

# High Vacuum Straight Solenoid Valve

# Series XSA

## Normally Closed Type

### How to Order

**XSA** **1** — **1** **2** **S** — **5** **G** **□** — **□**

Normally closed high vacuum straight solenoid valve

**Solenoid size**

1	No.1
2	No.2
3	No.3

**Orifice symbol**

1	ø2
2	ø3
3	ø4.5
4	ø6

\* Refer to table 1 below for applications.

**Fitting size**

2	1/4 B
3	3/8 B

\* Refer to table 1 below for applications.

**Fitting type**

V	For VCR®
S	For Swagelok®

**Spacer**

Nil	None
A	With spacer

\* Refer to Table 3 below in case spacers only are required separately.

**Electrical options**

Nil	None
S	With surge voltage suppressor
L	With light
Z	With light/Surge voltage suppressor

\* Refer to Table 2 below for applications.

**Electrical entry**

G	Grommet
C	Conduit
T	Terminal
D	DIN terminal

\* Refer to Table 2 below for applications.

**Voltage**

1	100 V AC (with rectifier)
5	24 V DC
6	12 V DC
9	Other (6 V DC, 48 V DC, 100 V DC)

\* Refer to Table 2 below for applications.



**Table 1: Model, Fitting size, Orifice**

Solenoid valve model (fitting size)			Orifice symbol (diameter)			
			1 (ø2)	2 (ø3)	3 (ø4.5)	4 (ø6)
XSA1	XSA2	XSA3				
2 (1/4)	—	—	•	•	—	—
—	2 (1/4)	—	—	•	•	—
—	—	2 (1/4)	—	—	•	—
—	—	3 (3/8)	—	—	—	•

**Table 3: Spacer part nos.**

Model	Part No.
XSA1	XSA122-8-4
XSA2	XSA232-8-4
XSA3	

**Table 2: Voltage, Electrical entry, Electrical options**

Electrical entry		G	G	C	D, T		
Electrical options		—	S	—	—	S	L, Z
AC	1 (100 V)	•	—	—	—	—	—
DC	5 (24 V)	•	•	•	•	•	•
	6 (12 V)	•	•	•	•	•	—

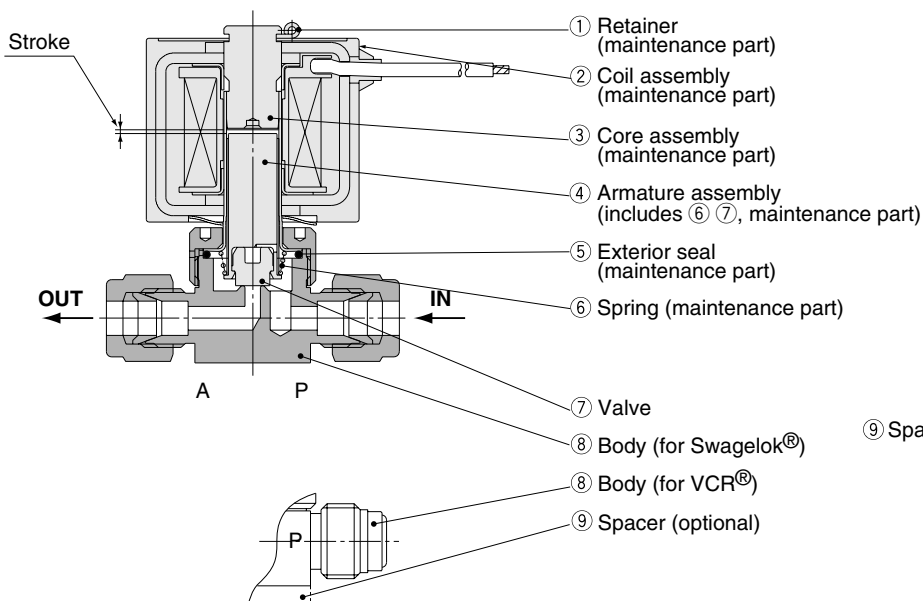
## Specifications

Model	XSA1-12	XSA1-22	XSA2-22	XSA2-32	XSA3-32	XSA3-43
Action	Normally closed direct acting 2 port solenoid valve					
Fluid	Non corrosive gas for stainless steel (SUS405 equivalent)					
Orifice diameter mmø	2	3		4.5		6
Cv factor	0.17	0.33		0.6		1.05
Actuation pressure difference MPa <sup>Note 1)</sup>	0.8	0.3	1.0	0.3	0.8	0.3
Port A pressure Pa	$1 \times 10^{-6}$					
Leakage Pa·m <sup>3</sup> /s {Torr l/s}	Internal		1.3 x 10 <sup>-9</sup> {1 x 10 <sup>-8</sup> } at ordinary temperatures, excluding gas permeation			
	External		1.3 x 10 <sup>-11</sup> {1 x 10 <sup>-10</sup> } at ordinary temperatures, excluding gas permeation			
	Fitting	VCR®	1.3 x 10 <sup>-11</sup> {1 x 10 <sup>-10</sup> }			
Swagelok®		1.3 x 10 <sup>-10</sup> {1 x 10 <sup>-9</sup> }				
Piping connection system	For VCR® and Swagelok®					
Connection size	1/4B					3/8B
Operating temperature °C	5 to 40					
Rated voltage	100 V AC (With full wave rectifier)			6/12/24/48/100 V DC		
Power consumption W	5		8		11	
Allowable voltage fluctuation %	±10					
Weight kg	0.3		0.5		0.6	

Note 1) The actuation pressure difference indicates the difference between Port P (high pressure side) and Port A (low pressure side).  
Example) In the case of 0.3 MPa, Port A is a vacuum (1 Torr or less), while Port P can be pressurized to 0.2 MPa {2 kgf/cm<sup>2</sup>}.

Note 2) Indicates case of grommet type electrical entry.

## Construction/Operation



### <<Operating principle>>

By energizing the coil assembly ②, the armature assembly ④ overcomes the composite force, consisting of the force acting on the valve ⑦ due to differential pressure and the reactive force of the spring ⑥, and is adsorbed to the core assembly ③, opening the valve ⑦. When energizing of the coil assembly ② is canceled, the armature assembly ④ is separated from the core assembly ③ by the reactive force of the spring ⑥, closing the valve ⑦.

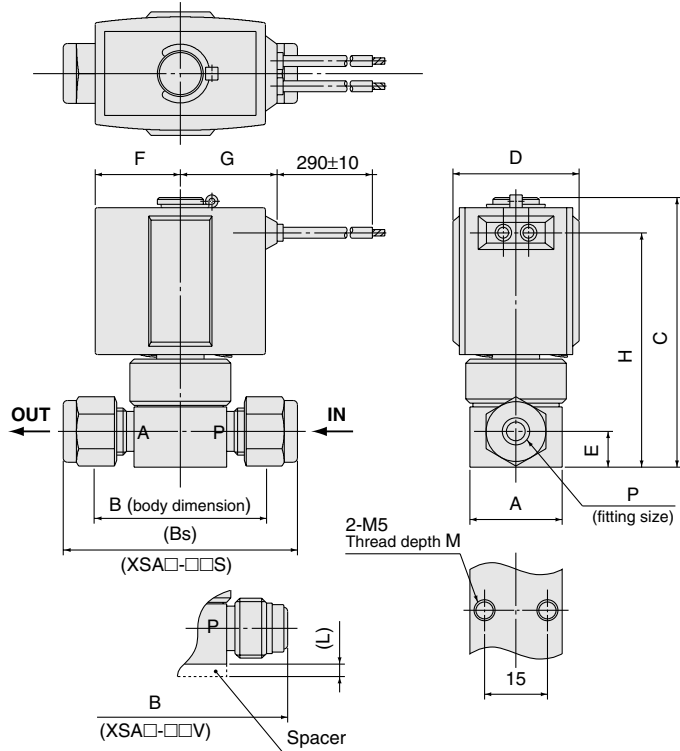
### <<Options>>

⑨ Spacer: A spacer used to raise the body when fastening it onto a flat area.

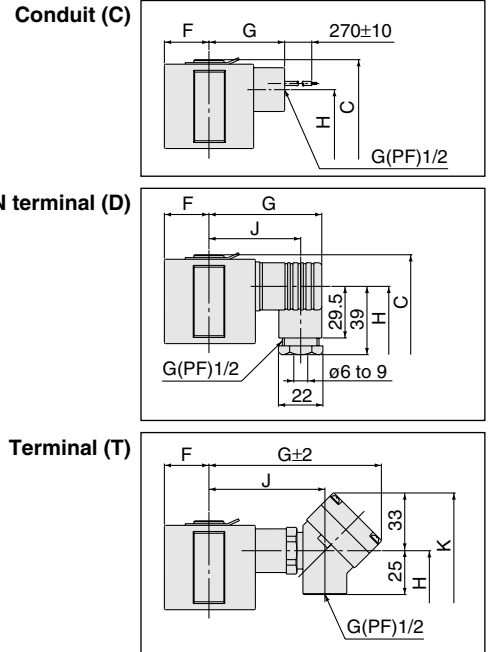
# Series XSA

## Dimensions

### Electrical entry Grommet (G)



### Electrical entry



(mm)

Model	A	B		C	D	E	F	Grommet		Conduit		Terminal			
		For VCR®	For Swagelok®					G	H	G	H	G	H	J	K
<b>XSA1-□2S(V)</b>	22	41(51)	56	64	30	8.5	20	23	56	39	48	92	48	59	81
<b>XSA2-□2S(V)</b>	25	46.5(57)	61	75.5	35	11.5	23	25.5	66	41	58.5	95	58.5	62	91.5
<b>XSA3-32S(V)</b>	25	46.5(57)	61	82	40	11.5	25.5	28	72	43	64	97	64	66	97
<b>XSA3-43S(V)</b>	25	50(66)	65	82	40	11.5	25.5	28	72	43	64	97	64	66	97

Model	DIN terminal			L	M	P (Unit: inch)
	G	H	J			
<b>XSA1-□2S(V)</b>	59	48	47	3	8	1/4
<b>XSA2-□2S(V)</b>	60	58.5	48	5	10	1/4
<b>XSA3-32S(V)</b>	63	64	51	5	10	1/4
<b>XSA3-43S(V)</b>	63	64	51	5	10	3/8



# Specific Product Precautions

Be sure to read this before handling.

## Maintenance Parts

### Straight solenoid valve (normally closed)

Construction No.	Description	XSA1	XSA2	XSA3
①	Retainer	VX070-010-1	VX070-011	VX070-012
②	Coil assembly	100VAC	VX021-001GB-X44	VX021-002GB-X44
		DC	(Refer to the section "How to Order Coil Assembly")	
③	Core assembly	XSA122-30-1	XSA232-30-1	XSA343-30-1
④	Armature assembly	XSA122-30-4	XSA232-30-4	XSA343-30-4
⑤	Exterior seal	AS568-016V	AS568-019V	

\* Refer to the Construction/Operation sections for construction numbers.

### How to Order Coil Assembly (DC for XSA)

VX021 — 001 C B — 05

Coil assembly

#### Applications

Size part no.	Applicable Series
001	No.1 Solenoid XSA1
002	No.2 Solenoid XSA2
003	No.3 Solenoid XSA3

#### Electrical entry

G	Grommet
C	Conduit
D	DIN terminal

#### Coil insulation type

B	Class B insulation
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#### Rated voltage Note1)

05	24 VDC
06	12VDC
51	6 VDC
53	48 VDC
55	100 VDC

Note 1) If the leading "0" is removed from voltage symbols 05, 06, these are the same as the solenoid valve symbols.

#### Electrical options

Nil	None
S	With Surge voltage suppressor
L	With light
Z	With light/surge voltage suppressor

#### Terminal box

Nil	None
T	With terminal box

#### How to Order

(Example) Series XSA1 with 12 VDC grommet.

Mode: VX021-001GB-06

(Example) Series XSA2 with 24 VDC DIN terminal (terminal box).

Mode: VX021-002DBT-05

(Example) Series XSA3 with 24 VDC terminal, surge voltage suppressor and light.

Mode: VX021-003CBTZ-05

#### Coil combinations

(Electrical entry, Coil insulation type, Electrical options)

Electrical entry	Without electrical options	With electrical options		
		With surge voltage suppressor	With light	With light/surge voltage suppressor
Grommet	GB	GBS	—	—
	CB	—	—	—
Conduit	CBT	CBTS	CBTL	CBTZ
	DB	—	—	—
DIN terminal	DBT	DBTS	DBTL	DBTZ

\* The applicable voltage with light, and with light/surge voltage suppressor, is 24 VDC only.