

***CSC Valves  
Canada Inc.***

**SOFT SEATED TRUNNION MOUNTED BALL VALVES**



**CSTS SERIES**

$$Q = \sum_{n=1}^{\infty} AS_n$$

***“Quality equates to the sum of Applied Science”***

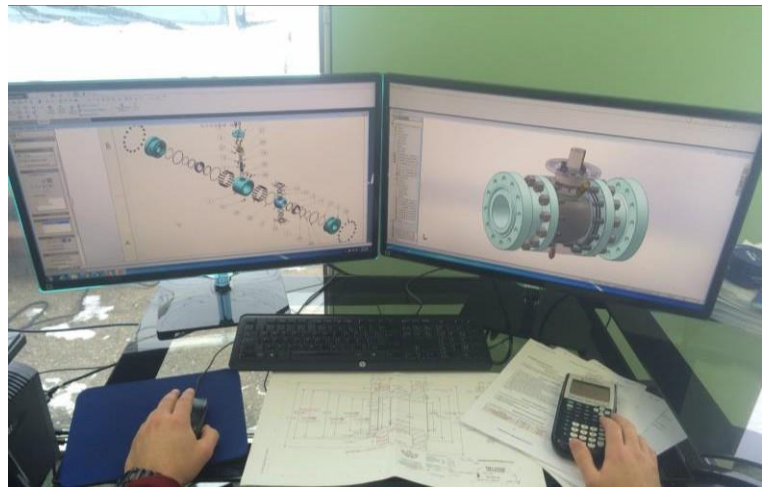


Serving the most rugged applications in the Western Canadian Sedimentary Basin  
*Brochure CSTS Series – February 2022*

# CSTS SERIES

SOFT SEATED TRUNNION MOUNTED BALL VALVES

CSC Valves Canada Inc. operates an engineering, research & development facility in Edmonton Alberta. Designs are verified and verifications are validated.



**Call toll free regarding your application  
engineering requirements. 1-888-803-5817**



Serving the most rugged applications in the Western Canadian Sedimentary Basin  
*Brochure CSTS Series – February 2022*

### Contents

Company Profile & Range Chart	2
Standards & Codes	3
Design Features	4
Self Relieving	5
DIB1/DPE	6
Exploded View	7
Trim Chart	8
Dimension Charts	9/10
Contact Information	11

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# CSTS SERIES

## SOFT SEATED TRUNNION MOUNTED BALL VALVES

### Company Profile:

**CSC Valves Canada Inc.** is a Canadian company engaged in the engineering design, manufacture and sale of quality valve products. The firm was formed, recognizing the need for flexibility of valve components given the myriad of applications found in oil and gas industry. Hence our commitment to offering customers **choice** of **components** and design concepts based on **their** application criteria. Our mission is to provide the safest possible products at the lowest possible cost. Application engineering and field commissioning services available upon request on a application by application basis.

RANGE CHART							
SIZE		ASME CLASS					
NPS	DN	150	300	600	900	1500	2500
2"	50	◇	◇	◇	◇	◇	◇
3"	80	◇	◇	◇	◇	◇	◇
4"	100	◇	◇	*	*	*	*
6"	150	*	*	*	*	*	*
8"	200	*	*	*	*	*	*
10"	250	*	*	*	*	*	*
12"	300	*	*	*	*	*	*
14"	350	*	*	*	*	*	
16"	400	*	*	*	*	*	
18"	450	*	*	*	*	*	
20"	500	*	*	*	*	*	
22"	550	*	*	*	*		
24"	600	*	*	*	*		
26"	650	*	*	*	*		
28"	700	*	*	*	*		
30"	750	*	*	*	*		
32"	800	*	*	*	*		
34"	850	*	*	*	*		
36"	900	*	*	*	*		
38"	950	*	*	*	*		
40"	1000	*	*	*	*		
42"	1050	*	*	*	*		
48"	1200	*	*	*	*		
56"	1400	*	*	*			

◇ = External Trunnion

\* = Internal Trunnion

# Industry Standards & Codes

### API - American Petroleum Institute

API -Q1

API -6D

API -607

API -608

API -6FA

API -598

### ASME - The American Society of Mechanical Engineers

ASME B16.5

ASME B16.10

ASME B16.34

### ASTM - American Society for Testing Materials

### ISO - International Organization for Standardization

ISO - 9001

ISO - 5211

ISO -15156

### MSS - Manufactures Standardization Society

MSS - SP6

MSS - SP25

MSS - SP45

### Sour Service - Hydrogen Sulfide

NACE MR0175 / ISO 15156 Region 3 Std

### CSA - Canadian Standards Association

CSA Z245.15 FOR USE IN CSA Z662.15

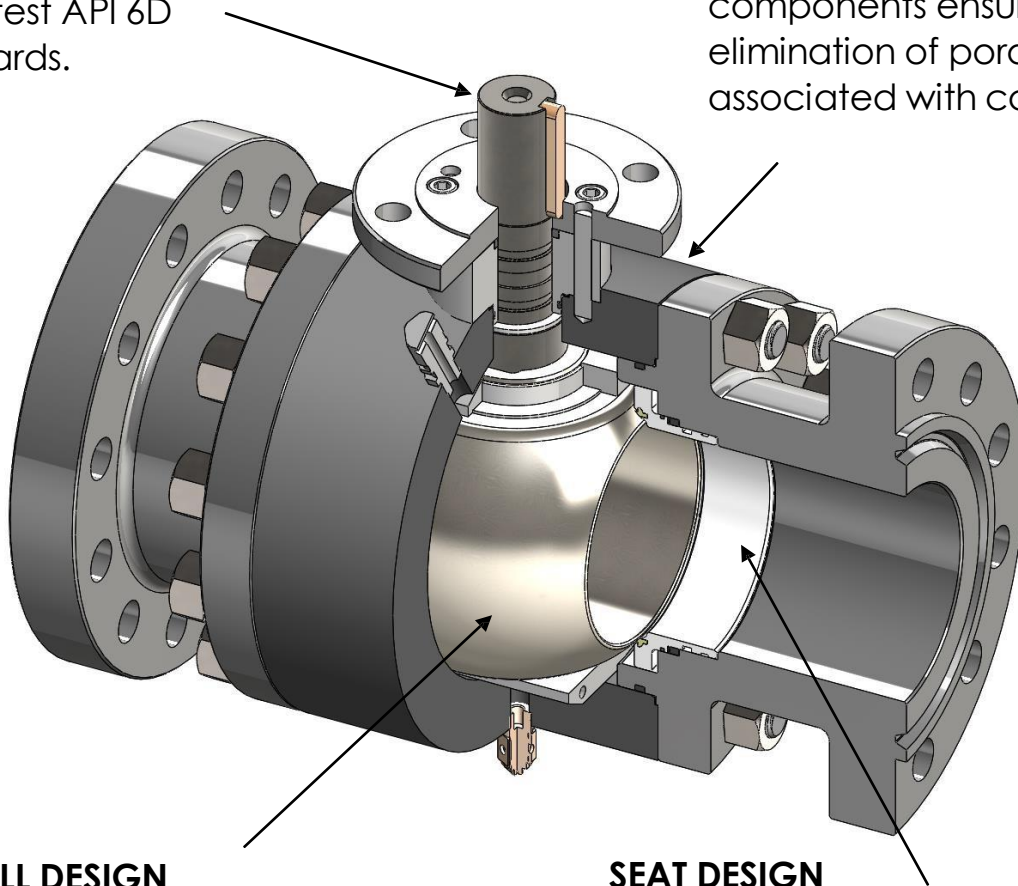
# DESIGN FEATURES

### STEM DESIGN

Standardized Blow-Out Proof Stem Design with maximum allowable stem torque in compliance with the latest API 6D standards.

### BODY DESIGN

100% forged construction of all pressure containing components ensures elimination of porosity associated with castings.



### BALL DESIGN

A wide variety of materials are offered including A105, A350 LF2, F316 SS, and specials on application. Standard balls include 3 mil ENP. All ASME class 1500 and 2500 valves include Tungsten Carbide hard face weld overlay as standard. This option is available on all sizes and pressure class'.

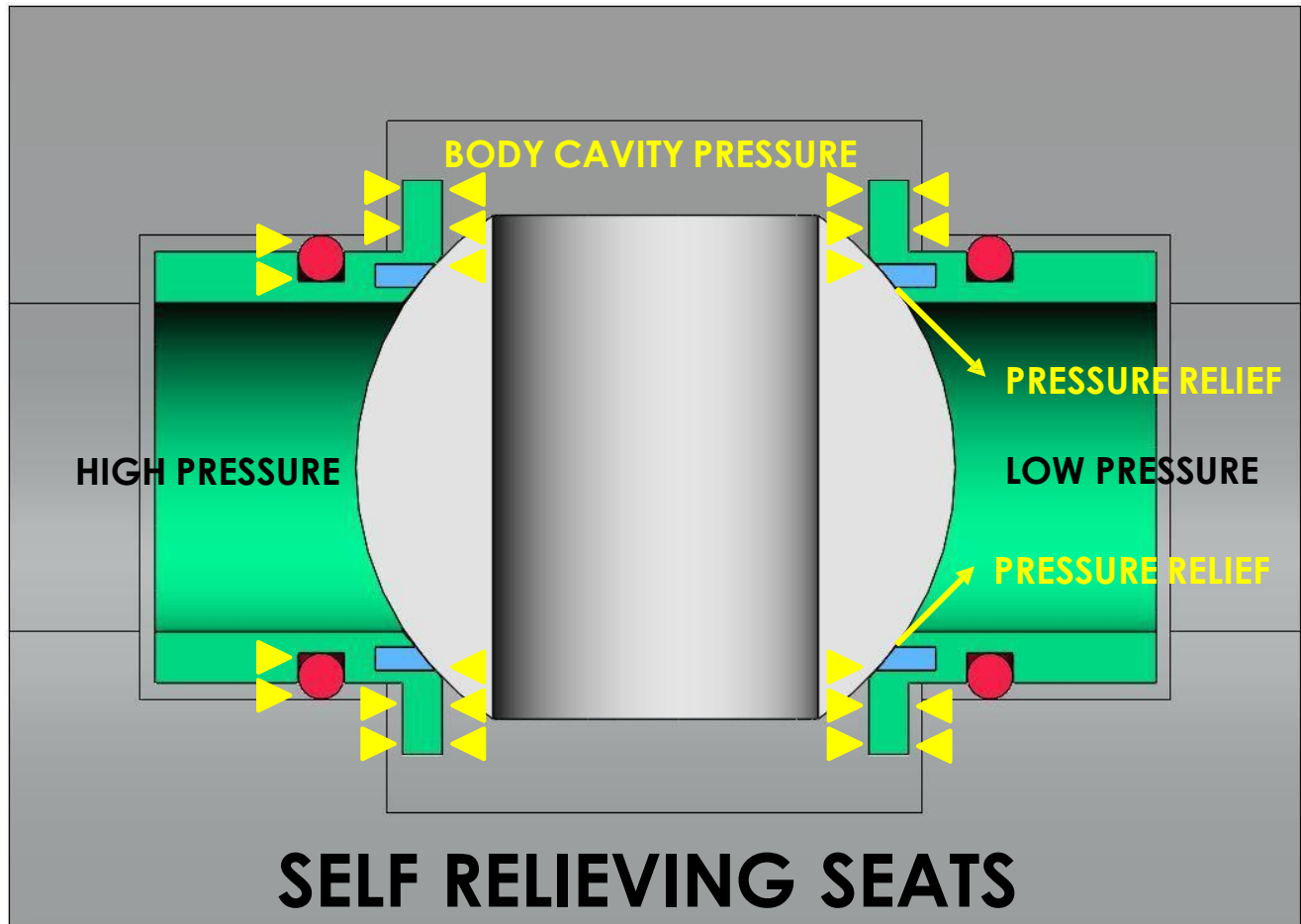
### SEAT DESIGN

Seats are standardized to a DIB-1 (Double Piston Effect) design. CSTS series valves are also offered in a DIB-2, Self Relieving/DPE combination & Self Relieving. The CSC Double Piston effect seat design includes the latest technology "delta seal" with scraper ring. Stainless Steel injection and bleed fittings are standard on all valves.

# CSTS SERIES

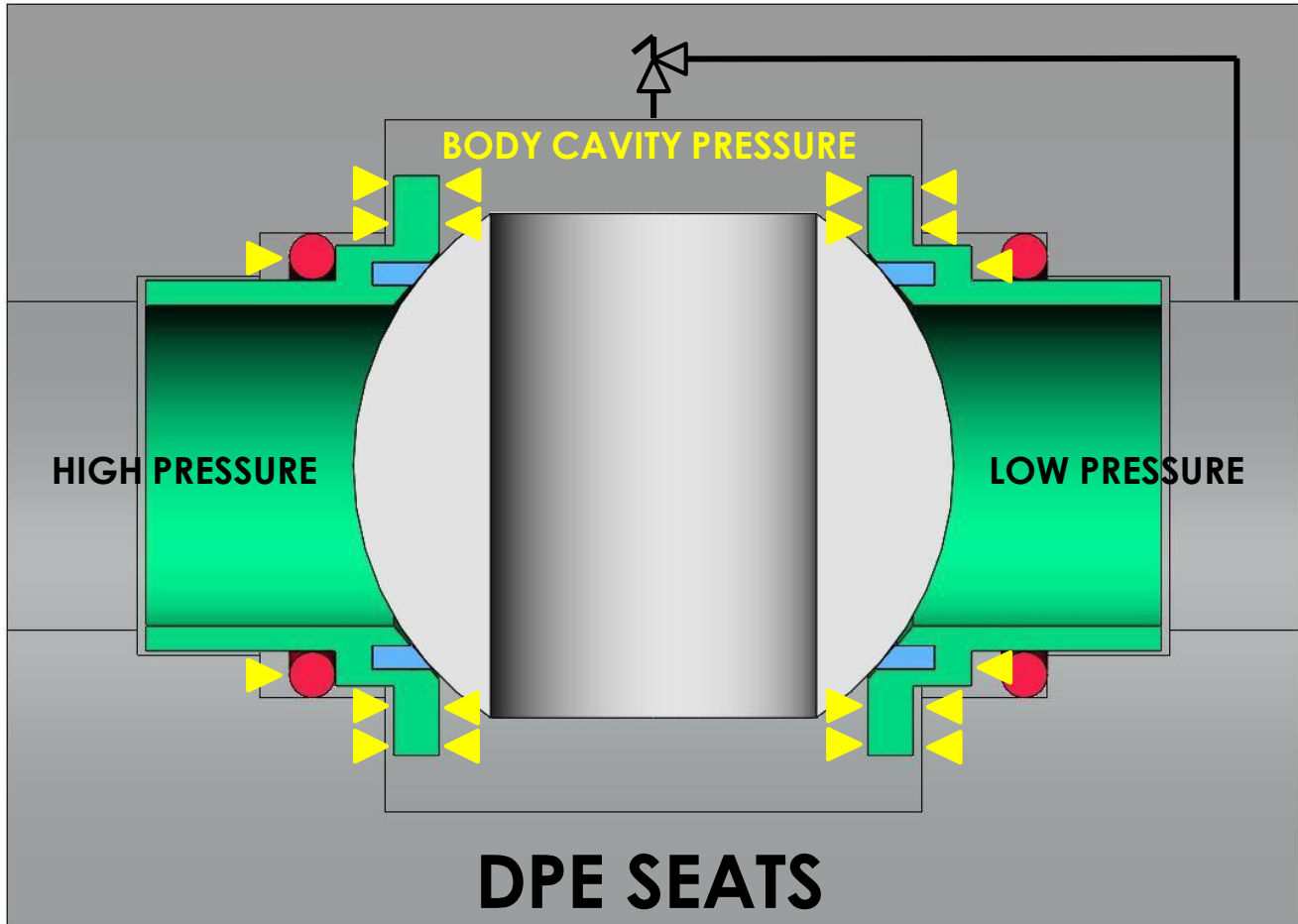
SOFT SEATED TRUNNION MOUNTED BALL VALVES

## DESIGN FEATURES – Self Relieving Seats



In the event of seat leakage or trapped cavity pressure, the “Self Relieving” seat design will allow the cavity pressure to internally relieve to the low pressure side thereby avoiding the risk associated with porting and relieving in liquid service.

### DESIGN FEATURES – DIB Seats



In the event of upstream seat leakage or thermal expansion of cavity pressure, pressure will engage a shuttle seal located on the back side of the downstream seat. This creates an imbalance of force causing the downstream seat to engage the sealing surface of the ball.

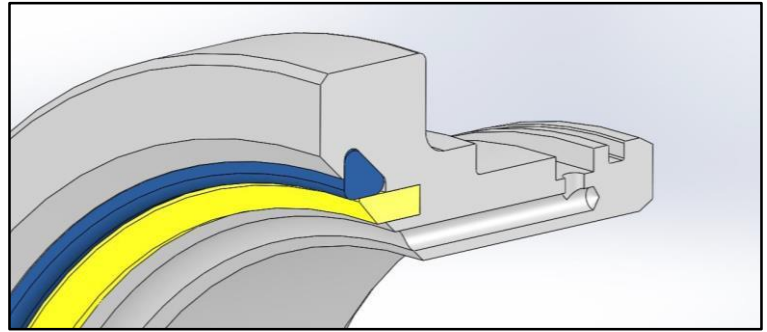
**Note: Standard DIB-1 valves are suitable for gas service. Liquid service requires porting to relieving of cavity pressure. Or the use of DIB-2 seats which is a combination of self relieving and DIB in a single valve. The DIB-2 design eliminates the need for porting and relieving in liquid service applications.**



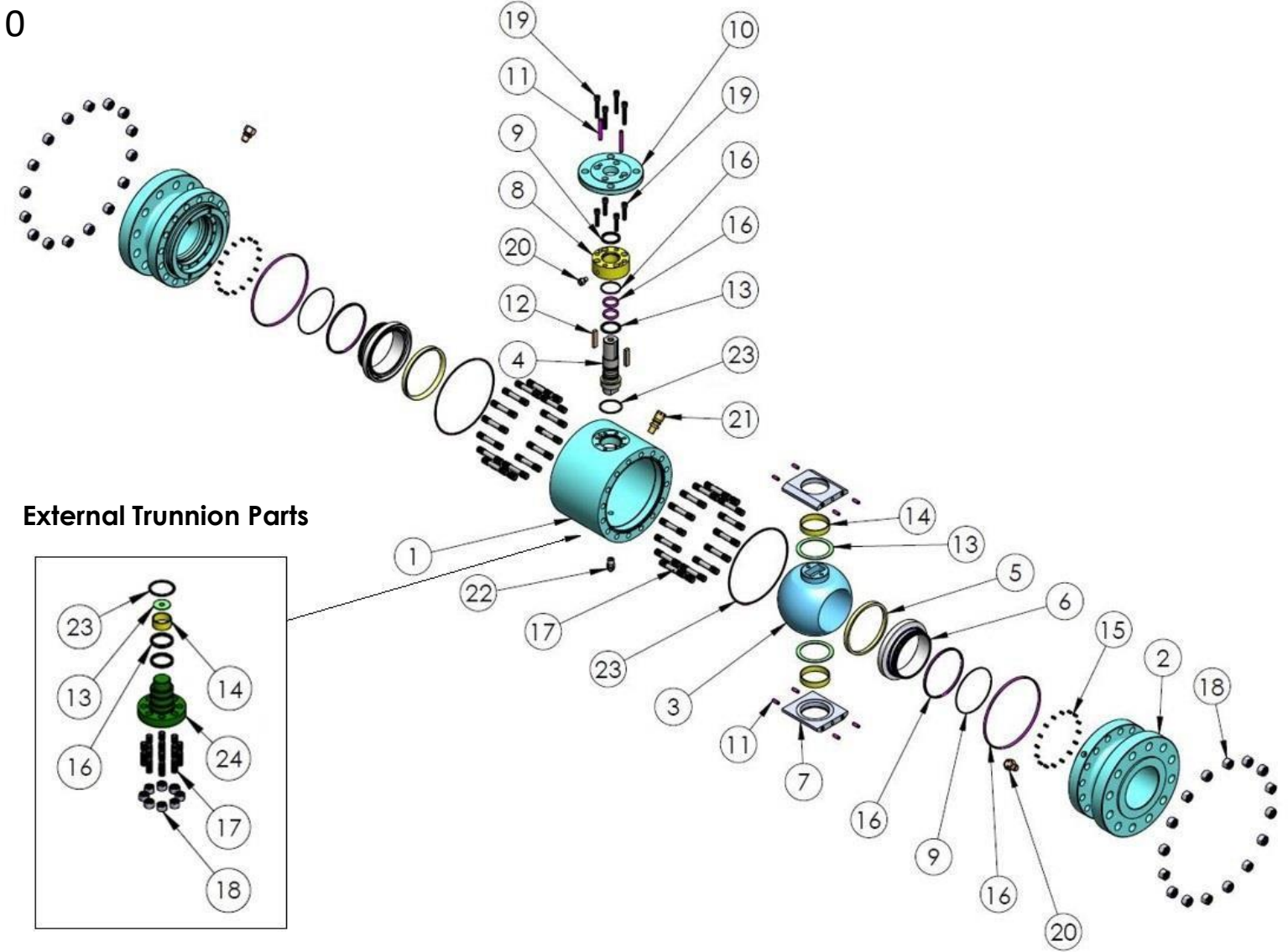
# CSTS SERIES

SOFT SEATED TRUNNION MOUNTED BALL VALVES

## EXPLODED VIEW



DPE Seat Cross-Section

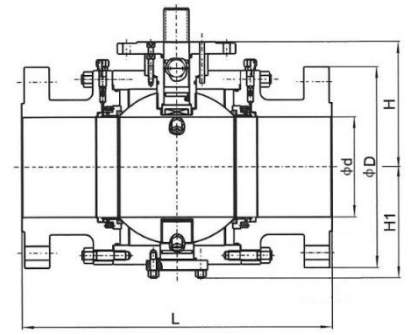


# Standard TRIM CHART

CSTS Trunnion				
Materials of Parts	No.	Part Name	DIB	Self Relieving
	1	Body	ASTM A350 LF2	ASTM A350 LF2
	2	End Connection	ASTM A350 LF2	ASTM A350 LF2
	3	Ball	ASTM A350 LF2+ENP/WC	ASTM A350 LF2+ENP/WC (WC Std. on CL 1500, 2500)
	4	Stem	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
	5	Seat	Viton GLT + NYLON	NYLON/PEEK/RPTFE
	6	Seat Ring	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
	7	Trunnion Plate	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
	8	Bonnet	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
	9	Fire Safe Packing	Graphite	Graphite
	10	Mounting Plate	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
	11	Pin	SAE 1035	SAE 1035
	12	Flat Key	SAE 1045	SAE 1045
	13	Thrust Bearing	PTFE	PTFE
	14	Trunnion Bearing	SS + Teflon	SS + Teflon
	15	Spring	INCONEL X-750	INCONEL X-750
	16	O Ring	Viton GLT	VITON GLT
	17	Stud	ASTM A320 L7M	ASTM A320 L7M
	18	Hex Nut	ASTM A194 7M	ASTM A194 7M
	19	Socket Head Cap Screw	ASTM A320 L7M	ASTM A320 L7M
	20	Grease Injection Fitting	ASTM A182 F304ss	ASTM A182 F304ss
	21	Vent Fitting	ASTM A182 F304ss	ASTM A182 F304ss
	22	Drain Fitting	ASTM A182 F304ss	ASTM A182 F304ss
	23	Firesafe Gasket	Graphite + 304ss	Graphite + 304ss
	24	Trunnion Pin	ASTM A350 LF2+ENP	ASTM A350 LF2+ENP
<b>Applicable Service Conditions</b>	Applicable Media		Water, Oil, Gas	
	Applicable Temp.		-46 TO 90C (Nylon), 120C (HSN), 250C (PEEK)	
Design and Manufacturing			API 6D, API 607, API 608, ASME B16.34, CSA Z245.15	
Pressure Test			API 6D, API 598	
Operation			Wrench Locking, Gear Operated, ISO 5211 mounting	

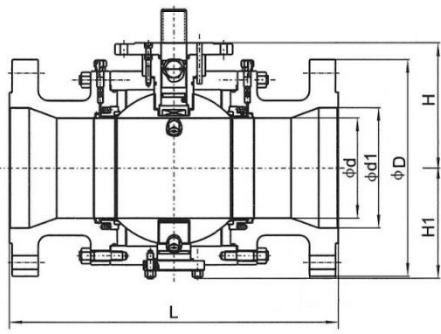
# CSTS SERIES

## SOFT SEATED TRUNNION MOUNTED BALL VALVES



### ASME Class 150-2500 Full Port Dimension Chart

Pressure Rating Class	Nominal Diameter		d (mm)	L (mm)		D (mm)	Height (mm)		Weight (kg)
	NPS	DN		RF	RTJ		H	H1	
150	2"	50	50	178	191	150	93	88	19
	3"	80	75	203	216	190	118.5	117	28
	4"	100	100	229	241	230	143.5	137	50
	6"	150	150	394	406	280	208	178.5	160
	8"	200	201	457	470	345	248	222	270
	10"	250	252	533	546	405	294	265	415
	12"	300	303	610	622	485	344.5	308.5	660
	14"	350	334	686	699	535	377	334	890
	16"	400	385	762	775	595	418	375	1080
	18"	450	436	864	876	635	463	410	1480
	20"	500	487	914	927	700	502	458	1970
	24"	600	589	1067	1080	815	586	534	3000
	26"	650	633	1143	-	870	626	582	3612
	28"	700	684	1245	-	927	644	605	4402
	30"	750	735	1295	-	984	720	672	5112
	32"	800	779	1372	-	1060	742	704	6667
	36"	900	874	1524	-	1168	839	796	8627
	38"	950	925	1600	-	1240	833	844	
	40"	1000	976	1753	-	1290	873	882	
	42"	1050	1020	1790	-	1345	915	922	
48"	1200	1166	1995	-	1510	1030	1035		
56"	1400	1360	2489	-	1745	1182	1192		
300	2"	50	50	216	232	165	93	88	22
	3"	80	75	283	298	210	118.5	117	38
	4"	100	100	305	321	255	143.5	137	60
	6"	150	150	403	419	320	208	178.5	180
	8"	200	201	502	518	380	208	222	295
	10"	250	252	568	584	445	248	265	450
	12"	300	303	648	664	520	294	308.5	700
	14"	350	334	762	778	585	344.5	334	1160
	16"	400	385	838	854	650	377	380	1340
	18"	450	436	914	930	710	423	410	1610
	20"	500	487	991	1010	775	463	458	2200
	24"	600	589	1143	1165	915	502	549	3460
	26"	650	633	1245	-	972	592	590	4017
	28"	700	684	1346	-	1035	633	682	4974
	30"	750	735	1397	-	1092	680	720	5681
	32"	800	779	1524	-	1149	730	737	6837
	36"	900	874	1727	-	1270	765	804	8700
	38"	950	925	1800	-	1170	838	844	
	40"	1000	976	1956	-	1240	875	881	
	42"	1050	1020	2083	-	1290	917	922	
48"	1200	1166	2170	-	1465	1030	1034		
56"	1400	1360	2743	-	1710	1182	1191		
600	2"	50	50	368	371	215	126.5	105	57
	3"	80	75	381	384	240	150	130	87
	4"	100	100	457	460	290	172.5	158	193
	6"	150	150	610	613	380	230	197	340
	8"	200	201	737	740	470	285	250	570
	10"	250	252	838	841	545	330	294	912
	12"	300	303	965	968	610	366	334	1325
	14"	350	322	1029	1038	640	415	368	1620
	16"	400	373	1130	1140	705	452	408	1990
	18"	450	423	1219	1232	785	501	461	2611
	20"	500	471	1321	1334	855	544	506	3880
	24"	600	570	1549	1568	1040	657	616	6296
	26"	650	617	1651	-	1086	700	635	7280
	28"	700	665	1753	-	1168	727	685	9166
	30"	750	712	1880	-	1232	760	722	11277
	32"	800	760	2032	-	1314	795	755	12300
	36"	900	855	2286	-	1461	886	846	17500
	38"	950	904	2300	-	1460	950	940	
	40"	1000	956	2410	-	1510	994	989	
	42"	1050	1006	2515	-	1560	1038	1031	
48"	1200	1149	2620	-	1785	1169	1146		
900	2"	50	42	451	454	235	149	123	140
	3"	80	62	578	584	305	215	171	216
	4"	100	87	673	683	355	245	206	328
	6"	150	131	914	927	485	306	263	1030
	8"	200	179	1022	1038	550	361	330	1570
	10"	250	223	1270	1292	675	426	388	2550
	12"	300	265	1422	1445	760	479	440	3872
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	1500	2"	50	368	371	215	126.5	105	57
		3"	80	470	473	265	166	149	168
		4"	100	546	549	310	219	178	230
		6"	150	705	711	395	268	227	685
		8"	200	832	841	485	303	267	993
		10"	250	991	1000	585	358	323	1781
		12"	300	1130	1146	675	414	381	2280
		14"	350	1257	1276	750	471	432	3000
		16"	400	1384	1407	825	498	453	3816
18"		450	1537	1559	915	570	530	6195	
20"	500	1664	1686	985	611	569	9075		
2500	2"	50	42	451	454	235	149	123	140
	3"	80	62	578	584	305	215	171	216
	4"	100	87	673	683	355	245	206	328
	6"	150	131	914	927	485	306	263	1030
	8"	200	179	1022	1038	550	361	330	1570
	10"	250	223	1270	1292	675	426	388	2550
	12"	300	265	1422	1445	760	479	440	3872
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	-	-	-	-	-	-	-	-	-



# CSTS SERIES

## SOFT SEATED TRUNNION MOUNTED BALL VALVES

### ASME Class 150-2500 Reg. Port Dimension Chart

Pressure Rating	Nominal Diameter		d (mm)	d1 (mm)	L (mm)		D (mm)	Height (mm)		Weight (kg)	
	NPS	DN			RF	RTJ		H	H1		
150	3" X 2"	80 X 50	50	75	203	216	190	93	88	28	
	4" X 3"	100 X 80	75	100	229	241	230	118.5	117	45	
	6" X 4"	150 X 100	100	150	394	406	280	143	137	95	
	8" X 6"	200 X 150	150	201	457	470	345	208	178.5	170	
	10" X 8"	250 X 200	201	252	533	546	405	248	222	313	
	12" X 10"	300 X 250	252	303	610	622	485	294	265	470	
	14" X 10"	350 X 250	252	334	686	699	535	294	265	521	
	14" X 12"	350 X 300	303	334	686	699	535	344.5	308.5	760	
	16" X 12"	400 X 300	303	385	762	775	595	344.5	308.5	834	
	16" X 14"	400 X 350	334	385	762	775	595	377	334	930	
	18" X 16"	450 X 400	385	436	864	876	635	418	375	1120	
	20" X 16"	500 X 400	385	487	914	927	700	418	375	1480	
	20" X 18"	500 X 450	436	487	914	927	700	463	410	1620	
	24" X 20"	600 X 500	487	589	1067	1080	815	502	458	2270	
	30" X 24"	750 X 600	589	735	1295	-	984	586	534	3730	
	36" X 30"	900 X 750	735	874	1524	-	1168	720	672	6740	
	38" X	950 X	874	925	1600	-	1240	839	796	-	
40" X	1000 X	925	976	1753	-	1290	833	844	-		
42" X	1050 X	976	1020	1790	-	1345	873	882	-		
48" X	1200 X	1020	1166	1995	-	1510	915	922	-		
56" X	1400 X	1166	1360	2489	-	1745	1030	1035	-		
300	3" X 2"	80 X 50	50	75	356	359	210	107	91.5	44	
	4" X 3"	100 X 80	75	100	432	435	275	140	119	85	
	6" X 4"	150 X 100	100	150	559	562	355	167	150	169	
	8" X 6"	200 X 150	150	201	660	664	420	222	192.5	280	
	10" X 8"	250 X 200	201	252	787	791	510	271	235	520	
	12" X 10"	300 X 250	252	303	838	841	560	317.5	280	790	
	14" X 10"	350 X 250	252	334	889	892	605	317.5	280	960	
	14" X 12"	350 X 300	303	334	889	892	605	360	320	1070	
	16" X 12"	400 X 300	303	385	991	994	685	360	320	1250	
	16" X 14"	400 X 350	334	385	991	994	685	390	350	1367	
	18" X 16"	450 X 400	385	436	1092	1095	745	440	395	1840	
	20" X 16"	500 X 400	385	487	1194	1200	815	440	395	2177	
	20" X 18"	500 X 450	436	487	1194	1200	815	485	439	2390	
	24" X 20"	600 X 500	487	589	1397	1407	940	533	490	3560	
	30" X 24"	750 X 600	589	735	1651	-	1130	616	573	5200	
	36" X 30"	900 X 750	735	874	2083	-	1314	753	710	9900	
	38" X	950 X	874	925	2080	-	1270	861	840	-	
40" X	1000 X	925	976	2080	-	1320	884	882	-		
42" X	1050 X	976	1020	2175	-	1405	931	931	-		
48" X	1200 X	1020	1166	2435	-	1595	965	964	-		
56" X	1400 X	1166	1360	2710	-	1855	1097	1086	-		
600	3" X 2"	80 X 50	50	75	470	473	265	126.5	105	127	
	4" X 3"	100 X 80	74	100	546	549	310	166	149	195	
	6" X 4"	150 X 100	100	144	705	711	395	219	178	270	
	8" X 6"	200 X 150	144	192	832	841	485	268	227	586	
	10" X 8"	250 X 200	192	239	991	1000	585	303	267	1010	
	12" X 10"	300 X 250	239	287	1130	1146	675	358	323	1760	
	14" X 10"	350 X 250	239	315	1257	1276	750	358	323	2010	
	14" X 12"	350 X 300	287	315	1257	1276	750	414	381	2680	
	16" X 12"	400 X 300	287	360	1384	1407	825	414	381	2860	
	16" X 14"	400 X 350	315	360	1384	1407	825	471	432	3530	
	18" X 16"	450 X 400	360	406	1537	1559	915	498	453	5030	
	20" X 16"	500 X 400	360	454	1664	1686	985	498	453	-	
	20" X 18"	500 X 450	406	454	1664	1686	985	570	530	5380	
	900	3" X 2"	80 X 50	50	75	578	584	305	149	123	157
		4" X 3"	100 X 80	62	87	673	683	355	215	171	260
		6" X 4"	150 X 100	87	131	914	927	485	245	206	548
		8" X 6"	200 X 150	131	179	1022	1038	550	306	263	1100
10" X 8"		250 X 179	179	223	1270	1292	675	361	330	1890	
12" X 10"		300 X 223	223	265	1422	1445	760	426	388	2850	
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1500		3" X 2"	80 X 50	50	75	683	687	355	215	171	260
		4" X 3"	100 X 80	62	87	778	782	405	285	226	340
	6" X 4"	150 X 100	87	131	914	927	485	245	206	548	
	8" X 6"	200 X 150	131	179	1022	1038	550	306	263	1100	
	10" X 8"	250 X 179	179	223	1270	1292	675	361	330	1890	
	12" X 10"	300 X 223	223	265	1422	1445	760	426	388	2850	
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