

Ball Valves

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



FITOK
Valves and Fittings

www.fitokgroup.com

Contents

Trunnion Ball Valves

BF and BFH Series



01

3-piece Ball Valves

BG Series General Application



08

3-piece Ball Valves

BH Series High Pressure Application



13

One-piece Instrumentation Ball Valves

BO Series



19

Bar Stock Ball Valves

BP Series



30

Hex Bar Stock Ball Valves

BR Series



37

High Performance Ball Valves

BV Series



41

Important Information about Ball Valves

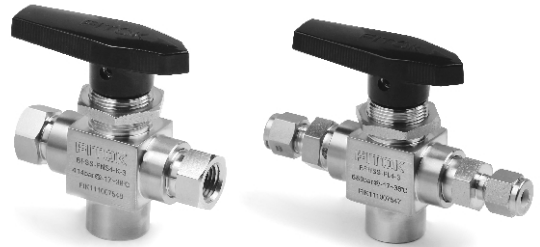
- ⦿ FITOK ball valves are designed to be used in fully open or fully closed position.
- ⦿ Packing adjustment may be required during the valve's life (except for BF and BFH series).
- ⦿ For better quality maintenance, FITOK ball valve should be kept in fully open position in warehouse.
- ⦿ Valves that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

Trunnion Ball Valves

BF and BFH Series High Pressure Service

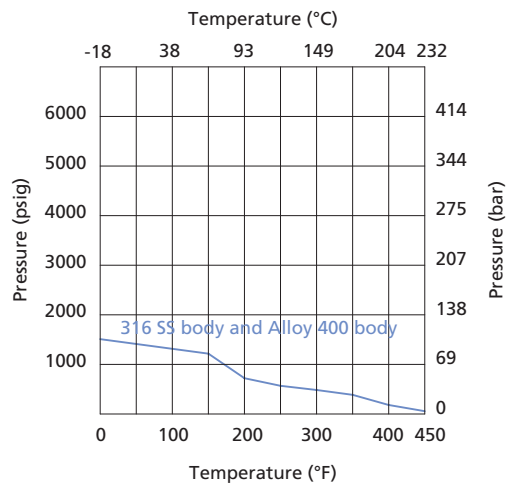
Features

- ⦿ Working pressure up to: 10000 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: Prevents ball blowout
- ⦿ Automatic compensation of seat sealing
- ⦿ Low operating torque
- ⦿ Handle as indicator of flow direction
- ⦿ Positive handle stop
- ⦿ Handle color options are available
- ⦿ Pneumatic or electric actuator available
- ⦿ Blowout proof stem
- ⦿ Panel mountable
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the maximum working 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: Provide leak tight integrity in both low and high-pressure systems, reduce seat wear from pressure surges

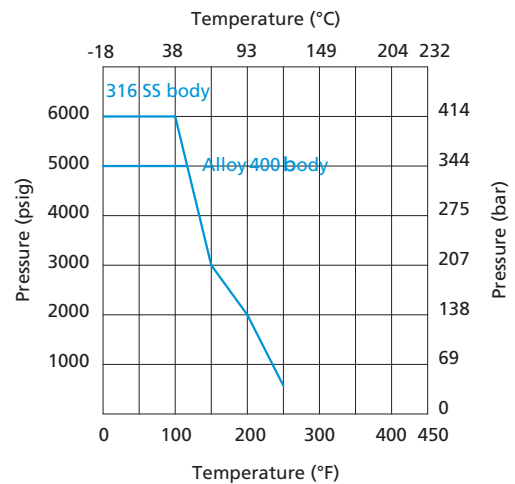


Pressure vs. Temperature

BF Series PTFE Seat

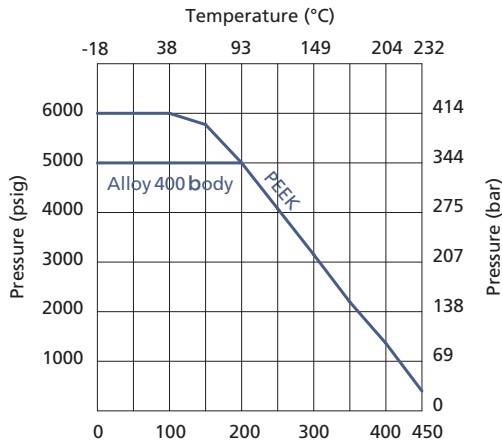


BF Series PCTFE Seat

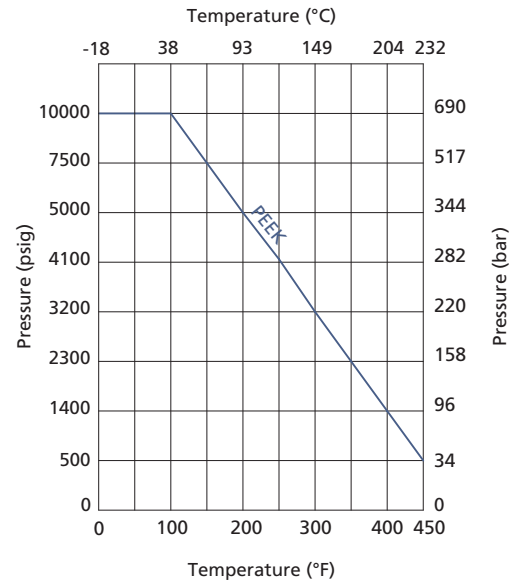


2 Ball Valves

BF Series PEEK Seat



BFH Series



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

Technical Data

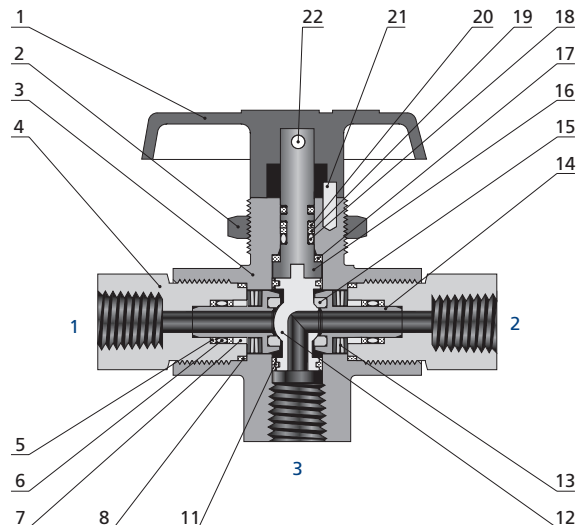
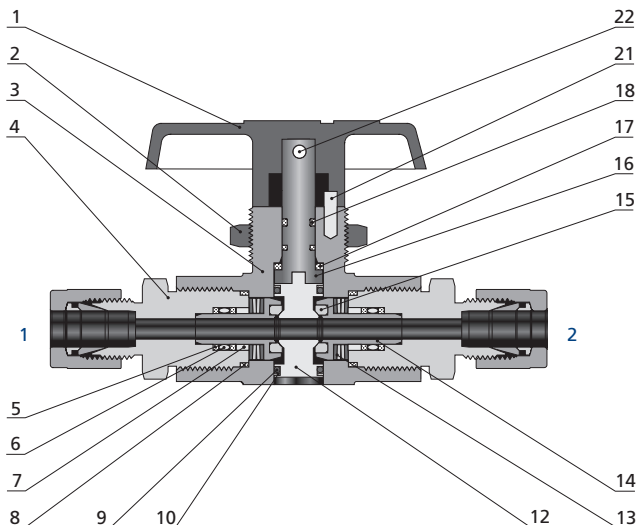
Seat Material	Temperature Rating °F (°C)	Pressure Rating @ 100°F (38°C) psig (bar)		Flow Coefficient (Cv)
		SS	Alloy 400	
BF Series				
PCTFE	0 to 250 (-18 to 121)	6000 (414)	5000 (344)	2-way valves-1.0 to 1.6 depending on end connection; 3-way valves-0.75
PEEK	0 to 450 (-18 to 232)	6000 (414)	5000 (344)	
PTFE		1500 (103)		
BFH Series				
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				
End Connection	FNS2, FNS4 FL4, ML6	ML10	FL6 ML8	FL8	ML12
Pressure Rating, psig (bar)	10000 (690)	8400 (578)	7500 (516)	6700 (461)	6600 (454)

Standard Materials of Construction

BF Series

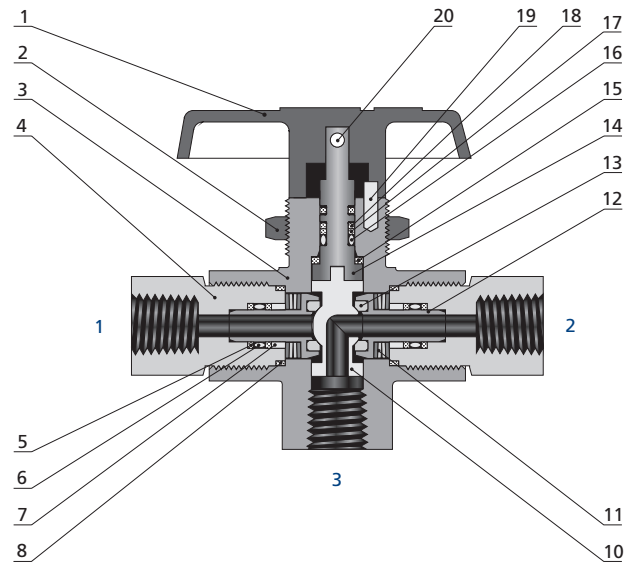
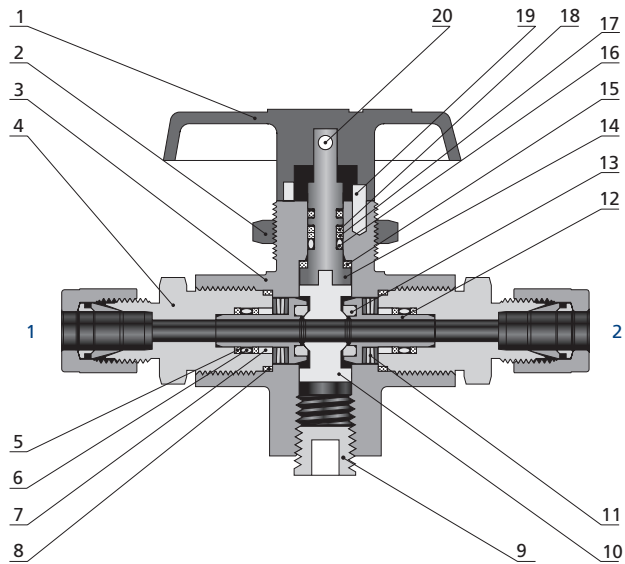


Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
		Material Grade/ASTM Specification			
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A276			
3	<i>Body</i>	316 SS/A182		Alloy 400/B164	
4	<i>End Connection</i>	316 SS/A479		Alloy 400/B164	
5	<i>Seat Retainer Backup Ring</i>	Reinforced PTFE			
6	<i>Seat Retainer O-ring</i>	Fluorocarbon FKM			
7	<i>Seat Retainer Guide</i>	316 SS/A276		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/A276		Alloy 400/B164	
13	<i>Seat Spring</i>	Alloy X-750/AMS 5542			
14	<i>Seat Retainer</i>	316 SS/A276		Alloy 400/B164	
15	<i>Seat</i>	PTFE or PEEK or PCTFE			
16	<i>Stem</i>	316 SS/A276		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>Pin</i>	SS			
22	<i>Set Screw</i>	SS			
<i>Lubricants</i>		Fluorinated-based			

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

4 Ball Valves

BFH Series



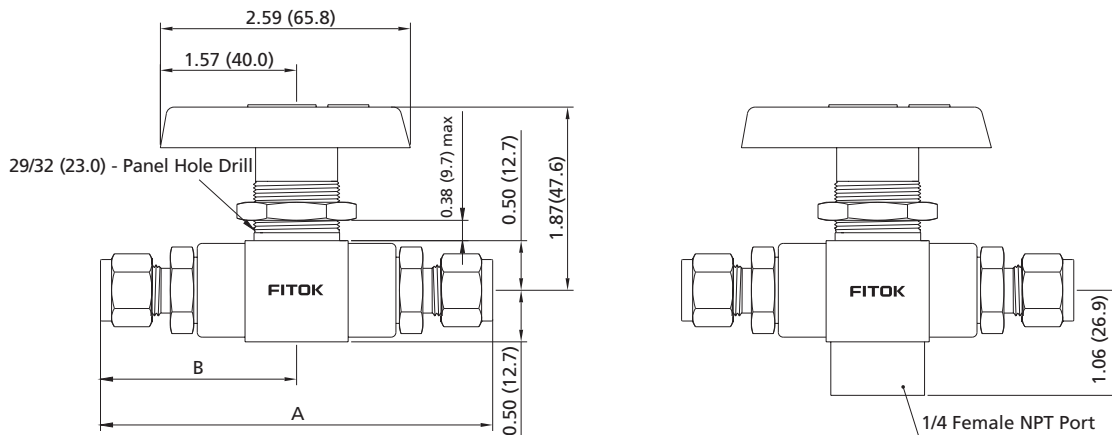
Item	Component	2-way	3-way
		Material Grade/ASTM Specification	
1	Handle	<i>Nylon with SS insert</i>	
2	Panel Nut	316 SS/A276	
3	Body	316 SS/A182	
4	End Connection	316 SS/A479	
5	Seat Retainer Guide	<i>Reinforced PTFE</i>	
6	Seat Retainer O-ring	<i>Fluorocarbon FKM</i>	
7	Seat Carrier Guide	316 SS/A276	
8	End Connection Seal	<i>PTFE/D1710</i>	
9	Plug	316 SS/A276	
10	Ball	<i>S21800/A276</i>	
11	Seat Spring	<i>Alloy X-750/AMS 5542</i>	
12	Seat Retainer	316 SS/A276	
13	Seat	PEEK	
14	Stem	316 SS/A276	
15	Stem Washer	PEEK	
16	Stem O-ring	<i>Fluorocarbon FKM</i>	
17	Secondary Stem Backup Ring	<i>PTFE/D1710</i>	
18	Primary Stem Backup Ring	PEEK	
19	Pin	SS	
20	Set Screw	SS	
Lubricants		<i>Fluorinated-based</i>	

Note: Wetted components are listed in *italic*.

1. Ball trunnions are Xylan® coated in BFH series 2-way valve.

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

Dimensions



2-way Valve

Basic Ordering Number		Connection Size		Cv	Dimension, 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 Size			Cv	Dimension, 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				
BF□□-FL4-3	BFH□□-FL4-3	1/4" FITOK	1/4" FITOK			3.93 (99.8)	1.97 (50.0)
BF□□-FL6-3	BFH□□-FL6-3	3/8" FITOK	3/8" FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-FL8-3	BFH□□-FL8-3	1/2" FITOK	1/2" FITOK			4.39 (111.5)	2.19 (55.6)
BF□□-ML6-3	BFH□□-ML6-3	6 mm FITOK	6 mm FITOK			4.60 (116.8)	2.30 (58.4)
BF□□-ML8-3	BFH□□-ML8-3	8 mm FITOK	8 mm FITOK			4.14 (105.2)	2.07 (52.6)
BF□□-ML10-3	BFH□□-ML10-3	10 mm FITOK	10 mm FITOK			4.15 (105.4)	
BF□□-ML12-3	BFH□□-ML12-3	12 mm FITOK	12 mm FITOK			4.41 (112.0)	2.20 (55.9)
					4.60 (116.8)	2.30 (58.4)	

1. FITOK means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
For dimensions not shown above, please contact the authorized representative or FITOK Group.
4. Bottom port of all 3-way valves is 1/4 in. female NPT.

6 Ball Valves

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 valves ordering number.

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

BF Series Seal Kits

Seal kits contain components of the same materials as new components. See "**Standard Materials of Construction**". For ordering the seal kits, please add the seat material code after the basic ordering number in the table below. PTFE's code is T, PCTFE's code is K, PEEK's code is P.

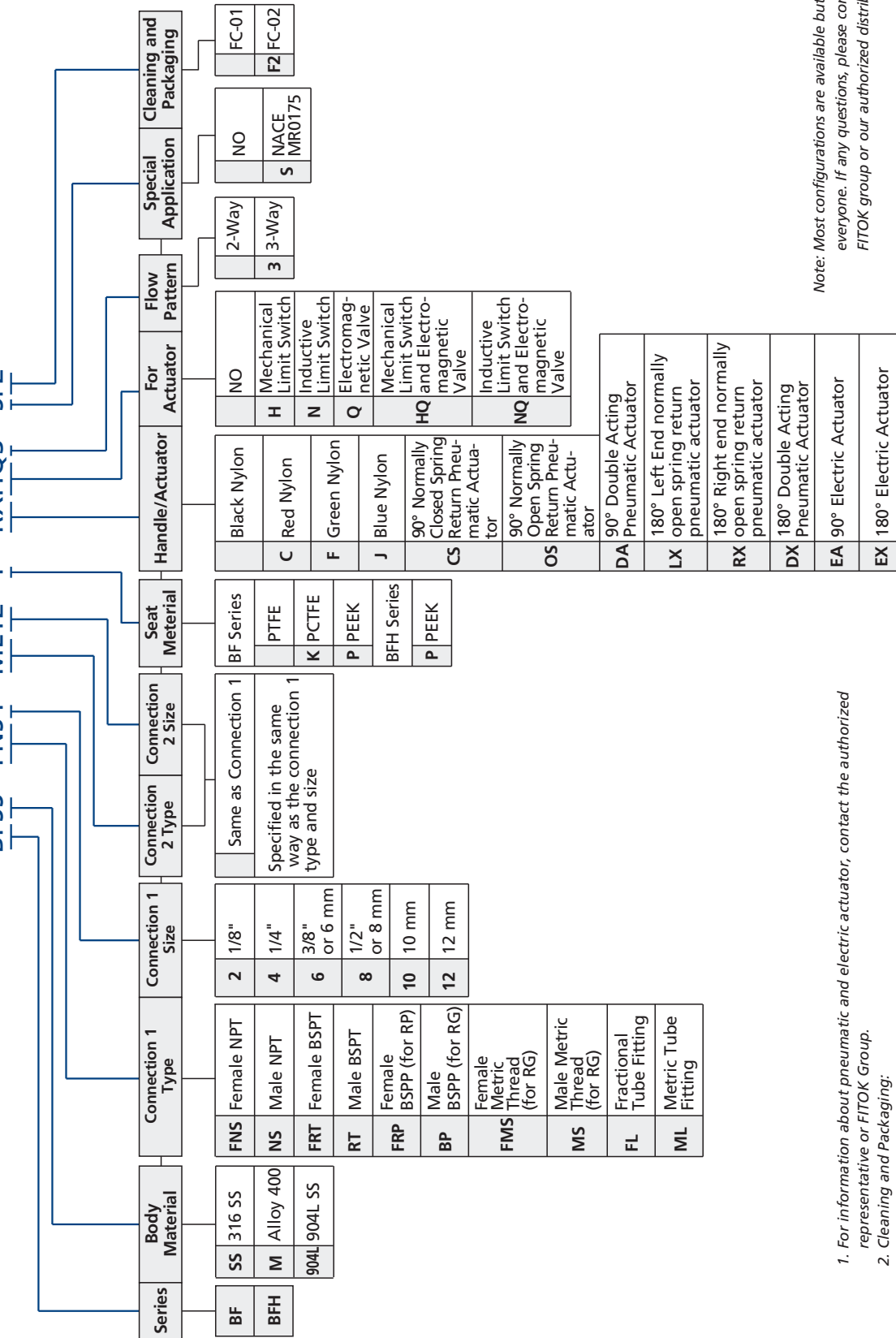
Example : BFSS-2-ZT

Valve Series	Basic Seal Kit Ordering Number	Kit Contents
BF 2-way	BFSS-2-Z	Instruction, O-rings, stem washer, ball, seat subassemblies (seats and seat retainers), seat springs, end connection seals, lubricant
BF 3-way	BFSS-3-Z	Instruction, 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	Instruction, 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 number specify 316 SS material. For ordering other materials, please replace the ordering number of the SS with the appropriate material code. For example, alloy 400 seal kit, please replace SS with M, the number is BFM-2-ZP.

Part Number Description

BFSS - FNS4 - ML12 - P - RXHQ3 - SF2



Note: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

- For information about pneumatic and electric actuator, contact the authorized representative or FITOK Group.
- 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

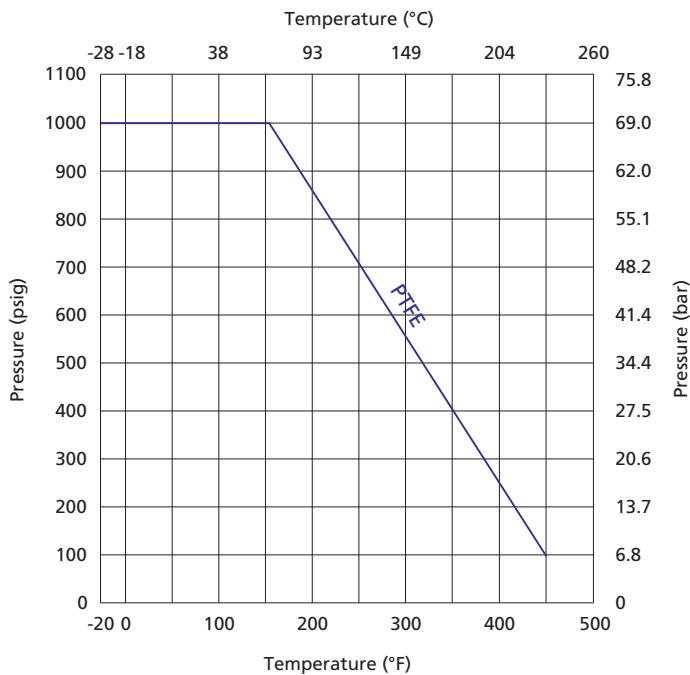
General Application

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 maximum working pressure to meet the requirement of no visible leak



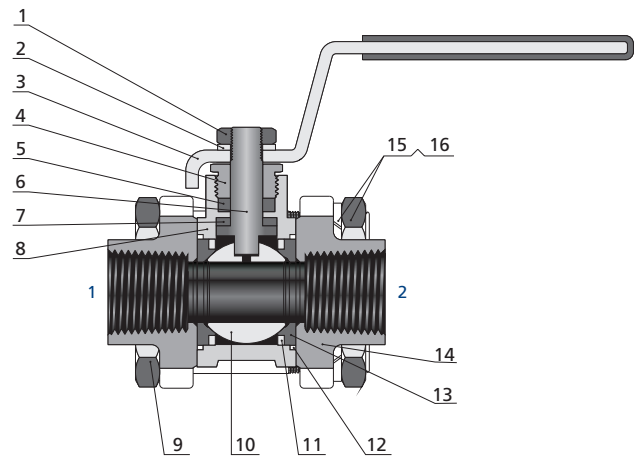
Pressure vs. Temperature



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

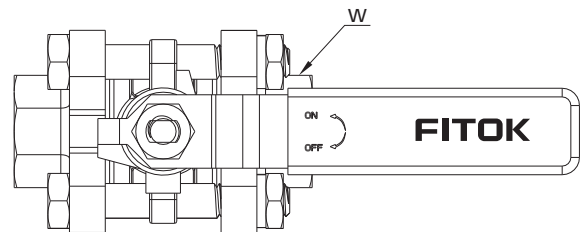
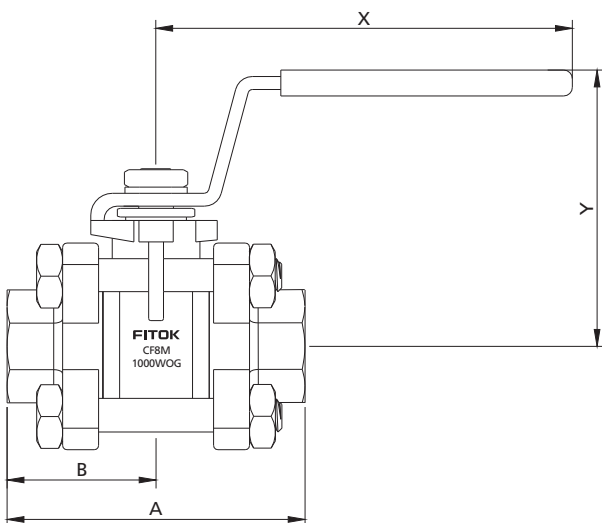
Standard Materials of Construction

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

Dimensions



10 Ball Valves

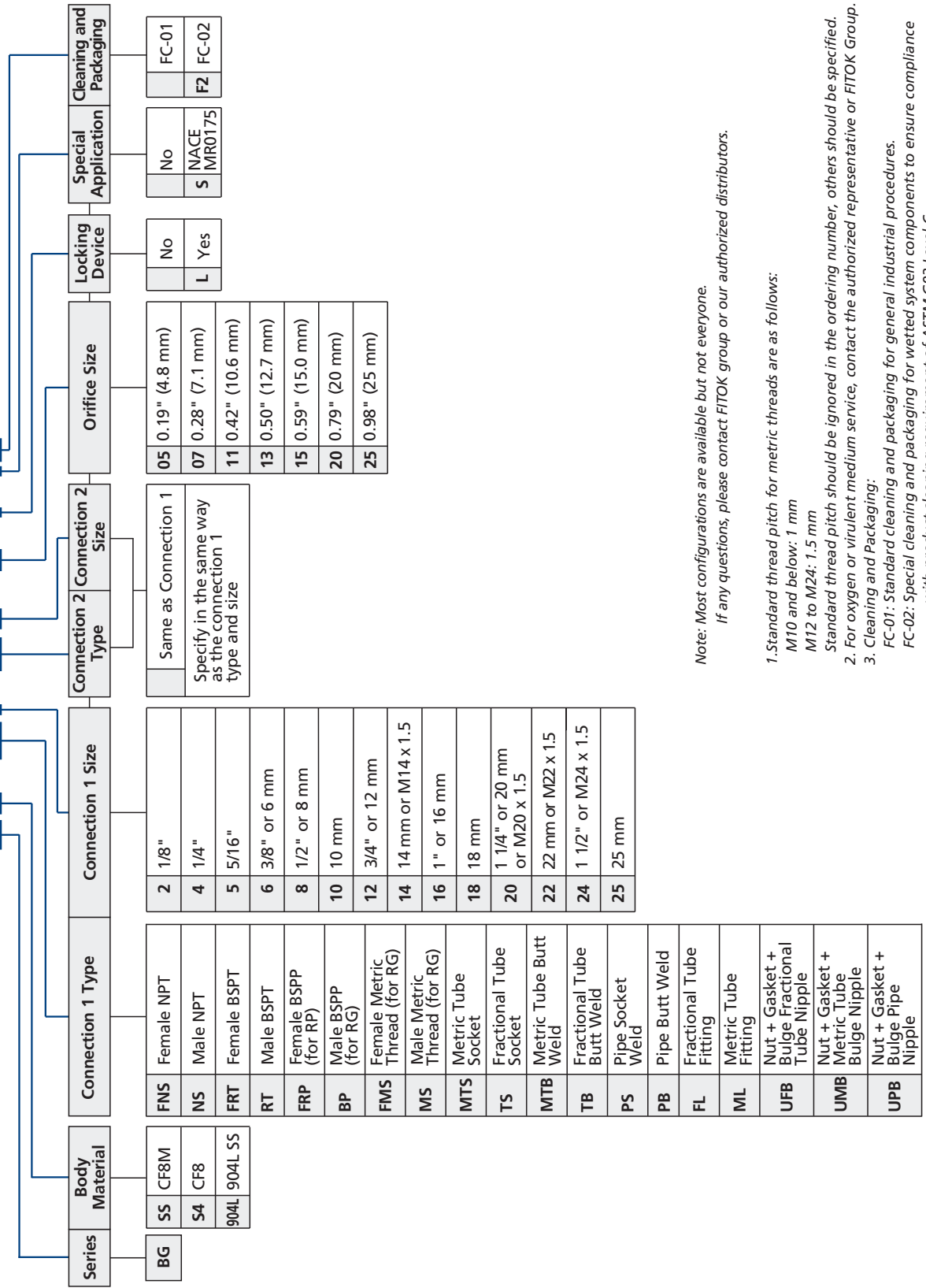
Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
BG□□-FNS2-05	1/8 Female NPT	1/8 Female NPT	0.19 (4.8)	1.2	2.05 (52.1)	1.03 (26.0)	0.63 (16.0)	2.69 (68.3)	1.46 (37.0)
BG□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP							
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)	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)	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)	
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)	2.26 (57.5)	
BG□□-FRP8-15	1/2 Female BSPP	1/2 Female BSPP							
BG□□-PS8-15	1/2 PS	1/2 PS							
BG□□-MTB22-15	22 mm MTB	22 mm MTB			3.13 (79.4)	1.56 (39.7)			
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			2.74 (69.5)	1.37 (34.8)			
BG□□-ML18-15	18 mm FITOK	18 mm FITOK							
BG□□-ML20-15	20 mm FITOK	20 mm FITOK							
BG□□-ML18-15	18 mm FITOK	18 mm FITOK	4.04 (103.0)	2.02 (51.3)					
BG□□-ML20-15	20 mm FITOK	20 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							

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, 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							
BG□□-ML28-25	28 mm FITOK	28 mm FITOK		50.0	5.91 (150.0)	2.95 (75.0)			
BG□□-PS16-25	1 PS	1 PS			3.54 (90.0)	1.77 (45.0)			
BG□□-PB16-25	1 PB Schedule Number: 80	1 PB Schedule Number: 80		93.0	90	45			

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, 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 FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Part Number Description

BGSS – FNS8 – ML18 – 15 – L – SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Orifice Size	Locking Device	Special Application	Cleaning and Packaging			
BG	SS	FNS	2 1/8"	Same as Connection 1	05 0.19" (4.8 mm)	No	No	FC-01				
	S4	NS	4 1/4"						07 0.28" (7.1 mm)	L Yes	NACE S	F2
	904L	FRT	5 5/16"						11 0.42" (10.6 mm)			

Connection 2 Size	Orifice Size
05 0.19" (4.8 mm)	05 0.19" (4.8 mm)
07 0.28" (7.1 mm)	07 0.28" (7.1 mm)
11 0.42" (10.6 mm)	11 0.42" (10.6 mm)
13 0.50" (12.7 mm)	13 0.50" (12.7 mm)
15 0.59" (15.0 mm)	15 0.59" (15.0 mm)
20 0.79" (20 mm)	20 0.79" (20 mm)
25 0.98" (25 mm)	25 0.98" (25 mm)

Connection 1 Type	Connection 1 Size
FNS Female NPT	2 1/8"
NS Male NPT	4 1/4"
FRT Female BSPT	5 5/16"
RT Male BSPT	6 3/8" or 6 mm
FRP Female BSPP (for RP)	8 1/2" or 8 mm
BP Male BSPP (for RG)	10 10 mm
FMS Female Metric Thread (for RG)	12 3/4" or 12 mm
MS Male Metric Thread (for RG)	14 14 mm or M14 x 1.5
MTS Metric Tube Socket	16 1" or 16 mm
TS Fractional Tube Socket	18 18 mm
MTB Metric Tube Butt Weld	20 1 1/4" or 20 mm or M20 x 1.5
TB Fractional Tube Butt Weld	22 22 mm or M22 x 1.5
PS Pipe Socket Weld	24 1 1/2" or M24 x 1.5
PB Pipe Butt Weld	25 25 mm

Note: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

- 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 ignored in the ordering number, others should be specified.
For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
- 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

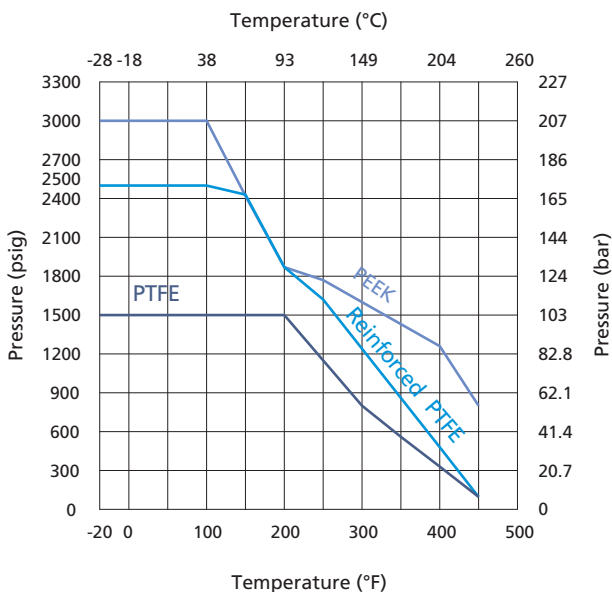
Features

- ⦿ Working pressure up to: 3000 psig (207 bar)
- ⦿ Working temperatures: -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
 - 1/2" to 2" and 12 mm to 50 mm tube butt or socket weld
 - 1/2" to 2" and 12 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 maximum working pressure to meet the requirement of no visible leak

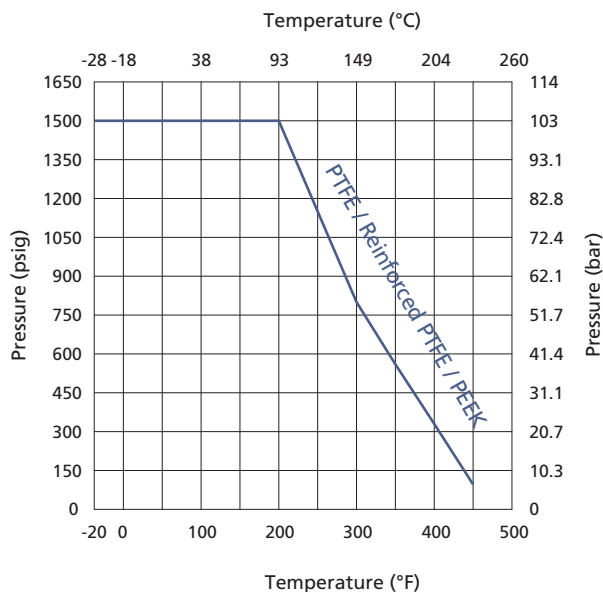


Pressure vs. Temperature

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



Orifice Size: 1.13" & 1.25" & 1.50"



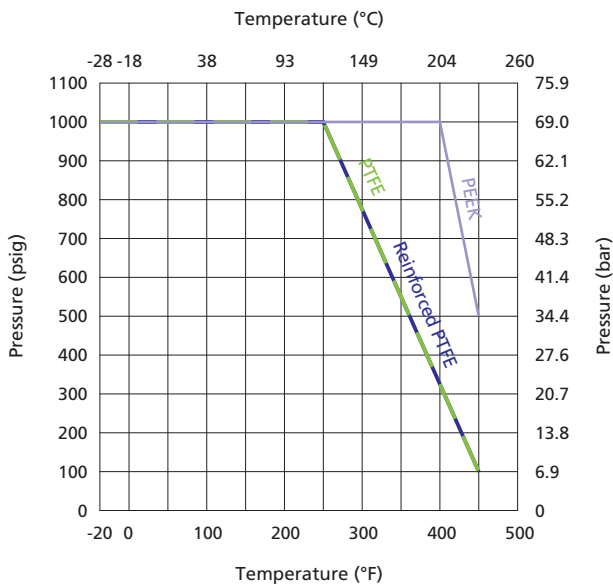
Note: The temperature and pressure rating are based on valves of standard materials.

3-way Valves

Features

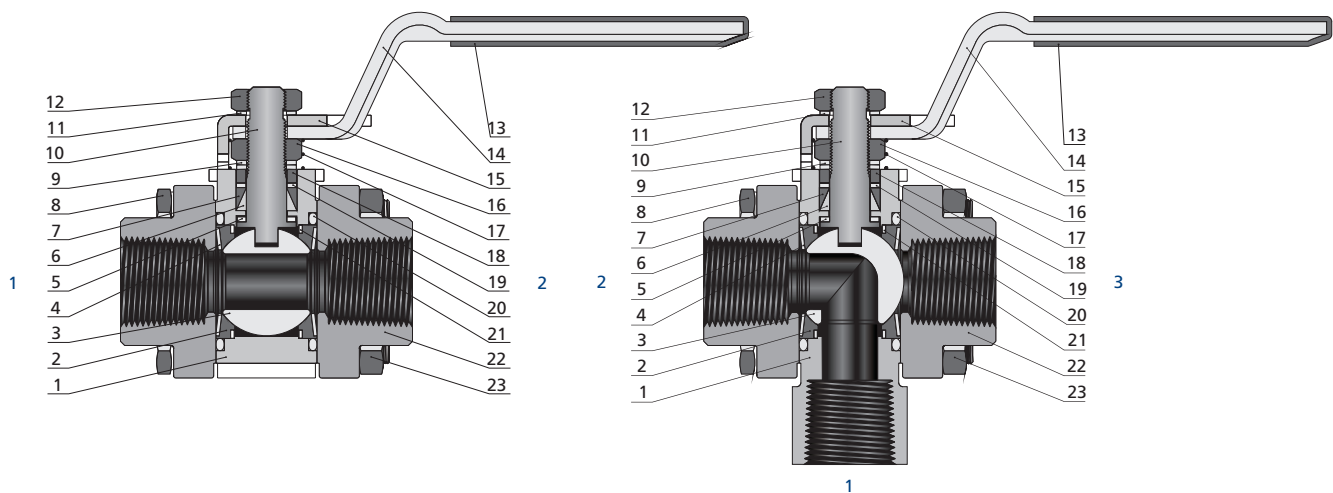
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ End connections:
1/4 to 2 thread
1/4" to 2" and 12 mm to 38 mm tube fitting
- ⦿ One-piece center body without welding
- ⦿ 180° actuation
- ⦿ Inlet and outlet for 3-way valve: connection 1 as inlet, connection 2 and connection 3 as outlet
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the maximum working pressure to meet the requirement of no visible leak

Pressure vs. Temperature



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

Standard Materials of Construction

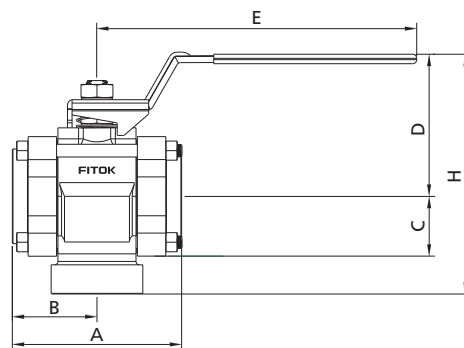
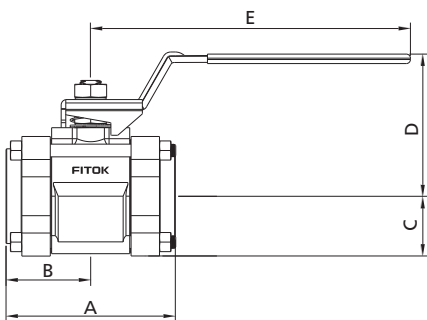


Item	Component	Material Grade/ASME Specification	
1	<i>Body</i>	CF8M/A351	CF8/A351
2	<i>Seat</i>	PTFE or Reinforced PTFE or PEEK	
3	<i>Ball</i>	316 SS/A479	
4	<i>Coned-disc Spring</i>	Strain-hardened 316 SS/A240	
5	<i>Stem Bearing</i>	PEEK	
6	<i>Lower Packing</i>	Reinforced PTFE	
7	<i>Upper Packing</i>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

Note: Wetted components are listed in italic.

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

Dimensions



16 Ball Valves

Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimension, 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)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	—		
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)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	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			0.41 (10.3)	7.5	2.16 (54.9)	1.08 (27.4)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	—
BH□□-ML10-07	BH□□-ML10-07-3	10 mm FITOK	10 mm FITOK										
BH□□-TS6-07	—	3/8" TS	3/8" TS										
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	0.38 (9.5)	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			4.04 (103)	2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	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			0.52 (13.1)	13.6	2.70 (68.6)	1.34 (34)	0.89 (22.6)	2.35 (59.7)	4.50 (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										
BH□□-PS8-13	—	1/2 PS	1/2 PS	0.52 (13.1)	15	2.69 (68.3)	1.34 (34)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	—		
BH□□-PB8-13	—	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80										

Basic Ordering Number		Connection Type and Size		Orifice in.(mm)	Cv	Dimension, 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□□-PB12-22	—	3/4 PB, Schedule Number: 80	3/4 PB, Schedule Number: 80								
BH□□-PB16-22	—	1 PB Schedule Number: 80	1 PB Schedule Number: 80								
BH□□-TS20-29	BH□□-TS20-29-3	1 1/4" TS	1 1/4" TS	1.13 (28.6)	80	4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)	—
BH□□-PB20-29	BH□□-PB20-29-3	1 1/4 PB, Schedule Number: 80	1 1/4 PB, Schedule Number: 80			4.57 (116)	2.28 (57.9)				
BH□□-FNS20-32	BH□□-FNS20-32-3	1 1/4 Female NPT	1 1/4 Female NPT	1.25 (31.8)	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	100	4.57 (116)	2.28 (57.9)	—	—	143	71.4	
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								5.09 (129)

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, 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 FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Part Number Description



BH6L - FNS8 - FRT8 - FL8 - P13G - OSHQ3L - SF2

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Packing Material	Handle/Actuator	For Actuator	Flow Pattern	Locking Device	Special Application	Cleaning and Packaging
BH	SS CF8M	FNS Female NPT	2 1/8"	Same as Connection 1	05 0.19" (4.8 mm)	PTFE	Reinforced PTFE	Yellow Handle Sleeve		NO		No	No	FC-01
	S4 CF8	NS Male NPT	4 1/4"	Specify in the same way as the Connection 1 type and size	07 0.28" (7.1 mm)	Reinforced PTFE	G Graphite	Red Handle Sleeve	H	Mechanical Limit Switch		L Yes	NACE MR0175	F2 FC-02
	904L SS	FRT Female BSPT	5 5/16"		10 0.41" (10.4 mm)	P PEEK		Green Handle Sleeve	N	Inductive Limit Switch				
		RT Male BSPT	6 3/8" or 6 mm		13 0.52" (13.1 mm)			Blue Handle Sleeve	Q	Electromagnetic Valve				
		FRP Female BSPP (for RP)	8 1/2" or 8 mm		22 0.88" (22.2 mm)			90° Normally Closed Spring Return Pneumatic Actuator	HQ	Mechanical Limit Switch and Electromagnetic Valve				
		BP Male BSPP (for RG)	10 10 mm		29 1.13" (28.6 mm)			90° Normally Open Spring Return Pneumatic Actuator	NQ	Inductive Limit Switch and Electromagnetic Valve				
		FMS Female Metric Thread (for RG)	12 3/4" or 12 mm		32 1.25" (31.8 mm)			90° Double Acting Pneumatic Actuator	DA					
		MS Male Metric Thread (for RG)	14 14 mm or M14 x 1.5		38 1.50" (38.1 mm)			180° Left end normally open spring return pneumatic actuator	LX					
		MTS Metric Tube Socket	16 1" or 16 mm					180° Right end normally open spring return pneumatic actuator	RX					
		TS Fractional Tube Socket	18 18 mm					180° Double Acting Pneumatic Actuator	DX					
		MTB Metric Tube Butt Weld	20 1 1/4" or 20 mm or M20 x 1.5					90° Electric Actuator	EA					
		TB Fractional Tube Butt Weld	22 22 mm or M22 x 1.5					180° Electric Actuator	EX					
		PS Pipe Socket Weld	24 1 1/2" or M24 x 1.5											
		PB Pipe Butt Weld	25 25 mm											
		FL Fractional Tube Fitting	27 M27 x 2											
		ML Metric Tube Fitting	28 28 mm											
		UPB Nut + Gasket + Bulge Fractional Tube Nipple	32 2" or 32 mm											
		UMB Nut + Gasket + Metric Tube Bulge Nipple												
		UPB Nut + Gasket + Bulge Pipe Nipple												
		FO FO Fitting												
		FR FR Fitting												

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be ignored in the ordering number, others should be specified.
- FO means FITOK O-seal fittings.
 FR means FITOK metal ring seal fittings.
- For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.
- For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
- 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: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

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)
- ⦿ Size from 1/16" to 3/4" or 3 mm to 18 mm
- ⦿ 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 zone, such as area between the ball and valve chamber
- ⦿ In-line inspection and repair after system relieved by top entry design
- ⦿ Thermal cycle performance improved and wear compensated by live-loaded design
- ⦿ Any reasonable connections available
- ⦿ Pneumatic and electric actuator available
- ⦿ Handle color options are available
- ⦿ Full operating pressure at any port
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the maximum working pressure to meet the requirement of no visible leak

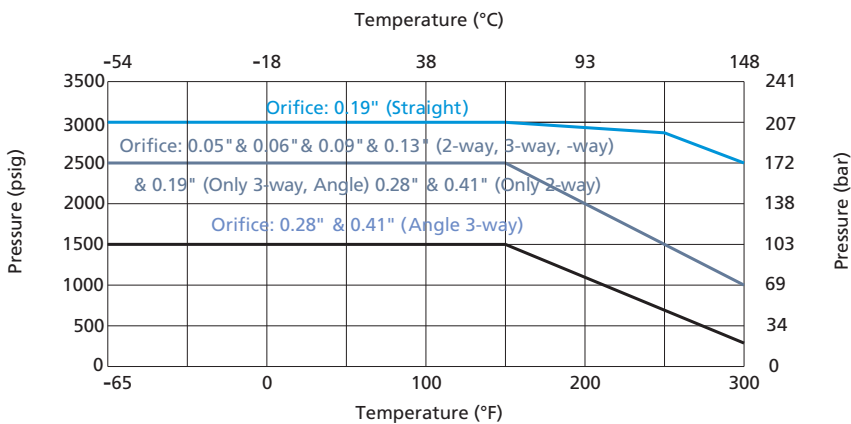


Pressure vs. Temperature

PFA, UHMWPE Packing Seat

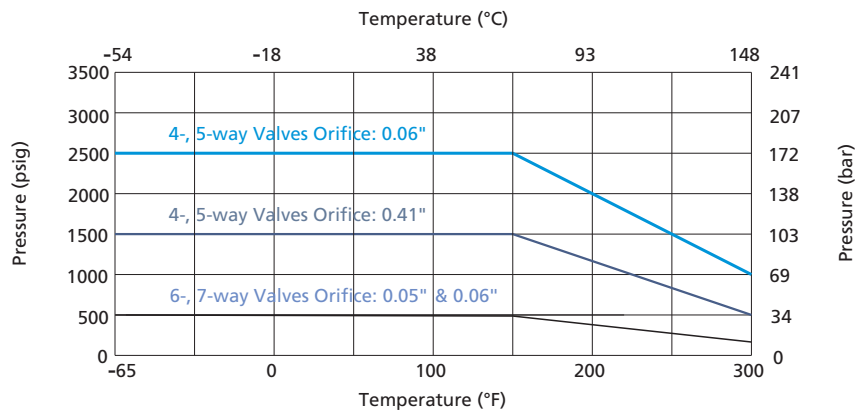
The working temperature of UHMWPE packing seat should not be higher than 65°C (150°F).

2-, 3-way, Angle Valves

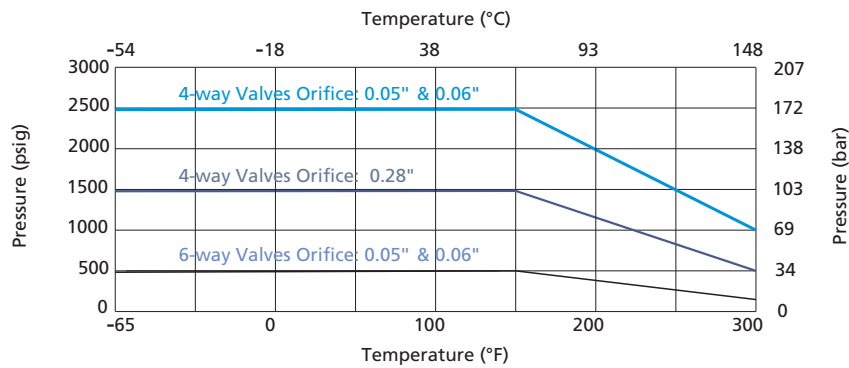


20 Ball Valves

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

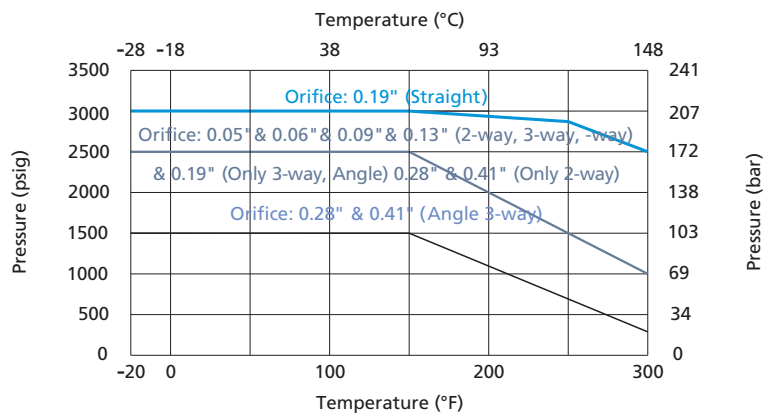


Crossover (4-, 6-way) Valves

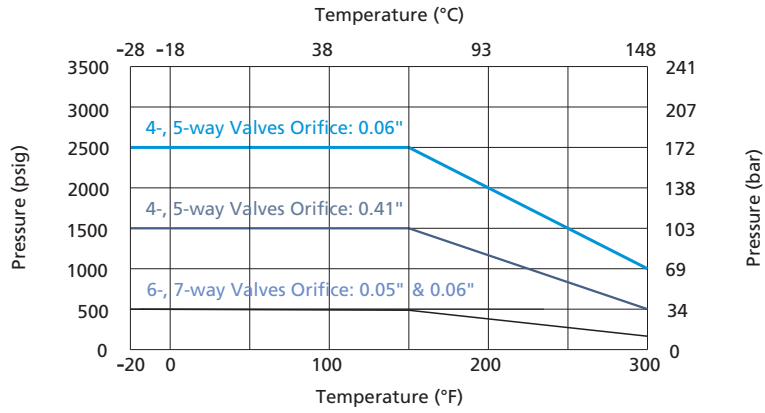


PTFE Packing Seat

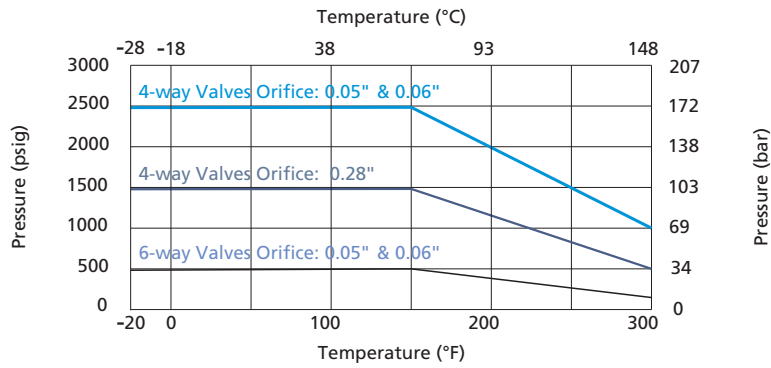
2-, 3-way, Angle Valves



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

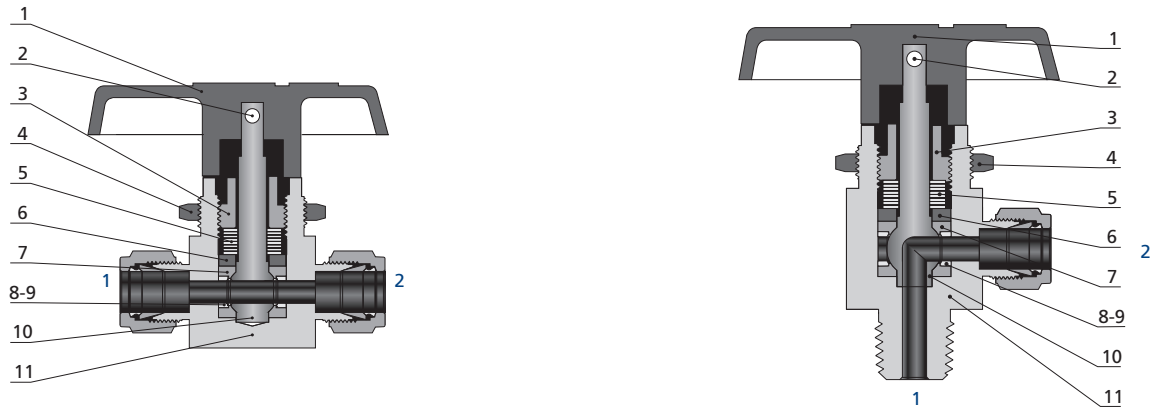


Crossover (4-, 6-way) Valves



- 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



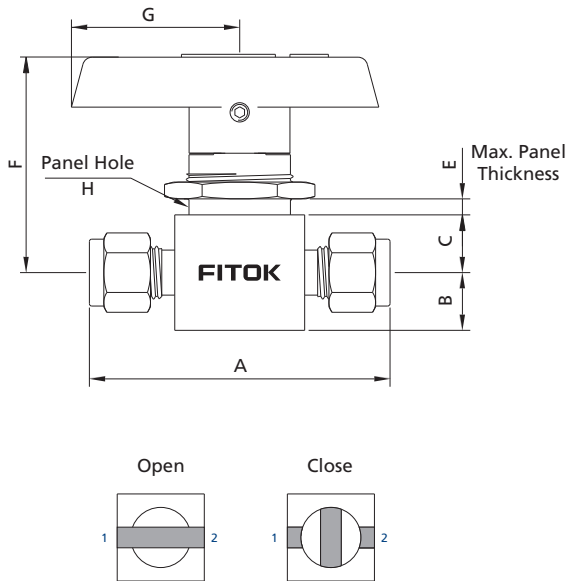
Item	Component	Valve Body Material		
		SS	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Nylon or Aluminium		
2	Set Screw	SS		
3	Packing Bolt	316 SS/A276	Brass CDA 36000/B16	Alloy R-405/B164
4	Panel Nut	316 SS/A276	Brass CDA 36000/B16	316 SS/A276
5	Dishing Spring	S17700/A693		
6	Gland	316 SS/A276	Brass CDA 36000/B16	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/A276	Brass	Alloy 400/B164
9	<i>Support Disc</i>			
10	<i>Ball Stem</i>	316 SS/A276	Brass CDA 36000/B16	Alloy 400/B164
11	<i>Body</i>	316 SS/A182	Brass CDA 37700/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 *italic*.

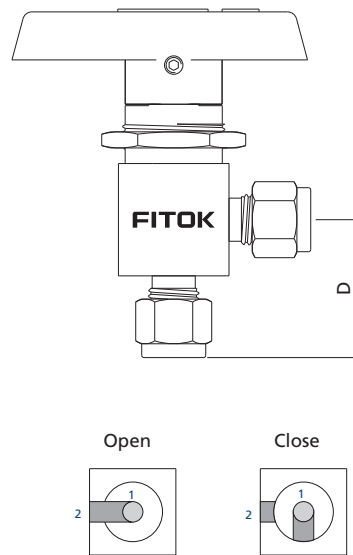
For other materials, please contact FITOK Group or our authorized distributors.

Dimensions

2-way Valves



Angle Pattern Valves

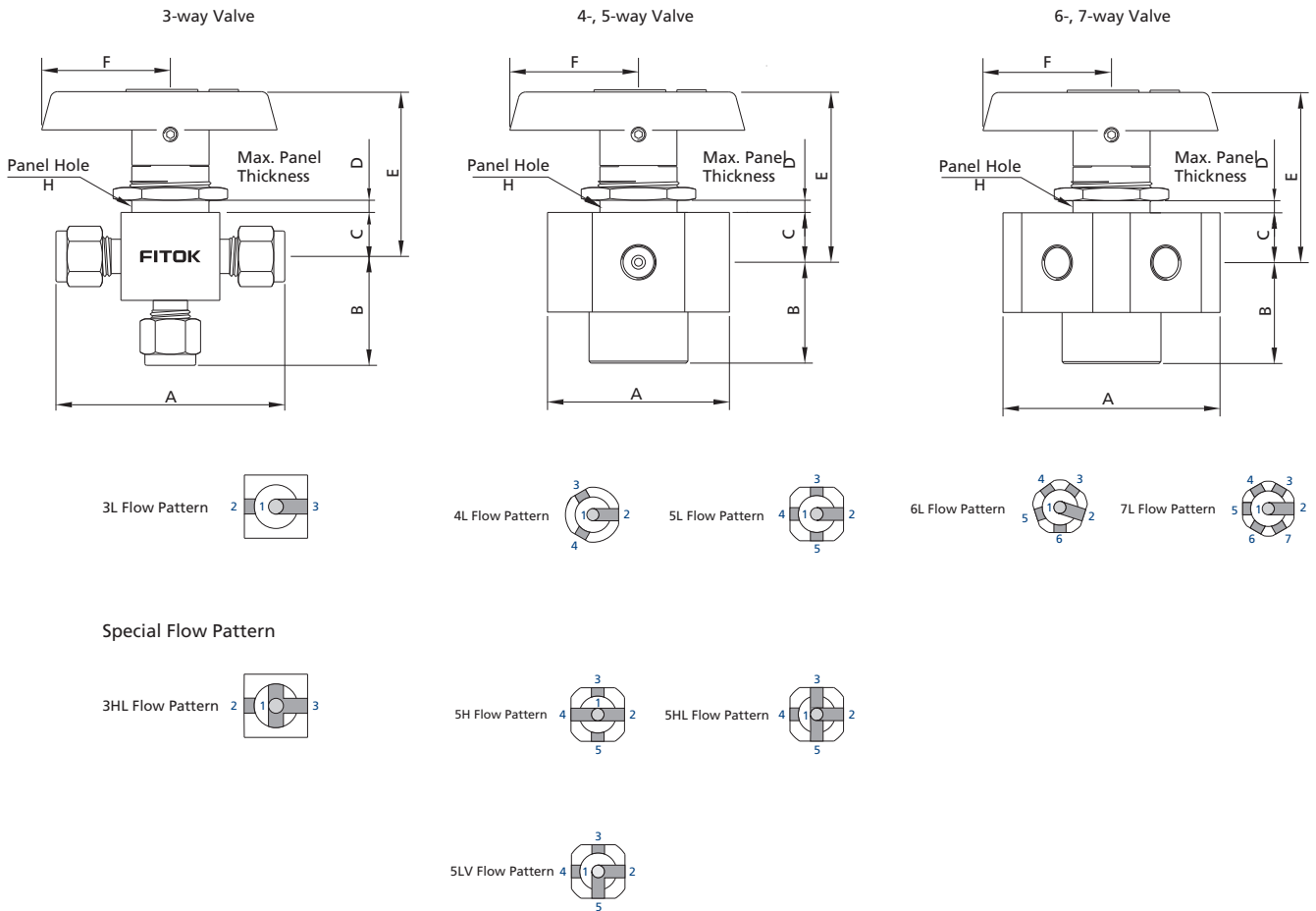


Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimension, in. (mm)							
			Straight	Angle	A	B	C	D	E	F	G	H
BO□□-FL1-00	1/16" FITOK	0.05 (1.3)	0.10	—	1.68 (42.7)	0.28 (7.1)	0.34 (8.6)	—	1/4 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL2-02	1/8" FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)			0.97 (24.6)				
BO□□-FL4-03	1/4" FITOK	0.13 (3.2)	0.60	0.35	2.21 (56.1)	0.38 (9.7)	0.44 (11.2)	1.07 (27.2)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL4-05		0.19 (4.8)			2.39 (60.7)			1.17 (29.7)				
BO□□-FL6-05	3/8" FITOK	0.28 (7.1)	1.50	0.90	2.58 (65.5)	0.56 (14.2)	0.56 (14.2)	1.29 (32.8)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FL6-07			6.00		2.00			3.05 (77.5)				
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	3.92 (99.6)							
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)	1/4 (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)	3/16 (4.8)	1.64 (41.7)
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)

24 Ball Valves

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimension, 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)	1/4 (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)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FNS4-05	1/4 Female NPT	0.90	0.75	2.06 (52.3)	1.03 (26.2)							
BO□□-FNS4-07		3/8 Female NPT	0.28 (7.1)	3.00	1.70	2.50 (63.5)	0.56 (14.2)	0.56 (14.2)	1.25 (31.8)	0.35 (9)	2.19 (55.5)	2.05 (52)
BO□□-FNS6-07	2.60			1.50								
BO□□-FNS8-10	1/2 Female NPT	0.41 (10.3)	6.30	3.50	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	1.56 (39.6)	3/8 (9.5)	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)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FRT4-05	1/4 Female BSPT		0.90		2.06 (52.3)							
BO□□-FRT6-07	3/8 Female BSPT	0.28 (7.1)	2.60	—	2.50 (63.5)	0.56 (14.2)	0.56 (14.2)	—	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FRT8-10	1/2 Female BSPT	0.41 (10.3)	6.30		3.12 (79.2)	0.69 (17.5)	0.69 (17.5)		0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-NS4-FL4-05	1/4 Male NPT	0.19 (4.8)	1.60	0.75	2.20 (55.9)	0.38 (9.7)	0.44 (11.2)	1.03 (26.2)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
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)	1/4 (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)		3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FR4-03	1/4 Male FR	0.13 (3.2)	0.60	0.35	2.13 (54.1)		0.34 (8.6)	1.09 (27.7)	1/4 (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)		3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FR8-07	1/2 Male FR	0.28 (7.1)	6.00	—	2.88 (73.2)	0.56 (14.2)		—	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FR8-10		0.41 (10.3)	12.00		3.12 (79.2)	0.69 (17.5)			0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)

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



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)							
				A	B	C	D	E	F	H	
3-way Valve											
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)	1/4 (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)	3/16 (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								

26 Ball Valves

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, 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)	1/4 (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)	3/16 (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)	1/4 (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)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FNS4-07-3L			1.70	2.46 (62.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FNS6-07-3L			3/8 Female NPT	1.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	3/8 (9.5)	2.67 (67.7)	3.13 (79.6)
BO□□-FNS8-10-3L	1/2 Female NPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	3/8 (9.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-FRT4-05-3L	1/4 Female BSPT	0.19 (4.8)	0.75	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	3/16 (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	2.46 (62.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FRT8-10-3L	1/2 Female BSPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)

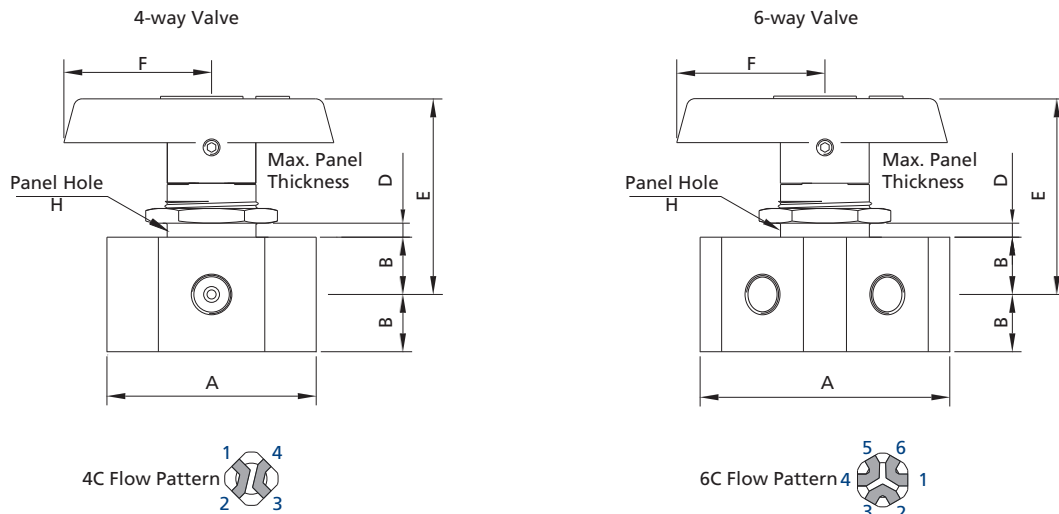
4 - & 5-way Valve

BO□□-FL2-01-4L	1/8" FITOK	0.06 (1.6)	0.07	2.36 (60)	1.32 (33.5)	0.44 (11.2)	5/32 (4.1)	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)	0.69 (17.5)	0.41 (10.5)	2.76 (70.2)	2.63 (66.7)	1 1/2 (38.1)
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										

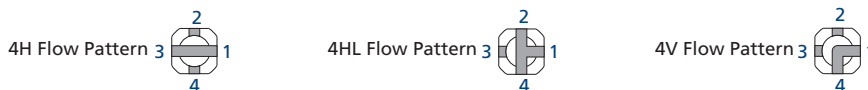
6 - & 7-way Valve

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)	0.69 (17.5)	0.41 (10.5)	2.76 (70.2)	2.63 (66.7)	1 1/2 (38.1)
BO□□-FL2-01-7L										

Crossover (4-, 6-way) Valves



Special Flow pattern



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)					
				A	B	D	E	F	H
4-way Valve									
BO□□-FL1-00-4C	1/16" FITOK	0.05 (1.3)	0.06	1.95 (49.6)	0.44 (11.2)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL2-01-4C	1/8" FITOK	0.06 (1.6)	0.08	2.61 (66.3)					
BO□□-FNS2-01-4C	1/8 Female NPT			1.55 (39.4)					
BO□□-FNS8-07-4C	1/2 Female NPT	0.28 (7.1)	1.60	3.13 (79.5)	0.69 (17.5)	0.48 (12.2)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
6-way Valve									
BO□□-FL1-00-6C	1/16" 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 FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

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.

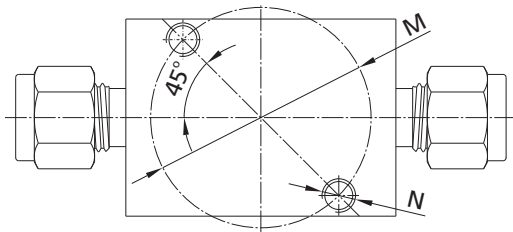
Bottom Screw Panel Mounting Options

Remark

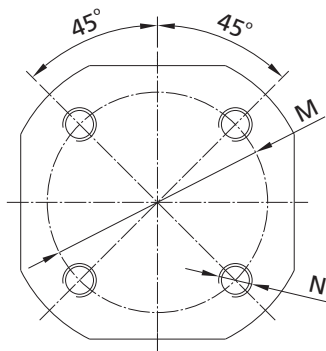
The bottom screw panel mounting options are not available on angle-pattern valves, 3-way valves, 6-way valves and 7-way valves.

Mounting Dimension

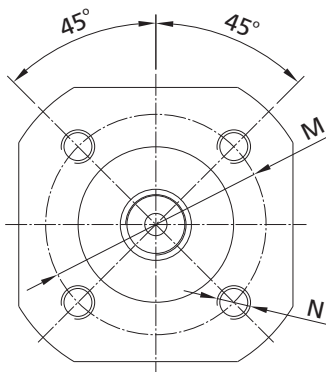
2-way



4-way



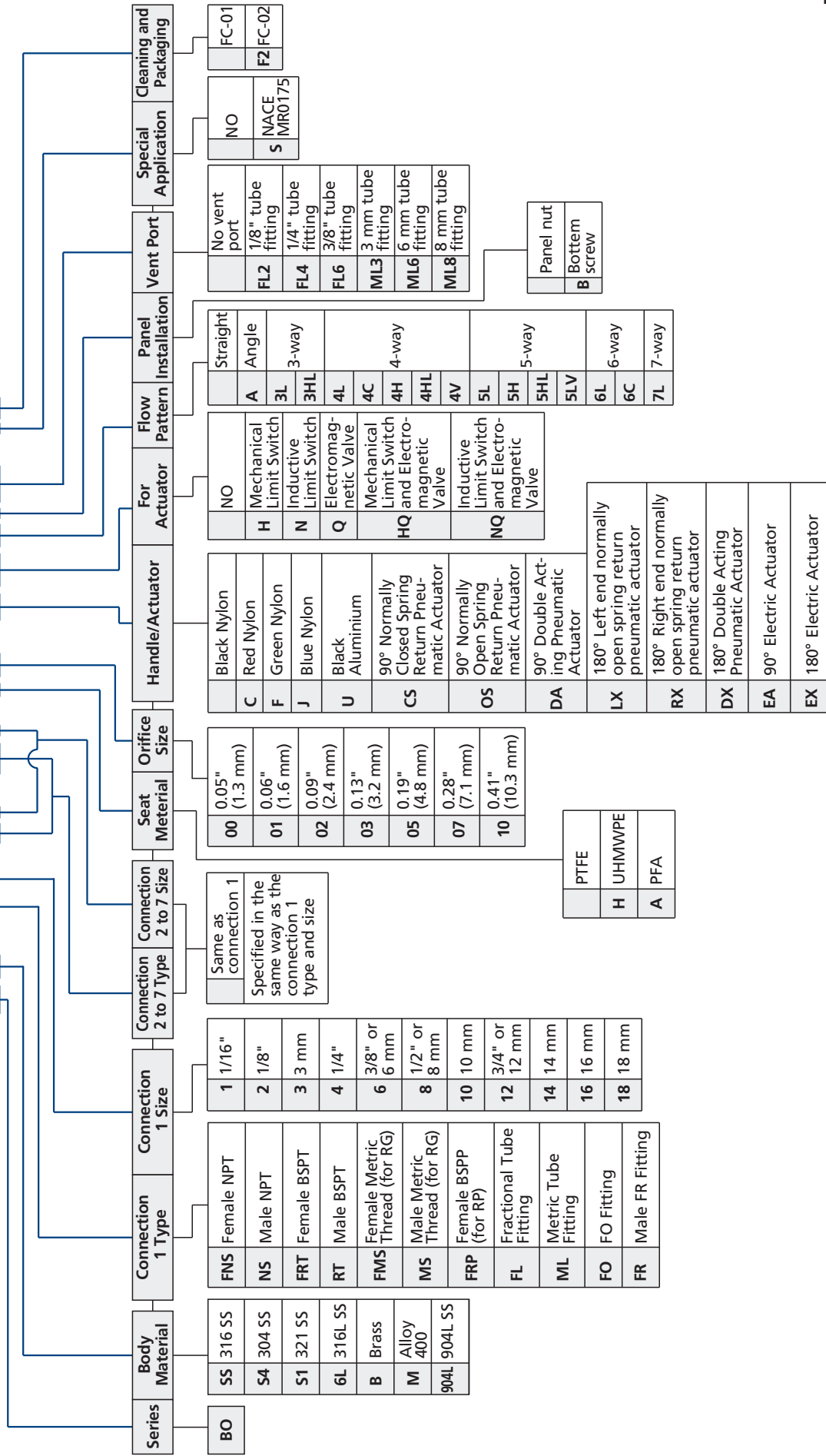
5-way



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

Part Number Description

BOSS - ML6 - FL4 - ML8 - H05 - OSHQ3LBF4 - SF2



Note: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

- For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.
- For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
- 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

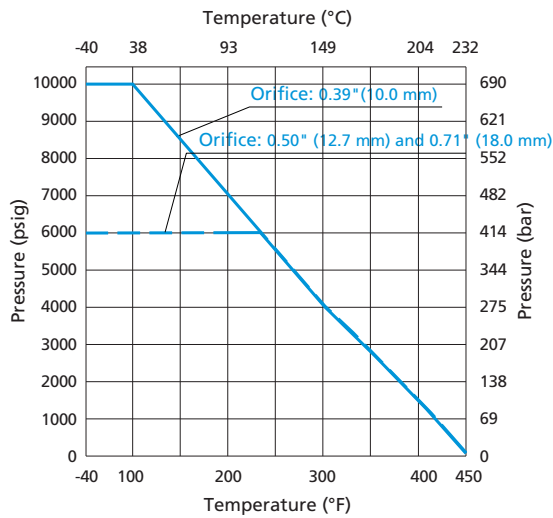
Features

- ⦿ 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 are available
- ⦿ Optional pneumatic and electric actuator
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve at the maximum working pressure (not higher than 6000 psig) to meet the requirement of no visible leak

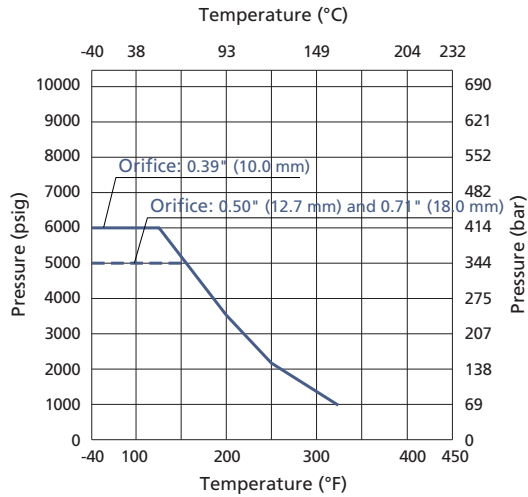


2-way Pressure vs. Temperature

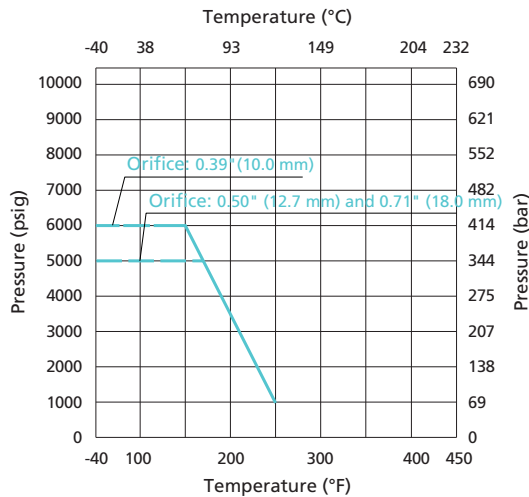
PEEK Seat



PVDF Seat

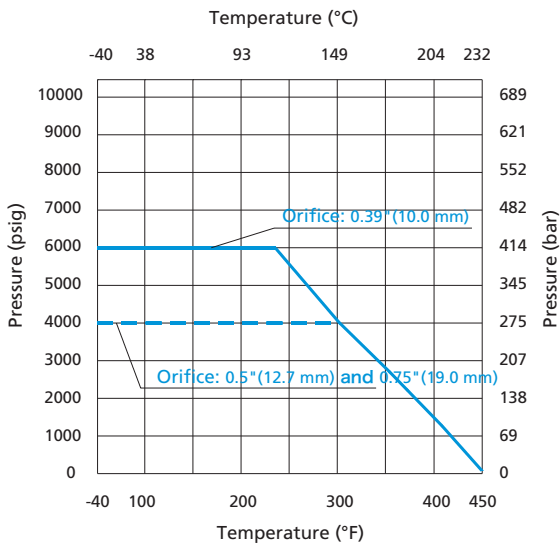


PCTFE Seat

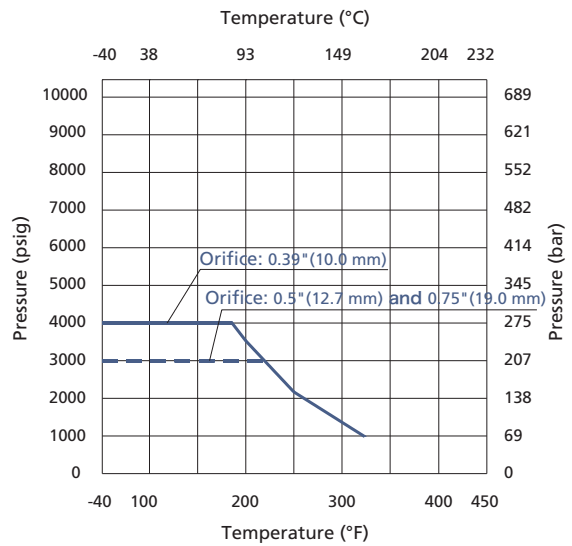


3-way Pressure vs. Temperature

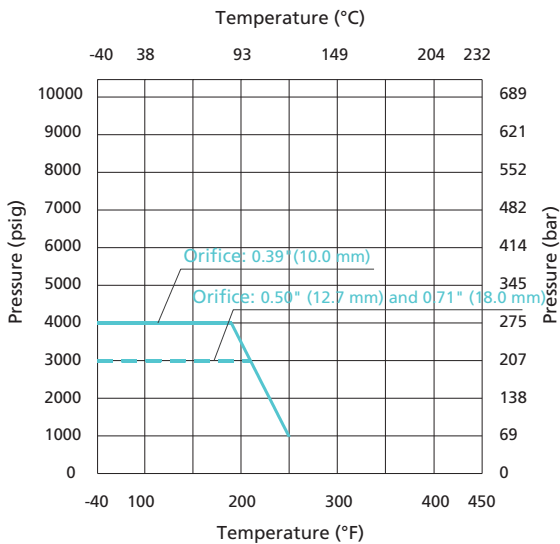
PEEK Seat



PVDF Seat



PCTFE Seat



Working Temperature Rating

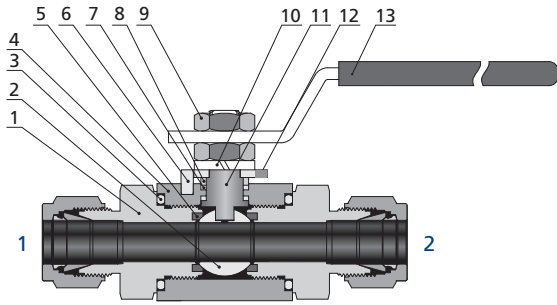
Material	Temperature Range °C (°F)
Fluorocarbon FKM	-40 to 232 (-40 to 450)
Buna-N	-28 to 94 (-18 to 200)
Neoprene	-28 to 121 (-18 to 250)
EPDM	-40 to 148 (-40 to 300)

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 the authorized representative or FITOK GROUP.

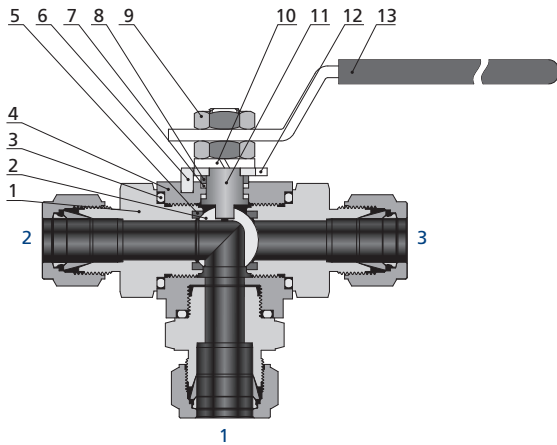
Note: The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the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

Standard Materials of Construction

2-way Valves



3-way Valves

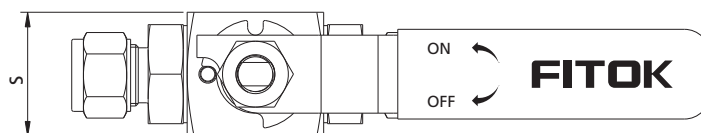
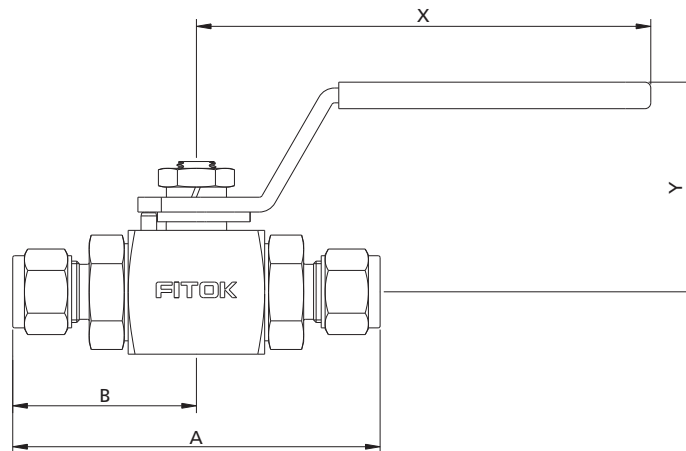


Item	Component	Body Material
		316 SS
1	<i>End Connection</i>	<i>316 SS/A479</i>
2	<i>Ball</i>	<i>316 SS/A479</i>
3	<i>O-ring</i>	<i>FKM or Buna-N or Neoprene or EPDM</i>
4	<i>Body</i>	<i>316 SS/A479</i>
5	<i>Seat</i>	<i>PVDF or PCTFE or PEEK</i>
6	Stop Pin	SS
7	<i>Stem Packing</i>	<i>PTFE/D1710</i>
8	Stem Washer	316 SS/A276
9	Stem Nut	SS
10	Spring Washer	316 SS/A276
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 italic.*
 For other materials, please contact FITOK Group or our authorized distributors.

Dimensions

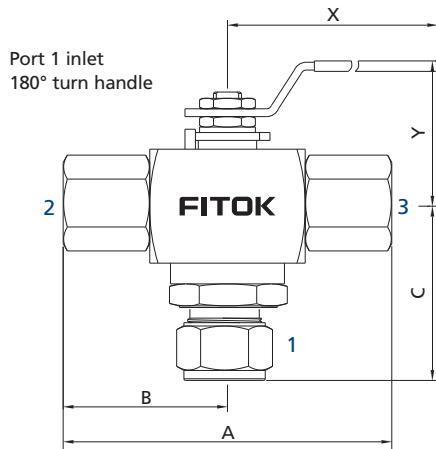
2-way Valves



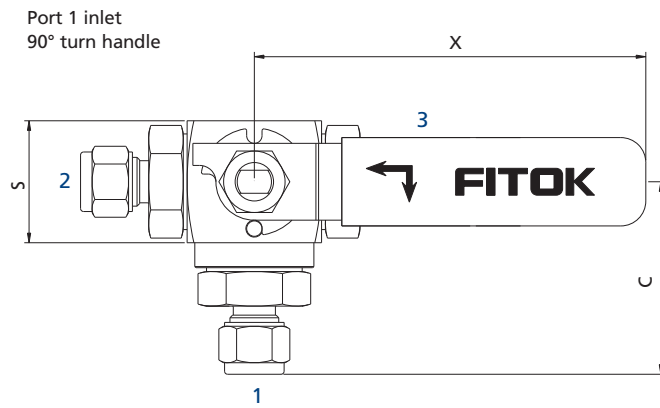
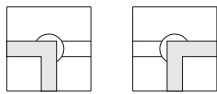
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimension, in. (mm)								
					A	B	X	Y	S				
BP□□-ML6-10	6 mm FITOK	10000 (690)	0.39 (10.0)	1.2	3.54 (90.0)	1.77 (45.0)	5.12 (130.0)	1.73 (44.0)	1.30 (32.0)				
BP□□-ML8-10	8 mm FITOK	7500 (517)			3.60 (91.6)	1.80 (45.8)							
BP□□-ML10-10	10 mm FITOK	8400 (579)			3.70 (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	7100 (490)			3.60 (91.6)	1.80 (45.8)							
BP□□-FL4-10	1/4" FITOK	7500 (517)		3.7	3.72 (94.6)	1.86 (47.3)							
BP□□-FL6-10	3/8" FITOK	6500 (448)			3.92 (99.6)	1.96 (49.8)							
BP□□-FL8-10	1/2" FITOK	6700 (462)		7.5	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)			3.11 (79.0)	1.56 (39.5)							
BP□□-FNS8-10	1/2 Female NPT	10000 (690)		3.7	3.36 (85.4)	1.68 (42.7)							
BP□□-NS4-10	1/4 Male NPT	10000 (690)			3.75 (95.2)	1.88 (47.6)							
BP□□-NS6-10	3/8 Male NPT	10000 (690)		0.50 (12.7)	10.0	4.42 (112.2)				2.21 (56.1)	5.71 (145.0)	1.89 (48.0)	1.50 (38.0)
BP□□-NS8-10	1/2 Male NPT	10000 (690)				4.12 (104.6)				2.06 (52.3)			
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)	19.0			4.87 (123.8)	2.43 (61.9)						
BP□□-FNS8-13	1/2 Female NPT	6000 (414)				5.11 (129.8)	2.66 (64.9)						
BP□□-FNS12-13	3/4 Female NPT	6000 (414)			4.59 (116.6)	2.29 (58.3)							
BP□□-NS12-13	3/4 Male NPT	6000 (414)			5.11 (129.8)	2.66 (64.9)							
BP□□-ML20-19	20 mm FITOK	5500 (379)			3.81 (96.8)	1.91 (48.4)							
BP□□-ML22-19	22 mm FITOK	4900 (338)			4.26 (108.2)	2.13 (54.1)							
BP□□-ML25-19	25 mm FITOK	4600 (317)	0.71 (18.0)		30.0	4.54 (115.2)	2.27 (57.6)	6.30 (160.0)	2.08 (53.0)	1.96 (50.0)			
BP□□-FL12-19	3/4" FITOK	5800 (400)				4.91 (124.8)	2.45 (62.4)						
BP□□-FL16-19	1" FITOK	4700 (324)		19.0		4.59 (116.6)	2.29 (58.3)						
BP□□-FNS12-19	3/4 Female NPT	6000 (414)			5.11 (129.8)	2.66 (64.9)							
BP□□-FNS16-19	1 Female NPT	6000 (414)		3.81 (96.8)	1.91 (48.4)								
BP□□-NS12-19	3/4 Male NPT	6000 (414)	4.26 (108.2)	2.13 (54.1)									
BP□□-NS16-19	1 Male NPT	6000 (414)	19.0	4.54 (115.2)	2.27 (57.6)								
BP□□-NS16-19	1 Male NPT	6000 (414)	30.0	4.91 (124.8)	2.45 (62.4)								

34 Ball Valves

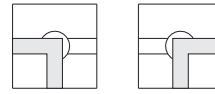
3-way Valves



Vertical Pattern



Horizontal Pattern



Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100 °F (38 °C), psig (bar)	Orifice in. (mm)	Cv	Dimension, 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	7100 (490)			3.72 (94.6)	1.86 (47.3)	2.16 (54.8)			
BP□□-FL4-10-3□	1/4" FITOK	7500 (517)		1.2	3.60 (91.6)	1.80 (45.8)	2.01 (51.3)			
BP□□-FL6-10-3□	3/8" FITOK	6500 (448)		3.7	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)			7.5	3.75 (95.2)	1.88 (47.6)			
BP□□-NS6-10-3□	3/8 Male NPT	10000 (690)								
BP□□-NS8-10-3□	1/2 Male NPT	10000 (690)								

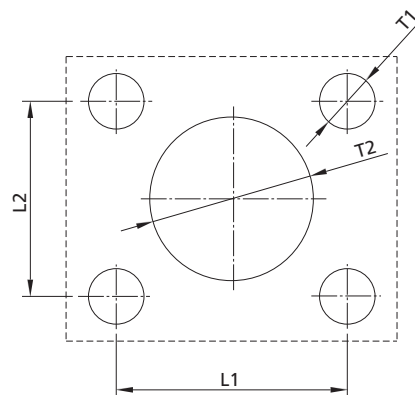
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimension, in. (mm)						
					A	B	C	X	Y	S	
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	10.0	4.04 (102.6)	2.02 (51.3)	2.41 (61.3)	5.71 (145.0)	1.89 (48.0)	1.50 (38.0)	
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)			2.16 (55.0)	2.16 (55.0)	2.16 (55.0)				
BP□□-FNS8-13-3□	1/2 Female NPT	6000 (414)			4.14 (105.2)	2.07 (52.6)	2.46 (62.6)				
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)	30.0	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)			19.0	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)			5.11 (129.8)	2.66 (64.9)	2.85 (72.4)				2.22 (56.5)
BP□□-FL16-19-3□	1" FITOK	4700 (324)			3.82 (97.0)	1.91 (48.5)	2.22 (56.5)				2.22 (56.5)
BP□□-FNS12-19-3□	3/4 Female NPT	6000 (414)			4.26 (108.2)	2.13 (54.1)	2.40 (60.8)				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 FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Panel Mounting Options

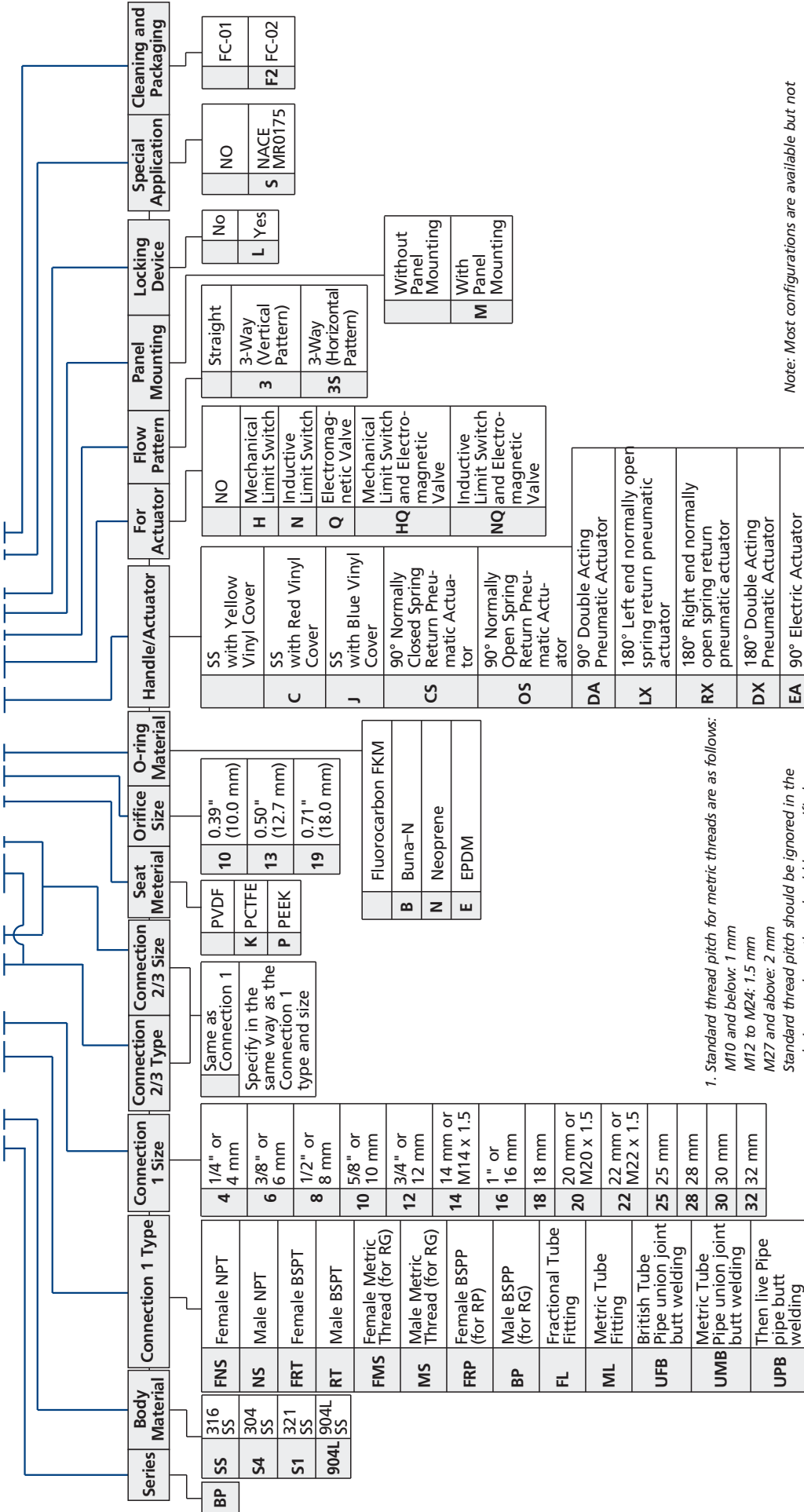
Dimension for Panel Mounting

Orifice in. (mm)	L1 in. (mm)	L2 in. (mm)	T1 in. (mm)	T2 in. (mm)
0.39 (10.0)	1.02 (26.0)	1.02 (26.0)	0.20 (5.0)	1.18 (30.0)
0.50 (12.7)	1.18 (30.0)	1.18 (30.0)	0.20 (5.0)	1.50 (38.0)
0.71 (18.0)	1.42 (36.0)	1.42 (36.0)	0.20 (5.0)	1.50 (38.0)



Part 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
	304 SS	NS	6	Specify in the same way as the Connection 1 type and size	13	PCTFE	0.50" (12.7 mm)	Buna-N	C with Red Vinyl Cover	H	Mechanical Limit Switch	3-Way (Vertical Pattern)	L Yes	NACE MR0175	F2 FC-02
	321 SS	FRT	8		19	PEEK	0.71" (18.0 mm)	Neoprene	J with Blue Vinyl Cover	N	Inductive Limit Switch	3-Way (Horizontal Pattern)			
	904L SS	RT	10					EPDM	CS 90° Normally Closed Spring Return Pneumatic Actuator	Q	Electromagnetic Valve				
		FMS	12						OS 90° Normally Open Spring Return Pneumatic Actuator	HQ	Mechanical Limit Switch and Electromagnetic Valve				
		MS	14						DA 90° Double Acting Pneumatic Actuator	INQ	Inductive Limit Switch and Electromagnetic Valve	Without Panel Mounting			
		FRP	16						LX 180° Left end normally open spring return pneumatic actuator			With Panel Mounting			
		BP	18						RX 180° Right end normally open spring return pneumatic actuator						
		FL	20						DX 180° Double Acting Pneumatic Actuator						
		ML	22						EA 90° Electric Actuator						
		UFB	25						EX 180° Electric Actuator						
		UMB	28												
		UPB	30												
			32												

- Standard thread pitch for metric threads are as follows:
 M10 and below: 1 mm
 M12 to M24: 1.5 mm
 M27 and above: 2 mm
 Standard thread pitch should be ignored in the ordering number, others should be specified.
- For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.
- For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
- 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: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

Hex Bar Stock Ball Valves

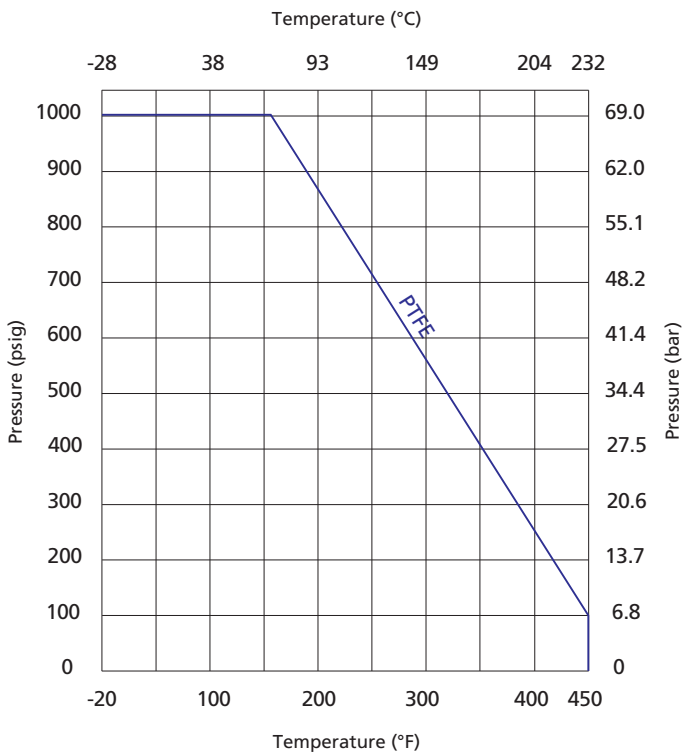
BR Series

Features

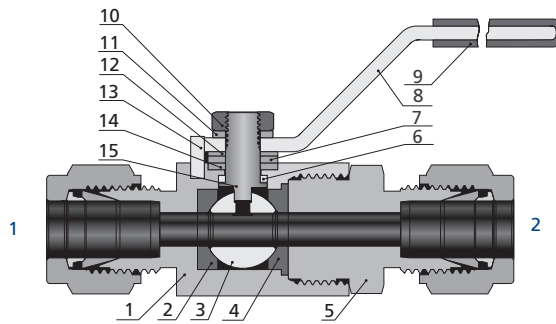
- ⦿ Working pressure up to: 1000 psig (69.0 bar)
- ⦿ Working temperature: -20°F to 450°F (-28°C to 232°C)
- ⦿ Compact and economical design
- ⦿ Free floating ball design for seat wear compensation
- ⦿ Bi-directional flow
- ⦿ Low operating torque
- ⦿ Any reasonable connections available
- ⦿ Blowout proof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



Pressure vs. Temperature



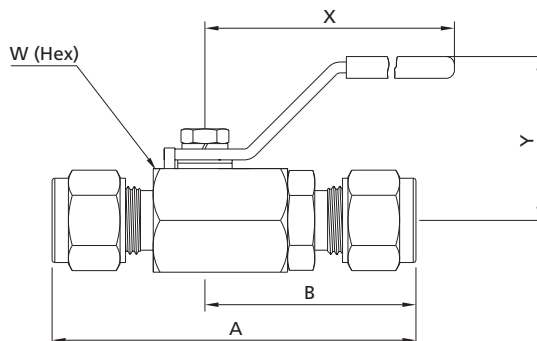
Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	316L SS	Brass
1	<i>Body</i>	<i>316 SS/A276 CF8M/A351</i>	<i>304 SS/A276 CF8/A351</i>	<i>316L SS/A276 CF3M/A351</i>	<i>Brass/B16</i>
2	<i>Front Seat</i>	<i>PTFE/D1710</i>			
3	<i>Ball</i>	<i>316 SS/A276</i>			
4	<i>Back Seat</i>	<i>PTFE/D1710</i>			
5	<i>End Connection</i>	<i>316 SS/A276</i>	<i>304 SS/A276</i>	<i>316L SS/A276</i>	<i>Brass/B16</i>
6	<i>Bottom Packing</i>	<i>PTFE/D1710</i>			
7	<i>Washer</i>	<i>316 SS/A276</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>Pin</i>	<i>SS</i>			
14	<i>Top Packing</i>	<i>PTFE/D1710</i>			
15	<i>Stem</i>	<i>316 SS/A276</i>			

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

Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)					
	Connection 1	Connection 2			A	B	W	X	Y	
BR□□-ML6-05	6 mm FITOK	6 mm FITOK	0.19 (4.8)	1.25	2.57 (65.2)	1.50 (38.1)	3/4 (19.05)	2.36 (60)	1.18 (30)	
BR□□-ML8-05	8 mm FITOK	8 mm FITOK			2.63 (66.8)	1.53 (38.8)				
BR□□-FL4-05	1/4" FITOK	1/4" FITOK			2.57 (65.2)	1.50 (38.1)				
BR□□-FL5-05	5/16" FITOK	5/16" FITOK			2.63 (66.8)	1.53 (38.8)				
BR□□-FNS2-05	1/8 Female NPT	1/8 Female NPT			1.85 (47.0)	1.08 (27.4)				
BR□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP			2.00 (50.0)	1.14 (29.0)				
BR□□-FRP4-05	1/4 Female BSPP	1/4 Female BSPP			2.00 (50.0)	1.14 (29.0)				
BR□□-FNS4-05	1/4 Female NPT	1/4 Female NPT			1.85 (47.0)	1.08 (27.4)				
BR□□-ML10-07	10 mm FITOK	10 mm FITOK	0.28 (7.1)	2.50	2.87 (72.9)	1.68 (42.7)	7/8 (22.23)	1.26 (32)		
BR□□-FL6-07	3/8" FITOK	3/8" FITOK			2.03 (51.6)	1.18 (30.0)				
BR□□-FRP6-07	3/8 Female BSPP	3/8 Female BSPP								
BR□□-FNS6-07	3/8 Female NPT	3/8 Female NPT								
BR□□-ML12-10	12 mm FITOK	12 mm FITOK	0.35 (8.9)	9.25	3.15 (80.0)	1.83 (46.5)	27.0	3.15 (80)	1.54 (39)	
BR□□-ML14-10	14 mm FITOK	14 mm FITOK			3.24 (82.2)	1.87 (47.5)				
BR□□-FL8-10	1/2" FITOK	1/2" FITOK			3.15 (80.0)	1.83 (46.5)				
BR□□-FL10-10	5/8" FITOK	5/8" FITOK			3.24 (82.2)	1.87 (47.5)				
BR□□-FRP8-10	1/2 Female BSPP	1/2 Female BSPP			2.08 (53.0)	1.12 (28.5)				15/16 (24.0)
BR□□-FNS8-10	1/2 Female NPT	1/2 Female NPT			2.08 (53.0)	1.12 (28.5)				
BR□□-ML16-13	16 mm FITOK	16 mm FITOK	0.47 (12.0)	12.65	3.50 (88.9)	2.00 (50.8)	1 1/4 (31.75)	3.94 (100)	2.03 (51.7)	
BR□□-ML18-13	18 mm FITOK	18 mm FITOK			2.48 (63.0)	1.30 (33.0)				
BR□□-FL12-13	3/4" FITOK	3/4" FITOK								
BR□□-FRP12-13	3/4 Female BSPP	3/4 Female BSPP								
BR□□-FNS12-13	3/4 Female NPT	3/4 Female NPT								2.39 (60.7)
BR□□-ML22-16	22 mm FITOK	22 mm FITOK	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (57.1)	1 1/2 (38.1)	2.15 (54.8)		
BR□□-ML25-16	25 mm FITOK	25 mm FITOK			4.31 (109.5)	2.42 (61.5)				
BR□□-FL16-16	1" FITOK	1" FITOK			3.25 (82.6)	1.63 (41.3)				
BR□□-FRP16-16	1 Female BSPP	1 Female BSPP			3.00 (76.5)	1.50 (38.1)				
BR□□-FNS16-16	1 Female NPT	1 Female NPT								

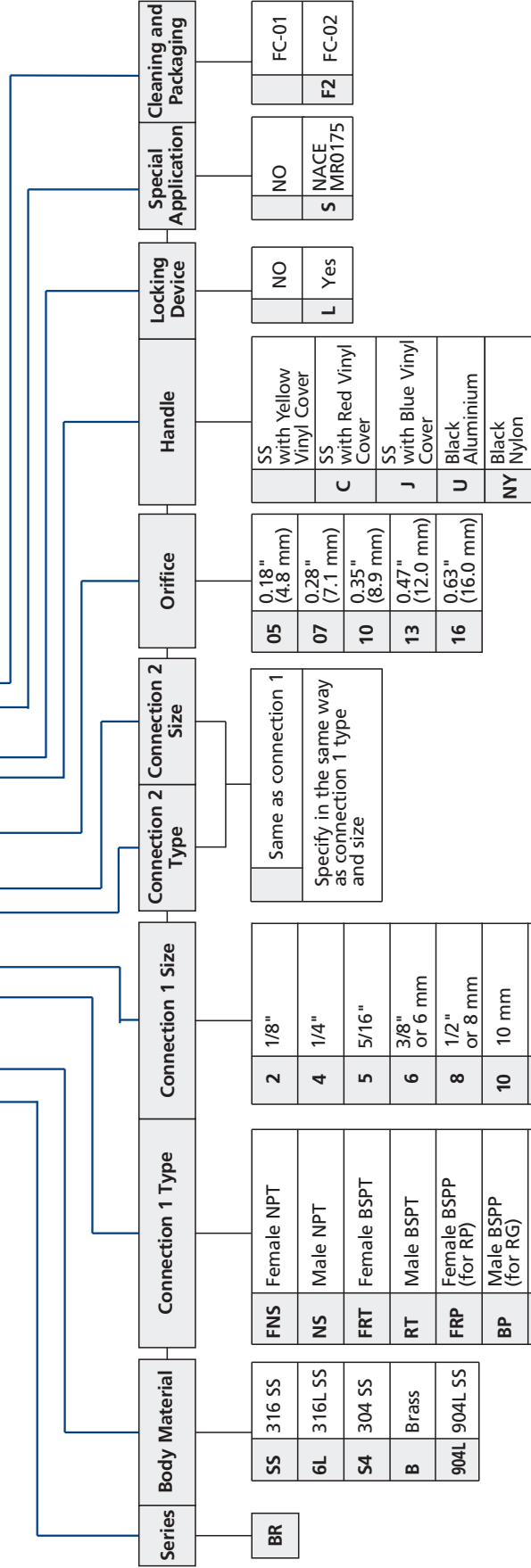
1. FITOK means FITOK double ferrule tube fittings.

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

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

Part Number Description

BRSS - ML8 - FL4 - 05 - UL - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 Type	Connection 2 Size	Orifice	Handle	Locking Device	Special Application	Cleaning and Packaging
--------	---------------	-------------------	-------------------	-------------------	-------------------	---------	--------	----------------	---------------------	------------------------

BR	SS	FNS	2		Same as connection 1	05	SS with Yellow Vinyl Cover	NO	NO	FC-01
	6L	NS	4		Specify in the same way as connection 1 type and size	07	SS with Red Vinyl Cover	L	S	FC-02
	S4	FRT	5			10	C		NA	F2
	B	RT	6			13	J		MI	R0175
	904L	FRP	8			16	U			
		BP	10				NY			
		FL	12							
		ML	14							
		UFB	16							
		UIMB	18							
		UPB	20							
			22							
			25							

05	0.18" (4.8 mm)
07	0.28" (7.1 mm)
10	0.35" (8.9 mm)
13	0.47" (12.0 mm)
16	0.63" (16.0 mm)

Same as connection 1
Specify in the same way as connection 1 type and size

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

FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	British Tube Pipe union joint butt welding
UIMB	Metric Tube Pipe union joint butt welding
UPB	Then live Pipe pipe butt welding

Note: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

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

- 2. Standard thread pitch should be ignored in the ordering number, others should be specified.
- 3. For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
- 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

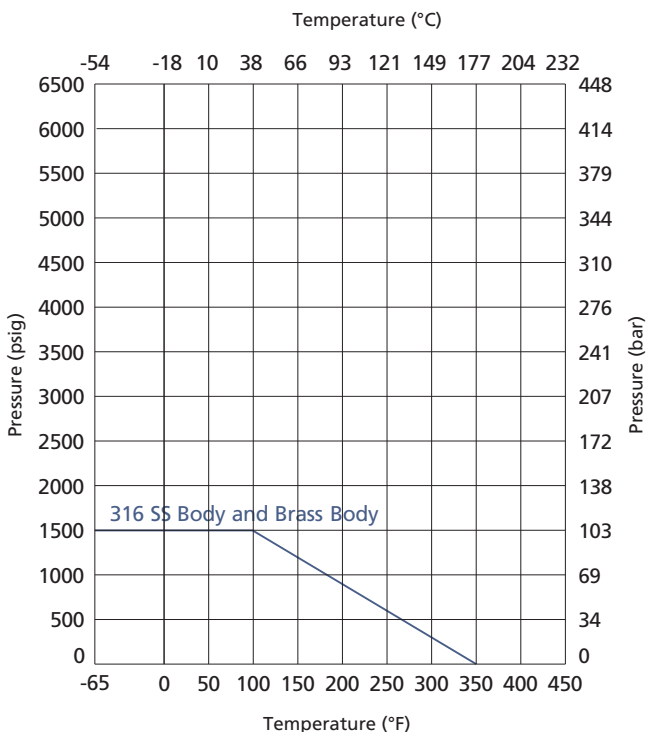
Features

- ⦿ 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
- ⦿ Positive handle stop
- ⦿ Handle as indicator of flow direction
- ⦿ Handle color options are available
- ⦿ Manual, electric or pneumatic actuator available
- ⦿ Leak-tight performance testing with nitrogen or compressed air for every valve to meet the requirement of no visible leakage at the maximum working pressure
- ⦿ The inlet of 3-way valves and angle pattern valves should be only from the bottom

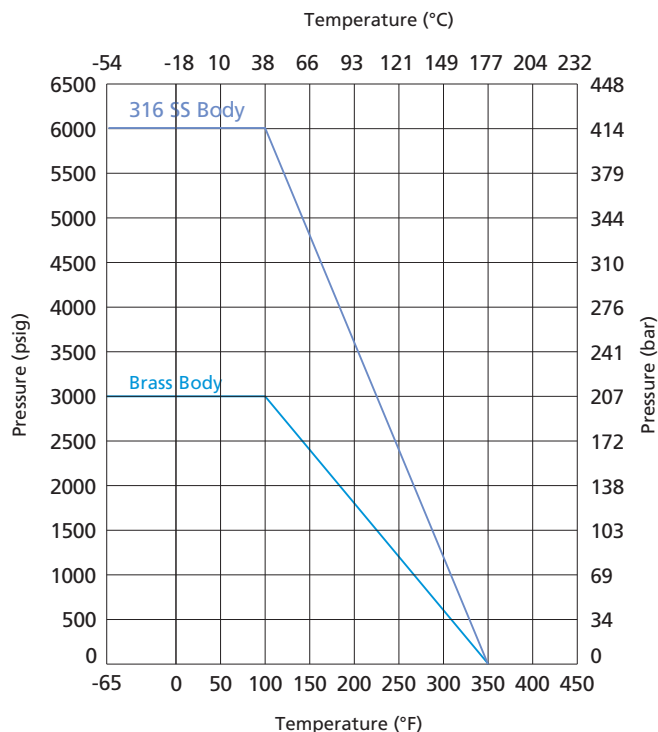


Pressure vs. Temperature

PTFE Seat



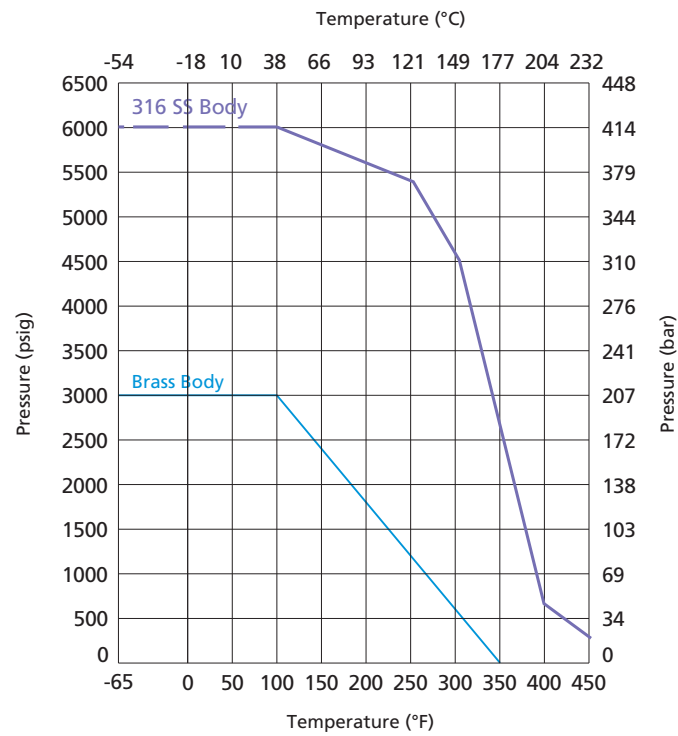
PCTFE Seat



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.

42 Ball Valves

PEEK Seat



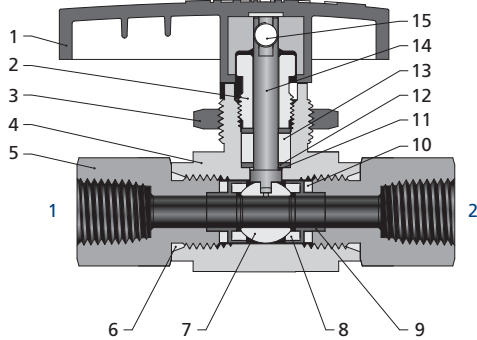
Working Temperature Rating

Packing Material	Temperature Range °F (°C)
PTFE	-65 to 450 (-54 to 232)
Buna-N	-20 to 250 (-28 to 121)
Fluorocarbon FKM	-15 to 450 (-26 to 232)
Neoprene	-20 to 250 (-28 to 121)

The working temperature of the valves is restricted by the working temperature of the seat and stem packing. The working temperature range of the valves should be the overlapped area of the two working temperature curves.

Standard Materials of Construction

Straight Valves

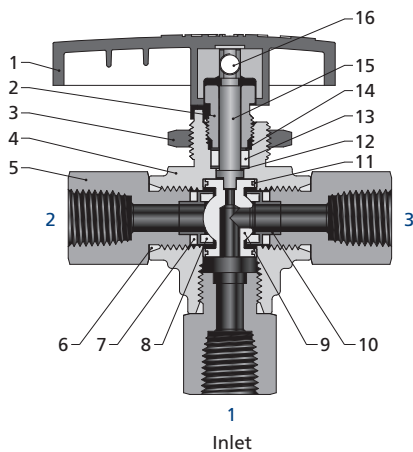


Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C36000/B16
3	Panel Nut	316 SS/A276	
4	Body	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	End Connection	316 SS/A479	C36000/B16
6	Connection O-ring	PTFE	
7	Ball	316 SS/A479	
8	Seat	PTFE or PCTFE or PEEK	
9	Seat Retainer	316 SS/A276	C36000/B16
10	Seat Packing	PTFE	
11	Stem Back-up Ring	PEEK	
12	Stem Washer	316/A276	
13	Stem Packing	<i>PTFE or Fluorocarbon FKM or Neoprene or Buna N</i>	
14	Stem	316 SS/A276	
15	Set Screw	SS	
Lubricants		<i>Fluorinated-based and silicone-based</i>	

Note: Wetted components are listed in *italic*.

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

3-way Valves



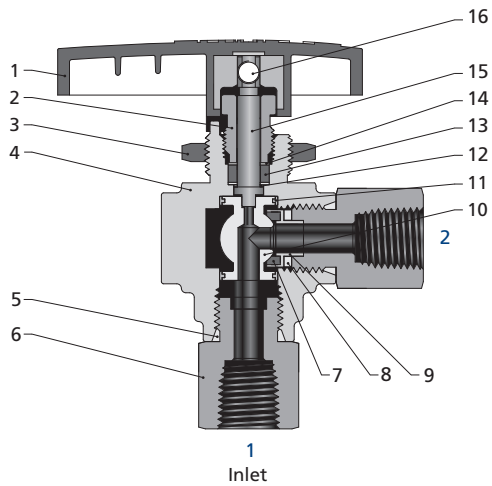
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C36000/B16
3	Panel Nut	316 SS/A276	
4	Body	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	End Connection	316 SS/A479	C36000/B16
6	Connection O-ring	PTFE	
7	Seat Packing	PTFE	
8	Seat	PTFE or PCTFE or PEEK	
9	Ball	316 SS/A479	
10	Seat Retainer	316 SS/A276	316 SS/A276
11	Trunnion Bearing	PEEK	
12	Stem Back-up Ring	PEEK	
13	Stem Packing	<i>PTFE or Fluorocarbon FKM or Neoprene or Buna N</i>	
14	Stem Washer	316 SS/A276	
15	Stem	316 SS/A276	
16	Set Screw	SS	
Lubricants		<i>Fluorinated-based and silicone-based</i>	

Note: Wetted components are listed in *italic*.

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

44 Ball Valves

Angle Pattern Valves



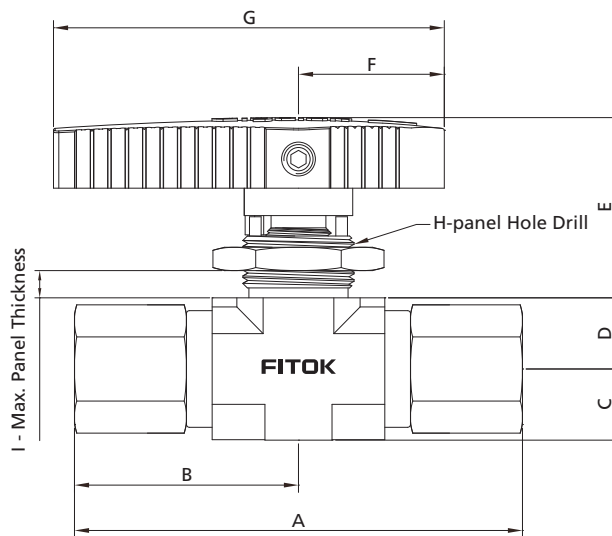
Item	Component	Valve Body Material	
		SS	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C36000/B16
3	Panel Nut	316 SS/A276	
4	<i>Body</i>	<i>CF8M/A351</i>	<i>C37700/B283</i>
5	<i>Connection O-ring</i>	PTFE	
6	<i>End Connection</i>	316 SS/A479	C36000/B16
7	<i>Seat</i>	PTFE or PCTFE or PEEK	
8	<i>Seat Packing</i>	PTFE	
9	<i>Seat Retainer</i>	316 SS/A276	
10	<i>Ball</i>	316 SS/A479	
11	<i>Trunnion Bearing</i>	PEEK	
12	<i>Stem Back-up Ring</i>	PEEK	
13	<i>Stem Packing</i>	PTFE or Fluorocarbon FKM or Neoprene or Buna N	
14	<i>Stem Washer</i>	316 SS/A276	
15	<i>Stem</i>	316 SS/A276	
16	<i>Set Screw</i>	SS	
<i>Lubricants</i>		<i>Fluorinated-based and silicone-based</i>	

Note: Wetted components are listed in italic.

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

Dimensions

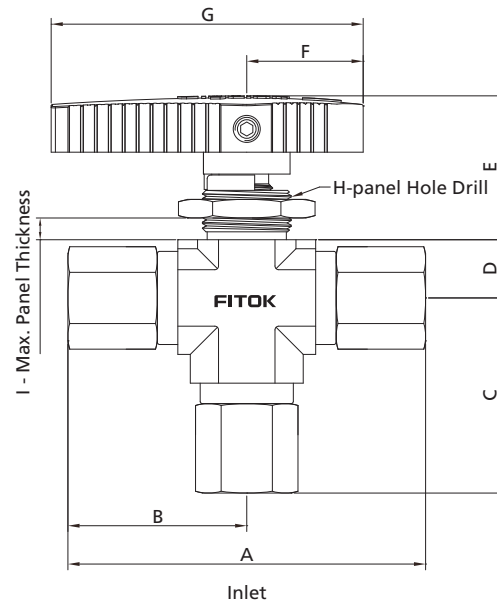
Straight Valves



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

46 Ball Valves

3-way Valves

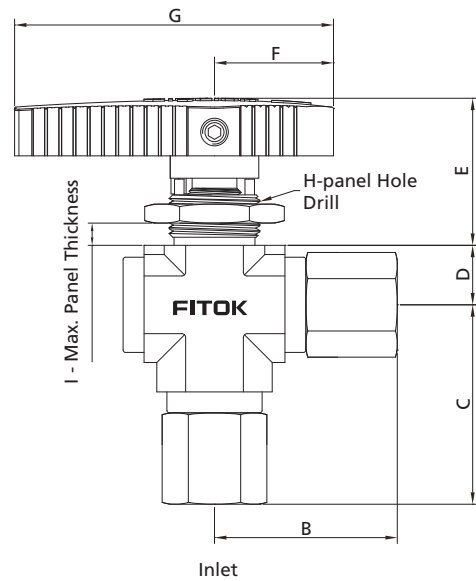


Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimension, in. (mm)										
		SS	Brass			A	B	C	D	E	F	G	H	I		
BV□□-FL1-01-3	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	1.35 (34.3)								
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)			2.74 (69.6)	1.37 (34.8)	1.42 (36.1)								
BV□□-FRT2-04-3	1/8 Female BSPT	6000 (414)	3000 (207)	0.12 (3.0)	0.28	2.14 (54.4)	1.07 (27.2)	1.12 (28.5)								
BV□□-FRP2-04-3	1/8 Female BSPP	6000 (414)	3000 (207)													
BV□□-FNS2-04-3	1/8 Female NPT	6000 (414)	3000 (207)								0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)
BV□□-RT2-04-3	1/8 Male BSPT	6000 (414)	3000 (207)					2.36 (60.0)	1.18 (30.0)	1.23 (31.3)						
BV□□-BP2-04-3	1/8 Male BSPP	6000 (414)	3000 (207)													
BV□□-NS2-04-3	1/8 Male NPT	6000 (414)	3000 (207)													
BV□□-RT4-04-3	1/4 Male BSPT	6000 (414)	3000 (207)													
BV□□-BP4-04-3	1/4 Male BSPP	6000 (414)	3000 (207)					2.70 (68.6)	1.35 (34.3)	1.40 (35.6)						
BV□□-NS4-04-3	1/4 Male NPT	6000 (414)	3000 (207)													
BV□□-FL4-05-3	1/4" FITOK	6000 (414)	3000 (207)			0.19 (4.7)	0.70	3.48 (88.4)	1.74 (44.2)	1.88 (47.7)						
BV□□-ML6-05-3	6 mm FITOK	6000 (414)	3000 (207)					3.50 (89.0)	1.75 (44.5)	1.89 (48.0)						
BV□□-FL6-06-3	3/8" FITOK	6000 (414)	3000 (207)					3.60 (91.4)	1.80 (45.7)	1.94 (49.2)						
BV□□-ML8-06-3	8 mm FITOK	6000 (414)	3000 (207)					3.56 (90.4)	1.78 (45.2)	1.92 (48.7)						
BV□□-ML10-06-3	10 mm FITOK	6000 (414)	3000 (207)					3.62 (92.0)	1.81 (46.0)	1.95 (49.5)						
BV□□-FRT4-06-3	1/4 Female BSPT	6000 (414)	3000 (207)													
BV□□-FRP4-06-3	1/4 Female BSPP	6000 (414)	3000 (207)					3.02 (76.8)	1.51 (38.4)	1.65 (41.9)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)
BV□□-FNS4-06-3	1/4 Female NPT	6000 (414)	3000 (207)													
BV□□-RT4-06-3	1/4 Male BSPT	6000 (414)	3000 (207)													
Bv□□-BP4-06-3	1/4 Male BSPP	6000 (414)	3000 (207)													
BV□□-NS4-06-3	1/4 Male NPT	6000 (414)	3000 (207)													
BV□□-RT6-06-3	3/8 Male BSPT	6000 (414)	3000 (207)			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)													

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

48 Ball Valves

Angle Pattern Valves



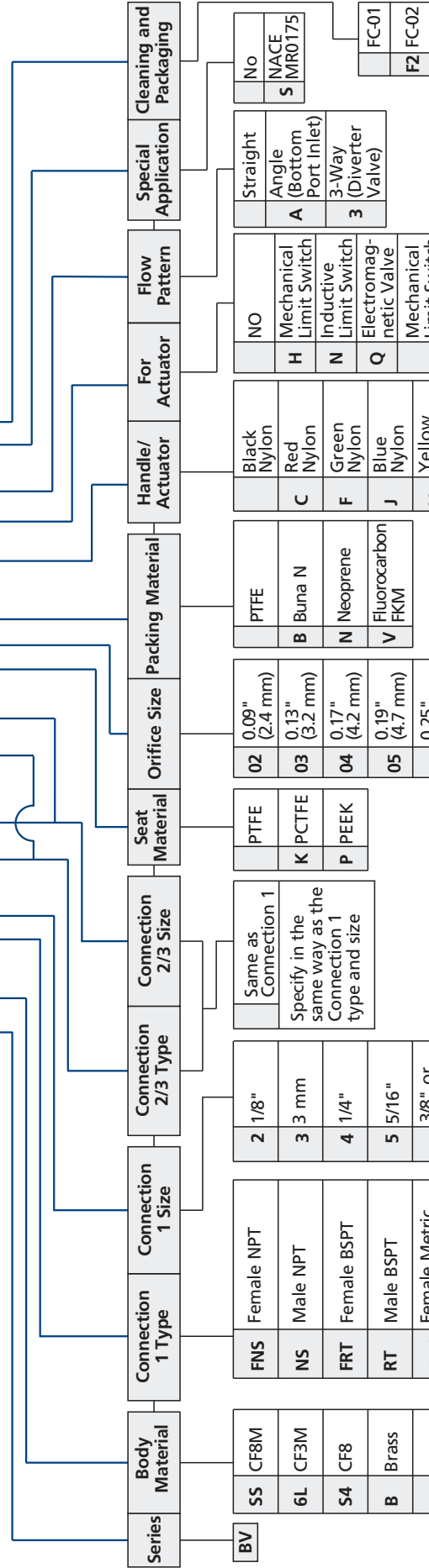
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimension, in. (mm)														
		SS	Brass			B	C	D	E	F	G	H	I							
BV□□-FL1-01-A	1/16" FITOK	6000 (414)	3000 (207)	0.05 (1.3)	0.06	1.30 (33.0)	1.35 (34.3)													
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)			1.07 (27.2)	1.12 (28.5)													
BV□□-FRP2-04-A	1/8 Female BSPP	6000 (414)	3000 (207)	0.12 (3.0)	0.28			0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)							
BV□□-FNS2-04-A	1/8 Female NPT	6000 (414)	3000 (207)			1.18 (30.0)	1.23 (31.3)													
BV□□-RT2-04-A	1/8 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP2-04-A	1/8 Male BSPP	6000 (414)	3000 (207)																	
BV□□-NS2-04-A	1/8 Male NPT	6000 (414)	3000 (207)																	
BV□□-RT4-04-A	1/4 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP4-04-A	1/4 Male BSPP	6000 (414)	3000 (207)			1.35 (34.3)	1.40 (35.6)													
BV□□-NS4-04-A	1/4 Male NPT	6000 (414)	3000 (207)																	
BV□□-FL4-05-A	1/4" FITOK	6000 (414)	3000 (207)			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)	0.19 (4.7)	0.70	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□□-FRP4-06-A	1/4 Female BSPP	6000 (414)	3000 (207)																	
BV□□-FNS4-06-A	1/4 Female NPT	6000 (414)	3000 (207)																	
BV□□-RT4-06-A	1/4 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP4-06-A	1/4 Male BSPP	6000 (414)	3000 (207)																	
BV□□-NS4-06-A	1/4 Male NPT	6000 (414)	3000 (207)																	
BV□□-RT6-06-A	3/8 Male BSPT	6000 (414)	3000 (207)																	
BV□□-BP6-06-A	3/8 Male BSPP	6000 (414)	3000 (207)			1.62 (41.1)	1.76 (44.6)													
BV□□-NS6-06-A	3/8 Male NPT	6000 (414)	3000 (207)																	

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)		Orifice in. (mm)	Cv	Dimension, 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)			2.42 (61.5)	2.76 (70.2)						
BV□□-ML14-10-A	14 mm FITOK	6000 (414)	1900 (131)										
BV□□-ML16-10-A	16 mm FITOK	5800 (400)	1700 (117)			1.95 (49.5)	2.29 (58.2)						
BV□□-ML18-10-A	18 mm FITOK	5400 (372)	1600 (110)										
BV□□-ML20-10-A	20 mm FITOK	5500 (379)	1600 (110)			2.15 (54.6)	2.49 (63.3)						
BV□□-ML22-10-A	22 mm FITOK	4900 (338)	1450 (100)										
BV□□-FRT6-10-A	3/8 Female BSPT	6000 (414)	3000 (207)			2.25 (57.1)	2.59 (65.8)						
BV□□-FRP6-10-A	3/8 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS6-10-A	3/8 Female NPT	6000 (414)	3000 (207)			2.22 (56.4)	2.56 (65.1)						
BV□□-FRT8-10-A	1/2 Female BSPT	6000 (414)	3000 (207)										
BV□□-FRP8-10-A	1/2 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS8-10-A	1/2 Female NPT	6000 (414)	3000 (207)										
BV□□-FRT12-10-A	3/4 Female BSPT	6000 (414)	3000 (207)										
BV□□-FRP12-10-A	3/4 Female BSPP	6000 (414)	3000 (207)										
BV□□-FNS12-10-A	3/4 Female NPT	6000 (414)	3000 (207)										
BV□□-RT8-10-A	1/2 Male BSPT	6000 (414)	3000 (207)										
BV□□-BP8-10-A	1/2 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS8-10-A	1/2 Male NPT	6000 (414)	3000 (207)										
BV□□-RT12-10-A	3/4 Male BSPT	6000 (414)	3000 (207)										
BV□□-BP12-10-A	3/4 Male BSPP	6000 (414)	3000 (207)										
BV□□-NS12-10-A	3/4 Male NPT	6000 (414)	3000 (207)										

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

Part Number Description

BVSS - FL8 - ML12 - ML10 - P06V - RXHQ3 - SF2



Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Packing Material	Handle/Actuator	For Actuator	Flow Pattern	Special Application	Cleaning and Packaging
BV	SS CF8M	FNS Female NPT	2 1/8"	2 1/8"	Same as Connection 1	PTFE	02 0.09" (2.4 mm)	PTFE	Black Nylon	NO	NO	Straight	No
	6L CF3M	NS Male NPT	3 3 mm	3 3 mm	Specify in the same way as the Connection 1 type and size	K PCTFE	03 0.13" (3.2 mm)	B Buna N	Red Nylon	H Mechanical Limit Switch	H Mechanical Limit Switch	Angle (Bottom Port Inlet)	NACE S MR0175
	S4 CF8	FRT Female BSPT	4 1/4"	4 1/4"		P PEEK	04 0.17" (4.2 mm)	N Neoprene	Green Nylon	N Inductive Limit Switch	N Inductive Limit Switch	3-Way (Diverter Valve)	
	B Brass	RT Male BSPT	5 5/16"	5 5/16"			05 0.19" (4.7 mm)	V Fluorocarbon FKM	Blue Nylon	Q Electromagnetic Valve	Q Electromagnetic Valve		FC-01
	904L 904L SS	FMS Female Metric Thread (for RG)	6 3/8" or 6 mm or M6 x 1	6 3/8" or 6 mm or M6 x 1			06 0.25" (6.4 mm)		Yellow Nylon	HQ Mechanical Limit Switch and Electromagnetic Valve	HQ Mechanical Limit Switch and Electromagnetic Valve		F2 FC-02
		MS Male Metric Thread (for RG)	8 1/2" or 8 mm	8 1/2" or 8 mm			10 0.41" (10.3 mm)		Black Aluminium	NQ Inductive Limit Switch and Electromagnetic Valve	NQ Inductive Limit Switch and Electromagnetic Valve		
		FRP Female BSPP (For RP)	10 10 mm or M10 x 1	10 10 mm or M10 x 1					90° Normally Closed Spring Return Pneumatic Actuator				
		BP Male BSPP (For RG)	12 3/4" or 12 mm	12 3/4" or 12 mm					CS				
		FL Fractional Tube Fitting	14 14 mm or M14 x 1.5	14 14 mm or M14 x 1.5									
		ML Metric Tube Fitting	16 16 mm	16 16 mm									
		UFB British Tube Pipe union joint butt welding	18 18 mm	18 18 mm									
		UMB Metric Tube Pipe union joint butt welding	20 20 mm or M20 x 1.5	20 20 mm or M20 x 1.5									
		UPB Then live Pipe pipe butt welding	22 22 mm or M22 x 1.5	22 22 mm or M22 x 1.5									
			24 M24 x 1.5	24 M24 x 1.5									

Note: Most configurations are available but not everyone. If any questions, please contact FITOK group or our authorized distributors.

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

2. For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.

3. For oxygen or virulent medium service, contact the authorized representative or FITOK Group.

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.

FITOK Group

FITOK GmbH (Headquarter)

Sprendlinger Landstr. 115, 63069 Offenbach am Main, Germany
Tel.: +49 69 8900 4498 Fax: +49 69 8900 4495

FITOK, Inc.

13843 North Promenade Blvd., Suite 750, Stafford, Texas 77477, USA
Tel.: +1 281 888 0077 Fax: +1 281 582 4051

FITOK Incorporated

Block C, Zone E, Yingtai Industrial Park, Dalang Street,
Longhua New District, Shenzhen, 518109, China
Tel.: +86 755 2803 2500 Fax: +86 755 2803 2619

FITOK Middle East Oil Equipment Trading LLC

208-209, Makateb Building, Airport Road, P.O.Box 185412, Deira, Dubai, UAE
Tel.: +971 4 2959 853 Fax: +971 4 2959 854

info@fitokgroup.com
www.fitokgroup.com

FK-IC-GV-01-EN-160802