

Single, Two & Three-piece **Ball Valves**



ASME Class 150, 300 & 600 | 8 mm - 300 mm (1/4" - 12")



L&T Valves Limited (Formerly Audco India Limited) is a wholly owned subsidiary of Larsen & Toubro. Backed by an fifty-year track-record of excellence and world-leading innovation, the company provides engineered flow-control solutions for key sectors of the economy such as oil & gas, power, petrochemicals, chemicals, fertilizers and pharmaceuticals.

Product Range:

- Gate, Globe & Check Valves
- Valves for Power
- Pipeline & Process Ball Valves
- Triple-offset Butterfly Valves
- Flanged & Wafer-type Butterfly Valves
- Double Block and Bleed Plug Valves
- Control Valves
- Customised Solutions

Valves are designed by an experienced team of valve experts who have a deep understanding of user-industry processes. An extensive manufacturing and quality assurance infrastructure ensure that world-class designs are transformed into high performance products. Every phase of manufacture is governed by an institutionalised environment, health and safety policy.

L&T Valves distribution network spans the globe, partnering some of the largest valve distribution companies in the world. In India, L&T Valves has a presence in every industrial centre through a network of offices, stockists, automation centres and service franchisees.



- Pressure-seal Range - Page No. 8
- Bolted-bonnet Range - Page No. 18
- Forged Steel Range - Page No. 24

L&T Valves offers a range of Floating Ball Valves in sizes up to 12" (300 mm) in a variety of body options, materials and end connections. Valves with pneumatic, electrical or hydraulic actuators can also be offered.

Designs for L&T ball valves are created in accordance with key international standards. Reliability of the products is established through a series of endurance and fire tests. Modern manufacturing and quality assurance processes are employed to ensure reliable performance and low cost of ownership.

The valve facility in Coimbatore is equipped for high-volume production and can manufacture over fifty thousand ball valves in a month.



Product Portfolio

Valve	Type	End Connection	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12
			8	10	15	20	25	32	40	50	65	80	100	150	200	250	300
Single-piece, Regular Bore	Fire-safe	Flanged CI 150/ 300			•	•	•		•	•	•	•	•	•			
					•	•	•		•	•	•	•	•	•	•	•	•
Three-piece, Full Bore	Standard	Screwed/ Socket-weld	•	•	•	•	•	•	•	•	•	•	•				
		Flanged CI 150/ 300			•	•	•		•	•							
	Fire-safe	Screwed/ Socket-weld	•	•	•	•	•	•	•	•	•	•	•				
Three-piece, Regular Bore	IBR	Screwed/ Socket-weld	•	•	•	•	•	•	•								
	Standard	Screwed/ Socket-weld				•	•	•	•	•		•	•				
		Flanged CI 150/ 300				•	•		•	•							
	Fire-safe	Screwed/ Socket-weld				•	•	•	•	•		•	•				
	IBR	Screwed/ Socket-weld				•	•	•	•	•							

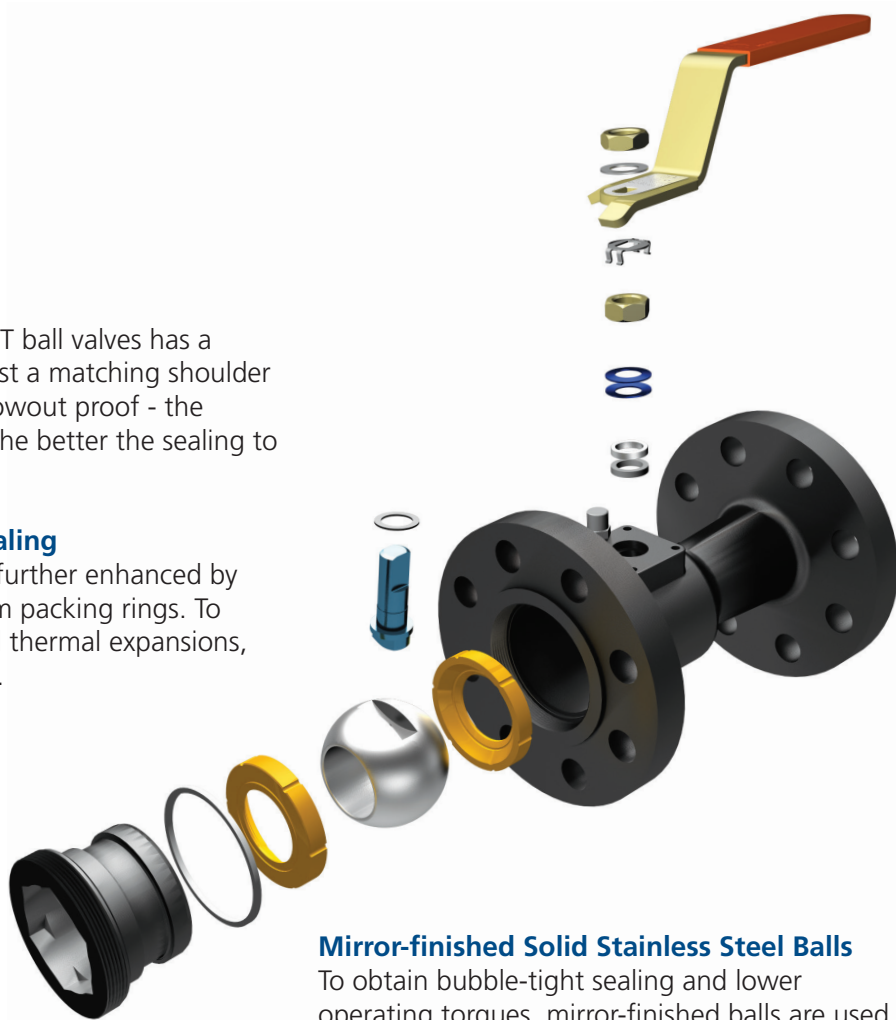
L&T Ball Valves are available in single-piece, two-piece and three-piece constructions. In these valves, line pressure forces the floating ball against the downstream seat to effect bubble-tight sealing.

Blowout Proof Stem

The side-entry stem of L&T ball valves has a shoulder that bears against a matching shoulder in the body to make it blowout proof - the higher the line pressure, the better the sealing to atmosphere.

High Integrity Stem Sealing

Sealing to atmosphere is further enhanced by stem thrust seals and stem packing rings. To compensate for wear and thermal expansions, Belleville springs are used.



Inserts in single-piece ball valves are provided with a hexagonal slot for easy removal.

Mirror-finished Solid Stainless Steel Balls

To obtain bubble-tight sealing and lower operating torques, mirror-finished balls are used as a standard. The solid construction of the balls guarantees higher structural strength.

Seats with Pressure-relieving Slots

Seats with fine grain structure are used to ensure better strength and longer life. Pressure-relieving slots are a unique feature of L&T ball valves. The slots relieve upstream pressure when the valve is in closed position and prevent seat damage.

Fire-Safe Feature

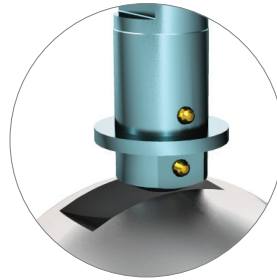
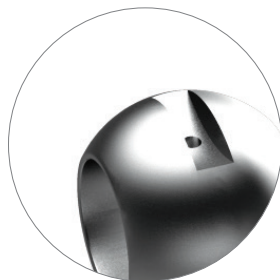
L&T fire-safe ball valves feature secondary metal seats. In the event of a fire, after the soft-seat totally sublimates, the ball moves and abuts the downstream metal seat to form a leak-tight seal.



Antistatic Feature

Static electricity builds up inside a valve when the ball rubs against non-metallic seats. This is a fire hazard, especially with flammable fluids. L&T ball valves have inbuilt antistatic mechanisms to provide electrical continuity.

Stems of full bore valves of size 65 mm and above and regular bore valves of size 80 mm and above are equipped with spring-loaded plungers. In valves of smaller sizes, electrical continuity is achieved by using Carbon-filled PTFE thrust seal and graphite stem packings.



Cavity Pressure Relief Mechanism

A slight increase in temperature of fluid entrapped in ball cavity can cause a rapid increase of pressure and damage the ball and seats.

To prevent this, L&T ball valves are equipped with automatic cavity relief mechanisms. When the valve is in open position, a hole provided on the ball connects the body cavity to the ball port and thereby ensure that cavity pressure does not build up. In the closed condition, when the cavity pressure rises above a designated level, the seat lip deflects to relieve pressure to the upstream side.

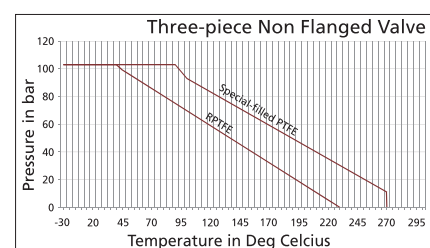
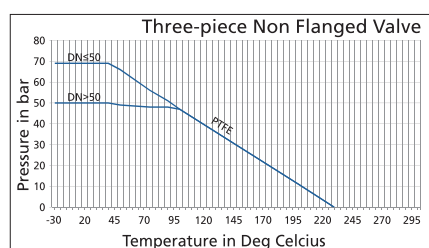
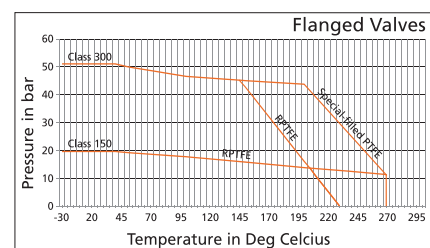
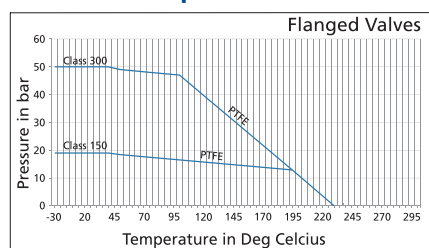
Standards

Scope		Standard
Design		ISO 17292
End-to-End	Socket-weld ends	ASME B16.11
	Screwed-end BSPT	ISO 7-1
	Screwed-end NPT	ASME B1.20.1
	End flange	ASME B16.5 RF
Face-to-face (Flanged)		ASME B16.10
Pressure testing		ISO 5208
Fire Test		ISO 10497/ API 607

Material of Construction

No.	Part	Material specification		
		Single-piece	Two-piece	Three-piece
1	Body/ Connector/ Insert	ASTM A216 Gr. WCB		ASTM A216 Gr. WCB ASTM A105
		ASTM A351 Gr. CF8M/ ASTM A182 Gr. F316		
2	Ball	ASTM A351 Gr. CF8M/ ASTM A182 Gr. F316		
3	Seat	PTFE/ RPTFE/ Special filled PTFE		
4	Stem	ASTM A479 Type 316		
5	Body Seal	Graphite		PTFE/ RPTFE/ Special filled PTFE/ Graphite
6	Stem Thrust Seal	Carbon-filled PTFE		
7	Stem Packing	Carbon-filled PTFE/ Graphite		

Pressure Temperature Charts - Seat Materials



Test Pressures (bar)

	Class 150	Class 300	Class 600*
Shell - Hydrostatic	30	77	155
Seat - Hydrostatic	22	56	113
Seat - Pneumatic	6	6	6

*With RPTFE/ Special filled PTFE

Valve Torque Data (in Nm)

Size		Bore	Single-piece		Two-piece		Three-piece		
DN	NPS		Flanged Cl 150	Flanged Cl 300	Flanged Cl 150	Flanged Cl 300	Screwed/ Socket- weld	Flanged Cl 150	Flanged Cl 300
8	¼	FB	-	-	-	-	6.5	-	-
		RB	-	-	-	-	-	-	-
10	⅜	FB	-	-	-	-	6.5	-	-
		RB	-	-	-	-	-	-	-
15	½	FB	5	5	9	9	6.5	5	5
		RB	-	-	-	-	-	-	-
20	¾	FB	-	-	9	9	9	8	9
		RB	5	5	-	-	6.5	5	5
25	1	FB	-	-	14	16	11	10	11
		RB	12	15	-	-	9	8	9
32	1¼	FB	-	-	-	-	30	-	-
		RB	-	-	-	-	16	-	-
40	1½	FB	-	-	25	28	34	18	32
		RB	18	22	-	-	13	13	13
50	2	FB	-	-	65	70	44	26	30
		RB	38	40	-	-	34	30	32
65	2½	FB	-	-	90	98	-	-	-
		RB	48	60	-	-	-	-	-
80	3	FB	-	-	150	165	-	-	-
		RB	90	100	-	-	-	-	-
100	4	FB	-	-	165	185	-	-	-
		RB	145	160	-	-	-	-	-
150	6	FB	-	-	250	350	-	-	-
		RB	165	190	-	-	-	-	-
200	8	FB	-	-	650	750	-	-	-
		RB	-	-	-	-	-	-	-
250	10	FB	-	-	1475	-	-	-	-
		RB	-	-	-	-	-	-	-
300	12	FB	-	-	2490	-	-	-	-
		RB	-	-	-	-	-	-	-

For screwed/ socket-weld end three-piece valves, torque values are as per full-rated working pressure of 69 bar.

Indicated design torque values are without factor of safety.

Flow Co-efficients

	Bore	8	10	15	20	25	32	40	50	65	80	100	150	200	250	300
C _v	FB	8	9	20	50	100	135	225	465	770	1090	1970	4635	8565	13575	19680
	RB	-	-	-	15	40	60	95	175	335	570	625	870	2300	3375	5540
K _v	FB	7	8	17	45	85	115	220	395	655	930	1675	3940	7280	11540	16730
	RB	-	-	-	13	35	50	80	150	285	485	530	740	1955	2870	14710

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

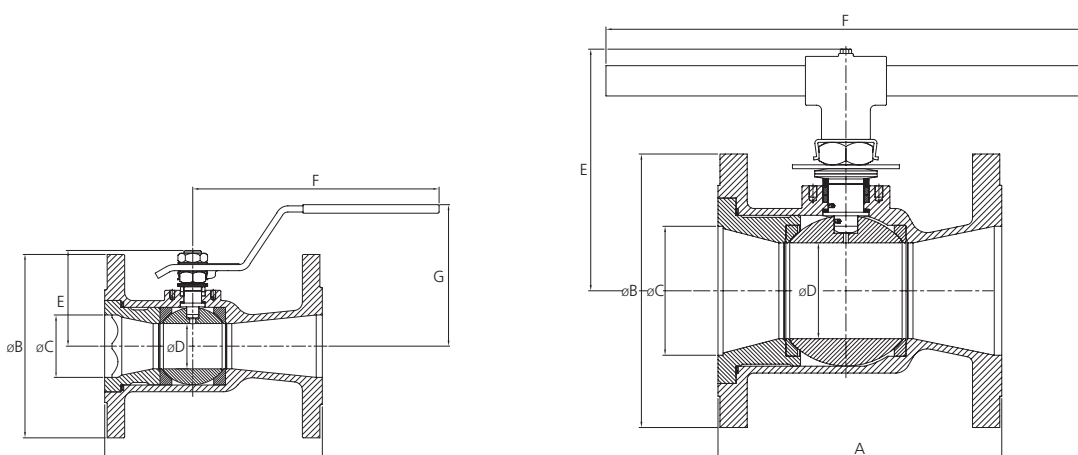
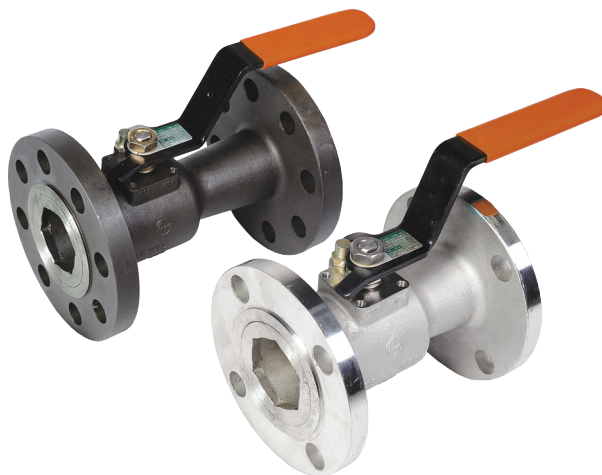
K_v - Flow Co-efficient of a valve is defined as flow of water with temperature ranging from 5 to 30° C in cubic meter per hour (m³/ hr) at a pressure drop of one kgf/ cm² across the valve.

C_v and K_v values are given for valve in fully open condition.

Single-Piece Ball Valves - Regular Bore

L&T single-piece and two-piece ball valves are provided with an integral actuator mounting flange conforming to ISO 5211.

(Please note that full bore valves in sizes DN 15 to DN 25 would be supplied with mounting flanges as per L&T's manufacturing standard).



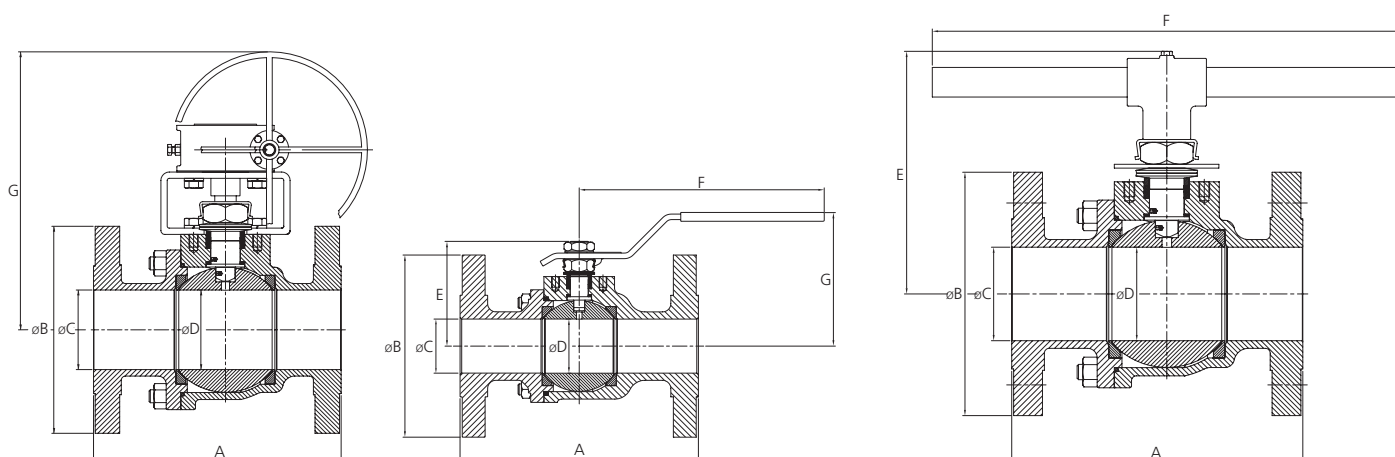
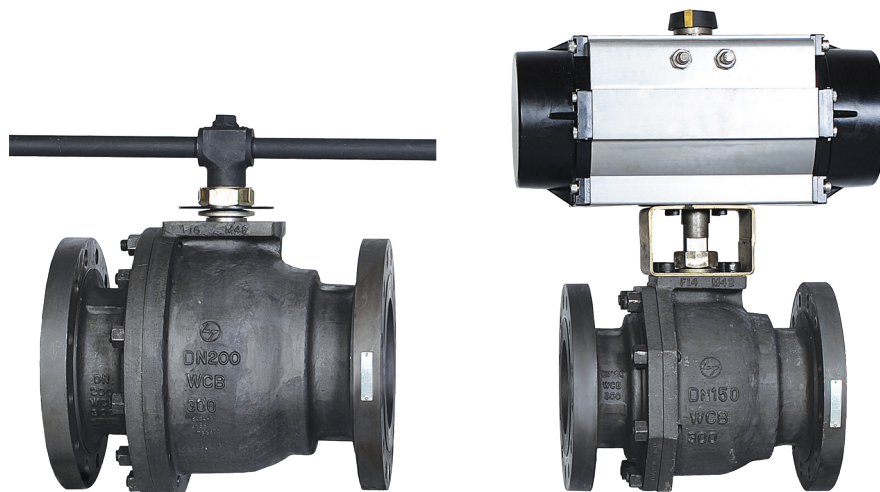
Dimensional Details

Size		A		B		C	D	E	F	G	Wt.	
DN	NPS	CI 150	CI 300	CI 150	CI 300						CI 150	CI 300
15	½	108	140	90	95	13	11	38	120	90	1.2	1.7
20	¾	117	152	100	115	19	11	38	120	90	1.4	2.5
25	1	127	165	110	125	25	17	46	140	100	2.1	3.6
40	1½	165	190	125	155	38	27	56	180	115	3.8	4.5
50	2	178	216	150	165	51	37	75	210	122	6.5	9.2
65	2½	190	241	180	190	64	49	102	210	142	11	15
80	3	203	282	190	210	76	62	175	390	-	15.5	22
100	4	229	305	230	255	102	74	195	390	-	24.6	34.8
150	6	267	403	280	320	152	98	245	*	-	40	65

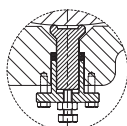
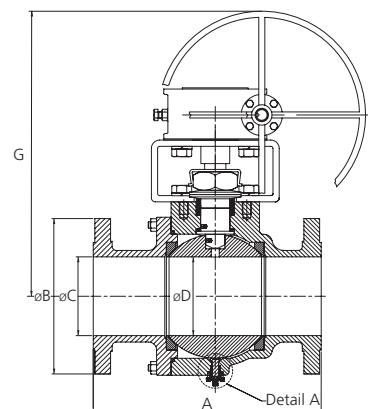
* 600 mm for CI 150 & 890 mm for CI 300

All dimensions in mm and weights in kg

Two-Piece Ball Valves - Full Bore



Dimensional Details



Detail A

Size		A		B		C	D	E		F	G	Wt.	
DN	NPS	CI 150	CI 300	CI 150	CI 300			CI 150	CI 300			CI 150	CI 300
15	½	108	140	90	95	13	11	38	38	120	90	1.4	1.9
20	¾	117	152	100	115	19	17	45	45	120	97	1.8	3.2
25	1	127	165	110	125	25	24	55	55	158	97	2.9	4.3
40	1½	165	190	125	155	38	37	75	75	212	122	5.3	6.4
50	2	178	216	150	165	51	49	103	103	212	142	9.4	12
65	2½	190	241	180	190	64	62	175	175	390	-	14.1	20.5
80	3	203	282	190	210	76	74	185	195	390	-	19.2	28
100	4	229	305	230	255	102	98	235	247	*	-	31	45
150	6	394	403	280	320	152	148	285	315	**	-	78.2	105
200	8	457	502	345	380	203	198	345	371	980	-	141.5	169

* 600 mm for CI 150 & 890 mm for CI 300

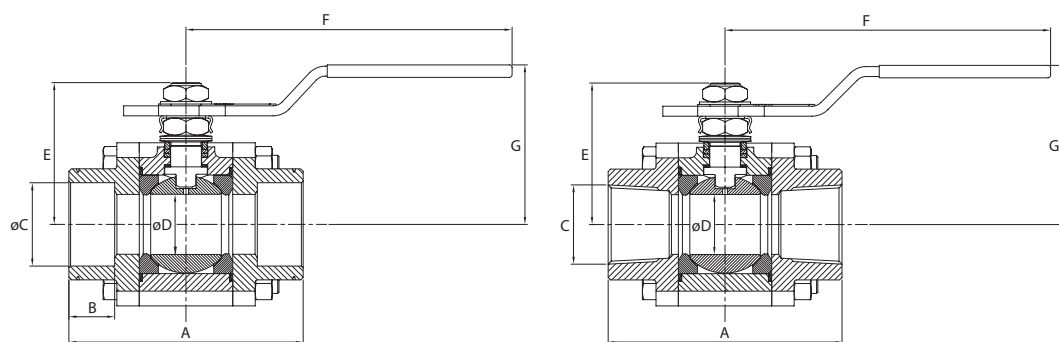
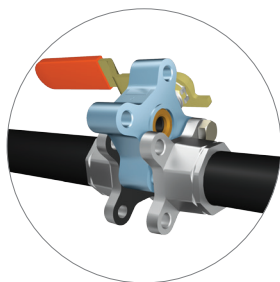
** 890 mm for CI 150 & 980 mm for CI 300

250	10	533	568	405	445	254	245	-	-	-	710	260	310
300	12	610	648	485	520	305	295	-	-	-	750	330	385

All dimensions in mm and weights in kg

Three-Piece Ball Valves - Full Bore

The valves are designed for easy on-line service. To access the valve internals, remove three connector bolts and swing the body out using the fourth bolt as a pivot.



Dimensional Details

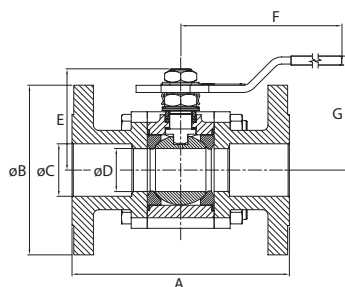
Screwed/ Socket-weld end

Cold Working Pressure (CWP)
 - 69 bar, with PTFE seat
 - 103 bar, with RPTFE and special filled PTFE

Screwed/ socket-weld valves in sizes 8 mm to 50 mm have a body rating of Class 800. In larger sizes, the body is rated to Class 300.

Size		A	B	C			D	E	F	G	Wt.
DN	NPS			SW	BSPT	NPT					
8	¼	62	9.5	14.6 - 14.2	¼" - 19	¼" - 18	11	38	132	50	0.7
10	⅜	62	9.5	18.0 - 17.6	⅜" - 19	⅜" - 18	11	38	132	50	0.7
15	½	66	10	22.2 - 21.8	½" - 14	½" - 14	11	38	132	50	0.7
20	¾	75	13	27.6 - 27.2	¾" - 14	¾" - 14	17	46	132	58	1.1
25	1	92	13	34.3 - 33.9	1" - 11	1" - 11½	24	54	162	65	1.7
32	1¼	114	13	43.1 - 42.7	1¼" - 11	1¼" - 11½	37	75	192	83	4.2
40	1½	114	13	49.2 - 48.8	1½" - 11	1½" - 11½	37	75	192	83	4.2
50	2	132	16	61.7 - 61.2	2" - 11	2" - 11½	49	87	202	94	6.3
65	2½	185	16	74.4 - 73.9	2½" - 11	2½" - 8	62	200	390	200	15.5
80	3	208	16	90.3 - 89.8	3" - 11	3" - 8	74	225	390	225	24.7
100	4	240	19	115.7 - 115.2	4" - 11	4" - 8	98	250	600	250	38.8

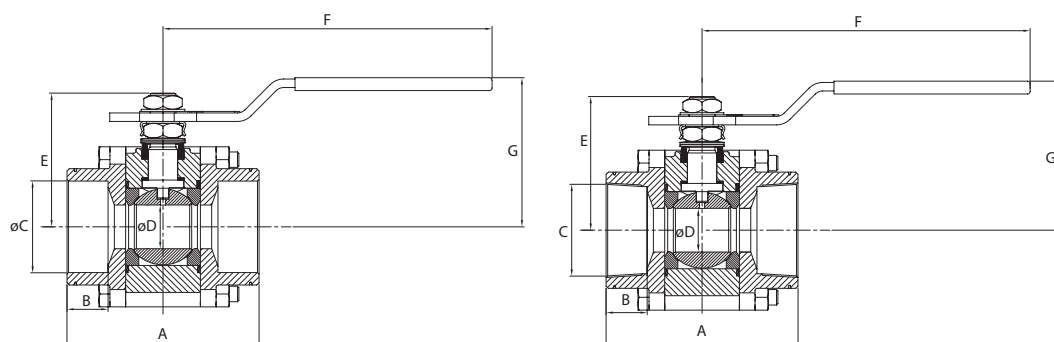
Flanged end



Size		A		B		C	D	E	F	G	Wt.	
DN	NPS	Cl 150	Cl 300	Cl 150	Cl 300						Cl 150	Cl 300
15	½	108	140	90	95	13	11	38	122	92	1.8	2.2
20	¾	117	152	100	115	19	17	46	142	98	2.2	3.4
25	1	127	165	110	125	25	24	54	152	98	3.2	4.8
40	1½	165	190	125	155	38	37	75	212	125	7.8	10.7
50	2	178	216	150	165	51	49	87	212	125	12.6	15.5

All dimensions in mm and weights in kg

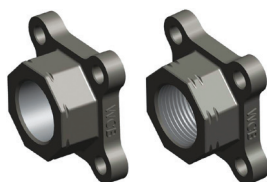
Three-Piece Ball Valves - Regular Bore



Dimensional Details

Screwed/ Socket-weld end

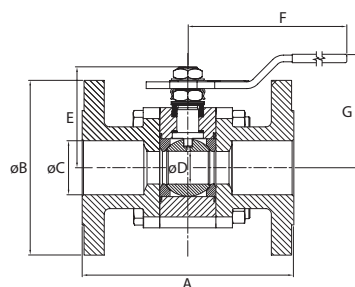
Grooves are provided on body connectors to differentiate valves based on end connections - one groove for socket-weld ends, two grooves for valves with screwed ends (NPT threads) and no grooves for valves with screwed ends (BSPT threads).



Size		A	B	C			D	E	F	G	Wt.
DN	NPS			SW	BSPT	NPT					
8	¼	62	9.5	14.6 - 14.2	¼" - 19	¼" - 18	11	38	132	50	0.7
10	¾	62	9.5	18.0 - 17.6	¾" - 19	¾" - 18	11	38	132	50	0.7
15	½	66	10	22.2 - 21.8	½" - 14	½" - 14	11	38	132	50	0.7
20	¾	69	13	27.6 - 27.2	¾" - 14	¾" - 14	11	38	132	50	0.8
25	1	90	13	34.3 - 33.9	1" - 11	1" - 11½	17	46	132	58	1.3
32	1¼	97	13	43.1 - 42.7	1¼" - 11	1¼" - 11½	24	54	162	65	1.8
40	1½	103	13	49.2 - 48.8	1½" - 11	1½" - 11½	27	56	162	66	2.5
50	2	122	16	61.7 - 61.2	2" - 11	2" - 11½	37	75	192	83	4.5
80	3	185	16	90.3 - 89.8	3" - 11	3" - 8	62	200	390	200	17.1
100	4	212	19	115.7 - 115.2	4" - 11	4" - 8	74	225	600	225	27.1

Valves in sizes 8 mm to 15 mm will be supplied in full bore construction

Flanged end



Size		A		B		C	D	E	F	G	Wt.	
DN	NPS	CI 150	CI 300	CI 150	CI 300						CI 150	CI 300
15	½	108	140	90	95	13	11	38	122	92	1.8	2.2
20	¾	117	152	100	115	19	11	38	122	92	1.8	3.0
25	1	127	165	110	125	25	17	46	142	98	2.5	4.2
40	1½	165	190	125	155	38	27	56	180	117	4.7	8.0
50	2	178	216	150	165	51	37	75	212	125	7.7	12.1

All dimensions in mm and weights in kg

Ordering Information

Series	Type	Bore	Ends	Material	Option*	Operator
L	1 - Single-piece	F - Full	BT - BSPT Threaded	C - Carbon Steel	F - Fire-safe	Wrench
	2 - Two-piece	R - Regular	NT - NPT Threaded	S - Stainless Steel		Gear Unit
	3 - Three-piece		SW - Socket-weld			Pneumatic
	6 - Three-piece (IBR)		F1 - Flanged CI 150			Electrical
			F3 - Flanged CI 300			

* For Three-piece Valves

Example – Catalogue no. for Pneumatically Operated Three-piece Regular Bore, Socket-weld end, Carbon steel valve is
L3RSWC – Pneumatic

L	3	R	SW	C	F	Pneumatic
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