

GUIDE TO PRODUCTS

FLOATING BALL VALVES

EXECUTIONS:

bolted, screwed, screwed and welded,
fully welded

class 800 and 9/1500

NPT, SW or BW ends

- size from 1/2" to 2"

- Reduced or Full bore

class 150 and 300

RF, RJ, BW or HUB ends

- size from 1/2" to 8"

- Reduced or Full bore

class 600

RF, RJ, BW or HUB ends

- size from 1/2" to 4"

- Reduced or Full bore

class 9/1500

RF, RJ, BW or HUB ends

- size from 1/2" to 2"

- Reduced or Full bore

TRUNNION MOUNTED BALL VALVES

EXECUTIONS:

bolted, fully welded, soft
or metal seated

class 150 - 300 - 600

RF, RJ, BW or HUB ends

- size from 1/2" to 56"

- Reduced or Full bore

class 900

RF, RJ, BW or HUB ends

- size from 1/2" to 52"

- Reduced or Full bore

class 1500

RF, RJ, BW or HUB ends

- size from 1/2" to 24"

- Reduced or Full bore

class 2500

RF, RJ, BW or HUB ends

- size from 1/2" to 12"

- Reduced or Full bore

RANGE OF CONSTRUCTION MATERIALS

ASTM A105N (Max.carbon cont. 0.22%)

ASTM A350 LF2

ASTM A182 F5 - F11 - F22 - F44 - F304(L)

F316 (L) - F316H - F316T

F 347

MONEL K 400 and K500 - ALLOY 20 - F51

F52 - F60 - F6a - AISI 9840 - INCOLOY 825

HASTELLOY B-C, SUPER DUPLEX, INCONEL

TITANIUM class 2 and 5

MATERIAL REPORTS AND PLATINGS

STELLITE HANYES Gr. 6 (Co. 60% min.)

CARBO-THUNGSTEN (UCAR)

ELECTRO NICKEL PLATING : from 26

to 75 microns thickness

CHROME PLATING : from 26 to 75 microns
thickness

Stainless steel and exotic materials seat
pocketing

all inside body linings

REGULATING SPECIFICATIONS

API STD.

6A - wellheads & X-mas trees

6D - pipeline valves

RP6F - fire test practice

6FA - fire test specification

598 - valve inspection

605 - C.S. large size flanges

607 - fire test for soft seated

ball & butterfly valves

ANSI STD.

B 16. 5 - pipe fl. & fl. fittings

B 16.10 - face to face dim.

B 16.25 - B W ends

B 16.34 - fl. & bw valve constr.

B 31. 3 - petrochem. piping sp.

B 31. 8 - gas transm. piping sys

NACE STANDARD

MR 01.75 - Sulfide stress-cracking
resistant metallic mat.

BS STD.

1503 - high pressure forgings

1504 - high pressure castings

1560 - pipe flanges and fl. fittings

2080 - fl. & bw valve dimensions

4504 - valve flanges and bolting

5146 - valve inspection

5351 - ball valves for petr. plants

5750 - Q.A. system

6755 - valve test (part 1)

fire safe (part 2)

MSS STD.

SP6 - flange face contact finish

SP25 - valve, fitting, flange marking

SP44 - pipeline flanges

SP45 - std. for by pass & drain conn.

SP55 - visual exam. of steel castings

SP61 - valve hydros tatic test

SP72 - gen. purpose BW or FL. ball valves

FLOATING BALL VALVES

Floating ball valve class 800 3 pcs bolted type

Reduced bore : code B6B8

Full bore : code B3B8

Test pressure

Body test: 3000 psi

Seat test: 2000 psi

Air test: 80 psi

Floating ball valve class 1500 3 pcs bolted type

Reduced bore : code B615

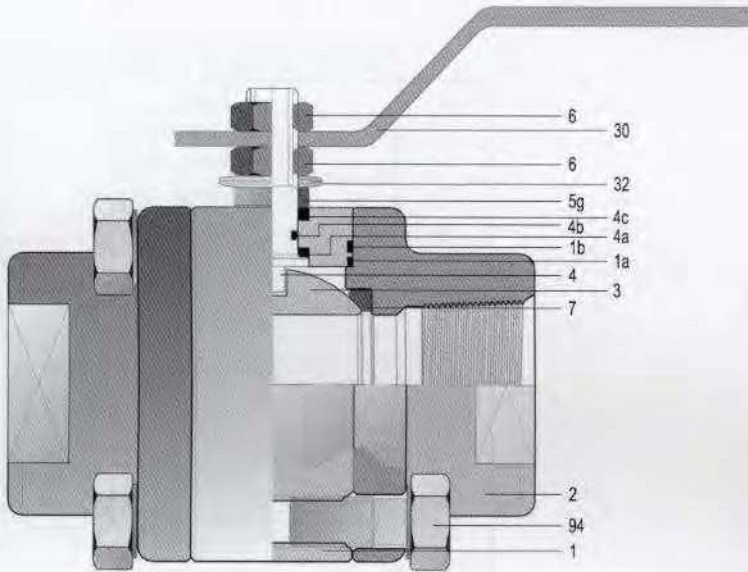
Full bore : code B315

Test pressure

Body test: 5400 psi

Seat test: 3600 psi

Air test: 80 psi



GENERAL VALVE COMPONENTS

1	Body
2	Lateral connection
1a	First body seal
1b	Second body gasket
3	Ball
4	Stem
4a	Stem bottom seal
4b	Stem "O" ring
4c	Stem top seal
7	Seat
5g	Gland
32	Spring washers
30	Lever
6	Gland and lever nuts
94	Body and connection bolts

BALL VALVE 3 PIECES RATING BS 800 - 1500 Lbs B3 and B6 TYPE

NPS	Face to Face +/-5	Ball diameter +0.5	Lever lenght	Center to top	WEIGHT Kg	TORQUE Nm	
						BS 800	BS 1500
1 / 4" - 3/8"	80	11	150	62	0.7	7.5	25
1 / 2" x 3/8"	80	11	150	62	0.7	7.5	25
1 / 2"	80	14	150	70	1	14	29
3 / 4" x 1 / 2"	80	14	150	70	0.9	14	29
3 / 4"	100	20	185	85	1.5	19	30
1" x 3 / 4"	100	20	185	85	1.3	19	30
1"	110	25	185	90	2.2	50	144
1.1 / 2" x 1"	110	25	185	90	2	50	144
1.1 / 2"	140	38	285	100	5	100	329
2" x 1.1 / 2"	140	38	285	100	4.7	100	329
2"	150	51	285	105	10	140	422

End connection

Fermale NPT to ANSI B 20.1

SW to ANSI B 16.11 or BW to ANSI B 16.25

Available with welded nipples plain or BW ends, standard lenght 100 mms, or Customer's request

Construction

According to BS 5351 and ASME b 16.34

Fire Safe tested & certified to BS6755 p.2



BURIED INSTALLATION



All Viar's valves can be supplied with stem extension allowing to install the valves underground and maintaining the operator device at suitable level for the person maneuvering the valve same.

Stem extensions are supplied with length to Customer's requirement, in welded or bolted execution.

Extended stem valves can be supplied with bare shaft, wrench, gear box or any type of hydraulic, pneumatic or electric actuator.



CRYOGENIC SERVICE

Viar's ball valves for cryogenic service are supplied with an extension column suitable to keep rotating components enough away from the source of cold.

This construction preserves also stem seals from all possibilities of damage which may originate during the manover at cryogenic temperatures which are normally intended to be from minus 80 °C to minus 196 °C



EMERGENCY SEALING SYSTEM ON SEATS

In case of damages which may occur to sealing components, this system allows the injection of an emergency sealant to the purpose of restoring the sealing integrity of the components.

As per Viar's standard, 1 injector per seat is provided for valve sizes 8" to 14" and 2 injectors per seat for valve sizes larger than 14"

VENT PLUG - DRAIN PLUG - BY PASS

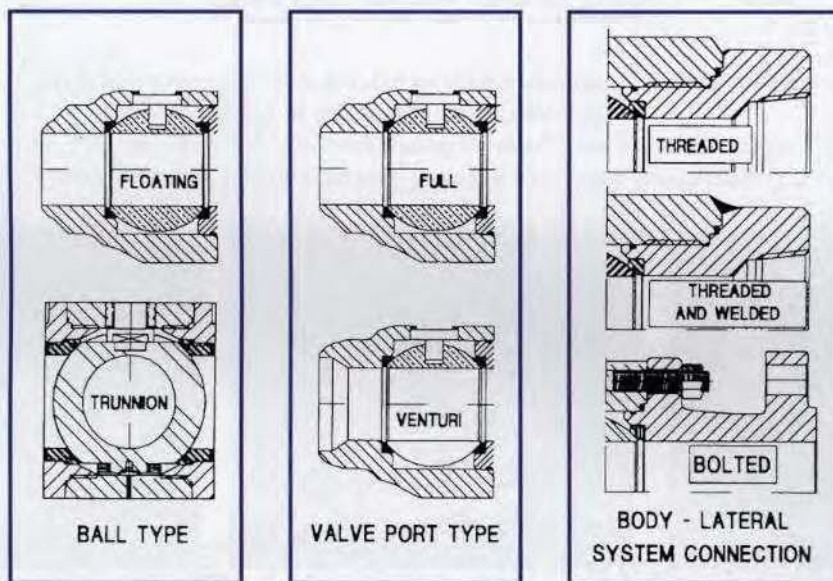
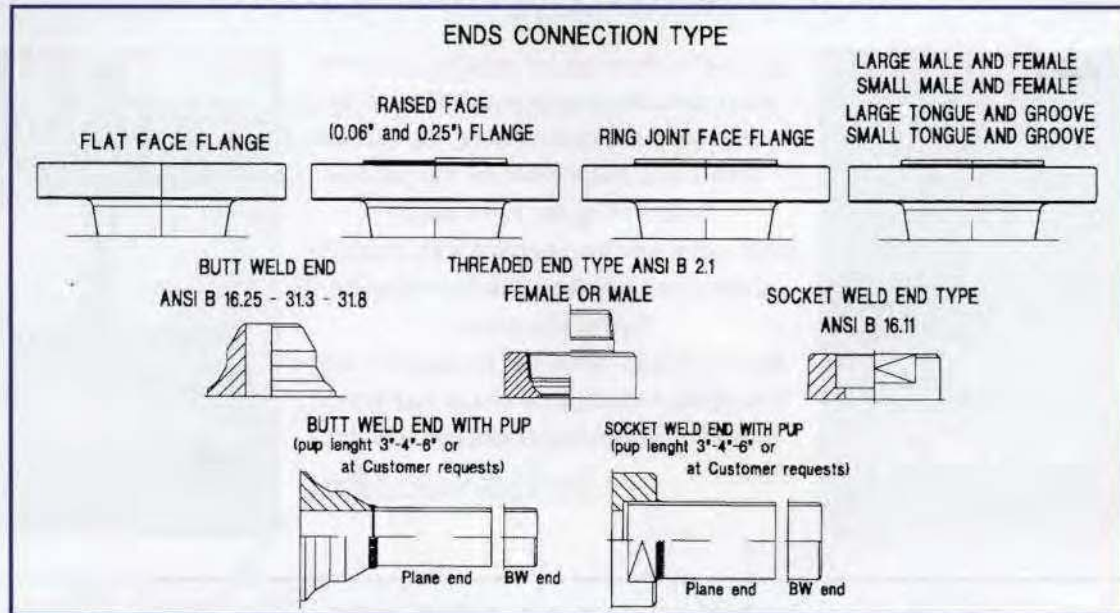
The vent plug is installed for 2 mayor reasons : the first is for test purposes and the second is just to allow the cleaning of the body cavity.

The drain plugs are in accordance with API 6D prescriptions :

- 1/2" size for valves up to 4"
- 3/4" size for valves 6" to 8"
- 1" size for valves 10" and larger

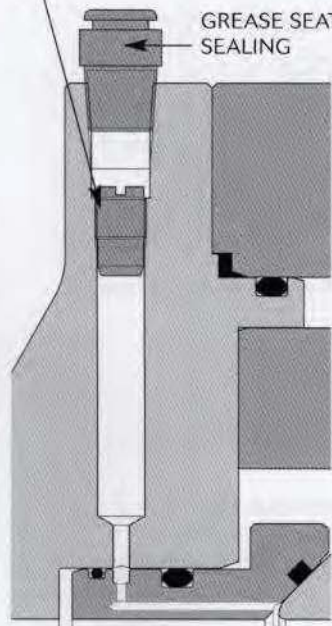
The by-pass is recommandable when valve is equipped with a gas hydraulic actuator. The by-pass is however installed on basis of a specific request from part of Customers.

TYPICAL CONSTRUCTION FEATURES

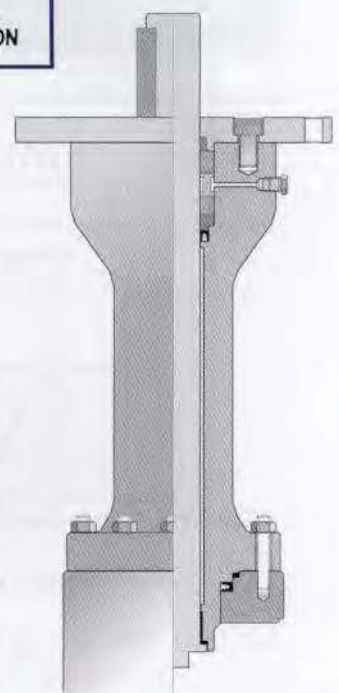
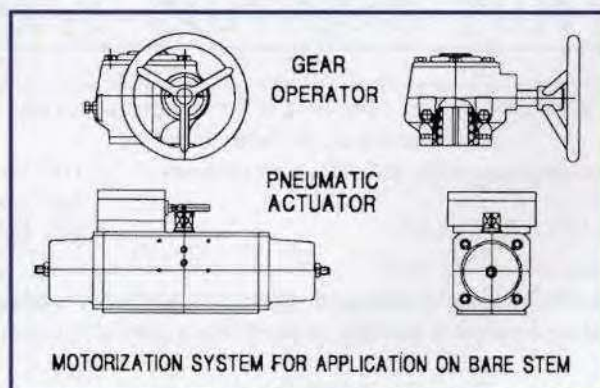
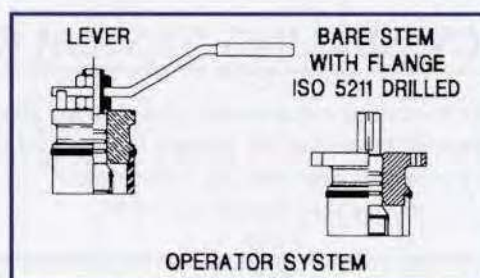


CHECK VALVE

GREASE SEAT
SEALING



EMERGENCY SEAL OF SEATS



EXTENDED BONNET



FLOATING BALL VALVES

Floating ball valve class 800 2 pcs screwed type

Reduced bore : code A5B8

Full bore : code A2B8

Test pressure

Body test: 3000 psi

Seat test: 2000 psi

Air test: 80 psi

Floating ball valve class 1500 2 pcs screwed type

Reduced bore : code A515

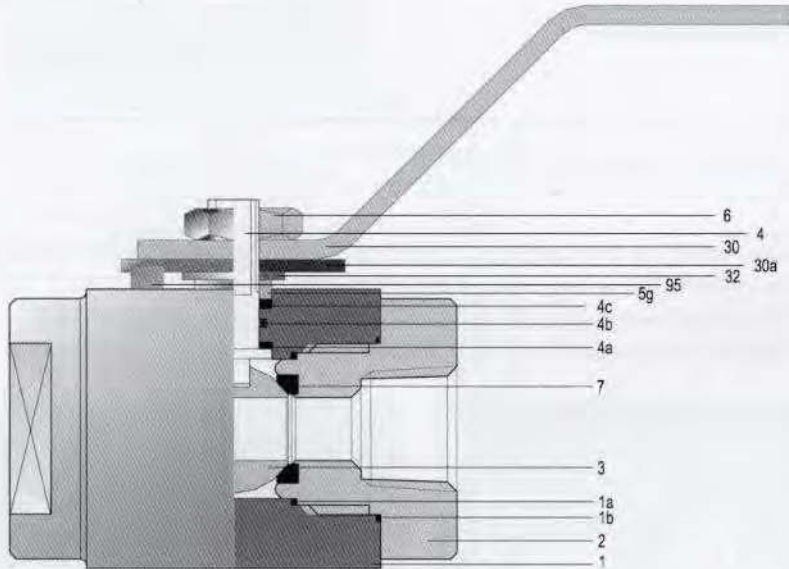
Full bore : code A215

Test pressure

Body test: 5400 psi

Seat test: 3600 psi

Air test: 80 psi



GENERAL VALVE COMPONENTS	
1	Body
2	Lateral connection
1a	First body seal
1b	Second body gasket
3	Ball
4	Stem
4a	Stem bottom seal
4b	Stem "O" ring
4c	Stem top seal
7	Seat
5g	Gland
32	Spring washers
30a	Stop plate
95	Stop pin
30	Lever
6	Lever nut

BALL VALVE 2 PIECES RATING BS 800 - 1500 Lbs A2 and A5 TYPE							
NPS	Face to Face +/-5	Ball diameter +0.5	Lever lenght	Center to top	WEIGHT Kg	TORQUE Nm	
						BS 800	BS 1500
1 / 4" - 3/8"	80	11	150	62	0.7	7.5	25
1 / 2" x 3/8"	80	11	150	62	0.7	7.5	25
1 / 2"	80	14	150	70	1	14	29
3 / 4" x 1 / 2"	80	14	150	70	0.9	14	29
3 / 4"	100	20	185	85	1.5	19	30
1" x 3 / 4"	100	20	185	85	1.3	19	30
1"	110	25	185	90	2.2	50	144
1.1 / 2" x 1"	110	25	185	90	2	50	144
1.1 / 2"	140	38	285	100	5	100	329
2" x 1.1 / 2"	140	38	285	100	4.7	100	329
2"	150	51	285	105	10	140	422

End connection

Femle NPT to ANSI B 20.1

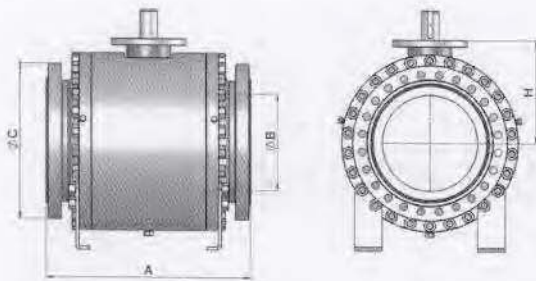
SW to ANSI B 16.11 or BW to ANSI B 16.25

Available with welded nipples plain or BW ends, standard lenght 100 mms, or Customer's request

Construction

According to BS 5351 and ASME b 16.34

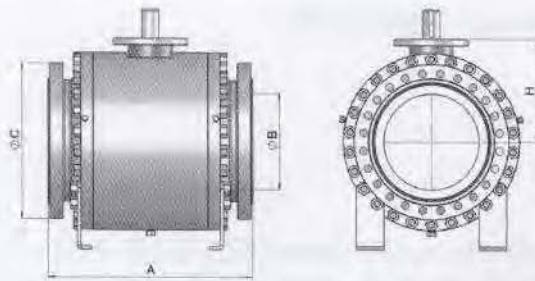
Fire Safe tested & certified to BS6755 p.2



TRUNNION MOUNTED DIMENSIONAL DATA

SIZE	ANSI CLASS 600							ANSI CLASS 900						
	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg
	RF	RTJ	BW					RF	RTJ	BW				
1/2"	216	216	216	13	95	81	14	216	216	216	13	120	81	16
3/4" x 1/2"	216	216	216	13	115	81	15	229	229	229	13	130	81	18
3/4"	216	216	216	20	115	92	16	229	229	229	19	130	92	20
1" x 3/4"	216	216	216	20	125	92	16	254	254	254	19	150	92	20
1"	216	216	216	25	125	101	22	254	254	254	25	150	101	26
1.1/2" x 1"	241	241	241	25	155	101	24	305	305	305	25	180	101	32
1.1/2"	241	241	241	38	155	121	26	305	305	305	38	180	121	40
2" x 1.1/2"	292	295	292	38	165	121	30	368	371	368	38	215	121	45
2"	292	295	292	51	165	114	34	368	371	368	51	215	129	52
3" x 2"	356	359	356	51	210	114	44	381	384	381	51	240	129	58
3"	356	359	356	76	210	136	66	381	384	381	76	240	159	80
4" x 3"	432	435	432	76	275	136	89	457	460	457	76	290	159	105
4"	432	435	432	102	275	164	120	457	460	457	102	290	201	170
6" x 4"	559	562	559	102	355	164	160	610	613	610	102	380	201	230
6"	559	562	559	152	355	194	275	610	613	610	152	380	234	390
8" x 6"	660	663	660	152	420	194	310	737	740	737	152	470	234	470
8"	660	663	660	203	420	250	510	737	740	737	203	470	280	640
10" x 6"	787	790	787	152	510	194	400	838	841	838	152	545	234	530
10" x 8"	787	790	787	203	510	250	570	838	841	838	203	545	280	700
10"	787	790	787	254	510	293	800	838	841	838	254	545	321	1070
12" x 8"	838	841	838	203	560	250	600	965	968	965	203	610	280	1000
12" x 10"	838	841	838	254	560	293	850	965	968	965	254	610	321	1200
12"	838	841	838	305	560	352	1110	965	968	965	305	610	405	1610
14" x 10"	889	892	889	254	605	293	700	1029	1039	1029	254	640	321	1000
14" x 12"	889	892	889	305	605	352	900	1029	1039	1029	305	640	405	1200
14"	889	892	889	337	605	403	1130	1029	1039	1029	324	640	415	1560
16" x 12"	991	994	991	305	685	352	1100	1130	1140	1130	305	705	405	1500
16" x 14"	991	994	991	337	685	403	1360	1130	1140	1130	324	705	415	1800
16"	991	994	991	387	685	452	1580	1130	1140	1130	375	705	614	2240
18" x 14"	1092	1095	1092	337	745	403	1200	1219	1232	1219	324	785	415	2100
18" x 16"	1092	1095	1092	387	745	452	1765	1219	1232	1219	375	785	614	2520
18"	1092	1095	1092	438	745	470	2180	1219	1232	1219	425	785	535	3000
20" x 16"	1194	1200	1194	387	815	452	2100	1321	1334	1321	375	855	614	2900
20" x 18"	1194	1200	1194	438	815	470	2460	1321	1334	1321	425	855	535	3400
20"	1194	1200	1194	489	815	536	2800	1321	1334	1321	473	855	605	4400
22" x 18"	1296	1305	1296	438	870	470	2500	.....	.....	.....	.....	.....	.....	.....
22" x 20"	1296	1305	1296	489	870	536	3200	.....	.....	.....	.....	.....	.....	.....
22"	1296	1305	1296	540	870	550	3930	.....	.....	.....	.....	.....	.....	.....
24" x 20"	1397	1407	1397	489	940	536	3390	1549	1568	1549	473	1040	605	5580
24"	1397	1407	1397	591	940	610	4880	1549	1568	1549	571	1040	700	7030
26" x 22"	1448	1461	1448	540	1016	550	4500	.....	.....	.....	.....	.....	.....	.....
26" x 24"	1448	1461	1448	591	1016	610	5000	1651	1674	1651	571	1086	700	7500
26"	1448	1461	1448	635	1016	650	5830	1651	1674	1651	617	1086	750	8270
28" x 26"	1549	1562	1549	635	1073	650	6000	1753	1775	1753	617	1168,5	750	9200
28"	1549	1562	1549	686	1073	710	6940	1753	1775	1753	667	1168,5	800	10200
30" x 24"	1651	1664	1651	591	1130	610	5910	1880	1902	1880	570	1232	700	8980
30"	1651	1664	1651	736	1130	770	8580	1880	1902	1880	722	1232	790	12440
32" x 26"	1778	1794	1778	635	1194	650	8000	2032	2054	2032	617	1314,5	750	10000
32"	1778	1794	1778	781	1194	880	9940	2032	2054	2032	760	1314,5	900	12100
34" x 28"	1930	1946	1930	686	1245	710	10000	2159	2188	2159	667	1397	800	15000
34"	1930	1946	1930	832	1245	850	11570	2159	2188	2159	810	1397	950	17460
36" x 30"	2083	2099	2083	736	1315	770	10560	2286	2315	2286	722	1460,5	790	15650
36"	2083	2099	2083	876	1315	850	13530	2286	2315	2286	855	1460,5	1050	20150
40"	2337	2337	2337	978	1320	1030	18570	.....	.....	.....	.....	.....	.....	.....
42"	2437	2437	2437	1020	1404	1100	21590	.....	.....	.....	.....	.....	.....	.....
48"	2540	2540	2540	1140	1594	1205	31550	.....	.....	.....	.....	.....	.....	.....
52"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
56"	2949	2949	2949	1384	1854	1300	47840	.....	2550	T.B.A.	1219	1745	1285	35000





TRUNNION MOUNTED DIMENSIONAL DATA

ANSI CLASS 150							ANSI CLASS 300							
SIZE	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg
	RF	RTJ	BW					RF	RTJ	BW				
1/2"	165	....	165	13	90	81	10	165	165	165	13	95	81	12
3/4" x 1/2"	191	....	191	13	100	81	11	191	191	191	13	115	81	13
3/4"	191	....	191	20	100	92	12	191	191	191	20	115	92	14
1" x 3/4"	216	216	191	20	110	92	15	216	216	191	20	125	92	16
1"	216	216	191	25	110	101	18	216	216	191	25	125	101	20
1.1/2" x 1"	216	216	191	25	125	101	20	216	216	191	25	155	101	22
1.1/2"	165	178	191	38	125	121	22	191	203	191	38	155	121	24
2" x 1.1/2"	178	191	216	38	150	121	25	216	232	216	38	165	121	26
2"	178	191	216	51	150	114	28	216	232	216	51	165	114	28
3" x 2"	203	216	282	51	190	114	30	282	298	282	51	210	114	34
3"	203	216	282	76	190	134	52	282	298	282	76	210	134	56
4" x 3"	229	242	305	76	230	134	61	305	321	305	76	255	134	64
4"	229	242	305	102	230	164	92	305	321	305	102	255	164	98
6" x 4"	394	407	457	102	280	164	100	403	419	457	102	320	164	120
6"	394	407	457	152	280	194	175	403	419	457	152	320	194	205
8" x 6"	457	470	521	152	345	194	200	502	518	521	152	380	194	245
8"	457	470	521	203	345	260	270	502	518	521	203	380	270	310
10" x 8"	533	546	559	203	405	260	310	568	584	559	203	445	270	320
10"	533	546	559	254	405	293	405	568	584	559	254	445	293	530
12" x 10"	610	623	635	254	485	293	485	648	664	635	254	520	293	620
12"	610	623	635	305	485	352	585	648	664	635	305	520	352	780
14" x 10"	686	697	762	254	535	293	565	762	778	762	254	585	293	720
14" x 12"	686	697	762	305	535	352	645	762	778	762	305	585	352	860
14"	686	697	762	337	535	384	805	762	778	762	337	585	384	1090
16" x 12"	762	775	838	305	595	352	730	838	854	838	305	650	352	1010
16" x 14"	762	775	838	337	595	384	870	838	854	838	337	650	384	1190
16"	762	775	838	387	595	434	1070	838	854	838	387	650	434	1480
18" x 14"	864	877	914	337	635	384	1010	914	930	914	337	710	384	1510
18" x 16"	864	877	914	387	635	434	1120	914	930	914	387	710	434	1650
18"	864	877	914	438	635	470	1270	914	930	914	438	710	470	1685
20" x 16"	914	927	991	387	700	434	1210	991	1010	991	387	775	434	1720
20" x 18"	914	927	991	438	700	470	1350	991	1010	991	438	775	470	1880
20"	914	927	991	489	700	532	1850	991	1010	991	489	775	532	2290
22" x 18"	991	....	1092	438	750	470	2050	1092	1114	1092	438	840	470	1850
22" x 20"	991	....	1092	489	750	532	2200	1092	1114	1092	489	840	532	2100
22"	991	....	1092	540	750	545	2450	1092	1114	1092	540	840	580	2880
24" x 20"	1067	1080	1143	489	815	532	2100	1143	1165	1143	489	915	532	2750
24"	1067	1080	1143	591	815	610	3180	1143	1165	1143	591	915	610	3610
26" x 22"	1143	....	1245	540	870	545	2900	1245	1270	1245	540	971,5	580	3700
26" x 24"	1143	....	1245	591	870	610	3200	1245	1270	1245	591	971,5	610	4050
26"	1143	....	1245	635	870	625	3770	1245	1270	1245	635	971,5	720	4810
28" x 26"	1244	....	1346	635	927	625	4000	1346	1371	1346	635	1035	720	5200
28"	1244	....	1346	685	927	660	4635	1346	1371	1346	685	1035	790	5920
30" x 24"	1295	....	1397	591	985	610	3430	1397	1422	1397	591	1092	610	4630
30"	1295	....	1397	736	985	720	5370	1397	1422	1397	736	1092	730	6740
32 x 26"	1371	....	1524	635	1060,5	625	6100	1524	1552	1524	635	1150	720	7000
32"	1371	....	1524	781	1060,5	750	6960	1524	1552	1524	781	1150	770	8080
34" x 28"	1473	....	1626	686	1111	680	7200	1626	1654	1626	686	1206,5	790	8500
34"	1473	....	1626	832	1111	780	7950	1626	1654	1626	832	1206,5	820	9260
36" x 30"	1524	....	1727	736	1168,5	720	6450	1727	1755	1727	736	1270	730	8330
36"	1524	....	1727	876	1168,5	800	8950	1727	1755	1727	876	1270	870	10280
40"	1753	....	1956	978	1289	900	12730	1956	....	1956	978	1238	950	13970
42"	1686	....	2083	1020	1346	940	14450	2083	....	2083	1020	1290	1000	16300
48"	2134	....	2388	1140	1511	1150	21750	2170	....	2170	1140	1467	1200	24300
56"	2134	....	2489	1384	1746	1320	34300	2743	....	2743	1384	1708	1400	38400

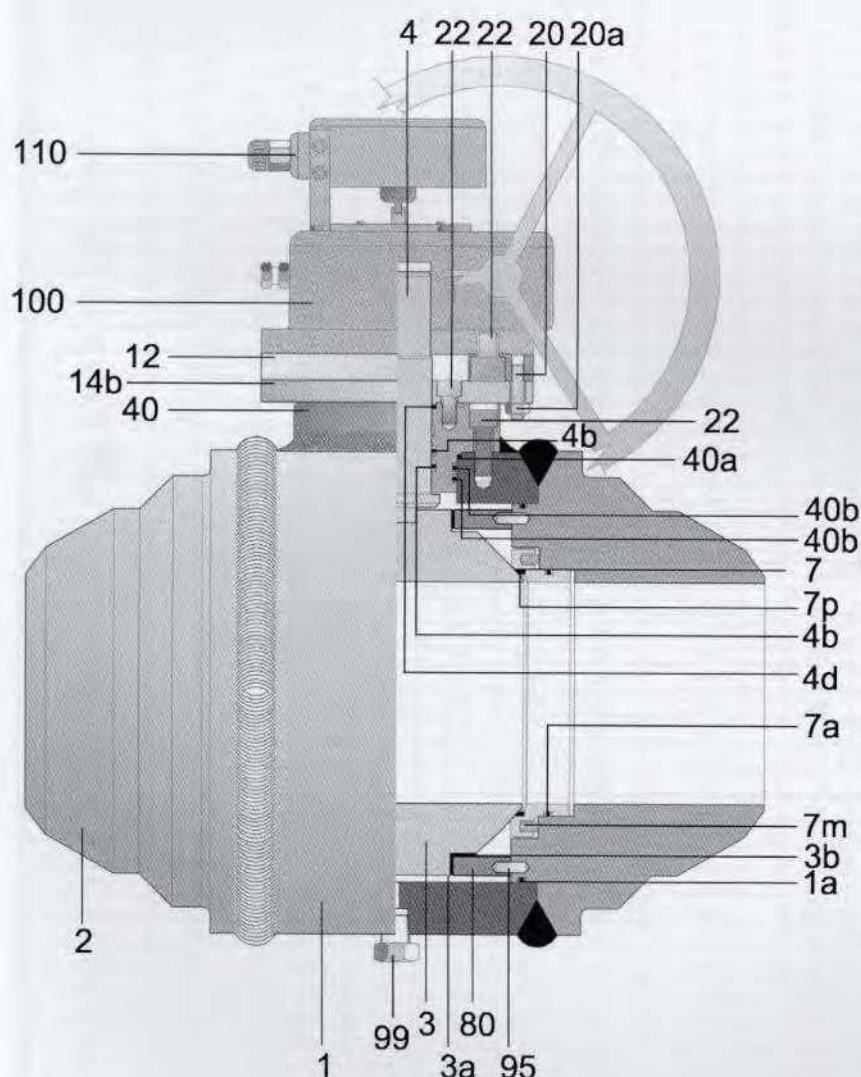
TRUNNION MOUNTED BALL VALVES

3 pcs Side entry ball valves, bolted or welded execution. Ends connections RF, RTJ, FF, BW.
Construction to API 6D, Fire Safe to BS 6755 Part 2, antistatic device, anti blowout stem system.

Welded type

Full bore : code PC (trunnion male) PL (trunnion female)
Reduced bore : code PD (trunnion male) PM (trunnion female)

RATINGS : #150 - #300 - #600 - #900 - #1500 - #2500



GENERAL VALVE COMPONENTS	
1	Body
1a	First body seal
1b	Body gasket
2	Lateral connection
3	Solid ball
3a	Push bearing
3b	Trust bearing
4	Stem
4b	First and second stem seals
4d	Stem packing
4w	Stem lubricate cap
7	Seat metal ring
7a	First and second seat seals
7m	Seat springs
7p	Soft seat insert
7w	Seat lubricate cap
80s	Upper ball shell
80g	Lower ball shell
40	Cover
40a	First and second cover seals
40b	Cover gasket
14b	Adapter flange
12	Motorization flange
13	Key
22	Socket bolt
95	Centering pin
99	Drain plug
100	Gear operator
110	Limit switches box

VALVES MAIN DIMENSIONS AND WEIGHTS PER EACH AVAILABLE SIZE AND RATING ARE SHOWN IN
GENERAL DIMENSIONAL TABLES AT PAGES 16 AND 17

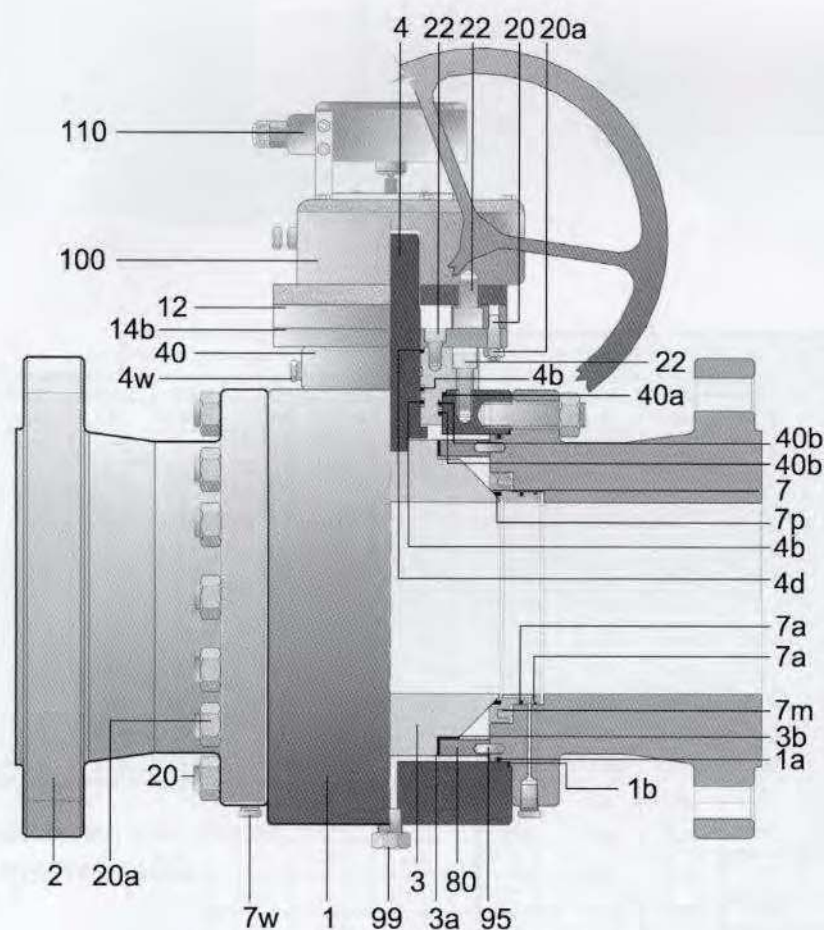


TRUNNION MOUNTED BALL VALVES

3 pcs Side entry ball valves, bolted or welded execution. Ends connections RF, RTJ, FF, BW.
Construction to API 6D, Fire Safe to BS 6755 Part 2, antistatic device, anti blowout stem system.

Bolted type Full bore : code BC (trunnion male) BL (trunnion female)
Reduced bore : code BD (trunnion male) BM (trunnion female)

RATINGS : #150 - #300 - #600 - #900 - #1500 - #2500



GENERAL VALVE COMPONENTS	
1	Body
1a	First body seal
1b	Body gasket
2	Lateral connection
3	Solid ball
3a	Push bearing
3b	Trust bearing
4	Stem
4b	First and second stem seals
4d	Stem packing
4w	Stem lubricate cap
7	Seat metal ring
7a	First and second seat seals
7m	Seat springs
7p	Soft seat insert
7w	Seat lubricate cap
80s	Upper ball shell
80g	Lower ball shell
40	Cover
40a	First and second cover seals
40b	Cover gasket
4d	Body and lateral tie rods
20	Nuts
20a	Adapter flange
14b	Motorization flange
12	Key
13	Socket bolt
22	Centering pin
95	Drain plug
99	Gear operator
100	Limit switches box

VALVES MAIN DIMENSIONS AND WEIGHTS PER EACH AVAILABLE SIZE AND RATING ARE SHOWN IN
GENERAL DIMENSIONAL TABLES AT PAGES 16 AND 17

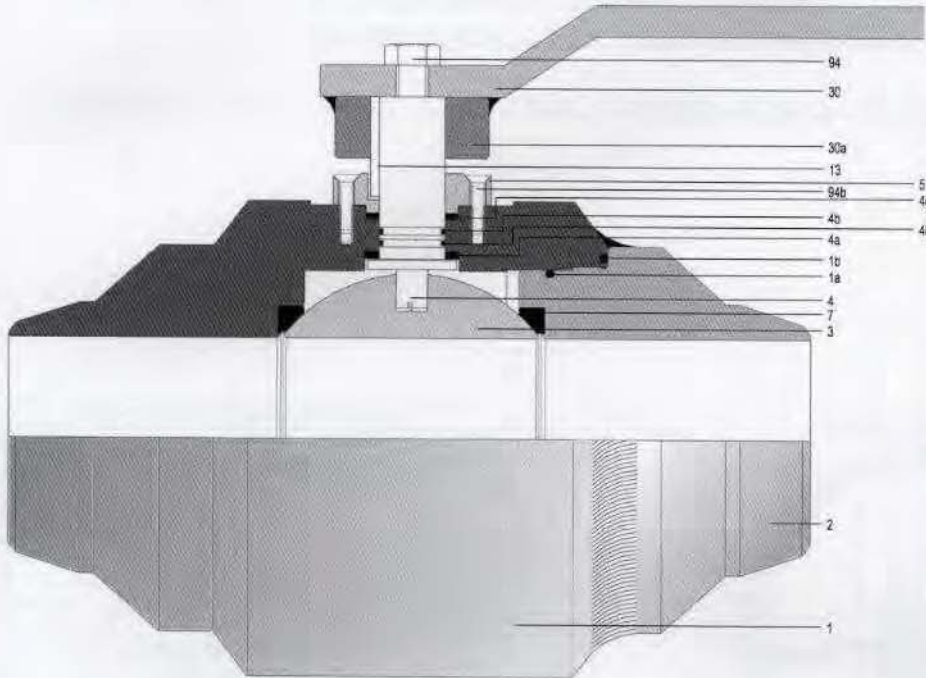
FLOATING BALL VALVES

2 pcs Split body ball valves to ANSI B 16.5 and ANSI B 16.10 Flanged or BW ends.
Construction to API 6D, fire safe to BS 6755 Part 2, antistatic device, anti blowout stem system.

Welded type

Reduced bore : code F5 __ (# 150 - 01 # 300 - 03 # 600 - 06 # 900 - 09 # 1500 - 15)

Full bore : code F2 __ (# 150 - 01 # 300 - 03 # 600 - 06 # 900 - 09 # 1500 - 15)



GENERAL VALVE COMPONENTS

1	Body
2	Lateral connection
1a	First body seal
3	Ball
4	Stem
4a	Stem bottom seal
4b	Stem "O" rings
4c	Stem top seal
7	Seat
5	Gland
94b	Gland screw
13	Stem key
30a	Lever bushing
30	Lever
94	Lever lock bolt

BALL VALVE 2 PIECES SPLIT BODY F2 and F5 TYPE

NPS	150 RF	150 RJ	150 BW	300 RF	300 RJ	300 BW	600 RF	600 RJ	600 BW	900 RF	900 RJ	900 BW	1500 RF	1500 RJ	1500 BW
1/2"	108	---	140	140	151	140	165	163.5	165	216	216	216	216	216	216
3/4" x 1/2"	117	---	152.5	152.5	165	152.5	190.5	190.5	190.5	229	229	229	229	229	229
3/4"	117	---	152.5	152.5	165	152.5	190.5	190.5	190.5	229	229	229	229	229	229
1" x 3/4"	127	140	165	165	178	165	216	216	216	254	254	254	254	254	254
1"	127	140	165	165	178	165	216	216	216	254	254	254	254	254	254
1" 1/2 x 1"	165	178	190.5	190.5	203	190.5	241.5	241.5	241.5	305	305	305	305	305	305
1" 1/2"	165	178	190.5	190.5	203	190.5	241.5	241.5	241.5	305	305	305	305	305	305
2" x 1" 1/2"	178	190.5	216	216	231.5	216	292	295	292	368	371.5	368	368	371	368
2"	178	190.5	216	216	231.5	216	292	295	292	368	371.5	368	368	371	368
3" x 2"	203	216	282.5	282.5	298	282.5	355.5	358.5	355.5	381	384	381	470	473	470
3"	203	216	282.5	282.5	298	282.5	355.5	358.5	355.5	381	384	381	470	473	470
4" x 3"	229	241	305	305	320.5	305	432	435	432						
4"	229	241	305	305	320.5	305	432	435	432						
6" x 4"	394 *	406 *	457 *	403.5 *	419 *	457 *	559	562	559						
6"	394 *	406 *	457 *	403.5 *	419 *	457 *	559	562	559						
8" x 6"	457 *	470 *	521 *	501.5 *	517.5 *	521 *	660.5	663.5	660.5						
8"	457 *	470 *	521 *	501.5 *	517.5 *	521 *	660.5	663.5	660.5						

FACE TO FACE DIMENSIONS

* LONG PATTERN

NPS	1/2"	3/4"	1"	1" 1/2"	2"	3"	4"	6"	8"
Ball diameter +0.5	11	20	25	38	51	76	102	152	203
Lever lenght +/- 25	150	180	180	280	280	380	480	700	GEAR
Center to top +/-25	73	75	78	100	136	164	195	251	276



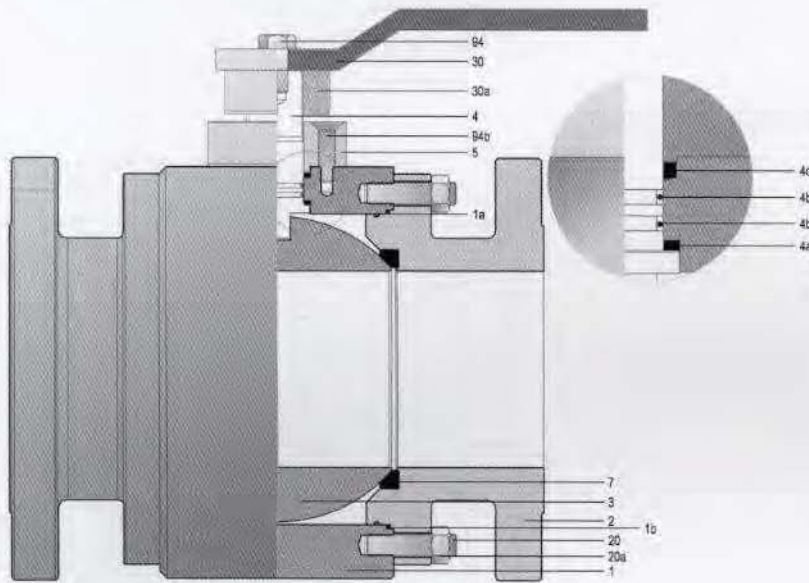
FLOATING BALL VALVES

2 pcs Split body ball valves to ANSI B 16.5 and ANSI B 16.10 Flanged or BW ends.
Construction to API 6D, fire safe to BS 6755 Part 2, antistatic device, anti blowout stem system.

Bolted type

Reduced bore : code B5 __ (# 150 - 01 # 300 - 03 # 600 - 06 # 900 - 09 # 1500 - 15)

Full bore : code B2 __ (# 150 - 01 # 300 - 03 # 600 - 06 # 900 - 09 # 1500 - 15)



GENERAL VALVE COMPONENTS

1	Body
2	Lateral connection
1a	First body seal
1b	Second body gasket
3	Ball
4	Stem
4a	Stem bottom seal
4b	Stem "O" rings
4c	Stem top seal
7	Seat
5	Gland
94b	Gland screw
13	Stem key
30a	Lever bushing
30	Lever
94	Lever lock bolt
20	Body and lateral tie rod
20a	Nuts

BALL VALVE 2 PIECES SPLIT BODY B2 and B5 TYPE

NPS	150 RF	150 RJ	150 BW	300 RF	300 RJ	300 BW	600 RF	600 RJ	600 BW	900 RF	900 RJ	900 BW	1500 RF	1500 RJ	1500 BW
1 1/2"	108	---	140	140	151	140	165	163.5	165	216	216	216	216	216	216
3/4" x 1 1/2"	117	---	152.5	152.5	165	152.5	190.5	190.5	190.5	229	229	229	229	229	229
3/4"	117	---	152.5	152.5	165	152.5	190.5	190.5	190.5	229	229	229	229	229	229
1" x 3/4"	127	140	165	165	178	165	216	216	216	254	254	254	254	254	254
1"	127	140	165	165	178	165	216	216	216	254	254	254	254	254	254
1" 1/2 x 1"	165	178	190.5	190.5	203	190.5	241.5	241.5	241.5	305	305	305	305	305	305
1" 1/2	165	178	190.5	190.5	203	190.5	241.5	241.5	241.5	305	305	305	305	305	305
2" x 1" 1/2	178	190.5	216	216	231.5	216	292	295	292	368	371.5	368	368	371	368
2"	178	190.5	216	216	231.5	216	292	295	292	368	371.5	368	368	371	368
3" x 2"	203	216	282.5	282.5	298	282.5	355.5	358.5	355.5	381	384	381	470	473	470
3"	203	216	282.5	282.5	298	282.5	355.5	358.5	355.5	381	384	381	470	473	470
4" x 3"	229	241	305	305	320.5	305	432	435	432						
4"	229	241	305	305	320.5	305	432	435	432						
6" x 4"	394 *	406 *	457 *	403.5 *	419 *	457 *	559	562	559						
6"	394 *	406 *	457 *	403.5 *	419 *	457 *	559	562	559						
8" x 6"	457 *	470 *	521 *	501.5 *	517.5 *	521 *	660.5	663.5	660.5						
8"	457 *	470 *	521 *	501.5 *	517.5 *	521 *	660.5	663.5	660.5						

FACE TO FACE DIMENSIONS

* LONG PATTERN

NPS	1 1/2"	3/4"	1"	1" 1/2	2"	3"	4"	6"	8"
Ball diameter +0.5	11	20	25	38	51	76	102	152	203
Lever length +/- 25	150	180	180	280	280	380	480	700	GEAR
Center to top +/-25	73	75	78	100	136	164	195	251	276

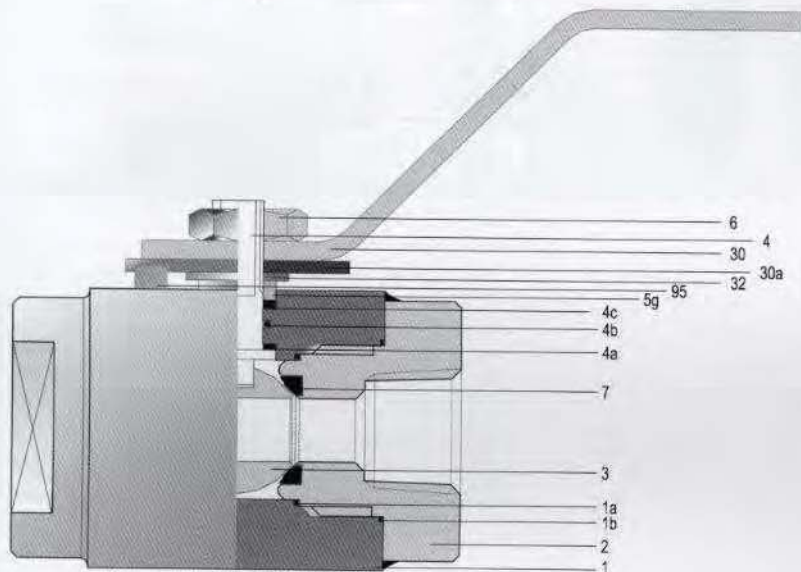
FLOATING BALL VALVES

Floating ball valve class 800 2 pcs screwed and welded type
 Reduced bore : code F5B8
 Full bore : code F2B8

Test pressure
 Body test: 3000 psi
 Seat test: 2000 psi
 Air test: 80 psi

Floating ball valve class 1500 2 pcs screwed and welded type
 Reduced bore : code F515
 Full bore : code F215

Test pressure
 Body test: 5400 psi
 Seat test: 3600 psi
 Air test: 80 psi



GENERAL VALVE COMPONENTS	
1	Body
2	Lateral connection
1a	First body seal
1b	Second body gasket
3	Ball
4	Stem
4a	Stem bottom seal
4b	Stem "O" ring
4c	Stem top seal
7	Seat
5	Gland
32	Spring washers
30a	Stop plate
95	Stop pin
30	Lever
6	Lever nut

BALL VALVE 2 PIECES RATING BS 800 - 1500 Lbs F2 and F5 TYPE								
NPS	Face to Face +/-5	Ball diameter +0.5	Lever lenght	Center to top	WEIGHT Kg	TORQUE Nm		
						BS 800	BS 1500	
1 / 4" - 3/8"	80	11	150	62	0.7	7.5	25	
1 / 2" x 3/8"	80	11	150	62	0.7	7.5	25	
1 / 2"	80	14	150	70	1	14	29	
3 / 4" x 1 / 2"	80	14	150	70	0.9	14	29	
3 / 4"	100	20	185	85	1.5	19	30	
1" x 3 / 4"	100	20	185	85	1.3	19	30	
1"	110	25	185	90	2.2	50	144	
1.1 / 2" x 1"	110	25	185	90	2	50	144	
1.1 / 2"	140	38	285	100	5	100	329	
2" x 1.1 / 2"	140	38	285	100	4.7	100	329	
2"	150	51	285	105	10	140	422	

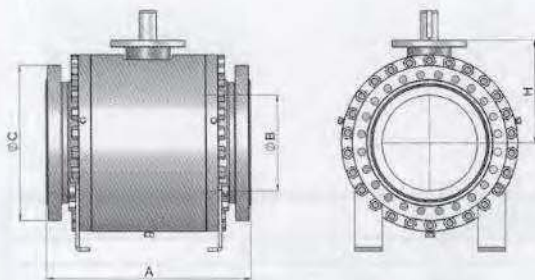
End connection

Female NPT to ANSI B 20.1
 SW to ANSI B 16.11 or BW to ANSI B 16.25
 Available with welded nipples plain or BW ends, standard lenght 100 mms, or Customer's request

Construction

According to BS 5351 and ASME b 16.34
 Fire Safe tested & certified to BS6755 p.2





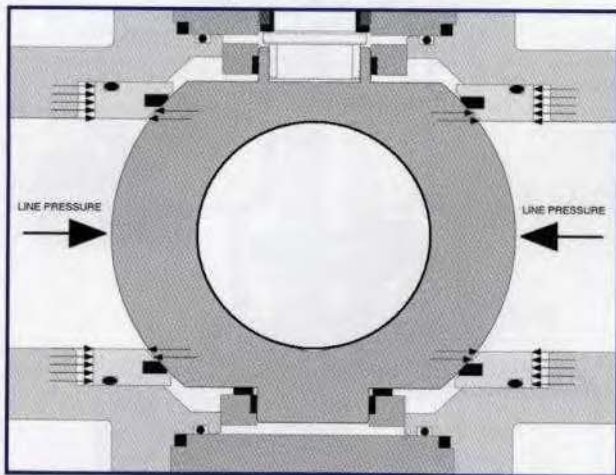
TRUNNION MOUNTED DIMENSIONAL DATA

ANSI CLASS 1500

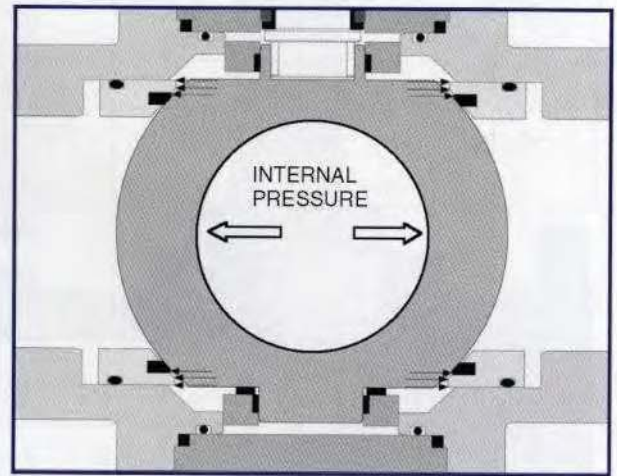
ANSI CLASS 2500

SIZE	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg	FACE TO FACE (A)			Ball port (B)	Flange diam. (C)	Center top (H)	Weight in Kg
	RF	RTJ	BW					RF	RTJ	BW				
1/2"	216	216	216	13	120	81	16	264	264	264	12	135	92	22
3/4" x 1/2"	229	229	229	13	130	81	18	308	308	308	12	140	92	25
3/4"	229	229	229	20	130	92	20	308	308	308	20	140	92	28
1" x 3/4"	254	254	254	20	150	92	23	308	308	308	20	160	92	33
1"	254	254	254	25	150	101	26	308	308	308	25	160	101	36
1.1/2" x 1"	305	305	305	25	180	101	32	387	387	387	25	205	101	36
1.1/2"	305	305	305	38	180	121	40	387	387	387	38	205	128	48
2" x 1.1/2"	368	371	368	38	215	121	45	451	454	451	38	235	128	65
2"	368	371	368	51	215	129	55	451	454	451	44,5	235	145	93
3" x 2"	470	473	470	51	265	129	75	578	584	578	44,5	305	145	165
3"	470	473	470	76	265	161	105	578	584	578	63,5	305	203	215
4" x 3"	546	549	546	76	310	161	130	673	683	673	63,5	355	203	280
4"	546	549	546	102	310	201	205	673	683	673	89	355	270	385
6" x 4"	705	711	705	102	395	201	300	914	927	914	89	485	270	540
6"	705	711	705	146	395	234	525	914	927	914	133	485	305	830
8" x 6"	832	842	832	146	485	234	615	1022	1038	1022	133	550	305	1150
8"	832	842	832	146	485	234	615	1022	1038	1022	181	550	360	1435
10" x 6"	991	1001	991	241	585	396	1000	1270	1292	1270	133	675	305	1300
10" x 8"	991	1001	991	241	585	396	1200	1270	1292	1270	181	675	360	1750
10"	991	1001	991	241	585	396	1560	1270	1292	1270	226	675	480	2220
12" x 8"	1130	1146	1130	289	675	428	1500	1422	1444	1422	181	760	360	2250
12" x 10"	1130	1146	1130	289	675	428	1855	1422	1444	1422	226	760	481	2650
12"	1130	1146	1130	289	675	428	2355	1422	1444	1422	267	760	574	3350
14" x 10"	1257	1276	1257	241	750	396	2100							
14" x 12"	1257	1276	1257	289	750	428	2620							
14"	1257	1276	1257	318	750	490	3020							
16" x 12"	1384	1406	1384	289	825	428	2890							
16" x 14"	1384	1406	1384	318	825	490	3500							
16"	1384	1406	1384	362	825	550	4260							
18"	1537	1559	1537	407	915	700	6400							
20"	1664	1686	1664	457	985	800	9300							
24"	2043	2071	2043	534	1170	900	14550							

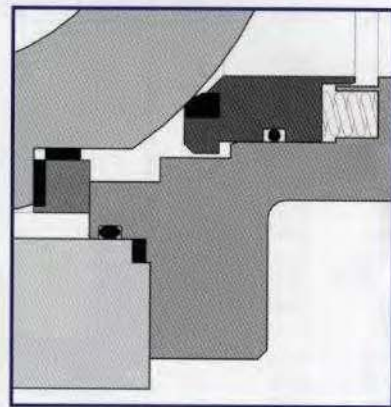
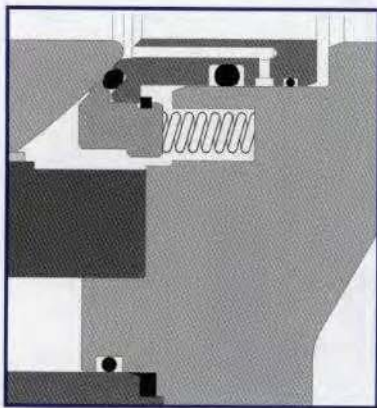
SEATS FOR TRUNNION MOUNTED BALL VALVES



This view shows the double piston effect execution which guarantees the sealing capacity of the valve also in case of damages in upstream seats.



This view shows the standard execution of the valve bleed construction.

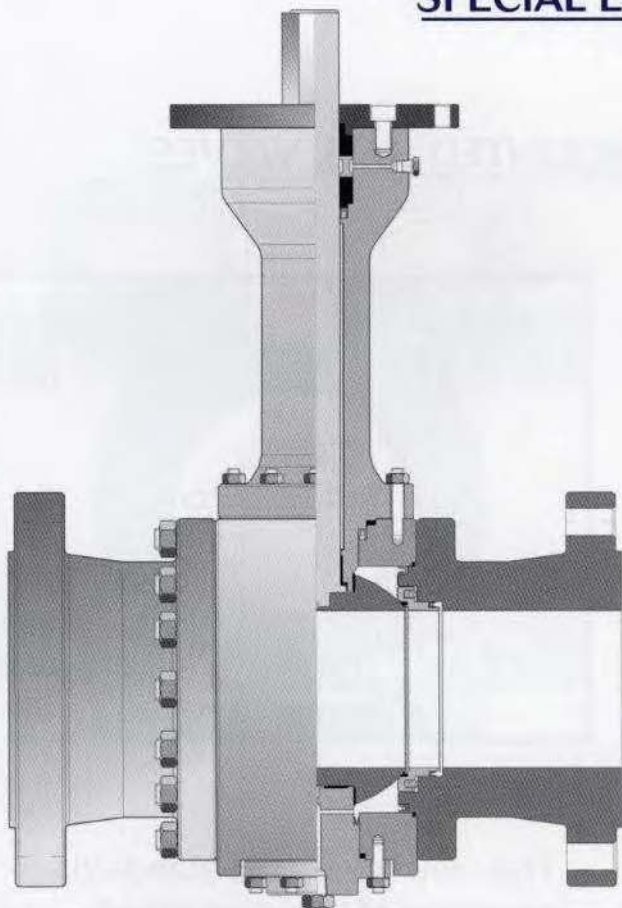


These views are showing the 2 most common sealing systems of a soft seated trunnion ball valve.

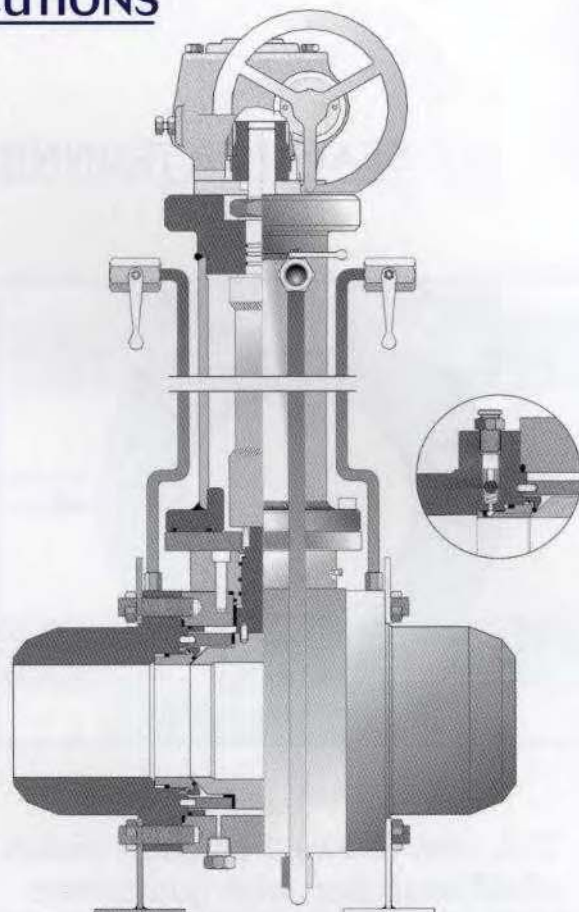
The left picture shows the sealing by "O" ring and the right picture the one by soft insert



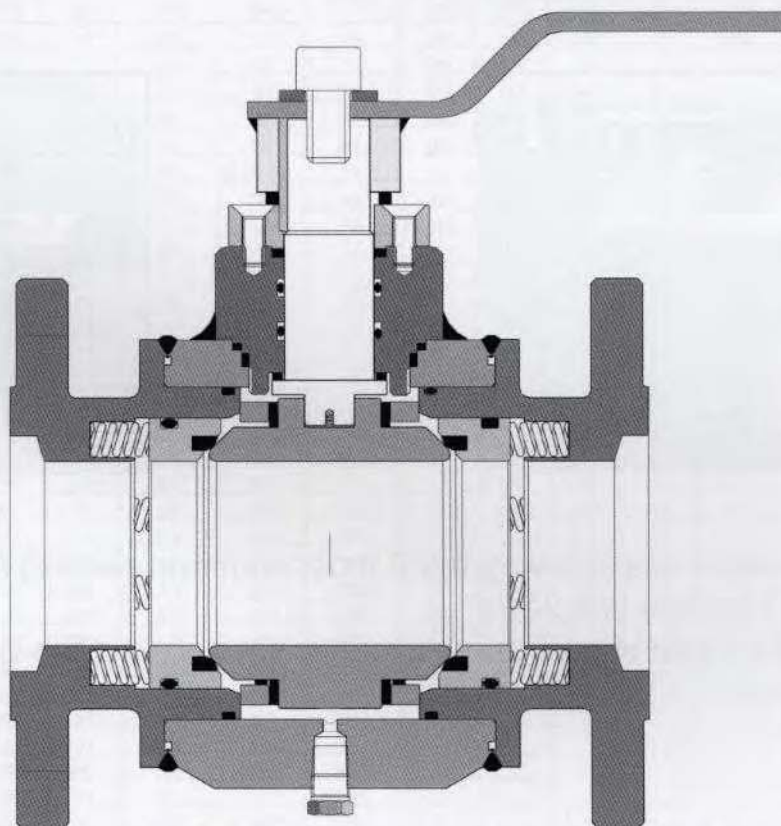
SPECIAL EXECUTIONS



CRYOGENIC SERVICE



EXTENDED STEM FOR BURIED INSTALLATION



TRUNNION BALL VALVE FULLY WELDED, FLANGED ENDS

CONVERSION TABLE FOR PRESSURE

	bar	Pa	MPa	Kg/cm ²	atm	psi	mm Hg
bar	1	1x10 ⁵	1x10 ⁻¹	1.0197	0.987	14.504	7.5006x10 ²
Pa	1x10 ⁻⁵	1	1x10 ⁻⁶	1.0197x10 ⁻⁵	0.987x10 ⁻⁵	14.504x10 ⁻⁵	7.5006x10 ⁻³
MPa	10	1x10 ⁶	1	10.197	9.87	145.04	7.5006x10 ⁻⁹
Kg/cm ²	0.980	0.980x10 ⁵	0.0980	1	0.9678	14.223	7.35x10 ⁴
atm	1.013	1.013x10 ⁵	0.0103	1.033	1	14.696	7.59x10 ²
psi	0.0689	0.0689x10 ⁵	0.00689	0.0703	0.0680	1	0.2539x10 ²
mm Hg	0.133x10 ⁻²	0.133x10 ³	0.133x10 ⁻³	0.136x10 ⁻⁴	0.131x10 ⁻²	3.937x10 ⁻²	1

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$$

$$^{\circ}\text{F} = 32 + 9/5^{\circ}\text{C}$$

[°] C	T	[°] F	[°] C	T	[°] F	[°] C	T	[°] F	[°] C	T	[°] F
-101	-150	-238	-6.67	20	68	12.8	55	131	32.2	90	194
-95.6	-140	-220	-6.11	21	69.8	13.3	56	132.8	32.8	91	195.8
-90	-130	-202	-5.56	22	71.6	13.9	57	134.6	33.3	92	197.6
-84.4	-120	-184	-5	23	73.4	14.4	58	136.4	33.9	93	199.4
-78.9	-110	-166	-4.44	24	75.2	15	59	138.2	34.4	94	201.2
-73.3	-100	-148	-3.89	25	77	15.6	60	140	35	95	203
-67.8	-90	-130	-3.33	26	78.8	16.1	61	141.8	35.6	96	204.8
-62.2	-80	-112	-2.78	27	80.6	16.7	62	143.6	36.1	97	206.6
-56.7	-70	-94	-2.22	28	82.4	17.2	63	145.4	36.7	98	208.4
-51.1	-60	-76	-1.67	29	84.2	17.8	64	147.2	37.2	99	210.2
-45.7	-50	-58	-1.11	30	86	18.3	65	149	38	100	212
-40	-40	-40	0.56	31	87.8	18.9	66	150.8	43	110	230
-34.4	-30	-22	0	32	89.6	19.4	67	152.6	49	120	248
-28.9	-20	-4	0.56	33	91.4	20	68	154.4	54	130	266
-23.3	-10	14	1.11	34	93.2	20.6	69	156.2	60	140	284
-17.8	0	32	1.67	35	95	21.1	70	158	66	150	302
-17.2	1	33.8	2.22	36	96.8	21.7	71	159.8	71	160	320
-16.7	2	35.6	2.78	37	98.6	22.2	72	161.6	77	170	338
-16.1	3	37.4	3.33	38	100.4	22.8	73	163.4	82	180	356
-15.6	4	39.2	3.89	39	102.2	23.3	74	165.2	88	190	374
-15	5	41	4.44	40	104	23.9	75	167	93	200	392
-14.4	6	42.8	5	41	105.8	24.4	76	168.8	121	250	482
-13.9	7	44.6	5.56	42	107.6	25	77	170.6	149	300	572
-13.3	8	46.4	6.11	43	109.4	25.6	78	172.4	177	350	662
-12.8	9	48.2	6.67	44	111.2	26.1	79	174.1	204	400	752
-12.2	10	50	7.22	45	113	26.7	80	176	232	450	842
-11.7	11	51.8	7.78	46	114.8	27.2	81	177.8	260	500	932
-11.1	12	53.6	8.33	47	116.6	27.8	82	179.6	288	550	1022
-10.6	13	55.4	8.89	48	118.4	28.3	83	181.4	316	600	1112
-10	14	57.2	9.44	49	120.2	28.9	84	183.2	343	650	1202
-9.44	15	59	10	50	122	29.4	85	185	371	700	1292
-8.89	16	60.8	10.6	51	123.8	30	86	186.8	427	800	1472
-8.33	17	62.6	11.1	52	125.6	30.6	87	188.6	482	900	1652
-7.78	18	64.4	11.7	53	127.4	31.1	88	190.4	538	1000	1832
-7.22	19	66.2	12.2	54	129.2	31.7	89	192.2			

Drawings and dimensions shown in this catalogue are indicative and can be modified without any prior notice



