Bellows-sealed Valves

SW and SU Series

FITOK

Contents

Bellows-sealed Valves
SW Series

B-126

Bellows-sealed Valves
SU Series

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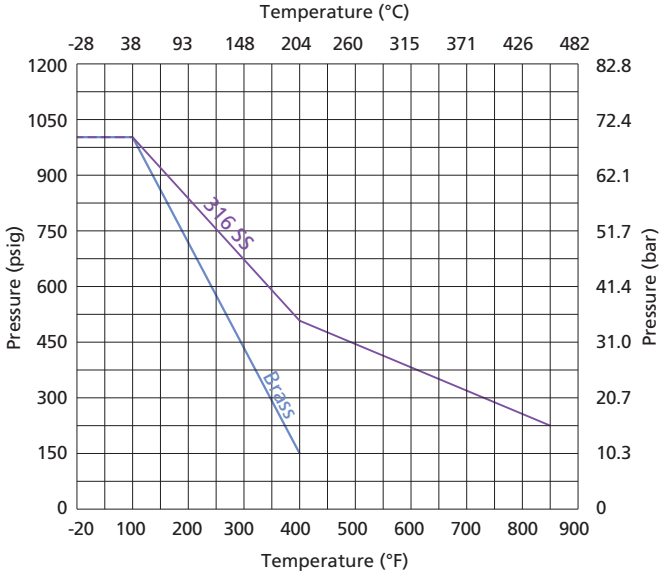
Bellows-sealed Valves

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 x 10^{-9} std cm^3/s)

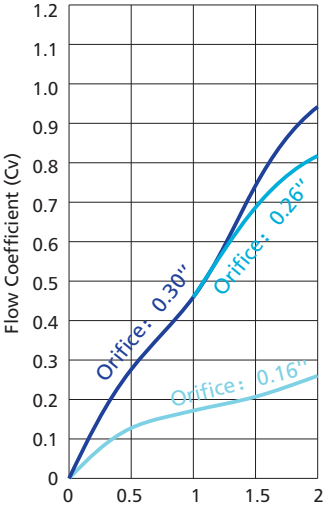
Pressure vs. Temperature



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

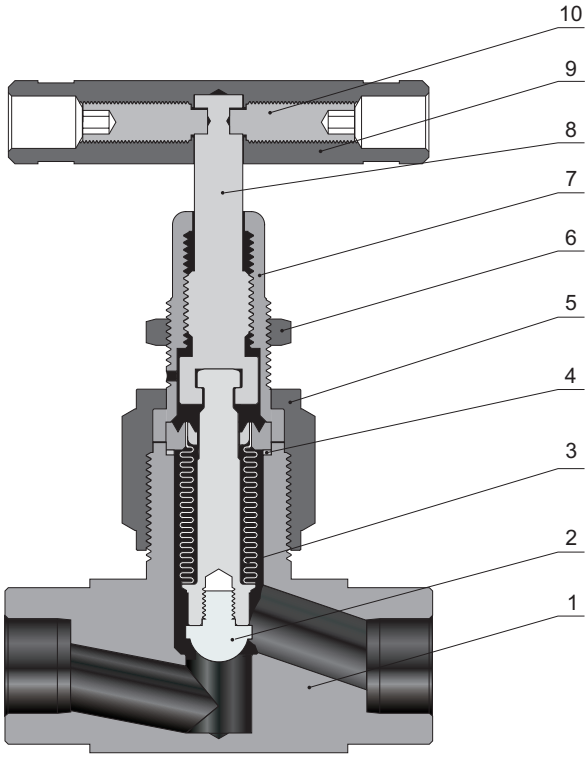
Flow Coefficient vs. Turns Open

Regulating Stem



Number of Turns Open

Standard Materials of Construction



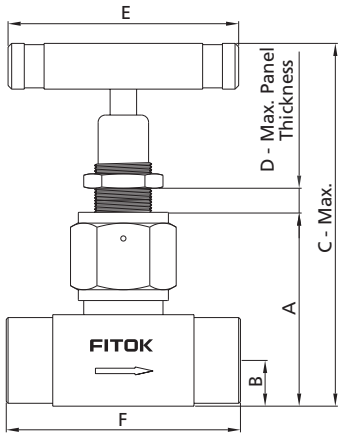
Tip Types

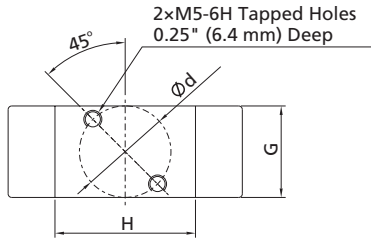
Conical Tip Regulating Tip Spherical Tip

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		Galvanized 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	Ød
SW□□-FL4-2-	1/4" FITOK	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)	1.00 (25.4)
SW□□-FL6-3-	3/8" FITOK	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)	1.00 (25.4)
SW□□-FL8-5-	1/2" FITOK	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)	1.00 (25.4)
SW□□-ML6-2-	6 mm FITOK	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)	1.00 (25.4)
SW□□-ML10-4-	10 mm FITOK	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)	1.00 (25.4)
SW□□-ML12-5-	12 mm FITOK	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)	1.00 (25.4)
SW□□-TS4-2-	1/4" TS	1/4" TS	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)	1.00 (25.4)
SW□□-TS6-4-	3/8" TS	3/8" TS	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)	1.00 (25.4)
SW□□-TS8-5-	1/2" TS	1/2" TS	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)	1.00 (25.4)
SW□□-TB8-4-	1/2" TB	1/2" TB	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)	1.00 (25.4)
SW□□-FFR4-2-	1/4" Female FR	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)	1.00 (25.4)
SW□□-FFR8-5-	1/2" Female FR	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)	1.00 (25.4)
SW□□-FR4-2-	1/4" Male FR	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)	1.00 (25.4)
SW□□-FR8-5-	1/2" Male FR	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)	1.00 (25.4)

1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings, TS means fractional tube socket weld, TB means fractional tube butt weld.
2. Dimensions are shown with FITOK nuts 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)

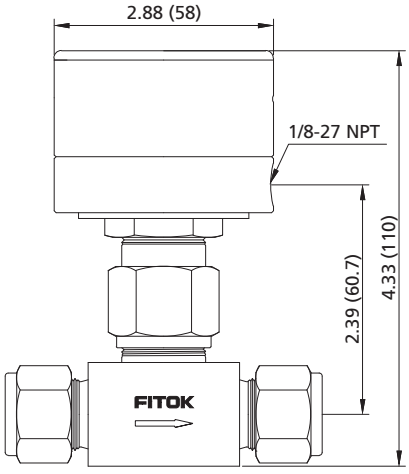
Materials of Construction

Component	Material
Housing	Anodized Aluminium
Stem Tip	PCTFE

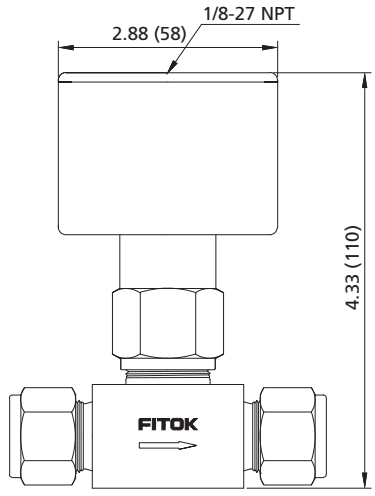
For valve components, refer to "Standard Materials of Construction" on page B-127.

Dimensions

Normally Closed



Normally Open



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.

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 6L 316L SS S4 304 SS 4L 304L SS B Brass	TS Fractional Tube Socket Weld MTS Metric Tube Socket Weld TB Fractional Tube Butt Weld MTB Metric Tube Butt Weld PS Pipe Socket Weld PB Pipe Butt Weld FL Fractional Tube Fitting ML Metric Tube Fitting UFB Rotatable Fractional Tube Butt Weld UMB Rotatable Metric Tube Butt Weld FFR Female FR Fitting FR Male FR Fitting	2 1/8" 4 1/4" 6 3/8" or 6 mm 8 1/2" or 8 mm 10 10 mm 12 3/4" or 12 mm 14 14 mm or M14 16 1" or 16 mm 18 18 mm 20 20 mm	Same as Inlet Specified in the same way as Inlet type and size		2 0.16" (4.1 mm) 3 0.26" (6.6 mm) 4 0.28" (7.1 mm) 5 0.31" (7.6 mm)	Stellite Spherical R Stainless Steel Regulating KN PCTFE Conical WR Stellite Regulating N Stainless Steel Conical WN Stellite Conical	Green Aluminum Bar L Black Aluminum Bar I Red Aluminum Bar J Blue Aluminum Bar M Stainless Steel Bar B Black nylon Knob – Only applicable to valves with orifice size of 0.16" (4.1 mm) T Toggle handle – Only applicable to valves with orifice size of 0.16" (4.1 mm), PCTFE conical tip and max. working pressure up to 100 psig (6.9 bar). C Normally Closed Pneumatic Actuator O Normally Open Pneumatic Actuator	Gasket Seal BW Welded Seal	NO S NACE MR0175 CE CE Certified	FC-01 F2 FC-02

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.

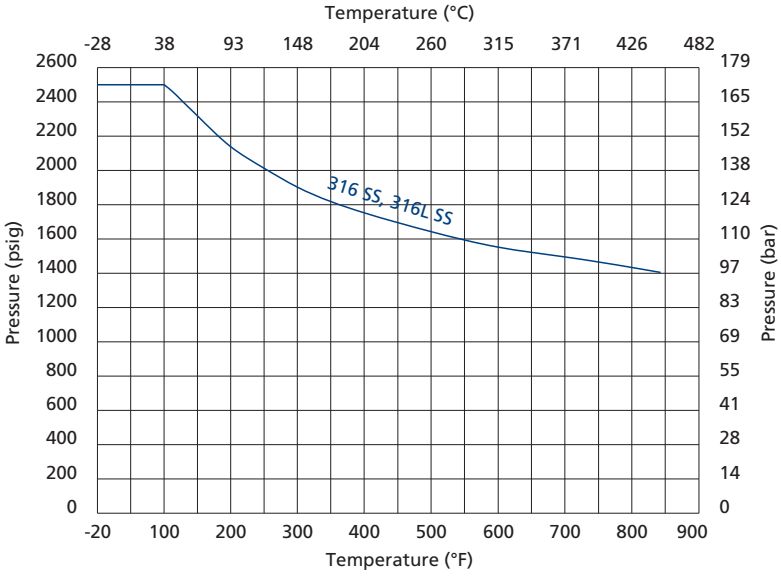
Bellows-sealed Valves

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 cm^3/s)

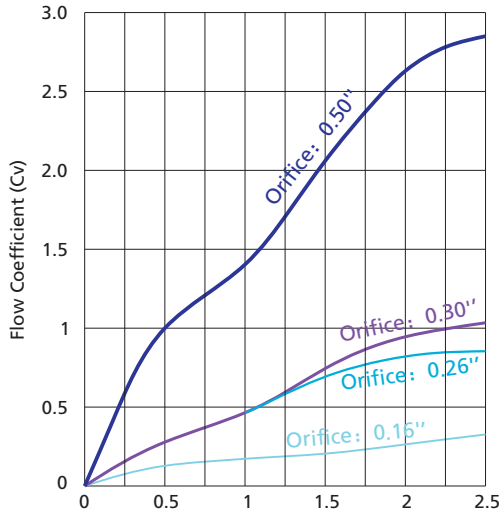
Pressure vs. Temperature



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

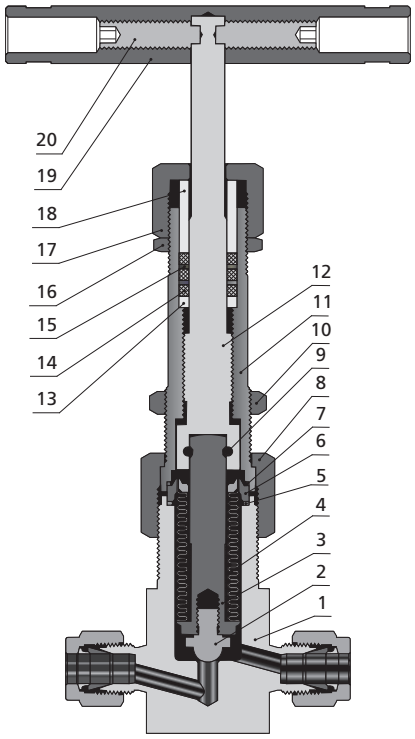
Flow Coefficient vs. Turns Open

Regulating Stem



Number of Turns Open

Standard Materials of Construction



Tip Types

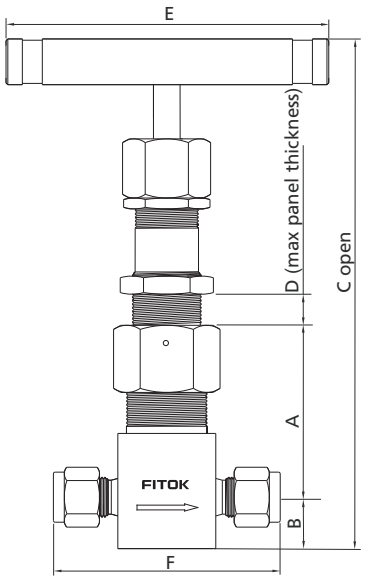
Conical Tip Regulating Tip Spherical Tip

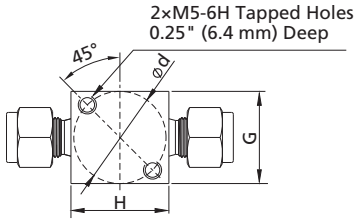
Component			Valve Body Material Grade/ASTM Specification
			316 SS
1	Body		316 SS/A182 or A479
2	Stem Tip	Regulating	316 SS/A479 or Stellite
		Conical	PCTFE/D1430 or 316 SS/A479 or Stellite
		Spherical	Stellite
3	Stem		316 SS/A479
4	Bellows		316L SS/A240
5	Gasket		Sliver-plated 316L SS/A269
6	Weld Ring		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	Luck Nut		Stainless steel
17	Packing Nut		316 SS/A479
18	Gland		316 SS/A479
19	Handle		6061/B210 /Stainless steel
20	Set Screws		Galvanized carbon steel

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

Dimensions

Orifice: ⩽ 0.30"



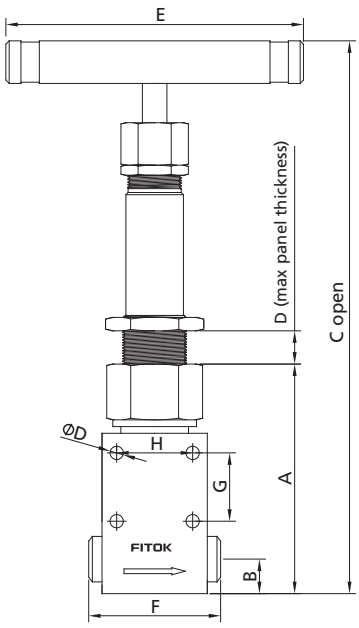


Basic Ordering Number	End Connections		Orifice in. (mm)	Cv	Dimensions, in. (mm)								
	Inlet Size	Outlet Size			A	B	C	D	E	F	G	H	∅d
SU□□-FL4-2-	1/4" FITOK	1/4" FITOK	0.16 (4.10)	0.36	1.86 (47.3)	0.54 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.46 (62.5)	1.00 (25.4)	1.07 (27.2)	1.00 (25.4)
SU□□-FL6-3-	3/8" FITOK	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)	1.13 (28.7)
SU□□-FL8-5-	1/2" FITOK	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)	1.13 (28.7)
SU□□-ML6-2-	6 mm FITOK	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)	1.00 (25.4)
SU□□-ML10-4-	10 mm FITOK	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)	1.13 (28.7)
SU□□-ML12-4-	12 mm FITOK	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)	1.13 (28.7)
SU□□-TS4-2-	1/4" TS	1/4" TS	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)	1.00 (25.4)
SU□□-TS6-4-	3/8" TS	3/8" TS	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)	1.13 (28.7)
SU□□-TS8-5-	1/2" TS	1/2" TS	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)	1.13 (28.7)
SU□□-FFR4-2-	1/4" Female FR	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)	1.00 (25.4)
SU□□-FFR8-5-	1/2" Female FR	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)	1.13 (28.7)
SU□□-FR4-2-	1/4" Male FR	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)	1.00 (25.4)
SU□□-FR8-5-	1/2" Male FR	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)	1.13 (28.7)

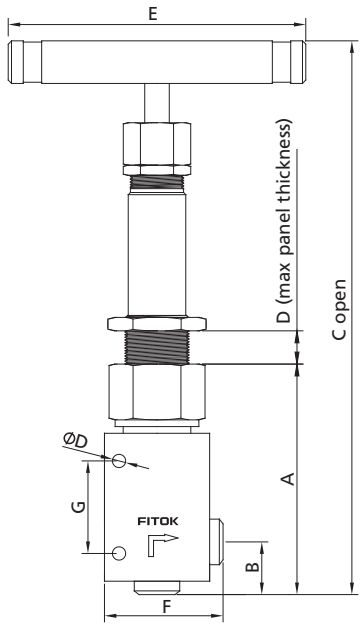
1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings. TS means fractional tube socket weld. TB means tube butt weld.
2. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, 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	Ød
SU□□-TS12-8-	3/4" TS	3/4" TS	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)	0.27 (6.9)
SU□□-PB12-8-	3/4" PB	3/4" PB	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)	0.27 (6.9)
SU□□-TS12-8A-	3/4" TS	3/4" TS	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)	——	0.27 (6.9)
Su□□-PB12-8A-	3/4" PB	3/4" PB	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)	——	0.27 (6.9)
SU□□-TB16-8A-	1" TB	1" TB	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)	——	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-132.

Materials of Construction

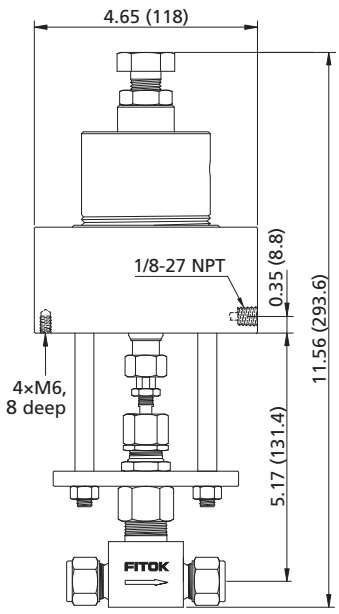
Component	Material
Housing	Anodized Aluminium
Stem Tip	Stellite
Bracket	Stainless Steel

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

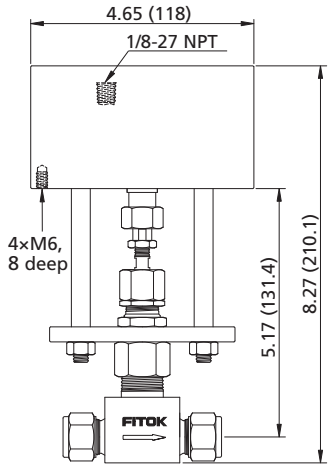
Dimensions

Dimensions are for reference only and subject to change

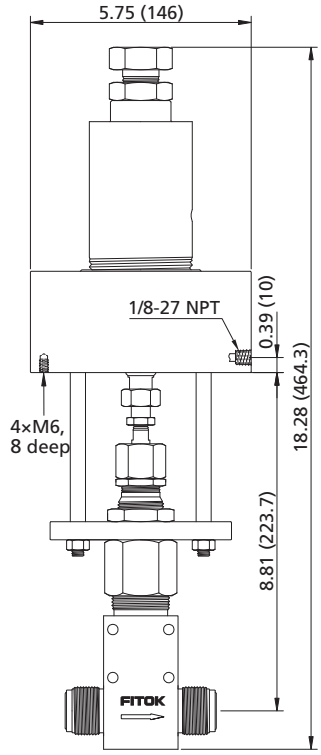
Normally closed, orifice ⩽0.30"



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**

Ordering Number Description

SUSS – 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
SU	SS 316 SS 6L 316L SS S4 304 SS 4L 304L SS	TS Fractional Tube Socket Weld MTS Metric Tube Socket Weld TB Fractional Tube Butt Weld MTB Metric Tube Butt Weld PS Pipe Socket Weld PB Pipe Butt Weld FL Fractional Tube Fitting ML Metric Tube Fitting UFB Rotatable Fractional Tube Butt Weld UMB Rotatable Metric Tube Butt Weld FFR Female FR Fitting FR Male FR Fitting	2 1/8" 4 1/4" 6 3/8" or 6 mm 8 1/2" or 8 mm 10 10 mm 12 3/4" or 12 mm 14 14 mm or M14 16 1" or 16 mm 18 18 mm 20 11/4 or 20 mm or M20 x 1.5 22 22 mm or M22 x 1.5 25 25 mm 27 M27 x 2 28 28 mm	Same as Inlet Type and Size Specify in the same way as Inlet Type and Inlet Size		2 0.16" (4.1 mm) 3 0.26" (6.60 mm) 4 0.28" (7.1 mm) 5 0.30" (7.6 mm) 8 0.50" (12.7 mm) 8A 0.61" (15.5 mm)	Stellite Spherical R Stainless Steel Regulating KN PCTFE Conical WR Stellite Regulating N Stainless Steel Conical WN Stellite Conical	Green Aluminum Bar L Black Aluminum Bar I Red Aluminum Bar J Blue Aluminum Bar M Stainless Steel Bar C Normally Closed Pneumatic Actuator O Normally Open Pneumatic Actuator	Gasket Seal BW Welded Seal	NO S NACE MR0175 CE CE Certified	FC-01 F2 FC-02

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.

info@fitokgroup.com
www.fitokgroup.com

FK-IC-GS-01-EN-/20211