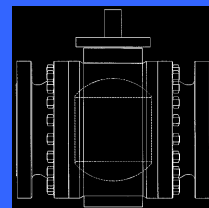


API 6D

Trunnion Mounted Ball Valves



Delta Pacific Valve Mfg. Co.
New York, U.S.A.



API 6D Trunnion Mounted Ball Valves

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HOW TO ORDER

P	1 5	2	2	F	T
ANSI Class	Body¹ Material	Trim² Material	Bore		
1 = ANSI Class 150 3 = ANSI Class 300 6 = ANSI Class 600 9 = ANSI Class 900 15 = ANSI Class 1500 25 = ANSI Class 2500	2 = A105 2 = A350 Grade LF2 3 = A182 Grade F316 4 = A182 Grade F304 6 = A182 Grade F6a D = Duplex Stainless S = Super Duplex Stainless X = Special	2 = Body + E.N.P. 3 = 316 S.S. 4 = 304 S.S. 6 = 410 S.S. D = Duplex S.S. S = Super Duplex Stainless X = Special	F = Full R = Reduced		

¹ Closures will be provided in the same material as the body.

² Trim components include the ball, stem, trunnion, and seat rings.

Example above, namely DPV Fig. P1522FT

API 6D Trunnion Mounted Ball Valve, ANSI Class 1500 Rated, Full Bore Forged Carbon Steel ASTM A105 Body and Closures, with Forged Carbon Steel ASTM A105 + 0.001" Electroless Nickel Plating (E.N.P.) Ball, and Carbon Steel AISI 1045 + 0.001" E.N.P. Stem/Trunnion

COMPANY INTRODUCTION

Delta Pacific Valve Manufacturing Company

Consistent product quality and availability of substantial stocks makes **DPV®** a dependable choice for API 6D trunnion mounted ball valves where total reliability is of the utmost concern.

DPV® manufactures valves to industry standard specifications, or to customer specified requirements, both promptly and economically.

DPV® maintains an extensive quality system which complies with the requirements of major oil companies, industry standards and to the ISO 9000 standard.

DPV® trunnion mounted ball valves are manufactured and pressure tested in compliance with the requirements of API 6D standard.

Materials of construction include ASTM A105 carbon steel, the ASTM A350 range of impact tested carbon and low-alloy steels and the ASTM A182 range of alloy and corrosion-resistant steels; the pressure containing components being of high integrity forgings.

All **DPV®** trunnion mounted ball valves can be provided with ISO 5211 mounting pads for easy adaptation to most makes of actuators or to suit customer specifications.

Environmentally Friendly Valves

In concert with customers' continual efforts to both reduce the cost of ownership and comply with local environmental requirements, **DPV®** now manufactures a range of low emission valves offering minimum leakage and maximum service life in the stem sealing and body joint areas.

Testing and evaluation criteria is based on EPA method 21, and emission rates lower than 500 ppm during operation are standard for this range of trunnion mounted ball valves.

DPV® is an internationally registered trademark of Delta Pacific Supplies, Incorporated, New York, U.S.A.



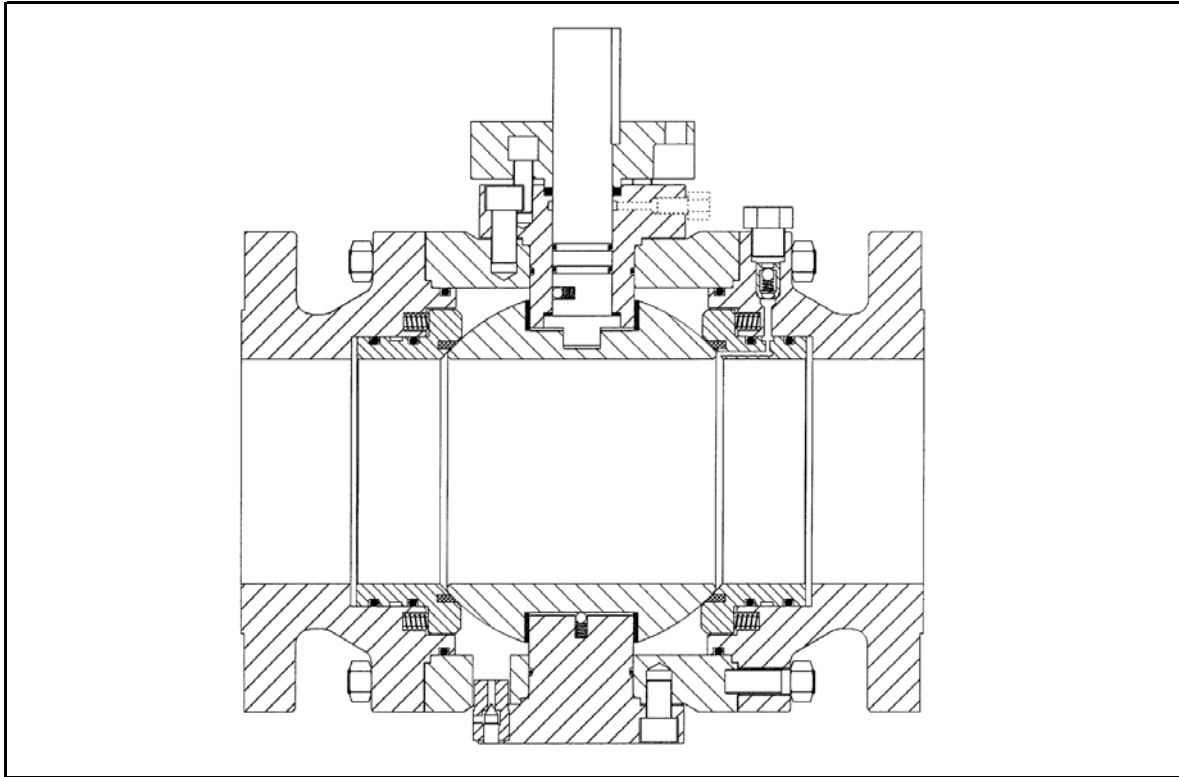
API 6D Trunnion Mounted Ball Valves

TECHNICAL SPECIFICATION

CONSTRUCTION	API 6D
FIRESAFE DESIGN	API 6FA and British Standard 6755 Part 2
STYLE	3-Piece Bolted Body, Side Entry, Trunnion Mounted Available in Full Bore and Reduced Bore Patterns
FACE-TO-FACE DIMENSIONS	API 6D and ASME B16.10
END-TO-END DIMENSIONS	API 6D and ASME B16.10
FLANGE END DIMENSIONS	Up to Size 24" ASME B16.5
	Sizes 26" and Larger ASME B16.47 Series A or B or API 605 or MSS SP-44
BUTT-WELD END DIMENSIONS	ASME B16.25
TESTING	API 6D
BODY AND CLOSURE MATERIALS	ASTM A105 Carbon Steel ASTM A350 Impact Tested Carbon / Low-Alloy Steel ASTM A182 Alloy / Corrosion-Resistant Steel or per Order Specifications
TRIM MATERIALS	E.N.P. (Electroless Nickel Plating) Alloy / Corrosion-Resistant Steel or per Order Specifications
SEAT MATERIALS	PTFE Nylon or per Order Specifications
SEAL MATERIALS	Buna-N / EPDM FKM Fluoroelastomer / Viton® A/B/GLT Flexible Graphite or per Order Specifications
OPERATION	Manual Lever Gearbox Actuation via ISO 5211 Mounting Pad or per Order Specifications

Viton® is a registered trademark of E. I. Du Pont De Nemours & Co.

TYPICAL CONSTRUCTION



TYPICAL PARTS AND MATERIALS

Service	Standard	Corrosive	Low Temp.
Part Name	-20 to 200 °F -29 to 93 °C	-20 to 350 °F -29 to 177 °C	-50 to 300 °F -46 to 149 °C
Body	A105 Normalized		A350 Grade LF2
Cover	A105 Normalized		A350 Grade LF2
Closure(s)	A105 Normalized		A350 Grade LF2
Ball	A105 + ENP	A182 Grade F316	A350 LF2 + ENP
Seat Ring(s)	A105 + ENP	A182 Grade F316	A350 LF2 + ENP
Stem	AISI 1045 + ENP	A182 Grade F316	A350 LF2 + ENP
Trunnion	AISI 1045 + ENP	A182 Grade F316	A350 LF2 + ENP
Seat(s)	Nylon / PEEK	PTFE / PEEK	
Seat Spring(s)	Inconel® X-750		
O-Ring(s)	HNBR / Viton® A/B/GLT		NBR / EPDM
Gasket(s)	Flexible Graphite		
Stud Bolt(s)	A193 Grade B7 / B7M		A320 Grade L7 / L7M
Hex Nut(s)	A194 Grade 2H / 2HM		A194 Grade 7 / 7M

Note: Other materials available upon request.

Inconel® is a registered trademark of International Nickle Co., Inc.

Viton® is a registered trademark of E. I. Du Pont De Nemours & Co.



API 6D Trunnion Mounted Ball Valves

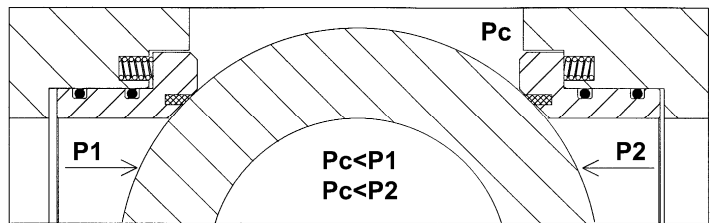
STANDARD DESIGN FEATURES

- ◆ Bi-Directional Flow
- ◆ Three-piece Bolted Body - Field Serviceable
- ◆ Full Bore Through Conduit - Suitable for Pigging Operations
- ◆ Anti-Blowout Stem
- ◆ Unique Valve Serialization- Full Traceability
- ◆ Anti-Static Devices - Provide electrical continuity between all valve components

STANDARD SEATING DESIGN

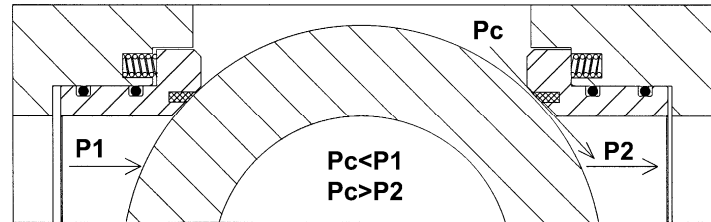
AUTOMATIC SEALING SEAT DESIGN

Seating design incorporates spring-loaded metal seat holders with soft seat inserts to maintain constant seat-to-ball contact effecting tight shut-off even at low pressure.



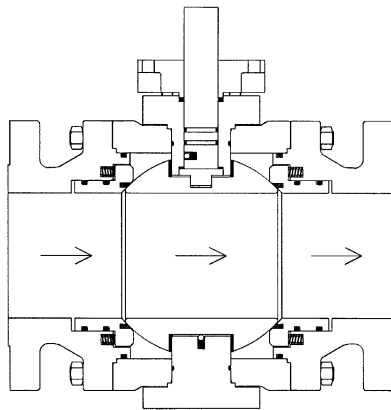
AUTOMATIC PRESSURE RELIEF SYSTEM

The spring-loaded seating design will automatically relieve excess cavity pressure into the line when the cavity pressure exceeds line pressure.

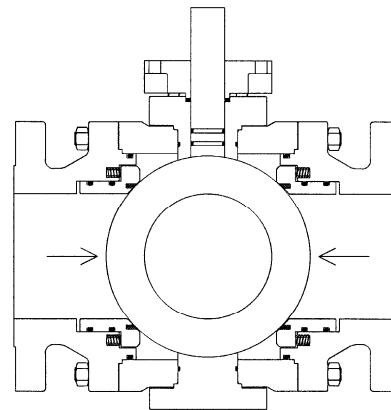


DOUBLE BLOCK AND BLEED

- ◆ Independent spring-loaded seat rings effect DOUBLE (upstream and downstream) seals (BLOCK) while a combination of vent and drain connections allow for BLEED operations
- ◆ The drain valve can also be used to test for seat/seal integrity



Valve in Open Position

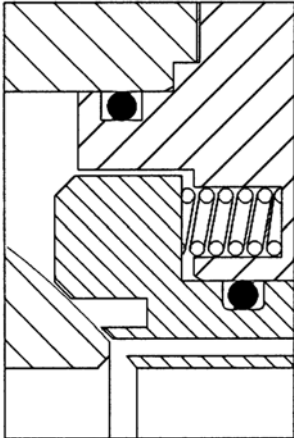


Valve in Closed Position

FIRESAFE DESIGN FEATURES

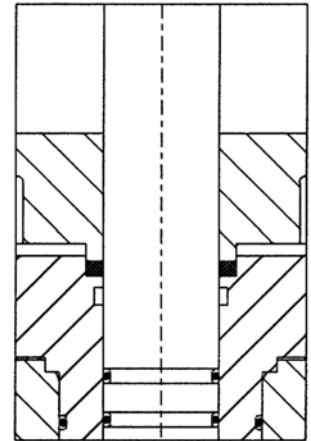
SECONDARY FIRESAFE METAL-TO-METAL SEATING

In event the soft seat insert is burned away, the spring-loaded metal seat rings will effect a secondary metal-to-metal seal.



TRIPLE STEM SEAL SYSTEM

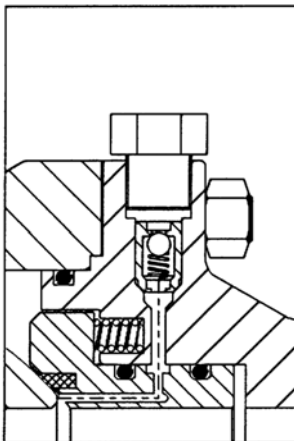
Two o-rings are employed below the sealant injection to provide static sealing while re-placeable packing is added above the sealant injection for triple protection and firesafe integrity.



SAFETY FEATURES AVAILABLE

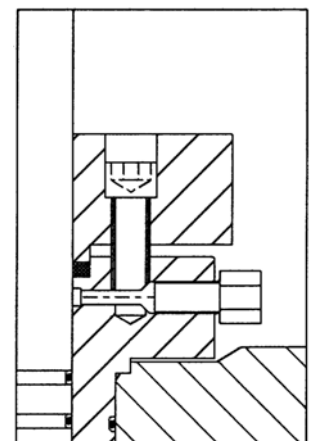
SEAT SEALANT INJECTION FITTING

A seat sealant injection fitting is provided to allow a fast, simple way to restore tight shut-off in the event the soft seat inserts are damaged.



STEM SEALANT INJECTION FITTING

A stem sealant injection fitting is provided to allow a fast, simple way to restore stem integrity in the event the stem seals are damaged.



- ◆ Locking Device - Prevents Tampering
- ◆ Transition Pups - For Welding
- ◆ Stem Extension - For Buried Service
- ◆ Extended Bonnet - For Insulated Service
- ◆ Fugitive Emissions Bonnet
- ◆ Actuation - Electric, Hydraulic and Pneumatic (Double Acting / Spring Return)

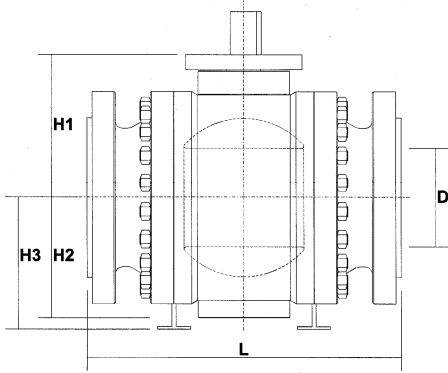
- ◆ "PMSS" Primary Metal, Secondary Soft Seating Design Available for Gas Service - Continuous Dual Seating with the Benefits of Abrasion-resistance Metal Seating and Bubble-tight Shut-off Soft Seating
- ◆ Metal Seats - E.N.P. or Hard-facing such as Cobalt Alloys and Tungsten Carbide
- ◆ Soft Seats - PTFE, Nylon, or PEEK



API 6D Trunnion Mounted Ball Valves

ANSI Class 150 (PN20)

Flanged (RF / RTJ) Ends

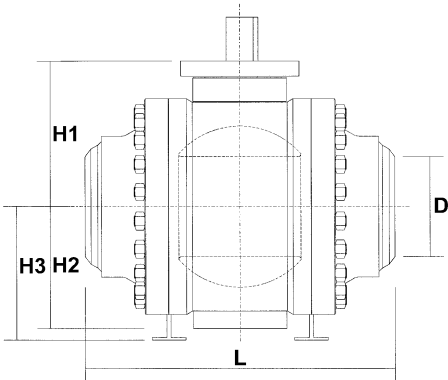


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	51	178	191	216	115	115	-	23
2½	64	191	203	241	140	140	-	42
3	76	203	216	283	145	140	-	45
4	102	229	241	305	185	180	-	82
6	152	394	406	457	215	-	185	178
8	203	457	470	521	260	-	220	224
10	254	533	546	559	300	-	270	403
12	305	610	622	635	350	-	305	562
14	337	686	699	762	370	-	380	756
16	387	762	775	838	415	-	440	1,051
18	438	864	876	914	450	-	455	1,405
20	489	914	927	991	485	-	495	1,934
24	591	1,067	1,080	1,143	570	-	695	3,044

Note: Other sizes available upon request.

Butt Weld (BW) Ends



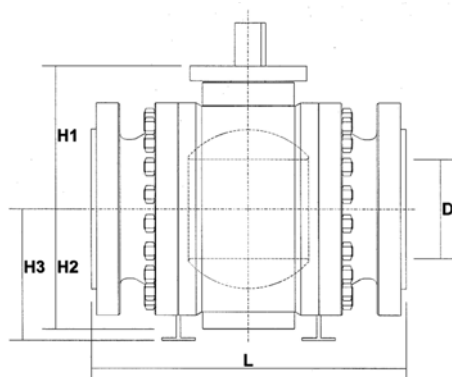
REDUCED BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	38	178	191	216	115	115	-	30
2½	51	191	203	241	140	115	-	32
3	51	203	216	283	145	115	-	34
4	76	229	241	305	185	140	-	54
6	102	394	406	457	215	-	160	98
8	152	457	470	521	260	-	185	196
10	203	533	546	559	300	-	220	298
12	254	610	622	635	350	-	270	406
14	305	686	699	762	370	-	305	570
16	337	762	775	838	415	-	380	826
18	387	864	876	914	450	-	440	1,126
20	438	914	927	991	485	-	455	1,488
24	489	1,067	1,080	1,143	570	-	495	2,141

Note: Other sizes available upon request.

ANSI Class 300 (PN50)

Flanged (RF / RTJ) Ends

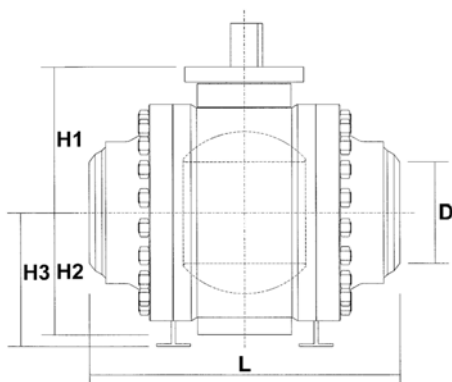


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	51	216	232	216	115	115	-	22
2½	64	241	257	241	140	140	-	55
3	76	283	298	283	145	140	-	41
4	102	305	321	305	185	180	-	67
6	152	403	419	457	215	-	185	194
8	203	502	518	521	260	-	220	292
10	254	568	584	559	300	-	270	500
12	305	648	664	635	350	-	305	757
14	337	762	778	762	370	-	380	924
16	387	838	854	838	415	-	440	1,276
18	438	914	930	914	450	-	455	1,610
20	489	991	1,010	991	485	-	495	2,225
24	591	1,143	1,165	1,143	570	-	695	3,425

Note: Other sizes available upon request.

Butt Weld (BW) Ends



REDUCED BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	38	216	232	216	115	115	-	27
2½	51	241	257	241	140	115	-	32
3	51	283	298	283	145	115	-	35
4	76	305	321	305	185	140	-	68
6	102	403	419	457	215	-	160	99
8	152	502	518	521	260	-	185	246
10	203	568	584	559	300	-	220	339
12	254	648	664	635	350	-	270	598
14	305	762	778	762	370	-	305	801
16	337	838	854	838	415	-	380	1,033
18	387	914	930	914	450	-	440	1,371
20	438	991	1,010	991	485	-	455	1,721
24	489	1,143	1,165	1,143	570	-	495	2,508

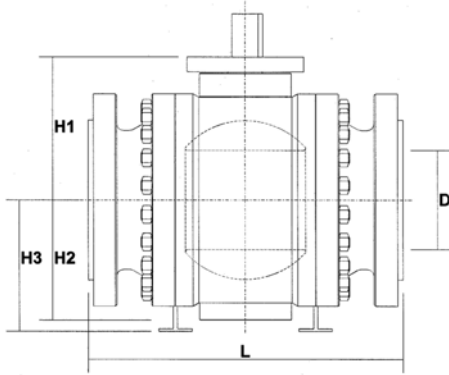
Note: Other sizes available upon request.



API 6D Trunnion Mounted Ball Valves

ANSI Class 600 (PN100)

Flanged (RF / RTJ) Ends

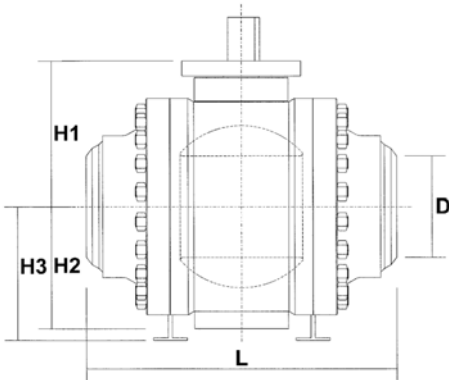


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	51	292	295	292	135	115	-	32
2½	64	330	333	330	155	140	-	58
3	76	356	359	356	160	140	-	65
4	102	432	435	432	205	180	-	123
6	152	559	562	559	235	-	190	219
8	203	660	664	660	285	-	250	485
10	254	787	791	787	320	-	290	739
12	305	838	841	838	385	-	345	956
14	337	889	892	889	375	-	385	1,044
16	387	991	994	991	425	-	445	1,498
18	438	1,092	1,095	1,092	460	-	460	1,973
20	489	1,194	1,200	1,194	500	-	500	2,562
24	591	1,397	1,407	1,397	590	-	695	4,696

Note: Other sizes available upon request.

Butt Weld (BW) Ends



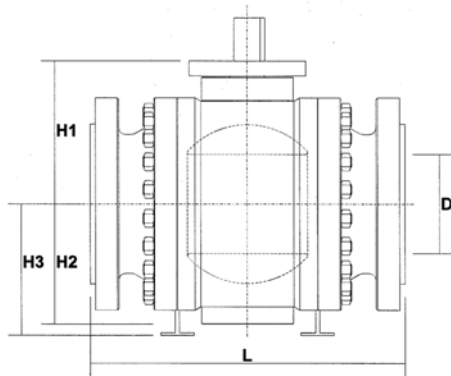
REDUCED BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	38	292	295	292	135	115	-	30
2½	51	330	333	330	155	115	-	40
3	51	356	359	356	160	115	-	45
4	76	432	435	432	205	140	-	96
6	102	559	562	559	235	-	160	179
8	152	660	664	660	285	-	190	291
10	203	787	791	787	320	-	250	612
12	254	838	841	838	385	-	290	827
14	305	889	892	889	375	-	345	1,076
16	337	991	994	991	425	-	385	1,292
18	387	1,092	1,095	1,092	460	-	445	1,678
20	438	1,194	1,200	1,194	500	-	460	2,220
24	489	1,397	1,407	1,397	590	-	500	3,119

Note: Other sizes available upon request.

ANSI Class 900 (PN150)

Flanged (RF / RTJ) Ends

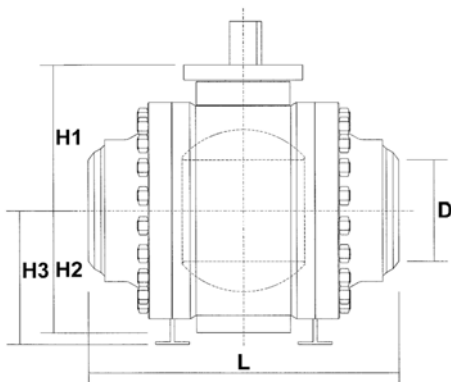


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	51	368	371	368	135	140	-	48
2½	64	419	422	419	155	140	-	75
3	76	381	384	381	160	140	-	78
4	102	457	460	457	205	205	-	150
6	152	610	613	610	230	-	235	357
8	203	737	740	737	285	-	310	547
10	254	838	841	838	330	-	345	976
12	305	965	968	965	385	-	370	1,516
14	324	1,029	1,038	1,029	390	-	395	1,920
16	375	1,130	1,140	1,130	440	-	420	2,749
18	425	1,219	1,232	1,219	485	-	465	3,979
20	473	1,321	1,334	1,321	525	-	550	4,960
24	572	1,549	1,568	1,549	625	-	605	8,401

Note: Other sizes available upon request.

Butt Weld (BW) Ends



REDUCED BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	38	368	371	368	135	140	-	40
2½	51	419	422	419	155	140	-	55
3	51	381	384	381	160	140	-	57
4	76	457	460	457	205	140	-	99
6	102	610	613	610	230	-	165	245
8	152	737	740	737	285	-	235	453
10	203	838	841	838	330	-	310	706
12	254	965	968	965	385	-	345	1,056
14	305	1,029	1,038	1,029	390	-	370	1,605
16	324	1,130	1,140	1,130	440	-	395	2,018
18	375	1,219	1,232	1,219	485	-	420	2,835
20	425	1,321	1,334	1,321	525	-	465	4,061
24	473	1,549	1,568	1,549	625	-	550	5,173

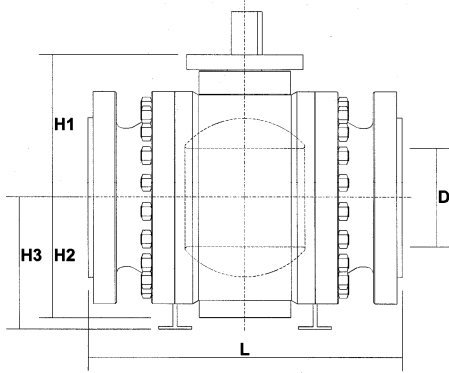
Note: Other sizes available upon request.



API 6D Trunnion Mounted Ball Valves

ANSI Class 1500 (PN250)

Flanged (RF / RTJ) Ends

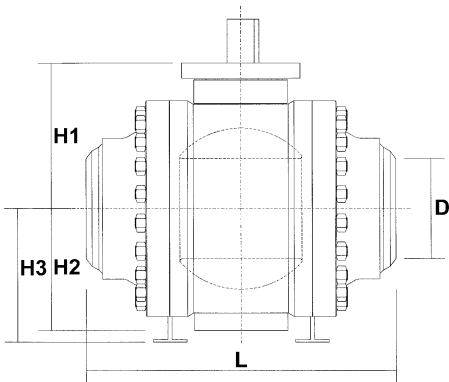


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	51	368	371	368	135	140	-	51
2½	64	419	422	419	155	140	-	90
3	76	470	473	470	160	140	-	98
4	102	546	549	546	190	205	-	175
6	146	705	711	705	245	-	240	491
8	194	832	841	832	295	-	310	785
10	241	991	1,000	991	335	-	345	1,464
12	289	1,130	1,146	1,130	410	-	370	2,259
14	318	1,257	1,276	1,257	430	-	395	2,767
16	362	1,384	1,407	1,384	485	-	425	4,047
18	406	1,537	1,559	1,537	550	-	600	6,260
20	457	1,664	1,686	1,664	620	-	650	9,120
24	533	2,043	2,071	2,043	700	-	720	14,320

Note: Other sizes available upon request.

Butt Weld (BW) Ends



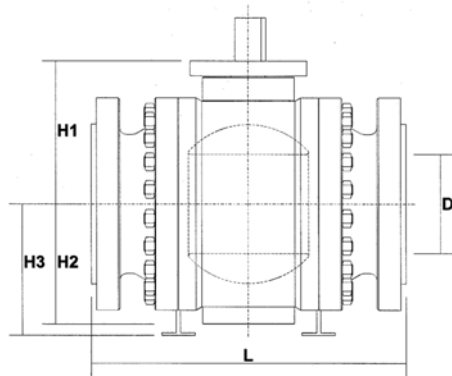
REDUCED BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
2	38	368	371	368	135	115	-	50
2½	51	419	422	419	155	115	-	65
3	51	470	473	470	160	140	-	75
4	76	546	549	546	190	140	-	115
6	102	705	711	705	245	-	165	315
8	146	832	841	832	295	-	240	603
10	194	991	1,000	991	335	-	310	876
12	241	1,130	1,146	1,130	410	-	345	1,691
14	289	1,257	1,276	1,257	430	-	370	2,440
16	318	1,384	1,407	1,384	485	-	395	2,949
18	362	1,537	1,559	1,537	480	-	500	4,980
20	406	1,664	1,686	1,664	550	-	600	7,540
24	457	2,043	2,071	2,043	620	-	650	10,950

Note: Other sizes available upon request.

ANSI Class 2500 (PN420)

Flanged (RF / RTJ) Ends

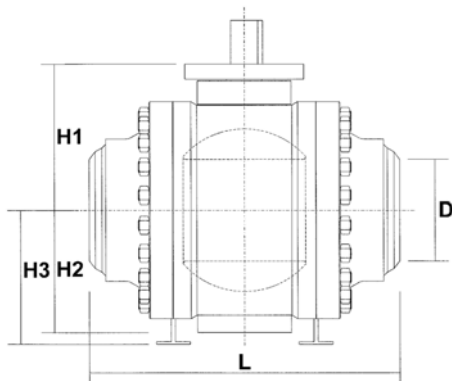


FULL BORE

Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	44	451	454	451	165	145	-	170
2½	54	508	540	508	170	165	-	210
3	64	578	584	578	180	170	-	270
4	89	673	683	673	205	195	-	395
6	133	914	927	914	270	-	250	910
8	181	1,022	1,038	1,022	380	-	360	2,450
10	225	1,270	1,292	1,270	455	-	445	3,260
12	267	1,422	1,445	1,422	485	-	470	4,670

Note: Other sizes available upon request.

Butt Weld (BW) Ends



REDUCED BORE

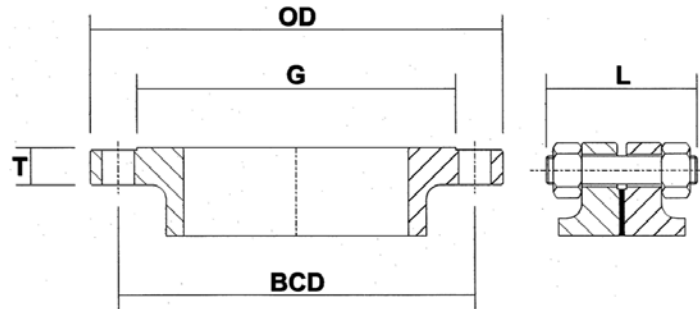
Nom. Size	ØD	L			H1	H2	H3	Wt.
		RF	RTJ	BW				
(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)	
2	32	451	454	451	165	130	-	85
2½	44	508	540	508	165	135	-	180
3	44	578	584	578	165	145	-	213
4	64	673	683	673	180	170	-	345
6	89	914	927	914	205	-	195	645
8	133	1,022	1,038	1,022	270	-	250	1,128
10	181	1,270	1,292	1,270	380	-	360	3,000
12	225	1,422	1,445	1,422	455	-	445	4,146

Note: Other sizes available upon request.



API 6D Trunnion Mounted Ball Valves

ANSI / ASME B16.5 FLANGE DIMENSIONS (in.)



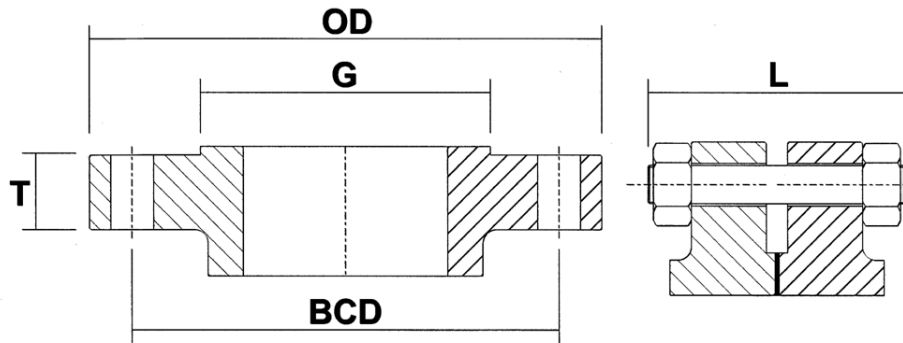
ANSI / ASME Class 150 R.F. (1/16" Raised Face)

Size	OD	T		G R.F. Ø	Bolt Circle Ø	Bolt Hole Ø	No. of Bolt Holes	Stud Bolt Ø	L	
		Companion Flange	Valve Flange						Stud Bolt	Size
2	6	3/4	5/8	3 5/8	4 3/4	3/4	4	5/8	3 1/4	2
2½	7	7/8	11/16	4 1/8	5 1/2	3/4	4	5/8	3 1/2	2½
3	7 1/2	15/16	3/4	5	6	3/4	4	5/8	3 1/2	3
4	9	15/16	15/16	6 3/16	7 1/2	3/4	8	5/8	3 1/2	4
6	11	1	1	8 1/2	9 1/2	7/8	8	3/4	4	6
8	13 1/2	1 1/8	1 1/8	10 5/8	11.75	7/8	8	3/4	4 1/4	8
10	16	1 3/16	1 3/16	12 3/4	14 1/4	1	12	7/8	4 1/2	10
12	19	1 1/4	1 1/4	15	17	1	12	7/8	4 3/4	12
14	21	1 3/8	1 3/8	16 1/4	18 3/4	1 1/8	12	1	5 1/4	14
16	23 1/2	1 7/16	1 7/16	18 1/2	21 1/4	1 1/8	16	1	5 1/4	16
18	25	1 9/16	1 9/16	21	22 3/4	1 1/4	16	1 1/8	5 3/4	18
20	27 1/2	1 11/16	1 11/16	23	25	1 1/4	20	1 1/8	6 1/4	20
24	32	1 7/8	1 7/8	27 1/4	29 1/2	1 3/8	20	1 1/4	6 3/4	24

ANSI / ASME Class 300 R.F. (1/16" Raised Face)

2	6 1/2	7/8	7/8	3 5/8	5	3/4	8	5/8	3 1/2	2
2½	7 1/2	1	1	4 1/8	5 7/8	7/8	8	3/4	4	2½
3	8 1/4	1 1/8	1 1/8	5	6 5/8	7/8	8	3/4	4 1/4	3
4	10	1 1/4	1 1/4	6 3/16	7 7/8	7/8	8	3/4	4 1/2	4
6	12 1/2	1 7/16	1 7/16	8 1/2	10 5/8	7/8	12	3/4	4 3/4	6
8	15	1 5/8	1 5/8	10 5/8	13	1	12	7/8	5 1/2	8
10	17 1/2	1 7/8	1 7/8	12 3/4	15 1/4	1 1/8	16	1	6 1/4	10
12	20 1/2	2	2	15	17 3/4	1 1/4	16	1 1/8	6 3/4	12
14	23	2 1/8	2 1/8	16 1/4	20 1/4	1 1/4	20	1 1/8	7	14
16	25 1/2	2 1/4	2 1/4	18 1/2	22 1/2	1 3/8	20	1 1/4	7 1/2	16
18	28	2 3/8	2 3/8	21	24 3/4	1 3/8	24	1 1/4	7 3/4	18
20	30 1/2	2 1/2	2 1/2	23	27	1 3/8	24	1 1/4	8	20
24	36	2 3/4	2 3/4	27 1/4	32	1 5/8	24	1.5	9	24

ANSI / ASME B16.5 FLANGE DIMENSIONS (in.)



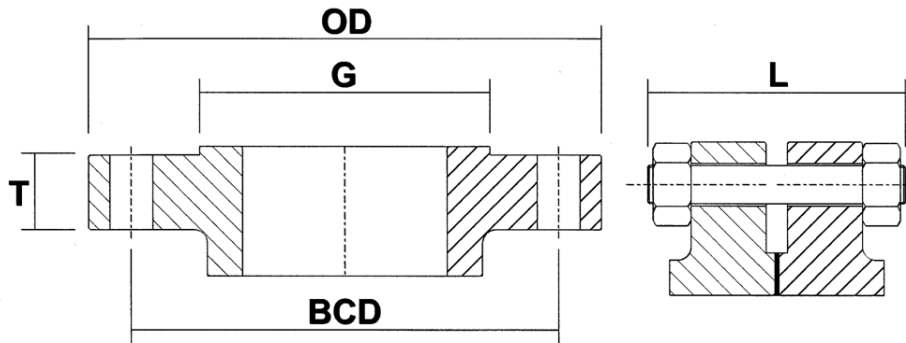
ANSI / ASME Class 600 R.F. (1/4" Raised Face)

Size	OD	T	G	Bolt Circle Ø	Bolt Hole Ø	No. of Bolt Holes	Stud Bolt Ø	L	Size
			R.F. Ø					Stud Bolt	
2	6 1/2	1	3 5/8	5	3/4	8	5/8	4 1/4	2
2½	7 1/2	1 1/8	4 1/8	5 7/8	7/8	8	3/4	4 3/4	2½
3	8 1/4	1 1/4	5	6 5/8	7/8	8	3/4	5	3
4	10 3/4	1 1/2	6 3/16	8 1/2	1	8	7/8	5 3/4	4
6	14	1 7/8	8 1/2	11 1/2	1 1/8	12	1	6 3/4	6
8	16 1/2	2 3/16	10 5/8	13 3/4	1 1/4	12	1 1/8	7 1/2	8
10	20	2 1/2	12 3/4	17	1 3/8	16	1 1/4	8 1/2	10
12	22	2 5/8	15	19 1/4	1 3/8	20	1 1/4	8 3/4	12
14	23 3/4	2 3/4	16 1/4	20 3/4	1 1/2	20	1 3/8	9 1/4	14
16	27	3	18 1/2	23 3/4	1 5/8	20	1 1/2	10	16
18	29 1/4	3 1/4	21	25 3/4	1 3/4	20	1 5/8	10 3/4	18
20	32	3 1/2	23	28 1/2	1 3/4	24	1 5/8	11 1/4	20
24	37	4	27 1/4	33	2	24	1 7/8	13	24

ANSI / ASME Class 900 R.F. (1/4" Raised Face)

2	8 1/2	1 1/2	3 5/8	6 1/2	1	8	7/8	5 3/4	2
2½	9 5/8	1 5/8	4 1/8	7 1/2	1 1/8	8	1	6 1/4	2½
3	9 1/2	1 1/2	5	7 1/2	1	8	7/8	5 3/4	3
4	11 1/2	1 3/4	6 3/16	9 1/4	1 1/4	8	1 1/8	6 3/4	4
6	15	2 3/16	8 1/2	12 1/2	1 1/4	12	1 1/8	7 1/2	6
8	18 1/2	2 1/2	10 5/8	15 1/2	1 1/2	12	1 3/8	8 3/4	8
10	21 1/2	2 3/4	12 3/4	18 1/2	1 1/2	16	1 3/8	9 1/4	10
12	24	3 1/8	15	21	1 1/2	20	1 3/8	10	12
14	25 1/4	3 3/8	16 1/4	22	1 5/8	20	1 1/2	10 3/4	14
16	27 3/4	3 1/2	18 1/2	24 1/4	1 3/4	20	1 5/8	11 1/4	16
18	31	4	21	27	2	20	1 7/8	12 3/4	18
20	33 3/4	4 1/4	23	29 1/2	2 1/8	20	2	13 3/4	20
24	41	5 1/2	27 1/4	35 1/2	2 5/8	20	2 1/2	17 1/4	24

ANSI / ASME B16.5 FLANGE DIMENSIONS (in.)



ANSI / ASME Class 1500 R.F. (1/4" Raised Face)

Size	OD	T	G	Bolt Circle Ø	Bolt Hole Ø	No. of Bolt Holes	Stud Bolt Ø	L	Size
			R.F. Ø					Stud Bolt	
2	8 1/2	1 1/2	3 5/8	6 1/2	1	8	7/8	5 3/4	2
2½	9 5/8	1 5/8	4 1/8	7 1/2	1 1/8	8	1	6 1/4	2½
3	10 1/2	1 7/8	5	8	1 1/4	8	1 1/8	7	3
4	12 1/4	2 1/8	6 3/16	9 1/2	1 3/8	8	1 1/4	7 3/4	4
6	15 1/2	3 1/4	8 1/2	12 1/2	1 1/2	12	1 3/8	10 1/4	6
8	19	3 5/8	10 5/8	15 1/2	1 3/4	12	1 5/8	11 1/2	8
10	23	4 1/4	12 3/4	19	2	12	1 7/8	13 1/4	10
12	26 1/2	4 7/8	15	22 1/2	2 1/8	16	2	14 3/4	12
14	29 1/2	5 1/4	16 1/4	25	2 3/8	16	2 1/4	16	14
16	32 1/2	5 3/4	18 1/2	27 3/4	2 5/8	16	2 1/2	17 1/2	16
18	36	6 3/8	21	30 1/2	2 7/8	16	2 3/4	19 1/2	18
20	38 3/4	7	23	32 3/4	3 1/8	16	3	21 1/4	20
24	46	8	27 1/4	39	3 5/8	16	3 1/2	24	24

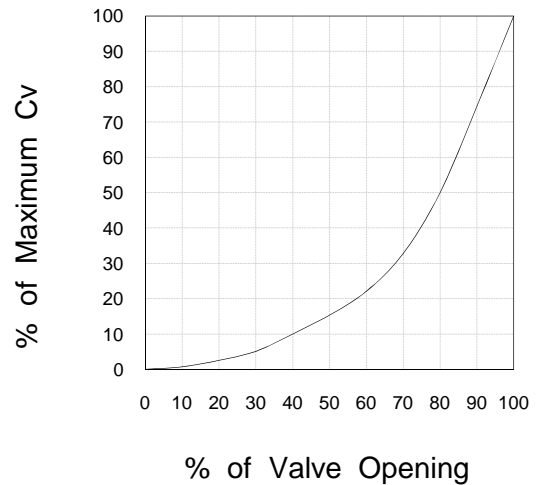
ANSI / ASME Class 2500 R.F. (1/4" Raised Face)

Size	OD	T	G	Bolt Circle Ø	Bolt Hole Ø	No. of Bolt Holes	Stud Bolt Ø	L	Size
			R.F. Ø					Stud Bolt	
2	9 1/4	2	3 5/8	6 3/4	1 1/8	8	1	7	2
2½	10 1/2	2 1/4	4 1/8	7 3/4	1 1/4	8	1 1/8	7 3/4	2½
3	12	2 5/8	5	9	1 3/8	8	1 1/4	8 3/4	3
4	14	3	6 3/16	10 3/4	1 5/8	8	1 1/2	10	4
6	19	4 1/4	8 1/2	14 1/2	2 1/8	8	2	13 1/2	6
8	21 3/4	5	10 5/8	17 1/4	2 1/8	12	2	15	8
10	26 1/2	6 1/2	12 3/4	21 1/4	2 5/8	12	2 1/2	19 1/4	10
12	30	7 1/4	15	24 3/8	2 7/8	12	2 3/4	21 1/4	12

FLOW DATA

FLOW CHARACTERISTIC

DPV® trunnion mounted ball valves have an equal percentage flow characteristic by design. This means that a given percentage change in the valve opening will produce the same percentage change in the flow rate.



FLOW RATE

The calculated flow rate data represented in the tables below express the maximum flow of clean water @ 60 °F in gallons per minute through a DPV® trunnion mounted ball valve while producing a 1 psi pressure drop across the valve.

Nom. Size	Full Bore						Reduced Bore					
	ANSI Class						ANSI Class					
	150	300	600	900	1500	2500	150	300	600	900	1500	2500
2	500	460	400	330	330	300	140	140	135	125	125	100
2½	1,010	860	780	700	620	550	160	170	160	160	160	130
3	1,350	1,150	1,050	935	830	740	180	195	180	180	180	150
4	2,500	2,200	1,850	1,760	1,660	1,460	545	535	480	480	480	410
6	5,300	5,290	4,460	4,405	4,100	2,600	790	765	745	740	740	590
8	10,500	9,600	8,730	8,475	8,010	5,370	1,945	1,945	1,945	1,945	1,600	1,400
10	17,500	16,750	14,250	14,205	13,310	8,630	4,050	4,040	4,040	4,040	3,860	3,050
12	26,300	25,500	22,550	21,430	17,070	12,500	6,900	6,900	6,900	6,900	6,670	5,350
14	31,850	30,050	28,400	26,800	24,275	-	13,100	13,100	13,100	13,100	12,630	-
16	43,300	41,700	38,150	36,700	33,215	-	14,600	14,580	14,300	14,200	13,490	-
18	57,300	55,370	50,950	48,700	43,400	-	19,750	19,750	19,750	19,750	18,760	-
20	74,500	72,300	65,600	62,500	55,930	-	27,750	27,750	27,750	27,300	20,470	-
24	112,300	109,150	98,150	94,050	84,025	-	29,000	28,850	27,250	26,900	25,500	-



API 6D Trunnion Mounted Ball Valves

ANSI CLASS 150 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	285	285	275	275	230	230	290	-29 to 38
200	260	260	230	230	195	195	260	93
300	230	230	205	215	175	175	230	149
350	215	215	198	205	168	168	215	177
400	200	200	190	195	160	160	200	204
450	185	185	180	183	153	153	185	232
500	170	170	170	170	145	145	170	260
550	155	155	155	155	143	143	155	288
600	140	140	140	140	140	140	140	316
650	125	125	125	125	125	125	125	343
700	110	110	110	110	110	110	110	371
750	95	95	95	95	95	95	95	399
800	80	80	80	80	80	80	80	427
850	65	65	65	65		320		454
900	50	50	50	50				482
950	35	35	35	35				510
1,000	20	20	20	20				538
1,050			20 ^a	20 ^a				566
1,100			20 ^a	20 ^a				593
1,150			20 ^a	20 ^a				621
1,200			20 ^a	20 ^a				649
1,250			20 ^a	20 ^a				677
1,300			20 ^a	20 ^a				704
1,350			20 ^a	20 ^a				732
1,400			20 ^a	20 ^a				760
1,450			15 ^a	15 ^a				788
1,500			10 ^a	10 ^a				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.

ANSI CLASS 300 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	740	740	720	720	600	600	750	-29 to 38
200	675	675	600	620	505	505	720	93
300	655	655	540	560	455	455	665	149
350	645	645	518	538	435	435	640	177
400	635	635	495	515	415	415	615	204
450	618	618	480	498	398	398	595	232
500	600	600	465	480	380	380	575	260
550	575	575	450	465	370	370	565	288
600	550	550	435	450	360	360	555	316
650	535	535	430	445	350	350	550	343
700	535	535	425	430	345	345	540	371
750	505	505	415	425	335	335	530	399
800	410	410	405	420	330	330		427
850	270	270	395	420		320		454
900	170	170	390	415				482
950	105	105	380	385				510
1,000	50	50	320	350				538
1,050			310	345				566
1,100			255	305				593
1,150			200	235				621
1,200			155	185				649
1,250			115	145				677
1,300			85	115				704
1,350			60	95				732
1,400			50	75				760
1,450			35	60				788
1,500			25	40				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.



API 6D Trunnion Mounted Ball Valves

ANSI CLASS 600 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	1,480	1,480	1,440	1,440	1,200	1,200	1,500	-29 to 38
200	1,350	1,350	1,200	1,240	1,015	1,015	1,440	93
300	1,315	1,315	1,080	1,120	910	910	1,330	149
350	1,293	1,293	1,038	1,073	868	868	1,280	177
400	1,270	1,270	995	1,025	825	825	1,230	204
450	1,235	1,235	963	990	795	795	1,190	232
500	1,200	1,200	930	955	765	765	1,150	260
550	1,148	1,148	903	928	743	743	1,133	288
600	1,095	1,095	875	900	720	720	1,115	316
650	1,075	1,075	860	890	700	700	1,100	343
700	1,065	1,065	850	870	685	685	1,085	371
750	1,010	1,010	830	855	670	670	1,065	399
800	825	825	805	845	660	660		427
850	535	535	790	835		645		454
900	345	345	780	830				482
950	205	205	765	775				510
1,000	105	105	640	700				538
1,050			615	685				566
1,100			515	610				593
1,150			400	475				621
1,200			310	370				649
1,250			225	295				677
1,300			170	235				704
1,350			125	190				732
1,400			95	150				760
1,450			70	115				788
1,500			55	85				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.

ANSI CLASS 900 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	2,220	2,220	2,160	2,160	1,800	1,800	2,250	-29 to 38
200	2,025	2,025	1,800	1,860	1,520	1,520	2,160	93
300	1,970	1,970	1,620	1,680	1,360	1,360	1,995	149
350	1,935	1,935	1,555	1,610	1,300	1,300	1,920	177
400	1,900	1,900	1,490	1,540	1,240	1,240	1,845	204
450	1,848	1,848	1,443	1,488	1,193	1,193	1,788	232
500	1,795	1,795	1,395	1,435	1,145	1,145	1,730	260
550	1,718	1,718	1,353	1,395	1,113	1,113	1,700	288
600	1,640	1,640	1,310	1,355	1,080	1,080	1,670	316
650	1,610	1,610	1,290	1,330	1,050	1,050	1,650	343
700	1,600	1,600	1,275	1,305	1,030	1,030	1,625	371
750	1,510	1,510	1,245	1,280	1,010	1,010	1,595	399
800	1,235	1,235	1,210	1,265	985	985		427
850	805	805	1,190	1,255		965		454
900	515	515	1,165	1,245				482
950	310	310	1,145	1,160				510
1,000	155	155	965	1,050				538
1,050			925	1,030				566
1,100			770	915				593
1,150			595	710				621
1,200			465	555				649
1,250			340	440				677
1,300			255	350				704
1,350			185	290				732
1,400			145	225				760
1,450			105	175				788
1,500			80	125				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.



API 6D Trunnion Mounted Ball Valves

ANSI CLASS 1500 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	3,705	3,705	3,600	3,600	3,000	3,000	3,750	-29 to 38
200	3,375	3,375	3,000	3,095	2,530	2,530	3,600	93
300	3,280	3,280	2,700	2,795	2,270	2,270	3,325	149
350	3,225	3,225	2,593	2,683	2,168	2,168	3,198	177
400	3,170	3,170	2,485	2,570	2,065	2,065	3,070	204
450	3,083	3,083	2,408	2,480	1,988	1,988	2,975	232
500	2,995	2,995	2,330	2,390	1,910	1,910	2,880	260
550	2,865	2,865	2,258	2,323	1,855	1,855	2,833	288
600	2,735	2,735	2,185	2,255	1,800	1,800	2,785	316
650	2,685	2,685	2,150	2,220	1,750	1,750	2,750	343
700	2,665	2,665	2,125	2,170	1,715	1,715	2,710	371
750	2,520	2,520	2,075	2,135	1,680	1,680	2,660	399
800	2,060	2,060	2,015	2,110	1,645	1,645		427
850	1,340	1,340	1,980	2,090		1,610		454
900	860	860	1,945	2,075				482
950	515	515	1,910	1,930				510
1,000	260	260	1,605	1,750				538
1,050			1,545	1,720				566
1,100			1,285	1,525				593
1,150			995	1,185				621
1,200			770	925				649
1,250			565	735				677
1,300			430	585				704
1,350			310	480				732
1,400			240	380				760
1,450			170	290				788
1,500			135	205				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.

ANSI CLASS 2500 PRESSURE-TEMP. RATINGS

Temperature °F	Pressure (psig)							Temperature °C
	ANSI B16.34 Material Group							
	1.1		2.1	2.2	2.3		2.8	
	A105 ^{1,2}	A350 LF2 ¹	A182					
F304 ³			F316 ³	F304L	F316L	F44		
-20 to 100	6,170	6,170	6,000	6,000	5,000	5,000	6,250	-29 to 38
200	5,625	5,625	5,000	5,160	4,220	4,220	6,000	93
300	5,470	5,470	4,500	4,660	3,780	3,780	5,540	149
350	5,375	5,375	4,320	4,470	3,610	3,610	5,330	177
400	5,280	5,280	4,140	4,280	3,440	3,440	5,120	204
450	5,135	5,135	4,010	4,130	3,310	3,310	4,960	232
500	4,990	4,990	3,880	3,980	3,180	3,180	4,800	260
550	4,775	4,775	3,760	3,870	3,090	3,090	4,720	288
600	4,560	4,560	3,640	3,760	3,000	3,000	4,640	316
650	4,475	4,475	3,580	3,700	2,920	2,920	4,580	343
700	4,440	4,440	3,540	3,620	2,860	2,860	4,520	371
750	4,200	4,200	3,460	3,560	2,800	2,800	4,430	399
800	3,430	3,430	3,360	3,520	2,740	2,740		427
850	2,230	2,230	3,300	3,480		2,680		454
900	1,430	1,430	3,240	3,460				482
950	860	860	3,180	3,220				510
1,000	430	430	2,675	2,915				538
1,050			2,570	2,865				566
1,100			2,145	2,545				593
1,150			1,655	1,970				621
1,200			1,285	1,545				649
1,250			945	1,230				677
1,300			715	970				704
1,350			515	800				732
1,400			400	630				760
1,450			285	485				788
1,500			230	345				816

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Only killed steel shall be used over 850 °F (454 °C).

³ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

Shaded Area Consult factory when working temperature is in this range.



API 6D Trunnion Mounted Ball Valves

MATERIAL SPECIFICATIONS

		Chemical Composition				
		Carbon Steels		Alloy and Corrosion-Resistant Steels		
		A105	A350 Gr. LF2	A182 Gr. F304	A182 Gr. F316	A182 Gr. F51
C ¹	%	0.350 ²	0.300	0.080	0.080	0.030
Mn	%	0.06 to 1.05 ²	0.06 to 1.35	2.000	2.000	2.000
P ¹	%	0.040	0.035	0.040	0.040	0.030
S ¹	%	0.050	0.040	0.030	0.030	0.020
Si ¹	%	0.350	0.15 to 0.30	1.000	1.000	1.000
Cu ¹	%	0.400 ³	0.400 ³	-	-	-
Ni ¹	%	0.400 ³	0.400 ³	8.00 to 11.00	10.00 to 14.00	4.50 to 6.50
Cr ¹	%	0.300 ^{3,4}	0.300 ^{3,4}	18.00 to 20.00	16.00 to 18.00	21.00 to 23.00
Mo ¹	%	0.120 ^{3,4}	0.120 ^{3,4}	-	2.00 to 3.00	2.50 to 3.50
V ¹	%	0.030 ⁵	0.030 ⁵	-	-	-
Nb ¹	%	0.020 ⁵	0.020 ⁵	-	-	-
N ¹	%	-	-	0.100	0.100	0.08 to 0.20

¹ Values listed are permitted maximums, unless otherwise stated.

² For each reduction of 0.01 % below the specified carbon maximum (0.35 %), an increase of 0.06 % manganese above the specified maximum (1.05 %) will be permitted up to a maximum of 1.35 %.

³ The sum of copper, nickel, chromium and molybdenum shall not exceed 1.00 %.

⁴ The sum of chromium and molybdenum shall not exceed 0.32 %.

⁵ By agreement between the manufacturer and the purchaser, the limits for vanadium and columbium, or both, may be increased to 0.10 % and 0.05 % respectively.

		Mechanical Properties				
		Carbon Steels		Alloy and Corrosion-Resistant Steels		
		A105	A350 Gr. LF2	A182 Gr. F304	A182 Gr. F316	A182 Gr. F51
T.S. ¹	MPa	485	485-685	515 ⁴	515 ⁴	620
Y.S. ^{1,2}	MPa	250	250	205	205	450
E.L. ¹	%	22.0	22.0	30.0	30.0	25.0
R.A. ¹	%	30.0	30.0	50.0	50.0	45.0
Hard. ³	HB	137 to 187	Max. 197	-	-	-

¹ Values listed are required minimums, unless otherwise stated.

² Determined by either the 0.2 % offset method or the 0.5 % extension-under-load method.

³ Values listed are permitted maximums, unless otherwise stated.

⁴ For sections over 5" (130 mm) in thickness, the minimum tensile strength shall be 485 MPa.

Impact Test Requirements for Carbon Steel to ASTM A350 Grade LF2		
Test Temperature	Minimum Energy Impact Permitted for	
-50.0 °F	Single Specimen	Average of Three Specimens
-45.6 °C	16 J (12 ft-lbf)	20 J (15 ft-lbf)

STANDARD TERMS AND CONDITIONS OF SALE

CONTROLLING PROVISIONS AND ACCEPTANCE

All DPV sales are expressly subject to these terms and conditions, which govern and prevail regardless of any terms and conditions set forth to the contrary by the Buyer. The Buyer's acceptance of these terms and conditions is evidenced by the Buyer's placement of order with DPV.

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All clerical and computational errors and/or omissions are exempted and are to be corrected by DPV.

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All DPV products are guaranteed to the original Buyer only for a one (1) year period from and after the invoice date against defects in material and workmanship under normal and proper use and service, and not caused or resulting from improper usage or application, improper installation, improper maintenance and repairs, modifications or alterations, normal wear and tears, corrosion, erosion, or chemical attacks. DPV's obligation under this warranty is limited strictly to repairing or replacing, at its election, any parts or products determined by DPV to be defective, or refunding the purchasing price to the original Buyer. DPV shall bear normal surface transportation cost for shipping the replacements, but shall not bear any losses, damages, installation, re-installation, engineering, or any other costs incurred thereof by the Buyer. The Uniform Commercial Code (UCC) shall not apply to the sale, nor the Michigan statutes adopting the UCC. This warranty is expressly made in lieu of and excludes all other warranties, guarantees, or representations expressed or implied. There are no implied warranties of merchantability or fitness for a particular purpose.

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Notwithstanding any provision in the Buyer's order or elsewhere to the contrary, under no circumstances shall DPV be liable for any direct, indirect, special, consequential or incidental damages (including but not limited to loss of revenue, loss of use, material, production or end products), or any other claims for damages arising out of the purchase, delivery, installation or use of DPV products, whether claimed in contract, warranty, tort (including negligence) and delays, actual or imputed, or otherwise.

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PARTIES

The abbreviation "DPV" refers to Delta Pacific Valve Mfg. Co., and the word "Buyer" refers to the Person, Party or Company purchasing goods and/or services from Delta Pacific Valve Mfg. Co. (DPV).

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API 6D / BS 5351 Floating Ball Valves

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One or Two-piece Body Design, Full & Reduced Bore
ANSI Class 150 & 300, ½" to 12", WCB/LCC/CF8M

API 609 Butterfly Valves

Category A, Wafer and Lug Body Patterns
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Industrial Ball Valves - Investment Cast

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