

**TRUNNION
BALL
VALVE
SERIES**

**KEY VALVES
UK LTD**

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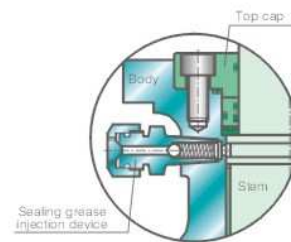
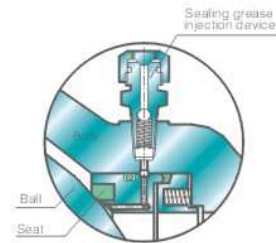


● Application

Trunnion ball valves are suitable for use on various kinds of pipelines of Class150 ~Class2500, PN16~PN160, JIS10K~JIS20K to cut off or turn on the pipeline medium, of which the operation types include worm gear, manual, pneumatic or electric actuators, being in general of flange connection, and butt welding ends connection as well.

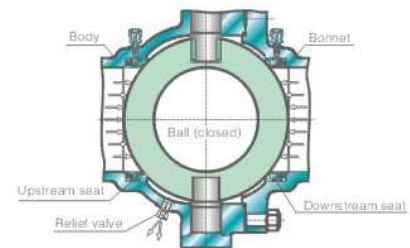
● Urgent grease injection device

According to customers' requirement, the trunnion ball valves made by Lianggong company are provided with devices for urgent grease injection, which are on both the stem and seat for the trunnion Ball valves of DN > 150mm (NPS6), and in the body cavity for the valve of DN < 125mm. When the O ring of stem or the body seat ring is damaged due to accident, the medium leakage between body and stem can be prevented by injecting the sealing grease through the device.



● Double-block and bleed functions

In general, Lianggong trunnion ball valve features the front ball sealing design structure. Each seat of the ball valve can separately cut off the medium at both inlet and outlet of the valve to realize double-block functions. When the ball valve is closed, body cavity and two of the body ends can be blocked with each other even if both the inlet and outlet are under pressure, when the medium left in the body cavity might be bled through the relief valve.



● Blow-out proof stem

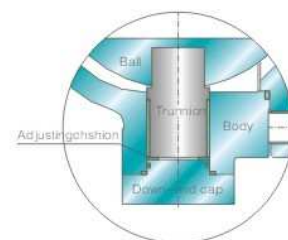
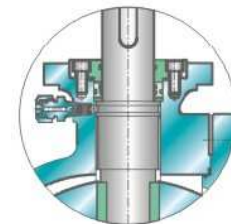
Blow-out proof structure is provided for the stem, which is positioned by the up-end cap and screw, being guaranteed not to be blown-out by the medium even if at abnormal risen pressure in the cavity.

● The Bi-sealing design structure, i.e. seat sealing in front of the ball and seat sealing behind the ball

According to some special working conditions and customers' requirement, Lianggong has provided the trunnion ball valve with the Bi-sealing design structure, i.e. seat sealing in front of the ball and seat sealing behind the ball, thus the reliable sealing of the valve is ensured because the valve can perform normally even if one of the effective sealing designs becomes lost due to the abnormal condition.

Regarding the seat in front of the ball, the piston effect formed by the area difference between D_1 and D_2 , plus the pre-tightened force of a spring would cause the seat in front of the ball by the pressure difference of the medium before and after the valve to touch the ball closely to form the tightness, of which the sealing force will become bigger as the pressure difference gets higher.

Regarding the seat after the ball, the piston effect formed by the area difference between D_2 and D_3 , plus the pre-tightened force of a spring would cause the seat behind the ball to touch the ball closely to form the tightness, of which the sealing force will become bigger as the pressure difference gets higher.





Trunnion ball valve

● Anti-static design

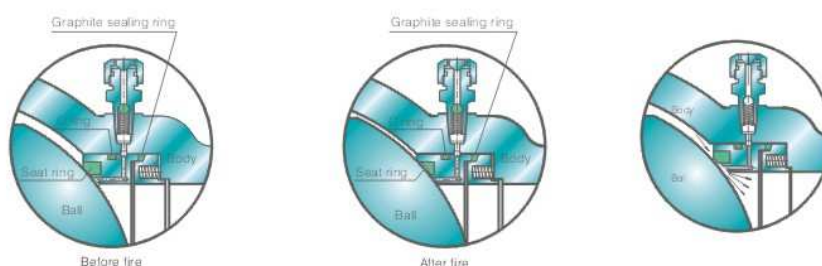
The ball of the trunnion ball valve gets close contact with each other through the trunnion, adjusting cushion, and down end cap, the passage of static electricity thus forms together with the valve, which may lead the static electricity caused by sparks generated by friction between the ball and seat during on and off performance to the ground to prevent the possible risk of fire or explosion.

● Self-relief in the body cavity

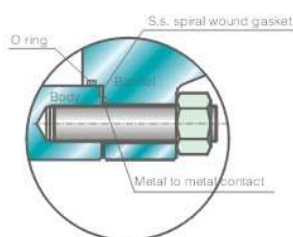
As the liquid medium left in the body cavity gasifies due to increased temperature, the pressure in the body cavity becomes abnormally higher, when the medium itself in the cavity would propel the seat and self-relieves the pressure to ensure the safety of valve.

● Fire safe design

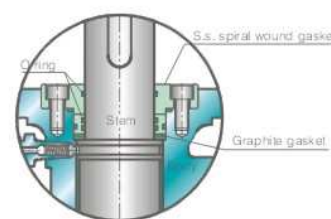
With the valve heated in a fire application, the nonmetal material parts such as seat sealing ring of PTFE, O ring for the stem, and sealing gasket for body and bonnet, might be damaged due to high temperature. Lianggong's special design of auxiliary metal to metal or the graphite seal is provided for the trunnion ball valve to effectively prevent both internal and external leakage of the valve. As required by customers, Shuangjiang's fire safe design for the trunnion ball valve meets the requirement of API 607, API 6Fa, BS 6755 and JB/T 6899.



Fire safe design of seat



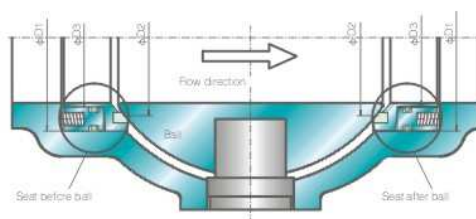
Fire safe design of valve body and bonnet flanges



Fire safe design of stem

● Mounting pad provided

Lianggong has provided for trunnion ball valve with Mounting pad for fixing the actuators, such as worm gear pneumatic, electric, hydraulic, and pneumatic & hydraulic actuators.



Cast steel ball valve



Materials of parts

NO	Part name	ASTM Material		
		Carbon steel	18Cr-9Ni-2Mo	Carbon steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet	A216-WCB	A351-CF8M	A352-LCB
3	ball	A182-F304 ¹⁾	A182-F316	A182-F304 ¹⁾
4	Stem	A276-304	A276-316	A276-304
5	Seat	A105+ENP	A182-F316	A350-LF2+ENP
6	Stem insert	Class filled PTFE		
7	Seat spring	A313-304	Inconel X-750	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+304 ²⁾
11	Bonnet O-ring	NBR	Viton	Viton

NO	Part name	ASTM Material		
		Carbon steel	1 1/4Cr-1/2Mo	Carbon steel
12	Antistatic spring	A313-304	A313-316	A313-304
13	Grounding plunger	A216-WCB	A182-F316	A182-F304
14	Bonnet stud	A193-B7	A193-B8	A320-L7
15	Bonnet stud nut	A194-2H	A194-8	A194-4
16	Trunnion	A276-304	A276-316	A276-304
17	Trunnion bearing	304+PTFE	316+PTFE	304+PTFE
18	Gland flange	A216-WCB	A351-CF8M	A352-LCB
19	Gland bolt	A193-B7	A193-B8	A193-B7
20	Stop plate	Carbon steel	Carbon steel+Zn	Carbon steel
21	Handle	Carbon steel		

Note: 1). A 105+ENP optional ; 2). Spiral wound construction.

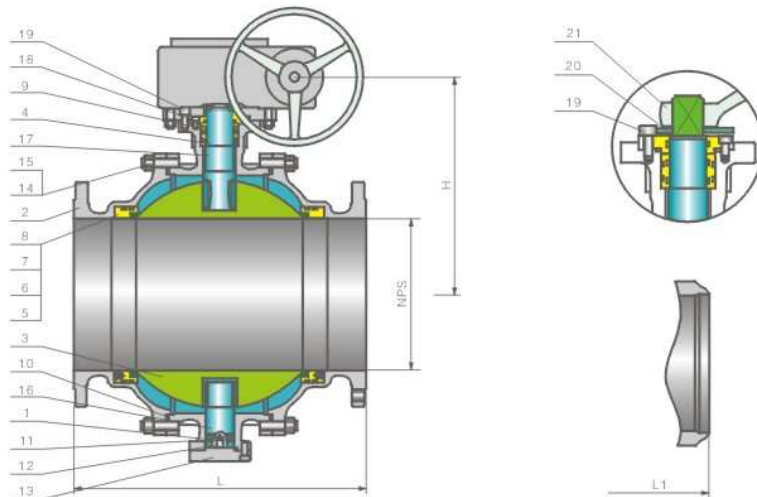
Trunnion Ball Valve

Applicable standards:

- Steel ball valves: API 608/API 6D
- Steel ball valves: ISO 14313
- Fire durable: API 607
- Anti static: API 608
- Steel valves: ASME B 16.34
- Face to face: ASME B 16.10
- End flanges: ASME B16.5
- Butt welding ends: ASME B16.25
- Inspection and test: API 598/API 6D

Design description:

- Full port design
- BB, Bolted bonnet, split body
- Three piece body for 12" & above
- Trunnion mounted ball type
- Blow-out proof stem
- Fire durable construction
- Anti static device
- Stopper device
- ISO 5211 Mounting pad
- Flanged or butt welding ends
- Available with wg operator



Dimensions data

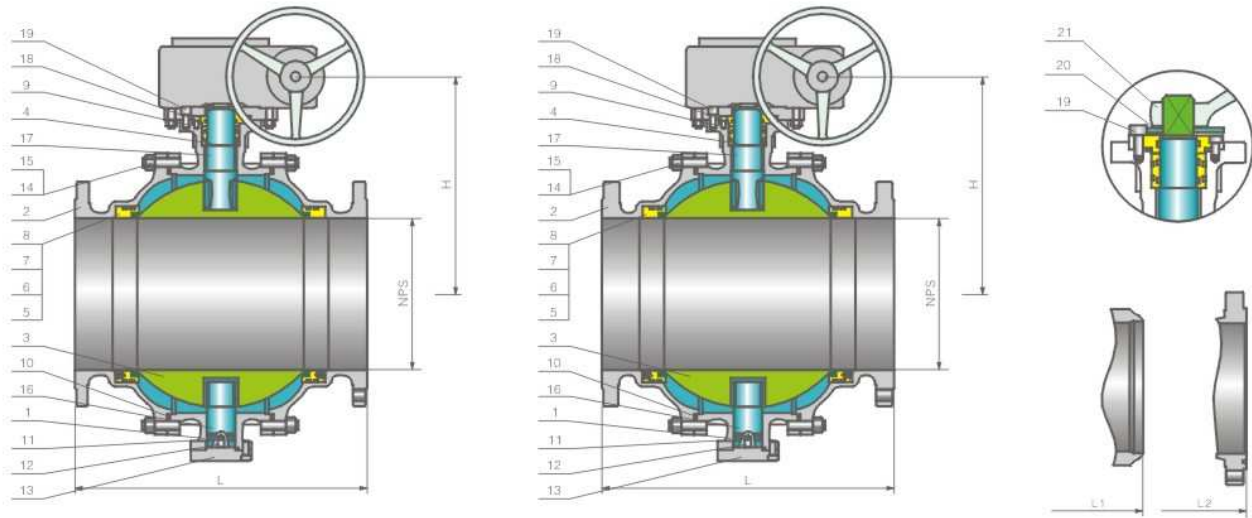
150Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
		mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800
L (RF)	in	7.00	7.50	8.00	9.00	15.50	18.00	21.00	24.00	27.00	30.00	34.00	36.00	42.00	45.00	49.00	51.00	54.00	60.00
	mm	178	190	203	229	394	457	533	610	686	762	864	914	1067	1143	1245	1295	1372	1524
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	68.00
	mm	216	241	283	305	457	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	1727
H	in	7.00	7.50	8.25	9.25	20.88	24.62	25.62	30.75	31.00	36.25	38.25	43.38	5.25	50.75	55.12	64.12	70.88	80.75
	mm	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1840	2050
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32	32	32	32
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	800
WT (Kg)	RF	15	19	27	38	81	140	160	205	260	390	510	750	1200	1400	1860	2100	2530	2970
	BW	13.5	15.5	24.5	32.5	76	132	147	182	241	370	495	726	1125	1250	1640	1930	2390	2760



Cast steel ball valve

Trunnion Ball Valve



● Dimensions data

300Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	8.50	9.50	11.12	12.00	15.88	19.75	22.38	25.50	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	-
	mm	216	241	283	305	403	502	568	648	762	838	914	991	1143	1245	1346	1397	1524	-
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	-
	mm	216	241	283	305	403	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	-
H	in	7.00	7.50	8.25	9.25	20.88	24.62	25.62	30.75	31.00	36.25	38.25	43.38	45.25	50.75	55.12	64.12	70.88	-
	mm	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1800	-
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32	32	32	-
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	-
WT (Kg)	RF	19	24	34	48	101	175	200	255	325	485	635	935	1500	1750	2225	2450	2870	-
	BW	14	16	25	34	82	145	155	185	238	375	516	782	1280	1375	1825	2180	2260	-

● Dimensions data

600Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700
L/L1 (RF/BW)	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00	57.00	61.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1448	1549
L2 (RTJ)	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	57.50	61.50
	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1407	1461	1562
H	in	7.12	7.62	8.50	9.50	21.52	25.00	26.12	31.12	31.88	36.38	38.75	44.50	46.62	52.50	57.00
	mm	180	193	215	241	540	635	665	790	810	925	985	1130	1185	1335	1450
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800
WT (Kg)	RF/RTJ	26	35	58	81	142	287	540	780	1000	1300	1700	2100	3400	3800	4500
	BW	19	25	42	51	82	200	395	610	805	1010	1350	1656	2775	3125	3790

Cast steel ball valve



● Dimensions data

900Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1 (RF/BW)	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2 (RTJ)	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.50	52.50	61.75
	mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
H	in	8.62	9.25	10.25	15.38	25.75	30.25	31.75	38.00	38.50	45.00	47.00	53.50	56.00
	mm	219	235	260	390	655	770	805	965	980	1145	1195	1360	1425
W	in	20	20	20	24	24	24	24	32	32	32	32	32	32
	mm	500	500	500	600	600	600	600	800	800	800	800	800	800
WT (Kg)	RF/RTJ	31	43	68	98	171	345	650	940	1205	1565	2050	2535	3950
	BW	23	31	51	61	102	240	480	735	965	1215	1625	1995	3335

Trunion Ball Valve

● Dimensions data

1500Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L2 (RTJ)	in	14.62	16.62	18.62	21.62	28.00	33.12	39.38	45.12	50.25	55.38
	mm	371	422	473	549	711	841	1000	1146	1276	1407
H	in	11.25	12.00	13.25	20.00	33.50	39.38	41.12	49.38	50.00	58.50
	mm	285	306	338	506	852	1000	1045	1255	1270	1485
W	in	20	20	24	24	24	32	32	32	32	32
	mm	500	500	600	600	600	800	800	800	800	800
WT (Kg)	RF/RTJ	49	67	106	153	268	540	1020	1475	1885	2455
	BW	33	44	73	87	145	345	685	1050	1385	1735

● Dimensions data

2500Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	17.75	20.00	22.75	26.50	36.00	40.25	50.00	56.00	-	-
	mm	451	508	578	673	914	1022	1270	1422	-	-
L2 (RTJ)	in	17.88	21.25	23.00	26.88	36.50	40.88	50.88	56.88	-	-
	mm	454	540	584	683	927	1038	1292	1445	-	-
H	in	12.00	12.88	14.25	21.25	35.88	42.12	44.00	53.00	-	-
	mm	304	327	362	540	911	1070	1120	1345	-	-
W	in	20	24	24	24	32	32	32	32	-	-
	mm	500	600	600	600	800	800	800	800	-	-
WT (Kg)	RF/RTJ	55	76	120	173	302	612	1150	1665	-	-
	BW	41	55	91	110	182	430	855	1315	-	-



Forged steel ball valve

Materials of parts

NO	Part name	ASTM Material		
		Carbon steel	18Cr-9Ni-2Mo	Carbon steel
1	Body	A105	A182-F316	A350-LF2
2	Bonnet	A105	A182-F316	A350-LF2
3	ball	A182-F304 ²	A182-F316	A182-F304 ²
4	Stem	A276-304	A276-316	A276-304
5	Seat	A105+ENP	A182-F316	A350-LF2+ENP
6	Stem insert	Class filled PTFE		
7	Seat spring	A313-304	Inconel X-750	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+304 ²
11	Bonnet O-ring	NBR	Viton	Viton

NO	Part name	ASTM Material		
		Carbon steel	11/4Cr-1/2Mo	Carbon steel
12	Antistatic spring	A313-304	A313-316	A313-304
13	Grounding plunger	A182-F304	A182-F316	A182-F304
14	Bonnet stud	A193-B7	A193-B8	A320-L7
15	Bonnet stud nut	A194-2H	A194-8	A194-4
16	Trunnion	A276-304	A276-316	A276-304
17	Trunnion bearing	304+PTFE	316+PTFE	304+PTFE
18	Gland	A105	A182-F316	A350-LF2
19	Gland bolt	A193-B7	A193-B8	A193-B7
20	Stop plate	Carbon steel	Carbon steel+Zn	Carbon steel
21	Handle	Carbon steel		

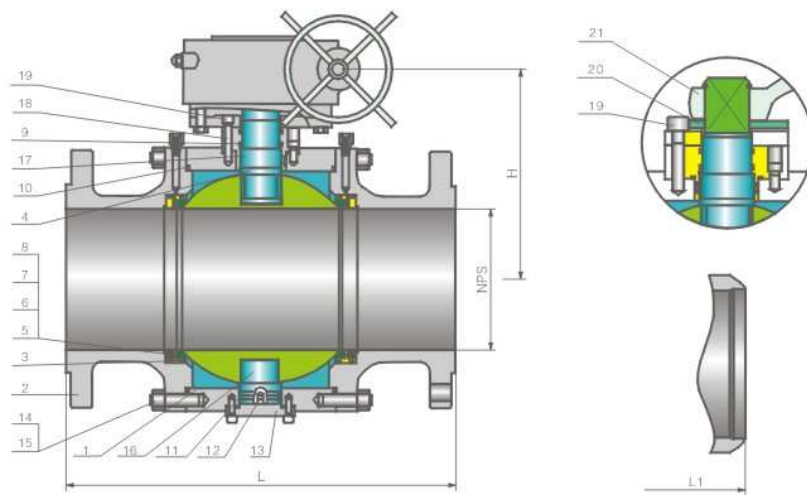
Note: 1). A 105+ENP optional ; 2). Spiral wound construction.

Applicable standards:

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 Steel ball valves: ISO 14313
 Fire durable: API 607
 Anti static: API 608
 Steel valves: ASME B 16.34
 Face to face: ASME B 16.10
 End flanges: ASME B16.5
 Butt welding ends: ASME B16.25
 Inspection and test: API 598/API 6D

Design description:

Full port design
 BB, Bolted bonnet, split body
 Three piece body for 12" & above
 Trunnion mounted ball type
 Blow-out proof stem
 Fire durable construction
 Anti static device
 Stopper device
 ISO 5211 Mounting pad
 Flanged or butt welding ends
 Available with wg operator

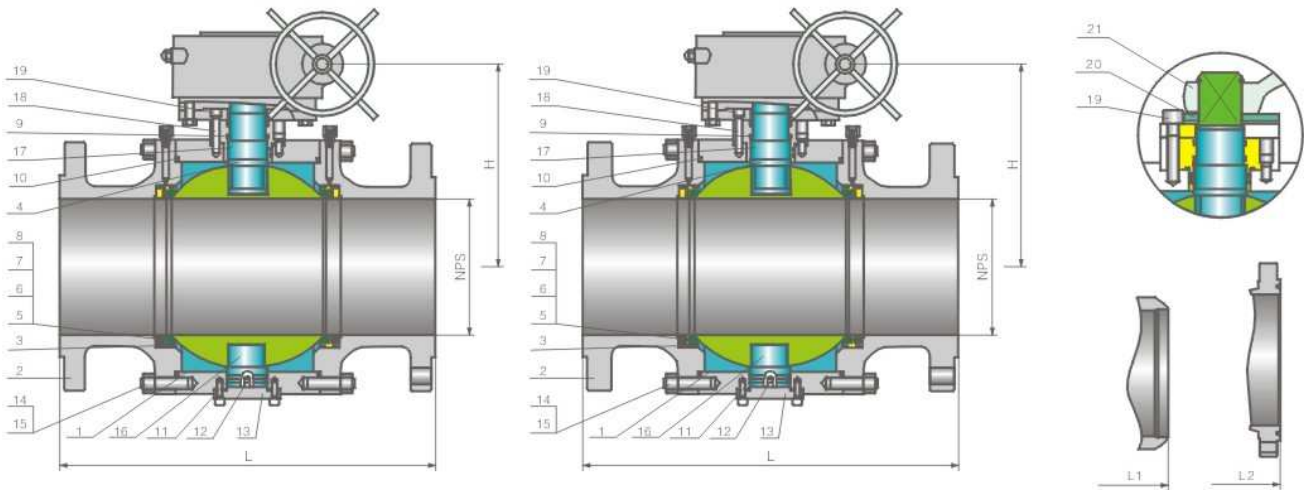


Dimensions data

150Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
		mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800
L (RF)	in	7.00	7.50	8.00	9.00	15.50	18.00	21.00	24.00	27.00	30.00	34.00	36.00	42.00	45.00	49.00	51.00	54.00	60.00
	mm	178	190	203	229	394	457	533	610	686	762	864	914	1067	1143	1245	1295	1372	1524
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	68.00
	mm	216	241	283	305	457	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	1727
H	in	4.00	6.00	7.00	9.25	9.88	11.00	12.62	15.38	16.50	21.88	23.62	25.00	28.00	29.50	31.50	34.00	36.00	38.50
	mm	120	150	180	235	250	280	320	390	420	555	600	635	710	750	800	865	915	980
W	in	16	16	24	24	24	24	32	32	32	32	32	32	32	40	40	40	40	40
	mm	400	400	600	600	600	600	800	800	800	800	800	800	800	1000	1000	1000	1000	1000
WT (Kg)	RF/RTJ	28	35	55	80	190	290	445	570	780	1520	2300	2500	3950	4890	6300	7100	8950	13500
	BW	25	28	49	71	182	277	423	553	747	1481	2266	2460	3904	4939	6362	8149	9000	13570

Forged steel ball valve



Trunion Ball Valve

● Dimensions data

300Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	8.50	9.50	11.12	12.00	15.88	19.75	22.38	25.50	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	-
	mm	216	241	283	305	403	502	568	648	762	838	914	991	1143	1245	1346	1397	1524	-
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	-
	mm	216	241	283	305	403	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	-
H	in	4.00	6.00	7.00	9.25	9.88	11.00	12.62	15.38	16.50	21.88	23.62	25.00	28.00	29.50	31.50	34.00	36.00	-
	mm	120	150	180	235	250	280	320	390	420	555	600	635	710	750	800	865	915	-
W	in	16	16	24	24	24	24	32	32	32	32	32	32	32	40	40	40	40	-
	mm	400	400	600	600	600	600	800	800	800	800	800	800	800	1000	1000	1000	1000	-
WT (Kg)	RF/RTJ	30	40	60	90	200	325	490	690	990	1810	2620	2860	4430	5430	6810	7655	9590	-
	BW	24	31	49	72	169	280	424	598	872	1665	2440	2635	4075	4880	6225	7115	9230	-

● Dimensions data

600Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700
L/L1 (RF/BW)	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00	57.00	61.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1448	1549
L2 (RTJ)	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	57.50	61.50
	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1407	1461	1562
H	in	6.50	7.00	7.88	11.00	12.25	14.00	16.12	18.00	19.25	21.00	24.88	25.62	30.12	31.88	34.62
	mm	165	180	200	280	310	355	410	455	490	535	630	650	765	810	880
W	in	16	24	24	24	32	32	32	32	32	32	40	40	40	40	40
	mm	400	600	600	600	800	800	800	800	800	800	1000	1000	1000	1000	1000
WT (Kg)	RF/RTJ	34	53	65	125	245	505	640	910	1380	2250	3400	3850	4900	6700	8300
	BW	27	43	49	95	188	418	495	740	1185	1960	3050	3406	4275	6025	7590



Forged steel ball valve

● Dimensions data

900Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1 (RF/BW)	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2 (RTJ)	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.50	52.50	61.75
	mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
H	in	6.72	7.50	8.25	11.38	12.62	15.38	17.00	18.50	20.88	24.00	26.00	27.50	30.75
	mm	170	190	210	290	320	390	430	470	530	610	660	700	780
W	in	24	24	24	32	32	32	32	32	32	40	40	40	40
	mm	600	600	600	800	800	800	800	800	800	1000	1000	1000	1000
WT (Kg)	RF/RTJ	45	65	73	135	360	650	930	1350	1890	3100	4300	4950	7100
	BW	37	53	56	98	291	545	760	1145	1650	2750	3875	4410	6485

● Dimensions data

1500Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L2 (RTJ)	in	14.62	16.62	18.62	21.62	28.00	33.12	39.38	45.12	50.25	55.38
	mm	371	422	473	549	711	841	1000	1146	1276	1407
H	in	6.75	7.50	8.25	11.38	13.00	15.75	17.38	22.00	25.25	27.12
	mm	170	190	210	290	330	400	440	560	640	690
W	in	24	24	32	32	32	32	32	40	40	40
	mm	600	600	800	800	800	800	800	1000	1000	1000
WT (Kg)	RF/RTJ	55	75	95	150	540	880	1360	1980	3100	4650
	BW	40	55	65	115	420	865	1025	1555	2600	3930

● Dimensions data

2500Lb

Size	in	2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	17.75	20.00	22.75	26.50	36.00	40.25	50.00	56.00	-	-
	mm	451	508	578	673	914	1022	1270	1422	-	-
L2 (RTJ)	in	17.88	21.25	23.00	26.88	36.50	40.88	50.88	56.88	-	-
	mm	454	540	584	683	927	1038	1292	1445	-	-
H	in	7.50	9.00	11.00	14.12	15.75	18.88	20.50	26.38	-	-
	mm	190	230	280	360	400	480	520	670	-	-
W	in	24	32	32	32	32	40	40	40	-	-
	mm	600	800	800	800	800	1000	1000	1000	-	-
WT (Kg)	RF/RTJ	68	95	120	185	675	1100	1650	2300	-	-
	BW	54	74	91	122	555	918	1355	2950	-	-