

# Bellows-Sealed Valves

SW and SU Series

Bellows-Sealed  
Valves



# Contents

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SW 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

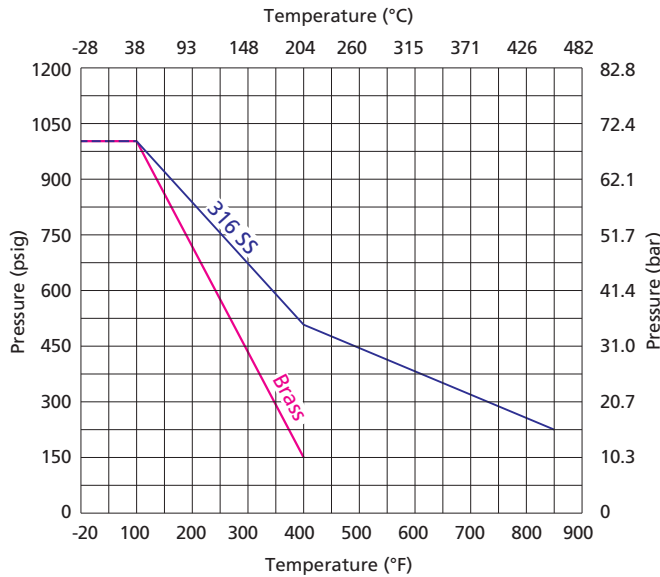
## SW Series

### 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:  $4 \times 10^{-9}$  std cm<sup>3</sup>/s)



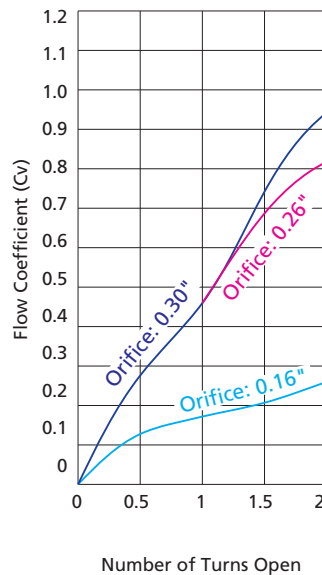
### Pressure vs. Temperature



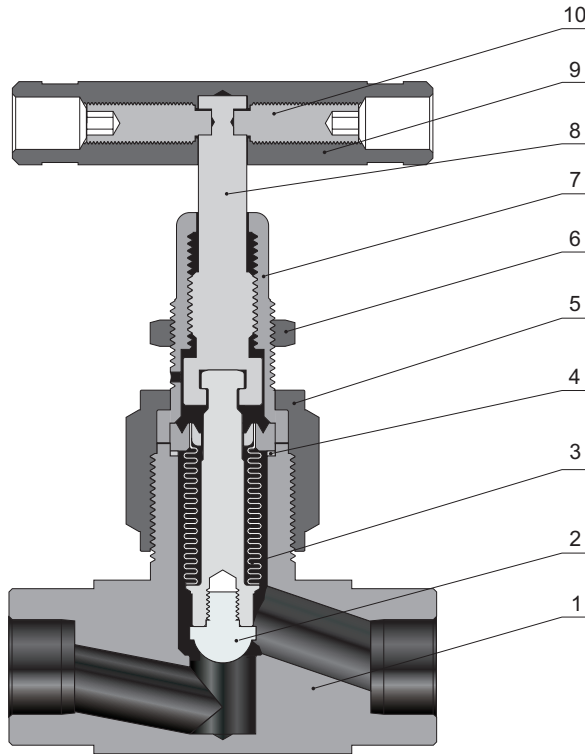
200°F (93°C) max. with PCTFE stem tip (soft tip).

### Flow Coefficient vs. Turns Open

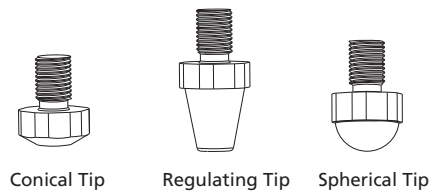
#### Regulating Stem



## Standard Materials of Construction



### Tip Types

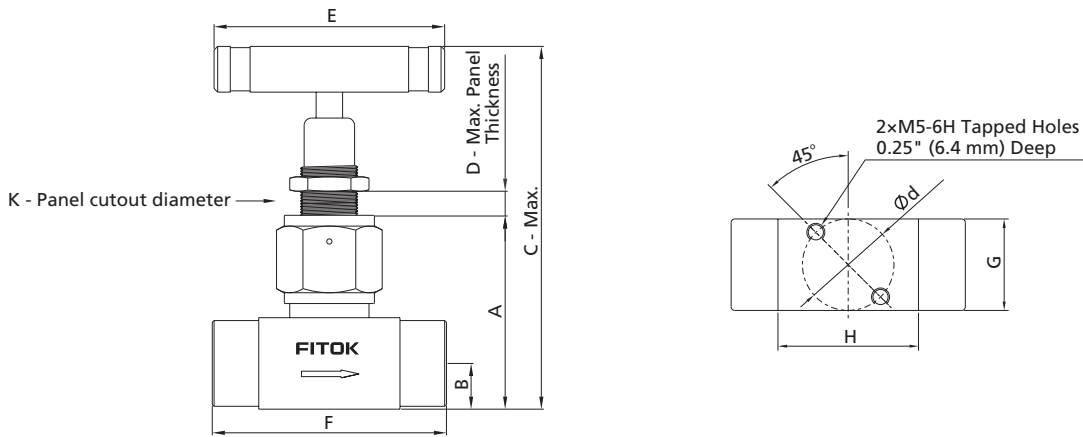


Component		Valve Body Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A182	Brass/B283
2	Stem Tip	Regulating	316 SS/A479 or Stellite
		Conical	PCTFE/D1430 or 316 SS/A479 or Stellite
		Spherical	Stellite
3	Bellows	316L SS/A240	
	Lower Stem	316 SS/A479	
	Weld Ring	316 SS/A479	
4	Gasket	Silver-plated 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	Upper Stem	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.

Bellows-Sealed Valves

## 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

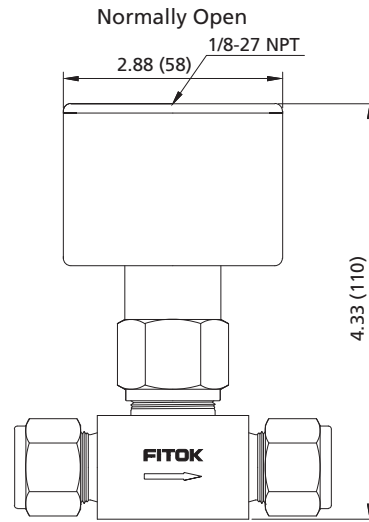
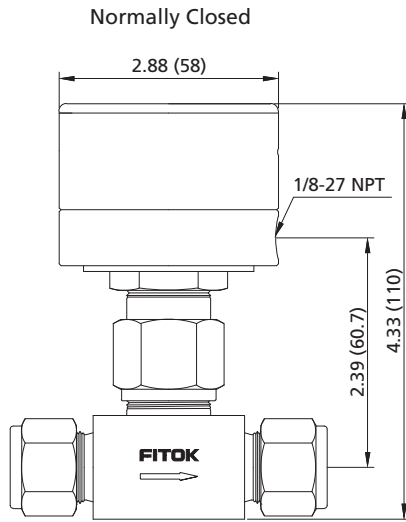
Actuator Type	Actuator Pressure Rating psig (bar)	Valve and Actuator Working Temperature °F (°C)	Valve Working Pressure psig (bar)
Normally Closed	65.3~79.8 (4.5~5.5)	-18~200 (-28~93)	145 (10.0)
Normally Open	72.5~87.0 (5.0~6.0)		500 (34.4)

### 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

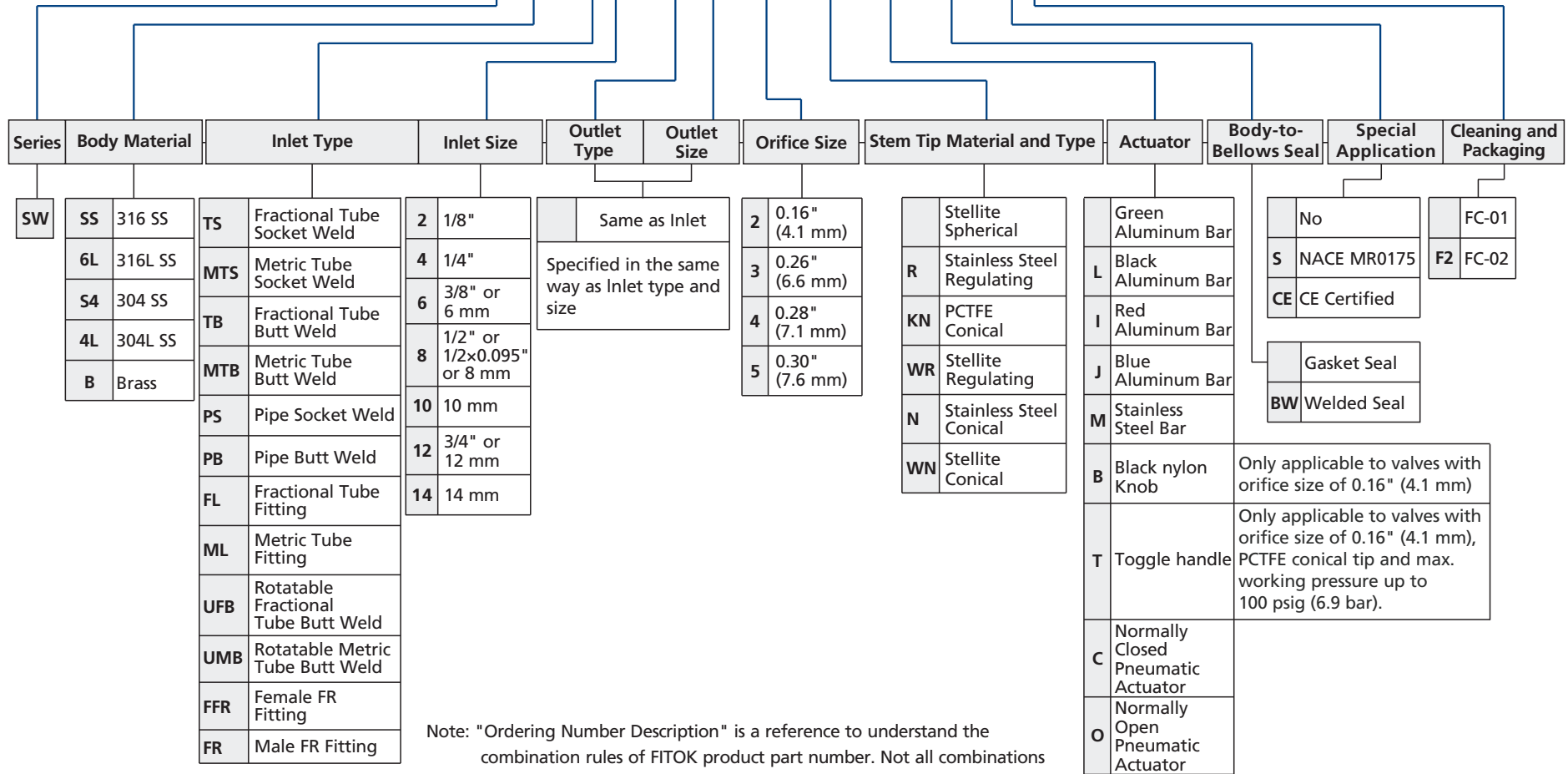


Basic Ordering Number	Cv
SW□□-□□-2-KN-C/O	0.36
SW□□-□□-3-KN-C/O	0.85
SW□□-□□-5-KN-C/O	1.0

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

# Ordering Number Description

SWSS - 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.

- 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

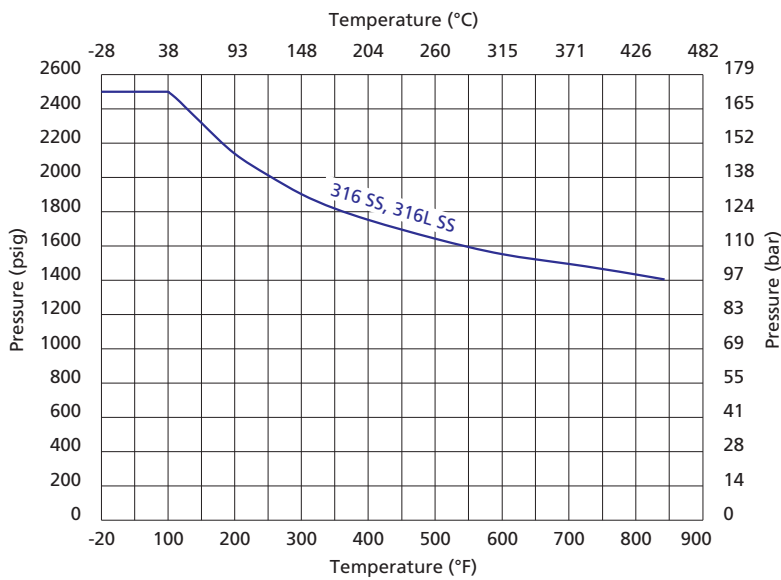
## SU Series

### 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 :  $4 \times 10^{-9}$  std cm<sup>3</sup>/s)



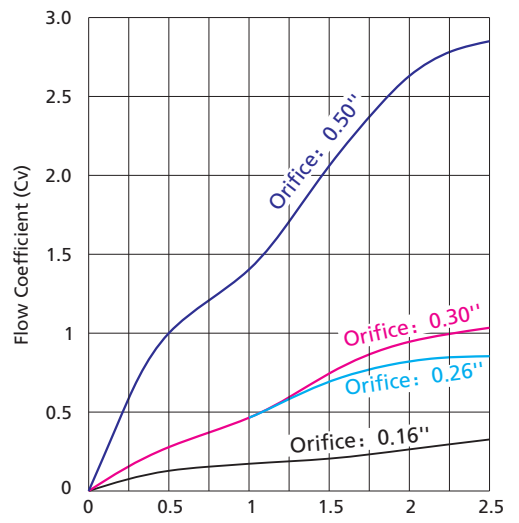
### Pressure vs. Temperature



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

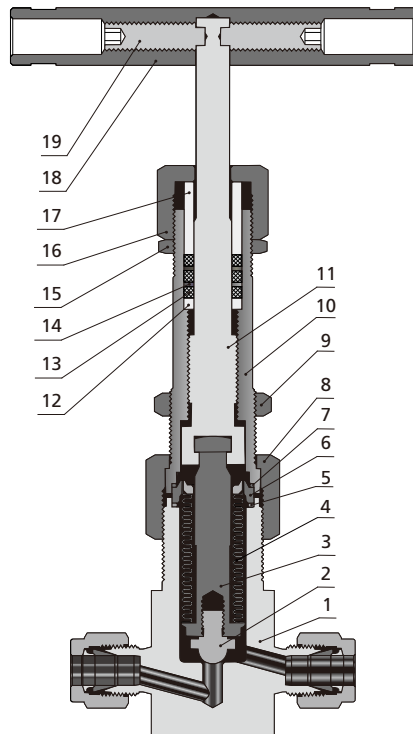
### Flow Coefficient vs. Turns Open

Regulating Stem



Number of Turns Open

## Standard Materials of Construction



### Tip Types

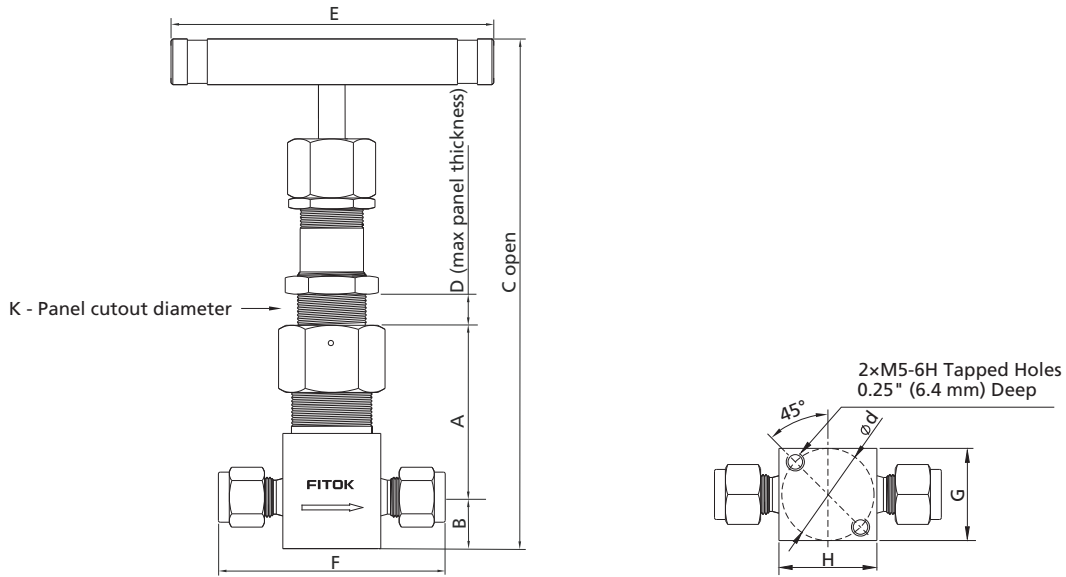


Component		Valve Body Material Grade/ASTM Specification	
		316 SS	
1	Body	316 SS/A182 or A479	
2	Stem Tip	Regulating	316 SS/A479 or Stellite
		Conical	PCTFE/D1430 or 316 SS/A479 or Stellite
		Spherical	Stellite
3	Stem	316 SS/A479	
4	Bellows	316L SS/A240	
5	Gasket	Silver-plated 316L SS/A269	
6	Weld Ring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

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

## Dimensions

Orifice:  $\leq 0.30$ "



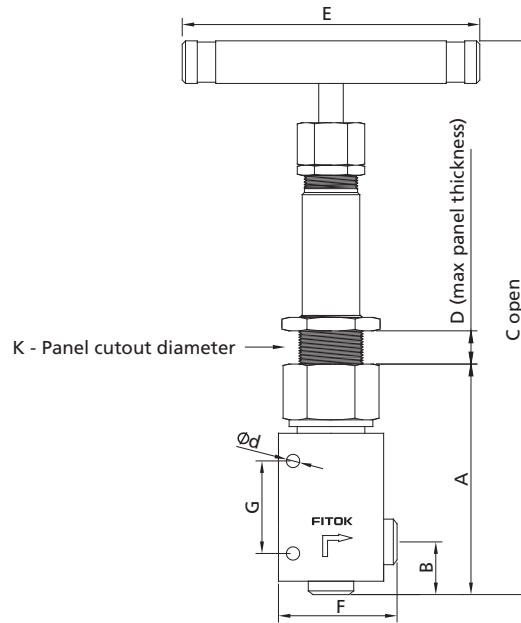
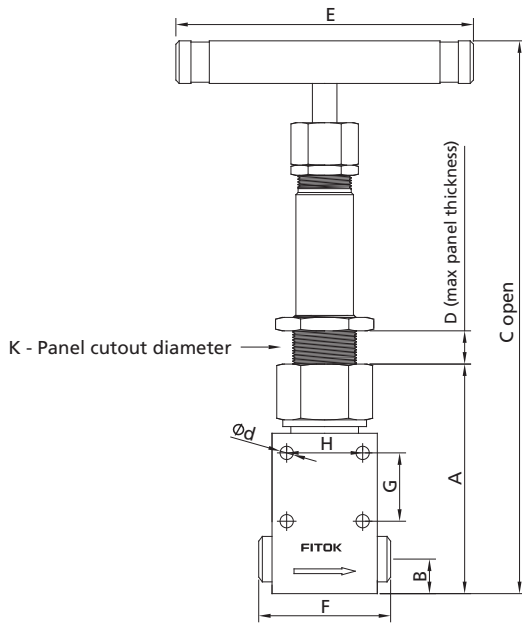
Basic Ordering Number	End Connections		Orifice in. (mm)	Cv	Dimensions, in. (mm)									
	Inlet Size	Outlet Size			A	B	C	D	E	F	G	H	K	Ød
SU□□-FL4-2-	1/4" FITOK		0.16 (4.10)	0.36	1.86 (47.3)	0.54 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.46 (62.5)	1.00 (25.4)	1.07 (27.2)	0.77 (19.5)	1.00 (25.4)
SU□□-FL6-3-	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)

Bellows-Sealed Valves

## Pneumatic Actuators



Bellows-Sealed Valves

### 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

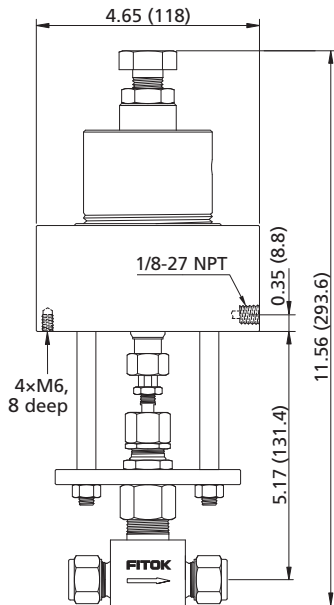
Component	Material
Housing	Anodized Aluminium
Stem Tip	Stellite
Bracket	Stainless Steel

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

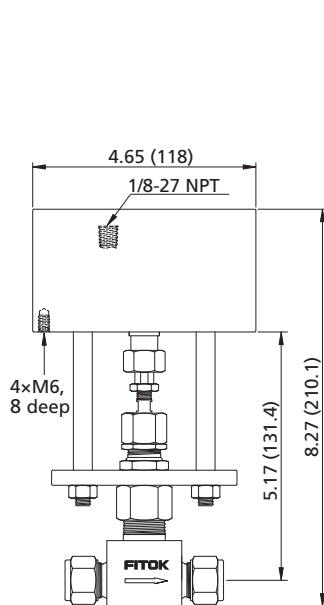
## Dimensions

Dimensions are for reference only and subject to change

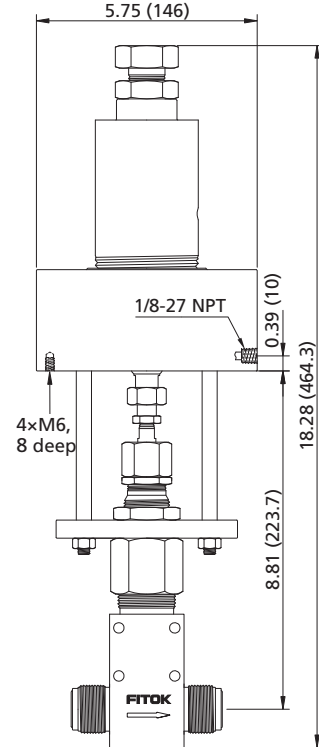
Normally closed, orifice  $\leq 0.30$ "



Normally open, orifice  $\leq 0.30$ "



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

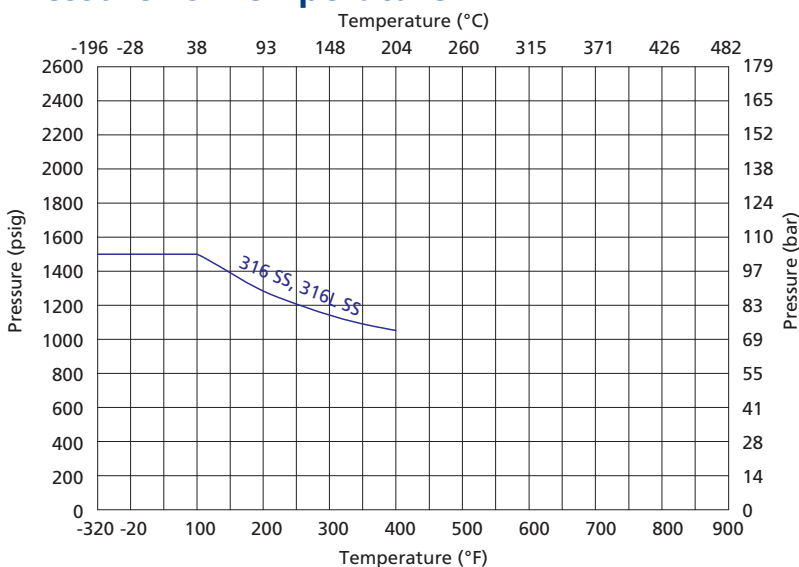
## Low Temperature Applications

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

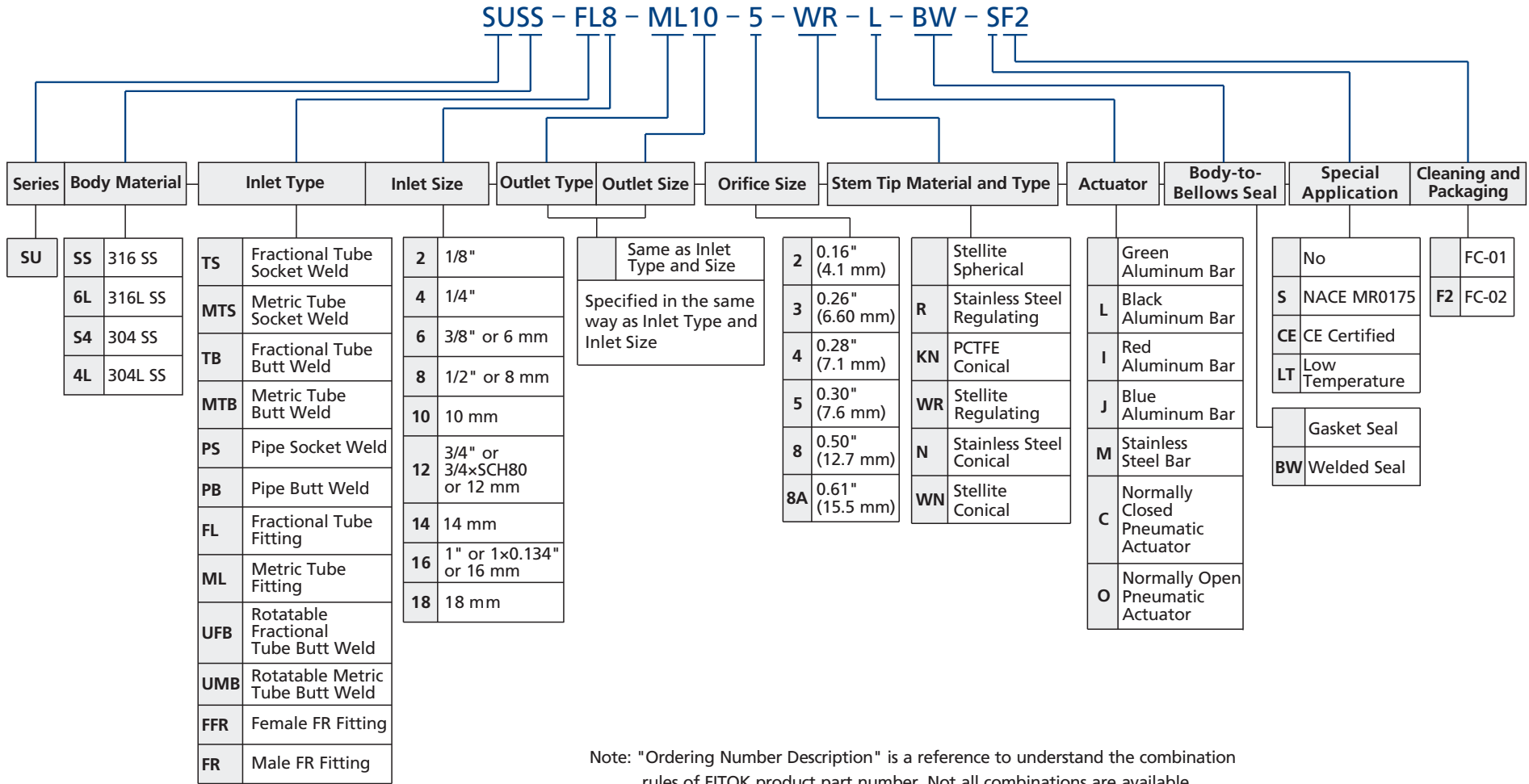
SUSS-FL12-8-LT

## Pressure vs. Temperature



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

## Ordering Number Description



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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