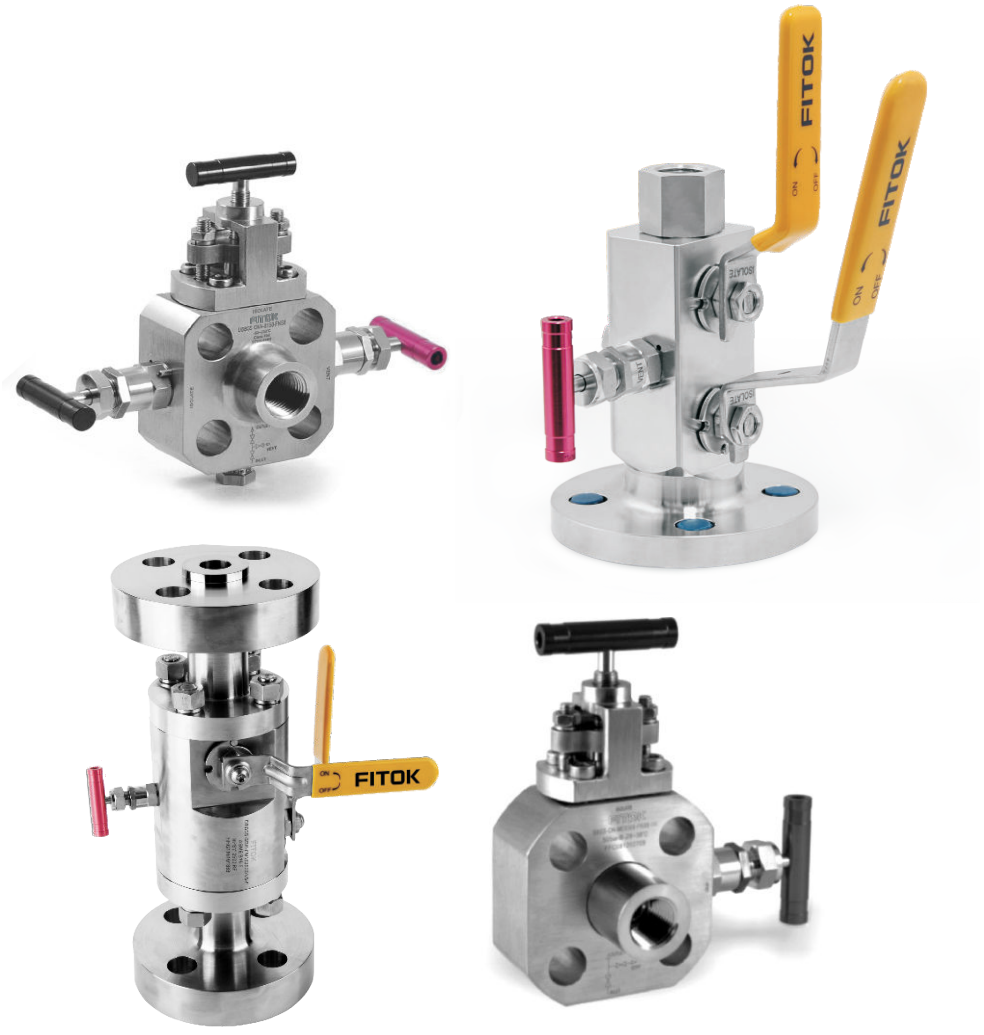
Block and Bleed Valves

BB, DB, SB and DBB Series



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Notes:

◎ Packing may need to be adjusted during valve use.

◎ For better maintenance, when storing the block and bleed valves:
The needle valve should be in the half-open position.
The ball valve should be in the fully open position.

◎ Ball valves that have not been opened for a period of time may have a high initial actuation torque.

Overview

Features

◎ Integral type, split type or wafer type body construction available
◎ Multiple functions available: double block and bleed, single block and bleed, double block, single block, injection and sampling
◎ Compact design, weight, space and cost savings
◎ Each valve is leak tested to a requirement in accordance with API 598
◎ Optional fire-safe design to API-607, anti-static design to EN 12266-2 and NACE MR0175 compliance

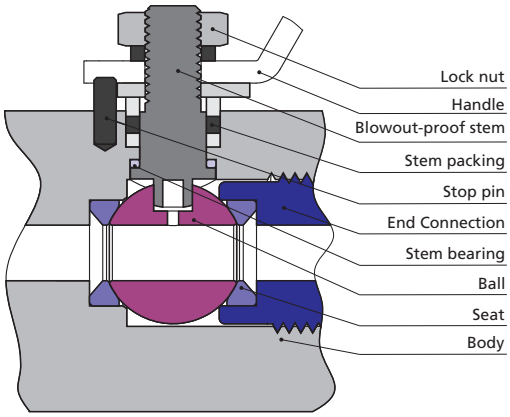
Design Codes

ASME B16.34	Valves-Flanged, Threaded and Welding End
ASME B16.5	Pipe Flanges and Flanged Fittings
ASME B1.20.1	Pipe Threads, General Purpose
ASME B16.25	Buttwelding Ends
NACE MR 0175/ ISO 15156	Petroleum and Natural Gas Industries-Materials for use in H2S-containing Environments in Oil and Gas Production
API 598	Valve Inspection and Testing
API 607	Fire Test for Soft-Seated Quarter Turn Valves Testing of Valves
MSS SP-25	Standard Marking System for Valves, Fittings, Flanges and Unions
EN 12266-2	Industrial valves - Testing of metallic valves - Part 2: Tests, test procedures and acceptance criteria - Supplementary requirements.
EN 1092-1	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges
MSS SP-97	Integrally Reinforced Forged Branch outlet Fittings-Socket Welding, Threaded, and Buttwelding Ends
ISO 17292	Metal ball valves for petroleum petrochemical and allied industries

Module Structures and Features

◎ Ball Valve

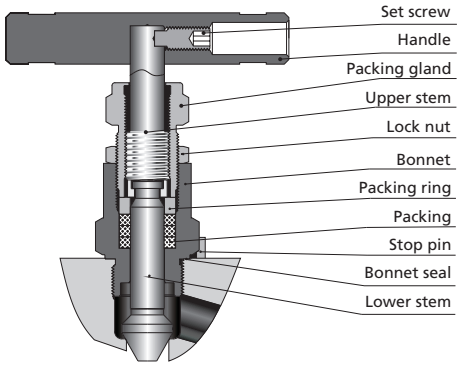
Designator: B



- ◎ Pressure rating up to Class 2500
- ◎ Bore sizes: NPS 3/8~NPS 2 (DN10~DN50)
- ◎ Working temperature: -65°F to 450°F (-54°C to 232°C)
- ◎ Side-loaded stem prevents stem blowout and enhances system safety
- ◎ High-strength stem bearing provides smooth actuation and eliminates galling between valve stem and body
- ◎ Packing adjustment may be required during the service life of the valves
- ◎ Designed to be used in the fully open or fully closed position
- ◎ Floating ball design to ensure the tightness under high pressure

◎ Screwed Bonnet Needle Valve

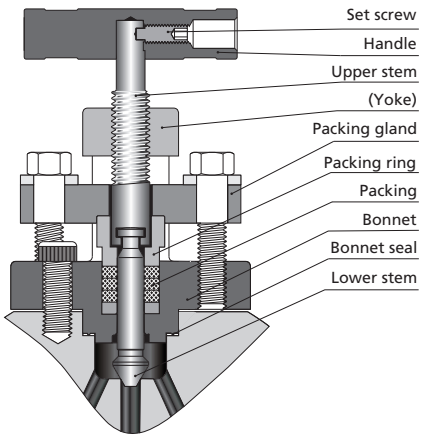
Designator: N



- ◎ Maximum pressure up to 10000 psig
- ◎ Bore sizes: 4 mm, 6.4 mm, 9.5 mm
- ◎ Working temperature:
  PTFE packing: -65°F to 450°F (-54 °C to 232°C)
  Graphite packing: -65°F to 1200°F (-54°C to 649°C)
- ◎ Upper stem threads cold rolled and lower stem surface hardened for high strength and smooth operation
- ◎ Upper stem thread lubricant isolated from system media
- ◎ Two-piece stem design: Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ◎ Safety back seating seal in fully open position

◎ Outside Screw and Yoke (OS&Y) Needle Valve

Designator: O



- ◎ Pressure rating up to Class 2500
- ◎ Bore Size: 4 mm
- ◎ Working temperature:
  PTFE packing: -65°F to 450°F (-54°C to 232°C)
  Graphite packing: -65°F to 1200°F (-54°C to 649°C)
- ◎ Upper stem threads cold rolled and lower stem surface hardened for high strength and smooth operation
- ◎ Upper stem thread lubricant isolated from system media
- ◎ Two-piece stem design: Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ◎ Bolted bonnet enhances strength and reliability
- ◎ Adjustable gland flange allows easy access to the packing gland and packing adjustment for an effective stem seal
- ◎ Investment case yoke is formed by precision casting which enhances strength and perfect stem alignment

◎ Handle colors indicate functions:

Ball Valves:
YELLOW=Isolation/Block RED=Bleed/Vent
Screwed Bonnet Needle Valves:
BLACK=Isolation/Block RED=Bleed/Vent
Bolted OS&Y Needle Valves:
BLACK=Isolation/Block RED=Bleed/Vent

Standard Materials of Construction

Component \ Material		316 SS	316L SS	Carbon Steel	Low Alloy Steel	Duplex Steel
Body		F316 / A182	F316L / A182	A105	LF2 / A350	F53 / A182
Ball Valve	Ball	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	Stem	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	End connection	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	Seat	PEEK				
	Body Seal	Graphite or PTFE				
	Stem Packing	Graphite or PTFE				
Screwed Bonnet Needle Valves	Lower Stem	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	Bonnet	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	Bonnet Seal	316L / A269	316L / A269	316L / A269	316L / A269	S32750 / A790
	Stem Packing	Graphite or PTFE				
OS&Y Needle Valves	Lower Stem	316 / A479	316L / A479	316 / A479	316 / A479	S32750 / A479
	Bonnet	F316 / A182	F316L / A182	A105	LF2 / A350	F53 / A182
	Bonnet Seal	316L / A269	316L / A269	316L / A269	316L / A269	S32750 / A790
	Stem Packing	Graphite or PTFE				

Pressure - Temperature Ratings

◎ Ratings are taken from ASME B16.34, Table 2-2.2 and Table VII-2-2.2. The rating data are based on stainless steel F316.

Temp. (°C)	ASME Rating					
	150	300	600	900	1500	2500
	Working Pressure (bar)					
-29~38	19.0	49.6	99.3	148.9	248.2	413.7
50	18.4	48.1	96.2	144.3	240.6	400.9
100	16.2	42.2	84.4	126.6	211.0	351.6
150	14.8	38.5	77.0	115.5	192.5	320.8
200	13.7	35.7	71.3	107.0	178.3	297.2
250	12.1	33.4	66.8	100.1	166.9	278.1
300	10.2	31.6	63.2	94.9	158.1	263.5
325	9.3	30.9	61.8	92.7	154.4	257.4
350	8.4	30.3	60.7	91.0	151.6	252.7
375	7.4	29.9	59.8	89.6	149.4	249.0
400	6.5	29.4	58.9	88.3	147.2	245.3
425	5.5	29.1	58.3	87.4	145.7	242.9
450	4.6	28.8	57.7	86.5	144.2	240.4
475	3.7	28.7	57.3	86.0	143.4	238.9
500	2.8	28.2	56.5	84.7	140.9	235.0
538	1.4	25.2	50.0	75.2	125.5	208.9

Temp. (°F)	ASME Rating					
	150	300	600	900	1500	2500
	Working Pressure (psig)					
-20~100	275	720	1440	2160	3600	6000
200	235	620	1240	1860	3095	5160
300	215	560	1120	1680	2795	4660
400	195	515	1025	1540	2570	4280
500	170	480	955	1435	2390	3980
600	140	450	900	1355	2255	3760
650	125	440	885	1325	2210	3680
700	110	435	870	1305	2170	3620
750	95	425	855	1280	2135	3560
800	80	420	845	1265	2110	3520
850	65	420	835	1255	2090	3480
900	50	415	830	1245	2075	3460
950	35	385	775	1160	1930	3220
1000	20	365	725	1090	1820	3030

◎ Ratings are taken from ASME B16.34, Table 2-2.3 and Table VII-2-2.3. The rating data are based on F316L stainless steel.

Temp. (°C)	ASME Rating						Temp. (°F)	ASME Rating					
	150	300	600	900	1500	2500		150	300	600	900	1500	2500
	Working Pressure (bar)							Working Pressure (psig)					
-29~38	15.9	41.4	82.7	124.1	206.8	344.7	-20~100	230	600	1200	1800	3000	5000
50	15.3	40.0	80.0	120.1	200.1	333.5	200	195	510	1020	1535	2555	4260
100	13.3	34.8	69.6	104.4	173.9	289.9	300	175	455	910	1370	2280	3800
150	12.0	31.4	62.8	94.2	157.0	261.6	400	160	420	840	1260	2100	3500
200	11.2	29.2	58.3	87.5	145.8	243.0	500	150	395	785	1180	1970	3280
250	10.5	27.5	54.9	82.4	137.3	228.9	600	140	370	745	1115	1860	3100
300	10.0	26.1	52.1	78.2	130.3	217.2	650	125	365	730	1095	1825	3040
325	9.3	25.5	51.0	76.4	127.4	212.3	700	110	360	720	1080	1800	3000
350	8.4	25.1	50.1	75.2	125.4	208.9	750	110	355	705	1060	1765	2940
375	7.4	24.8	49.5	74.3	123.8	206.3	800	80	345	690	1035	1730	2880
400	6.5	24.3	48.6	72.9	121.5	202.5	850	65	340	675	1015	1690	2820
425	5.5	23.9	47.7	71.6	119.3	198.8							
450	4.6	23.4	46.8	70.2	117.1	195.1							

◎ Ratings are taken from ASME B16.34, Table 2-1.1 and Table VII-2-1.1. The rating data are based on A105/A350 LF2 (Not recommended for use above 425°C).

Temp. (°C)	ASME Rating						Temp. (°F)	ASME Rating					
	150	300	600	900	1500	2500		150	300	600	900	1500	2500
	Working Pressure (bar)							Working Pressure (psig)					
-29~38	19.6	51.1	102.1	153.2	255.3	425.5	-20~100	285	740	1480	2220	3705	6170
50	19.2	50.1	100.2	150.4	250.6	417.7	200	260	680	1360	2035	3395	5655
100	17.7	46.6	93.2	139.8	233.0	388.3	300	230	655	1310	1965	3270	5450
150	15.8	45.1	90.2	135.2	225.4	375.6	400	200	635	1265	1900	3170	5280
200	13.8	43.8	87.6	131.4	219.0	365.0	500	170	605	1205	1810	3015	5025
250	12.1	41.9	83.9	125.8	209.7	349.5	600	140	570	1135	1705	2840	4730
300	10.2	39.8	79.6	119.5	199.1	331.8	650	125	550	1100	1650	2745	4575
325	9.3	38.7	77.4	116.1	193.6	322.6	700	110	530	1065	1590	2665	4425
350	8.4	37.6	75.1	112.7	187.8	313.0	750	95	505	1015	1520	2535	4230
375	7.4	36.4	72.7	109.1	181.8	303.1	800	80	410	825	1235	2055	3430
400	6.5	34.7	69.4	104.2	173.6	289.3	850	65	320	640	955	1595	2655
425	5.5	28.8	57.5	86.3	143.8	239.7	900	50	230	460	690	1150	1915
450	4.6	23.0	46.0	69.0	115.0	191.7	950	35	135	275	410	685	1145
475	3.7	17.4	34.9	52.3	87.2	145.3	1000	20	85	170	255	430	715
500	2.8	11.8	23.5	35.3	58.8	97.9							
538	1.4	5.9	11.8	17.7	29.5	49.2							

◎ Ratings are taken from ASME B16.34, Table 2-2.8 and Table VII-2-2.8. The rating data are based on F51 (Not recommended for use above 315 °C).

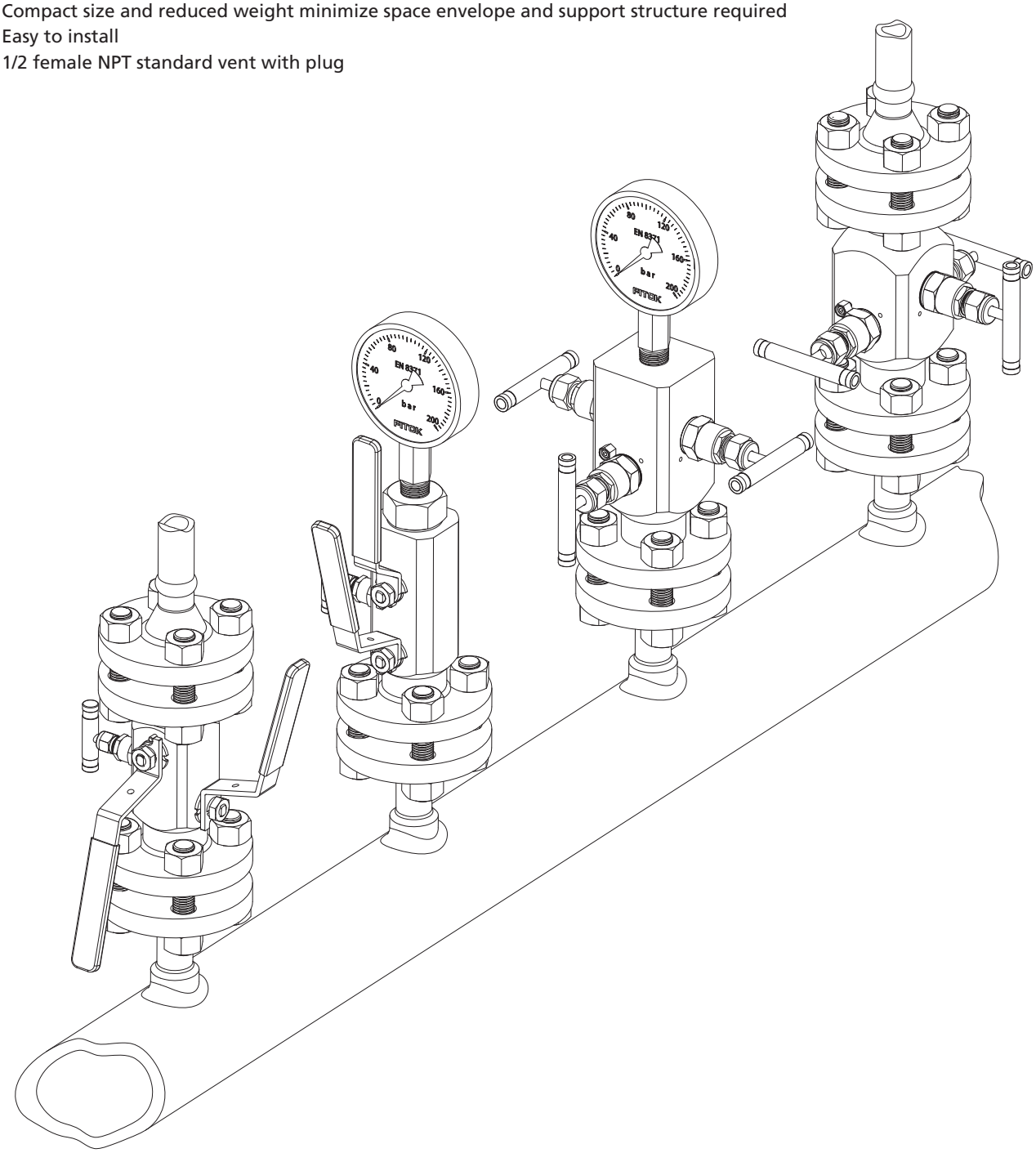
Temp. (°C)	ASME Rating					
	150	300	600	900	1500	2500
	Working Pressure (bar)					
-29~38	20.0	51.7	103.4	155.1	258.6	430.9
50	19.5	51.7	103.4	155.1	258.6	430.9
100	17.7	50.7	101.3	152.0	253.3	422.2
150	15.8	45.9	91.9	137.8	229.6	382.7
200	13.8	42.7	85.3	128.0	213.3	355.4
250	12.1	40.5	80.9	121.4	202.3	337.2
300	10.2	38.9	77.7	116.6	194.3	323.8
325	9.3	38.2	76.3	114.5	190.8	318.0
350	8.4	37.6	75.3	112.9	188.2	313.7
375	7.4	37.4	74.7	112.1	186.8	311.3
400	6.5	36.5	73.3	109.8	183.1	304.9

Temp. (°F)	ASME Rating					
	150	300	600	900	1500	2500
	Working Pressure (psig)					
-20~100	290	750	1500	2250	3750	6250
200	260	745	1490	2230	3720	6200
300	230	665	1335	2000	3335	5560
400	200	615	1230	1845	3070	5120
500	170	580	1160	1740	2905	4840
600	140	555	1115	1670	2785	4640
650	125	545	1095	1640	2735	4560
700	110	540	1085	1625	2710	4520
750	95	530	1065	1595	2660	4430

Integral Type Flange Block and Bleed Valves

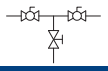
Features

- Bore sizes: NPS 3/8~NPS 3/4 (DN10~DN20)
- Flanges are forged integrally with the body
- Smooth transition from the process piping system to instrumentation in a single configuration
- Compact size and reduced weight minimize space envelope and support structure required
- Easy to install
- 1/2 female NPT standard vent with plug

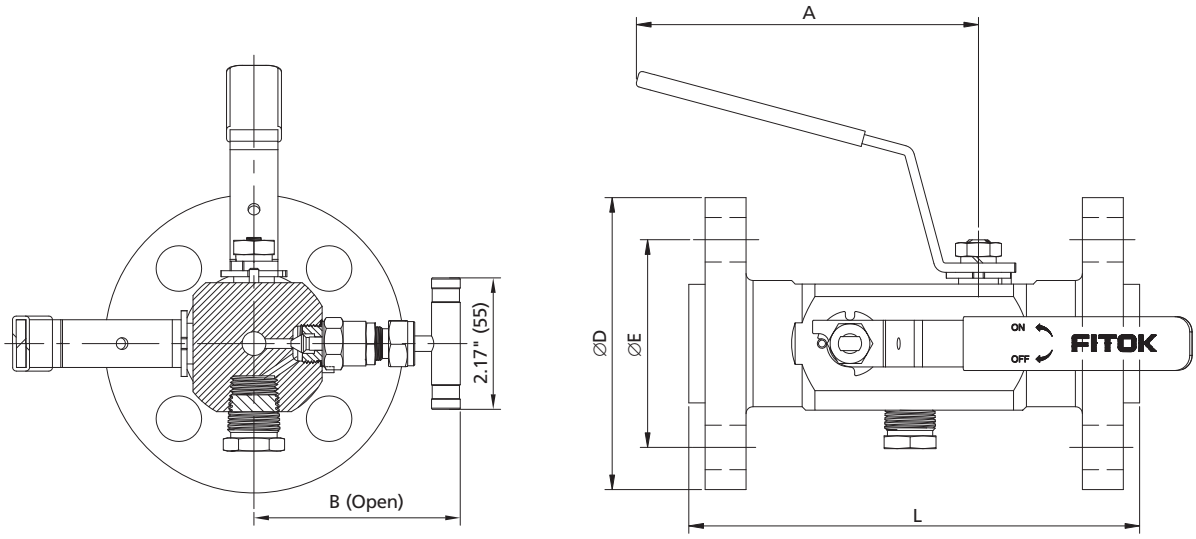


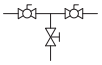
Valve Types and Dimensions

Double Block and Bleed Valves (DBB)

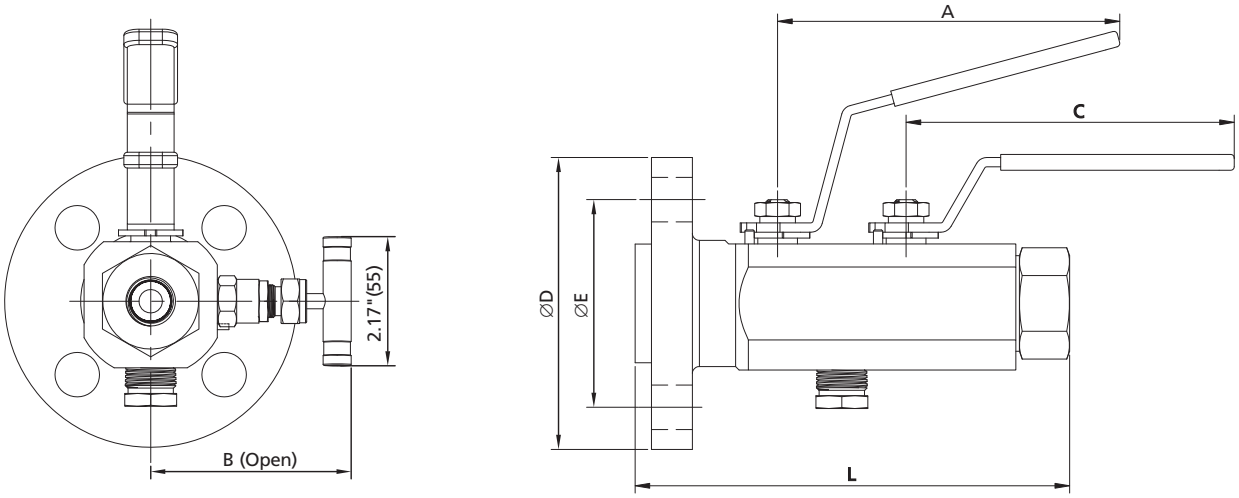
◎ Configuration (BBN): ball isolate, ball isolate, needle vent  Connection: Flange+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-□BBN□-FM□□□□-V8	RF Flange	RF Flange	1/2 Female NPT	See Tables 1-3
DBB□□-□BBN□-FJ□□□□-V8	RJ Flange	RJ Flange	1/2 Female NPT	



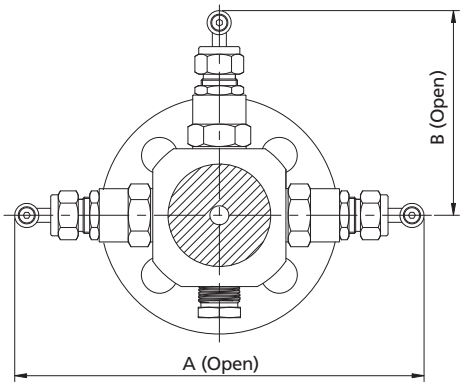
◎ Configuration (BBN): ball isolate, ball isolate, needle vent  Connection: Flange+Thread

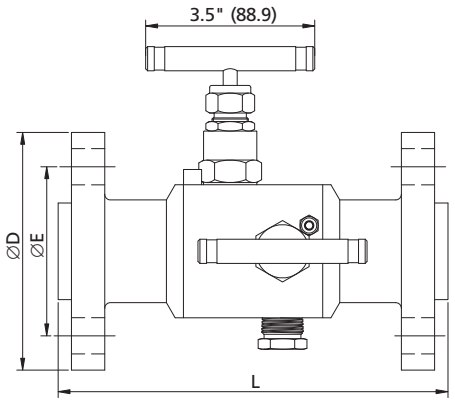
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-□BBN□-FM□□□□-FNS□-V8	RF Flange	Female NPT	1/2 Female NPT	See Tables 1-3
DBB□□-□BBN□-FJ□□□□-FNS□-V8	RJ Flange	Female NPT	1/2 Female NPT	



◎ Configuration (NNN): needle isolate, needle isolate, needle vent Connection: Flange+Flange

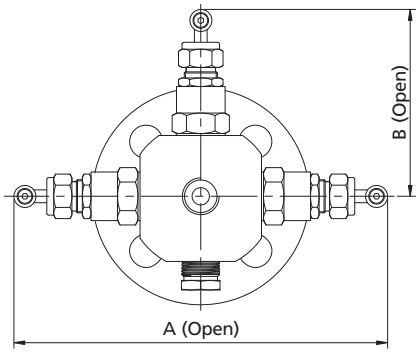
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-2NNN-FM□□□□-V8	RF Flange	RF Flange	1/2 Female NPT	See Table 4
DBB□□-2NNN-FJ□□□□-V8	RJ Flange	RJ Flange	1/2 Female NPT	

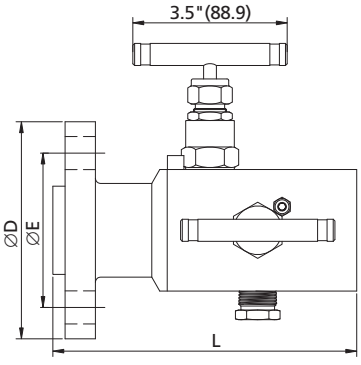




◎ Configuration (NNN): needle isolate, needle isolate, needle vent Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-2NNN-FM□□□□-FNS□-V8	RF Flange	Female NPT	1/2 Female NPT	See Table 4
DBB□□-2NNN-FJ□□□□-FNS□-V8	RJ Flange	Female NPT	1/2 Female NPT	

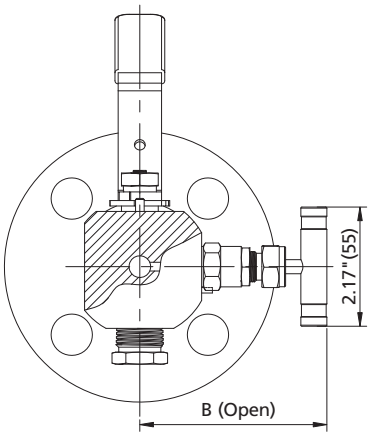


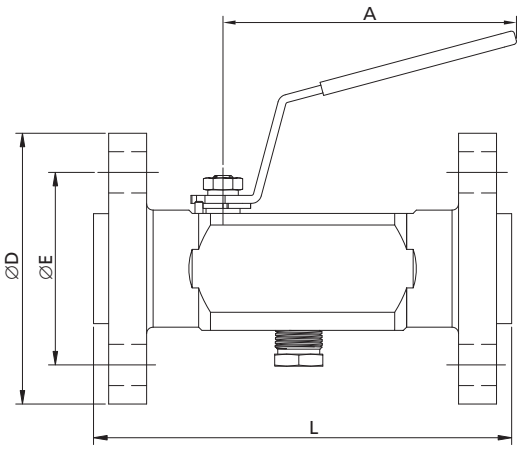


Single Block and Bleed Valves (BB)

◎ Configuration (BN): ball isolate, needle vent Connection: Flange+Flange

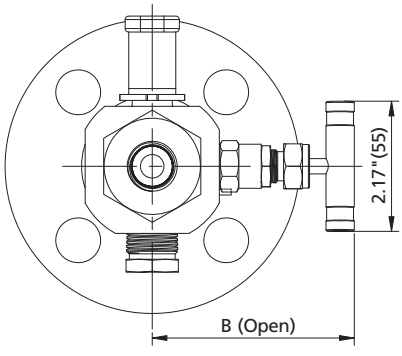
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-□BN□-FM□□□□-V8	RF Flange	RF Flange	1/2 Female NPT	See Tables 1-3
BB□□-□BN□-FJ□□□□-V8	RJ Flange	RJ Flange	1/2 Female NPT	





◎ Configuration (BN): ball isolate, needle vent Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-□BN□-FM□□□□-FNS□-V8	RF Flange	Female NPT	1/2 Female NPT	See Tables 1-3
BB□□-□BN□-FJ□□□□-FNS□-V8	RJ Flange	Female NPT	1/2 Female NPT	



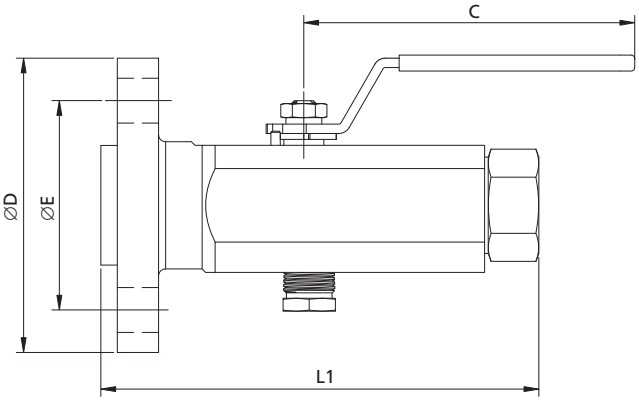


Table 1: Flange Options and Dimensions for 3/8 in. (9.5 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)								
		A	B	C	L			L1	∅D	∅E
					RF Flange	RJ Flange	Flange/NPT	Flange/NPT		
NPS1/2 (DN15)	150	5.75 (146)	3.48 (88.5)	5.51 (140)	6.41 (163)	6.41 (163)	6.61 (168)	4.72 (120)	3.54 (90)	2.37 (60.3)
	300				6.81 (173)	6.81 (173)	7.09 (180)	5.12 (130)	3.74 (95)	2.63 (66.7)
	600						7.32 (186)	5.35 (136)		
	900/1500				7.99 (203)	7.99 (203)	7.87 (200)	5.91 (150)	4.72 (120)	3.25 (82.6)
	2500						7.99 (203)	6.22 (158)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150				6.41 (163)	6.41 (163)	6.89 (175)	5.04 (128)	3.94 (100)	2.75 (69.9)
	300				6.81 (173)	6.81 (173)	7.20 (183)	5.24 (133)	4.53 (115)	3.25 (82.6)
	600						7.40 (188)	5.43 (138)		
	900/1500				7.99 (203)	7.99 (203)	7.95 (202)	5.98 (152)	5.12 (130)	3.50 (88.9)
	2500						8.19 (208)	6.22 (158)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150				6.41 (163)	6.41 (163)	6.89 (175)	5.12 (130)	4.33 (110)	3.13 (79.4)
	300				7.01 (178)	7.01 (178)	7.09 (180)		4.92 (125)	3.50 (88.9)
	600				7.60 (193)	7.60 (193)	7.32 (186)	5.35 (136)		
	900/1500				10.3 (261)	10.3 (261)	8.07 (205)	6.10 (155)	5.91 (150)	4.00 (101.6)
	2500				10.6 (273)	10.6 (273)	8.35 (212)	6.38 (162)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150				8.90 (226)	8.90 (226)	7.01 (178)	4.96 (126)	4.92 (125)	3.87 (98.4)
	300				9.89 (251)	9.89 (251)	7.28 (185)	5.31 (135)	6.10 (155)	4.50 (114.3)
	600						7.60 (193)	5.63 (143)		
	900/1500				11.5 (291)	11.5 (291)	8.31 (211)	6.34 (161)	7.09 (180)	4.87 (123.8)
	2500				12.4 (316)	12.4 (316)	8.86 (225)	6.89 (175)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150				9.09 (231)	9.09 (231)	7.01 (178)	5.24 (133)	5.91 (150)	4.75 (120.7)
	300				10.1 (256)	10.1 (256)	7.48 (190)	5.51 (140)	6.49 (165)	5.00 (127.0)
	600						7.83 (199)	5.87 (149)		
	900/1500				12.0 (306)	12.0 (306)	8.78 (223)	6.81 (173)	8.46 (215)	6.50 (165.1)
	2500				13.6 (346)	13.6 (346)	9.06 (230)	7.09 (180)	9.25 (235)	6.75 (171.4)

Table 2: Flange Options and Dimensions for 1/2 in. (14 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)								
		A	B	C	L			L1	∅D	∅E
					RF Flange	RJ Flange	Flange/NPT	Flange/NPT		
NPS1 (DN25)	150	6.73 (171)	3.68 (93.5)	6.5 (165)	9.10 (231)	9.10 (231)	8.54 (217)	5.87 (149)	4.33 (110)	3.13 (79.4)
	300				9.49 (241)	9.49 (241)	8.66 (220)	5.98 (152)	4.92 (125)	3.50 (88.9)
	600						8.74 (222)	6.06 (154)		
	900/1500				10.3 (261)	10.3 (261)	9.53 (242)	6.85 (174)	5.91 (150)	4.00 (101.6)
	2500				10.7 (273)	10.7 (273)	9.80 (249)	7.13 (181)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150				9.49 (241)	9.49 (241)	8.07 (205)	5.87 (149)	4.92 (125)	3.87 (98.4)
	300				9.89 (251)	9.89 (251)	8.74 (222)	6.06 (154)	6.10 (155)	4.50 (114.3)
	600						9.02 (229)	6.34 (161)		
	900/1500				11.5 (291)	11.5 (291)	9.61 (244)	6.93 (176)	7.09 (180)	4.87 (123.8)
	2500				12.4 (316)	12.4 (316)	10.2 (259)	7.52 (191)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150				9.49 (241)	9.49 (241)	8.15 (207)	5.91 (150)	5.91 (150)	4.75 (120.7)
	300				10.3 (261)	10.3 (261)	8.46 (215)	6.06 (154)	6.49 (165)	5.00 (127.0)
	600						8.86 (225)	6.93 (176)		
	900/1500				12.0 (306)	12.0 (306)	9.61 (244)	7.09 (180)	8.46 (215)	6.50 (165.1)
	2500				13.6 (346)	13.6 (346)	10.1 (256)	7.60 (193)	9.25 (235)	6.75 (171.4)

Table 3: Flange Options and Dimensions for 3/4 in. (20 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)								
		A	B	C	L			L1	∅D	∅E
					RF Flange	RJ Flange	Flange/NPT	Flange/NPT		
NPS1-1/2 (DN40)	150	6.73 (171)	3.88 (98.5)	6.5 (165)	8.94 (227)	8.94 (227)	9.13 (232)	6.3 (160)	4.92 (125)	3.87 (98.4)
	300				9.41 (239)	9.41 (239)	9.41 (239)	6.57 (167)	6.10 (155)	4.50 (114.3)
	600				10.04 (255)	10.04 (255)	9.69 (246)	6.85 (174)		
	900/1500				12.05 (306)	12.05 (306)	10.39 (264)	7.56 (192)	7.09 (180)	4.87 (123.8)
	2500				12.99 (330)	12.99 (330)	10.87 (276)	8.03 (204)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150				8.86 (225)	8.86 (225)	9.06 (230)	6.22 (158)	5.91 (150)	4.75 (120.7)
	300				9.37 (238)	9.37 (238)	9.33 (237)	6.49 (165)	6.49 (165)	5.00 (127.0)
	600				10.24 (260)	10.24 (260)	9.61 (244)	6.77 (172)		
	900/1500				12.60 (320)	12.60 (320)	11.02 (280)	7.64 (194)	8.46 (215)	6.50 (165.1)
	2500				13.7 (348)	13.7 (348)	11.42 (290)	8.27 (210)	9.25 (235)	6.75 (171.4)

Table 4: Flange Options and Dimensions for 3/8 in. (9.5 mm) Bore Size (Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	L			∅D	∅E
				RF Flange	RJ Flange	Flange/NPT		
NPS1/2 (DN15)	150	9.17 (233)	4.59 (116.5)	6.89 (175)	6.89 (175)	6.10 (155)	3.54 (90)	2.37 (60.3)
	300			7.28 (185)	7.28 (185)	6.30 (160)	3.74 (95)	2.63 (66.7)
	600							
	900/1500			8.46 (215)	8.46 (215)	6.89 (175)	4.72 (120)	3.25 (82.6)
	2500			9.25 (235)	9.25 (235)	7.28 (185)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150			6.89 (175)	6.89 (175)	6.10 (155)	3.94 (100)	2.75 (69.9)
	300			7.28 (185)	7.28 (185)	6.30 (160)	4.53 (115)	3.25 (82.6)
	600			7.87 (200)	7.87 (200)	6.69 (170)		
	900/1500			8.66 (225)	8.66 (225)	7.09 (180)	5.12 (130)	3.50 (88.9)
	2500			9.45 (240)	9.45 (240)	7.48 (190)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150			6.89 (175)	6.89 (175)	6.10 (155)	4.33 (110)	3.13 (79.4)
	300			7.28 (185)	7.28 (185)	6.30 (160)	4.92 (125)	3.50 (88.9)
	600			8.07 (205)	8.07 (205)	6.89 (175)		
	900/1500			10.04 (255)	10.04 (255)	7.68 (195)	5.91 (150)	4.00 (101.6)
	2500			10.24 (260)	10.24 (260)	7.87 (200)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150			7.09 (180)	7.09 (180)	6.30 (160)	4.92 (125)	3.87 (98.4)
	300			8.67 (220)	8.67 (220)	6.89 (175)	6.10 (155)	4.50 (114.3)
	600			8.86 (225)	8.86 (225)	7.28 (185)		
	900/1500			10.43 (265)	10.43 (265)	7.87 (200)	7.09 (180)	4.87 (123.8)
	2500			12.20 (310)	12.20 (310)	8.86 (225)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150			7.68 (195)	7.68 (195)	6.69 (170)	5.91 (150)	4.75 (120.7)
	300			8.67 (220)	8.67 (220)	7.09 (180)	6.49 (165)	5.00 (127.0)
	600			9.06 (230)	9.06 (230)	748 (190)		
	900/1500			11.42 (290)	11.42 (290)	8.67 (220)	8.46 (215)	6.50 (165.1)
	2500			12.60 (320)	12.60 (320)	9.06 (230)	9.25 (235)	6.75 (171.4)

Ordering Number Description

DBBSS - 1BBN1 - FM16300 - FNS8 - V8 - GSF2 - IE

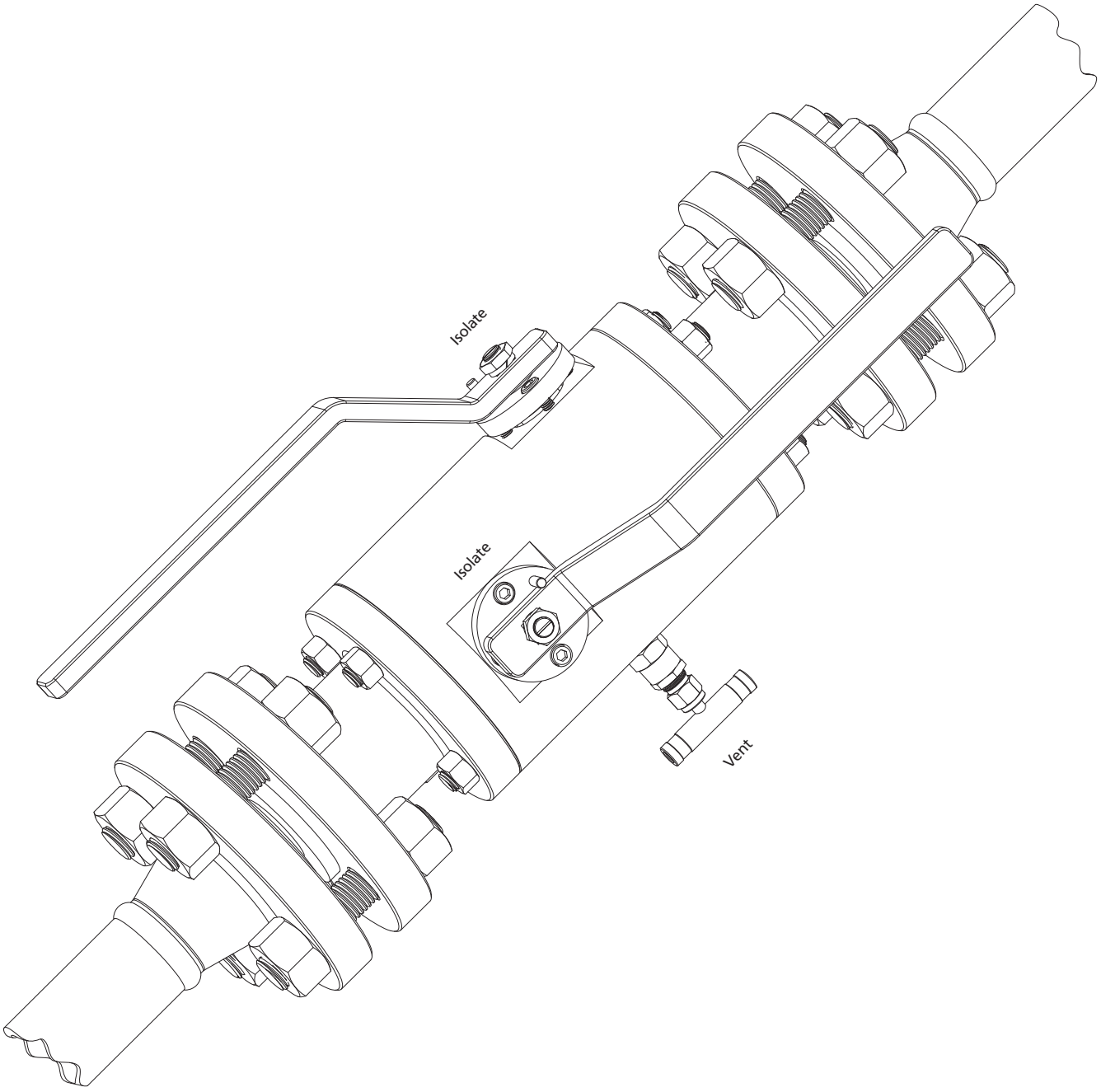
Series (Function)	Body Material	Needle Valve Bore Size	Configuration	Ball Valve Bore Size	Inlet Type	Inlet Size	Pressure Ratings	Outlet Type	Outlet Size	Vent Type and Size	Packing/ Sealing Material	Special Application	Cleaning and Packaging	Special Function
SS 316 SS		4 mm	Config-uration / Primary Isolate / Secon-dary Isolate / Bleed	No Ball Valve Configuration	FM RF Flange	ASME Flange (Class Series)		Same as inlet	Same as inlet	V4 1/4 Female NPT with plug	PTFE	No	No	No
6L 316L SS	1 6.4 mm	BBN Ball Ball Needle	9.5 mm	8 1/2"	FJ RJ Flange	150 Class 150	FNS Female NPT	6 3/8"	V8 1/2 Female NPT with plug	G Graphite	S NACE MR 0175	I Fire safe
CS Carbon Steel	2 9.5 mm	BBO Ball Ball OS&Y	1 14 mm	12 3/4"		300 Class 300	NS Male NPT	8 1/2"		Not an option for fire safe design		FC-01	IE Fire safe and anti-static
D7 Duplex 2507		NNN Needle Needle Needle	2 20 mm	16 1"		600 Class 600		12 3/4"				F2 FC-02	
DBB Double Block and Bleed		BN Ball — Needle		20 1 1/4"		900 Class 900		16 1"					
BB Single Block and Bleed		BO Ball — OS&Y		24 1 1/2"		1500 Class 1500		24 1 1/2"					
				32 2"		2500 Class 2500		32 2"					
						EN Flange (PN Series)							
						6 PN 6							
						10 PN 10							
						16 PN 16							
						25 PN 25							
						40 PN 40							
						63 PN 63							
						100 PN 100							
						160 PN 160							

1. For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
2.1 FC-01: Standard cleaning and packaging for general industrial procedures.
2.2 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.

Split Type Flang Block and Bleed Valves

Features

- Bore size: NPS 3/8~NPS 2 (DN10~DN50)
- 3-piece, bolted body construction
- Optional fire-safe and anti-static design
- 1/2 female NPT standard vent with plug



Valve Types and Dimensions

Double Block and Bleed Valves (DBB)

◎ Configuration (BBN): ball isolate, ball isolate, needle vent Connection: Flange+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-□BBN□-FM□□□□-V8-FS-I	RF Flange	RF Flange	1/2 Female NPT	See Tables 8-12
DBB□□-□BBN□-FJ□□□□-V8-FS-I	RJ Flange	RJ Flange	1/2 Female NPT	

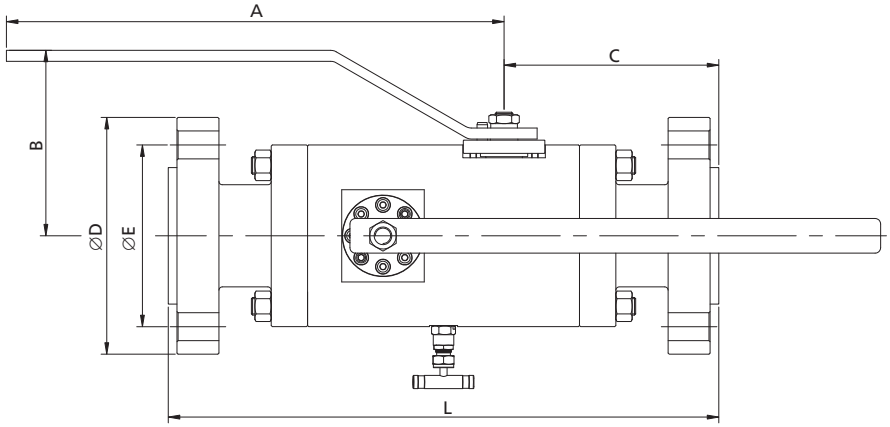


Table 8: Flange Options and Dimensions for 3/8 in. (9.5 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	C	L		∅D	∅E
					RF Flange	RJ Flange		
NPS1/2 (DN15)	150	8.62 (219)	4.37 (134)	4.37 (111)	11.10 (282)	-	3.54 (90)	2.37 (60.3)
	300			4.49 (114)	11.34 (288)	11.57 (294)	3.74 (95)	2.63 (66.7)
	600			4.76 (121)	11.89 (302)	11.89 (302)		
	900/1500			5.31 (135)	12.99 (330)	12.99 (330)	4.72 (120)	3.25 (82.6)
	2500			5.63 (143)	13.62 (346)	13.62 (346)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150			4.45 (113)	11.26 (286)	-	3.94 (100)	2.75 (69.9)
	300			4.65 (118)	11.65 (296)	11.65 (296)	4.53 (115)	3.25 (82.6)
	600			4.92 (125)	12.20 (310)	12.20 (310)		
	900/1500			5.43 (138)	13.23 (336)	13.23 (336)	5.12 (130)	3.50 (88.9)
	2500			5.71 (145)	13.78 (350)	13.78 (350)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150			4.49 (114)	11.34 (288)	11.34 (288)	4.33 (110)	3.13 (79.4)
	300			4.72 (120)	11.81 (300)	11.81 (300)	4.92 (125)	3.50 (88.9)
	600			4.96 (126)	12.28 (312)	12.28 (312)		
	900/1500			5.71 (145)	13.78 (350)	13.78 (350)	5.91 (150)	4.00 (101.6)
	2500			5.98 (152)	14.33 (364)	14.33 (364)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150			4.65 (118)	11.65 (296)	11.65 (296)	4.92 (125)	3.87 (98.4)
	300			5.0 (127)	12.36 (314)	12.36 (314)	6.10 (155)	4.50 (114.3)
	600			5.31 (135)	12.99 (330)	12.99 (330)		
	900/1500	7.44 (189)	7.05 (179)	5.98 (152)	14.33 (364)	14.33 (364)	7.09 (180)	4.87 (123.8)
	2500			6.57 (167)	15.51 (394)	15.67 (398)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150	8.62 (219)	4.37 (134)	4.76 (121)	11.89 (302)	11.89 (302)	5.91 (150)	4.75 (120.7)
	300			4.88 (124)	12.13 (308)	12.28 (312)	6.49 (165)	5.00 (127.0)
	600			5.28 (134)	12.91 (328)	13.07 (332)		
	900/1500	7.44 (189)	7.05 (179)	6.22 (155)	14.57 (370)	14.72 (374)	8.46 (215)	6.50 (165.1)
	2500			6.69 (170)	15.75 (400)	15.91 (404)	9.25 (235)	6.75 (171.4)

Table 9: Flange Options and Dimensions for 1/2 in. (14 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	C	L		∅D	∅E
					RF Flange	RJ Flange		
NPS1/2 (DN15)	150	8.62 (219)	4.37 (134)	4.37 (111)	11.10 (282)	-	3.54 (90)	2.37 (60.3)
	300			4.49 (114)	11.34 (288)	11.57 (294)	3.74 (95)	2.63 (66.7)
	600			4.76 (121)	11.89 (302)	11.89 (302)		
	900/1500			5.31 (135)	12.99 (330)	12.99 (330)	4.72 (120)	3.25 (82.6)
	2500			5.63 (143)	13.62 (346)	13.62 (346)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150			4.45 (113)	11.26 (286)	-	3.94 (100)	2.75 (69.9)
	300			4.65 (118)	11.65 (296)	11.65 (296)	4.53 (115)	3.25 (82.6)
	600			4.92 (125)	12.20 (310)	12.20 (310)		
	900/1500			5.43 (138)	13.23 (336)	13.23 (336)	5.12 (130)	3.50 (88.9)
	2500			5.71 (145)	13.78 (350)	13.78 (350)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150			4.49 (114)	11.34 (288)	11.34 (288)	4.33 (110)	3.13 (79.4)
	300			4.72 (120)	11.81 (300)	11.81 (300)	4.92 (125)	3.50 (88.9)
	600			4.96 (126)	12.28 (312)	12.28 (312)		
	900/1500			5.71 (145)	13.78 (350)	13.78 (350)	5.91 (150)	4.00 (101.6)
	2500			5.98 (152)	14.33 (364)	14.33 (364)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150			4.65 (118)	11.65 (296)	11.65 (296)	4.92 (125)	3.87 (98.4)
	300			5.0 (127)	12.36 (314)	12.36 (314)	6.10 (155)	4.50 (114.3)
	600			5.31 (135)	12.99 (330)	12.99 (330)		
	900/1500	7.44 (189)	7.05 (179)	5.98 (152)	14.33 (364)	14.33 (364)	7.09 (180)	4.87 (123.8)
	2500			6.57 (167)	15.51 (394)	15.67 (398)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150	8.62 (219)	4.37 (134)	4.76 (121)	11.89 (302)	11.89 (302)	5.91 (150)	4.75 (120.7)
	300			4.88 (124)	12.13 (308)	12.28 (312)	6.49 (165)	5.00 (127.0)
	600			5.28 (134)	12.91 (328)	13.07 (332)		
	900/1500	7.44 (189)	7.05 (179)	6.22 (155)	14.57 (370)	14.72 (374)	8.46 (215)	6.50 (165.1)
	2500			6.69 (170)	15.75 (400)	15.91 (404)	9.25 (235)	6.75 (171.4)

Table 10: Flange Options and Dimensions for 3/4 in. (20 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	C	L		∅D	∅E
					RF Flange	RJ Flange		
NPS3/4 (DN20)	150	9.53 (242)	4.37 (111)	4.53 (115)	11.42 (290)	-	3.94 (100)	2.75 (69.9)
	300			4.72 (120)	11.81 (300)	12.20 (310)	4.53 (115)	3.25 (82.6)
	600			5.0 (127)	12.36 (314)	12.36 (314)		
	900/1500			5.51 (140)	13.39 (340)	13.39 (340)	5.12 (130)	3.50 (88.9)
	2500			5.79 (147)	13.94 (354)	13.94 (354)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150			4.61 (117)	11.57 (294)	11.57 (294)	4.33 (110)	3.13 (79.4)
	300			4.80 (122)	11.97 (304)	11.97 (304)	4.92 (125)	3.50 (88.9)
	600			5.08 (129)	12.52 (318)	12.52 (318)		
	900/1500			5.83 (148)	14.02 (356)	14.02 (356)	5.91 (150)	4.00 (101.6)
	2500			6.1 (155)	14.57 (370)	14.57 (370)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150			4.72 (120)	11.81 (300)	11.81 (300)	4.92 (125)	3.87 (98.4)
	300			5.12 (130)	12.6 (320)	12.6 (320)	6.10 (155)	4.50 (114.3)
	600			5.43 (138)	13.31 (338)	13.31 (338)		
	900/1500		6.34 (161)	6.06 (154)	14.49 (368)	14.49 (368)	7.09 (180)	4.87 (123.8)
	2500			6.70 (170)	15.75 (400)	15.87 (403)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150		4.37 (111)	4.88 (124)	12.13 (308)	12.13 (308)	5.91 (150)	4.75 (120.7)
	300			5.0 (127)	12.36 (314)	12.52 (318)	6.49 (165)	5.00 (127.0)
	600			5.39 (137)	13.15 (334)	13.31 (338)		
	900/1500		6.34 (161)	6.22 (158)	14.8 (376)	14.96 (380)	8.46 (215)	6.50 (165.1)
	2500			6.81 (173)	15.98 (406)	16.14 (410)	9.25 (235)	6.75 (171.4)

Table 11: Flange Options and Dimensions for 1-1/2 in. (38.1 mm) Bore Size (Ball/Needle)

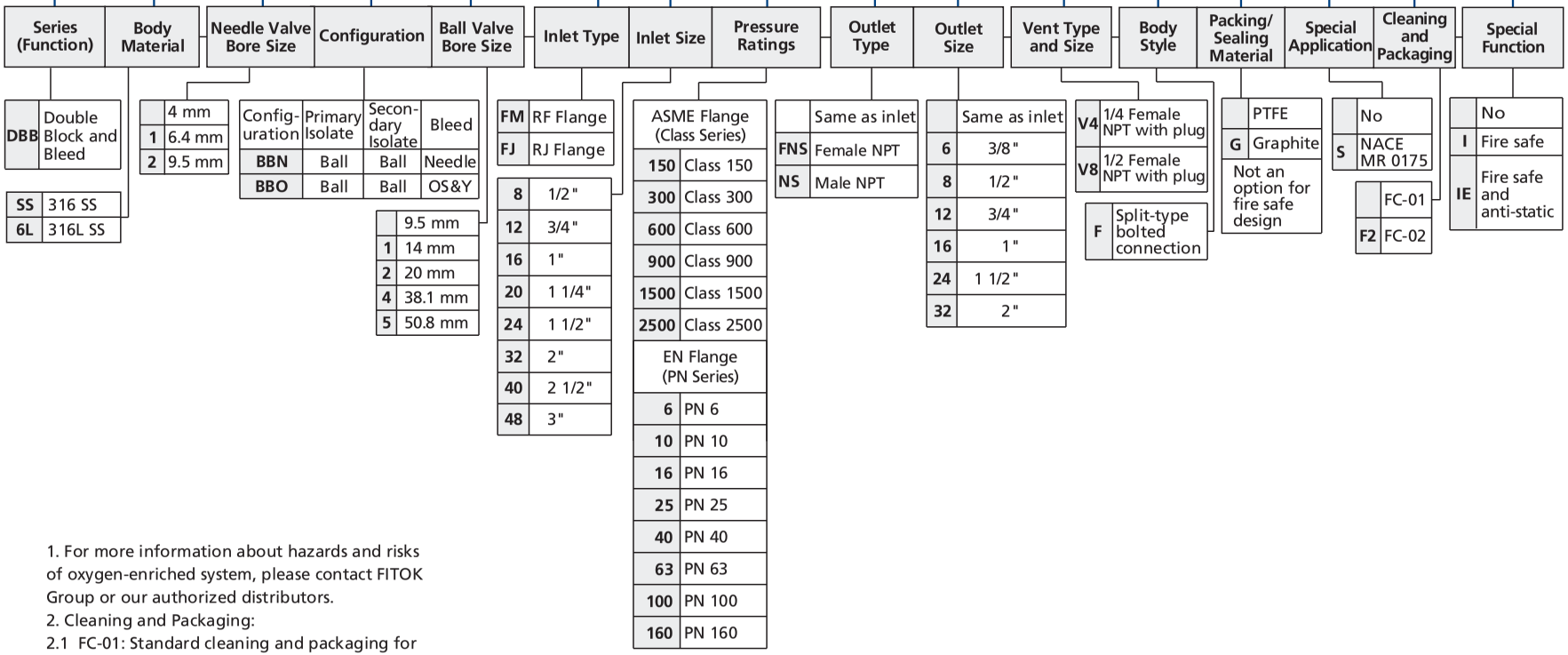
Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	C	L		∅D	∅E
					RF Flange	RJ Flange		
NPS1-1/2 (DN40)	150	10.7 (272)	5.28 (134)	5.43 (138)	14.2 (361)	14.7 (374)	4.92 (125)	3.87 (98.4)
	300			5.55 (141)	14.4 (367)	14.88 (378)	6.10 (155)	4.50 (114.3)
	600			5.87 (149)	15.12 (384)	15.12 (384)		
	900/1500		6.61 (168)	6.22 (158)	16.8 (402)	16.14 (410)	7.09 (180)	4.87 (123.8)
NPS2 (DN50)	150		5.28 (134)	5.47 (139)	14.3 (364)	14.8 (377)	5.91 (150)	4.75 (120.7)
	300			5.63 (143)	14.6 (372)	15.04 (382)	6.49 (165)	5.00 (127.0)
	600			5.98 (132)	15.4 (390)	15.5 (393)		
	900/1500		6.61 (168)	6.50 (165)	16.3 (415)	16.5 (418)	8.46 (215)	6.50 (165.1)

Table 12: Flange Options and Dimensions for 2 in. (50.8 mm) Bore Size (Ball/Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	C	L		∅D	∅E
					RF Flange	RJ Flange		
NPS2 (DN50)	150	17.80 (452)	6.63 (169)	5.94 (151)	15.35 (390)	15.8 (403)	5.91 (150)	4.75 (120.7)
	300			6.10 (155)	15.67 (398)	15.67 (398)	6.49 (165)	5.00 (127.0)
	600			6.38 (162)	16.38 (416)	16.5 (419)		
	900/1500			7.68 (195)	19.69 (500)	19.69 (500)	8.46 (215)	6.50 (165.1)
NPS3 (DN80)	150			6.14 (156)	15.7 (400)	16.3 (413)	7.48 (190)	6.0 (152.4)
	300			6.34 (161)	16.1 (410)	16.1 (410)	8.27 (210)	6.63 (168.3)
	600			6.61 (168)	16.9 (428)	17.0 (431)		
	900			7.68 (195)	19.69 (500)	19.69 (500)	9.45 (240)	7.50 (190.5)
	1500			8.27 (210)	20.87 (530)	20.87 (530)	10.43 (265)	8.0 (203.2)

Ordering Number Description

DBBSS - 1BBN1 - FM16300 - FNS8 - V8 - FGSF2 - IE



Series (Function)	
DBB	Double Block and Bleed

Body Material	
SS	316 SS
6L	316L SS

Needle Valve Bore Size	
	4 mm
1	6.4 mm
2	9.5 mm

Configuration			
Configuration	Primary Isolate	Secondary Isolate	Bleed
BBN	Ball	Ball	Needle
BBO	Ball	Ball	OS&Y

Ball Valve Bore Size	
	9.5 mm
1	14 mm
2	20 mm
4	38.1 mm
5	50.8 mm

Inlet Type	
FM	RF Flange
FJ	RJ Flange

Inlet Size	
8	1/2"
12	3/4"
16	1"
20	1 1/4"
24	1 1/2"
32	2"
40	2 1/2"
48	3"

Pressure Ratings	
ASME Flange (Class Series)	
150	Class 150
300	Class 300
600	Class 600
900	Class 900
1500	Class 1500
2500	Class 2500
EN Flange (PN Series)	
6	PN 6
10	PN 10
16	PN 16
25	PN 25
40	PN 40
63	PN 63
100	PN 100
160	PN 160

Outlet Type	
	Same as inlet
FNS	Female NPT
NS	Male NPT

Outlet Size	
	Same as inlet
6	3/8"
8	1/2"
12	3/4"
16	1"
24	1 1/2"
32	2"

Vent Type and Size	
V4	1/4 Female NPT with plug
V8	1/2 Female NPT with plug
F	Split-type bolted connection

Body Style	

Packing/ Sealing Material	
	PTFE
G	Graphite
Not an option for fire safe design	

Special Application	
	No
S	NACE MR 0175

Cleaning and Packaging	
	FC-01
F2	FC-02

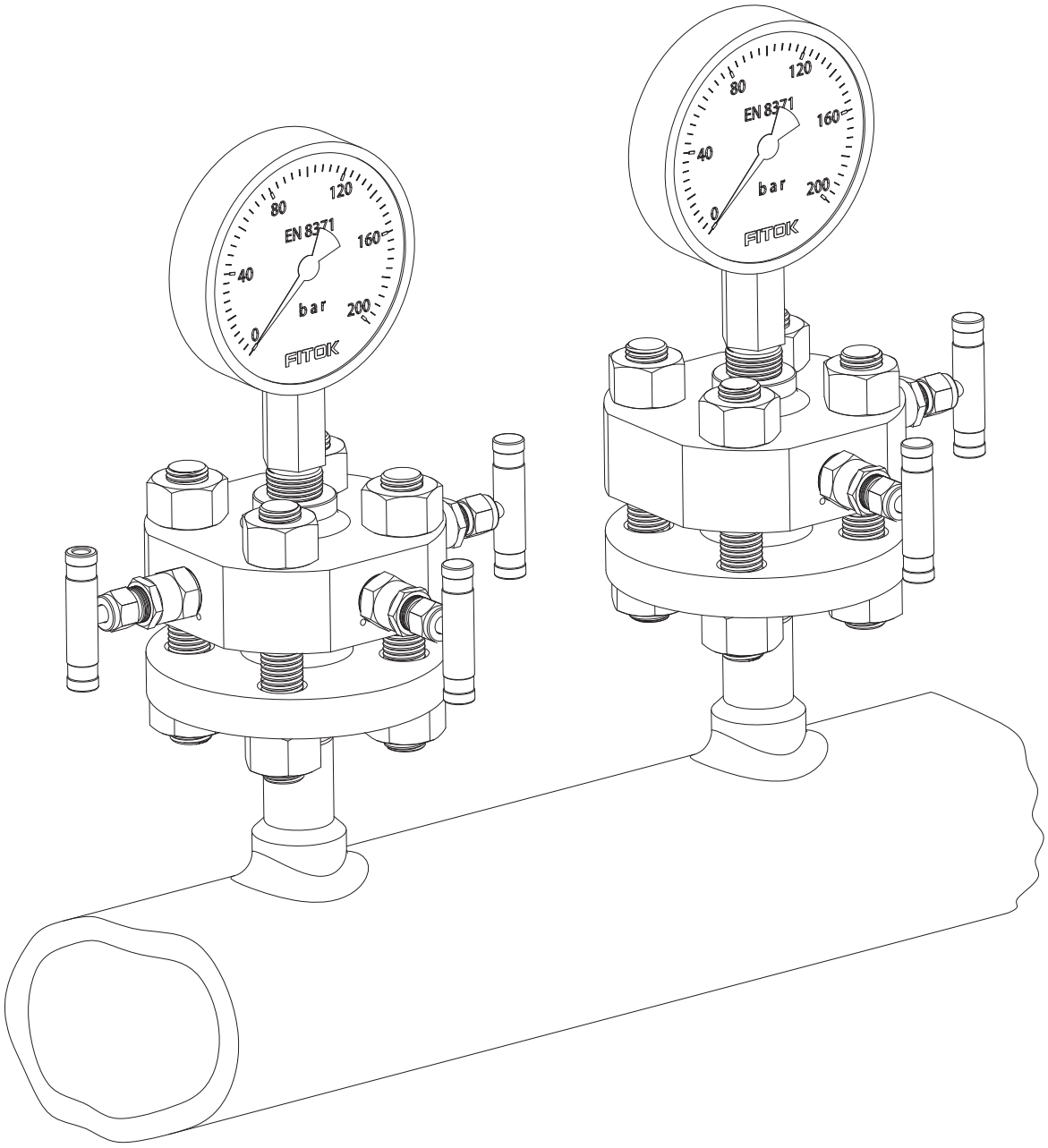
Special Function	
	No
I	Fire safe
IE	Fire safe and anti-static

1. For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
2.1 FC-01: Standard cleaning and packaging for general industrial procedures.
2.2 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.

Wafer Type Flange Block and Bleed Valves

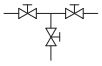
Features

◎ Smooth transition from the process piping system to instrumentation in a single configuration
◎ 1/2 female NPT standard outlet
◎ 1/2 female NPT standard vent with plug

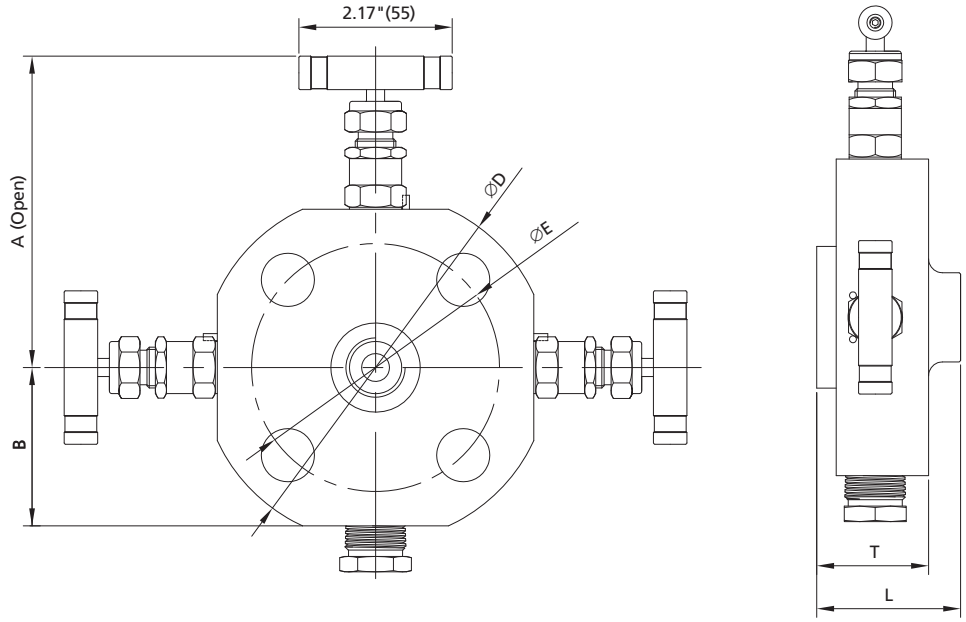


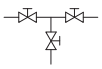
Types and Dimensions

Double Block and Bleed Valves (DBB)

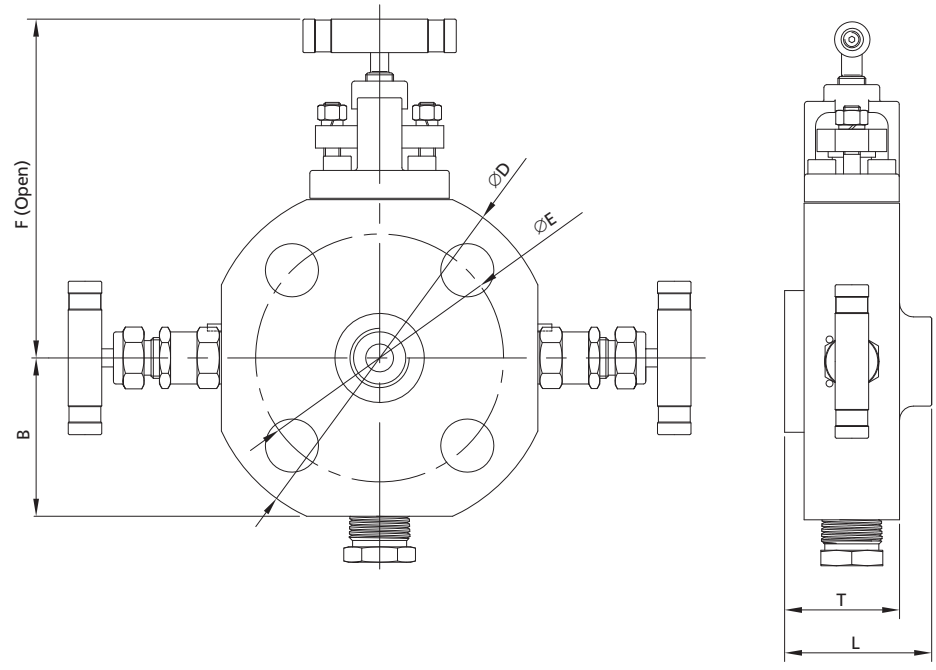
◎ Configuration (NNN): needle isolate, needle isolate, needle vent  Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-NNN-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 13
DBB□□-NNN-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	



◎ Configuration (ONN): OS&Y isolate, needle isolate, needle vent  Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-ONN-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 14
DBB□□-ONN-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	

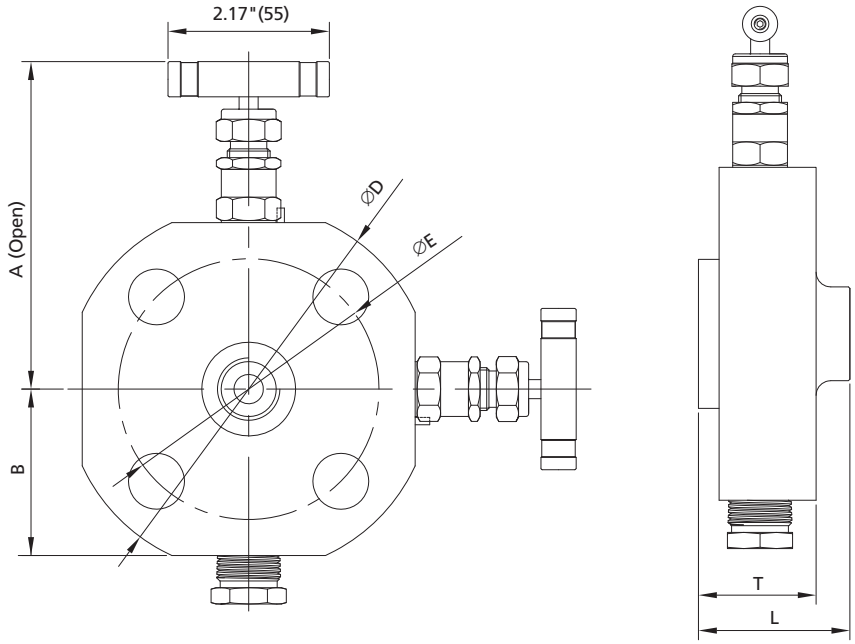


FITOK

Single Block and Bleed Valves (BB)

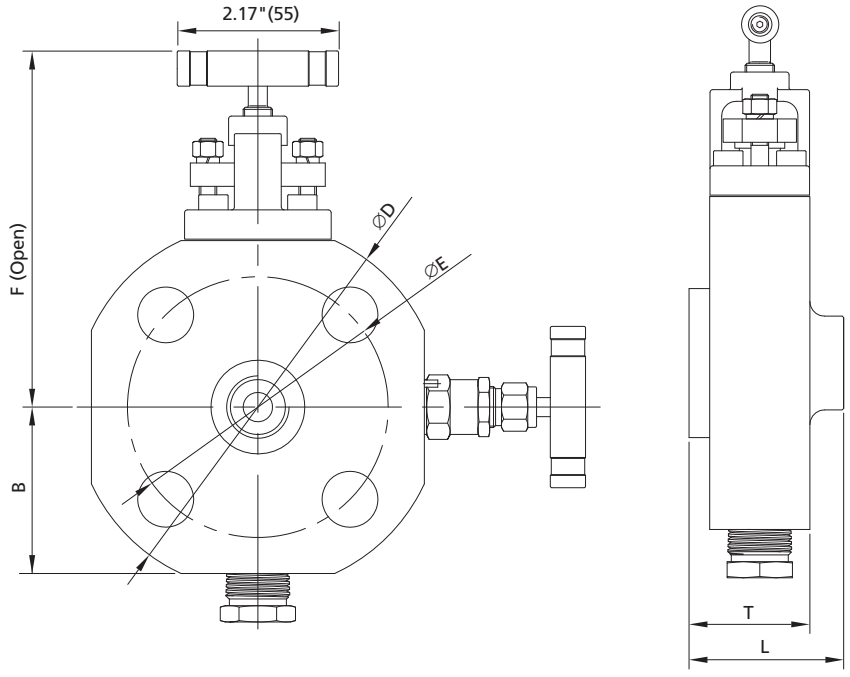
◎ Configuration (NN): needle isolate, needle vent Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-NN-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 13
BB□□-NN-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	



◎ Configuration (ON): OS&Y isolate, needle vent Connection: Flange+Thread

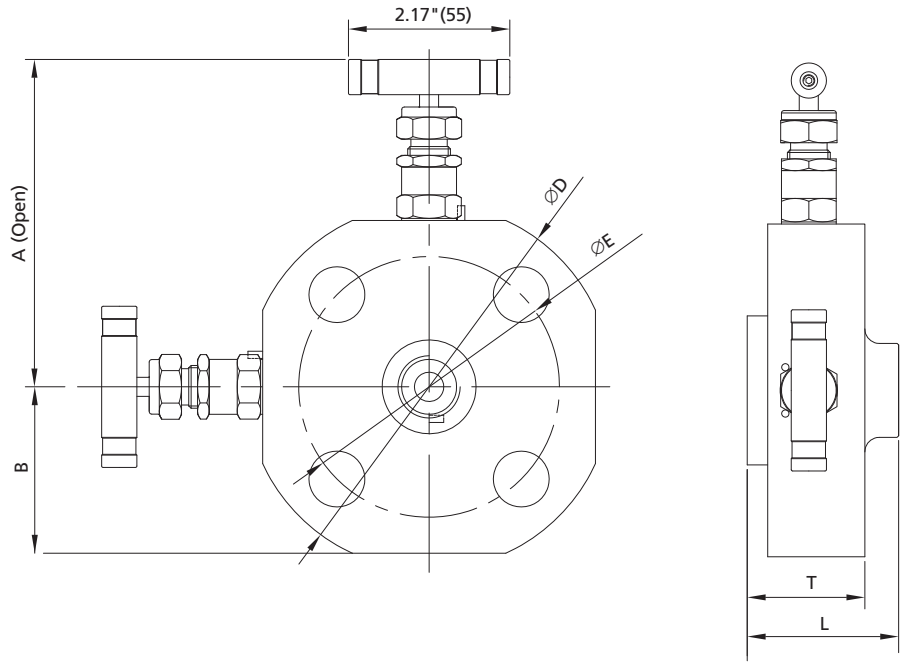
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-ON-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 14
BB□□-ON-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	



Double Block Valves (DB)

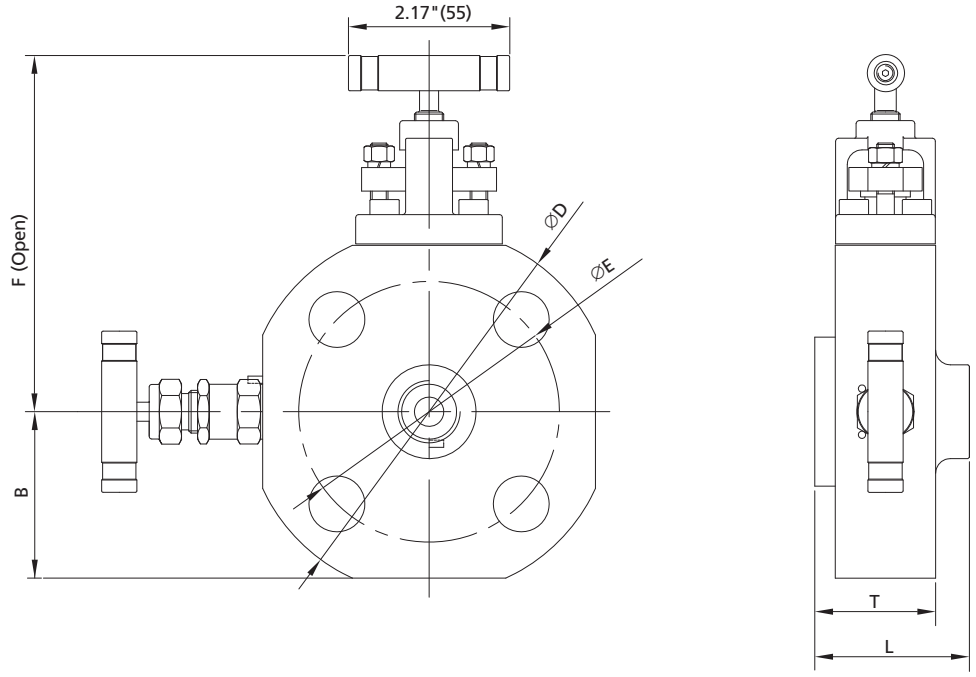
◎ Configuration (NN): needle primary, needle secondary Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DB□□-NN-MM□□□□-FNS8	RF Flange	1/2 Female NPT	/	See Table 13
DB□□-NN-MJ□□□□-FNS8	RJ Flange	1/2 Female NPT	/	



◎ Configuration (ON): OS&Y primary , needle secondary Connection: Flange+Thread

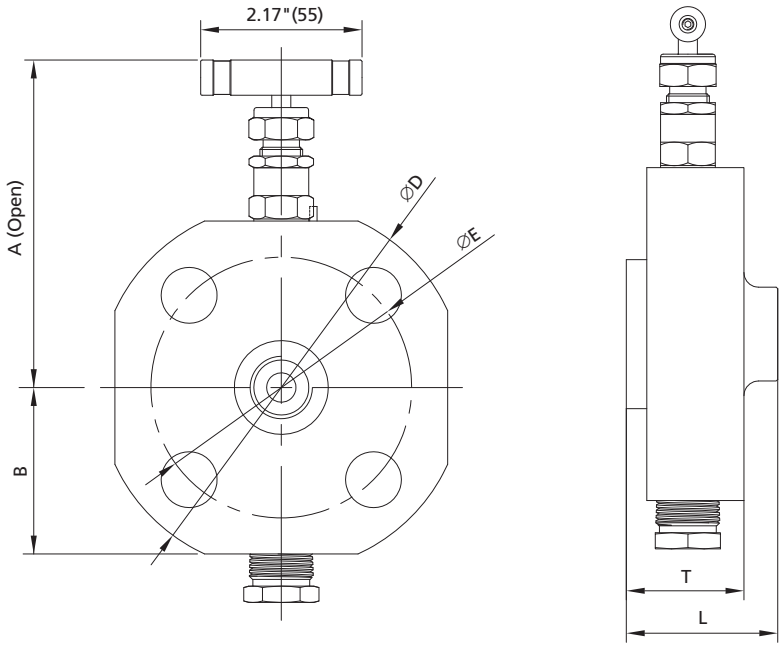
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DB□□-ON-MM□□□□-FNS8	RF Flange	1/2 Female NPT	/	See Table 14
DB□□-ON-MJ□□□□-FNS8	RJ Flange	1/2 Female NPT	/	



Single Block Valves (SB)

◎ Configuration (N): needle isolate, with vent port Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
SB□□-N-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 13
SB□□-N-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	



◎ Configuration (O): OS&Y isolate, with vent port Connection: Flange+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
SB□□-O-MM□□□□-FNS8-V8	RF Flange	1/2 Female NPT	1/2 Female NPT	See Table 14
SB□□-O-MJ□□□□-FNS8-V8	RJ Flange	1/2 Female NPT	1/2 Female NPT	

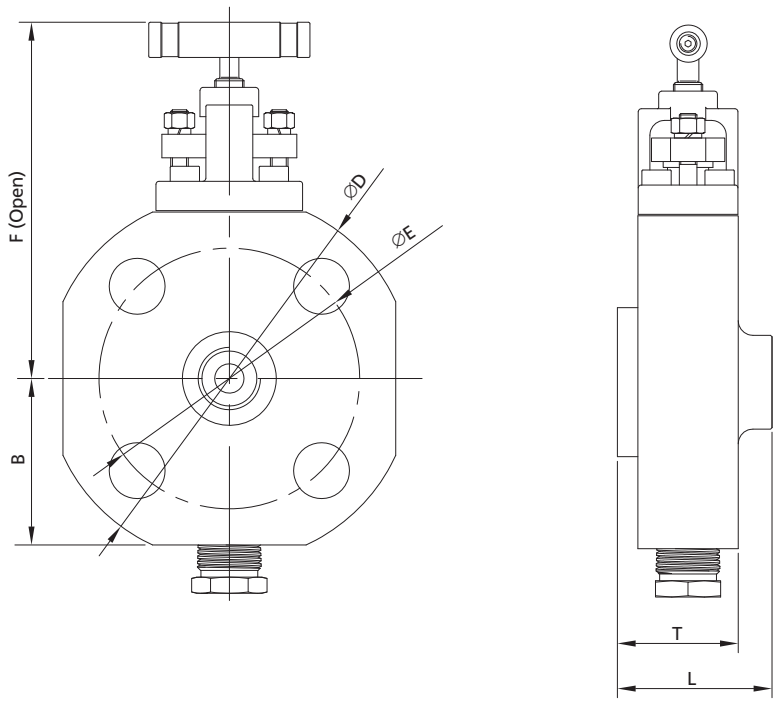


Table 13: Flange Options and Dimensions for 1/8 in. (4mm) Bore Size (Ball/Needle), configuration: N

Flange Size	ASME Class	Dimensions, in. (mm)							
		A	B	RF Flange		RJ Flange		∅D	∅E
				L	T	L	T		
NPS1/2 (DN15)	150	3.94 (100.0)	1.57 (40.0)	1.73 (44.0)	1.24 (31.5)	—	—	3.54 (90)	2.37 (60.3)
	300	4.04 (102.5)	1.67 (42.5)			1.79 (45.5)	1.30 (33.0)	3.74 (95)	2.63 (66.7)
	600				1.32 (33.5)				
	900/1500	4.53 (115.0)	2.17 (55.0)	1.73 (44.0)	1.32 (33.5)	1.79 (45.5)	1.30 (33.0)	4.72 (120)	3.25 (82.6)
	2500	4.82 (122.5)	2.46 (62.5)	1.93 (48.9)	1.51 (38.4)	1.93 (48.9)	1.51 (38.4)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150	4.13 (105.0)	1.77 (45.0)	1.73 (44.0)	1.24 (31.5)	—	—	3.94 (100)	2.75 (69.9)
	300	4.43 (112.5)	2.07 (52.5)			1.79 (45.5)	1.30 (33.0)	4.53 (115)	3.25 (82.6)
	600				1.32 (33.5)				
	900/1500	4.72 (120.0)	2.36 (60.0)	1.73 (44.0)	1.32 (33.5)	1.79 (45.5)	1.38 (35.0)	5.12 (130)	3.50 (88.9)
	2500	4.92 (125.0)	2.56 (65.0)	2.00 (50.9)	1.59 (40.4)	2.00 (50.9)	1.59 (40.4)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150	4.33 (110.0)	1.97 (50.0)	1.73 (44.0)	1.24 (31.5)	1.79 (45.5)	1.30 (33.0)	4.33 (110)	3.13 (79.4)
	300	4.63 (117.5)	2.26 (57.5)					4.92 (125)	3.50 (88.9)
	600				1.32 (33.5)				
	900/1500	5.12 (130.0)	2.76 (70.0)	2.00 (50.9)	1.51 (38.4)	2.00 (50.9)	1.51 (38.4)	5.91 (150)	4.00 (101.6)
	2500	5.31 (135.0)	2.95 (75.0)	2.00 (50.9)	1.71 (43.4)	2.00 (50.9)	1.71 (43.4)	6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150	4.63 (117.5)	2.26 (57.5)	1.73 (44.0)	1.24 (31.5)	1.79 (45.5)	1.30 (33.0)	4.92 (125)	3.87 (98.4)
	300	5.22 (132.5)	2.85 (72.5)	1.81 (46.0)	1.32 (33.5)	1.87 (47.5)	1.38 (35.0)	6.10 (155)	4.50 (114.3)
	600								
	900/1500	5.71 (145.0)	3.37 (85.0)	2.08 (52.9)	1.59 (40.4)	2.08 (52.9)	1.59 (40.4)	7.09 (180)	4.87 (123.8)
	2500	6.20 (157.5)	3.84 (97.5)	2.38 (60.4)	2.16 (54.9)	2.38 (60.4)	2.16 (54.9)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150	5.12 (130.0)	2.76 (70.0)	1.81 (46.0)	1.24 (31.5)	1.87 (47.5)	1.30 (33.0)	5.91 (150)	4.75 (120.7)
	300	5.41 (137.5)	3.05 (77.5)	1.89 (48.0)	1.32 (33.5)	1.95 (49.5)	1.38 (35.0)	6.49 (165)	5.00 (127.0)
	600								
	900/1500	6.30 (160.0)	3.94 (100.0)	2.38 (60.4)	1.89 (47.9)	2.38 (60.4)	1.89 (47.9)	8.46 (215)	6.50 (165.1)
	2500	6.50(165.0)	4.13 (105.0)	2.59 (65.9)	2.44 (61.9)	2.59 (65.9)	2.44 (61.9)	9.25 (235)	6.75 (171.4)

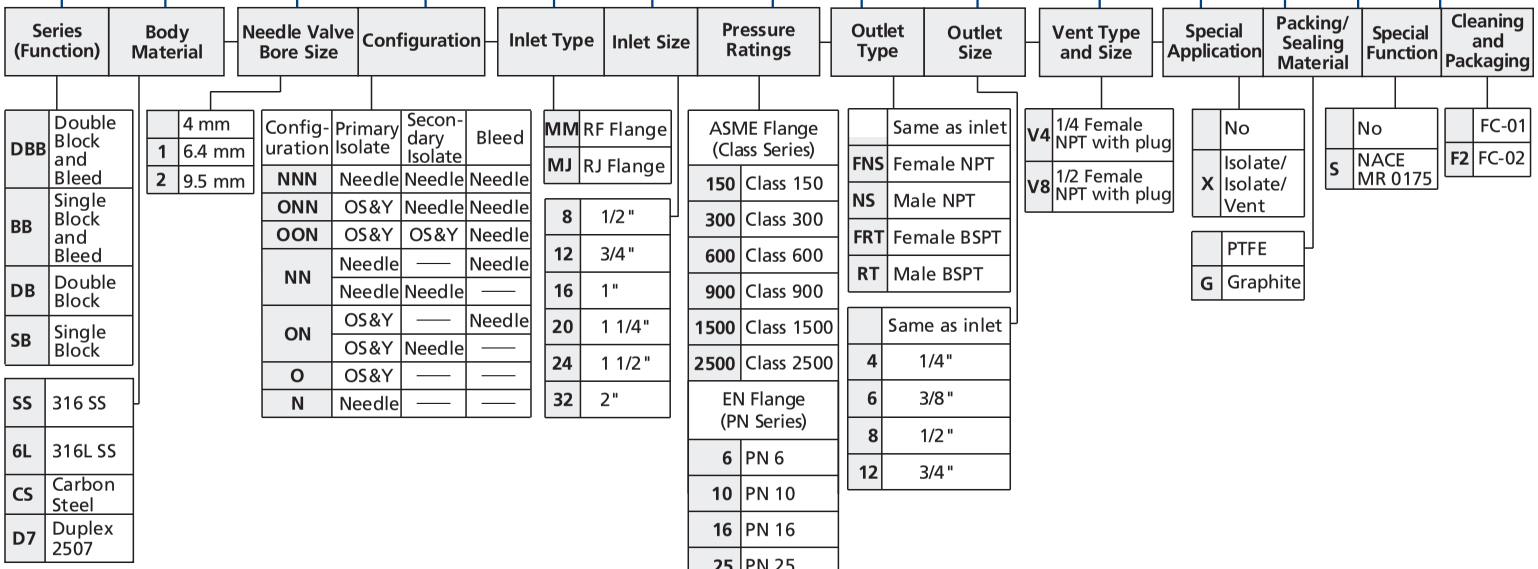
Note: For wafer-type flange block and bleed valves with 1/4 in. (6.35 mm), 3/8 in. (9.5 mm) bore, please contact FITOK Group or our authorized distributors.

Table 14: Flange Options and Dimensions for 1/8 in. (4mm) Bore Size (Needle), configuration: O

Flange Size	ASME Class	Dimensions, in. (mm)							
		F	B	RF Flange		RJ Flange		∅D	∅E
				L	T	L	T		
NPS1/2 (DN15)	150	4.33 (110.0)	1.57 (40.0)	2.03 (51.6)	1.58 (40.1)	—	—	3.54 (90)	2.37 (60.3)
	300	4.43 (112.5)	1.67 (42.5)			2.03 (51.6)	1.58 (40.1)	3.74 (95)	2.63 (66.7)
	600								
	900/1500	4.92 (125.0)	2.17 (55.0)					4.72 (120)	3.25 (82.6)
	2500	5.22 (132.5)	2.46 (62.5)					5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150	4.53 (115.0)	1.77 (45.0)	2.03 (51.6)	1.58 (40.1)	—	—	3.94 (100)	2.75 (69.9)
	300	4.82 (122.5)	2.07 (52.5)			2.03 (51.6)	1.58 (40.1)	4.53 (115)	3.25 (82.6)
	600								
	900/1500	5.12 (130.0)	2.36 (60.0)					5.12 (130)	3.50 (88.9)
	2500	5.31 (135.0)	2.56 (65.0)	2.11 (53.5)	1.65 (42.0)	2.11 (53.5)	1.65 (42.0)	5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150	4.72 (120.0)	1.97 (50.0)	2.03 (51.6)	1.58(40.1)	2.03 (51.6)	1.58 (40.1)	4.33 (110)	3.13 (79.4)
	300	5.02 (127.5)	2.26 (57.5)					4.92 (125)	3.50 (88.9)
	600								
	900/1500	5.51 (140.0)	2.76 (70.0)	2.11 (53.5)	1.65 (42.0)	2.11 (53.5)	1.65 (42.0)	5.91 (150)	4.00 (101.6)
	2500	5.71 (145.0)	2.95 (75.0)					6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150	5.02 (127.5)	2.26 (57.5)	2.03 (51.6)	1.58 (40.1)	2.03 (51.6)	1.58 (40.1)	4.92 (125)	3.87 (98.4)
	300	5.61 (142.5)	2.85 (72.5)	2.11 (53.5)	1.65 (42.0)	2.11 (53.5)	1.65 (42.0)	6.10 (155)	4.50 (114.3)
	600								
	900/1500	6.10 (155.0)	3.37 (85.0)	2.19 (55.5)	1.59 (44.0)	2.19 (55.5)	1.59 (44.0)	7.09 (180)	4.87 (123.8)
	2500	6.59 (167.5)	3.84 (97.5)	2.67 (67.9)	2.22 (56.4)	2.67 (67.9)	2.22 (56.4)	8.07 (205)	5.75 (146)
NPS2 (DN50)	150	5.51 (140.0)	2.76 (70.0)	2.11 (53.5)	1.65 (42.0)	2.11 (53.5)	1.65 (42.0)	5.91 (150)	4.75 (120.7)
	300	5.81 (147.5)	3.05 (77.5)	2.19 (55.5)	1.73 (44.0)	2.19 (55.5)	1.73 (44.0)	6.49 (165)	5.00 (127.0)
	600								
	900/1500	6.69 (170.0)	3.94 (100.0)	2.42 (61.5)	1.97 (50.0)	2.42 (61.5)	1.97 (50.0)	8.46 (215)	6.50 (165.1)
	2500	6.89 (175.0)	4.13 (105.0)	2.88 (73.4)	2.44 (61.9)	2.88 (73.4)	2.44 (61.9)	9.25 (235)	6.75 (171.4)

Ordering Number Description

DBBSS - 1NNN - MM16300 - FNS8 - V8 - XGSF2

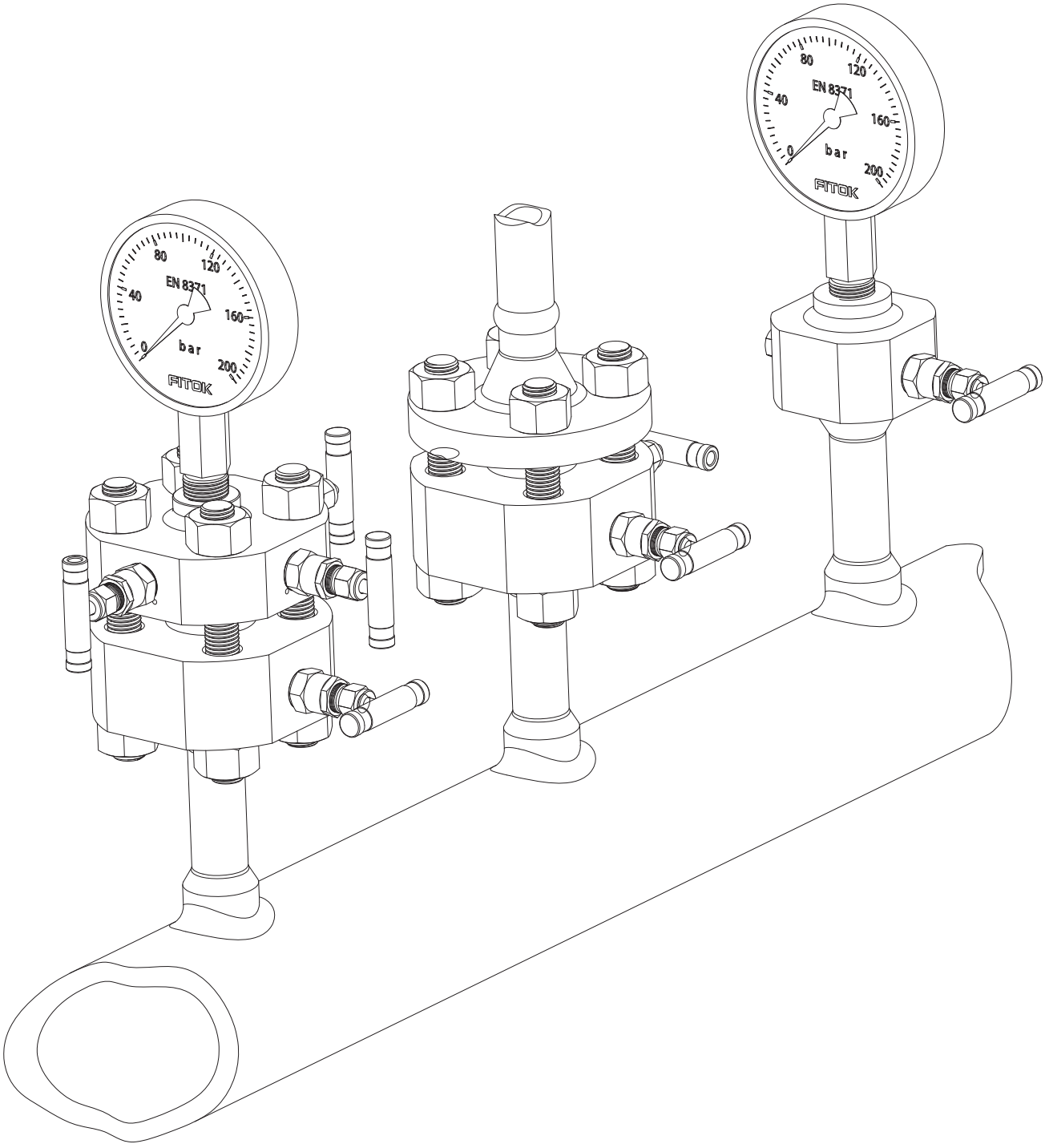


1. For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
2.2 FC-01: Standard cleaning and packaging for general industrial procedures.
2.2 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.
3. If there is a bypass outlet in addition to the vent port (with valve), the following designators apply:
V4V8: V8 for 1/2 Female NPT vent, V4 for 1/4 Female NPT bypass outlet.
V8V4: V4 for 1/4 Female NPT vent, V8 for 1/2 Female NPT bypass outlet.
2V4: 1/4 Female NPT vent and 1/4 Female NPT bypass outlet.
2V8: 1/2 Female NPT vent and 1/2 Female NPT bypass outlet.

Butt-welded Type Block and Bleed Valves

Features

◎ Available directly welded to the vessel or process pipe
◎ Weld inlet connection sizes from NPS 1/2 to NPS 2
◎ 1/2 female NPT standard vent with plug

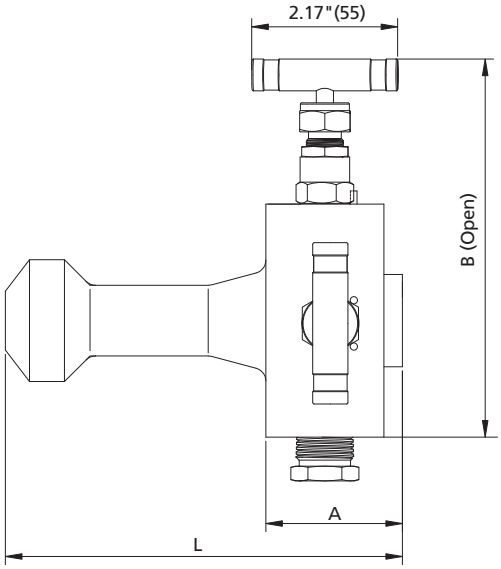


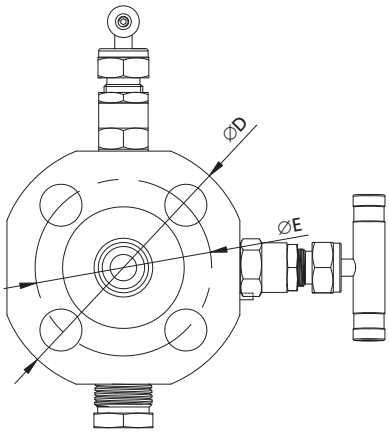
Valve Types and Dimensions

Single Block Valves (BB Series)

◎ Configuration (NN): needle isolate, needle vent Connection: BWE+Flange

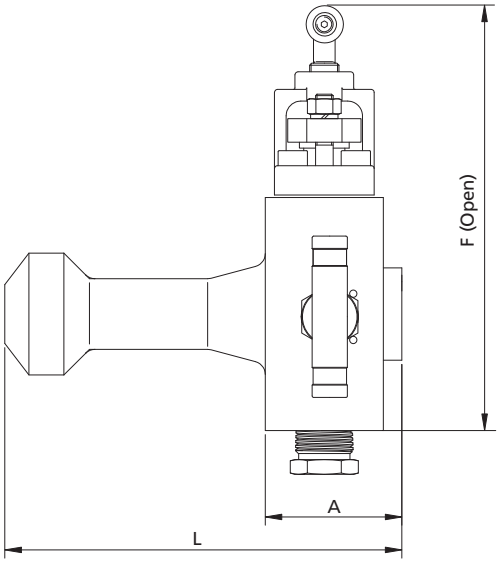
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-NN-BWE□-MM□□□□-V8	Butt Welding Branch	RF Flange	1/2 Female NPT	See Table 15
BB□□-NN-BWE□-MJ□□□□-V8	Butt Welding Branch	RJ Flange	1/2 Female NPT	

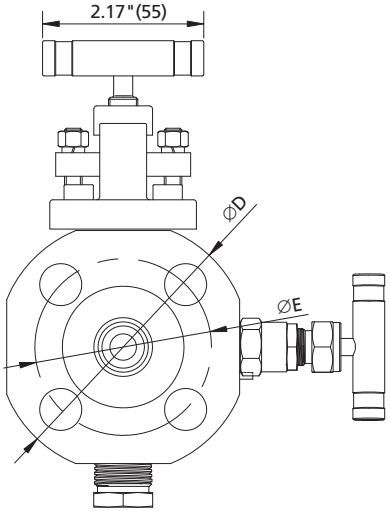




◎ Configuration (ON): OS&Y isolate, needle vent Connection: BWE+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
BB□□-ON-BWE□-MM□□□□-V8	Butt Welding Branch	RF Flange	1/2 Female NPT	See Table 15
BB□□-ON-BWE□-MJ□□□□-V8	Butt Welding Branch	RJ Flange	1/2 Female NPT	

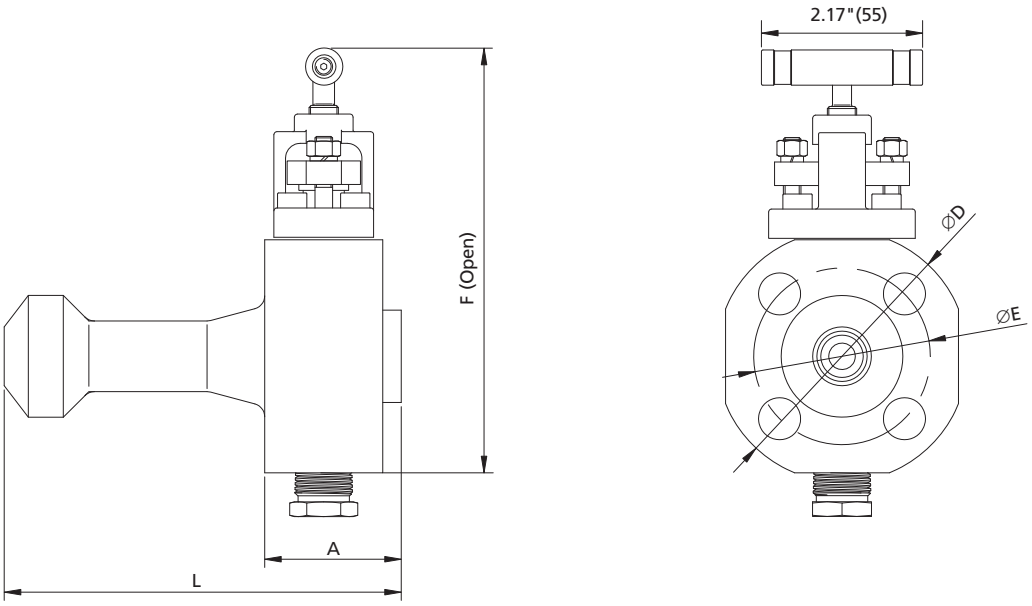




Single Block Valves (SB)

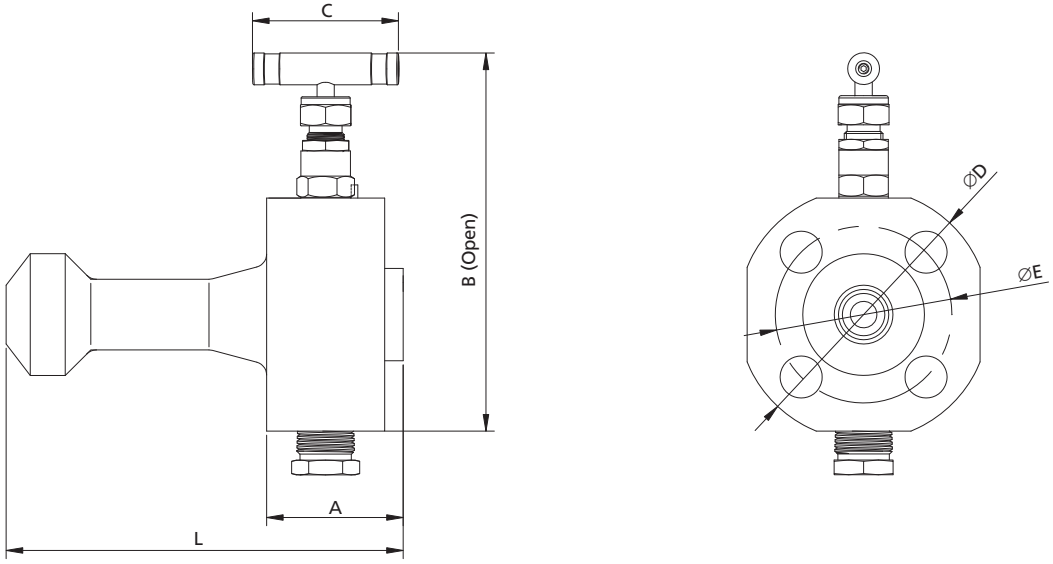
◎ Configuration (O): OS&Y isolate, with vent port Connection: BWE+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
SB□□-O-BWE□-MM□□□□-V8	Butt Welding Branch	RF Flange	1/2 Female NPT	See Table 15
SB□□-O-BWE□-MJ□□□□-V8	Butt Welding Branch	RJ Flange	1/2 Female NPT	



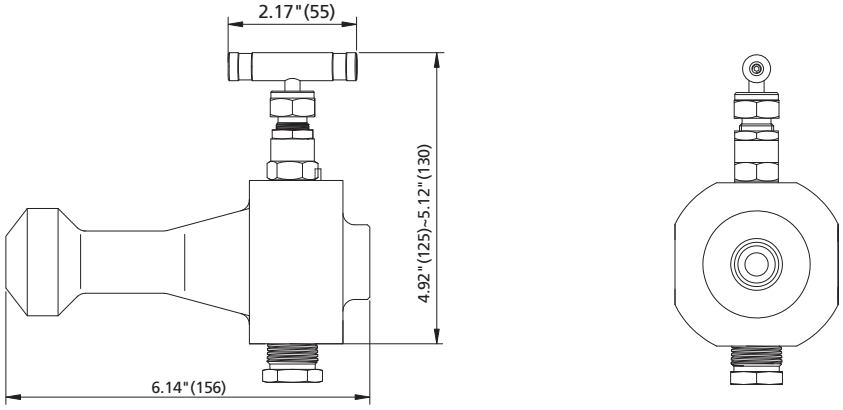
◎ Configuration (N): needle isolate, with vent port Connection: BWE+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
SB□□-□N-BWE□-MM□□□□-V8	Butt Welding Branch	RF Flange	1/2 Female NPT	See Tables 15-17
SB□□-□N-BWE□-MJ□□□□-V8	Butt Welding Branch	RJ Flange	1/2 Female NPT	

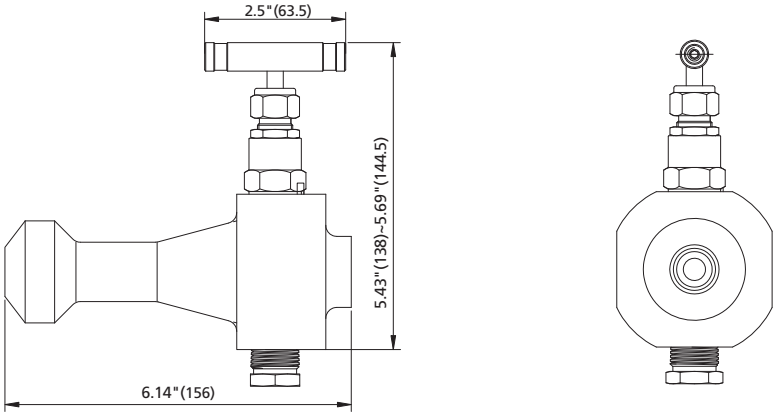


◎ Configuration (N): needle isolate, with vent port Connection: BWE+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
SB□□-N-BWE12-FNS8-V8	Butt Welding Branch	1/2 Female NPT	1/2 Female NPT



Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
SB□□-1N-BWE12-FNS8-V8	Butt Welding Branch	1/2 Female NPT	1/2 Female NPT



Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
SB□□-2N-BWE12-FNS8-V8	Butt Welding Branch	1/2 Female NPT	1/2 Female NPT

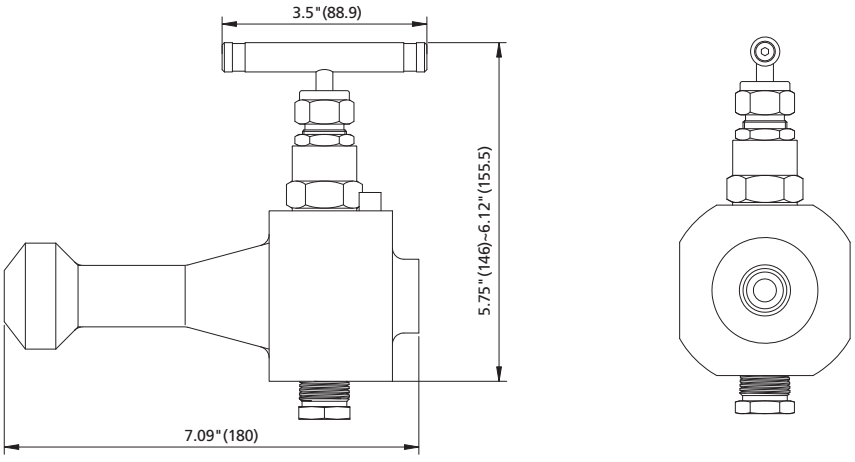


Table 15: Flange Options and Dimensions for 1/8 in. (4 mm) Bore Size (Needle)

Flange Size	ASME Class	Dimensions, in. (mm)						
		A	B	F	C	L RF/RJ Flange	∅D	∅E
NPS1/2 (DN15)	150	2.0 (50.8)	5.51 (140)	5.91 (150)	2.17 (55)	6.14 (156)	3.54 (90)	2.37 (60.3)
	300		5.71 (145)	6.10 (155)			3.74 (95)	2.63 (66.7)
	600	2.03 (51.6)				5.91 (150)		
	900/1500	1.85 (47)	6.69 (170)	7.09 (180)			4.72 (120)	3.25 (82.6)
	2500	2.07 (52.6)	7.28 (185)	7.68 (195)		6.14 (156)	5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150	2.0 (50.8)	5.91 (150)	6.30 (160)			3.94 (100)	2.75 (69.9)
	300	2.03 (51.6)	6.50 (165)	6.89 (175)			4.53 (115)	3.25 (82.6)
	600							
	900/1500		7.09 (180)	7.48 (190)			5.12 (130)	3.50 (88.9)
	2500		7.48 (190)	7.87 (200)			5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150		6.30 (160)	6.69 (170)			4.33 (110)	3.13 (79.4)
	300		6.89 (175)	7.28 (185)			4.92 (125)	3.50 (88.9)
	600							
	900/1500		7.87 (200)	8.27 (210)			5.91 (150)	4.00 (101.6)
	2500	2.11 (53.6)	8.27 (210)	8.66 (220)			6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150	1.91 (48.6)	6.89 (175)	7.28 (185)		6.93 (176)	4.92 (125)	3.87 (98.4)
	300	2.03 (51.6)	8.07 (205)	8.46 (215)			6.10 (155)	4.50 (114.3)
	600							
	900/1500	2.23 (56.5)	9.06 (230)	9.45 (240)			7.09 (180)	4.87 (123.8)
	2500	2.46 (62.6)	9.84 (250)	10.24 (260)			8.07 (205)	5.75 (146)
NPS2 (DN50)	150	1.95 (49.6)	7.87 (200)	8.27 (210)		7.32 (186)	5.91 (150)	4.75 (120.7)
	300	2.03 (51.6)	8.46 (215)	8.86 (225)			6.49 (165)	5.00 (127.0)
	600							
	900/1500	2.27 (57.6)	10.24 (260)	10.63 (270)			8.46 (215)	6.50 (165.1)
	2500	2.50 (63.6)	10.63 (270)	11.02 (280)			9.25 (235)	6.75 (171.4)

Table 16: Flange Options and Dimensions for 1/4 in. (6.4 mm) Bore Size (Needle)

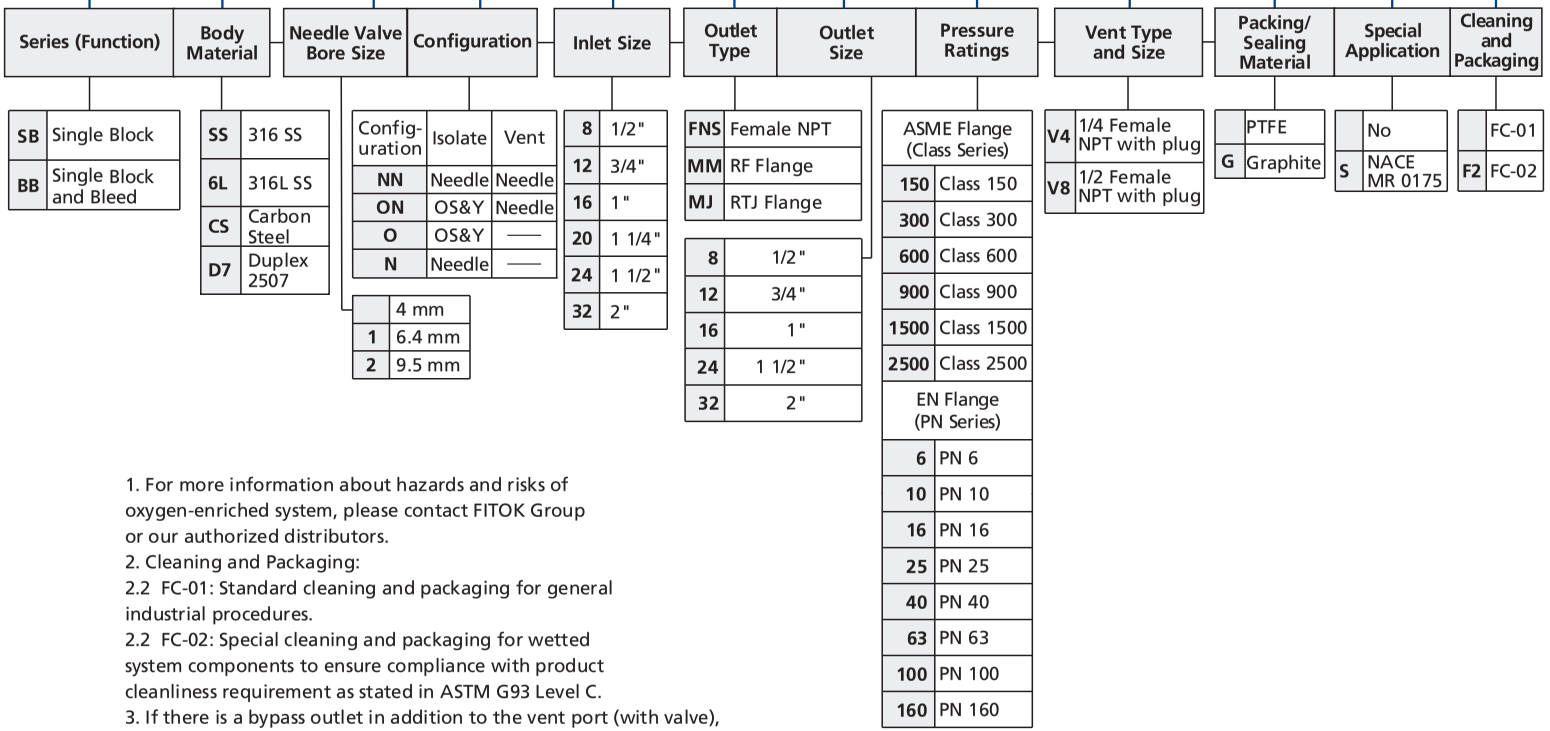
Flange Size	ASME Class	Dimensions, in. (mm)					
		A	B	C	L RF/RJ Flange	∅D	∅E
NPS1/2 (DN15)	150	2.03 (51.6)	6.08 (154.5)	2.5 (63.5)	6.14 (156)	3.54 (90)	2.37 (60.3)
	300	2.0 (50.8)	6.28 (159.5)			3.74 (95)	2.63 (66.7)
	600						
	900/1500	2.17 (55)	7.26 (184.5)			4.72 (120)	3.25 (82.6)
	2500	2.31 (58.6)	7.85 (199.5)			5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150	2.03 (51.6)	6.48 (164.5)		6.34 (161)	3.94 (100)	2.75 (69.9)
	300	2.23 (56.6)	7.07 (179.5)			4.53 (115)	3.25 (82.6)
	600	2.23 (56.6)					
	900/1500	2.31 (58.6)	7.66 (194.5)			5.12 (130)	3.50 (88.9)
	2500	2.39 (60.6)	8.05 (204.5)			5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150	2.03 (51.6)	6.87 (174.5)		6.54 (166)	4.33 (110)	3.13 (79.4)
	300	2.23 (56.6)	7.46 (189.5)			4.92 (125)	3.50 (88.9)
	600	2.23 (56.6)					
	900/1500	2.43 (61.6)	8.44 (214.5)			5.91 (150)	4.00 (101.6)
	2500	2.50 (63.6)	8.84 (224.5)			6.30 (160)	4.25 (108.0)
NPS1-1/2 (DN40)	150	1.91 (48.6)	7.46 (189.5)		6.93 (176)	4.92 (125)	3.87 (98.4)
	300	2.15 (54.6)	8.64 (219.5)			6.10 (155)	4.50 (114.3)
	600	2.15 (54.6)					
	900/1500	2.46 (62.6)	9.63 (244.5)			7.09 (180)	4.87 (123.8)
	2500	2.70 (68.6)	10.41 (264.5)			8.07 (205)	5.75 (146)
NPS2 (DN50)	150	1.95 (49.6)	8.44 (214.5)		7.32 (186)	5.91 (150)	4.75 (120.7)
	300	2.15 (54.6)	9.04 (229.5)			6.49 (165)	5.00 (127.0)
	600	2.15 (54.6)					
	900/1500	2.66 (67.6)	10.81 (274.5)			8.46 (215)	6.50 (165.1)
	2500	2.82 (71.6)	11.20 (284.5)			9.25 (235)	6.75 (171.4)

Table 17: Flange Options and Dimensions for 3/8 in. (9.5 mm) Bore Size (Needle)

Flange Size	ASME Class	Dimensions, in. (mm)					
		A	B	C	L RF/RJ Flange	∅D	∅E
NPS1/2 (DN15)	150	2.36 (60)	7.09 (161.5)	3.5 (88.9)	7.09 (180)	3.54 (90)	2.37 (60.3)
	300		7.20 (166.5)			3.74 (95)	2.63 (66.7)
	600						
	900/1500	2.80 (71)	8.19 (191.5)			4.72 (120)	3.25 (82.6)
	2500	2.83 (72)	8.78 (206.5)			5.31 (135)	3.50 (88.9)
NPS3/4 (DN20)	150	2.40 (61)	7.40 (171.5)			3.94 (100)	2.75 (69.9)
	300	2.68 (68)	7.99 (186.5)			4.53 (115)	3.25 (82.6)
	600						
	900/1500	3.03 (77)	8.58 (201.5)			5.12 (130)	3.50 (88.9)
	2500	3.19 (81)	8.98 (211.5)			5.51 (140)	3.75 (95.2)
NPS1 (DN25)	150	2.60 (66)	7.80 (181.5)			4.33 (110)	3.13 (79.4)
	300	2.80 (71)	8.39 (196.5)			4.92 (125)	3.50 (88.9)
	600	2.83 (72)					
	900/1500	3.23 (82)	9.37 (221.5)			5.91 (150)	4.00 (101.6)
	2500	3.50 (89)	9.76 (231.5)			6.30 (160)	4.25 (108.0)

Ordering Number Description

SBSS - 1NN - BWE12 - MM16300 - V8 - GSF2

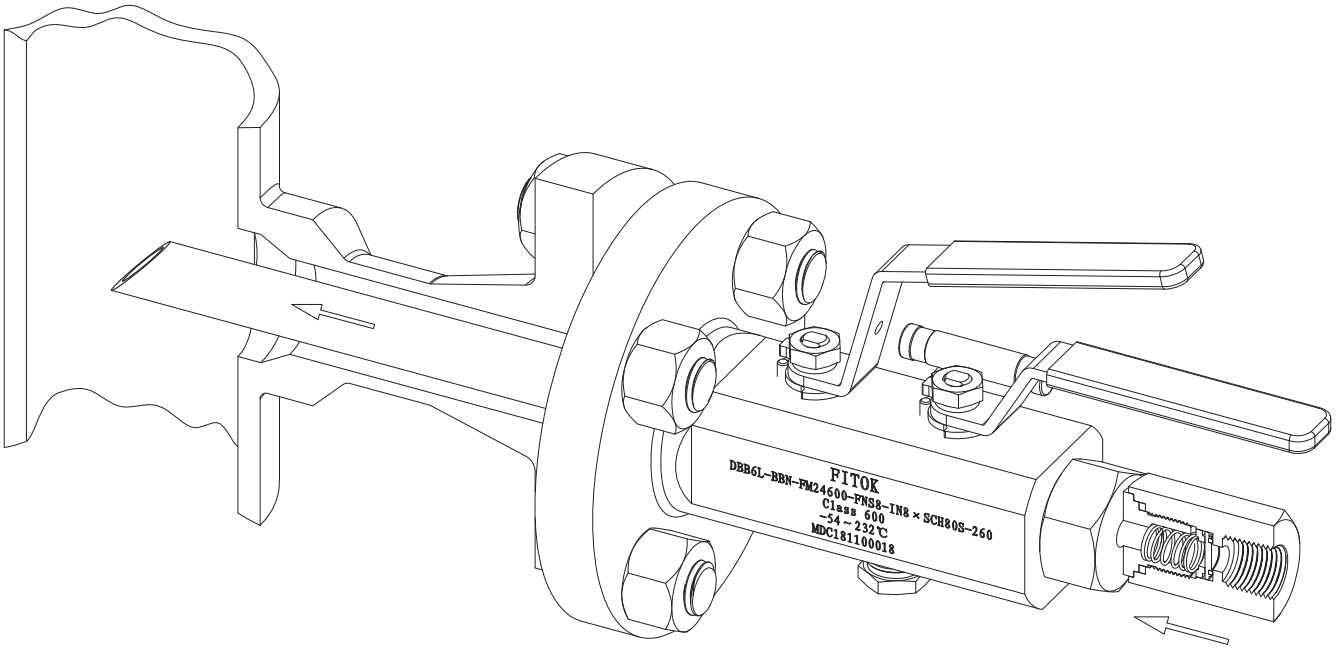


1. For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
2.2 FC-01: Standard cleaning and packaging for general industrial procedures.
2.2 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.
3. If there is a bypass outlet in addition to the vent port (with valve), the following designators apply:
V4V8: V8 for 1/2 Female NPT vent, V4 for 1/4 Female NPT bypass outlet.
V8V4: V4 for 1/4 Female NPT vent, V8 for 1/2 Female NPT bypass outlet.
2V4: 1/4 Female NPT vent and 1/4 Female NPT bypass outlet.
2V8: 1/2 Female NPT vent and 1/2 Female NPT bypass outlet.

Injection Type Block and Bleed Valves

Features

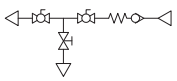
◎ Injection of chemicals and other media into the process stream
◎ A check valve is installed to prevent process fluid from reaching the inlet injection position
◎ The length of the injection nozzle orifice can be manufactured to meet customer requirements



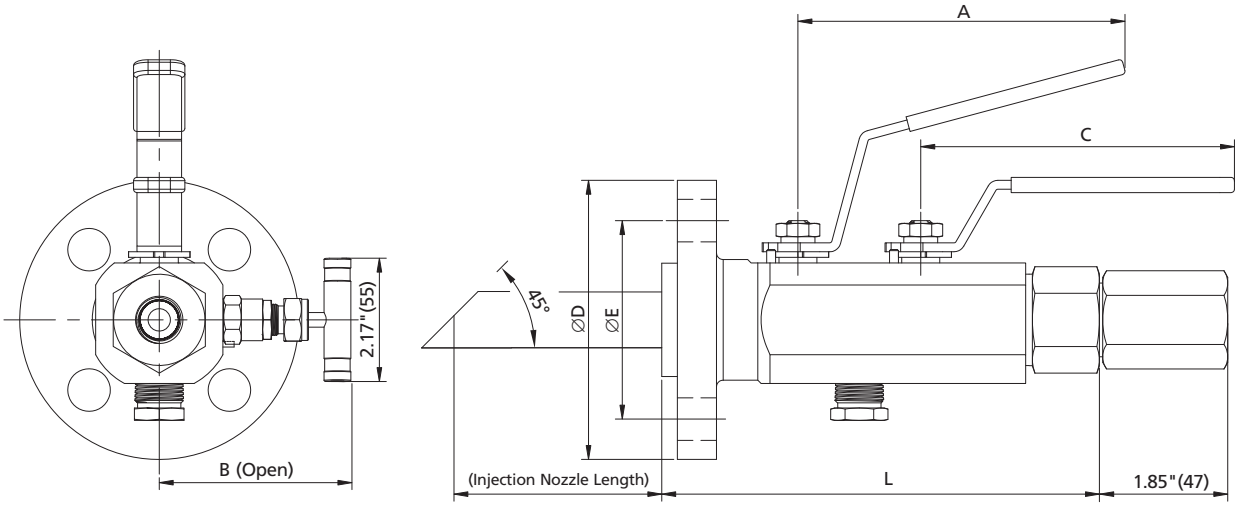
Valve Types and Dimensions

Double Block and Bleed Valves (DBB)

◎ Configuration (BBN): ball isolate, ball isolate, needle vent, check valve at inlet, injection nozzle at outlet
Connection: Flange+Thread

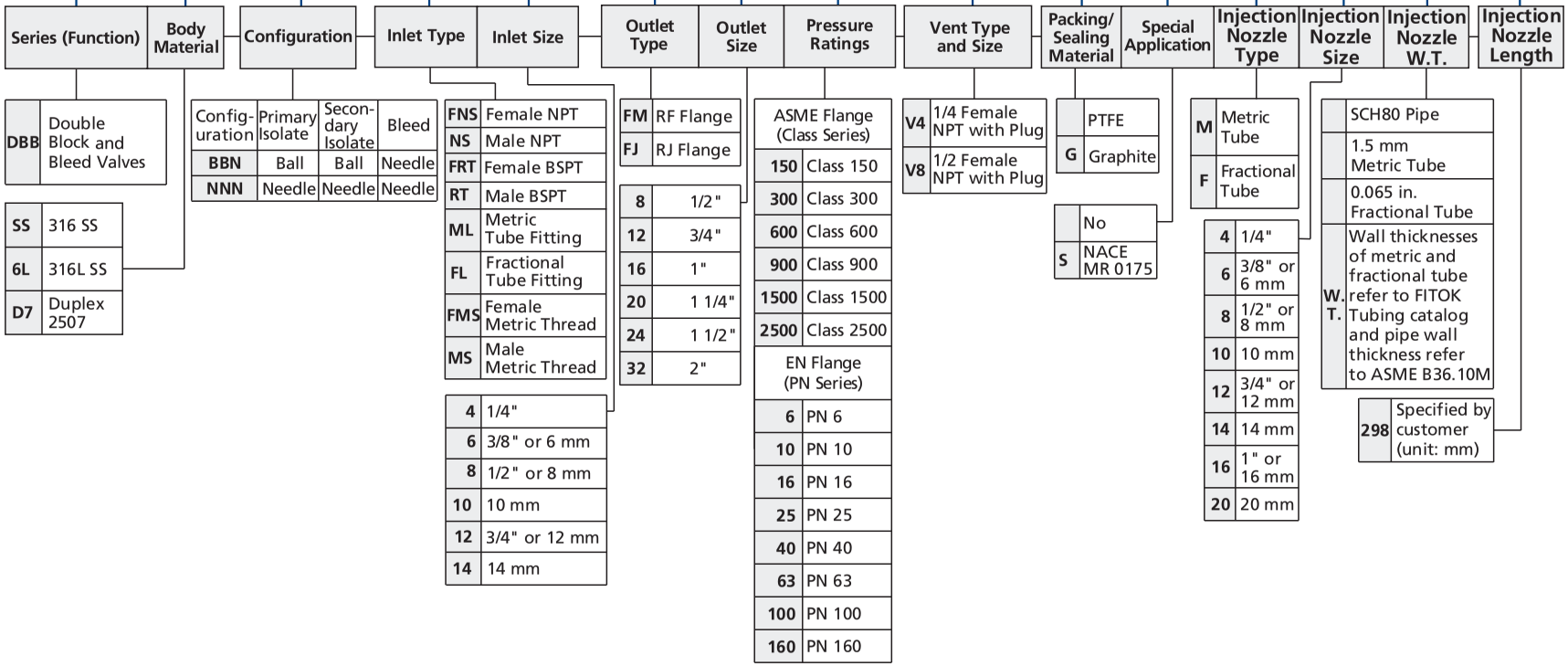


Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-BBN-FNS□-FM□□□□-V□-IN□□-□	RF Flange	Female NPT	Female NPT	See Tables 1-3
DBB□□-BBN-FNS□-FJ□□□□-V□-IN□□-□	RJ Flange	Female NPT	Female NPT	



Ordering Number Description

DBBSS - BBN - FNS8 - FM16300 - V8 - INGSM12x2 - 298

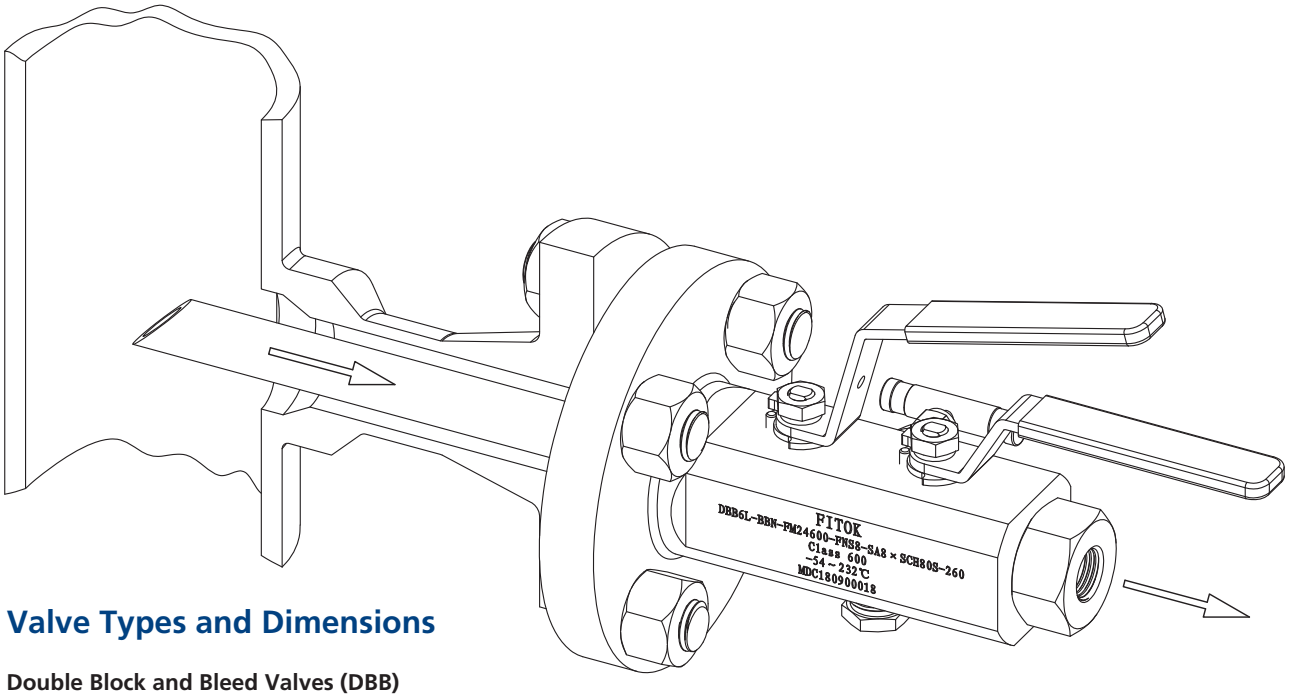


Note: For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.

Sampling Type Block and Bleed Valves

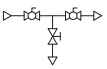
Features

◎ Developed to remove a sample directly from process stream at full system pressure
◎ Customized sampling probe extends from the pipe flange connection for correct sample removal
◎ Sampling probe length is manufactured to meet customer requirements

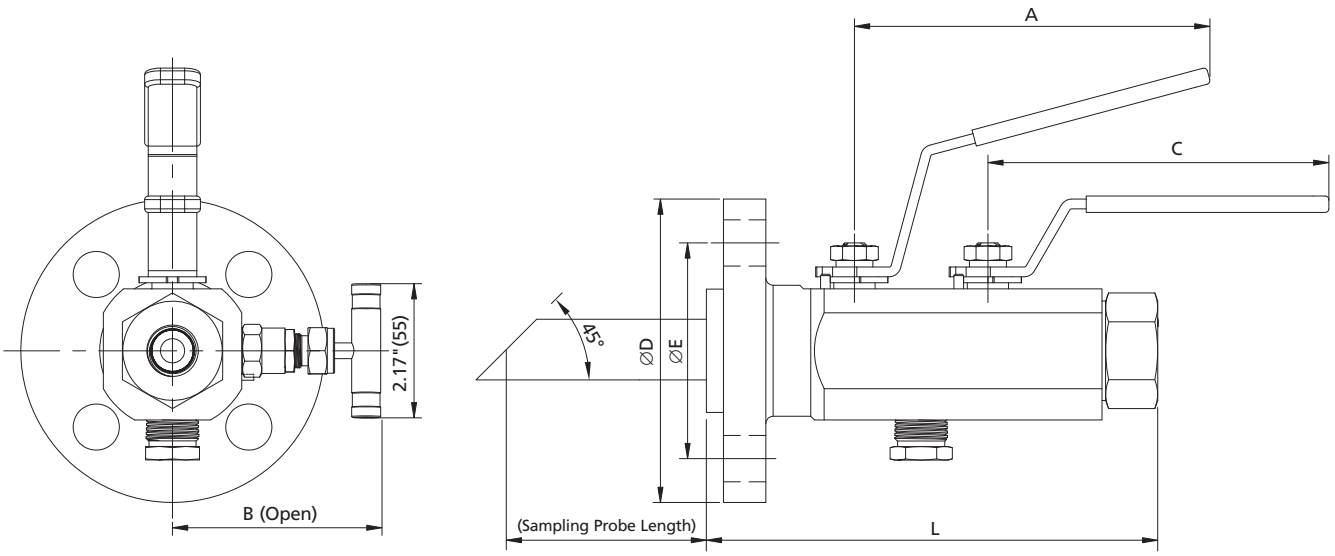


Valve Types and Dimensions

Double Block and Bleed Valves (DBB)

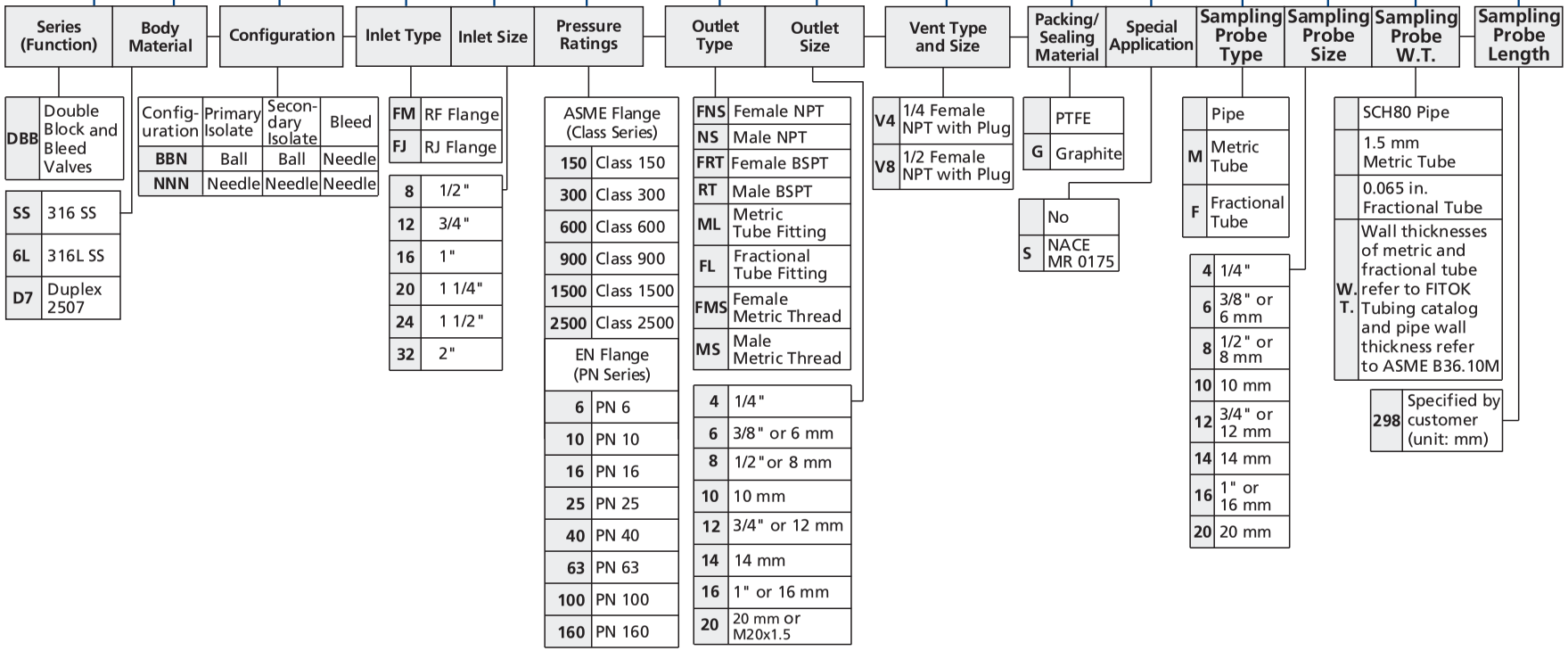
◎ Configuration (BBN): ball isolate, ball isolate, needle vent, sampling probe at inlet  Connection: Thread+Flange

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent	Dimensions
DBB□□-BBN-FM□□□□-FNS□-V□-SA□-□	RF Flange	Female NPT	Female NPT	See Tables 1-3
DBB□□-BBN-FJ□□□□-FNS□-V□-SA□-□	RJ Flange	Female NPT	Female NPT	



Ordering Number Description

DBBSS - BBN - FM16300 - FNS8 - V8 - SAGSF12x2 - 298

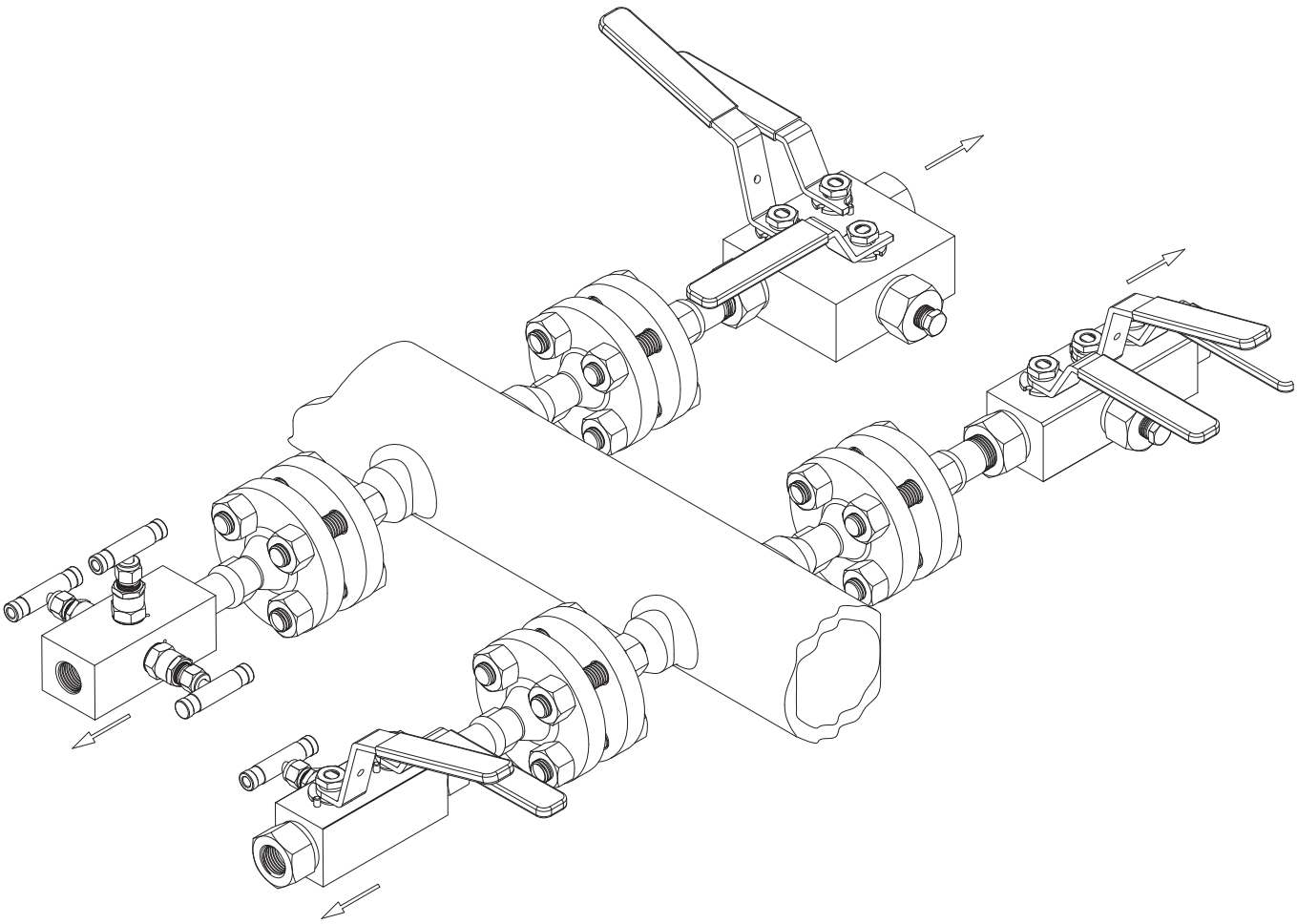


Note: For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.

Instrument Block and Bleed Valves

Features

◎ Integrally forged body
◎ A variety of instrument connections available
◎ 1/4 female NPT standard vent with plug

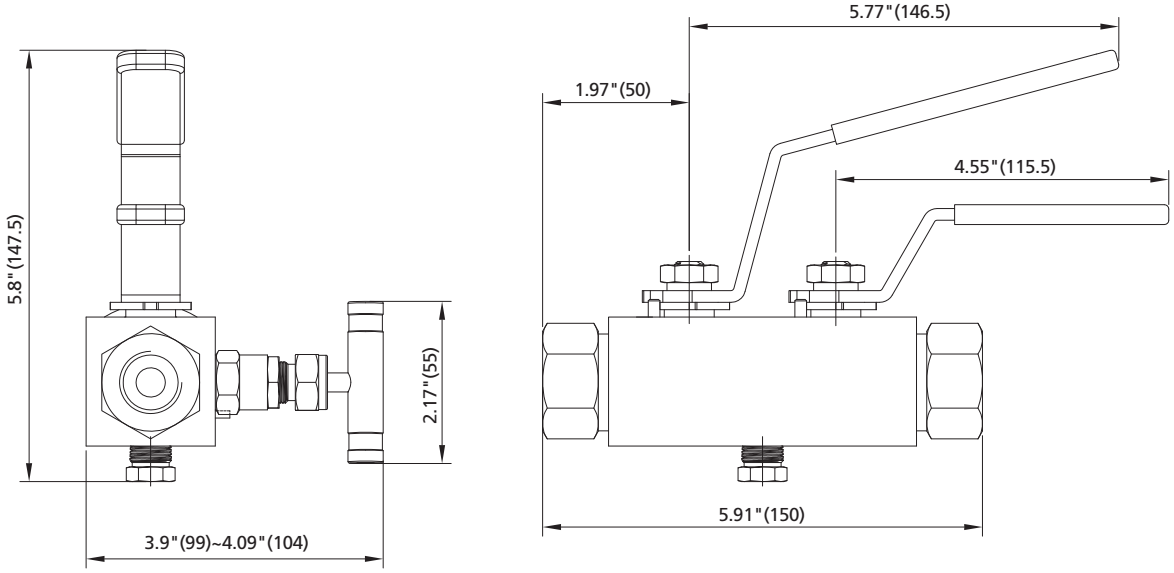


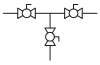
Valve Types and Dimensions

Double Block and Bleed Valves (BBN)

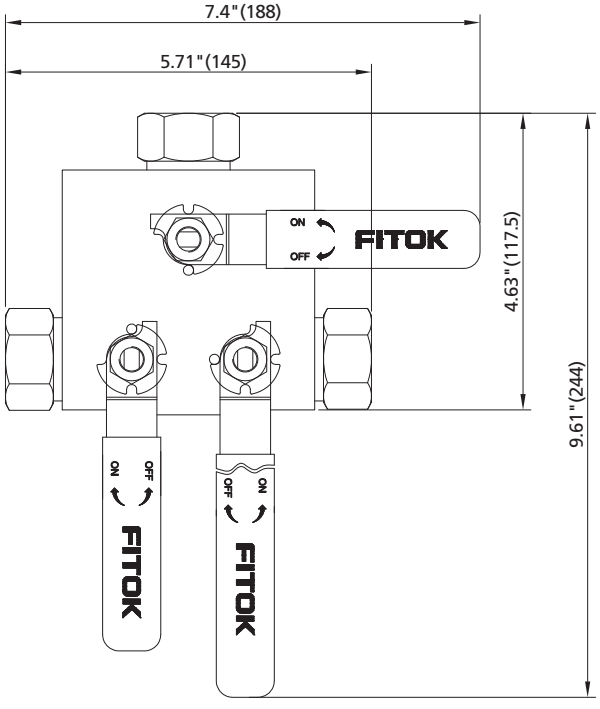
◎ Configuration (BBN): ball isolate, ball isolate, needle vent Connection: Thread+Thread

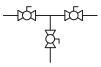
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
DBB□□-□BBN□-FNS□-V4-V	Female NPT	Female NPT	1/4 Female NPT



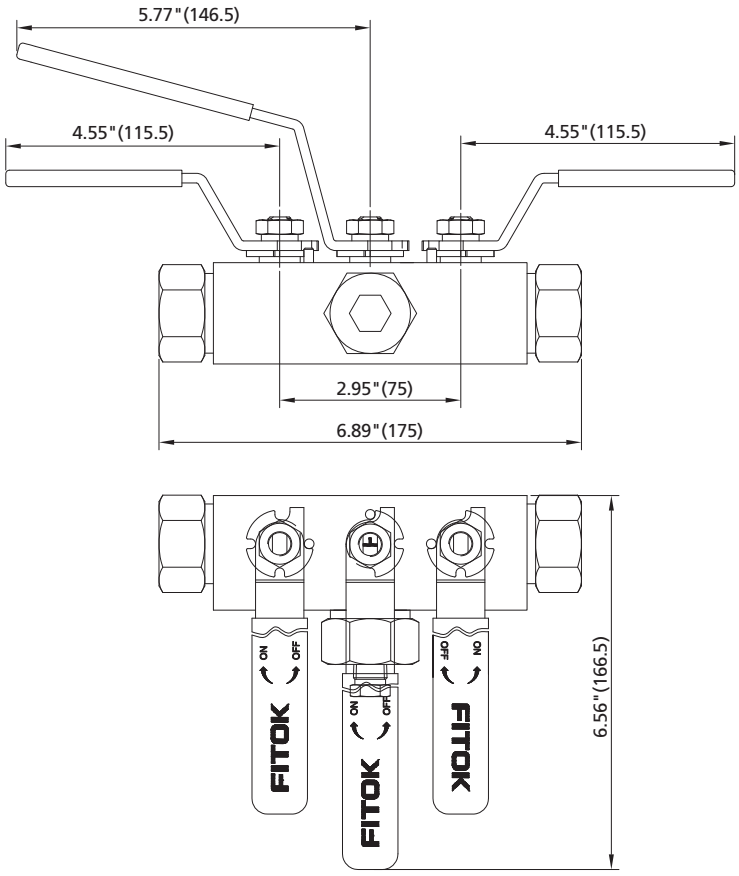
◎ Configuration (BBB): ball isolate, ball isolate, ball vent  Connection: Thread+Thread

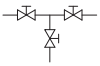
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
DBB□□-BBB□-FNS□-V4-C	Female NPT	Female NPT	1/4 Female NPT



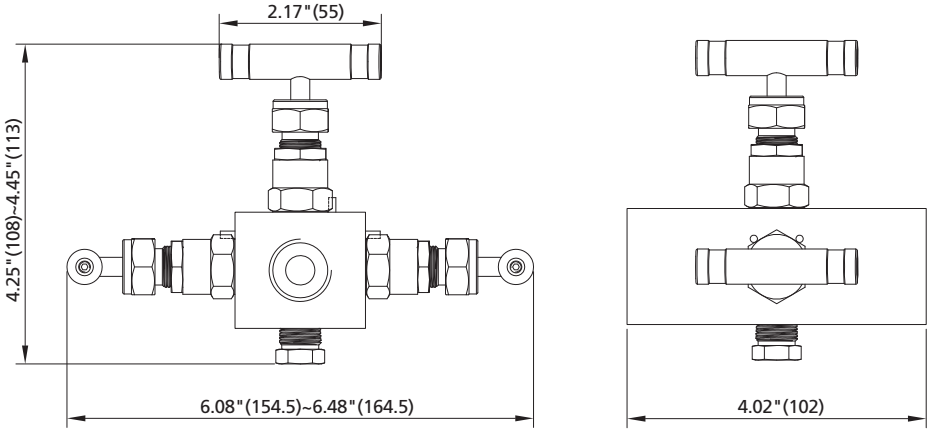
◎ Configuration (BBB): ball isolate, ball isolate, ball vent  Connection: Thread+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
DBB□□-BBB□-FNS□-V4-L	Female NPT	Female NPT	1/4 Female NPT



◎ Configuration (NNN): needle isolate, needle isolate, needle vent  Connection: Thread+Thread

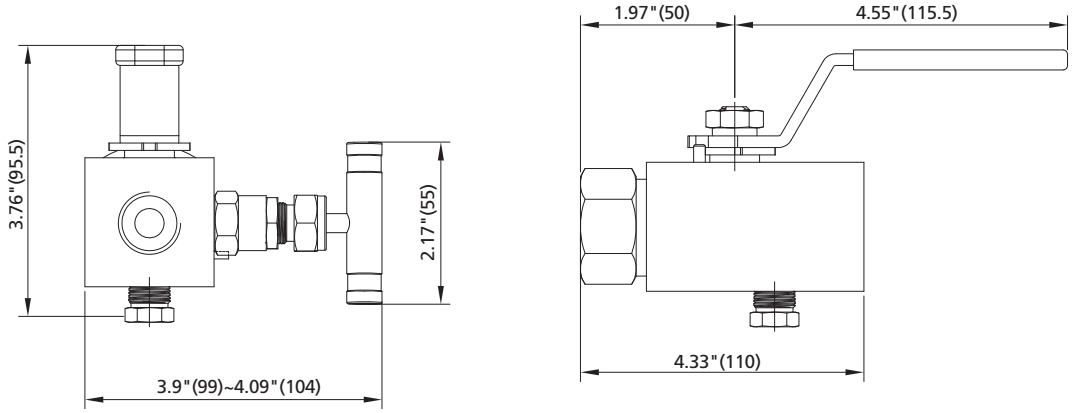
Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
DBB□□-□NNN-FNS□-V4-V	Female NPT	Female NPT	1/4 Female NPT



Single Block and Bleed Valves (BB)

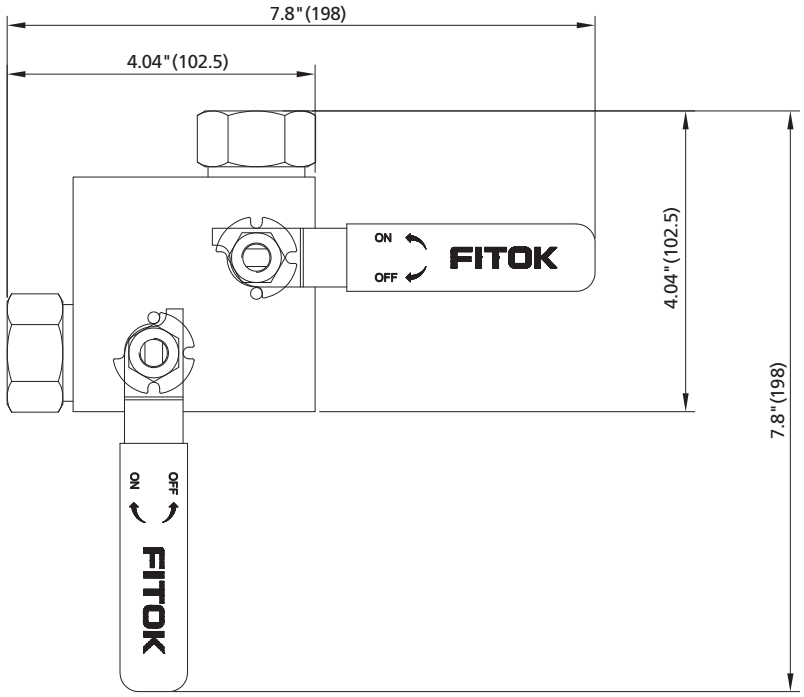
◎ Configuration (BN): ball isolate, needle vent Connection: Thread+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
BB□□-□BN□-FNS□-V4-V	Female NPT	Female NPT	1/4 Female NPT



◎ Configuration (BB): ball isolate, ball vent Connection: Thread+Thread

Basic Ordering Information	Inlet/Process Connection	Outlet/Instrument Connection	Bleed/Vent
BB□□-BB□-FNS□-V4-C	Female NPT	Female NPT	1/4 Female NPT



Ordering Number Description

DBBSS - 1BBN1 - NS810K - FNS810K - V4 - CGSF2

Series (Function)	Body Material	Needle Valve Bore Size	Configuration	Ball Valve Bore Size	Inlet Type	Inlet Size	Pressure Ratings	Outlet Type	Outlet Size	Pressure Ratings	Vent Type and Size	Body Style	Packing/ Sealing Material	Special Application	Cleaning and Packaging
DBB Double Block and Bleed Valves	SS 316 SS	No Needle Valves	Configuration / Primary Isolate / Primary Isolate / Bleed	No Ball Valves	FNS Female NPT	4 1/4"	Class 2500	Same as inlet	Same as inlet	Same as inlet	V4 1/4 Female NPT with Plug	C Compact pattern	PTFE	No	FC-01
BB Single Block and Bleed Valves	6L 316L SS	4 mm	NNN Needle Needle Needle	9.5 mm	NS Male NPT	6 3/8" or 6 mm	10 K 10000 psig (9000 psig for 316L), only applicable to 4 mm bore all-needle-valve configuration				V8 1/2 Female NPT with Plug	L Valves in-line mounted	G Graphite	S NACE MR 0175	F2 FC-02
	CS Carbon Steel	1 6.4 mm	BBB Ball Ball Ball	1 14 mm	FRT Female BSPT	8 1/8" or 8 mm						V Valves horizontally mounted			
	D7 Duplex 2507	2 9.5 mm	BBN Ball Ball Needle	2 20 mm	RT Male BSPT	10 10 mm									
			OON OS&Y OS&Y Needle		ML Metric Tube Fitting	12 3/4" or 12 mm									
			BBO Ball Ball OS&Y		FL Fractional Tube Fitting	14 14 mm									
			ONN OS&Y Needle Needle		FMS Female Metric Thread	16 1" or 16 mm									
			BB Ball — Ball		MS Male Metric Thread										
			BN Ball — Needle												
			BO Ball — OS&Y												

1. For more information about hazards and risks of oxygen-enriched system, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
2.2 FC-01: Standard cleaning and packaging for general industrial procedures.
2.2 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.

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