Cast Steel Trunnion Ball Valve

Forged Steel Trunnion Ball Valve

Floating Ball Valve

Steel ball valve

Ball valve is suitable for using on various kinds of pipelines of Class 150 to Class 2500 to turn or off the pipeline medium. Our steel ball valve have two types: floating ball valve and trunnion ball valve, Floating ball valve usually Class 150Lb~600Lb,Size1/2-8 " ,The Operation types include worn gear ,manual, pneumatic or electric actuators.

Ball valve design construction and specifications

Our cast steel ball valve conform to ,API 608,API 16D,ANSI B16.34 and BS5351.Each is tested according to API598,API6D and Marking is per MSS-SP-25.

Construction as follows

Full Bore/Reduced bore
Turn 90 degree opening or close
Detachable seat PTFE/RPTFE
Bolted cover/welded cover

Reliable seat seal
Fire safe design
Reliable stem seal
Anti-static device
Wrong operation prevention

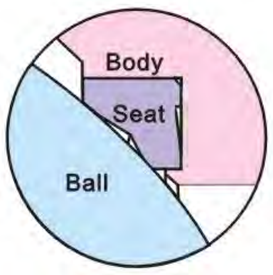
Standards and specification

Design & manufacture:API6D, API608, ASME B16.34, ANSI AWWA C507 MSS SP-72 AWWAC507, MSS SP-72, BS 5351, BS 6364, BFCI 70-2, ISO 5211, NACE MR0175.
Connection ends: ASME B16.5, ASME B16.47, API 605, MSS SP-44, ISO7005-1, JIS B2238, BS12627, ASME B16.25, ASME B16.11, BS 12760.
Face to face dimension: ASME B16.10, ISO 5752, BS 558, BS 12982
Testing & inspection: API598, API 6D, API 607, API 6FA, BS 6755, BS 12569, MSS SP-82, MSS SP-60
Normal pressure or rating: Class 150~Class2500, JIS10K~20K, PN10~PN420
Normal diameter or bore: NPS1/2~NPS10, DN15~DN250
Applicable temperature: -196℃-540℃
Operation type: Manual, worm gear, pneumatic, electric

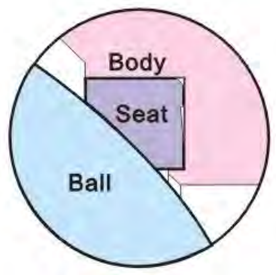
Construction and features of floating ball valve

Reliable seat seal

The structure design of elastic sealing ring has been adopted for floating ball valves. When the pressure of medium is low ,the contact area between valve seat insert and ball is relatively small, thus providing high sealing load to ensure dependable seating seal. When the pressure of medium is high, the contact area between valve seat insert and ball is relatively large, so that valve seat insert can endure the considerable medium thrust and without any damage.



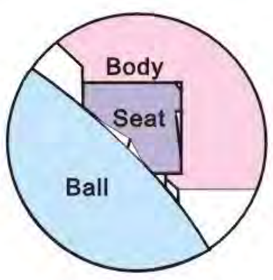
At lower medium pressure



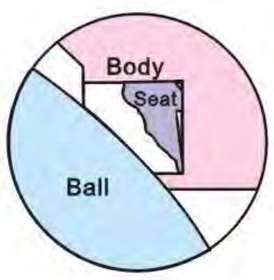
At higher medium pressure

Fire safe design

In case of fire, the non-metal material parts such as seat sealing ring of PTFE, stem back seat gasket, gland packing and the sealing gasket between body and bonnet might be damaged due to the high temperature. As shown in the figure, our specially designed structure of secondary metal to metal seal is provided to effectively prevent both internal and external leakage of the valve. This design can meet requirement of API607.



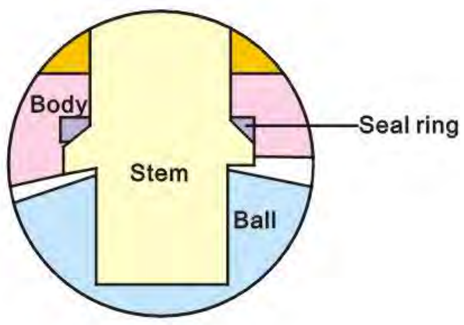
Before fire

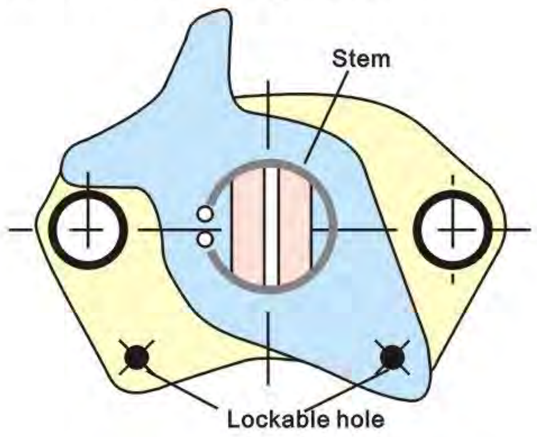


After fire

Anti blowout stem

The Anti-blowout design has been adopted for the stem to ensure that even if the pressure in the body cavity risen accidently and the packing flange becomes invalid, the stem may not be blown out by medium. To prevent these possibilities, The stem is designed with a backseat, being assembled from underneath. The sealing force against the back seats higher as the medium pressure. becomes higher. So the stem can be assured under variable medium pressure.





Wrong operation prevention

To prevent the ball valve from wrong operation. The fully opened or closed position of valve can be locked up, especially when are mounted outdoors or when valves are not allowed to be opened or closed by technical process.

Anti static device

As required by customers, an anti static device can be placed on the valve to derive the electic charge is accumulated on the ball form the static channel between the ball and stem, or between the stem and valve body.

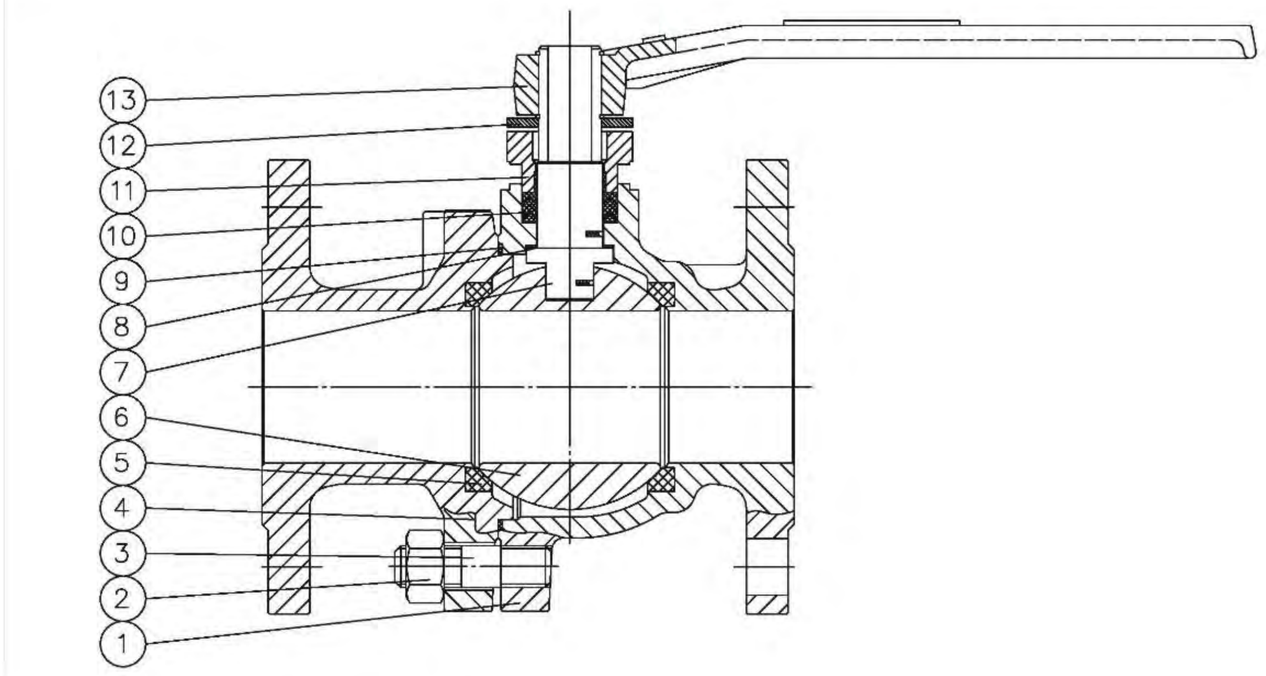
API Floating Ball Valve

Standards compliance

Design and Manufacture: API 608,API 6D,BS5351
Face to face(end to end):ANSI B 16.10,API6D, JIS B 2002
Flanged connection: ANSI B16.5, JISB2212-2214
Fire-safe:API607,API6 FA
Butt welded end: ANSI B16.25
Test and inspection:API598,API6D, JIS B2003

Floating ball valve

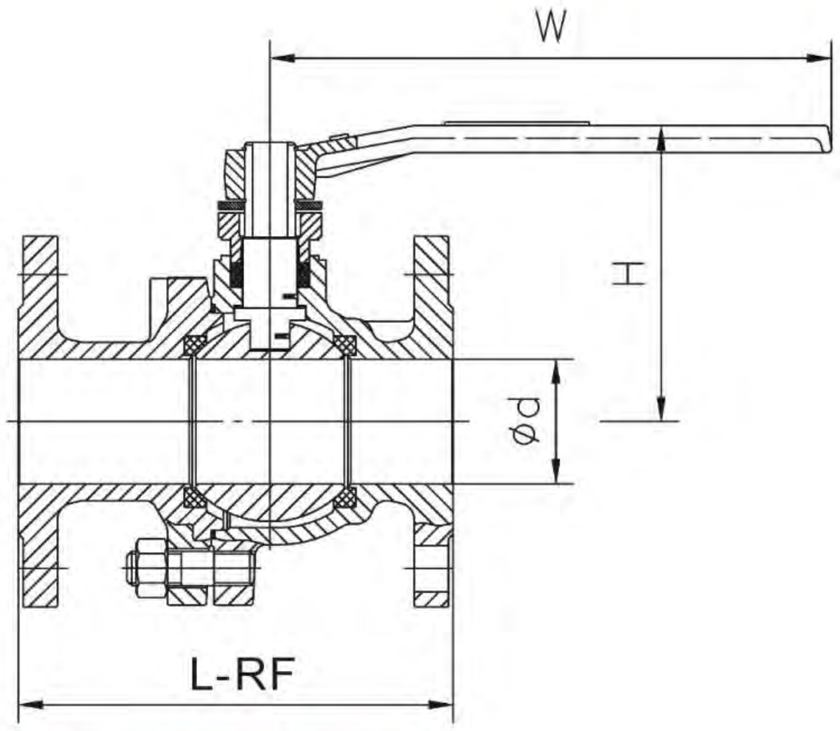
Bolted bonnet, Two-piece Body, floating Ball
Full or Reduced bore, Anti Blowout stem.
Fire safe and Anti static
Stainless steel ball
ASTM A216 WCB,A351 CF8,A351 CF8M,
A351 CF3,A351 CF3M, A351 CN7M

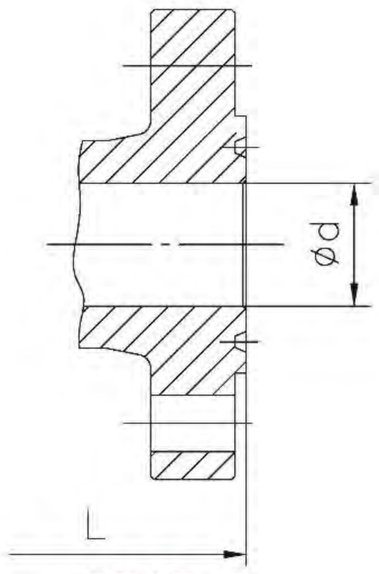


Parts and material list

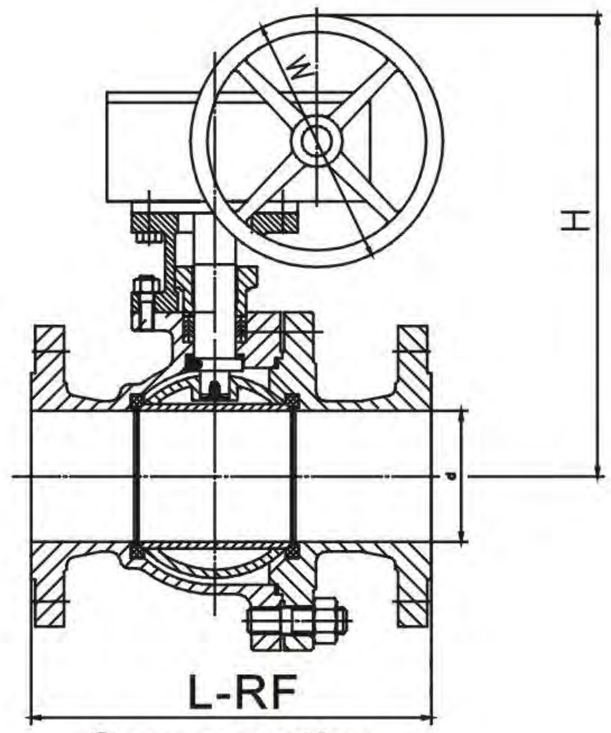
Parts No	Parts name	Material				
		WCB/13Cr	WCB/304	WCB/316	CF8/304	CF8M/316
1	Body	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
10	Packing	PTFE	PTFE	PTFE	PTFE	PTFE
11	Gland flange	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
12	Stop collar	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
13	Lever	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
8	Thrust washer	PTFE	PTFE	PTFE	PTFE	PTFE
7	Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
6	Ball	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
5	Seat	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE
9	Gasket	PTFE	PTFE	PTFE	PTFE	PTFE
2	Body nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M
3	Body bolting	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
4	Closure	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M

Noted; the chart above only lists out some common composition of steel ball valve parts, we may provide other diffterent parts material composition according to the customer’ s request or the actual valve working condition.





RTJ End



Gear operation

Main size and weight

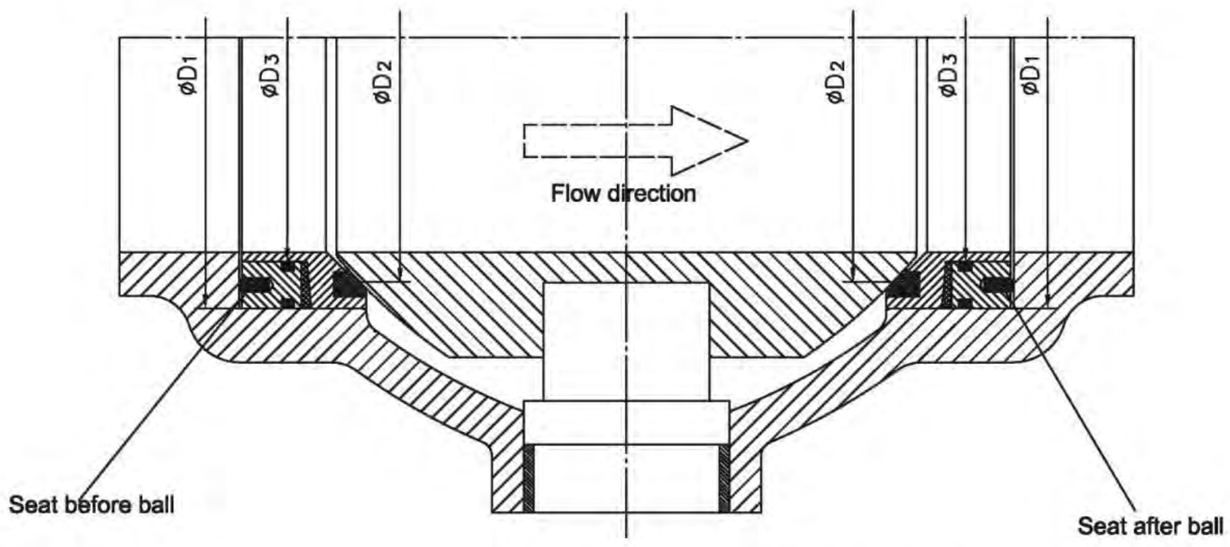
Class	Size		d	Dimensions (mm)						Weight (kg)	
	DN	NPS		L		W		H			
				RF	RTJ	Hand wheel	Gear box	Hand wheel	Gear box	Hand wheel	Gear box
150 10k	15	1/2	13	108	119	140	-	85	-	3	-
	20	3/4	19	117	130	140	-	90	-	3.2	-
	25	1	25	127	140	150	-	99	-	3.5	-
	32	1 1/4	32	140	153	180	-	105	-	5	-
	40	1 1/2	38	165	178	300	-	165	-	6	-
	50	2	49	178	191	350	-	140	-	11	-
	65	2 1/2	62	190	203	350	-	180	-	13.5	-
	80	3	75	203	216	500	-	235	-	19	-
	100	4	100	229	242	500	305	250	380	29	53
	125	5	127	356	369	800	305	280	405	49	79
	150	6	150	394	407	800	305	310	460	65	102
	200	8	201	457	470	1000	305	350	550	115	185
	250	10	252	533	546	-	400	-	706	-	280
300 20k	15	1/2	13	140	151	140	-	85	-	3	-
	20	3/4	19	152	165	140	-	90	-	5	-
	25	1	25	165	178	150	-	99	-	6	-
	32	1 1/4	32	178	191	180	-	105	-	8	-
	40	1 1/2	38	190	203	200	-	126	-	11	-
	50	2	49	216	232	250	-	142	-	16	-
	65	2 1/2	62	241	257	300	-	165	-	23	-
	80	3	74	283	299	350	-	178	-	30	52
	100	4	100	305	321	500	305	230	330	47	76
	125	5	127	381	397	800	305	280	380	74	124
	150	6	150	403	419	800	305	310	420	107	163
	200	8	201	502	518	1000	305	350	480	153	267
600	15	1/2	13	165	164	140	-	79	560	5	-
	20	3/4	19	190	190	140	-	83	-	7	-
	25	1	25	216	216	200	-	114	-	9	-
	32	1 1/4	32	229	229	200	-	120	-	13	-
	40	1 1/2	38	241	241	250	-	125	-	17	-
	50	2	49	292	295	300	-	156	-	25	-
	65	2 1/2	62	330	333	350	-	172	-	42	-
	80	3	74	356	359	500	305	220	370	56	76
	100	4	100	432	435	650	305	250	400	85	123
900	15	1/2	13	216	216	150	-	98	-	9	-
	20	3/4	19	229	229	150	-	105	-	13	-
	25	1	25	254	254	200	-	110	-	16	-
	32	1 1/4	32	279	279	250	-	120	-	24	-
	40	1 1/2	38	305	305	250	-	125	-	31	-
	50	2	49	368	371	350	-	160	-	45	-
1500	15	2 1/2	13	216	216	182	-	98	-	10	-
	20	3/4	19	229	229	250	-	125	-	14	-
	25	1	25	254	254	250	-	130	-	17	-
	32	1 1/4	32	279	279	300	-	155	-	25	-
	40	1 1/2	38	305	305	350	-	180	-	33	-
	50	2	49	368	371	450	-	225	-	48	-

Noted: We may provide other different actuators according to the customer's request, such as pneumatic, electric, hydraulic actuators, the details of them according to the actual valve working condition.

Construction and features of trunnion ball valve

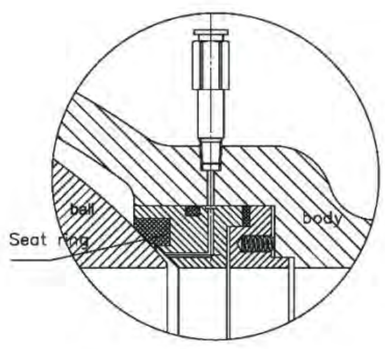
Seating structure

According to some special working conditions and customer′ s requirement,we provide 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.

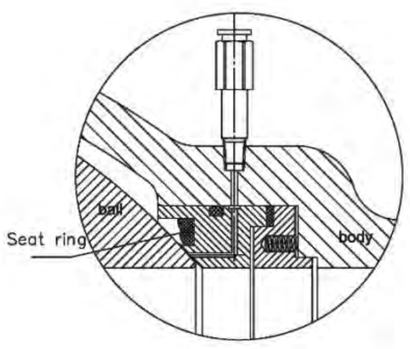


Fire safe design

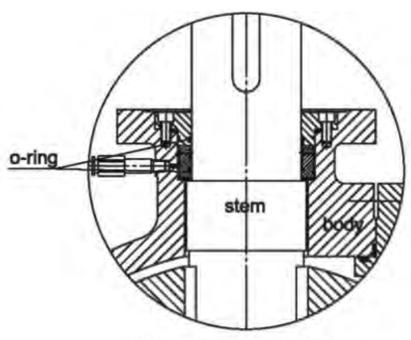
In case of fire, the non-metal material parts such as seat sealing ring of PTFE, o-ring for the stem, and sealing gasket for body and bonnet, might be damaged due to high temperature. As showed in the figure, our special design structure of secondary metal to metal or the graphite seal is provided for the trunnion ball valve to effectively prevent both internal and external leakage of the valve. This design can meet the requirement of API 1607



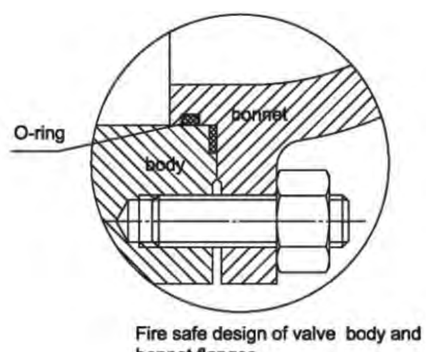
before fire



After fire



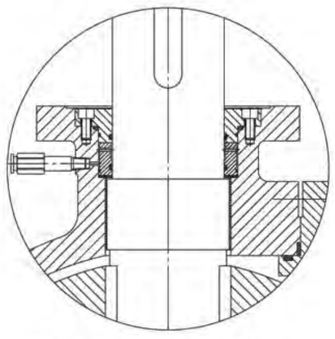
Fire safe design of stem

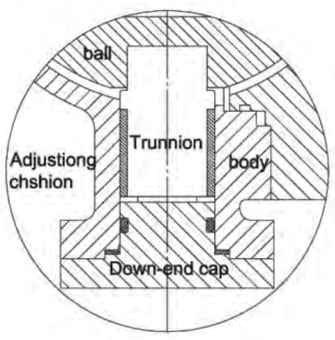


Fire safe design of valve body and bonnet flanges

Anti blowout stem

Anti blowout structure is provided with 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 even if at abnormal risen pressure in the cavity.


Anti blow out stem

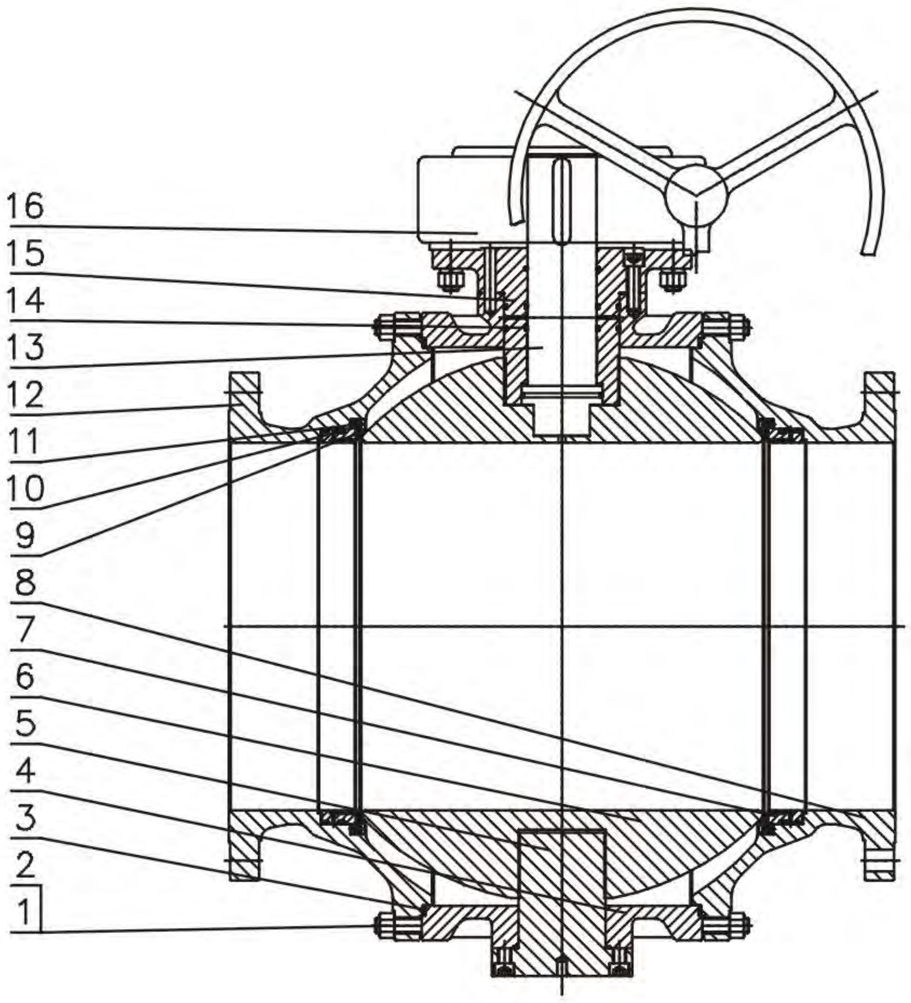


Anti-static design

Anti-static design

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

API Trunnion Ball Valve



Class 150~1500 cast steel Trunnion ball valve

Bolted cover, Two-piece or three-piece Body,
Anti Blowout stem.
Fire safe and Anti static
ASTM A216 WCB,A351 CF8,A351 CF8M,
A351 CF3,A351 CF3M,A351 CN7M

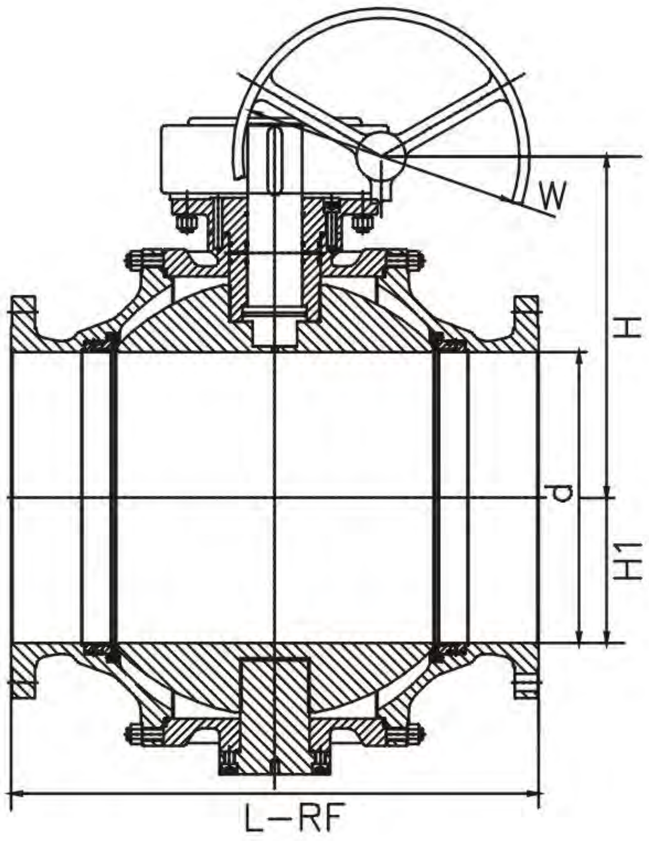
Standards compliance

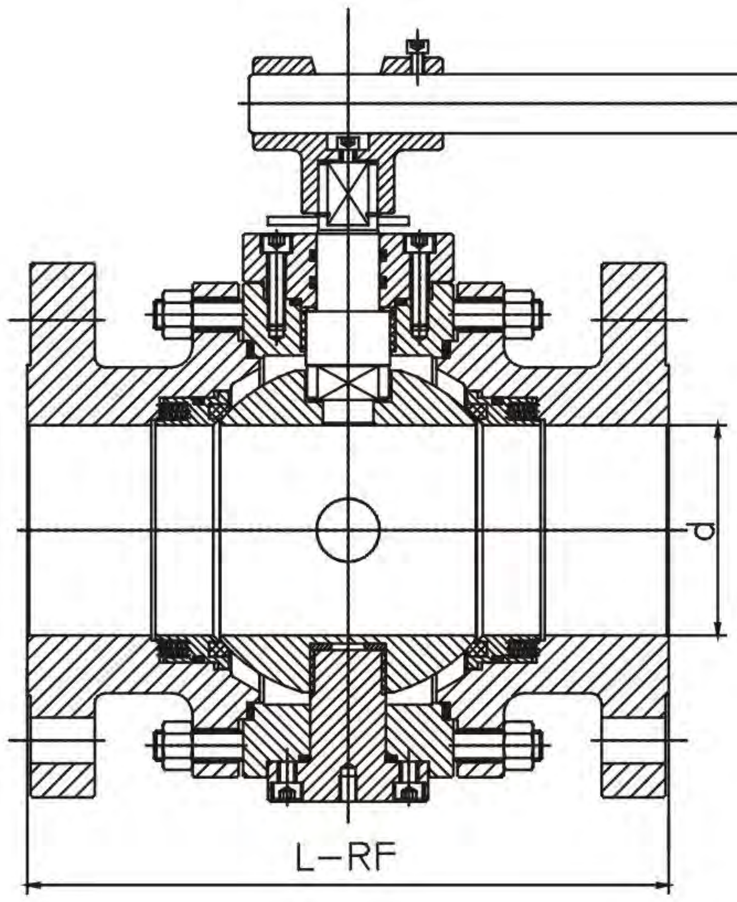
Design and Manufacture: API 6D,API 608
Face to face(end to end):API 6D, JIS B2002
Flanged connection:ANSIB16.5, JIS B2212-2214
Fire-safe:API607,API6FA
Butt welded and:ANSIB16.25
Test and inspection:API6D,API598,JIS B2003

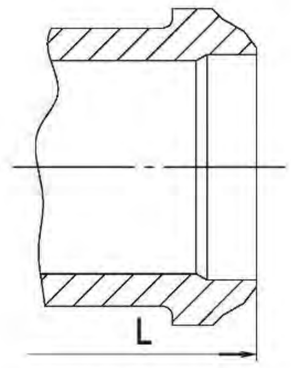
Parts and material list

Parts No.	Parts name	WCB/13Cr	WCB/304	WCB/316	CF8/304	CF8M/316
4	Body	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
10	O ring	Viton	Viton	Viton	Viton	Viton
13	Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
15	Gland	ASTM A105	ASTM A105	ASTM A105	ASTM A182 F304	ASTM A182 F316
16	Gear	Carbon steel/Gray iron	Carbon steel/Gray iron	Carbon steel/Gray iron	Carbon steel/Gray iron	Carbon steel/Gray iron
6	Ball	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
9	Seat	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE
14	O ring	Viton	Viton	Viton	Viton	Viton
7	Seat ring	ASTM A105	ASTM A105	ASTM A105	ASTM A182 F304	ASTM A182 F316
11	Spring	SS304 or inconel 750	SS304 or inconel 750	SS316 or inconel 750	SS304 or inconel 750	SS316 or inconel 750
1	Body bolting	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8
2	Body nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8
8	Cover	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
3	Gasket	PTFE	PTFE	PTFE	PTFE	PTFE
5	Low trunnion	ASTM A105	ASTM A105	ASTM A105	ASTM A182 F304	ASTM A182 F316
12	Cover	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M

Noted: the chart above only lists out some common composition of steel ball valve parts, we may provide other different parts material composition according to the customer s request or the actual valve working condition.







BW End

Class	Size		Dimensions (mm)						Weight (kg)
	DN	NPS	L		d	H	H_1	W	
			RF	BW					
150 10k	100	4	229	305	100	250	135	300	60
	125	5	356	381	127	260	165	300	80
	150	6	394	457	150	285	193	400	101
	200	8	457	521	201	325	240	400	166
	250	10	533	559	252	370	293	500	283
	300	12	610	635	303	415	340	500	463
	350	14	686	762	334	455	372	600	622
	400	16	762	838	385	500	415	600	900
	450	18	864	914	436	540	462	600	1150
	500	20	914	991	487	590	511	600	1360
	600	24	1067	1143	589	680	601	600	2514
	650	26	1143	1245	633	800	700	600	3200
	700	28	1245	1346	684	960	780	700	4000
	750	30	1295	1397	735	1200	830	700	4800
	800	32	1372	1524	779	1380	870	700	5800
	900	36	1524	1727	874	1650	970	700	8000
300 20k	100	4	305	305	100	205	140	300	70
	125	5	381	381	127	260	170	300	95
	150	6	403	457	150	285	192	400	128
	200	8	502	521	201	325	246	400	234
	250	10	568	559	252	370	303	500	403
	300	12	648	635	303	415	348	500	602
	350	14	762	762	334	455	378	600	803
	400	16	838	838	385	500	429	600	1273
	450	18	914	914	436	540	518	600	1450
	500	20	991	991	487	590	540	600	1700
	600	24	1143	1143	589	690	650	600	3100
	650	26	1245	1245	633	800	750	700	4500
	700	28	1346	1346	684	960	800	700	6000
	750	30	1397	1397	735	1200	860	700	7500
	800	32	1524	1524	779	1380	900	800	9000
	900	36	1727	1727	874	1650	1020	800	12000

Noted: We may provide other different actuators according to the customer's request, such as pneumatic, electric, hydraulic actuators, the details of them according to the actual valve working condition.

API Trunnion Ball Valve

Class	Size		Dimensions（mm）							Weight（kg）
	DN	NPS	L			d	H	H_1	W	
			RF	RTJ	BW					
600	50	2	292	295	292	49	140	94	300	32
	65	2½	330	333	330	62	155	115	300	47
	80	3	356	359	356	74	190	136	300	68
	100	4	432	435	432	100	220	152	300	106
	125	5	508	511	508	127	245	180	300	170
	150	6	559	562	559	150	300	209	400	241
	200	8	660	664	660	201	345	263	600	444
	250	10	787	791	787	252	405	312	600	668
	300	12	838	841	838	303	445	354	600	1050
	350	14	889	892	889	334	505	389	600	1317
	400	16	991	994	991	385	580	440	700	1800
	450	18	1092	1095	1092	436	700	530	700	2400
	500	20	1194	1200	1194	487	890	560	700	3000
	600	24	1397	1407	1397	538	1050	670	800	5400
900	50	2	368	371	368	49	170	98	300	45
	65	2½	419	422	419	62	195	120	300	55
	80	3	381	384	381	74	220	140	350	94
	100	4	457	460	457	100	245	162	350	141
	125	5	559	562	559	127	305	188	400	230
	150	6	610	613	610	150	335	213	400	325
	200	8	737	740	737	201	370	270	600	580
	250	10	838	841	838	252	475	322	600	850
	300	12	965	968	965	303	590	360	700	1330
	350	14	1029	1038	1029	322	700	400	700	1660
	400	16	1130	1140	1130	372	850	460	800	2280
1500	40	1½	305	305	305	38	280	100	300	44
	50	2	368	371	368	49	320	113	300	67
	65	2½	419	422	419	64	340	125	300	80
	80	3	470	473	470	74	385	138	300	130
	100	4	546	549	546	100	415	171	300	192
	125	5	673	676	673	125	480	200	400	335
	150	6	705	711	705	144	580	222	400	475
	200	8	832	841	832	192	584	280	400	820
	250	10	991	1000	991	239	650	340	500	1320
	300	12	1130	1146	1130	287	700	370	600	2050
2500	40	1½	384	387	384	38	290	105	300	72
	50	2	451	454	451	42	320	120	300	104
	65	2½	508	514	508	52	350	130	300	140
	80	3	578	584	578	62	400	150	300	202
	100	4	673	683	673	87	425	180	400	305
	125	5	794	807	794	100	500	210	400	530
	150	6	914	927	914	131	590	230	500	760
	200	8	1022	1038	1022	179	610	290	500	1200
	250	10	1270	1292	1270	223	660	350	600	2080