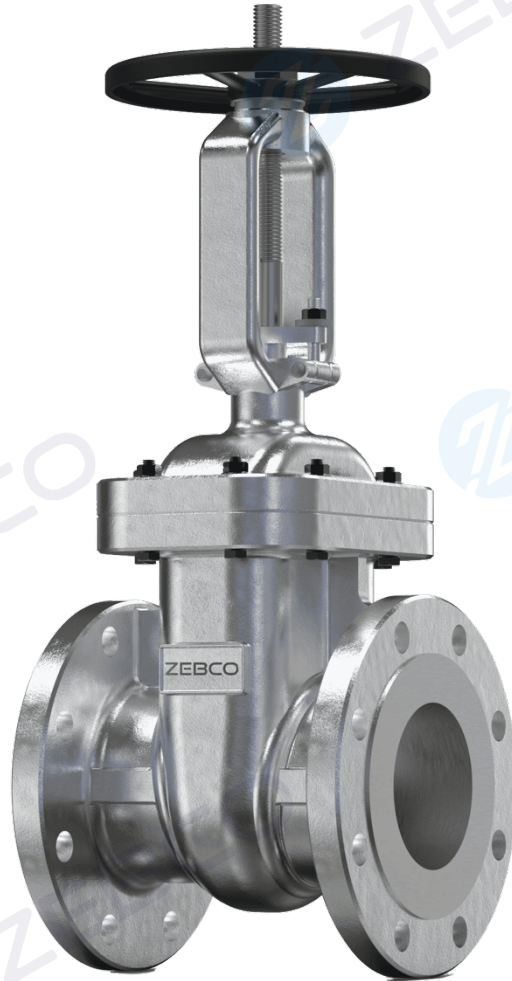


GATE VALVE



Zebco gate valves are primarily designed to start or stop flow, and when a straight-line flow of fluid and minimum flow restriction are needed. In service, these Valves generally are either fully open or fully closed.

The Gate (also called wedge) of a Gate Valve is completely removed when the Valve is fully open; the wedge is fully drawn up into the Valve Bonnet. This leaves an opening for flow through the Valve at the same inside diameter as the pipe system in which the Valve is installed.

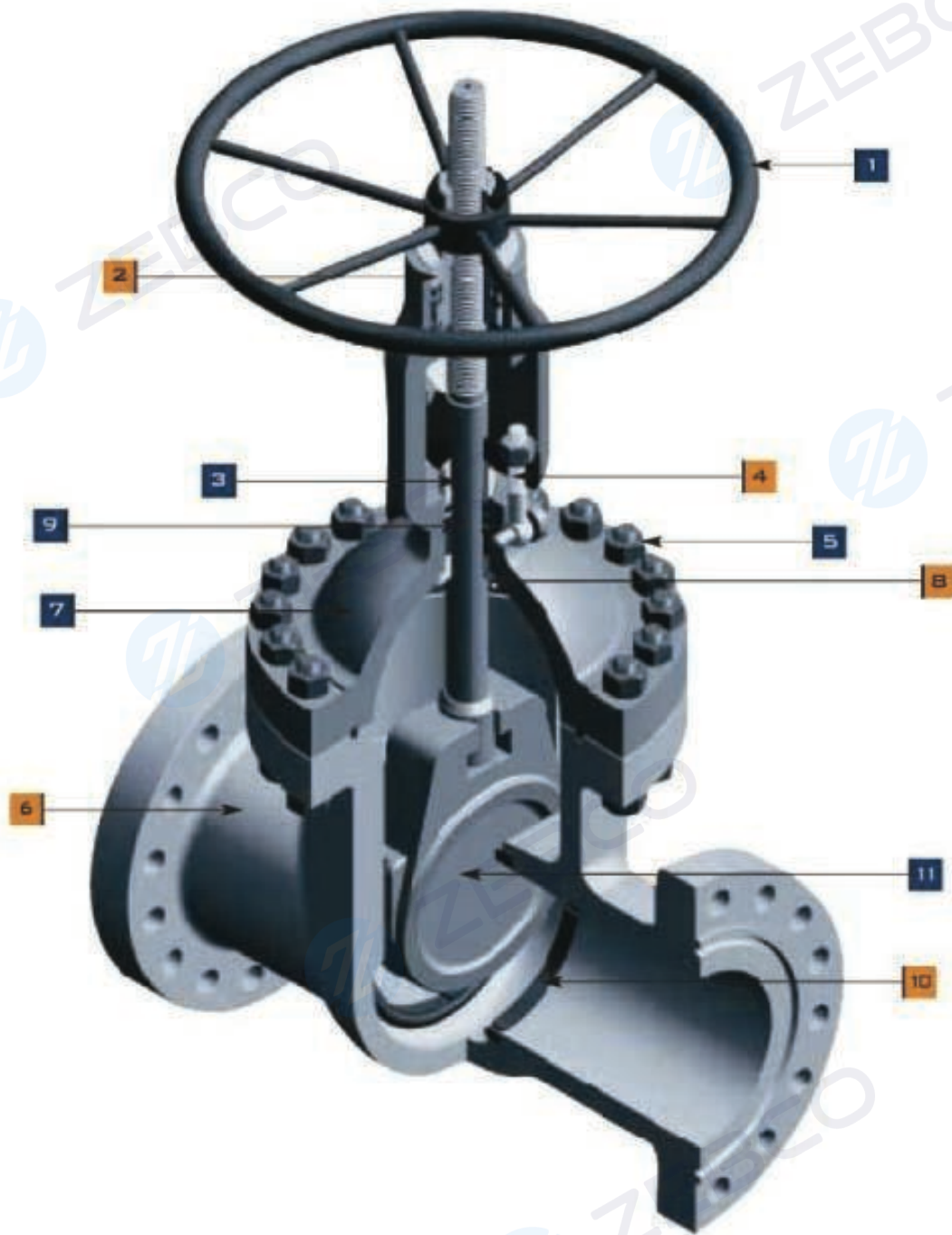
A Gate Valve can be used for a wide range of liquids and provides a tight seal when closed.

Advantages of using Gate Valves:

- Good shutoff features
- Gate Valves are bidirectional and therefore they can be used in two directions
- Pressure loss through the Valve is minimal

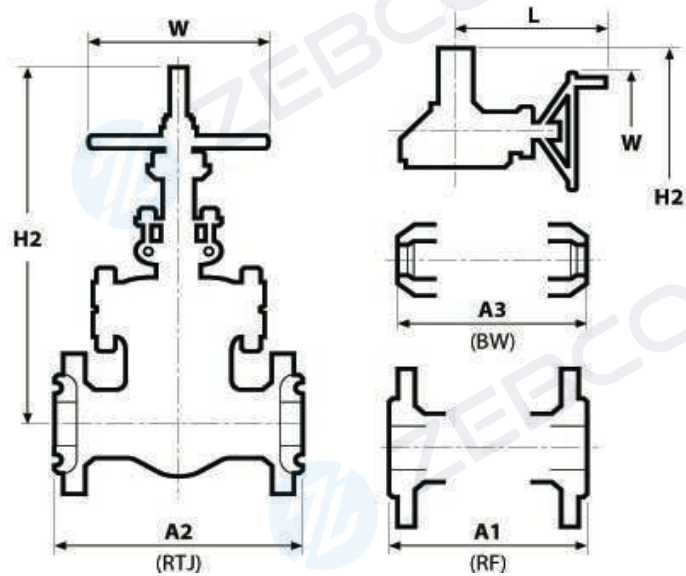
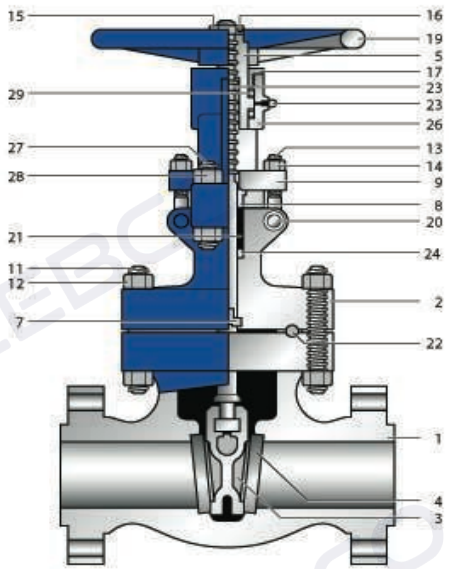
Construction of a Gate Valve

Gate Valves consist of three main parts: body, Bonnet, and trim. The body is generally connected to other equipment by means of flanged, screwed or welded connections. The Bonnet, which containing the moving parts, is attached to the body, usually with bolts, to permit maintenance. The Valve trim consists of the stem, the gate, the disc or wedge and the seat rings.



CAST STEEL, OUTSIDE SCREW AND YOKE, RISING STEM, NON-RISING HANDWHEEL, RENEWABLE SEAT, REMOVABLE YOKE SLEEVE, GLAND REPACKING UNDER PRESSURE.

- 1 HANDWHEEL :** The Spoked hand wheel is fabricated from steel pipe. The hub is coupled with the yoke sleeve by means of a tongue.
- 2 YOKESLEEVE :** The yoke sleeve is made from ASTM A439 Gr. D2 having high resistance to wear and a high melting point. It is designed to permit removal from the bonnet or the yoke whilst the valve is in service. Gate valves 6" class 600 and above are fitted ball thrust bearings.
- 3 GLAND AND FLANGE :** They are in forged steel and are supplied in two pieces, self-aligning design to permit the gland to descend parallel to the stem even if the eyebolts are unevenly tightened.
- 4 GLAND BOLT AND NUT :** The forged steel gland bolts are of the eyebolt type which can be swung outward for case of gland repacking. They are fixed to the bonnet by hinge pins.
- 5 BONNET BOLTING :** Bonnet studs and Nuts are manufactured from alloy steel to the relevant ASTM standard.
- 6 BODY :** The body is in cast steel and is carefully designed in all its details. The basic dimension, i.e. wall thickness, face to face and flanges comply with the relevant API and ANSI standards. The body to bonnet flange is circular, except in the class 150 which is oval. The body to bonnet joint are flat face on class 150 valves, male and female on class 300 and ring joint on class 400 and above. The body is threaded for renewable seats. Bosses are provided for drain taps or bypass piping.
- 7 BONNET :** The bonnet is in cast steel. It is machined to accept yoke sleeve and incorporates a stuffing box dimensioned in accordance with the API standard.
- 8 BONNET BUSHING :** The bonnet bushing or backseat is in forged stainless steel and forms part of the trim. Special attention is given to its machining.
- 9 STEM :** The stem is in forged stainless steel and is part of the trim. The stem is provided with a thread. A ground backseat is provided to ensure a perfectly tight seal to the stuffing box when the valve is fully open. The stem is ground to minimize friction and prevent damage to gland packing. The thread is trapezoidal ACME type. Dimensions comply with the API 600 Standard.
- 10 SEAT RINGS :** The rings are in forged stainless steel and are part of the trim. They are completely treaded outside and notched on their inner surface to ease installing and dismantling. Special welded-in-seat rings may be supplied upon request.
- 11 WEDGE :** The wedge is part of the trim. It is forged stainless steel for diameter up to 12" and is in cast steel for larger valves. It is normally supplied as the wedge type. It is connected to the stem by means of a T joint. The guides on each side of the wedge are machined. Special attention is given to the seating surfaces which are ground and lapped.



BILL OF MATERIAL

No.	NAME OF PART	ASTM SPECIFICATION							
		CARBON STEEL	HIGHTPRATURE SERVICE			LOW TEMPRATURE SERVICE	STAINLESS STEEL		
1	BODY	A216 - WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB/LCC/LC2/LC3	CF8M	CF8C	
2	BONNET	A216 - WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB/LCC/LC2/LC3	CF8M	CF8C	
3	DISC	A216-CR13/SS316	A217-WC6	A217-WC9	A217-C5	A352-LCB/LCC/LC2/LC3	CF8M	CF8C	
4	BODY SEAT RING	SS316 + HARD FACE	A182-F11	A182-F22	A182-F5A	A182-F304	F316	F347	
5	STEM	CR13/A182-SS316	A182-F6A	A182-F6A	A182-F6A	A182-F304	F316	F347	
6	BONNET BUSH	A276-410/A182-SS316	A276-410	A276-410	A276-410	A276-304	F316	F347	
7	PACKING GLAND	A276-410/A182-SS316	A276-410	A276-410	A276-410	A276-304	F316	F347	
8	GLAND FLANGE	A105	A105	A105	A105	A350-LF2	CF8M	CF8C	
9	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	B147-B8	F316	F347	
10	BONNET BOLT	A193-B7M	A193-B16	A193-B16	A193-B16	A320-L7M	A193-B8	A193-B8	
11	BONNET NUT	A194-2HM	A194-4	A194-4	A194-4	A194-7M	A194-8	A194-8	
12	GLAND BOLT	A193-B7M	A193-B7	A193-B7	A193-B7	A320-L7M	A193-B8	A193-B8	
13	GLAND NUT	A194-2HM	A194-2H	A194-2H	A194-4	A194-7M	A194-8	A194-8	
14	HANDLE NUT	STEEL							
15	SET SCREW	STEEL							
16	SLEEVE GLAND	STEEL							
17	HANDWHEEL	A395							
18	HINGE PIN	A276-410	A276-410	A276-410	A276-410	A276-304	F316	F347	
19	PACKING	COMMERCIAL							
20	GASKET	SPIRAL WOUND + GRAPHITE / RING JOINT							
21	GREASE NIPPLE	STEEL						BRONZE	BRONZE
22	LANTERN	A276-410	A276-410	A276-410	A276-410	A276-304	F316	F347	
23	YOKE	A216-WCB	216-WC6	216-WC9	A216-C5	A352-LCC/LC1/LC2/LC3	CF8M	CF8C	
24	YOKE BOLT	A193-B7M	A193-B16	A193-B16	A193-B16	A320-L7	A193-B8	A193-B8	
25	YOKE NUT	A194-2HM	A194-4	A194-4	A194-4	A194-4	A194-8	A194-8	
26	BEARING	COMMERCIAL							

CLASS 150 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48	52	60
SIZE	dn	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	900	1000	1050	1200	1300	1500
A1	in	7	7.5	8	9	10.5	11.5	13	14	15	16	17	18	20	24	24	28	30	31	34	36	42
(RF)	mm	178	191	203	229	267	292	330	356	381	406	432	457	508	610	610	711	762	813	864	914	1067+/-3
A2	in	8.5	9.5	11.2	12	15.87	16.5	18	19.8	22.5	24	26	28	32	36	36	40	42	43	46	54	42
(BW)	mm	216	241	282	305	403	419	457	503	572	610	660	711	813	914	914	1016	1067	1092	1168	1372	1067+/-3
A3	in	7	7.5	8	9	10.5	11.5	13	14	15	16	17	18	20	24	24	28	30	31	34	36	/
(RTJ)	mm	178	190	203	229	267	292	330	356	381	406	432	457	508	610	610	711	762	813	864	914	/
H2	in	15.4	16.7	18.1	22.8	30.6	38.4	46.4	54.6	60	68.7	79.1	91.7	109.6	127.4	134.5	161.8	183.9	174.4	217.5	227	240.16
	mm	390	425	461	580	776	976	1178	1387	1523	1745	2010	2330	2784	3236	3417	4109	4670	4430	5525	5766	6100
W	in	7.9	7.9	7.9	9.8	11.8	14	17.7	17.7	19.7	22	13.8	17.7	17.7	22	22	27.9	31.5	31.5	35.4	35.4	31.5
	mm	200	200	200	250	300	355	450	450	500	560	350	450	450	560	560	710	800	800	900	900	800
L	in	/	/	/	/	/	/	/	/	/	/	13.1	14.3	14.3	16.3	16.3	18.4	20.7	20.7	26.4	26.4	27.95
	mm	/	/	/	/	/	/	/	/	/	/	332	362	362	414	414	468	526	526	670	670	710
WGT	lb	48.5	55.1	66.2	99.2	187	295.5	445	639	816	1177	1475	1786	3153	4558	4827	7856	10370	10143	15677	18742	405.31
(RF)	kg	22	25	30	45	85	134	202	290	370	534	669	810	1430	2067	2189	3563	4703	4600	7110	8500	10295
WGT	lb	44.1	46.3	61.7	92.6	161	244	399	584	750	1111	1365	1697	3336	4756	4981	8011	10436	10198	15545	18853	/
(BW)	kg	20	21	28	42	73	111	181	265	340	504	619	770	1513	2157	2259	3633	4733	4625	7050	8550	/

CLASS 300 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48
SIZE	dn	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	900	1000	1050	1200
A1	in	8.5	9.5	11.12	12.0	15.9	16.5	18.0	19.75	30.0	33.0	36.0	39.0	45.0	53.0	55.0	68.0	76.0	78.0	87.2
(RF)	mm	216	241	282	305	404	419	457	502	762	838	914	991	1143	1346	1397	1727	1930	1981	2215
A2	in	9.12	10.12	11.75	12.62	16.5	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88	54.0	56.0	69.12	/	/	/
(BW)	mm	232	257	298	321	419	435	473	518	778	854	930	1010	1165	1372	1422	1756	/	/	/
A3	in	8.5	9.5	11.12	12.0	15.9	16.5	18.0	19.75	30.0	33.0	36.0	39.0	45.0	53.0	55.0	68.0	76.0	78.0	87.2
(RTJ)	mm	216	241	282	305	404	419	457	502	762	838	914	991	1143	1346	1397	1727	1930	1981	2215
H2	in	16.2	17.7	19.0	23.7	32.0	40.2	48.8	56.8	66.1	78.4	85.9	93.5	112.6	130.0	148.5	169.8	188.6	198.1	217.4
	mm	412	450	483	601	813	1020	1239	1443	1679	1993	2181	2376	2860	3302	3772	4312	4791	5032	5522
W	in	7.9	7.9	9.8	9.8	14.0	15.7	17.7	19.7	17.7	17.7	22.0	22.0	27.9	35.4	35.4	30.0	30.0	30.0	30.0
	mm	200	200	224	250	355	400	450	500	450	450	560	560	710	900	900	760	760	760	760
L	in	/	/	/	/	/	/	/	/	14.3	14.3	16.3	16.3	18.4	21.8	21.8	21.8	20.2	20.2	20.2
	mm	/	/	/	/	/	/	/	/	362	362	414	414	468	554	554	554	512	512	512
WGT	lb	63.9	88.2	105.8	163.2	313.1	485.1	721.0	1094	1530	2170	2880	3409	5204	8070.3	9591.6	15104.3	18654.3	20947.5	27342
(RF)	kg	29	40	48	74	142	220	327	496	694	984	1306	1546	2360	3660	4350	6850	8460	9500	12400
WGT	lb	52.9	77.2	81.6	141.1	269.0	379.2	511.6	862	1420	1839	2317	2703	4212	6637.1	7629.3	11003	13582.8	14994	19845
(BW)	kg	24	35	37	64	122	172	232	391	644	834	1051	1226	1910	3010	3460	4990	6160	6800	9000

CLASS 600 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42
SIZE	dn	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	900	1000	1050
A1 (RF)	in	11.5	13.0	14.0	17.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0	61.0	65.0	82.0	94.0	98.0
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1594	1651	2083	2387	2489
A2 (BW)	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	61.5	65.5	82.62	/	/
	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1406	1562	1664	2098	/	/
A3 (RTJ)	in	11.5	13.0	14.0	17.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0	61.0	65.0	82.0	94.0	98.0
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1594	1651	2083	2387	2489
H2	in	18.5	19.5	22.1	26.7	37.2	43.7	52.1	65.9	72.1	82.9	98.0	104.8	116.9	140.2	152.8	179.5	207.6	240.0
	mm	471	495	561	677	944	1110	1323	1675	1832	2106	2489	2662	2970	3562	3880	4560	5273	6098
W	in	8.8	8.8	9.8	11.8	17.7	19.7	24.8	22.0	22.0	27.9	27.9	31.5	35.4	30.0	30.0	30.0	30.0	30.0
	mm	224	224	250	300	450	500	630	560	560	710	710	800	900	760	760	760	760	760
L	in	/	/	/	/	/	/	/	16.3	16.3	18.4	18.4	20.7	26.4	20.2	20.2	20.2	20.2	20.2
	mm	/	/	/	/	/	/	/	414	414	468	468	526	670	512	512	512	512	512
WGT (RF)	lb	94.8	132.3	154.4	295.5	628	988	1499	2355	2836	4059	5700	6853	10337	13340.6	15313.7	21476.7	23262.8	24144.8
	kg	43	60	70	134	285	448	680	1068	1286	1841	2585	3108	4688	6050	6945	9740	10550	10950
WGT (BW)	lb	61.7	99.2	132.3	229.3	452	690	1180	2145	2571	3332	4741	5640	8595	10980.9	12590.6	17948.7	18830.7	19337.9
	kg	28	45	60	104	205	313	535	973	1166	1511	2150	2558	3898	4980	5710	8140	8540	8770

CLASS 900 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12	14	16	18	20	24
SIZE	dn	50	65	80	100	150	200	250	300	350	400	450	500	600
A1 (RF)	in	14.5	16.5	15.0	18.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0	61.0
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
A2 (BW)	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
	mm	371	422	384	460	612	740	841	968	1038	1140	1232	1333	1568
A3 (RTJ)	in	14.5	16.5	15.0	18.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0	61.0
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
H2	in	21.2	26.4	26.4	30.8	42.4	55.5	67.7	77.4	74.9	80.7	88.8	110.2	124.0
	mm	539	670	672	782	1076	1411	1720	1965	1902	2051	2256	2800	3150
W	in	11.8	11.8	14.0	15.7	22.0	17.7	22.0	22.0	24.0	24.0	30.0	30.0	24.0
	mm	300	300	355	400	560	450	560	560	610	610	760	760	610
L	in	/	/	/	/	/	14.3	16.3	16.3	20.2	20.2	21.8	21.8	20.2
	mm	/	/	/	/	/	362	414	414	512	512	554	554	512
WGT (RF)	lb	181	342	364	384	999	1720	2752	3400	4895.1	6615.0	8533.4	10716.3	16096.5
	kg	82	155	165	174	453	780	1248	1542	2220	3000	3870	4860	7300
WGT (BW)	lb	130	375	287	295	789	1378	2267	2844	4167.5	5655.8	7276.5	8730.3	13494.6
	kg	59	170	130	134	358	625	1028	1290	1890	2565	3300	4050	6120

CLASS 1500 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12	14	16	18	20	24
SIZE	dn	50	65	80	100	150	200	250	300	350	400	450	500	600
A1 (RF)	in	14.5	16.5	18.5	21.5	27.75	32.75	39.0	44.5	49.5	54.5	60.5	65.5	76.5
	mm	368	419	470	546	706	832	991	1130	1257	1384	1536	1664	1943
A2 (BW)	in	14.62	16.62	18.62	21.62	28.0	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
	mm	371	422	473	549	711	841	1000	1146	1276	1406	1559	1686	1972
A3 (RTJ)	in	14.5	16.5	18.5	21.5	27.75	32.75	39.0	44.5	49.5	54.5	60.5	65.5	76.5
	mm	368	419	470	546	706	832	991	1130	1257	1384	1536	1664	1943
H2	in	21.2	26.4	29.1	30.8	47.1	60.8	66.5	82.3	85.1	97.9	108.7	122.1	146.5
	mm	539	670	738	783	1196	1546	1688	2090	2162	2486	2762	3102	3721
W	in	11.8	11.8	15.7	19.7	13.8	22.0	27.9	27.9	30.0	30.0	30.0	24.0	24.0
	mm	300	300	400	500	350	560	710	710	760	760	760	610	610
L	in	/	/	/	/	13.1	16.3	18.4	18.4	21.8	21.8	21.8	20.2	20.2
	mm	/	/	/	/	332	414	468	468	554	554	554	512	512
WGT (RF)	lb	181	341.8	401	573	1360	3175	4412	8414	9073.6	15324.8	19845	24541.7	35875.4
	kg	82	155	182	260	617	1440	2001	3816	4115	6950	9000	11130	16270
WGT (BW)	lb	130	286.7	324	353	975	2646	3541	7080	7056	13230	17066.7	21079.8	30362.9
	kg	59	130	147	160	442	1200	1606	3211	3200	6000	7740	9560	13770

CLASS 2500 – CARBON & STAINLESS-STEEL GATE VALVES

DIMENSIONS & WEIGHTS

VALVE	nps	2	2.5	3	4	6	8	10	12
SIZE	dn	50	65	80	100	150	200	250	300
A1 (RF)	in	17.75	20.0	22.75	26.5	36.0	40.25	50.0	56.0
	mm	451	508	578	673	914	1022	1270	1422
A2 (BW)	in	17.87	20.25	23.0	26.8	36.5	40.87	50.88	56.88
	mm	454	514	584	683	927	1038	1292	1445
A3 (RTJ)	in	17.75	20.0	22.75	26.5	36.0	40.25	50.0	56.0
	mm	451	508	578	673	914	1022	1270	1422
H2	in	24.4	31.9	31.9	42.2	57.1	63.0	82.5	90.2
	mm	619	809	809	1073	1451	1600	2096	2292
W	in	11.8	17.7	17.7	24.8	24.0	24.0	24.0	30.0
	mm	300	450	450	630	610	610	610	760
L	in	/	/	/	/	17.0	20.2	20.2	21.8
	mm	/	/	/	/	432	512	512	554
WGT (RF)	lb	205	331	443	1336	3506	5380.2	10085.7	15831.9
	kg	93	150	201	606	1590	2440	4574	7180
WGT (BW)	lb	128	221	289	1083	2866.5	4410	8379	13230
	kg	58	100	131	491	1300	2000	3800	6000