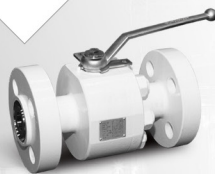


Ball Valves (Floating, Trunnion Mounted)



Floating Ball Valves

Design Features

Actuator Mounting Design (ISO-5211)

Flanged end products shall have an integrally cast actuator mounting pad. This feature provides for direct mount of gear operators or actuators. The additional cost for a separate mounting bracket is eliminated.

Stem Seal Design

The combination of stem packing and O-rings guarantee zero emissions even at low pressure.

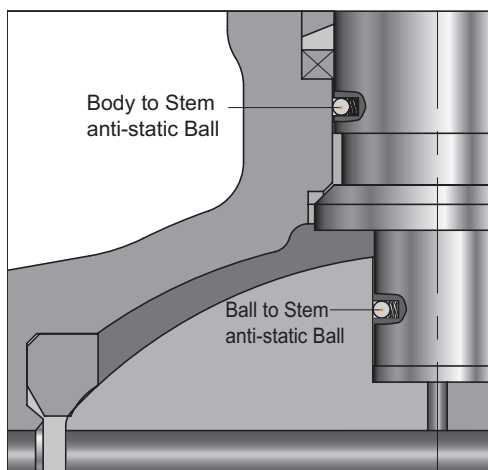
The primary seal is made out of flexible graphite, a material with extremely good resistance to fire conditions.

The anti blow out stem is inserted from inside of the valve body.

Anti-Static Design

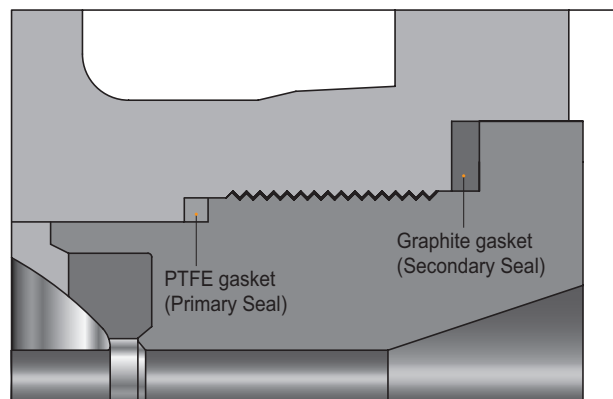
Ball valves present a particular problem with the build up of static electricity around the ball.

Ball valves have anti-static devices which provides contact between stem and ball, and stem and body to eliminate static electricity.



Unibody Ball Valve Design

The PTFE gasket packing acts as a primary seal for the Unibody ball valves. The secondary seal has been made out of flexible graphite, a material with extremely good resistance to fire conditions.

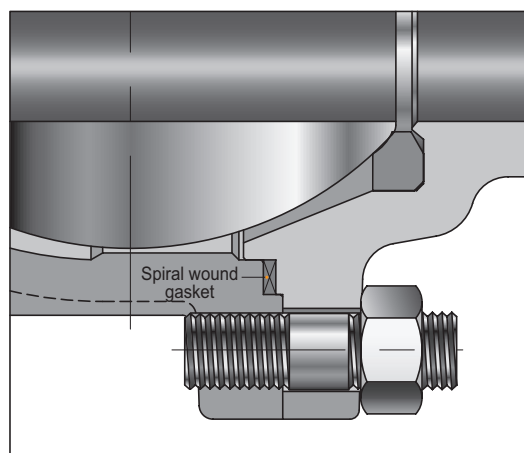
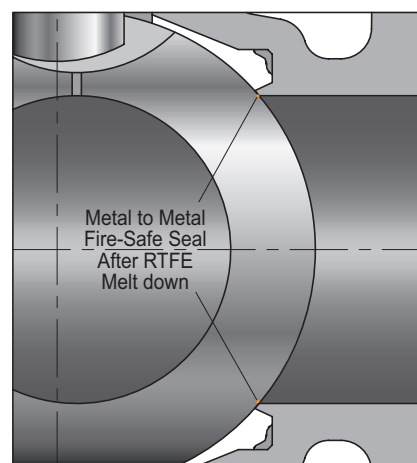


Fire Safe Design

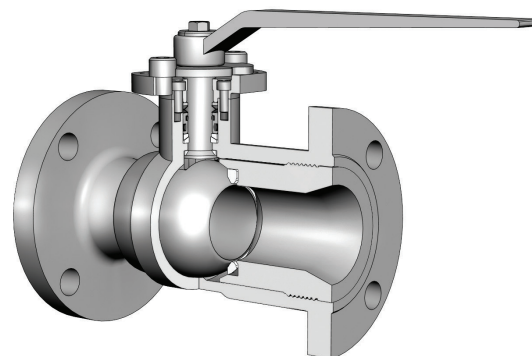
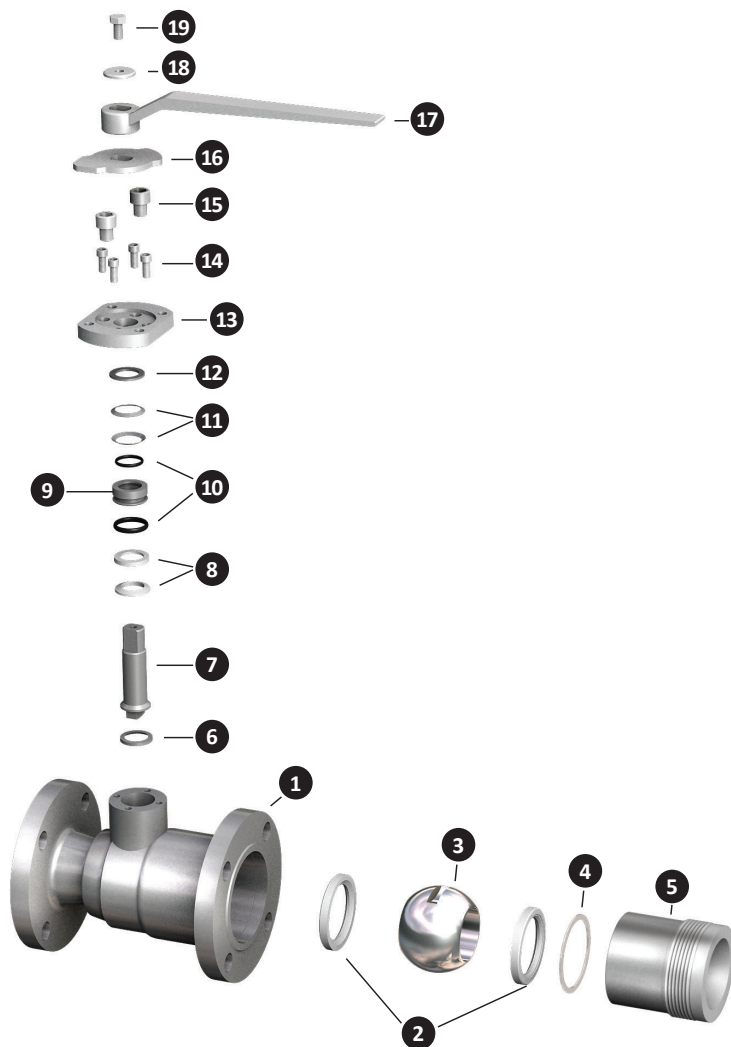
In the event of a fire the valve is required to make a downstream seal.

Even after the disintegration of the RTFE seats, BMT ball valves have an excellent metal to metal seal.

Special attention has been paid to the mechanical strength and sealing efficiency of the central flanged joint in the valve body.



1-piece Cast Steel Floating Ball Valve



Features

- Size: 1/2" ~ 6"
- Class: 150 ~ 300
- One Piece Cast Steel Body
- Floating Ball, Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design

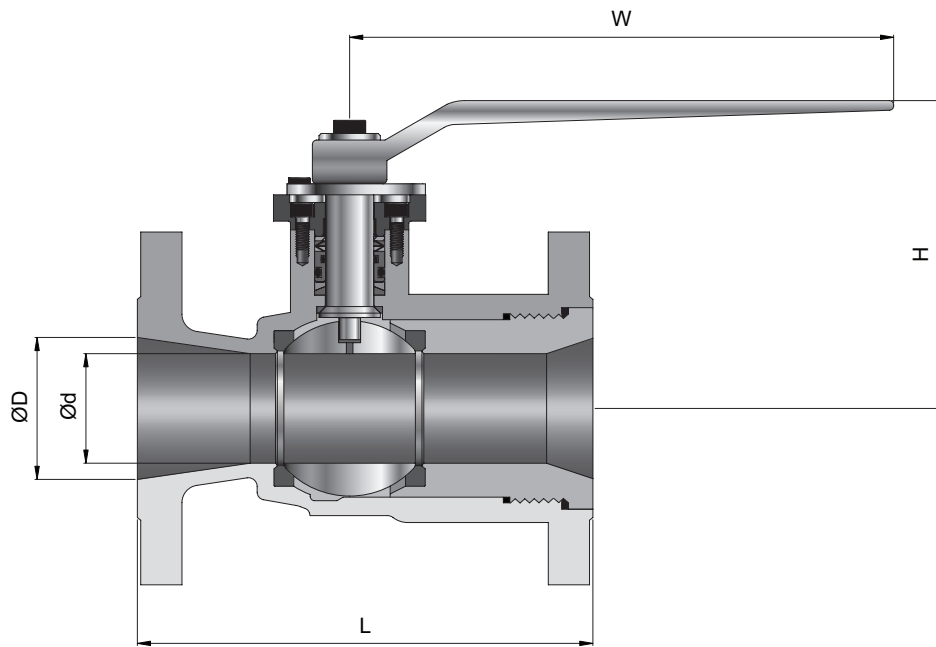
Specifications

- Design: ASME B16.34 / API 608 / ISO 17292
- Face to Face: ASME B16.10
- End Flange: ASME B16.5
- Test: API 598 / API 6D / BS EN 12266
- Fire Safe Test: API 607 / API 6FA / ISO 10497
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A351-CF8M	ASTM A216-WCB
2	SEAT	PTFE	PTFE
3	BALL	ASTM A351 CF8M	ASTM A351 CF8M
4	INSERT SEAL	PTFE/GRAPHITE	PTFE/GRAPHITE
5	INSERT	ASTM A351-CF8M	ASTM A216-WCB
6	THRUST WASHER	PEEK	PEEK
7	STEM	ASTM A479-TP316	ASTM A276-TP316
8	PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
9	STEM SEAL RETAINER	ASTM A276-TP316	ASTM A276-TP316
10	O-RING	VITON	VITON
11	DISC SPRING	STAINLESS STEEL	STAINLESS STEEL
12	GLAND	ASTM A276-TP316	ASTM A276-TP316
13	GLAND FLANGE	ASTM A351-CF8M	ASTM A216-WCB
14	FLANGE BOLT	ASTM A193-B8	ASTM A193-B7
15	STOPPER BOLT	ASTM A193-B8	ASTM A193-B7
16	STOPPER	STAINLESS STEEL	CARBON STEEL
17	HANDLE	STAINLESS STEEL	CARBON STEEL
18	PLAIN WASHER	ASTM A240-TP304	ASTM A240-TP304
19	HANDLE BOLT	ASTM-A193-B8	ASTM A307-B

Table of Dimensions



Class150

Size(inch)	Ød	ØD	L	H	W	Weight(Kg)
1/2	10	15	108	78	150	1.6
3/4	15	20	117	80	150	2.5
1	20	25	127	98	220	3
1-1/2	25	38	165	118	250	6
2	38	50	178	133	250	9
3	65	76	203	156	250	16
4	76	100	229	194	350	27.5
6	100	152	394	209	460	50

Class300

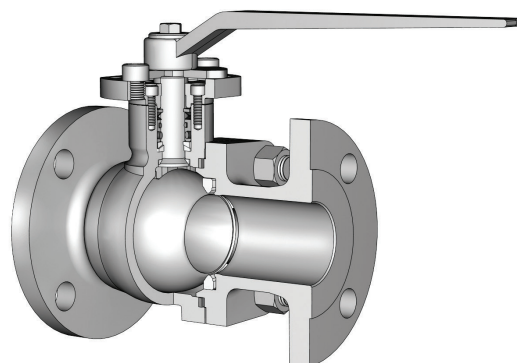
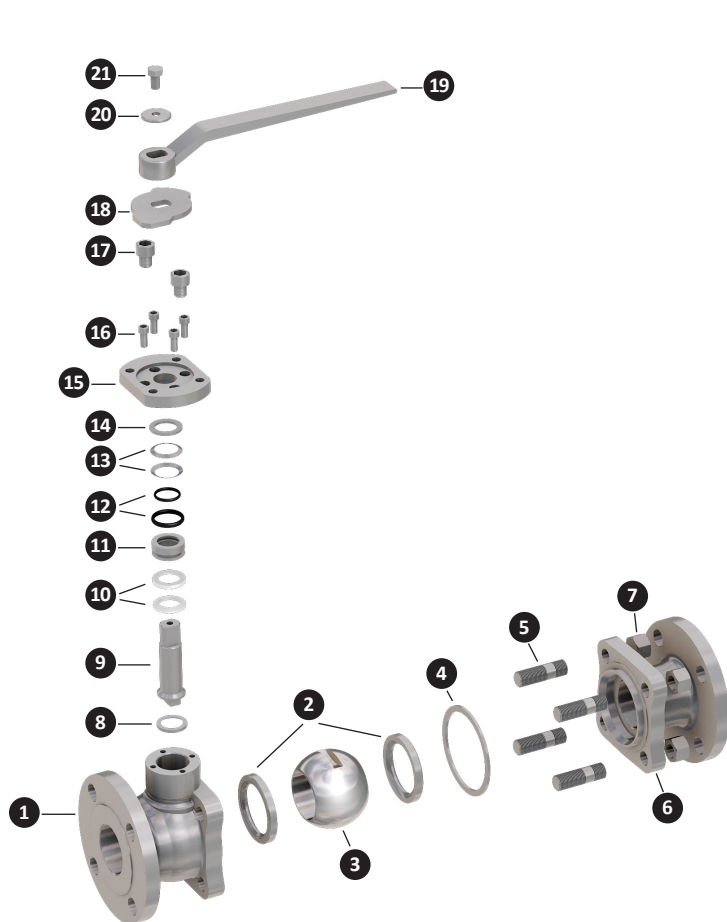
Size(inch)	Ød	ØD	L	H	W	Weight(Kg)
1/2	10	15	140	78	150	2.5
3/4	15	20	152	80	150	4.2
1	20	25	165	98	220	4.8
1-1/2	25	38	191	118	250	8.6
2	38	50	216	133	250	11.5
3	65	76	283	156	250	23.5
4	76	100	305	194	350	39
6	100	152	403	209	460	65

- Dimensions and Drawings are for reference only and are subject to change without prior notice.

- Unless otherwise specified, all dimensions are in millimeters.

- Sizes, pressure classes, and end connections not listed are available upon request.

2-piece Cast Steel Floating Ball Valve



Features

- Size: 1/2" ~ 10"
- Class: 150 ~ 300
- Two Piece Cast Steel Body
- Floating Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Low Emission

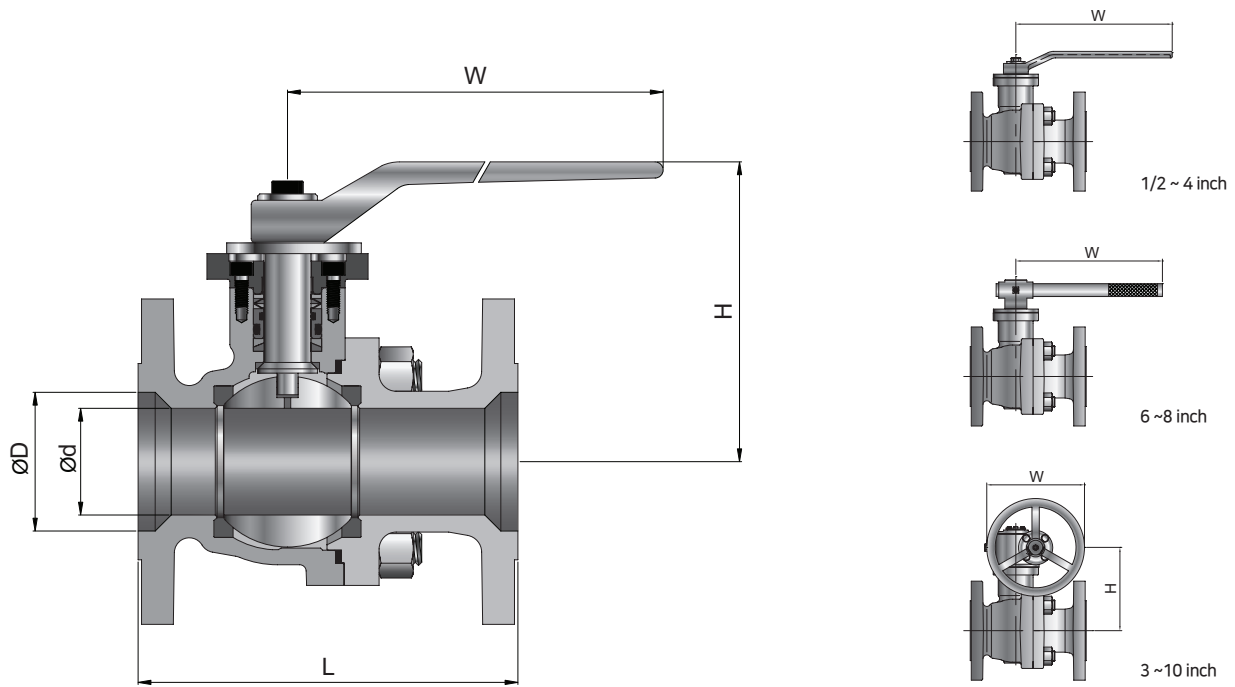
Specifications

- Design: ASME B16.34 / ISO 17292 / API 6D
- Face to Face: ASME B16.10
- End Flange: ASME B16.5
- Test: API 598 / API 6D / BS EN 12266
- Fire Safe Test: API 607 / API 6FA / ISO 10497
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A351-CF8M	ASTM A216-WCB
2	SEAT	PTFE	PTFE
3	BALL	ASTM A351 CF8M	ASTM A351 CF8M
4	BODY GASKET	PTFE/SWG(SS316+GRAPHITE)	PTFE/SWG(SS316+GRAPHITE)
5	STUD BOLT	ASTM A193-B8	ASTM A193-B7
6	BODY CAP	ASTM A351-CF8M	ASTM A216-WCB
7	BODY NUT	ASTM A194-8	ASTM A194-2H
8	THRUST WASHER	PEEK	PEEK
9	STEM	ASTM A479-316	ASTM A276-TP316
10	PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
11	STEM SEAL RETAINER	ASTM A276-TP316	ASTM A276-TP316
12	O-RING	VITON	VITON
13	DISC SPRING	STAINLESS STEEL	CARBON STEEL
14	GLAND	ASTM A479-316	ASTM A276-TP316
15	GLAND FLANGE	ASTM A351-CF8M	ASTM A216-WCB
16	FLANGE BOLT	ASTM A193-B8	ASTM A193-B7
17	STOPPER BOLT	ASTM A193-B8	ASTM A193-B7
18	STOPPER	STAINLESS STEEL	CARBON STEEL
19	HANDLE	STAINLESS STEEL	CARBON STEEL
20	PLAIN WASHER	ASTM A240-TP304	ASTM A240-TP304
21	HANDLE BOLT	ASTM A193-B8	ASTM A307-B

Table of Dimensions



Full Bore

Class150

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	108	88	140	2.2
3/4	20	117	92	140	2.7
1	25	127	101	170	4.5
1-1/2	38	165	124	250	7.0
2	50	178	142	250	9.5
2-1/2	65	191	159	350	15
3	76	203	194	350	19
4	100	229	210	460	30
6	152	394	292	*400	75
8	203	457	318	*500	115
10	254	533	408	*500	180.0

*Gear Operated

Reduced Bore

Class150

Size (inch)	ød	ØD	L	H	W	Weight (Kg)
3/4 × 1/2	15	20	117	88	140	2
1 × 3/4	20	25	127	92	140	3.5
1-1/2 × 1	25	38	165	101	170	5
2 × 1-1/2	38	50	178	124	250	9
2-1/2 × 2	50	65	191	142	250	13.0
3 × 2	50	76	203	159	350	21
4 × 3	76	100	229	194	460	30
6 × 4	100	152	394	210	460	50
8 × 6	152	203	457	292	*400	100
10 × 8	203	254	533	318	*500	180

*Gear Operated

Class300

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	140	88	140	2.5
3/4	20	152	92	140	3.5
1	25	165	101	170	5.5
1-1/2	38	191	124	250	9.0
2	50	216	142	250	13
2-1/2	65	241	159	350	21
3	76	283	194	350	27
4	100	305	210	460	40
6	152	403	292	*400	95
8	203	502	318	*500	150
10	254	568	408	*500	230.0

*Gear Operated

Class300

Size (inch)	ød	ØD	L	H	W	Weight (Kg)
3/4 × 1/2	15	20	152	88	140	3
1 × 3/4	20	25	165	92	140	4.6
1-1/2 × 1	25	38	191	101	170	7
2 × 1-1/2	38	50	216	124	250	12.5
2-1/2 × 2	50	65	241	142	250	17
3 × 2	50	76	283	159	350	33
4 × 3	76	100	305	194	460	40
6 × 4	100	152	403	210	460	70
8 × 6	152	203	502	292	*400	130.0
10 × 8	203	254	568	318	*500	220

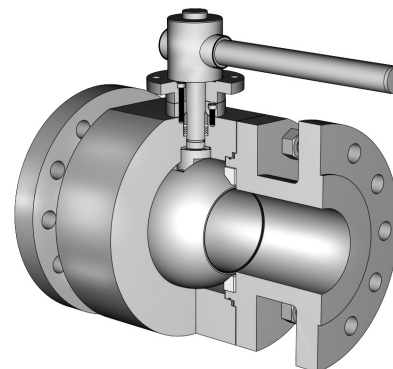
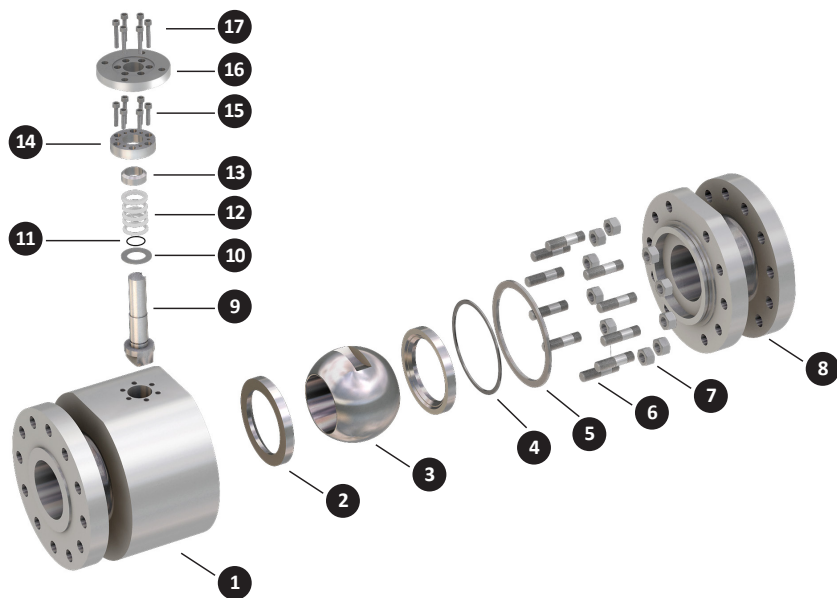
*Gear Operated

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- Unless otherwise specified, all dimensions are in millimeters.

- Sizes, pressure classes, and end connections not listed are available upon request.

2-piece Forged Steel Floating Ball Valve



Features

- Size: 1/2" ~ 10"
- Class: 150 ~ 2500
- Two Pieces Forged Steel Body
- Floating Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Low Emission

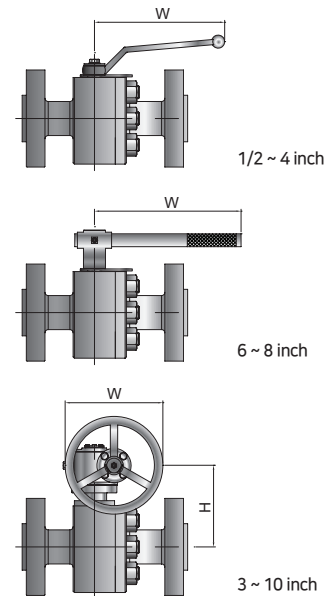
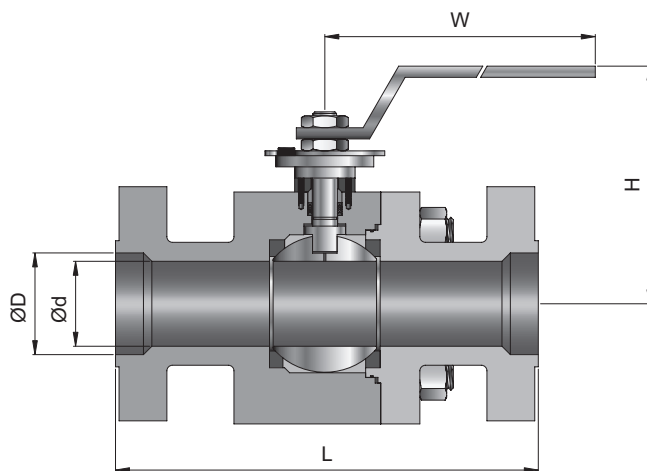
Specifications

- Design: ASME B16.34 / ISO 17292 / API 6D
- Face to Face: ASME B16.10
- End Flange: ASME B16.5
- Test: API 598 / BS EN 12266
- Fire Safe Test: API607 / API 6FA / ISO 10497
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A182-F316	ASTM A105
2	SEAT	R.PTFE/PEEK	R.PTFE/PEEK
3	BALL	ASTM A479-TP316	ASTM A479-TP316
4	BODY O-RING	VITON	VITON
5	BODY GASKET	PTFE/SWG(SS316+GRAPHITE)	PTFE/SWG(SS316+GRAPHITE)
6	STUD BOLT	ASTM A193-B8M	ASTM A193-B7
7	BODY NUT	ASTM A194-8M	ASTM A194-2H
8	BODY CAP	ASTM A182-F316	ASTM A105
9	STEM	ASTM A276-TP316	ASTM A276-TP316
10	THRUST WASHER	PEEK	PEEK
11	STEM O-RING	VITON	VITON
12	PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
13	GLAND	ASTM A276-TP316	ASTM A276-TP316
14	GLAND FLANGE	ASTM A276-TP316	ASTM A105
15	BOLT	ASTM A193-B8M	ASTM A193-B7
16	TOP FLANGE	ASTM A182-F316	ASTM A105
17	BOLT	ASTM A193-B8M	ASTM A193-B7

Table of Dimensions



Full Bore

Class150

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	108	81	150	2.8
3/4	20	117	85	150	3.7
1	25	127	98	180	5.3
1-1/2	38	165	133	280	8.3
2	50	178	141	280	11.2
2-1/2	65	191	139	400	18.4
3	76	203	150	400	23.0
4	100	229	223	650	39.3
6	152	394	297	*300	90.0
8	203	457	378	*300	140.0
10	254	533	408	*400	230.0

*Gear Operated

Class300

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	140	81	150	3.0
3/4	20	152	85	150	4.0
1	25	165	98	180	6.6
1-1/2	38	191	133	280	12.9
2	50	216	141	280	18.9
2-1/2	65	241	139	400	28.0
3	76	283	150	400	39.0
4	100	305	223	650	60.0
6	152	403	297	*300	130.0
8	203	502	378	*400	195.0
10	254	568	408	*400	290.0

*Gear Operated

Class600

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	165	66	150	3.5
3/4	20	191	88	170	5.0
1	25	216	90	250	7.5
1-1/2	38	241	120	400	15.0
2	50	292	135	400	23.0
3	76	356	164	400	48.0
4	100	432	224	995	80.0
6	152	559	260	*400	156.0

*Gear Operated

Reduced Bore

Class150

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 x 1/2	15	20	117	81	150	3.5
1 x 3/4	20	25	127	85	150	5.0
1-1/2 x 1	25	38	165	98	180	7.5
2 x 1-1/2	38	50	178	133	280	10.0
2-1/2 x 2	50	65	191	141	280	16.0
3 x 2	50	76	203	141	280	21.0
4 x 3	76	100	229	150	400	35.0
6 x 4	100	152	394	223	650	73.0
8 x 6	152	203	457	297	*300	120.0
10 x 8	203	254	533	378	*300	200.0

*Gear Operated

Class300

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 x 1/2	15	20	152	81	150	3.7
1 x 3/4	20	25	165	85	150	5.8
1-1/2 x 1	25	38	191	98	180	10.5
2 x 1-1/2	38	50	216	133	280	16.1
2-1/2 x 2	50	65	241	141	280	24.5
3 x 2	50	76	283	141	280	34.7
4 x 3	76	100	305	150	400	53.0
6 x 4	100	152	403	223	650	100.0
8 x 6	152	203	502	297	*300	170.0
10 x 8	203	254	568	378	*400	250.0

*Gear Operated

Class600

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 x 1/2	15	20	191	66	150	4.0
1 x 3/4	20	25	216	88	170	5.5
1-1/2 x 1	25	38	241	90	250	10.5
2 x 1-1/2	38	50	292	120	400	20.0
3 x 2	50	76	356	135	400	29.0
4 x 3	76	100	432	164	400	59.0
6 x 4	100	152	559	224	995	95.0
8 x 6	152	203	660	260	*400	190.0

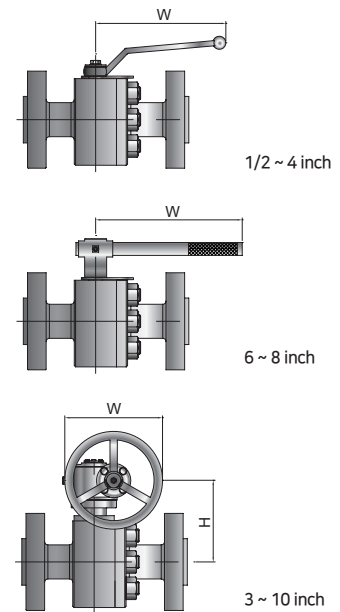
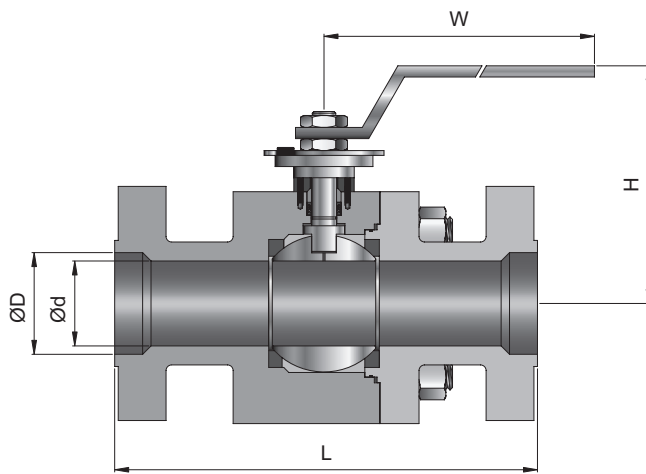
*Gear Operated

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- Unless otherwise specified, all dimensions are in millimeters.

- Sizes, pressure classes, and end connections not listed are available upon request.

Table of Dimensions



Full Bore

Class900

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	216	75	140	5.0
3/4	20	229	91	180	8.0
1	25	254	108	250	10.0
1-1/2	38	305	133	400	20.0
2	50	368	150	500	30.0
3	76	381	160	500	55.0

Reduced Bore

Class900

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 × 1/2	15	20	229	75	140	7.0
1 × 3/4	20	25	254	91	180	9.5
1-1/2 × 1	25	38	305	108	250	16.5
2 × 1-1/2	38	50	368	133	400	23.0
3 × 2	50	76	381	150	500	42.0
4 × 3	76	100	457	160	500	65.0

Class1500

Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	216	75	140	5.0
3/4	20	229	91	180	8.0
1	25	254	108	250	10.0
1-1/2	38	305	133	400	20.0
2	50	368	150	500	30.0
3	76	470	160	500	65.0

Class1500

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 × 1/2	15	20	229	75	140	7.0
1 × 3/4	20	25	254	91	180	9.5
1-1/2 × 1	25	38	305	108	250	16.5
2 × 1-1/2	38	50	368	133	400	23.0
3 × 2	50	76	470	150	500	60.0
4 × 3	76	100	546	160	500	78.0

Class2500

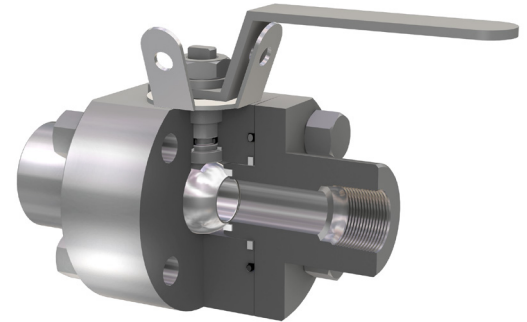
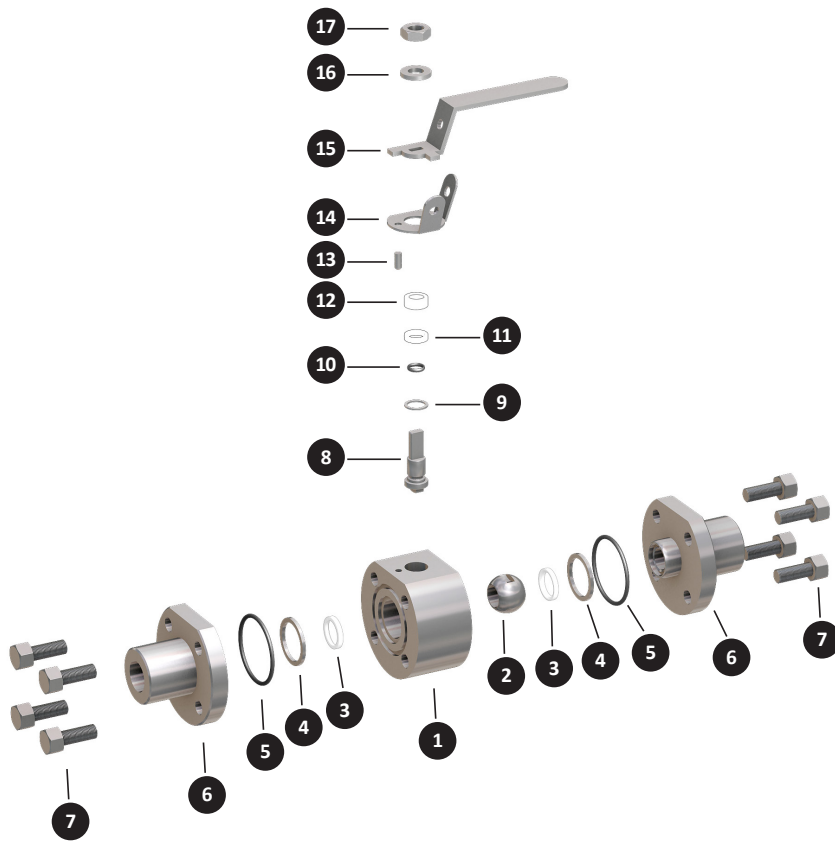
Size (inch)	ØD	L	H	W	Weight (Kg)
1/2	15	264	88	230	7.5
3/4	20	273	117	230	12.0
1	25	308	128	300	15.0
1-1/2	38	387	148	400	30.0
2	42	451	183	500	37.5

Class2500

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3/4 × 1/2	15	20	273	88	230	11.0
1 × 3/4	20	25	308	117	230	14.0
1-1/2 × 1	25	38	387	128	300	25.0
2 × 1-1/2	38	50	451	148	400	35.0
3 × 2	42	76	578	183	500	60.0

- Dimensions and Drawings are for reference only and are subject to change without prior notice.
 - Unless otherwise specified, all dimensions are in millimeters.
 - Sizes, pressure classes, and end connections not listed are available upon request.

Small-size Forged Steel Floating Ball Valve



Features

- Size: 1/2" ~ 2"
- Class: 800 ~ 2500
- Three Pieces Forged Steel Body
- Floating Ball
- Anti-Static Device
- Blow-out Proof Stem

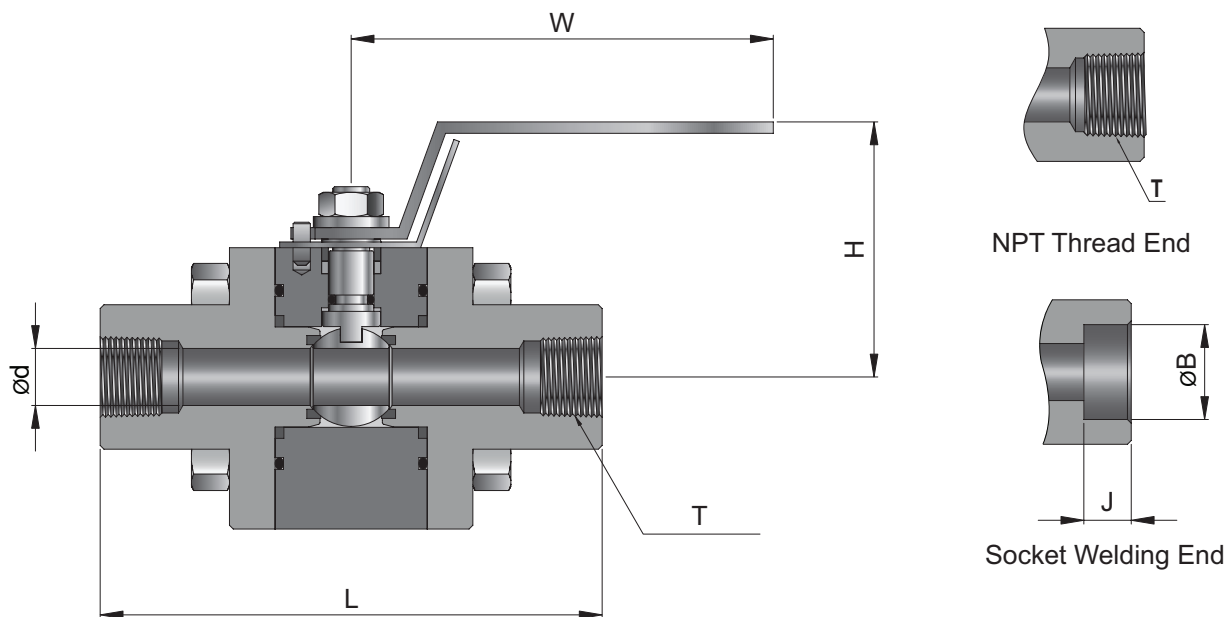
Specifications

- Design: ASME B16.34 / ISO 17292
- Face to Face: Manufacturer Standard
- Thread End: ASME B1.20.1
- Socket Welding End: ASME B16.11
- Test: API 598 / BS EN 12266
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A182-F316	ASTM A105
2	BALL	ASTM A479-TP316	ASTM A479-TP316
3	SEAT	R.PTFE/PEEK	R.PTFE/PEEK
4	BODY GASKET	PTFE/GRAPHITE	PTFE/GRAPHITE
5	BODY O-RING	VITON	VITON
6	BODY CAP	ASTM A182-F316	ASTM A105
7	FLANGE BOLT	ASTM A193-B8M	ASTM A193-B7
8	STEM	ASTM A276-TP316	ASTM A276-TP316
9	THRUST WASHER	PEEK	PEEK
10	STEM O-RING	VITON	VITON
11	STEM PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
12	GLAND	ASTM A276-TP316	ASTM A276-TP316
13	PIN	STAINLESS STEEL	CARBON STEEL
14	LOCK PLATE	STAINLESS STEEL	CARBON STEEL
15	HANDLE	STAINLESS STEEL	CARBON STEEL
16	PLAIN WASHER	STAINLESS STEEL	CARBON STEEL
17	NUT	ASTM A194-8M	ASTM A194-2H

Table of Dimensions



Class800

Port	Size	$\varnothing d$	H	L		W	$\varnothing B$	J	T
				FNPT	SW				
Reduced Bore	1/2 x 3/8	10.0	60.0	90	140.0	140.0	21.8	9.6	1/2
	3/4 x 1/2	15.0	100.0	95	155.0	160.0	27.1	12.7	3/4
	1 x 3/4	20.0	110.0	120	165.0	200.0	33.8	12.7	1
	1-1/4 x 1	25.0	88.0	150	180.0	200.0	42.6	12.7	1-1/4
	1-1/2 x 1-1/4	32.0	88.0	160	190.0	250.0	48.7	12.7	1/1/2
	2 x 1-1/2	38.0	93.0	240	230.0	250.0	61.2	15.7	2
Full Bore	1/2	15.0	62.0	95	140.0	160.0	21.8	9.6	1/2
	3/4	20.0	110.0	120	155.0	160.0	27.1	12.7	3/4
	1	25.0	88.0	150	165.0	200.0	33.8	12.7	1
	1-1/4	32.0	93.0	160	180.0	250.0	42.6	12.7	1-1/4
	1-1/2	38.0	93.0	170	190.0	250.0	48.7	12.7	1/1/2
	2	50.0	107.0	180	230.0	300.0	61.2	15.7	2

Class1500

Port	Size	$\varnothing d$	H	L		W	$\varnothing B$	J	T
				FNPT	SW				
Reduced Bore	1/2 x 3/8	10.0	65.0	90	140.0	140.0	21.8	9.6	1/2
	3/4 x 1/2	15.0	100.0	110	155.0	160.0	27.1	12.7	3/4
	1 x 3/4	20.0	115.0	140	165.0	200.0	33.8	12.7	1
	1-1/4 x 1	25.0	93.0	230	210.0	250.0	42.6	12.7	1-1/4
	1-1/2 x 1-1/4	32.0	93.0	260	240.0	250.0	48.7	12.7	1/1/2
	2 x 1-1/2	38.0	105.0	280	270.0	300.0	61.2	15.7	2
Full Bore	1/2	15.0	67.0	105	140.0	160.0	21.8	9.6	1/2
	3/4	20.0	110.0	130	170.0	160.0	27.1	12.7	3/4
	1	25.0	93.0	170	190.0	250.0	33.8	12.7	1
	1-1/4	32.0	105.0	180	200.0	250.0	42.6	12.7	1-1/4
	1-1/2	38.0	105.0	260	240.0	300.0	48.7	12.7	1/1/2

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- Sizes, pressure classes, and end connections not listed are available upon request.

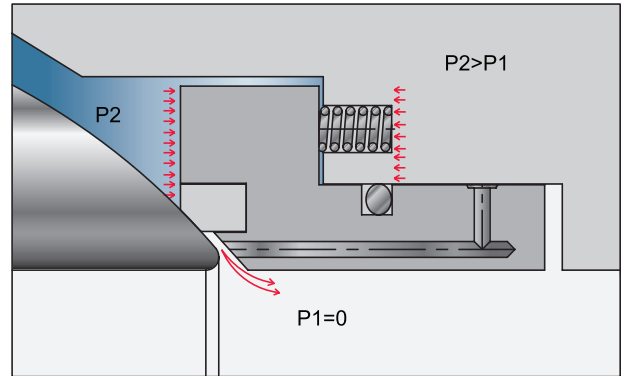
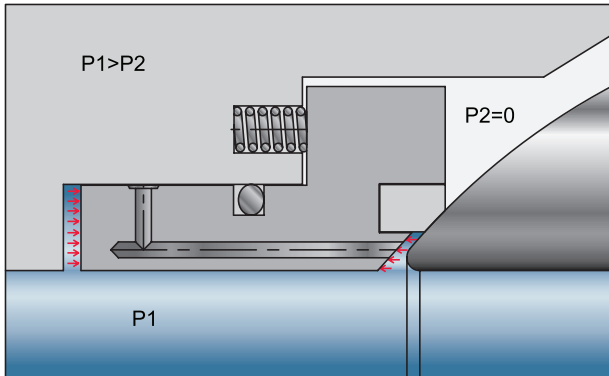
Trunnion Mounted Ball Valves

Design Features

Single Piston Effect (Standard)

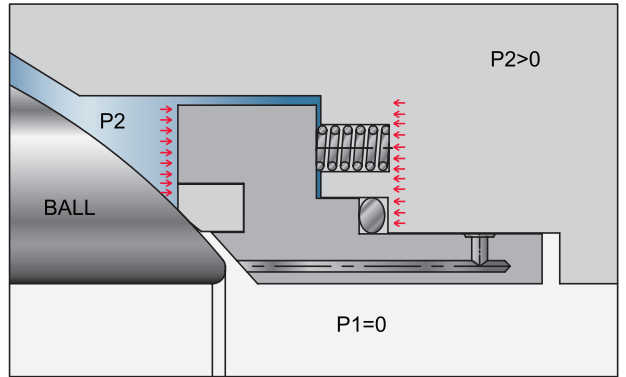
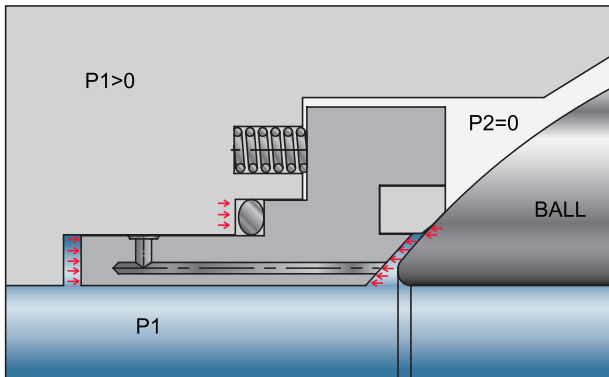
In the standard design of Trunnion Mounted Ball Valves, each seat ring performs the "Single piston" action.

In this case, the pressure acting on the external side of the seat ring results in a force pushing equally against the ball while the pressure acting on the internal side of the seat rings results in a force pushing equally away from the ball. Therefore while both seat rings grant the required tightness when the pressure is applied on their external side, they are "Self Relieving" allowing any excess pressure acting in the body cavity to be discharged in the line as soon as the force caused by the pressure overcomes the one provided by the springs.



Double Piston Effect (Optional)

By request, the seat rings design may be modified to perform "Double Piston Effect" action. In this case the pressure acting on both the external and internal side of the seat rings results in a force pushing equally against the ball. Therefore each seat ring allows for the required tightness even if the pressure is applied in the body cavity. This feature adds an extra sealing feature to the valve, but to release the possible excess pressure developed in the body cavity it is necessary to use an external safety relief valve.



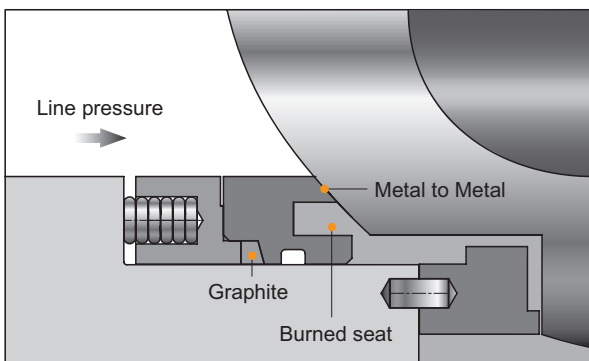
Fire Safe Design

A secondary metal seat is provided to maintain contact between the seat and ball in the event the primary non-metallic seat is destroyed by fire. Valves are fire safe by design.

The double body and bonnet seals give maximum security.

BMT valves are fitted with special graphite seals so as to effectively

stop all leakage in the event of a fire. All BMT trunnion Mounted ball valves are designed Fire Safe to API-607/API-6FA

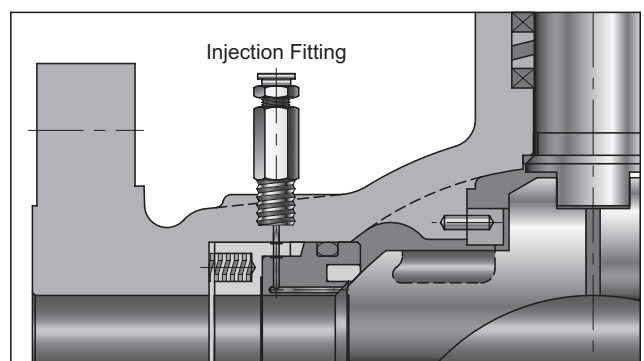


Secondary Seat and Stem Sealing (Optional)

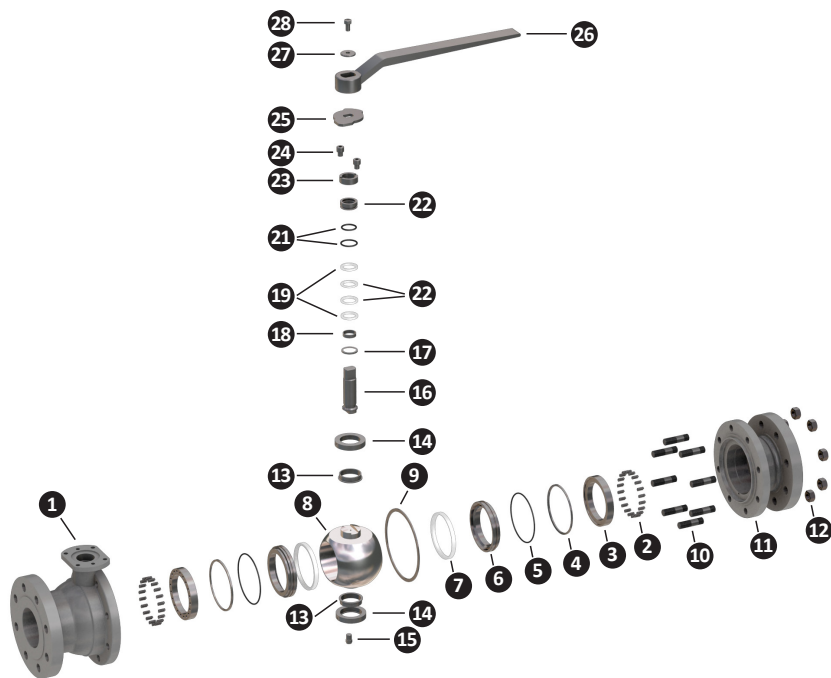
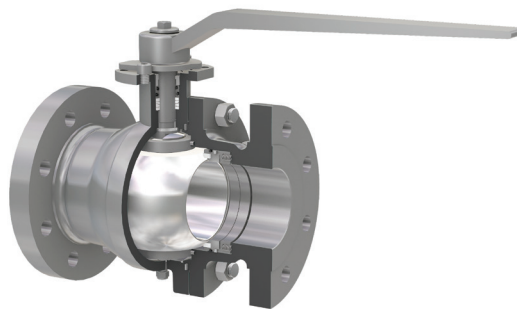
Ball valves are designed to provide high integrity shut-off.

Upon request, sealant injection fittings are installed.

In case of seat insert or stem seal damage, external or internal leakages can occur. An emergency sealant injection can save the integrity of the valve by incorporating a sealant seal around the stem or between the seat and the ball.



2-piece Cast Steel Trunnion Mounted Ball Valve



Features

- Size: 2" ~ 24"
- Class: 150 ~ 600
- Two Pieces Cast Steel Body
- Trunnion Mounted Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Emergency Sealant injector (6" & Larger)

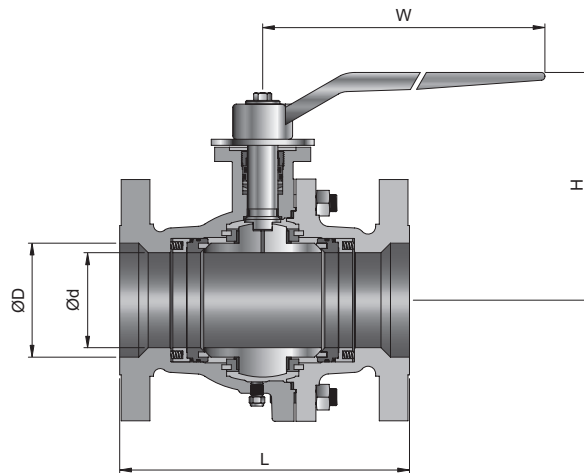
Specifications

- Design: ASME B16.34 / API 6D / ISO 17292
- Face to Face: ASME B16.10 / API 6D
- End Flange: ASME B16.5
- BW End: ASME B16.25
- Test: API 598 / API 6D / BS EN 12266
- Fire Safe Test: API 607 / API 6FA / ISO 10497
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A351-CF8M	ASTM A216-WCB
2	SPRING	Inconel X-750	Inconel X-750
3	GASKER RETAINER	ASTM A276-TP316	ASTM A276-TP316
4	RETAINER SEAL	PTFE/GRAPHITE	PTFE/GRAPHITE
5	RETAINER O-RING	VITON	VITON
6	SEAT RETAINER	ASTM A276-TP316	ASTM A276-TP316
7	SEAT	R.PTFE/NYLON	R.PTFE/NYLON
8	BALL	ASTM A351-CF8M	ASTM A351-CF8M
9	BODY GASKET	PTFE/SWG(SS316+GRAPHITE)	PTFE/SWG(SS316+GRAPHITE)
10	STUD BOLT	ASTM A193-B8M	ASTM A193-B7
11	BODY CAP	ASTM A351-CF8M	ASTM A216-WCB
12	NUT	ASTM A194-8M	ASTM A194-2H
13	TRUNNION BEARING	R.PTFE	R.PTFE
14	TRUNNION PLATE	ASTM A276-TP316	ASTM A276-TP316
15	DRAIN PLUG	ASTM A276-TP316	Carbon Steel
16	STEM	ASTM A276-TP316	ASTM A276-TP316
17	THRUST WASHER	PEEK	PEEK
18	THRUST BEARING	R.PTFE	R.PTFE
19	PACKING GLAND	ASTM A276-TP316	ASTM A276-TP316
20	PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
21	O-RING	VITON	VITON
22	STEM SEAL RETAINER	ASTM A276-TP316	ASTM A105
23	GLAND	ASTM A276-TP316	ASTM A105
24	STOP BOLT	ASTM A193-B8	ASTM A193-B7
25	STOPPER	STAINLESS STEEL	Carbon Steel
26	HANDLE	STAINLESS STEEL	Carbon Steel
27	PLAIN WASHER	STAINLESS STEEL	Carbon Steel
28	HANDLE BOLT	ASTM A193-B8	ASTM A193-B7

Table of Dimensions



Full Bore Class150

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	178	144	250	18
3	76	203	194	460	32
4	100	229	210	460	56
6	152	394	286	*400	125
8	203	457	338	*500	195
10	254	533	387	*500	270
12	305	610	450	*600	470
14	337	686	498	*700	570
16	387	762	550	*700	875
18	438	864	615	*800	935
20	489	914	647	*800	1520
24	591	1067	751	*900	2150

*Gear Operated

Class300

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	216	144	250	26
3	76	283	194	460	45
4	100	305	210	460	75
6	152	403	286	*400	152
8	203	502	338	*500	234
10	254	568	387	*500	303
12	305	648	450	*600	502
14	337	762	498	*700	602
16	387	838	550	*700	1001
18	438	914	615	*700	1155
20	489	991	647	*800	1815
24	591	1143	751	*900	2550

*Gear Operated

Class600

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	292	144	250	27
3	76	356	194	*250	53
4	100	432	235	*300	93
6	152	559	300	*500	200
8	203	660	360	*600	340
10	254	787	430	*700	550
12	305	838	468	*700	785
14	337	889	550	*800	850
16	387	991	615	*900	1580
18	438	1092	724	*900	2170
20	489	1194	810	*900	2630
24	591	1397	1010	*900	3950

*Gear Operated

Reduced Bore Class150

Size (inch)	ød	ØD	L	H	W	Weight (Kg)
3 × 2	50	76	203	144	250	26
4 × 3	76	100	229	194	460	50
6 × 4	100	152	394	210	460	118
8 × 6	152	203	457	286	*400	150
10 × 8	203	254	533	338	*500	230
12 × 10	254	305	610	387	*500	278
14 × 12	305	337	686	450	*600	460
16 × 14	337	387	762	498	*700	585
18 × 16	387	438	864	550	*700	890
20 × 18	438	489	914	615	*800	955
24 × 20	489	591	1067	647	*800	1650

*Gear Operated

Class300

Size (inch)	ød	ØD	L	H	W	Weight (Kg)
3 × 2	50	76	283	144	250	35
4 × 3	76	100	305	194	460	65
6 × 4	100	152	403	210	460	135
8 × 6	152	203	502	286	*400	200
10 × 8	203	254	568	338	*500	290
12 × 10	254	305	648	387	*500	310
14 × 12	305	337	762	450	*600	520
16 × 14	337	387	838	498	*700	820
18 × 16	387	438	914	550	*700	1025
20 × 18	438	489	991	615	*800	1180
24 × 20	489	591	1143	647	*800	1950

*Gear Operated

Class600

Size (inch)	ød	ØD	L	H	W	Weight (Kg)
3 × 2	50	76	356	144	250	43
4 × 3	76	100	432	194	*250	67
6 × 4	100	152	559	235	*300	98
8 × 6	152	203	660	300	*400	205
10 × 8	203	254	787	360	*500	350
12 × 10	254	305	838	430	*700	605
14 × 12	305	337	889	468	*700	820
16 × 14	337	387	991	550	*800	980
18 × 16	387	438	1092	615	*900	1805
20 × 18	438	489	1194	724	*900	2480
24 × 20	489	591	1397	810	*900	3800

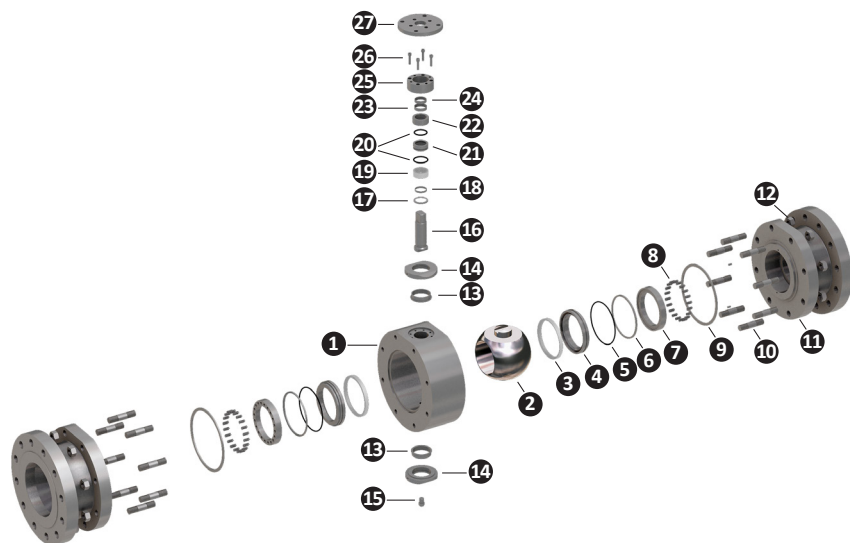
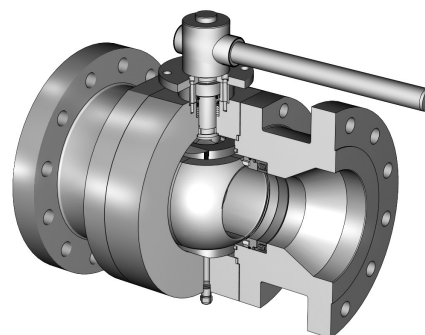
*Gear Operated

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- Unless otherwise specified, all dimensions are in millimeters.

- Sizes, pressure classes, and end connections not listed are available upon request.

3-piece Forged Steel Trunnion Mounted Ball Valve



Features

- Size: 2" ~ 24"
- Class: 150 ~ 2500
- Three Pieces Forged Steel Body
- Trunnion Mounted Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Double Block Bleed
- Fire Safe Design
- Emergency Sealant injector (6" & Larger)
- Vent Valve (6" & Larger)
- Lifting Lugs & Supporting Feet (8" & Larger)

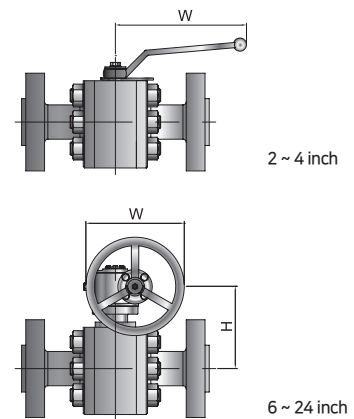
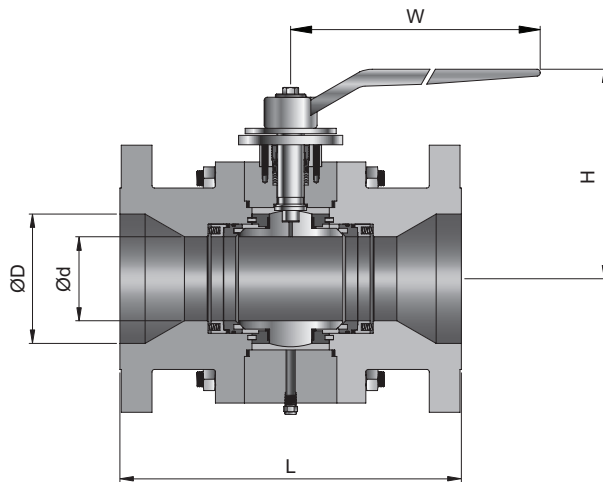
Specifications

- Design: ASME B16.34 / API 6D
- Face to Face: ASME B16.10 / API6D
- End Flange: ASME B16.5
- Test: API 6D
- Fire Safe Test: API 607 / API 6FA
- NACE MR-01-75 (Optional)

Materials of Construction

NO.	COMPONENT	MATERIAL	
		STAINLESS STEEL	CARBON STEEL
1	BODY	ASTM A182-F316	ASTM A105
2	BALL	ASTM A182-F316/A276-TP316	ASTM A182-F316/A105+ENP
3	SEAT	PTFE/DEVLON/NYLON	PTFE/DEVLON/NYLON
4	SEAT RETAINER	ASTM A276-TP316	ASTM A276-TP316
5	RETAINER O-RING	VITON	VITON
6	RETAINER SEAL	PTFE/GRAPHITE	PTFE/GRAPHITE
7	GASKER RETAINER	ASTM A276-TP316	ASTM A276-TP316
8	SPRING	INCONEL X-750	INCONEL X-750
9	BODY GASKET	PTFE/SWG(SS316+GRAPHITE)	PTFE/SWG(SS316+GRAPHITE)
10	STUD BOLT	ASTM A193-B8M	ASTM A193-B7
11	BODY CAP	ASTM A182-F316	ASTM A105
12	NUT	ASTM A194-8M	ASTM A194-2H
13	TRUNNION BEARING	R.PTFE	R.PTFE
14	TRUNNION PLATE	ASTM A276-TP316	ASTM A276-TP316
15	DRAIN PLUG	ASTM A276-TP316	CARBON STEEL
16	STEM	ASTM A564-TP630	ASTM A564-TP630/AISI4140+ENP
17	THRUST WASHER	PEEK	PEEK
18	THRUST BEARING	R.PTFE	R.PTFE
19	BUSHING	PEEK	PEEK
20	PACKING GLAND	ASTM A276-TP316	ASTM A276-TP316
21	STEM PACKING	PTFE/GRAPHITE	PTFE/GRAPHITE
22	O-RING RETAINER	ASTM A276-TP316	ASTM A105
23	O-RING	VITON	VITON
24	O-RING	VITON	VITON
25	BONNET	ASTM A276-TP316	ASTM A105
26	BOLT	ASTM A193-B8M	ASTM A193-B7
27	GEARBOX BASE	ASTM A276-TP316	ASTM A105

Table of Dimensions



Full Bore

Class150

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	178	180	265	30
3	76	203	190	285	60
4	100	229	212	285	92
6	152	394	277	*400	190
8	203	457	301	*400	345
10	254	533	359	*500	495
12	305	610	419	*600	705
14	337	686	460	*600	859
16	387	762	494	*600	1020
18	438	864	521	*600	1440
20	489	914	656	*600	1918
24	591	1067	795	*700	2803

*Gear Operated

Reduced Bore

Class150

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
2 × 1-1/2	38	50	178	140	250	26
3 × 2	50	76	203	180	265	34
4 × 3	76	100	229	190	285	62
6 × 4	100	152	394	212	285	102
8 × 6	152	203	457	277	*400	225
10 × 8	203	254	533	301	*400	373
12 × 10	254	305	610	359	*500	533
14 × 12	305	337	686	419	*600	730
16 × 14	337	387	762	460	*600	790
18 × 16	387	438	864	494	*600	1095
20 × 18	438	489	914	521	*600	1152
24 × 20	489	591	1067	656	*600	2060

*Gear Operated

Class300

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	216	180	265	31
3	76	283	190	285	69
4	100	305	212	400	11
6	152	403	277	*400	211
8	203	502	308	*500	376
10	254	568	381	*600	540
12	305	648	429	*600	763
14	337	762	460	*600	900
16	387	838	581	*600	1300
18	438	914	674	*700	1715
20	489	991	713	*700	2090
24	591	1143	850	*760	2890

*Gear Operated

Class300

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
2 × 1-1/2	38	50	216	140	250	30
3 × 2	50	76	283	180	265	37
4 × 3	76	100	305	190	285	74
6 × 4	100	152	403	212	400	142
8 × 6	152	203	502	277	*400	253
10 × 8	203	254	598	308	*500	410
12 × 10	254	305	648	381	*600	580
14 × 12	305	337	762	429	*600	830
16 × 14	337	387	838	460	*600	970
18 × 16	387	438	914	581	*600	1530
20 × 18	438	489	991	674	*700	1830
24 × 20	489	591	1143	713	*700	2220

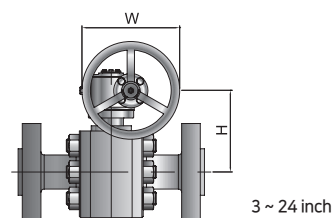
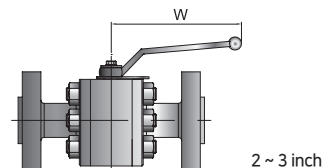
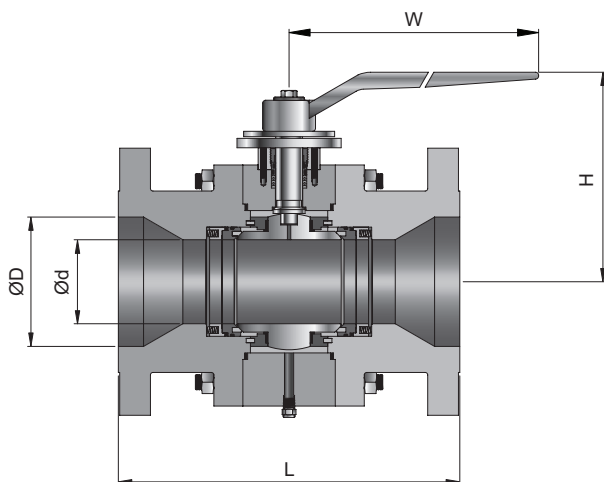
*Gear Operated

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Table of Dimensions



Full Bore

Class600

Size (inch)	ØD	L	H	W	Weight (Kg)
2	51	292	172	285	45
3	76	356	205	*250	80
4	102	432	308	*300	150
6	152	559	274	*500	248
8	203	660	342	*600	438
10	254	787	393	*600	701
12	305	838	522	*600	925
14	337	889	551	*600	1230
16	387	991	637	*700	1535
18	438	1092	683	*800	2135
20	489	1194	719	*800	2640
24	591	1397	823	*800	3960

*Gear Operated

Reduced Bore

Class600

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
2 × 1-1/2	38	51	292	164	265	40
3 × 2	51	76	356	172	285	54
4 × 3	76	102	432	205	*250	99
6 × 4	102	152	559	308	*300	212
8 × 6	152	203	660	274	*500	304
10 × 8	203	254	787	342	*600	510
12 × 10	254	305	838	393	*600	902
14 × 12	305	337	889	522	*600	1090
16 × 14	337	387	991	551	*600	1310
18 × 16	387	438	1092	637	*700	1640
20 × 18	438	489	1194	683	*800	2270
24 × 20	489	591	1397	719	*800	3440

*Gear Operated

Class900

Size (inch)	ØD	L	H	W	Weight (Kg)
3	76	381	302	*300	87
4	102	457	332	*400	160
6	152	610	345	*630	385
8	203	737	395	*710	560
10	254	838	463	*710	820
12	305	965	509	*710	1125
14	324	1029	528	*800	1610
16	406	1130	634	*900	2540
18	457	1219	689	*900	2820
20	508	1321	742	*1000	4770

*Gear Operated

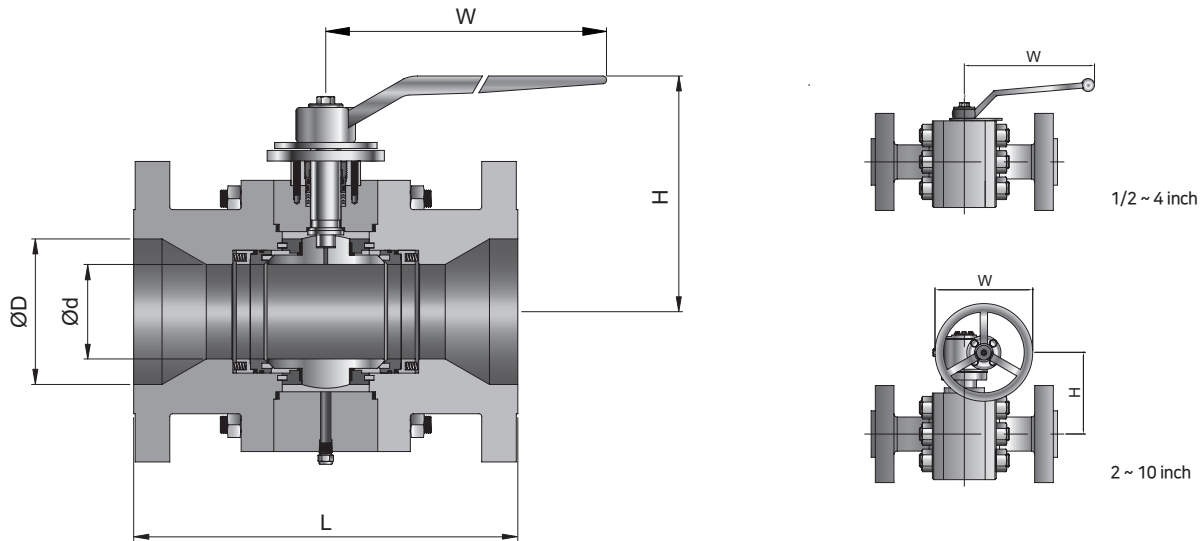
Class900

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
3 × 2	51	76	381	193	*250	56
4 × 3	76	102	457	302	*300	94
6 × 4	102	152	610	332	*400	226
8 × 6	152	203	737	345	*630	480
10 × 8	203	254	838	395	*710	650
12 × 10	254	305	965	463	*710	868
14 × 12	305	324	1029	509	*710	1310
16 × 14	356	406	1130	528	*800	1820
18 × 16	406	457	1219	634	*900	2500
20 × 18	457	508	1321	689	*900	3250

*Gear Operated

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 - Sizes, pressure classes, and end connections not listed are available upon request.

Table of Dimensions



Full Bore

Class1500

Size (inch)	ØD	L	H	W	Weight (Kg)
2	50	368	193	*300	60
3	76	470	270	*400	115
4	100	546	275	*500	194
6	146	705	325	*600	580
8	194	832	501	*700	758
10	241	991	536	*700	1195
12	289	1130	614	*800	1970
14	318	1257	662	*800	2250
16	362	1384	700	*800	2760

*Gear Operated

Reduced Bore

Class1500

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
2 × 1-1/2	38	50	368	183	285	56
3 × 2	50	76	470	193	*300	82
4 × 3	76	100	546	270	*400	150
6 × 4	100	146	705	275	*500	295
8 × 6	146	194	832	325	*600	690
10 × 8	194	241	991	501	*700	930
12 × 10	241	289	1130	536	*700	1340
14 × 12	289	318	1257	614	*800	2070
16 × 14	318	362	1384	662	*800	2470

*Gear Operated

Class2500

Size (inch)	ØD	L	H	W	Weight (Kg)
2	44	451	230	*400	90
3	64	578	284	*500	200
4	89	673	303	*500	385
6	133	914	394	*600	778
8	181	1022	488	*760	1352
10	225	1270	600	*760	2137
12	267	1422	872	*760	3267

*Gear Operated

Class2500

Size (inch)	Ød	ØD	L	H	W	Weight (Kg)
2 × 1-1/2	38	44	454	170	400	80
3 × 2	44	64	584	230	*400	160
4 × 3	64	89	683	284	*500	320
6 × 4	89	133	927	303	*500	640
8 × 6	133	181	1038	360	*600	1170
10 × 8	181	225	1292	420	*760	1919
12 × 10	225	267	1445	509	*760	2972

*Gear Operated

- Dimensions and Drawings are for reference only and are subject to change without prior notice.

- Unless otherwise specified, all dimensions are in millimeters.

- Sizes, pressure classes, and end connections not listed are available upon request.

Ordering Information

Example :

FB2F 2 2 - R 12 C - A031 - AB

1 2 3 4 5 6 7 8 9 10 11

1. Valve Series

- FB1C** = Floating 1-Piece Casting
- FB2C** = Floating 2-Piece Casting
- FB3C** = Floating 3-Piece Casting
- FB1F** = Floating 1-Piece Forged
- FB2F** = Floating 2-Piece Forged
- FB3F** = Floating 3-Piece Forged
- FBT2C** = Trunnion 2-Piece Casting
- FBT3C** = Trunnion 3-Piece Casting
- FBT2F** = Trunnion 2-Piece Forged
- FBT3F** = Trunnion 3-Piece Forged

2. Valve Type

- 1** = Flange x F.NPT
- 2** = Flange x Flange
- 3** = M.NPT x F.NPT
- 4** = F.NPT x F.NPT
- 5** = Pipe x F.NPT
- 6** = SW x F.NPT
- 7** = BW x F.NPT
- 8** = Pipe x Flange
- 9** = M.NPT x Flange
- 0** = SW x SW
- B** = BW x BW

3. Bore

- (Blank)** = 10 mm
- 1** = 15 mm
- 2** = 20 mm
- 3** = 25 mm
- 4** = 32 mm
- 5** = 38 mm
- 6** = 50 mm
- 7** = 65 mm
- 8** = 80 mm
- 9** = 100 mm
- 10** = 125 mm
- 11** = 150 mm
- 12** = 200 mm
- 13** = 250 mm
- 14** = 300 mm
- 15** = 335 mm
- 16** = 385 mm
- 17** = 435 mm
- 18** = 485 mm
- 19** = 535 mm
- 20** = 590 mm
- 21** = 640 mm
- 22** = 690 mm
- 23** = 740 mm

4. Connection

- R** = RF
- J** = RTJ
- F** = FF
- AF** = API 6B
- JF** = JIS FLANGE
- SA** = SAE J518
- IS** = ISO 6164
- JO** = JIS OIL

5. Size

- 4** = 1/4"
- 6** = 3/8"
- 8** = 1/2"
- 12** = 3/4"
- 16** = 1"
- 20** = 1-1/4"
- 24** = 1-1/2"
- 32** = 2"
- 40** = 2-1/2"
- 48** = 3"
- 64** = 4"
- 80** = 5"
- 96** = 6"
- 128** = 8"
- 160** = 10"
- 192** = 12"
- 224** = 14"
- 256** = 16"
- 288** = 18"
- 320** = 20"
- 352** = 22"
- 384** = 24"
- 416** = 26"
- 448** = 28"
- 480** = 30"

6. Pressure

- A** = Class 150
- B** = Class 300
- C** = Class 600
- D** = Class 900
- E** = Class 1500
- F** = Class 2500
- S** = Class 800
- G** = 2000 PSI
- H** = 3000 PSI
- I** = 5000 PSI
- W** = 6000 PSI
- J** = 10000 PSI
- K** = 15000 PSI
- L** = 20000 PSI
- M** = JIS 5K
- N** = JIS 10K
- P** = JIS 16K
- Q** = JIS 20K
- R** = JIS 30K
- T** = JIS 210K
- U** = JIS 280K
- V** = JIS 350K

7. Option

- A** = Standard
- D** = Locking Device
- G** = Gear Actuator
- H** = Metal Seat
- M** = Welded Overlay
- O** = Lifting Lug
- P** = Pneumatic Actuator

8. Trim

- 0** = Same material as the body
- 1** = SS316
- 2** = CF8M
- 3** = SS316L
- 4** = SS304
- 5** = A105+ENP
- 6** = A105+CR
- 7** = MONEL 400
- 8** = SS316+HF
- 9** = DUPLEX

9. Seat

- 0** = PTFE
- 1** = RTFE (G)
- 2** = RTFE (C)
- 3** = PEEK
- 4** = PCTFE
- 5** = POM
- 6** = DEVLON
- 7** = DELIN
- 8** = METAL
- 9** = NYLON 6

10. O-ring

- 0** = NBR
- 1** = VITON
- 2** = EPDM
- 3** = KALREZ
- 4** = CR
- 5** = SILICON
- 6** = AED(NBR)
- 7** = AED(VITON)
- 8** = HNBR
- 9** = MSNBR

11. Material

- (Blank)** = SS316
- 304** = SS304
- 36L** = SS316L
- 34L** = SS304L
- F51** = Duplex
- F53** = Super Duplex
- B** = Brass
- BZ** = Bronze
- AB** = AB
- M40** = M40
- 625** = Inconel 625
- 825** = Inconel 825
- 276** = HASTELLOY
- 15** = A105
- 15N** = A105N
- LF2** = A350 LF2

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Clean Ball Valves

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