FLOW BIZ™
EXPORTS PVT. LTD.
WE KNOW THE FLOW

BUREAU VERITAS

FIRE SAFE APPROVED

Trunnion Mounted Ball Valves 2 Piece & 3 Piece Design
ASME Class : 150 to 1500

Trunnion Mounted Ball Valves

Design Features :

FlowBiz make trunnion mounted ball valve is a quarter-turn valve that uses a hollow perforated and fixed or supported ball to control flow through it. The primary role of the Trunnion Mounted Ball Valve is to stop media in the pipeline. The support is in the shape of a shaft and is called a trunnion. The Trunnion absorbs any added pressure from the flow and Reduce stress on the valve's ball and seats. FlowBiz trunnion ball valve is innovatively designed where one end is connected to the stem, while the other end, called Trunnion (shaft), holds the ball firmly.

FlowBiz designed ball's mechanical anchoring absorb the thrust from the line pressure, preventing excess friction between the ball and seats, so even full working pressure operating torque remains low. This mechanical innovation of our engineers gives an advantage to our clients by reducing the overall costs of the valve actuation package. Stem and Ball isolation prevents side loading and wears of downstream seats, improving performance and durability.

FlowBiz Trunnion Mounted Ball Valves have their advantages over free-floating valves. Trunnion ball valves are suitable for low and high-pressure applications at very reasonable operational costs and offer lower operating costs than free-floating ball valves. The trunnion design provides a solution, and the ball does not float due to its connection with the Trunnion. It is advantageous since it will maintain a proper seal on both sides, and there is no added torque to the stem.

Advantages of the Trunnion Ball Design :

- Ease of Operation.
- Lower Operating Torque.
- Minimised Seat Wear.

Addition Features :

- Standard double block sealing performance.
- Complete die-forged structure for all pressure containing parts.
- Flanged End valves are manufactured with integral flange in casting and forging.
- The standard primary gasket design in AED (Anti-Explosive Decompression) type
- Secondary emergency seal always offered for the fire-safe purpose.
- High-quality stem gasket for reliable tightness and low emission performance.
- Long service life and surface finish for reliable sealing because of using low seat-ball friction materials.
- Best-in-Class CV (Coefficient Of Variation) values.
- Standard split & bolted design for body-closure connection.

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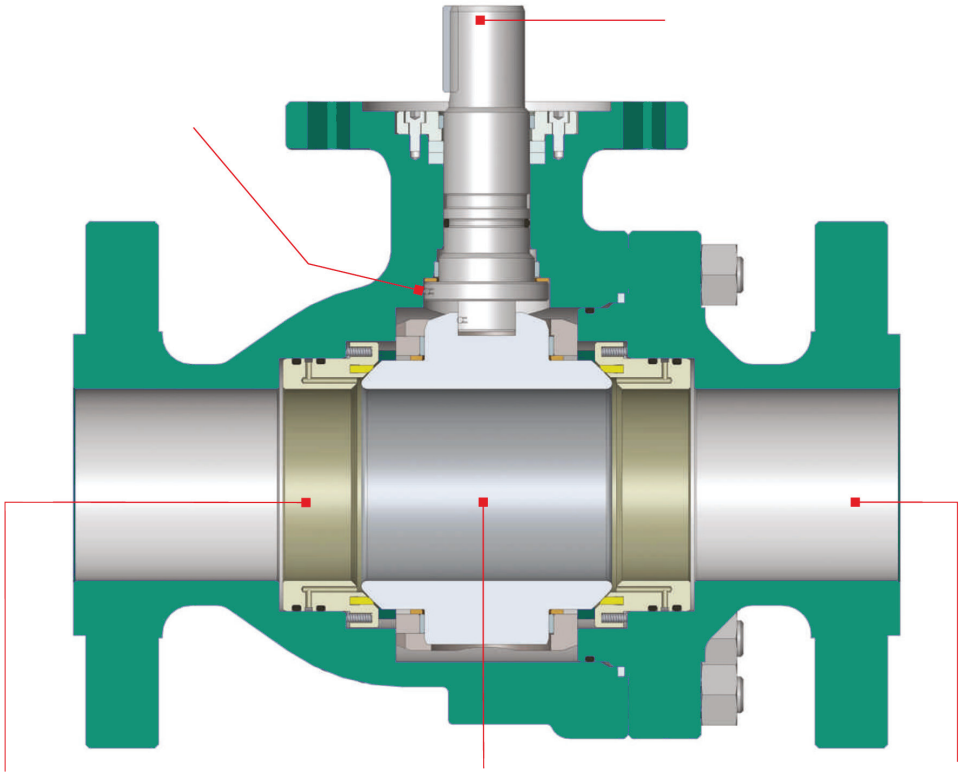

Anti-Static Design

FlowBiz enhances design by installing an anti-static grounding device as standard. Anti-Static devices ensure electrical continuity between ball, stem, and body, eliminating the possibility of static electrical charges that create sparks within the valve.

Stem

FlowBiz manufactures an Anti-blowout proof designed stem that allows the replacement of the stem seals even when the Trunnion mounted ball valve is in the fully closed or open position

Floating Seat Ring

FlowBiz Valves consist of two independent floating seat rings, ensuring the valve's bi-directional tightness from zero differential pressure to the maximum rated pressure.

Trunnion-Mounted Ball

FlowBiz engineers have developed a design where the ball is supported, and the seat rings are freely floating to move along the flow axis. Though the pressure pushes, the seat rings against the ball.

Machined Valve Bore

FlowBiz Trunnion Mounted Ball Valve body bore is entirely machined from the edge of the flanges to the ball's edge. Provides less resistance to flow, thereby increasing flow through the valve.

Self-Relieving Seat Design

FlowBiz designs Trunnion mounted ball valves that avoid excessive pressure build-up. Media is trapped in the body cavity when the valve is in the closed position. It creates thermal expansion and contraction unless media is drained. The rise in temperature rises makes the trapped media expand and increases the body cavity's pressure, but our design ends this issue. That is the beauty of our well crafted & well-engineered self relieving seat.

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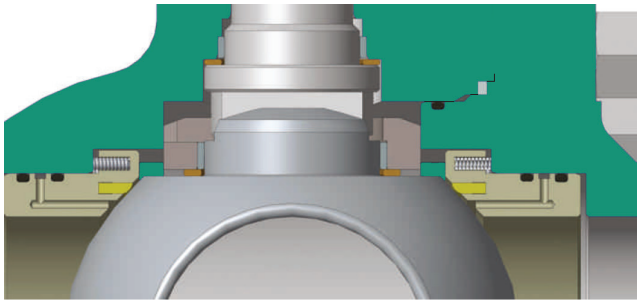
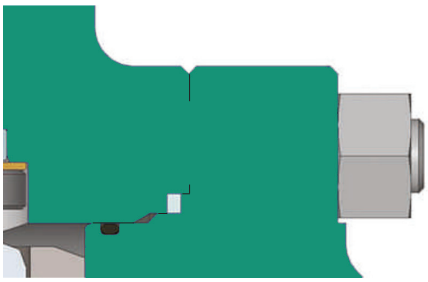


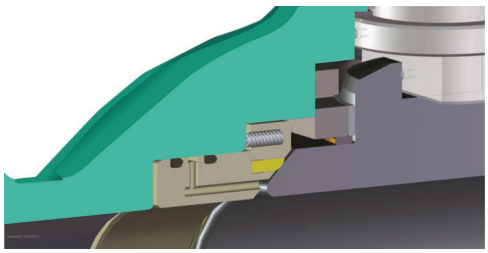
Double Block And Bleed

FlowBiz made spring-loaded floating seats maintain contact with the ball, providing a tight shut off even at a low-pressure differential. Autonomous sealing of upstream and downstream sides expedites fluid draining from the body cavity, creating double block and bleed operation.



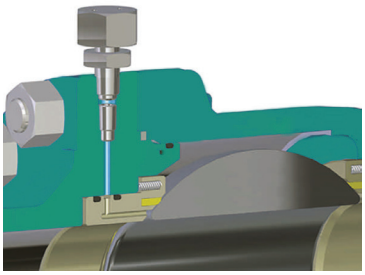
Body Joints

FlowBiz Trunnion Ball Valves are designed to meet or exceed the fugitive emission requirement in almost all range of pressure and temperature application. Our Engineers ensure perfect body joint sealing by double seal combination of O-ring and fire-safe spiral wound gasket. FlowBiz valves are apt for above as well as under-ground installations.



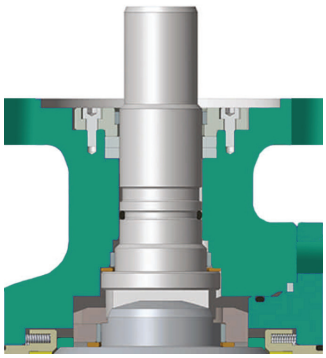
Fire Safe Design

FlowBiz Fire safe design ball valve is superintended so that the material and the structure of the ball valve can pass a fire test with limited leakage to the atmosphere and downstream after fire exposure. Additionally, providing fireproof packing of graphite at the metal seat ring prevent internal leakage. The fire-safe design comprises a primary soft-sealing and a secondary metal seat. The resilient material is inserted into the metal seat holder to provide a smooth action to the metal sealing between the ball and the seat rings. In case of fire, the soft seat insert burns and allowed the spring-loaded seat to ensure metal to metal sealing against the ball.



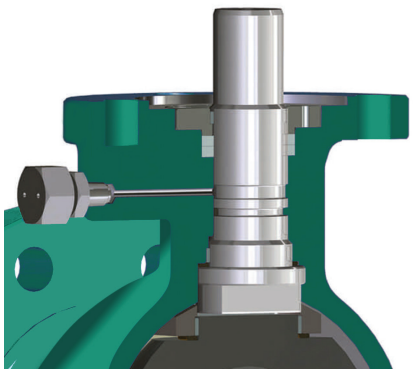
Emergancy Seat Sealant Injection

FlowBiz Trunnion Ball Valves is available with a sealant injection system upon special request. Each FlowBiz Trunnion Ball Valve has a port for sealant injection feature. The ability & adaptability of customization makes Trunnion mounted ball a wide variety of uses, following Industries use.



Stem Sealing

A multiple stem sealing arrangement prevents leakage to the atmosphere. The unique structural arrangement consists of a double sealing arrangement with O-rings on the stem, and two pre-energized graphite seal rings are also provided.



Emergancy Seat Sealant Injection

FlowBiz Trunnion Ball Valves is also available with a sealant system injection in steam upon special request. Each FlowBiz Trunnion Ball Valve has a port for sealant injection feature.

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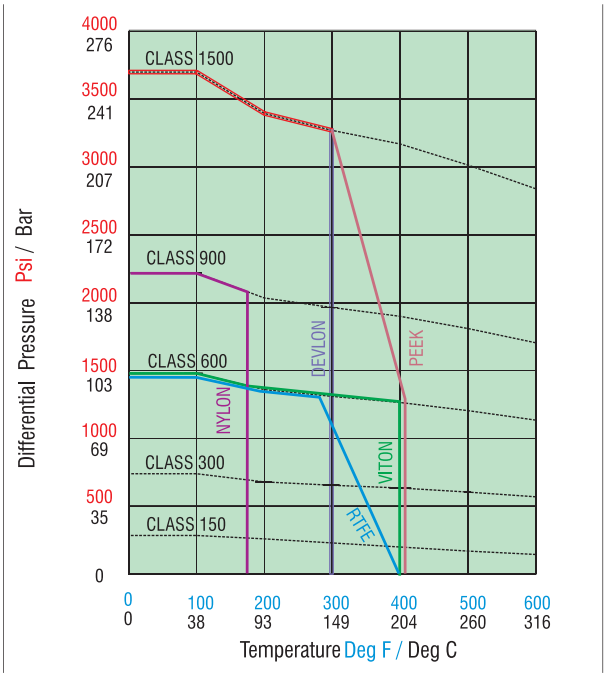
Pressure Temperature Ratings :



The graph explains Pressure - temperature seat ratings of valves for body material ASTM A 216 - Gr. WCB. Excluding body seat rings and primary soft seals, all valve components can withstand the pressure-temperature ratings specified in ASME B16.34.

Temperature Limits :

		Lower limits		Upper limits	
		Deg. F	Deg. C	Deg. F	Deg. C
Body Material	WCB	-20	-29	797	425
	LCB	-50	-46	653	345
	CF8	-320	-196	1000	538
	CF8M	-320	-196	1000	538
Seat	RPTFE	-58	-50	400	204
	DEVLON	-58	-50	302	150
	PEEK	-58	-50	400	204
	VITON	-10	-23	400	204
	NYLON 12	-58	-50	176	80

Note : Explained ratings are a reference for general service. Kindly consult our FlowBiz sales engineers team for specific recommendations.

Range :

VALVE TYPE	ASME CLASS	2		3		4		6		8		10		12		14		16		18		20		24	
		FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	FP	RP	•	RP
2 PIECE	150	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•		•						
	300	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•						
	600	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•						
	900	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•		•						
	1500	•	•	•	•	•	•	•	•	•	•		•												
3 PIECE	150																	•		•	•	•	•	•	•
	300																	•		•	•	•	•	•	•
	600																	•		•	•	•	•	•	•
	900															•		•			•				
	1500											•		•	•		•								

Specification & Codes :

Design		API 6D / ASME B16.34 / BS EN ISO 17292
Pressure & Temperature Rating		ASME B16.34
Testing		API 6D / API 598 / BS EN 1226-1
Ends	Face to Face/End to End Dimensions	API 6D / ASME B16.10
	End Flange Dimensions	ASME B16.5 / ASME B16.47
	Butt Weld End Dimensions	ASME B16.25
Fire Safe Test		API 607
Compliance		PED 2014 / 68 / EU
Nace		ANSI / NACE MRO 175 / ISO 15156-2

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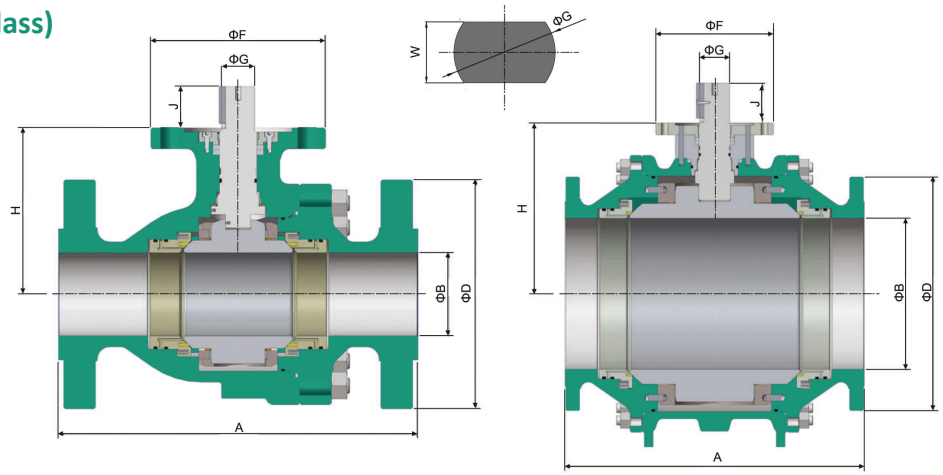
Full Port (150 Class)



ASME CLASS 150 (Dimensions are in mm)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT(Kg)#	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	49	178	191	216	130	F10	30	22	35	-	150	11	-	-	-	-	-	-	-	-	-	-	-	-
3	74	203	216	283	160	F12	35	24	40	-	190	25	-	-	-	-	-	-	-	-	-	-	-	-
4	100	229	241	305	185	F12	35	24	40	-	230	43	-	-	-	-	-	-	-	-	-	-	-	-
6	150	394	406	457	250	F12	40	29	40	-	280	122	-	-	-	-	-	-	-	-	-	-	-	-
8	201	457	470	521	302	F16	55	-	80	16 x 10	345	200	--	-	-	-	-	-	-	-	-	-	-	-
10	252	533	546	559	340	F16	55	-	80	16 x 10	405	315	-	-	-	-	-	-	-	-	-	-	-	-
12	303	610	622	635	375	F25	63.5	-	102	15.88 x 15.88	485	470	-	-	-	-	-	-	-	-	-	-	-	-
14	334	686	699	762	390	F25	70	-	102	20 x 12	535	600	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-			-	-	-		385	762	775	838	460	F25	76.2	-	102	19.05 x 19.05	595	995
18	-	-	-	-	-	-			-	-	-		436	864	876	914	500	F30	88.9	-	134	22.23 x 15.86	635	1315
20	-	-	-	-	-	-			-	-	-		487	914	927	991	525	F30	88.9	-	134	22.23 x 15.86	700	1700
24	-	-	-	-	-	-			-	-	-		589	1067	1080	1143	650	F35	120	-	150	32 x 18	815	2750

ASME CLASS 150 (Dimensions are in inches)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	1.94	7.00	7.50	8.50	5.12	F10	1.18	0.87	1.38	-	6.00	24	-	-	-	-	-	-	-	-	-	-	-	-
3	2.94	8.00	8.50	11.13	6.30	F12	1.38	0.94	1.57	-	7.50	55	-	-	-	-	-	-	-	-	-	-	-	-
4	3.94	9.00	9.50	12.00	7.28	F12	1.38	0.94	1.57	-	9.00	95	-	-	-	-	-	-	-	-	-	-	-	-
6	5.94	15.50	16.00	18.00	9.84	F12	1.57	1.18	1.57	-	11.00	268	-	-	-	-	-	-	-	-	-	-	-	-
8	7.94	18.00	18.50	20.50	11.89	F16	2.16	-	3.15	0.63 x 0.39	13.50	440	-	-	-	-	-	-	-	-	-	-	-	-
10	9.94	21.00	21.50	22.00	13.39	F16	2.16	-	3.15	0.63 x 0.39	16.00	693	-	-	-	-	-	-	-	-	-	-	-	-
12	11.94	24.00	24.50	25.00	14.76	F25	2.50	-	4.01	0.63 x 0.39	19.00	1034	-	-	-	-	-	-	-	-	-	-	-	-
14	13.19	27.00	27.50	30.00	15.35	F25	2.76	-	4.01	0.79 x 0.47	21.00	1320	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	15.19	30	30.5	33	18.11	F25	3	-	4.01	0.75 x 0.75	23.5	2189
18	-	-	-	-	-	-	-	-	-	-	-	-	17.19	34	34.5	36	19.7	F30	3.5	-	5.27	0.88 x 0.63	25	2893
20	-	-	-	-	-	-	-	-	-	-	-	-	19.19	36	36.0	39	20.67	F30	3.5	-	5.27	0.88 x 0.63	27.5	3740
24	-	-	-	-	-	-	-	-	-	-	-	-	23.19	42.00	42.50	45.00	25.60	F35	4.72	-	5.91	1.26 x 0.71	32.00	6050

Approximate value

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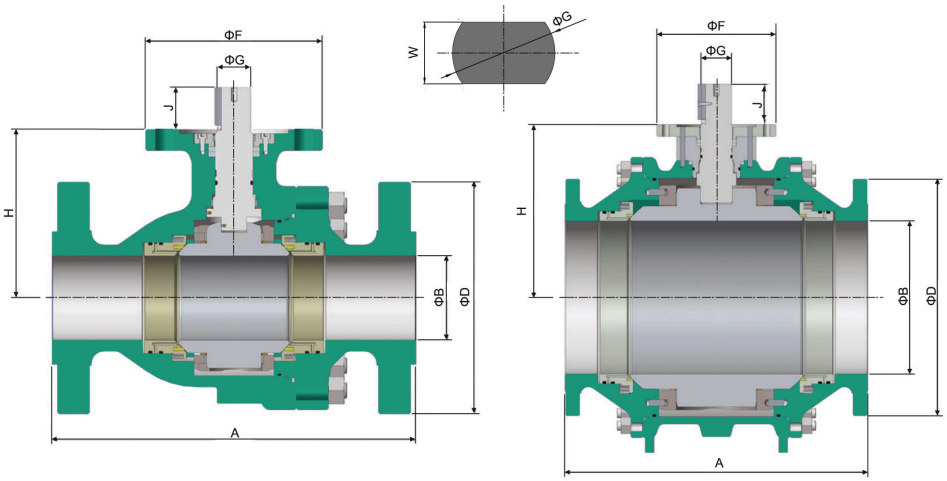
Full Port (300 Class)



ASME CLASS 300 (Dimensions are in mm)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	w	J	KEY SIZE	ØD	WT (Kg)#	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	49	216	232	216	130	F10	30	22	35	-	165	14	-	-	-	-	-	-	-	-	-	-	-	-
3	74	283	298	283	160	F12	35	24	40	-	210	40	-	-	-	-	-	-	-	-	-	-	-	-
4	100	305	321	305	185	F12	35	24	40	-	255	50	-	-	-	-	-	-	-	-	-	-	-	-
6	150	403	419	457	250	F16	45	-	60	14 x 9	320	138	-	-	-	-	-	-	-	-	-	-	-	-
8	201	502	518	521	302	F16	55	-	80	16 x 10	380	245	--	-	-	-	-	-	-	-	-	-	-	-
10	252	568	584	559	340	F16	55	-	80	16 x 10	445	366	-	-	-	-	-	-	-	-	-	-	-	-
12	303	648	664	635	375	F25	63.5	-	102	15.88 x 15.88	520	550	-	-	-	-	-	-	-	-	-	-	-	-
14	334	762	778	762	390	F25	70	-	102	20 x 12	585	820	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	385	838	854	838	460	F25	76.2	-	102	19.05 x 19.05	650	1187
18	-	-	-	-	-	-	-	-	-	-	-	-	436	914	930	914	500	F30	88.9	-	134	22.23 x 15.88	710	1560
20	-	-	-	-	-	-	-	-	-	-	-	-	487	991	1010	991	565	F35	88.9	-	134	22.23 x 15.88	775	2200
24	-	-	-	-	-	-	-	-	-	-	-	-	589	1143	1165	1143	670	F35	120	-	150	32 x 18	915	3500

ASME CLASS 300 (Dimensions are in inches)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	1.94	8.5	9.13	8.5	5.12	F10	1.18	0.87	1.38	-	6.5	31	-	-	-	-	-	-	-	-	-	-	-	-
3	2.94	11.13	11.75	11.13	6.3	F12	1.38	0.94	1.57	-	8.25	88	-	-	-	-	-	-	-	-	-	-	-	-
4	3.94	12	12.63	12	7.28	F12	1.38	0.94	1.57	-	10	110	-	-	-	-	-	-	-	-	-	-	-	-
6	5.94	15.88	16.5	18	9.84	F16	1.77	-	2.36	0.55 x 0.36	12.5	304	-	-	-	-	-	-	-	-	-	-	-	-
8	7.94	19.75	20.38	20.5	11.89	F16	2.16	-	3.15	0.63 x 0.39	15	539	--	-	-	-	-	-	-	-	-	-	-	-
10	9.94	22.38	23	22	13.39	F16	2.16	-	3.15	0.63 x 0.39	17.5	805	-	-	-	-	-	-	-	-	-	-	-	-
12	11.94	25.5	26.13	25	14.76	F25	2.5	-	4.01	0.63 x 0.39	20.5	1210	-	-	-	-	-	-	-	-	-	-	-	-
14	13.19	30	30.63	30	15.35	F25	2.76	-	4.01	0.79 x 0.47	23	1804	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	15.19	33	33.63	33	18.11	F25	3	-	4.01	0.75 x 0.75	25.5	2611
18	-	-	-	-	-	-	-	-	-	-	-	-	17.19	36	33.63	36	19.69	F30	3.5	-	5.27	0.88 x 0.63	28	3432
20	-	-	-	-	-	-	-	-	-	-	-		19.19	39	39.75	39	22.24	F35	3.5	-	5.27	0.88 x 0.63	30.5	4840
24	-	-	-	-	-	-	-	-	-	-	-		23.19	45	45.88	45	26.38	F35	4.72	-	5.91	1.26 x 0.71	36	7700

Approximate value
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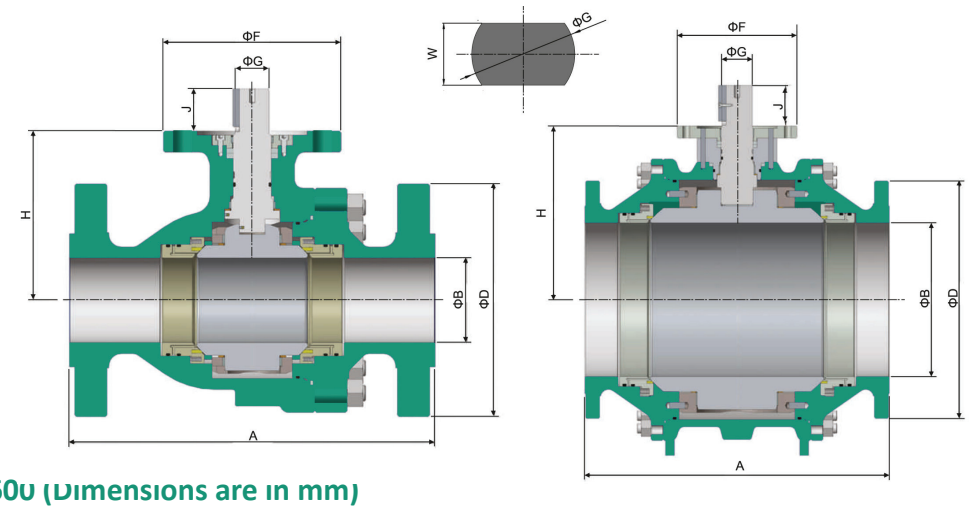
Full Port (600 Class)



ASME CLASS 600 (Dimensions are in mm)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	49	292	295	292	140	F10	30	22	35	-	165	32	-	-	-	-	-	-	-	-	-	-	-	-
3	74	356	359	356	165	F12	35	24	40	-	210	56	-	-	-	-	-	-	-	-	-	-	-	-
4	100	432	435	432	200	F16	40	-	50	12 x 8	275	108	-	-	-	-	-	-	-	-	-	-	-	-
6	150	559	562	559	250	F16	45	-	60	14 x 9	355	172	-	-	-	-	-	-	-	-	-	-	-	-
8	201	660	664	660	302	F16	55	-	80	16 x 10	420	349	--	-	-	-	-	-	-	-	-	-	-	-
10	252	787	791	787	343	F25	63.5	-	102	15.88 x 15.88	510	621	-	-	-	-	-	-	-	-	-	-	-	-
12	303	838	841	838	390	F25	70	-	102	20 x 12	560	835	-	-	-	-	-	-	-	-	-	-	-	-
14	334	889	892	889	415	F25	76.2	-	102	19.05 x 19.05	605	1200	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-			-	-	-		385	991	994	991	460	F30	88.9	-	134	22.23 x 15.88	685	1997
18	-	-	-	-	-	-			-	-	-		436	1092	1095	1092	525	F35	120	-	150	32 x 18	745	2730
20	-	-	-	-	-	-			-	-	-		487	1194	1200	1194	595	F35	120	-	150	32 x 18	815	3350
24	-	-	-	-	-	-			-	-	-		589	1397	1407	1397	680	F40	140	-	210	30 x 20	940	5975

ASME CLASS 600 (Dimensions are in Inches)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	1.94	11.50	11.63	11.50	5.51	F10	1.18	0.87	1.38	-	6.50	70	-	-	-	-	-	-	-	-	-	-	-	-
3	2.94	14.00	14.13	14.00	6.50	F12	1.38	0.94	1.57	-	8.25	123	-	-	-	-	-	-	-	-	-	-	-	-
4	3.94	17.00	17.13	17.00	7.87	F16	1.57	-	1.97	0.47 x 0.31	10.75	238	-	-	-	-	-	-	-	-	-	-	-	-
6	5.94	22.00	22.13	22.00	9.84	F16	1.77	-	2.36	0.55 x 0.35	14.00	378	-	-	-	-	-	-	-	-	-	-	-	-
8	7.94	26.00	26.13	26.00	11.89	F16	2.16	-	3.15	0.63 x 0.39	16.50	767	--	-	-	-	-	-	-	-	-	-	-	-
10	9.94	31.00	31.13	31.00	13.50	F25	2.50	-	4.01	0.63 x 0.63	20.00	1366	-	-	-	-	-	-	-	-	-	-	-	-
12	11.94	33.00	33.13	33.00	15.35	F25	2.76	-	4.01	0.79 x 0.47	22.00	1837	-	-	-	-	-	-	-	-	-	-	-	-
14	13.19	35.00	35.13	35.00	16.34	F25	3.00	-	4.01	0.77 x 0.75	23.75	2640	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-			-	-	-		15.19	39	39.13	39	18.11	F30	3.5	-	5.27	0.88 x 0.63	27	4393
18	-	-	-	-	-	-			-	-	-		17.19	43	43.13	43	20.67	F35	4.72	-	5.9	1.26 x 0.71	29.25	6006
20	-	-	-	-	-	-			-	-	-		19.19	47	47.25	47	23.43	F35	4.72	-	5.9	1.26 x 0.71	32	7370
24	-	-	-	-	-	-			-	-	-		23.19	55	55.38	55	26.77	F40	5.51	-	8.27	1.42 x 0.79	37	13145

Approximate value
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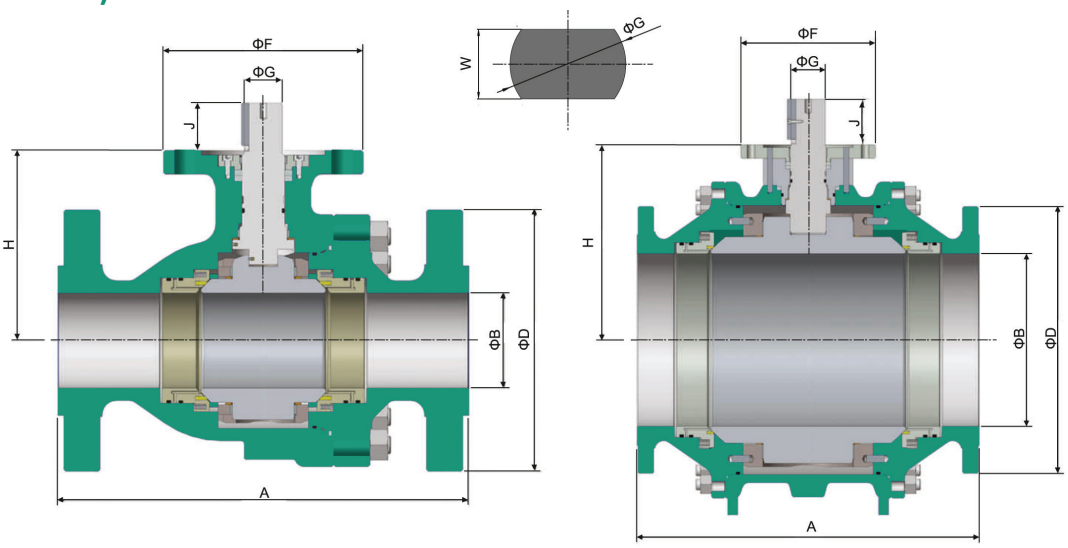
Full Port (900 Class)



ASME CLASS 900 (Dimensions are in mm)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	49	368	371	368	138	F12	30	22	35	-	215	60	-	-	-	-	-	-	-	-	-	-	-	-
3	74	381	384	381	180	F16	40	-	50	12 x 8	240	88	-	-	-	-	-	-	-	-	-	-	-	-
4	100	457	460	457	240	F16	45	-	60	14 x 9	290	140	-	-	-	-	-	-	-	-	-	-	-	-
6	150	610	613	610	275	F16	55	-	80	16 x 10	380	190	-	-	-	-	-	-	-	-	-	-	-	-
8	201	737	740	737	350	F25	63.5	-	102	15.88 x 15.88	470	593	--	-	-	-	-	-	-	-	-	-	-	-
10	252	838	841	838	360	F30	70	-	102	20 x 12	545	845	-	-	-	-	-	-	-	-	-	-	-	-
12	303	965	968	965	400	F30	70	-	102	20 x 12	610	1115	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	322	1029	1038	1029	465	F35	88.9	-	134	22.23 x 15.88	640	2074
16	-	-	-	-	-	-	-	-	-	-	-		373	1130	1140	1130	485	F35	88.9	-	134	22.23 x 15.88	705	2385

ASME CLASS 900 (Dimensions are in Inches)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	1.94	14.5	14.63	14.5	5.43	F12	1.18	0.87	1.38	-	8.5	132	-	-	-	-	-	-	-	-	-	-	-	-
3	2.94	15	15.13	15	7.09	F16	1.57	-	1.97	0.47 x 0.31	9.5	194	-	-	-	-	-	-	-	-	-	-	-	-
4	3.94	18	18.13	18	9.45	F16	1.77	-	2.36	0.55 x 0.35	11.5	308	-	-	-	-	-	-	-	-	-	-	-	-
6	5.94	24	24.13	24	10.82	F16	2.16	-	3.15	0.63 x 0.39	15	418	-	-	-	-	-	-	-	-	-	-	-	-
8	7.94	29	29.13	29	13.78	F25	2.5	-	4.01	0.63 x 0.63	18.5	1305	--	-	-	-	-	-	-	-	-	-	-	-
10	9.94	33	33.13	33	14.17	F30	2.76	-	4.01	0.79 x 0.47	21.5	1859	-	-	-	-	-	-	-	-	-	-	-	-
12	11.94	38	38.13	38	15.75	F30	2.76	-	4.01	0.79 x 0.47	24	2453	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	12.69	40.5	40.88	40.5	18.31	F35	3.5	-	5.27	0.88 x 0.63	25.25	4563
16	-	-	-	-	-	-	-	-	-	-	-	-	14.69	44.5	44.88	44.5	19.1	F35	3.5	-	5.27	0.88 x 0.63	27.75	5247

Approximate value

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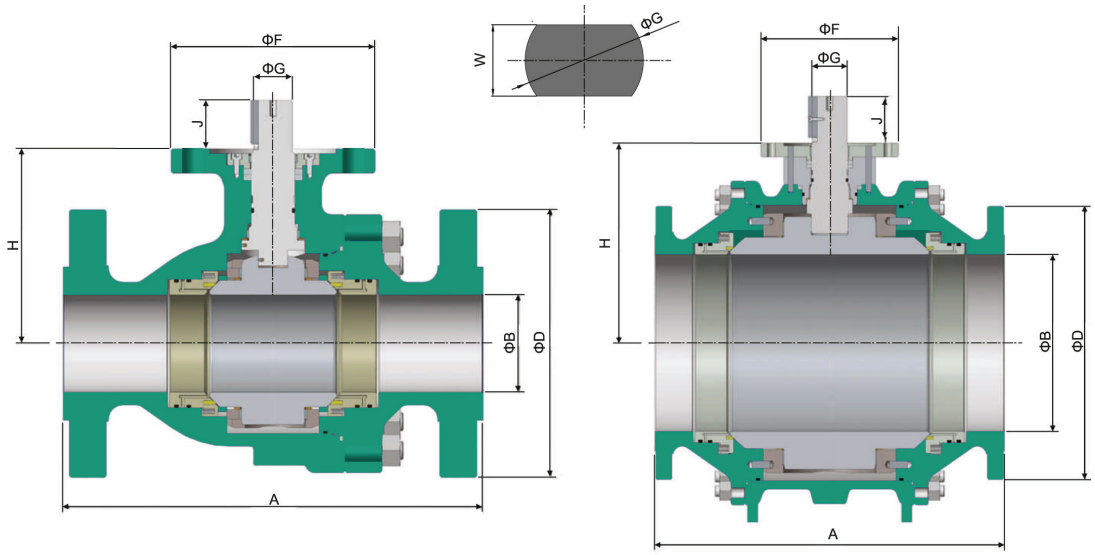
Full Port (1500 Class)



ASME CLASS 1500 (Dimensions are in mm)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	49	368	371	368	150	F12	30	22	35	-	215	62	-	-	-	-	-	-	-	-	-	-	-	-
3	74	470	473	470	180	F16	40	-	50	12 x 8	265	112	-	-	-	-	-	-	-	-	-	-	-	-
4	100	546	549	546	240	F16	45	-	60	14 x 9	310	200	-	-	-	-	-	-	-	-	-	-	-	-
6	144	705	711	705	325	F16	55	-	80	16 x 10	395	500	-	-	-	-	-	-	-	-	-	-	-	-
8	192	832	841	832	370	F30	63.5	-	102	15.88 x 15.88	485	1000	--	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	239	991	1000	991	470	F30	70	-	102	20 x 12	585	1580
12	-	-	-	-	-	-	-	-	-	-	-	-	287	1130	1146	1130	480	F35	88.9	-	134	22.23 x 15.88	675	2485

ASME CLASS 1500 (Dimensions are in Inches)

SIZE	2-PIECE												3-PIECE											
	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #	ØB	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS) #
NPS		RF	RTJ	BWE								FL		RF	RTJ	BWE								FL
2	1.94	14.5	14.63	14.5	5.91	F12	1.18	0.87	1.38	-	8.5	136	-	-	-	-	-	-	-	-	-	-	-	-
3	2.94	18.5	18.63	18.5	7.09	F16	1.57	-	1.97	0.47 x 0.32	10.5	246	-	-	-	-	-	-	-	-	-	-	-	-
4	3.94	21.5	21.63	21.5	9.45	F16	1.77	-	2.36	0.55 x 0.36	12.25	440	-	-	-	-	-	-	-	-	-	-	-	-
6	5.69	27.75	28	27.75	12.79	F16	2.16	-	3.15	0.63 x 0.39	15.5	1100	-	-	-	-	-	-	-	-	-	-	-	-
8	7.56	32.75	33.13	32.75	14.57	F30	2.5	-	4.01	0.63 x 0.63	19	2200	--	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	9.44	39	39.38	39	18.5	F30	2.76	-	4.01	0.79 x 0.47	23	3476
12	-	-	-	-	-	-	-	-	-	-	-	-	11.31	44.5	45.13	44.5	18.9	F35	3.5	-	5.27	0.88 x 0.63	26.5	5467

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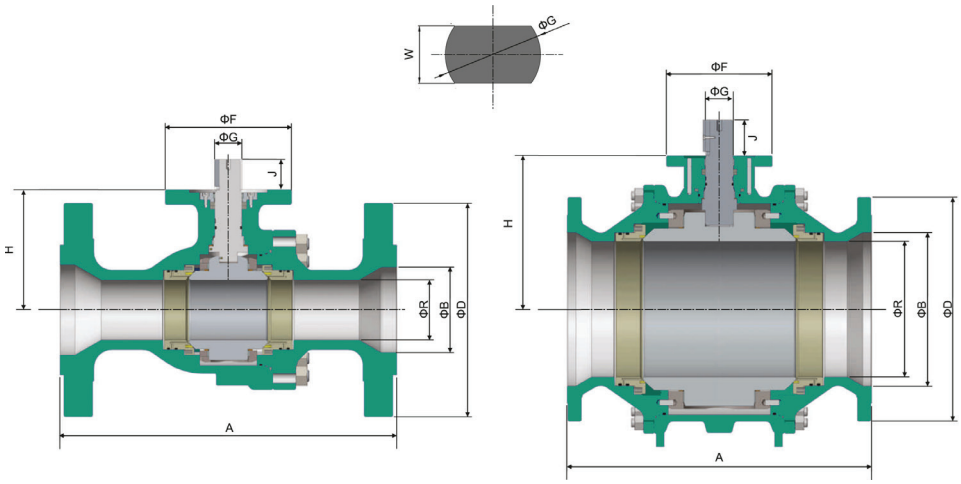
Reduced Port (150 Class)



ASME CLASS 150 (Dimensions are in mm)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
3 x 2	74	49	203	216	283	130	F10	30	22	35	-	190	15	-		-	-	-	-	-	-	-	-	-	-	-
4 x 3	100	74	229	241	305	160	F12	35	24	40	-	230	40	-		-	-	-	-	-	-	-	-	-	-	-
6 x 4	150	100	394	406	457	185	F12	35	24	40	-	280	64	-		-	-	-	-	-	-	-	-	-	-	-
8 x 6	201	150	457	470	521	250	F12	40	29	40		345	131	-		-	-	-	-	-	-	-	-	-	-	-
10 x 8	252	201	533	546	559	302	F16	55	-	80	16 x 10	405	250	--		-	-	-	-	-	-	-	-	-	-	-
12 x 10	303	252	610	622	635	340	F16	55	-	80	16 x 10	485	351	-		-	-	-	-	-	-	-	-	-	-	-
14 x 10	334	252	686	699	762	340	F16	55	-	80	16 x 10	535	400	-		-	-	-	-	-	-	-	-	-	-	-
16 x 12	385	303	762	775	838	375	F25	63.5	-	102	15.88 x 15.88	595	538	-		-	-	-	-	-	-	-	-	-	-	-
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	436	385	864	876	914	460	F25	76.2	-	102	19.05 x 19.05	635	1032
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	487	385	914	927	991	460	F25	76.2	-	102	19.05 x 19.05	700	1200
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	589	487	1067	1080	1143	525	F30	88.9	-	134	22.23 x 15.88	815	2030

ASME CLASS 150 (Dimensions are in Inches)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
3 x 2	2.94	1.94	8	8.5	11.13	5.12	F10	1.18	0.87	1.38	-	7.5	33	-		-	-	-	-	-	-	-	-	-	-	-
4 x 3	3.94	2.94	9	9.5	12	6.3	F12	1.38	0.94	1.57	-	9	88	-		-	-	-	-	-	-	-	-	-	-	-
6 x 4	5.94	3.94	15.5	16	18	7.28	F12	1.38	0.94	1.57	-	11	141	-		-	-	-	-	-	-	-	-	-	-	-
8 x 6	7.94	5.94	18	18.5	20.5	9.84	F12	1.57	1.18	1.57	-	13.5	288	-		-	-	-	-	-	-	-	-	-	-	-
10 x 8	9.94	7.94	21	21.5	22	11.89	F16	2.16	-	3.15	0.63 x 0.39	16	550	--		-	-	-	-	-	-	-	-	-	-	-
12 x 10	11.94	9.94	24	24.5	25	13.39	F16	2.16	-	3.15	0.63 x 0.39	19	772	-		-	-	-	-	-	-	-	-	-	-	-
14 x 10	13.19	9.94	27	27.5	30	13.39	F16	2.16	-	3.15	0.63 x 0.39	21	880	-		-	-	-	-	-	-	-	-	-	-	-
16 x 12	15.19	11.94	30	30.5	33	14.75	F25	2.5	-	4.01	0.63 x 0.63	23.5	1184	-		-	-	-	-	-	-	-	-	-	-	-
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	17.19	15.19	34	34.5	36	18.11	F25	3	-	4.01	0.75 x 0.75	25	2270
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	19.19	15.19	36	36.5	39	18.11	F25	3	-	4.01	0.75 x 0.75	27.5	2640
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	23.19	19.19	42	42.5	45	20.67	F30	3.5	-	5.27	0.88 x 0.63	32	4466

Approximate value

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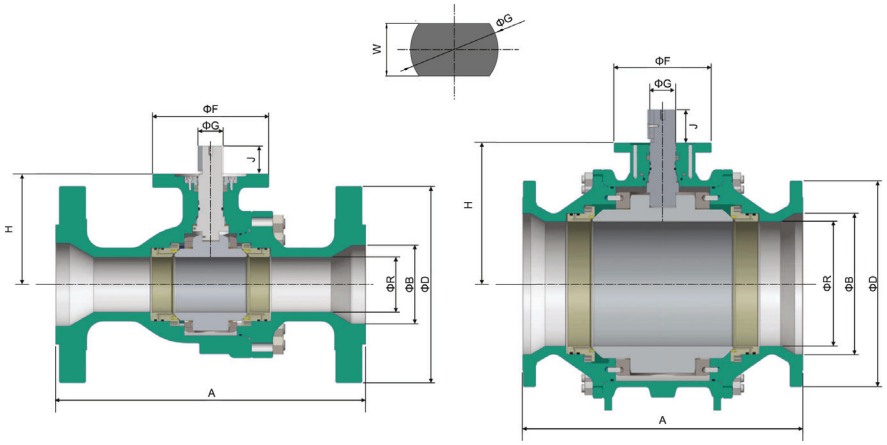

ASME CLASS 300 (Dimensions are in mm)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	49	39	216	232	216	110	F10	30	22	35	-	165	18	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	74	49	283	298	283	130	F10	30	22	35	-	210	30	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	100	74	305	321	305	160	F12	35	24	40	-	255	51	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	150	100	403	419	457	185	F12	35	24	40	-	320	91	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	201	150	502	518	521	250	F16	45	-	60	14 x 9	380	181	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	252	201	568	584	559	302	F16	55	-	80	16 x 10	445	290	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	303	252	648	664	635	340	F16	55	-	80	16 x 10	520	431	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	334	303	762	778	762	340	F16	55	-	102	16 x 10	585	500	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	385	303	838	854	838	375	F25	63.5	-	102	15.88 x 15.88	650	800	-	-	-	-	-	-	-	-	-	-	-	-	-
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	436	385	914	930	914	460	F25	76.2	-	102	19.05 x 19.05	710	1400
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	487	385	991	1010	991	460	F25	76.2	-	102	19.05 x 19.05	775	1465
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	589	487	1143	1165	1143	565	F35	88.9	-	134	22.23 x 15.88	915	2400

ASME CLASS 300 (Dimensions are in Inches)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	1.94	1.5	8.5	9.13	8.5	4.33	F10	1.18	0.87	1.38	-	6	40	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	2.94	1.94	11.13	11.75	11.13	5.12	F10	1.18	0.87	1.38	-	8.25	66	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	3.94	2.94	12	12.63	12	6.3	F12	1.38	0.94	1.57	-	10	112	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	5.94	3.94	15.88	16.5	18	7.28	F12	1.38	0.94	1.57	-	12.5	200	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	7.94	5.94	19.75	20.38	20.5	9.84	F16	1.77	-	2.36	0.55 x 0.36	15	398	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	9.94	7.94	22.38	23	22	11.89	F16	2.16	-	3.15	0.63 x 0.39	17.5	638	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	11.94	9.94	25.5	26.13	25	13.39	F16	2.16	-	3.15	0.63 x 0.39	20.5	948	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	13.19	9.94	30	30.63	30	13.39	F16	2.16	-	3.2	0.63 x 0.39	23	1100	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	15.19	11.94	33	33.63	33	14.76	F25	2.5	-	4.01	0.63 x 0.63	25.5	1760	-	-	-	-	-	-	-	-	-	-	-	-	-
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	17.19	15.19	36	36.63	36	18.11	F25	3	-	4.01	0.75 x 0.75	28	3080
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	19.19	15.19	39	39.75	39	18.11	F25	3	-	4.01	0.75 x 0.75	30.5	3223
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	23.19	19.19	45	45.88	45	22.24	F35	3.5	-	5.27	0.88 x 0.63	36	5280

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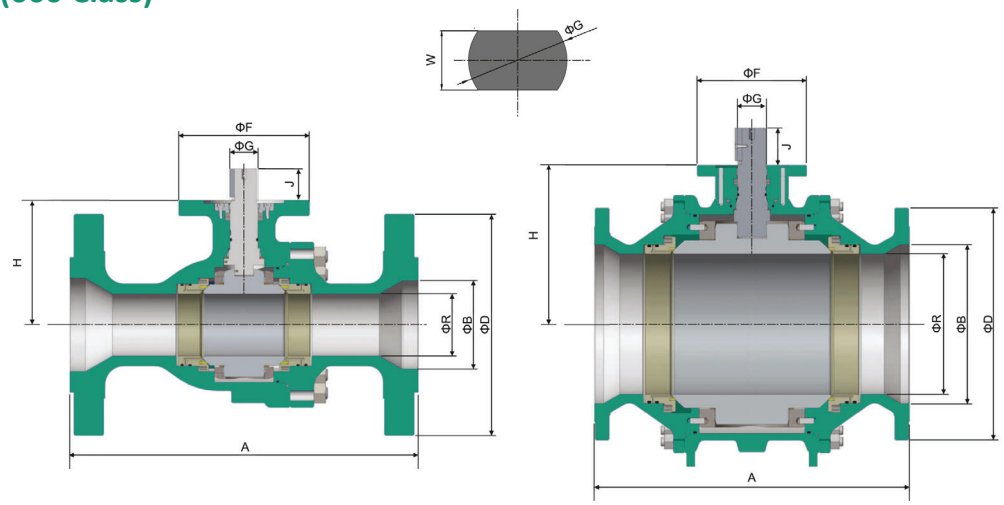
Reduced Port (600 Class)



ASME CLASS 600 (Dimensions are in mm)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	49	38	292	295	292	110	F10	30	22	35	-	165	25	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	74	49	356	359	356	140	F10	30	22	35	-	210	43	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	100	74	432	435	432	165	F12	35	24	40	-	275	88	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	150	100	559	562	559	200	F16	40	-	50	12 x 8	355	133	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	201	150	660	664	660	250	F16	45	-	60	14 x 9	420	304	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	252	201	787	791	787	302	F16	55	-	80	16 x 10	510	600	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	303	252	838	841	838	343	F25	63.5	-	102	15.88 x 15.88	560	980	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	334	252	889	892	889	343	F25	63.5	-	102	15.88 x 15.88	605	1000	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	385	334	991	994	991	415	F25	70	-	102	20 x 12	685	1200	-	-	-	-	-	-	-	-	-	-	-	-	
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	436	385	1092	1095	1092	460	F30	88.9	-	134	22.23 x 15.88	745	2150
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	487	385	1194	1200	1194	460	F30	88.9	-	134	22.23 x 15.88	815	2600
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	589	487	1397	1407	1397	595	F35	120	-	150	32 x 18	940	3430

ASME CLASS 600 (Dimensions are in Inches)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	1.94	1.5	11.5	11.63	11.5	4.33	F10	1.18	0.87	1.38	-	6	55	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	2.94	1.94	14	14.13	14	5.51	F10	1.18	0.87	1.38	-	8.25	95	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	3.94	2.94	17	17.13	17	6.5	F12	1.38	0.94	1.57	-	10.75	194	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	5.94	3.94	22	22.13	22	7.87	F16	1.57	-	1.97	0.47 x 0.31	14	293	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	7.94	5.94	26	26.13	26	9.84	F16	1.77	-	2.36	0.55 x 0.35	16.5	669	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	9.94	7.94	31	31.13	31	11.89	F16	2.16	-	3.15	0.63 x 0.39	20	1320	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	11.94	9.94	33	33.13	33	13.5	F25	2.5	-	4.01	0.63 x 0.63	22	2156	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	13.19	9.94	35	35.13	35	13.5	F25	2.5	-	4.01	0.63 x 0.63	23.75	2200	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	15.19	11.94	39	39.13	39	15.35	F25	2.76	-	4.01	0.79 x 0.47	27	2640	-	-	-	-	-	-	-	-	-	-	-	-	-
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	17.19	15.19	43	43.13	43	18.11	F30	3.5	-	5.27	0.88 x 0.63	29.25	4730
20 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	19.19	15.19	47	47.25	47	18.11	F30	3.5	-	5.27	0.88 x 0.63	32	5720
24 x 20	-	-	-	-	-	-	-	-	-	-	-	-	-	23.19	19.19	55	55.38	55	23.43	F35	4.72	-	5.9	1.26 x 0.71	37	7546

Approximate value

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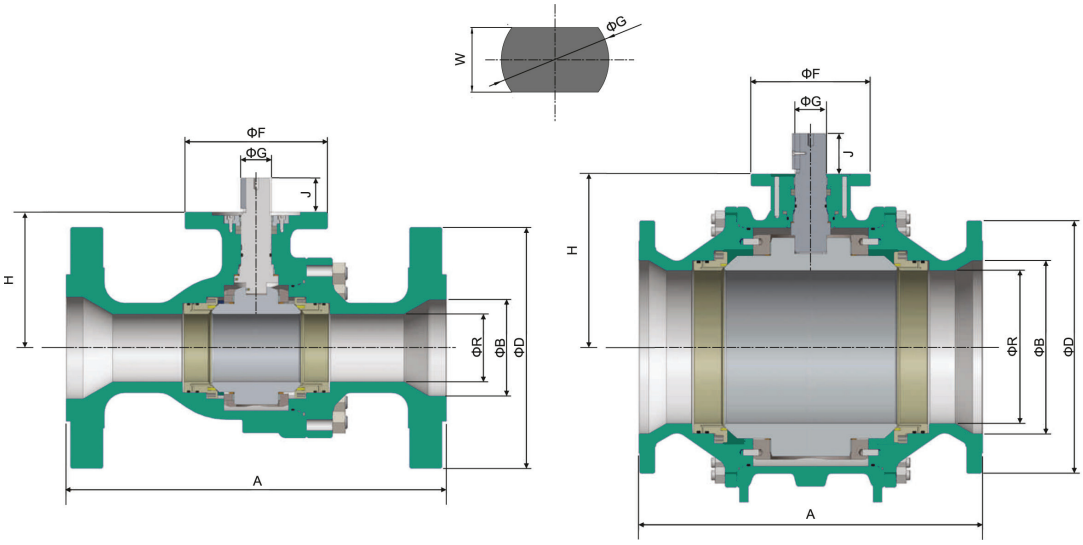
Reduced Port (900 Class)



ASME CLASS 900 (Dimensions are in mm)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	49	38	368	371	368	110	F12	30	22	35	-	215	34	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	74	49	381	384	381	138	F12	30	22	35	-	240	59	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	100	74	457	460	457	180	F16	40	-	50	12 x 8	290	115	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	150	100	610	613	610	240	F16	45	-	60	14 x 9	380	170	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	201	150	737	740	737	275	F16	55	-	80	16 x 10	470	348	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	252	201	838	841	838	350	F25	63.5	-	102	15.88 x 15.88	545	783	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	303	252	965	968	965	360	F30	70	-	102	20 x 12	610	984	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	322	252	1029	1038	1029	360	F30	70	-	102	20 x 12	640	1115	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	-	-	-	-	-	-	-	-	-	-	-	-	-	373	303	1130	1140	1130	400	F30	70	-	102	20 x 12	705	1440
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	423	373	1219	1232	1229	465	F35	88.9	-	134	22.23 x 15.88	785	2650

ASME CLASS 900 (Dimensions are in Inches)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	1.94	1.5	14.5	14.63	14.5	4.33	F12	1.18	0.87	1.38	-	8.5	75	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	2.94	1.94	15	15.13	15	5.43	F12	1.18	0.87	1.38	-	9.5	130	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	3.94	2.94	18	18.13	18	7.09	F16	1.57	-	1.97	0.47 x 0.32	11.5	253	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	5.94	3.94	24	24.13	24	9.45	F16	1.77	-	2.36	0.55 x 0.36	15	374	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	7.94	5.94	29	29.13	29	10.82	F16	2.16	-	3.15	0.63 x 0.39	18.5	766	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	9.94	7.94	33	33.13	33	13.78	F25	2.5	-	4.01	0.63 x 0.63	21.5	1723	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	11.94	9.94	38	38.13	38	14.17	F30	2.76	-	4.01	0.79 x 0.47	24	2165	-	-	-	-	-	-	-	-	-	-	-	-	-
14 x 10	12.69	9.94	40.5	40.88	40.5	14.17	F30	2.76	-	4.01	0.79 x 0.47	25.25	2453	-	-	-	-	-	-	-	-	-	-	-	-	-
16 x 12	-	-	-	-	-	-		-	-	-	-	-	-	14.69	11.94	44.5	44.88	44.5	15.75	F30	2.76	-	4.01	0.79 x 0.47	27.75	3168
18 x 16	-	-	-	-	-	-	-	-	-	-	-	-	-	16.69	14.69	48	48.5	48	19.1	F35	3.5	-	5.27	0.88 x 0.63	31	5830

Approximate value

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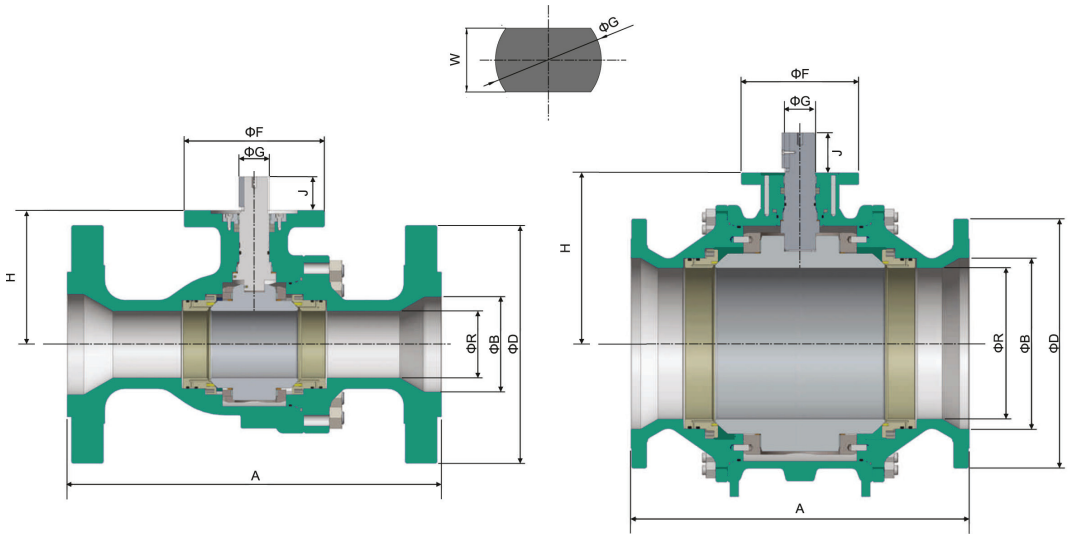
Reduced Port (1500 Class)



ASME CLASS 1500 (Dimensions are in mm)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (Kg)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	49	38	368	371	368	110	F12	30	22	35	-	215	40	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	74	49	470	473	470	150	F12	30	22	35	-	265	75	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	100	74	546	549	546	180	F16	40	-	50	12 x 8	310	130	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	144	100	705	711	705	240	F16	45	-	60	14 x 9	395	270	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	192	144	832	841	832	335	F16	55	-	80	16 x 10	485	600	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	239	192	991	1000	991	370	F30	63.5	-	102	15.88 x 15.88	585	1200	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	-	-	-	-	-	-	-	-	-	-	-	-	-	287	239	1130	1146	1130	470	F30	70	-	102	20 x 12	675	1800
14 x 10	-	-	-	-	-	-	-	-	-	-	-	-	-	315	239	1257	1276	1257	480	F30	70	-	102	20 x 12	750	2050

ASME CLASS 1500 (Dimensions are in Inches)

SIZE	2-PIECE													3-PIECE												
	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#	ØB	ØR	A			H	ISO TOP	ØG	W	J	KEY SIZE	ØD	WT (LBS)#
NPS			RF	RTJ	BWE								FL			RF	RTJ	BWE								FL
2 x 1.5	1.94	1.5	14.5	14.63	14.5	4.33	F12	1.18	0.87	1.38	-	8.25	88	-	-	-	-	-	-	-	-	-	-	-	-	-
3 x 2	2.94	1.94	18.5	18.63	18.5	5.91	F12	1.18	0.87	1.38	-	10.5	165	-	-	-	-	-	-	-	-	-	-	-	-	-
4 x 3	3.94	2.94	21.5	21.63	21.5	7.09	F16	1.57	-	1.97	0.47 x 0.32	12.3	286	-	-	-	-	-	-	-	-	-	-	-	-	-
6 x 4	5.69	3.94	27.75	28	27.75	9.45	F16	1.77	-	2.36	0.55 x 0.36	15.5	594	-	-	-	-	-	-	-	-	-	-	-	-	-
8 x 6	7.56	5.69	32.75	33.13	32.75	12.79	F16	2.16	-	3.15	0.63 x 0.39	19	1320	-	-	-	-	-	-	-	-	-	-	-	-	-
10 x 8	9.44	7.56	39	39.38	39	14.57	F30	2.5	-	4.01	0.63 x 0.63	23	2640	--	-	-	-	-	-	-	-	-	-	-	-	-
12 x 10	-	-	-	-	-	-	-	-	-	-	-	-	-	11.31	9.44	44.5	45.13	45.5	18.5	F30	3	-	4.01	0.79 x 0.47	26.5	3960
14 x 10	-	-	-	-	-	-	-	-	-	-	-	-	-	12.44	9.44	49.5	50.25	49.5	18.5	F30	3	-	4.01	0.79 x 0.47	29.5	4510

Approximate value

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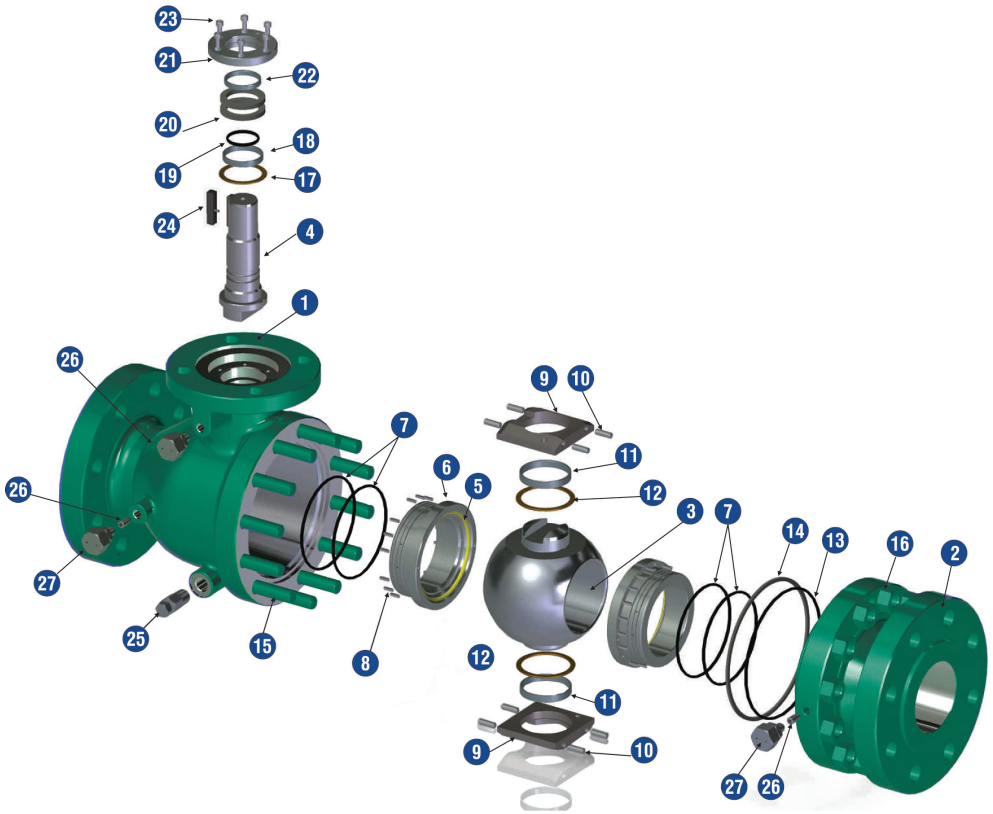
Materials of Construction : Two - Piece Design



MATERIALS OF CONSTRUCTION :

NO	COMPONENTS	MATERIALS	NO.	COMPONENTS	MATERIALS
1	Body	A 216 WCB, WCC / A 352 LCB,LCC / A 351 CF8M CF8, CF3M / DUPLEX SS / SUPER DUPLEX	22	Gland Bearing	SS - Backed PTFE
2	Connector		23	Soc Hd Cap Screw	A2 - 70(SS304)
3	Ball	A105 + ENP / A216 WCC + ENP / A352 LCB + ENP / A351 CF8M / A351 CF3M / A217 CA15 / DUPLEX SS / SUPER DUPLEX	24	Key	EN8
4	Stem	AISI 4140 + ENP / A479 SS410, SS316, SS304, XM19 / A564 TYPE 630	25	Bleed Fitting / Vent Fitting	SS316
5	Seat Insert	RPTFE / Devlon ® / PEEK / Viton	26	Check Valve	SS316
6	Seat Ring	A105 / ENP / A182 LF2 + ENP / A182 F316 / F316L / F6A / F51 / F55	27	Sealent fitting	SS316
7	Seat Seal	Viton / HNBR			
8	Seat Spring	Inconel B637 X-750, A313 SS 302			
9	Trunnion	A320 CS / A240 SS316 / DUPLEX SS / SUPER DUPLEX			
10	Pin	SS 316			
11	Trunnion Bearing	SS - Backed PTFE			
12	Thrust Bearing	SS - Backed PTFE			
13	Connector Seal	Viton / HNBR			
14	Body Gaket	Spirally - wound SS316 with Graphite Filler			
15	Stud	ASTM A193 B7, B7M, B8MA / A320 L7, L7M			
16	Hex Nut	ASTM A194 Gr. 2H, 2HM, 8M, 8MA, 7, 7M			
17	Stem Thrust Bearing	SS - backed PTFE			
18	Stem Bearing	SS - backed PTFE			
19	Stem Seal	Viton / HNBR			
20	Stem Packing	Graphite			
21	Gland	SS 316			

Note : High Grade 3mil (75 Micron) ENP Carbon steel Stems and balls are standard

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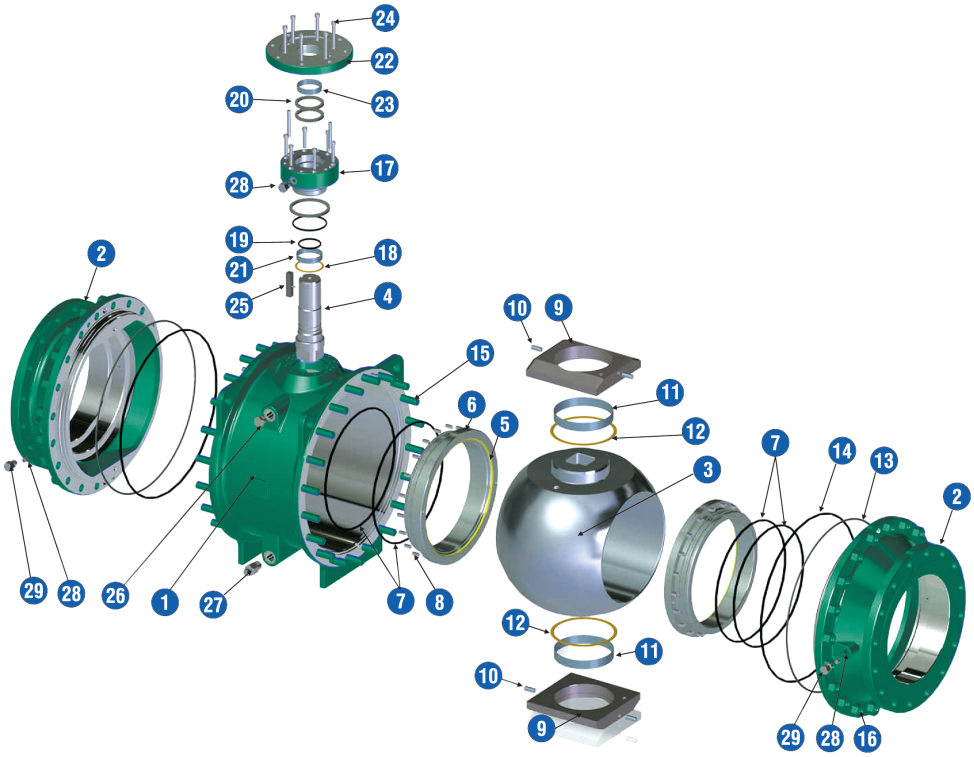
Materials of Construction : Three - Piece Design



MATERIALS OF CONSTRUCTION :

NO	COMPONENTS	MATERIALS	NO.	COMPONENTS	MATERIALS
1	Body	A 216 WCB, WCC / A 352 LCB,LCC / A 351 CF8M, CF8, CF3M / A995 4A, 6A / A105 / A182 LF2 + ENP / A182 F316 / F316 / F6A / F51/F55	22	ISO plate	A320 CS / A240 SS316 / DUPLEX SS / SUPER DUPLEX
2	Connector		23	Gland Bearing	SS - Backed PTFE
3	Ball	A105 + ENP / A216 WCC + ENP / A352 LCB + ENP / A351 CF8M / A351 CF3M / A217 CA15 / DUPLEX SS / ASTM A182	24	Soc Hd Cap Screw	A2 - 70 (SS304)
4	Stem	AISI 4140 + ENP / A479 SS410, SS316, SS304, XM19 / A564 TYPE 630	25	Key	SS316
5	Seat Insert	RPTFE / Devlon ® / PEEK / Viton	26	Vent Fitting	SS316
6	Seat Ring	A105 / ENP / A182 LF2 + ENP / A182 F316 / F316 / F316L / F51 / F55 / F6A	27	Bleed Fitting	SS316
7	Seat Seal	Viton / HNBR	28	Check Valve	SS316
8	Seat Spring	Inconel B637 X-750, A313 SS 302	29	Sealent fitting	SS316
9	Trunnion	A320 CS / A240 SS316 / DUPLEX SS / SUPER DUPLEX			
10	Pin	SS 316			
11	Trunnion Bearing	SS - Backed PTFE			
12	Thrust Bearing	SS - Backed PTFE			
13	Connector Seal	Viton / HNBR			
14	Body Gaket	Spirally - wound SS316 with Graphite Filler			
15	Stud	ASTM A193 B7, B7M, B8M, B8MA / A320 L7, L7M			
16	Hex Nut	ASTM A194 Gr. 2H, 2HM, 8M, 8MA, 7, 7M			
17	Stem Housing	A216 WCB, WCC / A352 LCB, LCC / A351 CF8M, CF8, CF3M / A995 4A,6A / A105 / A182 LF2 + ENP / A182 F316 / F136L / F6A / F51 / F55			
18	Stem Thrust Bearing	SS - backed PTFE			
19	Stem Seal	Viton / HNBR			
20	Stem Packing	Graphite			
21	Stem Bearing	SS - Backed PTFE			

Note : High Grade 3mil (75 Micron) ENP Carbon steel Stems and balls are standard

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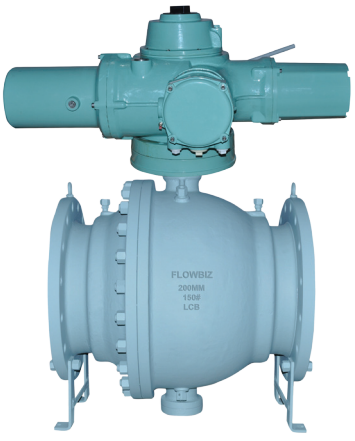
TORQUE VALUES (Nm / In-lbs)

SIZE		TORQUE TYPE	ASME PRESSURE CLASS									
			150		300		600		900		1500	
INCH	DN		Nm	In-lbs	Nm	In-lbs	Nm	In-lbs	Nm	In-lbs	Nm	In-lbs
1 1/2	40	BTO	-	-	99	717	99	876	111	982	162	1434
		ETC	-	-	65	575	79	699	89	788	130	1151
2"	50	BTO	68	602	84	743	108	956	133	1177	281	2487
		ETC	54	478	67	593	87	770	106	938	225	1991
3"	80	BTO	168	1487	234	2071	316	2797	427	3779	593	5248
		ETC	135	1195	187	1655	253	2239	342	3027	474	4195
4"	100	BTO	272	2407	359	3177	460	4071	599	5302	922	8160
		ETC	218	1929	287	2540	368	3257	479	4239	737	6523
6"	150	BTO	468	4142	745	6594	1193	19559	1639	14506	2541	22490
		ETC	374	3310	596	5275	953	8435	1311	11603	2033	17994
8"	200	BTO	871	7709	1382	12232	2392	21170	3289	29110	5293	46847
		ETC	698	6178	1105	9780	1914	16940	2632	23295	4216	37315
10"	250	BTO	1177	10417	1823	16135	3105	27482	4234	37474	6766	59884
		ETC	942	8337	1445	12789	2459	21764	3387	29977	5413	47909
12"	300	BTO	1467	12984	2208	19542	3687	32633	5442	48166	12300	108864
		ETC	1174	10391	1766	15630	2949	26101	4354	38536	9840	87091
14"	350	BTO	2614	23136	3852	34093	6923	61274	12982	114900		
		ETC	2091	18507	3082	27287	5538	49015	10446	92455		
16"	400	BTO	3545	31376	5305	46953	8850	78329	18867	166987		
		ETC	2835	25092	4245	37571	7081	62672	15122	133841		
18"	450	BTO	4905	43413	7757	68655	13599	120361				
		ETC	3944	34907	6205	54919	10879	96287				
20"	500	BTO	5968	52821	10268	90880	19696	174324				
		ETC	4774	42253	8215	72709	15756	139452				
24"	600	BTO	11571	102412	18253	161553	31622	279878				
		ETC	9256	81923	14601	129230	25297	223897				

* Applies to 2 reduced port
BTO : Break to Open Torque ETC : End to Close Torque

Note :

1) Torque Values are Primary Soft Seated valves with seat Insert material as Devlon / RTFE / Nylon 12.
2) Torque Values with PEEK seat insert are 100% higher than the above corresponding values.
3) Torque Values are at ambient temperature, media being clear water without any factor of safety.
4) Above Torque Values are indicative and for reference only. Actuator sizing torque will depend on service media.
5) For reduced port valves, consider torque values corresponding to the lower size e.g. For 12" x 10" reduced port value consider torque value corresponding to 10".



Special Applications

Sour Service

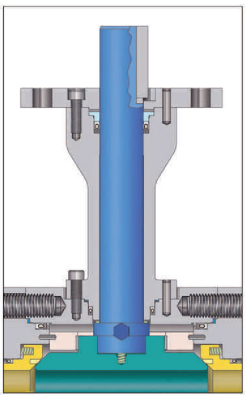
FlowBiz Trunnion Mounted Ball Valves comply with the requirements of ANSI / NACE MRO175 / ISO 15156-2, which are used in “sour gas” service, where there is the risk of stress corrosion due to the presence of wet H2S.
The standard procedure of hardness tests can be performed on all parts in contact with the fluid, such as ball, stem, body, connector, seat ring, springs, bolts.

EXTENDED STEM FOR LOW AND HIGH TEMPERATURE SERVICE

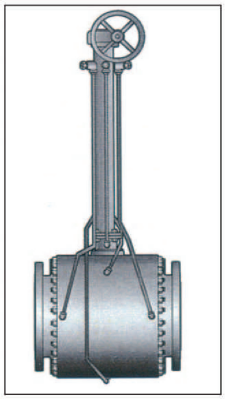
FlowBiz Trunnion Mounted Ball Valves designs include an extended bonnet for valves used on insulated lines or for valves required for high or low-temperature service.

The extended bonnet avoids damage to the seals due to distance from the body and the stem sealing area. We recommend extended bonnet use at temperatures below - 50 Deg C or above 200 Deg C (-5 Deg F or above 392 Deg F)

Low-Temp Extended Bonnet



Extended Stem



STEM FOR BURIED SERVICE

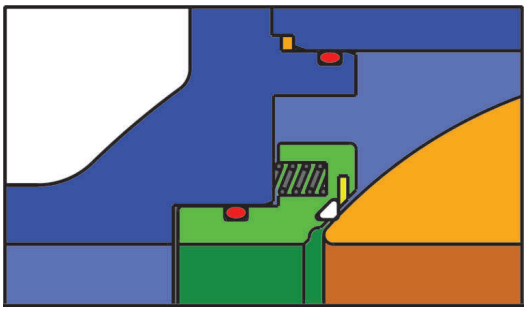
FlowBiz supplies suitable stem extensions on Trunnion Mounted Ball Valves to be installed on underground lines.
Extending all the drain, vent and emergency sealant lines. Firmly attaching all the relevant pipes are to the stem extension.

FIRE TEST

FlowBiz Trunnion Mounted Ball Valves have been engineered to fulfil the requirements of API607 completely. We have passed & certified for the Fire safe design by Bureau Veritas.

FIRE SAFE, PRIMARY METAL SECONDARY SOFT SEAT

FlowBiz Trunnion Mounted Ball Valves, primarily for gas applications, are enhanced with the primary metal and secondary soft seat. The soft Viton (secondary seal) seat gets compressed fully due to line pressure, and the metal seat does the primary sealing. Thus secondary soft seat gives a bubble-tight seat sealing, which is not possible in metal seating.



Chemical Industries: The safe and durable seal makes FlowBiz Trunnion mounted ball valves widely used in major chemical applications where such qualities are considered essential.

Electrical Industry: FlowBiz Trunnion mounted ball valves have proved the best of their quality in the operation of power industries in various applications such as turbines, skids, generators, and compressors.

Oil and gas industry: FlowBiz trunnion mounted ball valves are boon to Oil and gas industries, include oil refinery, feedstock lines, field gas plants, crude oil plants, industrial gas processing plants and gas feed lines.

Pipeline industries: FlowBiz trunnion mounted ball valves can handle several different media such as gasses, slurries, and liquids make trunnion ball valves extremely valuable to the pipeline industry.

Hydrocarbon industries: Trunnion mounted ball valves are handy for hydrocarbon processing.

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