



**PANAM**<sup>®</sup>  
ENGINEERING  
BEYOND  
LIMITS

# Double Block & Bleed Valves



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## Introduction

**PANAM**<sup>®</sup> has emerged as renowned name in global market for 'Instrumentation Fittings & Valves'. Since its inception in 1998 to present day, **PANAM**<sup>®</sup> has added new product every year and has broadened its product portfolio and its clientele base by supplying to potential customers worldwide. Key core values like Timely Delivery, Quality Consistency, Product Improvisation and After Sales Service has been instrumental in the phase wise evolution of company. Continuous improvement is the key to success, Customer feedback are taken with positive attitude and product are constantly groomed to a new quality and performance level to cope up with the competition. Our products are known for providing high-quality, high-reliability, low-cost options for the oil and gas industry. Over the year, the company has evolved from a product based company to a complete system solution provider. Over the coming years the entity of the company will attain state of the art operational efficiency for maintaining a competitive edge, with the advent increase in the utilization of its products in oil, gas and power sector.

**PANAM**<sup>®</sup> Block & Bleed and Double Block & Bleed Valves have been specifically designed to provide a compact, rigid, lighter, safer and lower cost solution than conventional piping methods used for the installation of gauges, transmitters and other critical equipment. Where Positive Isolation is required to protect personal and equipment, **PANAM**<sup>®</sup> Block & Bleed and Double Block & Bleed Valves are an excellent alternative to multi valve systems that are threaded or welded. Lowest possible install cost as well as the advantage of reduced weight and minimizing potential leak paths provides the highest possible system integrity. The reduced height of the installation reduces the risk of damage through vibration. Zero Leakage Valves in a Block Bleed Block configuration will deliver absolute isolation.

**PANAM**<sup>®</sup> is a leader in the field of Block & Bleed and Double Block & Bleed Valves. A company that has built its reputation on inspired development, precision engineering and high quality all with an emphasis on customer service that exceeds the expectations of industries worldwide.

**PANAM**<sup>®</sup> offers an unrivaled range of standard products from stock, together with the latest in modern manufacturing capability and has the capacity to handle specific requirements and exotic materials.

**PANAM**<sup>®</sup> new manufacturing facility has given added technical ability and resources to rapidly develop custom products for the most demanding or unusual applications.

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## Application & Installation

**PANAM**<sup>®</sup> Instrumentation products provide a wide range of solutions for Double Block & Bleed Valves.

**PANAM**<sup>®</sup> Double Block and Bleed Valves are made from one piece forged bodies which provides excellent flexibility including a choice of end connections, body style, ball and globe valve configuration instruments.

### 1) The Original Double Block and Bleed

3 Valves with a tee in the centre, 7 joints typically welded and x-rayed. This Double Block and Bleed can be welded directly to the process pipe or to a flange in applications where it is anticipated to require replacement due to aggressive process conditions. The assembly can be remade in a welding shop and taken to the field and replaced.

### 2) Double Block & Bleed made with 2 Valve

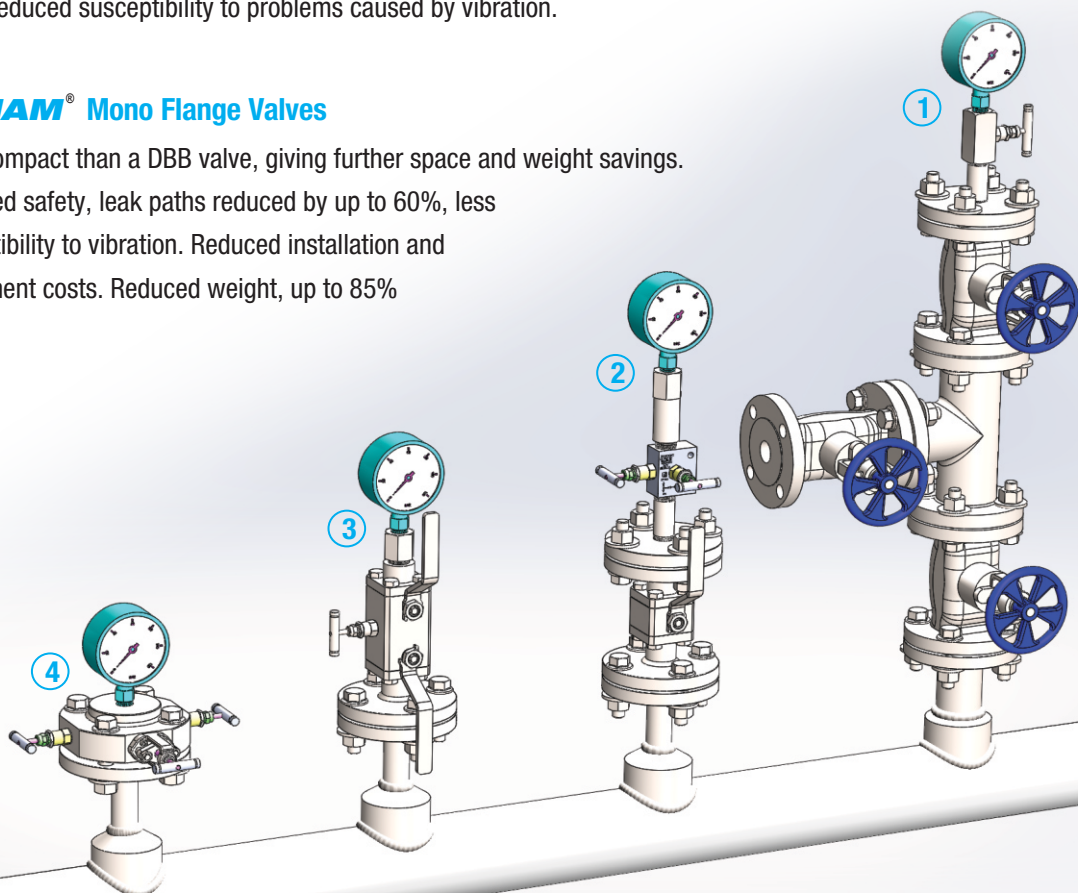
A welded flange, connected to a primary ANSI class isolating valve. The primary valve will be connected to a secondary instrument valve. A pressure gauge or transmitter will then be installed downstream of the instrument valve.

### 3) **PANAM**<sup>®</sup> Block & Bleed Valves

A One-piece integral forging incorporating up 3 ball valves or a mixture of ball and needle design. Improved safety, leak paths reduced by up to 60%. Reduced installation and component cost. Reduced weight by up to 80%. Reduced susceptibility to problems caused by vibration.

### 4) **PANAM**<sup>®</sup> Mono Flange Valves

More compact than a DBB valve, giving further space and weight savings. Improved safety, leak paths reduced by up to 60%, less susceptibility to vibration. Reduced installation and component costs. Reduced weight, up to 85%



## Features & Benefits

Stainless steel, carbon steel, and duplex stainless steel materials, Alloy 2507, Alloy 400, Alloy 625, Alloy 825, 6-Moly, and additional materials may be available upon request. Pressure ratings in accordance with ASME B16.5 / API-6A. Flanged connections compatible with ASME B16.5 / API-6A. Ball valve bore sizes from 3/8 to 2 in. (9.5 to 50.8 mm)

### Fire-Safe Test Approved

Double Block & Bleed valves are designed in accordance with API 607 & API SPEC 6FA.

### Double Body Gasket (Optional)

Double Block & Bleed valves are equipped with two body gaskets. The first body gasket is in soft material and the second in graphite, this combination assures the best seal characteristic in whatever corrosive service as well as giving a fire safe design.

### Anti-Static Device

In order to prevent static electricity from creating a dangerous conditions, static conduction spring is set between the stem and the ball.

### Anti Blow-Out Proof Stem

The stem is designed with internal T-Type shoulder to provide blow-out proof operations. This design assures that the stem can not be blown out of the valve in the case of the packing being removed while the valve is under pressure.

### Controlled Stem & Stuffing Box Finish

Stem and stuffing box finish machining is a key point of control. The stem is furnished to a surface finish of Ra=0.4, which can reduce friction of stem movement and provides less wear on the stem seal. The stuffing box surface is finished to Ra= 1.6 for better sealing performance.

### Solid Ball

The solid ball used provides straight through flow and real full-port performance characteristics.

### Longevity of life

Special consideration was devoted to enhanced life and operation of our valve throughout design, development, testing and manufacturing stages. Valve designs combined with the selection of advanced materials are such that long periods of inactivity should not affect the operations of the valves.

### Low Torque Opening and Closing

Seat designs, stem bearing system and stem seal arrangements ensure consistent minimal torque values

### Flow Capacity

Valve design allows for high flow capacity in liquid or gas services regardless of whether the media is clean or dirty. Full port valves allow for pigging and ensure maximum flow capacity. The high Cv makes Double Block & Bleeds Ideal for viscous service.

### Field Repairable

Simple user friendly design allows for quick and easy part replacement requiring minimal "Down Time".

### Locking Device (Optional)

Locking device is supplied upon request in order to prevent unauthorized opening / closing. Locking device can lock the valve in either the open or closed position and cannot be breached by removing the lever.

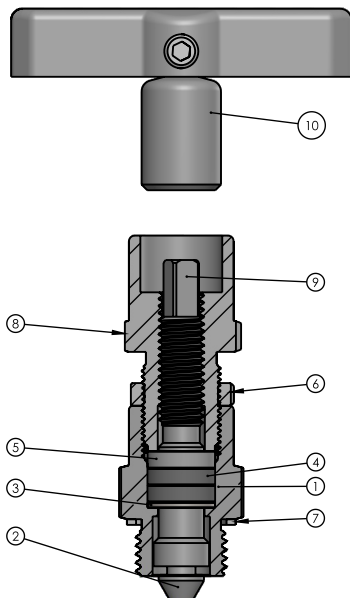
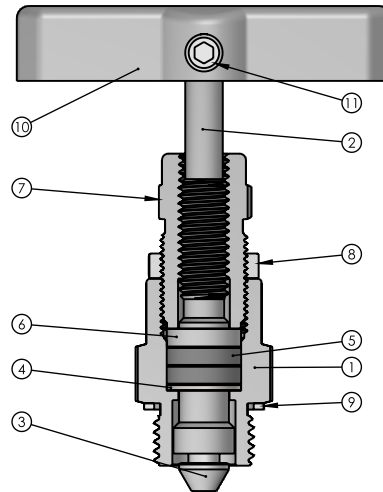
### Inspection and Testing

Every process interface valve is factory tested hydrostatically to a requirement of no visible leakage. A shell test is performed at 1.5 times maximum rated working pressure and a seat test is performed at 1.1 times maximum rated working pressure, in accordance with API 598 and API 6D. A low-pressure gas seat test is performed in accordance with API 598 and API 6D.



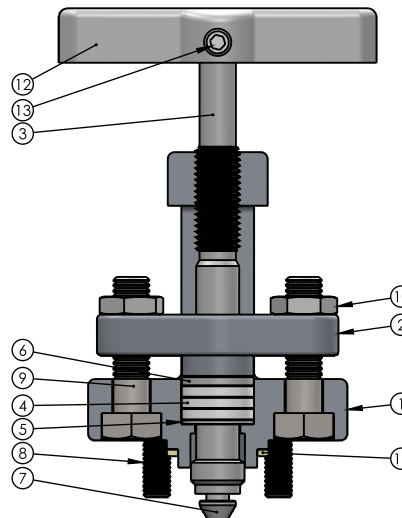
## Material of Construction

Part No.	Part Name	Material
1	Gland Body	ASTM A479 SS 316
2	Stem	ASTM A479 SS 316
3	Vee Tip	ASTM A479 SS 316
4	Bottom Washer	ASTM A564 SS174
5	Packing	ASTM A479 SS 316
6	Top Washer	PTFE
7	Retainer	ASTM A479 SS 316
8	Check Nut	ASTM A479 SS 316
9	Thrust Ring	ASTM A240 SS316
10	Handle	ASTM A351 CF8M
11	Socket Set Screw	ASTM A193 B8M

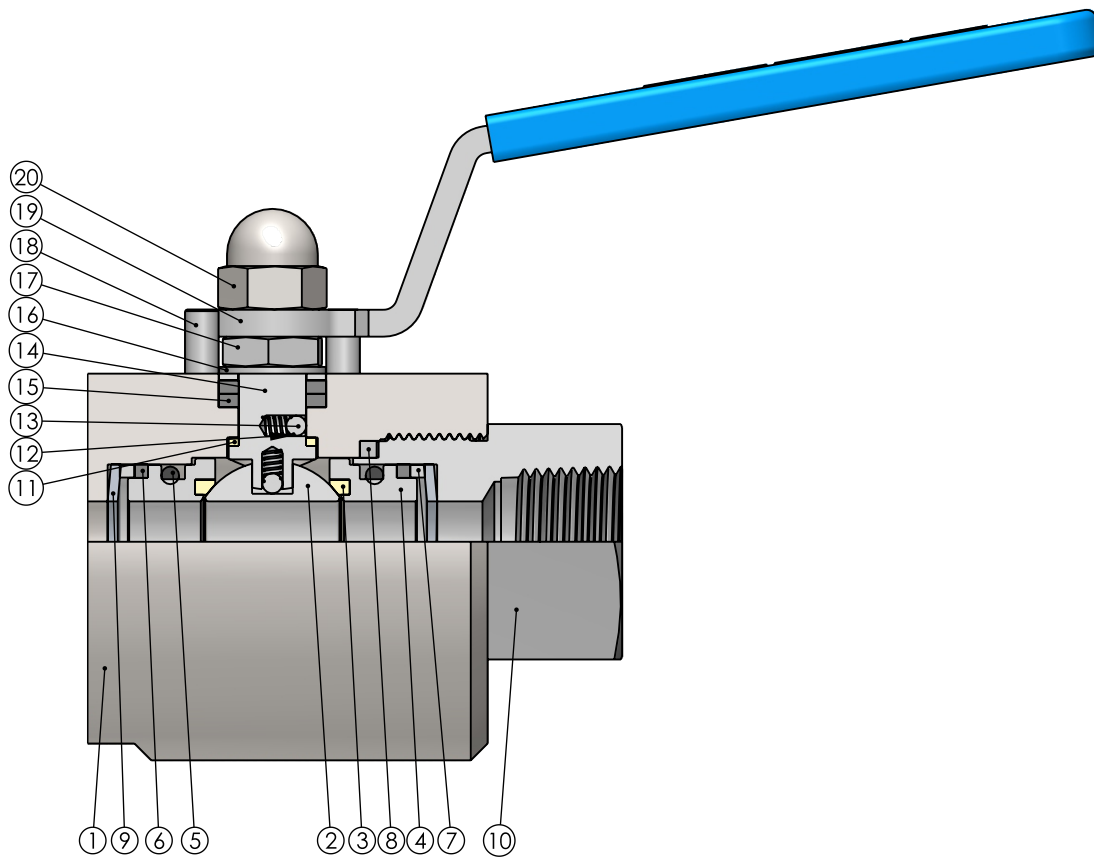


Part No.	Part Name	Material
1	Gland Body	ASTM A479 SS 316
2	Vee Tip	ASTM A564 SS 174
3	Bottom Washer	ASTM A479 SS 316
4	Packing	PTFE
5	Top Washer	ASTM A479 SS 316
6	Check Nut	ASTM A479 SS 316
7	Thrust Ring	ASTM A240 SS 316
8	Retainer	ASTM A479 SS 316
9	Stem	ASTM A479 SS 316
10	Anti-Tamper Key	SS 316

Part No.	Part Name	Material
1	OS & Y Gland Body	ASTM A351 CF8M
2	Retaining Plate	ASTM A351 CF8M
3	Spindle	ASTM A479 SS 316
4	Packing	PTFE
5	Bottom Washer	ASTM A479 SS 316
6	Top Washer	ASTM A479 SS 316
7	Vee Tip	ASTM A564 SS 174
8	Allen Bolt	ASTM A193 B8M
9	Hex Bolt	ASTM A193 B8M
10	Hex Nut	ASTM A192 B8
11	Thrust Ring	ASTM A479 SS 316
12	Handle	ASTM A351 CF8M
13	Socket Set Screw	ASTM A193 B8M

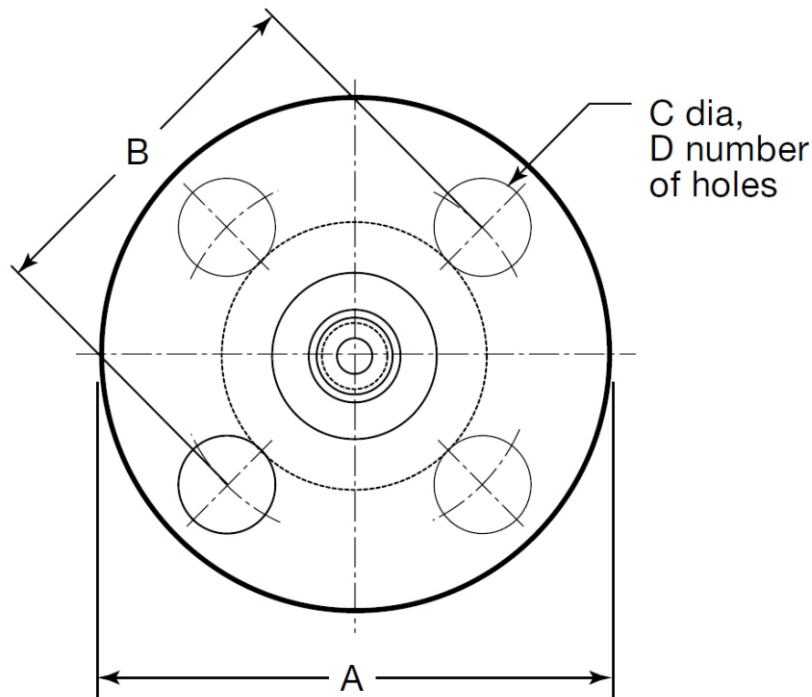


## Material of Construction



Part No.	Part Name	Material
1	Body	ASTM A182 F 316
2	Ball	ASTM A479 SS 316
3	Seat	PEEK
4	Seat Carrier	ASTM A479 SS 316
5	O Ring	Fluorocarbon FKM
6	Seat Seal	Grafoil
7	Backup Ring	ASTM A479 SS 316
8	Body Seal	PEEK
9	Disc Spring	Inconel X750
10	Hex Adaptor	ASTM A105N
11	Thrust Bearing	PEEK
12	Anti-Static Spring	Inconel X750
13	Anti-Static Ball	ASTM A479 SS 316
14	Stem	ASTM A479 SS 316
15	Stem Packing	Grafoil
16	Stem Washer	ASTM A479 SS 316
17	Hex Nut	ASTM A479 SS 316
18	Stoper Pin	ASTM A479 SS 316
19	Handle	ASTM A240 SS 316
20	Dome Nut	ASTM A479 SS 316

## Flange Sizes



### Class 150

Nominal Flange Size In	Dimensions - in (mm)			Mounting Holes D
	A	B	C	
1/2	3.50 (89)	2.38 (60.5)	5/8 (15.8)	4
3/4	3.90 (99)	2.75 (69.8)	5/8 (15.8)	4
1	4.25 (108)	3.12 (79.2)	5/8 (15.8)	4
1-1/2	5.00 (127)	3.88 (98.6)	5/8 (15.8)	4
2	5.98 (152)	4.75 (120.6)	3/4 (19)	4
3	7.48 (190)	6.00 (152.4)	3/4 (19)	4

### Class 300 / Class 600

Nominal Flange Size In	Dimensions - in (mm)			Mounting Holes D
	A	B	C	
1/2	3.74 (95)	2.62 (66.5)	5/8 (15.8)	4
3/4	4.61 (117)	3.25 (82.6)	3/4 (19)	4
1	4.88 (124)	3.50 (88.9)	3/4 (19)	4
1-1/2	6.10 (155)	4.50 (114.3)	7/8 (22.2)	4
2	6.50 (165)	5.00 (127)	3/4 (19)	8
3	8.27 (210)	6.62 (168.1)	7/8 (22.2)	8

### Class 900 / Class 1500

Nominal Flange Size In	Dimensions - in (mm)			Mounting Holes D
	A	B	C	
1/2	4.76 (121)	3.25 (82.6)	7/8 (22.2)	4
3/4	5.12 (130)	3.50 (88.9)	7/8 (22.2)	4
1	5.87 (149)	4.00 (101.6)	1 (25.4)	4
1-1/2	7.01 (178)	4.88 (124.0)	1-1/8 (28.5)	4
2	8.50 (216)	6.50 (165.1)	1 (25.4)	8
3 (CL 900)	9.49 (241)	7.50 (190.5)	1 (25.4)	8
3 (CL 1500)	10.51 (267)	8.00 (203.2)	1.25 (31.8)	8

### Class 2500

Nominal Flange Size In	Dimensions - in (mm)			Mounting Holes D
	A	B	C	
1/2	5.24 (133)	3.50 (88.9)	7/8 (22.2)	4
3/4	5.51 (140)	3.75 (95.2)	7/8 (22.2)	4
1	6.26 (159)	4.25 (108.0)	1 (25.4)	4
1-1/2	7.99 (203)	5.75 (146.0)	1-1/4 (31.8)	4
2	9.25 (235)	6.75 (171.4)	1-1/8 (28.5)	8



## Sizes and Configurations

Bore Size, mm(inch)	PDBB1/PDBB2	PDBB3/PDBB4	PDBB5
	Integral	3 Piece	Monoflange
4.8 (3/16")	X	X	√
10 (3/8")	√	X	X
12 (1/2")	√	X	X
14 (9/16")	√	X	X
20 (3/4")	X	√	X
25 (1")	X	√	X
36 (1-1/2")	X	√	X
50 (2")	X	√	X
<b>Valve Configuration</b>			
Double Block & Bleed	√	√	√
Single Block & Bleed	√	√	√
Single Block	√	√	√
Double Block	√	√	√
<b>End Connection Configuration</b>			
Flange X Thread	√①	√	√
Flange X Flange	√	√	√
Thread X Thread	√①	X	X

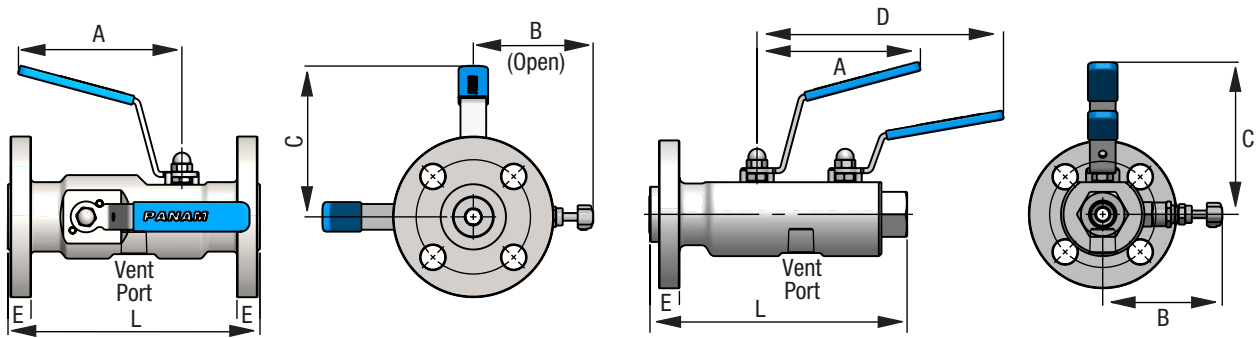
√ Available

√① PANAM Tube Fitting End Connections are Available as an Option Instead of Threads

## Pressure-Temperature Ratings (316/316L Working Pressure by Class, barg (psig))

Temperature	ASME Class					
	150	300	600	900	1500	2500
°C (°F)	Working Pressure, barg (psig)					
-29 to 38 (-20 to 100)	19.0 (275)	49.6 (719.4)	99.3 (1440.2)	148.9 (2159.6)	248.2 (3599.8)	413.7 (6000.0)
50 (122)	18.4 (266.8)	48.1 (697.6)	96.2 (1395.3)	144.3 (2092.9)	240.6 (3489.6)	400.9 (5814.6)
100 (212)	16.2 (234.9)	42.2 (612.0)	84.4 (1224.1)	126.6 (1836.2)	211.0 (3060.3)	351.6 (5099.5)
150 (302)	14.8 (214.6)	38.5 (558.4)	77.0 (1116.8)	115.5 (1675.2)	192.5 (2792.0)	320.8 (4652.8)
200 (392)	13.7 (198.7)	35.7 (517.8)	71.3 (1034.1)	107.0 (1551.8)	178.3 (2586.0)	297.2 (4310.5)
250 (482)	12.1 (175.5)	33.4 (484.4)	66.8 (968.9)	100.1 (1451.8)	166.9 (2420.7)	278.1 (4033.5)
300 (572)	10.2 (147.9)	31.6 (458.3)	63.2 (916.6)	94.9 (1376.4)	158.1 (2293.0)	263.5 (3821.7)
350 (662)	8.4 (121.8)	30.3 (439.4)	60.7 (880.4)	91.0 (1319.8)	151.6 (2198.8)	252.7 (3665.1)
400 (752)	6.5 (94.2)	29.4 (426.4)	58.9 (854.3)	88.3 (1280.7)	147.2 (2135.0)	245.3 (3557.8)
450 (842)	4.6 (66.7)	28.8 (417.7)	57.7 (836.9)	86.5 (1254.6)	144.2 (2091.4)	240.4 (3486.7)
500 (932)	2.8 (40.6)	28.2 (409.0)	56.5 (819.5)	84.7 (1228.5)	140.9 (2043.6)	235.0 (3408.4)

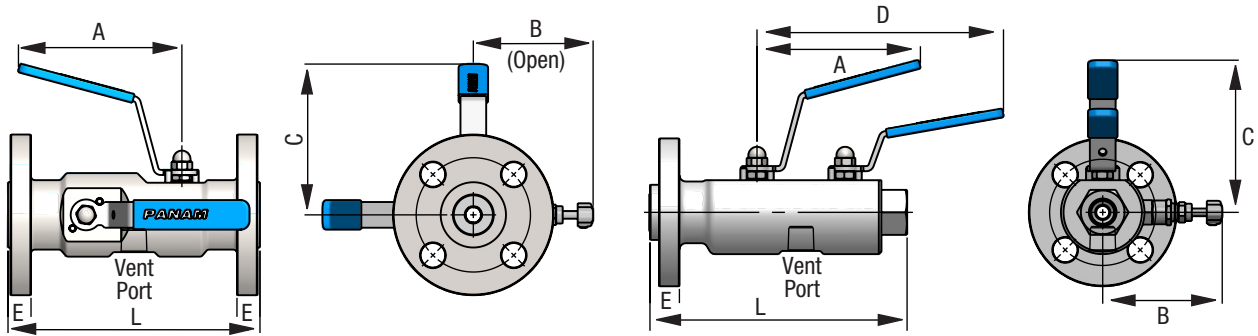
**PDBB - 3/8 in. (10mm) & 1/2 in (12mm) Bore**



Flange Size	ASME Class	Dimensions (mm)									Approx. Weight (kg.)	
		A	B	C	D	E (Min.)		L			Flange/Flange	Flange/NPT
						RF Flange	RTJ Flange	RF Flange	RTJ Flange	Flange NPT		
1/2" (DN 15)	150	127	99	117	185	11.20	X	180	X	190	4.00	4.00
	300	127	99	117	185	14.20	18.30	196	195	190	4.60	4.50
	600	127	99	117	185	20.60	19.80	196	195	190	4.60	4.50
	900 / 1500	127	99	117	185	28.80	28.80	210	209	220	6.70	6.00
	2500	127	99	117	185	36.60	36.60	235	234	205	9.50	7.00
3/4" (DN 20)	150	127	99	117	185	12.70	X	180	X	192	4.50	4.80
	300	127	99	117	185	15.70	20.60	196	195	185	5.80	4.90
	600	127	99	117	185	22.10	22.10	196	195	185	5.80	4.90
	900 / 1500	127	99	117	185	31.80	31.80	210	209	205	7.90	6.40
	2500	127	99	117	185	38.20	38.20	235	234	205	10.70	7.50
1" (DN 25)	150	127	99	117	185	14.20	19.05	180	189	190	5.10	5.00
	300	127	99	117	185	17.20	22.05	196	195	190	6.70	5.50
	600	127	99	117	185	23.90	23.90	196	195	190	6.70	5.50
	900 / 1500	127	99	117	185	34.80	34.80	230	229	215	11.00	7.60
	2500	127	99	117	185	41.50	41.50	255	254	205	14.30	9.00
1-1/2" (DN 40)	150	127	99	117	185	17.40	22.30	180	189	192	6.50	6.00
	300	127	99	117	185	20.50	25.40	210	209	200	10.20	7.30
	600	127	99	117	185	28.80	28.80	210	209	200	10.20	7.30
	900 / 1500	185	99	117	306	38.20	38.20	260	259	210	16.40	12.50
	2500	185	99	117	306	50.80	52.30	305	304	235	27.70	18.50
2" (DN 50)	150	127	99	117	185	19.00	23.90	200	209	190	8.40	6.60
	300	127	99	117	185	22.10	28.60	240	239	200	12.30	7.60
	600	127	99	117	185	31.80	33.30	240	239	200	12.30	7.60
	900 / 1500	185	99	117	306	44.50	45.90	246	245	205	24.00	14.40
	2500	185	99	117	306	57.20	58.80	310	310	240	36.50	20.50

\* Dimensions are for reference only, subject to change prior notice  
 \* For additional flange dimensions refer sizes & configuration page no 5

## PDBB - 14mm Bore

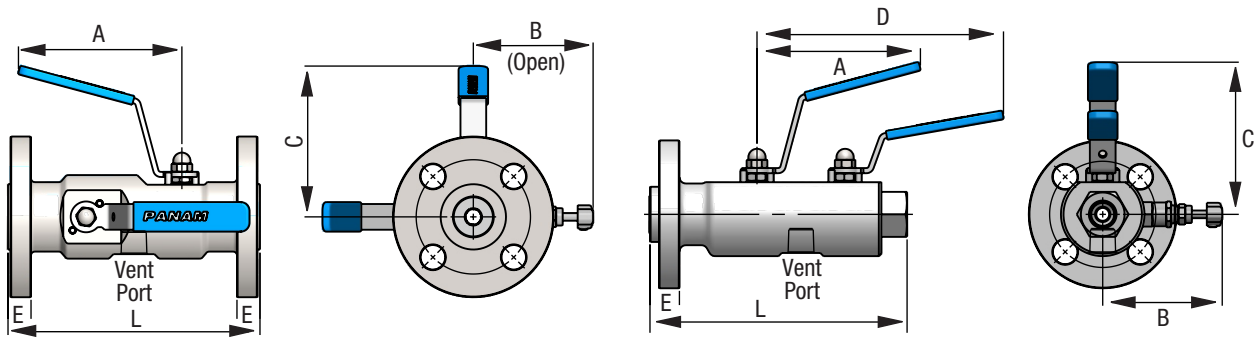


Flange Size	ASME Class	Dimensions (mm)									Approx. Weight (kg.)	
		A	B	C	D	E (Min.)		L			Flange/Flange	Flange/NPT
						RF Flange	RTJ Flange	RF Flange	RTJ Flange	Flange NPT		
3/4" (DN 20)	150	127	99	117	190	12.70	X	205.40	X	188.00	6.90	3.40
	300	127	99	117	190	15.70	20.60	211.40	221.20	191.00	7.00	3.70
	600	127	99	117	190	22.10	22.10	224.20	224.20	197.00	7.70	3.80
	900 / 1500	127	99	117	190	31.80	31.80	243.60	243.60	203.00	12.10	6.30
	2500	127	99	117	190	38.20	38.20	256.40	256.40	214.00	15.00	7.60
1" (DN 25)	150	127	99	117	190	14.20	19.05	208.40	218.10	190.00	7.20	3.70
	300	127	99	117	190	17.20	22.05	214.40	224.10	192.20	7.30	3.30
	600	127	99	117	190	23.90	23.90	227.80	227.80	198.90	7.80	3.90
	900 / 1500	127	99	117	190	34.80	34.80	249.60	249.60	209.80	12.50	6.50
	2500	127	99	117	190	41.50	41.50	263.00	263.00	216.50	15.80	7.80
1-1/2" (DN 40)	150	127	99	117	190	17.40	22.30	219.80	229.60	192.40	8.50	4.50
	300	127	99	117	190	20.50	25.40	226.00	235.80	195.50	11.20	6.20
	600	127	99	117	190	28.80	28.80	242.60	242.60	203.80	11.80	6.50
	900 / 1500	185	99	117	306	38.20	38.20	261.40	261.40	213.20	16.50	8.80
	2500	185	99	117	306	50.80	52.30	286.60	289.60	225.80	26.00	12.70
2" (DN 50)	150	127	99	117	190	19.00	23.90	223.60	232.80	194.00	10.20	5.40
	300	127	99	117	190	22.10	28.60	229.20	242.20	197.10	13.20	6.80
	600	127	99	117	190	31.80	33.30	248.60	251.60	206.80	13.90	6.90
	900 / 1500	185	99	117	306	44.50	45.90	274.00	276.80	219.50	25.50	12.50
	2500	185	99	117	306	57.20	58.80	299.40	302.60	232.20	35.50	17.90

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

**PDBB - 3/4 in (20mm) Bore**

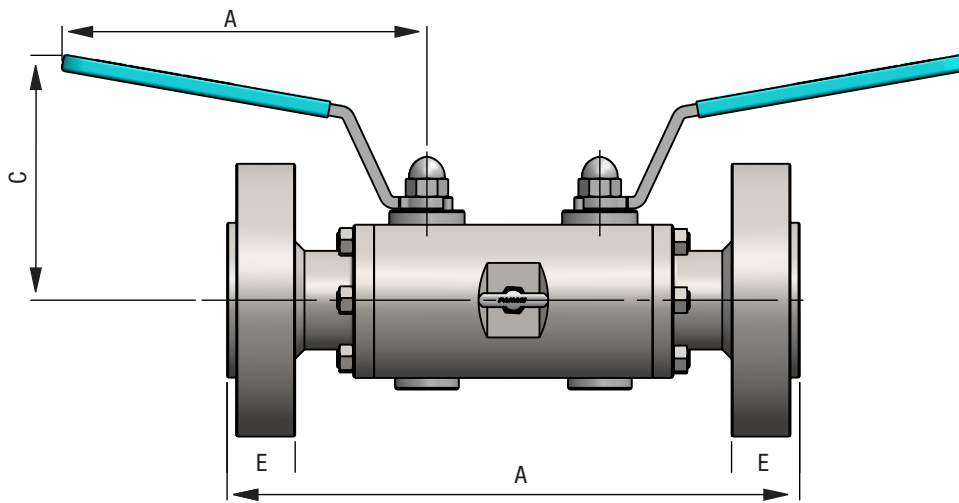


Flange Size	ASME Class	Dimensions (mm)								Approx Weight (kg.)
		A	B	C	D	E (Min.)		L		Flange
						RF Flange	RTJ Flange	RF Flange	RTJ Flange	
1" (DN 25)	150	185	106	140	306	14.20	19.05	252	262	8.80
	300	185	106	140	306	17.20	22.05	258	268	9.20
	600	185	106	140	306	23.90	23.90	272	272	9.40
	900 / 1500	185	106	140	306	34.80	34.80	294	294	13.50
	2500	185	106	140	306	41.50	41.50	307	307	22.50
1-1/2" (DN 40)	150	185	106	140	306	17.40	22.30	259	269	12.50
	300	185	106	140	306	20.50	25.40	265	275	14.50
	600	185	106	140	306	28.80	28.80	282	282	14.80
	900 / 1500	185	106	140	306	38.20	38.20	300	300	19.50
	2500	185	106	140	306	50.80	52.30	326	329	28.00
2" (DN 50)	150	185	106	140	306	19.00	23.90	262	272	14.50
	300	185	106	140	306	22.10	28.60	268	281	15.10
	600	185	106	140	306	31.80	33.30	288	291	15.50
	900 / 1500	185	106	140	306	44.50	45.90	313	316	30.50
	2500	185	106	140	306	57.20	58.80	338	342	29.80

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## PDBB - Reduce Bore

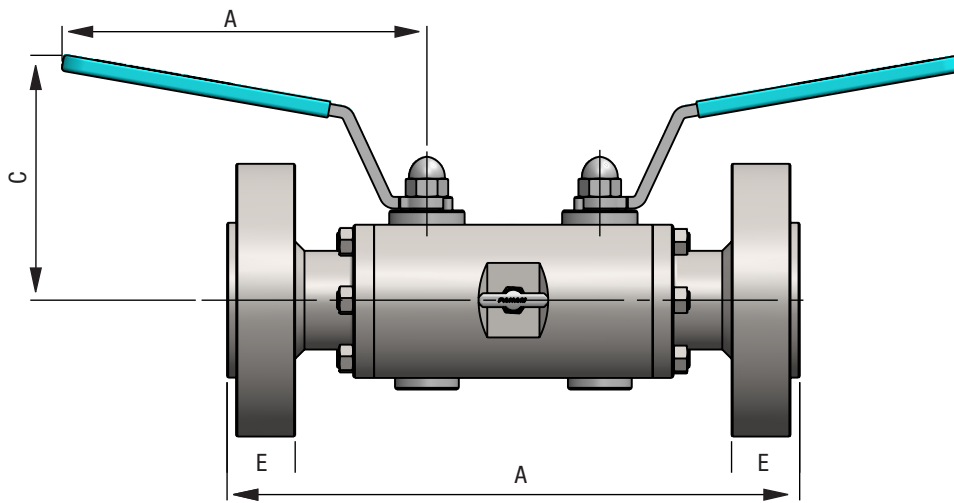


Flange Size	Bore Size	ASME Class	Dimensions (mm)						Approx Weight (kg.)
			A	C (Handle Ht)	E (T)		L		Flange
					RF Flange	RTJ Flange	RF Flange	RTJ Flange	
1-1/2"	(25mm)	150	225	130	17.40	22.30	285	295	17
		300	225	130	20.50	25.40	291	301	20
		600	225	130	28.80	28.80	308	308	21
		900 / 1500	225	130	38.20	38.20	326	326	27
		2500	225	130	50.80	52.30	352	355	37
2"	(38mm)	150	330	140	19.00	23.90	408	418	26
		300	330	140	22.10	28.60	414	427	30
		600	330	140	31.80	33.30	434	437	32
		900 / 1500	330	140	44.50	45.90	459	462	44
		2500	330	140	57.20	58.80	484	488	58
3"	(50mm)	150	450	156	23.90	28.80	434	444	53
		300	450	156	28.40	34.90	443	456	58
		600	450	156	38.20	39.77	462	466	59
		900 / 1500	450	156	44.50	46.10	475	478	68
		2500	450	156	54.00	55.60	494	497	84

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## PDBB - Full Bore

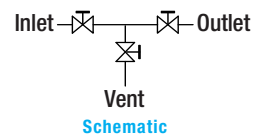
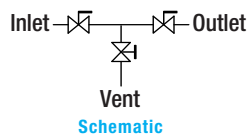
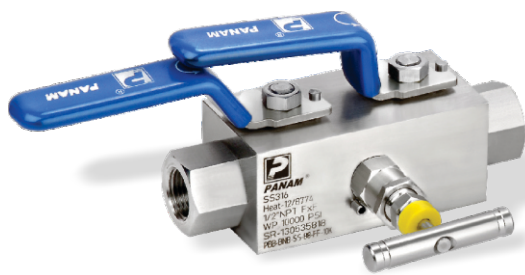


Flange Size	Bore Size	ASME Class	Dimensions (mm)						Approx Weight (kg.)
			A	C (Handle Ht)	E (T)		L		
					RF Flange	RTJ Flange	RF Flange	RTJ Flange	Flange
1"	(25mm)	150	225	130	14.20	19.05	278	288	16
		300	225	130	17.20	22.05	284	294	17
		600	225	130	23.90	23.90	298	298	18
		900 / 1500	225	130	34.80	34.80	320	320	22
		2500	225	130	41.50	41.50	333	333	24
1-1/2"	(38mm)	150	330	140	17.50	22.30	405	415	25
		300	330	140	20.50	25.40	411	421	27
		600	330	140	28.80	28.80	428	428	28
		900 / 1500	330	140	38.20	38.20	446	446	36
		2500	330	140	50.80	52.30	472	475	45
2"	(50mm)	150	450	156	19.00	23.90	424	434	44
		300	450	156	22.10	28.60	430	443	48
		600	450	156	31.80	33.30	450	453	52
		900 / 1500	450	156	44.50	45.90	475	478	69

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## DBB (Ball Valves, Ball Valves with Needle Valve & Needle Valve, Needle Valve with Needle Valve)



- For eliminating the need of tubing and fittings a single valve combines isolating and venting.
- Enabling instruments to be removed without disturbing the permanent piping installation, Block valve isolates the downstream process fluids and the bleed valve exhausts upstream fluids.
- The NPT vent plug is located 90° to the left and may be removed and replaced with exhaust piping to direct the fluids to a safe location.

### Isolating Ball Valves

**A479-316 Construction** - for corrosion resistance.

**Full or Reduced Bore** - for excellent flow.

**Three piece design** - for easy installation and maintenance.

**Anti Blow out internally loaded stem** - for safety.

**Floating ball design** - for positive sealing & seat wear out.

**Low torque 90° actuation with SS Lever / Phenolic handle** - for smooth operation.

### Isolating Needle Valves

**Non Rotating Vee / Ball Tip Design:-** Which forms a bearing joint with the stem eliminates rotation between plug & seat at closure, This prevents scoring and galling up the valve seat and ensure long life in repetitive shut off service.

**Safety Bonnet Lock:-** Prevents accidental disassembly.

**Stem Thread Rolled & Hard Plated:-** Provides additional strength & maximum service life.

**Mirror Finish Stem, Furnished to a 16RMS:-** Extends packing life and smooth stem operation.

**Adjustable Packing Below Stem Threads:-** Prevents stem lubrication washout and isolate threads from process contamination.

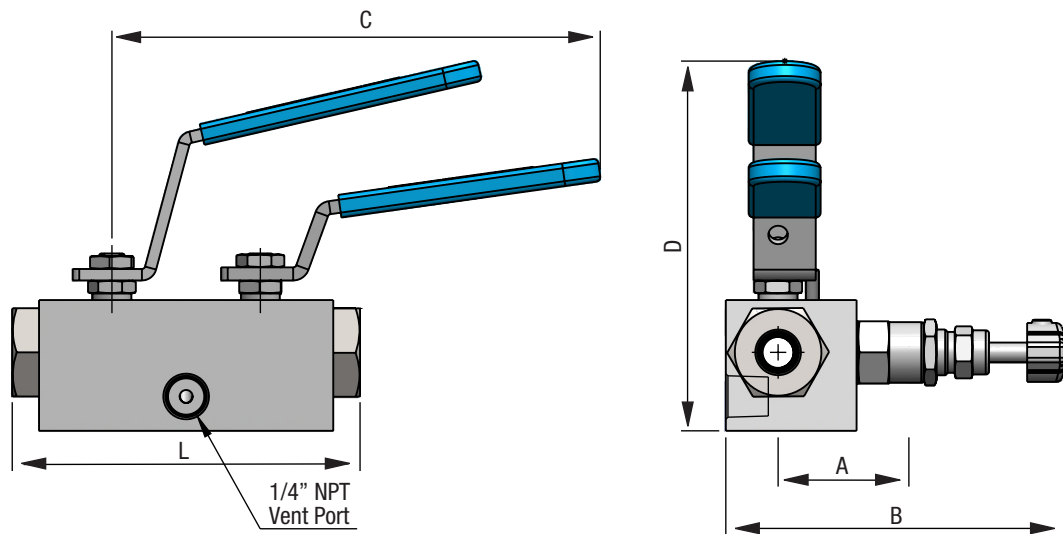
**Safety Back Seating:-** Provides secondary stem seal in full open position, prevents stem blow out.

**Stainless Steel Handle:-** For proper actuation.

**Body to Bonnet Seal:-** Metal to Metal constant compression, isolate bonnet threads from system fluids and eliminates possible tensile.

**Dust Cap:-** Prevents contaminants and lubricant washout of bonnet assembly.

## PDBB - Pipe to Pipe



Size	Type	Bore Size	Dimensions (mm)					Approx Weight (kg.)
			A	B	C	D	L	
1/4	F X F	9.5	40	110	150.0	115	106.5	1.60
3/8		9.5	40	110	150.0	115	106.5	1.60
1/2		9.5	40	110	150.0	115	131.5	1.70
3/4		14.0	45	110	175.5	120	149.0	2.20
1/4	M X F	9.5	40	110	150.0	115	121.0	1.70
3/8		9.5	40	110	150.0	115	121.0	1.70
1/2		9.5	40	110	150.0	115	138.0	1.60
3/4		14.0	45	115	175.5	120	155.0	2.30
1/4	Tube Inch	4.8	40	110	150.0	115	142.5	1.50
3/8		8.0	40	110	150.0	115	144.5	1.60
1/2		9.5	40	110	150.0	115	150.5	1.70
6mm	Tube Metric	4.8	40	110	150.0	115	142.5	1.60
8mm		6.5	40	110	150.0	115	145.5	1.50
10mm		9.0	40	110	150.0	115	150.5	1.70
12mm		9.5	40	110	150.0	115	149.5	1.70

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5



## Ordering Information

**PDBB-1-A-SS-1-P-12-25-300RF-8NF-8N-LH-SG**

### PANAM® Valves

**PDBB** - Double Block & Bleed   **PSB** - Single Block  
**PSBB** - Single Block & Bleed

### Connection Type

- 1** - Flange to Pipe (Integral)
- 2** - Flange to Flange (Integral)
- 3** - Flange to Pipe (Three Piece)
- 4** - Flange to Flange (Three Piece)
- 6** - Pipe to Pipe

### Configuration

- A** - Ball-Needle-Ball      **C** - Needle-Needle-Needle
- B** - Ball-Ball-Ball        **D** - Needle-Needle-Needle (Soft Seat)
- E** - Ball-Needle

### Material of Construction

- |  |                          |                            |
|--|--------------------------|----------------------------|
| <b>SS</b> - SS 316                       | <b>D2</b> - Duplex 32550 | <b>I8</b> - Inconel 825    |
| <b>CS</b> - Carbon Steel<br>(ASTM A105N) | <b>D3</b> - Duplex 32760 | <b>HC</b> - Hastalloy C276 |
| <b>LF2</b> - A350 LF2                    | <b>D4</b> - Duplex 32750 | <b>MO</b> - Monel 400      |
| <b>D1</b> - Duplex 31803                 | <b>D5</b> - Duplex 32205 | <b>6M</b> - 6Mo            |
|  | <b>I6</b> - Inconel 625  |                            |

### Seal Material

- 1** - PTFE    **2** - Grafoil    **3** - PCTFE    **4** - FKM

### Seat Material

- P** - Carbon Filled PTFE    **PC** - PCTFE                      **D** - Delrine (Soft Seat)  
**PK** - PEEK

### Bore Size

- 10** - 10mm    **14** - 14mm    **25** - 25mm    **50** - 50mm  
**12** - 12mm    **20** - 20mm    **36** - 36mm

### Inlet Size

- |                             |                    |                          |                           |
|-----------------------------|--------------------|--------------------------|---------------------------|
| <b>15</b> - 1/2" (Flange)   | <b>DN10</b> - DN10 | <b>DN32</b> - DN32       | <b>8</b> - 1/2" (Thread)  |
| <b>20</b> - 3/4" (Flange)   | <b>DN15</b> - DN15 | <b>DN40</b> - DN40       | <b>12</b> - 3/4" (Thread) |
| <b>25</b> - 1" (Flange)     | <b>DN20</b> - DN20 | <b>DN50</b> - DN50       | <b>16</b> - 1" (Thread)   |
| <b>40</b> - 1-1/2" (Flange) | <b>DN25</b> - DN25 | <b>4</b> - 1/4" (Thread) |                           |

### Inlet Type

- |                  |                    |                  |                    |                    |                      |
|------------------|--------------------|------------------|--------------------|--------------------|----------------------|
| <b>150</b> - 150 | <b>900</b> - 900   | <b>6</b> - PN6   | <b>40</b> - PN40   | <b>160</b> - PN160 | <b>NF</b> - NPT (F)  |
| <b>300</b> - 300 | <b>1500</b> - 1500 | <b>10</b> - PN10 | <b>64</b> - PN64   | <b>200</b> - PN200 | <b>RF</b> - BSPT (F) |
| <b>600</b> - 600 | <b>2500</b> - 2500 | <b>16</b> - PN16 | <b>100</b> - PN100 | <b>250</b> - PN250 | <b>GF</b> - BSPP (F) |

### Flange Type

- RF** - RF                      **GOST "X"** - GOST X = A/B/C/D/E/F/J/K/L/M  
**RTJ** - RTJ                **BS "X"** - British Standard X = A/B/C/D/E/F/G/H

## Ordering Information

### PDBB-1-A-SS-1-P-12-25-300RF-8NF-8N-LH-SG

#### Outlet

<b>None</b> - Same as Inlet	<b>16NF</b> - 1" NPT Female	<b>16GF</b> - 1" BSPP Female
<b>8NF</b> - 1/2" NPT Female	<b>8GF</b> - 1/2" BSPP Female	<b>16RF</b> - 1" BSPT Female
<b>12NF</b> - 3/4" NPT Female	<b>8RF</b> - 1/2" BSPT Female	<b>20MF</b> - M20 X 1.5 Female
<b>16NF</b> - 1" NPT Female	<b>12GF</b> - 3/4" BSPP Female	<b>08</b> - 1/2" OD Tube Fittings
<b>12NF</b> - 3/4" NPT Female	<b>12RF</b> - 3/4" BSPT Female	<b>M12</b> - 12mm OD Tube Fittings

#### Vent

<b>4N</b> - Vent 1/4" NPT	<b>20</b> - 3/4" Flanged	<b>50</b> - 2" Flanged
<b>8N</b> - Vent 1/2" NPT	<b>25</b> - 1" Flanged	
<b>15</b> - 1/2" Flanged	<b>40</b> - 1-1/2" Flanged	

#### Trim

<b>None</b> - Same as Body	<b>TR4</b> - Trim-Inconel 625	<b>TR8</b> - Trim-Hastelloy C-276
<b>TR1</b> - Trim-SS 316	<b>TR5</b> - Trim-Inconel 825	<b>TR9</b> - Trim-SS410
<b>TR2</b> - Trim-Duplex UNS31803	<b>TR6</b> - Trim-Duplex UNS32750	
<b>TR3</b> - Trim-Duplex UNS32760	<b>TR7</b> - Trim-Monel 400	

#### Options

<b>LH</b> - Lock Handle	<b>OS</b> - OS&Y Bonnet	<b>LS825</b> - PTFE LIPSEAL (IN825)
<b>SG</b> - Nace Mr0175	<b>ATK</b> - Anti-Temper Key	<b>LS316</b> - PTFE LIPSEAL (SS316)
<b>FS</b> - Fire Safe	<b>P</b> - With Bleed Plugged	<b>SRS</b> - Self relieving Seat
<b>PA</b> - Paint	<b>GRO</b> - Gear Operated	<b>AED</b> - Anti Explosion Decompression
<b>AS</b> - Anti Static	<b>WOL</b> - Weldover Lay	

## Monoflange Valves

**PANAM**<sup>®</sup> Monoflange valves are light weight Monoflange isolation valves that incorporates an Outside Screw and Yoke bolted bonnet design primary isolate together with a heavy duty instrument Needle Valve bonnet assembly for the vent valve. The compact one piece design not only ensures that potential leakage paths are kept to an absolute minimum but offers significant weight and component cost savings when compared to other conventional installation solutions.

Monoflange valves are designed to meet the requirements of piping class installations in accordance with ASME/ANSI standards that features all metal seating and metal to metal body / bonnet connections. Mono Flanges are manufactured in a full range of materials, flange types and ratings as well as having a choice of flange, screw or kidney flange outlets.

### Construction

Manufactured from a single piece forging or forged bar stock that incorporates the OS&Y valve head and outlet connection.

### Configuration

Block / Double Block / Block & Bleed /  
Double Block & Bleed

### Inlet

The flanged process connection can be made to suit any international size or rating including, but not restricted to :-  
\* ANSI B 16.5 Flanges from 1/2" to 4" in ratings from 150 to 2500 lbs in RF, FF, SRF and RTJ flange face styles.  
\* API Flanges up to 2.1/16", 3000, 5000 & 10,000 lbs  
\* Norsok L-100 Compact flange design

### Outlet

In Flange by Flange variants the outlet flange is identical to the inlet process flange as listed above. Alternatively the output can be:-

- \* Screwed female connections, ( 1/2" NPT standard)
- \* Kidney Flanges for direct connection onto transmitters
- \* Quick release compression fittings

### Bore Sizes

5mm (standard), 8mm can be provided depending upon the flange size and rating

### Fire Safe

Fire Safe to API 6FA / API 607

### NACE

All body & wetted parts materials comply with the requirements of NACE MR 0175 / En15156 or MR 0103 depending upon the environmental or application requirement

### Pressure Rating

Pressure rating up to 10,000 psi (690 barg)

### Temperature Rating

-54° C to 538° C (-65° F to 1000° F) depending upon the stem packing material and pressure rating

### OS&Y and Needle Valve Assemblies

OS&Y and Heavy duty needle valve bonnet assemblies incorporate a full range of features including:-

- \* Anti static, anti blow-out stems

\* Non-rotating stem tips provide a true metal to metal valve seat whereby the material of the stem tip is one grade harder than the body thus resisting over tightening, preventing wear and guaranteeing a 100% bubble tight seat closure, first time, every time.

### No Threads in the Process Stream

All needle valves bonnet assemblies incorporate 'soft' parent metal sealing rings that are located directly below the bonnet threads to ensure that no threads are directly in the process stream.

### Steam Packing

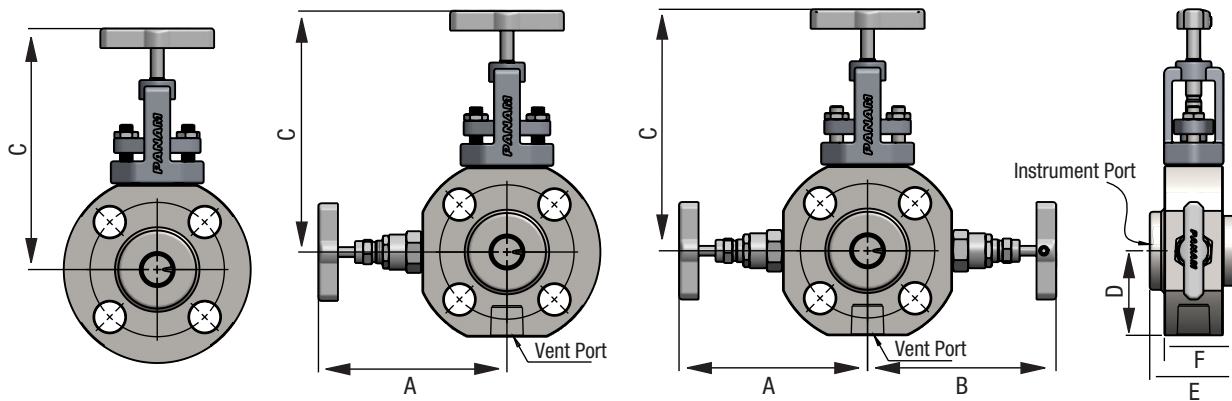
Fully adjustable, dynamically responsive multi ring gland sandwich, in either PTFE or Graphoil, resists all operating pressures and processes. Stem packing are all below the stem threads keeping the process away from the stem threads for longer life.

### Other Features

- \* Hydro static and gas pressure testing to BS 6755 Pt 1 or API 6A
- \* Material thickness as defined in ANSI / ASME B16.34
- \* Flange dimensions as defined in ANSI / ASME B16.5
- \* Heat code traceable material certification to EN 10204 3.1b
- \* Full range of testing, certification and documentation can be supplied including PMI and full range of NDE testing
- \* Pressure boundary designs calculated to ASME VIII Div 1
- \* Designed with 4:1 safety factor
- \* Optional locking and anti tamper bonnet assemblies



## Monoflange (Primary Isolate-OS&Y, Secondary Isolate & Drain-Screwed Bonnet)

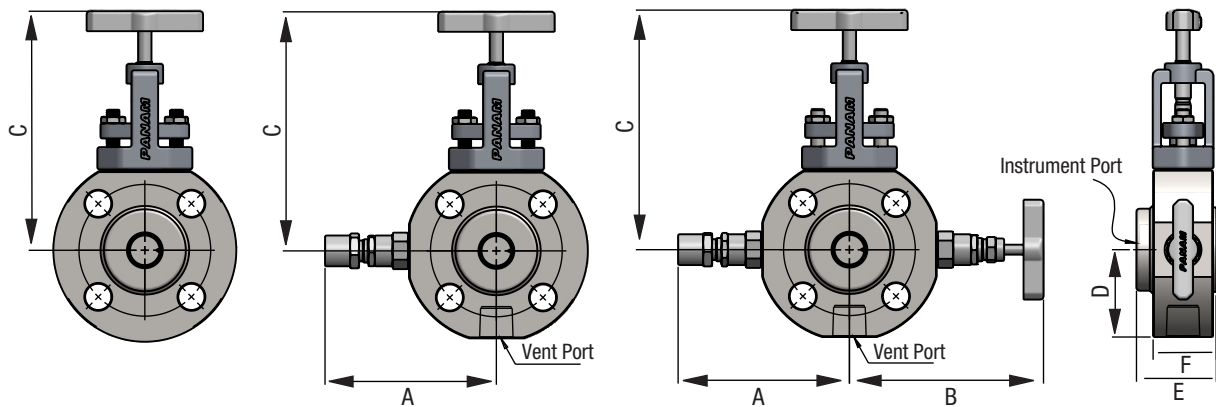


Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	109	109	142	40	48	37.5	X	X	2.2
	300 / 600	112	112	145	42	50	42.5	50	42.5	2.4
	900 / 1500	123	123	156	54	54	42.5	54	42.5	3.4
	2500	129	129	163	60	54	42.5	54	42.5	4.1
3/4" (DN 20)	150	113	113	147	44	48	37.5	X	X	2.6
	300 / 600	121	121	145	52	52	42.5	52	42.5	3.4
	900 / 1500	128	128	160	57	52	42.5	52	42.5	3.9
	2500	132	132	165	62	52	42.5	52	42.5	4.5
1" (DN 25)	150	117	117	150	47	48	37.5	53	42.5	3.0
	300 / 600	124	124	158	55	52	42.5	52	42.5	3.7
	900 / 1500	137	137	170	67	52	42.5	52	42.5	5.0
	2500	142	142	175	72	52	42.5	52	42.5	5.7
1-1/2" (DN 40)	150	127	127	160	57	48	37.5	53	42.5	4.1
	300 / 600	139	139	173	70	52	42.5	52	42.5	5.7
	900 / 1500	152	152	185	82	55	42.5	55	42.5	7.3
	2500	164	164	198	95	60	51.0	62	53.0	11.2
2" (DN 50)	150	139	139	173	70	48	37.5	53	42.5	5.8
	300 / 600	144	144	178	75	52	42.5	54	44.5	6.4
	900 / 1500	169	169	203	100	57	44.5	59	46.5	11.1
	2500	177	177	210	107	65	57.5	67	59.5	15.8

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## Monoflange (Primary Isolate-OS&Y, Secondary Isolate-Screwed, Drain-Anti Temper Bonnet)

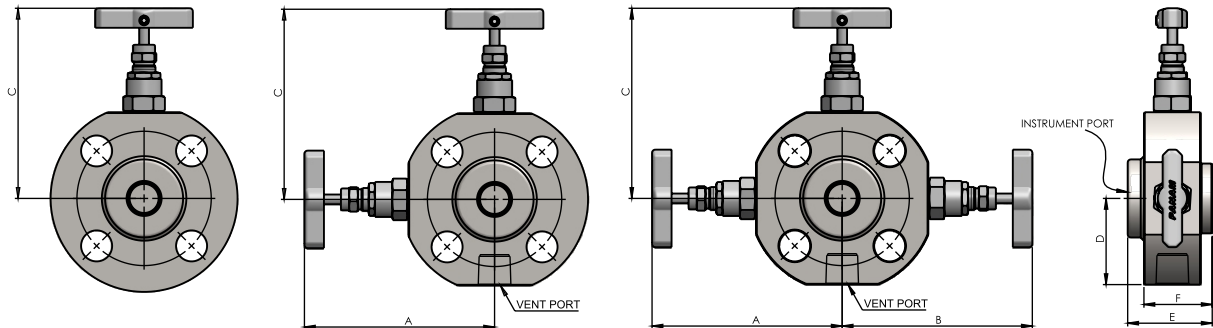


Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	95	109	142	40	48	37.5	X	X	2.2
	300 / 600	98	112	145	42	50	42.5	50	42.5	2.4
	900 / 1500	109	123	156	54	54	42.5	54	42.5	3.4
	2500	115	129	163	60	54	42.5	54	42.5	4.1
3/4" (DN 20)	150	99	113	147	44	48	37.5	X	X	2.6
	300 / 600	107	121	145	52	52	42.5	52	42.5	3.4
	900 / 1500	114	128	160	57	52	42.5	52	42.5	3.9
	2500	118	132	165	62	52	42.5	52	42.5	4.5
1" (DN 25)	150	103	117	150	47	48	37.5	53	42.5	3.0
	300 / 600	110	124	158	55	52	42.5	52	42.5	3.7
	900 / 1500	123	137	170	67	52	42.5	52	42.5	5.0
	2500	128	142	175	72	52	42.5	52	42.5	5.7
1-1/2" (DN 40)	150	113	127	160	57	48	37.5	53	42.5	4.1
	300 / 600	125	139	173	70	52	42.5	52	42.5	5.7
	900 / 1500	138	152	185	82	55	42.5	55	42.5	7.3
	2500	151	165	198	95	60	51.0	62	53.0	11.2
2" (DN 50)	150	125	139	173	70	48	37.5	53	42.5	5.8
	300 / 600	130	144	178	75	52	42.5	54	44.5	6.4
	900 / 1500	155	169	203	100	57	44.5	59	46.5	11.1
	2500	163	177	210	107	65	57.5	67	59.5	15.8

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## Monoflange (All Screwed Bonnet)

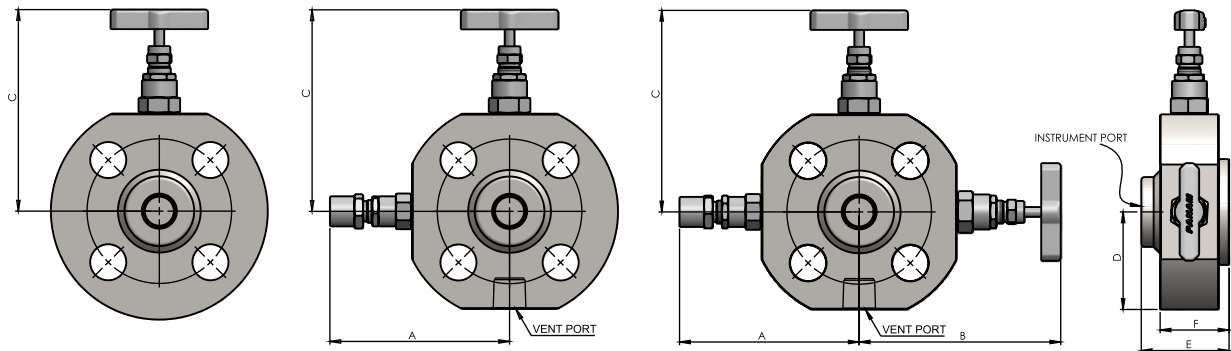


Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	109	109	109	40	48	37.5	X	X	2.1
	300 / 600	112	112	112	42	50	42.5	50	42.5	2.3
	900 / 1500	123	123	123	54	54	42.5	54	42.5	3.3
	2500	129	129	129	60	54	42.5	54	42.5	4.0
3/4" (DN 20)	150	113	113	113	44	48	37.5	X	X	2.5
	300 / 600	121	121	121	52	52	42.5	52	42.5	3.3
	900 / 1500	128	128	128	57	52	42.5	52	42.5	3.8
	2500	132	132	132	62	52	42.5	52	42.5	4.4
1" (DN 25)	150	117	117	117	47	48	37.5	53	42.5	2.9
	300 / 600	124	124	124	55	52	42.5	52	42.5	3.6
	900 / 1500	137	137	137	67	52	42.5	52	42.5	4.9
	2500	142	142	142	72	52	42.5	52	42.5	5.6
1-1/2" (DN 40)	150	127	127	127	57	48	37.5	53	42.5	4.0
	300 / 600	139	139	139	70	52	42.5	52	42.5	5.6
	900 / 1500	152	152	152	82	55	42.5	55	42.5	7.2
	2500	164	164	164	95	60	51.0	62	53.0	11.1
2" (DN 50)	150	139	139	139	70	48	37.5	53	42.5	5.7
	300 / 600	144	144	144	75	52	42.5	54	44.5	6.3
	900 / 1500	169	169	169	100	57	44.5	59	46.5	11.0
	2500	177	177	177	107	65	57.5	67	59.5	15.7

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## Monoflange (Primary & Secondary Isolate-Screwed, Drain-Anti Temper Bonnet)

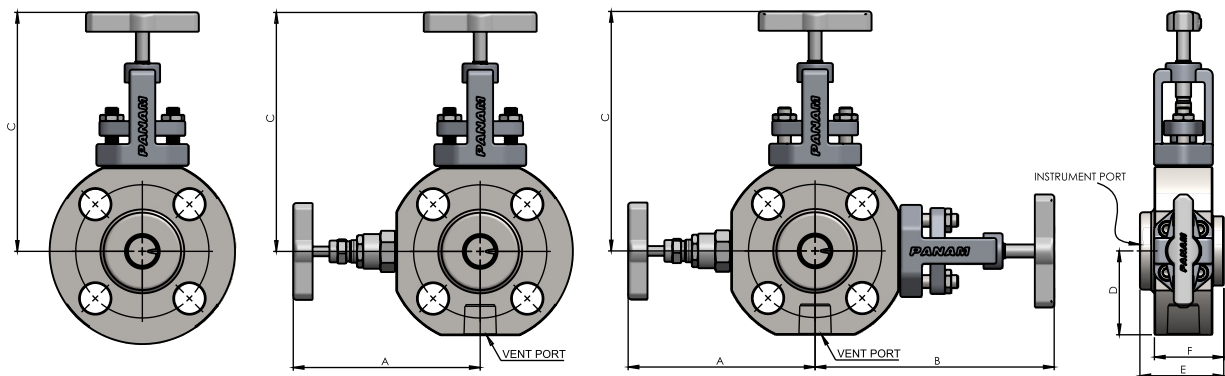


Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	95	109	109	40	48	37.5	X	X	2.1
	300 / 600	98	112	112	42	50	42.5	50	42.5	2.3
	900 / 1500	109	123	123	54	54	42.5	54	42.5	3.3
	2500	115	129	129	60	54	42.5	54	42.5	4.0
3/4" (DN 20)	150	99	113	113	44	48	37.5	X	X	2.5
	300 / 600	107	121	121	52	52	42.5	52	42.5	3.3
	900 / 1500	114	128	128	57	52	42.5	52	42.5	3.8
	2500	118	132	132	62	52	42.5	52	42.5	4.4
1" (DN 25)	150	103	117	117	47	48	37.5	53	42.5	2.9
	300 / 600	110	124	124	55	52	42.5	52	42.5	3.6
	900 / 1500	123	137	137	67	52	42.5	52	42.5	4.9
	2500	128	142	142	72	52	42.5	52	42.5	5.6
1-1/2" (DN 40)	150	113	127	127	57	48	37.5	53	42.5	4.0
	300 / 600	125	139	139	70	52	42.5	52	42.5	5.6
	900 / 1500	138	152	152	82	55	42.5	55	42.5	7.2
	2500	151	165	165	95	60	51.0	62	53.0	11.1
2" (DN 50)	150	125	139	139	70	48	37.5	53	42.5	5.7
	300 / 600	130	144	144	75	52	42.5	54	44.5	6.3
	900 / 1500	155	169	169	100	57	44.5	59	46.5	11.0
	2500	163	177	177	107	65	57.5	67	59.5	15.7

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## Monoflange (Primary & Secondary Isolate-OS&Y, Drain Screwed Bonnet)



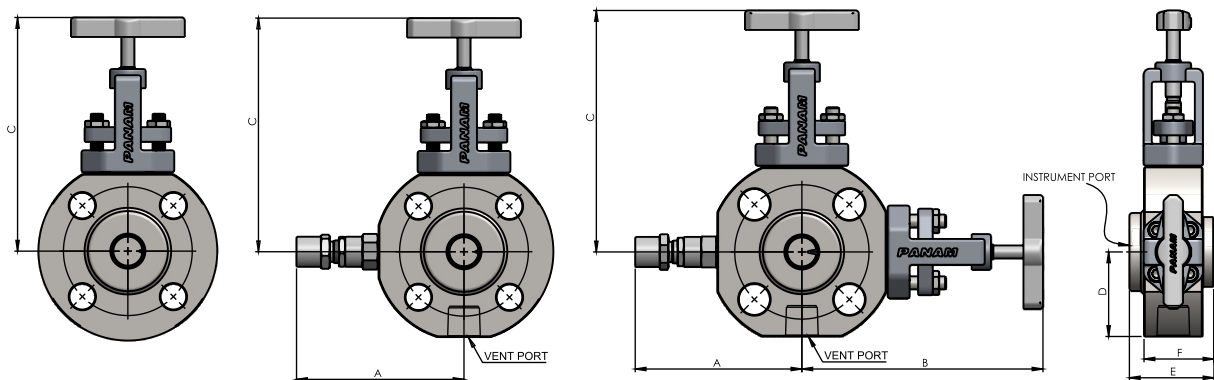
Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	109	142	142	40	48	37.5	X	X	2.2
	300 / 600	112	145	145	42	50	42.5	50	42.5	2.4
	900 / 1500	123	156	156	54	54	42.5	54	42.5	3.4
	2500	129	163	163	60	54	42.5	54	42.5	4.1
3/4" (DN 20)	150	113	147	147	44	48	37.5	X	X	2.6
	300 / 600	121	145	145	52	52	42.5	52	42.5	3.4
	900 / 1500	128	160	160	57	52	42.5	52	42.5	3.9
	2500	132	165	165	62	52	42.5	52	42.5	4.5
1" (DN 25)	150	117	150	150	47	48	37.5	53	42.5	3.0
	300 / 600	124	158	158	55	52	42.5	52	42.5	3.7
	900 / 1500	137	170	170	67	52	42.5	52	42.5	5.0
	2500	142	175	175	72	52	42.5	52	42.5	5.7
1-1/2" (DN 40)	150	127	160	160	57	48	37.5	53	42.5	4.1
	300 / 600	139	173	173	70	52	42.5	52	42.5	5.7
	900 / 1500	152	185	185	82	55	42.5	55	42.5	7.3
	2500	164	198	198	95	60	51.0	62	53.0	11.2
2" (DN 50)	150	139	173	173	70	48	37.5	53	42.5	5.8
	300 / 600	144	178	178	75	52	42.5	54	44.5	6.4
	900 / 1500	169	203	203	100	57	44.5	59	46.5	11.1
	2500	177	210	210	107	65	57.5	67	59.5	15.8

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5



## Monoflange (Primary & Secondary Isolate-Drain-Anti Temper Bonnet)



Flange Size	ASME Class	Dimensions (mm)								Weight (kg.)
		A	B	C	D	RF Flanges		RTJ Flanges		
						E	F	E	F	
1/2" (DN 15)	150	95	142	142	40	48	37.5	X	X	2.2
	300 / 600	98	145	145	42	50	42.5	50	42.5	2.4
	900 / 1500	109	156	156	54	54	42.5	54	42.5	3.4
	2500	115	163	163	60	54	42.5	54	42.5	4.1
3/4" (DN 20)	150	99	147	147	44	48	37.5	X	X	2.6
	300 / 600	107	145	145	52	52	42.5	52	42.5	3.4
	900 / 1500	114	160	160	57	52	42.5	52	42.5	3.9
	2500	118	165	165	62	52	42.5	52	42.5	4.5
1" (DN 25)	150	103	150	150	47	48	37.5	53	42.5	3.0
	300 / 600	110	158	158	55	52	42.5	52	42.5	3.7
	900 / 1500	123	170	170	67	52	42.5	52	42.5	5.0
	2500	128	175	175	72	52	42.5	52	42.5	5.7
1-1/2" (DN 40)	150	113	160	160	57	48	37.5	53	42.5	4.1
	300 / 600	125	173	173	70	52	42.5	52	42.5	5.7
	900 / 1500	138	185	185	82	55	42.5	55	42.5	7.3
	2500	151	198	198	95	60	51.0	62	53.0	11.2
2" (DN 50)	150	125	173	173	70	48	37.5	53	42.5	5.8
	300 / 600	130	178	178	75	52	42.5	54	44.5	6.4
	900 / 1500	155	203	203	100	57	44.5	59	46.5	11.1
	2500	163	210	210	107	65	57.5	67	59.5	15.8

\* Dimensions are for reference only, subject to change prior notice

\* For additional flange dimensions refer sizes & configuration page no 5

## Ordering Information

### PDBB-51-SS-P-25-900RTJ-8NF-8N-TR1-SG-FS

#### PANAM® Valves

**DBB** - Double Block & Bleed   **SB** - Single Block  
**SBB** - Single Block & Bleed   **DB** - Double Block

#### Series

- 51** - Monoflange (Primary Isolate-OS&Y, Secondary Isolate & Drain-Screwed Bonnet)
- 52** - Monoflange (Primary Isolate-OS&Y, Secondary Isolate-Screwed, Drain-Anti Temper Bonnet)
- 53** - Monoflange (All Screwed Bonnet)
- 54** - Monoflange (Primary & Secondary Isolate-Screwed, Drain-Anti Temper Bonnet)
- 55** - Monoflange (Primary & Secondary Isolate-OS&Y, Drain Screwed Bonnet)
- 56** - Monoflange (Primary & Secondary Isolate-Drain-Anti Temper Bonnet)

#### Material

<b>SS</b> - SS 316	<b>D2</b> - Duplex 32550	<b>HC</b> - Hastalloy C276
<b>CS</b> - Carbon Steel (ASTM A105N)	<b>D3</b> - Duplex 32760	<b>Mo</b> - Monel 400
<b>LF2</b> - LF2	<b>D4</b> - Duplex 32750	<b>6M</b> - 6Mo
<b>D1</b> - Duplex 31803	<b>I6</b> - Inconel 625	
	<b>I8</b> - Inconel 825	

#### Seat Material

**P** - PTFE   **G** - Grafoil

#### Inlet Size

<b>15</b> - 1/2"	<b>25</b> - 1"	<b>50</b> - 2"	<b>15</b> - DN15	<b>25</b> - DN25	<b>40</b> - DN40
<b>20</b> - 3/4"	<b>40</b> - 1-1/2"	<b>10</b> - DN10	<b>20</b> - DN20	<b>32</b> - DN32	<b>50</b> - DN50

#### Inlet Type

<b>150</b> - 150	<b>900</b> - 900	<b>6</b> - PN6	<b>40</b> - PN40	<b>160</b> - PN160
<b>300</b> - 300	<b>1500</b> - 1500	<b>10</b> - PN10	<b>64</b> - PN64	<b>200</b> - PN200
<b>600</b> - 600	<b>2500</b> - 2500	<b>16</b> - PN16	<b>100</b> - PN100	<b>250</b> - PN250

#### Flange Type

**RF** - RF   **GOST "X"** - GOST X = A/B/C/D/E/F/J/K/L/M  
**RTJ** - RTJ   **BS "X"** - British Standard X = A/B/C/D/E/F/G/H

#### Outlet

**None** - Same as Inlet   **8GF** - 1/2" BSP Female   **20MF** - M20x1.5 Female  
**8NF** - 1/2" NPT Female   **8RF** - 1/2" BSPT Female

#### Vent

**4N** - Vent 1/4" NPT   **8N** - Vent 1/2" NPT

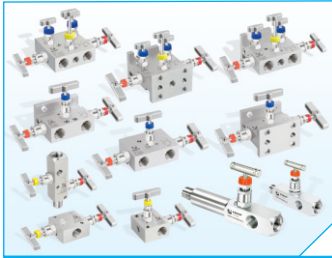
#### Trim

**None** - Same as Body   **TR2** - Trim-Duplex UNS31803   **TR4** - Trim-Inconel 625  
**TR1** - Trim-SS 316   **TR3** - Trim-Duplex UNS32760   **TR5** - Trim-inconel 825

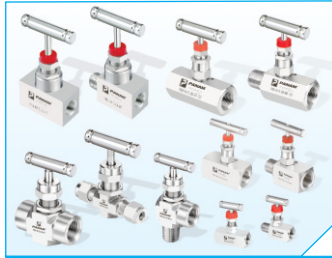
#### Options

**LH** - Lock Handle   **S6** - Stellite 6   **P** - With Bleed Plugged  
**SG** - Nace Mr0175   **FS** - Fire Safe   **ATK** - Anti-Temper Key

## Other Products



Valve Manifolds & Gauge Root Valves



Needle Valves



Ball Valves & Check Valves



Safety Relief Valves



Filters



Tube Fittings & HP Tube Fittings



Pipe Fittings



High Pressure Fittings



Flare Fittings 37°



Weld Fittings



Flange Adapters



Pressure Regulators



Double Block & Bleed Valves



Air Header & Condensate Pots



Tubings



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