ENTECH CONTROLS

Pneumatic Actuators & Ball Valves

Two Piece Trunnion Ball Valves
ASME Class 150, 300, 600 900

TRUNNION BALL VALVES

DESIGN FEATURES

STEM
Anti-blowout proof stem permits the replacement of the stem seals with the valve in the fully closed or open position.

FLOATING SEAT RING
Two independent floating seat rings assure the bi-directional tightness of the valve from zero differential pressure to the maximum rated pressure.

SELF-RELIEVING SEAT DESIGN
When the valve is in the closed position, media will be trapped in the body cavity. Unless this media is drained, it will be subjected to thermal expansion and contraction. As the temperature rises, the trapped media desires to expand and the pressure build-up, the ECI seats are designed to self-relieve, allowing the media in the body to escape into the pipeline.

ANTI-STATIC DESIGN
Stems feature anti-static grounding device as standard. These devices ensure electrical continuity between valve ball, stem and body, thus eliminating the possibility of static electrical charges creating sparks within the valve.

TRUNNION-MOUNTED BALL
The ball is supported and the seat rings are floating. Free to move along the flow axis. As the pressure increases the fluid pressure increases the fluid pressure pushes the seat rings against the ball.

BODY JOINTS
Double seal combination of o-ring and fire safe graphite ensures perfect body joint sealing. ECI Trunnion Ball Valves meet or exceed the fugitive emission requirements across a wide range of pressure and temperature applications. Valves are suitable for both above and underground installations.

FIRE SAFE DESIGN
ECI fire safe design consists of a primary soft sealing and a secondary metal seat. A resilient material is inserted into the metal seat holder to provide a soft action in addition to the metal sealing between the ball and seat rings. In case of fire the soft seat insert burns and allows the spring loaded seat to insure metal to metal sealing against the ball.

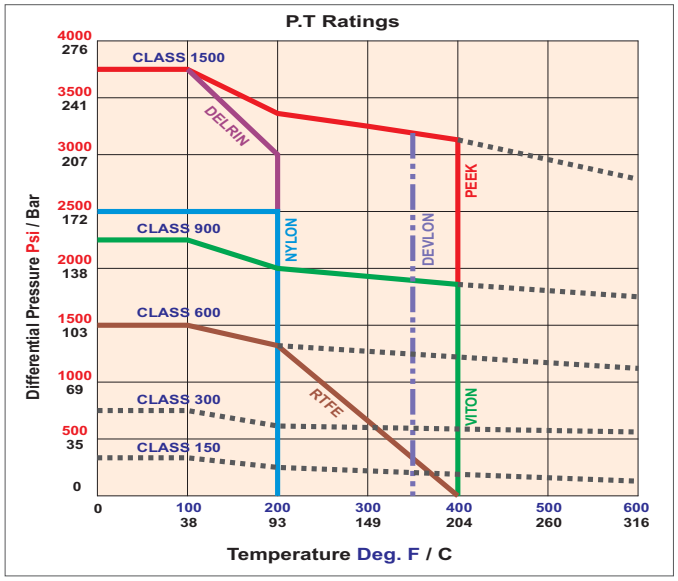
STEM SEALING
A combination of O-rings and gland packing ensures tight sealing and prevents any leakage. A graphite seal is also provided at the top of the steam housing.

STANDARDS

- **Design Standards** - API 6D/ASME 16.34/EN ISO 17292(BS 5351)
- **Inspection & Testing** - API 6D /API 598/BS EN 12266-1(BS6755-1)
- **Flange Dimensions** - ASME B16.5 / MSS-SP-44 /ASME B16.1
- **Fire Safe Test** - API 607 – ISO 10497 – 5 /API 6FA /BS EN 12266-2
- **Butt Weld Valve Ends** - ASME B 16.25/31.3/31.4/31.5
- **Drain/ Vent /Bypass** - MSS SP 45/ API 6D
- **Face to Face** - API 6D/ ASME 16.10/ISO 5752
- **Pressure Temperature** - ASME B16.34/BS EN 12516-I

Pressure Temperature Ratings & Torque Value

Pressure- temperature seat ratings of valves are as given in graph for body material ASTM A 216- Gr. WCB. With the exception of body seat rings and primary soft seals, all valve components are capable of withstanding the pressure – temperature ratings as specified in ASME B 16.34, BS EN 12516-1.



		Lower Limit		Upper Limit	
		Deg. F	Deg. C	Deg. F	Deg. C
BODY MATERIAL	WCB	-20	-29	1000	538
	LCB	-50	-46	650	343
	CF8	-425	-254	1500	816
	CF8M	-425	-254	1500	816
	NYLON	-50	-46	200	93
SEAT	DEVLON	-50	-46	347	175
	VITON	-18	-23	400	204
	PEEK	-50	-46	400	204
	RTFE	-50	-46	400	204
	DERLIN	14	-10	200	93

Note:

These ratings are a guide for general service please consults Entech Controls for specific recommendations

Torque Values (Nm / in-lbs.)

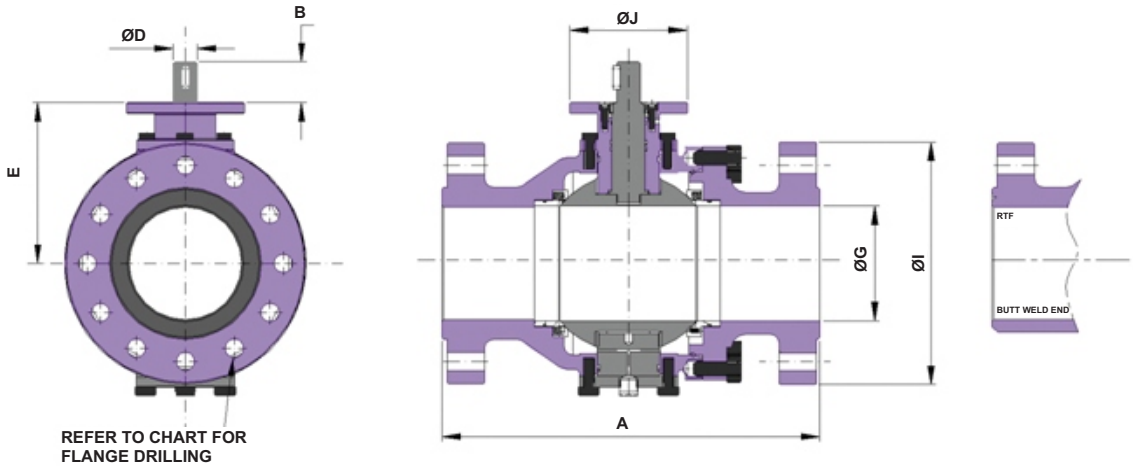
SIZE			150		300		600		900	
Inch	DIN	TORQUE TYPE	Nm	In-Lbs	Nm	In-lbs	Nm	In-lbs	Nm	In-lbs
2”	50	BTO	68	602	84	743	108	956	133	1177
		ETC	54	478	67	593	87	770	106	938
3”	80	BTO	168	1487	234	2071	316	2797	427	3779
		ETC	135	1195	187	1655	253	2239	342	3027
4”	100	BTO	272	2407	359	3177	460	4071	599	5302
		ETC	218	1929	287	2540	368	3257	479	4239
6”	150	BTO	468	4142	745	6594	1193	10559	1639	14506
		ETC	374	3310	596	5275	953	8435	1311	11603
8”	200	BTO	871	7709	1382	12232	2392	21170	3289	29110
		ETC	696	6178	1105	9780	1914	16940	2632	23295
10”	250	BTO	1177	10417	1823	16135	3105	27482	4234	37474
		ETC	942	8337	1445	12789	2459	21764	3387	29977
12”	300	BTO	1467	12984	2208	19542	3687	32633	5442	48166
		ETC	1174	10391	1766	15630	2949	26101	4354	38536

Note:-

Torque Break to open – When the valve is closed and under pressure, required torque to open the valve. Torque End to close- When the valve is about to close, Torque at that position.

Engineering (Full Bore)

All dimensions are in mm



FB Full Bore Class 150

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”	50	51	178	191	216	135	125	102	12	4	20	30	8x7	150	120.7	19	4	11
3”	80	76	203	216	282	185	150	125	14	4	30	45	8x7	190	152.4	19	4	25
4”	100	102	229	241	305	195	210	165	22	4	40	60	12x8	230	190.5	19	4	36
6”	150	152	394	406	457	227	210	165	22	4	45	65	14x9	280	241.3	22.2	8	130
8”	200	203	457	470	521	260	210	165	22	4	45	65	14x9	345	298.5	22.2	8	205
10”	250	254	533	546	559	325	300	254	18	8	45	65	14x9	405	362	25.4	12	285
12”	300	305	610	622	635	395	300	254	18	8	55	70	16x10	485	431.8	25.4	12	370

FB Full Bore Class 300

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”	50	51	216	232	216	135	125	102	12	4	25	40	8x7	165	127	19	8	14
3”	80	76	284	289	282	185	150	125	14	4	30	45	8x7	210	168.3	22.2	8	37
4”	100	102	305	321	305	195	210	165	22	4	40	60	12x8	255	200	22.2	8	52
6”	150	152	403	419	457	235	210	165	22	4	45	70	14x9	320	269.9	22.2	12	145
8”	200	203	502	518	521	285	210	165	22	4	45	70	14x9	380	330.2	25.4	12	240
10”	250	254	568	584	559	325	300	254	18	8	45	70	14x9	445	387.4	28.5	16	360
12”	300	305	648	664	635	360	300	254	18	8	55	70	16x10	520	450.8	31.8	16	440

FB Full Bore Class 600

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”	50	51	292	295	292	133	125	102	12	4	25	40	8x7	165	127	19	8	25
3”	80	76	365	359	365	185	150	125	14	4	40	60	12x8	210	168.3	22.2	8	65
4”	100	102	432	435	432	192	210	165	22	4	40	60	14x9	275	215.9	25.4	8	97
6”	150	152	599	562	559	233	210	165	22	4	45	70	14x9	355	292.1	28.5	12	210
8”	200	203	660	664	660	282	300	165	22	4	55	70	16x10	420	349.2	31.8	12	460
10”	250	254	787	791	787	355	300	254	18	8	63.5	102	15.88x15.88	445	387.4	28.5	16	360
12”	300	305	838	841	838	395	350	298	22	8	76.2	102	19.05x19.05	560	489	35	20	845

FB Full Bore Class 900

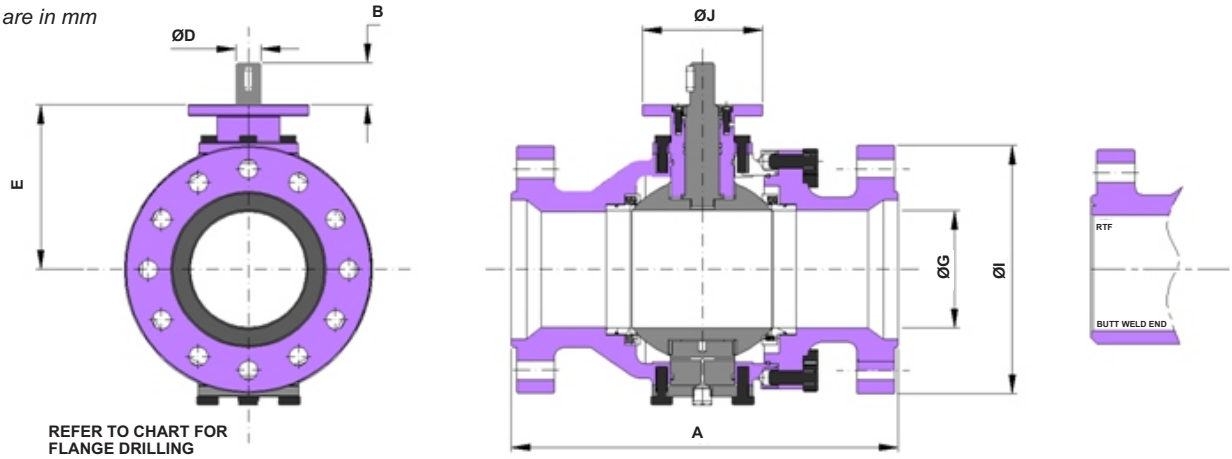
Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”	50	51	368	371	368	145	125	102	12	4	30	45	8x7	215	165.1	25.4	8	55
3”	80	76	381	384	381	195	150	125	14	4	45	70	14x9	240	190.5	25.4	8	85
4”	100	102	457	460	457	210	210	165	22	4	45	70	14x9	290	235	31.8	8	127
6”	150	152	610	613	610	250	210	165	22	4	55	70	16x10	380	317.5	31.8	12	284
8”	200	203	737	740	737	295	300	254	18	8	55	70	16x10	470	393.7	38.1	12	400
10”	250	254	838	841	838	355	300	254	18	8	76.2	102	19.05x19.05	545	469.9	38.1	16	845
12”	300	305	965	968	965	395	350	298	22	8	76.2	102	19.05x19.05	610	533.4	38.1	20	1115

FB Full Bore Class 1500

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
8”	200	7.99	32.8	33.11	32.8	15.75	11.81	10	0.70	8	3	4	0.75x0.75	19	15.5	1.75	12	2222
10”	250	10	39	39.37	39	18.5	13.77	11.73	0.94	8	3	4	0.75x0.75	23	19	2	12	3475
12”	300	12	44.5	45.12	44.5	18.9	16.33	14.01	1.25	8	3.5	5.25	0.88x0.62	26.50	22.5	2.13	16	5465

Engineering (Reduced Bore)

All dimensions are in mm



FB Reduced Bore Class 150

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
3”x2”	80x50	76	203	216	282	135	125	102	12	4	20	30	6x6	190	152.4	19	4	20
4”x3”	100x80	102	229	241	305	185	150	125	14	4	30	45	8x7	230	190.5	19	8	45
6”x4”	150x100	152	394	406	457	195	210	165	22	4	40	60	12x8	280	241.3	22.2	8	70
8”x6”	200x150	203	457	470	521	227	210	165	22	4	45	65	14x9	345	298.5	22.2	8	170
10”x8”	250x200	254	533	546	559	260	210	165	22	4	45	65	14x9	405	362	25.4	12	255
12”x10”	300x250	305	610	622	635	325	300	254	18	8	45	65	14x9	485	431.8	25.4	12	335

FB Reduced Bore Class 300

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
3”x2”	80x50	76	282	298	282	135	125	102	12	4	25	40	8x7	210	168.3	22.2	8	22
4”x3”	100x80	102	305	321	305	185	150	125	14	4	30	45	8x7	255	200	22.2	8	55
6”x4”	150x100	152	403	419	457	195	210	165	22	4	40	60	12x8	320	269.9	22.2	12	100
8”x6”	200x150	203	502	518	521	235	210	165	22	4	45	70	14x9	380	330.2	25.4	12	185
10”x8”	250x200	254	568	584	559	285	210	165	22	4	45	70	14x9	445	387.4	28.5	12	295
12”x10”	300x250	305	648	664	635	325	300	254	18	8	45	70	14x9	520	450.8	31.8	16	440

FB Reduced Bore Class 600

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”x1-1/2”	50x40	51	292	295	292	115	125	70/102	10/12	4	20	30	6x6	165	127	19	8	22
3”x2”	80x50	76	356	359	356	133	125	102	12	4	25	40	8x7	210	168.3	22.2	8	45
4”x3”	100x80	102	432	435	432	185	150	125	14	4	40	60	12x8	275	215.9	25.4	8	88
6”x4”	150x100	152	559	562	559	192	210	165	22	4	40	60	14x9	355	292.1	28.5	12	133
8”x6”	200x150	203	660	664	660	233	210	165	22	4	45	70	14x9	420	349.2	31.8	12	304
10”x8”	300x250	305	838	841	838	355	300	254	18	8	63.5	102	16x16	560	489	35	20	985

FB Reduced Bore Class 900

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
2”x1-1/2”	50x40	51	368	371	368	115	125	70/102	10/12	4	20	30	6x6	215	165.1	25.4	8	36
3”x2”	80x50	76	381	384	381	145	125	102	12	4	30	45	8x7	240	190.5	25.4	8	65
4”x3”	100x80	102	457	460	457	195	150	125	14	4	45	70	14x9	290	235	31.8	8	115
6”x4”	150x100	152	610	613	610	210	210	165	22	4	45	70	14x9	380	317.5	31.8	12	170
8”x6”	200x150	203	737	740	737	250	210	165	22	4	55	70	16x10	470	393.7	38.1	12	348
10”x8”	250x200	254	838	841	838	295	300	254	18	8	55	70	16x10	545	469.9	38.1	16	785
12”x10”	300x250	305	965	968	965	355	300	254	18	8	76.2	102	19.05x19.05	610	533.4	38.1	20	990

FB Full Bore Class 1500

Valve Size		ØG	A			E	ØJ	ISO TOP			ØD	B	KEY SIZE	ØI	FLANGE DRILLING			Wt.(Kg)
INCH	DN		RF	RTF	BWE			PCD	HOLEØ	NOS					BC	HOLEØ	NOS	
8”	200	7.99	32.8	33.11	32.8	15.75	11.81	10	0.70	8	3	4	0.75x0.75	19	15.5	1.75	12	2222
10”	250	10	39	39.37	39	18.5	13.77	11.73	0.94	8	3	4	0.75x0.75	23	19	2	12	3475
12”	300	12	44.5	45.12	44.5	18.9	16.33	14.01	1.25	8	3.5	5.25	0.88x0.62	26.50	22.5	2.13	16	5465

MATERIAL OF CONSTRUCTION/EXPLODED VIEW

BODY/END CONNECTOR
A351 CF8M /A 351 CF3M / A 351 CF3 / A351 CF8 / ASTM A216 WCB
A 352 LCB / A352 LCC / A 217 CA15 / DUPLEX SS

BALL
A 215 WCB / A351 CF8 / A 351 CF8M / A 351 CF3M
A 182 A105/A 217 CA15/DUPLEX SS

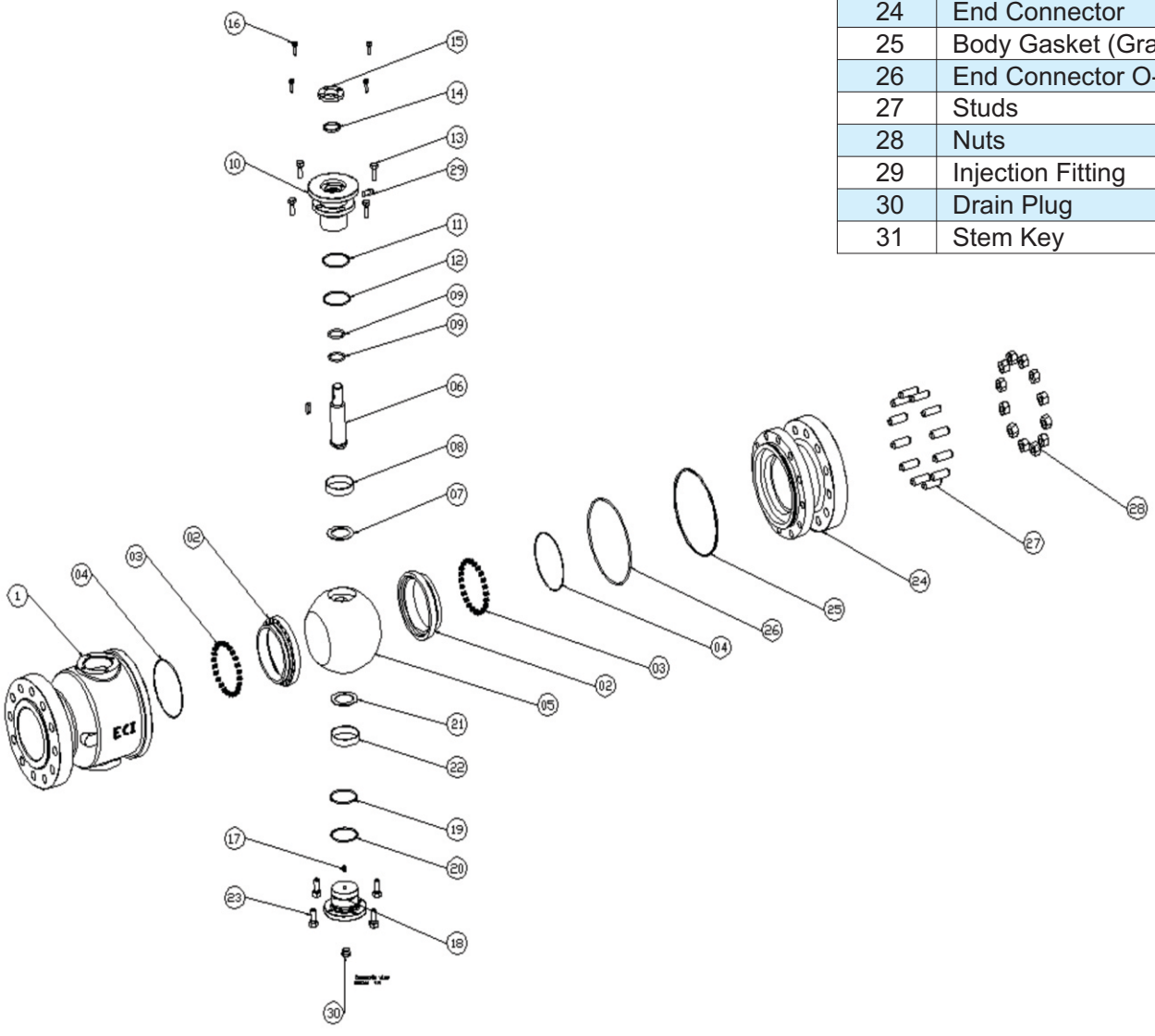
STEM
A182 A105+ENP / A182 F316/ A 182 F6A /DUPLEXSS

SEAT INSERT
DEVLON/NYLON (PA12)/DERLIN/RPTFE/PEEK/PCTFE/CGFT/VITON

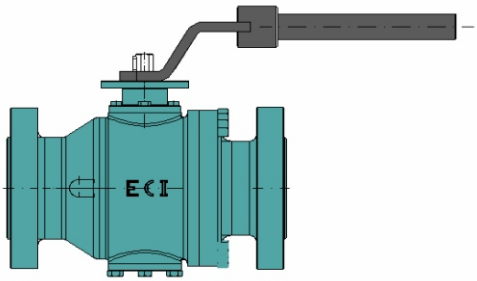
STUD/BOLT
ASTM-A 193 B7 /A 193 B7M/A 193 B8M/B8 /ASTM A 320 L7 , L7M

NUT
A 194 2H / A 194 2HM /A 194 7M/A 194 8M

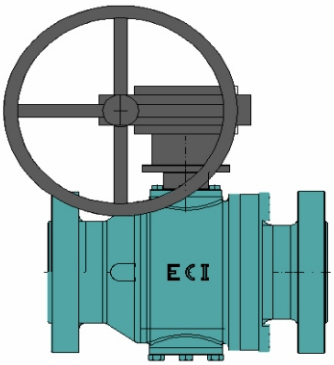
Sr.No.	Description
01	Body
02	Seat + insert
03	Spring (Seat)
04	Seat O-Ring
05	Ball
06	Stem
07	Thrust Washer (Stem)
08	Stem Bearing
09	Stem O-Ring
10	Stem Housing
11	Stem Housing Gasket
12	Stem Housing O-Ring
13	Hex Bolts (Stem Housing)
14	Stem Gasket
15	Gland
16	Cap Screw (Gland)
17	Antistatic Spring
18	Trunnion
19	Trunnion Gasket
20	Trunnion O-ring
21	Thrust Washer(Trunnion)
22	Trunnion Bearing
23	Hex Bolts (Trunnion)
24	End Connector
25	Body Gasket (Graphite)
26	End Connector O-Ring
27	Studs
28	Nuts
29	Injection Fitting
30	Drain Plug
31	Stem Key



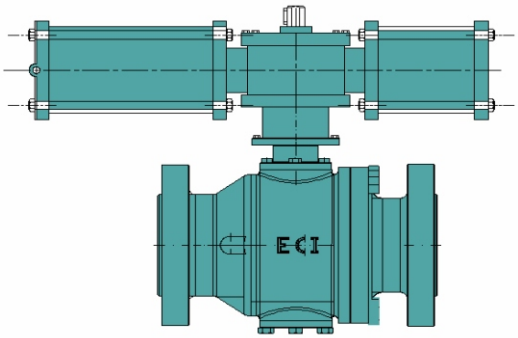
OPERATOR



Lever Operated



Gear Operated



Actuator Operated

Series		Act Size		Body / Adaptor		End Connection		Ball / Stem Matl		Seat Ring		Seat		Bore Size		Seal		Actuations	
BT1	Class 150	02	50/2”	01	WCB	RF	Raised Flange	01	CS + ENP	1	C.S	1	PTFE	F	FULL	1	BUNA-N (NBR)	L	LEVER
BT2	Class 300	03	80/3”	02	CF8	RTJ	Ring Type Joint	02	SS 304	2	SS304	2	RTFE	R	REDUCE	2	VITON	G	GEARBOX
BT3	Class 600	04	100/4”	03	CF8M	BW	Butt Weld	03	SS 316	3	SS316	3	CFT	X	OTHER	3	EPDM	A	ACTUATED
BT4	Class 900	06	150/”6	X	OTHER			X	OTHER	X	OTHER	4	PEEK					E	ELECTRICALLY
		08	200/8”									5	DELRIN					X	OTHER
		10	250/10”									6	NYLON PA 12						
		12	300/12”									X	OTHER						

For Example: To order 250/10” Reduced bore, Class 600, Body – WCB, Ball/Stem – SS316(CF8M), Seat Ring- SS316, Buna Seals , Seat - Delrin , Flanged Raised Face, Gear Operated with no requirements.

BT	3	1	0	0	3	RF	3	3	5	R	1	G

ENTECH CONTROLS

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