



Operation Manual

PRODUCT NAME

Pulse Valve

MODEL / Series / Product Number

JSXF(A) Series

SMC Corporation

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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.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
etc.



Danger

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



Warning

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



Caution

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



Warning

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. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Safety Instructions

Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not allowed.

Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

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.

Pulse Valve Valve for Dust Collector

Solenoid Valve Type

JSXF Series

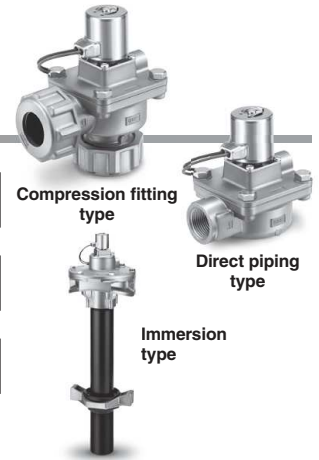


Differs depending on the voltage and electrical entry



How to Order

Compression	JSXF	E	-06 R	-5 CS B-S						
Direct Piping	JSXF	F	-06 R	-5 CS B-S						
Immersion	JSXF	H 4	-06 R 1	-5 CS B-S						
	1	2	3	4	5	6	7	8	9	10



1 Valve type

Nil	Solenoid valve
------------	----------------

2 Piping

E	Compression fitting type*1	
F	Direct piping type	
H	Immersion type*2	

*1 Seals and washers are included.

*2 The valve and pipe do not come assembled.

3 Tank size (JSXFH only)

4	4 inch
5	5 inch
6	6 inch
8	8 inch
10	10 inch

4 Port size*1

06	3/4 (20A)
10	1 (25A)
14	1 1/2 (40A)
20*2	2 (50A)

*1 For port size selection, refer to the "Variations for Port Size and Option" table below.

*2 Port size 20 is only available for the JSXFH.

5 Thread type

R	Rc
N	NPT
F	G

6 OUT port piping configuration (JSXFH only)

Symbol	Length	G thread	Appearance
1	Short	None	
2	Long		
3	Short	Yes	
4	Long		

7 Rated voltage

AC		DC	
Symbol	Rated voltage	Symbol	Rated voltage
1	100 VAC	5	24 VDC
2	200 VAC		
3	120 VAC (110 VAC)		
4	220 VAC		
7	240 VAC		
J	230 VAC		

8 Electrical entry

Symbol	Electrical entry	CE/UKCA-compliant
G	Grommet*1	24 VDC
GS	Grommet with PCB (With surge voltage suppressor)	100 VAC
		24 VDC
CS	Conduit (With surge voltage suppressor)	All voltages
DS	DIN terminal (With surge voltage suppressor)	All voltages
DZ	DIN terminal with light (With surge voltage suppressor)	All voltages
DN	DIN terminal without connector (With surge voltage suppressor)	All voltages
WN	M12 connector*2 (With surge voltage suppressor)	All voltages

*1 Only 24 VDC can be selected for the rated voltage.

*2 A cable for the M12 connector is not included with the product. Refer to "Option" on page 13 to order it separately.

9 Fluid and ambient temperatures

B	-40 to 60°C
----------	-------------

10 Silencer

Nil	Without
S	With

Shipped together with the product
Refer to "Replacement Parts" on page 12



Made to Order

Tank hole dia.: ø76 (Port size 14, 6-inch tank)	p. 25
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Variations for Port Size and Option

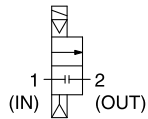
Model	Tank size	Port size			
		06	10	14	20
JSXFE	—	●	●	●	—
JSXFF	—	●	●	●	—
JSXFH	4 inch	●	—	—	—
	5 inch	●	●	—	—
	6 inch	—	●	●	—
	8 inch	—	—	●	●
	10 inch	—	—	—	●
Silencer		●	●	●	●

Specifications

Common Specifications

Valve specifications	Valve construction		Pilot operated diaphragm	
	Valve type		Normally closed (N.C.)	
	Fluid		Air	
	Withstand pressure	[MPa]	1.5	
	Min. operating pressure differential	[MPa]	0.1	
	Max. operating pressure differential	[MPa]	0.9	
	Max. system pressure	[MPa]	0.9	
	Fluid temperature	[°C]	-40*1 to 60	
	Ambient temperature	[°C]	-40 to 60	
	Enclosure		IP67 (IP65 for the DIN connector)*2	
Standards*3		CE/UKCA		
Coil specifications	Allowable voltage fluctuation		±10% of the rated voltage	
	Allowable leakage voltage	AC	5% or less of the rated voltage	
		DC	2% or less of the rated voltage	
	Apparent power*4, *5	AC	18 VA	
Power consumption*4	DC	12 W		

Symbol



JSXFE Series

*1 No condensation

*2 If water enters the product, it may result in operation failure or breakage.

Therefore, take appropriate measures to prevent water from entering the product when used in an environment where it is constantly exposed to water.

*3 Conformance to standards varies depending on the model. For details, refer to page 4.

*4 Power consumption/Apparent power: The value at an ambient temperature of 20°C and when the rated voltage is applied (Variation: ±10%)

*5 There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC.

Be sure to read "Specific Product Precautions" before handling.

Individual Specifications: Compression Fitting Type / Direct Piping Type

Series		JSXFE/F		
		06	10	14
Orifice diameter	[mm]	ø32	ø40	ø50
Port size		3/4	1	1 1/2
Weight*1 [g]	Compression	740	1,230	2,100
	Direct piping	560	820	1,480

*1 Indicates case of grommet type

Add 20 g for grommet with PCB, 70 g for conduit, 50 g for DIN terminal, and 15 g for M12 connector.



JSXFF Series

Individual Specifications: Immersion Type

Series		JSXFH								
		06		10		14		20		
Orifice diameter	[mm]	ø32		ø40		ø45		ø55		
Port size		3/4		1		1 1/2		2		
Tank size	ANSI	4	5	5	6	6	8	8	10	
Weight*1 [g]	Piping configuration	1	1,380	1,390	2,050	2,110	2,960	3,080	4,670	4,840
		2	1,410	1,430	2,100	2,210	3,120	3,310	4,990	5,150
		3	1,380	1,390	2,050	2,110	2,960	3,080	4,670	4,840
		4	1,410	1,430	2,100	2,210	3,120	3,310	4,990	5,150

*1 Indicates case of grommet type

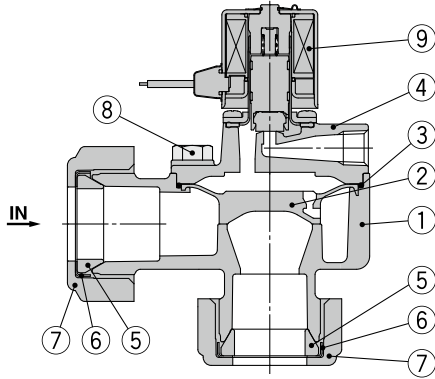
Add 20 g for grommet with PCB, 70 g for conduit, 50 g for DIN terminal, and 15 g for M12 connector.



JSXFH Series

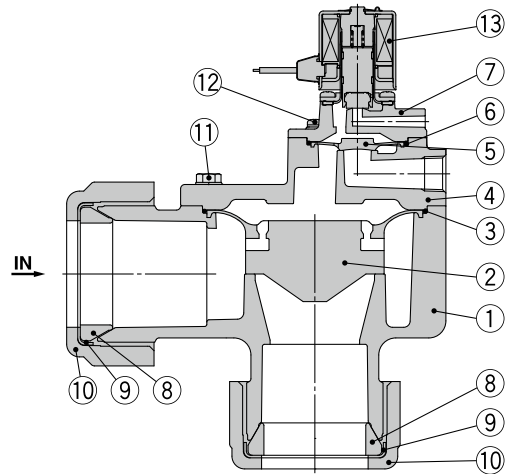
Construction**JSXFE/Compression Fitting Type**

Port sizes 06, 10

**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Seal	NBR
6	Washer	Fe (Chromating)
7	Compression nut	ADC
8	Hexagon bolt	Stainless steel
9	Pilot valve	—

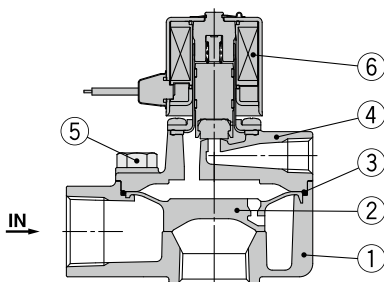
Port size 14

**Component Parts**

No.	Description	Material	No.	Description	Material
1	Body	ADC	8	Seal	NBR
2	Main valve	Resin	9	Washer	Fe (Chromating)
3	O-ring	NBR	10	Compression nut	ADC
4	Bonnet	ADC	11	Hexagon bolt	Stainless steel
5	Sub-valve	Resin	12	Cross recessed round head screw	Stainless steel
6	O-ring	NBR	13	Pilot valve	—
7	Bonnet	ADC			

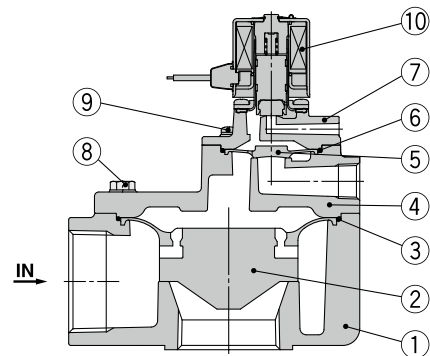
JSXFF/Direct Piping Type

Port sizes 06, 10

**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Hexagon bolt	Stainless steel
6	Pilot valve	—

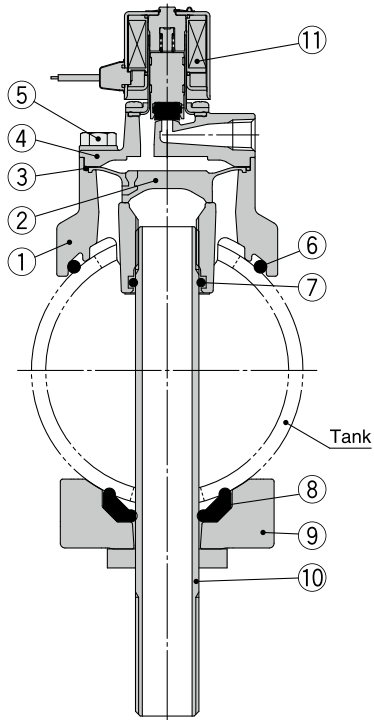
Port size 14

**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Sub-valve	Resin
6	O-ring	NBR
7	Bonnet	ADC
8	Hexagon bolt	Stainless steel
9	Cross recessed round head screw	Stainless steel
10	Pilot valve	—

Construction**JSXFH/Immersion Type**

Port sizes 06, 10

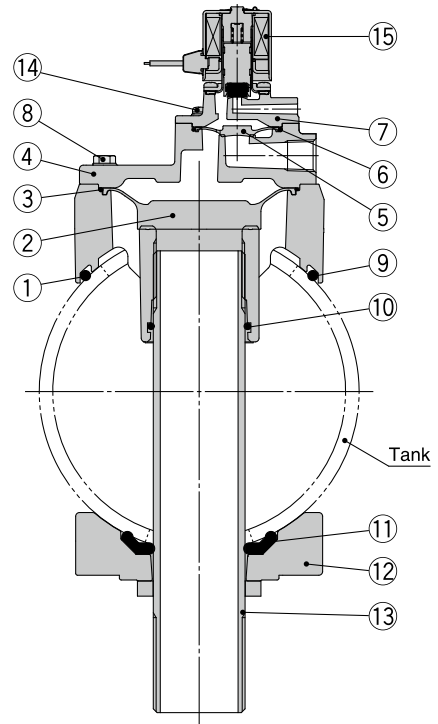


* The tank should be provided by the customer.

Component Parts

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Hexagon bolt	Stainless steel
6	O-ring	NBR
7	O-ring	NBR
8	Gasket	NBR
9	Bottom support	ADC
10	Outlet pipe assembly	STKM + SS400
11	Pilot valve	—

Port sizes 14, 20



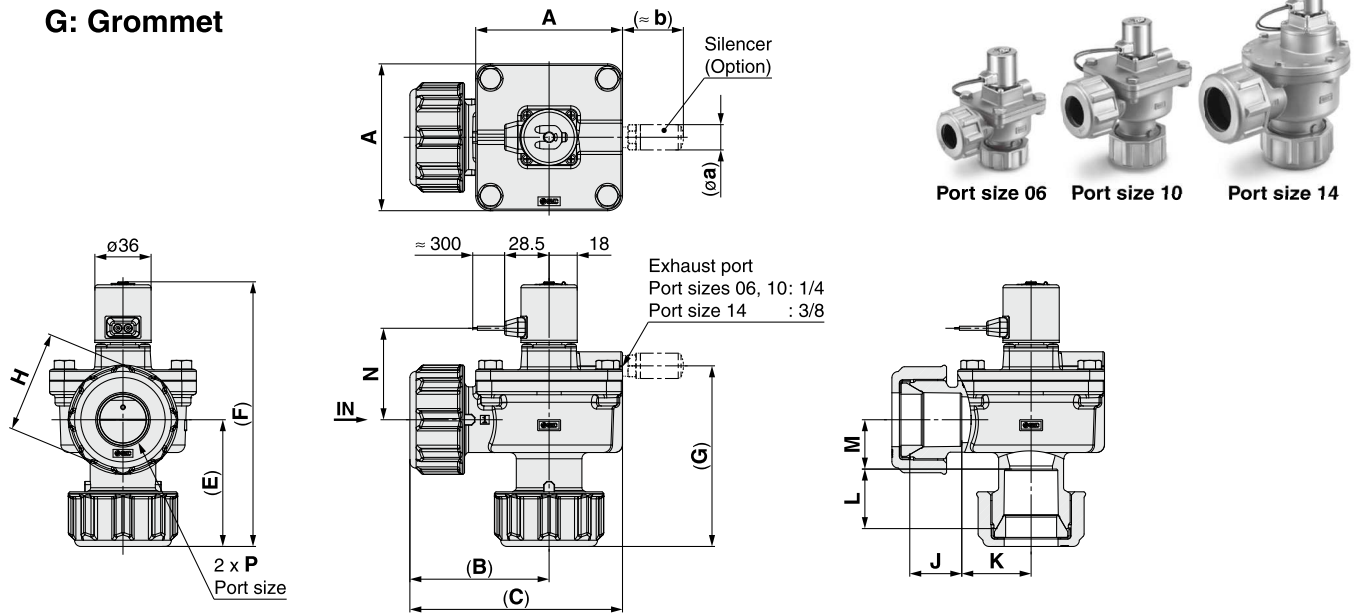
* The tank should be provided by the customer.

Component Parts

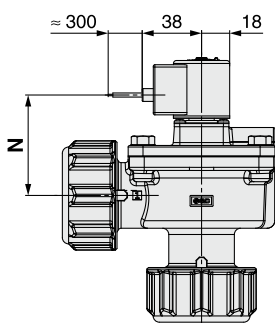
No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Sub-valve	Resin
6	O-ring	NBR
7	Bonnet	ADC
8	Hexagon bolt	Stainless steel
9	O-ring	NBR
10	O-ring	NBR
11	Gasket	NBR
12	Bottom support	ADC
13	Outlet pipe assembly	STKM + SS400
14	Cross recessed round head screw	Stainless steel
15	Pilot valve	—

Dimensions: JSXFE/Compression Fitting Type

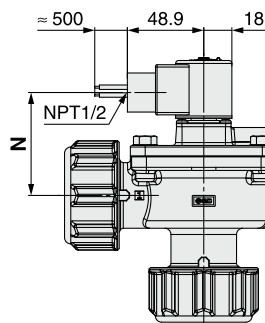
G: Grommet



GS: Grommet with PCB

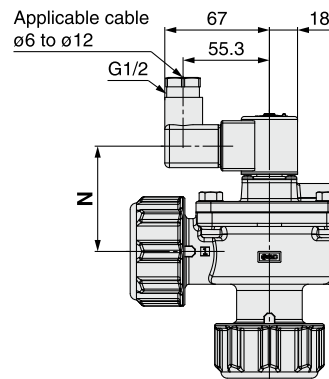


CS: Conduit

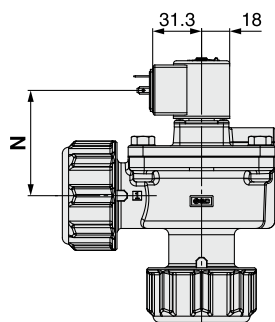


DS: DIN terminal

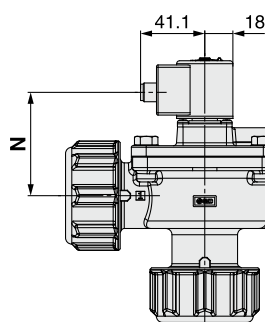
DZ: DIN terminal with light



DN: Without DIN connector



WN: M12 connector



Dimensions

[mm]

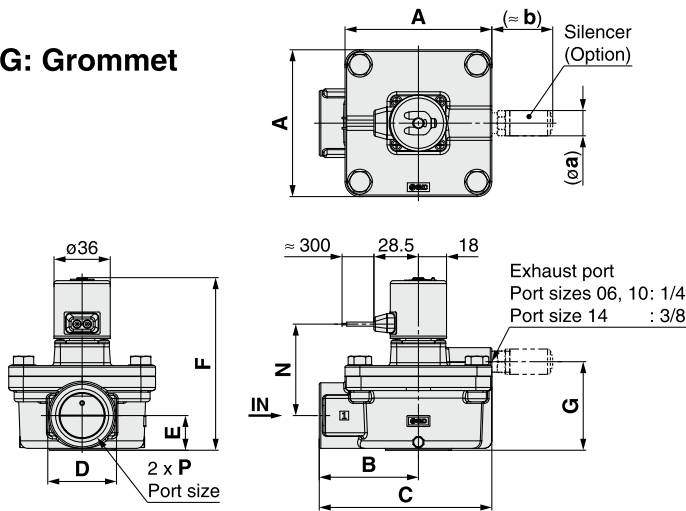
Model	Port size P	A	(B)	(C)	(E)	(F)	(G)	H	J	K	L	M
JSXFE-06	3/4	74	76	113	54	136	82	54	25.4	41.3	25.4	18.8
JSXFE-10	1	94	90	137	82	170	116	65	33.3	44.4	38.1	31.6
JSXFE-14	1 1/2	ø126	117	178	92	217	139	80	51.3	50.7	45	33

The dimensions in () show the dimensions after tightening.

Model	Port size P	N							With silencer	
		Grommet	Grommet with PCB	Conduit	DIN terminal	Without DIN connector	M12 connector	a	b	
JSXFE-06	3/4	52.6	58.3	59.9	61.4	61.4	60.2	16.5	39	
JSXFE-10	1	58.6	64.3	65.9	67.4	67.4	66.2			
JSXFE-14	1 1/2	95.6	101.3	102.9	104.4	104.4	103.2			20

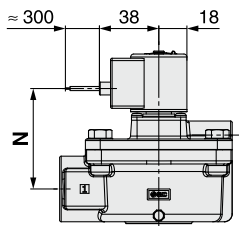
Dimensions: JSXFF/Direct Piping Type

G: Grommet

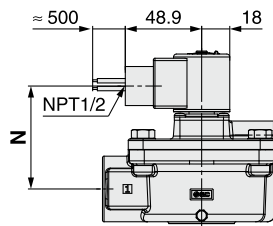


Port size 06 Port size 10 Port size 14

GS: Grommet with PCB

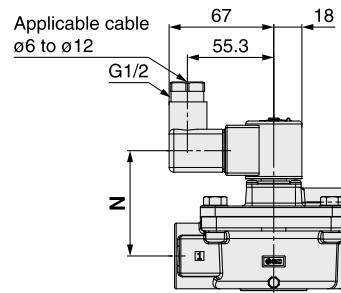


CS: Conduit

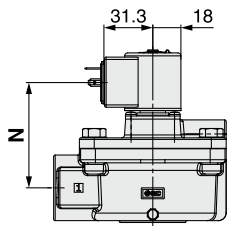


DS: DIN terminal

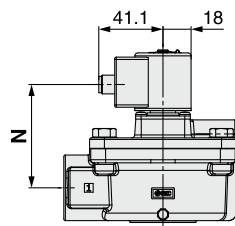
DZ: DIN terminal with light



DN: Without DIN connector



WN: M12 connector



Dimensions

[mm]

Model	Port size P	A	B	C	D	E	F	G
JSXFF-06	3/4	74	55.5	92.5	36	19.3	101.6	47.8
JSXFF-10	1	94	63.5	110.5	44	22.2	110.5	56.7
JSXFF-14	1 1/2	ø126	75.1	136.6	65	32	157.3	79

Model	Port size P	N							With silencer	
		Grommet	Grommet with PCB	Conduit	DIN terminal	Without DIN connector	M12 connector	a	b	
JSXFF-06	3/4	52.6	58.3	59.9	61.4	61.4	60.2	16.5	39	
JSXFF-10	1	58.6	64.3	65.9	67.4	67.4	66.2			
JSXFF-14	1 1/2	95.6	101.3	102.9	104.4	104.4	103.2	20	52	

Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

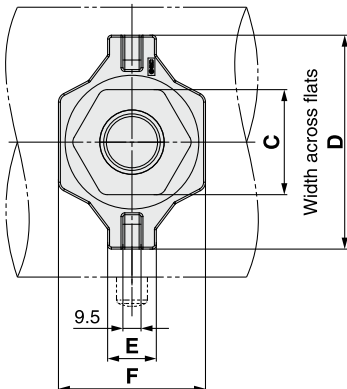
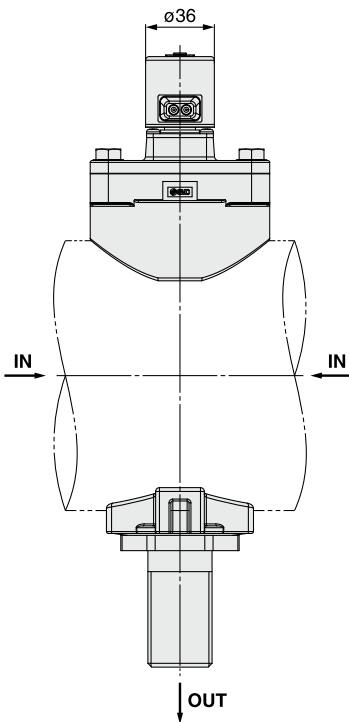
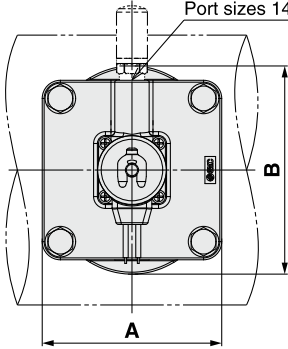
Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

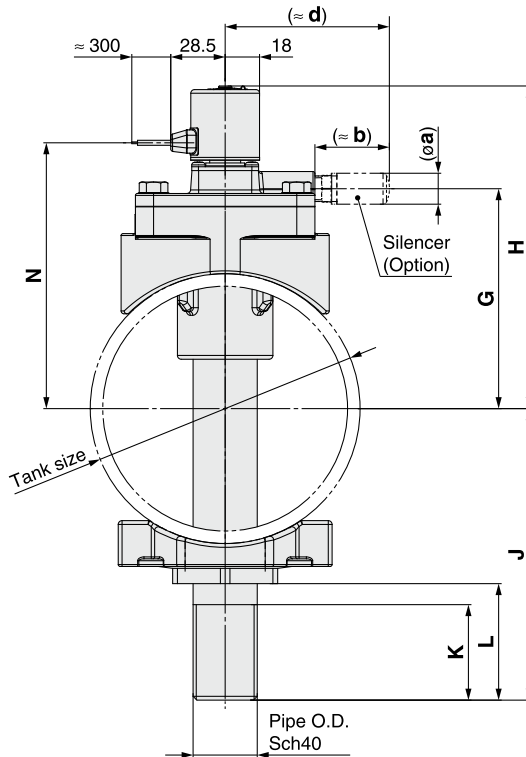
Dimensions: JSXFH/Immersion Type

Exhaust port
 Port sizes 06, 10: 1/4
 Port sizes 14, 20: 3/8



Port size 06 Port size 10 Port size 14 Port size 20

G: Grommet



Dimensions

Model	Port size	Tank size	Pipe O.D.	A	B	C	D	E	F	G	H
JSXFH4-06	3/4	4 inch (ANSI 4")	ø26.7 (ANSI 3/4")	90	93	46	90	25.5	63	99	153
JSXFH5-06		5 inch (ANSI 5")								113	166
JSXFH5-10	1	6 inch (ANSI 6")	ø33.6 (ANSI 1")	94	109	55	112	25.5	77	115	168
JSXFH6-10										128	182
JSXFH6-14	1 1/2	8 inch (ANSI 8")	ø48.3 (ANSI 1 1/2")	131	131	65	130	34.5	90	124	202
JSXFH8-14										150	228
JSXFH8-20	2	10 inch (ANSI 10")	ø60.3 (ANSI 2")	168	170	80	160	34.5	108	165	243
JSXFH10-20										192	270

OUT port piping configuration

Model	Port size	OUT port piping configuration											
		1			2			3			4		
		J	K	L	J	K	L	J	K	L	J	K	L
JSXFH4-06	3/4	146 ±5	62	164 ±5	80	146 ±5	G3/4" x 50	62	164 ±5	G3/4" x 70	80		
JSXFH5-06		153 ±5	56	173 ±5	76	153 ±5	G3/4" x 50	56	173 ±5	G3/4" x 70	76		
JSXFH5-10	1	153 ±5	61	173 ±5	81	153 ±5	G1" x 50	61	173 ±5	G1" x 70	81		
JSXFH6-10		173 ±5	68	213 ±5	108	173 ±5	G1" x 50	68	213 ±5	G1" x 90	108		
JSXFH6-14	1 1/2	169 ±5	61	209 ±5	101	169 ±5	G1 1/2" x 50	61	209 ±5	G1 1/2" x 90	101		
JSXFH8-14		198 ±5	65	258 ±5	125	198 ±5	G1 1/2" x 50	65	258 ±5	G1 1/2" x 110	125		
JSXFH8-20	2	197 ±5	60	257 ±5	120	197 ±5	G2" x 50	60	257 ±5	G2" x 110	120		
JSXFH10-20		224 ±5	60	284 ±5	120	224 ±5	G2" x 50	60	284 ±5	G2" x 110	120		

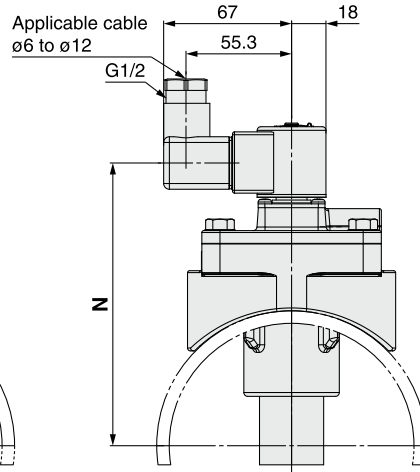
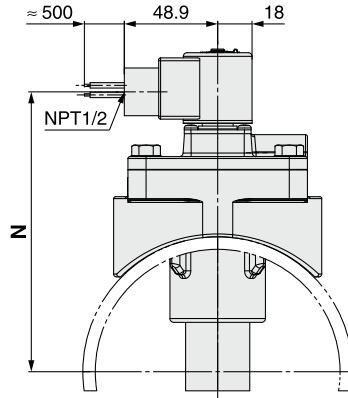
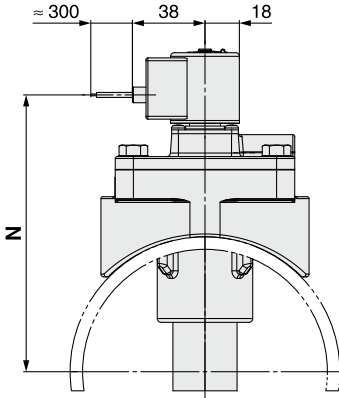
Dimensions: JSXFH/Immersion Type

GS: Grommet with PCB

CS: Conduit

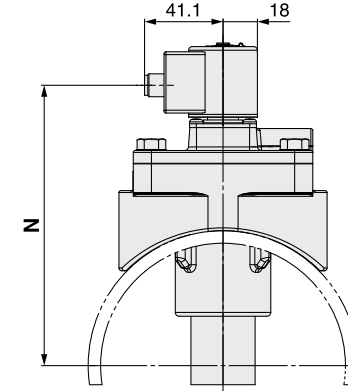
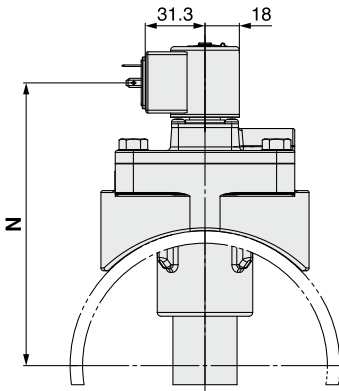
DS: DIN terminal

DZ: DIN terminal with light



DN: Without DIN connector

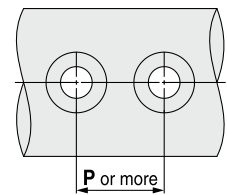
WN: M12 connector



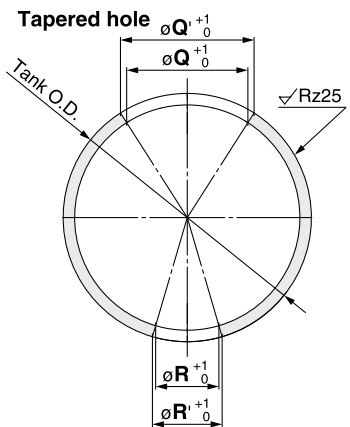
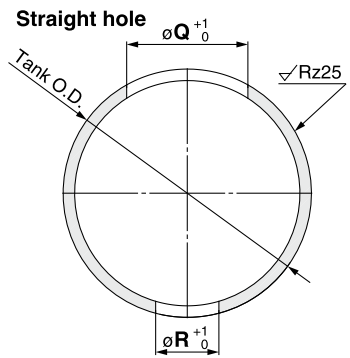
Recommended Tank Dimensions

* The tank should be provided by the customer.

Tank hole pitch



Tank hole machining



Dimensions

Model	Port size	N						With silencer		
		Grommet	Grommet with PCB	Conduit	DIN terminal	Without DIN connector	M12 connector	a	b	d
JSXFH4-06	3/4	123	129	131	132	132	131	16.5	39	76
JSXFH5-06		137	142	144	146	146	144			
JSXFH5-10	1	139	144	146	148	148	146	20	52	86
JSXFH6-10		152	158	160	161	161	160			
JSXFH6-14	1 1/2	173	178	180	182	182	180	20	52	114
JSXFH8-14		198	204	205	207	207	206			
JSXFH8-20	2	213	219	220	222	222	221	20	52	95
JSXFH10-20		240	246	247	249	249	248			

Recommended Tank Dimensions

Model	Port size	Tank size	Tank O.D.	Tank hole pitch P	Straight hole		Tapered hole			
					Q	R	Q	Q'	R	R'
JSXFH4-06	3/4	4 inch (ANSI 4")	ø114.3 +1.6/-0.8	95	55	28	55	61.5	28	31.3
JSXFH5-06		5 inch (ANSI 5")	ø141.3 +1.6/-0.8							
JSXFH5-10	1	6 inch (ANSI 6")	ø168.3 +1.6/-0.8	100	69	36	69	76	36	39.7
JSXFH6-10										
JSXFH6-14	1 1/2	8 inch (ANSI 8")	ø219.1 +1.6/-0.8	135	95	52	95	104	52	56.8
JSXFH8-14										
JSXFH8-20	2	10 inch (ANSI 10")	ø273.1 +2.4/-0.8	175	117	62	117	126	62	67
JSXFH10-20										

Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

Replacement Parts (Solenoid Valve Type/JSXF□)

Port size	Model	Replacement part number			
		Main valve assembly (Main valve + O-ring)	Sub-valve assembly (Sub-valve + O-ring)	Silencer	Solenoid coil*1
06	JSXF(E, F, H)□-06□-□□B-(S)	JSXF-06B-KT	—	Rc, G thread: AN20-02	JSXF□□-□□-□□B-KT1 Valve part number
10	JSXF(E, F, H)□-10□-□□B-(S)	JSXF-10B-KT	—	NPT thread: AN20-N02	
14	JSXF(E, F)□-14□-□□B-(S)	JSXF-14B-KT	JSXF-14B-KT2	Rc, G thread: AN30-03 NPT thread: AN30-N03	
	JSXFH□-14□-□□B-(S)	JSXF-14B-1-KT			
20	JSXFH□-20□-□□B-(S)	JSXF-20B-KT	JSXF-14B-KT2		

*1 The solenoid coil has a name plate with the product part number printed on it. In addition, the name plate has the marks of all applicable standards printed on it. For the solenoid coil, eligibility for CE marking standard certification varies depending on the electrical entry type and the rated voltage. When ordering a solenoid coil with different specifications than the valve currently in use, refer to "How to Order" in the catalog to confirm the status of standard compliance.

Disassembly/Assembly Procedure

⚠ Caution

1. Before disassembly, be sure to turn OFF the power supply and pressure supply, and then release the residual pressure.
2. Confirm that the solenoid coil temperature has dropped sufficiently before removing the product.

Disassembly

- 1) Remove the clip, and then remove the solenoid coil.
- 2) Loosen the hexagon bolts (cross recessed round head screws), and remove the bonnet assembly (bonnet), O-ring, and the main valve (sub-valve).

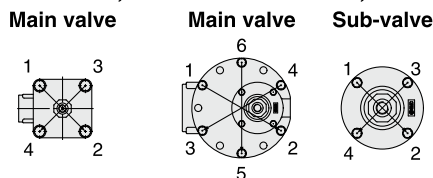
Assembly

- 1) Attach the main valve (sub-valve) to the body. The main valve (sub-valve) has a predetermined mounting direction. **Assemble the valve referring to Fig. 1.** If the valve is assembled incorrectly, it can cause a malfunction.
- 2) Mount the O-ring to the body groove. (See Fig. 2.) After mounting the O-ring, check to make sure that the O-ring is fitted properly into the groove. If it is not in the groove, external leakage and/or operation failure may occur.
- 3) Attach the bonnet assembly (bonnet) to the body.
- 4) Tighten the hexagon bolts (cross recessed round head screws) diagonally. (See Table 1 for the tightening torque.)
- 5) Secure the solenoid coil with a clip. (For details, refer to "Specific Product Precautions" on page 34)

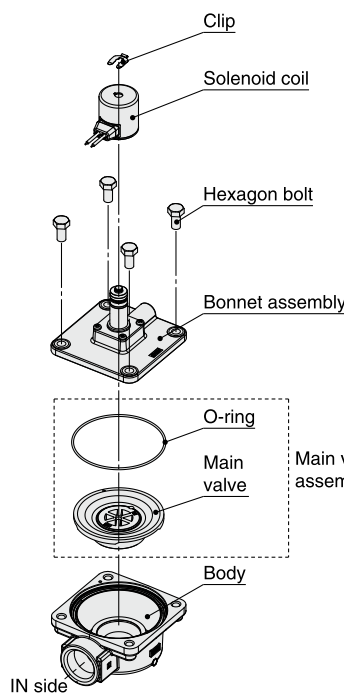
Table 1. Proper Tightening Torque [N·m]

JSXF□-06□	M8	12.5 to 13.8
JSXF□-10□	M8	12.5 to 13.8
JSXF□-14□	Main valve	M6 5.2 to 5.7
	Sub-valve	M4 1.5 to 1.7
JSXF□-20□	Main valve	M8 12.5 to 13.8
	Sub-valve	M4 1.5 to 1.7

Port sizes 06, 10 Port sizes 14, 20



Port sizes 06, 10



Port sizes 14, 20

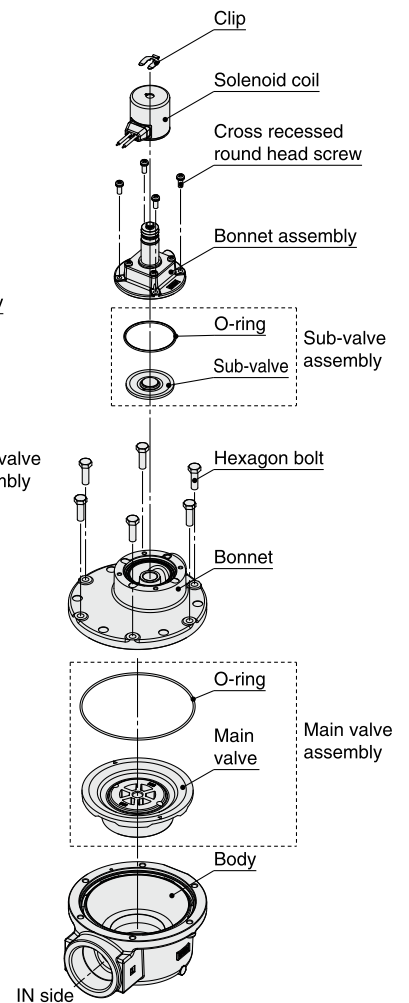


Fig. 2 O-ring position

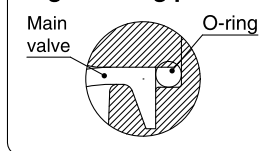
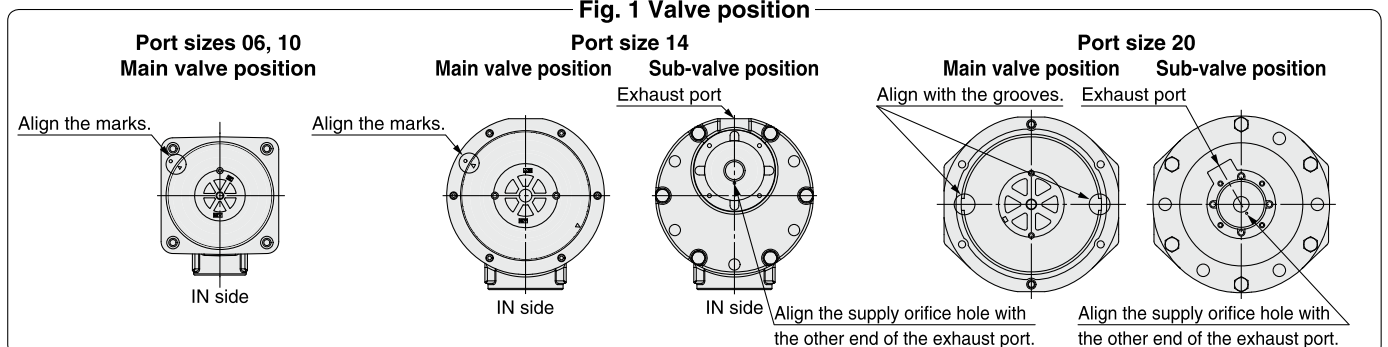


Fig. 1 Valve position



JSXF Series Option

Cable for M12 Connector (Female Connector with Cable)

The solenoid valve does not come with a cable for the M12 connector.
Please order it separately if necessary.

JSX022-30-1-1

● Specification

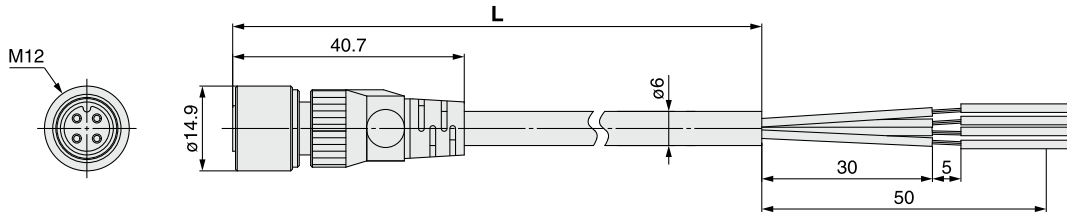
1	For DC voltages
2	For AC voltages

● Cable length L [mm]

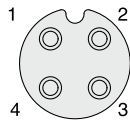
1	1000
2	2000
5	5000

Specifications

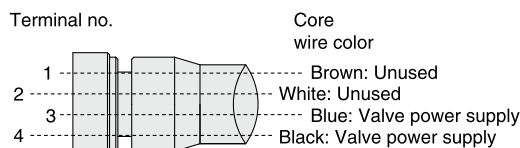
Part number		JSX022-30-1-□	JSX022-30-2-□
Key type		A-coded	B-coded
Rating/Performance	Rated current	4 A	
	Rated voltage	250 V	
	Contact resistance	40 mΩ or less	
	Insulation resistance	1000 MΩ or more	
	Withstand voltage	1500 VAC	
	Operating temperature range	-25 to 70°C	
	Min. bending radius (Fixed)	50 mm	
	Protection class	IP67 (Only with screw tightened)	
	Allowable repeated insertion/withdrawal	200	
Material	Material of knurl	Brass (Ni plating)	
	Contact (Surface treatment)	Copper alloy (Au plating)	
	Connector material	PBT	
	Cover	Soft PBT	



**For DC voltages
(A-coded)**

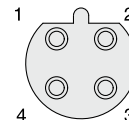


**Socket connector
pin arrangement**

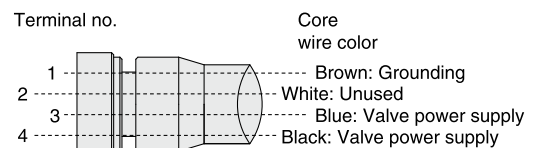


Connections

**For AC voltages
(B-coded)**



**Socket connector
pin arrangement**



Connections

* The solenoid valve has no polarity for DC voltages.

Solenoid Valve Type

JSXF Series

SMARTVENT Type

JSXF-P □ Series

Air Operated Type

JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

Pulse Valve Valve for Dust Collector

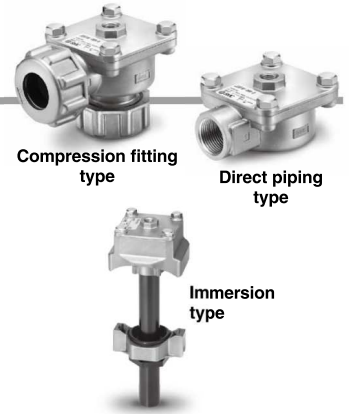
Air Operated Type

JSXFA Series



How to Order

Compression	JSXFAE	-06R	-B-	1
Direct Piping	JSXFAF	-06R	-B-	1
Immersion	JSXFAH	4-06R1	-B-	1
	1 2 3	4 5 6	7 8	9



1 Valve type

A	Air operated
---	--------------

2 Piping

E	Compression fitting type*1	
F	Direct piping type	
H	Immersion type*2	

*1 Seals and washers are included.

*2 The valve and pipe do not come assembled.

3 Tank size (JSXFAH only)

4	4 inch
5	5 inch
6	6 inch
8	8 inch
10	10 inch

5 Thread type

R	Rc
N	NPT
F	G

8 Silencer

(Only port size 14 and 20 can be selected.)

Nil	Without
S	With

Shipped together with the product
Refer to "Replacement Parts" on page 24

9 Pilot port size

Nil	1/4
1	1/8

4 Port size*1

06	3/4 (20A)
10	1 (25A)
14	1 1/2 (40A)
20*2	2 (50A)

*1 For port size selection, refer to the "Variations for Port Size and Option" table below.

*2 Port size 20 is only available for the JSXFAH.

6 OUT port piping configuration (JSXFAH only)

Symbol	Length	G thread	Appearance
1	Short	None	
2	Long	None	
3	Short	Yes	
4	Long	Yes	

7 Fluid and ambient temperatures

B	-40 to 60°C
---	-------------



Made to Order

Tank hole dia.: ø76 (Port size 14, 6-inch tank)	p. 25
--	-------

⚠ Caution

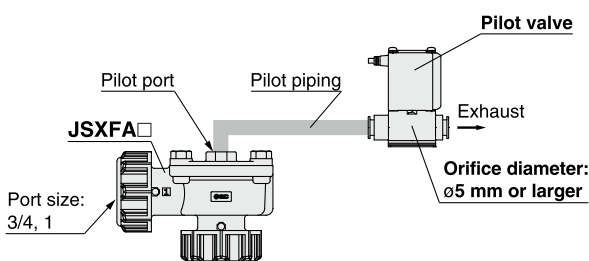
Pilot Valve Selection (JSXFA series common)

For the pilot valve orifice diameter, ø5 mm or larger is recommended.

The product may not operate correctly if the pilot valve orifice diameter is inadequate. (Port size: 3/4, 1)

Depending on the pilot piping port size*1 or length, the valve may not operate correctly.

*1 The I.D. of the pilot piping must be larger than the pilot valve orifice diameter to use. The max. pilot piping I.D. is 10 mm.



* The figure shows the JSXFAE.

Made to Order (JSXFA series common)

When the pilot valve orifice diameter is ø3 mm or larger and less than ø5 mm, put "A" to the end of the product number for made-to-order.

Pilot valve orifice diameter: Special specification

A	For ø3 mm to ø5 mm	Port size: 06, 10
---	--------------------	-------------------

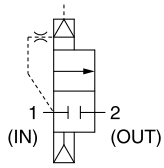
JSXFA [] - [] - B - [] [] A

Enter the standard product number.

Variations for Port Size and Option

Model	Tank size	Port size			
		06	10	14	20
JSXFAE	—	●	●	●	—
JSXFAF	—	●	●	●	—
JSXFAH	4 inch	●	—	—	—
	5 inch	●	●	—	—
	6 inch	—	●	●	—
	8 inch	—	—	●	●
	10 inch	—	—	—	●
Pilot valve orifice		●	●	—	—
Silencer		—	—	●	●

Symbol



JSXFAE Series



JSXFAF Series



JSXFAH Series

Specifications

Common Specifications

Valve specifications	Fluid	Air
	Min. operating pressure differential [MPa]	0.1
	Max. operating pressure differential [MPa]	0.9
	Max. system pressure [MPa]	0.9
	Fluid temperature [°C]	-40* ¹ to 60
	Ambient temperature [°C]	-40 to 60
	Operating environment	Indoor/Outdoor* ²

*1 No condensation

*2 For outdoor use, be sure to implement sufficient measures to protect the operational pilot valve from rain water.

Refer to "2-Port Solenoid Valves for Fluid Control Precautions" for protective measures. Be sure to read "Specific Product Precautions" before handling.

Individual Specifications: Compression Fitting Type / Direct Piping Type

Series	JSXFAE/F			
	06	10	14	
Orifice diameter [mm]	ø32	ø40	ø50	
Port size	3/4	1	1 1/2	
Weight [g]	Compression	470	910	1,850
	Direct piping	290	500	1,230

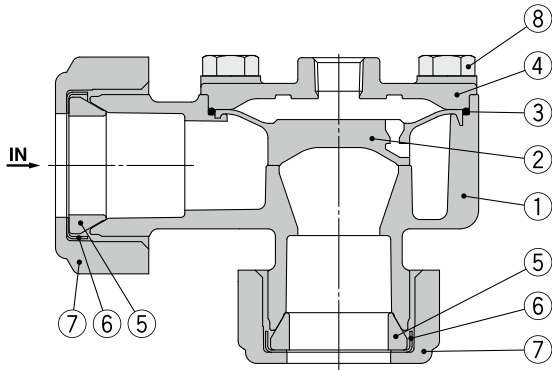
Individual Specifications: Immersion Type

Series	JSXFAH									
	06		10		14		20			
Orifice diameter [mm]	ø32		ø40		ø45		ø55			
Port size	3/4		1		1 1/2		2			
Tank size	ANSI	4	5	5	6	6	8	8	10	
Weight* ³ [g]	Piping configuration	1	1,110	1,120	1,730	1,790	2,710	2,830	4,420	4,590
		2	1,140	1,160	1,780	1,890	2,870	3,060	4,740	4,900
		3	1,110	1,120	1,730	1,790	2,710	2,830	4,420	4,590
		4	1,140	1,160	1,780	1,890	2,870	3,060	4,740	4,900

*3 The tank weight is not included in the weight above.

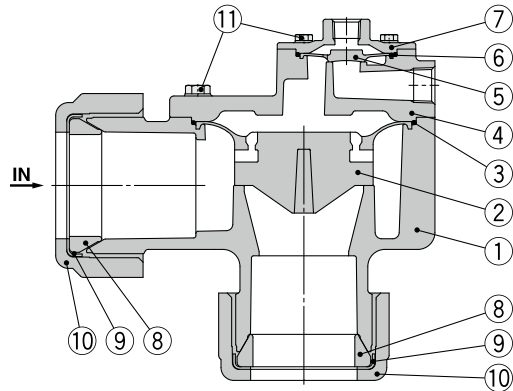
Construction**JSXFAE/Compression Fitting Type**

Port sizes 06, 10

**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Seal	NBR
6	Washer	Fe (Chromating)
7	Compression nut	ADC
8	Hexagon bolt	Stainless steel

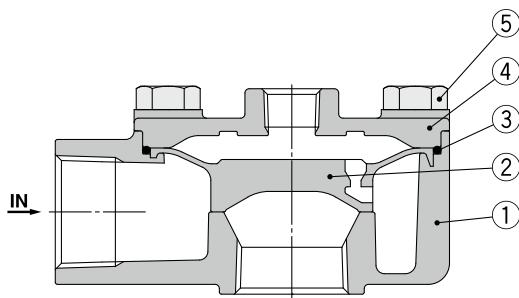
Port size 14

**Component Parts**

No.	Description	Material	No.	Description	Material
1	Body	ADC	8	Seal	NBR
2	Main valve	Resin	9	Washer	Fe (Chromating)
3	O-ring	NBR	10	Compression nut	ADC
4	Bonnet	ADC	11	Hexagon bolt	Stainless steel
5	Sub-valve	Resin			
6	O-ring	NBR			
7	Bonnet	ADC			

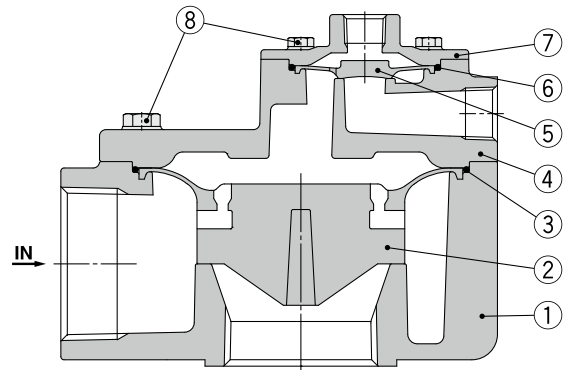
JSXFAD/Direct Piping Type

Port sizes 06, 10

**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Hexagon bolt	Stainless steel

Port size 14

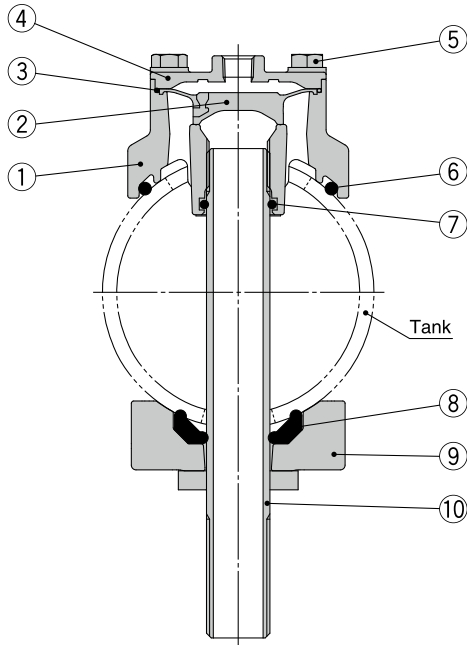
**Component Parts**

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Sub-valve	Resin
6	O-ring	NBR
7	Bonnet	ADC
8	Hexagon bolt	Stainless steel

Construction

JSXFAH/Immersion Type

Port sizes 06, 10

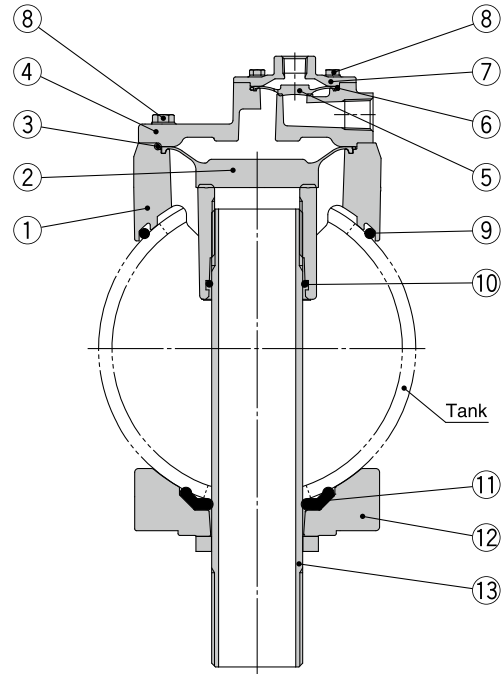


* The tank should be provided by the customer.

Component Parts

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Hexagon bolt	Stainless steel
6	O-ring	NBR
7	O-ring	NBR
8	Gasket	NBR
9	Bottom support	ADC
10	Outlet pipe assembly	STKM + SS400

Port sizes 14, 20



* The tank should be provided by the customer.

Component Parts

No.	Description	Material
1	Body	ADC
2	Main valve	Resin
3	O-ring	NBR
4	Bonnet	ADC
5	Sub-valve	Resin
6	O-ring	NBR
7	Bonnet	ADC
8	Hexagon bolt	Stainless steel
9	O-ring	NBR
10	O-ring	NBR
11	Gasket	NBR
12	Bottom support	ADC
13	Outlet pipe assembly	STKM + SS400

Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
 55-JSXF

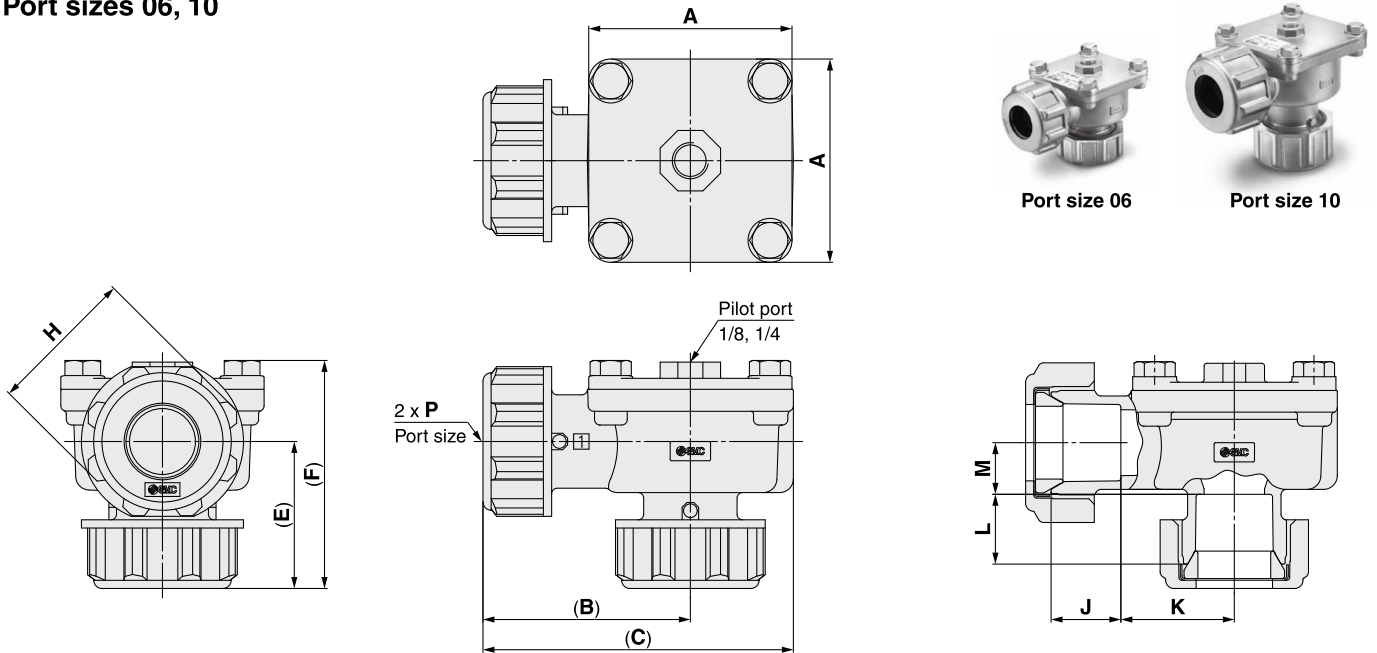
Dedicated Controller for Operation

Glossary of Terms

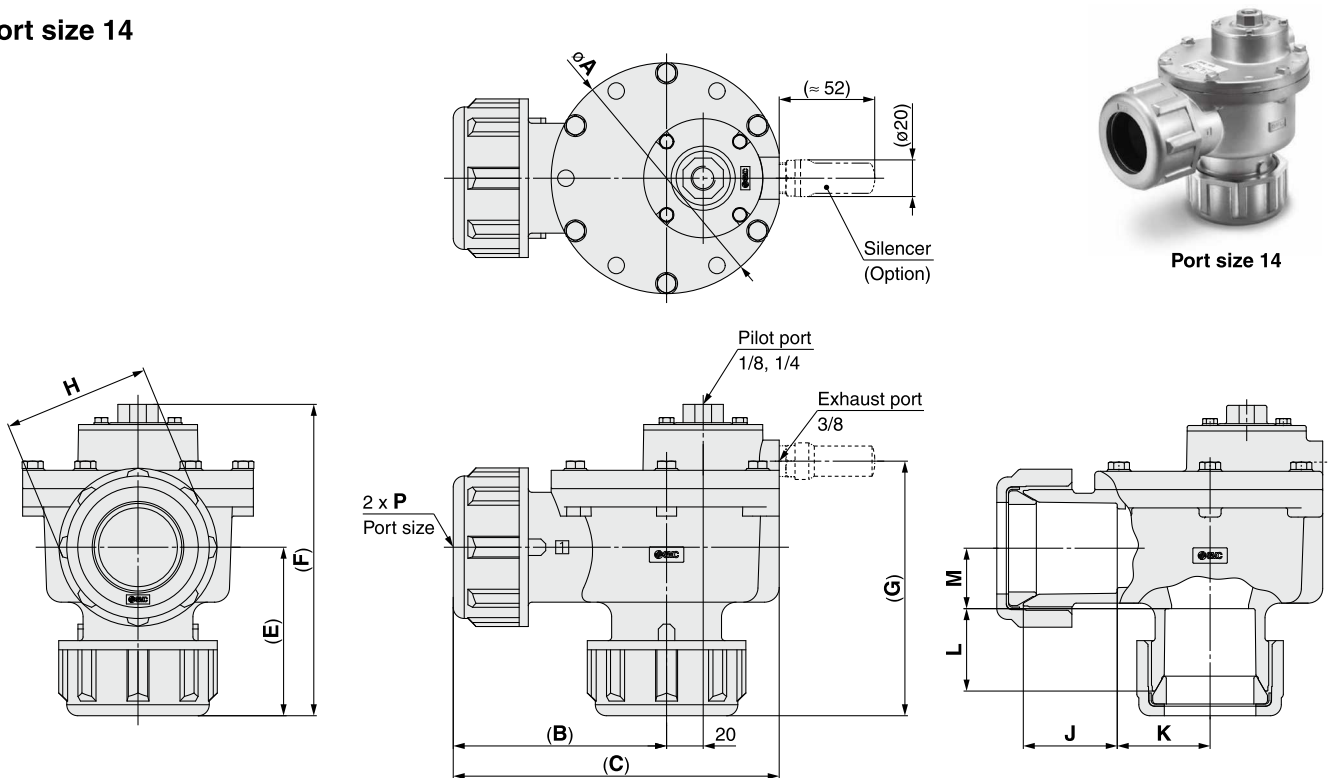
Specific Product Precautions

Dimensions: JSXFAE/Compression Fitting Type

Port sizes 06, 10



Port size 14



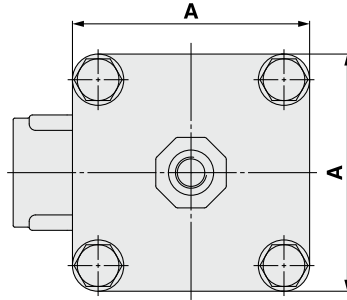
Dimensions

Model	Port size P	A	(B)	(C)	(E)	(F)	(G)	H	J	K	L	M
JSXFAE-06	3/4	74	76	113	54	83	—	54	25.4	41.3	25.4	18.8
JSXFAE-10	1	94	90	137	82	120	—	65	33.3	44.4	38.1	31.6
JSXFAE-14	1 1/2	126	117	178	92	170	139	80	51.3	50.7	45	33

The dimensions in () show the dimensions after tightening.

Dimensions: JSXFAF/Direct Piping Type

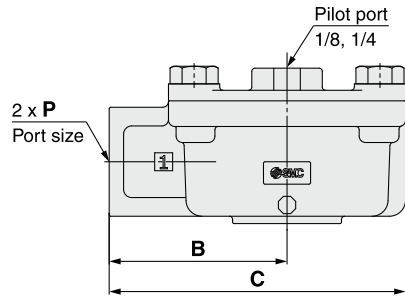
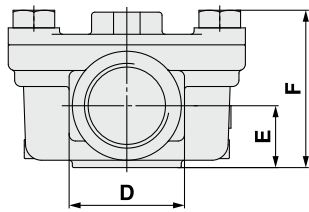
Port sizes 06, 10



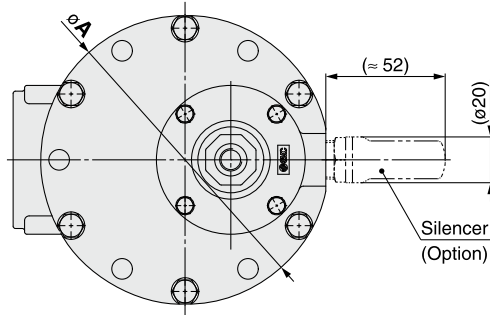
Port size 06



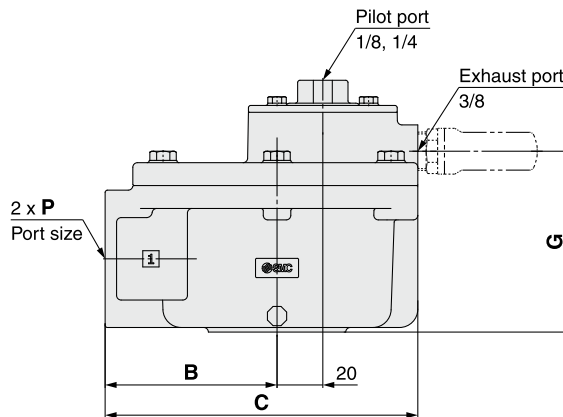
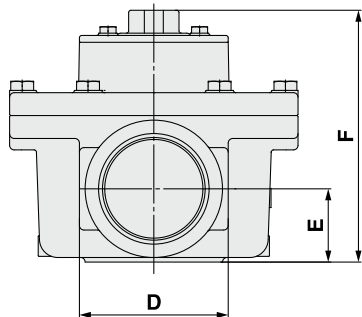
Port size 10



Port size 14



Port size 14



Dimensions

Model	Port size P	A	B	C	D	E	F	G
JSXFAP-06	3/4	74	55.5	92.5	36	19.3	48.8	—
JSXFAP-10	1	94	63.5	110.5	44	22.2	60.2	—
JSXFAP-14	1 1/2	126	75.1	136.6	65	32	110	79

[mm]

Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
 55-JSXF

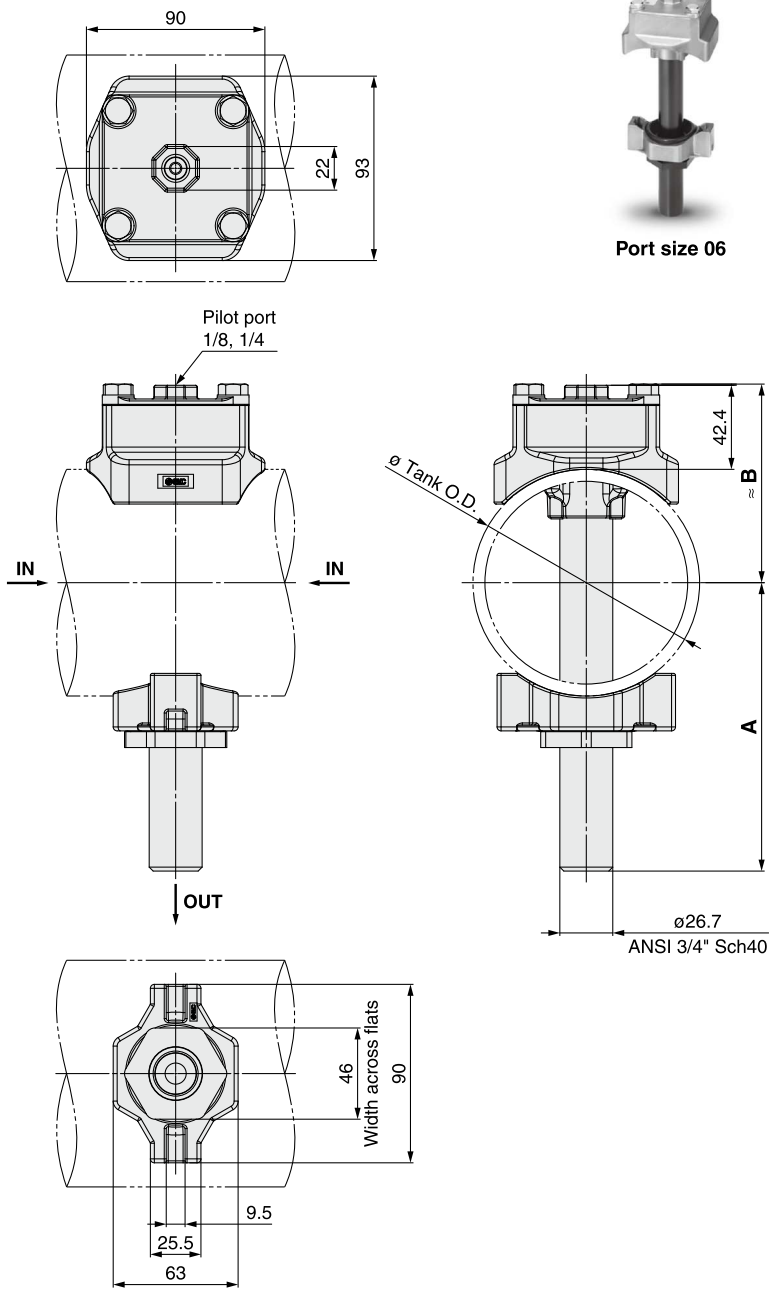
Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

Dimensions: JSXFAH/Immersion Type

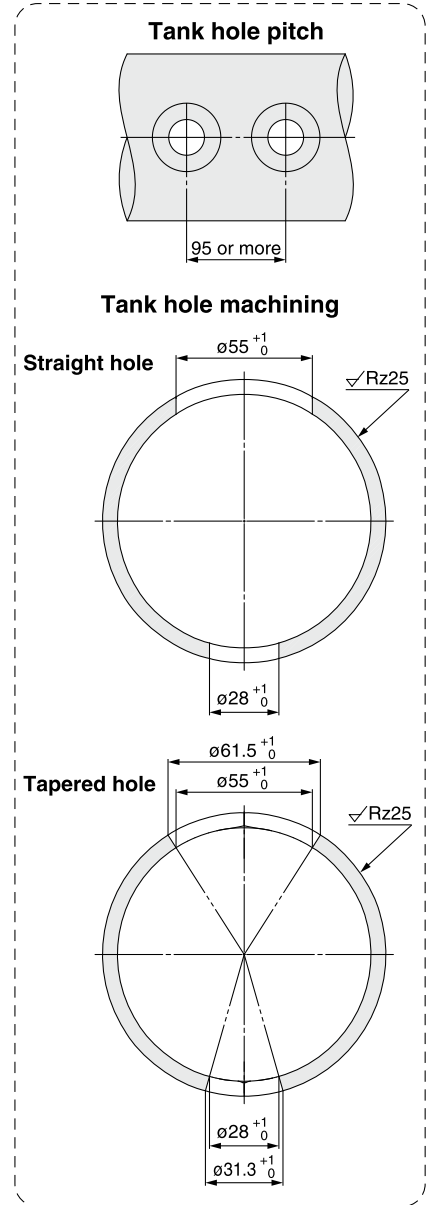
Port size 06



Port size 06

Recommended Tank Dimensions

* The tank should be provided by the customer.

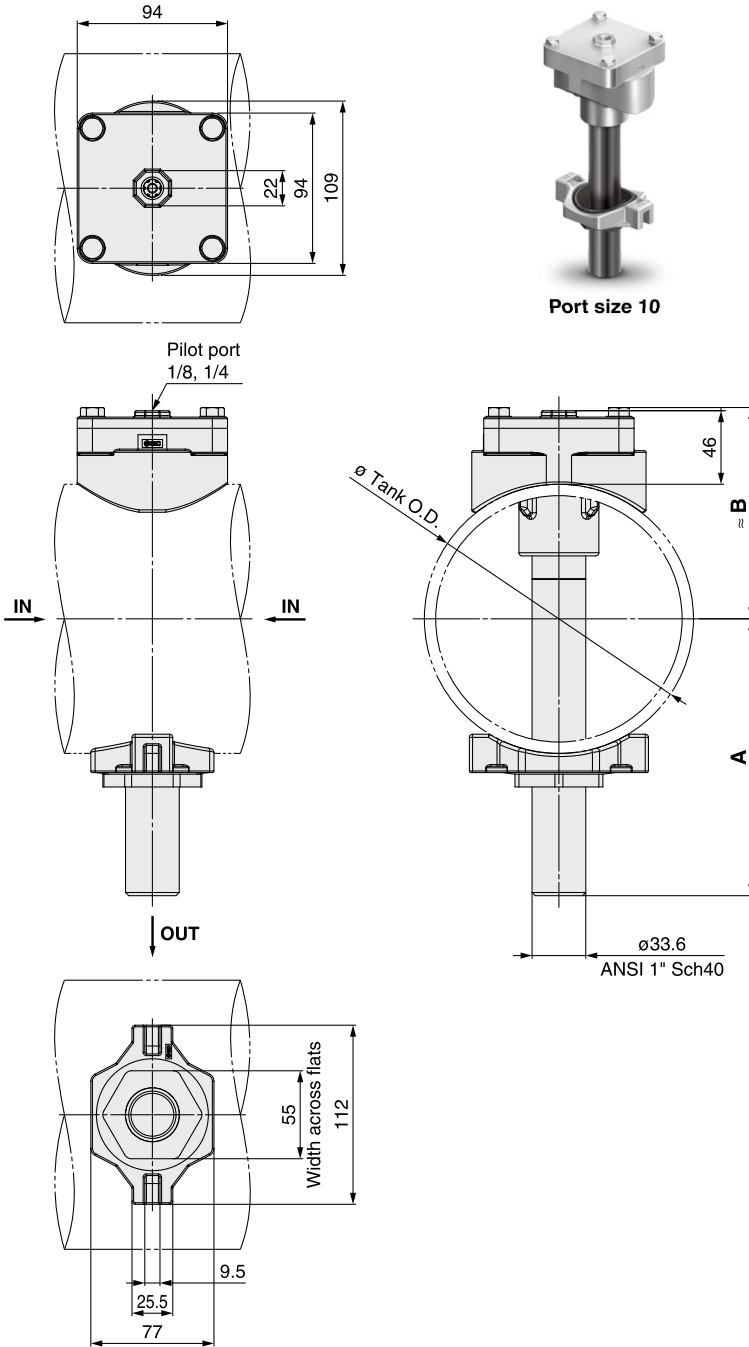


Dimensions

Tank size	Tank O.D. ø	B	OUT port piping configuration											
			1			2			3			4		
			A	D	E	A	D	E	A	D	E	A	D	E
4 inch (ANSI 4")	114.3 ^{+1.6} / _{-0.8}	100	146 ±5	—	62	164 ±5	—	80	146 ±5	50	62	164 ±5	70	80
5 inch (ANSI 5")	141.3 ^{+1.6} / _{-0.8}	114	153 ±5	—	56	173 ±5	—	76	153 ±5	50	56	173 ±5	70	76

Dimensions: JSXFAH/Immersion Type

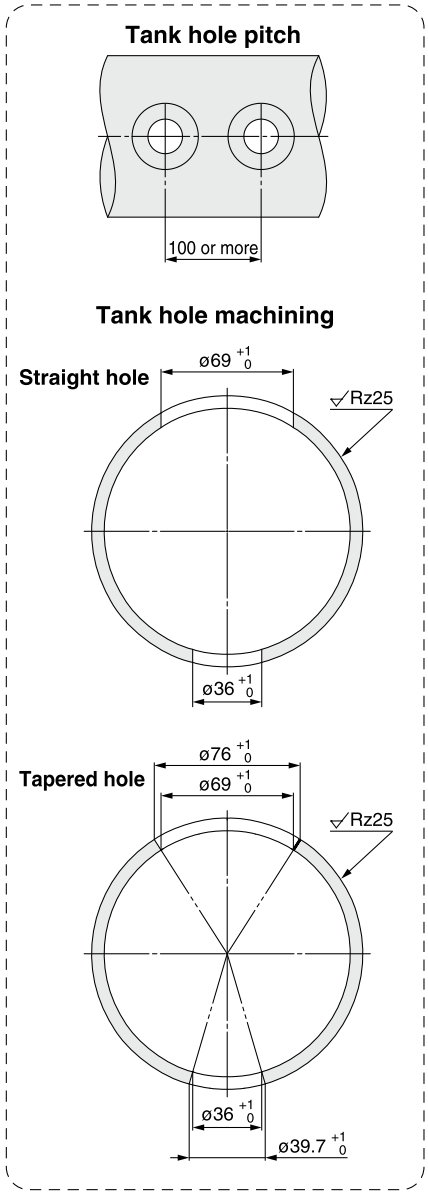
Port size 10



Port size 10

Recommended Tank Dimensions

* The tank should be provided by the customer.



Dimensions

Tank size	Tank O.D. ø	B	OUT port piping configuration											
			1			2			3			4		
			A	D	E	A	D	E	A	D	E	A	D	E
5 inch (ANSI 5")	141.3 ^{+1.6} _{-0.8}	118	153 ±5	—	61	173 ±5	—	81	153 ±5	50	61	173 ±5	70	81
6 inch (ANSI 6")	168.3 ^{+1.6} _{-0.8}	132	173 ±5	—	68	213 ±5	—	108	173 ±5	50	68	213 ±5	90	108

Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

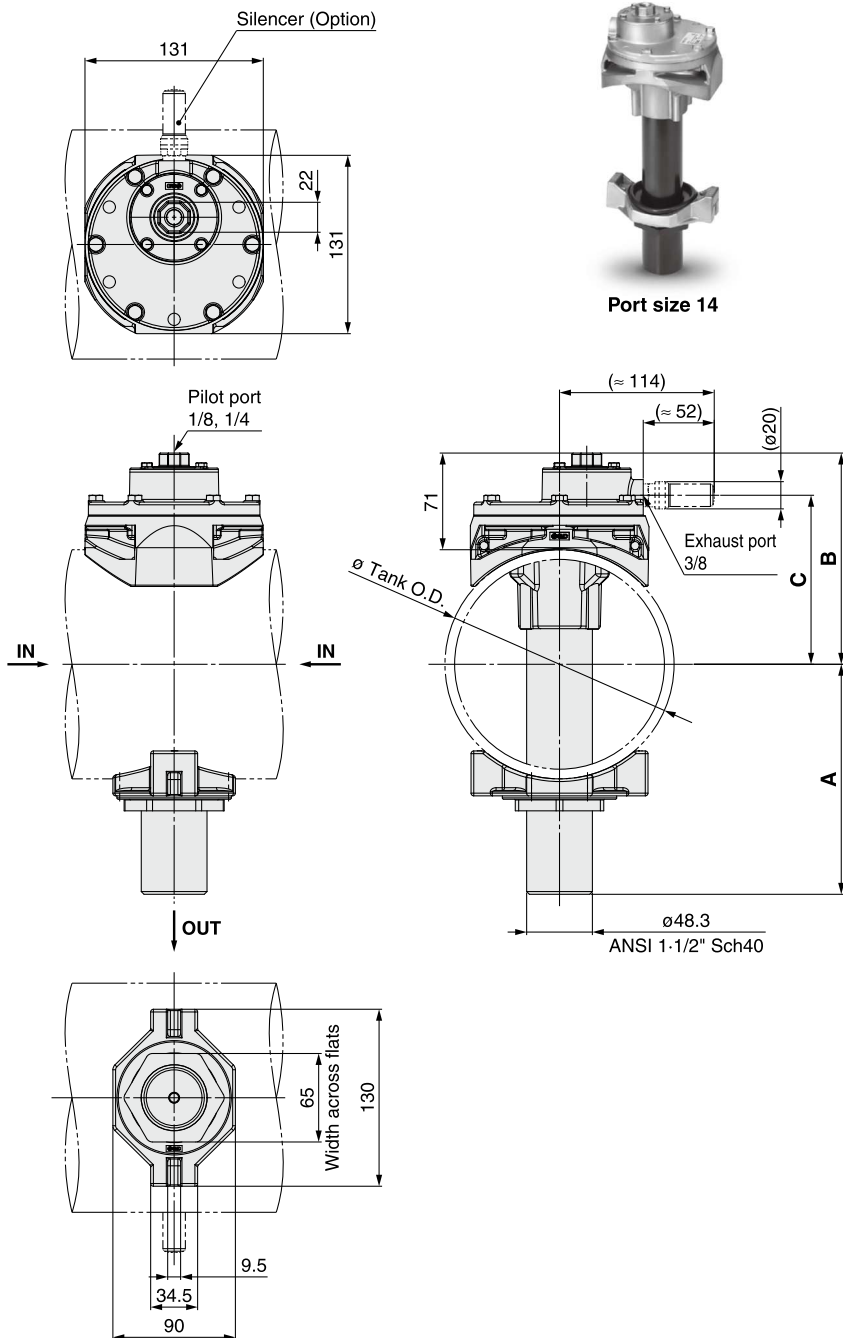
Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

Dimensions: JSXFAH/Immersion Type

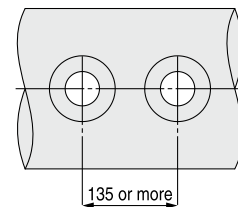
Port size 14



Recommended Tank Dimensions

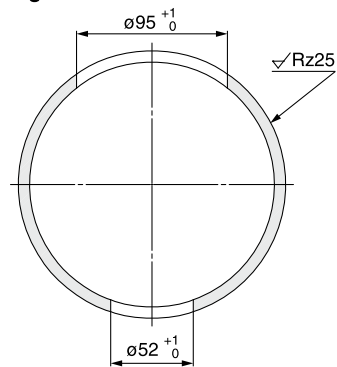
* The tank should be provided by the customer.

Tank hole pitch

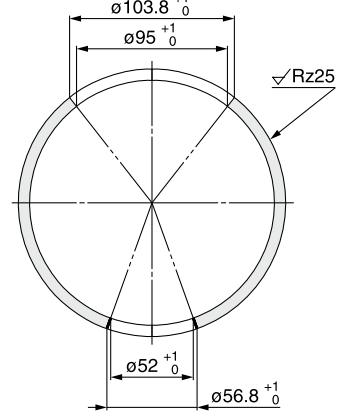


Tank hole machining

Straight hole



Tapered hole



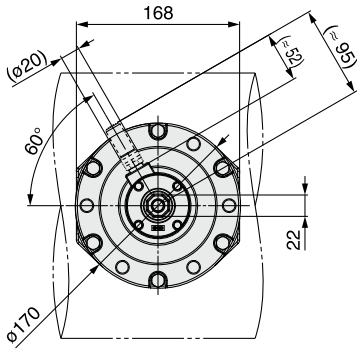
Dimensions

Tank size	Tank O.D. ø	B	C	OUT port piping configuration											
				1			2			3			4		
				A	D	E	A	D	E	A	D	E	A	D	E
6 inch (ANSI 6")	168.3 ^{+1.6} _{-0.8}	155	124	169 ±5	—	61	209 ±5	—	101	169 ±5	50	61	209 ±5	90	101
8 inch (ANSI 8")	219.1 ^{+1.6} _{-0.8}	181	150	198 ±5	—	65	258 ±5	—	125	198 ±5	50	65	258 ±5	110	125

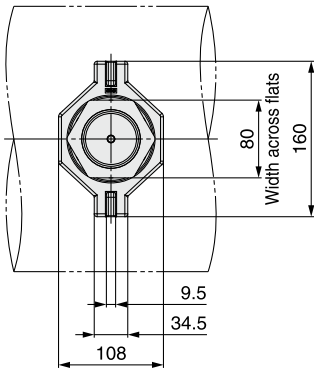
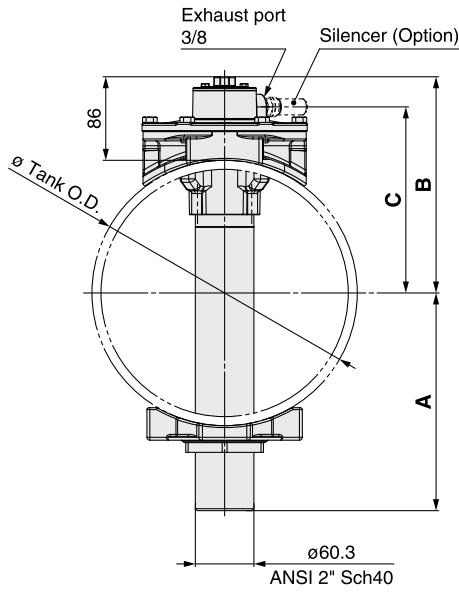
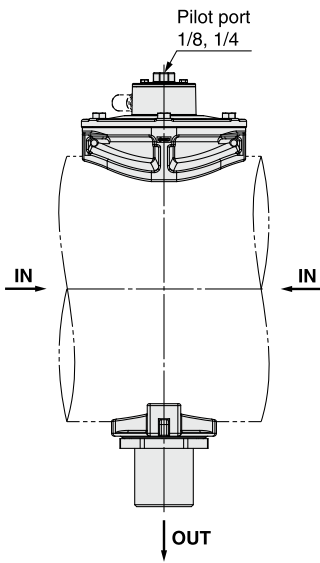
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Dimensions: JSXFAH/Immersion Type

Port size 20



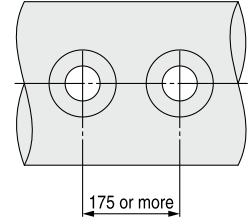
Port size 20



Recommended Tank Dimensions

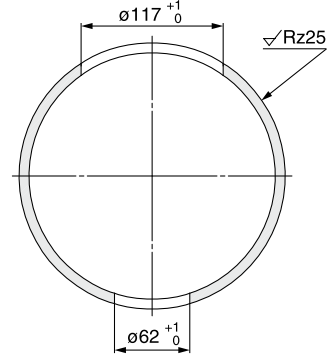
* The tank should be provided by the customer.

Tank hole pitch

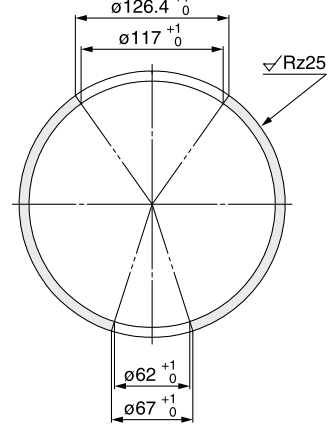


Tank hole machining

Straight hole

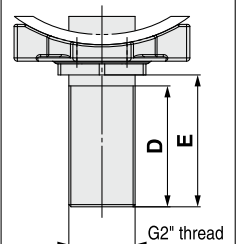
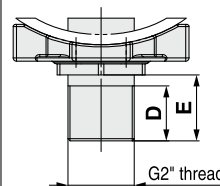
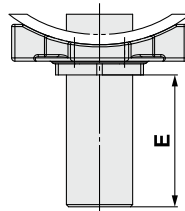
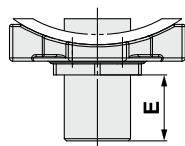


Tapered hole



Dimensions

Tank size	Tank O.D. ϕ	B	C	OUT port piping configuration											
				1			2			3			4		
				A	D	E	A	D	E	A	D	E	A	D	E
8 inch (ANSI 8")	219.1 $^{+1.6}_{-0.8}$	196	165	197 ± 5	—	60	257 ± 5	—	120	197 ± 5	50	60	257 ± 5	110	120
10 inch (ANSI 10")	273.1 $^{+2.4}_{-0.8}$	223	192	224 ± 5	—	60	284 ± 5	—	120	224 ± 5	50	60	284 ± 5	110	120



Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions

Replacement Parts (Air Operated Type/JSXFA)

Port size	Model	Replacement part number		
		Main valve assembly (Main valve + O-ring)	Sub-valve assembly (Sub-valve + O-ring)	Silencer
06	JSXFA(E, F, H)□-06□-B-□	JSXF-06B-KT	—	—
	JSXFA(E, F, H)□-06□-B-□A	JSXF-06B-A-KT	—	—
10	JSXFA(E, F, H)□-10□-B-□	JSXF-10B-KT	—	—
	JSXFA(E, F, H)□-10□-B-□A	JSXF-10B-A-KT	—	—
14	JSXFA(E, F)□-14□-B-(S)□	JSXF-14B-KT	JSXF-14B-KT2	Rc, G thread: AN30-03 NPT thread: AN30-N03
	JSXFAH□-14□-B-(S)□	JSXF-14B-1-KT		
20	JSXFAH□-20□-B-(S)□	JSXF-20B-KT	JSXF-14B-KT2	

Disassembly/Assembly Procedure

⚠ Caution

- Before disassembly, be sure to turn OFF the power supply and pressure supply, and then release the residual pressure.

Disassembly

- Loosen the hexagon bolts, and remove the bonnet, O-ring, and the main valve (sub-valve).

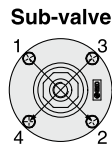
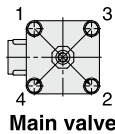
Assembly

- Attach the main valve (sub-valve) to the body. The main valve (sub-valve) has a predetermined mounting direction. **Assemble the valve referring to Fig. 1.**
If the valve is assembled incorrectly, it can cause a malfunction.
- Mount the O-ring to the body groove. (See Fig. 2.)
After mounting the O-ring, check to make sure that the O-ring is fitted properly into the groove. If it is not in the groove, external leakage and/or operation failure may occur.
- Attach the bonnet to the body.
- Tighten the hexagon bolts diagonally. (See Table 1 for the tightening torque.)

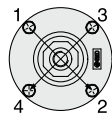
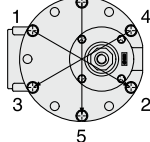
Table 1. Proper Tightening Torque [N·m]

JSXFA□-06□	M8	12.5 to 13.8
JSXFA□-10□	M8	12.5 to 13.8
JSXFA□-14□	Main valve	M6 5.2 to 5.7
	Sub-valve	M4 1.5 to 1.7
JSXFA□-20□	Main valve	M8 12.5 to 13.8
	Sub-valve	M4 1.5 to 1.7

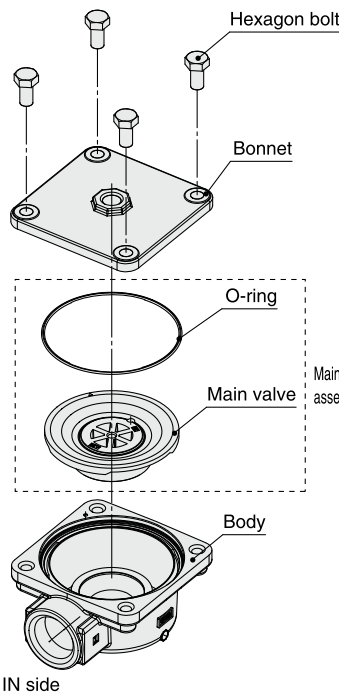
Port sizes
06, 10



Port sizes
14, 20

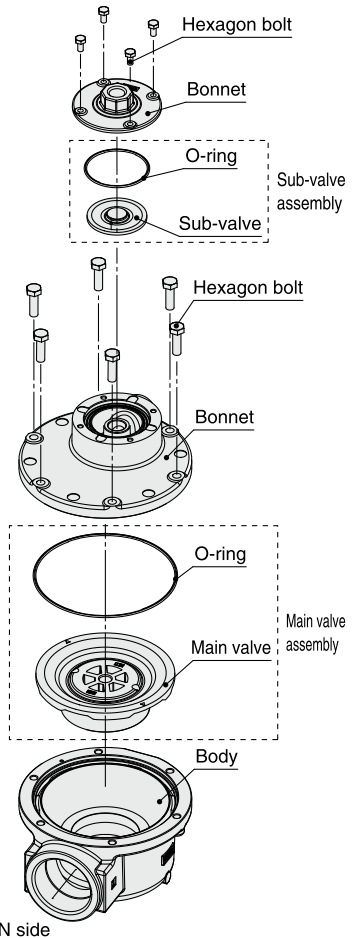


Port sizes 06, 10



IN side

Port sizes 14, 20



IN side

Fig. 2 O-ring position

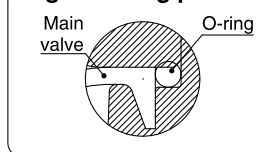
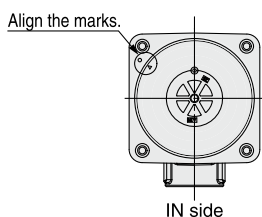
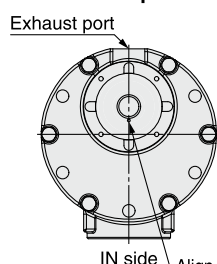
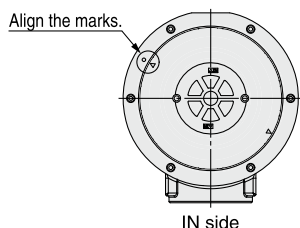


Fig. 1 Valve position

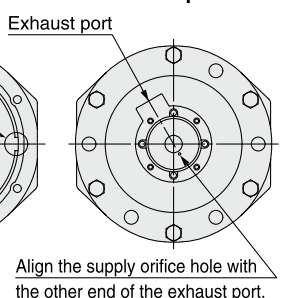
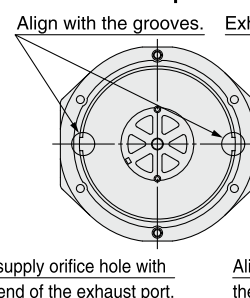
Port sizes 06, 10
Main valve position



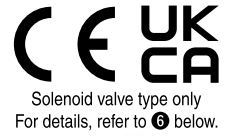
Port size 14
Main valve position Sub-valve position



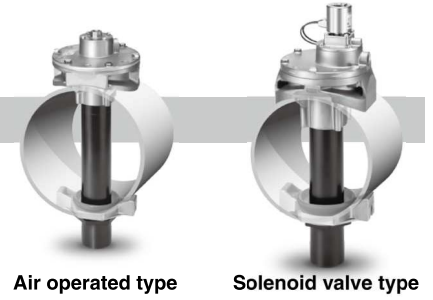
Port size 20
Main valve position Sub-valve position



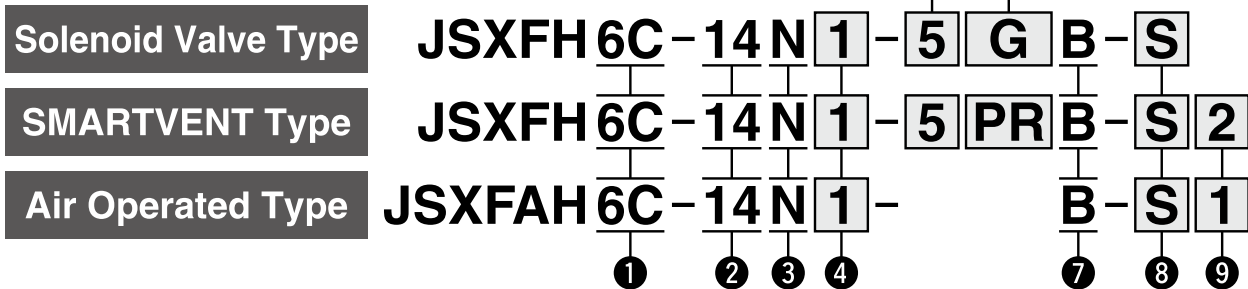
Immersion Type JSXF/JSXFA Series Made to Order



1 Tank Hole Diameter: $\varnothing 76$



How to Order



1 Valve type

6C	6 inch Tank hole dia. $\varnothing 76$
----	---

5 Rated voltage AC

Symbol	Rated voltage
1	100 VAC
2	200 VAC
3	120 VAC (110 VAC)
4	220 VAC
7	240 VAC
J	230 VAC

DC

Symbol	Rated voltage
5	24 VDC

7 Fluid and ambient temperatures

B	-40 to 60°C
---	-------------

8 Silencer

Nil	Without
S	With

9 Pilot port size (Air operated type)

Nil	1/4
1	1/8

2 Port size

14	1 1/2 (40A)
----	-------------

3 Thread type

N	NPT
---	-----

4 OUT port piping configuration

	Without	With
1	Short	
2	Long	
3	Short	
4	Long	

6 Rated voltage (Solenoid valve type) Electric control (SMARTVENT type)

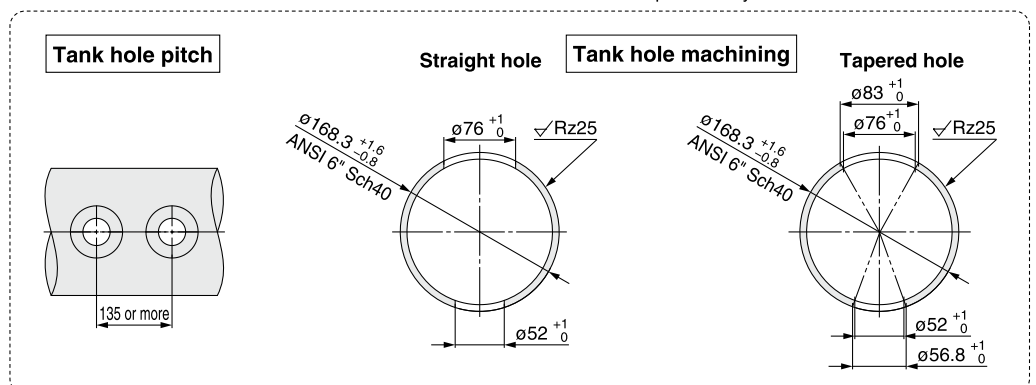
Symbol	Rated voltage/Electric control	CE/UKCA-compliant	Type	Symbol	Rated voltage/Electric control	CE/UKCA-compliant	Type
G	Grommet*1	24 VDC	Solenoid valve	DN	DIN terminal without connector (With surge voltage suppressor)	All voltages	Solenoid valve
GS	Grommet with PCB (With surge voltage suppressor)	100 VAC 24 VDC		WN	M12 connector*2 (With surge voltage suppressor)	All voltages	
CS	Conduit (With surge voltage suppressor)	All voltages		PP	Base, 3 holes*1	24 VDC	SMARTVENT
DS	DIN terminal (With surge voltage suppressor)	All voltages		PB	Base, 2 holes*1	24 VDC	
DZ	DIN terminal with light (With surge voltage suppressor)	All voltages		PR	Remote, 2 holes*1	24 VDC	

*1 Only 24 VDC can be selected for the rated voltage.

*2 A cable for the M12 connector is not included with the product. Refer to "Option" on page 13 to order it separately.

*3 When using a differential pressure sensor (provided by the customer), select PP for the base valve. Use a 2-wire type 4 to 20 mA specification differential pressure sensor.

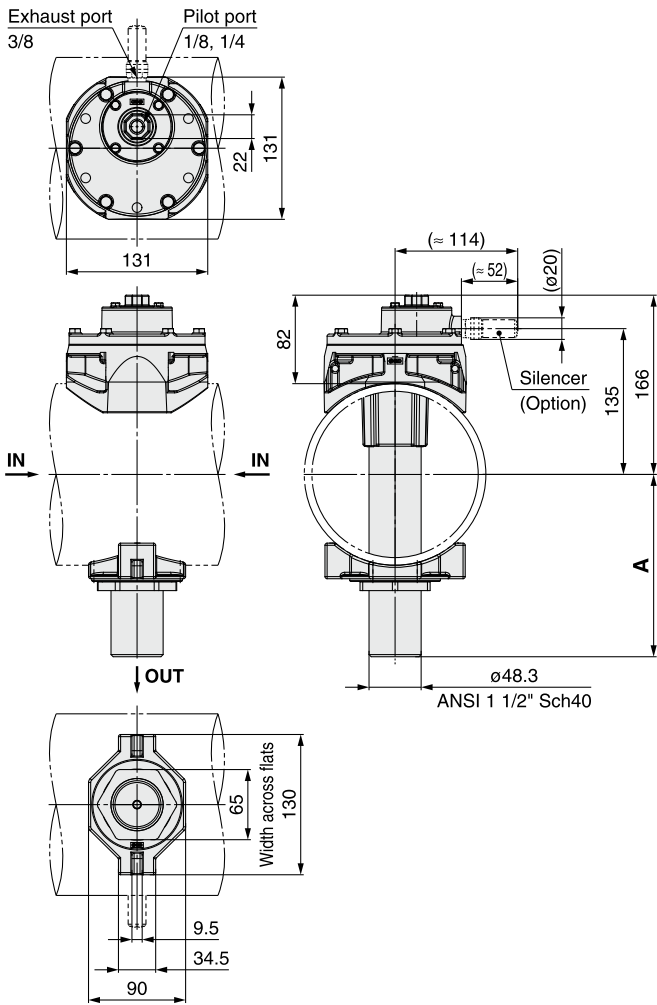
Recommended Tank Dimensions * The tank should be provided by the customer.



The specifications and replacement parts are the same as those of the standard model. Refer to pages 5 and 12 for the solenoid valve type, and pages 14 and 24 for the air operated type. Add 140 g to the weight of each.

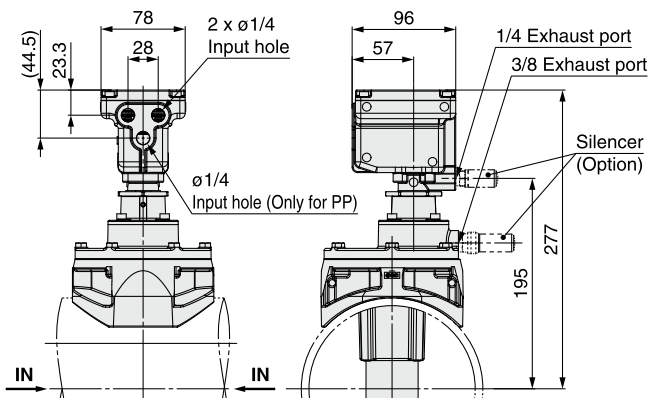
Dimensions

Air Operated Type



SMARTVENT Type

Dimensions other than those shown below are the same as those of the air operated type.

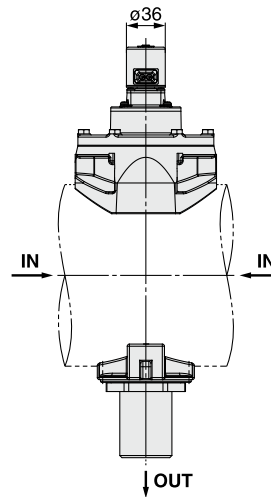


Dimensions	OUT port piping configuration			
	1	2	3	4
A	169 ±5	209 ±5	169 ±5	209 ±5

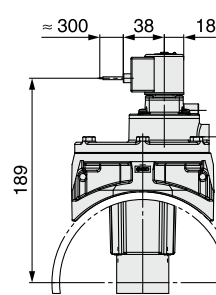
Solenoid Valve Type

Dimensions other than those shown below are the same as those of the air operated type.

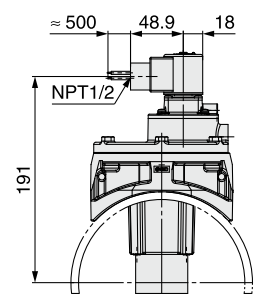
G: Grommet



GS: Grommet with PCB

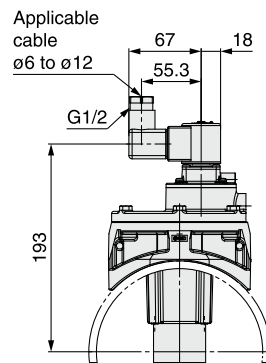


CS: Conduit

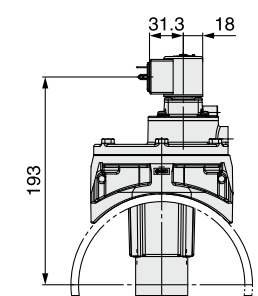


DS: DIN terminal

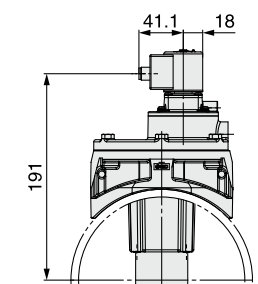
DZ: DIN terminal with light



DN: Without DIN connector



WN: M12 connector



Solenoid Valve Type
JSXF Series

SMARTVENT Type
JSXF-P Series

Air Operated Type
JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXF

Dedicated Controller for Operation

Glossary of Terms

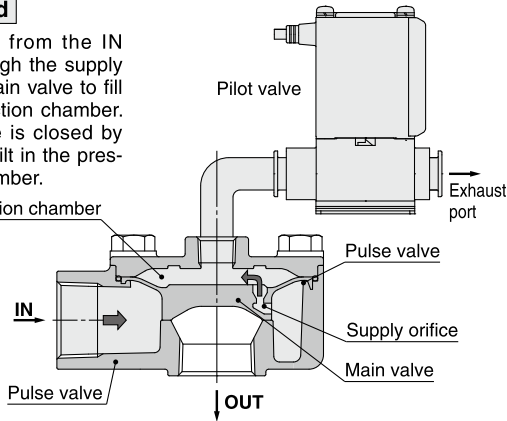
Specific Product Precautions

JSXF/JSXFA Series Working Principle

Port Sizes 06, 10

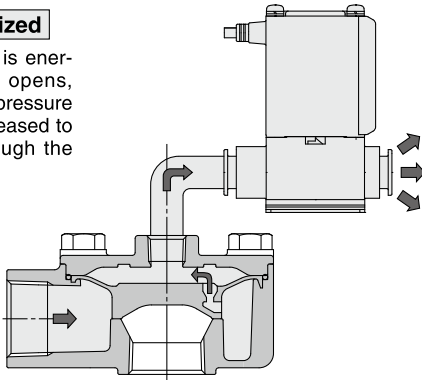
De-energized

The air enters from the IN side goes through the supply orifice of the main valve to fill the pressure action chamber. The main valve is closed by the pressure built in the pressure action chamber.



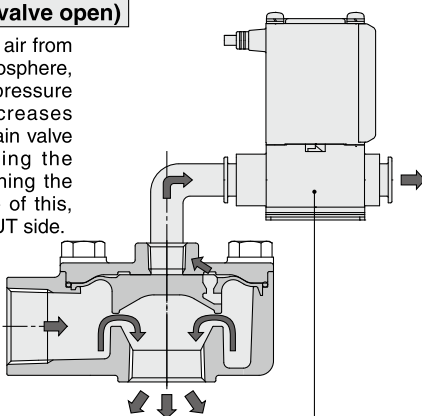
Right after energized

When the pilot valve is energized, the armature opens, and the air filling the pressure action chamber is released to the atmosphere through the pilot valve.



Energized (Main valve open)

Due to the release of air from the pilot valve to atmosphere, the pressure in the pressure action chamber decreases (force pushing the main valve down < force pushing the main valve up), opening the main valve. Because of this, the air flows to the OUT side.



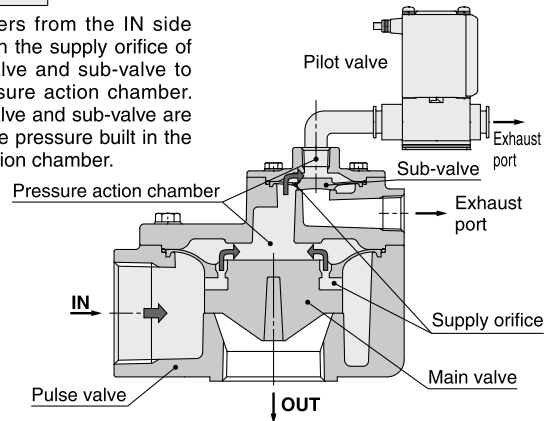
⚠ Caution P14 Pilot Valve Selection

* The figure shows the JSXF. AF.

Port Sizes 14, 20

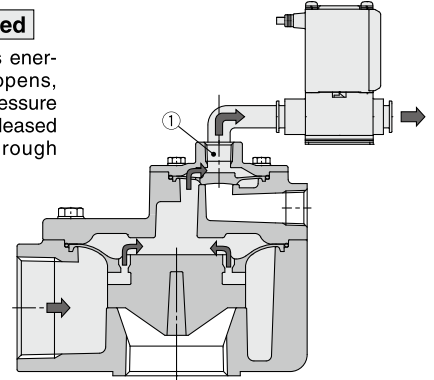
De-energized

The air enters from the IN side goes through the supply orifice of the main valve and sub-valve to fill the pressure action chamber. The main valve and sub-valve are closed by the pressure built in the pressure action chamber.



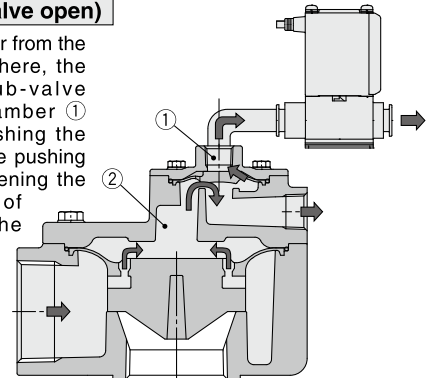
Right after energized

When the pilot valve is energized, the armature opens, and the air filling the pressure action chamber ① is released to the atmosphere through the pilot valve.



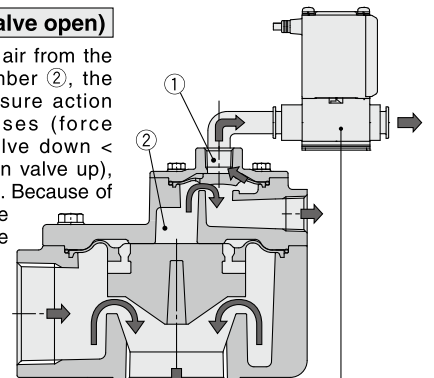
Energized (Sub-valve open)

Due to the release of air from the pilot valve to atmosphere, the pressure in the sub-valve pressure action chamber ① decreases (force pushing the sub-valve down < force pushing the sub-valve up), opening the sub-valve. Because of this, the air filling the pressure action chamber ② is released to the atmosphere from the exhaust port.



Energized (Main valve open)

Due to the release of air from the pressure action chamber ②, the pressure in the pressure action chamber ② decreases (force pushing the main valve down < force pushing the main valve up), opening the main valve. Because of this, the air flows to the OUT side of the pulse valve.



⚠ Caution P14 Pilot Valve Selection

JSXF/JSXFA Series

Glossary of Terms

Pressure Terminology

1. Max. operating pressure differential

The max. 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 max. operating pressure.

2. Min. operating pressure differential

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

3. Max. system pressure

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

[The pressure differential of the solenoid valve portion must not exceed the max. 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, $W = V \cdot A$.

* $\cos \theta$ 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. Degrees 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."

IP - -

First digit Second digit

● First Digit:

Degree of protection against solid foreign objects

0	Not protected
1	Protected against solid foreign objects of 50 mm ϕ and larger
2	Protected against solid foreign objects of 12 mm ϕ and larger
3	Protected against solid foreign objects of 2.5 mm ϕ and larger
4	Protected against solid foreign objects of 1.0 mm ϕ and larger
5	Dust protected
6	Dust-tight

● Second Digit:

Degree of protection against water

0	Not protected	
1	Protected against vertically falling water droplets	Dripproof type 1
2	Protected against vertically falling water droplets when enclosure is tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure is 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

Others


1. Material

NBR: Nitrile rubber

FKM: Fluororubber

EPDM: Ethylene propylene 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.

Solenoid Valve Type

JSXF Series

SMARTVENT Type

JSXF-P Series

Air Operated Type

JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXFA

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions



JSXF/JSXFA Series

Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For 2-port solenoid valve for fluid control precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Design

Warning

1. Confirm the specifications.

Give careful consideration to the operating conditions, such as the application, fluid, and environment, and use within the specified operating ranges. If the product is used beyond the specification range, this may cause the product to break or malfunction. We do not guarantee against any damage if the product is used outside of the specification range.

2. Cannot be used as an emergency shutoff valve, etc.

This product is not designed for use as an emergency shutoff valve or for use in other safety applications. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

3. Cannot be used for pressure (including vacuum) holding

This product is not suitable for holding the pressure (including vacuum) inside of a pressure vessel because air leakage is unavoidable.

4. Extended periods of continuous energization

- 1) This is a valve for pulse operation. Do not energize it continuously. Since it consumes a large amount of air, the valve will oscillate (chatter) due to insufficient air supply on the inlet side, and this can lead to failure.
- 2) As the coil becomes hot when energized, set the energizing time to 1 s or less and the de-energizing time to at least twice the energizing time. Furthermore, do not touch the coil while it is being energized or right after it has been energized.

5. Reverse pressure

If there is a possibility that reverse pressure will be applied, take countermeasures by installing a check valve, etc., on the downstream side.

6. Do not disassemble the product and replacement parts, and do not make any modifications, including additional machining.

Doing so may result in human injury and/or an accident.

Operating Environment

Warning

Do not use the product in such locations as those described below.

1. Locations with atmospheres where water vapor is present or locations where corrosive fluids (chemicals), sea water, or water may come into contact with the product

Implement appropriate protective measures if the product will be in contact with water for long periods of time, even for products which have IP65 or IP67 enclosures. Such water may enter through microscopic gaps in the product's external surfaces, resulting in fire damage or short-circuiting of the solenoid valve coils. If installing the product in close proximity to equipment such as machine tools, processing machines, etc., which use large amounts of liquids or oils, be sure to confirm that liquid dispersal or spatter from the peripheral equipment does not come into contact with the product.

2. Locations with explosive atmospheres

If the product is to be used in an explosive atmosphere, use the 56-JSXF (page 35) or the 55-JSXFA (page 37). Standard products without the “56-” or “55-” prefix cannot be used in explosive atmospheres.

3. Locations subject to vibration or impact

4. Locations where radiated heat will be received from nearby heat sources

5. Locations where freezing may occur within piping lines

- 1) The product can be used in ambient and fluid temperatures as low as -40°C . However, take measures to prevent the freezing or solidification of impurities, etc.
- 2) If the dew point temperature is high and the ambient temperature is low, or a large flow is being used, this may cause freezing. Be sure to periodically drain the product, or conduct drain removal using an air dryer, and retain the heat of the body.

Fluid

Warning

1. Take measures to prevent static electricity since some fluids generate static electricity.

2. Fluid temperature

Operate within the specified operating fluid temperature range.

3. Install a filter to ensure clean fluids.

- 1) The use of a fluid that contains foreign matter may result in the accelerated wear of the valve seat and armature as well as a malfunction or seal failure caused by the foreign matter adhering to the sliding parts of the armature. Install a filter of $5\ \mu\text{m}$ or less on the upstream side of the valve to remove foreign matter.
- 2) Replace or clean the filter when the pressure drop reaches $0.1\ \text{MPa}$ to prevent it from getting clogged.

Fluid Quality

Warning

1. Air

- 1) Do not use compressed air that contains chemicals, synthetic oils that include organic solvents, salt, corrosive gases, etc., as it can cause a malfunction or damage.
- 2) Compressed air that contains excessive drainage may cause the malfunction of valves and other pneumatic equipment. Install an aftercooler or an air dryer on the inlet side of the valve to prevent drainage.
- 3) If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause a malfunction. Install a mist separator on the inlet side of the valve to remove any carbon powder.
- 4) For compressed air quality, refer to the Best Pneumatics No. 6 catalog.
- 5) When air with a dew point of -70°C or lower is used, it may cause the accelerated wear of the inside of the valve, shortening the life of the product.

Mounting

Warning

1. Ensure sufficient space for maintenance and inspection.

In addition, when using a silencer, ensure sufficient space to replace the silencer.

2. When mounting the product, avoid sources of vibration, or change the mounting method to avoid resonance.

3. Do not install the product near a heat source. Be sure to install it in a location where the product will not be affected by radiant heat.

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

After installation or maintenance, check that the product is correctly mounted with appropriate functional and leakage inspections by supplying compressed air and power. Do not use the product if the equipment fails to operate correctly.

5. Do not touch the valve while it is being energized or right after it has been energized.

Valves will reach high temperatures after operation. Use caution as burns may be incurred if a hot valve is touched directly.



JSXF/JSXFA Series Specific Product Precautions 2

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Mounting

Warning

- Do not apply external force to the coil section.**
When the product is installed, apply a wrench to the outside of the piping connection while making sure that it does not come into contact with the coil.
- Do not warm the coil section with a heat insulator, etc.**
When insulation is used to prevent freezing, the insulation should be limited to the piping and body only. Do not insulate the coil. This can cause the coil to burn out.

Caution

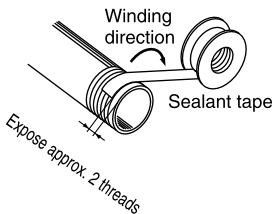
- Installation of regulators and restrictors**
If a regulator or restrictor is installed immediately before the inlet side of the valve or immediately after the outlet side of the valve, the valve will oscillate (chatter), resulting in a malfunction. Install it away from the valve or change the restriction amount.
- Install a header tank of sufficient capacity on the inlet side of the valve.**
This product is a large flow valve, so if the tank capacity is small, valve opening failure or valve oscillation (chattering) may occur due to pressure drop or insufficient air supply, resulting in a malfunction.
- Painting and coating**
Warnings or specifications printed or labeled on the product should not be erased, removed, or covered up.

Piping

Warning

- There may be cases in which the tubing detaches from the fitting and thrashes around uncontrollably due to tubing degradation or fitting breakage. To prevent this, fit the tubing with a protective cover or secure it in place.**

Caution

- For handling One-touch fittings, refer to the "Fittings and Tubing Precautions" in the Handling Precautions for SMC Products.**
- 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.
- Winding of sealant tape**
When connecting pipes, fittings, etc., do not allow any chips from the pipe threads and sealing material to enter the valve. Furthermore, when sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

- When using a fitting other than an SMC fitting**
Follow the instructions given by the fitting manufacturer.
- Avoid connecting ground lines to piping as this may cause the electric corrosion of the system.**
- When connecting piping to a product, avoid mistakes regarding the supply port, etc.**

Piping

Direct Piping Type Piping Precautions

Caution

- Use steel tubes for the inlet and outlet piping of the valve.**
- Screw tightening torque for piping**
When attaching fittings to valves, tighten within the tightening torque range shown below.

Tightening Torque for Piping

Connection thread	Proper tightening torque [N·m]
1/4	8 to 12
3/8	15 to 20
1/2	20 to 25
3/4	28 to 30
1	36 to 38
1 1/2	40 to 42

Compression Fitting Type Piping Precautions

Warning

Do not use the compression fitting to support the valve piping. The piping could disconnect from the valve. Be sure to mount the valve to secured piping. (Compression fittings do not have a valve-holding function.)

Caution

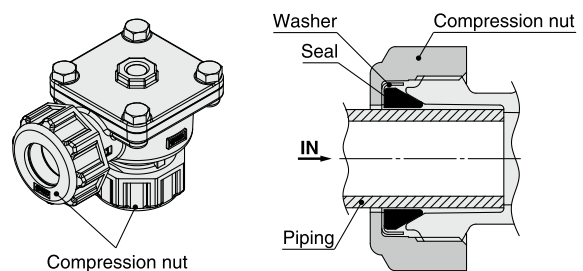
- Use steel tubes for the inlet and outlet piping of the valve.**
- Tightening of the compression nut**
Be sure to tighten the compression nut sufficiently to prevent the nut from loosening and leakage from occurring.

Wrench Tightening Angle after Hand-tightening (Guide for tightening the nut)

Size	Wrench tightening angle
3/4 (20A)	90° to 270°
1 (25A)	135° to 315°
1 1/2 (40A)	150° to 330°

- * Mount the valve to secured piping.
- * Insert the piping until it stops to prevent the piping from going in at an angle.
- * Do not expose the piping to oil or moisture. Otherwise, the valve may come off easily.
- * Sealing performance will decrease due to the deterioration of the seals. Tighten the compression nut regularly.

Cross section of the nut





JSXF/JSXFA Series Specific Product Precautions 3

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Piping

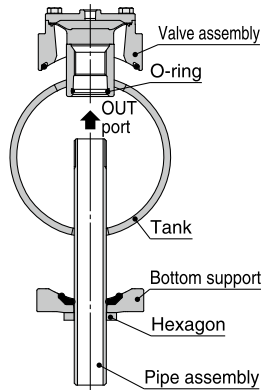
Immersion Type Piping Precautions

⚠ Caution

Installation of the immersion type

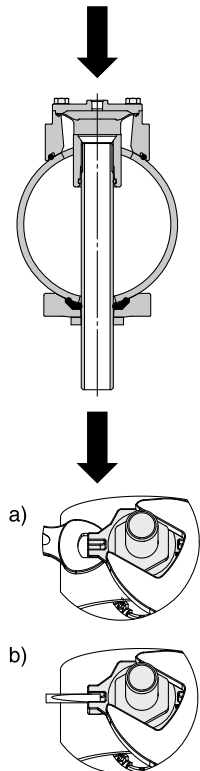
Refer to the figures below when installing the valve on a tank provided by the customer. Tighten and check the pipe assembly sufficiently to prevent leakage, looseness, and play.

Step 1) Insert the pipe assembly into the OUT port of the valve assembly and screw it in vertically. (Inserting the pipe at an angle may damage the O-ring inside the valve.)



Step 2) Continue tightening the pipe assembly until the body and the bottom support touch the tank.

1. Tighten with a wrench or other tool so that the bottom support does not rotate. Refer to a). (It can also be secured like in b).) When securing, align the tank with the curved surface of the bottom support.
2. Tighten the hexagonal part of the pipe assembly with a wrench.



Pipe Assembly Tightening Guide (Tightening torque)

Size	Tightening torque [N·m]
3/4 (20A)	30
1 (25A)	50
1 1/2 (40A)	50
2 (50A)	120

- * Excessive tightening may damage the valve or deform or damage the tank.
- * The pipe assembly may become loose due to vibration when discharging air. Be sure to perform periodic retightening.
- * The recommended tank is the ANSI Sch40. If making your own tank, ensure that it has sufficient strength to prevent it from becoming deformed when the valve is being screwed in.

SMARTVENT Type Piping Precautions

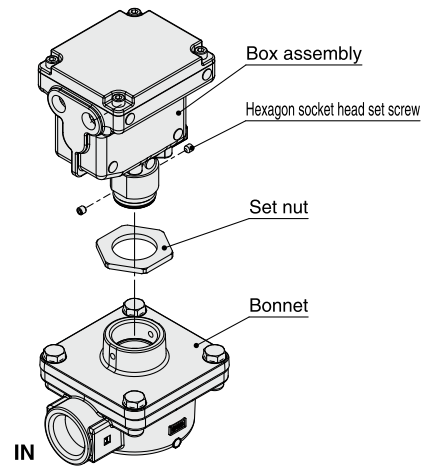
⚠ Caution

How to change the electrical entry direction

To change the electrical entry direction by yourself when piping, refer to the illustration below. Before disassembly, be sure to turn OFF the power supply and pressure supply, and then release the residual pressure.

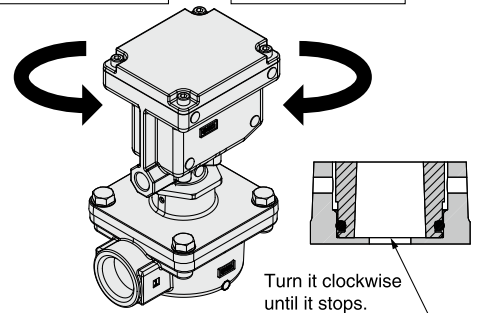
Step 1) Disassembly

1. Loosen the set nut and remove the two hexagon socket head set screws so the box assembly can be rotated.



2. Counterclockwise
To adjust the position, turn it counterclockwise (less than 1 rotation).

1. Clockwise
Turn it clockwise until it stops.



Step 2) Assembly

1. Turn the box assembly clockwise until it stops.
2. Turn the box assembly counterclockwise to the desired position.

Caution: Be sure to only turn it less than 1 rotation after it has stopped.

3. Tighten the set nut and then the hexagon socket head set screws. Refer to the table below for the tightening torque.

Table 1

Description	Size	Proper tightening torque
Set nut	Width across flats 46 mm	50 N·m
Hexagon socket head set screw	M5	1.35 to 1.65 N·m



JSXF/JSXFA Series Specific Product Precautions 4

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Wiring

Warning

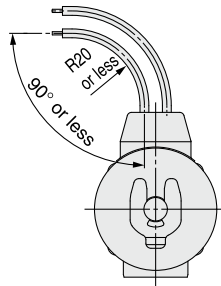
The solenoid valve is an electrical product. For safety, install an appropriate fuse and circuit breaker before use. When using multiple solenoid valves, it is not sufficient to merely install one fuse. For protecting the equipment more safely, select an appropriate fuse to each circuit of the solenoid valve.

Caution

1. As a rule, use electrical wire with a cross sectional area of 0.5 to 1.25 mm² for wiring.

2. External force applied to the lead wire

If an excessive force is applied to the lead wire, this may cause faulty wiring. Take appropriate measures so that a force of 10 N or more is not applied to the lead wire. Do not bend the lead wires beyond 90° with a radius of less than 20 mm or damage may occur.



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

4. 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.

5. When a surge from the solenoid affects the electrical circuitry, install a surge voltage suppressor, etc., in parallel with the solenoid. Or, use the product with a surge voltage suppressor.

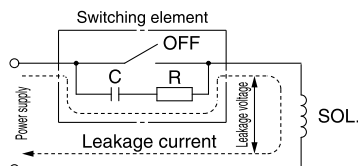
Residual voltage of the surge voltage suppressor

DC specification: Approx. 60 V

AC specification: Approx. 1 V

6. Leakage voltage

When the solenoid valve is operated using the controller, etc., the leakage voltage should be the product allowable leakage voltage or less. Particularly when using a resistor in parallel with a switching element and using a C-R element 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

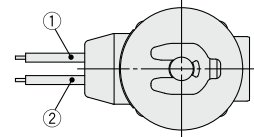
Electrical Connections

Caution

1. Grommet

Lead wire: AWG20 Insulator O.D.: 2.6 mm

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

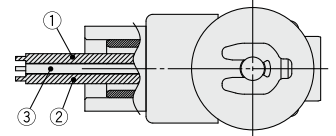


* There is no polarity.

2. Conduit

Lead wire: AWG18 Insulator O.D.: 2.8 mm

Rated voltage	Lead wire color		
	①	②	③
DC	Black	Red	Green/Yellow
100 VAC	Blue	Blue	Green/Yellow
200 VAC	Red	Red	Green/Yellow
Other AC	Gray	Gray	Green/Yellow



* There is no polarity.

* ③: Ground wire

Solenoid Valve Type

JSXF Series

SMARTVENT Type

JSXF-P Series

Air Operated Type

JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXFA

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions



JSXF/JSXFA Series Specific Product Precautions 5

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Electrical Connections

⚠ Caution

3. DIN terminal

Disassembly

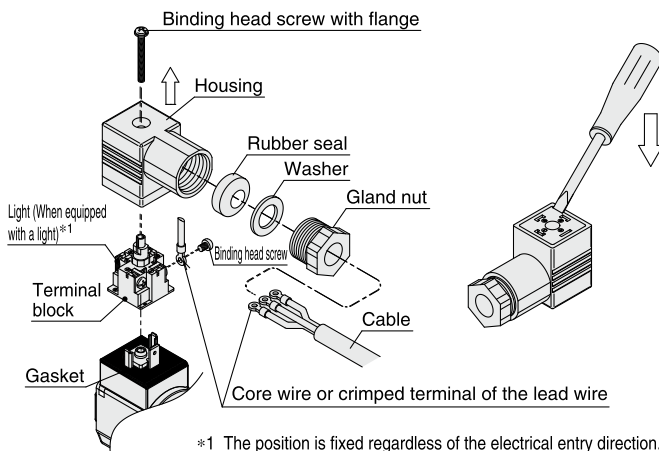
1. After loosening the binding head screw with flange, then if the housing is pulled in the direction of the arrow, the connector will be removed from the solenoid valve.
2. Pull out the binding head screw with flange from the housing.
3. There is a cutout on the bottom of the terminal block. Insert a small flat head screwdriver, etc., into this cutout, and remove the terminal block from the housing. (Refer to the figure below.)
4. Remove the gland nut, and pull out the washer and the rubber seal.

Wiring

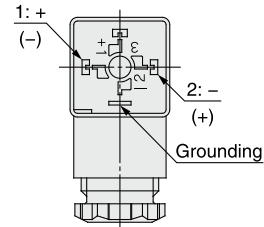
1. Pass the cable through the gland nut, washer, and rubber seal in this order, and insert these parts into the housing.
2. Loosen the binding head screw of the terminal block, then insert the core wire or the crimped terminal of the lead wire into the terminal, and securely fix it with the binding head screw. The binding head screw of the terminal block is M3.
 - *1 Tighten the screw to a torque of between 0.5 and 0.6 N·m.
 - *2 Cable O.D.: $\phi 6$ to $\phi 12$ mm
 - *3 For an outside cable diameter of $\phi 9$ to $\phi 12$ mm, remove the internal parts of the rubber seal before use.

Assembly

1. Pass the cable through the gland nut, washer, rubber seal, and the housing in this order, and connect to the terminal block. Then, set the terminal block inside the housing. (Push in the terminal block until it snaps into position.)
2. Insert the rubber seal and the washer in this order into the cable entry of the housing, and then tighten the gland nut securely.
3. Insert the gasket between the bottom part of the terminal block and the plug attached to the equipment, and then insert the binding head screw with flange from the top of the housing, and tighten it.
 - *1 Tighten the screw to a torque of between 0.5 and 0.6 N·m.
 - *2 The orientation of the connector can be changed in steps of 90° by changing the method of assembling the housing and the terminal block.



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

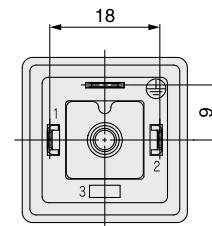


Terminal no.	1	2
DIN terminal	+ (-)	- (+)

* There is no polarity.

DIN (EN 175301-803) Terminal

This DIN terminal corresponds to the Form A DIN connector with an 18 mm terminal pitch.



Applicable cable O.D.: $\phi 6$ to $\phi 12$

4. M12 connector

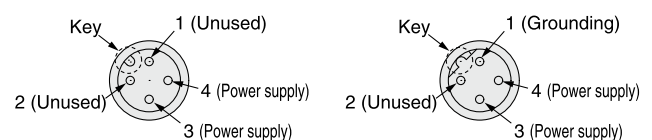
1. The IP67 (enclosure) rating of the valve can be obtained by using a cable with a female connector of IP67 specification. Please note that this product cannot be used in water.
2. Do not use a tool to mount the connector as this may cause damage. Only tighten it by hand. (0.39 to 0.49 N·m)
3. Avoid repeatedly bending or stretching the cable and applying heavy objects or force to it.
4. Do not pull the connector or cable unnecessarily.
5. Do not bend the cable at the root of the connector when installed.

■ Coding and pin arrangement of the M12 connector on the valve side

The shape (coding) and pin arrangement of the M12 connector are as follows.

DC specification: A-coded, 4-pin

AC specification: B-coded, 4-pin



* The solenoid valve has no polarity for DC voltages.

When using the cable with a female connector, make sure that the coding is correct. When installing the cable, be sure to align the key on the cable side connector (female side) with the key on the valve side connector (male side).

Be careful not to squeeze it in the wrong direction as pin damage, etc., may result.



JSXF/JSXFA Series Specific Product Precautions 6

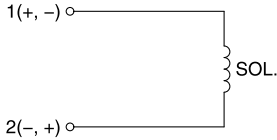
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Electrical Circuits

⚠ Caution

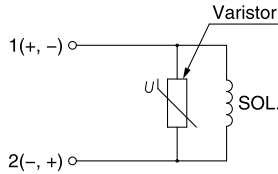
1. DC circuit

● Grommet



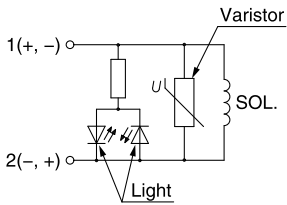
Without electrical option

● Grommet, Conduit, DIN terminal



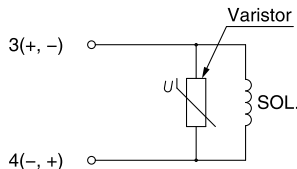
With surge voltage suppressor

● DIN terminal



With light/surge voltage suppressor

● M12 connector

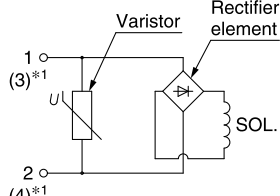


With surge voltage suppressor

2. AC circuit

The standard product is equipped with a surge voltage suppressor.

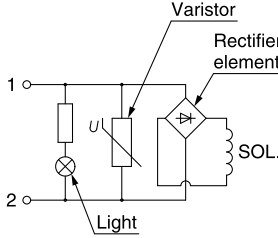
● Grommet, Conduit, DIN terminal, M12 connector



(3)*1
(4)*1
*1 For M12 connector

Without electrical option

● DIN terminal



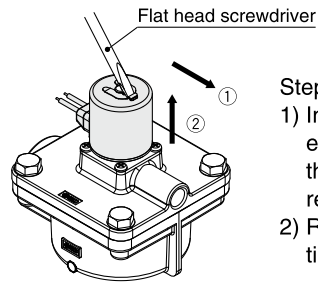
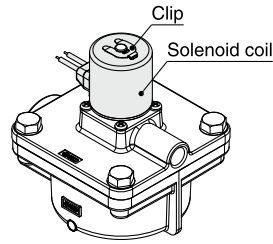
With light

Replacing the Solenoid Coils

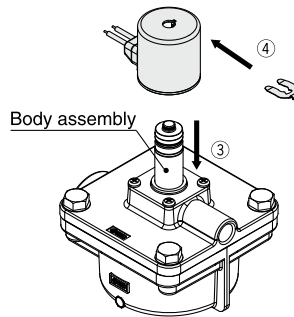
⚠ Warning

1. Before replacing the solenoid coil, turn OFF the power supply.
2. Due to the fluid temperature and the operating conditions, the solenoid coil may become extremely hot. Be careful when handling.

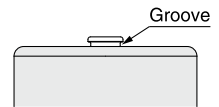
⚠ Caution



- Step 1) Remove the coil.
- 1) Insert a flat head screwdriver, etc., into the groove in the clip and slide it in the direction of ① to remove it.
 - 2) Remove the coil in the direction of ②.



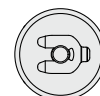
- Step 2) Assemble the coil.
- 1) Insert the replacement coil into the body assembly in the direction of ③.
 - 2) Insert the clip in the direction of ④ by aligning it with the groove in the top of the body assembly. The clip is directional. Refer to the figures below.



Be sure to confirm the clip direction (back and front) as well as the inserted condition.



Clip direction



OK



Not OK

Inserted condition

* When inserting the coil, be sure to push it in until the groove in the body assembly is visible.

Solenoid Valve Type

JSXF Series

SMARTVENT Type

JSXF-P Series

Air Operated Type

JSXFA Series

Working Principle

Made to Order

56-JSXF
55-JSXFA

Dedicated Controller for Operation

Glossary of Terms

Specific Product Precautions



JSXF/JSXFA Series

Specific Product Precautions 7

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Appearance

⚠ Caution

1. Surface treatment is applied to the product to improve corrosion resistance. There may be a spotted pattern on the surface depending on the treatment condition, but this does not affect usage or performance.
2. Rust may be generated on the solenoid coil depending on the operating environment and conditions, but this does not affect usage or performance.

Maintenance

⚠ Warning

1. **Removal of product**
 - 1) Turn OFF the fluid supply, and release the fluid pressure in the system.
 - 2) Turn OFF the power supply.
 - 3) Confirm that the valve temperature has dropped sufficiently before removing the product.
2. **Replace or clean filters periodically.**

Replace filters after 1 year of use or earlier if the pressure drop reaches 0.1 MPa.
3. **Exhaust the drainage from air filters periodically.**

If condensation in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensation to enter the compressed air lines. This may result in the malfunction of pneumatic equipment. If the drain bowl is difficult to check or remove, the installation of a drain bowl with an auto drain option is recommended.
4. **Silencer**

Prolonged use may cause clogging and changes in response characteristics. Replace it after using about 500,000 times. This number is subject to change based on fluid quality and energizing time.
5. **Disassembly**

Do not disassemble anything other than the main valve and solenoid coil. Doing so may result in a malfunction. Refer to the “Disassembly/Assembly Procedure” on pages 12,24 for part replacement instructions.
6. **Low-frequency operation**

Switch valves at least once every 30 days to prevent a malfunction. Also, in order to use them under the optimum state, conduct an inspection biannually.
7. **Storage**

In the case of long-term storage after use, thoroughly remove all moisture and store it in a location where the product is not exposed to sunlight and higher humidity to prevent rust and the deterioration of rubber materials, etc.
8. **Perform maintenance and inspection periodically.**

Confirm that the product is mounted correctly by conducting suitable function and leakage tests periodically. If air leakage increases or equipment does not operate properly, stop operation.

Dedicated Controller for Operation VXFC Series

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, be sure to confirm the polarity. If the polarity is incorrect, it may result in a malfunction or damage.
4. For details, please 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 0°C and 50°C.
3. Operate in an ambient humidity range between 45% to 80% (no condensation).

Return of Product

⚠ Warning

If the product to be returned is contaminated or is possibly contaminated with substances that are harmful to humans, for safety reasons, please contact SMC beforehand and then employ a specialist cleaning company to decontaminate the product. After the decontamination prescribed above has been carried out, submit a Product Return Request Sheet or the Detoxification/Decontamination Certificate to SMC and await SMC's approval and further instructions before attempting to return the item.
Please refer to the International Chemical Safety Cards (ICSC) for a list of harmful substances.
If you have any further questions, please don't hesitate to contact your SMC sales representative.

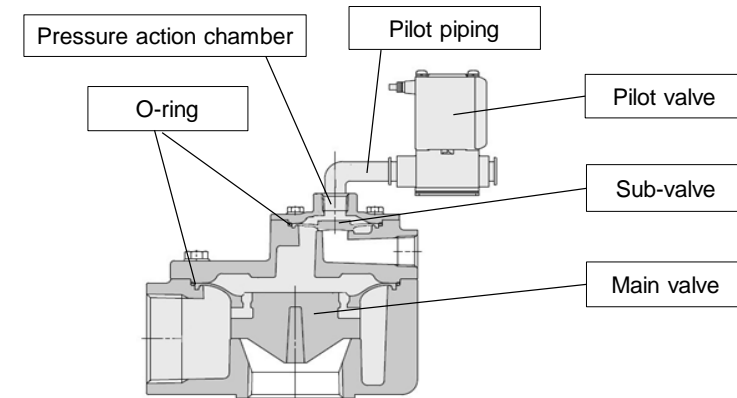
Operating conditions

Series	
Operating period	 months
Accumulated operating cycles	Approx. cycles

Chief	Approved	Person in charge
 	 	

* Circle the number or alphabet of the operation failure in double lined column.

Phenomenon	Possible causes	Part that could be the cause of nonconformity(*1)	Check methods	Measures	Solution	Permanent countermeasure		
I Operation Failure	1 Valve does not open	a	Insufficient supply pressure	- Is the minimum operating pressure within the specification range? * Min. operating pressure differential: 0.1 Mpa	- Check the differential pressure when the valve is open.	A	A Measures against supply pressure abnormality (1) Due to insufficiency of the minimum operating pressure differential, the nonconformity may have occurred. - Increase / decrease the supply pressure or review the piping and operation frequency / time to satisfy the minimum operating pressure differential. * If the pilot piping is too long, too thin, or the pilot valve is not appropriate, the main valve may not operate due to exhaust shortage. (2) As the maximum operating pressure differential exceeded the upper limit, the nonconformity may have occurred. - When the operating pressure differential exceeds the maximum operating pressure differential (0.9 MPa), it is possible that the pilot valve seating load becomes larger than the coil attraction force, making the valve unable to open. Please reduce supply pressure and review pilot valve specification.	
		b	The operating pressure differential is above the upper limit.	- Is the maximum operating pressure within the specification range? * Max. operating pressure differential: 0.9 Mpa	- Check the differential pressure when the valve is closed.	A		
		c	Adhesion of foreign matter in the pilot valve sliding part	Pilot valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
		d	Breakage of the valve diaphragm due to deterioration (swelling or shrinkage)	Main valve, sub-valve	- Is the ambient / fluid temperature within the specification range? * Ambient / fluid temperature: -40 to 60°C	- Check the ambient / fluid temperature.		C
		e	Deterioration of the pilot valve rubber part (swelling, sticking, etc.)	Pilot valve	- Is the ambient / fluid temperature within the specification range of the pilot valve in use?	- Check the ambient / fluid temperature.		C
		f	Insufficient coil attraction force of the pilot valve due to the influence of the temperature	Pilot valve	- Is the ambient / fluid temperature within the specification range of the pilot valve in use?	- Check the ambient / fluid temperature.		C
		g	Insufficient air exhaust from the pilot valve		- Check if the air exhaust flow from the pilot valve is adequate. - Set a longer ON time for the valve from the controller. - Does the removal of the silencer from the pilot valve fix the problem?	- Check the exhaust air flow of the pilot valve. - Adjust the time set by the controller. - Replace the silencer.		A·D
		h	Supply voltage is not applied.		- Is there any abnormality, such as failure, with the power supply or control circuit? - Is there any abnormality, such as disconnection of wiring system and erroneous wiring?	- Check power supply and control circuits. - Check the wiring condition.		G
	2 The valve does not close.	i	Pilot valve sealing failure	- Is the pilot valve closed?	- Check the pilot pressure.	D	B (1) The non-conformance may have occurred as foreign matter in the fluid was caught in the sliding part or seat. - Purify the fluid by installing an appropriate filter (filtration rating: approximately 5 μm) or by other means. - Perform air blow (flushing) sufficiently for the valve and piping before piping. - When the valve element is damaged by foreign matter as it is caught, replace the valve element using the maintenance kit. * Refer to page 12,24 of the catalog for the maintenance kit number. C (1) The valve element may have been deteriorated (swelling, shrinkage) or broken due to the influence of the temperature or fluid component, which led to the nonconformity. - Use the valve within its specified temperature range. (Check the pilot valve specifications) Specifications to check: Fluid temperature, ambient temperature, and fluid quality (type, mixture, additives, etc.) - When the valve element is deteriorated, replace the valve element using the maintenance kit. * Refer to page 12,24 of the catalog for the maintenance kit number.	
		j	Insufficient supply pressure	- Is the minimum operating pressure within the specification range? * Min. operating pressure differential: 0.1 Mpa	- Check the differential pressure when the valve closes.	A		
		k	Sealing failure or sliding failure due to adhesion of foreign matter in the pilot valve sliding part	Pilot valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
		l	The supply voltage is not applied.		- Is there any abnormality, such as failure, with the power supply or control circuit? - Is there any abnormality, such as disconnection of wiring system and erroneous wiring? - Is the product used with the power supply leakage voltage exceeding the allowable value? * Allowable leakage voltage: DC 2% or less of the rated voltage AC 5% or less of the rated voltage	- Check power supply and control circuits. - Check the wiring condition. - Check power supply and valve allowable voltage fluctuation.		G
		m	Deterioration (swelling or shrinkage) or breakage of the main valve.	Main valve	- Is the ambient / fluid temperature within the specification range? * Ambient / fluid temperature: -40 to 60°C	- Check the ambient / fluid temperature.		C
		n	Sealing failure due to the deterioration (swelling, shrinkage) or breakage of the pilot valve rubber part.	Pilot valve	- Is the ambient / fluid temperature within the specification range of the pilot valve in use?	- Check the ambient / fluid temperature.		C
II leakage	1 Leakage across valve seat (Internal leakage)	o	The main valve or pilot valve malfunctions due to resonance with the facilities around the product.	- Is vibration or impact applied?	- Check the vibration and impact.	E	D Measures against exhaust abnormality (1) When the pilot valve exhaust time is short, the nonconformity may have occurred due to insufficient exhaust of residual pressure in the pressurized chamber. - Set the controller set time (ON time of the valve) longer. - The exhaust capacity is also decreased by clogging of the silencer. Replace the silencer periodically. (2) The nonconformity may have occurred because as the pilot pressure kept being exhausted, the pressure is not built up in the pressurized chamber. - Check whether any leakage has occurred in the pilot circuit or pilot valve. E (1) Do not use the product where it is subject to vibration or impact. F (1) Check if the valve fluid direction and system fluid direction are consistent with each other. G Countermeasures in case of electrical system failure. (1) Abnormalities in the power supply, control circuits, and wiring systems may have caused the nonconformance. Replace or repair the power supply, control circuit, or wiring system. (2) Residual magnetic force may have caused the nonconformity. Use the product at the allowable leakage voltage value or below.	
		p	Sealing failure or sliding failure due to adhesion of foreign matter in the pilot valve sliding part	Sub-valve, pilot valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
		q	Sealing failure due to back pressure.		- Is the connection direction of the piping (fluid direction) opposite to the correct direction for the system?	- Check the connection direction of the piping.		F
		r	Sealing failure due to the deterioration of the external O-ring (swelling, shrinkage) caused by the influence of temperature.	O-ring	- Is the ambient / fluid temperature within the specification range? * Ambient / fluid temperature: -40 to 60°C	- Check the ambient / fluid temperature.		C
	2 Leakage from valve (External leakage)	s	Sealing failure or sliding failure due to adhesion of foreign matter in the pilot valve sliding part	Sub-valve, pilot valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
		t	The main valve or pilot valve malfunctions due to resonance with the facilities around the product.		- Is vibration or impact applied?	- Check the vibration and impact.		E
		u	The main valve did not open adequately because of foreign matter caught in the main valve.	Main valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
		v	The main valve did not open sufficiently because of foreign matter caught in the sliding part of the pilot valve.	Pilot valve	- Is foreign matter contained in the fluid?	- Check the fluid / filter. - Check for and remove foreign matter.		B
III Low flow rate	1 Drop in the discharge flow rate	w	Oscillation of the main valve due to insufficient operating pressure	- Is the minimum operating pressure within the specification range? * Min. operating pressure differential: 0.1 Mpa	- Check the differential pressure at the time of valve opening operation.	A		
		x	Noise is generated in resonance with the vibration of facilities around the product.		- Is vibration or impact applied?	- Check the vibration and impact.	E	
IV Noise	1 Excessive Noise is generated.	y	Oscillation of the diaphragm due to back pressure		- Is the connection direction of the piping (fluid direction) opposite to the correct direction for the system?	- Check the connection direction of the piping.	F	



Construction

*1) When a pilot valve is mentioned, for the air-operated type, it refers the pilot device used to drive the valve.
For the solenoid valve type, it refers to the mounted solenoid coil.

Revision history

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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