

Ball Valves

BF, BFH, BG, BH, BO, BP,
BR and BV Series

Ball Valves
Plug Valves



Contents

Trunnion Ball Valves

BF and BFH Series



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Important Information about Ball Valves

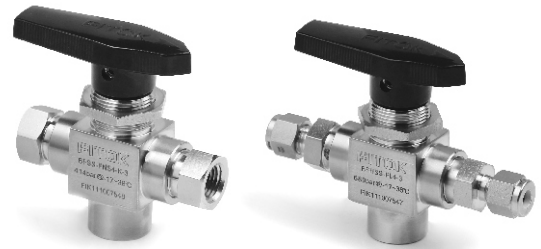
- ⦿ FITOK ball valves are designed to be used in fully open or fully closed position.
- ⦿ Packing adjustment may be required during the valve's life (except for BF and BFH series).
- ⦿ For better quality maintenance, FITOK ball valves should be kept in fully open position in warehouse.
- ⦿ Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Trunnion Ball Valves

BF and BFH Series

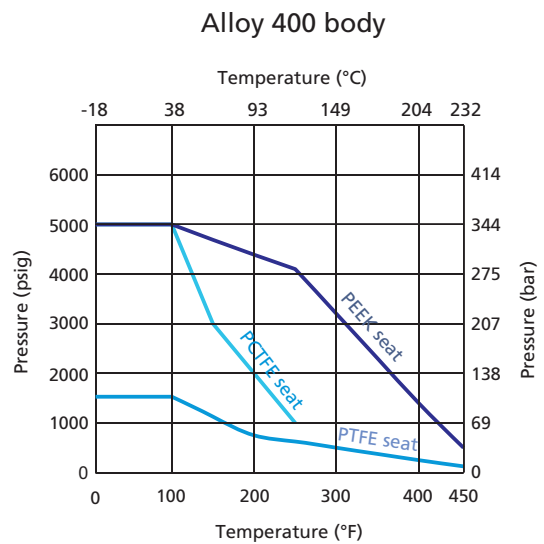
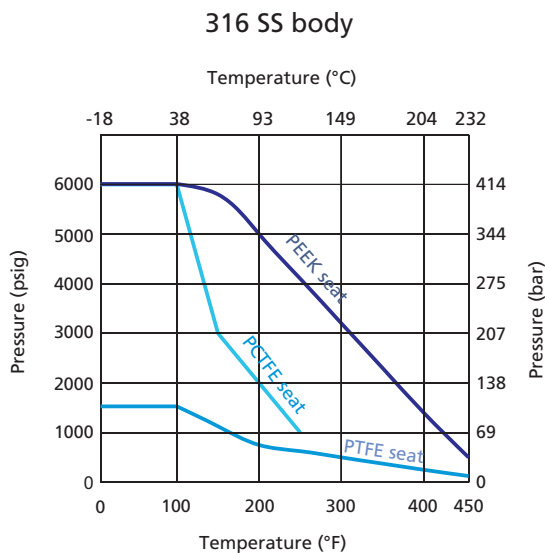
Features

- ⦿ Working pressure up to: 10,000 psig (690 bar)
- ⦿ Working temperature: 0°F to 450°F (-18°C to 232°C)
- ⦿ Orifice size: 0.19" (4.8 mm)
- ⦿ Fixed ball with double sealing
- ⦿ Trunnion-style ball to prevent ball blowout
- ⦿ Automatic compensation of seat sealing
- ⦿ Low operating torque
- ⦿ Blowout proof stem
- ⦿ Handle as indicator of flow direction
- ⦿ Positive handle stop
- ⦿ Handle color options available
- ⦿ Pneumatic and electric actuator available
- ⦿ Panel mountable
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure (not higher than 6000 psig) to meet the requirement of no visible leak
- ⦿ Compact maximum-flow design
- ⦿ 2- or 3-way flow patterns
- ⦿ Spring-load seats to provide leak tight integrity in both low-and high-pressure systems and reduce seat wear from pressure surges
- ⦿ The inlet of 3-way valve can be any port
- ⦿ Low-temperature service option available for BF series



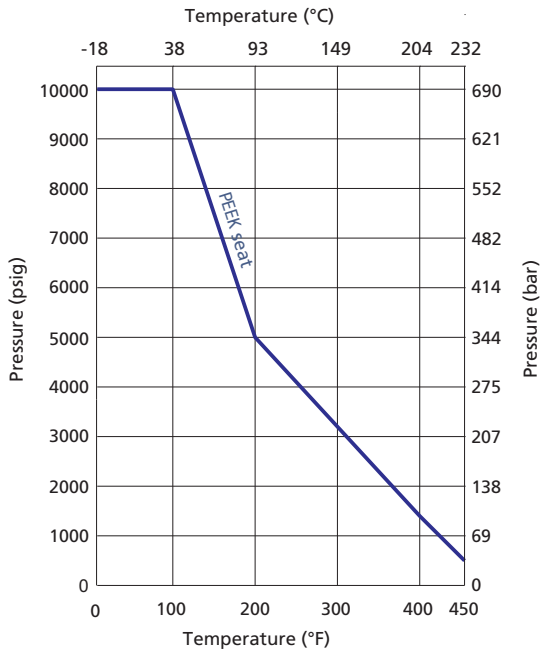
Pressure vs. Temperature

BF Series



BFH Series

316 SS body



Pressure Rating @ 100°F (38°C)

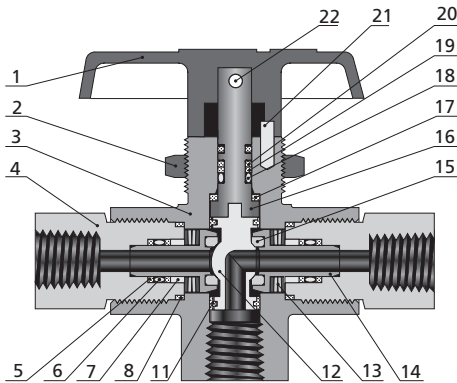
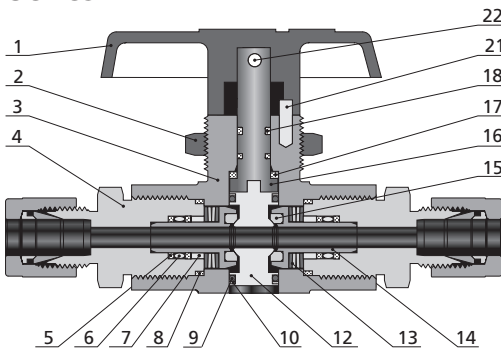
Material	End Connection	Pressure Rating, psig (bar)
316 SS	FNS2, FNS4 FL4, ML6	10000 (690)
	ML10	8400 (578)
	FL6/ML8	7500 (516)
	FL8	6700 (461)
	ML12	6800 (470)

Note: Maximum working pressure of BFH Series ball valves is 10,000 psig. The specified pressure rating is restricted by end connections.

Ball Valves
Plug Valves

Standard Materials of Construction

BF Series

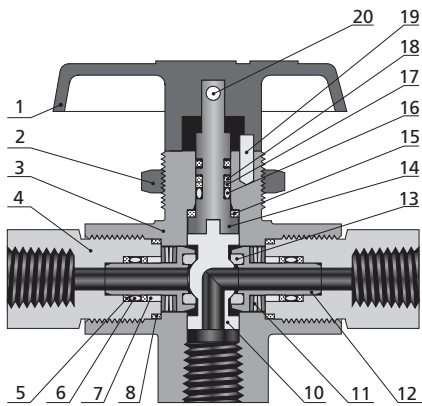
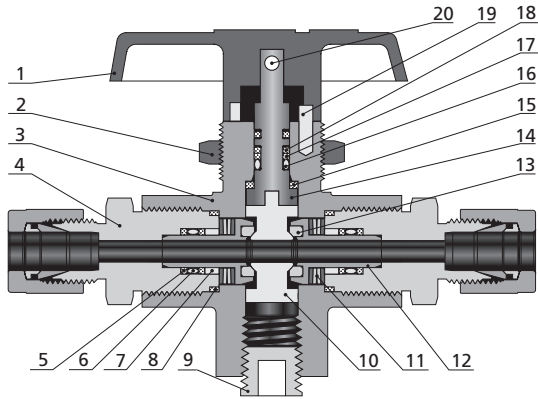


Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
Material Grade/ASTM Specification					
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	Body	316 SS/A182		Alloy 400/B164	
4	End Connection	316 SS/A479		Alloy 400/B164	
5	Seat Retainer Backup Ring	Reinforced PTFE			
6	Seat Retainer O-ring	Fluorocarbon FKM			
7	Seat Retainer Guide	316 SS/A479		Alloy 400/B164	
8	End Connection Seal	PTFE/D1710			
9	Trunnion O-ring	Fluorocarbon FKM	—	Fluorocarbon FKM	—
10	Trunnion Backup Ring	Reinforced PTFE	—	Reinforced PTFE	—
11	Trunnion Bearing	—	PEEK	—	PEEK
12	Ball	316 SS/A479		Alloy 400/B164	
13	Seat Spring	Alloy X-750/AMS 5542			
14	Seat Retainer	316 SS/A479		Alloy 400/B164	
15	Seat	PTFE or PEEK or PCTFE			
16	Stem	316 SS/A479		Alloy 400/B164	
17	Stem Washer	PEEK			
18	Stem O-ring	Fluorocarbon FKM		Fluorocarbon FKM	
19	Secondary Stem Backup Ring	—	PTFE/D1710	—	PTFE/D1710
20	Primary Stem Backup Ring	—	PEEK	—	PEEK
21	Stop Pin	SS			
22	Set Screw	Galvanized carbon steel			
Lubricants		Fluorinated-based			

Note: Wetted components are listed in italics.

1. Ball trunnions are PTFE coated for BF series 2-way valves.
2. For other materials, please contact FITOK Group or our authorized distributors.

BFH Series



Item	Component	2-way	3-way
		Material Grade/ASTM Specification	
1	Handle	<i>Nylon with SS insert</i>	
2	Panel Nut	316 SS/A479	
3	Body	316 SS/A182	
4	End Connection	316 SS/A479	
5	Seat Retainer Backup Ring	<i>Reinforced PTFE</i>	
6	Seat Retainer O-ring	<i>Fluorocarbon FKM</i>	
7	Seat Retainer Guide	316 SS/A479	
8	End Connection Seal	<i>PTFE/D1710</i>	
9	Plug	316 SS/A479	
10	Ball	S21800/A479	
11	Seat Spring	<i>Alloy X-750/AMS 5542</i>	
12	Seat Retainer	316 SS/A479	
13	Seat	PEEK	
14	Stem	316 SS/A479	
15	Stem Washer	PEEK	
16	Stem O-ring	<i>Fluorocarbon FKM</i>	
17	Secondary Stem Backup Ring	<i>PTFE/D1710</i>	
18	Primary Stem Backup Ring	PEEK	
19	Stop Pin	SS	
20	Set Screw	Galvanized carbon steel	
Lubricants		<i>Fluorinated-based</i>	

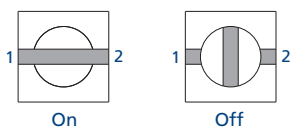
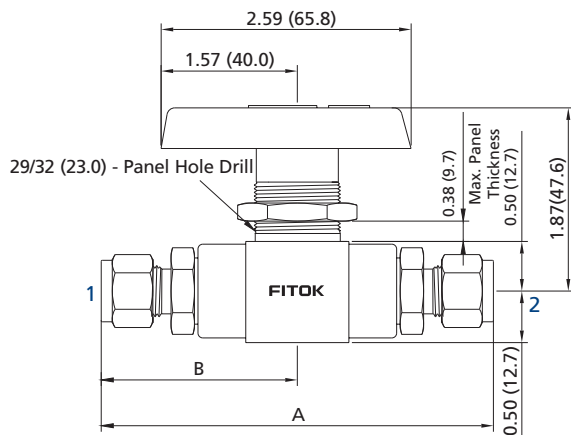
Note: Wetted components are listed in italics.

1. Ball trunnions are PTFE coated for BFH series ball valves.

2. For other materials, please contact FITOK Group or our authorized distributors.

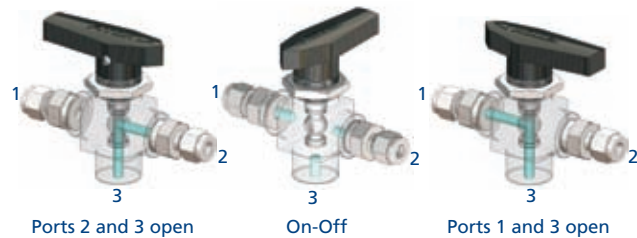
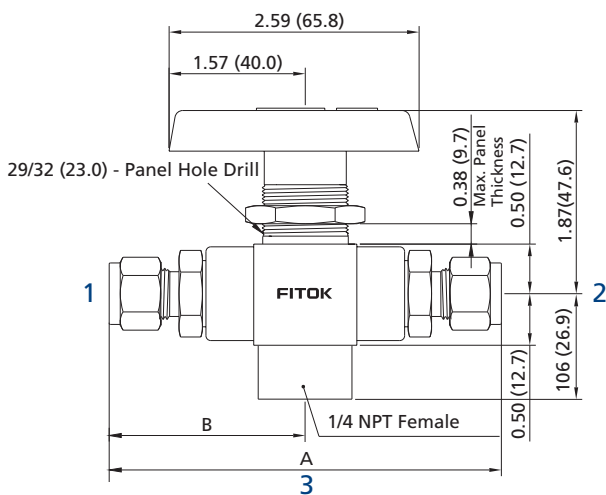
Dimensions

2-way Valves



Basic Ordering Number		Connection Type and Size		Cv	Dimensions, in. (mm)	
BF Series	BFH Series	Connection 1	Connection 2		A	B
BF□□-FNS2	BFH□□-FNS2-P	1/8 Female NPT	1/8 Female NPT	1.2	2.94 (74.7)	1.47 (37.3)
BF□□-FNS4	BFH□□-FNS4-P	1/4 Female NPT	1/4 Female NPT	1.0		
BF□□-FNS8	BFH□□-FNS8-P	1/2 Female NPT	1/2 Female NPT	1.2	4.25 (108.0)	2.13 (54.1)
BF□□-FL4	BFH□□-FL4-P	1/4" FITOK	1/4" FITOK	1.6	4.14 (105.2)	2.07 (52.6)
BF□□-FL6	BFH□□-FL6-P	3/8" FITOK	3/8" FITOK	1.4	4.39 (111.5)	2.19 (55.6)
BF□□-FL8	BFH□□-FL8-P	1/2" FITOK	1/2" FITOK	1.0	4.60 (116.8)	2.30 (58.4)
BF□□-ML6	BFH□□-ML6-P	6 mm FITOK	6 mm FITOK	1.6	4.14 (105.2)	2.07 (52.6)
BF□□-ML8	BFH□□-ML8-P	8 mm FITOK	8 mm FITOK	1.5	4.15 (105.4)	
BF□□-ML10	BFH□□-ML10-P	10 mm FITOK	10 mm FITOK	1.3	4.41 (112.0)	2.20 (55.9)
BF□□-ML12	BFH□□-ML12-P	12 mm FITOK	12 mm FITOK	1.0	4.60 (116.8)	2.30 (58.4)

3-way Valves



Basic Ordering Number		Connection Type and Size			Cv	Dimensions, in. (mm)	
BF Series	BFH Series	Connection 1	Connection 2	Connection 3		A	B
BF□□-FNS2-3	BFH□□-FNS2-P-3	1/8 Female NPT	1/8 Female NPT	1/4 Female NPT	0.75	2.94 (74.7)	1.47 (37.3)
BF□□-FNS4-3	BFH□□-FNS4-P-3	1/4 Female NPT	1/4 Female NPT				
BF□□-FL4-3	BFH□□-FL4-P-3	1/4" FITOK	1/4" FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-FL6-3	BFH□□-FL6-P-3	3/8" FITOK	3/8" FITOK			4.39 (111.5)	2.19 (55.6)
BF□□-FL8-3	BFH□□-FL8-P-3	1/2" FITOK	1/2" FITOK			4.60 (116.8)	2.30 (58.4)
BF□□-ML6-3	BFH□□-ML6-P-3	6 mm FITOK	6 mm FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-ML8-3	BFH□□-ML8-P-3	8 mm FITOK	8 mm FITOK			4.15 (105.4)	
BF□□-ML10-3	BFH□□-ML10-P-3	10 mm FITOK	10 mm FITOK			4.41 (112.0)	2.20 (55.9)
BF□□-ML12-3	BFH□□-ML12-P-3	12 mm FITOK	12 mm FITOK			4.60 (116.8)	2.30 (58.4)

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting 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.
4. Bottom port of all 3-way valves is 1/4 in. female NPT.

Low-Temperature Service Option

Trunnion ball valves for low-temperature service, with a temperature rating of -40°F to 248°F (-40°C to 120°C), are available.

Low-temperature valves have low-temperature FKM O-rings.

All other materials are the same as those of standard valves.

To order a valve for low-temperature service, insert -LT into the valve ordering number.

For example: BFSS-FL4-P-LT

Low-Temperature BF Series Pressure-Temperature Ratings

Seat Material	PEEK	PCTFE	PTFE
Temperature °C (°F)	Working Pressure psig (bar)		
-40 (-40) to 38 (100)	3770 (260)	3770 (260)	1500 (103)
65 (150)		Refer to Pressure vs. Temperature curve of standard valves	Refer to Pressure vs. Temperature curve of standard valves
120 (248)			

BF & BFH Series Seal Kits

Seal kits contain components of the same materials as new components. See "**Standard Materials of Construction**".

To order the seal kits, please add the seat material code to the basic ordering number in the table below.

PTFE's code is T, PCTFE's code is K, PEEK's code is P.

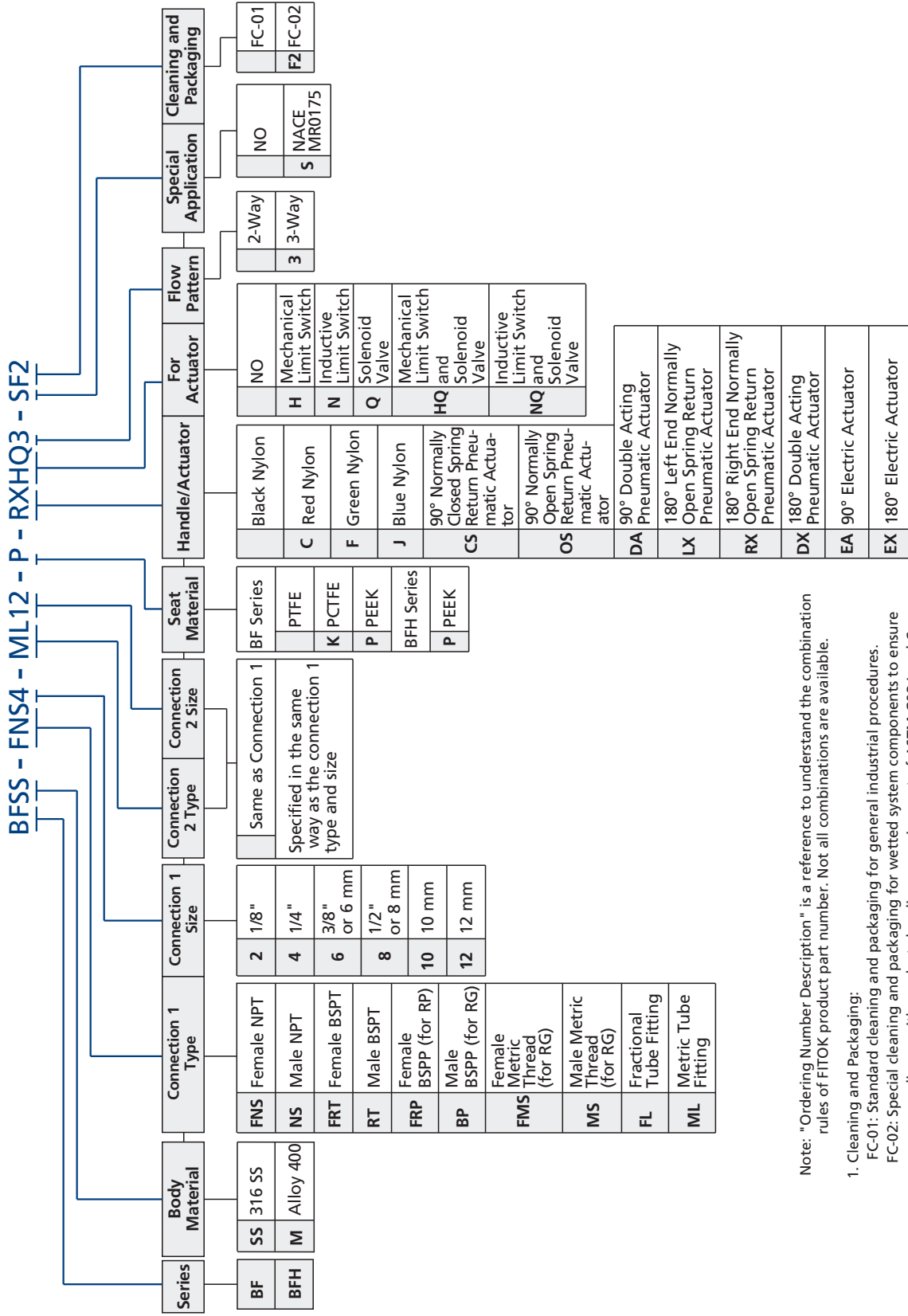
Example: BFSS-2-ZT

Valve Series	Basic Seal Kit Ordering Number	Kit Contents
BF 2-way	BFSS-2-Z	Instructions, O-rings, stem washer, ball, seat subassemblies (seats and seat retainers), seat springs, end connection seals, lubricant
BF 3-way	BFSS-3-Z	Instructions, stem, O-rings, backup rings, stem washer, trunnion bearing, ball, seat subassemblies (seats and seat retainers), seat springs, end connection seals, lubricant
BFH 2-way	BFHSS-2-Z	Instructions, stem, O-rings, backup rings, stem washer, ball, seat subassemblies (seats and seat retainers), seat springs, end connection seals, lubricant
BFH 3-way	BFHSS-3-Z	

Basic seal kit ordering numbers specify 316 SS material. To order other materials, please replace the ordering number of the SS with the appropriate material designator.

For example, alloy 400 seal kit, please replace SS with M. Example: BFM-2-ZP.

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.

- 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.
- For more information about pneumatic actuator ball valves, please refer to the catalog **Automatic Control Ball Valves**.

3-piece Ball Valves

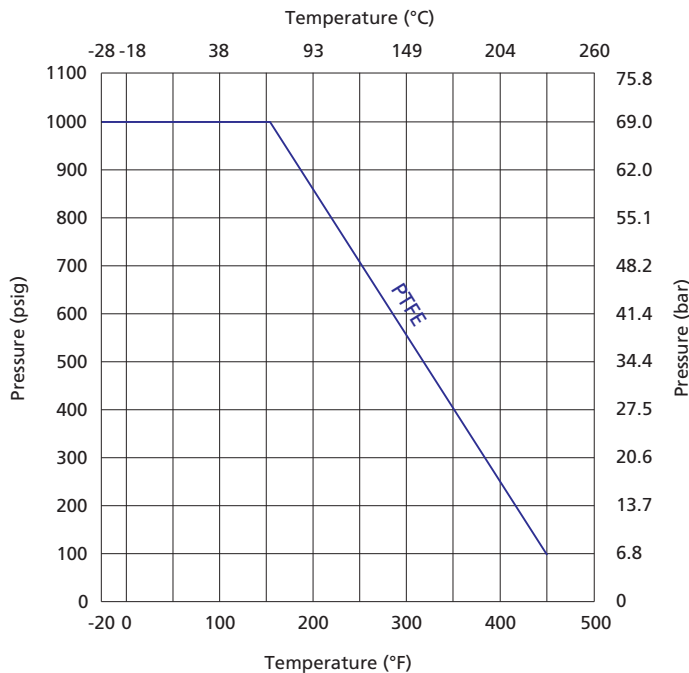
BG Series

Features

- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ End connections:
 - 1/8 to 1 thread
 - 1/8" to 1" pipe butt or socket weld
 - 1/4" to 1" and 6 mm to 25 mm tube butt or socket weld
 - 1/4" to 1" and 6 mm to 25 mm tube fitting
- ⦿ Orifice sizes: 0.19" (4.8 mm) to 1" (25 mm)
- ⦿ Blowout proof stem
- ⦿ Bidirectional flow
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak

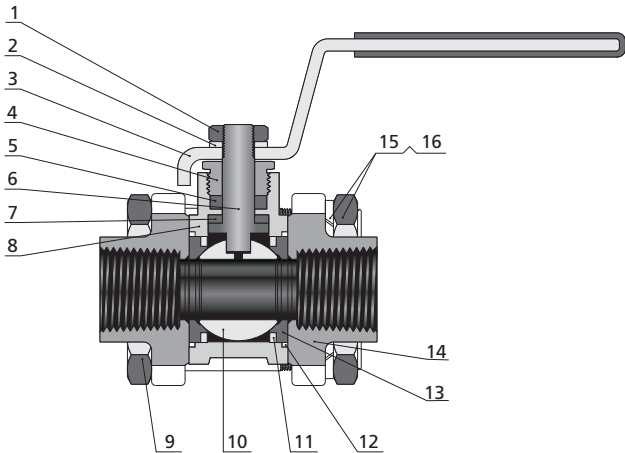


Pressure vs. Temperature



Note: The temperature and pressure rating are based on valves of standard materials.

Standard Materials of Construction

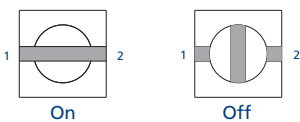
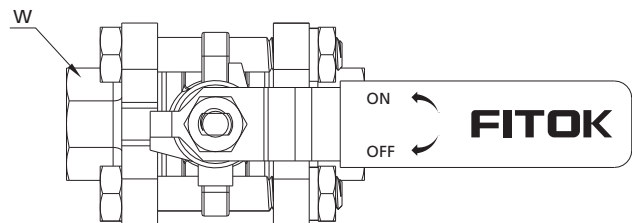
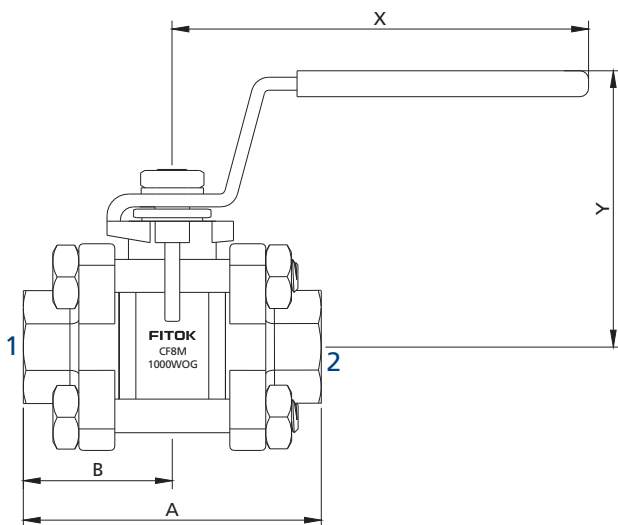


Item	Component	Valve Body Material	
		CF8M/A351	CF8/A351
1	Stem Nut	SS	
2	Gasket	SS	
3	Handle	304 SS/A240 (with vinyl sleeve)	
4	Gland	316 SS/A479 or 304 SS/A479	
5	Stem Packing	PTFE/D1710	
6	Stem	316 SS/A479 or 304 SS/A479	
7	Stem Bearing	PTFE/D1710	
8	Body	CF8M/A351	CF8/A351
9	Body Bolt	SS	
10	Ball	316 SS/A479 or 304 SS/A479	
11	Support Ring	316 SS/A240 or 304 SS/A240	
12	Flange Seal	PTFE/D1710	
13	Seat	PTFE/D1710	
14	End Connection	CF8M/A351	CF8/A351
15	Gasket	SS	
16	Nut	SS	
Lubricants		Silicone-based and PTFE-based	

Note: Wetted components are listed in italics.

For other materials, please contact FITOK Group or our authorized distributors.

Dimensions



B-12 Ball Valves

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
BG□□-FNS2-05	1/8 Female NPT	1/8 Female NPT	0.19 (4.8)	1.2	2.05 (52.1)	1.03 (26.0)	0.63 (16.0)	2.69 (68.3)	1.46 (37.0)
BG□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP							
BG□□-PB4-05	1/4 PB, Schedule Number: 80	1/4 PB, Schedule Number: 80							
BG□□-FL4-05	1/4" FITOK	1/4" FITOK							
BG□□-ML6-05	6 mm FITOK	6 mm FITOK							
BG□□-ML8-05	8 mm FITOK	8 mm FITOK							
BG□□-FNS4-07	1/4 Female NPT	1/4 Female NPT	0.28 (7.1)	3.8	2.05 (52.1)	1.03 (26.0)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)
BG□□-FRP4-07	1/4 Female BSPP	1/4 Female BSPP							
BG□□-FL6-07	3/8" FITOK	3/8" FITOK							
BG□□-ML10-07	10 mm FITOK	10 mm FITOK							
BG□□-FL8-11	1/2" FITOK	1/2" FITOK	0.42 (10.6)	7.5	4.04 (103.0)	2.02 (51.3)			
BG□□-ML12-11	12 mm FITOK	12 mm FITOK							
BG□□-ML14-11	14 mm FITOK	14 mm FITOK							
BG□□-FNS6-13	3/8 Female NPT	3/8 Female NPT	0.50 (12.7)	11.3	2.57 (65.2)	1.28 (32.6)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)
BG□□-FRP6-13	3/8 Female BSPP	3/8 Female BSPP							
BG□□-PS6-13	3/8 PS	3/8 PS							
BG□□-PB8-13	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80							
BG□□-FL10-13	5/8" FITOK	5/8" FITOK							
BG□□-ML16-13	16 mm FITOK	16 mm FITOK							
BG□□-FNS8-15	1/2 Female NPT	1/2 Female NPT	0.55 (14.0)	13.0	2.74 (69.5)	1.37 (34.8)	1.06 (27.0)	5.18 (131.5)	2.26 (57.5)
BG□□-FRP8-15	1/2 Female BSPP	1/2 Female BSPP							
BG□□-PS8-15	1/2 PS	1/2 PS							
BG□□-MTB22-15	22 mm MTB	22 mm MTB							
BG□□-TS12-15	3/4" TS	3/4" TS							
BG□□-MTS18-15	18 mm	18 mm							
BG□□-FL12-15	3/4" FITOK	3/4" FITOK							
BG□□-ML18-15	18 mm FITOK	18 mm FITOK							
BG□□-FNS12-20	3/4 Female NPT	3/4 Female NPT	0.79 (20.0)	50.0	3.15 (80.0)	1.57 (40.0)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)
BG□□-FRP12-20	3/4 Female BSPP	3/4 Female BSPP							

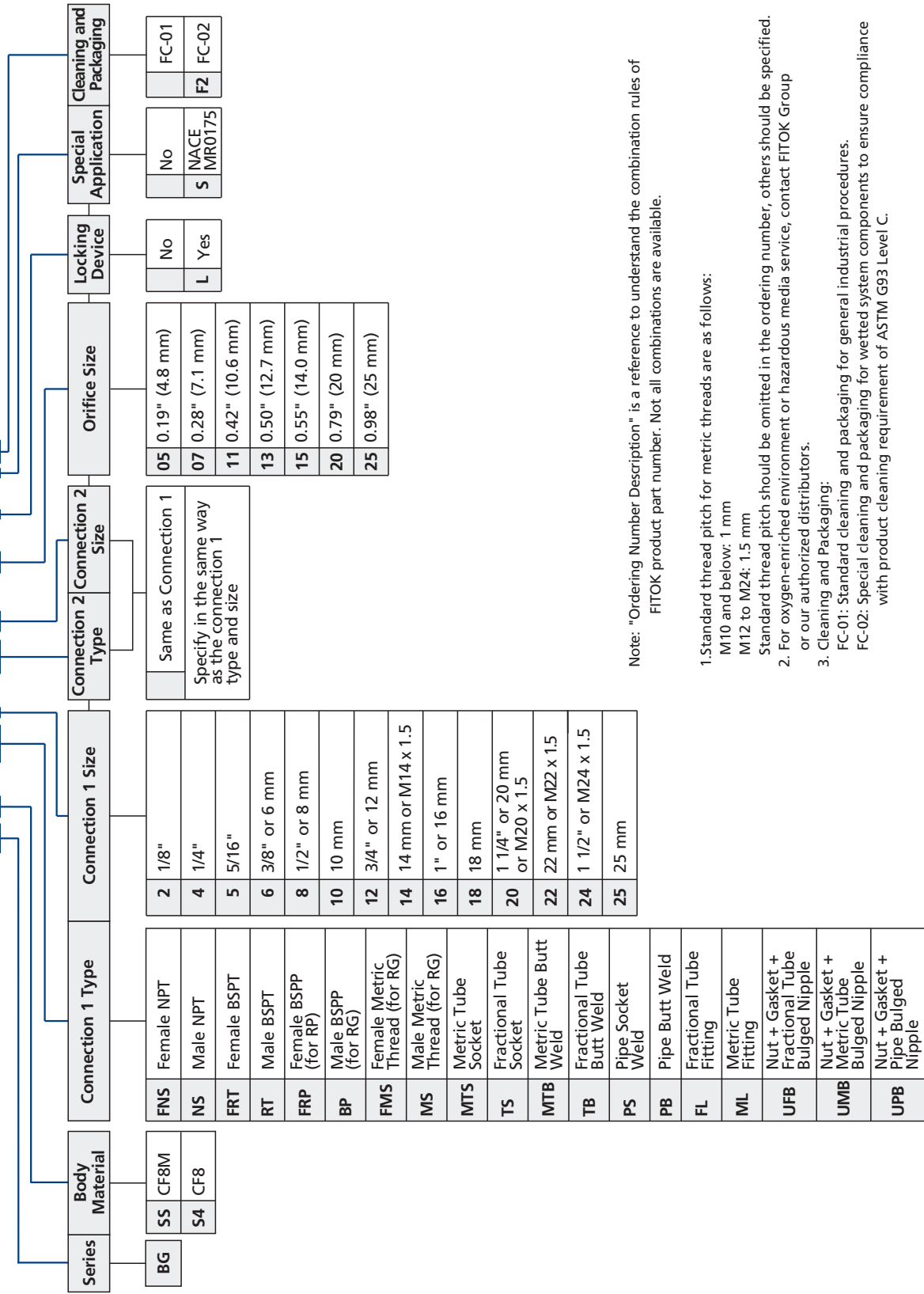
Ball Valves
Plug Valves

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
BG□□-PB12-20	3/4 PB Schedule Number: 80	3/4 PB Schedule Number: 80	0.79 (20.0)	50.0	3.15 (80.0)	1.57 (40.0)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)
BG□□-PS12-20	3/4 PS	3/4 PS							
BG□□-TS16-20	1" TS	1" TS							
BG□□-MTB25-20	25 mm MTB Schedule Number: 80	25 mm MTB Schedule Number: 80							
BG□□-MTS25-20	25 mm MTS	25 mm MTS			5.12 (130.0)	2.56 (65.0)	1.57 (40.0)	5.95 (151.2)	3.08 (78.2)
BG□□-FL16-20	1" FITOK	1" FITOK							
BG□□-ML22-20	22 mm FITOK	22 mm FITOK							
BG□□-ML25-20	25 mm FITOK	25 mm FITOK							
BG□□-FNS16-25	1 Female NPT	1 Female NPT	0.98 (25.0)	93.0	3.54 (90.0)	1.77 (45.0)	1.57 (40.0)	5.95 (151.2)	3.08 (78.2)
BG□□-FRP16-25	1 Female BSPP	1 Female BSPP							
BG□□-PS16-25	1 PS	1 PS							
BG□□-PB16-25	1 PB Schedule Number: 80	1 PB Schedule Number: 80							

1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, TB means fractional tube butt weld, MTB means metric tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting 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.

Ordering Number Description

BGSS - FNS8 - ML18 - 15 - L - SF2



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

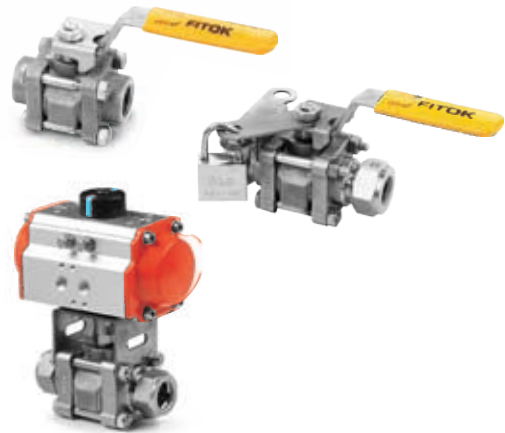
- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
- For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
- 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 cleaning requirement of ASTM G93 Level C.

3-piece Ball Valves

BH Series

Features

- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ End connections:
 - 1/8" to 2" thread
 - 1/8" to 2" pipe butt or socket weld
 - 1/4" to 2" and 6 mm to 50 mm tube butt or socket weld
 - 1/4" to 2" and 6 mm to 38 mm tube fitting
- ⦿ 3-piece precision cast body construction
- ⦿ Pneumatic and electric actuator available
- ⦿ Bidirectional flow for 2-way valves
- ⦿ Bottom port as inlet for 3-way valves
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak

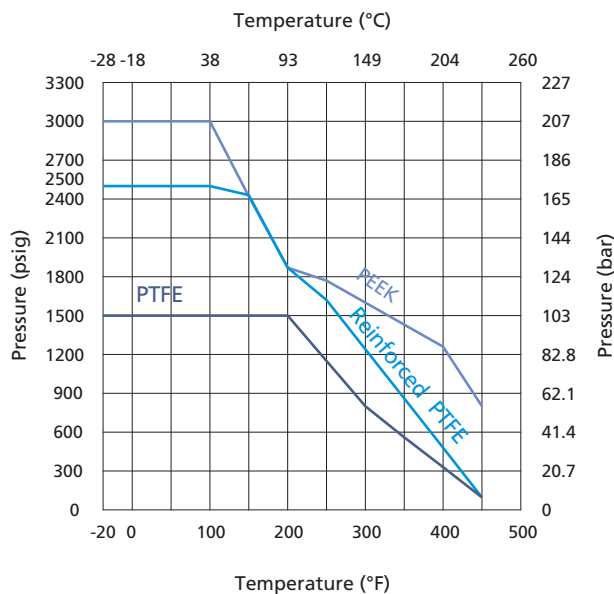


Ball Valves
Plug Valves

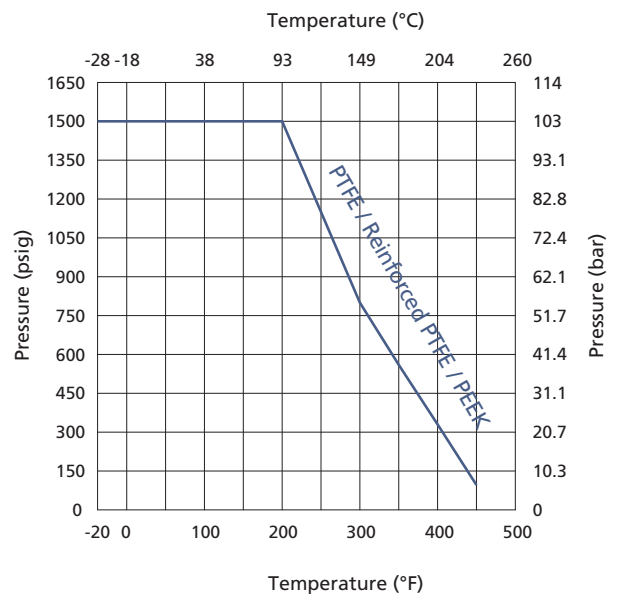
Pressure vs. Temperature

2-way Valves

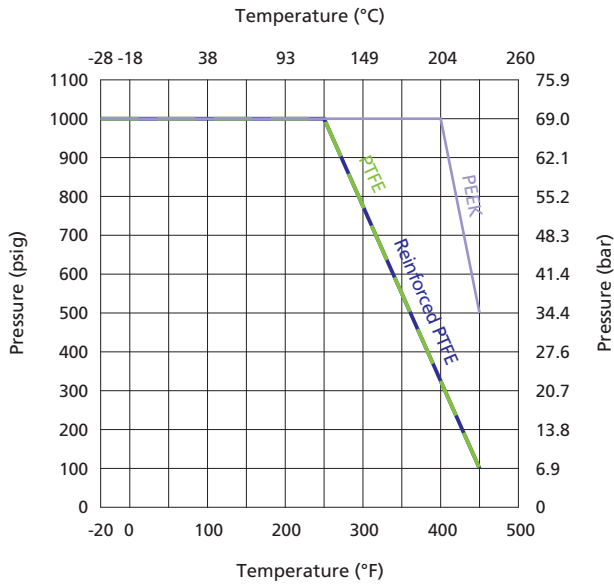
Orifice Size: 0.19", 0.28", 0.41", 0.52" & 0.88"



Orifice Size: 1.13", 1.25" & 1.50"

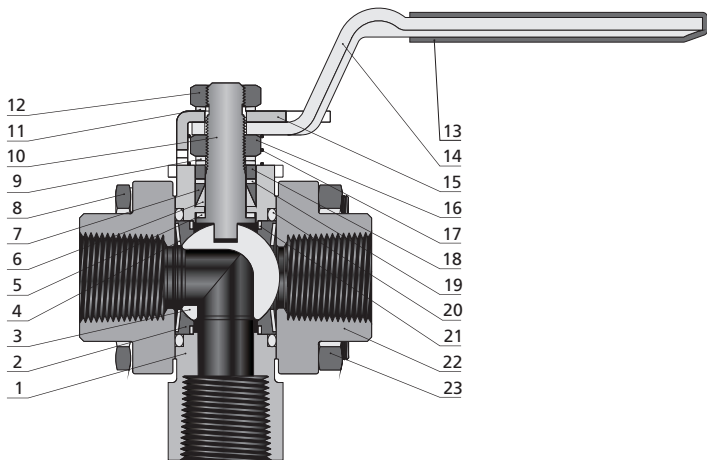
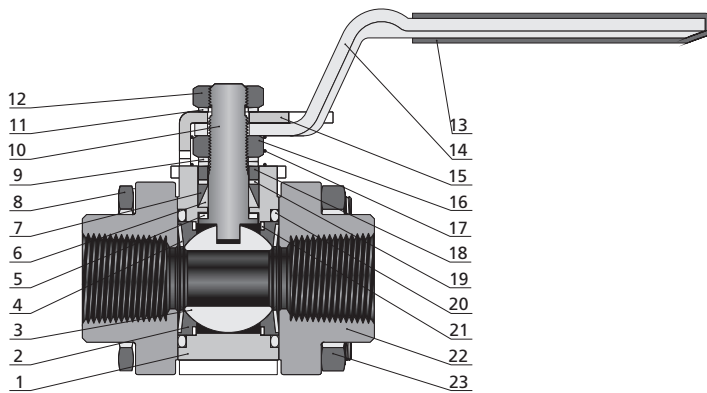


3-way Valves



Note: The temperature and pressure rating are based on valves of standard materials.

Standard Materials of Construction

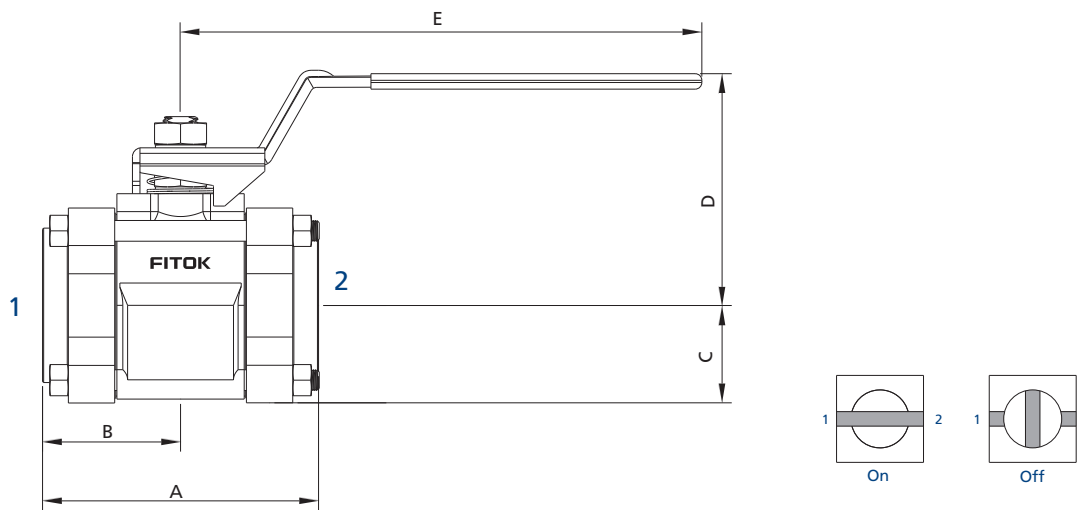


Item	Component	Material Grade/ASME Specification	
1	<i>Body</i>	<i>CF8M/A351</i>	<i>CF8/A351</i>
2	<i>Seat</i>	<i>PTFE or Reinforced PTFE or PEEK</i>	
3	<i>Ball</i>	<i>316 SS/A479</i>	
4	<i>Coned-disc Spring</i>	<i>Strain-hardened 316 SS/A240</i>	
5	<i>Stem Bearing</i>	<i>PEEK</i>	
6	<i>Lower Packing</i>	<i>Reinforced PTFE</i>	
7	<i>Upper Packing</i>	<i>Reinforced PTFE</i>	
8	Body Bolt	Gr. B8M/A193	
9	Stem Spring	Strain-hardened 316 SS/A240	
10	<i>Stem</i>	<i>316 SS/A479</i>	
11	Stem Spring	Strain-hardened 316 SS/A240	
12	Stem Nut	Gr. 8M/A194	
13	Handle Sleeve	Vinyl	
14	Handle	304 SS/A240	
15	Stop Plate	304 SS/A240	
16	Stem Nut	Gr. 8M/A194	
17	Grounding Spring	302 SS/A313	
18	Gland	PTFE-coated 316 SS/A479	
19	<i>Packing Support</i>	<i>PEEK</i>	
20	<i>Flange Seal</i>	<i>PTFE/D1710</i>	
21	<i>Support Ring</i>	<i>316 SS/A240</i>	
22	<i>End Connection</i>	<i>CF8M/A351</i>	<i>CF8/A351</i>
23	Body Nut	Gr.8M/A194	
	<i>Lubricants</i>	<i>Silicone-based and PTTE-based</i>	

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

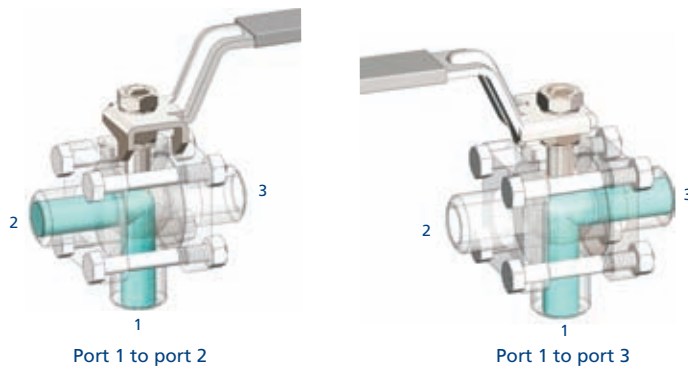
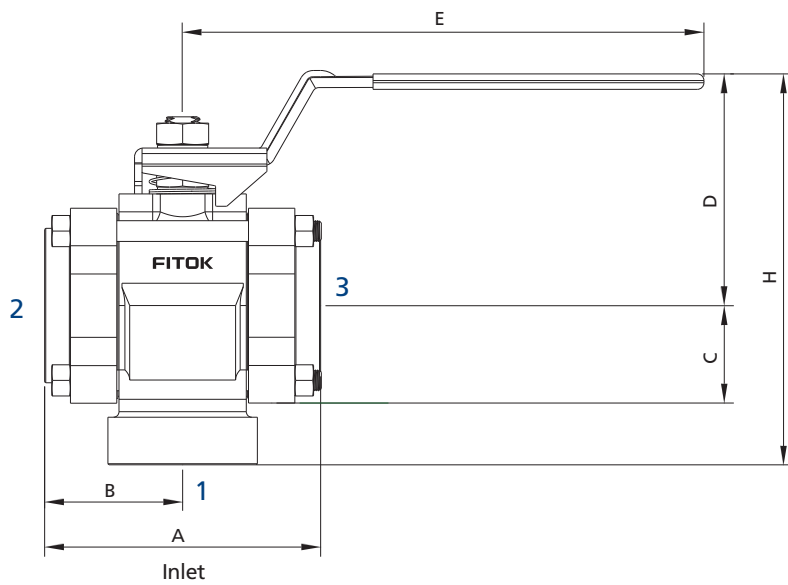
Dimensions

2-way Valves



Ball Valves
Plug Valves

3-way Valves



B-18 Ball Valves

Ball Valves
Plug Valves

Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)												
2-way	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H							
BH□□-FL4-05	BH□□-FL4-05-3	1/4" FITOK	1/4" FITOK	0.19 (4.8)	1.2	3.17 (80.5)	1.59 (40.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	3.35 (85.1)							
BH□□-ML6-05	BH□□-ML6-05-3	6 mm FITOK	6 mm FITOK		2.5													
BH□□-ML8-05	BH□□-ML8-05-3	8 mm FITOK	8 mm FITOK		1.2	2.16 (54.9)	1.08 (27.4)											
BH□□-TS4-05	—	1/4" TS	1/4" TS			2.08 (52.8)	1.04 (26.4)											
BH□□-MTS6-05	—	6 mm MTS	6 mm MTS			—												
BH□□-PB4-05	—	1/4 PB, Schedule Number: 80	1/4 PB, Schedule Number: 80		0.28 (7.1)	3.8	2.16 (54.9)					1.08 (27.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	3.12 (79.2)		
BH□□-FNS2-07	BH□□-FNS2-07-3	1/8 Female NPT	1/8 Female NPT															
BH□□-FRT2-07	BH□□-FRT2-07-3	1/8 Female BSPT	1/8 Female BSPT															
BH□□-FRP2-07	BH□□-FRP2-07-3	1/8 Female BSPP	1/8 Female BSPP															
BH□□-FNS4-07	BH□□-FNS4-07-3	1/4 Female NPT	1/4 Female NPT															
BH□□-FRT4-07	BH□□-FRT4-07-3	1/4 Female BSPT	1/4 Female BSPT															
BH□□-FRP4-07	BH□□-FRP4-07-3	1/4 Female BSPP	1/4 Female BSPP															
BH□□-FL6-07	BH□□-FL6-07-3	3/8" FITOK	3/8" FITOK	3.17 (80.5)				1.59 (40.4)	4.37 (111)									
BH□□-ML10-07	BH□□-ML10-07-3	10 mm FITOK	10 mm FITOK	3.20 (81.3)				1.60 (40.6)										
BH□□-TS6-07	—	3/8" TS	3/8" TS	2.16 (54.9)				1.08 (27.4)										
BH□□-PB6-07	—	3/8 PB, Schedule Number: 80	3/8 PB, Schedule Number: 80	2.08 (52.8)				1.04 (26.4)										
BH□□-FL8-10	BH□□-FL8-10-3	1/2" FITOK	1/2" FITOK	0.41 (10.4)	7.5	4.04 (103)	2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.48 (114)							
BH□□-ML12-10	BH□□-ML12-10-3	12 mm FITOK	12 mm FITOK	0.41 (10.4)														
BH□□-TS8-10	—	1/2" TS	1/2" TS	0.41 (10.4)								2.70 (68.6)	1.34 (34)					
BH□□-FNS6-13	BH□□-FNS6-13-3	3/8 Female NPT	3/8 Female NPT	0.52 (13.1)	12	2.70 (68.6)	1.35 (34.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.19 (106)							
BH□□-FRT6-13	BH□□-FRT6-13-3	3/8 Female BSPT	3/8 Female BSPT															
BH□□-FRP6-13	BH□□-FRP6-13-3	3/8 Female BSPP	3/8 Female BSPP															
BH□□-FNS8-13	BH□□-FNS8-13-3	1/2 Female NPT	1/2 Female NPT															
BH□□-FRT8-13	BH□□-FRT8-13-3	1/2 Female BSPT	1/2 Female BSPT															
BH□□-FRP8-13	BH□□-FRP8-13-3	1/2 Female BSPP	1/2 Female BSPP															
BH□□-FL12-13	BH□□-FL12-13-3	3/4" FITOK	3/4" FITOK									13.6	4.04 (103)	2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.48 (114)
BH□□-ML16-13	BH□□-ML16-13-3	16 mm FITOK	16 mm FITOK															
BH□□-ML18-13	BH□□-ML18-13-3	18 mm FITOK	18 mm FITOK															
BH□□-TS12-13	—	3/4" TS	3/4" TS										2.70 (68.6)	1.34 (34)				
BH□□-PS8-13	—	1/2 PS	1/2 PS									15	—					
BH□□-PB8-13	—	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80	6.8	2.69 (68.3)	1.34 (34)	—											

Basic Ordering Number		Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in. (mm)					
2-way	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H
BH□□-PB12-13	—	3/4 PB, Schedule Number: 80	3/4 PB, Schedule Number: 80	0.52 (13.1)	13.6	2.69 (68.3)	1.34 (34)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	—
BH□□-FNS12-22	BH□□-FNS12-22-3	3/4 Female NPT	3/4 Female NPT	0.88 (22.2)	31	3.59 (91.2)	1.8 (45.7)	1.25 (31.8)	2.94 (74.7)	6.00 (152)	5.45 (138)
BH□□-FRT12-22	BH□□-FRT12-22-3	3/4 Female BSPT	3/4 Female BSPT								
BH□□-FRP12-22	BH□□-FRP12-22-3	3/4 Female BSPP	3/4 Female BSPP								
BH□□-FNS16-22	BH□□-FNS16-22-3	1 Female NPT	1 Female NPT								
BH□□-FRT16-22	BH□□-FRT16-22-3	1 Female BSPT	1 Female BSPT								
BH□□-FRP16-22	BH□□-FRP16-22-3	1 Female BSPP	1 Female BSPP								
BH□□-FL16-22	BH□□-FL16-22-3	1" FITOK	1" FITOK								
BH□□-FL20-22	BH□□-FL20-22-3	1 1/4" FITOK	1 1/4" FITOK								
BH□□-ML25-22	BH□□-ML25-22-3	25 mm FITOK	25 mm FITOK								
BH□□-ML28-22	BH□□-ML28-22-3	28 mm FITOK	28 mm FITOK								
BH□□-TS16-22	—	1" TS	1" TS								
BH□□-MTS25-22	—	25 mm MTS	25 mm MTS								
BH□□-PS12-22	—	3/4 PS	3/4 PS								
BH□□-PS16-22	—	1 PS	1 PS								
BH□□-PB16-22	—	1 PB Schedule Number: 80	1 PB Schedule Number: 80								
BH□□-TS20-29	—	1 1/4" TS	1 1/4" TS		1.13 (28.6)	80	4.39 (112)				2.19 (55.6)
BH□□-PB20-32	—	1 1/4 PB, Schedule Number: 80	1 1/4 PB, Schedule Number: 80	4.57 (116)			2.28 (57.9)				
BH□□-FNS20-32	BH□□-FNS20-32-3	1 1/4 Female NPT	1 1/4 Female NPT	1.25 (31.8)	90	4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)	6.86 (174)
BH□□-FNS24-32	BH□□-FNS24-32-3	1 1/2 Female NPT	1 1/2 Female NPT								
BH□□-TS24-32	—	1 1/2" TS	1 1/2" TS								
BH□□-PS20-32	—	1 1/4 PS	1 1/4 PS								
BH□□-PS24-32	—	1 1/2 PS	1 1/2 PS								
BH□□-PB24-32	—	1 1/2 PB, Schedule Number: 80	1 1/2 PB, Schedule Number: 80								
BH□□-FNS32-38	BH□□-FNS32-38-3	2 Female NPT	2 Female NPT	1.50 (38.1)	130	4.94 (125)	2.47 (62.5)	1.74 (44.2)	4.16 (106)	9.14 (232)	7.21 (183)
BH□□-FRT32-38	BH□□-FRT32-38-3	2 Female BSPT	2 Female BSPT								
BH□□-TS32-38	—	2" TS	2" TS								
BH□□-PS32-38	—	2 PS	2 PS								
BH□□-PB32-38	—	2 PB, Schedule Number: 80	2 PB, Schedule Number: 80								6.14 (156)

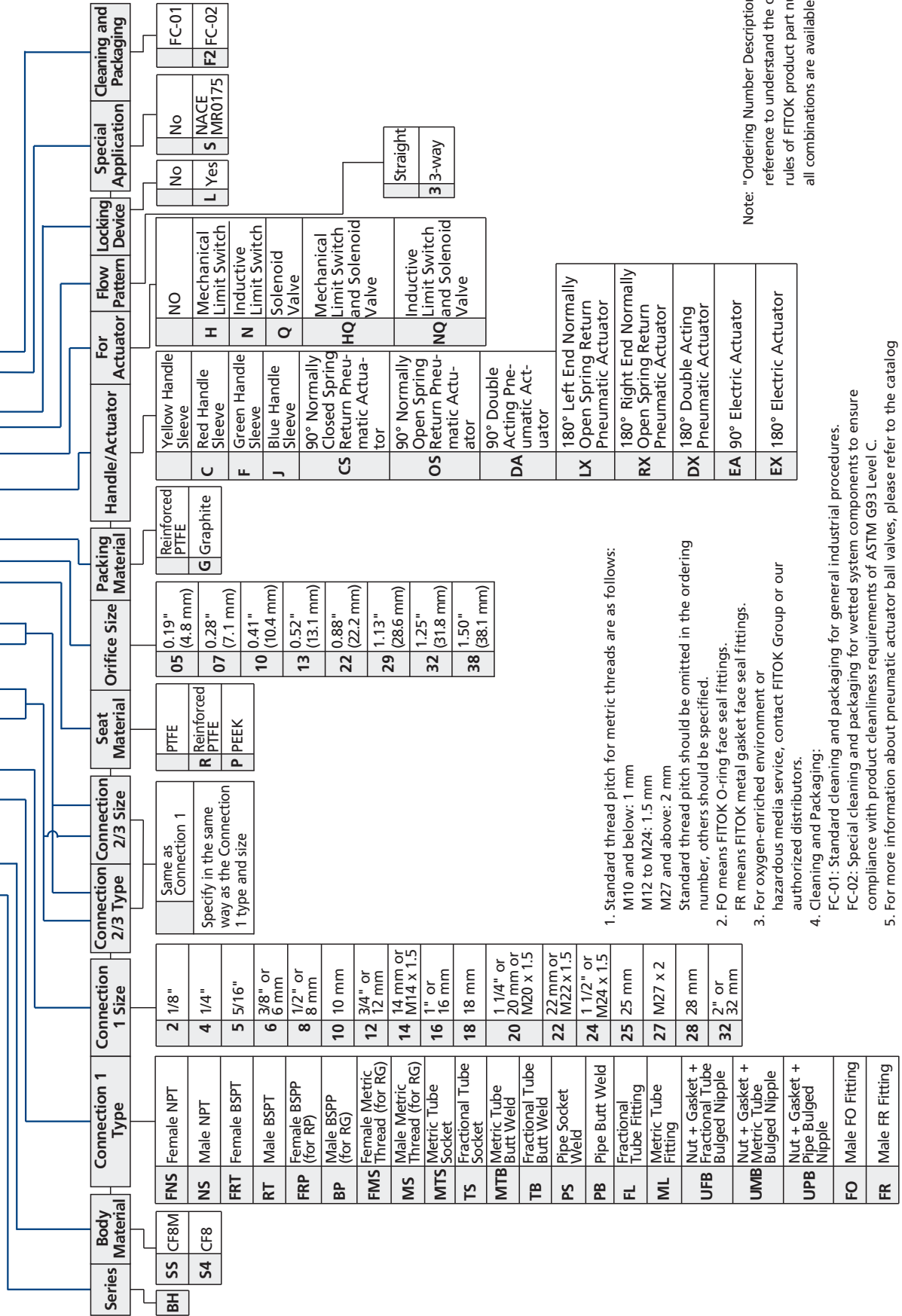
1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, TB means fractional tube butt weld, MTB means metric tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.

2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.

3. Dimensions are shown with tube fitting 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.

Ordering Number Description

BHS4 - FNS8 - FRT8 - FL8 - P13G - OSHQ3L - SF2



1. Standard thread pitch for metric threads are as follows:

- M10 and below: 1 mm
- M12 to M24: 1.5 mm
- M27 and above: 2 mm

Standard thread pitch should be omitted in the ordering number, others should be specified.

2. FO means FITOK O-ring face seal fittings.

FR means FITOK metal gasket face seal fittings.

3. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

4. 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 requirements of ASTM G93 Level C.

5. For more information about pneumatic actuator ball valves, please refer to the catalog **Automatic Control Ball Valves**.

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

One-piece Instrumentation Ball Valves

BO Series

Features

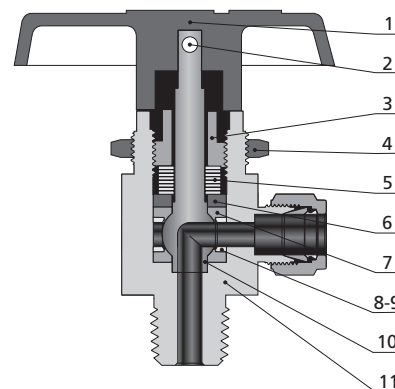
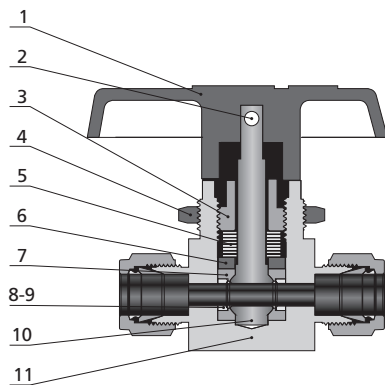
- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -65°F to 300°F (-54°C to 148°C)
- ⦿ End connections:
1/4 to 1/2 thread
1/16" to 3/4" and 3 mm to 18 mm tube fitting
- ⦿ 2-, 3-, 4-, 5-, 6- and 7-way models for on-off, switching and crossover service available
- ⦿ One-piece body and one-piece ball stem
- ⦿ No dead space
- ⦿ Top-loaded design to allow adjustment with the valve in-line
- ⦿ Thermal cycle performance improved and wear compensated by live-loaded design
- ⦿ Any reasonable connections available
- ⦿ Pneumatic and electric actuator available
- ⦿ Handle color options available
- ⦿ Full operating pressure at any port
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak
- ⦿ The inlet can be any port except for valves with vent ports



Note:

1. To prevent seat leakage, packing adjustment may be required periodically during the service life of the valve.
2. A higher initial actuation torque may happen to the valves that have not been cycled for a period of time.
3. Before installation, instrumentation ball valves exposed to dynamic temperature conditions may lose their initial packing load. Stem packing adjustment should be required.

Standard Materials of Construction



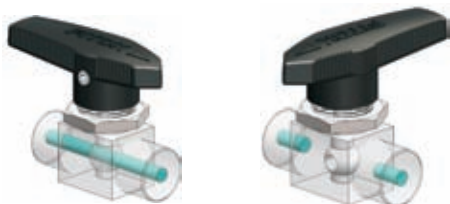
Item	Component	Valve Body Material		
		316 SS	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Nylon or Aluminium		
2	Set Screw	Galvanized carbon steel		
3	Packing Bolt	316 SS/A479	Brass C36000/B16	Alloy 400/B164
4	Panel Nut	316 SS/A479	Brass C36000/B16	316 SS/A479
5	Disc Spring	S17700/A693		
6	Gland	316 SS/A479	316 SS/A479	Alloy 400/B164
7	<i>Packing Seat</i>	<i>PTFE/D1710 or UHMWPE/D4020 or PFA/D3307</i>		
8	<i>Support Ring</i>	316 SS/A479	316 SS/A479	Alloy 400/B164
9	<i>Support Disc</i>			
10	<i>Ball Stem</i>	316 SS/A479	Brass C36000/B16	Alloy 400/B164
11	<i>Body</i>	316 SS/A182	Brass C37700/B16	Alloy 400/B164
<i>Wetted Lubricant</i>		<i>Fluorinated-based and silicone-based</i>		
Non-wetted Lubricant		Molybdenum disulfide with hydrocarbon binder coat		

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

On-Off (2-way) Valves

Standard Flow Path

Straight Pattern



On

Off

Angle Pattern



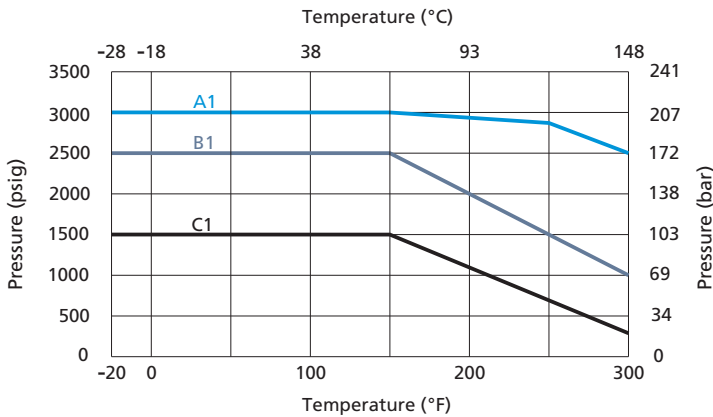
On

Off

Pressure vs. Temperature

Straight Pattern and Angle Pattern

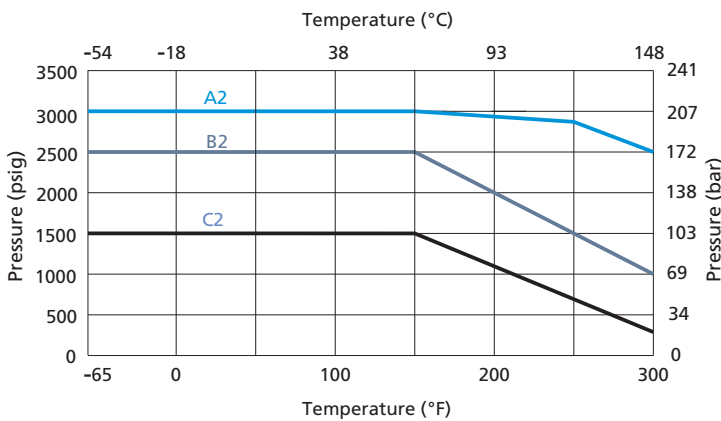
PTFE Packing Seat



- A1: Straight Pattern Valves (orifice 0.19")
- B1: Straight Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.28" & 0.41")
Angle Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
- C1: Angle Pattern Valves (orifice 0.28" & 0.41")

PFA, UHMWPE Packing Seat

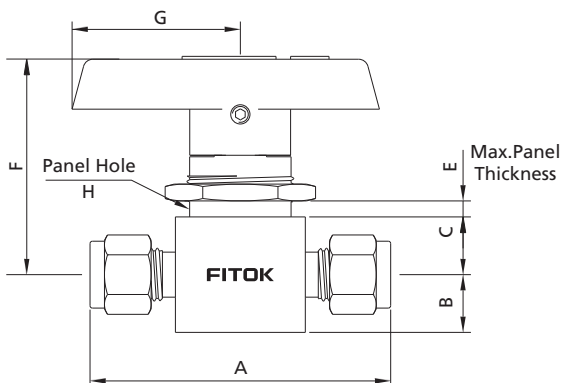
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



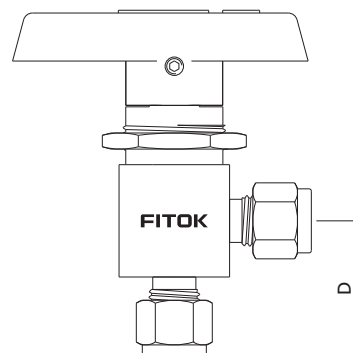
- A2: Straight Pattern Valves (orifice 0.19")
- B2: Straight Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.28" & 0.41")
Angle Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
- C2: Angle Valves (orifice 0.28" & 0.41")

Dimensions

Straight Pattern



Angle Pattern



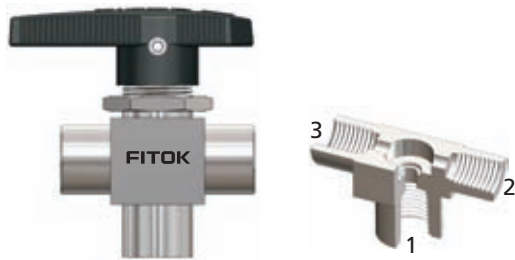
B-24 Ball Valves

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimensions, in. (mm)								
			Straight	Angle	A	B	C	D	E	F	G	H	
BO□□-FL1-00	1/16" FITOK	0.05 (1.3)	0.10	—	1.68 (42.7)				—				
BO□□-FL2-02	1/8" FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-FL4-03	1/4" FITOK	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)					
BO□□-FL4-05		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FL6-05	3/8" FITOK		1.50		2.58 (65.5)			1.29 (32.8)					
BO□□-FL6-07		0.28 (7.1)	6.00	2.00	3.05 (77.5)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-FL8-10	1/2" FITOK	0.41 (10.3)	6.40	3.80	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	
BO□□-FL12-10	3/4" FITOK		12.00	4.60									
BO□□-ML3-02	3 mm FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-ML6-03	6 mm FITOK	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)					
BO□□-ML6-05		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-ML8-05	8 mm FITOK		1.50		2.46 (62.5)			1.20 (30.5)					
BO□□-ML10-07	10 mm FITOK	0.28 (7.1)	6.00	2.00	3.07 (78.0)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-ML12-10	12 mm FITOK	0.41 (10.3)	12.00	4.60	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	
BO□□-FNS2-03	1/8 Female NPT	0.13 (3.2)	0.50	0.30	1.63 (41.4)	0.28 (7.1)	0.34 (8.6)	0.81 (20.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-FNS2-05		0.19 (4.8)	1.20	0.70	2.00 (50.8)	0.38 (9.7)	0.44 (11.2)	1.00 (25.4)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FNS4-05	1/4 Female NPT		0.90	0.75	2.06 (52.3)			1.03 (26.2)					
BO□□-FNS4-07		0.28 (7.1)	3.00	1.70	2.50 (63.5)	0.56 (14.2)	0.56 (14.2)	1.25 (31.8)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-FNS6-07	3/8 Female NPT		2.60	1.50									
BO□□-FNS8-10	1/2 Female NPT	0.41 (10.3)	6.30	3.50	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	1.56 (39.6)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	
BO□□-NS4-05	1/4 Male NPT	0.19 (4.8)	1.20	0.75	2.00 (50.8)	0.38 (9.7)	0.44 (11.2)	1.03 (26.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FRT4-05	1/4 Female BSPT		0.90			2.06 (52.3)							
BO□□-FRT6-07	3/8 Female BSPT	0.28 (7.1)	2.60	—	2.50 (63.5)	0.56 (14.2)	0.56 (14.2)	—	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-FRT8-10	1/2 Female BSPT	0.41 (10.3)	6.30	—	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	—	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	
BO□□-FO4-03	1/4 Male FO	0.13 (3.2)	0.60	0.35	1.75 (44.4)		0.34 (8.6)	0.94 (23.9)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-FO4-05		0.19 (4.8)	2.40	0.90	1.88 (47.8)	0.38 (9.7)	0.44 (11.2)		0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FR4-03	1/4 Male FR	0.13 (3.2)	0.60	0.35	2.13 (54.1)		0.34 (8.6)	1.09 (27.7)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-FR4-05		0.19 (4.8)	2.40	0.90			0.44 (11.2)		0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FR8-07	1/2 Male FR	0.28 (7.1)	6.00	—	2.88 (73.2)	0.56 (14.2)	—	—	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-FR8-10		0.41 (10.3)	12.00	—	3.12 (79.2)	0.69 (17.5)	—	—	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	

Switching (3-, 4-, 5-, 6- and 7-way) Valves

Standard Flow Path

3-way Valves

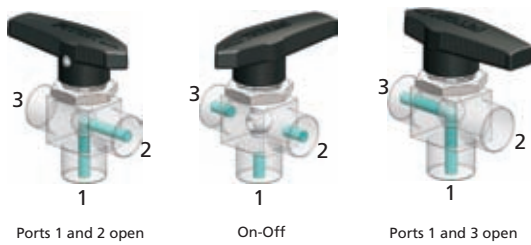


4-way Valves



3L Flow Path

This type of valve can connect one side port to the bottom port or shut off 3 ports. Switch between 0°, 90° and 180° positions with 180° rotation handle.

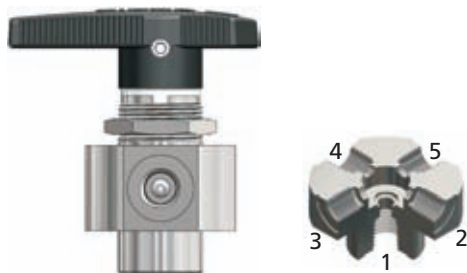


4L Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 2 side ports at the same time. Switching can be done in 120° increments with 360° rotation handle.

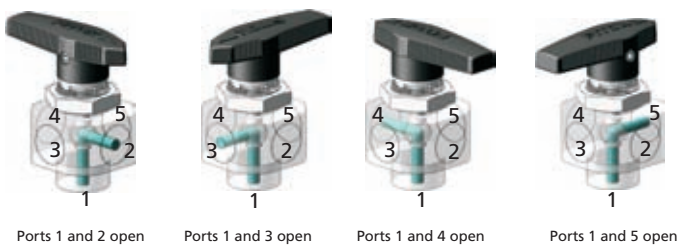


5-way Valves



5L Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 3 side ports at the same time. Switching can be done in 90° increments with 360° rotation handle.



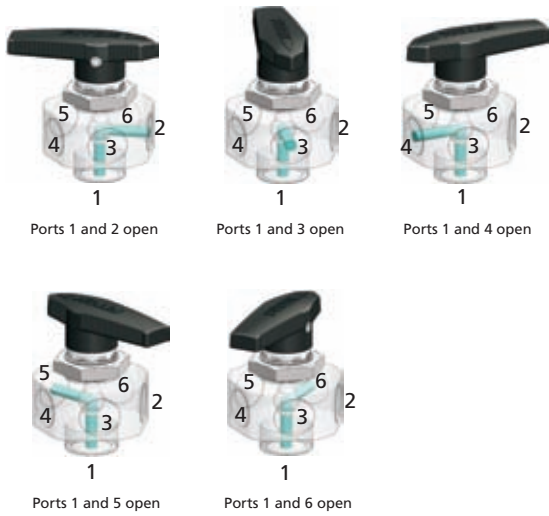
B-26 Ball Valves

6-way Valves

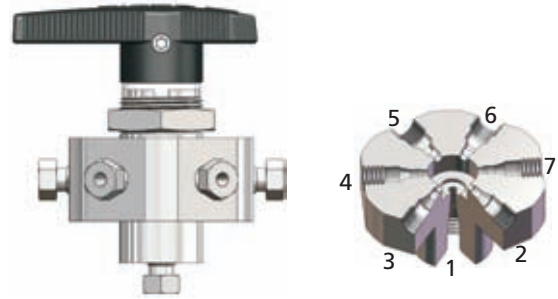


6L Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 4 side ports at the same time. Switching can be done in 72° increments with 360° rotation handle.

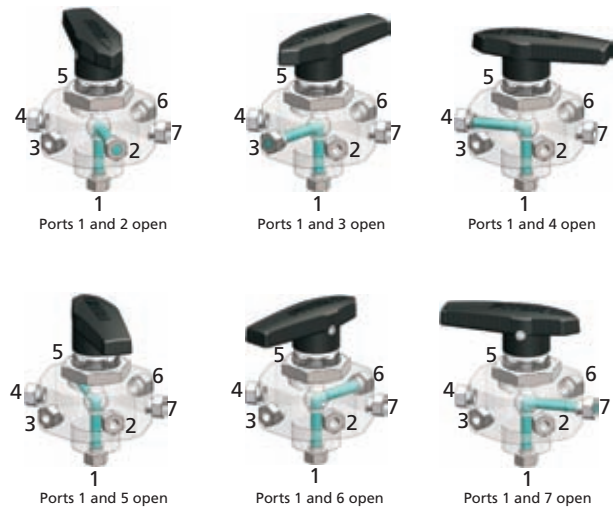


7-way Valves



7L Flow Path

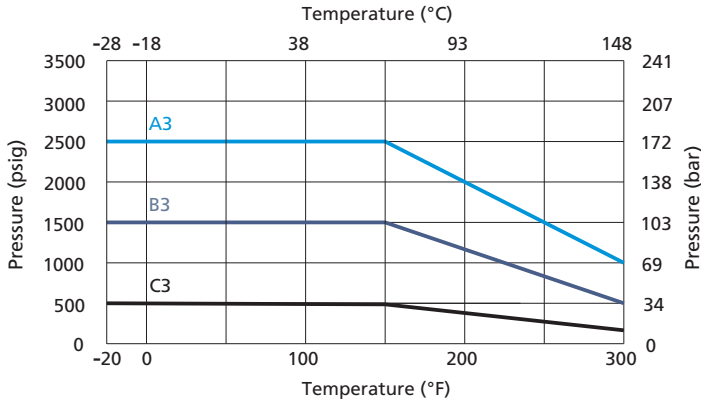
This type of valve can connect one side port to the bottom port, and shut off other 5 side ports at the same time. Switching can be done in 60° increments with 360° rotation handle.



Pressure vs. Temperature

Switching Valves

PTFE Packing Seat



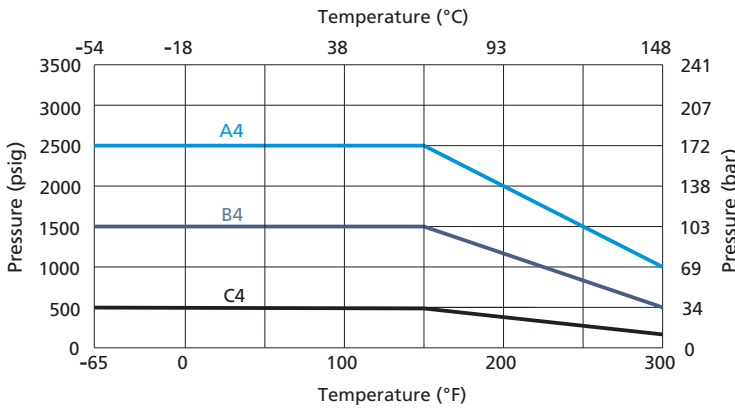
A3: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")

B3: 3-way (orifice 0.28" & 0.41")
4-way / 5-way (orifice 0.41")

C3: 6-way / 7-way (orifice 0.05" & 0.06")

PFA, UHMWPE Packing Seat

The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



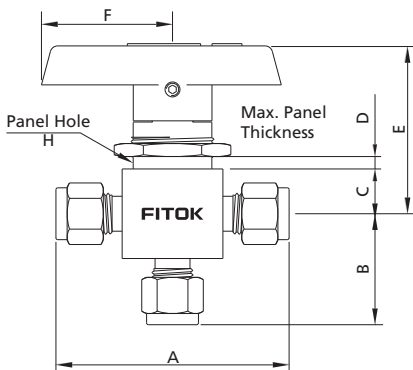
A4: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")

B4: 3-way (orifice 0.28" & 0.41")
4-way / 5-way (orifice 0.41")

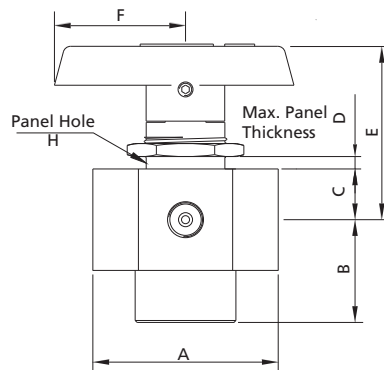
C4: 6-way / 7-way (orifice 0.05" & 0.06")

Dimensions

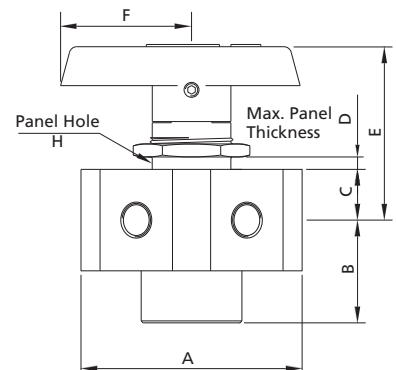
3-way Valves



4-and 5-way Valves



6-and 7-way Valves



B-28 Ball Valves

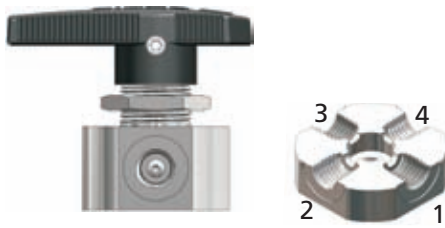
Ball Valves
Plug Valves

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)						
				A	B	C	D	E	F	H
3-way Valves										
BO□□-FL1-00-3L	1/16" FITOK	0.05 (1.3)	0.08	1.68 (42.7)	0.81 (20.6)					
BO□□-FL2-02-3L	1/8" FITOK	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL4-03-3L	1/4" FITOK	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)					
BO□□-FL4-05-3L		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL6-07-3L	3/8" FITOK	0.28 (7.1)	2.00	2.89 (73.4)	1.43 (36.3)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	11/8 (28.6)
BO□□-FL8-10-3L	1/2" FITOK	0.41 (10.3)	4.60	3.48 (88.4)	1.74 (44.2)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	11/2 (38.1)
BO□□-FL12-10-3L	3/4" FITOK		4.90							
BO□□-ML3-02-3L	3 mm FITOK	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-ML6-03-3L	6 mm FITOK	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)					
BO□□-ML6-05-3L		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-ML8-05-3L	8 mm FITOK		0.80	2.46 (62.5)	1.20 (30.5)					
BO□□-ML10-07-3L	10 mm FITOK	0.28 (7.1)	2.00	2.89 (73.4)	1.43 (36.3)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-ML12-10-3L	12 mm FITOK	0.41 (10.3)	4.60	3.48 (88.4)	1.74 (44.2)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-FNS2-03-3L	1/8 Female NPT	0.13 (3.2)	0.30	1.63 (41.4)	0.81 (20.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FNS4-05-3L	1/4 Female NPT	0.19 (4.8)	0.75	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FNS4-07-3L		0.28 (7.1)	1.70	2.5 (63.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FNS6-07-3L	3/8 Female NPT		1.50							
BO□□-FNS8-10-3L	1/2 Female NPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-FRT4-05-3L	1/4 Female BSPT	0.19 (4.8)	0.75	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FRT6-07-3L	3/8 Female BSPT	0.28 (7.1)	1.50	2.5 (63.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FRT8-10-3L	1/2 Female BSPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
4 - & 5-way Valves										
BO□□-FL2-01-4L	1/8" Female FITOK Tube Fitting	0.06 (1.6)	0.07	2.36 (60)	1.32 (33.5)	0.44 (11.2)	0.20 (5.2)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
BO□□-FL2-01-5L				1.85 (47)	0.88 (22.4)					
BO□□-FNS2-01-4L	1/8 Female NPT	0.06 (1.6)	0.07	1.55 (39.4)						
BO□□-FNS2-01-5L										
BO□□-FNS8-10-4L	1/2 Female NPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	0.41 (10.5)	2.67 (70.2)	2.63 (66.7)	1 1/2 (38.1)
BO□□-FNS8-10-5L										
6 - & 7-way Valves										
BO□□-FL1-00-6L	1/16" Female FITOK Tube Fitting	0.05 (1.3)	0.05	2.64 (67)	1.32 (33.5)	0.44 (11.2)	0.28 (7)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
BO□□-FL1-00-7L										
BO□□-FL2-01-6L	1/8" Female FITOK Tube Fitting	0.06 (1.6)	0.07	2.26 (57.6)	0.97 (24.7)					
BO□□-FL2-01-7L										

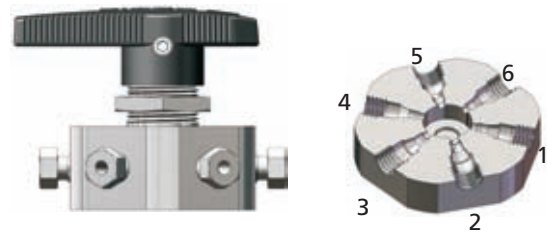
Crossover (4-, 6-way) Valves

Standard Flow Path

4-way Valves



6-way Valves



4C Flow Path

This type of valve can connect two groups of adjacent ports at the same time. Switch between 0° and 90° positions with 90° rotation handle.

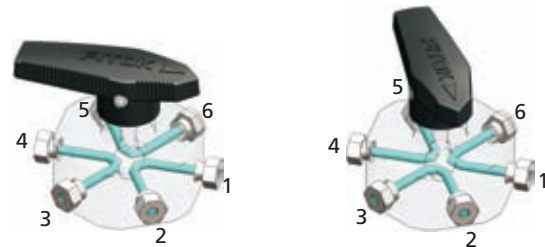


Ports 1 and 2 open
Ports 3 and 4 open

Ports 1 and 4 open
Ports 2 and 3 open

6C Flow Path

This type of valve can connect three groups of adjacent ports at the same time. Switch between 0° and 60° positions with 60° rotation handle.



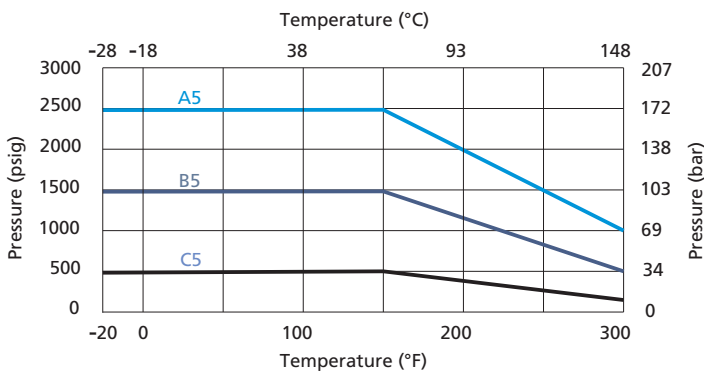
Ports 1 and 2 open
Ports 3 and 4 open
Ports 5 and 6 open

Ports 1 and 6 open
Ports 2 and 3 open
Ports 4 and 5 open

Pressure vs. Temperature

Crossover Valves

PTFE Packing Seat



A5: 4-way (orifice 0.06")

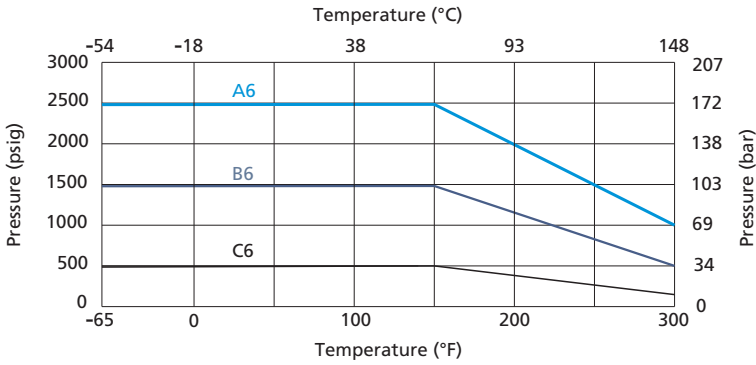
B5: 4-way (orifice 0.41")

C5: 6-way (orifice 0.05" & 0.06")

B-30 Ball Valves

PFA, UHMWPE Packing Seat

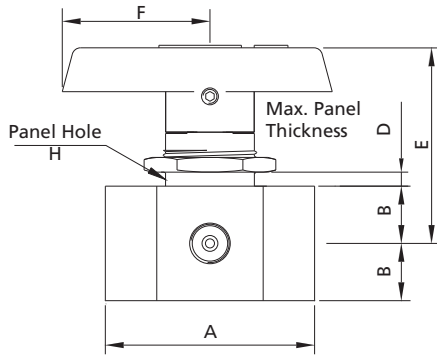
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



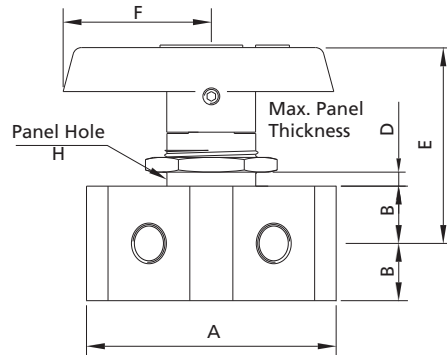
- A6: 4-way (orifice 0.06")
- B6: 6-way (orifice 0.41")
- C6: 6-way (orifice 0.05" & 0.06")

Dimensions

4-way Valves



6-way Valves



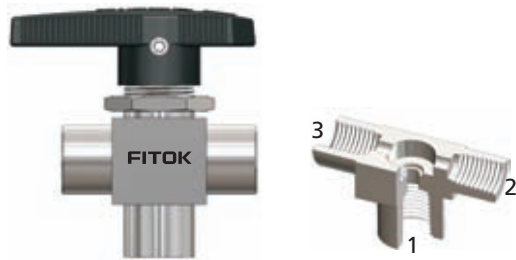
Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
				A	B	D	E	F	H
4-way Valve									
BO□□-FL1-00-4C	1/16" Female FITOK Tube Fitting	0.05 (1.3)	0.06	1.95 (49.6)					
BO□□-FL2-01-4C	1/8" Female FITOK Tube Fitting	0.06 (1.6)	0.08	2.61 (66.3)	0.44 (11.2)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FNS2-01-4C	1/8 Female NPT			1.55 (39.4)					
BO□□-FNS8-07-4C	1/2 Female NPT	0.28 (7.1)	1.60	3.13 (79.5)	0.69 (17.5)	0.48 (12.2)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
6-way Valve									
BO□□-FL1-00-6C	1/16" Female FITOK Tube Fitting	0.05 (1.3)	0.06	1.95 (49.5)	0.44 (11.2)	3/16 (4.8)	1.68 (42.7)	1.53 (38.9)	29/32 (23.1)
BO□□-FL2-01-6C	1/8" Female FITOK Tube Fitting	0.06 (1.6)	0.08	2.59 (65.8)					

Note: Connection type for ball valves in 4L, 5L, 6L, 7L, 4C, 6C, 4H, 4HL, 4V, 5HL, 5H and 5LV flow path is female FITOK tube fitting, which can not be used directly with standard FT and MT connections. Please contact FITOK Group or authorized distributors for use with standard FT and MT connections.

- FITOK means FITOK double ferrule tube fittings.
- Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
- Dimensions are shown with tube fitting 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.

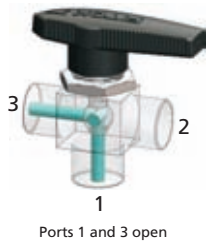
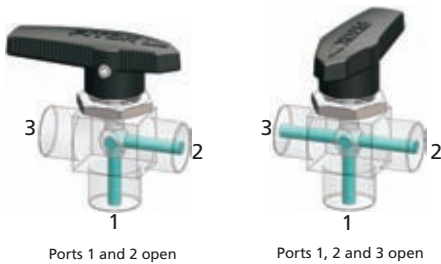
Special Flow Path

3-way Valves



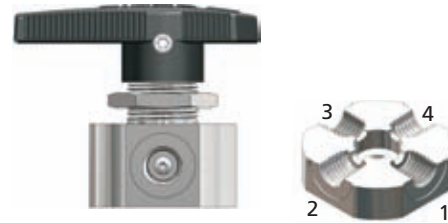
3HL Flow Path

This type of valve can connect one side port to the bottom port, or connect two side ports to the bottom port. Switching can be done in 90° increments with 180° rotation handle.



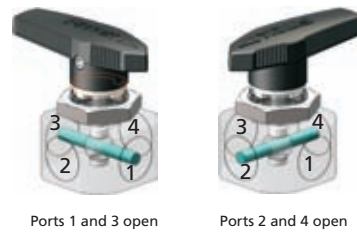
Note: For Temperature VS. Pressure curves and dimensions of 3-way and 4-way valves, see Switching (3-, 4-, 5-, 6- and 7-way) Valves above.

4-way Valves



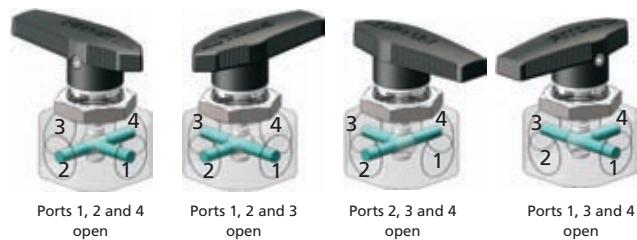
4H Flow Path

This type of valve can connect two opposite ports. Switch between 0° and 90° positions with 90° rotation handle.



4HL Flow Path

This type of valve can connect three adjacent ports and shut off other ports. Switching can be done in 90° increments with 360° rotation handle.



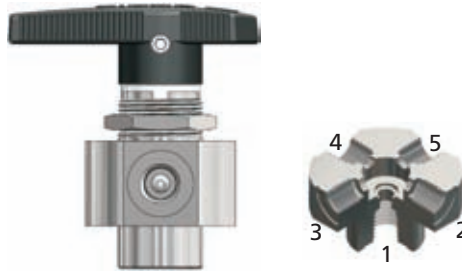
4V Flow Path

This type of valve can connect two adjacent ports and shut off other ports. Switching can be done in 90° increments with 360° rotation handle.



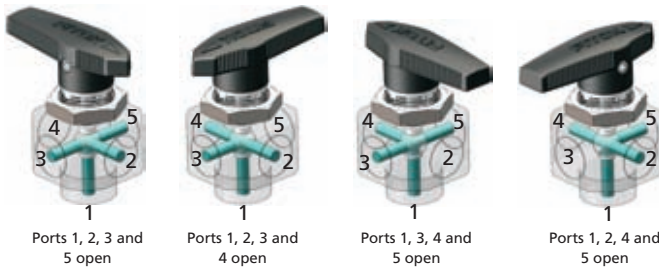
B-32 Ball Valves

5-way Valves



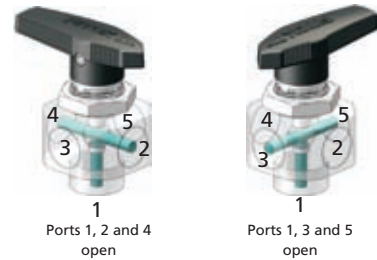
5HL Flow Path

This type of valve can connect three side ports to the bottom port, and shut off the fourth side port at the same time. Switching can be done in 90° increments with 360° rotation handle.



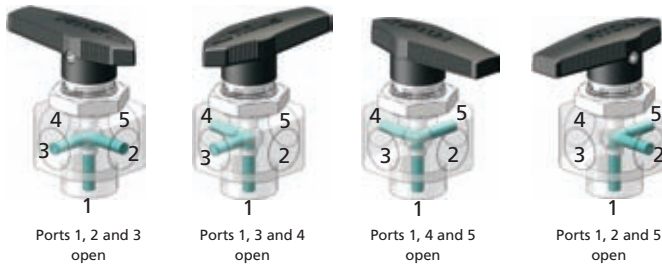
5H Flow Path

This type of valve can connect the bottom port to port 2 and port 4, or connect the bottom port to port 3 and port 5. Switch between 0° and 90° positions with 90° rotation handle.



5LV Flow Path

This type of valve can connect two adjacent ports to the bottom port, and shut off other two side ports at the same time. Switching can be done in 90° increments with 360° rotation handle.



Note: For Temperature vs. Pressure curve and dimensions of 5-way valves, see Switching (3-, 4-, 5-, 6- and 7-way) Valves above.

Vent Port Options

Vented Valves

The maximum working pressure for vented valves is 500 psig (34.4 bar).

Straight-pattern Valves

A vent hole in the side of the valve body makes the downstream port vent to atmosphere when the valve is closed.

Angle-pattern and 3-way Valves

A vent hole in the side of the valve body makes the bottom port vent to atmosphere when the valve is closed.

Welded Vent Port Connections

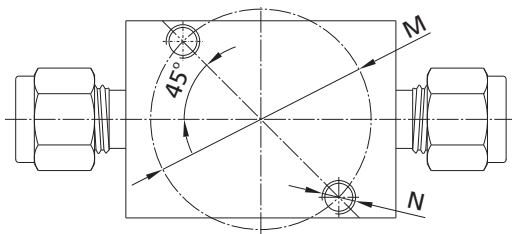
A FITOK tube fitting or a tube stub welded to the vent port is available for stainless steel vented valves.

Bottom Screw Panel Mounting Options

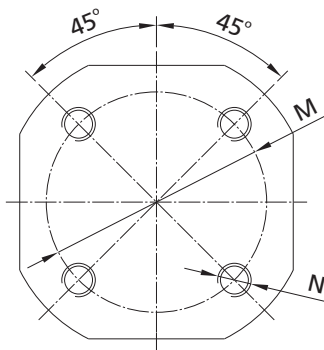
Mounting Dimensions

The bottom screw panel mounting options are not available on angle-pattern valves, 3-way valves, 6-way valves and 7-way valves.

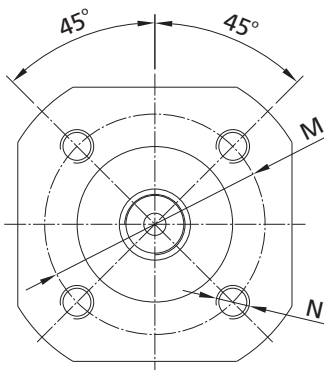
2-way



4-way



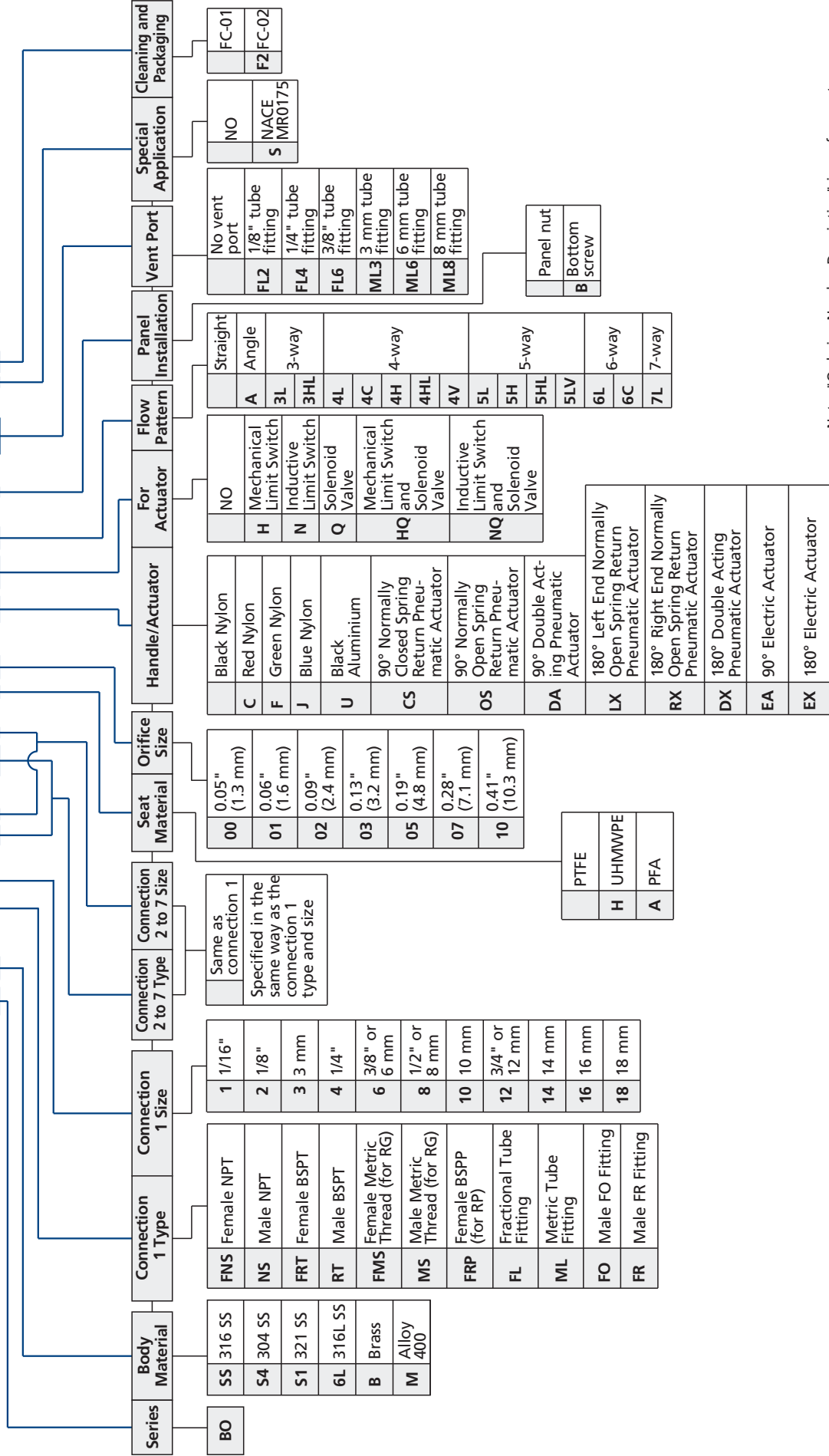
5-way



	Orifice in. (mm)	Dimensions, in. (mm)	
		M	N
2-way	0.05~0.13 (1.3~3.2)	0.63 (15.88)	M2.5 x 0.45 deep 0.24" (6)
	0.19 (4.8)	0.88 (22.23)	M3 x 0.5 deep 0.24" (6)
	0.28 (7.1)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)
4-way	0.41 (10.3)	1.63 (41.28)	M5 x 0.8 deep 0.24" (6)
	0.05~0.06 (1.3~1.6)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)
5-way	0.28 (7.1)	2.00 (50.8)	M5 x 0.8 deep 0.24" (6)
	0.05~0.06 (1.3~1.6)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)
5-way	0.41 (10.3)	2.00 (50.8)	M5 x 0.8 deep 0.24" (6)
	0.05~0.06 (1.3~1.6)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)

Ordering Number Description

BOSS - ML6 - FL4 - ML8 - H05 - OSHQ3L - B - FL4 - SF2



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

1. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

2. 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.

3. For more information about pneumatic actuator ball valves, please refer to the catalog *Automatic Control Ball Valves*.

Bar Stock Ball Valves

BP Series

Features

- ⦿ Working pressure up to: 10000 psig (690 bar)
- ⦿ Working temperature: -40°F to 450°F (-40°C to 232°C)
- ⦿ Bidirectional flow for 2-way valves
- ⦿ Seat wear compensation by free floating ball
- ⦿ Variety of end connections
- ⦿ Blowout proof stem with self-sealing function
- ⦿ Handle color options available
- ⦿ Optional pneumatic and electric actuator
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure (not higher than 6000 psig) to meet the requirement of no visible leak
- ⦿ Restricted flow path for BP series: only port 1 as inlet, port 2 and port 3 as outlet

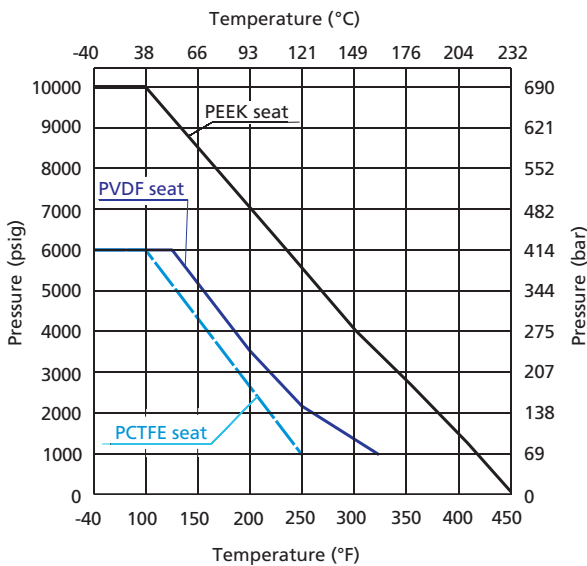


Ball Valves
Plug Valves

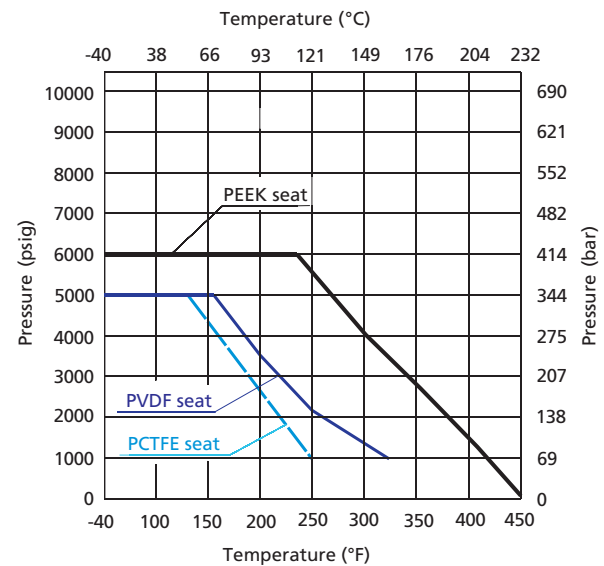
Pressure vs. Temperature

2-way Valves

Orifice: 0.39" (10.0 mm)



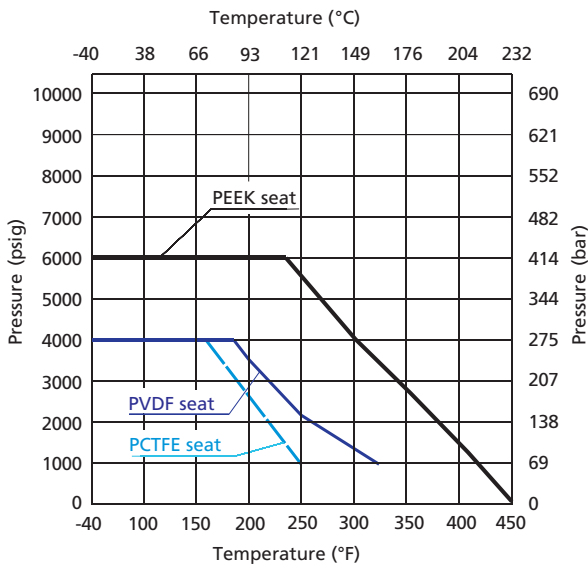
Orifice: 0.50" (12.7 mm) and 0.71" (18.0 mm)



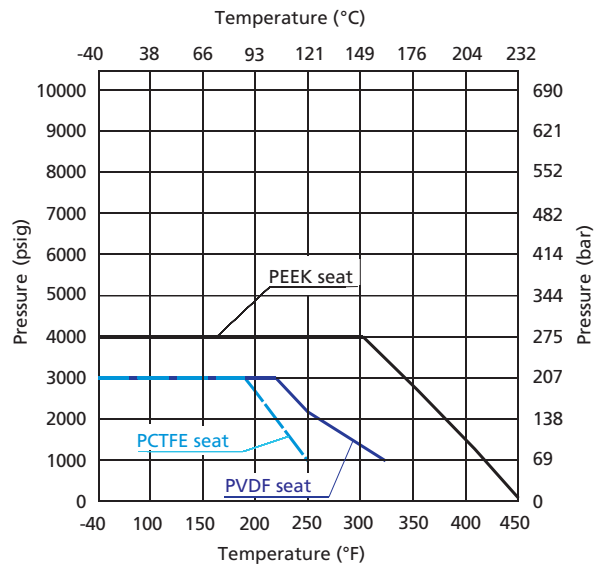
B-36 Ball Valves

3-way Valves

Orifice: 0.39" (10.0 mm)



Orifice: 0.50" (12.7 mm) and 0.71" (18.0 mm)

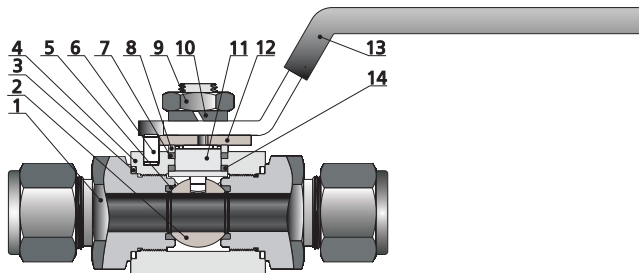


Note: 1. Graphs are with 316SS body. For information of body in other materials, please contact FITOK Group or our authorized distributors.

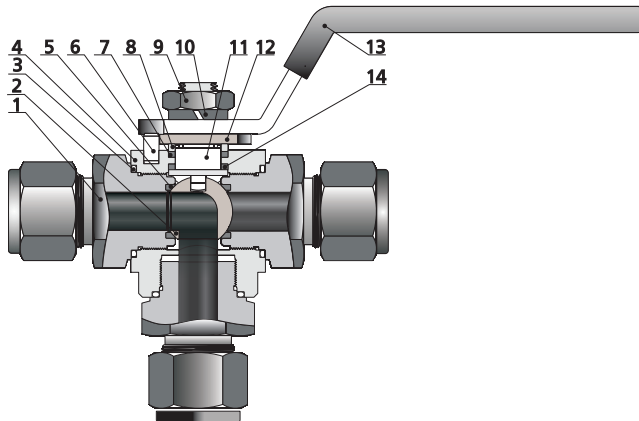
2. The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the pressure rating of the valve.

Standard Materials of Construction

2-way Valves



3-way Valves



Item	Component	Body Material
		316 SS
1	<i>End Connection</i>	<i>316 SS/A479</i>
2	<i>Ball</i>	<i>316 SS/A479</i>
3	<i>O-ring</i>	<i>FKM or Buna-N or Neoprene or EPDM</i>
4	<i>Body</i>	<i>316 SS/A479</i>
5	<i>Seat</i>	<i>PVDF or PCTFE or PEEK</i>
6	Stop Pin	SS
7	<i>Stem Packing</i>	<i>PTFE/D1710</i>
8	Stem Washer	316 SS/A479
9	Stem Nut ^①	SS
10	Spring Washer	SS
11	<i>Stem</i>	<i>316 SS/A479</i>
12	Stop Block	304 SS/A240
13	Handle	SS with vinyl cover
14	Lower Packing ^②	PEEK

Note: Wetted components are listed in italics.

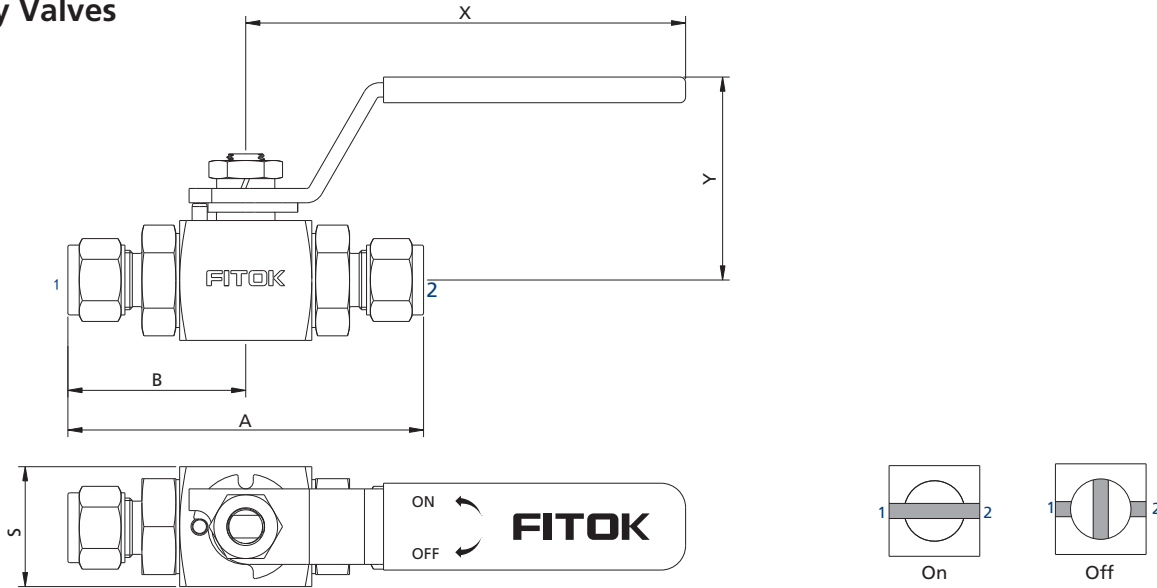
For other materials, please contact FITOK Group or our authorized distributors.

① Ball valves with orifice 0.50" (12.7 mm) and 0.71" (18.0 mm) have 2 stem nuts.

② Lower packing material of ball valves with orifice 0.71" (18.0 mm) is PTFE.

Dimensions

2-way Valves



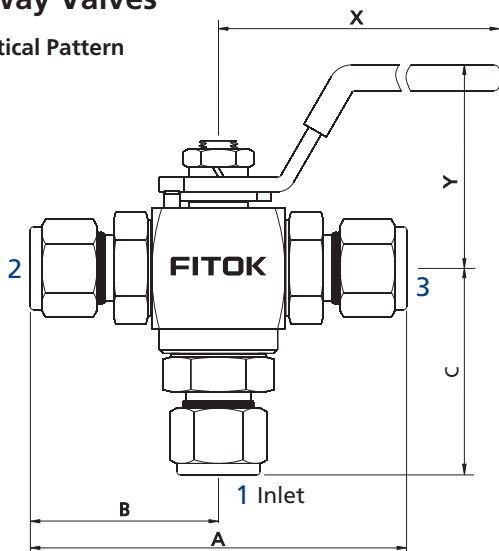
Ball Valves
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)				
					A	B	X	Y	S
BP□□-ML6-10	6 mm FITOK	10000 (690)	0.19(4.8)	1.2	3.54 (90.0)	1.77 (45.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)
BP□□-ML8-10	8 mm FITOK	7500 (517)	0.25(6.4)	2.3	3.60 (91.6)	1.80 (45.8)			
BP□□-ML10-10	10 mm FITOK	8400 (579)	0.28(7.1)	3.7	3.70 (94.0)	1.85 (47.0)			
BP□□-ML12-10	12 mm FITOK	6800 (469)	0.39 (10.0)	7.5	3.94 (100.0)	1.97 (50.0)			
BP□□-ML14-10	14 mm FITOK	6200 (427)			3.94 (100.0)	1.97 (50.0)			
BP□□-FL4-10	1/4" FITOK	10000 (690)	0.19(4.8)	1.2	3.56 (90.4)	1.78 (45.2)			
BP□□-FL6-10	3/8" FITOK	6500 (448)	0.28(7.1)	3.7	3.72 (94.6)	1.86 (47.3)			
BP□□-FL8-10	1/2" FITOK	6700 (462)	0.39 (10.0)	7.5	3.92 (99.6)	1.96 (49.8)			
BP□□-FNS4-10	1/4 Female NPT	10000 (690)			3.03 (77.0)	1.52 (38.5)			
BP□□-FNS6-10	3/8 Female NPT	10000 (690)			2.80 (71.0)	1.40 (35.5)			
BP□□-FNS8-10	1/2 Female NPT	10000 (690)			3.27 (83.0)	1.63 (41.5)			
BP□□-NS4-10	1/4 Male NPT	10000 (690)	0.28(7.1)	3.7	3.36 (85.4)	1.68 (42.7)			
BP□□-NS6-10	3/8 Male NPT	10000 (690)	0.39 (10.0)	7.5	3.75 (95.2)	1.88 (47.6)			
BP□□-NS8-10	1/2 Male NPT	10000 (690)			3.75 (95.2)	1.88 (47.6)			
BP□□-ML16-13	16 mm FITOK	5800 (400)			4.42 (112.2)	2.21 (56.1)			
BP□□-ML18-13	18 mm FITOK	5400 (372)	4.12 (104.6)	2.06 (52.3)					
BP□□-ML20-13	20 mm FITOK	5500 (379)	4.43 (112.6)	2.22 (56.3)					
BP□□-ML22-13	22 mm FITOK	4900 (338)	4.29 (109.0)	2.15 (54.5)					
BP□□-FL10-13	5/8" FITOK	6000 (414)	0.50 (12.7)	10.0	4.36 (110.6)	2.18 (55.3)			
BP□□-FL12-13	3/4" FITOK	5800 (400)			4.36 (110.6)	2.18 (55.3)			
BP□□-FNS8-13	1/2 Female NPT	6000 (414)			3.54 (90.0)	1.77 (45.0)			
BP□□-FNS12-13	3/4 Female NPT	6000 (414)			4.09 (104.0)	2.05 (52.0)			
BP□□-NS12-13	3/4 Male NPT	6000 (414)			4.14 (105.2)	2.07 (52.6)			
BP□□-ML20-19	20 mm FITOK	5500 (379)			4.87 (123.8)	2.43 (61.9)			
BP□□-ML22-19	22 mm FITOK	4900 (338)	0.71 (18.0)	30.0	5.11 (129.8)	2.66 (64.9)			
BP□□-ML25-19	25 mm FITOK	4600 (317)			5.11 (129.8)	2.66 (64.9)			
BP□□-FL12-19	3/4" FITOK	5800 (400)			4.59 (116.6)	2.29 (58.3)			
BP□□-FL16-19	1" FITOK	4700 (324)			5.11 (129.8)	2.66 (64.9)			
BP□□-FNS12-19	3/4 Female NPT	6000 (414)			3.81 (96.8)	1.91 (48.4)			
BP□□-FNS16-19	1 Female NPT	6000 (414)			4.26 (108.2)	2.13 (54.1)			
BP□□-NS16-19	1 Male NPT	6000 (414)	4.91 (124.8)	2.45 (62.4)					

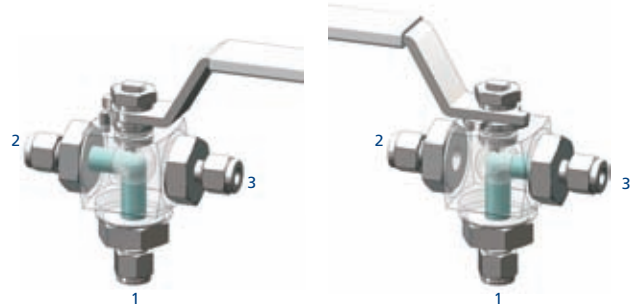
B-38 Ball Valves

3-way Valves

Vertical Pattern



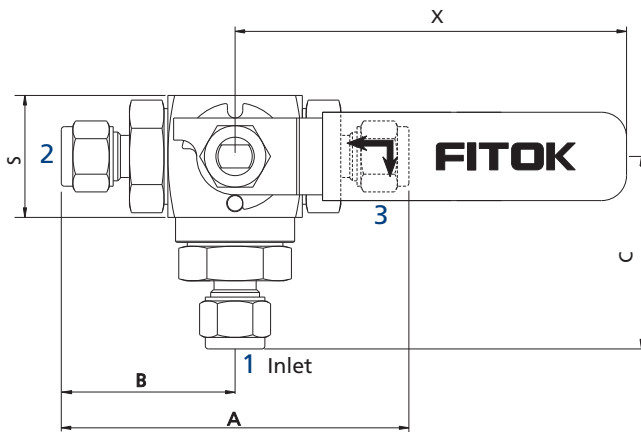
Port 1 as inlet
180° rotation handle



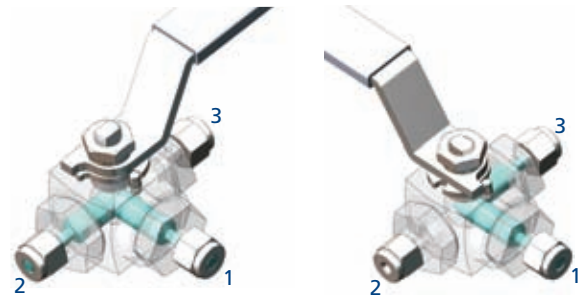
Port 1 to port 2

Port 1 to port 3

Horizontal Pattern



Port 1 as inlet
90° rotation handle



Port 1 to port 2

Port 1 to port 3

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100 °F (38 °C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
				A	B	C	X	Y	S
BP□□-ML6-10-3□	6 mm FITOK	10000 (690)	0.19 (4.8)	3.54 (90.0)	1.77 (45.0)	2.00 (51.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)
BP□□-ML8-10-3□	8 mm FITOK	7500 (517)	0.25 (6.4)	3.60 (91.6)	1.80 (45.8)	2.02 (51.3)			
BP□□-ML10-10-3□	10 mm FITOK	8400 (579)	0.28 (7.1)	3.70 (94.0)	1.85 (47.0)	2.07 (52.5)			
BP□□-ML12-10-3□	12 mm FITOK	6800 (469)	0.39 (10.0)	3.94 (100.0)	1.97 (50.0)	2.18 (55.5)			
BP□□-ML14-10-3□	14 mm FITOK	6200 (427)		3.94 (100.0)	1.97 (50.0)	2.18 (55.5)			
BP□□-FL4-10-3□	1/4" FITOK	10000 (690)	0.19 (4.8)	3.56 (90.4)	1.78 (45.2)	1.95 (49.5)			
BP□□-FL6-10-3□	3/8" FITOK	6500 (448)	0.28 (7.1)	3.72 (94.6)	1.86 (47.3)	2.16 (54.8)			
BP□□-FL8-10-3□	1/2" FITOK	6700 (462)	0.39 (10.0)	3.92 (99.6)	1.96 (49.8)	2.13 (54.0)			
BP□□-FNS4-10-3□	1/4 Female NPT	10000 (690)		3.03 (77.0)	1.52 (38.5)	1.44 (36.5)			
BP□□-FNS6-10-3□	3/8 Female NPT	10000 (690)		2.80 (71.0)	1.40 (35.5)	1.57 (40.0)			
BP□□-FNS8-10-3□	1/2 Female NPT	10000 (690)		3.27 (83.0)	1.63 (41.5)	1.83 (46.4)			
BP□□-NS4-10-3□	1/4 Male NPT	10000 (690)	0.28 (7.1)	3.36 (85.4)	1.68 (42.7)	1.90 (48.2)			
BP□□-NS6-10-3□	3/8 Male NPT	10000 (690)	0.39 (10.0)	3.75 (95.2)	1.88 (47.6)	2.09 (53.1)			
BP□□-NS8-10-3□	1/2 Male NPT	10000 (690)		3.75 (95.2)	1.88 (47.6)	2.09 (53.1)			

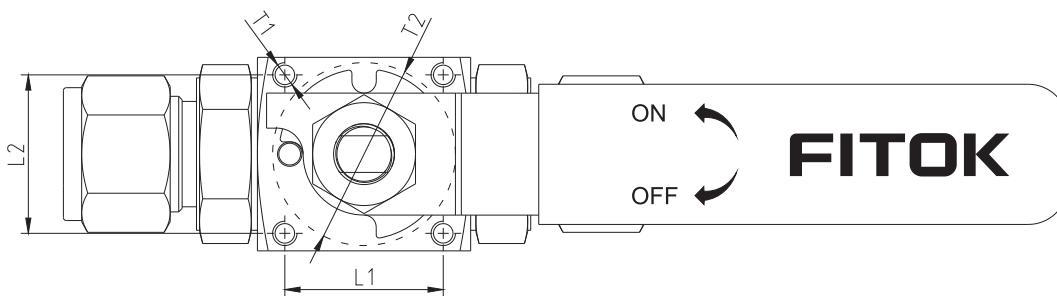
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
	Connection 1/2/3	316 SS		A	B	C	X	Y	S
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	4.42 (112.2)	2.21 (56.1)	2.60 (66.1)	5.59 (142.0)	2.54 (64.4)	1.50 (38.0)
BP□□-ML18-13-3□	18 mm FITOK	5400 (372)		4.12 (104.6)	2.06 (52.3)	2.45 (62.3)			
BP□□-ML20-13-3□	20 mm FITOK	5500 (379)		4.43 (112.6)	2.22 (56.3)	2.61 (66.3)			
BP□□-ML22-13-3□	22 mm FITOK	4900 (338)		4.29 (109.0)	2.15 (54.5)	2.54 (64.5)			
BP□□-FL10-13-3□	5/8" FITOK	6000 (414)		4.36 (110.6)	2.18 (55.3)	2.57 (65.3)			
BP□□-FL12-13-3□	3/4" FITOK	5800 (400)		3.54 (90.0)	1.77 (45.0)	2.02 (51.2)			
BP□□-FNS8-13-3□	1/2 Female NPT	6000 (414)		4.09 (104.0)	2.05 (52.0)	2.44 (62.0)			
BP□□-FNS12-13-3□	3/4 Female NPT	6000 (414)		4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
BP□□-NS12-13-3□	3/4 Male NPT	6000 (414)							
BP□□-ML20-19-3□	20 mm FITOK	5500 (379)		0.71 (18.0)	4.87 (123.8)	2.43 (61.9)			
BP□□-ML22-19-3□	22 mm FITOK	4900 (338)	5.11 (129.8)		2.66 (64.9)	3.00 (76.2)			
BP□□-ML25-19-3□	25 mm FITOK	4600 (317)	4.86 (123.4)		2.43 (61.7)	3.02 (76.7)			
BP□□-FL12-19-3□	3/4" FITOK	5800 (400)	5.11 (129.8)		2.66 (64.9)	2.85 (72.4)			
BP□□-FL16-19-3□	1" FITOK	4700 (324)	3.82 (97.0)		1.91 (48.5)	2.22 (56.5)			
BP□□-FNS12-19-3□	3/4 Female NPT	6000 (414)	4.26 (108.2)		2.13 (54.1)	2.72 (69.1)			
BP□□-FNS16-19-3□	1 Female NPT	6000 (414)	4.54 (115.2)		2.27 (57.6)	2.72 (69.1)			
BP□□-NS12-19-3□	3/4 Male NPT	6000 (414)	4.91 (124.8)		2.45 (62.4)	2.90 (73.9)			
BP□□-NS16-19-3□	1 Male NPT	6000 (414)							

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting 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.

Panel Mounting Options

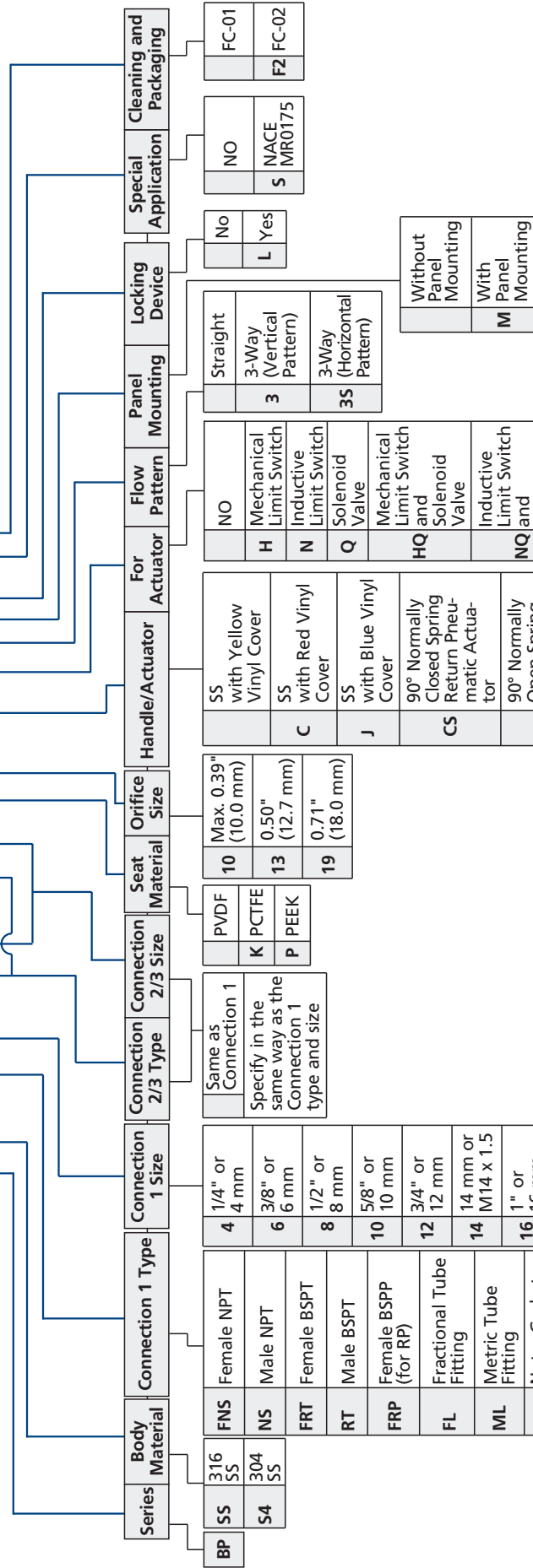
Dimension for Panel Mounting

Orifice in. (mm)	in. (mm)			
	L1	L2	T1	T2
0.39 (10.0)	1.02 (26.0)	1.02 (26.0)	M4 × 0.7P deep 0.19 (5.0)	1.18 (30.0)
0.50 (12.7)	1.18 (30.0)	1.18 (30.0)	M5 × 0.8P deep 0.19 (5.0)	1.18 (30.0)
0.71 (18.0)	1.37 (35.0)	1.57 (40.0)	M5 × 0.8P deep 0.19 (5.0)	1.50 (38.0)



Ordering Number Description

BPSS - ML20 - FL12 - FNS8 - P13 - OSHQ3ML - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Handle/Actuator	For Actuator	Flow Pattern	Panel Mounting	Locking Device	Special Application	Cleaning and Packaging										
BP	SS	FNS	4	1	K	PVDF	10	SS with Yellow Vinyl Cover	H	NO	3	No	NO	FC-01										
			6												Same as Connection 1 Specify in the same way as the Connection 1 type and size	P	19	C	N	3W	L	NACE MR0175	F2 FC-02	
			8																					FRT
10	NS	Male NPT	3/8" or 6 mm	1	PCTFE	13	SS with Red Vinyl Cover	N	Inductive Limit Switch Solenoid Valve	3														
12	FRP	Female BSPT	1/2" or 8 mm											P	PEEK	19	J	Q	Mechanical Limit Switch Solenoid Valve	3S				
14																								
16	ML	Metric Tube Fitting	14 mm or M14 x 1.5	Same as Connection 1 Specify in the same way as the Connection 1 type and size	P	PEEK	0.71" (18.0 mm)	90° Normally Closed Spring Return Pneumatic Actuator	HQ	Mechanical Limit Switch Solenoid Valve	3													
18	UFB	Nut + Gasket + Fractional Tube Bulged Nipple	1" or 16 mm													OS	Inductive Limit Switch Solenoid Valve	3S	Without Panel Mounting					
20	UMB	Nut + Gasket + Metric Tube Bulged Nipple	22 mm or M22 x 1.5																					
22	UPB	Nut + Gasket + Pipe Bulged Nipple	25 25 mm													DA	90° Double Acting Pneumatic Actuator	3S	With Panel Mounting					
25			28 28 mm																					
28			30 30 mm																					
30			32 32 mm																					
32																								

1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.

2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

3. 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 requirements of ASTM G93 Level C.

4. For more information about pneumatic actuator ball valves, please refer to the catalog **Automatic Control Ball Valves**.

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



Hex Bar Stock Ball Valves

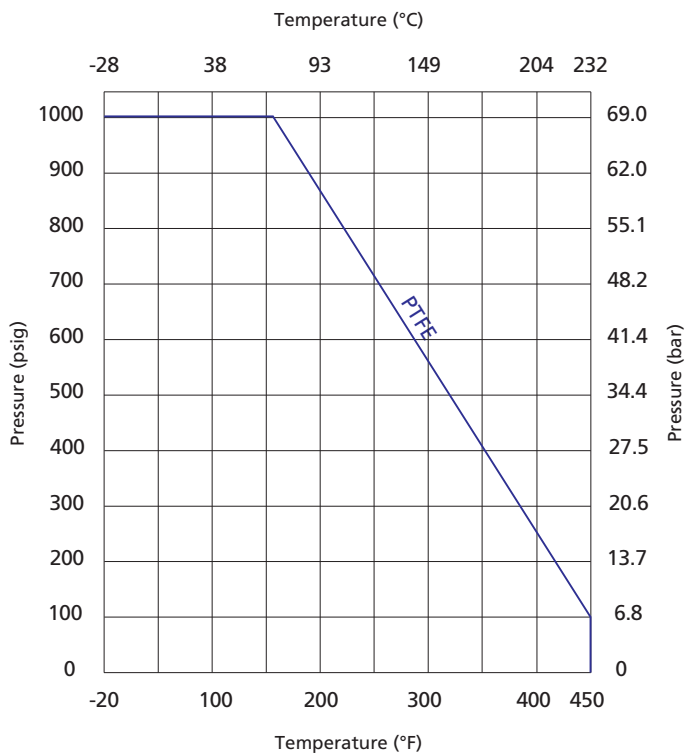
BR Series

Features

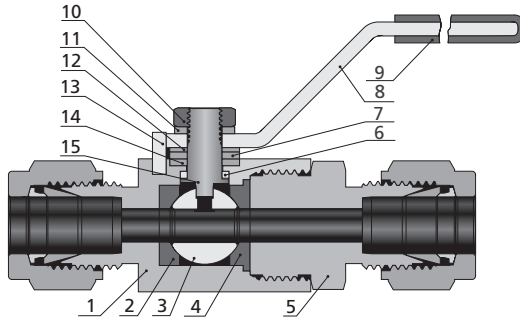
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ Compact and economical design
- ⦿ Free floating ball design for seat wear compensation
- ⦿ Bi-directional flow
- ⦿ Low operating torque
- ⦿ Any reasonable connections available
- ⦿ Blowout proof stem
- ⦿ Handle color options available
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak



Pressure vs. Temperature



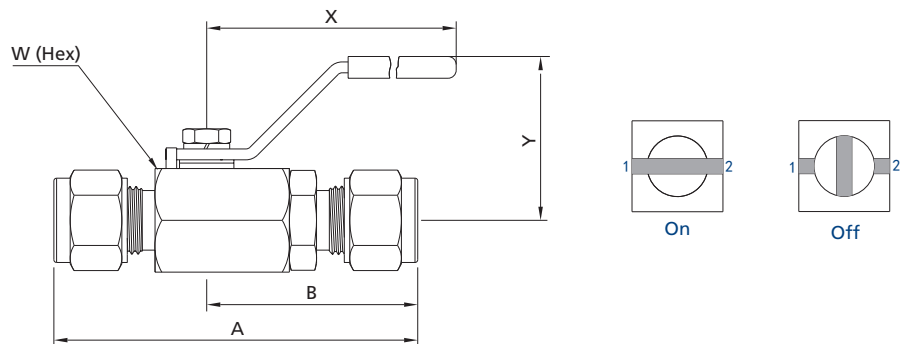
Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	316L SS	Brass
1	<i>Body</i>	<i>316 SS/A479</i>	<i>304 SS/A479</i>	<i>316L SS/A479</i>	<i>Brass C36000/B16</i>
2	<i>Front Seat</i>	<i>PTFE/D1710</i>			
3	<i>Ball</i>	<i>316 SS/A479</i>	<i>304 SS/A479</i>	<i>316L SS/A479</i>	<i>316 SS/A479</i>
4	<i>Back Seat</i>	<i>PTFE/D1710</i>			
5	<i>End Connection</i>	<i>316 SS/A479</i>	<i>304 SS/A479</i>	<i>316L SS/A479</i>	<i>Brass C36000/B16</i>
6	<i>Lower Packing</i>	<i>PTFE/D1710</i>			
7	Washer	316 SS/A479			
8	Handle	304 SS/A240 or Aluminium			
9	Sleeve	Vinyl			
10	Stem Nut	SS			
11	Gasket	SS			
12	Coned-disk Spring	S17700/A693			
13	Stop Pin	SS			
14	<i>Upper Packing</i>	<i>PTFE/D1710</i>			
15	<i>Stem</i>	<i>316 SS/A479</i>	<i>304 SS/A479</i>	<i>316L SS/A479</i>	<i>316 SS/A479</i>

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)					
	Connection 1	Connection 2			A	B	W	X	Y	
BR□□-ML6-05	6 mm FITOK	6 mm FITOK	0.19 (4.8)	1.25	2.57 (65.2)	1.50 (38.1)	3/4 (19.05)	2.36 (60)	1.18 (30)	
BR□□-ML8-05	8 mm FITOK	8 mm FITOK			2.63 (66.8)	1.53 (38.8)				
BR□□-FL4-05	1/4" FITOK	1/4" FITOK			2.57 (65.2)	1.50 (38.1)				
BR□□-FL5-05	5/16" FITOK	5/16" FITOK			2.63 (66.8)	1.53 (38.8)				
BR□□-FNS2-05	1/8 Female NPT	1/8 Female NPT			1.85 (47.0)	1.08 (27.4)				
BR□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP			2.00 (50.0)	1.14 (29.0)				
BR□□-FRP4-05	1/4 Female BSPP	1/4 Female BSPP			2.00 (50.0)	1.14 (29.0)				
BR□□-FNS4-05	1/4 Female NPT	1/4 Female NPT			1.85 (47.0)	1.08 (27.4)				
BR□□-ML10-07	10 mm FITOK	10 mm FITOK	0.28 (7.1)	2.50	2.87 (72.9)	1.68 (42.7)	7/8 (22.23)	1.26 (32)		
BR□□-FL6-07	3/8" FITOK	3/8" FITOK			2.03 (51.6)	1.18 (30.0)				
BR□□-FRP6-07	3/8 Female BSPP	3/8 Female BSPP								
BR□□-FNS6-07	3/8 Female NPT	3/8 Female NPT								
BR□□-ML12-10	12 mm FITOK	12 mm FITOK	0.35 (8.9)	9.25	3.15 (80.0)	1.83 (46.5)	1 1/16 (27.0)	3.15 (80)	1.54 (39)	
BR□□-ML14-10	14 mm FITOK	14 mm FITOK			3.24 (82.2)	1.87 (47.5)				
BR□□-FL8-10	1/2" FITOK	1/2" FITOK			3.15 (80.0)	1.83 (46.5)				
BR□□-FL10-10	5/8" FITOK	5/8" FITOK			3.24 (82.2)	1.87 (47.5)				
BR□□-FRP8-10	1/2 Female BSPP	1/2 Female BSPP			2.08 (53.0)	1.12 (28.5)				15/16 (24.0)
BR□□-FNS8-10	1/2 Female NPT	1/2 Female NPT			2.08 (53.0)	1.12 (28.5)				
BR□□-ML16-13	16 mm FITOK	16 mm FITOK	0.47 (12.0)	12.65	3.50 (88.9)	2.00 (50.8)	1 1/4 (31.75)	3.94 (100)	2.03 (51.7)	
BR□□-ML18-13	18 mm FITOK	18 mm FITOK			2.48 (63.0)	1.30 (33.0)				
BR□□-FL12-13	3/4" FITOK	3/4" FITOK								
BR□□-FRP12-13	3/4 Female BSPP	3/4 Female BSPP								
BR□□-FNS12-13	3/4 Female NPT	3/4 Female NPT								
BR□□-ML22-16	22 mm FITOK	22 mm FITOK	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (57.1)	1 1/2 (38.1)	2.15 (54.8)		
BR□□-ML25-16	25 mm FITOK	25 mm FITOK			4.31 (109.5)	2.42 (61.5)				
BR□□-FL16-16	1" FITOK	1" FITOK			3.25 (82.6)	1.63 (41.3)				
BR□□-FRP16-16	1 Female BSPP	1 Female BSPP								
BR□□-FNS16-16	1 Female NPT	1 Female NPT								

1. FITOK means FITOK double ferrule tube fittings.

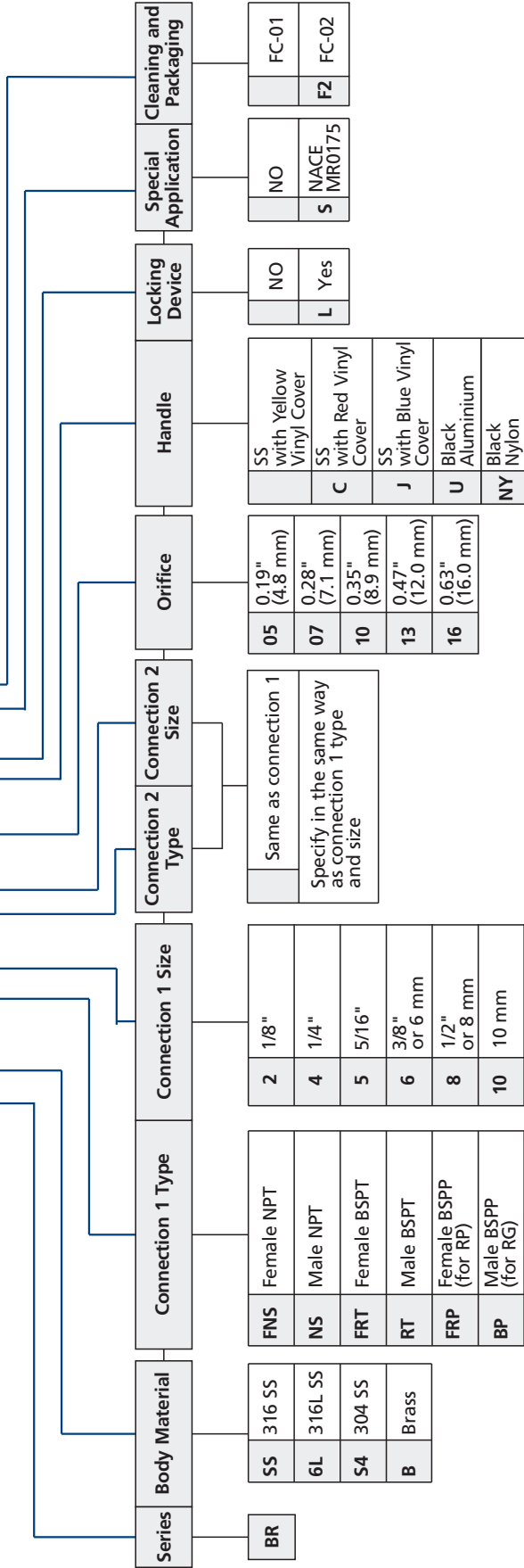
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.

3. Dimensions are shown with tube fitting 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.

Ordering Number Description

BRSS - ML8 - FL4 - 05 - UL - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Orifice	Handle	Locking Device	Special Application	Cleaning and Packaging
BR	SS 316 SS 6L 316L SS S4 304 SS B Brass	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FRP Female BSPP (for RP) BP Male BSPP (for RG) FL Fractional Tube Fitting ML Metric Tube Fitting UFB Nut + Gasket + Fractional Tube Bulged Nipple UMB Nut + Gasket + Metric Tube Bulged Nipple UPB Nut + Gasket + Pipe Bulged Nipple	2 1/8" 4 1/4" 5 5/16" 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 x 1.5 16 1" or 16 mm 18 18 mm 20 1 1/4" or 20 mm or M20 x 1.5 22 22 mm or M22 x 1.5 25 25 mm		Same as connection 1 Specify in the same way as connection 1 type and size	05 0.19" (4.8 mm) 07 0.28" (7.1 mm) 10 0.35" (8.9 mm) 13 0.47" (12.0 mm) 16 0.63" (16.0 mm)	SS with Yellow Vinyl Cover SS with Red Vinyl Cover SS with Blue Vinyl Cover J with Blue Vinyl Cover U Black Aluminium NY Black Nylon	NO L Yes	NO S NACE MR0175	FC-01 FC-02 F2

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

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm

Standard thread pitch should be omitted in the ordering number, others should be specified. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

3. 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 cleaning requirement of ASTM G93 Level C.

High Performance Ball Valves

BV Series

Features

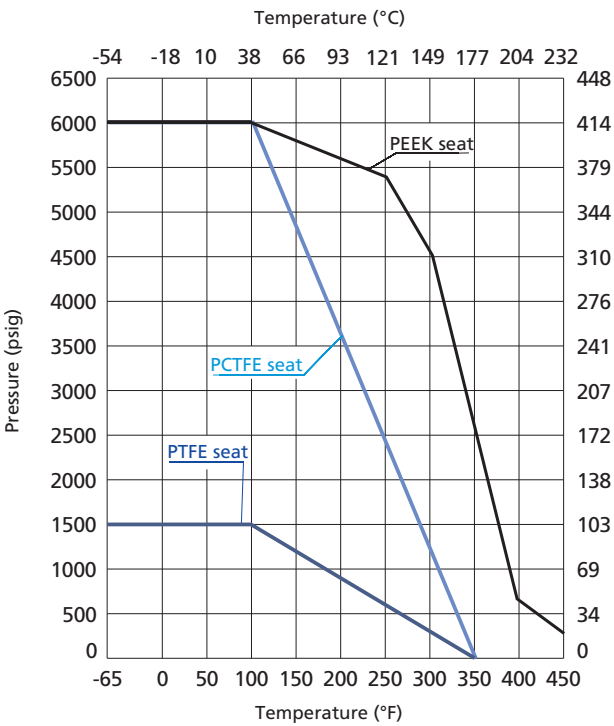
- ⦿ Working pressure up to: 6000 psig (414 bar)
- ⦿ Working temperature: -65°F to 450°F (-54°C to 232°C)
- ⦿ Low operating torque
- ⦿ Handle as indicator of flow direction
- ⦿ Positive handle stop
- ⦿ Electric and pneumatic actuator available
- ⦿ Handle color options available
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve to meet the requirement of no visible leakage at the rated pressure
- ⦿ Bi-directional flow for straight valves
- ⦿ The inlet of 3-way valves and angle pattern valves can only be the bottom port



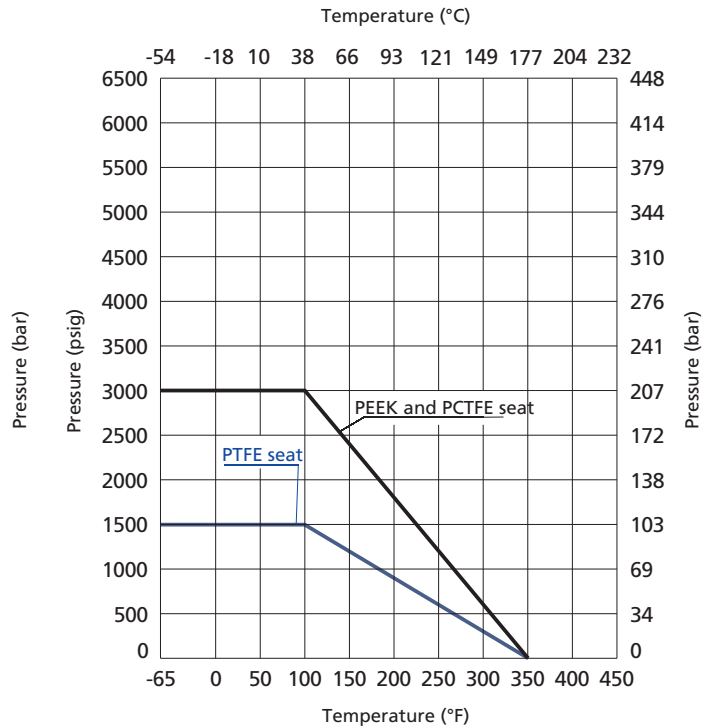
Ball Valves
Plug Valves

Pressure vs. Temperature

316 SS Body



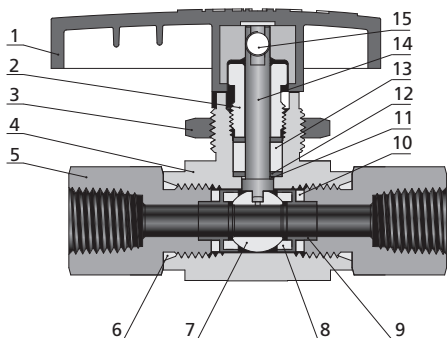
Brass Body



Note: The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the pressure rating of the valve.

Standard Materials of Construction

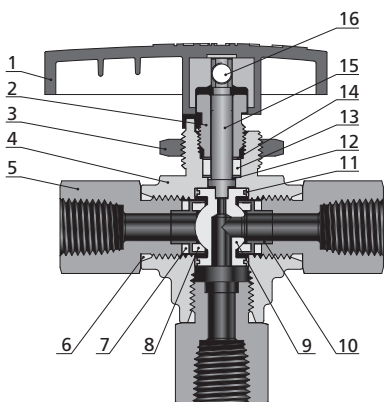
Straight Valves



Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	<i>Body</i>	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	<i>End Connection</i>	<i>316 SS/A479</i>	<i>C36000/B16</i>
6	<i>Connection O-ring</i>	PTFE	
7	<i>Ball</i>	316 SS/A479	
8	<i>Seat</i>	PTFE or PCTFE or PEEK	
9	<i>Seat Retainer</i>	316 SS/A479	
10	<i>Seat Packing</i>	PTFE	
11	<i>Stem Back-up Ring</i>	PEEK	
12	<i>Stem Washer</i>	316/A479	
13	<i>Stem Packing</i>	PTFE	
14	<i>Stem</i>	316 SS/A479	
15	<i>Set Screw</i>	Galvanized carbon steel	
	<i>Lubricants</i>	Fluorinated-based	

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

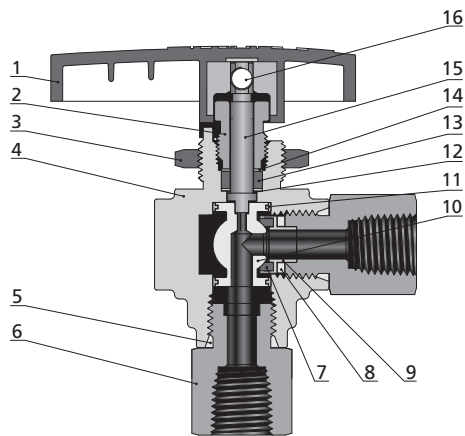
3-way Valves



Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	<i>Body</i>	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	<i>End Connection</i>	<i>316 SS/A479</i>	<i>C36000/B16</i>
6	<i>Connection O-ring</i>	PTFE	
7	<i>Seat Packing</i>	PTFE	
8	<i>Seat</i>	PTFE or PCTFE or PEEK	
9	<i>Ball</i>	316 SS/A479	
10	<i>Seat Retainer</i>	316 SS/A479	
11	<i>Trunnion Bearing</i>	PEEK	
12	<i>Stem Back-up Ring</i>	PEEK	
13	<i>Stem Packing</i>	PTFE	
14	<i>Stem Washer</i>	316 SS/A479	
15	<i>Stem</i>	316 SS/A479	
16	<i>Set Screw</i>	Galvanized carbon steel	
	<i>Lubricants</i>	Fluorinated-based	

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

Angle Pattern Valves



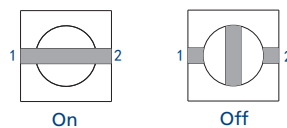
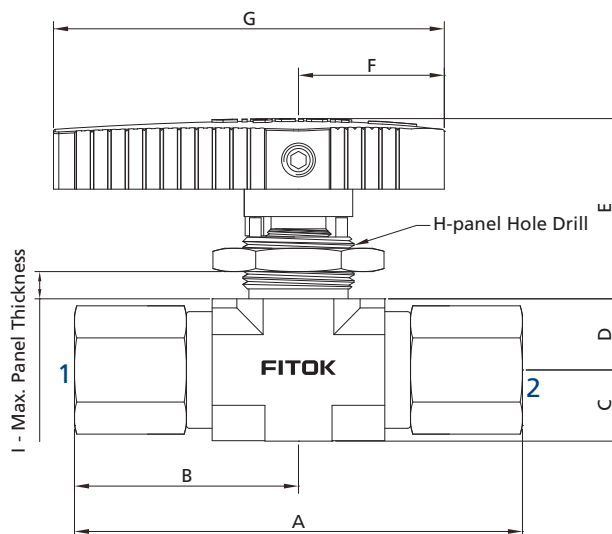
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	<i>Body</i>	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	<i>Connection O-ring</i>	PTFE	
6	<i>End Connection</i>	316 SS/A479	C36000/B16
7	<i>Seat</i>	PTFE or PCTFE or PEEK	
8	<i>Seat Packing</i>	PTFE	
9	<i>Seat Retainer</i>	316 SS/A479	
10	<i>Ball</i>	316 SS/A479	
11	<i>Trunnion Bearing</i>	PEEK	
12	<i>Stem Back-up Ring</i>	PEEK	
13	<i>Stem Packing</i>	PTFE	
14	<i>Stem Washer</i>	316 SS/A479	
15	<i>Stem</i>	316 SS/A479	
16	<i>Set Screw</i>	Galvanized carbon Steel	
	<i>Lubricants</i>	Fluorinated-based	

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

Ball Valves
Plug Valves

Dimensions

Straight Valves

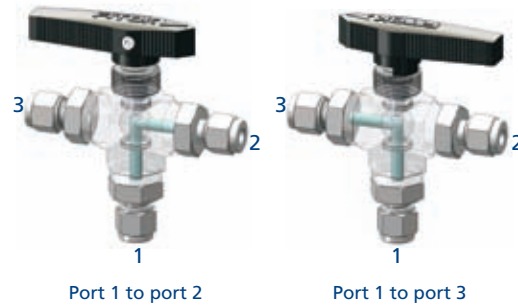
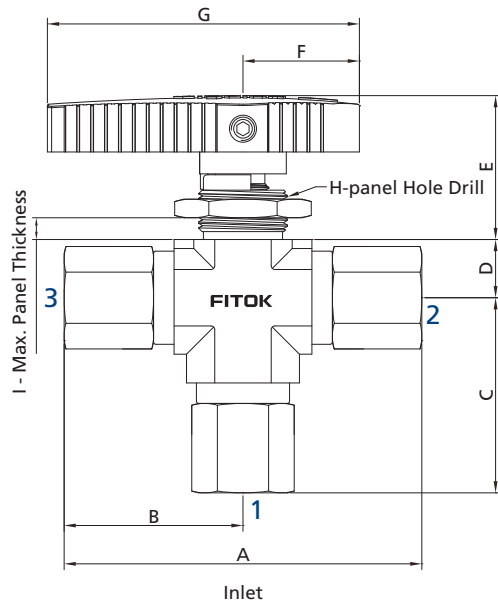


B-48 Ball Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C) psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)																					
		316 SS	Brass			A	B	C	D	E	F	G	H	I													
BV□□-FL1-01	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)																				
BV□□-FL2-02	1/8" FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	2.72 (69.0)	1.36 (34.5)																				
BV□□-ML3-02	3 mm FITOK	6000 (414)	3000 (207)			2.74 (69.6)	1.37 (34.8)																				
BV□□-FRT2-04	1/8 Female BSPT	6000 (414)	3000 (207)	0.17 (4.2)	0.93	2.14 (54.4)	1.07 (27.2)	0.36 (9.2)	0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)													
BV□□-FRP2-04	1/8 Female BSPP	6000 (414)	3000 (207)																								
BV□□-FNS2-04	1/8 Female NPT	6000 (414)	3000 (207)																								
BV□□-RT2-04	1/8 Male BSPT	6000 (414)	3000 (207)																								
BV□□-BP2-04	1/8 Male BSPP	6000 (414)	3000 (207)																								
BV□□-NS2-04	1/8 Male NPT	6000 (414)	3000 (207)																								
BV□□-RT4-04	1/4 Male BSPT	6000 (414)	3000 (207)																								
BV□□-BP4-04	1/4 Male BSPP	6000 (414)	3000 (207)												2.70 (68.6)	1.35 (34.3)											
BV□□-NS4-04	1/4 Male NPT	6000 (414)	3000 (207)																								
BV□□-FL4-05	1/4" FITOK	6000 (414)	3000 (207)			0.19 (4.7)	1.04								3.48 (88.4)	1.74 (44.2)											
BV□□-ML6-05	6 mm FITOK	6000 (414)	3000 (207)												3.50 (89.0)	1.75 (44.5)											
BV□□-FL6-06	3/8" FITOK	6000 (414)	2200 (152)	0.25 (6.4)	2.34	3.60 (91.4)	1.80 (45.7)	0.48 (12.2)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)													
BV□□-ML8-06	8 mm FITOK	6000 (414)	2300 (159)			3.56 (90.4)	1.78 (45.2)																				
BV□□-ML10-06	10 mm FITOK	6000 (414)	1900 (131)			3.62 (92.0)	1.81 (46.0)																				
BV□□-FRT4-06	1/4 Female BSPT	6000 (414)	3000 (207)																								
BV□□-FRP4-06	1/4 Female BSPP	6000 (414)	3000 (207)												3.02 (76.8)	1.51 (38.4)											
BV□□-FNS4-06	1/4 Female NPT	6000 (414)	3000 (207)																								
BV□□-RT4-06	1/4 Male BSPT	6000 (414)	3000 (207)																								
BV□□-BP4-06	1/4 Male BSPP	6000 (414)	3000 (207)																								
BV□□-NS4-06	1/4 Male NPT	6000 (414)	3000 (207)																								
BV□□-RT6-06	3/8 Male BSPT	6000 (414)	3000 (207)																								
BV□□-BP6-06	3/8 Male BSPP	6000 (414)	3000 (207)																								
BV□□-NS6-06	3/8 Male NPT	6000 (414)	3000 (207)																								
BV□□-FL8-10	1/2" FITOK	6000 (414)	2100 (145)	0.41 (10.3)	6.42	4.68 (118.8)	2.34 (59.4)																				
BV□□-FL12-10	3/4" FITOK	5800 (400)	1800 (124)																								
BV□□-ML12-10	12 mm FITOK	6000 (414)	2000 (138)	0.37 (9.5)	5.57																						
BV□□-ML14-10	14 mm FITOK	6000 (414)	1900 (131)	0.41 (10.3)	6.42	4.66 (118.4)	2.33 (59.2)	0.75 (19.0)	0.71 (18.0)	1.54 (39.0)	1.42 (36.0)	3.78 (96.0)	0.90 (22.9)	0.38 (9.7)													
BV□□-ML16-10	16 mm FITOK	5800 (400)	1700 (117)																								
BV□□-ML18-10	18 mm FITOK	5400 (372)	1600 (110)																								
BV□□-ML20-10	20 mm FITOK	5500 (379)	1600 (110)																								
BV□□-ML22-10	22 mm FITOK	4900 (338)	1450 (100)												4.84 (123.0)	2.42 (61.5)											
BV□□-FRT6-10	3/8 Female BSPT	6000 (414)	3000 (207)																								
BV□□-FRP6-10	3/8 Female BSPP	6000 (414)	3000 (207)												3.90 (99.0)	1.95 (49.5)											
BV□□-FNS6-10	3/8 Female NPT	6000 (414)	3000 (207)																								
BV□□-FRT8-10	1/2 Female BSPT	6000 (414)	3000 (207)												4.30 (109.2)	2.15 (54.6)											
BV□□-FRP8-10	1/2 Female BSPP	6000 (414)	3000 (207)												3.97 (101.0)	1.99 (50.5)											
BV□□-FNS8-10	1/2 Female NPT	6000 (414)	3000 (207)												4.30 (109.2)	2.15 (54.6)											
BV□□-FRT12-10	3/4 Female BSPT	6000 (414)	3000 (207)																								
BV□□-FRP12-10	3/4 Female BSPP	6000 (414)	3000 (207)			4.50 (114.2)	2.25 (57.1)																				
BV□□-FNS12-10	3/4 Female NPT	6000 (414)	3000 (207)																								
BV□□-RT8-10	1/2 Male BSPT	6000 (414)	3000 (207)																								
BV□□-BP8-10	1/2 Male BSPP	6000 (414)	3000 (207)																								
BV□□-NS8-10	1/2 Male NPT	6000 (414)	3000 (207)																								
BV□□-RT12-10	3/4 Male BSPT	6000 (414)	3000 (207)			4.44 (112.8)	2.22 (56.4)																				
BV□□-BP12-10	3/4 Male BSPP	6000 (414)	3000 (207)																								
BV□□-NS12-10	3/4 Male NPT	6000 (414)	3000 (207)																								

Ball Valves
Plug Valves

3-way Valves



Ball Valves
Plug Valves

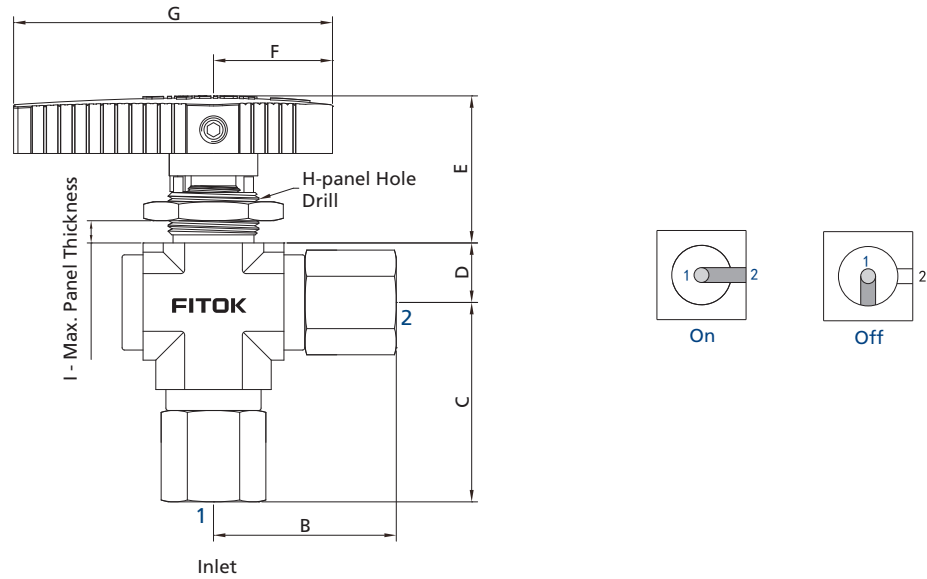
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)													
		316 SS	Brass			A	B	C	D	E	F	G	H	I					
BV□□-FL1-01-3	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	1.35 (34.3)											
BV□□-FL2-02-3	1/8" FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	2.72 (69.0)	1.36 (34.5)	1.41 (35.8)											
BV□□-ML3-02-3	3 mm FITOK	6000 (414)	3000 (207)			2.74 (69.6)	1.37 (34.8)	1.42 (36.1)											
BV□□-FRT2-04-3	1/8 Female BSPT	6000 (414)	3000 (207)	0.12 (3.0)	0.28	2.14 (54.4)	1.07 (27.2)	1.12 (28.5)											
BV□□-FRP2-04-3	1/8 Female BSPP	6000 (414)	3000 (207)																
BV□□-FNS2-04-3	1/8 Female NPT	6000 (414)	3000 (207)								0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)			
BV□□-RT2-04-3	1/8 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP2-04-3	1/8 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS2-04-3	1/8 Male NPT	6000 (414)	3000 (207)																
BV□□-RT4-04-3	1/4 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP4-04-3	1/4 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS4-04-3	1/4 Male NPT	6000 (414)	3000 (207)																
BV□□-FL4-05-3	1/4" FITOK	6000 (414)	3000 (207)			0.19 (4.7)	0.70	3.48 (88.4)	1.74 (44.2)	1.88 (47.7)									
BV□□-ML6-05-3	6 mm FITOK	6000 (414)	3000 (207)																
BV□□-FL6-06-3	3/8" FITOK	6000 (414)	3000 (207)																
BV□□-ML8-06-3	8 mm FITOK	6000 (414)	3000 (207)																
BV□□-ML10-06-3	10 mm FITOK	6000 (414)	3000 (207)																
BV□□-FRT4-06-3	1/4 Female BSPT	6000 (414)	3000 (207)																
BV□□-FRP4-06-3	1/4 Female BSPP	6000 (414)	3000 (207)																
BV□□-FNS4-06-3	1/4 Female NPT	6000 (414)	3000 (207)								0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)			
BV□□-RT4-06-3	1/4 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP4-06-3	1/4 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS4-06-3	1/4 Male NPT	6000 (414)	3000 (207)																
BV□□-RT6-06-3	3/8 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP6-06-3	3/8 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS6-06-3	3/8 Male NPT	6000 (414)	3000 (207)																

B-50 Ball Valves

Ball Valves
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)								
		316 SS	Brass			A	B	C	D	E	F	G	H	I
BV□□-FL8-10-3	1/2" FITOK	6000 (414)	2100 (145)	0.37 (9.5)	3.48	4.68 (118.8)	2.34 (59.4)	2.68 (68.1)	0.71 (18.0)	1.54 (39.0)	1.42 (36.0)	3.78 (96.0)	0.90 (22.9)	0.38 (9.7)
BV□□-FL12-10-3	3/4" FITOK	5800 (400)	1800 (124)			4.66 (118.4)	2.33 (59.2)	2.67 (67.9)						
BV□□-ML12-10-3	12 mm FITOK	6000 (414)	2000 (138)			4.84 (123.0)	2.42 (61.5)	2.76 (70.2)						
BV□□-ML14-10-3	14 mm FITOK	6000 (414)	1900 (131)											
BV□□-ML16-10-3	16 mm FITOK	5800 (400)	1700 (117)			3.90 (99.0)	1.95 (49.5)	2.29 (58.2)						
BV□□-ML18-10-3	18 mm FITOK	5400 (372)	1600 (110)											
BV□□-ML20-10-3	20 mm FITOK	5500 (379)	1600 (110)			4.30 (109.2)	2.15 (54.6)	2.49 (63.3)						
BV□□-ML22-10-3	22 mm FITOK	4900 (338)	1450 (100)											
BV□□-FRT6-10-3	3/8 Female BSPT	6000 (414)	3000 (207)			3.97 (101.0)	1.99 (50.5)	2.33 (59.1)						
BV□□-FRP6-10-3	3/8 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS6-10-3	3/8 Female NPT	6000 (414)	3000 (207)			4.30 (109.2)	2.15 (54.6)	2.49 (63.3)						
BV□□-FRT8-10-3	1/2 Female BSPT	6000 (414)	3000 (207)											
BV□□-FRP8-10-3	1/2 Female BSPP	6000 (414)	3000 (207)			4.50 (114.2)	2.25 (57.1)	2.59 (65.8)						
BV□□-FNS8-10-3	1/2 Female NPT	6000 (414)	3000 (207)											
BV□□-FRT12-10-3	3/4 Female BSPT	6000 (414)	3000 (207)			4.44 (112.8)	2.22 (56.4)	2.56 (65.1)						
BV□□-FRP12-10-3	3/4 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS12-10-3	3/4 Female NPT	6000 (414)	3000 (207)											
BV□□-RT8-10-3	1/2 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP8-10-3	1/2 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS8-10-3	1/2 Male NPT	6000 (414)	3000 (207)											
BV□□-RT12-10-3	3/4 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP12-10-3	3/4 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS12-10-3	3/4 Male NPT	6000 (414)	3000 (207)											

Angle Pattern Valves



Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)										
		316 SS	Brass			B	C	D	E	F	G	H	I			
BV□□-FL1-01-A	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	1.30 (33.0)	1.35 (34.3)									
BV□□-FL2-02-A	1/8" FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	1.36 (34.5)	1.41 (35.8)									
BV□□-ML3-02-A	3 mm FITOK	6000 (414)	3000 (207)			1.37 (34.8)	1.42 (36.1)									
BV□□-FRT2-04-A	1/8 Female BSPT	6000 (414)	3000 (207)			1.07 (27.2)	1.12 (28.5)									
BV□□-FRP2-04-A	1/8 Female BSPP	6000 (414)	3000 (207)	0.12 (3.0)	0.28			0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)			
BV□□-FNS2-04-A	1/8 Female NPT	6000 (414)	3000 (207)			1.18 (30.0)	1.23 (31.3)									
BV□□-RT2-04-A	1/8 Male BSPT	6000 (414)	3000 (207)													
BV□□-BP2-04-A	1/8 Male BSPP	6000 (414)	3000 (207)													
BV□□-NS2-04-A	1/8 Male NPT	6000 (414)	3000 (207)													
BV□□-RT4-04-A	1/4 Male BSPT	6000 (414)	3000 (207)													
BV□□-BP4-04-A	1/4 Male BSPP	6000 (414)	3000 (207)					1.35 (34.3)	1.40 (35.6)							
BV□□-NS4-04-A	1/4 Male NPT	6000 (414)	3000 (207)													
BV□□-FL4-05-A	1/4" FITOK	6000 (414)	3000 (207)			0.19 (4.7)	0.70	1.74 (44.2)	1.88 (47.7)							
BV□□-ML6-05-A	6 mm FITOK	6000 (414)	3000 (207)					1.75 (44.5)	1.89 (48.0)							
BV□□-FL6-06-A	3/8" FITOK	6000 (414)	2200 (152)	1.80 (45.7)	1.94 (49.2)											
BV□□-ML8-06-A	8 mm FITOK	6000 (414)	2300 (159)	1.78 (45.2)	1.92 (48.7)											
BV□□-ML10-06-A	10 mm FITOK	6000 (414)	1900 (131)	1.81 (46.0)	1.95 (49.5)											
BV□□-FRT4-06-A	1/4 Female BSPT	6000 (414)	3000 (207)													
BV□□-FRP4-06-A	1/4 Female BSPP	6000 (414)	3000 (207)					1.51 (38.4)	1.65 (41.9)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)	
BV□□-FNS4-06-A	1/4 Female NPT	6000 (414)	3000 (207)													
BV□□-RT4-06-A	1/4 Male BSPT	6000 (414)	3000 (207)													
BV□□-BP4-06-A	1/4 Male BSPP	6000 (414)	3000 (207)													
BV□□-NS4-06-A	1/4 Male NPT	6000 (414)	3000 (207)													
BV□□-RT6-06-A	3/8 Male BSPT	6000 (414)	3000 (207)					1.62 (41.1)	1.76 (44.6)							
BV□□-BP6-06-A	3/8 Male BSPP	6000 (414)	3000 (207)													
BV□□-NS6-06-A	3/8 Male NPT	6000 (414)	3000 (207)													

Ball Valves
Plug Valves

B-52 Ball Valves

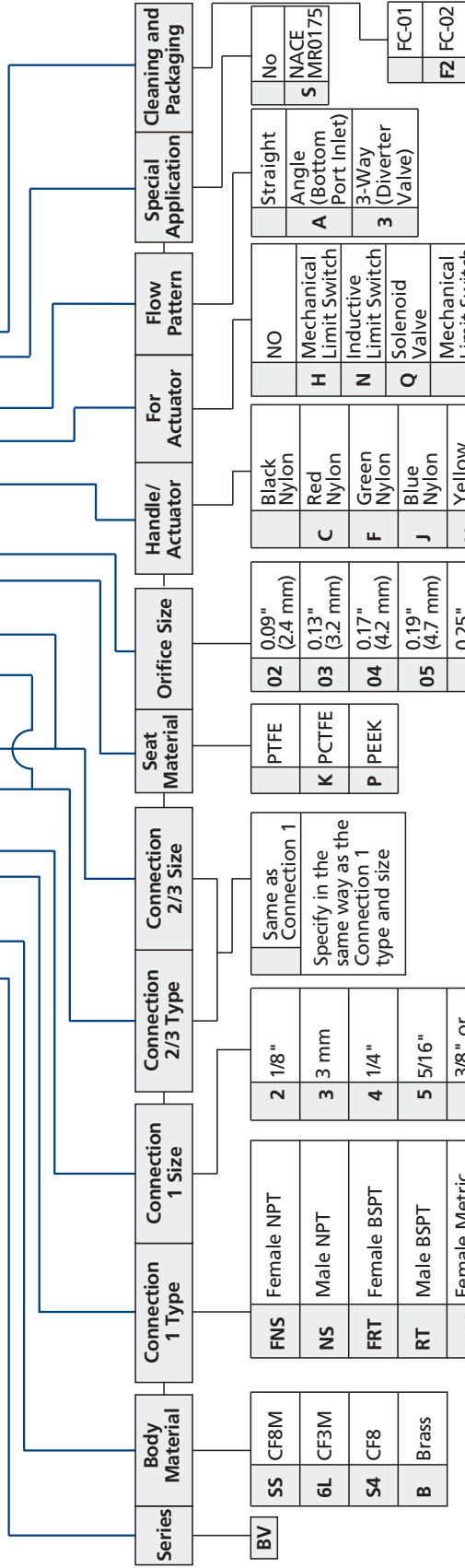
Ball Valves
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)							
	Connection 1/2	316 SS	Brass			B	C	D	E	F	G	H	I
BV□□-FL8-10-A	1/2" FITOK	6000 (414)	2100 (145)	0.37 (9.5)	3.48	2.34(59.4)	2.68(68.1)	0.71 (18.0)	1.54 (39.0)	1.42 (36.0)	3.78 (96.0)	0.90 (22.9)	0.38 (9.7)
BV□□-FL12-10-A	3/4" FITOK	5800 (400)	1800 (124)										
BV□□-ML12-10-A	12 mm FITOK	6000 (414)	2000 (138)										
BV□□-ML14-10-A	14 mm FITOK	6000 (414)	1900 (131)			2.33 (59.2)	2.67 (67.9)						
BV□□-ML16-10-A	16 mm FITOK	5800 (400)	1700 (117)										
BV□□-ML18-10-A	18 mm FITOK	5400 (372)	1600 (110)										
BV□□-ML20-10-A	20 mm FITOK	5500 (379)	1600 (110)			2.42 (61.5)	2.76 (70.2)						
BV□□-ML22-10-A	22 mm FITOK	4900 (338)	1450 (100)										
BV□□-FRT6-10-A	3/8 Female BSPT	6000 (414)	3000 (207)			1.95 (49.5)	2.29 (58.2)						
BV□□-FRP6-10-A	3/8 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS6-10-A	3/8 Female NPT	6000 (414)	3000 (207)										
BV□□-FRT8-10-A	1/2 Female BSPT	6000 (414)	3000 (207)			2.15 (54.6)	2.49 (63.3)						
BV□□-FRP8-10-A	1/2 Female BSPP	6000 (414)	3000 (207)			1.99 (50.5)	2.33 (59.1)						
BV□□-FNS8-10-A	1/2 Female NPT	6000 (414)	3000 (207)			2.15 (54.6)	2.49 (63.3)						
BV□□-FRT12-10-A	3/4 Female BSPT	6000 (414)	3000 (207)										
BV□□-FRP12-10-A	3/4 Female BSPP	6000 (414)	3000 (207)			2.25 (57.1)	2.59 (65.8)						
BV□□-FNS12-10-A	3/4 Female NPT	6000 (414)	3000 (207)										
BV□□-RT8-10-A	1/2 Male BSPT	6000 (414)	3000 (207)										
BV□□-BP8-10-A	1/2 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS8-10-A	1/2 Male NPT	6000 (414)	3000 (207)										
BV□□-RT12-10-A	3/4 Male BSPT	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
BV□□-BP12-10-A	3/4 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS12-10-A	3/4 Male NPT	6000 (414)	3000 (207)										

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting 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.

Ordering Number Description

BVSS - FL8 - ML12 - ML10 - P06 - RXHQ3 - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Handle/Actuator	For Actuator	Flow Pattern	Special Application	Cleaning and Packaging
BV	SS CF8M	FNS Female NPT	2 1/8"	2 1/8"	02 0.09" (2.4 mm)	PTFE	C Black Nylon	H NO	NO	Straight	No	
	6L CF3M	NS Male NPT	3 3 mm	3 3 mm	03 0.13" (3.2 mm)	K PCTFE	F Red Nylon	N Inductive Limit Switch	Mechanical Limit Switch	A Angle (Bottom Port Inlet)	NACE S MRO175	
	S4 CF8	FRT Female BSPT	4 1/4"	4 1/4"	04 0.17" (4.2 mm)	P PEEK	J Green Nylon	Q Solenoid Valve	Inductive Limit Switch	3 3-Way (Diverter Valve)	FC-01	
	B Brass	RT Male BSPT	5 5/16"	5 5/16"	05 0.19" (4.7 mm)		Y Yellow Nylon	HQ and Solenoid Valve	Mechanical Limit Switch		F2 FC-02	
		FMS Female Metric Thread (for RG)	6 3/8" or 16 mm or M6 x 1	6 3/8" or 16 mm or M6 x 1	06 0.25" (6.4 mm)		U Black Aluminium	NQ Inductive Limit Switch	Inductive Limit Switch			
		MS Male Metric Thread (for RG)	8 1/2" or 8 mm	8 1/2" or 8 mm	10 0.41" (10.3 mm)		CS 90° Normally Closed Spring Return Pneumatic Actuator					
		FRP Female BSPP (For Rp)	10 10 mm or M10 x 1	10 10 mm or M10 x 1			OS 90° Normally Open Spring Return Pneumatic Actuator					
		BP Male BSPP (For Rg)	12 3/4" or 12 mm	12 3/4" or 12 mm			DA 90° Double Acting Pneumatic Actuator					
		FL Fractional Tube Fitting	14 14 mm or M14 x 1.5	14 14 mm or M14 x 1.5			LX 180° Left End Normally Open Spring Return Pneumatic Actuator					
		ML Metric Tube Fitting	16 16 mm	16 16 mm			RX 180° Right End Normally Open Spring Return Pneumatic Actuator					
		UFB Nut + Gasket + Fractional Tube Bulged Nipple	18 18 mm	18 18 mm			DX 180° Double Acting Pneumatic Actuator					
		UMB Nut + Gasket + Metric Tube Bulged Nipple	20 20 mm or M20 x 1.5	20 20 mm or M20 x 1.5			EA 90° Electric Actuator					
		UPB Nut + Gasket + Pipe Bulged Nipple	22 22 mm or M22 x 1.5	22 22 mm or M22 x 1.5			EX 180° Electric Actuator					

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

1. Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 Standard thread pitch should be omitted in the ordering number, others should be specified.

2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

3. 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 cleaning requirement of ASTM G93 Level C.

4. For more information about pneumatic actuator ball valves, please refer to the catalog **Automatic Control Ball Valves**.

Plug Valves

PV Series

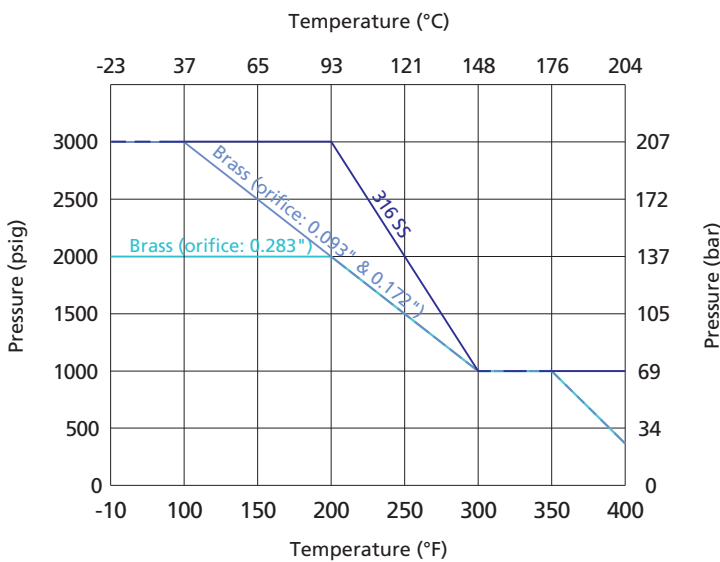
Ball Valves
Plug Valves



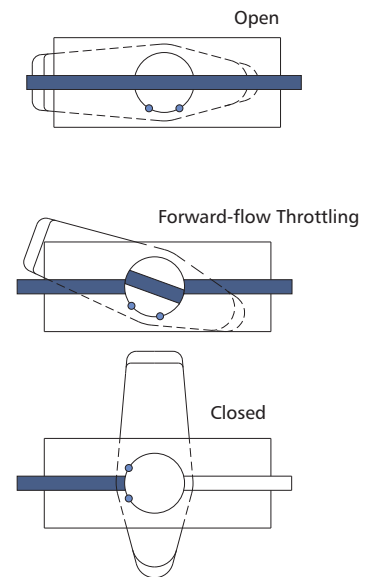
Features

- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⦿ Sizes from 1/8" to 3/4" and 6 to 12 mm
- ⦿ Easy to maintain and clean
- ⦿ Low operating torque
- ⦿ Replaceable plug assembly
- ⦿ Handle as indicator of flow direction
- ⦿ Options for handle color
- ⦿ Positive handle shutoff
- ⦿ Bottom end connections as the only inlet port for 3-way valves
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the maximum working pressure to meet the requirement of no visible leak

Pressure vs. Temperature



Operation (2-way)



1. Differential pressure is limited to 150 psig (10.3 bar) maximum if reverse flow occurs.
2. Reverse flow throttling may damage O-ring.

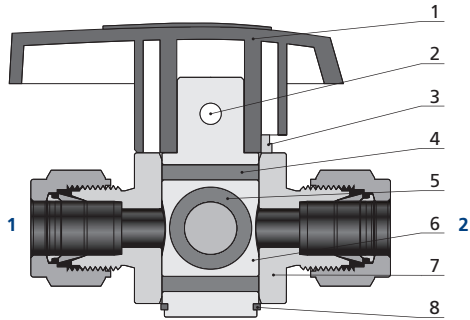
Downstream Vents (2-way)

Plug and valve body allow pressure to be released to atmosphere when closed. Maximum working pressure: 150 psig (10.3 bar).



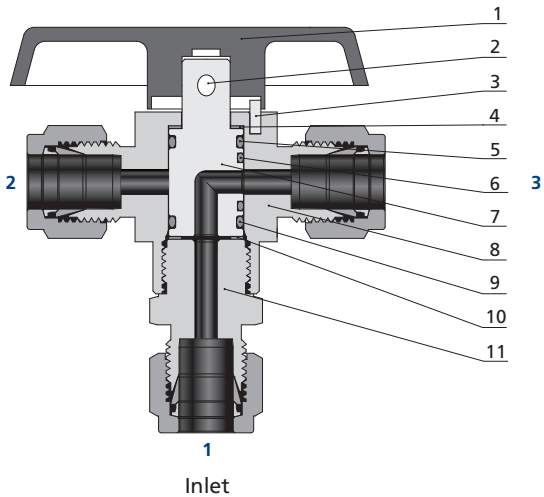
Standard Materials of Construction

2-way



Item	Component	Material Grade/ASTM Specification	
		Valve Body Material	
		316 SS	Brass
1	Handle	Nylon or Aluminium	
2	Handle Pin	Stainless steel	
3	Body Pin	Stainless steel	
4	O-ring	Fluorocarbon FKM or Neoprene or EPDM or Buna N or Kalrez	
5	O-ring	Fluorocarbon FKM or Neoprene or EPDM or Buna N or Kalrez	
6	Plug	PTFE-coated 316 SS/A479	PTFE-coated brass/B453
7	Body	316 SS/A479	Brass/B453
8	Retaining Ring	Stainless steel	
Lubricant		Silicone-based	

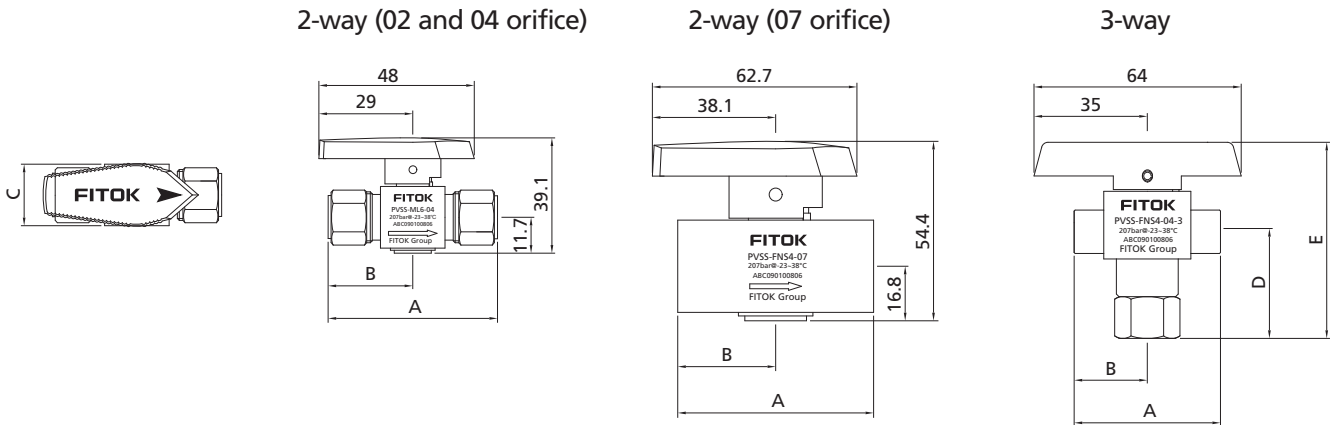
3-way



Note: The 3-way plug valve is in working state when the handle is in limit positions. There will be a short moment of interconnection for the three ports when rotating the handle.

Item	Component	Material Grade/ASTM Specifications	
		Valve Body Material	
		316 SS	Brass
1	Handle	Aluminium	
2	Handle Pin	Stainless steel	
3	Body Pin	Stainless steel	
4	Gasket	PTFE	
5	O-ring	Fluorocarbon FKM or Neoprene or EPDM or Buna N or Kalrez	
6	O-ring	Fluorocarbon FKM or Neoprene or EPDM or Buna N or Kalrez	
7	Plug	PTFE-coated 316 SS/A479	PTFE-coated brass/B453
8	Body	316 SS/A479	Brass/B453
9	O-ring	Fluorocarbon FKM or Neoprene or EPDM or Buna N or Kalrez	
10	Gasket	PTFE	
11	Fitting	316 SS/A479	Brass/B453
Lubricant		Silicone-based	

Dimensions



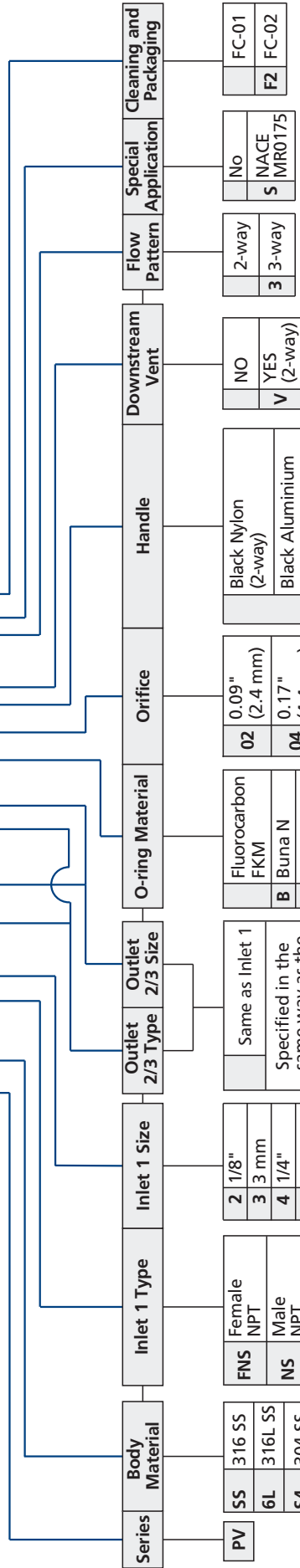
Ball Valves
Plug Valves

Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
2-way	3-way	Inlet 1	Outlet 2/3			A	B	C	D	E
PV□□-FL2-02	PV□□-FL2-02-3	1/8" FITOK	1/8" FITOK	0.09 (2.4)	0.10	1.99 (50.5)	0.98 (24.9)	0.75 (19.0)	1.61 (40.8)	2.69 (68.4)
PV□□-FL4-04	PV□□-FL4-04-3	1/4" FITOK	1/4" FITOK	0.17 (4.4)	1.6	2.17 (55.1)	1.08 (27.4)		1.70 (43.3)	2.79 (70.9)
PV□□-FL6-04	PV□□-FL6-04-3	3/8" FITOK	3/8" FITOK		1.1	2.29 (58.2)	1.14 (29.0)		1.76 (44.8)	2.85 (72.4)
PV□□-FL6-07	PV□□-FL6-07-3	3/8" FITOK	3/8" FITOK	0.28 (7.2)	6.4	2.66 (67.6)	1.33 (33.8)	1.12 (28.5)	2.16 (54.8)	3.43 (87.2)
PV□□-FL8-07	PV□□-FL8-07-3	1/2" FITOK	1/2" FITOK		4.4	2.88 (73.2)	1.44 (36.6)		2.26 (57.3)	3.53 (89.7)
PV□□-ML3-02	PV□□-ML3-02-3	3 mm FITOK	3 mm FITOK	0.09 (2.4)	0.10	1.99 (50.5)	0.98 (24.9)	0.75 (19.0)	1.61 (40.8)	2.69 (68.4)
PV□□-ML6-04	PV□□-ML6-04-3	6 mm FITOK	6 mm FITOK	0.17 (4.4)	1.6	2.17 (55.1)	1.08 (27.4)		1.70 (43.3)	2.79 (70.9)
PV□□-ML10-07	PV□□-ML10-07-3	10 mm FITOK	10 mm FITOK		6.4	2.68 (68.1)	1.34 (34.0)		2.17 (55.1)	3.44 (87.5)
PV□□-ML12-07	PV□□-ML12-07-3	12 mm FITOK	12 mm FITOK	0.28 (7.2)	4.8	2.96 (75.2)	1.44 (36.6)	1.12 (28.5)	2.26 (57.5)	3.54 (89.9)
PV□□-FNS2-04	PV□□-FNS2-04-3	1/8 Female NPT	1/8 Female NPT		0.17 (4.4)	1.2	1.78 (45.2)		0.89 (22.6)	0.75 (19.0)
PV□□-FNS4-04	PV□□-FNS4-04-3	1/4 Female NPT	1/4 Female NPT	0.9		2.10 (53.4)	1.05 (26.7)	1.50 (38.0)	2.58 (65.6)	
PV□□-FNS4-07	PV□□-FNS4-07-3	1/4 Female NPT	1/4 Female NPT	0.28 (7.2)	4.3	2.38 (60.5)	1.19 (30.2)	1.12 (28.5)	1.89 (48.0)	3.17 (80.4)
PV□□-FNS8-07	PV□□-FNS8-07-3	1/2 Female NPT	1/2 Female NPT		2.7	2.88 (73.2)	1.44 (36.6)		2.08 (52.8)	3.35 (85.2)
PV□□-NS2-04	PV□□-NS2-04-3	1/8 Male NPT	1/8 Male NPT	0.17 (4.4)	1.0	1.53 (38.9)	0.76 (19.3)	0.75 (19.0)	1.37 (34.9)	2.46 (62.5)
PV□□-NS4-04	PV□□-NS4-04-3	1/4 Male NPT	1/4 Male NPT		1.0	1.90 (48.3)	0.95 (24.1)		1.55 (39.4)	2.64 (67.0)
PV□□-NS8-07	PV□□-NS8-07-3	1/2 Male NPT	1/2 Male NPT	0.28 (7.2)	2.4	2.64 (67.1)	1.32 (33.5)	1.12 (28.5)	2.15 (54.5)	3.42 (86.9)
PV□□-FRT2-04	PV□□-FRT2-04-3	1/8 Female BSPT	1/8 Female BSPT	0.17 (4.4)	1.2	1.78 (45.2)	0.89 (22.6)	0.75 (19.0)	1.31 (33.4)	2.40 (61.0)
PV□□-FRT4-04	PV□□-FRT4-04-3	1/4 Female BSPT	1/4 Female BSPT		0.9	2.09 (53.1)	1.11 (28.2)		1.50 (38.0)	2.58 (65.6)
PV□□-FRT4-07	PV□□-FRT4-07-3	1/4 Female BSPT	1/4 Female BSPT	0.28 (7.2)	4.3	2.38 (60.5)	1.19 (30.2)	1.12 (28.5)	1.99 (50.5)	3.26 (82.9)
PV□□-FRT8-07	PV□□-FRT8-07-3	1/2 Female BSPT	1/2 Female BSPT		2.7	2.88 (73.2)	1.57 (39.9)		2.18 (55.3)	3.45 (87.7)

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please refer to the ordering information.
3. Dimensions are shown with FITOK tube fitting 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.

Ordering Number Description

PVSS—FL8—ML12—FL8—B04GV—3SF2



Series	Body Material	Inlet 1 Type	Inlet 1 Size	Outlet 2/3 Type	Outlet 2/3 Size	O-ring Material	Orifice	Handle	Downstream Vent	Flow Pattern	Special Application	Cleaning and Packaging
PV	SS 316 SS 6L 316L SS S4 304 SS B Brass 904L 904L SS	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FMS Female Metric Thread (for RG) MS Male Metric Thread (for RG) FRP Female BSPP (for RP) BP Male BSPP (for RG) FL Fractional Tube Fitting ML Metric Tube Fitting	2 1/8" 3 3 mm 4 1/4" 6 3/8" or 6 mm 8 1/2" or 8 mm 10 10 mm 12 3/4" or 12 mm	Same as Inlet 1 Specified in the same way as the inlet 1 type and size	02 0.09" (2.4 mm) 04 0.17" (4.4 mm) 07 0.28" (7.2 mm)	Fluorocarbon FKM B Buna N E EPDM N Neoprene Z Kalrez	Black Nylon (2-way) Black Aluminium (3-way) Red Nylon (2-way) Red Aluminium (3-way) Green Nylon (2-way) Green Aluminium (3-way) Yellow Nylon (2-way) Yellow Aluminium (3-way) Blue Nylon (2-way) Blue Aluminium (3-way) Black Aluminium (2-way)	NO YES V (2-way)	2-way 3 3-way	No NACE S MR0175	FC-01 FC-02 F2	

1. Standard thread pitch for metric threads are as follows:

- M10 and below: 1 mm
- M12 to M24: 1.5 mm

Standard thread pitch should be omitted in the ordering number, others should be specified.

2. For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.

3. 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.

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

Needle Valves, Metering Valves

Needle Valves



B-60

Metering Valves



B-103

Needle Valves
Metering Valves

Needle Valves

NB, NBH, ND, NDH, NF, NFH, NG, NGH, NR, NRG, NT, NU, NUH and NY Series

Needle Valves
Metering Valves



Contents

Bar Stock Needle Valves

NB Series and NBH Series



B-62

Nonrotating-stem Needle Valves

ND Series and NDH Series



B-68

Forged Needle Valves

NF Series and NFH Series



B-72

General Purpose Needle Valves

NG Series and NGH Series



B-78

Rising Plug Valves

NR Series and NRG Series



B-85

Toggle Valves

NT Series



B-89

Union Bonnet Needle Valves

NU Series and NUH Series



B-93

Outside Screw and Yoke (OS&Y) Needle Valves

NY Series



B-99

Bar Stock Needle Valves

NB Series: Working pressure up to 6000 psig

NBH Series: Working pressure up to 10000 psig

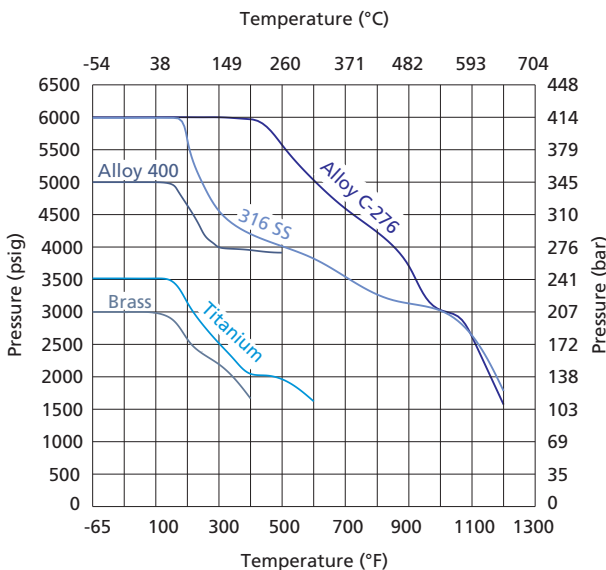


Features

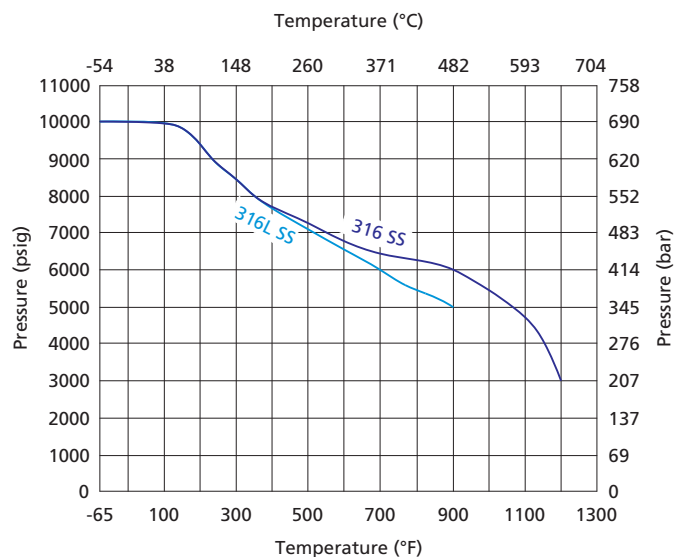
- ⦿ Cold drawn bar as body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air (NB Series) at the maximum allowable working pressure or with water (NBH Series) at 1.1 times maximum allowable working pressure
- ⦿ Working pressure up to:
 - NB Series—Stainless steel: 6000 psig (414 bar)
 - Alloy C-276: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
 - Titanium: 3500 psig (241 bar)
 - Brass: 3000 psig (207 bar)
 - NBH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
 - PTFE: -65°F to 450°F (-54°C to 232°C)
 - PEEK: -65°F to 500°F (-54°C to 260°C)
 - Graphite: -65°F to 1200°F (-54°C to 649°C)

Pressure vs. Temperature

NB Series



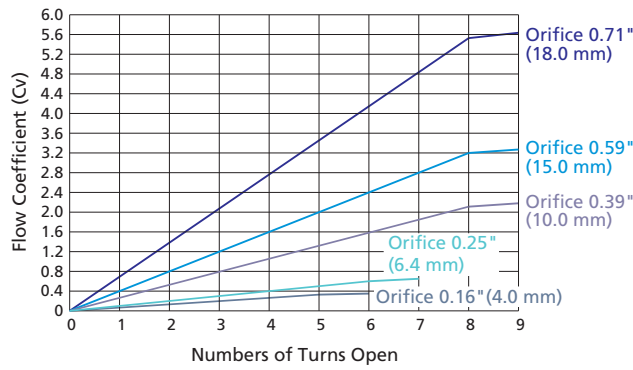
NBH Series



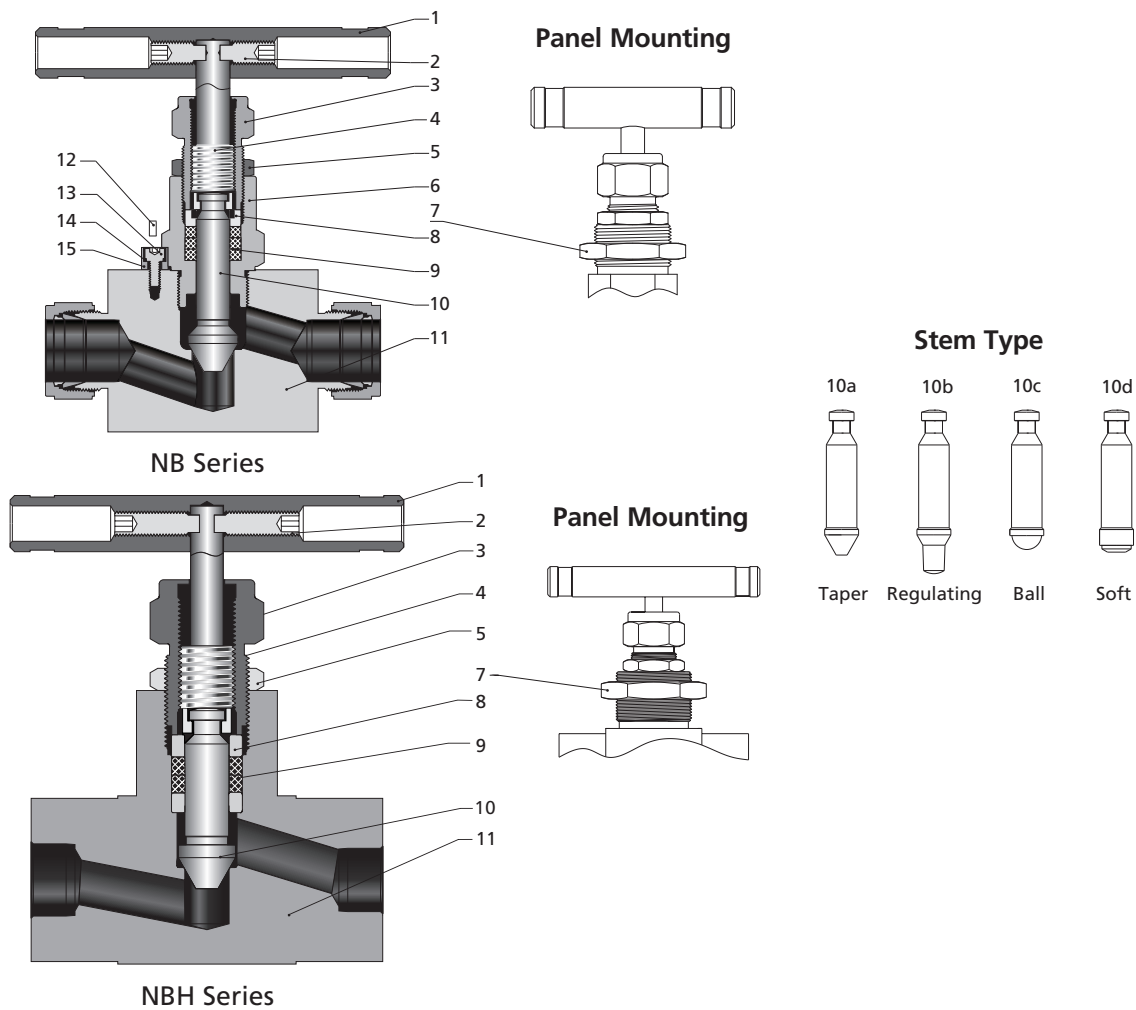
1. Graphs are based on graphite packing.
 2. Soft tips are for NB Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
 3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem



Standard Materials of Construction

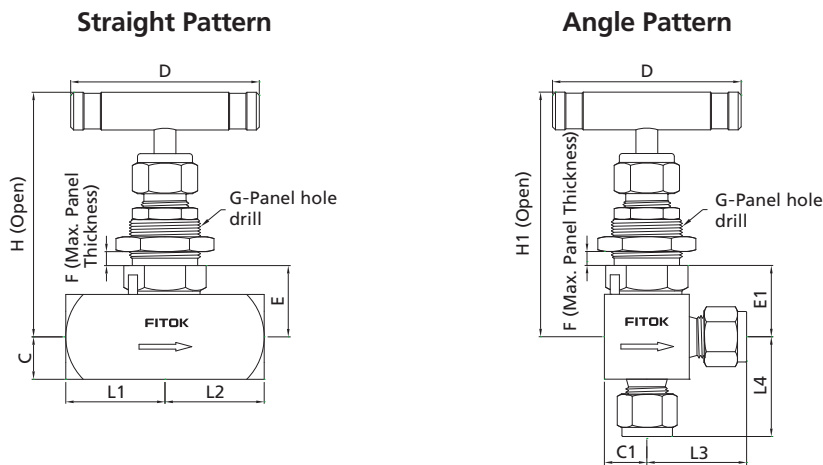


Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Galvanized carbon steel				
3	Packing Bolt	304 SS/A276			Brass C36000/B16	
4	Upper Stem	316 SS/A276				
5	Lock Nut	Stainless steel				
6	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass C36000/B16

Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
Material Grade/ASTM Specification						
7	Panel Nut	Stainless steel				Brass C36000/B16
8	Gland	316 SS/A276				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c 10d	Lower Stem	Hardened 316 SS/A276	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Hardened 316 SS/A276
11	Body	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass C36000/B16
	Seat	Same as Body				
12	Lock Pin	Stainless steel				
13	Screw	Stainless steel				
14	Spring Washer	Stainless steel				
15	Bush	Stainless steel				
	Lubricant	Molybdenum disulfide-based				

- Item 12 is applied in valves with orifice of 4.0 and 6.0mm. For valves with orifice of 10.0, 15.0 and 18.0mm, item 13, 14 and 15 are used instead of item 12.
- Contact FITOK Group or our authorized distributors for other materials.

Dimensions



© NB Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBSS-FNS2-7-Y

Dimensions of NB Series

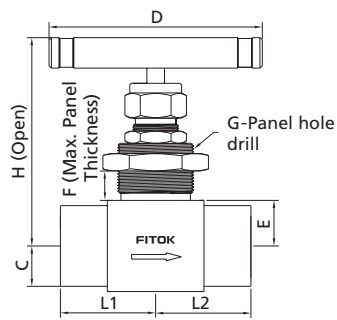
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	0.84 (21.4)	0.84 (21.4)	0.25 (6.4)	0.77 (19.6)	2.86 (72.7)	2.86 (72.7)
NB□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)											
NB□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)									
NB□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)											
NB□□-FL4-7	1/4" FITOK	1/4" FITOK			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)									
NB□□-ML6-7	6 mm FITOK	6 mm FITOK															
NB□□-ML8-7	8 mm FITOK	8 mm FITOK															
NB□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)
NB□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)									
NB□□-NS6-8	3/8 Male NPT	3/8 Male NPT															
NB□□-FL6-8	3/8" FITOK	3/8" FITOK															
NB□□-FL8-8	1/2" FITOK	1/2" FITOK															

Dimensions of NB Series

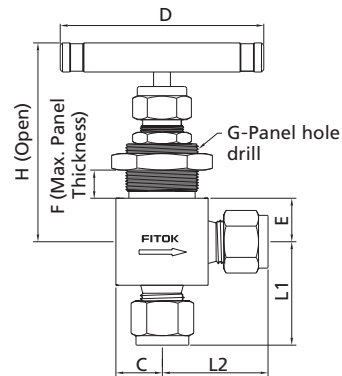
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																							
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1											
NB□□-ML10-8	10 mm FITOK	10 mm FITOK	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)											
NB□□-ML12-8	12 mm FITOK	12 mm FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)																				
NB□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)																						
NB□□-TS6-8-G	3/8" TS	3/8" TS																										
NB□□-TS8-8-G	1/2" TS	1/2" TS																										
NB□□-MTS12-8-G	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)																				
NB□□-MTS14-8-G	14 mm MTS	14 mm MTS																										
NB□□-MTS16-8-G	16 mm MTS	16 mm MTS																										
NB□□-MTB14-8-G	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)																				
NB□□-MTB16-8-G	16 mm MTB	16 mm MTB																										
NB□□-UMB14-8	14 mm UMB	14 mm UMB			2.92 (74.1)	2.92 (74.1)																						
NB□□-UMB16-8	16 mm UMB	16 mm UMB																										
NB□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)																						
NB□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric																										
NB□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.88 (22.2)	0.75 (19.05)	3.50 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.11 (104.5)	4.11 (104.5)											
NB□□-FNS12-9	3/4 Female NPT	3/4 Female NPT																										
NB□□-NS12-9	3/4 Male NPT	3/4 Male NPT				1.50 (38.1)																						
NB□□-FL12-9	3/4" FITOK	3/4" FITOK																										
NB□□-ML14-9	14 mm FITOK	14 mm FITOK			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)																				
NB□□-ML16-9	16 mm FITOK	16 mm FITOK																										
NB□□-ML18-9	18 mm FITOK	18 mm FITOK																										
NB□□-MTS14-9-G	14 mm MTS	14 mm MTS			1.75 (44.5)	1.75 (44.5)																						
NB□□-MTS16-9-G	16 mm MTS	16 mm MTS																										
NB□□-TS12-9-G	3/4" TS	3/4" TS																										
NB□□-UMB14-9	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)																						
NB□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric			1.56 (39.7)	1.56 (39.7)																						
NB□□-FNS12-6	3/4 Female NPT	3/4 Female NPT			0.59 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)										1.75 (44.5)	1.14 (29.0)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	1.70 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.00 (127)	4.72 (120)
NB□□-TS16-6-G	1" TS	1" TS																										
NB□□-MTS25-6-G	25 mm MTS	25 mm MTS	1.75 (44.5)	1.75 (44.5)			1.75 (44.5)	1.75 (44.5)																				
NB□□-MTS28-6-G	28 mm MTS	28 mm MTS																										
NB□□-PS12-6-G	3/4 PS	3/4 PS																										
NB□□-FNS16-0	1 Female NPT	1 Female NPT	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)			1.24 (31.5)		5.00 (127)					5.25 (133.3)												
NB□□-MTS25-0-G	25 mm MTS	25 mm MTS																										
NB□□-TS16-0-G	1" TS	1" TS																										
NB□□-MTS28-0-G	28 mm MTS	28 mm MTS																										
NB□□-PS12-0-G	3/4 PS	3/4 PS																										
NB□□-PS16-0-G	1 PS	1 PS																										

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Straight Pattern



Angle Pattern



© NBH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBHSS-FNS2-7-Y

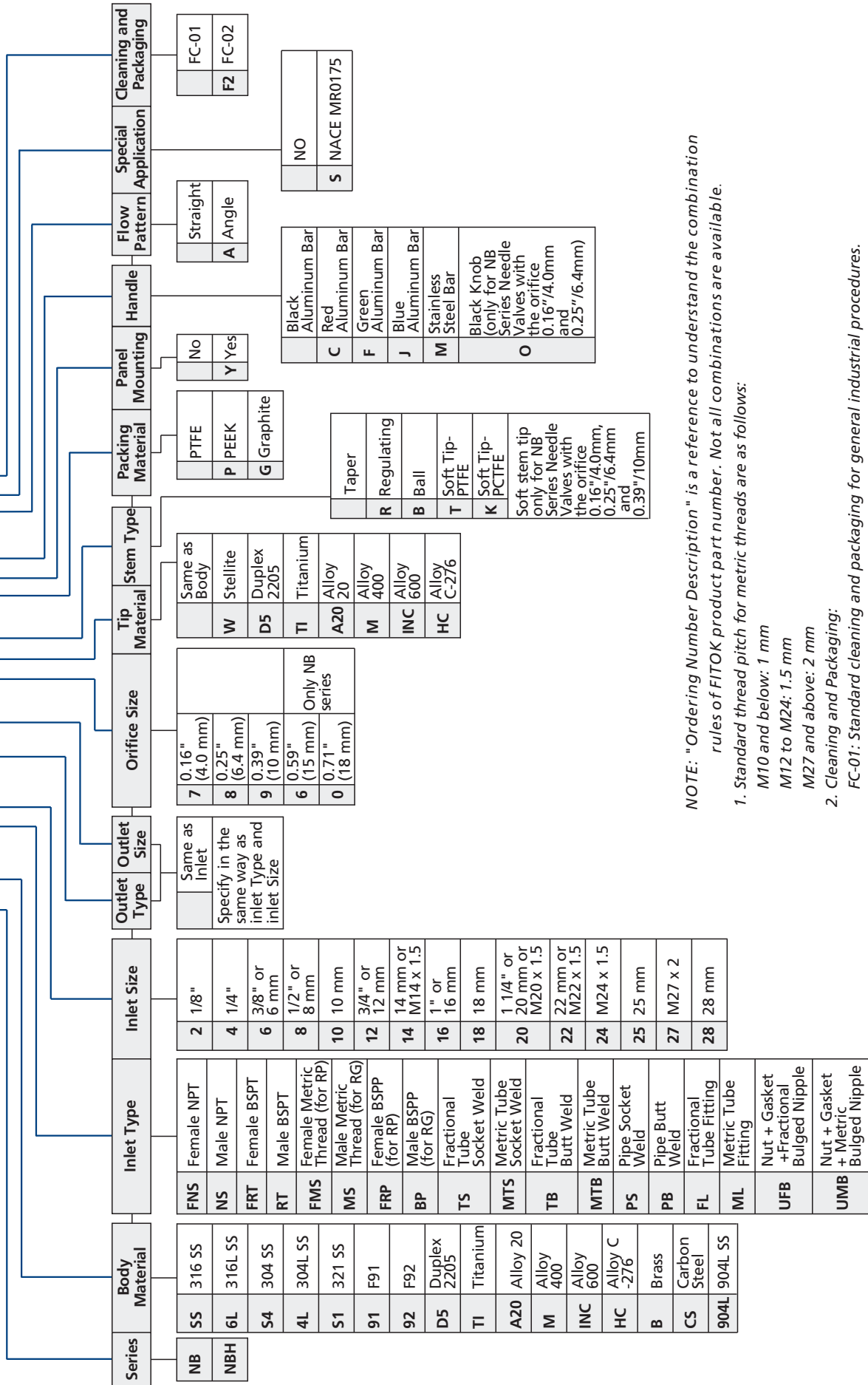
Dimensions of NBH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NBH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.50 (12.7)	2.50 (63.5)	0.50 (12.7)	0.25 (6.4)	0.96 (24.4)	2.87 (73)
NBH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT										
NBH□□-FNS4-NS4-7	1/4 Female NPT	1/4 Male NPT										
NBH□□-NS4-7	1/4 Male NPT	1/4 Male NPT										
NBH□□-TS4-7-G	1/4" TS	1/4" TS			1.13 (28.6)	1.13 (28.6)						
NBH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.236 (6.4)	0.85	1.31 (33.4)	1.31 (33.4)	0.625 (15.88)	3.50 (88.9)	0.625 (15.88)	0.38 (9.7)	1.09 (27.7)	3.56 (90.3)
NBH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT										
NBH□□-NS6-8	3/8 Male NPT	3/8 Male NPT										
NBH□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.875 (22.2)	3.50 (88.9)	0.875 (22.2)	0.38 (9.7)	1.45 (36.8)	4.17 (106)

1. Connection type of "TS" means fractional tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

NBSS - FL8 - ML12 - 8WB - GYM - ASF2



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

1. Standard thread pitch for metric threads are as follows:

M10 and below: 1 mm

M12 to M24: 1.5 mm

M27 and above: 2 mm

2. 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.

Nonrotating-stem Needle Valves

ND Series: Working pressure up to 3000 psig

NDH Series: Working pressure up to 5000 psig

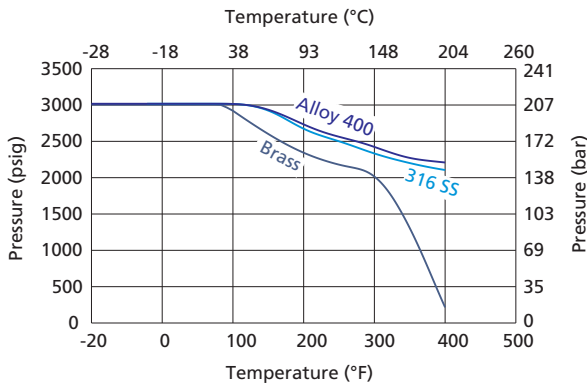
Features

- ⊙ One-piece forged body
- ⊙ Straight and angle pattern
- ⊙ Compact design
- ⊙ Non-rotating stem
- ⊙ Specially designed handle to stop contamination from entering into the valve
- ⊙ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⊙ Working pressure up to:
 - ND Series—Stainless steel: 3000 psig (207 bar)
 - Brass: 3000 psig (207 bar)
 - NDH Series—Stainless steel: 5000 psig (345 bar)
- ⊙ Working temperature with stem tip:
 - PCTFE stem tip: -20°F to 200°F (-28°C to 93°C)
 - PEEK stem tip: -20°F to 400°F (-28°C to 204°C)
- ⊙ Working temperature with O-ring:
 - Fluorocarbon Rubber (FKM) : -20°F to 400°F (-28°C to 204°C)
 - Nitrile Butadiene Rubber (NBR) : -20°F to 212°F (-28°C to 100°C)
 - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

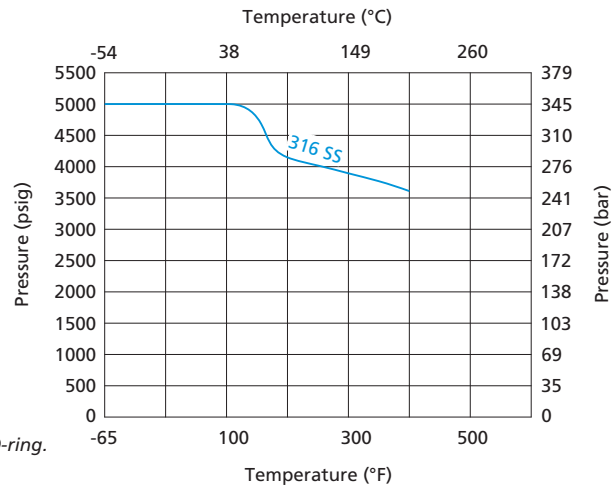


Pressure vs. Temperature

ND Series

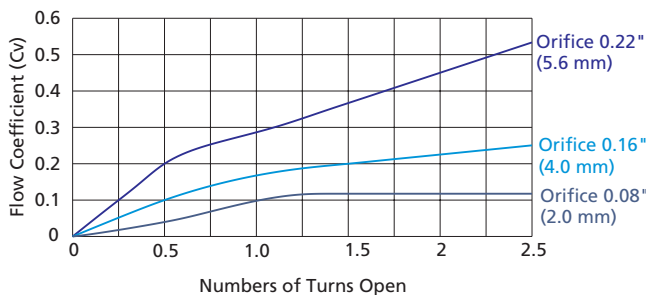


NDH Series

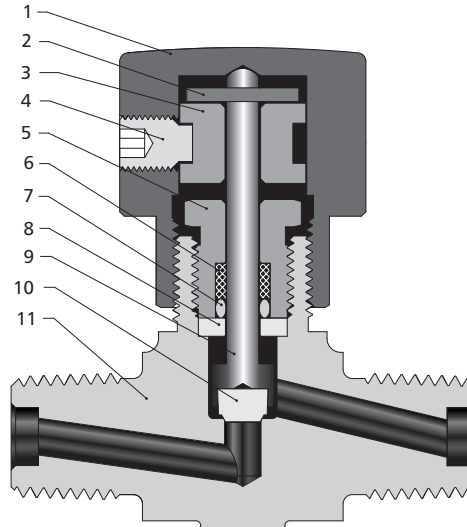


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)



Standard Materials of Construction

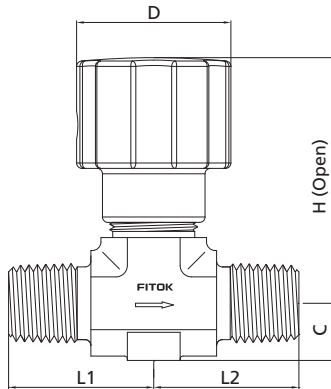


Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
Material Grade/ASTM Specification						
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	316 SS/A276	304 SS/A276	321 SS/A276	Brass C36000/B16	Alloy 400/B164
6	Backup Ring	PTFE/D1710				
7	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)				
8	Washer	316 SS/A276				Alloy 400/B164
9	Stem	316 SS/A276				Alloy 400/B164
10	Stem Tip	PCTFE or PEEK				
11	Body	316 SS/A182	304 SS/A182	321 SS/A182	Brass C37700/B283	Alloy 400/B564
	Lubricant	Molybdenum disulfide-based				

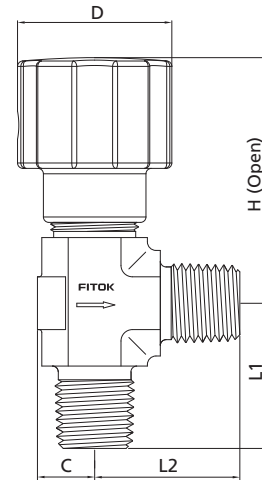
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



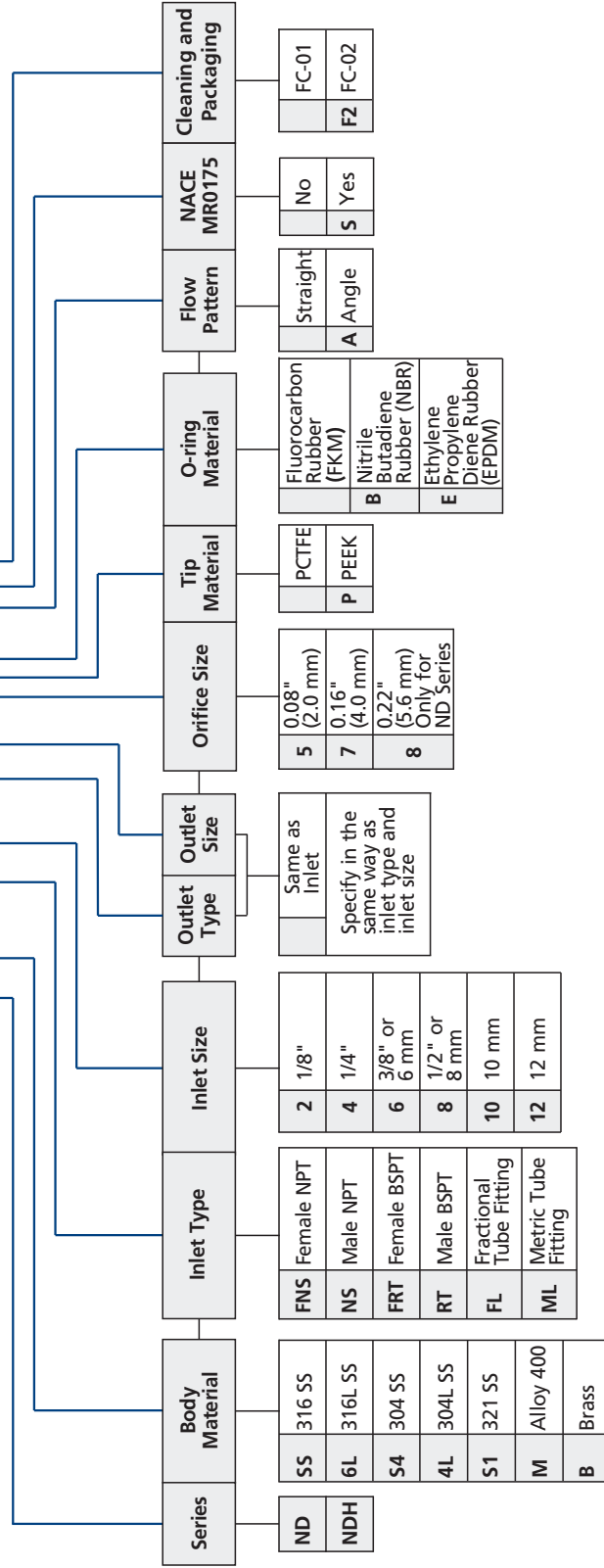
ND and NDH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
ND□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.12	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
ND□□-NS2-FL2-5	1/8" Male NPT	1/8" Male NPT			1.10 (27.9)	1.10 (27.9)			
ND□□-FL2-5	1/8" FITOK	1/8" FITOK							
ND□□-ML3-5	3 mm FITOK	3 mm FITOK	0.16 (4.0)	0.27	1.18 (30.0)	1.18 (30.0)	0.39 (10.0)	1.06 (26.9)	1.86 (47.2)
ND□□-NS4-7	1/4 Male NPT	1/4 Male NPT							
ND□□-NS4-FL4-7	1/4" Male NPT	1/4" FITOK							
ND□□-FL4-7	1/4" FITOK	1/4" FITOK							
ND□□-ML6-7	6 mm FITOK	6 mm FITOK	0.22 (5.6)	0.53	1.30 (33.0)	1.30 (33.0)	0.53 (13.5)	1.12 (28.4)	2.02 (51.3)
ND□□-ML8-7	8 mm FITOK	8 mm FITOK							
ND□□-FNS4-8	1/4 Female NPT	1/4 Female NPT							
ND□□-NS6-8	3/8 Male NPT	3/8 Male NPT							
ND□□-FL6-8	3/8" FITOK	3/8" FITOK							
ND□□-FL8-8	1/2" FITOK	1/2" FITOK	0.08 (2.0)	0.12	1.10 (27.9)	1.10 (27.9)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
ND□□-ML10-8	10 mm FITOK	10 mm FITOK							
ND□□-ML12-8	12 mm FITOK	12 mm FITOK							
NDH□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.16 (4.0)	0.27	0.98 (25.0)	0.95 (25.0)	0.39 (10.0)	1.06 (26.9)	1.98 (50.2)
NDH□□-FL2-5	1/8" FITOK	1/8" FITOK							
NDH□□-ML3-5	3 mm FITOK	3 mm FITOK							
NDH□□-NS4-7	1/4" Male NPT	1/4" Male NPT	0.08 (2.0)	0.12	1.10 (27.9)	1.10 (27.9)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
NDH□□-FL4-7	1/4" FITOK	1/4" FITOK							
NDH□□-ML6-7	6 mm FITOK	6 mm FITOK							

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

NDSS - FNS4 - ML8 - 7PE - ASF2



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.

Forged Needle Valves

NF Series: Working pressure up to 6000 psig

NFH Series: Working pressure up to 10000 psig

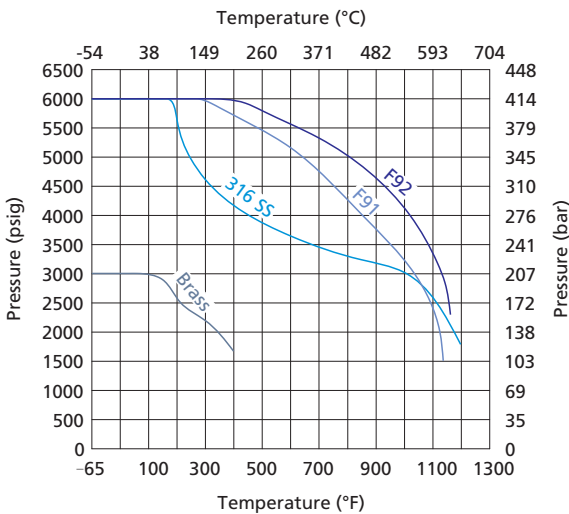
Features

- ⦿ One-piece forged body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air (NF Series) at the maximum allowable working pressure or with water (NFH Series) at 1.1 times the maximum allowable working pressure
- ⦿ Working pressure up to:
 - NF Series—Stainless steel: 6000 psig (414 bar)
 - Alloy C-276: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
 - Titanium: 3500 psig (241 bar)
 - Brass: 3000 psig (207 bar)
- ⦿ Working temperature:
 - PTFE: -65°F to 450°F (-54°C to 232°C)
 - PEEK: -65°F to 500°F (-54°C to 260°C)
 - Graphite: -65°F to 1200°F (-54°C to 649°C)

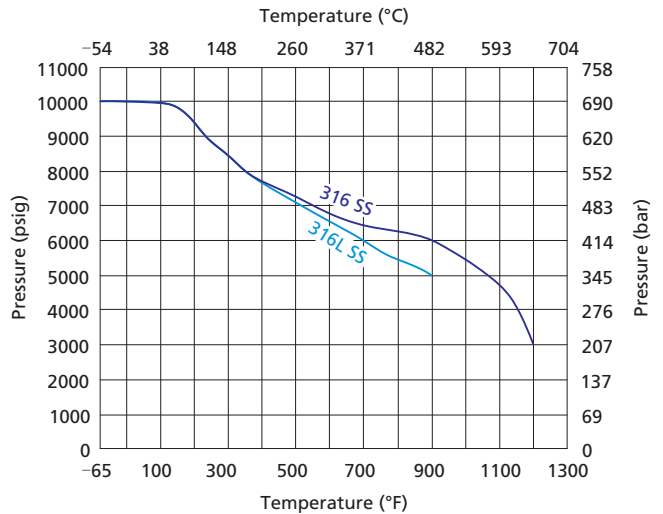


Pressure vs. Temperature

NF Series



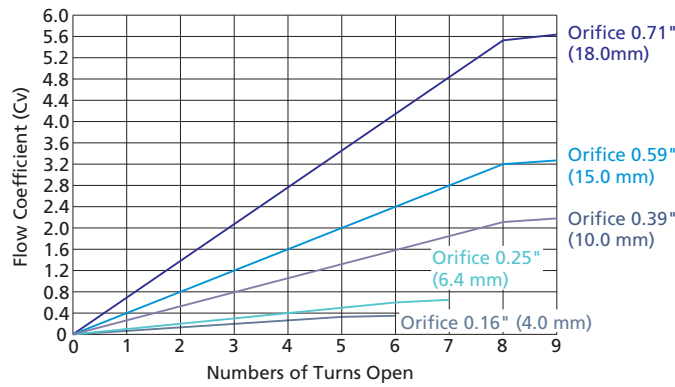
NFH Series



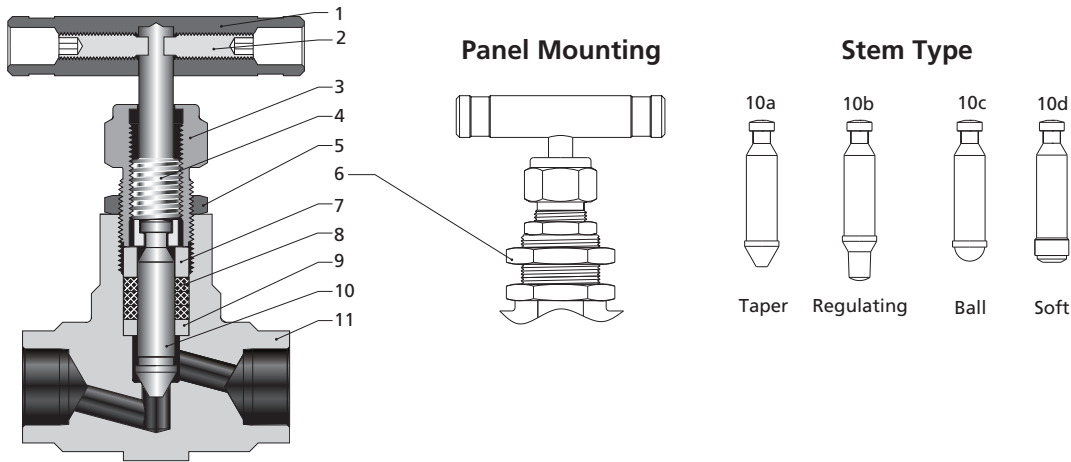
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem



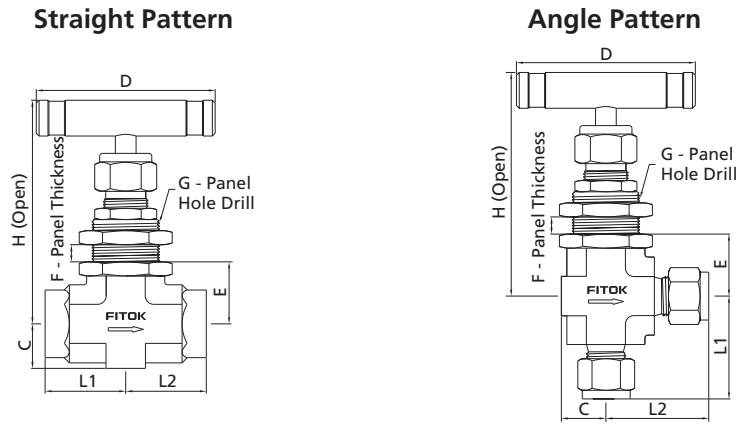
Standard Materials of Construction



Item	Component	Valve Body Material		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Galvanized carbon steel		
3	Packing Bolt	304 SS/A276	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A276		
5	Lock Nut	Stainless steel	1020/A108	Brass C36000/B16
6	Panel Nut	Stainless steel	1020/A108	Brass C36000/B16
7	Gland	316 SS/A276		Brass C36000/B16
8	Packing	PTFE or PEEK or graphite		
9	Packing Washer	316 SS/A276		Brass C36000/B16
10a 10b 10c 10d	Lower Stem	Hardened 316 SS/A276		
11	Body	316 SS/A182	F91/A182	Brass C37700/B283
	Seat	Same as Body		
	Lubricant	Molybdenum disulfide-based		

Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions



© NF Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NFSS-FNS2-7-Y

Dimensions of NF Series

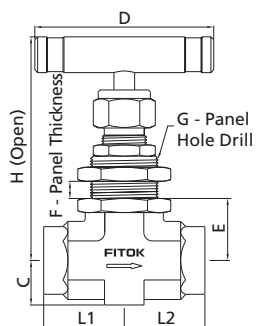
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.53 (13.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)
NF□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)						
NF□□-FL4-7	1/4" FITOK	1/4" FITOK			1.22 (30.9)	1.22 (30.9)						
NF□□-ML6-7	6 mm FITOK	6 mm FITOK			1.25 (31.75)	1.25 (31.75)						
NF□□-ML8-7	8 mm FITOK	8 mm FITOK			1.03 (26.2)	1.03 (26.2)						
NF□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.13 (28.6)	1.13 (28.6)						
NF□□-NS6-7	3/8 Male NPT	3/8 Male NPT										
NF□□-FO4-7	1/4" Male FO	1/4" Male FO										
NF□□-FR4-7	1/4" Male FR	1/4" Male FR										
NF□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.42 (36.1)	1.42 (36.1)						
NF□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.44 (36.5)	1.44 (36.5)						
NF□□-FL6-8	3/8" FITOK	3/8" FITOK			1.53 (38.9)	1.53 (38.9)						
NF□□-ML10-8	10 mm FITOK	10 mm FITOK			1.56 (39.7)	1.56 (39.7)						
NF□□-ML12-8	12 mm FITOK	12 mm FITOK			1.26 (32.0)	1.26 (32.0)						
NF□□-ML14-8	14 mm FITOK	14 mm FITOK			1.50 (38.1)	1.50 (38.1)						
NF□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.53 (38.9)	1.53 (38.9)						
NF□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.13 (28.6)	1.13 (28.6)						
NF□□-FL8-8	1/2" FITOK	1/2" FITOK			1.50 (38.1)	1.50 (38.1)						
NF□□-TS6-8-G	3/8" TS	3/8" TS			1.53 (38.9)	1.53 (38.9)						
NF□□-TS8-8-G	1/2" TS	1/2" TS			1.13 (28.6)	1.13 (28.6)						
NF□□-MTS12-8-G	12 mm MTS	12 mm MTS			1.50 (38.1)	1.50 (38.1)						
NF□□-MTS14-8-G	14 mm MTS	14 mm MTS			1.50 (38.1)	1.50 (38.1)						
NF□□-MTS16-8-G	16 mm MTS	16 mm MTS			2.92 (74.1)	2.92 (74.1)						
NF□□-MTB14-8-G	14 mm MTB	14 mm MTB			1.13 (28.6)	1.13 (28.6)						
NF□□-MTB16-8-G	16 mm MTB	16 mm MTB			1.56 (39.7)	1.56 (39.7)						
NF□□-UMB14-8	14 mm UMB	14 mm UMB			1.50 (38.1)	1.50 (38.1)						
NF□□-UMB16-8	16 mm UMB	16 mm UMB			1.50 (38.1)	1.50 (38.1)						
NF□□-FO8-8	1/2" Male FO	1/2" Male FO										
NF□□-FR8-8	1/2" Male FR	1/2" Male FR										
NF□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric										

Dimensions of NF Series

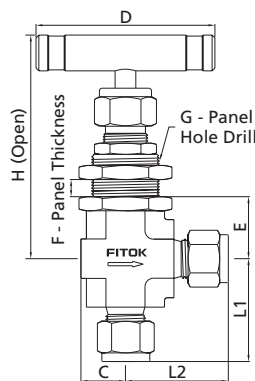
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.50 (88.9)	0.89 (22.5)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)
NF□□-NS8-9	1/2 Male NPT	1/2 Male NPT										
NF□□-NS12-9	3/4 Male NPT	3/4 Male NPT										
NF□□-FL12-9	3/4" FITOK	3/4" FITOK										
NF□□-ML14-9	14 mm FITOK	14 mm FITOK			1.97 (50.0)	1.97 (50.0)	0.76 (19.4)					
NF□□-ML16-9	16 mm FITOK	16 mm FITOK										
NF□□-ML18-9	18 mm FITOK	18 mm FITOK			1.56 (39.7)	1.56 (39.7)	0.89 (22.5)					
NF□□-ML20-9	20 mm FITOK	20 mm FITOK										
NF□□-MTS14-9-G	14 mm MTS	14 mm MTS			2.98 (75.7)	2.98 (75.7)	0.76 (19.4)					
NF□□-MTS16-9-G	16 mm MTS	16 mm MTS										
NF□□-MTS18-9-G	18 mm MTS	18 mm MTS			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)					
NF□□-TS12-9-G	3/4" TS	3/4" TS										
NF□□-PS8-9-G	1/2 PS	1/2 PS			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)					
NF□□-MTB16-9-G	16 mm MTB	16 mm MTB										
NF□□-UMB14-9	14 mm UMB	14 mm UMB			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)					
NF□□-UMB16-9	16 mm UMB	16 mm UMB										
NF□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric	0.59 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT										
NF□□-TS16-6-G	1" TS	1" TS			2.35 (59.7)	2.35 (59.7)						
NF□□-MTS25-6-G	25 mm MTS	25 mm MTS										
NF□□-MTS28-6-G	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)	5.33 (135.4)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-PS12-6-G	3/4 PS	3/4 PS										
NF□□-PB12-6-G	3/4 PB	3/4 PB	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	5.33 (135.4)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-FL12-6	3/4" FITOK	3/4" FITOK										
NF□□-ML20-6	20 mm FITOK	20 mm FITOK										
NF□□-TS16-0-G	1" TS	1" TS										
NF□□-MTS25-0-G	25 mm MTS	25 mm MTS										
NF□□-MTS28-0-G	28 mm MTS	28 mm MTS	1.97 (50.0)	1.97 (50.0)	5.33 (135.4)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)		
NF□□-PS12-0-G	3/4 PS	3/4 PS										
NF□□-PB16-0-G	1 PB	1 PB										

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "FO" means O-ring face seal fittings. "FR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Straight Pattern



Angle Pattern



© NFH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NFHSS-FNS2-7-Y

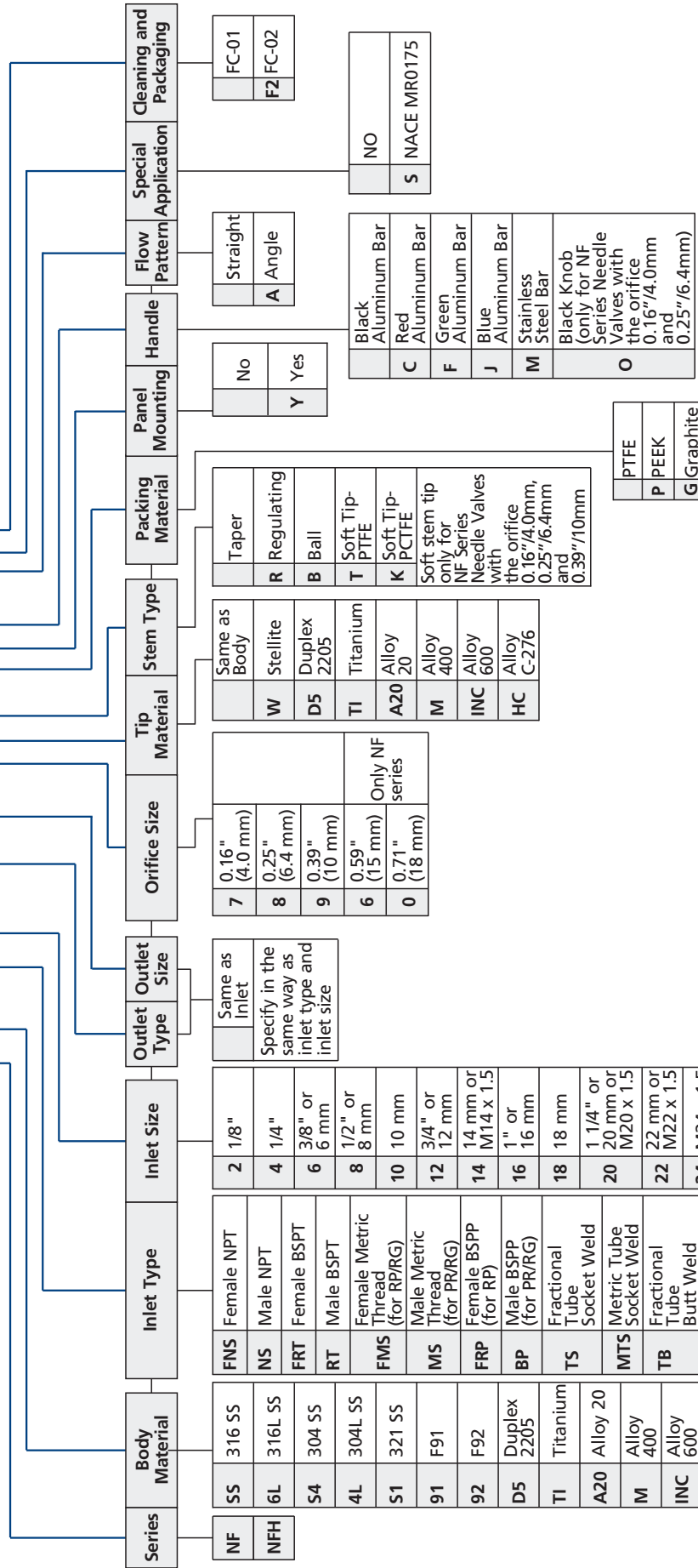
Dimensions of NFH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NFH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55.0)	0.62 (15.8)	0.76 (19.4)	0.25 (6.4)	0.77 (19.6)
NFH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.06 (26.2)	1.06 (26.2)						
NFH□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.22 (30.9)	1.22 (30.9)						
NFH□□-FNS4-NS4-7	1/4 Female NPT	1/4 Male NPT			1.06 (26.2)	1.22 (30.9)						
NFH□□-TS4-7-G	1/4" TS	1/4" TS			1.06 (26.2)	1.06 (26.2)						
NFH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	3.38 (85.8)	2.50 (63.5)	0.76 (19.4)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NFH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.50 (38.1)	1.50 (38.1)						
NFH□□-NS6-8	3/8 Male NPT	3/8 Female NPT			1.56 (39.7)	1.56 (39.7)						
NFH□□-TS8-9-G	1/2" TS	1/2" TS	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.50 (88.9)	0.76 (19.4)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)

1. Connection type of "TS" means tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

NFS4 - TS16 - MTS25 - 6WR - GYM - ASF2



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

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- 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.

General Purpose Needle Valves

NG Series: Working pressure up to 3000 psig

NGH Series: Working pressure up to 5000 psig

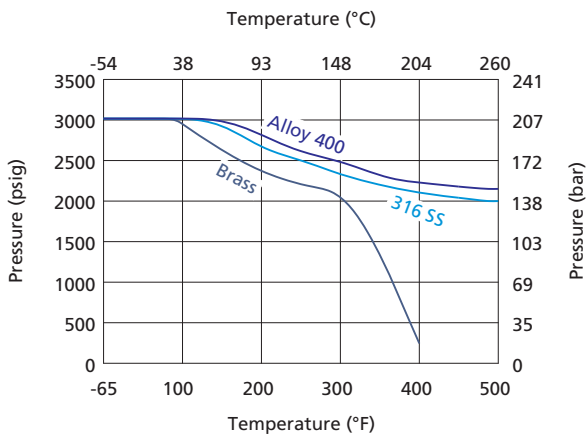
Features

- ⦿ One-piece forged body
- ⦿ Easy external adjustments by packing nut
- ⦿ Live-loaded packing system
- ⦿ Handles of different colors available
- ⦿ Compact design
- ⦿ Panel mounting available
- ⦿ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to:
 - NG Series—Stainless steel, Brass, Alloy 400: 3000 psig (207 bar)
 - NGH Series—Stainless steel: 5000 psig (345 bar)
- ⦿ Working temperature:
 - PTFE: -65°F to 450°F (-54°C to 232°C)
 - PEEK: -65°F to 500°F (-54°C to 260°C)

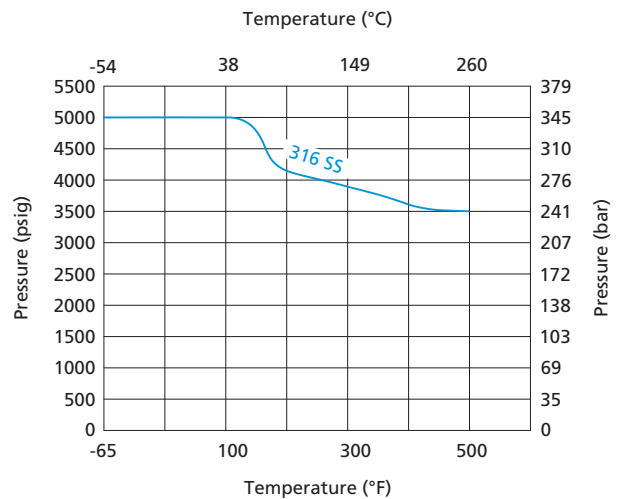


Pressure vs. Temperature

NG Series



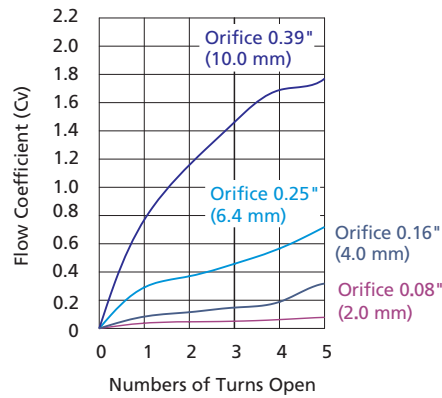
NGH Series



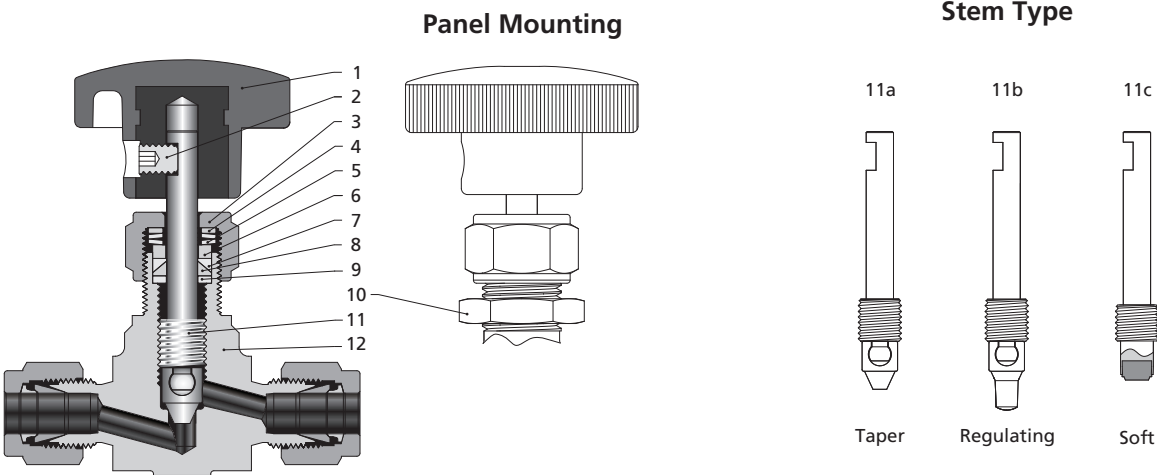
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem



Standard Materials of Construction

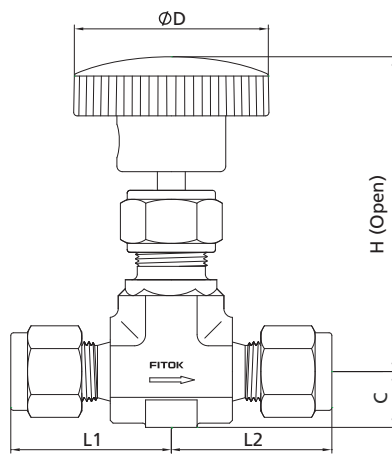


Item	Component	Valve Body Material		
		316 SS	Brass	Alloy
		Material Grade/ASTM Specification		
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Galvanized carbon steel		
3	Packing Bolt	304 SS/A276	Brass C36000/B16	304 SS/A276
4	Washer	316 SS/A276		
5	Packing Spring	S17700/A693		
6	Washer	316 SS/A276		
7	Upper Packing	PTFE/PEEK		
8	Lower Packing			
9	Packing Washer	316 SS/A276	Alloy 400/B164	
10	Panel Nut	Stainless steel	Brass C36000/B16	Stainless steel
11a	Taper Stem/Stem Tip	Hardened 316 SS/A276		Alloy 400/B164
11b	Regulating Stem/Stem Tip	Hardened 316 SS/A276		Alloy 400/B164
11c	Soft Stem	316 SS/A276		Alloy 400/B164
	Stem Tip	PCTFE/D1430 or PEEK		
12	Body	316 SS/A182	Brass C37700/B283	Alloy 400/B564
Lubricant		Molybdenum disulfide-based		

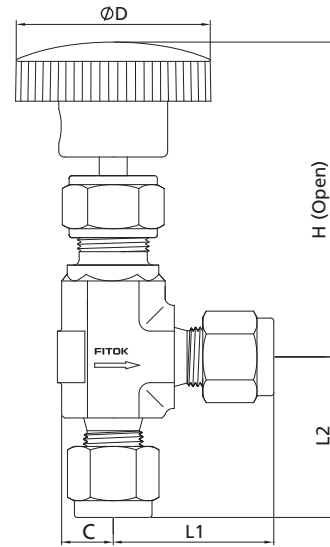
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



Dimensions of NG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NG□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.05)	0.75 (19.05)	0.31 (7.9)	1.00 (25.4)	2.30 (58.4)
NG□□-FNS2-5	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)			
NG□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)			
NG□□-ML3-5	3 mm FITOK	3 mm FITOK							
NG□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	2.46 (62.5)
NG□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)			
NG□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			
NG□□-ML6-7	6 mm FITOK	6 mm FITOK			1.17 (29.7)	1.17 (29.7)			
NG□□-ML8-7	8 mm FITOK	8 mm FITOK			2.24 (57.0)	2.24 (57.0)			
NG□□-UMB6-7	6 mm UMB	6 mm UMB							
NG□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.88 (47.8)	2.85 (72.4)
NG□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					0.62 (15.8)		2.90 (73.7)
NG□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)	0.53 (13.5)		2.85 (72.4)
NG□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		2.90 (73.7)
NG□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)			
NG□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)			
NG□□-ML10-8	10 mm FITOK	10 mm FITOK			1.30 (33.0)	1.30 (33.0)	0.53 (13.5)		2.85 (72.4)
NG□□-ML12-8	12 mm FITOK	12 mm FITOK			1.40 (35.6)	1.40 (35.6)			
NG□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)	0.62 (15.8)		2.90 (73.7)
NG□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)			
NG□□-UMB10-8	10 mm UMB	10 mm UMB							
NG□□-UMB14-8	14 mm UMB	14 mm UMB			2.60 (66.0)	2.60 (66.0)	0.53 (13.5)		2.85 (72.4)

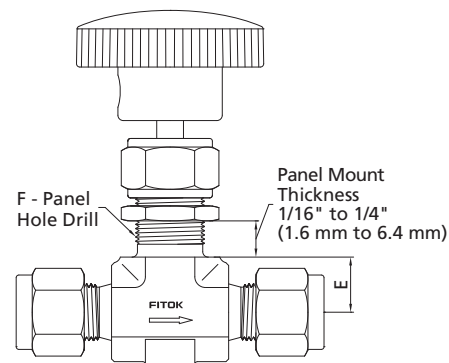
Dimensions of NG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NG□□-FNS8-9-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NG□□-FNS12-9-L	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)	0.89 (22.5)		
NG□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
NG□□-FL8-9-L	1/2" FITOK	1/2" FITOK							
NG□□-FL12-9-L	3/4" FITOK	3/4" FITOK							
NG□□-ML14-9-L	14 mm FITOK	14 mm FITOK							

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used tubing. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

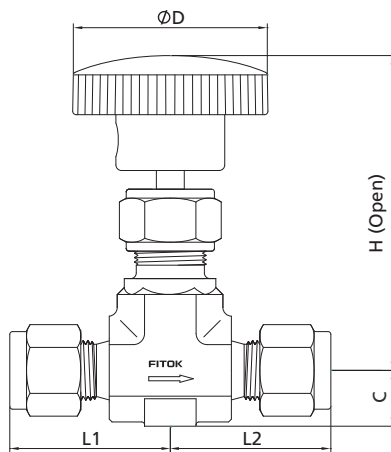
Panel Mount Dimensions of NG Series

Orifice in.(mm)	Dimensions, in.(mm)	
	E	F
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)

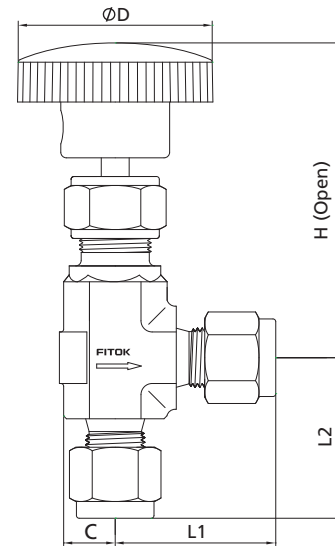


1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y

Straight Pattern



Angle Pattern



Dimensions of NGH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	H	
NGH□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.0)	0.75 (19.0)	0.31 (7.9)	1.00 (25.4)	2.30 (58.4)	
NGH□□-FNS2-5	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)				
NGH□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)				
NGH□□-ML3-5	3 mm FITOK	3 mm FITOK	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	2.46 (62.5)	
NGH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT			0.98 (25.0)	0.98 (25.0)				
NGH□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.13 (28.7)	1.13 (28.7)				
NGH□□-FL4-7	1/4" FITOK	1/4" FITOK			1.17 (29.7)	1.17 (29.7)				
NGH□□-ML6-7	6 mm FITOK	6 mm FITOK			2.24 (57.0)	2.24 (57.0)				
NGH□□-ML8-7	8 mm FITOK	8 mm FITOK	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.88 (47.8)	2.85 (72.4)	
NGH□□-UMB6-7	6 mm UMB	6 mm UMB			0.62 (15.8)	2.90 (73.7)				
NGH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)	1.12 (28.4)	0.53 (13.5)		2.85 (72.4)	
NGH□□-FNS6-8	3/8" Female NPT	3/8" Female NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		2.90 (73.7)	
NGH□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.29 (32.8)	1.29 (32.8)	0.53 (13.5)		1.88 (47.8)	2.85 (72.4)
NGH□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.40 (35.6)	1.40 (35.6)				
NGH□□-FL6-8	3/8" FITOK	3/8" FITOK			1.30 (33.0)	1.30 (33.0)				
NGH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)	0.62 (15.8)		1.88 (47.8)	2.85 (72.4)
NGH□□-ML10-8	10 mm FITOK	10 mm FITOK			1.56 (39.7)	1.56 (39.7)				
NGH□□-ML12-8	12 mm FITOK	12 mm FITOK			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		1.88 (47.8)	2.90 (73.7)
NGH□□-ML14-8	14 mm FITOK	14 mm FITOK	2.60 (66.0)	2.60 (66.0)						
NGH□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric	0.53 (13.5)	2.85 (72.4)						
NGH□□-UMB10-8	10 mm UMB	10 mm UMB	0.25 (6.4)	0.70	2.60 (66.0)	2.60 (66.0)	0.53 (13.5)	1.88 (47.8)	2.85 (72.4)	
NGH□□-UMB14-8	14 mm UMB	14 mm UMB			0.53 (13.5)	2.90 (73.7)				

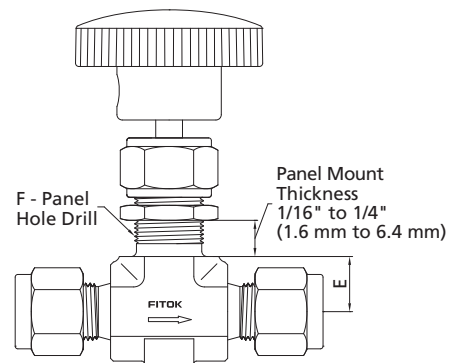
Dimensions of NGH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NGH□□-FNS8-9-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NGH□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.63 (41.3)	1.63 (41.3)	0.89 (22.5)		
NGH□□-FL8-9-L	1/2" FITOK	1/2" FITOK			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
NGH□□-FL12-9-L	3/4" FITOK	3/4" FITOK							
NGH□□-ML14-9-L	14 mm FITOK	14 mm FITOK							

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Panel Mount Dimensions of NGH Series

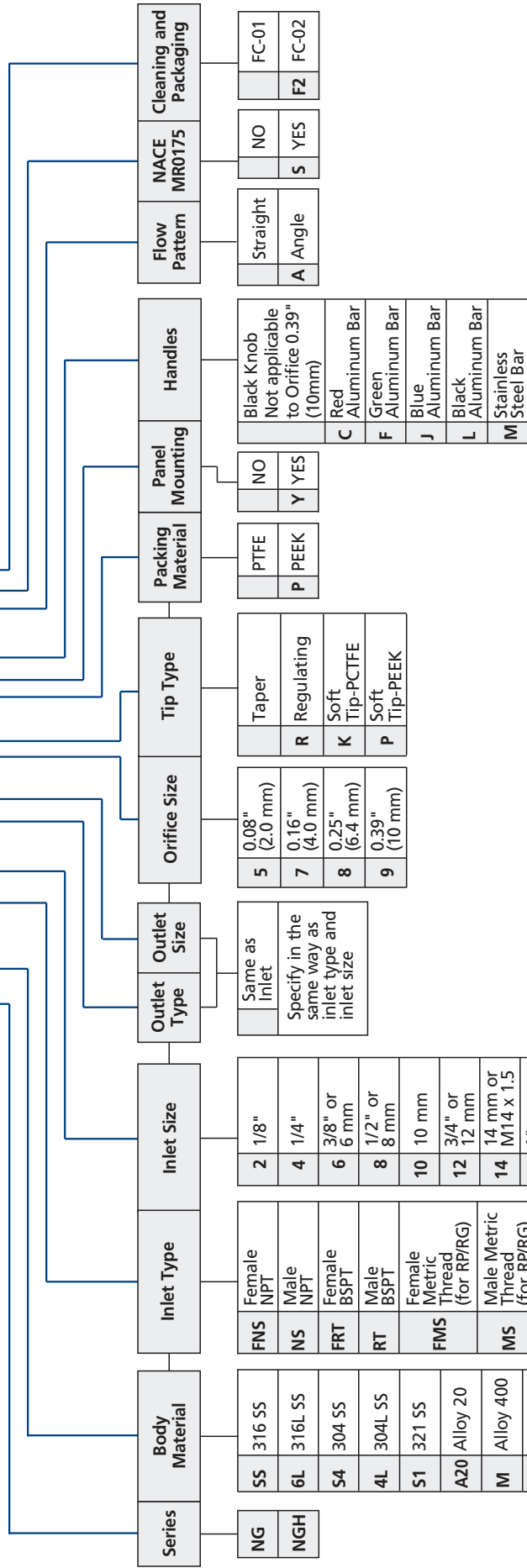
Orifice in.(mm)	Dimensions, in.(mm)	
	E	F
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)



1. NGH Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGHSS-NS2-5-Y

Ordering Number Description

NGS4 - FNS8 - FL8 - 9P - PYM - ASF2



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

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be omitted in the ordering number, others should be specified.
 For Orifice 0.39" (10 mm) needle valves, the option of black knob handle is unavailable.
 If handle designator is void, a black anodized Aluminum bar handle should be equipped.
- 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.

Rising Plug Valves

NR Series

NRG (with gauge port) Series

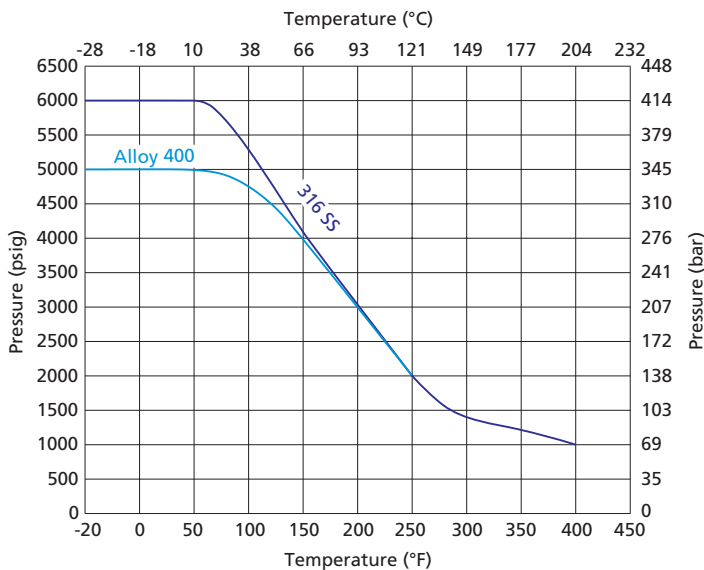
Features

- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to:
 - Stainless steel: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
- ⦿ Working temperature with seat:
 - Acetal: -20°F to 250°F (-28°C to 121°C)
 - PEEK: -20°F to 450°F (-28°C to 232°C)
- ⦿ Working temperature with O-ring:
 - Fluorocarbon Rubber (FKM): -20°F to 400°F (-28°C to 204°C)
 - Nitrile Butadiene Rubber (NBR): -20°F to 212°F (-28°C to 100°C)
 - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

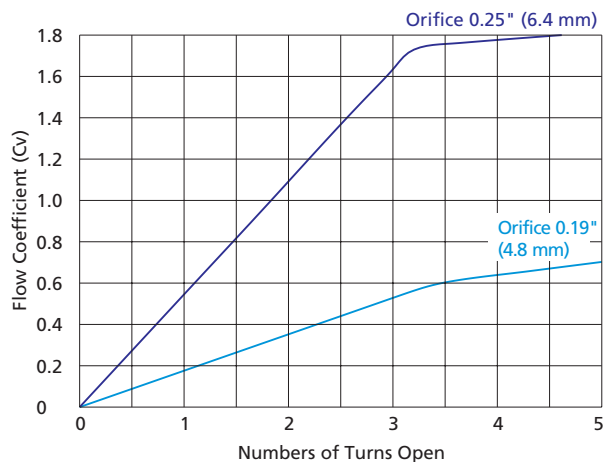


Needle Valves
Metering Valves

Pressure vs. Temperature

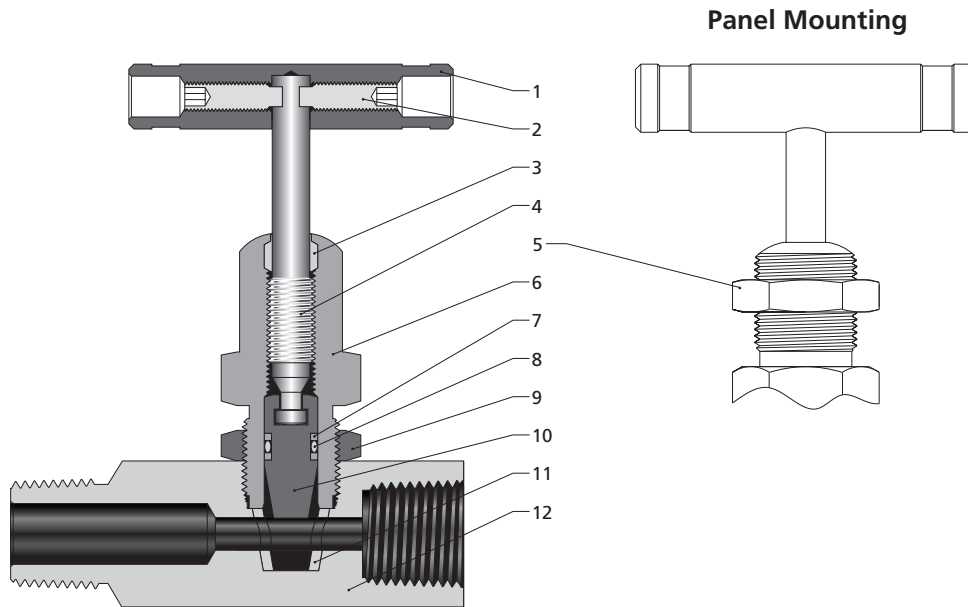


Flow Data at 100°F (38°C)



1. Graphs are based on PEEK seat and Fluorocarbon(FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

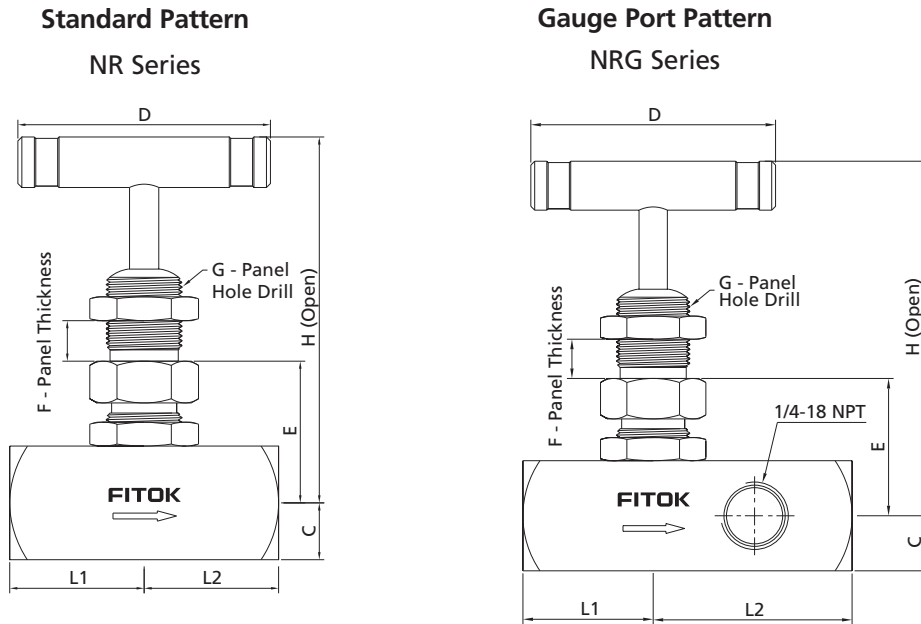
Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Alloy 400
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Galvanized carbon steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A479			Alloy 400/B164
5	Panel Nut	Stainless steel			
6	Bonnet	316 SS/A479	304 SS/A479	321 SS/A479	Alloy 400/B164
7	Backup Ring	PTFE/D1710			
8	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)			
9	Lock Nut	Stainless steel			
10	Stem Tip	316 SS/A276	304 SS/A276	321 SS/A276	Alloy 400/B164
11	Seat	Acetal or PEEK			
12	Body	316 SS/A479	304 SS/A479	321 SS/A479	Alloy 400/B164
	Lubricant	Molybdenum disulfide-based			

Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions



© NR Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NRSS-FNS4-7-Y

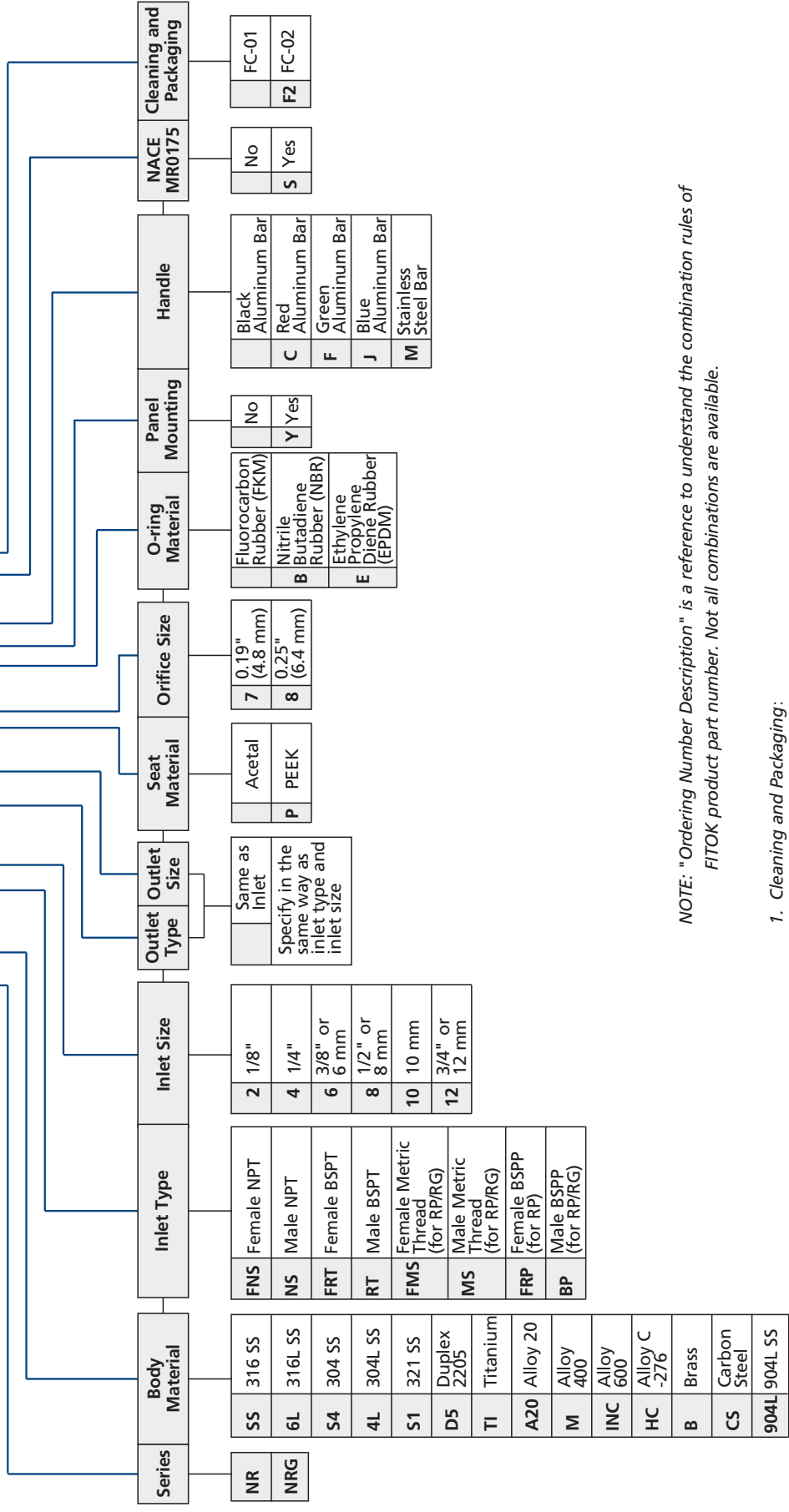
Dimensions of NR and NRG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NR □□-FNS4-7	1/4 Female NPT	1/4 Female NPT	0.19 (4.8)	0.63	1.12 (28.4)	1.12 (28.4)	0.44 (11.1)	2.17 (55.0)	1.28 (32.5)	0.38 (9.7)	0.77 (19.6)	3.77 (95.8)
NR □□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.78 (45.2)		0.50 (12.7)		1.34 (34.0)			
NR □□-NS8-FNS4-7	1/2 Male NPT	1/4 Female NPT			1.89 (48.0)	1.75 (44.4)	1.34 (34.0)					
NRG □□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)							
NRG □□-NS8-FNS4-7	1/2 Male NPT	1/4 Female NPT			3.12 (79.2)							
NR □□-FNS8-8	1/2 Female NPT	1/2 Female NPT	0.25 (6.4)	1.80	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	2.50 (63.5)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
NR □□-NS8-FNS8-8	1/2 Male NPT	1/2 Female NPT			2.16 (54.9)							
NR □□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT			3.33 (84.6)	2.25 (57.2)						
NRG □□-FNS8-8	1/2 Female NPT	1/2 Female NPT										
NRG □□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT										

1. Sizes and types listed are standard. Other sizes and types are available upon request.
2. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

NRSS - NS8 - FNS8 - P8 - BYM - SF2



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.

Toggle Valves

NT Series

Features

- ⦿ One piece forged body
- ⦿ Straight and angle patterns
- ⦿ Compact design
- ⦿ Quick opening or closing
- ⦿ Nonrotating stem
- ⦿ Panel mounting available
- ⦿ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to: 300 psig (20.7 bar)

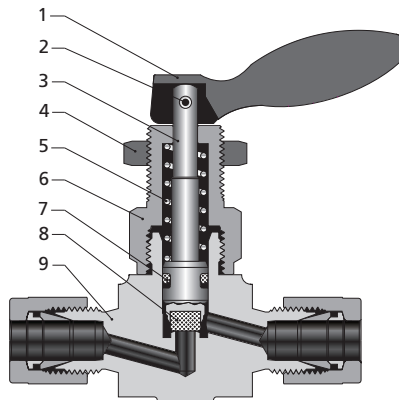


Technical Data

Orifice in. (mm)	Working Pressure at 100°F (38°C) psig (bar)
0.08 (2.0)	300 (20.7)
0.125 (3.2)	
0.25 (6.4)	200 (13.8)

O-ring Material	Temperature Rating
Fluorocarbon Rubber (FKM)	-20°F to 400°F (-28°C to 204°C)
Nitrile Butadiene Rubber (NBR)	-20°F to 212°F (-28°C to 100°C)
Ethylene Propylene Diene Rubber (EPDM)	-20°F to 300°F (-28°C to 148°C)

Standard Materials of Construction

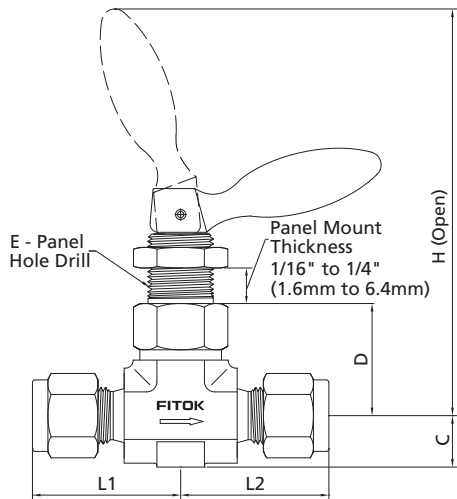


Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A276	304 SS/A276		316 SS/A276
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A276			Brass C36000/B16
7	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)			
8	Stem Tip	PTFE/D1710			
9	Body	316 SS/A182	304 SS/A182	321 SS/A182	Brass C37700/B283
	Lubricant	Molybdenum disulfide-based			

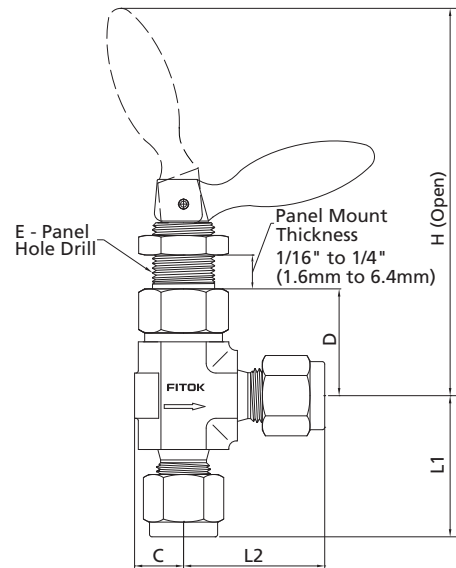
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



Dimensions of NT series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	E	H
NT□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.75 (19.05)	0.75 (19.05)	0.32 (8.2)	0.85 (21.7)	0.53 (13.5)	2.83 (71.9)
NT□□-NS2-FL2-5	1/8 Male NPT	1/8" FITOK			0.75 (19.05)	0.98 (25.0)				
NT□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)				
NT□□-ML3-5	3 mm FITOK	3 mm FITOK								
NT□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	0.85 (21.7)	0.53 (13.5)	2.83 (71.9)
NT□□-NS2-7	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)				
NT□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)				
NT□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			0.98 (25.0)	1.13 (28.7)				
NT□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)					
NT□□-ML6-7	6 mm FITOK	6 mm FITOK								
NT□□-ML8-7	8 mm FITOK	8 mm FITOK								
NT□□-FNS4-8	1/4 Female NPT	1/4 Female NPT			0.25 (6.4)	0.70				
NT□□-FNS6-8	3/8 Female NPT	3/8 Female NPT	1.12 (28.4)	1.12 (28.4)						
NT□□-NS6-8	3/8 Male NPT	3/8 Male NPT	1.29 (32.8)	1.29 (32.8)						
NT□□-FL6-8	3/8" FITOK	3/8" FITOK	1.40 (35.6)	1.40 (35.6)						
NT□□-FL8-8	1/2" FITOK	1/2" FITOK	1.36 (34.5)	1.36 (34.5)						
NT□□-ML10-8	10 mm FITOK	10 mm FITOK	1.46 (37.1)	1.46 (37.1)						
NT□□-ML12-8	12 mm FITOK	12 mm FITOK								

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Pneumatic Actuators

Features

- Valve and actuator are fully assembled and every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- Opens and closes quickly and reliably
- Rotatable actuator port allows easy installation

Actuation Modes

- Normally closed—air opens, spring closes
- Normally open—air closes, spring opens
- Double acting—air opens and closes

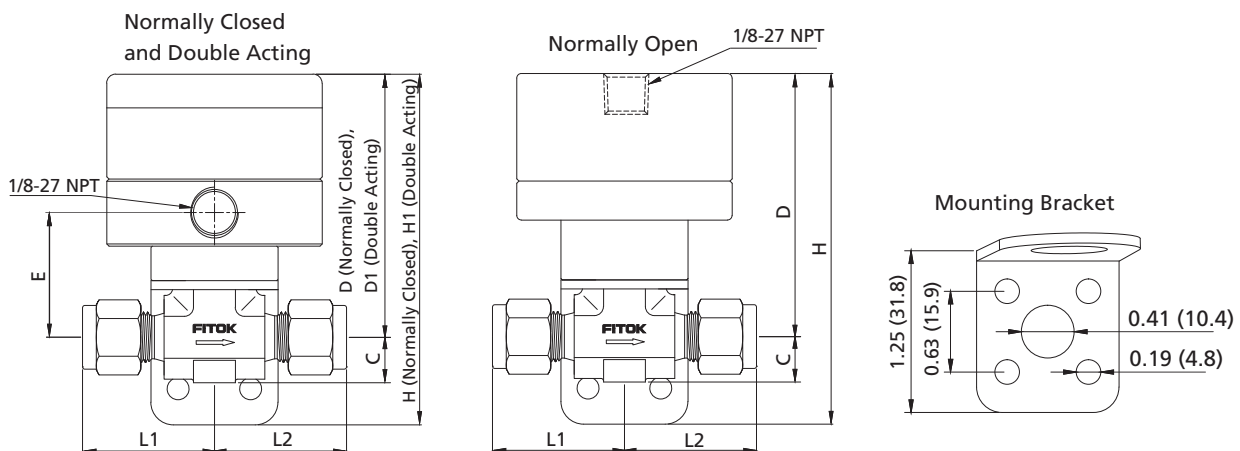
Technical Data

Actuator Type	Working Pressure at 100°F (38°C) psig (bar)	Actuator Pressure Rating psig (bar)
Normally closed	300 (20.7)	87 (6)
Normally open	450 (31.0)	
Double acting		

Component	Material
	Material Grade/ASTM Specification
Housing	Anodized aluminum
Spring	S17700/A313
Mounting Bracket	304SS/A240
Stem Tip	Normally open, normally closed—PTFE/D1710, double acting—PCTFE/D1430

Please refer to NT Series "Standard Materials of Construction" for other materials.

Dimensions



Normally Closed and
Double Acting



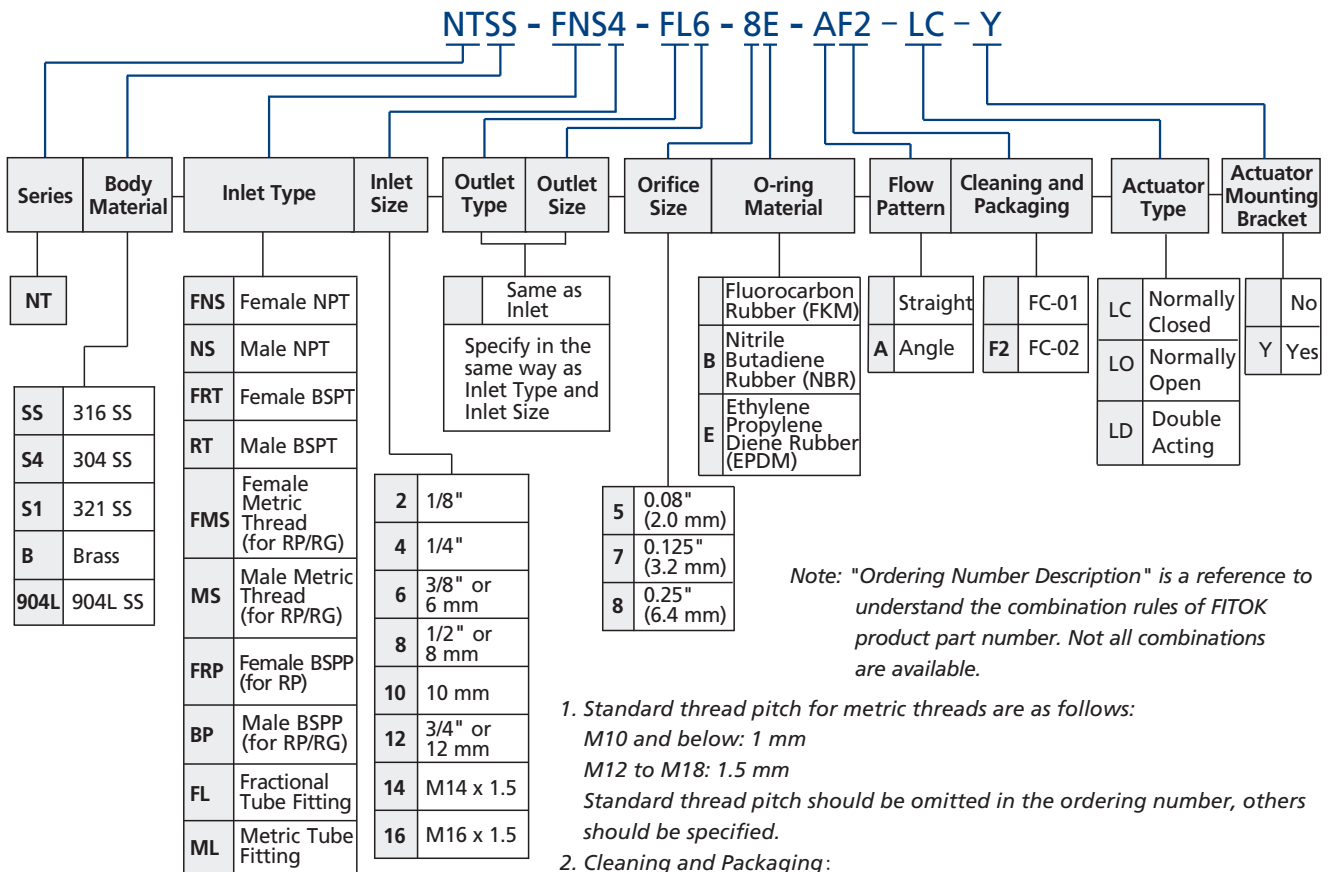
Normally Open



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	D1	H	H1	E
NT□□-NS2-5-LC-Y	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.86 (21.8)	0.86 (21.8)						
NT□□-NS2-FL2-5-LC-Y	1/8 Male NPT	1/8" FITOK			0.86 (21.8)	1.03 (26.2)						
NT□□-FL2-5-LC-Y	1/8" FITOK	1/8" FITOK			1.03 (26.2)	1.03 (26.2)						
NT□□-ML3-5-LC-Y	3 mm FITOK	3 mm FITOK	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	2.28 (58)	2.46 (62.5)	3.04 (77.3)	3.22 (81.8)	1.08 (27.5)
NT□□-FNS2-7-LC-Y	1/8 Female NPT	1/8 Female NPT			0.86 (21.8)	0.86 (21.8)						
NT□□-NS2-7-LC-Y	1/8 Male NPT	1/8 Male NPT			0.98 (25.0)	0.98 (25.0)						
NT□□-NS4-7-LC-Y	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	1.13 (28.7)						
NT□□-NS4-FL4-7-LC-Y	1/4 Male NPT	1/4" FITOK			1.13 (28.7)							
NT□□-FL4-7-LC-Y	1/4" FITOK	1/4" FITOK										
NT□□-ML6-7-LC-Y	6 mm FITOK	6 mm FITOK										
NT□□-ML8-7-LC-Y	8 mm FITOK	8 mm FITOK										

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



1. Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M18: 1.5 mm
 Standard thread pitch should be omitted in the ordering number, others should be specified.
2. 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.

Union Bonnet Needle Valves

NU Series: Working pressure up to 6000 psig

NUH Series: Working pressure up to 10000 psig

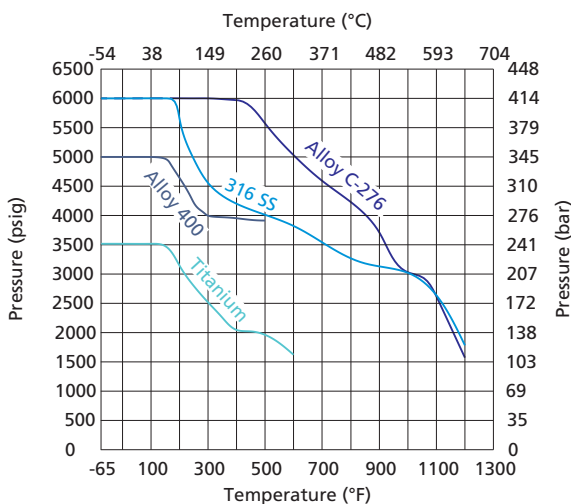
Features

- ⦿ One-piece forged body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Accidental valve disassembly disabled by union bonnet construction
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary movement of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air (NU Series) at the maximum allowable working pressure or with water (NUH Series) at 1.1 times the maximum allowable pressure
- ⦿ Working pressure up to:
 - NU Series—Stainless steel: 6000 psig (414 bar)
 - Alloy C-276: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
 - Titanium: 3500 psig (241 bar)
 - NUH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
 - PTFE: -65°F to 450°F (-54°C to 232°C)
 - PEEK: -65°F to 500°F (-54°C to 260°C)
 - Graphite: -65°F to 1200°F (-54°C to 649°C)

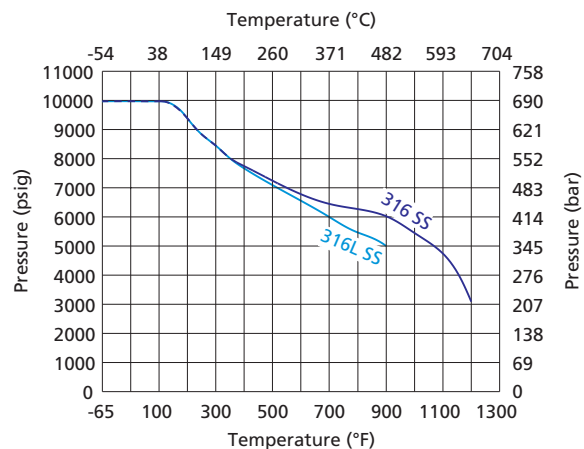


Pressure vs. Temperature

NU Series



NUH Series



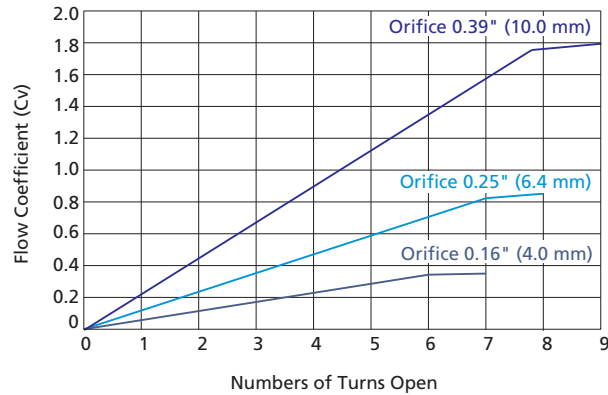
1. Graphs are based on graphite packing.

2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).

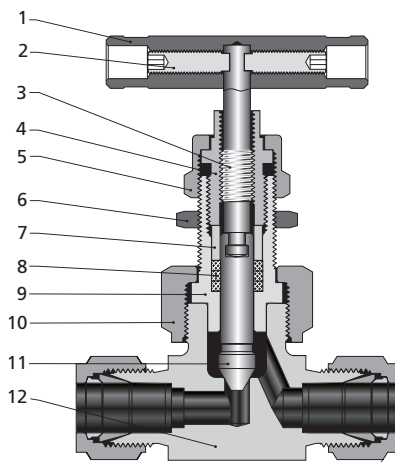
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (37°C)

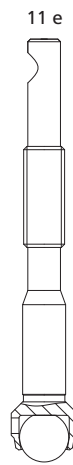
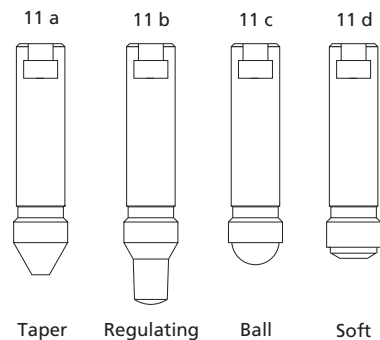
Regulating Stem



Standard Materials of Construction



Stem Type

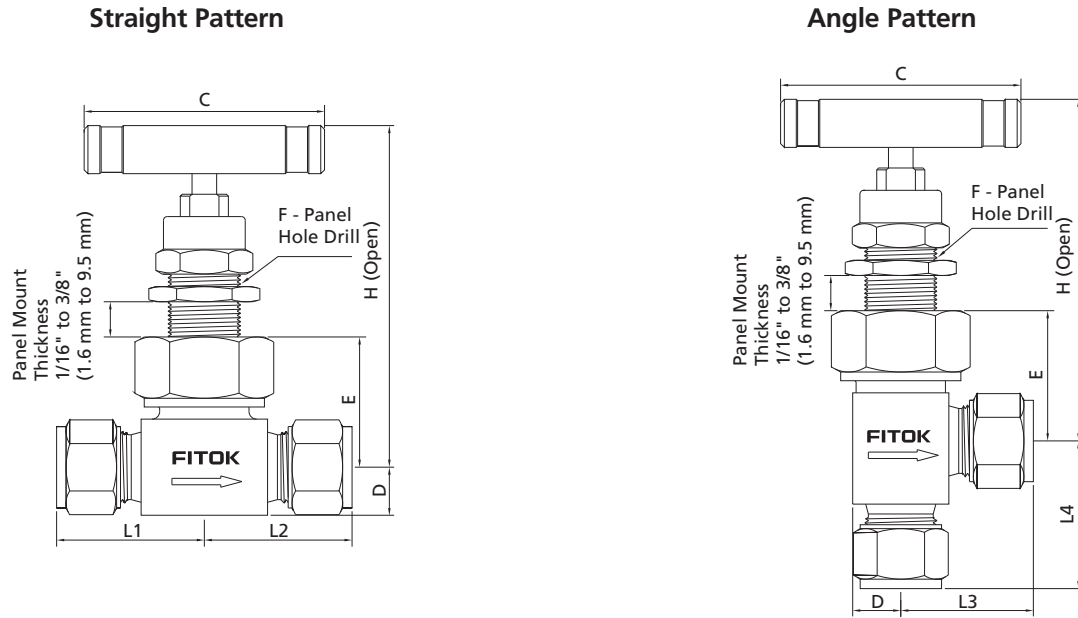


Ball (only for NUH Series)

Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Galvanized carbon steel			
3	Upper Stem	316 SS/A276			
4	Packing Bolt	304 SS/A276			
5	Lock Nut	316 SS/A276			
6	Panel Nut	Stainless steel			
7	Gland	316 SS/A276			
8	Packing	PTFE or PEEK or graphite			
9	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
10	Union Nut	316 SS/A276			
11a 11b 11c 11d 11e	Lower Stem	Hardened 316 SS/A276	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
12	Body	316 SS/A182	Alloy 400/B164, B127, B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564
	Seat	Same as Body			
	Lubricant	Molybdenum disulfide-based			

Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions



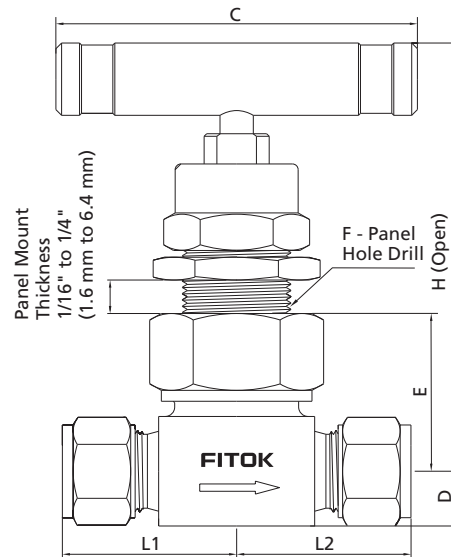
Dimensions of NU Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H				
NU□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.89 (22.6)	1.00 (25.4)	1.75 (44.5)	0.39 (9.9)	1.09 (27.7)	0.59 (15.0)	3.06 (77.7)				
NU□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)											
NU□□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.00 (25.4)	1.03 (26.2)											
NU□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.00 (25.4)	1.00 (25.4)	1.00 (25.4)										
NU□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)										
NU□□-FRP4-7	1/4 Female BSPP	1/4 Female BSPP			1.00 (25.4)	1.22 (30.9)	1.14 (29.0)										
NU□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			1.03 (26.2)	1.22 (30.9)											
NU□□-FNS4-FL4-7	1/4 Female NPT	1/4" FITOK			1.22 (30.9)	1.22 (30.9)	1.15 (29.2)										
NU□□-FL4-7	1/4" FITOK	1/4" FITOK			1.00 (25.4)	1.00 (25.4)	0.85 (21.6)							1.00 (25.4)			
NU□□-ML6-7	6 mm FITOK	6 mm FITOK			1.03 (26.2)	1.03 (26.2)	1.10 (28.0)							1.10 (28.0)			
NU□□-ML8-7	8 mm FITOK	8 mm FITOK			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)							1.13 (28.6)			
NU□□-TS4-7-G	1/4" TS	1/4" TS			1.06 (26.9)	1.06 (26.9)	2.50 (63.5)								0.50 (12.7)	1.34 (34.0)	0.78 (19.8)
NU□□-FO4-7	1/4" Male FO	1/4" Male FO			1.41 (35.9)	1.41 (35.9)								1.28 (32.5)			
NU□□-FR4-7	1/4" Male FR	1/4" Male FR			1.52 (38.6)	1.52 (38.6)	1.40 (35.6)							1.58 (40.1)			
NU□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	1.42 (36.1)	1.42 (36.1)	1.30 (33.0)	1.48 (37.6)											
NU□□-FNS6-8	3/8 Female NPT	3/8 Female NPT															
NU□□-NS6-8	3/8 Male NPT	3/8 Male NPT															
NU□□-FL6-8	3/8" FITOK	3/8" FITOK															
NU□□-FL8-8	1/2" FITOK	1/2" FITOK															
NU□□-ML10-8	10 mm FITOK	10 mm FITOK															

Dimensions of NU Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)										
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H		
NU □□-ML12-8	12 mm FITOK	12 mm FITOK	0.25 (6.4)	0.86	1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.58 (40.1)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.78 (96.0)		
NU □□-ML14-8	14 mm FITOK	14 mm FITOK													
NU □□-ML16-8	16 mm FITOK	16 mm FITOK													
NU □□-TS6-8-G	3/8" TS	3/8" TS													
NU □□-TS8-8-G	1/2" TS	1/2" TS													
NU □□-PS4-8-G	1/4 PS	1/4 PS													
NU □□-MTS12-8-G	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.78 (96.0)		
NU □□-MTS14-8-G	14 mm MTS	14 mm MTS													
NU □□-MTS16-8-G	16 mm MTS	16 mm MTS													
NU □□-MTB14-8-G	14 mm MTB	14 mm MTB													
NU □□-MTB16-8-G	16 mm MTB	16 mm MTB													
NU □□-UMB14-8	14 mm UMB	14 mm UMB													
NU □□-FO8-8	1/2" Male FO	1/2" Male FO			1.56 (39.6)	1.56 (39.6)	1.13 (28.6)	1.50 (38.1)	2.50 (63.5)	0.63 (16.0)	1.46 (37.1)	3.90 (99.0)			
NU □□-FR8-8	1/2" Male FR	1/2" Male FR													
NU □□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric													
NU □□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric													
NU □□-NS8-9	1/2 Male NPT	1/2 Male NPT													
NU □□-FNS8-9	1/2 Female NPT	1/2 Female NPT													
NU □□-NS12-9	3/4 Male NPT	3/4 Male NPT			0.39 (10.0)	1.8	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)
NU □□-FNS12-9	3/4 Female NPT	3/4 Female NPT													
NU □□-NS12-9	3/4 Male NPT	3/4 Male NPT													
NU □□-FL8-9	1/2" FITOK	1/2" FITOK													
NU □□-FL12-9	3/4" FITOK	3/4" FITOK													
NU □□-ML14-9	14 mm FITOK	14 mm FITOK													
NU □□-ML16-9	16 mm FITOK	16 mm FITOK	1.97 (50.0)	1.97 (50.0)			1.68 (42.7)	2.08 (52.8)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)		
NU □□-ML18-9	18 mm FITOK	18 mm FITOK													
NU □□-ML20-9	20 mm FITOK	20 mm FITOK													
NU □□-MTS14-9-G	14 mm MTS	14 mm MTS													
NU □□-MTS16-9-G	16 mm MTS	16 mm MTS													
NU □□-TS8-9-G	1/2" TS	1/2" TS													
NU □□-TS12-9-G	3/4" TS	3/4" TS	1.56 (39.7)	1.56 (39.7)			1.31 (33.3)	1.69 (42.9)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)		
NU □□-MTB16-9-G	16 mm MTB	16 mm MTB													
NU □□-UMB14-9	14 mm UMB	14 mm UMB													
NU □□-FR8-9	1/2" Male FR	1/2" Male FR													
NU □□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric													
NU □□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric													

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
4. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
5. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.



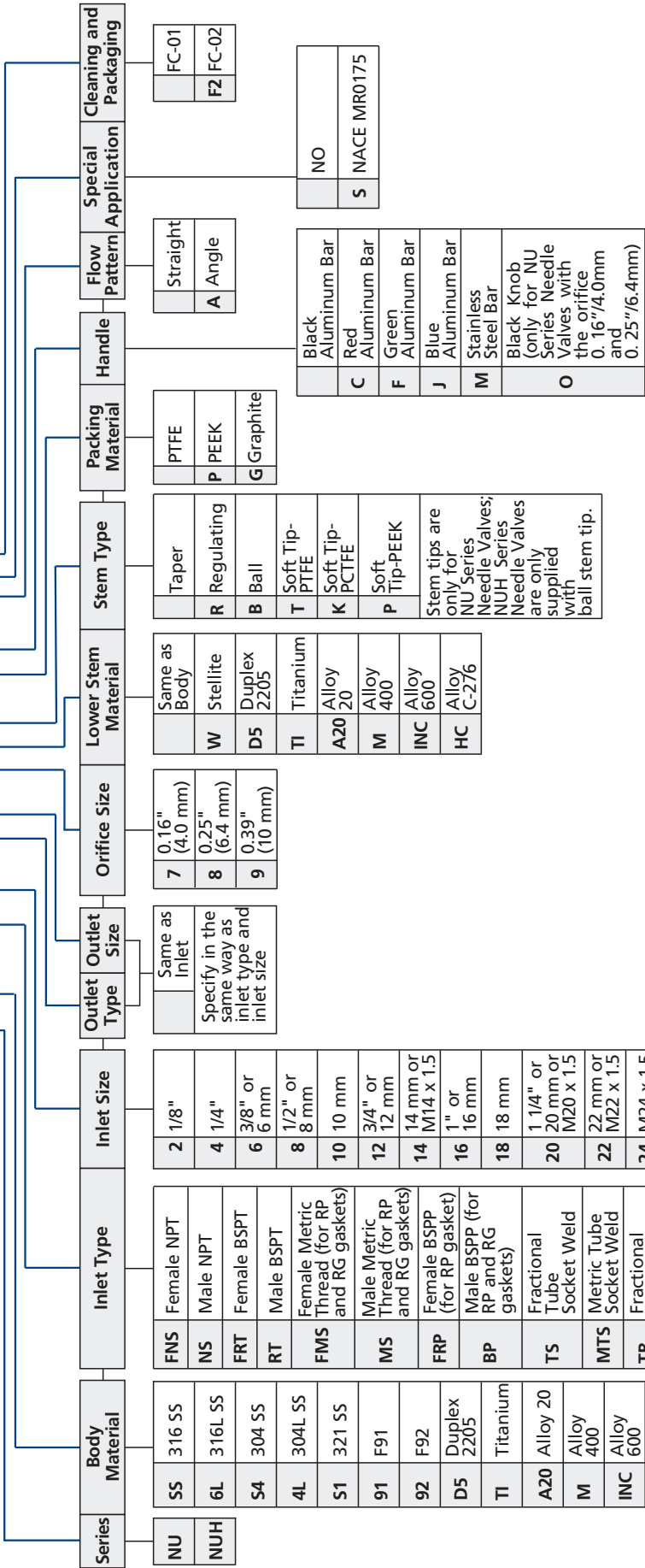
Dimensions of NUH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
NUH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.1)	0.78 (19.8)	3.42 (86.9)
NUH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT									
NUH□□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT									
NUH□□-NS4-7	1/4 Male NPT	1/4 Male NPT									
NUH□□-TS4-7-G	1/4" TS	1/4" TS			1.13 (28.6)	1.13 (28.6)					
NUH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.86	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.77 (45.0)	1.03 (26.2)	4.09 (104)
NUH□□-NS8-8	1/2 Male NPT	1/2 Male NPT									
NUH□□-TS8-8-G	1/2" TS	1/2" TS									
NUH□□-MTS12-8-G	12 mm MTS	12 mm MTS									

1. Connection type of "TS" means tube socket weld. "MTS" means metric tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

NUSS - FNS6 - FL6 - 8WB - GM - ASF2



Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Lower Stem Material	Stem Type	Packing Material	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NU	SS	FNS Female NPT	2 1/8"	Same as Inlet	7 0.16" (4.0 mm)	Same as Body	Taper	PTFE	Black Aluminum Bar	Straight		FC-01	
NUH	6L	NS Male NPT	4 1/4"	Specify in the same way as inlet type and inlet size	8 0.25" (6.4 mm)	W Stellite	R Regulating	P PEEK	Red Aluminum Bar	A Angle		F2 FC-02	
	S4	FRT Female BSPT	6 3/8" or 6 mm		9 0.39" (10 mm)	D5 Duplex 2205	B Ball	G Graphite	Green Aluminum Bar				
	4L	RT Male BSPT	8 1/2" or 8 mm			TI Titanium	T Soft Tip-PTFE		Blue Aluminum Bar				
	S1	FMS Female Metric Thread (for RP and RG gaskets)	10 10 mm			A20 Alloy 20	K Soft Tip-PTFE		Stainless Steel Bar				
	91	MS Male Metric Thread (for RP and RG gaskets)	12 3/4" or 12 mm			M Alloy 400	P Soft Tip-PEEK		Black Knob Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm				
	92	FRP Female BSPP (for RP gasket)	14 14 mm or M14 x 1.5			INC Alloy 600							
	D5	BP Male BSPP (for RP and RG gaskets)	16 1" or 16 mm			HC Alloy C-276							
	TI	TS Fractional Tube Socket Weld	18 18 mm										
	A20	MTS Metric Tube Socket Weld	20 1 1/4" or 20 mm or M20 x 1.5										
	M	TB Fractional Tube Butt Weld	22 22 mm or M22 x 1.5										
	INC	MTB Metric Tube Butt Weld	24 M24 x 1.5										
	HC	PS Pipe Socket Weld	25 25 mm										
	B	PB Pipe Butt Weld	27 M27 x 2										
	CS	FL Fractional Tube Fitting	28 28 mm										
	904L	ML Metric Tube Fitting											
		UFB Nut + Gasket + Fractional Bulged Nipple											
		UMB Nut + Gasket + Metric Bulged Nipple											
		FO Male FO 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 are available.

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be omitted in the ordering number, others should be specified.
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- 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.



Outside Screw and Yoke (OS&Y) Needle Valves

NY Series: Working pressure up to 6000 psig

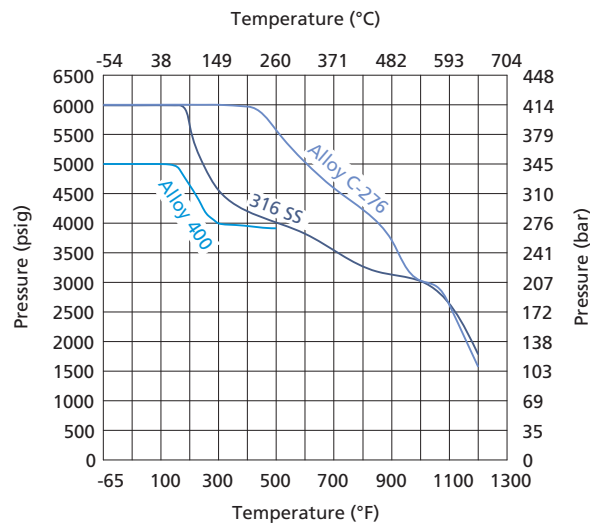
Features

- ⦿ Cold drawn bar as body
- ⦿ Standard seat diameter 0.16" (4mm). Cv: 0.35 standard
- ⦿ Hardened stem threads prevent galling
- ⦿ Stem threads completely isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Externally adjustable gland, independent of spindle thread
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Bottom mounting available
- ⦿ Every valve leak tested with Nitrogen or compressed air at maximum allowable working pressure
- ⦿ Working pressure up to:
 - NY Series—Stainless steel: 6000 psig (414 bar)
 - Alloy C-276: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
- ⦿ Working temperature:
 - PTFE: -65°F to 450°F (-54°C to 232°C)
 - PEEK: -65°F to 500°F (-54°C to 260°C)
 - Graphite: -65°F to 1200°F (-54°C to 649°C)



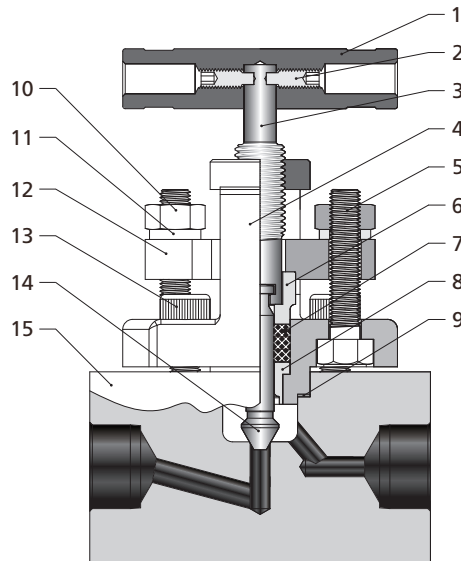
Pressure vs. Temperature

NY Series



1. Graphs are based on graphite packing.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Standard Materials of Construction

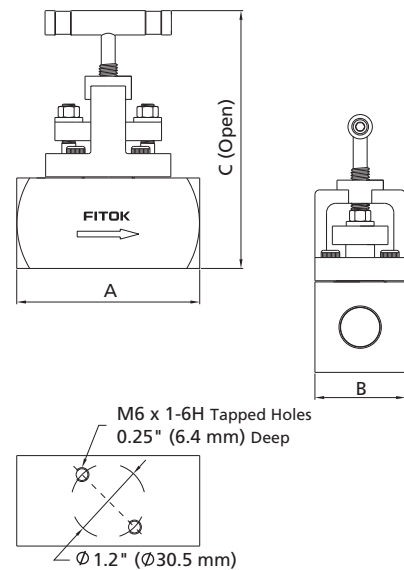


Item	Component	Valve Body Material
		316 SS
		Material Grade/ASTM Specification
1	Handle	Anodized aluminum or stainless steel
2	Set Screw	Galvanized carbon steel
3	Upper Stem	316 SS/A276
4	Yoke	316 SS/A182
5	Bolts	Stainless steel
6	Packing Washer	316 SS/A276
7	Packing	PTFE or PEEK or graphite
8	Packing Washer	316 SS/A276
9	Joint Seal	316 SS/A276
10	Nuts	Stainless steel
11	Gaskets	Stainless steel
12	Gland bridge	316 SS/A182
13	Bolts	Stainless steel
14	Lower Stem	Hardened 316 SS/A276
15	Body	316 SS/A479
	Lubricant	Molybdenum disulfide-based

Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions of NY Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)		
	Inlet	Outlet			A	B	C
NY□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	2.69 (68.2)	1.50 (38.1)	4.04 (102.7)
NY□□-NS4	1/4 Male NPT	1/4 Male NPT			2.95 (75.0)		
NY□□-NS4-FNS4	1/4 Male NPT	1/4 Female NPT			2.72 (69.2)		
NY□□-FNS6	3/8 Female NPT	3/8 Female NPT			2.93 (75.0)		
NY□□-NS6	3/8 Male NPT	3/8 Male NPT			3.00 (76.2)		
NY□□-FNS8	1/2 Female NPT	1/2 Female NPT			3.27 (82.0)		
NY□□-NS8	1/2 Male NPT	1/2 Male NPT			3.00 (76.2)		
NY□□-NS8-FNS8	1/2 Male NPT	1/2 Female NPT			3.00 (76.2)		
NY□□-PS8-G	1/2 PS	1/2 PS			3.54 (89.8)		
NY□□-PB8-G	1/2 PB	1/2 PB			3.44 (87.4)		
NY□□-FL4	1/4" FITOK	1/4" FITOK			3.50 (88.9)		
NY□□-FL6	3/8" FITOK	3/8" FITOK			3.78 (96.0)		
NY□□-FL8	1/2" FITOK	1/2" FITOK			3.44 (87.4)		
NY□□-ML6	6 mm FITOK	6 mm FITOK			3.78 (96.0)		
NY□□-ML8	8 mm FITOK	8 mm FITOK			3.78 (96.0)		
NY□□-ML12	12 mm FITOK	12 mm FITOK					

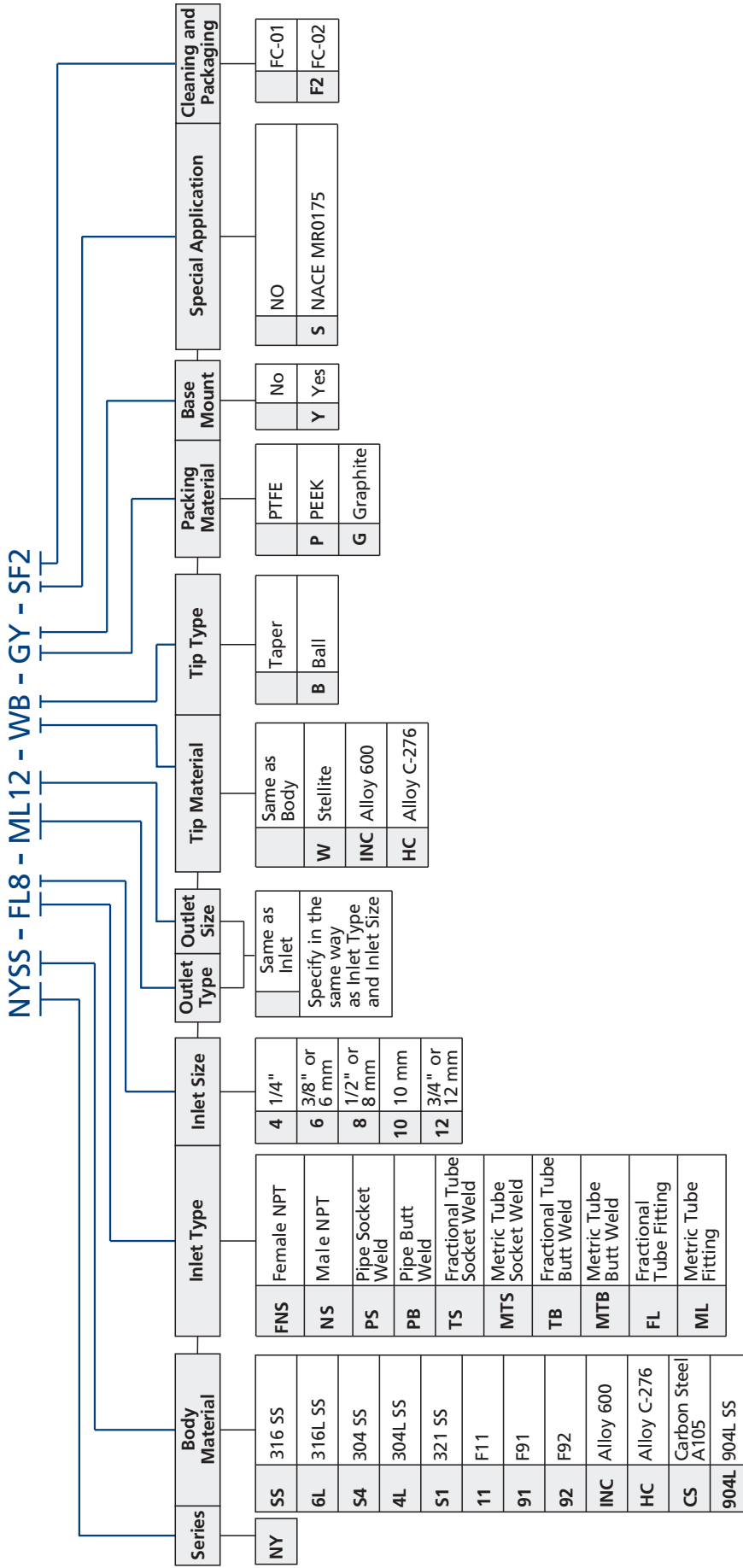


1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



Needle Valves
Metering Valves



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.

Metering Valves

MS, MV, ML and MH Series



Needle Valves
Metering Valves

Features

MS Series

- ⊙ Working pressure up to: 2000 psig (138 bar)
- ⊙ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⊙ Orifice size: 0.032" (0.81 mm)
- ⊙ Max. flow coefficient (Cv): 0.004
- ⊙ Stem taper: 1°
- ⊙ Turns to open: 9 to 12
- ⊙ Shutoff service: not available
- ⊙ Variety of end connections
- ⊙ Panel mountable
- ⊙ Flow pattern: straight, angle, cross and double
- ⊙ Handle type: knurled, vernier and slotted
- ⊙ Variety of materials available for valve body



MV and ML Series

- ⊙ Working pressure up to: 1000 psig (69 bar)
- ⊙ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⊙ Max. flow coefficients (Cv):
 - MV series: 0.03
 - ML series: 0.15
- ⊙ Orifice sizes:
 - MV series: 0.056" (1.42 mm)
 - ML series: 0.128" (3.25 mm)
- ⊙ Stem taper:
 - MV series: 3°
 - ML series: 6.5°
- ⊙ Turns to open:
 - MV series: 8 to 10
 - ML series: 10 to 11
- ⊙ Shutoff service:
 - MV series: not available
 - ML series: available
- ⊙ Variety of end connections
- ⊙ Panel mountable
- ⊙ Flow pattern: straight, angle, cross (MV Series) and double (MV Series)
- ⊙ Handle type:
 - MV series: knurled, vernier and slotted
 - ML series: round and vernier
- ⊙ Variety of materials available for valve body

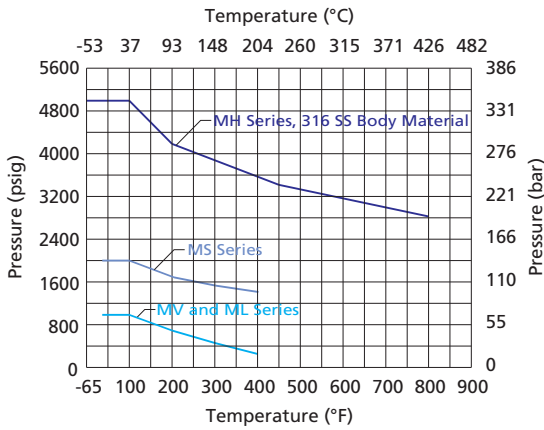


MH Series

- ⊙ Working pressure up to: 5000 psig (345 bar)
- ⊙ Working temperature: -65°F to 850°F (-54°C to 454°C)
- ⊙ Orifice size: 0.062" (1.6 mm)
- ⊙ Max. flow coefficient (Cv): 0.04
- ⊙ Stem taper: 2°
- ⊙ Shutoff service: available
- ⊙ Variety of end connections
- ⊙ Turns to open: 9 to 10
- ⊙ Panel mountable
- ⊙ Flow pattern: straight and angle
- ⊙ Handle type: round circular and vernier
- ⊙ Variety of materials available for valve body



Pressure vs. Temperature



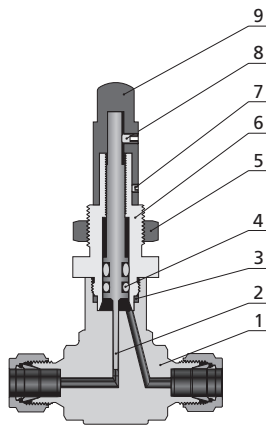
1. Graphs are based on Fluorocarbon and Graphite (for MH Series).
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Temperature Ranges for Different seal Materials

Seal Material	Temperature Range °F (°C)
O-Ring (for MS, MV, ML Series)	
Buna N (NBR)	-10 to 212 (-23 to 100)
Ethylene Propylene (EPDM)	-10 to 300 (-23 to 148)
Fluorocarbon (FKM)	-10 to 400 (-23 to 204)
Kalrez (FFKM)	-10 to 527 (-23 to 275)
Neoprene (CR)	-10 to 250 (-23 to 121)
Stem Packing (for MH Series)	
PTFE	-65 to 450 (-54 to 232)
Graphite	-65 to 850 (-54 to 454)

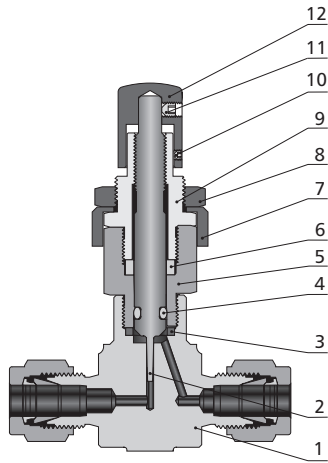
Standard Materials of Construction

MS Series



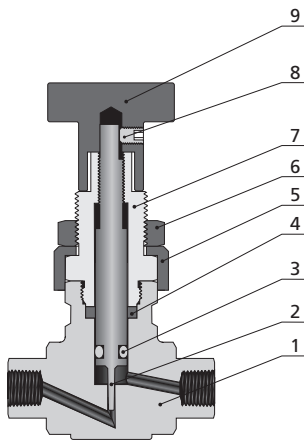
Component		Valve Body Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2	Stem	316 SS/A479	
3	Body Seal	Fluorocarbon FKM	
4	O-ring	Fluorocarbon FKM	
5	Panel Mount Nut	Stainless steel	Silver-mist chrome-plated C36000/B16
6	Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
7	Lock Screw	Stainless steel	
8	Handle Screw	Stainless steel	
9	Handle	316 SS/A276	Silver-mist chrome-plated C36000/B16

MV Series



Component		Valve Body Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2	Stem	316 SS/A479	
3	Body Seal	Fluorocarbon FKM	
4	O-ring	Fluorocarbon FKM	
5	Body Extension	316 SS/A479	Silver-mist chrome-plated C36000/B16
6	Stem Guide Ring	PTFE/D1710	
7	Bonnet Sleeve	Stainless steel	
8	Panel Mount Nut	316 SS/A276	Silver-mist chrome-plated C36000/B16
9	Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
10	Lock Screw	Stainless steel	
11	Handle Screw	Stainless steel	
12	Handle	316 SS/A276	Silver-mist chrome-plated C36000/B16

ML Series

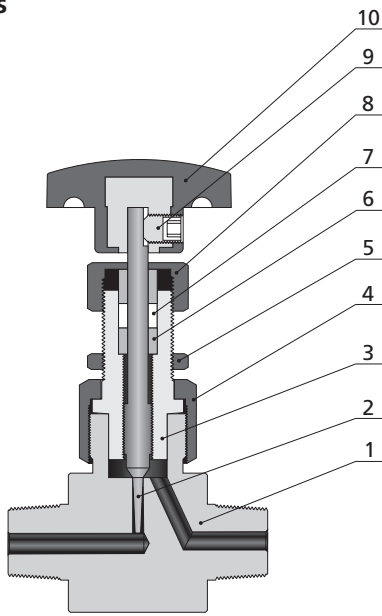


Component		Valve Body Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2	Stem	Hardened 316 SS/A479	
3	O-ring	Fluorocarbon FKM	
4	Stem Guide Ring	PTFE/D1710	
5	Bonnet Sleeve	Stainless steel	
6	Panel Mount Nut	316 SS/A276	Silver-mist chrome-plated C36000/B16
7	Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
8	Handle Screw	Stainless steel	
9	Handle	Anodized aluminium	

1. Lubricants: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials.

MH Series



Component		Material Grade/ASTM Specification
1	Body	316 SS/A479
2	Stem	440C SS/A276
3	Bonnet	316 SS/A479
4	Union Nut	316 SS/A276
5	Panel Mount Nut	Stainless steel
6	Packing Gland	316 SS/A276
7	Packing	PTFE/D1710
8	Union Nut	316 SS/A276
9	Handle Screw	Stainless steel
10	Handle	Nylon

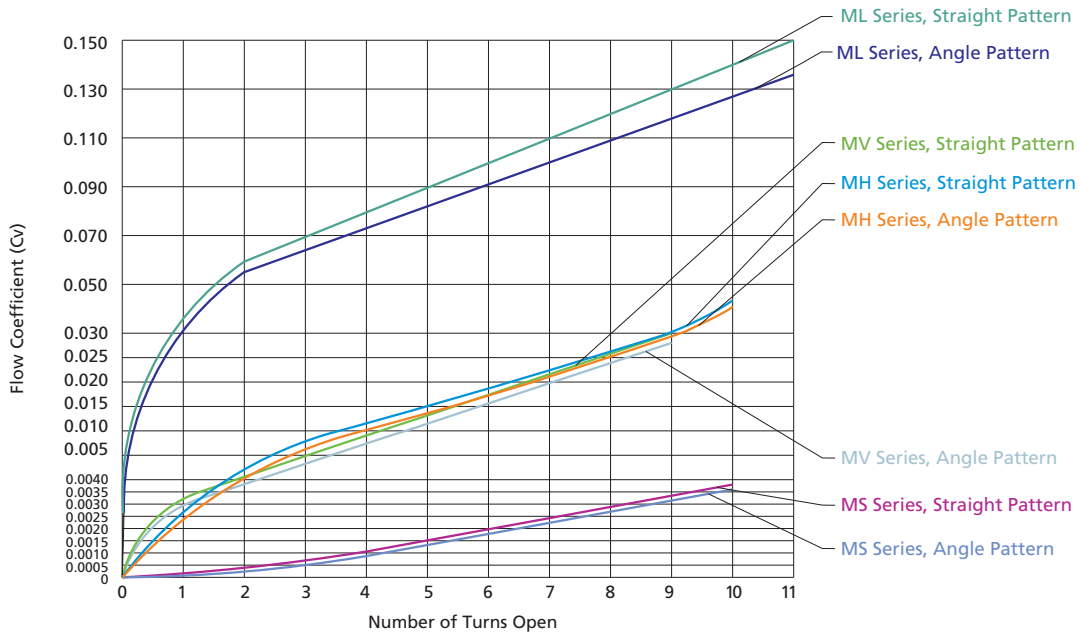
Lubricant: Silicone-based

Needle Valves
Metering Valves

Flow Data in full open position at 70°F (20°C)

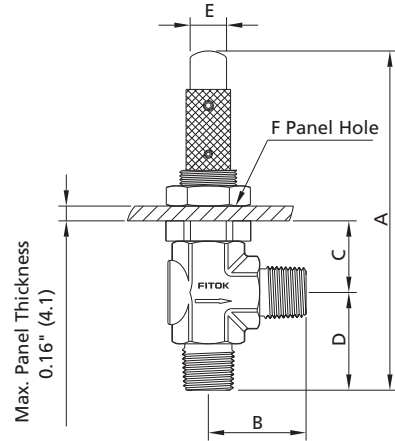
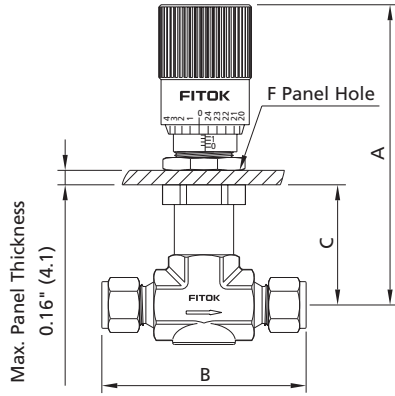
Pressure Drop to Atmosphere psig (bar)	MS Series (CV: 0.004)		MV Series (CV: 0.03)		ML Series (CV: 0.15)		MH Series (CV: 0.04)	
	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)
10 (0.69)	0.04 (1.1)	0.01 (0.03)	0.33 (9.3)	0.09 (0.34)	2.00 (56.6)	0.51 (1.90)	0.45 (12.7)	0.12 (0.45)
50 (3.45)	0.10 (2.8)	0.02 (0.07)	0.90 (25.4)	0.21 (0.79)	6.40 (181)	1.20 (4.50)	1.20 (33.9)	0.28 (1.00)
100 (6.90)	0.20 (5.6)	0.04 (0.15)	1.50 (42.4)	0.30 (1.10)	11.40 (323)	1.70 (6.40)	2.10 (59.4)	0.40 (1.50)

Flow Coefficient at Turns to Open



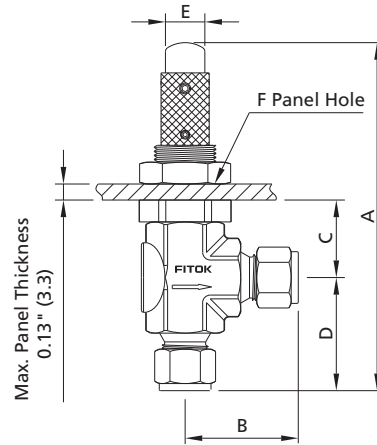
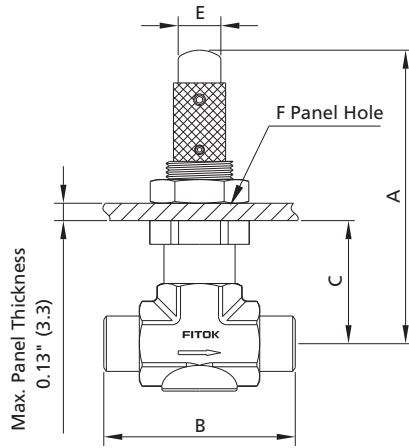
Dimensions

MS Series



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
MS□□-FL1-	1/16" FITOK	1/16" FITOK	2.34 (59.4)	1.56 (39.6)	0.92 (23.4)	—	0.38 (9.6)	0.45 (11.4)
MS□□-FL2-	1/8" FITOK	1/8" FITOK		2.04 (51.8)				
MS□□-FL4-	1/4" FITOK	1/4" FITOK						
MS□□-ML3-	3 mm FITOK	3 mm FITOK						
MS□□-ML6-	6 mm FITOK	6 mm FITOK						
MS□□-FR4-	1/4 Male FR	1/4 Male FR	2.06 (52.3)					
Angle Pattern								
MS□□-FL1-	1/16" FITOK	1/16" FITOK	2.96 (75.2)	0.81 (20.6)	0.92 (23.4)	0.81 (20.6)	0.38 (9.6)	0.45 (11.4)
MS□□-FL2-	1/8" FITOK	1/8" FITOK	3.07 (78.0)	0.98 (24.9)		0.98 (24.9)		
MS□□-FL4-	1/4" FITOK	1/4" FITOK	3.11 (79.0)	1.02 (25.9)		1.02 (25.9)		
MS□□-ML3-	3 mm FITOK	3 mm FITOK	3.07 (78.0)	0.98 (24.9)		0.98 (24.9)		
MS□□-FNS2-	1/8 Female NPT	1/8 Female NPT						

MV and ML Series



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F

Straight Pattern

MV□□-FL2-	1/8" FITOK	1/8" FITOK	2.64 (67.1)	2.02 (51.3)	1.52 (38.5)	—	0.50 (12.7)	0.58 (14.7)
MV□□-FL4-	1/4" FITOK	1/4" FITOK		2.20 (55.9)				
MV□□-ML3-	3 mm FITOK	3 mm FITOK		2.02 (51.3)				
MV□□-ML6-	6 mm FITOK	6 mm FITOK		2.20 (55.9)				
MV□□-NS2-	1/8 Male NPT	1/8 Male NPT		1.60 (40.6)				
MV□□-NS4-	1/4 Male NPT	1/4 Male NPT		1.96 (49.8)				
MV□□-FNS2-	1/8 Female NPT	1/8 Female NPT		1.94 (49.3)				
MV□□-FR4-	1/4 Male FR	1/4 Male FR		2.06 (52.3)				

Angle Pattern

MV□□-FL2-	1/8" FITOK	1/8" FITOK	3.65 (92.8)	1.01 (25.7)	1.07 (27.2)	1.01 (25.7)	0.50 (12.7)	0.58 (14.7)
MV□□-FL4-	1/4" FITOK	1/4" FITOK	3.74 (95.0)	1.10 (27.9)		1.10 (27.9)		
MV□□-ML3-	3 mm FITOK	3 mm FITOK	3.65 (92.8)	1.01 (25.7)		1.01 (25.7)		
MV□□-ML6-	6 mm FITOK	6 mm FITOK	3.74 (95.0)	1.10 (27.9)		1.10 (27.9)		
MV□□-NS2-	1/8 Male NPT	1/8 Male NPT	3.44 (87.4)	0.80 (20.3)		0.80 (20.3)		
MV□□-NS4-	1/4 Male NPT	1/4 Male NPT	3.62 (92.0)	0.98 (24.9)		0.98 (24.9)		
MV□□-FNS2-	1/8 Female NPT	1/8 Female NPT	3.61 (91.7)	0.97 (24.6)		0.97 (24.6)		
MV□□-FR4-	1/4 Male FR	1/4 Male FR						

Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F

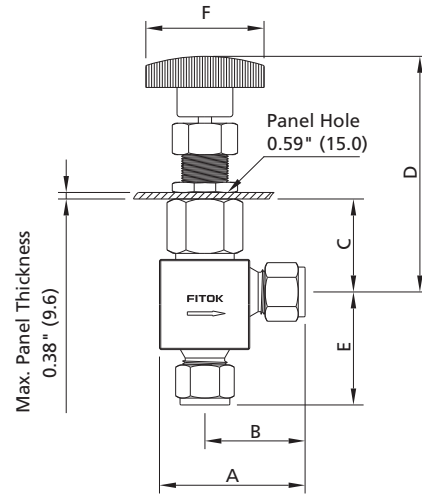
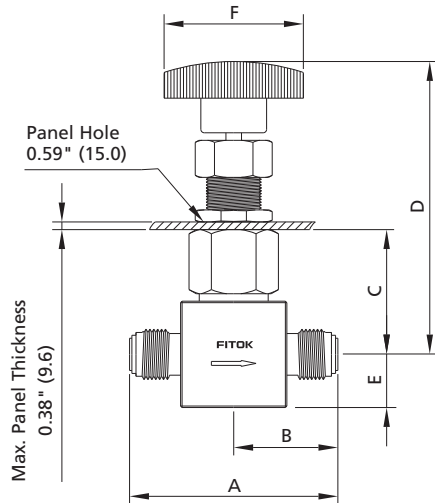
Straight Pattern

ML□□-FL4-	1/4" FITOK	1/4" FITOK	2.72 (69.1)	2.34 (59.4)	1.26 (32.0)	—	1.13 (28.7)	0.58 (14.7)
ML□□-FL6-	3/8" FITOK	3/8" FITOK		2.46 (62.5)				
ML□□-ML6-	6 mm FITOK	6 mm FITOK		2.34 (59.4)				
ML□□-NS4-	1/4 Male NPT	1/4 Male NPT		2.00 (50.8)				

Angle Pattern

ML□□-FL4-	1/4" FITOK	1/4" FITOK	3.89 (98.8)	1.17 (29.7)	1.26 (32.0)	1.17 (29.7)	1.13 (28.7)	0.58 (14.7)
ML□□-ML6-	6 mm FITOK	6 mm FITOK						

MH Series

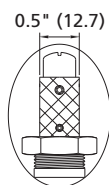


Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
MH□□-FL4-	1/4" FITOK	1/4" FITOK	2.40 (61.0)	1.20 (30.5)	1.09 (27.7)	3.86 (98.0)	0.38 (9.6)	1.38 (35.1)
MH□□-ML6-	6 mm FITOK	6 mm FITOK						
MH□□-FNS2-	1/8 Female NPT	1/8 Female NPT	2.00 (50.8)	1.00 (25.4)			0.40 (10.1)	
MH□□-FNS4-	1/4 Female NPT	1/4 Female NPT	2.06 (52.3)	1.03 (26.2)				
Angle Pattern								
MH□□-FL4-	1/4" FITOK	1/4" FITOK	1.54 (39.1)	1.16 (29.5)	1.09 (27.7)	3.86 (98.0)	1.48 (37.6)	1.38 (35.1)
MH□□-ML6-	6 mm FITOK	6 mm FITOK						
MH□□-FNS2-	1/8 Female NPT	1/8 Female NPT	1.28 (32.5)	0.91 (23.1)			1.00 (25.4)	
MH□□-FNS4-	1/4 Female NPT	1/4 Female NPT						

Optional Handles

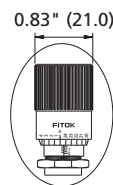
Slotted Handle

- ⦿ Flow setting adjustment is available with a screwdriver
- ⦿ Ideal for installation where handle is difficult to access
- ⦿ Available for MS and MV series



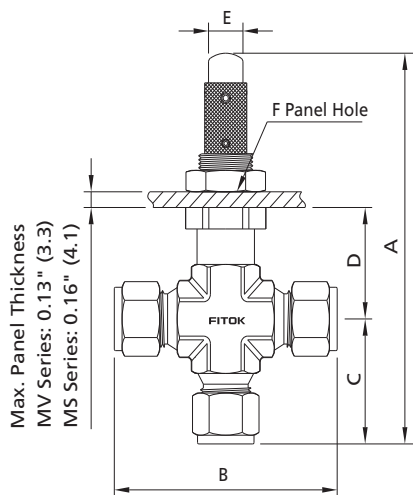
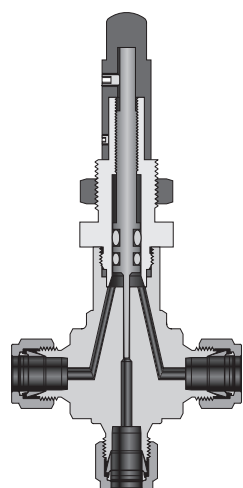
Vernier Handle

- ⦿ Precise graduated aluminum alloy handle
- ⦿ Repeatable flow setting
- ⦿ Adjustment accurate to 1/25 turn (1/1000 of an inch)
- ⦿ Available for all series

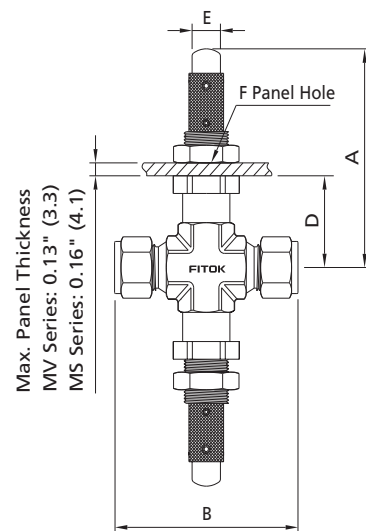
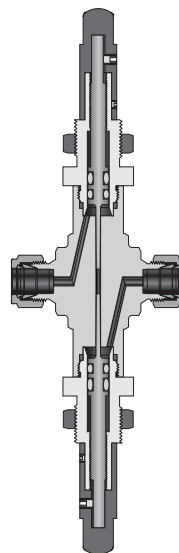


Optional Patterns

Cross Pattern



Double Pattern



1. Fluid flows between side ports around stem in any stem position.
2. Fluid flows through branch port can be metered in both directions.

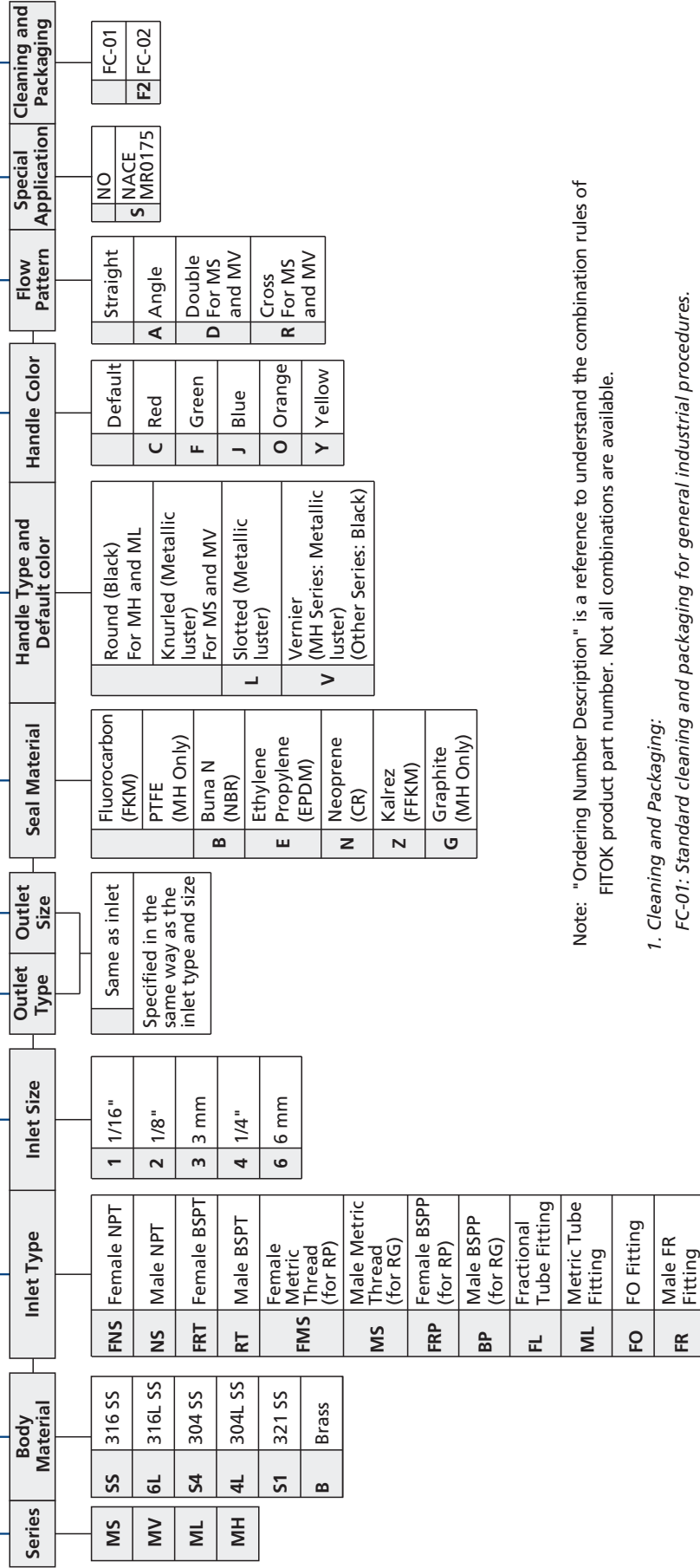
Inlet valve handle can be set and locked at desired maximum flow, outlet valve handle can be used for fine flow control up to the preset maximum of the inlet valve.

Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Cross Pattern								
MS□□-FL2-	1/8" FITOK	1/8" FITOK	3.32 (84.3)	1.96 (49.8)	0.98 (24.9)	0.92 (23.4)	0.38 (9.6)	0.45 (11.4)
MS□□-ML3-	3 mm FITOK	3 mm FITOK						
Double Pattern								
MS□□-FL2-	1/8" FITOK	1/8" FITOK	2.41 (61.2)	1.90 (48.3)	—	0.99 (25.2)	0.38 (9.6)	0.45 (11.4)
MS□□-ML3-	3 mm FITOK	3 mm FITOK						
Cross Pattern								
MV□□-FL4-	1/4" FITOK	1/4" FITOK	3.74 (95.0)	2.20 (55.9)	1.10 (27.9)	1.52 (38.5)	0.50 (12.7)	0.58 (14.7)
MV□□-ML6-	6 mm FITOK	6 mm FITOK						
Double Pattern								
MV□□-FL4-	1/4" FITOK	1/4" FITOK	2.62 (67.1)	2.20 (55.9)	—	1.52 (38.5)	0.50 (12.7)	0.58 (14.7)
MV□□-ML6-	6 mm FITOK	6 mm FITOK						

1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For special sizes and types, refer to the ordering information.
3. 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.

Ordering Number Description

MVSS – FL4 – ML6 – EVJ – ASF2



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 cleaning requirement of ASTM G93 Level C.

Bellows-sealed Valves

Bellows-sealed Valves



B-114

Bellows-sealed Valves

SW and SU Series

Bellows-sealed
Valves



Contents

Bellows-sealed Valves

SW Series



B-116

Bellows-sealed Valves

SU Series



B-120

Bellows-sealed Valves

SW Series

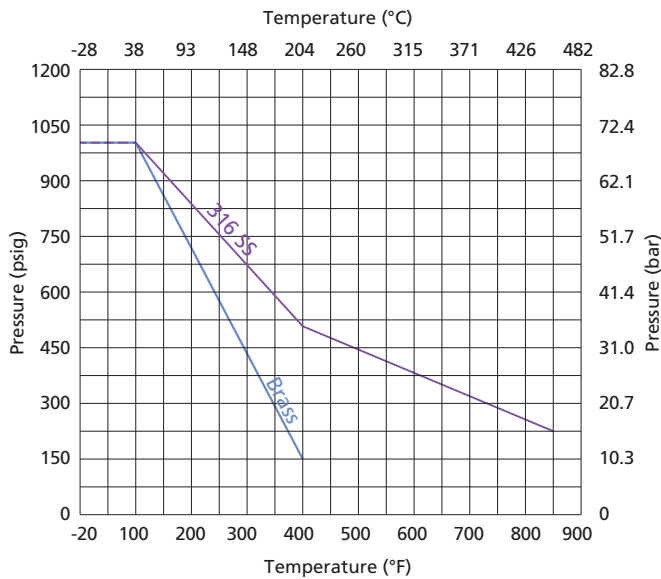
Features

- ⦿ 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 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 pressure ≥ 87 psig (6 bar) at the seat, envelope and all seals (maximum allowable leak rate: 4×10^{-9} std cm³/s)



Bellows-sealed Valves

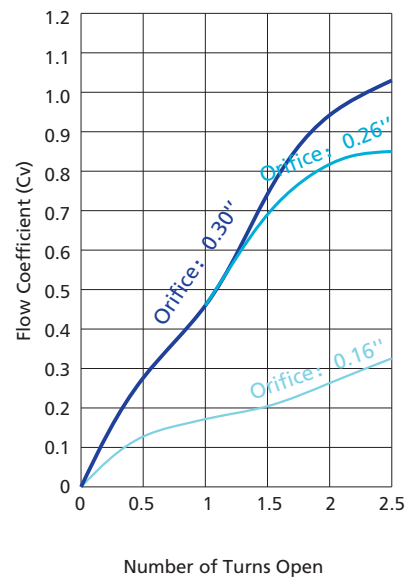
Pressure vs. Temperature



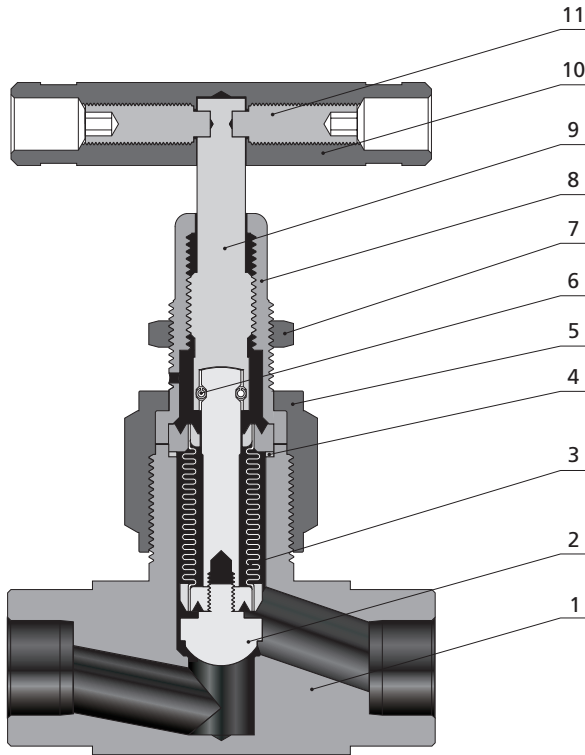
200°F (93°C) max. with PCTFE stem tip (soft tip).

Flow Coefficient vs. Turns Open

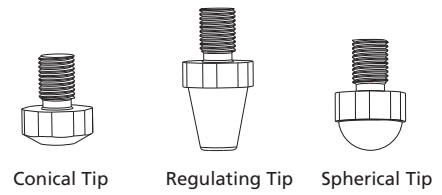
Regulating Stem



Standard Materials of Construction



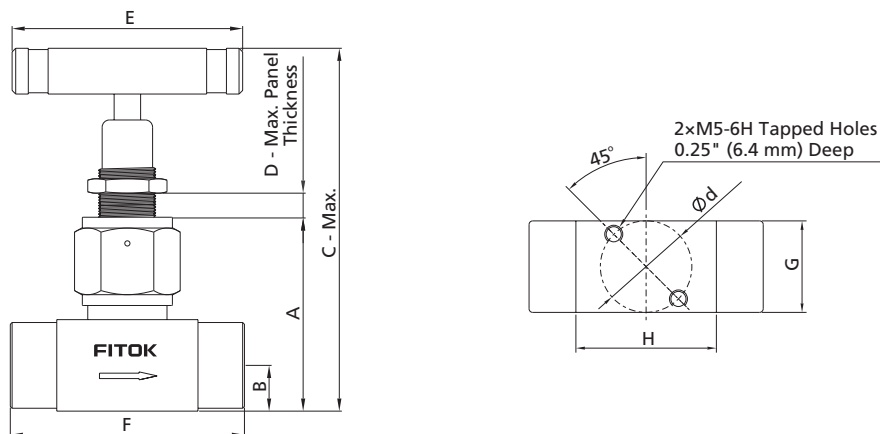
Tip Types



Component		Valve Body Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A182	Brass/B283
2	Stem Tip	316 SS/A479 (regulating)	
		PCTFE/D1430 (conical)	
		Stellite (spherical)	
3	Bellow	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	Pin	Stainless steel	
7	Panel Mount Nut	Stainless steel	Brass/B16
8	Bonnet	316 SS/A479	Brass/B16
9	Actuator	304 SS/A479	304 SS/A479
10	Handle	6061/B210 /stainless steel	
11	Set Screws	Galvanized carbon steel	
Wetted Lubricant		Fluorinated-based	
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.

Ordering Number Description

SWSS – FL8 – ML10 – 5 – WR – B – SF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Material and Type	Handle	Special Application	Cleaning and Packaging
SW	SS	TS	2 1/8"		Same as Inlet	2 0.16" (4.1 mm)	Stellite Spherical	Green Aluminum Bar	NO	FC-01
	6L	MTS	4 1/4"	Specified in the same way as Inlet type and size		3 0.26" (6.6 mm)	Stainless Steel Regulating	Black Aluminum Bar	S	F2
	S4	TB	6 3/8" or 6 mm			4 0.28" (7.1 mm)	PCTFE Conical	Red Aluminum Bar		
	4L	MTB	8 1/2" or 8 mm			5 0.30" (7.6 mm)	Stellite Regulating	Blue Aluminum Bar		
	B		10 10 mm				Stainless Steel Conical	Stainless Steel Bar		
		PS	12 3/4" or 12 mm				Stellite Conical	Black nylon Knob		Only applicable to valves with orifice size of 0.16" (4.1mm)
		PB	14 14 mm or M14				Stellite Conical	Toggle handle		Only applicable to valves with orifice size of 0.16" (4.1mm), PCTFE conical tip and max. working pressure up to 100 psig (6.9 bar).
		FL	16 1" or 16 mm							
		ML	18 18 mm							
		UFB	20 20 mm							
		UMB								
		FFR								
		FR								

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.

Bellows-sealed Valves

SU Series

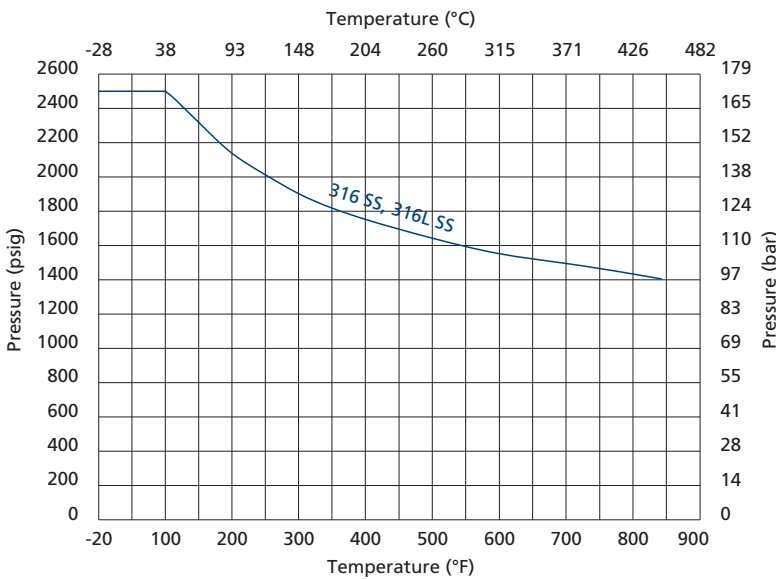
Features

- ⦿ 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 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 pressure ≥ 87 psig (6 bar) at the seat, envelope and all seals (maximum allowable leak rate : 4×10^{-9} std cm³/s)



Bellows-sealed Valves

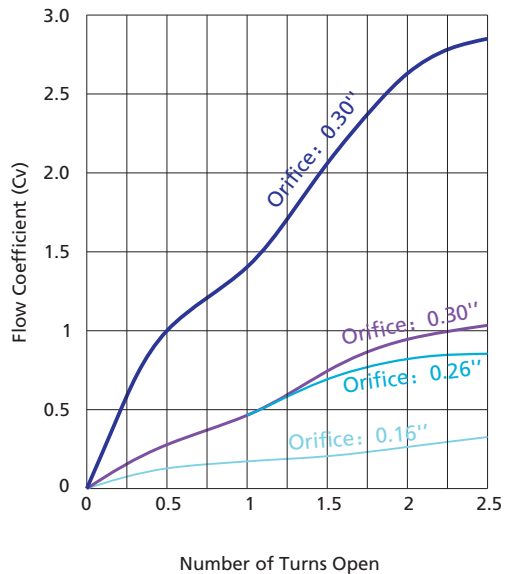
Pressure vs. Temperature



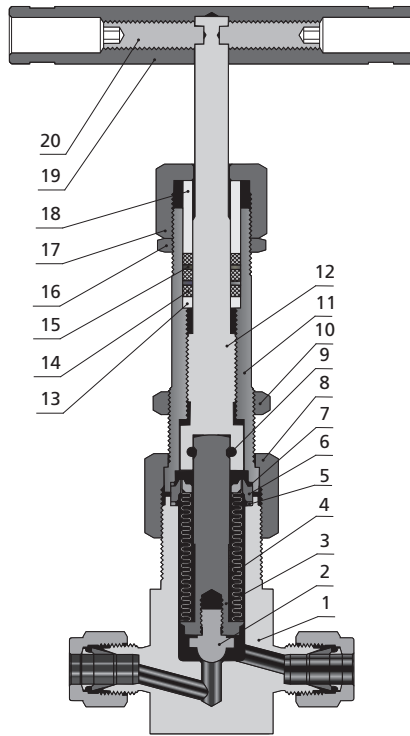
200°F (93°C) max. with PCTFE stem tip (soft tip).

Flow Coefficient vs. Turns Open

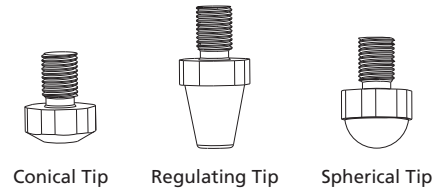
Regulating Stem



Standard Materials of Construction



Tip Types

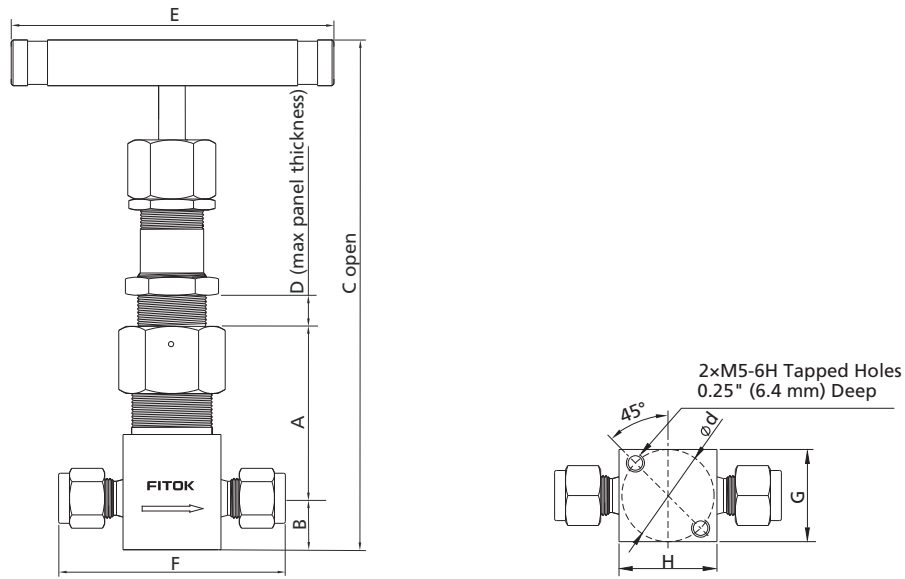


Component		Valve Body Material Grade/ASTM Specification
		316 SS
1	Body	316 SS/A182 or A479
2	Stem Tip	316 SS/A479 (regulating)
		PCTFE/D1430 (conical)
		Stellite (spherical)
3	Stem	316 SS/A479
4	Bellows	316L SS/A240
5	Gasket	Sliver-plated 316L SS/A269
6	Weld Ring	316 SS/A479
7	Gasket	Sliver-plated 316L 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/A276
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 "

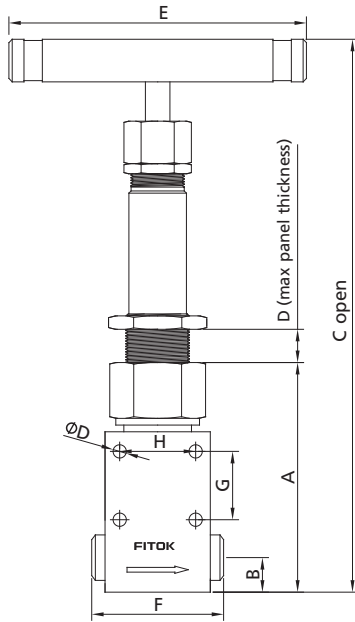


Basic Ordering Number	End Connections		Orifice in. (mm)	Cv	Dimensions, in. (mm)								
	Inlet Size	Outlet Size			A	B	C	D	E	F	G	H	Ød
SU□□-FL4-2-	1/4" FITOK	1/4" FITOK	0.16 (4.10)	0.36	1.86 (47.3)	0.54 (14.2)	6.34 (161.0)	0.38 (9.7)	3.50 (88.9)	2.46 (62.5)	1.00 (25.4)	1.07 (27.2)	1.00 (25.4)
SU□□-FL6-3-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

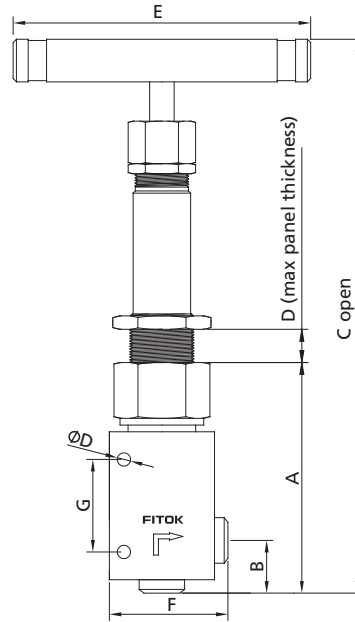
1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings. TS means fractional tube socket weld. TB means tube butt weld.
2. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, 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"

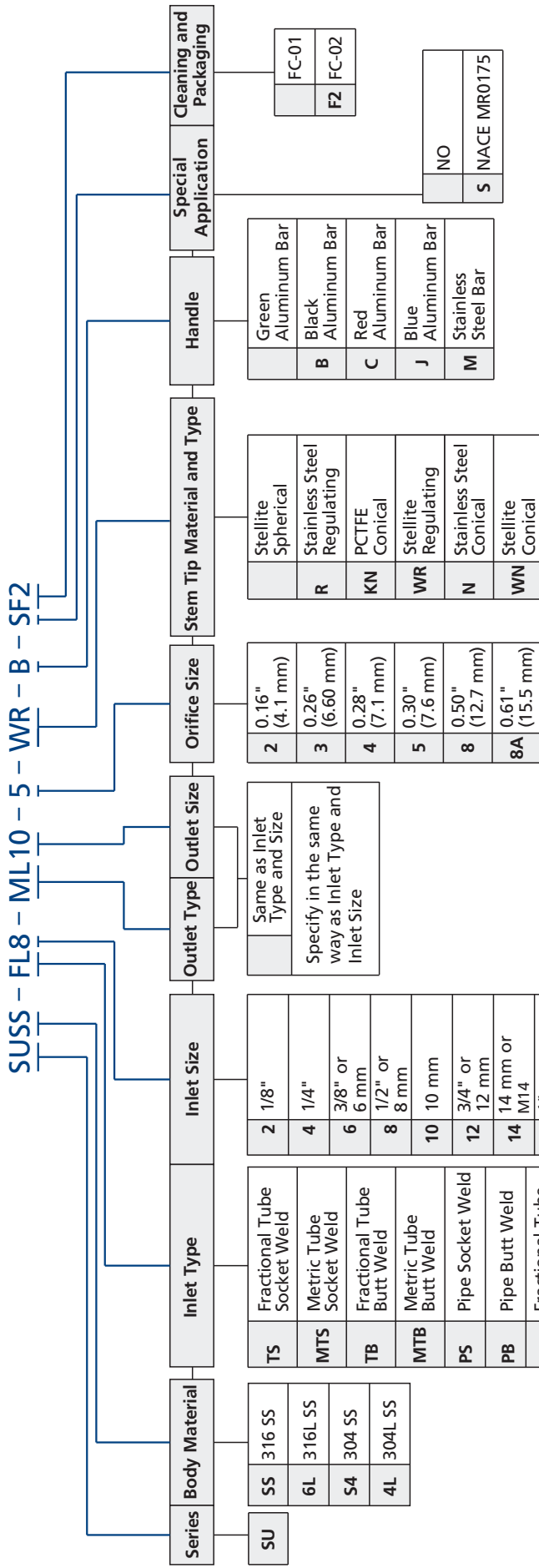


Orifice: 0.61"



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)

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.

Check Valves, Relief Valves

Check Valves



B-126

Proportional Relief Valves



B-142

Check Valves

CV, CH, CO, CA, COA, CL and CW Series



Check Valves

CV, CH, CO, CA, COA, CL and CW Series



Features

CV Series

- ⦿ Resilient O-ring seat design for leak free sealing
- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 375°F (-23°C to 190°C)
- ⦿ Cracking pressure: 1/3 to 25 psig (0.02 to 1.7 bar)
- ⦿ Variety of end connections and materials available
- ⦿ Fixed cracking pressure, mountable in any directions

CH Series

- ⦿ Seat ring continuously cleaned by media, avoiding secondary pollution
- ⦿ Working pressure up to: 6000 psig (414 bar)
- ⦿ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⦿ Cracking pressure: 1/3 to 25 psig (0.02 to 1.7 bar)
- ⦿ Variety of end connections and materials available
- ⦿ Fixed cracking pressure, mountable in any directions

CO Series

- ⦿ Compact design, one piece body
- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 375°F (-23°C to 190°C)
- ⦿ Cracking pressure: 1/3 to 25 psig (0.02 to 1.7 bar)
- ⦿ Variety of end connections and materials available
- ⦿ Fixed cracking pressure, mountable in any directions

CA Series

- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 375°F (-23°C to 190°C)
- ⦿ Cracking pressure: 3 to 600 psig (0.2 to 41.4 bar)
- ⦿ Variety of end connections and materials available
- ⦿ Various springs available
- ⦿ Adjustable cracking pressure, mountable in any directions

COA Series

- ⦿ Compact design, one-piece body
- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 375°F (-23°C to 190°C)
- ⦿ Cracking pressure: 3 to 600 psig (0.2 to 41.4 bar)
- ⦿ Variety of end connections and materials available
- ⦿ Various springs available
- ⦿ Adjustable cracking pressure, mountable in any directions

CL Series

- ⦿ Working pressure up to: 6000 psig (414 bar)
- ⦿ Working temperature: -65°F to 900°F (-53°C to 482°C)
- ⦿ Rugged, all-stainless steel construction
- ⦿ Union bonnet design, all-stainless steel structure, horizontal installation with bonnet nut on top
- ⦿ Reverse flow coefficient less than 0.1% of forward flow coefficient

CW Series

- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⦿ Cracking pressure: less than 2 psig (0.14 bar)
- ⦿ Variety of end connections and materials available
- ⦿ All-welded design for safety
- ⦿ Standard or fine polished wetted surfaces optional

1. Besides CL series, other check valves are all coated with lubricants like silicone base and molybdenum disulfide base.
2. Please contact FITOK Group or our authorized distributors for other materials.
3. PTFE-coated spring is an option for CV, CO, CA, and COA series check valves. For more details, please contact FITOK Group or our authorized distributors.
4. Every valve is tested with nitrogen for leak-tight performance at its maximum working pressure.

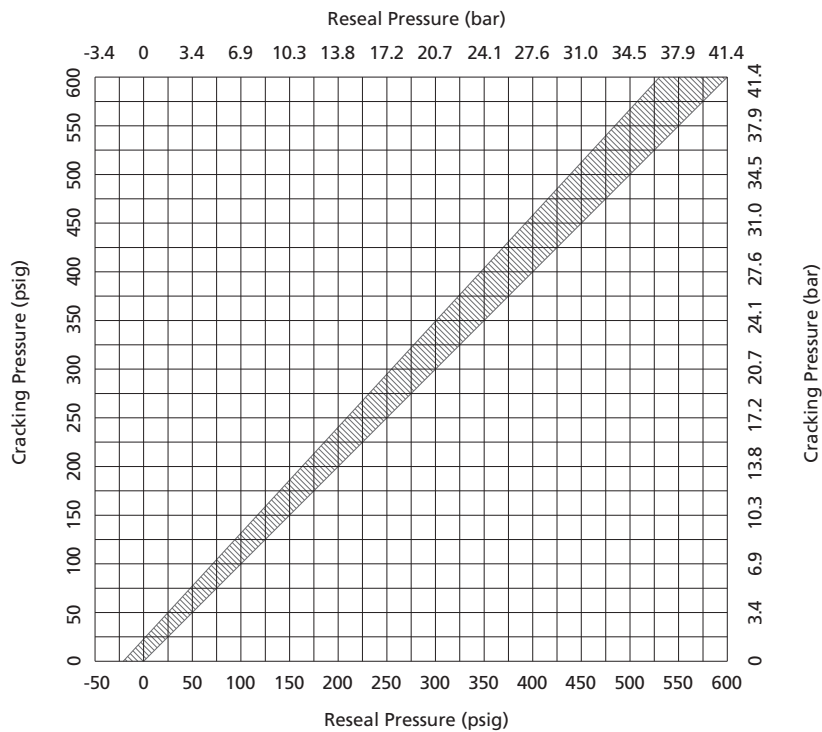
Cracking Pressure and Reseal Pressure

Cracking pressure - the upstream pressure at which the first indication of flow occurs.

Reseal pressure - the pressure at which there is no indication of flow.

Series	Nominal Cracking Pressure psig (bar)	Cracking Pressure Range psig (bar)	Reseal Pressure Range psig (bar)
CV	1/3 (0.02) 1 (0.06) 3 (0.21) 10 (0.68) 25 (1.7)	0 to 3 (0 to 0.21) 0 to 4 (0 to 0.28) 1 to 5 (0.06 to 0.34) 7 to 15 (0.49 to 1.1) 20 to 30 (1.4 to 2.1)	Up to 6 (0.42) downstream pressure Up to 6 (0.42) downstream pressure Up to 6 (0.42) downstream pressure 3 (0.21) or higher upstream pressure 17 (1.2) or higher upstream pressure
CH	1/3 (0.02) 1 (0.06) 3 (0.21) 10 (0.68) 25 (1.7)	0 to 3 (0 to 0.21) 0 to 4 (0 to 0.28) 1 to 5 (0.06 to 0.34) 7 to 15 (0.49 to 1.1) 20 to 30 (1.4 to 2.1)	Up to 6 (0.42) downstream pressure Up to 5 (0.35) downstream pressure Up to 2 (0.14) downstream pressure 3 (0.21) or higher upstream pressure 17 (1.2) or higher upstream pressure
CO	1/3 (0.02) 1 (0.06) 3 (0.21) 10 (0.68) 25 (1.7)	0 to 3 (0 to 0.21) 0 to 4 (0 to 0.28) 1 to 5 (0.06 to 0.34) 7 to 15 (0.49 to 1.1) 20 to 30 (1.4 to 2.1)	6 to 20 (0.42 to 1.4) downstream pressure 5 to 20 (0.35 to 1.4) downstream pressure 3 to 20 (0.21 to 1.4) downstream pressure 3 to 10 (0.21 to 0.68) downstream pressure 5 (0.35) or higher upstream pressure
CA	3 to 50 (0.21 to 3.4) 50 to 150 (3.4 to 10.3)	—————	Refer to the chart below
COA	150 to 350 (10.3 to 24.1) 350 to 600 (24.1 to 41.3)		
CW	1/3 (0.02)	0 to 2 (0 to 0.14)	Up to 2 (0.14) downstream pressure

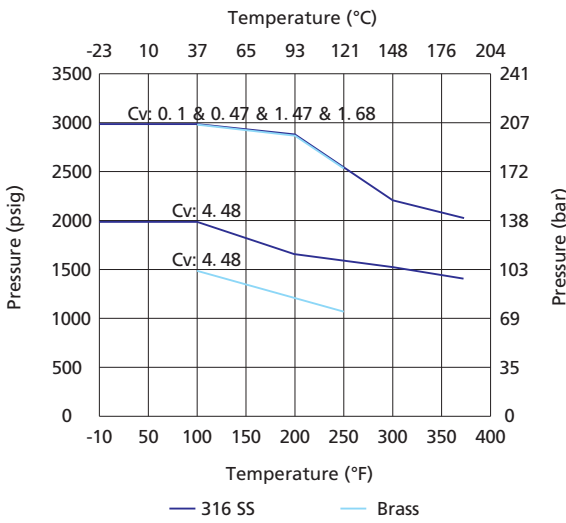
Check Valves
Relief Valves



Pressure vs. Temperature

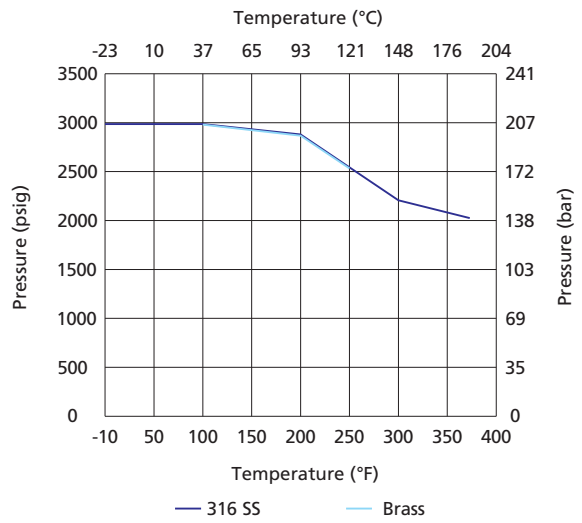
CV Series

FKM O-ring in 316 SS Body and Buna N in Brass Body

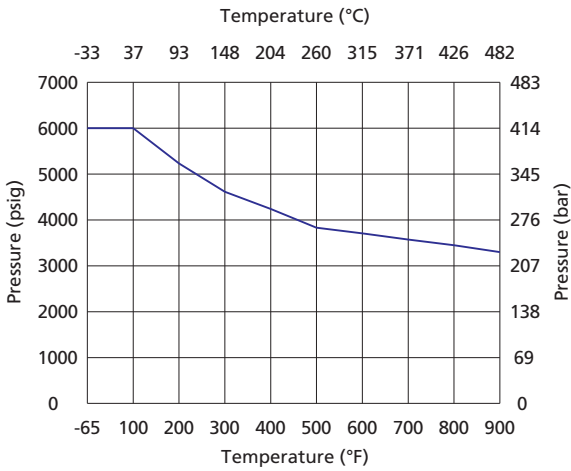


CO, CA and COA Series

FKM O-ring in 316 SS Body and Buna N in Brass Body

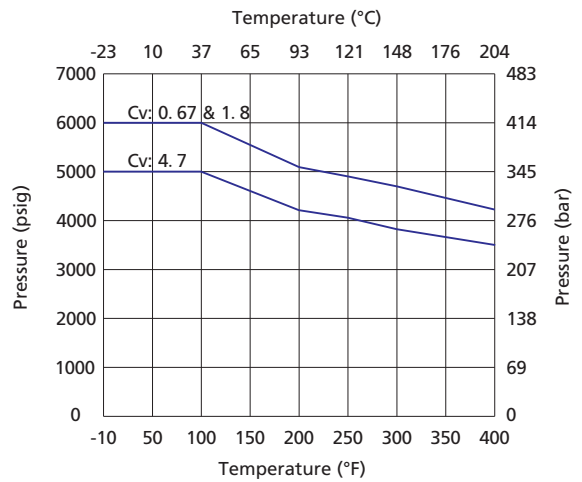


CL Series



CH Series

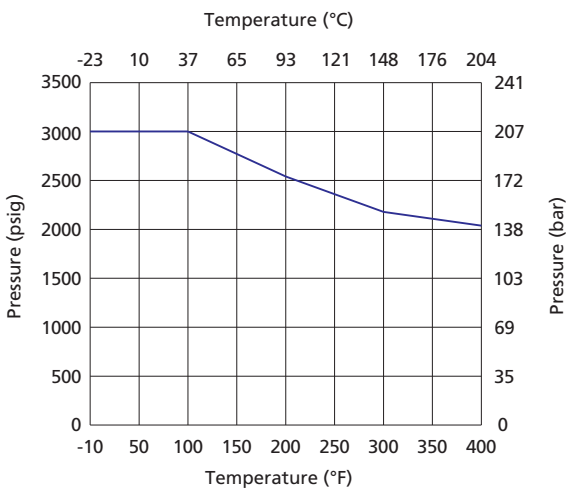
FKM O-ring in 316 SS Body



Check Valves
Relief Valves

CW Series

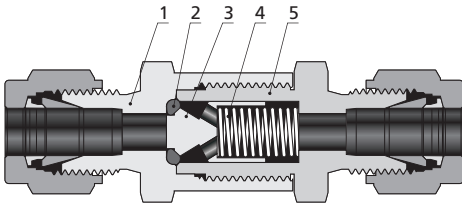
FKM O-ring in 316 SS Body



The temperature rating of CH Series check valve is restricted by the connection types. For details please refer to B-134.

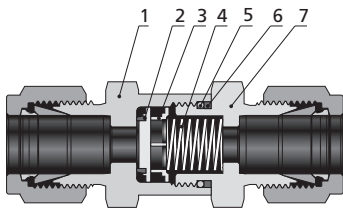
Standard Materials of Construction

CV Series



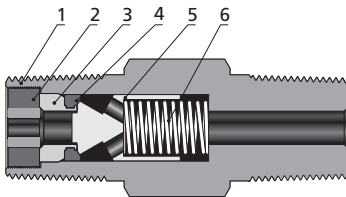
Component	Material Grade/ASTM Specification	
	316 SS	Brass
1 Inlet Body	316 SS/A479	Brass C36000/B16
2 O-ring	Fluorocarbon FKM	Buna N
3 Poppet	316 SS/A479	Brass C36000/B16
4 Spring	302 SS/A313	302 SS/A313
5 Outlet Body	316 SS/A479	Brass C36000/B16

CH Series



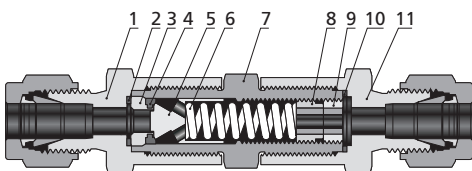
Component	Material Grade/ASTM Specification	
	316 SS	Brass
1 Inlet Body	316 SS/A479	
2 Poppet	Fluorocarbon-FKM-bonded 316 SS/A479	
3 Poppet Stop	316 SS/A240	
4 Spring	302 SS/A313	
5 O-ring	Fluorocarbon FKM	
6 Backup Ring	PTFE/D1710	
7 Outlet Body	316 SS/A479	

CO Series



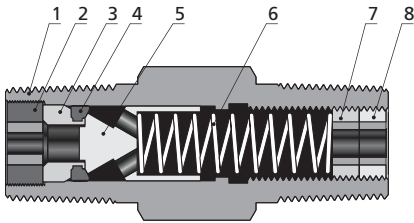
Component	Material Grade/ASTM Specification	
	316 SS	Brass
1 Body	316 SS/A479	Brass C36000/B16
2 Insert Locking Screw	316 SS/A276 or A479	Brass C36000/B16
3 Insert	316 SS/A479	Brass C36000/B16
4 O-ring	Fluorocarbon FKM	Buna N
5 Poppet	316 SS/A479	Brass C36000/B16
6 Spring	302 SS/A313	302 SS/A313

CA Series



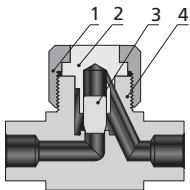
Component	Material Grade/ASTM Specification	
	316 SS	Brass
1 Inlet Body	316 SS/A479	Brass C36000/B16
2 Inlet Gasket	PTFE-coated 316 SS/A240	PTFE-coated 316 SS/A240
3 Insert	316 SS/A479	Brass C36000/B16
4 O-ring	Fluorocarbon FKM	Buna N
5 Poppet	316 SS/A479	Brass C36000/B16
6 Spring	302 SS/A313	302 SS/A313
7 Center Body	316 SS/A479	Brass C36000/B16
8 Adjusting Screw	316 SS/A276	316 SS/A276
9 Locking Screw	316 SS/A276	316 SS/A276
10 Outlet Gasket	PTFE-coated 316 SS/A276	PTFE-coated 316 SS/A276
11 Outlet Body	316 SS/A479	Brass C36000/B16

COA Series



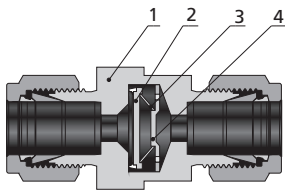
Component		Material Grade/ASTM Specification	
		316 SS	Brass
1	Body	316 SS/A479	Brass C36000/B16
2	Insert Locking Screw	316 SS/A479	Brass C36000/B16
3	Insert	316 SS/A479	Brass C36000/B16
4	O-ring	Fluorocarbon FKM	Buna N
5	Poppet	316 SS/A479	Brass C36000/B16
6	Spring	302 SS/A313	302 SS/A313
7	Adjusting Screw	316 SS/A276	316 SS/A276
8	Locking Screw	316 SS/A276	316 SS/A276

CL Series



Component		Material Grade/ASTM Specification
1	Bonnet Nut	316 SS/A479
2	Bonnet	316 SS/A479
3	Poppet	S17400/A564
4	Body	316 SS/A479

CW Series

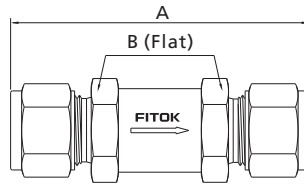


Component		Material Grade/ASTM Specification
1	Body	316L SS/A479
2	Poppet	Fluorocarbon FKM-bonded 316 SS/A479
3	Belleville Spring	Alloy X - 750/B637
4	Poppet Stop	316L SS/A240

Check Valves
Relief Valves

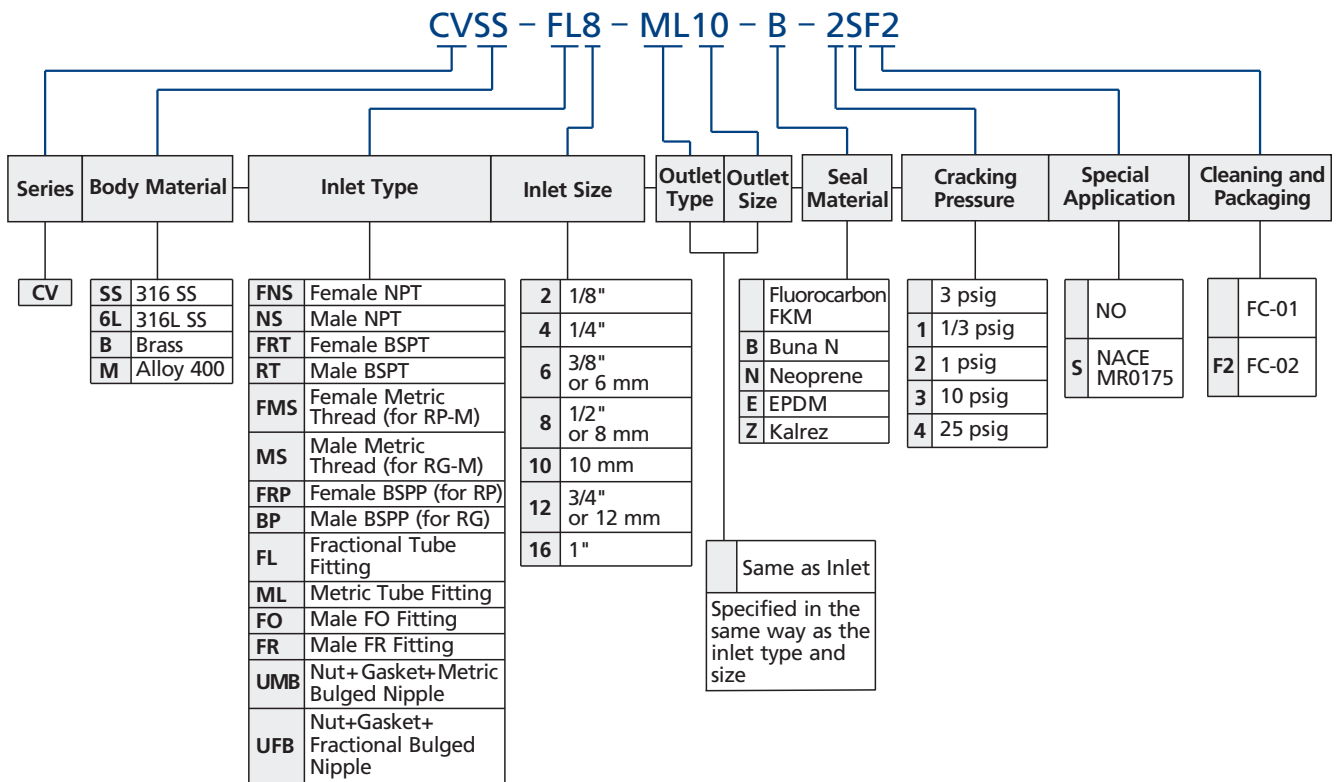
Dimensions

CV Series



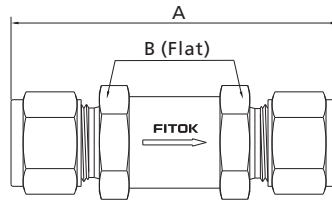
Basic Ordering Number	Connection Type and Size		Cv	Dimensions, in. (mm)	
	Inlet	Outlet		A	B
CV□□-FL2-	1/8" FITOK	1/8" FITOK	0.10	2.14 (54.3)	5/8 (15.9)
CV□□-FL4-	1/4" FITOK	1/4" FITOK	0.47	2.35 (59.7)	
CV□□-FL6-	3/8" FITOK	3/8" FITOK	1.47	3.17 (80.5)	7/8 (22.2)
CV□□-FL8-	1/2" FITOK	1/2" FITOK	1.68	3.42 (86.9)	
CV□□-FL12-	3/4" FITOK	3/4" FITOK	4.48	4.32 (110.0)	1 1/4 (31.8)
CV□□-FL16-	1" FITOK	1" FITOK		4.74 (120.0)	1 3/8 (34.9)
CV□□-ML6-	6 mm FITOK	6 mm FITOK	0.47	2.36 (59.9)	5/8 (15.9)
CV□□-ML10-	10 mm FITOK	10 mm FITOK	1.68	3.32 (84.3)	7/8 (22.2)
CV□□-ML12-	12 mm FITOK	12 mm FITOK		3.42 (86.9)	
CV□□-FNS2-	1/8 Female NPT	1/8 Female NPT	0.10	1.89 (48.0)	5/8 (15.9)
CV□□-FNS4-	1/4 Female NPT	1/4 Female NPT	0.47	2.15 (54.6)	3/4 (19.1)
CV□□-FNS6-	3/8 Female NPT	3/8 Female NPT	1.47	2.98 (75.7)	7/8 (22.2)
CV□□-FNS8-	1/2 Female NPT	1/2 Female NPT	1.68	3.58 (90.9)	1 1/16 (27.0)
CV□□-FNS12-	3/4 Female NPT	3/4 Female NPT	4.48	4.08 (104.0)	1 1/4 (31.8)
CV□□-FNS16-	1 Female NPT	1 Female NPT		4.84 (123.0)	1 5/8 (41.3)
CV□□-NS2-	1/8 Male NPT	1/8 Male NPT	0.10	1.71 (43.4)	5/8 (15.9)
CV□□-NS4-	1/4 Male NPT	1/4 Male NPT	0.47	2.09 (53.1)	
CV□□-NS6-	3/8 Male NPT	3/8 Male NPT	1.47	2.78 (70.6)	7/8 (22.2)
CV□□-NS8-	1/2 Male NPT	1/2 Male NPT	1.68	3.16 (80.3)	
CV□□-NS12-	3/4 Male NPT	3/4 Male NPT	4.48	4.08 (104.0)	1 1/4 (31.8)
CV□□-NS16-	1 Male NPT	1 Male NPT		4.52 (115.0)	1 5/8 (41.3)
CV□□-FR4-	1/4" Male FR	1/4" Male FR	0.47	2.21 (56.1)	5/8 (15.9)
CV□□-FR8-	1/2" Male FR	1/2" Male FR	1.68	3.56 (90.4)	15/16 (23.8)
CV□□-FR12-	3/4" Male FR	3/4" Male FR	4.48	4.64 (118.0)	1 5/8 (41.3)
CV□□-FR16-	1" Male FR	1" Male FR		4.76 (121.0)	

Ordering Number Description



- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- 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.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- PTFE-coated gasket can be chosen to reduce the possibility of O-ring's moving in system caused by the pressure fluctuations, vibration or pulsating. For more details, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

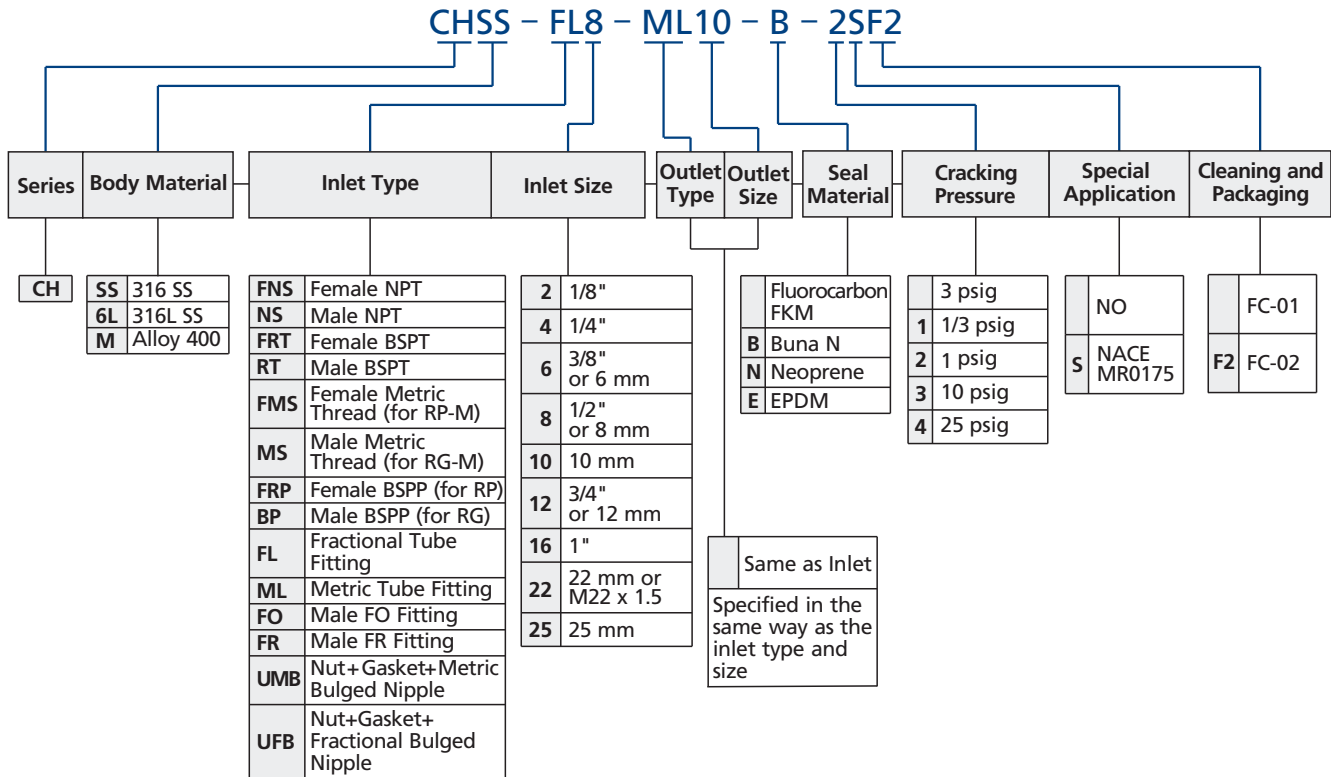
CH Series



Basic Ordering Number	Connection Type and Size		Pressure Rating at 100° F (37° C) bar (psig)	Cv	Dimensions, in. (mm)	
	Inlet	Outlet			A	B
CH□□-FL2-	1/8" FITOK	1/8" FITOK	414 (6000)	0.67	2.27 (57.7)	11/16 (17.5)
CH□□-FL4-	1/4" FITOK	1/4" FITOK			2.43 (61.7)	
CH□□-FL6-	3/8" FITOK	3/8" FITOK		1.8	2.75 (69.9)	1 (25.4)
CH□□-FL8-	1/2" FITOK	1/2" FITOK			2.96 (75.2)	
CH□□-FL12-	3/4" FITOK	3/4" FITOK	344 (5000)	4.7	3.52 (89.4)	1 5/8 (41.3)
CH□□-FL16-	1" FITOK	1" FITOK	323 (4700)		3.88 (98.6)	
CH□□-ML6-	6 mm FITOK	6 mm FITOK	414 (6000)	0.67	2.43 (61.7)	11/16 (17.5)
CH□□-ML8-	8 mm FITOK	8 mm FITOK			2.70 (68.6)	
CH□□-ML10-	10 mm FITOK	10 mm FITOK		1.8	2.80 (71.1)	1 (25.4)
CH□□-ML12-	12 mm FITOK	12 mm FITOK			2.96 (75.2)	
CH□□-ML22-	22 mm FITOK	22 mm FITOK	337 (4900)	4.7	3.48 (88.4)	1 5/8 (41.3)
CH□□-ML25-	25 mm FITOK	25 mm FITOK	316 (4600)		3.88 (98.6)	
CH□□-FNS4-	1/4 Female NPT	1/4 Female NPT	414 (6000)	0.67	2.13 (54.1)	11/16 (17.5)
CH□□-FNS6-	3/8 Female NPT	3/8 Female NPT	365 (5300)		1.8	
CH□□-FNS8-	1/2 Female NPT	1/2 Female NPT	337 (4900)	4.7		3.03 (77.0)
CH□□-FNS12-	3/4 Female NPT	3/4 Female NPT	316 (4600)		3.23 (82.0)	1 5/8 (41.3)
CH□□-FNS16-	1 Female NPT	1 Female NPT	303 (4400)	3.83 (97.3)		
CH□□-NS2-	1/8 Male NPT	1/8 Male NPT	414 (6000)	0.67	1.79 (45.4)	11/16 (17.5)
CH□□-NS4-	1/4 Male NPT	1/4 Male NPT			2.17 (55.1)	
CH□□-NS6-	3/8 Male NPT	3/8 Male NPT		1.8	2.36 (59.9)	1 (25.4)
CH□□-NS8-	1/2 Male NPT	1/2 Male NPT			2.73 (69.3)	
CH□□-NS12-	3/4 Male NPT	3/4 Male NPT	344 (5000)	4.7	3.29 (83.6)	1 5/8 (41.3)
CH□□-NS16-	1 Male NPT	1 Male NPT	303 (4400)		3.67 (93.2)	
CH□□-FRT4-	1/4 Female BSPT	1/4 Female BSPT	414 (6000)	0.67	2.28 (57.9)	11/16 (17.5)
CH□□-FRT8-	1/2 Female BSPT	1/2 Female BSPT	351 (5100)	1.8	3.29 (83.6)	1 1/16 (27.0)
CH□□-FRT12-	3/4 Female BSPT	3/4 Female BSPT	330 (4800)	4.7	3.55 (90.2)	1 5/8 (41.3)
CH□□-FRT16-	1 Female BSPT	1 Female BSPT	303 (4400)		3.83 (97.3)	
CH□□-RT4-	1/4 Male BSPT	1/4 Male BSPT	414 (6000)	0.67	2.17 (55.1)	11/16 (17.5)
CH□□-RT8-	1/2 Male BSPT	1/2 Male BSPT		1.8	2.73 (69.3)	1 (25.4)
CH□□-RT12-	3/4 Male BSPT	3/4 Male BSPT	344 (5000)	4.7	3.35 (85.1)	1 5/8 (41.3)
CH□□-RT16-	1 Male BSPT	1 Male BSPT			3.67 (93.2)	
CH□□-FR4-	1/4" Male FR	1/4" Male FR	414 (6000)	0.67	2.28 (57.9)	11/16 (17.5)
CH□□-FR8-	1/2" Male FR	1/2" Male FR	296 (4300)	1.8	2.73 (69.3)	1 (25.4)
CH□□-FR12-	3/4" Male FR	3/4" Male FR	254 (3700)	4.7	3.78 (96.0)	1 5/8 (41.3)
CH□□-FO4-	1/4" Male FO	1/4" Male FO	414 (6000)	0.67	1.98 (50.3)	11/16 (17.5)
CH□□-FO8-	1/2" Male FO	1/2" Male FO		1.8	2.35 (59.7)	1 (25.4)
CH□□-FO12-	3/4" Male FO	3/4" Male FO	344 (5000)	4.7	2.90 (73.7)	1 5/8 (41.3)
CH□□-FO16-	1" Male FO	1" Male FO				

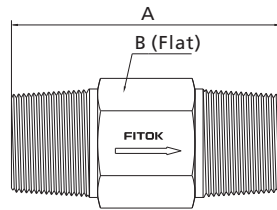
Check Valves
Relief Valves

Ordering Number Description



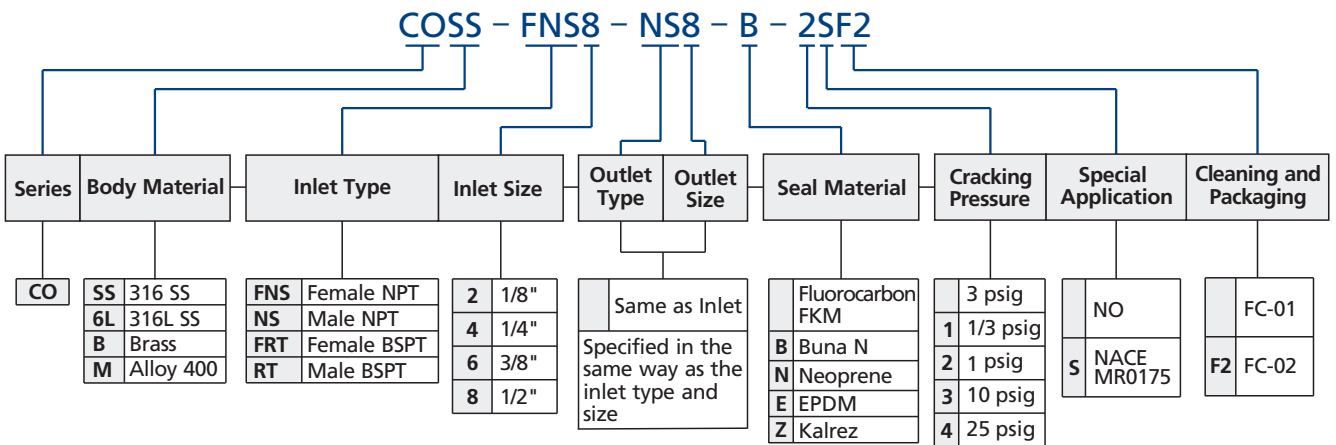
- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- 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.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

CO Series



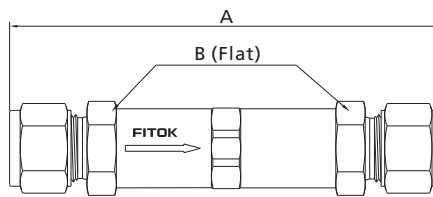
Basic Ordering Number	Connection Type and Size		CV	Dimensions, in. (mm)	
	Inlet	Outlet		A	B
CO□□-FNS4-	1/4 Female NPT	1/4 Female NPT	0.35	2.41 (61.2)	3/4 (19.1)
CO□□-FNS8-	1/2 Female NPT	1/2 Female NPT	1.20	3.71 (94.2)	1 1/16 (27.0)
CO□□-NS4-	1/4 Male NPT	1/4 Male NPT	0.35	1.62 (41.1)	9/16 (14.3)
CO□□-NS8-	1/2 Male NPT	1/2 Male NPT	1.20	2.28 (57.9)	7/8 (22.2)
CO□□-FRT4-	1/4 Female BSPT	1/4 Female BSPT	0.35	2.54 (64.5)	3/4 (19.1)
CO□□-RT4-	1/4 Male BSPT	1/4 Male BSPT		1.62 (41.1)	9/16 (14.3)

Ordering Number Description



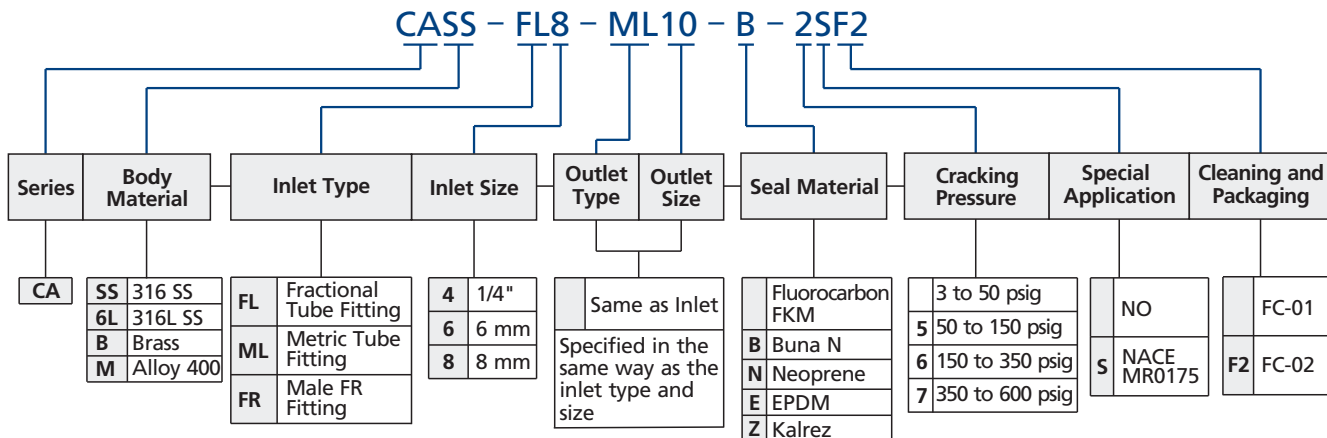
- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:
 FC-01: Standard cleaning and packaging for general industrial procedures.
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

CA Series



Basic Ordering Number	Connection Type and Size		Cv	Dimensions, in. (mm)	
	Inlet	Outlet		A	B
CA□□-FL4-	1/4" FITOK	1/4" FITOK	0.37	3.23 (82.0)	5/8 (15.9)
CA□□-ML6-	6 mm FITOK	6 mm FITOK		3.32 (84.3)	
CA□□-ML8-	8 mm FITOK	8 mm FITOK		3.09 (78.5)	
CA□□-FR4-	1/4" Male FR	1/4" Male FR			

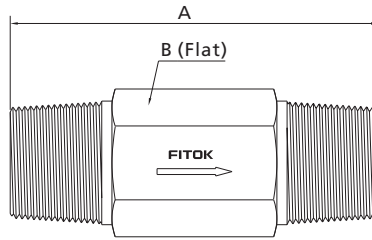
Ordering Number Description



Check Valves
Relief Valves

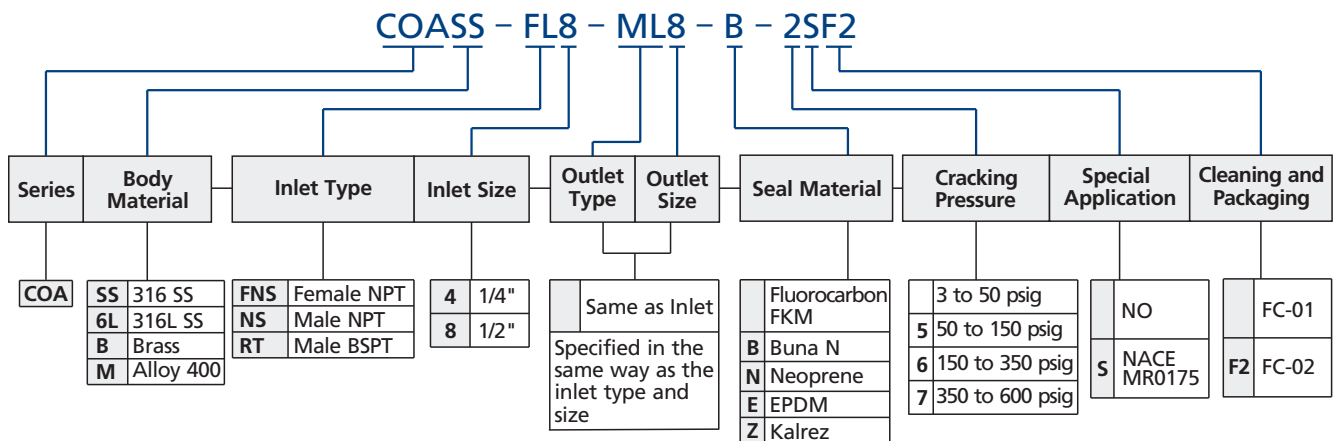
- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:
 FC-01: Standard cleaning and packaging for general industrial procedures.
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

COA Series



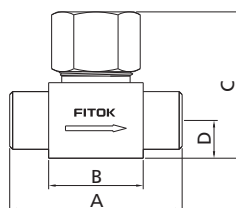
Basic Ordering Number	Connection Type and Size		Cv	Dimensions, in. (mm)	
	Inlet	Outlet		A	B
COA □□ -FNS4-	1/4 Female NPT	1/4 Female NPT	0.35	2.98 (75.7)	3/4 (19.1)
COA □□ -NS4-	1/4 Male NPT	1/4 Male NPT	0.35	1.62 (41.1)	9/16 (14.3)
COA □□ -NS8-	1/2 Male NPT	1/2 Male NPT	1.20	2.56 (65.0)	7/8 (22.2)
COA □□ -RT4-	1/4 Male BSPT	1/4 Male BSPT	0.35	1.62 (41.1)	9/16 (14.3)
COA □□ -RT8-	1/2 Male BSPT	1/2 Male BSPT	1.20	2.56 (65.0)	7/8 (22.2)

Ordering Number Description



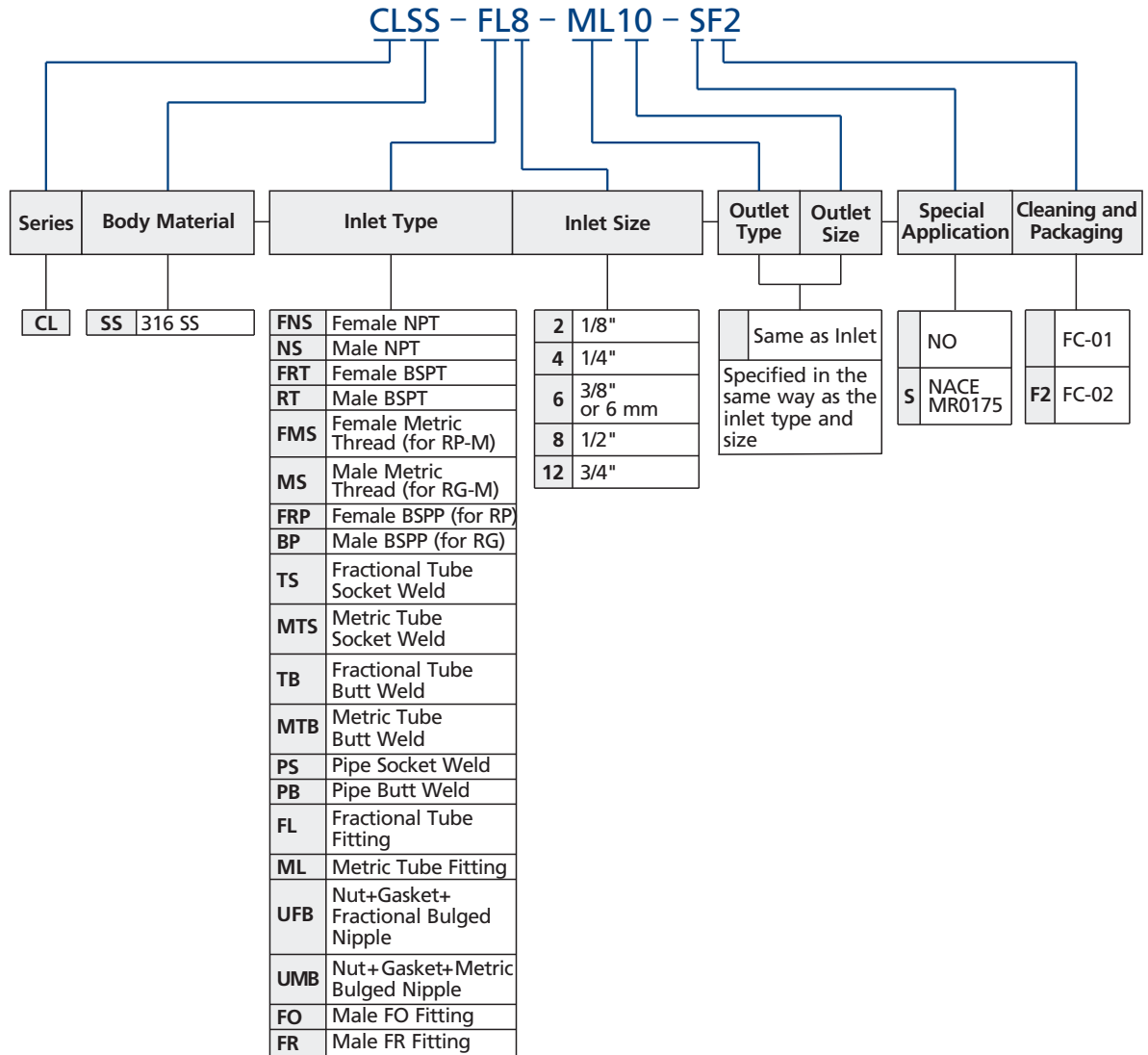
- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

CL Series



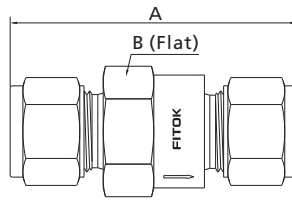
Basic Ordering Number	Connection Type and Size		CV	Dimensions, in. (mm)			
	Inlet	Outlet		A	B	C	D
CL□□-FL4	1/4" FITOK	1/4" FITOK	0.30	2.40 (61.0)	1.01 (25.7)	1.47 (37.3)	0.39 (9.9)
CL□□-FL6	3/8" FITOK	3/8" FITOK	0.64	2.83 (71.9)	1.31 (33.3)	1.85 (47.0)	0.50 (12.7)
CL□□-FL8	1/2" FITOK	1/2" FITOK	2.20	3.92 (99.6)	2.19 (55.6)	2.44 (62.0)	0.62 (15.7)
CL□□-FL12	3/4" FITOK	3/4" FITOK					
CL□□-ML6	6 mm FITOK	6 mm FITOK	0.30	2.40 (61.0)	1.01 (25.7)	1.47 (37.3)	0.39 (9.9)
CL□□-FNS2	1/8 Female NPT	1/8 Female NPT					
CL□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.64	2.25 (57.2)	1.25 (31.8)	1.85 (47.0)	0.50 (12.7)
CL□□-FNS6	3/8 Female NPT	3/8 Female NPT	2.20	3.12 (79.2)	1.86 (47.2)	2.44 (62.0)	0.62 (15.7)
CL□□-FNS8	1/2 Female NPT	1/2 Female NPT					
CL□□-TS4	1/4" TS	1/4" TS	0.30	1.81 (46.0)	0.90 (22.9)	1.47 (37.3)	0.39 (9.9)
CL□□-TS6	3/8" TS	3/8" TS	0.64	2.25 (57.2)	1.25 (31.8)	1.85 (47.0)	0.50 (12.7)
CL□□-TS8	1/2" TS	1/2" TS	2.20	3.13 (79.5)	1.88 (47.8)	2.44 (62.0)	0.62 (15.7)
CL□□-PB4	1/4 PB	1/4 PB	0.30	1.81 (46.0)	0.90 (22.9)	1.47 (37.3)	0.39 (9.9)
CL□□-PB6	3/8 PB	3/8 PB	0.64	2.25 (57.2)	1.25 (31.8)	1.85 (47.0)	0.50 (12.7)
CL□□-PB8	1/2 PB	1/2 PB	2.20	3.13 (79.5)	1.88 (47.8)	2.44 (62.0)	0.62 (15.7)

Ordering Number Description



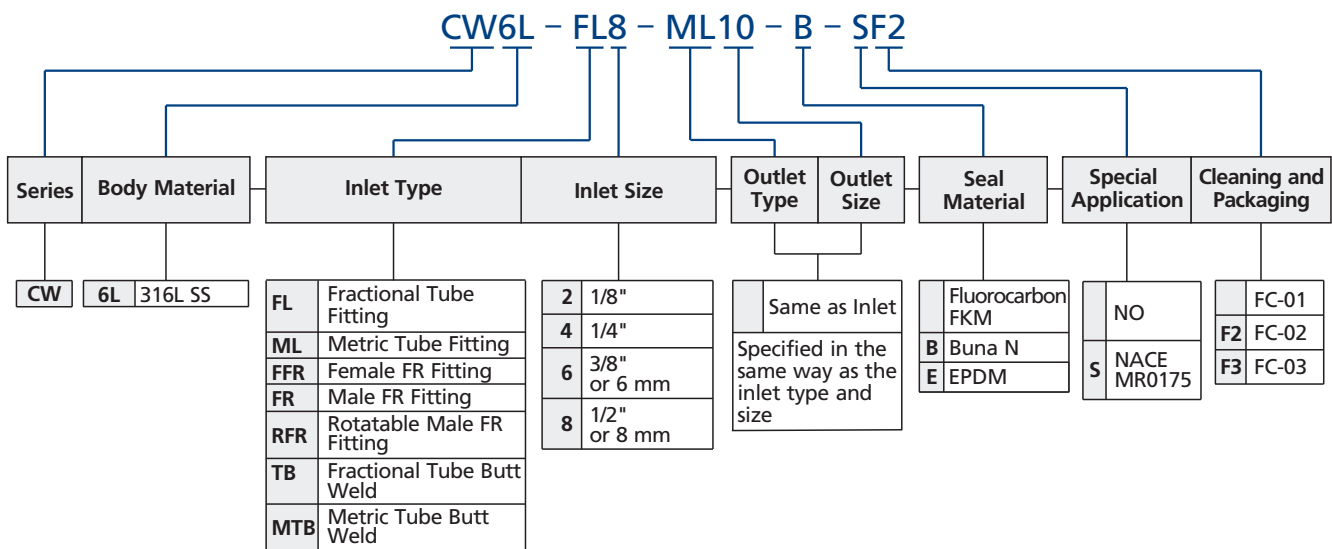
1. Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be omitted in the ordering number, others should be specified.
2. For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
3. 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.
4. The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.

CW Series



Basic Ordering Number	Connection Type and Size		Cv	Dimensions, in. (mm)	
	Inlet	Outlet		A	B
CW□□-TB4	1/4" TB	1/4" TB	0.55	1.24 (31.5)	7/8 (22.22)
CW□□-TB6	3/8" TB	3/8" TB	0.70		
CW□□-TB8	1/2" TB	1/2" TB	0.55		
CW□□-MTB6	6 mm MTB	6 mm MTB	0.55	1.80 (45.7)	1 (25.4)
CW□□-FR4	1/4" Male FR	1/4" Male FR	0.70		
CW□□-FR8	1/2" Male FR	1/2" Male FR	0.55	2.06 (52.3)	7/8 (22.22)
CW□□-FL4	1/4" FITOK	1/4" FITOK	0.55	1.96 (49.8)	7/8 (22.22)
CW□□-ML6	6 mm FITOK	6 mm FITOK			

Ordering Number Description



Check Valves Relief Valves

- For oxygen-enriched environment or hazardous media service, please contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:
 - FC-01: Standard cleaning and packaging for general industrial procedures.
 - FC-02: Special Cleaning and packaging is applied to wetted system assembly with its surface roughness finished to an average of Ra 0.5 µm after machine polishing to meet the requirement of ASTM G93 Level C.
 - FC-03: Ultrahigh-purity Cleaning and Packaging is applied to wetted system assembly with its surface roughness finished to an average of Ra 0.2 µm after machine polishing and electropolishing.
- The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
- Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
- If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

Proportional Relief Valves

RV, RL and RM Series

Check Valves
Relief Valves



Proportional Relief Valves

RV, RL and RM Series

Introduction

FITOK relief valves OPEN when system pressure reaches the set pressure and CLOSE when system pressure falls below the set pressure.



Features

- ⦿ Set pressure:
 - RV series: 7 color-coded springs available for a wide range of set pressure, 50 to 6000 psig @ 70°F (3.4 to 414 bar @ 20°C)
 - RL series: 10 to 225 psig @ 70°F (0.68 to 15.5 bar @ 20°C)
 - RM series: 3 color-coded springs available for a wide range of set pressure, 50 to 1500 psig @ 70°F (3.4 to 103 bar @ 20°C)
- ⦿ Maximum outlet pressure:
 - RV series: 1500 psig (103 bar)
 - RL series: 225 psig (15.5 bar)
 - RM series: 1500 psig (103 bar)
- ⦿ Orifice size:
 - RV series: 0.14" (3.6 mm)
 - RL series: 0.19" (4.8 mm) and 0.25" (6.4 mm)
 - RM series: 0.25" (6.4 mm)
- ⦿ Back pressure
 - Back pressure is the pressure of the outlet of valves. It increases the set pressure of proportional relief valves.
 - RV and RM series: Balanced stem design to eliminate the effect of system back pressure
 - RL series: Pre-set pressure = Desired pressure - 0.8 × Back pressure
- ⦿ Working temperature: -10°F to 300°F (-23°C to 148°C)
- ⦿ Variety of end connections
- ⦿ Liquid or gas service
- ⦿ Adjustable bonnet cap and adjustable set pressure
- ⦿ Lead seal through lock wire holes to lock proportional relief valve so as to secure a set pressure effectively
- ⦿ Variety of seal materials
- ⦿ Label identifies the set pressure range

Applications

Relief valves are proportional relief valves that open gradually as the pressure increases. Consequently, they do not have a capacity rating at a given pressure rise (accumulation), and they are not certified to ASME or any other codes.

⚠ **Some system applications require relief valves to meet specific safety codes. The system designer and user must determine when such codes apply and whether these relief valves conform to them.**

⚠ **FITOK proportional relief valves should never be used as ASME Boiler and Pressure Vessel Code safety relief devices.**

⚠ **FITOK proportional relief valves are not "Safety Accessories" as defined in the Pressure Equipment Directive 2014/68/EU.**

Temperature Range of Sealing Materials

O-ring Material	Temperature Ranges °F (°C)
Fluorocarbon Rubber	25 to 250 (-4 to 121)
Buna-N Rubber	0 to 250 (-17 to 121)
Neoprene Rubber	-10 to 300 (-23 to 148)
EPDM	30 to 250 (-1 to 121)

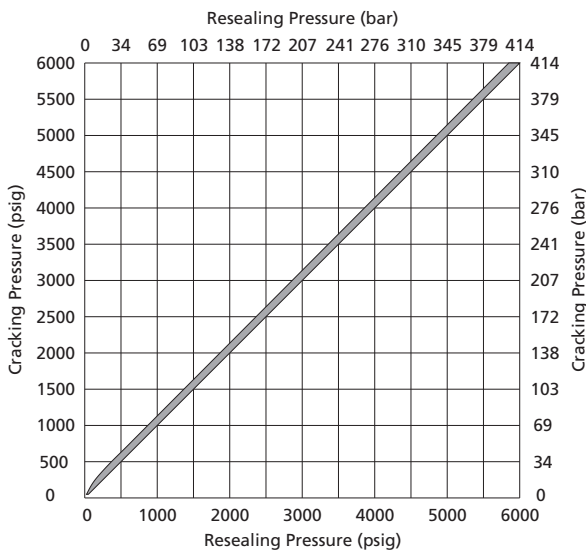
Set Pressure and Resealing Pressure

Set pressure: The set pressure is the upstream pressure at which the first indication of flow occurs. The repeatability of set pressure of each valve after initial relief is $\pm 5\%$ at room temperature.

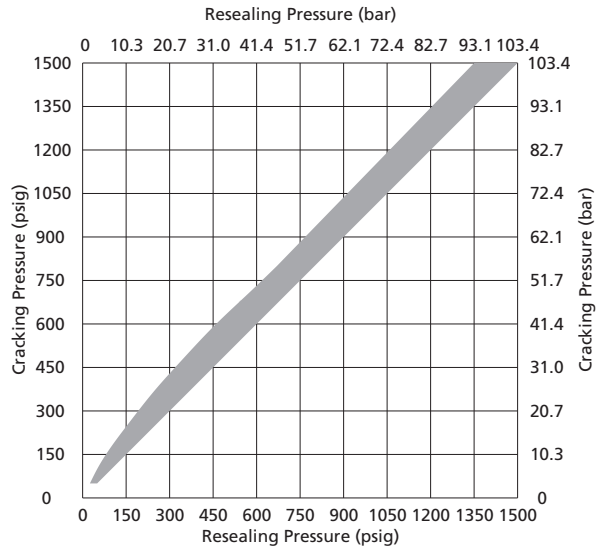
Resealing pressure: The resealing pressure is the upstream pressure at which there is no indication of flow. Resealing pressure is always lower than set pressure.

Note: For valves not acutated for a period of time, the initial relief pressure may be higher than the set pressure.

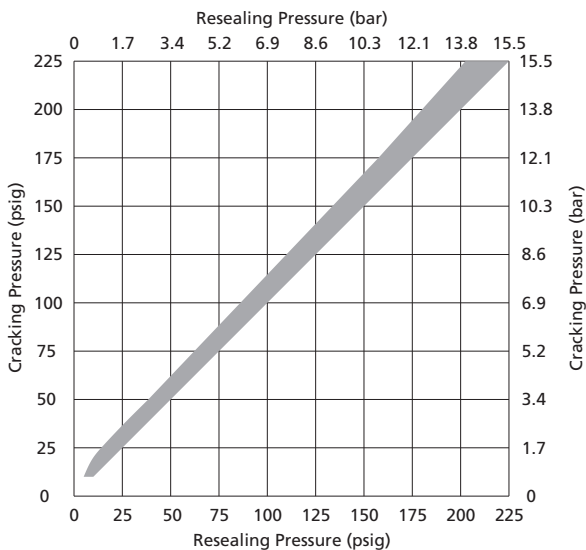
RV Series



RM Series



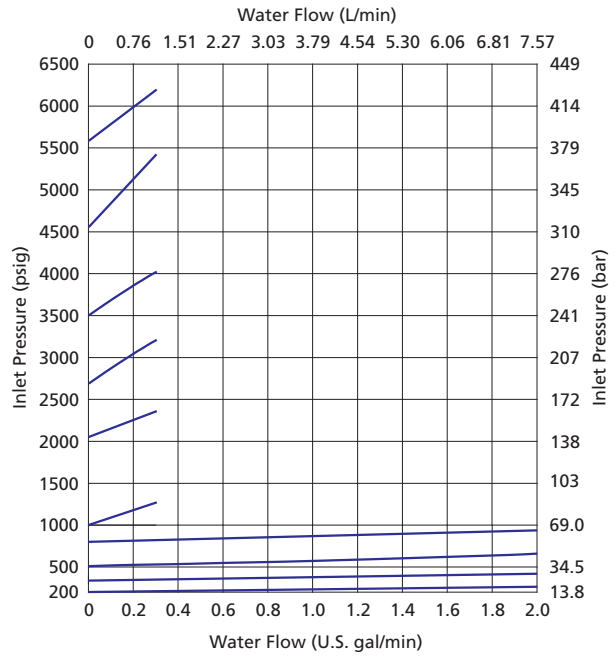
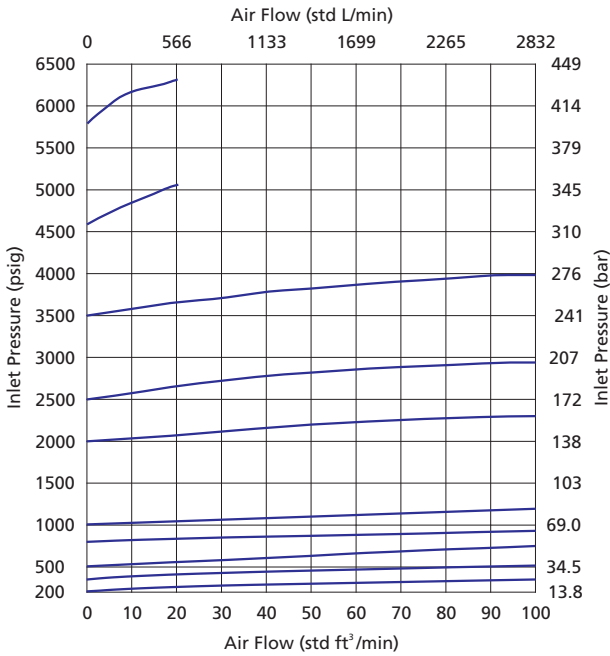
RL Series



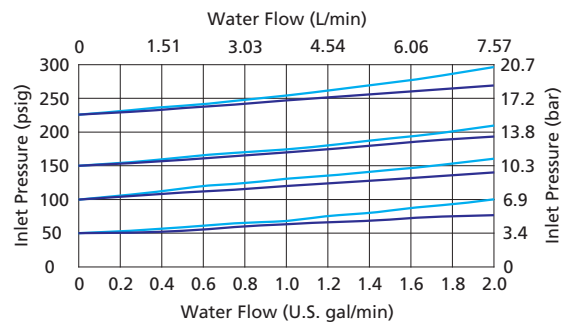
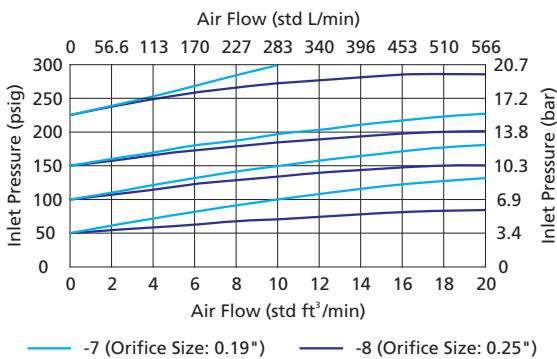
Check Valves
Relief Valves

Flow Data at 70°F (20°C)

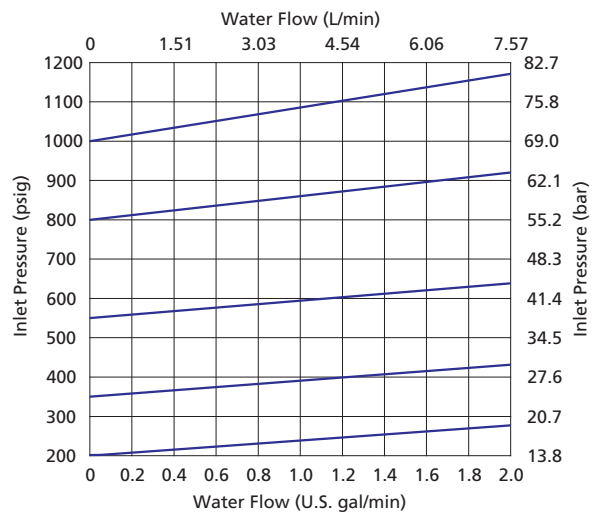
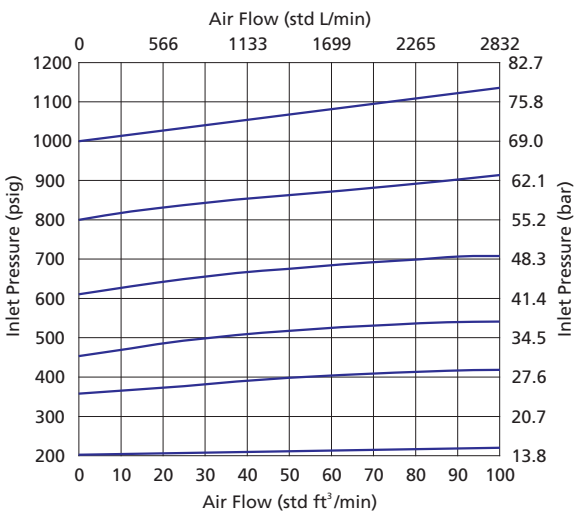
RV Series



RL Series



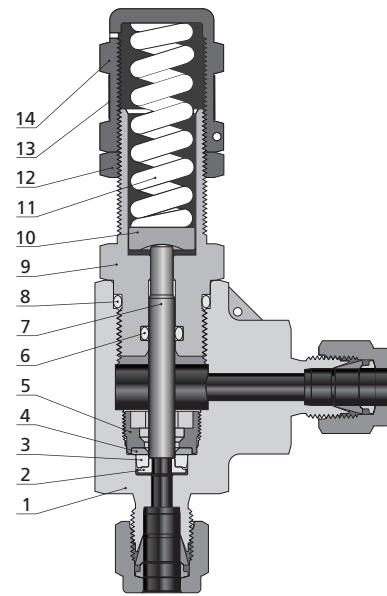
RM Series



Standard Materials of Construction

RV Series

Component		Material Grade/ASTM Specification
1	<i>Body</i>	316 SS/A182
2	<i>Seat</i>	316 SS/A479
3	<i>O-ring</i>	Fluorocarbon FKM
4	<i>Gasket</i>	PEEK
5	<i>Seat Retainer</i>	316 SS/A479
6	<i>O-ring</i>	Fluorocarbon FKM
7	<i>Stem</i>	316 SS/A479
8	<i>O-ring</i>	Fluorocarbon FKM
9	<i>Bonnet</i>	316 SS/A479
10	<i>Spring Support</i>	316 SS/A479
11	<i>Spring</i>	S17700 SS/AMS 5678
12	<i>Lock Nut</i>	17-4PH powdered metal
13	<i>Label</i>	Polyester
14	<i>Bonnet Cap</i>	316 SS/A479



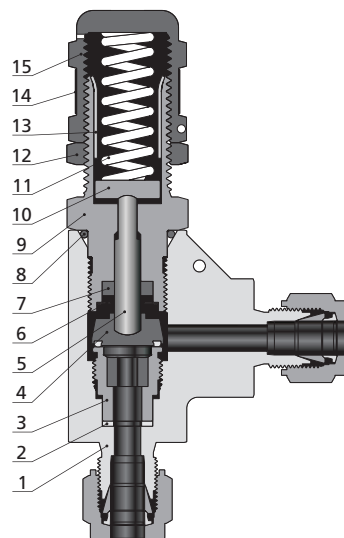
Note: Wetted components are listed in italics.

1. Lubricant: Silicone-based

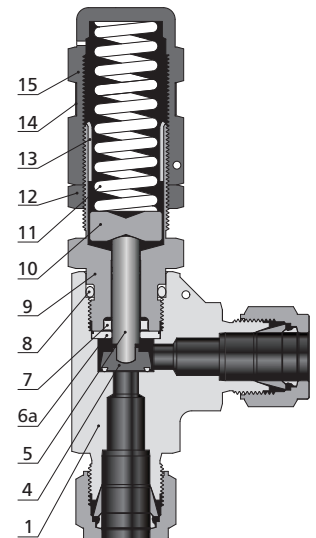
2. Contact FITOK Group or our authorized distributors for other materials

RL Series

Component		Material Grade/ASTM Specification
1	<i>Body</i>	316 SS/A182
2	<i>Gasket</i>	316 SS/A479
3	<i>Seat</i>	316 SS/A479
4	<i>Bonded disc</i>	316 SS/A479+Fluorocarbon FKM
5	<i>Stem</i>	316 SS/A479
6	<i>Retainer</i>	316 SS/A479
6a	<i>Ring</i>	316 SS/A479
7	<i>Quad Seal</i>	Fluorocarbon FKM
8	<i>O-ring</i>	Fluorocarbon FKM
9	<i>Bonnet</i>	316 SS/A479
10	<i>Spring Support</i>	316 SS/A479
11	<i>Spring</i>	S17700 SS/AMS 5678
12	<i>Lock Nut</i>	17-4PH powdered metal
13	<i>Sleeve</i>	304SS/A240
14	<i>Label</i>	Polyester
15	<i>Bonnet Cap</i>	316 SS/A479



Orifice 7
0.19 in. (4.8 mm)



Orifice 8
0.25 in. (6.4 mm)

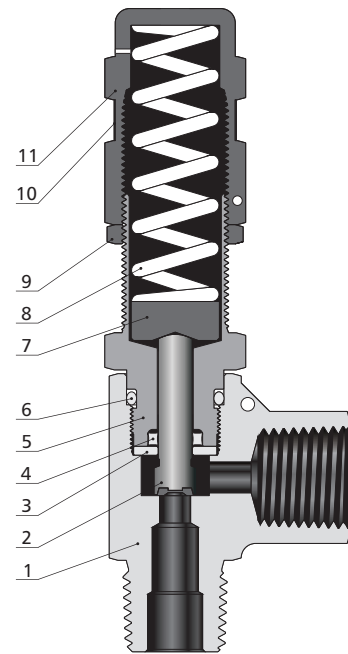
Note: Wetted components are listed in italics.

1. Lubricant: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials

RM Series

Component		Material Grade/ASTM Specification
1	Body	316 SS/A182
2	Stem	316 SS/A479+Fluorocarbon FKM
3	Retainer	316 SS/A479
4	Seal	Fluorocarbon FKM
5	Bonnet	316 SS/A479
6	O-ring	Fluorocarbon FKM
7	Spring Support	316 SS/A479
8	Spring	S17700 SS/AMS 5678
9	Lock Nut	17-4PH powdered metal
10	Label	Polyester
11	Bonnet Cap	316 SS/A479



Note: Wetted components are listed in italics.

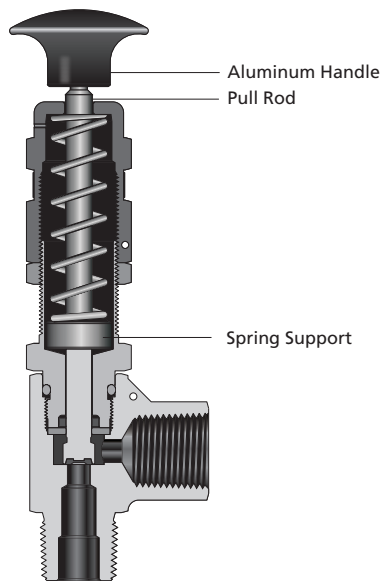
1. Lubricant: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials

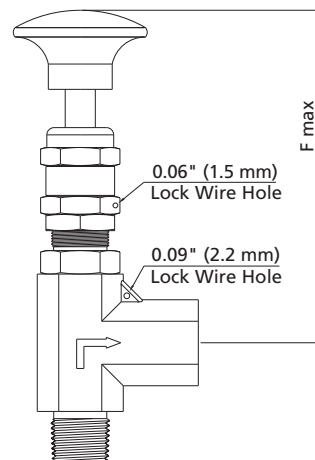
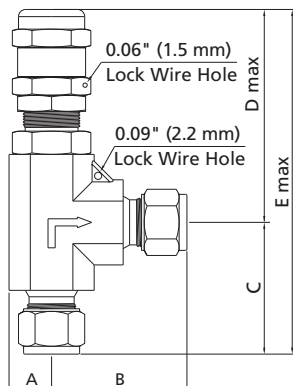
Manual Override Handles

Lift the aluminum handle with hand to open the proportional relief valve without changing the set pressure. For use with following valves :

- RV Series — set pressure range 50~1500 psig
- RL Series — set pressure range 10~225 psig
- RM Series— set pressure range 50~300 psig



Dimensions



Check Valves
Relief Valves

RV Series

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Dimensions, in. (mm)					
	Inlet	Outlet		A	B	C	Dmax	Emax	Fmax
RV□□-FL4-6-□	1/4" FITOK	1/4" FITOK	0.14 (3.6)	0.46 (11.9)	1.60 (40.6)	1.44 (36.6)	2.70 (68.6)	4.14 (105.2)	4.09 (103.9)
RV□□-FL6-6-□	3/8" FITOK	3/8" FITOK							
RV□□-FL8-6-□	1/2" FITOK	1/2" FITOK							
RV□□-ML6-6-□	6 mm FITOK	6 mm FITOK		0.46 (11.9)	1.60 (40.6)	1.44 (36.6)	2.70 (68.6)	4.14 (105.2)	4.09 (104.9)
RV□□-ML8-6-□	8 mm FITOK	8 mm FITOK							
RV□□-ML12-6-□	12 mm FITOK	12 mm FITOK							
RV□□-FNS4-6-□	1/4 Female NPT	1/4 Female NPT		0.46 (11.9)	1.17 (29.7)	1.38 (34.9)	2.70 (68.6)	4.08 (103.5)	4.28 (108.7)
RV□□-NS4-6-□	1/4 Male NPT	1/4 Male NPT							
RV□□-FRT4-6-□	1/4 Female BSPT	1/4 Female BSPT							

RL Series

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Dimensions, in. (mm)					
	Inlet Size	Outlet Size		A	B	C	D	E	F
RL□□-FL4-7	1/4" FITOK	1/4" FITOK	0.19 (4.8)	0.46 (11.9)	1.60 (40.6)	1.44 (36.6)		4.14 (105.0)	4.09 (104.0)
RL□□-ML6-7	6 mm FITOK	6 mm FITOK							
RL□□-NS4-7	1/4 Male NPT	1/4 Male NPT							
RL□□-RT4-7	1/4 Male BSPT	1/4 Male BSPT			1.17 (29.7)	1.38 (34.9)		4.08 (103.5)	
RL□□-FNS4-7	1/4 Female NPT	1/4 Female NPT							
RL□□-FRT4-7	1/4 Female BSPT	1/4 Female BSPT							
RL□□-FL8-8	1/2" FITOK	1/2" FITOK	0.25 (6.4)	0.54 (13.7)	1.83 (46.5)	1.83 (46.5)	4.09 (104.0)	5.92 (150.0)	5.37 (136.0)
RL□□-ML12-8	12 mm FITOK	12 mm FITOK							
RL□□-NS8-8	1/2 Male NPT	1/2 Male NPT							
RL□□-RT8-8	1/2 Male BSPT	1/2 Male BSPT							
RL□□-FNS8-8	1/2 Female NPT	1/2 Female NPT							
RL□□-FRT8-8	1/2 Female BSPT	1/2 Female BSPT							

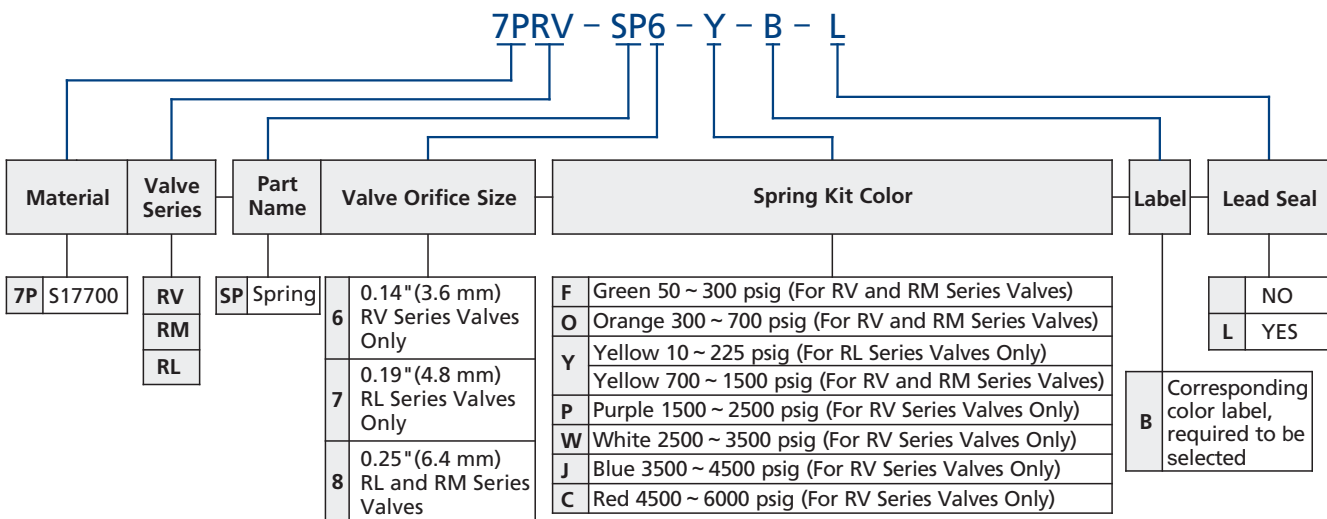
Check Valves
Relief Valves

RM Series

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Dimensions, in. (mm)					
	Inlet Size	Outlet Size		A	B	C	D	E	F
RM□□-FL8-8-□	1/2" FITOK	1/2" FITOK	0.25 (6.4)	0.54 (13.7)	1.83 (46.5)	1.83 (46.5)	4.09 (104.0)	5.92 (150.0)	5.37 (136.0)
RM□□-ML12-8-□	12 mm FITOK	12 mm FITOK							
RM□□-NS8-8-□	1/2 Male NPT	1/2 Male NPT			1.44 (36.6)	1.44 (36.6)	5.52 (140.0)		
RM□□-RT8-8-□	1/2 Male BSPT	1/2 Male BSPT							
RM□□-FNS8-8-□	1/2 Female NPT	1/2 Female NPT							
RM□□-FRT8-8-□	1/2 Female BSPT	1/2 Female BSPT							

1. FITOK means FITOK double ferrule tube fittings.
2. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. Sizes and types listed are standard. For other connection types and sizes, please contact FITOK Group or our authorized distributors.

Spring Kit 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.

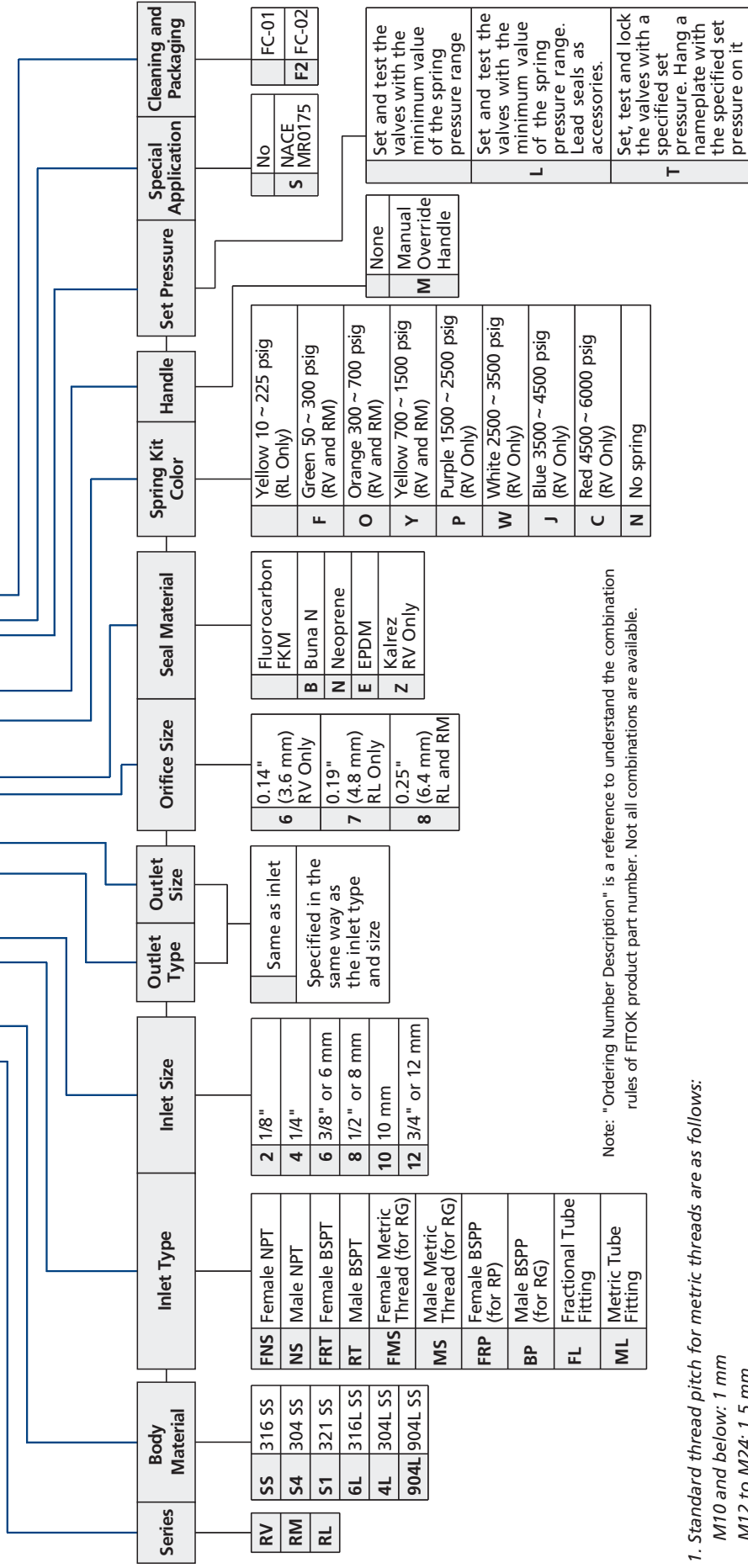
© Every spring kit includes a spring, a label and a lead seal (optional).

Check Valves
Relief Valves

Ordering Number Description

Valves

RVSS – FL6 – ML8 – 6Z – WM – TSF2



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

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be ignored in the ordering number, others should be specified.
- 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 cleaning requirement of ASTM G93 Level C.
 3. The color of the manual override handle is black. For other colors, please contact FITOK Group or our authorized distributors.
 4. For Proportional Relief Valves with specified set pressure on the nameplate, add the set pressure value (unit: psig) as a suffix to the ordering number.
 Example: RVSS-ML6-6-F-T-116PSIG.

Bleed Valves, Purge Valves

Bleed Valves



B-152

Purge Valves



B-157

Bleed Valves

RB Series



Bleed Valves
Purge Valves

Bleed Valves

RB Series

Introduction

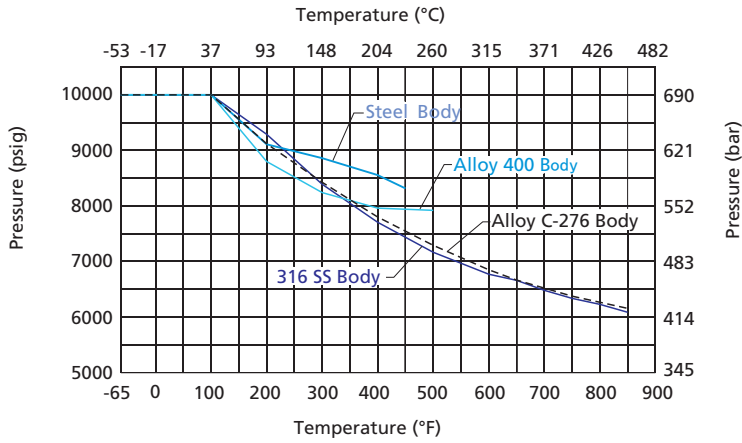
Bleed valves can be used on instrument devices such as multi-valve manifolds or gauge valves to vent signal line pressure to atmosphere before removal of an instrument or to assist in calibration.

Features

- ⦿ Compact design for easy installation
- ⦿ Hardened stem and tip to extend cycle life
- ⦿ Working pressure up to: 10000 psig (690 bar)
- ⦿ Working temperature: -65°F to 850°F (-54°C to 454°C)
- ⦿ Variety of end connections
- ⦿ Leak-tight performance testing with Nitrogen or compressed air for every valve at the rated pressure (not higher than 6000 psig) to meet the requirement of no visible leak

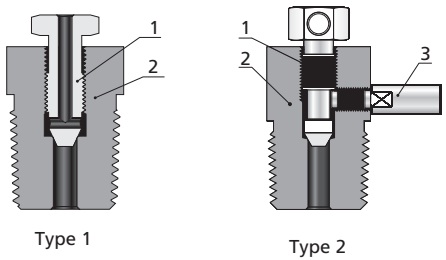


Pressure vs. Temperature



Note: Ratings based on all metal seals. Ratings limited to:
 ■ -20°F (-28°C) min with steel.
 ■ 450°F (232°C) max with SAE end connections using fluorocarbon FKM O-rings.
 ■ 4500 psig (310 bar) max with SAE end connections.

Standard Materials of Construction



Component	Valve Body Material Grade/ASTM Specification			
	316 SS	Carbon Steel	Alloy 400	Alloy C-276
1 Stem	<i>Hardened 316 SS/A479</i>			
2 Body	316 SS/A479	1018/A108	<i>Alloy 400/B164</i>	<i>C-276/B574</i>
3 Vent tube	316 SS/A479			

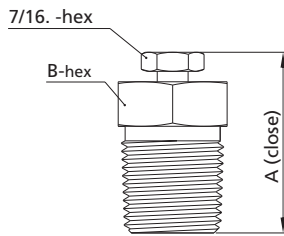
Note: Wetted components are listed in italics.
 1. Hydrocarbon carrier.
 2. Contact FITOK Group or our authorized distributors for other materials.

Bleed Valves
Purge Valves

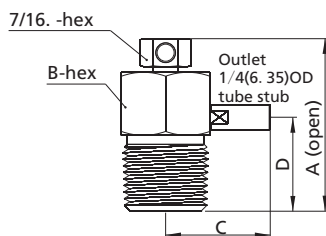
Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Type 1



Type 2



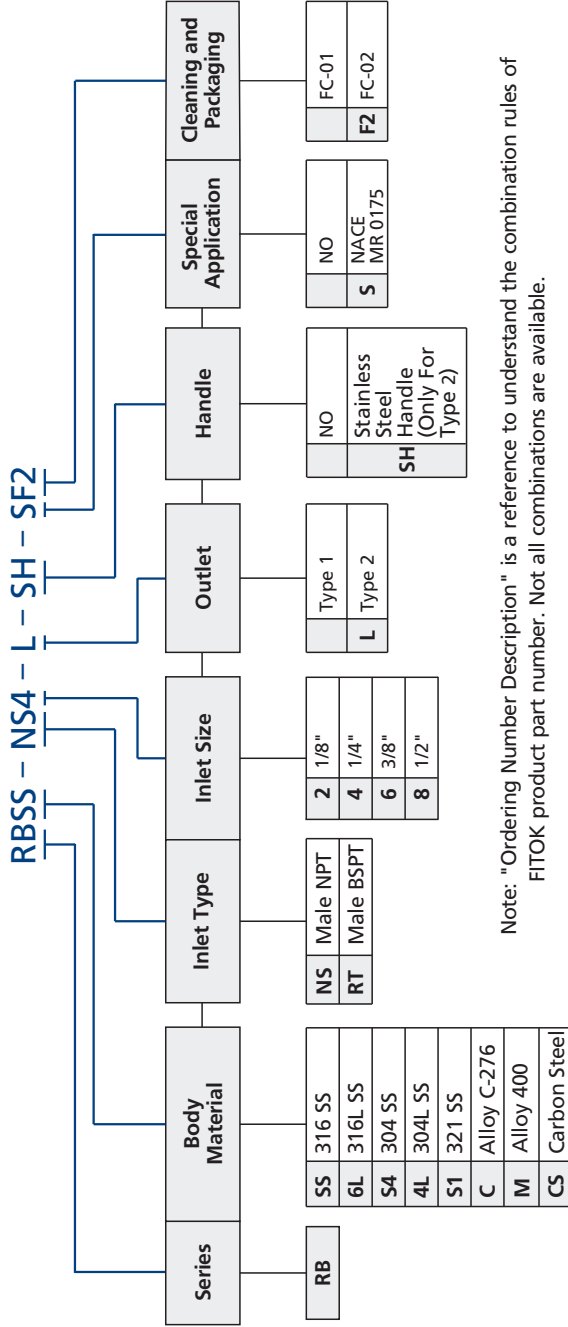
Type	Basic Ordering Number	Inlet Type and Size	Dimensions, in. (mm)			
			A	B	C	D
Type 1	RB□□-NS4	1/4 Male NPT	1.31 (33.4)	5/8 (15.9)	—	—
	RB□□-NS6	3/8 Male NPT	1.46 (37.1)	7/8 (22.2)		
	RB□□-NS8	1/2 Male NPT				
	RB□□-RT4	1/4 Male BSPT	1.31 (33.4)	5/8 (15.9)		
	RB□□-RT6	3/8 Male BSPT	1.46 (37.1)	7/8 (22.2)		
	RB□□-RT8	1/2 Male BSPT				
Type 2	RB□□-NS4-L	1/4 Male NPT	1.65 (41.8)	5/8 (15.9)	0.94 (24)	0.78 (19.7)
	RB□□-NS6-L	3/8 Male NPT	1.78 (45.1)	7/8 (22.2)	1.03 (26.2)	0.91 (23)
	RB□□-NS8-L	1/2 Male NPT			1.04 (26.3)	
	RB□□-RT4-L	1/4 Male BSPT	1.65 (41.8)	5/8 (15.9)	0.94 (24)	0.78 (19.7)
	RB□□-RT6-L	3/8 Male BSPT	1.78 (45.1)	7/8 (22.2)	1.03 (26.2)	0.91 (23)
	RB□□-RT8-L	1/2 Male BSPT			1.04 (26.3)	

Sizes and types listed are standard. Other sizes and types are available upon request.

Caution

When installing a bleed valve, position the vent tube to direct system fluid away from operating personnel. Always open bleed valves slowly. These valves contain no packing, so some fluid weepage will occur when the valves are opened. Operating personnel must protect themselves from exposure to system fluids.

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.

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.

Purge Valves

RP Series



Bleed Valves
Purge Valves

Purge Valves

RP Series

Introduction

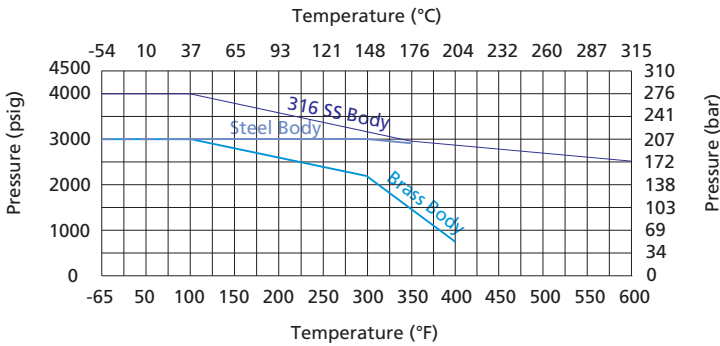
Purge valves are manual bleed, vent or drain valves. The knurled cap is permanently assembled to the valve body for safety. One-quarter turn with a wrench from finger-tight obtains leaktight closure during initial installation. Tightening with a wrench ensures closure to the rated pressure with subsequent installations.

Features

- ⦿ Compact design for easy installation
- ⦿ Bonnet crimped to valve body to prevent accidental disassembly
- ⦿ Working pressure up to: 4000 psig (276 bar)
- ⦿ Working temperature: -65°F to 600°F (-54°C to 315°C)
- ⦿ Leak-tight performance testing with Nitrogen or compressed air for every valve at the maximum working pressure to meet the requirement of no visible leak.



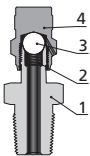
Pressure vs. Temperature



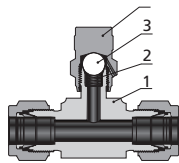
Note: Ratings based on all metal seals. Ratings limited to:
 ■ -20°F (-28°C) min with steel.
 ■ 450°F (232°C) max with SAE end connections using fluorocarbon FKM O-rings.

Standard Materials of Construction

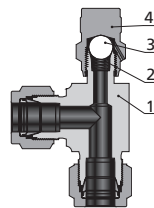
Type L



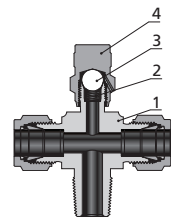
Type TL



Type TA



Type C



Component	Material Grade/ASTM Specification			
	316 SS	Brass	Carbon Steel	
1	<i>Body</i>	<i>316 SS/A182 316 SS/A479</i>	<i>Brass C36000/B16 Brass C37700/B283</i>	<i>12L4/A108 Chromium-plated</i>
2	<i>Spring</i>	<i>302 SS/A313</i>		
3	<i>Poppet (Ball)</i>	<i>316 SS/A479</i>		
4	<i>Cap</i>	<i>316 SS/A479</i>	<i>Brass C36000/B16</i>	<i>12L4/A108 Chromium-plated</i>

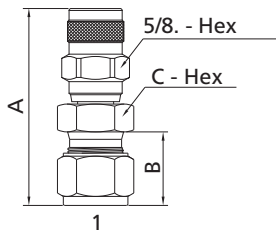
Note: Wetted components are listed in italics.

1. Lubricant: molybdenum disulfide-based and silicone-based.

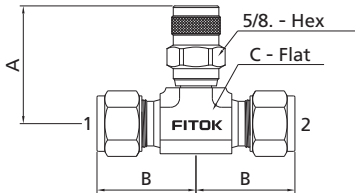
2. Contact FITOK Group or our authorized distributors for other materials.

Dimensions

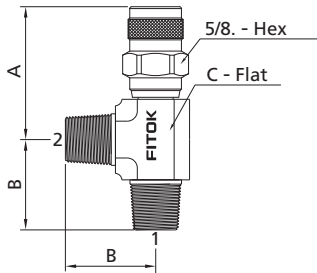
Type L



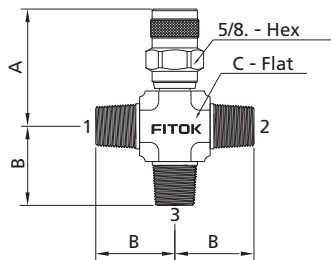
Type TL



Type TA



Type C



Caution:

When installing a purge valve, position the vent hole to direct system fluid away from operating personnel. Always open purge valves slowly. These valves contain no packing, so some fluid weepage will occur when the valves are opened. Operating personnel must protect themselves from exposure to system fluids.

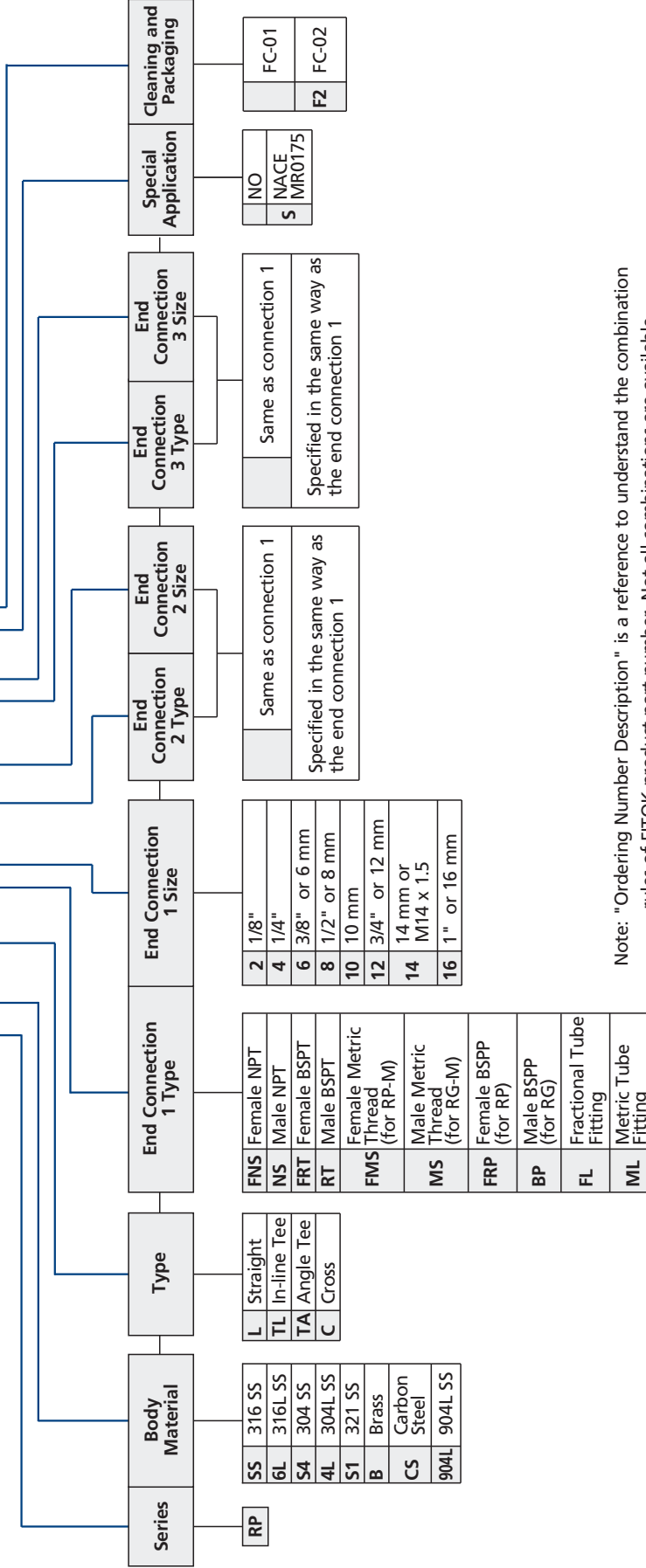
Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)				
			A _{max}	B	C	D	
RP□□-L	-FL4	1/4" FITOK	1.96 (49.8)	0.69 (17.5)	1/2 (12.7)	5/8 (15.9)	
	-FL6	3/8" FITOK	2.05 (52.1)	0.75 (19.1)	5/8 (15.9)		
	-FL8	1/2" FITOK	2.20 (56.0)	0.88 (22.4)	13/16 (20.6)		
	-ML6	6 mm FITOK	1.96 (49.8)	0.69 (17.5)	0.55 (14.0)		
	-ML8	8 mm FITOK	2.02 (51.3)	0.73 (18.6)	0.59 (15.0)		
	-ML10	10 mm FITOK	2.10 (53.4)	0.77 (19.6)	0.71 (18.0)		
	-ML12	12 mm FITOK	2.20 (55.9)	0.87 (22.0)	0.87 (22.0)		
	-FNS4	1/4 Female NPT	1.76 (44.7)	0.72 (18.3)	3/4 (19.1)		
	-FNS6	3/8 Female NPT	1.83 (46.5)	0.78 (19.8)	7/8 (22.2)		
	-FNS8	1/2 Female NPT	2.02 (51.3)	0.97 (24.6)	1 1/16 (26.9)		
	-NS4	1/4 Male NPT	1.84 (46.8)	0.56 (14.2)	9/16 (14.3)		
	-NS6	3/8 Male NPT	1.89 (48.0)	0.56 (14.2)	11/16 (17.5)		
	-NS8	1/2 Male NPT	2.11 (53.6)	0.75 (19.1)	7/8 (22.2)		
	RP□□-TL RP□□-TA RP□□-C	-FL4	1/4" FITOK	1.41 (35.8)	1.06 (26.9)		1/2 (12.7)
		-FL6	3/8" FITOK	1.49 (37.8)	1.20 (30.5)		5/8 (15.9)
		-FL8	1/2" FITOK	1.61 (40.9)	1.42 (36.1)		13/16 (20.6)
-ML6		6 mm FITOK	1.41 (35.8)	1.06 (27.0)	1/2 (12.7)		
-ML8		8 mm FITOK	1.48 (37.7)	1.495 (29.9)	5/8 (15.9)		
-ML10		10 mm FITOK	1.52 (38.6)	1.24 (31.6)	11/16 (17.5)		
-ML12		12 mm FITOK	1.60 (40.6)	1.41 (36.0)	13/16 (20.6)		
-FNS4		1/4 Female NPT	1.66 (42.2)	1.17 (29.7)	11/16 (17.5)		
-FNS6		3/8 Female NPT	1.75 (44.4)	1.42 (36.1)	13/16 (20.6)		
-FNS8		1/2 Female NPT	1.75 (44.4)	1.56 (39.6)	1 (25.4)		
-NS4		1/4 Male NPT	1.54 (39.2)	1.05 (26.7)	1/2 (12.7)		
-NS6		3/8 Male NPT	1.68 (42.6)	1.17 (29.7)	11/16 (17.5)		
-NS8	1/2 Male NPT	1.75 (44.4)	1.45 (36.8)	13/16 (20.6)			

1. FITOK means FITOK double ferrule tube fittings.
2. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. Sizes and types listed are standard. Other sizes and types are available upon request.

Bleed Valves
Purge Valves

Ordering Number Description

RPSS – C – FL8 – ML10 – FL8 – SF2



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

1. Standard thread pitch for metric threads are as follows:

M10 and below: 1 mm

M12 to M24: 1.5 mm

M27 and above: 2 mm

Standard thread pitch should be omitted in the ordering number, others should be specified.

2. 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.