PNEUCON

Ball Valve
(Auto/Manual)

BUILT IN RELIABILITY

TUV NORD ISO 9001 CE Ex SIL IEC 61508 / IEC 61511

Company Profile

Pneucon Automation Pvt. Ltd. is a renowned & popular force in the arena of 'Design', 'Development', and 'Manufacturing' of a innovative range of Automated Valves. Our commitment extends beyond standardized solutions, catering to the diverse and customized automation demands of modern Process Industries. Pneucon boasts a fully integrated division conceptually reacting swiftly to all customer demands and technical supports. Apart from benefiting from the inherent synergies arising from its business verticals, the company's diversified products contribute to Pneucon becoming as a One Stop Solution to all the customers under a single roof.

Design and Engineering

The Engineering department's mission revolves around design innovation, utilizing advanced technology & continuous use of new design techniques.

The Design Team experts have acquired competence over years to produce high-quality automated innovative products suitable for the world of process industries. We are able to provide a complete design activity according to the customer requests, producing concept solutions.

Manufacturing

Pneucon manufacturing unit is equipped with the latest machines, and test facilities. Our production team of skilled workers ensure to employ latest state –of-the-art modern techniques in the entire cycle of production under stringent quality control procedures & norms.

Pneucon make Valves, Pneumatic Rotary Actuators, Scotch Yoke Actuators, Limit switches & all other accessories are manufactured to the highest degree of accuracy to ensure performance & reliability.

Quality

Pneucon products are produced in strict compliance with the Quality Management System requirements and in conformance with the engineering codes in practice and relevant standards.

Customer Service

Pneucon has fully integrated customer service division, which is fully geared to react speedily to all customers enquiries and whatever technical support needed. The interchangeability of the spares has proven to be the best service support on site to the end users.

THE COMPANY IS CONFIDENT IN ITS RESOURCES SETTING THE PACE IN VALVE TECHNOLOGY

Range at Glance

- Pneucon valves are designed and manufactured as per ASME B16.34/ API 6D/ BS EN 17292. These Standards Cover Pressure - Temperature ratings, minimum shell thickness, bore diameter for each size/class
- Castings inspection as per MSS-SP 53, 54, 55, 59, 93 & 94
- Actuator mounting pad on the valve is as per ISO 5211
- Other applicable standards

				SIZE									
TYPE	END CONNECTION	PORT	ASME CLASS	½"	¾"	1"	1¼"	1½"	2"	2½"	3"	4"	6"	8"
SINGLE PIECE	FLANGED	FULL / REDUCED	150	✔	✔	✔		✔	✔	✔	✔	✔		
TWO PIECE	FLANGED	FULL / REDUCED	150 / 300	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
		FULL / REDUCED	600	✔		✔		✔	✔		✔	✔		
THREE PIECE	FLANGED	FULL / REDUCED	150/600	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	SOCKET WELD / SCREWED	FULL / REDUCED	150/600	✔	✔	✔	✔	✔	✔					
THREE PIECE FORGED	SOCKET WELD / SCREWED	FULL / REDUCED	800	✔	✔	✔		✔	✔		✔			
SINGLE PIECE/ FULL JACKETED	FLANGED	FULL	150			✔		✔	✔		✔	✔		
3-WAY L PORT	FLANGED	FULL	150 / 300		✔	✔		✔	✔		✔	✔	✔	
3-WAY T PORT	FLANGED	FULL	150 / 300		✔	✔		✔	✔	✔	✔	✔	✔	

Features

Live Loaded Gland Packing

Graphite packing are provided as standard taking care of Fire Safe Design Condition. Belleville Springs Washers are used to achieve live loading which protect Gland Loosening under vibrations & shock conditions. This will also reduces manual efforts to maintain gland adjustment time to time.

Antistatic Device

To ensure Electrical Continuity between the Stem & Ball & Body all valves are provided with Antistatic Device as an integral part of Floating Ball Valves.

Blow out Proof Stem

Stem is designed to include a collar to provide protection against Blow Outs. This design feature offers safety superior to top-entry stem design where the line pressure works to break the stem seating.

Double 'D' Stem to Lever Connection

Stems are Designed to have Double 'D' Connection at the top for Lever Fixing. This feature eliminates possibility of Lever Assembly in the wrong direction as the Lever indicates the Valve Position once installed on the line. Square Drive provided for On-Off Valves.

Equalized Cavity Pressure

The Pressure equalization hole at the top of the Ball combined with Seat Design are Engineered to maintain the Pressure balance in the line & in the Body Cavity irrespective of Valve Position.

Integral Actuator Mounting Pad

Pneucon floating ball valve are furnished with an integral actuator mounting pad as per ISO 5211 specification, this easily and uniformly enable mounting of any actuators provided with ISO 5211 valve mounting flanges.

Large & Mirror Finished Steel Balls

SS balls are manufactured to very close spherocity tolerances and are mirror finished to achieve better sealing and considerably lower operating torque.

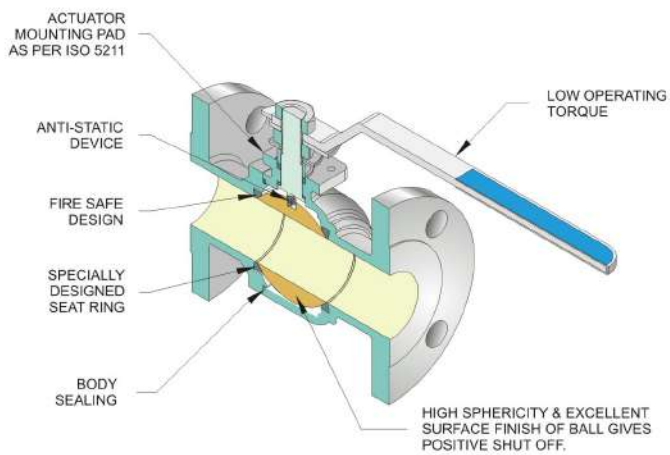
Gland Pusher Design

Gland Pusher plate have direct access Without Removing Actuator

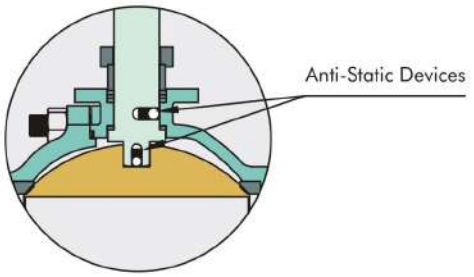
Pneucon offers feature of accessing gland pusher plate without disturbing mounting of any instrument. In case of any maintenance required in process pipelines, which reduces human efforts and also gives flexibility to end user which can save time during maintenance

Fire Safe Feature

Pneucon provides Fire safe feature in Ball Valves. An integral metal lip in the body with soft seat are designed, in event the soft seat insert is burned away the line pressure force the Ball to move and rests against the lip, forming a metal to metal seat, thus restricting the leakage to levels specified by fire safe standard API 607.

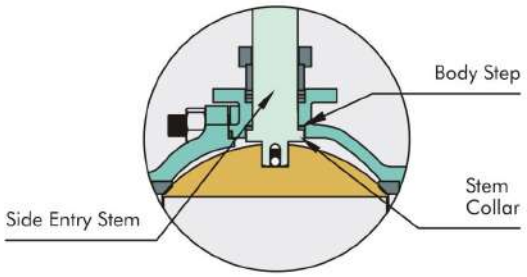


Anti-Static Device for Fire-Safe

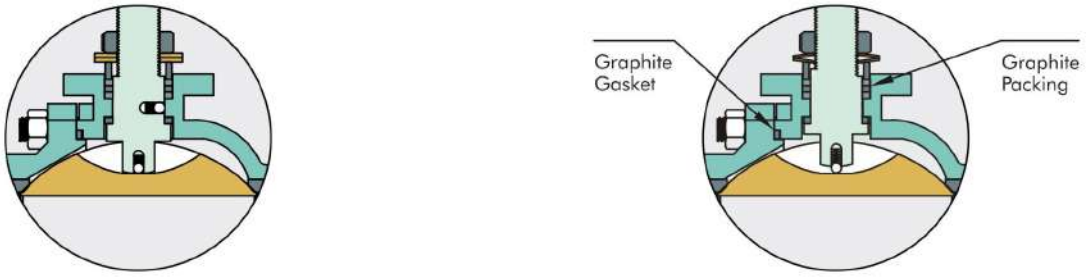


Springed metallic plunger anti-static device is featured between the ball to stem to body to maintain metallic continuity between all the metallic component contact, for desipating heat thereby defusing static electricity and normalising the frictional heat value lower than the most severe service flameable conditions.
The stem is featured with the intergral T-type round collar coupled with the rounded slotted pressure balanced ball, installed internally from body side, retained by the step in the body to assure blow out designed featured safety at all pressures with back seat between to ensure gland sealing.

Blow-Out Proof Stem and Gland Leakage



Fire-Safe Design and External Leakage Arrested



Before Fire

After Fire

(A) External Leakage Prevention - All the possible external leakage point between stem and body, body and adaptor are made with primary O ring seal and secondary graphite packing or gasket seal. When fire burned out the primary O ring seal, the secondary graphite packing/gasket seal still can be prevent the process medium without external leakage.

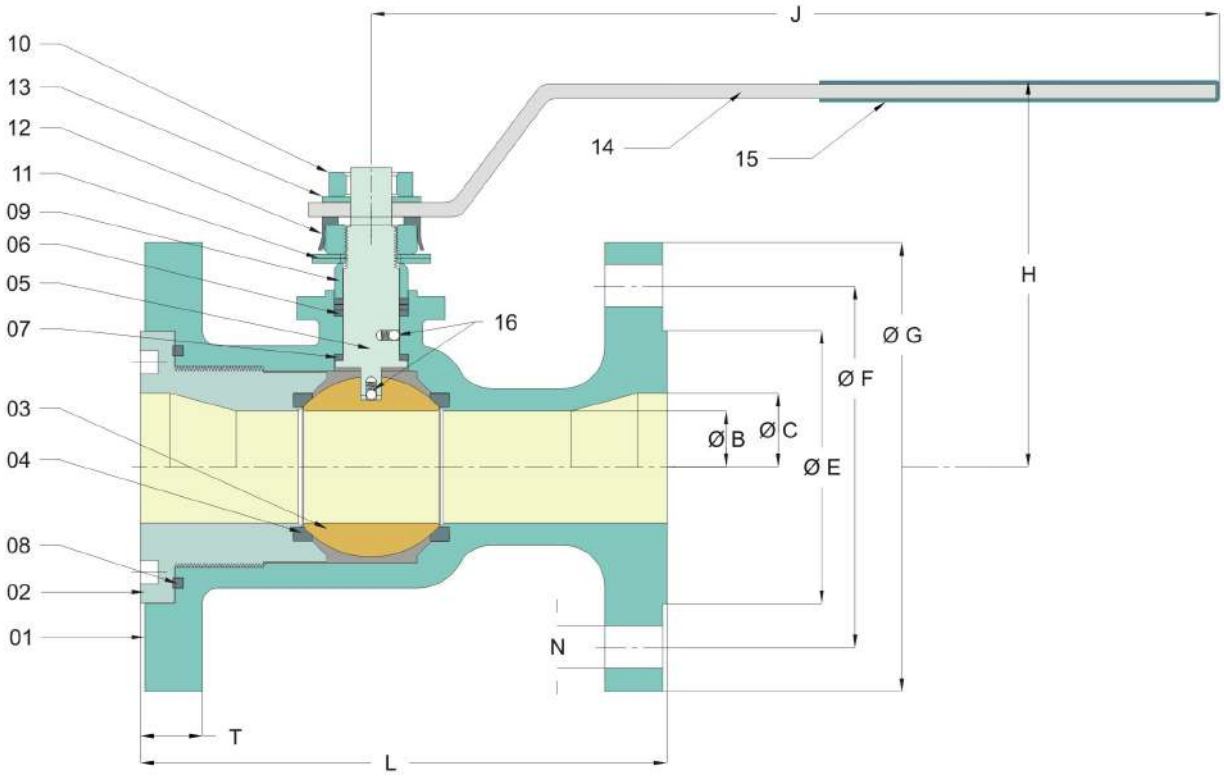
Fire-Safe Design and Internal Leakage Arrested

Before Fire

After Fire

(B) Internal Leakage Prevention - When fire burned out the primary soft seal, the upstream medium pressure push the ball to downstream against the secondary metal seat lip to shut off the process medium and prevent the internal leakage through the valve bore.

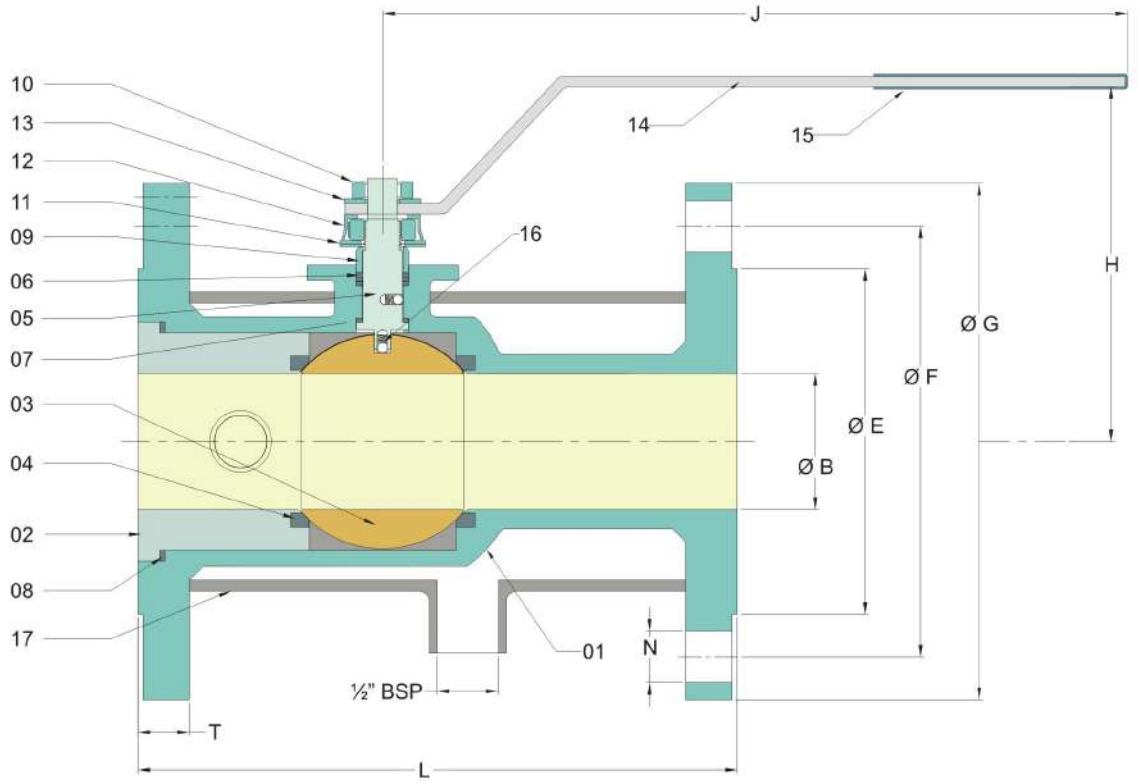
310 Series : Single Piece Flanged Ball Valve
150# (Full/Reduced Bore)



01	Body
02	Body Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket
09	Gland Pusher Ring
10	HEX Lock Nut
11	Belly Welly Washer
12	Nut Retainer Washer
13	Internal Tooth Washer
14	Lever
15	Lever Sleeve
16	Antistatic Device
17	Name Plate

Size	15	20	25	40	50	65	80	100
Class	ASME 150# Full / Reduced Bore							
B	9	14	19	25	38	50	62	76
C	14	19	25	38	50	62	75	100
E	35	43	51	73	92	105	127	157
F	60.5	69.8	79.4	98.4	120.7	139.7	152.4	190
G	89	98	108	127	152	178	190.5	229
T	10	10.9	11.6	14.7	16.3	17.2	19.5	24.2
L	108	117	127	165	178	190	203	229
N	16	16	16	16	19	19	19	19
No of Holes	04	04	04	04	04	04	04	08
H	93	98	127	133	178	185	220	245
J	180	180	210	210	290	290	450	450
FB WEIGHT (KG)	2	2.6	3.8	6	10	16	20	26
RB WEIGHT (KG)	1.3	2.5	3	4	8	14	17.5	27

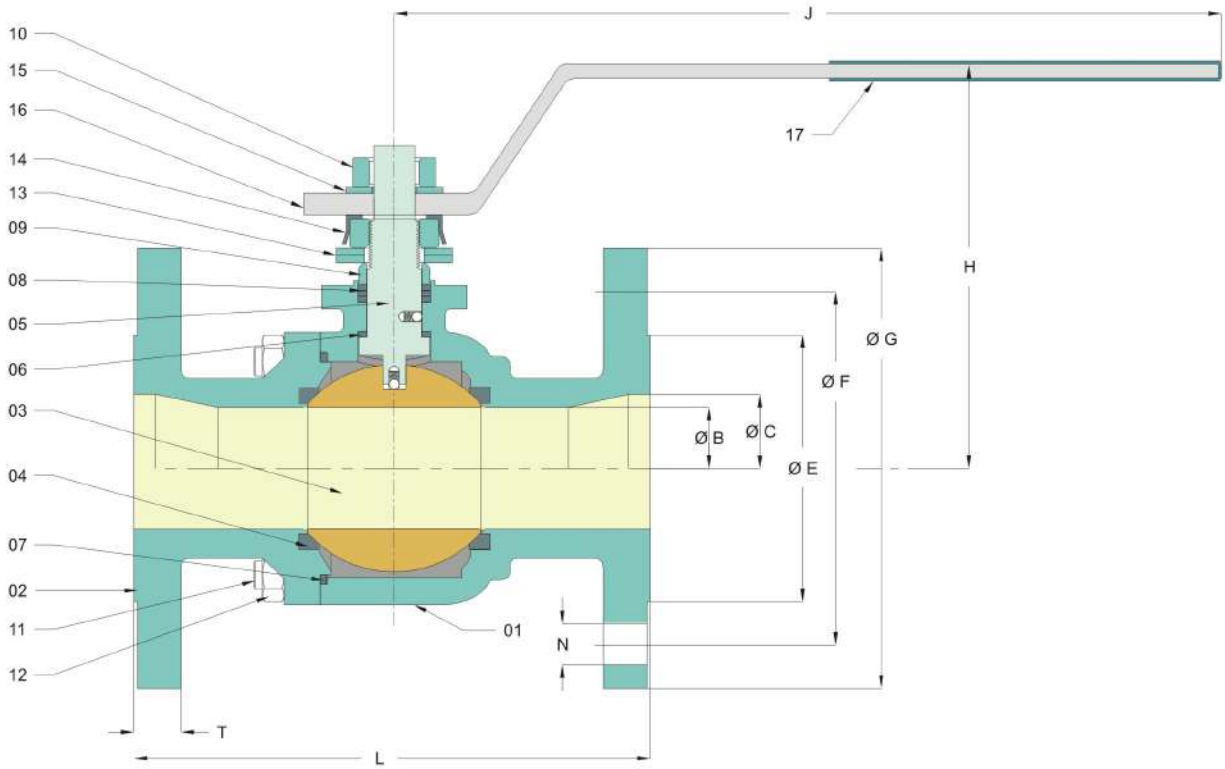
315 Series : Single Piece Jacketed Ball Valve
150# (Full/Reduced Bore)



01	Body
02	Body Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket
09	Gland Pusher Ring
10	HEX Lock Nut
11	Belly Welly Washer
12	Nut Retainer Washer
13	Internal Tooth Washer
14	Lever
15	Lever Sleeve
16	Antistatic Device
17	Jacket

Size	25	40	50	80	100	150
Class	ASME 150# Full / Reduced Bore					
B	19	25	38	62	75	100
C	25	38	50	75	100	150
E	73	92	105	157	216	270
F	98	121	140	190	241	299
G	127	152	178	229	280	343
T	18	19	22.2	24	25.4	28.6
L	127	165	178	203	229	267
N	16	19	19	19	19	22
No of Holes	04	04	04	04	08	08
H	127	147	178	220	245	-
J	210	210	290	450	450	-
FB WEIGHT (KG)	5.7	9	15	30	54	105
RB WEIGHT (KG)	4.5	6	12	27	40.5	69

320 Series : 2 Piece Flanged Ball Valve
150# (Full/Reduced Bore)



01	Body
02	Body Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket
09	Gland Pusher Ring
10	HEX Lock Nut
11	Body Stud Bolt
12	Body Stud HEX Nut
13	Belly Welly Washer
14	Nut Retainer Washer
15	Internal Tooth Washer
16	Lever
17	Lever Sleeve
18	Stopper Pin
19	Name Plate

2 Piece Ball Valve 150# General Assembly

Size	15	20	25	32	40	50	65	80	100	150	200
Class	ASME 150# Full / Reduced Bore										
B	09	14	19	25	32	38	50	62	76	102	150
C	14	19	25	32	38	50	62	75	100	150	200
E	35	43	51	63.5	73	92	105	127	157	216	270
F	60.3	69.8	79.4	88.9	98.4	120.7	139.7	152.4	190.5	241.3	298.5
G	90	100	110	115	125	150	180	190	230	280	345
T	10	10.9	11.6	13.2	14.7	16.3	17.9	19.5	24.2	25.9	29
L	108	117	127	140	165	178	190	203	229	267	292
N	16	16	16	16	16	19	19	19	19	22	22
No of Holes	04	04	04	04	04	04	04	04	08	08	08
H	93	98	127	127	147	178	185	220	245	273	-
J	180	180	210	210	210	290	290	450	450	990	-
FB Weight (KG)	2	2.6	3.8	4.7	6	10	16	20	36	70	140
RB Weight (KG)	1.3	2.5	3	3.6	4	8	14	17.5	27	46	82

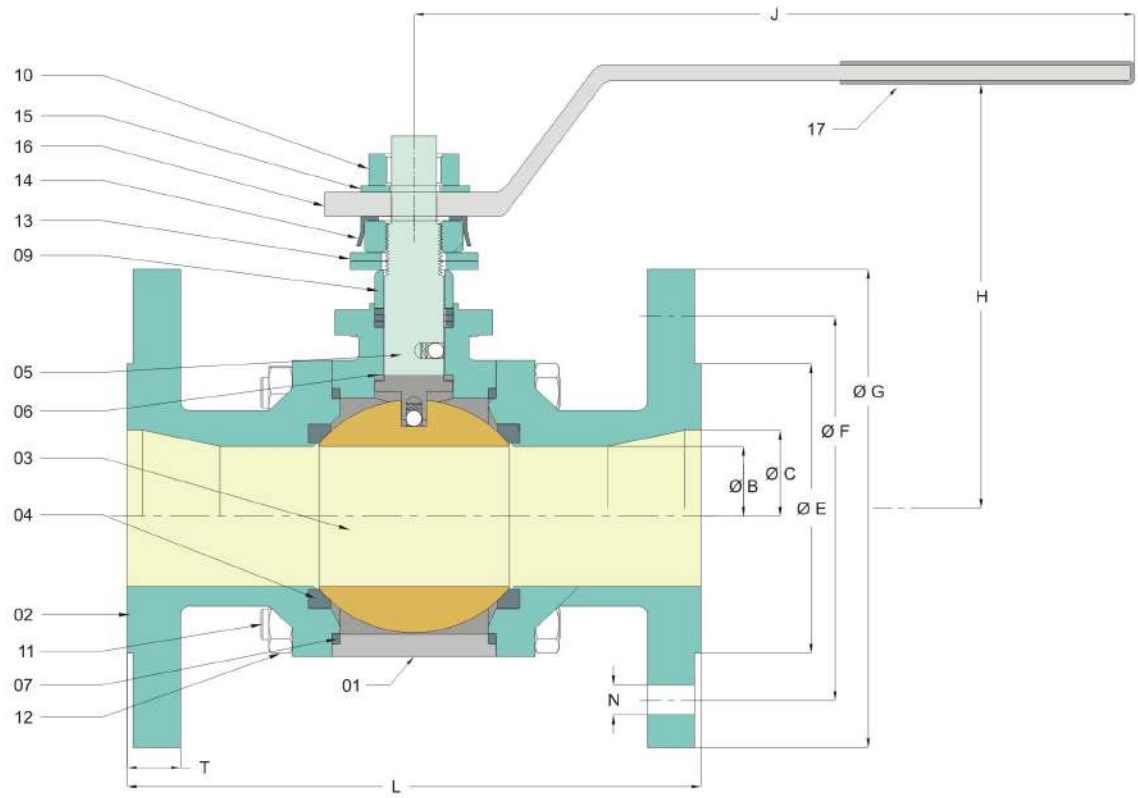
2 Piece Ball Valve 300# General Assembly

Size	15	20	25	32	40	50	65	80	100	150	200
Class	ASME 300# Full / Reduced Bore										
B	09	14	19	25	32	38	50	62	76	102	150
C	14	19	25	32	38	50	62	75	100	150	200
E	35	43	51	63.5	73	92	105	127	157	216	270
F	67	83	89	98.5	114	127	149	168	200	270	330
G	95	118	124	133	156	165	191	210	254	318	381
T	15	16	18	19.5	21.1	23	25.9	29	32	37	41.7
L	140	152	165	178	190	216	241	283	305	403	419
N	16	19	19	19	19	19	22	22	22	22	25
No of Holes	04	04	04	04	04	08	08	08	08	12	12
H	98	127	147	178	178	185	220	245	273	-	-
J	180	180	210	210	210	290	290	450	450	-	-
FB Weight (KG)	3.2	4.2	6	7.5	9.6	16	27.5	34	62	119	238
RB Weight (KG)	2	4	5	6	6.4	13	24	30	46	79	140

2 Piece Ball Valve 600# General Assembly

Size	15	20	25	40	50	80	100	150
Class	ASME 600# Full / Reduced Bore							
B	09	14	19	25	38	50	76	102
C	14	19	25	38	50	75	100	150
E	35	43	51	73	92	127	157	216
F	66.7	83	89	114.3	127	168	216	292
G	95	118	124	156	165	210	273	356
T	16.3	17.9	19.5	24.3	27.4	33.8	40.1	49.7
L	165	190.5	216	241	292	356	432	559
N	16	19	19	22	19	22	25.4	28.5
No of Holes	04	04	04	04	08	08	08	12
H	67	67	67	91	106	147	184	-
J	212	212	212	275	455	692	990	-
FB Weight (KG)	4.5	5.7	7	13	17	40	83	100
RB Weight (KG)	4.2	5.1	6.2	11	15.5	33	64	82

340 Series : 3 Piece Flanged Ball Valve
150# (Full/Reduced Bore)



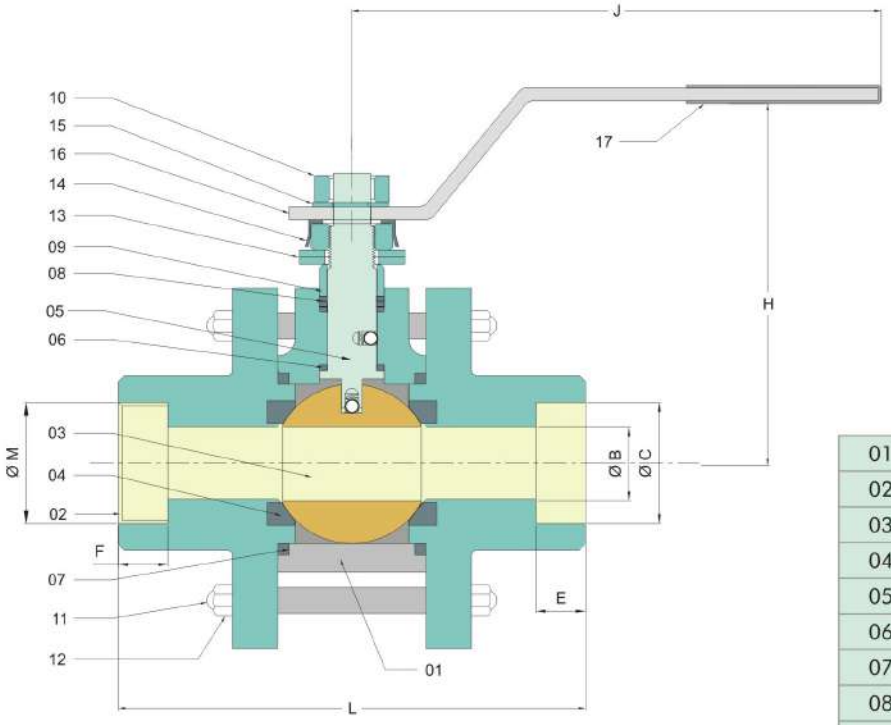
01	Body
02	Body Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket
09	Gland Pusher Ring
10	HEX Lock Nut
11	Body Stud Bolt
12	Body Stud HEX Nut
13	Belly Welly Washer
14	Nut Retainer Washer
15	Internal Tooth Washer
16	Lever
17	Lever Sleeve
18	Stopper Pin
19	Name Plate

Size	15	20	25	32	40	50	65	80	100	150	200
Class	ASME 150# Full / Reduced Bore										
B	09	14	19	25	32	38	50	62	76	102	150
C	14	19	25	32	38	50	62	75	100	150	200
E	35	43	51	64	73	92	105	127	157	216	270
F	61	70	79	89	98	121	140	152	191	241	299
G	89	98	108	115	127	152	178	190	229	280	343
T	10	11	12	13	15	16.3	17.2	19.5	24.2	25.9	29
L	108	117	127	140	165	178	190	203	229	267	292
N	16	16	16	16	16	19	19	19	19	22	22
No of Holes	04	04	04	04	04	04	04	04	08	08	08
H	93	98	127	127	147	178	185	220	245	273	-
J	180	180	210	210	210	290	290	450	450	900	-
FB WEIGHT (KG)	2	2.6	3.8	4.7	6	10	16	20	36	70	140
RB WEIGHT (KG)	1.3	2.5	3	3.6	4	8	14	17.5	27	46	82

Features

Three Piece Ball Valves designed are for easy on-line service.
To access the valve internals, remove three connector bolts and swing the body out using the forth bolt as pivot

330 Series : 3 Piece Socket & Screwed Ball Valve
150/600# (Full/Reduced Bore)



Size	15	20	25	32	40	50
Class	ASME 150# Reduced Bore					
B	12.5	19	24	32	38	50
L	75	85	95	110	120	130
ØC	21.7	27.1	33.8	42.5	48.6	61.1
E	10	13	13	13	13	16
ØM	1/2" BSP	3/4" BSP	1" BSP	11/4" BSP	11/2" BSP	2" BSP
F	15	16	20	22	24	25
H	60	65	75	95	105	125
J	125	150	170	230	230	275
RB WEIGHT (KG)	3.2	4.2	6	7.5	9.6	16

01	Body
02	Body Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket
09	Gland Pusher Ring
10	HEX Lock Nut
11	Body Stud Bolt
12	Body Stud HEX Nut
13	Belly Welly Washer
14	Nut Retainer Washer
15	Internal Tooth Washer
16	Lever
17	Lever Sleeve
18	Stopper Pin
19	Name Plate

Features

1. 3 Piece design is compact and available with a variety of pipe ends like Screwed, Socket Weld.
2. It comes with superior performance characteristics with fast and economical in line maintenance.

TYPES OF END CONNECTION


FLANGED

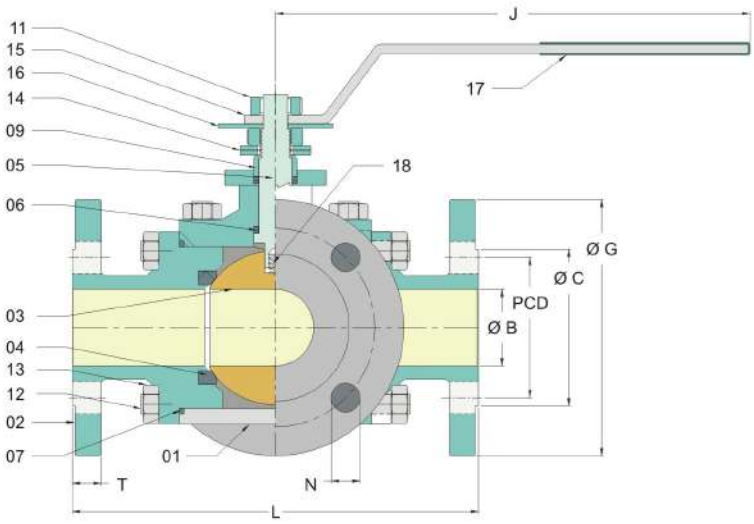

SCREWED

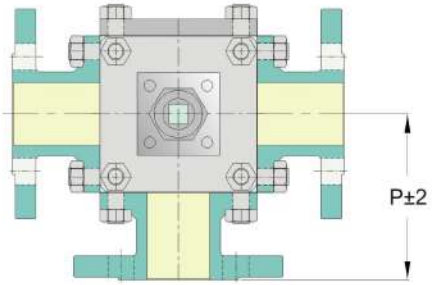

SOCKET WELD


BUTT WELD


TRI CLOVER

360 Series : 3 Way Ball Valve
150# General Assembly

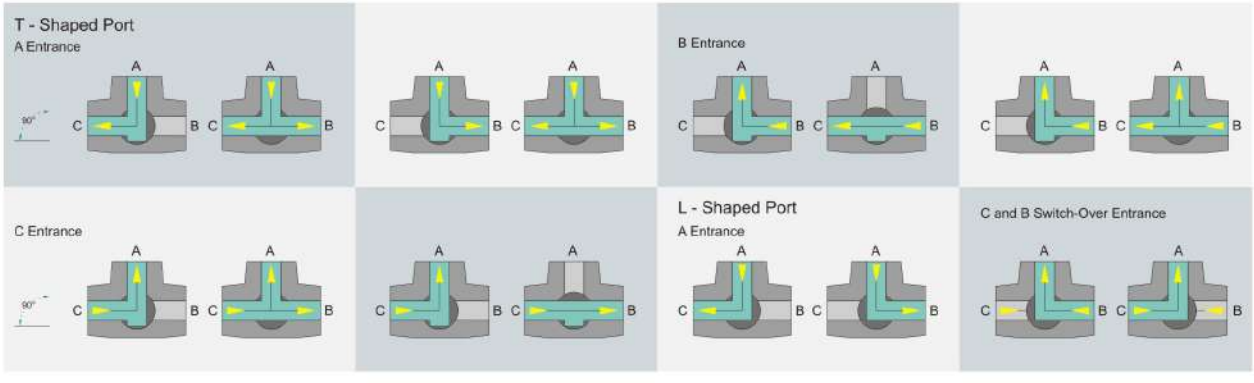




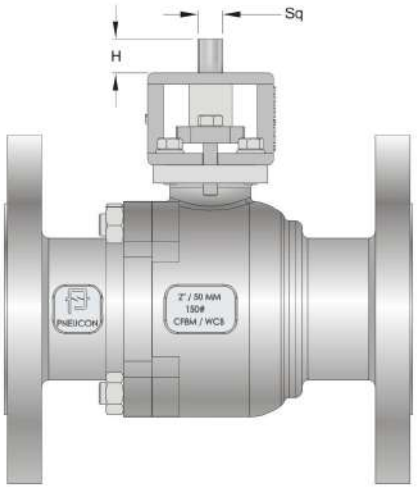
(L - Port Flow Pattern & T - Port Flow Pattern)								
Size	25	40	50	65	80	100	150	200
Class	ASME 150 Full Bore							
B	25	38	50	63	75	98	148	198
C	51	73	92	105	127	158	216	216
G	108	127	152	178	191	229	279	343
PCD	79	98.4	121	140	152	191	241	298
T	11	14	16	17.5	19.1	23.9	25.4	25.4
N	16	16	19	19	19	19	22	22
No of Holes	04	04	04	04	04	08	08	08
P	83	102	118	144	153	185	261	293
L	165	203	235	287	305	370	522	585
WEIGHT (KG)	4.5	6	12	21	26.5	40.5	69	123

01	Body
02	Side Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Body Seal
08	Gland Pusher Ring
09	Gland Pusher Ring
11	Gland Nut
12	Body Stud Bolt
13	Body Stud HEX Nut
14	Belly Welly Washer
15	Lever
16	Lever Locking Ring
17	Sleeve
18	Antistatic Device

Types of 3 – Way Ball Valves Flow Directions

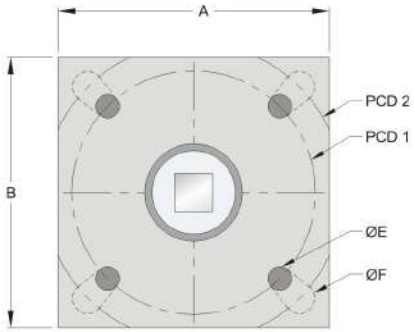


ISO 5211 - Bore Shaft

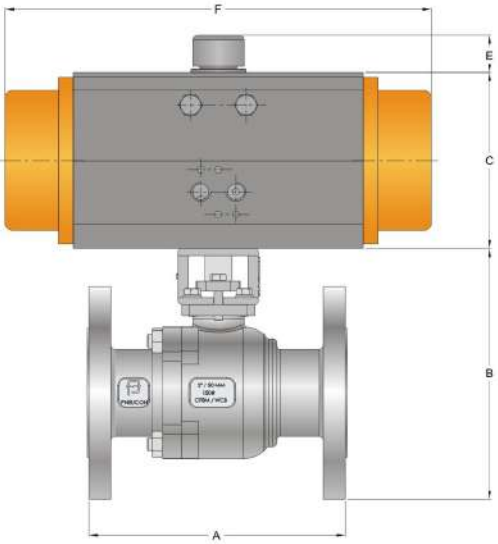


01	Body
02	Side Adaptor
03	Ball
04	Seat Ring
05	Stem
06	Gland Packing
07	Thrust Washer
08	Gasket for Body to Body Adaptor
09	Gland Pusher
10	Gland Pusher Ring
11	Stud for Gland Pusher (FT)
12	Nut for Gland Pusher
13	Stud for Body to Body Adaptor (HT)
14	Nut for Body to Body Adaptor
15	Mounting Bracket
16	HEX Screw for Mounting Bracket
17	Plain Washer for Mounting Bracket
18	Adaptor Shaft
19	Name Plate

ISO 5211 Mounting Pad Details									
Valve Size	A	B	PCD 1	PCD 2	ØE	ØF	H	Sq	Weight (Kgs)
15mm	55	55	50	-	08	-	12	11 x 11	2.2
20mm	55	55	50	-	08	-	12	11 x 11	2.8
25mm	55	55	50	-	08	-	16	14 x 14	4.4
40mm	70	70	50	70	08	10	16	14 x 14	6.6
50mm	70	70	50	70	08	10	16	14 x 14	11
65mm	70	70	70	102	10	12	19	17 x 17	17.5
80mm	70	70	70	102	10	12	19	17 x 17	22
100mm	120	120	102	125	10	12	19	17 x 17	40
150mm	120	120	102	125	12	14	30	27 x 27	77
200mm	150	150	125	140	14	16	40	36 x 36	154



Note : For Sq - Expander Sleeve is available on request.



Ball Valve with Rotary Actuator							
Valve Size	Actuator Size	A	B	C	E	F	Weight (Kgs)
15mm	055	108	107.5	76	20	169	4.2
20mm	055	117	116	76	20	169	4.8
25mm	065	127	122.5	87.8	20	216	7.1
40mm	065	165	156	87.8	20	216	9.3
50mm	075	178	179	98	20	232	14.5
65mm	085	190	212	108.7	20	271	22.6
80mm	100	203	231	125.7	20	293	29
100mm	125	226	270	152.5	20	405	54.3
150mm	150	267	367	186.5	30	475	103.5
200mm	200	292	405	248	30	641	214

Material of Construction

Part	Material Options
Body	ASTM - A216 WCB / A351 CF8 / A351 CF8M / A351 CF3M / A352 LCB / A217 CAT 15
Body Adapter	ASTM - A216 WCB / A351 CF8 / A351 CF8M / A351 CF3 / A351 CF3M / A352 LCB / A217 CA15
Ball	ASTM - A351 CF8 / A351 CF8M / A351 CF3 / A351 CF3M / A217 CA15
Stem	ASTM - A479 SS304 / A479 SS316 / A479 SS304L / A479 SS316L /A182 F304 / A182 F316 / A182 F410
StemSeat	VIRGN PTFE / RPTFE / NYLON / PEEK / DELRIN / PCTFE / DEVLON / MEPTFE / MOS_2
O Ring	VITON
Stem Gasket	VIRGIN PTFE / RPTFE / GRAPHITE
Spacer	ASTM - A479 SS316
Cup Spring	ASATM - A479 SS304 / 50 Cr V4
Stem Nut	ASTM - A194 Gr.7 / A194 Gr.7M / A194 Gr.8 / A194 Gr.8M / A194 Gr.2H / A194 Gr.2HM
Handle	MS (Zink Plated) / SS 304 / SS 316
Stop Pin	ASTM - A479 SS316 / MS
Body Gasket	VIRGIN PTFE / RPTFE / GRAPHITE
Studs / Bolts	ASTM - A320 Gr.L7 / A320 Gr.L7M/ A193 Gr.B8 / A193 Gr.B8M / A193 Gr.B8 / A193 Gr.B7M
Nut	ASTM - A194 Gr.7 / A194 Gr.7M / A194 Gr.8 / A194 Gr.8M / A194 2H / A194 Gr.2HM
Stem Bush	PHOSPHOR BRONZE
Stem Housing	ASTM - A216WCB / A351 CF8 / A351 CF8M / A351 CF3 / A351 CF3M / A352 LCB / A217 CA15

Note : Contact factory for exotic material requirements

Soft Material Data

Seat Material Specifications

	PTFE	RPTFE	Molon (Nylon+MoS_2)	PEEK
Tensile Strength (MPa)	24.8	25.4	75~100	91
Compressive Strength (MPa)	35	52	100~140	137
Elongation (%)	250	120	10~30	50
Hardness (SH.A)	56	60	78	82
Water Absorption (%)	<0.01	<0.01	0.7	0.12
Specific Gravity (G/cm3)	2.2	2.2	1.2	1.35
Temperature Range (°F)	-300~400	-150~425	-40~300	-150~500
Pressure Rating (Class)	150~600	150~600	150~1500	150~2500
Service Application	Chemical & Cryogenic	Chemical & Cryogenic	High Pressure & Low Temperature	High Pressure & High Temperature
Tensile Strength (MPa)	55	60	80	68
Compressive Strength (MPa)				
Elongation (%)	150	200	5.37	220
Hardness (SH.A)	70	75	78	78
Water Absorption (%)	0.3	0.2	0.1	0.2
Specific Gravity (G/cm3)	1.04	1.01	1.14	1.41
Temperature Range (°F)	-40~200	-58~250	-150~300	-58~230
Pressure Rating (Class)	600~1500	600~1500	150~1500	150~1500
Service Application	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature

Note : Contact factory for exotic Seat material requirements

Torque Chart for Floating Ball Valve

Size (mm)		150 Class		300 Class			600 Class		900 Class	1500 Class
DP (Bar)		10	20	20	40	55	60	100	150	250
FB	RB									
15	20	4	5	5	7	9	15	20	25	35
20	25	6	8	8	9	12	20	30	35	45
25	32	11	12	12	14	19	25	38	70	115
32	40	14	19	19	21	25	45	70	100	160
40	50	21	25	25	25	30	75	90	140	180
50	65	27	31	40	43	50	95	130	200	300
65	80	39	45	55	80	70	110	150	320	450
80	100	58	63	75	103	110	130	200	435	600
100	150	108	121	165	175	180	280	370	-	-
150	200	290	320	400	470	550	800	1000	-	-
200	250	460	530	850	900	1000	-	-	-	-

Notes :

- These torque values indicate break open torque. • For closing torque value multiply by 0.85
- These torque values are based on clean fluid. • For run torque values multiply by 0.7
- For lubricants (oil, greese etc.) Application multiply by 1.2 • For unclean fluid/dry gas/ wet gas applications multiply by 1.4
- For soft slurry & dry steam application multiply by 1.6
- For abrasive slurry application multily by 2 • For cryogenic application multiply by 2.5
- For seat material peek multiply by 3.0 for metal seat multiply by 4.0 • Above values are suitable for seat materials PTFE / RPTFE / TFM1600 and other seat material multiply by 2.0

Actuator sizing :

First consider factor of safety for fluid condition and seat MOC then,

• For selecting gear operator multiply by 1.5 • For selecting pneumatic or electric actuator multiply by 1.3

Flow Co-efficient

	BORE	8	10	15	20	25	40	50	65	80	100	150	200
CV	FB	8	9	20	50	100	135	225	465	770	1090	1970	4635
	RB	-	-	-	15	40	60	95	175	335	570	625	870
KV	FB	7	8	17	45	85	115	220	395	655	930	3940	7280
	RB	-	-	-	13	35	50	80	150	285	485	530	740

Cv : Flow Co-efficient of the valve is defined as flow of water at 15.6°C (60°F) in gallon (US) per minute at a pressure drop of 1 psi across the valve.

Kv : Flow Co-efficient of the valve is defined as flow of water temperature ranging from 5°C (40°F) in cubic meter per hour (m^3/hr.) at pressure drop of 1 valve across the valve. Cv & Kv valve of the valve are given in fully open conditions.

Ball Valve Product Selection Code

1 VALVE MODEL	2 SIZE		3 BODY+BALL+ ADAPTOR MOC		4 SEAT+GLAND+ BODY GASKET MOC		5 END CONNECTION	6 RATING	7 BORE	8 FIRE SAFETY	9 OPERATION	10 SPECIAL REQUIREMENT
320	015	100	A	I	P	T	RF	R01	F	N	BS	BE
330	020	125	B	J	G	M	FF	R02	R	F	HL	JK
340	025	150	C	O	L	F	SC	R03			GO	HE
350	032	200	D		C	R	SW	R04			RA	IB
360	040	250	E		K	O	BT	R05			RM	O
530	050		F				TC	O			EO	
	065		G				TR				O	
	080		H				O					

1 VALVE MODEL
- 310 - 1 PIECE BALL VALVE
- 320 - 2 PIECE BALL VALVE
- 330 - 3 PIECE BALL VALVE (150/600#)
- 340 - 3 PIECE BALL VALVE (150#)
- 350 - PFA LINED VALVE
- 360 - 3 WAY BALL VALVE
- 530 - FLUSH BOTTOM BALL VALVE

2 SIZE
- 015 - 15 mm
- 020 - 20 mm
- 025 - 25 mm
- 032 - 32 mm
- 040 - 40 mm
- 050 - 50 mm
- 065 - 65 mm
- 080 - 80 mm
- 100 - 100 mm
- 125 - 125 mm
- 150 - 150 mm
- 200 - 200 mm
- 250 - 250 mm

3 BODY+ADAPTOR+ BALL MOC
- A - WCB
- B - CF8 / SS304
- C - CF8M / SS316
- D - CF3 / SS304L
- E - CF3M / SS316L
- F - A105 / FORGED STEEL
- G - WCB + PFA LINED
- H - CF8 + PFA LINED
- I - CF8M + PFA LINED
- J - POLYPRPPYLENE
- N - HASTELLOY C-276
- P - MONEL
- Q - SS318
- R - UPVC
- S - PVDF
- O - OTHER THAN ABOVE

4 SEAT+GLAND+ BODY GASKET MOC
- P - PTFE*
- G - GLASS FILLED TEFLON
- L - GRAPHITE FILLED TEFLON
- C - CARBON PTFE
- K - PEEK
- T - TFM
- M - METAL TO METAL
- F - GRAFOIL**
- R - RPTFE
- O - OTHER THAN ABOVE

5 END CONNECTION & FINISH
- RF - FLANGED RAISED FACE SERRATED*
- FF - FLANGED FLAT FACE SMOOTH
- SC - SCREWED
- SW - SOCKETWELD
- BT - BUTTWELD
- TC - TRICLOVER
- TR - TRUNIUN
- O - OTHER THAN ABOVE

6 RATING
- R01 - ASME 150#*
- R02 - ASME 300#
- R03 - ASME 600#
- R04 - ASME 800#
- R05 - ASME 900#
- O - OTHER THAN ABOVE

7 BORE
- FB - FULL BORE*
- RB - REDUCE BORE

8 FIRE SAFETY
- N - NON FIRE SAFE
- F - FIRE SAFE

9 OPERATION
- BS - BARE STEM
- HL - HAND LEVER
- GO - GEAR OPERATED
- RA - ROTARY ACT
- RM - ROTARY ACT WITH MOR
- EO - ELECTRICAL OPERATED
- O - OTHER THAN ABOVE

9 SPECIAL REQUIREMENT
- BE - BONEET EXTENTION
- JK - JACKETED FOR MODEL 310
- HE - HELIUM LEAK TEST & RADIOGRAPHY
- IB - IBR CERTIFIED
- O - OTHER THAN ABOVE

SPECIAL REQUIREMENT TO BE SPECIFIED (IF APPLICABLE)

EXAMPLE

1 320 — 2 015 — 3 AB — 4 P — 5 RF — 6 R01 — 7 F — 8 N — 9 R — 10 BE

Above stands for 2 Piece Fire Safe Ball Valve, size - 15mm, WCB Body & Adaptor MOC + CF8 Ball MOC, PTFE - Seat / Gland / Gasket MOC, Flanged End Raised face serreted, 150#, Full Bore, Operation - Rotary Actuator

Note - i) Above marked with "" is default for Valve if not specified*
*ii) Above marked with "**" is not applicable for seat MOC*
iii) Fire Safety available only for Valve Model 310, 320 & 330

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