THE ALLOY VALVE STOCKIST

Grupo Compás – The Alloy Valve Stockist

Alloy gate, globe, check, ball, and butterfly valves in duplex, 6moly SMO super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium.

Alloy Valves from stock

Corrosion-resistant, high-alloy valves

Duplex valves

Super duplex valves

Alloy 20 valves

Hastelloy valves

Inconel valves

Incoloy valves

Monel valves

6moly & 254 SMO valves

Titanium valves

Zirconium, Uranus, 904L valves

Gate, globe, check, ball and butterfly valves

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Content Overview

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Alloy gate, globe, check, ball, and butterfly valves in duplex, 6moly SMO super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium.

■ A broad range of alloy process valves ■

Grupo Compás is a premier alloy valve stockist and distributor.

As a valve stockist, we keep titanium, inconel, hastelloy, duplex, super duplex, monel, alloy 20, alloy 600, alloy 626, alloy 800, and tungsten valves in stock, and can also offer them on short manufacturing lead times.

We work with ANSI and DIN standards, in a wide range of sizes and pressure ratings, and stock premium brand valves, approved leading oil, gas and chemical companies. We supply end users and engineering firms, from the chemical, petrochemical, gas, nuclear, marine, construction and food markets. For quotations or further information about our products, please contact by phone +34 93 435 1672 or by email: alloy-valves@alloy-valves.com

Which alloy to use in different process environments?

Environment	Problem	Poor	Good	Best
Chlorides	Pitting, crevice corrosion	300 Series SS	Duplex alloys 317LXN®	Alloy 276 AL6XN®
Chlorides/Halides	Stress corrosion cracking	300 Series SS	Duplex alloys	Alloy 600/625 AL6XN®
Hydrochloric Acid	Pitting, crevice corrosion	Titanium, Duplex, 20 Cb-3	Alloy 22, 276	Zirconium, Tantalum
Hydrofluoric Acid	Pitting, crevice corrosion	Duplex Alloys	Silver, Gold	Copper, Monel® Alloy 400
Sulfuric Acid	Pitting, crevice corrosion	Copper-Nickel (MONEL®) Alloy 601	20 Cb-3	Alloy 622 HASTELLOY® C-22
General Acidic Attack	Critical Pitting	300 Series SS	317LNMo Duplex Alloys	Alloy 25-6 Mo Alloy 625

® AL6XN and 317LXN are Trademarks of Allegheny Ludlum Steel. ® MONEL and HASTELLOY are trademarks of Allegheny Ludlum Steel. ® Nitronic is a trademark of U.S. Steel.

■ A182 F51, A182 F53, A182 F55, A182 F44, 254 SMO, A351 CN7M, A890 Gr.4A, A890 Gr. 5A, A494 M35-1, B564-N08825, F316TI, A321, A347, C276, A217 WC5, WC9, B148, A494, 1.4462, 6 Moly, UNS S31802, UNS 31254, UNS C95500, A494 CW12MW, A494 M35-1, A351 CN7M, A317, A351 CG8M, A890-4A CD3MN, A890-5A CEMN, A890-6A CD3MWCUN, duplex 2205, N08825, B564-N08825, 2.4858, N02200, B160, N02200, A494-CZ100, NW2200, 1.7740, N04400, B564. N04400, 1.7730, 2.4360, N05500, N05500, 2.4375, N08904, 904L NCDU, 1.4539, N06600, N06600, A494-CY40, 1.7742, 2.4816, N06625, N06625, A494-CW6MC, 2.4856, N10276, B564-N10276, A494-CW2M, 2.4819, R50400 & B381-Gr2. ■

■ Scope of alloy valve supply ■

Gate valves

- ½"-48", 150#, 300#, 600#, 800# 900#, 1500#, 2500# SW, NPT, BW, RF, RTJ
- Monel, Alloy 20, F347, duplex F51, super duplex F53 and F55, inconel, hastelloy C276 / B3, titanium, 254 SMO 6moly F44, F91, F321, F317L and incoloy
- Full stellite trims, combination of CS A216 WCB body and alloy trim
- HF Acid (CS/Monel or Monel/Monel)

Globe valves

- ½"-24", 150#, 300#, 600#, 800# 900#, 1500#, 2500# SW, NPT, BW, RF, RTJ
- Duplex F51, monel, Alloy 20, F347, , super duplex F53 and F55, inconel, hastelloy C276 / B3, titanium, 254 SMO 6moly F44, F91, F321, F317L and incoloy
- Full stellite trims, combination of CS A216 WCB body and alloy trim
- HF Acid (CS/Monel or Monel/Monel)

Check valves

Duo Check

- 2" – 72", 150#, 300#, 600#, 800# 900#, 1500#, 2500# in BW and RF
- Monel, Alloy 20, F347, duplex, super duplex, inconel, hastelloy C276 / B3, titanium
- Wafer, lug, double flanged, metal and soft seated designs

Swing check

- 2"-24", 150#, 300#, 600#, 800# 900#, 1500# in BW, RF and RTJ
- Monel, Alloy 20, F347, duplex, super duplex, inconel, hastelloy C276 / B3, titanium

Piston and ball check

- ½"-2", 800#, 1500#, 2500# SW, NPT, valvolets and combination ends
- Monel, Alloy 20, F347, duplex, super duplex, inconel, hastelloy C276 / B3, titanium

Ball valves

- PTFE, RPTFE, metal-seated, full and reduced bore, floating and trunnion
- 2" – 72", 150#, 300#, 600#, 800# 900#, 1500#, 2500# in BW and RF
- Monel, Alloy 20, F347, duplex, super duplex, inconel, hastelloy C276 / B3, titanium
- Firesafe and API6D

Butterfly valves

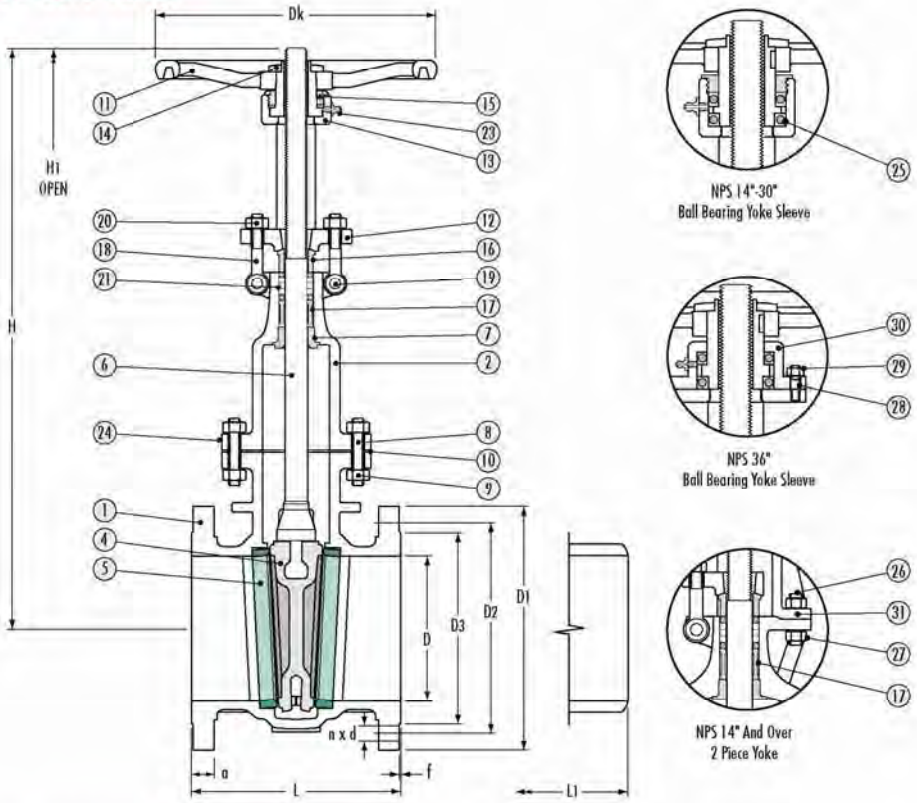
- 2" – 72", 150#, 300#, 600# in lug, wafer, double eccentric and triple offset
- High performance valves in monel, Alloy 20, F347, duplex, super duplex, inconel, hastelloy C276 / B3, titanium
- Soft and metal seated alternatives

Alloy gate valves

Duplex, super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium

		
Alloy valves from stock	**Duplex gate valve**	**Super duplex gate valve**
		
Alloy 20 gate valve	**Monel gate valve**	**Hastelloy gate valve**
		
Inconel gate valve	**Incoloy gate valve**	**Titanium gate valve**

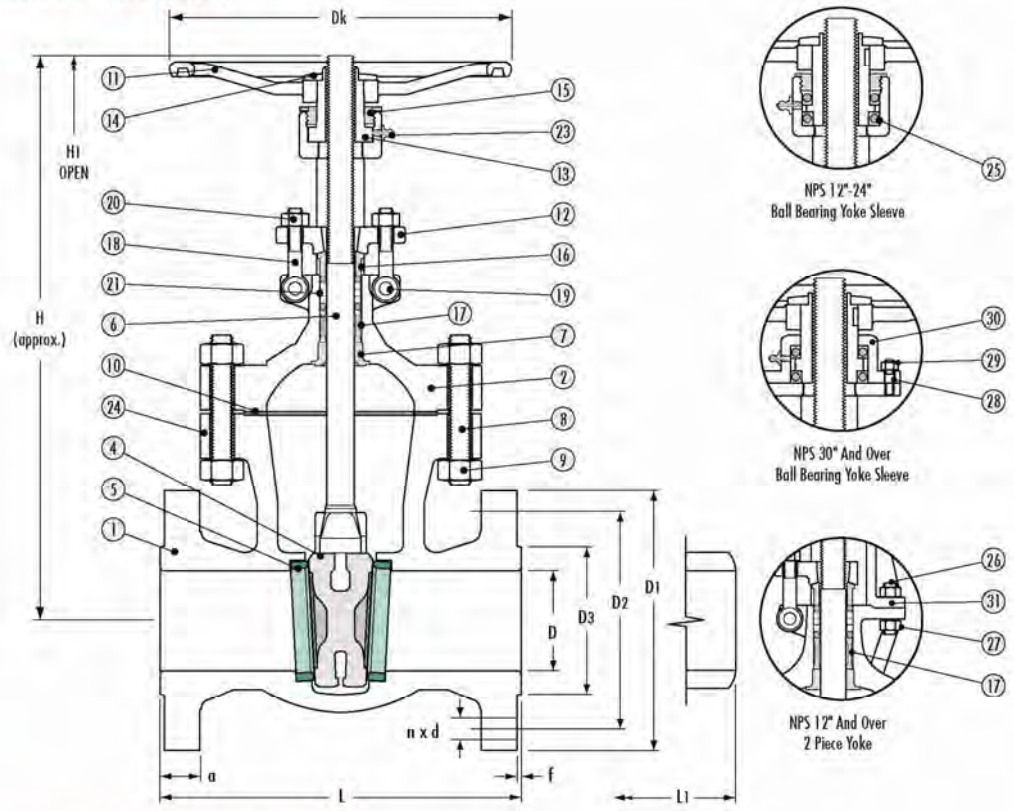
Class 150 Gate Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

			End Flange												
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1(open)	Dk	Wt. Lbs.	Cv
2	2.00	6.00	4.75	4	0.75	3.62	0.63	0.06	7.00	8.50	12.80	15.63	7.87	45	298.7
2 1/2	2.50	7.00	5.50	4	0.75	4.13	0.71	0.06	7.50	9.50	15.94	19.48	9.84	57	466.7
3	3.00	7.50	6.00	4	0.75	5.00	0.75	0.06	8.00	11.12	16.93	20.55	9.84	66	694.1
4	4.00	9.00	7.50	8	0.75	6.18	0.94	0.06	9.00	12.00	19.09	23.70	9.84	103	1234
6	6.00	11.00	9.50	8	0.87	8.50	1.02	0.06	10.50	15.88	25.91	32.60	11.81	163	2873.9
8	8.00	13.50	11.75	8	0.87	10.63	1.14	0.06	11.50	16.50	30.94	39.69	15.75	273	5109.1
10	10.00	16.00	14.25	12	0.98	12.75	1.22	0.06	13.00	18.00	37.68	48.62	17.72	532	8622.6
12	12.00	19.00	17.00	12	0.98	15.00	1.26	0.06	14.00	19.75	43.70	56.70	19.69	558	12416.5
14	13.25	21.00	18.75	12	1.12	16.25	1.38	0.06	15.00	22.50	47.80	62.09	19.69	860	17651.7
16	15.25	23.50	21.25	16	1.12	18.50	1.46	0.06	16.00	24.00	54.61	71.15	22.05	1235	23055.3
18	17.25	25.00	22.75	16	1.26	21.00	1.57	0.06	17.00	26.00	61.00	79.50	24.80	1455	30603.6
20	19.25	27.50	25.00	20	1.26	23.00	1.69	0.06	18.00	28.00	66.06	86.53	24.80	1742	37782.2
24	23.25	32.00	29.50	20	1.38	27.25	1.89	0.06	20.00	32.00	78.25	102.86	27.95	2557	57349.4
30(A)	29.00	38.75	36.00	28	1.38	33.75	2.95	0.06	24.00	36.00	93.70	124.01	31.50	4674	95044
30(B)	29.00	34.94	33.31	44	0.87	32.00	1.77	0.06	24.00	36.00	93.70	124.01	31.50	4189	95044
36(A)	34.50	46.00	42.75	32	1.61	40.25	3.58	0.06	28.00	40.00	117.68	154.93	35.43	7086	146313.1
36(B)	34.50	41.62	39.75	44	0.98	38.25	2.09	0.06	28.00	40.00	117.68	154.93	35.43	6272	146313.1

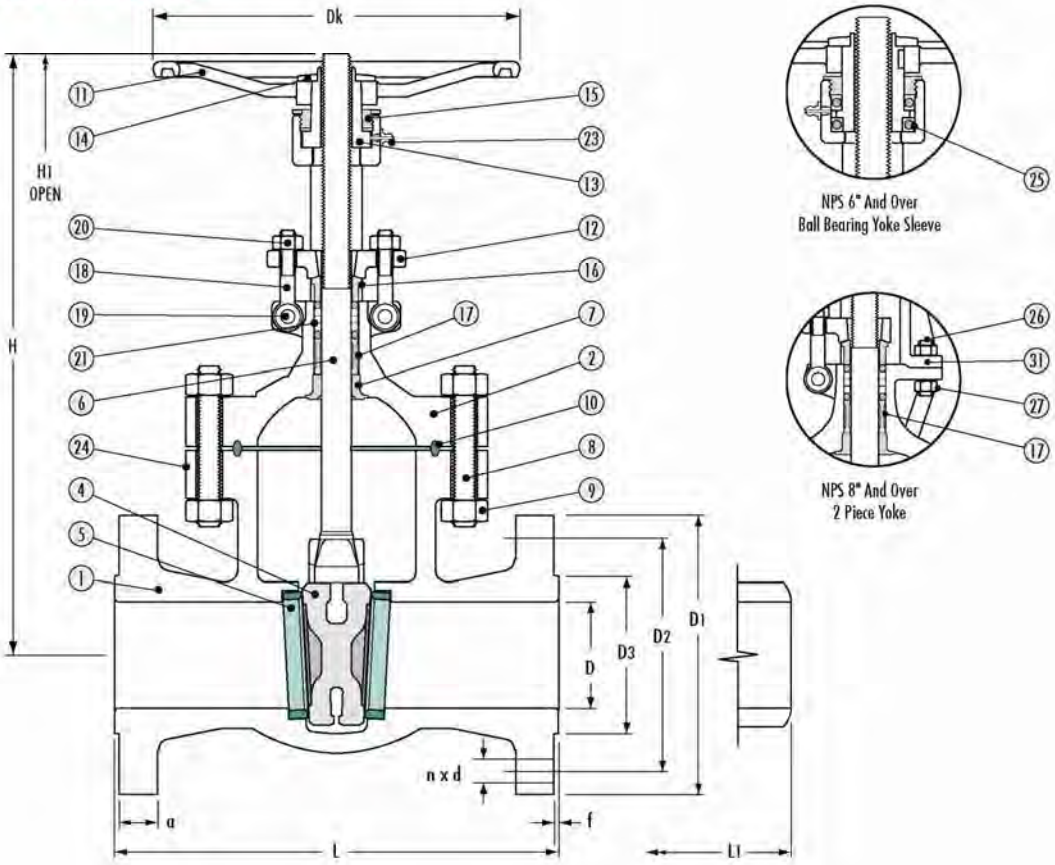
Class 300 Gate Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
2	2.00	6.50	5.71	8	0.75	3.62	0.91	0.06	8.50	8.50	14.17	17.00	7.87	60	289.8
2 1/2	2.50	7.50	5.87	8	0.75	4.13	1.02	0.06	9.50	9.50	17.13	20.56	9.84	82	452.8
3	3.00	8.25	6.61	8	0.87	5.00	1.14	0.06	11.12	11.12	18.31	21.93	9.84	98	672.1
4	4.00	10.00	7.87	8	0.87	6.18	1.26	0.06	12.00	12.00	20.47	25.08	9.84	143	1194.8
6	6.00	12.50	10.63	12	0.87	8.50	1.46	0.06	15.88	15.88	27.75	34.44	15.75	296	2776.4
8	8.00	15.00	13.00	12	1.00	10.63	1.65	0.06	16.50	16.50	34.92	44.13	17.72	500	4935.8
10	10.00	17.50	15.25	16	1.12	12.75	1.89	0.06	18.00	18.00	41.26	52.52	19.69	787	7982.9
12	12.00	20.50	17.75	16	1.26	15.00	2.00	0.06	19.75	19.75	44.09	57.09	19.69	1213	11929.4
14	13.25	23.00	20.25	20	1.26	16.25	2.13	0.06	30.00	30.00	49.00	63.29	22.05	1704	15646.6
16	15.25	25.50	22.50	20	1.38	18.50	2.28	0.06	33.00	33.00	55.79	72.33	24.80	2244	21207.8
18	17.00	28.00	24.75	24	1.38	21.00	2.40	0.06	36.00	36.00	61.00	79.50	24.80	2800	26841.1
20	19.00	30.50	27.00	24	1.38	23.00	2.52	0.06	39.00	39.00	67.68	88.15	27.95	3682	34490.3
24	23.00	36.00	32.00	24	1.61	27.25	2.75	0.06	45.00	45.00	79.92	104.53	31.50	5842	51874.4
30(A)	29.00	43.00	39.25	28	1.89	33.75	3.62	0.06	55.00	55.00	102.83	134.25	35.43	9535	85010
30(B)	29.00	39.00	36.25	36	1.50	33.25	3.70	0.06	55.00	55.00	102.83	134.25	35.43	9006	85010
36(A)	34.50	50.00	46.00	32	1.73	40.25	4.13	0.06	68.00	68.00	117.40	154.65	37.25	13029	—
36(B)	34.50	46.10	42.88	32	1.73	39.75	4.09	0.06	68.00	68.00	117.40	154.65	37.25	12346	—

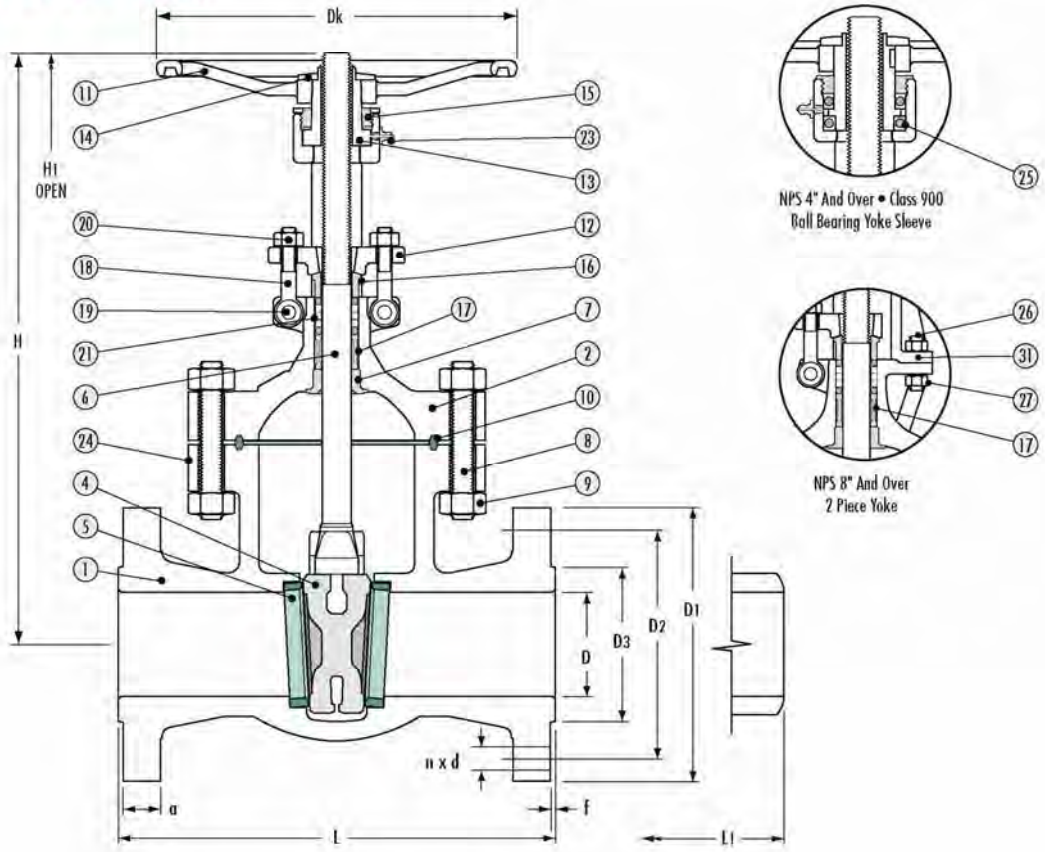
Class 600 Gate Valves



Dimensional Data (in.) and Flow Coefficient (Cv)

	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
2	2.00	6.50	5.00	8	0.75	3.62	1.02	0.25	11.50	11.50	14.17	17.00	7.87	90	260.7
2 1/2	2.50	7.50	5.91	8	0.87	4.13	1.14	0.25	13.00	13.00	17.24	20.67	9.84	119	407.4
3	3.00	8.25	6.63	8	0.87	5.00	1.26	0.25	14.00	14.00	17.99	21.61	9.84	133	586.6
4	4.00	10.75	8.50	8	0.98	6.18	1.54	0.25	17.00	17.00	21.61	26.22	11.81	260	1068.6
6	6.00	14.00	11.50	12	1.10	8.50	1.89	0.25	22.00	22.00	31.30	38.58	19.69	719	2404.4
8	7.87	16.50	13.75	12	1.26	10.63	2.20	0.25	26.00	26.00	34.06	42.92	19.69	1025	4385.6
10	9.75	20.00	17.00	16	1.38	12.75	2.52	0.25	31.00	31.00	41.73	52.56	24.80	1709	7244.4
12	11.73	22.00	19.25	20	1.38	15.00	2.64	0.25	33.00	33.00	46.61	59.60	24.80	2271	10753
14	12.87	23.75	20.75	20	1.50	16.25	2.76	0.25	35.00	35.00	55.12	69.88	27.95	2542	15116
16	14.75	27.00	23.75	20	1.61	18.50	3.03	0.25	39.00	39.00	60.83	77.96	27.95	3164	20436.3
18	16.50	29.25	25.75	20	1.73	21.00	3.25	0.25	43.00	43.00	69.29	88.98	31.50	5331	26841.1
20	18.25	32.00	28.50	24	1.73	23.00	3.50	0.25	47.00	47.00	73.62	94.87	31.50	6554	34490.3
24	22.00	37.00	33.00	24	2.00	27.25	4.02	0.25	55.00	55.00	85.83	110.63	35.43	9057	51874.4

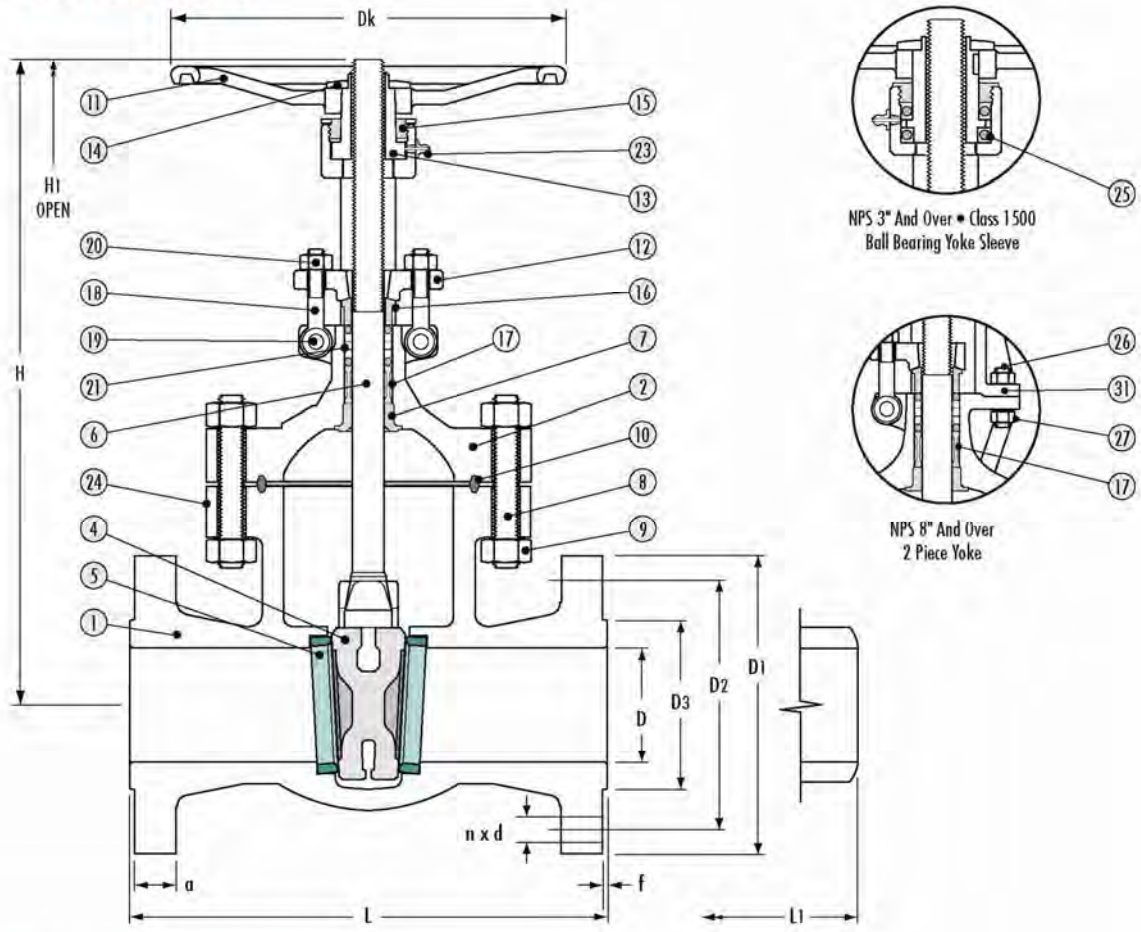
Class 900 Gate Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
3	2.87	9.50	7.50	8	0.98	5.00	1.54	0.25	15.00	15.00	20.43	24.43	11.81	236	560.5
4	3.86	11.50	9.25	8	1.26	6.18	1.77	0.25	18.00	18.00	23.90	28.86	15.75	379	1018.9
6	5.75	15.00	12.50	12	1.26	8.50	2.20	0.25	24.00	24.00	31.89	38.98	19.69	842	2346.5
8	7.50	18.50	15.50	12	1.50	10.63	2.52	0.25	29.00	29.00	38.39	47.45	24.80	1466	4274.6
10	9.37	21.50	18.50	16	1.50	12.75	2.75	0.25	33.00	33.00	43.31	53.56	27.95	1973	6852.5
12	11.14	24.00	21.00	20	1.50	15.00	3.12	0.25	38.00	38.00	49.37	62.37	27.95	2877	10138

Class 1500 Gate Valves



Dimensional Data (in.) and Flow Coefficient (Cv)

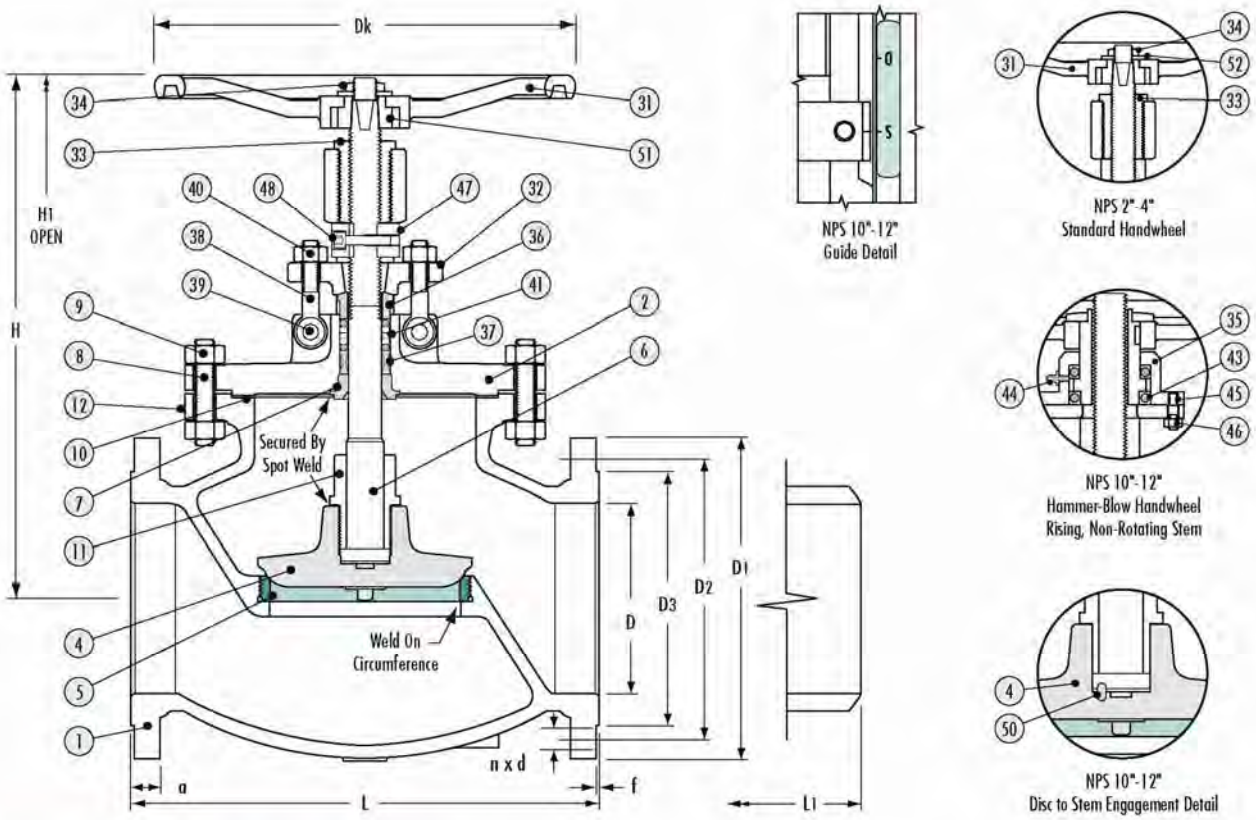
	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
2	1.97	8.50	6.50	8	0.98	3.62	1.54	0.25	14.50	14.50	18.78	21.61	9.84	188	249.1
3	2.76	10.50	8.00	8	1.26	5.00	1.89	0.25	18.50	18.50	23.43	27.05	15.75	332	537.7
4	3.62	12.25	9.50	8	1.38	6.18	2.13	0.25	21.50	21.50	24.80	29.41	17.72	495	975.5
6	5.39	15.50	12.50	12	1.50	8.50	3.27	0.25	27.75	27.75	32.68	39.88	22.05	1138	2242.2
8	7.00	19.00	15.50	12	1.73	10.63	3.62	0.25	32.75	32.75	38.98	47.64	27.95	2205	4075.6
10	8.78	23.00	19.00	12	2.00	12.75	4.25	0.25	39.00	39.00	46.57	57.36	31.50	3439	6518.1
12	10.39	26.50	22.50	16	2.13	15.00	4.88	0.25	44.50	44.50	51.18	63.78	31.50	4872	9617.8

Alloy globe valves

Duplex, super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium

 Alloy valves from stock	 Duplex globe valve	 Super duplex globe valve
 Alloy 20 globe valve	 Monel globe valve	 Hastelloy globe valve
 Inconel globe valve	 Incoloy globe valve	 Titanium globe valve

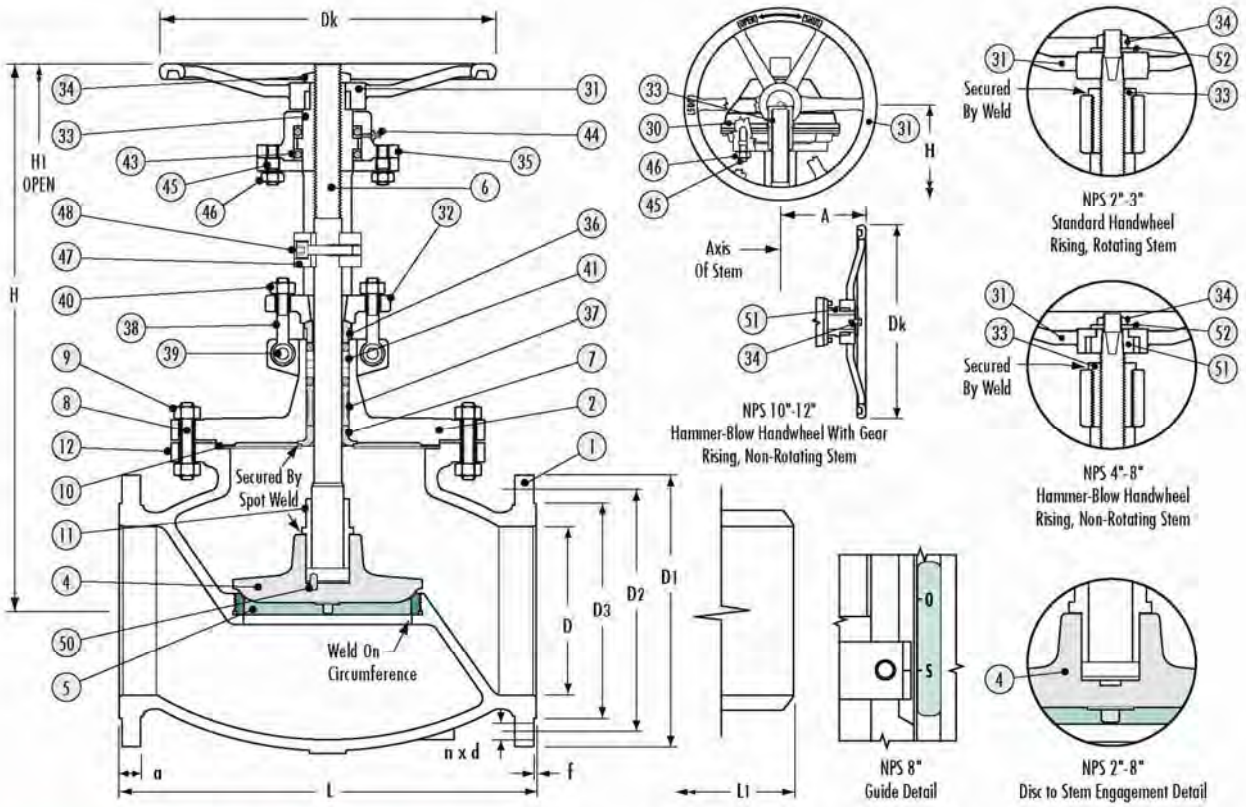
Class 150 Globe Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
2	2.00	6.00	4.75	4	0.75	3.62	0.63	0.06	8.00	8.00	13.58	14.96	7.87	55	46.9
2 1/2	2.50	7.00	5.50	4	.75	4.13	0.71	0.06	8.50	8.50	19.30	21.07	9.84	77	72.2
3	3.00	7.50	6.00	4	0.75	5.00	0.75	0.06	9.50	9.50	15.75	17.52	9.84	93	105.5
4	4.00	9.00	7.50	8	0.75	6.18	0.94	0.06	11.50	11.50	18.31	20.28	15.75	143	166
6	6.00	11.00	9.50	8	0.87	8.50	1.00	0.06	16.00	16.00	20.08	22.05	17.72	254	400
8	8.00	13.50	11.75	8	0.87	10.63	1.12	0.06	19.50	19.50	21.97	24.25	17.72	375	810
10	10.00	16.00	14.25	12	0.98	12.75	1.19	0.06	24.50	24.50	29.50	32.10	19.69	617	1310.5
12	12.00	19.00	17.00	12	0.98	15.00	1.25	0.06	27.50	27.50	32.48	35.75	19.69	833	1900.6

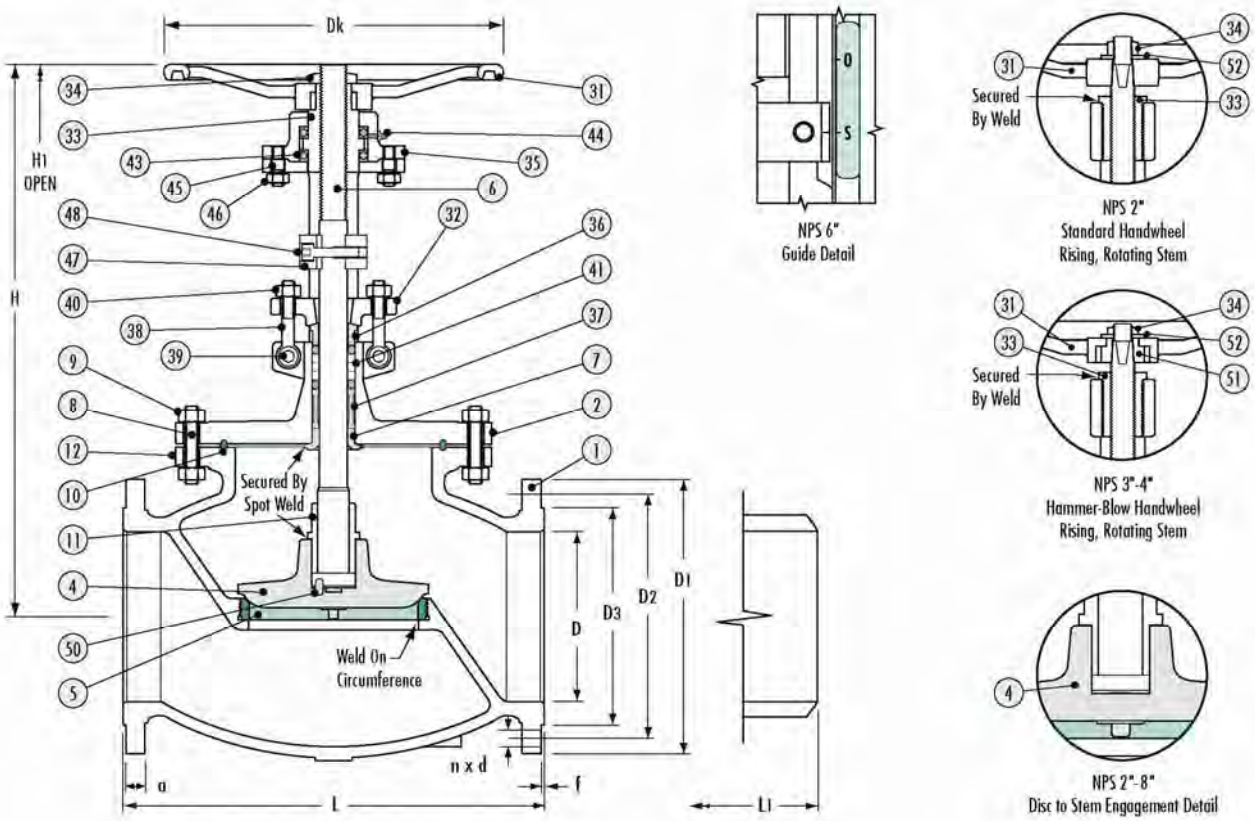
Class 300 Globe Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange															
			Bolt Hole													
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1(open)	Dk	A	Wt. Lbs.	Cv
2	2.00	6.50	5.00	8	0.75	3.62	0.91	0.06	10.50	10.50	15.16	16.73	7.87	–	66	46.5
2 1/2	2.50	7.50	5.87	8	0.87	4.13	1.02	0.06	11.50	11.50	17.52	19.10	9.84	–	106	84.5
3	3.00	8.25	6.63	8	0.87	5.00	1.14	0.06	12.50	12.50	17.91	19.88	9.84	–	126	104.7
4	4.00	10.00	7.87	8	0.87	6.18	1.26	0.06	14.00	14.00	20.47	22.44	15.75	–	185	165
6	6.00	12.52	10.63	12	0.87	8.50	1.46	0.06	17.50	17.50	22.83	25.19	17.72	–	357	436.7
8	8.00	15.00	13.00	12	0.98	10.63	1.65	0.06	22.00	22.00	31.10	33.38	19.69	–	617	692.9
10	10.00	17.50	15.25	16	1.12	12.75	1.88	0.06	24.50	24.50	32.64	35.40	19.69	11.10	915	1120.6
12	12.00	20.50	17.75	16	1.26	15.00	2.01	0.06	28.00	28.00	35.35	38.58	27.95	11.10	1276	1882.4

Class 600 Globe Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

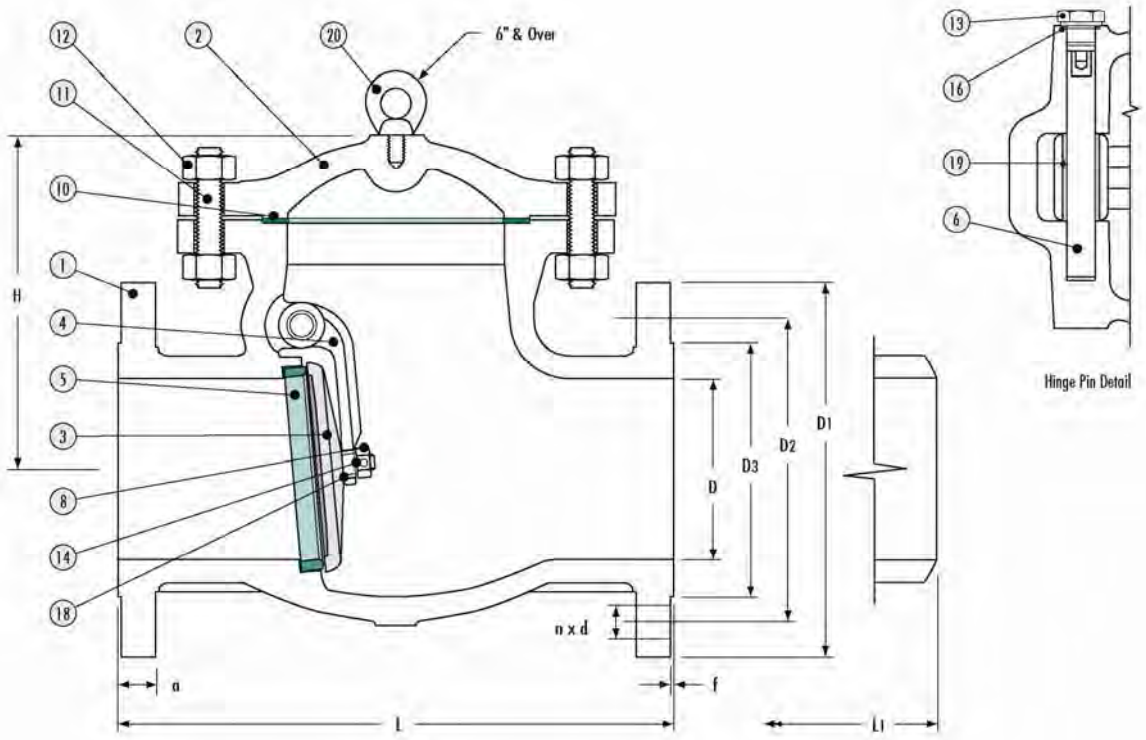
	End Flange														
			Bolt Hole												
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	H1 (open)	Dk	Wt. Lbs.	Cv
2	2.00	6.50	5.00	8	0.75	3.62	1.30	0.25	11.50	11.50	16.93	18.50	15.75	95	46.2
2 1/2	2.50	7.50	5.87	8	0.87	4.13	1.14	0.25	13.00	13.00	20.27	22.25	17.72	163	73.2
3	3.00	8.25	6.63	8	0.87	5.00	1.54	0.25	14.00	14.00	20.28	22.25	17.72	163	103.9
4	4.00	10.75	8.50	8	0.98	6.18	1.81	0.25	17.00	17.00	23.23	25.59	17.72	309	189.7
6	6.00	14.00	11.50	12	1.10	8.50	2.17	0.25	22.00	22.00	34.45	37.21	27.95	789	394.5
8	7.88	16.50	13.75	12	1.25	10.62	2.19	0.25	26.00	26.00	28.39	31.54	22.05	800	795.8

Alloy check valves

Duplex, super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium

 **Alloy valves from stock**	 **Duplex check valve**	 **Super duplex check valve**
 **Alloy 20 check valve**	 **Monel check valve**	 **Hastelloy check valve**
 **Inconel check valve**	 **Incoloy check valve**	 **Titanium check valve**

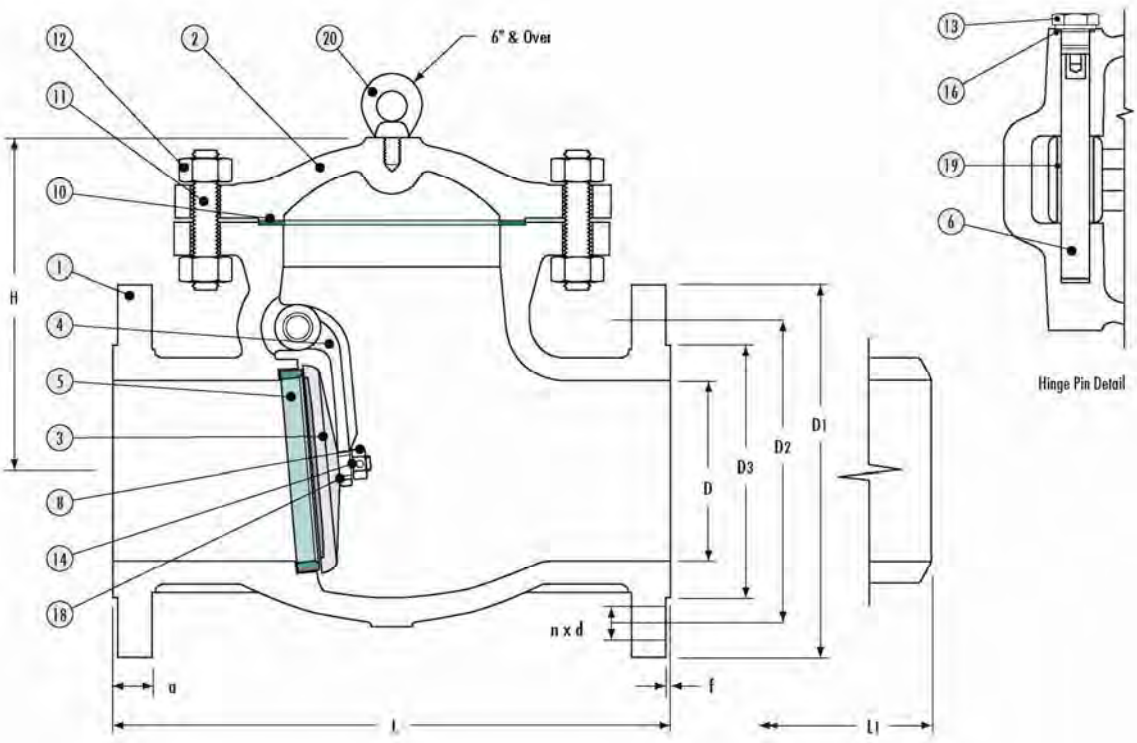
Class 150 Swing Check Valves



Dimensional Data (in.) and Flow Coefficient (C_v)

Size	End Flange D	D1	Bolt Hole D2	n	d	D3	a	f	L	L1	H	Wt. Lbs.	Cv
2	2.00	6.00	4.75	4	0.75	3.62	0.63	0.06	8.00	8.00	6.30	32	218.1
3	3.00	7.50	6.00	4	0.75	5.00	0.75	0.06	9.50	9.50	8.27	54	499.2
4	4.00	9.00	7.50	8	0.75	6.18	0.94	0.06	11.50	11.50	8.46	97	903.2
6	6.00	11.00	9.50	8	0.87	8.50	1.02	0.06	14.00	14.00	10.43	155	2032.1
8	8.00	13.50	11.75	8	0.87	10.63	1.14	0.06	19.50	19.50	12.28	245	3679
10	10.00	16.00	14.25	12	0.98	12.75	1.22	0.06	24.50	24.50	13.86	481	5857.9
12	12.00	19.00	17.00	12	0.98	15.00	1.26	0.06	27.50	27.50	15.83	593	8435.4
14	13.25	21.00	18.75	12	1.10	16.25	1.38	0.06	31.00	31.00	15.94	776	11708.8
16	15.25	23.50	21.25	16	1.10	18.50	1.46	0.06	34.00	34.00	17.91	1063	15293.2
18	17.25	25.00	22.75	16	1.26	21.00	1.57	0.06	38.50	38.50	19.69	1265	19754.5
20	19.25	27.50	25.00	20	1.26	23.00	1.69	0.06	38.50	38.50	20.69	1553	24912.9
24	23.25	32.00	29.50	20	1.38	27.25	1.89	0.06	51.00	51.00	25.59	2381	36680.8

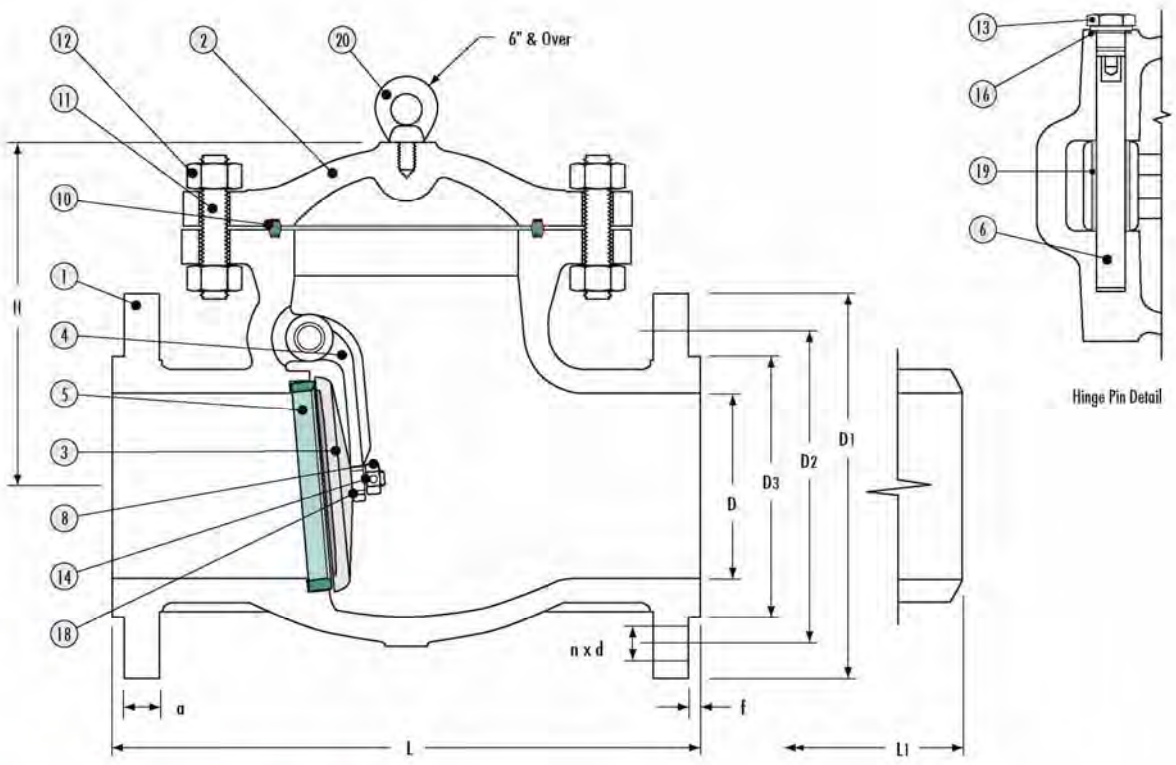
Class 300 Swing Check Valves



Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange												
			Bolt Hole										
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	Wt. Lbs.	Cv
2	2.00	6.50	5.00	8	0.75	3.62	0.88	0.06	10.50	10.50	6.29	42	211.2
2 1/2	2.50	7.50	5.88	8	0.88	4.12	1.00	0.06	11.50	11.50	7.08	66	330
3	3.00	8.25	6.62	8	0.88	5.00	1.12	0.06	12.50	12.50	8.26	83	482.8
4	4.00	10.00	7.88	8	0.88	6.19	1.25	0.06	14.00	14.00	8.86	129	858.4
6	6.00	12.50	10.62	12	0.88	8.50	1.44	0.06	17.50	17.50	11.81	217	1963.2
8	8.00	15.00	13.00	12	1.00	10.62	1.62	0.06	21.00	21.00	13.07	400	3549.8
10	10.00	17.50	15.25	16	1.12	12.75	1.88	0.06	24.50	24.50	15.04	598	5546.6
12	12.00	20.50	17.75	16	1.25	15.00	2.00	0.06	28.00	28.00	17.79	851	8128.5
14	13.25	23.00	20.25	20	1.25	16.25	2.12	0.06	33.00	33.00	17.60	1023	11063.8
16	15.25	25.50	22.50	20	1.38	18.50	2.25	0.06	34.00	34.00	21.26	1705	14715.9
18	17.00	28.00	24.75	24	1.38	21.00	2.38	0.06	38.50	38.50	23.23	1771	18624.8
20	19.00	30.50	27.00	24	1.38	23.00	2.50	0.06	40.00	40.00	25.19	2761	23431.5
24	23.00	36.00	32.00	24	1.62	27.25	2.75	0.06	53.00	53.00	36.29	4184	33741.4

Class 600 Swing Check Valves

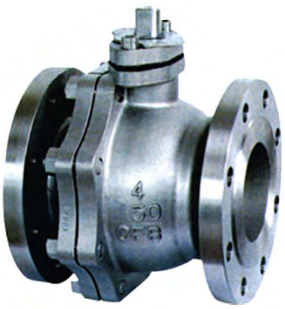


Dimensional Data (in.) and Flow Coefficient (C_V)

	End Flange												
			Bolt Hole										
Size	D	D1	D2	n	d	D3	a	f	L	L1	H	Wt. Lbs.	Cv
2	2.00	6.50	5.00	8	0.75	3.62	1.30	0.28	11.50	11.50	7.68	62	204.9
3	3.00	8.25	6.63	8	0.87	5.00	1.54	0.28	14.00	14.00	9.45	108	468
4	4.00	10.75	8.50	8	0.98	6.18	1.81	0.28	17.00	17.00	10.83	208	844.8
6	6.00	14.00	11.50	12	1.10	8.50	2.17	0.28	22.00	22.00	12.20	529	1900.9
8	7.87	16.50	13.75	12	1.26	10.63	2.48	0.28	26.00	26.00	14.57	743	3433.4
10	9.75	20.00	17.00	16	1.38	12.75	2.80	0.28	31.00	31.00	16.77	1296	5364.7
12	11.75	22.00	19.25	20	1.38	15.00	2.91	0.28	33.00	33.00	19.88	1649	7852.9
14	12.87	23.78	20.75	20	1.50	16.25	3.03	0.28	35.00	35.00	22.05	2013	10688.6
16	14.75	27.00	23.75	20	1.61	18.50	3.31	0.28	39.00	39.00	25.59	2260	14199.3

Alloy ball valves

Duplex, super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium

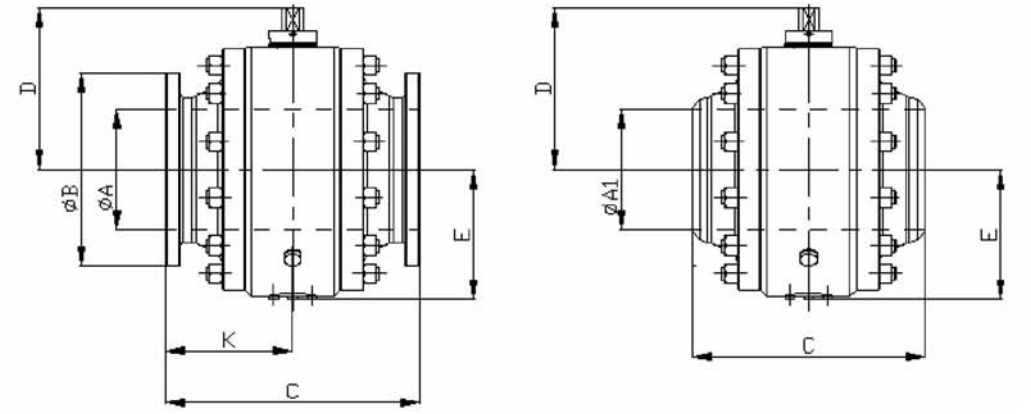
		
Alloy valves from stock	**Duplex ball valve**	**Super duplex ball valve**
		
Alloy 20 ball valve	**Monel ball valve**	**Hastelloy ball valve**
		
Inconel ball valve	**Incoloy ball valve**	**Titanium ball valve**

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 20
ANSI 150 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	20	*285*	16	*230*
HYDROSTATIC PRESSURE TEST – BODY	30	*425*	24	*345*
HYDROSTATIC PRESSURE TEST – SEAT	22	*300*	18	*360*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – FULL BORE

DN		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		Welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	13	152[3]	152[3]	150	Symmetrical valves K=C/2	89	69.5	60.5	6	4
¾	20	19	152[3]	152[3]	150		99	69.5	60.5	6	4
1	25	25	160[3]	172.7[3]	150		108	79.5	69.5	7	5
1 ½	40	38	190[3]	202.7[3]	190		127	93.5	83	13	10
2	50	50	178	191	198		152	115	95.5	17	13
3	80	76	203	216	220		190	135	120.5	31	24
4	100	100	229	241	270		229	167.5	140.5	52	45
6	150	150	394	406	346		279	227.5	190.4	145	125
8	200	201.4	457	470	430		343	268.5	227	270	230
10	250	252.4	533	546	510		406	339	272.3	460	420
12	300	303.4	610	622	620		483	406.5	329	750	700
14	350	336	686	699	660		533	445	353.5	1060	970
16	400	388	762	775	760		597	481.5	389	1380	1250
18	450	438	864	876	830		635	568.5	491.8	2000	1850
20	500	489	914	927	910		698	604	525.5	2500	2200
24	600	590	1067	1080	1040		813	691.1	608.3	4500	4100
28	700	685	1245	1258	1250		927				
30	750	737	1295	1308	1300		985	841.6	716.8	7030	6410
32	800	780	1372	1385	1370		1060				
34	850	832	1473	1502	1485		1111				
36	900	876	1524	1537	1520		1168				

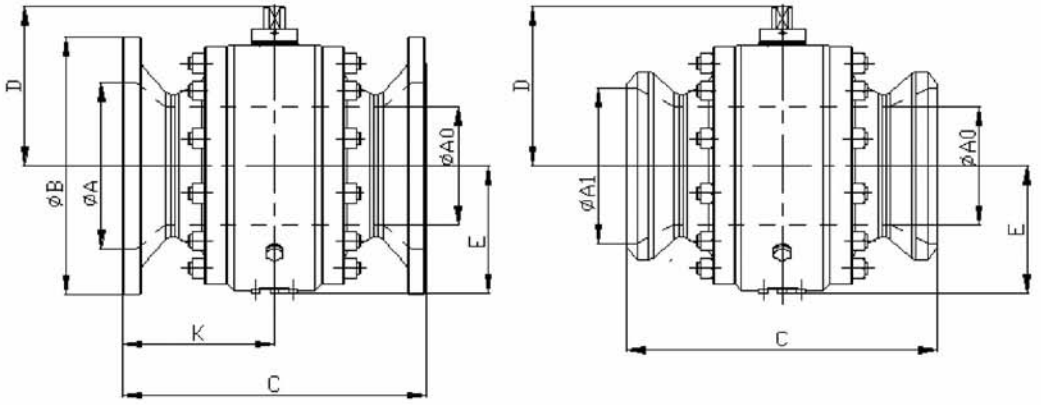
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - o Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - o Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 20
ANSI 150 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	20	*285*	16	*230*
HYDROSTATIC PRESSURE TEST – BODY	30	*425*	24	*345*
HYDROSTATIC PRESSURE TEST – SEAT	22	*300*	18	*360*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

DN		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE [3]	K	ØB[2]	D	E	Flanges	BW
1 x ¾	25	25	19	160[3]	172.7[3]	150	Symmetrical valves K=C/2	108	69.5	60.5	7	4
1 ½ x 1	40	38	25	165[3]	202.7[3]	160		127	79.5	69.5	10	6
2 x 1 ½	50	50	38	178	191	198		152	93.5	83	15	12
3 x 2	80	76	50	203	216	220		190	115	95.5	23	16
4 x 3	100	100	76	229	241	270		229	135	120.5	40	27
6 x 4	150	150	100	394	406	346		279	167.5	140.5	82	49
8 x 6	200	201.4	150	457	470	430		343	227.5	190.4	180	130
10 x 8	250	252.4	201.4	533	546	510		406	268.5	227	310	245
12 x 10	300	303.4	252.4	610	622	540		483	339	272.3	540	450
14 x 12	350	336	303.4	686	699	620		533	406	329	790	730
16 x 12	400	388	303.4	762	775	660		597	406	329	990	920
16 x 14	400	388	336	762	775	660		597	445	353.5	1130	1000
18 x 16	450	438	388	864	876	760		635	481.5	389	1450	1300
20 x 16	500	489	388	914	927	800		698	481.5	389	2060	1810
20 x 18	500	489	438	914	927	800		698	568.5	491.8	2300	1950
24 x 20	600	590	489	1067	1080	910		813	604	525.5	2650	2400
30 x 24	750	737	590	1295	1308	1040		985	691.1	608.3	5530	4300
32 x 28	800	780	685	1372	1385	1370		1060				
36 x 30	900	876	737	1524	1537	1520		1168	841.6	716.8		
36 x 32	950	876	780	1524	1537	1520		1168				
36 x 34	900	876	832	1524	1537	1520		1168				
40 x 36	1000	975	876	1702	1730	1720		1289				

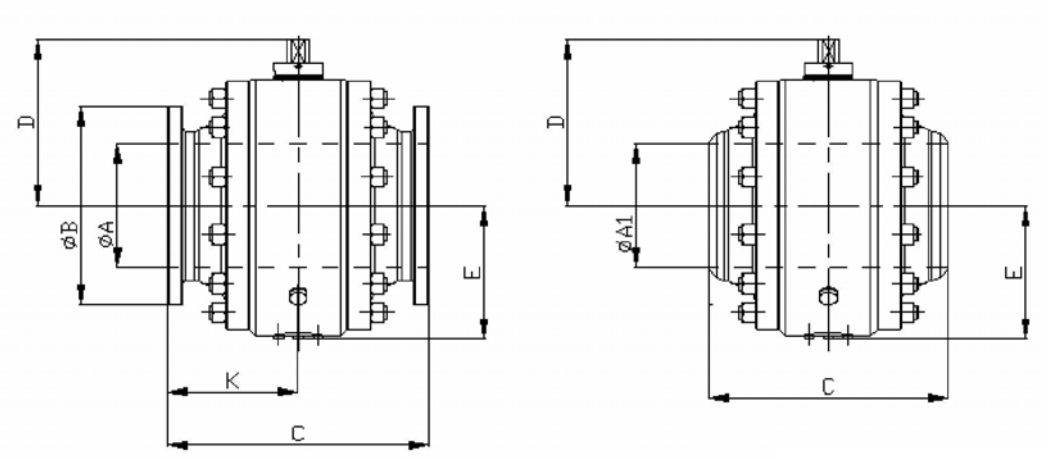
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 50
ANSI 300 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	51	*740*	41	*600*
HYDROSTATIC PRESSURE TEST – BODY	78	*1100*	63	*900*
HYDROSTATIC PRESSURE TEST – SEAT	57	*800*	46	*660*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – FULL BORE

DN		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		Welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	13	152	163.2	150	Symmetrical valves K=C/2	95	69.5	60.5	6	4
¾	20	19	152.4	165.1	150		117	69.5	60.5	7	4
1	25	25	165	177.8	150		124	79.5	69.5	8	5
1 ½	40	38	190.5	203.2	190		156	93.5	83	15	10
2	50	50	216	231.7	198		165	115	95.5	23	13
3	80	76	282.5	298.2	220		210	135	120.5	43	24
4	100	100	304.8	320.6	270		254	167.5	140.5	70	45
6	150	150	403.4	419.2	346		318	227.5	190.4	165	125
8	200	201.4	501.7	517.5	430		381	268.5	227	280	230
10	250	252.4	568.5	584.2	510		444	339	272.3	500	420
12	300	303.4	647.7	663.5	620		521	406.5	329	810	700
14	350	336	762	777.7	660		584	445	353.5	1150	970
16	400	388	838.2	854	760		648	481.5	389	1500	1250
18	450	438	914.4	930.2	830		711	568.5	491.8	2300	1850
20	500	489	990.6	1009.7	910		775	604	525.5	2700	2200
24	600	590	1143	1165.4	1040		914	691.1	608.3	4800	4100
28	700	685	1346	1372	1250		1035				
30	750	737	1397	1422.4	1300		1092	841.6	716.8	7500	6410
32	800	780	1524	1553	1370		1149				
34	850	832	1625	1654	1630		1206				
36	900	876	1727	1756	1520		1270				

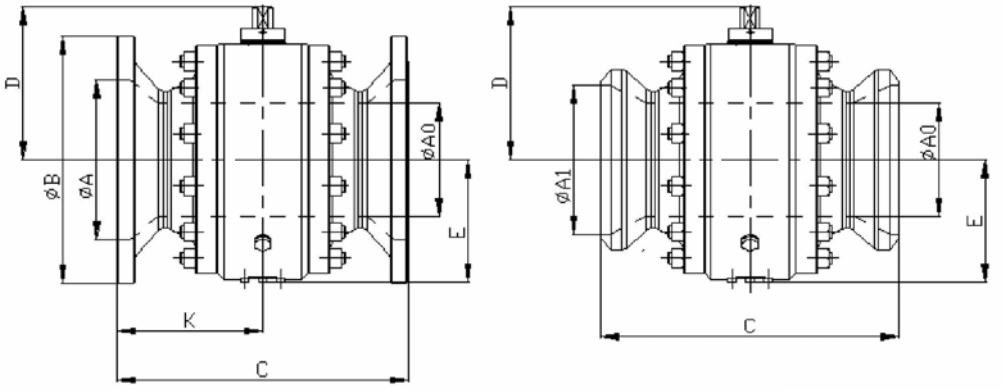
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 50
ANSI 300 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	51	*740*	41	*600*
HYDROSTATIC PRESSURE TEST – BODY	78	*1100*	63	*900*
HYDROSTATIC PRESSURE TEST – SEAT	57	*800*	46	*660*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

DN		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
1 × ¾	25	25	19	165	177.8	150	Symmetrical valves K=C/2	124	69.5	60.5	7	4
1 ½ × 1	40	38	25	190.5	203.2	190		156	79.5	69.5	11	6
2 × 1 ½	50	50	38	216	231.7	198		165	93.5	83	18	12
3 × 2	80	76	50	282.5	298.2	220		210	115	95.5	35	16
4 × 3	100	100	76	304.8	320.6	270		254	135	120.5	58	27
6 × 4	150	150	100	403.4	419.2	346		318	167.5	140.5	95	49
8 × 6	200	201.4	150	501.7	517.5	430		381	227.5	190.4	210	130
10 × 8	250	252.4	201.4	568.5	584.2	510		444	268.5	227	360	245
12 × 10	300	303.4	252.4	647.7	663.5	620		521	339	272.3	600	450
14 × 12	350	336	303.4	762	777.7	660		584	406.5	329	920	730
16 × 12	400	388	303.4	838.2	854	760		648	406.5	329	1180	970
16 × 14	400	388	336	838.2	854	760		648	445	353.5	1250	1000
18 × 16	450	438	388	914.4	930.2	830		711	481.5	389	1650	1300
20 × 16	500	489	388	990.6	1009.7	910		775	481.5	389	2130	1805
20 × 18	500	489	438	990.6	1009.7	910		775	568.5	491.8	2500	1950
24 × 20	600	590	489	1143	1165.4	1040		914	604	525.5	3100	2400
30 × 24	750	737	590	1397	1422.4	1300		1092	691.1	608.3	5788	4400
32 × 28	800	780	685	1524	1553	1370		1149				
34 × 30	850	832	737	1625	1654	1630		1206	841.6	716.8		
36 × 30	900	876	737	1727	1756	1520		1270	841.6	716.8		
36 × 32	900	876	780	1727	1756	1520		1270				

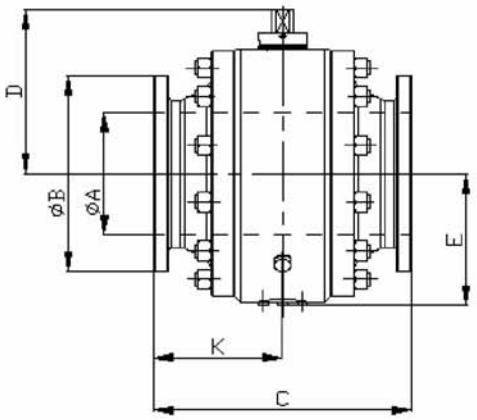
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

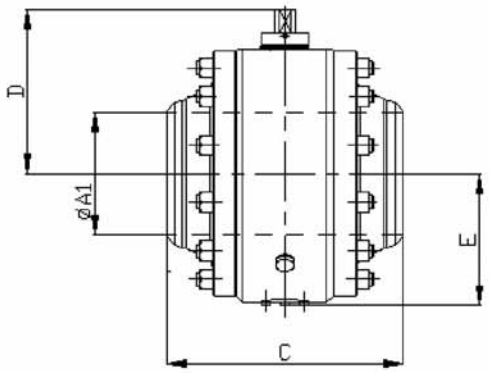
TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 100
ANSI 600 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	102	*1480*	82.5	*1200*
HYDROSTATIC PRESSURE TEST – BODY	154	*2175*	125	*1780*
HYDROSTATIC PRESSURE TEST – SEAT	113	*1600*	92	*1310*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*





TYPE A and W – FULL BORE

DN		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		Welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	13	165.1	163.6	150	Symmetrical valves K=C/2	95	69.5	60.5	7	4
¾	20	19	190.5	190.5	150		117	69.5	60.5	7	4
1	25	25	215.9	215.9	150		124	79.5	69.5	10	6
1 ½	40	38	241.3	241.3	190		156	93.5	83	17	11
2	50	50	292.1	295.1	220		165	115	95.5	30	20
3	80	76	355.6	358.6	270		210	151	126.3	65	45
4	100	100	431.8	434.8	320		273	192.5	157	125	85
6	150	150	558.8	561.8	400		356	265	198.8	280	200
8	200	201.4	660.4	663.4	500		419	334.5	261	500	380
10	250	252.4	787.4	790.4	540		508	378.5	307	750	540
12	300	303.4	838.2	841.2	620		559	444.2	361	1150	900
14	350	336	889	892	710		603	501.5	416.3	1650	1400
16	400	388	990.6	993.6	760		686	532	452.8	2150	1700
18	450	438	1092.2	1095.2	890		743	584.1	527	2850	2300
20	500	489	1193.8	1200.2	910		813	656.6	580	3200	2700
24	600	590	1397	1406.7	1040		940	728.1	621.5	6000	4900
28	700	685	1549	1562	1250		1073				
30	750	737	1651	1664	1350		1130				
32	800	780	1778	1794	1470		1194				
34	850	832	1930	1946	1620		1245				
36	900	876	2083	2099	1700		1315				

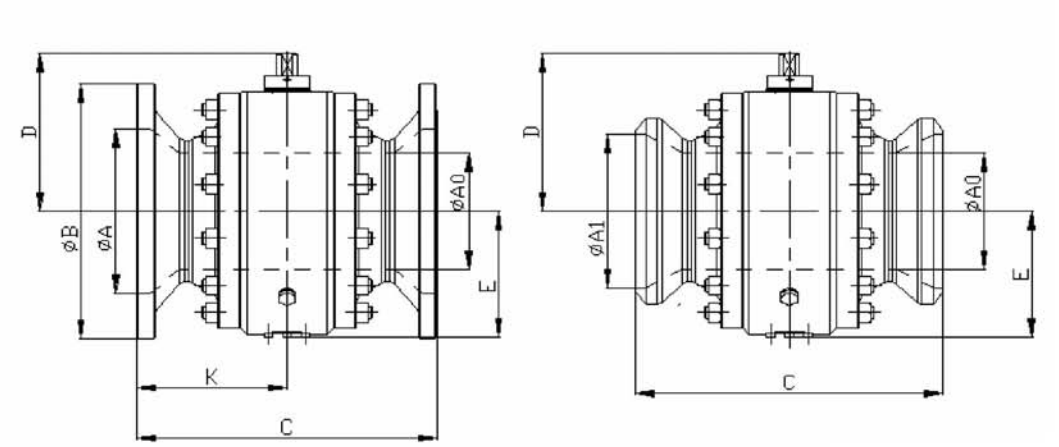
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 100
ANSI 600 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	102	*1480*	82.5	*1200*
HYDROSTATIC PRESSURE TEST – BODY	154	*2175*	125	*1780*
HYDROSTATIC PRESSURE TEST – SEAT	113	*1600*	92	*1310*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

DN		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
1 × ¾	25	25	19	215.9	215.9	150	Symmetrical valves K=C/2	124	69.5	60.5	8	4
1 ½ × 1	40	38	25	241.3	241.3	160		156	79.2	69.5	13	6
2 × 1 ½	50	50	38	292.1	295.1	198		165	93.2	83	21	12
3 × 2	80	76	50	355.6	358.6	270		210	115	95.5	42	23
4 × 3	100	100	76	431.8	434.8	300		273	150.8	126.3	92	49
6 × 4	150	150	100	558.8	561.8	400		356	192.6	157	175	90
8 × 6	200	201.4	150	660.4	663.4	500		419	265.1	198.8	350	220
10 × 8	250	252.4	201.4	787.4	790.4	540		508	334.2	261	620	420
12 × 10	300	303.4	252.4	838.2	841.2	570		559	378	307	850	600
14 × 12	350	336	303.4	889	892	620		603	444.2	361	1250	950
16 × 12	400	388	303.4	990.6	993.6	620		686	444.2	361	1610	1260
16 × 14	400	388	336	990.6	993.6	710		686	501.5	416.3	1950	1480
18 × 16	450	438	388	1092.2	1095.2	760		743	532	452.8	2450	1800
20 × 16	500	489	388	1193.8	1200.2	760		813	532	452.8	2730	2120
20 × 18	500	489	438	1193.8	1200.2	890		813	584.1	527	3100	2400
24 × 20	600	590	489	1397	1406.7	910		940	656.6	580	4300	3000
30 × 24	750	737	590	1651	1664	1350		1130				
32 × 28	800	780	685	1778	1794	1470		1194				
34 × 30	850	832	737	1930	1946	1620		1245				
36 × 30	900	876	737	2083	2099	1700		1314				
36 × 32	950	876	780	2083	2099	1700		1314				

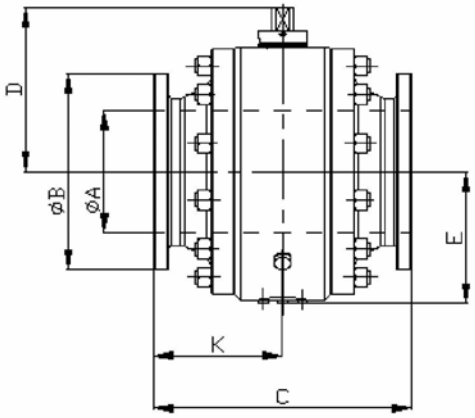
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

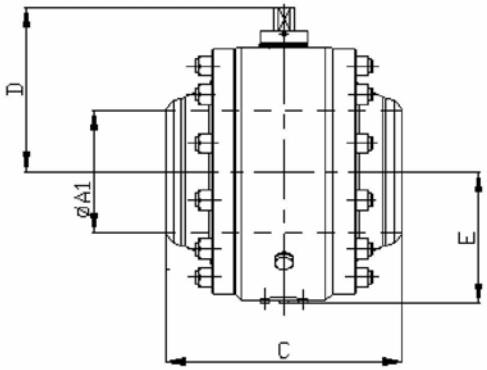
TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 150
ANSI 900 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	153	*2220*	124	*1800*
HYDROSTATIC PRESSURE TEST – BODY	230	*3250*	187	*2660*
HYDROSTATIC PRESSURE TEST – SEAT	167	*2400*	137	*1950*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*





TYPE A and W – FULL BORE

DN		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		Welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	13	215.9	215.9	150	Symmetrical valves K=C/2	121	69.5	60.5	9	4
¾	20	19	228.6	228.6	150		130	69.5	60.5	10	4
1	25	25	254	254	165		149	84.5	76	18	9
1 ½	40	38	304.8	304.8	195		178	102	95	30	15
2	50	50	368.3	371.3	220		216	115	95.5	45	20
3	80	76	381	384	270		241	151	126.3	70	45
4	100	100	457.2	460.2	320		292	192.5	157	135	85
6	150	150	609.6	612.6	400		381	265	198.8	310	200
8	200	201.4	736.6	739.6	500		470	334.5	261	580	380
10	250	252.4	838.2	841.2	600		546	403.2	335	900	700
12	300	303.4	965.2	968.2	700		610	476	411	1700	1350
14	350	336	1028.7	1038.4	750		641	519.5	449	2100	1650
16	400	388	1130.3	1140	880		705	556	486	2600	2000
18	450	438	1219.2	1231.9	900		787	656	572	3700	3000
20	500	489	1320.8	1333.5	1040		857	692.5	607	4800	4000
24	600	590	1549.4	1568.5	1040		1041	795	695	8000	6800
28	700	667	*1707*	*1749*	*1420*		1168				
30	750	714	*1803*	*1825*	*1510*		1232				
32	800	762	*1905*	*1927*	*1615*		1314				
36	900	857	*2182*	*2210*	*1750*		1461				

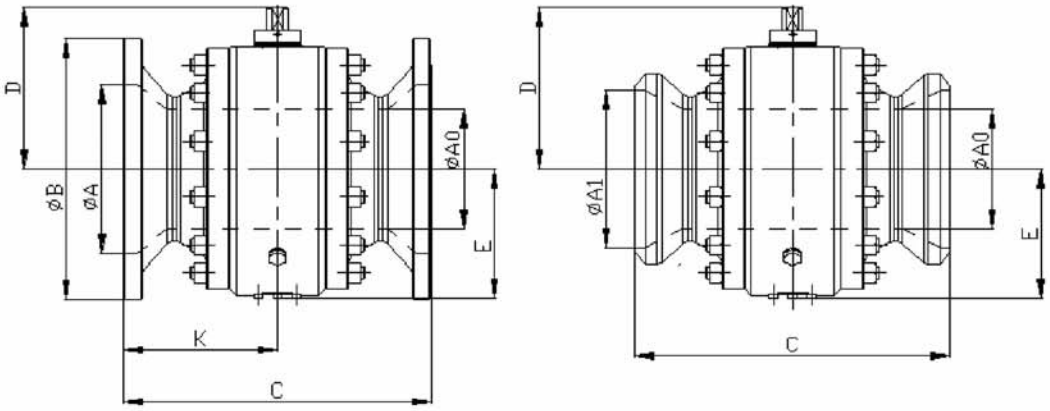
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness
- *Face-to-face not covered by API 6D and ASME B16.10*

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 150
ANSI 900 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	153	*2220*	124	*1800*
HYDROSTATIC PRESSURE TEST – BODY	230	*3250*	187	*2660*
HYDROSTATIC PRESSURE TEST – SEAT	167	*2400*	137	*1950*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

DN		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
1 × ¾	25	25	19	254	254	150	Symmetrical valves K=C/2	149	69.5	60.5	12	4
1 ½ × 1	40	38	25	304.8	304.8	165		178	84.5	76	22	9
2 × 1 ½	50	50	38	368.3	371.3	198		216	102	95	43	17
3 × 2	80	76	50	381	384	270		241	115	95.5	55	23
4 × 3	100	100	76	457.2	460.2	300		292	151	126.3	100	49
6 × 4	150	150	100	609.6	612.6	400		381	192.5	157	215	90
8 × 6	200	201.4	150	736.6	739.6	500		470	265	198.8	430	220
10 × 8	250	252.4	201.4	838.2	841.2	540		546	334.5	261	730	420
12 × 10	300	303.4	252.4	965.2	968.2	600		610	403.2	335	1130	730
14 × 12	350	336	303.4	1028.7	1038.4	700		641	476	411	1800	1350
16 × 12	400	388	303.4	1130.3	1140	750		705	476	411	2020	1570
16 × 14	400	388	336	1130.3	1140	750		705	519.5	449	2250	1750
18 × 16	450	438	388	1219.2	1231.9	880		787	556	486	2850	2150
20 × 16	500	489	388	1320.8	1333.5	900		857	556	486	3800	3510
20 × 18	500	489	438	1320.8	1333.5	900		857	656	572	4100	3300
24 × 20	600	590	489	1549.4	1568.5	1040		1041	692.5	607	5800	4400
30 × 24	750	714	590	*1803*	*1825*	*1510*		1232	795	695		
32 × 28	800	762	667	*1905*	*1927*	*1615*		1314				
36 × 30	900	857	714	*2182*	*2210*	*1750*		1461				
36 × 32	950	857	762	*2182*	*2210*	*1750*		1461				

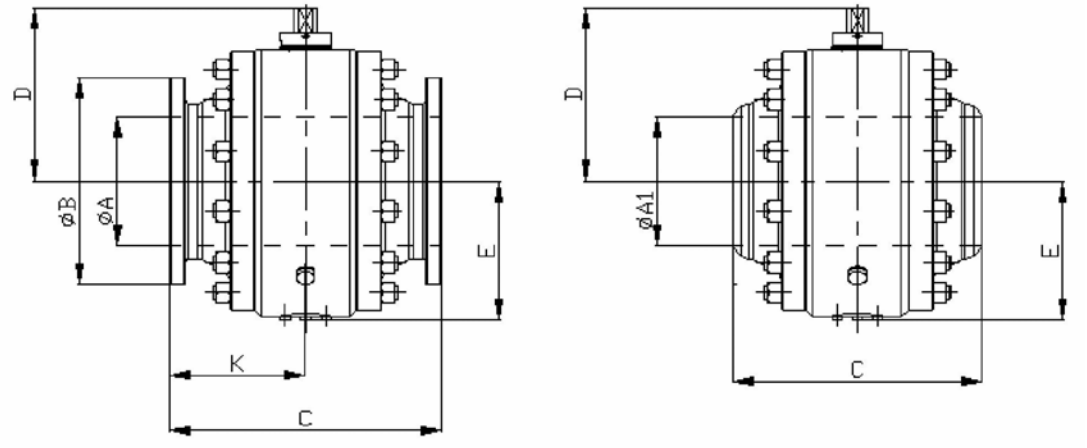
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5 for DN ≤ 600 and MSS SP44 / ASME B16.47 Serie A for DN > 600
- (3) Face-to-face manufacturer
- Materials :
  - o Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - o Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness
- *Face-to-face not covered by API 6D and ASME B16.10*

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 250
ANSI 1500 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	255	*3705*	206	*3000*
HYDROSTATIC PRESSURE TEST – BODY	383	*5400*	311	*4425*
HYDROSTATIC PRESSURE TEST – SEAT	281	*4000*	228	*3245*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – FULL BORE

DN		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		Welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	13	215.9	215.9	155	Symmetrical valves K=C/2	121	72.5	60.5	11	5
¾	20	19	228.6	228.6	160		130	72.5	60.5	12	5
1	25	25	254	254	165		149	84.5	76	18	9
1 ½	40	38	304.8	304.8	195		178	102	95	30	15
2	50	50	368.3	371.3	260		216	129.2	107	54	30
3	80	76	469.9	472.9	330		267	182.5	152	120	75
4	100	100	546.1	549.1	380		311	225	185	185	125
6	150	150	704.9	711.2	510		394	304	235	450	340
8	200	201.4	831.8	841.5	600		483	379.2	328	850	650
10	250	252.4	990.6	1000.3	715		584	435	390	1550	1200
12	300	303.4	1130.3	1146	810		673	494	460	2300	1750
14	350	318	1257.3	1276.4	900		749	586	508	3300	2650
16	400	362	1384.3	1406.7	965		826	622	569	4500	3700
18	450	438	Special flanges or connectors								
20	500	489									
24	600	571									

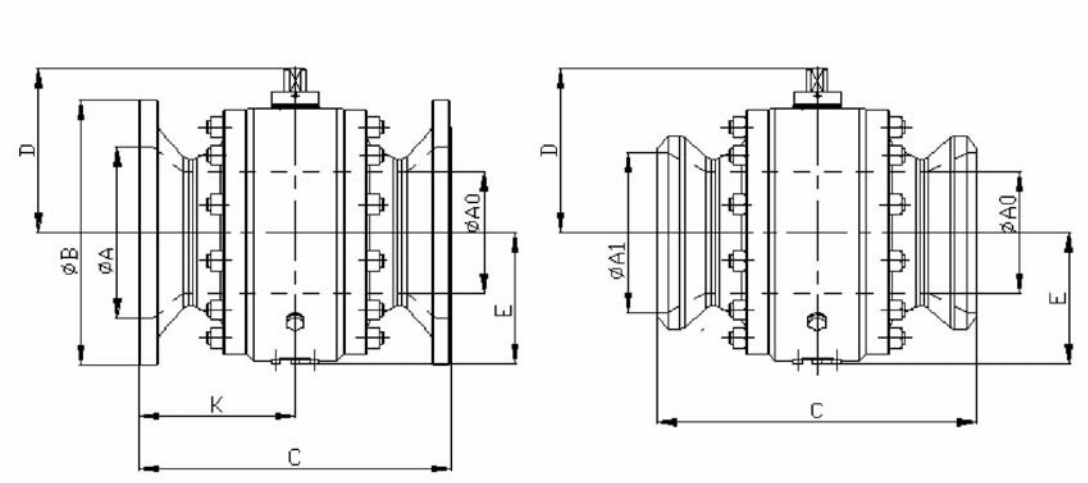
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 250
ANSI 1500 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	255	*3705*	206	*3000*
HYDROSTATIC PRESSURE TEST – BODY	383	*5400*	311	*4425*
HYDROSTATIC PRESSURE TEST – SEAT	281	*4000*	228	*3245*
AIR PRESSURE TEST – SEAT	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

Lever sizes page 37

DN		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
1 × ¾	25	25	19	254	254	195	Symmetrical valves K=C/2	149	72.5	60.5	12	5
1 ½ × 1	40	38	25	304.8	304.8	235		178	84.5	76	22	10
2 × 1 ½	50	50	38	368.3	371.3	289		216	102	95	43	17
3 × 2	80	76	50	469.9	472.9	300		267	129.2	107	75	34
4 × 3	100	100	76	546.1	549.1	425		311	182.5	152	140	80
6 × 4	150	150	100	704.9	711.2	550		394	225	185	310	135
8 × 6	200	201.4	150	831.8	841.5	650		483	304	235	600	360
10 × 8	250	252.4	201.4	990.6	1000.3	770		584	379.2	328	1050	700
12 × 10	300	303.4	252.4	1130.3	1146	880		673	435	390	1800	1300
14 × 12	350	318	303.4	1257.3	1276.4	980		749	494	460	2600	1900
16 × 12	400	362	303.4	1384.3	1406.7	1080		826	494	460	3250	2380
16 × 14	400	362	318	1384.3	1406.7	1080		826	586	508	3700	2850
18 × 16	450	438	362	Special flanges or connectors					622	569	5000	3900
20 × 16	500	489	362									
20 × 18	500	489	438									
24 × 20	600	571	489									

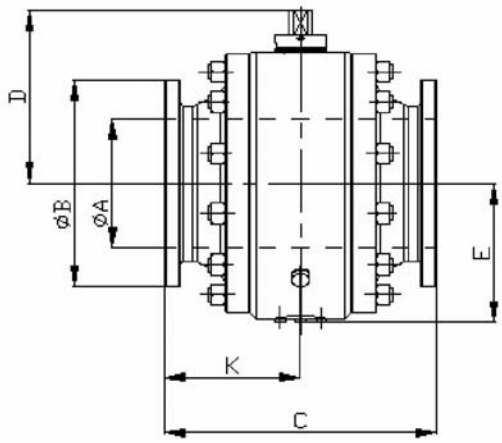
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5
- (3) Face-to-face manufacturer
- Materials :
  - o Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - o Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

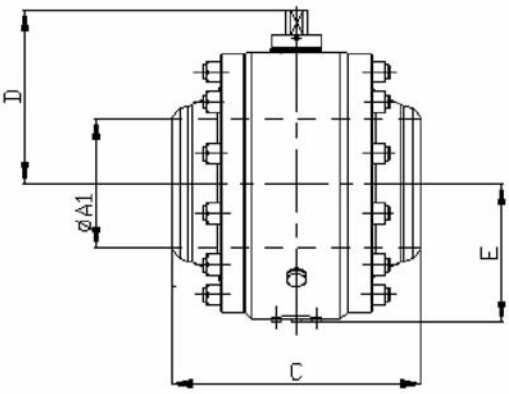
TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 420
ANSI 2500 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	425	*6170*	344	*5000*
BODY TEST PRESSURE	639	*9000*	517	*7360*
HIGH PRESSURE SEAT TEST	468	*6600*	379	*5395*
AIR SEAT TEST PRESSURE	5.6	*80*	5.6	*80*





TYPE A and W – FULL BORE

ND		ØA	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
			Flanged[1]		To be welded						
Inches	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
½	15	12	263.7	263.7	298	Symmetrical valves K=C/2	133	89.2	88	20	13
¾	20	16	273	273	298		140	89.2	88	21	13
1	25	21	307.8	307.8	308		159	99	95	29	16
1 ½	40	34	384	387	330		203	130.7	129.5	55	30
2	50	43	450.9	453.9	350		235	157.2	142.5	90	50
3	80	67	577.9	584.2	420		305	190.2	164.8	190	110
4	100	87	673.1	682.8	520		356	249.9	198	320	200
6	150	133	914.4	927.1	670		483	338.2	299	850	500
8	200	180	1022.4	1038.1	800		552	404.5	358	1500	1000
10	250	226	1270	1292.4	995		673	467	460	2600	1850
12	300	266	1422.4	1444.8	1115		762	590	553	4000	2900
14	350	292	Special flanges or connectors					659	612		
16	400	326						695	675		
18	450										
20	500										
24	600										

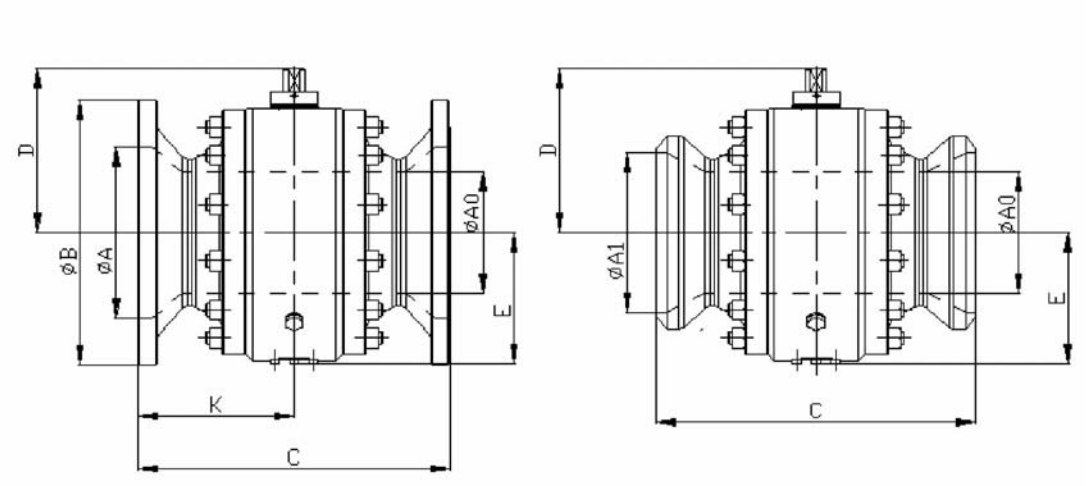
Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

TRUNNION BALL VALVES

DIMENSIONS AND WEIGHT

CLASS ISO PN 420
ANSI 2500 lbs

WORKING AND TEST PRESSURE	Materials Group 1-1		Materials Group 2-3	
	Bar	**Psi**	**Bar**	**Psi**
MAXIMUM WORKING PRESSURE	425	*6170*	344	*5000*
BODY TEST PRESSURE	639	*9000*	517	*7360*
HIGH PRESSURE SEAT TEST	468	*6600*	379	*5395*
AIR SEAT TEST PRESSURE	5.6	*80*	5.6	*80*



TYPE A and W – REDUCED BORE

ND		ØA	$ØA_0$	FACE TO FACE (mm) C			DIMENSIONS (mm)				WEIGHT (Kg)	
				Flanged[1]		Welded						
Inches	mm	mm	mm	RF	RTJ	WE[3]	K	ØB[2]	D	E	Flanges	BW
1 × ¾	25	21	16	307.8	307.8	298	Symmetrical valves K=C/2	159	89.2	88	23	14
1 ½ × 1	40	34	21	384	387	308		203	99	95	44	18
2 × 1 ½	50	43	34	450.9	453.9	332		235	130.7	129.5	70	33
3 × 2	80	67	43	577.9	584.2	392		305	157.2	142.5	155	55
4 × 3	100	87	67	673.1	682.8	456		356	190.2	164.8	225	120
6 × 4	150	133	87	914.4	927.1	620		483	249.9	198	520	240
8 × 6	200	180	133	1022.4	1038.1	690		552	338.2	299	1050	560
10 × 8	250	226	180	1270	1292.4	860		673	404.5	358	2000	1100
12 × 10	300	266	226	1422.4	1444.8	964		762	467	460	3100	2000
14 × 12	350	304.8	266	Special flanges or connectors					590	553		
16 × 12	400	326	266						590	553		
16 × 14	400	326	292						659	612		
18 × 16	450	358	326						695	675		
20 × 16	500	396	326									
20 × 18	500	396	358									
24 × 20	600	465	396									

Notes :
- Allowance on ØA : 0/+0.3
- Indicated weight is only for the bare stem valve.
- (1) API 6D Table 4 or ASME B16.10.
- (2) NFE 29-203 & ASME B16.5
- (3) Face-to-face manufacturer
- Materials :
  - Group 1-1 : carbon steels (C, C- Si, C- Mn - Si, C-Mn, Si, V)
  - Group 2-3 : austenitic steels (18Cr-8Ni, 16Cr-12Ni-2Mo)
- $ØA_1$ depending on the pipe thickness

Alloy butterfly valves

Duplex, super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium

 **Alloy valves from stock**	 **Duplex butterfly valve**	 **Super duplex butterfly valve**
 **Alloy 20 butterfly valve**	 **Monel butterfly valve**	 **Hastelloy butterfly valve**
 **Inconel butterfly valve**	 **Incoloy butterfly valve**	 **Titanium butterfly valve**

THE ALLOY VALVE STOCKIST

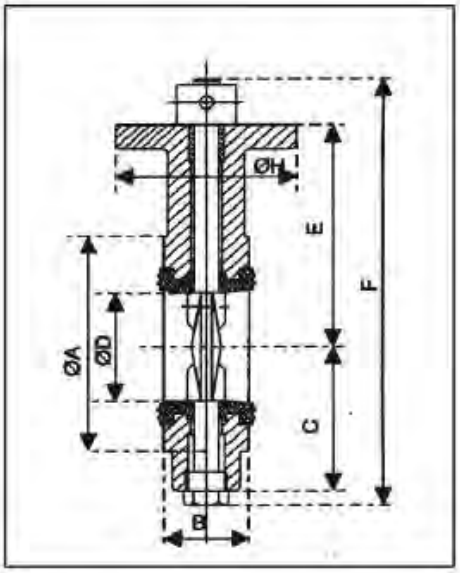
Grupo Compás – The Alloy Valve Stockist

Alloy gate, globe, check, ball, and butterfly valves in duplex, 6moly SMO super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium.

Technical Data

Manufactured	As per IS - 13095 / BS - 5155 / AWWA - C - 504
Pressure Rating	PN - 10, PN - 16
Class	125 / 150
Temp. Range	-20° TO + 160°c
Face to Face Dimensions	ISO - 5752 / BS 5155 Wafer short / API - 609
Actuation By	Hand leaver - DN - 25 to DN - 150 Gear Operated DN - 200 to DN - 1200
End Connections	Wafer - Flangeless Double Flanged
Suitable for Mounting Flanges to	IS / ANSI / BS / DIN Standards

Note - Pneumatic / Electric Actuators also can be provided

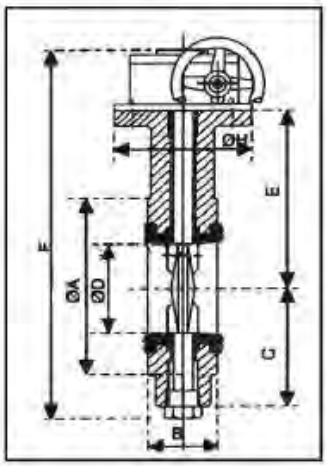


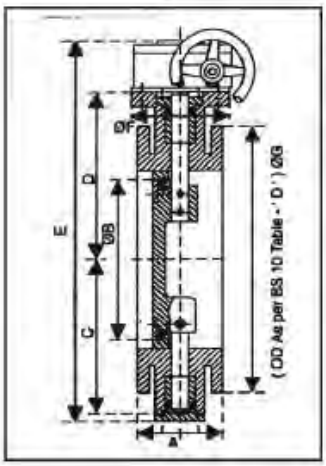
Butterfly Valves Gear Operator

Size	A	B	C	D	E	F	H
DN-200	267	58	155	197	215	392	140
DN-250	323	66	192	248	247	462	140
DN-300	373	77	215	298	277	515	140
DN-350	437	81	255	340	305	650	150
DN-400	488	104	285	389	330	707	150
DN-450	538	113	315	438	370	792	170
DN-500	593	126	352	489	403	860	170
DN-600	694	152	419	585	485	1022	270
DN-700	806	167	470	688	560	1148	300

Butterfly Valves - Hand lever Operator

Size	A	B	C	D	E	F	H
DN-25	65	29	48	26	77	144	60
DN-32	70	32	52	34	83	154	60
DN-40	83	32	57	45	95	172	60
DN-50	95	41	64.5	52.5	105	190	95
DN-65	107	45	70.5	65	116	207	95
DN-80	127	45	81	77.5	137	239	95
DN-100	162	50	101	104	150	272	95
DN-125	190	54	118	128	164	304	95
DN-150	216	54	129	145	179	329	95





Double Flanged Butterfly Valves Gear Operator

Size	A	B	C	D	E	F	G
DN-250	165	243	216	252	543	140	406
DN-300	178	293	248	284	607	140	457
DN-350	190	338	284	315	689	150	527
DN-400	216	387	311	333	734	150	578
DN-450	222	432	338	378	824	170	641
DN-500	229	478	360	396	860	170	705
DN-600	267	581	432	468	1017	270	826
DN-700	292	675	491	527	1125	270	940
DN-800	318	774	545	585	1247	270	1060
DN-900	330	873	612	648	1400	300	1150
DN-1000	302	977	671	702	1512	300	1283
DN-1100	440	1076	725	756	1643	320	1389
DN-1200	470	1175	783	819	1782	320	1492

■ Duplex gate, globe, check, ball, and butterfly valves in F51 / S31803 / 1.4462 ■

Duplex stainless steels are extremely corrosion resistant, work hardenable alloys. Their microstructures consist of a mixture of austenite and ferrite phases. As a result, duplex stainless steels display properties characteristic of both austenitic and ferritic stainless steels. This combination of properties can mean some compromise when compared with pure austenitic and pure ferritic grades.

Duplex stainless steels are in most cases, tougher than ferritic stainless steel. Strengths of duplex stainless steels can in some cases be double that for austenitic stainless steels. Whilst duplex stainless steels are considered resistant to stress corrosion cracking, they are not as resistant to this form of attack as ferritic stainless steel. However, the corrosion resistance of the least resistant Duplex stainless steel is greater than that for the most commonly used grades of stainless steel, i.e. 304 and 316.

Duplex stainless steels are also magnetic, a property that can be used to easily differentiate them from common austenitic grades of stainless. Due to excellent corrosion resistance and high strength, the most widely used duplex stainless steel is 2205. The name 2205 comes from a typical composition of 22% Chromium and 5% Nickel. Other designations for 2205 are given below. There are many other duplex stainless steels, most of which are proprietary grades developed and produced by individual manufacturers.

Corrosion Resistance of Duplex stainless steel
Duplex stainless steels are extremely corrosion resistant. They have high resistance to intergranular corrosion. Even in chloride and sulphide environments, Duplex stainless steel exhibit very high resistance to stress corrosion cracking. The super duplex grades are even more resistant to corrosion.

Heat Resistance of Duplex stainless steel
The high chromium content of Duplex stainless steel that protects against corrosion, causes embrittlement at temperatures over about 300°C. At low temperatures duplex stainless steels have better ductility than the ferritic and martensitic grades. Duplex grades can readily be used down to at least -50°C.

Fabrication of Duplex stainless steel
Fabrication of all stainless steel should be done only with tools dedicated to stainless steel materials. Tooling and work surfaces must be thoroughly cleaned before use. These precautions are necessary to avoid cross contamination of stainless steel by easily corroded metals that may discolour the surface of the fabricated product.

Heat Treatment of Duplex stainless steel
Duplex stainless steel cannot be hardened by heat treatment. They can however be work hardened. Solution treatment or annealing can be done by rapid cooling after heating to around 1100°C.
Machinability

Although machinable, the high strengths of Duplex stainless steel makes machining difficult. As an example, machining of 2205 is around 20% slower than for 304. Machining can be enhanced by using the following rules:

Welding of Duplex stainless steel

Duplex stainless steel have good weldability. All standard welding processes can be used. They are not quite as easily welded as the austenitic grades but low thermal expansion in duplex grades reduces distortion and residual stresses after welding. The recommended filler material for 2205 stainless steel is 2209.

Applications of Duplex stainless steel

- Chemical processing, transport and storage
- Oil and gas exploration and offshore rigs, as well as refining
- Marine environments
- Pulp & paper manufacturing
- Chemical process plants

Corresponding Standards:

- EN/DIN 1.4462 X2CrNiMoN22.5.3
- AFNOR Z2CND22.05Az
- AISI A182 F51
- UNS ASTM A276 S31803 / S32205
- BRANDS SAF 2205 - SANMAC
- URANUS 45N
- EN (10283) 1.4470

Duplex stainless steel is among various metals used in corrosion-resistant applications. Duplex's machining rate of travel is similar to that of 316 stainless steel with high-speed steel tooling, and duplex requires fewer machining labor hours than high-nickel alloys. Duplex alloys are in a class with several other materials for various types of corrosion resistance. Some of the corrosive environments listed below depict these differences. There are many more types of corrosive conditions but these are some for which stainless and nickel alloys are suitable.

Duplex is better than the 300 series in nearly every category. The consideration in the case of chlorides and halides must include costs. Duplex alloys are nearly equal in strength to the C276 and AL6XN alloys. The pitting and crevice corrosion resistance of C276 and AL6XN are only slightly superior to the duplex alloys'. The corrosion rate for duplex is 23 mil/year; AL6XN is 17 mil/year. The elements that provide the strength and corrosion resistance in duplex are much more common than those found in some high-nickel alloys. For instance C276 contains tungsten. Carpenter 20Cb contains columbium and tantalum. The 625 alloy contains columbium, tantalum, cobalt, and titanium. Chromium, nickel, molybdenum, and nitrogen are common elements that provide the strength and corrosion resistance in the duplex alloys.

■ Super duplex gate, globe, check, ball, and butterfly valves ■

Alloy SAF 2507 (UNS S32750) is a super duplex stainless steel with 25% chromium, 4% molybdenum, and 7% nickel designed for demanding applications which require exceptional strength and corrosion resistance, such as chemical process, petrochemical, and seawater equipment. The steel has excellent resistance to chloride stress corrosion cracking, high thermal conductivity, and a low coefficient of thermal expansion. The high chromium, molybdenum, and nitrogen levels provide excellent resistance to pitting, crevice, and general corrosion.

Standards

ASTM/ASME	A240 - UNS S32750
EURONORM	1.4410 - X2 Cr Ni MoN 25.7.4
AFNOR	Z3 CN 25.06 Az

General Properties

Alloy SAF 2507 is a super duplex stainless steel with 25% chromium, 4% molybdenum, and 7% nickel designed for demanding applications which require exceptional strength and corrosion resistance, such as chemical process, petrochemical, and seawater equipment. The steel has excellent resistance to chloride stress corrosion cracking, high thermal conductivity and a low coefficient of thermal expansion. The high chromium, molybdenum, and nitrogen levels provide excellent resistance to pitting, crevice, and general corrosion.

The impact strength is also high. Alloy SAF 2507 is not recommended for applications which require long exposures to temperatures above 570°F because of the risk of a reduction in toughness.

Applications

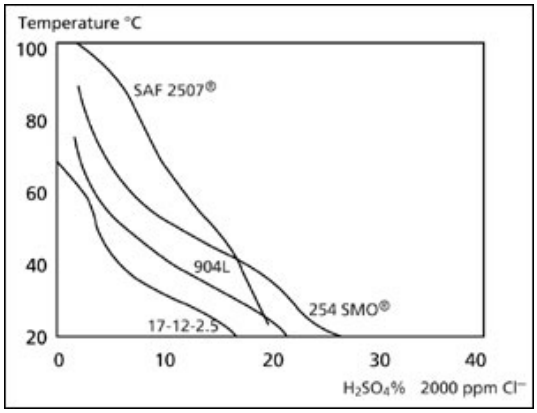
- Oil and gas industry equipment
- Offshore platforms, heat exchangers, process and service water systems, fire-fighting systems, injection and ballast water systems
- Chemical process industries, heat exchangers, vessels, and piping
- Desalination plants, high pressure RO-plant and seawater piping
- Mechanical and structural components, high strength, corrosion-resistant parts
- Power industry FGD systems, utility and industrial scrubber systems, absorber towers, ducting, and piping

General Corrosion Resistance

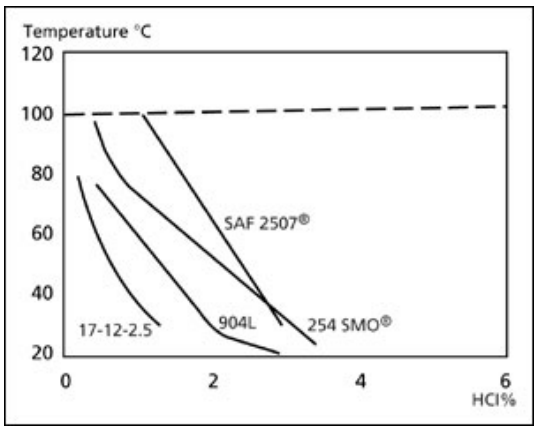
The high chromium and molybdenum content of SAF 2507 makes it extremely resistant to uniform corrosion by organic acids like formic and acetic acid. SAF 2507 also provides excellent resistance to inorganic acids, especially those containing chlorides.

In dilute sulphuric acid contaminated with chloride ions, SAF 2507 has better corrosion resistance than 904L, which is a highly alloyed austenitic steel grade specially designed to resist pure sulphuric acid.

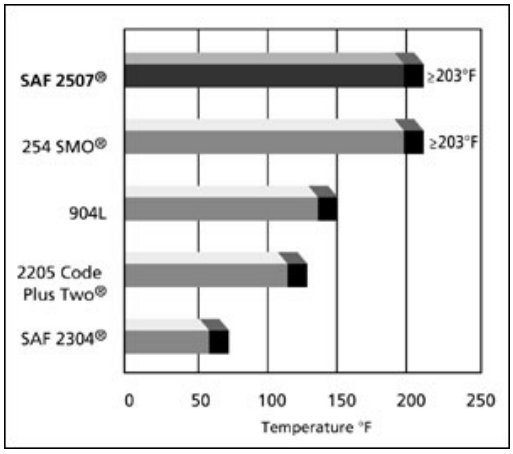
Stainless steel of type 316L (2.5%Mo) cannot be used in hydrochloric acid due to the risk of localized and uniform corrosion. However, SAF 2507 can be used in dilute hydrochloric acid. Pitting need not be a risk in the zone below the borderline in this figure, but crevices must be avoided.



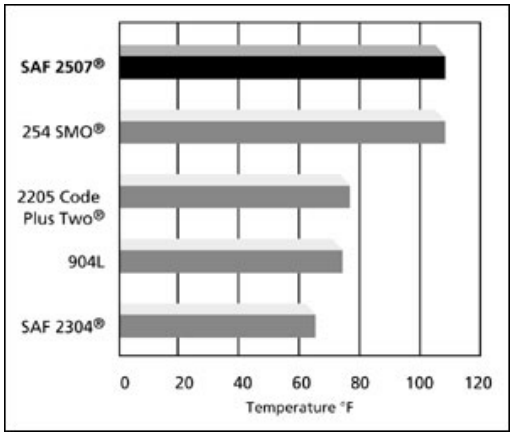
Isocorrosion curves, 0.1 mm/year, in sulphuric acid with an addition of 2000 ppm chloride ions



Isocorrosion curves, 0.1 mm/year, in hydrochloric acid. Broken line curve represents the boiling point.



Critical Pitting Temperature (CPT) range for various alloys in 1M NACl



Critical Crevice Corrosion Temperature (CCT) for various alloys in 10% $FeCl_3$

Intergranural Corrosion

SAF 2507's low carbon content greatly lowers the risk of carbide precipitation at the grain boundaries during heat treatment; therefore, the alloy is highly resistant to carbide-related intergranular corrosion.

Stress Corrosion Cracking

The duplex structure of SAF 2507 provides excellent resistance to chloride stress corrosion cracking (SCC). Because of its higher alloy content, SAF 2507 is superior to 2205 in corrosion resistance and strength. SAF 2507 is especially useful in offshore oil and gas applications and in wells with either naturally high brine levels or where brine has been injected to enhance recovery.

Pitting Corrosion
Different testing methods can be used to establish the pitting resistance of steels in chloride-containing solutions. The data above were measured by an electrochemical technique based on ASTM G 61. The critical pitting temperatures (CPT) of several high-performance steels in a 1M sodium chloride solution were determined. The results illustrate the excellent resistance of SAF 2507 to pitting corrosion. The normal data spread for each grade is indicated by the dark gray portion of the bar.

Crevice Corrosion
The presence of crevices, almost unavoidable in practical constructions and operations, makes stainless steels more susceptible to corrosion in chloride environments. SAF 2507 is highly resistant to crevice corrosion. The critical crevice corrosion temperatures of SAF 2507 and several other high-performance stainless steels are shown above.

Mechanical and Physical Properties
SAF 2507 combines high tensile and impact strength with a low coefficient of thermal expansion and high thermal conductivity. These properties are suitable for many structural and mechanical components. The low, ambient, and elevated temperature mechanical properties of SAF 2507 sheet and plate are shown below. All of the test data shown are for samples in the annealed and quenched condition.

SAF 2507 is not recommended for applications which require long exposures to temperatures in excess of 570°F because of the increased risk of a reduction in toughness. The data listed here are typical for wrought products and should not be regarded as a maximum or minimum value unless specifically stated.

Hot forming
SAF 2507 should be hot worked between 1875°F and 2250°F. This should be followed by a solution anneal at 1925°F minimum and a rapid air or water quench.

Cold Forming
Most of the common stainless steel forming methods can be used for cold working SAF 2507. The alloy has a higher yield strength and lower ductility than the austenitic steels so fabricators may find that higher forming forces, increased radius of bending, and increased allowance for springback are necessary. Deep drawing, stretch forming, and similar processes are more difficult to perform on SAF 2507 than on an austenitic stainless steel. When forming requires more than 10% cold deformation, a solution anneal and quench are recommended.

Heat Treatment
SAF 2507 should be solution annealed and quenched after either hot or cold forming. Solution annealing should be done at a minimum of 1925°F. Annealing should be followed immediately by a rapid air or water quench. To obtain maximum corrosion resistance, heat treated products should be pickled and rinsed.

Welding
SAF 2507 possesses good weldability and can be joined to itself or other materials by

shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), plasma arc welding (PAW), flux cored wire (FCW), or submerged arc welding (SAW). 2507/P100 filler metal is suggested when welding SAF 2507 because it will produce the appropriate duplex weld structure.

Preheating of SAF 2507 is not necessary except to prevent condensation on cold metal. The interpass weld temperature should not exceed 300°F or the weld integrity can be adversely affected. The root should be shielded with argon or 90% N_2/10% H_2 purging gas for maximum corrosion resistance. The latter provides better corrosion resistance.

If welding is to be done on only one surface and post-weld cleaning is not possible, GTAW is suggested for root passes. GTAW or PAW should not be done without a filler metal unless post-weld cleanup is possible. A heat input of 5-38 kJ/in. should be used for SMAW or GTAW. A heat input of about 50kJ/in. can be used for SAW.

Comparative Standards:

EN/DIN	• 1.4501
	• X2CrNiMoCuWN25.7.4
AFNOR	• Z3CND25.06Az
UNS	• S32760
AISI	• F55 (A182 / A276 / A479)
GOST	• 12Kh13
BRANDS®	• ZERON100
NORSOK	• M630 MDS D57 BAR
	• M630 MDS D54 FORGINGS
	• M630 MDS D55 PLATE
	• M630 MDS D56 CASTINGS
	• M650 Qualification of Manufacturer
OTHER	• NACE MR01-75
	• ISO 15156
	• EN 10088-3
	• PED 97/23/EC
	• ASTM G48 Method A
	• ASTM A751 COMPOSITION
	• ASTM A388 U/T
	• API 6A - PSL 4

Similar to UNS S32550 / S32520 / FERRALIUM 255-SD50 /UNS S32750 / AISI-F53 / 1.4410 / Z3CNDU25.07Az / X2CrNiMoCuN25.6.3/ 1.4507/ Uranus 52N / SAF 25.07 SANMAC

■ Alloy 20 gate, globe, check, ball, and butterfly valves ■

Alloy 20 is a nickel-chromium-molybdenum stainless steel alloy developed for applications involving sulphuric acid. Its corrosion resistance also finds other uses in the chemical, food, pharmaceutical, and plastics industries. Alloy 20 resists pitting and chloride ion corrosion and its copper content protects it from sulphuric acid. It is also known as Carpenter 20. Cast versions are designated CN7M.

Composition

- Nickel, 32.5-35%
- Chromium, 19-21%
- Carbon, 0.06% maximum
- Copper, 3-4%
- Molybdenum, 2-3%
- Manganese, 2% maximum
- Silicon, 1% maximum
- Columbium, 1% maximum
- Iron, 31-44% (balance)

Other Names

- UNS N08020
- DIN 2.4660
- CN7M

- Carpenter 20 CB 3™
- AL 20™
- Carlson Alloy C20™
- Nickelvac 23™
- Nicrofer 3620 Nb™

Specifications

ASTM B729, B464, B366, B473, B462

ASME SB729, SB464, SB366, SB473, SB462

ANSI / ASTM A555-79

■ Monel gate, globe, check, ball, and butterfly valves ■

Monel is a trademark of Special Metals Corporation for a series of nickel alloys, primarily composed of nickel (up to 67%) and copper, with some iron and other trace elements. Monel alloy 400 is binary alloy of the same proportions of nickel and copper as is found naturally in the nickel ore from the Sudbury (Ontario) mines.

Compared to steel, Monel is very difficult to machine as it work-hardens instantly with heat and does not harden into a constant matrix. It needs to be turned and worked at slow speeds and low feed rates. It is resistant to corrosion and acids, and some alloys can withstand a fire in pure oxygen. It is commonly used in applications with highly corrosive conditions. Small additions of aluminium and titanium form an alloy (K-500) with the same corrosion resistance but with much greater strength due to gamma prime formation on aging. Monel's corrosion resistance makes it ideal for marine applications.

Alloys

Trade Name ASME P Group	ASTM/AISI Steel type	UNS
Monel 400	B127 / B164	N04400
Monel 401		N04401
Monel 404	B 164	N04404
Monel K-500	B 865	N05500
Monel R-405		N04405

■ Hastelloy gate, globe, check, ball, and butterfly valves ■

Hastelloy is the registered trademark name of Haynes International, Inc. The trademark is applied as the prefix name of a range of twenty two different highly corrosion-resistant metal alloys loosely grouped by the metallurgical industry under the material term "superalloys" or "high-performance alloys".

The predominant alloying ingredient is typically the transition metal nickel. Other alloying ingredients are added to nickel in each of the subcategories of this trademark designation and include varying percentages of the elements molybdenum, chromium, cobalt, iron, copper, manganese, titanium, zirconium, aluminum, carbon, and tungsten.

The primary function of the Hastelloy super alloys is that of effective survival under high-temperature, high-stress service in a moderately to severely corrosive, and/or erosion prone environment where more common and less expensive iron-based alloys would fail, including the pressure vessels of some nuclear reactors, chemical reactors, and pipes and valves in chemical industry.

The most common Hastelloy alloys are Hastelloy B, Hastelloy B2, Hastelloy B3, Hastelloy C, Hastelloy C22 and Hastelloy C276.

Composition of various hastelloy alloys

Alloy	Co	Cr	Mo	W	Fe	Si	Mn	C	Ni	Others
B-2	1*	1*	28	–	2*	0.1*	1*	0.01*	Balance	–
B-3	3*	1.5	28.5	3*	1.5	0.1*	3*	0.01*	65 min.	Al-0.5*, Ti-0.2*
C-4	2*	16	16	–	3*	0.08*	1*	0.01*	Balance	Ti-0.7*
C-2000	2*	23	16	–	3*	0.08*	–	0.01*	Balance	Cu-1.6
C-22	2.5*	22	13	3	3	0.08*	0.5*	0.01*	Balance	V-0.35*
C-276	2.5*	16	16	4	5	0.08*	1*	0.01*	Balance	V-0.35*
G-30	2*	30	5.5	2.5	15	1*	1.5*	0.03*	Balance	Nb-0.8*, Cu-2*
N	0.2*	7	16	0.5*	5*	1*	0.8*	0.08*	Balance	Al+Ti-0.5*, Cu-0.35*
W	2.5*	5	24	–	6	1*	1*	0.12*	Balance	V-0.6*

- [1] The undiluted deposited chemical composition of covered electrodes of some of these alloys may vary beyond the limits shown.

■ Inconel gate, globe, check, ball, and butterfly valves ■

Inconel is a registered trademark of Special Metals Corporation that refers to a family of austenitic nickel-chromium-based superalloys. Inconel alloys are typically used in high temperature applications. It is often referred to in English as "Inco" (or occasionally "Iconel"). Common trade names for Inconel include: Inconel 625, Chronin 625, Altemp 625, Haynes 625, Nickelvac 625 and Nicrofer 6020.

Composition

Different Inconels have widely varying compositions, but all are predominantly nickel, with chromium as the second element.

Inconel	Element (% by mass)													
	Nickel	Chromium	Iron	Molybdenum	Niobium	Cobalt	Manganese	Copper	Aluminium	Titanium	Silicon	Carbon	Sulfur	Phosphorus	Boron
600	72.0	14.0-17.0	6.0-10.0				1.0	0.5			0.5	0.15	0.015		
625	58.0	20.0-23.0	5.0	8.0-10.0	3.15-4.15	1.0	0.5		0.4	0.4	0.5	0.1	0.015	0.015	
718	50.0-55.0	17.0-21.0	balance	2.8-3.3	4.75-5.5	1.0	0.35	0.2-0.8	0.65-1.15	0.3	0.35	0.08	0.015	0.015	0.006

Properties

Inconel alloys are oxidation and corrosion resistant materials well suited for service in extreme environments. When heated, Inconel forms a thick, stable, passivating oxide layer protecting the surface from further attack. Inconel retains strength over a wide temperature range, attractive for high temperature applications where aluminum and steel would succumb to creep as a result of thermally-induced crystal vacancies (see Arrhenius equation). Inconel's high temperature strength is developed by solid solution strengthening or precipitation strengthening, depending on the alloy. In age hardening or precipitation strengthening varieties, small amounts of niobium combine with nickel to form the intermetallic compound Ni3Nb or gamma prime (γ'). Gamma prime forms small cubic crystals that inhibit slip and creep effectively at elevated temperatures.

Machining

Inconel is a difficult metal to shape and machine using traditional techniques due to rapid work hardening. After the first machining pass, work hardening tends to elastically deform either the workpiece or the tool on subsequent passes. For this reason, age-hardened Inconels such as 718 are machined using an aggressive but slow cut with a hard tool, minimizing the number of passes required. Alternatively, the majority of the machining can be performed with the workpiece in a solutionised form, with only the final steps being performed after age-hardening. External threads are machined using a lathe to "single point" the threads, or by rolling the threads using a screw machine. Holes with internal threads are made by welding or brazing threaded inserts made of stainless steel. Cutting of plate is often done with a waterjet cutter. Internal threads can also be cut by single point method on lathe, or by threadmilling on a machining center. New whisker reinforced ceramic cutters are also used to machine nickel alloys. They remove material at a rate typically 8 times faster than carbide cutters.

Joining

Welding inconel alloys is difficult due to cracking and microstructural segregation of alloying elements in the heat affected zone. However, several alloys have been designed to overcome these problems. The most common way to weld inconel is by using a TIG welder with the appropriate filler metal.

Inconel alloys

- Inconel 600: Solid solution strengthened
- Inconel 625: Acid resistant, good weldability
- Inconel 690: Low cobalt content for nuclear applications
- Inconel 718: Gamma double prime strengthened with good weldability
- Inconel 751: Increased aluminum content for improved rupture strength in the 1600 F range
- Inconel 939: Gamma prime strengthened with good weldability

■ Incoloy gate, globe, check, ball, and butterfly valves ■

Background
Incoloy alloy 825 is a nickel iron chromium alloy with additions of molybdenum, copper and titanium, with exceptional resistance to many aggressive corrosion environments.

Incoloy 825 is highly resistant to corrosion. It has a high nickel content, sufficient to resist chloride ion stress corrosion cracking, and a very stable austenite structure. The levels of molybdenum and copper enable the alloy to resist reducing agents and acids. Chromium gives resistance to oxidising conditions, such as nitric acid solutions, nitrates and oxidising salts. The alloy is titanium stabilised to resist pitting and intergranular attack after fabrication, particularly welding, which includes heating in the critical sensitisation temperature range (650°C – 760°C).

Alloy 825 offers exceptional resistance to corrosion by sulphuric and phosphoric acids and is often the most cost effective alloy in sulphuric acid service.

Pressure Vessels
Incoloy 825 is approved for pressure vessel operating temperatures up to 525°C (AS1210, AS4041), 538°C (ASME Boiler & Pressure Vessel Code, Sections I, III, VIII, IX, Cases 1936, N-188). Brittle phases may form in alloy 825 at temperatures above ~ 540°C, so it is not normally used at these temperatures, where creep-rupture properties would be design factors.

Applications of Incoloy 825

Typical Applications of Incoloy Alloy 825 include:

- Sulphuric acid piping and vessels
- Phosphoric acid evaporators
- Pickling tank heaters, pickling tanks and equipment
- Chemical process equipment
- Propellor shafts
- Tank trucks
- Calorifiers
- Electrostatic precipitator electrodes
- Hot vessels for food, water and seawater,
- ammonium sulphate vessels
- Expansion bellows
- Marine exhaust systems
- Power station ash hoppers

Corrosion Resistance
The outstanding property of Incoloy 825 is its corrosion resistance. In reducing & oxidising conditions, Incoloy 825 resists general corrosion, pitting & crevice corrosion, intergranular corrosion and stress corrosion cracking. It is particularly useful in sulphuric & phosphoric acids, sulphur containing flue gases, sour gas and oil wells and sea water.

Fabrication
Incoloy 825 can be readily hot or cold worked. Hot working should be in the range 870 – 1180°C, finishing at 870 – 980°C. For maximum corrosion resistance hot worked parts should be stabilise annealed before use. The alloy is easier to cold form than stainless steels.

Machinability
Incoloy 825 is classed as a 'C' alloy, and is reasonably easy to machine.

Welding
The alloy is readily weldable by the normal processes (GMAW (MIG), GTAW (TIG), SMAW (manual), SAW). The joint must be clean to avoid contamination of the weld pool.

Heat Treatment
Incoloy 825 is stabilise annealed at 940°C. The softest structure is obtained at 980°C. Sections heavier than sheet, strip and wire should be quenched to avoid sensitisation.

ASTM Product Specifications
B163 Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes
B423 Nickel-Iron-Chromium-Molybdenum-Copper Alloy (UNS N08825 and N08221)* Seamless Pipe and Tube
B424 Ni-Fe-Cr-Mo-Cu Alloy (UNS N08825 and UNS N08221)* Plate, Sheet, and Strip
B425 Ni-Fe-Cr-Mo-Cu Alloy (UNS N08825)
B704 Welded UNS N06625 and UNS N08825 Alloy Tubes
B705 Nickel-Alloy (UNS N06625 and N08825) Welded Pipe
B751 General Requirements for Nickel and Nickel Alloy Welded Tube

Equivalent Grade Designations
Other international grades that are equivalent to Incoloy Alloy 825.

USA	UNS	N08825
France	AFNOR	NC 21 FeDU
GB	BS	NA 16
Germany	DIN	NiCr21Mo
Germany	Werkstoff	Nr 2.4858

■ 6moly / 254 SMO gate, globe, check, ball, and butterfly valves ■

Principal Design Features
This is a very high end austenitic stainless steel that combines impact toughness resistance to chloride stress corrosion cracking, pitting and crevice corrosion with strength nearly twice that of 300 series stainless steels. In some applications it has been found to be a more cost effective substitute for high nickel and titanium alloys.

Applications
Petroleum production, saltwater handling, food processing and chemical processing equipment, pulp mill bleach systems, flue gas desulfurization scrubbers and tall oil distillation columns.

Specifications:
ASTM A182 (F44), ASTM A240, ASTM A249, ASTM A269, ASTM A312, ASTM A469, ASTM A813, ASTM A814, UNS S31254, 6 Moly.

Machinability
An extremely high work hardening rate combined with a total lack of sulfur make 254-SMO very tough to machine. Sharp tools, positive feeds, overpowered machine tools, ample lubrication and slow speeds generally offer the best results.

Forming
Due to its high initial yield strength, this alloy will require greater force than used in other austenitic stainless steels.

Welding
Welding without filler material results in poor strength properties. Recommended filler metals include AWS A5.14 ERNiCrMo-3, and alloy 625. Electrodes should comply with AWS A5.11 ENiCrMo-12.

Hot Working
While cold forming is recommended wherever feasible, forging, upsetting and other operations can be performed at 1800-2100 F. Temperatures above this range will cause scaling and a reduction in the workability of the material. Post-process annealing is required to re-attain maximum corrosion resistant properties.

Cold Working
Most common cold work methods are successful with this alloy. It should be understood however that the material will be more difficult to work than other austenitic stainless steels due its high work hardening rate. The resulting hardening will, however, produce increases in strength and toughness which may be of value in the finished product.

Annealing
2100-2200 F (1149-1204 C), followed by a water quench.

■ Titanium gate, globe, check, ball, and butterfly valves ■

Physical properties

A metallic element, titanium is recognized for its high strength-to-weight ratio. It is a strong metal with low density that is quite ductile (especially in an oxygen-free environment), lustrous, and metallic-white in color. The relatively high melting point (over 1,649 °C or 3,000 °F) makes it useful as a refractory metal.

Commercial (99.2% pure) grades of titanium have ultimate tensile strength of about 63,000 psi (434 MPa), equal to that of some steel alloys, but are 45% lighter. Titanium is 60% more dense than aluminium, but more than twice as strong as the most commonly used 6061-T6 aluminium alloy. Titanium can be used for multiple reasons. Certain titanium alloys (e.g., Beta C) achieve tensile strengths of over 200,000 psi (1380 MPa). However, titanium loses strength when heated above 430 °C (800 °F).

It is fairly hard although not as hard as some grades of heat-treated steel, non-magnetic and a poor conductor of heat and electricity. Machining requires precautions, as the material will soften and gall if sharp tools and proper cooling methods are not used. Like those made from steel, titanium structures have a fatigue limit which guarantees longevity in some applications.

The metal is a dimorphic allotrope with the hexagonal alpha form changing into the body-centered cubic (lattice) beta form at 882 °C (1,619 °F). The specific heat of the alpha form increases dramatically as it is heated to this transition temperature but then falls and remains fairly constant for the beta form regardless of temperature.

Similar to zirconium and hafnium, an additional omega phase exists, which is thermodynamically stable at high pressures, but which may exist metastably at ambient pressures. This phase is usually hexagonal (ideal) or trigonal (distorted) and can be viewed as being due to a soft longitudinal acoustic phonon of the beta phase causing collapse of (111) planes of atoms.

Chemical

The most noted chemical property of titanium is its excellent resistance to corrosion; it is almost as resistant as platinum, capable of withstanding attack by acids, moist chlorine in water but is soluble in concentrated acids.

While the following pourbaix diagram shows that titanium is thermodynamically a very reactive metal, it is slow to react with water and air.

This metal forms a passive and protective oxide coating (leading to increased corrosion-resistance) when exposed to elevated temperatures in air, but at room temperatures it resists tarnishing. When it first forms, this protective layer is only 1–2 nm thick but continues to slowly grow; reaching a thickness of 25 nm in four years.

Titanium burns in air when heated to 1200 °C (2,200 °F) and in pure oxygen when heated to 610 °C (1,130 °F) or higher, forming titanium dioxide. As a result, the metal cannot be melted in open air as it burns before the melting point is reached, so melting is only possible in an inert atmosphere or in vacuum. It is also one of the few elements that burns in pure nitrogen gas (it burns at 800 °C or 1,472 °F and forms titanium nitride, which causes embrittlement). Titanium is resistant to dilute sulphuric acid and hydrochloric acid, along with chlorine gas, chloride solutions, and most organic acids. It is paramagnetic (weakly attracted to magnets) and has fairly low electrical and thermal conductivity.

Experiments have shown that natural titanium becomes radioactive after it is bombarded with deuterons, emitting mainly positrons and hard gamma rays. When it is red hot the metal combines with oxygen, and when it reaches 550 °C (1,022 °F) it combines with chlorine It also reacts with the other halogens and absorbs hydrogen.

Compounds

The +4 oxidation state dominates in titanium chemistry, but compounds in the +3 oxidation state are also common. Because of this high oxidation state, many titanium compounds have a high degree of covalent bonding.

Star sapphires and rubies get their asterism from the titanium dioxide impurities present in them. Titanates are compounds made with titanium dioxide. Barium titanate has piezoelectric properties, thus making it possible to use it as a transducer in the interconversion of sound and electricity. Esters of titanium are formed by the reaction of alcohols and titanium tetrachloride and are used to waterproof fabrics.

Titanium nitride (TiN) is often used to coat cutting tools, such as drill bits.[20] It also finds use as a gold-colored decorative finish, and as a barrier metal in semiconductor fabrication.

Titanium tetrachloride (titanium(IV) chloride, $TiCl_4$, sometimes called "Tickle") is a colorless liquid which is used as an intermediate in the manufacture of titanium dioxide for paint. It is widely used in organic chemistry as a Lewis acid, for example in the Mukaiyama aldol condensation. Titanium also forms a lower chloride, titanium(III) chloride ($TiCl_3$), which is used as a reducing agent.
Titanocene dichloride is an important catalyst for carbon-carbon bond formation. Titanium isopropoxide is used for Sharpless epoxidation. Other compounds include titanium bromide (used in metallurgy, superalloys, and high-temperature electrical wiring and coatings) and titanium carbide (found in high-temperature cutting tools and coatings).

Isotopes

About 50 grades of titanium and titanium alloys are designated and currently used, although only a couple of dozen are readily available commercially.[41] The ASTM International recognizes 31 Grades of titanium metal and alloys, of which Grades 1 through 4 are commercially pure (unalloyed). These four are distinguished by their varying degrees of tensile strength, as a function of oxygen content, with Grade 1 being the most ductile (lowest tensile strength with an oxygen content of 0.18%), and Grade 4 the least (highest tensile strength with an oxygen content of 0.40%). The remaining grades are alloys, each designed for specific purposes, be it ductility, strength, hardness, electrical

resistivity, creep resistance, resistance to corrosion from specific media, or a combination thereof.

The grades covered by ASTM and other alloys are also produced to meet Aerospace and Military specifications (SAE-AMS, MIL-T), ISO standards, and country-specific specifications, as well as proprietary end-user specifications for aerospace, military, medical, and industrial applications.

In terms of fabrication, all welding of titanium must be done in an inert atmosphere of argon or helium in order to shield it from contamination with atmospheric gases such as oxygen, nitrogen, or hydrogen. Contamination will cause a variety of conditions, such as embrittlement, which will reduce the integrity of the assembly welds and lead to joint failure. Commercially pure flat product (sheet, plate) can be formed readily, but processing must take into account the fact that the metal has a "memory" and tends to spring back. This is especially true of certain high-strength alloys. The metal can be machined using the same equipment and via the same processes as stainless steel.

Applications
Titanium is used in steel as an alloying element (ferro-titanium) to reduce grain size and as a deoxidizer, and in stainless steel to reduce carbon content. Titanium is often alloyed with aluminium (to refine grain size), vanadium, copper (to harden), iron, manganese, molybdenum, and with other metals. Applications for titanium mill products (sheet, plate, bar, wire, forgings, castings) can be found in industrial, aerospace, recreational, and emerging markets. Powdered titanium is used in pyrotechnics as a source of bright-burning particles.

Marine
Due to its high corrosion resistance to sea water, titanium is used to make propeller shafts and rigging and in the heat exchangers of desalination plants; in heater-chillers for salt water aquariums, fishing line and leader, and for divers' knives. Titanium is used to manufacture the housings and other components of ocean-deployed surveillance and monitoring devices for scientific and military use. The former Soviet Union developed techniques for making submarines largely out of titanium, which became both the fastest and deepest diving submarines of their time.

Industrial
Welded titanium pipe and process equipment (heat exchangers, tanks, process vessels, valves) are used in the chemical and petrochemical industries primarily for corrosion resistance. Specific alloys are used in downhole and nickel hydrometallurgy applications due to their high strength titanium Beta C, corrosion resistance, or combination of both. The pulp and paper industry uses titanium in process equipment exposed to corrosive media such as sodium hypochlorite or wet chlorine gas (in the bleachery). Other applications include: ultrasonic welding, wave soldering, and sputtering targets.

Grupo Compás – The Alloy Valve Stockist

Alloy gate, globe, check, ball, and butterfly valves in duplex, 6moly SMO super duplex, alloy 20, monel, hastelloy, inconel, incoloy and titanium.

Alloy material overview

304SS	347SS	HASTELLOY A	3% NICKEL CAST IRON
304	347		
CF8	CF8C	HAST A	3NI
304LSS	CF82B	HA	CIA
CF3	188SCB	HAA	NCI*
188S ELC	188CB	A	**HASTELLOY B**
D2L	D2CB		
DF8L (LAD)	**410SS**	NR	**NI RESIST CAST IRON**
188 ELC	CR13		NR2
316SS	11 13	HAST B	CAUSUL*
316	F6	HB	
CF8M	EXELLOY (CRANE)	HAB	**SPECIAL**
188SMO	CA 15	N7M	
188M	**FERRALIUM**	N12M	A-254-SMO
188MO	CD4M	N2	(LADISH)
L22XM	CD4MCU	DC2	**LOW TEMP STEELS**
D4	DURCOMET 100	B•	
CF7M	38 (JB)	NiMO	LCB (CAST CARBON)
8M•	**MONEL 400**	CW12M	LC1 (CAST 1/2 % MOLY)
36 (JB)	M35		LC2 (CAST 2 1/2 % NICKEL)
6 (HMC)	M35W	**HASTELLOY C**	LC3 (CAST 3 1/2 % NICKEL)
0 (ALOYCO)	DM		LF1 (FORGED CARBON)
C (CONTRO)	M	HAST C	LF2 (FORGED CARBON)
KA2SMO	(LAD)	HC	LF3 (FORGED 3 1/2 NICKEL)
317SS	MONL	HAC	
CG8M	MLCB	CW7M	(LAD)
316LSS	MON	CW12M	A 105 (FORGED)
316L ML	MNL	22 (JB)	**CARBON STEEL**
CF3M	EM	DC3	CS
188SMO ELC	NICU	C•	WCB (CAST)
D4L	QQN-177 (LAD)	73 (JB)	**1 1/4% CR 1/2% MOLY**
6L (HMC)	COMPE (LAD)	NIMOCR	
L22XMELC	K (TRIM)		WC6 (CAST)
ALLOY 20	71 (JB)	**HASTELLOY D**	F11 (FORGED)
A20	Mo (HMC)		
CN7M	**NICKEL 200**	HAST D	**2 1/4% CR 1/2% MOLY**
C20	NI	HD	
D20	DNI	HAD	(LAD)
DURIMET 20	CZ100		TI•
CN7MTB	J20	**TITANIUM**	
35 (JB)	FA20		**5% CR 1/2% MOLY**
A2 (HMC)	L34	TI	F22 (FORGED)
20•	INC	CZ100S C5 (CAST)	WC9 (CAST)
STAINLESS 20 CY40	LNI	F5 (FORGED) (LAD)	F9 (FORGED)
F (ALOYCO) DIN	DCI	F5A (FORGED)	C12 (CAST)
DURIMET	21 (JB)		
CAR-20	**ZIRCONIUM**		**MALLEABLE IRON**

CHROME-MOLY ALLOYS

Pipe	Valves	Flanges	Weld Fittings	Screwed and Socket Fittings
A-335 P-1	A-217 WC-6	A-182 F-1	A-234 WP-1	A-182 F-1
A-335 P-12	A-217 WC-6	A-182 F-12	A-234 WP-12	A-182 F-12
A-335 P-11	A-182 F11/A-217 WC-6	A-182 F-11	A-234 WP-11	A-182 F-11
A-335 P-22	A-182 F-22/A-217 WC-9	A-182 F-22	A-234 WP-22	A-182 F-22
A-335 P-5	A-182 F-5/A-217 WC-5	A-182 F-5	A-234 WP-5	A-182 F-5
A-335 P-7	A-182 F-7/A-217 WC-12	A-182 F-7	A-234 WP-7	A-182 F-7
A-335 P-9	A-182 F-9/A-217 WC-12	A-182 F-9	A-234 WP-9	A-182 F-9
A-268 T-410	A-182 F-6/A-351 CA-15	A-182 F-6	A-234 WP-410	A-182 F-6
CARBON STEELS				
Pipe	**Valves**	**Flanges**	**Weld Fittings**	**Screwed and Socket Fittings**
A-53	A-105 A-216 WCB	A-105, A-181 Grade 2	A-234 WPB	A-105, A-181 Grade 2
A-106B	A-105 A-216 WCB	A-105 A-181 Grade 2	A-234 WPB	A-105 Grade 2 A-181 Grade 2
LOW-TEMPERATURE STEELS				
Pipe	**Valves**	**Flanges**	**Weld Fittings**	**Screwed and Socket Fittings**
A-333 Grade 6	A-350 LF-2/A-352 LCB	A-350 LF-2	A-420 WPL-6	A-350 LF-2
A-333 Grade 3	A-350 LF-3/A-352 LCS	A-350 LF-3	A-420 WPL-3	A-350 LF-3
STAINLESS STEELS				
Pipe	**Valves**	**Flanges**	**Weld Fittings**	**Screwed and Socket Fittings**
A-312 T304	A-182 F-304/A-351 CF8	A-182 F-304	A-403 WP-304	A-182 F-304
A-312 304L	A-182 F-304L/A-296 CF3	A-182 F-304L	A-403 WP-304L	A-182 F-304L
A-312 T316	A-182 F-316/A-351 CF8M	A-182 F-316	A-403 WP-316	A-182 F-316
A-312 316L	A-182 F-316L/A-296 CF3M	A-182 F-316L	A-403 WP-316L	A-182 F-316L
A-312 321	A-182 F-321/A-351 CF8C	A-182 F-321	A-403 WP-321	A-182 F-321
A-312 347	A-182 F/347/A-351 CF8CMO	A-182 F-347	A-403 WP-347	A-182 F-347

■ Valves in Inconel (Alloy 600), Monel (Alloy 400), Incoloy (Alloy 800), Alloy 20, Duplex, Super Duplex, Hastelloy, Titanium, 6Moly, Stainless Steel and Carbon Steel■

■ A182 F51, A182 F53, A182 F55, A182 F44, 254 SMO, A351 CN7M, A890 Gr.4A, A890 Gr. 5A, A494 M35-1, B564-N08825, F316TI, A321, A347, C276, A217 WC5, WC9, B148, A494, 1.4462, 6 Moly, UNS S31802, UNS 31254, UNS C95500, A494 CW12MW, A494 M35-1, A351 CN7M, A317, A351 CG8M, A890-4A CD3MN, A890-5A CEMN, A890-6A CD3MWCUN, duplex 2205,N08825, B564-N08825, 2.4858, N02200, B160, N02200, A494-CZ100, NW2200, 1.7740, N04400, B564. N04400, 1.7730, 2.4360, N05500, N05500, 2.4375, N08904, 904L NCDU, 1.4539, N06600, N06600, A494-CY40, 1.7742, 2.4816, N06625, N06625, A494-CW6MC, 2.4856, N10276, B564-N10276, A494-CW2M, 2.4819, R50400 & B381-Gr2. ■

■ Gate, globe, check, ball, and butterfly valves in exotic material from stock ■