Ball Valves

BF, BFH, BG, BH, BO, BP, BR, BRC, BV, BK and BU Series



Contents

Trunnion Ball Valves
BF and BFH Series



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3-Piece Ball Valves
BG Series



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3-Piece Ball Valves
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One-Piece Instrumentation Ball Valves
BO Series



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Bar Stock Ball Valves
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BR and BRC Series



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BU 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 service life of the valve (except for BF, BFH and BU series).
◎ For better quality maintenance, FITOK ball valves should be kept in fully open position in warehouse.
◎ Valves that have not been actuated for a period of time may have a higher initial actuation torque.

Trunnion Ball Valves

BF and BFH Series

Features

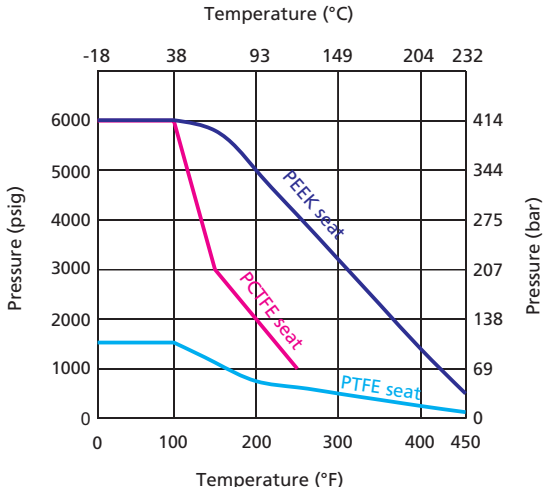


- Working pressure up to: 10,000 psig (690 bar)
- Working temperature: 0°F to 450°F (-18°C to 232°C)
- Orifice size: 0.19" (4.8 mm)
- Fixed ball with double sealing
- Trunnion-style ball to prevent ball blowout
- Automatic compensation of seat sealing
- Low operating torque
- Blowout proof stem
- Handle 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
- BF series 3-way ball valves for "fast fill" CNG filling station application available
- BF series ball valves with ECE R110 type approval available

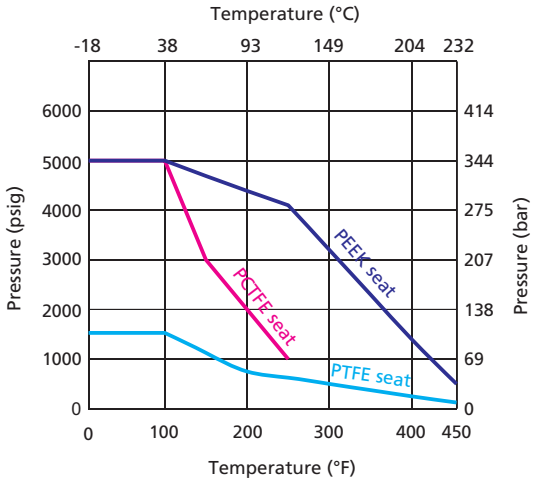
Pressure vs. Temperature

BF Series

316 SS Body

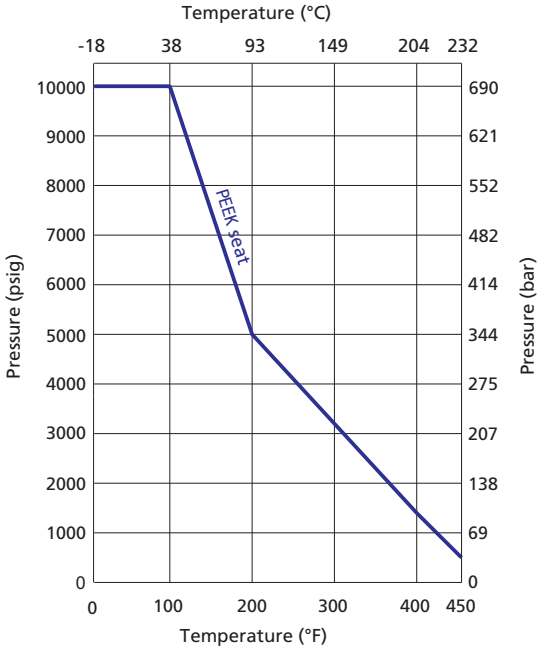


Alloy 400 Body



BFH Series

316 SS Body



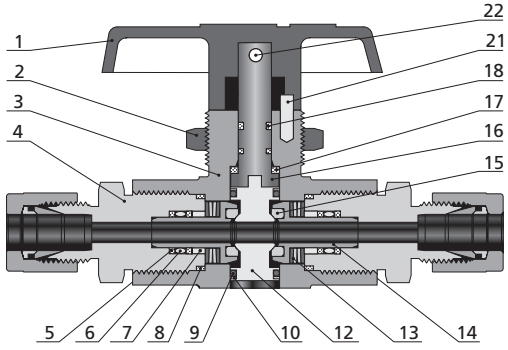
Pressure Rating@100°F (38°C)

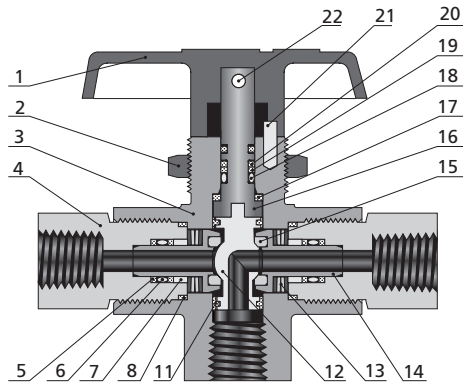
Material	End Connection	Pressure Rating, psig (bar)
316 SS	FNS2, FNS4 FL4, ML6	10000 (690)
	ML10	8400 (578)
	FL6/ML8	7500 (516)
	FL8	6700 (461)
	ML12	6800 (470)

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

Standard Materials of Construction

BF Series

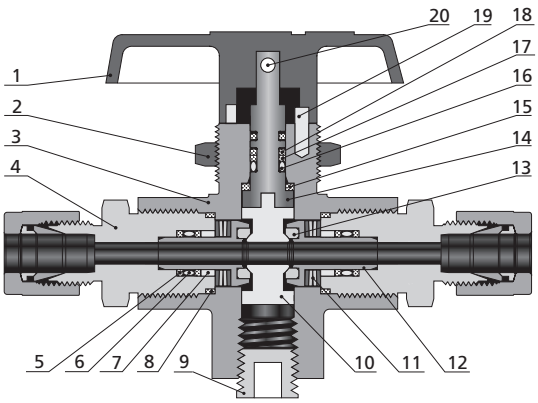


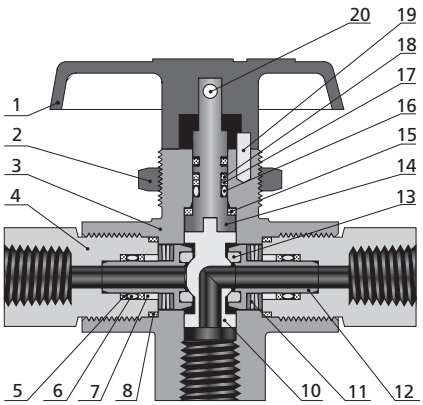


Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
		Material Grade/ASTM Specification			
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	*Body*	*F316 SS/A182*		*Alloy 400/B164*	
4	*End Connection*	*316 SS/A479*		*Alloy 400/B164*	
5	*Seat Retainer Backup Ring*	*Reinforced PTFE*			
6	*Seat Retainer O-ring*	*Fluorocarbon FKM*			
7	*Seat Retainer Guide*	*316 SS/A479*		*Alloy 400/B164*	
8	*End Connection Seal*	*Silver-plated 316L/A269*			
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*	*S21800/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	Zinc-plated carbon steel			
Lubricants		*Fluorinated-based*			

Notes: Wetted components are listed in italics.
1. Ball trunnions are PTFE coated for BF series 2-way valves.
2. For other materials, please contact FITOK Group or our authorized distributors.

BFH Series





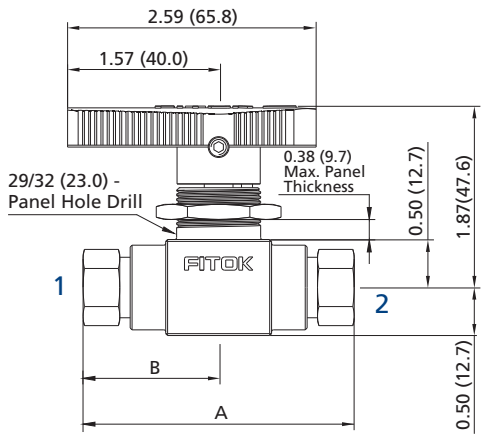
Item	Component	2-way / 3-way
		Material Grade/ASTM Specification
1	Handle	Nylon with SS insert
2	Panel Nut	316 SS/A479
3	*Body*	*316 SS/A479*
4	*End Connection*	*316 SS/A479*
5	*Seat Retainer Backup Ring*	*Reinforced PTFE*
6	*Seat Retainer O-ring*	*Fluorocarbon FKM*
7	*Seat Retainer Guide*	*316 SS/A479*
8	*End Connection Seal*	*Silver-plated 316L/A269*
9	*Plug*	*316 SS/A479*
10	*Ball*	*S21800/A479*
11	*Seat Spring*	*Alloy X-750/AMS 5542*
12	*Seat Retainer*	*316 SS/A479*
13	*Seat*	*PEEK*
14	*Stem*	*316 SS/A479*
15	*Stem Washer*	*PEEK*
16	*Stem O-ring*	*Fluorocarbon FKM*
17	Secondary Stem Backup Ring	PTFE/D1710
18	Primary Stem Backup Ring	PEEK
19	Stop Pin	SS
20	Set Screw	Zinc-plated carbon steel
Lubricants		*Fluorinated-based*

Notes: 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.

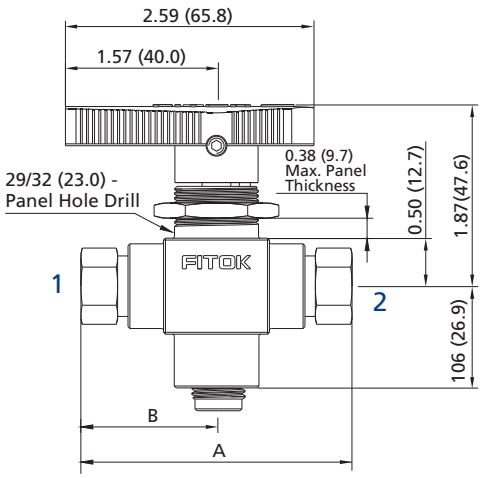
Dimensions

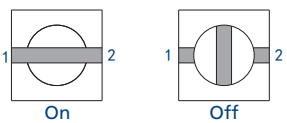
2-way Valves

BF Series



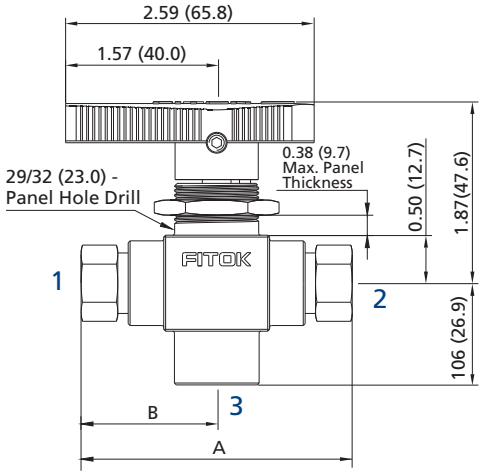
BFH Series

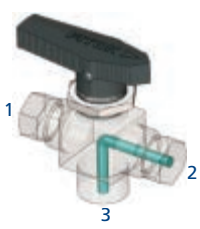




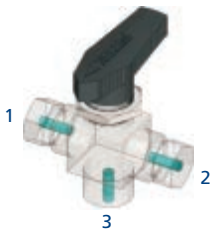
Basic Ordering Number		Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)	
BF Series	BFH Series	Connection 1/2			A	B
BF□□-FNS2	BFH□□-FNS2-P	1/8 Female NPT	0.19 (4.8)	1.2	2.94 (74.7)	1.47 (37.3)
BF□□-FNS4	———	1/4 Female NPT		1.0		
———	BFH□□-FNS4-P				3.93 (99.8)	1.97 (50.0)
BF□□-FNS8	———	1/2 Female NPT		1.2	4.25 (108.0)	2.13 (54.1)
BF□□-FL4	BFH□□-FL4-P	1/4" FITOK		1.6	4.14 (105.2)	2.07 (52.6)
BF□□-FL6	BFH□□-FL6-P	3/8" FITOK		1.4	4.39 (111.5)	2.19 (55.6)
BF□□-FL8	BFH□□-FL8-P	1/2" FITOK		1.0	4.60 (116.8)	2.30 (58.4)
BF□□-ML6	BFH□□-ML6-P	6 mm FITOK		1.6	4.14 (105.2)	2.07 (52.6)
BF□□-ML8	BFH□□-ML8-P	8 mm FITOK		1.5	4.15 (105.4)	
BF□□-ML10	BFH□□-ML10-P	10 mm FITOK		1.3	4.41 (112.0)	2.20 (55.9)
BF□□-ML12	BFH□□-ML12-P	12 mm FITOK		1.0	4.60 (116.8)	2.30 (58.4)

3-way Valves

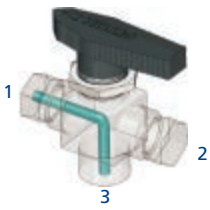




Ports 2 and 3 open



Off



Ports 1 and 3 open

Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)	
BF Series	BFH Series	Connection 1/2	Connection 3			A	B
BF□□-FNS2-3	BFH□□-FNS2-P-3	1/8 Female NPT	1/4 Female NPT	0.19 (4.8)	0.75	2.94 (74.7)	1.47 (37.3)
BF□□-FNS4-3	———	1/4 Female NPT					
———	BFH□□-FNS4-P-3					3.93 (99.8)	1.97 (50.0)
BF□□-FL4-3	BFH□□-FL4-P-3	1/4" FITOK				4.14 (105.2)	2.07 (52.6)
BF□□-FL6-3	BFH□□-FL6-P-3	3/8" FITOK				4.39 (111.5)	2.19 (55.6)
BF□□-FL8-3	BFH□□-FL8-P-3	1/2" FITOK				4.60 (116.8)	2.30 (58.4)
BF□□-ML6-3	BFH□□-ML6-P-3	6 mm FITOK				4.14 (105.2)	2.07 (52.6)
BF□□-ML8-3	BFH□□-ML8-P-3	8 mm FITOK				4.15 (105.4)	
BF□□-ML10-3	BFH□□-ML10-P-3	10 mm FITOK				4.41 (112.0)	2.20 (55.9)
BF□□-ML12-3	BFH□□-ML12-P-3	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.

Special Application Ball Valves

Low-Temperature Service

BF and BFH series ball valves for low-temperature service, with a temperature rating of -40°F to 200°F (-40°C to 93°C), are available.

Low-temperature service valves have low-temperature NBR O-rings. All other materials are the same as those of standard valves.

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

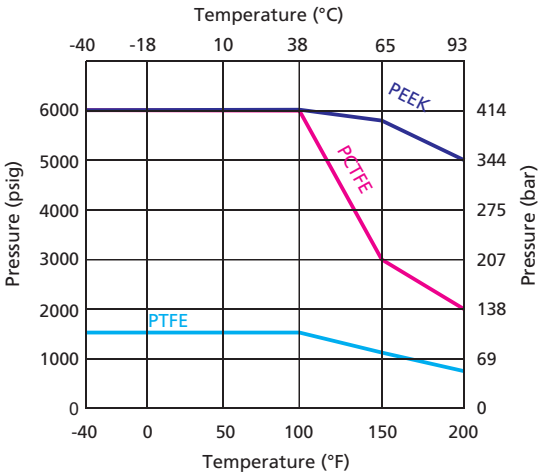
For example: BFSS-FL4-P-**LT**

BFSS-FL4-P-3-**LT**

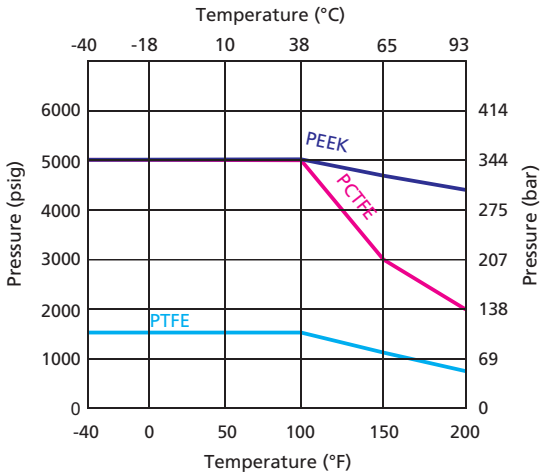
Seal kit for field replacement is available, see "Seal Kits" on Page B-09.

Low-Temperature Service BF Series Pressure vs. Temperature

316 SS Body

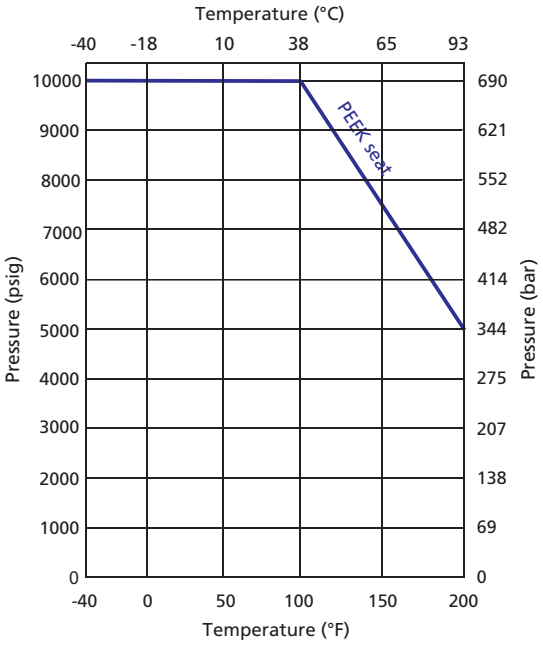


Alloy 400 Body



Low-Temperature Service BFH Series Pressure vs. Temperature

316 SS Body



Note: The maximum working pressure for BFH series low-temperature service ball valves is the same as that of standard ball valves.

"Fast Fill" CNG Filling Station Application

BF series 3-way valves for use in "fast-fill" CNG filling station as well as a variety of filling station applications are available.

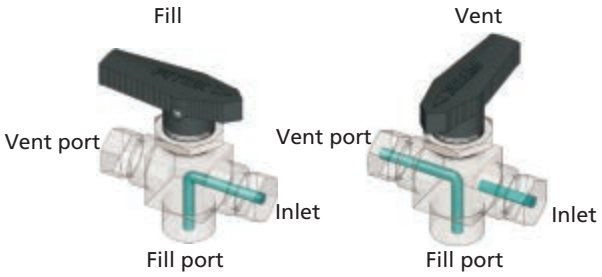
Features

- ◎ A directional installation with 90 degree actuation for ease of operation during filling
- ◎ 3-way design with vent port for ease of venting after fill
- ◎ PEEK seats to reduce maintenance required in high-cycle applications
- ◎ Cycle life test report available upon request
- ◎ Field repairable with seal kit, see "Seal Kits" on Page B-09

To order, the flow pattern designator should be specified as "**3DL**" in the valve ordering number.

Example: BFSS-FNS4-P-**3DL** (The material and pressure vs. temperature curve are the same with those of BF series standard valves.)

BFSS-FNS4-P-**3DL**-LT (The material and pressure vs. temperature curve are the same with those of BF series low-temperature service valves.)



CNG/NGV Application

BF series ball valves with ECE R110 manual valve type approval available.
Classification: Class 0
Temperature rating: -40°F to 248°F (-40°C to 120°C)
Pressure rating: 3770 psig (260 bar)
CNG/NGV application valves have low-temperature FKM O-rings and PEEK seats. All other materials are the same as those of standard valves.
To order a valve for CNG/NGV application, add -**R110** into the valve ordering number.
For example: BFSS-FL4-P-**R110**
BFSS-FL4-P-3-**R110**
Seal kit for field replacement is available, see "Seal Kits" on Page B-09.

Seal Kits

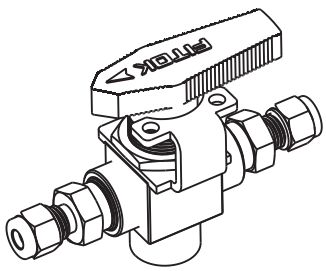
Valve Series	Flow Pattern	Special Application	Basic Seal Kit Ordering Number	Content
BF	2-way	/	BFSS-2-□	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal, trunnion O-ring, trunnion backup ring, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, instructions.
		Low-temperature service	BFSS-2-□-LT	
		CNG/NGV application	BFSS-2-P-R110	
	3-way	/	BFSS-3-□	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal,trunnion bearing, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, secondary stem backup ring, primary stem backup ring, instructions.
		Low-temperature service	BFSS-3-□-LT	
		"Fast Fill" CNG filling station application	BFSS-3DL-P	
			BFSS-3DL-P-LT	
		CNG/NGV application	BFSS-3-P-R110	
BFH	2-way	/	BFHSS-2-P	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, secondary stem backup ring, primary stem backup ring, instructions.
		Low-temperature service	BFHSS-2-P-LT	
	3-way	/	BFHSS-3-P	
		Low-temperature service	BFHSS-3-P-LT	

Seat Material	Designator
PTFE	T
PCTFE	K
PEEK	P

1. Seal kit components are the same materials and grades listed in materials of construction.
2. To order seal kits for BF series standard and low-temperature service ball valves, select a seat designator from the table at left and add to the basic seal kit ordering number.
   Example: BFSS-2-T
   BFSS-2-P-LT
3. The listed basic seal kit ordering numbers specify 316 stainless steel material.
   To order kits with other materials, such as Alloy 400 material, replace "SS" with "M" in the ordering number.
   Example: BFM-2-T

Locking Device

◎ Lock BF series 2-way or 3-way valves, locking hole diameter is 0.21 in (5.2 mm).
◎ To order a ball valve with locking device, add -**L** to the valve ordering number.
Example: BFSS-ML6-**L**/BFSS-ML6-3-**L**



Ball Valve without Handle

◎ Ball Valve without handle can be directly connected to the FITOK actuator assembly.
◎ To order, please add -**AM** to the valve ordering number.
Example: BFSS-FL4-P-**AM**

Ordering Number Description

BFSS - FNS4 - ML12 - P - L - RXHQ3 - SCEF2

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Seat Material	Locking Device	Handle/Actuator	For Actuator	Flow Pattern	Special Application	Cleaning and Packaging
BF	SS 316 SS	FNS Female NPT	2 1/8"	Same as Connection 1	Same as Connection 1	BF Series	No	Black Nylon Handle	None	2-Way	None	FC-01
BFH	M Alloy 400	NS Male NPT	4 1/4"	Specified in the same way as connection 1 type and size		PTFE	L Yes	I Red Nylon Handle	H Mechanical Limit Switch	3 3-Way	S NACE MR0175	F2 FC-02
		FRT Female BSPT	6 3/8" or 6 mm			K PCTFE		GR Green Nylon Handle	N Inductive Limit Switch	3DL 3-Way "Fast Fill"	SI SilcoNert® 2000 (Sulfinert®) Coating	
		RT Male BSPT	8 1/2" or 8 mm			P PEEK		J Blue Nylon Handle	Q Solenoid Valve		CE CE Certification	
		FRP Female BSPP (for RP)	10 10 mm			BFH Series		AM Without Handle	HQ Mechanical Limit Switch and Solenoid Valve		LT Low-temperature Service	
		BP Male BSPP (for RG)	12 12 mm			P PEEK		C 90° Normally Closed Pneumatic Actuator	NQ Inductive Limit Switch and Solenoid Valve		R110 ECE R110	
		FMS Female Metric Thread (for RG-M)						O 90° Normally Open Pneumatic Actuator				
		MS Male Metric Thread (for RG-M)						D 90° Double Acting Pneumatic Actuator				
		FL Fractional Tube Fitting						LX 180° Left End Normally Open Pneumatic Actuator				
		ML Metric Tube Fitting						RX 180° Right End Normally Open Pneumatic Actuator				
								DX 180° Double Acting Pneumatic Actuator				
								E 90° Electric Actuator				
								EX 180° Electric Actuator				

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

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
2. For more information about pneumatically actuated ball valves, please refer to the catalog Automatic Control Ball Valves.
3. SilcoNert® 2000 (Sulfinert®) Coating: Except for ball valves with PEEK seat, wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
4. CE certification is available. For more information, please contact FITOK group or our authorized distributors.
5. Certifications do not include attachments to the valve, such as actuators or a different handle mechanism.

3-Piece Ball Valves

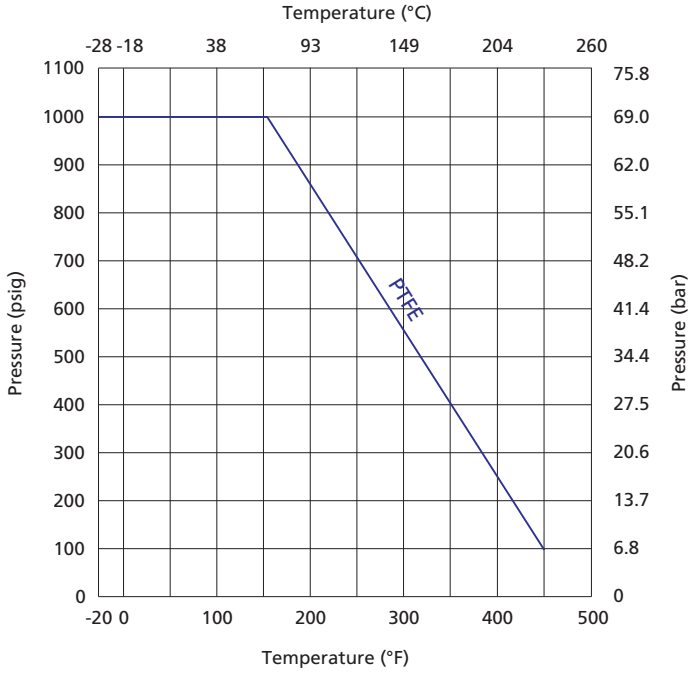
BG Series

Features

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

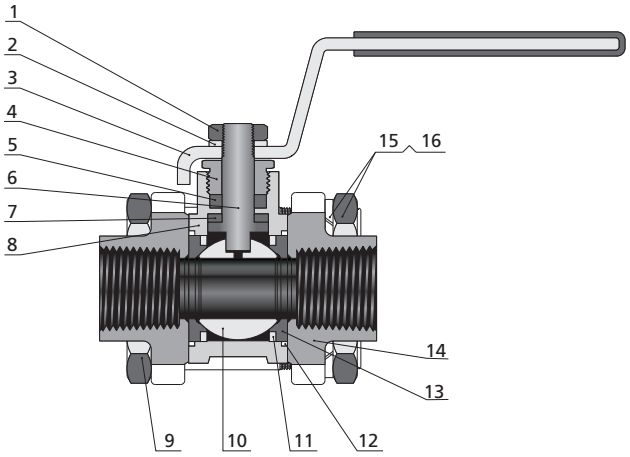


Pressure vs. Temperature



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

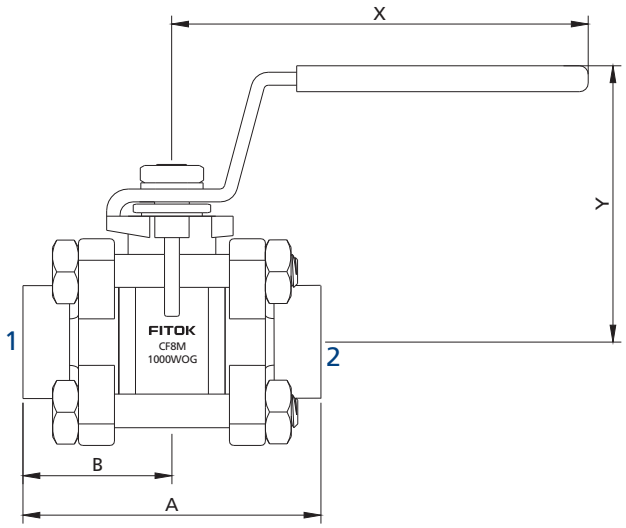
Standard Materials of Construction

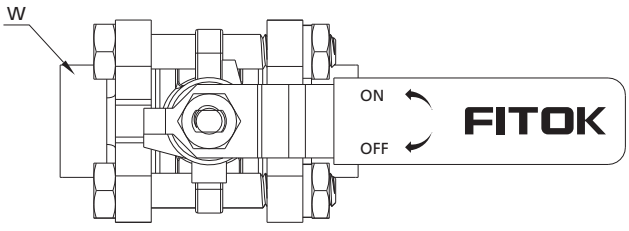


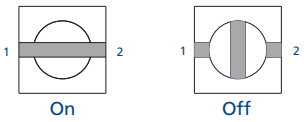
Item	Component	Valve Body Material	
		CF8M/ A351	CF8/ A351
1	Stem Nut	SS	
2	Gasket	SS	
3	Handle	304 SS/A240 (with vinyl sleeve)	
4	Gland	316 SS/A479 or 304 SS/A479	
5	*Stem Packing*	*PTFE/D1710*	
6	*Stem*	*316 SS/A479 or 304 SS/A479*	
7	*Stem Bearing*	*PTFE/D1710*	
8	*Body*	*CF8M/A351*	*CF8/A351*
9	Body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

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

Dimensions







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×SCH80 Pipe Butt Weld	1/4×SCH80 Pipe Butt Weld							
BG□□-FL4-05	1/4" FITOK	1/4" FITOK			2.63 (66.8)	1.31 (33.4)			
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)			
BG□□-FRP4-07	1/4 Female BSPP	1/4 Female BSPP							
BG□□-FL6-07	3/8" FITOK	3/8" FITOK			2.63 (66.8)	1.31 (33.4)			
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)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)
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)			
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×SCH80 Pipe Butt Weld	1/2×SCH80 Pipe Butt Weld			2.96 (75.3)	1.48 (37.7)			
BG□□-FL10-13	5/8" FITOK	5/8" FITOK			4.04 (103.0)	2.02 (51.3)			
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)		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	22×3 mm Tube Butt Weld	22×3 mm Tube Butt Weld							
BG□□-TS12-15	3/4" TS	3/4" TS							
BG□□-MTS18-15	18 mm Tube Socket Weld	18 mm Tube Socket Weld							
BG□□-FL12-15	3/4" FITOK	3/4" FITOK			4.04 (103.0)	2.02 (51.3)			
BG□□-ML18-15	18 mm FITOK	18 mm FITOK							
BG□□-FNS12-20	3/4 Female NPT	3/4 Female NPT	0.79 (20.0)	50.0	3.15 (80.0)	1.57 (40.0)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)
BG□□-FRP12-20	3/4 Female BSPP	3/4 Female BSPP							

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×SCH80 Pipe Butt Weld	3/4×SCH80 Pipe Butt Weld	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	25×3.5 mm Tube Butt Weld	25×3.5 mm Tube Butt Weld							
BG□□-MTS25-20	25 mm Tube Socket Weld	25 mm Tube Socket Weld							
BG□□-FL16-20	1" FITOK	1" FITOK			5.12 (130.0)	2.56 (65.0)			
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×SCH80 Pipe Butt Weld	1×SCH80 Pipe Butt Weld							

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. Butt welding ends are manually welded. For connections with orbital welding, please contact FITOK Group or our authorized distributors.
3. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
4. 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.

Seal Kits

Valve Orifice	Basic Seal Kit Ordering Number	Content
05/07	T-BG-2-RK	Seat, flange seal, lower packing, upper packing, instructions
11/13	T-BG-4-RK	
15	T-BG-6-RK	
20	T-BG-12-RK	
25	T-BG-16-RK	Seat, flange seal, stem bearing, packing support, lower packing, upper packing, instructions

Locking Device

- Lock BG series valves, locking hole diameters of: valves with orifice 05 or 07 are 0.185 in (4.7 mm); valves with orifice 11, 13, 15, or 20 are 0.22 in (5.7 mm); valves with orifice 25 are 0.19 in (4.8 mm)
- To order a ball valve with locking device, add -**L** to the valve ordering number.
  Example: BGSS-FRT8-15-**L**

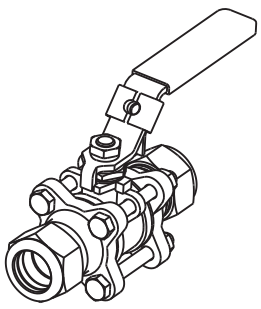


Diagram of Ball Valves with Locking Device and Orifice 05, 07, 11, 13, 15, or 20

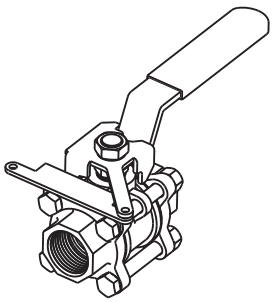


Diagram of Ball Valves with Locking Device and Orifice 25

Ordering Number Description

BGSS - FNS8 - ML18 - 15 - L - SF2

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Orifice Size	Locking Device	Special Application	Cleaning and Packaging
BG	SS CF8M S4 CF8	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FRP Female BSPP (for RP) BP Male BSPP (for RG) FMS Female Metric Thread (for RG-M) MS Male Metric Thread (for RG-M) MTS Metric Tube Socket TS Fractional Tube Socket MTB Metric Tube Butt Weld TB Fractional Tube Butt Weld PS Pipe Socket Weld PB Pipe Butt Weld FL Fractional Tube Fitting ML Metric Tube Fitting UFB Rotatable Fractional Tube Butt Weld UMB Rotatable Metric Tube Butt Weld UPB Nut + Gasket + Pipe Bulged Nipple	2 1/8" 4 1/4" or 1/4×SCH80 5 5/16" 6 3/8" or 6 mm 8 1/2" or 8 mm or 1/2×SCH80 10 5/8" or 10 mm 12 3/4" or 12 mm or 3/4×SCH80 14 14 mm or M14 x 1.5 16 1" or 16 mm or 1"×SCH80 18 18 mm 20 1 1/4" or 20 mm or M20 x 1.5 22 22 mm or 22×3 mm or M22×1.5 24 1 1/2" or M24 x 1.5 25 25 mm or 25×3.5 mm	Same as Connection 1 Specified in the same way as connection 1 type and size		05 0.19" (4.8 mm) 07 0.28" (7.1 mm) 11 0.42" (10.6 mm) 13 0.50" (12.7 mm) 15 0.55" (14.0 mm) 20 0.79" (20 mm) 25 0.98" (25 mm)	No L Yes	None S NACE MR0175 SI SilcoNert® 2000 (Sulfinert®) Coating	FC-01 F2 FC-02

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

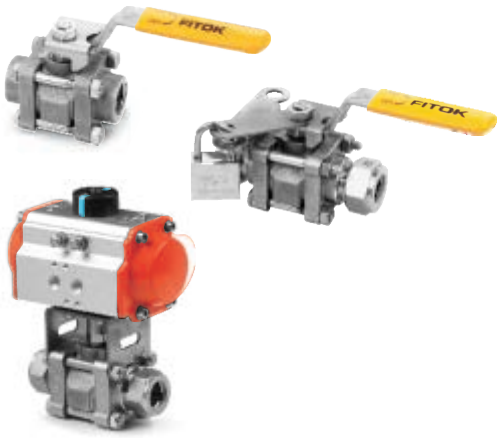
1.Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
2. If you need a port with orbital welding, please contact FITOK Group.
3. For oxygen-enriched environment or hazardous 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 cleaning requirement of ASTM G93 Level C.
5. SilcoNert® 2000 (Sulfinert®) Coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

3-Piece Ball Valves

BH Series

Features

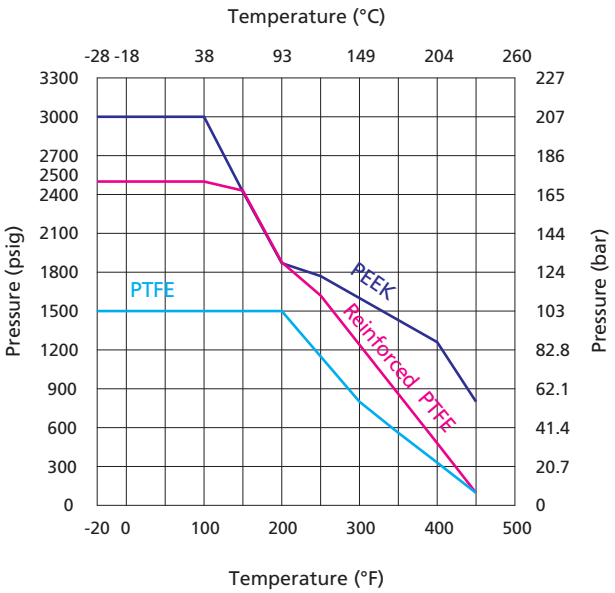
- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -20°F to 450°F (-28°C to 232°C)
- End connections:
  1/8 to 2 thread
  1/8" to 2" pipe butt or socket weld
  1/4" to 2" and 6 mm to 50 mm tube butt or socket weld
  1/4" to 2" and 6 mm to 38 mm tube fitting
- 3-piece precision cast body construction
- Orifize sizes: 0.19"(4.8 mm) to 1.5" (38.1 mm)
- Blowout proof stem
- 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



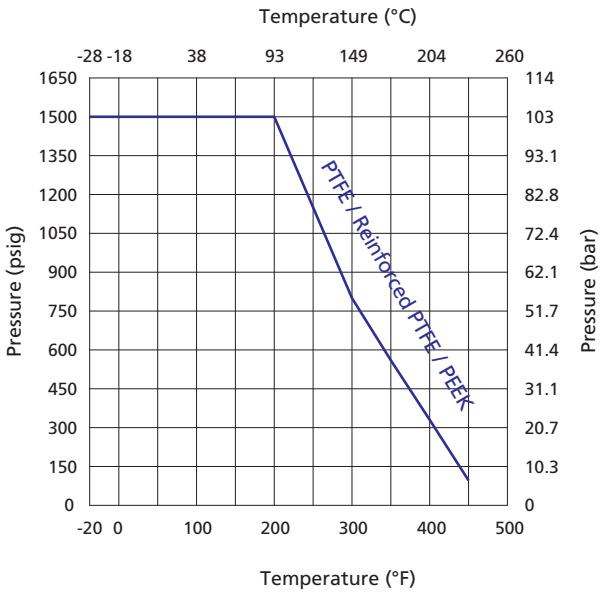
Pressure vs. Temperature

2-way Valves

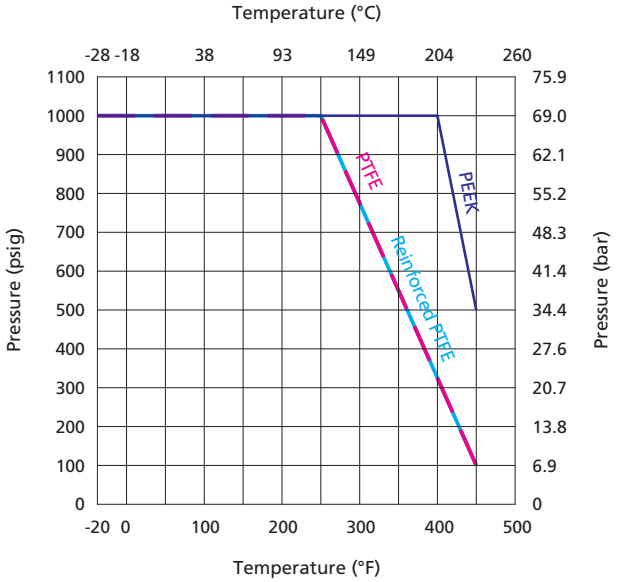
Orifice Size: 0.19", 0.28", 0.41", 0.52" & 0.88"



Orifice Size: 1.13", 1.25" & 1.50"

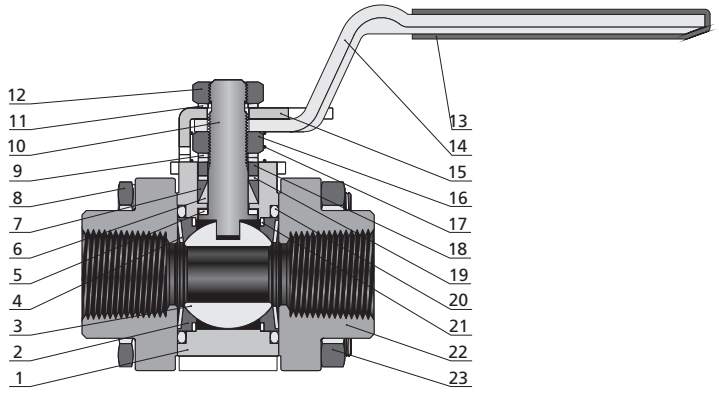


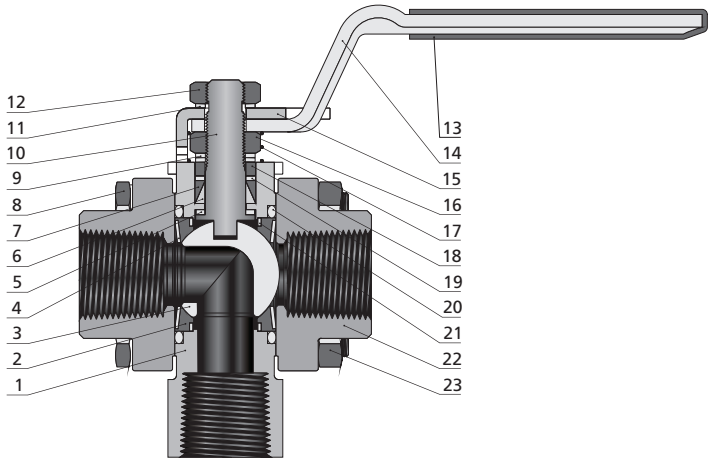
3-way Valves



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

Standard Materials of Construction



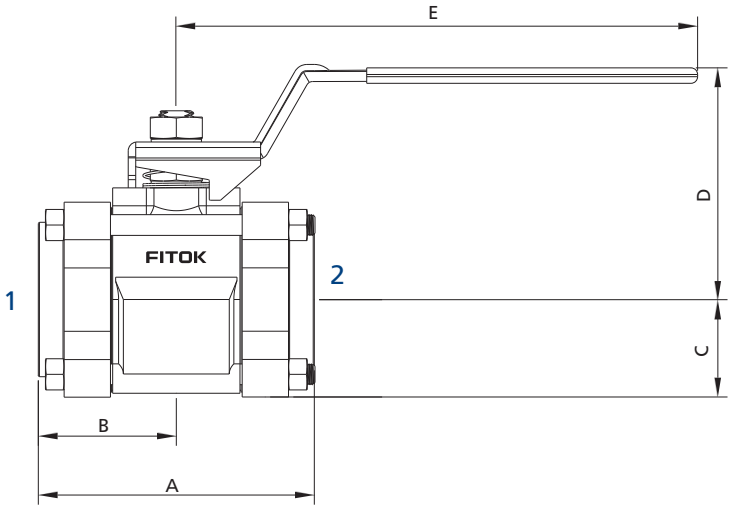


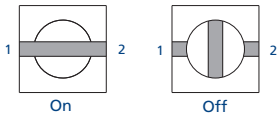
Item	Component	Material Grade/ASME Specification	
1	*Body*	*CF8M/A351*	*CF8/A351*
2	*Seat*	*PTFE or Reinforced PTFE or PEEK*	
3	*Ball*	*316 SS/A479*	
4	*Coned-disc Spring*	*Strain-hardened 316 SS/A240*	
5	*Stem Bearing*	*PEEK*	
6	*Lower Packing*	*Reinforced PTFE*	
7	*Upper Packing*	*Reinforced PTFE*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

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

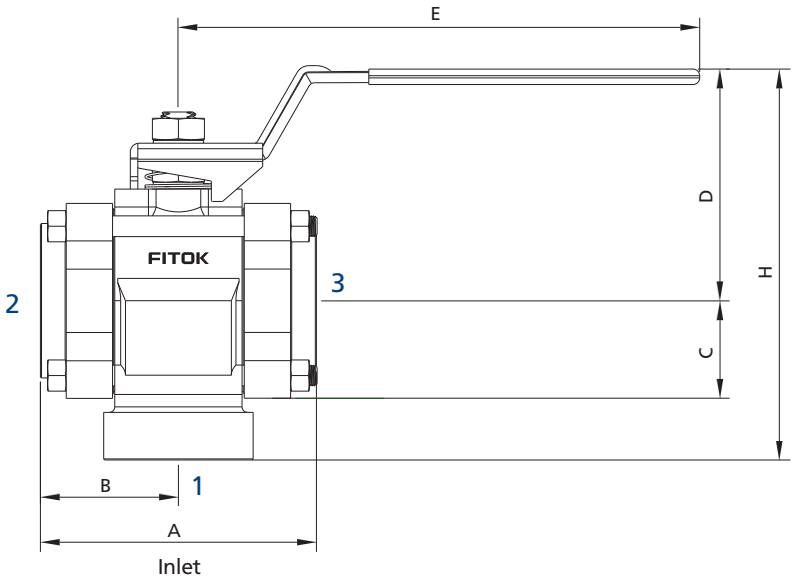
Dimensions

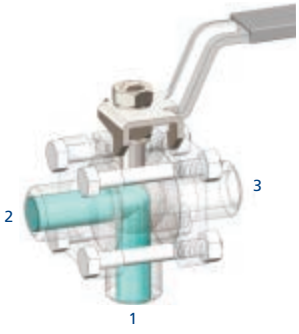
2-way Valves



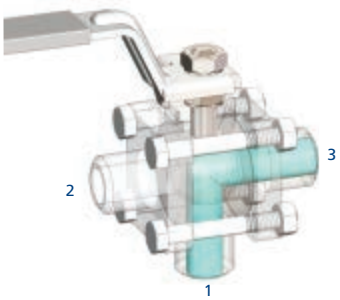


3-way Valves





Port 1 to port 2



Port 1 to port 3

Basic Ordering Number		Connection Type and Size		Orifice in. (mm)		Cv		Dimensions, in. (mm)					
2-way	3-way	Connection 1	Connection 2/3	2-way	3-way	2-way	3-way	A	B	C	D	E	H
BH□□-FL4-05	BH□□-FL4-05-3	1/4" FITOK	1/4" FITOK	0.19 (4.8)	0.19 (4.8)	1.2	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										
BH□□-ML8-05	BH□□-ML8-05-3	8 mm FITOK	8 mm FITOK			2.5							
BH□□-TS4-05	—	1/4" TS	1/4" TS		—	1.2	—	2.16 (54.9)	1.08 (27.4)				—
BH□□-MTS6-05	—	6 mm Tube Socket Weld	6 mm Tube Socket Weld										
BH□□-PB4-05	—	1/4×SCH80 Pipe Butt Weld	1/4×SCH80 Pipe Butt Weld					2.08 (52.8)	1.04 (26.4)				
BH□□-FNS2-07	BH□□-FNS2-07-3	1/8 Female NPT	1/8 Female NPT	0.28 (7.1)	0.28 (7.1)	3.8	1.7	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□□-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×SCH80 Pipe Butt Weld	3/8×SCH80 Pipe Butt Weld					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)	0.41 (10.4)	7.5	3.5	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		0.37 (9.5)		2.5						
BH□□-TS8-10	—	1/2" TS	1/2" TS		—		—	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)	0.52 (13.1)	12.0	5.0	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)				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			15.0							
BH□□-PB8-13	—	1/2×SCH80 Pipe Butt Weld	1/2×SCH80 Pipe Butt Weld			6.8		2.69 (68.3)	1.34 (34)				
BH□□-PB12-13	—	3/4×SCH80 Pipe Butt Weld	3/4×SCH80 Pipe Butt Weld			13.6							
BH□□-FNS12-22	BH□□-FNS12-22-3	3/4 Female NPT	3/4 Female NPT	0.88 (22.2)	0.71 (18.0)	31.0	12.0	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										

Basic Ordering Number		Connection Type and Size		Orifice in.(mm)		Cv		Dimensions, in. (mm)					
2-way	3-way	Connection 1	Connection 2/3	2-way	3-way	2-way	3-way	A	B	C	D	E	H
BH□□-FRP12-22	BH□□-FRP12-22-3	3/4 Female BSPP	3/4 Female BSPP	0.88 (22.2)	0.71 (18.0)	31.0	12.0	3.59 (91.2)	1.8 (45.7)	1.25 (31.8)	2.94 (74.7)	6.00 (152)	5.45 (138)
BH□□-FNS16-22	BH□□-FNS16-22-3	1 Female NPT	1 Female NPT			38.0							
BH□□-FRT16-22	BH□□-FRT16-22-3	1 Female BSPT	1 Female BSPT					4.45 (113)	2.23 (56.6)				
BH□□-FRP16-22	BH□□-FRP16-22-3	1 Female BSPP	1 Female BSPP										
BH□□-FL16-22	BH□□-FL16-22-3	1" FITOK	1" FITOK			40.0		5.36 (136)	2.68 (68)				5.91 (150)
BH□□-FL20-22	BH□□-FL20-22-3	1 1/4" FITOK	1 1/4" FITOK					6.34 (161)	3.17 (80.5)				
BH□□-ML25-22	BH□□-ML25-22-3	25 mm FITOK	25 mm FITOK					5.36 (136)	2.68 (68)				
BH□□-ML28-22	BH□□-ML28-22-3	28 mm FITOK	28 mm FITOK					6.14 (156)	3.07 (78)				
BH□□-TS16-22	—	1" TS	1" TS		—		—	3.59 (91.2)	1.80 (45.7)				—
BH□□-MTS25-22	—	25 mm Tube Socket Weld	25 mm Tube Socket Weld			38.0		3.59 (91.2)	1.80 (45.7)				
BH□□-PS12-22	—	3/4 PS	3/4 PS			36.0							
BH□□-PS16-22	—	1 PS	1 PS			42.0							
BH□□-PB16-22	—	1×SCH80 Pipe Butt Weld	1×SCH80 Pipe Butt Weld			40.0		3.46 (87.9)	1.73 (43.9)	1.25 (31.8)			
BH□□-TS20-29	—	1 1/4" TS	1 1/4" TS	1.13 (28.6)		80.0		4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)	—
BH□□-PB20-32	—	1 1/4×SCH80 Pipe Butt Weld	1 1/4×SCH80 Pipe Butt Weld			90.0		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)	0.87 (22.0)		18.0	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			100.0							
BH□□-TS24-32	—	1 1/2" TS	1 1/2" TS		—		—						—
BH□□-PS20-32	—	1 1/4 PS	1 1/4 PS			90.0		4.51 (115)	2.25 (57.2)				
BH□□-PS24-32	—	1 1/2 PS	1 1/2 PS			100.0		4.57 (116)	2.28 (57.9)				
BH□□-PB24-32	—	1 1/2×SCH80 Pipe Butt Weld	1 1/2×SCH80 Pipe Butt Weld										
BH□□-FNS32-38	BH□□-FNS32-38-3	2 Female NPT	2 Female NPT	1.50 (38.1)	0.98 (25.0)	130.0	23.0	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×SCH80 Pipe Butt Weld	2×SCH80 Pipe Butt Weld					6.14 (156)	3.12 (78)				

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.

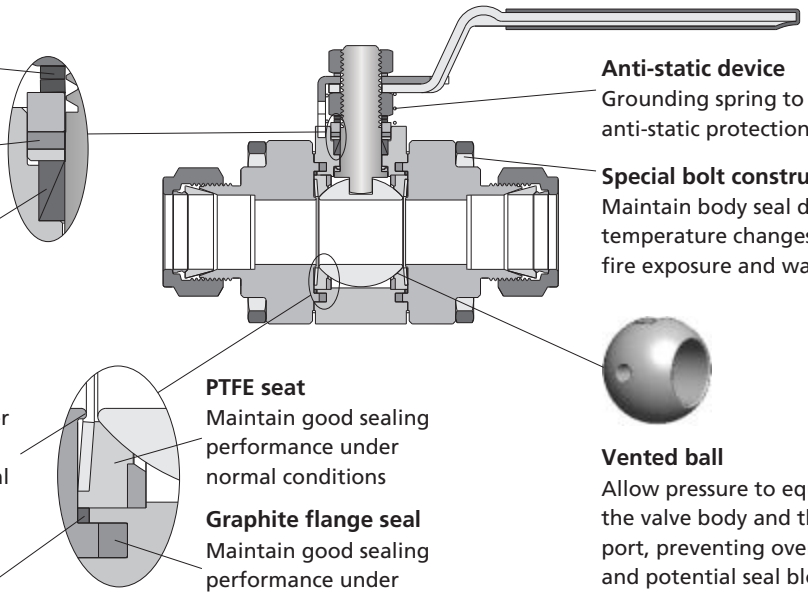
Ball Valves for Special Applications



Fire safe applications

API 607 and ISO 15848-1 certified.
Patented stem packing design and seat design.
Working temperature: -40°F to 400°F (-40°C to 204°C).
Working pressure up to: 1500 psig (103 bar).
Orifice size: 0.19" (4.8 mm) to 1.25" (31.8 mm).
Helium leak rate/stem diameter $\leqslant 1.78\times10^{-6}$ std cm^3/s.
To order a fire safe valve, add -**IE** to the valve ordering number.
For example: BHSS-FL16-22-**IE**
To order a FDA-compliant fire safe valve, add -**FDA-IE** to the valve ordering number.
For example: BHSS-FL16-22-**FDA-IE**

Structure Features



Live-loaded disc spring
Elastic compensation effect

Graphite stem packing
Maintain good sealing performance under fire conditions

PTFE stem packing
Maintain good sealing performance under normal conditions

Metal seal design
Reduce the risk of leakage under fire conditions by reducing the active gap between the spherical surface and the sealing surface

PTFE flange seal
Maintain good sealing performance under normal conditions

Anti-static device
Grounding spring to provide anti-static protection

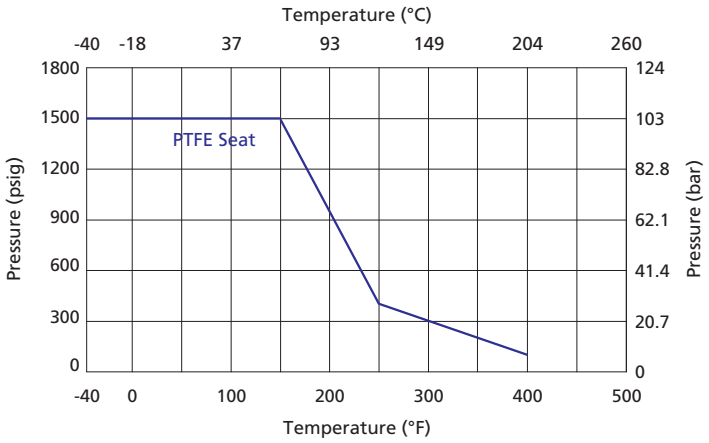
Special bolt construction
Maintain body seal during rapid temperature changes resulting from fire exposure and water quenching

PTFE seat
Maintain good sealing performance under normal conditions

Graphite flange seal
Maintain good sealing performance under fire conditions

Vented ball
Allow pressure to equalize between the valve body and the upstream port, preventing overpressurization and potential seal blowout under fire conditions

Pressure vs. Temperature



Standard Materials of Construction

Component	Material/ ASME Specification
Disc Spring	*Alloy X-750/AMS 5542*
Flange Seal	Graphite
Stem Packing	Graphite
Packing Support	*316 SS/A479*
Stem Lower Bearing	*316 SS/A479*
Stem Upper Bearing	*PEEK*
Body Bolt	SS

Notes: Wetted components are listed in italics. Other components not listed are in the same material as components of general service ball valves. For other materials, please contact FITOK Group or our authorized distributors.

Seal Kits

Valve Orifice	Flow Pattern	Basic Seal Kit Ordering Number	Content
05/07	2-way	BHSS-□4-RK	Seat, coned-disc spring, stem bearing, lower packing, upper packing, stem spring, gland, packing support, flange seal, instructions
	3-way		
10/13	2-way	BHSS-□8-RK	
	3-way		
22	2-way	BHSS-□16-RK	
	3-way		
29/32	2-way	BHSS-□24-RK	
	3-way		
38	2-way	BHSS-□32-RK	
	3-way		

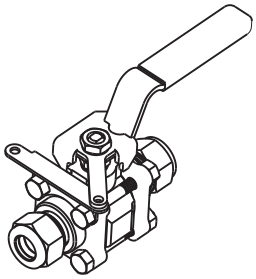
Seat Material	Designator
PTFE	-
Reinforced PTFE	R
PEEK	P

1. Seal kit components are the same materials and grades listed in materials of construction.
2. The default seat material in the seal kit for BH series valves is PTFE. To order seats with other materials, add a seat material designator to "□" in the basic seal kit ordering number to get a complete ordering number.
   Example: BHSS-8-RK
   BHSS-P8-RK
3. The listed basic seal kit ordering numbers specify CF8M material. To order kits with other materials, such as CF8, replace "SS" with "S4" in the ordering number.
   Example: BHS4-8-RK

Locking Device

◎ Lock BH series 2-way or 3-way valves, locking hole diameters of the whole series of valves are 0.20 in (5.0 mm).

◎ To order a ball valve with locking device, add -**L** to the valve ordering number.
Example: BHSS-FL16-22-**L**/BHSS-FL16-22-3**L**



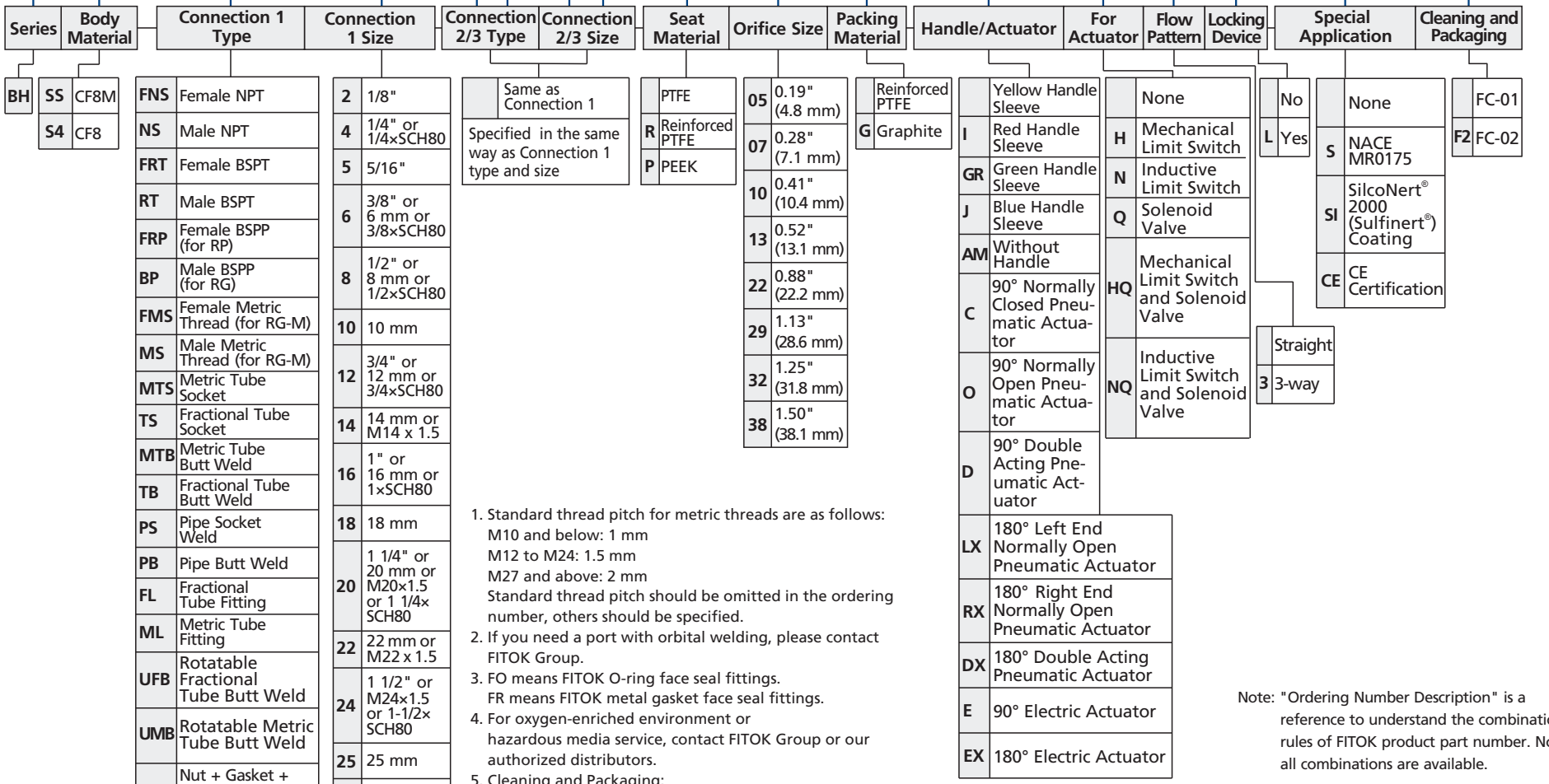
Ball Valve without Handle

◎ Ball Valve without handle can be directly connected to the FITOK actuator assembly.

◎ To order, please add -**AM** to the valve ordering number.
Example: BHSS-FL4-P05-**AM**

Ordering Number Description

BHS4 - FNS8 - FRT8 - FL8 - P13G - OHQ3L - SCEF2



Series	Body Material
BH	SS CF8M
	S4 CF8

Connection 1 Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
MTS	Metric Tube Socket
TS	Fractional Tube Socket
MTB	Metric Tube Butt Weld
TB	Fractional Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	Rotatable Fractional Tube Butt Weld
UMB	Rotatable Metric Tube Butt Weld
UPB	Nut + Gasket + Pipe Bulged Nipple
FO	Male FO Fitting
FR	Male FR Fitting

Connection 1 Size	
2	1/8"
4	1/4" or 1/4×SCH80
5	5/16"
6	3/8" or 6 mm or 3/8×SCH80
8	1/2" or 8 mm or 1/2×SCH80
10	10 mm
12	3/4" or 12 mm or 3/4×SCH80
14	14 mm or M14 x 1.5
16	1" or 16 mm or 1×SCH80
18	18 mm
20	1 1/4" or 20 mm or M20×1.5 or 1 1/4× SCH80
22	22 mm or M22 x 1.5
24	1 1/2" or M24×1.5 or 1-1/2× SCH80
25	25 mm
27	M27 x 2
28	28 mm
32	2" or 2×SCH80

Connection 2/3 Type / Connection 2/3 Size
Same as Connection 1
Specified in the same way as Connection 1 type and size

Seat Material	
	PTFE
R	Reinforced PTFE
P	PEEK

Orifice Size	
05	0.19" (4.8 mm)
07	0.28" (7.1 mm)
10	0.41" (10.4 mm)
13	0.52" (13.1 mm)
22	0.88" (22.2 mm)
29	1.13" (28.6 mm)
32	1.25" (31.8 mm)
38	1.50" (38.1 mm)

Packing Material	
	Reinforced PTFE
G	Graphite

Handle/Actuator	
	Yellow Handle Sleeve
I	Red Handle Sleeve
GR	Green Handle Sleeve
J	Blue Handle Sleeve
AM	Without Handle
C	90° Normally Closed Pneumatic Actuator
O	90° Normally Open Pneumatic Actuator
D	90° Double Acting Pneumatic Actuator
LX	180° Left End Normally Open Pneumatic Actuator
RX	180° Right End Normally Open Pneumatic Actuator
DX	180° Double Acting Pneumatic Actuator
E	90° Electric Actuator
EX	180° Electric Actuator

For Actuator	
	None
H	Mechanical Limit Switch
N	Inductive Limit Switch
Q	Solenoid Valve
HQ	Mechanical Limit Switch and Solenoid Valve
NQ	Inductive Limit Switch and Solenoid Valve

Flow Pattern	
	Straight
3	3-way

Locking Device	
	No
L	Yes

Special Application	
	None
S	NACE MR0175
SI	SilcoNert® 2000 (Sulfinert®) Coating
CE	CE Certification

Cleaning and Packaging	
	FC-01
F2	FC-02

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. If you need a port with orbital welding, please contact FITOK Group.
3. FO means FITOK O-ring face seal fittings.
   FR means FITOK metal gasket face seal fittings.
4. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
5. 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.
6. For more information about pneumatic actuator ball valves, please refer to the catalog Automatic Control Ball Valves.
7. SilcoNert® 2000 (Sulfinert®) Coating: Except for ball valves with PEEK seat, wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
8. CE certification is available. For more information, please contact FITOK group or our authorized distributors

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

One-Piece Instrumentation Ball Valves

BO Series

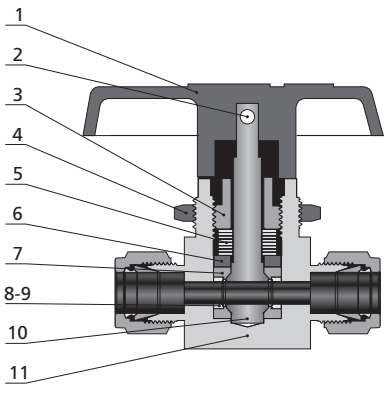
Features

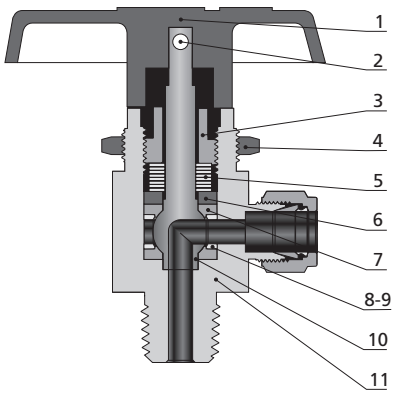


- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -65°F to 300°F (-54°C to 148°C)
- End connections:
  1/4 to 1/2 thread
  1/16" to 3/4" and 3 mm to 18 mm tube fitting
- 2-, 3-, 4-, 5-, 6- and 7-way models for on-off, switching and crossover service available
- One-piece body and one-piece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

Notes:
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 actuated 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





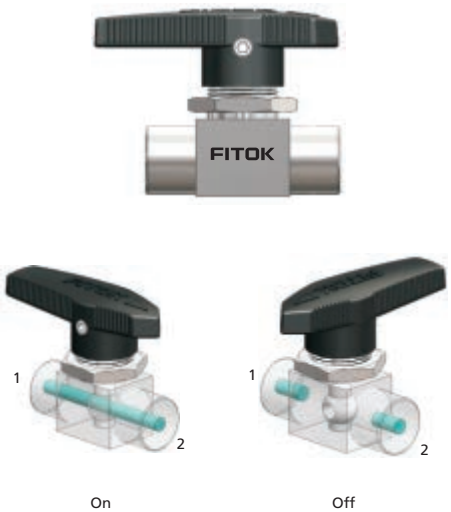
Item	Component	Valve Body Material		
		316 SS	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Nylon or Aluminium		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	316 SS/A*479*	Brass C36000/B16	Alloy 400/B164
4	Panel Nut	316 SS/A*479*	Brass C36000/B16	316 SS/A*479*
5	Disc Spring	S17700/A693		
6	Gland	316 SS/A*479*	316 SS/A479	Alloy 400/B164
7	*Packing Seat*	*PTFE/D1710 or UHMWPE/D4020 or PFA/D3307*		
8	*Support Ring*	*316 SS/A479*	316 SS/A479	*Alloy 400/B164*
9	*Support Disc*			
10	*Ball Stem*	*316 SS/A479*	*Brass C36000/B16*	*Alloy 400/B164*
11	*Body*	*316 SS/A182*	*Brass C37700/B283*	*Alloy 400/B164*
Wetted Lubricant		*Fluorinated-based and silicone-based*		
Non-wetted Lubricant		Molybdenum disulfide with hydrocarbon binder coat		

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

On-Off (2-way) Valves

Standard Flow Path

Straight Pattern



On Off

Angle Pattern

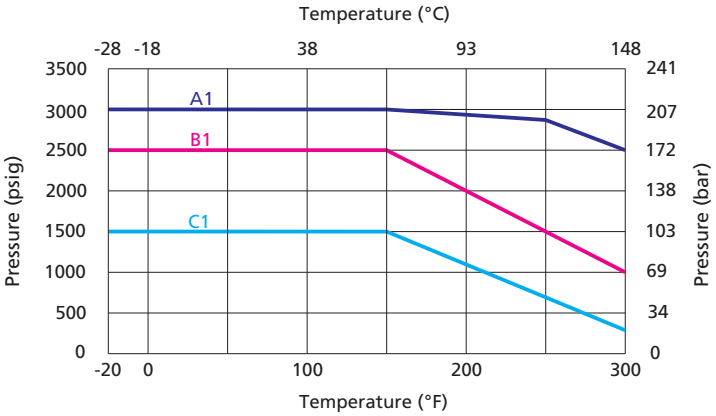


On Off

Pressure vs. Temperature

Straight Pattern and Angle Pattern

PTFE Packing Seat



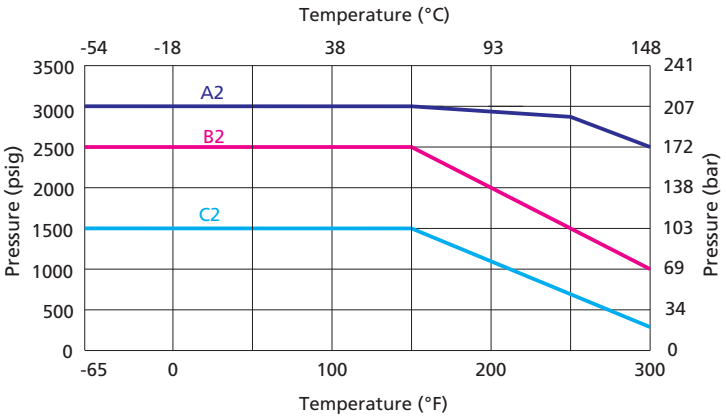
A1: Straight Pattern Valves (orifice 0.19")

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

C1: Angle Pattern Valves (orifice 0.28" & 0.41")

PFA, UHMWPE Packing Seat

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



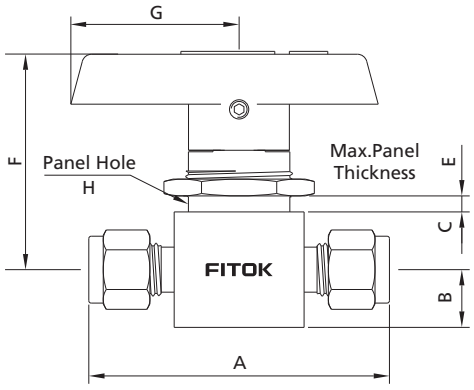
A2: Straight Pattern Valves (orifice 0.19")

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

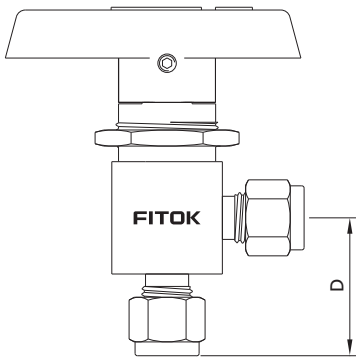
C2: Angle Valves (orifice 0.28" & 0.41")

Dimensions

Straight Pattern



Angle Pattern

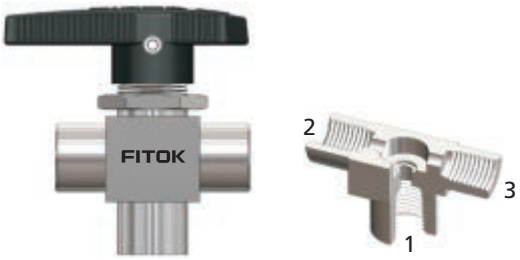


Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimensions, in. (mm)							
			Straight	Angle	A	B	C	D	E	F	G	H
BO□□-FL1-00	1/16" FITOK	0.05 (1.3)	0.10	——	1.68 (42.7)	0.28 (7.1)	0.34 (8.6)	——	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL2-02	1/8" FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)			0.97 (24.6)				
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)	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□□-FL12-10	3/4" FITOK		6.40	3.80								
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)	11/8 (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)	11/2 (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)	0.38 (9.7)	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)		0.44 (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.



Ports 1 and 3 open | Off | Ports 1 and 2 open

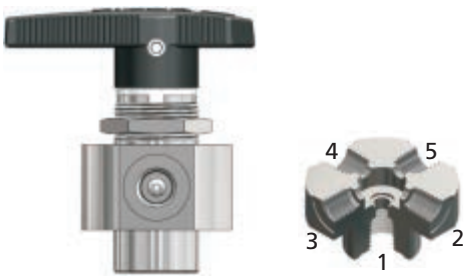
4L Flow Path

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.



Ports 1 and 2 open | Ports 1 and 3 open | Ports 1 and 4 open

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.

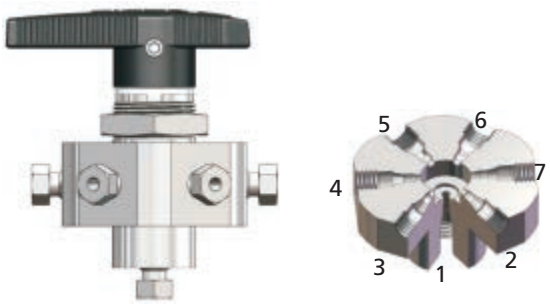


Ports 1 and 2 open | Ports 1 and 3 open | Ports 1 and 4 open | Ports 1 and 5 open

6-way Valves



7-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.



Ports 1 and 2 open



Ports 1 and 3 open



Ports 1 and 4 open



Ports 1 and 5 open



Ports 1 and 6 open

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.



Ports 1 and 2 open



Ports 1 and 3 open



Ports 1 and 4 open



Ports 1 and 5 open



Ports 1 and 6 open

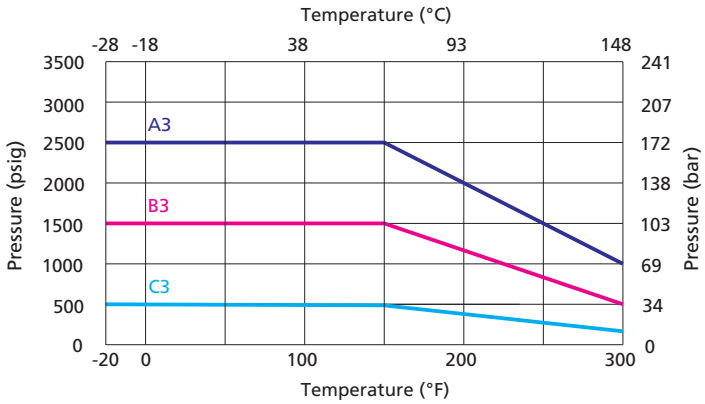


Ports 1 and 7 open

Pressure vs. Temperature

Switching Valves

PTFE Packing Seat



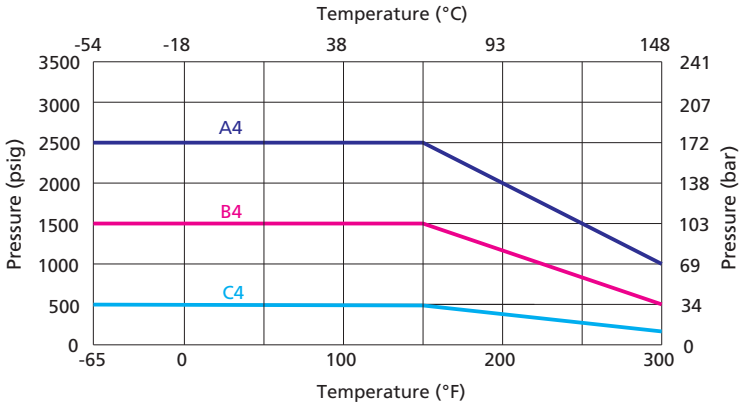
A3: 3-way (orifice 0.05"& 0.06"& 0.09"& 0.13"&0.19")
4-way / 5-way (orifice 0.06")

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).



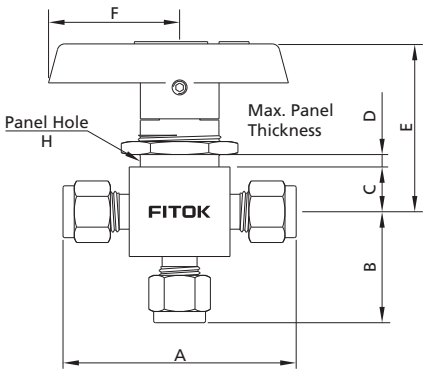
A4: 3-way (orifice 0.05"& 0.06"& 0.09"& 0.13"&0.19")
4-way / 5-way (orifice 0.06")

B4: 3-way (orifice 0.28"& 0.41")
4-way / 5-way (orifice 0. 41")

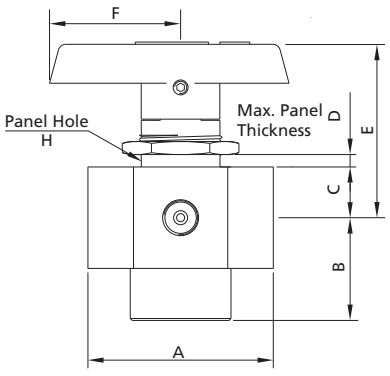
C4: 6-way / 7-way (orifice 0. 05" & 0. 06")

Dimensions

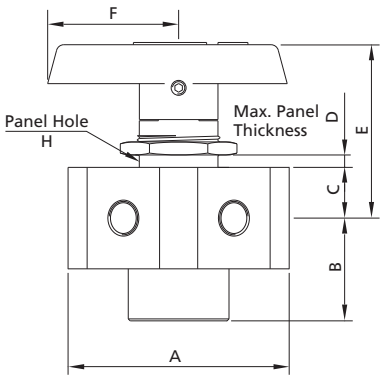
3-way Valves



4-and 5-way Valves



6-and 7-way Valves

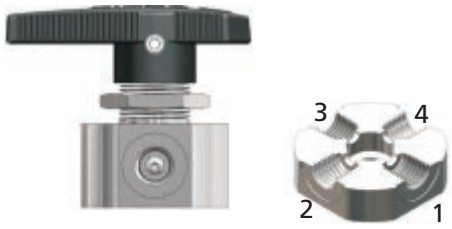


Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)						
				A	B	C	D	E	F	H
	3-way Valves									
BO□□-FL1-00-3L	1/16" FITOK	0.05 (1.3)	0.08	1.68 (42.7)	0.81 (20.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL2-02-3L	1/8" FITOK	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)					
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										
BO□□-FNS2-01-4L	1/8 Female NPT	0.06 (1.6)	0.07	1.85 (47)	0.88 (22.4)					
BO□□-FNS2-01-5L				1.55 (39.4)						
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										

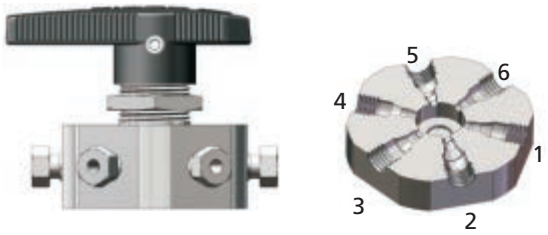
Crossover (4–, 6–Way) Valves

Standard Flow Path

4-way Valves

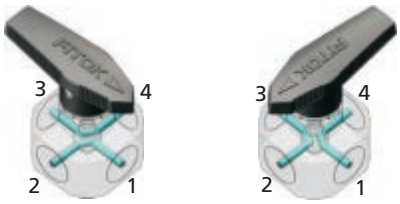


6-way Valves



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.

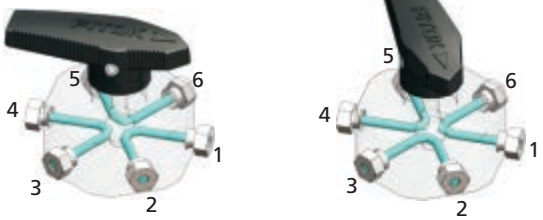


Ports 1 and 2 open
Ports 3 and 4 open

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.



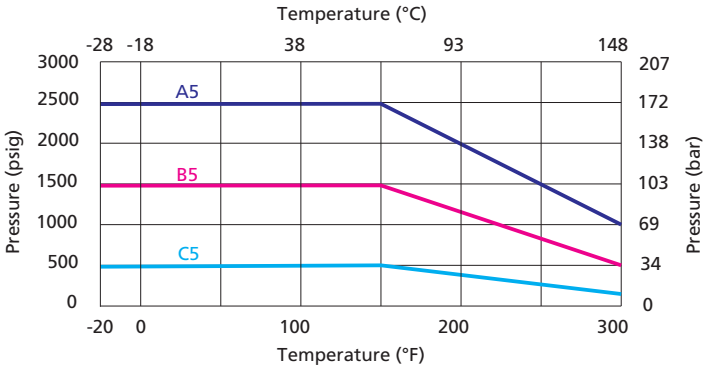
Ports 1 and 2 open
Ports 3 and 4 open
Ports 5 and 6 open

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

Pressure vs. Temperature

Crossover Valves

PTFE Packing Seat



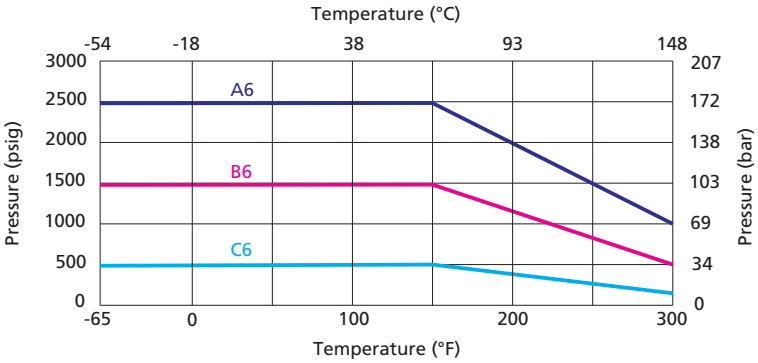
A5: 4-way (orifice 0.06")

B5: 4-way (orifice 0.41")

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

PFA, UHMWPE Packing Seat

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



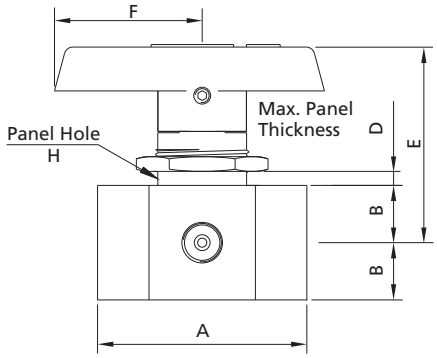
A6: 4-way (orifice 0.06")

B6: 6-way (orifice 0.41")

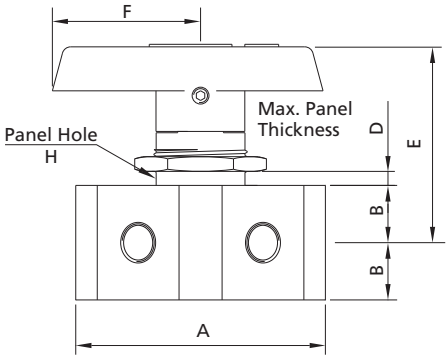
C6: 6-way (orifice 0.05"& 0. 06")

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 ①	0.05 (1.3)	0.06	1.95 (49.6)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL2-01-4C	1/8" Female FITOK Tube Fitting ①	0.06 (1.6)	0.08	2.61 (66.3)					
BO□□-FNS2-01-4C	1/8 Female NPT ①			1.55 (39.4)					
BO□□-FNS8-07-4C	1/2 Female NPT ②	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)	0.19 (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)					

Notes: 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.

① There might be an across-connection flow during switching. If it is not acceptable to you, please specify a spherical orifice of 0.049 in. Example: BOSS-FL2-01-4C-049.

② There might be an across-connection flow during switching. If it is not acceptable to you, please specify a spherical orifice of 0.093 in. Example: BOSS-FNS8-07-4C-093.

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.

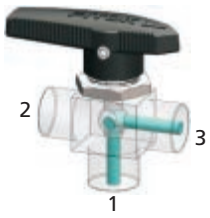
Special Flow Path

3-way Valves

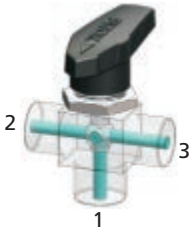


3HL Flow Path

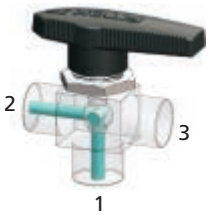
This type of valve can connect one side port to the bottom port, or connect two side ports to the bottom port. Switching can be done in 90° increments with 180° rotation handle.



Ports 1 and 3 open



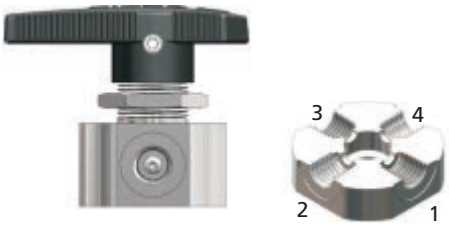
Ports 1, 2 and 3 open



Ports 1 and 2 open

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



Ports 1 and 3 open



Ports 2 and 4 open

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.



Ports 1, 2 and 4 open



Ports 1, 2 and 3 open



Ports 2, 3 and 4 open



Ports 1, 3 and 4 open

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.



Ports 1 and 2 open



Ports 2 and 3 open



Ports 3 and 4 open



Ports 1 and 4 open

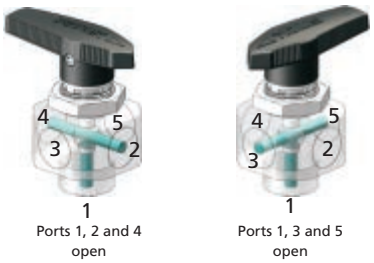
5-way Valves





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.

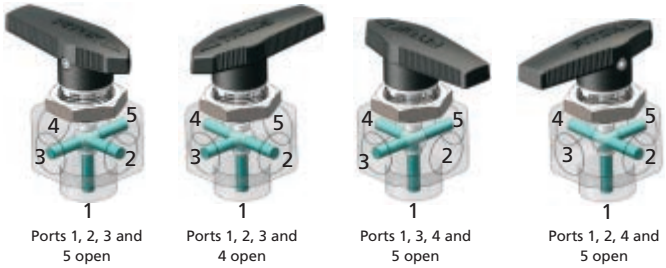


Ports 1, 2 and 4 open

Ports 1, 3 and 5 open

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.



Ports 1, 2, 3 and 5 open

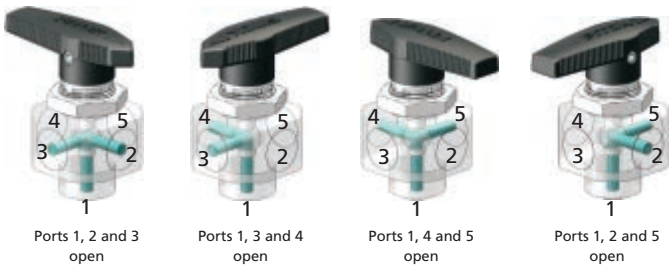
Ports 1, 2, 3 and 4 open

Ports 1, 3, 4 and 5 open

Ports 1, 2, 4 and 5 open

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.



Ports 1, 2 and 3 open

Ports 1, 3 and 4 open

Ports 1, 4 and 5 open

Ports 1, 2 and 5 open

Note: For Temperature vs. Pressure curve and dimensions of 5-way valves, see Switching (5-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.

Process Option

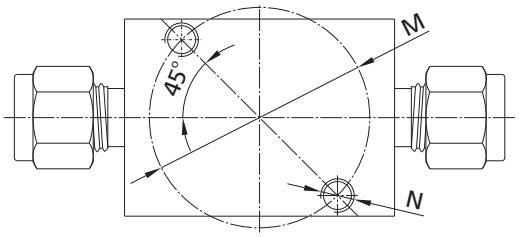
Valves with FOG process are available. FOG refers to FC-02 without lubrication.
To order a valve with FOG process, add -FOG suffix to the valve ordering number, for example: BOSS-FL4-05-FOG.
The pressure rating of valves with FOG process: 200 psig (13.8 bar) for orifice 10, 500 psig (34.4 bar) for other orifice.
The starting torque of valves with FOG process is greater than that of the lubricated valves.

Bottom Screw Panel Mounting Options

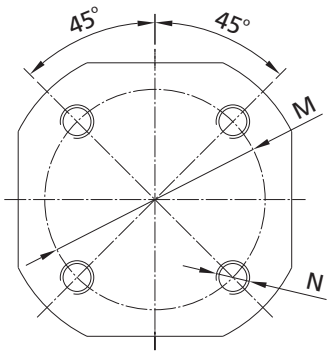
Mounting Dimensions

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

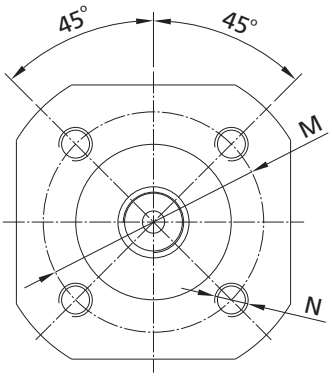
2-way



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)
	0.41 (10.3)	1.63 (41.28)	M5 x 0.8 deep 0.24" (6)
4-way	0.05~0.06 (1.3~1.6)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)
	0.28 (7.1)	2.00 (50.8)	M5 x 0.8 deep 0.24" (6)
5-way	0.05~0.06 (1.3~1.6)	1.25 (31.75)	M5 x 0.8 deep 0.24" (6)
	0.41 (10.3)	2.00 (50.8)	M5 x 0.8 deep 0.24" (6)

Locking Device

- ◎ Locking Device 1 can lock BO series valves with 90° or 180° rotation handle, locking hole diameter is 0.21 in (5.2 mm);
- ◎ To order a ball valve with locking device 1, add -**LH** to the valve ordering number. Example: BOSS-FL6-07-**LH**/BOSS-FL6-07-3L-**LH**
- ◎ Locking Device 2 can lock BO series valves with 90°,180°, or 360° rotation handle, locking hole diameter is 0.34 in (8.7 mm);
- ◎ To order a ball valve with locking device 2, add -**LK** to the valve ordering number. Example: BOSS-ML6-05-**LK**/BOSS-ML6-05-5L-**LK**

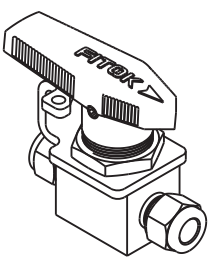


Diagram of Locking Device 1

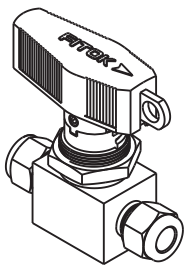


Diagram of Locking Device 2

Ball Valve without Handle

- ◎ Ball Valve without handle can be directly connected to the FITOK actuator assembly.
- ◎ To order, please add - **AM** to the valve ordering number. Example: BOSS-FL4-05- **AM**

Ordering Number Description

BOSS - ML6 - FL4 - ML8 - H05 - DXHQ3L - BLH - FL4 - SF2

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 to 7 Type	Connection 2 to 7 Size	Seat Material	Orifice Size	Handle/Actuator	For Actuator	Flow Pattern	Panel Installation	Locking Device	Vent Port	Special Application	Cleaning and Packaging
BO	SS 316 SS	FNS Female NPT	1 1/16"	Same as connection 1	Same as connection 1	PTFE	00 0.05" (1.3 mm)	Black Nylon Handle	None	Straight	Straight	No vent port	No	None	FC-01
	S4 304 SS	NS Male NPT	2 1/8"	Specified in the same way as connection 1 type and size		H UHMWPE	01 0.06" (1.6 mm)	I Red Nylon Handle	H Mechanical Limit Switch	A Angle		FL2 1/8" tube fitting	LH Locking Device 1	S NACE MR0175	F2 FC-02
	S1 321 SS	FRT Female BSPT	3 3 mm			A PFA	02 0.09" (2.4 mm)	GR Green Nylon Handle	N Inductive Limit Switch	3L 3-way		FL4 1/4" tube fitting	LK Locking Device 2	SI SilcoNert® 2000 (Sulfinert®) Coating	FOG FC-02 without Lubrication
	6L 316L SS	RT Male BSPT	4 1/4"				03 0.13" (3.2 mm)	J Blue Nylon Handlle	Q Solenoid Valve	3HL 3-way		FL6 3/8" tube fitting		CE CE Certification	
	B Brass	FMS Female Metric Thread (for RG-M)	6 3/8" or 6 mm				05 0.19" (4.8 mm)	AM Without Handle	HQ Mechanical Limit Switch and Solenoid Valve	4L 4-way		ML3 3 mm tube fitting			
	M Alloy 400	MS Male Metric Thread (for RG-M)	8 1/2" or 8 mm				07 0.28" (7.1 mm)	U Black Aluminium Handle		4C 4-way		ML6 6 mm tube fitting			
		FRP Female BSPP (for RP)	10 10 mm				10 0.41" (10.3 mm)	C 90° Normally Closed Pneumatic Actuator	NQ Inductive Limit Switch and Solenoid Valve	4H 4-way		ML8 8 mm tube fitting			
		FL Fractional Tube Fitting	12 3/4" or 12 mm					O 90° Normally Open Pneumatic Actuator		4HL 4-way					
		ML Metric Tube Fitting	14 14 mm					D 90° Double Acting Pneumatic Actuator		4V 4-way					
		FO Male FO Fitting	16 16 mm					LX 180° Left End Normally Open Pneumatic Actuator		5L 5-way					
		FR Male FR Fitting	18 18 mm					RX 180° Right End Normally Open Pneumatic Actuator		5H 5-way					
								DX 180° Double Acting Pneumatic Actuator		5HL 5-way					
								E 90° Electric Actuator		5LV 5-way					
								EX 180° Electric Actuator		6L 6-way					
										6C 6-way					
										7L 7-way					
											Panel nut				
											B Bottom screw				

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.
4. SilcoNert® 2000 (Sulfinert®) Coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
5. CE certification is available. For more information, please contact FITOK group or our authorized distributors.

Bar Stock Ball Valves

BP Series

Features

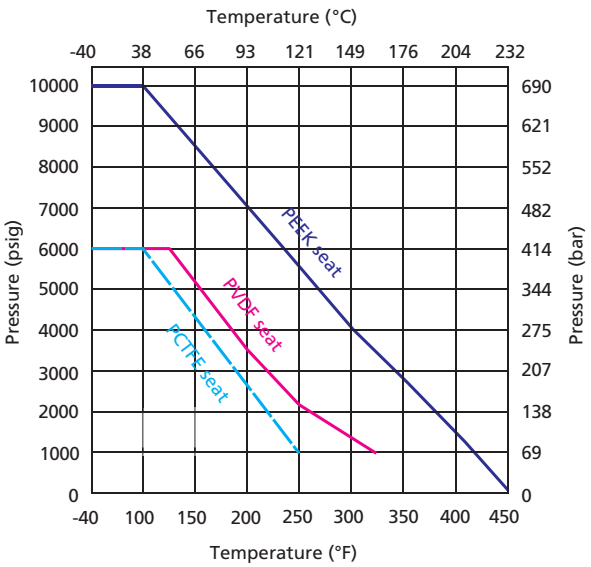


- ◎ Working pressure up to: 10000 psig (690 bar)
- ◎ Working temperature: -40°F to 450°F (-40°C to 232°C)
- ◎ Bidirectional flow for 2-way valves
- ◎ Seat wear compensation by free floating ball
- ◎ Variety of end connections
- ◎ Blowout proof stem with self-sealing function
- ◎ Handle color options 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

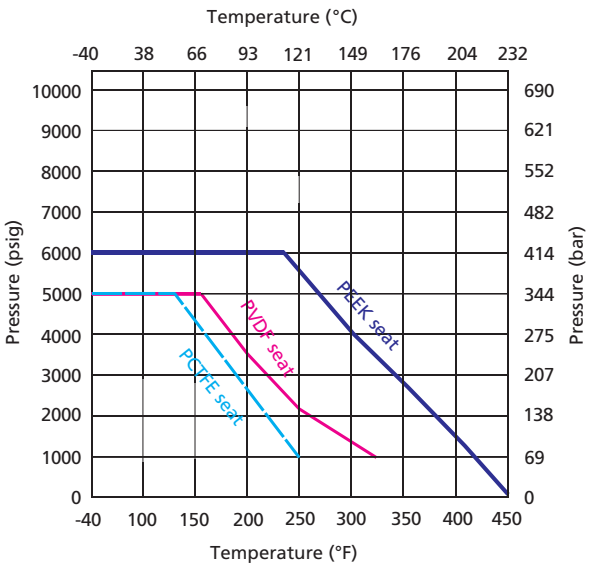
Pressure vs. Temperature

2-way Valves

Orifice code: 10

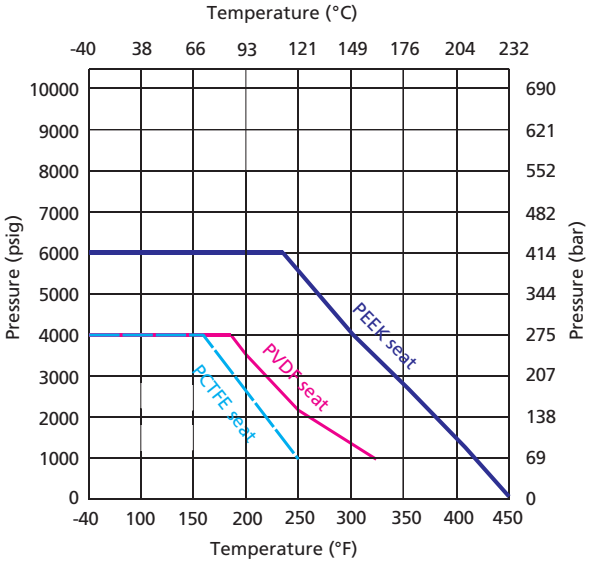


Orifice code: 13 and 19

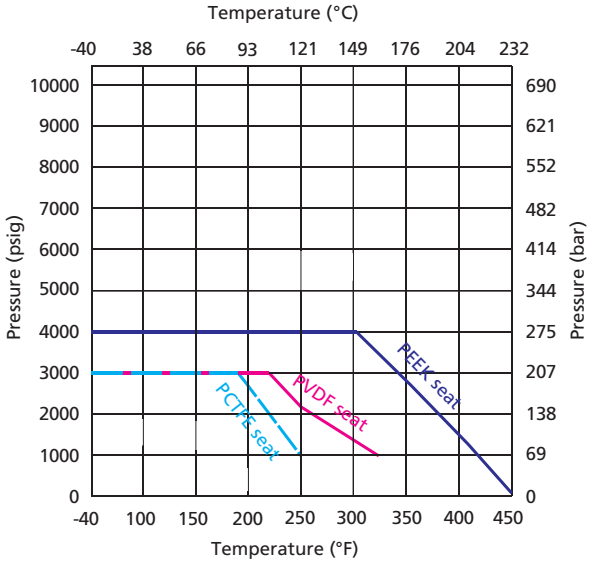


3-way Valves

Orifice code: 10



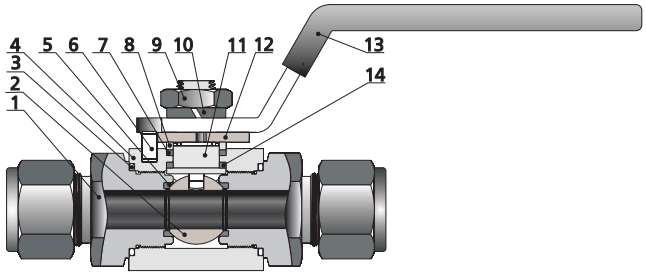
Orifice code: 13 and 19



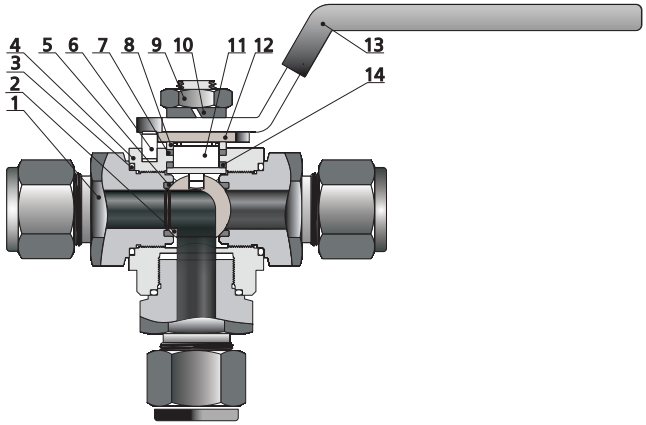
Notes: 1. Graphs are with 316 SS body. For information of body in other materials, please contact FITOK Group or our authorized distributors.
2. The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, 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

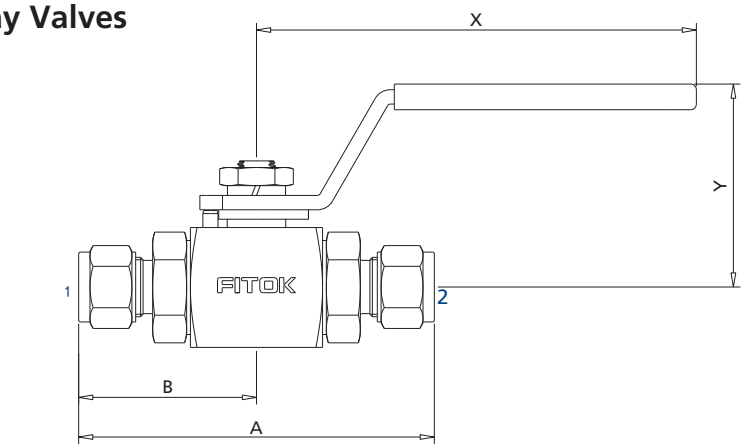


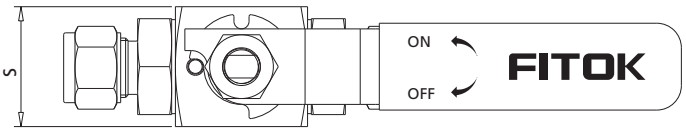
Item	Component	Body Material
		316 SS
1	*End Connection*	*316 SS/A479*
2	*Ball*	*316 SS/A479*
3	*O-ring*	*Fluorocarbon FKM*
4	*Body*	*316 SS/A479*
5	*Seat*	*PVDF or PCTFE or PEEK*
6	Stop Pin	SS
7	*Stem Packing*	*PTFE/D1710*
8	Stem Washer	316 SS/A479
9	Stem Nut ①	SS
10	Spring Washer	SS
11	*Stem*	*316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

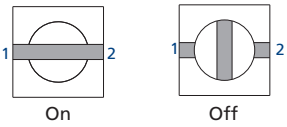
Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.
① Ball valves with orifice code 13 or 19 have 2 stem nuts.
② Lower packing material of ball valves with orifice code 19 is PTFE.

Dimensions

2-way Valves



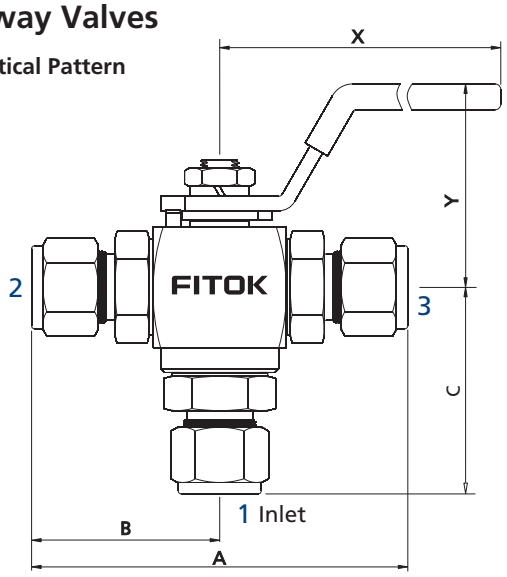




Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1/2	316 SS			A	B	X	Y	S
BP□□-ML6-10	6 mm FITOK	10000 (690)	0.19(4.8)	1.2	3.54 (90.0)	1.77 (45.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)
BP□□-ML8-10	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)							
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					
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)	0.50 (12.7)	10.0	4.42 (112.2)	2.21 (56.1)	5.59 (142.0)	2.54 (64.4)	1.50 (38.0)
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)			4.36 (110.6)	2.18 (55.3)			
BP□□-FL12-13	3/4" FITOK	5800 (400)							
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)	0.71 (18.0)	30.0	4.87 (123.8)	2.43 (61.9)	6.46 (164.0)	2.72 (69.0)	1.96 (50.0)
BP□□-ML22-19	22 mm FITOK	4900 (338)							
BP□□-ML25-19	25 mm FITOK	4600 (317)			5.11 (129.8)	2.66 (64.9)			
BP□□-FL12-19	3/4" FITOK	5800 (400)			4.59 (116.6)	2.29 (58.3)			
BP□□-FL16-19	1" FITOK	4700 (324)			5.11 (129.8)	2.66 (64.9)			
BP□□-FNS12-19	3/4 Female NPT	6000 (414)			3.81 (96.8)	1.91 (48.4)			
BP□□-FNS16-19	1 Female NPT	6000 (414)			4.26 (108.2)	2.13 (54.1)			
BP□□-NS16-19	1 Male NPT	6000 (414)			4.91 (124.8)	2.45 (62.4)			

3-way Valves

Vertical Pattern



Port 1 as inlet
180° rotation handle

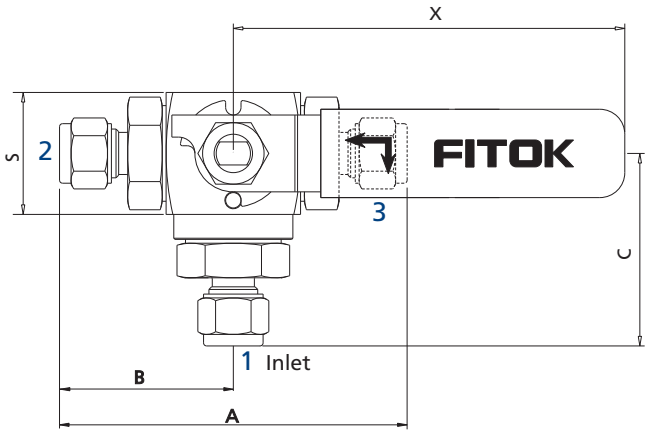


Port 1 to port 2

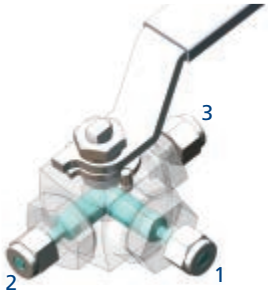


Port 1 to port 3

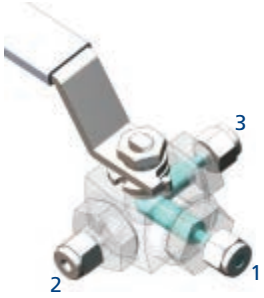
Horizontal Pattern



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)					
	Connection 1/2/3	316 SS		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)							
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)						
BP□□-NS8-10-3□	1/2 Male NPT	10000 (690)		3.75 (95.2)	1.88 (47.6)	2.09 (53.1)			

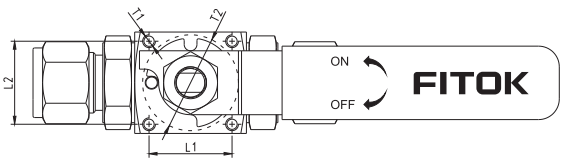
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
	Connection 1/2/3	316 SS		A	B	C	X	Y	S
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	4.42 (112.2)	2.21 (56.1)	2.60 (66.1)	5.59 (142.0)	2.54 (64.4)	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)							
BP□□-FNS8-13-3□	1/2 Female NPT	6000 (414)		3.54 (90.0)	1.77 (45.0)	2.02 (51.2)			
BP□□-FNS12-13-3□	3/4 Female NPT	6000 (414)		4.09 (104.0)	2.05 (52.0)	2.44 (62.0)			
BP□□-NS12-13-3□	3/4 Male NPT	6000 (414)		4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
BP□□-ML20-19-3□	20 mm FITOK	5500 (379)	0.71 (18.0)	4.87 (123.8)	2.43 (61.9)	2.89 (73.4)	6.46 (164.0)	2.72 (69.0)	1.96 (50.0)
BP□□-ML22-19-3□	22 mm FITOK	4900 (338)							
BP□□-ML25-19-3□	25 mm FITOK	4600 (317)		5.11 (129.8)	2.66 (64.9)	3.00 (76.2)			
BP□□-FL12-19-3□	3/4" FITOK	5800 (400)		4.86 (123.4)	2.43 (61.7)	3.02 (76.7)			
BP□□-FL16-19-3□	1" FITOK	4700 (324)		5.11 (129.8)	2.66 (64.9)	2.85 (72.4)			
BP□□-FNS12-19-3□	3/4 Female NPT	6000 (414)		3.82 (97.0)	1.91 (48.5)	2.22 (56.5)			
BP□□-FNS16-19-3□	1 Female NPT	6000 (414)		4.26 (108.2)	2.13 (54.1)	2.72 (69.1)			
BP□□-NS12-19-3□	3/4 Male NPT	6000 (414)		4.54 (115.2)	2.27 (57.6)	2.72 (69.1)			
BP□□-NS16-19-3□	1 Male NPT	6000 (414)		4.91 (124.8)	2.45 (62.4)	2.90 (73.9)			

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)



Seal Kits

Valve Orifice	Flow Pattern	Basic Seal Kit Ordering Number	Content
10	2-way	BPSS-□10-RK	Seat, upper packing, lower packing, O-ring, stem, ball, instructions
	3-way (vertical)	BPSS-□10-3-RK	
	3-way (horizontal)	BPSS-□10-3S-RK	
13	2-way	BPSS-□13-RK	
	3-way (vertical)	BPSS-□13-3-RK	
	3-way (horizontal)	BPSS-□13-3S-RK	
19	2-way	BPSS-□19-RK	
	3-way (vertical)	BPSS-□19-3-RK	
	3-way (horizontal)	BPSS-□19-3S-RK	

Seat Material	Designator
PVDF	-
PCTFE	K
PEEK	P

1. Seal kit components are the same materials and grades listed in materials of construction.
2. The default seat material in the seal kit for BP series valves is PVDF. To order seats with other materials, add a seat material designator to "□" in the basic seal kit ordering number to get a complete ordering number.
   Example: BPSS-10-RK
   BPSS-P10-RK
3. The listed basic seal kit ordering numbers specify 316 stainless steel material. To order kits with other materials, such as 304 stainless steel material, replace "SS" with "S4" in the ordering number.
   Example: BPS4-10-RK

Locking Device

◎ Locking Device 1 can lock BP series 2-way or 3-way valves , locking hole diameter is 0.23 in (6.0 mm);

◎ To order a ball valve with locking device 1, add -**L** to the valve ordering number.
Example: BPSS-FL4-10-**L**/BPSS-FL4-10-3S-**L**/BPSS-FL4-10-3-**L**

◎ Locking Device 2 can lock BP series 2-way or 3-way valves, locking hole diameters of valves with orifice 10 or 13 are 0.23 in (6.0 mm);

◎ To order a ball valve with locking device 2, add -**LK** to the valve ordering number.
Example: BPSS-FL4-10-**LK**/BPSS-FL4-10-3S-**LK**

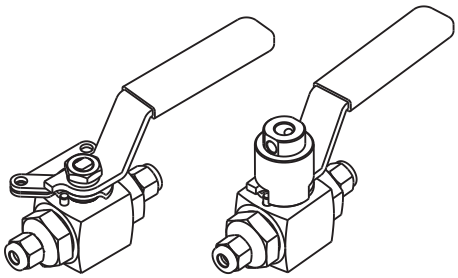


Diagram of Locking Device 1 | Diagram of Locking Device 2

Ball Valve without Handle

◎ Ball Valve without handle can be directly connected to the FITOK actuator assembly.

◎ To order, please add -**AM** to the valve ordering number.
Example: BPSS-FL12-13-**AM**

FITOK

Ordering Number Description

BPSS - ML20 - FL12 - FNS8 - P13 - OHQ3ML - SCEF2

Series	Body Material
BP	SS 316 SS
	S4 304 SS
	S1 321 SS

Connection 1 Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FRP	Female BSPP (for RP)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	Rotatable Fractional Tube Butt Weld
UMB	Rotatable Metric Tube Butt Weld
UPB	Nut + Gasket + Pipe Bulged Nipple

Connection 1 Size	
4	1/4" or 4 mm
6	3/8" or 6 mm
8	1/2" or 8 mm
10	5/8" or 10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
25	25 mm
28	28 mm
30	30 mm
32	32 mm

Connection 2/3 Type
Same as Connection 1
Specified in the same way as Connection 1 type and size

Connection 2/3 Size	
	PVDF
K	PCTFE
P	PEEK

Seat Material	
	PVDF
K	PCTFE
P	PEEK

Orifice Size	
10	Max. 0.39" (10.0 mm)
13	0.50" (12.7 mm)
19	0.71" (18.0 mm)

Handle/Actuator	
	Yellow Handle Sleeve
I	Red Handle Sleeve
J	Blue Handle Sleeve
AM	Without Handle
C	90° Normally Closed Pneumatic Actuator
O	90° Normally Open Pneumatic Actuator
D	90° Double Acting Pneumatic Actuator
LX	180° Left End Normally Open Pneumatic Actuator
RX	180° Right End Normally Open Pneumatic Actuator
DX	180° Double Acting Pneumatic Actuator
E	90° Electric Actuator
EX	180° Electric Actuator

For Actuator	
	None
H	Mechanical Limit Switch
N	Inductive Limit Switch
Q	Solenoid Valve
HQ	Mechanical Limit Switch and Solenoid Valve
NQ	Inductive Limit Switch and Solenoid Valve

Flow Pattern	
	Straight
3	3-Way (Vertical Pattern)
3S	3-Way (Horizontal Pattern)

Panel Mounting	
	Without Panel Mounting
M	With Panel Mounting

Locking Device	
	No
L	Locking Device 1
LK	Locking Device 2

Special Application	
	None
S	NACE MR0175
SI	SilcoNert® 2000 (Sulfinert®) Coating
CE	CE Certification

Cleaning and Packaging	
	FC-01
F2	FC-02

1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirements of ASTM G93 Level C.
4. For more information about pneumatic actuator ball valves, please refer to the catalog Automatic Control Ball Valves.
5. SilcoNert® 2000 (Sulfinert®) Coating: Except for ball valves with PEEK seat, wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
6. CE certification is available. For more information, please contact FITOK group or our authorized distributors.
7. The rated working pressure of BP series ball valves for "NACE MRO175" application is lower than that of standard valves. For detailed pressure values, please contact FITOK Group or our authorized distributors.

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

Hex Bar Stock Ball Valves

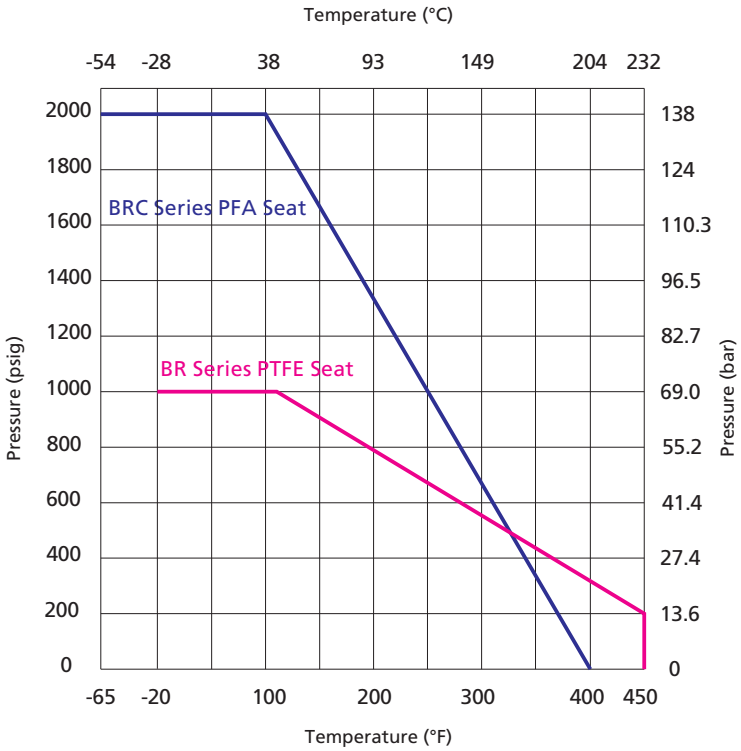
BR and BRC Series

Features



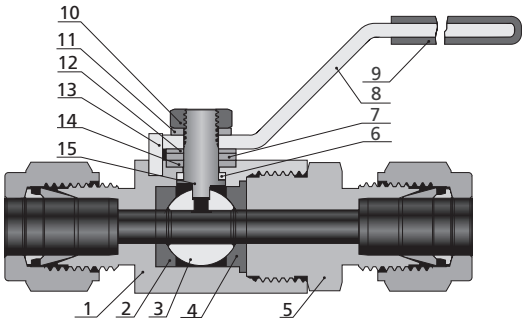
◎ Working pressure up to:
BR Series: 1000 psig (69.0 bar)
BRC Series: 2000 psig (138 bar)
◎ Working temperature:
BR Series: -20°F to 450°F (-28°C to 232°C)
BRC Series: -65°F to 400°F (-54°C to 204°C)
◎ Compact and economical design
◎ Free floating ball design for seat wear compensation
◎ Bidirectional flow
◎ Low operating torque
◎ A variety of end 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

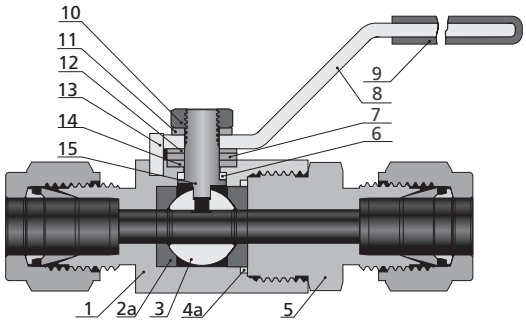


Standard Materials of Construction

BR Series



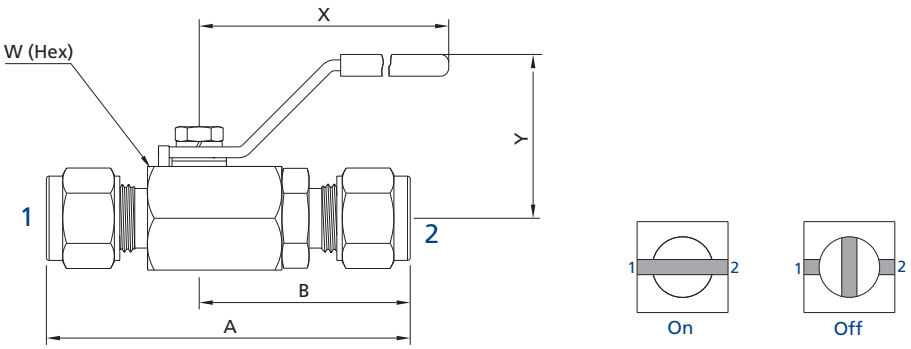
BRC Series



Item	Component	BR Series		BRC Series
		Valve Body Material		
		316 SS	Brass	316 SS
		Material Grade/ASTM Specification		
1	*Body*	*316 SS/A479*	*Brass C36000/B16*	*316 SS/A479*
2	*Front Seat*	*PTFE/D1710*		———
2a	*Seat*	———		*PFA/D3307*
3	*Ball*	*316 SS/A479*		
4	*Back Seat*	*PTFE/D1710*		———
4a	*Sealing Gasket*	———		316L SS/A269
5	*End Connection*	*316 SS/A479*	*Brass C36000/B16*	*316 SS/A479*
6	*Lower Packing*	*PTFE/D1710*		
7	Washer	316 SS/A479		
8	Handle	304 SS/A240 or Aluminium		
9	Sleeve	Vinyl		
10	Stem Nut	SS		
11	Gasket	SS		
12	Coned-disc Spring	S17700/A693		
13	Stop Pin	SS		
14	*Upper Packing*	*PTFE/D1710*		
15	*Stem*	*316 SS/A479*		

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 1/2			A	B	W	X	Y
BR□□-ML6-05	BRC□□-ML6-05	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	BRC□□-ML8-05	8 mm FITOK			2.63 (66.8)	1.53 (38.8)			
BR□□-FL4-05	BRC□□-FL4-05	1/4" FITOK			2.57 (65.2)	1.50 (38.1)			
BR□□-FL5-05	BRC□□-FL5-05	5/16" FITOK			2.63 (66.8)	1.53 (38.8)			
BR□□-FNS2-05	BRC□□-FNS2-05	1/8 Female NPT			1.85 (47.0)	1.08 (27.4)			
BR□□-FRP2-05	BRC□□-FRP2-05	1/8 Female BSPP			2.00 (50.0)	1.14 (29.0)			
BR□□-FRP4-05	BRC□□-FRP4-05	1/4 Female BSPP			2.00 (50.0)	1.14 (29.0)			
BR□□-FNS4-05	BRC□□-FNS4-05	1/4 Female NPT			1.85 (47.0)	1.08 (27.4)			
BR□□-ML10-07	BRC□□-ML10-07	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	BRC□□-FL6-07	3/8" FITOK							
BR□□-FRP6-07	BRC□□-FRP6-07	3/8 Female BSPP			2.03 (51.6)	1.18 (30.0)			
BR□□-FNS6-07	BRC□□-FNS6-07	3/8 Female NPT							
BR□□-ML12-10	BRC□□-ML12-10	12 mm FITOK	0.35 (8.9)	5.30	3.15 (80.0)	1.83 (46.5)	1 1/16 (27.0)	3.15 (80)	1.54 (39)
BR□□-ML14-10	BRC□□-ML14-10	14 mm FITOK			3.24 (82.2)	1.87 (47.5)			
BR□□-FL8-10	BRC□□-FL8-10	1/2" FITOK			3.15 (80.0)	1.83 (46.5)			
BR□□-FL10-10	BRC□□-FL10-10	5/8" FITOK			3.24 (82.2)	1.87 (47.5)			
BR□□-FRP8-10	BRC□□-FRP8-10	1/2 Female BSPP			2.08 (53.0)	1.12 (28.5)	15/16 (24.0)		
BR□□-FNS8-10	BRC□□-FNS8-10	1/2 Female NPT			2.08 (53.0)	1.12 (28.5)			
BR□□-ML16-13	BRC□□-ML16-13	16 mm FITOK	0.47 (12.0)	8.60	3.50 (88.9)	2.00 (50.8)	1 1/4 (31.75)	3.94 (100)	2.03 (51.7)
BR□□-ML18-13	BRC□□-ML18-13	18 mm FITOK							
BR□□-FL12-13	BRC□□-FL12-13	3/4" FITOK							
BR□□-FRP12-13	———	3/4 Female BSPP			2.48 (63.0)	1.30 (33.0)			
———	BRC□□-FRP12-13				3.13 (79.5)	1.95 (49.5)			
BR□□-FNS12-13	———	3/4 Female NPT			2.39 (60.7)	1.20 (30.5)			
———	BRC□□-FNS12-13				3.13 (79.5)	1.95 (49.5)			
BR□□-ML22-16	BRC□□-ML22-16	22 mm FITOK	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (56.8)	1 1/2 (38.1)		2.15 (54.8)
BR□□-ML25-16	BRC□□-ML25-16	25 mm FITOK			4.31 (109.5)	2.42 (61.5)			
BR□□-FL16-16	BRC□□-FL16-16	1" FITOK							
BR□□-FRP16-16	———	1 Female BSPP			3.25 (82.6)	1.63 (41.3)			
———	BRC□□-FRP16-16				3.68 (93.4)	2.14 (54.3)			
BR□□-FNS16-16	———	1 Female NPT			3.00 (76.5)	1.50 (38.1)			
———	BRC□□-FNS16-16				3.43 (87.1)	2.01 (51.1)			

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.

Seal Kits

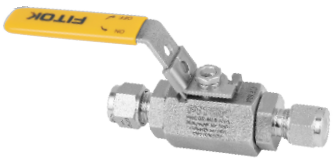
Valve Orifice	Basic Seal Kit Ordering Number		Content
05	BRSS-05-RK	BRCSS-05-RK	Seat, ball, lower packing, upper packing, instructions
07	BRSS-07-RK	BRCSS-07-RK	
10	BRSS-10-RK	BRCSS-10-RK	
13	BRSS-13-RK	BRCSS-13-RK	Seat, flange seal (BR)/sealing gasket (BRC), ball, lower packing, upper packing, instructions
16	BRSS-16-RK	BRCSS-16-RK	

1. Seal kit components are the same materials and grades listed in materials of construction.
2. The listed basic seal kit ordering numbers specify 316 stainless steel material. To order kits with other materials, such as 304 stainless steel material, replace "SS" with "S4" in the ordering number.
   Example: BRS4-10-RK

Locking Device

◎ Locking Device 1 can lock BR/BRC series valves.
For valves with orifice sizes 05, 07, and 10, the locking hole diameter is 0.19 in (4.8 mm);
For valves with orifice sizes 13 and 16, the locking hole diameter is 0.22 in (5.7 mm).

◎ To order a ball valve with Locking Device 1, add -**L** to the valve ordering number.
Example: BRSS-ML12-10-**L**



Locking Device 1

◎ Locking Device 2 can lock BR/BRC series valves.
For valves with orifice sizes 05 and 07, the locking hole diameter is 0.19 in (4.8 mm);
For valves with orifice sizes 10, 13, and 16, the locking hole diameter is 0.24 in (6.2 mm).

◎ To order a ball valve with Locking Device 2, add -**LB** to the valve ordering number.
Example: BRSS-ML12-10-**LB**



Locking Device 2

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	Specified in the same way as connection 1 type and size	05 0.19" (4.8 mm)	Yellow Handle Sleeve	No	None	FC-01
BRC	6L 316L SS	NS Male NPT	4 1/4"			07 0.28" (7.1 mm)	I Red Handle Sleeve	L Locking Device 1	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	5 5/16"			10 0.35" (8.9 mm)	J Blue Handle Sleeve	LB Locking Device 2	SI SilcoNert® 2000 (Sulfinert®) Coating	
	B Brass	RT Male BSPT	6 3/8" or 6 mm			13 0.47" (12.0 mm)	U Black Aluminium			
		FRP Female BSPP (for RP)	8 1/2" or 8 mm			16 0.63" (16.0 mm)	NY Black Nylon			
		BP Male BSPP (for RG)	10 10 mm				T Butterfly Handle with Yellow Plastic Handle Sleeve			
		FL Fractional Tube Fitting	12 3/4" or 12 mm				TI Butterfly Handle with Red Plastic Handle Sleeve			
		ML Metric Tube Fitting	14 14 mm or M14 x 1.5				TJ Butterfly Handle with Blue Plastic Handle Sleeve			
		UFB Rotatable Fractional Tube Butt Weld	16 1" or 16 mm							
		UMB Rotatable Metric Tube Butt Weld	18 18 mm							
		UPB Nut + Gasket + Pipe Bulged Nipple	20 1 1/4" or 20 mm or M20 x 1.5							
			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.

1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.
4. SilcoNert® 2000 (Sulfinert®) Coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

High Performance Ball Valves

BV Series

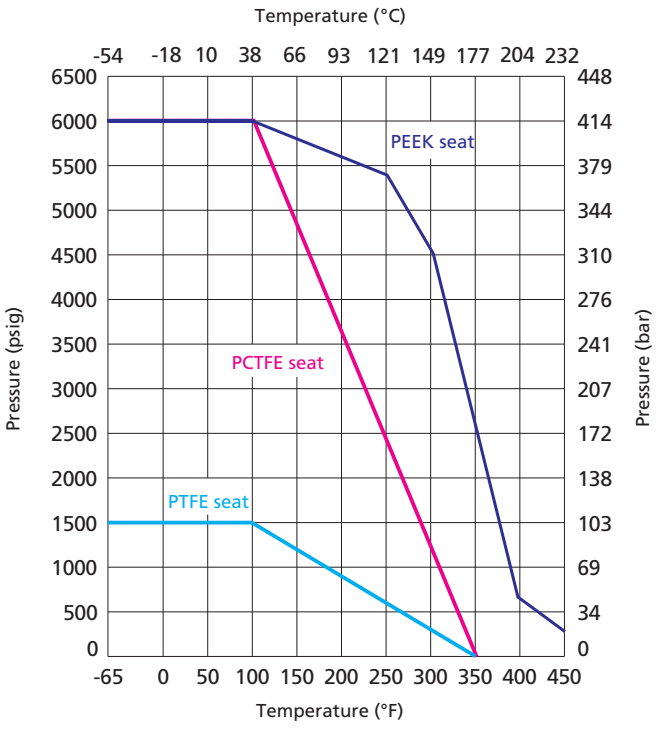
Features

- ◎ 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
- ◎ Bidirectional flow for straight valves
- ◎ The inlet of 3-way valves and angle pattern valves can only be the bottom port

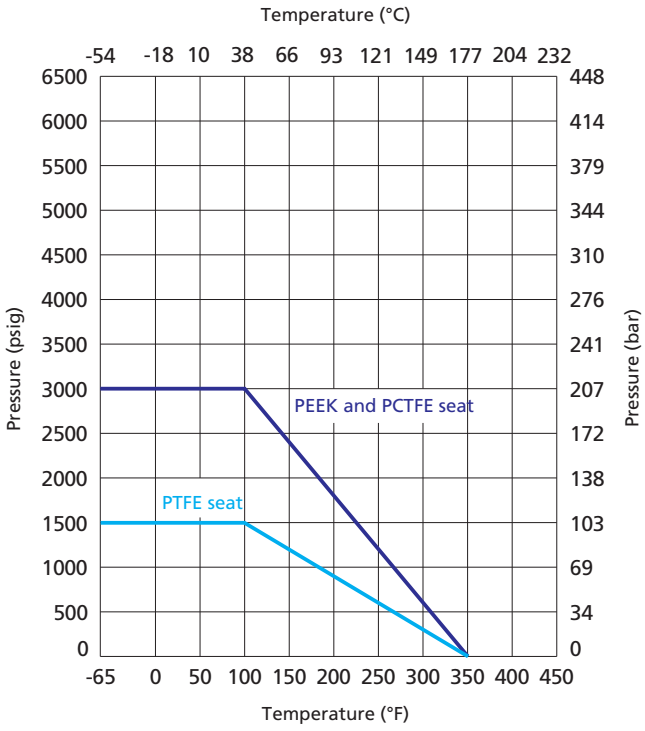


Pressure vs. Temperature

316 SS Body



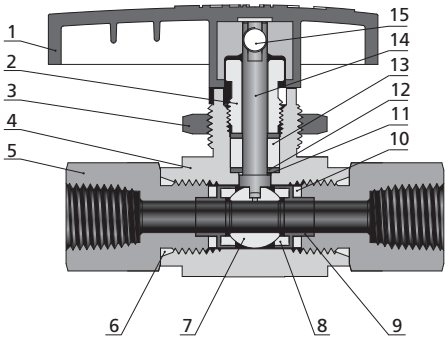
Brass Body



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

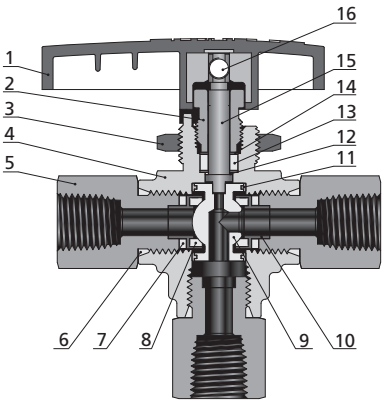
Straight Valves



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	*Body*	*CF8M/A351*	*C37700/B283*
5	*End Connection*	*316 SS/A479*	*C36000/B16*
6	*Connection Ring*	*PTFE*	
7	*Ball*	*316 SS/A479*	
8	*Seat*	*PTFE or PCTFE or PEEK*	
9	*Seat Retainer*	*316 SS/A479*	
10	*Seat Packing*	*PTFE*	
11	*Stem Back-up Ring*	*PEEK*	
12	*Stem Washer*	*316/A479*	
13	*Stem Packing*	*PTFE*	
14	*Stem*	*316 SS/A479*	
15	Set Screw	Zinc-plated carbon steel	
	Lubricants	*Fluorinated-based*	

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

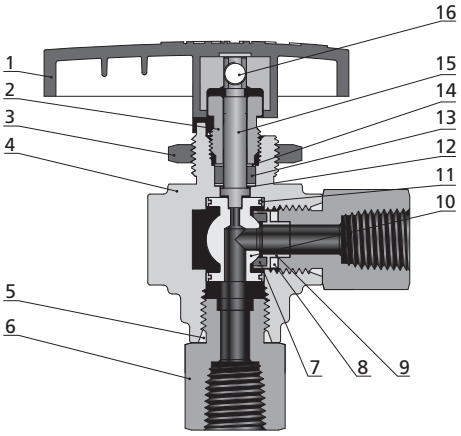
3-way Valves



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	*Body*	*CF8M/A351*	*C37700/B283*
5	*End Connection*	*316 SS/A479*	*C36000/B16*
6	*Connection Ring*	*PTFE*	
7	*Seat Packing*	*PTFE*	
8	*Seat*	*PTFE or PCTFE or PEEK*	
9	*Ball*	*316 SS/A479*	
10	*Seat Retainer*	*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	Zinc-plated carbon steel	
	Lubricants	*Fluorinated-based*	

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

Angle Pattern Valves

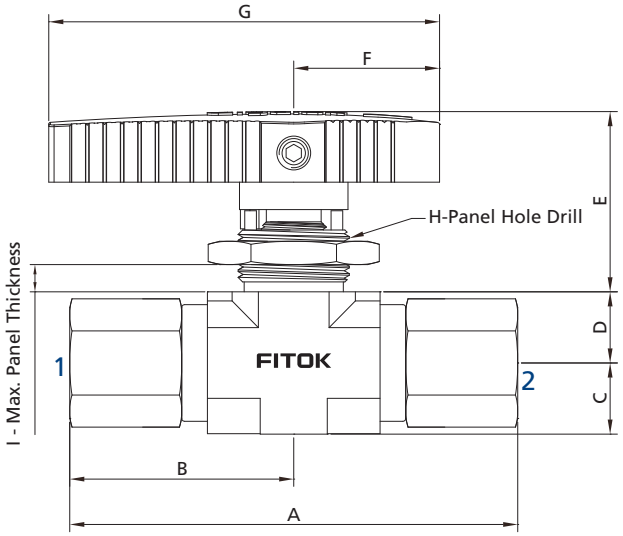


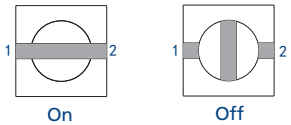
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	*Body*	*CF8M/A351*	*C37700/B283*
5	*Connection Ring*	*PTFE*	
6	*End Connection*	*316 SS/A479*	*C36000/B16*
7	*Seat*	*PTFE or PCTFE or PEEK*	
8	*Seat Packing*	*PTFE*	
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*	*Zinc-plated carbon Steel*	
	Lubricants	*Fluorinated-based*	

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

Dimensions

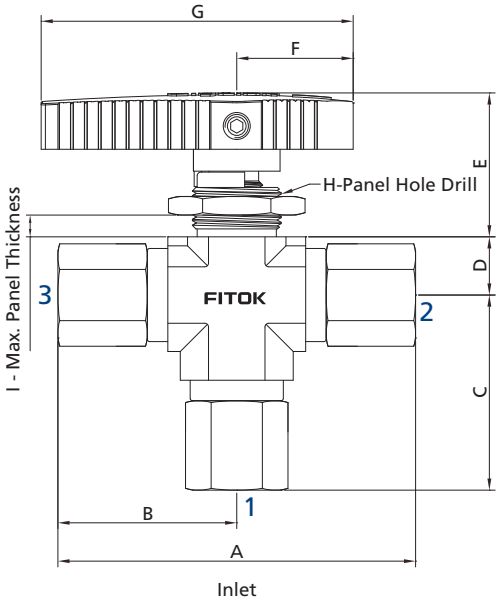
Straight Valves





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			A	B	C	D	E	F	G	H	I
BV□□-FL1-01	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	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□□-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)							
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)			2.36 (60.0)	1.18 (30.0)							
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)			2.70 (68.6)	1.35 (34.3)							
BV□□-BP4-04	1/4 Male BSPP	6000 (414)	3000 (207)											
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)	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□□-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)							
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)			3.02 (76.8)	1.51 (38.4)							
BV□□-FRP4-06	1/4 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS4-06	1/4 Female NPT	6000 (414)	3000 (207)											
BV□□-RT4-06	1/4 Male BSPT	6000 (414)	3000 (207)			3.24 (82.2)	1.62 (41.1)							
BV□□-BP4-06	1/4 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS4-06	1/4 Male NPT	6000 (414)	3000 (207)											
BV□□-RT6-06	3/8 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP6-06	3/8 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS6-06	3/8 Male NPT	6000 (414)	3000 (207)											
BV□□-FL8-10	1/2" FITOK	6000 (414)	2100 (145)	0.41 (10.3)	6.42	4.68 (118.8)	2.34 (59.4)	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□□-FL12-10	3/4" FITOK	5800 (400)	1800 (124)			4.66 (118.4)	2.33 (59.2)							
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									
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)			4.84 (123.0)	2.42 (61.5)							
BV□□-ML22-10	22 mm FITOK	4900 (338)	1450 (100)											
BV□□-FRT6-10	3/8 Female BSPT	6000 (414)	3000 (207)			3.90 (99.0)	1.95 (49.5)							
BV□□-FRP6-10	3/8 Female BSPP	6000 (414)	3000 (207)											
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)			4.50 (114.2)	2.25 (57.1)							
BV□□-FRP12-10	3/4 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS12-10	3/4 Female NPT	6000 (414)	3000 (207)											
BV□□-RT8-10	1/2 Male BSPT	6000 (414)	3000 (207			4.44 (112.8)	2.22 (56.4)							
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)											
BV□□-BP12-10	3/4 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS12-10	3/4 Male NPT	6000 (414)	3000 (207)											

3-way Valves





Port 1 to port 2

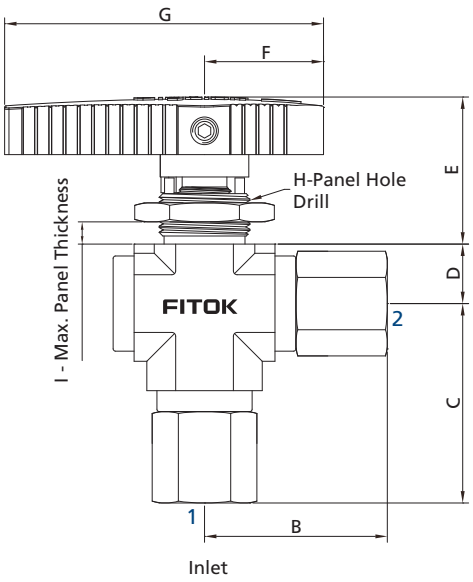


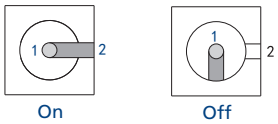
Port 1 to port 3

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)								
	Connection 1/2/3	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)	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□□-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)			2.36 (60.0)	1.18 (30.0)	1.23 (31.3)						
BV□□-RT2-04-3	1/8 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP2-04-3	1/8 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS2-04-3	1/8 Male NPT	6000 (414)	3000 (207)											
BV□□-RT4-04-3	1/4 Male BSPT	6000 (414)	3000 (207)			2.70 (68.6)	1.35 (34.3)	1.40 (35.6)						
BV□□-BP4-04-3	1/4 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS4-04-3	1/4 Male NPT	6000 (414)	3000 (207)											
BV□□-FL4-05-3	1/4" FITOK	6000 (414)	3000 (207)	0.19 (4.7)	0.70	3.48 (88.4)	1.74 (44.2)	1.88 (47.7)	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□□-ML6-05-3	6 mm FITOK	6000 (414)	3000 (207)			3.50 (89.0)	1.75 (44.5)	1.89 (48.0)						
BV□□-FL6-05-3	3/8" FITOK	6000 (414)	3000 (207)			3.60 (91.4)	1.80 (45.7)	1.94 (49.2)						
BV□□-ML8-05-3	8 mm FITOK	6000 (414)	3000 (207)			3.56 (90.4)	1.78 (45.2)	1.92 (48.7)						
BV□□-ML10-05-3	10 mm FITOK	6000 (414)	3000 (207)			3.62 (92.0)	1.81 (46.0)	1.95 (49.5)						
BV□□-FRT4-05-3	1/4 Female BSPT	6000 (414)	3000 (207)			3.02 (76.8)	1.51 (38.4)	1.65 (41.9)						
BV□□-FRP4-05-3	1/4 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS4-05-3	1/4 Female NPT	6000 (414)	3000 (207)											
BV□□-RT4-05-3	1/4 Male BSPT	6000 (414)	3000 (207)			3.24 (82.2)	1.62 (41.1)	1.76 (44.6)						
Bv□□-BP4-05-3	1/4 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS4-05-3	1/4 Male NPT	6000 (414)	3000 (207)											
BV□□-RT6-05-3	3/8 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP6-05-3	3/8 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS6-05-3	3/8 Male NPT	6000 (414)	3000 (207)											

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 1/2/3	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)											
BV□□-ML14-10-3	14 mm FITOK	6000 (414)	1900 (131)											
BV□□-ML16-10-3	16 mm FITOK	5800 (400)	1700 (117)											
BV□□-ML18-10-3	18 mm FITOK	5400 (372)	1600 (110)											
BV□□-ML20-10-3	20 mm FITOK	5500 (379)	1600 (110)			4.84 (123.0)	2.42 (61.5)	2.76 (70.2)						
BV□□-ML22-10-3	22 mm FITOK	4900 (338)	1450 (100)											
BV□□-FRT6-10-3	3/8 Female BSPT	6000 (414)	3000 (207)			3.90 (99.0)	1.95 (49.5)	2.29 (58.2)						
BV□□-FRP6-10-3	3/8 Female BSPP	6000 (414)	3000 (207)											
BV□□-FNS6-10-3	3/8 Female NPT	6000 (414)	3000 (207)											
BV□□-FRT8-10-3	1/2 Female BSPT	6000 (414)	3000 (207)			4.30 (109.2)	2.15 (54.6)	2.49 (63.3)						
BV□□-FRP8-10-3	1/2 Female BSPP	6000 (414)	3000 (207)			3.97 (101.0)	1.99 (50.5)	2.33 (59.1)						
BV□□-FNS8-10-3	1/2 Female NPT	6000 (414)	3000 (207)			4.30 (109.2)	2.15 (54.6)	2.49 (63.3)						
BV□□-FRT12-10-3	3/4 Female BSPT	6000 (414)	3000 (207)			4.50 (114.2)	2.25 (57.1)	2.59 (65.8)						
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)			4.44 (112.8)	2.22 (56.4)	2.56 (65.1)						
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)							
	Connection 1/2	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)	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□□-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)	0.12 (3.0)	0.28	1.07 (27.2)	1.12 (28.5)						
BV□□-FRP2-04-A	1/8 Female BSPP	6000 (414)	3000 (207)										
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)			1.35 (34.3)	1.40 (35.6)						
BV□□-BP4-04-A	1/4 Male BSPP	6000 (414)	3000 (207)										
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)	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□□-ML6-05-A	6 mm FITOK	6000 (414)	3000 (207)			1.75 (44.5)	1.89 (48.0)						
BV□□-FL6-05-A	3/8" FITOK	6000 (414)	2200 (152)			1.80 (45.7)	1.94 (49.2)						
BV□□-ML8-05-A	8 mm FITOK	6000 (414)	2300 (159)			1.78 (45.2)	1.92 (48.7)						
BV□□-ML10-05-A	10 mm FITOK	6000 (414)	1900 (131)			1.81 (46.0)	1.95 (49.5)						
BV□□-FRT4-05-A	1/4 Female BSPT	6000 (414)	3000 (207)			1.51 (38.4)	1.65 (41.9)						
BV□□-FRP4-05-A	1/4 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS4-05-A	1/4 Female NPT	6000 (414)	3000 (207)										
BV□□-RT4-05-A	1/4 Male BSPT	6000 (414)	3000 (207)			1.62 (41.1)	1.76 (44.6)						
Bv□□-BP4-05-A	1/4 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS4-05-A	1/4 Male NPT	6000 (414)	3000 (207)										
BV□□-RT6-05-A	3/8 Male BSPT	6000 (414)	3000 (207)										
BV□□-BP6-05-A	3/8 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS6-05-A	3/8 Male NPT	6000 (414)	3000 (207)										

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)			2.33 (59.2)	2.67 (67.9)						
BV□□-ML12-10-A	12 mm FITOK	6000 (414)	2000 (138)										
BV□□-ML14-10-A	14 mm FITOK	6000 (414)	1900 (131)										
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)			2.25 (57.1)	2.59 (65.8)						
BV□□-FRP12-10-A	3/4 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS12-10-A	3/4 Female NPT	6000 (414)	3000 (207)										
BV□□-RT8-10-A	1/2 Male BSPT	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
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)										
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.

Locking Device

◎ Lock BV series 2-way or 3-way valves, locking hole diameter is 0.21 in (5.2 mm).

◎ To order a ball valve with locking device, add **-L** to the valve ordering number.
Example: BVSS-ML12-10-**L**/BVSS-ML12-10-3-**L**



Ball Valve without Handle

◎ Ball Valve without handle can be directly connected to the FITOK actuator assembly.

◎ To order, please add -**AM** to the valve ordering number.
Example: BVSS-FL4-05-**AM**

Ordering Number Description

BVSS - FL8 - ML12 - ML10 - P06 - RXHQ3 - L - SCEF2

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	Locking Device	Special Application	Cleaning and Packaging
BV	SS CF8M 6L CF3M S4 CF8 B Brass	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FMS Female Metric Thread (for RG-M) MS Male Metric Thread (for RG-M) FRP Female BSPP (For RP) BP Male BSPP (For RG) FL Fractional Tube Fitting ML Metric Tube Fitting UFB Rotatable Fractional Tube Butt Weld UMB Rotatable Metric Tube Butt Weld UPB Nut + Gasket + Pipe Bulged Nipple	2 1/8" 3 3 mm 4 1/4" 5 5/16" 6 3/8" or 6 mm or M6 x 1 8 1/2" or 8 mm 10 10 mm or M10 x 1 12 3/4" or 12 mm 14 14 mm or M14 x 1.5 16 16 mm 18 18 mm 20 20 mm or M20 x 1.5 22 22 mm or M22 x 1.5 24 M24 x 1.5	Same as Connection 1 Specified in the same way as Connection 1 type and size	Same as Connection 1 Specified in the same way as Connection 1 type and size	PTFE K PCTFE P PEEK	02 0.09" (2.4 mm) 03 0.13" (3.2 mm) 04 0.17" (4.2 mm) 05 0.19" (4.7 mm) 06 0.25" (6.4 mm) 10 0.41" (10.3 mm)	Black Nylon Handle I Red Nylon Handle GR Green Nylon Handle J Blue Nylon Handle Y Yellow Nylon Handle U Black Aluminium Handle AM Without Handle C 90° Normally Closed Pneumatic Actuator O 90° Normally Open Pneumatic Actuator D 90° Double Acting Pneumatic Actuator LX 180° Left End Normally Open Pneumatic Actuator RX 180° Right End Normally Open Pneumatic Actuator DX 180° Double Acting Pneumatic Actuator E 90° Electric Actuator EX 180° Electric Actuator	None H Mechanical Limit Switch N Inductive Limit Switch Q Solenoid Valve HQ Mechanical Limit Switch and Solenoid Valve NQ Inductive Limit Switch and Solenoid Valve	Straight A Angle (Bottom Port Inlet) 3 3-Way (Diverter Valve)	No L Yes	None S NACE MR0175 SI SilcoNert® 2000 (Sulfinert®) Coating CE CE Certification	FC-01 F2 FC-02

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

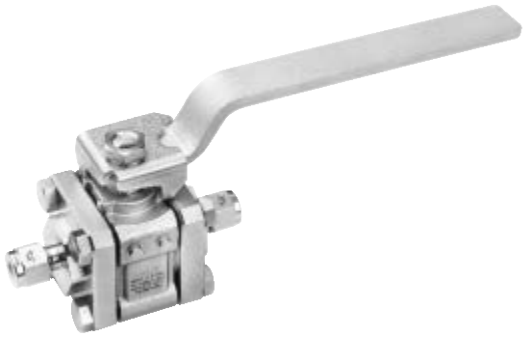
1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.
4. For more information about pneumatic actuator ball valves, please refer to the catalog Automatic Control Ball Valves.
5. SilcoNert® 2000 (Sulfinert®) Coating: Except for ball valves with PEEK seat, wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
6. CE certification is available. For more information, please contact FITOK group or our authorized distributors

High Temperature Metal-Seated Ball Valves

BK Series

Features

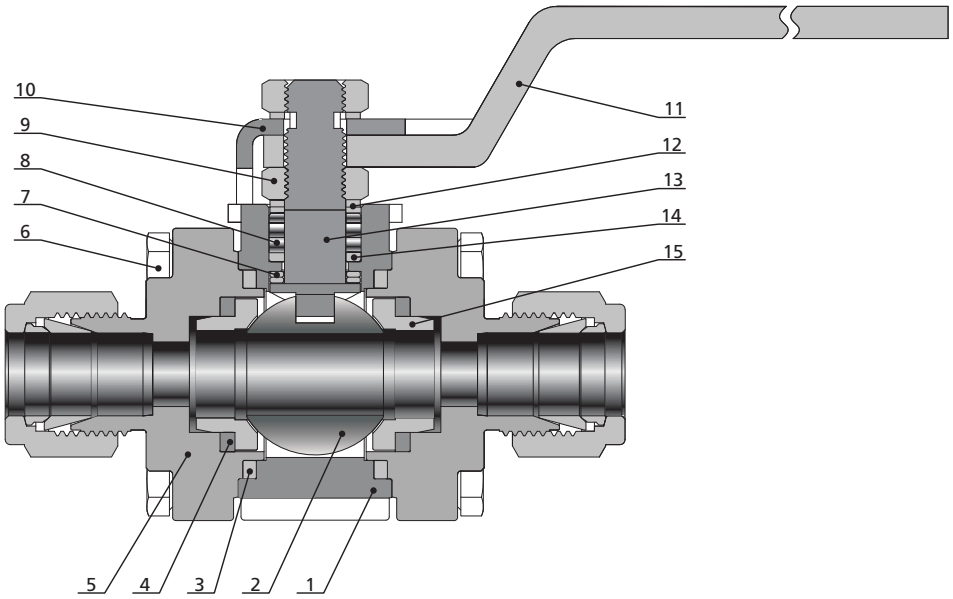
- Applied for high temperature and high viscosity liquid medium, not recommended for use in high temperature gas or low viscosity liquid medium
- 3-piece precision cast body construction
- Free floating ball design provides seat wear compensation
- Ball and seats mate-lapped for 100% contact ensures absolute shutoff
- High temperature resistant sealing materials for thermal service up to 662°F (350°C)
- Blowout-proof stem
- Positive handle stop
- Orifice sizes: 0.5" (12.7 mm), 1" (25.4 mm), 1.5" (38.1 mm)
- Variety of end connections
- Test Standard: Low pressure gas tightness FCI 70-2 Class VI
  High pressure liquid test ISO 5208 Rate D



Technical Data

Orifice, in. (mm)	0.5 (12.7), 1 (25.4), 1.5 (38.1)	
Material	316/304 SS	
Connection Type	FITOK Tube Fitting	Weld Fitting
Temperature, °F (°C)	-65 (-54) to 662 (350)	
Working Pressure, psig (bar)	1000 (69)	

Standard Materials of Construction

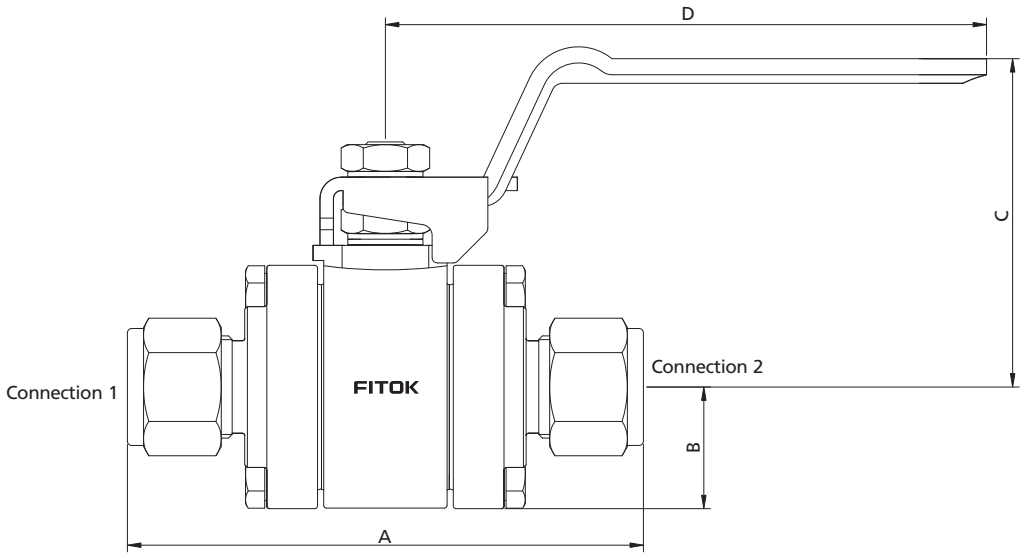


Item	Component	Material	
1	*Body*	*CF8M/A351*	*CF8/A351*
2	*Ball*	*316/304 SS, HVOF-sprayed WC coatings*	
3	*Flange Seal*	*Graphite*	
4	*Seat Packing*	*Graphite*	
5	*End Connection*	*CF8M/A351*	*CF8/A351*
6	Hex Bolt	Stainless Steel	
7	*Stem Bearing*	*Stellite 6/AMS5387*	
8	*Packing*	*Graphite*	
9	Hex Nut	316 SS/A479	
10	Stop Plate	304 SS/A240	
11	Handle	304 SS/A240	
12	Stem Spring	Strain-hardened 316 SS/A240	
13	*Stem*	*316 SS/A479*	
14	*Stem Washer*	*316 SS /A479*	
15	*Seat*	*316 SS/A479, hardfacing stellite*	*304 SS/A479, hardfacing stellite*

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

Dimensions

Dimensions are for reference only and are subject to change.



Basic Ordering Information	Connection Type		Orifice in. (mm)	Dimensions, in. (mm)			
	Connection 1	Connection 2		A	B	C	D
BK□□-FL8-13G	1/2" FITOK	1/2" FITOK	0.41 (10.4)	3.79 (96.2)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-FL10-13G	5/8" FITOK	5/8" FITOK	0.5 (12.7)	3.79 (96.2)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-FL12-13G	3/4" FITOK	3/4" FITOK		3.92 (99.6)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-ML16-13G	16 mm FITOK	16 mm FITOK		3.92 (99.6)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-ML18-13G	18 mm FITOK	18 mm FITOK		3.91 (99.4)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-TB12-13G	3/4"×0.120" Tube Butt Weld	3/4"×0.120" Tube Butt Weld		3.8 (96.6)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-TS12-13G	3/4" Tube Socket Weld	3/4" Tube Socket Weld		3.2 (80.2)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-PB8-13G	1/2×SCH80 Pipe Butt Weld	1/2×SCH80 Pipe Butt Weld		3.24 (82.34)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-PB12-13G	3/4×SCH80 Pipe Butt Weld	3/4×SCH80 Pipe Butt Weld		3.24 (82.34)	0.89 (22.7)	2.25 (57.1)	6.5 (165)
BK□□-TB24-25G	1 1/2"×0.197" Tube Butt Weld	1 1/2"×0.197" Tube Butt Weld	1 (25.4)	——	——	——	——
BK□□-TS20-25G	1 1/4" Tube Socket Weld	1 1/4" Tube Socket Weld		——	——	——	——
BK□□-PB20-25G	1 1/4×SCH80 Pipe Butt Weld	1 1/4×SCH80 Pipe Butt Weld		——	——	——	——
BK□□-TB32-38G	2"×0.217" Tube Butt Weld	2"×0.217" Tube Butt Weld	1.5 (38.1)	——	——	——	——
BK□□-PB24-38G	1 1/2×SCH80 Pipe Butt Weld	1 1/2×SCH80 Pipe Butt Weld		——	——	——	——
BK□□-PS24-38G	1 1/2" Pipe Socket Weld	1 1/2" Pipe Socket Weld		——	——	——	——

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

Ordering Number Description

BKSS – FL10 – PB8 – 13G

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Orifice Size	Packing Material
BK	SS CF8M S4 CF8	FL Fractional Tube Fitting ML Metric Tube Fitting TB Fractional Tube Butt Weld TS Fractional Tube Socket Weld PB Pipe Butt Weld PS Pipe Socket Weld	8 1/2" or 1/2×SCH80 10 5/8" 12 3/4" or 3/4"×0.120" or 3/4×SCH80 14 7/8" 16 1" or 16 mm 18 18 mm 20 1 1/4" or 20 mm or 1 1/4×SCH80 24 1 1/2" or 1 1/2"×0.197" or 1 1/2×SCH80 32 2"×0.217"	Same as Connection 1 Specified in the same way as Connection 1 type and size		13 0.5" (12.7 mm) 25 1" (25.4 mm) 38 1.5" (38.1 mm)	G Graphite

1. If you need a port with orbital welding, please contact FITOK Group.

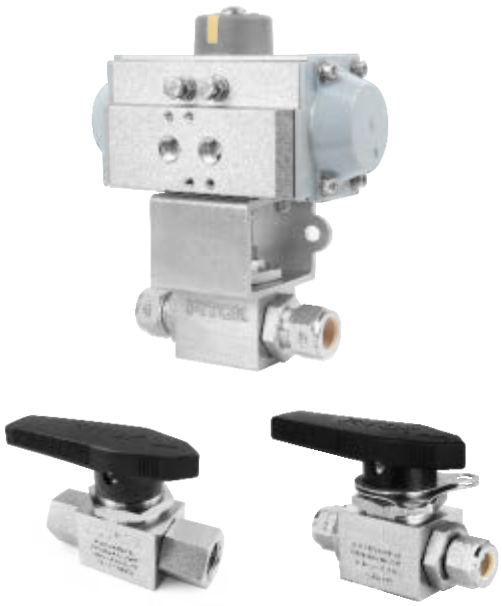
Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Alternative Fuel Service (AFS) Ball Valves

BU Series

Features

- Working pressures up to 6000 psig (413 bar)
- Working temperature: -40 to 250°F (-40 to 121°C)
- High flow-Cv from 4.0 to 13.8
- Low-temperature fluorocarbon material provides sealing capability over full temperature range
- Spring-loaded seat provides leak-tight integrity in both low-and high-pressure systems and reduces seat wear from pressure surges
- A variety of end connections available
- Low operating torque
- All wetted components are compatible with hydrogen and compressed natural gas (CNG)
- No packing adjustment required
- Bidirectional flow
- Options for handle colors
- Pneumatic actuators available
- Each valve is leak tested with nitrogen or compressed air at working pressure to meet a requirement of no visible leak
- Field repairable with seal kit
- ECE R110 type approval available

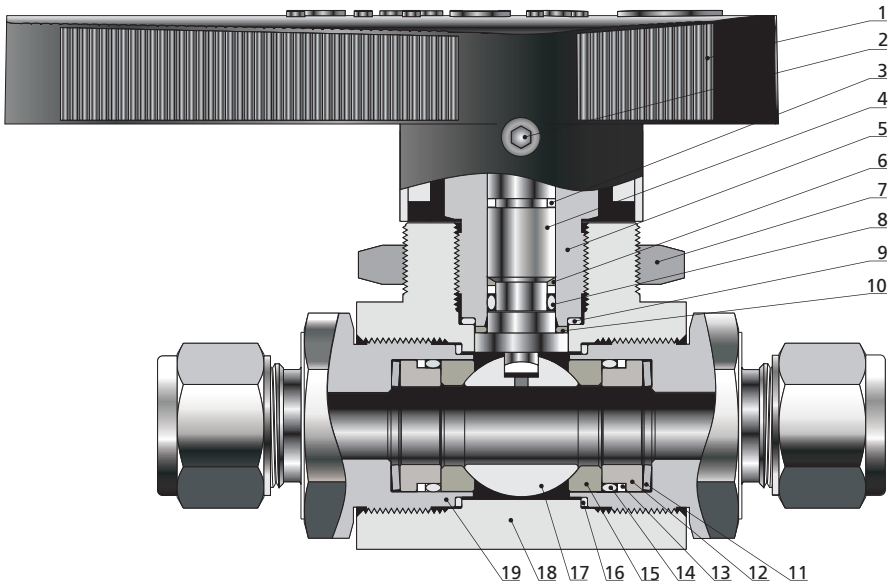


Pressure VS Temperature Ratings

End Connection	FITOK Tube Fitting			Female Pipe	
	3/8, 1/2 in., 12 mm	3/4 in., 16 mm	1 in.	3/8, 1/2 in.	3/4 in.
Temperature °F (°C)	Working Pressure, psig (bar)				
-40 (-40) ~ 250 (121)	6000 (414)	5800 (400)	4700 (324)	6000 (414)	6000 (414)

Note: Ratings are based on valves of standard materials.

Standard Materials of Construction

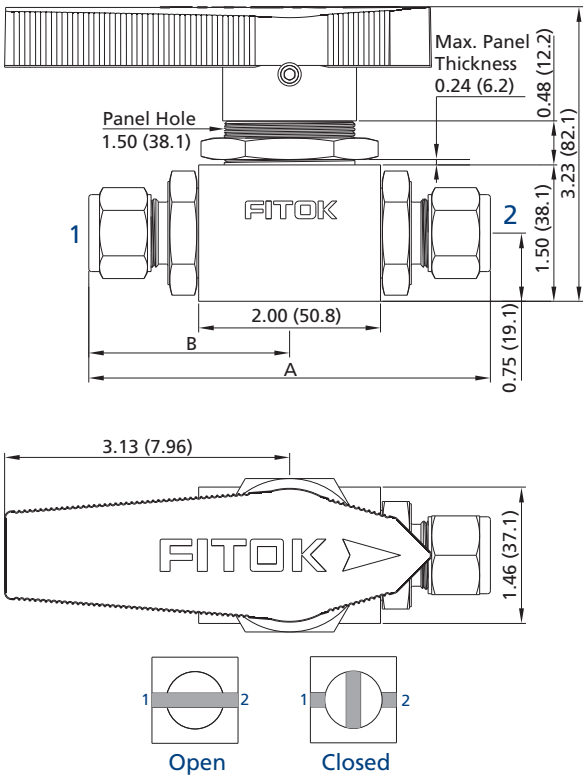


Item	Component	Material/ASTM Specification
1	Handle	Nylon with stainless steel insert
2	Set screw	Zinc-plated carbon steel
3	*Guide ring*	*PTFE/D1710*
4	*Stem*	*316 SS/A479*
5	*Packing bolt*	*316 SS/A479*
6	*Stem backup ring*	*PEEK*
7	Lock nut	316 SS/A479
8	*Stem O-ring*	*Low-temperature fluorocarbon*
9	*Packing bolt washer*	*Silver-plated 316 SS/A269*
10	*Thrust washer*	*PEEK*
11	*Coned-disc spring*	*316 SS/A240*
12	*Seat gland*	*316 SS/A479*
13	*Seat backup ring*	*PTFE/D1710*
14	*Seat O-ring*	*Low-temperature fluorocarbon*
15	*Seat*	*PEEK*
16	*End connection gasket*	*Silver-plated 316 SS/A269*
17	*Ball*	*316 SS/A479*
18	*Body*	*316 SS/A479*
19	*End connection*	*316 SS/A479*
	Lubricant	*PTFE-based*

Note: Wetted components listed in italics.

Dimensions

Dimensions in in. (mm) are for reference only and subject to change.



Ordering Number	Connection① Type and Size	Cv	Orifice in. (mm)	Dimensions in. (mm)	
				A	B
BUSS-ML10-P12	10 mm FITOK	5.2	0.31 (7.9)	4.21 (107)	2.11 (53.5)
BUSS-ML12-P12	12 mm FITOK	5.2	0.41 (10.3)	4.42 (112.2)	2.21 (56.1)
BUSS-ML16-P12	16 mm FITOK	12.4	0.47 (12.0)	4.42 (112.3)	2.21 (56.2)
BUSS-FL6-P12	3/8" FITOK	4.0	0.28 (7.1)	4.20 (106.6)	2.10 (53.3)
BUSS-FL8-P12	1/2" FITOK	7.2	0.41 (10.3)	4.40 (111.8)	2.20 (55.9)
BUSS-FL12-P12	3/4" FITOK	7.1	0.47 (12.0)	4.50 (114.3)	2.46 (62.5)
BUSS-FL16-P12	1" FITOK	6.5	0.47 (12.0)	4.93 (125.1)	2.25 (57.1)
BUSS-FNS6-P12	3/8" Female NPT	11.0	0.47 (12.0)	4.01 (102)	2.00 (50.8)
BUSS-FNS8-P12	1/2" Female NPT	13.8		4.01 (102)	2.00 (50.8)
BUSS-FNS12-P12	3/4" Female NPT	7.8		4.13 (105)	2.06 (52.3)
BUSS-FRT8-P12	1/2" Female BSPT	13.8		4.01 (102)	2.00 (50.8)

Note: Dimensions shown with FITOK tube fitting nuts finger-tight.Valves can be ordered with two different end connections. Contact FITOK Group or our authorized distributors. Not recommended for panel mounting; not available with pneumatic actuator.

CNG/NGV Application

ECE R110 Manual Service Valve Type Approval
Classification: Class 0
Temperature: -40 to 248°F (-40 to 120°C)
Pressure: 3370 psig (260 bar)
To order, add -**R110** to the valve ordering number.
Example: BUSS-ML12-P12-**R110**
Seal kit for field replacement is available, see "Seal Kits".

Seal Kits

Seal Kit Name	Seal Kit Ordering Number	Seal Kit Content
Seat seal kit	SS-BU-P-SE	Seat, seat backup ring, seat O-ring, coned-disc spring, end connection gasket, instructions.
Stem and seat seal kit	SS-BU-P	Guide ring, stem backup ring, stem O-ring, packing bolt washer, thrust washer, seat, seat backup ring, seat O-ring, coned-disc spring, end connection gasket, instructions

Locking Device



Locking Device 1



Locking Device 2

- Locking Device 1 can lock BU series valves and has a locking hole diameter of 0.21 in (5.2 mm).
- To order a ball valve with Locking Device 1, add - **L** to the valve ordering number.
  Example: BUSS-ML12-P12- **L**
- Locking Device 2 can lock BU series valves without affecting panel mounting and has a locking hole diameter of 0.34 in (8.7 mm).
- To order a ball valve with Locking Device 2, add - **LP** to the valve ordering number.
  Example: BUSS-ML12-P12- **LP**
- A kit for Locking Device 2 is available for adding a locking structure to existing ball valves.

Kits for Locking Device 2

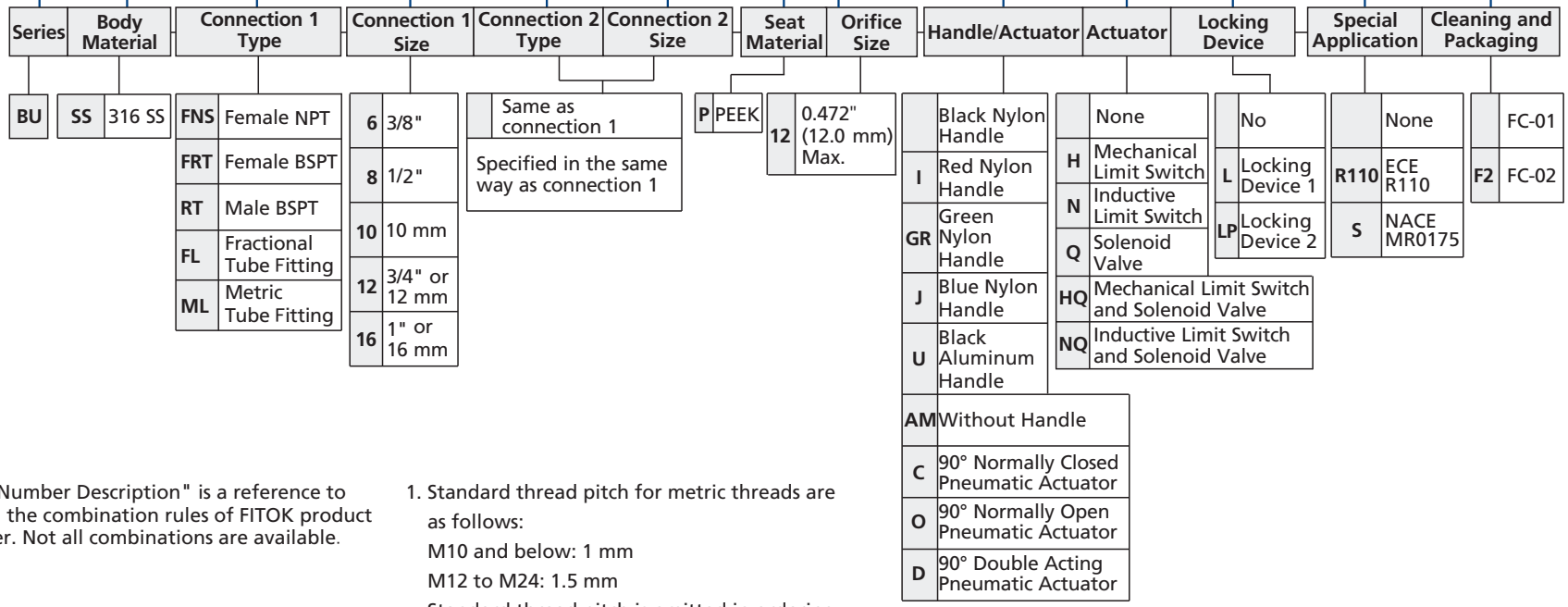
Name	Kit Ordering Number	Content
Locking Device Kits	BUS4-12-LP-RK	Upper lock plate, lower lock plate, handle, hexagon socket set screws

Ball Valve without Handle

- Ball Valve without handle can be directly connected to the FITOK actuator assembly.
- To order, please add -**AM** to the valve ordering number.
  Example: BUSS-FL8-P12-**AM**

Ordering Number Description

BUSS – ML12 – FL12 – P12 – OHQL – SF2



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

1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   Standard thread pitch is omitted in ordering number.
   For special thread pitch, specify in the ordering number.
2. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.
4. For more details about ball valves with pneumatic actuators, refer to Automatic Control Ball Valves.
5. Certifications do not include attachments to the valve, such as actuators or a different handle mechanism.