	VX21□2	Ø2, Ø3, Ø4.5	1/8, 1/4	30	46	48.5	41	65.5	42	53.5	100.5	41	69.5	82
VX22□0	VX22□2	Ø3, Ø4.5, Ø6	1/4, 3/8	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	93.5
VX22□0	-	Ø8, Ø10	1/4, 3/8, 1/2	33	59	51.5	54	68.5	55	56.5	103.5	54	72.5	100
VX23□0	VX23□2	Ø3, Ø4.5, Ø6	1/4, 3/8	36	62	54	57	71	58	59	106	57	75	99.5
VX23□0	-	Ø8, Ø10	1/4, 3/8, 1/2	36	65	54	60	71	61	59	106	60	75	106

Note 1) The figures in the parentheses are normally open (N.O.) type dimensions

Note 2) Add 1.5 mm to 'R' and 'T' dimensions for the N.O. spec.

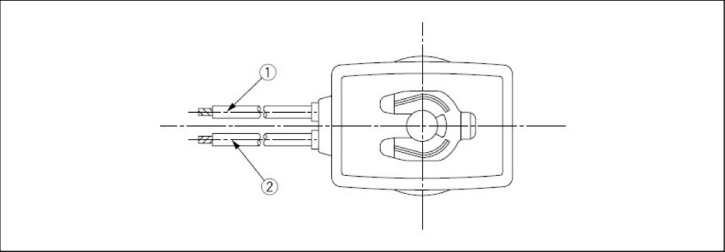
3.4 Electrical connection

CAUTION

GROMMET

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

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



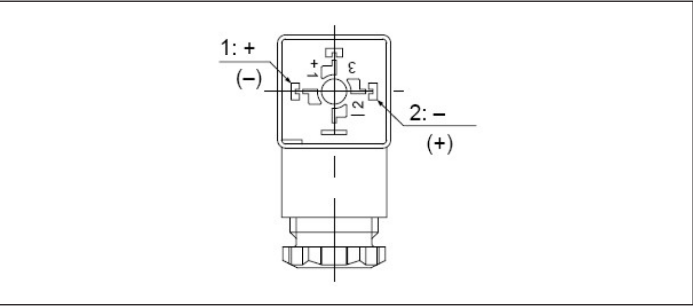
Rated voltage	Lead wire color	
	1	2
DC (Class B only)	Black	Red
100 VAC	Blue	Blue
200 VAC	Red	Red
Other AC	Gray	Gray

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

3 Installation (continued)

DIN TERMINAL (CLASS B ONLY)

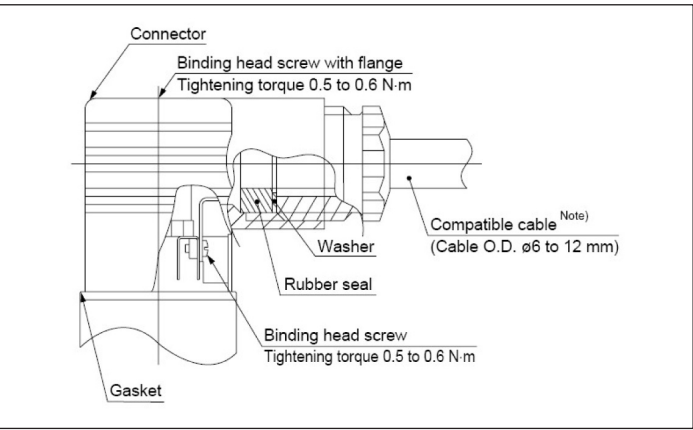
Internal connections are as shown below.



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

*There is no polarity

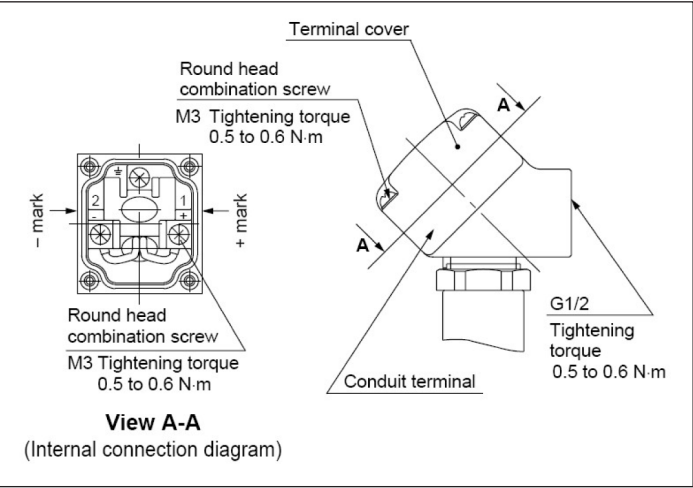
- Use compatible heavy duty cords with cable O.D. of Ø6 to 12mm
- Use the tightening torques below for each section.



Note) For a cable with an outside diameter of Ø9 to 12mm, remove the internal parts of the rubber seal before using.

CONDUIT TERMINAL

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

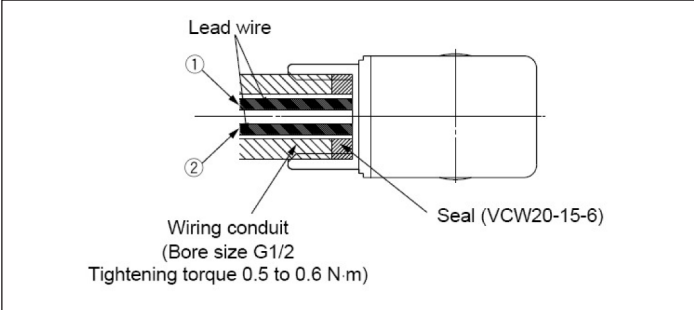


3 Installation (continued)

CONDUIT

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

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



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 D.C. (For the power saving type, there is polarity.)

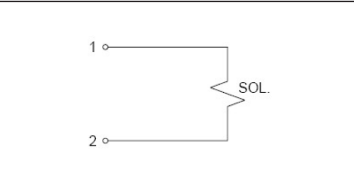
Description	Part no.
Seal	VCW20-15-6

Note) Please order separately

3 Installation (continued)

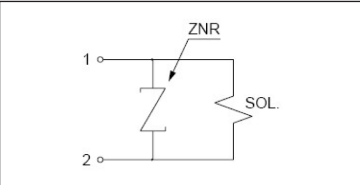
[AC, Class B/H Circuit]

Grommet, Conduit, Conduit terminal



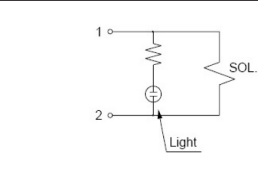
Without electrical option

Grommet, Conduit terminal



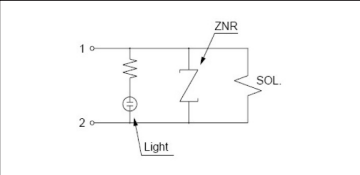
With surge voltage suppressor

Conduit terminal



With light

Conduit terminal

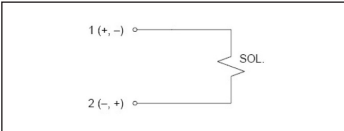


With light/surge voltage suppressor

3.5 Electrical circuits

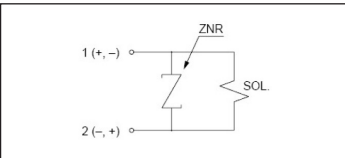
DC circuit

Grommet, conduit, Conduit terminal, DIN type



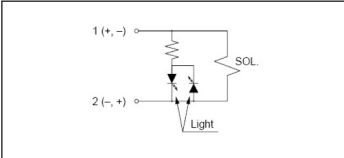
Without electrical option

Grommet, conduit terminal, DIN type



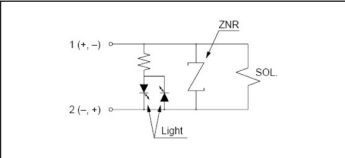
With surge voltage suppressor

Conduit terminal, DIN type



With light

Conduit terminal, DIN type

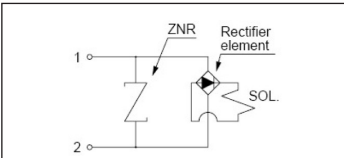


With light/surge voltage suppressor

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

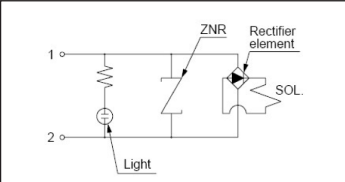
*For AC/Class B, the standard product is equipped with surge voltage suppressor.

Grommet, Conduit, Conduit terminal, DIN type



Without electrical option

Conduit terminal, DIN type



With light

4 Names / Functions of Individual Parts

WARNING

- Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.
- Shut down before maintenance, before attempting any kind of maintenance, make sure the supply pressure is shut off and all residual air pressure is released from the system to be worked on.
- Start up after maintenance: apply operating and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.
- 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.
- Demount the product.

Low frequency operation

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 every half year.

Filters and strainers

- Be careful regarding clogging of filters and strainers.
- Replace filter elements after one year of use, or earlier if the pressure drop reaches 0.1 MPa.
- Clean strainers when the pressure drop reaches 0.1MPa.

Lubrication

When using after lubricating, never forget to lubricate continuously.

Storage

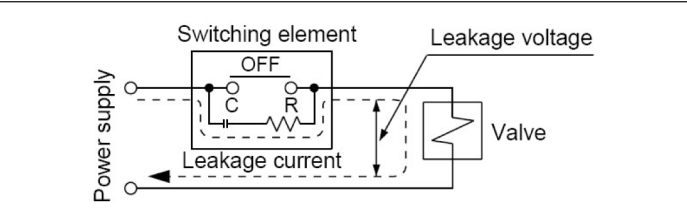
In case of long term storage after use with heated water, thoroughly remove all moisture to prevent rust and deterioration of rubber materials, etc.

Exhaust the drain from an air filter periodically.

5 Limitations of Use

WARNING

- Do not exceed any of the specifications laid out in section 2 of this document or the specific product catalogue.
- 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.



Low temperature operation

- The valve can be used in an ambient temperature of between -10 to -20°C, however take measures to prevent freezing or solidification of impurities, etc.
- When using valves for water applications in cold climates, the water can freeze. Take appropriate countermeasures to prevent water remaining in the tubing after the pump has stopped (e.g., by draining the water, etc). When heating by steam, be careful not to expose the coil portion to steam.
Installation of dryer, heat retaining of the body is recommended to prevent a freezing condition in which the dew point temperature is high and the ambient temperature is low, and the high flow runs.

6 Contacts

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FINLAND	(358) 207-513 513	PORTUGAL	(351) 2 610 89 22
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