

Bellows-Sealed Valves

SW and SU Series

Bellows-Sealed
Valves



Contents

Bellows-Sealed Valves

SW Series

**B-140**

Bellows-Sealed Valves

SU Series

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Notes:

- ⦿ Packing may need to be adjusted during the use of SU series bellows-sealed valves.
- ⦿ For better maintenance, FITOK bellows-sealed valves should be stored in the half-open position.

Bellows-Sealed Valves

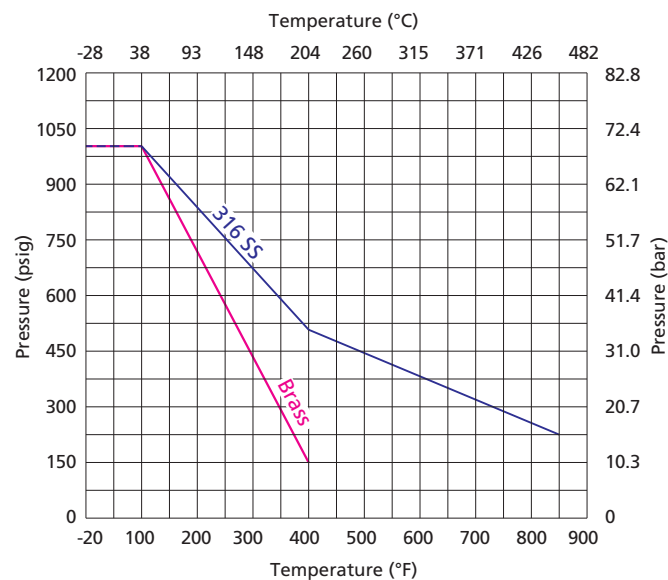
SW Series

Features

- Working pressure up to: 1000 psig (69.0 bar)
- Working temperature: -20°F to 842°F (-28°C to 450°C)
- Variety of end connections
- Body material: 316 SS, brass
- Hydraulic-formed multilayer bellows for longer cycle life
- Nonrotating stem tip eliminates galling within the seat area
- Externally pressurized bellows design for maximum strength
- Strictly controlled bellows stroke to improve safety and cycle life
- Replaceable bellows and stem tip assembly
- Regulating, conical and spherical stem tips available
- Handle color options are available
- Panel and bottom mounting available
- Every FITOK bellows-sealed valve leak tested with helium at the seat, envelope and all seals (maximum allowable leak rate: 4×10^{-9} std cm³/s)



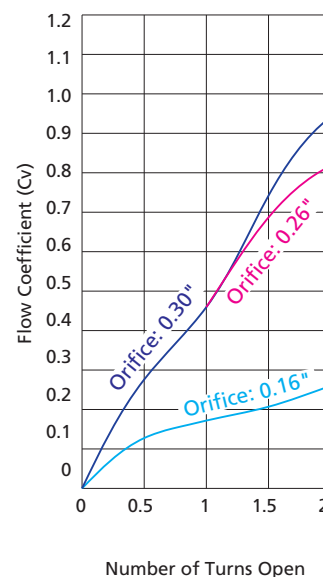
Pressure vs. Temperature



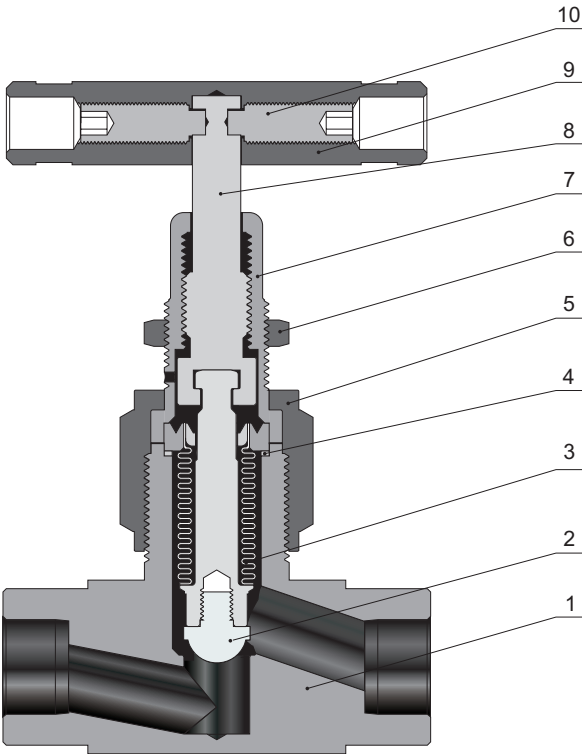
200°F (93°C) max. with PCTFE stem tip (soft tip).

Flow Coefficient vs. Turns Open

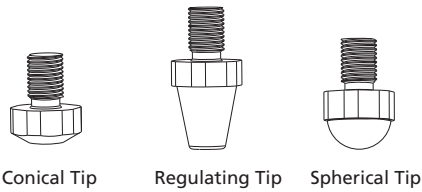
Regulating Stem



Standard Materials of Construction



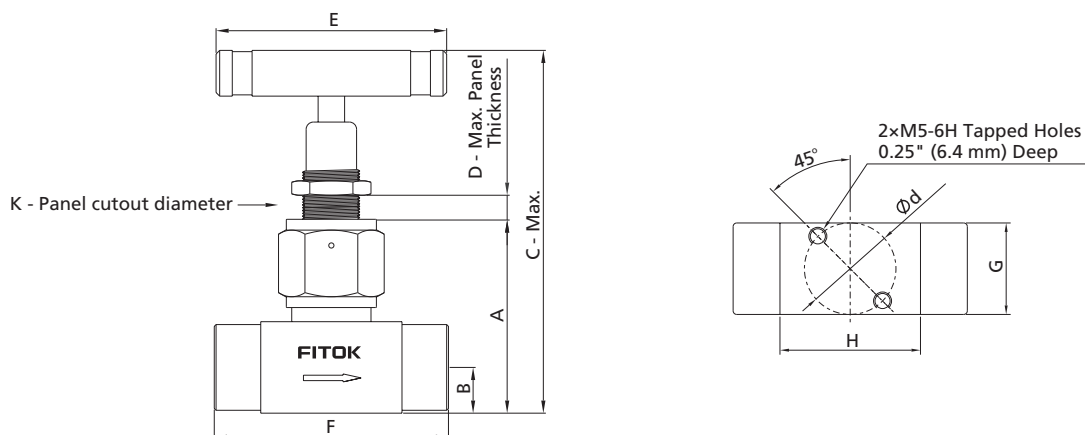
Tip Types



Valve Body Material Grade/ASTM Specification				
Component			Valve Body Material Grade/ASTM Specification	
			316 SS	Brass
1	Body		316 SS/A182	Brass/B283
2	Stem Tip	Regulating	316 SS/A479 or Stellite	
		Conical	PCTFE/D1430 or 316 SS/A479 or Stellite	
		Spherical	Stellite	
3	Bellows		316L SS/A240	
	Stem		316 SS/A479	
	Weld Ring		316 SS/A479	
4	Gasket		Silver-plated 316 SS/A269	
5	Bonnet Nut		316 SS/A479	Brass/B16
6	Panel Mount Nut		Stainless steel	Brass/B16
7	Bonnet		316 SS/A479	Brass/B16
8	Actuator		316 SS/A479	316 SS/A479
9	Handle		6061/B211 or stainless steel	
10	Set Screws		Zinc-plated carbon steel	
Non-wetted Lubricant			Molybdenum disulfide	

Contact FITOK Group or our authorized distributors for valves of other materials.

Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)									
	Inlet	Outlet			A	B	C	D	E	F	G	H	K	Ød
SW□□-FL4-2-	1/4" FITOK		0.16 (4.1)	0.36	2.16 (54.8)	0.54 (13.7)	4.05 (102.8)	0.39 (10.0)	2.50 (63.5)	2.46 (62.5)	1.00 (25.4)	1.06 (26.9)	0.65 (16.4)	1.00 (25.4)
SW□□-FL6-3-	3/8" FITOK		0.26 (6.6)	0.85	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	3.09 (78.5)	1.10 (25.4)	1.57 (39.9)	0.65 (16.4)	1.00 (25.4)
SW□□-FL8-5-	1/2" FITOK		0.30 (7.6)	1.20	2.16 (54.8)	0.54 (13.7)	4.05 (102.8)	0.39 (10.0)	2.50 (63.5)	3.30 (83.8)	1.13 (25.4)	1.57 (40.0)	0.65 (16.4)	1.00 (25.4)
SW□□-ML6-2-	6 mm FITOK		0.16 (4.1)	0.36	2.16 (54.8)	0.54 (13.7)	4.05 (102.8)	0.39 (10.0)	2.50 (63.5)	2.46 (62.5)	1.00 (25.4)	1.07 (27.1)	0.65 (16.4)	1.00 (25.4)
SW□□-ML10-4-	10 mm FITOK		0.28 (7.1)	1.00	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	3.11 (79.0)	1.00 (25.4)	1.57 (39.8)	0.65 (16.4)	1.00 (25.4)
SW□□-ML12-5-	12 mm FITOK		0.30 (7.6)	1.20	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	3.30 (83.8)	1.00 (25.4)	1.57 (39.8)	0.65 (16.4)	1.00 (25.4)
SW□□-TS4-2-	1/4" Tube Socket Weld		0.16 (4.1)	0.36	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	1.68 (42.7)	1.00 (25.4)	1.00 (25.4)	0.65 (16.4)	1.00 (25.4)
SW□□-TS6-4-	3/8" Tube Socket Weld		0.28 (7.1)	1.00	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	2.27 (57.7)	1.00 (25.4)	1.51 (38.4)	0.65 (16.4)	1.00 (25.4)
SW□□-TS8-5-	1/2" Tube Socket Weld		0.30 (7.6)	1.20	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	2.27 (57.7)	1.00 (25.4)	1.25 (31.7)	0.65 (16.4)	1.00 (25.4)
SW□□-TB8-3-	1/2x0.095" Tube Butt Weld		0.26 (6.6)	0.85	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	2.27 (57.7)	1.00 (25.4)	1.48 (37.7)	0.65 (16.4)	1.00 (25.4)
SW□□-FFR4-2-	1/4" Female FR		0.16 (4.1)	0.36	2.16 (54.8)	0.54 (13.7)	4.05 (102.8)	0.39 (10.0)	2.50 (63.5)	2.76 (70.1)	1.00 (25.4)	1.02 (25.8)	0.65 (16.4)	1.00 (25.4)
SW□□-FFR8-5-	1/2" Female FR		0.30 (7.6)	1.20	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	3.12 (79.2)	1.00 (25.4)	1.25 (31.75)	0.65 (16.4)	1.00 (25.4)
SW□□-FR4-2-	1/4" Male FR		0.16 (4.1)	0.36	2.16 (54.8)	0.54 (13.7)	4.05 (102.8)	0.39 (10.0)	2.50 (63.5)	2.24 (56.9)	1.00 (25.4)	1.00 (25.4)	0.65 (16.4)	1.00 (25.4)
SW□□-FR8-5-	1/2" Male FR		0.30 (7.6)	1.20	2.20 (55.8)	0.54 (13.7)	4.09 (103.8)	0.39 (10.0)	2.50 (63.5)	3.00 (76.2)	1.13 (28.7)	1.50 (38.1)	0.65 (16.4)	1.00 (25.4)

1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings.
2. Valve dimensions of FITOK tube fittings in port types listed are dimensions when nuts are finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For special sizes and types, please contact FITOK Group or our authorized distributors.

Pneumatic Actuators



Features

- ◎ Low actuation pressure
- ◎ Opens and closes quickly and reliably
- ◎ Rotatable port for normally closed actuators allows easy installation
- ◎ Normally open actuators black capped for identification

Actuation Modes

- ◎ Normally closed—air opens, spring closes
- ◎ Normally open—air closes, spring opens

Technical Data

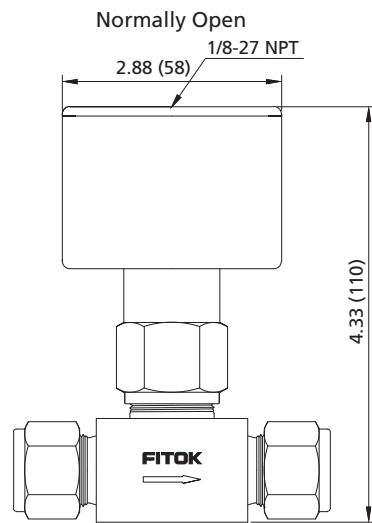
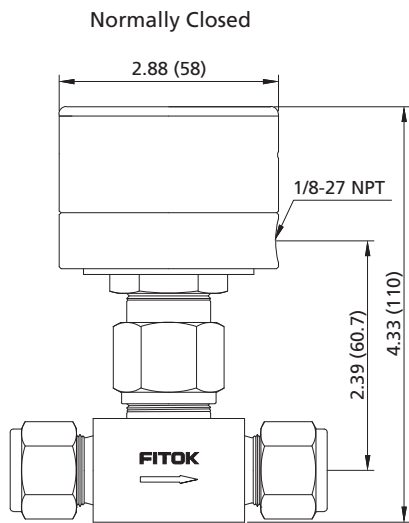
Actuator Type	Actuator Pressure Rating psig (bar)	Valve and Actuator Working Temperature °F (°C)	Valve Working Pressure psig (bar)
Normally Closed	65.3~79.8 (4.5~5.5)	-18~200 (-28~93)	145 (10.0)
Normally Open	72.5~87.0 (5.0~6.0)		500 (34.4)

Materials of Construction

Component	Material
Housing	Anodized Aluminium
Stem Tip	PCTFE

For valve components, refer to "Standard Materials of Construction" on page B-133.

Dimensions



Basic Ordering Number	Cv
SW□□-□□-2-KN-C/O	0.36
SW□□-□□-3-KN-C/O	0.85
SW□□-□□-5-KN-C/O	1.0

C designates normally closed models; O designates normally open models.

Bellows-Sealed
Valves

Ordering Number Description

SWSS - FL8 - ML10 - 5 - WR - L - BW - SF2																	
Series	Body Material		Inlet Type		Inlet Size		Outlet Type	Outlet Size	Orifice Size	Stem Tip Material and Type	Actuator	Body-to-Bellows Seal	Special Application	Cleaning and Packaging			
SW	SS	316 SS	TS	Fractional Tube Socket Weld	2	1/8"	Same as Inlet Specified in the same way as Inlet type and size		2	0.16" (4.1 mm)	Spherical Stainless Steel Regulating PCTFE Conical Stellite Regulating Stainless Steel Conical Stellite Conical	Green Aluminum Bar	No	FC-01			
	6L	316L SS	MTS	Metric Tube Socket Weld	4	1/4"			3	0.26" (6.6 mm)		L	Black Aluminum Bar	S	NACE MR0175	F2	FC-02
	S4	304 SS	TB	Fractional Tube Butt Weld	6	3/8" or 6 mm			4	0.28" (7.1 mm)		I	Red Aluminum Bar	CE	CE Certified		
	4L	304L SS	MTB	Metric Tube Butt Weld	8	1/2" or 1/2x0.095" or 8 mm			5	0.30" (7.6 mm)		J	Blue Aluminum Bar		Gasket Seal		
	B	Brass	PS	Pipe Socket Weld	10	10 mm						M	Stainless Steel Bar	BW	Welded Seal		
			PB	Pipe Butt Weld	12	3/4" or 12 mm											
			FL	Fractional Tube Fitting	14	14 mm											
			ML	Metric Tube Fitting													
			UFB	Rotatable Fractional Tube Butt Weld													
			UMB	Rotatable Metric Tube Butt Weld													
			FFR	Female FR Fitting													
			FR	Male FR Fitting													

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations

- Cleaning and Packaging:
 FC-01: Standard cleaning and packaging for general industrial procedures.
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- CE certification is available. For more information, please contact FITOK group or our authorized distributors.

Bellows-Sealed Valves

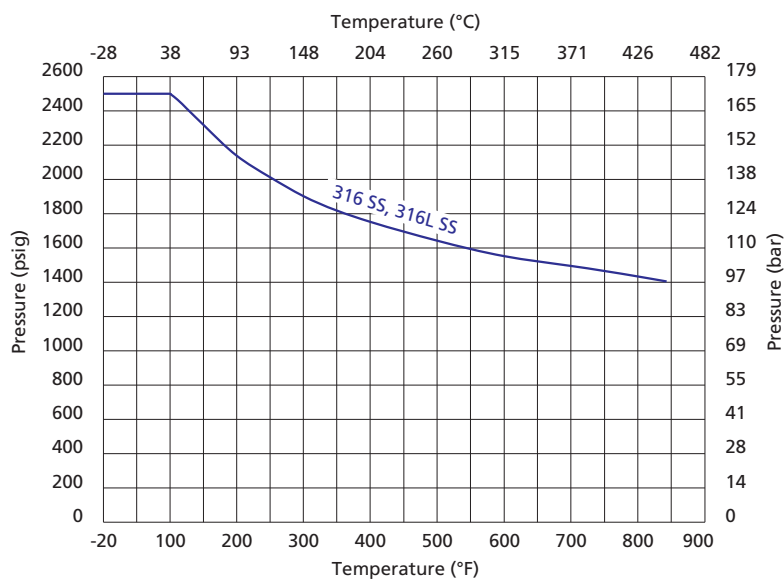
SU Series

Features

- Working pressure up to: 2500 psig (172 bar)
- Working temperature: -20°F to 842°F (-28°C to 450°C)
- Variety of end connections
- 316 SS body material
- Upper packing provides secondary containment system above the bellows
- Hydraulic-formed multilayer bellows for longer cycle life
- Nonrotating stem tip eliminates galling within the seat area
- Strictly controlled bellows stroke to improve safety and cycle life
- Replaceable bellows and stem tip assembly
- Regulating, conical, and spherical stem tips available
- Panel and bottom mounting available
- Double lock-pins enable steady and durable fastening of the handle
- Handle color options are available
- Every FITOK bellows-sealed valve leak tested with helium at the seat, envelope and all seals (maximum allowable leak rate : 4×10^{-9} std cm³/s)



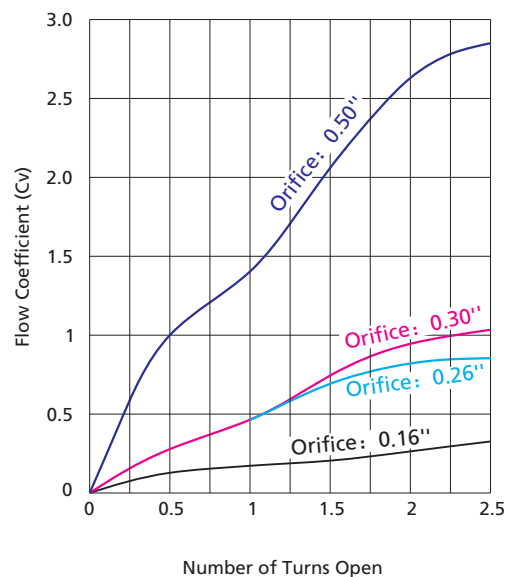
Pressure vs. Temperature



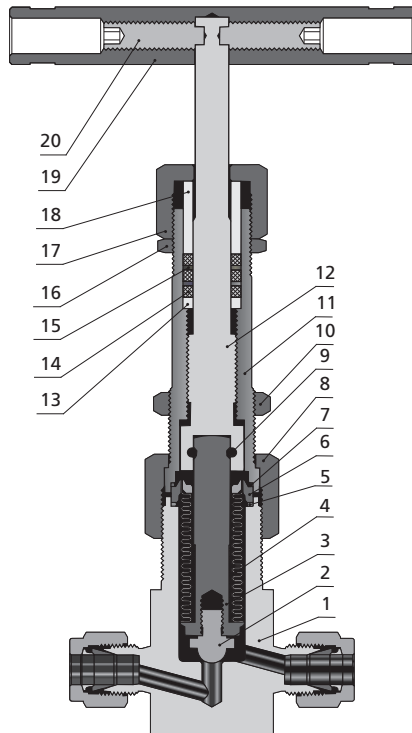
200°F (93°C) max. with PCTFE stem tip (soft tip).

Flow Coefficient vs. Turns Open

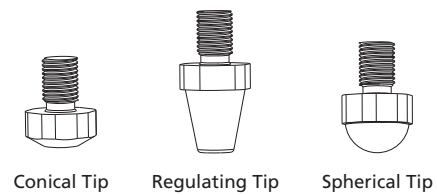
Regulating Stem



Standard Materials of Construction



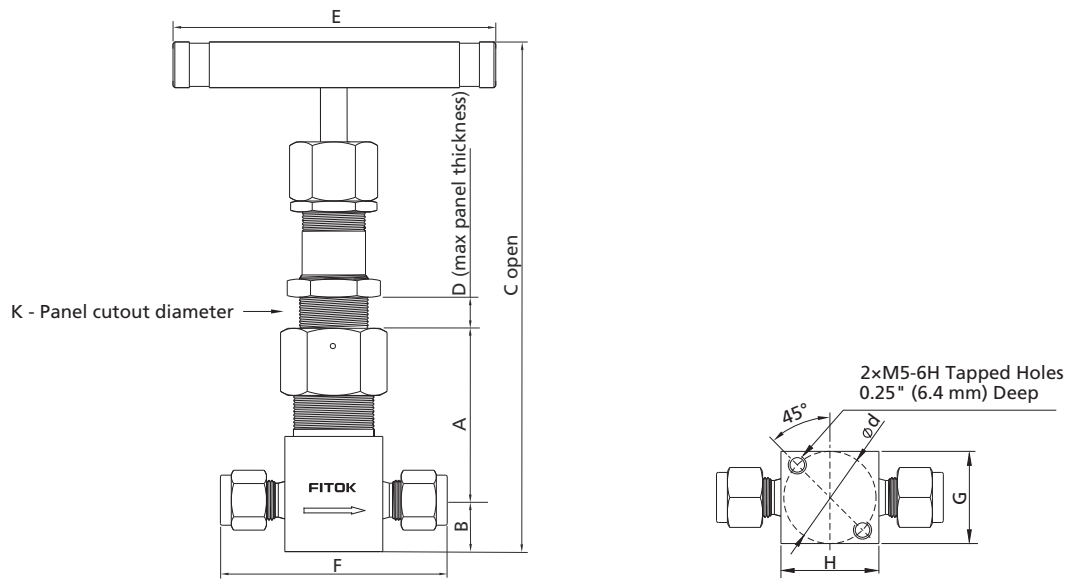
Tip Types



Component			Valve Body Material Grade/ASTM Specification
			316 SS
1	Body		316 SS/A182 or A479
2	Stem Tip	Regulating	316 SS/A479 or Stellite
		Conical	PCTFE/D1430 or 316 SS/A479 or Stellite
		Spherical	Stellite
3	Stem		316 SS/A479
4	Bellows		316L SS/A240
5	Gasket		Sliver-plated 316L SS/A269
6	Weld Ring		316 SS/A479
7	Gasket		Sliver-plated 316L SS/A269
8	Bonnet Nut		316 SS/A479
9	Pin		Stainless steel
10	Panel Mount Nut		Stainless steel
11	Bonnet		316 SS/A479
12	Actuator		440C SS/A479
13	Packing washer		316 SS/A479
14	Packing		Graphite
15	Packing washer		316 SS/A479
16	Lock Nut		Stainless steel
17	Packing Nut		316 SS/A479
18	Gland		316 SS/A479
19	Handle		6061/B210 /Stainless steel
20	Set Screws		Zinc-plated carbon steel

Contact FITOK Group or our authorized distributors for valves of other materials.

Dimensions

Orifice: ≤ 0.30 "

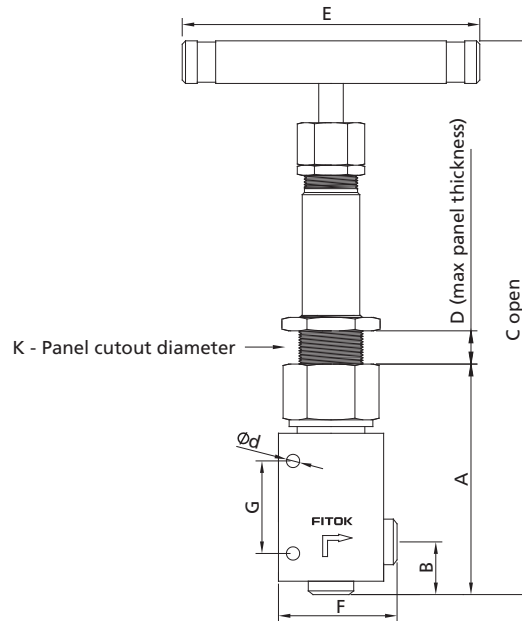
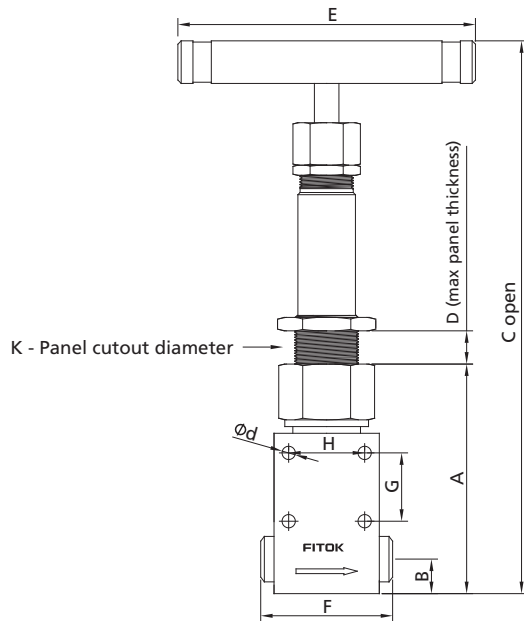
Basic Ordering Number	End Connections		Orifice in. (mm)	Cv	Dimensions, in. (mm)									
	Inlet Size	Outlet Size			A	B	C	D	E	F	G	H	K	Ød
SU□□-FL4-2-	1/4" FITOK		0.16 (4.10)	0.36	1.86 (47.3)	0.54 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.46 (62.5)	1.00 (25.4)	1.07 (27.2)	0.77 (19.5)	1.00 (25.4)
SU□□-FL6-3-	3/8" FITOK		0.26 (6.60)	0.85	1.94 (49.3)	0.50 (12.7)	6.36 (161.5)	0.38 (9.7)	3.50 (88.9)	3.09 (78.5)	1.13 (28.7)	1.57 (40.0)	0.77 (19.5)	1.13 (28.7)
SU□□-FL8-5-	1/2" FITOK		0.30 (7.60)	1.20	1.98 (50.3)	0.50 (12.7)	6.40 (162.5)	0.38 (9.7)	3.50 (88.9)	3.30 (83.8)	1.13 (28.7)	1.57 (40.0)	0.77 (19.5)	1.13 (28.7)
SU□□-ML6-2-	6 mm FITOK		0.16 (4.10)	0.36	1.86 (47.3)	0.56 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.46 (62.5)	1.00 (25.4)	1.05 (26.6)	0.77 (19.5)	1.00 (25.4)
SU□□-ML10-4-	10 mm FITOK		0.28 (7.10)	1.00	1.97 (50.1)	0.50 (12.7)	6.39 (162.3)	0.38 (9.7)	3.50 (88.9)	3.11 (79.0)	1.13 (28.7)	1.57 (40.0)	0.77 (19.5)	1.13 (28.7)
SU□□-ML12-4-	12 mm FITOK		0.28 (7.10)	1.00	1.97 (50.1)	0.50 (12.7)	6.39 (162.3)	0.38 (9.7)	3.50 (88.9)	3.30 (83.8)	1.13 (28.7)	1.57 (40.0)	0.77 (19.5)	1.13 (28.7)
SU□□-TS4-2-	1/4" Tube Socket Weld		0.16 (4.10)	0.36	1.86 (47.3)	0.56 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	1.68 (42.7)	1.00 (25.4)	1.00 (25.4)	0.77 (19.5)	1.00 (25.4)
SU□□-TS6-4-	3/8" Tube Socket Weld		0.28 (7.10)	1.00	1.97 (50.1)	0.50 (12.7)	6.39 (162.3)	0.38 (9.7)	3.50 (88.9)	2.27 (57.7)	1.13 (28.7)	1.52 (38.6)	0.77 (19.5)	1.13 (28.7)
SU□□-TS8-5-	1/2" Tube Socket Weld		0.30 (7.60)	1.20	1.98 (50.3)	0.50 (12.7)	6.40 (162.5)	0.38 (9.7)	3.50 (88.9)	2.27 (57.7)	1.13 (28.7)	1.52 (38.6)	0.77 (19.5)	1.13 (28.7)
SU□□-FFR4-2-	1/4" Female FR		0.16 (4.10)	0.36	1.86 (47.3)	0.56 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.76 (70.1)	1.00 (25.4)	1.00 (25.4)	0.77 (19.5)	1.00 (25.4)
SU□□-FFR8-5-	1/2" Female FR		0.30 (7.60)	1.20	1.98 (50.3)	0.50 (12.7)	6.40 (162.5)	0.38 (9.7)	3.50 (88.9)	3.12 (79.2)	1.13 (28.7)	1.52 (38.6)	0.77 (19.5)	1.13 (28.7)
SU□□-FR4-2-	1/4" Male FR		0.16 (4.10)	0.36	1.86 (47.3)	0.56 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.24 (56.9)	1.00 (25.4)	1.00 (25.4)	0.77 (19.5)	1.00 (25.4)
SU□□-FR8-5-	1/2" Male FR		0.30 (7.60)	1.20	1.98 (50.3)	0.50 (12.7)	6.40 (162.5)	0.38 (9.7)	3.50 (88.9)	3.00 (76.2)	1.13 (28.7)	1.52 (38.6)	0.77 (19.5)	1.13 (28.7)

1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings.
2. Valve dimensions of FITOK tube fittings in port types listed are dimensions when nuts are finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.
3. The sizes and types listed are standard. Other sizes and types are available upon request. For special sizes and types, refer to ordering information.

Dimensions

Orifice: 0.50"

Orifice: 0.61"



Basic Ordering Number	End Connections		Orifice in. (mm)	Cv	Dimensions, in. (mm)									
	Inlet Size	Outlet Size			A	B	C	D	E	F	G	H	K	Ød
SU□□-TS12-8-	3/4" Tube Socket Weld		0.50 (12.7)	3.10	5.45 (138.5)	1.00 (25.4)	11.60 (295)	0.59 (14.9)	5.00 (127)	2.44 (62.0)	1.25 (31.8)	1.46 (37.0)	1.2 (30.5)	0.27 (6.9)
SU□□-PB12-8-	3/4×SCH80 Pipe Butt Weld		0.50 (12.7)	3.10	5.45 (138.5)	1.00 (25.4)	11.60 (295)	0.59 (14.9)	5.00 (127)	2.44 (62.0)	1.25 (31.8)	1.46 (37.0)	1.2 (30.5)	0.27 (6.9)
SU□□-TS12-8A-	3/4" Tube Socket Weld		0.61 (15.5)	5.30	5.45 (138.5)	1.44 (36.6)	11.60 (295)	0.59 (14.9)	5.00 (127)	2.49 (63.2)	1.60 (40.6)	—	1.2 (30.5)	0.27 (6.9)
Su□□-PB12-8A-	3/4×SCH80 Pipe Butt Weld		0.61 (15.5)	5.30	5.45 (138.5)	1.44 (36.6)	11.60 (295)	0.59 (14.9)	5.00 (127)	2.49 (63.2)	1.60 (40.6)	—	1.2 (30.5)	0.27 (6.9)
SU□□-TB16-8A-	1×0.134" Tube Butt Weld		0.61 (15.5)	5.30	5.45 (138.5)	1.44 (36.6)	11.60 (295)	0.59 (14.9)	5.00 (127)	2.49 (63.2)	1.60 (40.6)	—	1.2 (30.5)	0.27 (6.9)

Pneumatic Actuators



Features

- Low actuation pressure
- Opens and closes quickly and reliably
- Aluminum and stainless steel components

Actuation Modes

- Normally closed—air opens, spring closes
- Normally open—air closes, spring opens

Technical Data

Orifice	Working Temperature °F (°C)	Pressure Rating psig (bar)
≤0.30"	-20~200 (-28~93)	80~94 (5.5~6.5)
0.50"		87~116 (6~8)

For valve ratings, please refer to Pressure VS. Temperature on page B-138.

Materials of Construction

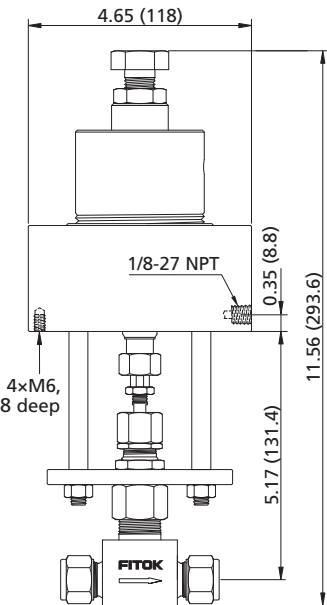
Component	Material
Housing	Anodized Aluminium
Stem Tip	Stellite
Bracket	Stainless Steel

For valve components, refer to "Standard Materials of Construction" on page B-139.

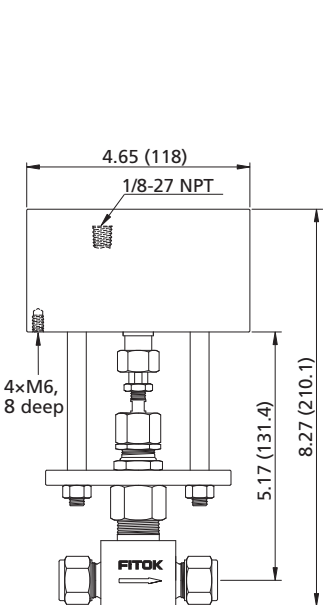
Dimensions

Dimensions are for reference only and subject to change

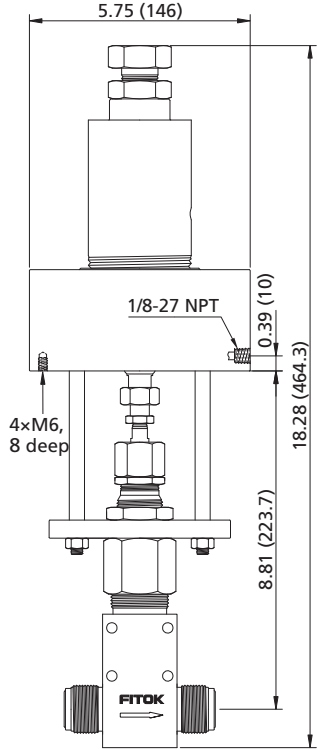
Normally closed, orifice ≤0.30"



Normally open, orifice ≤0.30"



Normally closed, orifice 0.50"



Ordering Information

To order valves with pneumatic actuators, add -C or -O to the valve ordering number. C designates normally closed models; O designates normally open models.

SU□□-□□-2/3/4/5-C/O

SU□□-□□-8-C

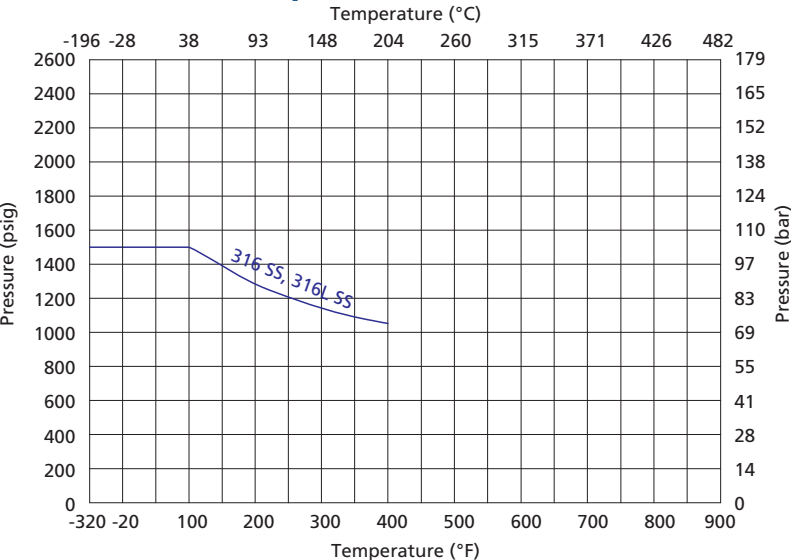
Low Temperature Applications

SU series bellows-sealed valves for temperatures ranging from -320°F to 400°F (-196°C to 204°C) are available, featuring PTFE packing. To order, please add -LT to the valve ordering number.

Example: SUSS-FL4-5-LT

SUSS-FL12-8-LT

Pressure vs. Temperature



Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).

Ordering Number Description

Series		Body Material		Inlet Type		Inlet Size		Outlet Type	Outlet Size	Orifice Size	Stem Tip Material and Type		Actuator	Body-to-Bellows Seal	Special Application		Cleaning and Packaging											
SU	SS	316 SS		TS	Fractional Tube Socket Weld	2	1/8"	Same as Inlet Type and Size Specified in the same way as Inlet Type and Inlet Size		2	0.16" (4.1 mm)	R	Stellite Spherical	L	Green Aluminum Bar	No	FC-01											
	6L	316L SS		MTS	Metric Tube Socket Weld	4	1/4"																					
	S4	304 SS		TB	Fractional Tube Butt Weld	6	3/8" or 6 mm																					
	4L	304L SS		MTB	Metric Tube Butt Weld	8	1/2" or 8 mm																					
			PS	Pipe Socket Weld	10	10 mm													3	0.26" (6.60 mm)	KN	PCTFE Conical	I	Red Aluminum Bar	S	NACE MR0175	F2	FC-02
			PB	Pipe Butt Weld	12	3/4" or 3/4×SCH80 or 12 mm													4	0.28" (7.1 mm)	WR	Stellite Regulating	J	Blue Aluminum Bar	CE	CE Certified		
			FL	Fractional Tube Fitting	14	14 mm													5	0.30" (7.6 mm)	N	Stainless Steel Conical	M	Stainless Steel Bar	LT	Low Temperature		
			ML	Metric Tube Fitting	16	1" or 1×0.134" or 16 mm													8	0.50" (12.7 mm)	WN	Stellite Conical	C	Normally Closed Pneumatic Actuator		Gasket Seal		
			UFB	Rotatable Fractional Tube Butt Weld	18	18 mm													8A	0.61" (15.5 mm)			O	Normally Open Pneumatic Actuator	BW	Welded Seal		
			UMB	Rotatable Metric Tube Butt Weld																								
			FFR	Female FR Fitting																								
			FR	Male FR Fitting																								

SUSS – FL8 – ML10 – 5 – WR – L – BW – SF2

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:

FC-01: Standard cleaning and packaging for general industrial procedures.

FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

2. CE certification is available. For more information, please contact FITOK group or our authorized distributors.

3. LT: Apply to low temperature applications with PTFE auxiliary packing, working temperature -320~400°F (-196~204°C).

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FK-IC-GS-01-EN-/41009