2 Port Solenoid Valve/Air Operated Valve For Dust Collector

New

CE*

RoHS

New Applicable for high temperature

Fluid temperature
212°F (100°C)

Large port size is available.

Port size
50A to 100A

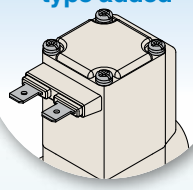
* [Excluding VXFC]

Enclosure

IP65*

* Electrical entry "Faston" type terminal is IP40.

Faston terminal type added



Flange type

Mounting can be changed depending on the piping conditions!

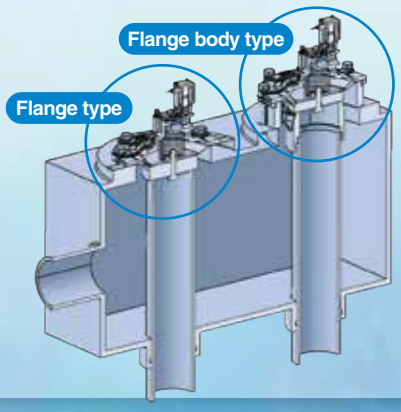
Flange body type

Orifice machining on the outlet is not necessary, **so piping man hour is reduced!**

Flange body I type
(Flange mounting type)

Flange body II type
(Through hole mounting type)

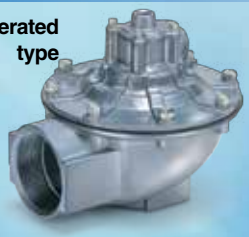
Installation Example



Direct piping type

Solenoid valve type

Air operated type



Dedicated controller for operation Series VXFC

Variations

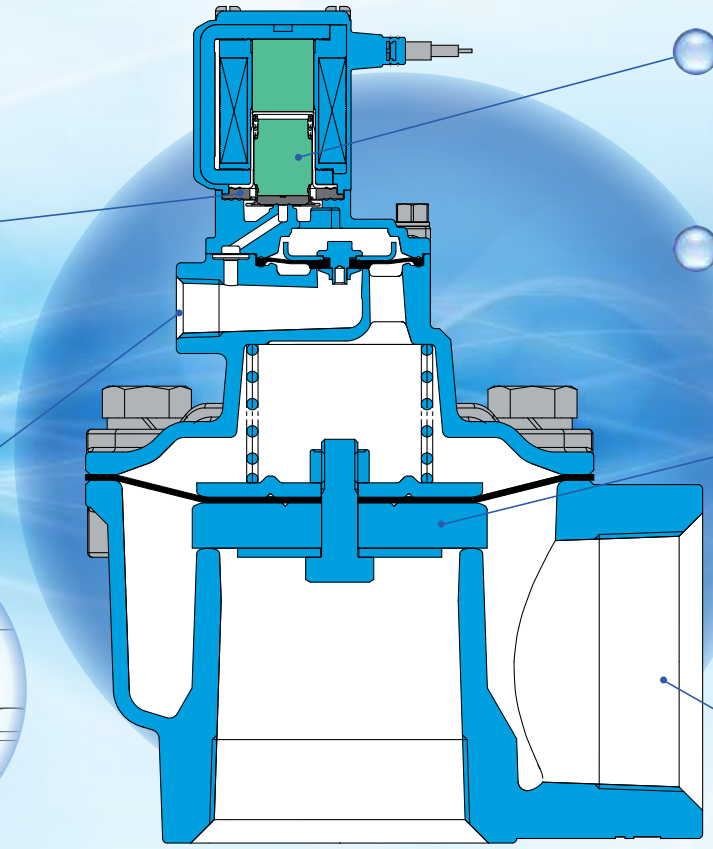
Type	Port size	Piping: Direct piping type	Piping: Flange type	Piping: Flange body I type (Flange mounting type)	Piping: Flange body II type (Through hole mounting type)	Electrical entry* (* Solenoid valve type only)
Solenoid valve type Air operated type	20A	●				Grommet DIN terminal Conduit terminal Conduit Faston terminal
	25A	●				
	40A	●				
	50A	●				
	65A	●	●			
	80A	●	●	●	●	
	90A		●			
	100A		●			

Series VXF2/VXFA2

SMC

CAT.NAS70-47B

2 Port Solenoid Valve/Air Operated Valve For Dust Collector *Series VXF2/VXFA2*

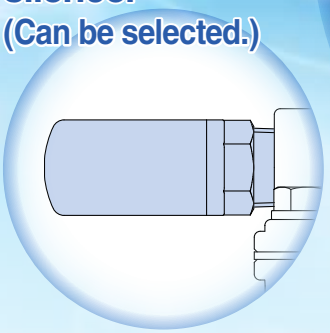


Enclosure IP65

Low-noise construction

Metal noise reduced by the rubber bumper

With/without silencer (Can be selected.)



Improved armature durability

Flame resistant UL94V-0 conformed

Diaphragm assembly material

(Diaphragm/Main valve)

- NBR/POM: For normal temperature
- FKM/PTFE: For high temperature

Piping variations

20A, 25A, 40A
50A, 65A, 80A
90A, 100A

Built-in full-wave rectifier type (AC specification)

Improved durability

Service life is extended by the special construction. (compared with current shading coil)

Reduced apparent power (for normal temperature)

11 VA →**7** VA (Size 21, 22, 24, 25, 26, 27, 28)

18 VA →**10** VA (Size 23)

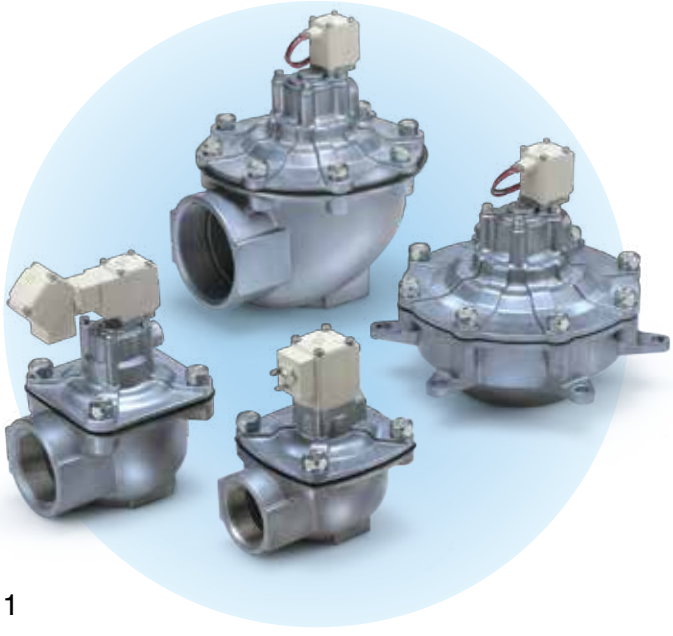
Noise reduction

Rectified to DC by the full-wave rectifier, resulting in a buzz noise reduction.

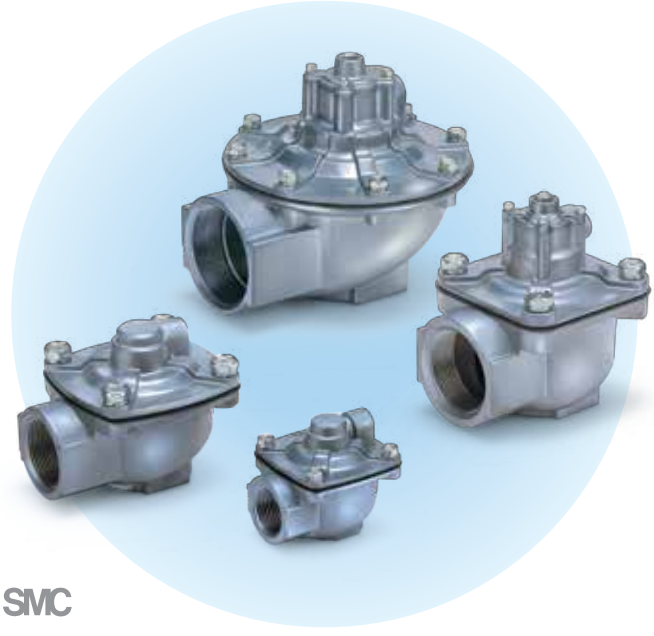
Low-noise construction

Specially constructed to reduce the metal noise during operation.

Solenoid Valve Type *Series VXF2*



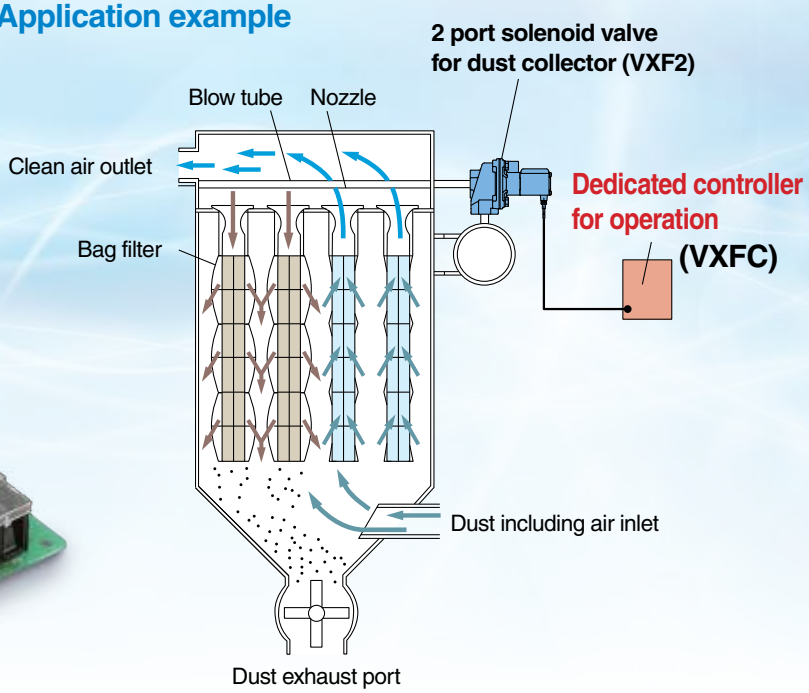
Air Operated Type *Series VXFA2*



The valve controller turns ON/OFF many valves for the dust controller.

Power supply voltage	**85 to 240 VAC 12 VDC, 24 to 48 VDC**
Number of output points	**6 output points, 10 output points**

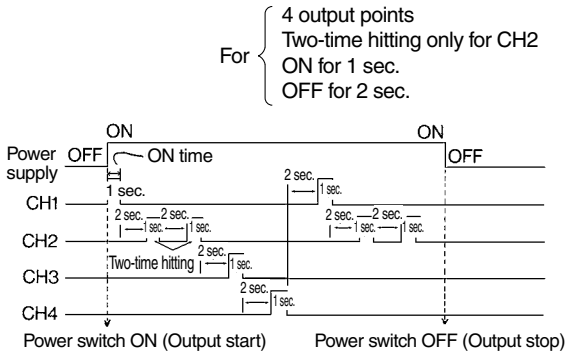
Application example



Two-time Hitting Function

A two-time hitting function is adopted to improve the bag filter dusting efficiency. Turn ON the DIP switch for two-time hitting (OFF for one-time hitting). (Effective up to the number of setting channels)

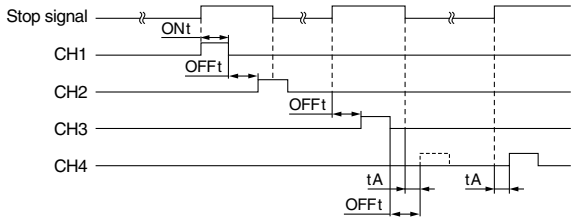
Operation sequence diagram



Interrupt Operation Function

Interrupting an operation from an external switch is possible using input signals.

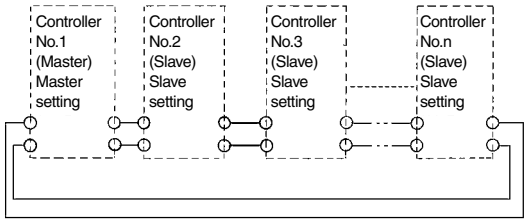
Operation sequence diagram



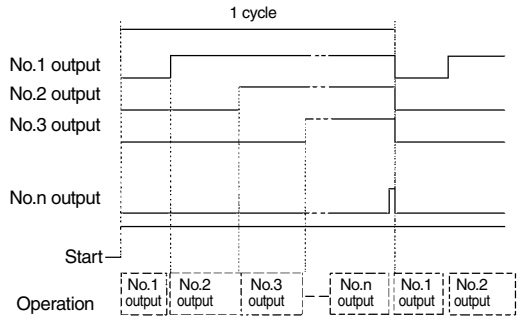
Cascade Connection (Multiple-board connection)

VXFC10: One board allows outputs at merely 10 output points max. But the points can be increased to 20 and 30 output points by connecting cascades.

Connection



Operation sequence diagram



Common Specifications/Selection Steps

Specifications

Solenoid Valve Type

Model		VXF21A□□	VXF22A□□	VXF23A□□	VXF24A□□	VXF25$^{A}_{B}$□□	VXF26$^{A}_{B}{}^{C}_{D}$□□	VXF27B□□	VXF28B□□
Orifice size	**mmø**	22	28	44	53	70	80	90	100
Fluid		Air							
Min. operating pressure		4.4 psi (0.03 MPa)			15 psi (0.1 MPa)				
Max. operating pressure		102 psi (0.7 MPa)							
Fluid temperature (for normal/high temperature)		14°F [–10°C] (No freezing) to 140°F [60°C]/14°F [–10°C] (No freezing) to 212°F [100°C]							
Ambient temperature		41 to 140°F (5 to 60°C)							
Coil insulation type (for normal/high temperature)		Class B/Class H							
Enclosure		IP65							
Allowable voltage fluctuation	**V**	±10% of rated voltage							
Apparent power (for normal/high temperature)	**AC (VA)**	7/9		10/12	7/9				
Power consumption (for normal temperature)	**DC (W)**	7		8	7				

Solenoid Coil Specifications

Normally Closed (N.C.)

DC Specification

(For normal temperature)

Size	Power consumption (W) Note 1)	Temperature rise Note 2)
Size 21, 22, 24, 25, 26, 27, 28	7	140°F (60°C)
Size 23	8	131°F (55°C)

Note 1) Power consumption, Apparent power: The value at ambient temperature of 68°F (20°C) and when the rated voltage is applied. (Variation: ±10%)

Note 2) 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.

AC Specification (Built-in Full-wave Rectifier Type)

(For normal/high temperature)

Size	Apparent power (VA) Note 1) Note 2)	Temperature rise Note 3)
Size 21, 22, 24, 25, 26, 27, 28	7/9	40°F (60°C)/212°F (100°C)
Size 23	10/12	158°F (70°C)/212°F (100°C)

Note 1) Power consumption, Apparent power: The value at ambient temperature of 68°F (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 because a rectifying circuit is used in the AC (Built-in full-wave rectifier type).

Note 3) Value at ambient temperature of 68°F (20°C) and when the rated voltage is applied. The value depends on the ambient environment. This is for reference.

Valve Leakage Rate

	Leakage rate Note)
Internal leakage	1000 cm^3/min or less
External leakage	100 cm^3/min or less

Note) Leakage is the value at ambient temperature 68°F (20°C)

Selection Steps

Step 1 **Select the port size.**

Item	Selection item	Symbol
Port size	20A (3/4)	1
	25A (1)	2
	40A (1 1/2)	3
	50A (2)	4
	65A (2 1/2)	5
	80A (3)	6
	90A (2 1/2)	7
	100A (4)	8

❶

VXF2 ❶[1] A A A

Step 2 **Select the piping system.**

Item	Selection item	Symbol
Piping	Direct piping type	A
	Flange type	B
	Flange body I type	C
	Flange body II type	D

❷

VXF2 1 ❷[A] A A

Step 3 **Diaphragm/Main valve material, Select whether the silencer is mounted.**

Item	Selection item	Symbol
Material With/without silencer	NBR/POM Without silencer	A
	NBR/POM With silencer	B
	FKM/PTFE Without silencer	C
	FKM/PTFE With silencer	D

❸

VXF2 1 A ❸[A] A

Step 4 **Select electrical specification.**

Item	Voltage/Electrical entry	Symbol
Electrical specification	Grommet 24 VDC	A

❹

VXF2 1 A A ❹[A]

Step 5 **For other special options, refer to page 7.**

How to Order

Solenoid Valve Type **VXF2** **1** **A** **A** **A**

Port size

Symbol	Port size
1	20A
2	25A
3	40A
4	50A
5	65A
6	80A
7	90A
8	100A

Piping

Symbol	Piping
A	Direct piping type
A	Direct piping type
B	Flange type
A	Direct piping type
B	Flange type
C	Flange body I type
D	Flange body II type
B	Flange type

Material – With/without silencer, Fluid temperature

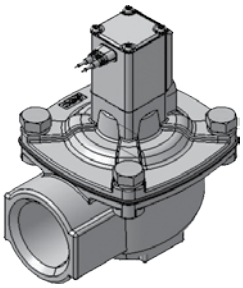
Symbol	Diaphragm/ Main valve material	With/without silencer	Fluid temperature
A	NBR/POM	Without	For normal temperature (Max. 140°F [60°C])
B	NBR/POM	With	
C	FKM/PTFE	Without	For high temperature (Max. 212°F [100°C])
D	FKM/PTFE	With	

Voltage – Electrical entry

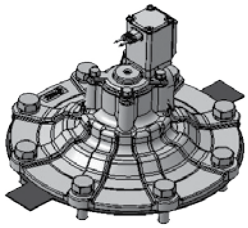
Symbol	Voltage	Electrical entry
A	24 VDC	Grommet
B	100 VAC	Grommet Note 2) (with surge voltage suppressor)
C	110 VAC	
D	200 VAC	
E	230 VAC	
F	24 VDC	
G	24 VDC	DIN terminal (with surge voltage suppressor)
H	100 VAC	
J	110 VAC	
K	200 VAC	
L	230 VAC	
M	24 VDC	Conduit terminal (with surge voltage suppressor)
N	100 VAC	
P	110 VAC	
Q	200 VAC	
R	230 VAC	
S	24 VDC	Conduit Note 2) (with surge voltage suppressor)
T	100 VAC	
U	110 VAC	
V	200 VAC	
W	230 VAC	
Y	24 VDC	Faston terminal
Z	Other voltages	

Note 1) For high temperature type, DC specification, DIN terminal and Faston terminal are not available.

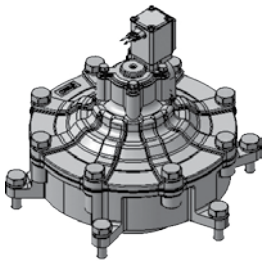
Note 2) For high temperature type, the surge voltage suppressor for grommet or conduit is attached in the middle of lead wire.



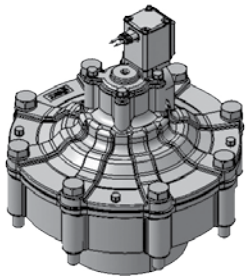
A: Direct piping type



B: Flange type



C: Flange body I type (Flange mounting type)



D: Flange body II type (Through hole mounting type)

For other special options, refer to page 7.

Special voltage	24 VAC
	48 VAC
	220 VAC
	240 VAC
	12 VDC
DIN terminal with light	
With conduit terminal and light	
G thread	
NPT thread	

Common Specifications/Selection Steps

Specifications

Air Operated Type

Model	VXFA21AA□	VXFA22AA□	VXFA23AA□	VXFA24A$^{A}_{B}$□	VXFA25(A,B)$^{A}_{B}$□	VXFA26(A,B,C,D)$^{A}_{B}$□	VXFA27B$^{A}_{B}$□	VXFA28B$^{A}_{B}$□
Orifice size mmø	22	28	44	53	70	80	90	100
Fluid	Air							
Min. operating pressure	4.4 psi (0.03 MPa)			15 psi (0.1 MPa)				
Max. operating pressure	102 psi (0.7 MPa)							
Fluid temperature (for normal/high temperature)	14°F (–10°C) (No freezing) to 140°F (60°C)/14°F (–10°C) (No freezing) to 212°F (100°C)							
Ambient temperature	41 to 140°F (5 to 60°C)							

Valve Leakage Rate

	Leakage rate Note)
Internal leakage	1000 cm^3/min or less
External leakage	100 cm^3/min or less

Note) Leakage is the value at ambient temperature 68°F (20°C)

Selection Steps

Step 1 **Select the port size.**

Item	Selection item	Symbol
Port size	20A(3/4)	1
	25A(1)	2
	40A(1 1/2)	3
	50A(2)	4
	65A(2 1/2)	5
	80A(3)	6
	90A(2 1/2)	7
	100A(4)	8

❶

VXFA2 ❶ **1** A A

Step 2 **Select the piping system.**

Item	Selection item	Symbol
Piping	Direct piping type	A
	Flange type	B
	Flange body I type	C
	Flange body II type	D

❷

VXFA2 1 ❷ **A** A

Step 3 **Diaphragm/Main valve material, Select whether the silencer is mounted.**

Item	Selection item	Symbol
Material With/without silencer	NBR/POM Without silencer	A
	NBR/POM With silencer	B
	FKM/PTFE Without silencer	C
	FKM/PTFE With silencer	D

❸

VXFA2 1 A ❸ **A**

Step 4 **For other special options, refer to page 7.**

RoHS

How to Order

Air Operated Type **VXFA2** **1** **A** **A**

Port size

Symbol	Port size
1	20A
2	25A
3	40A
4	50A
5	65A
6	80A
7	90A
8	100A

Piping

Symbol	Piping
A	Direct piping type
B	Flange type
C	Flange body I type
D	Flange body II type

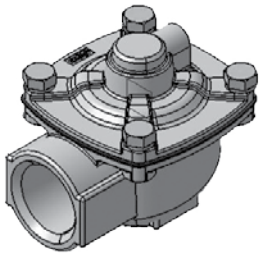
Material – With/without silencer, Fluid temperature

Symbol	Diaphragm/ Main valve material	With/without silencer*	Fluid temperature
A	NBR/POM	Without	For normal temperature (Max. 140°F [60°C])
B	NBR/POM	With	
C	FKM/PTFE	Without	For high temperature (Max. 212°F [100°C])
D	FKM/PTFE	With	

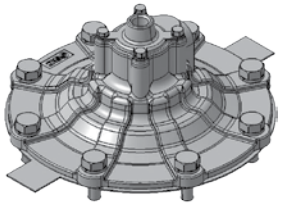
* For 40A or less, silencer cannot be selected.

For other special options, refer to page 7.

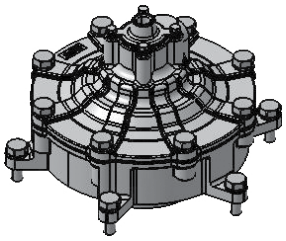
G thread
NPT thread



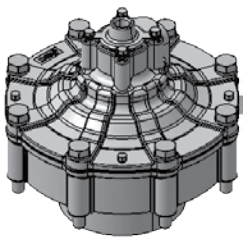
A: Direct piping type



B: Flange type



C: Flange body I type (Flange mounting type)



D: Flange body II type (Through hole mounting type)

⚠Caution
Selection of Pilot Valve

When selecting the air operated type VXFA2 series, select the 2 port valve with the stated orifice diameter or more.

VXFA21 to VXFA23: ø5 mm or more
VXFA24 to VXFA28: ø4 mm or more

Other Special Options

Electrical Option
(Special voltage, with light)

VXF2 1 A A Z 1A

- **Enter standard product number.**
- **Electrical option**
- **Special voltage – Electrical entry/Electrical option**

Specifications	Symbol	Voltage	Electrical entry
Special voltage	**1A**	48 VAC	Grommet Note 2) (with surge voltage suppressor)
	1B	220 VAC	
	1C	240 VAC	
	1U	24 VAC	
	1D	12 VDC	Grommet
	1E	12 VDC	Grommet (with surge voltage suppressor)
	1F	48 VAC	DIN terminal (with surge voltage suppressor)
	1G	220 VAC	
	1H	240 VAC	
	1V	24 VAC	
	1J	12 VDC	
	1K	48 VAC	Conduit terminal (with surge voltage suppressor)
	1L	220 VAC	
	1M	240 VAC	
	1W	24 VAC	
	1N	12 VDC	
	1P	48 VAC	Conduit Note 2) (with surge voltage suppressor)
	1Q	220 VAC	
	1R	240 VAC	
	1Y	24 VAC	
	1S	12 VDC	
	1T	12 VDC	Faston terminal
With light	**2A**	24 VDC	DIN terminal (with surge voltage suppressor)
	2B	100 VAC	
	2C	110 VAC	
	2D	200 VAC	
	2E	230 VAC	
	2F	48 VAC	
	2G	220 VAC	
	2H	240 VAC	
	2V	24 VAC	
	2J	12 VDC	
	2K	24 VDC	Conduit terminal (with surge voltage suppressor)
	2L	100 VAC	
	2M	110 VAC	
	2N	200 VAC	
	2P	230 VAC	
	2Q	48 VAC	
	2R	220 VAC	
	2S	240 VAC	
	2W	24 VAC	
	2T	12 VDC	
Without DIN connector	**3A**	24 VDC	DIN terminal (with surge voltage suppressor)
	3B	100 VAC	
	3C	110 VAC	
	3D	200 VAC	
	3E	230 VAC	
	3F	48 VAC	
	3G	220 VAC	
	3H	240 VAC	
	3V	24 VAC	
	3J	12 VDC	

Note 1) For high temperature type, DC specification, DIN terminal and Faston terminal are not available.

Note 2) For high temperature type, the surge voltage suppressor for grommet or conduit is attached in the middle of lead wire.

Other Option
(Port thread)

VXF(A)2 1 A A A ☐

- **Enter standard product number.**
- **Piping option Port thread**

Symbol	Port thread
A	G
B	NPT

∗ Enter symbols in the order below when ordering an electrical option and other option.

Example) Solenoid valve type

VXF2 1 A A Z 1A A

- **Electrical option**
- **Other option**

Series VXF2/VXFA2
Valve Characteristics

The valve characteristics data was measured with the outlet piping length. The valve characteristics vary depending on the tank capacity, air supply, set pressure, outlet conditions (nozzle size, quantity, piping length), so please use these values as a guideline.

1. Response Time, Start-up Speed

VXF2 Type

Measuring conditions
Test circuit..... Refer to the circuit below.

Test sample···**VXF21A** (Port size 3/4) **VXF22A** (Port size 1)
VXF23A (Port size 1 1/2) **VXF24A** (Port size 2)
VXF25A, B (Port size 2 1/2) **VXF26A, B, C, D** (Port size 3)
VXF27B (Port size 3 1/2) **VXF28B** (Port size 4)

Air tank capacity···**VXF21 to VXF22**: 100 L
VXF23 to VXF24: 200 L
VXF25 to VXF28: 1000 L

Energizing time·····150 msec

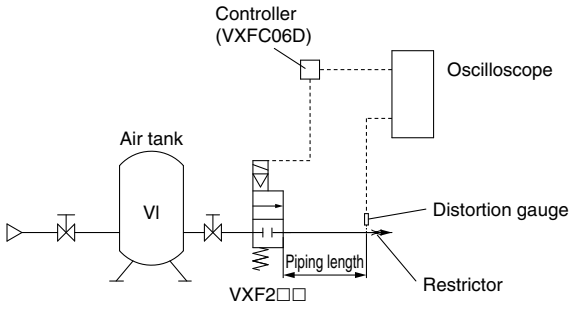
Rated voltage·····24 VDC

Outlet piping length·····500 mm

Thread size connected to the outlet piping end

VXF21: Rc3/8 **VXF22**: Rc1/2
VXF23: Rc3/4 **VXF24**: Rc1
VXF25: Rc1 1/2 **VXF26**: Rc2
VXF27: Rc2 1/2 **VXF28**: Rc3

How to calculate
1. Set the tank pressure to 73 psi (0.5 MPa).
2. Close the stop valve on the inlet of the tank.
3. Energize the valve and read the pressure wave on the outlet.



VXF2□ Test circuit

VXFA2 Type

Measuring conditions
Test circuit..... Refer to the circuit below.

Test sample···**VXFA21A** (Port size 3/4) **VXFA22A** (Port size 1)
VXFA23A (Port size 1 1/2) **VXFA24A** (Port size 2)
VXFA25A, B (Port size 2 1/2) **VXFA26A, B, C, D** (Port size 3)
VXFA27B (Port size 3 1/2) **VXFA28B** (Port size 4)

Air tank capacity···**VXFA21 to VXFA22**: 100 L
VXFA23 to VXFA24: 200 L
VXFA25 to VXFA28: 1000 L

Energizing time·····150 msec

Pilot valve
VX232AA (Orifice, ø5, Rated voltage 24 VDC)

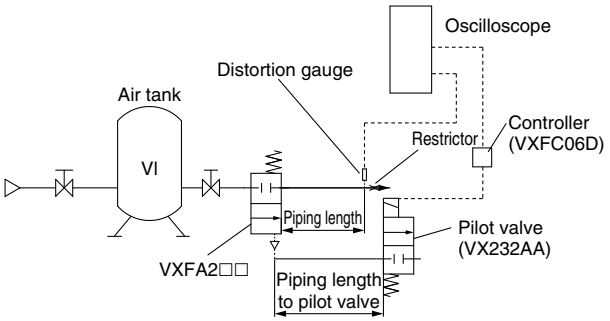
Piping length to the pilot valve
500 mm, 1000 mm, 1500 mm (ø10, t = 1.5)

Outlet piping length·····500 mm

Thread size connected to the outlet piping end

VXFA21: Rc3/8 **VXFA22**: Rc1/2
VXFA23: Rc3/4 **VXFA24**: Rc1
VXFA25: Rc1 1/2 **VXFA26**: Rc2
VXFA27: Rc2 1/2 **VXFA28**: Rc3

How to calculate
1. Set the tank pressure to 73 psi (0.5 MPa).
2. Close the stop valve on the inlet of the tank.
3. Energize the pilot valve and read the pressure wave on the outlet.



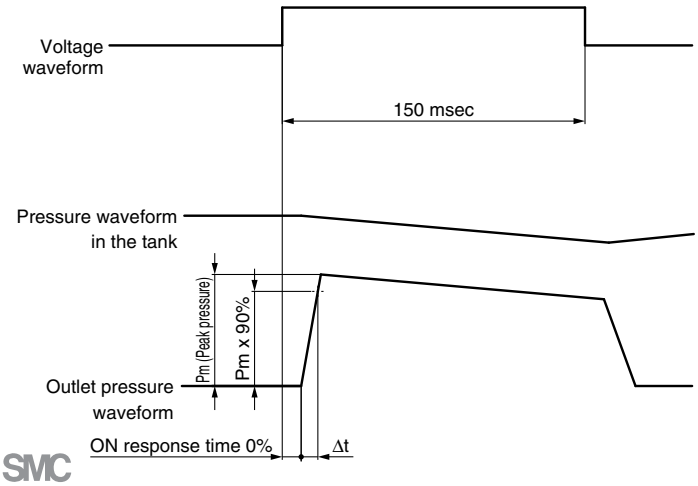
VXFA2□ Test circuit

ON response time
Time required until the valve is switched after it is energized (Time required until pressure is released to the outlet)

Start-up speed
Speed until the valve is switched after being energized and the pressure released to the outlet reaches 90% of the peak pressure

Note) For air operated type, the longer the piping length to the pilot valve, the longer the ON response time will be. If the piping length is extended more, the valve might not be opened due to piping capacity and resistance in the piping, so keep the piping length to the pilot valve as short as possible.

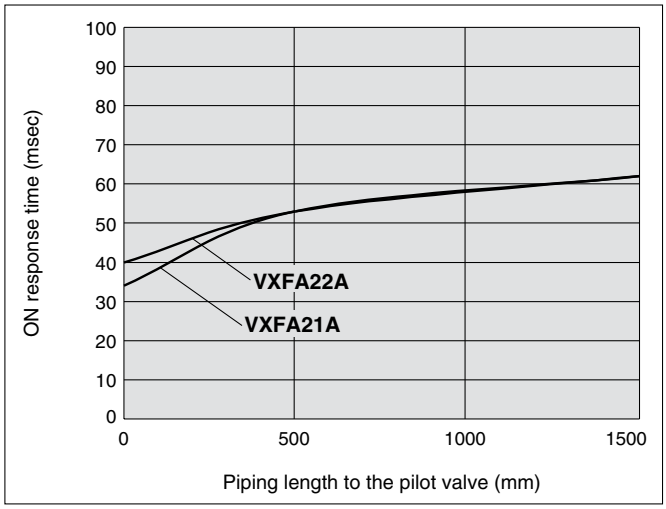
How to Read the Data

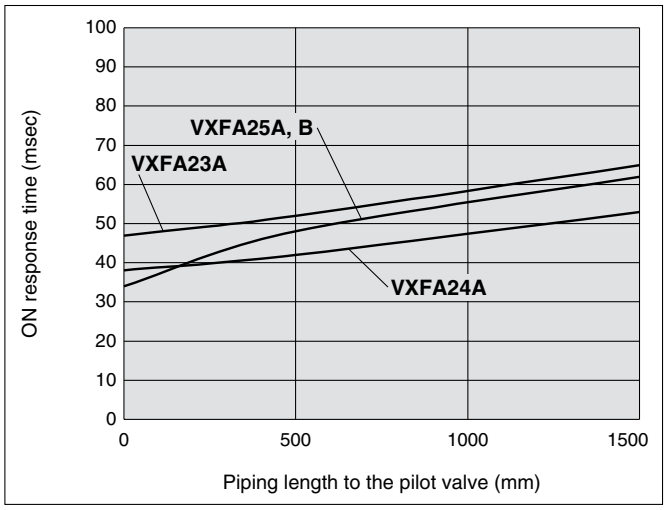


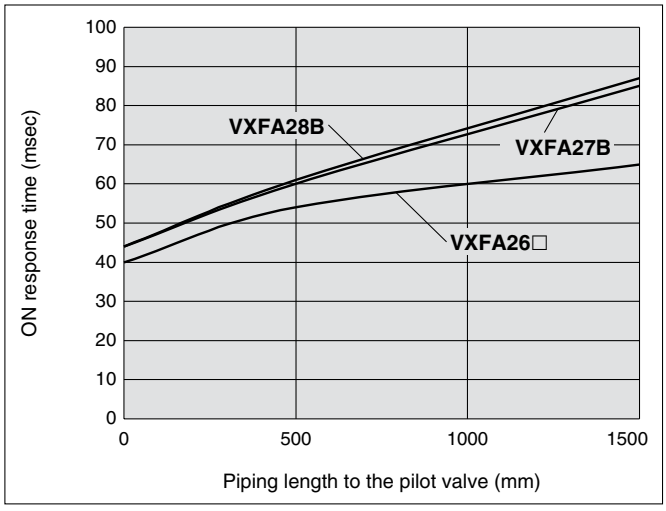
1. Response Time, Start-up Speed

For VXF2/solenoid valve type, the piping length to the pilot valve should be 0 mm.

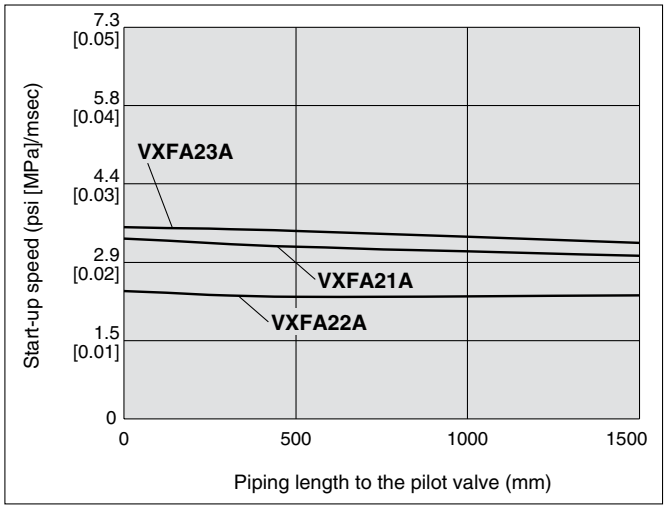
ON Response Time

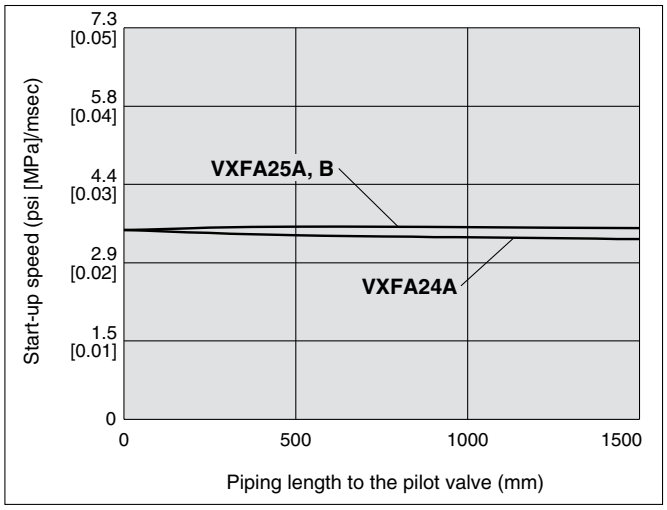


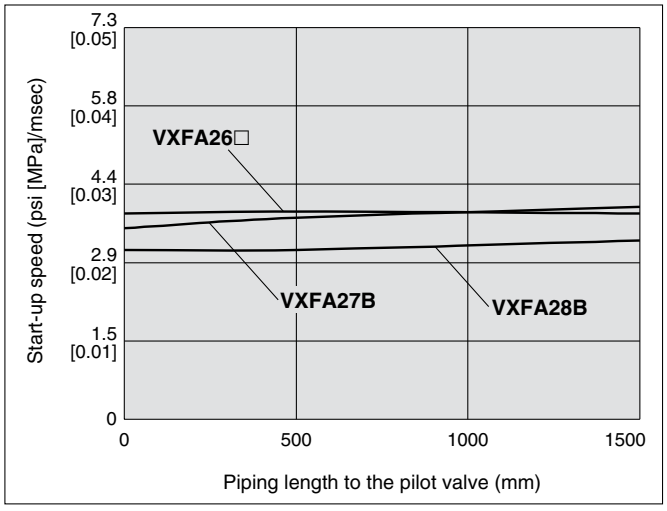




Start-up Speed







2. Discharge Volume

For VXF2/solenoid valve type, the piping length to the pilot valve should be 0 mm.

VXF2 Type

Measuring conditions
Test circuit..... Refer to the circuit below.

Test sample···**VXF21A** (Port size 3/4) **VXF22A** (Port size 1)
VXF23A (Port size 1 1/2) **VXF24A** (Port size 2)
VXF25A, B (Port size 2 1/2) **VXF26A, B, C, D** (Port size 3)
VXF27B (Port size 3 1/2) **VXF28B** (Port size 4)

Air tank capacity···**VXF21 to VXF22**: 100 L
VXF23 to VXF24: 200 L
VXF25 to VXF28: 1000 L

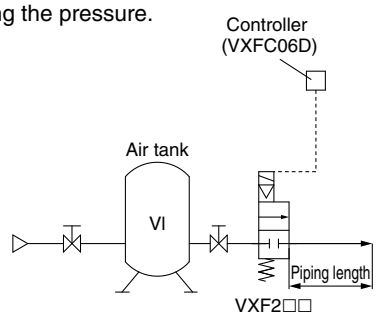
Energizing time·····150 msec

Rated voltage·····24 VDC

Outlet piping length·····500 mm

Thread size connected to the outlet piping end·····Open

How to calculate
1. Set the tank pressure to 73 psi (0.5 MPa).
2. Close the stop valve on the inlet of the tank.
3. Energize the valve and read the tank pressure after releasing the pressure.



VXF2□ Test circuit

VXFA2 Type

Measuring conditions
Test circuit ..... Refer to the circuit below.

Test sample···**VXFA21A** (Port size 3/4) **VXFA22A** (Port size 1)
VXFA23A (Port size 1 1/2) **VXFA24A** (Port size 2)
VXFA25A, B (Port size 2 1/2) **VXFA26A, B, C, D** (Port size 3)
VXFA27B (Port size 3 1/2) **VXFA28B** (Port size 4)

Air tank capacity···**VXFA21 to VXFA22**: 100 L
VXFA23 to VXFA24: 200 L
VXFA25 to VXFA28: 1000 L

Energizing time·····150 msec

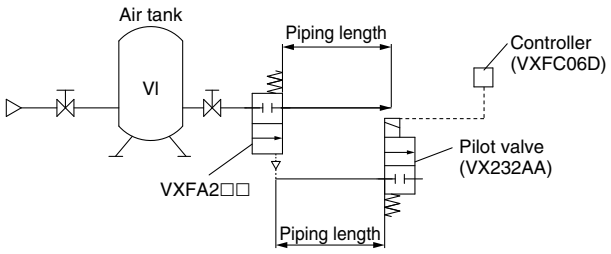
Pilot valve
VX232AA (Orifice, ø5, Rated voltage 24 VDC)

Piping length to the pilot valve
500 mm, 1000 mm, 1500 mm (ø10, t = 1.5)

Outlet piping length·····500 mm

Thread size connected to the outlet piping end·····Open

How to calculate
1. Set the tank pressure to 73 psi (0.5 MPa).
2. Close the stop valve on the inlet of the tank.
3. Energize the pilot valve and read the tank pressure after releasing the pressure.



VXFA2□ Test circuit

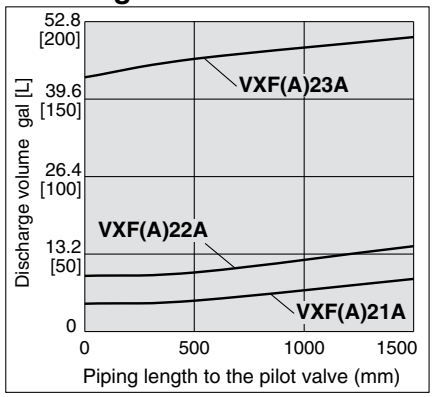
Discharge volume: Valve discharge volume per energizing time

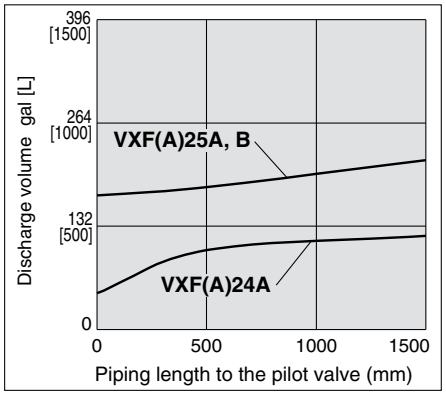
Conversion of the discharge volume
Calculate the discharge volume by reading the tank pressure after the valve starts the operation.

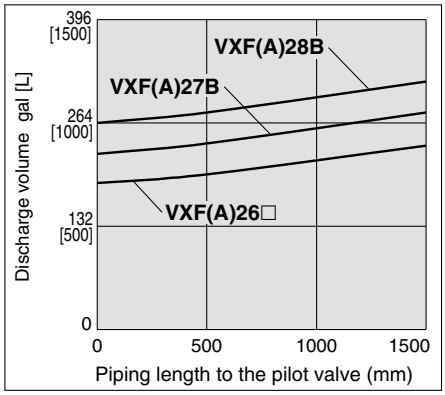
Conversion equation
$V_0 = (P_1 \times V_1 - P_2 \times V_1)/P_0$
V_0: Discharge volume L
P_1: Tank initial pressure MPa (Absolute pressure)
V_1: Tank capacity L
P_2: Tank pressure after release MPa (Absolute pressure)

Note 1) If the regulator or the restrictor is installed right before the IN side of the valve, the valve may oscillate when it is turned off. Keep the regulator or the restrictor away from the valve for at least 1 m or change restriction.
Note 2) The dust collector valve is a large flow control valve in which air is discharged with high speed to clean the bag filter with impact wave. Tank capacity should be sufficient to secure impact wave and discharge flow rate. If the air tank capacity is insufficient, response delay of valve, malfunctions or oscillation may occur.

Discharge Volume





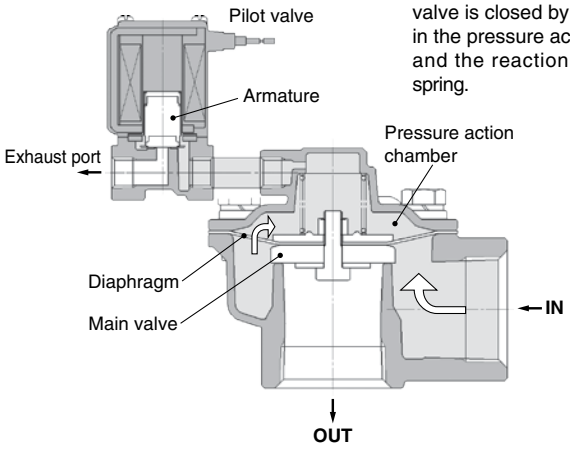


Working Principle

VXFA21, 22, 23

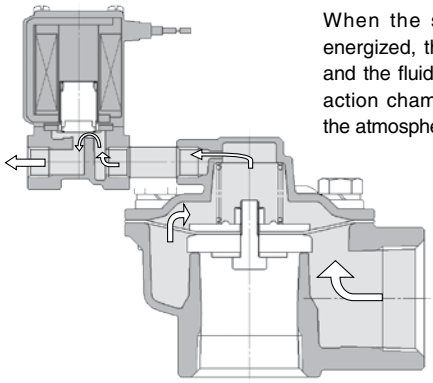
De-energized

The fluid enters from the IN goes through the supply orifice of the diaphragm to fill the pressure action chamber. Main valve is closed by the pressure in the pressure action chamber and the reaction force of the spring.



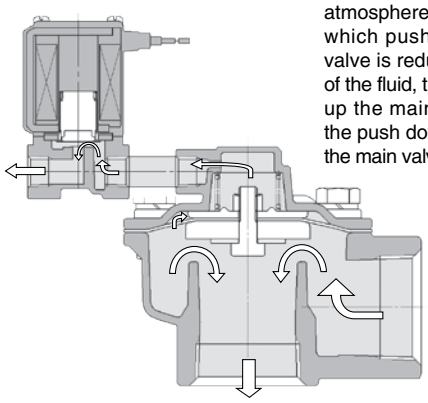
Right after energized

When the solenoid valve is energized, the armature opens and the fluid filling the pressure action chamber is released to the atmosphere.



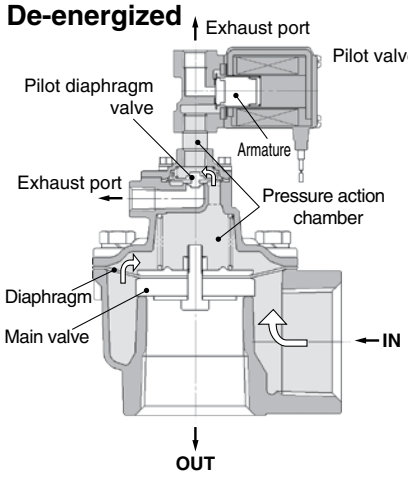
Energized (Main valve open)

The pressure in the pressure action chamber decreases by releasing the fluid to the atmosphere. Because the force which pushes down the main valve is reduced by the release of the fluid, the force that pushes up the main valve overcomes the push down force and opens the main valve.



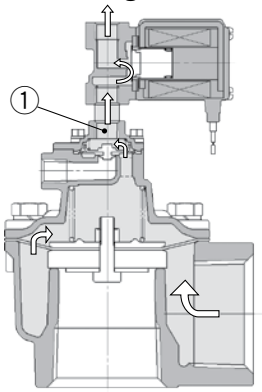
VXFA24 to 28 (Double diaphragm)

De-energized



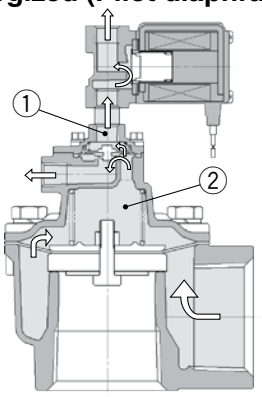
The fluid enters from the IN goes through the supply orifice of the diaphragm and the pilot diaphragm valve to fill the pressure action chambers. The main valve and pilot diaphragm valve are closed by the pressure in the pressure action chamber and the reaction force of the spring.

Right after energized



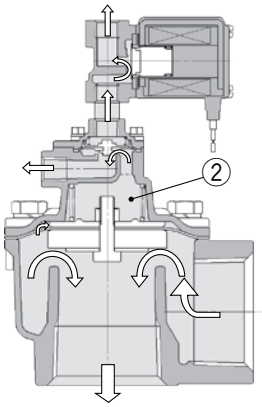
When the solenoid valve is energized, the armature opens and the fluid filling the pressure action chamber ① of the pilot diaphragm valve is released to the atmosphere.

Energized (Pilot diaphragm valve open)



The pressure in the pressure action chamber ① of the pilot diaphragm valve decreases by releasing the fluid to the atmosphere. Because the force which pushes down the pilot diaphragm valve is reduced by the release of the fluid, the force that pushes up the pilot diaphragm valve overcomes the push down force and opens the pilot diaphragm valve. Then, the fluid filling the pressure action chamber ② of the main valve is released to the atmosphere.

Energized (Main valve open)

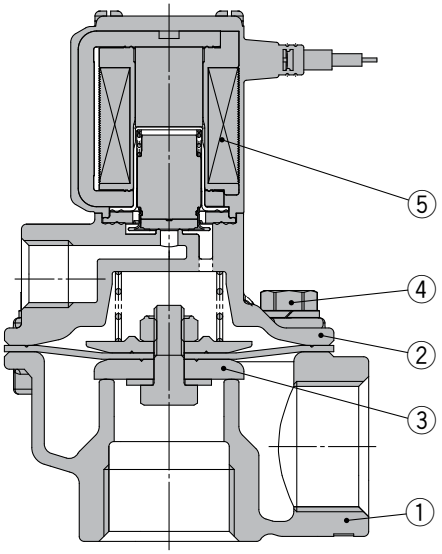


The pressure in the pressure action chamber ② of the main valve decreases by releasing the fluid to the atmosphere. Because the force which pushes down the main valve is reduced by the release of the fluid, the force that pushes up the main valve overcomes the push down force and opens the main valve.

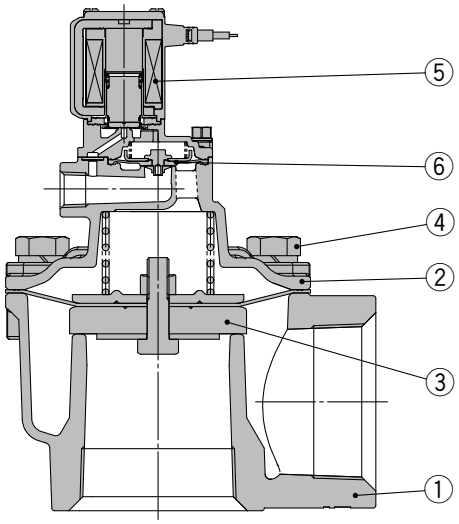
Construction

Solenoid Valve Type

VXF2$^{1}_{2}_{3}$A□□/Direct piping type

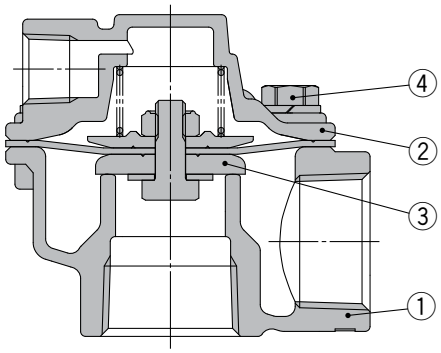


VXF2$^{4}_{5}_{6}$A□□/Direct piping type

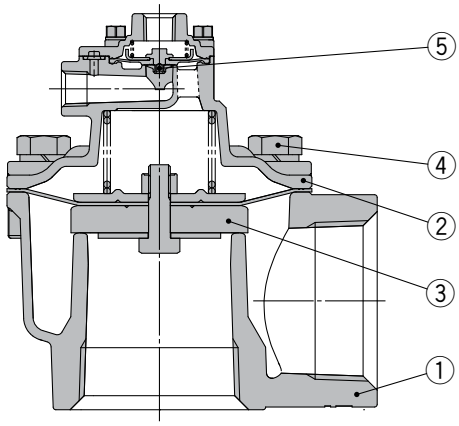


Air Operated Type

VXFA2$^{1}_{2}_{3}$A□□/Direct piping type



VXFA2$^{4}_{5}_{6}$A□□/Direct piping type



Component Parts ( ): For high temperature

No.	Description	Material
1	**Body**	ADC
2	**Bonnet**	ADC
3	**Diaphragm assembly**	NBR (FKM), POM (PTFE), Stainless steel
4	**Upset bolt**	FE
5	**Pilot valve assembly**	—
6	**Diaphragm assembly for pilot valve**	NBR (FKM), Stainless steel

Component Parts ( ): For high temperature

No.	Description	Material
1	**Body**	ADC
2	**Bonnet**	ADC
3	**Diaphragm assembly**	NBR (FKM), POM (PTFE), Stainless steel
4	**Upset bolt**	FE
5	**Diaphragm assembly for pilot valve**	NBR (FKM)

Replacement Parts (For normal temperature/high temperature)

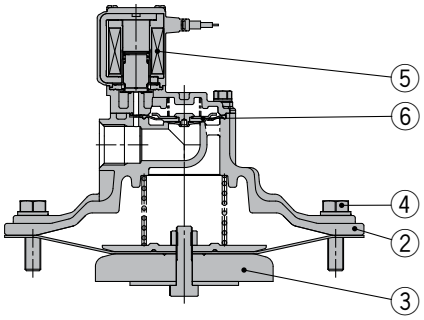
Model	Diaphragm assembly Note)	Diaphragm assembly for pilot valve		Silencer	
	Solenoid valve type	Solenoid valve type	Air operated type	Solenoid valve type	Air operated type
VXF(A)21A□(B)	VXF-21AA/VXF-21AC	—	—	AN20-02/EBKX-J2001-100	—
VXF(A)22A□(B)	VXF-22AA/VXF-22AC	—	—	AN20-02/EBKX-J2001-100	—
VXF(A)23A□(B)	VXF-23AA/VXF-23AC	—	—	AN20-02/EBKX-J2001-100	—
VXF(A)24A□(B)	VXF-24AA/VXF-24AC	VXD30-3A-1A/VXD30-3A-F-1A	VXD30-3A-2A/VXD30-3A-F-2A	AN20-02/EBKX-J2001-100	AN20-02/EBKX-J2001-100
VXF(A)25A□(B)	VXF-25AA/VXF-25AC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120	AN40-04/EBKX-J2003-120
VXF(A)26A□(B)	VXF-26AA/VXF-26AC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120	AN40-04/EBKX-J2003-120

Note) Spring is shipped together with the product, but not assembled.

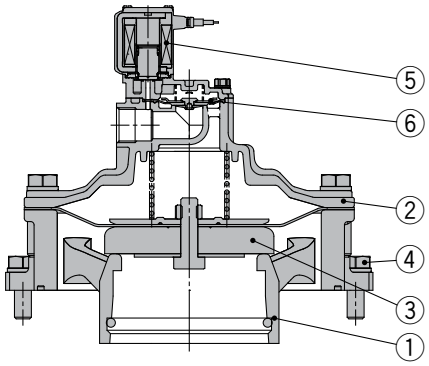
Construction

Solenoid Valve Type

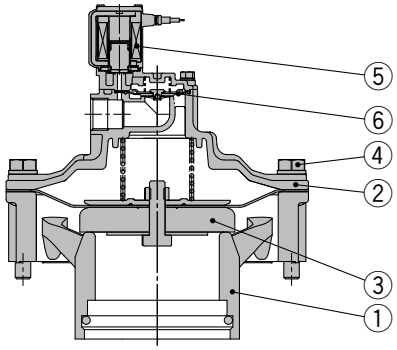
VXF2$\begin{smallmatrix}5\\6\\7\\8\end{smallmatrix}$B□□/Flange type



VXF26C□□/Flange body I type

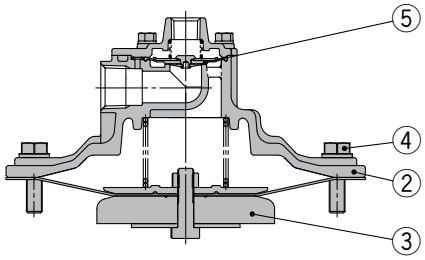


VXF26D□□/Flange body II type

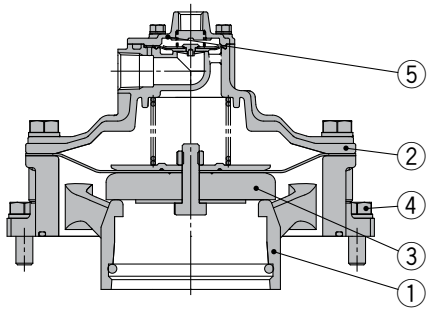


Air Operated Type

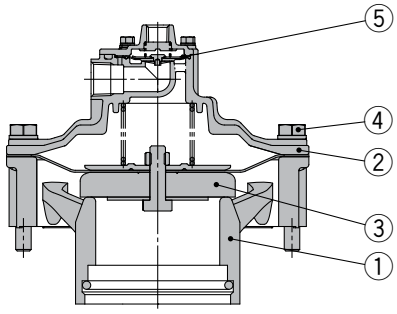
VXFA2$\begin{smallmatrix}5\\6\\7\\8\end{smallmatrix}$B□□/Flange type



VXFA26C□□/Flange body I type



VXFA26D□□/Flange body II type



Component Parts

( ): For high temperature

No.	Description	Material
1	**Body**	ADC
2	**Bonnet**	ADC
3	**Diaphragm assembly**	NBR (FKM), POM (PTFE), Stainless steel
4	**Upset bolt**	FE
5	**Pilot valve assembly**	—
6	**Diaphragm assembly for pilot valve**	NBR (FKM), Stainless steel

Component Parts

( ): For high temperature

No.	Description	Material
1	**Body**	ADC
2	**Bonnet**	ADC
3	**Diaphragm assembly**	NBR (FKM), POM (PTFE), Stainless steel
4	**Upset bolt**	FE
5	**Diaphragm assembly for pilot valve**	NBR (FKM), Stainless steel

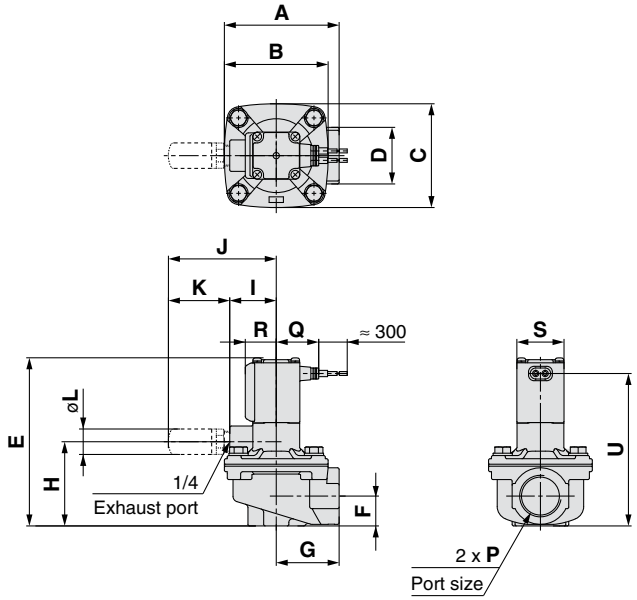
Replacement Parts (For normal temperature/high temperature)

Model	Diaphragm assembly Note)	Diaphragm assembly for pilot valve		Silencer
	Solenoid valve type	Solenoid valve type	Air operated type	Solenoid valve type
VXF(A)25BA(B)	VXF-25AA/VXF-25AC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120
VXF(A)26BA(B)	VXF-26BA/VXF-26BC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120
VXF(A)26CA(B)	VXF-26CA/VXF-26CC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120
VXF(A)26DA(B)	VXF-26CA/VXF-26CC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120
VXF(A)27BA(B)	VXF-27BA/VXF-27BC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120
VXF(A)28BA(B)	VXF-28BA/VXF-28BC	VXD40S-3A-1A/VXD40S-3A-F-1A	VXD40S-3A-2A/VXD40S-3A-F-2A	AN40-04/EBKX-J2003-120

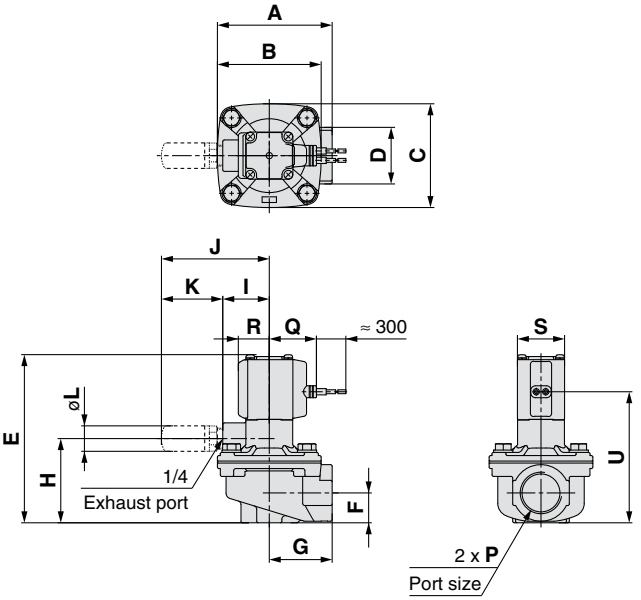
Note) Spring is shipped together with the product, but not assembled.

Dimensions: Direct piping type VXF21A□□□/22A□□□/23A□□□

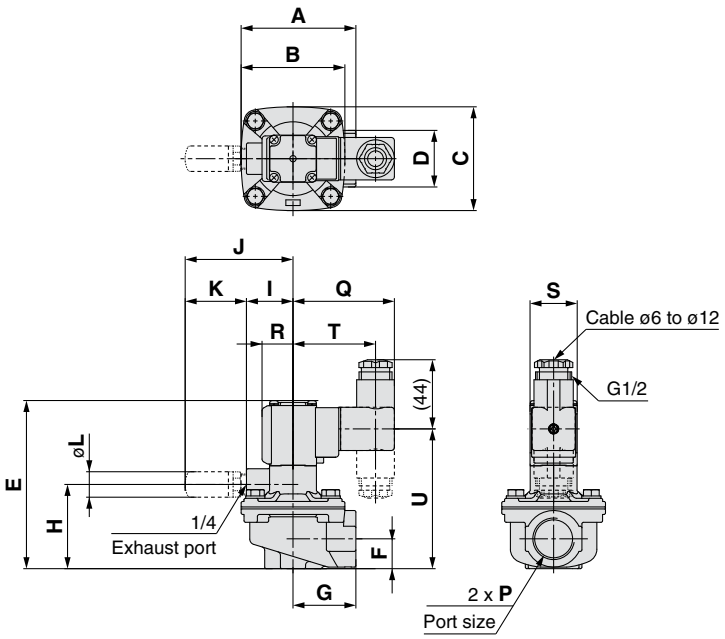
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Dimensions

(mm)

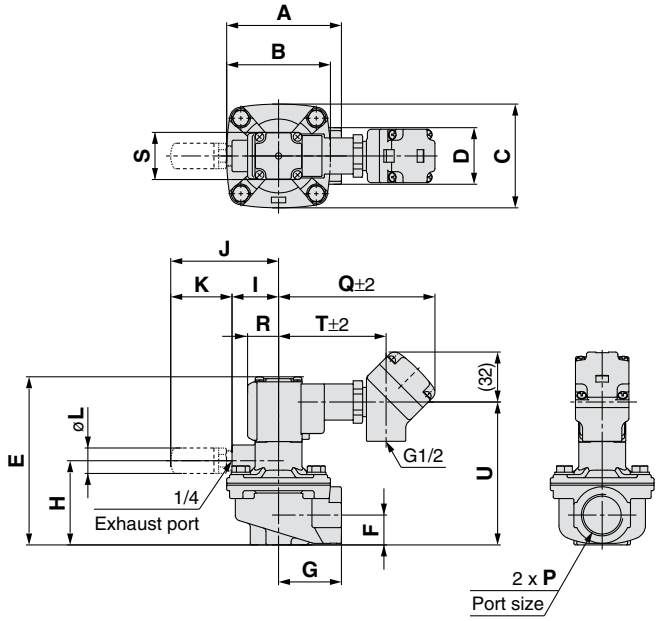
Model	Port size P	A	B	C	D	E	F	G	H	I	J	K	L	S
VXF21A□	3/4	73	66	66	36	107	19	40	53.5	29.5	68.5 (70.8)	39 (41.3)	16.5 (17)	30
VXF22A□	1	84	74	74	45	118	23.5	47	64.5	29.5	68.5 (70.8)	39 (41.3)	16.5 (17)	30
VXF23A□	1 1/2	132	110	110	63	154.5	35	77	95	32	71 (73.3)	39 (41.3)	16.5 (17)	35

Model	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
	Q	R	U	Q	R	U	Q	R	U	T
VXF21A□	27	20	97	30	20	83.5	64.5	20	89	52.5
VXF22A□	27	20	108	30	20	94.5	64.5	20	100	52.5
VXF23A□	29.5	22	143.5	32.5	22	130	67	22	135.5	55

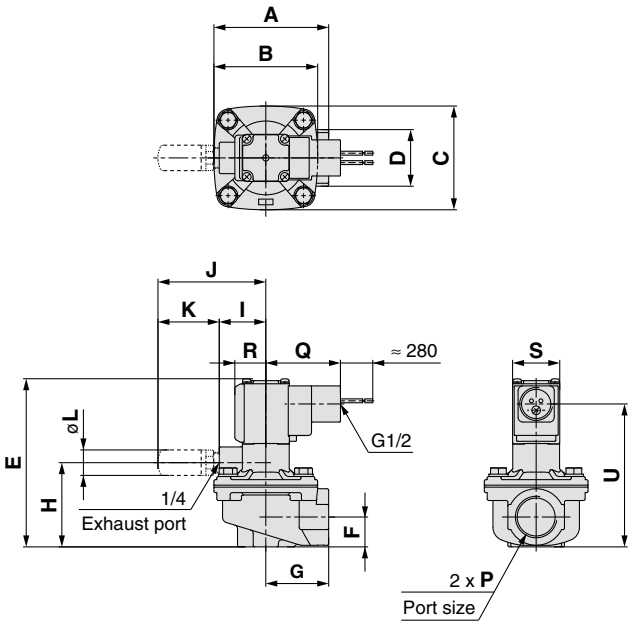
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Direct piping type VXF21A□□□/22A□□□/23A□□□

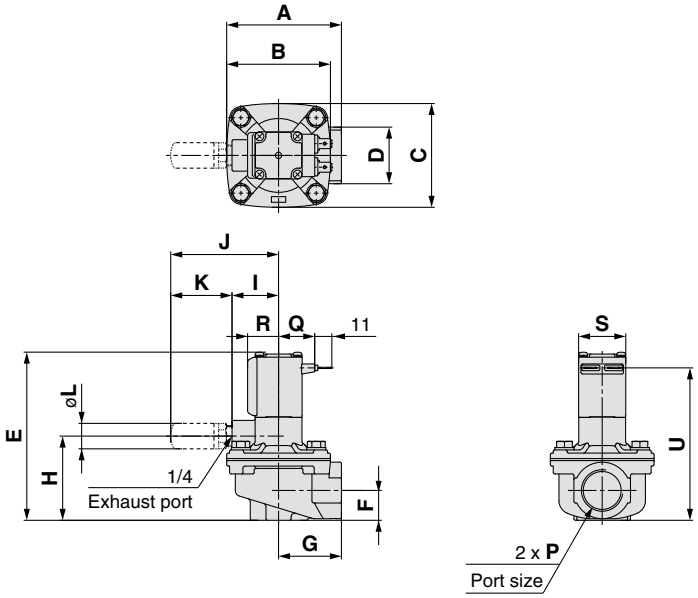
Conduit terminal



Conduit



Faston terminal



Dimensions

(mm)

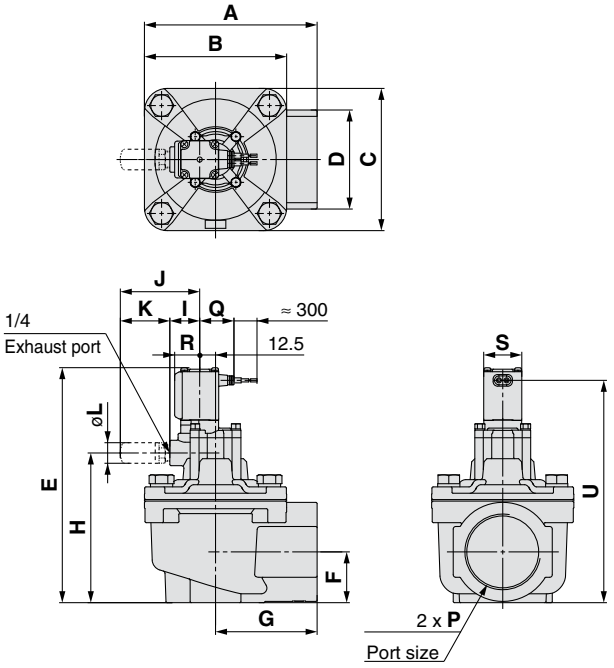
Model	Port size P	A	B	C	D	E	F	G	H	I	J	K	L	S
VXF21A□	3/4	73	66	66	36	107	19	40	53.5	29.5	68.5 (70.8)	39 (41.3)	16.5 (17)	30
VXF22A□	1	84	74	74	45	118	23.5	47	64.5	29.5	68.5 (70.8)	39 (41.3)	16.5 (17)	30
VXF23A□	1 1/2	132	110	110	63	154.5	35	77	95	32	71 (73.3)	39 (41.3)	16.5 (17)	35

Model	Conduit terminal				Conduit			Faston terminal		
	Q	R	U	T	Q	R	U	Q	R	U
VXF21A□	99.5	20	91	68.5	47.5	20	91	23	20	97
VXF22A□	99.5	20	102	68.5	47.5	20	102	23	20	108
VXF23A□	102	22	137.5	71	50	22	137.5	25.5	22	143.5

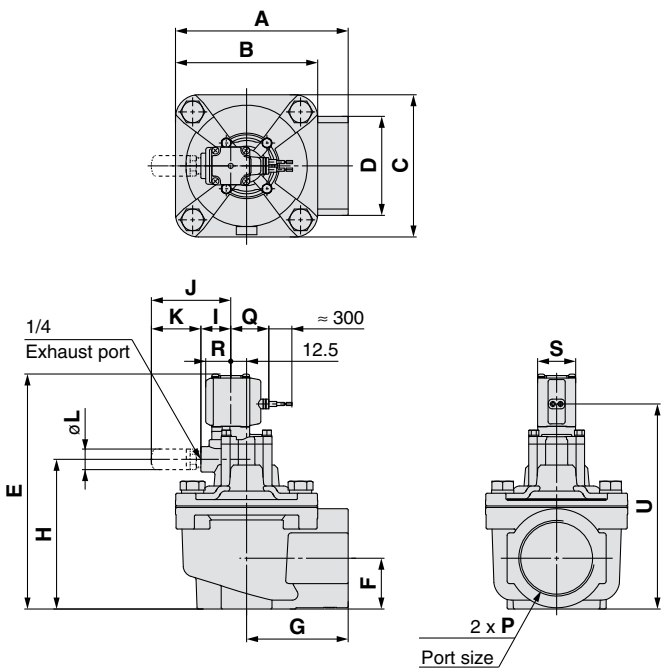
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Direct piping type VXF24A□□□

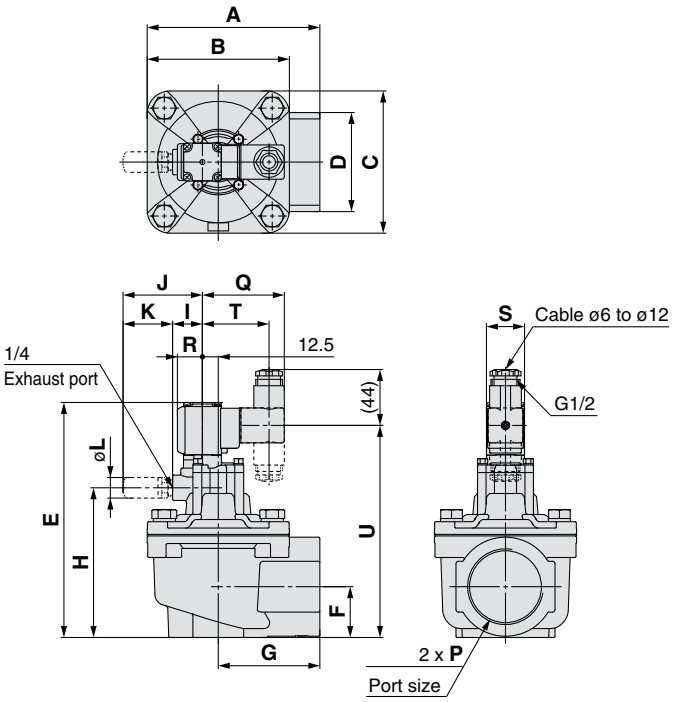
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Dimensions

(mm)

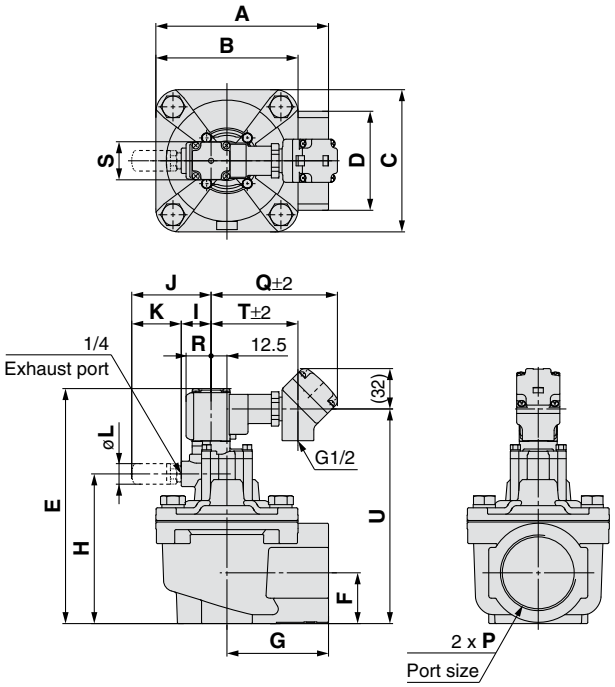
Model	Port size P	A	B	C	D	E	F	G	H	I	J	K	L	S
VXF24A□	2	136	112	112	78	185	40	80	118	23.5	62.5 (64.8)	39 (41.3)	16.5 (17)	30

Model	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
	Q	R	U	Q	R	U	Q	R	U	T
VXF24A□	27	20	175	30	20	161.5	64.5	20	167	52.5

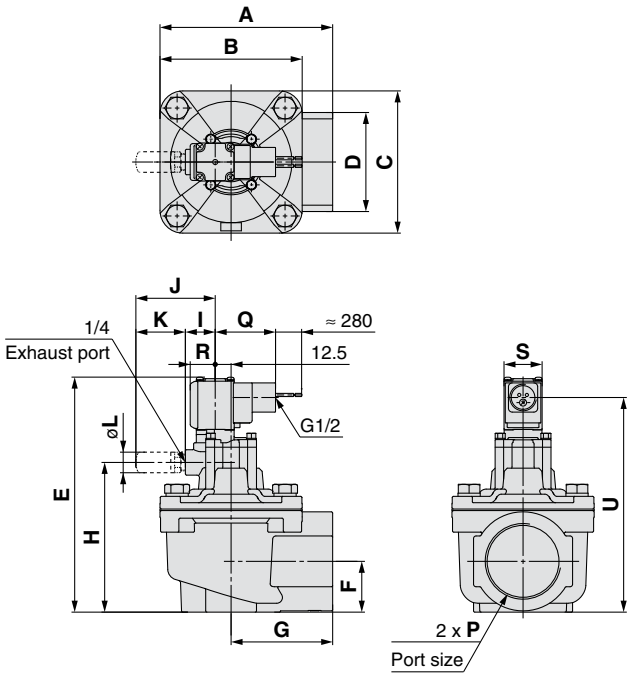
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Direct piping type VXF24A□□□

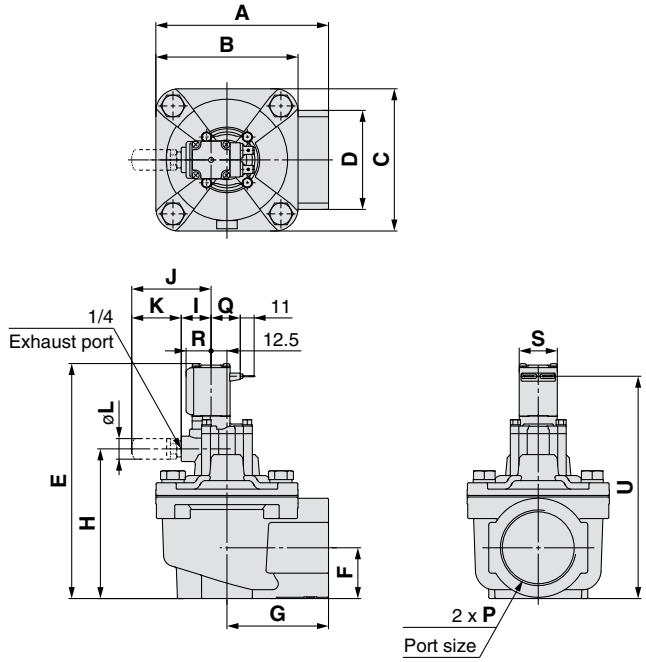
Conduit terminal



Conduit



Faston terminal



Dimensions

(mm)

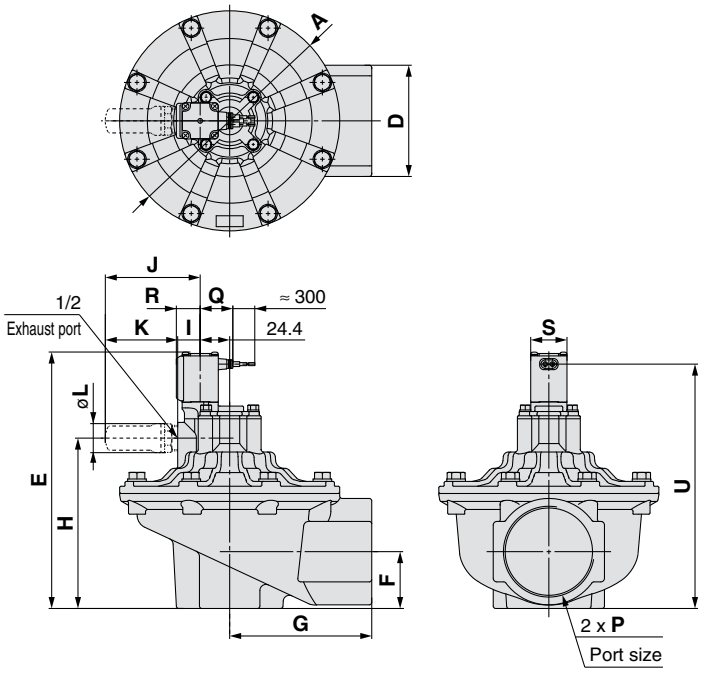
Model	Port size P	A	B	C	D	E	F	G	H	I	J	K	L	S
VXF24A□	2	136	112	112	78	185	40	80	118	23.5	62.5 (64.8)	39 (41.3)	16.5 (17)	30

Model	Conduit terminal				Conduit			Faston terminal		
	Q	R	U	T	Q	R	U	Q	R	U
VXF24A□	99.5	20	169	68.5	47.5	20	169	23	20	175

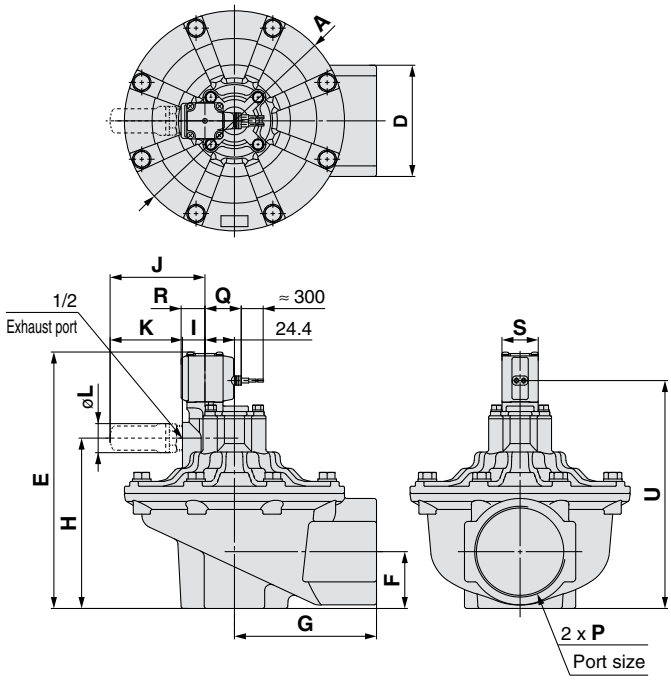
∗ ( ): When the symbol “D” for high temperature is selected.

Dimensions: Direct piping type VXF25A□□□/26A□□□

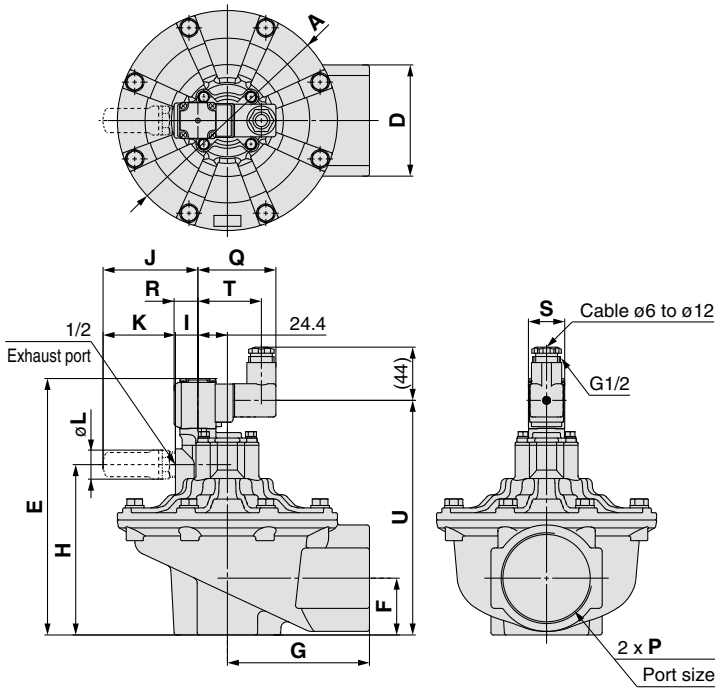
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Dimensions

(mm)

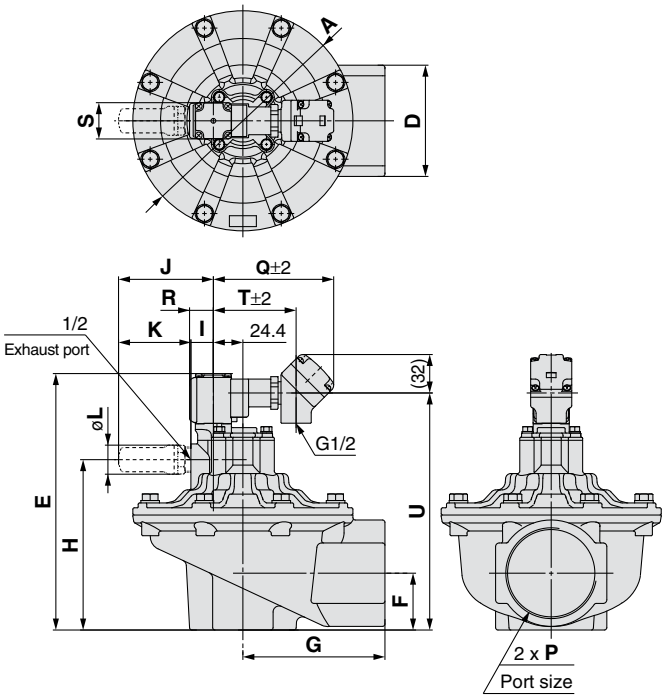
Model	Port size P	A	D	E	F	G	H	I	J	K	L	S
VXF25A□	2 1/2	182	92	212	47	117.5	141	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF26A□	3	206	102	247	63	119	176	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30

Model	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
	Q	R	U	Q	R	U	Q	R	U	T
VXF25A□	27	20	202	30	20	188.5	64.5	20	194	52.5
VXF26A□	27	20	237	30	20	223.5	64.5	20	229	52.5

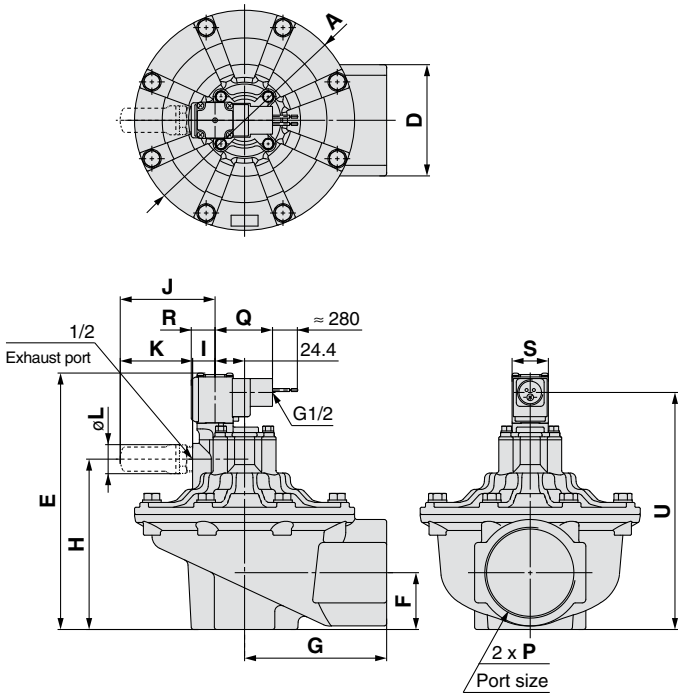
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Direct piping type VXF25A□□□/26A□□□

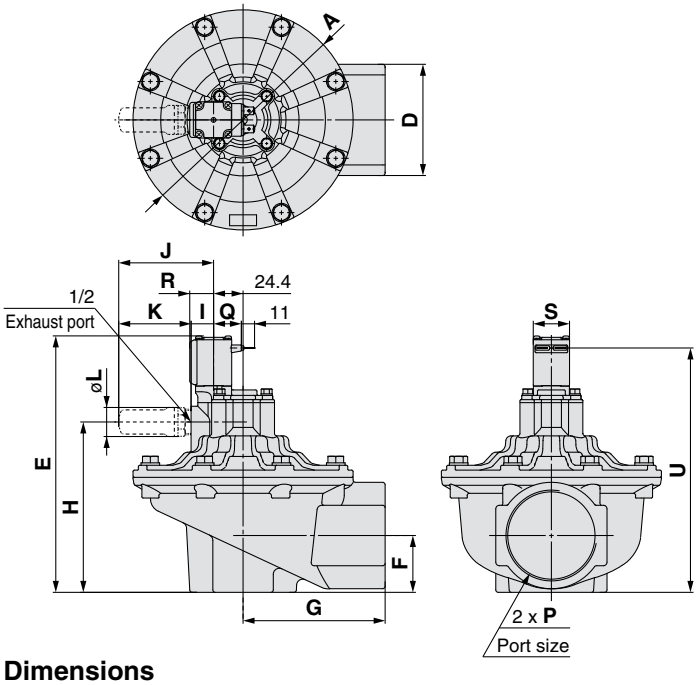
Conduit terminal



Conduit



Faston terminal



Dimensions

(mm)

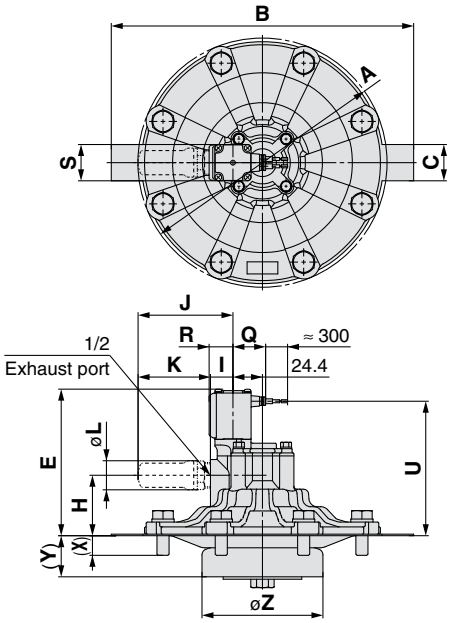
Model	Port size P	A	D	E	F	G	H	I	J	K	L	S
VXF25A□	2 1/2	182	92	212	47	117.5	141	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF26A□	3	206	102	247	63	119	176	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30

Model	Conduit terminal				Conduit			Faston terminal		
	Q	**R**	**U**	**T**	**Q**	**R**	**U**	**Q**	**R**	**U**
VXF25A□	99.5	20	196	68.5	47.5	20	196	23	20	202
VXF26A□	99.5	20	231	68.5	47.5	20	231	23	20	237

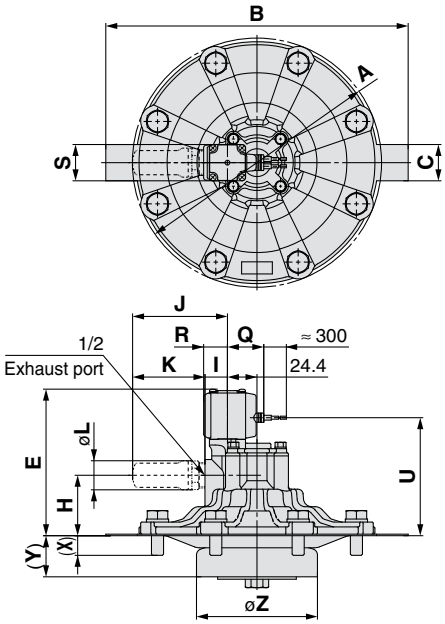
∗ ( ): When the symbol “D” for high temperature is selected.

Dimensions: Flange type VXF25B□□□/26B□□□/27B□□□/28B□□□

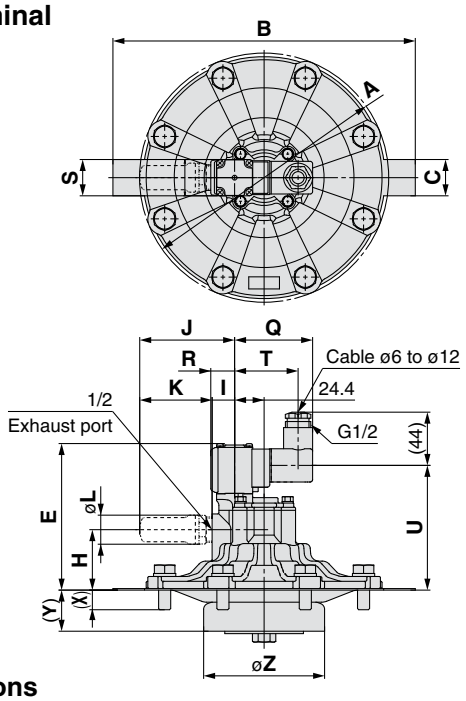
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Note) Refer to page 23 for the dimensions on the mounting side.

Dimensions

(mm)

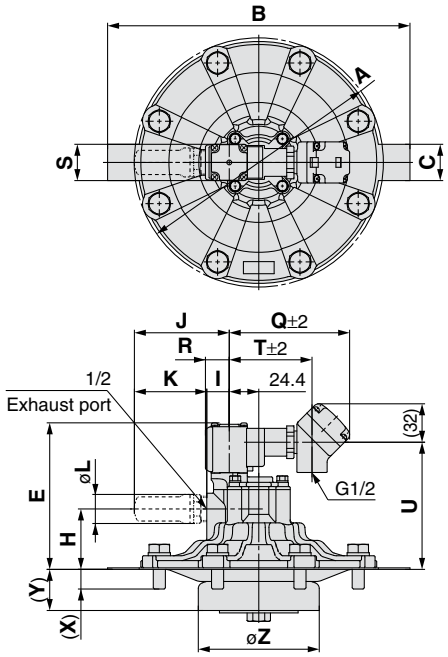
Model	A	B	C	E	H	I	X	Y	Z	J	K	L	S
VXF25B□	182	—	—	118	47	18.6	17	18.3	90	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF26B□	206	250	30	121	50	18.6	17	34	100	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF27B□	206	250	30	121	50	18.6	17	34	110	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF28B□	206	250	30	121	50	18.6	17	34	120	78.4 (70.2)	59.8 (43.1)	24 (17)	30

Model	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
	Q	R	U	Q	R	U	Q	R	U	T
VXF25B□	27	20	108	30	20	94.5	64.5	20	100	52.5
VXF26B□	27	20	111	30	20	97.5	64.5	20	103	52.5
VXF27B□	27	20	111	30	20	97.5	64.5	20	103	52.5
VXF28B□	27	20	111	30	20	97.5	64.5	20	103	52.5

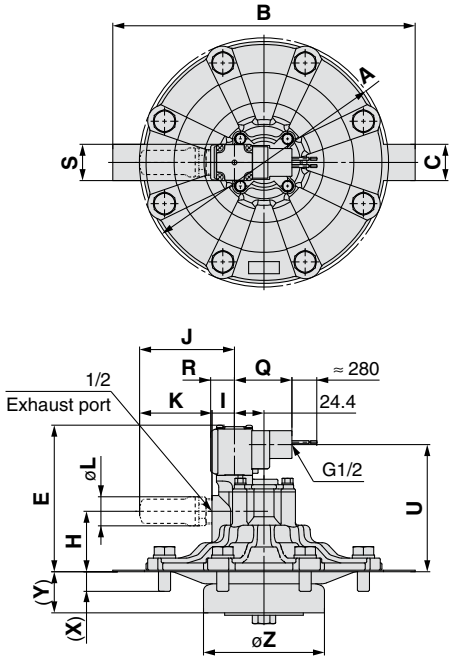
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Flange type VXF25B□□□/26B□□□/27B□□□/28B□□□

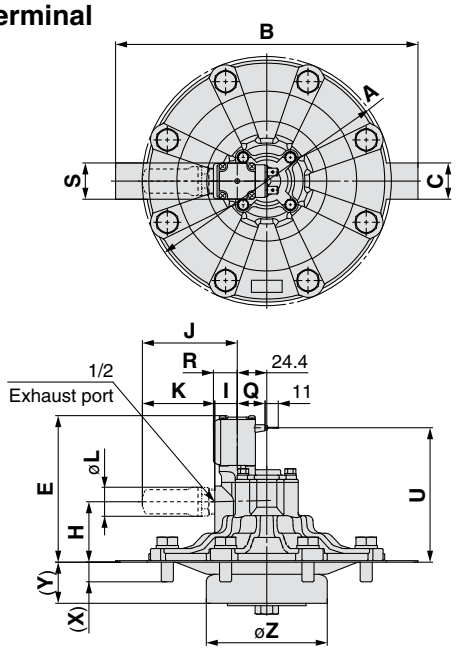
Conduit terminal



Conduit



Faston terminal



Note) Refer to page 23 for the dimensions on the mounting side.

Dimensions

(mm)

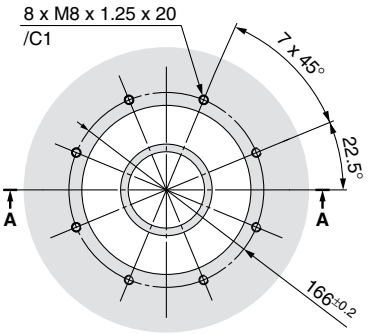
Model	A	B	C	E	H	I	X	Y	Z	J	K	L	S
VXF25B□	182	—	—	118	47	18.6	17	18.3	90	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF26B□	206	250	30	121	50	18.6	17	34	100	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF27B□	206	250	30	121	50	18.6	17	34	110	78.4 (70.2)	59.8 (43.1)	24 (17)	30
VXF28B□	206	250	30	121	50	18.6	17	34	120	78.4 (70.2)	59.8 (43.1)	24 (17)	30

Model	Conduit terminal				Conduit			Faston terminal		
	Q	R	U	T	Q	R	U	Q	R	U
VXF25B□	99.5	20	102	68.5	47.5	20	102	23	20	108
VXF26B□	99.5	20	105	68.5	47.5	20	105	23	20	111
VXF27B□	99.5	20	105	68.5	47.5	20	105	23	20	111
VXF28B□	99.5	20	105	68.5	47.5	20	105	23	20	111

∗ ( ): When the symbol “D” for high temperature is selected.

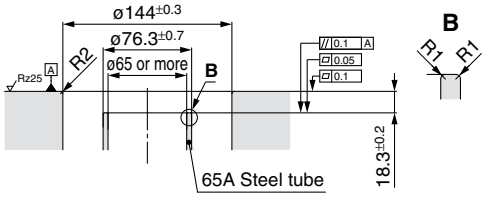
Dimensions on the Mounting Side: Flange type

VXF25B□□□

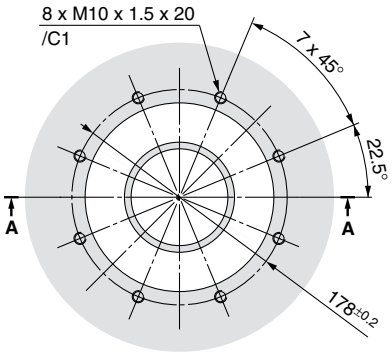


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

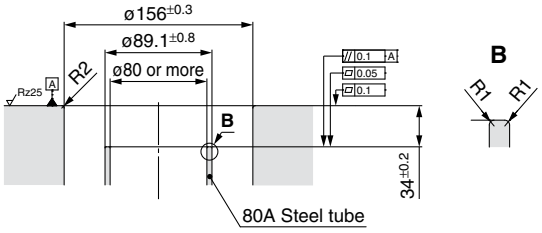


VXF26B□□□

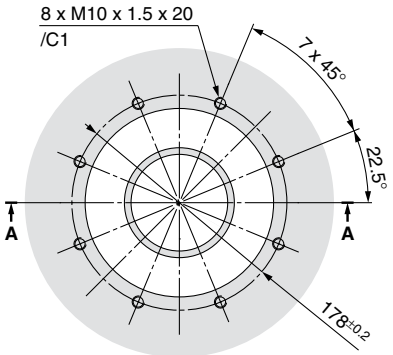


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

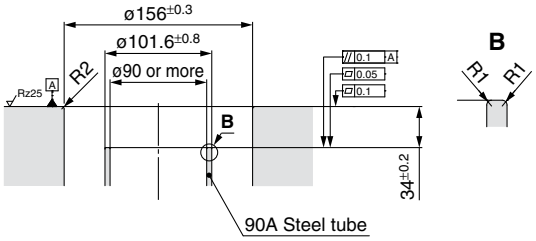


VXF27B□□□

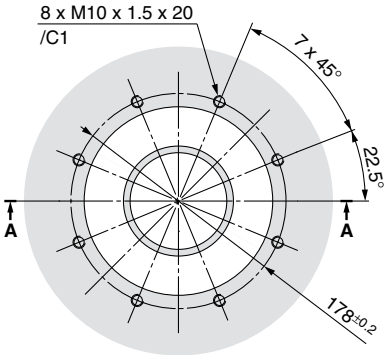


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

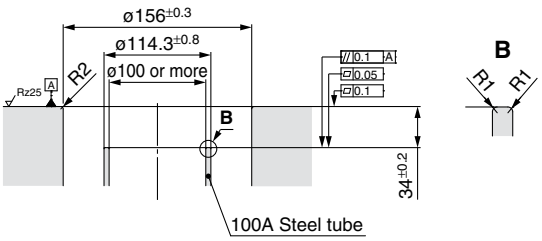


VXF28B□□□



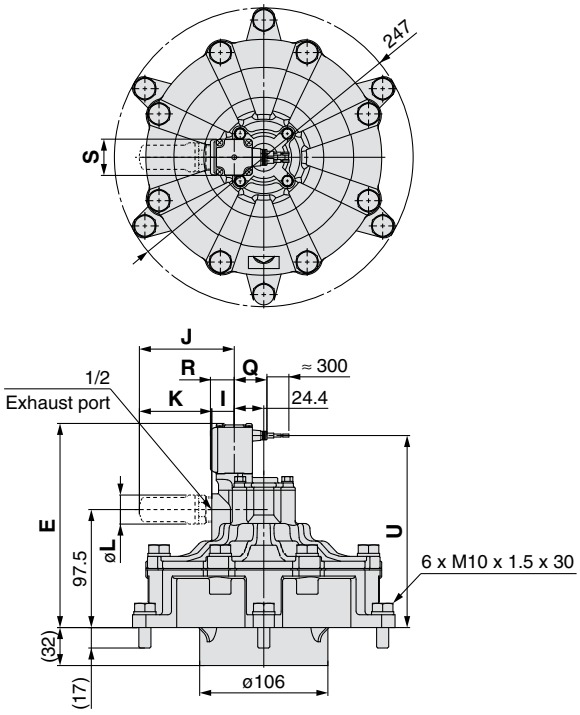
A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

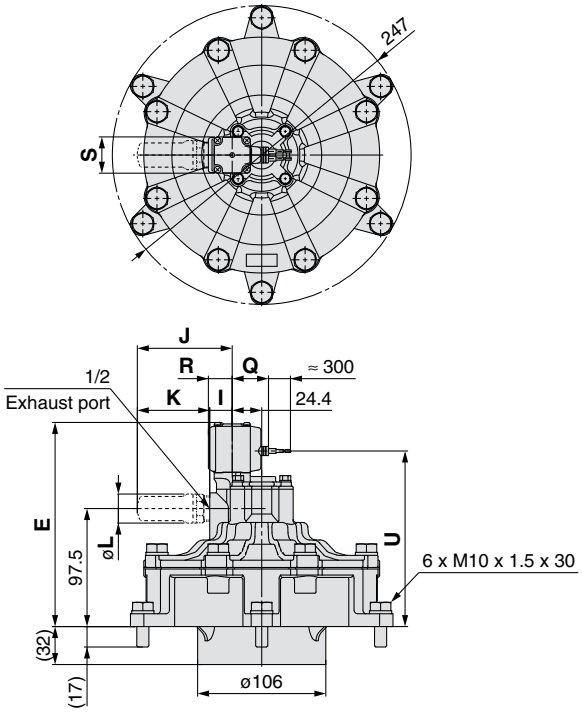


Dimensions: Flange body I type VXF26C□□□

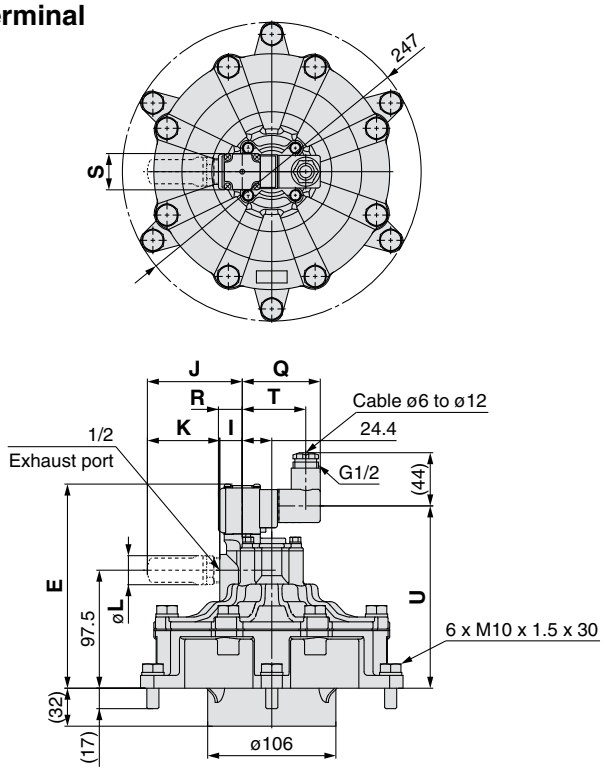
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Note) Refer to page 28 for the dimensions on the mounting side.

Dimensions

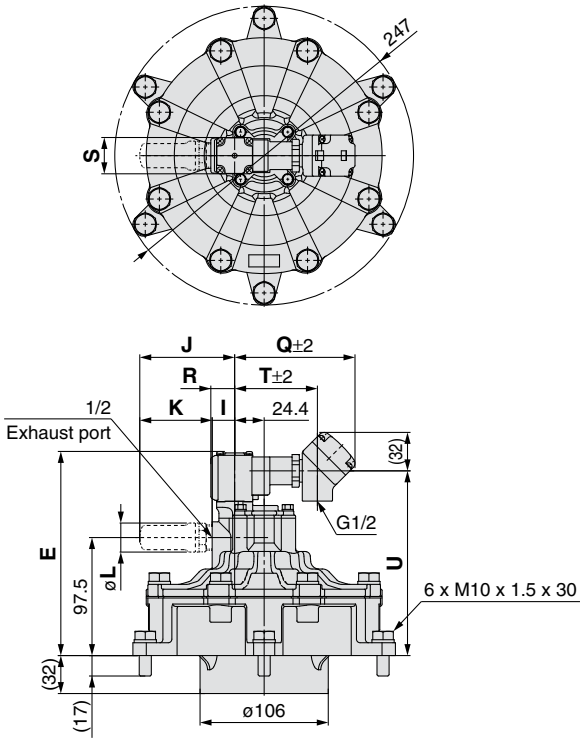
(mm)

Model	E	I	J	K	L	S	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
							Q	R	U	Q	R	U	Q	R	U	T
VXF26C□	169	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30	27	20	159	30	20	145	64.5	20	151	52.5

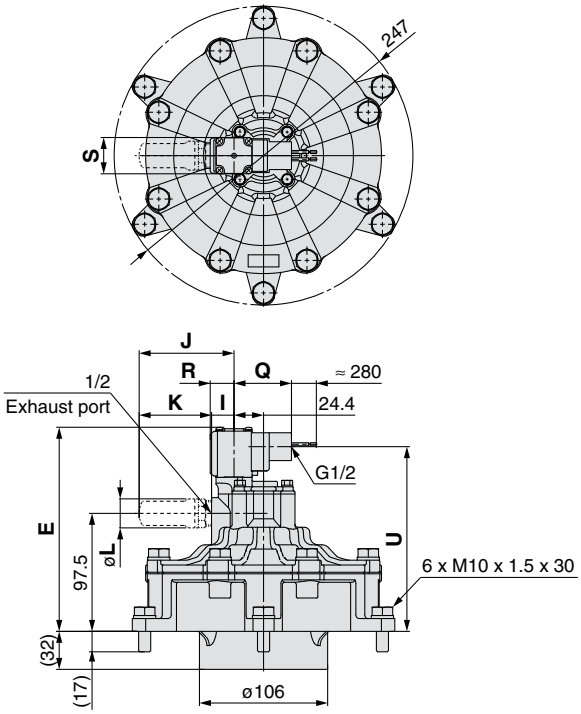
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Flange body I type VXF26C□□□

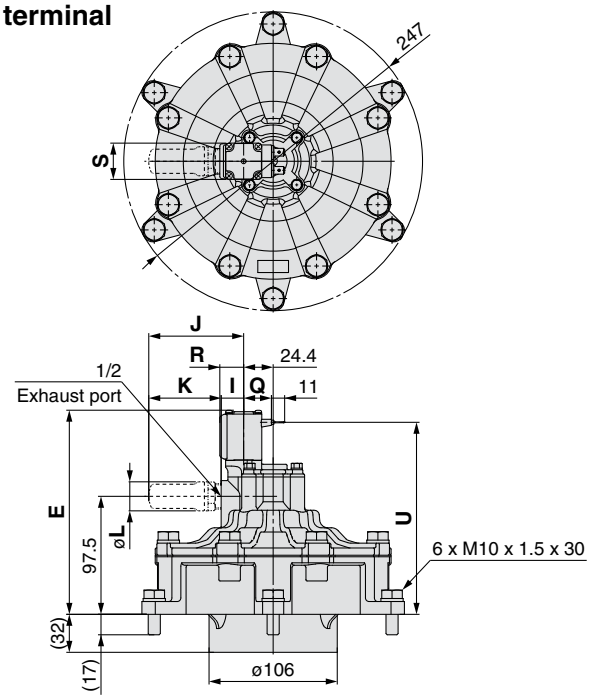
Conduit terminal



Conduit



Faston terminal



Note) Refer to page 28 for the dimensions on the mounting side.

Dimensions

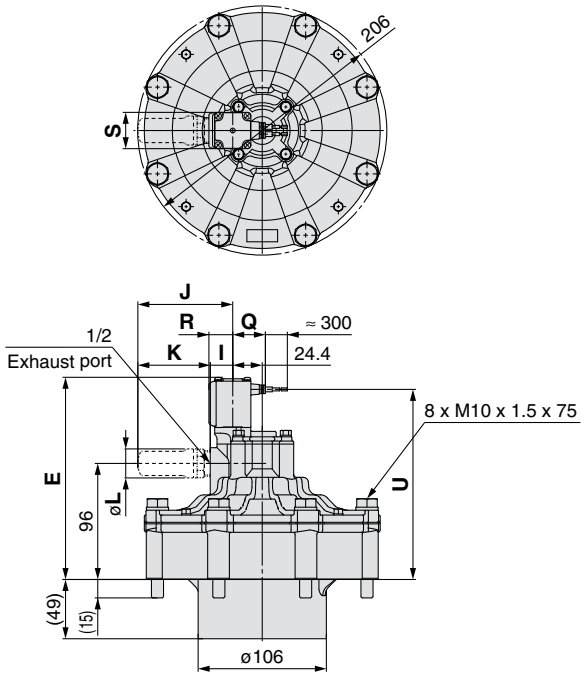
(mm)

Model	E	I	J	K	L	S	Conduit terminal				Conduit			Faston type		
							Q	R	U	T	Q	R	U	Q	R	U
VXF26C□	169	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30	99.5	20	153	68.5	47.5	20	153	23	20	159

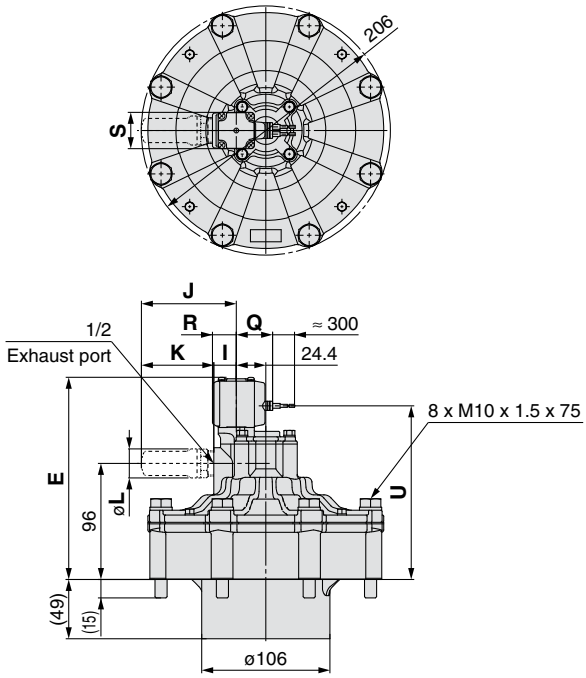
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Flange body II type VXF26D□□□

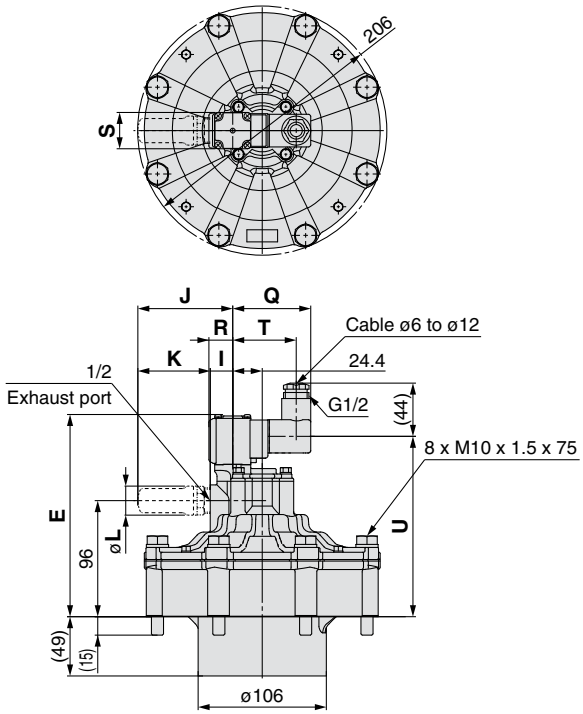
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



Note) Refer to page 28 for the dimensions on the mounting side.

Dimensions

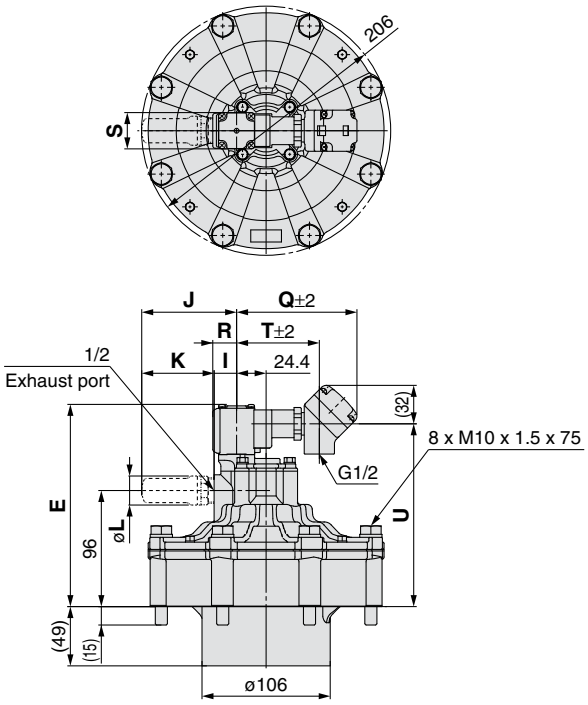
(mm)

Model	E	I	J	K	L	S	Grommet			Grommet (with surge voltage suppressor)			DIN terminal			
							Q	R	U	Q	R	U	Q	R	U	T
VXF26D□	167	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30	27	20	157	30	20	143.5	64.5	20	149	52.5

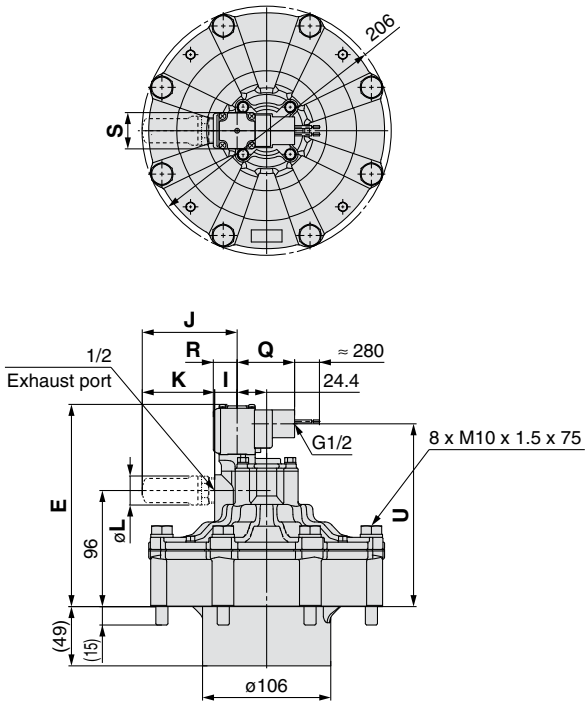
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Flange body II type VXF26D□□□

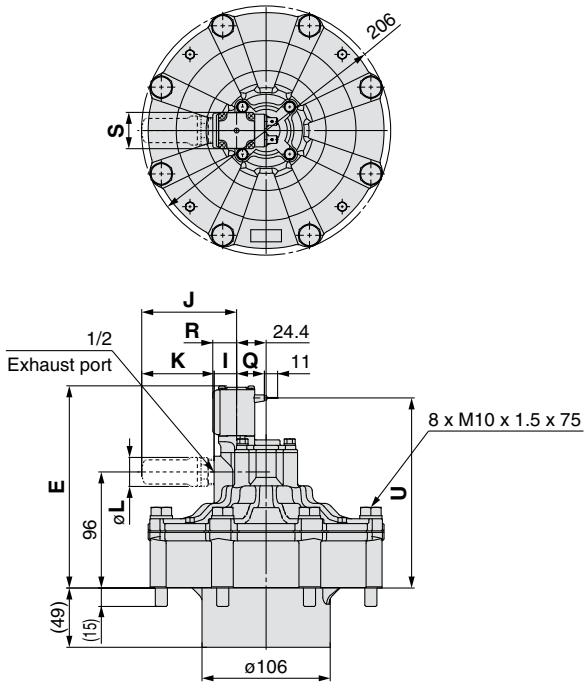
Conduit terminal



Conduit



Faston terminal



Note) Refer to page 28 for the dimensions on the mounting side.

Dimensions

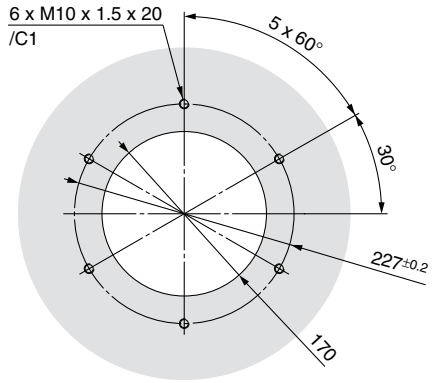
(mm)

Model	E	I	J	K	L	S	Conduit terminal				Conduit			Faston type		
							Q	R	U	T	Q	R	U	Q	R	U
VXF26D□	167	18.6	78.4 (70.2)	59.8 (43.1)	24 (17)	30	99.5	20	151	68.5	47.5	20	151	23	20	157

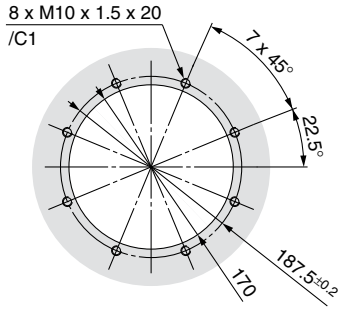
∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions on the Mounting Side: Flange body I/II type

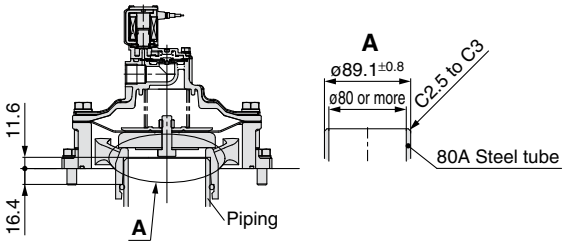
VXF26C□□□



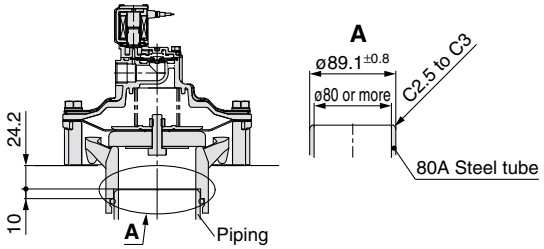
VXF26D□□□



VXF26C□□□ Piping

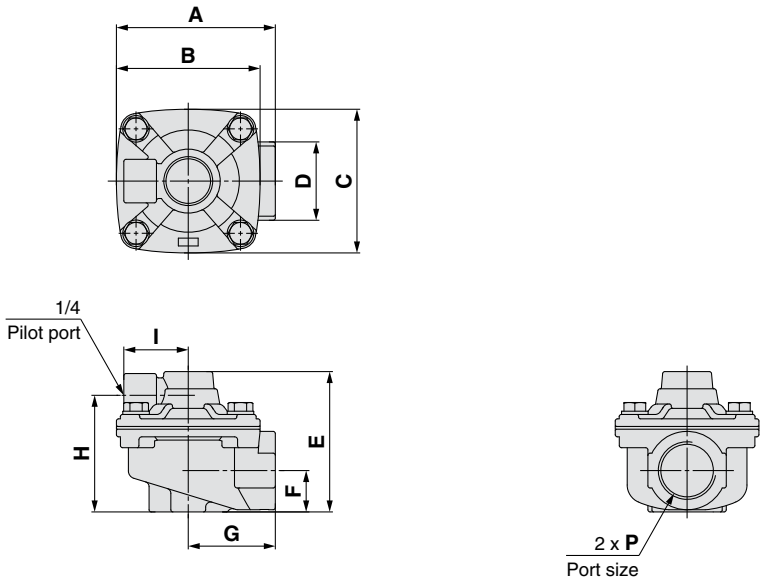


VXF26D□□□ Piping



Dimensions: Direct piping type

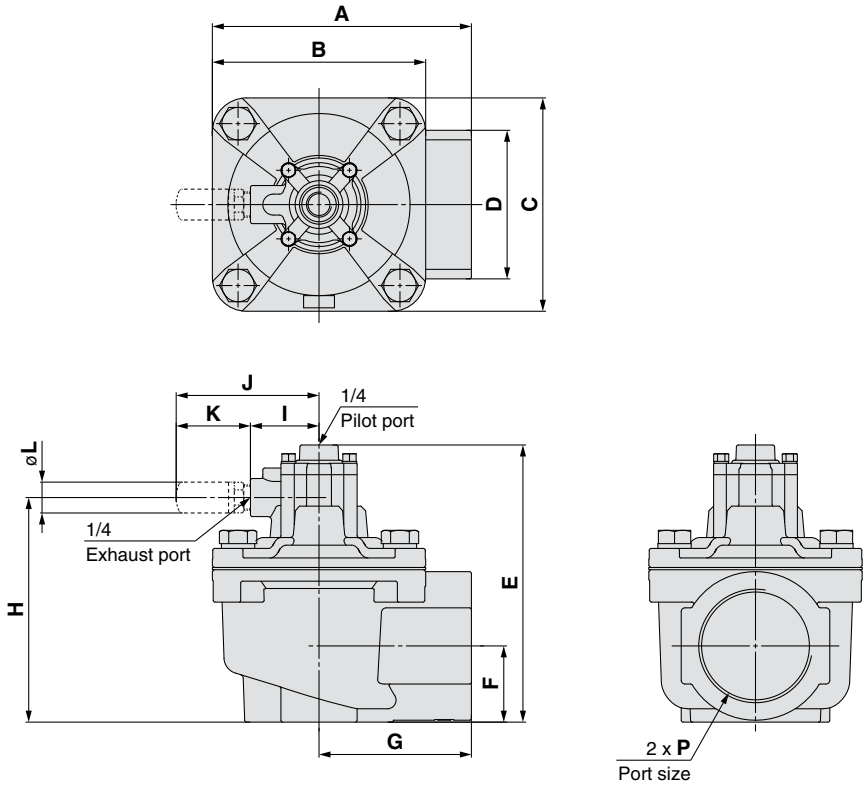
VXFA21A□□□
VXFA22A□□□
VXFA23A□□□



Dimensions (mm)

Model	Port size P	A	B	C	D	E	F	G	H	I
VXFA21A□	3/4	73	66	66	36	64.5	19	40	53.5	29.5
VXFA22A□	1	84	74	74	45	74.5	23.5	47	64.5	29.5
VXFA23A□	1 1/2	132	110	110	63	106	35	77	95	32

VXFA24A□□□



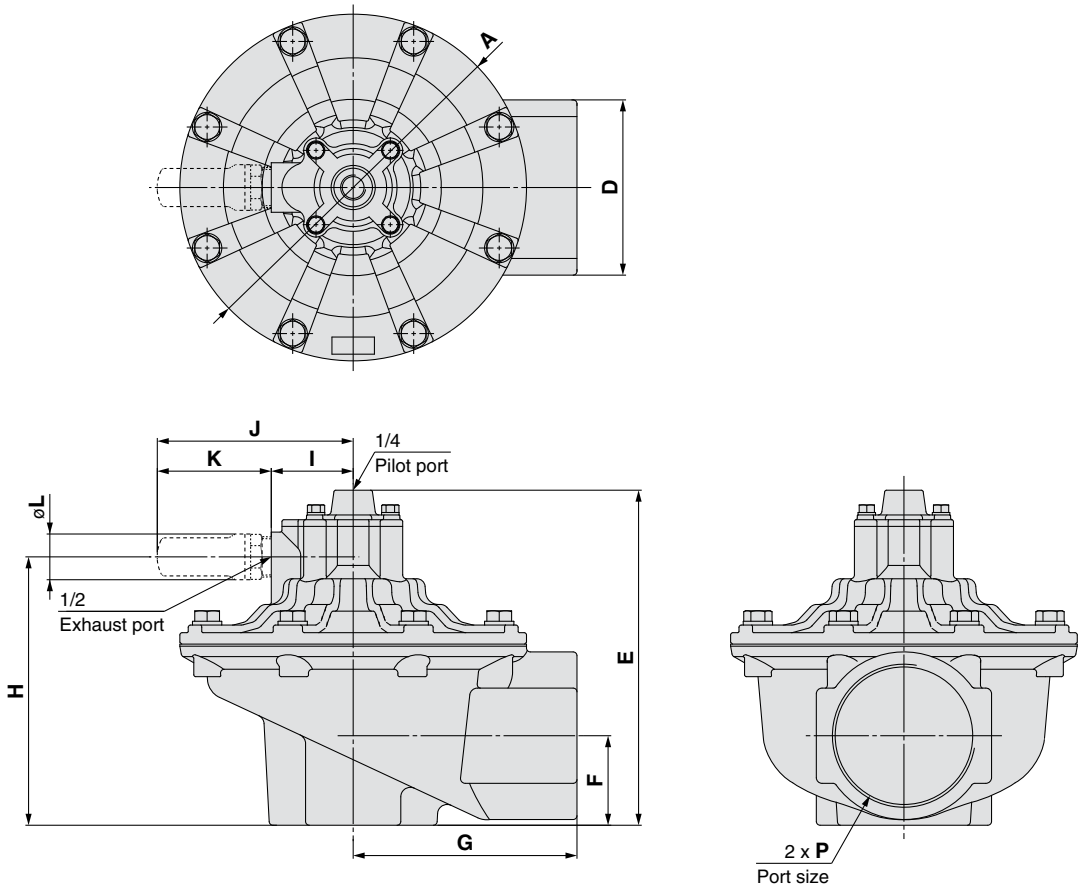
Dimensions (mm)

Model	Port size P	A	B	C	D	E	F	G	H	I	J	K	L
VXFA24A□	2	136	112	112	78	145.5	40	80	118	36	75 (77.8)	39 (41.3)	16.5 (17)

∗ ( ): When the symbol "D" for high temperature is selected.

Dimensions: Direct piping type

VXFA25A□□□
VXFA26A□□□



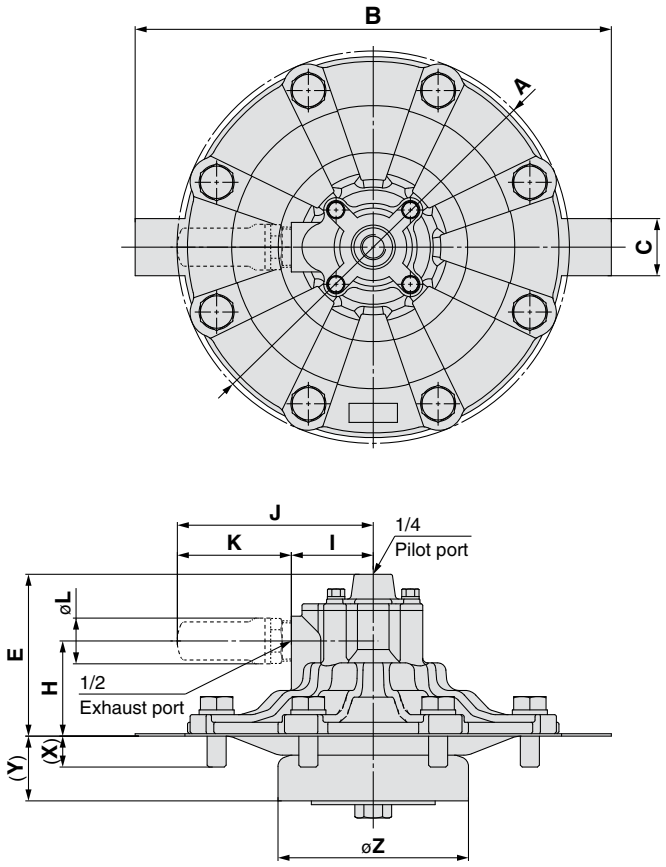
Dimensions (mm)

Model	Port size P	A	D	E	F	G	H	I	J	K	L
VXFA25A□	2 1/2	182	92	176	47	117.5	141	43	102.8 (94.6)	59.8 (43.1)	24 (17)
VXFA26A□	3	206	102	211	63	119	176	43	102.8 (94.6)	59.8 (43.1)	24 (17)

∗ ( ): When the symbol “D” for high temperature is selected.

Dimensions: Flange type

VXFA25B□□□
VXFA26B□□□
VXFA27B□□□
VXFA28B□□□



Note) Refer to page 32 for the dimensions on the mounting side.

Dimensions

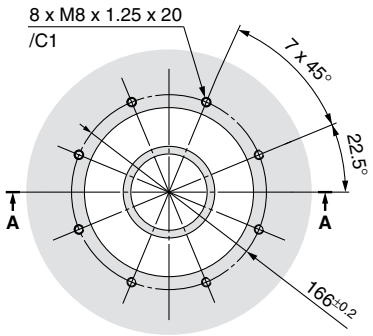
(mm)

Model	A	B	C	E	Y	X	H	I	J	K	L	Z
VXFA25B□	182	—	—	82	18.3	17	47	43	102.8 (94.6)	59.8 (43.1)	24 (17)	90
VXFA26B□	206	250	30	85	34	17	50	43	102.8 (94.6)	59.8 (43.1)	24 (17)	100
VXFA27B□	206	250	30	85	34	17	50	43	102.8 (94.6)	59.8 (43.1)	24 (17)	110
VXFA28B□	206	250	30	85	34	17	50	43	102.8 (94.6)	59.8 (43.1)	24 (17)	120

∗ ( ): When the symbol “D” for high temperature is selected.

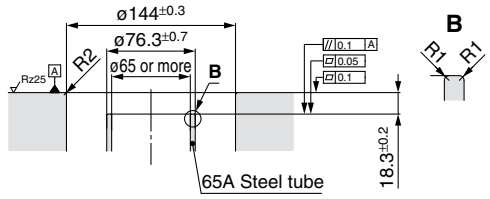
Dimensions on the Mounting Side: Flange type

VXFA25B□□□

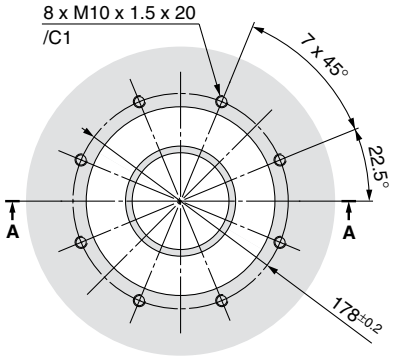


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

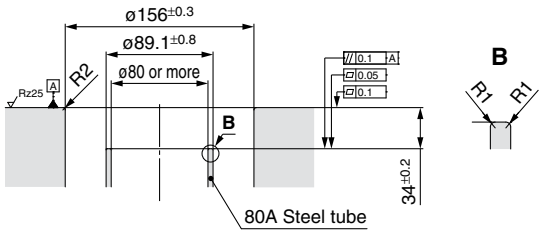


VXFA26B□□□

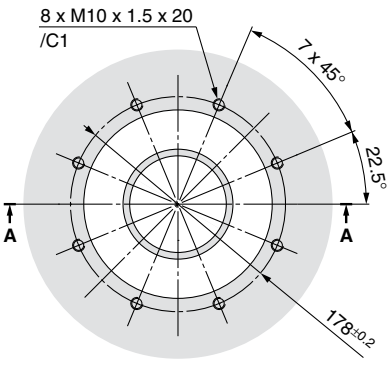


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

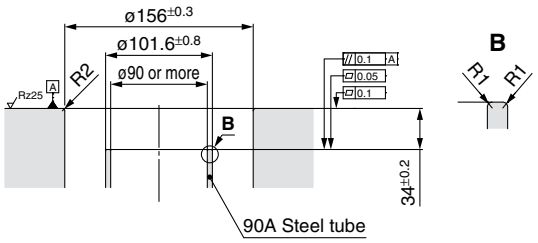


VXFA27B□□□

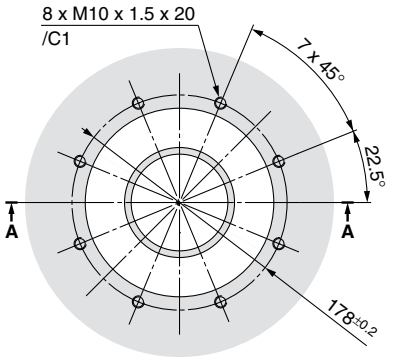


A-A

The surface roughness of the orifice machining should be Rz6.3 or less.

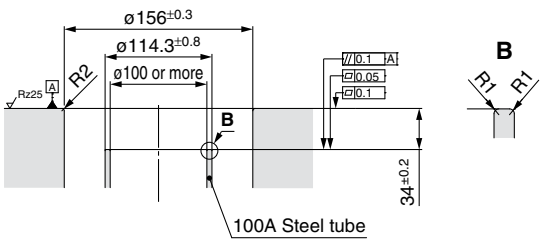


VXFA28B□□□



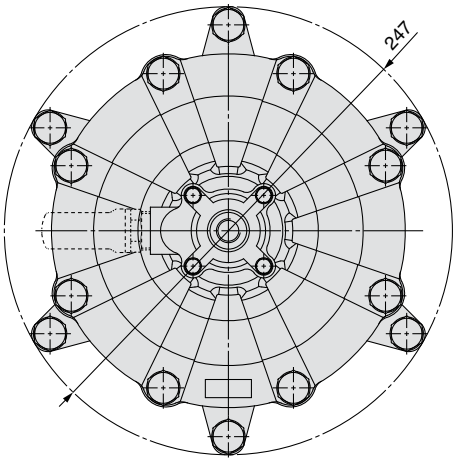
A-A

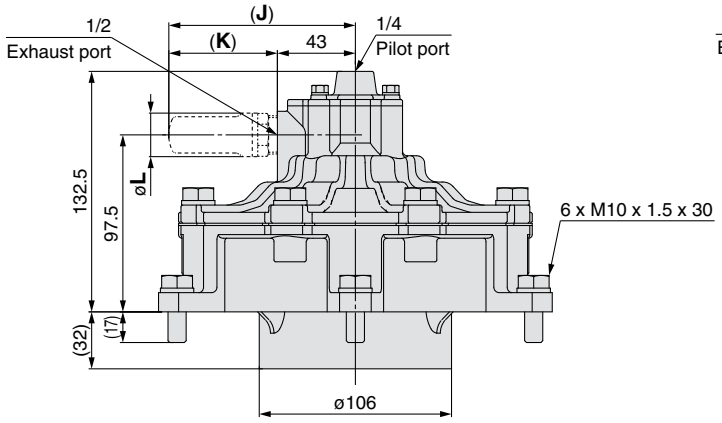
The surface roughness of the orifice machining should be Rz6.3 or less.



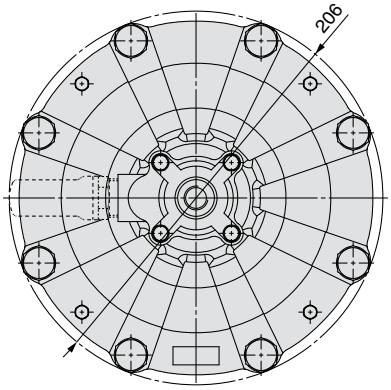
Dimensions: Flange body I/II type

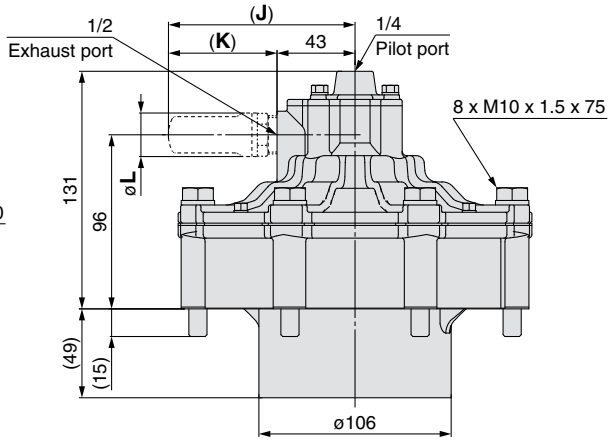
VXFA26C□□□





VXFA26D□□□

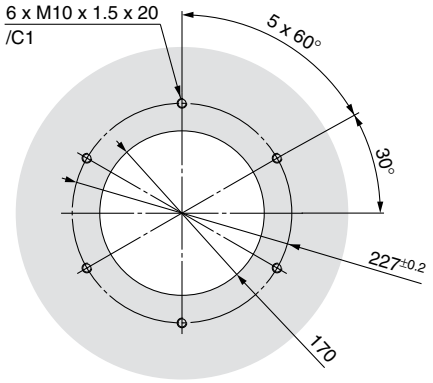




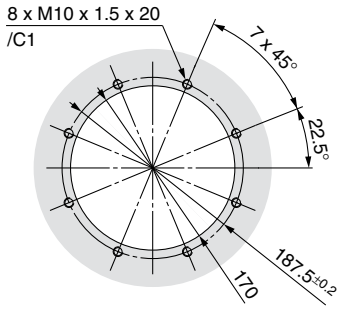
Note) Refer to page 34 for the dimensions on the mounting side.
Refer to page 31 for J, K, L dimensions.

Dimensions on the Mounting Side: Flange body I/II type

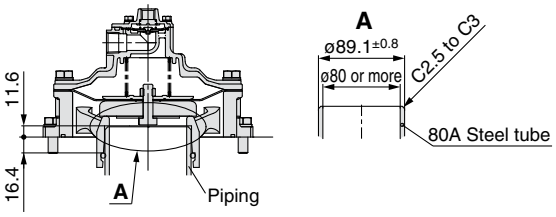
VXFA26C□□□



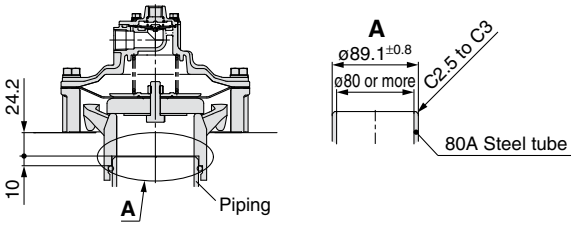
VXFA26D□□□



VXFA26C□□□ Piping



VXFA26D□□□ Piping



RoHS

Dedicated Controller For Operation/Series VXFC

How to Order Controller

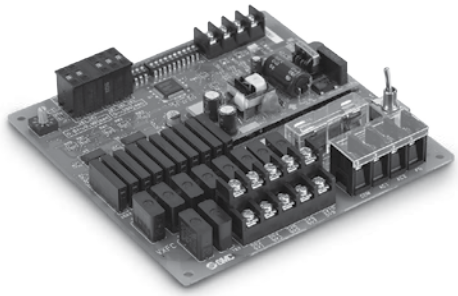
VXFC 06 D

Number of output points

06	6 output points
10	10 output points

Voltage

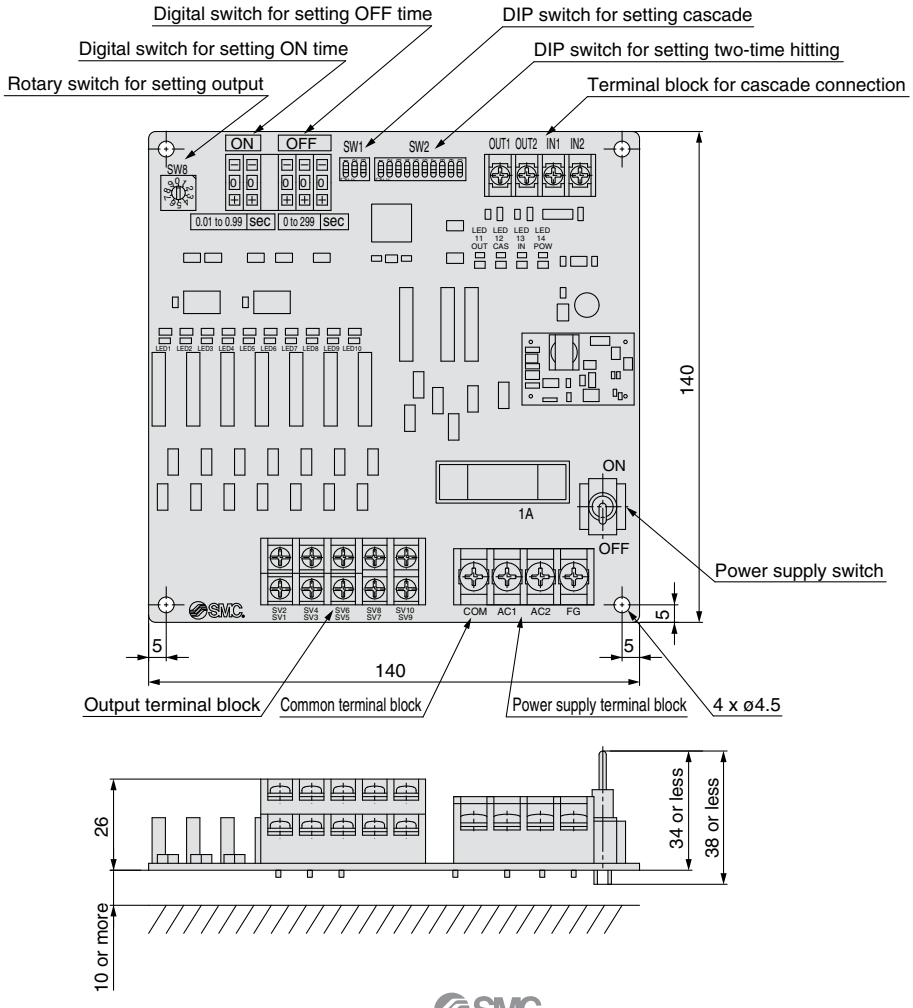
D	24 to 48 VDC
D-6	12 VDC
A	85 to 240 VAC



Specifications

Model		VXFC 06/10 A	VXFC 06/10 D	VXFC 06/10 D-6
Input voltage		85 to 240 VAC	24 to 48 VDC	12 VDC
Output voltage		Same as input voltage		
Time setting	**ON**	0.01 to 0.99 sec		
	OFF	0 to 299 sec		
	Time accuracy	±2%		
Number of outputs		6 to 10 points		
Operating ambient temperature		32 to 122°F [0 to 50°C] (No condensation allowed)		
Operating ambient humidity		45 to 80% (No condensation allowed)		
Output current		0.5 A or less	0.5 A or less	0.5 A or less
Power supply fuse		3 A	1 A	1 A

Dimensions



SMC

Glossary of Terms

Pressure Terminology

1. Maximum operating pressure differential

The maximum pressure differential (the difference between the inlet and outlet pressure) which is allowed for operation. When the outlet pressure is 0 MPa, this becomes the maximum operating pressure.

2. Minimum operating pressure differential

The minimum pressure differential (the difference between the inlet pressure and outlet pressure) required to keep the main valve fully open.

3. Maximum system pressure

The maximum pressure that can be applied inside the pipelines (line pressure).

[The pressure differential of the solenoid valve portion must not exceed the maximum operating pressure differential.]

4. Withstand pressure

The pressure in which the valve must be withstood without a drop in performance after holding for one minute under prescribed pressure and returning to the operating pressure range. [value under the prescribed conditions]

Electrical Terminology

1. Apparent power (VA)

Volt-ampere is the product of voltage (V) and current (A).

Power consumption (W): For AC, $W = V \cdot A \cdot \cos\theta$.

For DC, $W = V \cdot A$.

Note) $\cos\theta$ shows power factor. $\cos\theta \approx 0.9$

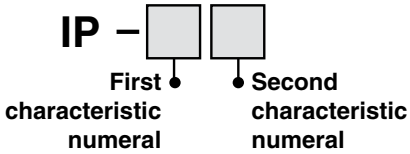
2. Surge voltage

A high voltage which is momentarily generated by shutting off the power in the shut-off area.

3. Degree of protection

A degree defined in the "JIS C 0920: Waterproof test of electric machinery/appliance and the degree of protection against the intrusion of solid foreign objects."

Verify the degree of protection for each product.



●First Characteristics:
Degrees of protection against solid foreign objects

0	Non-protected
1	Protected against solid foreign objects of 50 mmø and greater
2	Protected against solid foreign objects of 12 mmø and greater
3	Protected against solid foreign objects of 2.5 mmø and greater
4	Protected against solid foreign objects of 1.0 mmø and greater
5	Dust-protected
6	Dust-tight

Electrical Terminology

●Second Characteristics:
Degrees of protection against water

0	Non-protected	—
1	Protected against vertically falling water drops	Dripproof type 1
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure tilted up to 60°	Rainproof type
4	Protected against splashing water	Splashproof type
5	Protected against water jets	Water-jet-proof type
6	Protected against powerful water jets	Powerful water-jet-proof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) IP65: Dust-tight, Water-jet-proof type

"Water-jet-proof type" means that no water intrudes inside an equipment that could hinder from operating normally by means of applying water for 3 minutes in the prescribed manner. Take appropriate protection measures, since a device is not usable in an environment where a droplet of water is splashed constantly.

Others

1. Material

NBR: Nitrile rubber

FKM: Fluoro rubber

2. Symbol

In the symbol (), when the valve is closed, flow is blocked from port 1 to port 2. However, if the pressure in port 2 is higher than port 1, the valve will not be able to block the fluid and it will flow from port 2 to port 1.

Faston Terminal

1. Faston™ is a trademark of Tyco Electronics Corp.

2. For electrical connection of the Faston terminal and molded coil, use Tyco's "Amp/Faston connector/250 Series" or the equivalent.

Series VXF2/VXFA2
Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

2 Port Solenoid Valve For Dust Collector
Series VXF2/VXFA2

Design

⚠Warning

1. Cannot be used as an emergency shutoff valve etc.

The valves presented in this catalog are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

2. Extended periods of continuous energization

The solenoid coil will generate heat when continuously energized. Avoid using in a tightly shut container. Install it in a well-ventilated area. Furthermore, do not touch it while it is being energized or right after it is energized.

3. When the conduit type is used as equivalent to an IP65 enclosure, install a wiring conduit etc.

Silencer

⚠Caution

1. The silencer's response properties do not change in the initial stage, but will change due to the blockage after long use. Replace it after using about 500,000 times. This number is subject to change based on fluid quality and energizing time.

2. When using a silencer, make space for silencer replacement.

Selection

⚠Warning

1. Air quality

1. 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.

2. Install an air filter.

Install an air filter close to the valve on the upstream side. A filtration degree of 5 µm or less should be selected.

3. Install an aftercooler or air dryer, etc.

Compressed air that contains excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an aftercooler or air dryer, etc.

4. If excessive carbon powder is generated, eliminate it by installing a mist separator on the upstream side of valves.

If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause a malfunction.

Refer to the Best Pneumatics No. 5 for further details on compressed air quality.

Selection

⚠Warning

2. Ambient environment

Use within the allowable ambient temperature range. Check the compatibility between the product's composition materials and the ambient atmosphere. Be certain that the fluid used does not touch the external surface of the product.

3. Countermeasures against static electricity

Take measures to prevent static electricity since some fluids can cause static electricity.

4. Low temperature operation

1. The valve can be used in an ambient temperature of between –4 to 14° F (–20 to –10° C). However, take measures to prevent freezing or solidification of impurities, etc.
2. 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 a freezing condition in which the dew point temperature is high and the ambient temperature is low, and the high flow runs.

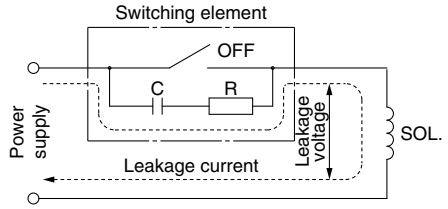
5. Fluid properties

Use a general compressed air with a filter of 5 µm or less mounted on the inlet of the piping. (Excluding dry air)

⚠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 coil: 5% or less of rated voltage
DC coil: 2% or less of rated voltage

2. The response performance and start-up speed deteriorate in the case of air operated type (VXFA2) as compared with a solenoid valve type (VXF2). Refer to the data for pilot piping.

3. Note that for DC, idle time and return time increase if the voltage is lowered. If a surge voltage suppressor is installed, the return speed decreases.

Series VXF2/VXFA2
Specific Product Precautions 2

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

2 Port Solenoid Valve For Dust Collector
Series VXF2/VXFA2

Mounting

⚠Warning

1. If air leakage increases or equipment does not operate properly, stop operation.

After mounting is completed, confirm that it has been done correctly by performing a suitable function test.

2. 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.

3. Mount a valve with its coil position upward, not downward.

When mounting a valve with its coil position downward, foreign objects in the fluid will adhere to the iron core leading to a malfunction. Especially for strict leakage control, such as with vacuum applications and non-leak specifications, the coil must be positioned upward.

4. 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.

5. Avoid sources of vibration, or adjust the arm from the body to the minimum length so that resonance will not occur.

6. Painting and coating

Warnings or specifications printed or labeled on the product should not be erased, removed or covered up.

Piping

⚠Warning

1. During use, deterioration of the tube or damage to the fittings could cause tubes to come loose from their fittings and thrash about.

To prevent uncontrolled tube movement, install protective covers or fasten tubes securely in place.

2. For piping the tube, fix the product securely using the mounting holes so that the product is not in the air.

⚠Caution

1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

Install piping so that it does not apply pulling, pressing, bending or other forces on the valve body.

2. Avoid connecting ground lines to piping, as this may cause electric corrosion of the system.

Piping

⚠Caution

3. Always tighten threads with the proper tightening torque.

When attaching fittings to valves, tighten with the proper tightening torque shown below.

Tightening Torque for Piping

Connection thread	Proper tightening torque lbf·ft [N·m]
Rc1/4	8.9 to 10.3 [12 to 14]
Rc3/8	16.2 to 17.7 [22 to 24]
Rc1/2	20.7 to 22.1 [28 to 30]
Rc3/4	20.7 to 22.1 [28 to 30]
Rc1	26.6 to 28.0 [36 to 38]
Rc1 1/2	29.5 to 31.0 [40 to 42]
Rc2	35.4 to 36.9 [48 to 50]
Rc2 1/2	35.4 to 36.9 [48 to 50]
Rc3	35.4 to 36.9 [48 to 50]

4. When connecting piping to a product

Avoid mistakes regarding the supply port etc.

5. If a regulator, or a restrictor, is installed immediately before or after the IN port of the valve, the main valve may oscillate (chatter). Install them away from the valve or change the restriction.

6. The header tank capacity should be sufficient. This is a valve for large flow rate, so if the capacity is small, the main valve may oscillate due to pressure drop or insufficient air supply.

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.

2. Use electrical circuits which do not generate chattering in their contacts.

3. Use voltage which is within ±10% of the rated voltage. In cases with a DC power supply where importance is placed on responsiveness, stay within ±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 SMC.)

Specific Product Precautions 3

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

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

2 Port Solenoid Valve For Dust Collector
Series VXF2/VXFA2

Operating Environment

⚠Warning

1. **Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water vapor, or where there is direct contact with any of these.**
2. **Do not use in explosive atmospheres.**
3. **Do not use in locations subject to vibration or impact.**
4. **Do not use in locations where radiated heat will be received from nearby heat sources.**
5. **Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.**

Maintenance

⚠Warning

1. Removing the product

The valve becomes hot depending on the fluid temperature. Confirm that the valve temperature has dropped sufficiently before performing work. If touched inadvertently, there is a danger of being burned.

1. Shut off the fluid supply and release the fluid pressure in the system.
2. Shut off the power supply.
3. Remove the product.

2. 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 a half year.

⚠Caution

1. Filters

1. Be careful regarding clogging of filters.
2. Replace filter elements after one year of use, or earlier if the pressure drop reaches 15 psi (0.1 MPa).

2. Storage

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

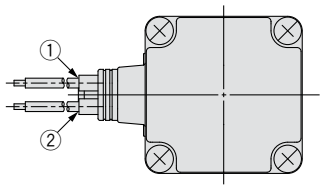
3. Exhaust the drainage from an air filter periodically.

Electrical Connections

⚠Caution

■ Grommet

Class B coil: AWG20 Outside insulator diameter of 2.5 mm

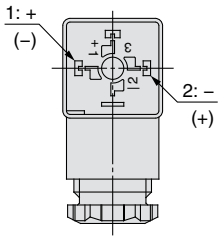


Rated voltage	Lead wire color	
	①	②
DC	Black	Red
100 VAC	Blue	Blue
200 VAC	Red	Red
Other AC	Gray	Gray

∗ There is no polarity.

■ DIN terminal

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

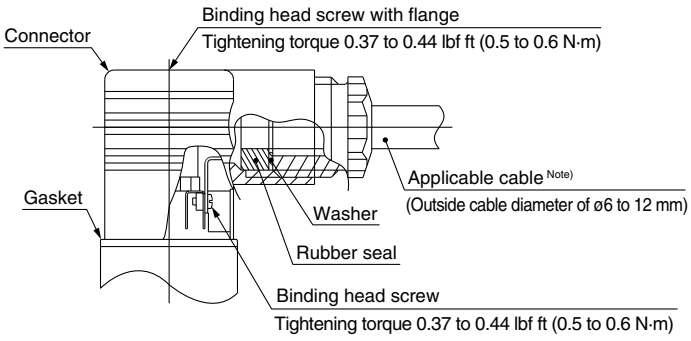


Terminal no.	1	2
DIN terminal	+ (–)	– (+)

∗ There is no polarity.

· Use a heavy-duty cord with an outside cable diameter of ø6 to 12 mm.

· Use the tightening torques below for each section.



Note) For an outside cable diameter of ø9 to 12 mm, remove the internal parts of the rubber seal before using.

Series VXF2/VXFA2
Specific Product Precautions 4

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

2 Port Solenoid Valve For Dust Collector
Series VXF2/VXFA2

Electrical Connections

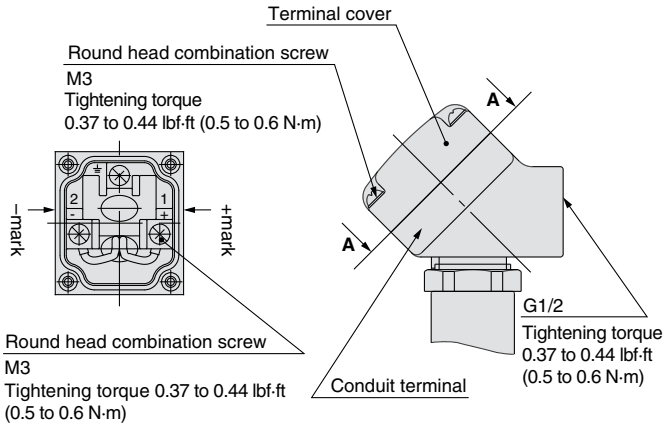
⚠Caution

■ 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.



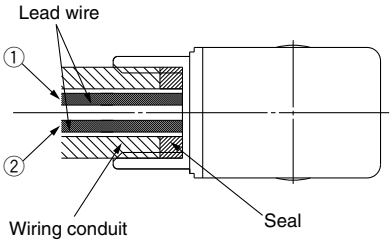
View A-A

(Internal connection diagram)

■ Conduit

When used as an IP65 equivalent, use seal to install the wiring conduit. Also, use the tightening torque below for the conduit.

Class B coil: AWG20 Outside insulator diameter of 2.5 mm



(Port size G1/2 Tightening torque 0.37 to 0.44 lbf·ft [0.5 to 0.6 N·m])

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.
(There is polarity for the power-saving type.)

Description	Part no.
Seal	VCW20-15-6

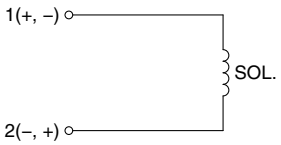
Note) Please order separately.

Electrical Circuits

⚠Caution

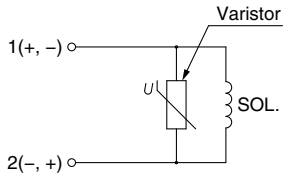
[DC circuit]

Grommet, Faston terminal



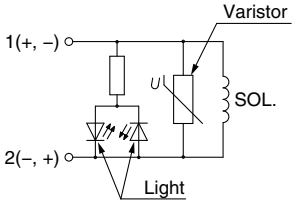
Without electrical option

Grommet, DIN terminal, Conduit terminal, Conduit



With surge voltage suppressor

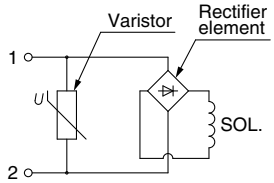
DIN terminal, Conduit terminal



With light and surge voltage suppressor

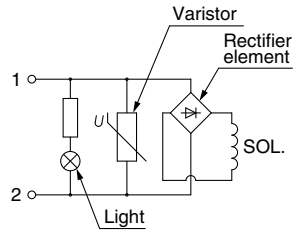
[AC circuit]

Grommet, DIN terminal Conduit terminal, Conduit



Without electrical option

DIN terminal, Conduit terminal



With light and surge voltage suppressor

Specific Product Precautions 5

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Dedicated Controller For Operation Series VXFC

Wiring

⚠Warning

1. The controller starts its output the moment the power switch is turned ON. Be aware that even if the power switch is turned OFF, power is connected to the terminal block.

⚠Caution

1. Make sure that the power supply voltage to be input matches the voltage in the controller's specifications. The power supply voltage that has been input becomes the voltage that is output to the solenoid valves.

2. Connect a ground that is rated Class 3 or greater to the power supply terminal block's FG.

3. If the power source is DC, use caution to its polarity. If the polarity is incorrect, it may result in a malfunction or damage.

4. For details, refer to the separate Operation Manual.

5. The solenoid valve mounted on the controller should be equipped with a surge voltage suppressor.

Operating Environment

⚠Warning

1. Operate under conditions that are free of vibration and impact.

2. Operate in an ambient temperature range between 32°F (0°C) and 122°F (50°C).

3. Operate in an ambient humidity range between 45% to 85% (with no condensation).

⚠ Safety Instructions

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

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

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

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

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

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

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

⚠ Caution

1. The product is provided for use in manufacturing industries.

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

Limited warranty and Disclaimer/ Compliance Requirements

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

Limited warranty and Disclaimer

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

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

Compliance Requirements

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

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

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

Revision history

Edition B
- The models applicable for high temperature added.
- The orifice diameter of the pilot valve for VXFA2 changed. (Page 6)
- Valve leakage rate added.
- Working principle and glossary of terms added.
- The values of power consumption and temperature rise changed. (Size 21, 22, 24, 25, 26, 27, 28)
- Number of pages increased from 40 to 44

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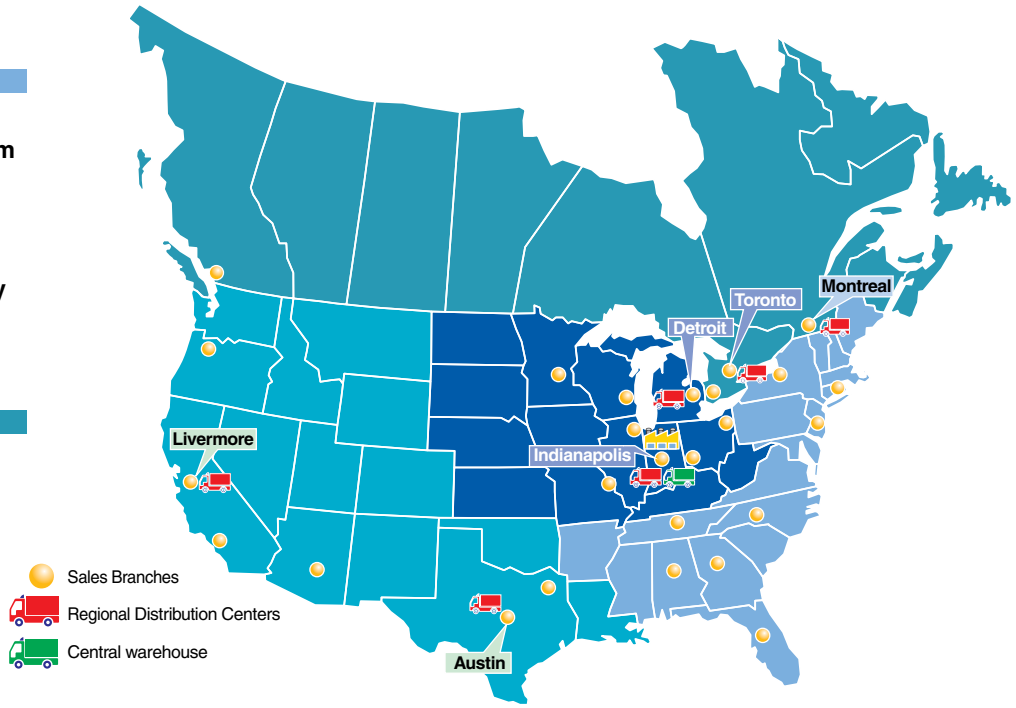

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