CHAODA

Soft Seated Ball Valves

Material & Engineering Specifics

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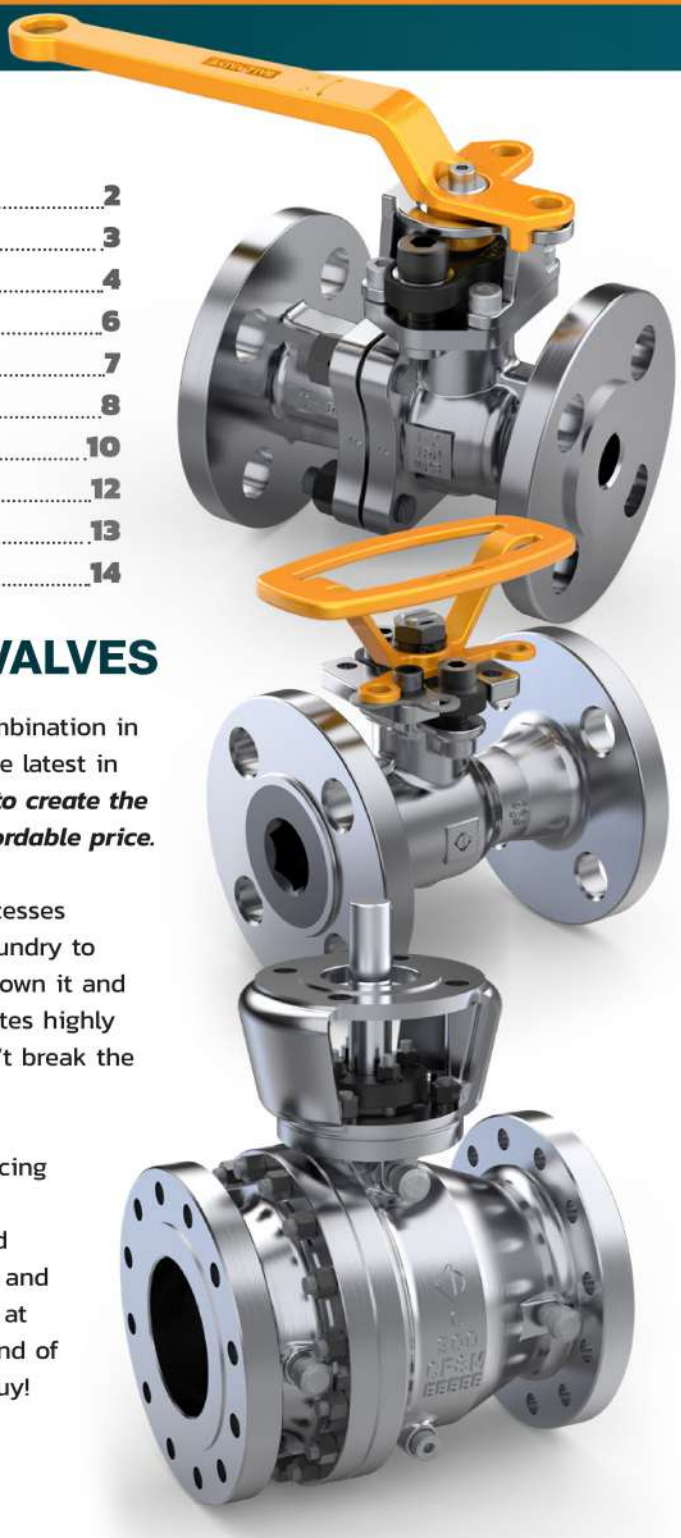


CHAODA'S SOFT SEATED BALL VALVES

The Chaoda Group is proud to be able to offer a unique combination in the Soft Seated Ball Valve industry – field proven designs, the latest in processing technology, and high efficiency manufacturing – ***to create the highest quality Soft Seated Ball Valve at an extremely affordable price.***

We are a fully integrated manufacturer owning all of the processes required to produce these valves. From the design to the foundry to the machining and processing to the assembly and test, we own it and control it. This streamlined, tightly controlled system generates highly consistent product tailored to your needs at a cost that won't break the budget.

Since 1984, The Chaoda Group has been committed to producing high quality valves for industry at a competitive price. Consistency in ownership has kept this strategy on track and maintained a philosophy of ongoing investment in Research and Development as well as manufacturing efficiencies all aimed at staying ahead of the competition. The result is ultimate blend of high quality Soft Seated Ball Valves that you can afford to buy!

INDUSTRIES WE SERVE

SPECIFICATIONS

We are committed to product safety and quality.

We conform to the following standards, as applicable:

API	AMERICAN PETROLEUM INSTITUTE
SPEC. 6D	Specification for Pipeline Valves
STD. 6FA	Fire Test for Valves
STD. 607	Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats
STD. 608	Metal Ball Valves - Flanged, Threaded, and Welding Ends
STD. 598	Valve Inspection and Testing
SPEC. Q1	QMS Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry

ANSI / ASME	AMERICAN NATIONAL STANDARD INSTITUTE / AMERICAN SOCIETY OF MECHANICAL ENGINEERS
B1.20.1	Pipe threads, general purpose
B16.5	Pipe flanges & flange fittings
B16.10	Face-to-Face & End-to-End dimensions of Valves
B16.34	Valves - Flanged, Threaded, and Welding End
B31.3	Process Piping

NACE	NATIONAL ASSOCIATION OF CORROSION ENGINEERS
MR0175	Materials for use in H2S containing environments in oil & gas production
MR0103	Metallic materials resistant to sulfide stress cracking in corrosive petroleum refining environments

CSA	CANADIAN STANDARDS ASSOCIATION
Z245.12	Steel Flanges
Z245.15	Steel Valves
Z662	Oil and Gas Pipeline Systems

CRN	PROVINCE	CRN	PROVINCE	CRN	PROVINCE
0C16847.2	Alberta	0C16847.20	Newfoundland	CSA 0C16847.26	Quebec
Exempt	British Columbia	0C16847.2T	Northwest Territories	0C16847.2Y	Yukon
0C16847.24	Manitoba	0C16847.28	Nova Scotia	CSA 0C16847.26	Saskatchewan
0C16847.2N	Nunavut	0C18995.5	Ontario		
0C16847.27	New Brunswick	0C16847.29	Prince Edward Island		

SOME MATERIAL OPTIONS

Chaoda offers our Soft Seated Ball Valves in a variety of material options ensuring optimal performance in virtually any operating environment.

PART NAME	BILL OF MATERIALS
Body/End Connection	Forged or Cast Carbon Steels; Stainless Steels; Duplex, Chrome, and Nickel Alloys
Ball	A182 F6a; 316 SS; Duplex Alloys; Inconel™ and other Nickel Alloys
Body Seal	S/S and Graphite, PTFE and Graphite
Seal	PTFE, RPTFE, DEVLON, PEEK
Trunnion Seat Springs	17-4 PH SS; Inconel™ X750
Stem	A182 F6a; 316 SS; 17-4 PH SS; XM-19; Inconel™ 718
Stem Packing	Graphite, PTFE

Other material options available. Please consult factory.

FLOATING SOFT SEATED BALL VALVE

A Powerhouse For Any Industry

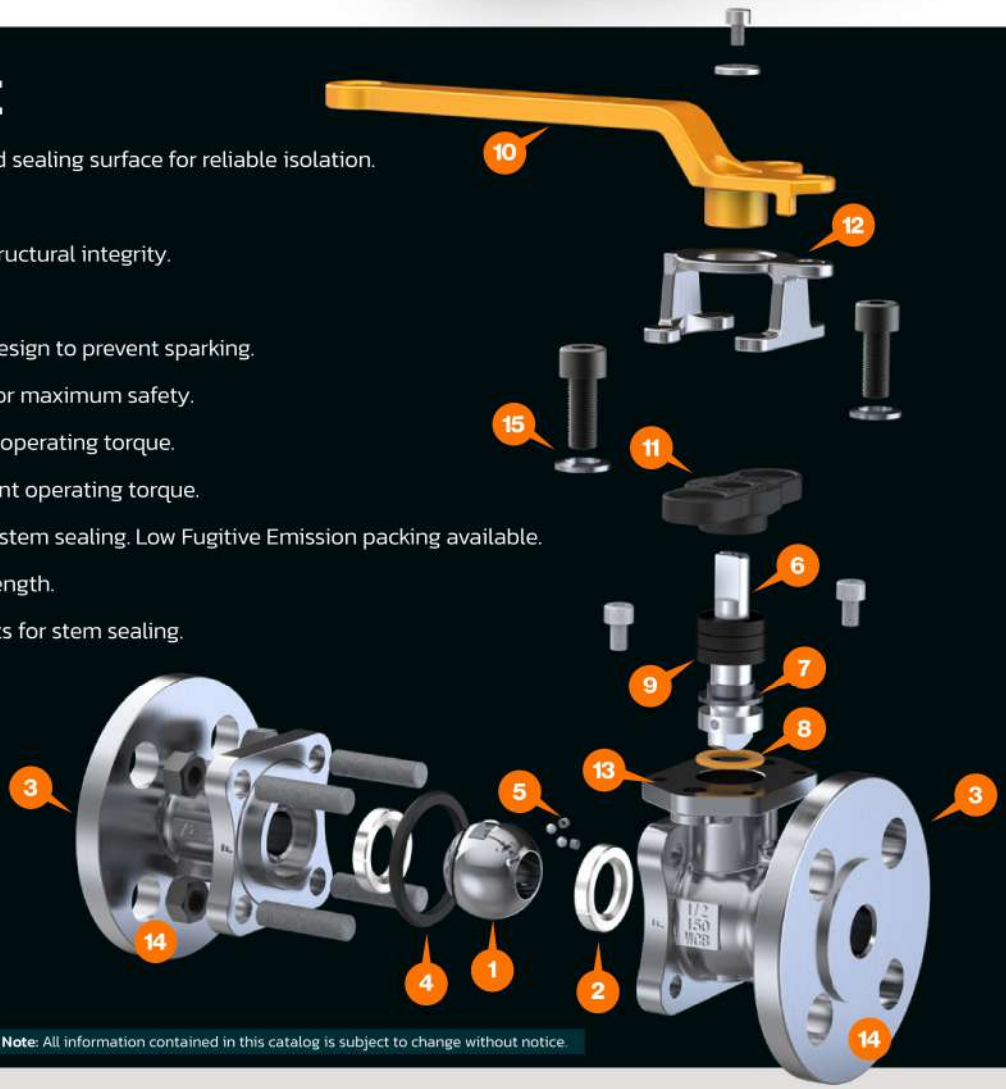
Employing the latest in processing technology and manufacturing automation, Chaoda offers high quality Soft Seated ball valves for all industrial service conditions.

Chaoda offers a broad range of soft seat materials designed for optimal performance in many applications. Whether it is our standard permeation resistant modified copolymer seat material or some other application specific material, our flawless execution in machining and assembly make Chaoda valves the most dependable sealing Soft Seated ball valve available – at an affordable price!

Let Chaoda be your ball valve of choice, today and every day!

TAKE A LOOK INSIDE

1. **Precision Machined Ball –** Maximized sealing surface for reliable isolation.
2. **Soft Seat Rings –** For a perfect seal.
3. **Two-Piece Body Design –** Provides structural integrity.
4. **Body Seal –** For a leak-tight joint.
5. **Dual Grounding Device –** Antistatic design to prevent sparking.
6. **Blowout Proof Stem –** High strength for maximum safety.
7. **Stem Guide –** Helps ensure consistent operating torque.
8. **Stem Bushing –** Helps ensure consistent operating torque.
9. **Stem Packing –** Provides for excellent stem sealing. Low Fugitive Emission packing available.
10. **Cast Steel Handle –** For maximum strength.
11. **Packing Gland –** Provides adjustments for stem sealing.
12. **Locking Device –** For security when needed.
13. **ISO Mounting Dimensions –** Standardized to fit most actuation mounting.
14. **End Connections –** Flanges shown, other designs available.
15. **Live-loaded Gland With Belleville Spring –** Provides long service life with very low maintenance.



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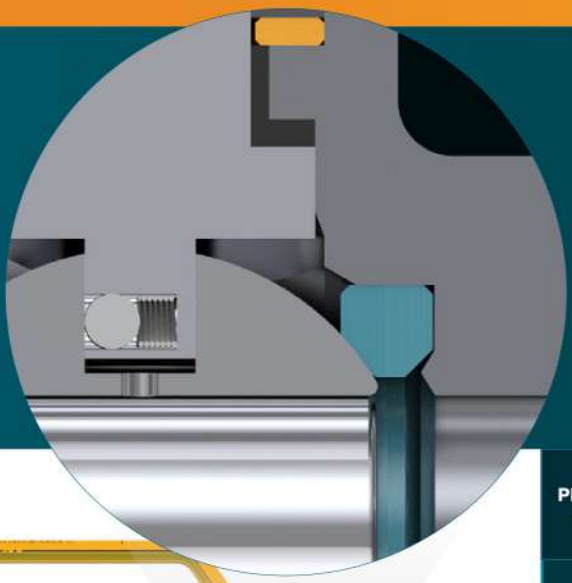
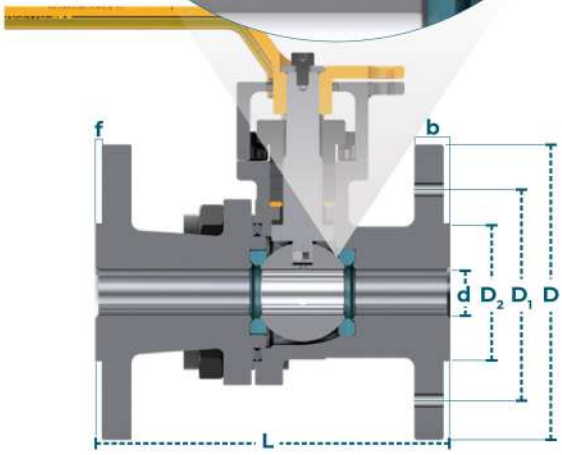


A unique technique has been employed for the ball grinding, which makes the ball surface reach a perfect roundness. This makes the ball and seat seal exceed the standard requirements.

Each valve is factory acceptance tested per API 598. Partial sizes shown. Other sizes and classes available as standard.



ASME B16.10 Face to Face | API 608 | API 607 | NACE | Cryogenic Options Available

PRESSURE CLASS	SIZE		DIMENSIONS (IN)								WEIGHT (LB)	
			L		d	D	D_1	D_2	b	f		
	DN	NPS	RF	RTJ							LEVER	GEAR
CLASS 150	15	½	4.25	4.69	0.55	3.50	2.38	1.38	0.45	0.06	7	-
	20	¾	4.61	5.12	0.75	3.86	2.76	1.69	0.45	0.06	9	-
	25	1	5.00	5.51	0.98	4.25	3.13	2.01	0.45	0.06	11	-
	32	1¼	5.51	6.02	1.26	4.61	3.50	2.52	0.51	0.06	15	-
	40	1½	6.50	7.01	1.50	5.00	3.88	2.87	0.57	0.06	18	-
	50	2	7.01	7.52	2.01	5.98	4.74	3.62	0.63	0.06	26	-
	65	2½	7.48	7.99	2.52	7.36	5.49	4.13	0.69	0.06	40	-
	80	3	7.99	8.50	2.99	7.48	6.00	5.00	0.77	0.06	53	-
	100	4	9.02	9.53	4.02	9.02	7.50	6.18	0.94	0.06	84	117
	125	5	14.02	14.53	5.00	10.00	8.50	7.32	0.94	0.06	132	174
	150	6	15.51	16.02	5.98	10.98	9.51	8.50	1.00	0.06	181	225
	200	8	17.99	18.50	7.99	13.50	11.75	10.63	1.14	0.06	320	408
	250	10	20.98	21.50	10.00	15.98	14.25	12.76	1.22	0.06	-	617
CLASS 300	15	½	5.51	5.94	0.55	3.74	2.62	1.38	0.57	0.06	7	-
	20	¾	5.98	6.50	0.75	4.61	3.25	1.69	0.63	0.06	11	-
	25	1	6.50	7.01	0.98	4.88	3.50	2.01	0.69	0.06	13	-
	32	1¼	7.01	7.52	1.26	5.24	3.88	2.52	0.77	0.06	18	-
	40	1½	7.48	7.99	1.50	6.14	4.51	2.87	0.83	0.06	24	-
	50	2	8.50	9.13	2.01	6.50	5.00	3.62	0.89	0.06	35	-
	65	2½	9.49	10.12	2.52	7.48	5.87	4.13	1.00	0.06	53	-
	80	3	11.14	11.77	2.99	8.27	6.63	5.00	1.14	0.06	75	115
	100	4	12.01	12.64	4.02	10.00	7.87	6.18	1.26	0.06	123	168
	125	5	15.00	15.63	5.00	10.98	9.25	7.32	1.38	0.06	190	273
	150	6	15.87	16.50	5.98	12.52	10.63	8.50	1.46	0.06	276	359
	200	8	19.76	20.39	7.99	15.00	12.99	10.63	1.63	0.06	489	589
CLASS 600	15	½	6.50	6.46	0.55	3.74	2.62	1.38	0.57	0.25	11	-
	20	¾	7.48	7.48	0.75	4.65	3.25	1.69	0.63	0.25	15	-
	25	1	8.50	8.50	0.98	4.88	3.50	2.01	0.69	0.25	20	-
	32	1¼	9.02	9.02	1.26	5.24	3.88	2.52	0.83	0.25	29	-
	40	1½	9.49	9.49	1.50	6.14	4.51	2.87	0.89	0.25	37	-
	50	2	11.50	11.61	2.01	6.50	5.00	3.62	1.00	0.25	55	-
	65	2½	12.99	13.11	2.52	7.48	5.87	4.13	1.14	0.25	93	-
	80	3	14.02	14.13	2.99	8.27	6.61	5.00	1.26	0.25	123	168
	100	4	17.01	17.13	4.02	10.75	8.50	6.18	1.52	0.25	187	271
CLASS 900	15	½	8.50	8.50	0.55	4.76	3.25	1.38	0.89	0.25	20	-
	20	¾	9.02	9.02	0.79	5.12	3.50	1.69	1.00	0.25	29	-
	25	1	10.00	10.00	0.98	5.87	4.00	2.01	1.14	0.25	35	-
	32	1¼	10.98	10.98	1.26	6.26	4.37	2.52	1.14	0.25	53	-
	40	1½	12.01	12.01	1.50	7.01	4.87	2.87	1.26	0.25	68	-
	50	2	14.49	14.61	1.97	8.50	6.15	3.62	1.52	0.25	99	-
CLASS 1500	15	½	8.50	8.50	0.55	4.76	3.25	1.38	0.89	0.25	22	-
	20	¾	9.02	9.02	0.79	5.12	3.50	1.69	1.00	0.25	31	-
	25	1	10.00	10.00	0.98	5.87	4.00	2.01	1.14	0.25	37	-
	32	1¼	10.98	10.98	1.26	6.26	4.37	2.52	1.14	0.25	55	-
	40	1½	12.01	12.01	1.50	7.01	4.87	2.87	1.26	0.25	73	-
	50	2	14.49	14.61	1.97	8.50	6.15	3.62	1.52	0.25	106	-

Partial sizes shown. Other sizes available as standard.

SIZE		TORQUE VALUE (IN.LB)		
		CL150	CL300	CL600
DN	NPS			
15	½	62	89	150
20	¾	89	133	212
25	1	124	177	310
32	1¼	159	266	443
40	1½	221	354	602
50	2	354	531	885
65	2½	487	752	1239
80	3	708	1062	1859
100	4	1062	1593	3098
125	5	1770	2655	-
150	6	3363	5133	-
200	8	5487	8408	-

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UNIBODY SOFT SEATED BALL VALVE

Advanced Leak Prevention

The Chaoda USA unibody flanged end ball valves are constructed from castings & forgings that are machined to exact specifications. Unibody construction minimizes external leak paths and provides for sturdy containment. Built in accordance with API standard 608.

Whether it is our standard, or some other application specific, seat material and configuration, our flawless execution in machining and assembly make Chaoda valves the most dependable Soft Seated ball valves available – at an affordable price!

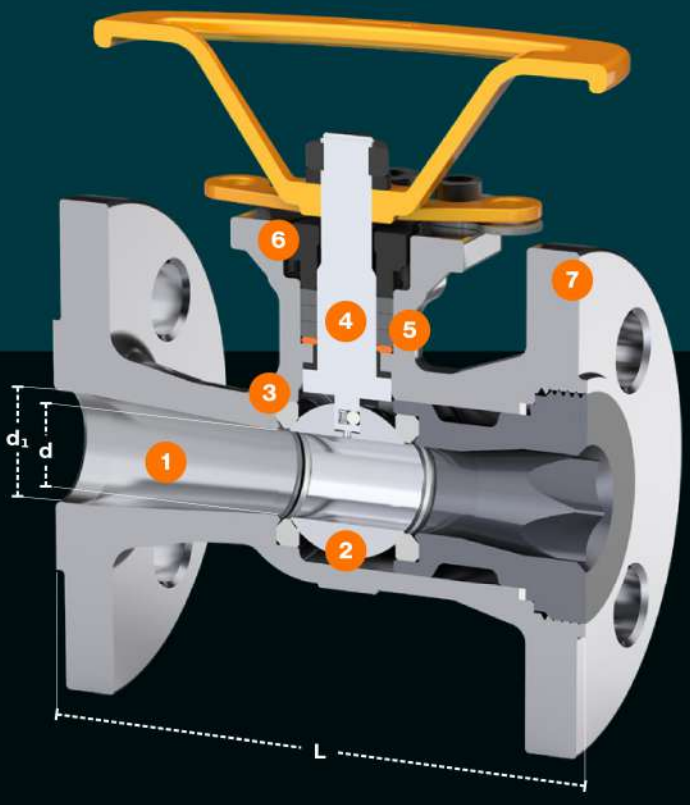
Let Chaoda be your ball valve of choice, today and every day!

CLASS 150							
(IN)	3/4"	1"	1-1/2"	2"	3"	4"	6"
d	0.47	0.67	1.06	1.46	2.2	2.95	3.94
d_1	0.75	0.98	1.5	2.01	2.99	4.02	5.98
L	4.61	5	6.5	7.01	7.99	9.02	10.51
Weight (lb)	7	9	13	18	33	64	119

CLASS 300							
(IN)	3/4"	1"	1-1/2"	2"	3"	4"	6"
d	0.47	0.67	1.06	1.46	2.2	2.95	3.94
d_1	0.75	0.98	1.5	2.01	2.99	4.02	5.98
L	5.98	6.5	7.48	8.5	11.1	12.01	15.87
Weight (lb)	9	11	20	24	49	88	179

TAKE A LOOK INSIDE

1. **Body –** Single piece body provides structural integrity.
2. **Precision Machined Ball –** Maximized sealing surface for reliable isolation.
3. **Soft Seat Rings –** For a perfect seal.
4. **Stem –** High strength for maximum safety.
5. **Stem Packing –** Provides for excellent stem sealing.
6. **Packing Gland and Follower –** Provides adjustments for stem sealing ability.
7. **End Connections –** Flanges shown, other designs available.



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TRUNNION SOFT SEATED BALL VALVE

For When Isolation Gets Tough

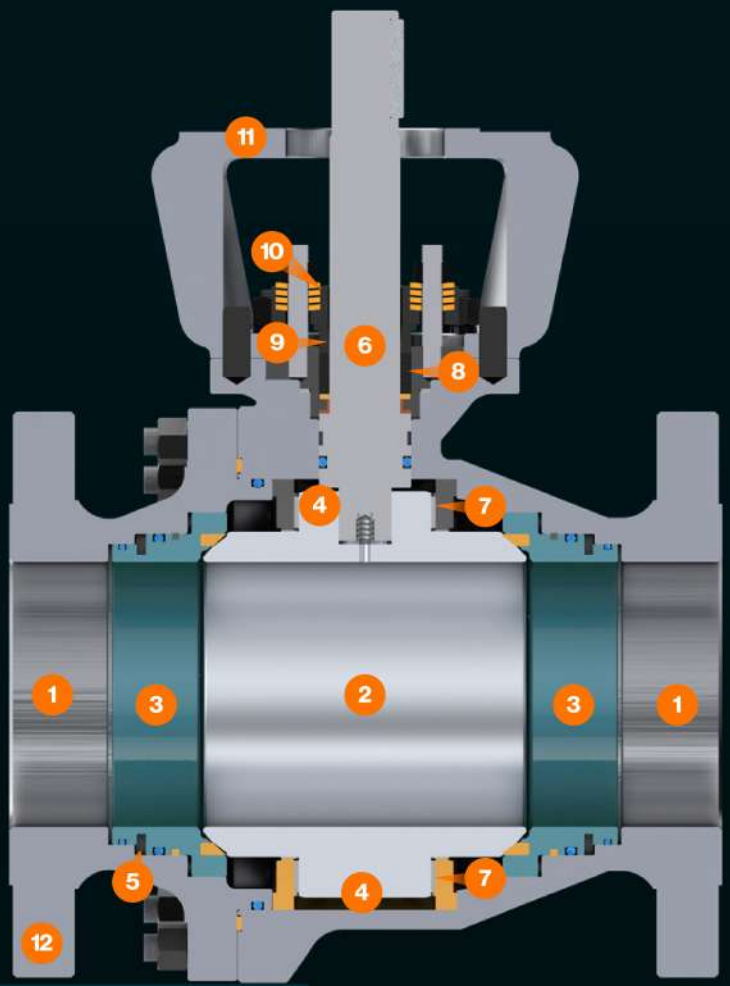
In applications where operating torque matters, our trunnion ball valves are the answer. Thanks to the trunnion-supported ball, turning open and closed is a breeze.

Whether it is temperature, pressure, or critical isolation driven, Chaoda offers a broad range of seat materials designed for optimal performance. Seat and Spring designs suitable for either Double Block and Bleed or Double Piston Effect help offer the right solution for a variety of isolation challenges. Whether it is our standard, or some other application specific, seat material and configuration, our flawless execution in machining and assembly make Chaoda valves the most dependable Soft Seated ball valves available – at an affordable price!

Let Chaoda be your ball valve of choice, today and every day!

TAKE A LOOK INSIDE

1. **Body –** Provides structural integrity.
2. **Precision Machined Ball –** Maximized sealing surface for reliable isolation.
3. **Machined Seat Rings With Soft Insert –** For a perfect seal.
4. **Body and Trunnion Seal –** For ball support and pressure integrity.
5. **Seat Springs –** For consistent loading of ball to seat interface.
6. **Stem –** High strength for maximum safety.
7. **Trunnion Bushings –** Helps ensure consistent operating torque.
8. **Stem Packing –** Provides for excellent stem sealing. Low Fugitive Emission packing available.
9. **Packing Gland and Follower –** Provides adjustments for stem sealing ability.
10. **Live-loaded Gland with Belleville Spring –** Provides long service life with very low maintenance.
11. **ISO Mounting Dimensions –** Standardized to fit most actuation mounting.
12. **End Connections –** Flanges shown, other designs available.



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DESIGN FEATURES

Our ball valves come with several features that allow for easier operation and maintenance.

API 607 Fire Safe Design

Chaoda Ball valves have been tested and successfully passed the rigorous fire-safe test.

Live Loaded Adjustable Packing Design

Provides a long service life with very low maintenance.

API 641 Low Fugitive Emission Packing

Optional: Provides significant Health, Safety and Environmental benefits.

ISO Mounting Flange

Standardized to fit most actuation mounting.

Antistatic Device*

A stainless steel grounding plunger between the body/stem and stem/ ball permits electrical continuity.

*2"-4" bore antistatic accomplished through trunnion bearing.

Lubricant/Emergency Seat Seal

Special sealants may be injected into fittings that are located on the adapter flanges to restore sealing integrity if seat sealing surface is damaged.

Emergency Sealant Injection System

The sealant injection system located on the body can be utilized in case of emergencies, o-ring damage, or if stem leakage occurs. A secondary check valve is installed under the sealant injection fitting to ensure the safety.

Double Sealed Envelope Connections

A combination of an o-ring and firesafe gasket ensures a positive seal.

Body/Adapter Seal Connection

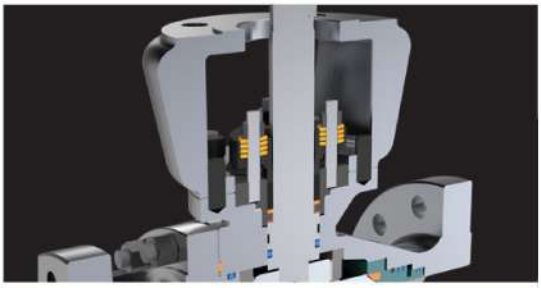
An o-ring on this connection ensures a positive seal.

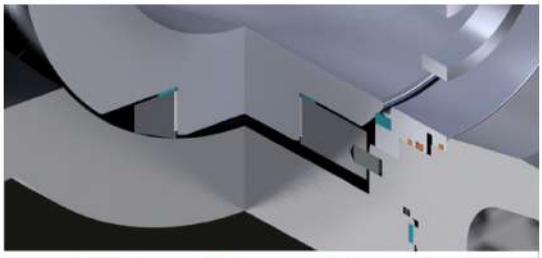
Heavy Duty Bearings

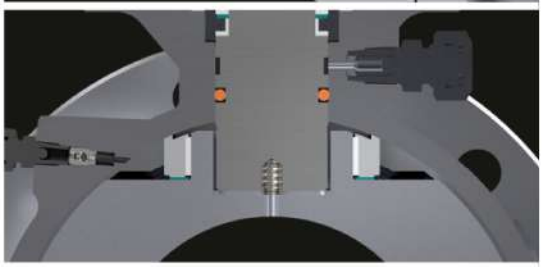
Heavy duty bearings balance the pressure load on the ball by reducing friction between ball and seat resulting in smooth and easy operation of valve.

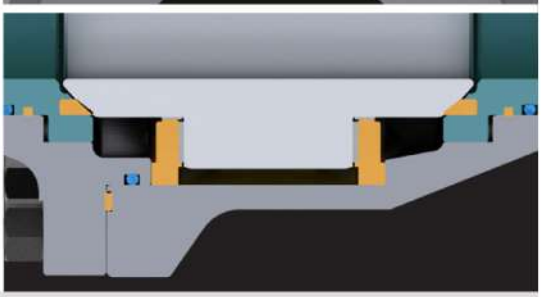
Internal Trunnion Plate Design

Reduce possible leakage path. For size 4" and above.









TECHNICAL SEATING FEATURES

Chaoda's soft-seated trunnion ball valve is designed with the following standard features for cavity draining and pressure relief.

Double Block and Bleed

The double block and bleed condition is available in all seat design configurations. When the ball is in the closed position the body cavity pressure may be drained down to 'zero' by opening the bleed valve and draining the fluid by removing the drain plug. Each seat works independently assuring tight shut off seal against ball on the upstream and downstream side.

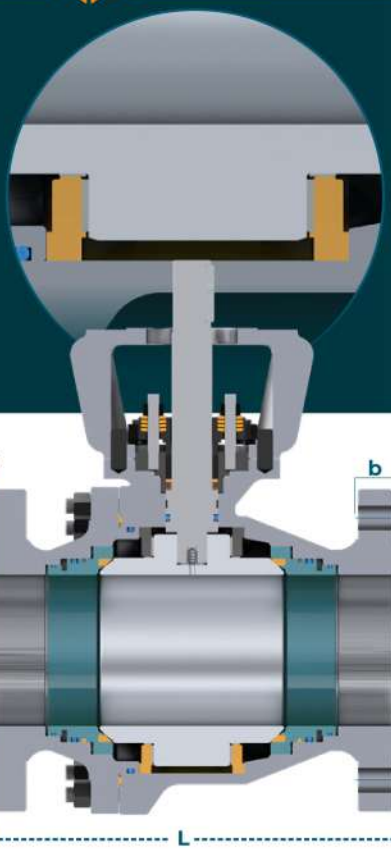
Self Relieving Seat Design

Upstream Seat

The difference in the area is multiplied by the line pressure which forces the seat against the ball surface. Also the springs behind the seat adds the force to the seat which keeps the seat in contact with the ball surface which provides the tight seal.

Downstream Seat

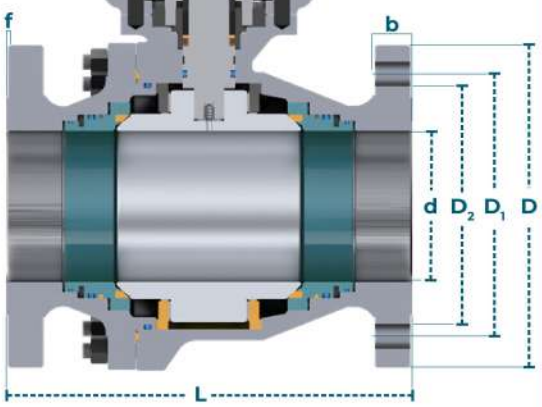
When the body cavity pressure exceeds the spring pressure, automatic pressure relief will occur by relieving the body cavity pressure past the downstream seat. This eliminates the need for the body relief valve.



TRUNNION MOUNTED

The trunnion support structure maintains the ball position in the center of the body, eliminating seating side loads due to pressure. The pivot point guides the ball with ease for a perfect seal. Trunnion support together with pressure assisted seats ensure reliable sealing with lower operating torques.

Each valve is factory acceptance tested per API 598.
Partial sizes shown. Other sizes and classes available as standard.



ASME B16.10 Face to Face | API 16.5 Flange
API 607 | API 608 | NACE
Cryogenic Options Available

SIZE		TORQUE VALUE (IN.LB)		
DN	NPS	CL150	CL300	CL600
50	2	-	-	797
65	2½	-	-	1416
80	3	-	-	2124
100	4	974	1770	3009
125	5	1593	2832	4868
150	6	3009	5399	8674
200	8	4425	7966	14161
250	10	7346	13276	23012
300	12	10621	19472	33633
350	14	15046	27437	46909
400	16	20357	37173	63725
450	18	26552	48679	83197
500	20	33633	61955	106208
600	24	49564	88507	146037
650	26	60185	110634	-
700	28	70806	132761	-
750	30	84082	159313	-
800	32	97358	185865	-
900	36	123910	238969	-

PRESSURE CLASS	SIZE		DIMENSIONS (IN)								WEIGHT (LB)
			L		d	D	D_1	D_2	b	f	
	DN	NPS	RF	BW							
CLASS 150	100	4	9.02	12.01	4.02	0.09	7.50	6.18	0.94	0.06	132
	125	5	14.02	15.00	5.00	10.00	8.50	7.32	0.94	0.06	176
	150	6	15.51	17.99	5.98	10.98	9.51	8.50	1.00	0.06	223
	200	8	17.99	20.51	7.99	13.50	11.75	10.63	1.14	0.06	366
	250	10	20.98	22.01	10.00	15.98	14.25	12.76	1.22	0.06	624
	300	12	24.02	25.00	12.01	19.02	17.01	15.00	1.26	0.06	1021
	350	14	27.01	30.00	13.27	20.98	18.74	16.26	1.38	0.06	1371
	400	16	30.00	32.99	15.24	23.50	21.26	18.50	1.46	0.06	1984
	450	18	34.02	35.98	17.24	25.00	22.76	20.98	1.57	0.06	2535
	500	20	35.98	39.02	19.25	27.52	25.00	22.99	1.69	0.06	2998
	600	24	42.01	45.00	23.27	32.01	29.51	27.24	1.89	0.06	5542
	650	26	45.00	49.02	24.92	30.94	29.31	27.99	1.57	0.06	7055
	700	28	49.02	52.99	26.93	32.95	31.32	30.00	1.69	0.06	8818
	750	30	50.98	55.00	28.94	34.92	33.31	32.01	1.69	0.06	10582
	800	32	54.02	60.00	30.67	37.05	35.43	34.02	1.73	0.06	12787
	900	36	60.00	67.99	34.41	41.61	39.74	38.27	2.01	0.06	17637
	1000	40	74.80	72.44	38.43	46.26	44.11	42.52	2.20	0.06	21605
	1050	42	80.71	77.17	40.16	48.27	46.12	44.49	2.32	0.06	24251
	1200	48	85.83	82.68	45.91	54.80	52.56	50.75	2.56	0.06	30865
CLASS 300	100	4	12.01	12.01	4.02	0.10	7.87	6.18	1.26	0.06	154
	125	5	15.00	15.00	5.00	10.98	9.25	7.32	1.38	0.06	209
	150	6	15.87	17.99	5.98	12.52	10.63	8.50	1.46	0.06	282
	200	8	19.76	20.51	7.99	15.00	12.99	10.63	1.63	0.06	516
	250	10	22.36	22.01	10.00	17.52	15.26	12.76	1.89	0.06	888
	300	12	25.51	25.00	12.01	20.51	17.76	15.00	2.01	0.06	1327
	350	14	30.00	30.00	13.27	22.99	20.26	16.26	2.13	0.06	1770
	400	16	32.99	32.99	15.24	25.51	22.50	18.50	2.28	0.06	2806
	450	18	35.98	35.98	17.24	27.99	24.74	20.98	2.40	0.06	3197
	500	20	39.02	39.02	19.25	30.51	27.01	22.99	2.52	0.06	3748
	600	24	45.00	45.00	23.27	35.98	32.01	27.24	2.76	0.06	6834
	650	26	49.02	49.02	24.92	34.13	31.63	29.02	3.43	0.06	9921
	700	28	52.99	52.99	26.93	36.26	33.74	30.98	3.43	0.06	13228
	750	30	55.00	55.00	28.94	39.02	36.26	33.27	3.62	0.06	16535
	800	32	60.00	60.00	30.67	41.50	38.50	35.51	4.02	0.06	19842
	900	36	67.99	67.99	34.41	46.14	42.87	39.76	4.02	0.06	26455
CLASS 600	50	2	11.50	11.50	2.01	6.50	5.00	3.62	1.02	0.25	71
	65	2.5	12.99	12.99	2.52	7.48	5.87	4.13	1.14	0.25	104
	80	3	14.02	14.02	2.99	8.27	6.61	5.00	1.26	0.25	150
	100	4	17.01	17.01	4.02	10.75	8.50	6.18	1.50	0.25	234
	125	5	20.00	20.00	5.00	12.99	10.49	7.32	1.77	0.25	375
	150	6	22.01	22.01	5.98	14.02	11.50	8.50	1.89	0.25	531
	200	8	25.98	25.98	7.99	16.50	13.74	10.63	2.20	0.25	979
	250	10	30.98	30.98	10.00	20.00	17.01	12.76	2.52	0.25	1473
	300	12	32.99	32.99	12.01	22.01	19.25	15.00	2.64	0.25	2315
	350	14	35.00	35.00	13.15	23.74	20.75	16.26	2.76	0.25	2903
	400	16	39.02	39.02	15.16	27.01	23.74	18.50	3.03	0.25	3968
	450	18	42.99	42.99	17.17	29.25	25.75	20.98	3.27	0.25	5291
	500	20	47.01	47.01	19.17	32.01	28.50	22.99	3.50	0.25	6614
	600	24	55.00	55.00	23.19	37.01	32.99	27.24	4.02	0.25	11905

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PRESSURE CLASS	SIZE		DIMENSIONS (IN)								WEIGHT (LB)
			L		d	D	D_1	D_2	b	f	
	DN	NPS	RF	BW							
CLASS 900	50	2	14.49	14.49	2.01	8.50	6.50	3.62	1.52	0.25	99
	65	2½	16.50	16.50	2.52	9.61	7.50	4.13	1.63	0.25	121
	80	3	15.00	15.00	2.99	9.49	7.50	5.00	1.52	0.25	207
	100	4	17.99	17.99	4.02	11.50	9.25	6.18	1.75	0.25	311
	125	5	22.01	22.01	5.00	13.74	11.00	7.32	2.01	0.25	507
	150	6	24.02	24.02	5.98	15.00	12.50	8.50	2.20	0.25	717
	200	8	29.02	29.02	7.99	18.50	15.50	10.63	2.50	0.25	1279
	250	10	32.99	32.99	10.00	21.46	18.50	12.76	2.76	0.25	1874
	300	12	37.99	37.99	12.01	24.02	21.00	15.00	3.13	0.25	2932
	350	14	40.51	40.51	12.68	25.20	22.00	16.26	3.39	0.25	3660
	400	16	44.49	44.49	14.69	27.76	24.25	18.50	3.50	0.25	5027
CLASS 1500	40	1.5	12.01	12.01	1.50	7.01	4.87	6.81	1.26	0.25	97
	50	2	14.49	14.49	2.01	8.50	6.50	3.62	1.52	0.25	148
	65	2.5	16.50	16.50	2.52	9.61	7.50	4.13	1.63	0.25	176
	80	3	18.50	18.50	2.99	10.51	8.00	5.00	1.89	0.25	287
	100	4	21.50	21.50	4.02	12.24	9.50	6.18	2.13	0.25	423
	125	5	26.50	26.50	4.92	14.76	11.50	7.32	2.89	0.25	739
	150	6	27.76	27.76	5.67	15.51	12.50	8.50	3.27	0.25	1047
	200	8	32.76	32.76	7.56	19.02	15.50	10.63	3.62	0.25	1808
	250	10	39.02	39.02	9.41	23.03	19.00	12.76	4.25	0.25	2910
	300	12	44.49	44.49	11.30	26.57	22.50	15.00	4.88	0.25	4519
CLASS 2500	40	1.5	15.12	15.12	1.50	7.99	5.75	2.87	1.75	0.25	159
	50	2	17.76	17.76	1.65	9.25	6.75	3.62	2.01	0.25	229
	65	2.5	20.00	20.00	2.05	10.51	7.75	4.13	2.26	0.25	309
	80	3	22.76	22.76	2.44	12.01	9.00	5.00	2.64	0.25	445
	100	4	26.50	26.50	3.43	14.02	10.75	6.18	3.01	0.25	672
	125	5	31.26	31.26	3.94	16.50	12.75	7.32	3.64	0.25	1168
	150	6	35.98	35.98	5.16	19.02	14.50	8.50	4.25	0.25	1676
	200	8	40.24	40.24	7.05	21.65	17.25	10.63	5.00	0.25	2646
	250	10	50.00	50.00	8.78	26.57	21.25	12.76	6.52	0.25	4586

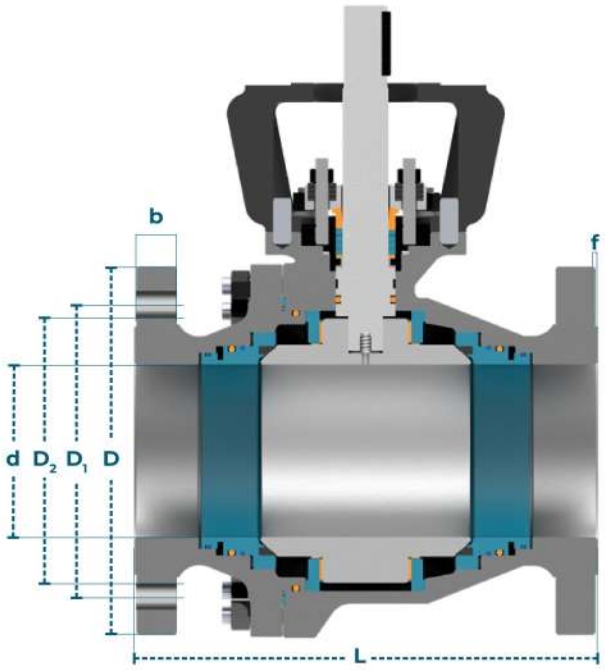
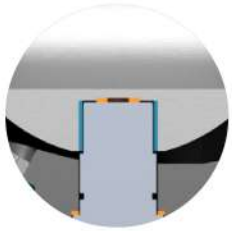


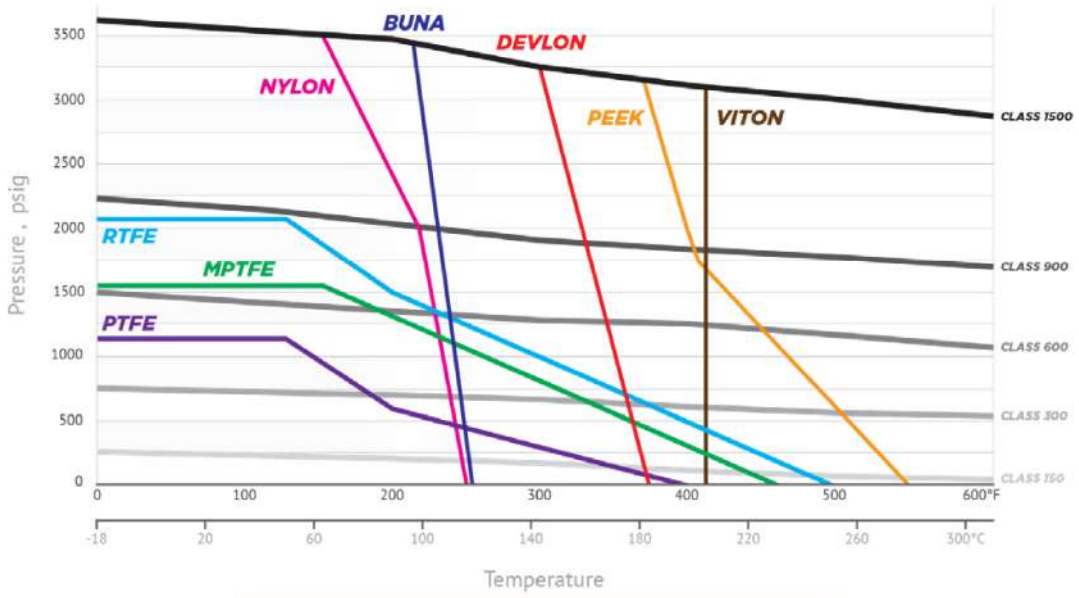
Plate Design

Post Design



All designs, materials and specifications are subject to change without notice.
Dimensions shown are full port "long pattern" design.
Internal Trunnion plate Design for size 4" and above.

PRESSURE & TEMPERATURE RATINGS FOR FLOATING AND TRUNNION MOUNTED DESIGNS



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OUR SERVICES

A wide array available

When valves are used in critical applications with potentially hazardous media, it is very important that equipment go through proper cleaning to ensure it is safe to use in its intended service. Chaoda can offer you peace of mind, knowing that every valve is cleaned and throroughly double checked following all required standards and specifications.

Chlorine Cleaned

- *Pamphlet 6 - Piping Systems for Dry Chlorine*
- *Chaoda internal specifications*
- *End user specifications*

Oxygen Cleaned

- *ASTM G93 --Standard Guide for Cleanliness Levels and Cleaning Methods for Materials and Equipment Used in Oxygen-Enriched Environments*
- *CGA G-4.1 Cleaning Equipment for Oxygen Service*
- *MSS SP-138-2009 Quality Standard for Oxygen Cleaning of Valves & Fittings*
- *Chaoda internal specifications*
- *End user specifications*

Phosgene Cleaned

- *Chaoda internal specifications*
- *End user specifications*

Spare Parts Available

- *O-ring*
- *Spiral Wound Gasket*
- *Packing-Graphite, PTFE, API 622 FE Packing*
- *Seat-PTFE, RPTFE, Nylon, PEEK, Devlon, Delrin*

OTHER LITERATURE

Interested in more products?

Chaoda offers a wide variety of valves, soft-seated ball valves included. Please ask our sales staff for any of the below brochures and catalogs if you are interested in learning more about any of our other products.

Chaoda manufactures a wide range of products, including a full line of API 6D Trunnion Ball Valves. Consistency in ownership has kept Chaoda on track and maintained a philosophy of ongoing investment in Research and Development, as well as manufacturing efficiencies all aimed at staying ahead of the competition. For more information, please see our API 6D Trunnion Ball Valve catalog.

For a safe, efficient and reliable pigging operation, Chaoda offers our uniquely designed pigging ball valve. We manufacture 3" through 20" class 150 through 1500. For more information, please reference our pig valve catalog.

Chaoda offers an instrument ball valve with various end connections and materials. Please see the instrument ball valve catalog for more information.

Chaoda offers a unique combination in the Metal Seated Ball Valve industry – field proven designs, the latest in processing technology, and high efficiency manufacturing – to create the highest quality Metal Seated Ball Valve at an extremely affordable price. For more information, please reference our metal seated ball valve catalog.

Chaoda offers a full line of API 594 dual plate check valves. For more information, please see our dual plate check valve catalog.

Chaoda is proud to be able to offer a an industry-leading gate, globe and check valve product line. With modern designs, exotic alloy capabilities and the latest in fugitive emissions technology, we are able to manufacture a high quality gate, globe and check valve. For more information, please reference our GGC valve catalog.

VALVE SIZE

NPS 2 - NPS 48

PRESSURE CLASS

1 = ASME Class 150
3 = ASME Class 300
6 = ASME Class 600
9 = ASME Class 900
15 = ASME Class 1500
25 = ASME Class 2500

BODY / BONNET CONFIGURATION

CR = Cryogenic Bonnet
SP = Short Pattern (ASME B16.10)
L2 = L-Port, 2-Seat Design
T2 = T-Port, 2-Seat Design
L4 = L-Port, 4-Seat Design
T4 = T-Port, 4-Seat Design

BODY MATERIAL

See Below

NPS 2 — **1** — **BF2** — **CR** — **FP** — **RF** — **CF8M** (A)

BF2 = BF2 Series 2 Piece Body Floating Ball Valve, Soft-Seated
BFU = BFU Series Unibody Floating Ball Valve, Soft-Seated
BFW = BFW Series Split Body Multiport Floating Ball Valve, Soft-Seated
BT2 = BT2 Series 2 Piece Trunnion Ball Valve, Soft-Seated, Packing Design
BT3 = BT3 Series 3 Piece Trunnion Ball Valve, Soft-Seated, Packing Design

VALVE TYPE

FP = Full Port
RP = Reduced Port

PORT SIZE

RF = Raised Face
RFA = Raised Face Series A
RFB = Raised Face Series B
RTJ = Ring Type Joint
RTA = RTJ Series A
RTB = RTJ Series B
BW### = Buttweld (advise schedule)

END CONNECTION

HOW TO ORDER BALL VALVES

NPS 2 1-BF2-CR-FP-RF-CF8M-2-50-PC-T-N-L-VB-C250

Example: *NPS 2 BF2 Series 2pc Floater, CL 150, Cryogenic, Full Port, RF, CF8M Body, 316SS Trim, XM-19 Stem, PCTFE Seats, PTFE Lip Seals, NACE, LO, Vented Ball, Cryo Extension 250mm, Design: API608, Test: API598*

This unique Valve Figure Number system is arranged to cover the basic valve design features. When ordering, please include this basic Figure Number and add any additional design requirements and features in a complete valve description. Valve designs, materials, trims and other features are not limited to those listed below.

(CDUSA Ordering Rev. 13, Oct., 2025)

(A) BODY MATERIAL

WCB = A216 Gr. WCB
WCC = A216 Gr. WCC
LCB = A352 Gr. LCB
LCC = A352 Gr. LCC
WC6 = A217 Gr. WC6
WC9 = A217 Gr. WC9
C5 = A217 Gr. C5
C12 = A217 Gr. C12
C12A = A217 Gr. C12A
CF8 = A351 Gr. CF8
CF3 = A351 Gr. CF3
CF10 = A351 Gr. CF10
CF10M = A351 Gr. CF10M
CG8M = A351 Gr. CG8M
CG3M = A351 Gr. CG3M
CF8C = A351 Gr. CF8C
CK3MCUN = A351 Gr. CK3MCuN
CD4MCUN = A995 Gr. CD4MCun - 1B
CE8MN = A995 Gr. CE8MN - 2A

TRIM MATERIAL

00 = Trim same nominal chemistry as body material
CE3 = Carbon Steel + 3mil ENP Trim
LE3 = Low Temp Carbon Steel + 3mil ENP Trim
2 = 316SS Trim
1 = 304SS Trim
63 = 17-4PH Trim
51 = Duplex Trim
40 = 410SS Trim
A20 = Alloy 20 Trim
MON = Monel Trim
71 = Inconel 718 Trim
27 = Hastelloy C-276 Trim
X = Special Trim

SEATING MATERIAL

R = TFM
GP = Glass-Filled PTFE
CR = Carbon-Filled TFM
N = Nylon
DV = Devlon® V-API
PE = PEEK
CG = Carbon Graphite
PC = PCTFE (Kel-F®)
PA = PFA

CONFIGURATION

VB = Vented Ball
JB = Jacketed Valve, Bolt-On
JW = Jacketed Valve, Weld-On

— 2 — 50 — PC — T — N — L — VB — C250 (B)

41 = 4140+ENP Stem
40 = 410SS Stem
63 = 17-4PH Stem
31 = S31803 Duplex Stem
50 = XM-19 Stem
51 = F51 Duplex Stem
66 = A286 Gr. 660 Stem
71 = Inconel 718 Stem
K5 = Monel K-500 Stem
27 = Hastelloy C-276 Stem
* = Omit if Not Required

STEM MATERIAL

G = Graphite Packing & Gasket
P = PTFE Packing & Gasket
T = PTFE Lip Seals
X = Special Stem Seal

PRIMARY STEM & BODY SEALS

N = NACE MR0103 & MR0175 Compliant
N3 = NACE MR0103 Compliant
N5 = NACE MR0175 Compliant
* = Omit if Not Required

NACE

L = Lever (Lockable)
G = Gear
OH = Oval Handle
BS = Bare Stem
A = Actuator

OPERATOR

(B) EXTENSIONS

E#### = Operator Insulation Extension (advise extension length in mm)
C#### = Non-Cold Box Cryogenic Extension (advise extension length in mm)
B#### = Cold Box Cryogenic Extension (advise extension length in mm)

CD3MN = A995 Gr. CD3MN - 4A
CE3MN = A995 Gr. CE3MN - 5A
CD3MWCUN = A995 Gr. CD3MWCuN - 6A
CN7M = A351 Gr. CN7M - Alloy 20
CN3MCU = A990 Gr. CM3MCu - Modified Alloy 20
CZ100 = A494 Gr. CZ100 - Nickel 200
M351 = A494 Gr. M35-1 - Monel
CY40 = A494 Gr. CY40 Cl. 1 - Inconel 600
CT15C = A351 Gr. CT15C Cl. 1 - Incoloy 800
CW6MC = A494 Gr. CW6MC - Inconel 625
CU5MCUC = A494 Gr. CU5MCuC - Incoloy 825
N12MV = A494 Gr. N-12MV - Hastelloy B
CW12MW = A494 Gr. CW-12MW - Hastelloy C-276
A105 = A105N
LF2 = A350 Gr. LF2 Cl. 1
F11 = A182 Gr. F11 Cl. 2
F22 = A182 Gr. F22 Cl. 3
F5 = A182 Gr. F5a
F9 = A182 Gr. F9

F91 = A182 Gr. F91 Type 1
F304 = A182 Gr. F304
F304L = A182 Gr. F304L
F304H = A182 Gr. F304H
F304/L = A182 Gr. F304/F304L
F316 = A182 Gr. F316
F316L = A182 Gr. F316L
F316H = A182 Gr. F316H
F316/L = A182 Gr. F316/F316L
F317 = A182 Gr. F317
F317L = A182 Gr. F317L
F317/L = A182 Gr. F317/F317L
F321 = A182 Gr. F321
F321H = A182 Gr. F321H
F347 = A182 Gr. F347
F347H = A182 Gr. F347H
F44 = A182 Gr. F44
F51 = A182 Gr. F51
F53 = A182 Gr. F53

F55 = A182 Gr. F55
F60 = A182 Gr. F60
N08020 = B462 Gr. N08020 Alloy 20
N02200 = B564 Gr. N02200 Nickel 200
N04400 = B564 Gr. N04400 Monel
N06600 = B564 Gr. N06600 Inconel 600
N08800 = B462 Gr. N08800 Incoloy 800
N06022 = B564 Gr. N06022 Hastelloy C-22
N06625 = B564 Gr. N06625 Inconel 625
N08825 = B462 Gr. N08825 Incoloy 825
N10665 = B564 Gr. N10665 Hastelloy B-2
N10276 = B564 Gr. N10276 Hastelloy C-276
N08810 = B564 Gr. N08810 Incoloy 800H

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