

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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BV Series



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Important Information about Ball Valves

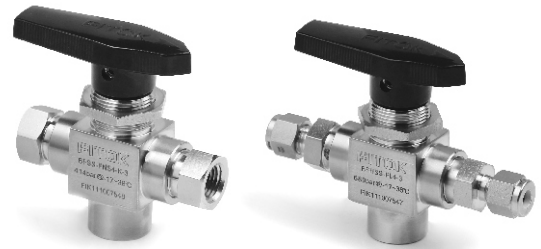
- ⦿ FITOK ball valves are designed to be used in fully open or fully closed position.
- ⦿ Packing adjustment may be required during the valve's life (except for BF and BFH series).
- ⦿ For better quality maintenance, FITOK ball valves should be kept in fully open position in warehouse.
- ⦿ Valves that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

Trunnion Ball Valves

BF and BFH Series

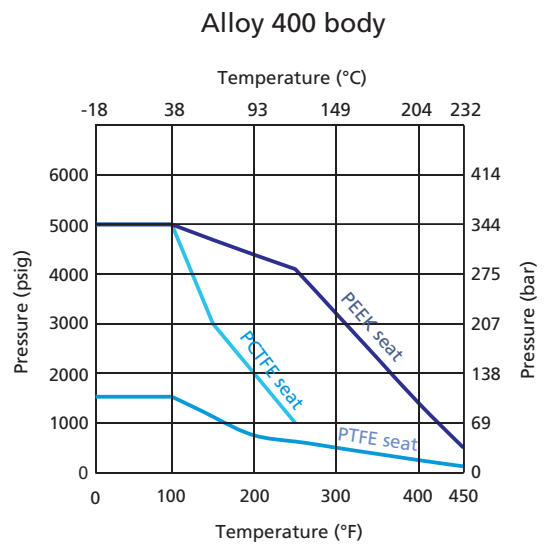
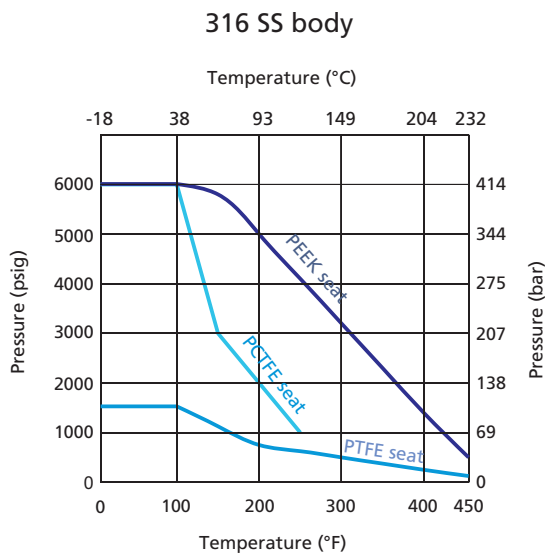
Features

- ⦿ 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



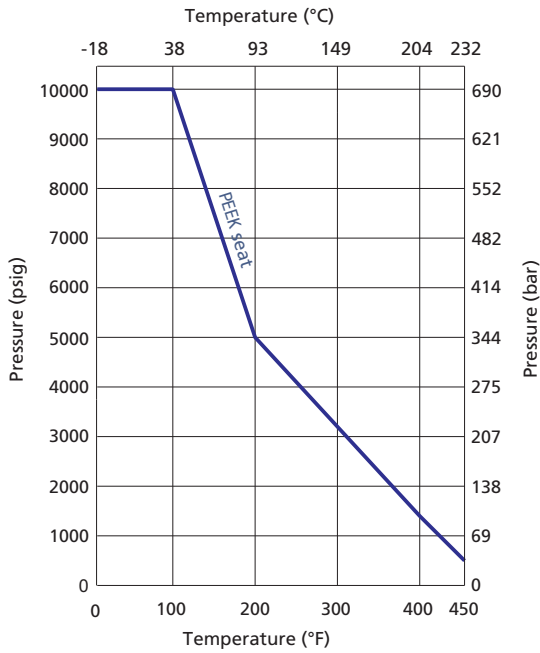
Pressure vs. Temperature

BF Series



BFH Series

316 SS body



Pressure Rating @ 100°F (38°C)

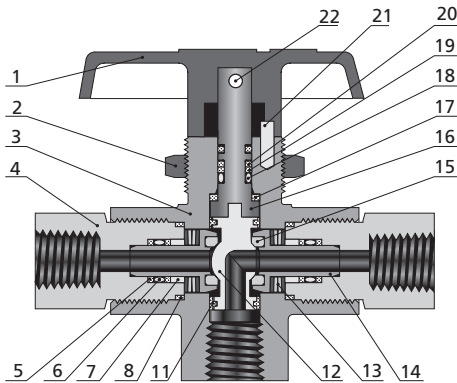
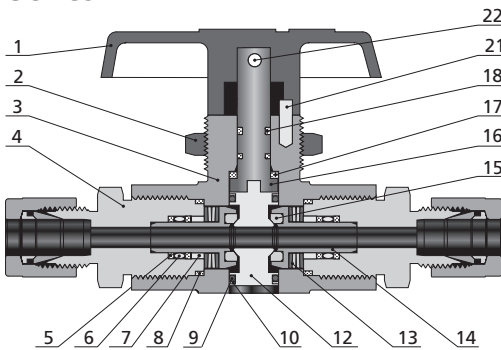
Material	End Connection	Pressure Rating, psig (bar)
316 SS	FNS2, FNS4 FL4, ML6	10000 (690)
	ML10	8400 (578)
	FL6/ML8	7500 (516)
	FL8	6700 (461)
	ML12	6800 (470)

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

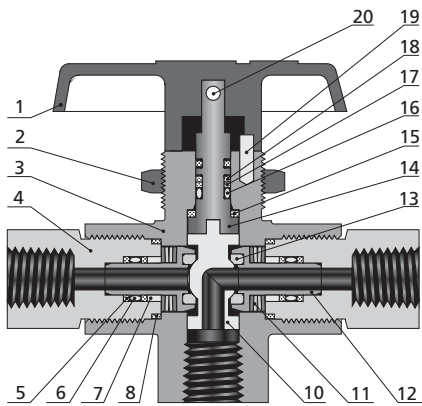
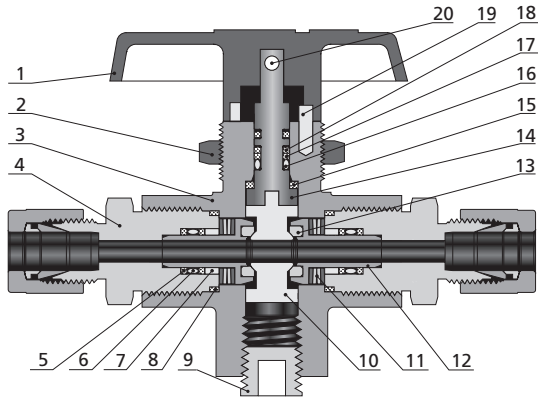


Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
Material Grade/ASTM Specification					
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	Body	316 SS/A182		Alloy 400/B164	
4	End Connection	316 SS/A479		Alloy 400/B164	
5	Seat Retainer Backup Ring	Reinforced 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.

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

BFH Series



Ball Valves
Plug Valves

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

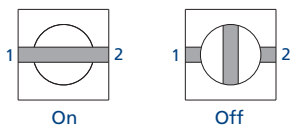
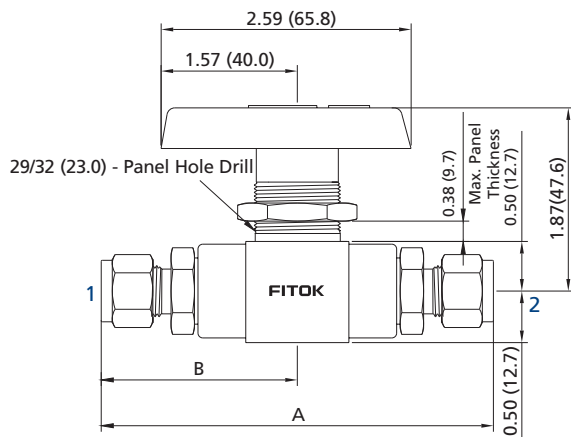
Note: Wetted components are listed in italics.

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

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

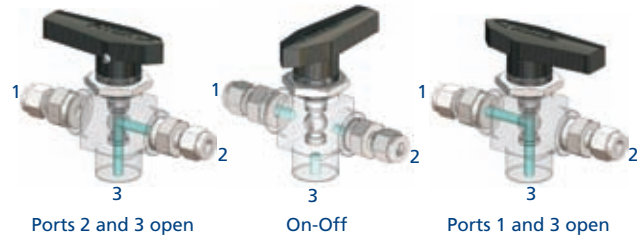
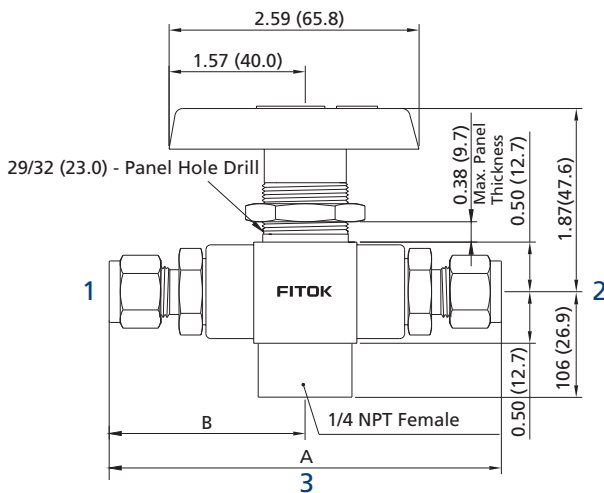
Dimensions

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.

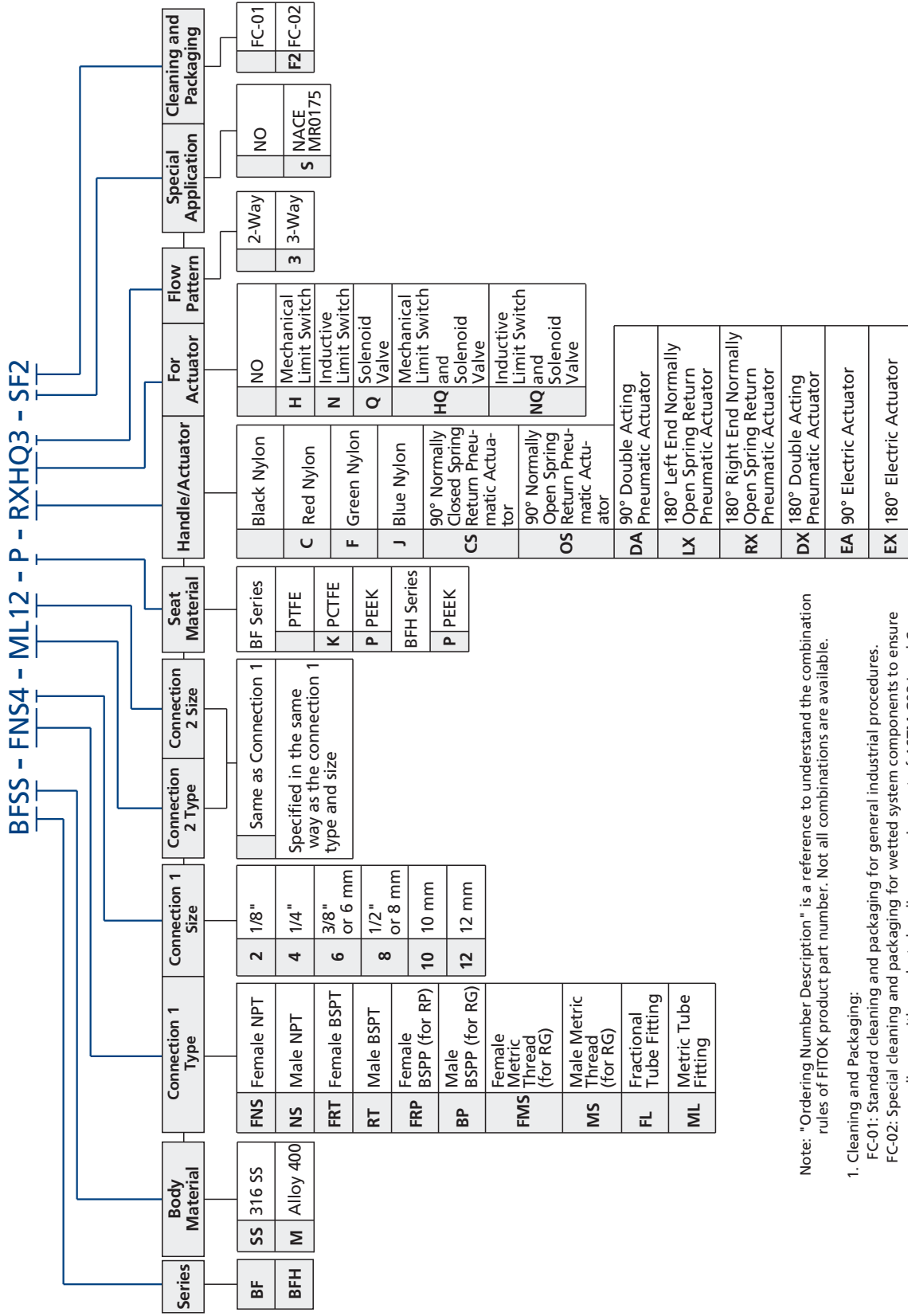
Example: BFSS-2-ZT

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

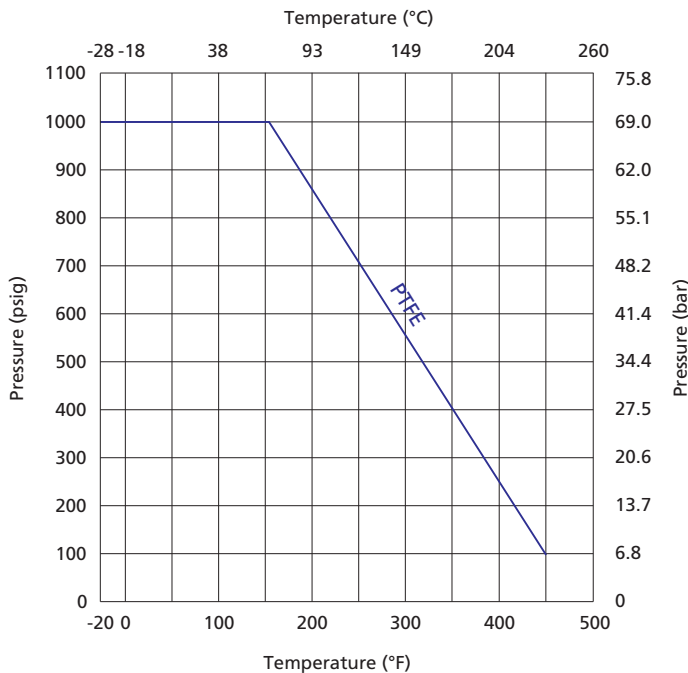
BG Series

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

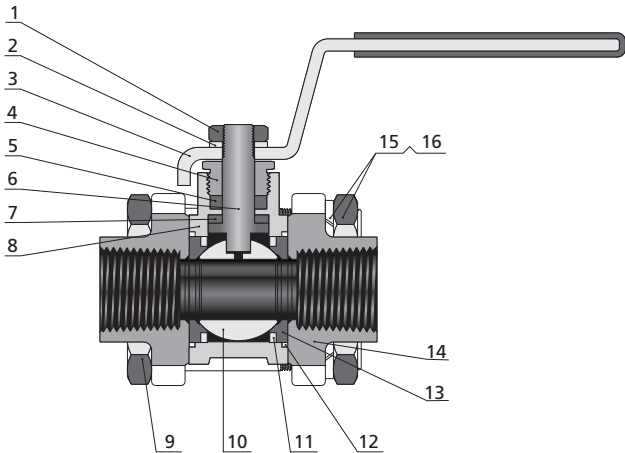


Pressure vs. Temperature



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

Standard Materials of Construction



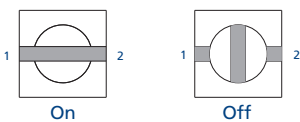
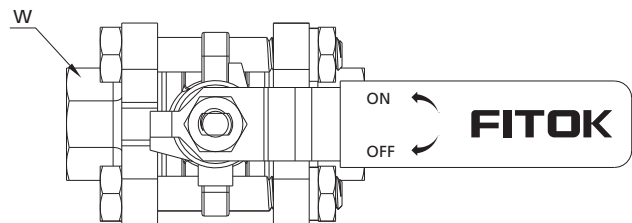
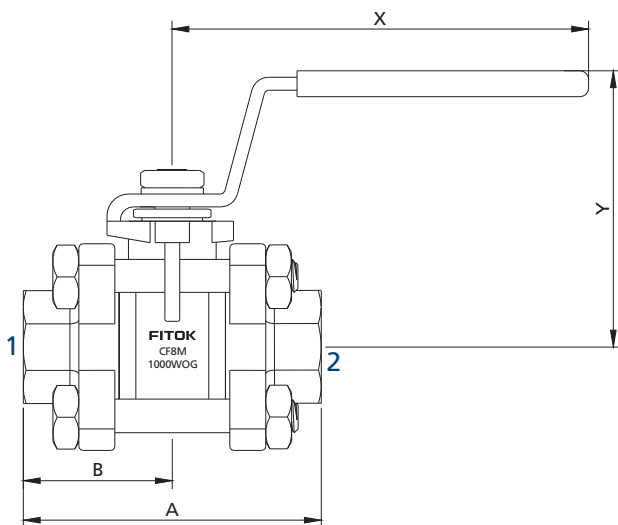
Item	Component	Valve Body Material	
		CF8M/A351	CF8/A351
1	Stem Nut	SS	
2	Gasket	SS	
3	Handle	304 SS/A240 (with vinyl sleeve)	
4	Gland	316 SS/A479 or 304 SS/A479	
5	Stem Packing	PTFE/D1710	
6	Stem	316 SS/A479 or 304 SS/A479	
7	Stem Bearing	PTFE/D1710	
8	Body	CF8M/A351	CF8/A351
9	Body Bolt	SS	
10	Ball	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	
<i>Lubricants</i>		<i>Silicone-based and PTFE-based</i>	

Ball Valves
Plug Valves

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			
BG□□-FRP12-20	3/4 Female BSPP	3/4 Female BSPP							

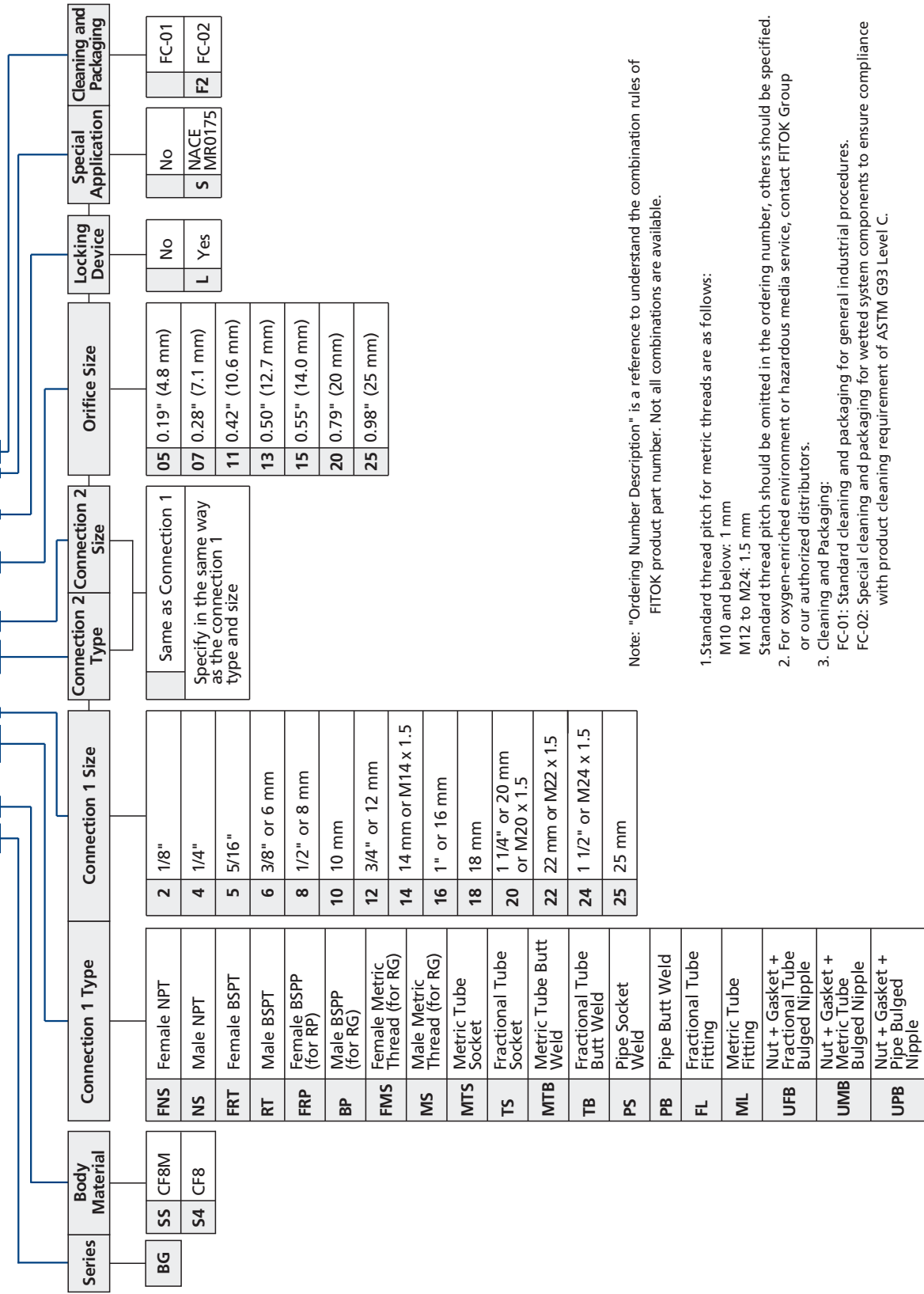
Ball Valves
Plug Valves

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.

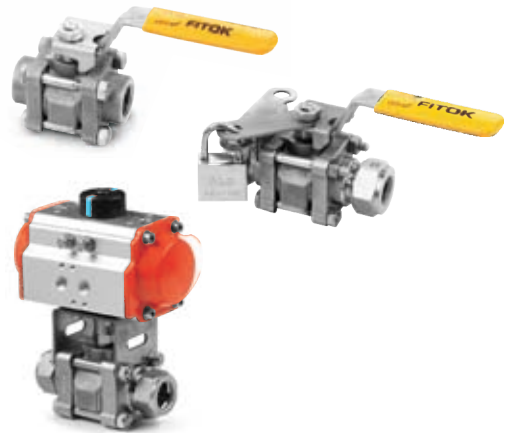
- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
- For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.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

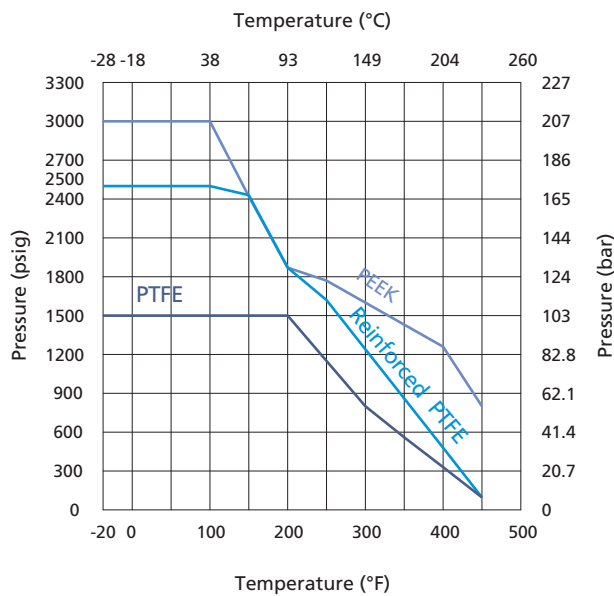


Ball Valves
Plug Valves

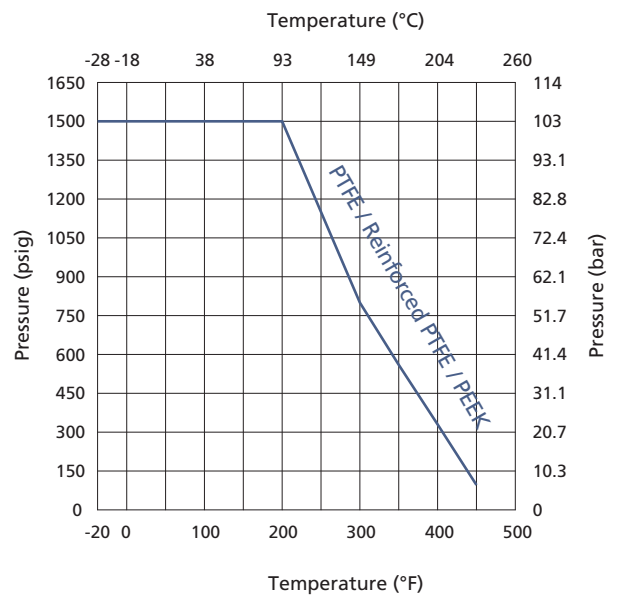
Pressure vs. Temperature

2-way Valves

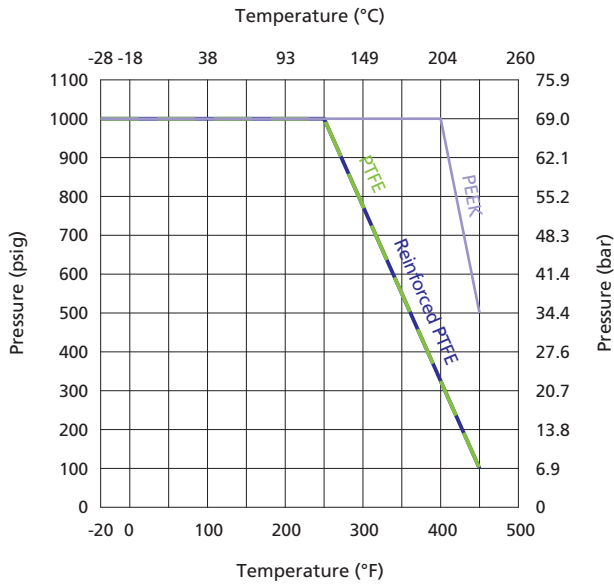
Orifice Size: 0.19", 0.28", 0.41", 0.52" & 0.88"



Orifice Size: 1.13", 1.25" & 1.50"

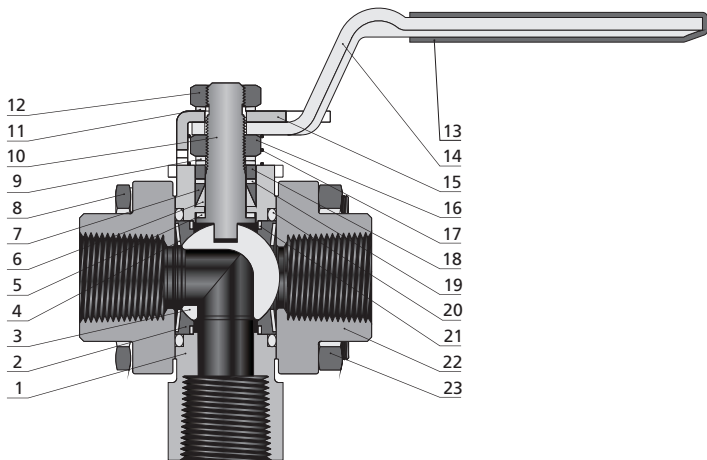
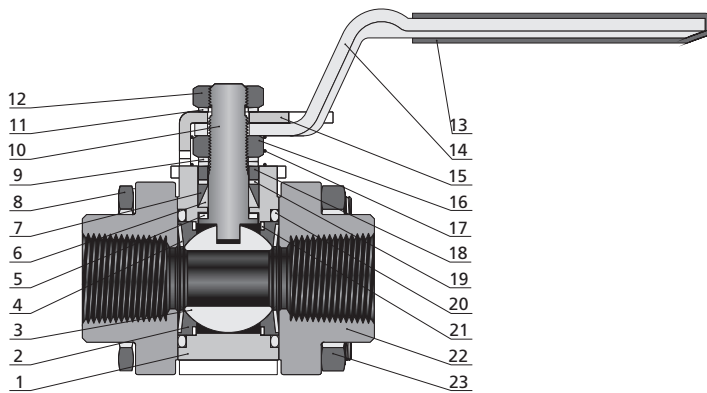


3-way Valves



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

Standard Materials of Construction

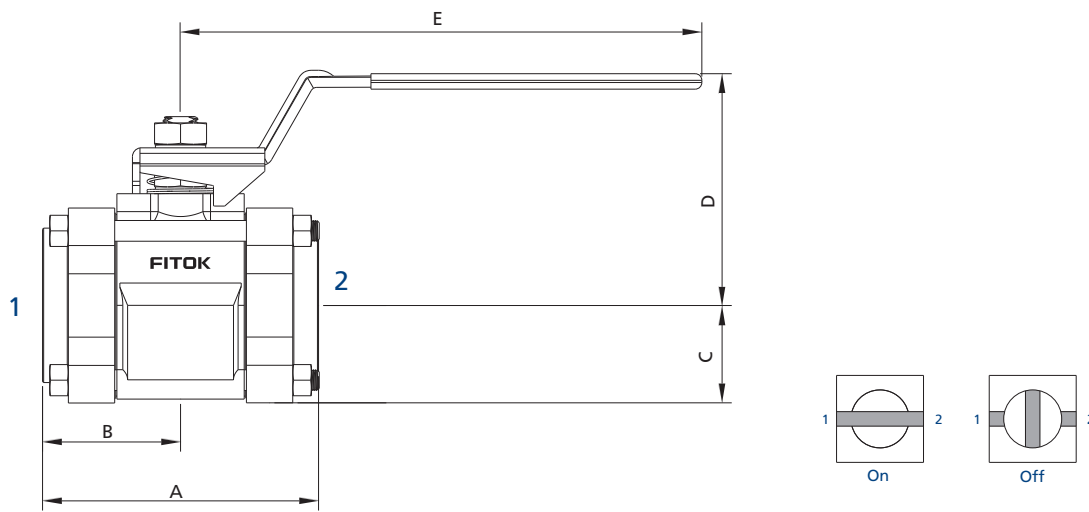


Item	Component	Material Grade/ASME Specification	
1	<i>Body</i>	<i>CF8M/A351</i>	<i>CF8/A351</i>
2	<i>Seat</i>	<i>PTFE or Reinforced PTFE or PEEK</i>	
3	<i>Ball</i>	<i>316 SS/A479</i>	
4	<i>Coned-disc Spring</i>	<i>Strain-hardened 316 SS/A240</i>	
5	<i>Stem Bearing</i>	<i>PEEK</i>	
6	<i>Lower Packing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

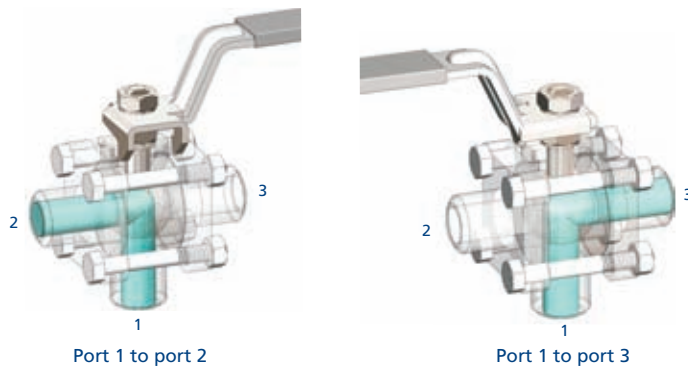
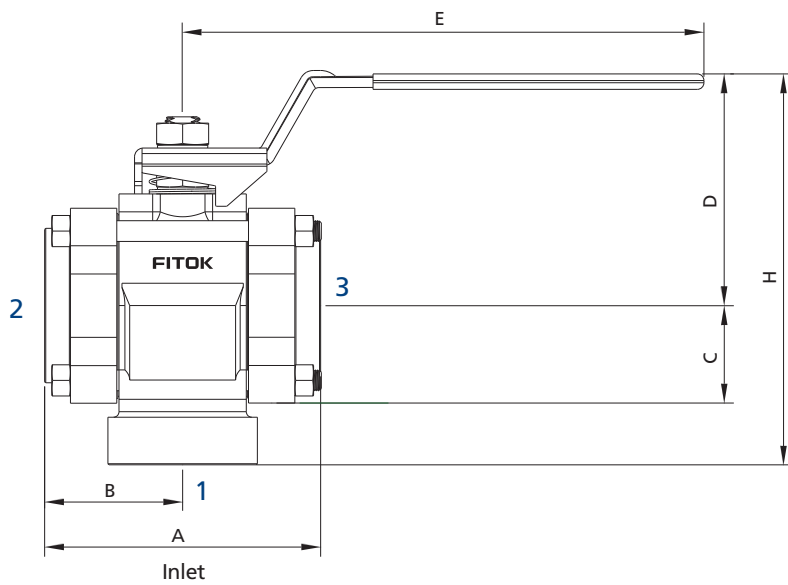
Dimensions

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								

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

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Packing Material	Handle/Actuator	For Actuator	Flow Locking Device	Special Application	Cleaning and Packaging
BH	SS CF8M	FNS Female NPT	2 1/8"		Same as Connection 1	PTFE	05 0.19" (4.8 mm)	Reinforced PTFE	Yellow Handle Sleeve	H	NO	No	FC-01
	S4 CF8	NS Male NPT	4 1/4"		Specify in the same way as the Connection 1 type and size	R Reinforced PTFE	07 0.28" (7.1 mm)	G Graphite	Red Handle Sleeve	C	Mechanical Limit Switch	No	F2 FC-02
		FRT Female BSPT	5 5/16"			P PEEK	10 0.41" (10.4 mm)		Green Handle Sleeve	F	Inductive Limit Switch	L Yes	
		RT Male BSPT	3/8" or 6 mm				13 0.52" (13.1 mm)		Blue Handle Sleeve	J	Solenoid Valve	S NACE MR0175	
		FRP Female BSPP (for RP)	1/2" or 8 mm				22 0.88" (22.2 mm)		90° Normally Closed Spring Return Pneumatic Actuator	CS	Mechanical Limit Switch and Solenoid Valve		
		BP Male BSPP (for RG)	10 10 mm				29 1.13"		90° Normally Open Spring Return Pneumatic Actuator	HQ			
		FMS Female Metric Thread (for RG)	3/4" or 12 mm				32 1.25" (31.8 mm)		90° Double Acting Pneumatic Actuator	OS	Inductive Limit Switch and Solenoid Valve		
		MS Male Metric Thread (for RG)	14 14 mm or M14 x 1.5				38 1.50" (38.1 mm)			DA			
		MTS Metric Tube Socket	1" or 16 mm										
		TS Fractional Tube Socket	18 18 mm										
		MTB Metric Tube Butt Weld	1 1/4" or 20 mm or M20 x 1.5										
		TB Fractional Tube Butt Weld	22 22 mm or M22 x 1.5										
		PS Pipe Socket Weld	1 1/2" or M24 x 1.5										
		PB Pipe Butt Weld	25 25 mm										
		FL Fractional Tube Fitting	27 M27 x 2										
		ML Metric Tube Fitting	28 28 mm										
		UFB Nut + Gasket + Fractional Tube Bulged Nipple	2" or 32 mm										
		UMB Nut + Gasket + Metric Tube Bulged Nipple											
		UPB Nut + Gasket + Pipe Bulged Nipple											
		FO Male FO Fitting											
		FR Male FR Fitting											

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.

Straight
3-way

One-piece Instrumentation Ball Valves

BO Series

Features

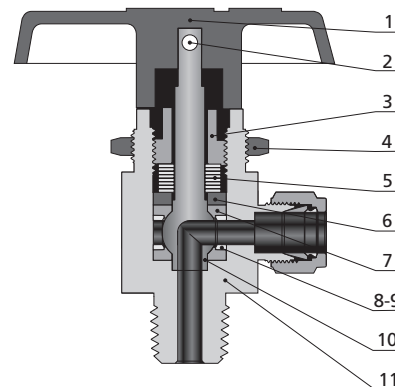
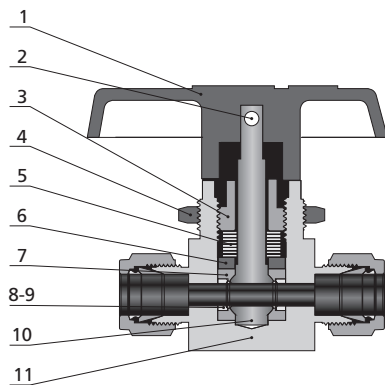
- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperature: -65°F to 300°F (-54°C to 148°C)
- ⦿ End connections:
1/4 to 1/2 thread
1/16" to 3/4" and 3 mm to 18 mm tube fitting
- ⦿ 2-, 3-, 4-, 5-, 6- and 7-way models for on-off, switching and crossover service available
- ⦿ One-piece body 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		

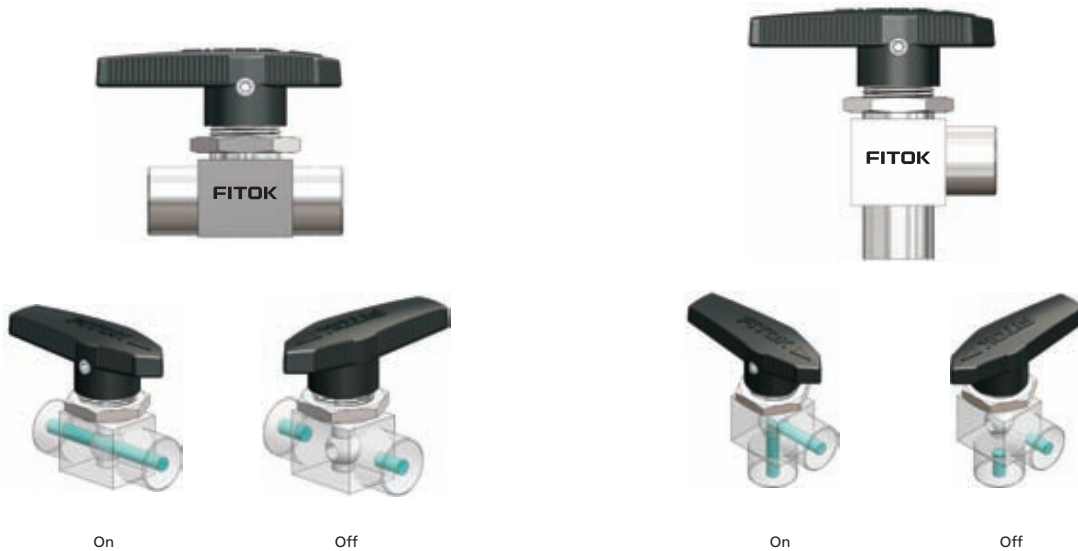
Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

On-Off (2-way) Valves

Standard Flow Path

Straight Pattern

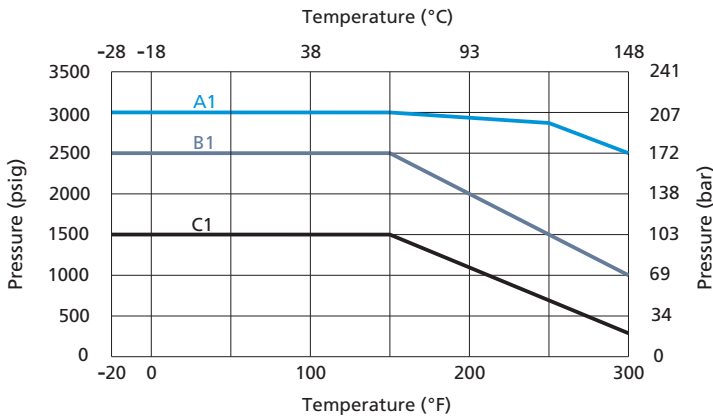
Angle Pattern



Pressure vs. Temperature

Straight Pattern and Angle Pattern

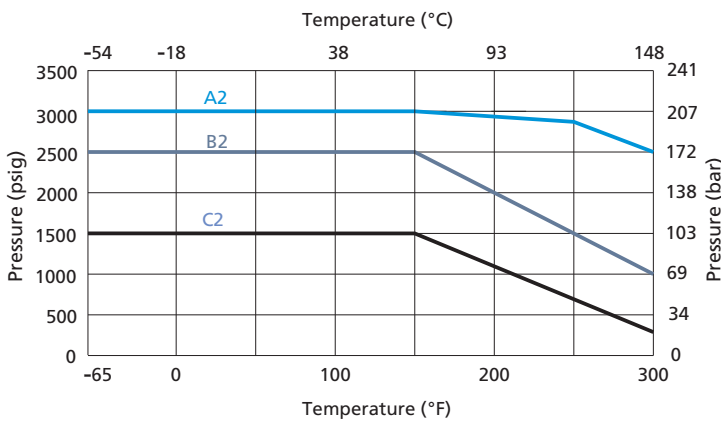
PTFE Packing Seat



- 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

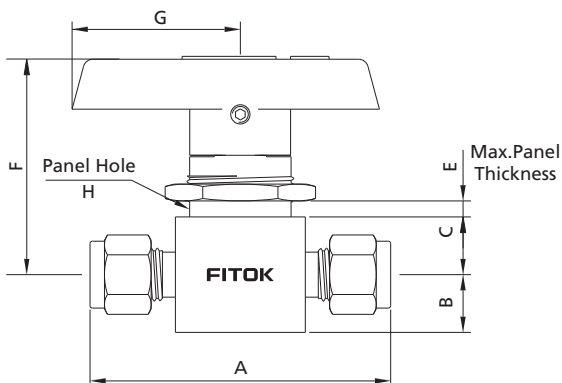
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



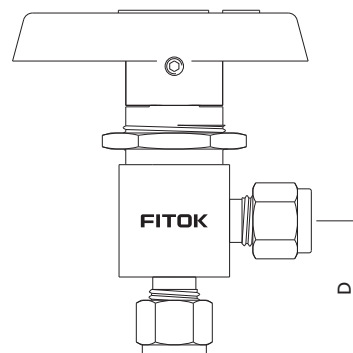
- A2: Straight Pattern Valves (orifice 0.19")
- B2: Straight Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.28" & 0.41")
Angle Pattern Valves (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
- C2: Angle Valves (orifice 0.28" & 0.41")

Dimensions

Straight Pattern



Angle Pattern



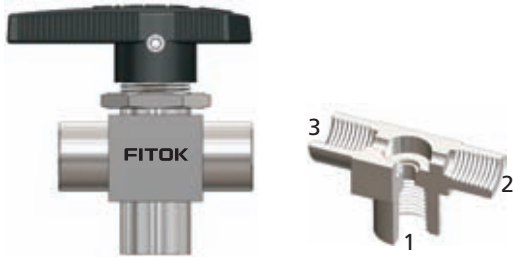
B-24 Ball Valves

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

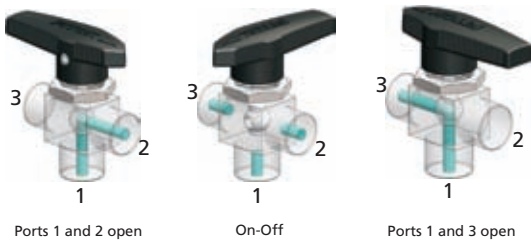


4-way Valves



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.

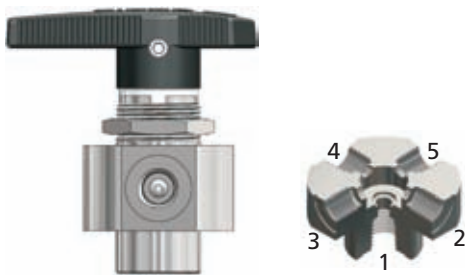


4L Flow Path

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.

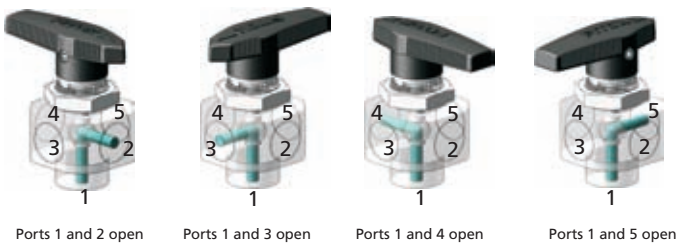


5-way Valves



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.



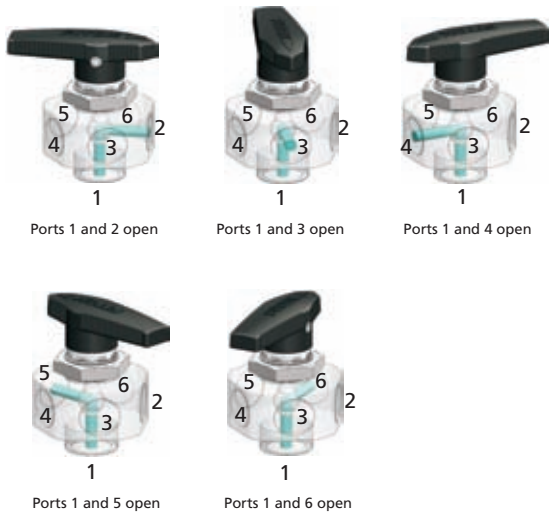
B-26 Ball Valves

6-way Valves

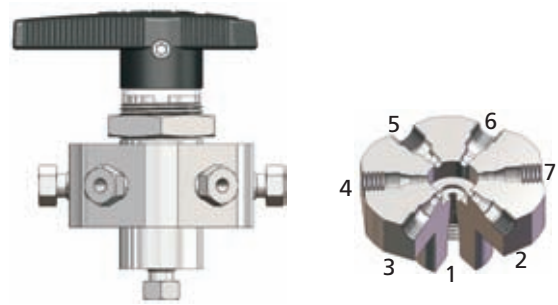


6L Flow Path

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.

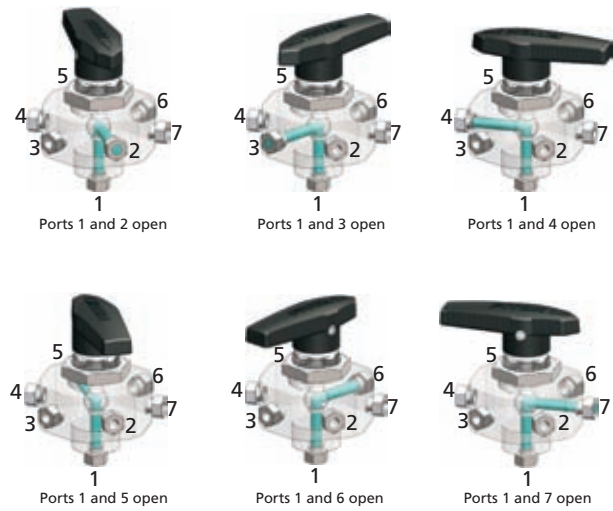


7-way Valves



7L Flow Path

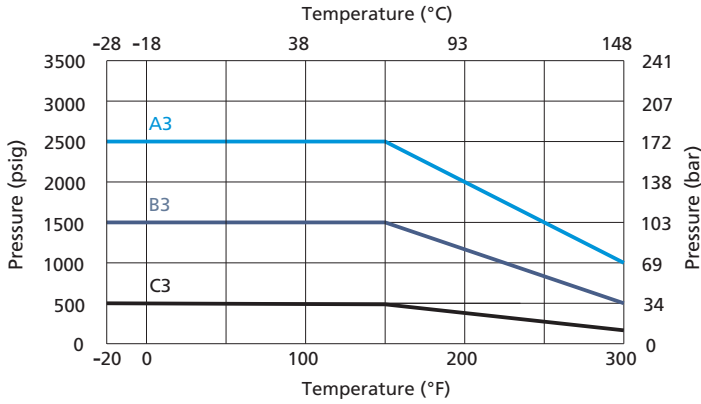
This type of valve can connect one side port to the bottom port, and shut off other 5 side ports at the same time. Switching can be done in 60° increments with 360° rotation handle.



Pressure vs. Temperature

Switching Valves

PTFE Packing Seat



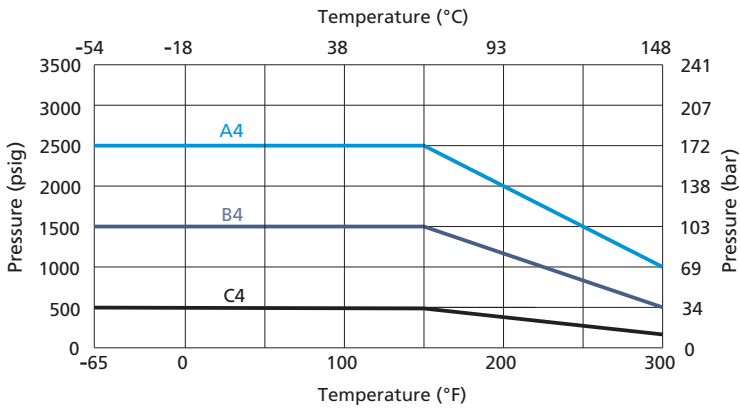
A3: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")

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).



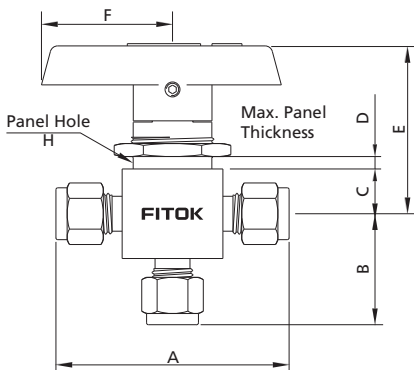
A4: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")

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

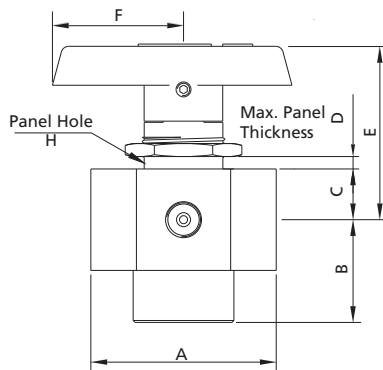
C4: 6-way / 7-way (orifice 0.05" & 0.06")

Dimensions

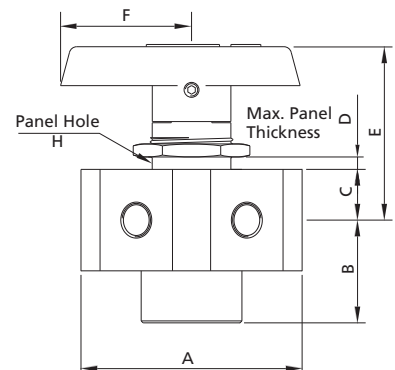
3-way Valves



4-and 5-way Valves



6-and 7-way Valves



B-28 Ball Valves

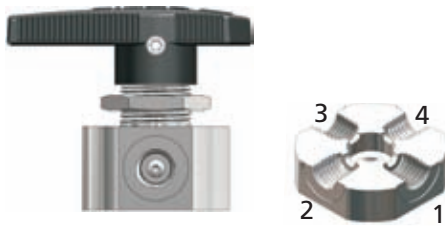
Ball Valves
Plug Valves

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										

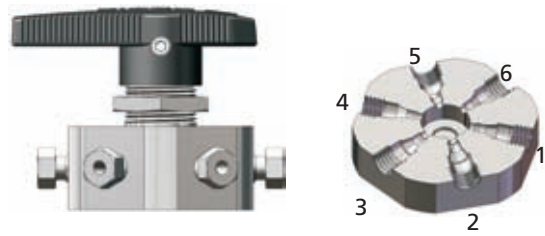
Crossover (4-, 6-way) Valves

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.

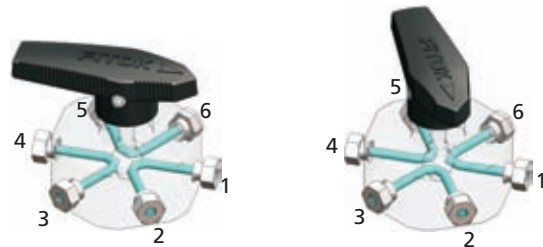


Ports 1 and 2 open
Ports 3 and 4 open

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.



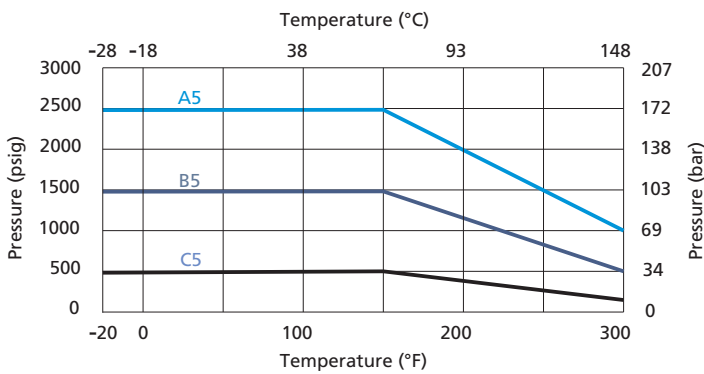
Ports 1 and 2 open
Ports 3 and 4 open
Ports 5 and 6 open

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")

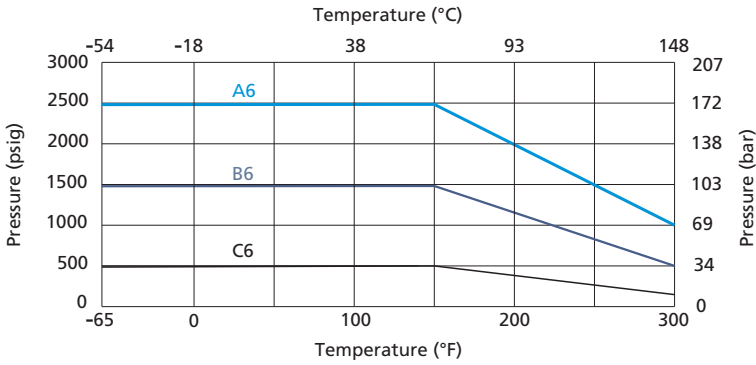
B5: 4-way (orifice 0.41")

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

B-30 Ball Valves

PFA, UHMWPE Packing Seat

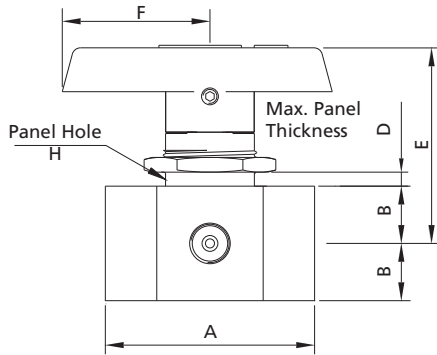
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



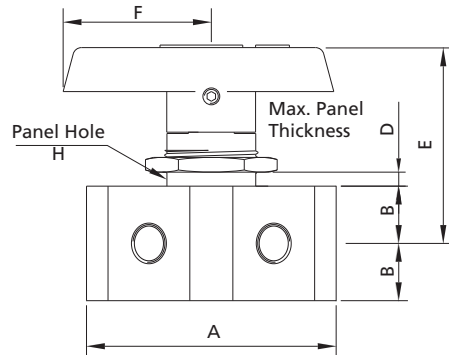
- A6: 4-way (orifice 0.06")
- B6: 6-way (orifice 0.41")
- C6: 6-way (orifice 0.05" & 0.06")

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.

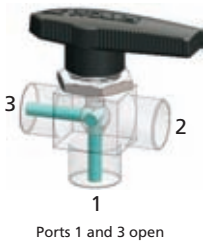
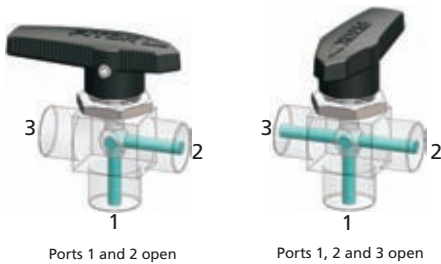
Special Flow Path

3-way Valves



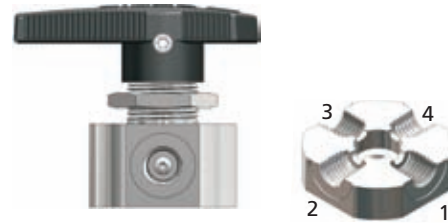
3HL Flow Path

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.



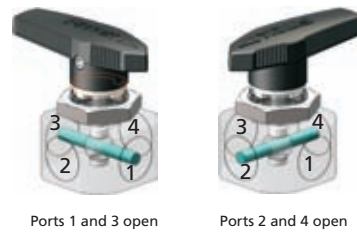
Note: For Temperature VS. Pressure curves and dimensions of 3-way and 4-way valves, see Switching (3-, 4-, 5-, 6- and 7-way) Valves above.

4-way Valves



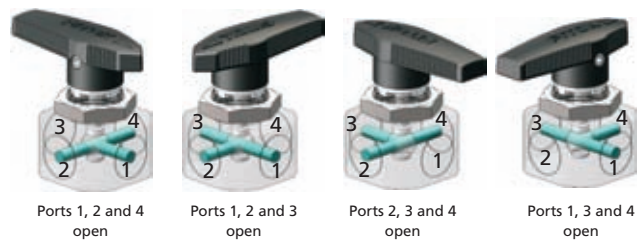
4H Flow Path

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



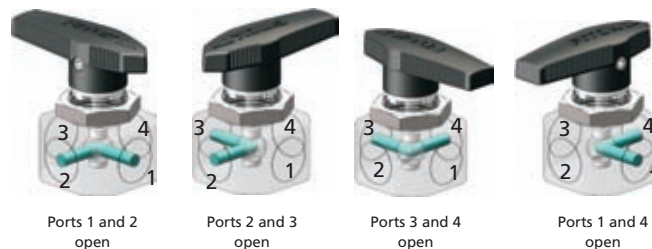
4HL Flow Path

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.



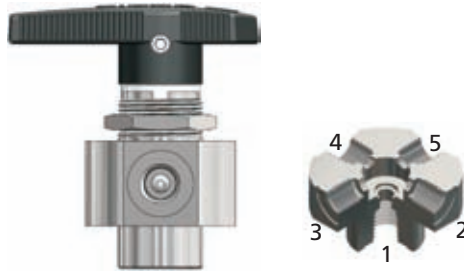
4V Flow Path

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.



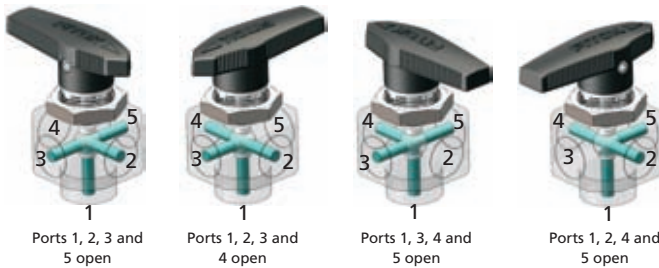
B-32 Ball Valves

5-way Valves



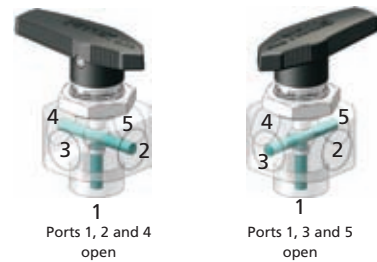
5HL Flow Path

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.



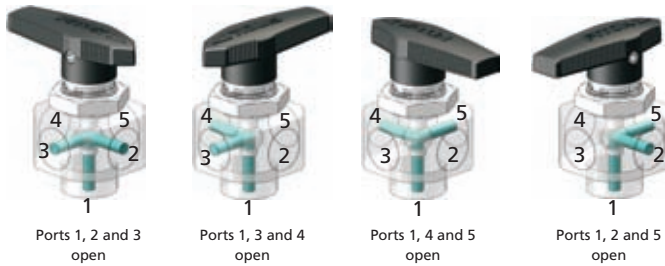
5H Flow Path

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

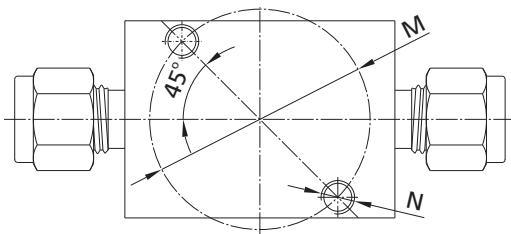
A FITOK tube fitting or a tube stub welded to the vent port is available for stainless steel vented valves.

Bottom Screw Panel Mounting Options

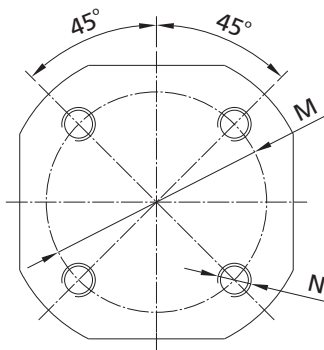
Mounting Dimensions

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

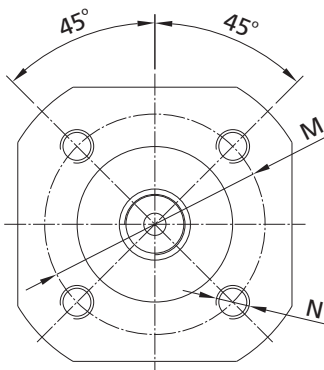
2-way



4-way



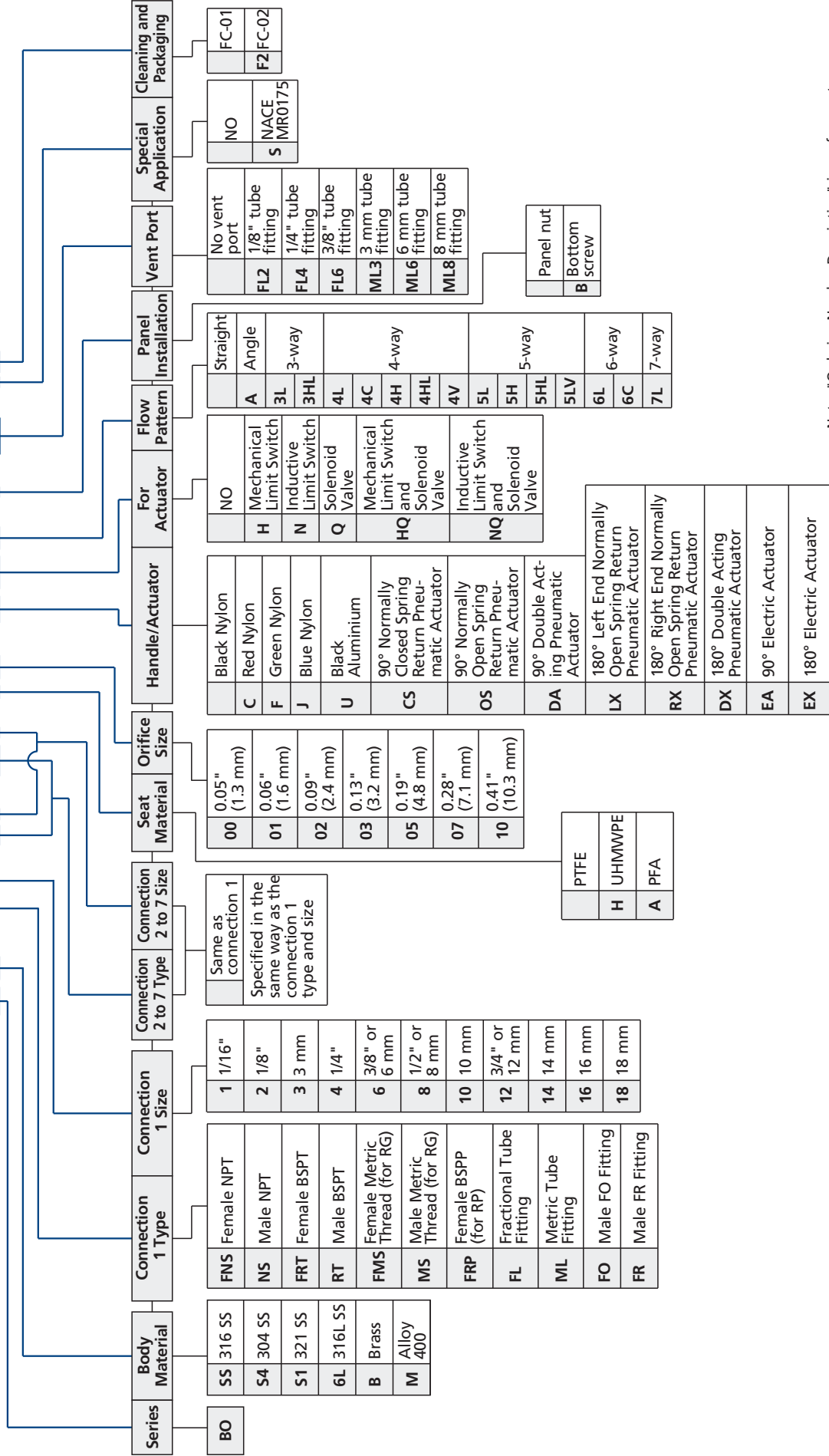
5-way



	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

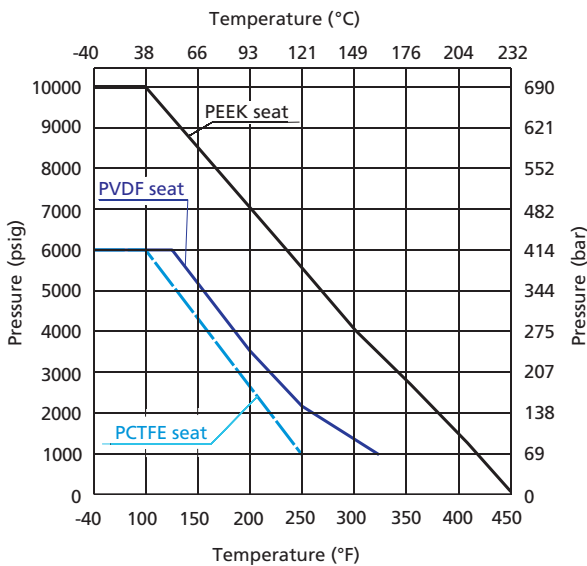


Ball Valves
Plug Valves

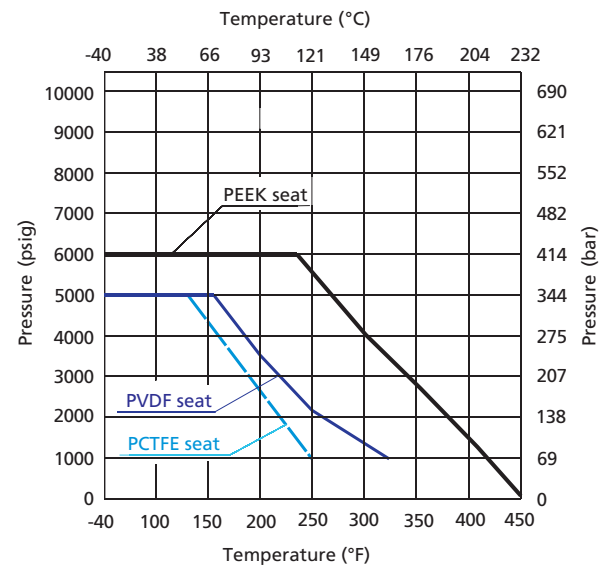
Pressure vs. Temperature

2-way Valves

Orifice: 0.39" (10.0 mm)



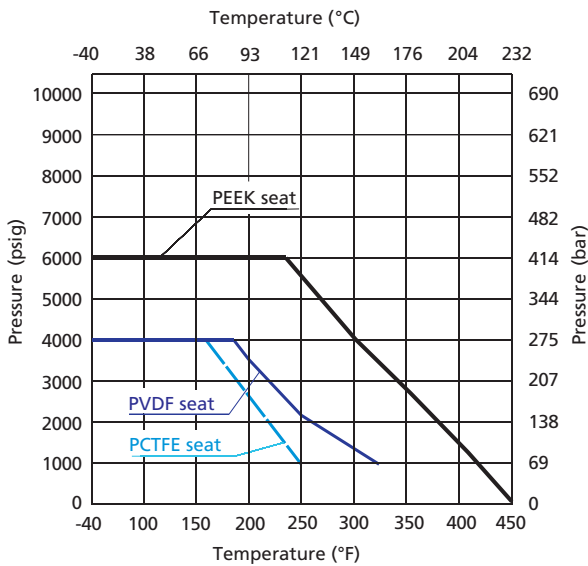
Orifice: 0.50" (12.7 mm) and 0.71" (18.0 mm)



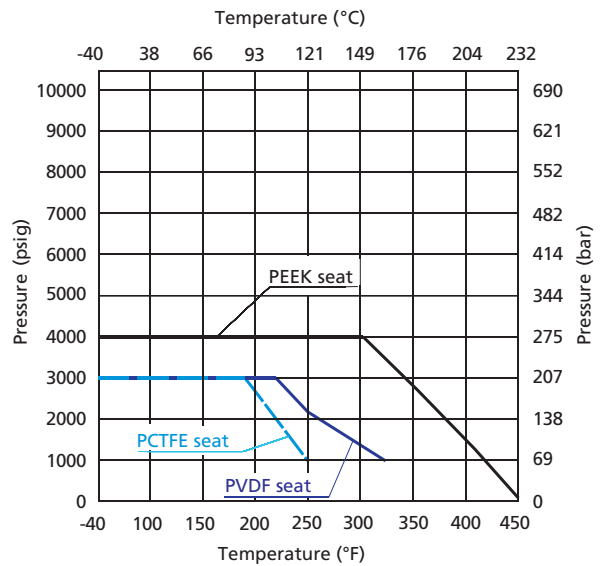
B-36 Ball Valves

3-way Valves

Orifice: 0.39" (10.0 mm)



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

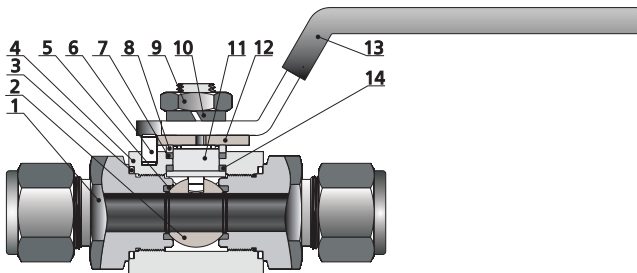


Note: 1. Graphs are with 316SS body. For information of body in other materials, please contact FITOK Group or our authorized distributors.

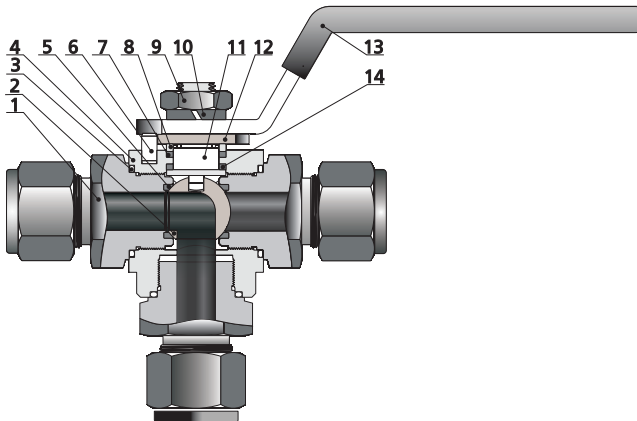
2. The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the pressure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

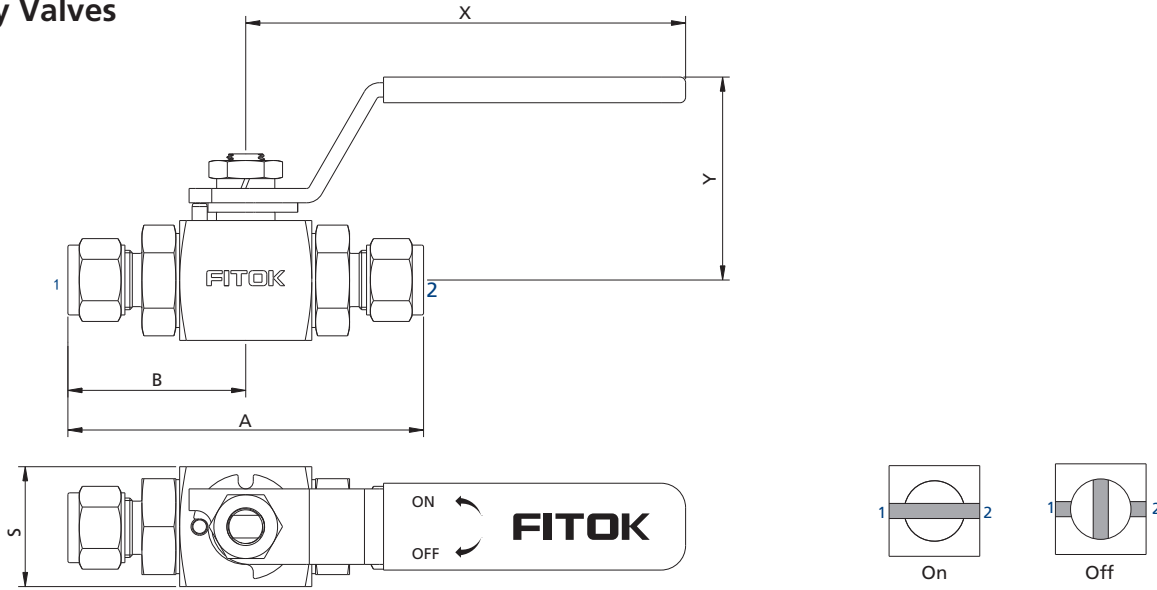
For other materials, please contact FITOK Group or our authorized distributors.

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



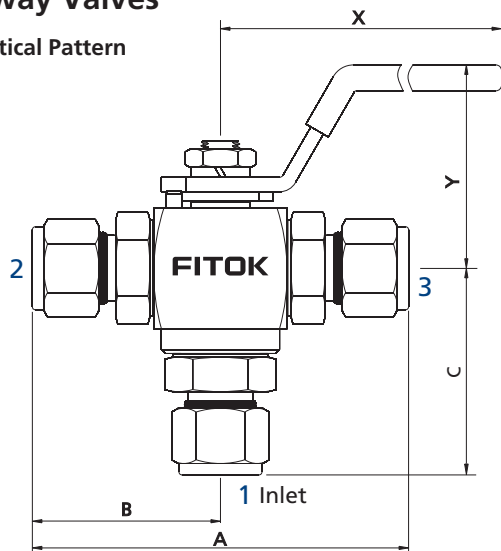
Ball Valves
Plug Valves

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)			5.11 (129.8)	2.66 (64.9)			
BP□□-ML25-19	25 mm FITOK	4600 (317)	0.71 (18.0)	30.0	4.59 (116.6)	2.29 (58.3)			
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)					

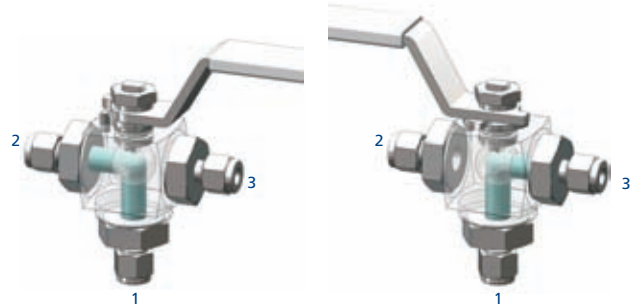
B-38 Ball Valves

3-way Valves

Vertical Pattern



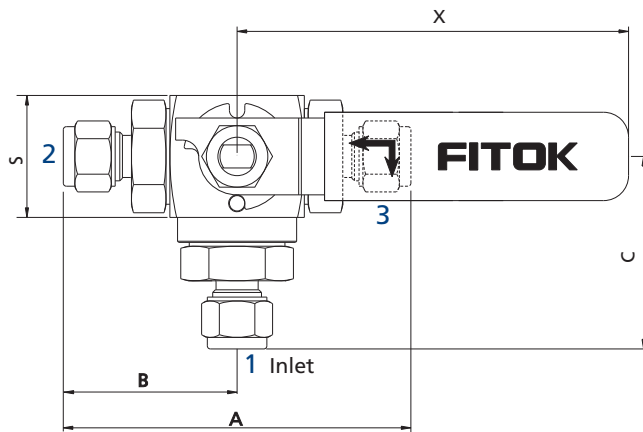
Port 1 as inlet
180° rotation handle



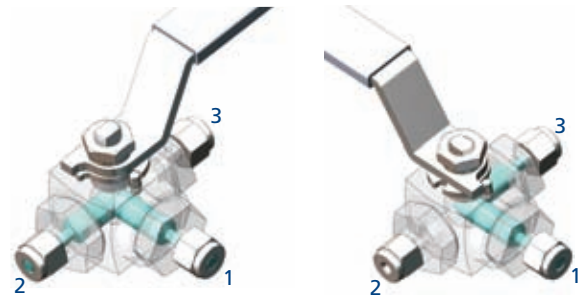
Port 1 to port 2

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)			

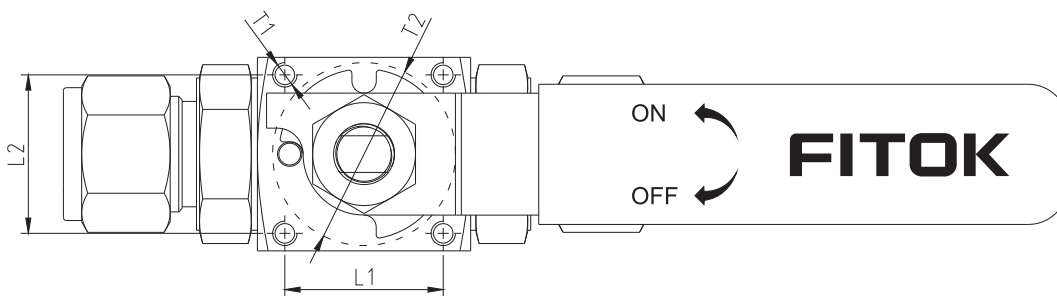
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
	Connection 1/2/3	316 SS		A	B	C	X	Y	S
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	4.42 (112.2)	2.21 (56.1)	2.60 (66.1)	5.59 (142.0)	2.54 (64.4)	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)



Hex Bar Stock Ball Valves

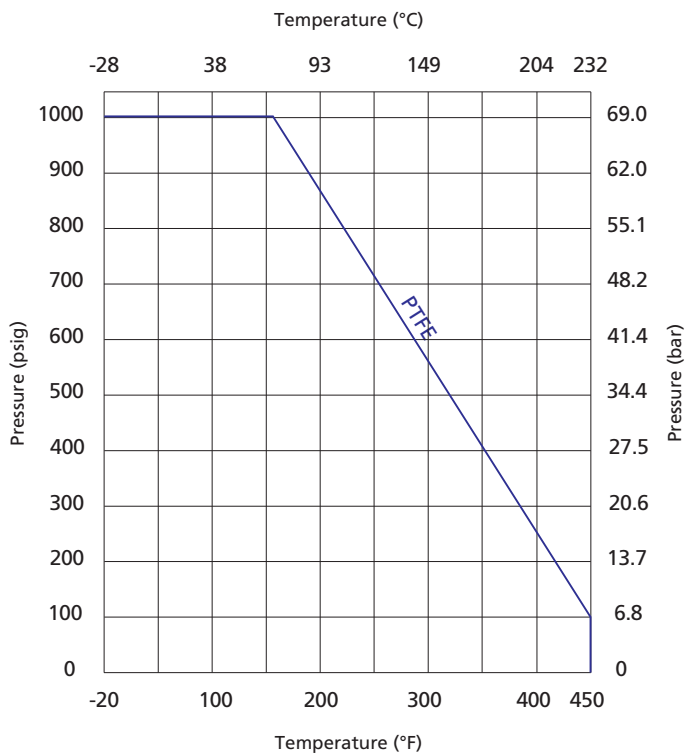
BR Series

Features

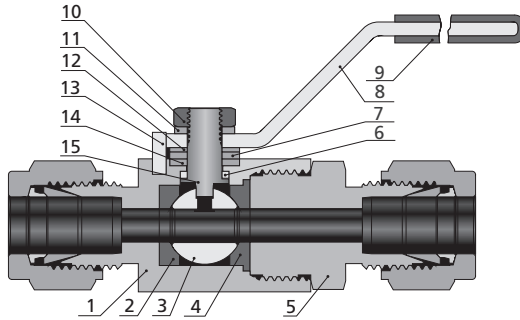
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ Compact and economical design
- ⦿ Free floating ball design for seat wear compensation
- ⦿ Bi-directional flow
- ⦿ Low operating torque
- ⦿ Any reasonable connections available
- ⦿ Blowout proof 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



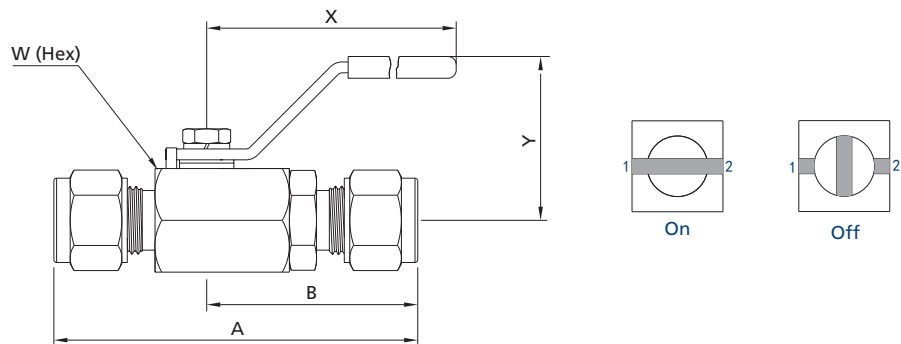
Standard Materials of Construction



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.

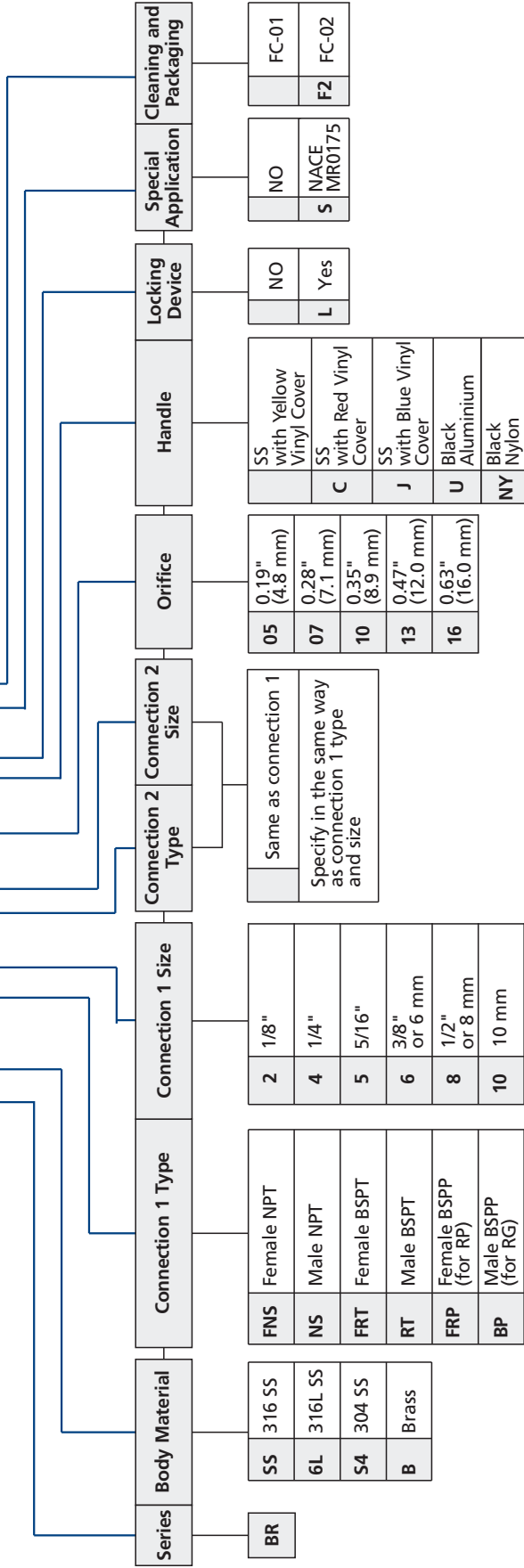
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.

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	FNS Female NPT	2 1/8"		Same as connection 1	05 0.19" (4.8 mm)	SS with Yellow Vinyl Cover	NO	NO	FC-01
	6L 316L SS	NS Male NPT	4 1/4"			Specify in the same way as connection 1 type and size	07 0.28" (7.1 mm)	C with Red Vinyl Cover	L Yes	S NACE MR0175
	S4 304 SS	FRT Female BSPT	5 5/16"			10 0.35" (8.9 mm)	SS			
	B Brass	RT Male BSPT	6 3/8" or 6 mm			13 0.47" (12.0 mm)	SS with Blue Vinyl Cover			
		FRP Female BSPP (for RP)	8 1/2" or 8 mm			16 0.63" (16.0 mm)	U Black Aluminium			
		BP Male BSPP (for RG)	10 10 mm				NY Nylon			
		FL Fractional Tube Fitting	12 3/4" or 12 mm							
		ML Metric Tube Fitting	14 14 mm or M14 x 1.5							
		UFB Nut + Gasket + Fractional Tube Bulged Nipple	16 1" or 16 mm							
		UMB Nut + Gasket + Metric Tube Bulged Nipple	20 1 1/4" or 20 mm or M20 x 1.5							
		UPB Nut + Gasket + Pipe Bulged Nipple	22 22 mm or M22 x 1.5							
			25 25 mm							

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

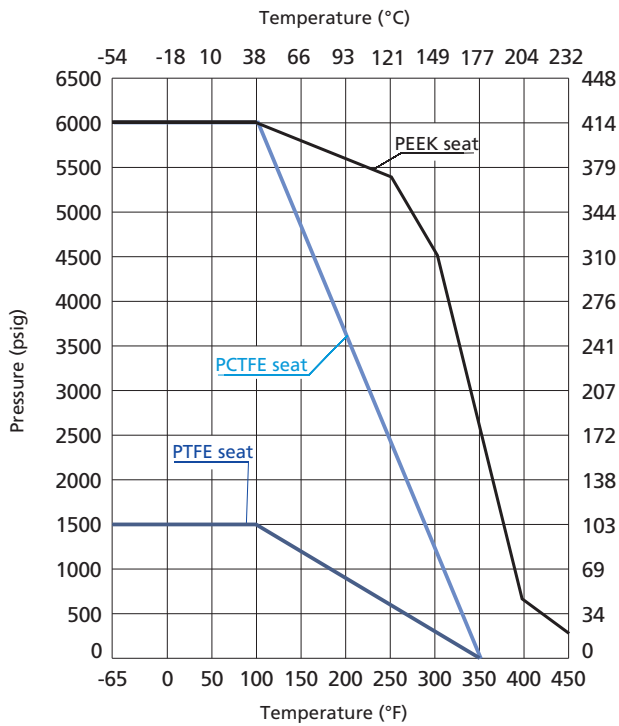
- ⦿ Working pressure up to: 6000 psig (414 bar)
- ⦿ Working temperature: -65°F to 450°F (-54°C to 232°C)
- ⦿ Low operating torque
- ⦿ Handle as indicator of flow direction
- ⦿ Positive handle stop
- ⦿ Electric and pneumatic actuator available
- ⦿ Handle color options available
- ⦿ Leak-tight performance 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



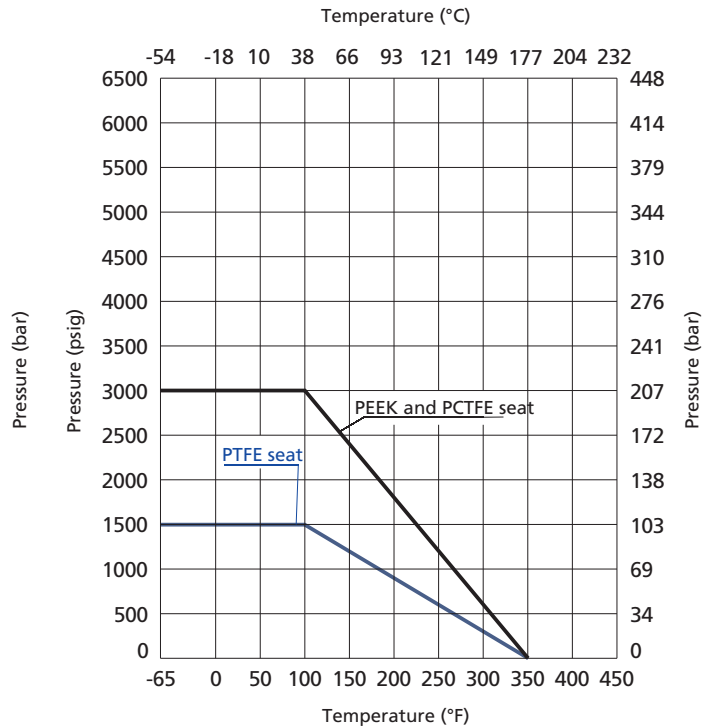
Ball Valves
Plug Valves

Pressure vs. Temperature

316 SS Body



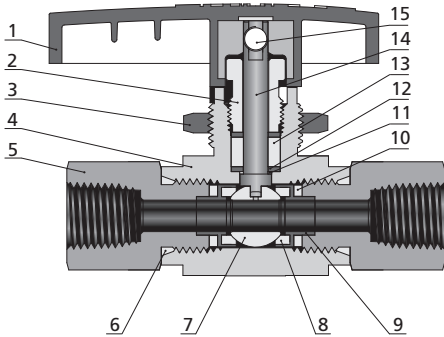
Brass Body



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

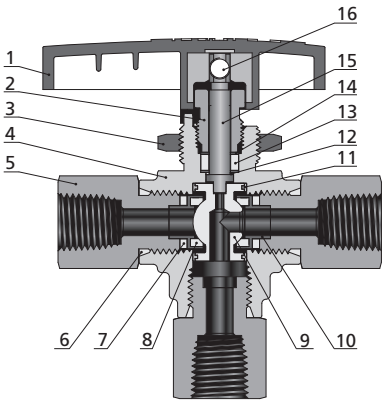
Straight Valves



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.

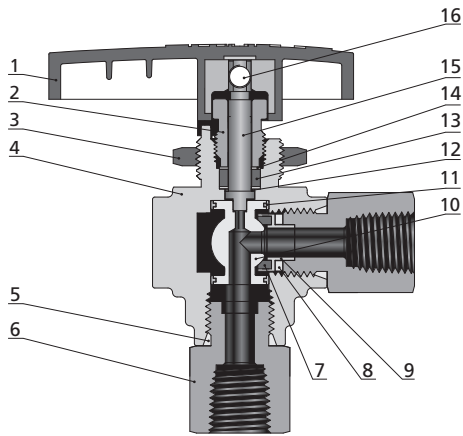
3-way Valves



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



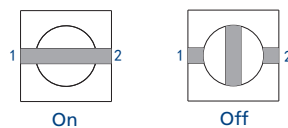
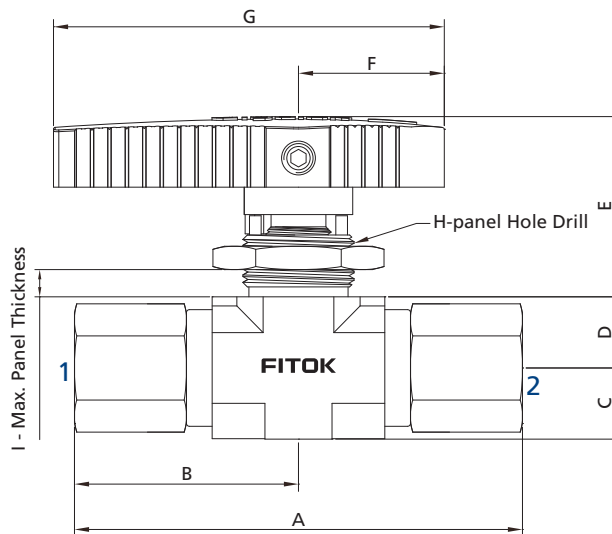
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	Body	CF8M/A351	C37700/B283
5	Connection O-ring	PTFE	
6	End Connection	316 SS/A479	C36000/B16
7	Seat	PTFE or PCTFE or PEEK	
8	Seat Packing	PTFE	
9	Seat Retainer	316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

Note: Wetted components are listed in italics.

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

Dimensions

Straight Valves

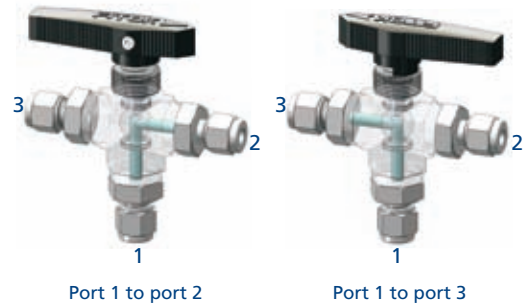
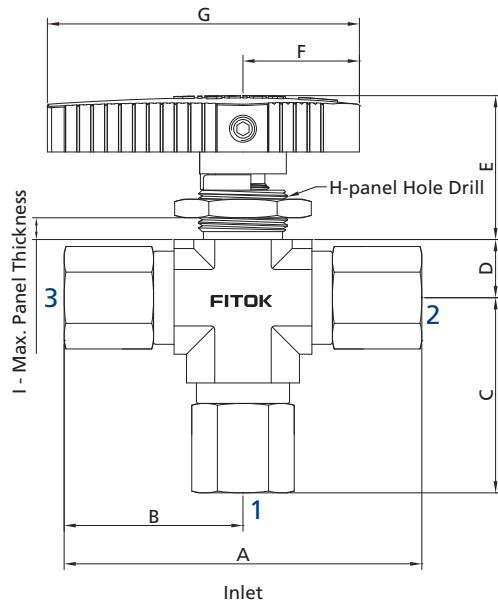


B-48 Ball Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C)		Orifice in. (mm)	Cv	Dimensions, in. (mm)																					
		316 SS	Brass			A	B	C	D	E	F	G	H	I													
															Connection 1/2												
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)												3.24 (82.2)	1.62 (41.1)											
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

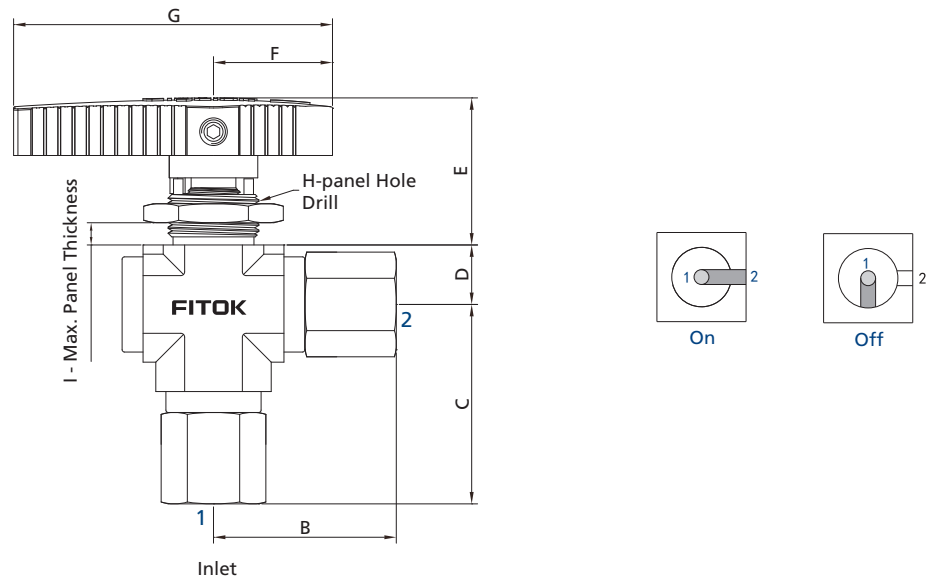
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)													
		316 SS	Brass			A	B	C	D	E	F	G	H	I					
BV□□-FL1-01-3	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	1.35 (34.3)											
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)					2.36 (60.0)	1.18 (30.0)	1.23 (31.3)									
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)					2.70 (68.6)	1.35 (34.3)	1.40 (35.6)									
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)					3.50 (89.0)	1.75 (44.5)	1.89 (48.0)									
BV□□-FL6-06-3	3/8" FITOK	6000 (414)	3000 (207)					3.60 (91.4)	1.80 (45.7)	1.94 (49.2)									
BV□□-ML8-06-3	8 mm FITOK	6000 (414)	3000 (207)					3.56 (90.4)	1.78 (45.2)	1.92 (48.7)									
BV□□-ML10-06-3	10 mm FITOK	6000 (414)	3000 (207)					3.62 (92.0)	1.81 (46.0)	1.95 (49.5)									
BV□□-FRT4-06-3	1/4 Female BSPT	6000 (414)	3000 (207)																
BV□□-FRP4-06-3	1/4 Female BSPP	6000 (414)	3000 (207)					3.02 (76.8)	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□□-FNS4-06-3	1/4 Female NPT	6000 (414)	3000 (207)																
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)			3.24 (82.2)	1.62 (41.1)	1.76 (44.6)											

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)													

B-52 Ball Valves

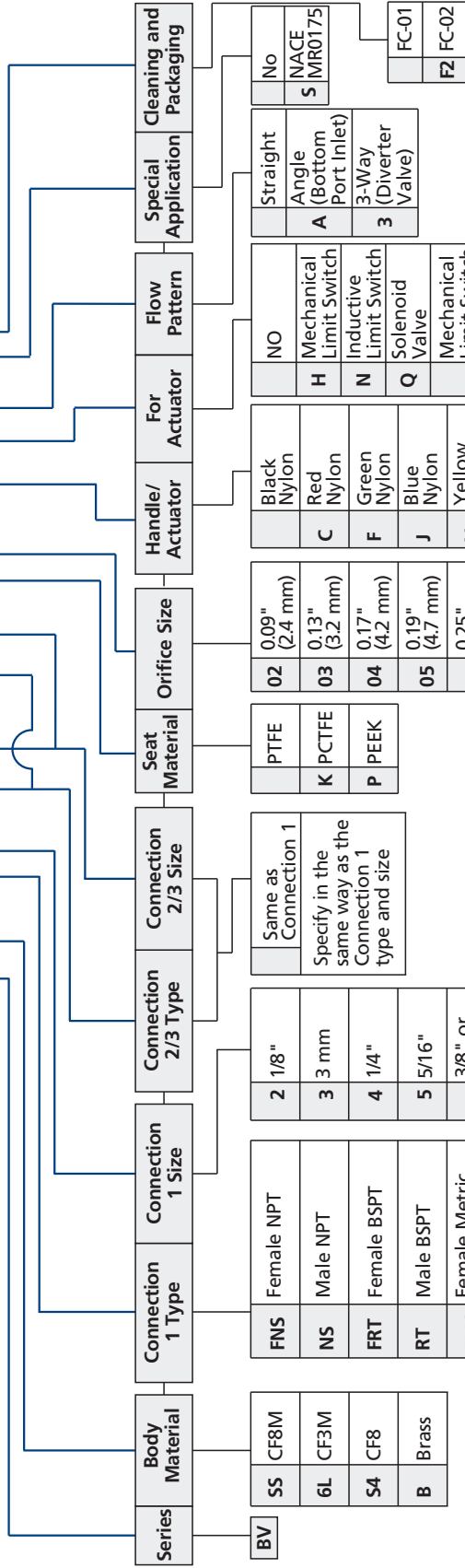
Ball Valves
Plug Valves

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	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	Mechanical Limit Switch	A	NACE MR0175	
	S4 CF8	FRT Female BSPT	4 1/4"	4 1/4"	04 0.17" (4.2 mm)	P PEEK	J Green Nylon	Q	Inductive Limit Switch	3	(3-Way Diverter Valve)	
	B Brass	RT Male BSPT	5 5/16"	5 5/16"	05 0.19" (4.7 mm)		Y Yellow Nylon	HQ	Mechanical Limit Switch			FC-01
		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			F2 FC-02
		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								
		BP Male BSPP (For Rg)	12 3/4" or 12 mm	12 3/4" or 12 mm								
		FL Fractional Tube Fitting	14 14 mm or M14 x 1.5	14 14 mm or M14 x 1.5								
		ML Metric Tube Fitting	16 16 mm	16 16 mm								
		UFB Nut + Gasket + Fractional Tube Bulged Nipple	18 18 mm	18 18 mm								
		UMB Nut + Gasket + Metric Tube Bulged Nipple	20 20 mm or M20 x 1.5	20 20 mm or M20 x 1.5								
		UPB Nut + Gasket + Pipe Bulged Nipple	22 22 mm or M22 x 1.5	22 22 mm or M22 x 1.5								
			24 M24 x 1.5	24 M24 x 1.5								

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.

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

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