

Trunnion-mounted Ball Valves



ASME Class 150 to 2500 | 2" to 56" (50 mm to 1400 mm)
API 6D

L&T Valves is a wholly owned subsidiary of Larsen & Toubro. Backed by a 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
- Pipeline & Process Ball Valves
- Triple-offset Butterfly Valves
- Flanged & Wafer-type Butterfly Valves
- Double Block and Bleed Plug Valves
- Customized Solutions including HIPPS
- Smart and Digital Solutions

Valves are designed by an experienced team that possesses a deep understanding of user-industry processes. An extensive manufacturing and quality assurance infrastructure ensures 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 marketing network spans the globe reinforced by strategic alliance with key international distributors. In India, it has a presence in every industrial centre through a network of offices, field engineers, distributors, automation centres and service franchisees.



Trunnion-mounted Ball Valves



L&T Valves manufactures a comprehensive range of Trunnion-mounted Ball Valves in sizes up to 56" (1400 mm) in ASME classes from 150 to 2500. The valves are offered in a variety of body styles, materials, trims and actuation options to address critical services in hydrocarbon, power and allied industries.

L&T Trunnion-mounted Ball Valves (TMBV) meet the requirements of API 6D and can be offered with API 6D monogram. The valves are certified Fire Safe as per API 6FA, API 607 and ISO 10497, and meet Fugitive Emission requirements of ISO 15848 and API 641. L&T TMBV is certified SIL-3 capable (Safety Integrity Level-3) as per IEC 61508 and can be offered with actuators and accessories to meet customer demands.

All critical machining operations on L&T Trunnion-mounted Ball Valves are carried out on 5-axis machining centres and CNC machines.

Range

Valve Type	ASME Class	2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	36	42	48	56
2-piece	150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	300	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	600	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	900	•	•	•	•	•														
	1500	•	•	•	•	•														
	2500	•	•	•	•	•														
3-piece	150						•	•	•	•	•	•	•	•	•	•	•	•	•	•
	300						•	•	•	•	•	•	•	•	•	•	•	•	•	•
	600						•	•	•	•	•	•	•	•	•	•	•	•	•	•
	900					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	1500					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2500					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Compliance Standards

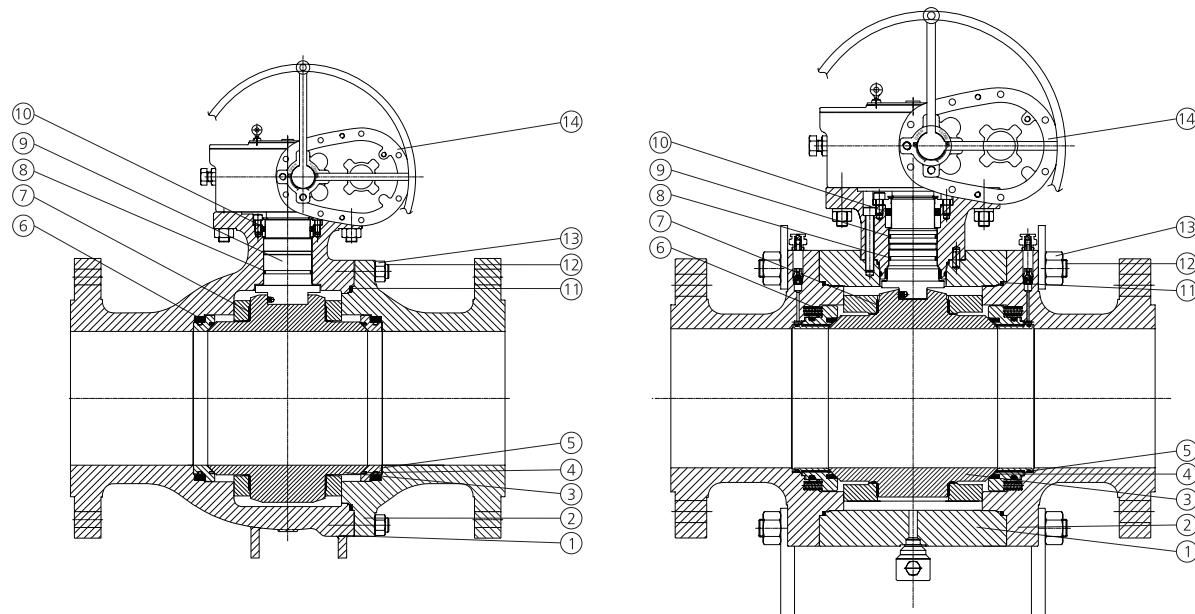
Trunnion-mounted Ball Valves are designed in accordance with key international standards. They also meet the requirements of major power and oil & gas industry standards and customer specifications.

Parameter		Standard
Design		API 6D/ ISO 14313/ API 608
Pressure - Temperature Rating		ASME B16.34
Ends	Face-to-face/ End-to-end Dimensions	API 6D/ ASME B16.10
	End Flange Dimensions	ASME B16.5/ ASME B16.47
	Butt-weld End Dimensions	ASME B16.25
Testing	Hydrostatic	API 6D/ API 598
	Fire Test	API 6FA/ API 607/ ISO 10497
	Cryo Test	BS 6364

Materials of Construction

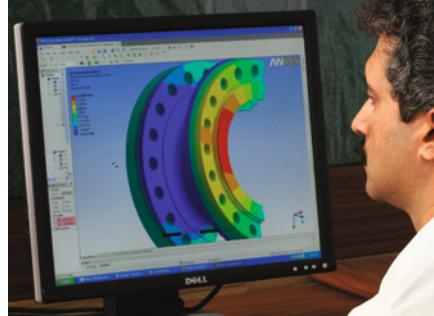
No.	Components	Materials	
		WCB/ WCC	LCB/ LCC
1	Body	A105N/ A216 Gr. WCB/ WCC	A350 Gr. LF2/ A352 Gr. LCB/ LCC
2	Connector	A105N/ A216 Gr. WCB/ WCC	A350 Gr. LF2/ A352 Gr. LCB/ LCC
3	Ball	A182 Gr. F6a/ A105N + ENP Coated/ A182 Gr. F316/ F316L	A182 Gr. F316/ F316L/ A351 Gr. CF8M/ CF3M
4	Seat	PTFE/ RPTFE/ Nylon impregnated with MoS ₂ / PEEK/ Devlon®/ PCTFE	
5	Seat Ring	A182 Gr. F6a/ A182 Gr. F316/ F316L	A182 Gr. F316/ F316L
6	Coil Spring	Inconel X750	
7	Bearing	SS-backed PTFE	
8	Seals	FKM (Viton®)/ HNBR/ Nitrile Rubber/ FFKM (Kalrez®) / Lipseals/ Graphite	
9	Stem	A479 Type 410/ A479 Type 316/ 316L	A479 Type 316/ 316L
10	Packing	Graphite	
11	Body Seal	Graphite/ Spirally-wound SS304/ 316 with Graphite Filler	
12	Stud	A193 Gr. B7/ B7M	A320 Gr. L7/ L7M
13	Hexagonal Nut	A194 Gr. 2H/ 2HM/ 7	A194 Gr. 7/ 7M
14	Gear Unit	Worm Gear	

Valves in other materials available on demand



No.	Components	Materials		
		CF8M/ CF3M	Gr. 4A/ 5A (Duplex SS)	Inconel 625
1	Body	A182 Gr. F316/ A351 Gr. CF8M/ CF3M	A182 Gr. F51/ F53/ A995 Gr. 4A/ 5A	B564 UNS N06625/ A494 UNS N26625 (CW6MC)
2	Connector	A182 Gr. F316/ A351 Gr. CF8M/ CF3M	A182 Gr. F51/ F53/ A995 Gr. 4A/ 5A	B564 UNS N06625/ A494 UNS N26625 (CW6MC)
3	Ball	A182 Gr. F316/ F316L	A182 Gr. F51/ F53	B564 UNS N06625
4	Seat	PTFE/ RPTFE/ Nylon impregnated with MoS ₂ / PEEK/ Devlon®/ PCTFE		
5	Seat Ring	A182 Gr. F316/ F316L	A182 Gr. F51/ F53	B564 UNS N06625
6	Coil Spring	Inconel X750		
7	Bearing	SS-backed PTFE	Duplex SS-backed PTFE/ Inconel 625-backed PTFE	Inconel 625-backed PTFE
8	Seals	FKM (Viton®)/ HNBR/ Nitrile Rubber/ FFKM (Kalrez®) / Lipseals/ Graphite		
9	Stem	A479 Type 316/ 316L	A182 Gr. F51/ F53	B564 UNS N06625
10	Packing	Graphite		
12	Stud	A193 Gr. B8M Cl. 2	A193 Gr. B8M Cl. 2/ A453 Gr. 660 Cl. A	A193 Gr. B8M Cl. 2/ A453 Gr. 660 Cl. A
13	Hexagonal Nut	A194 Gr. 8M/ 8MA	A194 Gr. 8M/ 8MA/ A453 Gr. 660 Cl. A	A194 Gr. 8M/ 8MA/ A453 Gr. 660 Cl. A
14	Gear Unit	Worm Gear		

R&D



Designs for L&T Trunnion-mounted Ball Valves are created in a 3D environment using state-of-the-art design and analysis software. Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) are extensively used to fine-tune product performance.

The valves are certified Fire Safe as per API 6FA, API 607 and ISO 10497, and meet the requirements of ISO 15848 (Fugitive Emission).

In-house Qualification Test Facilities:

- Fire Test
- Fugitive Emission Test
- Cryogenic Test
- Vacuum Test
- Endurance & Cycle Tests

The valves are designed for unmatched reliability in critical services and are certified SIL-3 capable for systematic integrity as per IEC 61508.

Manufacturing



L&T Valves leverages world-class manufacturing capabilities to ensure that the valves deliver reliable performance. 5-axis machining centres, CNC machines and special purpose machines are employed to guarantee dimensional accuracy and consistency.

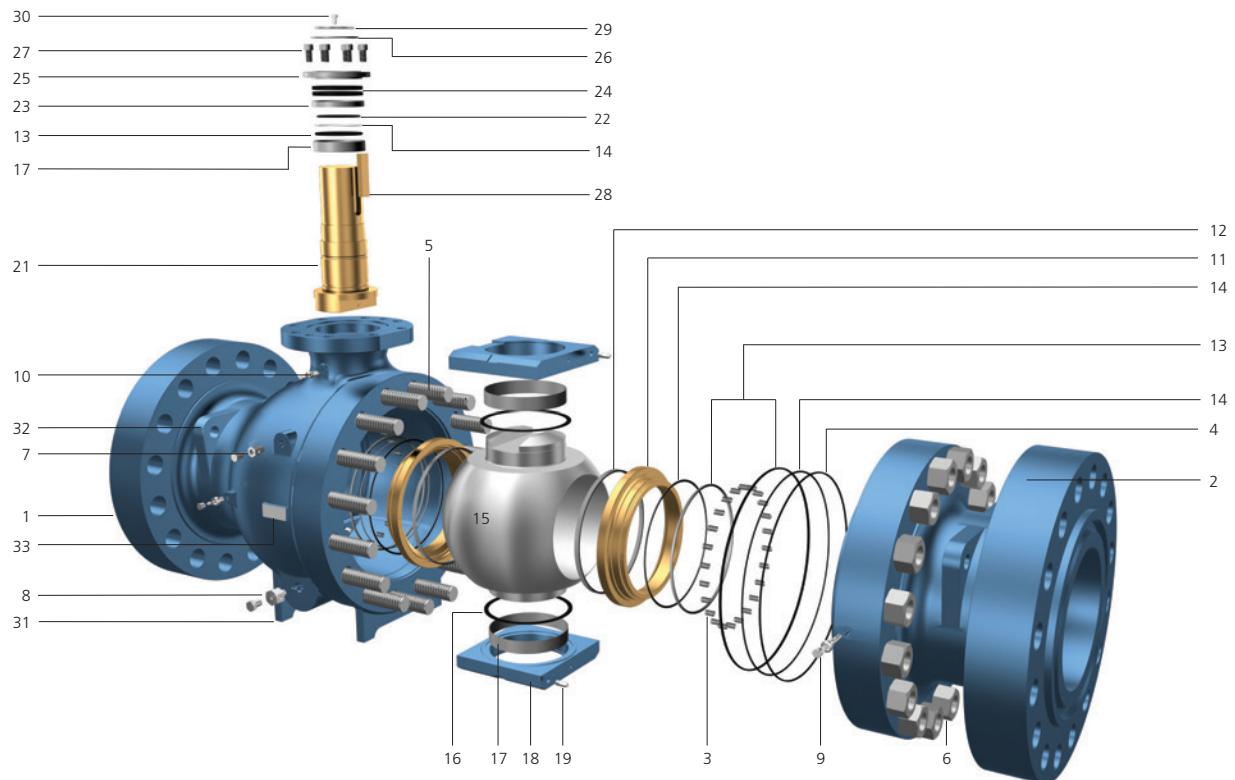
The valves conform to API 6D and can be offered with the API Monogram.

The quality management systems of L&T Valves have been certified to comply with:

- ISO 9001: 2015
- API Spec Q1
- CE (PED 97/ 23/ EC)
- ATEX (CE CD 94/ 9/ EC)

Quality is built into each and every valve through a meticulously implemented QAP. Established processes control all stages of manufacture to ensure quality consistent with international standards and customer requirements.

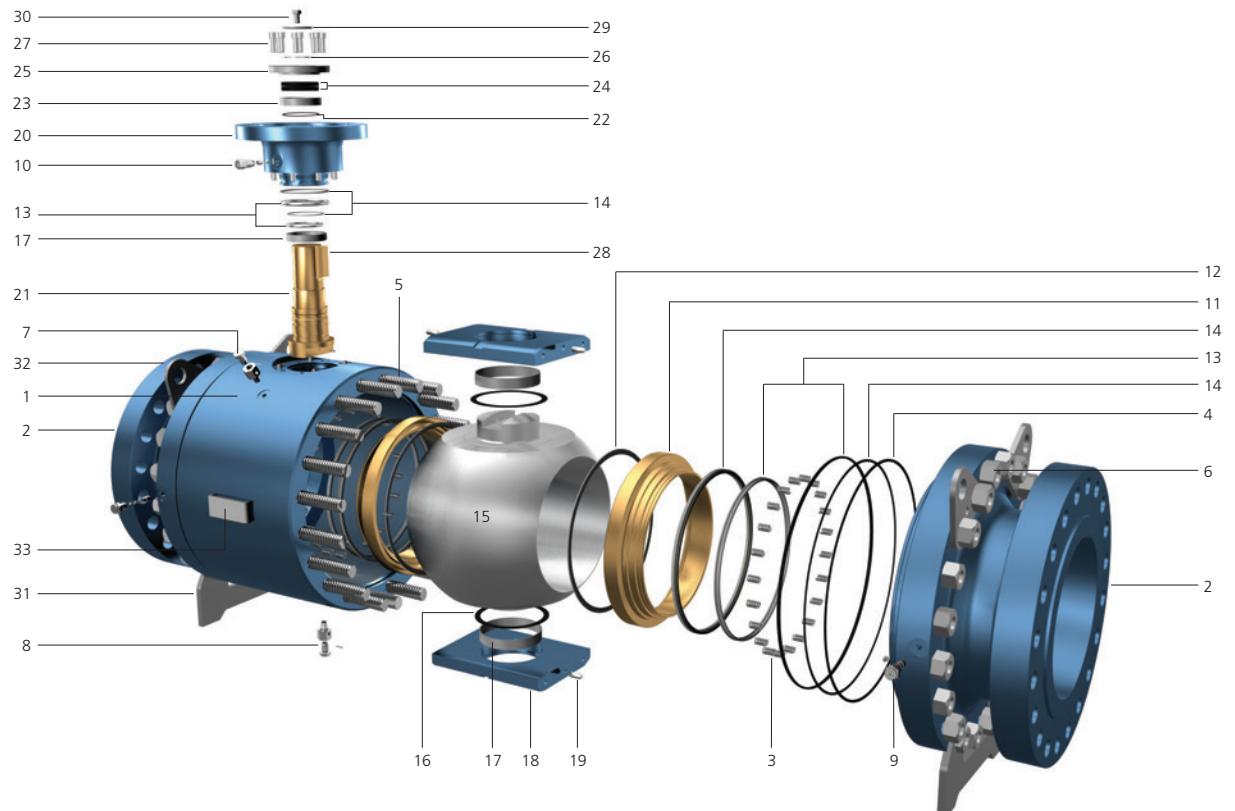
At L&T Valves, occupational health and safety as well as environmental protection are key priorities, and their management systems meet international standards.



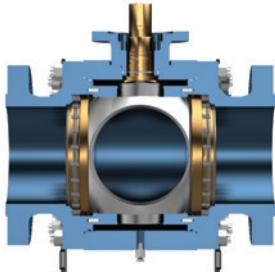
2-piece Trunnion-mounted Ball Valve

1 - Body	7 - Vent Plug	13 - O-ring	19 - Pin	25 - Gland	31 - Foot Support
2 - Connector	8 - Drain Plug	14 - Back-up Ring	20 - Stem Housing	26 - Circlip	32 - Lifting Lug
3 - Coil Spring	9 - Seat Sealant Injector	15 - Ball	21 - Stem	27 - Soc Head Cap Screw	33 - Name Plate
4 - Body Seal	10 - Stem Sealant Injector	16 - Thrust Washer	22 - Thrust Bearing	28 - Key	
5 - Stud	11 - Seat Ring	17 - Bearing	23 - Junk Ring	29 - Washer	
6 - Hex Nut	12 - Seat	18 - Bearing Block	24 - Packing	30 - Hex Head Screw	

3-piece Trunnion-mounted Ball Valve



Features & Benefits

**Double Block and Bleed**

L&T Valves offers Trunnion-mounted Ball Valves (TMBV) that conform to API 6D. The valve, in closed position, blocks flow from both valve ends when the cavity between the seating surfaces is vented through a bleed connection provided on the body cavity.

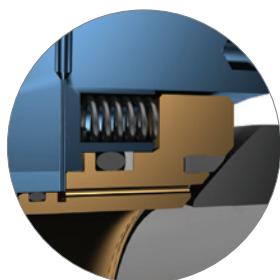
Inbuilt Double Block & Bleed feature enables on-line affirmation of seat sealing. The seat rings float in the flow-axis against a fixed ball and line pressure forces the spring-loaded seats against the ball to effect sealing.

Fire Safe

L&T Trunnion-mounted Ball Valves are fire-safe by design and meet the requirements of API 6FA, API 607 and ISO 10497.

**Blowout-proof Stem**

The stem of L&T Trunnion-mounted Ball Valves has an integral shoulder that butts against a matching profile in the body to make it blowout-proof. This feature also enables online replacement of packing rings during an emergency.

**Anti-static**

Build-up of static electricity due to friction between ball and soft seat material is a fire hazard. A spring-loaded plunger is provided on the stem to ensure electrical continuity and to dissipate any static electricity generated.

Cavity Relief

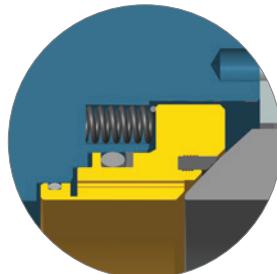
To prevent damage to valve seats and ball due to over-pressurisation inside cavity, all L&T Trunnion-mounted Ball Valves are provided with automatic cavity pressure relief mechanism. When pressure of entrapped fluid exceeds 1.33 times the rated pressure, the spring-loaded seat gets pushed away from the ball to relieve pressure.

Internal Trunnion Holder

L&T Trunnion-mounted Ball Valves are equipped with internal trunnion holders (bearing blocks). This design eliminates a leakage path as well as prevents accidental damage during handling.

Seat Variants

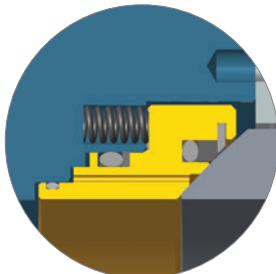
Soft Seat (Primary)



Sealing is obtained when the seat material comes into contact with the spherical surface of the ball.

The soft seat is placed within the seat ring and spring-loaded against the ball to ensure contact even at low line pressures.

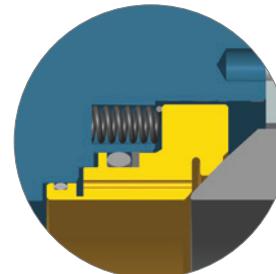
Metal Seat (Primary)



In Primary Metal, Secondary Soft (PMSS) seats, sealing is achieved by the simultaneous contact of primary metal seat ring and secondary soft insert with the ball.

The soft insert is backed by an elastomer O-ring to ensure contact with the ball.

Fully Metal Seat



Sealing is achieved by the contact of metal seat ring with the ball.

Seat rings can be offered with Tungsten/ Chromium Carbide coating or hardfacing with Stellite 6 or equivalent.

Pressure - Temperature Range for Seat & Seal Materials

Seat	Range (°C)
PTFE	-50 to 175
RPTFE	-100 to 200
Nylon 6	-40 to 121
Nylon PA12G	-50 to 125
Devlon® V API	-50 to 150
PEEK	-100 to 260
PCTFE	-200 to 150

PTFE & RPTFE seats are offered only up to class 300 & up to a maximum temperature of 160°C for class 300.

Seal	Range (°C)
HNBR	-50 to 165
FKM (Viton®)	-46 to 205
FFKM (Kalrez®)	-20 to 315
Lip Seal	-196 to 150

Elastomer seals with Anti-Explosive Decompression (AED) property is offered for Class 600 and above, and on customer demand

Double Piston Seat

L&T Trunnion-mounted Ball Valves are also offered with Double Piston seats. In this design, cavity pressure acts on both upstream and downstream seats to create a 'double piston' effect on seat rings that enhances sealing. Valves with Double Piston seats require an external cavity relief mechanism while handling non-compressible fluids.

Specials

L&T Trunnion-mounted Ball Valves are in service across the world in cross-country pipelines, offshore platforms, refineries and process plants. The valves have also made a mark in services such as single-buoy mooring projects, LPG caverns and seawater injection lines that test valve integrity and performance. Leveraging this proven expertise in flow-control, L&T Valves offers a range of customised solutions:

Low Temperature & Cryogenic Valves

L&T Valves manufactures a range of cryogenic and low temperature valves for temperatures as low as -196°C. The valves are offered with a variety of seals including spring-energized PTFE lip-seals, FKM and HNBR.



Twin-isolation Ball Valve (TIBV)

Twin-isolation ball valve provides double isolation in critical services that demand high reliability. The valve minimizes leakage paths, optimizes space utilization and provides an economical alternate to a two-valve system.



High Integrity Pressure Protection Systems (HIPPS)

L&T Trunnion-mounted Ball Valves are also used in High Integrity Pressure Protection Systems (HIPPS) offered by L&T Valves.



Top-Entry Ball Valves

L&T Valves offers Top-entry Ball Valves for critical services where even a small downtime can lead to huge costs. The valves are designed for online maintenance, without removing the valves from the pipeline.

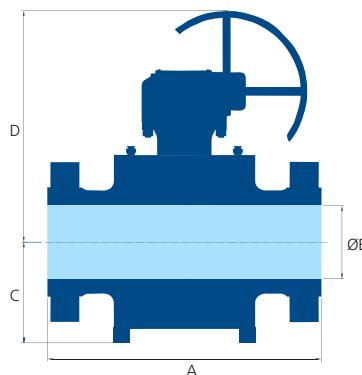


Ball Valves with Overlays

L&T Valves offers valves for highly corrosive services with internal wetted parts overlaid with materials such as Inconel, SS316L.

Trunnion-mounted Ball Valves

ASME Class 150
Full Bore



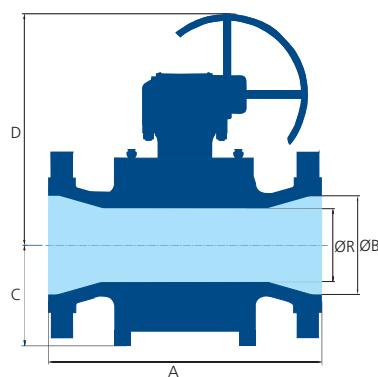
56" Class 150

Size	2-piece									3-piece								
	A			B	C	D	Wt.		A			B	C	D	Wt.			
	RF	RTJ	BW				FL	BW	RF	RTJ	BW				FL	BW		
2	178	191	216	49	60	160	20	16	-	-	-	-	-	-	-	-	-	-
3	203	216	283	74	90	260	35	30	-	-	-	-	-	-	-	-	-	-
4	229	241	305	100	105	280	45	40	-	-	-	-	-	-	-	-	-	-
6	394	406	457	150	160	485	140	120	-	-	-	-	-	-	-	-	-	-
8	457	470	521	201	215	595	235	205	457	470	521	201	320	600	290	260		
10	533	546	559	252	265	635	340	300	533	546	559	252	390	690	430	390		
12	610	622	635	303	310	720	530	465	610	622	635	303	410	710	620	560		
14	686	699	762	334	340	745	680	595	686	699	762	334	445	760	810	730		
16	762	775	838	385	380	790	870	760	762	775	838	385	490	785	1040	935		
18	864	876	914	436	430	885	1280	1130	864	876	914	436	535	830	1310	1180		
20	914	927	991	487	490	940	1625	1425	914	927	991	487	590	920	1860	1675		
24	1067	1080	1143	589	555	1010	2460	2150	1067	1080	1143	589	655	1000	3120	2817		
28	-	-	-	-	-	-	-	-	1245	-	1346	684	820	1130	4395	3955		
30	-	-	-	-	-	-	-	-	1295	-	1397	735	830	1190	5500	4975		
32	-	-	-	-	-	-	-	-	1372	-	1524	779	885	1255	6425	5780		
36	-	-	-	-	-	-	-	-	1524	-	1727	874	960	1400	8460	7615		
40	-	-	-	-	-	-	-	-	1753	-	1956	976	1020	1530	12120	10910		
42	-	-	-	-	-	-	-	-	1855	-	2083	1020	1080	1560	13630	12270		
48	-	-	-	-	-	-	-	-	2134	-	2170	1166	1130	1700	20680	18500		
56	-	-	-	-	-	-	-	-	2489	-	2489	1360	1350	2000	34210	30790		

All dimensions in mm and weights in kg

Trunnion-mounted Ball Valves

ASME Class 150
Reduced Bore



14" x 12" Class 150

Size	2-piece								3-piece									
	A			R	B	C	D	Wt.		A			R	B	C	D	Wt.	
	RF	RTJ	BW					FL	BW	RF	RTJ	BW					FL	BW
3 x 2	203	216	283	49	74	75	230	23	18	-	-	-	-	-	-	-	-	
4 x 3	229	241	305	74	100	90	260	40	35	-	-	-	-	-	-	-	-	
6 x 4	394	406	457	100	150	130	345	75	60	-	-	-	-	-	-	-	-	
8 x 6	457	470	521	150	201	160	485	165	140	-	-	-	-	-	-	-	-	
10 x 8	533	546	559	201	252	215	595	260	230	533	546	559	201	252	320	600	325	
12 x 10	610	622	635	252	303	265	635	360	320	610	622	635	252	303	390	690	495	
14 x 10	686	699	762	252	334	265	635	425	375	686	699	762	252	334	390	690	525	
14 x 12	686	699	762	303	334	310	720	560	490	686	699	762	303	334	410	710	670	
16 x 12	762	775	838	303	385	325	720	620	580	762	775	838	303	385	410	710	720	
16 x 14	762	775	838	334	385	340	745	725	645	762	775	838	334	385	445	760	830	
18 x 14	864	876	914	334	436	340	745	865	765	864	876	914	334	436	445	760	980	
20 x 16	914	927	991	385	487	380	790	945	825	914	927	991	385	487	490	785	1190	
20 x 18	914	927	991	436	487	430	885	1475	1400	914	927	991	436	487	535	830	1625	
24 x 20	1067	1080	1143	487	589	480	940	1850	1640	1067	1080	1143	487	589	590	920	2070	
28 x 24	1245		1346	589	684	555	1010	3540	3190	1245	-	1346	589	684	655	1000	4100	
30 x 24	1295		1397	589	735	555	1010	4260	3800	1295	-	1397	589	735	655	1000	5025	
36 x 30	-	-	-	-	-	-	-	-	-	1524	-	1727	735	874	830	1190	6250	
42 x 36	-	-	-	-	-	-	-	-	-	1855	-	2083	874	1020	960	1400	*	
48 x 42	-	-	-	-	-	-	-	-	-	2134	-	2170	1020	1166	1080	1560	*	
56 x 48	-	-	-	-	-	-	-	-	-	2489	-	2489	1166	1360	1185	1690	*	

All dimensions in mm and weights in kg

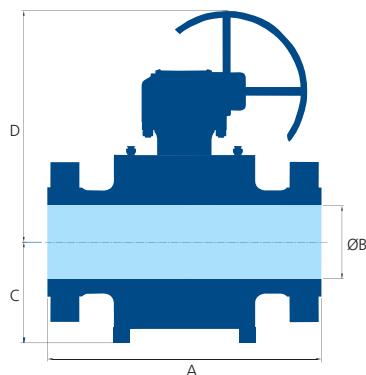
* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 300
Full Bore



16" Class 300

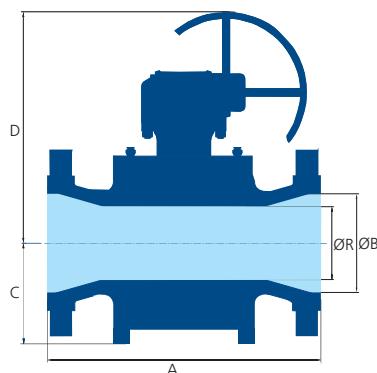


Size	2-piece									3-piece								
	A			B	C	D	Wt.		A			B	C	D	Wt.			
	RF	RTJ	BW				FL	BW	RF	RTJ	BW				FL	BW		
2	216	232	216	49	75	250	25	20	-	-	-	-	-	-	-	-	-	-
3	283	298	283	74	90	260	45	40	-	-	-	-	-	-	-	-	-	-
4	305	321	305	100	130	380	75	65	-	-	-	-	-	-	-	-	-	-
6	403	419	457	150	165	485	180	160	-	-	-	-	-	-	-	-	-	-
8	502	518	521	201	235	595	290	255	502	518	521	201	360	610	355	320		
10	568	584	559	252	275	665	445	405	568	584	559	252	380	650	530	475		
12	648	664	635	303	320	720	660	595	648	664	635	303	420	730	835	760		
14	762	778	762	334	360	820	900	800	762	778	762	334	460	760	1010	910		
16	838	854	838	385	390	850	980	850	838	854	838	385	490	850	1390	1250		
18	914	930	914	436	445	900	1620	1450	914	930	914	436	545	890	1805	1640		
20	991	1010	991	487	490	1005	2010	1790	991	1010	991	487	610	940	2290	2065		
24	1143	1165	1143	589	575	1080	3010	2710	1143	1165	1143	589	685	1075	3525	3200		
28	-	-	-	-	-	-	-	-	1346	1372	1346	684	825	1240	5310	4770		
30	-	-	-	-	-	-	-	-	1397	1422	1397	735	860	1310	6310	5680		
32	-	-	-	-	-	-	-	-	1524	1553	1524	779	890	1430	7420	6680		
36	-	-	-	-	-	-	-	-	1727	1756	1727	874	970	1480	10265	8645		
40	-	-	-	-	-	-	-	-	1956	-	1956	976	1040	1560	12980	11680		
42	-	-	-	-	-	-	-	-	2083	-	2083	1020	1080	1650	14645	13000		
48	-	-	-	-	-	-	-	-	2170	-	2170	1166	1210	1770	22460	20215		
56	-	-	-	-	-	-	-	-	2743	-	2743	1360	1400	2000	38285	34455		

All dimensions in mm and weights in kg

Trunnion-mounted Ball Valves

ASME Class 300
Reduced Bore



16" x 14" Class 300

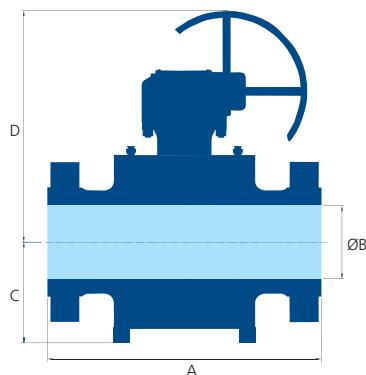
Size	2-piece								3-piece									
	A			R	B	C	D	Wt.		A			R	B	C	D	Wt.	
	RF	RTJ	BW					FL	BW	RF	RTJ	BW					FL	BW
3 x 2	283	298	283	49	74	75	250	30	25	-	-	-	-	-	-	-	-	-
4 x 3	305	321	305	74	100	90	260	55	45	-	-	-	-	-	-	-	-	-
6 x 4	403	419	457	100	150	130	380	100	90	-	-	-	-	-	-	-	-	-
8 x 6	502	518	521	150	201	165	485	190	170	-	-	-	-	-	-	-	-	-
10 x 8	568	584	559	201	252	235	595	310	270	568	584	559	201	252	360	610	400	365
12 x 10	648	664	635	252	303	275	665	470	410	648	664	635	252	303	380	650	585	535
14 x 10	762	778	762	252	334	275	665	620	550	762	778	762	252	334	380	650	648	585
14 x 12	762	778	762	303	334	320	720	740	655	762	778	762	303	334	420	730	840	755
16 x 12	838	854	838	303	385	350	720	765	670	838	854	838	303	385	420	730	990	890
16 x 14	838	854	838	334	385	360	820	990	880	838	854	838	334	385	460	760	1100	990
18 x 14	914	930	914	334	436	385	820	1210	1070	914	930	914	334	436	460	760	1360	1225
18 x 16	914	930	914	385	436	390	850	1350	1190	914	930	914	385	436	490	850	1590	1430
20 x 16	991	1010	991	385	487	400	850	1480	1310	991	1010	991	385	487	490	850	1695	1525
20 x 18	991	1010	991	436	487	445	900	1870	1680	991	1010	991	436	487	545	890	2075	1900
22 x 18	1092	1114	1092	436	538	445	900	2050	1820	1092	1114	1092	436	538	545	890	2200	2000
24 x 20	1143	1165	1143	487	589	490	1005	2560	2285	1143	1165	1143	487	589	610	940	2945	2690
28 x 24	1346	1372	1346	589	684	575	1080	3905	3525	1346	1372	1346	589	684	650	1080	4500	4180
30 x 24	1397	1422	1397	589	735	575	1080	4900	4350	1397	1422	1397	589	735	650	1080	5635	5180
36 x 30	-	-	-	-	-	-	-	-	-	1727	1756	1727	735	874	860	1310	8260	7435
42 x 36	-	-	-	-	-	-	-	-	-	2083	-	2083	874	1020	970	1480	9200	8280
48 x 42	-	-	-	-	-	-	-	-	-	2170	-	2170	1020	1166	1080	1650	*	*
56 x 48	-	-	-	-	-	-	-	-	-	2743	-	2743	1166	1360	1185	1710	*	*

All dimensions in mm and weights in kg

* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 600
Full Bore



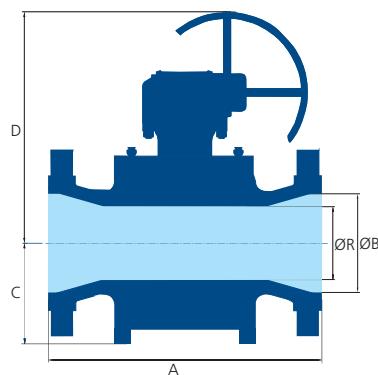
14" Class 600

Size	2-piece								3-piece							
	A			B	C	D	Wt.		A			B	C	D	Wt.	
	RF	RTJ	BW				FL	BW	RF	RTJ	BW				FL	BW
2	292	295	292	49	75	250	35	30	-	-	-	-	-	-	-	-
3	356	359	356	74	105	355	65	55	-	-	-	-	-	-	-	-
4	432	435	432	100	130	450	110	100	-	-	-	-	-	-	-	-
6	559	562	559	150	175	565	295	270	-	-	-	-	-	-	-	-
8	660	664	660	201	235	645	450	400	660	664	660	201	340	575	480	435
10	787	791	787	252	310	765	745	670	787	791	787	252	390	735	820	745
12	838	841	838	303	355	810	970	870	838	841	838	303	450	950	1130	1035
14	889	892	889	334	380	840	1330	1210	889	892	889	334	470	960	1480	1365
16	991	994	991	385	425	935	1570	1405	991	994	991	385	530	1060	1915	1760
18	1092	1095	1092	436	475	1060	2350	2130	1092	1095	1092	436	570	1065	2240	2025
20	1194	1200	1194	487	530	1130	2965	2685	1194	1200	1194	487	600	1190	2690	2420
24	1397	1407	1397	589	600	1265	4500	4050	1397	1407	1397	589	740	1285	5445	4990
28	-	-	-	-	-	-	-	-	1549	1562	1549	684	840	1300	7485	6825
30	-	-	-	-	-	-	-	-	1651	1664	1651	735	900	1310	9880	9090
32	-	-	-	-	-	-	-	-	1778	1794	1778	779	940	1340	11850	10515
36	-	-	-	-	-	-	-	-	2083	2099	2083	874	1010	1390	14780	11245
40	-	-	-	-	-	-	-	-	2337	2350	2337	976	1040	1540	17200	15480
42	-	-	-	-	-	-	-	-	2437	2450	2437	1020	1080	1670	19790	17810
48	-	-	-	-	-	-	-	-	2540	2553	2540	1166	1260	1720	28985	26085
56	-	-	-	-	-	-	-	-	2949	2962	2949	1360	1450	2100	47665	42900

All dimensions in mm and weights in kg

Trunnion-mounted Ball Valves

ASME Class 600
Reduced Bore



30" x 24" Class 600

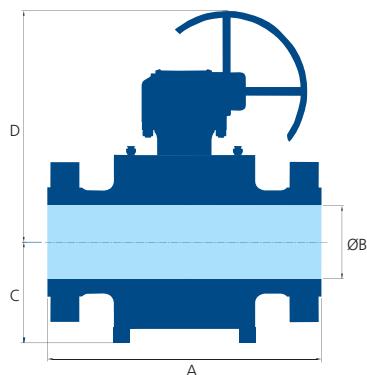
Size	2-piece								3-piece									
	A			R	B	C	D	Wt.		A			R	B	C	D	Wt.	
	RF	RTJ	BW					FL	BW	RF	RTJ	BW					FL	BW
3 x 2	356	359	356	49	74	75	250	40	35	-	-	-	-	-	-	-	-	-
4 x 3	432	435	432	74	100	105	355	90	80	-	-	-	-	-	-	-	-	-
6 x 4	559	562	559	100	150	130	450	145	130	-	-	-	-	-	-	-	-	-
8 x 6	660	664	660	150	201	175	565	325	295	-	-	-	-	-	-	-	-	-
10 x 8	787	791	787	201	252	235	645	565	510	787	791	787	201	252	340	575	630	565
12 x 10	838	841	838	252	303	310	765	800	715	838	841	838	252	303	390	650	855	765
14 x 10	889	892	889	252	334	310	765	965	870	889	892	889	252	334	390	650	1080	975
14 x 12	889	892	889	303	334	355	810	1050	960	889	892	889	303	334	450	950	1275	1160
16 x 12	991	994	991	303	385	355	810	1170	1050	991	994	991	303	385	450	950	1355	1230
16 x 14	991	994	991	334	385	380	840	1465	1345	991	994	991	334	385	470	960	1685	1545
18 x 14	1092	1095	1092	334	436	380	840	1540	1410	1092	1095	1092	334	436	470	960	1785	1630
18 x 16	1092	1095	1092	385	436	425	935	1735	1545	1092	1095	1092	385	436	530	1060	2000	1820
20 x 16	1194	1200	1194	385	487	425	935	2065	1855	1194	1200	1194	385	487	530	1060	2130	1915
20 x 18	1194	1200	1194	436	487	475	1060	2415	2175	1194	1200	1194	436	487	570	1065	2775	2535
22 x 18	1295	1305	1295	436	538	475	1060	2675	2390	1295	1305	1295	436	538	570	1065	2945	2695
24 x 20	1397	1407	1397	487	589	530	1130	3300	3100	1397	1407	1397	487	589	600	1190	3800	3465
28 x 24	1549	1562	1549	589	684	600	1265	5250	4700	1549	1562	1549	589	684	740	1285	6040	5615
30 x 24	1651	1664	1651	589	735	600	1265	6780	6100	1651	1664	1651	589	735	740	1285	7800	7255
36 x 30	-	-	-	-	-	-	-	-	-	2083	2099	2083	735	874	900	1310	9845	8860
42 x 36	-	-	-	-	-	-	-	-	-	2437	2450	2437	874	1020	1010	1390	11100	9990
48 x 42	-	-	-	-	-	-	-	-	-	2540	2553	2540	1020	1166	1030	1670	*	*
56 x 48	-	-	-	-	-	-	-	-	-	2949	2962	2949	1166	1360	1260	1720	*	*

All dimensions in mm and weights in kg

* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 900
Full Bore

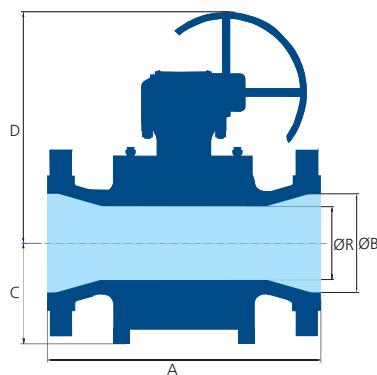


Size	A			B	C	D	Wt.		Design
	NPS	RF	RTJ				FL	BW	
2	368	371	368	49	95	335	65	60	2-piece
3	381	384	381	74	120	435	85	70	
4	457	460	457	100	145	545	160	145	
6	610	613	610	150	195	620	350	320	
8	737	740	737	201	360	670	650	590	
10	838	841	838	252	410	770	915	820	
12	965	968	965	303	460	865	1430	1300	
14	1029	1038	1029	322	500	910	1600	1445	
16	1130	1140	1130	373	545	940	2195	1970	3-piece
18	1219	1232	1219	423	580	1060	3150	2860	
20	1321	1334	1321	471	650	1215	4880	4475	
24	1549	1568	1549	570	690	1305	7300	6655	
28	1753	1775	1753	665	825	1410	10125	9110	
30	1880	1902	1880	712	890	1450	12030	10830	
32	2032	2054	2032	760	910	1460	14024	12620	
36	2286	2315	2286	855	965	1475	20075	18070	

All dimensions in mm and weights in kg

Trunnion-mounted Ball Valves

ASME Class 900
Reduced Bore



10" x 8" Class 900

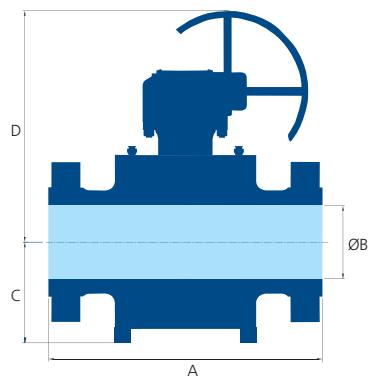
Size	A			R	B	C	D	Wt.		Design
	NPS	RF	RTJ					FL	BW	
3 x 2	381	384	381	49	74	95	335	70	65	2-piece
4 x 3	457	460	457	74	100	120	435	110	100	
6 x 4	610	613	610	100	150	145	545	210	190	
8 x 6	737	740	737	150	201	195	620	380	335	
10 x 8	838	841	838	201	252	360	670	750	705	
12 x 10	965	968	965	252	303	410	770	1055	980	
14 x 10	1029	1038	1029	252	322	410	770	1120	1050	
14 x 12	1029	1038	1029	303	322	460	865	1515	1375	
16 x 12	1130	1140	1130	303	373	460	865	1610	1455	
16 x 14	1130	1140	1130	322	373	500	910	1770	1585	
18 x 14	1219	1232	1219	322	423	500	910	1830	1650	3-piece
18 x 16	1219	1232	1219	373	423	545	940	2525	2310	
20 x 16	1321	1334	1321	373	471	545	940	2680	2445	
20 x 18	1321	1334	1321	423	471	580	1060	3625	3330	
24 x 20	1549	1568	1549	471	570	650	1215	5175	4845	
28 x 24	1753	1775	1753	570	665	690	1305	7740	7245	
30 x 24	1880	1902	1880	570	712	690	1305	8205	7450	
36 x 30	2286	2315	2286	712	855	890	1450	12755	11900	
42 x 36	*	*	*	855	1006	965	1475	21300	19740	
48 x 42	*	*	*	855	1006	1010	1500	*	*	

All dimensions in mm and weights in kg

* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 1500
Full Bore



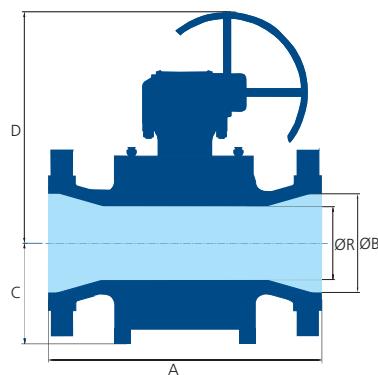
14" Class 1500

Size	A			B	C	D	Wt.		Design
	NPS	RF	RTJ				FL	BW	
2	368	371	368	49	95	340	70	60	2 Piece
3	470	473	470	74	125	445	110	95	
4	546	549	546	100	180	605	265	240	
6	705	711	705	144	225	645	490	440	
8	832	841	832	192	390	750	935	855	3 Piece
10	991	1000	991	239	475	875	1800	1650	
12	1130	1146	1130	287	510	1020	2580	2355	
14	1257	1276	1257	315	550	1060	3350	3055	
16	1384	1407	1384	360	620	1185	4190	3770	
18	1537	1559	1537	406	645	1235	6330	5695	
20	1664	1686	1664	454	785	1305	8800	7880	
24	1950	1972	1950	546	845	1465	14435	12995	

All dimensions in mm and weights in kg

Trunnion-mounted Ball Valves

ASME Class 1500
Reduced Bore



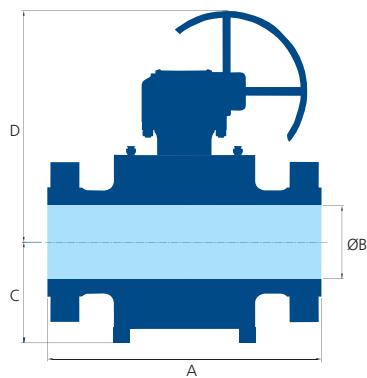
Size	A			R	B	C	D	Wt.		Design
	NPS	RF	RTJ					FL	BW	
3 x 2	470	473	470	49	74	95	340	85	80	2-piece
4 x 3	546	549	546	74	100	125	445	155	140	
6 x 4	705	711	705	100	144	180	605	355	320	
8 x 6	832	841	832	144	192	265	645	580	520	
10 x 8	991	1000	991	192	239	390	750	1125	1020	3-piece
12 x 10	1130	1146	1130	239	287	475	875	1910	1745	
14 x 10	1257	1276	1257	239	315	475	875	2150	1940	
14 x 12	1257	1276	1257	287	315	510	1020	2740	2500	
16 x 12	1384	1407	1384	287	360	510	1020	2875	2585	
16 x 14	1384	1407	1384	315	360	550	1060	3725	3400	
18 x 14	1537	1559	1537	315	406	550	1060	4100	3650	
18 x 16	1537	1559	1537	360	406	620	1185	4900	4400	
20 x 16	1664	1686	1664	360	454	625	1185	5150	4635	
20 x 18	1664	1686	1664	406	454	645	1235	6710	5975	
24 x 20	1950	1972	1950	454	546	785	1350	9860	8770	
28 x 24	*	*	*	546	641	845	1465	*	*	
30 x 24	*	*	*	546	686	845	1465	*	*	

All dimensions in mm and weights in kg

* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 2500
Full Bore



16" Class 2500

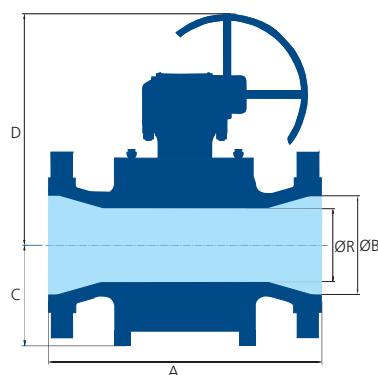
Size	A			B	C	D	Wt.		Design
	NPS	RF	RTJ				FL	BW	
2	451	454	451	42	120	360	105	90	2-piece
3	578	584	578	62	145	525	205	170	
4	673	683	673	87	185	605	370	310	
6	914	927	914	131	320	750	1100	1000	
8	1022	1038	1022	179	550	890	1980	1820	3-piece
10	1270	1292	1270	223	555	1045	3275	3000	
12	1422	1445	1422	265	680	1125	5150	4635	
14	1575	1600	1575	292	700	1235	8015	7210	
16	1752	1778	1752	333	780	1350	10700	9700	
18	*	*	*	374	*	*	*	*	

All dimensions in mm and weights in kg

* Contact L&T Valves for weights

Trunnion-mounted Ball Valves

ASME Class 2500
Reduced Bore



20" x 18" Class 2500

Size	A			R	B	C	D	Wt.		Design
	NPS	RF	RTJ					FL	BW	
3 x 2	578	584	578	42	62	120	360	170	155	2-piece
4 x 3	673	683	673	62	87	145	525	260	230	
6 x 4	914	927	914	87	131	185	605	575	530	
8 x 6	1022	1038	1022	131	179	320	750	1225	1120	
10 x 8	1270	1292	1270	179	223	520	890	2420	2245	3-piece
12 x 10	1422	1445	1422	223	265	550	1045	3650	3350	
14 x 10	1575	1600	1575	223	292	555	1045	4150	3780	
14 x 12	1575	1600	1575	265	292	680	1125	5800	5380	
16 x 12	1752	1778	1752	265	333	680	1125	6480	5900	
16 x 14	1752	1778	1752	292	333	730	1235	8800	7900	
18 x 14	2120	2145	2120	292	374	730	1235	9460	8515	
18 x 16	2120	2145	2120	333	374	780	1350	11625	10450	
20 x 16	2170	2195	2170	333	419	780	1350	12850	11560	
20 x 18	2170	2195	2170	374	419	860	1400	15820	14470	

All dimensions in mm and weights in kg

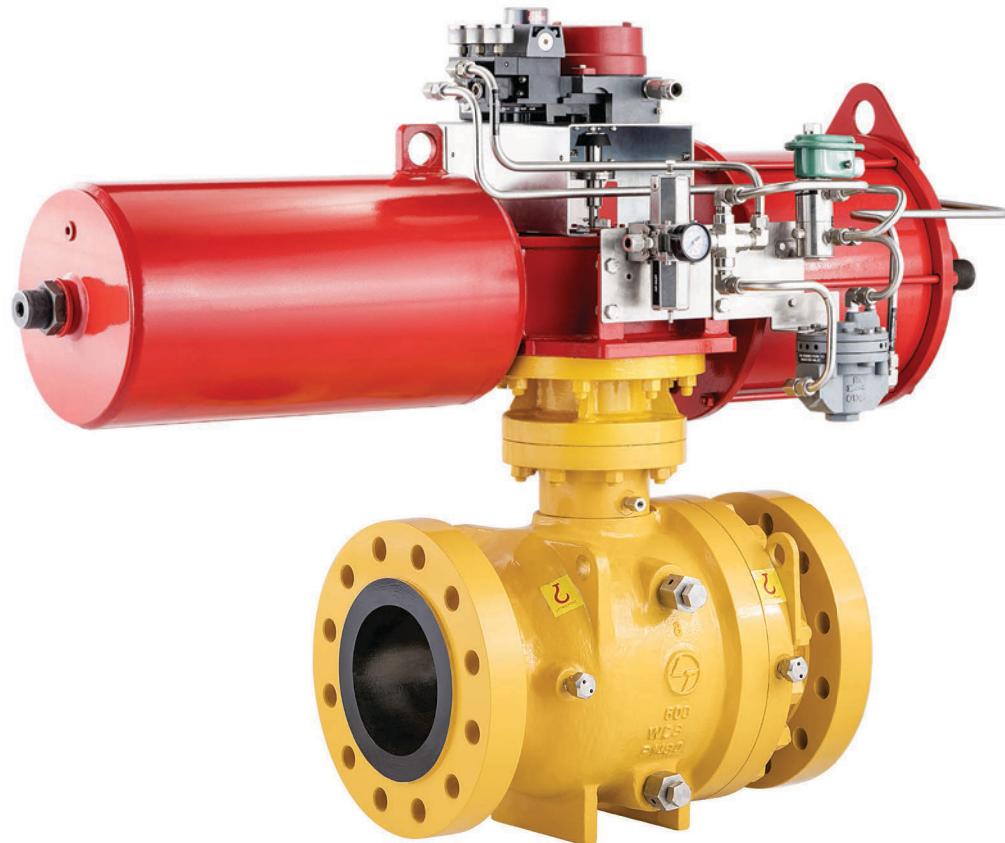
Ordering Information

Valve	Bore	Configuration	ASME Class	Ends	Operator	Accessories
T - TMBV	F - Full Bore	A - 2-piece Bolted, Soft Seat	2 - Cl. 150	33 - Flanged RF	G - Gear Unit	X - Extension Spindle
	R - Reduced Bore	B - 2-piece Bolted, PMSS*	3 - Cl. 300	55 - Flanged RTJ	N - Bare Shaft	L - Locking Device
		C - 2-piece Bolted, Metal Seat	6 - Cl. 600	66 - Butt-weld	W - Wrench/ Lever	S - Special
		D - 2-piece Welded, Soft Seat	9 - Cl. 900	36 - Flanged RF & Butt-weld	E - Electrical Actuator	I - Limit Switch
		E - 2-piece Welded, PMSS*	A - Cl. 1500	56 - Flanged RTJ & Butt-weld	P - Pneumatic Actuator	
		F - 2-piece Welded, Metal Seat	B - Cl. 2500		O - Gas-over-Oil Actuator	
		G - 3-piece Bolted, Soft Seat			H - Hydraulic Actuator	
		H - 3-piece Bolted, PMSS*			T - Electro-hydraulic Actuator	
		I - 3-piece Bolted, Metal Seat				
		J - 3-piece Welded, Soft Seat				
		K - 3-piece Welded, PMSS*				
		L - 3-piece Welded, Metal Seat				
		M - Top Entry, Soft Seat				
		N - Top entry, PMSS*				
		O - Top Entry, Metal Seat				
		P - Twin-isolation, Soft Seat				
		Q - Twin-isolation, PMSS*				
		R - Twin-isolation, Metal Seat				

*PMSS - Primary Metal Seated,
Secondary Soft Seated

Valves Automation Solutions

Leveraging in-house capabilities in system design, manufacture, integration and testing, L&T Valves offers a comprehensive range of SIL-capable Valve Automation Solutions that go beyond industry standards and customer expectations.



The L&T Valves Advantage

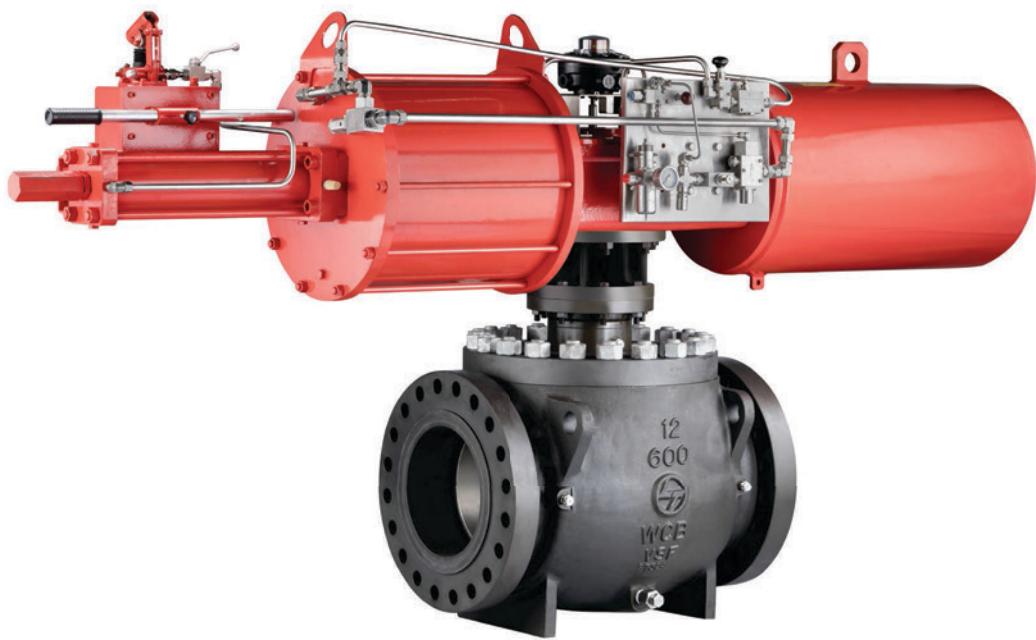
- Versatile range of valves
- Flow-control expertise of over 55 years
- World-class manufacturing facility
- In-house capability to design and integrate customized automation solutions
- Designs reviewed by Functional Safety Engineer
- Flexibility to offer any combination of valve/ actuator/ accessory/ communication protocol
- New-build and retrofitting options for automation systems for valves
- Trained personnel for commissioning and service support
- Single-point warranty for the complete valve automation system

Emergency Shutdown Valves

L&T Valves offers Emergency shutdown / Blow down Valves (ESDV/ SDV/ BDV) built on Trunnion-mounted Ball Valves.

Features:

- SIL2 or SIL3-capable System
- Fast closing/ opening – operating time less than 2 seconds
- Fail-safe configuration (Open/ Close/ Stay-put)
- Redundancy – 1oo2/ 2oo3 for Solenoid Valve
- Partial Stroke Test (PST) facility
- Open/ Close Position Indicator
- Instruments suitable for Hazardous Area Classification IP/ NEMA/ ATEX/ IEC/ FM/ CE/ PESO



Options

- ESD via Momentary/ Pulse signal
- Instruments mounted on IP cabinet box
- Local Control Station (LCS) with customized local operating function
- Manual open/ close
- Back-up Air Volume Tank
- Pneumatic ESD control without electric source

High Integrity Pressure Protection System (HIPPS)

L&T Valves offers a range of customised SIL3-capable High Integrity Pressure Protection Systems (HIPPS) for over-pressure protection.

Conventionally, in case of over-pressurisation, the gases released are primarily flared. Flaring and venting of flammable gases pose health and safety hazards and constitute a significant threat to the environment.

High Integrity Pressure Protection System (HIPPS) is a Safety Instrumented System (SIS), which by definition is a distinct, reliable system, used to contain catastrophic over-pressurisation and prevent the release of toxic, flammable or explosive chemicals.

HIPPS protects downstream equipment by shutting-off the source of over-pressure within seconds, and is designed to offer at least the same reliability as a safety relief valve or flare system.



Compliance Standards:

- IEC 61511 and IEC 61508

Components:

- Valves - Ball or Butterfly
- Actuators - Pneumatic, Hydraulic or Electro-hydraulic
- Pressure Transmitters
- Logic Solver – Solid state or Programmable Logic Controller (PLC)
- High Integrity Manifold Block

Redundancy:

- Final control element (1oo2)
- Solenoid valves (1oo2)
- Pressure transmitters (2oo3)
- Logic Solver – Redundancy on I/O Cards, Relays, Communication and Power Module

Gate, Globe & Check Valves

Bolted Bonnet & Pressure-seal

#150 to 4500, Up to 72" (1800 mm)

Cryogenic Valves

Low Emission Valves

Bellow-sealed Valves

API monogrammed, SIL3-Capable



Ball Valves

Trunnion-mounted

#150 to 2500, Up to 56" (1400 mm)

Side-entry and Top-entry

Soft-seated and Metal-seated

API monogrammed, SIL3-Capable



Floating Ball Valves, #150 to 2500, Up to 8" (200 mm)

Soft-seated and Metal-seated

Butterfly Valves

Triple-offset, #150 to 1500, Up to 100" (2500 mm)

API monogrammed, SIL3-Capable

Soft-seated, PN6 to PN25

Integrally-moulded - Wafer, Lugged & Flanged, Up to 36" (900 mm)

Large-size Flanged Valves, Up to 120" (3000 mm)



Double Block and Bleed Plug Valves

#150 to 600,

Up to 42" (1050 mm)

API Monogrammed



Valve Automation Solutions

SIL3-capable Automation Solutions

High Integrity Pressure Protection System (HIPPS),

Emergency Shutdown Valves (ESDV)



LAMP L&T Valves Asset Management Programme

Smart Valves with diagnostic and communication modules



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CIN: U74999MH1961PLC012188

Publication Number: VC103/1118. As we continuously endeavour to improve our products,
the data given herein is subject to change. Please refer www.Lntvalves.com for the latest publication.

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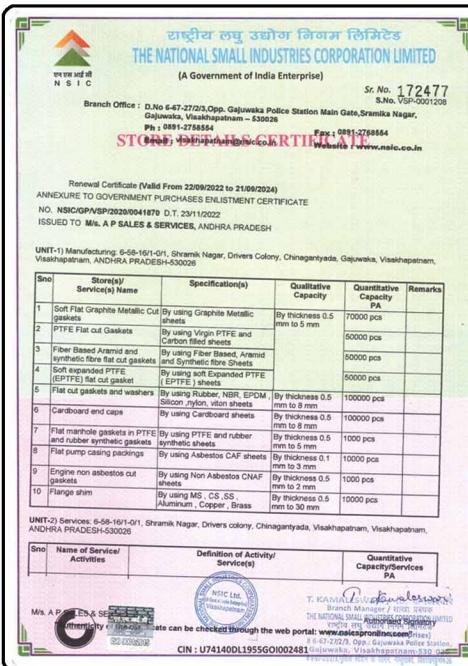


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