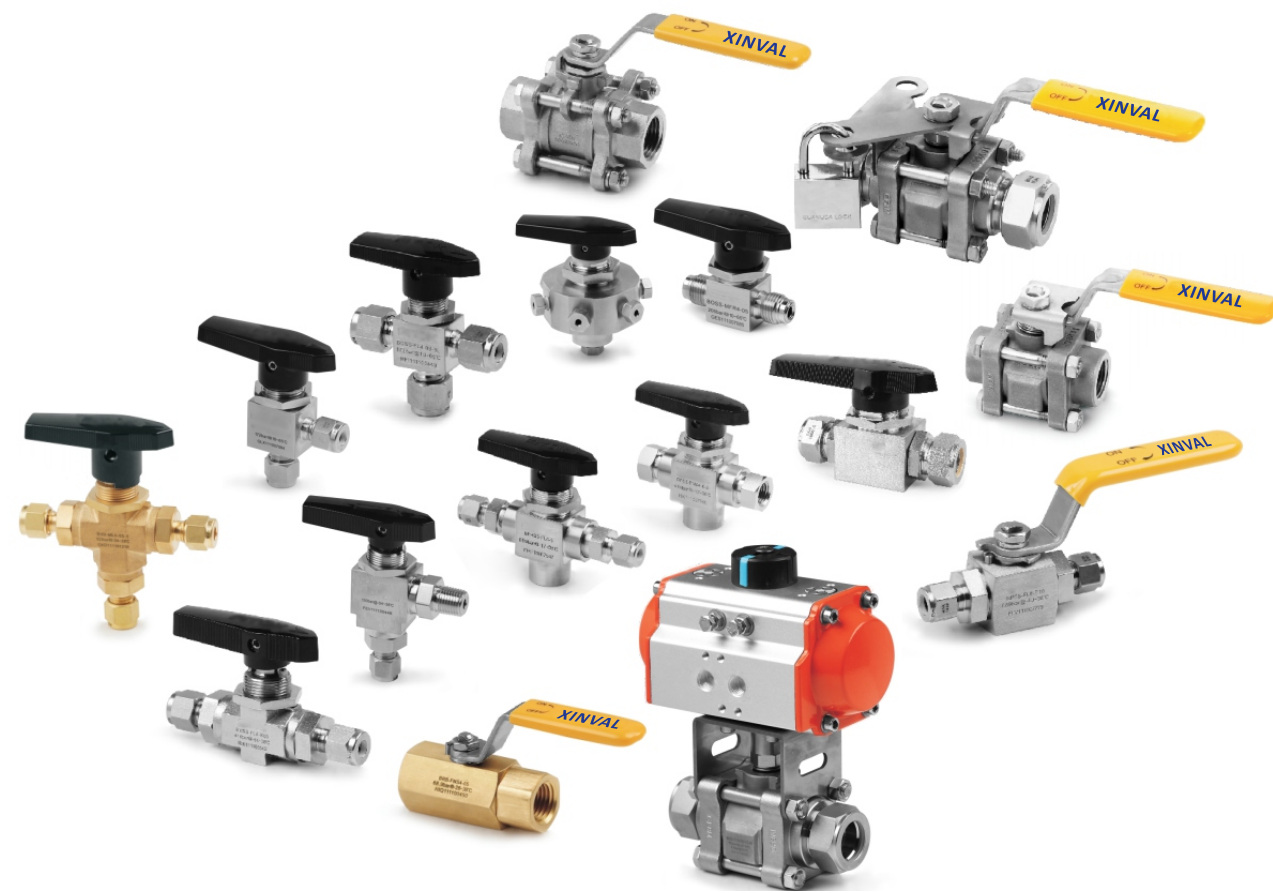


Ball Valves

BV1, BV2, BV3, BV4, BV5, BV6, BV7



Contents

One-piece Instrumentation Ball Valves

BV1 Series



01

3-piece Ball Valves

BV2 Series



14

3-piece Ball Valves

BV3 Series



19

Bar Stock Ball Valves

BV4 Series



25

Hex Bar Stock Ball Valves

BV5 and BV5C Series



31

Trunnion Ball Valves

BV6 and BV6H Series



35

High Performance Ball Valves

BV7 Series



41

Important Information about Ball Valves

- ⦿ XINVAL ball valves are designed to be used in fully open or fully closed position.
- ⦿ Packing adjustment may be required during the valve's life (except for BV6 and BV6H series).
- ⦿ For better quality maintenance, XINVAL ball valves should be kept in fully open position in warehouse.
- ⦿ Valves that have not been cycled for a period of time may have a higher initial actuation torque.

One-piece Instrumentation Ball Valves

BV1 Series

Features

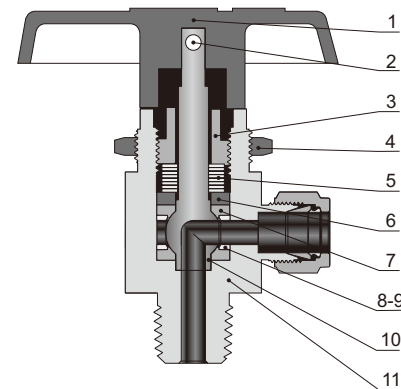
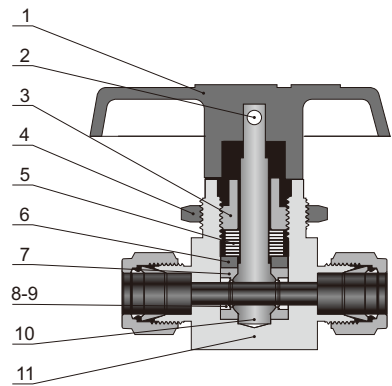
- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -65°F to 300°F (-54°C to 148°C)
- End connections:
1/4 to 1/2 thread
1/16" to 3/4" and 3 mm to 18 mm tube fitting
- 2-, 3-, 4-, 5-, 6- and 7-way models for on-off, switching and crossover service available
- One-piece body and one-piece ball stem
- No dead space
- Top-loaded design to allow adjustment with the valve in-line
- Thermal cycle performance improved and wear compensated by live-loaded design
- Any reasonable connections available
- Pneumatic and electric actuator available
- Handle color options available
- Full operating pressure at any port
- Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak
- The inlet can be any port except for valves with vent ports



Note:

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

Standard Materials of Construction



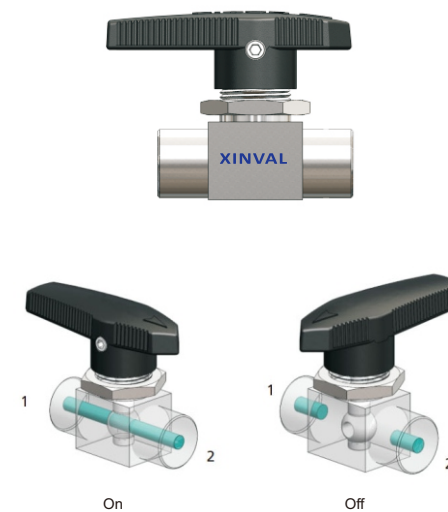
Item	Component	Valve Body Material		
		316 SS	Brass	Alloy 400
Material Grade/ASTM Specification				
1	Handle	Nylon or Aluminium		
2	Set Screw	Galvanized carbon s teel		
3	Packing Bolt	316 SS/A 479	Brass C36000/B16	Alloy 400/B164
4	Panel Nut	316 SS/A 479	Brass C36000/B16	316 SS/A 479
5	Disc Spring	S17700/A693		
6	Gland	316 SS/A479	316 SS/A479	Alloy 400/B164
7	Packing Seat	PTFE/D1710 or UHMWPE/D4020or PFA/D3307		
8	Support Ring	316 SS/A479	316 SS/A479	Alloy 400/B164
9	Support Disc			
10	Ball Stem	316 SS/A 479	Brass C36000/B16	Alloy 400/B164
11	Body	316 SS/A182	Brass C37700/B283	Alloy 400/B164
Wetted Lubricant		Fluorinated-based and silicone-based		
Non-wetted Lubricant		Molybdenum disulfide with hydrocarbon binder coat		

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

On-Off (2-way) Valves

Standard Flow Path

Straight Pattern



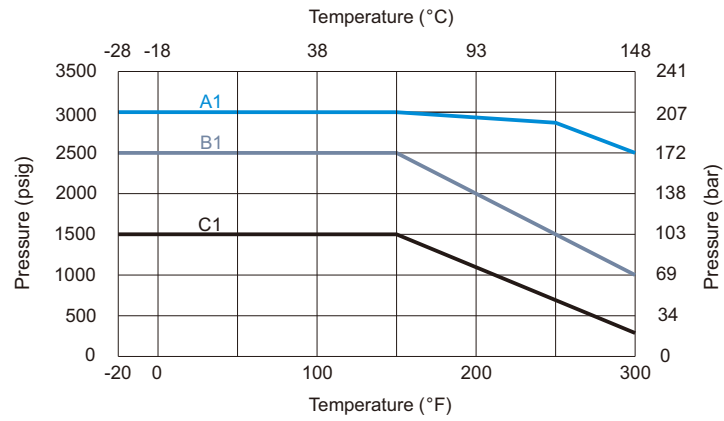
Angle Pattern



Pressure vs. Temperature

Straight Pattern and Angle Pattern

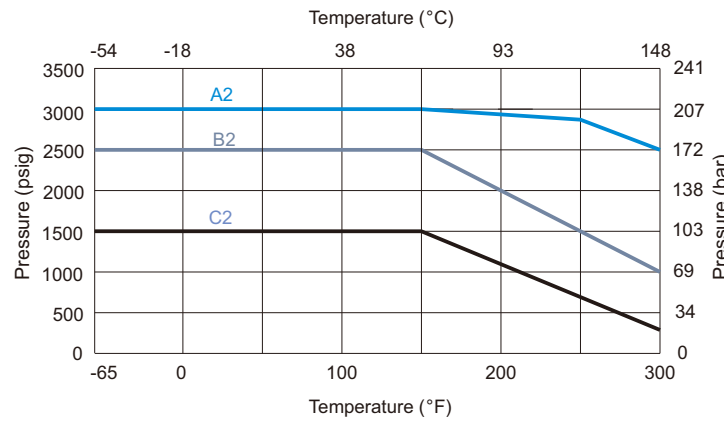
PTFE Packing Seat



A1: Straight Pattern Valves (orifice 0.19")
 B1: Straight Pattern Valves (orifice 0.05"& 0.06"& 0.09"& 0.13" & 0.28" & 0.41")
 Angle Pattern Valves (orifice 0.05"& 0.06"& 0.09"& 0.13" & 0.19")
 C1: Angle Pattern Valves (orifice 0.28" & 0.41")

PFA, UHMWPE Packing Seat

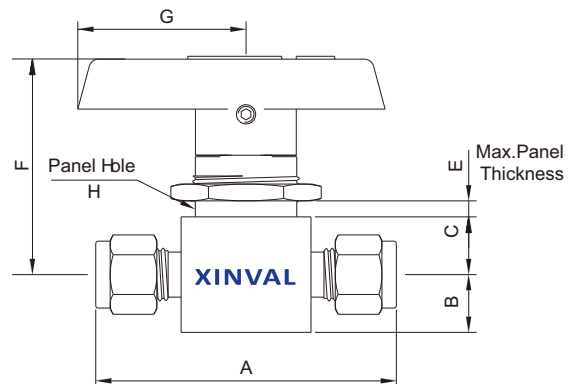
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



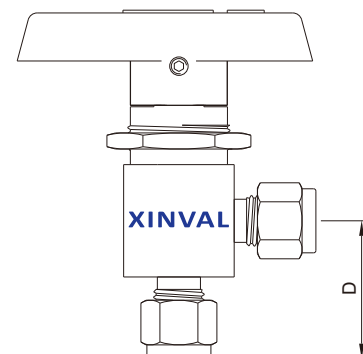
A2: Straight Pattern Valves (orifice 0.19")
 B2: Straight Pattern Valves (orifice 0.05"& 0.06"& 0.09"& 0.13" & 0.28" & 0.41")
 Angle Pattern Valves (orifice 0.05"& 0.06"& 0.09"& 0.13" & 0.19")
 C2: Angle Valves (orifice 0.28" & 0.41")

Dimensions

Straight Pattern



Angle Pattern

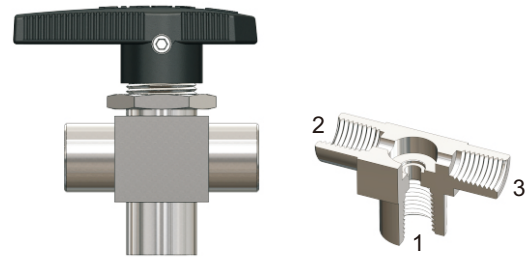


Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv		Dimensions, in. (mm)												
			Straight	Angle	A	B	C	D	E	F	G	H					
316-BV12A-F1-0	1/16" Tube Fitting	0.05 (1.3)	0.10	—	1.68 (42.7)												
316-BV12A-F2-2	1/8" Tube Fitting	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)					
316-BV12A-F4-3	1/4" Tube Fitting	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)									
316-BV12A-F4-5		0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-F6-5	3/8" Tube Fitting	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)					
316-BV12A-F6-7		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)					
316-BV12A-F8-10	1/2" Tube Fitting	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)					
316-BV12A-F12-10	3/4" Tube Fitting	0.09 (2.4)	0.20	0.15	2.01 (51.1)	0.28 (7.1)	0.34 (8.6)	0.97 (24.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)					
316-BV12A-F3M-2	3 mm Tube Fitting	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)									
316-BV12A-F6M-3	6 mm Tube Fitting	0.19 (4.8)	1.40	0.90	2.39 (60.7)	0.38 (9.7)	0.44 (11.2)	1.17 (29.7)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-F6M-5		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)					
316-BV12A-F8M-5	8 mm Tube Fitting	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)					
316-BV12A-F10M-7	10 mm Tube Fitting	0.13 (3.2)	0.60	0.35	2.21 (56.1)			1.07 (27.2)									
316-BV12A-F12M-10	12 mm Tube Fitting	0.19 (4.8)	1.40	0.90	2.46 (62.5)	0.38 (9.7)	0.44 (11.2)	1.20 (30.5)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-FN2-3	1/8 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)	1 1/8 (28.6)					
316-BV12A-FN2-5		0.41 (10.3)	6.30	3.50	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	1.56 (39.6)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)					
316-BV12A-FN4-5	1/4 Female NPT	0.13 (3.2)	0.50	0.30	1.63 (41.4)	0.28 (7.1)	0.34 (8.6)	0.81 (20.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)					
316-BV12A-FN4-7		0.19 (4.8)	1.20	0.70	2.00 (50.8)	0.38 (9.7)	0.44 (11.2)	1.00 (25.4)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-FN4-7	3/8 Female NPT	0.28 (7.1)	3.00	1.70	2.06 (52.3)	0.56 (14.2)	0.56 (14.2)	1.03 (26.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)					
316-BV12A-FN6-7		0.41 (10.3)	6.30	3.50	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	1.56 (39.6)	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)					
316-BV12A-FN8-10	1/2 Female NPT	0.19 (4.8)	1.20	0.75	2.00 (50.8)	0.38 (9.7)	0.44 (11.2)	1.03 (26.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-N4-5	1/4 Male NPT	0.28 (7.1)	2.60	—	2.50 (63.5)	0.56 (14.2)	0.56 (14.2)	—	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)					
316-BV12A-FRT4-5	1/4 Female BSPT	0.41 (10.3)	6.30	—	3.12 (79.2)	0.69 (17.5)	0.69 (17.5)	—	0.49 (12.5)	2.67 (67.7)	3.13 (79.6)	1 1/2 (38.1)					
316-BV12A-FRT6-7	3/8 Female BSPT	0.13 (3.2)	0.60	0.35	1.75 (44.4)		0.34 (8.6)	0.94 (23.9)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)					
316-BV12A-OR4-3	1/4 Male OR	0.19 (4.8)	2.40	0.90	1.88 (47.8)		0.44 (11.2)	—	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-OR4-5		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)					
316-BV12A-MR4-3	1/4 Male MR	0.13 (3.2)	0.60	0.35	2.13 (54.1)		0.34 (8.6)	1.09 (27.7)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)					
316-BV12A-MR4-5		0.19 (4.8)	2.40	0.90	2.44 (61.9)		0.44 (11.2)	—	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)					
316-BV12A-MR8-7	1/2 Male MR	0.28 (7.1)	6.00	—	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)					
316-BV12A-MR8-10		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)					

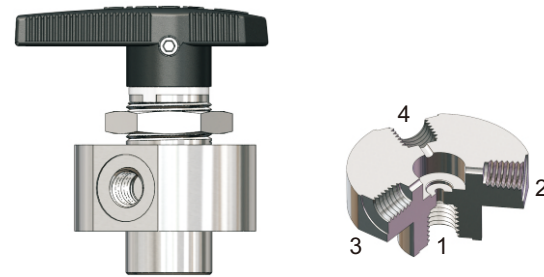
Switching (3-, 4-, 5-, 6- and 7-way) Valves

Standard Flow Path

3-way Valves

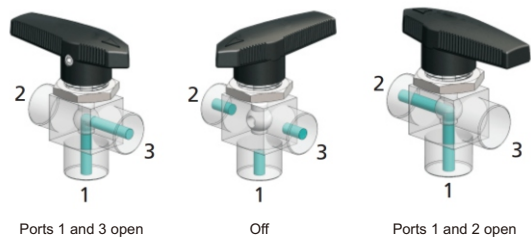


4-way Valves



3A Flow Path

This type of valve can connect one side port to the bottom port or shut off 3 ports. Switch between 0°, 90° and 180° positions with 180° rotation handle.

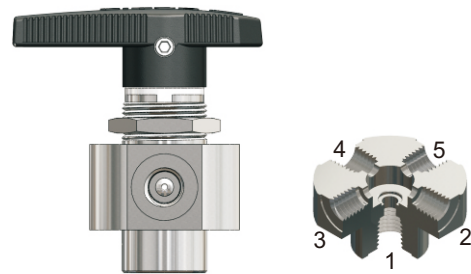


4A Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 2 side ports at the same time. Switching can be done in 120° increments with 360° rotation handle.

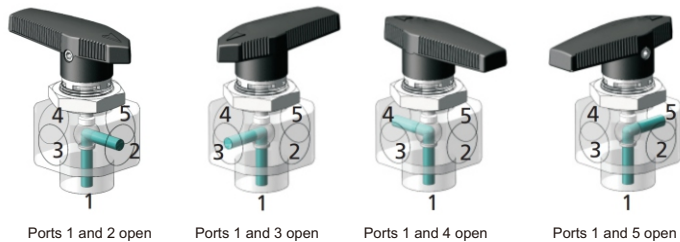


5-way Valves

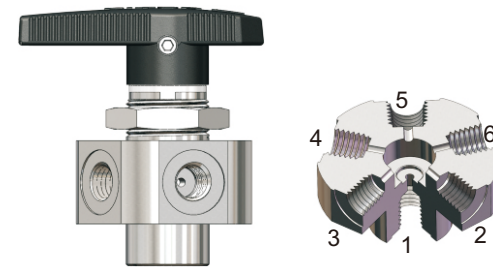


5A Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 3 side ports at the same time. Switching can be done in 90° increments with 360° rotation handle.

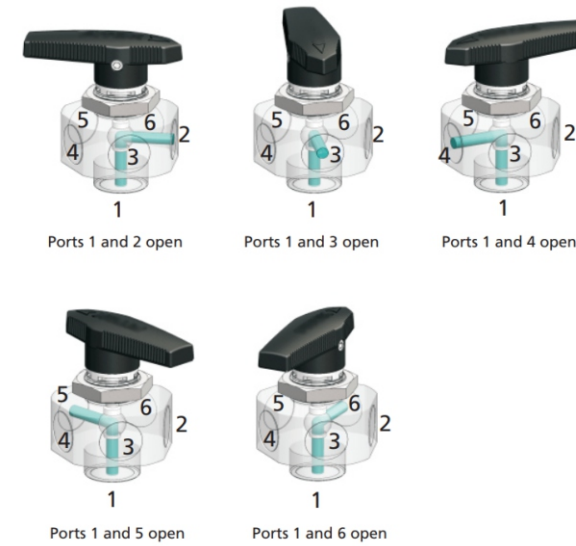


6-way Valves

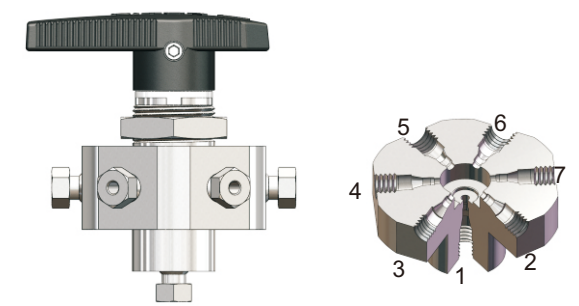


6A Flow Path

This type of valve can connect one side port to the bottom port, and shut off other 4 side ports at the same time. Switching can be done in 72° increments with 360° rotation handle.

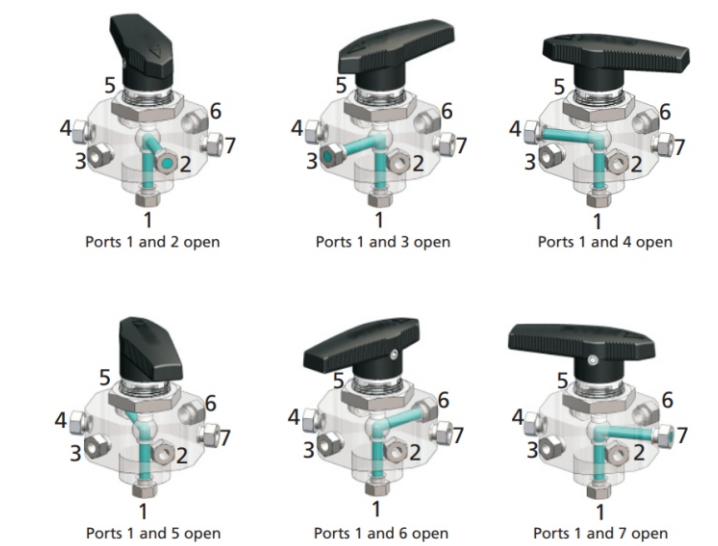


7-way Valves



7A Flow Path

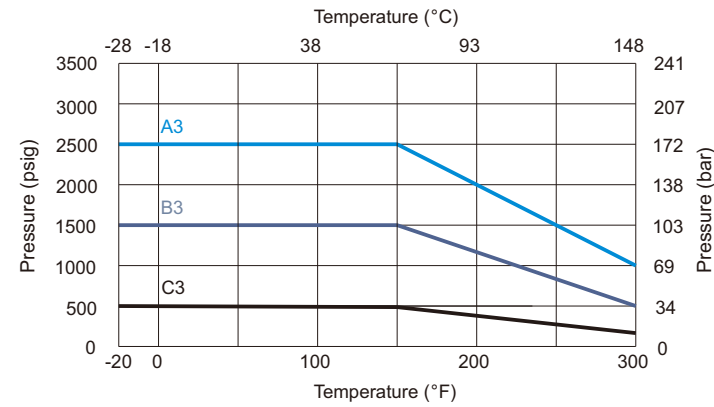
This type of valve can connect one side port to the bottom port, and shut off other 5 side ports at the same time. Switching can be done in 60° increments with 360° rotation handle.



Pressure vs. Temperature

Switching Valves

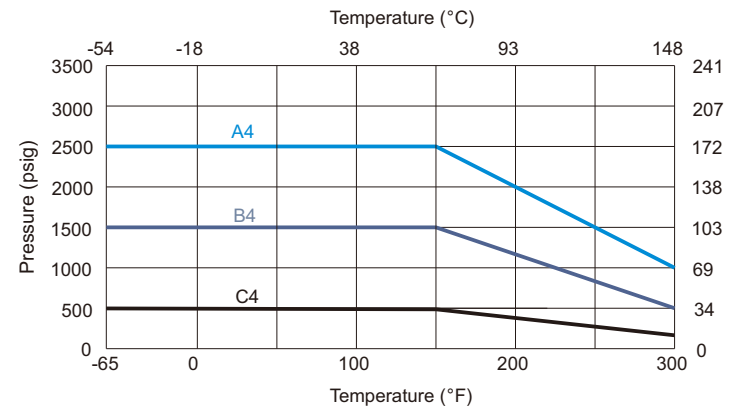
PTFE Packing Seat



A3: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")
B3: 3-way (orifice 0.28" & 0.41")
4-way / 5-way (orifice 0.41")
C3: 6-way / 7-way (orifice 0.05" & 0.06")

PFA, UHMWPE Packing Seat

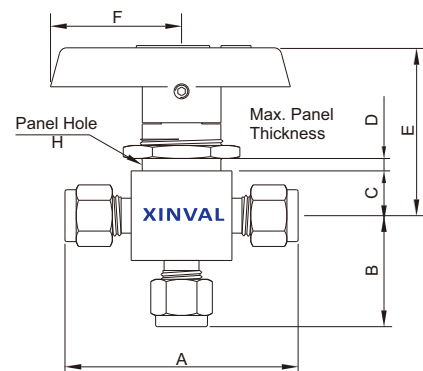
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



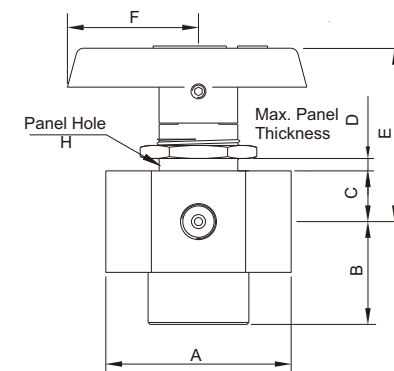
A4: 3-way (orifice 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
4-way / 5-way (orifice 0.06")
B4: 3-way (orifice 0.28" & 0.41")
4-way / 5-way (orifice 0.41")
C4: 6-way / 7-way (orifice 0.05" & 0.06")

Dimensions

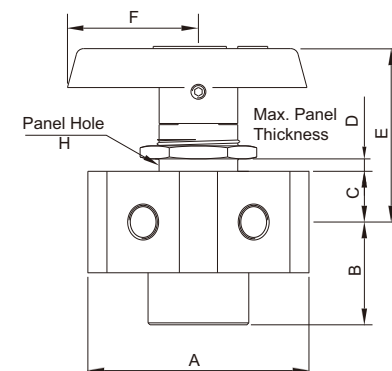
3-way Valves



4-and 5-way Valves



6-and 7-way Valves



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)							
				A	B	C	D	E	F	H	
3-way Valves											
316-BV13A-F1-0	1/16" Tube Fitting	0.05 (1.3)	0.08	1.68 (42.7)	0.81 (20.6)						
316-BV13A-F2-2	1/8" Tube Fitting	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
316-BV13A-F4-3	1/4" Tube Fitting	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)						
316-BV13A-F4-5		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
316-BV13A-F6-7	3/8" Tube Fitting	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)	
316-BV13A-F8-10	1/2" Tube Fitting	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)	
316-BV13A-F12-10	3/4" Tube Fitting		4.90								
316-BV13A-F3M-2	3 mm Tube Fitting	0.09 (2.4)	0.15	2.01 (51.1)	0.97 (24.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
316-BV13A-F6M-3	6 mm Tube Fitting	0.13 (3.2)	0.35	2.21 (56.1)	1.07 (27.2)						
316-BV13A-F6M-5		0.19 (4.8)	0.90	2.39 (60.7)	1.17 (29.7)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
316-BV13A-F8M-5	8 mm Tube Fitting		0.80	2.46 (62.5)	1.20 (30.5)						
316-BV13A-F10M-7	10 mm Tube Fitting	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)	
316-BV13A-F12M-10	12 mm Tube Fitting	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)	
316-BV13A-FN2-3	1/8 Female NPT	0.13 (3.2)	0.30	1.63 (41.4)	0.81 (20.6)	0.34 (8.6)	0.25 (6.4)	1.43 (36.2)	1.10 (28)	19/32 (15.1)	
316-BV13A-FN4-5	1/4 Female NPT	0.19 (4.8)	0.75	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
316-BV13A-FN4-7		0.28 (7.1)	1.70	2.5 (63.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
316-BV13A-FN6-7	3/8 Female NPT		1.50								
316-BV13A-FN8-10	1/2 Female NPT	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)	
316-BV13A-FRT4-5	1/4 Female BSPT	0.19 (4.8)	0.75	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)	
316-BV13A-FRT6-7	3/8 Female BSPT	0.28 (7.1)	1.50	2.5 (63.5)	1.18 (30)	0.56 (14.2)	0.35 (9)	2.19 (55.5)	2.05 (52)	1 1/8 (28.6)	
316-BV13A-FRT8-10	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 Valves

316-BV14A-F2-1	1/8" Tube Fitting	0.06 (1.6)	0.07	2.36 (60)	1.32 (33.5)	0.44 (11.2)	0.20 (5.2)	1.76 (44.6)	1.57 (39.9)	29/32 (23.1)
316-BV15A-F2-1				1.85 (47)	0.88 (22.4)					
316-BV14A-FN2-1	1/8 Female NPT	0.06 (1.6)	0.07	1.55 (39.4)						
316-BV15A-FN2-1										
316-BV14A-FN8-10	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)	2.67 (70.2)	2.63 (66.7)	1 1/2 (38.1)
316-BV15A-FN8-10										

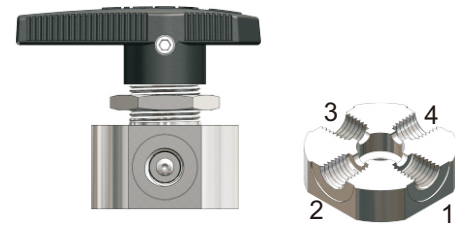
6 - & 7-way Valves

316-BV16A-F1-0	1/16" Tube Fitting	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)
316-BV17A-F1-0										
316-BV16A-F2-1	1/8" Tube Fitting	0.06 (1.6)	0.07	2.26 (57.6)	0.97 (24.7)					
316-BV17A-F2-1										

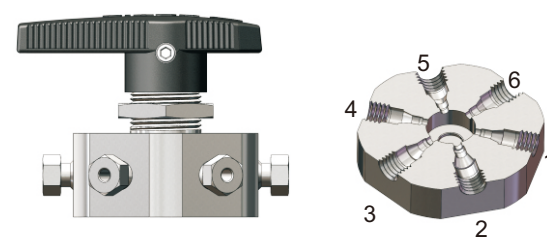
Crossover (4-way, 6-way) Valves

Standard Flow Path

4-way Valves

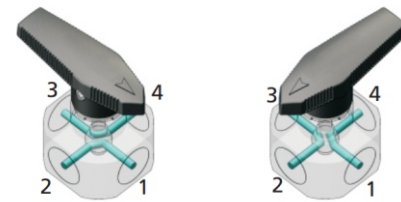


6-way Valves



4C Flow Path

This type of valve can connect two groups of adjacent ports at the same time. Switch between 0° and 90° positions with 90° rotation handle.

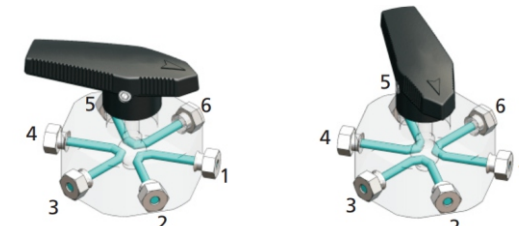


Ports 1 and 2 open
Ports 3 and 4 open

Ports 1 and 4 open
Ports 2 and 3 open

6C Flow Path

This type of valve can connect three groups of adjacent ports at the same time. Switch between 0° and 60° positions with 60° rotation handle.



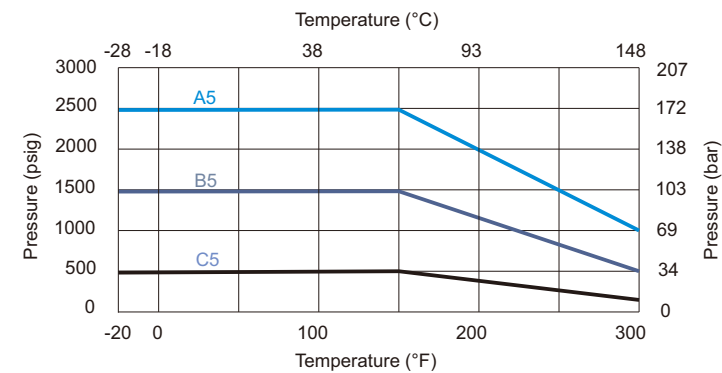
Ports 1 and 2 open
Ports 3 and 4 open
Ports 5 and 6 open

Ports 1 and 6 open
Ports 2 and 3 open
Ports 4 and 5 open

Pressure vs. Temperature

Crossover Valves

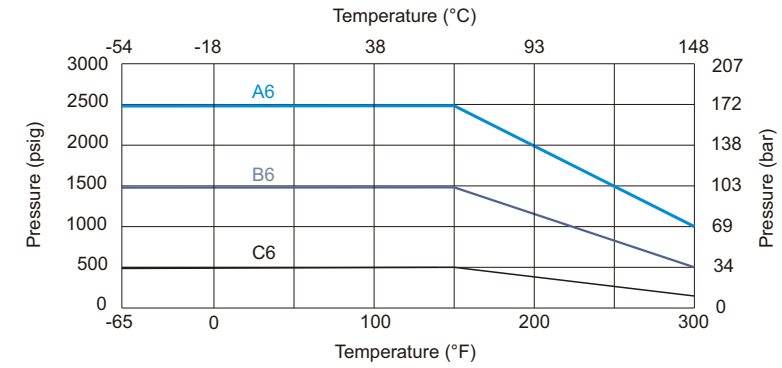
PTFE Packing Seat



A5: 4-way (orifice 0.06")
B5: 4-way (orifice 0.41")
C5: 6-way (orifice 0.05" & 0.06")

PFA, UHMWPE Packing Seat

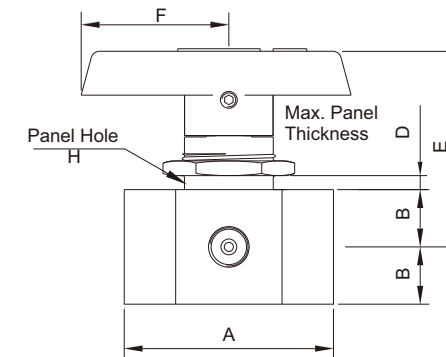
The working temperature of UHMWPE packing seat should not be higher than 150°F (65°C).



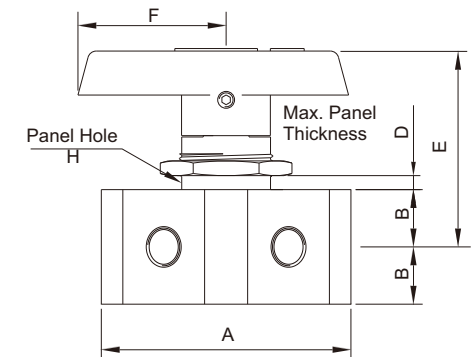
A6: 4-way (orifice 0.06")
B6: 6-way (orifice 0.41")
C6: 6-way (orifice 0.05" & 0.06")

Dimensions

4-way Valves



6-way Valves



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)					
				A	B	D	E	F	H
4-way Valve									
316-BV14C-F1-0	1/16" Tube Fitting	0.05 (1.3)	0.06	1.95 (49.6)					
316-BV14C-F2-1	1/8" Tube Fitting	0.06 (1.6)	0.08	2.61 (66.3)	0.44 (11.2)	0.19 (4.8)	1.64 (41.7)	1.57 (39.9)	25/32 (19.8)
316-BV14C-FN2-1	1/8 Female NPT			1.55 (39.4)					
316-BV14C-FN8-7	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									
316-BV16C-F1-0	1/16" Tube Fitting	0.05 (1.3)	0.06	1.95 (49.5)	0.44 (11.2)	0.19 (4.8)	1.68 (42.7)	1.53 (38.9)	29/32 (23.1)
316-BV16C-F2-1	1/8" Tube Fitting	0.06 (1.6)	0.08	2.59 (65.8)					

Note: Connection type for ball valves in 4A, 5A, 6A, 7A, 4C, 6C, 4H, 4HL, 4V, 5HL, 5H and 5AV flow path is Tube Fitting, which can not be used directly with standard FT and MT connections. Please contact XINVAL Group or authorized distributors for use with standard FT and MT connections.

- Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL Group or our authorized distributors.
- 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 XINVAL Group or our authorized distributors.

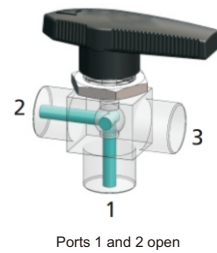
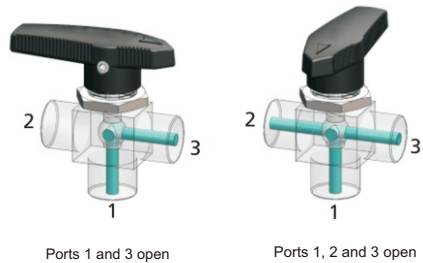
Special Flow Path

3-way Valves



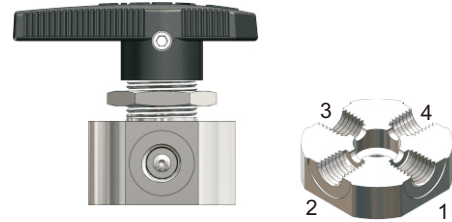
3HL Flow Path

This type of valve can connect one side port to the bottom port, or connect two side ports to the bottom port. Switching can be done in 90° increments with 180° rotation handle.



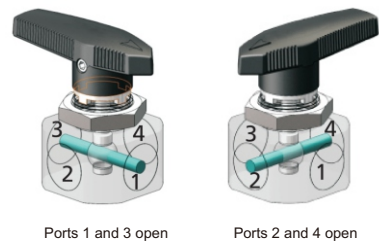
Note: For Temperature VS. Pressure curves and dimensions of 3-way valves, see Switching (3-way) Valves above. For Temperature VS. Pressure curves and dimensions of 4-way valves, see Crossover (4-way) Valves above.

4-way Valves



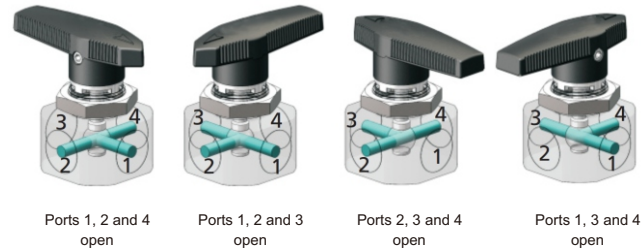
4H Flow Path

This type of valve can connect two opposite ports. Switch between 0° and 90° positions with 90° rotation handle.



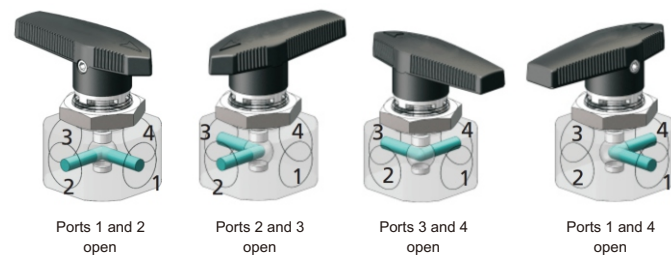
4HL Flow Path

This type of valve can connect three adjacent ports and shut off other ports. Switching can be done in 90° increments with 360° rotation handle.

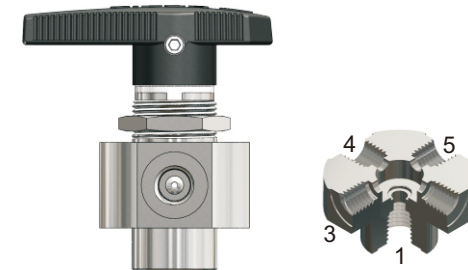


4V Flow Path

This type of valve can connect two adjacent ports and shut off other ports. Switching can be done in 90° increments with 360° rotation handle.

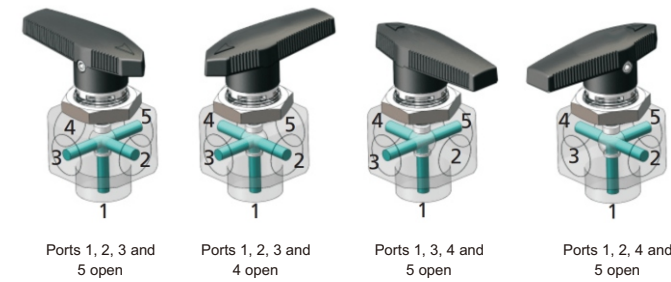


5-way Valves



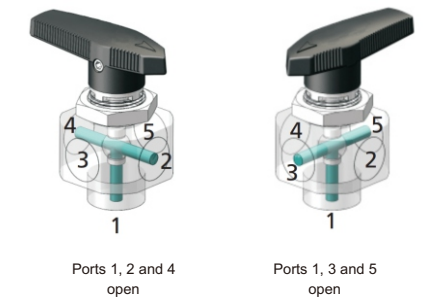
5HL Flow Path

This type of valve can connect three side ports to the bottom port, and shut off the fourth side port at the same time. Switching can be done in 90° increments with 360° rotation handle.



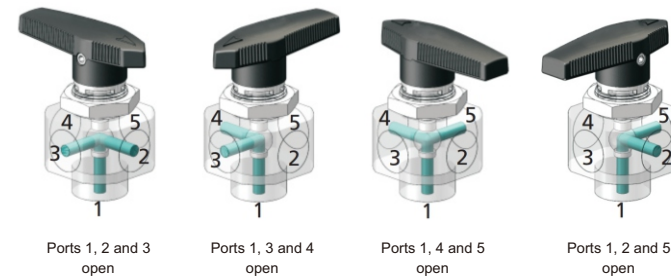
5H Flow Path

This type of valve can connect the bottom port to port 2 and port 4, or connect the bottom port to port 3 and port 5. Switch between 0° and 90° positions with 90° rotation handle.



5AV Flow Path

This type of valve can connect two adjacent ports to the bottom port, and shut off other two side ports at the same time. Switching can be done in 90° increments with 360° rotation handle.



Note: For Temperature vs. Pressure curve and dimensions of 5-way valves, see Switching (5-way) Valves above.

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

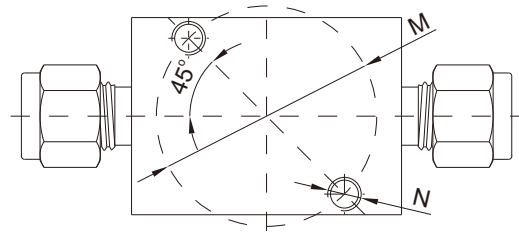
A XINVAL tube fitting or a tube stub welded to the vent port is available for stainless steel vented valves.

Bottom Screw Panel Mounting Options

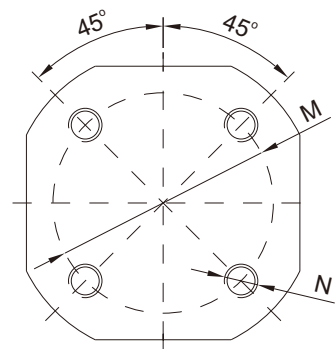
Mounting Dimensions

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

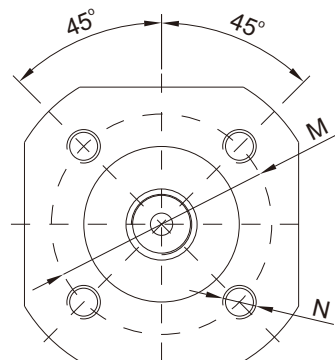
2-way



4-way



5-way



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

3-piece Ball Valves

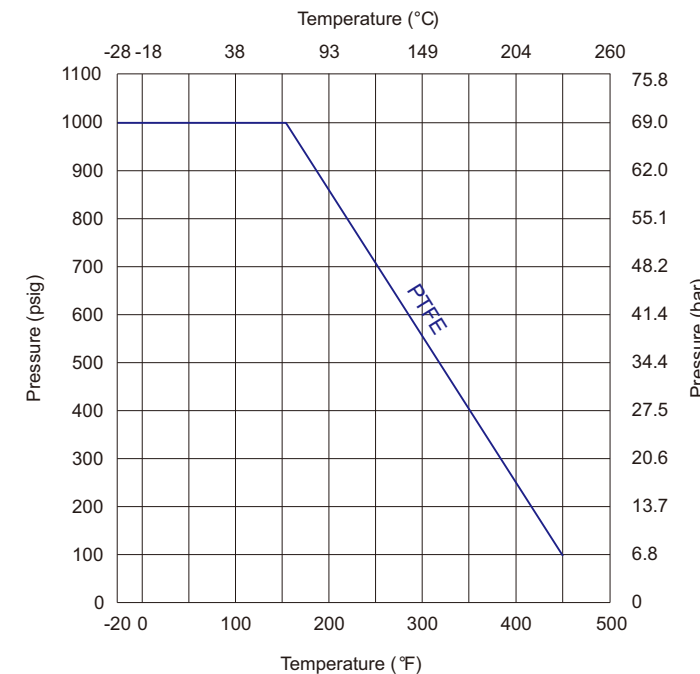
BV2 Series

Features

- Working pressure up to: 1000 psig (69.0 bar)
- Working temperature: -20°F to 450°F (-28°C to 232°C)
- End connections:
 - 1/8 to 1 thread
 - 1/8" to 1" pipe butt or socket weld
 - 1/4" to 1" and 6 mm to 25 mm tube butt or socket weld
 - 1/4" to 1" and 6 mm to 25 mm tube fitting
- Orifice sizes: 0.19" (4.8 mm) to 1" (25 mm)
- Blowout proof stem
- Bidirectional flow
- Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak

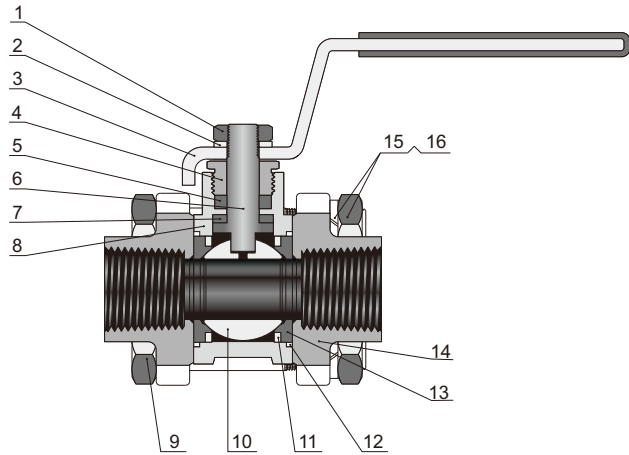


Pressure vs. Temperature



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

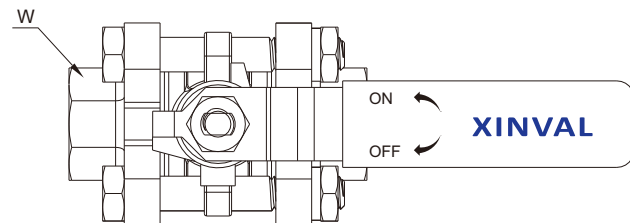
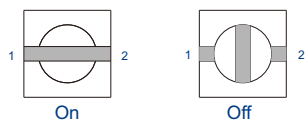
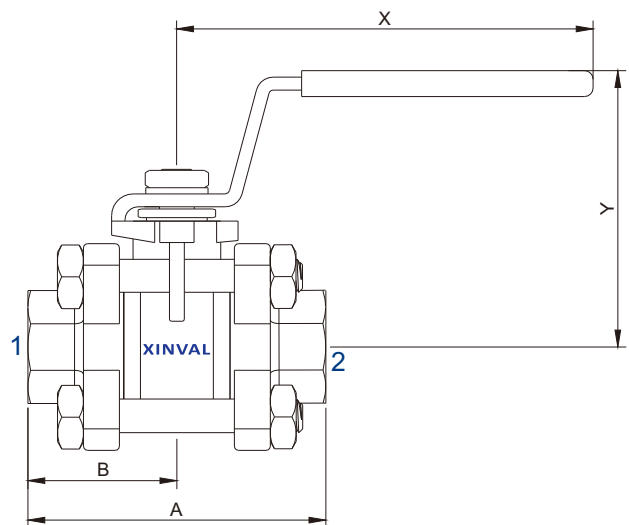
Standard Materials of Construction



Item	Component	Valve Body Material	
		CF8M/A351	CF8/A351
1	Stem Nut	SS	
2	Gasket	SS	
3	Handle	304 SS/A240 (with vinyl sleeve)	
4	Gland	316 SS/A479 or 304 SS/A479	
5	Stem Packing	PTFE/D1710	
6	Stem	316 SS/A479 or 304 SS/A479	
7	Stem Bearing	PTFE/D1710	
8	Body	CF8M/A351	CF8/A351
9	Body Bolt	SS	
10	Ball	316 SS/A479 or 304 SS/A479	
11	Support Ring	316 SS/A240 or 304 SS/A240	
12	Flange Seal	PTFE/D1710	
13	Seat	PTFE/D1710	
14	End Connection	CF8M/A351	CF8/A351
15	Gasket	SS	
16	Nut	SS	
Lubricants		Silicone-based and PTFE-based	

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

Dimensions

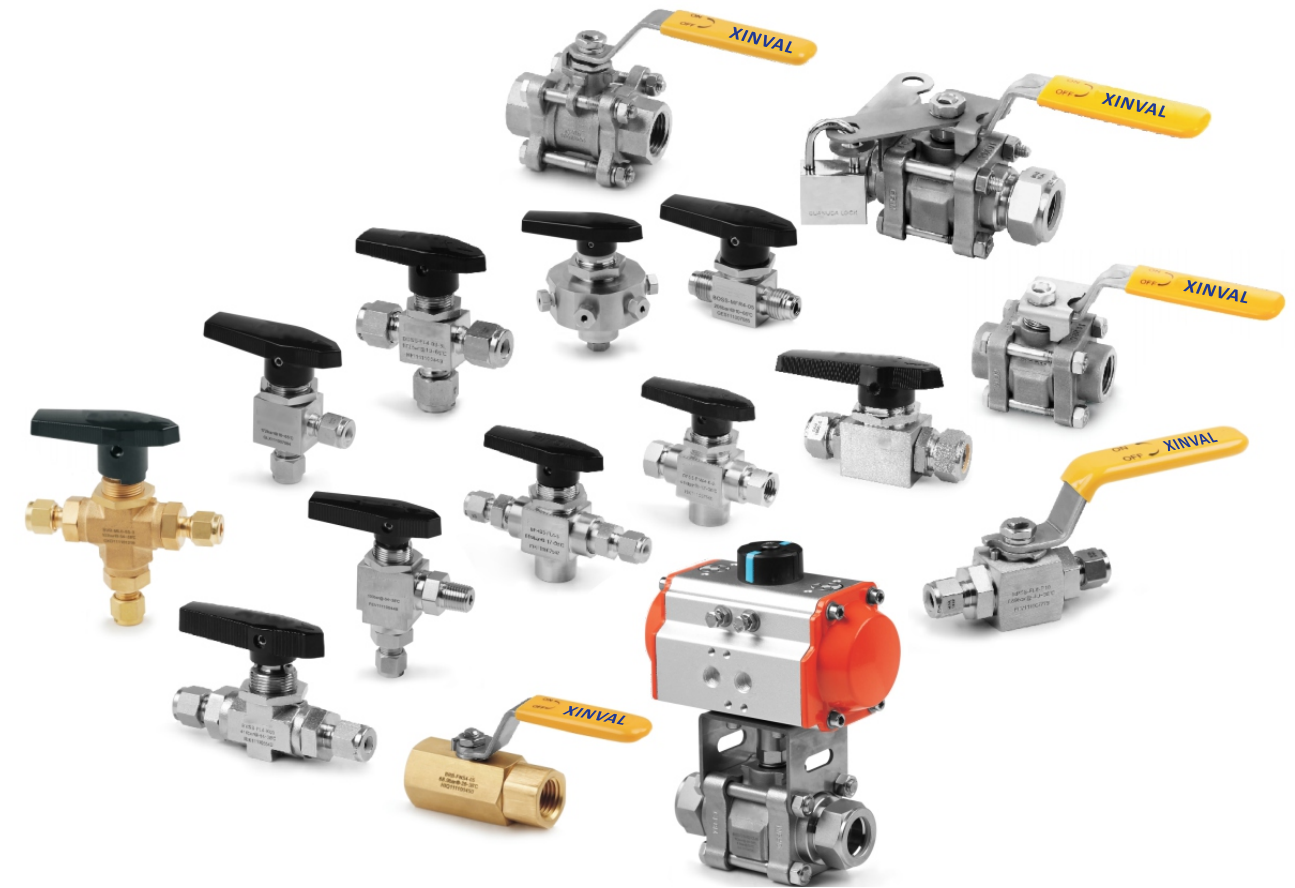


Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
316-BV22A-FN2-5	1/8 Female NPT	1/8 Female NPT	0.19 (4.8)	1.2	2.05 (52.1)	1.03 (26.0)	0.63 (16.0)	2.69 (68.3)	1.46 (37.0)
316-BV22A-RP2-5	1/8 Female BSPP	1/8 Female BSPP							
316-BV22A-PB4-5	1/4 PB, Schedule Number: 80	1/4 PB, Schedule Number: 80							
316-BV22A-F4-5	1/4" Tube Fitting	1/4" Tube Fitting							
316-BV22A-F6M-5	6 mm Tube Fitting	6 mm Tube Fitting	0.28 (7.1)	3.8	2.05 (52.1)	1.03 (26.0)	0.93 (23.5)	2.19 (55.7)	
316-BV22A-F8M-5	8 mm Tube Fitting	8 mm Tube Fitting							
316-BV22A-FN4-7	1/4 Female NPT	1/4 Female NPT							
316-BV22A-RP4-7	1/4 Female BSPP	1/4 Female BSPP							
316-BV22A-F6-7	3/8" Tube Fitting	3/8" Tube Fitting	0.42 (10.6)	7.5	4.04 (103.0)	2.02 (51.3)	0.93 (23.5)	2.19 (55.7)	
316-BV22A-F10M-7	10 mm Tube Fitting	10 mm Tube Fitting							
316-BV22A-F8-11	1/2" Tube Fitting	1/2" Tube Fitting							
316-BV22A-F12M-11	12 mm Tube Fitting	12 mm Tube Fitting							
316-BV22A-F14M-11	14 mm Tube Fitting	14 mm Tube Fitting	0.50 (12.7)	11.3	2.57 (65.2)	1.28 (32.6)	3.94 (100.0)	2.19 (55.7)	
316-BV22A-FN6-13	3/8 Female NPT	3/8 Female NPT							
316-BV22A-RP6-13	3/8 Female BSPP	3/8 Female BSPP							
316-BV22A-PS6-13	3/8 PS	3/8 PS							
316-BV22A-PB8-13	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80	0.55 (14.0)	13.0	2.96 (75.3)	1.48 (37.7)	1.06 (27.0)	2.26 (57.5)	
316-BV22A-F10-13	5/8" Tube Fitting	5/8" Tube Fitting							
316-BV22A-F16M-13	16 mm Tube Fitting	16 mm Tube Fitting							
316-BV22A-FN8-14	1/2 Female NPT	1/2 Female NPT							
316-BV22A-RP8-14	1/2 Female BSPP	1/2 Female BSPP	0.79 (20.0)	50.0	4.04 (103.0)	2.02 (51.3)	1.34 (34.0)	5.18 (131.5)	
316-BV22A-PS8-14	1/2 PS	1/2 PS							
316-BV22A-TB22M-14	22 mm TB, tube wall thickness: 3 mm	22 mm TB, tube wall thickness: 3 mm							
316-BV22A-TS12-14	3/4" TS	3/4" TS							
316-BV22A-TS18M-14	18 mm TS	18 mm TS	0.79 (20.0)	50.0	3.15 (80.0)	1.57 (40.0)	1.34 (34.0)	2.66 (67.5)	
316-BV22A-F12-14	3/4" Tube Fitting	3/4" Tube Fitting							
316-BV22A-F18M-14	18 mm Tube Fitting	18 mm Tube Fitting							
316-BV22A-FN12-20	3/4 Female NPT	3/4 Female NPT							
316-BV22A-RP12-20	3/4 Female BSPP	3/4 Female BSPP							

Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2			A	B	W	X	Y
316-BV22A-PB12-20	3/4 PB Schedule Number: 80	3/4 PB Schedule Number: 80	0.79 (20.0)	50.0	3.15 (80.0)	1.57 (40.0)	1.34 (34.0)	5.18 (131.5)	2.66 (67.5)
316-BV22A-PS12-20	3/4 PS	3/4 PS							
316-BV22A-TS16-20	1" TS	1" TS							
316-BV22A-TB25M-20	25 mm TB, tube wall thickness: 3.5 mm	25 mm TB, tube wall thickness: 3.5 mm							
316-BV22A-TS25M-20	25 mm TS	25 mm TS							
316-BV22A-F16-20	1" Tube Fitting	1" Tube Fitting							
316-BV22A-F22M-20	22 mm Tube Fitting	22 mm Tube Fitting							
316-BV22A-F25M-20	25 mm Tube Fitting	25 mm Tube Fitting	0.98 (25.0)	93.0	3.54 (90.0)	1.77 (45.0)	1.57 (40.0)	5.95 (151.2)	3.08 (78.2)
316-BV22A-FN16-25	1 Female NPT	1 Female NPT							
316-BV22A-RP16-25	1 Female BSPP	1 Female BSPP							
316-BV22A-PS16-25	1 PS	1 PS							
316-BV22A-PB16-25	1 PB Schedule Number: 80	1 PB Schedule Number: 80							

1. TS means fractional tube socket weld, TB means fractional tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL 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 XINVAL Group or our authorized distributors.

XINVAL

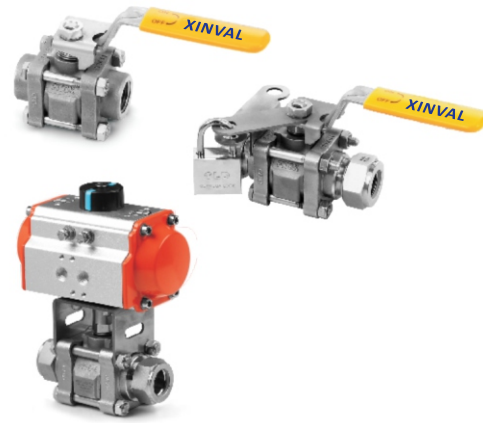


3-piece Ball Valves

BV3 Series

Features

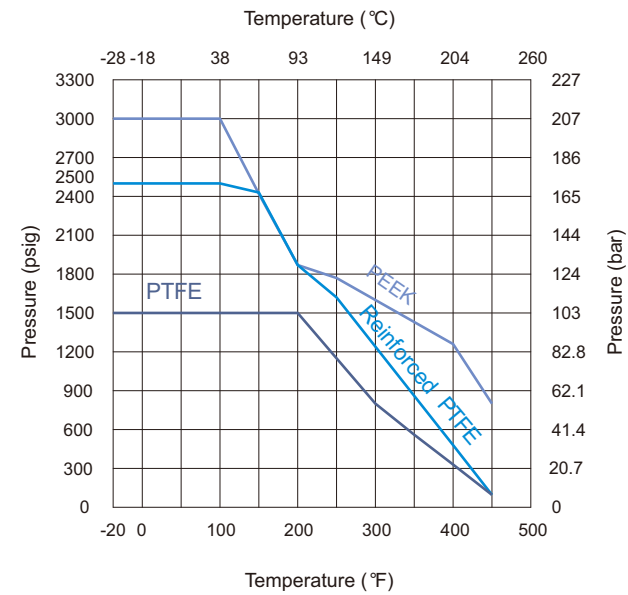
- Working pressure up to : 3000 psig (207 bar)
- Working temperature: -20°F to 450 °F (-28°C to 232°C)
- End connections:
 - 1/8 to 2 thread
 - 1/8" to 2" pipe butt or socket weld
 - 1/4" to 2" and 6 mm to 50 mm tube butt or socket weld
 - 1/4" to 2" and 6 mm to 38 mm tube fitting
- 3-piece precision cast body construction
- Orifize sizes: 0.19"(4.8 mm) to 1.5" (38.1 mm)
- Pneumatic and electric actuator available
- Bidirectional flow for 2-way valves
- Bottom port as inlet for 3-way valves
- Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak



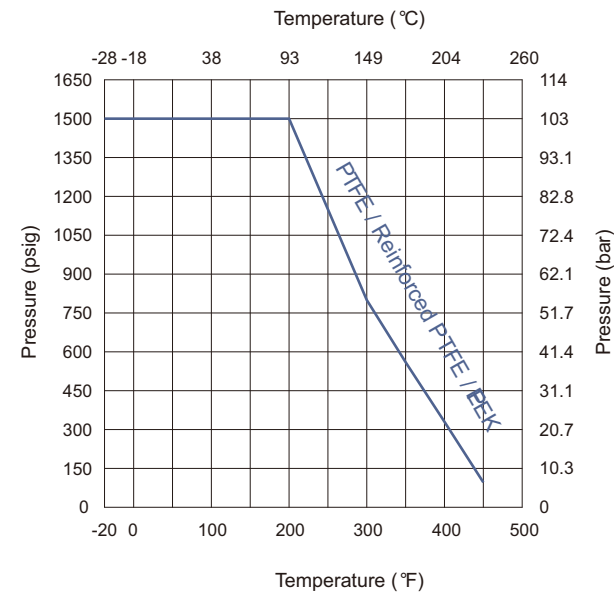
Pressure vs. Temperature

2-way Valves

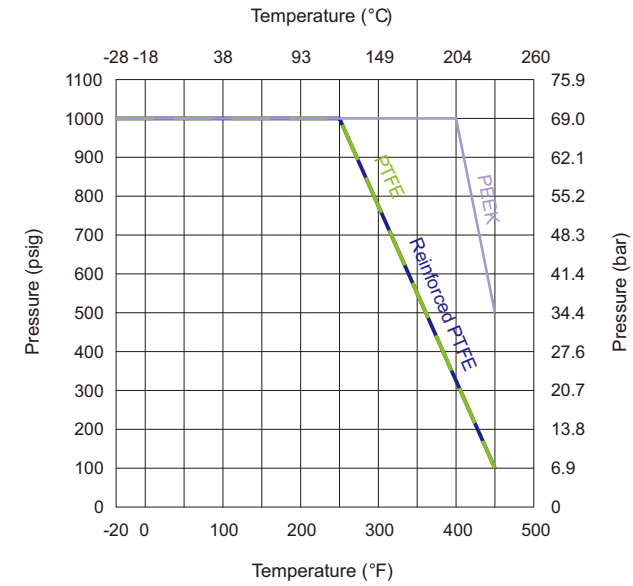
Orifice Size: 0.19", 0.28", 0.41", 0.52" & 0.88"



Orifice Size: 1.13", 1.25" & 1.50"

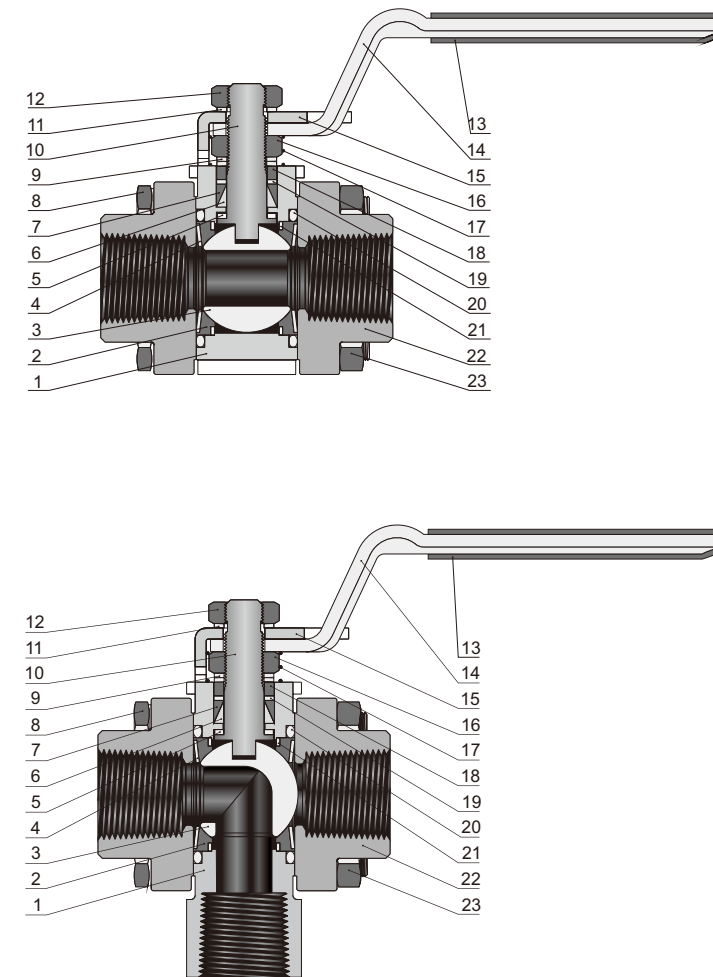


3-way Valves



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

Standard Materials of Construction

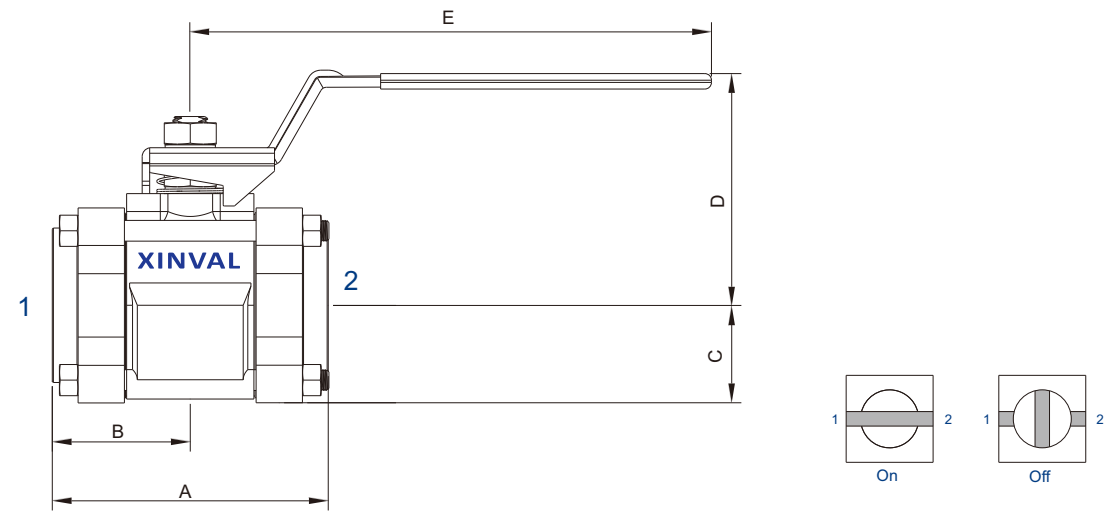


Item	Component	Material Grade/ASME Specification	
1	Body	CF8M/A351	CF8/A351
2	Seat	PTFE or Reinforced PTFE or PEEK	
3	Ball	316 SS/A479	
4	Coned-disc Spring	Strain-hardened 316 SS/A240	
5	Stem Bearing	PEEK	
6	Lower Packing	Reinforced PTFE	
7	Upper Packing	Reinforced PTFE	
8	Body Bolt	Gr. B8M/A193	
9	Stem 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/A479	
19	Packing Support	PEEK	
20	Flange Seal	PTFE/D1710	
21	Support Ring	316 SS/A240	
22	End Connection	CF8M/A351	CF8/A351
23	Body Nut	Gr.8M/A194	
	Lubricants	Silicone-based and PTFE-based	

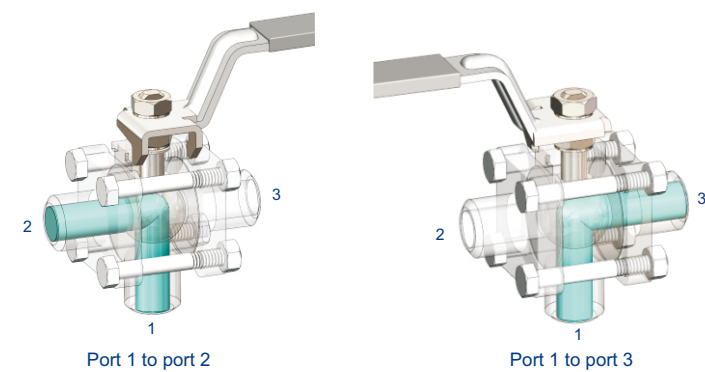
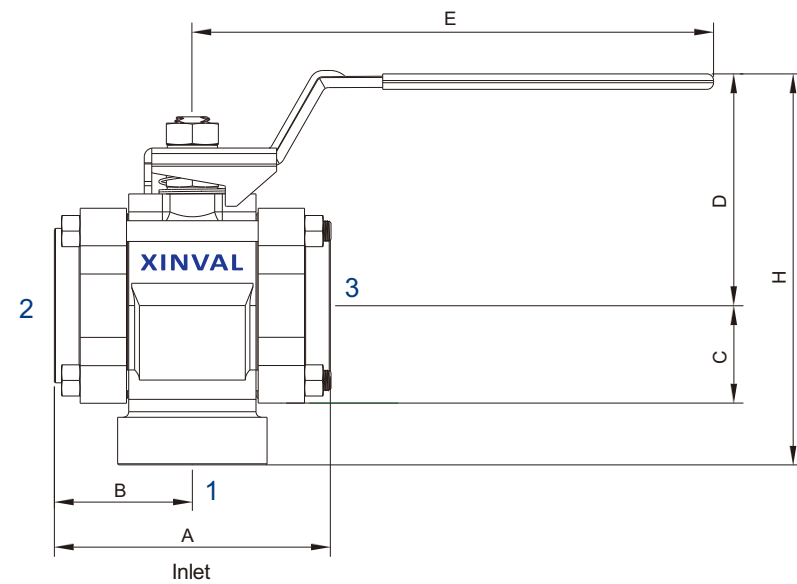
Note: Wetted components are listed in italics. For other materials, please contact XINVAL Group or our authorized distributors.

Dimensions

2-way Valves



3-way Valves

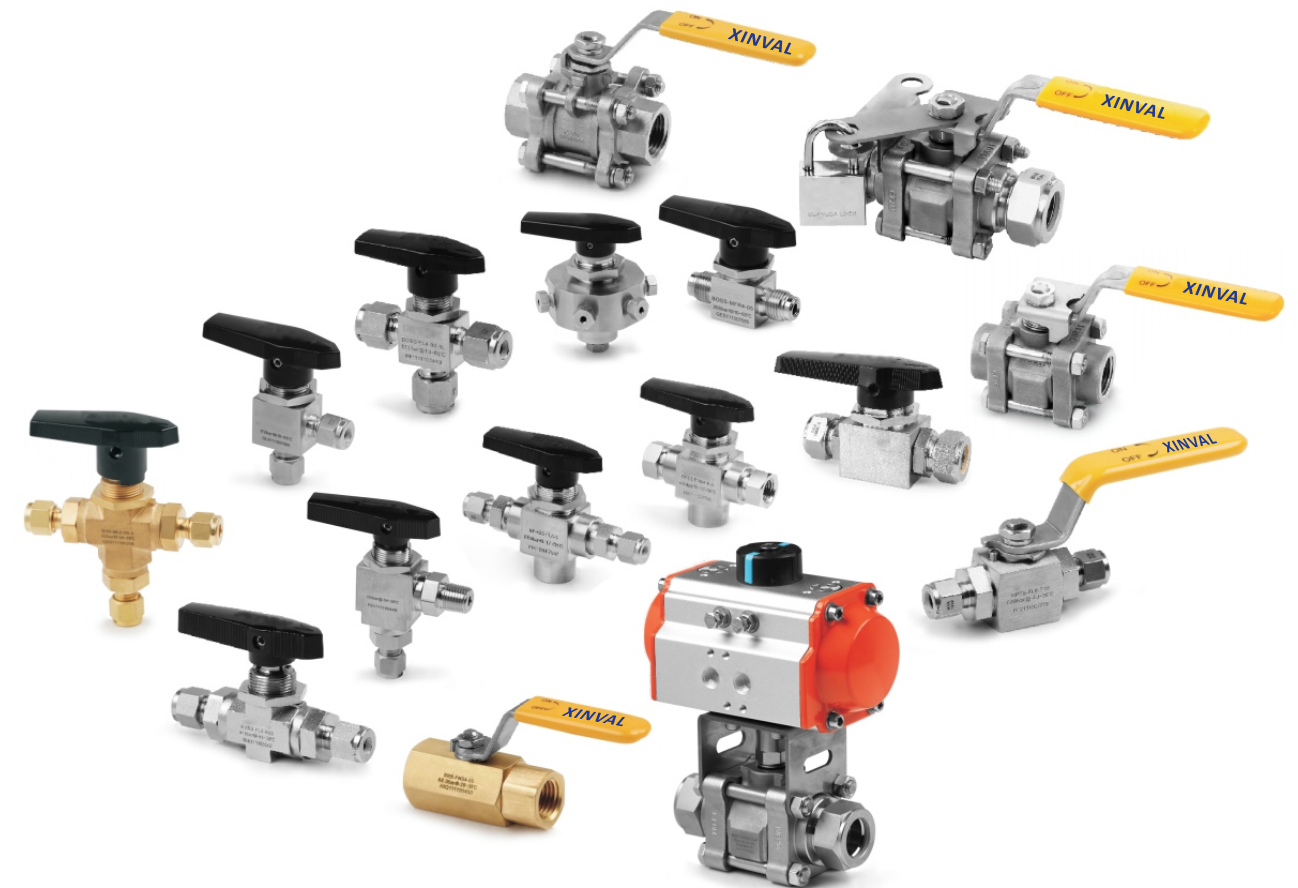


Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)													
2-way	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H								
316-BV32A-F4-5	316-BV33A-F4-5	1/4" Tube Fitting	1/4" Tube Fitting	0.19 (4.8)	1.2	3.17 (80.5)	1.59 (40.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)	3.35 (85.1)								
316-BV32A-F6M-5	316-BV33A-F6M-5	6 mm Tube Fitting	6 mm Tube Fitting																
316-BV32A-F8M-5	316-BV33A-F8M-5	8 mm Tube Fitting	8 mm Tube Fitting																
316-BV32A-TS4-5	---	1/4" TS	1/4" TS																
316-BV32A-MTS6-5	---	6 mm TS	6 mm TS																
316-BV32A-PB4-5	---	1/4 PB, Schedule Number: 80	1/4 PB, Schedule Number: 80																
316-BV32A-FN2-7	316-BV33A-FN2-7	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)								
316-BV32A-FRT2-7	316-BV33A-FRT2-7	1/8 Female BSPT	1/8 Female BSPT																
316-BV32A-RP2-7	316-BV33A-RP2-7	1/8 Female BSPP	1/8 Female BSPP																
316-BV32A-FN4-7	316-BV33A-FN4-7	1/4 Female NPT	1/4 Female NPT																
316-BV32A-FRT4-7	316-BV33A-FRT4-7	1/4 Female BSPT	1/4 Female BSPT																
316-BV32A-RP4-7	316-BV33A-RP4-7	1/4 Female BSPP	1/4 Female BSPP																
316-BV32A-F6-7	316-BV33A-F6-7	3/8" Tube Fitting	3/8" Tube Fitting		7.5	4.04 (103)	2.02 (51.3)					0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.37 (111)				
316-BV32A-F10M-7	316-BV33A-F10M-7	10 mm Tube Fitting	10 mm Tube Fitting																
316-BV32A-TS6-7	---	3/8" TS	3/8" TS																
316-BV32A-PB6-7	---	3/8 PB, Schedule Number: 80	3/8 PB, Schedule Number: 80																
316-BV32A-F8-10	316-BV33A-F8-10	1/2" Tube Fitting	1/2" Tube Fitting			0.41 (10.4)	4.04 (103)								2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.48 (114)
316-BV32A-F12M-10	316-BV33A-F12M-10	12 mm Tube Fitting	12 mm Tube Fitting																
316-BV32A-TS8-10	---	1/2" TS	1/2" TS																
316-BV32A-FN6-13	316-BV33A-FN6-13	3/8 Female NPT	3/8 Female NPT	0.52 (13.1)	12	2.70 (68.6)	1.35 (34.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.19 (106)								
316-BV32A-FRT6-13	316-BV33A-FRT6-13	3/8 Female BSPT	3/8 Female BSPT																
316-BV32A-RP6-13	316-BV33A-RP6-13	3/8 Female BSPP	3/8 Female BSPP																
316-BV32A-FN8-13	316-BV33A-FN8-13	1/2 Female NPT	1/2 Female NPT																
316-BV32A-FRT8-13	316-BV33A-FRT8-13	1/2 Female BSPT	1/2 Female BSPT																
316-BV32A-RP8-13	316-BV33A-RP8-13	1/2 Female BSPP	1/2 Female BSPP																
316-BV32A-F12-13	316-BV33A-F12-13	3/4" Tube Fitting	3/4" Tube Fitting		13.6	4.04 (103)	2.02 (51.3)					0.89 (22.6)	2.35 (59.7)	4.50 (114)	4.48 (114)				
316-BV32A-F16M-13	316-BV33A-F16M-13	16 mm Tube Fitting	16 mm Tube Fitting																
316-BV32A-F18M-13	316-BV33A-F18M-13	18 mm Tube Fitting	18 mm Tube Fitting																
316-BV32A-TS12-13	---	3/4" TS	3/4" TS																
316-BV32A-PS8-13	---	1/2 PS	1/2 PS																
316-BV32A-PB8-13	---	1/2 PB, Schedule Number: 80	1/2 PB, Schedule Number: 80																
				6.8	2.69 (68.3)	1.34 (34)													

Basic Ordering Number		Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in. (mm)					
2-way	3-way	Connection 1	Connection 2/3			A	B	C	D	E	H
316-BV32A-PB12-13	—	3/4 PB, Schedule Number: 80	3/4 PB, Schedule Number: 80	0.52 (13.1)	13.6	2.69 (68.3)	1.34 (34)	0.89 (22.6)	2.35 (59.7)	4.50 (114)	—
316-BV32A-FN12-22	316-BV33A-FN12-22	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)
316-BV32A-FRT12-22	316-BV33A-FRT12-22	3/4 Female BSPT	3/4 Female BSPT								
316-BV32A-RP12-22	316-BV33A-RP12-22	3/4 Female BSPP	3/4 Female BSPP								
316-BV32A-FN16-22	316-BV33A-FN16-22	1 Female NPT	1 Female NPT								
316-BV32A-FRT16-22	316-BV33A-FRT16-22	1 Female BSPT	1 Female BSPT								
316-BV32A-RP16-22	316-BV33A-RP16-22	1 Female BSPP	1 Female BSPP								
316-BV32A-F16-22	316-BV33A-F16-22	1" Tube Fitting	1" Tube Fitting								
316-BV32A-F20-22	316-BV33A-F20-22	1 1/4" Tube Fitting	1 1/4" Tube Fitting								
316-BV32A-F25M-22	316-BV33A-F25M-22	25 mm Tube Fitting	25 mm Tube Fitting								
316-BV32A-ML28-22	316-BV33A-ML28-22	28 mm Tube Fitting	28 mm Tube Fitting								
316-BV32A-TS16-22	—	1" TS	1" TS								
316-BV32A-TS25M-22	—	25 mm TS	25 mm TS								
316-BV32A-PS12-22	—	3/4 PS	3/4 PS								
316-BV32A-PS16-22	—	1 PS	1 PS								
316-BV32A-PB16-22	—	1 PB Schedule Number: 80	1 PB Schedule Number: 80								
316-BV32A-TS20-29	—	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)
316-BV32A-PB20-32	—	1 1/4 PB, Schedule Number: 80	1 1/4 PB, Schedule Number: 80	4.57 (116)			2.28 (57.9)				
316-BV32A-FN20-32	316-BV33A-FN202	1 1/4 Female NPT	1 1/4 Female NPT	1.25 (31.8)	90	4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)	6.86 (174)
316-BV32A-FN24-32	316-BV33A-FN242	1 1/2 Female NPT	1 1/2 Female NPT		100						
316-BV32A-TS24-32	—	1 1/2" TS	1 1/2" TS		90	4.51 (115)	2.25 (57.2)				
316-BV32A-PS20-32	—	1 1/4 PS	1 1/4 PS			100	4.57 (116)				
316-BV32A-PS24-32	—	1 1/2 PS	1 1/2 PS								
316-BV32A-PB24-32	—	1 1/2 PB, Schedule Number: 80	1 1/2 PB, Schedule Number: 80								
316-BV32A-FN32-38	316-BV33A-FN32-38	2 Female NPT	2 Female NPT	1.50 (38.1)	130	4.94 (125)	2.47 (62.5)	1.74 (44.2)	4.16 (106)	9.14 (232)	7.21 (183)
316-BV32A-FRT32-38	316-BV33A-FRT32-38	2 Female BSPT	2 Female BSPT								
316-BV32A-TS32-38	—	2" TS	2" TS								
316-BV32A-PS32-38	—	2 PS	2 PS								
316-BV32A-PB32-38	—	2 PB, Schedule Number: 80	2 PB, Schedule Number: 80								

1. TS means fractional tube socket weld, TB means tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
 2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL 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 XINVAL Group or our authorized distributors.

XINVAL



Bar Stock Ball Valves

BV4 Series

Features

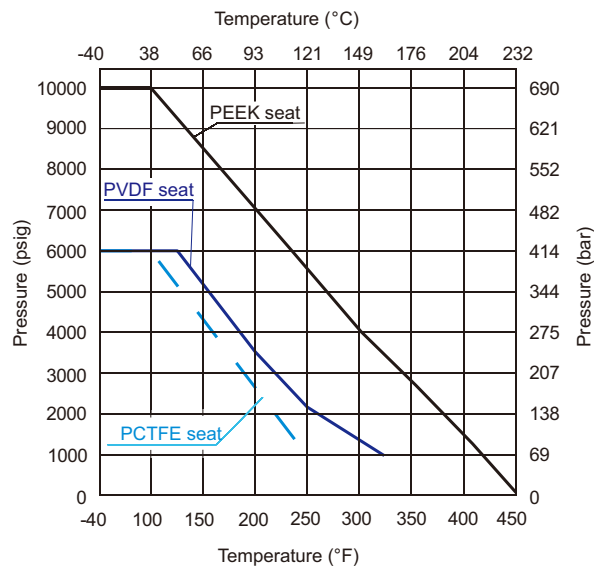
- Working pressure up to: 10000 psig (690 bar)
- Working temperature: -40°F to 450°F (-40°C to 232°C)
- Bidirectional flow for 2-way valves
- Seat wear compensation by free floating ball
- Variety of end connections
- Blowout proof stem with self-sealing function
- Handle color options available
- Optional 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 BV4 series: only port 1 as inlet, port 2 and port 3 as outlet



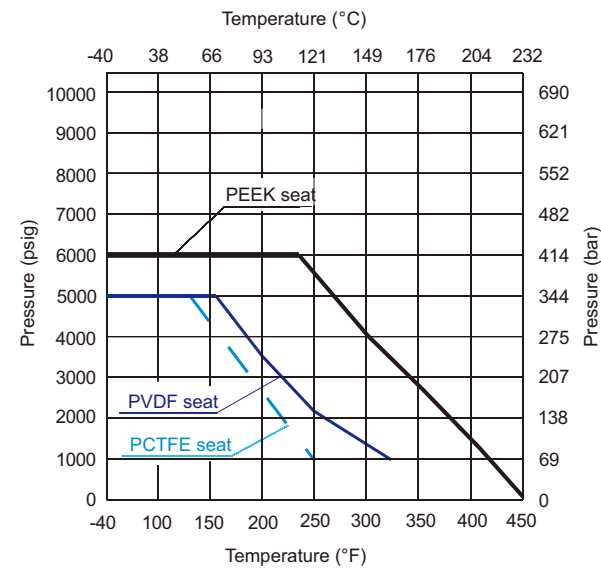
Pressure vs. Temperature

2-way Valves

Orifice code: 10

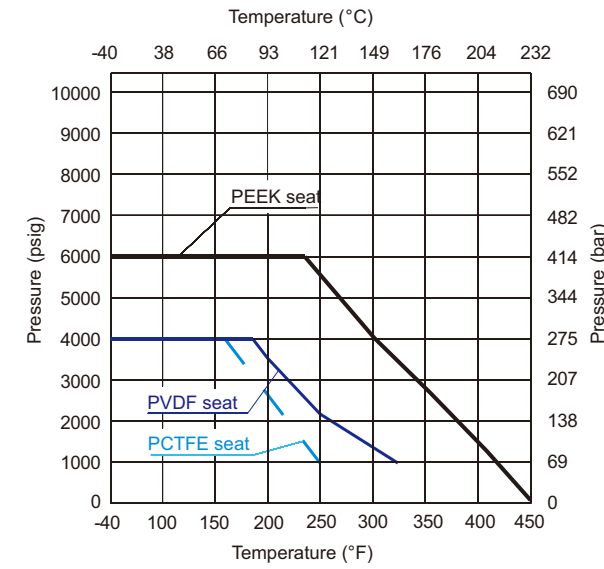


Orifice code: 13 and 19

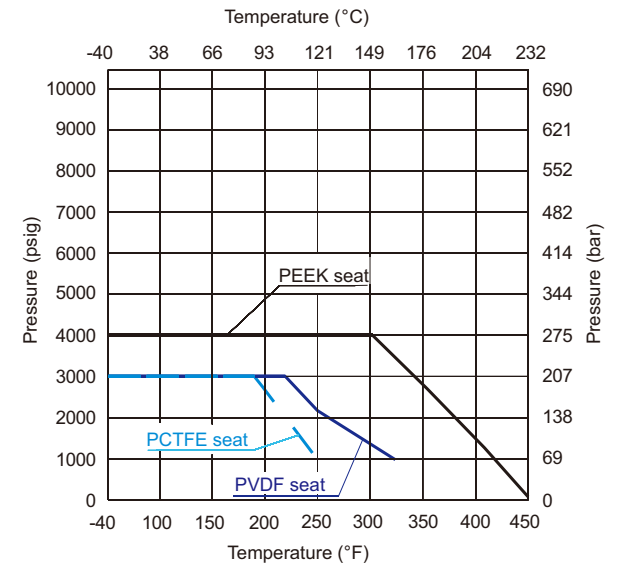


3-way Valves

Orifice code: 10



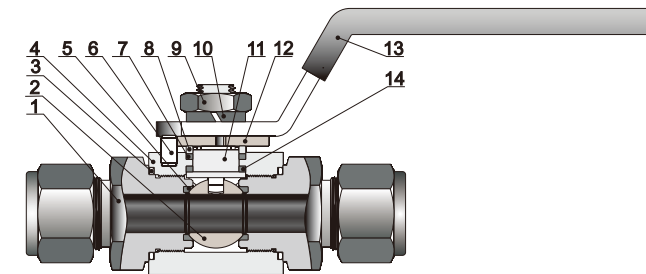
Orifice code: 13 and 19



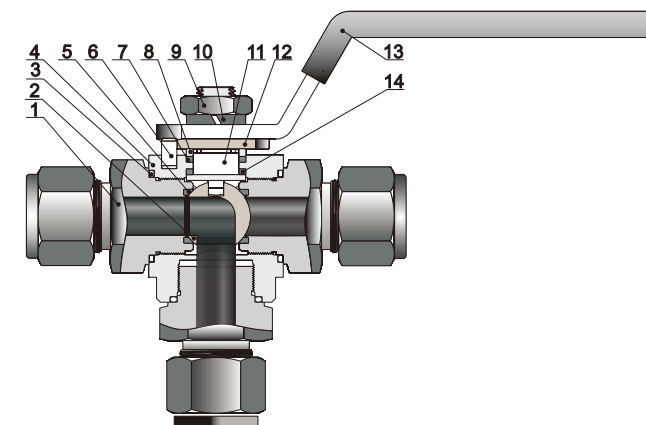
Note: 1. Graphs are with 316SS body. For information of body in other materials, please contact XINVAL Group
 2. The working pressure of valves is restricted by materials of the valve body and seat, as well as end connections. When choosing a valve for your applications, please refer to the above Temperature 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



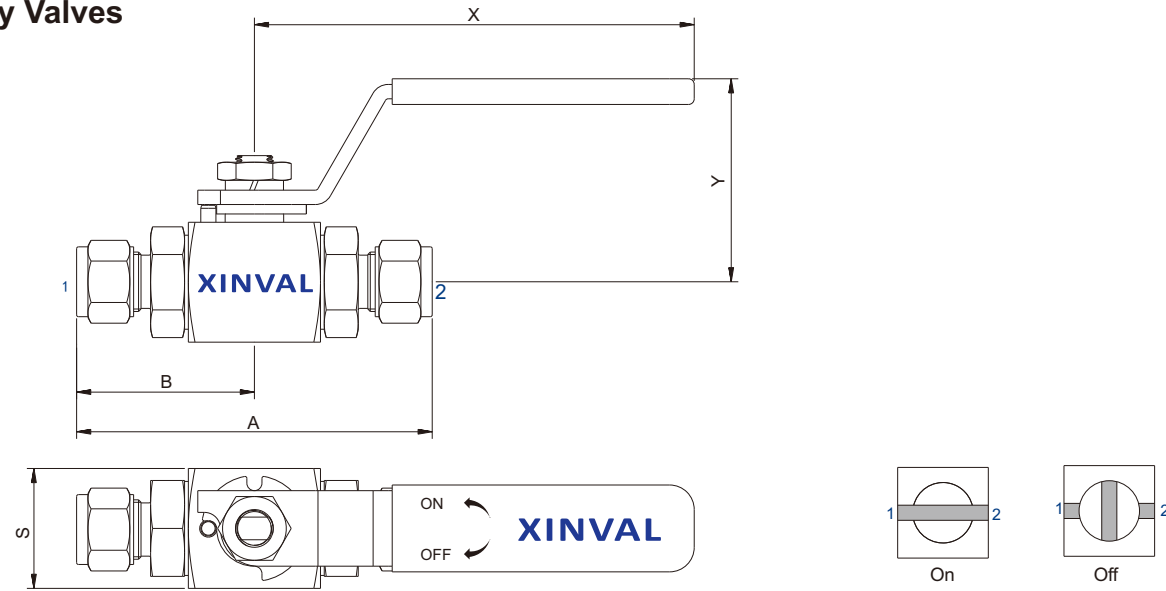
Item	Component	Body Material
		316 SS
1	End Connection	316 SS/A479
2	Ball	316 SSA 479
3	O-ring	Fluorocarbon FKM
4	Body	316 SSA 479
5	Seat	PVDF or PCTFE or PEEK
6	Stop Pin	SS
7	Stem Packing	PTFE/D1710
8	Stem Washer	316 SSA479
9	Stem Nut ^①	SS
10	Spring Washer	SS
11	Stem	316 SSA479
12	Stop Block	304 SSA240
13	Handle	SS with vinyl cover
14	Lower Packing ^②	PEEK

Note: Wetted components are listed in italics.
 For other materials, please contact XINVAL 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.

Dimensions

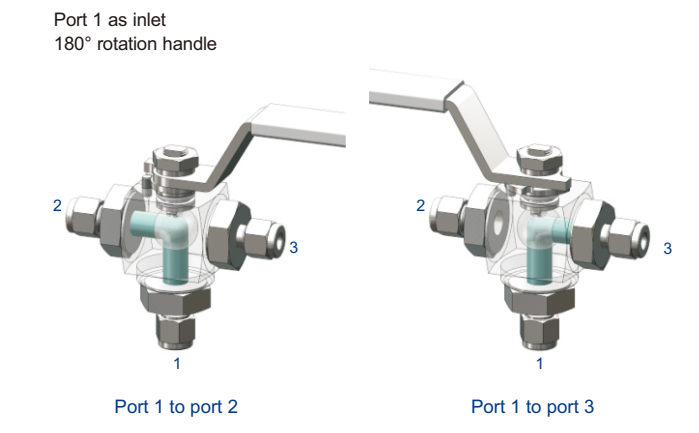
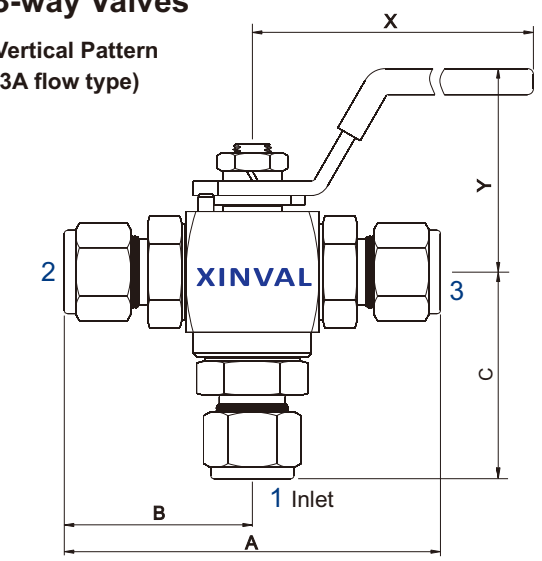
2-way Valves



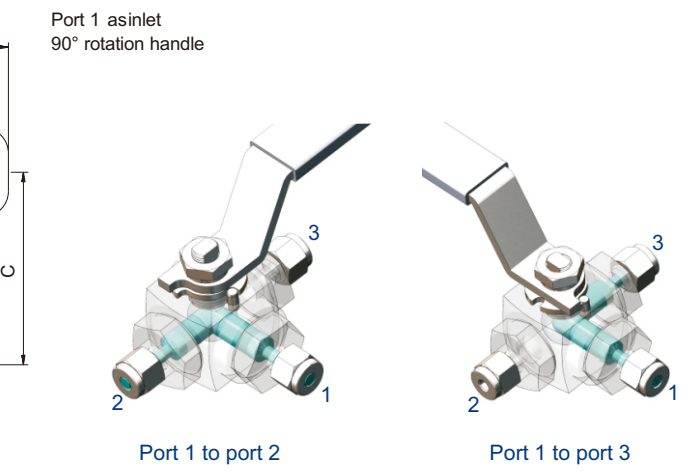
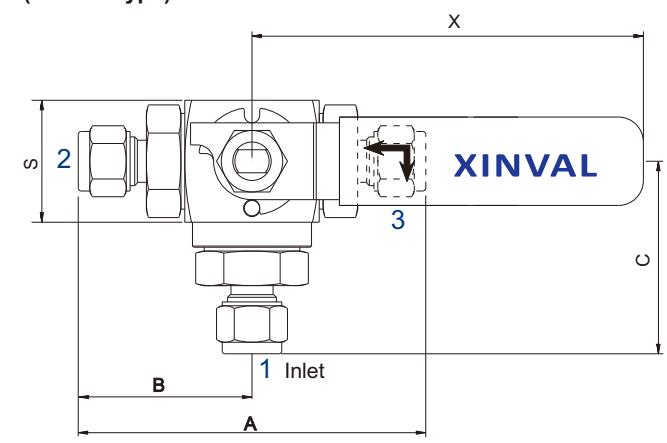
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @100°F (38 °C), psig (bar)	Orifice in. (mm)	Cv	Dimensions, in. (mm)				
					A	B	X	Y	S
316-BV42A-F6M-5	6 mm Tube Fitting	10000 (690)	0.19(4.8)	1.2	3.54 (90.0)	1.77 (45.0)	4.57 (116.0)	2.10 (53.4)	1.30 (32.0)
316-BV42A-F8M-6	8 mm Tube Fitting	7500 (517)	0.25(6.4)	2.3	3.60 (91.6)	1.80 (45.8)			
316-BV42A-F10M-7	10 mm Tube Fitting	8400 (579)	0.28(7.1)	3.7	3.70 (94.0)	1.85 (47.0)			
316-BV42A-F12M-10	12 mm Tube Fitting	6800 (469)	0.39 (10.0)	7.5	3.94 (100.0)	1.97 (50.0)			
316-BV42A-F14M-10	14 mm Tube Fitting	6200 (427)							
316-BV42A-F4-5	1/4" Tube Fitting	10000 (690)	0.19(4.8)	1.2	3.56 (90.4)	1.78 (45.2)			
316-BV42A-F6-7	3/8" Tube Fitting	6500 (448)	0.28(7.1)	3.7	3.72 (94.6)	1.86 (47.3)			
316-BV42A-F8-10	1/2" Tube Fitting	6700 (462)	0.39 (10.0)	7.5	3.92 (99.6)	1.96 (49.8)			
316-BV42A-FN4-10	1/4 Female NPT	10000 (690)			3.03 (77.0)	1.52 (38.5)			
316-BV42A-FN6-10	3/8 Female NPT	10000 (690)			2.80 (71.0)	1.40 (35.5)			
316-BV42A-FN8-10	1/2 Female NPT	10000 (690)			3.27 (83.0)	1.63 (41.5)			
316-BV42A-N4-7	1/4 Male NPT	10000 (690)	0.28(7.1)	3.7	3.36 (85.4)	1.68 (42.7)			
316-BV42A-N6-10	3/8 Male NPT	10000 (690)	0.39 (10.0)	7.5	3.75 (95.2)	1.88 (47.6)			
316-BV42A-N8-10	1/2 Male NPT	10000 (690)			4.42 (112.2)	2.21 (56.1)			
316-BV42A-F16M-13	16 mm Tube Fitting	5800 (400)	0.50 (12.7)	10.0	4.12 (104.6)	2.06 (52.3)			
316-BV42A-F18M-13	18 mm Tube Fitting	5400 (372)			4.43 (112.6)	2.22 (56.3)			
316-BV42A-F20M-13	20 mm Tube Fitting	5500 (379)			4.29 (109.0)	2.15 (54.5)			
316-BV42A-F22M-13	22 mm Tube Fitting	4900 (338)			4.36 (110.6)	2.18 (55.3)			
316-BV42A-F10-13	5/8" Tube Fitting	6000 (414)			3.54 (90.0)	1.77 (45.0)			
316-BV42A-F12-13	3/4" Tube Fitting	5800 (400)			4.09 (104.0)	2.05 (52.0)			
316-BV42A-FN8-13	1/2 Female NPT	6000 (414)			4.14 (105.2)	2.07 (52.6)			
316-BV42A-FN12-13	3/4 Female NPT	6000 (414)			0.71 (18.0)	30.0	4.87 (123.8)	2.43 (61.9)	
316-BV42A-F20M-18	20 mm Tube Fitting	5500 (379)					5.11 (129.8)	2.66 (64.9)	
316-BV42A-F22M-18	22 mm Tube Fitting	4900 (338)					4.59 (116.6)	2.29 (58.3)	
316-BV42A-F25M-18	25 mm Tube Fitting	4600 (317)	5.11 (129.8)	2.66 (64.9)					
316-BV42A-F12-18	3/4" Tube Fitting	5800 (400)	0.39 (10.0)	7.5	6.46 (164.0)	2.72 (69.0)			
316-BV42A-F16-18	1" Tube Fitting	4700 (324)			5.11 (129.8)	2.66 (64.9)			
316-BV42A-FN12-18	3/4 Female NPT	6000 (414)	0.28 (7.1)	3.7	3.81 (96.8)	1.91 (48.4)			
316-BV42A-FN16-18	1 Female NPT	6000 (414)			4.26 (108.2)	2.13 (54.1)			
316-BV42A-N16-18	1 Male NPT	6000 (414)			4.91 (124.8)	2.45 (62.4)			

3-way Valves

Vertical Pattern (3A flow type)



Horizontal Pattern (3B flow type)



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	
316-BV43A-F6M-5	6 mm Tube Fitting	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)	
316-BV43A-F8M-6	8 mm Tube Fitting	7500 (517)	0.25 (6.4)	3.60 (91.6)	1.80 (45.8)	2.02 (51.3)				
316-BV43A-F10M-7	10 mm Tube Fitting	8400 (579)	0.28 (7.1)	3.70 (94.0)	1.85 (47.0)	2.07 (52.5)				
316-BV43A-F12M-10	12 mm Tube Fitting	6800 (469)	0.39 (10.0)	3.94 (100.0)	1.97 (50.0)	2.18 (55.5)				
316-BV43A-F14M-10	14 mm Tube Fitting	6200 (427)								
316-BV43A-F4-5	1/4" Tube Fitting	10000 (690)	0.19 (4.8)	3.56 (90.4)	1.78 (45.2)	1.95 (49.5)				
316-BV43A-F6-7	3/8" Tube Fitting	6500 (448)	0.28 (7.1)	3.72 (94.6)	1.86 (47.3)	2.16 (54.8)				
316-BV43A-F8-10	1/2" Tube Fitting	6700 (462)	0.39 (10.0)	7.5	3.92 (99.6)	1.96 (49.8)				2.13 (54.0)
316-BV43A-FN4-10	1/4 Female NPT	10000 (690)			3.03 (77.0)	1.52 (38.5)				1.44 (36.5)
316-BV43A-FN6-10	3/8 Female NPT	10000 (690)			2.80 (71.0)	1.40 (35.5)				1.57 (40.0)
316-BV43A-FN8-10	1/2 Female NPT	10000 (690)			3.27 (83.0)	1.63 (41.5)	1.83 (46.4)			
316-BV43A-N4-7	1/4 Male NPT	10000 (690)	0.28 (7.1)	3.36 (85.4)	1.68 (42.7)	1.90 (48.2)				
316-BV43A-N6-10	3/8 Male NPT	10000 (690)	0.39 (10.0)	7.5	3.75 (95.2)	1.88 (47.6)	2.09 (53.1)			
316-BV43A-N8-10	1/2 Male NPT	10000 (690)			4.42 (112.2)	2.21 (56.1)				

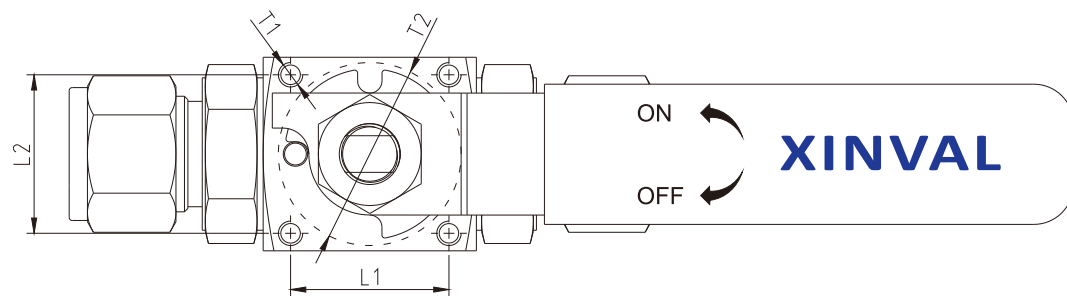
Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @ 100°F (38 °C), psig (bar)	Orifice in. (mm)	Dimensions, in. (mm)					
				A	B	C	X	Y	S
316-BV43A-F16M-13	16 mm Tube Fitting	5800 (400)	0.50 (12.7)	4.42 (112.2)	2.21 (56.1)	2.60 (66.1)	5.59 (142.0)	2.54 (64.4)	1.50 (38.0)
316-BV43A-F18M-13	18 mm Tube Fitting	5400 (372)		4.12 (104.6)	2.06 (52.3)	2.45 (62.3)			
316-BV43A-F20M-13	20 mm Tube Fitting	5500 (379)		4.43 (112.6)	2.22 (56.3)	2.61 (66.3)			
316-BV43A-F22M-13	22 mm Tube Fitting	4900 (338)		4.29 (109.0)	2.15 (55.6)	2.54 (64.5)			
316-BV43A-F10-13	5/8" Tube Fitting	6000 (414)		4.36 (110.6)	2.18 (55.3)	2.57 (65.3)			
316-BV43A-F12-13	3/4" Tube Fitting	5800 (400)							
316-BV43A-FN8-13	1/2 Female NPT	6000 (414)		3.54 (90.0)	1.77 (45.0)	2.02 (51.2)			
316-BV43A-FN12-13	3/4 Female NPT	6000 (414)		4.09 (104.0)	2.05 (52.0)	2.44 (62.0)			
316-BV43A-N12-13	3/4 Male NPT	6000 (414)		4.14 (105.2)	2.07 (52.6)	2.46 (62.6)			
316-BV43A-F20M-18	20 mm Tube Fitting	5500 (379)		0.71 (18.0)	4.87 (123.8)	2.43 (61.9)			
316-BV43A-F22M-18	22 mm Tube Fitting	4900 (338)	5.11 (129.8)		2.66 (64.9)	3.00 (76.2)			
316-BV43A-F25M-18	25 mm Tube Fitting	4600 (317)	4.86 (123.4)		2.43 (61.7)	3.02 (76.7)			
316-BV43A-F12-18	3/4" Tube Fitting	5800 (400)	5.11 (129.8)		2.66 (64.9)	2.85 (72.4)			
316-BV43A-F16-18	1" Tube Fitting	4700 (324)	3.82 (97.0)		1.91 (48.5)	2.22 (56.5)			
316-BV43A-FN12-18	3/4 Female NPT	6000 (414)	4.26 (108.2)		2.13 (54.1)	2.72 (69.1)			
316-BV43A-FN16-18	1 Female NPT	6000 (414)	4.54 (115.2)		2.27 (57.6)	2.72 (69.1)			
316-BV43A-N12-18	3/4 Male NPT	6000 (414)	4.91 (124.8)		2.45 (62.4)	2.90 (73.9)			
316-BV43A-N16-18	1 Male NPT	6000 (414)							

1. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL Group or our authorized distributors.
 2. 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 XINVAL Group or our authorized distributors.

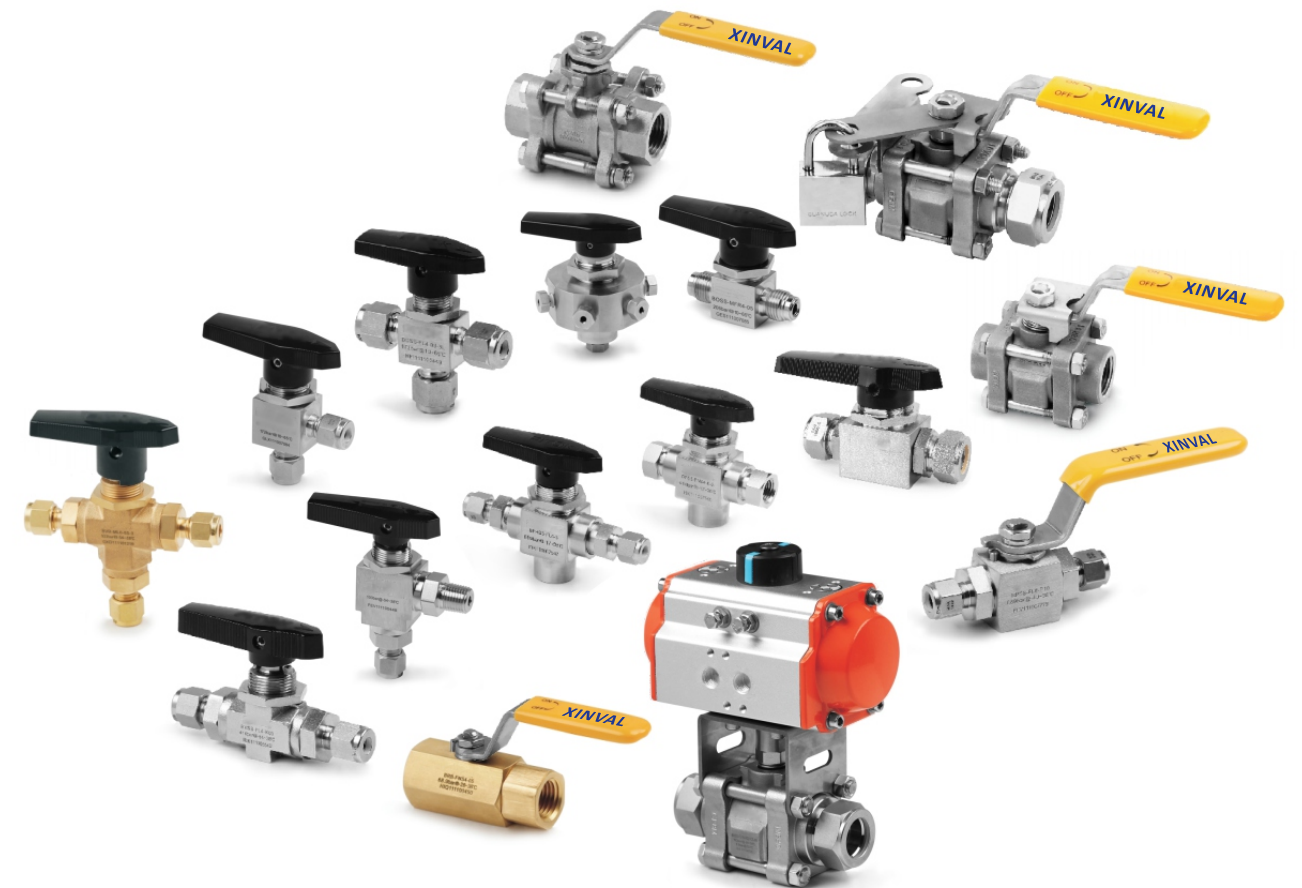
Panel Mounting Options

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)



XINVAL



Hex Bar Stock Ball Valves

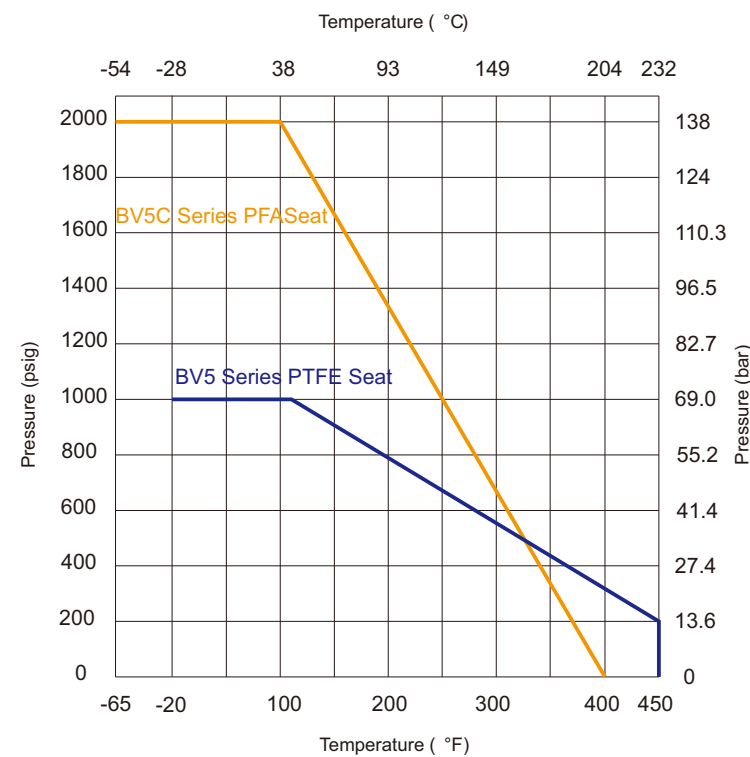
BV5 and BV5C Series

Features

- Working pressure up to:
BV5 Series: 1000 psig (69.0 bar)
BV5C Series: 2000 psig (138 bar)
- Working temperature:
BV5 Series: 20°F to 450°F (-28°C to 232°C)
BV5C Series: -65°F to 400°F (-54°C to 204°C)
- Compact and economical design
- Free floating ball design for seat wear compensation
- Bi-directional flow
- Low operating torque
- A variety of end connections available
- Blowout proof stem
- Handle color options available
- Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak

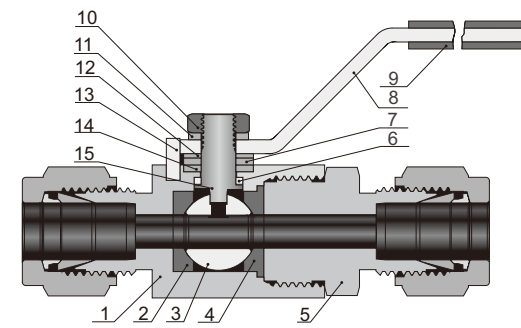


Pressure vs. Temperature

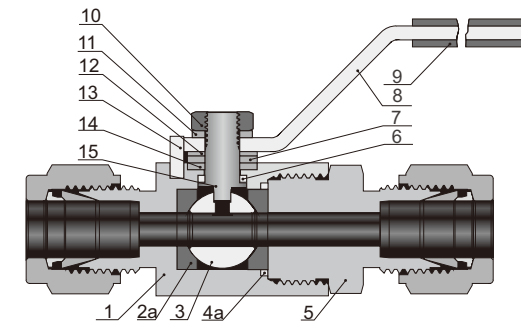


Standard Materials of Construction

BV5 Series



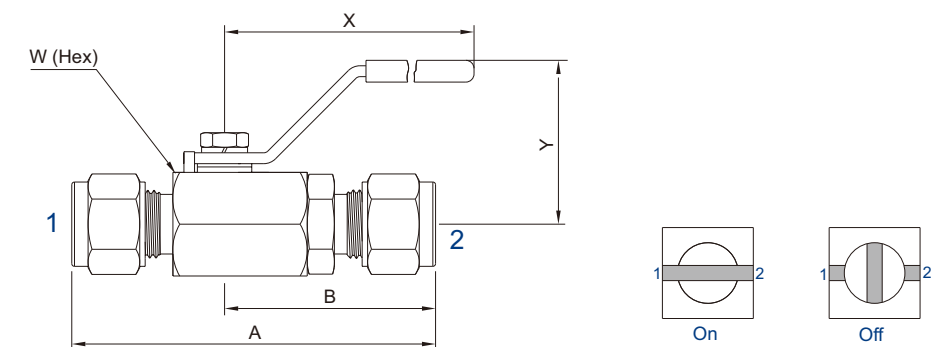
BV5C Series



Item	Component	BR Series		BRC Series
		Valve Body Material		
		316 SS	Brass	316 SS
Material Grade/ASTM Specification				
1	Body	316 SS/A479	Brass C36000/B16	316 SS/A479
2	Front Seat	PTFE/D1710		
2a	Seat			PFA/D3307
3	Ball	316 SS/A479		
4	Back Seat	PTFE/D1710		
4a	Sealing Gasket			316L SS/A269
5	End Connection	316 SS/A479	Brass C36000 /B16	316 SS/A479
6	Lower Packing	PTFE/D1710		
7	Washer	316 SS/A479		
8	Handle	304 SS/A240 or Aluminium		
9	Sleeve	Vinyl		
10	Stem Nut	SS		
11	Gasket	SS		
12	Coned-disc Spring	S17700/A693		
13	Stop Pin	SS		
14	Upper Packing	PTFE/D1710		
15	Stem	316 SS/A479		

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

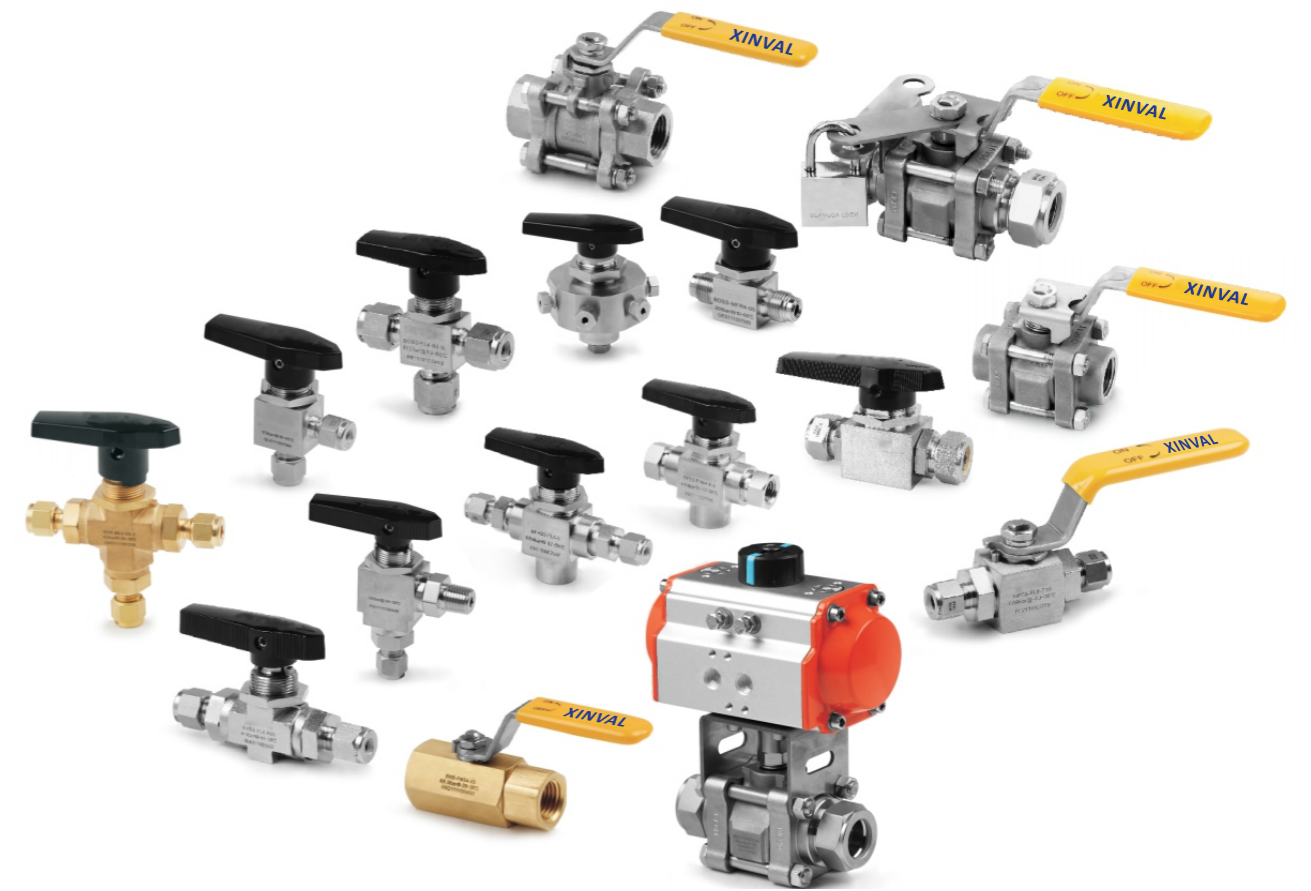
Dimensions



XINVAL

Basic Ordering Number		Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)				
					A	B	W	X	Y
316-BV52A-F6M-5	316-BV5C2A-F6M-5	6 mm Tube Fitting	0.19 (4.8)	1.25	2.57 (65.2)	1.50 (38.1)	3/4 (19.05)	2.36 (60)	1.18 (30)
316-BV52A-F8M-5	316-BV5C2A-F8M-5	8 mm Tube Fitting			2.63 (66.8)	1.53 (38.8)			
316-BV52A-F4-5	316-BV5C2A-F4-5	1/4" Tube Fitting			2.57 (65.2)	1.50 (38.1)			
316-BV52A-F5-5	316-BV5C2A-F5-5	5/16" Tube Fitting			2.63 (66.8)	1.53 (38.8)			
316-BV52A-FN2-5	316-BV5C2A-FN2-5	1/8 Female NPT			1.85 (47.0)	1.08 (27.4)			
316-BV52A-RP2-5	316-BV5C2A-RP2-5	1/8 Female BSPP			2.00 (50.0)	1.14 (29.0)			
316-BV52A-RP4-5	316-BV5C2A-RP4-5	1/4 Female BSPP			2.00 (50.0)	1.14 (29.0)			
316-BV52A-FN4-5	316-BV5C2A-FN4-5	1/4 Female NPT			1.85 (47.0)	1.08 (27.4)			
316-BV52A-F10M-7	316-BV5C2A-F10M-7	10 mm Tube Fitting	0.28 (7.1)	2.50	2.87 (72.9)	1.68 (42.7)	7/8 (22.23)	3.15 (80)	1.26 (32)
316-BV52A-F6-7	316-BV5C2A-F6-7	3/8" Tube Fitting			2.03 (51.6)	1.18 (30.0)			
316-BV52A-RP6-7	316-BV5C2A-RP6-7	3/8 Female BSPP							
316-BV52A-FN6-7	316-BV5C2A-FN6-7	3/8 Female NPT							
316-BV52A-F12M-9	316-BV5C2A-F12M-9	12 mm Tube Fitting	0.35 (8.9)	9.25	3.15 (80.0)	1.83 (46.5)	1 1/16 (27.0)	3.15 (80)	1.54 (39)
316-BV52A-F14M-9	316-BV5C2A-F14M-9	14 mm Tube Fitting			3.24 (82.2)	1.87 (47.5)			
316-BV52A-F8-9	316-BV5C2A-F8-9	1/2" Tube Fitting			3.15 (80.0)	1.83 (46.5)			
316-BV52A-F10-9	316-BV5C2A-F10-9	5/8" Tube Fitting			3.24 (82.2)	1.87 (47.5)			
316-BV52A-RP8-9	316-BV5C2A-RP8-9	1/2 Female BSPP			2.08 (53.0)	1.12 (28.5)			
316-BV52A-FN8-9	316-BV5C2A-FN8-9	1/2 Female NPT			2.08 (53.0)	1.12 (28.5)			
316-BV52A-F16M-12	316-BV5C2A-F16M-12	16 mm Tube Fitting	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)
316-BV52A-F18M-12	316-BV5C2A-F18M-12	18 mm Tube Fitting							
316-BV52A-F12-12	316-BV5C2A-F12-12	3/4" Tube Fitting			2.48 (63.0)	1.30 (33.0)			
316-BV52A-RP12-12	316-BV5C2A-RP12-12	3/4 Female BSPP			2.39 (60.7)	1.20 (30.5)			
316-BV52A-FN12-12	316-BV5C2A-FN12-12	3/4 Female NPT							
316-BV52A-F22M-16	316-BV5C2A-F22M-16	22 mm Tube Fitting	0.63 (16.0)	17.35	3.96 (100.6)	2.24 (57.1)	1 1/2 (38.1)	3.94 (100)	2.15 (54.8)
316-BV52A-F25M-16	316-BV5C2A-F25M-16	25 mm Tube Fitting			4.31 (109.5)	2.42 (61.5)			
316-BV52A-F16-16	316-BV5C2A-F16-16	1" Tube Fitting							
316-BV52A-RP16-16	316-BV5C2A-RP16-16	1 Female BSPP			3.25 (82.6)	1.63 (41.3)			
316-BV52A-FN16-16	316-BV5C2A-FN16-16	1 Female NPT			3.00 (76.5)	1.50 (38.1)			

1. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL Group or our authorized distributors.
 2. 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 XINVAL Group or our authorized distributors.



Trunnion Ball Valves

BV6 and BV6H Series

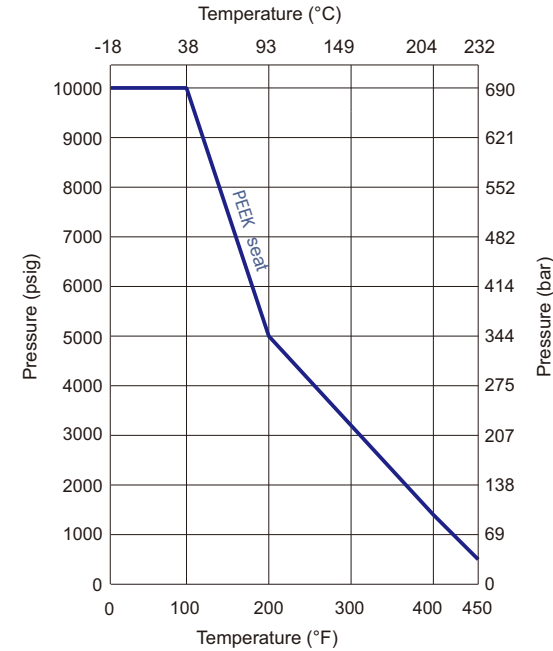
Features

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



BV6H Series

316 SS body



Pressure Rating@100°F (38°C)

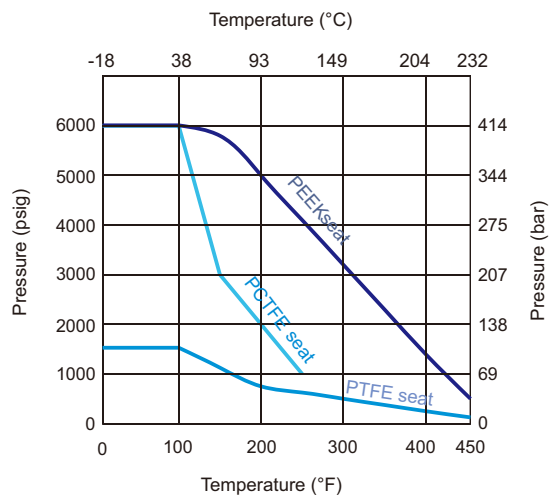
Material	End Connection	Pressure Rating psig (bar)
316 SS	FN2, FN4 F4, F6M	10000 (690)
	F10M	8400 (578)
	F6/F8M	7500 (516)
	F8	6700 (461)
	F12M	6800 (470)

Note: Maximum working pressure of BV6H Series ball valves is 10,000 psig. The specified pressure rating is restricted by end connections.

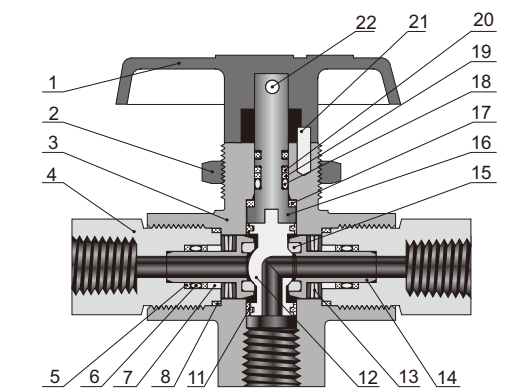
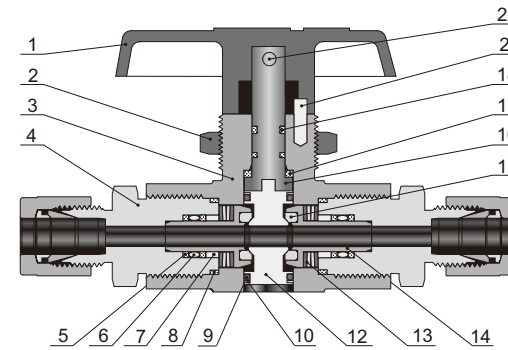
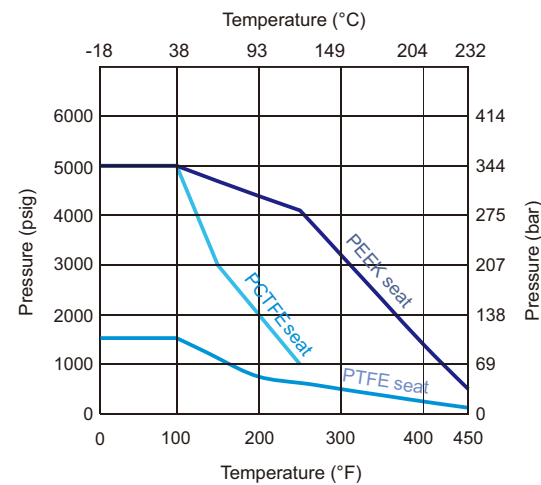
Pressure vs. Temperature

BV6 Series

316 SS body



Alloy 400 body

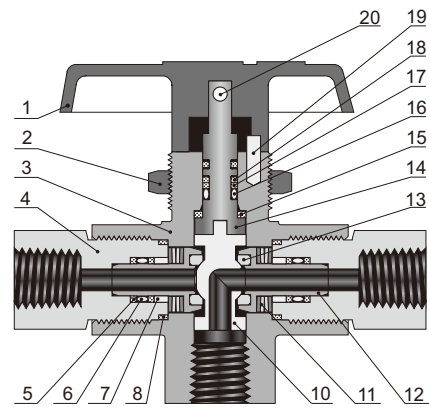
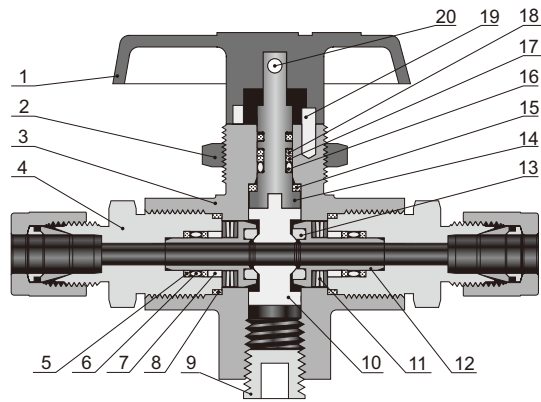


Note: Wetted components are listed in italics.

1. Ball trunnions are PTFE coated for BV6 series 2-way valves.
2. For other materials, please contact XINVAL Group or our authorized distributors.

Item	Component	Valve Body Material			
		316 SS		Alloy 400	
		2-way	3-way	2-way	3-way
		Material Grade/ASTM Specification			
1	Handle	Nylon with SS insert			
2	Panel Nut	316 SS/A479			
3	Body	<i>F316 SS/A182</i>		<i>Alloy 400/B164</i>	
4	End Connection	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
5	Seat Retainer Backup Ring	<i>Reinforced PTFE</i>			
6	Seat Retainer O-ring	<i>Fluorocarbon FKM</i>			
7	Seat Retainer Guide	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
8	End Connection Seal	<i>Silver-plated 316L/A269</i>			
9	Trunnion O-ring	<i>Fluorocarbon FKM</i>	---	<i>Fluorocarbon FKM</i>	---
10	Trunnion Backup Ring	<i>Reinforced PTFE</i>	---	<i>Reinforced PTFE</i>	---
11	Trunnion Bearing	---	<i>PEEK</i>	---	<i>PEEK</i>
12	Ball	<i>316 SS/A479</i>	<i>S21800/A479</i>	<i>Alloy 400/B164</i>	
13	Seat Spring	<i>Alloy X-750/AMS 5542</i>			
14	Seat Retainer	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
15	Seat	<i>PTFE or PEEK or PCTFE</i>			
16	Stem	<i>316 SS/A479</i>		<i>Alloy 400/B164</i>	
17	Stem Washer	<i>PEEK</i>			
18	Stem O-ring	<i>Fluorocarbon FKM</i>		<i>Fluorocarbon FKM</i>	
19	Secondary Stem Backup Ring	---	<i>PTFE/D1710</i>	---	<i>PTFE/D1710</i>
20	Primary Stem Backup Ring	---	<i>PEEK</i>	---	<i>PEEK</i>
21	Stop Pin	<i>316 SS</i>			
22	Set Screw	<i>Galvanized carbon steel</i>			
<i>Lubricants</i>		<i>Fluorinated-based</i>			

BV6H Series

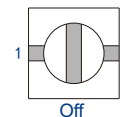
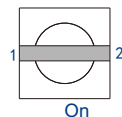
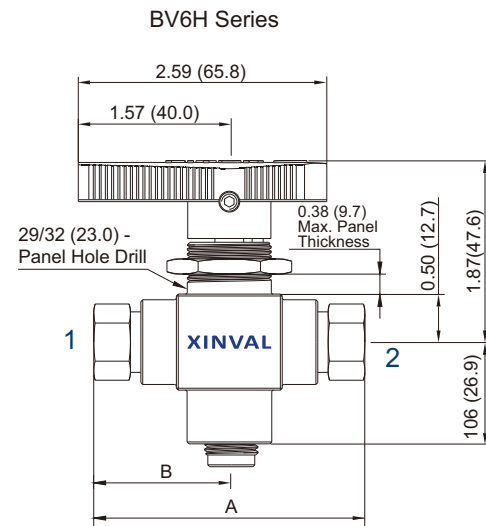
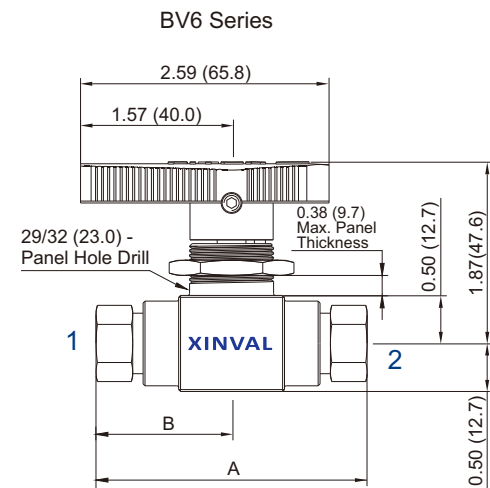


Item	Component	2-way	3-way
		Material Grade/ASTM Specification	
1	Handle	<i>Nylon with SS insert</i>	
2	Panel Nut	316 SS/A479	
3	Body	316 SS/A182	
4	End Connection	316 SS/A479	
5	Seat Retainer Backup Ring	<i>Reinforced PTFE</i>	
6	Seat Retainer O-ring	<i>Fluorocarbon FKM</i>	
7	Seat Retainer Guide	316 SS/A479	
8	End Connection Seal	<i>Silver-plated 316L/A269</i>	
9	Plug	316 SS/A479	
10	Ball	S21800/A479	
11	Seat Spring	<i>Alloy X-750/AMS 5542</i>	
12	Seat Retainer	316 SS/A479	
13	Seat	PEEK	
14	Stem	316 SS/A479	
15	Stem Washer	PEEK	
16	Stem O-ring	<i>Fluorocarbon FKM</i>	
17	Secondary Stem Backup Ring	PTFE/D1710	
18	Primary Stem Backup Ring	PEEK	
19	Stop Pin	SS	
20	Set Screw	Galvanized carbon steel	
Lubricants		<i>Fluorinated-based</i>	

Note: Wetted components are listed in italics.
 1. Ball trunnions are PTFE coated for BV6H series ball valves.
 2. For other materials, please contact XINVAL Group or our authorized distributors .

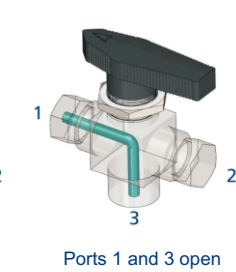
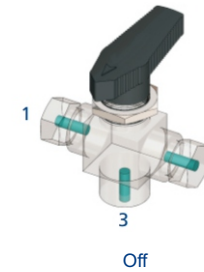
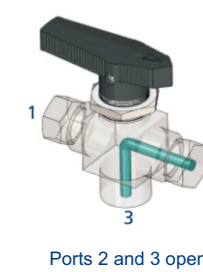
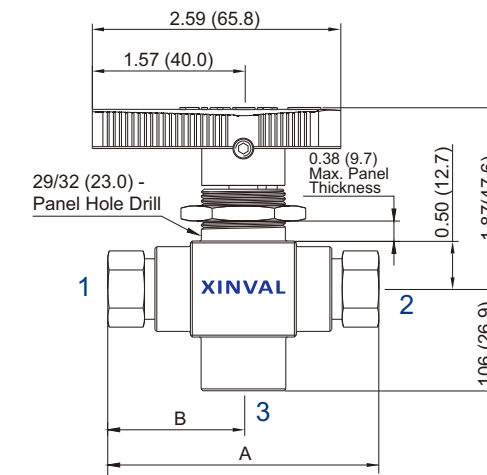
Dimensions

2-way Valves



Basic Ordering Numbe		Connection Type and Size	Orifice in. (mm)	Cv	Dimensions, in. (mm)	
BV6 Series	BV6H Series	Connection 1/2			A	B
316-BV62A-FN2	316-BV6H2A-FN2-P	1/8 Female NPT	0.19 (4.8)	1.2	2.94 (74.7)	1.47 (37.3)
316-BV62A-FN4	316-BV6H2A-FN4-P	1/4 Female NPT			3.93 (99.8)	1.97 (50.0)
316-BV62A-FN8	316-BV6H2A-FN8-P	1/2 Female NPT		1.2	4.25 (108.0)	2.13 (54.1)
316-BV62A-F4	316-BV6H2A-F4-P	1/4" Tube Fitting		1.6	4.14 (105.2)	2.07 (52.6)
316-BV62A-F6	316-BV6H2A-F6-P	3/8" Tube Fitting		1.4	4.39 (111.5)	2.19 (55.6)
316-BV62A-F8	316-BV6H2A-F8-P	1/2" Tube Fitting		1.0	4.60 (116.8)	2.30 (58.4)
316-BV62A-F6M	316-BV6H2A-F6M-P	6 mm Tube Fitting		1.6	4.14 (105.2)	2.07 (52.6)
316-BV62A-F8M	316-BV6H2A-F8M-P	8 mm Tube Fitting		1.5	4.15 (105.4)	2.07 (52.6)
316-BV62A-F10M	316-BV6H2A-F10M-P	10 mm Tube Fitting		1.3	4.41 (112.0)	2.20 (55.9)
316-BV62A-F12M	316-BV6H2A-F12M-P	12 mm Tube Fitting		1.0	4.60 (116.8)	2.30 (58.4)

3-way Valves



Basic Ordering Number		Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)	
BV6 Series	BV6H Series	Connection 1/2	Connection 3			A	B
316-BV63A-FN2	316-BV6H3A-FN2	1/8 Female NPT	1/4 Female NPT	0.19 (4.8)	0.75	2.94 (74.7)	1.47 (37.3)
316-BV63A-FN4	316-BV6H3A-FN4-P	1/4 Female NPT				3.93 (99.8)	1.97 (50.0)
316-BV63A-F4	316-BV6H3A-F4-P	1/4" Tube Fitting				4.14 (105.2)	2.07 (52.6)
316-BV63A-F6	316-BV6H3A-F6-P	3/8" Tube Fitting				4.39 (111.5)	2.19 (55.6)
316-BV63A-F8	316-BV6H3A-F8-P	1/2" Tube Fitting				4.60 (116.8)	2.30 (58.4)
316-BV63A-F6M	316-BV6H3A-F6M-P	6 mm Tube Fitting				4.14 (105.2)	2.07 (52.6)
316-BV63A-F8M	316-BV6H3A-F8M-P	8 mm Tube Fitting				4.15 (105.4)	2.07 (52.6)
316-BV63A-F10M	316-BV6H3A-F10M-P	10 mm Tube Fitting				4.41 (112.0)	2.20 (55.9)
316-BV63A-F12M	316-BV6H3A-F12M-P	12 mm Tube Fitting				4.60 (116.8)	2.30 (58.4)

1. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL Group or our authorized distributors.
 2. 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 XINVAL Group or our authorized distributors.
 3. Bottom port of all 3-way valves is 1/4 in. female NPT.

Special Application Ball Valves

Low-Temperature Service

BV6 and BV6H series 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 service valves have low-temperature NBR O-rings. All other materials are the same as those of standard valves.

To order a valve for low-temperature service, add - LT into the valve ordering number.

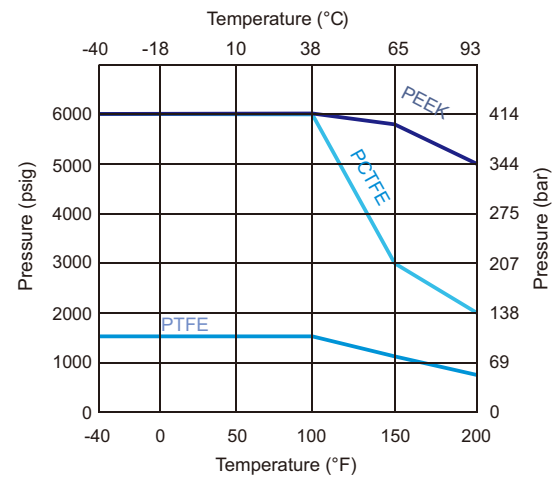
For example: 316-BV62A-F4-P-LT

316-BV63A-F4-P-LT

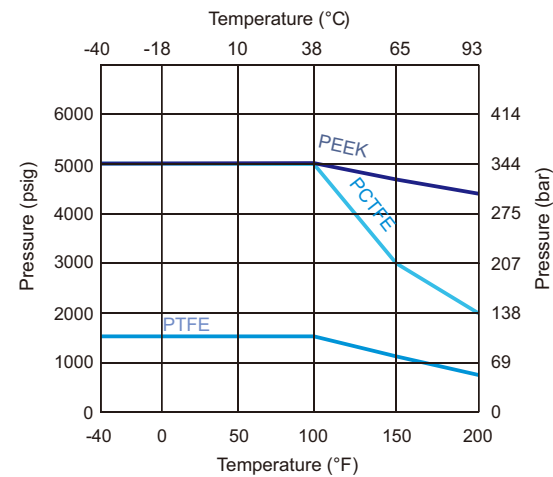
Seal kit for field replacement is available, see "Seal Kits" in Page B-09.

Low-Temperature Service BV6 Series Pressure vs. Temperature

316 SS Body

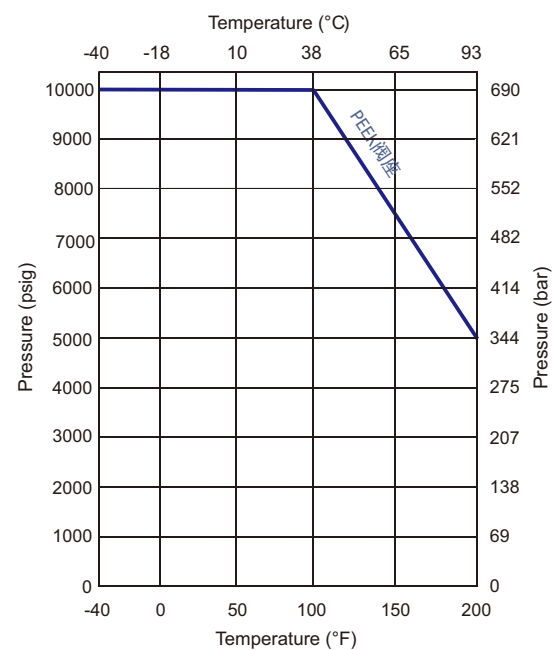


Alloy 400 Body



Low-Temperature Service BV6H Series Pressure vs. Temperature

316 SS Body



Note: The maximum working pressure for BV6H series low-temperature service ball valves is the same as that of standard ball valves.

Seal kit for field replacement is available:

Seal Kits

Valve Series	Flow Pattern	Special Application	Basic Seal Kit Ordering Number	Content
BV6	2-way	/	316-BV62A-□	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal, trunnion O-ring, trunnion backup ring, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, instructions.
		Low-temperature service	316-BV62A-□-LT	
	3-way	/	316-BV63A-□	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal, trunnion bearing, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, secondary stem backup ring, primary stem backup ring, instructions.
		Low-temperature service	316-BV63A-□-LT	
BV6H	2-way	/	316-BV62A-P	Seat retainer backup ring, seat retainer O-ring, seat retainer guide, end connection seal, ball, seat spring, seat retainer, seat, stem, stem washer, stem O-ring, secondary stem backup ring, primary stem backup ring, instructions.
		Low-temperature service	316-BV62A-P-LT	
	3-way	/	316-BV63A-P	
		Low-temperature service	316-BV63A-P-LT	

Seat Material	Designator
PTFE	T
PCTFE	K
PEEK	P

to order seal kits for BV6 series standard and low-temperature service ball valves, select a seat designator from the table at left and add to the basic seal kit ordering number.
 Example: 316-BV62A-T
 316-BV62A-P-LT

Ordering numbers specify 316 stainless steel material. For other materials, replace 316 in the ordering numbers with other material designators.
 Example: M4-BV62A-T. M4 is the designator for Alloy 400.

High Performance Ball Valves

BV7 Series

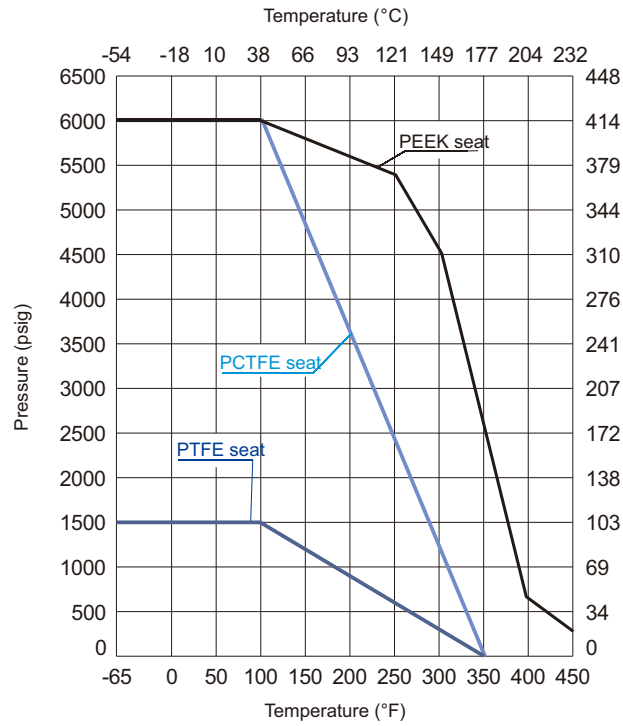
Features

- Working pressure up to: 6000 psig (414 bar)
- Working temperature: -65°F to 450°F (-54°C to 232°C)
- Low operating torque
- Handle as indicator of flow direction
- Positive handle stop
- Electric and pneumatic actuator available
- Handle color options available
- Leak-tight performance testing with nitrogen or compressed air for every valve to meet the requirement of no visible leakage at the rated pressure
- Bi-directional flow for straight valves
- The inlet of 3-way valves and angle pattern valves can only be the bottom port

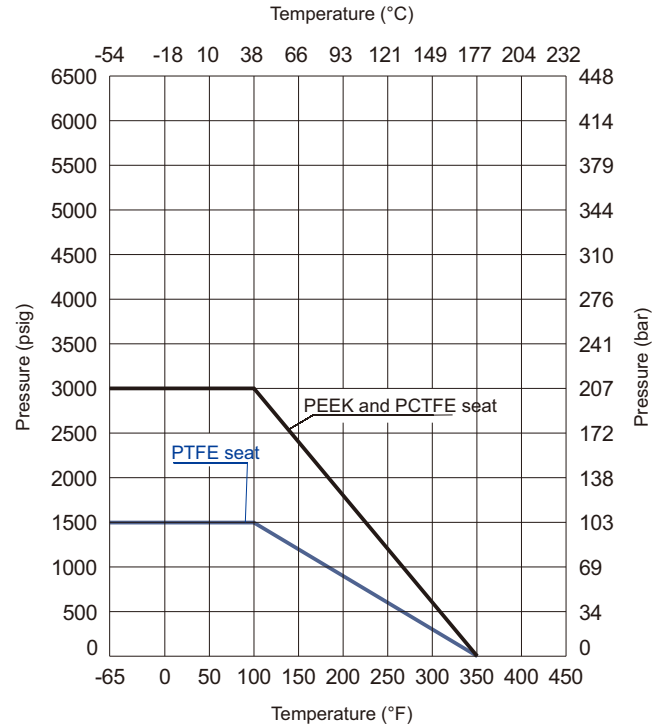


Pressure vs. Temperature

316 SS Body



Brass Body

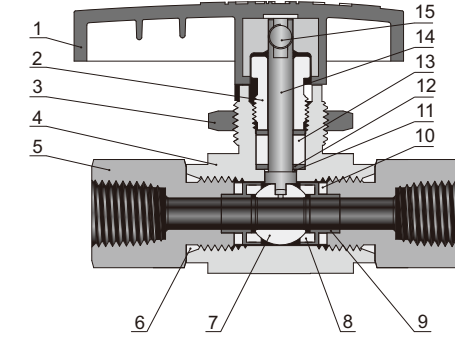


Note:

When choosing a valve for your applications, please refer to the above Temperature vs. Pressure Curves and the pressure rating in the dimension table. The minimum value shall be the pressure rating of the valve.

Standard Materials of Construction

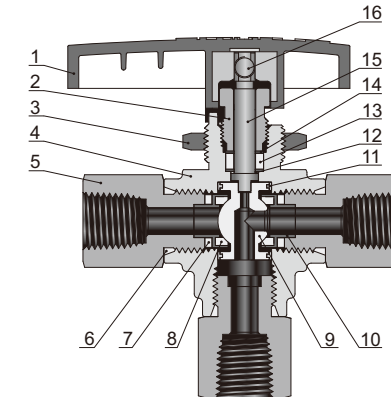
Straight Valves



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

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

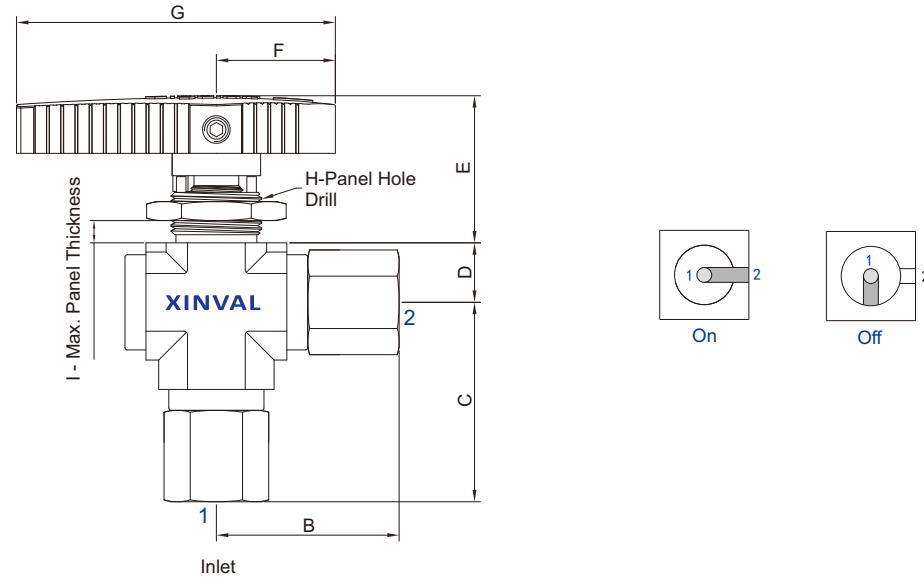
3-way Valves



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

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

Angle Pattern Valves



Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @100°F (38 °C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)												
		316 SS	Brass			B	C	D	E	F	G	H	I					
316-BV72B-F1-1	1/16" Tube Fitting	6000 (414)	3000 (207)	0.05 (1.3)	0.06	1.30 (33.0)	1.35 (34.3)											
316-BV72B-F2-2	1/8" Tube Fitting	6000 (414)	3000 (207)	0.09 (2.4)	0.21	1.36 (34.5)	1.41 (35.8)											
316-BV72B-F3M-2	3 mm Tube Fitting	6000 (414)	3000 (207)			1.37 (34.8)	1.42 (36.1)											
316-BV72B-FRT2-3	1/8 Female BSPT	6000 (414)	3000 (207)	0.12 (3.0)	0.28	1.07 (27.2)	1.12 (28.5)											
316-BV72B-RP2-3	1/8 Female BSPP	6000 (414)	3000 (207)															
316-BV72B-FN2-3	1/8 Female NPT	6000 (414)	3000 (207)							0.33 (8.5)	0.94 (23.9)	0.79 (20.0)	1.97 (50.0)	0.58 (14.7)	0.18 (4.6)			
316-BV72B-RT2-3	1/8 Male BSPT	6000 (414)	3000 (207)			1.18 (30.0)	1.23 (31.3)											
316-BV72B-BP2-3	1/8 Male BSPP	6000 (414)	3000 (207)															
316-BV72B-N2-3	1/8 Male NPT	6000 (414)	3000 (207)															
316-BV72B-RT4-3	1/4 Male BSPT	6000 (414)	3000 (207)															
316-BV72B-BP4-3	1/4 Male BSPP	6000 (414)	3000 (207)			1.35 (34.3)	1.40 (35.6)											
316-BV72B-N4-3	1/4 Male NPT	6000 (414)	3000 (207)															
316-BV72B-F4-5	1/4" Tube Fitting	6000 (414)	3000 (207)			0.19 (4.7)	0.70	1.74 (44.2)	1.88 (47.7)									
316-BV72B-F6M-5	6 mm XINVAL	6000 (414)	3000 (207)	1.75 (44.5)	1.89 (48.0)													
316-BV72B-F6-5	3/8" Tube Fitting	6000 (414)	2200 (152)	1.80 (45.7)	1.94 (49.2)													
316-BV72B-F8M-5	8 mm Tube Fitting	6000 (414)	2300 (159)	1.78 (45.2)	1.92 (48.7)													
316-BV72B-F10M-5	10 mm Tube Fitting	6000 (414)	1900 (131)	1.81 (46.0)	1.95 (49.5)													
316-BV72B-FRT4-5	1/4 Female BSPT	6000 (414)	3000 (207)	1.51 (38.4)	1.65 (41.9)			0.48 (12.2)	1.24 (31.5)	0.59 (25.0)	2.64 (67.0)	0.77 (19.6)	0.25 (6.4)					
316-BV72B-RP4-5	1/4 Female BSPP	6000 (414)	3000 (207)															
316-BV72B-FN4-5	1/4 Female NPT	6000 (414)	3000 (207)															
316-BV72B-RT4-5	1/4 Male BSPT	6000 (414)	3000 (207)															
316-BV72B-BP4-5	1/4 Male BSPP	6000 (414)	3000 (207)															
316-BV72B-N4-5	1/4 Male NPT	6000 (414)	3000 (207)															
316-BV72B-RT6-5	3/8 Male BSPT	6000 (414)	3000 (207)	1.62 (41.1)	1.76 (44.6)													
316-BV72B-BP6-5	3/8 Male BSPP	6000 (414)	3000 (207)															
316-BV72B-N6-5	3/8 Male NPT	6000 (414)	3000 (207)															

Basic Ordering Number	Connection Type and Size	Pressure Rating of End Connections @100°F (38 °C), psig (bar)		Orifice in. (mm)	Cv	Dimensions, in. (mm)												
		316 SS	Brass			B	C	D	E	F	G	H	I					
316-BV72B-F8-10	1/2" Tube Fitting	6000 (414)	2100 (145)	0.37 (9.5)	3.48	2.34 (59.4)	2.68 (68.1)											
316-BV72B-F12-10	3/4" Tube Fitting	5800 (400)	1800 (124)			2.33 (59.2)	2.67 (67.9)											
316-BV72B-F12M-10	12 mm Tube Fitting	6000 (414)	2000 (138)															
316-BV72B-F14M-10	14 mm Tube Fitting	6000 (414)	1900 (131)															
316-BV72B-F16M-10	16 mm Tube Fitting	5800 (400)	1700 (117)															
316-BV72B-F18M-10	18 mm Tube Fitting	5400 (372)	1600 (110)															
316-BV72B-F20M-10	20 mm Tube Fitting	5500 (379)	1600 (110)															
316-BV72B-F22M-10	22 mm Tube Fitting	4900 (338)	1450 (100)															
316-BV72B-FRT6-10	3/8 Female BSPT	6000 (414)	3000 (207)															
316-BV72B-RP6-10	3/8 Female BSPP	6000 (414)	3000 (207)															
316-BV72B-FN6-10	3/8 Female NPT	6000 (414)	3000 (207)															
316-BV72B-FRT8-10	1/2 Female BSPT	6000 (414)	3000 (207)															
316-BV72B-RP8-10	1/2 Female BSPP	6000 (414)	3000 (207)															
316-BV72B-FN8-10	1/2 Female NPT	6000 (414)	3000 (207)															
316-BV72B-FRT12-10	3/4 Female BSPT	6000 (414)	3000 (207)															
316-BV72B-RP12-10	3/4 Female BSPP	6000 (414)	3000 (207)															
316-BV72B-FN12-10	3/4 Female NPT	6000 (414)	3000 (207)															
316-BV72B-RT8-10	1/2 Male BSPT	6000 (414)	3000 (207)															
316-BV72B-BP8-10	1/2 Male BSPP	6000 (414)	3000 (207)															
316-BV72B-N8-10	1/2 Male NPT	6000 (414)	3000 (207)															
316-BV72B-RT12-10	3/4 Male BSPT	6000 (414)	3000 (207)															
316-BV72B-BP12-10	3/4 Male BSPP	6000 (414)	3000 (207)															
316-BV72B-N12-10	3/4 Male NPT	6000 (414)	3000 (207)															

1. Sizes and types listed are standard. Other sizes and types are available upon request, please contact XINVAL Group or our authorized distributors.
 2. 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 XINVAL Group or our authorized distributors.