KOMOTO

Technical Bulletin B-410

Series 41
Ball Valves
for ANSI 150-2500
DIN/BS 4504 PN10-PN420
JIS 10K-63K

Series 41 Features

General

Series 41 ball valves have been developed for wide range of process industry applications including severe services and critical processes. Series 41 ball valves comply with API standards that incorporate many special features including multiple fire safe guards, secondary metal seat, anti-blowout stem, static electric grounding device, and so on. This series of valves is designed for both pressure and vacuum service. The Valves are available with full bores and reduced bores.

Design Features:

- Design in accordance with API 6D/608
- Manual or actuated configuration
- The body is sized to grant maximum rigidity against pipeline forces even when the trim is removed for servicing
- Soft, Metal seat, and optional PMSS (Primary Metal, Secondary Soft) are available
- A cast body closed by a bolted bonnet minimizes the number of potential leak paths
- Full in-line service and maintenance. Suitable for critical service conditions where on-site field reparability and quick turn around are needed or in area where space is limited, such as platform decks (Top Entry type)
- The valve can be welded directly onto the pipeline assembly

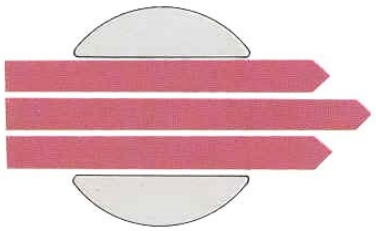


Figure 1. Maximum flow with full bore

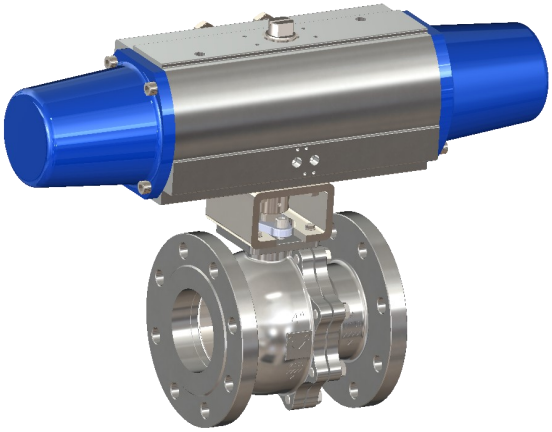


Figure 2. Series 41 Ball Valve mounted with series 3800 pneumatic cylinder actuator

Ball Valve Specifications

Valve Type	Ball Valve																	
Valve Model	Series 41																	
Body Type	2-way, 3-way, 4-way																	
Valve Size (inch)	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
(mm)	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Pressure Rating	ANSI 150# ~ 2500# (JIS 10K ~ 63K, PN 10~ 420)																	
End Connection	RF, FF, SW, BW, RTJ, etc																	
Body Materials	A216WCB, A351CF8/CF8M, A351CF3M																	
Bonnet Type	Plain(-17°C to 230°C), Extension(-45°C to -17°C, over 230°C), Cryogenic																	
Packing	Teflon, Graphite																	
Guiding	O-ring																	
Seat Type	Metal/Soft																	
Valve Plug Shapes	Ball																	
Plug Characteristic	On-Off																	
Trim Materials	A351CF8/CF8M, A351CF3/CF3M, and so on																	

Seat / Seal Design

Unique ACTI-Seal Seat design uses a lip seal principle for efficient sealing at all pressures from zero to the maximum rated positive or negative pressure.

This design seals with a minimum and nearly uniform torque requirement. The seat seals are pre-loaded against the ball on assembly to provide shut off at low pressures. At higher pressures, the ball is forced against the seat and provides a positive seal to maximum rated pressures.

The generous lip section of the seat is added assurance of long and efficient seat life.

Stem Seal and Bearing

All ball valves incorporate a PTFE bearing to absorb any radial loading on the valve stem. A PTFE thrust bearing is also provided to reduce friction due to axial loading. Packing utilizes multiple "V" Shaped PTFE rings ; tightening the gland nut spreads each ring and creates a multiple seal between the stem and body. The simple gland adjustment also allows compensation for operational wear. In addition, fluid pressure below the stem packing spreads the rings and improves the seal by increasing the stress on the rings-prohibiting leakage and minimizing maintenance.

Ball

One of the most important components in any ball valve is the ball itself. The sphericity and surface finish of the ball are directly related to the life of the valve, its pressure holding capability and the operating torque.

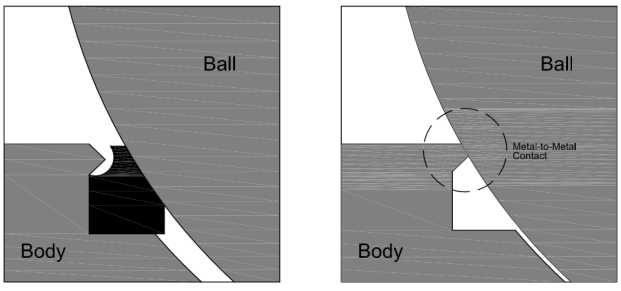
For these reasons, we designed special production equipment to produce balls that have a sphericity of ± 0008" and a 4RMS surface finish.

Figure 3. Ball

Fire-Safe API-607

One of the many requirements of today's industries is that ball valves must have a metal to metal seal in case the non-metallic seal is destroyed by fire or other means.

It provides assurance to the user handling flammable or hazardous fluids that should the non-metallic seal be destroyed, the ball valve will stop the flow of material until a new seal is installed.



Before fire　　Afther fire

Figure 4. Fire-Safe

Seat Performance Data

TFE

General application seat material, exhibiting lowest operating torque and excellent resistance to chemical attack.

RTFE

Most commonly specified seat material, and used as the basis for published torque valves. Maintains the excellent chemical resistance of unfilled Teflon (TFE) with increased resistance to wear and abrasion resulting in longer life.

Carbon Graphite

Designed for high temperature applications. Maximum service temperature is limited to 759 deg F(404 deg C) in oxidizing applications. This seat like all hard seat materials does not necessarily provide "bubble tight" shut-off. Most test standards have allowable leakage rates or list "classes" of shut-off for this type of seat. Be aware of the system design requirements when specifying this or any hard sea.

(UHMWPE)

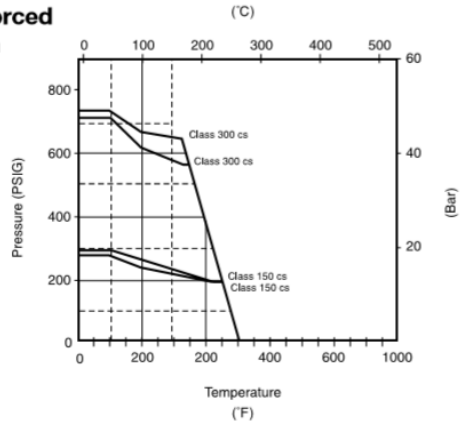
Ultra High Molecular Weight Polyethylene offers good abrasion resistance making it suitable for use in high solids or slurry applications. These seats are completely confined by a metallic seatholder enhancing their performance in abrasive.

This seat is frequently specified in services where fluorine off gassing in even the slightest services. UHMWPE should be used with caution in the presence of solvents, and the operating torque can be expected to be 30% higher than that of the Teflon based seat materials.

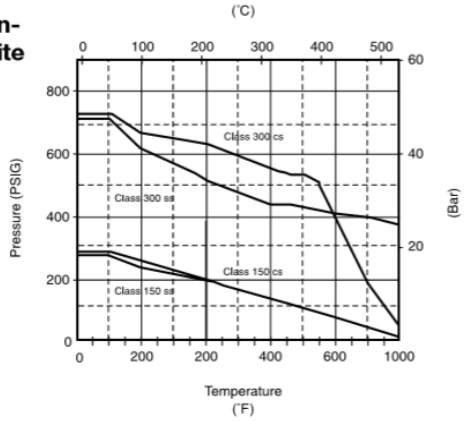
(PEEK)

PEEK(Poly Ether Ether Ketone) offers a high strength alternative to RTFE, resistant to creep and cold flow. This seat offers good abrasion resistance. Higher in cost, this material offers similar chemical resistance to TFE but should be checked on application. Operating torque tend to be 40% higher than RTFE.

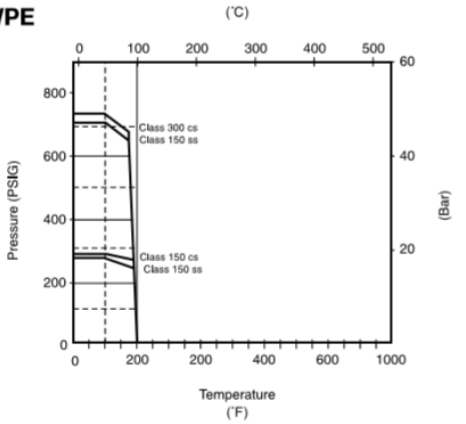
Reinforced Teflon



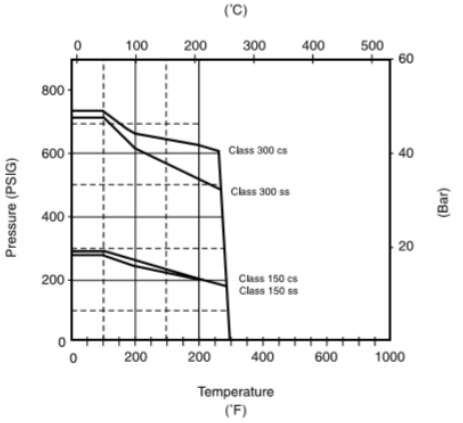
Carbon-Graphite



UHMWPE



PEEK



Floating Ball Valve Torque Value (N.M)

Size (mm) / Classs (lbs)	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"
150	3	5	5	16	25	50	65	125	250	410	700
300	7	12	12	38	60	120	160	280	600	950	1550
400	15	30	30	90	140	240	350	540	-	-	-
600	19	35	35	130	190	360	460	770	-	-	-

Table 1. Floating Ball Valve Torque Value (N.M)

Trunnion Type Ball Valve Torque Value (N.M)

Size (mm) / Classs (lbs)	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"
150	25	50	65	125	250	410	700	1100	1750	2600	3900	6200	7500	10500	14500	21000
300	60	120	160	280	600	950	1550	2000	3300	5000	7500	11800	14400	19600	28200	29800
400	140	240	350	540	740	1260	1910	3250	5340	7500	10000	12400	18500	29500	40500	53000
600	190	360	460	770	1050	1980	3280	5250	7200	9860	14500	19600	29000	42500	58000	62000

Table 2. Trunnion Type Ball Valve Torque Value (N.M)

Note: Torque date is according to seat condition. It can be variable.

Specifications For Seal Materials

	Viton A	NBR	Viton B	HNBR(HSN)	Viton AED
Temperature Range (° F)	-20~400	-50~250	-20~400	-40~320	-20~480
Hardness (SH.A)	70	70	70	80	90
Specific Gravity (G/cm3)	1.85	1.2	1.85	1.33	1.9
Service Application	Petroleum Oils, Gasoline Transmission Fluid	Petroleum Oils, Water, Hydraulic Oils	Mineral Acid, Steam, MTBE	Petroleum Oils, H2S & Co2	Anti-Explosive Decom-pression

Table 3. Specifications For Seal Materials

Specifications For Gasket Materials

	Flexible	Spiral Wound 316+graphite	PTFE	Spiral Wound Mo-nel+PTFE
Temperature Range(° F)	-300~900	-300~900	-300~400	-300~400
PH	0~14	0~14	0~14	0~14
Service Application	Fire-safe	Fire-safe	Cryogenic, High Corro-sive	High Corrosive

Table 4. Specifications For Gasket Materials

A. Floating Ball Valve

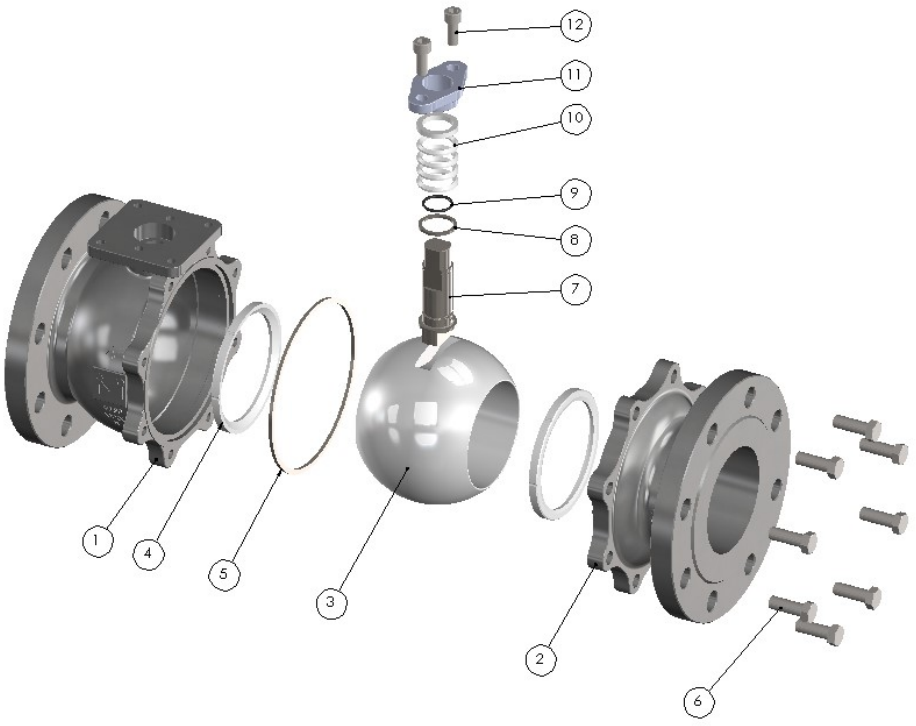
Standard Specifications

Flanged end, side entry body construction, Floating ball design, Full bore or reduced bore, Fields serviceable, wrench/ gear/actuator mounted.

The ball valves comply with one or more of the following standard specifications as to pressure, temperature ratings and dimensions: ANSI, API, BS, DIN, MSS

	JIS	API	ASME
Design standard	JIS B2071	API6D	ASME B16.34
Face to face	JIS B2002	API6D	ASME B16.10
Flanged ends	JIS B2220	ASME B 16.5	
Test & Inspection	JIS B2003	API6D	API598

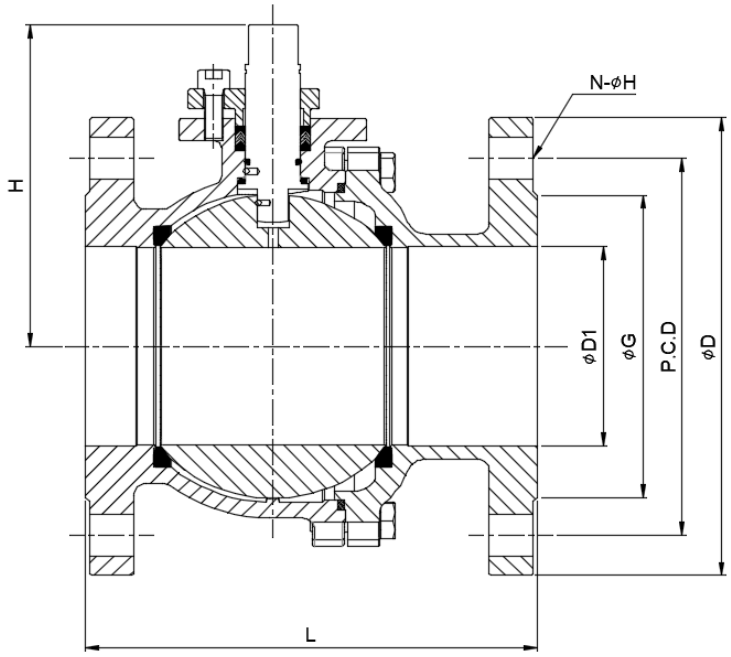
PART LIST



No.	Name
1	Body
2	Bonnet Flange
3	Ball
4	Seat Ring
5	Bonnet Gasket
6	Bolt
7	Stem
8	Thrust Bearing
9	Stem O-ring
10	Packing
11	Gland Flange
12	Gland Flange Bolt

Figure 5. Floating ball valve

Dimension Table (Floating ball valve)



ANSI CALSS 150

NPS (Inch)	ØD1	ØG	P.C.D	ØD	N-ØH	L	H
1/2	15	34.9	60.3	90	4-16	108	46.5
3/4	20	42.9	69.9	100	4-16	117	50.8
1	25	50.8	79.4	110	4-16	127	58.3
1 1/2	38.5	73	98.4	125	4-16	165	83.5
2	50	92.1	120.7	150	4-19	178	91.6
2 1/2	62	104.8	139.7	180	4-19	190	115.5
3	76	127	152.4	190	4-19	203	128.5
4	101	157.2	190.5	230	8-19	229	162.8
5	123	185.7	215.9	255	8-22	356	195
6	151	215.9	241.3	280	8-22	394	217
8	201	269.9	298.5	345	8-22	457	253

ANSI CALSS 300

NPS (Inch)	ØD1	ØG	P.C.D	ØD	N-ØH	L	H
1/2	15	34.9	66.7	95	4-16	140	46.5
3/4	20	42.9	82.6	115	4-19	152	50.8
1	25	50.8	88.9	125	4-19	165	58.3
1 1/2	38.5	73	114.3	155	4-22	190	83.5
2	50	92.1	127	165	8-19	216	91.6
2 1/2	62	104.8	149.2	190	8-22	241	115.5
3	76	127	168.3	210	8-22	282	128.5
4	101	157.2	200	255	8-22	305	162.8
5	123	185.7	235	280	8-22	381	195
6	151	215.9	269.9	320	12-22	403	217
8	201	269.9	330.2	380	12-25	502	253

B. Trunnion Ball Valve

Design Feature

TRUNNION-MOUNTED BALL

At low pressure the seat sealing action is achieved by the thrust of the springs acting on the seat rings.
As the pressure increases the fluid pressure pushes the seat rings against the ball.

ANTI-STATIC DESIGN

The electrical conductance continuity between all the metallic components is guaranteed and certified.

FLOATING SEAT RINGS

Two independent floating seat rings assure the bi-directional tightness of the valve. The seats are carefully designed to minimize the torque required to operate the valves without losing sealing power, which is assured from zero differential pressure to the valve's maximum rated pressure.

LOW EMISSION VALVES

Accurate machining of stem and bonnet sealing surfaces ensures compliance with the most severe pollution control regulations. Special "live" seals are available on request.

BALL SEAT ALIGNMENT

Mechanical stops ensure control over ball rotation.

ANTI-BLOWOUT STEM

Stem is retained by thestem cover. Other designs Available on request

STEM SEALING

Two O-rings and one graphite gasket ensure the stem seal.
The O-rings can be replaced with the valve in fully open or fully closed position by removing the stem cover after having released all the pressure in the body cavity.

BODY SEALING

The double sealing action of O-rings and graphite gaskets in all the static joints of the body components, ensures zero leakage and the Fire Safe feature. Lip-seal rings and/or graphite gaskets can be used for special service.

EMERGENCY SEALANT INJECTION

Each valve is supplied c/w emergency sealant injection feature located between the upper O-rings and the graphite gasket. Emergency sealant injection feature on seats is available on request only, for 6" full port and larger. Emergency grease injection features are not available on low and high temperature valves.

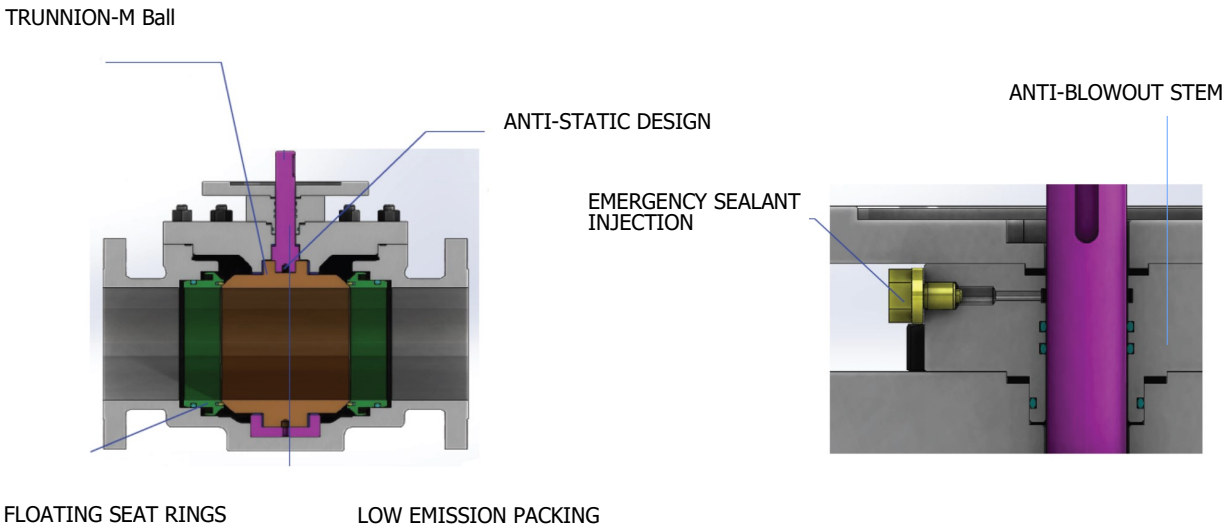


Figure 6. Trunnion ball valve construction

Seat Construction

Soft Seat

Sealing is obtained when the seat material comes into contact with the spherical surface of the ball. The soft seat is placed within the seat ring and spring-loaded against the ball to ensure contact even at low line pressures.

Metal Seat

Sealing is achieved by the contact of metal seat ring with the ball.

Primary Metal, Secondary Soft (PMSS) seats

In Primary Metal, Secondary Soft (PMSS) seats, sealing is achieved by the simultaneous contact of primary metal seat ring and secondary soft insert with the ball.

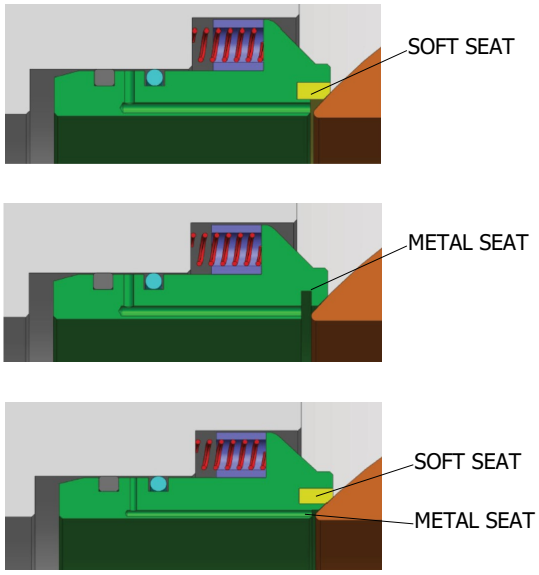
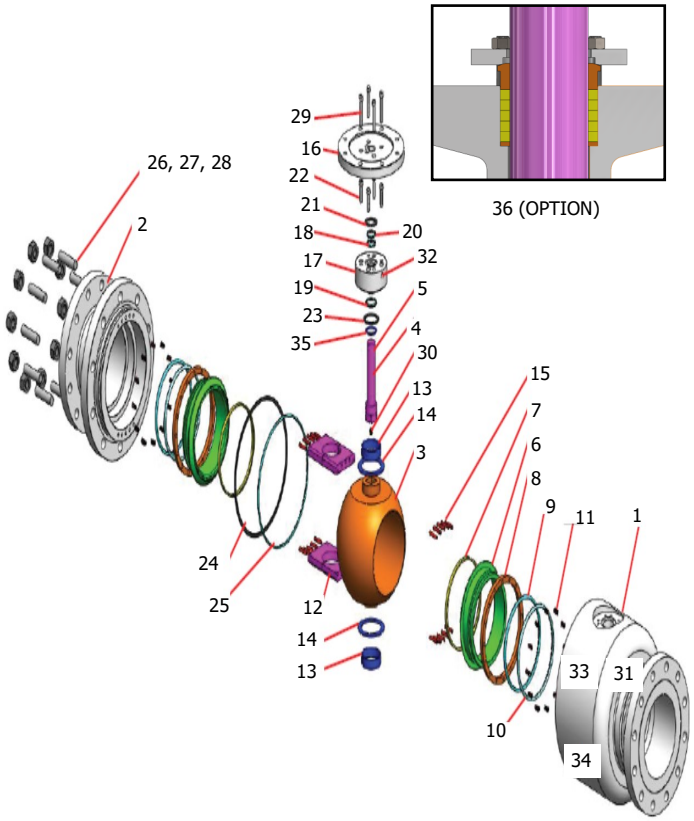


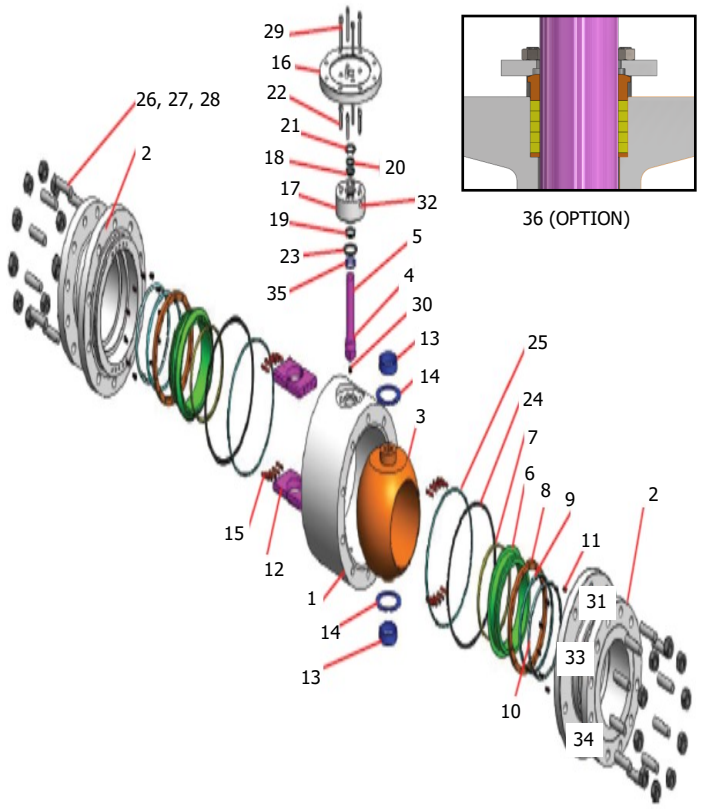
Figure 7. Seat construction

Part List (Side Entry Ball Valve — 2 Piece Design)



No.	Name	No.	Name
1	BODY	19	O-RING
2	CLOSURE	20	O-RING
3	BALL	21	GLAND FLANGE GASKET
4	SPINDLE	22	WRENCH BOLT
5	KEY	23	SPINDLE COVER GASKET
6	SOFT SEAT	24	BODY GASKET
7	SOFT SEAT INNER RING	25	O-RING
8	SPRING RETAINER	26	BOLT
9	O-RING	27	SPRING WASHER
10	GRAPHITE SEAL	28	WASHER
11	SPRING	29	WRENCH BOLT
12	BALL GUIDE	30	ANTISTATIC SPRING
13	BALL THRUST BUSH	31	SEAT SEALLANT PLUG
14	BALL THRUST WASHER	32	SPINDLE SEALLANT PLUG
15	PIN	33	VENT TAP
16	GLAND FLANGE	34	DRAIN TAP
17	SPINDLE COVER	35	SPINDLE THRUST WASHER
18	O-RING	36	PACKING ASS'Y (OPTION)

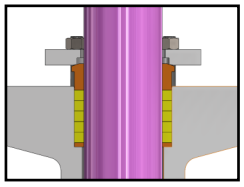
Part List (Side Entry Ball Valve — 3 Piece Design)



36 (OPTION)

No.	Name	No.	Name
1	BODY	19	O-RING
2	CLOSURE	20	O-RING
3	BALL	21	GLAND FLANGE GAS-KET
4	SPINDLE	22	WRENCH BOLT
5	KEY	23	SPINDLE COVER GASKET
6	SOFT SEAT	24	BODY GASKET
7	SOFT SEAT INNER RING	25	O-RING
8	SPRING RETAINER	26	BOLT
9	O-RING	27	SPRING WASHER
10	GRAPHITE SEAL	28	WASHER
11	SPRING	29	WRENCH BOLT
12	BALL GUIDE	30	ANTISTATIC SPRING
13	BALL THRUST BUSH	31	SEAT SEALLANT PLUG
14	BALL THRUST WASH-ER	32	SPINDLE SEALLANT PLUG
15	PIN	33	VENT TAP
16	GLAND FLANGE	34	DRAIN TAP
17	SPINDLE COVER	35	SPINDLE THRUST WASHER
18	O-RING	36	PACKING ASS'Y (OPTION)

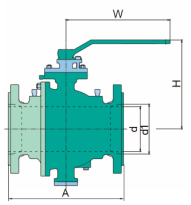
Part List (Top Entry Ball Valve)

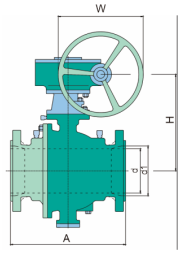


35 (OPTION)

No.	Name	No.	Name
1	BODY	18	O-RING
2	BONNET	19	O-RING
3	BALL	20	O-RING
4	SPINDLE	21	GLAND FLANGE GAS-KET
5	KEY	22	WRENCH BOLT
6	SOFT SEAT	23	SPINDLE COVER GASKET
7	SOFT SEAT INNER RING	24	BODY GASKET
8	SPRING RETAINER	25	O-RING
9	GRAPHITE SEAL	26	STUD BOLT
10	O-RING	27	HEX NUT
11	SPRING	28	SEAT SETING BOLT
12	BALL GUIDE	29	WRENCH BOLT
13	BALL THRUST BUSH	30	ANTISTATIC SPRING
14	BALL THRUST WASH-ER	31	SEAT SEALLANT PLUG
15	SPINDLE THRUST WASHER	32	SPINDLE SEALLANT PLUG
16	GLAND FLANGE	33	VENT PLUG
17	SPINDLE COVER	34	DRAIN PLUG
35	PACKING ASS'Y (OPTION)		

2Piece Trunnion Mounted Ball Valve





Dimensions & Weights

FULL BORE — Class 150

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	Kg
2	51	178	140	250	15
3	76	203	177	350	24
4	102	229	206	420	40
6	151	394	305	*280	95
8	203	457	398	*320	170
10	254	533	495	*350	255
12	305	610	580	*400	390
14	337	686	625	*500	510
16	387	762	720	*500	820
18	438	864	770	*500	1010
20	489	914	840	*500	1828
24	591	1067	920	*600	2100

REDUCED BORE — Class 150

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3x2	51	76	203	140	250	21
4x3	76	102	229	177	350	30
6x4	102	152	394	206	420	68
8x6	152	203	457	305	*280	115
10x8	203	254	533	398	*320	214
12x10	254	305	610	495	*350	284
14x12	305	337	686	580	*400	418
16x14	337	387	762	625	*500	612
18x16	387	438	864	720	*500	970
20x18	428	489	914	770	*500	1137
24x20	489	591	1067	840	*500	2000

FULL BORE — Class 300

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	Kg
2	51	216	140	250	18
3	76	283	177	350	33
4	102	305	206	420	55
6	151	403	305	*280	135
8	203	502	398	*320	210
10	254	568	495	*350	391
12	305	648	580	*400	550
14	337	762	625	*500	710
16	387	838	720	*500	1250
18	438	914	770	*500	1300
20	489	991	840	*500	2180
24	591	1143	920	*600	2930

REDUCED BORE — Class 300

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3x2	51	76	283	140	250	25
4x3	76	102	305	177	350	41
6x4	102	152	403	206	420	92
8x6	152	203	502	305	*280	164
10x8	203	254	568	398	*320	350
12x10	254	305	648	495	*350	400
14x12	305	337	762	580	*400	590
16x14	337	387	838	625	*500	850
18x16	387	438	914	720	*500	1220
20x18	428	489	991	770	*500	1460
24x20	489	591	1143	840	*500	2220

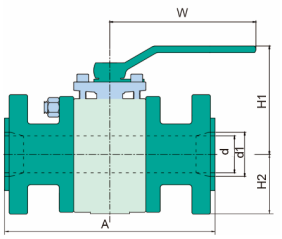
FULL BORE — Class 600

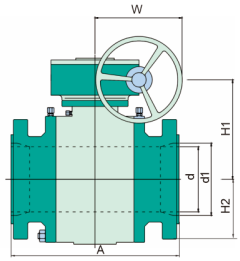
Size	d	A	H	W	Weight
in	mm	mm	mm	mm	Kg
2	51	292	140	250	25
3	76	356	177	350	50
4	102	432	206	420	56
6	151	559	305	*280	250
8	203	660	398	*320	437
10	254	787	495	*350	735
12	305	838	580	*400	1050
14	337	889	625	*500	1300
16	387	991	720	*500	1775
18	438	1092	770	*500	2100
20	489	1194	840	*500	3100
24	591	1397	920	*600	4750

REDUCED BORE — Class 600

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3x2	51	76	356	145	350	39
4x3	76	102	432	182	420	65
6x4	102	152	559	211	700	136
8x6	152	203	660	435	*400	292
10x8	203	254	787	530	*500	505
12x10	254	305	838	615	*500	760
14x12	305	337	889	680	*500	1105
16x14	337	387	991	420	*600	1417
18x16	387	438	1092	840	*600	1955
20x18	428	489	1194	890	*600	2380
24x20	489	591	1397	925	*600	3640

3Piece Trunnion Mounted Ball Valve





Dimensions & Weights

FULL BORE — Class 150

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	170	180	138	265	30
3	76	203	190	150	285	60
4	102	229	212	170	285	92
6	152	394	277	183	*400	190
8	203	457	301	216	*400	345
10	254	533	359	260	*500	495
12	305	610	419	287	*600	705
14	337	686	460	338	*600	859
16	387	762	494	375	*600	1020
18	438	864	521	402	*600	1440
20	489	914	656	427	*600	1918
22	540	991	733	480	*600	2352
24	591	1067	795	518	*700	2803
26	635	1143	870	535	*800	3200
28	686	1245	935	542	*800	4045
30	737	1295	1010	605	*800	4820
32	781	1372	1060	650	*800	5490
34	832	1473	1077	650	*800	6704
36	876	1524	1115	700	*800	7615
40	978	1727	1400	865	*800	10271

REDUCED BORE — Class 150

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	178	140	110	250	26
3x2	51	76	203	180	130	265	34
4x3	76	102	229	190	150	285	62
6x4	102	152	394	212	170	285	102
8x6	152	203	457	277	183	*400	225
10x8	203	254	533	301	216	*400	373
12x10	254	305	610	359	260	*500	533
14x12	305	337	686	419	287	*600	730
16x14	337	387	762	460	338	*600	790
18x16	387	438	864	494	375	*600	1095
20x18	438	489	914	521	402	*600	1152
22x18	438	540	991	521	402	*600	2343
24x20	489	591	1067	656	427	*600	2060
26x22	540	635	1143	733	480	*600	2215
28x24	591	686	1245	795	518	*700	2700
30x24	591	737	1295	795	518	*700	2918
32x26	635	781	1372	870	535	*800	4005
34x28	686	832	1473	935	542	*800	4445
36x30	737	876	1524	1010	605	*800	4995
40x34	832	978	1727	1077	650	*800	8200

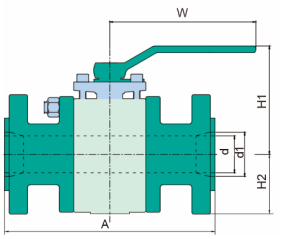
FULL BORE — Class 300

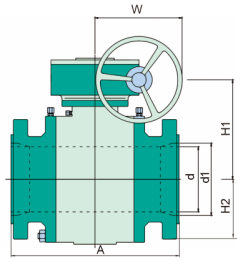
Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	216	180	130	265	31
3	76	283	190	150	285	69
4	102	305	212	170	285	110
6	152	403	277	183	*400	211
8	203	502	308	217	*400	376
10	254	568	381	265	*500	540
12	305	648	429	307	*600	763
14	337	762	460	338	*600	900
16	387	838	581	375	*600	1300
18	438	914	674	414	*600	1715
20	489	991	713	450	*600	2090
22	540	1092	780	492	*600	2220
24	591	1143	850	531	*700	2890
28	686	1346	958	556	*800	4575
30	737	1397	1035	620	*800	5590
32	781	1524	1087	666	*800	6240
34	832	1626	1104	666	*800	7370
36	876	1727	1143	718	*800	8435
40	978	1930	1435	887	*800	11200

REDUCED BORE — Class 300

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	216	140	110	250	30
3x2	51	76	283	180	130	265	37
4x3	76	102	305	190	150	285	74
6x4	102	152	403	212	170	400	142
8x6	152	203	502	277	183	*400	253
10x8	203	254	568	308	217	*500	410
12x10	254	305	648	381	265	*600	580
14x12	305	337	762	429	307	*600	830
16x14	337	387	838	460	338	*600	970
18x16	387	438	914	581	375	*600	1530
20x18	438	489	991	674	414	*700	1830
22x18	438	540	1092	674	414	*700	2010
24x20	489	591	1143	713	450	*700	2220
28x24	591	686	1346	850	531	*760	3200
30x24	591	737	1397	850	531	*760	3200
34x28	686	832	1626	958	556	*800	4845
36x30	737	876	1727	1035	620	*800	6100
40x34	832	978	1930	1104	666	*800	8200

3Piece Trunnion Mounted Ball Valve





Dimensions & Weights

FULL BORE — Class 600

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	292	172	130	285	45
3	76	356	205	150	400	80
4	102	432	308	170	755	150
6	152	559	274	185	*500	248
8	203	660	342	223	*600	438
10	254	787	393	270	*600	701
12	305	838	522	310	*600	925
14	337	889	551	340	*600	1230
16	387	991	637	378	*700	1535
18	438	1092	683	418	*760	2135
20	489	1194	719	451	*800	2640
22	540	1295	754	492	*800	3370
24	591	1397	823	539	*800	3960
28	686	1549	958	556	*800	6060
30	737	1651	1035	620	*800	6690
32	781	1778	1087	666	*800	7825
34	832	1930	1104	666	*800	8460
36	876	2083	1143	718	*800	10650
40	978	2337	1435	887	*800	14700

REDUCED BORE — Class 600

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	292	164	110	265	40
3x2	51	76	356	172	130	285	54
4x3	76	102	432	205	150	400	99
6x4	102	152	559	308	170	750	212
8x6	152	203	660	274	185	*500	304
10x8	203	254	787	342	223	*600	510
12x10	254	305	838	393	270	*600	902
14x12	305	337	889	522	310	*600	1090
16x14	337	387	991	551	340	*600	1310
18x16	387	438	1092	637	378	*700	1640
20x18	438	489	1194	683	418	*760	2270
22x18	438	540	1295	683	418	*760	2430
24x20	489	591	1397	719	451	*760	3440
28x24	591	686	1549	823	539	*800	4250
30x24	591	737	1651	823	539	*800	4730
34x28	686	832	1930	958	556	*800	7200
36x30	737	876	2083	1035	620	*800	8600
40x34	832	978	2337	1104	666	*800	10020

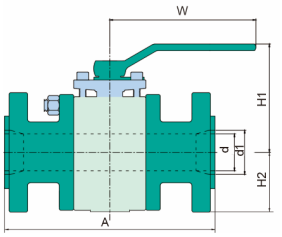
FULL BORE — Class 900

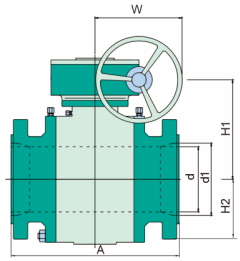
Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	368	193	136	400	52
3	76	381	302	158	755	87
4	102	457	332	180	*400	160
6	152	610	320	187	*600	385
8	203	737	365	226	*600	560
10	254	838	495	280	*600	820
12	305	965	600	329	*700	1125
14	324	1029	625	390	*760	1610
16	375	1130	675	407	*760	2010
18	425	1219	715	526	*760	2810
20	473	1321	750	600	*760	3460
22	524	1422	780	640	*800	4410
24	572	1549	800	690	*800	5497
28	667	1753	987	573	*800	10202
30	714	1880	1066	638	*800	11442
32	762	2032	1120	686	*800	12102
34	810	2159	1137	688	*800	17462
36	857	2286	1177	739	*800	20154

REDUCED BORE — Class 900

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	368	175	110	285	45
3x2	51	76	381	193	136	400	56
4x3	76	102	457	302	158	755	94
6x4	102	152	610	332	180	*400	226
8x6	152	203	737	320	187	*600	480
10x8	203	254	838	365	226	*600	650
12x10	254	305	965	495	280	*600	868
14x12	305	324	1029	600	329	*600	1310
16x14	324	375	1130	625	390	*700	1830
18x16	375	425	1219	675	407	*760	2205
20x18	425	473	1321	715	526	*760	3140
22x18	425	524	1422	715	526	*760	3288
24x20	473	572	1549	750	600	*760	3810
28x24	572	667	1753	800	690	*800	7580
30x24	572	714	1880	945	547	*800	7981
34x28	667	810	2159	987	573	*800	11202
36x30	714	857	2286	1066	638	*800	15653

3Piece Trunnion Mounted Ball Valve





Dimensions & Weights

FULL BORE — Class 1500

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	368	193	150	400	60
3	76	470	270	168	1135	115
4	102	546	275	176	*500	194
6	146	705	325	203	*600	580
8	194	832	501	248	*700	752
10	241	991	536	297	*700	1195
12	289	1130	614	357	*760	1970
14	318	1257	662	383	*760	2250
16	362	1384	700	434	*760	2760
18	407	1537	750	506	*760	3646
20	457	1664	864	586	*800	4497
22	495	1816	925	631	*800	5731
24	534	2045	1065	675	*800	7151

REDUCED BORE — Class 1500

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	368	183	110	285	56
3x2	51	76	470	193	150	400	82
4x3	76	102	546	270	168	1135	150
6x4	102	146	705	275	176	*500	295
8x6	146	194	832	325	203	*600	690
10x8	194	241	991	501	248	*700	930
12x10	241	289	1130	536	297	*700	1340
14x12	289	318	1257	614	357	*760	2070
16x14	318	362	1384	662	383	*760	2470
18x16	362	407	1537	700	434	*760	2950
20x18	407	457	1664	750	506	*760	3350
22x18	407	495	1816	750	506	*800	3600
24x20	457	534	2045	864	586	*800	5850

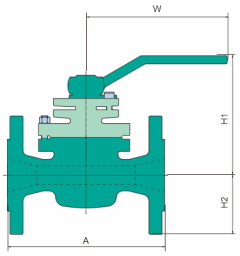
FULL BORE — Class 2500

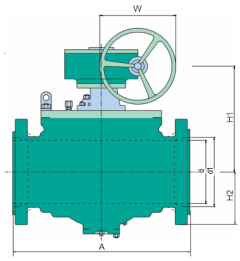
Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	44	451	230	121	815	90
3	64	578	284	146	*500	200
4	89	673	303	164	*500	385
6	133	914	394	220	*600	778
8	181	1022	488	312	*760	1352
10	225	1270	600	425	*760	2137
12	267	1422	872	629	*760	3267

REDUCED BORE — Class 2500

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	44	454	170	100	400	80
3x2	44	64	584	230	121	815	160
4x3	64	89	683	284	146	*500	320
6x4	89	133	927	303	164	*500	640
8x6	133	181	1038	360	365	*600	1170
10x8	181	225	1292	420	410	*760	1919
12x10	225	267	1445	509	470	*760	2972

Top Entry Cast Steel Ball Valve





Dimensions & Weights

FULL BORE — Class 150

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	292	170	76	285	46
3	76	356	210	95	285	83
4	102	432	250	115	400	156
6	152	559	265	140	*400	256
8	203	660	355	172	*400	453
10	254	787	385	203	*600	622
12	305	838	400	242	*600	747
14	337	889	450	267	*600	959
16	387	991	510	299	*600	1220
18	438	1092	565	318	*600	1640
20	489	1194	620	349	*600	2118
24	591	1397	680	407	*700	2950

REDUCED BORE — Class 150

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	292	165	76	265	41
3x2	51	76	356	170	95	285	58
4x3	76	102	432	210	115	285	104
6x4	102	152	559	250	140	400	228
8x6	152	203	660	265	172	*400	320
10x8	203	254	787	355	203	*400	536
12x10	254	305	838	385	242	*600	685
14x12	305	337	889	400	247	*600	840
16x14	337	387	991	450	299	*600	1070
18x16	387	438	1092	510	318	*600	1430
20x18	438	489	1194	565	349	*600	1850
24x20	489	591	1397	620	407	*600	2450

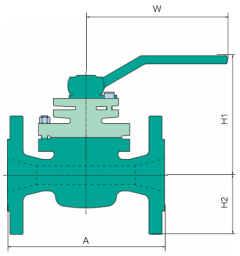
FULL BORE — Class 300

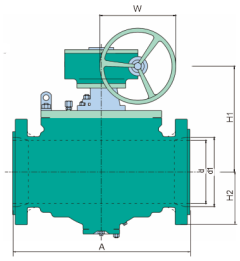
Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	292	170	83	285	49
3	76	356	210	105	285	87
4	102	432	250	127	400	164
6	152	559	265	159	*400	272
8	203	660	355	191	*500	479
10	254	787	385	222	*600	657
12	305	838	400	261	*600	783
14	337	889	450	292	*600	1007
16	387	991	510	324	*600	1281
18	438	1092	565	356	*700	1722
20	489	1194	620	388	*700	2224
24	591	1397	680	457	*700	3100

REDUCED BORE — Class 300

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	292	165	83	265	44
3x2	51	76	356	170	105	285	62
4x3	76	102	432	210	127	285	110
6x4	102	152	559	250	159	400	243
8x6	152	203	660	265	191	*400	343
10x8	203	254	787	355	222	*400	559
12x10	254	305	838	385	261	*600	725
14x12	305	337	889	400	292	*600	890
16x14	337	387	991	450	324	*600	1120
18x16	387	438	1092	510	356	*600	1480
20x18	438	489	1194	565	388	*700	1960
24x20	489	591	1397	620	457	7600	2650

Top Entry Cast Steel Ball Valve





Dimensions & Weights

FULL BORE — Class 600

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	292	180	83	285	52
3	76	356	220	150	285	92
4	102	432	260	137	400	173
6	152	559	275	175	*400	285
8	203	660	370	210	*400	504
10	254	787	398	254	*600	680
12	305	838	410	280	*700	819

REDUCED BORE — Class 600

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	292	174	83	285	46
3x2	51	76	356	180	105	285	74
4x3	76	102	432	220	137	760	120
6x4	102	152	559	260	178	1140	249
8x6	152	203	660	275	210	*500	380
10x8	203	254	787	370	254	*600	587
12x10	254	305	838	398	280	*600	752

FULL BORE — Class 900

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	368	190	108	760	60
3	76	831	230	121	1140	100
4	102	457	270	146	*400	204
6	152	610	320	191	*500	420
8	203	737	375	235	*600	644
10	254	838	440	273	*700	943
12	305	965	498	305	*700	1295

REDUCED BORE — Class 900

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	368	182	108	760	54
3x2	51	76	381	190	121	760	80
4x3	76	102	457	230	146	1140	148
6x4	102	152	610	270	191	*400	305
8x6	152	203	737	320	235	*500	552
10x8	203	254	838	375	273	*600	748
12x10	254	305	965	440	305	*700	1048

FULL BORE — Class 1500

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	Kg
2	51	368	195	108	760	69
3	76	470	233	134	*400	133
4	102	546	276	156	*500	253
6	146	705	324	197	*600	667
8	194	832	397	242	*700	865
10	241	991	462	292	*700	1375
12	289	1130	493	337	*760	2175

REDUCED BORE — Class 1500

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	Kg
2x1-1/2	38	51	368	189	108	760	63
3x2	51	76	470	195	134	760	95
4x3	76	102	546	233	156	*400	183
6x4	102	146	705	276	197	*500	359
8x6	146	194	832	324	242	*600	794
10x8	194	241	991	397	292	*700	1070
12x10	241	289	1130	462	337	*700	1541

Warranty / Remedy

Korea Motoyama Inc. warrants goods of its manufacture as being free of defective materials and faulty workmanship for 12 months from the date of shipment, unless otherwise specified. In this period, all of our products claimed by original defects may be returned to our factory after notice and authorization by us. If warranted goods are returned to Korea Motoyama Inc. during the period of coverage, it will be repaired or replaced without charge for those items it finds defective. Such defects shall be exclusive of the effects of corrosion, erosion, normal wear or improper handling and storage. In case our engineers have field service, the user shall detach and install valves by his cost. Determination of the suitability of the Products for the use contemplated by the buyer or buyer's customer(s) is the sole responsibility of the buyer in connection therewith. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.

Specifications are subject to change without notices.

KOMOTO

VALVES & CONTROLS

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