

PIPELINE VALVE

Trunnion Mounted Ball Valve



WTV FLOW CONTROL

Technical Features



STANDARD FEATURES	Type Z	Type C	COMMENTS
Size range	1½"FB up to 6" RB	6½"FB up to 60"	Special sizes
Pressure (class)	150-2500	150-2500	
Three piece split body	YES	YES	
Anti-static device	YES	YES	
Self relieving seats	YES	NO	C-option(no extra cost)
Double Piston Effect seats	NO	YES	Z-option(no extra cost)
Lubricated stem	NO	YES	
Lubricated seat	YES	YES	C-option(*)
Double block and bleed	YES	YES	
Metal to metal seats	YES(*)	YES(*)	
Trunion mounted ball	YES	YES	
Full or Reduced bore	YES	YES	
Bi-directional	YES	YES	
Minimum thickness ASME B16.34	YES	YES	
RF of RTJ flanges to ASME B16.5	YES	YES	Other flange design(*)
BW(butt-weld)ends to ASME B31.4/B31.8	YES	YES	Other code for BW design(*)
Bore and end-to-end	YES(*)	YES(*)	Dimensions other than API 6D(*)
Manufacture in accordance with API 6D	YES	YES	ASME B 16.34 design available on request(*)
Materials certification to EN10204 type3.1B for pressure containing parts,ball,stem and seats	YES	YES	(Nateruaks certification level*)
Fire safe design to API6FA(BS6755Pt.2)	YES	YES	Other fire safe code (e.g.API607)(*)
Boling ASME VLLL div.1	YES	YES	ASME 16.34 available (*)
Operation by lever, gear w/handwheel or catuator	YES	YES	



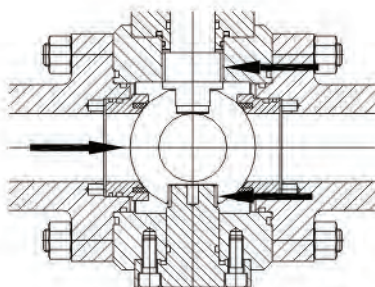
Type Z



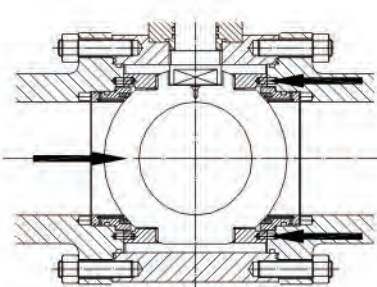
Type C

(*)Available with extra cost

Trunion Mounted Ball Valve



Type Z



Type C

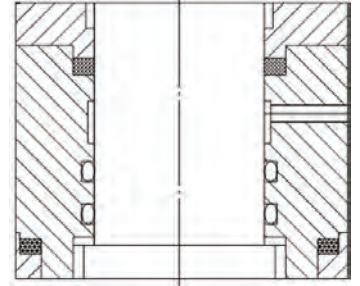
When the ball is in fully closed position, two trunnions absorb the side thrust generated by line pressures, preventing excess friction between ball and seats. With this system, operating torque is low even at full rated working pressure. Therefore a generous sizing of trunnions is essential to the life and operability of the valve. The spherical surface is machined and ground to close tolerance. To reduce torque and minimize wear, the ball is then electroless nickel plated and polished to mirror finish. For special applications the ball may be hardfaced with T.C.C (Tungsten carbide coating) to improve resistance to wear and prevent scratching caused by hard particles.

Technical Features



Emergency Sealant Injection for Stem and Seat

In case of emergency, when sealing materials (seat sealing and stem o-ring) are damaged or decomposed by fire or other accidental cause, a sealant injection into fitting on both stem and seat prevents leakage until the primary seal is restored. For Type Z ball valve the seat sealant injection is an optional feature available with an extra cost. However, the material between ball and seat is a thermoplastic, thus no further injection is necessary. Self lubricated & low friction materials are used for stem bearings, stem seals and body seats. Low friction materials, e.g. Nylon, are used for seat inserts. Stem bearings and selflubricating seals give predictable operating torque for the life of the valve.



Stem

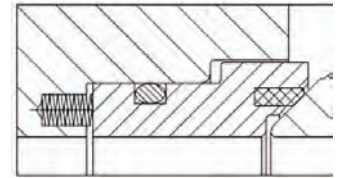
The stem is made separately from the ball. It is blow-out proof, properly obtained with an integral collar in the bottom of the stem.

Stem Seal

Sealing system can be defined triple: two static o-rings seal the stem, plus a third graphite retained by the adaptor flange. This ultimate seal can be replaced when the valve is in line and in closed position.

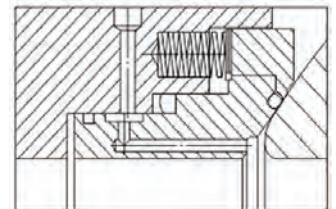
Polymer Insert

The sealing between the seat and the ball is performed by a plastic polymer insert. The choice of this soft sealing depends on the service conditions. The initial seal at low differential pressure is obtained by the spring-loaded floating seats (spring energized) which achieve independent sealing. Increasing the line pressure behind the upstream seat ring helps the seat spring load to force the upstream seat tightly against the ball.



Elastomer Seat

The sealing between the seat and the ball is performed by a primary metal seal, and a secondary O-ring seal for both the seats. The choice of the secondary seal "soft sealing" depends on the service conditions. The initial seal at low differential pressure is obtained by the spring loaded floating seats (spring energized) which achieve independent sealing. Increasing the line pressure behind the upstream seat ring helps the seats spring load to force the upstream seat tightly against the ball.



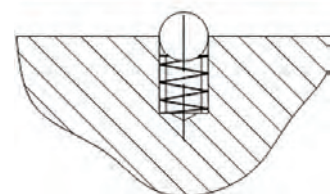
Firesafe Design and Test

Fire safe is standard design of WTV ball valve. Two o-ring and gland gasket prevent leak paths from the valve stem area. If fire deteriorate O-ring, gland gasket, the stem firesafe packing prevent fluid or gas leakage. WTV soft seat ball valve fire safe test (shown in the image) was witnessed and certified according to API6FA and BS 6755 PT.2



Anti-static Device

This device is a standard feature of WTV ball valves. A coil spring thrusts a little sphere, providing earthed continuity between stem and other metallic components of valve (ball and body) in order to avoid sparks during turning of the stem for opening and closing the valve and prevent problems in case of use with flammable fluids and gas.



Technical Features

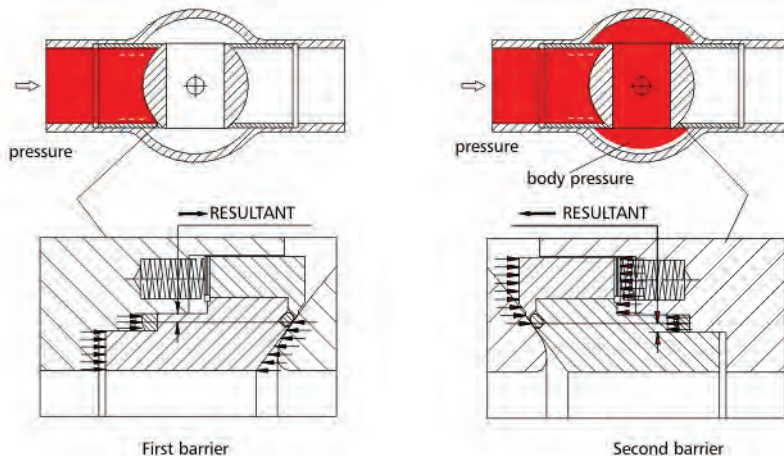


Body Vent and Drain

The drain and vent plug of the valve body enable to check the integrity of the seat ring.
A bleed valve may replace the drain plug.

Double Block and Bleed (DBB)

WTV design of a valve with two seating surfaces between which the cavity can be vented through a bleed connection and thus confirm the tightness of the valve, as well in closed position as open position, when pressure is applied to any side or both sides of the valve.

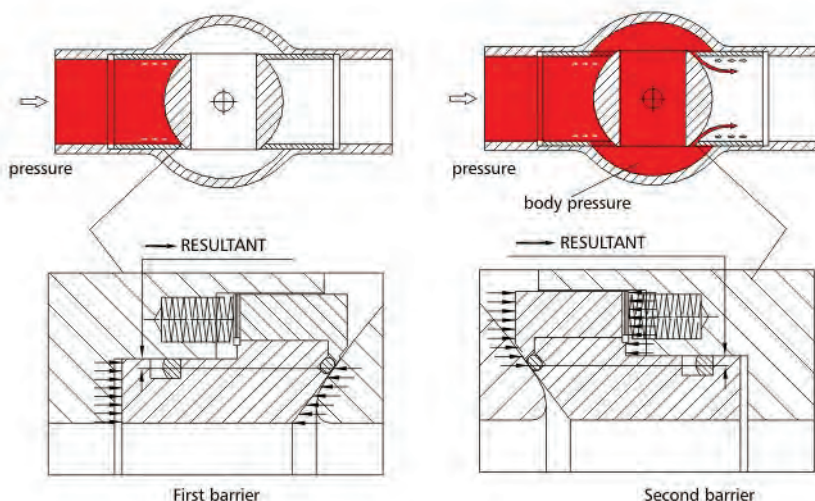


Double Piston Effect (C-Standard, zoption)

With the DPE seat configuration when there is a leakage in the upstream seat, the pressure entering into the body cavity pushes the downstream seat against the ball and the valve seals.

This effect is a sealing principle involved in utilising line pressure to effect a seal across the floating seat.

A relief valve is recommended to be installed to protect the body cavity from excess pressure.

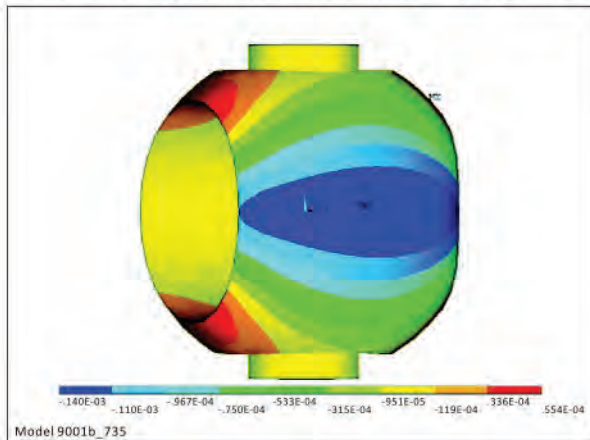


Self-relieving Seats

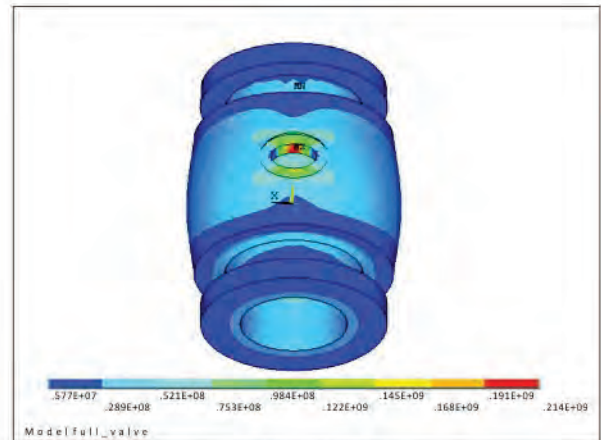
In self-relieving condition, excessive internal body pressure is automatically relieved both in upstream and downstream line by forcing the seats away from the closure element.

Ball valve fixed deformation finite element analysis

Ball Valve Strength and Finite Element Analysis of Deformation

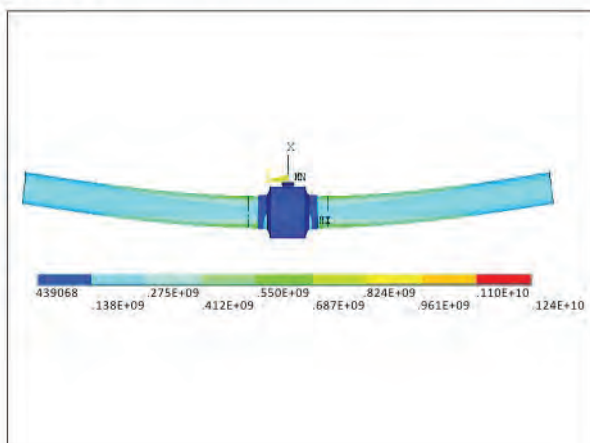


Class900 36" ball

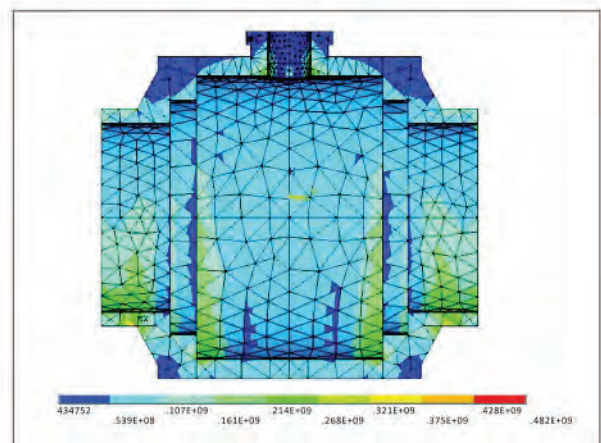


Class900 36" body

safety assessment of structure strength of valve body under the composite function of medium pressure and external bending moment



Class600 40" fully welded valve body



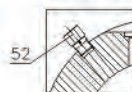
STD. Material Selection



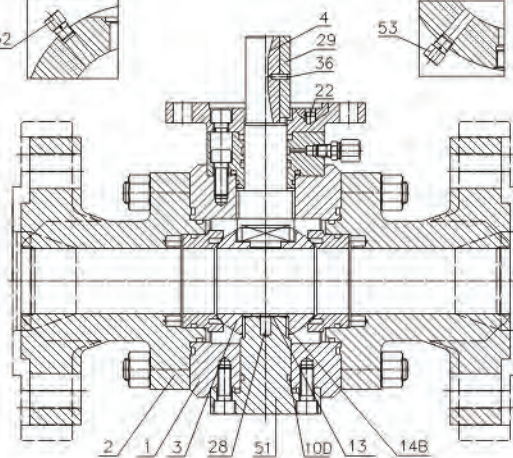
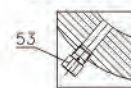
Type Z

Pos.	Description	Material	Notes
55	SCREW RING	ASTM A182 F6a	3
54	STOP COLLAR	AISI 1025	3
53	DRAIN PLUG	AISI 1025+Zn	
52	VENT PLUG	AISI 1025+Zn	
51	LOWER TRUNNION	ASTM A182 F6a	
36	PIN	AISI 1045	
29	KEY	AISI 1045	
28	ANTI-STATIC SPRING	SS	
26	COUPLING FLANGE	ASTM A105	4
25	TOP COVER	ASTM A105+ENP	1
22	PIN	AISI 1025	
18E	SCREW	ASTM A193 B7	3
18B	SCREW	ASTM A193 B7	4
18A	SCREW	ASTM A193 B7	
14C	RADIAL BEARING	SS+PTFE	
14B	RADIAL BEARING	SS+PTFE	
14A	RADIAL BEARING	SS+PTFE	
13	PLANE BEARING	SS+PTFE	
12	THRUST WASHER	SS+PTFE	
10E	O-RING	VITON	
10D	O-RING	VITON	
10C	O-RING	VITON	
9D	FIRE SAFE RING	GRAPHITE	
9C	FIRE SAFE RING	GRAPHITE	
8	SEAT SPRING	17-7PH	
7	O-RING	VITON	
6	SEAT RING	ASTM A105+ENP	1
5	SEAT INSERT	RPTFE	2
4	STEM	ASTM A182 F6a CL.2	
3	BALL	A105+ENP	1
2	CLOSURE	ASTM A105	
1	BODY	ASTM A105	
Pos.	Description	Material	Notes

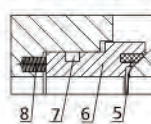
VENT PLUG DETAIL



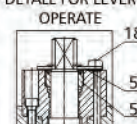
DRAIN PLUG DETAIL



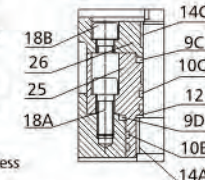
SEAT DETAIL



DETAIL FOR LEVER OPERATE



SEAT DETAIL



Notes:1) Electroless Nickel Plated 0.001" thickness

2) Nylon insert on class 900/1500

3) For lever operated valves

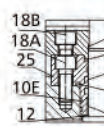
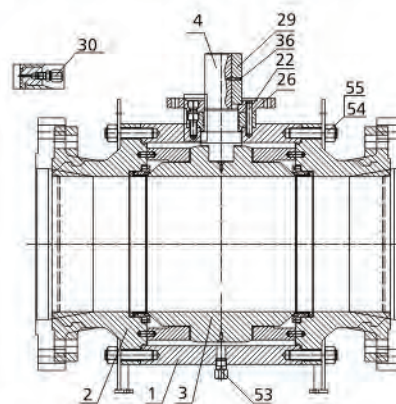
4) For gear or actuated valves

Service: standard fluid — carbon steel valve-fire safe design

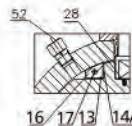
Temperature:-7°C+160°C (-7°C+121°C for class 900-1500)

Type C

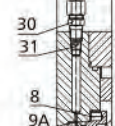
Pos.	Description	Material	Notes
55	NUT	ASTM A194 2H	
54	BOLT	ASTM A193 B7	
53	DRAIN PLUG	AISI 1025+Zn	
52	VENT PLUG	AISI 1025+Zn	
36	PIN	AISI 1045	
31	CHECK VALVE	AISI 1025+Zn	
30	SEAT GREASE FITTING	AISI 1025+Zn	
29	KEY	AISI 1045	
28	ANTI-STATIC SPRING	SS	
26	COUPLING FLANGE	ASTM A105	
25	TOP COVER	A105+ENP	1
22	PIN	AISI 1025	
18B	SCREW	A193 B7	
18A	SCREW	A193 B7	
17	BEARING RETAINER PIN	AISI 1035	
16	BEARING RETAINER	ASTM A105	
14C	RADIAL BEARING	SS+PTFE	
14B	RADIAL BEARING	SS+PTFE	
14A	RADIAL BEARING	SS+PTFE	
13	PLANE BEARING	SS+PTFE	
12	THRUST WASHER	SS+PTFE	
10E	O-RING	VITON	3
10C	O-RING	VITON	3
9D	FIRE SAFE RING	GRAPHITE	
9C	FIRE SAFE RING	GRAPHITE	
9A	FIRE SAFE RING	GRAPHITE	
8	SEAT SPRING	17-7PH	3
7	O-RING	VITON	
6	SEAT RING	ASTM A105+ENP	1
5	SEAT INSERT	RPTFE	2
4	STEM	ASTM A182 F6a CL.2	
3	BALL	ASTM A105+ENP	1
2	CLOSURE	ASTM A105	
1	BODY	ASTM A105	
Pos.	Description	Material	Notes



SEAT DETAIL



BALL DETAIL



SEAT DETAIL

Notes:1) Electroless Nickel Plated 0.001" thickness

2) Nylon for class 1500.

3) Viton (AED) for Class 600 and above.

Service: standard fluid — carbon steel valve-fire safe design

Temperature:-7°C+160°C (-7°C+121°C for Class 900-1500)

STD. Material Selection

Trim materials for general service (sweet fluids) FULL CARBON STEEL

AA	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 180°C	-29° / + 180°C	-29° + 180°C	-29° / + 180°C
Body	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Closure	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Ball	ASTM A350 Gr.LF2 + ENP	AISI 4140 + ENP	ASTM A350 Gr.LF2 + ENP	A694 F65 + ENP
Seat	ASTM A350 Gr.LF2 + ENP	ASTM A350 Gr.LF2 + ENP	ASTM A350 Gr.LF2 + ENP	ASTM A350 Gr.LF2 + ENP
Stem	A 182 F6 + ENP	AISI 4140 + ENP	A 182 F6 + ENP	AISI 4140 + ENP
Bolting	B7 / 2H	B7 / 2H	B7 / 2H	B7 / 2H
Seat gasket	PTFE (2)	NYLON	VITON	NYLON
Other seals	VITON	VITON	VITON	VITON
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for corrosive services (comply to NACE MR 01-75) STAINLESS STEEL TRIM

CC	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 180°C	-29° / + 180°C	-29° + 180°C	-29° / + 180°C
Body	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Closure	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Ball	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 694 F65 + ENP
Seat	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	ASTM A350 Gr.LF2 + ENP
Stem	ASTM A 182 F316 + ENP	17-4 PH + ENP	17-4 PH + ENP	AISI 4140 + ENP
Bolting	B7 / 2H	B7 / 2H	B7 / 2H	B7 / 2H
Seat gasket	PTFE	NYLON	VITON (2)	NYLON
Other seals	VITON	VITON	VITON	VITON
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for highly corrosive services 13% Cr. STAINLESS STEEL TRIM

DD	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 180°C	-29° / + 180°C	-29° + 180°C	-29° / + 180°C
Body	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Closure	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Ball	A 182 F6 + ENP	A 182 F6 + ENP	A 182 F6 + ENP	A 182 F6 + ENP
Seat	A 182 F6 + ENP	A 182 F6 + ENP	A 182 F6 + ENP	A 182 F6 + ENP
Stem	A 182 F6 + ENP	A 182 F6NM + ENP	A 182 F6 + ENP	A 182 F6 + ENP
Bolting	B7 / 2H	B7 / 2H	B7 / 2H	B7 / 2H
Seat gasket	PTFE	NYLON	VITON	NYLON
Other seals	VITON	VITON	VITON	VITON
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for corrosive services (comply to NACE MR 01-75) FULL STAINLESS STEEL VALVE

EE	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 180°C	-29° / + 180°C	-29° + 180°C	-29° / + 180°C
Body	A 182 F316	A 182 F316	A 182 F316	A 182 F316
Closure	A 182 F316	A 182 F316	A 182 F316	A 182 F316
Ball	A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Seat	A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Stem	A 182 F316 + ENP	17-4 PH + ENP	17-4 PH + ENP	17-4 PH + ENP
Bolting	B7 / 2H	B7 / 2H	B7 / 2H	B7 / 2H
Seat gasket	PTFE (2)	NYLON	VITON	NYLON
Other seals	VITON	VITON	VITON	VITON
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Note:(2)NYLON FOR CLASS 900-1500
Alternative material selections available upon request



STD. Material Selection

Trim materials for corrosive services (comply to NACE MR 01-75) FULL DUPLEX STEEL VALVE

FF	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 180°C	-29° + 180°C	-29° + 180°C	-29° + 180°C
Body	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51
Closure	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51
Ball	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51 + ENP	ASTM A 182 F51
Seat	ASTM A 182 F51	ASTM A 182 F51	ASTM A 182 F51 + ENP	ASTM A 182 F51
Stem	ASTM A 182 F51 + ENP	ASTM A 182 F51 + ENP	ASTM A 182 F51 + ENP	A 182 F51 + ENP
Bolting	ASTM B7 / 2H	ASTM B7 / 2H	ASTM B7 / 2H	ASTM B7 / 2H
Seat gasket	PTFE	NYLON	VITON	NYLON
Other seals	VITON	VITON	VITON	VITON
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for low temperature with stem extension FULL STAINLESS STEEL VALVE

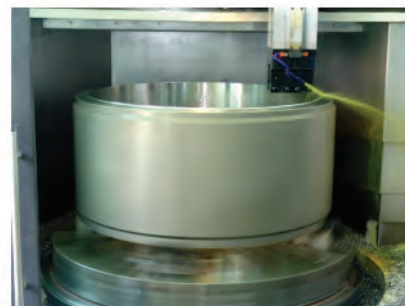
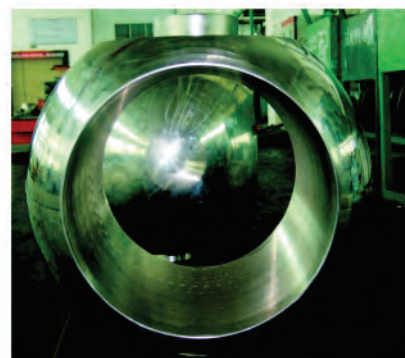
GG	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-46° + 180°C	-46° + 180°C	-46° + 180°C	-46° + 180°C
Body	ASTM A 182 F316	A 182 F316	A 182 F316	A 182 F316
Closure	ASTM A 182 F316	A 182 F316	A 182 F316	A 182 F316
Ball	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Seat	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Stem	ASTM A 182 F316 + ENP	17-4 PH + ENP	17-4 PH + ENP	17-4 PH + ENP
Bolting	L7 / Gr.7	L7 / Gr.7	L7 / Gr.7	L7 / Gr.7
Seat gasket	PTFE	NYLON	VITON	NYLON
Other seals	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for cryogenic temperature with extension FULL STAINLESS STEEL VALVE

LL	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-196° + 120°C	-196° + 120°C	-196° + 120°C	-196° + 120°C
Body	ASTM A 182 F316	A 182 F316	A 182 F316	A 182 F316
Closure	ASTM A 182 F316	A 182 F316	A 182 F316	A 182 F316
Ball	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Seat	ASTM A 182 F316 + ENP	A 182 F316 LN+ ENP	A 182 F316 + ENP	A 182 F316 LN+ ENP
Stem	XM 19 + ENP	INCONEL 718 + ENP	XM 19 + ENP	XM 19 + ENP
Bolting	A 453 Gr.660	A 453 Gr.660	A 453 Gr.660	A 453 Gr.660
Seat gasket	KEL-F	KEL-F	KEL-F	KEL-F
Other seals	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

Trim materials for high temperature

MM	Z		C	
Rating	150-1500	2500	150-1500	2500
Temperature	-29° + 250°C	-29° + 250°C	-29° + 250°C	-29° + 250°C
Body	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Closure	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2	ASTM A350 Gr.LF2
Ball	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC
Seat	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC	ASTM A350 Gr.LF2 + TCC
Stem	17-4 PH + ENP	INCONEL 718 + ENP	17-4 PH + ENP	INCONEL 718 + ENP
Bolting	B7 / 2H	B7 / 2H	B7 / 2H	B7 / 2H
Seat gasket	METAL TO METAL	METAL TO METAL	METAL TO METAL	METAL TO METAL
Other seals	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY	PTFE + ELGILOY
Seat spring	INCONEL X 750	INCONEL X 750	INCONEL X 750	INCONEL X 750

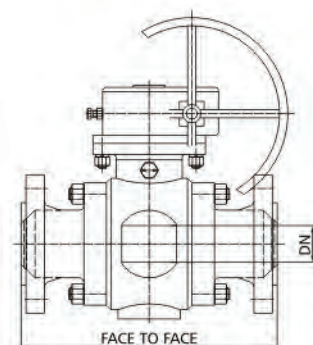
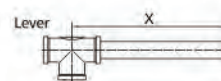


BALL VALVES TYPE Z (Overall Dimensions)



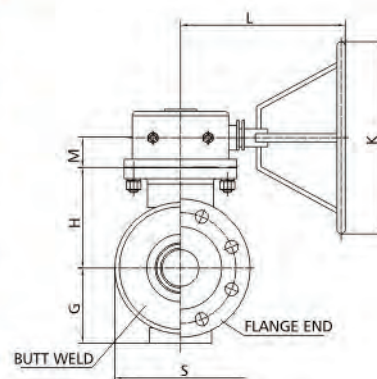
TYPE Z ANSI CLASS150 (PN 20) Working Pressure 275 Psi (19 bar) Hydrostatic Shell Test 420 Psi (29 bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	191	165	178	160.5	103.5	124	28	143	160	250
2"x 1.5"	38	216	178	191	160.5	103.5	124	28	143	160	250
2"	49	216	178	191	178	113.5	134	28	143	160	250
3"x 2"	49	283	203	216	178	113.5	134	28	143	160	250
3"	74	283	203	216	220	139.5	160	28	143	160	300
4"x 3"	74	229	305	241	220	139.5	160	28	143	160	300
4"	100	229	305	241	268	167	178	32	162	240	400
6"x 4"	100	457	394	406	268	167	178	32	162	240	400



TYPE Z ANSI CLASS300 (PN50) Working Pressure 720 Psi (50bar) Hydrostatic Shell Test 1080Psi (75 bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	191	191	203	160.5	103.5	124	28	143	160	250
2"x 1.5"	38	216	216	232	160.5	103.5	124	28	143	160	250
2"	49	216	216	232	178	113.5	134	28	143	160	250
3"x 2"	49	283	283	298	178	113.5	134	28	143	160	250
3"	74	283	283	298	220	139.5	160	28	143	160	300
4"x 3"	74	305	305	321	220	139.5	160	28	143	160	300
4"	100	305	305	321	268	167	178	32	162	240	400
6"x 4"	100	457	403	419	268	167	178	32	162	240	400



TYPE Z ANSI CLASS400 (PN64) Working Pressure 960 Psi (66bar) Hydrostatic Shell Test 1440Psi (100bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	241	241	241	130	75	88	28	143	160	300
2"x 1.5"	38	292	292	295	130	75	88	28	143	160	300
2"	49	292	292	295	155	87.5	117	32	162	240	400
3"x 2"	49	356	356	359	155	87.5	117	32	162	240	400
3"	74	356	356	359	205	116	150.5	35	182	280	500
4"x 3"	74	406	406	410	205	116	150.5	35	182	280	500
4"	100	406	406	410	245	137	171	35	182	280	600
6"x 4"	100	495	495	498	245	137	171	35	182	280	600



TYPE Z ANSI CLASS600 (PN100) Working Pressure 1440 Psi (100bar) Hydrostatic Shell Test 2160Psi (149bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	241	241	241	130	75	88	28	143	160	300
2"x 1.5"	38	292	292	295	130	75	88	28	143	160	300
2"	49	292	292	295	155	87.5	117	32	162	240	400
3"x 2"	49	356	356	359	155	87.5	117	32	162	240	400
3"	74	356	356	359	205	116	150.5	35	182	280	500
4"x 3"	74	432	432	435	205	116	150.5	35	182	280	500
4"	100	432	432	435	245	137	171	35	182	280	600
6"x 4"	100	559	559	562	245	137	171	35	182	280	600



BALL VALVES TYPE Z (Overall Dimensions)



TYPE Z ANSI CLASS 900 (PN 150) Working Pressure 2160 Psi (149 bar) Hydrostatic Shell Test 2240 Psi (223 bar)

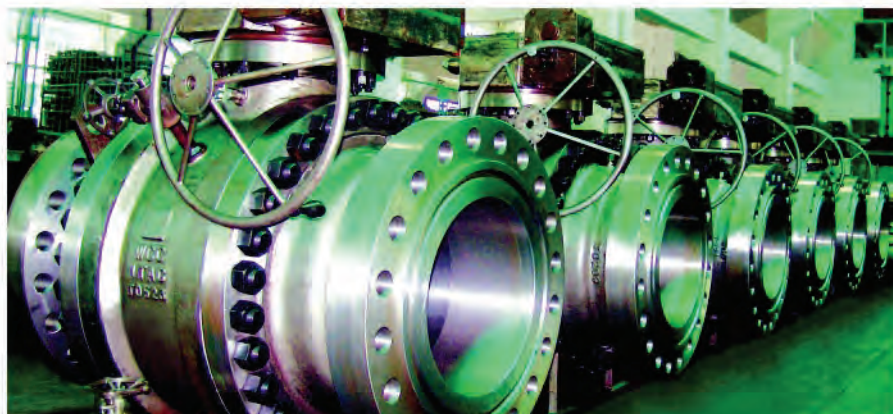
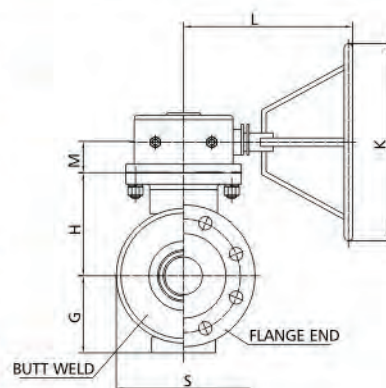
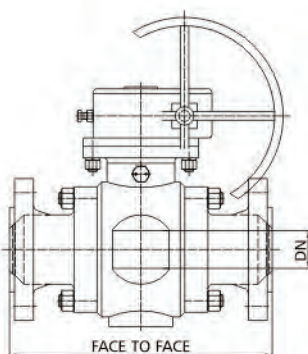
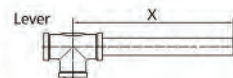
SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	305	305	305	150	83	110	32	162	240	400
2"x 1.5"	38	369	369	371	150	83	110	32	162	240	400
2"	49	369	369	371	175	100	134	35	182	280	600
3"x 2"	49	381	381	384	175	100	134	35	182	280	600
3"	74	381	381	384	210	118.5	152	35	182	280	600
4"x 3"	74	457	457	460	210	118.5	152	35	182	280	600
4"	100	457	457	460	255	140.5	189	54	336	350	750
6"x 4"	100	610	610	613	255	140.5	189	54	336	350	750

TYPE Z ANSI CLASS 1500 (PN 250) Working Pressure 3600 Psi (248 bar) Hydrostatic Shell Test 5400 Psi (372bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	305	305	305	150	83	110	32	162	240	400
2"x 1.5"	38	369	369	371	150	83	110	32	162	240	400
2"	49	369	369	371	175	100	134	35	182	280	600
3"x 2"	49	470	470	473	175	100	134	35	182	280	600
3"	74	470	470	473	224	126.5	166.5	54	336	350	750
4"x 3"	74	546	546	549	224	126.5	166.5	54	336	350	750
4"	100	546	546	549	280	153	199.5	54	336	350	950
6"x 4"	100	705	705	711	280	153	199.5	54	336	350	950

TYPE Z ANSI CLASS 2500 (PN 420) Working Pressure 3600 Psi (420bar) Hydrostatic Shell Test 9000 Psi (630bar)

SIZE		FACE TO FACE			S	G	H	M	L	K	X
NPS	DN	WE	RF	RTJ							
1.5"	38	384	384	384	172	99	134	35	182	280	400
2"x 1.5"	38	451	451	454	172	99	134	35	182	280	400
2"	42	451	451	454	190	108.5	162	40	214	320	700
3"x 2"	42	578	578	584	190	108.5	162	40	214	320	700
3"	62	578	578	584	260	149	201.5	54	500	460	1050
4"x 3"	62	673	673	683	260	149	201.5	54	500	460	1050
4"	87	673	673	683	330	192.5	246	54	500	460	-
6"x 4"	87	914	914	927	330	192.5	246	54	500	460	-



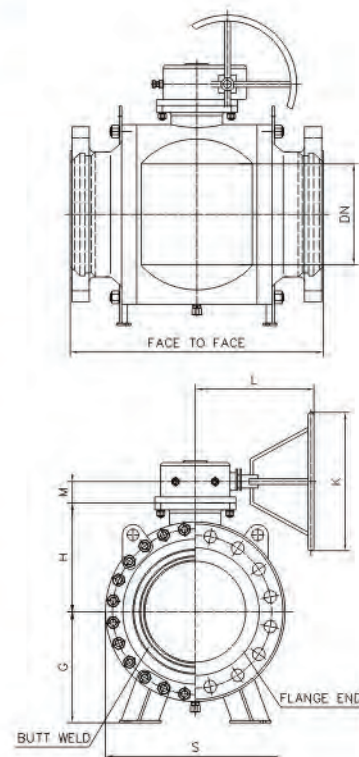
BALL VALVES TYPE C (Overall Dimensions)



TYPE C **ANSI CLASS150 (PN20)**
Working Pressure 275 Psi (19bar) Hydrostatic Shell Test 420Psi (29bar)

SIZE	FACE TO FACE									
NPS	DN	WE	RF	RTJ	S	G	H	M	L	K
6"	150	457	394	406	310	215	204.5	45	182	280
8"x 6"	150	521	457	470	310	235	204.5	45	182	280
8"	201	521	457	470	385	255	257	54	336	350
10"x8"	201	559	533	546	385	285	257	54	336	350
10"	252	559	533	546	460	300	294.5	54	336	350
12"x10"	252	635	610	622	460	330	294.5	54	336	350
12"	303	635	610	622	537	340	331	54	500	460
14"x12"	303	762	686	699	537	370	331	54	500	460
14"	334	762	686	699	586	365	356	54	500	460
16"x14"	334	838	762	775	586	395	356	54	500	460
16"	385	838	762	775	658	406	392	54	500	600
18"x16"	385	914	864	876	658	440	392	54	500	600
18"	436	914	864	876	738	465	437	54	500	600
20"x18"	436	991	914	927	738	500	437	54	500	600
20"	487	991	914	927	811	490	474	77	645	600
24"x20"	487	1143	1067	1080	811	550	474	77	645	600
22"	538	*	991	*	899	535	517	77	645	600
24"	589	1143	1067	1080	968	565	552	77	645	600
30"x24"	589	1397	1295	*	968	650	552	77	645	600
26"	633	1245	1143	*	1050	620	603	77	645	600
28"	684	1346	1245	*	1134	680	644	77	645	600
30"x28"	684	1524	1372	*	1134	750	644	77	645	600
30"	735	1397	1295	*	1217	730	686	77	645	600
36"x30"	735	1727	1524	*	1217	820	686	77	645	600
32"	779	1524	1372	*	1288	780	722	87	753	600
34"	830	1626	1473	*	1372	820	772	87	753	600
36"	874	1727	1524	*	1444	850	817	87	753	600
38"	925	*	1600	*	1523	900	857	87	753	600
40"	976	*	1670	*	1604	9300	898	87	753	600
42"	1020	*	1740	*	1677	980	940	95	785	600
44"	1070	*	1810	*	1752	1015	978	95	785	600
46"	1116	*	1870	*	1828	1060	1016.5	95	785	600
48"	1166	*	1960	*	1903	1100	1054	95	785	600
56"	1360	*	2240	*	2222	1280	1244.5	191	568	600
60"	1458	*	2400	*	2377	1360	1322.5	206	590	600

* To be confirmed after P/O placement.



TYPE C **ANSI CLASS300 (PN50)**
Working Pressure 720 Psi (50bar) Hydrostatic Shell Test 1080Psi (75bar)

SIZE	FACE TO FACE									
NPS	DN	WE	RF	RTJ	S	G	H	M	L	K
6"	150	457	403	419	310	215	204.5	45	182	280
8"x 6"	150	521	502	518	310	235	204.5	45	182	280
8"	201	521	502	518	385	255	257	54	336	350
10"x8"	201	559	568	584	385	285	257	54	336	350
10"	252	559	568	584	460	300	294.5	54	336	350
12"x10"	252	635	648	664	460	330	294.5	54	336	350
12"	303	635	648	664	537	340	331	54	500	460
14"x12"	303	762	762	778	537	370	331	54	500	460
14"	334	762	762	778	586	365	356	54	500	600
16"x14"	334	838	838	854	586	395	356	54	500	600
16"	385	838	838	854	669	410	402	54	500	600
18"x16"	385	914	914	930	669	435	402	54	500	600
18"	436	914	914	930	750	455	441	77	645	600
20"x18"	436	991	991	1010	750	490	441	77	645	600
20"	487	991	991	1010	824	490	479	77	645	600
24"x20"	487	1143	1143	1165	824	550	479	77	645	600
22"	538	1092	1092	1114	920	555	535	77	645	600
24"	589	1143	1143	1165	990	575	571	77	645	600
30"x24"	589	1397	1397	1422	990	645	571	77	645	600
26"	633	1245	1245	1270	1064	595	608.5	87	753	600
28"	684	1346	1346	1372	1164	660	658	87	753	600
30"x28"	684	1524	1524	1553	1164	720	658	87	753	600
30"	735	1397	1397	1422	1235	730	711	87	753	600
36"x30"	735	1727	1727	1756	1235	820	711	87	753	600
32"	779	1524	1524	1553	1307	770	747.5	95	785	600
34"	830	1626	1626	1654	1386	810	792	95	785	600
36"	874	1727	1727	1756	1464	850	832	95	785	600
38"	925	*	1680	*	1540	890	870	95	785	600
40"	976	*	1760	*	1627	940	937.5	191	568	600
42"	1020	*	1840	*	1697	980	973	191	568	600
44"	1070	*	1920	*	1785	1015	1023.5	191	568	600
46"	1116	*	1980	*	1855	1050	1058.5	206	590	600
48"	1166	*	2070	*	1933	1080	1098	206	590	600
56"	1360	*	2400	*	2250	1280	1271	215	674	800
60"	1458	*	2560	*	2410	1390	1362.5	170	726	800

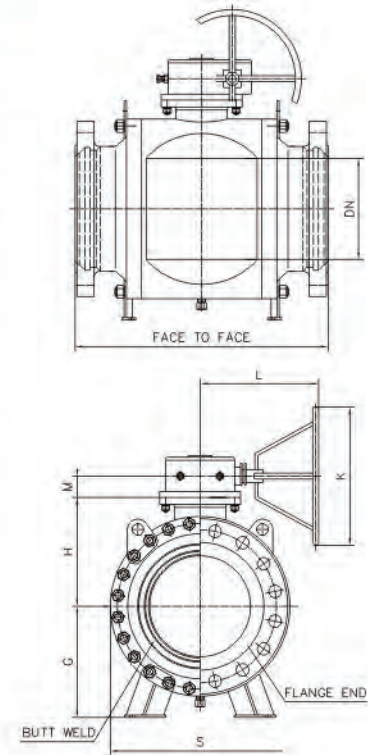
* To be confirmed after P/O placement.

BALL VALVES TYPE C (Overall Dimensions)



TYPE C		ANSI CLASS400 (PN64)									
Working Pressure960Psi (66bar) Hydrostatic Shell Test 1440Psi (100bar)											
SIZE		FACE TO FACE			S	G	H	M	L	K	
NPS	DN	WE	RF	RTJ							
6"	150	495	495	498	315	220	216	54	336	350	
8"x 6"	150	597	597	600	315	240	216	54	336	350	
8"	201	597	597	600	388	255	252	54	500	460	
10"x8"	201	673	673	676	388	280	252	54	500	460	
10"	252	673	673	676	475	310	304	54	500	600	
12"x10"	252	762	762	765	475	340	304	54	500	600	
12"	303	762	762	765	552	345	342	77	645	600	
14"x12"	303	826	826	829	552	380	342	77	645	600	
14"	334	826	826	829	598	370	360	77	645	600	
16"x14"	334	902	902	905	598	405	360	77	645	600	
16"	385	902	902	905	680	415	413	77	645	600	
18"x16"	385	978	978	981	680	450	413	77	645	600	
18"	436	978	978	981	765	460	460	77	645	600	
20"x18"	436	1054	1054	1060	765	495	460	77	645	600	
20"	487	1054	1054	1060	848	495	497	87	753	600	
24"x20"	487	1232	1232	1241	848	535	497	87	753	600	
22"	538	1143	1143	1153	935	545	555	87	753	600	
24"	589	1232	1232	1241	1000	585	590	87	753	600	
30"x24"	589	1524	1524	1537	1000	625	590	87	753	600	
26"	633	1308	1308	1321	1090	650	632	87	753	600	
28"	684	1397	1397	1410	1165	680	688	95	785	600	
30"x28"	684	1651	1651	1667	1165	720	688	95	785	600	
30"	735	1524	1524	1537	1255	725	735	95	785	600	
36"x30"	735	1880	1880	1895	1255	765	735	95	785	600	
32"	779	1651	1651	1667	1335	765	780	95	785	600	
34"	830	1778	1778	1794	1410	810	835	191	568	600	
36"	874	1880	1880	1895	1490	865	880	206	590	600	
38"	925	*	*	*	1570	910	925	206	590	600	
40"	976	*	*	*	1655	950	970	215	674	800	
42"	1020	*	*	*	1725	1005	1020	215	674	800	
44"	1070	*	*	*	1820	1045	1060	170	726	800	
46"	1116	*	*	*	1900	1085	1110	170	726	800	
48"	1166	*	*	*	2000	1150	1152	170	726	800	
56"	1360	*	*	*	2310	1320	1336	*	*	*	
60"	1458	*	*	*	2500	1400	1435	*	*	*	

* To be confirmed after P/O placement.



TYPE C		ANSI CLASS600 (PN100)									
		Working Pressure1440Psi (99bar) Hydrostatic Shell Test 2160Psi (149bar)									
SIZE		FACE TO FACE			S	G	H	M	L	K	
NPS	DN	WE	RF	RTJ							
6"	150	559	559	562	315	220	216	54	336	350	
8"x 6"	150	660	660	664	315	240	216	54	336	350	
8"	201	660	660	664	388	255	252	54	500	460	
10"x8"	201	787	787	791	388	280	252	54	500	460	
10"	252	787	787	791	475	310	304	54	500	600	
12"x10"	252	838	838	841	475	340	304	54	500	600	
12"	303	838	838	841	552	345	342	77	645	600	
14"x12"	303	889	889	892	552	380	342	77	645	600	
14"	334	889	889	892	605	375	366	77	645	600	
16"x14"	334	991	991	994	605	410	366	77	645	600	
16"	385	991	991	994	693	420	421.5	77	645	600	
18"x16"	385	1092	1092	1095	693	460	421.5	77	645	600	
18"	436	1092	1092	1095	776	465	470	77	645	600	
20"x18"	436	1194	1194	1200	776	500	470	77	645	600	
20"	487	1194	1194	1200	860	505	513.5	87	753	600	
24"x20"	487	1397	1397	1407	860	550	513.5	87	753	600	
22"	538	1295	1295	1305	945	550	565	87	753	600	
24"	589	1397	1397	1407	1024	590	609	87	753	600	
30"x24"	589	1651	1651	1664	1024	655	609	87	753	600	
26"	633	1448	1448	1461	1105	660	650	87	753	600	
28"	684	1549	1549	1562	1185	690	698.5	95	785	600	
30"x28"	684	1778	1778	1794	1185	730	698.5	95	785	600	
30"	735	1651	1651	1664	1275	735	745	95	785	600	
36"x30"	735	2083	2083	2099	1275	770	745	95	785	600	
32"	779	1778	1778	1794	1352	775	797	95	785	600	
34"	830	1930	1930	1946	1438	825	841	191	568	600	
36"	874	2083	2083	2099	1514	870	885	206	590	600	
38"	925	*	1840	*	1600	920	928.5	206	590	600	
40"	976	*	1920	*	1680	960	969.5	215	674	800	
42"	1020	*	2000	*	1761	1010	1023	215	674	800	
44"	1070	*	2080	*	1845	1050	1065	215	674	800	
46"	1116	*	2160	*	1925	1100	1116	170	726	800	
48"	1166	*	2260	*	2010	1155	1159.5	170	726	800	
56"	1360	*	2610	*	2350	1325	1343	*	*	*	
60"	1458	*	2800	*	2524	1415	1443	*	*	*	

* To be confirmed after P/O placement.

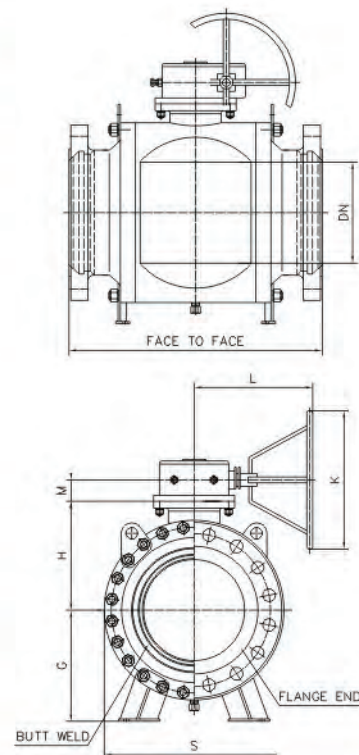


BALL VALVES TYPE C (Overall Dimensions)



TYPE C		ANSI CLASS900 (PN150)									
		Working Pressure2160Psi (149bar) Hydrostatic Shell Test 3240Psi (223bar)									
SIZE		FACE TO FACE			S	G	H	M	L	K	
NPS	DN	WE	RF	RTJ							
6"	150	610	610	613	327	220	220	54	500	460	
8"x 6"	150	737	737	740	327	240	220	54	500	460	
8"	201	737	737	740	414	270	272	54	500	600	
10"x8"	201	838	838	841	414	295	272	54	500	600	
10"	252	838	838	841	501	320	315	54	645	600	
12"x10"	252	965	965	968	501	350	315	54	645	600	
12"	303	965	965	968	589	370	368	77	645	600	
14"x12"	303	1029	1029	1038	589	400	368	77	645	600	
14"	332	1029	1029	1038	630	390	387	77	645	600	
16"x14"	332	1130	1130	1140	630	425	387	77	645	600	
16"	373	1130	1130	1140	730	440	446	87	753	600	
18"x16"	373	1219	1219	1132	730	475	446	87	753	600	
18"	423	1219	1219	1132	818	485	500	87	753	600	
20"x18"	423	1321	1321	1334	818	520	500	87	753	600	
20"	471	1321	1321	1334	910	530	550	87	753	600	
24"x20"	471	1549	1549	1568	910	580	550	87	753	600	
24"	570	1549	1549	1568	1089	630	649	95	785	600	
30"x24"	570	*	1880	1920	1089	690	649	95	785	600	
26"	617	*	1651	1673	1220	750	710	95	785	600	
28"	665	*	*	*	1300	790	755	191	568	600	
32"x28"	665	*	*	*	1300	840	755	191	568	600	
30"	712	*	1880	1902	1365	850	815	206	590	600	
36"x30"	712	*	2286	2315	1365	900	815	206	590	600	
32"	760	*	*	*	1465	910	850	215	674	800	
34"	808	*	*	*	1555	960	885	215	674	800	
36"	855	*	2286	2315	1650	1020	970	215	674	800	
40"	956	*	*	*	1815	1120	1060	170	726	800	
42"	1006	*	*	*	1915	1200	1110	*	*	*	
48"	1149	*	*	*	2160	1330	1250	*	*	*	

▲ To be confirmed after P/O placement.

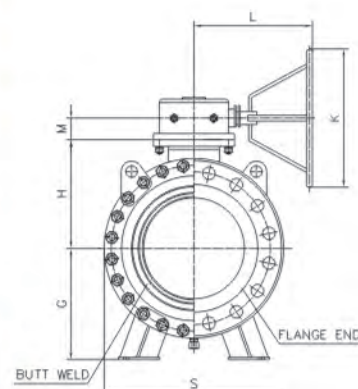
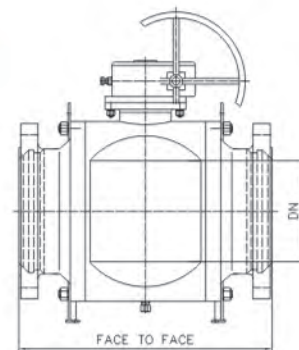


BALL VALVES TYPE C (Overall Dimensions)



TYPE C		ANSI CLASS1500 (PN250) Working Pressure 3600Psi (248bar) Hydrostatic Shell Test 5400Psi (372bar)									
SIZE		FACE TO FACE				S	G	H	M	L	K
NPS	DN	WE	RF	RTJ							
6"	144	705	705	711	366	245	246.5	54	500	600	
8"x 6"	144	832	832	841	366	270	246.5	54	500	600	
8"	192	832	832	841	473	300	300.5	77	645	600	
10"x8"	192	991	991	1000	473	330	300.5	77	645	600	
10"	239	991	991	1000	580	360	363	77	645	600	
12"x10"	239	1130	1130	1146	580	395	363	77	645	600	
12"	287	1130	1130	1146	690	420	425.5	87	753	600	
14"x12"	287	1257	1257	1276	690	460	425.5	87	753	600	
14"	315	1257	1257	1276	750	450	465	87	753	600	
16"x14"	315	1384	1384	1407	750	490	465	87	753	600	
16"	360	1384	1384	1407	855	510	521.5	87	753	600	
18"x16"	360	♣	1537	1559	855	545	521.5	87	753	600	
18"	406	♣	1537	1559	1020	635	642	87	753	600	
20"x18"	406	♣	1664	1686	1020	695	642	87	753	600	
20"	454	♣	1664	1686	1132	690	703	95	785	600	
24"x20"	454	♣	♣	1972	1132	740	703	95	785	600	
24"	546	♣	♣	1972	1380	820	832	206	590	600	
30"x24"	546	♣	♣	♣	1380	860	832	206	590	600	
26"	594	1943	♣	♣	1458	860	878	215	674	800	
28"	641	♣	♣	♣	1580	920	935	215	674	800	
32"x28"	641	♣	♣	♣	1580	980	935	215	674	800	
30"	686	♣	♣	♣	1690	980	995	170	726	800	
36"x30"	686	♣	♣	♣	1690	1040	995	170	726	800	
32"	730	♣	♣	♣	1800	1030	1045	♣	♣	♣	
34"	775	♣	♣	♣	1920	1100	1123	♣	♣	♣	
36"	819	♣	♣	♣	2030	1145	1165	♣	♣	♣	

♣ To be confirmed after P/O placement.



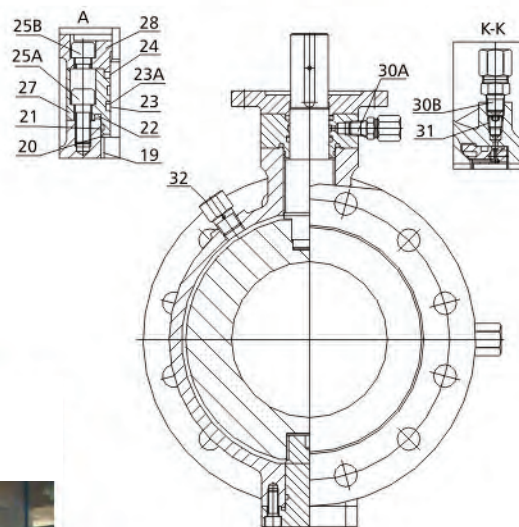
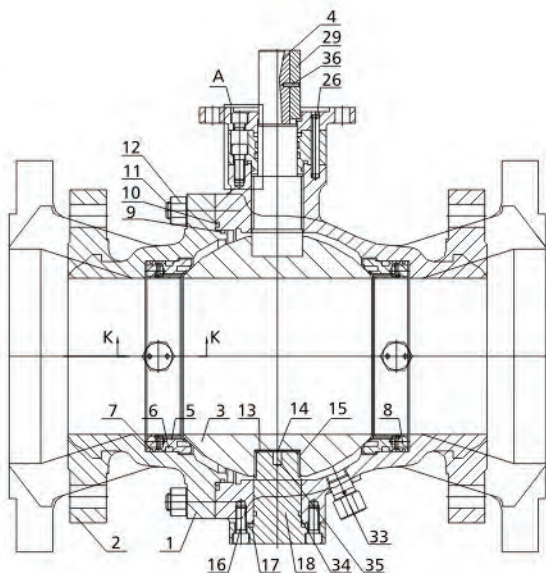
TYPE C		ANSI CLASS2500 (PN420) Working Pressure 6000Psi (420bar) Hydrostatic Shell Test 9000Psi (630bar)									
SIZE		FACE TO FACE				S	G	H	M	L	K
NPS	DN	WE	RF	RTJ							
6"	131	914	914	927	475	300	321	77	645	600	
8"x 6"	131	1022	1022	1038	475	300	321	77	645	600	
8"	179	1022	1022	1038	635	387.5	411	77	645	600	
10"x8"	179	1270	1270	1292	635	387.5	411	77	645	600	
10"	223	1270	1270	1292	775	470	475.5	87	753	600	
12"x10"	223	1422	1422	1445	775	470	475.5	87	753	600	
12"	265	1422	1422	1445	900	530	560	95	785	600	
14"x12"	265	♣	♣	♣	900	530	560	95	785	600	
14"	292	♣	♣	♣	1005	575	615.5	95	785	600	
16"x14"	292	♣	♣	♣	1005	575	615.5	95	785	600	
16"	333	♣	♣	♣	1200	675	731	206	590	600	
20"x16"	333	♣	♣	♣	1200	675	731	206	590	600	

♣ To be confirmed after P/O placement.



BALL VALVES TYPE Z (Overall Dimensions)

Pos.	Description	Material
2	LEFT BODY	A216 WCB
2	RIGHT BODY	A216 WCB
3	BALL	A105+ENP
4	UPPER STEM	A182 F6a CL.2
5	SEAT	Assembly
5.1	SEAT RING	A105+ENP
5.2	INSERT RING	RPTFE
6	O-RING	VITON
7	SEAT GASKET	Graphite
8	SEAT SPRING	17-7PH
9	O-RING	VITON
10	CLOSURE F.S. SEAL	SS+Graphite
11	BODY STUD NUT	A194-2H
12	BODY STUD	A193-B7
13	BLOCK BEARING	SS+PTFE
14	AXIAL BEARING	SS
15	STEM BEARING	SS+PTFE
16	CAPSCREW	A193-B7
17	LOWER STEM GASKET	SS+Graphite
18	LOWER STEM	A182 F6a CL.2
19	RADIAL BEARING	SS+PTFE
20	AXIAL BEARING	SS+PTFE
21	O-RING	VITON
22	TOP COVER F.S. SEAL	SS+Graphite
23	O-RING	VITON
23A	BAFFLE GASKET	PTFE
24	UPPER STEM GASKET	Graphite
25A	CAPSCREW	A193-B7
25B	CAPSCREW	A193-B7
26	TOP COVER PIN	AISI 1025
27	TOP COVER	A105+ENP
28	COUPLING PLATE	A105
29	KEY	A576-1045
30B	STEM GREASE FITTING	A576-1025+Zn
30A	SEAT GREASE FITTING	A576-1025+Zn
31	CHECK VALVE	A576-1025+Zn
32	RELIEF VALVE	A576-1025+Zn
33	DRAIN PLUG	A576-1025+Zn
34	O-RING	VITON
35	ANTI-STATIC SPRING	SS



BALL VALVES TYPE Z (Overall Dimensions)



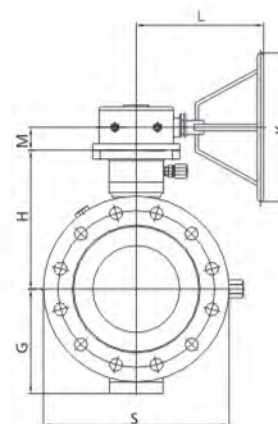
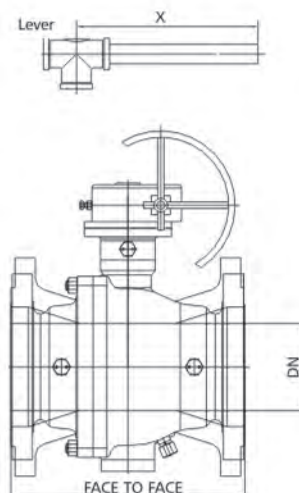
Casting steel ball valve

ANSI CLASS 150 (PN20)											
TYPE	SIZE inches	DN	FACE TO FACE			G	H	M	S	K	L
			WE	RF	RTJ						
	6"	150	457	394	406	180	239	45	308	280	182
	8"	201	521	457	470	222	297	54	382	350	336
	8"x6"x8"	150	521	457	470	180	239	54	308	280	182
	10"	252	559	533	546	269	344	54	463	350	336
	10"x8"x10"	201	559	533	546	222	297	54	382	350	336
	12"	303	635	610	622	309	391	54	541	460	500
	12"x10"x12"	252	635	610	622	269	344	54	463	350	336
	14"	334	762	686	699	339	420	54	598	460	500
	14"x12"x14"	303	762	686	699	309	391	54	541	460	500
	16"	385	838	762	775	383	472	54	681	460	500
	16"x14"x16"	334	838	762	775	339	420	54	598	460	500
	18"	436	914	864	876	426	520	54	763	600	500
	18"x16"x18"	385	914	864	876	383	472	54	681	460	500
	20"	487	991	914	927	477	562	77	839	600	645
	20"x18"x20"	436	991	914	927	426	520	54	763	600	500
	22"x20"x22"	487	▲	991	▲	477	562	77	839	600	645

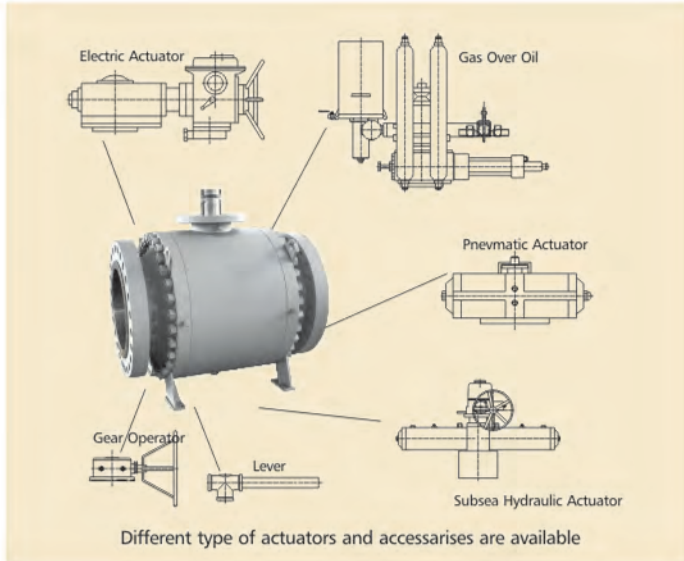
ANSI CLASS 300 (PN50)											
TYPE	SIZE inches	DN	FACE TO FACE			G	H	M	S	K	L
			WE	RF	RTJ						
	6"	150	457	403	419	180	239	45	320	280	182
	8"	201	521	502	518	222	297	54	393	350	336
	8"x6"x8"	150	521	502	518	180	239	45	320	280	182
	10"	252	559	568	584	269	344	54	473	350	336
	10"x8"x10"	201	559	568	584	222	297	54	393	350	336
	12"	303	635	648	664	309	391	54	552	460	500
	12"x10"x12"	252	635	648	664	269	344	54	473	350	336
	14"	334	762	762	778	339	420	54	609	600	500
	14"x12"x14"	303	762	762	778	309	391	54	552	460	500
	16"	385	838	838	854	383	472	54	685	600	500
	16"x14"x16"	334	838	838	854	339	420	54	609	600	500
	18"	436	914	914	930	426	520	77	772	600	645
	18"x16"x18"	385	914	914	930	383	472	54	685	600	500
	20"	487	991	991	1010	477	562	77	856	600	645
	20"x18"x20"	436	991	991	1010	426	520	77	772	600	645
	22"x20"x22"	487	1092	1092	1114	477	562	77	856	600	645

ANSI CLASS 600 (PN100)												
TYPE	SIZE inches	DN	FACE TO FACE			G	H	M	S	K	L	X
			WE	RF	RTJ							
	2"	49	292	292	295	92	124	♣	165	♣	♣	400
	2 1/2"	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣
	3"	74	356	356	359	143.6	159.5	♣	210	♣	♣	450
	3"x2"x3"	49	356	356	359	92	124	♣	165	♣	♣	400
	4"	100	432	432	435	146	182	♣	275	♣	♣	750
	4"x3"x4"	74	432	432	435	143.6	159.5	♣	210	♣	♣	450
	6"	150	559	559	562	189	260	54	355	350	336	♣
	6"x4"x6"	100	559	559	562	146	182	♣	275	♣	♣	750
	8"	201	660	660	664	237	306	54	400	460	500	♣
	8"x6"x8"	150	660	660	664	189	260	54	355	350	350	♣
	10"	252	787	787	791	287	365	54	490	600	500	♣
	10"x8"x10"	201	787	787	791	237	306	54	408	460	460	♣
	12"	303	838	838	841	327	415	77	570	600	645	♣
	12"x10"x12"	252	838	838	841	287	365	54	490	600	600	♣
	14"	334	889	889	892	352	444	77	620	600	645	♣
	14"x12"x14"	303	889	889	892	327	415	77	570	600	600	♣
	16"	385	991	991	994	410	507	77	706	600	645	♣
	16"x14"x16"	334	991	991	994	352	444	77	620	600	600	♣
	18"x16"x18"	385	1092	1092	1095	410	507	77	706	600	600	♣

ANSI CLASS 900 (PN150)												
TYPE	SIZE inches	DN	FACE TO FACE			G	H	M	S	K	L	X
			WE	RF	RTJ							
	2"	49	368	368	371	106	143	♣	215	♣	♣	550
	2 1/2"	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣
	3"	74	381	381	384	127.5	163	♣	241	♣	♣	750
	3"x2"x3"	49	381	381	384	106	143	♣	215	♣	♣	550
	4"	100	457	457	460	145.	201	♣	292	♣	♣	1200
	4"x3"x4"	74	457	457	460	127.55	163	♣	241	♣	♣	750
	6"	150	610	610	613	197	277	54	300	460	500	♣
	6"x4"x6"	100	610	610	613	145.5	201	♣	292	♣	♣	1200
	8"	201	737	737	740	254	332	54	470	600	500	♣
	8"x6"x8"	150	737	737	740	197	277.5	54	300	460	500	♣
	10"	252	838	838	841	312	38	77	545	600	645	♣
	10"x8"x10"	201	838	838	841	254	332.55	54	470	600	500	♣
	12"	303	965	965	968	352	452	77	607	600	645	♣
	12"x10"x12"	252	965	965	968	312	385	77	545	600	645	♣
	14"x12"x14"	303	1029	1029	1038	352	452	77	607	600	645	♣



SPECIAL APPLICATIONS



Operating unit

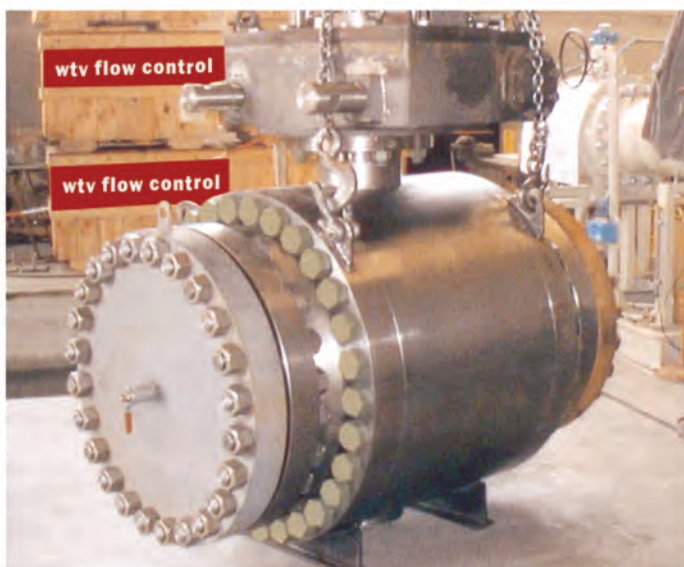


Underground Installation

Stem extension can be available for BTL ball valve.

This feature permits use of valves in remote area, e.g. for underground installation.

BTL can provide any kind of stem extension, with piping and fittings suitable to raise the body drain, the body vent and the emergency sealant injection fitting up the stand floor.



Subsea service

Special materials and protective overlays for extended life of service. Reliable product in order to provide long lasting service without maintenance. Additional sea water gaskets protect stem and external sealing areas. Special protective coatings.



Cryogenic service

Use range up to minus 196°C. Assure the maneuverability at low temperature. Materials and dimensions are specially designed to suit low temperature.