



Product Application Manual

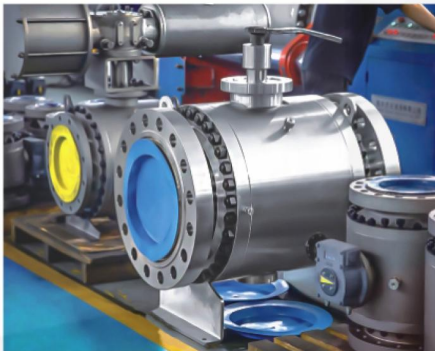
XHVAL GROUP VALVE CO., LTD.



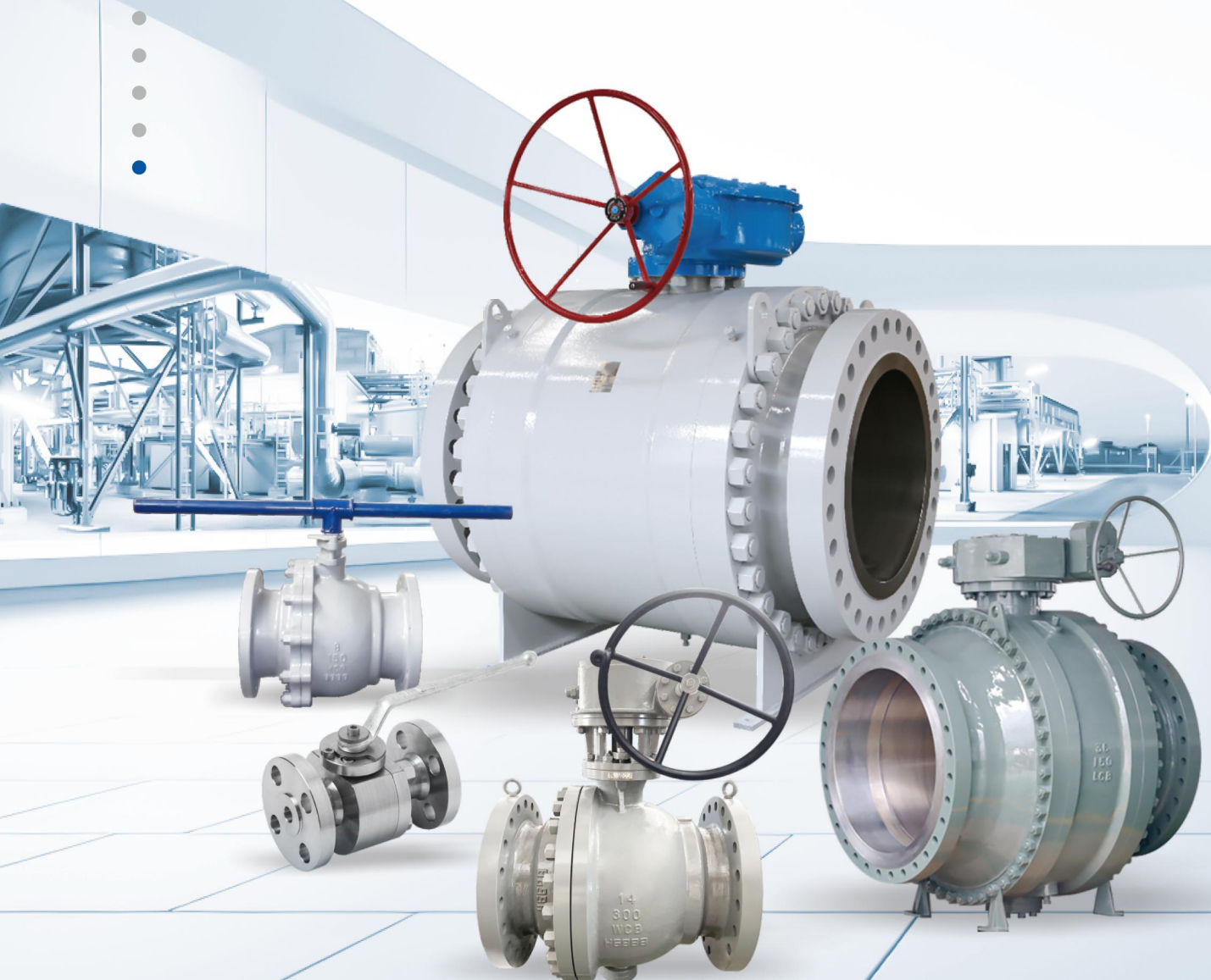
XHVAL GROUP VALVE CO.,LTD.is located in Sangiao Industrial Zone, Wenzhou City, China. established in 1986, With API 6D, ISO, CE, API 607 etc. Certificates engaged in professional valve development, manufacture and sale of professional valve manufacturers. The enterprise is orientated towards clients' satisfaction; in this way, it adapts its valves to your requirements and delivers them in deadlines rigorously established. The technical and human staff, highly qualified, works every day in order to offer you the most innovative solutions and to strengthen the commitment with the customers

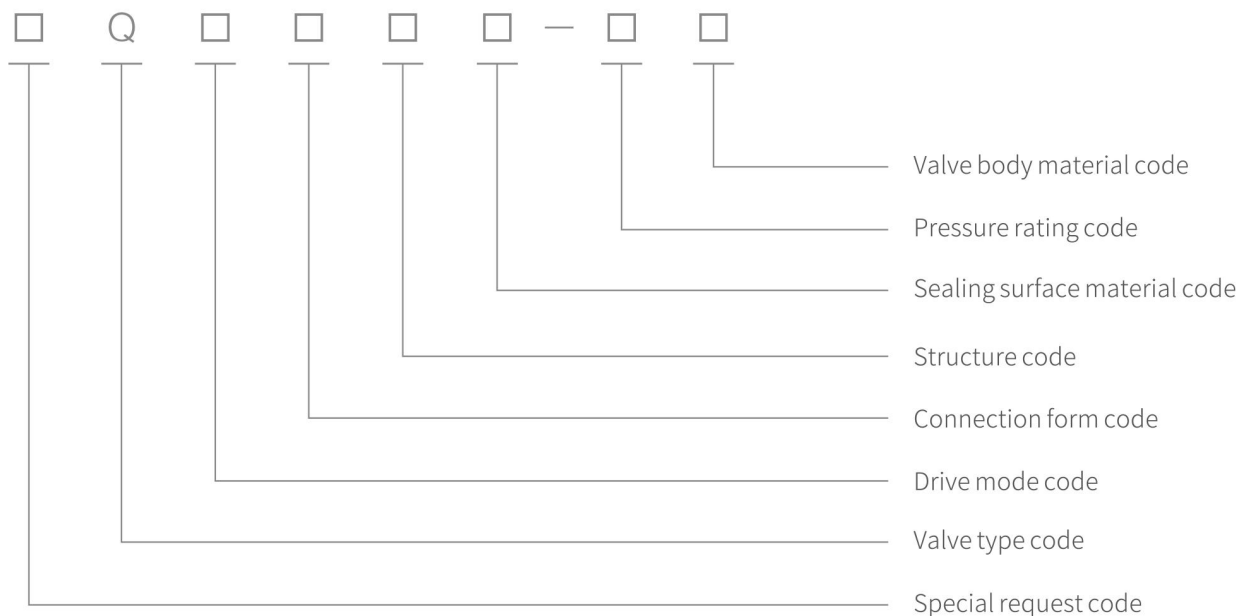


About XHVAL



Ball Valve Series





Special Request Code

- K - Sulfur resistant
- D - Low temperature type
- EX - Extension rod type
- M - Buried type
- B - Insulation
- H - Slow closing
- P - Slagging

Valve type code

- FB - Floating Ball Valve;
- TB - Fixed ball valve

Drive mode code

- 3 - Worm Gear Operator
- 5 - Bevel gear drive
- 6 - Pneumatic
- 6A - Pneumatic adjustment
- 6S - Pneumatic spring return
- 7 - Hydraulic
- 8 - Gas-liquid linkage
- 8H - Gas-liquid linkage with emergency cut-off
- 9 - Electric

Special request code

- RF - Raised Face Flange
- FF - Full face flange
- FM - Concave
- M - Convex
- MFM - Concave and convex flange
- TG - Tongue and groove flange
- RJ - Ring Face Flange
- BW - Butt Welding
- SW - Socket welding
- NPT - Threaded connection

Structure code

- 1 - Straight through
- 2 - Reduced diameter straight
- 3T - T-shaped tee
- 3L - L-shaped tee
- 4 - Four-way
- 5 - Overall top-mounted type (full diameter)
- 5A - Overall top-mounted type (reduced diameter)
- 6 - Orbital ball valve (full diameter)
- 6A - Orbital ball valve (reduced diameter)
- 7H - Eccentric hemisphere
- 7F - Eccentric Global
- 8 - Fully welded (full diameter)
- 8A - Fully welded (reduced diameter)

Sealing surface material code

Y - Cemented carbide
 F - Reinforced polytetrafluoroethylene
 N - Nylon
 PPL - Para-Polyphenylene
 G - Carbon fiber
 E - PEEK
 M - MOLON
 H - Alloy steel
 Q - Enamel
 T - Copper alloy
 X - Rubber

Valve body material code

C - WCB (A105)
 C5 - C5
 C6 - WC6
 C9 - WC9
 L - LCB
 P8 - CF8 (304)
 R8 - CF8M (316)
 P3 - CF3 (304L)
 R3 - CF3M (316L)

Pressure rating code

1 - PN16 Class 150
 2 - PN25
 3 - Class 300
 4 - PN40 Class 400
 5 - PN64 Class 600
 8 - Class 900
 9 - PN100
 15 - Class 1500
 16 - PN160
 20 - PN200
 25 - Class 2500

Ball valve technical specifications

Specifications	API series	GB series
Design specification	API 6D, API 608, BS5351	GB/T 12237, JB/T 7745
Pressure temperature rating	ASME B16.34	GB/T 12224
Structure length	ASME B16.10	GB/T 12221, GB/T 15188.1
Flange type size	ASME B16.5, ASME 16.47	GB/T9113, JB/T79
Butt welding end connection	ASME B16.25	GB/T 9124
Socket welding connection	ASME B16.11	GB/T 12224
Threaded end connection	ASME B16.1.20	GB/T 12224
Inspection and testing	API 598, API 6D	JB/T9092, GB/T13927

Design

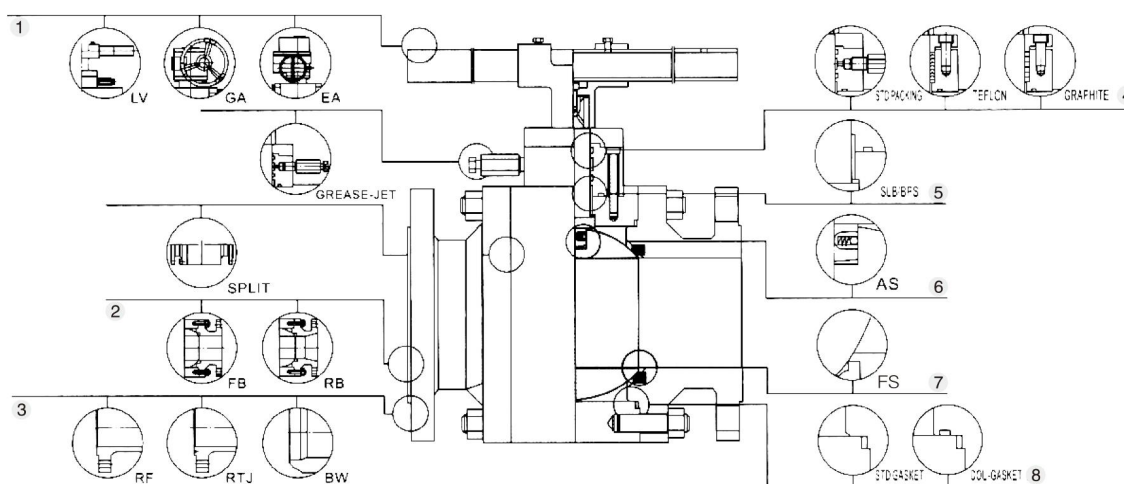
Forged steel floating ball valve are designed and manufactured to provide maximum service life and dependability. Meet the design requirements of American petroleum Institute Standard API 608 & API 6D, British Standard BS 5351 and generally conform to American Society of Mechanical Engineers Standard ASME B16.34. Valves are available in a complete range of body/bonnet materials and trims.

Rang of Materials

Standard body/bonnet materials include nine grades of carbon, low alloy and stainless steels. For special applications they can be supplied in other grades of alloy and stainless steel. There's a full range of trim materials to match any service. Optional packing and gasket materials are available for a full range of service conditions.

Available Modifications For Forged Steel Valves

- Trim changes
- End connection Modifications
- Packing and Gasket Changes
- Operator Mounting
- Handwheel Extensions
- Pressure Equalizing
- AS or FD
- Customer specified Coatings
- Weld End Bore Changes
- Oxygen & Chlorine Cleaning & Packaging



1 Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

3 End Connections

A choice of Flanged, RTJ flanged or Butt welding end for piping flexibility

5 BPS

Blow-out Proof Stem, A pressure-safe stem shoulder design that protects against failure under excess pressure.

7 FS

Fire safe Designed to API 607 to grant their operation suitability in case of fire. Secondary metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

2 Bore

Path and diameter reduction can be used

4 Packing

STD Packing adopt high-performance rubber seal ring, STD Packing and TEFLON use situation for smooth pressure. With snapping apply high-pressure situation. Graphite packing use situation for high-temperature.

6 AS

Anti Static. A metallic contact is always granted between ball and stem / body to discharge eventual statics build-up during service.

8 Gasket

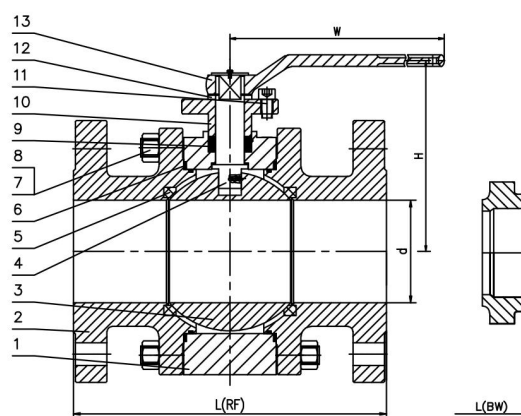
STD Gasket or Dou-Gasket STD Gasket adopt high-performance rubber seal ring. DOU-Gasket adopt high-performance rubber seal ring and spiral wound graphite.

Applicable Standards

- Steel Ball Valves, API 608, API 6D
- Steel Ball Valves, ISO 10434, ISO 14313
- Fire Safe, API 607
- Anti Static, API 608
- Steel Valves, ASME B 16.34
- Face to Face, ASME B 16.10
- End Flanges, ASME B 16.5
- Buttwelding Ends, ASME B 16.25
- Inspection and Test API 598/API 6D

Design Description

- Full and reduce port design
- BB, bolted bonnet, split body
- Floating ball type
- Blow-out proof stem
- Fire safe construction
- Anti static device
- Stopper device
- ISO5211 mounting pad
- Flanged or butt welding ends
- Available with BG operator

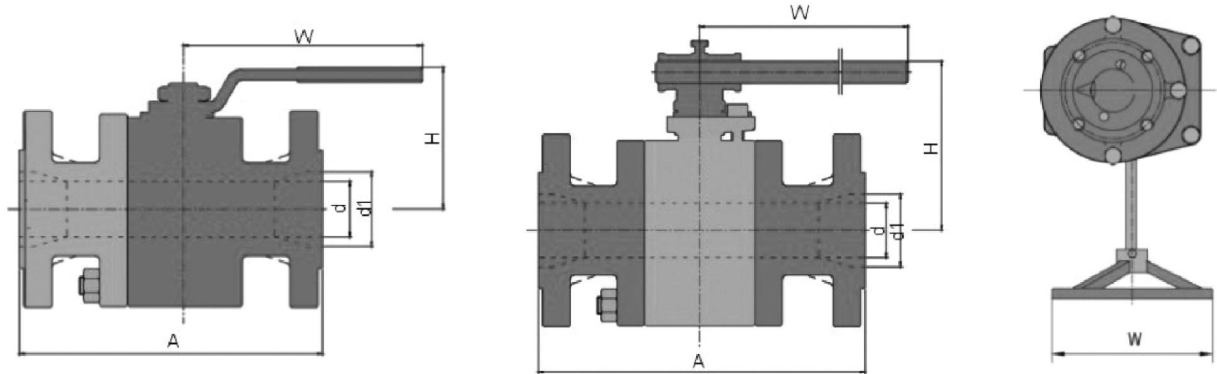


Materials of parts

No.	Part Name	ASTM Material		
1	Body	ASTM A105	ASTM 350 LF2	ASTM A182 F304
2	Bonnet	ASTM A105	ASTM 350 LF2	ASTM A182 F304
3	Ball	ASTM A105+ENP	ASTM A182 F304	ASTM A182 F304
4	Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F304
5	Seat Ring	PTFE	PTFE	PTFE
6	Bonnet Gasket	SS304+Graphite	SS304+Graphite	SS304+Graphite
7	Bonnet Stud	ASTM A193 B7	ASTM A320 L7	ASTM A193 B8
8	Bonnet Stud Nut	ASTM A194 2H	ASTM A194 4	ASTM A194 8
9	Packing	Graphite	Graphite	Graphite
10	Gland	ASTM A105	ASTM 350 LF2	ASTM A182 F304
11	Gland Bolt	ASTM A193 B7	ASTM A320 L7	ASTM A193 B8
12	Stop Plate	CS	CS	CS
13	Handle	Malleable Iron	Malleable Iron	Malleable Iron

Noted: The chart above only lists our some common composition of steel valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

Dimensions are for reference only



Full bore

Class 150

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	108	75	130	2.8
3/4	19	117	84	170	3.7
1	25	127	90	170	5.3
1 1/2	38	165	127	250	8.3
2	51	178	140	250	11.2
2 1/2	64	191	164	350	18.4
3	76	203	177	350	23.0
4	102	229	206	420	39.3

Reduced bore

Class 150

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	117	75	130	3.5
1 x 3/4	19	25	127	84	170	5.0
1 1/2 x 1	25	38	162	90	170	7.5
2 x 1 1/2	38	51	178	127	250	10.0
2 1/2 x 2	51	64	190	140	250	16.0
3 x 2	51	76	203	140	250	21.0
4 x 3	76	102	229	177	350	35.0
6 x 4	102	152	267	206	420	73.0

Full bore

Class 300

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	108	75	130	3.0
3/4	19	117	84	170	4.0
1	25	127	90	170	6.6
1 1/2	38	165	127	250	12.9
2	51	178	140	250	18.9
2 1/2	64	191	164	350	28.0
3	76	203	177	350	39.0
4	102	229	206	420	60.0

Reduced bore

Class 300

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	117	75	130	3.7
1 x 3/4	19	25	127	84	170	5.8
1 1/2 x 1	25	38	162	90	170	10.5
2 x 1 1/2	38	51	178	127	250	16.1
2 1/2 x 2	51	64	190	140	250	24.5
3 x 2	51	76	203	140	250	34.7
4 x 3	76	102	229	177	350	53.0
6 x 4	102	152	267	206	420	100.0

Full bore

Class 600

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	165	80	170	3.5
3/4	19	191	89	200	5.0
1	25	216	95	200	7.5
1 1/2	38	241	132	350	15.0
2	51	292	145	350	23.0
3	76	356	182	420	48.0
4	102	432	211	700	80.0

Reduced bore

Class 600

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	191	80	170	4.0
1 x 3/4	19	25	216	89	200	5.5
1 1/2 x 1	25	38	241	95	200	10.5
2 x 1 1/2	38	51	292	132	350	20.0
3 x 2	51	76	356	145	350	29.0
4 x 3	76	102	432	182	420	59.0
6 x 4	102	152	559	211	700	95.0

Design

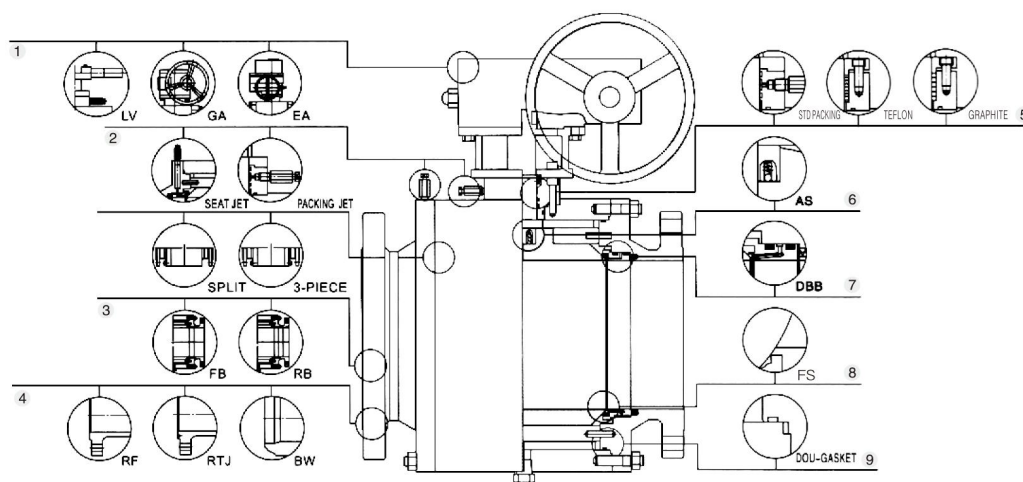
Forged steel ball valve are designed and manufactured to provide maximum service life and dependability. Meet the design requirements of American petroleum Institute Standard API 608 & API 6D, British Standard BS 5351 and generally conform to American Society of Mechanical Engineers Standard ASME B16.34. Valves are available in a complete range of body/bonnet materials and trims.

Range of Materials

Standard body/bonnet materials include nine grades of carbon, low alloy and stainless steels. For special applications they can be supplied in other grades of alloy and stainless steel. There's a full range of trim materials to match any service. Optional packing and gasket materials are available for a full range of service conditions.

Available Modifications For Forged Steel Valves

- Trim changes
- End connection Modifications
- Packing and Gasket Changes
- Operator Mounting
- Handwheel Extensions
- Pressure Equalizing
- AS or FS
- Customer specified Coatings
- Weld End Bore Changes
- Oxygen & Chlorine Cleaning & Packaging



1 Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

2 Grease-Jet Joint

Installed in prescriptive part accord with the apply and satisfied with ecumenical situations and realize sealin spot with maintenance easily.

3 Bore

Path and diameter reduction can be used

4 End Connections

A choice of Flanged, RTJ flanged or Butt welding end for piping flexibility

5 Packing

STD Packing adopt high-performance rubber seal ring, STD Packing and TEFLON use situation for smooth pressure. With snapping apply high-pressure situation. Graphite packing use situation for high-temperature.

6 AS

Anti Static. A metallic contact is always granted between ball and stem / body to discharge eventual statics build-up during service.

7 DDB

Double Block & Bleed. The body cavity is isolated when the ball is in either fully closed or fully opened position, the medium entrapped in it can easily be bled to avoid overpressure.

8 FS

Fire safe Designed to API 607 to grant their operation suitability in case of fire. Secondary metal-to-metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

9 Gasket

STD Gasket or Dou-Gasket
STD Gasket adopt high-performance rubber seal ring. DOU-Gasket adopt high-performance rubber seal ring and spiral wound graphite.

Applicable Standards

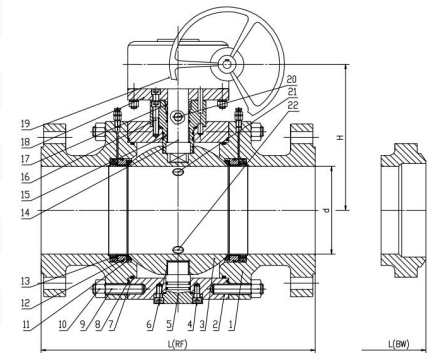
- Steel Ball Valves, API 608, API 6D
- Steel Ball Valves, ISO 10434, ISO 14313
- Fire Safe, API 607
- Anti Ststic, API 608
- Steel Valves, ASME B 16.34
- Face to Face, ASME B 16.10
- End Flanges, ASME B 16.5
- Buttwelding Ends, ASME B 16.25
- Inspection and Test API 598/API 6D

Design Description

- Full and reduce port design
- BB, bolted bonnet, split body
- Three piece body for 12" & above
- Trunnion mounted ball type
- Fire safe construction
- Anti static device
- Stopper device
- ISO5211 mounting pad
- Flanged or butt welding ends
- Available with BG operator

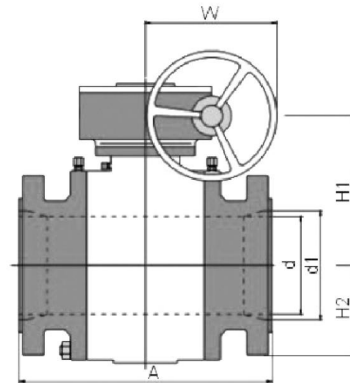
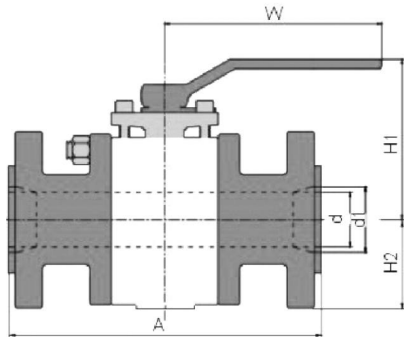
Materials of parts

No.	Part Name	ASTM Material		
1	Body	ASTM A105	ASTM A182-F316	ASTM A350-LF2
2	Bonnet	ASTM A105	ASTM A182-F316	ASTM A350-LF2
3	Ball	ASTM A182-F304 ¹⁾	ASTM A182-F316	ASTM A182-F304 ¹⁾
4	Stem	ASTM A276-304	ASTM A276-316	ASTM A276-304
5	Seat	ASTM A105+ENP	ASTM A182-F316	ASTM A350-LF2+ENP
6	Seat Insert	PTFE	PTFE	PTEF
7	Seat Spring	ASTM A313-304	Inconel X-750	ASTM A313-304
8	Seat O-Ring	Viton	Viton	Viton
9	Stem O-Ring	Viton	Viton	Viton
10	Bonnet Gasket	Graphite+304 ²⁾	Graphite+316 ²⁾	Graphite+316 ²⁾
11	Bonnet O-Ring	Viton	Viton	Viton
12	Antistatic Spring	ASTM A313-304	ASTM A313-316	ASTM A313-304
13	Grounding Plunger	ASTM A182-F304	ASTM A182-F316	ASTM A182-F304
14	Bonnet Stud	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7
15	Bonnet Stud Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-4
16	Trunnion	ASTM A276-304	ASTM A276-316	ASTM A276-304
17	Trunnion Bearing	ASTM 304+PTFF	316+PTFE	304+PTFE
18	Gland	ASTM A105	ASTM A182-F316	ASTM A350-LF2
19	Gland Bolt	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7
20	Stop Plate	Carbon Steel	Carbon Steel+Zn	Carbon Steel
21	Handle	Carbon Steel	Carbon Steel	Carbon Steel



Noted: The chart above only lists our some common composition of steel valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

Dimensions are for reference only



Full bore

Class 150

Size in	d mm	A mm	H1 mm	H2 mm	W mm	Weight 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 in	d mm	d1 mm	A mm	H1 mm	H2 mm	W mm	Weight kg
2 × 1½	38	51	178	140	110	250	26
3 × 2	51	76	203	180	130	265	34
4 × 3	76	102	229	190	150	285	62
6 × 4	102	152	394	212	170	285	102
8 × 6	152	203	457	277	183	*400	225
10 × 8	203	254	533	301	216	*400	373
12 × 10	254	305	610	359	260	*500	533
14 × 12	305	337	686	419	287	*600	730
16 × 14	337	387	762	460	338	*600	790
18 × 16	387	438	864	494	375	*600	1095
20 × 18	438	489	914	521	402	*600	1152
22 × 18	438	540	991	521	402	*600	2343
24 × 20	489	591	1067	656	427	*600	2060
26 × 22	540	635	1143	733	480	*600	2215
28 × 24	591	686	1245	795	518	*700	2700
30 × 24	591	737	1295	795	518	*700	2918
32 × 26	635	781	1372	870	535	*800	4005
34 × 28	686	832	1473	935	542	*800	4445
36 × 30	737	876	1524	1010	605	*800	4995
40 × 34	832	978	1727	1077	650	*800	8200

* Gear Operated

Full bore

Class 300

Size in	d mm	A mm	H1 mm	H2 mm	W mm	Weight 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	*500	376
10	254	568	381	265	*600	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	*700	1715
20	489	991	713	450	*700	2090
22	540	1092	780	492	*700	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

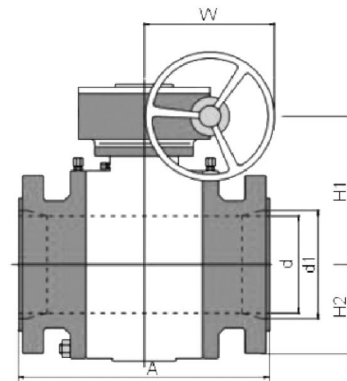
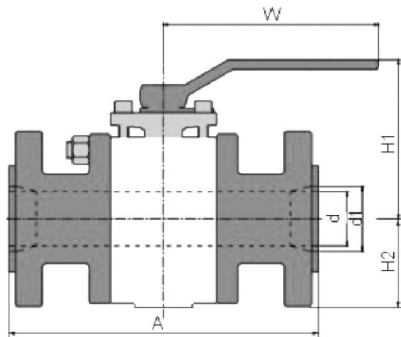
Reduced bore

Class 300

Size in	d mm	d1 mm	A mm	H1 mm	H2 mm	W mm	Weight kg
2 × 1½	38	51	216	140	110	250	30
3 × 2	51	76	283	180	130	265	37
4 × 3	76	102	305	190	150	285	74
6 × 4	102	152	403	212	170	400	142
8 × 6	152	203	502	277	183	*400	253
10 × 8	203	254	568	308	217	*500	410
12 × 10	254	305	648	381	265	*600	580
14 × 12	305	337	762	429	307	*600	830
16 × 14	337	387	838	460	338	*600	970
18 × 16	387	438	914	581	375	*600	1530
20 × 18	438	489	991	674	414	*700	1830
22 × 18	438	540	1092	674	414	*700	2010
24 × 20	489	591	1143	713	450	*700	2220
28 × 24	591	686	1346	850	531	*760	3200
30 × 24	591	737	1397	850	531	*760	3200
34 × 28	686	832	1626	958	556	*800	4845
36 × 30	737	876	1727	1035	620	*800	6100
40 × 34	832	978	1930	1104	666	*800	8200

* Gear Operated

Dimensions are for reference only



Full bore

Class 600

Size in	d mm	A mm	H1 mm	H2 mm	W mm	Weight 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	*760	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 in	d mm	d1 mm	A mm	H1 mm	H2 mm	W mm	Weight kg
2 x 1 1/2	38	51	292	164	110	265	40
3 x 2	51	76	356	172	130	285	54
4 x 3	76	102	432	205	150	400	99
6 x 4	102	152	559	308	170	755	212
8 x 6	152	203	660	274	185	*500	304
10 x 8	203	254	787	342	223	*600	510
12 x 10	254	305	838	393	270	*600	902
14 x 12	305	337	889	522	310	*600	1090
16 x 14	337	387	991	551	340	*600	1310
18 x 16	387	438	1092	537	378	*700	1640
20 x 18	438	489	1194	683	418	*760	2270
22 x 18	438	540	1295	683	418	*760	2430
24 x 20	489	591	1397	719	451	*760	3440
28 x 24	591	686	1549	823	539	*800	4250
30 x 24	591	737	1651	823	539	*800	4730
34 x 28	686	832	1930	958	556	*800	7200
36 x 30	737	876	2083	1035	620	*800	8600
40 x 34	832	978	2337	1104	666	*800	10020

* Gear Operated

Full bore

Class 900

Size in	d mm	A mm	H1 mm	H2 mm	W mm	Weight 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	337	1029	625	390	*760	1610
16	387	1130	675	407	*760	2010
18	438	1219	715	526	*760	2810
20	489	1321	750	600	*760	3460
22	540	1422	780	640	*800	4410
24	591	1549	800	690	*800	5497
28	686	1753	987	573	*800	10202
30	737	1880	1066	638	*800	11442
32	781	2032	1120	686	*800	12102
34	832	3159	1137	688	*800	17462
36	876	2286	1177	739	*800	20154

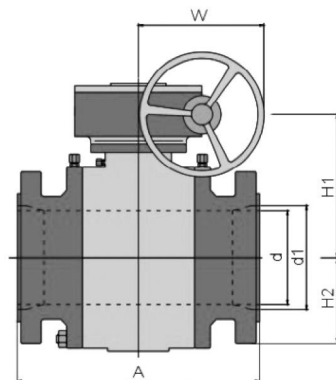
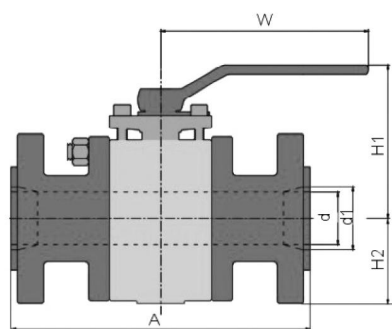
Reduced bore

Class 900

Size in	d mm	d1 mm	A mm	H1 mm	H2 mm	W mm	Weight kg
2 x 1 1/2	38	51	368	175	110	285	45
3 x 2	51	76	381	193	130	400	56
4 x 3	76	102	457	302	158	755	94
6 x 4	102	152	610	332	180	*400	226
8 x 6	152	203	737	320	187	*600	480
10 x 8	203	254	838	365	226	*600	650
12 x 10	254	305	965	495	280	*600	868
14 x 12	305	324	1029	600	329	*700	1310
16 x 14	324	375	1130	625	390	*760	1830
18 x 16	375	425	1219	675	407	*760	2205
20 x 18	425	473	1321	715	526	*760	3140
22 x 18	425	524	1422	715	526	*760	3288
24 x 20	473	572	1549	750	600	*760	3810
28 x 24	572	667	1763	800	690	*800	7580
30 x 24	572	714	1880	945	547	*800	7981
34 x 28	667	810	2159	987	573	*800	11202
36 x 30	714	857	2286	1066	638	*800	15653

* Gear Operated

Dimensions are for reference only



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	514	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
2 × 1½	38	51	368	183	110	285	56
3 × 2	51	76	470	193	150	400	82
4 × 3	76	102	546	270	168	1135	150
6 × 4	102	146	705	275	176	*500	295
8 × 6	146	194	832	325	203	*600	690
10 × 8	194	241	991	501	248	*700	930
12 × 10	241	289	1130	536	297	*700	1340
14 × 12	289	318	1257	614	357	*760	2070
16 × 14	318	362	1384	662	383	*760	2470
18 × 16	362	407	1537	700	434	*760	2950
20 × 18	407	457	1664	750	506	*760	3350
22 × 18	407	495	1816	750	506	*800	3600
24 × 20	457	534	2045	864	586	*800	5850

* Gear Operated

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
2 × 1½	38	44	454	170	100	400	80
3 × 2	44	64	584	230	121	815	160
4 × 3	64	89	683	284	146	*500	320
6 × 4	89	133	927	303	164	*500	640
8 × 6	133	181	1038	360	365	*600	1170
10 × 8	181	225	1292	420	410	*760	1919
12 × 10	225	267	1445	509	470	*760	2972

* Gear Operated

Design

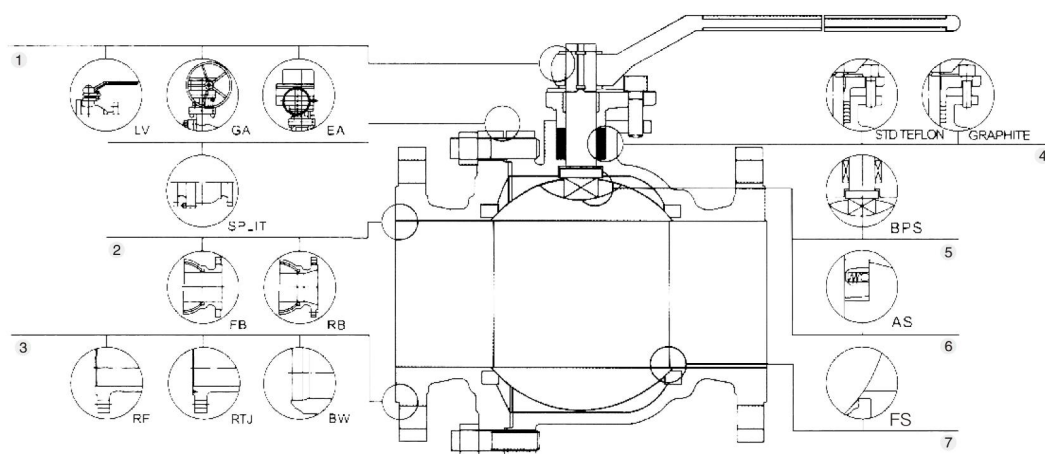
Cast steel floating ball valve are designed and manufactured to provide maximum service life and dependability. All ball valves are full ported and meet the design requirements of American Petroleum Institute standard API 608 & API 6D, British standard BS 5351 and Generally conform to American Society of Mechanical Engineers standard ASME B16.34. Valves are available in a complete range of body/bonnet materials and trims.

Range of Materials

Standard body/bonnet materials include nine grades of carbon, low alloy and stainless steels. For special applications they can be supplied in other grades of alloy and stainless steel. There's a full range of trim materials to match any service. Optional packing and gasket materials are available for a full range of service conditions.

Available Modifications For Cast Steel Valves

- Trim changes
- End connection Modifications
- Packing and Gasket Changes
- Operator Mounting
- Handwheel Extensions
- Pressure Equalizing
- AS or FD
- Customer specified Coatings
- Weld End Bore Changes
- Oxygen & Chlorine Cleaning & Packaging



1 Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

2 Bore

Path and diameter reduction can be used

3 End Connections

A choice of Flanged, RTJ flanged or Butt welding end for piping flexibility

4 Packing

STD Packing adopt high-performance rubber seal ring, STD Packing and TEFLON use situation for smooth pressure. With snapping apply high-pressure situation. Graphite packing use situation for high-temperature.

5 BPS

Blow-out Proof Stem, A pressure-safe stem shoulder design that protects against failure under excess pressure.

6 AS

Anti Static. A metallic contact is always granted between ball and stem / body to discharge eventual statics build-up during service.

7 FS

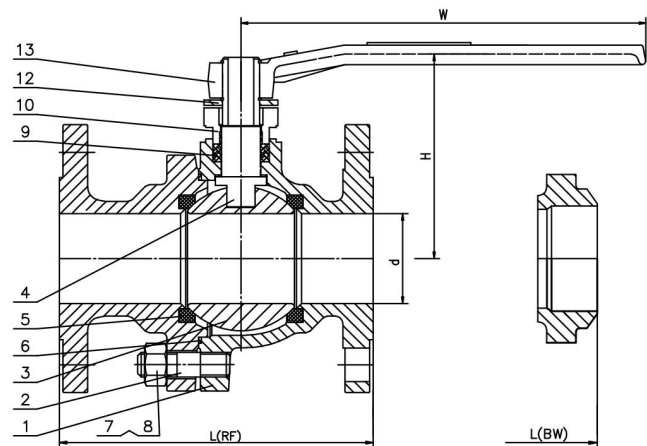
Fire safe Designed to API 607 to grant their operation suitability in case of fire. Secondary metal-to-metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

Applicable Standards

- Steel Ball Valves, API 608, API 6D
- Steel Ball Valves, ISO 10434, ISO 14313
- Fire Durable, API 607
- Anti Ststic, API 608
- Steel Valves, ASME B 16.34
- Face to Face, ASME B 16.10
- End Flanges, ASME B 16.5
- Buttwelding Ends, ASME B 16.25
- Inspection and Test API 598/API 6D

Design Description

- Full and reduce port design
- BB, bolted bonnet, split body
- Floating ball type
- Blow-out proof stem
- Fire safe construction
- Anti static device
- Stopper device
- ISO5211 mounting pad
- Flanged or butt welding ends
- Available with BG operator

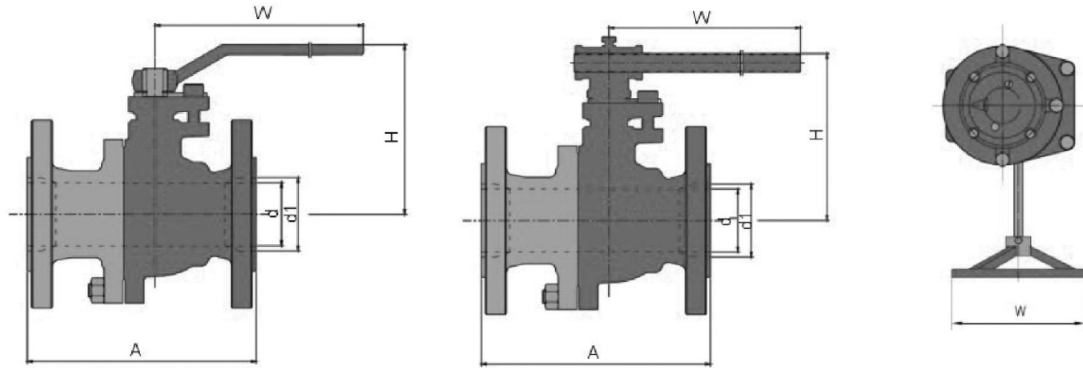


Materials of parts

No.	Part Name	ASTM Material		
1	Body	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
2	Bonnet	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
3	Ball	ASTM A182-F304 ¹⁾	ASTM A182-F316	ASTM A182-F304 ¹⁾
4	Stem	ASTM A276-304	ASTM A276-316	ASTM A276-304
5	Seat Ring	PTFE	PTFE	PTFE
6	Bonnet Gasket	Graphite+304 ²⁾	PTFE	Graphite+304 ²⁾
7	Bonnet Stud	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7
8	Bonnet Stud Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-7
9	Packing	Graphite	Graphite	Graphite
10	Gland	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
11	Gland Bolt	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7
12	Stop Plate	CarbonSteel	Carbon Steel+Zn	Carbon Steel
13	Handle	Carbon Steel	Carbon Steel	Carbon Steel

Noted: The chart above only lists our some common composition of steel valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

Dimensions are for reference only



Full bore

Class 150

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	108	75	130	2.3
3/4	19	117	84	170	2.5
1	25	127	90	170	3.5
1 1/2	38	165	127	250	7.3
2	51	178	140	250	9.8
2 1/2	64	190	164	350	15
3	76	203	177	350	18
4	102	229	206	420	33
5	125	356	292	700	57
6	152	394	320	*1000	66
8	203	457	365	*1300	102
10	254	533	420	*1800	166

Reduced bore

Class 150

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	117	75	130	2.7
1 x 3/4	19	25	127	84	170	3.0
1 1/2 x 1	25	38	165	90	170	4.3
2 x 1 1/2	38	51	178	127	250	9.5
2 1/2 x 2	51	64	190	140	250	12
3 x 2	51	76	203	140	250	16.5
4 x 3	76	102	229	177	350	24
6 x 4	102	152	394	206	420	43
8 x 6	152	203	457	320	*1000	85.5
10 x 8	203	254	533	365	*1300	132.6

* Gear Operated

Full bore

Class 300

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	140	75	130	3.5
3/4	19	152	84	170	4.2
1	25	165	90	170	5.8
1 1/2	38	191	127	250	10.5
2	51	216	140	250	14
2 1/2	64	241	164	350	19
3	76	283	177	350	31
4	102	305	206	420	54
5	125	381	292	700	75.5
6	152	403	320	*1000	90
8	203	502	365	*1300	151

Reduced bore

Class 300

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	152	75	130	4.0
1 x 3/4	19	25	165	84	170	5.0
1 1/2 x 1	25	38	190	90	170	7.0
2 x 1 1/2	38	51	216	127	250	12
2 1/2 x 2	51	64	241	140	250	17
3 x 2	51	76	283	140	250	21.5
4 x 3	76	102	305	177	350	37
6 x 4	102	152	403	206	420	66
8 x 6	152	203	419	320	*1000	127
10 x 8	203	254	457	365	*1300	196.5

* Gear Operated

Full bore

Class 600

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	160	80	170	3.5
3/4	19	191	89	200	5.0
1	25	216	95	200	7.5
1 1/2	38	241	132	350	15.0
2	51	292	145	350	20.8
3	76	356	182	420	41
4	102	432	211	700	76

Reduced bore

Class 600

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4 x 1/2	13	19	191	80	170	4.0
1 x 3/4	19	25	216	89	200	5.0
1 1/2 x 1	25	38	21	95	200	10.5
2 x 1 1/2	38	51	292	132	350	14.7
3 x 2	51	76	356	145	350	29.0
4 x 3	76	102	432	182	420	56.0
6 x 4	102	152	559	211	700	95.0

* Gear Operated

Design

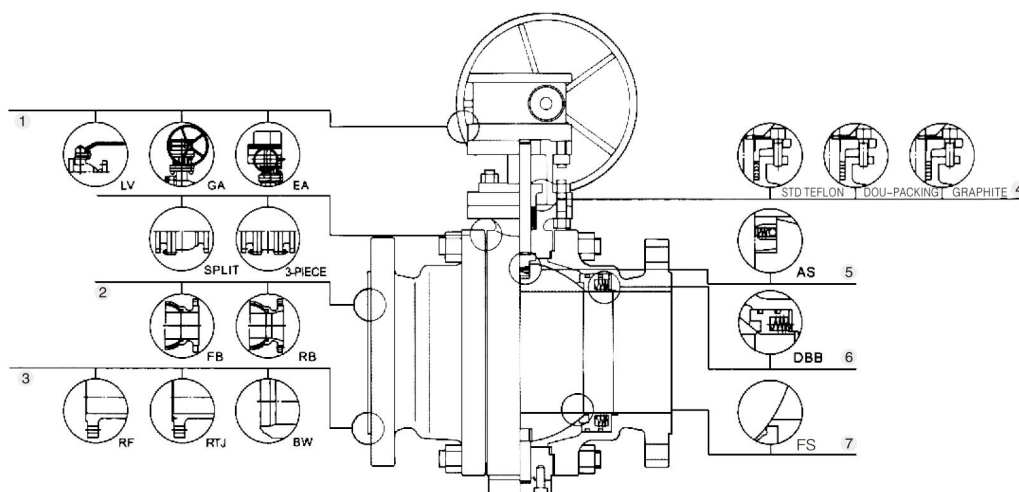
Cast steel trunnion mounted ball valve are designed and manufactured to provide maximum service life and dependability. Meet the design requirements of American Petroleum Institute standard API 608 & API 6D, British standard BS5351 and Generally conform to American Society of Mechanical Engineers standard ASME B16.34. Valves are available in a complete range of body/bonnet materials and trims.

Rang of Materials

Standard body/bonnet materials include nine grades of carbon, low alloy and stainless steels. For special aplications they can be supplied in other grades of alloy and stainless steel. There's a full range of trim materials to match any service. Optional packing and gasket materials are available for a full range of service conditions.

Available Modifications For Forged Steel Valves

- Trim changes
- End connection Modifications
- Packing and Gasket Changes
- Operator Mounting
- Handwheel Extensions
- Pressure Equalizing
- AS or FS
- Customer specified Coatings
- Weld End Bore Changes
- Oxygen & Chlorine Cleaning & Packaging



1 Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

2 Bore

Full Bore or Reduced Bore. Full-bore design provides exceptional flow control.

3 End Connections

A choice of Flanged, RTJ flanged or Butt welding end for piping flexibility

4 Packing

STD Packing adopt high-performance rubber seal ring, STD Packing and TEFLON use situation for smooth pressure. With snapping apply high-pressure situation. Graphite packing use situation for high-temperature.

5 AS

Anti Static. A metallic contact is always granted between ball and stem / body to discharge eventual statics build-up during service.

6 DDB

Double Block & Bleed. The body cavity is isolated when the ball is in either fully closed or fully opened position, the medium entrapped in it can easily be bled to avoid overpressure.

7 FS

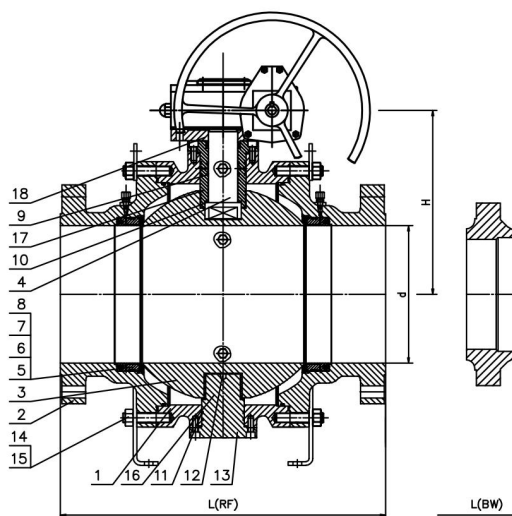
Fire safe Designed to API 607 to grant their operation suitability in case of fire. Secondary metal-to-metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

Applicable Standards

- Steel Ball Valves, API 608, API 6D
- Steel Ball Valves, ISO 10434, ISO 14313
- Fire Durable, API 607
- Anti Ststic, API 608
- Steel Valves, ASME B 16.34
- Face to Face, ASME B 16.10
- End Flanges, ASME B 16.5
- Buttwelding Ends, ASME B 16.25
- Inspection and Test API 598/API 6D

Design Description

- Full and reduce port design
- BB, bolted bonnet, split body
- Three piece body for 12" & above
- Trunnion mounted ball type
- Fire safe construction
- Anti static device
- Stopper device
- ISO5211 mounting pad
- Flanged or butt welding ends
- Available with BG operator

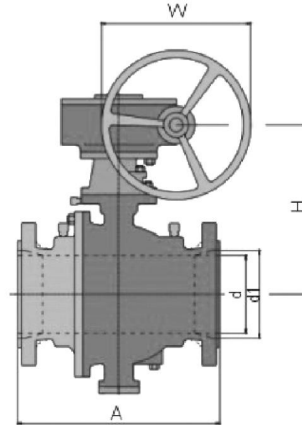
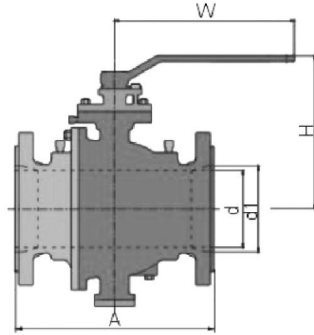


Materials of parts

No.	Part Name	ASTM Material		
1	Body	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
2	Bonnet	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
3	Ball	ASTM A182-F304 ¹⁾	ASTM A182-F316	ASTM A182-F304 ¹⁾
4	Stem	ASTM A276-304	ASTM A276-316	ASTM A276-304
5	Seat	ASTM A105+ENP	ASTM A182-F316	ASTM A350-LF2+ENP
6	Seat Insert	PTFE	PTFE	PTFE
7	Seat Spring	ASTM A313-304	Inconel X-750	ASTM A313-304
8	Seat O-Ring	NBR	Viton	Viton
9	Stem O-Ring	NBR	Viton	Viton
10	Bonnet Gasket	Graphite+304 ²⁾	Graphite+316 ²⁾	Graphite+316 ²⁾
11	Bonnet O-Ring	NBR	Viton	Viton
12	Antistatic Spring	ASTM A313-304	ASTM A313-316	ASTM A313-304
13	Grounding Plunger	ASTM A216-WCB	ASTM A182-F316	ASTM A182-F304
14	Bonnet Stud	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7
15	Bonnet Stud Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-7
16	Trunnion	ASTM A276-304	ASTM A276-316	ASTM A276-304
17	Trunnion Bearing	304+PTFE	316+PTFE	304+PTFE
18	Gland Flange	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
19	Gland Bolt	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7
20	Stop Plate	Carbon Steel	Carbon Steel+Zn	Carbon Steel
21	Handle	Carbon Steel	Carbon Steel	Carbon Steel

Noted: The chart above only lists our some common composition of steel valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

Dimensions are for reference only



Full bore

Class 150

Size in	d mm	A mm	H mm	W mm	Weight kg
2	51	178	140	250	15
3	76	203	177	350	24
4	102	229	206	420	40
6	152	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 in	d mm	d1 mm	A mm	H mm	W mm	Weight kg
3 × 2	51	76	203	140	250	21
4 × 3	76	102	229	177	350	30
6 × 4	102	152	394	206	420	68
8 × 6	152	203	457	305	*280	115
10 × 8	203	254	533	398	*320	214
12 × 10	254	305	610	495	*350	284
14 × 12	305	337	686	580	*400	418
16 × 14	337	387	762	625	*500	612
18 × 16	387	438	864	720	*500	970
20 × 18	428	489	914	770	*500	1137
24 × 20	489	591	1067	840	*500	2000

* Gear Operated

Full bore

Class 300

Size in	d mm	A mm	H mm	W mm	Weight kg
2	51	216	140	250	18
3	76	283	177	350	33
4	102	305	206	420	55
6	152	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 in	d mm	d1 mm	A mm	H mm	W mm	Weight kg
3 × 2	51	76	283	140	250	25
4 × 3	76	102	305	177	350	41
6 × 4	102	152	403	206	420	92
8 × 6	152	203	502	305	*280	164
10 × 8	203	254	568	398	*320	350
12 × 10	254	305	648	495	*350	400
14 × 12	305	337	762	580	*400	590
16 × 14	337	387	838	625	*500	850
18 × 16	387	438	914	720	*500	1220
20 × 18	428	489	991	770	*500	1460
24 × 20	489	591	1143	840	*500	2220

* Gear Operated

Full bore

Class 600

Size in	d mm	A mm	H mm	W mm	Weight kg
2	51	292	145	350	25
3	76	356	182	420	50
4	102	432	211	700	56
6	152	559	435	*400	250
8	203	660	530	*500	437
10	254	787	615	*500	735
12	305	838	680	*500	1050
14	337	889	720	*600	1300
16	387	991	540	*600	1775
18	438	1092	590	*600	2100
20	489	1194	925	*600	3100
24	591	1397	980	*600	4750

Reduced bore

Class 600

Size in	d mm	d1 mm	A mm	H mm	W mm	Weight kg
3 × 2	51	76	356	145	350	39
4 × 3	76	102	432	182	420	65
6 × 4	102	152	559	211	700	136
8 × 6	152	203	660	435	*400	292
10 × 8	203	254	787	530	*500	505
12 × 10	254	305	838	615	*500	760
14 × 12	305	337	889	680	*500	1105
16 × 14	337	387	991	420	*600	1417
18 × 16	387	438	1092	840	*600	1955
20 × 18	428	489	1194	890	*600	2380
24 × 20	489	591	1397	925	*600	3640

* Gear Operated

Applicable Standards

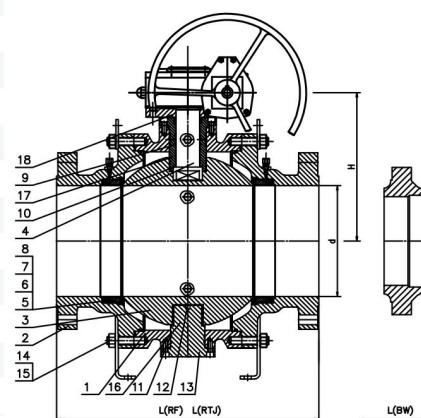
- Steel Ball Valves, API 608, API 6D
- Steel Ball Valves, ISO 10434, ISO 14313
- Fire Durable, API 607
- Anti Ststic, API 608
- Steel Valves, ASME B 16.34
- Face to Face, ASME B 16.10
- End Flanges, ASME B 16.5
- Buttwelding Ends, ASME B 16.25
- Inspection and Test API 598/API 6D

Design Description

- Full and reduce port design
- BB, bolted bonnet, split body
- Three piece body for 12" & above
- Trunnion mounted ball type
- Fire safe construction
- Anti static device
- Stopper device
- ISO5211 mounting pad
- Flanged or butt welding ends
- Available with BG operator

Materials of parts

No.	Part Name	ASTM Material		
1	Body	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
2	Bonnet	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
3	Ball	ASTM A182-F304 ¹⁾	ASTM A182-F316	ASTM A182-F304 ¹⁾
4	Stem	ASTM A276-304	ASTM A276-316	ASTM A276-304
5	Seat	ASTM A105+ENP	ASTM A182-F316	ASTM A350-LF2+ENP
6	Seat Insert	PTFE	PTFE	PTFE
7	Seat Spring	ASTM A313-304	Inconel X-750	ASTM A313-304
8	Seat O-Ring	Viton	Viton	Viton
9	Stem O-Ring	Viton	Viton	Viton
10	Bonnet Gasket	Graphite+304 ²⁾	Graphite+316 ²⁾	Graphite+316 ²⁾
11	Bonnet O-Ring	Viton	Viton	Viton
12	Antistatic Spring	ASTM A313-304	ASTM A313-316	ASTM A313-304
13	Grounding Plunger	ASTM A216-WCB	ASTM A182-F316	ASTM A182-F304
14	Bonnet Stud	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7
15	Bonnet Stud Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-7
16	Trunnion	ASTM A276-304	ASTM A276-316	ASTM A276-304
17	Trunnion Bearing	304+PTFE	316+PTFE	304+PTFE
18	Gland Flange	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCB
19	Gland Bolt	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7
20	Stop Plate	Carbon Steel	Carbon Steel+Zn	Carbon Steel
21	Handle	Carbon Steel	Carbon Steel	Carbon Steel



Noted: The chart above only lists our some common composition of steel valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

Dimensions are for reference only

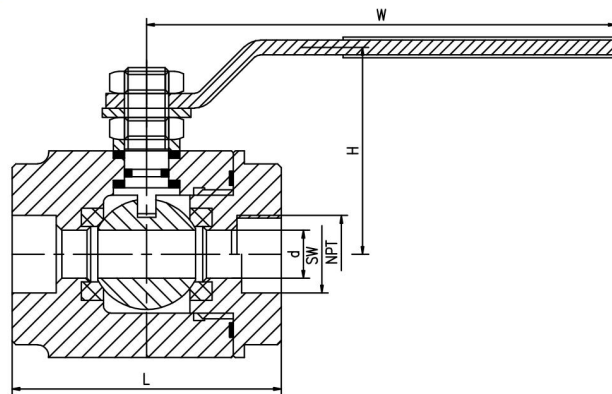
NPS DN	2 50	2 1/2 65	3 80	4 100	6 150	8 200	10 250	12 300	14 350	16 400	2 50	2 1/2 65	3 80	4 100	6 150	8 200	10 250	12 300	in mm
ANSI Class 1500Lb										ANSI Class 2500Lb									
L/L1 (RF)(BW)	14.50 368	16.50 419	18.50 470	21.50 546	27.75 705	32.75 832	39.00 991	44.50 1130	49.50 1257	54.50 1384	17.75 451	20.00 508	22.75 578	26.50 673	36.00 914	40.25 1022	50.00 1270	56.00 1422	in mm
L2 (RTJ)	14.62 371	16.62 422	18.62 473	21.62 549	28.00 711	33.13 842	39.38 1000	45.12 1146	50.25 1276	55.38 1407	17.87 454	20.25 514	23.00 584	26.88 683	36.50 927	40.87 1038	50.88 1292	56.88 1445	in mm
H	11.25 285	12.00 306	13.25 338	20.00 506	33.50 852	39.38 1000	41.12 1045	49.38 1255	50.00 1270	58.50 1485	12.00 304	12.88 327	14.25 362	21.25 540	35.88 911	42.12 1070	44.00 1120	53.00 1345	in mm
(d)	49	62	74	100	144	192	239	287	315	360	42	52	62	87	131	179	223	265	mm
W	20 500	20 500	24 600	24 600	24 600	32 800	32 800	32 800	32 800	32 800	20 500	24 600	24 600	24 600	32 800	32 800	32 800	32 800	in mm
WT (kg)	49 33	67 44	106 73	153 87	268 145	540 345	1020 685	1475 1050	1885 1385	2455 1735	55 41	76 55	120 91	173 110	302 182	612 430	1150 855	1665 1315	RF BW

Application Specifications

- Design and manufacture conform to BS5351; MSS SP-118
- Connection ends conform to:
 - 1) Socket welded ends conform to ANSI B16.11, JB/T1715
 - 2) Screw ends conform to ANSI B1.12.1, JB/T7306
 - 3) Butt-welded ends conform to ANSI B16.25, JB/T12224
- Test and inspection conform to API 598, GB/T13927, JB/T9092
- Materials conform to ANSI/ASTM

Valve body pressure rating

- Class 800, Max 1920 psig@100°F
 Class 1500, Max 3600 psig@100°F



Materials of parts

No.	Part Name	ASTM Material			
1	Body	ASTMA105	F304	F316	F316L
2	Ball	SS304	SS304	SS316	SS316L
3	Stem	SS304	SS304	SS316	SS316L
4	Seat	PTFE	PTFE	PTFE	PTFE
5	Gasket	PTFE	PTFE	PTFE	PTFE
6	Packing	Graphite	Graphite	Graphite	Graphite
7	Fixcasket	PTFE	PTFE	PTFE	PTFE
8	Locating piece	CS	CS	CS	CS
9	Lever	CS	CS	CS	CS
10	Stem nut	SS	SS	SS	SS
11	Stop pin	SS	SS	SS	SS

Dimensions are for reference only

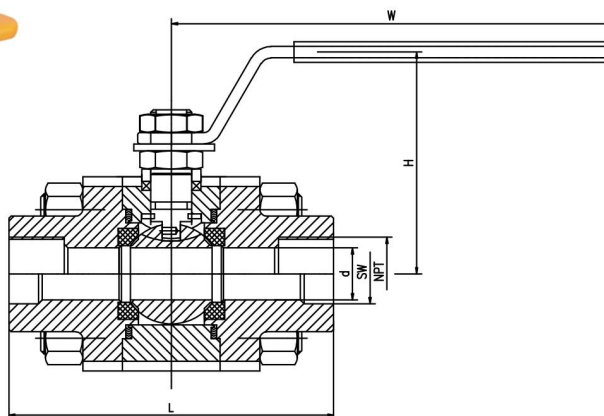
RB	FB	L	d	NPT		SW		L1		H	W	Weight(kg)
				RB	FB	RB	FB	RB	FB			
3/8x1/4"	1/4"	68	9.5	3/8"	1/4"	17.6	14.2	9.6	9.6	53	130	1.1
1/2x3/8"	3/8"	68	9.5	1/2"	3/8"	21.8	17.6	9.6	9.6	53	130	1.1
3/4x1/2"	1/2"	73	13	3/4"	1/2"	27.1	21.8	12.7	9.6	56	130	1.3
1x3/4"	3/4"	97	18	1"	3/4"	33.8	27.1	12.7	12.7	70	160	1.9
1 1/4x1"	1"	105	24	1 1/4"	1"	42.6	33.8	12.7	12.7	80	220	3.3
1 1/2x1 1/4"	1 1/4"	118	30	1 1/2"	1 1/4"	48.7	42.6	12.7	12.7	90	250	4.1
2x1 1/2"	1 1/2"	133	38	2"	1 1/2"	61.2	48.7	15.9	12.7	100	250	5.6
2 1/2x2"	2"	148	48	2 1/2"	2"	74.1	61.2	15.9	15.9	110	290	12.2

Application Specifications

- Design and manufacture conform to BS5351; MSS SP-118
- Connection ends conform to:
 - 1) Scket welded ends conform to ANSI B16.11, JB/T1715
 - 2) Screw ends conform to ANSI B1.12.1, JB/T7306
 - 3) Butt-welded ends conform to ANSI B16.25, JB/T12224
- Test and inspection conform to API 598, GB/T13927, JB/T9092
- Materials conform to ANSI/ASTM

Valve body pressure rating

Class 800, Max 1920 psig@100°F
 Class 1500, Max 3600 psig@100°F



Materials of parts

No.	Part Name	ASTM Material			
1	Body	ASTM A105	F304	F316	F316L
2	Ball	SS304	SS304	SS316	SS316L
3	Stem	SS304	SS304	SS316	SS316L
4	Seat	PTFE	PTFE	PTFE	PTFE
5	Gasket	PTFE	PTFE	PTFE	PTFE
6	Packing	Graphite	Graphite	Graphite	Graphite
7	Fixcasket	PTFE	PTFE	PTFE	PTFE
8	Locating piece	CS	CS	CS	CS
9	Lever	CS	CS	CS	CS
10	Stem nut	SS	SS	SS	SS
11	Stop pin	SS	SS	SS	SS
12	Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 8M	ASTM A194 8M
13	Stud bolt	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M	ASTM A193 B8M

Dimensions are for reference only

RB	FB	L	d	NPT		SW		L1		H	W	Weight(kg)
				RB	FB	RB	FB	RB	FB			
3/8x1/4"	1/4"	92	9.5	3/8"	1/4"	17.6	14.2	9.6	9.6	53	130	1.5
1/2x3/8"	3/8"	92	9.5	1/2"	3/8"	21.8	17.6	9.6	9.6	53	130	1.5
3/4x1/2"	1/2"	92	13	3/4"	1/2"	27.1	21.8	12.7	9.6	56	130	1.5
1x3/4"	3/4"	111	18	1"	3/4"	33.8	27.1	12.7	12.7	70	160	2.4
1 1/4x1"	1"	127	24	1 1/4"	1"	42.6	33.8	12.7	12.7	80	220	3.9
1 1/2x1 1/4"	1 1/4"	140	30	1 1/2"	1 1/4"	48.7	42.6	12.7	12.7	90	250	6.1
2x1 1/2"	1 1/2"	152	38	2"	1 1/2"	61.2	48.7	15.9	12.7	100	250	8.5
2 1/2x2"	2"	178	48	2 1/2"	2"	74.1	61.2	15.9	15.9	110	290	10