

High Vacuum Angle Valve

Series XLS

Electromagnetic Type Bellows Pressure Balance

How to Order



Starting voltage

5	24 VDC
9	Other (48 VDC, 100 VDC)

Note) Holding voltage is 25% of starting voltage.

Electrical entry

G	Grommet
C	Conduit
T	Terminal
D	DIN terminal

Without control power supply **XLS** — **25** — **5** **G**

With control power supply **XLS** — **25** — **P** **1** **G**

High vacuum angle valve
(Bellows pressure balance,
2 stage voltage switching type)

Valve size

16	KF16
25	KF25

Electrical entry

G	Grommet
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Voltage

1	100 VAC
2	200 VAC
5	24 VDC

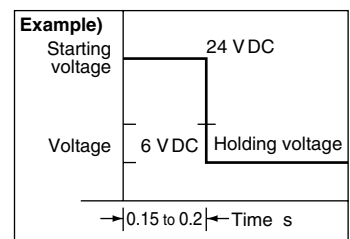
Control power supply

P	With control power
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⚠ Warning

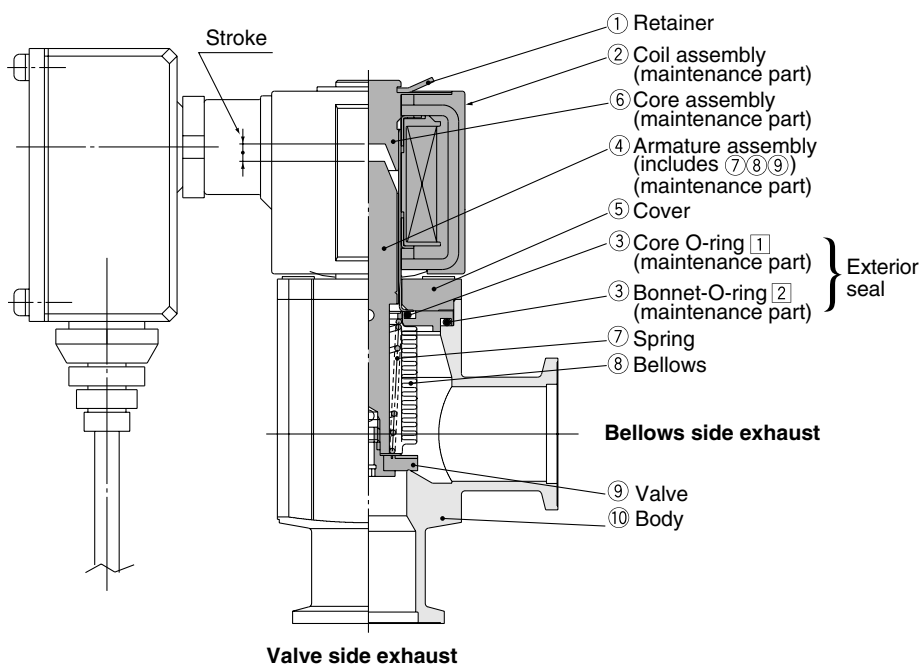
(1) In case there is no control power supply (XLS-25-□□: 24/48/100 VDC), starting voltage should be applied for only 0.15 to 0.2s, in accordance with the prescribed method (indicated on the back of the coil). Continuously applying starting voltage can cause overheating of the coil and fire. Holding voltage is 25% of the starting voltage (the application method is shown on the back of the solenoid coil).



Specifications

Model	XLS-16		XLS-25		XLS-16-P□G		XLS-25-P□G		
Valve type	Normally closed (N.C.)								
Fluid	Non-corrosive gas for aluminum alloy (A6063) and stainless steel (SUS405 equiv.)								
Operating temperature °C	5 to 40								
Operating pressure Pa {Torr}	0.2M to 1×10^{-6} {1.5k to 7.5×10^{-9} }								
Conductance l/s <small>(Note 1)</small>	5		8		5		8		
Leakage Pa·m ³ /s {Torr l/s}	Internal	1.3×10^{-8} { 1×10^{-7} } at ordinary temperatures, excluding gas permeation							
	External	1.3×10^{-11} { 1×10^{-10} } at ordinary temperatures, excluding gas permeation							
Flange type	KF16		KF25		KF16		KF25		
Principle materials	Body : Aluminum alloy Bellows: Stainless steel Seal: FKM (Fluoro rubber)								
Surface treatment	Exterior: Hard anodized Interior Machined for clean environment								
Control power supply	No				Yes				
Operating power supply voltage	24/6, 48/12, 100/24 VDC				24 VDC 100/200 VAC				
Allowable voltage fluctuation %	±10								
Power consumption W	Initial	35		45		35		45	
	Holding	6.5		7.5		6.5		7.5	
Current consumption A	Initial	1.5		2.0		1.5		2.0	
	Holding	0.4		0.5		0.4		0.5	
Electrical entry	G, C, D, T type				G type only				
Coil insulation	Class B								
Maximum operating frequency	10 c.p.m								
Weight kg	0.4		0.7		0.7		1.0		

Construction/Operation



<<Operating principle>>

By energizing the coil assembly ② for 0.15 to 0.2 s with the starting voltage, the armature assembly ④ overcomes the reactive force of the spring ⑦ and is adsorbed to the core assembly ⑥, opening the valve ⑨. After that, it is held with 25% of the starting voltage (when there is no power supply). (When there is a power supply, the activating voltage only is applied to the coil assembly ②.) When energizing of the coil assembly ② is canceled, the armature assembly ④ is separated from the core assembly ⑥ by the reactive force of the spring ⑦, closing the valve ⑨.

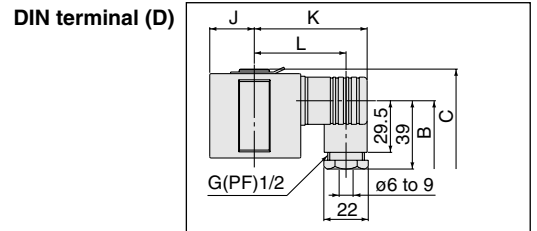
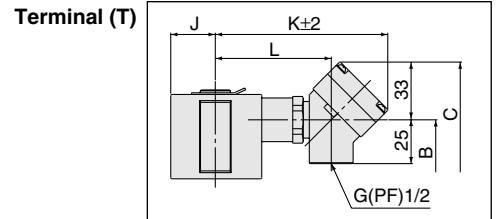
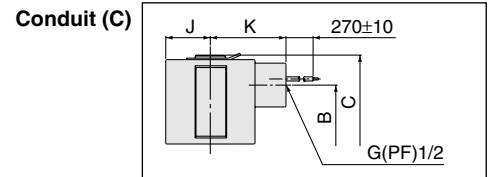
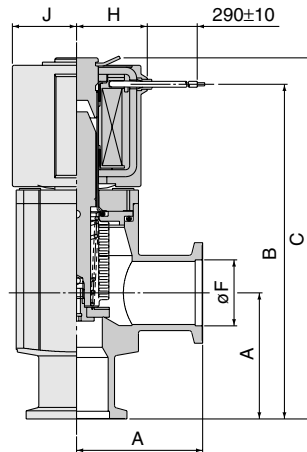
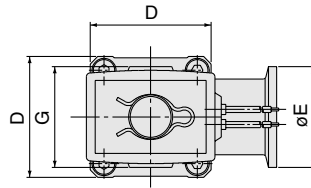
Note 1) The fixed seals between the interior of the body ⑩ and the atmosphere are the exterior seals ③, and the drive section is sealed by the bellows ⑧.

Note 2) Since the seal diameter of the valve ⑨ and the effective pressure receiving diameter of the bellows ⑧ are the same, pressure is in balance and the bellows side can also be used for exhaust.

Series XLS

Dimensions

XLS/Without control power supply Grommet (G)

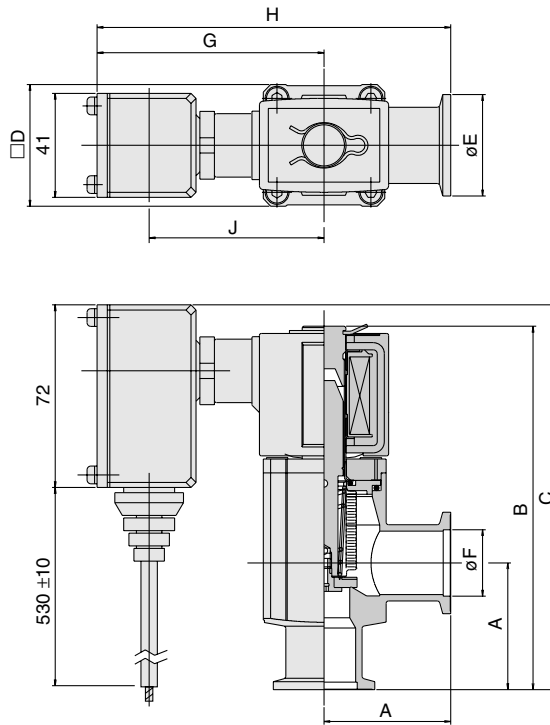


Model	A	B	C	D	E	F	G	H	J	K	L
XLS-16-□G	40	104	113	38	30	17.1	35	25.5	23	—	—
XLS-16-□C		96								41	—
XLS-16-□D			129							60	48
XLS-16-□T		95								62	
XLS-25-□G	50	128.5	138.5	48	40	26.2	40	28	25.5	—	—
XLS-25-□C		121.5								43	—
XLS-25-□D		120.5								63	51
XLS-25-□T		121.5								97	66

(mm)

Dimensions

XLS/With control power supply
Grommet (G)

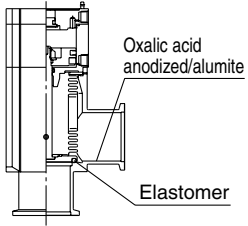
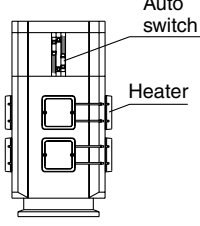


(mm)

Model	A	B	C	D	E	F	G	H	J
XLS-16-P□G	40	113	121	38	30	17.1	87	110	66.5
XLS-25-P□G	50	138.5	147	48	40	26.2	89.5	115	69

Made to Order

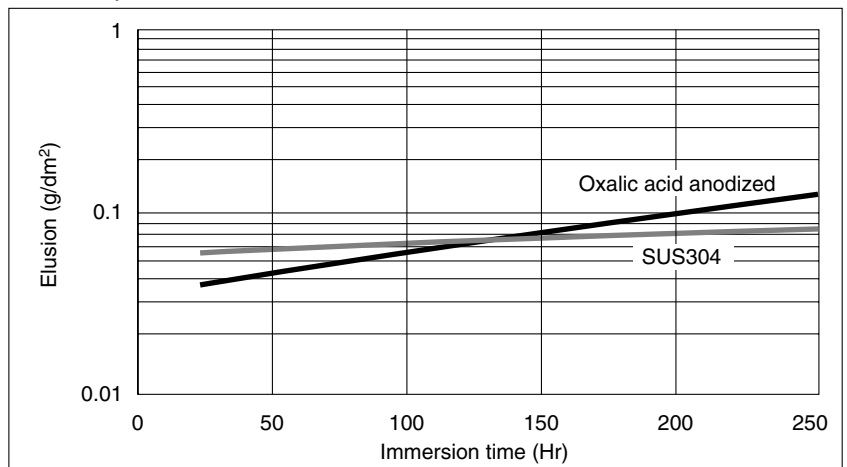
Special aluminum valve products. Contact SMC for applicable models.

Special specifications	Contents	
Improved corrosion resistance ^{Note)}	Body interior is oxalic acid anodized to improve corrosion resistance against chlorine system gas. (The corrosion resistance is equivalent to that of stainless steel SUS304.)	
Improved plasma resistance	Use of perfluoroelastomer for internal seals enables applications in severe operating environments, such as semiconductor manufacturing processes involving plasma generation.	
Improved resistance to corrosion and plasma	Body interior = Oxalic acid anodized Internal seal = Perfluoroelastomer	
Heat-resistant type (120 °C) (Deposit prevention + Operation check + Internal processing)	A baking heater is added for uniform heating to prevent formation of deposits. Adoption of a high temperature auto switch (Max. 150 °C) enables operation check during heating.	

Consult SMC for the above specifications.

Note) Type with improved corrosion resistance.

An immersion test in HCl (1% hydrochloric acid) yields results equivalent to those for SUS304 for the first 150 hours.



Maintenance Parts

Air operated angle valve/Manual valve Bonnet & handle assembly/Construction part number: (1)

Model	Temperature specifications	Valve size					
		XL -16	XL -25	XL -40	XL -50	XL -63	XL -80
XLA	General use	XLA16-30-1	XLA25-30-1	XLA40-30-1	XLA50-30-1	XLA63-30-1	XLA80-30-1
	High temperature	XLA16-30-1H	XLA25-30-1H	XLA40-30-1H	XLA50-30-1H	XLA63-30-1H	XLA80-30-1H
XLAV	General use	XLAV16-30-1	XLAV25-30-1	XLAV40-30-1	XLAV50-30-1	XLAV63-30-1	XLAV80-30-1
XLC	General use	XLC16-30-1	XLC25-30-1	XLC40-30-1	XLC50-30-1	XLC63-30-1	XLC80-30-1
	High temperature	XLC16-30-1H	XLC25-30-1H	XLC40-30-1H	XLC50-30-1H	XLC63-30-1H	XLC80-30-1H
XLCV	General use	XLCV16-30-1	XLCV25-30-1	XLCV40-30-1	XLCV50-30-1	XLCV63-30-1	XLCV80-30-1
XLF	General use	XLF16-30-1	XLF25-30-1	XLF40-30-1	XLF50-30-1	XLF63-30-1	XLF80-30-1
	High temperature	XLF16-30-1H	XLF25-30-1H	XLF40-30-1H	XLF50-30-1H	XLF63-30-1H	XLF80-30-1H
XLFV	General use	XLFV16-30-1	XLFV25-30-1	XLFV40-30-1	XLFV50-30-1	XLFV63-30-1	XLFV80-30-1
XLG	General use	XLG16-30-1	XLG25-30-1	XLG40-30-1	XLG50-30-1	XLG63-30-1	XLG80-30-1
	High temperature	XLG16-30-1H	XLG25-30-1H	XLG40-30-1H	XLG50-30-1H	XLG63-30-1H	XLG80-30-1H
XLGV	General use	XLGV16-30-1	XLGV25-30-1	XLGV40-30-1	XLGV50-30-1	XLGV63-30-1	XLGV80-30-1
XLD	General use	—	XLD25-30-1	XLD40-30-1	XLD50-30-1	XLD63-30-1	XLD80-30-1
	High temperature	—	XLD25-30-1H	XLD40-30-1H	XLD50-30-1H	XLD63-30-1H	XLD80-30-1H
XLDV	General use	—	XLDV25-30-1	XLDV40-30-1	XLDV50-30-1	XLDV63-30-1	XLDV80-30-1
XLH	Standard	XLH16-30-1	XLH25-30-1	XLH40-30-1	XLH50-30-1	—	—

Exterior seal, (M) Valve seal, S Valve seal Assemblies

Construction No.	Description	XL(A, C, H) [V]-16	XL(F, G) [V]-16	XLD [V]-25	XL(A, C, H) [V]-25	XL(F, G) [V]-25	XLD [V]-40	XL [V]-40	XLD [V]-50	XL [V]-50	XLD [V]-63	XL [V]-63	XLD [V]-80	XL [V]-80
③	Exterior seal	AS568-025V	XLF16-6	AS568-030V		XLF25-6	AS568-035V		AS568-039V		AS568-043V		AS568-045V	
⑭ (-②)	(M) Valve seal	B2401-V15V		B2401-V24V			B2401-P42V		AS568-227V		AS568-233V		B2401-V85V	
⑭ (-②)	S Valve seal assembly	—		AS568-009V		—	XLD40-2-9-1A	—	XLD50-2-9-1A	—	XLD80-2-9-3A	—	XLD80-2-9-3A	—

* Refer to the Construction/Operation drawing of each series for the construction numbers.

Replacement heaters/Part Nos. (XLA, XLC, XLD, XLF, XLG, XLH)

Model	Part Nos./Mounting positions/Set quantity					
	H2 (heater for 100°C)	Mounting position	Set quantity	H3 (heater for 120°C)	Mounting position	Set quantity
XL -25	—	—	—	XLA25-60M-1	(a)	1
XL -40	XLA25-60M-1	(a)	1	XLA25-60M-2	(b) (c)	1
XL -50	XLA25-60M-1	(a)	1	XLA25-60M-2	(b) (c)	1
XL -63	XLA25-60M-2	(b) (c)	1	XLA25-60M-3	(a) (b) (c)	1
XL -80	XLA25-60M-3	(a) (b) (c)	1	XLA25-60M-2	(b) (c)	2

Note 1) The above (a), (b), (c) indicate heater mounting positions. The heater mounting positions (a), (b), (c) are shown in the dimension drawing for each series.

Note 2) Heater set quantity indicates multiple heaters.

(Example) The heaters included with XLA-80-H3 are 2 pieces of XLH25-60M-2 (a set including 2 heater units).

Angle solenoid valve

Construction No.	Description	XLS-16- 	XLS-16-P 	XLS-25- 	XLS-25-P
②	Coil assembly	XLS16-20- G, C, T, D	XLS16-20-P G	XLS25-20- G, C, T, D	XLS25-20-P G
⑥	Core assembly	XLS16-30-1		XLS25-30-1	
④	Armature assembly	XLS16-30-2		XLS25-30-2	
③-①	Core O-ring	AS568-018V		AS568-018V	
③-②	Bonnet O-ring	AS568-025V		AS568-030V	

Note) The voltage symbol is entered here. (Refer to "How to Order")

The letters G, C, T and D following indicate grommet, conduit, terminal and DIN respectively.

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