

# Ball Valves

BF, BFH, BG, BH, BO, BP,  
BR and BV 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-22

## Bar Stock Ball Valves

BP Series



B-33

## Hex Bar Stock Ball Valves

BR Series



B-40

## High Performance Ball Valves

BV Series



B-44

## Important Information about Ball Valves

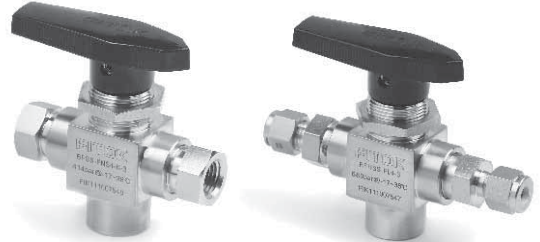
- ⦿ FITOK ball valves are designed to be used in fully open or fully closed position.
- ⦿ Packing adjustment may be required during the valve's life (except for BF and BFH series).
- ⦿ For better quality maintenance, FITOK ball valves should be kept in fully open position in warehouse.
- ⦿ Valves that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

# Trunnion Ball Valves

## BF and BFH Series

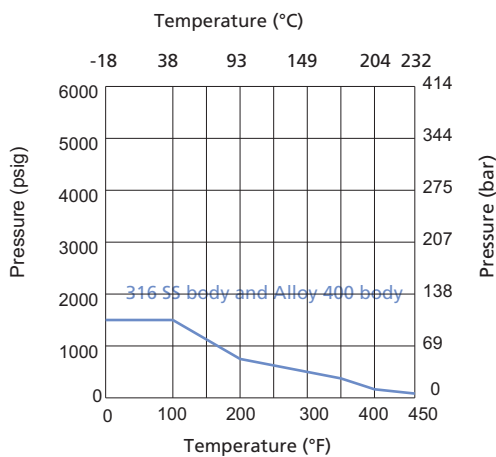
### Features

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

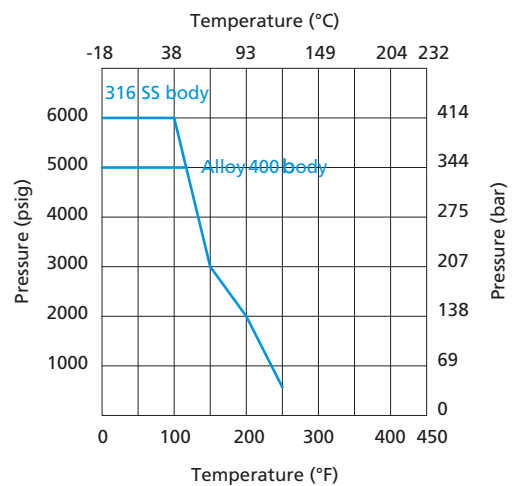


### Pressure vs. Temperature

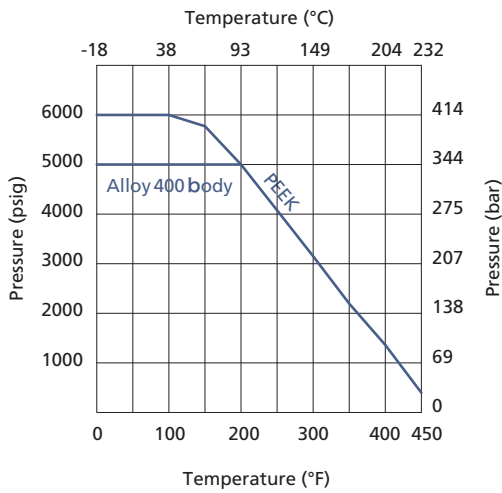
BF Series PTFE Seat



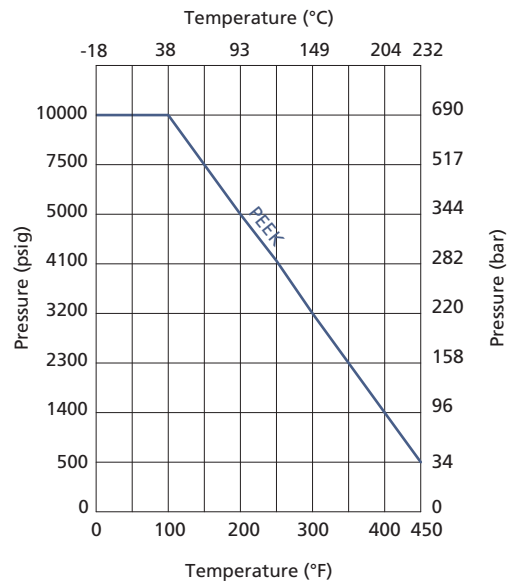
BF Series PCTFE Seat



BF Series PEEK Seat



BFH Series



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

## Technical Data

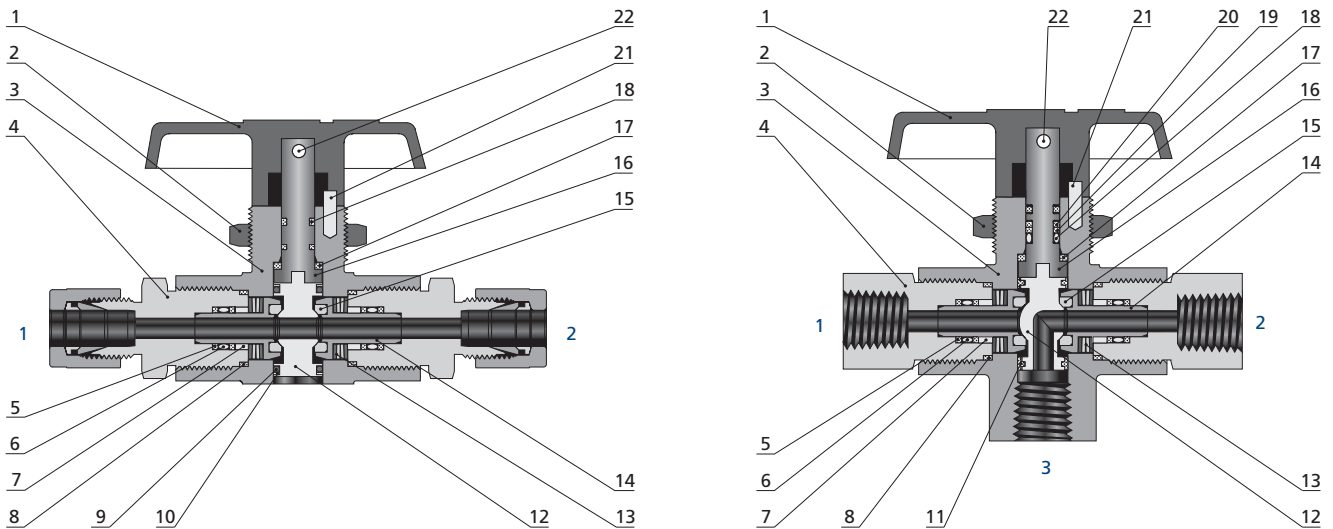
Seat Material	Temperature Rating °F (°C)	Pressure Rating @ 100°F (38°C) psig (bar)		Flow Coefficient (Cv)
		SS	Alloy 400	
<b>BF Series</b>				
PCTFE	0 to 250 (-18 to 121)	6000 (414)	5000 (344)	2-way valves-1.0 to 1.6 depending on end connection; 3-way valves-0.75
PEEK	0 to 450 (-18 to 232)	6000 (414)	5000 (344)	
PTFE		1500 (103)		
<b>BFH Series</b>				
PEEK	0 to 450 (-18 to 232)	6000 to 10000 (414 to 690), depending on end connection	—	2-way valves-1.0 to 1.6 depending on end connection; 3-way valves-0.75

### BFH Series Pressure Rating @ 100°F (38°C)

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

## Standard Materials of Construction

### BF Series



Ball Valves  
Plug Valves

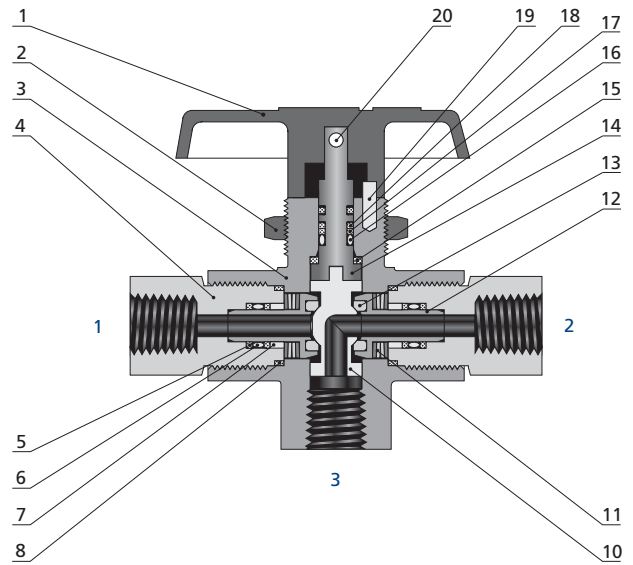
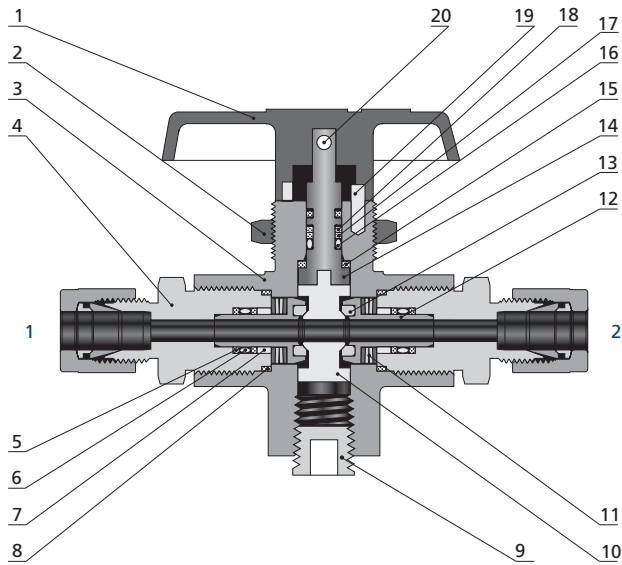
Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
		Material Grade/ASTM Specification			
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	<i>Body</i>	316 SS/A182		Alloy 400/B164	
4	<i>End Connection</i>	316 SS/A479		Alloy 400/B164	
5	<i>Seat Retainer Backup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

Note: Wetted components are listed in italics.

1. Ball trunnions are PTFE coated for BF series 2-way valves.

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

**BFH Series**



Ball Valves  
Plug Valves

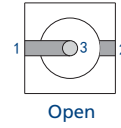
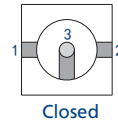
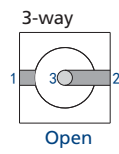
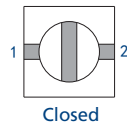
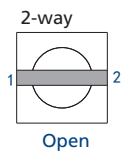
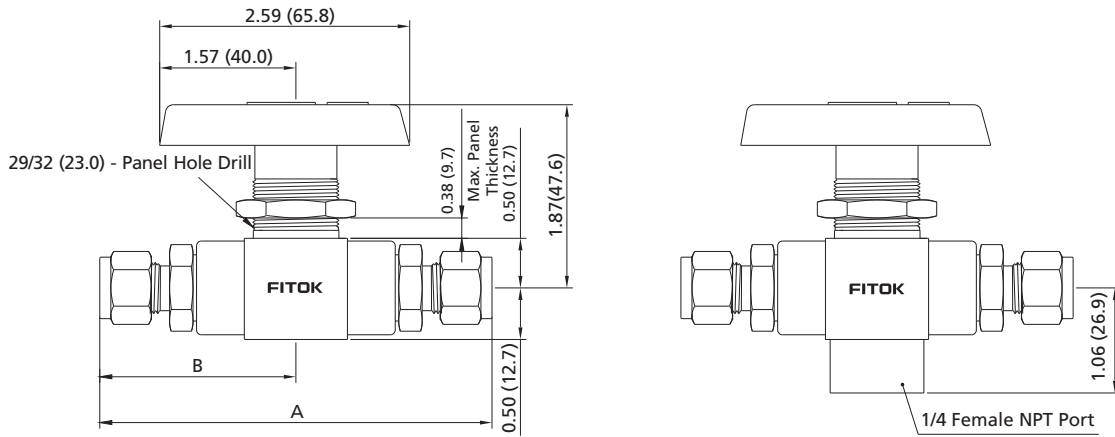
Item	Component	2-way	3-way
		Material Grade/ASTM Specification	
1	<i>Handle</i>	<i>Nylon with SS insert</i>	
2	<i>Panel Nut</i>	<i>316 SS/A479</i>	
3	<i>Body</i>	<i>316 SS/A182</i>	
4	<i>End Connection</i>	<i>316 SS/A479</i>	
5	<i>Seat Retainer Backup Ring</i>	<i>Reinforced PTFE</i>	
6	<i>Seat Retainer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

Note: Wetted components are listed in italics.

1. Ball trunnions are Xylan® coated for BFH series 2-way valves.

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

## Dimensions and Ordering Information



### 2-way Valve

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

## 3-way Valve

Basic Ordering Number		Connection Type and Size			Cv	Dimensions, in. (mm)	
BF Series	BFH Series	Connection 1	Connection 2	Connection 3		A	B
BF□□-FNS2-3	BFH□□-FNS2-3	1/8 Female NPT	1/8 Female NPT	1/4 Female NPT	0.75	2.94 (74.7)	1.47 (37.3)
BF□□-FNS4-3	BFH□□-FNS4-3	1/4 Female NPT	1/4 Female NPT			3.93 (99.8)	1.97 (50.0)
BF□□-FL4-3	BFH□□-FL4-3	1/4" FITOK	1/4" FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-FL6-3	BFH□□-FL6-3	3/8" FITOK	3/8" FITOK			4.39 (111.5)	2.19 (55.6)
BF□□-FL8-3	BFH□□-FL8-3	1/2" FITOK	1/2" FITOK			4.60 (116.8)	2.30 (58.4)
BF□□-ML6-3	BFH□□-ML6-3	6 mm FITOK	6 mm FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-ML8-3	BFH□□-ML8-3	8 mm FITOK	8 mm FITOK			4.15 (105.4)	2.07 (52.6)
BF□□-ML10-3	BFH□□-ML10-3	10 mm FITOK	10 mm FITOK			4.41 (112.0)	2.20 (55.9)
BF□□-ML12-3	BFH□□-ML12-3	12 mm FITOK	12 mm FITOK			4.60 (116.8)	2.30 (58.4)

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
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.

## BF & BFH Series Special Cleaning and Packaging F2 (FC-02)

To order optional cleaning and packaging in accordance with FITOK special cleaning and packaging F2 (FC-02), to ensure compliance with product cleanliness requirements stated in ASTM G93 level C for BF series with PCTFE, PTFE or PEEK, add "F2" to valve ordering number.

Example: BFSS-ML8-P-3-F2 (3-way)

## BF & BFH Series Seal Kits

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

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

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

Example : BFSS-2-ZT

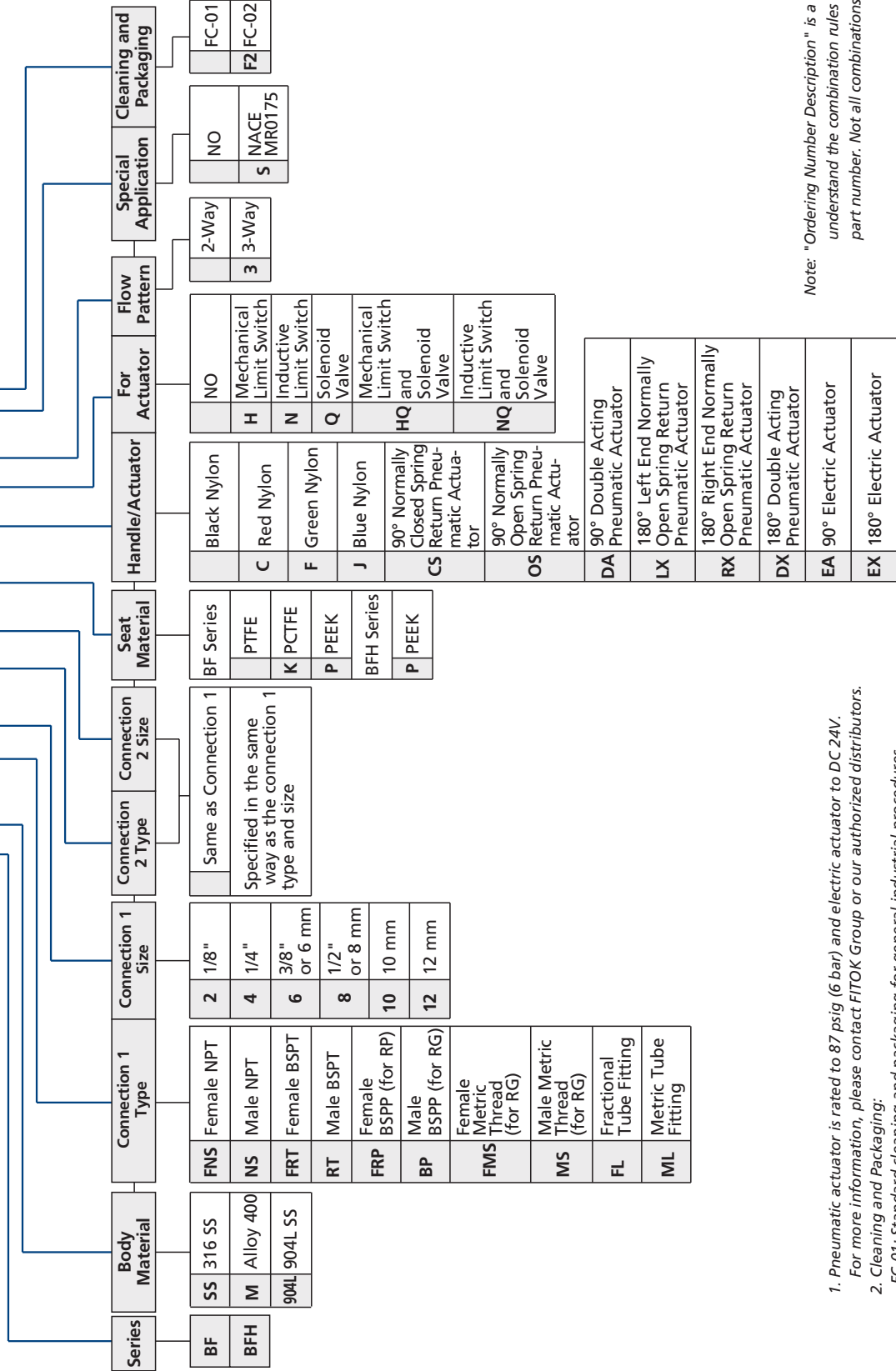
Valve Series	Basic Seal Kit Ordering Number	Kit Contents
BF 2-way	BFSS-2-Z	Instructions, O-rings, stem washer, ball, seat subassemblies (seats and seat retainers), seat springs, end connection seals, lubricant
BF 3-way	BFSS-3-Z	Instructions, stem, O-rings, backup rings, stem washer, trunnion bearing,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

Basic seal kit ordering numbers specify 316 SS material. To order other materials, please replace the ordering number of the SS with the appropriate material designator. For example, alloy 400 seal kit, please replace SS with M. Example: BFM-2-ZP.



# Ordering Number Description

## BFSS - FNS4 - ML12 - P - RXHQ3 - SF2



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

1. Pneumatic actuator is rated to 87 psig (6 bar) and electric actuator to DC 24V. For more information, please 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-piece Ball Valves

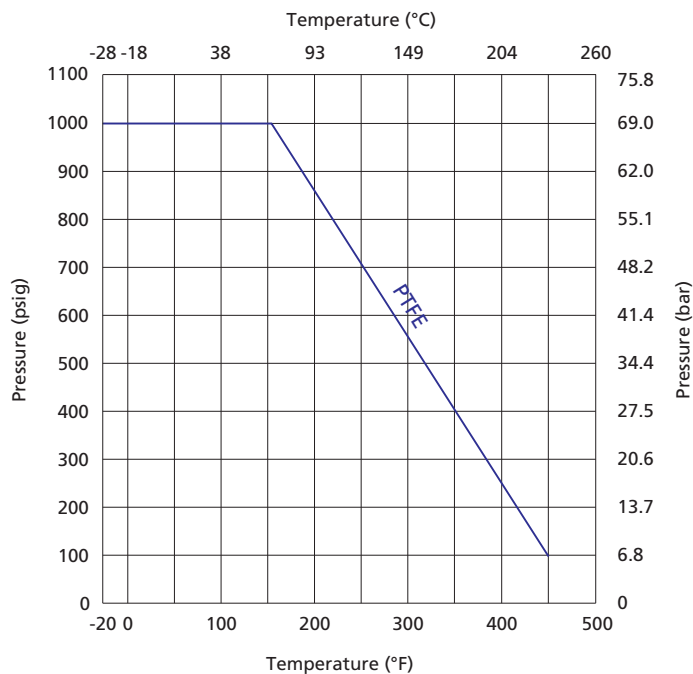
## BG Series

### 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
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak



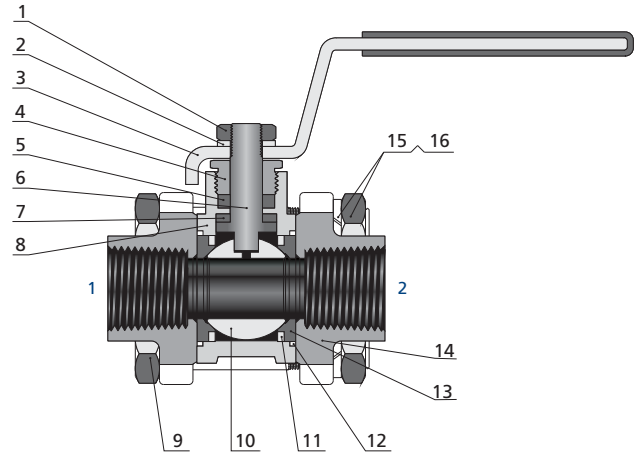
### Pressure vs. Temperature



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

## Standard Materials of Construction

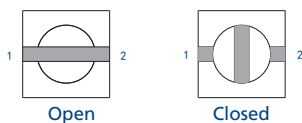
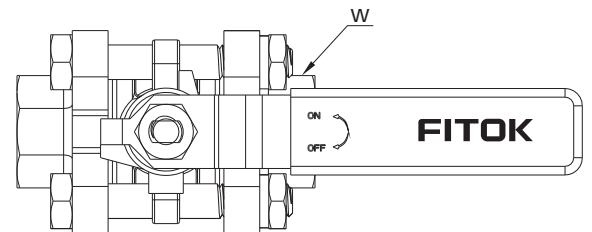
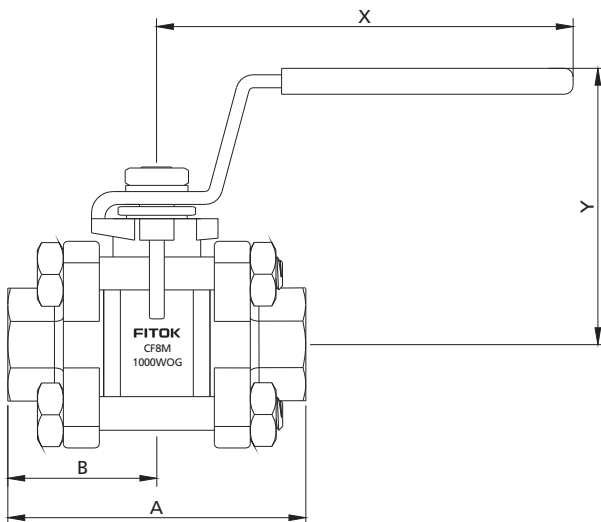
Item	Component	Valve Body Material	
		CF8M/A351	CF8/A351
1	Stem Nut	SS	
2	Gasket	SS	
3	Handle	304 SS/A240 (with vinyl sleeve)	
4	Gland	316 SS/A479 or 304 SS/A479	
5	Stem Packing	PTFE/D1710	
6	Stem	316 SS/A479 or 304 SS/A479	
7	Stem Bearing	PTFE/D1710	
8	Body	CF8M/A351	CF8/A351
9	Body Bolt	SS	
10	Ball	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 PB, Schedule Number: 80	1/4 PB, Schedule Number: 80							
BG□□-FL4-05	1/4" FITOK	1/4" FITOK							
BG□□-ML6-05	6 mm FITOK	6 mm FITOK							
BG□□-ML8-05	8 mm FITOK	8 mm FITOK							
BG□□-FNS4-07	1/4 Female NPT	1/4 Female NPT	0.28 (7.1)	3.8	2.05 (52.1)	1.03 (26.0)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)
BG□□-FRP4-07	1/4 Female BSPP	1/4 Female BSPP							
BG□□-PS4-07	1/4 PS	1/4 PS							
BG□□-PB6-07	3/8 PB, Schedule Number: 80	3/8 PB, Schedule Number: 80							
BG□□-FL6-07	3/8" FITOK	3/8" FITOK							
BG□□-ML10-07	10 mm FITOK	10 mm FITOK							
BG□□-FL8-11	1/2" FITOK	1/2" FITOK	0.42 (10.6)	7.5	4.04 (103.0)	2.02 (51.3)	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)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)
BG□□-FRP6-13	3/8 Female BSPP	3/8 Female BSPP							
BG□□-PS6-13	3/8 PS	3/8 PS							
BG□□-PB8-13	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80							
BG□□-FL10-13	5/8" FITOK	5/8" FITOK							
BG□□-ML16-13	16 mm FITOK	16 mm FITOK							
BG□□-FNS8-15	1/2 Female NPT	1/2 Female NPT	0.59 (15.0)	13.0	2.74 (69.5)	1.37 (34.8)	1.06 (27.0)	5.18 (131.5)	2.66 (67.5)
BG□□-FRP8-15	1/2 Female BSPP	1/2 Female BSPP							
BG□□-PS8-15	1/2 PS	1/2 PS							
BG□□-MTB22-15	22 mm MTB	22 mm MTB							
BG□□-TS12-15	3/4" TS	3/4" TS							
BG□□-MTS18-15	18 mm	18 mm							
BG□□-FL12-15	3/4" FITOK	3/4" FITOK							
BG□□-ML18-15	18 mm FITOK	18 mm FITOK							
BG□□-ML20-15	20 mm FITOK	20 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							

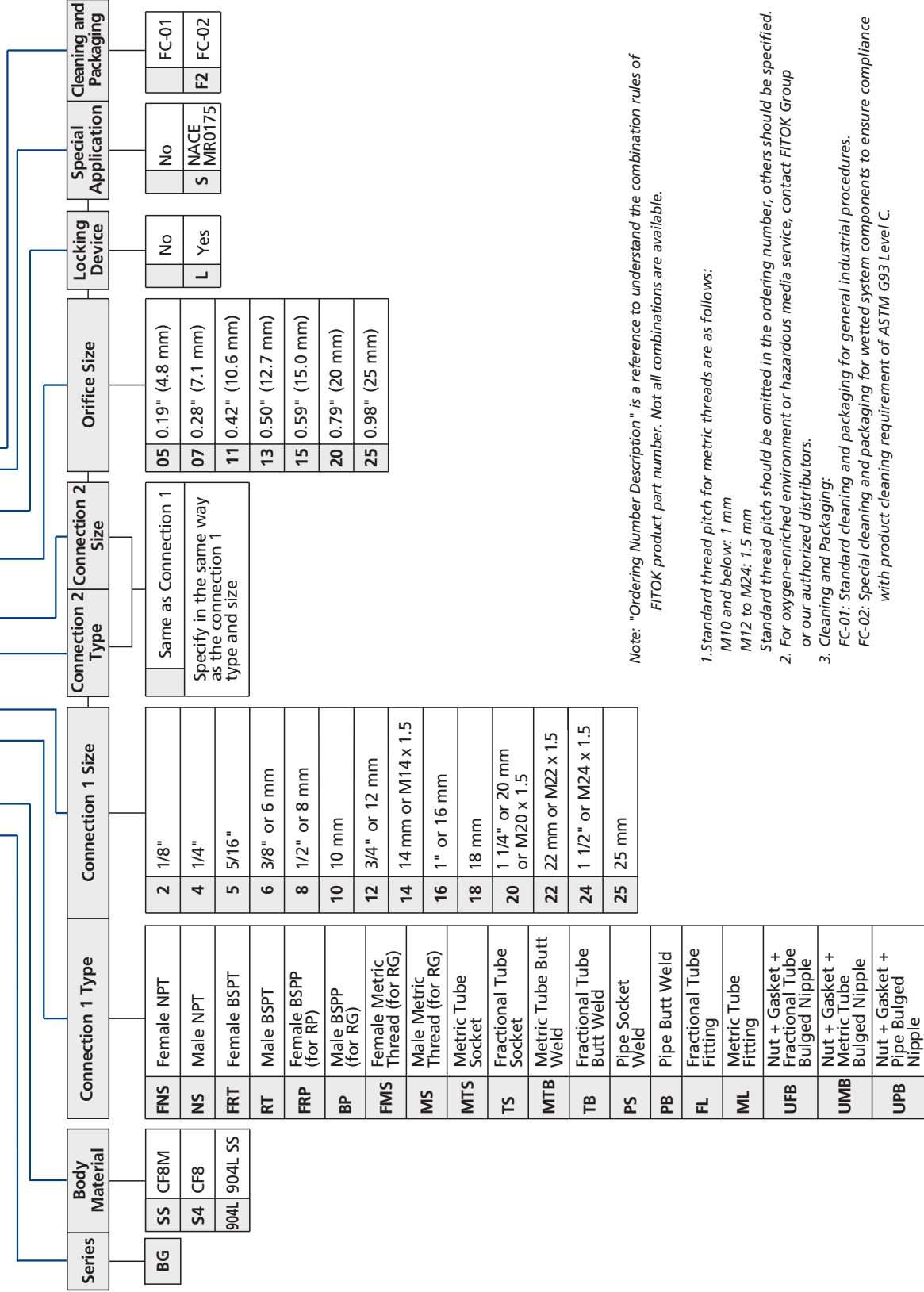
## B-14 Ball Valves

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
BG□□-PB12-20	3/4 PB Schedule Number: 80	3/4 PB Schedule Number: 80	0.79 (20.0)	50.0	3.48 (88.5)	1.74 (44.3)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)
BG□□-PS12-20	3/4 PS	3/4 PS			3.15 (80.0)	1.57 (40.0)			
BG□□-TS16-20	1" TS	1" TS			3.48 (88.5)	1.74 (44.3)			
BG□□-MTB25-20	25 mm MTB Schedule Number: 80	25 mm MTB Schedule Number: 80			3.15 (80.0)	1.57 (40.0)			
BG□□-MTS25-20	25 mm MTS	25 mm MTS			5.12 (130.0)	2.56 (65.0)			
BG□□-FL16-20	1" FITOK	1" FITOK							
BG□□-ML22-20	22 mm FITOK	22 mm FITOK							
BG□□-ML25-20	25 mm FITOK	25 mm FITOK							
BG□□-FNS16-25	1 Female NPT	1 Female NPT	0.98 (25.0)	93.0	3.54 (90.0)	1.77 (45.0)	1.57 (40.0)	5.95 (151.2)	3.08 (78.2)
BG□□-FRP16-25	1 Female BSPP	1 Female BSPP		50.0	5.91 (150.0)	2.95 (75.0)			
BG□□-ML28-25	28 mm FITOK	28 mm FITOK		93.0	3.54 (90.0)	1.77 (45.0)			
BG□□-PS16-25	1 PS	1 PS			90	45			
BG□□-PB16-25	1 PB Schedule Number: 80	1 PB Schedule Number: 80							

1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, TB means fractional tube butt weld, MTB means metric tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with tube fitting nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

BGSS - FNS8 - ML18 - 15 - L - SF2



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

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

# 3-piece Ball Valves

## BH Series

### 2-way Valves

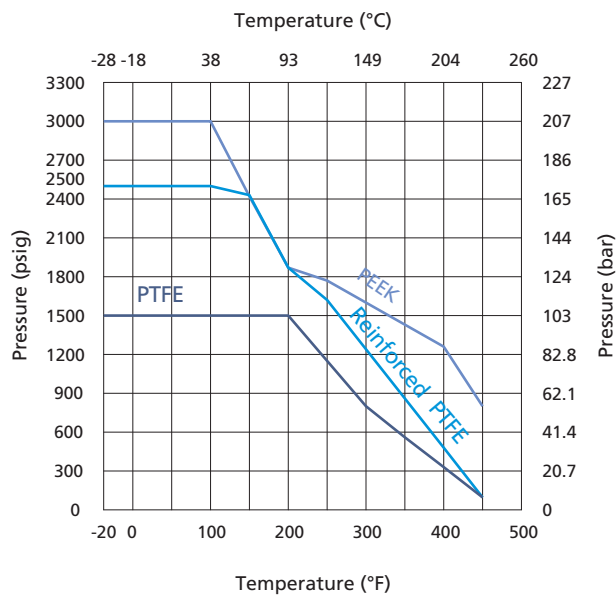
#### Features

- ⦿ 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
- ⦿ Body materials: CF8M (316), CF8 (304)
- ⦿ Seat materials: PTFE, RPTFE and PEEK
- ⦿ Packing materials: RPTFE, Graphite
- ⦿ Orifice sizes: 0.19" (4.8 mm) to 1.5" (38.1 mm)
- ⦿ Pneumatic and electric actuator 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

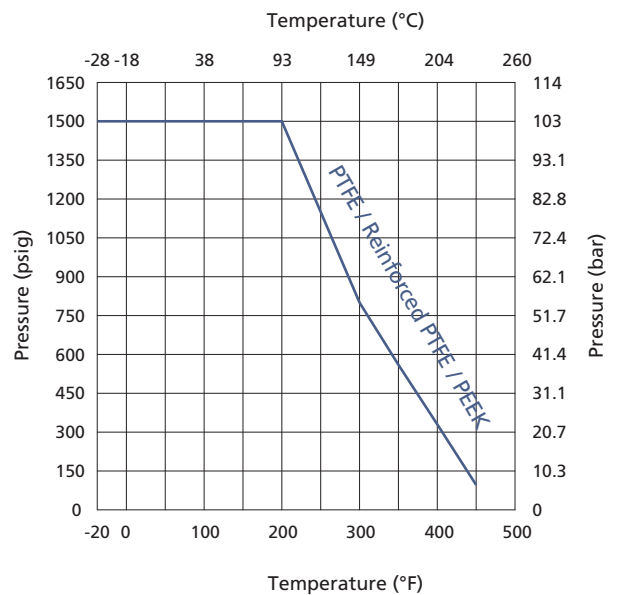


#### Pressure vs. Temperature

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



Orifice Size: 1.13", 1.25" & 1.50"



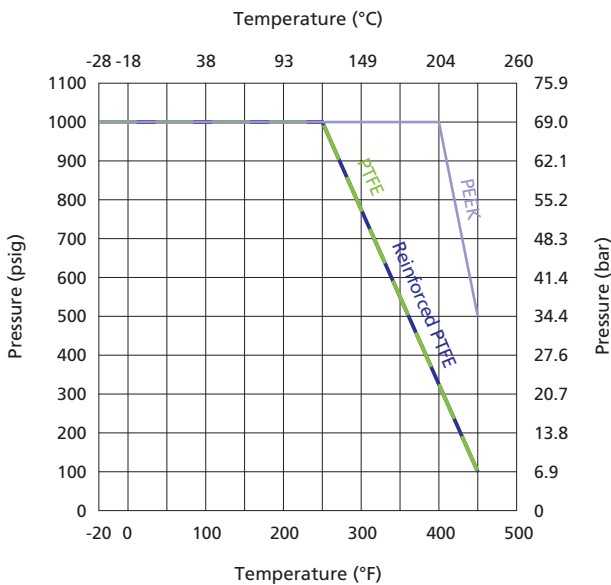
Note: The temperature and pressure rating are based on valves of standard materials.

# 3-way Valves

## Features

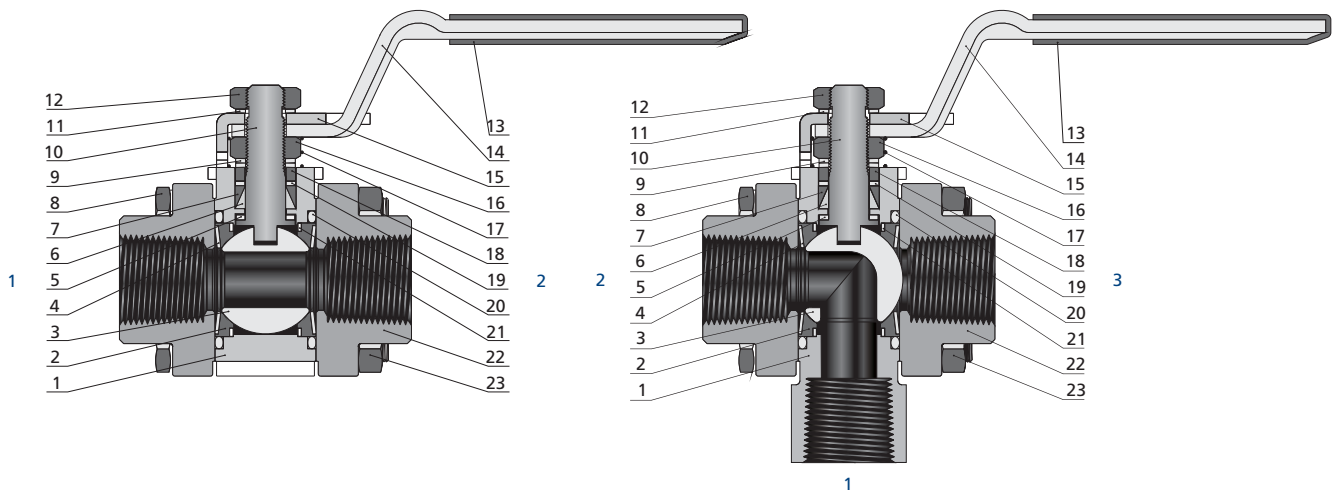
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ End connections:
  - 1/8 to 2 thread
  - 1/4" to 2" and 6 mm to 38 mm tube fitting
- ⦿ One-piece center body without welding
- ⦿ 180° actuation
- ⦿ Only the bottom port as inlet
- ⦿ Leak-tight 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





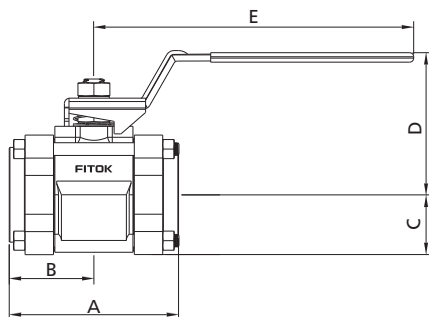
## B-18 Ball Valves

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

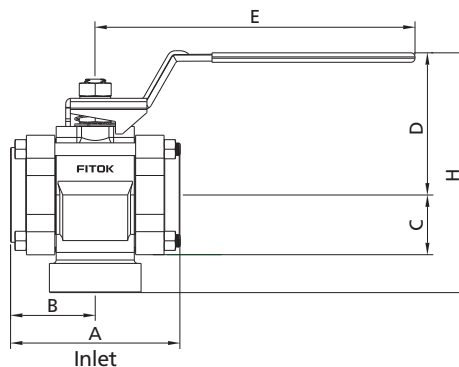
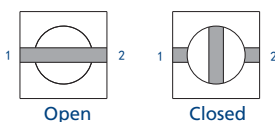
Note: Wetted components are listed in italics.

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

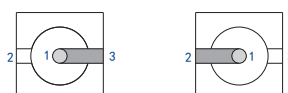
## Dimensions



2-way



3-way



**FITOK**

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

B-20 Ball Valves

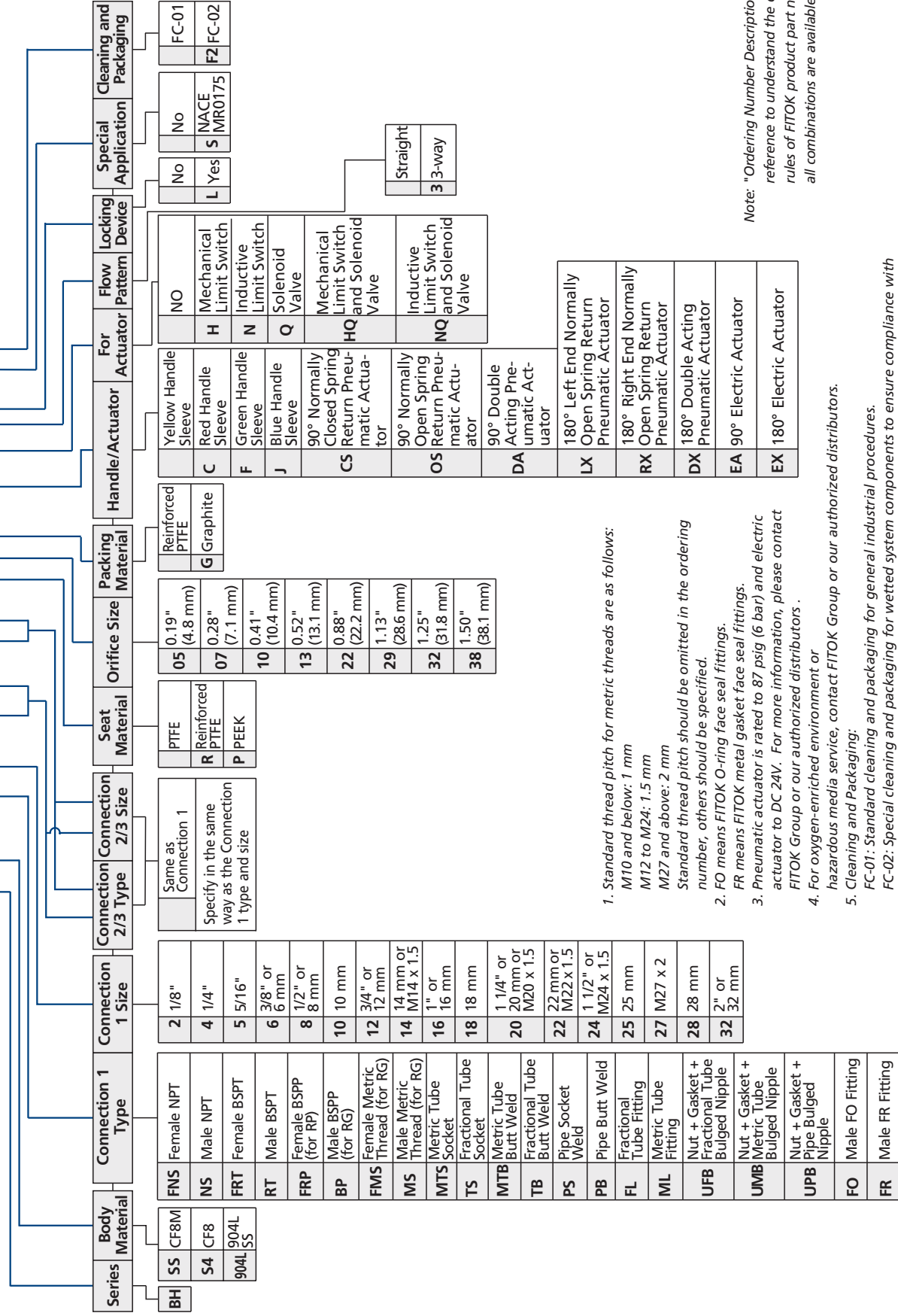
Ball Valves  
Plug Valves

Basic Ordering Number		Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in. (mm)																					
Straight	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H																
BH□□-PB12-13	—	3/4 PB, Schedule Number: 80	3/4 PB, Schedule Number: 80	0.52 (13.1)	13.6	2.69 (68.3)	1.34 (34)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	—																
BH□□-FNS12-22	BH□□-FNS12-22-3	3/4 Female NPT	3/4 Female NPT	0.88 (22.2)	31	3.59 (91.2)	1.8 (45.7)	1.25 (31.8)	2.94 (74.7)	6.00 (152)	5.45 (138)																
BH□□-FRT12-22	BH□□-FRT12-22-3	3/4 Female BSPT	3/4 Female BSPT																								
BH□□-FRP12-22	BH□□-FRP12-22-3	3/4 Female BSPP	3/4 Female BSPP																								
BH□□-FNS16-22	BH□□-FNS16-22-3	1 Female NPT	1 Female NPT																								
BH□□-FRT16-22	BH□□-FRT16-22-3	1 Female BSPT	1 Female BSPT																								
BH□□-FRP16-22	BH□□-FRP16-22-3	1 Female BSPP	1 Female BSPP																								
BH□□-FL16-22	BH□□-FL16-22-3	1" FITOK	1" FITOK																								
BH□□-FL20-22	BH□□-FL20-22-3	1 1/4" FITOK	1 1/4" FITOK																								
BH□□-ML25-22	BH□□-ML25-22-3	25 mm FITOK	25 mm FITOK																								
BH□□-ML28-22	BH□□-ML28-22-3	28 mm FITOK	28 mm FITOK																								
BH□□-TS16-22	—	1" TS	1" TS																								
BH□□-MTS25-22	—	25 mm MTS	25 mm MTS																								
BH□□-PS12-22	—	3/4 PS	3/4 PS																								
BH□□-PS16-22	—	1 PS	1 PS																								
BH□□-PB12-32	—	3/4 PB, Schedule Number: 80	3/4 PB, Schedule Number: 80	1.13 (28.6)	80	3.46 (87.9)	1.73 (43.9)	1.25 (31.8)	4.03 (102)	9.14 (232)	—																
BH□□-PB16-22	—	1 PB Schedule Number: 80	1 PB Schedule Number: 80																								
BH□□-TS20-29	—	1 1/4" TS	1 1/4" TS																								
BH□□-PB20-32	—	1 1/4 PB, Schedule Number: 80	1 1/4 PB, Schedule Number: 80																								
BH□□-FNS20-32	BH□□-FNS20-32-3	1 1/4 Female NPT	1 1/4 Female NPT									1.25 (31.8)	100	4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)	6.86 (174)								
BH□□-FNS24-32	BH□□-FNS24-32-3	1 1/2 Female NPT	1 1/2 Female NPT																								
BH□□-TS24-32	—	1 1/2" TS	1 1/2" TS																								
BH□□-PS20-32	—	1 1/4 PS	1 1/4 PS																								
BH□□-PS24-32	—	1 1/2 PS	1 1/2 PS																								
BH□□-PB24-32	—	1 1/2 PB, Schedule Number: 80	1 1/2 PB, Schedule Number: 80																								
BH□□-FNS32-38	BH□□-FNS32-38-3	2 Female NPT	2 Female NPT																	1.50 (38.1)	130	4.94 (125)	2.47 (62.7)	1.74 (44.2)	4.16 (106)	9.14 (232)	7.21 (183)
BH□□-FRT32-38	BH□□-FRT32-38-3	2 Female BSPT	2 Female BSPT																								
BH□□-TS32-38	—	2" TS	2" TS																								
BH□□-PS32-38	—	2 PS	2 PS																								
BH□□-PB32-38	—	2 PB, Schedule Number: 80	2 PB, Schedule Number: 80																								

1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, TB means fractional tube butt weld, MTB means metric tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with tube fitting nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

## BHS4 – FNS8 – FRT8 – FL8 – P13G – OSHQ3L – SF2



- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.
- FO means FITOK O-ring face seal fittings.  
 FR means FITOK metal gasket face seal fittings.
- Pneumatic actuator is rated to 87 psig (6 bar) and electric actuator to DC 24V. For more information, please contact FITOK Group or our authorized distributors.
- For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirements of ASTM G93 Level C.

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

# 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)
- ⦿ 1/4 to 1/2 pipe thread
- ⦿ Size from 1/16" to 3/4" or 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

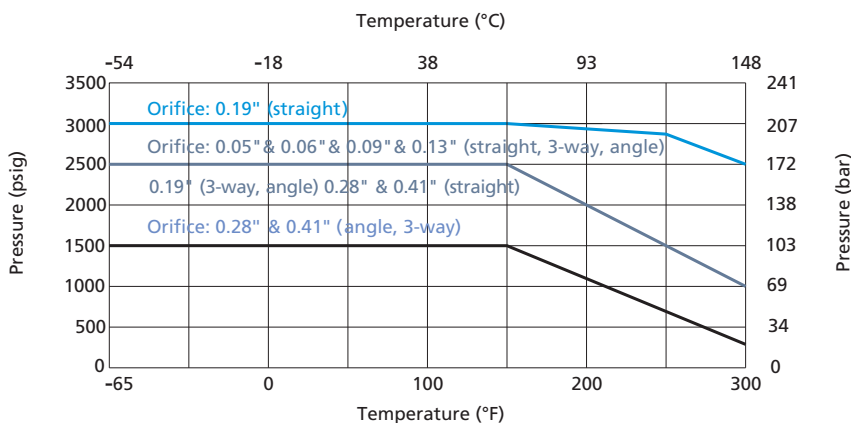


### Pressure vs. Temperature

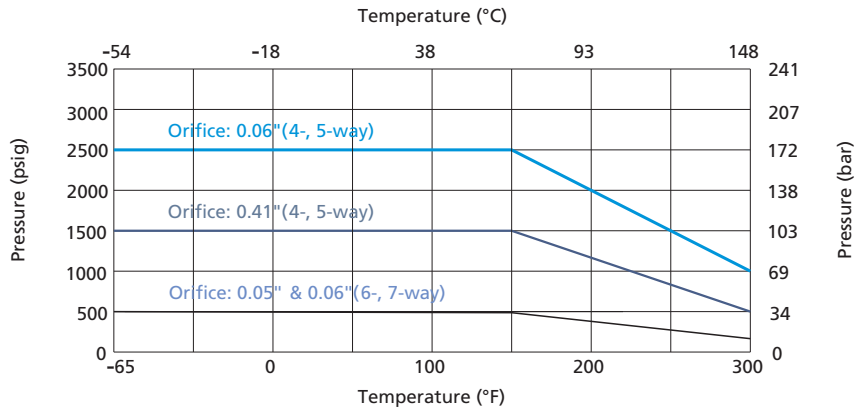
#### PFA, UHMWPE Packing Seat

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

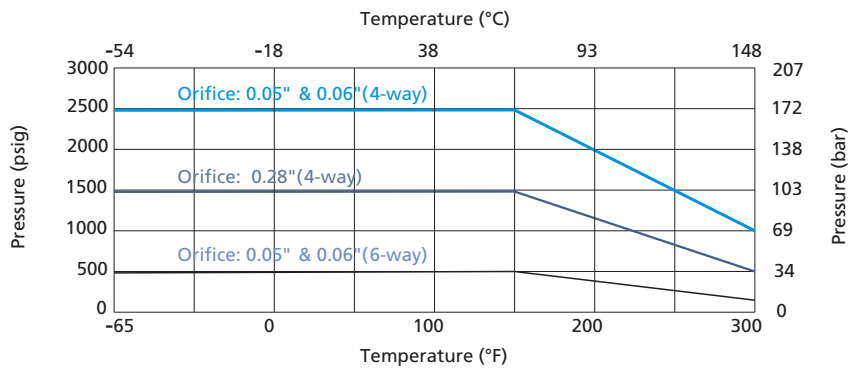
#### Straight, 3-way, Angle Valves



4-, 5-, 6-, 7-way Valves

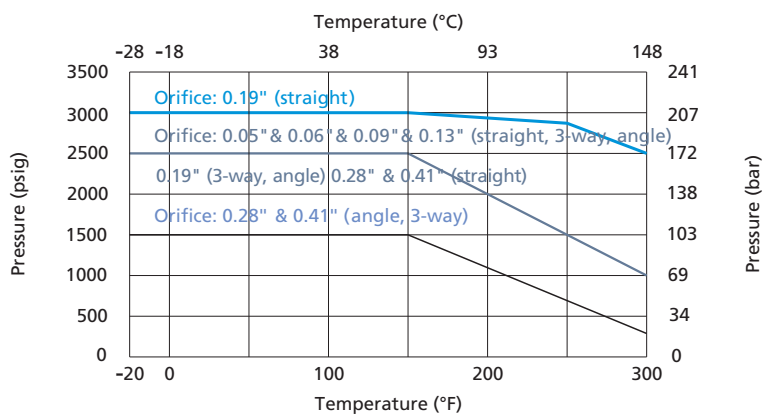


Crossover (4-, 6-way) Valves



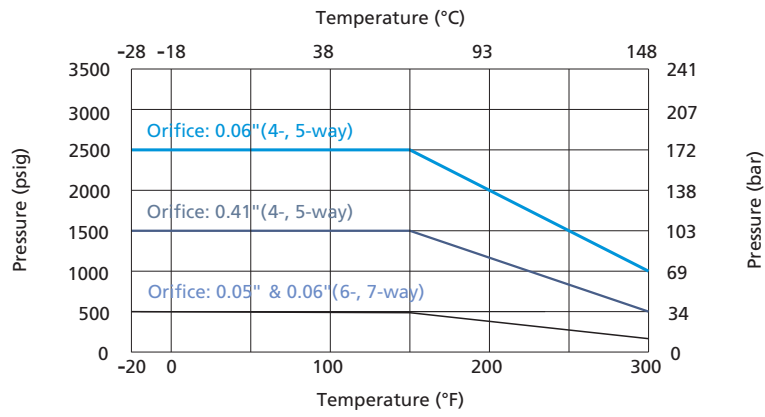
PTFE Packing Seat

Straight, 3-way, Angle Valves

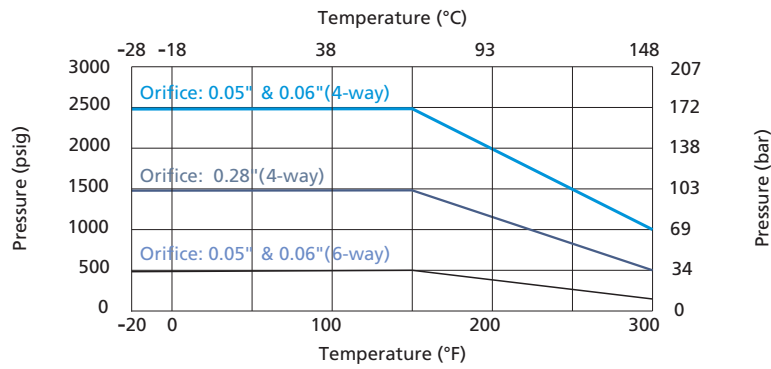


## B-24 Ball Valves

### 4-, 5-, 6-, 7-way Valves



### Crossover (4-, 6-way) Valves



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

## Standard Materials of Construction



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

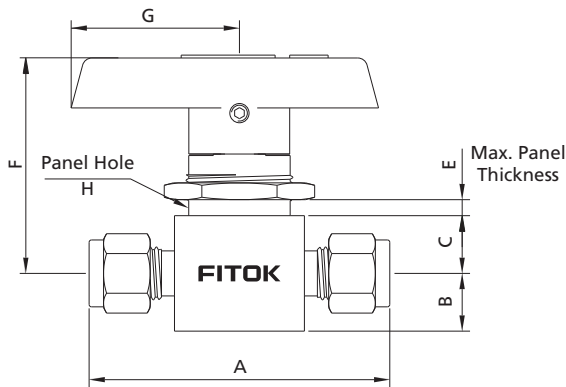
Note: Wetted components are listed in italics.

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

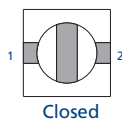
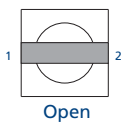


## Dimensions

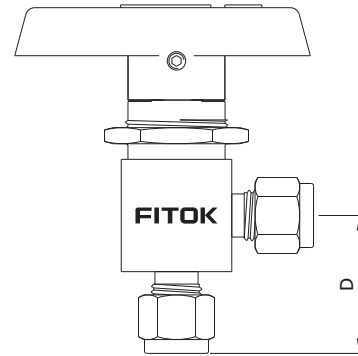
### 2-way Valves



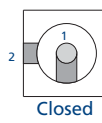
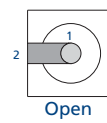
2-way



### Angle Pattern Valves



Angle Pattern

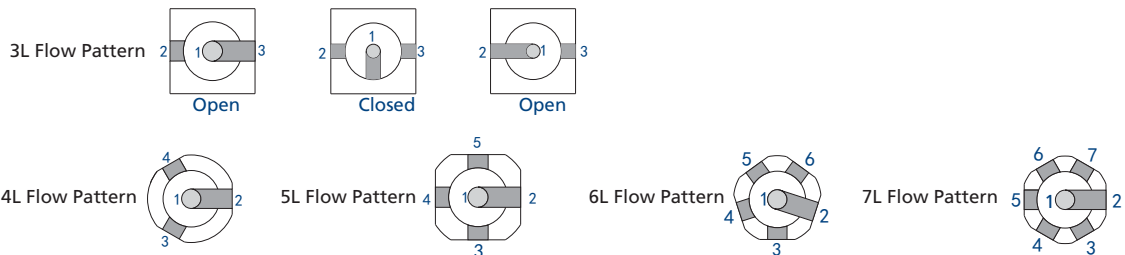
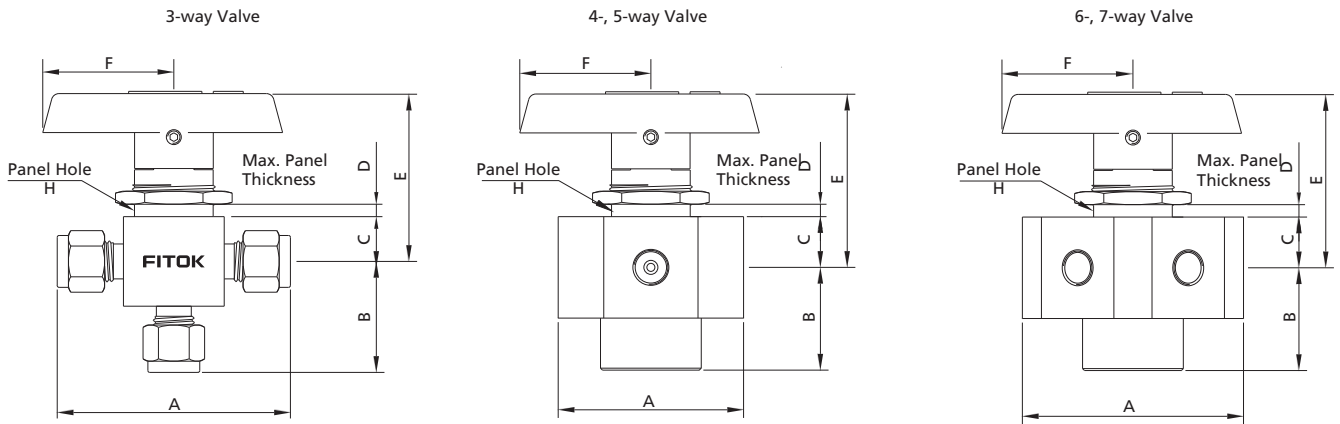


Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimensions, in. (mm)								
			Straight	Angle	A	B	C	D	E	F	G	H	
BO□□-FL1-00	1/16" FITOK	0.05 (1.3)	0.10	—	1.68 (42.7)								
BO□□-FL2-02	1/8" FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-FL4-03	1/4" FITOK	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)					
BO□□-FL4-05		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-FL6-05	3/8" FITOK		1.50		2.58 (65.5)			1.29 (32.8)					
BO□□-FL6-07		0.28 (7.1)	6.00	2.00	3.05 (77.5)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-FL8-10	1/2" FITOK	0.41 (10.3)	6.40	3.80	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	
BO□□-FL12-10	3/4" FITOK		12.00	4.60									
BO□□-ML3-02	3 mm FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
BO□□-ML6-03	6 mm FITOK	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)					
BO□□-ML6-05		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
BO□□-ML8-05	8 mm FITOK		1.50		2.46 (62.5)			1.20 (30.5)					
BO□□-ML10-07	10 mm FITOK	0.28 (7.1)	6.00	2.00	3.07 (78.0)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
BO□□-ML12-10	12 mm FITOK	0.41 (10.3)	12.00	4.60	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)	

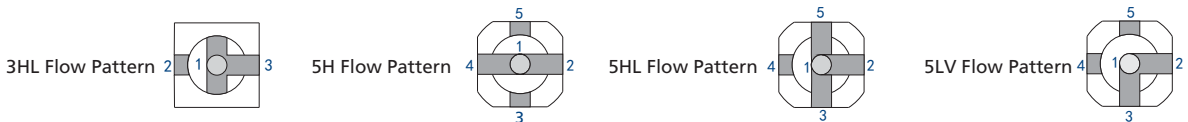
Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimensions, in. (mm)							
			Straight	Angle	A	B	C	D	E	F	G	H
BO□□-FNS2-03	1/8 Female NPT	0.13 (3.2)	0.50	0.30	1.63 (41.4)	0.28 (7.1)	0.34 (8.6)	0.81 (20.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FNS2-05		0.19 (4.8)	1.20	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	0.28 (7.1)	0.90	0.75	2.06 (52.3)	0.56 (14.2)	0.56 (14.2)	1.03 (26.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	11/8 (28.6)
BO□□-FNS4-07			3.00	1.70	2.50 (63.5)			1.25 (31.8)				
BO□□-FNS6-07	3/8 Female NPT	0.41 (10.3)	2.60	1.50	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□□-FNS8-10	1/2 Female NPT		6.30	3.50				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	2.60	—			2.06 (52.3)				
BO□□-FRT6-07	3/8 Female BSPT	0.28 (7.1)	6.30			—	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	—	0.49 (12.5)	2.67 (67.7)
BO□□-FRT8-10	1/2 Female BSPT	0.41 (10.3)	0.19 (4.8)	0.75	2.20 (55.9)	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□□-NS4-FL4-05	1/4 Male NPT	1.60										
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)	0.38 (9.7)	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)

# B-28 Ball Valves

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



### Special Flow Pattern



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)						
				A	B	C	D	E	F	H
<b>3-way Valve</b>										
BO□□-FL1-00-3L	1/16" FITOK	0.05 (1.3)	0.08	1.68 (42.7)	0.81 (20.6)					
BO□□-FL2-02-3L	1/8" FITOK	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL4-03-3L	1/4" FITOK	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)					
BO□□-FL4-05-3L		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL6-07-3L	3/8" FITOK	0.28 (7.1)	2.00	2.89 (73.4)	1.43 (36.3)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	11/8 (28.6)
BO□□-FL8-10-3L	1/2" FITOK	0.41 (10.3)	4.60	3.48 (88.4)	1.74 (44.2)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	11/2 (38.1)
BO□□-FL12-10-3L	3/4" FITOK		4.90							

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)						
				A	B	C	D	E	F	H
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		8 mm FITOK	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)
BO□□-ML8-05-3L	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			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	0.28 (7.1)	1.50	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□□-FNS8-10-3L	1/2 Female NPT		3.50							
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 - &amp; 5-way Valve

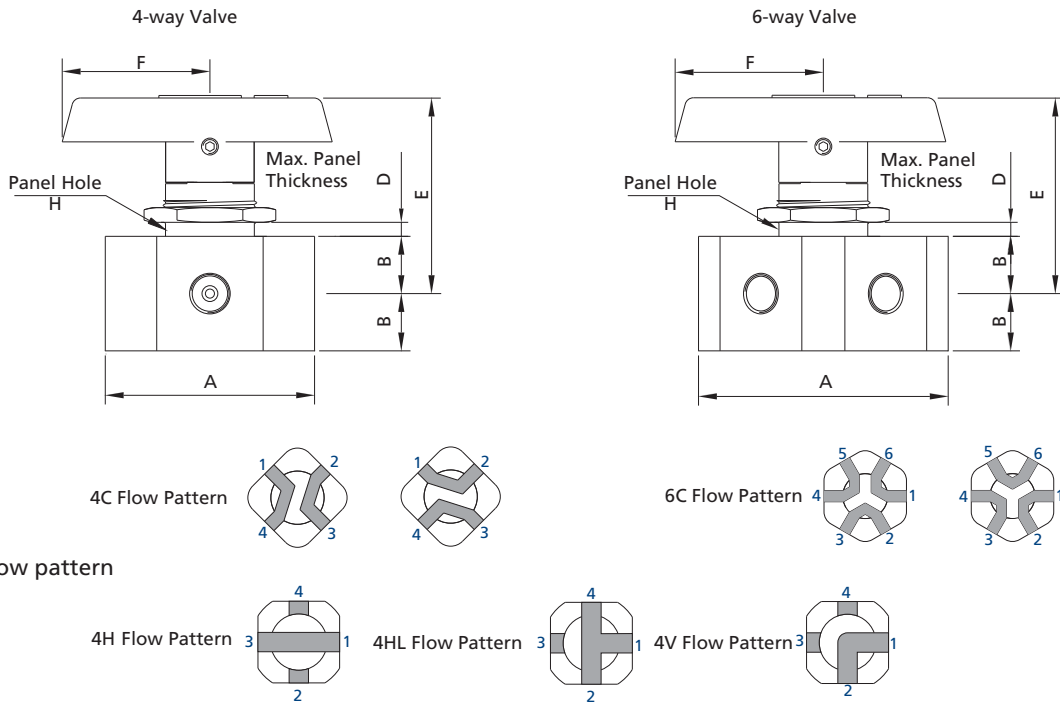
BO□□-FL2-01-4L	1/8" FITOK	0.06 (1.6)	0.07	2.36 (60)	1.32 (33.5)	0.44 (11.2)	0.2 (5.2)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
BO□□-FL2-01-5L										
BO□□-FNS2-01-4L	1/8 Female NPT	0.06 (1.6)	0.07	1.85 (47)	0.88 (22.4)	0.44 (11.2)	0.2 (5.2)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
BO□□-FNS2-01-5L				1.55 (39.4)						
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)	2.76 (70.2)	2.63 (66.7)	1 1/2 (38.1)
BO□□-FNS8-10-5L										

## 6 - &amp; 7-way Valve

BO□□-FL1-00-6L	1/16" FITOK	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" FITOK	0.06 (1.6)	0.07	2.26 (57.6)	0.97 (24.7)	0.44 (11.2)	0.28 (7)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
BO□□-FL2-01-7L										

## B-30 Ball Valves

### Crossover (4-, 6-way) Valves



#### Special Flow pattern



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

1. FITOK means FITOK double ferrule tube fittings.

2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.

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.

## 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.

28 Ball Valves

**Angle-pattern and 3-way Valves**

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

**Welded Vent Port Connections**

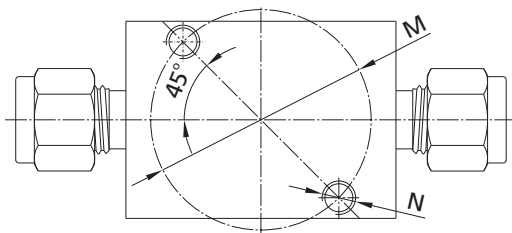
A FITOK tube fitting or a tube stub welded to the vent port is available for stainless steel vented valves.

**Bottom Screw Panel Mounting Options**

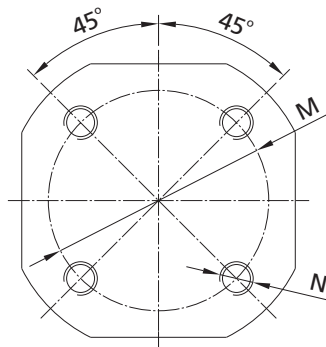
The bottom screw panel mounting options are not available on angle-pattern valves, 3-way valves, 6-way valves and 7-way valves.

**Mounting Dimensions**

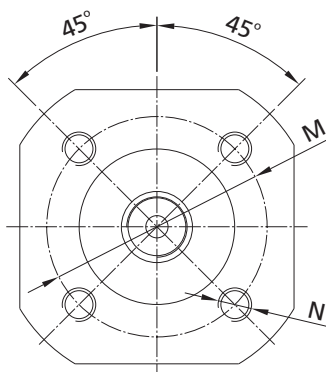
2-way



4-way



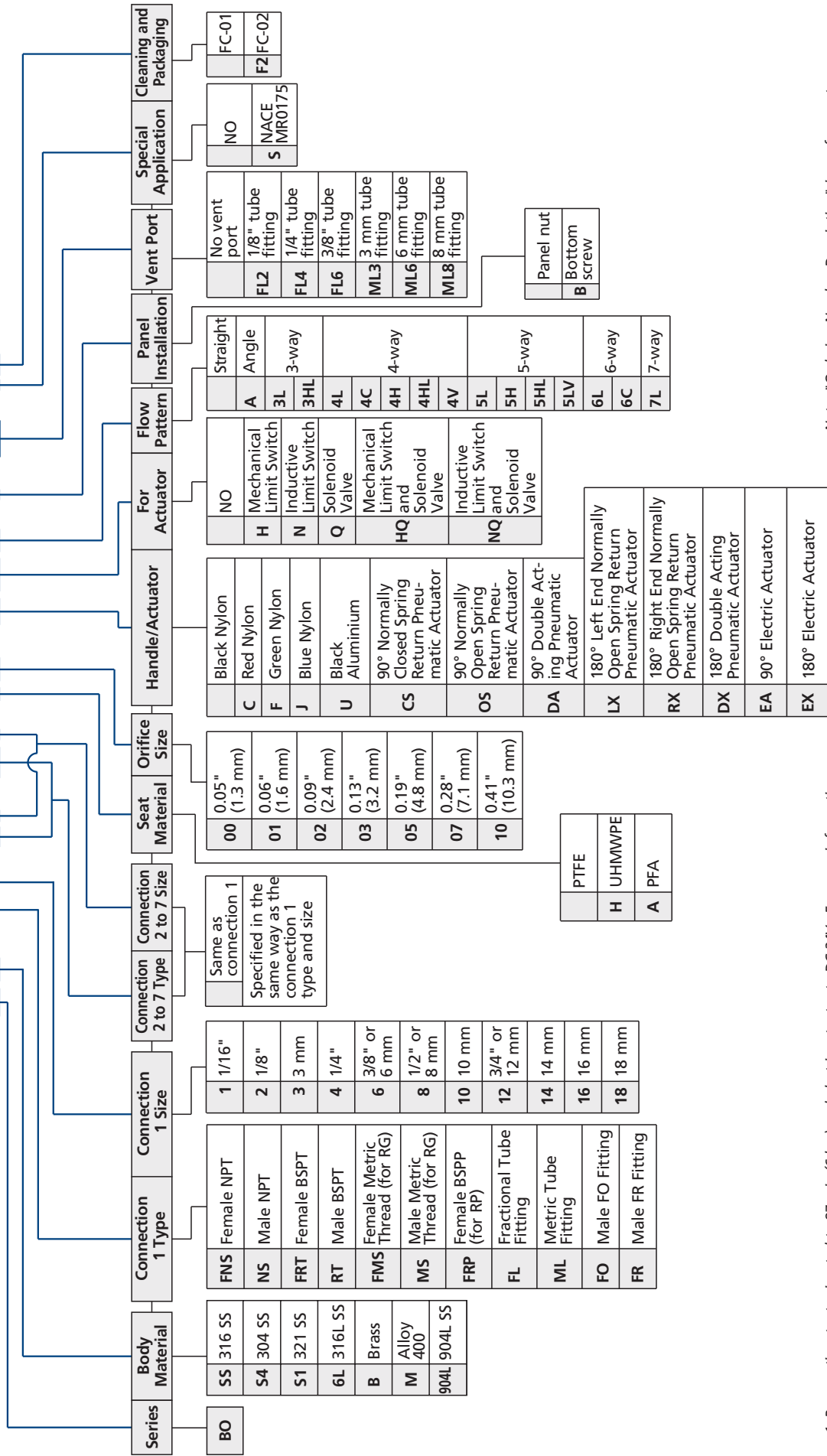
5-way



	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)

# Ordering Number Description

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



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

1. Pneumatic actuator is rated to 87 psig (6 bar) and electric actuator to DC 24V. For more information, please contact FITOK Group or our authorized distributors.
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 requirement of ASTM G93 Level C.

# Bar Stock Ball Valves

## BP Series

### Features

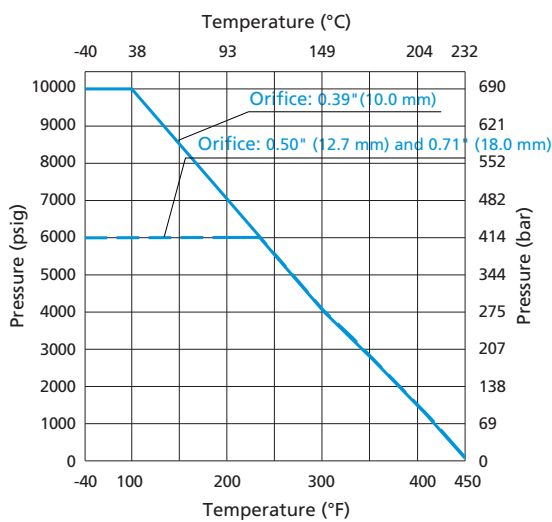
- ⦿ Working pressure up to: 10000 psig (690 bar)
- ⦿ Working temperature: -40°F to 450°F (-40°C to 232°C)
- ⦿ Bi-directional flow for 2-way valves
- ⦿ Seat wear compensation by free floating ball
- ⦿ Variety of end connections
- ⦿ Blowout proof stem with self-sealing function
- ⦿ Handle color options 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: only port 1 as inlet, port 2 and port 3 as outlet



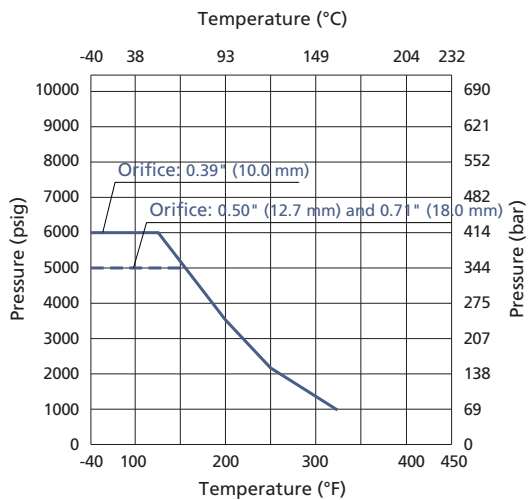
Ball Valves  
Plug Valves

## 2-way Pressure vs. Temperature

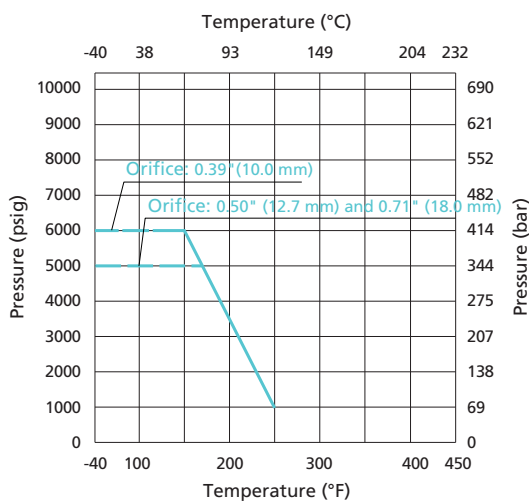
### PEEK Seat



### PVDF Seat



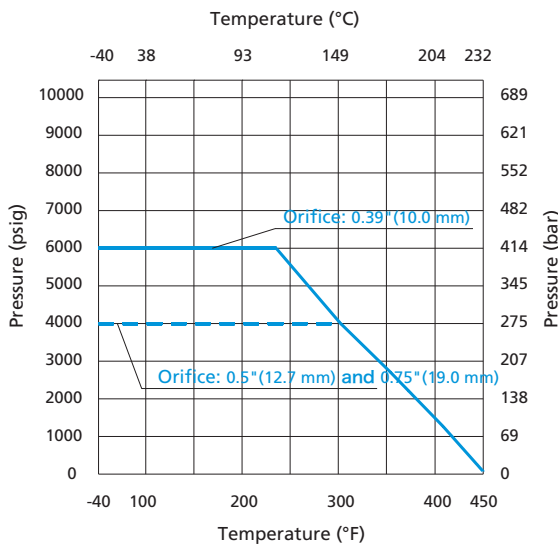
### PCTFE Seat



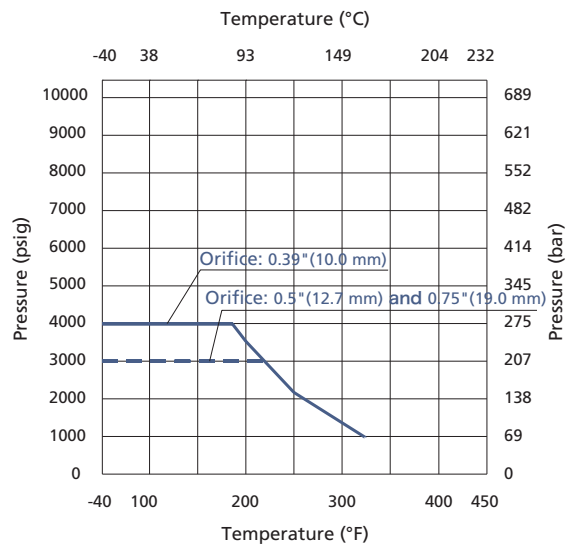


### 3-way Pressure vs. Temperature

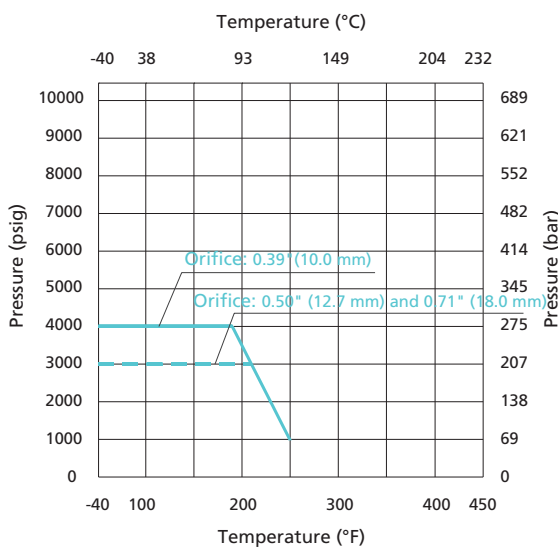
#### PEEK Seat



#### PVDF Seat



#### PCTFE Seat



### Working Temperature Rating

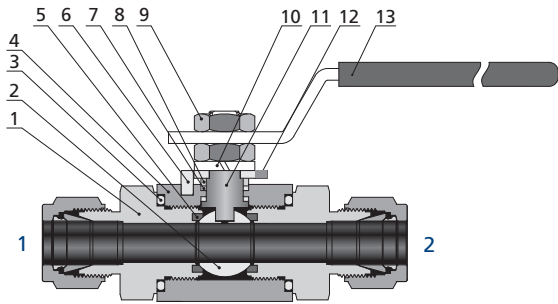
Material	Temperature Range °F (°C)
Fluorocarbon FKM	-40 to 450 (-40 to 232)
Buna-N	-18 to 200 (-28 to 94)
Neoprene	-18 to 250 (-28 to 121)
EPDM	-40 to 300 (-40 to 148)

1. The working temperature of the valves is restricted by the working temperature of the seat and O-ring. The working temperature range of the valves should be the overlapped area of the two working temperature curves.
2. Graphs are with 316SS body. For information of body in other materials, please contact FITOK Group or our authorized distributors.

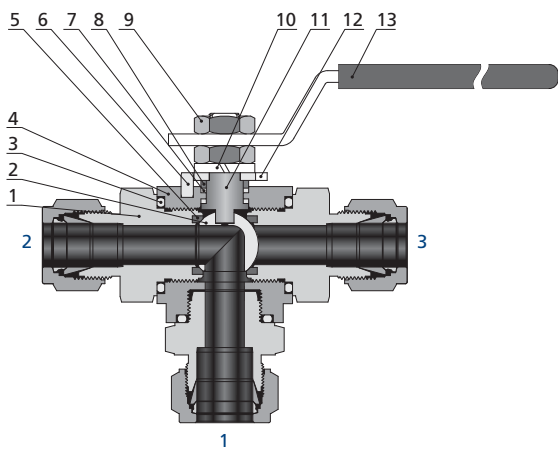
Note: The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the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

## Standard Materials of Construction

### 2-way Valves



### 3-way Valves



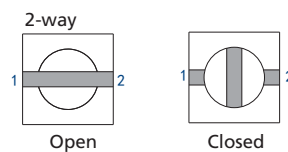
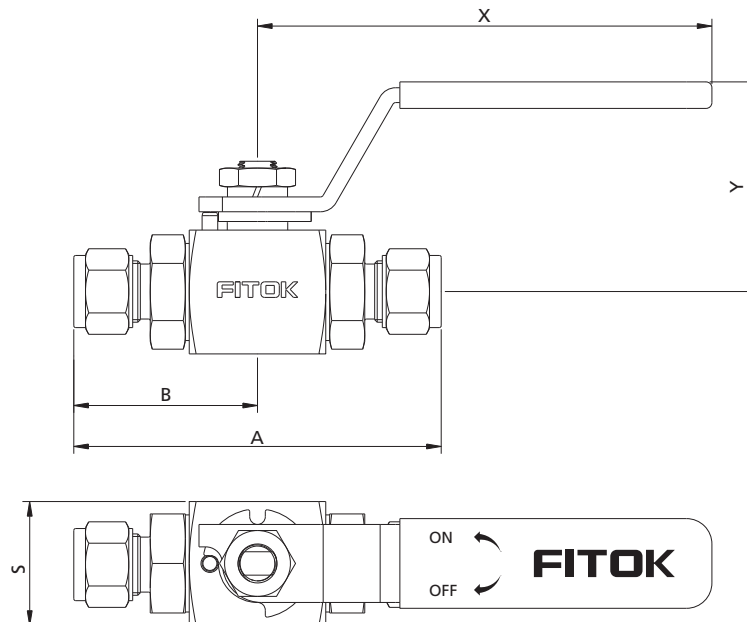
Item	Component	Body Material
		316 SS
1	<i>End Connection</i>	<i>316 SS/A479</i>
2	<i>Ball</i>	<i>316 SS/A479</i>
3	<i>O-ring</i>	<i>FKM or Buna-N or Neoprene or EPDM</i>
4	<i>Body</i>	<i>316 SS/A479</i>
5	<i>Seat</i>	<i>PVDF or PCTFE or PEEK</i>
6	Stop Pin	SS
7	<i>Stem Packing</i>	<i>PTFE/D1710</i>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

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

① The ball valve with orifice 0.39" (10 mm) only has one stem nut.

## Dimensions

### 2-way Valves

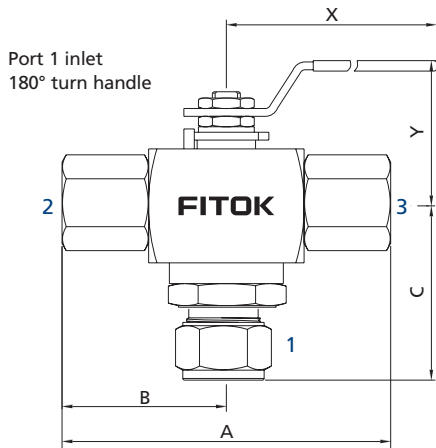


B-36 Ball Valves

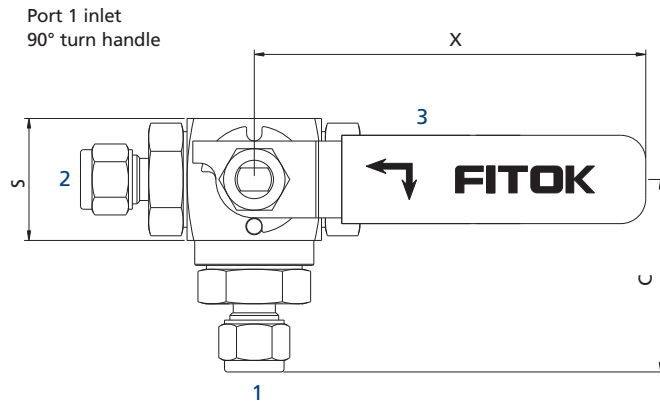
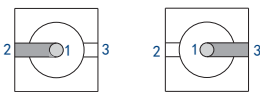
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)									
					A	B	X	Y	S					
BP□□-ML6-10	6 mm FITOK	10000 (690)	0.39 (10.0)	1.2	3.54 (90.0)	1.77 (45.0)	5.12 (130.0)	1.73 (44.0)	1.30 (32.0)					
BP□□-ML8-10	8 mm FITOK	7500 (517)			3.60 (91.6)	1.80 (45.8)								
BP□□-ML10-10	10 mm FITOK	8400 (579)		3.7	3.70 (94.0)	1.85 (47.0)								
BP□□-ML12-10	12 mm FITOK	6800 (469)		7.5	3.94 (100.0)	1.97 (50.0)								
BP□□-ML14-10	14 mm FITOK	6200 (427)		1.2	3.60 (91.6)	1.80 (45.8)								
BP□□-FL4-10	1/4" FITOK	10000 (690)		3.7	3.72 (94.6)	1.86 (47.3)								
BP□□-FL6-10	3/8" FITOK	6500 (448)		7.5	3.92 (99.6)	1.96 (49.8)								
BP□□-FL8-10	1/2" FITOK	6700 (462)			3.03 (77.0)	1.52 (38.5)								
BP□□-FNS4-10	1/4 Female NPT	10000 (690)			2.80 (71.0)	1.40 (35.5)								
BP□□-FNS6-10	3/8 Female NPT	10000 (690)		3.7	3.11 (79.0)	1.56 (39.5)								
BP□□-FNS8-10	1/2 Female NPT	10000 (690)			3.36 (85.4)	1.68 (42.7)								
BP□□-NS4-10	1/4 Male NPT	10000 (690)		7.5	3.75 (95.2)	1.88 (47.6)								
BP□□-NS6-10	3/8 Male NPT	10000 (690)			4.42 (112.2)	2.21 (56.1)								
BP□□-NS8-10	1/2 Male NPT	10000 (690)		0.50 (12.7)	10.0	4.12 (104.6)				2.06 (52.3)	5.71 (145.0)	1.89 (48.0)	1.50 (38.0)	
BP□□-ML16-13	16 mm FITOK	5800 (400)				4.43 (112.6)				2.22 (56.3)				
BP□□-ML18-13	18 mm FITOK	5400 (372)	4.36 (110.6)			2.18 (55.3)								
BP□□-ML20-13	20 mm FITOK	5500 (379)	3.54 (90.0)			1.77 (45.0)								
BP□□-ML22-13	22 mm FITOK	4900 (338)	4.09 (104.0)			2.05 (52.0)								
BP□□-FL10-13	5/8" FITOK	6000 (414)	4.14 (105.2)			2.07 (52.6)								
BP□□-FL12-13	3/4" FITOK	5800 (400)	0.71 (18.0)			19.0	4.87 (123.8)	2.43 (61.9)	6.30 (160.0)	2.08 (53.0)				1.96 (50.0)
BP□□-FL12-13	3/4" FITOK	5800 (400)					5.11 (129.8)	2.66 (64.9)						
BP□□-FNS8-13	1/2 Female NPT	6000 (414)					19.0	4.59 (116.6)						
BP□□-FNS12-13	3/4 Female NPT	6000 (414)		30.0	5.11 (129.8)		2.66 (64.9)							
BP□□-NS12-13	3/4 Male NPT	6000 (414)			3.81 (96.8)		1.91 (48.4)							
BP□□-ML20-19	20 mm FITOK	5500 (379)		0.71 (18.0)	30.0		4.26 (108.2)	2.13 (54.1)			6.30 (160.0)	2.08 (53.0)	1.96 (50.0)	
BP□□-ML22-19	22 mm FITOK	4900 (338)	4.54 (115.2)			2.27 (57.6)								
BP□□-ML25-19	25 mm FITOK	4600 (317)	4.91 (124.8)			2.45 (62.4)								
BP□□-FL12-19	3/4" FITOK	5800 (400)	19.0			4.54 (115.2)	2.27 (57.6)							
BP□□-FL16-19	1" FITOK	4700 (324)				4.91 (124.8)	2.45 (62.4)							
BP□□-FNS12-19	3/4 Female NPT	6000 (414)	30.0			4.54 (115.2)	2.27 (57.6)							
BP□□-FNS16-19	1 Female NPT	6000 (414)				4.91 (124.8)	2.45 (62.4)							
BP□□-NS12-19	3/4 Male NPT	6000 (414)	30.0			4.91 (124.8)	2.45 (62.4)							
BP□□-NS16-19	1 Male NPT	6000 (414)		4.91 (124.8)	2.45 (62.4)									

Ball Valves  
Plug Valves

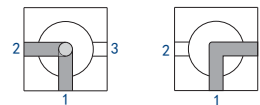
3-way Valves



Vertical Pattern



Horizontal Pattern



Ball Valves  
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100 °F (38 °C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
					A	B	C	X	Y	S
BP□□-ML6-10-3□	6 mm FITOK	10000 (690)	0.39 (10.0)	1.2	3.54 (90.0)	1.77 (45.0)	2.00 (51.0)	5.12 (130.0)	1.73 (44.0)	1.30 (32.0)
BP□□-ML8-10-3□	8 mm FITOK	7500 (517)			3.60 (91.6)	1.80 (45.8)	2.02 (51.3)			
BP□□-ML10-10-3□	10 mm FITOK	8400 (579)			3.70 (94.0)	1.85 (47.0)	2.07 (52.5)			
BP□□-ML12-10-3□	12 mm FITOK	6800 (469)		7.5	3.94 (100.0)	1.97 (50.0)	2.18 (55.5)			
BP□□-ML14-10-3□	14 mm FITOK	6200 (427)			3.60 (91.6)	1.80 (45.8)	2.01 (53.3)			
BP□□-FL4-10-3□	1/4" FITOK	10000 (690)		3.7	3.72 (94.6)	1.86 (47.3)	2.16 (54.8)			
BP□□-FL6-10-3□	3/8" FITOK	6500 (448)			3.92 (99.6)	1.96 (49.8)	2.13 (54.0)			
BP□□-FL8-10-3□	1/2" FITOK	6700 (462)		7.5	3.03 (77.0)	1.52 (38.5)	1.44 (36.5)			
BP□□-FNS4-10-3□	1/4 Female NPT	10000 (690)			2.80 (71.0)	1.40 (35.5)	1.57 (40.0)			
BP□□-FNS6-10-3□	3/8 Female NPT	10000 (690)			3.27 (83.0)	1.63 (41.5)	1.83 (46.4)			
BP□□-FNS8-10-3□	1/2 Female NPT	10000 (690)		3.7	3.36 (85.4)	1.68 (42.7)	1.90 (48.2)			
BP□□-NS4-10-3□	1/4 Male NPT	10000 (690)			3.75 (95.2)	1.88 (47.6)	2.09 (53.1)			
BP□□-NS6-10-3□	3/8 Male NPT	10000 (690)		7.5						
BP□□-NS8-10-3□	1/2 Male NPT	10000 (690)								

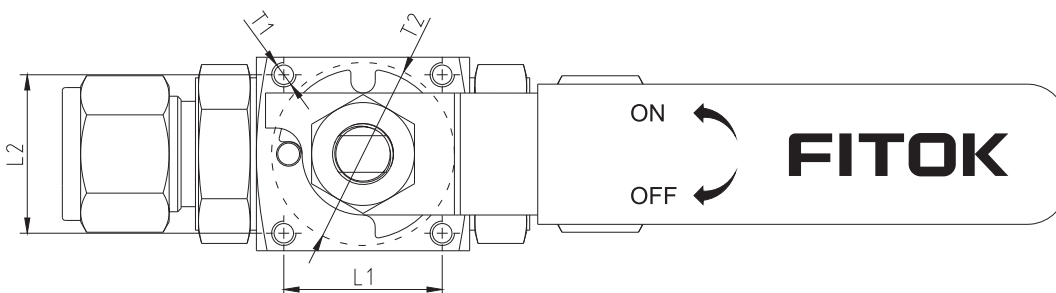
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
					A	B	C	X	Y	S
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	10.0	4.04 (102.6)	2.02 (51.3)	2.41 (61.3)	5.71 (145.0)	1.89 (48.0)	1.50 (38.0)
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)			4.36 (110.6)	2.18 (55.3)	2.57 (65.3)			
BP□□-FL10-13-3□	5/8" FITOK	6000 (414)			3.82 (97.0)	1.91 (48.5)	1.95 (49.5)			
BP□□-FL12-13-3□	3/4" FITOK	5800 (400)			4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
BP□□-FNS8-13-3□	1/2 Female NPT	6000 (414)					2.16 (55.0)			
BP□□-FNS12-13-3□	3/4 Female NPT	6000 (414)								
BP□□-NS12-13-3□	3/4 Male NPT	6000 (414)								
BP□□-ML20-19-3□	20 mm FITOK	5500 (379)	0.71 (18.0)	19.0	4.87 (123.8)	2.43 (61.9)	2.89 (73.4)	6.30 (160.0)	2.08 (53.0)	1.96 (50.0)
BP□□-ML22-19-3□	22 mm FITOK	4900 (338)		30.0	5.11 (129.8)	2.66 (64.9)	3.00 (76.2)			
BP□□-ML25-19-3□	25 mm FITOK	4600 (317)		19.0	4.86 (123.4)	2.43 (61.7)	3.02 (76.7)			
BP□□-FL12-19-3□	3/4" FITOK	5800 (400)		30.0	5.11 (129.8)	2.66 (64.9)	2.85 (72.4)			
BP□□-FL16-19-3□	1" FITOK	4700 (324)		30.0	3.82 (97.0)	1.91 (48.5)	2.22 (56.5)			
BP□□-FNS12-19-3□	3/4 Female NPT	6000 (414)		30.0	4.26 (108.2)	2.13 (54.1)	2.40 (60.8)			
BP□□-FNS16-19-3□	1 Female NPT	6000 (414)		19.0	4.54 (115.2)	2.27 (57.6)	2.72 (69.1)			
BP□□-NS12-19-3□	3/4 Male NPT	6000 (414)		30.0	4.91 (124.8)	2.45 (62.4)	2.90 (73.9)			
BP□□-NS16-19-3□	1 Male NPT	6000 (414)								

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

## Panel Mounting Options

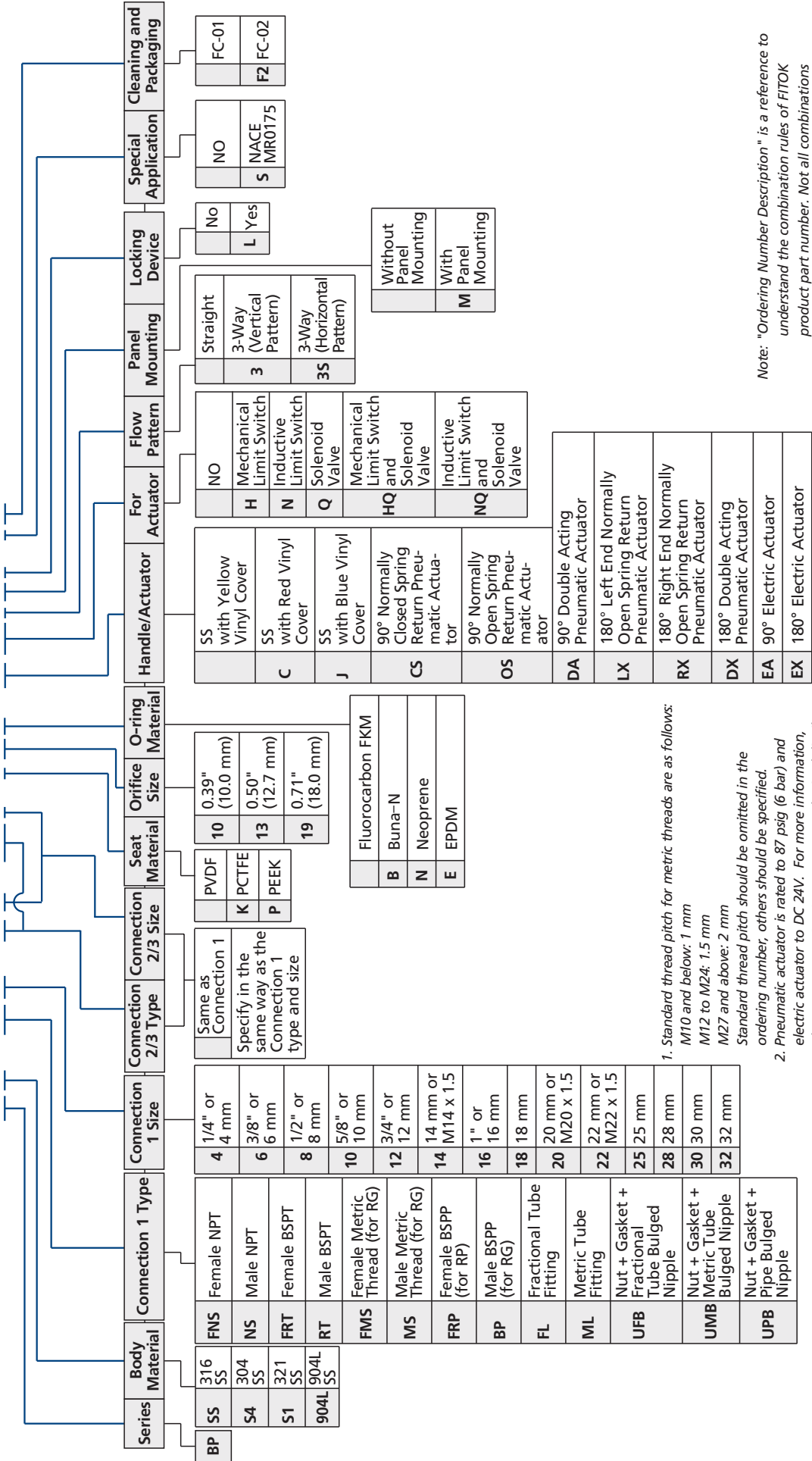
### Dimension for Panel Mounting

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



# Ordering Number Description

BPSS - ML20 - FL12 - FNS8 - P13N - OSHQ3ML - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Seat Orifice Size	O-ring Material	Handle/Actuator	For Actuator	Flow Pattern	Panel Mounting	Locking Device	Special Application	Cleaning and Packaging
BP	SS	FNS	4	Same as Connection 1	10	PVDF	0.39" (10.0 mm)	FKM	SS with Yellow Vinyl Cover	NO	NO	Straight	No	NO	FC-01
	S4	NS	6	Specify in the same way as the Connection 1 type and size	13	K PCTFE	0.50" (12.7 mm)	Buna-N	SS with Red Vinyl Cover	H	Mechanical Limit Switch	3	L Yes	NACE MR0175	F2 FC-02
	S1	FRT	8		19	P PEEK	0.71" (18.0 mm)	Neoprene	C	N	Inductive Limit Switch	35		S	
	904L SS	RT	10					EPDM	J	Q	Solenoid Valve				
		FMS	12						CS	HQ	Mechanical Limit Switch				
		MS	14						OS	NQ	Inductive Limit Switch				
		FRP	16						DA						
		BP	18						LX						
		FL	20						RX						
		ML	22						DX						
		UFB	25						EA						
		UMB	28						EX						
		UPB	30												
			32												

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

- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified
- Pneumatic actuator is rated to 87 psig (6 bar) and electric actuator to DC 24V. For more information, please contact FITOK Group or our authorized distributors.
- For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirements of ASTM G93 Level C.

# Hex Bar Stock Ball Valves

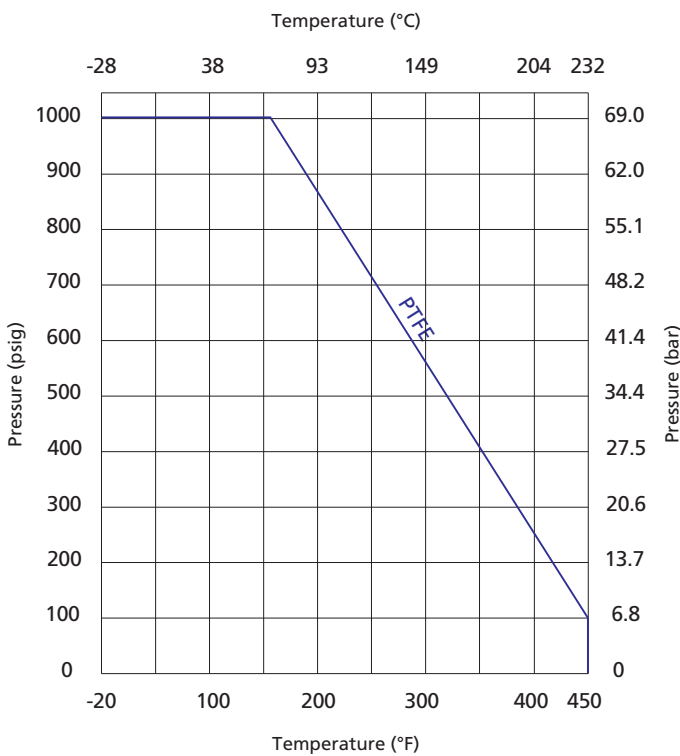
## BR Series

### Features

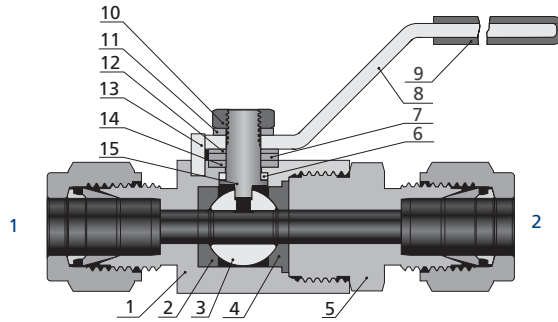
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ Compact and economical design
- ⦿ Free floating ball design for seat wear compensation
- ⦿ Bi-directional flow
- ⦿ Low operating torque
- ⦿ Any reasonable connections available
- ⦿ Blowout proof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



### Pressure vs. Temperature



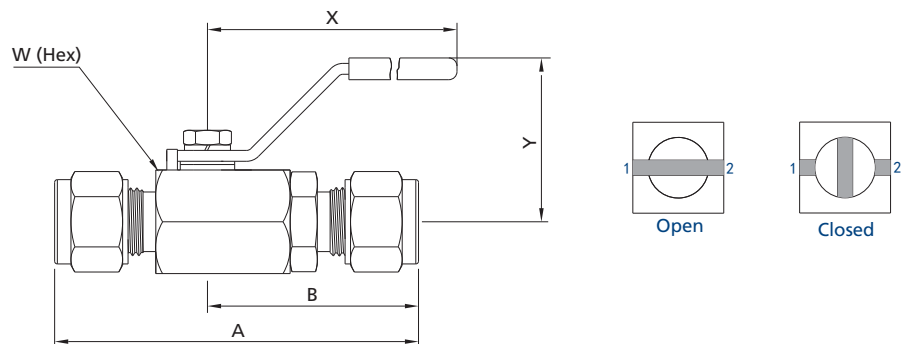
## Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	316L SS	Brass
1	<i>Body</i>	<i>316 SS/A479 CF8M/A351</i>	<i>304 SS/A479 CF8/A351</i>	<i>316L SS/A479 CF3M/A351</i>	<i>Brass/B16</i>
2	<i>Front Seat</i>	<i>PTFE/D1710</i>			
3	<i>Ball</i>	<i>316 SS/A479</i>			
4	<i>Back Seat</i>	<i>PTFE/D1710</i>			
5	<i>End Connection</i>	<i>316 SS/A479</i>	<i>304 SS/A479</i>	<i>316L SS/A479</i>	<i>Brass/B16</i>
6	<i>Lower Packing</i>	<i>PTFE/D1710</i>			
7	<i>Washer</i>	<i>316 SS/A479</i>			
8	<i>Handle</i>	<i>304 SS/A240 or Aluminium</i>			
9	<i>Sleeve</i>	<i>Vinyl</i>			
10	<i>Stem Nut</i>	<i>SS</i>			
11	<i>Gasket</i>	<i>SS</i>			
12	<i>Coned-disk Spring</i>	<i>S17700/A693</i>			
13	<i>Stop Pin</i>	<i>SS</i>			
14	<i>Upper Packing</i>	<i>PTFE/D1710</i>			
15	<i>Stem</i>	<i>316 SS/A479</i>			

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

## Dimensions





## B-42 Ball Valves

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)							
	Connection 1	Connection 2			A	B	W	X	Y			
BR□□-ML6-05	6 mm FITOK	6 mm FITOK	0.19 (4.8)	1.25	2.57 (65.2)	1.50 (38.1)	3/4 (19.05)	2.36 (60)	1.18 (30)			
BR□□-ML8-05	8 mm FITOK	8 mm FITOK			2.63 (66.8)	1.53 (38.8)						
BR□□-FL4-05	1/4" FITOK	1/4" FITOK			2.57 (65.2)	1.50 (38.1)						
BR□□-FL5-05	5/16" FITOK	5/16" FITOK			2.63 (66.8)	1.53 (38.8)						
BR□□-FNS2-05	1/8 Female NPT	1/8 Female NPT			1.85 (47.0)	1.08 (27.4)						
BR□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP			2.00 (50.0)	1.14 (29.0)						
BR□□-FRP4-05	1/4 Female BSPP	1/4 Female BSPP			2.00 (50.0)	1.14 (29.0)						
BR□□-FNS4-05	1/4 Female NPT	1/4 Female NPT			1.85 (47.0)	1.08 (27.4)						
BR□□-ML10-07	10 mm FITOK	10 mm FITOK			0.28 (7.1)	2.50				2.87 (72.9)	1.68 (42.7)	7/8 (22.23)
BR□□-FL6-07	3/8" FITOK	3/8" FITOK	2.03 (51.6)	1.18 (30.0)								
BR□□-FRP6-07	3/8 Female BSPP	3/8 Female BSPP										
BR□□-FNS6-07	3/8 Female NPT	3/8 Female NPT										
BR□□-ML12-10	12 mm FITOK	12 mm FITOK	0.35 (8.9)	9.25	3.15 (80.0)	1.83 (46.5)	1 1/16 (27.0)	3.15 (80)	1.54 (39)			
BR□□-ML14-10	14 mm FITOK	14 mm FITOK			3.24 (82.2)	1.87 (47.5)						
BR□□-FL8-10	1/2" FITOK	1/2" FITOK								3.15 (80.0)	1.83 (46.5)	
BR□□-FL10-10	5/8" FITOK	5/8" FITOK			3.24 (82.2)	1.87 (47.5)				15/16 (24.0)		
BR□□-FRP8-10	1/2 Female BSPP	1/2 Female BSPP			2.08 (53.0)	1.12 (28.5)						
BR□□-FNS8-10	1/2 Female NPT	1/2 Female NPT			2.08 (53.0)	1.12 (28.5)						
BR□□-ML16-13	16 mm FITOK	16 mm FITOK	0.47 (12.0)	12.65	3.50 (88.9)	2.00 (50.8)	1 1/4 (31.75)	3.94 (100)	2.03 (51.7)			
BR□□-ML18-13	18 mm FITOK	18 mm FITOK								2.48 (63.0)	1.30 (33.0)	
BR□□-FL12-13	3/4" FITOK	3/4" FITOK										2.39 (60.7)
BR□□-FRP12-13	3/4 Female BSPP	3/4 Female BSPP			3.96 (100.6)	2.24 (57.1)						
BR□□-FNS12-13	3/4 Female NPT	3/4 Female NPT										
BR□□-ML22-16	22 mm FITOK	22 mm FITOK	0.63 (16.0)	17.35	4.31 (109.5)	2.42 (61.5)	1 1/2 (38.1)	2.15 (54.8)				
BR□□-ML25-16	25 mm FITOK	25 mm FITOK							3.25 (82.6)	1.63 (41.3)		
BR□□-FL16-16	1" FITOK	1" FITOK									3.00 (76.5)	1.50 (38.1)
BR□□-FRP16-16	1 Female BSPP	1 Female BSPP										
BR□□-FNS16-16	1 Female NPT	1 Female NPT										

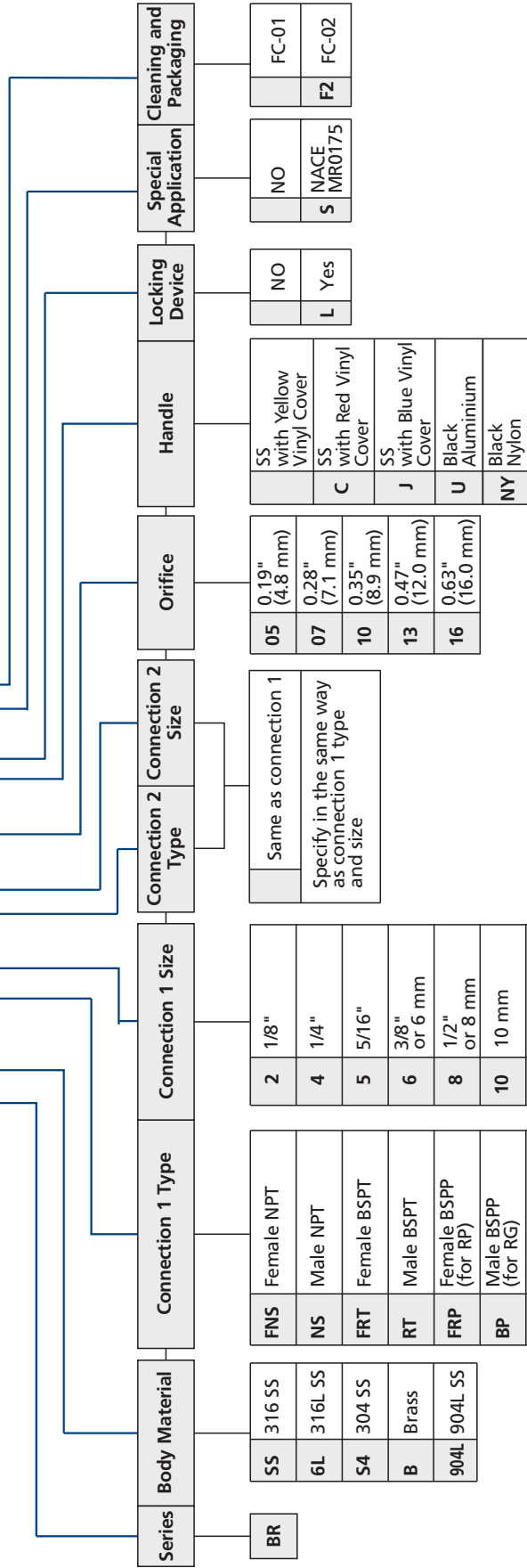
1. FITOK means FITOK double ferrule tube fittings.

2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.

3. Dimensions are shown with tube fitting nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

BRSS - ML8 - FL4 - O5 - UL - SF2



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

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

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

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

3. Cleaning and Packaging:

FC-01: Standard cleaning and packaging for general industrial procedures.

FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.

# High Performance Ball Valves

## BV Series

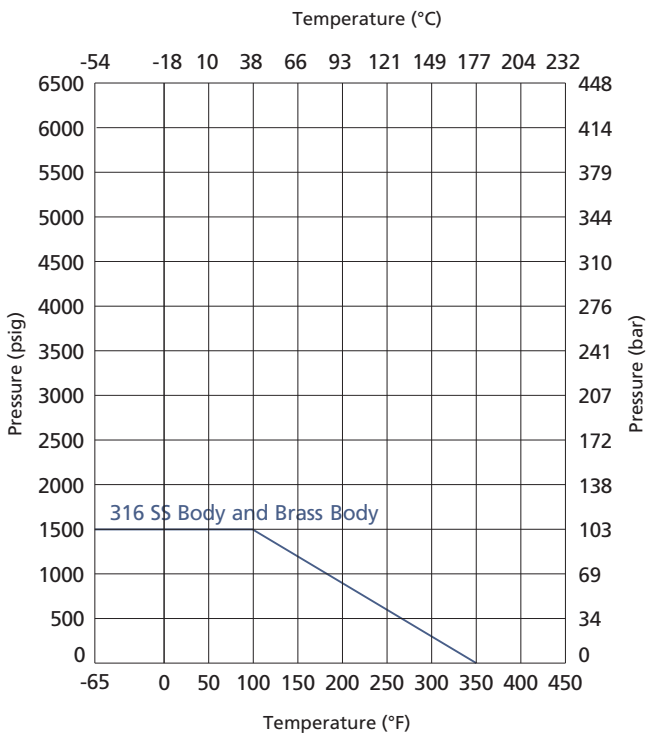
### Features

- ⦿ Working pressure up to: 6000 psig (414 bar)
- ⦿ Working temperature: -65°F to 450°F (-54°C to 232°C)
- ⦿ Bi-directional flow for straight valves
- ⦿ 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
- ⦿ The inlet of 3-way valves and angle pattern valves can only be the bottom port

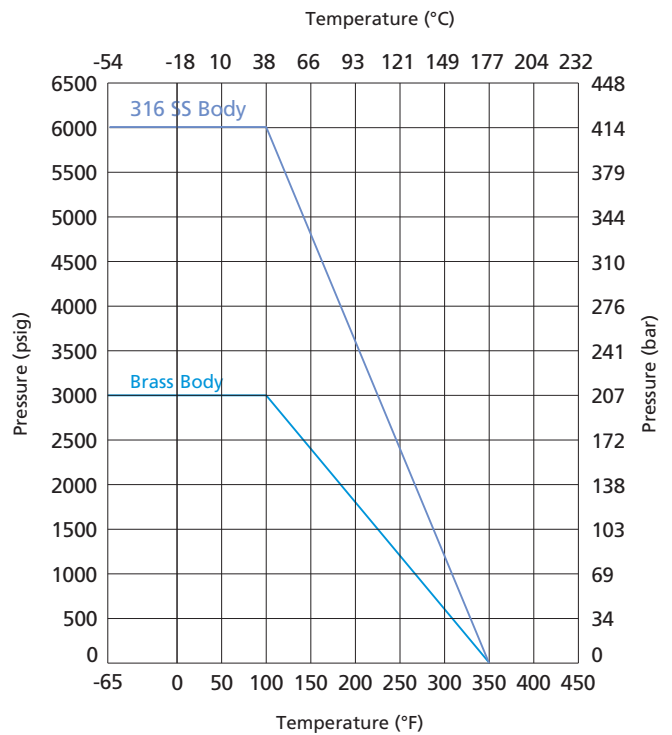


### Pressure vs. Temperature

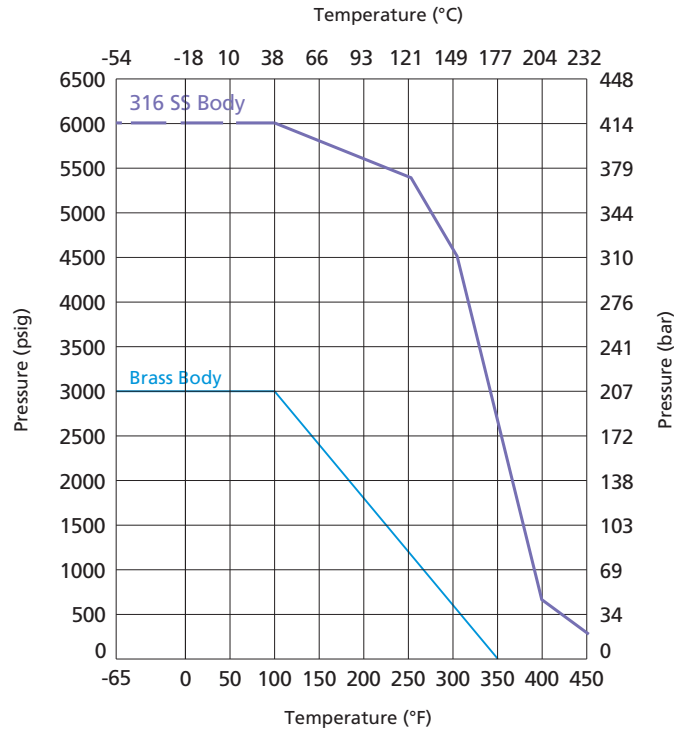
PTFE Seat



PCTFE Seat



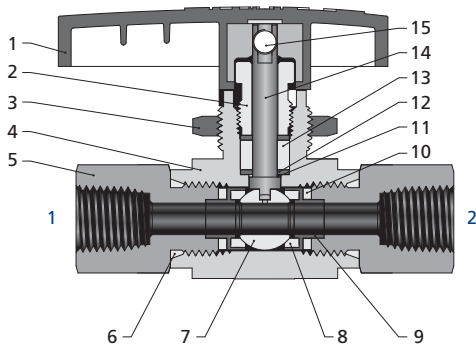
PEEK Seat



*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

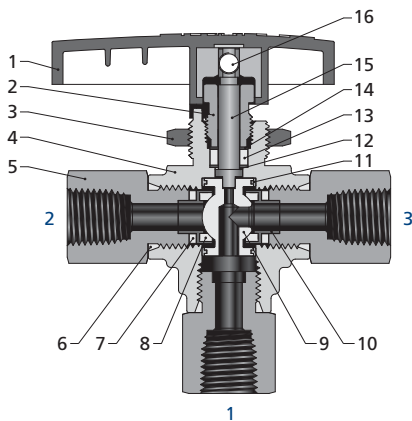
### Straight Valves



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	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	End Connection	316 SS/A479	C36000/B16
6	Connection O-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	SS	
	Lubricants	<i>Fluorinated-based and silicone-based</i>	

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

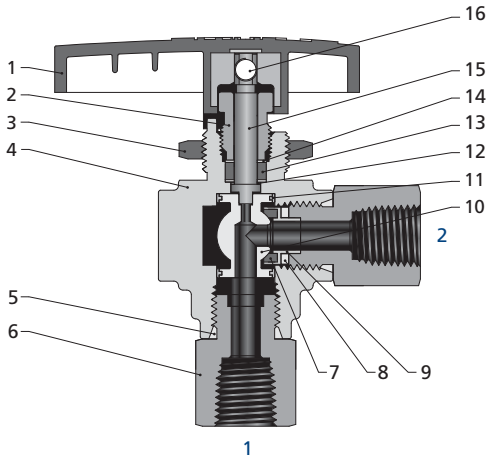
### 3-way Valves



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	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	End Connection	316 SS/A479	C36000/B16
6	Connection O-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	SS	
	Lubricants	<i>Fluorinated-based and silicone-based</i>	

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

Angle Pattern Valves



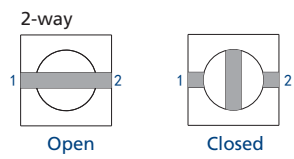
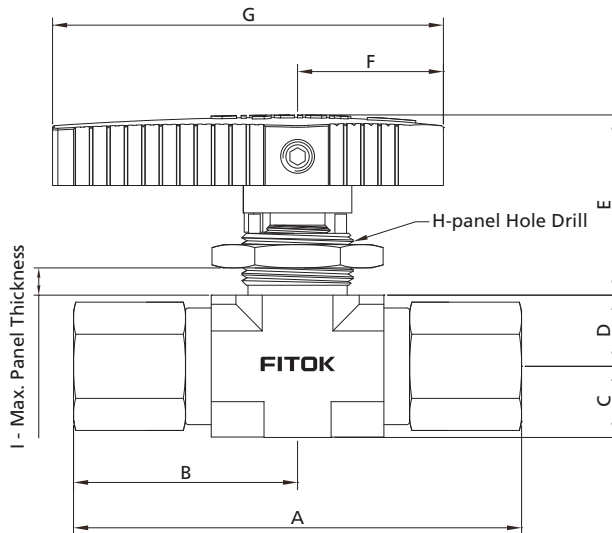
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A479	C36000/B16
3	Panel Nut	316 SS/A479	
4	Body	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	Connection O-ring	PTFE	
6	End Connection	316 SS/A479	C36000/B16
7	Seat	PTFE or PCTFE or PEEK	
8	Seat Packing	PTFE	
9	Seat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

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

Ball Valves  
Plug Valves

Dimensions

Straight Valves

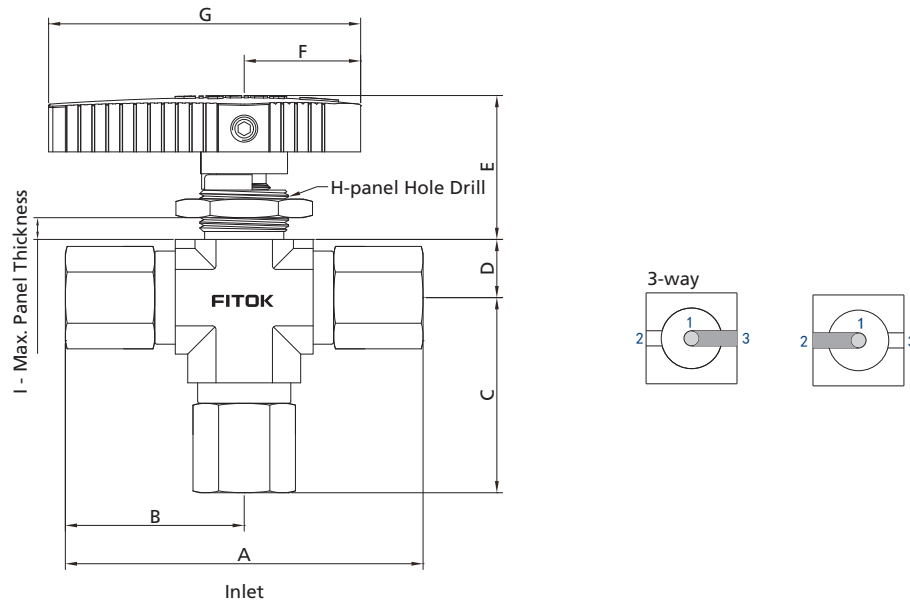


B-48 Ball Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C) psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)													
		SS	Brass			A	B	C	D	E	F	G	H	I					
	Connection 1/2																		
BV□□-FL1-01	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)												
BV□□-FL2-02	1/8" FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	2.72 (69.0)	1.36 (34.5)												
BV□□-ML3-02	3 mm FITOK	6000 (414)	3000 (207)			2.74 (69.6)	1.37 (34.8)												
BV□□-FRT2-04	1/8 Female BSPT	6000 (414)	3000 (207)	0.17 (4.2)	0.93	2.14 (54.4)	1.07 (27.2)	0.36 (9.2)	0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)					
BV□□-FRP2-04	1/8 Female BSPP	6000 (414)	3000 (207)																
BV□□-FNS2-04	1/8 Female NPT	6000 (414)	3000 (207)																
BV□□-RT2-04	1/8 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP2-04	1/8 Male BSPP	6000 (414)	3000 (207)					2.36 (60.0)	1.18 (30.0)										
BV□□-NS2-04	1/8 Male NPT	6000 (414)	3000 (207)																
BV□□-RT4-04	1/4 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP4-04	1/4 Male BSPP	6000 (414)	3000 (207)					2.70 (68.6)	1.35 (34.3)										
BV□□-NS4-04	1/4 Male NPT	6000 (414)	3000 (207)																
BV□□-FL4-05	1/4" FITOK	6000 (414)	3000 (207)			0.19 (4.7)	1.04	3.48 (88.4)	1.74 (44.2)										
BV□□-ML6-05	6 mm FITOK	6000 (414)	3000 (207)	3.50 (89.0)	1.75 (44.5)														
BV□□-FL6-06	3/8" FITOK	6000 (414)	2200 (152)	0.25 (6.4)	2.34	3.60 (91.4)	1.80 (45.7)												
BV□□-ML8-06	8 mm FITOK	6000 (414)	2300 (159)			3.56 (90.4)	1.78 (45.2)												
BV□□-ML10-06	10 mm FITOK	6000 (414)	1900 (131)			3.62 (92.0)	1.81 (46.0)												
BV□□-FRT4-06	1/4 Female BSPT	6000 (414)	3000 (207)																
BV□□-FRP4-06	1/4 Female BSPP	6000 (414)	3000 (207)					3.02 (76.8)	1.51 (38.4)	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□□-FNS4-06	1/4 Female NPT	6000 (414)	3000 (207)																
BV□□-RT4-06	1/4 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP4-06	1/4 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS4-06	1/4 Male NPT	6000 (414)	3000 (207)					3.24 (82.2)	1.62 (41.1)										
BV□□-RT6-06	3/8 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP6-06	3/8 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS6-06	3/8 Male NPT	6000 (414)	3000 (207)																
BV□□-FL8-10	1/2" FITOK	6000 (414)	2100 (145)	0.41 (10.3)	6.42	4.68 (118.8)	2.34 (59.4)												
BV□□-FL12-10	3/4" FITOK	5800 (400)	1800 (124)																
BV□□-ML12-10	12 mm FITOK	6000 (414)	2000 (138)	0.37 (9.5)	5.57														
BV□□-ML14-10	14 mm FITOK	6000 (414)	1900 (131)	0.41 (10.3)	6.42	4.66 (118.4)	2.33 (59.2)												
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)																
BV□□-FRP6-10	3/8 Female BSPP	6000 (414)	3000 (207)					3.90 (99.0)	1.95 (49.5)										
BV□□-FNS6-10	3/8 Female NPT	6000 (414)	3000 (207)																
BV□□-FRT8-10	1/2 Female BSPT	6000 (414)	3000 (207)							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□□-FRP8-10	1/2 Female BSPP	6000 (414)	3000 (207)					4.30 (109.2)	2.15 (54.6)										
BV□□-FNS8-10	1/2 Female NPT	6000 (414)	3000 (207)																
BV□□-FRT12-10	3/4 Female BSPT	6000 (414)	3000 (207)																
BV□□-FRP12-10	3/4 Female BSPP	6000 (414)	3000 (207)			4.50 (114.2)	2.25 (57.1)												
BV□□-FNS12-10	3/4 Female NPT	6000 (414)	3000 (207)																
BV□□-RT8-10	1/2 Male BSPT	6000 (414)	3000 (207)																
BV□□-BP8-10	1/2 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS8-10	1/2 Male NPT	6000 (414)	3000 (207)																
BV□□-RT12-10	3/4 Male BSPT	6000 (414)	3000 (207)			4.44 (112.8)	2.22 (56.4)												
BV□□-BP12-10	3/4 Male BSPP	6000 (414)	3000 (207)																
BV□□-NS12-10	3/4 Male NPT	6000 (414)	3000 (207)																

Ball Valves  
Plug Valves

3-way Valves



Ball Valves  
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)														
		SS	Brass			A	B	C	D	E	F	G	H	I						
BV□□-FL1-01-3	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	1.35 (34.3)												
BV□□-FL2-02-3	1/8" FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	2.72 (69.0)	1.36 (34.5)	1.41 (35.8)												
BV□□-ML3-02-3	3 mm FITOK	6000 (414)	3000 (207)	0.09 (2.4)	0.21	2.74 (69.6)	1.37 (34.8)	1.42 (36.1)												
BV□□-FRT2-04-3	1/8 Female BSPT	6000 (414)	3000 (207)			2.14 (54.4)	1.07 (27.2)	1.12 (28.5)												
BV□□-FRP2-04-3	1/8 Female BSPP	6000 (414)	3000 (207)																	
BV□□-FNS2-04-3	1/8 Female NPT	6000 (414)	3000 (207)						0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)						
BV□□-RT2-04-3	1/8 Male BSPT	6000 (414)	3000 (207)			2.36 (60.0)	1.18 (30.0)	1.23 (31.3)												
BV□□-BP2-04-3	1/8 Male BSPP	6000 (414)	3000 (207)	0.12 (3.0)	0.28															
BV□□-NS2-04-3	1/8 Male NPT	6000 (414)	3000 (207)																	
BV□□-RT4-04-3	1/4 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP4-04-3	1/4 Male BSPP	6000 (414)	3000 (207)			2.70 (68.6)	1.35 (34.3)	1.40 (35.6)												
BV□□-NS4-04-3	1/4 Male NPT	6000 (414)	3000 (207)																	
BV□□-FL4-05-3	1/4" FITOK	6000 (414)	3000 (207)			3.48 (88.4)	1.74 (44.2)	1.88 (47.7)												
BV□□-ML6-05-3	6 mm FITOK	6000 (414)	3000 (207)			3.50 (89.0)	1.75 (44.5)	1.89 (48.0)												
BV□□-FL6-06-3	3/8" FITOK	6000 (414)	3000 (207)			3.60 (91.4)	1.80 (45.7)	1.94 (49.2)												
BV□□-ML8-06-3	8 mm FITOK	6000 (414)	3000 (207)			3.56 (90.4)	1.78 (45.2)	1.92 (48.7)												
BV□□-ML10-06-3	10 mm FITOK	6000 (414)	3000 (207)			3.62 (92.0)	1.81 (46.0)	1.95 (49.5)												
BV□□-FRT4-06-3	1/4 Female BSPT	6000 (414)	3000 (207)																	
BV□□-FRP4-06-3	1/4 Female BSPP	6000 (414)	3000 (207)			3.02 (76.8)	1.51 (38.4)	1.65 (41.9)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)						
BV□□-FNS4-06-3	1/4 Female NPT	6000 (414)	3000 (207)																	
BV□□-RT4-06-3	1/4 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP4-06-3	1/4 Male BSPP	6000 (414)	3000 (207)																	
BV□□-NS4-06-3	1/4 Male NPT	6000 (414)	3000 (207)																	
BV□□-RT6-06-3	3/8 Male BSPT	6000 (414)	3000 (207)			3.24 (82.2)	1.62 (41.1)	1.76 (44.6)												
BV□□-BP6-06-3	3/8 Male BSPP	6000 (414)	3000 (207)																	
BV□□-NS6-06-3	3/8 Male NPT	6000 (414)	3000 (207)																	

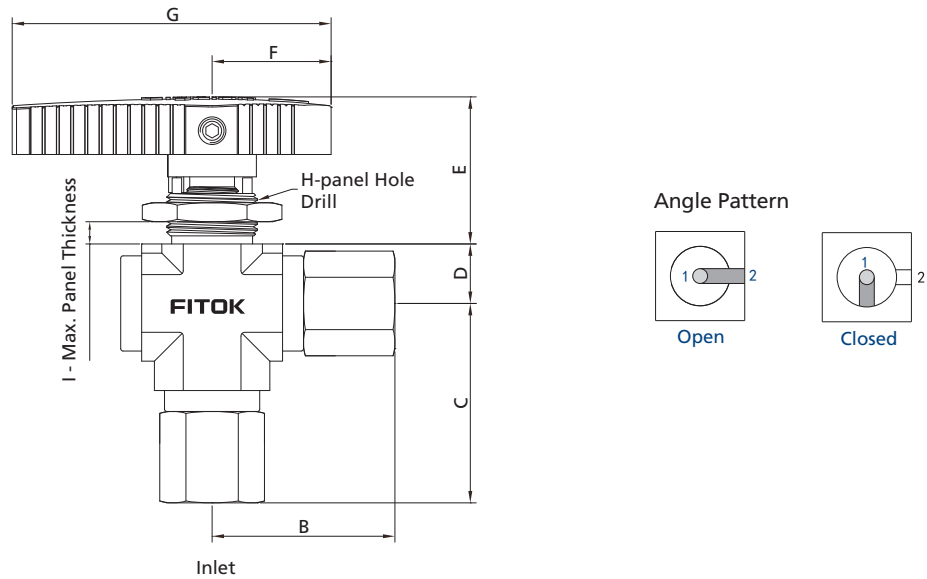


# B-50 Ball Valves

Ball Valves  
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)								
		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)											
BV□□-ML12-10-3	12 mm FITOK	6000 (414)	2000 (138)											
BV□□-ML14-10-3	14 mm FITOK	6000 (414)	1900 (131)			4.66(118.4)	2.33 (59.2)	2.67 (67.9)						
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)											
BV□□-FRP6-10-3	3/8 Female BSPP	6000 (414)	3000 (207)			3.90 (99.0)	1.95 (49.5)	2.29 (58.2)						
BV□□-FNS6-10-3	3/8 Female NPT	6000 (414)	3000 (207)											
BV□□-FRT8-10-3	1/2 Female BSPT	6000 (414)	3000 (207)											
BV□□-FRP8-10-3	1/2 Female BSPP	6000 (414)	3000 (207)			4.30 (109.2)	2.15 (54.6)	2.49 (63.3)						
BV□□-FNS8-10-3	1/2 Female NPT	6000 (414)	3000 (207)											
BV□□-FRT12-10-3	3/4 Female BSPT	6000 (414)	3000 (207)											
BV□□-FRP12-10-3	3/4 Female BSPP	6000 (414)	3000 (207)			4.50 (114.2)	2.25 (57.1)	2.59 (65.8)						
BV□□-FNS12-10-3	3/4 Female NPT	6000 (414)	3000 (207)											
BV□□-RT8-10-3	1/2 Male BSPT	6000 (414)	3000 (207)											
BV□□-BP8-10-3	1/2 Male BSPP	6000 (414)	3000 (207)											
BV□□-NS8-10-3	1/2 Male NPT	6000 (414)	3000 (207)											
BV□□-RT12-10-3	3/4 Male BSPT	6000 (414)	3000 (207)			4.44 (112.8)	2.22 (56.4)	2.56 (65.1)						
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



Ball Valves  
Plug Valves

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

## B-52 Ball Valves

Ball Valves  
Plug Valves

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)							
		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)			2.15 (54.6)	2.49 (63.3)						
BV□□-FRT8-10-A	1/2 Female BSPT	6000 (414)	3000 (207)										
BV□□-FRP8-10-A	1/2 Female BSPP	6000 (414)	3000 (207)			2.25 (57.1)	2.59 (65.8)						
BV□□-FNS8-10-A	1/2 Female NPT	6000 (414)	3000 (207)										
BV□□-FRT12-10-A	3/4 Female BSPT	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
BV□□-FRP12-10-A	3/4 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS12-10-A	3/4 Female NPT	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
BV□□-RT8-10-A	1/2 Male BSPT	6000 (414)	3000 (207)										
BV□□-BP8-10-A	1/2 Male BSPP	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
BV□□-NS8-10-A	1/2 Male NPT	6000 (414)	3000 (207)										
BV□□-RT12-10-A	3/4 Male BSPT	6000 (414)	3000 (207)	2.22 (56.4)	2.56 (65.1)								
BV□□-BP12-10-A	3/4 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS12-10-A	3/4 Male NPT	6000 (414)	3000 (207)	2.22 (56.4)	2.56 (65.1)								

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

# Ordering Number Description

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

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Handle/Actuator	For Actuator	Flow Pattern	Special Application	Cleaning and Packaging
BV	SS	FNS	Female NPT	2 1/8"	Same as Connection 1	PTFE	02	Black Nylon	NO	NO	Straight	No
	6L	NS	Male NPT	3 3 mm	Specify in the same way as the Connection 1 type and size	K PCTFE	03	Red Nylon	H	Mechanical Limit Switch	Angle (Bottom Port Inlet)	INACE
	S4	FRT	Female BSPT	4 1/4"		P PEEK	04	Green Nylon	N	Inductive Limit Switch	3-Way (Diverter Valve)	5 MR0175
	B	RT	Male BSPT	5 5/16"			05	Blue Nylon	Q	Solenoid Valve		FC-01
	904L	FMS	Female Metric Thread (for RG)	3/8" or 6 mm or M6 x 1			06	Yellow Nylon	HQ	Mechanical Limit Switch and Solenoid Valve		F2 FC-02
		MS	Male Metric Thread (for RG)	1/2" or 8 mm			10	Black Aluminium	NQ	Inductive Limit Switch and Solenoid Valve		
		FRP	Female BSPP (For RP)	10 mm or M10 x 1				90° Normally Closed Spring Return Pneumatic Actuator				
		BP	Male BSPP (For RG)	3/4" or 12 mm								
		FL	Fractional Tube Fitting	14 mm or M14 x 1.5								
		ML	Metric Tube Fitting	16 mm								
		UFB	Nut + Gasket + Fractional Tube Bulged Nipple	18 mm								
		UMB	Nut + Gasket + Metric Tube Bulged Nipple	20 mm or M20 x 1.5								
		UPB	Nut + Gasket + Pipe Bulged Nipple	22 mm or M22 x 1.5								
				24 M24 x 1.5								
								OS		90° Normally Open Spring Return Pneumatic Actuator		
								DA		90° Double Acting Pneumatic Actuator		
								LX		180° Left End Normally Open Spring Return Pneumatic Actuator		
								RX		180° Right End Normally Open Spring Return Pneumatic Actuator		
								DX		180° Double Acting Pneumatic Actuator		
								EA		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. 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. Pneumatic actuator is rated to 87 psig (6 bar) and electric actuator to DC 24V. For more information, please contact FITOK Group or our authorized distributors.

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.

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