

VIZA



**BALL  
VALVE**

The Flow  
Control Expert  
For The  
21<sup>st</sup> Century

[www.vizavalve.com](http://www.vizavalve.com)

QUALITY VALVE  
RELIABLE  
AND GLOBAL SERVICE



Code No. C03-1805

# VIZA SERVICE

VIZA Valves has been serving for many global End users and EPCs for more than 10 years and has set a reliable, professional reputation among the valve industry. VIZA can offer more economic customized valve solutions for customers to respond to different working conditions.

VIZA can offer a series of service ranging from valve installation, onsite maintenance, onsite inspection to onsite technical and operation training, VIZA has a global service team that can offer easy and quick response through professional knowledge.



The Flow Control Expert for the 21<sup>st</sup> Century



**BALL VALVE**

### COOPERATIVE PARTNER

- 📍 NORTH & SOUTH AMERICA
- 📍 EUROPE & AFRICA
- 📍 MIDDLE EAST
- 📍 ASIA PACIFIC



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**QUALITY VALVE  
RELIABLE  
AND GLOBAL SERVICE**

# COMPANY OVERVIEW

[www.vizavalve.com](http://www.vizavalve.com)

QUALITY VALVE, RELIABLE AND GLOBAL SERVICE

## VIZA VALVES

VIZA Valves is China's leading manufacturer of industrial valves. The head office, Suzhou VIZA Valve Co., Ltd., is located in Kunshan and has been manufacturing top-quality valves for more than 10 years. From its early days, VIZA Valves has always been an export-oriented manufacturer. All valves are designed, produced, and tested under rigorous international standards such as API, ANSI, ASTM, NACE, ISO, EN, BS, DIN, UNI, MSS, AWWA and JIS. VIZA Valves products are 100% exported to North America, Western Europe, Middle East, Australia and other Regions and are widely used in industries like Oil & Gas, Pipeline Transmission, Refining, Chemical and Petrochemical, Power Generation, Water and Waste Water Treatment etc.

## VIZA VALVES' GOAL

VIZA Valves' goal is to produce a zero defect product with a long and reliable service life and minimize cost for all customers, EPCs and End users through VIZA's professional work. VIZA Valves is dedicated to serving the global energy industry and working towards a sustainable new world.

**10+**

has been  
manufacturing  
top-quality valves  
for more than 10  
years.

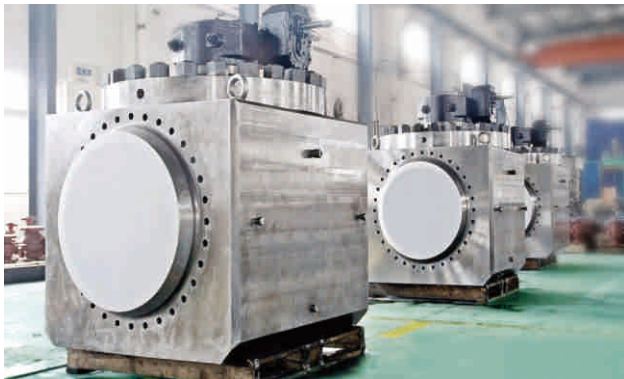




### PRODUCTION RANGE

**1/2" -48"**  
**150-2500**

Size from 1/2" to 48"  
Class from 150 to 2500



## MANUFACTURING PLANTS

VIZA Valves has built its own manufacturing plants: one is Kunshan Viza Valve Co., Ltd. (refer to Kunshan Viza) located in Kunshan, nearby Shanghai focusing on high and middle pressure valves such as floating and trunnion mounted ball valves, cast steel gate, globe and check valves; another is Tianjin Tangu Viza Valve Co., Ltd. (refer to Tianjin Viza) located in Tianjin, nearby Beijing focusing on low pressure valves such as butterfly valves, resilient seat gate valves and cast iron valves.

## VIZA PRODUCTS

Kunshan Viza is specialized in manufacturing Forged Steel and Cast Steel Trunnion Mounted and Floating type Ball Valves , size from 1/2" to 48" , class from 150 to 2500, with body materials as A105N, LF2, WCB, LCB, LCC, F304, F304L, F316, F316L, CF8, CF3, CF8M, CF3M, F51, F53, F55, 4A, 5A, 6A & seat materials as PTFE, Nylon, Delrin, PEEK, etc. All valves are API607/6FA fire safe certified. VIZA factory has strict quality assurance system and is API 6D, ISO 9001:2008, CE/PED and ATEX certified.

# VIZA QUALITY

## QUALIFICATION & CERTIFICATION

### QUALITY CONTROL

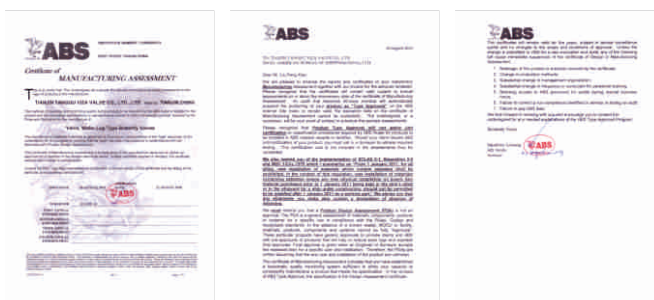
VIZA Valves has a deep understanding that valve quality would make difference to customer and society so VIZA has set a complete system of internal quality assurance and implemented a strict quality control plan from raw material selection to finished product final inspection. VIZA has made continuous improvement for quality management.

VIZA Valves has obtained ISO9001: 2008 International Quality System Certification, ISO14001 Environmental System Certification, OHSAS18001 Occupational Health Safety Certification, European Union CE Certification, and American Petroleum Institute API System Certification.

### API



### ABS



### CE



### ISO



### TA-Luft



### TS



### ATEX

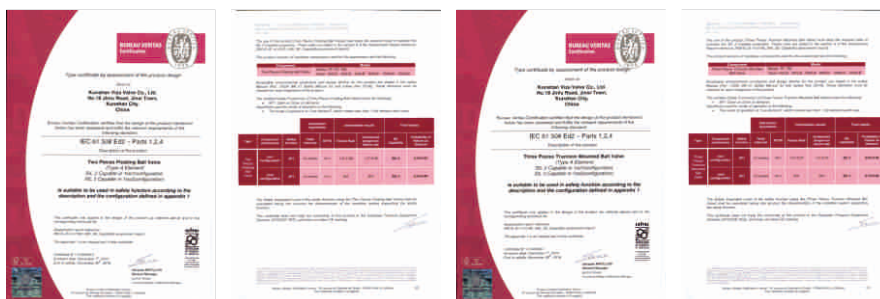


Product certification (API6D, API600), API 6107, API 6FA fire test certification, American classification society ABS certification, Russia CU-TR certification, AQSIQ TS certification.

### EAC



### SIL3



# PRODUCTION EQUIPMENT

## PRODUCTION CONCEPT

VIZA Valves combines advanced production equipment with professional team, effectively concentrate production resources, enhance production efficiency, improve processing technology and process control capacity through the use of the most advanced hardware and software. VIZA carries out advanced production concept, implements strict 7S field management so as to meet or surpass various requirements from different customers.



## FACTORY PRODUCTION FACILITY

VIZA factory has machining center, CNC machine tools, CNC boring and milling machine, general machine tool, large vertical lathe, spherical machine tool and other excellent mechanical processing equipment.



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VIZA Valves Integrates Advanced Production Equipment with Professional Team to optimize production.





VIZA has its own laboratory, having advanced equipment to ensure raw materials testing, process control and valve test, such as: Material mechanical performance test, Spectral analysis of material composition, Material metallographic analysis



## ADVANCED EQUIPMENT

VIZA has a full set of advanced inspection and testing equipment to control the quality of the valve from the rough casting to the finished product. These devices allow us to perform the following tests:



Radiographic test

Ultrasonic test

Magnetic particle test

Liquid penetrating test

Hydraulic test

High pressure gas test

Cryogenic test

Corrosion test

Fugitive emission test

High temperature cycling test



# SERIES TF

## 3PC Body Forged Trunnion Mounted Ball Valve



### Features

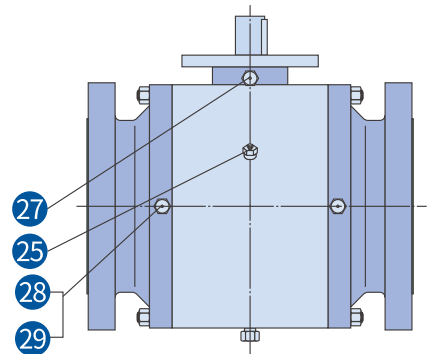
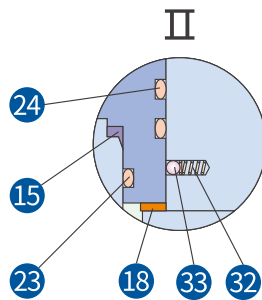
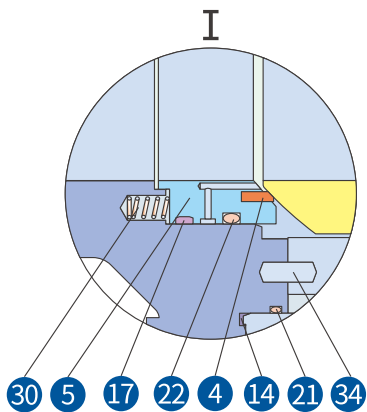
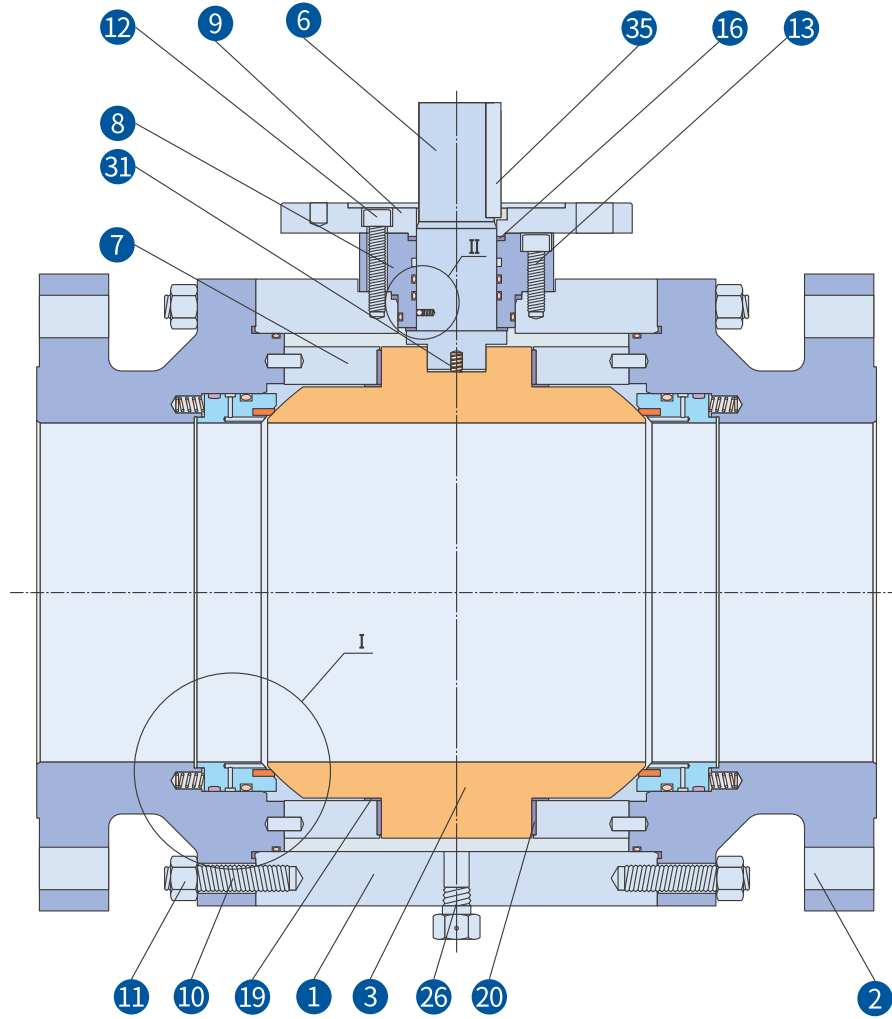
Size: 2"-48"  
Class: 150-2500  
Three Pieces Forged Steel Body  
Trunnion Mounted Ball, Full & Reduced Bore  
Anti-static Device  
Blow-out Proof Stem  
Double Block and Bleed  
Fire Safe Design  
Emergency Sealant Injector (6" & Larger)  
Vent Valve and Safety Valve  
Lifting Lugs & Supporting Feet (8" & Larger)  
Seat Pocket SS Overlay (Optional)  
Seals Area ENP Coated

### Specifications

Design	ASME B16.34/API 6D
Face to Face	ASME B16.10/API 6D
End to End	ASME B16.10/API 6D
End Flange	ASME B16.5/B16.47A
BW End	ASME B16.25
Test	API 6D
Fire Safe Test	API 607/API 6FA
Special	NACE MR 01 75

# SERIES TF

## Material Specification



# TF BALL VALVE

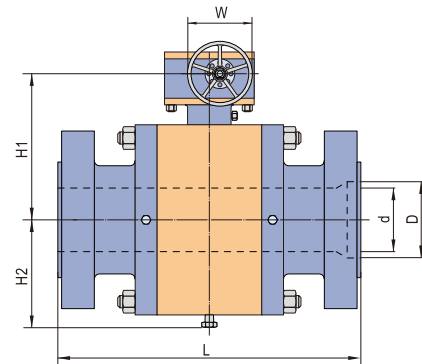
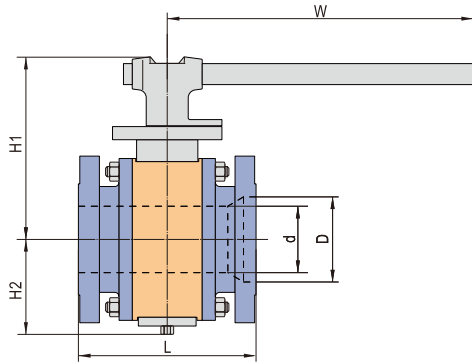
## 3PC Body Forged Trunnion Mounted Ball Valve

NO.	PART	A105/ENP	A105/316	F316/316	LF2/316-NACE
1	Body	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
2	Adapter	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
		AISI 4140/ENP (2500LB)	ASTM A182-F51 (900LB~2500LB)	ASTM A182-F51 (900LB-2500LB)	ASTM A182-F51 (900LB-2500LB)
4	Seat Insert	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK
5	Seat Ring	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
6	Stem	AISI 4140/ENP	ASTM A182-F51	ASTM A182-F51	ASTM A182-F51
7	Trunnion Support	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
8	Gland Flange	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
9	Top Flange	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
10	Body Stud	ASTM A193-B7	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7M
11	Body Nut	ASTM A194-2H	ASTM A194-2H	ASTM A194-8	ASTM A194-7M
12	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
13	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
14	*Body Gasket	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
15	*Gland Gasket	Graphite	Graphite	Graphite	Graphite
16	*Stem Firesafe Packing	Graphite	Graphite	Graphite	Graphite
17	*Seat Firesafe Packing	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
18	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
19	Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
20	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
21	*O-ring	Viton	Viton	Viton	Viton
22	*O-ring	Viton	Viton	Viton	Viton
23	*O-ring	Viton	Viton	Viton	Viton
24	*O-ring	Viton	Viton	Viton	Viton
25	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
26	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
27	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
28	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
29	Check Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
30	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
31	Antistatic Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
32	Antistatic Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
33	Grounding Plunger	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
34	Alignment Pin	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
35	key	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel

\*Recommended Spare Parts

# DIMENSIONS AND WEIGHT

## 3PC Body Forged Trunnion Mounted Ball Valve



FULLBORE		CLASS 150				
SIZE	d	L	H1	H2	W	WEIGHT
in	mm	mm	mm	mm	mm	Kg
2	51	178	176	96	350	10
3	76	203	220	119	400	31
4	102	229	241	139	450	46
6	152	394	230	167	*300	128
8	203	457	285	210	*400	234
10	254	533	335	251	*400	406
12	305	610	384	290	*400	596
14	337	686	414	319	*610	829
16	387	762	454	354	*610	1092
18	438	864	498	397	*610	1577
20	489	914	623	435	*610	2001
22	538	991	662	464	*610	2535
24	591	1067	635	515	*700	3075
26	635	1143	750	550	*760	3862
28	686	1245	753	585	*760	4429
30	737	1295	895	656	*760	5782
32	781	1372	900	659	*760	6356
34	832	1473	940	700	*760	7911
36	876	1524	975	735	*760	8712
40	976	1727	1046	810	*760	11737
42	1020	1987	1074	835	*800	12200
48	1168	2120	1722	1040	*800	18400

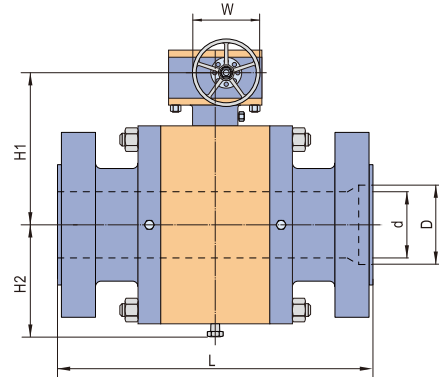
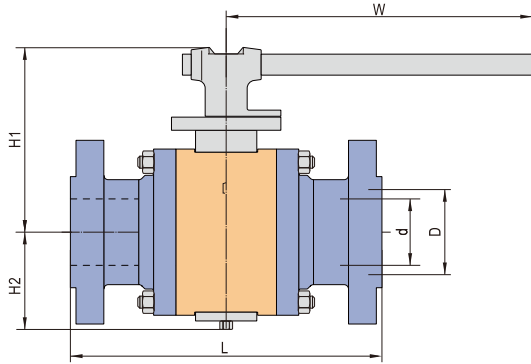
\* Gear Operation

REDUCE BORE		CLASS 150					
SIZE	d	D	L	H1	H2	W	WEIGHT
in	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	178	168	87	350	13
3*2	51	76	203	176	96	350	21
4*3	76	102	229	220	119	400	38
6*4	102	152	394	241	139	450	73
8*6	152	203	457	230	167	*300	160
10*8	203	254	533	285	210	*400	260
12*10	254	305	610	335	251	*400	444
14*10	254	337	686	335	251	*400	520
14*12	305	337	686	384	290	*400	664
16*12	305	387	762	384	290	*400	734
16*14	337	387	762	414	319	*610	907
18*14	337	438	864	414	319	*610	986
18*16	387	438	864	454	354	*610	1214
20*16	387	489	914	454	354	*610	1316
20*18	438	489	914	498	397	*610	1728
22*18	438	538	991	498	397	*610	1783
24*20	489	591	1067	623	435	*610	2258
26*22	538	635	1143	662	464	*610	2904
28*24	591	686	1245	635	515	*700	3508
30*24	591	737	1295	635	515	*700	3733
32*26	635	781	1372	750	550	*760	4493
34*28	686	832	1473	753	585	*760	5198
36*30	737	876	1524	895	656	*760	6302
40*34	832	976	1727	940	700	*760	9824

FULLBORE		CLASS 300				
SIZE	d	L	H1	H2	W	WEIGHT
in	mm	mm	mm	mm	mm	Kg
2	51	216	177	89	400	23
3	76	283	220	119	450	42
4	102	305	243	137	500	60
6	152	403	228	167	*305	154
8	203	502	286	206	*400	282
10	254	568	335	252	*500	449
12	305	648	391	289	*610	658
14	337	762	422	323	*610	986
16	387	838	467	367	*610	1440
18	438	914	635	411	*610	1908
20	489	991	684	450	*700	2425
22	538	1092	637	488	*700	3213
24	591	1143	674	519	*760	3710
28	686	1346	794	602	*760	5618
30	737	1397	810	655	*760	7396
32	781	1524	872	685	*800	8469
34	832	1626	900	720	*800	9908
36	876	1727	1031	740	*800	10771
40	976	1956	1109	818	*800	13632
42	1020	2032	1133	848	*800	13000
48	1168	2170	1346	969	*1016	19000

\* Gear Operation

REDUCE BORE		CLASS 300					
SIZE	d	D	L	H1	H2	W	WEIGHT
in	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	216	168	75	350	17
3*2	51	76	283	177	89	400	35
4*3	76	102	305	220	119	450	55
6*4	102	152	403	243	137	500	91
8*6	152	203	502	228	167	*305	184
10*8	203	254	568	286	206	*400	320
12*10	254	305	648	335	252	*500	500
14*10	254	337	762	335	252	*500	579
14*12	305	337	762	391	289	*610	763
16*12	305	387	838	391	289	*610	862
16*14	337	387	838	422	323	*610	1109
18*14	337	438	914	422	323	*610	1231
18*16	387	438	914	467	367	*610	1547
20*16	387	489	991	467	367	*610	1632
20*18	438	489	991	635	411	*610	2060
22*18	438	538	1092	635	411	*610	2251
24*20	489	591	1143	684	450	*700	2821
28*24	591	686	1346	674	519	*760	4373
30*24	591	737	1397	674	519	*760	4577
34*28	686	832	1626	794	602	*760	5664
36*30	737	876	1727	810	655	*760	9083
40*34	832	976	1956	900	720	*800	12005



**FULLBORE CLASS 600**

SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2	51	292	176	100	400	27
3	76	356	223	125	500	61
4	102	432	268	148	650	107
6	152	559	259	181	*400	269
8	203	660	304	225	*500	423
10	254	787	366	278	*610	741
12	305	838	412	323	*610	1074
14	337	889	521	339	*610	1264
16	387	991	609	398	*610	2008
18	438	1092	620	443	*700	3720
20	489	1194	612	490	*760	3650
22	538	1295	686	513	*760	3816
24	591	1397	741	555	*810	5373
28	685	1549	966	643	*810	8076
30	737	1651	1018	688	*810	9664
32	781	1778	900	775	*1016	12030
34	832	1930	940	820	*1016	14399
36	874	2083	1177	800	*1016	16013
40	976	2159	1267	883	*1219	20553
42	1020	2175	1213	918	*1219	16400
48	1168	2435	1765	1070	*1219	24200

\* Gear Operation

**REDUCE BORE CLASS 600**

SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2*1-1/2	38	51	292	168	75	350	21
3*2	51	76	356	176	100	400	41
4*3	76	102	432	223	125	500	76
6*4	102	152	559	268	148	650	158
8*6	152	203	660	259	181	*400	334
10*8	203	254	787	304	225	*500	574
12*10	254	305	838	366	278	*610	836
14*10	254	337	889	366	278	*610	894
14*12	305	337	889	412	323	*610	1177
16*12	305	387	991	412	323	*610	1306
16*14	337	387	991	521	339	*610	1531
18*14	337	438	1092	521	339	*610	1629
18*16	387	438	1092	609	398	*610	2208
20*16	387	489	1194	609	398	*610	2438
20*18	438	489	1194	620	443	*700	2960
22*18	438	538	1295	620	443	*700	3214
24*20	489	591	1397	612	490	*760	4241
28*24	591	685	1549	741	555	*810	6022
30*24	591	737	1651	741	555	*810	7669
34*28	685	832	1930	966	643	*810	11238
36*30	737	874	2083	1018	735	*800	12838
40*34	832	976	2159	940	820	*1016	17876

**FULLBORE CLASS 900**

SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2	51	368	216	115	450	60
3	76	381	255	125	650	77
4	102	457	217	165	*406	138
6	152	610	274	195	*400	340
8	203	737	328	245	*610	588
10	254	838	485	302	*610	1022
12	305	965	517	334	*610	1378
14	324	1029	588	369	*710	1828
16	375	1130	613	426	*710	1999
18	425	1219	635	458	*760	3456
20	473	1321	810	510	*812	4760
24	572	1549	954	598	*800	5497
28	667	1753	1063	668	*1016	10202
30	712	1880	1085	713	*1016	11442
32	760	2032	1036	752	*1219	17462
36	855	2286	1130	836	*1219	20154

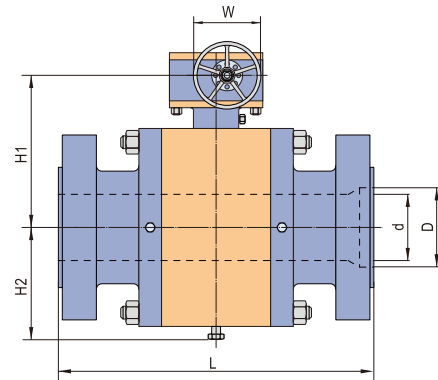
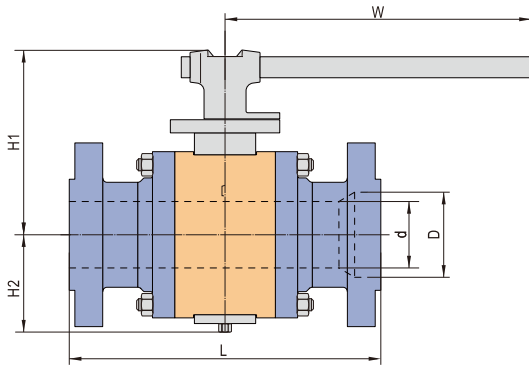
\* Gear Operation

**REDUCE BORE CLASS 900**

SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2*1-1/2	38	51	368	168	75	400	48
3*2	51	76	381	216	115	450	60
4*3	76	102	457	255	125	650	106
6*4	102	152	610	217	165	*400	208
8*6	152	203	737	274	195	*400	430
10*8	203	254	838	328	245	*610	738
12*10	254	305	965	485	302	*610	1145
14*10	254	324	1029	485	302	*610	1081
14*12	305	324	1029	517	334	*610	1495
16*12	305	375	1130	517	334	*610	1742
16*14	324	375	1130	588	369	*710	2123
18*16	375	425	1219	613	426	*710	2299
20*16	375	473	1321	613	426	*710	2596
20*18	425	473	1321	635	458	*760	3749
24*20	473	572	1549	810	510	*812	5793
28*24	572	667	1753	954	598	*800	7580
30*24	572	712	1880	954	598	*800	7981
36*30	712	855	2286	1085	713	*1016	15653

# DIMENSIONS AND WEIGHT

3PC Body Forged Trunnion Mounted Ball Valve



FULLBORE		CLASS 1500				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2	51	368	216	105	450	68
3	76	470	270	132	650	130
4	102	546	244	159	*406	219
6	146	705	308	200	*610	474
8	194	832	366	262	*610	904
10	241	991	479	294	*710	1442
12	289	1130	551	360	*710	2348
14	318	1257	558	390	*760	3066
16	362	1384	657	462	*760	4563
18	406	1537	823	490	*812	5916
20	456	1664	933	596	*1016	6700
24	546	1944	1068	654	*1016	7151

\* Gear Operation

REDUCE BORE		CLASS 1500					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2*1-1/2	38	51	368	191	98	400	45
3*2	51	76	470	216	105	450	96
4*3	76	102	546	270	132	650	142
6*4	102	146	705	244	159	*406	306
8*6	146	194	832	308	200	*610	592
10*8	194	241	991	366	262	*610	1142
12*10	241	289	1130	479	294	*710	1719
14*10	241	318	1257	479	294	*710	1992
14*12	289	318	1257	551	360	*710	2638
16*12	289	362	1384	551	360	*710	2993
16*14	318	362	1384	558	390	*760	3432
18*16	362	406	1537	657	462	*760	5042
20*16	362	456	1664	657	462	*760	5601
20*18	406	456	1664	823	490	*812	6482
24*20	456	546	1944	933	596	*1016	5850

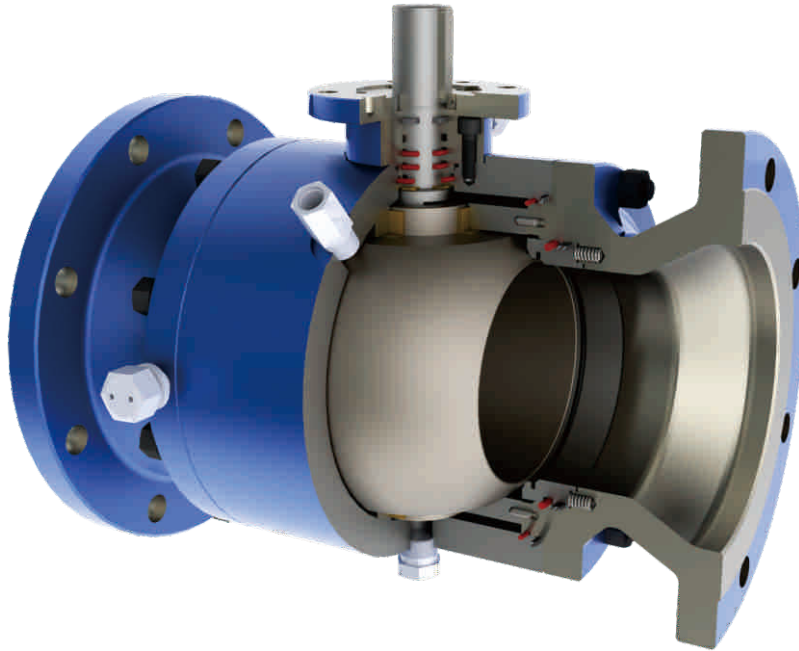
FULLBORE		CLASS 2500				
SIZE in	d mm	L(RTJ) mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2	44	454	247	108	650	80
3	64	584	241	152	*400	243
4	89	683	270	172	*500	389
6	133	927	365	233	*610	1145
8	181	1038	561	305	*610	1675
10	223	1292	600	370	*710	2871
12	265	1445	638	465	*760	3267

\* Gear Operation

REDUCE BORE		CLASS 2500					
SIZE in	d mm	D mm	L(RTJ) mm	H1 mm	H2 mm	W mm	WEIGHT Kg
2*1-1/2	38	44	454	216	110	450	79
3*2	44.5	64	584	247	108	650	130
4*3	64	89	683	241	152	*400	260
6*4	89	133	927	270	172	*500	578
8*6	133	181	1038	365	233	*610	1074
10*8	181	223	1292	561	305	*610	2173
12*10	223	265	1445	600	370	*710	3500

# SERIES TM

## Metal to Metal Seat Trunnion Mounted Ball Valve



### Severe Service

Normal soft-seated valve can not be used for abrasive service or/and for operation under high temperature that prohibits the use of a resilient material. VIZA metal-to-metal seated trunnion mounted ball valve (series TM, range 2"~24" class 150~2500) is designed for this type of severe service that seating action is provided by the metal to metal contacting and seating action is emerged between ball and seat ring.

### General Design

Blow-out proof stem, anti-static device, double block & bleed, self relieving seats, Mechanical stops for ball seat alignment are designed as standard requirements; while for fire safe and sealant injection system will be supplied upon service request.

### Superior Sealing

High precision machining and seat to ball rubbing result in superior ball and seat interfacing for reliable sealing conforming to ANSI/FCI 70-2 class V

### Reliable Operations

Spring-loaded seats maintain close contacting with the ball ensuring tight sealing even at low pressures. This also results in stable operating torques at high differential pressures over a wide range of temperatures or/and high frequency.

### Material Selection

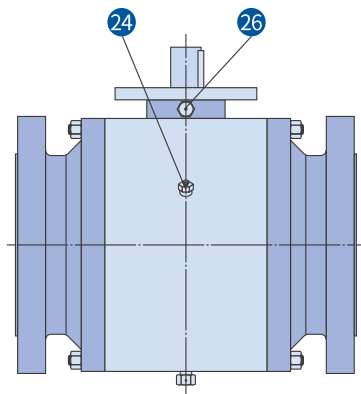
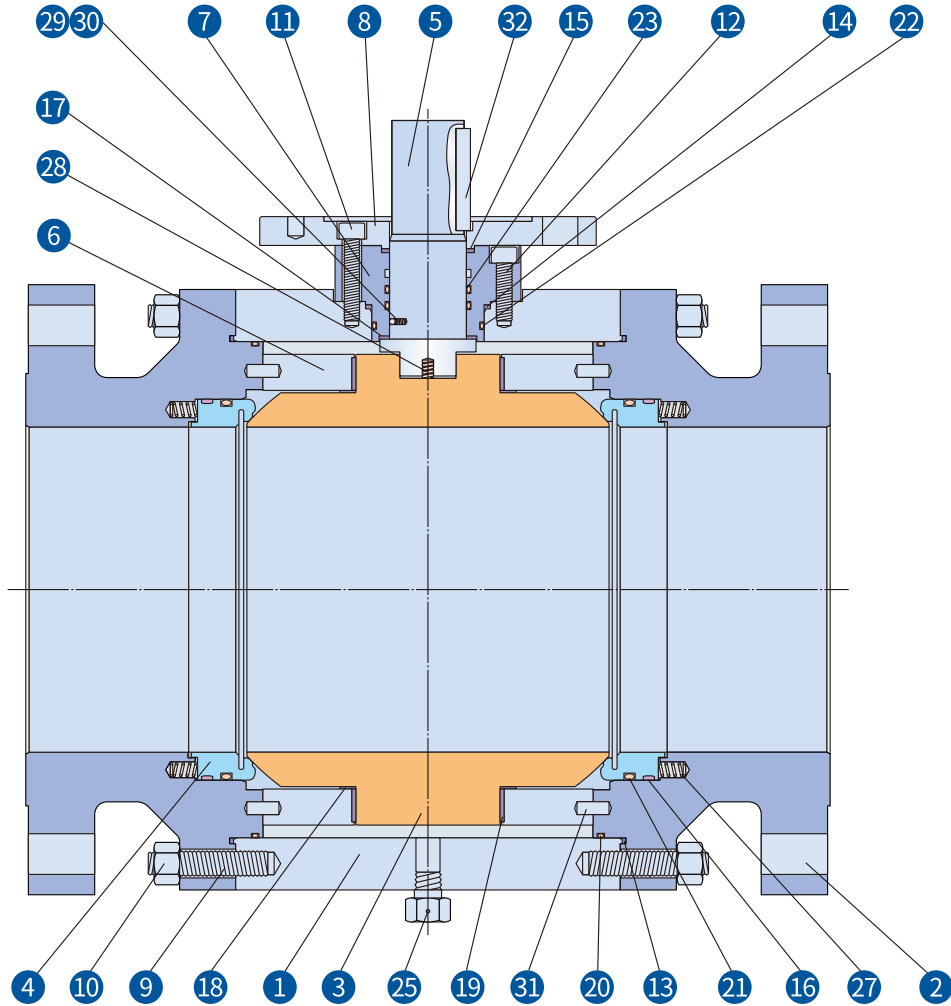
Various materials can be chosen for the service up to 500°C. For service temperature above 300°C, the extension bonnet is required.

### Applications

Hard faced ball and seats (TCC as standard, other special coatings are available on request) allow the valve to be used in more severe services such as slurries, pulp stock, mining and other abrasive media in long life.

# SERIES TM

## Material Specification



**BALL VALVE**

Metal To Metal Seat Trunnion Mounted Ball Valve

NO.	PART	Standard Materials	Standard Materials
1	Body	ASTM A105N	A182-F316
2	Adapter	ASTM A105N	A182-F316
3	Ball	ASTM A105N+TCC	A182-F316+TCC
4	Seat	ASTM A105N+TCC	A182-F316+TCC
5	Stem	AIS14140 ENP	A182-F51
6	Trunnion Supprot	Carbon Steel	Stainless Steel
7	Gland Flange	ASTM A105N	A182-F316
8	Top Flange	ASTM A105N	A182-F316
9	Body stud	ASTM A193-B7	A193-B8
10	Body Nut	ASTM A194-2H	A194-8
11	Screw	Carbon Steel	Stainless Steel
12	Screw	Carbon Steel	Stainless Steel
13	*Body gasket	Graphite	Graphite
14	*Gland gasket	Graphite	Graphite
15	*Stem Firesafe Packing	Graphite	Graphite
16	*Seat Firesate packing	Carbon Fibre+ Graphite	Carbon Fibre+ Graphite
17	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE
18	Washer	SS+COPPER+PTFE	SS+COPPER+PTFE
19	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE
20	*O-ring	Viton	Viton
21	*O-ring	Viton	Viton
22	*O-ring	Viton	Viton
23	*O-ring	Viton	Viton
24	Vent Valve	Stainless Steel	Stainless Steel
25	Drain	Stainless Steel	Stainless Steel
26	Stem Injection	Stainless Steel	Stainless Steel
27	Seat Spring	Inconel X -750	Inconel X -750
28	Antistatic Spring	Inconel X -750	Inconel X -750
29	Antistatic Spring	Inconel X -750	Inconel X -750
30	Grounding Plunger	Stainless Steel	Stainless Steel
31	Alignment Pin	Stainless Steel	Stainless Steel
32	Key	Carbon Steel	Stainless Steel

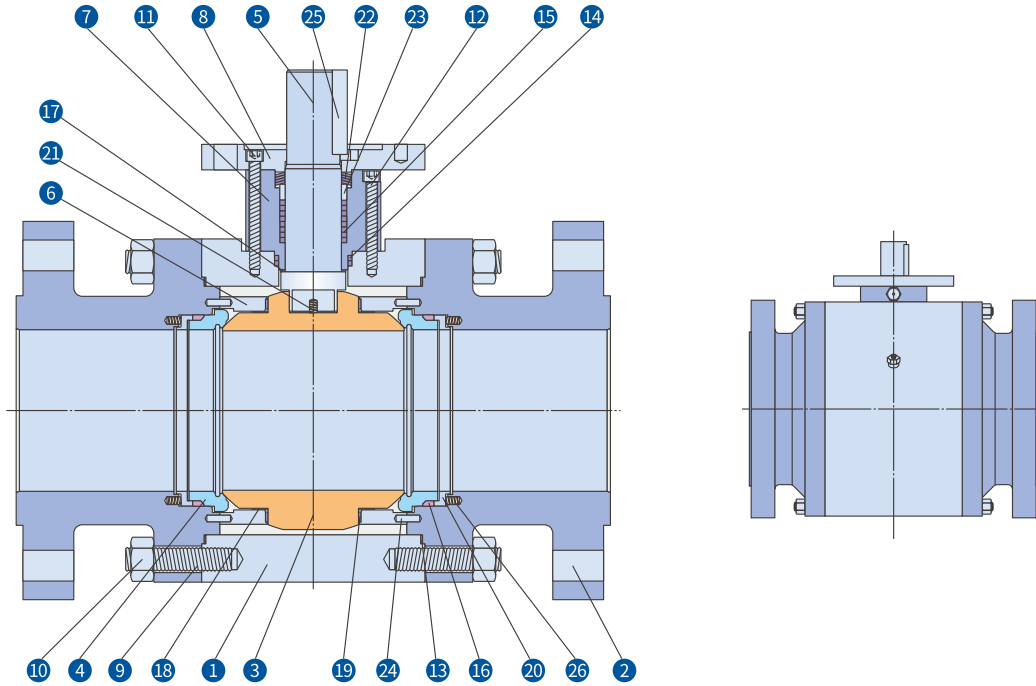
1. \*Recommended Spare Parts

2. TCC: Tungsten Carbide Coating

3. Customer shall order the valve according to service condition

# SERIES TM-H

## Material Specification



## TM-H BALL VALVE

High Temperature Metal Seat Trunnion Mounted Ball Valve

NO. PART	Standard Materials	NO. PART	Standard Materials
1 Body	ASTM A105N or A182-F316	14 *Gland Gasket	Graphite
2 Adapter	ASTM A105N or A182-F316	15 *Stem Firesafe Packing	Graphite
3 Ball	ASTM A105N+TCC or A182-F316+TCC	16 Seat Firesafe Packing	Graphite
4 Seat	ASTM A105N+TCC or A182-F316+TCC	17 Thrust Washer	316SS+COPPER
5 Stem	AISI 4140 ENP/A182 F6a	18 Washer	316SS+COPPER
6 Trunnion Support	Carbon Steel or Stainless Steel	19 Bearing	316SS+COPPER
7 Gland Flange	ASTM A105N or A182-F316	20 Push ring	316
8 Top Flange	Carbon Steel or Stainless Steel	21 Antistatic Spring	Inconel X-750
9 Body stud	ASTM A193-B7 or A193-B8	22 Disc Spring	17-7PH
10 Body Nut	ASTM A194-2H or A194-8	23 Gland	316
11 Screw	Carbon Steel or Stainless Steel	24 Alignment Pin	Stainless Steel
12 Screw	Carbon Steel or Stainless Steel	25 Key	Carbon Steel or Stainless Steel
13 *Body Gasket	Graphite or SW Graphite	26 Seat Spring	Inconel X-750

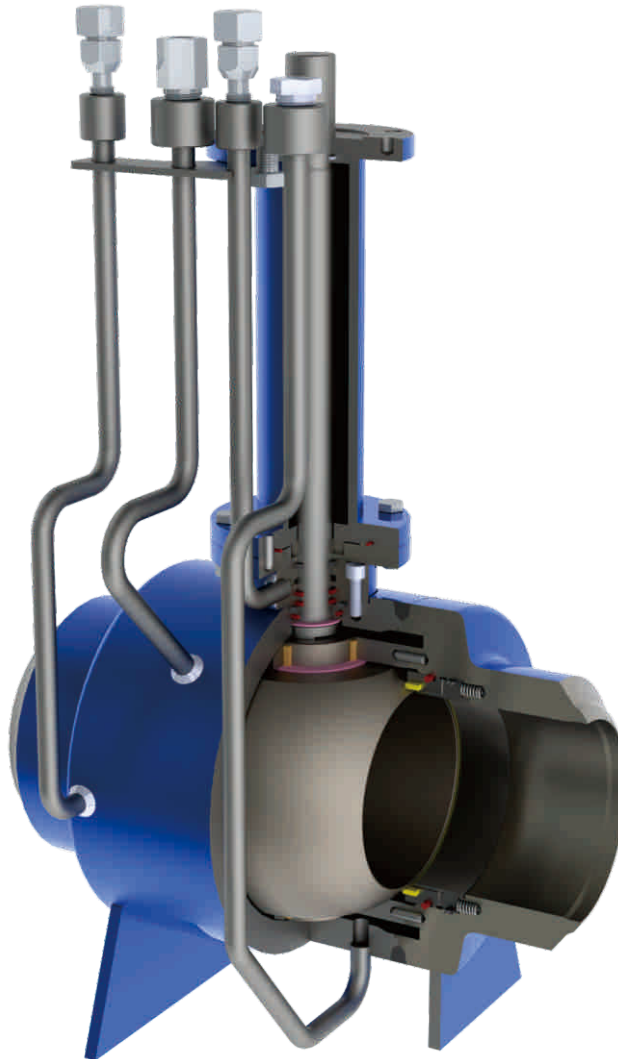
1. \* Recommended Spare Parts

3. Customer shall order the valve according to service condition

2. TCC: Tungsten Carbide Coating

# SERIES TW

## Welded Body Trunnion Mounted Ball Valve



### Features

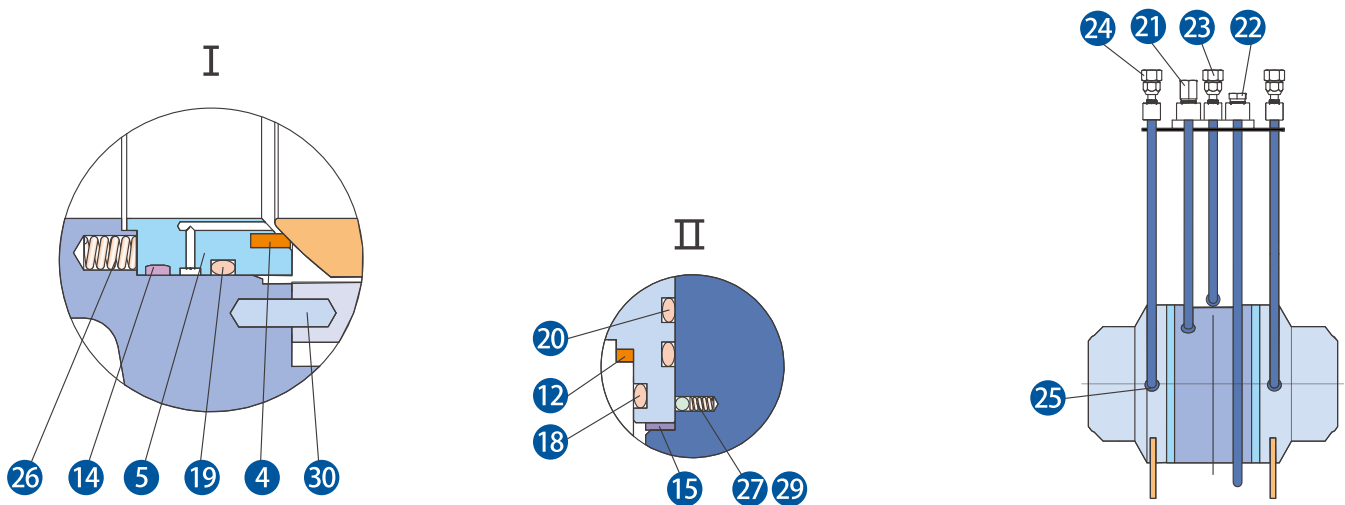
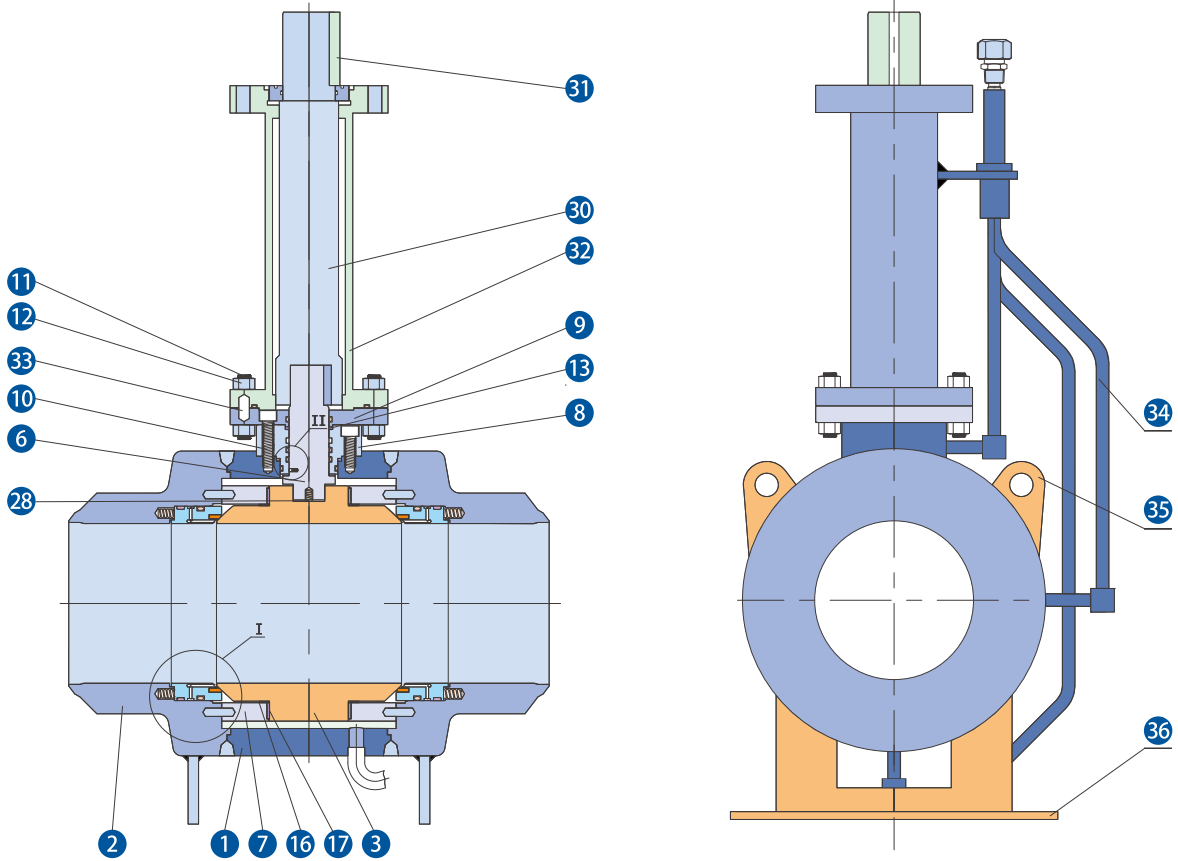
Size: 2"~48"  
 Class: 150~2500  
 Welded Forged Steel Body  
 Trunnion Mounted Ball  
 Anti-static Device  
 Blow-out Proof Stem  
 Fire Safe Design  
 For Underground Use (On Request)

### Specifications

Design	ASME B16.34/API6D
Face to Face	ASME B16.34/API6D
End to End	ASME B16.34/API6D
End Flange	ASME B16.5/B16.47A
BW End	ASME B16.25
Test	API 6D
Fire Safe Test	API 607/API 6FA
Special	NACE MR0175

# SERIES TW

## Material Specification



# TW BALL VALVE

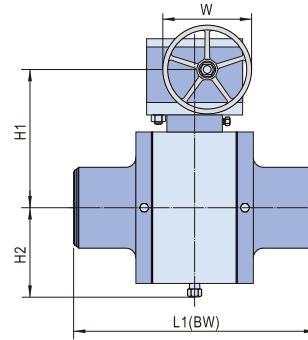
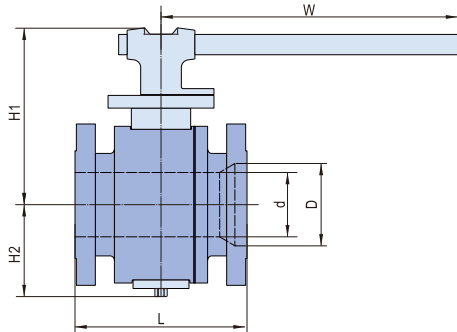
## Welded Body Trunnion Mounted Ball Valve

NO. PART	A105/ENP	A105/316	F316/316	LF2/316NACE	
1	Body	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
2	Adapter	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
4	Seat Insert	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK
5	Seat Ring	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
6	Stem	AISI 4140/ENP	ASTM A182-F51	ASTM A182-F51	ASTM A182-F51
7	Trunnion Support	Carbon Steel	Carbon Steel	ASTM A182-F316	Carbon Steel
8	Gland Flange	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
9	Top Flange	Carbon Steel	Carbon Steel	ASTM A182-F316	Carbon Steel
10	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
11	Stud	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
12	Nut	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
13	*Stem Firesafe Packing	Graphite	Graphite	Graphite	Graphite
14	*Seat Firesafe Packing	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
15	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
16	Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
17	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
18	*O-Ring	Viton	Viton	Viton	Viton
19	*O-Ring	Viton	Viton	Viton	Viton
20	*O-Ring	Viton	Viton	Viton	Viton
21	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
22	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
23	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
24	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25	Check Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
26	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
27	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
28	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
29	Steel Ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
30	Driving Tube	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
31	key	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
32	Yoke Tube Assy.	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
33	Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
34	Education Tube 1	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
35	Lifting Lugs	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
36	Supporting Feet	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel

\*Recommended Spare Parts

# DIMENSIONS AND WEIGHT

## Welded Body Trunnion Mounted Ball Valve



### FULL BORE CLASS 150

SIZE	d	L	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	51	178	216	155	85	350	30	29
3	76	203	283	191	110	400	60	54
4	102	229	305	211	130	450	91	83
6	152	394	457	231	160	*305	189	177
8	203	457	521	282	235	*406	344	325
10	254	533	559	336	290	*406	492	461
12	305	610	635	373	315	*406	702	657
14	337	686	762	413	345	*406	854	807
16	387	762	838	457	383	*600	1014	948
18	438	864	914	501	435	*600	1431	1338
20	489	914	991	551	495	*600	1907	1783
22	538	991	1092	600	555	*600	2338	2186
24	591	1067	1143	635	590	*700	2789	2607
26	635	1143	1245	710	620	*700	3181	2974
28	686	1245	1346	760	670	*760	4021	3759
30	737	1295	1397	800	710	*760	4791	4479
32	781	1372	1524	840	745	*760	5457	5102
34	832	1473	1626	890	775	*760	6664	5230
36	876	1524	1727	930	805	*760	7569	7077
40	976	1727	1956	1010	900	*760	10209	9545

\*Gear Operation

### REDUCE BORE CLASS 150

SIZE	d	D	L	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	178	216	152	80	350	26
3*2	51	76	203	283	155	85	350	34
4*3	76	102	229	305	191	110	400	62
6*4	102	152	394	457	211	130	450	101
8*6	152	203	457	521	231	160	*305	224
10*8	203	254	533	559	282	235	*406	372
12*10	254	305	610	635	336	290	*406	530
14*10	254	337	686	762	336	290	*406	623
14*12	305	337	686	762	373	315	*406	727
16*12	305	387	762	838	373	315	*406	787
16*14	337	387	762	838	413	345	*406	839
18*14	337	438	864	914	413	345	*406	1005
18*16	387	438	864	914	457	383	*600	1089
20*16	387	489	914	991	457	383	*600	1109
20*18	438	489	914	991	501	435	*600	1143
22*18	438	538	991	1092	501	435	*600	2332
24*20	489	591	1067	1143	551	495	*600	2046
26*22	538	635	1143	1245	600	555	*600	2201
28*24	591	686	1245	1346	635	590	*700	2784
30*24	591	737	1295	1397	635	590	*700	2779
32*26	635	781	1372	1524	710	620	*700	3976
34*28	686	832	1473	1626	760	670	*760	4412
36*30	737	876	1524	1727	820	710	*760	4955
40*34	832	976	1727	1956	935	775	*760	8154

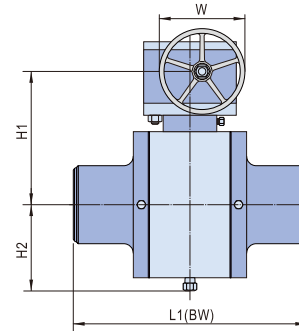
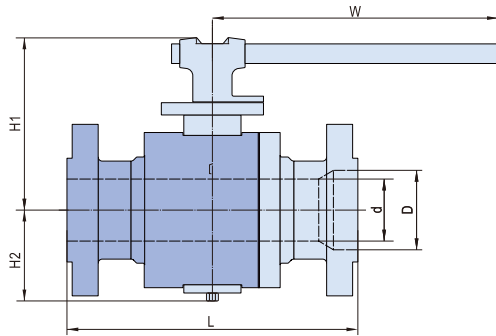
### FULL BORE CLASS 300

SIZE	d	L	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	51	216	216	155	85	400	30	26
3	76	283	283	191	110	450	68	62
4	102	305	305	211	130	500	108	97
6	152	403	457	229	160	*305	208	193
8	203	502	521	291	235	*406	370	347
10	254	568	559	340	290	*406	531	498
12	305	648	635	375	315	*500	760	713
14	337	762	762	417	345	*600	895	830
16	387	838	838	466	400	*600	1294	1214
18	438	914	914	506	440	*600	1706	1618
20	489	991	991	563	495	*600	2079	1966
22	538	1092	1092	605	560	*700	2206	2068
24	591	1143	1143	684	590	*760	2876	2717
28	686	1346	1346	770	680	*760	4552	4297
30	737	1397	1397	810	720	*760	5562	5251
32	781	1524	1524	850	760	*800	6209	5861
34	832	1626	1626	900	790	*800	7333	6922
36	876	1727	1727	940	820	*800	8393	7923
40	976	1956	1956	1025	915	*800	11144	10528

\*Gear Operation

### REDUCE BORE CLASS 300

SIZE	d	D	L	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	216	216	152	80	350	30
3*2	51	76	283	283	155	85	400	36
4*3	76	102	305	305	191	110	450	72
6*4	102	152	403	457	211	130	500	139
8*6	152	203	502	521	229	160	*305	247
10*8	203	254	568	559	291	235	*406	401
12*10	254	305	648	635	340	290	*406	577
14*10	254	337	762	762	340	315	*406	678
14*12	305	337	762	762	375	315	*500	825
16*12	305	387	838	838	375	360	*500	1045
16*14	337	387	838	838	417	360	*600	1116
18*14	337	438	914	914	417	400	*600	1309
18*16	387	438	914	914	466	400	*600	1516
20*16	387	489	991	991	466	420	*600	1766
20*18	438	489	991	991	506	440	*600	1807
22*18	438	538	1092	1092	506	440	*600	1982
24*20	489	591	1143	1143	563	495	*600	2189
28*24	591	686	1346	1346	684	590	*760	3163
30*24	591	737	1397	1397	684	590	*760	3158
34*28	686	832	1626	1626	770	680	*760	4789
36*30	737	876	1727	1727	810	720	*760	5525
40*34	832	976	1956	1956	900	790	*800	8112



FULL BORE		CLASS 600						
SIZE	d	L	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	51	292	292	155	400	400	44	41
3	76	356	356	193	500	500	79	73
4	102	432	432	239	700	700	148	138
6	152	559	559	266	*406	*406	243	227
8	203	660	660	310	*406	*406	432	408
10	254	787	787	354	*600	*600	690	655
12	305	838	838	411	*600	*600	841	790
14	337	889	889	435	*600	*600	1211	1141
16	387	991	991	493	*600	*600	1511	1424
18	438	1092	1092	544	*700	*700	2106	1997
20	489	1194	1194	629	*760	*760	2605	2473
22	538	1295	1295	683	*800	*800	3318	3162
24	591	1397	1397	728	*800	*800	3901	3703
28	686	1549	1549	810	*800	*800	5969	5671
30	737	1651	1651	863	*800	*800	6590	6261
32	781	1778	1778	900	*800	*800	7708	7323
34	832	1930	1930	940	*800	*800	8333	7916
36	876	2083	2083	990	*800	*800	10490	9966
40	978	2337	2337	1070	*900	*900	14480	13756

\* Gear Operation

REDUCE BORE		CLASS 600						
SIZE	d	D	L	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	292	292	152	80	350	40
3*2	51	76	356	356	155	85	400	53
4*3	76	102	432	432	193	112	500	98
6*4	102	152	559	559	239	140	700	210
8*6	152	203	660	660	266	175	*406	299
10*8	203	254	787	787	310	250	*406	504
12*10	254	305	838	838	354	290	*600	783
14*10	254	337	889	889	354	345	*600	832
14*12	305	337	889	889	411	345	*600	896
16*12	305	387	991	991	411	370	*600	951
16*14	337	387	991	991	435	370	*600	1291
18*14	337	438	1092	1092	435	410	*600	1501
18*16	387	438	1092	1092	493	420	*600	1616
20*16	387	489	1194	1194	493	440	*600	2041
20*18	438	489	1194	1194	544	462	*700	2241
22*18	438	538	1295	1295	544	462	*700	2401
24*20	489	591	1397	1397	629	515	*760	3405
28*24	591	686	1549	1549	728	610	*800	4191
30*24	591	737	1651	1651	728	610	*800	4671
34*28	686	832	1930	1930	810	695	*800	7109
36*30	737	876	2083	2083	863	735	*800	8500
40*34	832	978	2337	2337	940	820	*800	9903

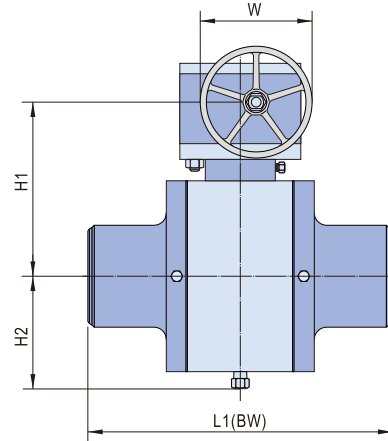
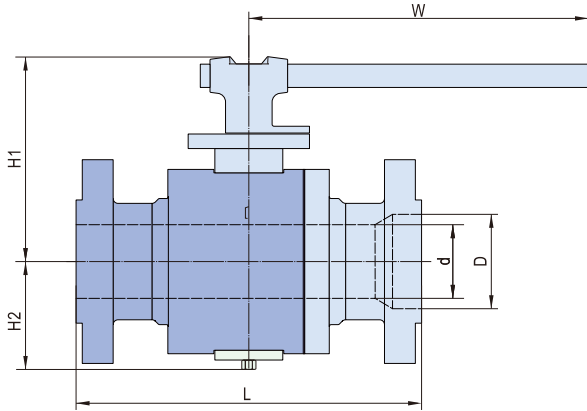
FULL BORE		CLASS 900						
SIZE	d	L	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	51	368	368	178	100	450	50	47
3	76	381	381	221	125	600	85	78
4	102	457	457	215	150	*305	156	142
6	152	610	610	268	215	*406	379	351
8	203	737	737	324	260	*600	554	512
10	254	838	838	371	305	*600	809	738
12	305	965	965	425	360	*600	1110	1027
14	324	1029	1029	463	390	*600	1591	1491
16	375	1130	1130	513	440	*710	1986	1844
18	425	1219	1219	614	500	*760	2781	2605
20	473	1321	1321	644	530	*760	3416	3193
24	572	1549	1549	745	630	*800	5443	5113
28	667	1753	1753	830	720	*800	10132	9473
30	712	1880	1880	880	755	*800	11385	10645
32	760	2159	2159	970	850	*900	17375	16246
36	855	2286	2286	1030	930	*900	20053	18750

\* Gear Operation

REDUCE BORE		CLASS 900						
SIZE	d	D	L	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	368	368	152	80	400	44
3*2	51	76	381	381	178	100	450	54
4*3	76	102	457	457	221	125	600	92
6*4	102	152	610	610	215	150	*305	222
8*6	152	203	737	737	268	260	*406	474
10*8	203	254	838	838	324	305	*600	644
12*10	254	305	965	965	371	335	*600	857
14*10	254	324	1029	1029	371	360	*600	1039
14*12	305	324	1029	1029	425	360	*600	1295
16*12	305	375	1130	1130	425	390	*600	1370
16*14	324	375	1130	1130	463	390	*600	1811
18*16	375	425	1219	1219	513	440	*710	2181
20*16	375	473	1321	1321	513	470	*710	2711
20*18	425	473	1321	1321	614	500	*760	3111
24*20	473	572	1549	1549	644	550	*760	3766
28*24	572	667	1753	1753	745	630	*800	7526
30*24	572	712	1880	1880	745	665	*800	7927
34*28	667	810	2159	2159	830	750	*800	11132
36*30	712	855	2286	2286	880	780	*800	15596

# DIMENSIONS AND WEIGHT

## Welded Body Trunnion Mounted Ball Valve



### FULL BORE CLASS 1500

SIZE	d	L	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	51	368	368	178	100	450	50	47
3	76	470	470	226	130	700	112	100
4	102	546	546	241	162	*406	190	215
6	146	705	705	319	255	*600	574	460
8	194	832	832	345	280	*600	742	900
10	241	991	991	411	345	*600	1184	1086
12	289	1130	1130	478	405	*600	1952	1818
14	318	1257	1257	517	435	*700	2224	2070
16	362	1384	1384	599	485	*760	2717	2528
18	406	1537	1537	663	545	*800	3584	3317
20	456	1664	1664	695	580	*800	4421	4088
24	546	1944	1944	842	730	*900	7029	6383

\* Gear Operation

### REDUCE BORE CLASS 1500

SIZE	d	D	L	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	368	368	152	80	400	55
3*2	51	76	470	470	178	100	450	80
4*3	76	102	546	546	226	130	700	147
6*4	102	146	705	705	241	162	*406	291
8*6	146	194	832	832	319	270	*600	684
10*8	194	241	991	991	345	325	*600	920
12*10	241	289	1130	1130	411	370	*600	1329
14*10	241	318	1257	1257	411	405	*600	1829
14*12	289	318	1257	1257	478	405	*600	2052
16*12	289	362	1384	1384	478	435	*600	2502
16*14	318	362	1384	1384	517	435	*700	2644
18*16	362	406	1537	1537	599	485	*760	2907
20*16	362	456	1664	1664	599	545	*760	3782
20*18	407	456	1664	1664	663	545	*800	4088
24*20	546	546	1944	1944	695	640	*800	5774

### FULL BORE CLASS 2500

SIZE	d	L(RTJ)	L1	H1	H2	W	RF Weight	BW Weight
in	mm	mm	mm	mm	mm	mm	Kg	Kg
2	44	454	451	214	118	700	87	71
3	64	584	578	216	150	*406	194	159
4	89	683	673	265	180	*406	375	320
6	133	927	914	371	305	*600	756	614
8	181	1038	1022	426	360	*600	1319	1108
10	223	1292	1270	463	390	*710	2096	1688
12	265	1445	1422	550	465	*760	3216	2639

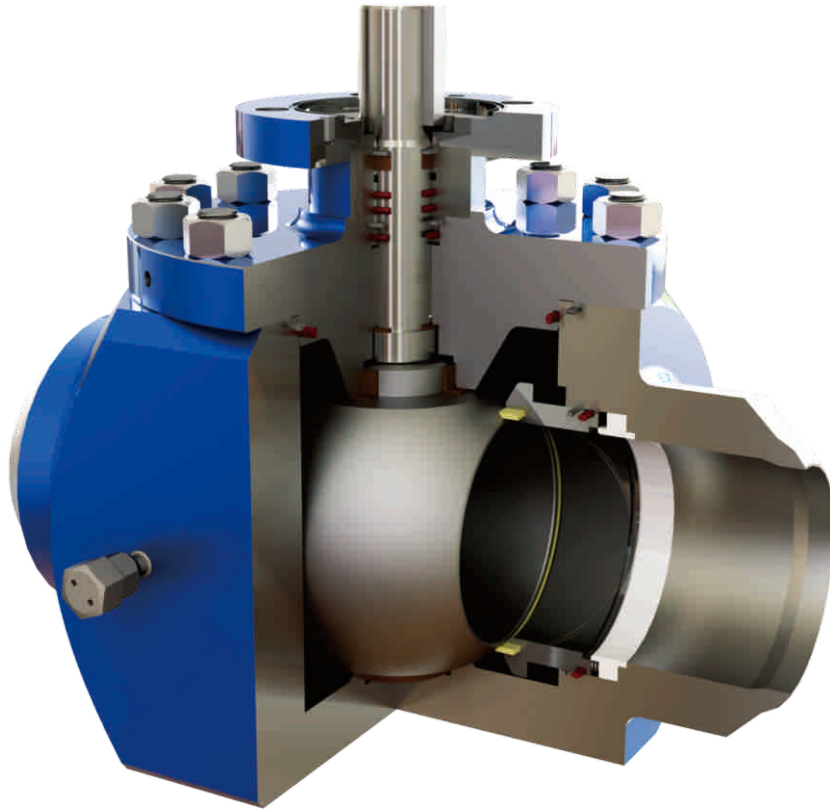
\* Gear Operation

### REDUCE BORE CLASS 2500

SIZE	d	D	L(RTJ)	L1	H1	H2	W	RF Weight
in	mm	mm	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	44	454	451	175	95	450	78
3*2	44	64	584	578	214	118	700	157
4*3	64	89	683	673	216	150	*406	314
6*4	89	133	927	914	265	270	*406	630
8*6	133	181	1038	1022	371	305	*600	1148
10*8	181	223	1292	1270	426	370	*600	1886
12*10	223	265	1445	1422	463	415	*710	2921

# SERIES TT

## Top Entry Forged Trunnion Mounted Ball Valve



### Features

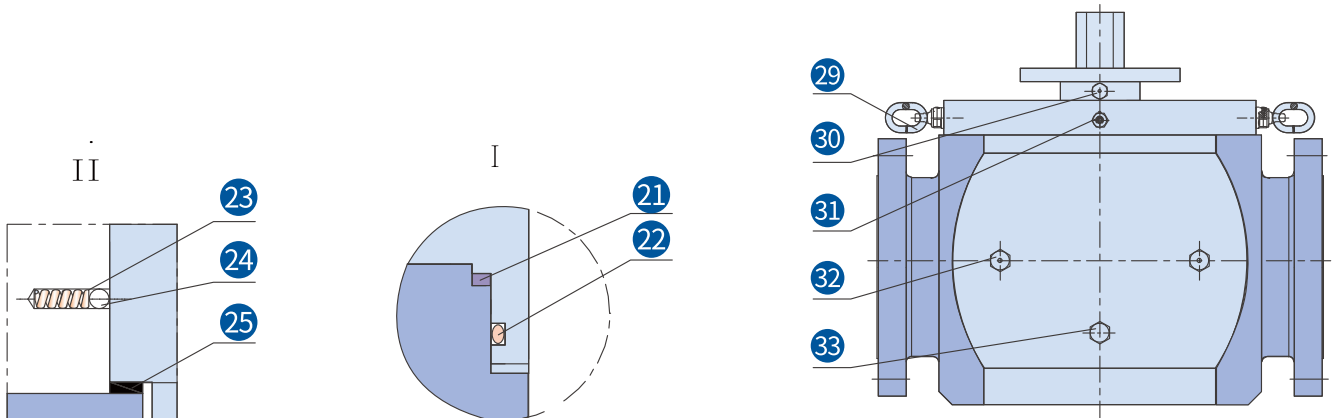
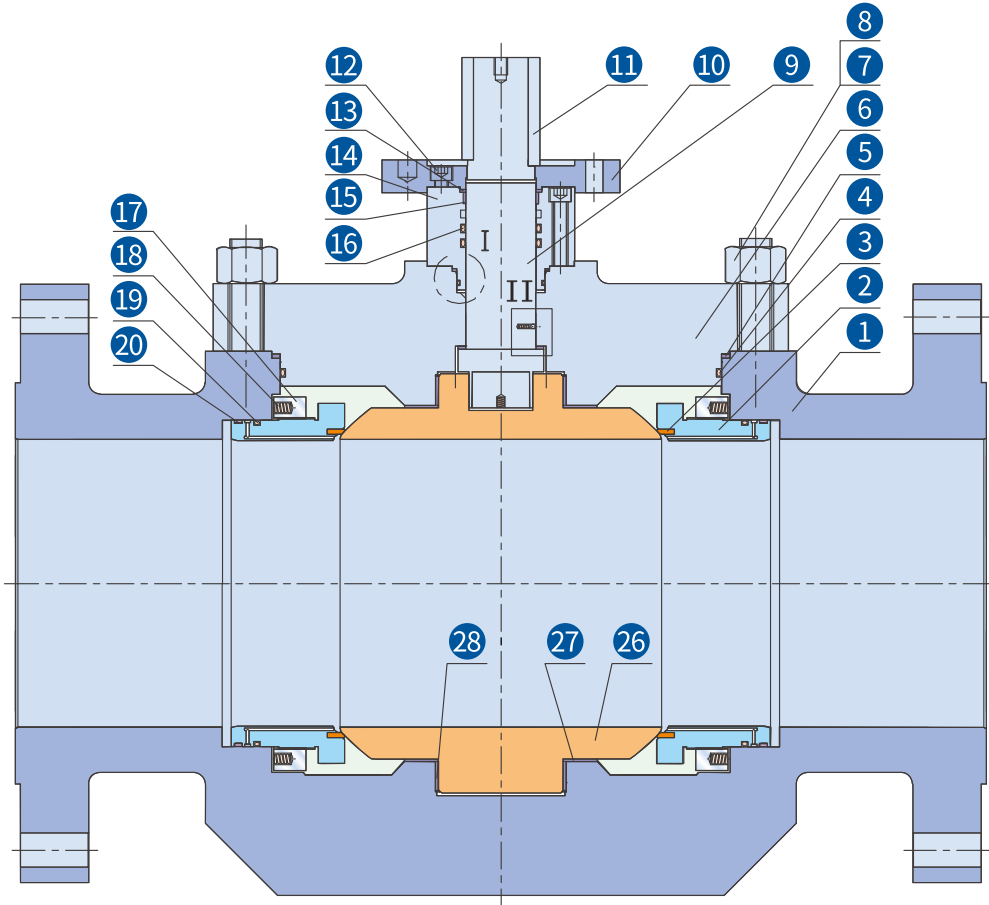
Size: 2" ~ 28"  
Class: 150-1500  
Top Entry Forged Steel Body  
Trunnion Mounted Ball, Full & Reduced Bore  
Anti-static Device  
Blow-out Proof Stem  
Fire Safe Design  
Emergency Sealant Injector ( 6" & Larger)

### Specifications

Design	ASME B16.34/API6D
Face to Face	ASME B16.10/API6D
End to End	ASME B16.10/API6D
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 6D
Fire Safe Test	API 607/API 6FA
Special	NACE MR0175

# SERIES TT

## Material Specification



**BALL VALVE**

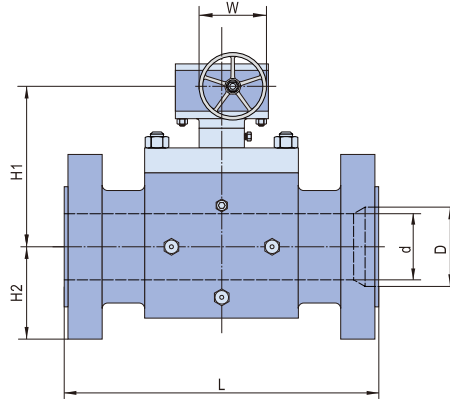
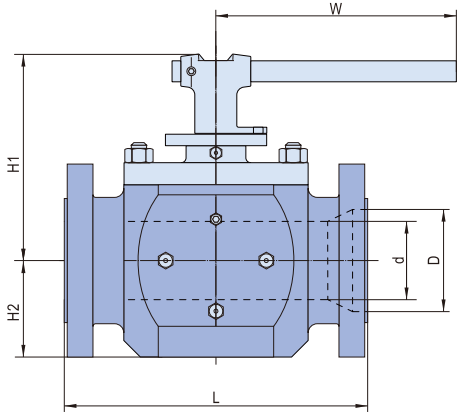
Top Entry Forged Trunnion Mounted Ball Valve

NO.	PART	A105/ENP	A105/316	F316/316	LF2/316NACE
1	Body	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
2	Seat Ring	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
3	Seat Insert	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK
4	*O-Ring	Viton	Viton	Viton	Viton
5	*Body Gasket	Graphite	Graphite	Graphite	Graphite
6	Cover	ASTM A105	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
7	Body Stud	NASTM A193-B7	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7M
8	Body Nut	ASTM A194-2H	ASTM A194-2H	ASTM A194-8	ASTM A194-7M
9	Stem	AISI 4140 /ENP	ASTM A182-F51	ASTM A182-F51	ASTM A182-F51
10	Top Flange	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
11	key	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
12	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
13	*Stem Firesafe Packing	Graphite	Graphite	Graphite	Graphite
14	Gland Flange	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
15	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
16	*O-Ring	Viton	Viton	Viton	Viton
17	Spring Seat Ring	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
18	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
19	*O-Ring	Viton	Viton	Viton	Viton
20	*Seat Firesafe Packing	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
21	*Gland Gasket	Graphite	Graphite	Graphite	Graphite
22	*O-Ring	Viton	Viton	Viton	Viton
23	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
24	Steel Ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
26	Ball	ASTM A105N/ENP	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
27	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
28	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	S+COPPER+PTFE	SS+COPPER+PTFE
29	Lifting Lugs	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
30	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
31	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
32	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
33	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

\*Recommended Spare Parts

# DIMENSIONS AND WEIGHT

## Top Entry Trunnion Mounted Ball Valve



FULL BORE		CLASS 150				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2	51	292	210	83	350	46
3	76	356	225	110	400	83
4	102	432	260	143	450	156
6	152	559	295	217	*305	256
8	203	660	322	264	*406	453
10	254	787	357	313	*406	622
12	305	838	405	372	*406	747
14	337	889	455	430	*406	959
16	387	991	470	452	*600	1220
18	438	1092	500	470	*600	1640
20	489	1194	555	583	*600	2118
24	591	1397	600	594	*700	2950

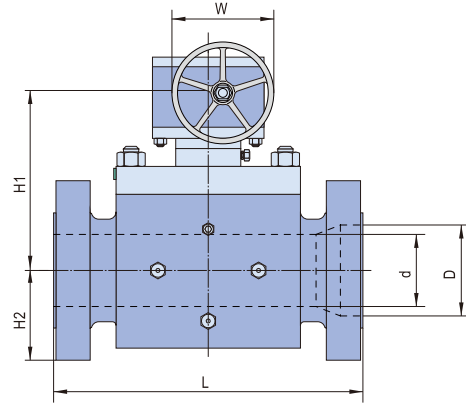
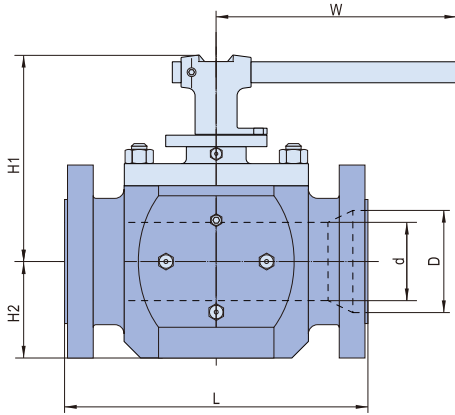
REDUCE BORE		CLASS 150					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2*1-1/2	38	51	292	180	78	250	41
3*2	51	76	356	210	83	350	58
4*3	76	102	432	225	110	400	104
6*4	102	152	559	260	143	450	228
8*6	152	203	660	295	217	*305	320
10*8	203	254	787	322	264	*406	536
12*10	254	305	838	357	313	*406	685
14*10	254	337	889	357	313	*406	740
14*12	305	337	889	405	372	*406	840
16*12	305	387	991	405	372	*406	924
16*14	337	387	991	455	430	*406	1070
18*14	337	438	1092	455	430	*406	1177
18*16	387	438	1092	463	452	*600	1430
20*16	387	489	1194	463	452	*600	1681
20*18	438	489	1194	500	470	*600	1850
24*20	489	591	1397	555	583	*600	2450

\* Gear Operation

REDUCE BORE		CLASS 300					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2*1-1/2	38	51	292	180	78	250	44
3*2	51	76	356	210	83	400	62
4*3	76	102	432	225	110	450	110
6*4	102	152	559	260	143	500	243
8*6	152	203	660	295	217	*305	343
10*8	203	254	787	330	264	*406	559
12*10	254	305	838	365	313	*406	725
14*10	254	337	889	365	313	*406	798
14*12	305	337	889	415	400	*500	890
16*12	305	387	991	415	400	*500	1052
16*14	337	387	991	460	430	*600	1120
18*14	337	438	1092	460	430	*600	1288
18*16	387	438	1092	480	452	*600	1480
20*16	387	489	1194	480	452	*600	1728
20*18	438	489	1194	523	470	*600	1960
24*20	489	591	1397	585	583	*600	2650

FULL BORE		CLASS 300				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2	51	292	210	83	400	49
3	76	356	225	110	450	87
4	102	432	260	143	500	164
6	152	559	295	217	*305	272
8	203	660	330	264	*406	479
10	254	787	365	313	*406	657
12	305	838	415	400	*500	783
14	337	889	460	430	*600	1007
16	387	991	480	452	*600	1281
18	438	1092	523	470	*600	1722
20	489	1194	585	583	*600	2224
24	591	1397	635	594	*760	3100

\* Gear Operation



FULL BORE		CLASS 600				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2	51	292	210	83	400	52
3	76	356	225	110	500	92
4	102	432	260	143	700	173
6	152	559	295	217	*406	285
8	203	660	330	264	*406	504
10	254	787	370	313	*600	680
12	305	838	425	400	*600	819

\* Gear Operation

REDUCE BORE		CLASS 600					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2*1-1/2	38	51	292	180	78	350	46
3*2	51	76	356	210	83	400	74
4*3	76	102	432	225	110	500	120
6*4	102	152	559	260	143	700	249
8*6	152	203	660	295	217	*406	380
10*8	203	254	787	330	264	*406	587
12*10	254	305	838	370	313	*600	752

FULL BORE		CLASS 900				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2	51	368	210	83	450	60
3	76	381	225	110	600	100
4	102	457	260	143	*305	204
6	152	610	295	225	*406	420
8	203	737	335	270	*600	644
10	254	838	377	320	*600	943
12	305	965	510	415	*600	1295

\* Gear Operation

REDUCE BORE		CLASS 900					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2*1-1/2	38	51	368	180	78	400	54
3*2	51	76	381	210	83	450	80
4*3	76	102	457	225	110	600	148
6*4	102	152	610	260	143	*305	305
8*6	152	203	737	295	225	*406	552
10*8	203	254	838	335	270	*600	748
12*10	254	305	965	377	320	*600	1048

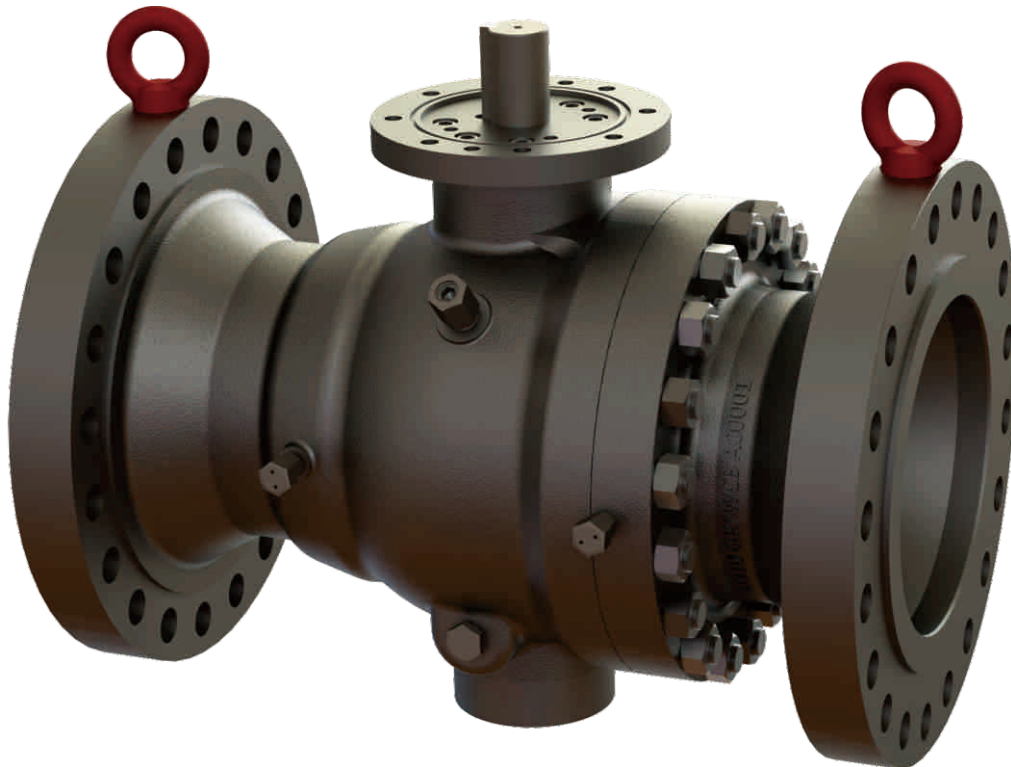
FULL BORE		CLASS 1500				
SIZE in	d mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2	51	368	210	83	450	69
3	76	470	235	120	700	133
4	102	546	290	153	*406	256
6	146	705	300	235	*600	667
8	194	832	350	282	*600	865
10	241	991	400	335	*600	1375
12	289	1130	525	425	*600	2175

\* Gear Operation

REDUCE BORE		CLASS 1500					
SIZE in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight Kg
2*1-1/2	38	51	368	180	78	400	63
3*2	51	76	470	235	120	450	95
4*3	76	102	546	290	153	700	183
6*4	102	146	705	300	235	*406	359
8*6	146	194	832	350	282	*600	794
10*8	194	241	991	400	335	*600	1070
12*10	241	289	1130	525	425	*600	1541

# SERIES TCS

## Casting Trunnion Mounted Ball Valve



### Features

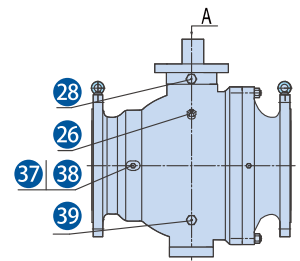
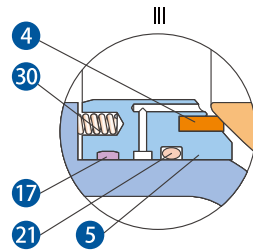
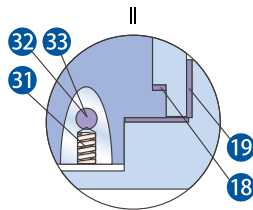
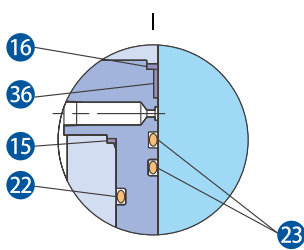
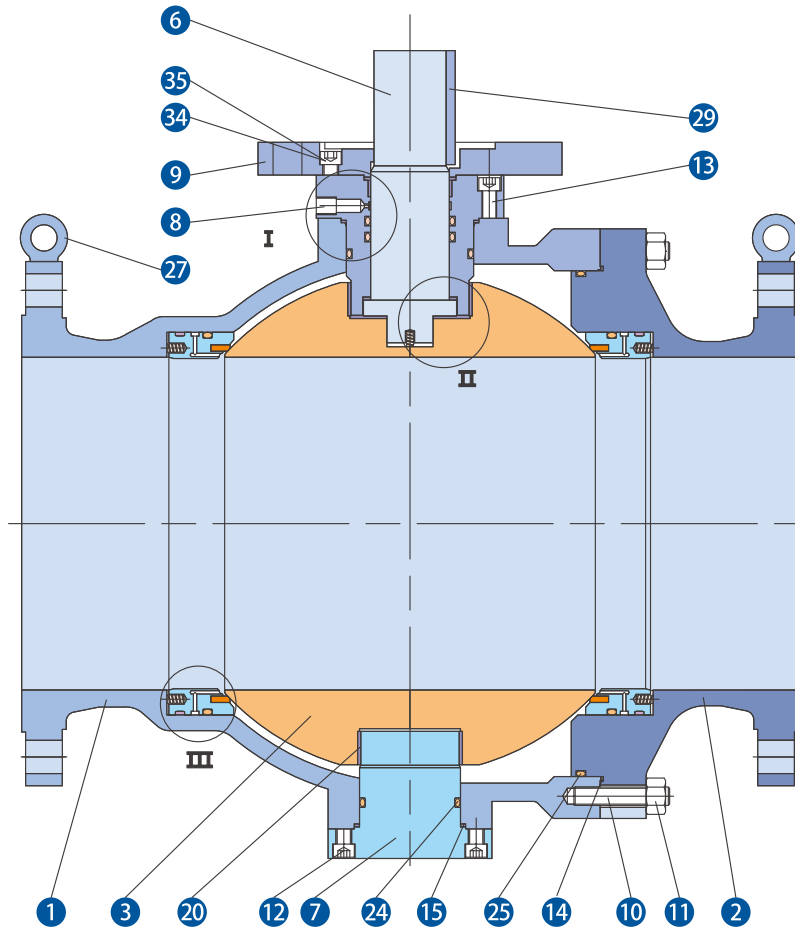
- Size: 2" - 36"
- Class: 150 - 600
- Two Pieces Casting Steel Body
- Trunnion Mounted Ball, Full bore & Reduced bore
- Anti-static Device
- Blow-out Proof Stem
- Double Block and Bleed
- Fire safe design
- Emergency Sealant injector (6" & larger)
- Vent & Safety Valve

### Specifications

Design	ASME B16.34/API 6D
Face to face	ASME B16.10/API 6D
End to end	ASME B16.10/API 6D
End flange	ASME B16.25/b16.47A
Test	API 6D
Fire safe test	API 607/API 6FA
Special	NACE MR 0175

# SERIES TCS

## Material Specification



- 1.The valve is designed in accordance with API 6D.
- 2.The inspection and test of the valve shall be in accordance with API 6D.
- 3.The marking of the valve shall be in accordance with MSS SP-25.

- 4.The flange dimension for size < 24 inch shall be in accordance with ASME B16.5  
The flange dimension for size > 26 inch shall be in accordance with ASME B16.47A

# TCS BALL VALVE

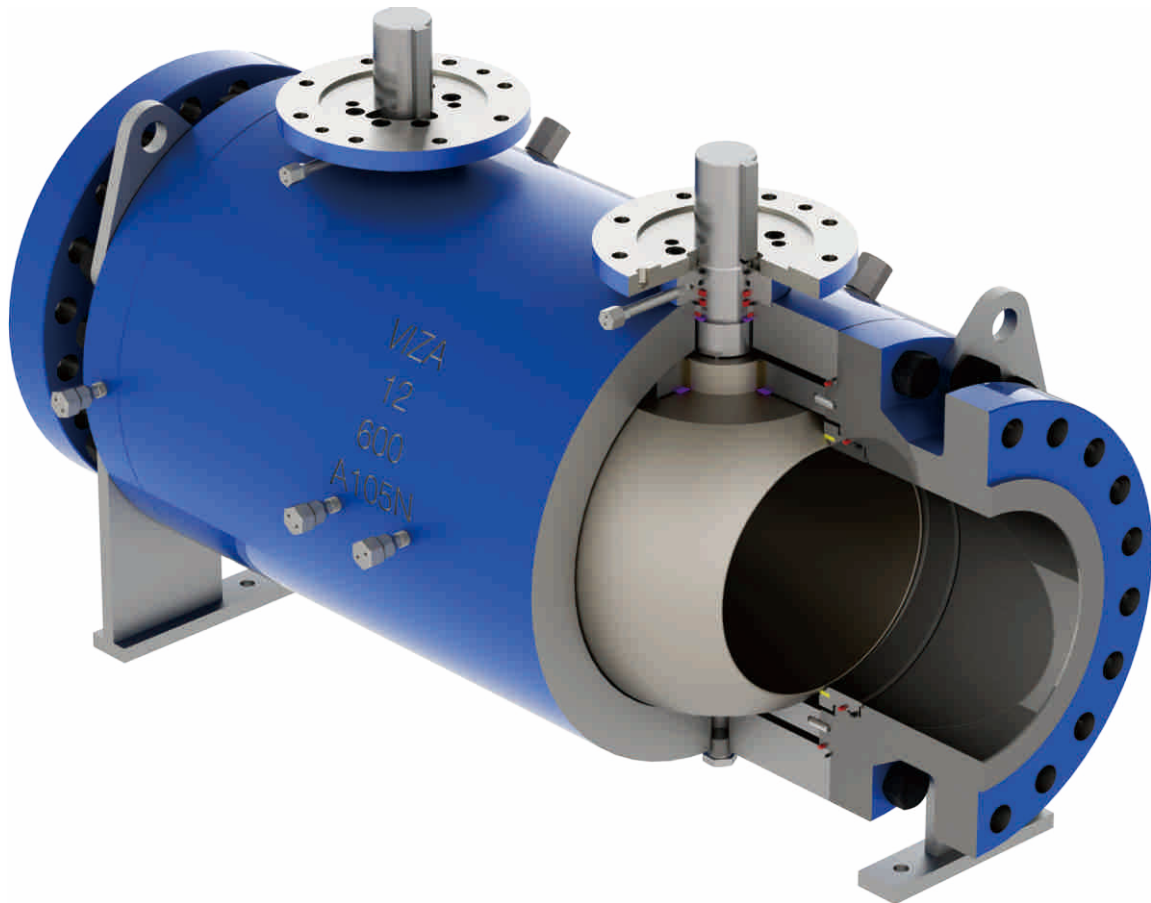
Casting Trunnion Mounted Ball Valve

NO.	PART	A105/ENP	A105/316	F316/316	LF2/316NACE
1	Body	ASTM A216-WCB	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCC
2	Adapter	ASTM A216-WCB	ASTM A216-WCB	ASTM A351-CF8M	ASTM A352-LCC
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
4	Seat Insert	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK
5	Seat Ring	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
6	Stem	AISI 4140/ENP	ASTM A182-F51	ASTM A182-F51	ASTM A182-F51
7	Trunnion	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
8	Gland Flange	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
9	Top Flange	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
10	Body Stud	ASTM A193-B7	ASTMA19-B7	ASTMA193-B8	ASTM A350-L7M
11	Body Nut	ASTM A194-2H	ASTM A194-2H	ASTM A194-8	ASTM A194-7M
12	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
13	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
14	*Body Gasket	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
15	*Gland Gasket	Graphite	Graphite	Graphite	Graphite
16	*Stem Firesafe Packing	Graphite	Graphite	Graphite	Graphite
17	*Seat Firesafe Packing	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
18	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
19	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
20	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
21	*O-Ring	Viton	Viton	Viton	Viton
22	*O-Ring	Viton	Viton	Viton	Vibm
23	*O-Ring	Viton	Viton	Viton	Viton
24	*O-Ring	Viton	Viton	Viton	Vibm
25	*O-Ring	Viton	Viton	Viton	Viton
26	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
27	Eye Bolt	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
28	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
29	key	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
30	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
31	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
32	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
33	Grounding Plunger	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
34	Alignment Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
35	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTM A320-L7M
36	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
37	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
38	Check Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
39	PIug	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

\*Recommended Spare Parts

# SERIES TD

## Twin Ball Trunnion Mounted Ball Valve



### Features

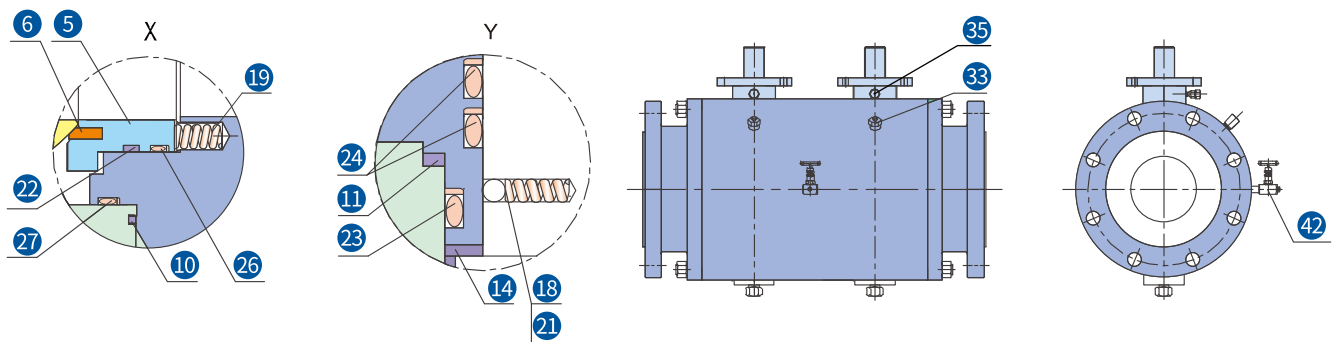
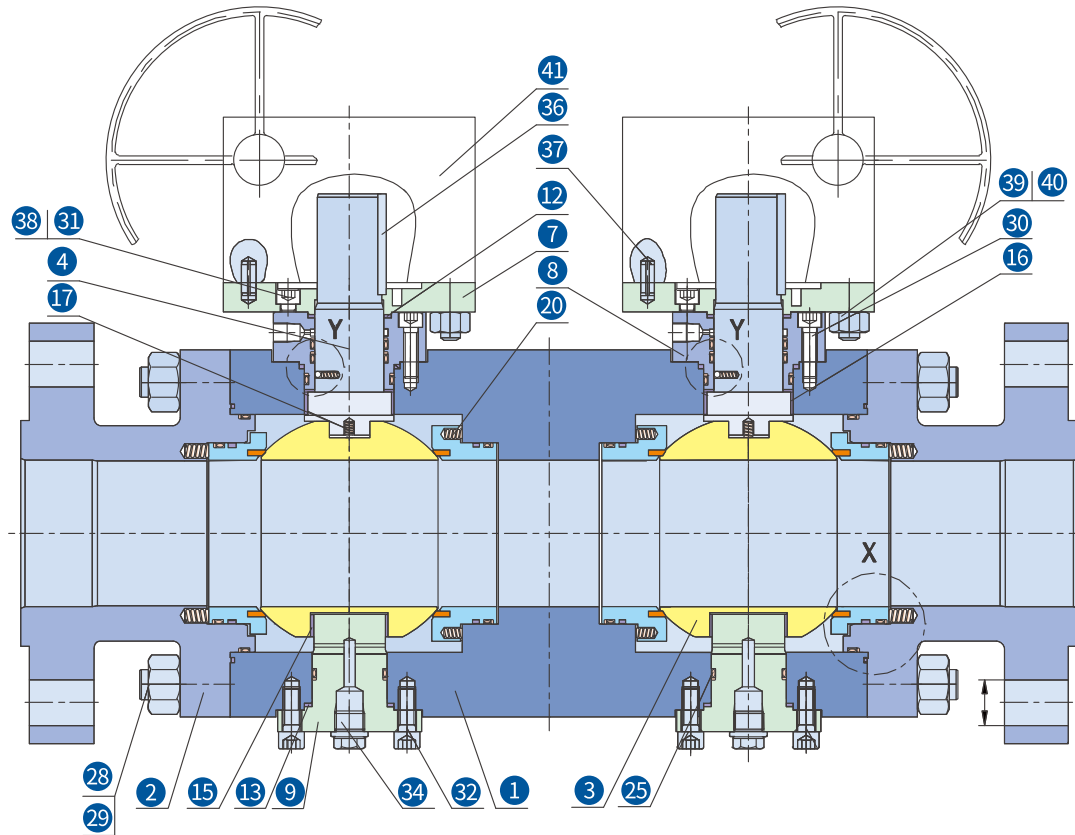
- Size: 2" - 24"
- Class: 150 - 1500
- Twin Ball for length limited pipeline
- Trunnion mounted ball
- Anti-static device
- Blow-out proof stem
- Fire safe design
- Emergency Sealant injector (6" & larger)

### Specifications

- Design: ASME B16.34/API 6D
- Face to face: Manufacturer standard / Customized
- End to end: Manufacturer standard / Customized
- End flange: ASME B16.25
- Test: API 6D
- Fire safe certified: API 607

# SERIES TD

## Material Specification



1. The valve is designed in accordance with API 6D.
2. The inspection and test of the valve shall be in accordance with API 6D.

3. The marking of the valve shall be in accordance with MSS SP-25.

**BALL VALVE**

## Twin Ball Trunnion Mounted Ball Valve

NO.	PART	A105/ENP	A105/316	F316/316	LF2/316NACE
1	Body	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
2	Adapter	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
4	Stem	AISI 4140/ENP	ASTM A182-F51	ASTM A182-F51	ASTM A182-F51
5	Seat Ring	ASTM A105N/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
6	Seat Insert	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK	PTFE/NYLON/PEEK
7	Top Flange	Carbon Steel	Carbon Steel	ASTM A182-F316	Carbon Steel
8	Gland Flange	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
9	Trunnion Support	ASTM A105N	ASTM A105N	ASTM A182-F316	ASTM A350-LF2
10	*Body Gasket	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
11	*Gland Gasket	Graphite	Graphite	Graphite	Graphite
12	*Stem Firesafe Packing	Graphite	Graphite	Graphite	Graphite
13	*Gasket	Graphite	Graphite	Graphite	Graphite
14	Thrust Washer	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
15	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
16	Bearing	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE	SS+COPPER+PTFE
17	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
18	Antistatic Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
19	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
20	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
21	Steel Ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
22	Seat Firesafe Packing	Braided Graphite	Braided Graphite	Braided Graphite	Braided Graphite
23	*O-Ring	Viton	Viton	Viton	Viton
24	*O-Ring	Viton	Viton	Viton	Viton
25	*O-Ring	Viton	Viton	Viton	Viton
26	*O-Ring	Viton	Viton	Viton	Viton
27	*O-Ring	Viton	Viton	Viton	Viton
28	Body Stud	ASTM A193-B7	ASTM A193-B7	ASTM A193-B8	ASTM A320-L7M
29	Body Nut	ASTM A194-2H	ASTM A194-2H	ASTM A194-8	ASTM A194-7M
30	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
31	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
32	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
33	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
34	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
35	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
36	Key	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
37	Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
38	Gland Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
39	Stud	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
40	Nut	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
41	Gear Box	COMPONENT	COMPONENT	COMPONENT	COMPONENT
42	Needle Valve	COMPONENT	COMPONENT	COMPONENT	COMPONENT

\*Recommended Spare Parts

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for the 21<sup>st</sup> Century**

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QUALITY VALVE  
RELIABLE  
AND GLOBAL SERVICE



Code No. C03-1805



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