

Bellows-sealed Valves

SM Series



FITOK
Valves and Fittings

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Bellows-sealed Valves

SM Series Low Pressure Bellows-sealed Valves

Features

- ⦿ Metal-to-metal gasket seal without external leakage
- ⦿ Precision-formed metal bellows to ensure reliability
- ⦿ Non-rotating stem tip to increase shutoff cycle life
- ⦿ Handle and pneumatic actuator available
- ⦿ Pneumatic actuator to rotate 360° for ease of installation
- ⦿ Panel mounting and bottom mounting available

Technical Data

Type		SM4	SM8
Ports Size		1/4" to 3/8" or 6 mm to 8 mm	3/8" to 1/2" or 10 mm to 12 mm
Flow Coefficient (Cv)		0.3	0.8
Orifice Size		0.16 in. (4.1mm)	0.31 in. (7.9 mm)
Max. Working Pressure	Handle	500 psig (34.4 bar)	
	Pneumatic	145 psig (10 bar)	
Pneumatic Actuator Operation Pressure		60 to 90 psig (4.2 to 6.2 bar)	
Temperature		PCTFE: -10 ~ 150°F (-23 ~ 65°C) PFA: -10 ~ 302°F (-23 ~ 150°C)	
Leak rate (helium)	Internal	≤ 4x10 ⁻⁹ mbar l/s	
	External	≤ 1x10 ⁻⁹ mbar l/s	

Flow Data

Air @ 70°F (21°C)

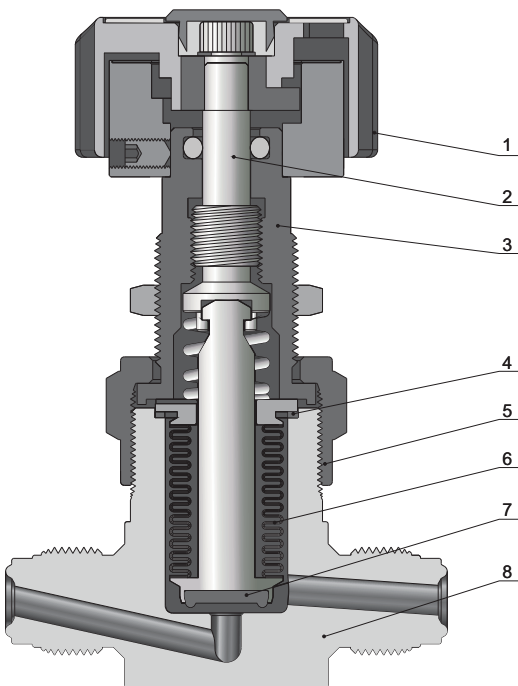
Water @ 60°F (16°C)

Pressure Drop to Atmosphere psig (bar)	SM4: Cv 0.3		SM8: Cv 0.8	
	Air (l/min)	Water (l/min)	Air (l/min)	Water (l/min)
10 (0.68)	100	3.5	270	9.6
50 (3.4)	270	8.0	730	21.6
100 (6.8)	490	11.4	1280	30.0

Product Technology Grade

Product Grade Technology	General Purpose	Special Cleaning and Packaging	Ultra High Purity
Material/Specification	316 SS/ASTM A479 316L SS/ASTM A479		316L SS/ASTM A479
Wetted Surface Roughness	Ra 20 µin. (0.51 µm)		Ra 10 µin. (0.25 µm)
Polishing Process	Machine finished		Electropolished
Cleaning and Packaging Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Cleaning and Packaging
Cleaning Process	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In Class 100 cleanroom
Packaging Process	Individually bagged	Double bagged	Double bagged and vacuum sealed in cleanroom

Major Material of Construction



Handle Actuator

Item	Component	Material/Specification
1	Handle	ABS
2	Actuator	416 SS/ASTM A582
3	Bonnet	316 SS/ASTM A479
4	Bonnet Gasket	316L SS/ASTM A269
5	Bonnet nut	316 SS/ASTM A479
6	Bellows	316L SS/ASTM A269
7	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
8	Body	316 SS/ASTM A479 or 316L SS/ASTM A479

Actuators

Handle

- ⦿ Half turn to operate from fully open to closed
- ⦿ Handle with window to visually indicate open and closed states



Pneumatic

- ⦿ Normally open, "N.O." marked on the top of the cylinder
- ⦿ Normally closed, "N.C." marked on the top of the cylinder

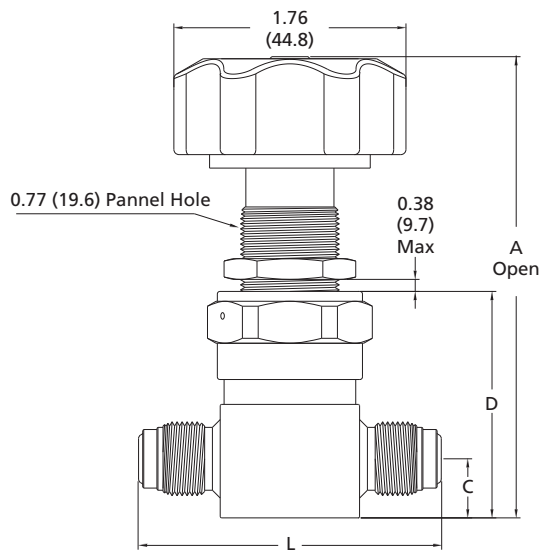


Straight Type

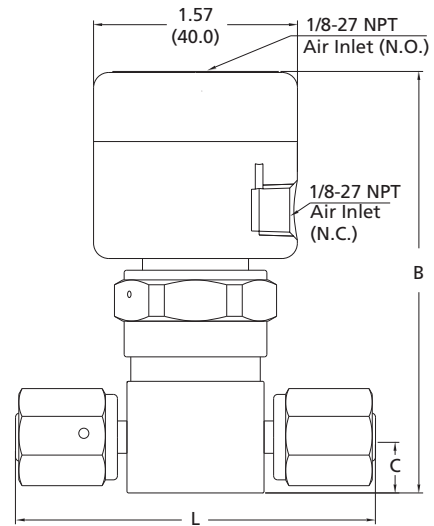
Dimensions

Dimensions, in inches (millimeters), are for reference only.

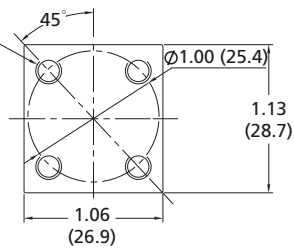
Handle



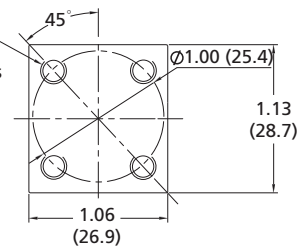
Pneumatic



4 x M5 x 0.8-6H thread
The holes are compatible
with 10-32 mounting screws



4 x M5 x 0.8-6H thread
The holes are compatible
with 10-32 mounting screws



Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)				
		A	B	C	D	L
SM4 Series						
SM4□□-FL4-	1/4" FITOK Tube Fitting	3.51 (89.4)	3.25 (82.7)	0.45 (11.4)	1.72 (43.7)	2.46(62.5)
SM4□□-FL6-	3/8" FITOK Tube Fitting					2.58(65.5)
SM4□□-ML6-	6 mm FITOK Tube Fitting					2.46(62.5)
SM4□□-ML8-	8 mm FITOK Tube Fitting					2.53(64.3)
SM4□□-TB4-	1/4" Tube Butt Weld					1.74(44.2)
SM4□□-TB6-	3/8" Tube Butt Weld					
SM4□□-MTB6-	6 mm Tube Butt Weld					
SM4□□-TS4-	1/4" Tube Socket Weld					
SM4□□-FR4-	1/4" Integral Male FR					
SM4□□-FFR4-	1/4" Female FR					
SM4□□-FO4-	1/4" Male FO	2.00(50.8)				
SM8 Series						
SM8□□-FL6-	3/8" FITOK Tube Fitting	3.77 (95.7)	3.74 (95.0)	0.53 (13.5)	1.81 (46.0)	2.58(65.5)
SM8□□-FL8-	1/2" FITOK Tube Fitting					2.80(71.1)
SM8□□-ML10-	10 mm FITOK Tube Fitting					2.60(66.0)
SM8□□-ML12-	12 mm FITOK Tube Fitting					2.80(71.1)
SM8□□-TB6-	3/8" Tube Butt Weld					1.74(44.2)
SM8□□-TB8-	1/2" Tube Butt Weld					
SM8□□-FR8-	1/2" Integral Male FR			0.66 (16.8)	1.99(50.5)	2.58(65.5)
SM8□□-FFR8-	1/2" Female FR			1.93(49.0)	3.15(80.0)	

Part Number Description

SM4 SS - FL 4 - ML 6 - R A F2

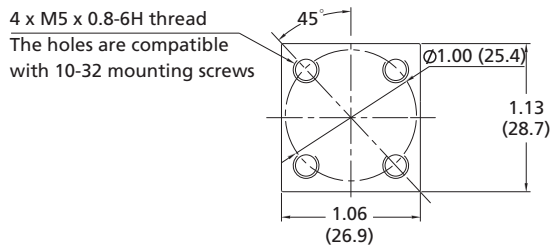
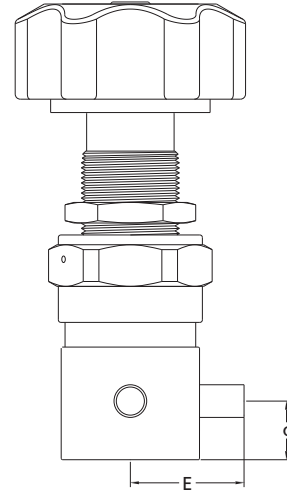
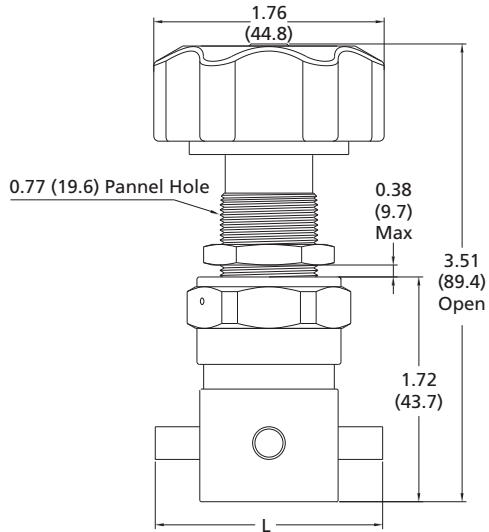
Body Material	Inlet Type	Outlet Type	Outlet Size	Actuator Type	Seat	Technology Grade
6L 316L SS	TB Fractional Tube Butt Weld	Same as Inlet	Same as Inlet	R Handle	PCTFE	General Purpose
SS 316 SS	MTB Metric Tube Butt Weld	Specify in the same way as inlet type	Specify in the same way as inlet size	C Pneumatic Normally Closed	A PFA	F2 Special Cleaning and Packaging
Type	TS Fractional Tube Socket Weld	Inlet Size 4 1/4" 6 6 mm or 3/8" 8 8 mm or 1/2" 10 10 mm 12 12 mm	O Pneumatic Normally Open		F3 Ultra High Purity	
4	FR Male FR Fitting					
8	FFR Female FR Fitting					
	FL Fractional Tube Fitting					
	ML Metric Tube Fitting					
	FO Male FO Fitting					

Branch Type

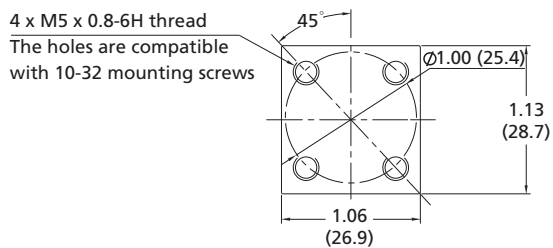
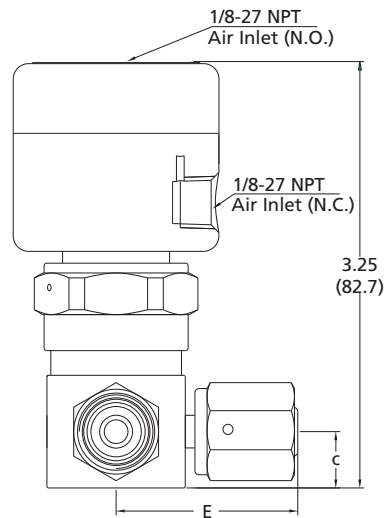
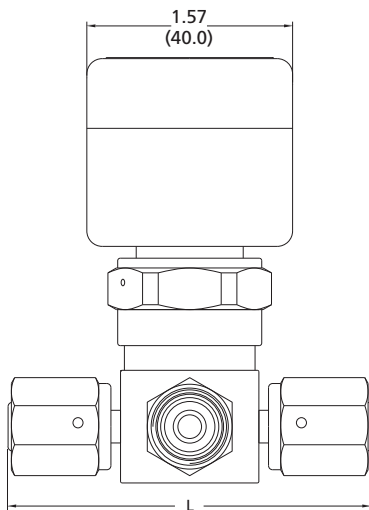
Dimensions

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Handle



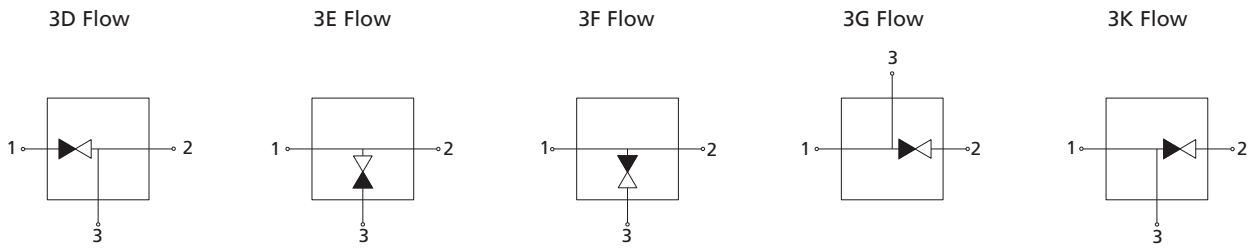
Pneumatic



Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)		
		C	E	L
SM4□□-TB4-	1/4" Tube Butt Weld	0.45 (11.4)	0.87 (22.1)	1.74 (44.2)
SM4□□-MTB6-	6 mm Tube Butt Weld		1.38 (35.1)	2.76 (70.1)
SM4□□-FFR4-	1/4" Female FR		1.74 (44.2)	3.48 (88.4)
SM4□□-RFR4-	1/4" Rotatable Male FR			

Flow Paths

© Flow paths as viewed from the top



Part Number Description

SM4	SS	-	TB	4	-	FR	4	-	FFR	4-3G	-	R	A	F2	
Type	Body Material		Port 1 Type		Port 2/3 Type	Port 2/3 Size		Flow Path	Actuator Type		Seat		Technology Grade		
4	6L 316L SS	SS 316 SS	TB	Fractional Tube Butt Weld	Same as Port 1	Same as Port 1		3D	R	Handle	PCTFE		General Purpose		
			MTB	Metric Tube Butt Weld	Specify in the same way as port 1 type	Specify in the same way as port 1 size		3E	C	Pneumatic Normally Closed	A		PFA	F2	Special Cleaning and Packaging
			TS	Fractional Tube Socket Weld						3F	O	Pneumatic Normally Open			F3
			FR	Male FR Fitting				3G							
			FFR	Female FR Fitting				3K							
			FL	Fractional Tube Fitting											
			ML	Metric Tube Fitting											
			FO	Male FO Fitting											
					Port 1 Size										
					4	1/4"									
					6	6 mm or 3/8"									
					8	8 mm									

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