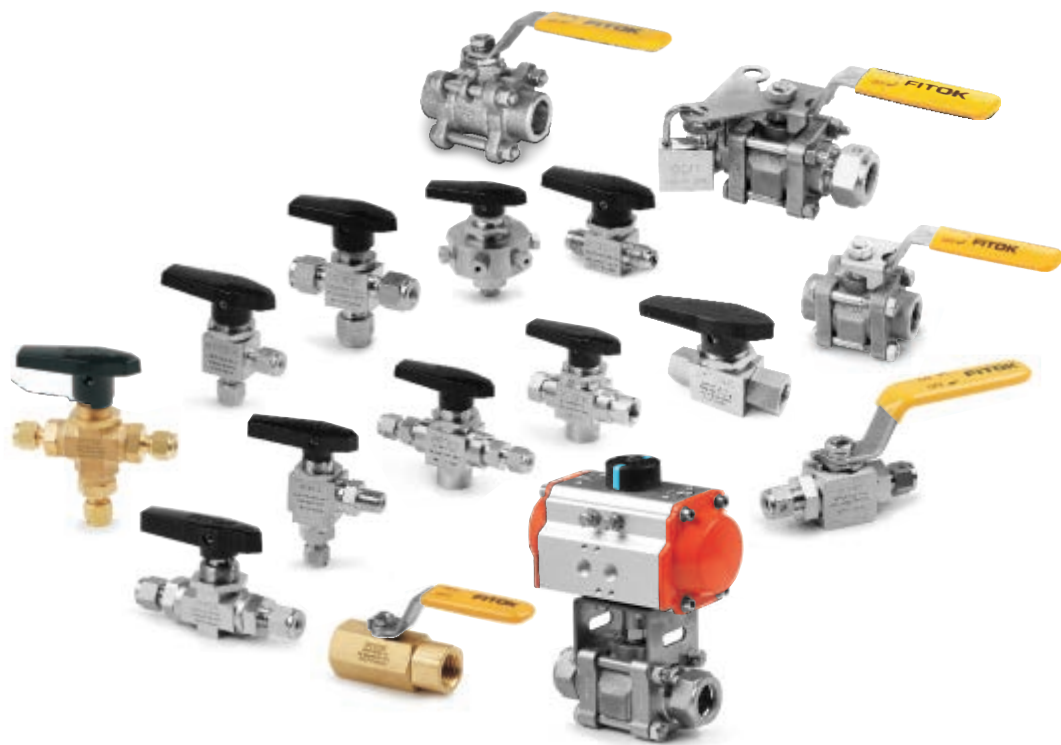


# Ball Valves

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

Ball Valves  
Plug Valves



# Contents

## Trunnion Ball Valves

BF and BFH Series



B-04

## 3-Piece Ball Valves

BG Series



B-11

## 3-Piece Ball Valves

BH Series



B-16

## One-Piece Instrumentation Ball Valves

BO Series



B-24

## Bar Stock Ball Valves

BP Series



B-38

## Hex Bar Stock Ball Valves

BR and BRC Series



B-45

## High Performance Ball Valves

BV Series



B-50

## High Temperature Metal-seated Ball Valves

BK Series



B-59

## Alternative Fuel Service (AFS) Ball Valves

BU Series



B-63

## Important Information about Ball Valves

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

# Bar Stock Ball Valves

## BP Series

### Features

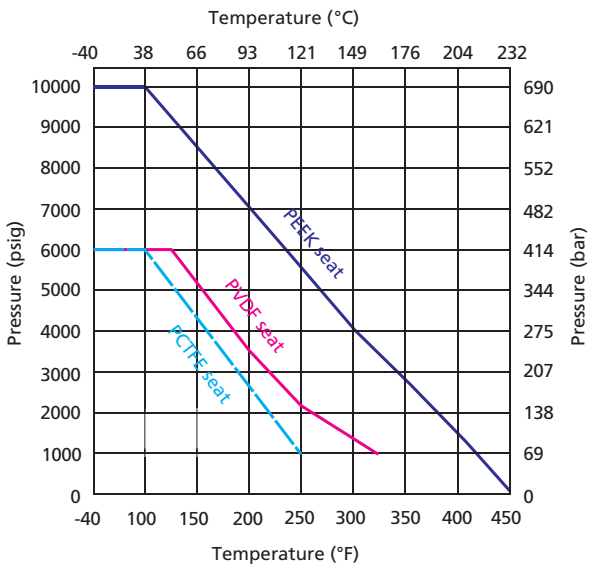
- ⊙ Working pressure up to: 10000 psig (690 bar)
- ⊙ Working temperature: -40°F to 450°F (-40°C to 232°C)
- ⊙ Bidirectional flow for 2-way valves
- ⊙ Seat wear compensation by free floating ball
- ⊙ Variety of end connections
- ⊙ Blowout proof stem with self-sealing function
- ⊙ Handle color options available
- ⊙ Optional pneumatic and electric actuator
- ⊙ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure (not higher than 6000 psig) to meet the requirement of no visible leak
- ⊙ Restricted flow path for BP series: only port 1 as inlet, port 2 and port 3 as outlet



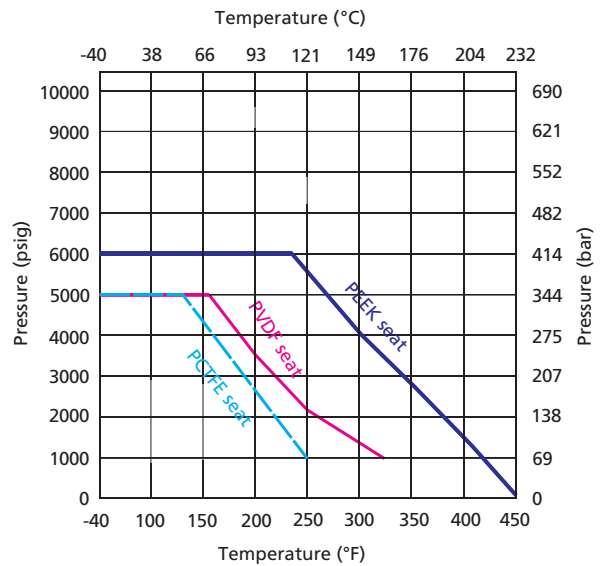
### Pressure vs. Temperature

#### 2-way Valves

Orifice code: 10

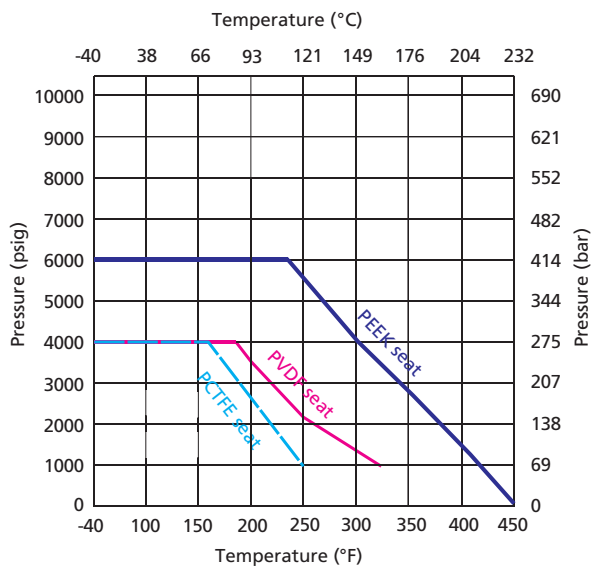


Orifice code: 13 and 19

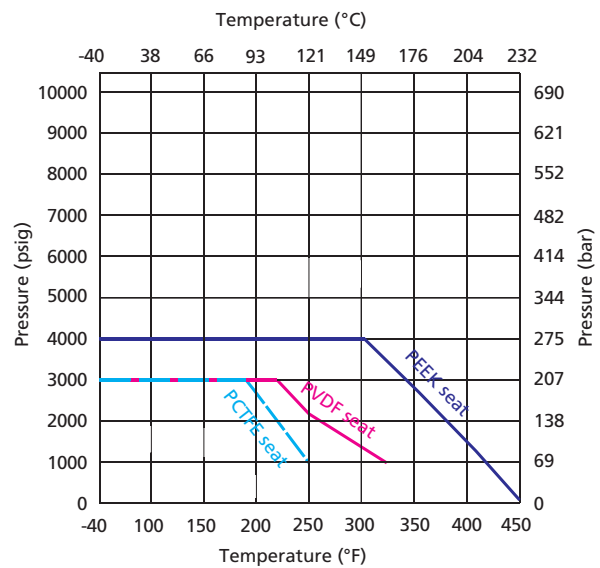


### 3-way Valves

Orifice code: 10



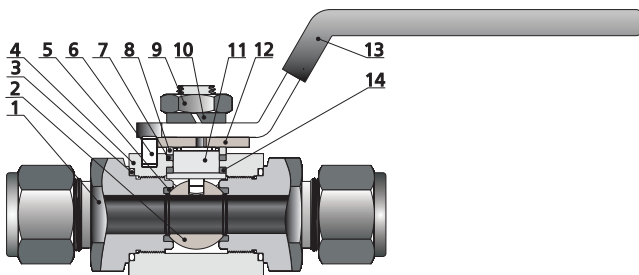
Orifice code: 13 and 19



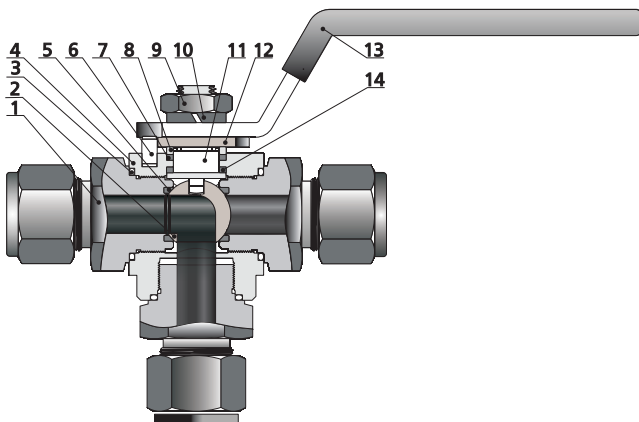
Notes: 1. Graphs are with 316 SS body. For information of body in other materials, please contact FITOK Group or our authorized distributors.  
 2. The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the pressure rating of the valve.

### Standard Materials of Construction

#### 2-way Valves



#### 3-way Valves



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

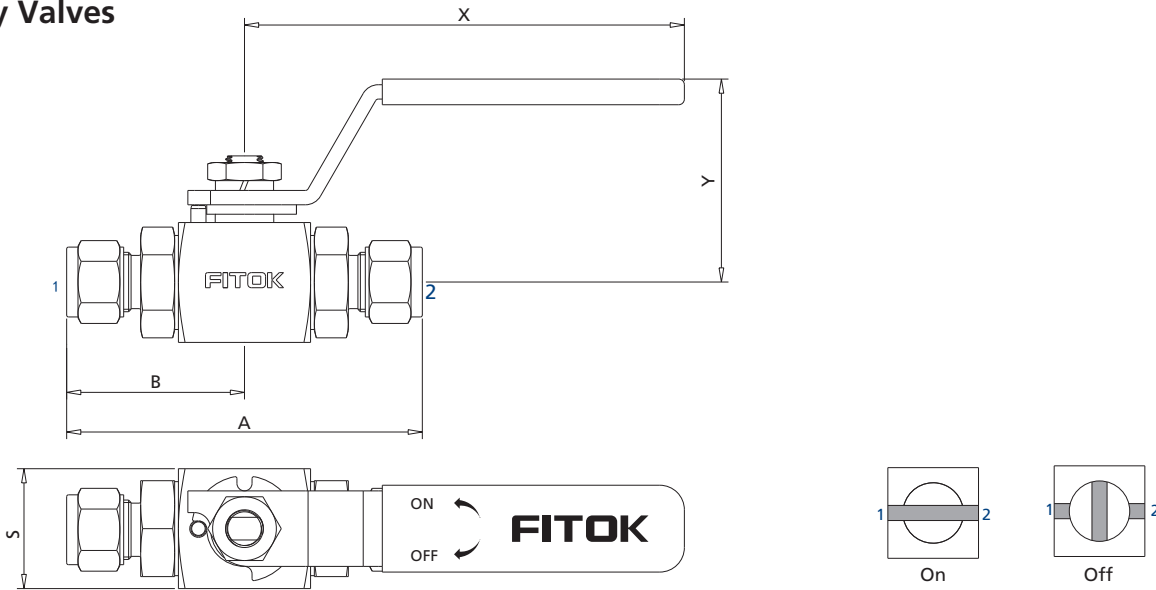
Note: Wetted components are listed in italics.  
 For other materials, please contact FITOK Group or our authorized distributors.

- ① Ball valves with orifice code 13 or 19 have 2 stem nuts.
- ② Lower packing material of ball valves with orifice code 19 is PTFE.

Ball Valves  
Plug Valves

## Dimensions

### 2-way Valves

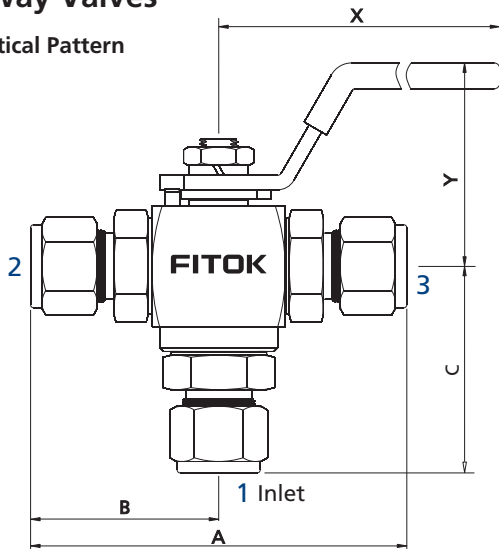


Ball Valves  
Plug Valves

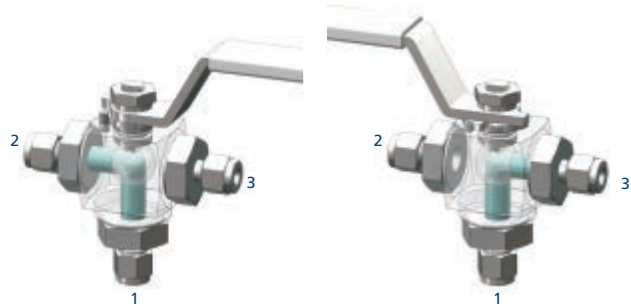
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)				
					A	B	X	Y	S
BP□□-ML6-10	6 mm FITOK	10000 (690)	0.19(4.8)	1.2	3.54 (90.0)	1.77 (45.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)
BP□□-ML8-10	8 mm FITOK	7500 (517)	0.25(6.4)	2.3	3.60 (91.6)	1.80 (45.8)			
BP□□-ML10-10	10 mm FITOK	8400 (579)	0.28(7.1)	3.7	3.70 (94.0)	1.85 (47.0)			
BP□□-ML12-10	12 mm FITOK	6800 (469)	0.39 (10.0)	7.5	3.94 (100.0)	1.97 (50.0)			
BP□□-ML14-10	14 mm FITOK	6200 (427)			3.92 (99.6)	1.96 (49.8)			
BP□□-FL4-10	1/4" FITOK	10000 (690)	0.19(4.8)	1.2	3.56 (90.4)	1.78 (45.2)			
BP□□-FL6-10	3/8" FITOK	6500 (448)	0.28(7.1)	3.7	3.72 (94.6)	1.86 (47.3)			
BP□□-FL8-10	1/2" FITOK	6700 (462)	0.39 (10.0)	7.5	3.03 (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)			3.27 (83.0)	1.63 (41.5)			
BP□□-FNS8-10	1/2 Female NPT	10000 (690)	0.28(7.1)	3.7	3.36 (85.4)	1.68 (42.7)			
BP□□-NS4-10	1/4 Male NPT	10000 (690)			0.39 (10.0)	7.5			
BP□□-NS6-10	3/8 Male NPT	10000 (690)					4.42 (112.2)	2.21 (56.1)	
BP□□-NS8-10	1/2 Male NPT	10000 (690)	0.50 (12.7)	10.0	4.12 (104.6)	2.06 (52.3)			
BP□□-ML16-13	16 mm FITOK	5800 (400)			4.43 (112.6)	2.22 (56.3)			
BP□□-ML18-13	18 mm FITOK	5400 (372)			4.29 (109.0)	2.15 (54.5)			
BP□□-ML20-13	20 mm FITOK	5500 (379)			4.36 (110.6)	2.18 (55.3)			
BP□□-ML22-13	22 mm FITOK	4900 (338)			5.59 (142.0)	2.54 (64.4)	1.50 (38.0)		
BP□□-FL10-13	5/8" FITOK	6000 (414)						3.54 (90.0)	1.77 (45.0)
BP□□-FL12-13	3/4" FITOK	5800 (400)			4.09 (104.0)	2.05 (52.0)			
BP□□-FNS8-13	1/2 Female NPT	6000 (414)			4.14 (105.2)	2.07 (52.6)			
BP□□-FNS12-13	3/4 Female NPT	6000 (414)			0.71 (18.0)	30.0	4.87 (123.8)	2.43 (61.9)	
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)					4.59 (116.6)	2.29 (58.3)	
BP□□-ML22-19	22 mm FITOK	4900 (338)					5.11 (129.8)	2.66 (64.9)	
BP□□-ML25-19	25 mm FITOK	4600 (317)	3.81 (96.8)	1.91 (48.4)					
BP□□-FL12-19	3/4" FITOK	5800 (400)	4.26 (108.2)	2.13 (54.1)					
BP□□-FL16-19	1" FITOK	4700 (324)	4.91 (124.8)	2.45 (62.4)					
BP□□-FNS12-19	3/4 Female NPT	6000 (414)							
BP□□-FNS16-19	1 Female NPT	6000 (414)							
BP□□-NS16-19	1 Male NPT	6000 (414)							

### 3-way Valves

#### Vertical Pattern



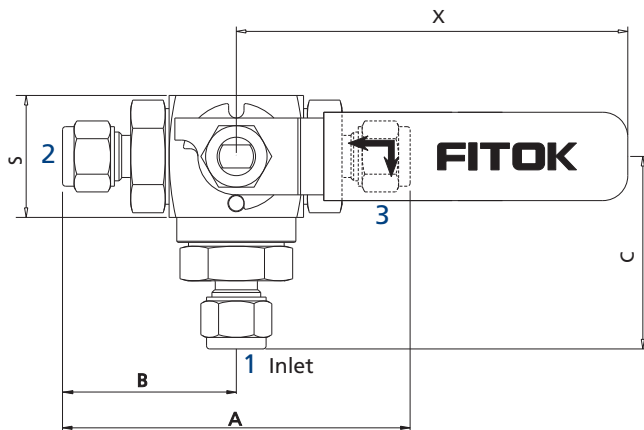
Port 1 as inlet  
180° rotation handle



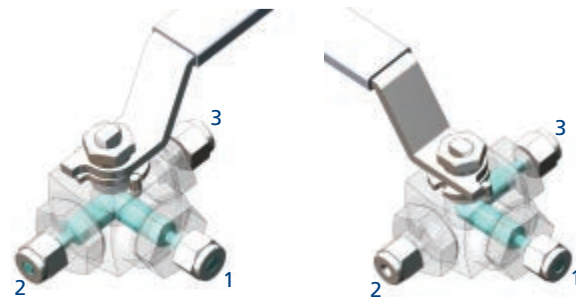
Port 1 to port 2

Port 1 to port 3

#### Horizontal Pattern



Port 1 as inlet  
90° rotation handle



Port 1 to port 2

Port 1 to port 3

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100 °F (38 °C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)						
				A	B	C	X	Y	S	
BP□□-ML6-10-3□	6 mm FITOK	10000 (690)	0.19 (4.8)	3.54 (90.0)	1.77 (45.0)	2.00 (51.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)	
BP□□-ML8-10-3□	8 mm FITOK	7500 (517)	0.25 (6.4)	3.60 (91.6)	1.80 (45.8)	2.02 (51.3)				
BP□□-ML10-10-3□	10 mm FITOK	8400 (579)	0.28 (7.1)	3.70 (94.0)	1.85 (47.0)	2.07 (52.5)				
BP□□-ML12-10-3□	12 mm FITOK	6800 (469)	0.39 (10.0)	3.94 (100.0)	1.97 (50.0)	2.18 (55.5)				
BP□□-ML14-10-3□	14 mm FITOK	6200 (427)		3.94 (100.0)	1.97 (50.0)	2.18 (55.5)				
BP□□-FL4-10-3□	1/4" FITOK	10000 (690)	0.19 (4.8)	3.56 (90.4)	1.78 (45.2)	1.95 (49.5)				
BP□□-FL6-10-3□	3/8" FITOK	6500 (448)	0.28 (7.1)	3.72 (94.6)	1.86 (47.3)	2.16 (54.8)				
BP□□-FL8-10-3□	1/2" FITOK	6700 (462)	0.39 (10.0)	3.92 (99.6)	1.96 (49.8)	2.13 (54.0)				
BP□□-FNS4-10-3□	1/4 Female NPT	10000 (690)		3.03 (77.0)	1.52 (38.5)	1.44 (36.5)				
BP□□-FNS6-10-3□	3/8 Female NPT	10000 (690)		2.80 (71.0)	1.40 (35.5)	1.57 (40.0)				
BP□□-FNS8-10-3□	1/2 Female NPT	10000 (690)		3.27 (83.0)	1.63 (41.5)	1.83 (46.4)				
BP□□-NS4-10-3□	1/4 Male NPT	10000 (690)		0.28 (7.1)	3.36 (85.4)	1.68 (42.7)				1.90 (48.2)
BP□□-NS6-10-3□	3/8 Male NPT	10000 (690)			3.36 (85.4)	1.68 (42.7)				1.90 (48.2)
BP□□-NS8-10-3□	1/2 Male NPT	10000 (690)	3.75 (95.2)		1.88 (47.6)	2.09 (53.1)				

Ball Valves  
Plug Valves

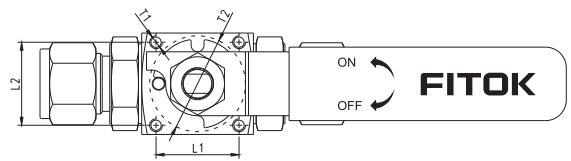
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38°C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
	Connection 1/2/3			316 SS	A	B	C	X	Y
BP□□-ML16-13-3□	16 mm FITOK	5800 (400)	0.50 (12.7)	4.42 (112.2)	2.21 (56.1)	2.60 (66.1)	5.59 (142.0)	2.54 (64.4)	1.50 (38.0)
BP□□-ML18-13-3□	18 mm FITOK	5400 (372)		4.12 (104.6)	2.06 (52.3)	2.45 (62.3)			
BP□□-ML20-13-3□	20 mm FITOK	5500 (379)		4.43 (112.6)	2.22 (56.3)	2.61 (66.3)			
BP□□-ML22-13-3□	22 mm FITOK	4900 (338)		4.29 (109.0)	2.15 (54.5)	2.54 (64.5)			
BP□□-FL10-13-3□	5/8" FITOK	6000 (414)		4.36 (110.6)	2.18 (55.3)	2.57 (65.3)			
BP□□-FL12-13-3□	3/4" FITOK	5800 (400)		3.54 (90.0)	1.77 (45.0)	2.02 (51.2)			
BP□□-FNS8-13-3□	1/2 Female NPT	6000 (414)		4.09 (104.0)	2.05 (52.0)	2.44 (62.0)			
BP□□-FNS12-13-3□	3/4 Female NPT	6000 (414)		4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
BP□□-NS12-13-3□	3/4 Male NPT	6000 (414)							
BP□□-ML20-19-3□	20 mm FITOK	5500 (379)	0.71 (18.0)	4.87 (123.8)	2.43 (61.9)	2.89 (73.4)	6.46 (164.0)	2.72 (69.0)	1.96 (50.0)
BP□□-ML22-19-3□	22 mm FITOK	4900 (338)		5.11 (129.8)	2.66 (64.9)	3.00 (76.2)			
BP□□-ML25-19-3□	25 mm FITOK	4600 (317)		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)			
BP□□-FL16-19-3□	1" FITOK	4700 (324)		3.82 (97.0)	1.91 (48.5)	2.22 (56.5)			
BP□□-FNS12-19-3□	3/4 Female NPT	6000 (414)		4.26 (108.2)	2.13 (54.1)	2.72 (69.1)			
BP□□-FNS16-19-3□	1 Female NPT	6000 (414)		4.54 (115.2)	2.27 (57.6)	2.72 (69.1)			
BP□□-NS12-19-3□	3/4 Male NPT	6000 (414)		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, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting nuts finger-tightened. All dimensions are for reference only and are subject to change.  
For dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Panel Mounting Options

### Dimension for Panel Mounting

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



## Seal Kits

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

Seat Material	Designator
PVDF	-
PCTFE	K
PEEK	P

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

## Locking Device

- ⦿ Locking Device 1 can lock BP series 2-way or 3-way valves, locking hole diameter is 0.23 in (6.0 mm);
- ⦿ To order a ball valve with locking device 1, add -L to the valve ordering number.  
Example: BPSS-FL4-10-L/BPSS-FL4-10-3S-L/BPSS-FL4-10-3-L
- ⦿ Locking Device 2 can lock BP series 2-way or 3-way valves, locking hole diameters of valves with orifice 10 or 13 are 0.23 in (6.0 mm);
- ⦿ To order a ball valve with locking device 2, add -LK to the valve ordering number.  
Example: BPSS-FL4-10-LK/BPSS-FL4-10-3S-LK

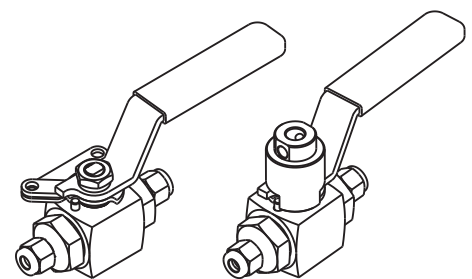


Diagram of Locking Device 1

Diagram of Locking Device 2

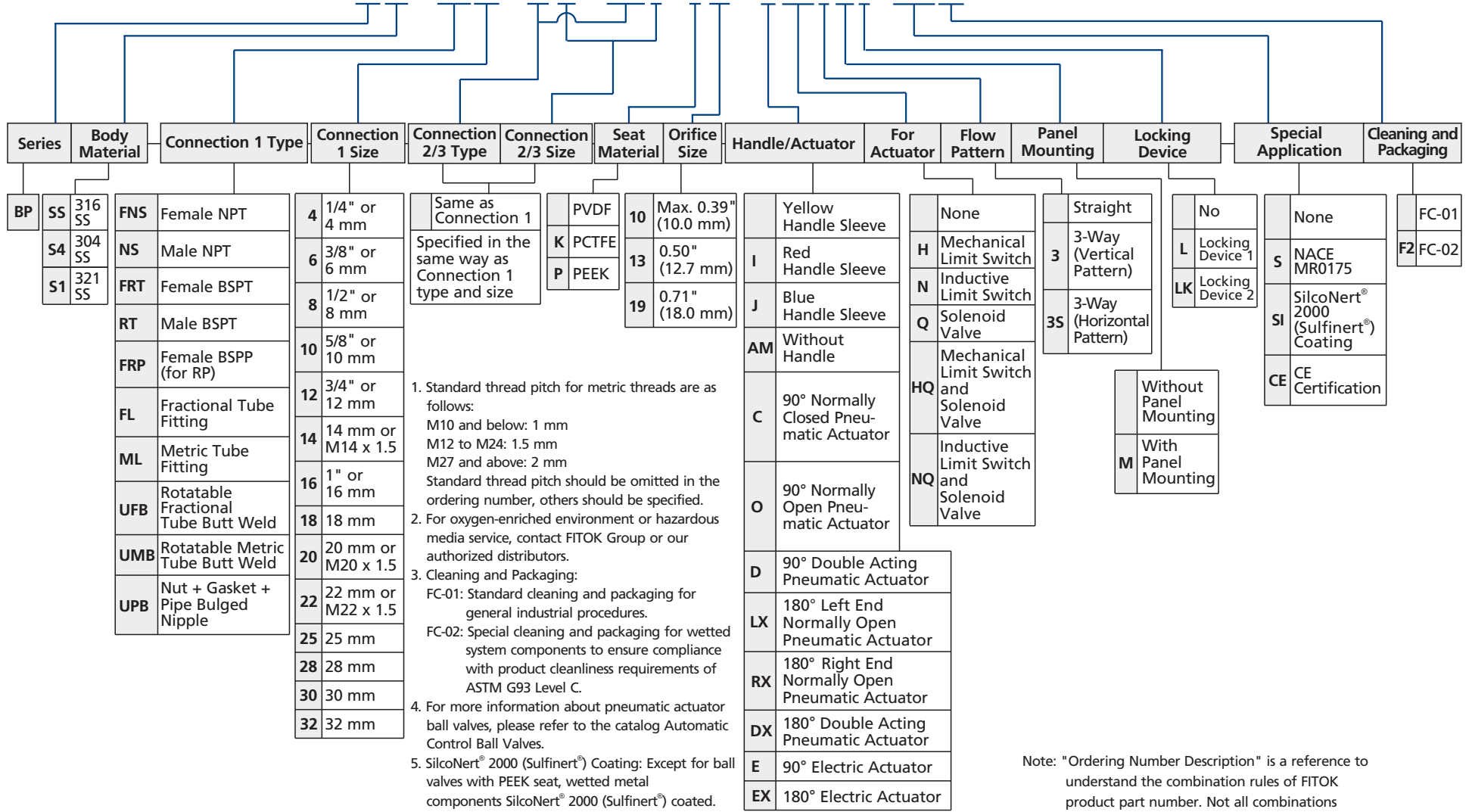
## Ball Valve without Handle

- ⦿ Ball Valve without handle can be directly connected to the FITOK actuator assembly.
- ⦿ To order, please add -AM to the valve ordering number.  
Example: BPSS-FL12-13-AM



# Ordering Number Description

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



- Standard thread pitch for metric threads are as follows:  
M10 and below: 1 mm  
M12 to M24: 1.5 mm  
M27 and above: 2 mm  
Standard thread pitch should be omitted in the ordering number, others should be specified.
- For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.
- 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.
- For more information about pneumatic actuator ball valves, please refer to the catalog Automatic Control Ball Valves.
- SilcoNert® 2000 (Sulfinert®) Coating: Except for ball valves with PEEK seat, wetted metal components SilcoNert® 2000 (Sulfinert®) coated.
- CE certification is available. For more information, please contact FITOK group or our authorized distributors.
- The rated working pressure of BP series ball valves for "NACE MRO175" application is lower than that of standard valves. For detailed pressure values, please contact FITOK Group or our authorized distributors.

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