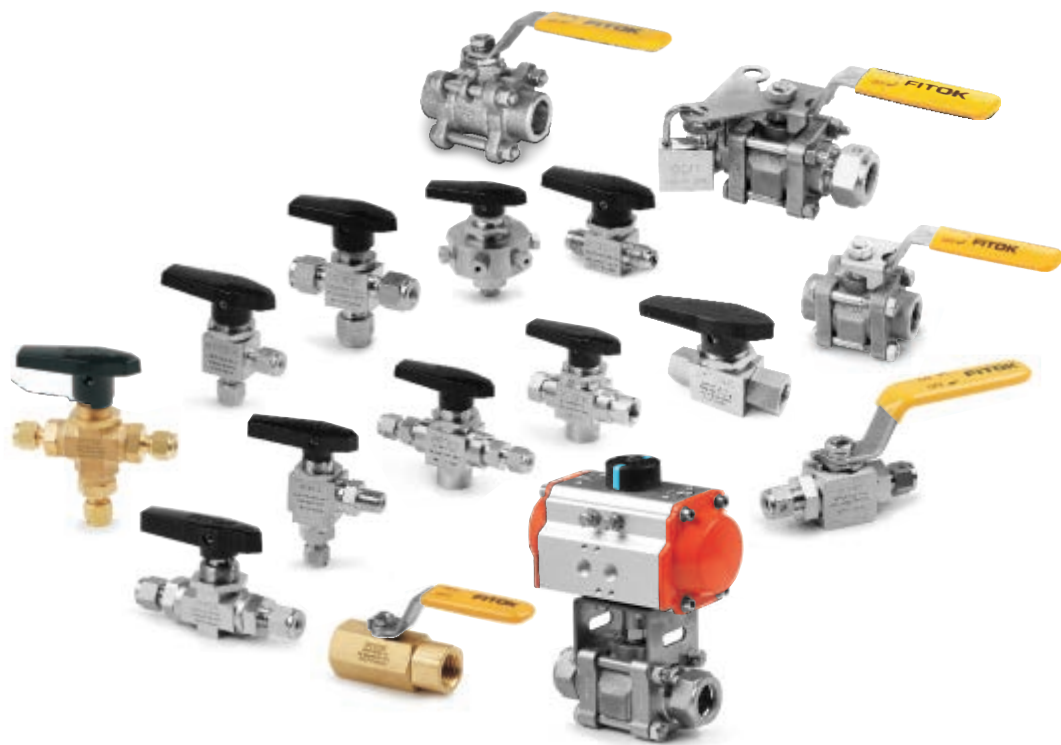


Ball Valves

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

Ball Valves
Plug Valves



Contents

Trunnion Ball Valves

BF and BFH Series



B-04

3-Piece Ball Valves

BG Series



B-11

3-Piece Ball Valves

BH Series



B-16

One-Piece Instrumentation Ball Valves

BO Series



B-24

Bar Stock Ball Valves

BP Series



B-38

Hex Bar Stock Ball Valves

BR and BRC Series



B-45

High Performance Ball Valves

BV Series



B-50

High Temperature Metal-seated Ball Valves

BK Series



B-59

Alternative Fuel Service (AFS) Ball Valves

BU Series



B-63

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

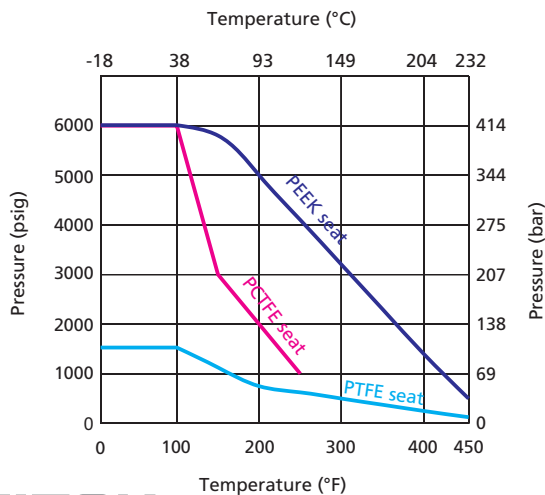
- ⦿ Working pressure up to: 10,000 psig (690 bar)
- ⦿ Working temperature: 0°F to 450°F (-18°C to 232°C)
- ⦿ Orifice size: 0.19" (4.8 mm)
- ⦿ Fixed ball with double sealing
- ⦿ Trunnion-style ball to prevent ball blowout
- ⦿ Automatic compensation of seat sealing
- ⦿ Low operating torque
- ⦿ Blowout 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



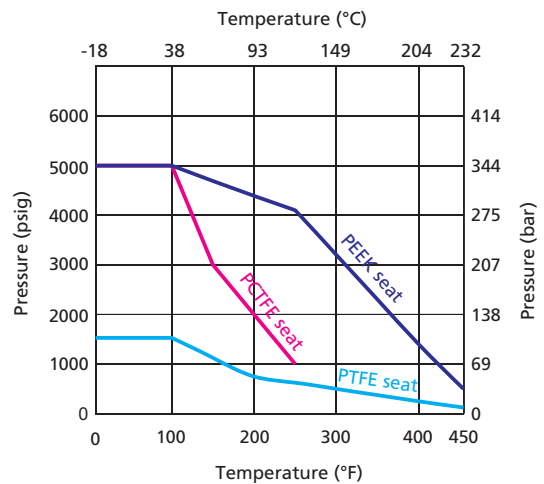
Pressure vs. Temperature

BF Series

316 SS Body

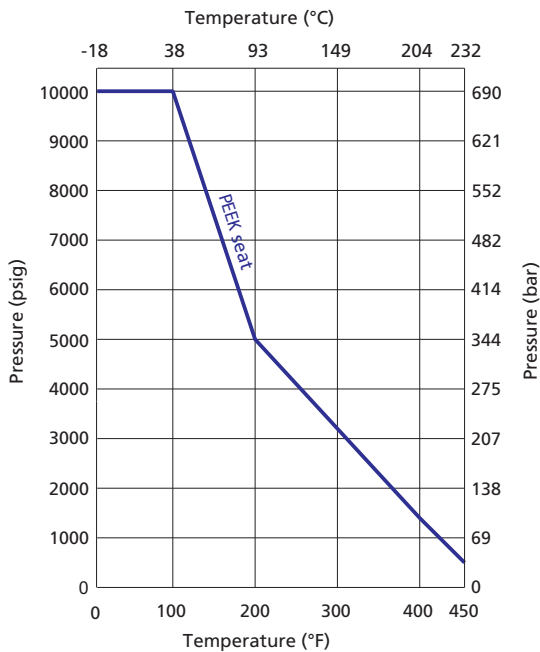


Alloy 400 Body



BFH Series

316 SS Body



Pressure Rating@100°F (38°C)

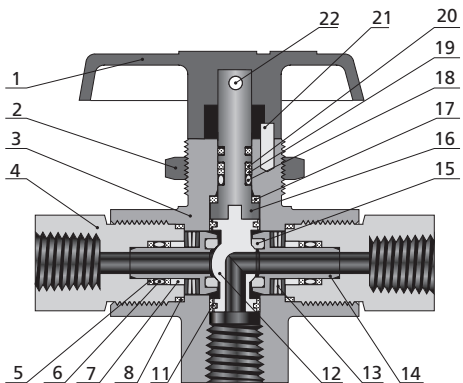
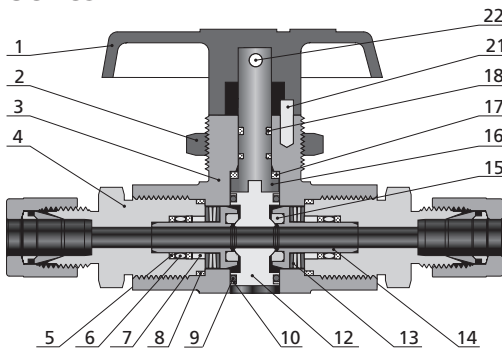
Material	End Connection	Pressure Rating, psig (bar)
316 SS	FNS2, FNS4 FL4, ML6	10000 (690)
	ML10	8400 (578)
	FL6/ML8	7500 (516)
	FL8	6700 (461)
	ML12	6800 (470)

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

Ball Valves
Plug Valves

Standard Materials of Construction

BF Series

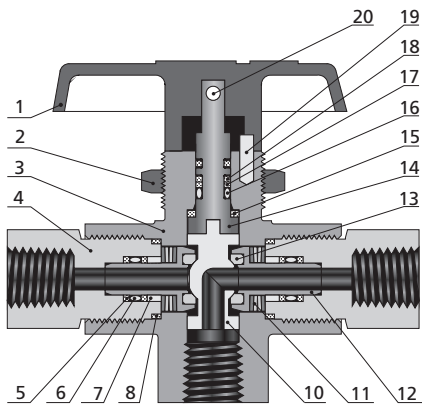
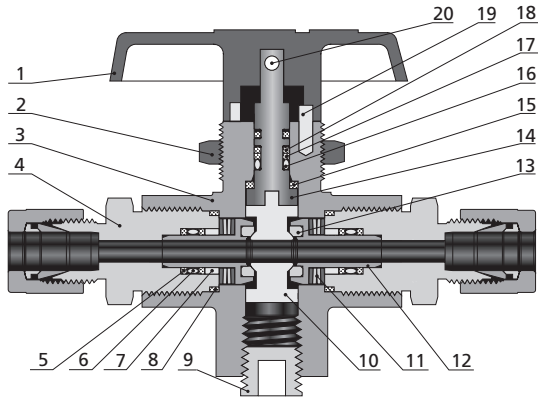


Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
Material Grade/ASTM Specification					
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	Body	<i>F316 SS/A182</i>		<i>Alloy 400/B164</i>	
4	End Connection	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
5	Seat Retainer Backup Ring	<i>Reinforced PTFE</i>			
6	Seat Retainer O-ring	<i>Fluorocarbon FKM</i>			
7	Seat Retainer Guide	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
8	End Connection Seal	<i>Silver-plated 316L/A269</i>			
9	Trunnion O-ring	<i>Fluorocarbon FKM Reinforced PTFE</i>	—	<i>Fluorocarbon FKM Reinforced PTFE</i>	—
10	Trunnion Backup Ring	<i>Reinforced PTFE</i>	—	<i>Reinforced PTFE</i>	—
11	Trunnion Bearing	—	<i>PEEK</i>	—	<i>PEEK</i>
12	Ball	<i>316 SS/A479</i>	<i>S21800/A479</i>	<i>Alloy 400/B164</i>	
13	Seat Spring	<i>Alloy X-750/AMS 5542</i>			
14	Seat Retainer	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
15	Seat	<i>PTFE or PEEK or PCTFE</i>			
16	Stem	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
17	Stem Washer	<i>PEEK</i>			
18	Stem O-ring	<i>Fluorocarbon FKM</i>	—	<i>Fluorocarbon FKM</i>	—
19	Secondary Stem Backup Ring	—	<i>PTFE/D1710</i>	—	<i>PTFE/D1710</i>
20	Primary Stem Backup Ring	—	<i>PEEK</i>	—	<i>PEEK</i>
21	Stop Pin	SS			
22	Set Screw	Zinc-plated carbon steel			
<i>Lubricants</i>		<i>Fluorinated-based</i>			

Notes: Wetted components are listed in italics.

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

BFH Series



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	
<i>Lubricants</i>		<i>Fluorinated-based</i>	

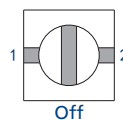
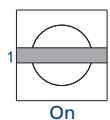
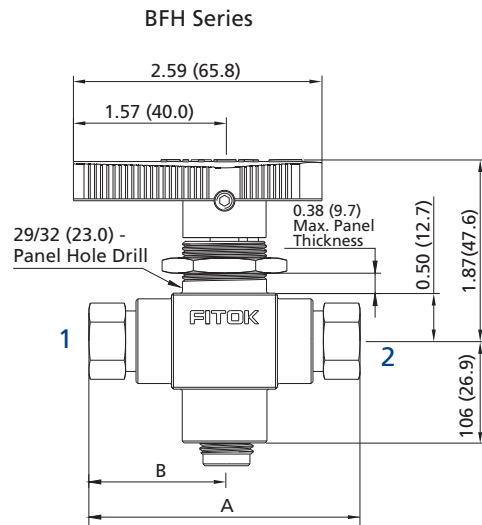
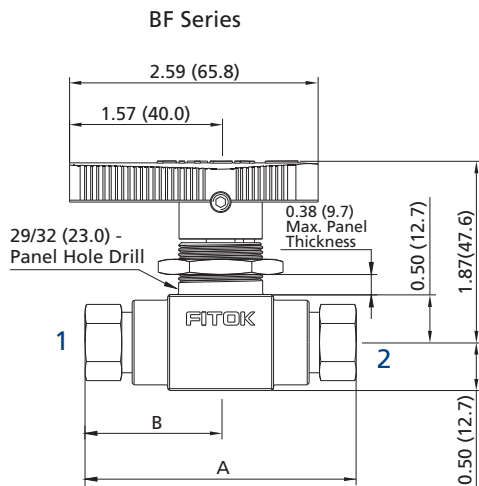
Notes: Wetted components are listed in italics.

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

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

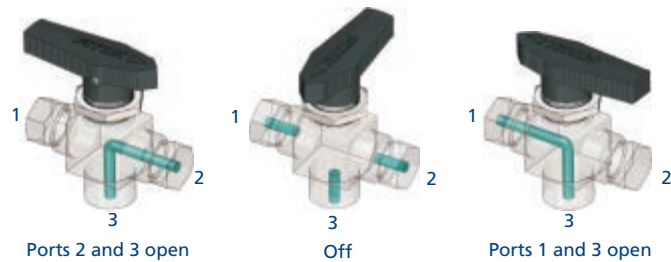
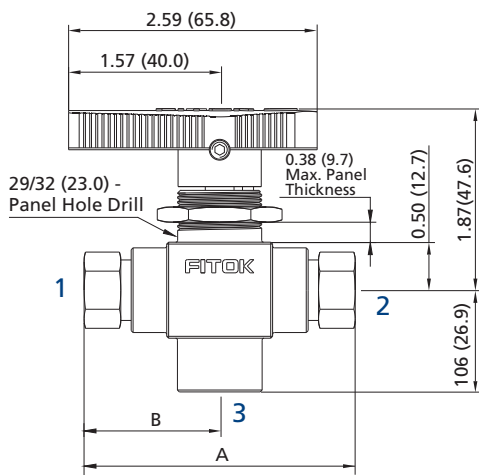
Dimensions

2-way Valves



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	BFH□□-FNS4-P	1/4 Female NPT					
BF□□-FNS8	BFH□□-FNS4-P	1/2 Female NPT			1.0	3.93 (99.8)	1.97 (50.0)
BF□□-FL4	BFH□□-FL4-P	1/4" FITOK			1.2	4.25 (108.0)	2.13 (54.1)
BF□□-FL6	BFH□□-FL6-P	3/8" FITOK			1.6	4.14 (105.2)	2.07 (52.6)
BF□□-FL8	BFH□□-FL8-P	1/2" FITOK			1.4	4.39 (111.5)	2.19 (55.6)
BF□□-ML6	BFH□□-ML6-P	6 mm FITOK			1.0	4.60 (116.8)	2.30 (58.4)
BF□□-ML8	BFH□□-ML8-P	8 mm FITOK			1.6	4.14 (105.2)	2.07 (52.6)
BF□□-ML10	BFH□□-ML10-P	10 mm FITOK			1.5	4.15 (105.4)	2.20 (55.9)
BF□□-ML12	BFH□□-ML12-P	12 mm FITOK			1.3	4.41 (112.0)	2.20 (55.9)
					1.0	4.60 (116.8)	2.30 (58.4)

3-way Valves



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	BFH□□-FNS4-P-3	1/4 Female NPT					
BF□□-FL4-3	BFH□□-FL4-P-3	1/4" FITOK				3.93 (99.8)	1.97 (50.0)
BF□□-FL6-3	BFH□□-FL6-P-3	3/8" FITOK				4.14 (105.2)	2.07 (52.6)
BF□□-FL8-3	BFH□□-FL8-P-3	1/2" FITOK				4.39 (111.5)	2.19 (55.6)
BF□□-ML6-3	BFH□□-ML6-P-3	6 mm FITOK				4.60 (116.8)	2.30 (58.4)
BF□□-ML8-3	BFH□□-ML8-P-3	8 mm FITOK				4.14 (105.2)	2.07 (52.6)
BF□□-ML10-3	BFH□□-ML10-P-3	10 mm FITOK				4.15 (105.4)	2.20 (55.9)
BF□□-ML12-3	BFH□□-ML12-P-3	12 mm FITOK				4.41 (112.0)	2.20 (55.9)
						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.

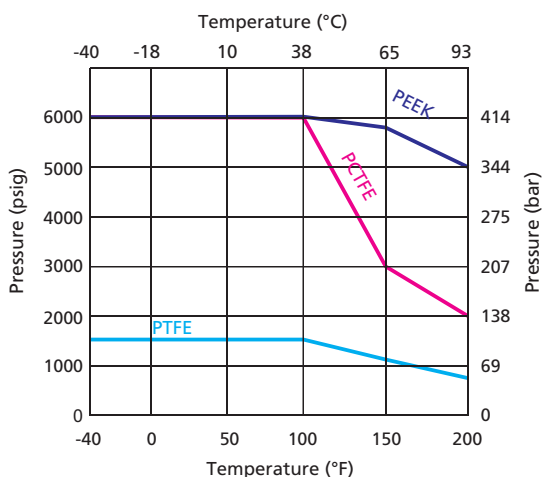
For example: BFSS-FL4-P-LT

BFSS-FL4-P-3-LT

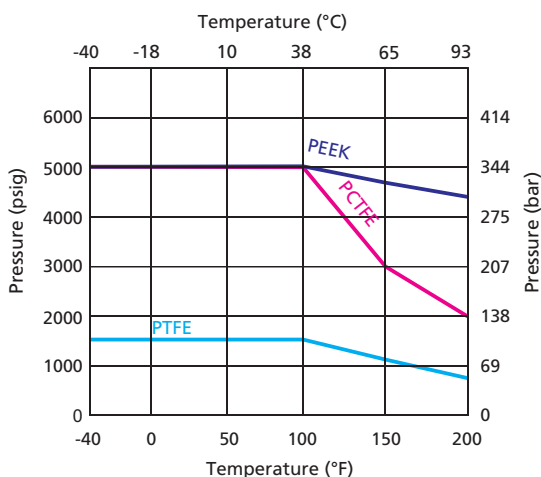
Seal kit for field replacement is available, see "Seal Kits" on Page B-09.

Low-Temperature Service BF Series Pressure vs. Temperature

316 SS Body

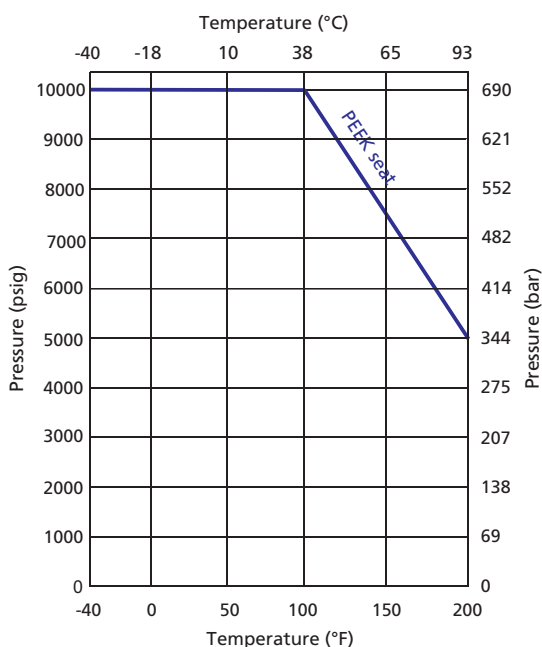


Alloy 400 Body



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.

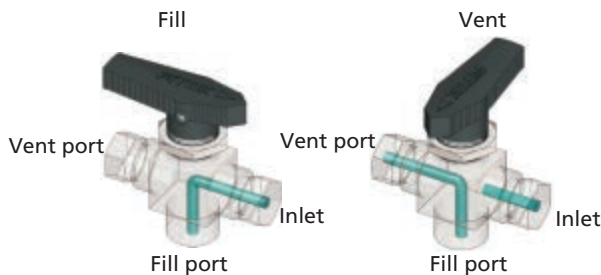
"Fast Fill" CNG Filling Station Application

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	
		CNG/NGV application	BFSS-3DL-P-LT	
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.

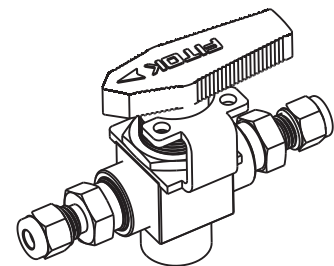
Example: BFM-2-T

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

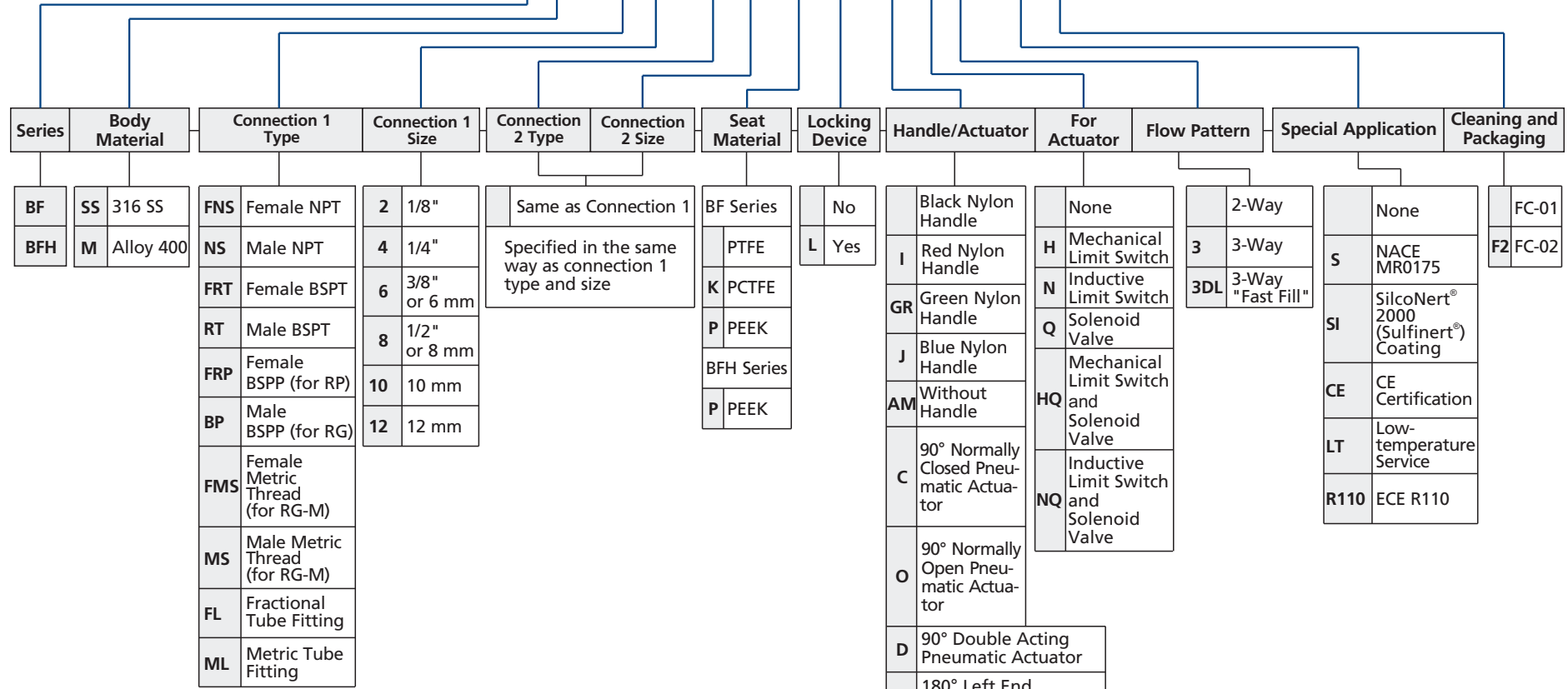
☉ Ball Valve without handle can be directly connected to the FITOK actuator assembly.

☉ 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



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.