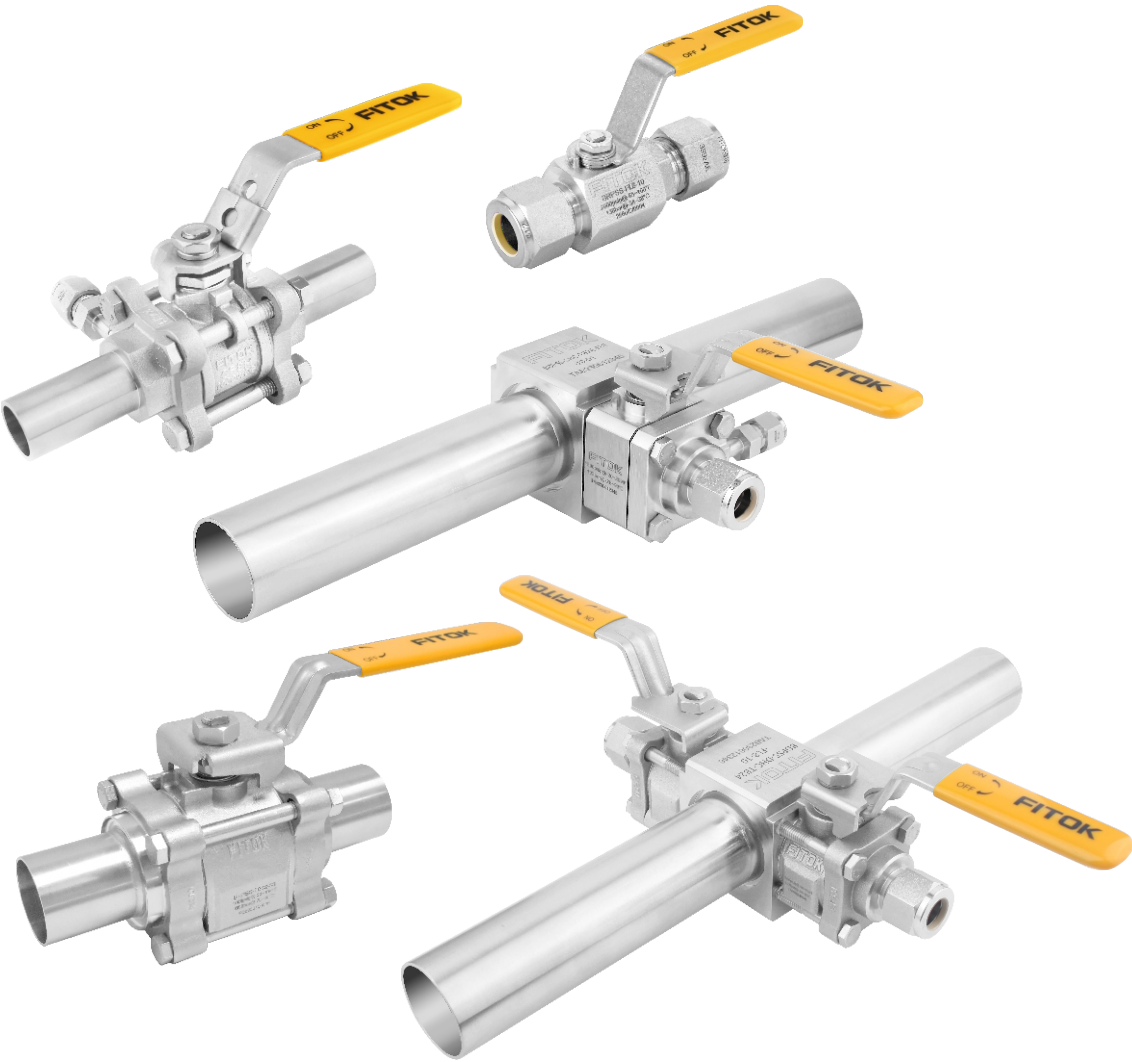


# Ball Valves

Fittings
Valves
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# Contents

3-Piece High Purity Ball Valves BGP Series	V-105
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Technical Information

# 3-Piece High Purity Ball Valves

## BGP Series

### Introduction

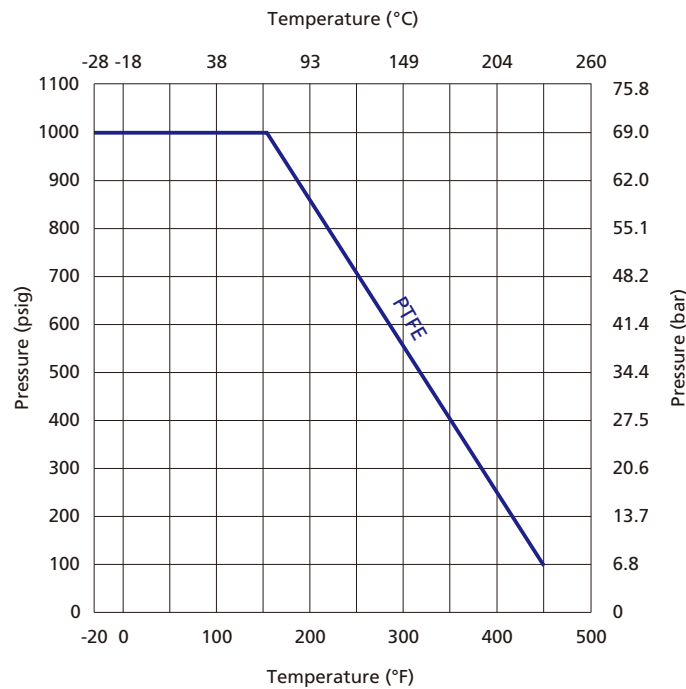
BGP series 3-piece high purity ball valves are designed to meet the requirements of degreasing, low working pressure, high flow rate and bi-directional flow for the clean dry air (CDA) and bulk gas distribution line, which are widely used in specialty gas, semiconductor and chemical industries.



### Features

- Working pressure up to: 1000 psig (69.0 bar)
- Working temperature: -20 °F to 450 °F (-28 °C to 232 °C)
- Orifice sizes: 0.18" (4.6 mm) to 1.5" (38.1 mm)
- Factory tested for leaks with nitrogen or compressed air at rated working pressure, with optional helium leak testing to helium leak rate  $\leq 1 \times 10^{-8}$  std cm<sup>3</sup>/s

### Pressure vs. Temperature

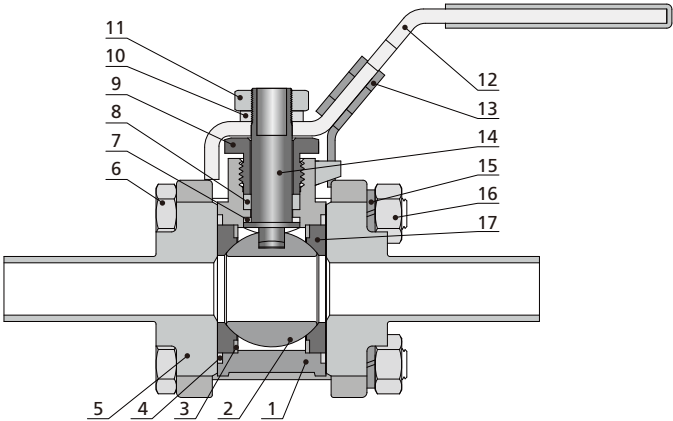


Note: The temperature and pressure rating is based on valves of standard materials.

Process Specification

Item	Process Specification	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
	Material	CF8M, CF3M	CF3M
Flow Path Surface Roughness		Ra 25 µin. (0.6 µm)	Ra 10 µin. (0.25 µm)
Process		Machined	Electropolished
Lubrication		Components in contact with the medium are treated with special lubricants that are oxygen- compatible	

Major Materials of Construction

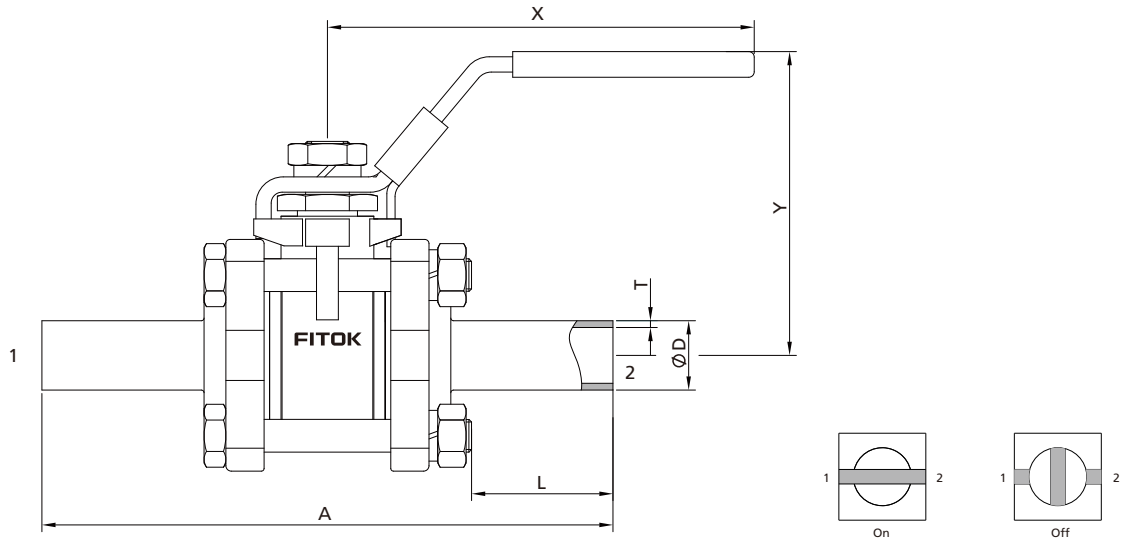


Item	Component	Material/Specification	
1	Body	CF8M/A351	CF3M/A351
2	Ball	316 SS/A479	316L SS/A479
3	Support Ring	316 SS/A240	316L SS/A240
4	Side Seal	PTFE/D1710	
5	End Cap	CF3M/A351	
6	Body Bolt	Stainless Steel	
7	Stem Bearing	PTFE/D1710	
8	Stem Packing	PTFE/D1710	
9	Packing Gland	304 SS/A479	
10	Gasket	Stainless Steel	
11	Stem Nut	Stainless Steel	
12	Handle	304 SS/A240 (with PVC Sleeve)	
13	Lock Block	304 SS/A240	
14	Stem	316 SS/A479	316L SS/A479
15	Standard Spring Gasket	Stainless Steel	
16	Hex Nut	Stainless Steel	
17	Seat	PTFE/D1710	

Note: Components in contact with the media are listed in italics. For other materials, please contact FITOK Group or our authorized distributors.

# Dimensions

Dimensions in in. (mm) are for reference only and subject to change.



Ordering Information	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
				A	L	D	T	X	Y
BGP□□-TB4-05	1/4"×0.035" Fractional Extended Tube Plain Butt Weld	0.18 (4.6)	1.1	3.30 (83.3)	0.81 (20.5)	0.25 (6.35)	0.035 (0.89)	2.69 (68.3)	1.46 (37.0)
BGP□□-FL4-05	1/4" FITOK Tube Fittings	0.19 (4.8)	1.2	2.63 (66.8)	—	—	—		
BGP□□-ML6-05	6 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-ML8-05	8 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-TB6-07	3/8"×0.035" Fractional Extended Tube Plain Butt Weld	0.28 (7.1)	3.8	3.30 (83.3)	0.81 (20.5)	0.375 (9.53)	0.035 (0.89)	2.69 (68.3)	1.46 (37.0)
BGP□□-FL6-07	3/8" FITOK Tube Fittings			2.63 (66.8)	—	—	—		
BGP□□-ML10-07	10 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-TB8-11	1/2"×0.049" Fractional Extended Tube Plain Butt Weld	0.40 (10.21)	7.2	4.12 (104.6)	0.93 (23.5)	0.50 (12.7)	0.049 (1.24)	3.94 (100.0)	2.19 (55.7)
BGP□□-FL8-11	1/2" FITOK Tube Fittings	0.42 (10.6)	7.5	4.04 (103.0)	—	—	—		
BGP□□-ML12-11	12 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-ML14-11	14 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-FL10-13	5/8" FITOK Tube Fittings	0.5 (12.7)	11.3	—	—	—	—		
BGP□□-TB12-15	3/4"×0.065" Fractional Extended Tube Plain Butt Weld	0.55 (14.0)	13	5.12 (130.0)	1.26 (32)	0.75 (19.05)	0.065 (1.65)	3.94 (100.0)	2.26 (57.5)
BGP□□-FL12-15	3/4" FITOK Tube Fittings			4.04 (103.0)	—	—	—		
BGP□□-ML18-15	18 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-TB16-20	1"×0.065" Fractional Extended Tube Plain Butt Weld	0.79 (20.0)	34	6.3 (160.0)	1.67 (42.5)	1.00 (25.4)	0.065 (1.65)	5.18 (131.5)	2.66 (67.5)
BGP□□-FL16-20	1" FITOK Tube Fittings			—	—	—	—		
BGP□□-ML22-20	22 mm FITOK Tube Fittings			5.12 (130.0)	—	—	—		
BGP□□-ML25-20	25 mm FITOK Tube Fittings			—	—	—	—		
BGP□□-TB24-32	1 1/2"×0.065" Fractional Extended Tube Plain Butt Weld	1.25 (31.8)	100	7.81 (198.3)	2.07 (52.6)	1.50 (38.1)	0.065 (1.65)	9.14 (232)	4.03 (102)
BGP□□-TB32-38	2"×0.065" Fractional Extended Tube Plain Butt Weld	1.50 (38.1)	130	8.59 (218.1)	2.04 (51.8)	2.00 (50.8)			4.16 (103)

1. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
2. Connection tube length can be specified, such as BGPSS-TB4-05, if L=30 mm is required, the part number should be changed to BGPSS-TB4×L30-05.

## Locking Device

- Lock BGP series valves, locking hole diameters of: valves with orifice 05 or 07 are 0.185 in. (4.7 mm); valves with orifice 11, 13, 15, or 20 are 0.22 in. (5.7 mm); valves with orifice 32, 38 are 0.394 in. (10 mm)
- To order a ball valve with locking device, please refer to the "Ordering Number Description" and add -L to the valve ordering number  
Example: BGPSS-FL8-11-L

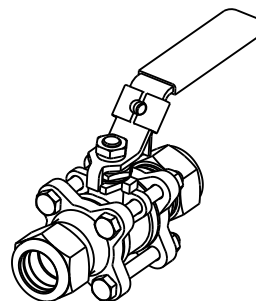
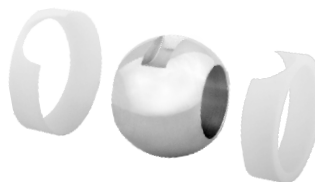


Diagram of Ball Valves with Locking Device

## Low Dead Space Inserts

- Reduce fluid entrapment around the ball, stem, and seat when the valve is open or closed
- To order a ball valve with low dead space insert, please add -RZ to the valve ordering number  
Example: BGPSS-FL4-05-RZ



## Ordering Number Description

BGPSS - TB4 - TB6 - 05 - I L - U1D2 - RZ - AR2F3									
Series	Body Material	Connection 1 Size	Connection 2 Type	Connection 2 Size	Locking Device	Upstream Purge	Downstream Purge	Special Application	Supplementary Testing
BGP	SS CF8M	4 1/4" or 1/4"x0.035"	Same as Connection 1		None	None	None	None	None
	6L CF3M	6 3/8" or 3/8"x0.035" or 6 mm	Specified in the same way as the Connection 1		L Yes	U1 1/4" Tube Fitting with Plug	D1 1/4" Tube Fitting with Plug	RZ Low Dead Space Insert	AR2 Helium Leak Testing
Connection 1 Type		Orifice Size		Handle		Process Specification			
TB	Fractional Extended Tube Plain Butt Weld	8 1/2" or 1/2"x0.049" or 8 mm	05 Maximum 0.19" (4.8 mm)	I	Yellow Handle Cover	F3 FC-03 (For CF3M only)			
FL	Fractional Tube Fitting	10 5/8" or 10 mm	07 0.28" (7.1 mm)	F	Green Handle Cover				
ML	Metric Tube Fitting	12 3/4" or 3/4"x0.065" or 12 mm	11 0.42" (10.6 mm)	J	Blue Handle Cover				
FR	Integral Male FR Metal Gasket Face Seal Fitting	14 14 mm	13 0.50" (12.7 mm)						
FO	FO Series O-Ring Face Seal Fitting	16 1" or 1"x0.065"	15 0.55" (14.0 mm)						
		18 18 mm	20 0.79" (20.0 mm)						
		22 22 mm	32 1.25" (31.8 mm)						
		24 1 1/2"x0.065"	38 1.50" (38.1 mm)						
		25 25 mm							
		32 2"x0.065"							

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.

# 3-Piece High Purity Ball Valves

## BHP Series



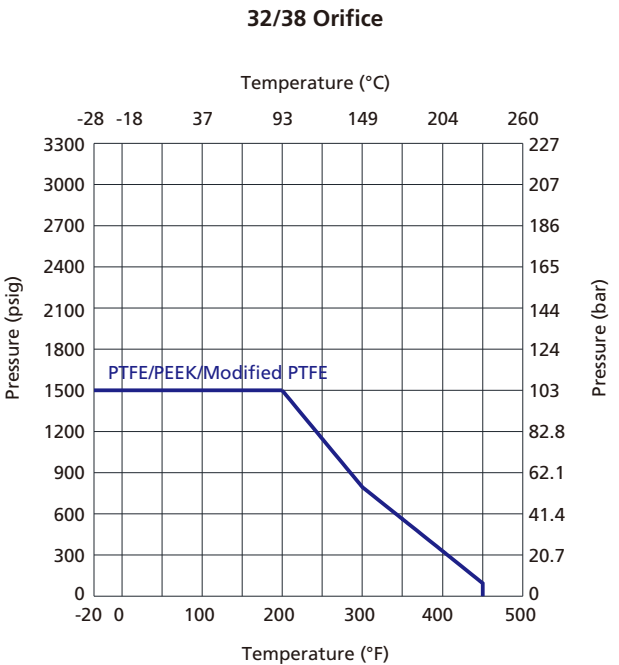
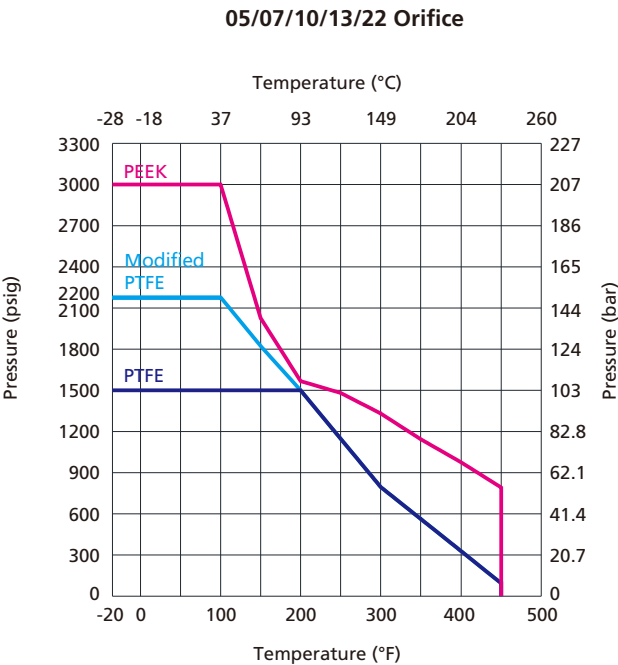
### Introduction

BHP Series 3-piece high purity ball valves are designed to meet the requirements of degreasing, high working pressure, high flow rate and bi-directional flow for the clean dry air (CDA) and bulk gas distribution line, which are widely used in specialty gas, semiconductor and chemical industries.

### Features

- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -20 °F to 450 °F (-28 °C to 232 °C)
- Orifice sizes: 0.18" (4.6 mm) to 1.5" (38.1 mm)
- Factory tested for leaks with nitrogen or compressed air at rated working pressure, with optional helium leak testing to helium leak rate  $\leq 1 \times 10^{-8}$  std cm<sup>3</sup>/s

### Pressure vs. Temperature



Notes:

- The temperature and pressure rating is based on valves of standard materials.
- Modified PTFE is a modified second generation polytetrafluoroethylene (TFM 1600), which is a PFA and PTFE composite. It has comparable chemical compatibility with PTFE, lower deformation rate than PTFE, and higher pressure and temperature tolerance than PTFE.

## Working Pressure of the Weld End at -28 °C to 38 °C

Body Material	End Code	Size	Working Pressure (psig)
CF8M/CF3M	TB4	1/4" x 0.035"	5100
	TB6	3/8" x 0.035"	3300
	TB8	1/2" x 0.049"	3700
	TB12	3/4" x 0.065"	3300
	TB16	1" x 0.065"	2400
	TB24	1 1/2" x 0.065"	1600
	TB32	2" x 0.065"	1200

Note: BHP series high purity ball valves have a maximum working pressure of 3000 psig, which is also limited by the end connection.

## Process Specification

Item	Process Specification	
	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	CF8M, CF3M	CF3M
Flow Path Surface Roughness	Ra 25 µin. (0.6 µm)	Ra 10 µin. (0.25 µm)
Process	Machined	Electropolished
Lubrication	Components in contact with the medium are treated with special lubricants that are oxygen- compatible	

Fittings

Valves

Regulators

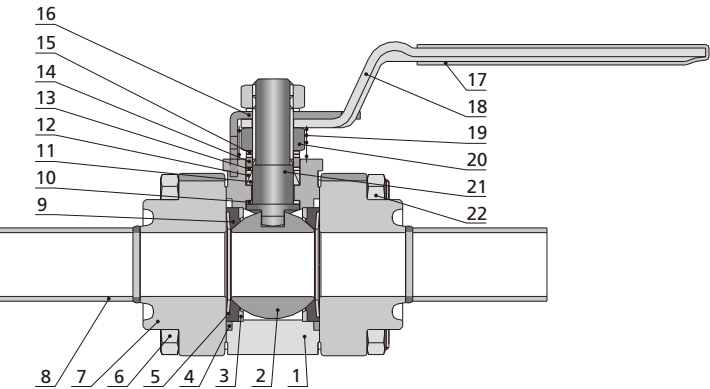
Filters

Tubing

Integrated  
SystemsOther  
ProductsTechnical  
Information



Major Materials of Construction

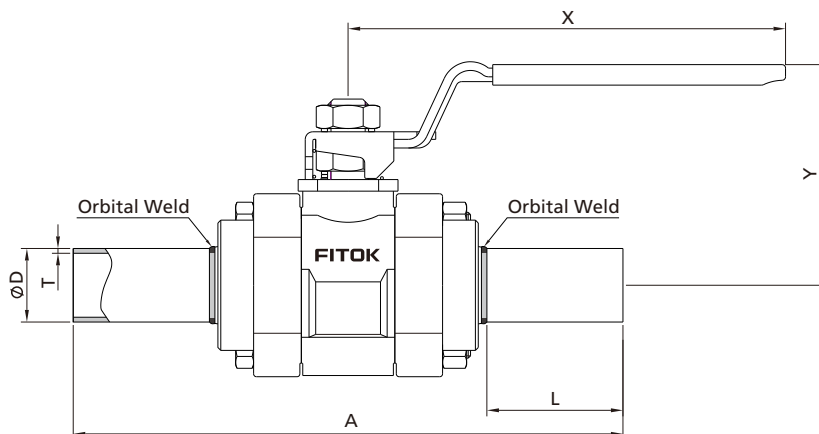


Item	Component	Material/Specification	
1	<i>Body</i>	<i>CF8M/A351</i>	<i>CF3M/A351</i>
2	<i>Ball</i>	<i>316 SS/A479</i>	<i>316L SS/A479</i>
3	<i>Support Ring</i>	<i>316 SS/A240</i>	<i>316L SS/A240</i>
4	<i>Side Seal</i>	<i>PTFE/D1710</i>	
5	<i>Butterfly Spring</i>	<i>Strain Hardened 316 SS/A240</i>	
6	Body Bolt	Gr.B8M/A193	
7	<i>End Cap</i>	<i>CF8M/A351</i>	<i>CF3M/A351</i>
8	<i>Welded Tube</i>	<i>316L SS/A269</i>	
9	<i>Valve Seat</i>	<i>PTFE/Modified PTFE/PEEK</i>	
10	<i>Stem Bearing</i>	<i>PEEK</i>	
11	<i>Lower Packing</i>	<i>PTFE/D1710</i>	
12	<i>Upper Packing</i>	<i>PTFE/D1710</i>	
13	Packing Support	PEEK	
14	Seal Gland	PTFE-coated 316 SS/A479	
15	Stem Spring	Strain Hardened 316 SS/A240	
16	Stop Plate	304 SS/240	
17	Handle Cover	Vinyl Plastic	
18	Handle	304 SS/A240	
19	Grounding Spring	302 SS/A313	
20	Stem Nut	Gr.8M/A194	
21	<i>Stem</i>	<i>316 SS/A479</i>	<i>316L SS/A479</i>
22	Body Nut	Gr.8M/A194	

Note:  
Components in contact with the media are listed in italics, for other materials of the valve please contact FITOK Group or authorized agent.

## Dimensions

Dimensions in in. (mm) are for reference only and subject to change.

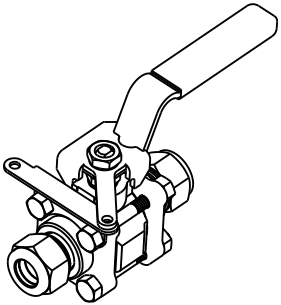


Ordering Information	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
				A	L	D	T	X	Y
BHP□□-TB4-05	1/4"×0.035" Fractional Extended Tube Plain Butt Weld	0.18 (4.6)	1.1	3.54 (90)	0.79 (20)	0.25 (6.35)	0.035 (0.89)	2.37 (60.2)	1.66 (42.2)
BHP□□-FL4-05	1/4" FITOK Tube Fittings	0.19 (4.8)	1.2	3.17 (80.5)	—	—	—		
BHP□□-ML6-05	6 mm FITOK Tube Fittings		2.5						
BHP□□-ML8-05	8 mm FITOK Tube Fittings								
BHP□□-TB6-07	3/8"×0.035" Fractional Extended Tube Plain Butt Weld	0.28 (7.1)	3.8	3.54 (90)	0.79 (20)	0.375 (9.53)	0.035 (0.89)	2.37 (60.2)	1.66 (42.2)
BHP□□-FL6-07	3/8" FITOK Tube Fittings			3.17 (80.5)	—	—	—		
BHP□□-ML10-07	10 mm FITOK Tube Fittings			3.20 (81.3)					
BHP□□-TB8-10	1/2"×0.049" Fractional Extended Tube Plain Butt Weld	0.40 (10.2)	7.2	4.72 (120)	1.18 (30)	0.50 (12.7)	0.049 (1.24)	4.50 (114)	2.35 (59.7)
BHP□□-FL8-10	1/2" FITOK Tube Fittings	0.41 (10.4)	7.5	4.04 (103.0)	—	—	—		
BHP□□-ML12-10	12 mm FITOK Tube Fittings								
BHP□□-FL12-13	3/4" FITOK Tube Fittings	0.52 (13.1)	13.6	4.04 (103)	—	—	—	4.50 (114)	2.35 (59.7)
BHP□□-ML16-13	16 mm FITOK Tube Fittings								
BHP□□-ML18-13	18 mm FITOK Tube Fittings								
BHP□□-TB12-22	3/4"×0.065" Fractional Extended Tube Plain Butt Weld	0.62 (15.7)	18	5.12 (170)	1.42 (40)	0.75 (19.05)	0.065 (1.65)	6.00 (152)	2.94 (74.7)
BHP□□-TB16-22	1"×0.065" Fractional Extended Tube Plain Butt Weld	0.87 (22.1)	36	6.3 (190)	1.97 (50)	1.00 (25.4)	0.065 (1.65)		
BHP□□-FL16-22	1" FITOK Tube Fittings	0.88 (22.2)	40	5.36 (136)	—	—	—		
BHP□□-FL20-22	1 1/4" FITOK Tube Fittings			6.34 (161)					
BHP□□-ML25-22	25 mm FITOK Tube Fittings			5.36 (136)					
BHP□□-ML28-22	28 mm FITOK Tube Fittings			6.14 (156)					
BHP□□-TB24-32	1 1/2"×0.065" Fractional Extended Tube Plain Butt Weld	1.25 (31.8)	100	8.59 (218.2)	2.07 (52.6)	1.50 (38.1)	0.065 (1.65)	9.14 (232)	4.03 (102)
BHP□□-TB32-38	2"×0.065" Fractional Extended Tube Plain Butt Weld	1.50 (38.1)	130	9.03 (229.3)	2.04 (51.8)	2.00 (50.8)			4.16 (103)

- Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
- Connection tube length can be specified, such as BHPSS-TB4-05, if L=30 mm is required, the part number should be changed to BHPSS-TB4xL30-05.

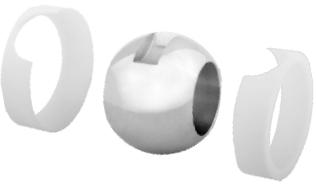
## Locking Device

- ⦿ Lock BHP series valves, locking hole diameters of the whole series of valves are 0.20 in. (5 mm)
- ⦿ To order a ball valve with locking device, please refer to the "Ordering Number Description" and add -L to the valve ordering number  
Example: BHP5S-FL16-22-L



## Low Dead Space Inserts

- ⦿ Reduce fluid entrapment around the ball, stem, and seat when the valve is open or closed
- ⦿ To order a ball valve with low dead space insert, please add -RZ to the valve ordering number  
Example: BHP5S-FL4-05-RZ



## Ordering Number Description

BHPSS - FL8 - ML12 - P13 - CHQL - U1D1 - RZ - AR2F3									
Series	Body Material		Connection 2 Type	Connection 2 Size	Actuator Accessory		Special Application		
BHP	SS	CF8M	Same as Connection 1	Specified in the same way as the Connection 1	None		None		
	6L	CF3M			H	Mechanical limit switch	RZ	Low Dead Space Insert	
					N	Inductive limit switch			
					Q	Solenoid Valve			
					HQ	Mechanical limit switch and solenoid valve			
					NQ	Inductive limit switch and solenoid valve			
Connection 1 Type		Valve Seat Material		Orifice Size		Locking Device		Supplementary Testing	
TB	Fractional Extended Tube Plain Butt Weld		PTFE	05	Maximum 0.19" (4.8 mm)		None		None
FL	Fractional Tube Fittings	P	PEEK	07	0.28" (7.1 mm)	L	Yes	AR2	Helium Leak Testing
ML	Metric Tube Fittings	M	Modified PTFE	10	0.41" (10.4 mm)				
FR	Integral Male FR Metal Gasket Face Seal Fittings			13	0.52" (13.1 mm)				
FO	FO Series O-Ring Face Seal Fitting			22	0.88" (22.2 mm)				
Connection 1 Size		Handle/Actuator		Upstream Purge		Downstream Purge		Process Specification	
4	1/4" or 1/4"×0.035"		Yellow Handle Cover		None		None		FC-02
6	3/8" or 3/8"×0.035" or 6 mm	I	Red Handle Cover	U1	1/4" Tube Fitting with Plug	D1	1/4" Tube Fitting with Plug	F3	FC-03 (For CF3M only)
8	1/2" or 1/2"×0.049" or 8 mm	F	Green Handle Cover	U2	1/4" Male FR Fitting with Plug	D2	1/4" Male FR Fitting with Plug		
10	10 mm	J	Blue Handle Cover						
12	3/4" or 3/4"×0.065" or 12 mm	C	90° Normally Closed Pneumatic Actuator						
16	1" or 1"×0.065" or 16 mm	O	90° Normally Open Pneumatic Actuator						
18	18 mm	D	90° Double Acting Pneumatic Actuator						
20	1 1/4"	E	90° Electric Actuator						
24	1 1/2"×0.065"								
25	25 mm								
28	28 mm								
32	2"×0.065"								

### Notes:

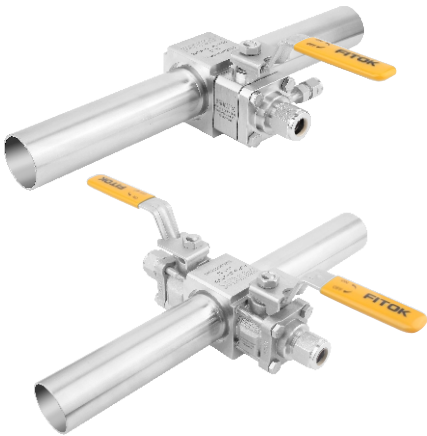
- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.  
Not all combinations are available, Should you have any questions, please contact FITOK Group or our authorized distributors.
- The PEEK seat material and the FOG process cannot be selected at once.

# Distribution Block Valves

## BDP Series

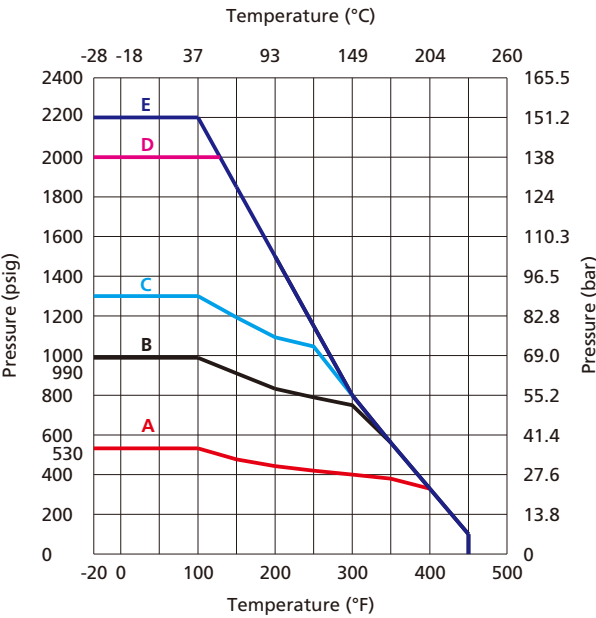
### Features

- Working temperature: -20 °F to 450 °F (-28 °C to 232 °C)
- Main line tube is full bore
- Main line Tube with orbital welding
- Branch ball valves are BHP or BGP series
- Factory tested for leaks with nitrogen or compressed air at rated working pressure, with optional helium leak testing to helium leak rate  $\leq 1 \times 10^{-8}$  std cm<sup>3</sup>/s

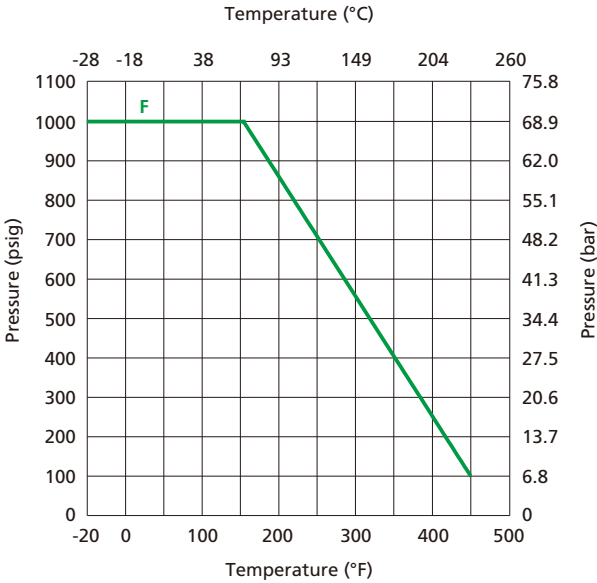


### Pressure vs. Temperature

Branch ball valves are BHP Series



Branch ball valves are BGP Series



Main Line Tube Size in (mm)	4×0.083	2×0.065	1 1/2×0.065	1×0.065	3/4×0.065 1/2×0.049
Orifice Code	38, 32	13, 10	13, 10, 07	13, 10, 07	05, 07
Temperature and Pressure Curve	A —	B —	C —	D —	E —

Main Line Tube Size in (mm)	1 1/2×0.065	1×0.065	3/4×0.065 1/2×0.065
Orifice Code	15, 11, 07	15, 11, 07	07, 05
Temperature and Pressure Curve	F —		

Process Specification

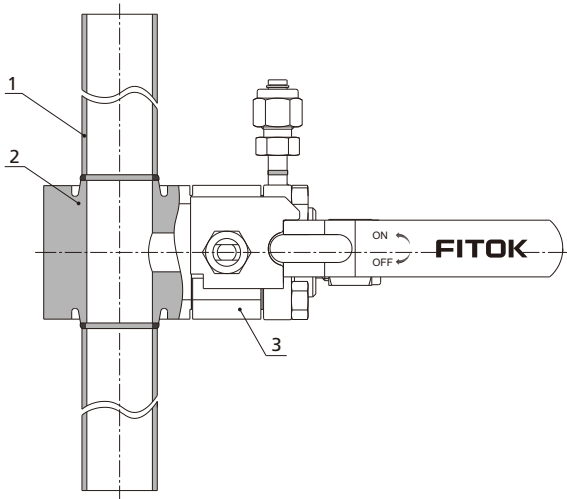
Item	Process Specification	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material		CF8M, CF3M	CF3M
Flow Path Surface Roughness		Ra 25 µin. (0.6 µm)	Ra 10 µin. (0.25 µm)
Process		Machined	Electropolished
Lubrication		Components in contact with the medium are treated with special lubricants that are oxygen- compatible	

Major Materials of Construction

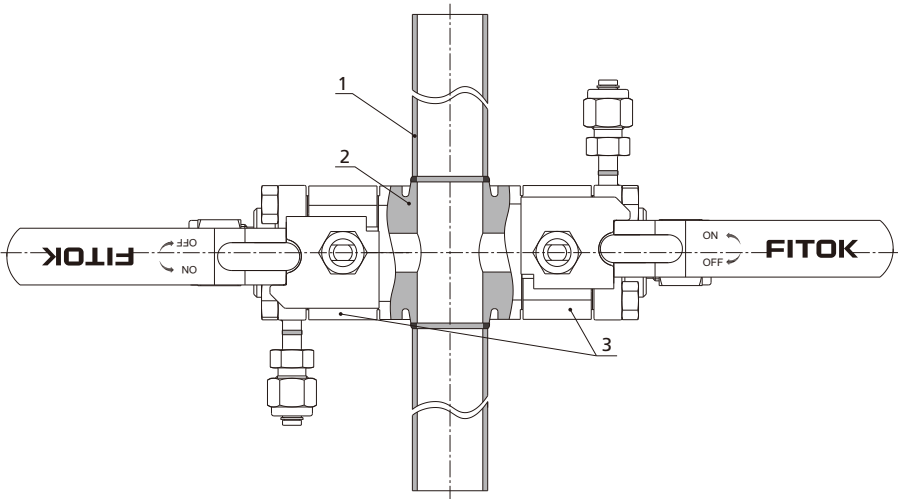
Item	Component		Material/Specification	
1	Main Line Tube		316L SS/A269	
2	Valve block		316L SS/A479	
3	BHP Series Branch Ball Valve	Body	CF8M/A351	CF3M/A351
		Seat	Modified PTFE	
	BGP Series Branch Ball Valve	Body	CF8M/A351	CF3M/A351
		Seat	PTFE	

Note:  
Components in contact with the media are listed in italics. Branch ball valves are BHP and BGP series, and other parts not listed are the same materials as BHP and BGP series standard valve parts.

Single Horizontal Cross



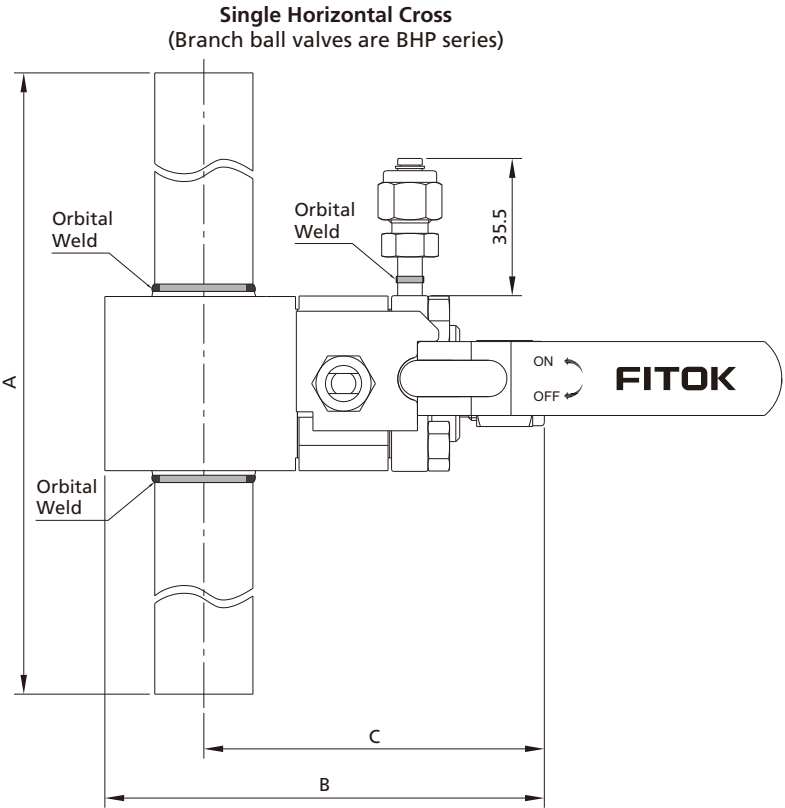
Double Horizontal Cross



Fittings
Valves
Regulators
Filters
Tubing
Integrated Systems
Other Products
Technical Information

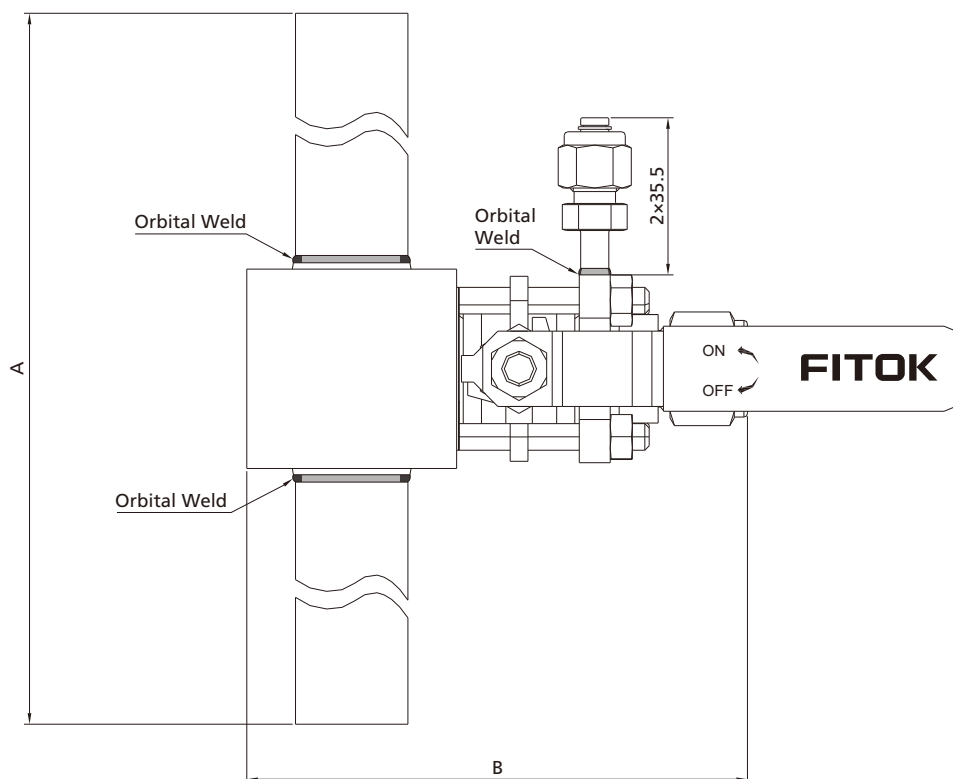
# Ordering information and dimensions

Please refer to BHP and BGP series for the dimensions of branch ball valves.  
Dimensions are indicated in in. (mm, only for reference and subject to change).



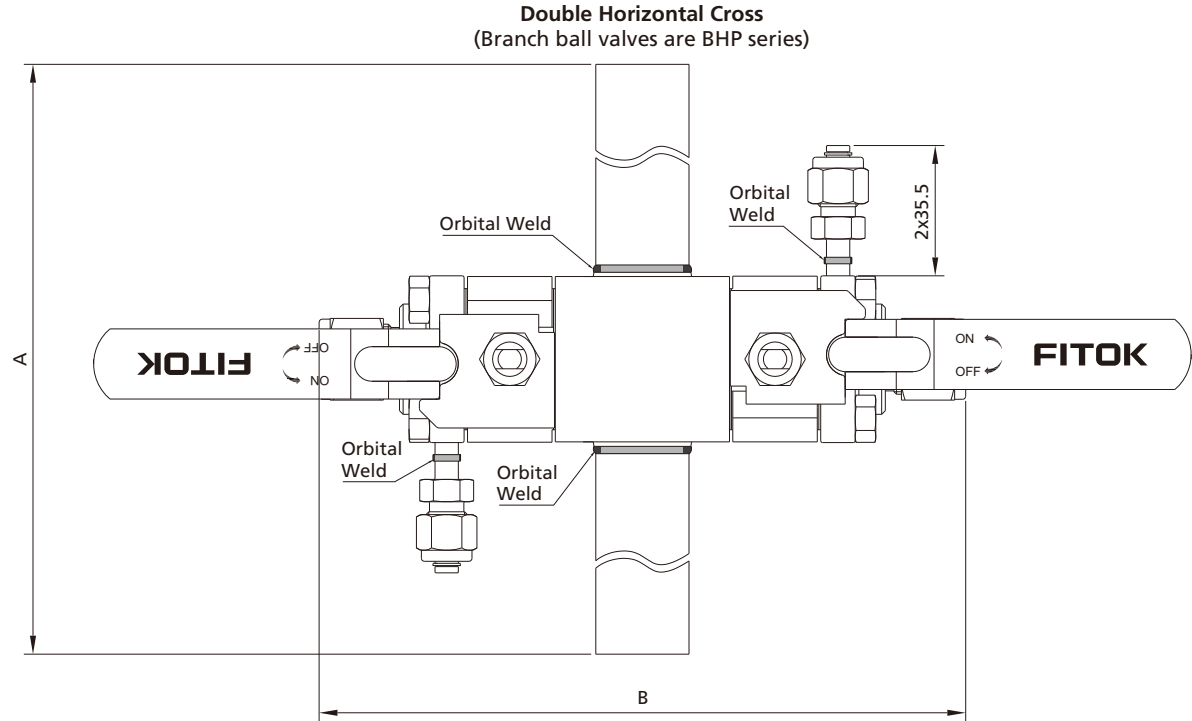
Ordering information	Main line tube size in. (mm)	Branch line tube end size	Orifice in. (mm)	Dimensions, in. (mm)		
				A	B	C
BDP□□-SHC-TB8-FL4-05-D1	1/2×0.049	1/4 in.	0.187 (4.8)	7.00 (178)	3.31 (84.1)	2.56 (65.0)
BDP□□-SHC-TB8-FL6-07-D1		3/8 in.	0.281 (7.1)			
BDP□□-SHC-TB12-FL4-05-D1	3/4×0.065	1/4 in.	0.187 (4.8)	9.00 (229)	3.31 (84.1)	2.56 (65.0)
BDP□□-SHC-TB12-FL6-07-D1		3/8 in.	0.281 (7.1)			
BDP□□-SHC-TB16-FL6-07-D1	1×0.065	3/8 in.	0.281 (7.1)	13.0 (330)	4.31 (109)	3.31 (84.1)
BDP□□-SHC-TB16-FL8-10-D1		1/2 in.	0.411 (10.4)		4.44 (113)	3.44 (87.4)
BDP□□-SHC-TB16-FL12-13-D1		3/4 in.	0.516 (13.1)			
BDP□□-SHC-TB24-FL6-07-D1	1 1/2×0.065	3/8 in.	0.281 (7.1)	13.0 (330)	4.56 (116)	3.44 (87.4)
BDP□□-SHC-TB24-FL8-10-D1		1/2 in.	0.411 (10.4)		4.69 (119)	6.56 (90.4)
BDP□□-SHC-TB24-FL12-13-D1		3/4 in.	0.516 (13.1)			
BDP□□-SHC-TB32-FL8-10-D1	2×0.065	1/2 in.	0.411 (10.4)	13.0 (330)	5.97 (152)	4.06 (103)
BDP□□-SHC-TB32-FL12-13-D1		3/4 in.	0.516 (13.1)			
BDP□□-SHC-TB64-FL24-32-D1	4×0.083	1 1/2 in.	1.250 (31.8)	23.0 (584)	10.2 (259)	7.19 (183)
BDP□□-SHC-TB64-FL32-38-D1		2 in.	1.500 (38.1)		11.6 (295)	8.63 (219)

**Single Horizontal Cross**  
(Branch ball valves are BGP series)



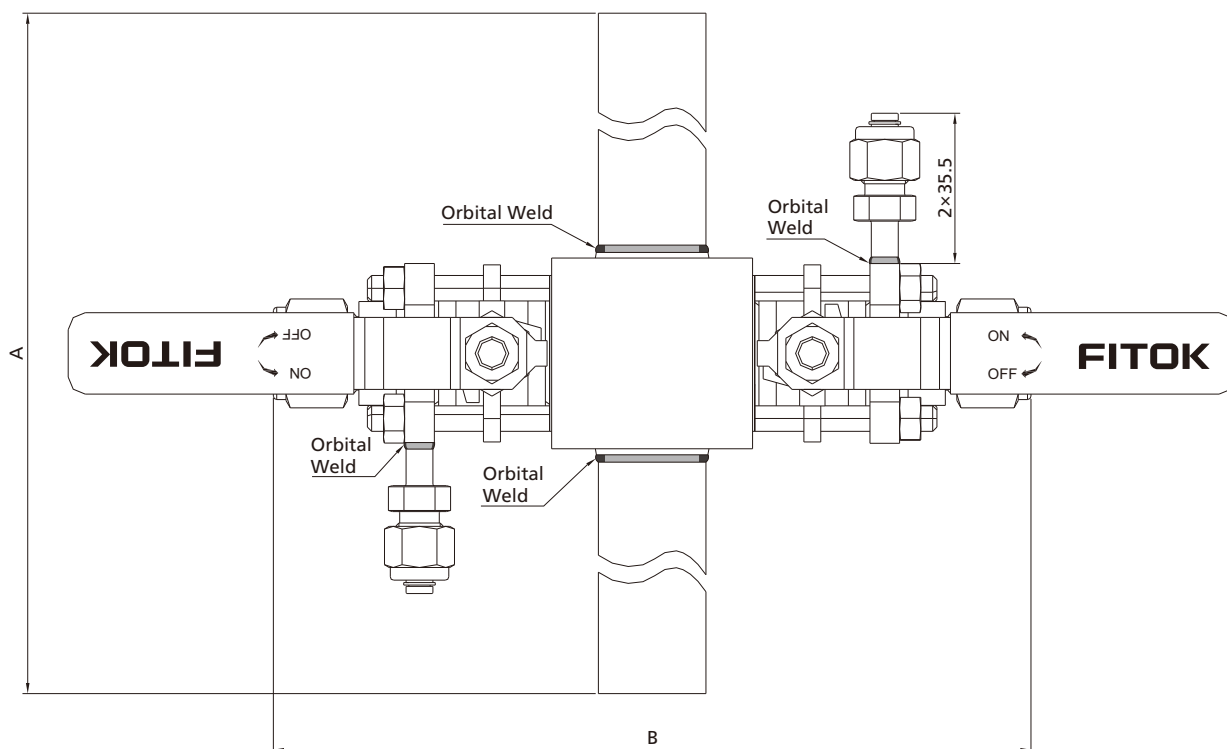
Ordering information	Main line tube size in. (mm)	Branch line tube end size	Orifice in. (mm)	Dimensions, in. (mm)	
				A	B
BDP□□-SHC-TB8-BGP-FL4-05-D1	1/2×0.049	1/4 in.	0.19 (4.8)	7.00 (178)	3.12 (79.2)
BDP□□-SHC-TB8-BGP-FL6-07-D1		3/8 in.	0.28 (7.1)		
BDP□□-SHC-TB12-BGP-FL4-05-D1	3/4×0.065	1/4 in.	0.19 (4.8)	9.00 (229)	3.12 (79.2)
BDP□□-SHC-TB12-BGP-FL6-07-D1		3/8 in.	0.28 (7.1)		
BDP□□-SHC-TB16-BGP-FL6-07-D1	1×0.065	3/8 in.	0.28 (7.1)	13.0 (330)	4.53 (115)
BDP□□-SHC-TB16-BGP-FL8-11-D1		1/2 in.	0.42 (10.6)		4.72 (120)
BDP□□-SHC-TB16-BGP-FL12-15-D1		3/4 in.	0.55 (14.0)		
BDP□□-SHC-TB24-BGP-FL6-07-D1	1 1/2×0.065	3/8 in.	0.28 (7.1)	13.0 (330)	4.80 (122)
BDP□□-SHC-TB24-BGP-FL8-11-D1		1/2 in.	0.42 (10.6)		5.00 (127)
BDP□□-SHC-TB24-BGP-FL12-15-D1		3/4 in.	0.55 (14.0)		





Ordering information	Main line tube size in. (mm)	Branch line tube end size	Orifice in. (mm)	Dimensions, in. (mm)	
				A	B
BDP□□-DHC-TB8-FL4-05-D1	1/2×0.049	1/4 in.	0.187 (4.8)	7.00 (178)	5.19 (132)
BDP□□-DHC-TB8-FL6-07-D1		3/8 in.	0.281 (7.1)		
BDP□□-DHC-TB12-FL4-05-D1	3/4×0.065	1/4 in.	0.187 (4.8)	9.00 (229)	5.19 (132)
BDP□□-DHC-TB12-FL6-07-D1		3/8 in.	0.281 (7.1)		
BDP□□-DHC-TB16-FL6-07-D1	1×0.065	3/8 in.	0.281 (7.1)	13.0 (330)	6.69 (170)
BDP□□-DHC-TB16-FL8-10-D1		1/2 in.	0.411 (10.4)		6.88 (175)
BDP□□-DHC-TB16-FL12-13-D1		3/4 in.	0.516 (13.1)		
BDP□□-DHC-TB24-FL6-07-D1	1 1/2×0.065	3/8 in.	0.281 (7.1)	13.0 (330)	6.94 (176)
BDP□□-DHC-TB24-FL8-10-D1		1/2 in.	0.411 (10.4)		7.13 (181)
BDP□□-DHC-TB24-FL12-13-D1		3/4 in.	0.516 (13.1)		
BDP□□-DHC-TB32-FL8-10-D1	2×0.065	1/2 in.	0.411 (10.4)	13.0 (330)	8.19 (208)
BDP□□-DHC-TB32-FL12-13-D1		3/4 in.	0.516 (13.1)		
BDP□□-DHC-TB64-FL24-32-D1	4×0.083	1 1/2 in.	1.250 (31.8)	23.0 (584)	14.4 (365)
BDP□□-DHC-TB64-FL32-38-D1		2 in.	1.500 (38.1)		17.2 (437)

**Double Horizontal Cross**  
(Branch ball valves are BGP series)



Ordering information	Main line tube size in. (mm)	Branch line tube end size	Orifice in. (mm)	Dimensions, in. (mm)	
				A	B
BDP□□-DHC-TB8-BGP-FL4-05-D1	1/2×0.049	1/4 in.	0.19 (4.8)	7.00 (178)	4.65 (118)
BDP□□-DHC-TB8-BGP-FL6-07-D1		3/8 in.	0.28 (7.1)		
BDP□□-DHC-TB12-BGP-FL4-05-D1	3/4×0.065	1/4 in.	0.19 (4.8)	9.00 (229)	4.65 (118)
BDP□□-DHC-TB12-BGP-FL6-07-D1		3/8 in.	0.28 (7.1)		
BDP□□-DHC-TB16-BGP-FL6-07-D1	1×0.065	3/8 in.	0.28 (7.1)	13.0 (330)	6.14 (156)
BDP□□-DHC-TB16-BGP-FL8-11-D1		1/2 in.	0.42 (10.6)		6.34 (161)
BDP□□-DHC-TB16-BGP-FL12-15-D1		3/4 in.	0.55 (14.0)		
BDP□□-DHC-TB24-BGP-FL6-07-D1	1 1/2×0.065	3/8 in.	0.28 (7.1)	13.0 (330)	6.38 (162)
BDP□□-DHC-TB24-BGP-FL8-11-D1		1/2 in.	0.42 (10.6)		6.57 (167)
BDP□□-DHC-TB24-BGP-FL12-15-D1		3/4 in.	0.55 (14.0)		

Fittings

Valves

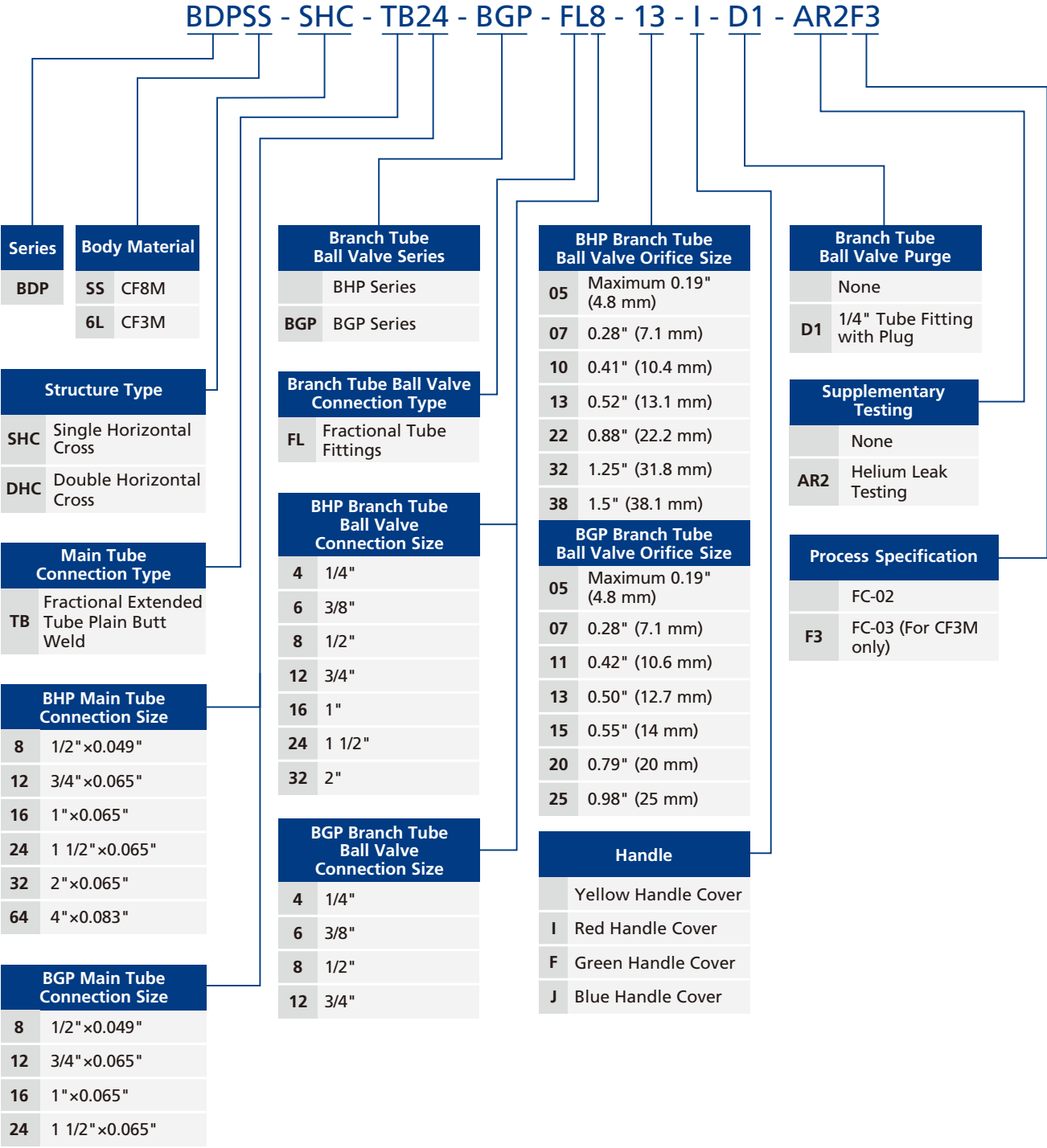
Regulators

Filters

Tubing

Integrated  
SystemsOther  
ProductsTechnical  
Information

Ordering Number Description



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.  
Not all combinations are available, Should you have any questions, please contact FITOK Group or our authorized distributors.

# Hex Bar Stock High Purity Ball Valves

## BRP Series

### Introduction

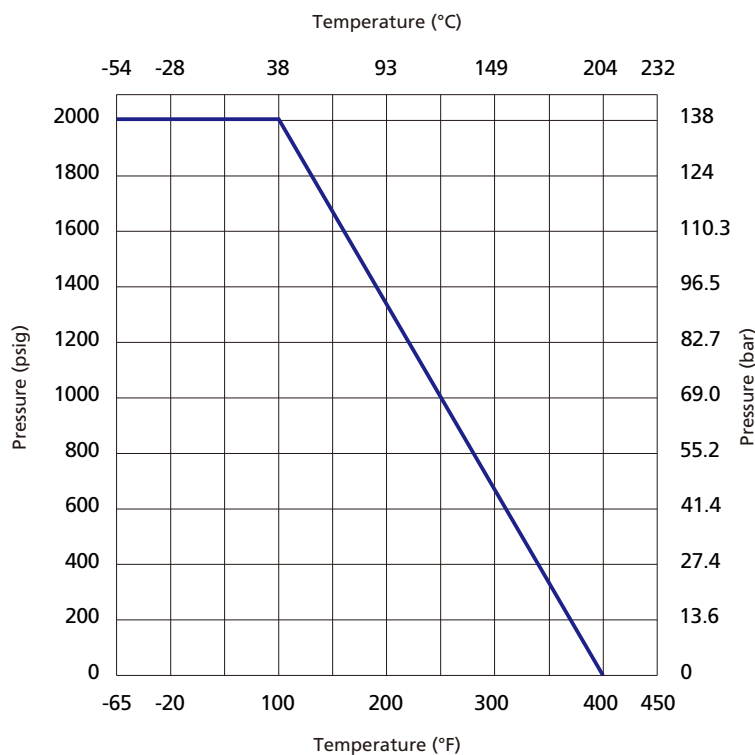
BRP series hex bar high purity ball valves are designed to meet the requirements of degreasing, low working pressure and bi-directional flow for the clean dry air (CDA) and bulk gas distribution line, which are widely used in specialty gas, semiconductor and chemical industries.



### Features

- Working pressure up to: 2000 psig (138 bar)
- Working temperature: -65 °F to 400 °F (-54 °C to 204 °C)
- Orifice sizes: 0.19" (4.8 mm) to 0.63" (16 mm)
- Factory tested for leaks with nitrogen or compressed air at rated working pressure, with optional helium leak testing to helium leak rate  $\leq 1 \times 10^{-8}$  std cm<sup>3</sup>/s

### Pressure vs. Temperature

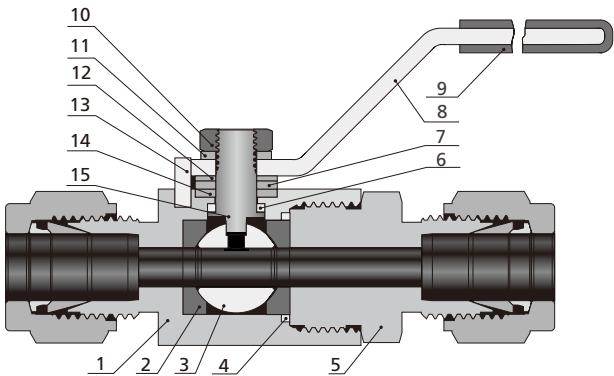


Note: The temperature and pressure rating is based on valves of standard materials.

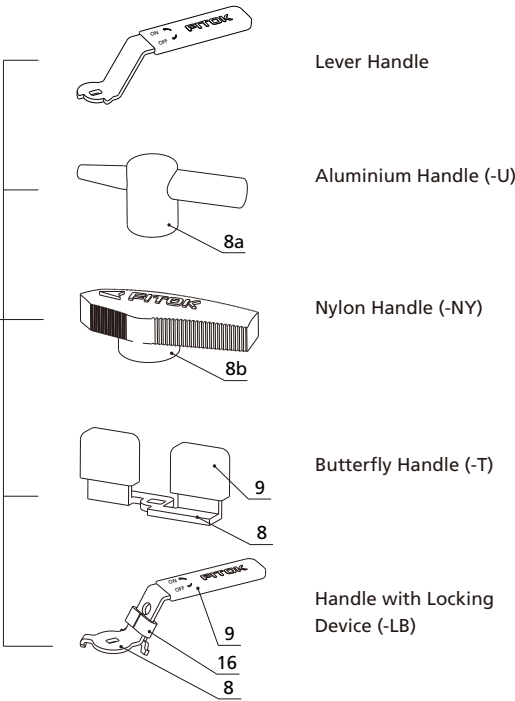
Process Specification

Item	Process Specification	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material		316 SS, 316L SS	316L SS
Flow Path Surface Roughness		Ra 25 µin. (0.6 µm)	Ra 10 µin. (0.25 µm)
Process		Machined	Electropolished
Lubrication		Components in contact with the medium are treated with special lubricants that are oxygen- compatible	

Major Materials of Construction



Handle Options



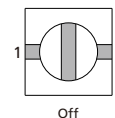
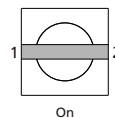
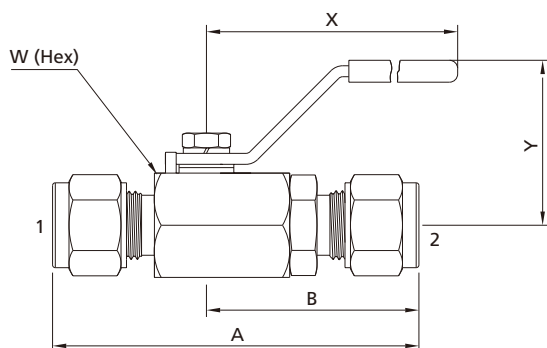
Item	Component	Material/Specification	
		316 SS	316L SS
1	Body	316 SS/A479	316L SS/A479
2	Seat	PFA/D3307	
3	Ball	316 SS/A479	316L SS/A479
4	Gasket	316L SS/A269	
5	End Connection	316 SS/A479	316L SS/A479
6	Lower Packing	Modified PTFE	
7	Washer	316 SS/A479	
8	Handle	304 SS/A240	
8a		Aluminium	
8b		Nylon with 304 SS insert	
9	Sleeve	Vinyl Ester	
10	Stem Nut	Stainless Steel	
11	Gasket	Stainless Steel	
12	Coned-Disc Spring	S17700/A693	
13	Stop Pin <sup>①</sup>	Stainless Steel	
14	Upper Packing	Modified PTFE	
15	Stem	316 SS/A479	316L SS/A479
16	Lock Block	304 SS/A240	

Note: Components in contact with the media are listed in italics.  
For other materials, please contact FITOK Group or our authorized distributors.

① A handle with a locking device does not include a stop pin.

## Dimensions

Dimensions in in. (mm) are for reference only and subject to change.



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
	Connection 1/2			A	B	W	X	Y	
BRP□□-ML6-05	6 mm FITOK	0.19 (4.8)	1.25	2.57 (65.2)	1.50 (38.1)	3/4 (19.05)	2.36 (60.0)	1.18 (30)	
BRP□□-ML8-05	8 mm FITOK			2.63 (66.8)	1.53 (38.8)				
BRP□□-FL4-05	1/4" FITOK			2.57 (65.2)	1.50 (38.1)				
BRP□□-FL5-05	5/16" FITOK			2.63 (66.8)	1.53 (38.8)				
BRP□□-ML10-07	10 mm FITOK	0.28 (7.1)	2.50	2.87 (72.9)	1.68 (42.7)	7/8 (22.23)		1.26 (32)	
BRP□□-FL6-07	3/8" FITOK								
BRP□□-ML12-10	12 mm FITOK	0.35 (8.9)	5.30	3.15 (80.0)	1.83 (46.5)	1 1/16 (27.0)	3.15 (80)	1.54 (39)	
BRP□□-ML14-10	14 mm FITOK			3.24 (82.2)	1.87 (47.5)				
BRP□□-FL8-10	1/2" FITOK			3.15 (80.0)	1.83 (46.5)				
BRP□□-FL10-10	5/8" FITOK			3.24 (82.2)	1.87 (47.5)				
BRP□□-ML16-13	16 mm FITOK	0.47 (12.0)	8.60	3.50 (88.9)	2.00 (50.8)	1 1/4 (31.75)	3.94 (100)	2.03 (51.7)	
BRP□□-ML18-13	18 mm FITOK								
BRP□□-FL12-13	3/4" FITOK								
BRP□□-ML22-16	22 mm FITOK	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (56.8)	1 1/2 (38.1)		2.15 (54.8)	
BRP□□-ML25-16	25 mm FITOK			4.31 (109.5)	2.42 (61.5)				
BRP□□-FL16-16	1" FITOK								

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 FITOK 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.

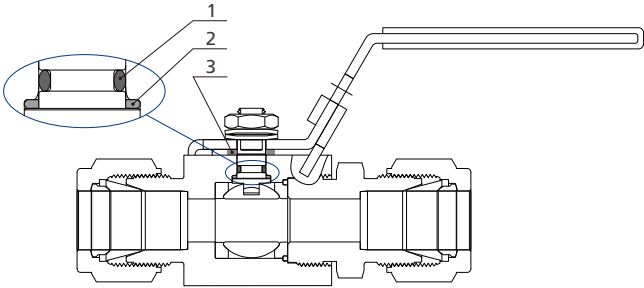
O-Ring Stem Packing Ball Valves

- ⦿ Suitable for applications where adjusting the packing during valve operation is inconvenient.
- ⦿ Standard factory testing includes a sealing test using nitrogen or compressed air at rated working pressure. Optional helium leak testing is available, with a helium leakage rate  $\leq 1 \times 10^{-6}$  std cm<sup>3</sup>/s

Materials of Construction

Item	Component	Material/Specification
1	O-ring	<i>Fluorocarbon FKM, EPDM, Buna N, FFKM</i>
2	Lower Packing	<i>PEEK</i>
3	Seal	PTFE

Note: Wetted components are listed in italics. Other components are consistent with standard materials of construction.



Temperature Range

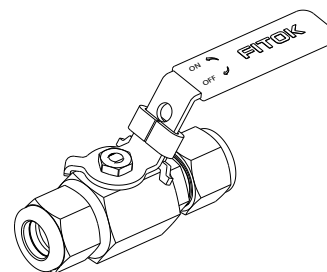
Stem Packing Material	Designator	Temperature Range °F (°C)
<i>Fluorocarbon FKM</i>	VI	5 ~ 400 (-15 ~ 204)
<i>EPDM</i>	E	-40 ~ 250 (-40 ~ 121)
<i>Buna N</i>	B	0 ~ 250 (-17 ~ 121)
<i>FFKM</i>	Z	14 ~ 400 (-10 ~ 204)

Ordering Information

- ⦿ To order an O-ring stem packing ball valve, add the suffix VI to the standard part number.  
Exmaple: BRPSS-ML12-10VI

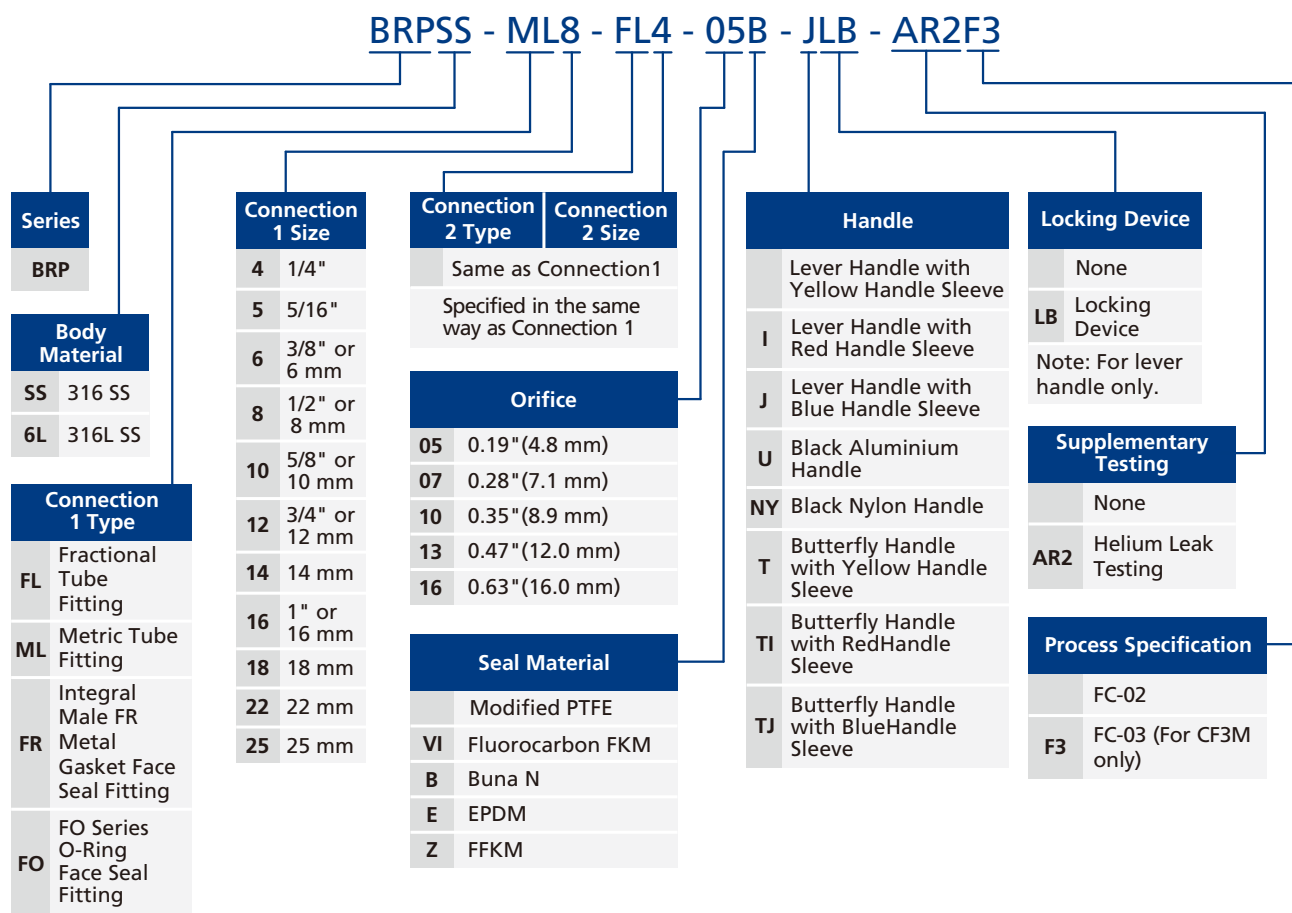
## Locking Device

Body Material	Orifice	Locking Hole Diameter in. (mm)	Example
A variety of optional materials (bar stock)	05	0.19 (4.8)	BRPSS-ML12-10-LB
	07		
	10		
	13	0.24 (6.2)	
	16		



Locking Device

## Ordering Number Description



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.

Not all combinations are available, Should you have any questions, please contact FITOK Group or our authorized distributors.