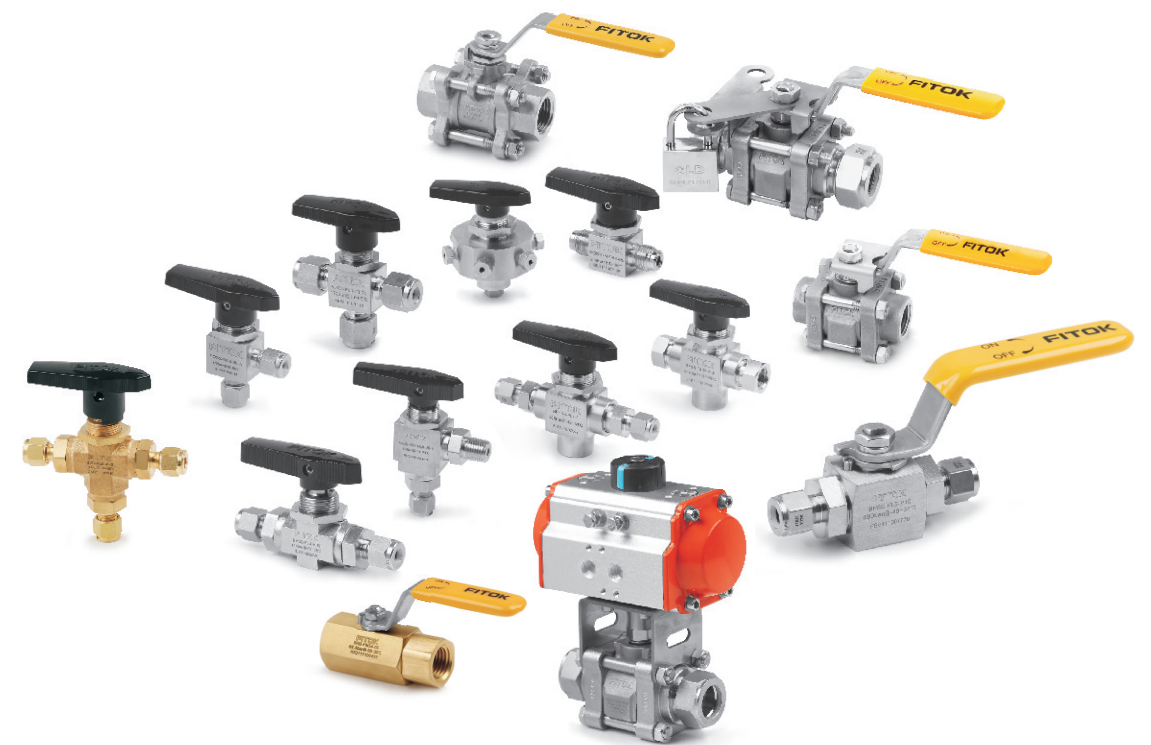


Ball Valves

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



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FITOK
Valves and Fittings

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Trunnion Ball Valves

BF and BFH Series

High Pressure Service

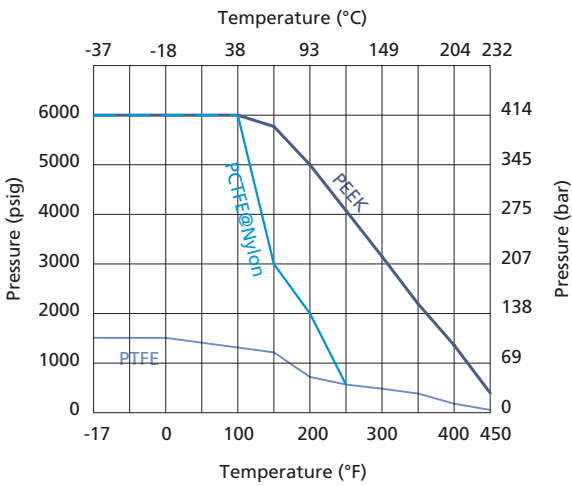
Features

- Maximum working pressure: 10000 psig (690 bar)
- Working temperature: 0°F to 450°F (-18°C to 232°C)
- Fixed ball with double sealing
- 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 for every valve at the maximum working pressure, but not higher than 6000 psig
- 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.
- Trunnion-style ball: Prevents ball blowout.

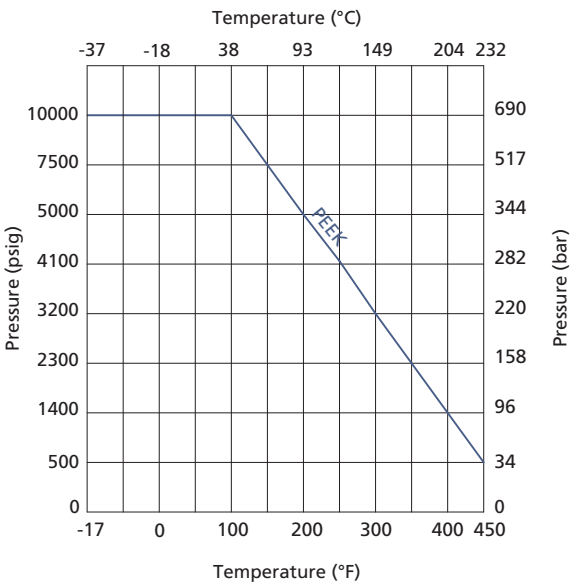


Pressure vs. Temperature

BF Series



BFH Series



Important Information about Ball Valves

- ⦿ FITOK ball valves are designed to be used in a fully open or fully closed position.
- ⦿ Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Technical Data

Seat Material	Temperature Rating °F (°C)	Pressure Rating at 100°F (37°C) psig (bar)		Flow Coefficient (Cv)
		Stainless Steel	Alloy 400	
BF Series				
PCTFE, reinforced nylon	0 to 250 (-17 to 121)	6000 (413)	5000 (344)	2-way valves-1.0 to 1.6 depending on end connection; 3-way valves-0.75
PEEK	0 to 450 (-17 to 232)	6000 (413)	5000 (344)	
PTFE		1500 (103)		
BFH Series				
PEEK	0 to 450 (-17 to 232)	6000 to 10000 (413 to 690), depending on end connection	—	2-way valves-1.0 to 1.6 depending on end connection; 3-way valves-0.75

Flow Data at 70°F (20°C)

BF Series 2-way

0.19" (4.8 mm) orifice, 1.2 Cv

Inlet Pressure psig (bar)	Pressure Drop (Δ p) psig (bar)	Air Flow std L/min (std ft³/min)	Water Flow L/min (U.S. gal/min)
1000 (69)	10 (0.69)	14 (334)	3.5 (13)
3000 (207)	50 (3.45)	30 (834)	7.5 (28)
6000 (414)	100 (6.90)	60 (1670)	11.0 (41)

BF Series 3-way

0.19" (4.8 mm) orifice, 0.75 Cv

Inlet Pressure psig (bar)	Pressure Drop (Δ p) psig (bar)	Air Flow std L/min (std ft³/min)	Water Flow L/min (U.S. gal/min)
1000 (69)	10 (0.69)	10 (275)	3.0 (11)
3000 (207)	50 (3.45)	23 (630)	7.0 (26)
6000 (414)	100 (6.90)	42 (1150)	9.5 (35)

BFH Series 2-way

0.19" (4.8 mm) orifice, 1.2 Cv

Inlet Pressure psig (bar)	Pressure Drop (Δ p) psig (bar)	Air Flow std L/min (std ft³/min)	Water Flow L/min (U.S. gal/min)
1000 (69)	150 (10.3)	90 (2550)	15 (56)
6000 (414)	600 (41.4)	345 (9660)	30 (111)
10000 (690)	1000 (69.0)	560 (15680)	40 (148)

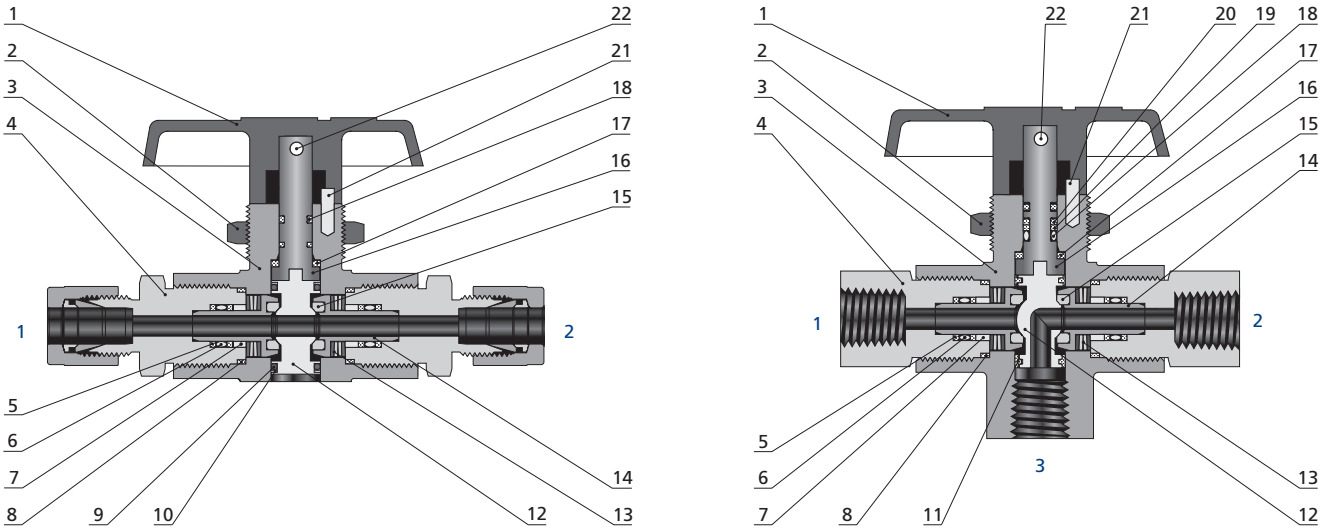
BFH Series 3-way

0.19" (4.8 mm) orifice, 0.75 Cv

Inlet Pressure psig (bar)	Pressure Drop (Δ p) psig (bar)	Air Flow std L/min (std ft³/min)	Water Flow L/min (U.S. gal/min)
1000 (69)	150 (10.3)	55 (1540)	10 (37.0)
6000 (414)	600 (41.4)	200 (5600)	20 (74.0)
10000 (690)	1000 (69.0)	330 (9240)	25 (92.5)

Standard Materials of Construction

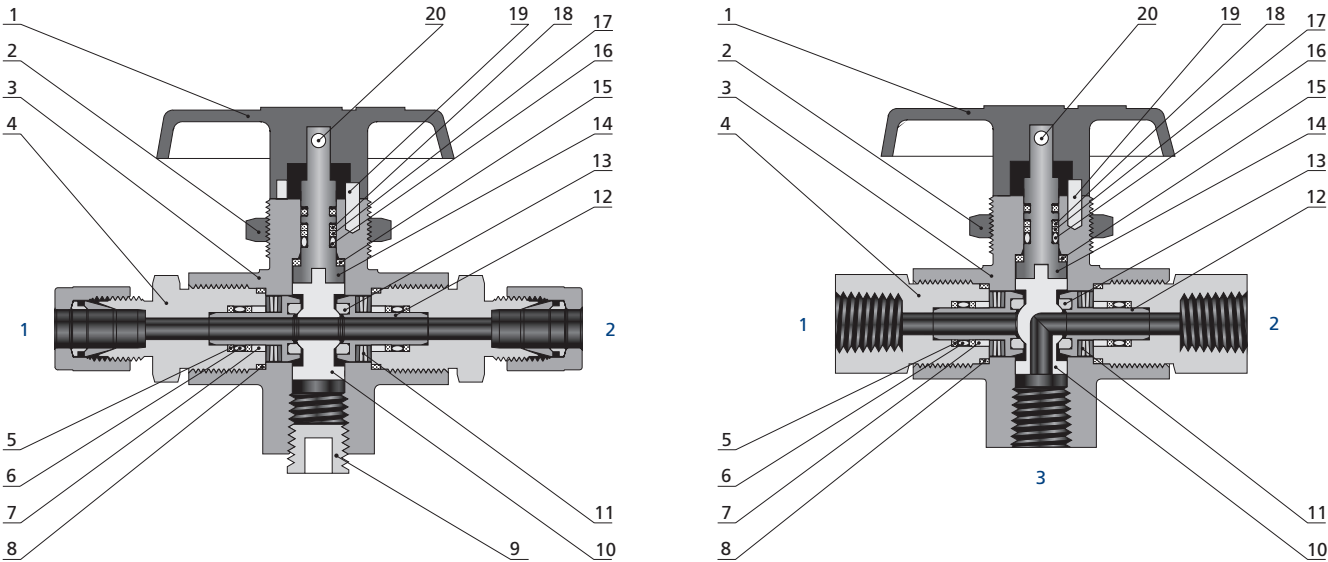
BF Series



Item	Component	Valve Body Material			
		316 Stainless Steel		Alloy 400	
		2-way	3-way	2-way	3-way
		Material Grade/ASTM Specification			
1	Handle	Nylon or Aluminium			
2	Panel Nut	316 SS/B783			
3	Body	316 SS/A479	316 SS/A182	Alloy 400/B164	
4	End Connector	316 SS/A479		Alloy R-405/B164	
5	Seat Retainer Backup Ring	Reinforced PTFE			
6	Seat Retainer O-ring	Fluorocarbon FKM			
7	Seat Retainer Guide	316 SS/A276		Alloy R-405/B164	
8	End Connector Seal	PTFE/D1710			
9	Trunnion O-ring	Fluorocarbon FKM	—	Fluorocarbon FKM	—
10	Trunnion Backup Ring	Reinforced PTFE	—	Reinforced PTFE	—
11	Trunnion Bearing	—	PEEK	—	PEEK
12	Ball	316 SS/A276	S21800/A276	Alloy R-405/B164	
13	Seat Spring	Alloy X-750/AMS 5542			
14	Seat Retainer	316 SS/A276		Alloy R-405/B164	
15	Seat	PTFE or PEEK or PCTFE			
16	Stem	316 SS/A276		Alloy R-405/B164	
17	Stem Washer	Reinforced PTFE	PEEK	Reinforced PTFE	PEEK
18	Stem O-ring	Fluorocarbon FKM		Fluorocarbon FKM	
19	Secondary Stem Backup Ring	—	PTFE/D710	—	PTFE/D710
20	Primary Stem Backup Ring	—	PEEK	—	PEEK
21	Pin	Stainless Steel			
22	Set Screw	Stainless Steel			
Lubricants		Fluorinated-based (all valves) tungsten disulfide additive (valves with peek seats)			

1. Ball trunnions are PTFE coated in BF series 2-way valve.
2. Other materials are available upon request, refer to the ordering information.

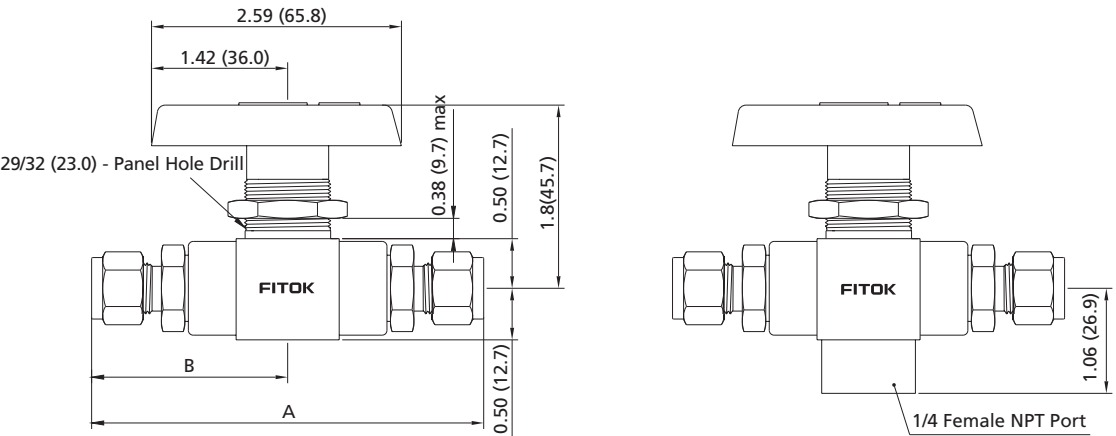
BFH Series



Item	Component	2-way	3-way
		Material Grade/ASTM Specification	
1	Handle	Nylon or Aluminium	
2	Panel Nut	316 SS/B783	
3	Body	316 SS/A479	316 SS/A182
4	End Connector	316 SS/A479	
5	Seat Retainer Guide	Reinforced PTFE	
6	Seat Retainer O-ring	Fluorocarbon FKM	
7	Seat Carrier Guide	316 SS/A276	
8	End Connector Seal	PTFE/D1710	
9	Plug	316 SS/A276	
10	Ball	S21800/A276	
11	Seat Spring	Alloy X-750/AMS 5542	
12	Seat Retainer	316 SS/A276	
13	Seat	PEEK	
14	Stem	316 SS/A276	
15	Stem Washer	PEEK	
16	Stem O-ring	Fluorocarbon FKM	
17	Secondary Stem Backup Ring	PTFE/D710	
18	Primary Stem Backup Ring	PEEK	
19	Pin	Stainless Steel	
20	Set Screw	Stainless Steel	
Lubricants		Molybdenum and Tungsten disulfide and Fluorinated-based	

1. Ball trunnions are Xylan® coated in BFH series 2-way valve.
2. Other materials are available upon request, refer to the ordering information.

Dimensions and Order Information



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

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

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.

Service Option

Low-temperature Service

Trunnion ball valves for low-temperature service, with a temperature rating of -40°F to 200°F (-40°C to 93°C) are available. Low-temperature valves have low-temperature Buna C O-rings. All other materials and ratings are the same as those of standard valves.

Example: BFSS-FL4-P-W (2-way)

BF Series Low-temperature service Pressure - temperature Ratings

Material	316 SS		Alloy 400	
Seat Material	PCTFE PEEK	PTFE	PCTFE PEEK	PTFE
Temperature, °F (°C)	Working Pressure, psig (bar)			
-40 to 100 (-40 to 37)	6000 (414)	1500 (103)	5000 (344)	1500 (103)
100 to 200 (37 to 93)	See Pressure vs. Temperature			

BFH Series Low-temperature service Pressure - temperature Ratings

Material	316 SS				
End Connection	FNS2, FNS4 FL4, ML6	ML10	FL6 ML8	FL8	ML12
Temperature, °F (°C)	Working Pressure, psig (bar)				
-40 to 100 (-40 to 37)	10000 (690)	8400 (578)	7500 (516)	6700 (461)	6600 (454)
100 to 200 (37 to 93)	See Pressure vs. Temperature				

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 lever for BF series with PCTFE, PTFE, PEEK or reinforced nylon seats, add "F2" to valves ordering number.

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

Oxygen Service Hazards

For more information about hazards and risks of oxygen-enriched system, please contact the authorized representative or FITOK Group.

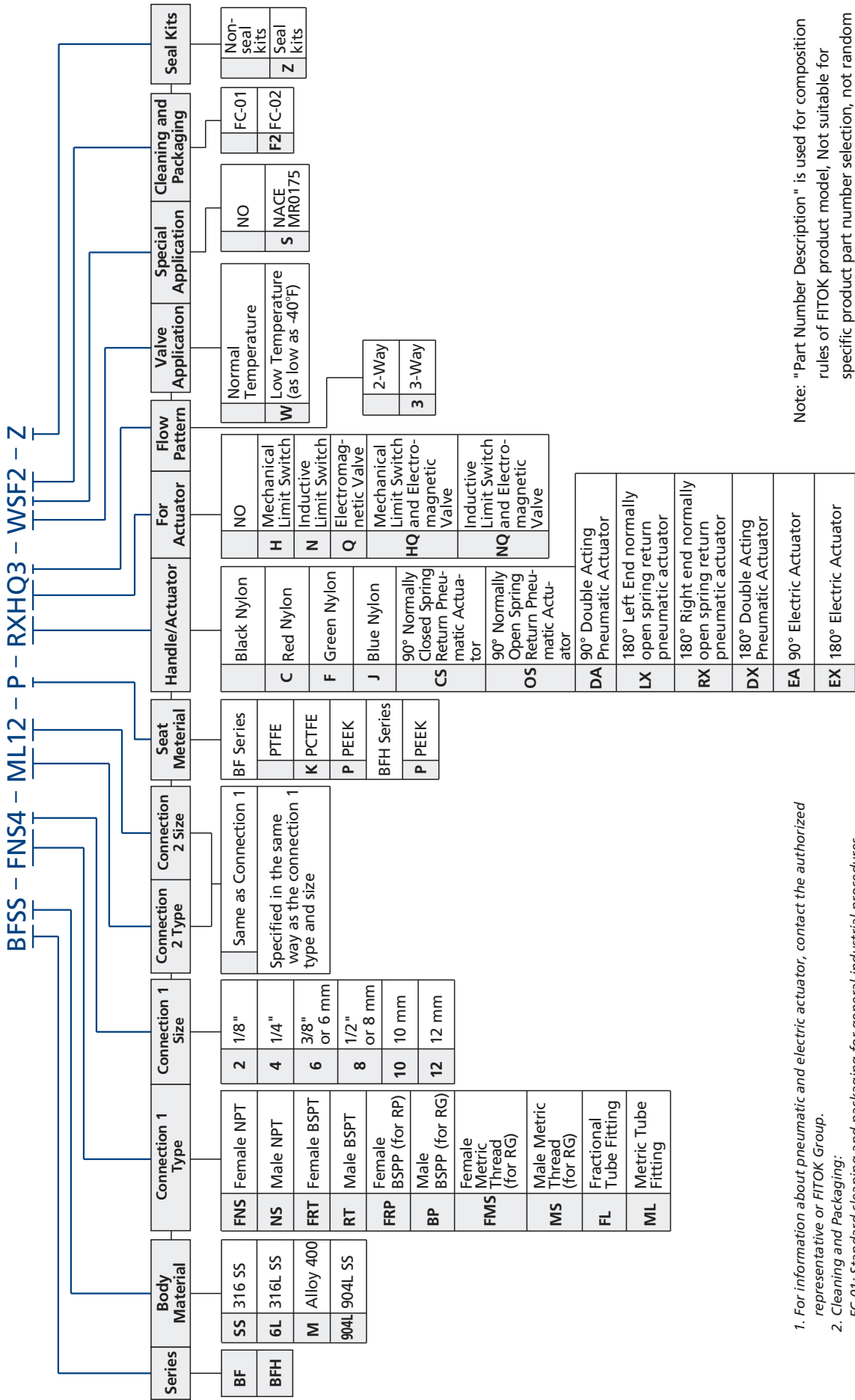
BF&BFH Series Seal Kits

- 1. Seal kits contain components of the same material as original valve. See standard material of construction
- 2. To complete the ordering number, please add Z for seal kits. Examples as follows:

Valve Series	Basic Seal Kit Ordering Number	Kit Contents
BF 2-way seal kits	BFSS-ML12-ML10-P-CLF2-Z	Instructions, O-rings, stem bearing, ball, seat subassemblies (seats and seat carriers), seat springs, end screw seals, lubricant
BF 3-way seal kits	BFSS-FNS4-ML12-ML10-P-C3LF4-Z	Instructions, O-rings, stem bearing, stem, ball, seat subassemblies (seats and seat carriers), seat springs, end screw seals, lubricant
BFH 2-way seal kits	BFHSS-ML12-ML10-P-CLF2-Z	Instructions, stem, O-rings, backup rings, stem bearing, ball, seat subassemblies (seats and seat carriers), seat springs, end screw seals, lubricant
BFH 3-way seal kits	BFHSS-FNS4-ML12-ML10-P-C3LF4-Z	

Seal kit ordering numbers specify stainless steel material. For alloy 400 material, replace SS with M in the basic ordering number.

Part Number Description



3-piece Ball Valves

BG Series

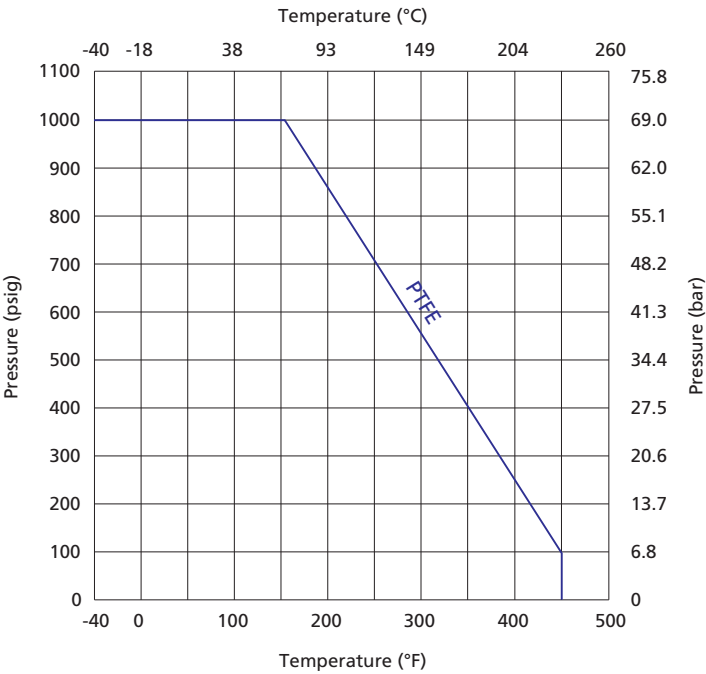
General Application

Features

- Maximum working pressure: 1000 psig (69.0 bar)
- Working temperature: -40°F to 450°F (-40°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
 - 1/2 to 1 flange
- Orifice sizes: 0.19" (4.8 mm) to 1" (25 mm)
- Blowout proof stem
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen

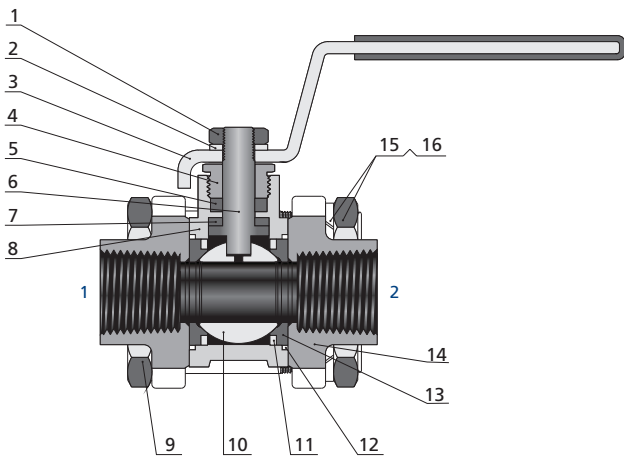


Pressure vs. Temperature

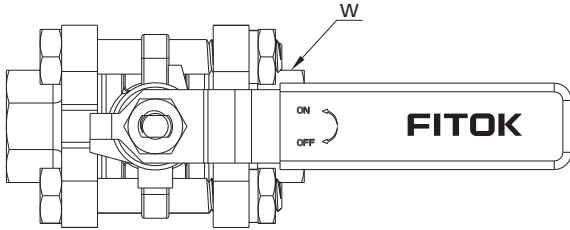
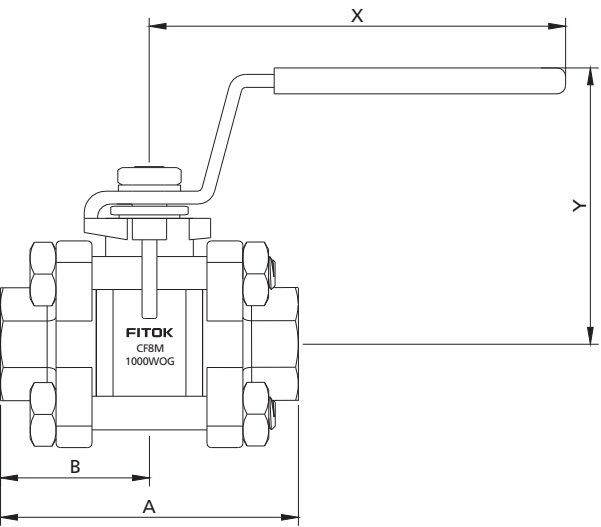


Standard Materials of Construction

Item	Component	Valve Body Material			
		CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
1	Stem Nut	Gr. 8M/A194			
2	Gasket	304 SS			
3	Handle	304 SS/A240 (with vinyl sleeve)			
4	Gland	316 SS/A276 or 304 SS/A276			
5	Stem Packing	PTFE/D1710			
6	Stem	316 SS/A276 or 304 SS/A276			
7	Stem Bearing	PTFE/D1710			
8	Body	CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
9	Body Bolt	Gr. 8M/A193			
10	Ball	316 SS/A276 or 304 SS/A276			
11	Support Ring	316 SS/A240 or 304 SS/A240			
12	Flange Seal	PTFE/D1710			
13	Seat	PTFE/D1710			
14	Flange	CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
15	Gasket	304 SS			
16	Nut	Gr. 8M/A194			
Lubricants		Silicone-based and PTFE-based			



Dimensions

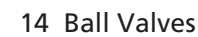


Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)						
	Connection 1	Connection 2			A	B	W	X	Y		
BG□□-FNS2-05	1/8 Female NPT	1/8 Female NPT	0.19 (4.8)	1.2	2.05 (52.1)	1.03 (26.0)	0.63 (16.0)	2.69 (68.3)	1.46 (37.0)		
BG□□-FRP2-05	1/8 Female BSPP	1/8 Female BSPP									
BG□□-PB4-05	1/4 PB	1/4 PB									
BG□□-FL4-05	1/4" FITOK	1/4" FITOK									
BG□□-ML6-05	6 mm FITOK	6 mm FITOK			2.63 (66.8)	1.31 (33.4)					
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)	0.63 (16.0)	2.69 (68.3)	1.46 (37.0)		
BG□□-FRP4-07	1/4 Female BSPP	1/4 Female BSPP									
BG□□-PS4-07	1/4 PS	1/4 PS			2.11 (53.6)	1.06 (26.8)					
BG□□-PB6-07	3/8 PB	3/8 PB									
BG□□-FL6-07	3/8" FITOK	3/8" FITOK								2.63 (66.8)	1.31 (33.4)
BG□□-ML10-07	10 mm FITOK	10 mm FITOK									
BG□□-FL8-11	1/2" FITOK	1/2" FITOK	0.42 (10.6)	7.5	4.04 (103.0)	2.02 (51.3)	0.93 (23.5)	3.94 (100.0)	2.19 (55.7)		
BG□□-ML12-11	12 mm FITOK	12 mm FITOK					0.93 (23.5)				
BG□□-ML14-11	14 mm FITOK	14 mm FITOK					0.93 (23.5)				
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)		2.19 (55.7)		
BG□□-FRP6-13	3/8 Female BSPP	3/8 Female BSPP					0.93 (23.5)				
BG□□-PS6-13	3/8 PS	3/8 PS					0.93 (23.5)			2.19 (55.7)	
BG□□-PB8-13	1/2 PB	1/2 PB			0.93 (23.5)						
BG□□-FL10-13	5/8" FITOK	5/8" FITOK			0.93 (23.5)						
BG□□-ML16-13	16 mm FITOK	16 mm FITOK			0.93 (23.5)	2.19 (55.7)					
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)	3.94 (100.0)	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			2.74 (69.5)	1.37 (34.8)					
BG□□-MTS18-15	18 mm MTS	18 mm MTS									
BG□□-FL12-15	3/4" FITOK	3/4" 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	4.57 (116.0)	2.28 (58.0)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)				
BG□□-FNS12-20	3/4 Female NPT	3/4 Female NPT	3.15 (80.0)	1.57 (40.0)							
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	3/4 PB	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	25 mm MTB			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			5.91 (150.0)	2.95 (75.0)			
BG□□-ML28-20	28 mm FITOK	28 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)			
BG□□-FRP16-25	1 Female BSPP	1 Female BSPP			4.07 (103.3)	2.03 (51.7)			
BG□□-PS16-25	1 PS	1 PS							
BG□□-PB16-25	1 PB	1 PB					5.75 (146.0)	2.87 (73.0)	
BG□□-FL20-25	1 1/4" FITOK	1 1/4" FITOK							

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.

14 Ball Valves



Note: "Part Number Description" is used for composition rules of FITOK product model.
Not suitable for specific product part number selection, not random combinations.
If in doubt, please contact FITOK group or authorized agent.

1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.
2. 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 as stated in ASTM G93 Level C.

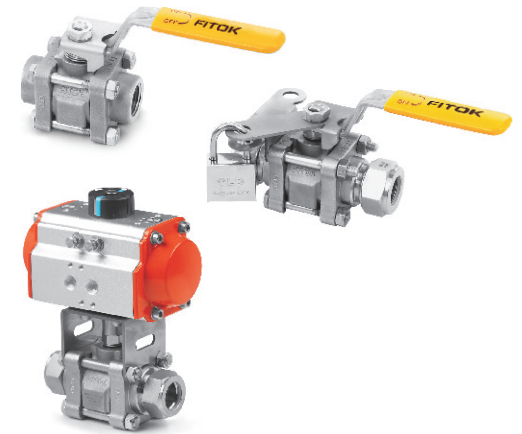
3-piece Ball Valves

BH Series

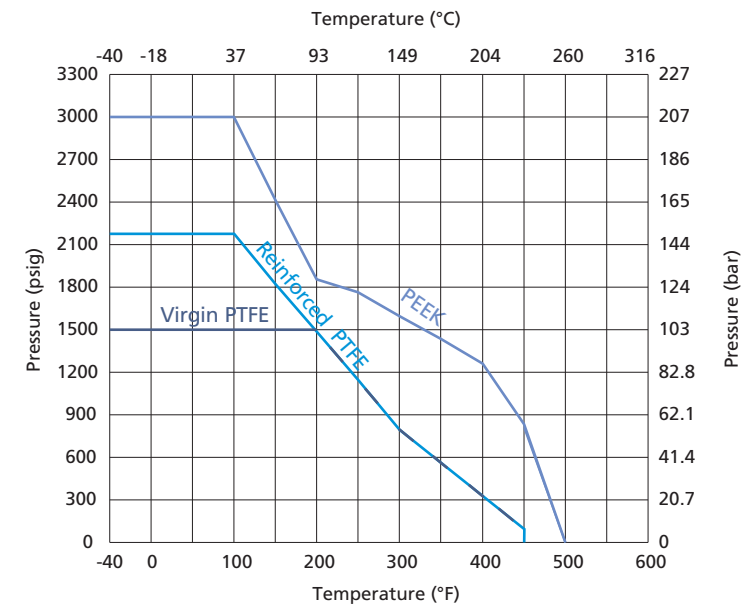
2-way Valves

Features

- ⦿ Maximum working pressure: 3000 psig (207 bar)
- ⦿ Working temperatures: -40°F to 450°F (-40°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), CF3M (316L), CF8 (304) and CF3 (304L)
- ⦿ Seat materials: PTFE, RPTFE and PEEK
- ⦿ Packing materials: RPTFE, Graphite and O-ring
- ⦿ Orifice sizes: 0.19" (4.8 mm) to 1.5" (38.1 mm)
- ⦿ Pneumatic and electric actuator available



Pressure vs. Temperature

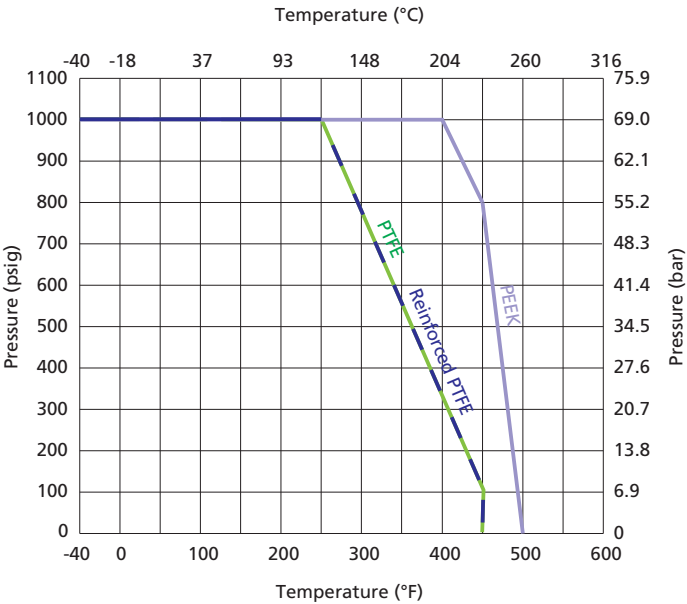


3-way Valves

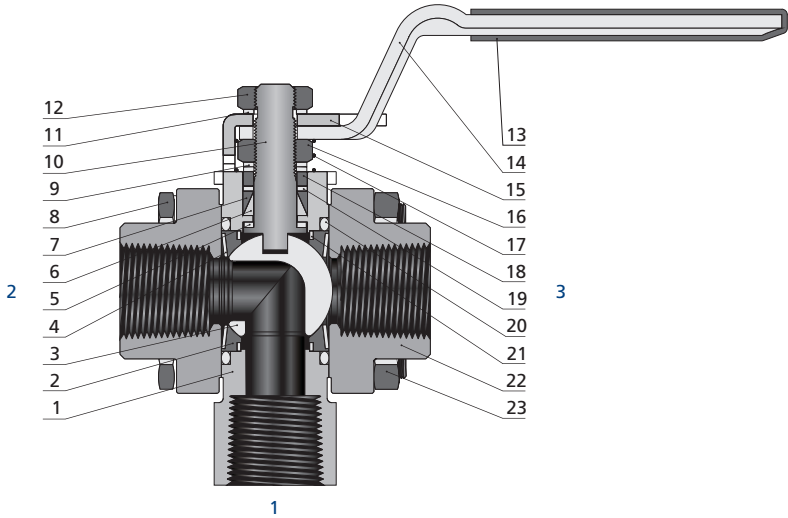
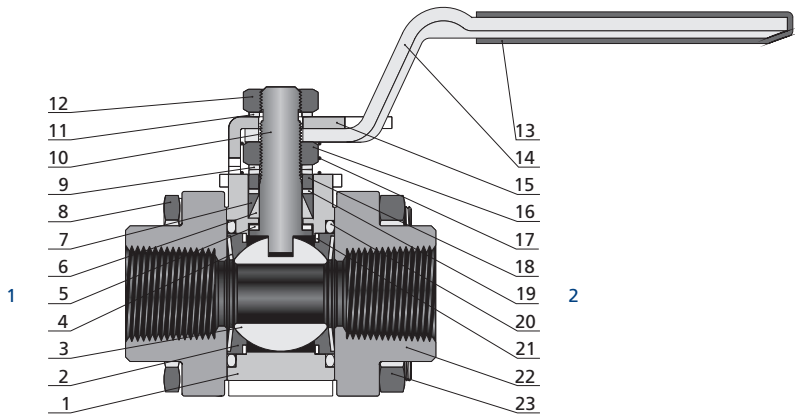
Features

- Maximum working pressure: 1000 psig (69.0 bar)
- Working temperature: -40°F to 450°F (-40°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 for every valve at the maximum working pressure with nitrogen

Pressure vs. Temperature



Standard Materials of Construction



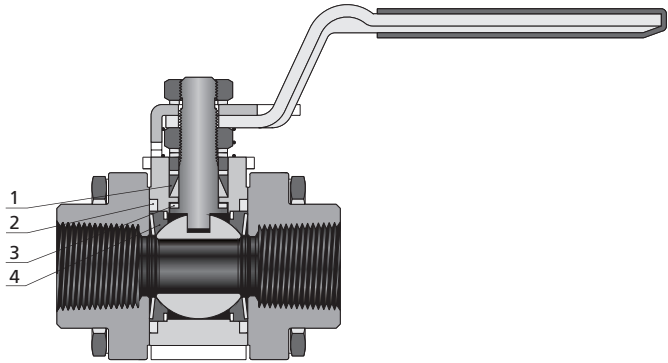
Item	Component	Valve Body Material			
		Material Grade/ASME Specification			
1	Body	CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
2	Seat	PTFE/D1710			
3	Ball	316 SS/A276			
4	Coned-disc Spring	Strain-hardened 316 SS/A240			
5	Stem Bearing	PEEK (Polyetheretherketone)			
6	Lower Packing	Reinforced PTFE			
7	Upper Packing	Reinforced PTFE			
8	Body Bolt	Gr. B8M/A193			
9	Stem Spring	Strain-hardened 316 SS/A240			
10	Stem	316 SS/A479			
11	Stem Spring	Strain-hardened 316 SS/A240			
12	Stem Nut	Gr. 8M/A194			
13	Handle Sleeve	Vinyl			
14	Handle	304 SS/A240			
15	Stop Plate	304 SS/A240			
16	Stem Nut	Gr. 8M/A194			
17	Grounding Spring	302 SS/A313			
18	Gland	PTFE-coated 316 SS/B783			
19	Packing Support	PEEK (Polyetheretherketone)			
20	Flange Seal	Fluorocarbon FKM			
21	Support Ring	316 SS/A240			
22	Flange	CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
23	Body Nut	Gr.8M/A194			
Lubricants		Silicone-based and PTTE-based			

Other materials available upon request

Steam Service

Features

- Maximum working pressure: 2500 psig (172 bar)
- Working temperature: -40°F to 600°F (-40°C to 316°C)
- Encased 8-bolt construction
- Graphite flange seals
- PEEK seats and stem seals

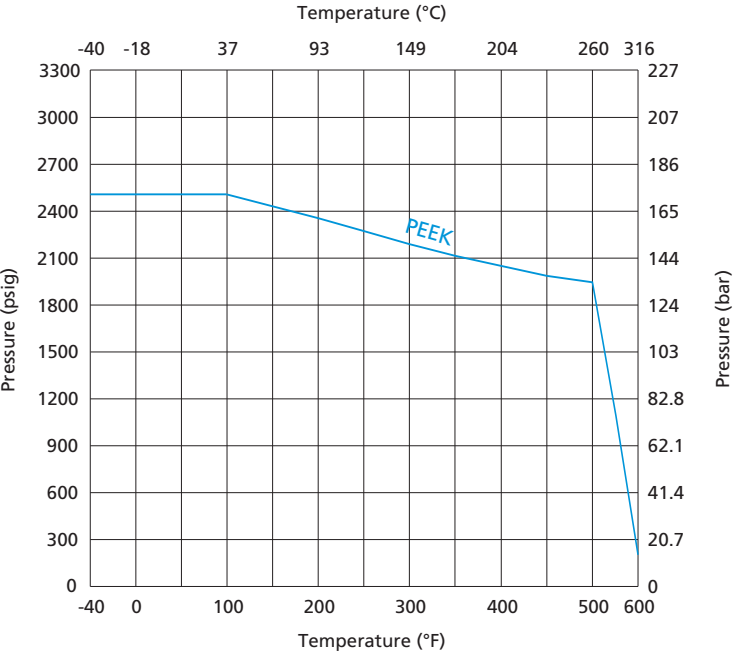


Materials of Construction

Item	Component	Valve Body Material			
		CF8M/A351	CF3M/A351	CF8/A351	CF3/A351
1	Packing	Molybdenum disulfide-coated PEEK			
2	Flange seal	Graphite with 316 SS			
3	Stem bearing	Molybdenum disulfide-coated PEEK			
4	Seat	Molybdenum disulfide-coated PEEK			
Lubricant		PTFE-based			

All other components are same as general application.

Pressure vs. Temperature



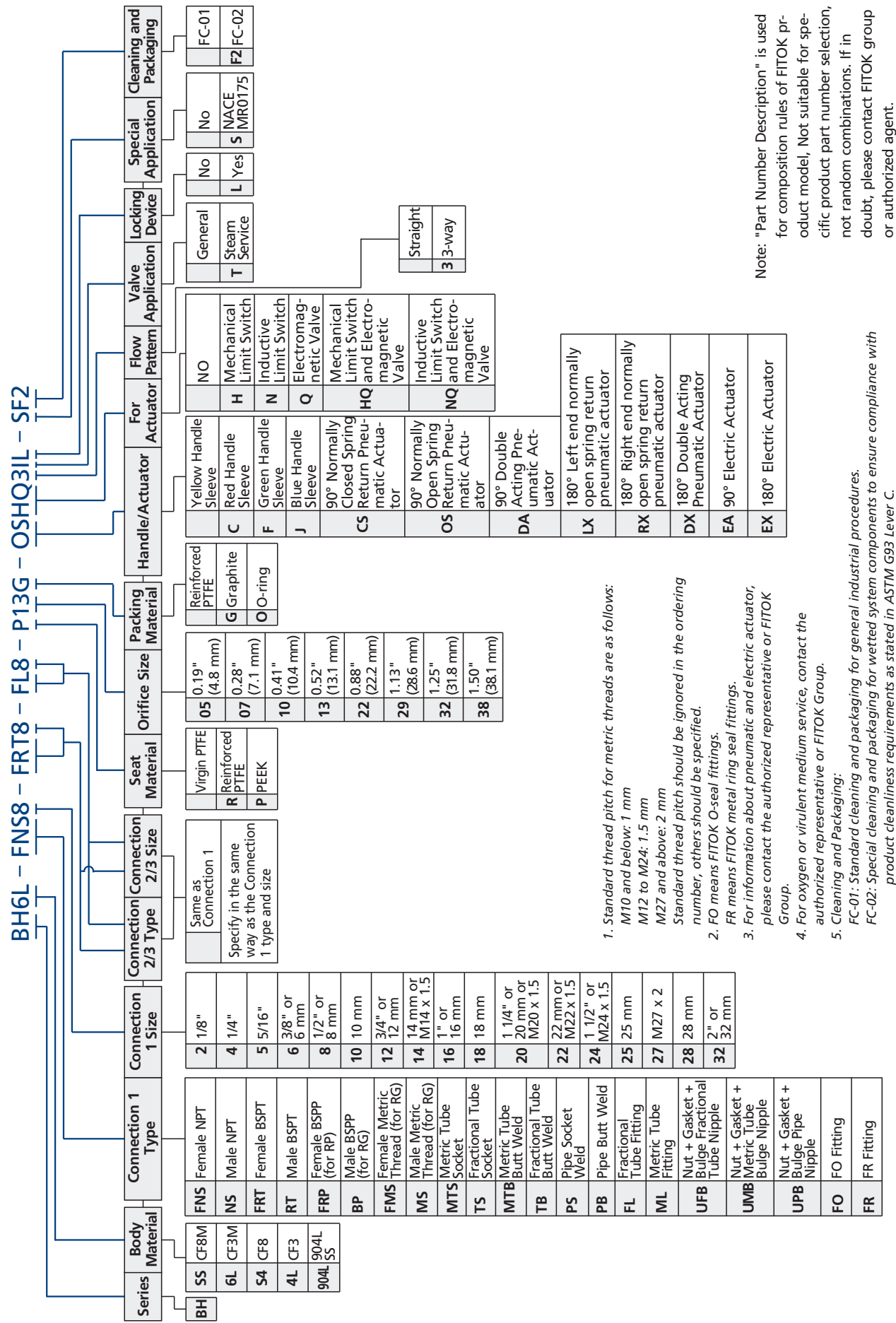
Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)						
Straight	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H	
BH□□-FL4-05	BH□□-FL4-05-3	1/4" FITOK	1/4" FITOK	0.19 (4.8)	1.2	3.17 (80.5)	1.59 (40.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	3.35 (85.1)	
BH□□-ML6-05	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	BH□□-TS4-05-3	1/4" TS	1/4" TS			2.16 (54.9)	1.08 (27.4)				—	
BH□□-MTS6-05	BH□□-MTS6-05-3	6 mm MTS	6 mm MTS									
BH□□-PB4-05	BH□□-PB4-05-3	1/4 PB	1/4 PB									
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									
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□□-FL5-07	BH□□-FL5-07-3	5/16" FITOK	5/16" FITOK			3.17 (80.5)	1.59 (40.4)				4.37 (111)	
BH□□-FL6-07	BH□□-FL6-07-3	3/8" FITOK	3/8" FITOK									
BH□□-ML10-07	BH□□-ML10-07-3	10 mm FITOK	10 mm FITOK									
BH□□-TS6-07	BH□□-TS6-07-3	3/8" TS	3/8" TS			2.16 (54.9)	1.08 (27.4)					—
BH□□-PB6-07	BH□□-PB6-07-3	3/8 PB	3/8 PB									
BH□□-FL8-10	BH□□-FL8-10-3	1/2" FITOK	1/2" FITOK									
BH□□-ML12-10	BH□□-ML12-10-3	12 mm FITOK	12 mm FITOK	0.41 (10.3)	7.5	4.04 (103)	2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.48 (114)	
BH□□-TS8-10	BH□□-TS8-10-3	1/2" TS	1/2" TS	0.38 (9.5)								
BH□□-FNS6-13	BH□□-FNS6-13-3	3/8 Female NPT	3/8 Female NPT	0.41 (10.4)								
BH□□-FRT6-13	BH□□-FRT6-13-3	3/8 Female BSPT	3/8 Female BSPT	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□□-FRP6-13	BH□□-FRP6-13-3	3/8 Female BSPP	3/8 Female BSPP									
BH□□-FNS8-13	BH□□-FNS8-13-3	1/2 Female NPT	1/2 Female NPT									
BH□□-FRT8-13	BH□□-FRT8-13-3	1/2 Female BSPT	1/2 Female BSPT									
BH□□-FRP8-13	BH□□-FRP8-13-3	1/2 Female BSPP	1/2 Female BSPP									
BH□□-FL12-13	BH□□-FL12-13-3	3/4" FITOK	3/4" FITOK									
BH□□-ML16-13	BH□□-ML16-13-3	16 mm FITOK	16 mm FITOK		4.04 (103)	2.02 (51.3)	4.84 (123)					
BH□□-ML18-13	BH□□-ML18-13-3	18 mm FITOK	18 mm FITOK									
BH□□-TS12-13	BH□□-TS12-13-3	3/4" TS	3/4" TS									
BH□□-PS8-13	BH□□-PS8-13-3	1/2 PS	1/2 PS		2.70 (68.6)	1.34 (34)					—	
BH□□-PB8-13	BH□□-PB8-13-3	1/2 PB	1/2 PB									
						15						2.69 (68.3)

General Purpose Fittings													
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	BH□□-PB12-13-3	3/4 PB	3/4 PB	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		38	4.45 (113)	2.23 (56.6)						
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		40	5.36 (136)	2.68 (68)				5.91 (150)		
BH□□-FL20-22	BH□□-FL20-22-3	1 1/4" FITOK	1 1/4" FITOK			6.34 (161)	3.17 (80.5)						
BH□□-ML25-22	BH□□-ML25-22-3	25 mm FITOK	25 mm FITOK		40	5.36 (136)	2.68 (68)						
BH□□-ML28-22	BH□□-ML28-22-3	28 mm FITOK	28 mm FITOK			6.14 (156)	3.07 (78)						
BH□□-TS16-22	BH□□-TS16-22-3	1" TS	1" TS			3.59 (91.2)	1.80 (45.7)						
BH□□-MTS25-22	BH□□-MTS25-22-3	25 mm MTS	25 mm MTS		38	3.59 (91.2)	1.80 (45.7)				1.25 (31.8)	—	
BH□□-PS12-22	BH□□-PS12-22-3	3/4 PS	3/4 PS		36								
BH□□-PS16-22	BH□□-PS16-22-3	1 PS	1 PS		42								
BH□□-PB12-22	BH□□-PB12-22-3	3/4 PB	3/4 PB		36								
BH□□-PB16-22	BH□□-PB16-22-3	1 PB	1 PB	40									
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	1 1/4 PB			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	BH□□-TS24-32-3	1 1/2" TS	1 1/2" TS										
BH□□-PS20-32	BH□□-PS20-32-3	1 1/4 PS	1 1/4 PS		100	4.51 (115)	2.25 (57.2)				—		
BH□□-PS24-32	BH□□-PS24-32-3	1 1/2 PS	1 1/2 PS			4.57 (116)	2.28 (57.9)						
BH□□-PB24-32	BH□□-PB24-32-3	1 1/2 PB	1 1/2 PB			4.57 (116)	2.28 (57.9)						
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	BH□□-TS32-38-3	2" TS	2" TS										
BH□□-PS32-38	BH□□-PS32-38-3	2 PS	2 PS								5.09 (129)	2.55 (64.8)	—
BH□□-PB32-38	BH□□-PB32-38-3	2 PB	2 PB										

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.

FITOK

Part Number	Description



Note: "Part Number Description" is used for composition rules of FITOK product model. Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK group or authorized agent.

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 as stated in ASTM G93 Lever C.

One-piece Instrumentation Ball Valves

BO Series

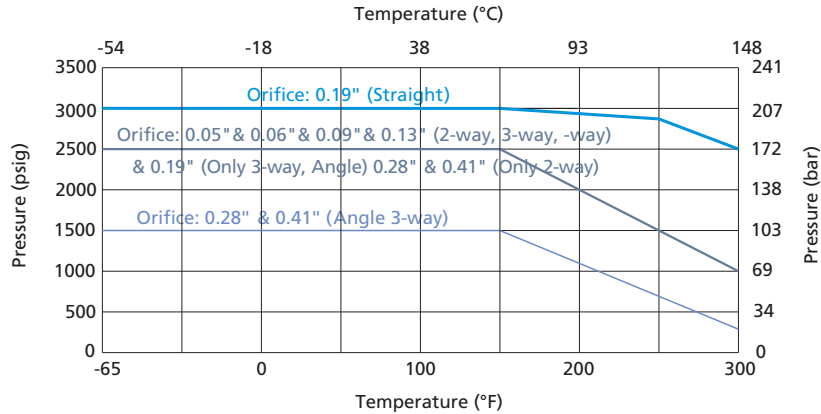
Features

- Maximum working pressure: 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
- Options for handle color
- Full operating pressure at any port
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen

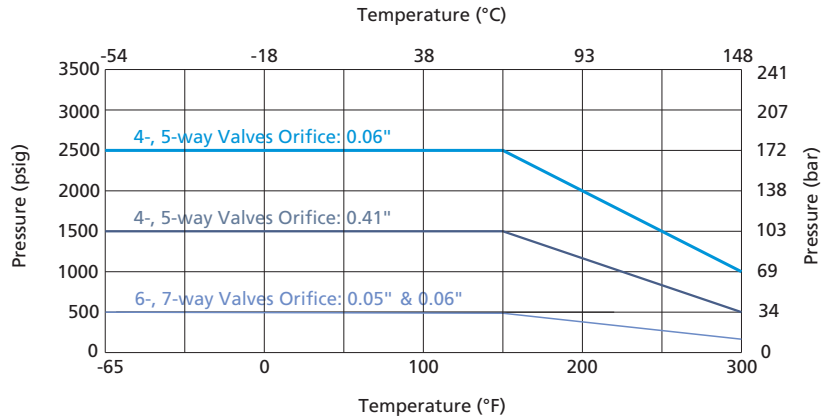


Pressure vs. Temperature

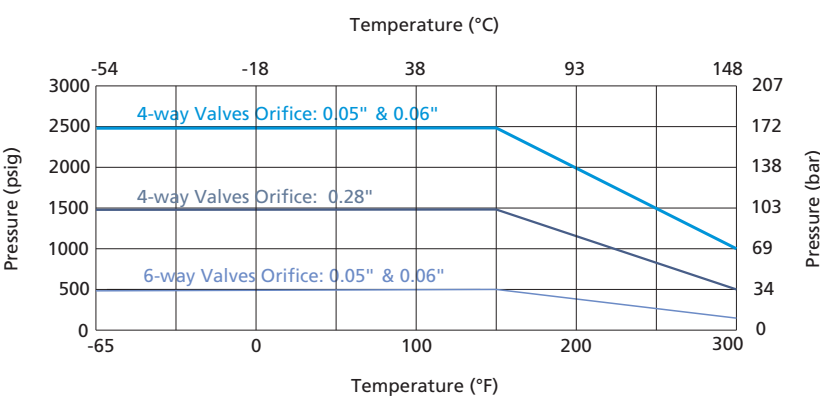
2-, 3-way, Angle Valves



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



Crossover (4-, 6-way) Valves



Standard Materials of Construction

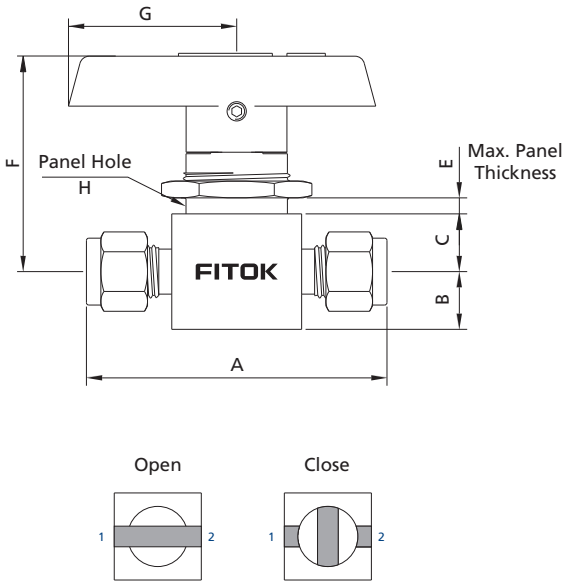


Item	Component	Valve Body Material		
		Stainless Steel	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Nylon or Aluminium		
2	Set Screw	S17400 SS/A564		
3	Packing Bolt	Powdered metal 300 series SS or 316 SS/A276, A479	Brass CDA 36000/B16	Alloy R-405/B164
4	Panel Nut	Powdered metal 300 series SS /B783 or 316 SS/A276, A479	Brass CDA 36000/B16	Powdered metal 300 series SS /B783 or 316 SS/A276, A479
5	Dishing Spring	S17700/A693		
6	Gland	Powdered metal 300 series SS/B783 or 316 SS/A276	Brass CDA 36000/B16	Alloy 400/B164
7	Packing Seat	PTFE/D1710 or UHMWPE/D4020		
8	Support Ring	Fluorocarbon-coated powdered metal 300 series SS/B783	Fluorocarbon-coated brass powdered metal	Fluorocarbon-coated alloy 400 powdered metal
9	Support Disc			
10	Ball Stem	316 SS/A276	Brass CDA 36000/B16	Alloy 400/B164
11	Body	316 SS/A182	Brass CDA 37700/B16	Alloy 400/B164
Wetted Lubricant		Fluorinated-based and silicone-based		
Non-wetted Lubricant		Molybdenum disulfide with hydrocarbon binder coat		

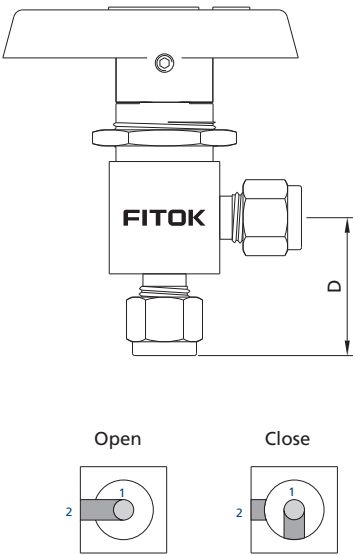
Contact the authorized representative or FITOK Group for valves of other materials.

Dimensions

2-way Valves



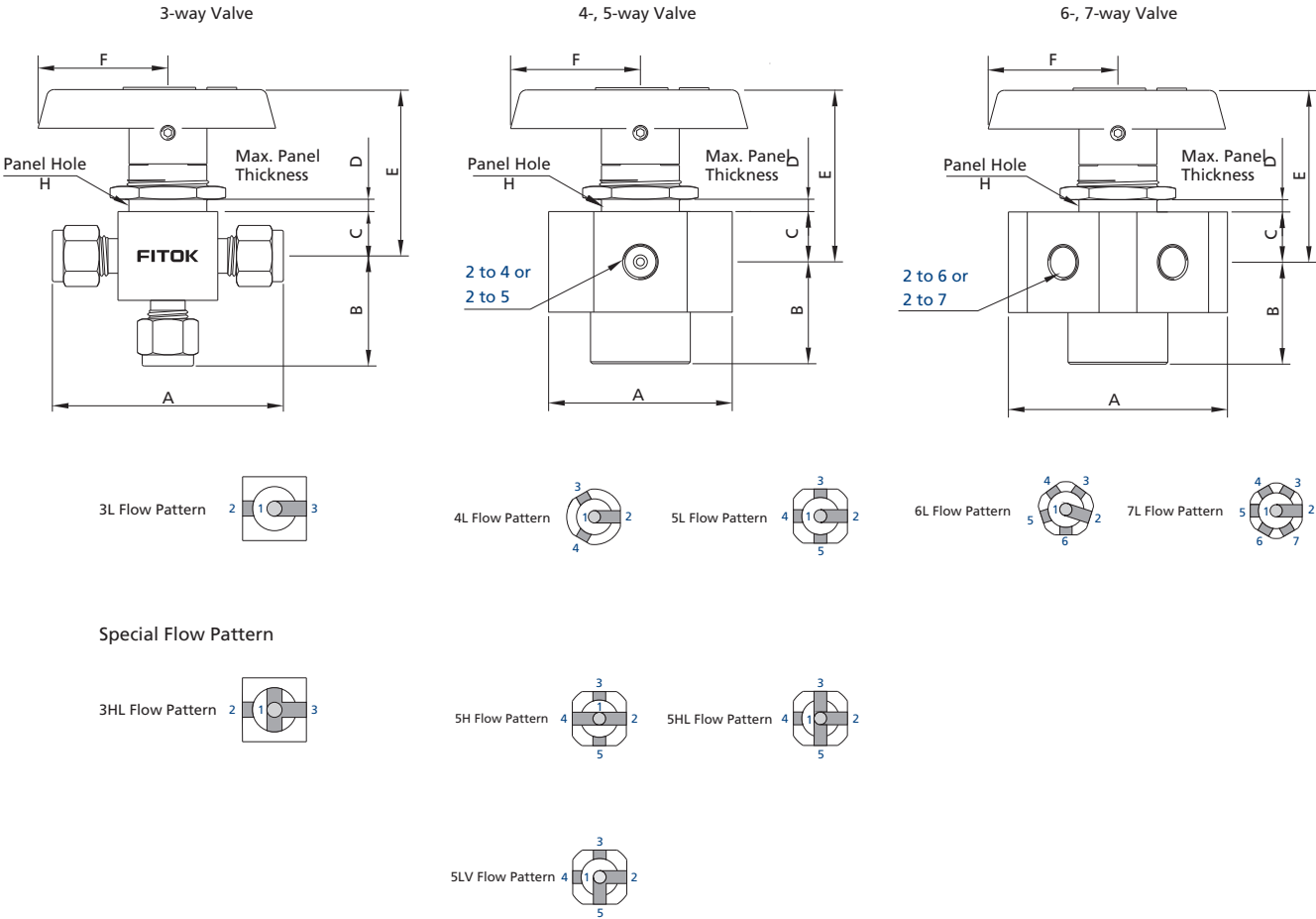
Angle Pattern Valves



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)			1.07 (27.2)				
BO□□-FL4-05		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-FL6-05			1.50		2.58 (65.5)			1.29 (32.8)				
BO□□-FL6-07	3/8" FITOK	0.28 (7.1)	6.00	2.00	3.05 (77.5)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-FL8-10	1/2" FITOK	0.41 (10.3)	6.40	3.80	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-FL12-10	3/4" FITOK		12.00	4.60								
BO□□-ML3-02	3 mm FITOK	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	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)			1.17 (29.7)				
BO□□-ML8-05	8 mm FITOK		1.50		2.46 (62.5)	0.38 (9.7)	0.44 (11.2)	1.20 (30.5)	3/16 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
BO□□-ML10-07	10 mm FITOK	0.28 (7.1)	6.00	2.00	3.07 (78.0)	0.56 (14.2)	0.56 (14.2)	1.43 (36.3)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-ML12-10	12 mm FITOK	0.41 (10.3)	12.00	4.60	3.92 (99.6)	0.69 (17.5)	0.69 (17.5)	1.74 (44.2)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		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	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		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



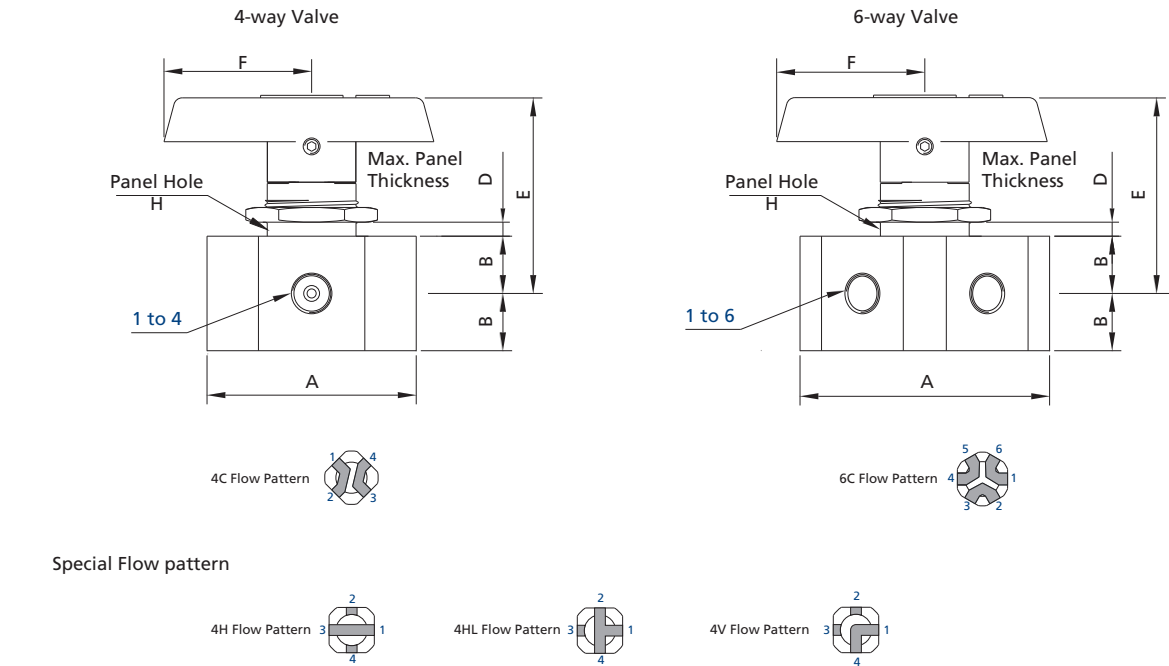
Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)						
				A	B	C	D	E	F	H
3-way Valve										
BO□□-FL1-00-3L	1/16" FITOK	0.05 (1.3)	0.08	1.68 (42.7)	0.81 (20.6)	0.34 (8.6)	1/4 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)
BO□□-FL2-02-3L	1/8" FITOK	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)					
BO□□-FL4-03-3L	1/4" FITOK	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)					
BO□□-FL4-05-3L		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	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							

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		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□□-ML8-05-3L	8 mm FITOK		0.80	2.46 (62.5)	1.20 (30.5)					
BO□□-ML10-07-3L	10 mm FITOK	0.28 (7.1)	2.00	2.89 (73.4)	1.43 (36.3)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)
BO□□-ML12-10-3L	12 mm FITOK	0.41 (10.3)	4.60	3.48 (88.4)	1.74 (44.2)	0.69 (17.5)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)
BO□□-FNS2-03-3L	1/8 Female NPT	0.13 (3.2)	0.30	1.63 (41.4)	0.81 (20.6)	0.34 (8.6)	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		0.28 (7.1)	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							
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	2.64 (67)	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)					
BO□□-FNS2-01-5L										
BO□□-FNS8-10-4L	1/2 Female NPT	0.41 (10.3)	3.50	3.13 (79.5)	1.56 (39.6)	0.69 (17.5)	0.41 (10.5)	2.63 (66.7)	3.00 (76.0)	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							
BO□□-FL2-01-7L										

Crossover (4-, 6-way) Valves



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						

- 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.

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.

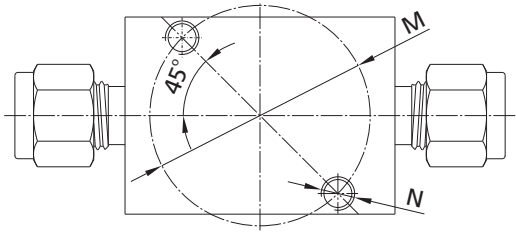
Bottom Screw Panel Mounting Options

Remark

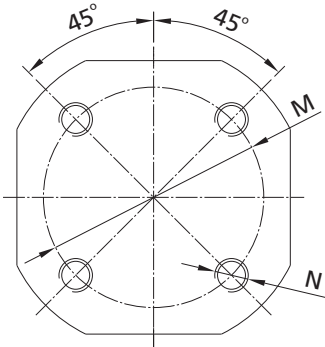
The bottom screw panel mounting options are not available on angle-pattern valves, 3-way valves, 6-way valves and 7-way valves.

Mounting Dimension

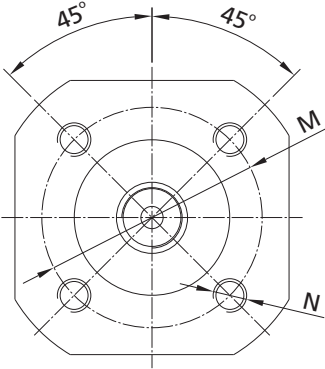
2-way



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

Part Number Description

BOSS – ML6 – FL4 – ML8 – H05 – OSHQ3LBFL4 – SF2

Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2 to 7 Type	Seat Material	Orifice Size	Handle/Actuator	For Actuator	Flow Pattern	Panel Installation	Vent Port	Special Application	Cleaning and Packaging
BO	SS 316 SS	FNS	1 1/16"	Same as connection 1 Specified in the same way as the connection 1 type and size	00	0.05" (1.3 mm)	C Black Nylon	NO	A Straight 3L Angle 3HL 3-way 4L 4-way 4H 4-way 4HL 4-way 4V 4-way 5L 5-way 5H 5-way 5HL 5-way 6L 6-way 6C 6-way 7L 7-way	FL2 1/8" tube fitting FL4 1/4" tube fitting FL6 3/8" tube fitting ML3 3 mm tube fitting ML6 6 mm tube fitting ML8 8 mm tube fitting	No vent port Panel nut Bottom screw	NO NACE S MR0175	FC-01 F2 FC-02
	S4 304 SS	NS	2 1/8"		01	0.06" (1.6 mm)	F Red Nylon	H Mechanical Limit Switch					
	S1 321 SS	FRT	3 3 mm		02	0.09" (2.4 mm)	J Blue Nylon	N Inductive Limit Switch					
	6L 316L SS	RT	4 1/4"		03	0.13" (3.2 mm)	U Black Aluminium	Q Electromagnetic Valve					
	4L 304L SS	FMS	3/8" or 6 mm		05	0.19" (4.8 mm)	CS 90° Normally Closed Spring Return Pneumatic Actuator	HQ Mechanical Limit Switch and Electromagnetic Valve					
	B Brass	MS	1/2" or 8 mm		07	0.28" (7.1 mm)	OS 90° Normally Open Spring Return Pneumatic Actuator	NQ Inductive Limit Switch and Electromagnetic Valve					
	M Alloy 400	FRP	10 10 mm		10	0.41" (10.3 mm)	DA 90° Double Acting Pneumatic Actuator						
	904L 904L SS	FL	3/4" or 12 mm				LX 180° Left end normally open spring return pneumatic actuator						
		ML	14 14 mm				RX 180° Right end normally open spring return pneumatic actuator						
		FO	16 16 mm				DX 180° Double Acting Pneumatic Actuator						
		FR	18 18 mm				EA 90° Electric Actuator						
							EX 180° Electric Actuator						

1. To prevent seat leakage, it may be required to check and adjust the stem packing 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. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
4. Sizes and types listed are standard. Other sizes and types are available upon request.
5. For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.
6. For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
6. 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 as stated in ASTM G93 Level C.

Note: "Part Number Description" is used for composition rules of FITOK product model, Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK group or authorized agent.

Bar Stock Ball Valves

BP Series

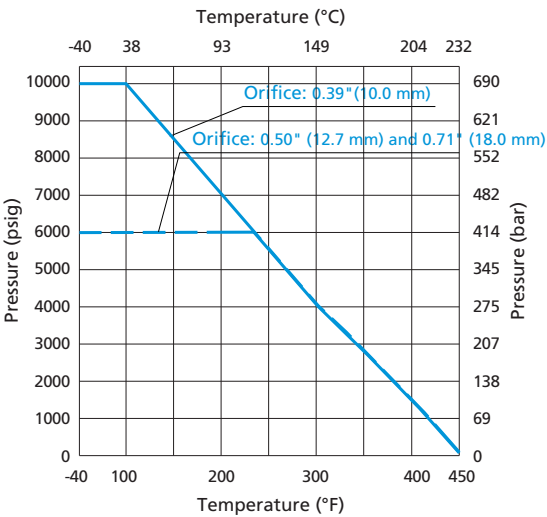
Features

- Maximum working pressure: 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
- Options for handle color
- Optional pneumatic and electric actuator
- Leak-tight performance testing with nitrogen for every valve at the maximum working pressure, but not higher than 6000 psig

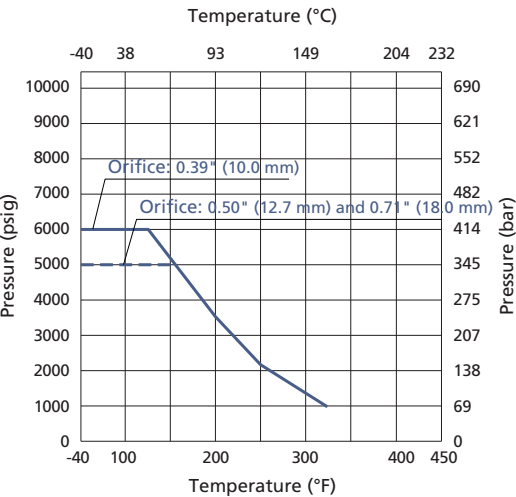


Pressure vs. Temperature

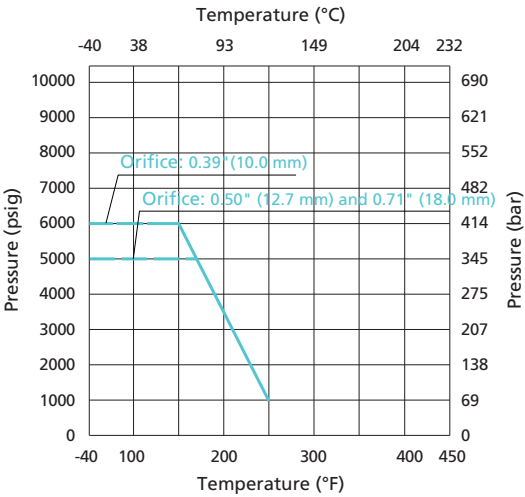
PEEK



PVDF



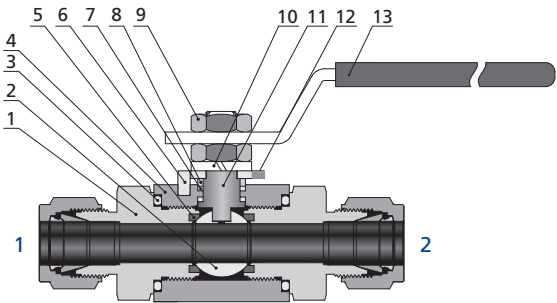
PCTFE



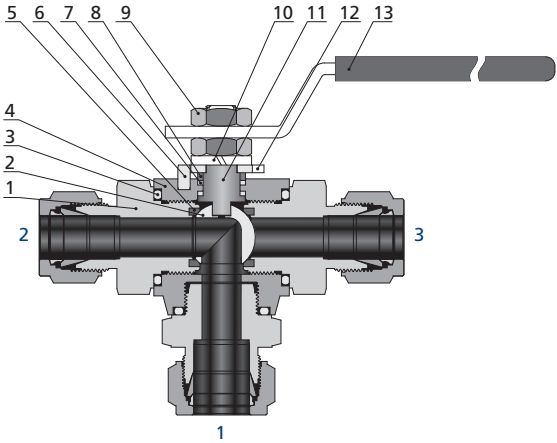
1. Graphs are for 2-way valves only.
2. Maximum working pressure for 3-way valves:
6000 psig: connection 1 as inlet, connection 2 and connection 3 as outlet
3000 psig: connection 2 and connection 3 as inlet, connection 1 as outlet

Standard Materials of Construction

2-way Valves

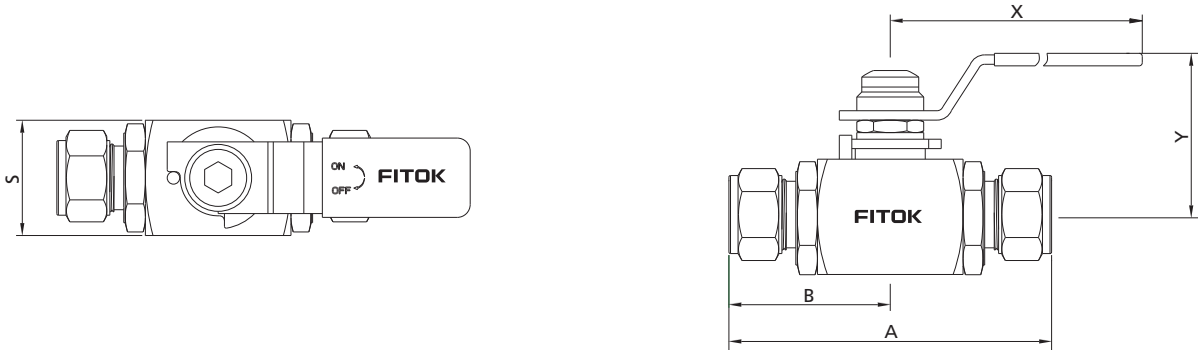


3-way Valves



Dimensions

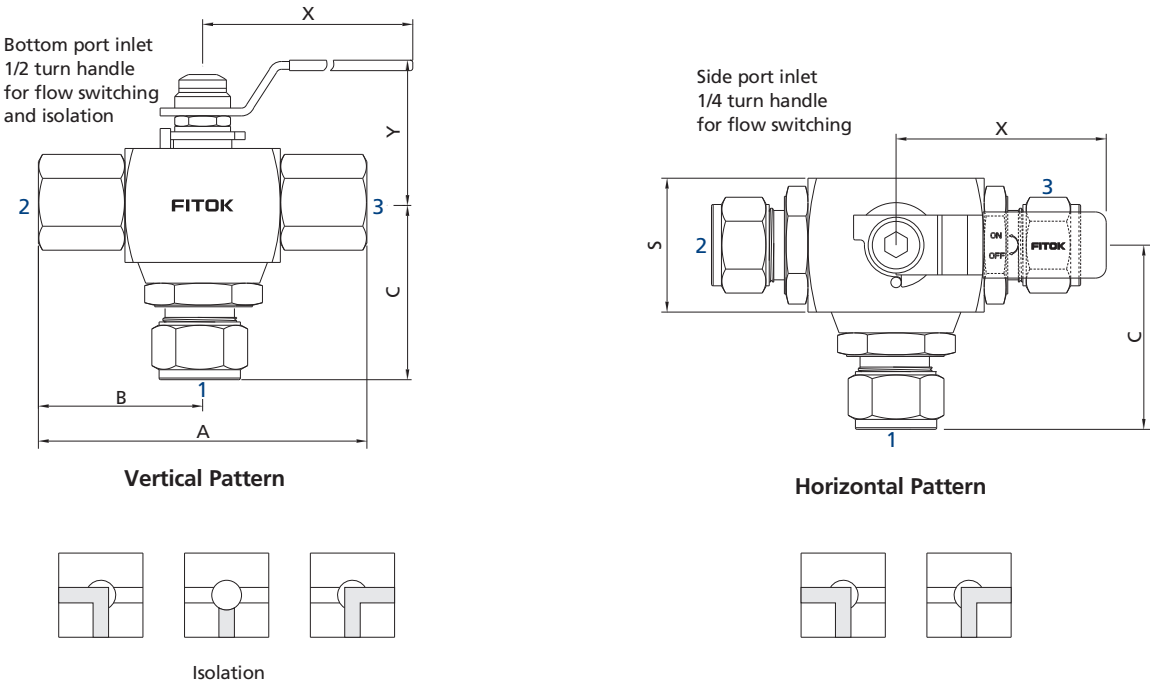
2-way Valves



Item	Component	Body Material	
		316 SS	Alloy 400
1	End Connector	316 SS/A276	Alloy 400/B164
2	Ball	316 SS/A479	Alloy R-405/B164
3	O-ring	Fluorocarbon FKM	
4	Body	316 SS/A479	Alloy 400/B164
5	Seat	PVDF or PCTFE or PEEK	
6	Stop Pin	Stainless Steel	
7	Stem Packing	PTFE/D1710	
8	Stem Washer	316 SS/A276	
9	Stem Nut	Stainless Steel	
10	Spring Washer	316 SS/A276	
11	Stem	316 SS/A276	
12	Stop Block	304 SS/A240	
13	Handle	Stainless steel with vinyl cover	

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)				
	Connection 1	Connection 2			A	B	X	Y	S
BP□□-ML6-10	6 mm FITOK	6 mm FITOK	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	8 mm FITOK			3.60 (91.6)	1.80 (45.8)			
BP□□-ML10-10	10 mm FITOK	10 mm FITOK		3.7	3.70 (94.0)	1.85 (47.0)			
BP□□-ML12-10	12 mm FITOK	12 mm FITOK		7.5	3.94 (100.0)	1.97 (50.0)			
BP□□-ML14-10	14 mm FITOK	14 mm FITOK							
BP□□-FL4-10	1/4" FITOK	1/4" FITOK		1.2	3.60 (91.6)	1.80 (45.8)			
BP□□-FL6-10	3/8" FITOK	3/8" FITOK		3.7	3.72 (94.6)	1.86 (47.3)			
BP□□-FL8-10	1/2" FITOK	1/2" FITOK		7.5	3.92 (99.6)	1.96 (49.8)			
BP□□-FNS4-10	1/4 Female NPT	1/4 Female NPT			3.03 (77.0)	1.52 (38.5)			
BP□□-FNS6-10	3/8 Female NPT	3/8 Female NPT			2.80 (71.0)	1.40 (35.5)			
BP□□-FNS8-10	1/2 Female NPT	1/2 Female NPT			3.11 (79.0)	1.56 (39.5)			
BP□□-NS4-10	1/4 Male NPT	1/4 Male NPT		3.7	3.36 (85.4)	1.68 (42.7)			
BP□□-NS6-10	3/8 Male NPT	3/8 Male NPT		7.5					
BP□□-NS8-10	1/2 Male NPT	1/2 Male NPT			3.75 (95.2)	1.88 (47.6)			
BP□□-ML16-13	16 mm FITOK	16 mm FITOK	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□□-ML18-13	18 mm FITOK	18 mm FITOK			4.12 (104.6)	2.06 (52.3)			
BP□□-ML20-13	20 mm FITOK	20 mm FITOK			4.43 (112.6)	2.22 (56.3)			
BP□□-ML22-13	22 mm FITOK	22 mm FITOK							
BP□□-FL10-13	5/8" FITOK	5/8" FITOK			4.36 (110.6)	2.18 (55.3)			
BP□□-FL12-13	3/4" FITOK	3/4" FITOK							
BP□□-FNS8-13	1/2 Female NPT	1/2 Female NPT			3.54 (90.0)	1.77 (45.0)			
BP□□-FNS12-13	3/4 Female NPT	3/4 Female NPT			4.09 (104.0)	2.05 (52.0)			
BP□□-NS12-13	3/4 Male NPT	3/4 Male NPT			4.14 (105.2)	2.07 (52.6)			
BP□□-ML20-19	20 mm FITOK	20 mm FITOK	0.71 (18.0)	19.0	4.87 (123.8)	2.43 (61.9)	6.30 (160.0)	2.08 (53.0)	1.96 (50.0)
BP□□-ML22-19	22 mm FITOK	22 mm FITOK		30.0	5.11 (129.8)	2.66 (64.9)			
BP□□-ML25-19	25 mm FITOK	25 mm FITOK		19.0	4.59 (116.6)	2.29 (58.3)			
BP□□-FL12-19	3/4" FITOK	3/4" FITOK		30.0	5.11 (129.8)	2.66 (64.9)			
BP□□-FL16-19	1" FITOK	1" FITOK			3.81 (96.8)	1.91 (48.4)			
BP□□-FNS12-19	3/4 Female NPT	3/4 Female NPT			4.26 (108.2)	2.13 (54.1)			
BP□□-FNS16-19	1 Female NPT	1 Female NPT							
BP□□-NS12-19	3/4 Male NPT	3/4 Male NPT		19.0	4.54 (115.2)	2.27 (57.6)			
BP□□-NS16-19	1 Male NPT	1 Male NPT		30.0	4.91 (124.8)	2.45 (62.4)			

3-way Valves



Basic Ordering Number	Connection Type and Size		Orifice	Cv	Dimension, in. (mm)						
	Connection 1	Connection 2/3	in. (mm)		A	B	C	X	Y	S	
BP□□-ML6-10-3□	6 mm FITOK	6 mm FITOK	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	8 mm FITOK			3.60 (91.6)	1.80 (45.8)	2.02 (51.3)				
BP□□-ML10-10-3□	10 mm FITOK	10 mm FITOK		3.7	3.70 (94.0)	1.85 (47.0)	2.07 (52.5)				
BP□□-ML12-10-3□	12 mm FITOK	12 mm FITOK		7.5	3.94 (100.0)	1.97 (50.0)	2.18 (55.5)				
BP□□-ML14-10-3□	14 mm FITOK	14 mm FITOK									
BP□□-FL4-10-3□	1/4" FITOK	1/4" FITOK		1.2	3.60 (91.6)	1.80 (45.8)	2.01 (53.3)				
BP□□-FL6-10-3□	3/8" FITOK	3/8" FITOK		3.7	3.72 (94.6)	1.86 (47.3)	2.16 (54.8)				
BP□□-FL8-10-3□	1/2" FITOK	1/2" FITOK		7.5	3.92 (99.6)	1.96 (49.8)	2.13 (54.0)				
BP□□-FNS4-10-3□	1/4 Female NPT	1/4 Female NPT			3.03 (77.0)	1.52 (38.5)	1.44 (36.5)				
BP□□-FNS6-10-3□	3/8 Female NPT	3/8 Female NPT			2.80 (71.0)	1.40 (35.5)	1.57 (40.0)				
BP□□-FNS8-10-3□	1/2 Female NPT	1/2 Female NPT			3.27 (83.0)	1.63 (41.5)	1.83 (46.4)				
BP□□-NS4-10-3□	1/4 Male NPT	1/4 Male NPT		3.7	7.5	3.36 (85.4)	1.68 (42.7)				1.90 (48.2)
BP□□-NS6-10-3□	3/8 Male NPT	3/8 Male NPT		3.75 (95.2)		1.88 (47.6)	2.09 (53.1)				
BP□□-NS8-10-3□	1/2 Male NPT	1/2 Male NPT									

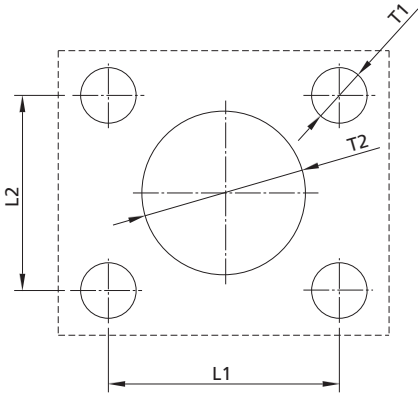
Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)					
	Connection 1	Connection 2/3			A	B	C	X	Y	S
BP□□-ML16-13-3□	16 mm FITOK	16 mm FITOK	0.50 (12.7)	10.0	4.04 (102.6)	2.02 (51.3)	2.41 (61.3)	5.71 (145.0)	1.89 (48.0)	1.50 (38.0)
BP□□-ML18-13-3□	18 mm FITOK	18 mm FITOK			4.12 (104.6)	2.06 (52.3)	2.45 (62.3)			
BP□□-ML20-13-3□	20 mm FITOK	20 mm FITOK			4.43 (112.6)	2.22 (56.3)	2.61 (66.3)			
BP□□-ML22-13-3□	22 mm FITOK	22 mm FITOK								
BP□□-FL10-13-3□	5/8" FITOK	5/8" FITOK			4.36 (110.6)	2.18 (55.3)	2.57 (65.3)			
BP□□-FL12-13-3□	3/4" FITOK	3/4" FITOK								
BP□□-FNS8-10-3□	1/2 Female NPT	1/2 Female NPT			3.82 (97.0)	1.91 (48.5)	1.95 (49.5)			
BP□□-FNS12-13-3□	3/4 Female NPT	3/4 Female NPT					2.16 (55.0)			
BP□□-NS12-13-3□	3/4 Male NPT	3/4 Male NPT			4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
BP□□-ML20-19-3□	20 mm FITOK	20 mm FITOK	0.71 (18.0)	19.0	4.87 (123.8)	2.43 (61.9)	2.89 (73.4)	6.30 (160.0)	2.08 (53.0)	1.96 (50.0)
BP□□-ML22-19-3□	22 mm FITOK	22 mm FITOK		30.0	5.11 (129.8)	2.66 (64.9)	3.00 (76.2)			
BP□□-ML25-19-3□	25 mm FITOK	25 mm FITOK		19.0	4.86 (123.4)	2.43 (61.7)	3.02 (76.7)			
BP□□-FL12-19-3□	3/4" FITOK	3/4" FITOK		30.0	5.11 (129.8)	2.66 (64.9)	2.85 (72.4)			
BP□□-FL16-19-3□	1" FITOK	1" FITOK			3.82 (97.0)	1.91 (48.5)	2.22 (56.5)			
BP□□-FNS12-19-3□	3/4 Female NPT	3/4 Female NPT			4.26 (108.2)	2.13 (54.1)	2.40 (60.8)			
BP□□-FNS16-19-3□	1 Female NPT	1 Female NPT								
BP□□-NS12-19-3□	3/4 Male NPT	3/4 Male NPT		19.0	4.54 (115.2)	2.27 (57.6)	2.72 (69.1)			
BP□□-NS16-19-3□	1 Male NPT	1 Male NPT		30.0	4.91 (124.8)	2.45 (62.4)	2.90 (73.9)			

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.

Panel Mounting Options

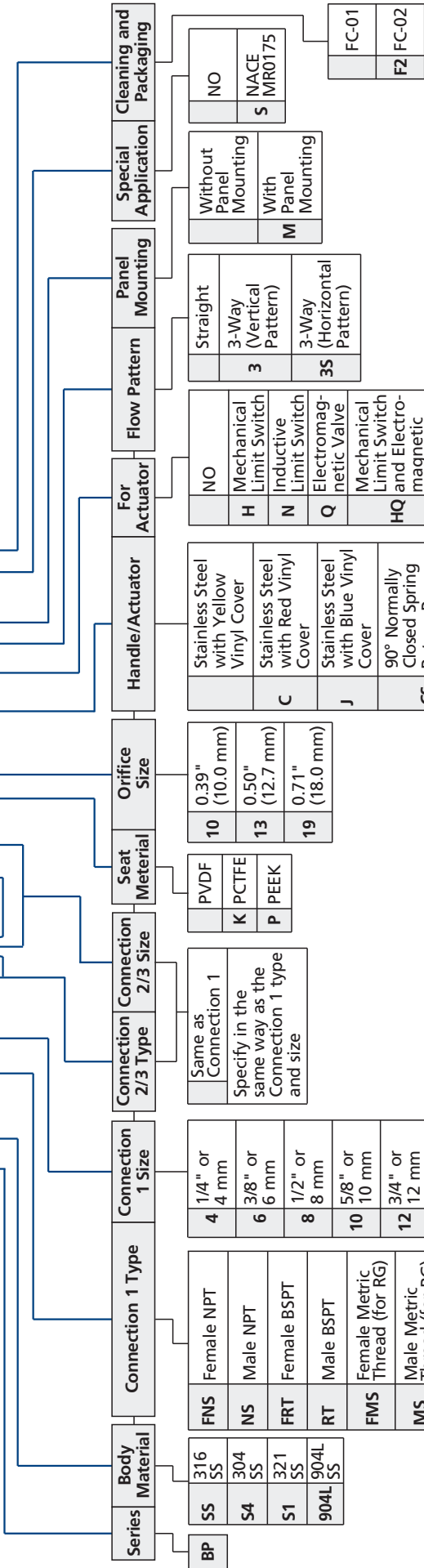
Dimension for Panel Mounting

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 – P13 – OSHQ3M – SF2



1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.
2. FO means FITOK O-seal fittings.
FR means FITOK metal ring seal fittings.
3. For information about pneumatic and electric actuator, please contact the authorized representative or FITOK Group.
4. For oxygen or virulent medium service, contact the authorized representative or FITOK Group.
5. Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirements as stated in ASTM G93 Level C.

Note: "Part Number Description" is used for composition rules of FITOK product model, Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK group or authorized agent.

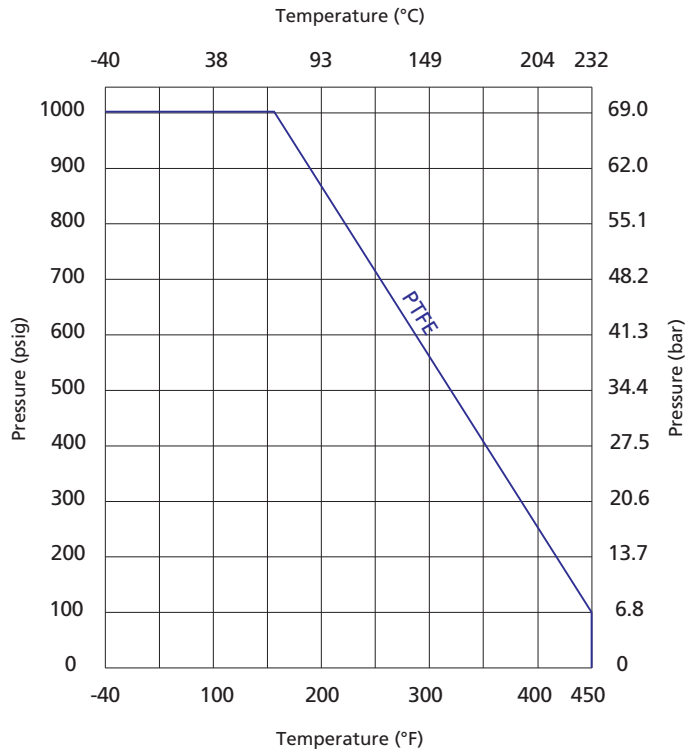
Hex Bar Stock Ball Valves

BR Series

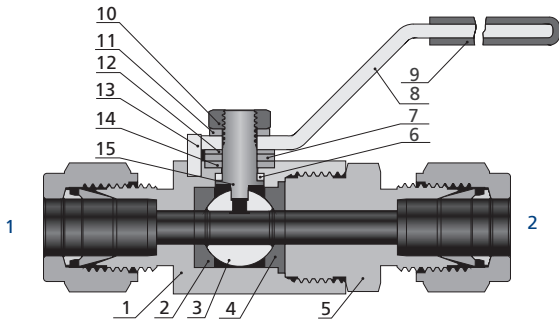
Features

- Maximum working pressure: 1000 psig (69.0 bar)
- Working temperature: -40°F to 450°F (-40°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
- Options for handle color
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen

Pressure vs. Temperature



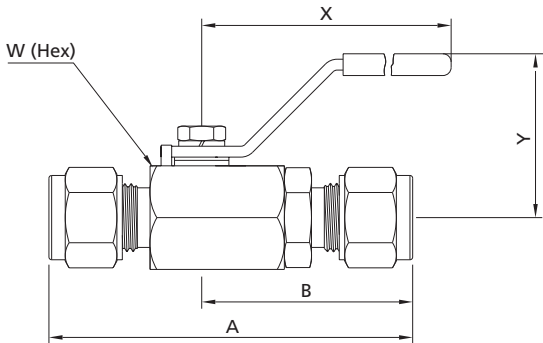
Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	316L SS	Brass
1	Body	316 SS/A276 316 SS/A351	304 SS/A276 304 SS/A351	316L SS/A276 316L SS/A351	Brass/B16
2	Front Seat	PTFE/D1710			
3	Ball	316 SS/A276			
4	Back Seat	PTFE/D1710			
5	End Connector	316 SS/A276	304 SS/A276	316L SS/A276	Brass/B16
6	Bottom Packing	PTFE/D1710			
7	Washer	316 SS/A276			
8	Handle	304 SS/A240 or Aluminium			
9	Sleeve	Vinyl			
10	Stem Nut	Stainless steel			
11	Gasket	Stainless steel			
12	Coned-disk Spring	S17700/A693			
13	Pin	Stainless steel			
14	Top Packing	PTFE/D1710			
15	Stem	316 SS/A276			

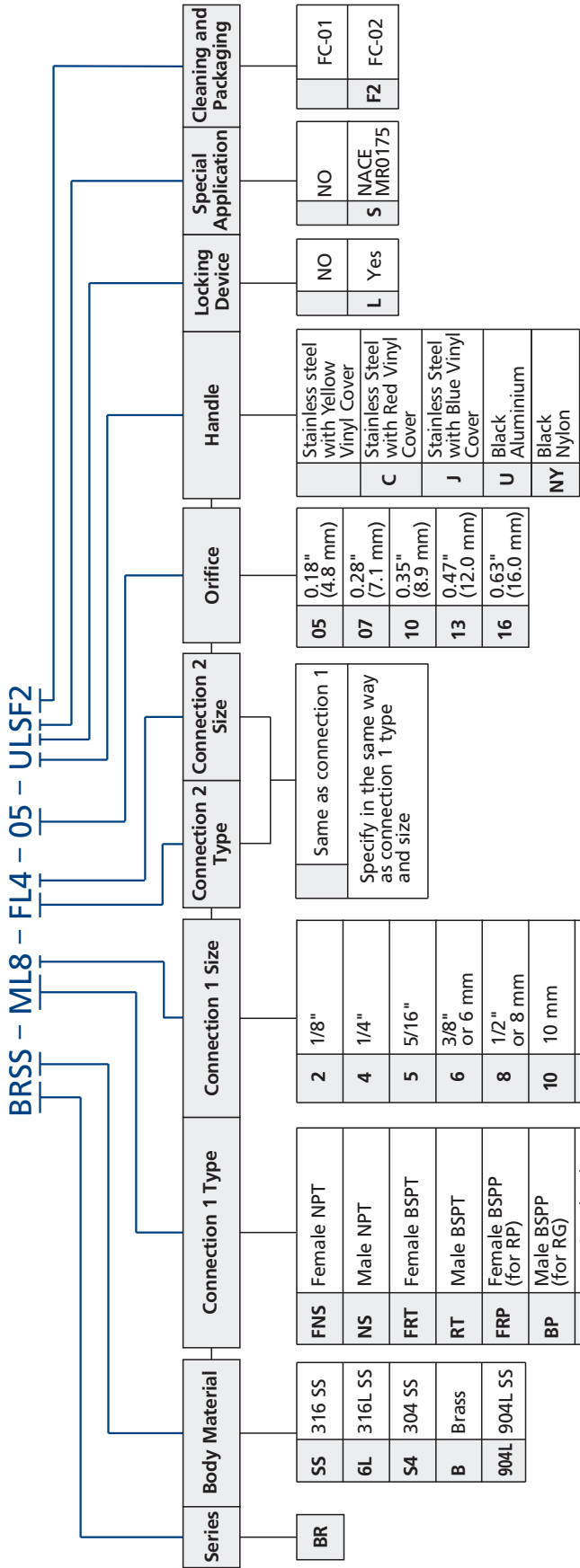
Other materials available upon request.

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)		
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							
BR□□-FL12-13	3/4" FITOK	3/4" FITOK							
BR□□-FRP12-13	3/4 Female BSPP	3/4 Female BSPP			2.48 (63.0)	1.30 (33.0)			
BR□□-FNS12-13	3/4 Female NPT	3/4 Female NPT			2.39 (60.7)	1.20 (30.5)			
BR□□-ML22-16	22 mm FITOK	22 mm FITOK	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (57.1)	1 1/2 (38.1)		2.15 (54.8)
BR□□-ML25-16	25 mm FITOK	25 mm FITOK			4.31 (109.5)	2.42 (61.5)			
BR□□-FL16-16	1" FITOK	1" FITOK			3.25 (82.6)	1.63 (41.3)			
BR□□-FRP16-16	1 Female BSPP	1 Female BSPP							
BR□□-FNS16-16	1 Female NPT	1 Female NPT							

- 1. FITOK means FITOK double ferrule tube fittings.
- 2. Sizes and types listed are standard. Other sizes and types are available upon request.
- 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.



Note: "Part Number Description" is used for composition rules of FITOK product model, Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK group or authorized agent.

1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.
2. 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 as stated in ASTM G93 Level C.

High Performance Ball Valves

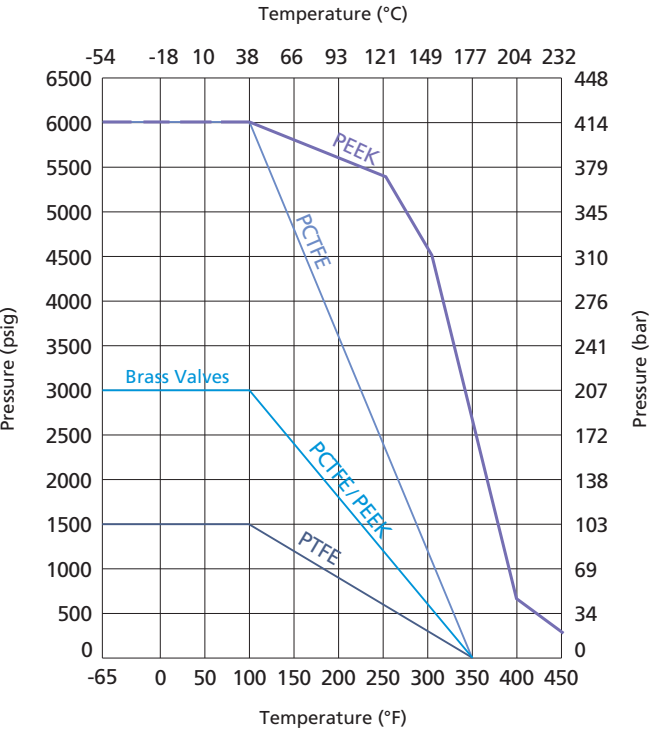
BV Series

Features

- Maximum working pressure: 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 flow direction indicator
- Options for handle color
- Manual, electric or pneumatic actuator available
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen
- The inlet of 3-way valves and angle pattern valves should be only from the bottom.



Pressure vs. Temperature

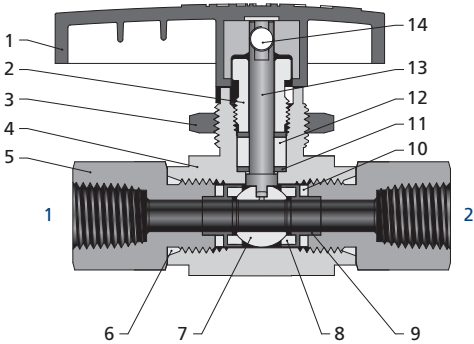


Temperature Ranges

Packing Materials	Temperature Range °F (°C)
PTFE	-65 to 450 (-54 to 232)
Buna-N	-40 to 250 (-40 to 121)
Fluorocarbon FKM	-15 to 450 (-26 to 232)
Neoprene	-40 to 250 (-40 to 121)

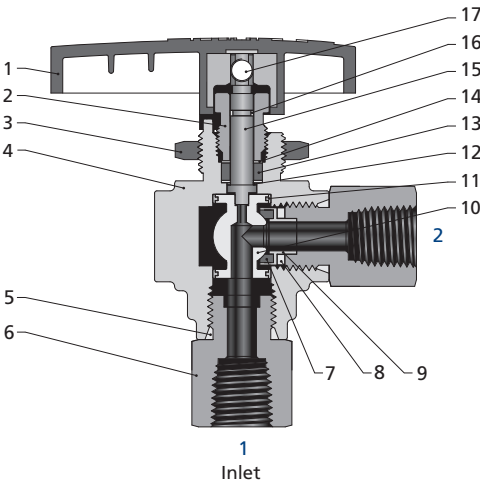
Standard Materials of Construction

Straight Valves



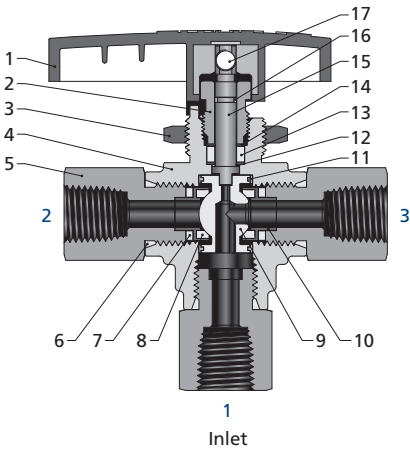
Item	Component	Valve Body Material	
		Stainless steel	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C34000/B453
3	Panel Nut	316 SS/A276	C36000/B16
4	Body	CF8M/A351	C37700/B283
5	End Connector	316 SS/A479	C36000/B16
6	Connector O-ring	PTFE	
7	Ball	316 SS/A479	
8	Seat	PTFE or PCTFE or PEEK	
9	Seat Retainer	316 SS/A276	C36000/B16
10	Seat Packing	PTFE	
11	Stem Washer	316/A276	
12	Stem Packing	PTFE or Fluorocarbon FKM or Neoprene or Buna N	
13	Stem	316 SS/A276	
14	Set Screw	Stainless steel	
Lubricants		Fluorinated-based and silicone-based	

Angle Pattern Valves



Item	Component	Valve Body Material	
		Stainless Steel	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C34000/B453
3	Panel Nut	316 SS/A276	C36000/B16
4	Body	CF8M/A351	C37700/B283
5	Connector O-ring	PTFE	
6	End Connector	316 SS/A479	C36000/B16
7	Seat	PTFE or PCTFE or PEEK	
8	Seat Packing	PTFE	
9	Seat Retainer	316 SS/A276	C36000/B16
10	Ball	316 SS/A479	
11	Trunnion Bearing	PEEK	
12	Stem Back-up Ring	PEEK	
13	Stem Packing	PTFE or Fluorocarbon FKM or Neoprene or Buna N	
14	Stem Washer	316 SS/A276	
15	Stem	316 SS/A276	
16	Stem Bearing	PTFE	
17	Set Screw	Stainless steel	
Lubricants		Fluorinated-based and silicone-based	

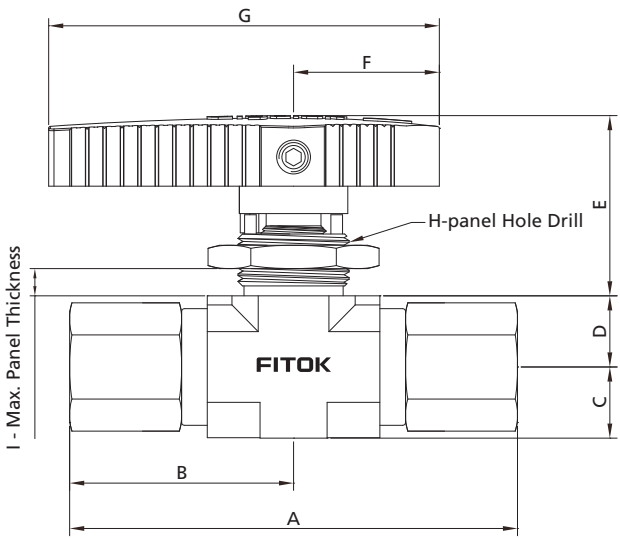
3-way Valves



Item	Component	Valve Body Material	
		Stainless Steel	Brass
1	Handle	Nylon or Aluminium	
2	Packing Nut	316 SS/A276	C34000/B453
3	Panel Nut	316 SS/A276	C36000/B16
4	Body	CF8M/A351	C37700/B283
5	End Connector	316 SS/A479	C36000/B16
6	Connector 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	C36000/B16
11	Trunnion Bearing	PEEK	
12	Stem Back-up Ring	PEEK	
13	Stem Packing	PTFE or Fluorocarbon FKM or Neoprene or Buna N	
14	Stem Washer	316 SS/A276	
15	Stem	316 SS/A276	
16	Stem Bearing	PTFE	
17	Set Screw	Stainless steel	
Lubricants		Fluorinated-based and silicone-based	

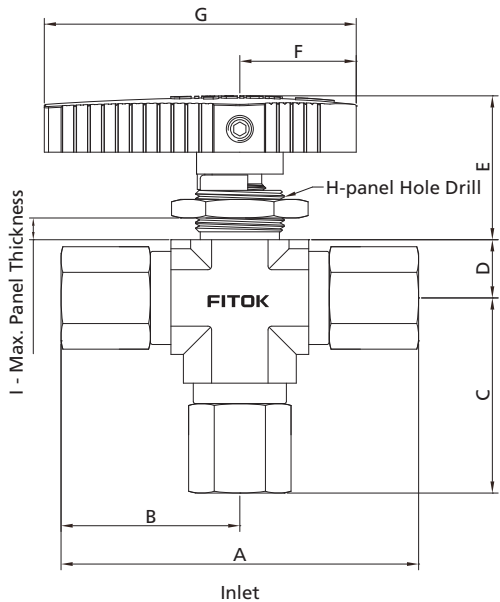
Dimensions

Straight Valves



Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimension, in. (mm)															
	Connection 1	Connection 2			A	B	C	D	E	F	G	H	I							
BV□□-FL1-01	1/16" FITOK	1/16" FITOK	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	0.36 (9.2)	0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)							
BV□□-FL2-02	1/8" FITOK	1/8" FITOK	0.09 (2.4)	0.21	2.72 (69.0)	1.36 (34.5)														
BV□□-ML3-02	3 mm FITOK	3 mm FITOK			2.74 (69.6)	1.37 (34.8)														
BV□□-FRT2-04	1/8 Female BSPT	1/8 Female BSPT	0.17 (4.2)	0.93	2.14 (54.4)	1.07 (27.2)														
BV□□-FRP2-04	1/8 Female BSPP	1/8 Female BSPP																		
BV□□-FNS2-04	1/8 Female NPT	1/8 Female NPT																		
BV□□-RT2-04	1/8 Male BSPT	1/8 Male BSPT																		
BV□□-BP2-04	1/8 Male BSPP	1/8 Male BSPP			2.36 (60.0)	1.18 (30.0)														
BV□□-NS2-04	1/8 Male NPT	1/8 Male NPT																		
BV□□-RT4-04	1/4 Male BSPT	1/4 Male BSPT																		
BV□□-BP4-04	1/4 Male BSPP	1/4 Male BSPP																		
BV□□-NS4-04	1/4 Male NPT	1/4 Male NPT			2.70 (68.6)	1.35 (34.3)														
BV□□-FL4-05	1/4" FITOK	1/4" FITOK	0.19 (4.7)	1.04	3.48 (88.4)	1.74 (44.2)	0.48 (12.2)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)							
BV□□-ML6-05	6 mm FITOK	6 mm FITOK			3.50 (89.0)	1.75 (44.5)														
BV□□-FL6-06	3/8" FITOK	3/8" FITOK	0.25 (6.4)	2.34	3.60 (91.4)	1.80 (45.7)														
BV□□-ML8-06	8 mm FITOK	8 mm FITOK			3.56 (90.4)	1.78 (45.2)														
BV□□-ML10-06	10 mm FITOK	10 mm FITOK			3.62 (92.0)	1.81 (46.0)														
BV□□-FRT4-06	1/4 Female BSPT	1/4 Female BSPT			3.02 (76.8)	1.51 (38.4)														
BV□□-FRP4-06	1/4 Female BSPP	1/4 Female BSPP																		
BV□□-FNS4-06	1/4 Female NPT	1/4 Female NPT			3.24 (82.2)	1.62 (41.1)														
BV□□-RT4-06	1/4 Male BSPT	1/4 Male BSPT																		
BV□□-BP4-06	1/4 Male BSPP	1/4 Male BSPP																		
BV□□-NS4-06	1/4 Male NPT	1/4 Male NPT																		
BV□□-RT6-06	3/8 Male BSPT	3/8 Male BSPT			0.41 (10.3)	6.42								4.68 (118.8)	2.34 (59.4)	0.75 (19.0)	0.71 (18.0)	1.54 (39.0)	1.42 (36.0)	3.78 (96.0)
BV□□-BP6-06	3/8 Male BSPP	3/8 Male BSPP																		
BV□□-NS6-06	3/8 Male NPT	3/8 Male NPT																		
BV□□-FL8-10	1/2" FITOK	1/2" FITOK																		
BV□□-FL12-10	3/4" FITOK	3/4" FITOK	4.84 (123.0)	2.42 (61.5)																
BV□□-ML12-10	12 mm FITOK	12 mm FITOK																		
BV□□-ML14-10	14 mm FITOK	14 mm FITOK																		
BV□□-ML16-10	16 mm FITOK	16 mm FITOK																		
BV□□-ML18-10	18 mm FITOK	18 mm FITOK	4.30 (109.2)	2.15 (54.6)																
BV□□-ML20-10	20 mm FITOK	20 mm FITOK																		
BV□□-ML22-10	22 mm FITOK	22 mm FITOK																		
BV□□-FRT6-10	3/8 Female BSPT	3/8 Female BSPT	3.90 (99.0)	1.95 (49.5)																
BV□□-FRP6-10	3/8 Female BSPP	3/8 Female BSPP																		
BV□□-FNS6-10	3/8 Female NPT	3/8 Female NPT	0.41 (10.3)	6.42	4.44 (112.8)	2.22 (56.4)														
BV□□-FRT8-10	1/2 Female BSPT	1/2 Female BSPT																		
BV□□-FRP8-10	1/2 Female BSPP	1/2 Female BSPP																		
BV□□-FNS8-10	1/2 Female NPT	1/2 Female NPT																		
BV□□-FRT12-10	3/4 Female BSPT	3/4 Female BSPT			4.50 (114.2)	2.25 (57.1)														
BV□□-FRP12-10	3/4 Female BSPP	3/4 Female BSPP																		
BV□□-FNS12-10	3/4 Female NPT	3/4 Female NPT																		
BV□□-RT8-10	1/2 Male BSPT	1/2 Male BSPT																		
BV□□-BP8-10	1/2 Male BSPP	1/2 Male BSPP																		
BV□□-NS8-10	1/2 Male NPT	1/2 Male NPT																		
BV□□-RT12-10	3/4 Male BSPT	3/4 Male BSPT																		
BV□□-BP12-10	3/4 Male BSPP	3/4 Male BSPP																		
BV□□-NS12-10	3/4 Male NPT	3/4 Male NPT																		

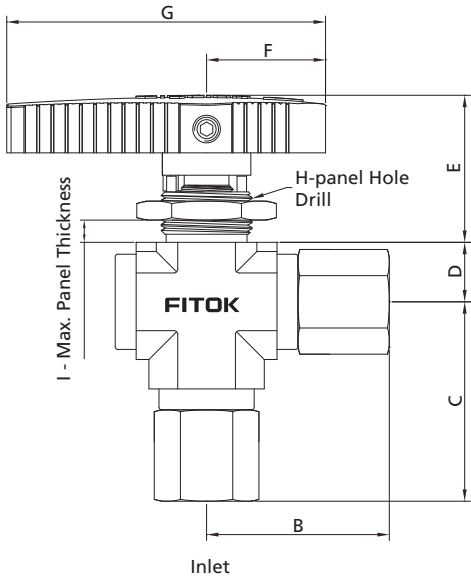
3-way Valves



Basic Ordering Number	Connection type and size		Orifice in. (mm)	Cv	Dimension, in. (mm)														
	Connection 1	Connection 2/3			A	B	C	D	E	F	G	H	I						
BV□□-FL1-01-3	1/16" FITOK	1/16" FITOK	0.05 (1.3)	0.06	2.60 (66.0)	1.30 (33.0)	1.35 (34.3)	0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)						
BV□□-FL2-02-3	1/8" FITOK	1/8" FITOK	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	3 mm FITOK			2.74 (69.6)	1.37 (34.8)	1.42 (36.1)												
BV□□-FRT2-04-3	1/8 Female BSPT	1/8 Female BSPT	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	1/8 Female BSPP					1.23 (31.3)												
BV□□-FNS2-04-3	1/8 Female NPT	1/8 Female NPT																	
BV□□-RT2-04-3	1/8 Male BSPT	1/8 Male BSPT																	
BV□□-BP2-04-3	1/8 Male BSPP	1/8 Male BSPP																	
BV□□-NS2-04-3	1/8 Male NPT	1/8 Male NPT			2.70 (68.6)	1.35 (34.3)	1.40 (35.6)												
BV□□-RT4-04-3	1/4 Male BSPT	1/4 Male BSPT																	
BV□□-BP4-04-3	1/4 Male BSPP	1/4 Male BSPP																	
BV□□-NS4-04-3	1/4 Male NPT	1/4 Male NPT																	
BV□□-FL4-05-3	1/4" FITOK	1/4" FITOK			0.19 (4.7)	0.70	3.48 (88.4)	1.74 (44.2)	1.88 (47.7)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)				
BV□□-ML6-05-3	6 mm FITOK	6 mm FITOK	3.50 (89.0)	1.75 (44.5)			1.89 (48.0)												
BV□□-FL6-06-3	3/8" FITOK	3/8" FITOK	3.60 (91.4)	1.80 (45.7)			1.94 (49.2)												
BV□□-ML8-06-3	8 mm FITOK	8 mm FITOK	3.56 (90.4)	1.78 (45.2)			1.92 (48.7)												
BV□□-ML10-06-3	10 mm FITOK	10 mm FITOK	3.62 (92.0)	1.81 (46.0)			1.95 (49.5)												
BV□□-FRT4-06-3	1/4 Female BSPT	1/4 Female BSPT	3.02 (76.8)	1.51 (38.4)			1.65 (41.9)												
BV□□-FRP4-06-3	1/4 Female BSPP	1/4 Female BSPP																	
BV□□-FNS4-06-3	1/4 Female NPT	1/4 Female NPT	3.24 (82.2)	1.62 (41.1)			1.76 (44.6)												
BV□□-RT4-06-3	1/4 Male BSPT	1/4 Male BSPT																	
Bv□□-BP4-06-3	1/4 Male BSPP	1/4 Male BSPP																	
BV□□-NS4-06-3	1/4 Male NPT	1/4 Male NPT																	
BV□□-RT6-06-3	3/8 Male BSPT	3/8 Male BSPT																	
BV□□-BP6-06-3	3/8 Male BSPP	3/8 Male BSPP																	
BV□□-NS6-06-3	3/8 Male NPT	3/8 Male NPT																	

Basic Ordering Number	Connection type and size		Orifice in. (mm)	Cv	Dimension, in. (mm)							
	Connection 1	Connection 2/3			B	C	D	E	F	G	H	I
BV□□-FL8-10-3	1/2" FITOK	1/2" FITOK	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□□-FL12-10-3	3/4" FITOK	3/4" FITOK			2.33 (59.2)	2.67 (67.9)						
BV□□-ML12-10-3	12 mm FITOK	12 mm FITOK										
BV□□-ML14-10-3	14 mm FITOK	14 mm FITOK										
BV□□-ML16-10-3	16 mm FITOK	16 mm FITOK										
BV□□-ML18-10-3	18 mm FITOK	18 mm FITOK										
BV□□-ML20-10-3	20 mm FITOK	20 mm FITOK			2.42 (61.5)	2.76 (70.2)						
BV□□-ML22-10-3	22 mm FITOK	22 mm FITOK										
BV□□-FRT6-10-3	3/8 Female BSPT	3/8 Female BSPT			1.95 (49.5)	2.29 (58.2)						
BV□□-FRP6-10-3	3/8 Female BSPP	3/8 Female BSPP										
BV□□-FNS6-10-3	3/8 Female NPT	3/8 Female NPT			2.15 (54.6)	2.49 (63.3)						
BV□□-FRT8-10-3	1/2 Female BSPT	1/2 Female BSPT										
BV□□-FRP8-10-3	1/2 Female BSPP	1/2 Female BSPP										
BV□□-FNS8-10-3	1/2 Female NPT	1/2 Female NPT			2.25 (57.1)	2.59 (65.8)						
BV□□-FRT12-10-3	3/4 Female BSPT	3/4 Female BSPT										
BV□□-FRP12-10-3	3/4 Female BSPP	3/4 Female BSPP			2.22 (56.4)	2.56 (65.1)						
BV□□-FNS12-10-3	3/4 Female NPT	3/4 Female NPT										
BV□□-RT8-10-3	1/2 Male BSPT	1/2 Male BSPT										
BV□□-BP8-10-3	1/2 Male BSPP	1/2 Male BSPP										
BV□□-NS8-10-3	1/2 Male NPT	1/2 Male NPT										
BV□□-RT12-10-3	3/4 Male BSPT	3/4 Male BSPT										
BV□□-BP12-10-3	3/4 Male BSPP	3/4 Male BSPP										
BV□□-NS12-10-3	3/4 Male NPT	3/4 Male NPT										

Angle Pattern Valves



Basic Ordering Number	Connection type and size		Orifice in. (mm)	Cv	Dimension, in. (mm)							
	Connection 1	Connection 2/3			B	C	D	E	F	G	H	I
BV□□-FL1-01-A	1/16" FITOK	1/16" FITOK	0.05 (1.3)	0.06	1.30 (33.0)	1.35 (34.3)	0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)
BV□□-FL2-02-A	1/8" FITOK	1/8" FITOK	0.09 (2.4)	0.21	1.36 (34.5)	1.41 (35.8)						
BV□□-ML3-02-A	3 mm FITOK	3 mm FITOK			1.37 (34.8)	1.42 (36.1)						
BV□□-FRT2-04-A	1/8 Female BSPT	1/8 Female BSPT	0.12 (3.0)	0.28	1.07 (27.2)	1.12 (28.5)						
BV□□-FRP2-04-A	1/8 Female BSPP	1/8 Female BSPP			1.18 (30.0)	1.23 (31.3)						
BV□□-FNS2-04-A	1/8 Female NPT	1/8 Female NPT										
BV□□-RT2-04-A	1/8 Male BSPT	1/8 Male BSPT										
BV□□-BP2-04-A	1/8 Male BSPP	1/8 Male BSPP										
BV□□-NS2-04-A	1/8 Male NPT	1/8 Male NPT										
BV□□-RT4-04-A	1/4 Male BSPT	1/4 Male BSPT			1.35 (34.3)	1.40 (35.6)						
BV□□-BP4-04-A	1/4 Male BSPP	1/4 Male BSPP										
BV□□-NS4-04-A	1/4 Male NPT	1/4 Male NPT										
BV□□-FL4-05-A	1/4" FITOK	1/4" FITOK	0.19 (4.7)	0.70	1.74 (44.2)	1.88 (47.7)	0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)
BV□□-ML6-05-A	6 mm FITOK	6 mm FITOK			1.75 (44.5)	1.89 (48.0)						
BV□□-FL6-06-A	3/8" FITOK	3/8" FITOK			1.80 (45.7)	1.94 (49.2)						
BV□□-ML8-06-A	8 mm FITOK	8 mm FITOK			1.78 (45.2)	1.92 (48.7)						
BV□□-ML10-06-A	10 mm FITOK	10 mm FITOK			1.81 (46.0)	1.95 (49.5)						
BV□□-FRT4-06-A	1/4 Female BSPT	1/4 Female BSPT			1.51 (38.4)	1.65 (41.9)						
BV□□-FRP4-06-A	1/4 Female BSPP	1/4 Female BSPP										
BV□□-FNS4-06-A	1/4 Female NPT	1/4 Female NPT										
BV□□-RT4-06-A	1/4 Male BSPT	1/4 Male BSPT			1.62 (41.1)	1.76 (44.6)						
Bv□□-BP4-06-A	1/4 Male BSPP	1/4 Male BSPP										
BV□□-NS4-06-A	1/4 Male NPT	1/4 Male NPT										
BV□□-RT6-06-A	3/8 Male BSPT	3/8 Male BSPT										
BV□□-BP6-06-A	3/8 Male BSPP	3/8 Male BSPP										
BV□□-NS6-06-A	3/8 Male NPT	3/8 Male NPT										

