

# Subsea Ball Valves

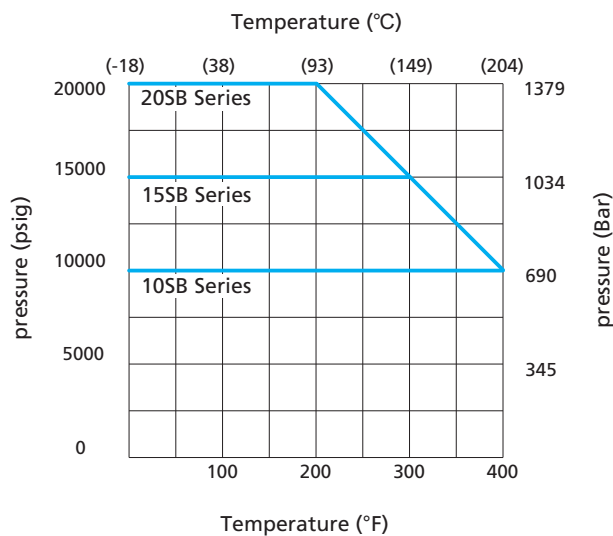
## 2-way Valves, 3-way Valves

### Features

- Working pressure up to 20,000 psig (1379 bar)
- Maximum external pressure: 6,000 psig (414 bar)
- NBR O-ring for operation from -10 to 250°F (-23 to 121°C); other O-ring materials available
- High tensile 316 stainless steel or S17400 stainless steel as standard material for valve body
- Available to NACE MR0175
- Rapid quarter turn action to provide quick opening/closing action for easy ROV or diver operation
- PEEK seats offer excellent resistance against chemicals, heat and abrasion
- Full-port flow path to minimize pressure drop
- 2-way and 3-way valve configurations
- Bidirectional flow for 2-way valves
- Wide selection of tube and pipe end fittings available
- A variety of wetted materials optional
- Maximum water depth: 13,800 ft. (4200 m)



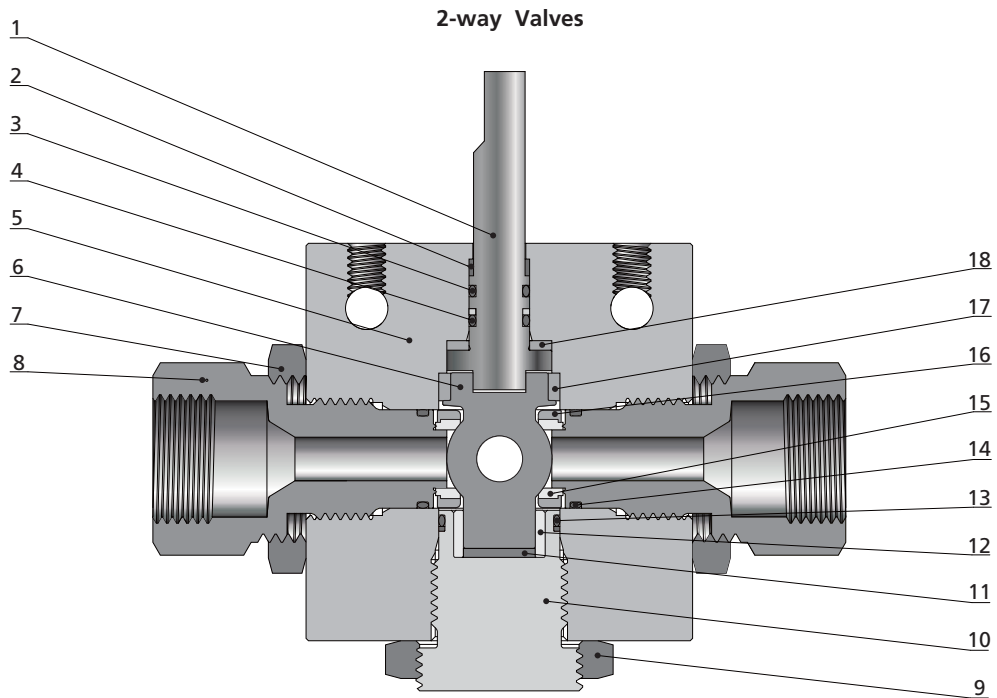
### Pressure vs. Temperature Curve



NOTE: The maximum allowable working pressure drops if the side connection works as inlet.

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## Standard Materials of Construction

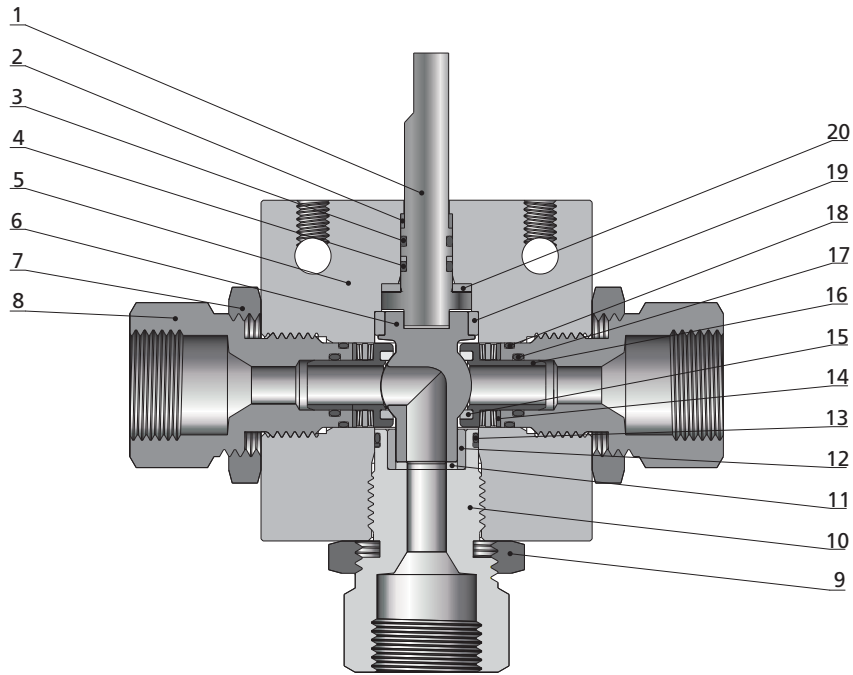


Item	Component	Material Grade
1	<i>Ball Stem</i>	316 SS
2	Stem Backup	PEEK
3	O-Ring	NBR
4	<i>O-Ring</i>	NBR
5	<i>Body</i>	316 SS / S17400 SS(For Orifice No. 16 only)
6	<i>Ball</i>	316 SS
7	Lock Nut	316 SS
8	<i>Seat Gland</i>	316 SS / S17400 SS(For Orifice No. 16 only)
9	Locking Piece	316 SS
10	<i>Bottom Gland</i>	316 SS / S17400 SS(For Orifice No. 16 only)
11	<i>Bottom Thrust washer</i>	PEEK
12	<i>Bearing</i>	PEEK
13	<i>O-Ring</i>	NBR
14	<i>O-Ring</i>	NBR
15	<i>Seat</i>	PEEK
16	<i>Seat Retainer</i>	316 SS
17	<i>Bearing</i>	PEEK
18	<i>Thrust Washer</i>	PEEK
	Lubricant	Molybdenum Disulfide/Fluorinated-based

*Wetted components listed in italics.*

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3-way Valves

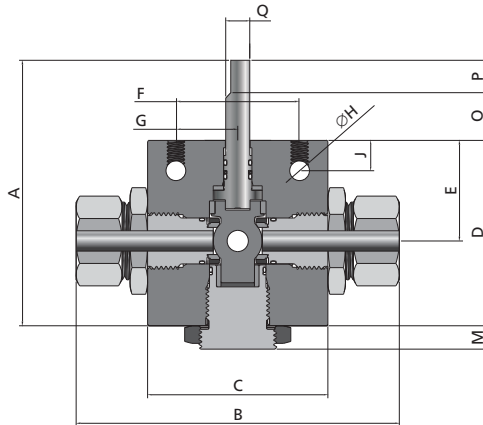


Item	Component	Material Grade
1	<i>Ball Stem</i>	316 SS
2	Stem Backup	PEEK
3	O-Ring	NBR
4	<i>O-Ring</i>	NBR
5	<i>Body</i>	316 SS
6	<i>Ball</i>	316 SS
7	Lock Nut	316 SS
8	<i>Seat Gland</i>	316 SS
9	Locking Piece	316 SS
10	<i>Bottom Gland</i>	316 SS
11	<i>Bottom Thrust washer</i>	PEEK
12	<i>Bearing</i>	PEEK
13	O-Ring	NBR
14	<i>Belleville Washer</i>	S17700
15	<i>Seat</i>	PEEK
16	<i>Seat Retainer</i>	S17700
17	O-Ring	NBR
18	O-Ring	NBR
19	<i>Bearing</i>	PEEK
20	<i>Thrust Washer</i>	PEEK
	Lubricant	Molybdenum Disulfide/Fluorinated-based

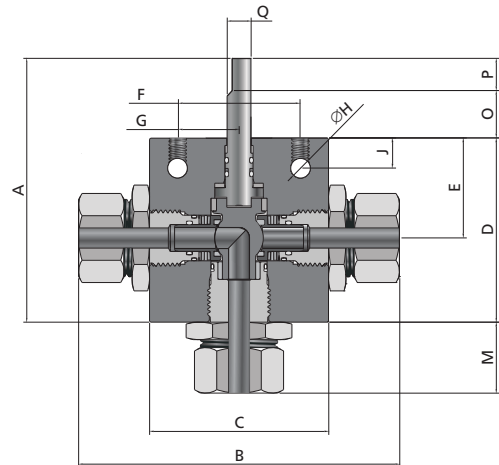
*Wetted components listed in italics.*

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# Dimensions



2-way Valves



3-way Valves

Dimensions, in. (mm)												
Flow Pattern	Orifice No.	A	B	C	D	E	F	G	H	J	M	Block Thickness
2-way	4	4.31 (109.3)	4.20 (106.8)	2 (50.8)	2.53 (64.2)	1.28 (32.5)	1.5 (38.1)	0.75 (19.05)	0.28 (7.1)	0.43 (10.9)	0.35 (8.8)	1 (25.4)
	6	5.94 (150.8)	5.53 (140.4)	3 (76.2)	3.43 (87.3)	1.78 (45.2)	2.5 (63.5)	1.25 (31.75)	0.31 (7.9)	0.41 (10.3)	0.35 (8.8)	1.38 (34.9)
	8	6.67 (169.5)	7.72 (196.2)	4.12 (104.6)	4.23 (107.5)	2.07 (52.4)	3 (76.2)	1.5 (38.1)	0.31 (7.9)	0.5 (12.7)	0.61 (15.5)	1.75 (44.5)
	16	10.82 (274.8)	12.30 (312.4)	6.24 (158.6)	6.65 (169.0)	3.20 (81.3)	4 (101.6)	2 (50.8)	0.41 (10.4)	0.63 (15.9)	0.89 (22.5)	3.38 (85.7)
3-way	4	4.34 (110.2)	4.70 (119.5)	2.5 (63.5)	2.56 (65)	1.34 (34)	2 (50.8)	1 (25.4)	0.28 (7.1)	0.41 (10.3)	1.1 (28)	1 (25.4)
	8	6.67 (169.5)	7.72 (196.2)	4.12 (104.6)	4.23 (107.5)	2.07 (52.4)	3 (76.2)	1.5 (38.1)	0.31 (7.9)	0.5 (12.7)	1.45 (36.8)	1.75 (44.5)

Dimensions, in. (mm)					
Flow Pattern	Orifice No.	O	P	Q	R
2-way	4	1.278 (32.5)	0.50 (12.7)	0.25 (6.35)	0.22 (5.48)
	6	1.24 (31.7)	1.25 (31.8)	0.44 (11.1)	0.38 (9.35)
	8	1.56 (39.7)	0.88 (22.2)	0.62 (15.9)	0.44 (11.13)
	16	2.41 (61.3)	1.75 (44.5)	1.25 (31.8)	1.00 (25.4)
3-way	4	1.28 (32.5)	0.5 (12.7)	0.25 (6.35)	0.22 (5.49)
	8	1.56 (39.7)	0.88 (22.2)	0.62 (15.9)	0.44 (11.13)

**Ball stem connection**

Orifice 4

Orifice 6/8

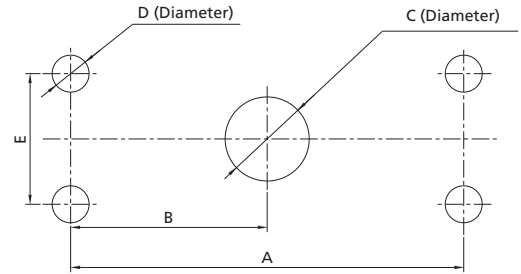
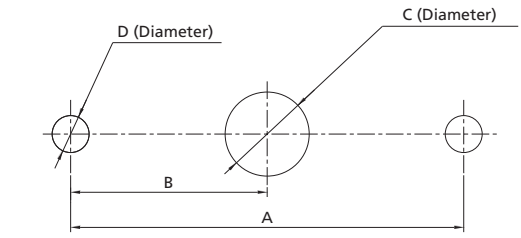
All dimensions are for reference only and are subject to change.

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## Ball Valve Panel Mounting Dimensions

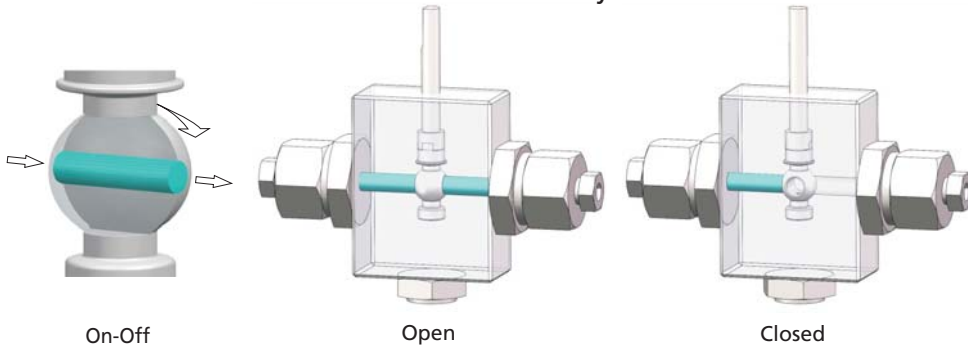
Flow Pattern	Orifice No.	Dimensions, in. (mm)			
		A	B	C	D
2-way	4	1.5 (38.1)	0.75 (19.05)	0.31 (7.9)	0.28 (7.1)
3-way	4	2 (50.8)	1 (25.4)	0.31 (7.9)	0.28 (7.1)

Flow Pattern	Orifice No.	Dimensions, in. (mm)				
		A	B	C	D	E
2-way	6	2.5 (63.5)	1.25 (31.75)	0.5 (12.7)	0.33 (8.5)	0.88 (22.3)
	8	3 (76.2)	1.5 (38.1)	0.69 (17.5)	0.33 (8.5)	1 (25.4)
	16	4 (101.6)	2 (50.8)	1.38 (35.0)	0.39 (10.0)	1.50 (38.1)
3-way	8	3 (76.2)	1.5 (38.1)	0.69 (17.5)	0.33 (8.5)	1 (25.4)

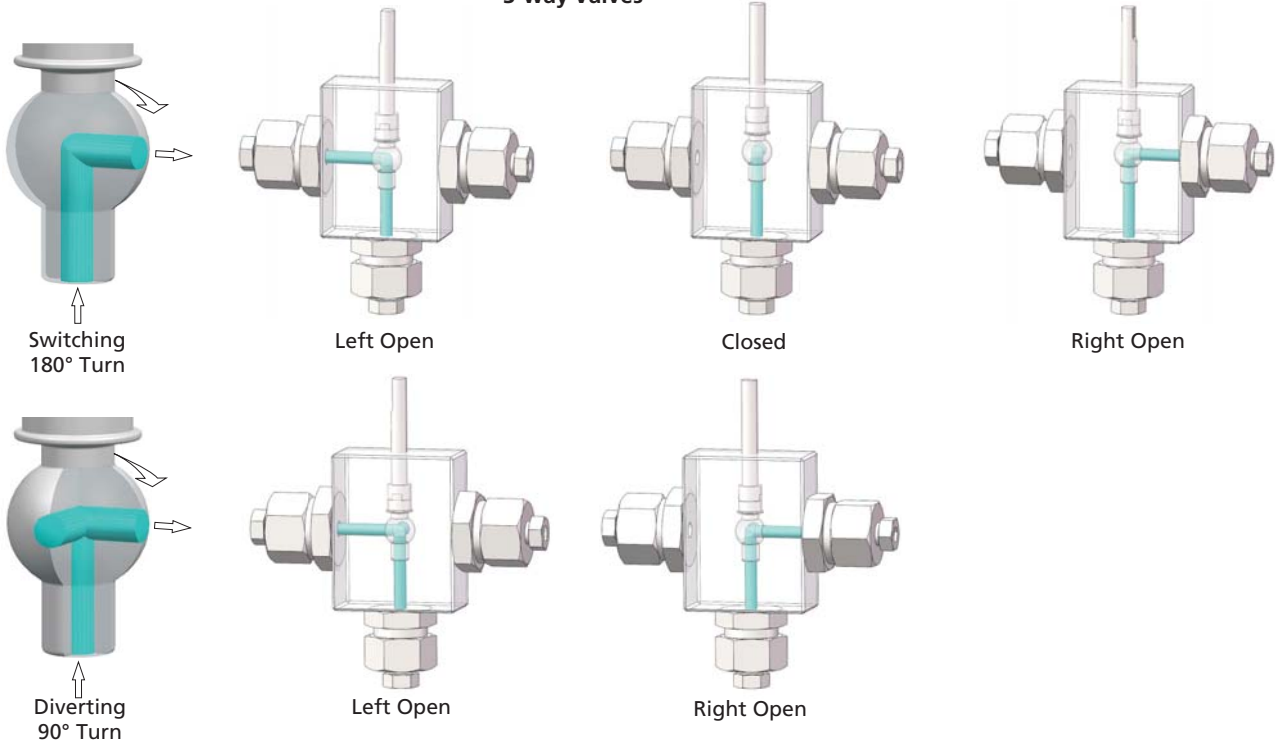


## Flow Configuration

### 2-way Valves



### 3-way Valves



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## Ordering Information and Dimensions

Ordering Number	Flow Pattern	Connection	Orifice No.	Orifice size in. (mm)	Cv	Working Pressure psig (bar)	
10SBSS-MF12-8-1	2-way	MF12	8	0.5 (12.7)	10.2	10,000 (690)	
10SBSS-MF16-8-1		MF16		0.5 (12.7)	10.2		
10SBSS-FNS12-8-1		FNS12		0.5 (12.7)	10.2		
10SBSS-FNS16-8-1		FNS16		0.5 (12.7)	10.2		
10SB4P-MF24-16-1		MF24	16	0.94 (23.8)	30.0		
10SBSS-MF12-8-2	3-way	MF12	8	0.5 (12.7)	10.2	15,000 (1034)	
15SBSS-DFF4-4-1	2-way	DFF4	4	0.128 (3.25)	0.26		
15SBSS-DFF6-4-1		DFF6		0.25 (6.35)	1.51		
15SBSS-FNS4-4-1		FNS4		0.25 (6.35)	1.51		
15SBSS-FNS6-4-1		FNS6		0.25 (6.35)	1.51		
15SBSS-FNS8-4-1		FNS8		0.25 (6.35)	1.51		
15SBSS-FNS4-6-1		FNS4	6	0.375 (9.52)	3.51		
15SBSS-FNS6-6-1		FNS6		0.375 (9.52)	3.51		
15SBSS-FNS8-6-1		FNS8		0.375 (9.52)	3.51		
15SBSS-MF12-8-1		3-way	MF12	8	0.5 (12.7)		10.2
15SBSS-FNS4-4-2			FNS4	4	0.188 (4.77)		0.5
15SBSS-FNS4-4-2D	FNS4						
15SBSS-FNS6-4-2	FNS6		0.188 (4.77)		0.5		
15SBSS-FNS6-4-2D							
20SBSS-MF4-4-1	2-way	MF4	4	0.109 (2.77)	0.36		20,000 (1379)
20SBSS-MF6-4-1		MF6		0.203 (5.16)	1.23		
20SBSS-MF9-4-1		MF9		0.25 (6.35)	1.51		
20SBSS-HF4-4-1		HF4		0.094 (2.39)	0.26		
20SBSS-HF6-4-1		HF6		0.125 (3.17)	0.47		
20SBSS-MF6-6-1		MF6	6	0.203 (5.16)	1.23		
20SBSS-MF9-6-1		MF9		0.312 (7.92)	2.93		
20SBSS-MF12-6-1		MF12		0.375 (9.52)	3.51		
20SBSS-MF4-4-2		3-way	MF4	4	0.109 (2.77)	0.17	
20SBSS-MF4-4-2D							

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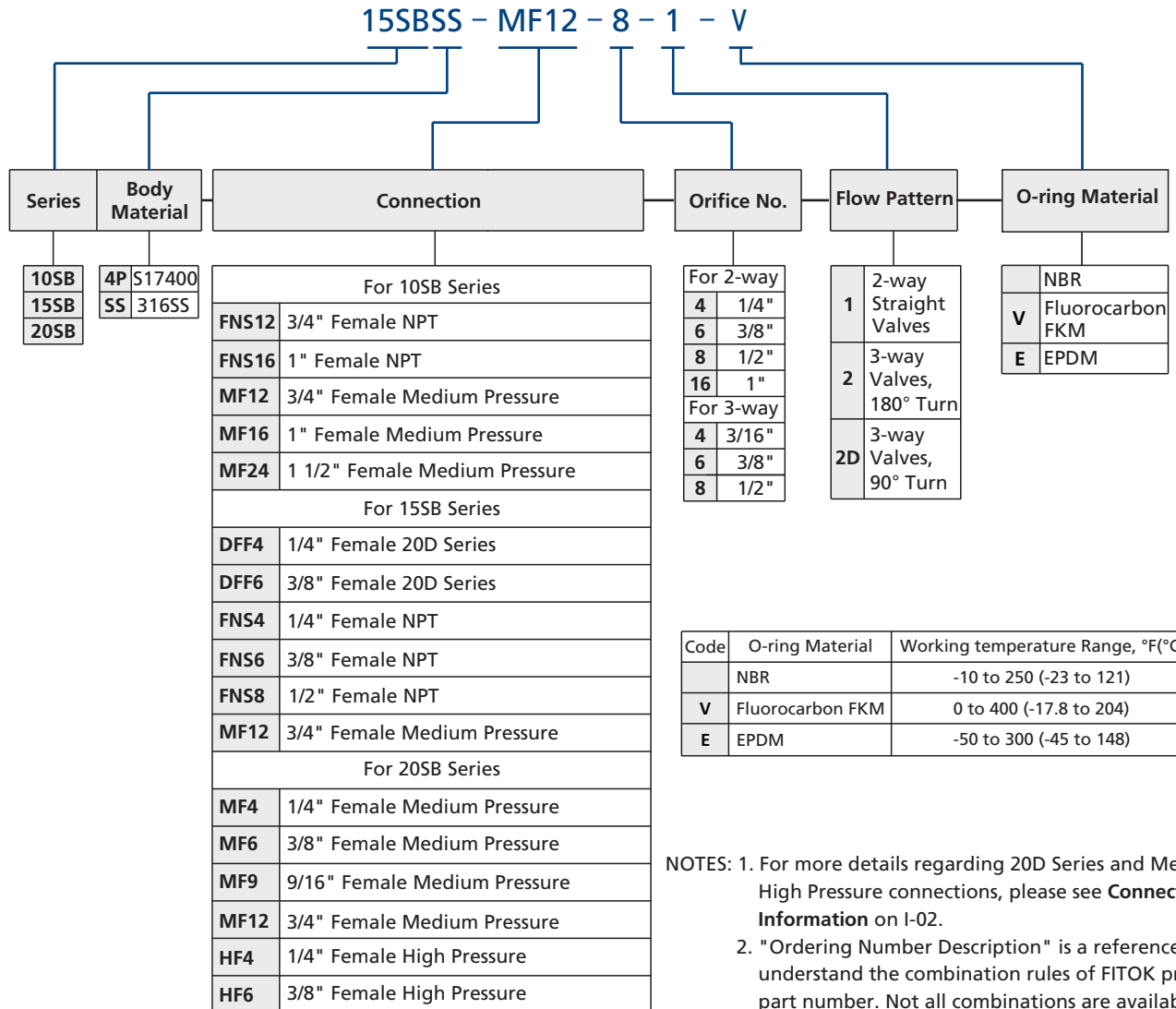
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## Ordering Information and Dimensions (continued)

Ordering Number	Flow Pattern	Connection	Orifice No.	Orifice size in. (mm)	Cv	Working Pressure psig (bar)
20SBSS-MF6-4-2	3-way	MF6	4	0.188 (4.77)	0.5	20,000 (1379)
20SBSS-MF6-4-2D						
20SBSS-MF9-4-2		MF9		0.188 (4.77)	0.5	
20SBSS-MF9-4-2D						
20SBSS-HF4-4-2		HF4		0.094 (2.39)	0.13	
20SBSS-HF4-4-2D						
20SBSS-HF6-4-2		HF6		0.125 (3.17)	0.22	
20SBSS-HF6-4-2D						

## Ordering Number Description



NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.  
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.