

# PIPELINE BALL VALVES



# ***SUFA***



**CNNC SUFA TECHNOLOGY INDUSTRY CO.,LTD.**

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# COMPANY PROFILE

## »» Company Profile



SUFA Technology Industry Co., Ltd. CNNC (abbreviated as "SUFA", the Code: 000777) is a High-tech enterprise, which is located in the national level Suzhou high-tech new district. SUFA is the first public listed company with in China valve industry and nuclear power industry, which has been traded in Shenzhen Stock Exchange since 1997.

SUFA is based on its root enterprise, Suzhou Valve Factory established in 1955. SUFA is an integrated Production plant with more than 50 years of experience in valve manufacturing, marketing and service. SUFA has become the leading enterprise in the valve industry with more than 500 domestic and overseas customers, the country manufacture base for all kinds of industry valve in complete.

As the leading manufacturer in China valve industry, the company has a strong Science and Technology R&D system, good production procedure, trustworthy QA system with the perfect testing method. It equipped with the facilities including X-ray accelerator, Spectrometer, the nitrogen-mass spectrum instrumentation, Cryogenic test system, Helium Leakage Monitor, Flux test, Biometry test, etc. There are also fit out the high pressure and high temperature test loop for some special valves, etc.: nuclear valve, high pressure valve and so on with which the reliability and quality of products may be guaranteed.

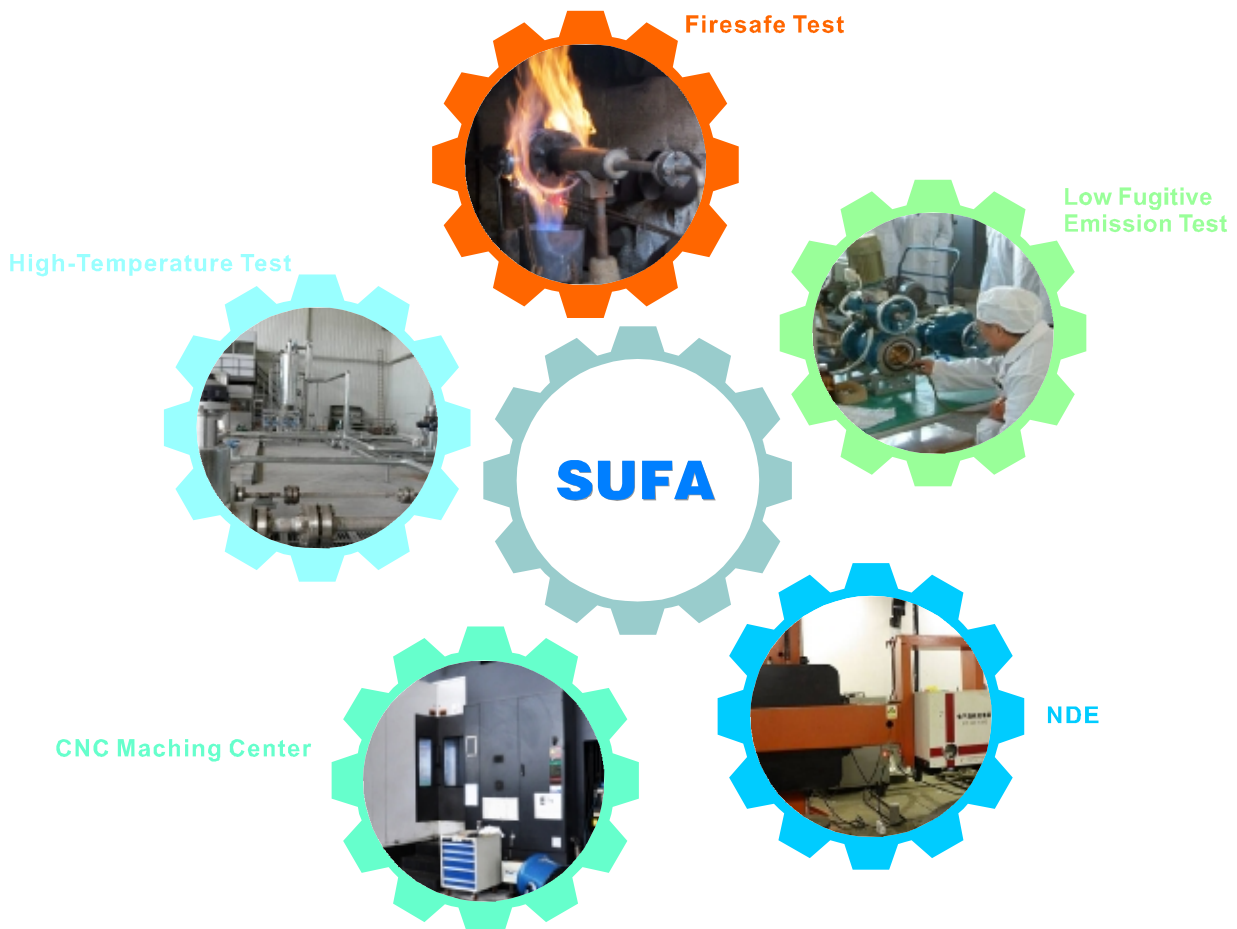
SUFA was the first one among Chinese valve manufacturers that obtained API certificate in 1982. And SUFA was granted the quality system certificate of ISO9001 in 1993. The company obtained the "CE" TUV certificate for the QA system "mode H" in 2001.

Then the Factory gained the licenses issued by different authorities, e.g. ABS (USA), BV (France), DNV (Norway) and CCS (China) for valve manufacturing. Since 1995, other qualification certification have been offered many times, including licenses (the License of Qualified Designing for Civil Nuclear Pressure Equipment and the License of Qualified Manufacturer for Civil Nuclear Pressure Equipment) Issued by China National Nuclear Safety Bureau, Qualified supplier nets for China Power, Petro China and SINOPEC. SUFA has had the "Certificate for the Exemption of Import and Export Commodities from inspection" issued by State Central Administration of the PR. of China for Quality Supervision and inspection & Quarantine in 2003, and the "Certificate for the Exemption of Quality for Export Commodities form Inspection, 'In 2006. All the approvals by authorized organizations reflect SUFA's integrated capability and the leading position in the valve industry of China.

# COMPANY PROFILE



Suzhou SUFA Ball Valve CO., LTD. belong to SUFA Technology Industry CO., LTD. CNNC , are SUFA in October 2008 acquisition of the formation of a wholly-owned subsidiary. Suzhou SUFA Ball Valve CO., LTD. specializes in API6D pipeline ball valve and other industrial R&D, manufacturing and sales, to rely on the parent company of powerful technology, talent advantages and so its well- established valve manufacturing, quality management systems and rich management experience, will certainly rank among the excellent Chinese ball valve suppliers, to provide high quality but cheap ball valve products to customers.



# PRODUCT RANGE

## » Product Range

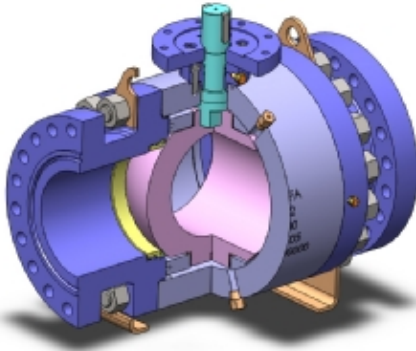


### PRODUCT RANGE

SIZE (in/mm)		PRESSURE RATING			
		CL150~CL600	CL900	CL1500	CL2500
SIDE ENTRY	CASTING	1-1/2~20 DN40~DN500	N/A	N/A	N/A
	FORGING	1-1/2~56 DN40~DN1400	1-1/2~48 DN40~DN1200	1-1/2~36 DN40~DN900	1-1/2~16 DN40~DN500
TOP-ENTRY		2~56 DN50~DN1400	2~48 DN50~DN1200	2~36 DN50~DN900	2~16 DN50~DN500
WELDED BODY		2~56 DN50~DN1400	2~48 DN50~DN1200	2~36 DN50~DN900	N/A

# DESIGN FEATURES

## » Design Features



SUFA's pipeline ball valves are designed in line with the ANSI standards and API 6D / ISO 14313 standard, are classified into the flanged design and the full welded design, to meet different user's requirements. Its wall thickness of body and strength of the bolt connection are designed according to ASME B16.34, deliberate and strict calculations can ensure the safety of connection of appropriate pressure class.

### TRUNNION-MOUNTED BALL

The ball is fixed and the seat rings are floating, free to move along the valve axis.

At low pressure the seat sealing action is achieved by the thrust of the springs acting on the seat rings.

As the pressure increases the fluid pressure pushes the seat rings against the ball to provide a tight seal.

### INDEPENDENT BALL AND STEM

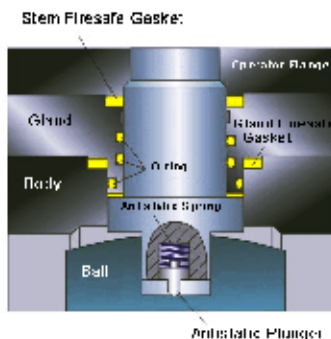
The ball and stem are independent to minimize the effect of the side thrust generated by the pressure acting on the ball.

### ANTI-STATIC DESIGN

The electrical conductance continuity between all the metallic components is guaranteed and certified.

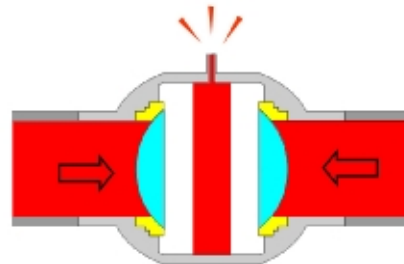
### FIRESAFE DESIGN

When the sealing materials (seat sealing or stem sealing) are damaged or decomposed by fire or other accidental causes, body gasket and stem firesafe packing are the measure that prevents external fluid leakage. It is a standard design, fully meet the API607 and BS6755 part.2.

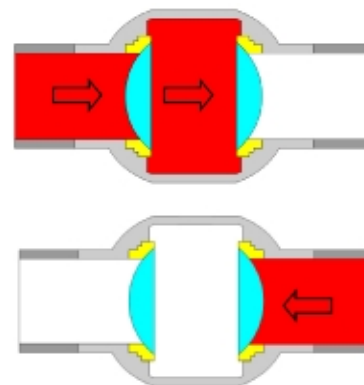


### DOUBLE BLOCK AND BLEED (DBB)

The double block and bleed feature, both with the ball in the fully closed or fully open position, is a standard feature. In the closed position, the valve with two seating surfaces provides a seal against pressure from both ends of the valve with a means of venting/bleeding the cavity between the seating surfaces.



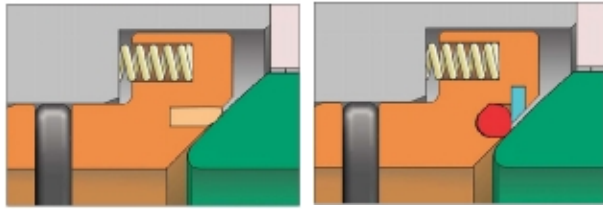
### DOUBLE ISOLATION AND BLEED (DIB)



The double isolation and bleed feature is designed on user's request. In the closed position, each of two seating surfaces provides a seal against pressure from a single source, with a means of venting/bleeding the cavity between the seating surfaces.

# DESIGN FEATURES

## RELIABLE SEAT SEALING

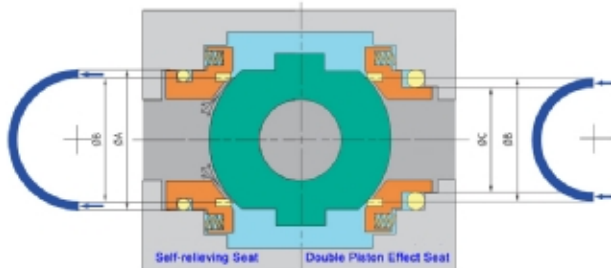


A resilient material (such as rubber or polymeric material) is inserted into the metal seat ring to provide a soft seating action between the ball and the seat rings.

**Primary Soft Seat - Secondary Metal Seat:** Polymeric material (such as PTFE, NYLON, etc.) is inserted into the metal seat ring to provide the primary sealing, the metal seat ring provide the secondary sealing.

**Primary Metal Seat - Secondary Soft Seat:** The metal seat ring provide the primary sealing, rubber material (such as VITON, HNBR, etc.) is inserted into the metal seat ring to provide the secondary sealing.

## SELF-RELIEVING



Once the valve cavity pressure increases, the pressure is greater than the line pressure, the thrust generated by the pressure difference overcomes the spring force and separates the seat from the ball, the pressure discharge from one side and pressure in the valve cavity declines, the spring pushes the seat against the ball again.

The double piston design doesn't permit the automatic release of any overpressure in the body cavity. Valves with double piston effect seat rings require a relief valve in order to reduce the build-up of overpressure in the body cavity if necessary.

## EMERGENCY SEALANT INJECTION SYSTEM

The design of emergency sealant injection system is used in the ball valve (6" (DN 150) and larger). When the soft sealing material subject to a certain degree of damage and a micro-leakage occurs, the appropriate sealant can be injected through the emergency sealant injection system to achieve a secondary sealing.

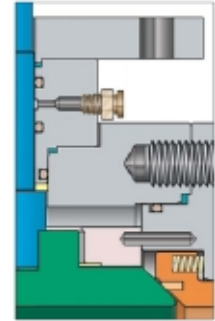
This system can also be used for flushing and lubricating the seat area to keep its clean when necessary.

## RELIABLE STEM AND BODY SEALING

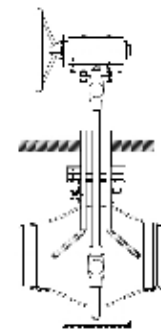
Two O-rings and one graphite gasket ensure the stem seal. In addition, the stems of the pipeline valves have installed the grease injection fitting.

The double sealing action of O-rings and graphite gaskets in all the static joints of the body components ensures zero leakage and the Firesafe feature.

Full welded structure used in the full welded body pipeline ball valve completely prevents external leakage.

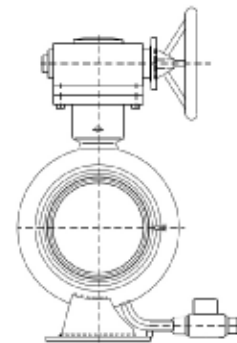


## EXTENDED STEM



Valves installed underground or in remote locations can be operated with an optional extended stem. All the drain, vent and emergency sealant connections can be operated using extended connecting pipes firmly attached to the stem protective cover.

## VENT VALVE AND DRAIN PLUG



Each valve 6" (DN150) and larger is supplied a vent valve located in the upper part of the body and a drain plug located in the lower part of the body.

Each valve less than 6" (DN150) is supplied a vent valve located in the lower part of the body.

As required, the vent valve and the drain plug will be replaced with other valves.

# DESIGN FEATURES

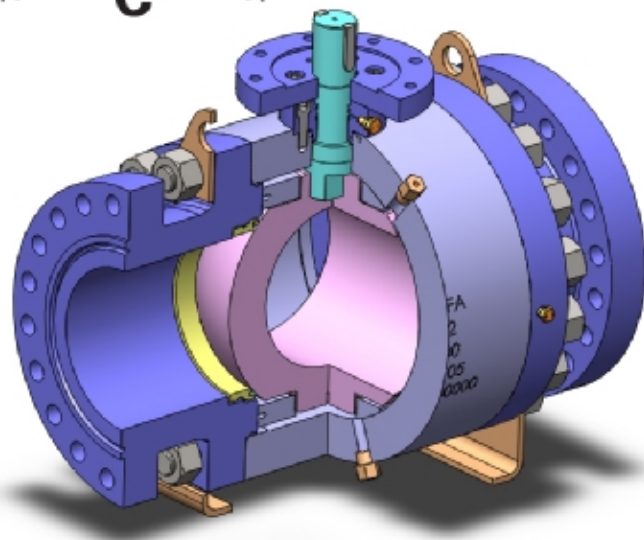
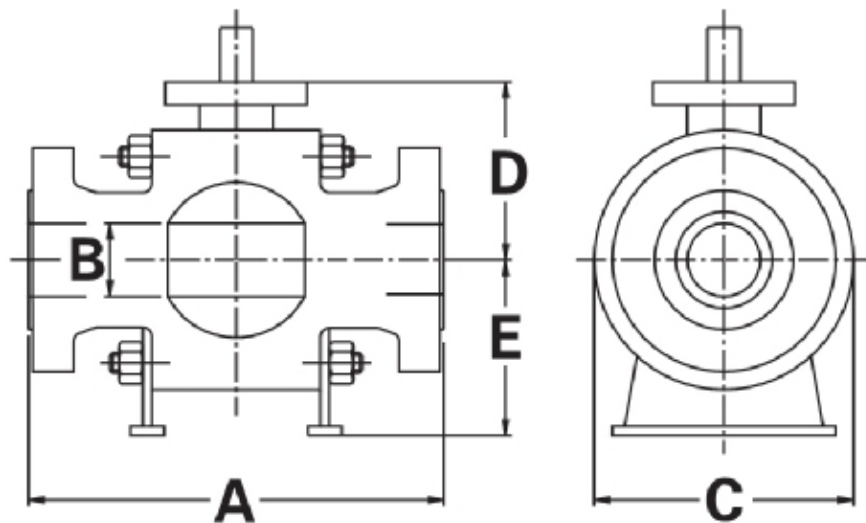
## » Design Features

FEATURE	SIDE ENTRY	TOP ENTRY	WELDED BODY
API 6D Design and Construction	As Required	As Required	As Required
Primary Soft Seat - Secondary Metal Seat	Standard	Standard	Standard
Primary Metal Seat - Secondary Soft Seat	On Request	On Request	On Request
Metal to Metal Seat	On Request	On Request	N/A
Self Relieving Seats	Standard	Standard	Standard
Double Isolation and Bleed DIB-1	On Request	On Request	On Request
Double Isolation and Bleed DIB-2	On Request	On Request	On Request
Face to Face Dimensions	As Required	As Required	As Required
Valve Ends	As Required	As Required	As Required
Fire Safe Design to API 6FA/API 607	Standard	Standard	Standard
Full or Reduced Bore	As Required	As Required	As Required
Anti-Blowout Stem	Standard	Standard	Standard
Antistatic	Standard	Standard	Standard
Double Block and Bleed	Standard	Standard	Standard
Double Body Seals	Standard	Standard	N/A
Triple Stem Seals	Standard	Standard	Standard
Drain Plug	Standard	Standard	Standard
Drain Valve	On Request	On Request	On Request
Vent Valve	Standard	Standard	Standard
Emergency Sealant Injection	Standard	Standard	Standard
Locking Device	Standard	Standard	Standard
With Lock	On Request	On Request	On Request
Position Indicator	Standard	Standard	Standard
Extended Stem for Underground Installation	On Request	On Request	On Request
Operation Methods	As Required	As Required	As Required
Lifting Lugs	Standard on 6"(DN150) and Larger		
Supporting Feet	Standard on 6"(DN150) and Larger		



# BOLTED BODY SIDE-ENTRY

## » Bolted Body Side-Entry



### PARTS LIST

1	Body	11	Valve Support	21	Body Gasket	31	Antistatic Plunger
2	Closure	12	Body/Closure Stud	22	Gland Gasket	32	Antistatic Spring
3	Ball	13	Body/Closure Nut	23	Seat Firesafe Gasket	33	Stem bushing
4	Stem	14	Gland Screw	24	Stem Thrust Washer	34	Stem Key
5	Seat Insert	15	Operator Flange Screw	25	Ball Thrust Washer	35	Seat Injector
6	Seat	16	Seat Spring	26	Ball bushing	36	Stem Injector
7	Gland	17	Body O-ring	27	Stem Firesafe Gasket	37	Check Valve
8	Operator Flange	18	Seat O-ring	28	Trunnion Pin	38	Drain Plug
9	Trunnion	19	Stem O-ring	29	Gland Pin	39	Vent Valve
10	Lifting Lug	20	Gland O-ring	30	Pin		

# BOLTED BODY SIDE-ENTRY



ASME CLASS 150 FULL BORE

SIZE		B	A		C	D	E	Kg
in	mm		RF	BW				
1-1/2	40	38	165	191	120	110	80	24
2	50	51	178	216	152	125	87	30
3	80	76	203	283	182	142	104	53
4	100	102	229	305	229	165	131	86
6	150	152	394	457	309	217	194	156
8	200	203	457	521	398	259	240	253
10	250	254	533	559	486	306	294	387
12	300	305	610	635	580	361	357	559
14	350	337	686	762	630	389	375	760
16	400	387	762	838	702	428	395	1020
18	450	438	864	914	782	469	443	1215
20	500	489	914	991	850	501	476	1790
22	550	540	1016	1092	940	550	520	2360
24	600	591	1067	1143	1016	603	562	3100
26	650	635	1143	1245	1060	627	580	3680
28	700	686	1245	1346	1140	644	658	4500
30	750	737	1295	1397	1240	691	704	5210
32	800	781	1372	1524	1300	742	746	6800
34	850	832	1473	1626	1370	759	773	7800
36	900	876	1524	1727	1430	812	807	8800
40	1000	978	1930	1930	1600	900	898	12560
42	1050	1022	2000	2000	1660	943	937	14280
48	1200	1168	2240	2240	1930	1097	1066	21000
56	1400	1362	2400	2400	2270	1302	1253	33000

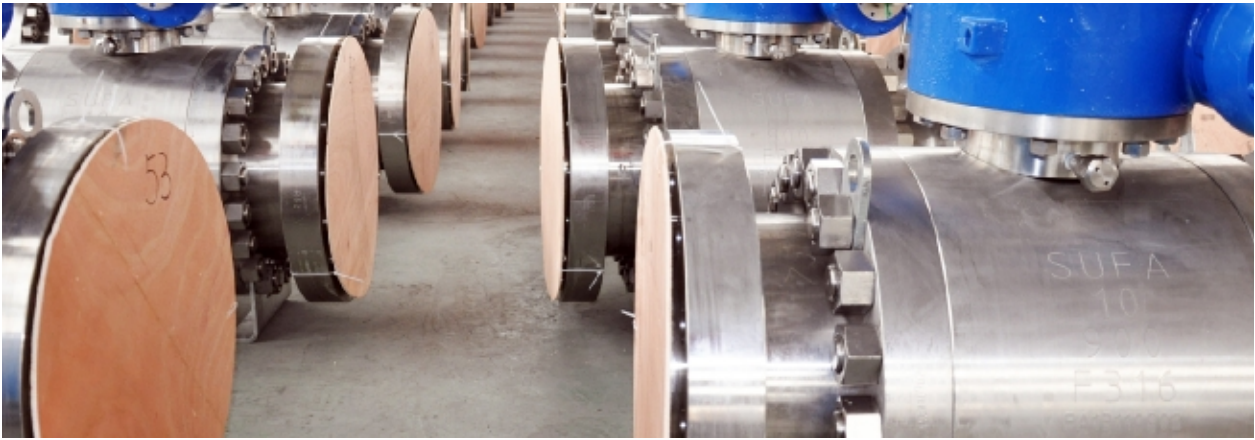
# BOLTED BODY SIDE-ENTRY



## ASME CLASS 300 FULL BORE

SIZE		B	A		C	D	E	Kg
in	mm		RF	BW				
1-1/2	40	38	191	191	120	110	80	24
2	50	51	216	216	152	125	87	30
3	80	76	283	283	190	145	110	55
4	100	102	305	305	242	176	138	92
6	150	152	403	457	309	217	194	182
8	200	203	502	521	398	259	240	278
10	250	254	568	559	486	306	294	500
12	300	305	648	635	580	361	357	733
14	350	337	762	762	630	389	375	1030
16	400	387	838	838	702	428	395	1420
18	450	438	914	914	782	469	443	1590
20	500	489	991	991	872	529	490	2200
22	550	540	1092	1092	970	574	530	2788
24	600	591	1143	1143	1036	624	573	3460
26	650	635	1245	1245	1100	630	580	4660
28	700	686	1346	1346	1160	640	665	5770
30	750	737	1397	1397	1250	700	730	6590
32	800	781	1524	1524	1340	745	765	7930
34	850	832	1626	1626	1420	760	800	9040
36	900	876	1727	1727	1460	805	825	10090
40	1000	978	1930	1930	1640	900	920	13770
42	1050	1022	2000	2000	1720	968	950	16000
48	1200	1168	2240	2240	1980	1100	1100	24000
56	1400	1362	2400	2400	2300	1285	1270	38100

# BOLTED BODY SIDE-ENTRY



## ASME CLASS 600 FULL BORE

SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
1-1/2	40	38	241	241	241	123	110	85	26
2	50	51	292	292	295	158	128	94	32
3	80	76	356	356	359	204	156	117	62
4	100	102	432	432	435	259	183	148	113
6	150	152	559	559	562	335	226	210	253
8	200	203	660	660	664	424	271	263	485
10	250	254	787	787	791	508	323	316	758
12	300	305	838	838	841	595	371	357	1067
14	350	337	889	889	892	648	401	393	1083
16	400	387	991	991	994	738	457	418	1525
18	450	438	1092	1092	1095	817	501	470	2095
20	500	489	1194	1194	1200	905	555	502	2638
22	550	540	1295	1295	1305	970	615	554	3787
24	600	591	1397	1397	1407	1083	657	601	4740
26	650	635	1448	1448	1461	1020	630	618	5650
28	700	686	1549	1549	1562	1200	665	692	6760
30	750	737	1651	1651	1664	1300	741	800	8378
32	800	781	1778	1778	1794	1340	756	804	9740
34	850	832	1930	1930	1946	1420	782	817	11340
36	900	876	2083	2083	2099	1550	869	945	13300
40	1000	978	2000	2000	-	1650	916	980	18340
42	1050	1022	2100	2100	-	1800	995	1110	21350
48	1200	1168	2400	2400	-	2100	1132	1265	31110
56	1400	1362	2600	2600	-	2400	1290	1450	47300

# BOLTED BODY SIDE-ENTRY



ASME CLASS 900 FULL BORE

SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
1-1/2	40	38	305	305	305		120	100	40
2	50	51	368	368	371	186	142	111	48
3	80	76	381	381	384	225	165	129.5	55
4	100	102	457	457	460	275	195	158	145
6	150	152	610	610	613	367	248	223	360
8	200	203	737	737	740	454	296	265	580
10	250	254	838	838	841	546	348	319	1010
12	300	305	965	965	968	650	411	377	1510
14	350	324	1029	1029	1038	692	448	393	1450
16	400	375	1130	1130	1140	790	511	444	2150
18	450	425	1219	1219	1232	876	557	486	2820
20	500	473	1321	1321	1334	964	600	537	4200
22	550	524	1422	1422	1441	1060	650	640	5400
24	600	572	1549	1549	1568	1160	704	690	6800
26	650	619	1651	1651	1673	1205	735	730	8150
28	700	667	1760	1760	1782	1260	775	766	9900
30	750	714	1880	1880	1902	1350	820	807	12180
32	800	762	2010	2010	2032	1428	856	850	14820
34	850	810	2150	2150	2179	1480	890	880	17200
36	900	857	2286	2286	2315	1610	950	945	18900
40	1000	956	2460	2460	-	1740	1010	1020	23780
42	1050	1006	2520	2520	-	1780	1020	1030	29000
48	1200	1149	2740	2740	-	2190	1240	1250	36000

# BOLTED BODY SIDE-ENTRY

## ASME CLASS 1500 FULL BORE

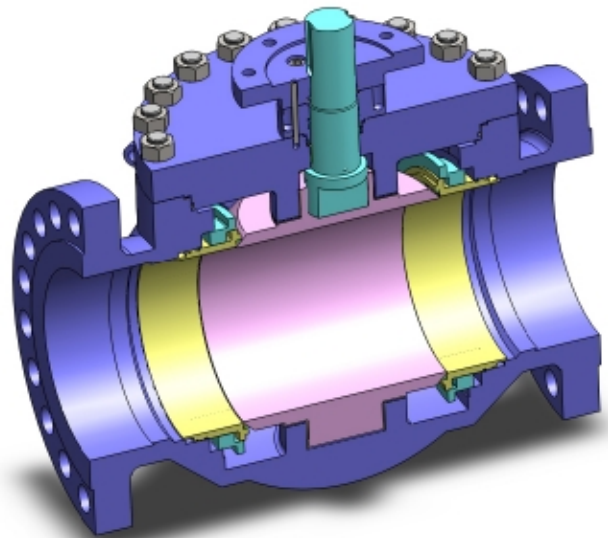
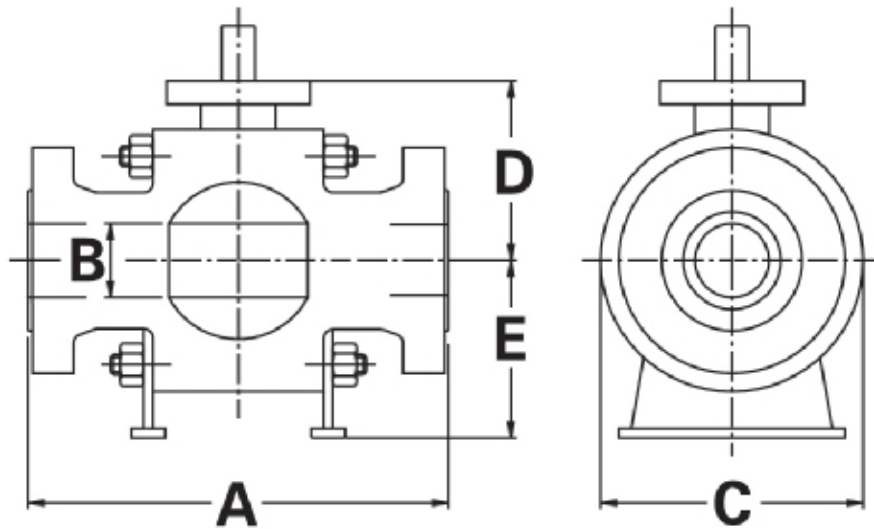
SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
1-1/2	40	38	305	305	305	150	120	100	40
2	50	51	368	368	371	186	142	111	48
3	80	76	470	470	473	233	170	136	97
4	100	102	546	546	549	297	216	174	198
6	150	146	705	705	711	395	268	241	480
8	200	194	832	832	841	489	319	292	820
10	250	241	991	991	1000	628	396	369	1500
12	300	289	1130	1130	1146	708	456	416	2250
14	350	318	1257	1257	1276	760	493	438	2850
16	400	362	1384	1384	1407	872	552	490	3300
18	450	407	1537	1537	1559	1014	625	567	4070
20	500	457	1664	1664	1686	1164	705	643	5540
22	550	495	1816	1816	1845	1340	775	725	6195
24	600	534	1943	1943	1972	1424	836	792	7500
26	650	594	1943	1943	-	1570	898	856	9075
28	700	641	2210	2210	-	1680	990	943	12000
30	750	686	2400	2400	-	1750	1020	1010	14300
32	800	730	2500	2500	-	1890	1090	1080	16520
34	850	775	2600	2600	-	2010	1150	1130	19200
36	900	819	2800	2800	-	2100	1200	1190	22800

## ASME CLASS 2500 FULL BORE

SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
1-1/2	40	38	384	384	387	220	140	125	110
2	50	44	451	451	454	235	150	127	120
3	80	64	578	578	584	305	177	198	246
4	100	89	673	673	683	356	227	233	470
6	150	133	914	914	927	483	264	252	937
8	200	181	1022	1022	1038	620	383	339	1410
10	250	225	1270	1270	1292	745	453	422	2600
12	300	267	1422	1422	1445	870	520	482	4200
14	350	292	1610	1610	-	950	620	560	5600
16	400	333	1800	1800	-	1080	660	630	7800

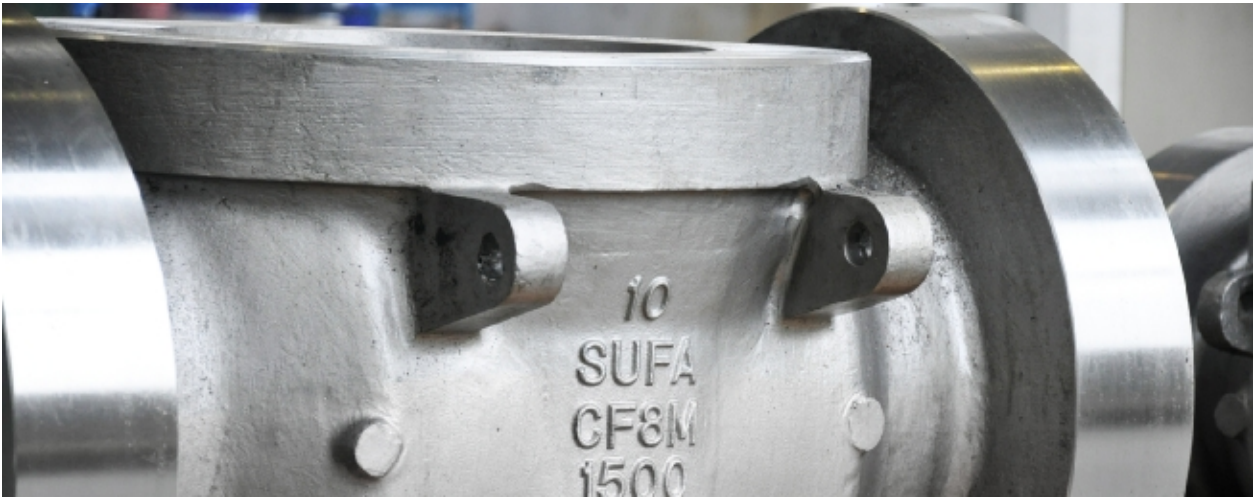
# TOP-ENTRY

## »» Top-Entry



### PARTS LIST

1	Body	11	Spring Holder Ring	21	Body Gasket	31	Antistatic Spring
2	Closure	12	Body/Closure Stud	22	Gland Gasket	32	Stem bushing
3	Ball	13	Body/Closure Nut	23	Seat Firesafe Gasket	33	Stem Key
4	Stem	14	Gland Screw	24	Stem Thrust Washer	34	Seat Injector
5	Seat Insert	15	Operator Flange Screw	25	Ball Thrust Washer	35	Stem Injector
6	Seat	16	Seat Spring	26	Ball bushing	36	Check Valve
7	Gland	17	Body O-ring	27	Stem Firesafe Gasket	37	Drain Plug
8	Operator Flange	18	Seat O-ring	28	Trunnion Pin	38	Vent Valve
9	Trunnion	19	Stem O-ring	29	Gland Pin		
10	Lifting Lug	20	Gland O-ring	30	Antistatic Plunger		



## ASME CLASS 150 FULL BORE

SIZE		B	A		C	D	E	Kg
in	mm		RF	BW				
2	50	51	178	292	292	125	87	29
3	80	76	203	356	356	142	104	54
4	100	102	229	432	432	165	131	84
6	150	152	394	559	559	217	194	155
8	200	203	457	660	660	259	240	293
10	250	254	533	787	787	306	294	403
12	300	305	610	838	838	361	357	511
14	350	337	686	889	889	389	375	547
16	400	387	762	991	991	428	395	792
18	450	438	864	1092	1092	469	443	1088
20	500	489	914	1194	1194	501	476	1390
22	550	540	1016	1295	1295	550	520	1980
24	600	591	1067	1397	1397	603	562	2304
26	650	635	1143	1448	1448	627	580	2736
28	700	686	1245	1549	1549	644	658	3312
30	750	737	1295	1651	1651	691	704	4054
32	800	781	1372	1778	1778	742	746	5101
34	850	832	1473	1930	1930	759	773	5616
36	900	876	1524	2083	2083	812	807	6552
40	1000	978	1930	2000	2000	900	898	9209
42	1050	1022	2000	2100	2100	943	937	10872
48	1200	1168	2240	2400	2400	1097	1066	16272
56	1400	1362	2400	2600	2600	1302	1253	26000



# TOP-ENTRY



## ASME CLASS 300 FULL BORE

SIZE		B	A		C	D	E	Kg
in	mm		RF	BW				
2	50	51	292	292	152	125	87	30
3	80	76	356	356	190	145	110	57
4	100	102	432	432	242	176	138	88
6	150	152	559	559	309	217	194	163
8	200	203	660	660	398	259	240	308
10	250	254	787	787	486	306	294	423
12	300	305	838	838	580	361	357	537
14	350	337	889	889	630	389	375	574
16	400	387	991	991	702	428	395	832
18	450	438	1092	1092	782	469	443	1142
20	500	489	1194	1194	872	529	490	1460
22	550	540	1295	1295	970	574	530	2079
24	600	591	1397	1397	1036	624	573	2419
26	650	635	1448	1448	1100	630	580	2873
28	700	686	1549	1549	1160	640	665	3478
30	750	737	1651	1651	1250	700	730	4257
32	800	781	1778	1778	1340	745	765	5356
34	850	832	1930	1930	1420	760	800	5897
36	900	876	2083	2083	1460	805	825	6880
40	1000	978	2000	2000	1640	900	920	9669
42	1050	1022	2100	2100	1720	968	950	11416
48	1200	1168	2400	2400	1980	1100	1100	17086
56	1400	1362	2600	2600	2300	1285	1270	28000



## ASME CLASS 600 FULL BORE

SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
2	50	51	292	292	295	158	128	94	49
3	80	76	356	356	359	204	156	117	80
4	100	102	432	432	435	259	183	148	132
6	150	152	559	559	562	335	226	210	271
8	200	203	660	660	664	424	271	263	500
10	250	254	787	787	791	508	323	316	684
12	300	305	838	838	841	595	371	357	864
14	350	337	889	889	892	648	401	393	924
16	400	387	991	991	994	738	457	418	1334
18	450	438	1092	1092	1095	817	501	470	1828
20	500	489	1194	1194	1200	905	555	502	2328
22	550	540	1295	1295	1305	970	615	554	3312
24	600	591	1397	1397	1407	1083	657	601	3856
26	650	635	1448	1448	1461	1020	630	618	4576
28	700	686	1549	1549	1562	1200	665	692	5534
30	750	737	1651	1651	1664	1300	741	800	6768
32	800	781	1778	1778	1794	1340	756	804	8524
34	850	832	1930	1930	1946	1420	782	817	9386
36	900	876	2083	2083	2099	1550	869	945	10942
40	1000	978	2000	2000	-	1650	916	980	15366
42	1050	1022	2100	2100	-	1800	995	1110	18142
48	1200	1168	2400	2400	-	2100	1132	1265	27143
56	1400	1362	2600	2600	-	2400	1290	1450	30000

# TOP-ENTRY



ASME CLASS 900 FULL BORE

SIZE		B	A			C	D	E	mm
in	mm		RF	BW	RTJ				
2	50	51	368	368	371	186	142	111	42
3	80	76	381	381	384	225	165	129.5	88
4	100	102	457	457	460	275	195	158	160
6	150	152	610	610	613	367	248	223	344
8	200	203	737	737	740	454	296	265	640
10	250	254	838	838	841	546	348	319	800
12	300	305	965	965	968	650	411	377	1040
14	350	324	1029	1029	1038	692	448	393	1356
16	400	375	1130	1130	1140	790	511	444	2048
18	450	425	1219	1219	1232	876	557	486	2720
20	500	473	1321	1321	1334	964	600	537	3520
22	550	524	1422	1422	1441	1060	650	640	4560
24	600	572	1549	1549	1568	1160	704	690	5760
26	650	619	1651	1651	1673	1205	735	730	7120
28	700	667	1760	1760	1782	1260	775	766	8320
30	750	714	1880	1880	1902	1350	820	807	10300
32	800	762	2010	2010	2032	1428	856	850	12760
34	850	810	2150	2150	2179	1480	890	880	14000
36	900	857	2286	2286	2315	1610	950	945	16480
40	1000	956	2460	2460	-	1740	1010	1020	20300
42	1050	1006	2520	2520	-	1780	1020	1030	25000
48	1200	1149	2740	2740	-	2190	1240	1250	30000

## ASME CLASS 1500 FULL BORE

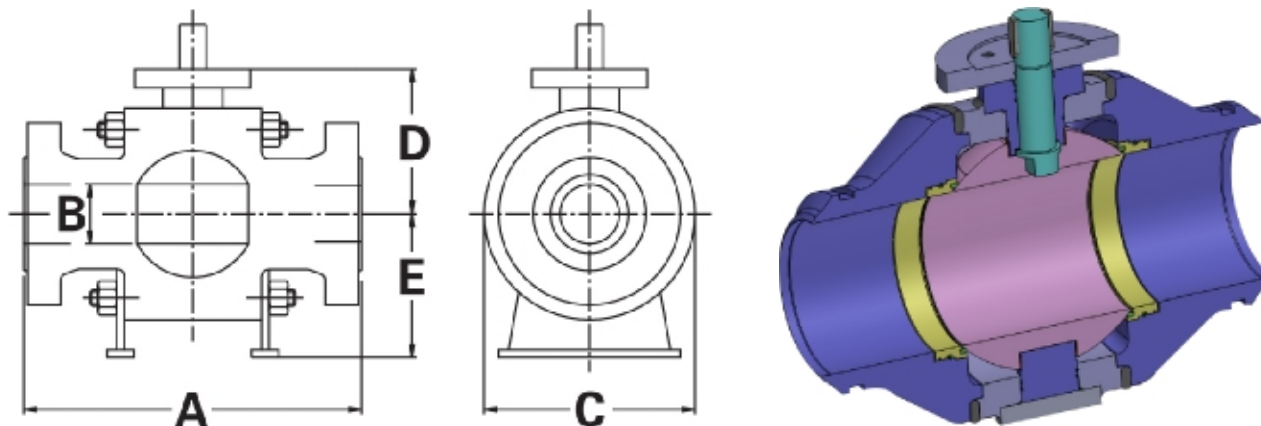
SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
2	50	51	368	368	371	186	142	111	45
3	80	76	470	470	473	233	170	136	98
4	100	102	546	546	549	297	216	174	178
6	150	146	705	705	711	395	268	241	384
8	200	194	832	832	841	489	319	292	704
10	250	241	991	991	1000	628	396	369	920
12	300	289	1130	1130	1146	708	456	416	1291
14	350	318	1257	1257	1276	760	493	438	1672
16	400	362	1384	1384	1407	872	552	490	2490
18	450	407	1537	1537	1559	1014	625	567	3264
20	500	457	1664	1664	1686	1164	705	643	4274
22	550	495	1816	1816	1845	1340	775	725	6000
24	600	534	1943	1943	1972	1424	836	792	7488
26	650	594	1943	1943	-	1570	898	856	8500
28	700	641	2210	2210	-	1680	990	943	11000
30	750	686	2400	2400	-	1750	1020	1010	12000
32	800	730	2500	2500	-	1890	1090	1080	14000
34	850	775	2600	2600	-	2010	1150	1130	16000
36	900	819	2800	2800	-	2100	1200	1190	

## ASME CLASS 2500 FULL BORE

SIZE		B	A			C	D	E	Kg
in	mm		RF	BW	RTJ				
2	50	44	451	451	454	235	150	127	120
3	80	64	578	578	584	305	177	198	246
4	100	89	673	673	683	356	227	233	470
6	150	133	914	914	927	483	264	252	937
8	200	181	1022	1022	1038	620	383	339	1410
10	250	225	1270	1270	1292	745	453	422	2600
12	300	267	1422	1422	1445	870	520	482	4200
14	350	292	1610	1610	-	950	620	560	5600
16	400	333	1800	1800	-	1080	660	630	7800

# WELDED BODY

## » Welded Body



### PARTS LIST

1	Body	10	Lifting Lug	19	Seat Firesafe Gasket	28	Antistatic Spring
2	Closure	11	Valve Support	20	Stem Thrust Washer	29	Stem bushing
3	Ball	12	Gland Screw	21	Ball Thrust Washer	30	Stem Key
4	Stem	13	Operator Flange Screw	22	Ball bushing	31	Seat Injector
5	Seat Insert	14	Seat Spring	23	Stem Firesafe Gasket	32	Stem Injector
6	Seat	15	Seat O-ring	24	Trunnion Pin	33	Check Valve
7	Gland	16	Stem O-ring	25	Gland Pin	34	Drain Plug
8	Operator Flange	17	Gland O-ring	26	Pin	35	Vent Valve
9	Trunnion	18	Gland Gasket	27	Antistatic Plunger		



# WELDED BODY



## ASME CLASS 150 FULL BORE

SIZE		B	A		C	D	E
in	mm		RF	BW			
2	50	51	178	216	152	125	87
3	80	76	203	283	182	142	104
4	100	102	229	305	229	165	131
6	150	152	394	457	309	217	194
8	200	203	457	521	398	259	240
10	250	254	533	559	486	306	294
12	300	305	610	635	580	361	357
14	350	337	686	762	630	389	375
16	400	387	762	838	702	428	395
18	450	438	864	914	782	469	443
20	500	489	914	991	850	501	476
22	550	540	1016	1092	940	550	520
24	600	591	1067	1143	1016	603	562
26	650	635	1143	1245	1060	627	580
28	700	686	1245	1346	1140	644	658
30	750	737	1295	1397	1240	691	704
32	800	781	1372	1524	1300	742	746
34	850	832	1473	1626	1370	759	773
36	900	876	1524	1727	1430	812	807
40	1000	978	1930	1930	1600	900	898
42	1050	1022	2000	2000	1660	943	937
48	1200	1168	2240	2240	1930	1097	1066
56	1400	1362	2400	2400	2270	1302	1253

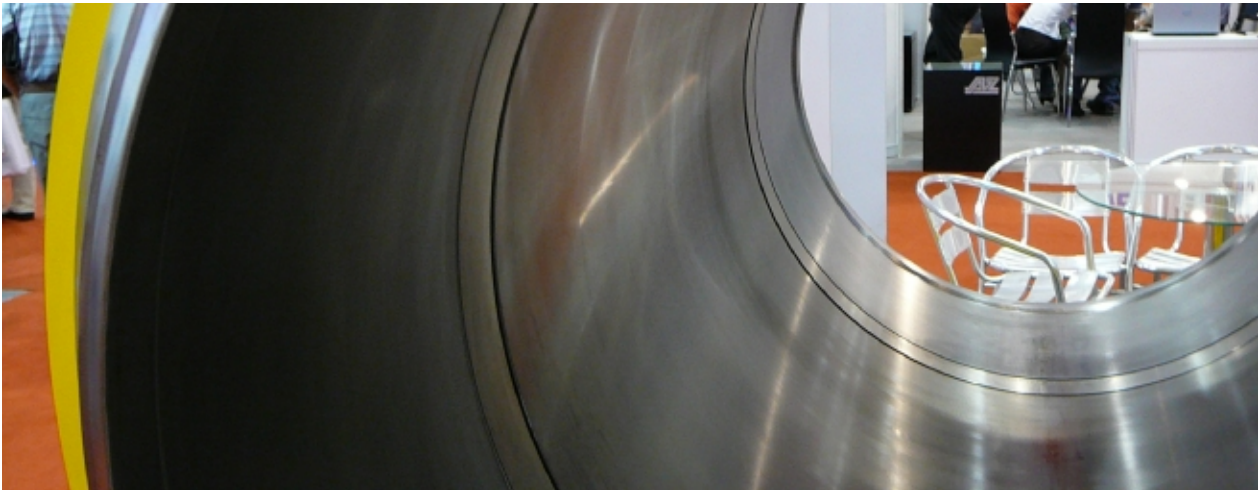
# WELDED BODY



ASME CLASS 300 FULL BORE

SIZE		B	A		C	D	E
in	mm		RF	BW			
2	50	51	216	216	152	125	87
3	80	76	283	283	190	145	110
4	100	102	305	305	242	176	138
6	150	152	403	457	309	217	194
8	200	203	502	521	398	259	240
10	250	254	568	559	486	306	294
12	300	305	648	635	580	361	357
14	350	337	762	762	630	389	375
16	400	387	838	838	702	428	395
18	450	438	914	914	782	469	443
20	500	489	991	991	872	529	490
22	550	540	1092	1092	970	574	530
24	600	591	1143	1143	1036	624	573
26	650	635	1245	1245	1100	630	580
28	700	686	1346	1346	1160	640	665
30	750	737	1397	1397	1250	700	730
32	800	781	1524	1524	1340	745	765
34	850	832	1626	1626	1420	760	800
36	900	876	1727	1727	1460	805	825
40	1000	978	1930	1930	1640	900	920
42	1050	1022	2000	2000	1720	968	950
48	1200	1168	2240	2240	1980	1100	1100
56	1400	1362	2400	2400	2300	1285	1270

# WELDED BODY



ASME CLASS 600 FULL BORE

SIZE		B	A			C	D	E
in	mm		RF	BW	RTJ			
2	50	51	292	292	295	158	128	94
3	80	76	356	356	359	204	156	117
4	100	102	432	432	435	259	183	148
6	150	152	559	559	562	335	226	210
8	200	203	660	660	664	424	271	263
10	250	254	787	787	791	508	323	316
12	300	305	838	838	841	595	371	357
14	350	337	889	889	892	648	401	393
16	400	387	991	991	994	738	457	418
18	450	438	1092	1092	1095	817	501	470
20	500	489	1194	1194	1200	905	555	502
22	550	540	1295	1295	1305	970	615	554
24	600	591	1397	1397	1407	1083	657	601
26	650	635	1448	1448	1461	1020	630	618
28	700	686	1549	1549	1562	1200	665	692
30	750	737	1651	1651	1664	1300	741	800
32	800	781	1778	1778	1794	1340	756	804
34	850	832	1930	1930	1946	1420	782	817
36	900	876	2083	2083	2099	1550	869	945
40	1000	978	2000	2000	-	1650	916	980
42	1050	1022	2100	2100	-	1800	995	1110
48	1200	1168	2400	2400	-	2100	1132	1265
56	1400	1362	2600	2600	-	2400	1290	1450



# WELDED BODY



ASME CLASS 900 FULL BORE

SIZE		B	A			C	D	E
in	mm		RF	BW	RTJ			
2	50	51	368	368	371	186	142	111
3	80	76	381	381	384	225	165	129.5
4	100	102	457	457	460	275	195	158
6	150	152	610	610	613	367	248	223
8	200	203	737	737	740	454	296	265
10	250	254	838	838	841	546	348	319
12	300	305	965	965	968	650	411	377
14	350	324	1029	1029	1038	692	448	393
16	400	375	1130	1130	1140	790	511	444
18	450	425	1219	1219	1232	876	557	486
20	500	473	1321	1321	1334	964	600	537
22	550	524	1422	1422	1441	1060	650	640
24	600	572	1549	1549	1568	1160	704	690
26	650	619	1651	1651	1673	1205	735	730
28	700	667	1760	1760	1782	1260	775	766
30	750	714	1880	1880	1902	1350	820	807
32	800	762	2010	2010	2032	1428	856	850
34	850	810	2150	2150	2179	1480	890	880
36	900	857	2286	2286	2315	1610	950	945
40	1000	956	2460	2460	-	1740	1010	1020
42	1050	1006	2520	2520	-	1780	1020	1030
48	1200	1149	2740	2740	-	2190	1240	1250

# WELDED BODY



## ASME CLASS 1500 FULL BORE

SIZE		B	A			C	D	E
in	mm		RF	BW	RTJ			
2	50	51	368	368	371	186	142	111
3	80	76	470	470	473	233	170	136
4	100	102	546	546	549	297	216	174
6	150	146	705	705	711	395	268	241
8	200	194	832	832	841	489	319	292
10	250	241	991	991	1000	628	396	369
12	300	289	1130	1130	1146	708	456	416
14	350	318	1257	1257	1276	760	493	438
16	400	362	1384	1384	1407	872	552	490
18	450	407	1537	1537	1559	1014	625	567
20	500	457	1664	1664	1686	1164	705	643
22	550	495	1816	1816	1845	1340	775	725
24	600	534	1943	1943	1972	1424	836	792
26	650	594	1943	1943	-	1570	898	856
28	700	641	2210	2210	-	1680	990	943
30	750	686	2400	2400	-	1750	1020	1010
32	800	730	2500	2500	-	1890	1090	1080
34	850	775	2600	2600	-	2010	1150	1130
36	900	819	2800	2800	-	2100	1200	1190

# MATERIAL SPECIFICATIONS

## Material Specifications

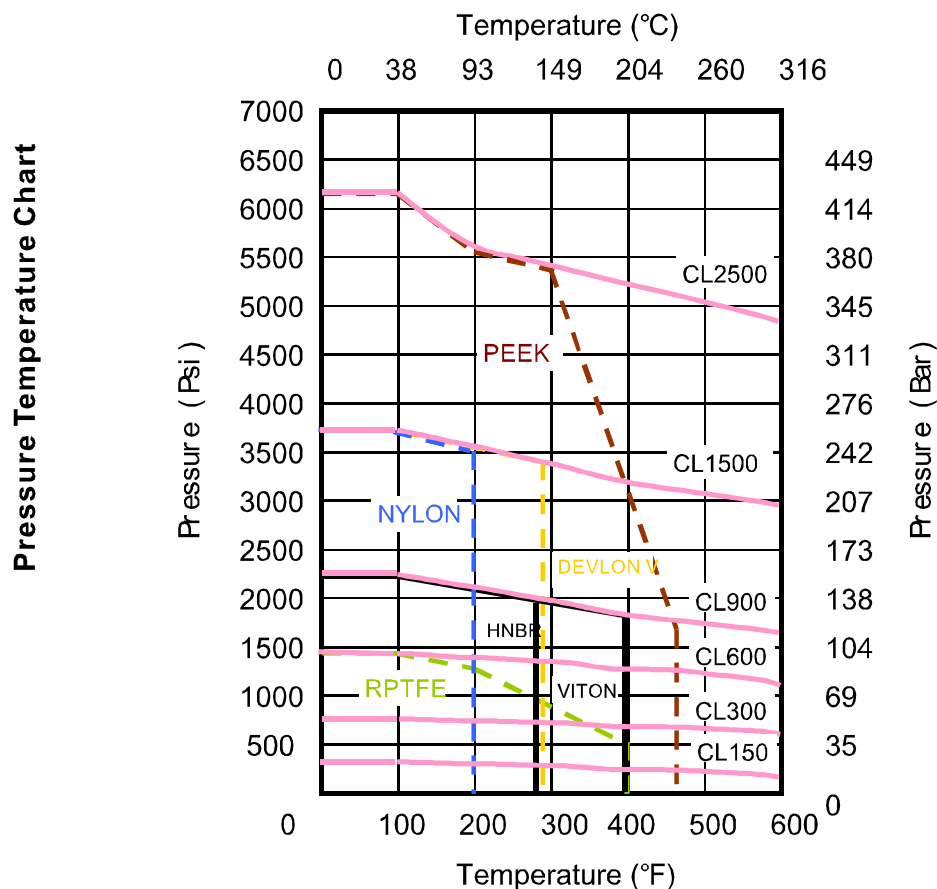
### BODY & TRIM MATERIAL

CARBON STEEL	A105	A216 WCB	A216 WCC
LOW TEMPERATURE CARBON STEEL	A350 LF2	A352 LCB	A352 LCC
MARTENSITIC STAINLESS STEEL	A182 F6A	A182 F6NM	A217 CA15 A487 CA6NM
AUSTENITIC STAINLESS STEEL	A182 F316 A182 F347 A351 CF3M	A182 F316L A182 F321 A351 CF3	A182 F304 A351 CF8M A351 CF8
DUPLEX STAINLESS STEEL	A564 Gr 630 (UNS S17400)		
PRECIPITATION HARDENING STAINLESS STEEL	A181 F51 (UNS S31803) A182 F55 (UNS S31760) A890-5A (UNS S32760)	A182 F53 (UNS S31750) A890-4A (UNS S31803) A890-6A (UNS S32760)	
NICKELALLOYS	Incoloy 825 (UNS N08825) Inconel 625 (UNS N06625) Inconel 750 (UNS N07750)	Incoloy 925 (UNS N09925) Inconel 718 (UNS N07718) Monel 400 Monel K500	

### SEAT INSERT & SEALS MATERIAL

PTFE RPTFE NYLON DEVLON PEEK PCTFE PPL

NBR HNBR VITON



# MATERIAL SPECIFICATIONS



# ENGINEERING DATA

## Engineering Data

### Cv FLOW COEFFICIENT

SIZE (in)	PRESSURE RATING					
	CL150	CL300	CL600	CL900	CL1500	CL2500
2	420	420	400	330	330	250
2-1/2	690	690	610	520	510	320
3x2	200	200	200	190	180	200
3	1200	1050	1000	910	820	500
4x3	600	600	600	590	550	560
4	2200	2100	1850	1800	1700	1100
6x4	800	800	790	790	780	745
6	5150	5100	4600	4380	3800	2500
8x6	2150	2150	2150	2150	2150	2150
8	9500	9400	9000	8500	7400	5300
10x8	4300	4300	4300	4450	4450	4100
10	15000	15000	14700	14500	11500	8300
12x10	7550	7550	7550	8000	9000	7550
12	23000	23000	22500	21100	18000	13000
14x12	14000	14000	14000	12800	13000	-
14	28000	28000	28000	25000	21000	-
16x14	15000	15000	15000	14200	14100	-
16	37200	37200	37200	34500	27500	-
18x16	21000	21000	21000	19200	19000	-
20x16	15300	15300	15300	13800	12000	-
18	49000	49000	49000	45000	37000	-
20x18	28400	28400	28400	25000	25000	-
20	59000	59000	59000	55200	47800	-
24x20	28200	28200	28000	25100	20600	-
22	68200	68200	68200	62000	54000	-
24	92000	92000	92000	83800	70000	-
30x24	36000	36000	36000	32900	-	-
26	110000	110000	110000	98500	-	-
28	121000	121000	121000	113000	-	-
30	145000	144000	144000	130000	-	-
36x30	64000	64000	64000	61500	-	-
32	170000	170000	170000	151000	-	-
36x32	87000	87000	87000	69500	-	-
36	210000	210000	210000	198200	-	-
40	267500	267500	267500	-	-	-
42x36	96700	96700	96000	-	-	-
42	280000	280000	280000	-	-	-
48	384000	384000	384000	-	-	-
56x42	89000	89000	89000	-	-	-
56	521000	521000	521000	-	-	-

#### Method of Calculating Flow:

The coefficient of flow Cv expresses the rate of flow in gallons per minute at 15.6°C (60°F) water with a pressure drop of 1 psig across the valve. To find the flow of liquid through the valve from the Cv, use the following formulas.

NOTE: Kv is related to the flow coefficient Cv.

$K_v = C_v / 1.156$ , expressed in SI units of cubic meters per hour.

#### FOR LIQUIDS:

$$Q_L = C_V \sqrt{\frac{\Delta P}{G_L}}$$

QL=flow of liquid (gal./min.)

$\Delta P = (P_1 - P_2)$  Pressure drop across the valve (psi)

G= Specific gravity of liquid (water = 1)

#### FOR GASES:

$$Q_g = 61 C_V \sqrt{\frac{P_2 \cdot \Delta P}{G_g}}$$

Qg=Flow of gas (SCFH)

$\Delta P = (P_1 - P_2)$  Pressure drop across the valve (psi)

P2=Outlet pressure (psi)

Gg= Specific gravity of gas (gas = 1)

# ENGINEERING DATA

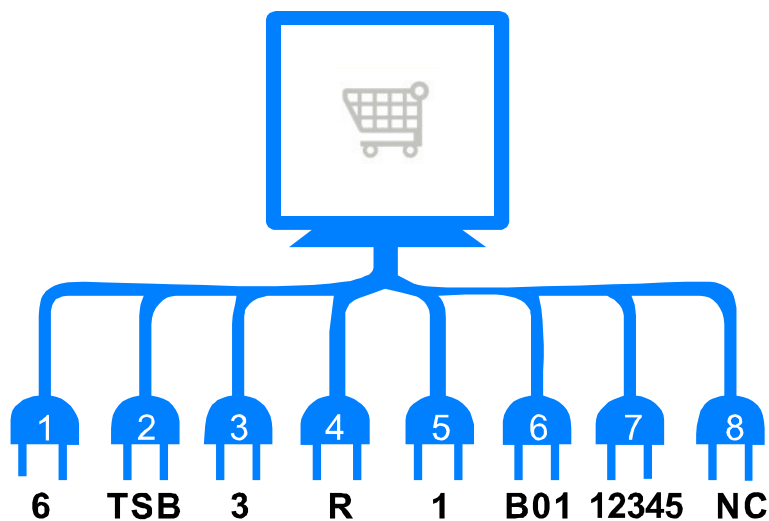


## OPERATING TORQUE

SIZE (in)	TORQUE(N.M)						
	CL150	CL300	CL400	CL600	CL900	CL1500	CL2500
1-1/2	40	50	58	80	140	240	290
2	50	60	67	120	200	320	590
3	60	100	167	240	427	500	990
4	129	210	331	460	750	1000	1960
6	380	580	660	900	1200	2900	5500
8	800	1400	1613	2150	3800	5500	9800
10	1100	2300	2493	3050	5000	11000	20000
12	1600	2510	3153	4300	9000	16000	33054
14	1800	3200	5280	5723	16000	21000	43000
16	3200	5350	6143	8900	21500	30000	65000
18	3400	5510	9900	13500	25800	33280	-
20	4800	7600	11000	16000	26000	37000	-
22	5400	9400	12300	17500	28000	46000	-
24	7000	12500	14800	19500	35000	53000	-
26	8000	15000	20000	27600	38000	65000	-
28	9000	18000	22000	30000	46000	78000	-
30	12950	20000	26600	34000	60000	90000	-
32	15000	23000	32000	39000	70000	120000	-
34	18000	28000	39000	50000	76000	136000	-
36	21000	33000	44000	60000	80000	150000	-
40	25000	40000	51000	65000	98000	-	-
42	28600	46000	58000	73000	115000	-	-
48	31000	65964	92000	142800	200000	-	-
56	51000	94000	160000	220000	-	-	-

# HOW TO ORDER

## »» How to Order



### 1 SIZE

FULL BORE			REDUCED BORE		
in(mm)	in(mm)	in(mm)	in(mm)	in(mm)	in(mm)
1-1/2 (40)	14 (350)	32 (800)	2x1-1/2 (50x40)	16x14 (400x350)	32x30 (800x750)
2 (50)	16 (400)	34 (850)	2-1/2x2 (65x50)	18x16 (450x400)	34x30 (850x750)
2-1/2 (65)	18 (450)	36 (900)	3x2 (80x50)	20x16 (500x400)	36x30 (900x750)
3 (80)	20 (500)	38 (950)	4x3 (100x80)	20x18 (500x450)	38x32 (950x800)
4 (100)	22 (550)	40 (1000)	6x4 (150x100)	22x20 (550x500)	40x36 (1000x900)
6 (150)	24 (600)	42 (1050)	8x6 (200x150)	24x20 (600x500)	42x36 (1050x900)
8 (200)	26 (650)	48 (1200)	10x8 (250x200)	26x24 (650x600)	48x40 (1200x1000)
10 (250)	28 (700)	56 (1400)	12x10 (300x250)	28x24 (700x600)	56x48 (1400x1200)
12 (300)	30 (750)	60 (1500)	14x12 (350x300)	30x24 (750x600)	60x48 (1500x1200)

### 2 MODEL

CODE	TYPE	CODE	TYPE
TLA	2-PCS Casting (DBB)	TDA	Top Entry Casting(DIB)
TLB	2-PCS Forging (DBB)	TDB	Top Entry Forging (DIB)
TSA	3-PCS Casting (DBB)	TWS	Welded Body (DBB)
TSB	3-PCS Forging (DBB)	TWB	Welded Body (DIB)
TBB	3-PCS Casting (DIB)	TMA	Metal Seat Casting(DBB)
TBB	3-PCS Forging (DIB)	TMB	Metal Seat Forging(DBB)

# HOW TO ORDER

## 3 PRESSURE RATING

CODE	0	1	2	3	4	6	8	9	15	25
CLASS	125LB	150LB	250LB	300LB	400LB	600LB	800LB	900LB	1500LB	2500LB

## 4 CONNECTION

CODE	TYPE	CODE	TYPE	CODE	TYPE
B	Butt Weld	F	Flat Face Flanged	X	Others
R	Flanged RF-B16.5/B16.47	S	Socket Weld		
J	Flanged RTJ	N	Threaded		

## 5 ACTUATION

CODE	TYPE	CODE	TYPE	CODE	TYPE	CODE	TYPE
1	Wrench	3	Electric	5	Hydraulic	X	Others
2	Gear Operator	4	Pneumatic	6	Bare Stem		

## 6 BODY MATERIAL

CODE	MATERIAL	CODE	MATERIAL
T00	A216 WCB	C51	A182 F53
T01	A216 WCC	C52	A182 F55
T50	A105	D03	A352 LCB
T54	A105N	D04	A352 LCC
B00	A351 CF8	D50	A350 LF3
B01	A351 CF8M	D53	A350 LF2
B02	A351 CF3	N50	B564 UNS N04400
B03	A351 CF3M	N51	B564 UNS N06600
B50	A182 F304	N52	B564 UNS N06625
B51	A182 F316	N56	B564 UNS N08825
B52	A182 F304L	N60	B462 UNS N08020
B53	A182 F316L	N61	B381 F-2
C60	A182 F60	N62	B381 F-5
C50	A182 F51	X	Others





# HOW TO ORDER

## 7 TRIM MATERIAL

BALL	STEM	SEAT RING	SEAT INSERT	SEALING
1.A105/ENP	1.A105/ENP	1.A105/ENP	1.PTFE	1.NBR
2.A350 LF2/ENP	2.A350 LF2/ENP	2.A350 LF2/ENP	2.RPTFE	2.VITON A
3.AISI 4140/ENP	3.AISI 4140/ENP	3.AISI 4140/ENP	3.NYLON	3.VITON AED
4.A182 F304	4.A182 F304	4.A182 F304	4.PEEK	4.VITON B
5.A182 F316	5.A182 F316	5.A182 F316	5.PPL	5.HNBR
6.A182 F321	6.A182 F321	6.A182 F321	6.DEVLON V	6.HNBR-80
7.A182 F304L	7.A182 F304L	7.A182 F304L	7.PCTFE	7.VITON JACKETED PTFE
8.A182 F316L	8.A182 F316L	8.A182 F316L	8.MOLON	8.EPDM
9.A182 F6a	9.A182 F6a	9.A182 F6a	B.HNBR-ED	9.FFKM
A.A564 630	A.A564 630	A.A564 630	9.PFA	A.ELAST-0-LION 101
B.A182 F51	B.A182 F51	B.A182 F51	C.VITON	B.HNBR-ED
C.A182 F53	C.A182 F53	C.A182 F53	X.Others	C. Graphite
C.A182 F55	C.A182 F55	C.A182 F55		D.Graphite+PTFE
F.UNS NO8825	F.UNS NO8825	F.UNS NO8825		L.Lipseal
N.UNS NO6625	N.UNS NO6625	N.UNS NO6625		X.Others
O.UNS N06600	O.UNS N06600	O.UNS N06600		
X.Others	X.Others	X.Others		

## 8 SPECIAL REQUIRMENTS

CODE	DESCRIPTION	CODE	DESCRIPTION
NC	NACE MR0175	BT	Special Fastener Materials
MD	Underground Installation	OT	Others
WL	With Lock		



# HOW TO ORDER

**SUFA**

**Orbit ball valve**

**Spring return handle**

**Forged trunnion ball valve**

**Cryogenic ball valve**

**Pneumatic actuated ball valve**

**Cast trunnion ball valve**

**Forged metal to metal ball valve**

**Fully veiled ball valve  
40" Class600**

**Metal to metal ball valve  
18" Class1500**



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