



ASME Classes 150 – 900

API 600 / 623 / 594 / ASME B16.34
Bolted Bonnet Design



Cast Steel Gate, Globe & Check Valves

CHAODA INTRODUCTION

At Chaoda, pioneering design meets efficient manufacturing for top-tier gate, globe, and check valves.

INDUSTRIES WE SERVE



The Chaoda Group is proud to be able to offer a unique combination in the Cast Gate, Globe and Check Valve industry. We have field proven designs, the latest in processing technology, and high efficiency manufacturing **creating a high-quality Gate, Globe and Check Valve.**

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

Since 1984, The Chaoda Group has been committed to producing high quality valves for industry at a competitive price. Consistency in ownership has kept this strategy on track and maintained a philosophy of ongoing investment in research and development as well as manufacturing efficiencies. This keeps us ahead of the competition. The result is the ultimate blend of high-quality Cast Gate, Globe and Check Valves.

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Cast Steel Gate, Globe, & Check Valves

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YOUR LOW FUGITIVE EMISSIONS PARTNER

The EPA has made selecting the right valve for reducing fugitive emission extremely critical.



Chaoda Valve – Your Low Fugitive Emissions Partner

Over the past several years in the United States, the EPA has challenged end users in the refining, chemical and petrochemical industries to continuously lower fugitive emissions from their facilities. As a result of this, the problem of fugitive emissions of Volatile Organic Compounds (VOCs) has grown in importance in refineries, chemical plants, and petrochemical plants in the US and around the world.

When fugitive emissions sources have been analyzed, 60% or more of these fugitive emissions originate from valves, with rising stem valves such as gate valves and globe valves making up most of those emissions. For this reason, it is critical when selecting a valve manufacturer to partner with, to choose one that has demonstrated experience and a commitment to producing a high-quality, low fugitive emission product.

Testing is the Key

Chaoda Valve is proud to have partnered with our valued end users to meet and exceed these fugitive emissions challenges. Chaoda Gate & Globe Valves are designed, manufactured & tested to provide maximum emissions of 100 ppm of VOCs. Chaoda Valve has performed extensive 3rd party testing at reputable US laboratories on our multi-turn valves in accordance with API 624. This test protocol involves applying pressure to the valve filled with methane gas, and performing 310 mechanical cycles and 3 thermal cycles. During this test, leakage of methane from the valve is detected in accordance to EPA Method 21. The maximum allowable leakage for API 624 is 100 ppm of methane. In the tests performed, all Chaoda valves tested resulted in an average leakage of **under 50 ppm**, meeting and exceeding the requirements of this rigorous test.

Certified Low Leaking Valve Technology

As a result, Chaoda Valves are considered to have been tested in accordance to Generally Accepted Good Engineering Practice and are 'Certified Low Leaking Valve Technology' as defined by the EPA. Chaoda can provide 5-year low fugitive emissions warranties in accordance with EPA consent decree requirements to our end users upon request.

An Ongoing Commitment

Chaoda's commitment to excellence does not stop with the extensive testing we have already performed. Chaoda Valve has long experience with capital projects in regions such as the Middle East, Europe and Southeast Asia which often require production fugitive emissions tests for valves, such as testing per the requirements of ISO 15848 Part 2. Due to this experience, we can perform production fugitive emissions testing on valves per end user requirements to assure the user of excellent fugitive emissions performance.



API 600 GATE VALVE

Chaoda's API 600 gate valves are expertly crafted for refinery, petrochemical, and chemical plant applications.

GATE VALVE

ASME Class 150, 300, 600, 900

Chaoda has our own foundry equipped with state-of-the-art technology that allows us to pour all castings for our valves in-house including exotic alloys. The casting process can create valves with complex shapes, patterns, and sizes.

BASIC DESIGN	API 600
TESTING	API 598
END DIMENSION FLANGED	ASME B16.5 (NPS<24) ASME B16.47 series B or A (NPS>24)
BUTT WELD	ASME B16.25
FACE-TO-FACE:	ASME B16.10
P/T RATINGS:	ASME B16.34



A CLOSER LOOK

1) Wedge Design

All cast steel gate valves are equipped standard with a flex wedge design to allow seating surfaces to adapt to changes in the body/seat surfaces induced by thermal expansions and pipeline loads.

2) Bolted Bonnet Design

3) Stem Packing Design

Gate valves are equipped standard with low-emissions graphite packing qualified per API 622. Gate valves can be optionally live-loaded with Belleville springs for improved performance in thermal cycling applications.

4) Backseat Design

All cast gate valves are equipped standard with a backseat to allow for sealing in case of packing leakage.

5) Seat Design

Cast carbon steel gate valves are equipped standard with seal-welded seat rings. Cast stainless steel gate valves are equipped standard with integral seats. Seat and/or wedge surfaces can be hardfaced with CoCr-A or other hardfacing overlays.

6) Stem Design

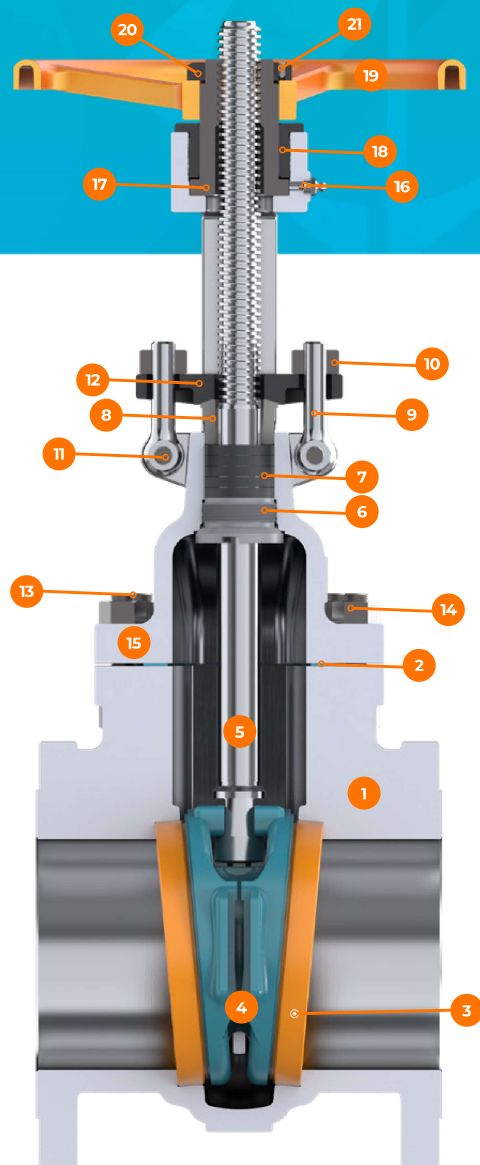
Stems are integral 1-piece forged design. Stems are designed to fail outside the pressure boundary and has been validated by stem strength testing performed per API RP 591.

7) Operation

Gate valves are equipped standard with handwheels or gear operators depending on size and customer requirement. Gate valves can be supplied bare stem with actuator mounting flanges on customer request.

API 600 GATE VALVE

ASME Class 150, 300, 600, 900
Standard Parts and Materials



ITEM	PART NAME	WCB API TRIM 8	LCC API TRIM 12	C5 API TRIM 5	CF8M API TRIM 12	CD3MN 1/2 HARDFACE TRIM
1	Body	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
2	Gasket Class 150	Corrugated 304SS + Graphite	Corrugated 304SS + Graphite	Corrugated 304SS + Graphite	Corrugated 316SS + Graphite	Corrugated S31803 + Graphite
	Gasket Class 300 - 600	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 316SS + Graphite	Spiralwound S31803 + Graphite
	Gasket Class 900	RTJ 316SS	RTJ 316SS	RTJ 316SS	RTJ 316SS	RTJ S31803
3	Seat Rings**	ASTMA105 + HF*	ASTMA350 LF2 + HF*	ASTMA182 F5 + HF*	Integral + HF*	Integral + HF*
4	Wedge	ASTMA216 WCB + 13%Cr	ASTMA352 LCC + 316SS	ASTMA217 C5 + HF*	ASTMA351 CF8M	ASTMA995 CD3MN
5	Stem	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F51
6	Backseat Bushing	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	Integral	Integral
7	Packing	Graphite				
8	Gland	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F51
9	Gland Eyebolt	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
10	Eyebolt Nut	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
11	Eyebolt Pin	ASTMA36				
12	Gland Flange	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA351 CF8
13	Bonnet Stud***	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
14	Bonnet Nut***	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
15	Bonnet	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
16	Grease Fitting	Steel				
17	Stem Nut	Aluminum Bronze				
18	Yoke Sleeve Nut	CS (ASTM 1035)				
19	Handwheel	CS				
20	Handwheel Nut	CS (ASTM 1035)				
21	Set Screw	CS (ASTM 1035)				

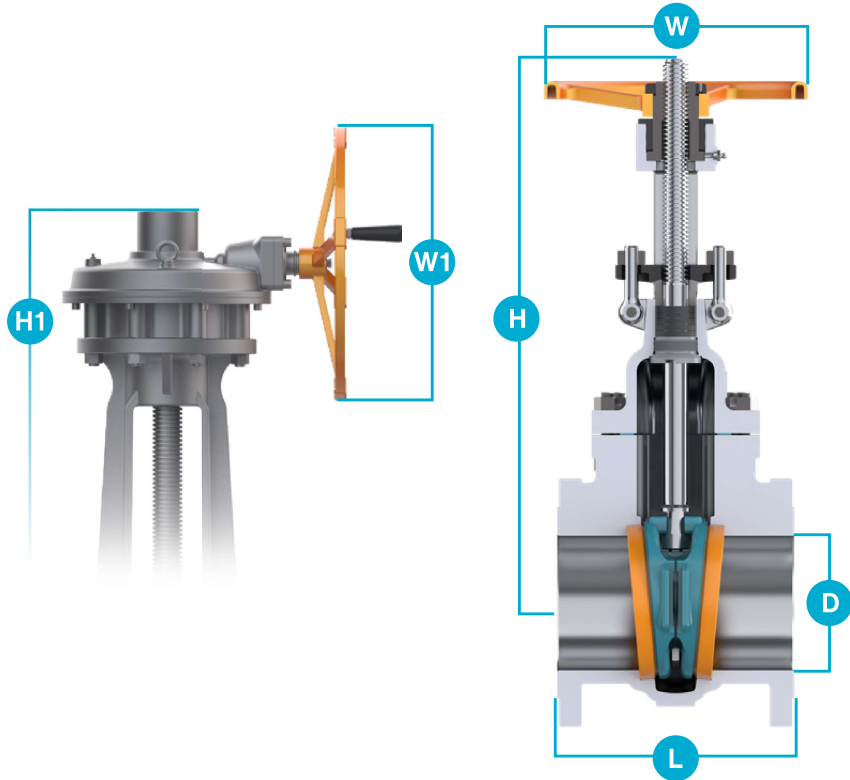
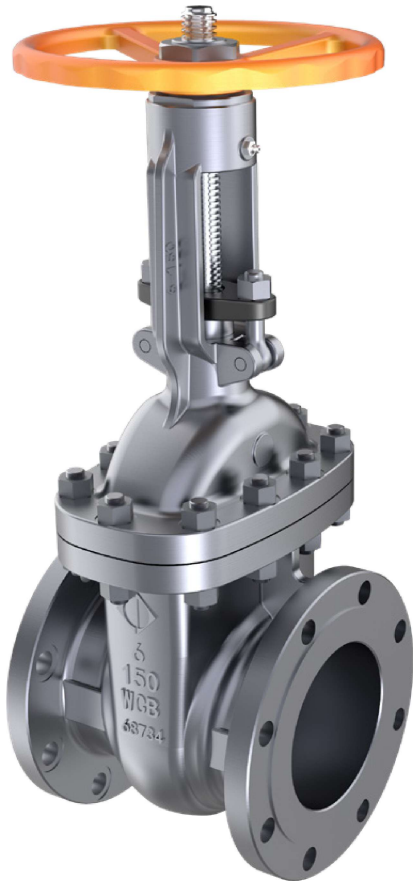
* - HF Denotes CoCr-A hardfacing applied to sealing surface (Stellite® 6 or equivalent) | ** - Seat Rings are seal-welded into valve body

*** - If NACE compliance for exposed service is required, carbon steel valves can be supplied with appropriate bolting (WCB - B7M/2HM, LCC - L7M/7M)

API 600 GATE VALVE

ASME Class 150

Dimensional Information



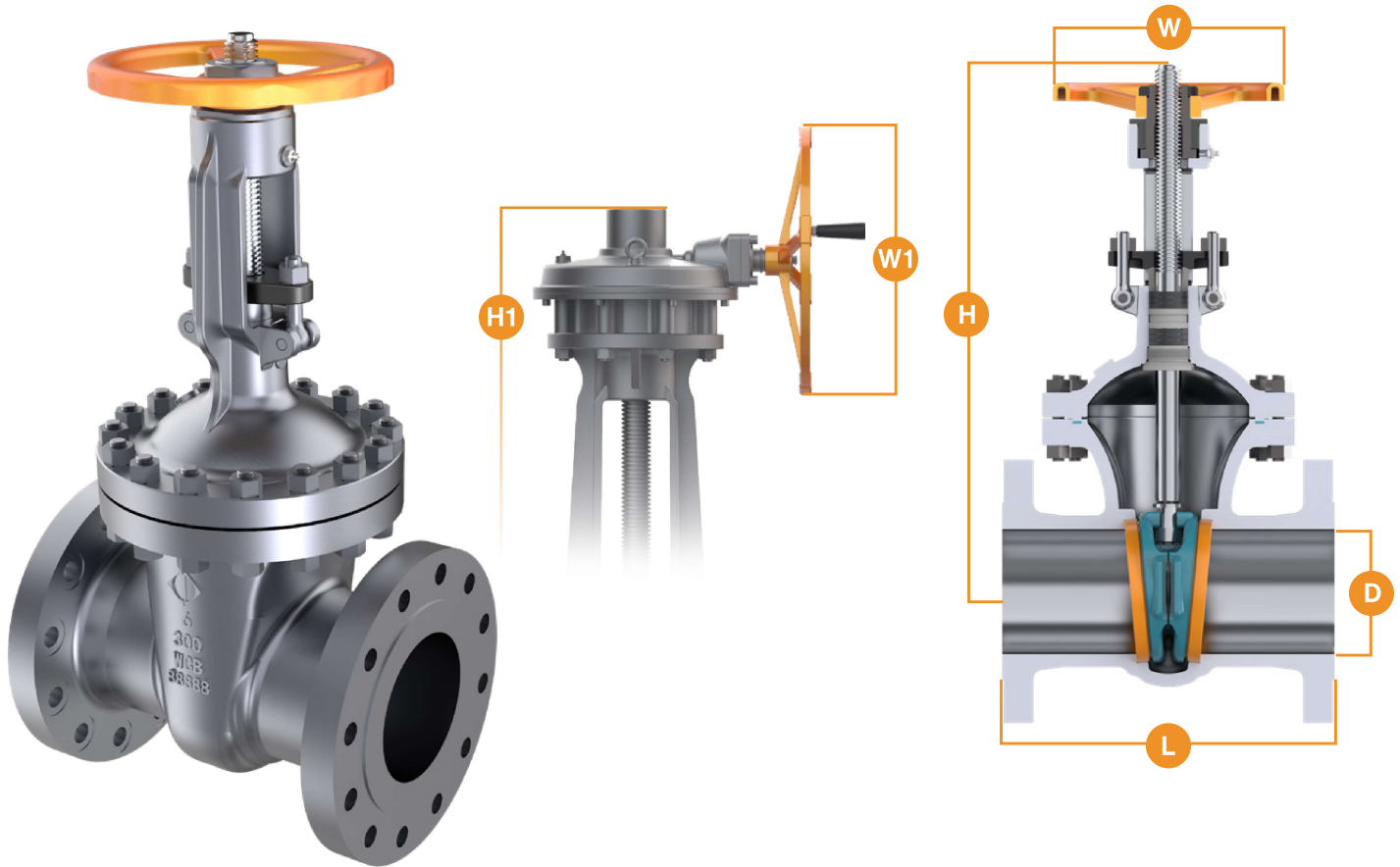
CL. 150	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	7 (178)	7.5 (191)	8.5 (216)	2 (51)	16 (407)	-	7.9 (200)	-	42 (19)	-
2.5	7.5 (191)	8 (203)	9.5 (241)	2.5 (64)	17.5 (445)	-	7.9 (200)	-	55 (25)	-
3	8 (203)	8.5 (216)	11.1 (283)	3 (76)	20.2 (514)	-	9.8 (250)	-	73 (33)	-
4	9 (229)	9.5 (241)	12 (305)	4 (102)	23.9 (607)	-	11 (280)	-	108 (49)	-
6	10.5 (267)	11 (279)	15.9 (403)	6 (152)	30.7 (780)	32.3 (820)	11.8 (300)	11.8 (300)	170 (77)	229 (104)
8	11.5 (292)	12 (305)	16.5 (419)	8 (203)	38.4 (975)	40.2 (1020)	13.8 (350)	11.8 (300)	271 (123)	331 (150)
10	13 (330)	13.5 (343)	18 (457)	10 (254)	46.7 (1186)	47.2 (1200)	15.7 (400)	11.8 (300)	415 (188)	474 (215)
12	14 (356)	14.5 (368)	19.8 (502)	12 (305)	54.3 (1380)	56.3 (1430)	17.7 (450)	11.8 (300)	635 (288)	695 (315)
14	15 (381)	15.5 (394)	22.5 (572)	13.3 (337)	60.8 (1545)	62.2 (1580)	19.7 (500)	17.7 (450)	849 (385)	959 (435)
16	16 (406)	16.5 (419)	24 (610)	15.2 (387)	68.2 (1733)	70.1 (1780)	19.7 (500)	17.7 (450)	1103 (500)	1217 (552)
18	17 (432)	17.5 (445)	26 (660)	17.2 (438)	75.4 (1915)	78.3 (1990)	19.7 (500)	17.7 (450)	1325 (601)	1440 (653)

CL. 150	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
20	18 (457)	18.5 (470)	28 (711)	19.3 (489)	83.5 (2122)	87.4 (2220)	23.6 (600)	19.7 (500)	1685 (764)	1799 (816)
24	20 (508)	20.5 (521)	32 (813)	23.3 (591)	99.2 (2520)	102.4 (2600)	23.6 (600)	19.7 (500)	2220 (1007)	2613 (1185)
26	22 (559)	-	34 (864)	24.9 (633)	-	110.2 (2800)	-	23.6 (600)	-	3418 (1550)
28	24 (610)	-	36 (914)	26.9 (684)	-	120.1 (3050)	-	23.6 (600)	-	4145 (1880)
30	24 (610)	-	36 (914)	28.9 (735)	-	123.2 (3130)	-	23.6 (600)	-	5072 (2300)
32	28 (711)	-	38 (965)	30.7 (779)	-	129.1 (3280)	-	23.6 (600)	-	5623 (2550)
34	30 (762)	-	40 (1016)	32.7 (830)	-	137.8 (3500)	-	23.6 (600)	-	6505 (2950)
36	28 (711)	-	40 (1016)	34.4 (874)	-	146.5 (3720)	-	23.6 (600)	-	7475 (3390)
40	31.9 (811)	-	-	38.4 (976)	-	159.4 (4050)	-	23.6 (600)	-	9702 (4400)
42	34 (864)	-	-	40.2 (1020)	-	165.4 (4200)	-	23.6 (600)	-	11025 (5000)
48	36 (914)	-	-	45.9 (1166)	-	186.6 (4740)	-	23.6 (600)	-	15656 (7100)

API 600 GATE VALVE

ASME Class 300

Dimensional Information



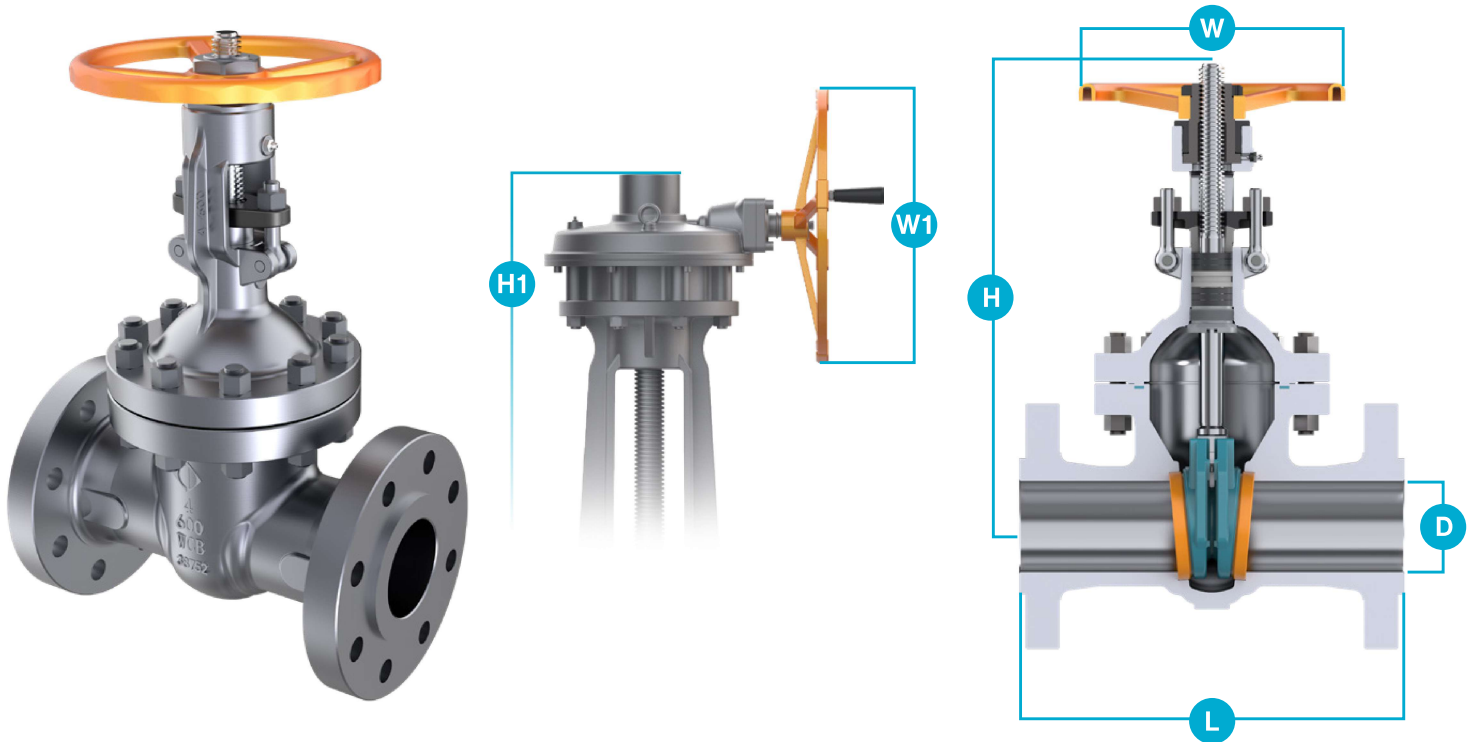
CL. 300	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	8.5 (216)	9.1 (232)	8.5 (216)	2 (51)	16.5 (420)	-	7.9 (200)	-	55 (25)	-
2.5	9.5 (241)	10.1 (257)	9.5 (241)	2.5 (64)	17.6 (446)	-	7.9 (200)	-	66 (30)	-
3	11.1 (283)	11.7 (298)	11.1 (283)	3 (76)	21.1 (537)	-	9.8 (250)	-	106 (48)	-
4	12 (305)	12.6 (321)	12 (305)	4 (102)	24.4 (619)	25.6 (650)	11 (280)	11.8 (300)	161 (73)	221 (100)
6	15.9 (403)	16.5 (419)	15.9 (403)	6 (152)	31.7 (806)	32.9 (835)	13.8 (350)	11.8 (300)	287 (130)	410 (186)
8	16.5 (419)	17.1 (435)	16.5 (419)	8 (203)	39.4 (1000)	40.6 (1030)	15.7 (400)	11.8 (300)	459 (208)	518 (235)
10	18 (457)	18.6 (473)	18 (457)	10 (254)	48.8 (1240)	50.4 (1280)	17.7 (450)	11.8 (300)	736 (334)	851 (386)
12	19.8 (502)	20.4 (518)	19.8 (502)	12 (305)	56.1 (1425)	57.5 (1460)	19.7 (500)	17.7 (450)	992 (450)	1107 (502)
14	30 (762)	30.6 (778)	30 (762)	13.3 (337)	62.4 (1585)	63.8 (1620)	23.6 (600)	17.7 (450)	1552 (704)	1667 (756)
16	33 (838)	33.6 (854)	33 (838)	15.2 (387)	70.5 (1790)	72 (1830)	25.6 (650)	17.7 (450)	2035 (923)	2128 (965)

CL. 300	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
18	36 (914)	36.6 (930)	36 (914)	17.2 (438)	77.2 (1960)	78.7 (2000)	25.6 (650)	19.7 (500)	2494 (1131)	2699 (1224)
20	39 (991)	39.8 (1010)	39 (991)	19.3 (489)	85 (2158)	87.4 (2220)	29.5 (750)	19.7 (500)	2966 (1345)	3087 (1400)
24	45 (1143)	45.9 (1165)	45 (1143)	23.3 (591)	101.4 (2576)	103.1 (2620)	35.4 (900)	23.6 (600)	4679 (2122)	5259 (2385)
26	49 (1245)	50 (1270)	49 (1245)	24.9 (633)	-	112.2 (2850)	-	23.6 (600)	-	6615 (3000)
28	53 (1346)	54 (1372)	53 (1346)	26.9 (684)	-	121.3 (3080)	-	23.6 (600)	-	7718 (3500)
30	55 (1397)	56 (1422)	55 (1397)	28.9 (735)	-	125.2 (3180)	-	23.6 (600)	-	9261 (4200)
32	60 (1524)	61.1 (1553)	60 (1524)	30.7 (779)	-	129.9 (3300)	-	23.6 (600)	-	10805 (4900)
34	64 (1626)	65.1 (1654)	64 (1626)	32.7 (830)	-	139.8 (3550)	-	23.6 (600)	-	11687 (5300)
36	68 (1727)	69.1 (1756)	68 (1727)	34.4 (874)	-	148 (3760)	-	23.6 (600)	-	13892 (6300)

API 600 GATE VALVE

ASME Class 600 & 900

Dimensional Information



CL. 600	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	11.5 (292)	11.6 (295)	11.5 (292)	2 (51)	17.5 (444)	-	7.9 (200)	-	71 (32)	-
2.5	13 (330)	13.1 (333)	13 (330)	2.5 (64)	19.7 (500)	-	9.8 (250)	-	115 (52)	-
3	14 (356)	14.1 (359)	14 (356)	3 (76)	22 (558)	23 (585)	11 (280)	11.8 (300)	132 (60)	192 (87)
4	17 (432)	17.1 (435)	17 (432)	4 (102)	26.2 (665)	27.4 (695)	11.8 (300)	11.8 (300)	236 (107)	295 (134)
6	22 (559)	22.1 (562)	22 (559)	6 (152)	34.2 (868)	35.4 (900)	17.7 (450)	11.8 (300)	476 (216)	591 (268)
8	26 (660)	26.1 (664)	26 (660)	8 (203)	42.2 (1073)	43.7 (1110)	19.7 (500)	17.7 (450)	880 (399)	994 (451)
10	31 (787)	31.1 (791)	31 (787)	10 (254)	49.7 (1263)	51.2 (1300)	25.6 (650)	17.7 (450)	1334 (605)	1449 (657)
12	33 (838)	33.1 (841)	33 (838)	12 (305)	63 (1600)	65 (1650)	27.6 (700)	19.7 (500)	1876 (851)	1969 (893)
14	35 (889)	35.1 (892)	35 (889)	13.3 (337)	66.6 (1692)	68.9 (1750)	35.4 (900)	19.7 (500)	2595 (1177)	2717 (1232)
16	39 (991)	39.1 (994)	39 (991)	15.2 (387)	72.2 (1835)	74.8 (1900)	35.4 (900)	19.7 (500)	3336 (1513)	3457 (1568)
18	43 (1092)	43.1 (1095)	43 (1092)	17.2 (438)	-	79.5 (2020)	-	23.6 (600)	-	4366 (1980)
20	47 (1194)	47.2 (1200)	47 (1194)	19.3 (489)	-	85.5 (2172)	-	23.6 (600)	-	5954 (2700)
24	55 (1397)	55.4 (1407)	55 (1397)	23.3 (591)	-	104.3 (2650)	-	23.6 (600)	-	8820 (4000)

CL. 900	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	14.5 (368)	14.6 (371)	14.5 (368)	2 (51)	18 (458)	-	11 (280)	-	154 (70)	-
2.5	16.5 (419)	16.6 (422)	16.5 (419)	2.4 (62)	21.7 (550)	-	11 (280)	-	243 (110)	-
3	15 (381)	15.1 (384)	15 (381)	2.9 (74)	24 (610)	26 (660)	11.8 (300)	11.8 (300)	309 (140)	368 (167)
4	18 (457)	18.1 (460)	18 (457)	3.9 (100)	27.6 (702)	29.5 (750)	13.8 (350)	11.8 (300)	441 (200)	501 (227)
6	24 (610)	24.1 (613)	24 (610)	5.9 (150)	38.6 (980)	41.7 (1060)	19.7 (500)	17.7 (450)	789 (358)	904 (410)
8	29 (737)	29.1 (740)	29 (737)	7.9 (201)	43.3 (1100)	44.9 (1140)	25.6 (650)	17.7 (450)	1213 (550)	1323 (600)
10	33 (838)	33.1 (841)	33 (838)	9.9 (252)	52 (1320)	53.9 (1370)	27.6 (700)	19.7 (500)	2205 (1000)	2426 (1100)
12	38 (965)	38.1 (968)	38 (965)	11.9 (303)	59.1 (1500)	61.4 (1560)	35.4 (900)	19.7 (500)	2679 (1215)	2889 (1310)
14	40.5 (1029)	40.9 (1038)	40.5 (1029)	12.7 (322)	74.8 (1900)	72.8 (1850)	35.4 (900)	23.6 (600)	3528 (1600)	3749 (1700)
16	44.5 (1130)	44.9 (1140)	44.5 (1130)	14.7 (373)	80.7 (2050)	76.8 (1950)	35.4 (900)	23.6 (600)	4741 (2150)	5138 (2330)
18	48 (1219)	48.5 (1232)	48 (1219)	16.7 (423)	-	81.9 (2080)	-	23.6 (600)	-	5954 (2700)
20	52 (1321)	52.5 (1334)	52 (1321)	18.5 (471)	-	90.6 (2300)	-	23.6 (600)	-	7828 (3550)
24	61 (1549)	61.7 (1568)	61 (1549)	22.4 (570)	-	102.4 (2600)	-	23.6 (600)	-	13451 (6100)

API 623 GLOBE VALVE

Chaoda's API 623 globe valves are optimized for refinery, petrochemical, and chemical plant use.

GLOBE VALVE

ASME Class 150, 300, 600, 900

Chaoda's in-house foundry, armed with cutting-edge technology, enables us to craft all valve castings, including exotic alloys, for both our API 623 globe valves. This advanced casting process accommodates intricate shapes, patterns, and sizes.

BASIC DESIGN	API 623
TESTING	API 598
END DIMENSION FLANGED	ASME B16.5
BUTT WELD	ASME B16.25
FACE-TO-FACE:	ASME B16.10
P/T RATINGS:	ASME B16.34



A CLOSER LOOK

1) Bolted Bonnet Design

2) Backseat Design

All cast globe valves are equipped standard with a backseat to allow for sealing in case of packing leakage.

3) Seat Design

(Not Shown) Cast carbon steel globe valves are equipped standard with a seat ring that is welded into the body. Cast stainless steel globe valves are equipped standard with an integral seat. Seat and/or disc surfaces can be hardfaced with CoCr-A or other hardfacing overlays.

4) Stem Design

Stems are integral 1-piece forged design. Stems are designed to fail outside the pressure boundary.

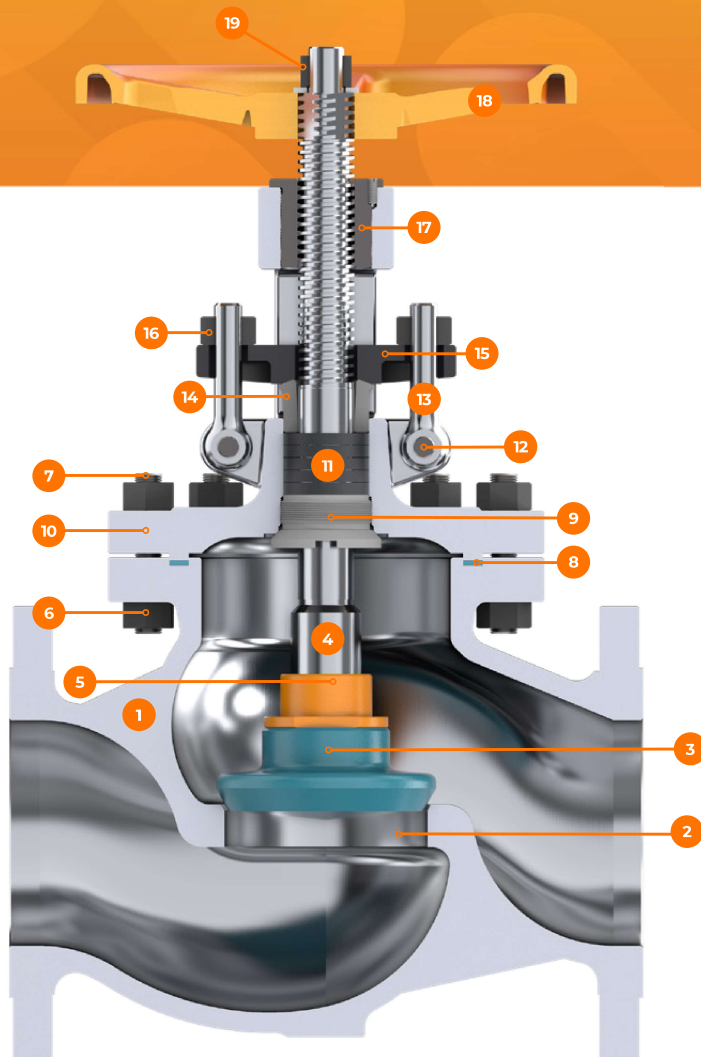
5) Operation

Globe valves are equipped standard with handwheels or gear operators depending on size and customer requirement.

API 623 GLOBE VALVE

ASME Class 150, 300, 600, 900

Standard Parts and Materials



ITEM	PART NAME	WCB API TRIM 8	LCC API TRIM 12	C5 API TRIM 5	CF8M API TRIM 12	CD3MN 1/2 HARDFACE TRIM
1	Body	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA890 GR. 4A
2	Seat Ring	ASTMA105 + HF*	ASTMA350 LF2 + HF*	ASTMA182 F5 + HF*	Integral + HF*	Integral + HF*
3	Disc	ASTMA105 + 13%Cr	ASTMA350 LF2 + 316SS	ASTMA182 F5 + HF*	ASTMA182 F316	ASTMA182 F51
4	Stem	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F51
5	Disc Nut	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F51
6	Bonnet Nut***	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
7	Bonnet Stud***	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
8	Gasket Class 150-600	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 316SS + Graphite	Spiralwound S31803 + Graphite
	Gasket Class 900	RTJ 316SS	RTJ 316SS	RTJ 316SS	RTJ 316SS	RTJ S31803
9	Backseat Bushing	ASTMA182 F6a	ASTMA182 F316	ASTMA182 F6a	Integral	Integral
10	Bonnet	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
11	Packing	Graphite				
12	Eyebolt Pin	ASTMA36				
13	Gland Eyebolt	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
14	Gland	ASTMA182 F6a	ASTMA182 F304	ASTMA182 F304	ASTMA182 F316	ASTMA182 F51
15	Gland Flange	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA351 CF8
16	Eyebolt Nut	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
17	Stem Nut	ASTMB148 C95200	ASTMB148 C95200	ASTMB148 C95200	ASTMB148 C95200	ASTMB148 C95200
18	Handwheel	CS				
19	Handwheel Nut	CS (ASTM 1035)				

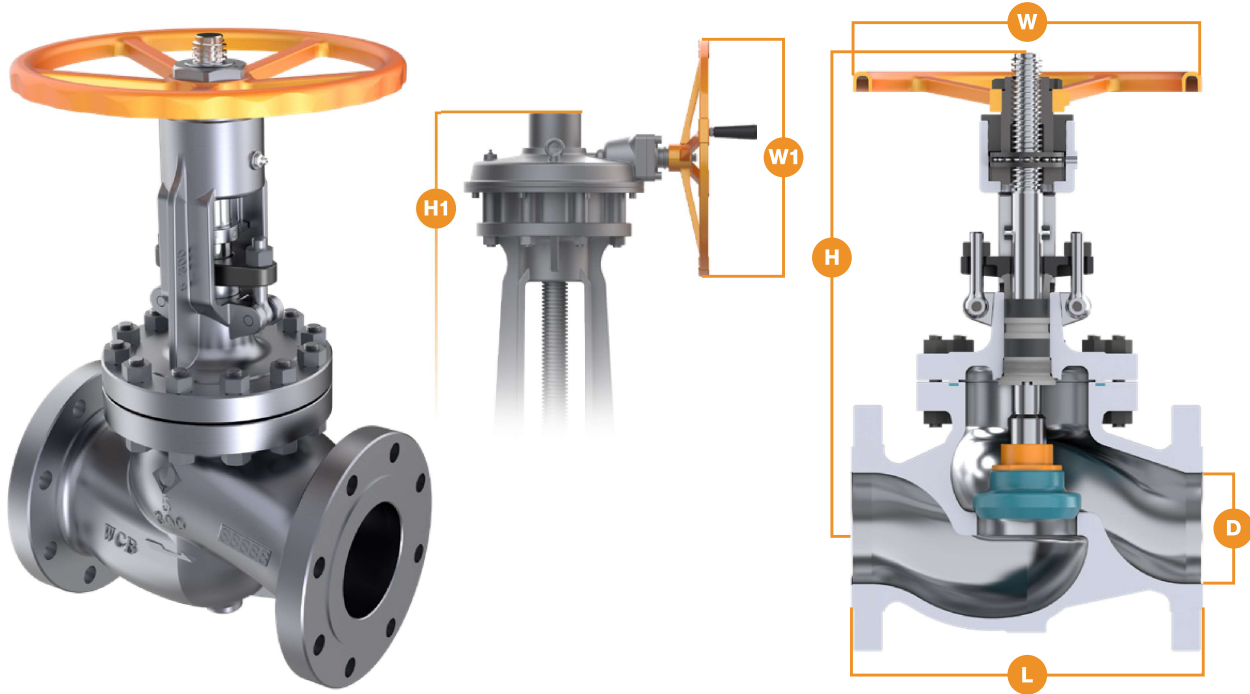
* - HF Denotes CoCr-A hardfacing applied to sealing surface (Stellite® 6 or equivalent) | ** - Seat Rings are seal-welded into valve body

*** - If NACE compliance for exposed service is required, carbon steel valves can be supplied with appropriate bolting (WCB - B7M/2HM, LCC - L7M/7M)

API 623 GLOBE VALVE

ASME Class 150, 300, 600, 900

Dimensional Information



CL. 150	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	8 (203)	8.5 (216)	8 (203)	2 (51)	13 (330)	-	7.9 (200)	-	42 (19)	-
2 1/2	8.5 (216)	9 (229)	8.5 (216)	2.5 (64)	14.2 (360)	-	9.8 (250)	-	60 (27)	-
3	9.5 (241)	10 (254)	9.5 (241)	3 (76)	15.4 (390)	-	11 (280)	-	79 (36)	-
4	11.5 (292)	12 (305)	11.5 (292)	4 (102)	17.5 (445)	-	11.8 (300)	-	117 (53)	-
6	16 (406)	16.5 (419)	16 (406)	6 (152)	20.5 (520)	21.9 (556)	13.8 (350)	11.8 (300)	207 (94)	278 (126)
8	19.5 (495)	20 (508)	19.5 (495)	8 (203)	23.6 (600)	25.9 (658)	17.7 (450)	11.8 (300)	326 (148)	397 (180)
10	24.5 (622)	25 (635)	24.5 (622)	10 (254)	30.4 (773)	31.7 (805)	17.7 (450)	17.7 (450)	534 (242)	642 (291)
12	27.5 (698)	28 (711)	27.5 (698)	11.9 (303)	-	41.6 (1056)	-	19.7 (500)	-	1058 (480)
14	31 (787)	31.5 (800)	31 (787)	13.2 (336)	-	45 (1142)	-	18.1 (460)	-	1588 (720)
16	36 (914)	36.5 (927)	36 (914)	15.2 (387)	-	48.3 (1226)	-	18.1 (460)	-	2315 (1050)
18	38.5 (978)	39 (991)	38.5 (978)	17.2 (438)	-	51.7 (1312)	-	18.1 (460)	-	3043 (1380)

CL. 600	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	11.5 (292)	11.6 (295)	11.5 (292)	2 (51)	14.3 (362)	-	9.8 (250)	-	71 (32)	-
2 1/2	13 (330)	13.1 (333)	13 (330)	2.5 (64)	16.2 (412)	-	11 (280)	-	93 (42)	-
3	14 (356)	14.1 (359)	14 (356)	3 (76)	18.4 (468)	-	15.7 (400)	-	139 (63)	-
4	17 (432)	17.1 (435)	17 (432)	4 (102)	20.9 (530)	25 (636)	17.7 (450)	17.7 (450)	236 (107)	304 (138)
6	22 (559)	22.1 (562)	22 (559)	6 (152)	30.8 (782)	29.7 (755)	23.6 (600)	17.7 (450)	639 (290)	754 (342)
8	26 (660)	26.1 (664)	26 (660)	7.9 (200)	36.1 (918)	34.6 (880)	25.6 (650)	19.7 (500)	1191 (540)	1422 (645)

CL. 300	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	10.5 (267)	11.1 (283)	10.5 (267)	2 (51)	15.2 (385)	-	7.9 (200)	-	55 (25)	-
2 1/2	11.5 (292)	12.1 (308)	11.5 (292)	2.5 (64)	16.5 (420)	-	7.9 (200)	-	93 (42)	-
3	12.5 (318)	13.1 (333)	12.5 (318)	3 (76)	17.3 (440)	-	11 (280)	-	101 (46)	-
4	14 (356)	14.6 (371)	14 (356)	4 (102)	20.3 (515)	-	13.8 (350)	-	163 (74)	-
6	17.5 (444)	18.1 (460)	17.5 (444)	6 (152)	26 (660)	27.2 (690)	15.7 (400)	12.2 (310)	364 (165)	430 (195)
8	22 (559)	22.6 (575)	22 (559)	8 (203)	35.4 (900)	37.4 (950)	21.7 (550)	18.1 (460)	606 (275)	721 (327)
10	24.5 (622)	25.1 (638)	24.5 (622)	10 (254)	37.4 (950)	39 (990)	23.6 (600)	18.1 (460)	882 (400)	997 (452)
12	28 (711)	28.6 (727)	28 (711)	12 (305)	40.6 (1030)	42.5 (1080)	27.6 (700)	18.1 (460)	1376 (624)	1599 (725)

CL. 900	DIMENSIONS INCH (MM)								WT LB (KG)	
SIZE	L			D	H	H1	W	W1	HW	GO
	RF	RTJ	BW							
2	14.5 (368)	14.6 (371)	14.5 (368)	2 (51)	21.7 (550)	-	13.8 (350)	-	121 (55)	-
2 1/2	16.5 (419)	16.6 (422)	16.5 (419)	2.5 (64)	22 (560)	-	13.8 (350)	-	150 (68)	-
3	15 (381)	15.1 (384)	15 (381)	3 (76)	22.2 (564)	21.3 (540)	15.7 (400)	11.8 (300)	209 (95)	282 (128)
4	18 (457)	18.1 (460)	18 (457)	4 (102)	27 (685)	28.3 (720)	17.7 (450)	17.7 (450)	353 (160)	463 (210)
6	24 (610)	24.1 (613)	24 (610)	6 (152)	37.4 (950)	40 (1015)	25.6 (650)	19.7 (500)	904 (410)	1058 (480)

API 594 SWING CHECK VALVE

Chaoda's API 594 swing check valves are tailored for refinery, petrochemical, and chemical plant use.

SWING CHECK VALVE

ASME Class 150, 300, 600, 900

Chaoda's advanced in-house foundry, equipped with top-tier technology, crafts all swing check valve castings, including those in exotic alloys. This process yields intricate shapes, patterns, and sizes.

BASIC DESIGN	API 594
TESTING	API 598
END DIMENSION FLANGED	ASME B16.5
BUTT WELD	ASME B16.25
FACE-TO-FACE:	ASME B16.10
P/T RATINGS:	ASME B16.34



A CLOSER LOOK

1) Bolted Bonnet Design

2) Internally-Retained Hinge Pin

All swing check valves are equipped standard with internally-retained hinge pins to eliminate a potential leak path and comply to API 594 requirements.

3) Disc Design

All swing check discs are equipped standard with an anti-rotation feature that prevents the disc from rotating more than 360 degrees.

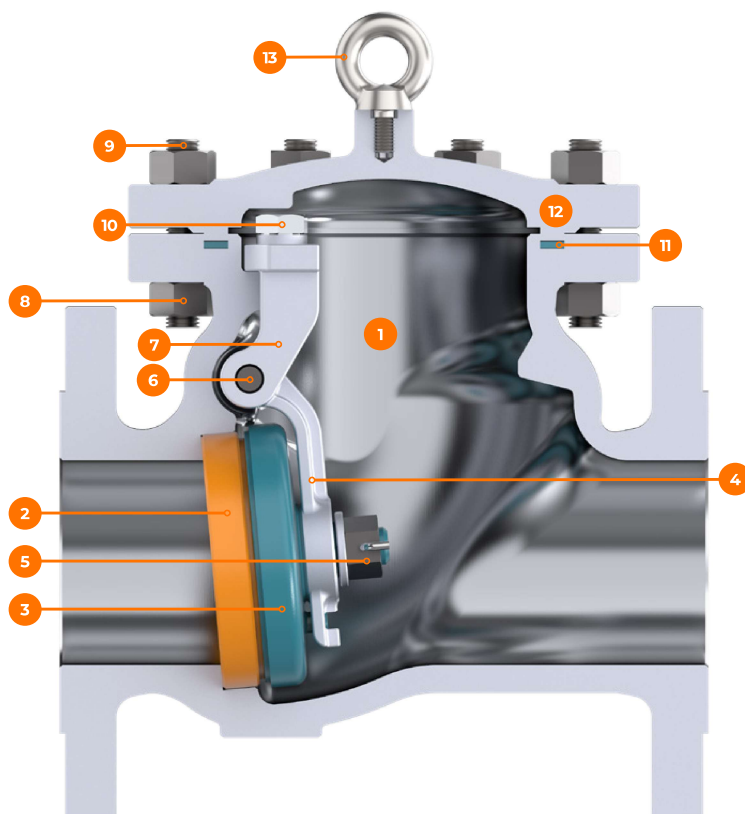
4) Seat Design

Cast carbon steel swing check valves are equipped standard with seal-welded seat ring. Cast stainless steel swing check valves are equipped standard with integral seats. Seat and/or disc surfaces can be hardfaced with CoCr-A or other hardfacing overlays.

API 594 SWING CHECK VALVE

ASME Class 150, 300, 600, 900

Standard Parts and Materials



ITEM	PART NAME	WCB API TRIM 8	LCC API TRIM 12	C5 API TRIM 5	CF8M API TRIM 12	CD3MN 1/2 HARDFACE TRIM
1	Body	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
2	Seat Ring	ASTMA105 + HF*	ASTMA350 LF2 + HF*	ASTMA182 F5 + HF*	Integral + HF*	Integral + HF*
3	Disc	ASTMA216 WCB + 13%Cr	ASTMA352 LCC + 316SS	ASTMA217 C5 + HF*	ASTMA351 CF8M	ASTMA995 CD3MN
4	Arm	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
5	Disc Nut	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
6	Hinge Pin	A276 410	A276 316	A276 410	ASTMA276 316	UNSS31803
7	Yoke	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
8	Bonnet Nut	ASTMA194 2H	ASTMA194 7	ASTMA194 4	ASTMA194 8M	ASTMA194 8M
9	Bonnet Stud	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
10	Yoke Bolt	ASTMA193 B7	ASTMA320 L7	ASTMA193 B16	ASTMA193 B8M	ASTMA193 B8M
11	Gasket Class 150-600	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 304SS + Graphite	Spiralwound 316SS + Graphite	Spiralwound S31803 + Graphite
	Gasket Class 900	RTJ316SS	RTJ316SS	RTJ316SS	RTJ316SS	RTJS31803
12	Cover	ASTMA216 WCB	ASTMA352 LCC	ASTMA217 C5	ASTMA351 CF8M	ASTMA995 CD3MN
13	Eyebolt	ASTM1025				

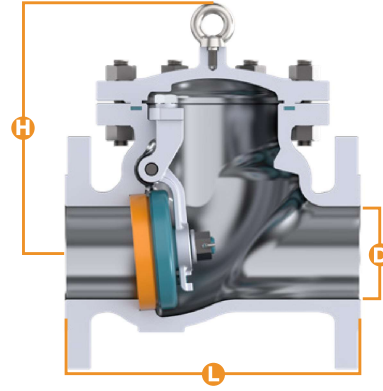
* - HF Denotes CoCr-A hardfacing applied to sealing surface (Stellite® 6 or equivalent) | ** - Seat Ring if equipped is seal-welded into valve body

*** - If NACE compliance for exposed service is required, carbon steel valves can be supplied with appropriate bolting (WCB - B7M/2HM, LCC - L7M/7M)

API 594 SWING CHECK VALVE

ASME Class 150, 300, 600, 900

Dimensional Information



CL. 150	DIMENSIONS INCH (MM)					WT
SIZE	L			D	H	LB (KG)
	RF	RTJ	BW			
2	8 (203)	8.5 (216)	8 (203)	2 (51)	5.2 (132)	33 (15)
2.5	8.5 (216)	9 (229)	8.5 (216)	2.5 (64)	5.8 (147)	44 (20)
3	9.5 (241)	10 (254)	9.5 (241)	3 (76)	6.9 (176)	60 (27)
4	11.5 (292)	12 (305)	11.5 (292)	4 (102)	7.8 (198)	99 (45)
6	14 (356)	14.5 (368)	14 (356)	6 (152)	12.6 (320)	152 (69)
8	19.5 (495)	20 (508)	19.5 (495)	8 (203)	15 (380)	289 (131)
10	24.5 (622)	25 (635)	24.5 (622)	10 (254)	17.3 (440)	483 (219)
12	27.5 (699)	28 (711)	27.5 (699)	12 (305)	18.9 (480)	708 (321)
14	31 (787)	31.5 (800)	31 (787)	13.3 (337)	20.9 (530)	838 (380)
16	34 (864)	34.5 (876)	34 (864)	15.2 (387)	22.8 (580)	1235 (560)
18	38.5 (978)	39 (991)	38.5 (978)	17.2 (438)	24.3 (618)	1389 (630)
20	38.5 (978)	39 (991)	38.5 (978)	19.3 (489)	25.9 (657)	1698 (770)
24	51 (1295)	51.5 (1308)	51 (1295)	23.3 (591)	29.9 (760)	2117 (960)

CL. 300	DIMENSIONS INCH (MM)					WT
SIZE	L			D	H	LB (KG)
	RF	RTJ	BW			
2	10.5 (267)	11.1 (283)	10.5 (267)	2 (51)	5.7 (144)	44 (20)
2.5	11.5 (292)	12.1 (308)	11.5 (292)	2.5 (64)	6.7 (169)	77 (35)
3	12.5 (318)	13.1 (333)	12.5 (318)	3 (76)	8.3 (210)	88 (40)
4	14 (356)	14.6 (371)	14 (356)	4 (102)	10.2 (260)	135 (61)
6	17.5 (445)	18.1 (460)	17.5 (445)	6 (152)	12.8 (326)	287 (130)
8	21 (533)	21.6 (549)	21 (533)	8 (203)	15 (380)	419 (190)
10	24.5 (622)	25.1 (638)	24.5 (622)	10 (254)	17.3 (440)	653 (296)
12	28 (711)	28.6 (727)	28 (711)	12 (305)	20.5 (520)	992 (450)
14	33 (838)	33.6 (854)	33 (838)	13.3 (337)	21.3 (540)	1411 (640)
16	34 (864)	34.6 (879)	34 (864)	15.2 (387)	23.1 (588)	1874 (850)
18	38.5 (978)	39.1 (994)	38.5 (978)	17.2 (438)	26.4 (670)	2271 (1030)
20	40 (1016)	40.7 (1035)	40 (1016)	19.3 (489)	28.3 (720)	2933 (1330)
24	53 (1346)	53.9 (1368)	53 (1346)	23.3 (591)	33.5 (850)	4300 (1950)

CL. 600	DIMENSIONS INCH (MM)					WT
SIZE	L			D	H	LB (KG)
	RF	RTJ	BW			
2	11.5 (292)	11.6 (295)	11.5 (292)	2 (51)	6.7 (170)	62 (28)
2 1/2	13 (330)	13.1 (333)	13 (330)	2.5 (64)	7 (178)	88 (40)
3	14 (356)	14.1 (359)	14 (356)	3 (76)	9.7 (246)	150 (68)
4	17 (432)	17.1 (435)	17 (432)	4 (102)	11.4 (290)	258 (117)
6	22 (559)	22.1 (562)	22 (559)	6 (152)	14.2 (360)	423 (192)
8	26 (660)	26.1 (664)	26 (660)	8 (203)	16.9 (430)	750 (340)
10	31 (787)	31.1 (791)	31 (787)	10 (254)	19.8 (502)	1136 (515)
12	33 (838)	33.1 (841)	33 (838)	12 (305)	21.8 (554)	1654 (750)
14	35 (889)	35.1 (892)	35 (889)	13.3 (337)	23.4 (595)	1962 (890)
16	39 (991)	39.1 (994)	39 (991)	15.2 (387)	26.8 (680)	2873 (1303)
18	43 (1092)	43.1 (1095)	43 (1092)	17.2 (438)	30.6 (778)	3969 (1800)
20	47 (1194)	47.2 (1200)	47 (1194)	19.3 (489)	38.2 (970)	4741 (2150)
24	55 (1397)	55.4 (1407)	55 (1397)	23.3 (591)	43.3 (1100)	7056 (3200)

CL. 900	DIMENSIONS INCH (MM)					WT
SIZE	L			D	H	LB (KG)
	RF	RTJ	BW			
2	14.5 (368)	14.6 (371)	14.5 (368)	2 (51)	7.9 (200)	106 (48)
2.5	16.5 (419)	16.6 (422)	16.5 (419)	2.5 (64)	8.7 (220)	165 (75)
3	18 (457)	18.1 (460)	18 (457)	3 (76)	11 (280)	209 (95)
4	24 (610)	24.1 (613)	24 (610)	4 (102)	12.6 (320)	298 (135)
6	29 (737)	29.1 (740)	29 (737)	6 (152)	15.7 (400)	582 (264)
8	33 (838)	33.1 (841)	33 (838)	8 (203)	18.9 (480)	935 (424)
10	38 (965)	38.1 (968)	38 (965)	10 (254)	22 (560)	1610 (730)
12	40.5 (1029)	40.9 (1038)	40.5 (1029)	12 (305)	24.9 (632)	2359 (1070)
14	44.5 (1130)	44.9 (1140)	44.5 (1130)	12.7 (322)	26.8 (680)	2602 (1180)
16	48 (1219)	48.5 (1232)	48 (1219)	14.7 (373)	30.7 (780)	3947 (1790)
18	52 (1321)	52.5 (1334)	52 (1321)	16.7 (423)	34.6 (880)	5513 (2500)
20	61 (1549)	61.7 (1568)	61 (1549)	18.5 (471)	41.3 (1050)	6791 (3080)
24	61 (1549)	61.7 (1568)	61 (1549)	20.6 (522)	47.2 (1200)	10143 (4600)

Note: All information contained in this catalog is subject to change without notice.

PRESSURE – TEMPERATURE RATINGS

ASME B16.34 Valves

The following pressure-temperature ratings are based on ASME B16.34 (2020 Edition). The temperatures shown are that of the pressure-containing shell, which is considered to be the same temperature as that of the fluid flowing within it.

Special consideration should be given to items such as trim, bonnet gasket material, and packing to assure that the rating is merited in all respects.

MAXIMUM ALLOWABLE NON-SHOCK PRESSURE (PSIG)								
SERVICE TEMP °F	PRESSURE CLASS	A216 GR. WCB GROUP 1.1 (A)	A352 GR. LCC GROUP 1.2 (B)	A217 GR. WC6 GROUP 1.9 (C), (D), (E)	A217 GR. C5 GROUP 1.13 (C), (E)	A217 GR. C12 GROUP 1.14 (C), (E)	A351 GR. CF8M GROUP 2.2 (G)	A995 GR. CD3MN GROUP 2.8 (H)
-20 to 100	150	285	290	290	290	290	275	290
	300	740	750	750	750	750	720	750
	600	1,480	1,500	1,500	1,500	1,500	1,440	1,500
	900	2,220	2,250	2,250	2,250	2,250	2,160	2,250
200	150	260	260	260	260	260	235	260
	300	680	750	750	750	750	620	745
	600	1,360	1,500	1,500	1,500	1,500	1,240	1,490
	900	2,035	2,250	2,250	2,250	2,250	1,860	2,230
300	150	230	230	230	230	230	215	230
	300	655	730	720	730	730	560	665
	600	1,310	1,455	1,445	1,455	1,455	1,120	1,335
	900	1,965	2,185	2,165	2,185	2,185	1,680	2,000
400	150	200	200	200	200	200	195	200
	300	635	705	695	705	705	515	615
	600	1,265	1,405	1,385	1,410	1,410	1,025	1,230
	900	1,900	2,110	2,080	2,115	2,115	1,540	1,845
500	150	170	170	170	170	170	170	170
	300	605	665	665	665	665	480	580
	600	1,205	1,330	1,330	1,330	1,330	955	1,160
	900	1,810	1,995	1,995	1,995	1,995	1,435	1,740
600	150	140	140	140	140	140	140	140
	300	570	605	605	605	605	450	555
	600	1,135	1,210	1,210	1,210	1,210	900	1,115
	900	1,705	1,815	1,815	1,815	1,815	1,355	1,670
650	150	125	125	125	125	125	125	-
	300	550	590	590	590	590	440	-
	600	1,100	1,175	1,175	1,175	1,175	885	-
	900	1,650	1,765	1,765	1,765	1,765	1,325	-
700	150	110	-	110	110	110	110	-
	300	530	-	570	570	570	435	-
	600	1,060	-	1,135	1,135	1,135	870	-
	900	1,590	-	1,705	1,705	1,705	1,305	-
750	150	95	-	95	95	95	95	-
	300	505	-	530	530	530	425	-
	600	1,015	-	1,065	1,065	1,065	855	-
	900	1,520	-	1,595	1,595	1,595	1,280	-
800	150	80	-	80	80	80	80	-
	300	410	-	510	510	510	420	-
	600	825	-	1,015	1,015	1,015	845	-
	900	1,235	-	1,525	1,525	1,525	1,265	-
850	150	65	-	65	65	65	65	-
	300	320	-	485	485	485	420	-
	600	640	-	975	975	975	835	-
	900	955	-	1,460	1,460	1,460	1,255	-
900	150	50	-	50	50	50	50	-
	300	230	-	450	375	450	415	-
	600	460	-	900	745	900	830	-
	900	690	-	1,350	1,120	1,350	1,245	-

MAXIMUM ALLOWABLE NON-SHOCK PRESSURE (PSIG)								
SERVICE TEMP °F	PRESSURE CLASS	A216 GR. WCB GROUP 1.1 (A)	A352 GR. LCC GROUP 1.2 (B)	A217 GR. WC6 GROUP 1.9 (C), (D), (E)	A217 GR. C5 GROUP 1.13 (C), (E)	A217 GR. C12 GROUP 1.14 (C), (E)	A351 GR. CF8M GROUP 2.2 (G)	A995 GR. CD3MN GROUP 2.8 (H)
950	150	35	-	35	35	35	35	-
	300	135	-	320	275	375	385	-
	600	275	-	640	550	755	775	-
	900	410	-	955	825	1,130	1,160	-
1000	150	20	-	20	20	20	20	-
	300	85	-	215	200	255	365	-
	600	170	-	430	400	505	725	-
	900	255	-	650	595	760	1,090	-
1050	150	-	-	20 (f)	20 (f)	20 (f)	20	-
	300	-	-	145	145	170	360	-
	600	-	-	290	290	345	720	-
	900	-	-	430	430	515	1,080	-
1100	150	-	-	20 (f)	20 (f)	20 (f)	20 (f)	-
	300	-	-	95	100	115	305	-
	600	-	-	190	200	225	610	-
	900	-	-	290	300	340	915	-
1150	150	-	-	-	20 (f)	20 (f)	20 (f)	-
	300	-	-	-	60	75	235	-
	600	-	-	-	125	150	475	-
	900	-	-	-	185	225	710	-
1200	150	-	-	-	15 (f)	20 (f)	20 (f)	-
	300	-	-	-	35	50	185	-
	600	-	-	-	70	105	370	-
	900	-	-	-	105	155	555	-
1250	150	-	-	-	-	-	20 (f)	-
	300	-	-	-	-	-	145	-
	600	-	-	-	-	-	295	-
	900	-	-	-	-	-	440	-
1300	150	-	-	-	-	-	20 (f)	-
	300	-	-	-	-	-	115	-
	600	-	-	-	-	-	235	-
	900	-	-	-	-	-	350	-
1350	150	-	-	-	-	-	20 (f)	-
	300	-	-	-	-	-	95	-
	600	-	-	-	-	-	190	-
	900	-	-	-	-	-	290	-
1400	150	-	-	-	-	-	20 (f)	-
	300	-	-	-	-	-	75	-
	600	-	-	-	-	-	150	-
	900	-	-	-	-	-	225	-
1450	150	-	-	-	-	-	20 (f)	-
	300	-	-	-	-	-	60	-
	600	-	-	-	-	-	115	-
	900	-	-	-	-	-	175	-
1500	150	-	-	-	-	-	15 (f)	-
	300	-	-	-	-	-	40	-
	600	-	-	-	-	-	85	-
	900	-	-	-	-	-	125	-

ADDITIONAL NOTES FOR P/T CHARTS

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

(b) Not to be used over 650°F

(c) Use normalized and tempered material only.

(d) Not to be used over 1,100°F.

(e) The deliberate addition of any element not listed in ASTM A217, Table 1 is prohibited, except that calcium (Ca) and manganese (Mn) may be added for deoxidation.

(f) Flanged-end valve ratings terminate at 1,000°F.

(g) At temperatures above 1,000°F, use only when the carbon content is 0.04% or higher.

(h) This steel may become brittle after service at moderately elevated temperatures. Not to be used over 600°F.

PRESSURE – TEMPERATURE RATINGS

ASME B16.34 Valves

MAXIMUM ALLOWABLE NON-SHOCK PRESSURE (BAR)								
SERVICE TEMP °C	PRESSURE CLASS	A216 GR. WCB GROUP 1.1 (A)	A352 GR. LCC GROUP 1.2 (B)	A217 GR. WC6 GROUP 1.9 (C), (D), (E)	A217 GR. C5 GROUP 1.13 (C), (E)	A217 GR. C12 GROUP 1.14 (C), (E)	A351 GR. CF8M GROUP 2.2 (G)	A995 GR. CD3MN GROUP 2.8 (H)
-29 to 38	150	19.6	19.8	19.8	20	20	19	20
	300	51.1	51.7	51.7	51.7	51.7	49.6	51.7
	600	102.1	103.4	103.4	103.4	103.4	99.3	103.4
	900	153.2	155.1	155.1	155.1	155.1	148.9	155.1
50	150	19.2	19.5	19.5	19.5	19.5	18.4	19.5
	300	50.1	51.7	51.7	51.7	51.7	48.1	51.7
	600	100.2	103.4	103.4	103.4	103.4	96.2	103.4
	900	150.4	155.11	155.1	155.1	155.1	144.3	155.1
100	150	17.7	17.7	17.7	17.7	17.7	16.2	17.7
	300	46.6	51.5	51.5	51.5	51.5	42.2	50.7
	600	93.2	103	103	103	103	84.4	101.3
	900	139.8	154.6	154.4	154.6	154.6	126.6	152
150	150	15.8	15.8	15.8	15.8	15.8	14.8	15.8
	300	45.1	50.2	49.7	50.3	50.3	38.5	45.9
	600	90.2	100.3	99.5	100.3	100.3	77	91.9
	900	135.2	150.5	149.2	150.6	150.6	115.5	137.8
200	150	13.8	13.8	13.8	13.8	13.8	13.7	13.8
	300	43.8	48.6	48	48.6	48.6	35.7	42.7
	600	87.6	97.2	95.9	97.2	97.2	71.3	85.3
	900	131.4	145.8	143.9	145.8	145.8	107	128
250	150	12.1	12.1	12.1	12.1	12.1	12.1	12.1
	300	41.9	46.3	46.3	46.3	46.3	33.4	40.5
	600	83.9	92.7	92.7	92.7	92.7	66.8	80.9
	900	125.8	139	139	139	139	100.1	121.4
300	150	10.2	10.2	10.2	10.2	10.2	10.2	10.2
	300	39.8	42.9	42.9	42.9	42.9	31.6	38.9
	600	79.6	85.7	85.7	85.7	85.7	63.2	77.7
	900	119.5	128.6	128.6	128.6	128.6	94.9	116.6
325	150	9.3	9.3	9.3	9.3	9.3	9.3	9.3
	300	38.7	41.4	41.4	41.4	41.4	30.9	38.2
	600	77.4	82.6	82.6	82.6	82.6	61.8	76.3
	900	116.1	124	124	124	124	92.7	114.5
350	150	8.4	8.4	8.4	8.4	8.4	8.4	8.4
	300	37.6	40	40.3	40.3	40.3	30.3	37.6
	600	75.1	80	80.4	80.4	80.4	60.7	75.3
	900	112.7	120.1	120.7	120.7	120.7	91	112.9
375	150	7.4	7.4	7.4	7.4	7.4	7.4	7.4
	300	36.4	37.8	38.9	38.9	38.9	29.9	37.4
	600	72.7	75.7	77.6	77.6	77.6	59.8	74.7
	900	109.1	113.5	116.5	116.5	116.5	89.6	112.1
400	150	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	300	34.7	34.7	36.5	36.5	36.5	29.4	36.5
	600	69.4	69.4	73.3	73.3	73.3	58.9	73.3
	900	104.2	104.2	109.8	109.8	109.8	88.3	109.8
425	150	5.5	5.5	5.5	5.5	5.5	5.5	-
	300	28.8	28.8	35.2	35.2	35.2	29.1	-
	600	57.5	57.5	70	70	70	58.3	-
	900	86.3	86.3	105.1	105.1	105.1	87.4	-
450	150	4.6	4.6	4.6	4.6	4.6	4.6	-
	300	23	23	33.7	33.7	33.7	28.8	-
	600	46	46	67.7	67.7	67.7	57.7	-
	900	69	69	101.4	101.4	101.4	86.5	-
475	150	3.7	3.7	3.7	3.7	3.7	3.7	-
	300	17.4	17.1	31.7	27.9	31.7	28.7	-
	600	34.9	34.2	63.4	55.7	63.4	57.3	-
	900	52.3	51.3	95.1	83.6	95.1	86	-

MAXIMUM ALLOWABLE NON-SHOCK PRESSURE (BAR)								
SERVICE TEMP °C	PRESSURE CLASS	A216 GR. WCB GROUP 1.1 (A)	A352 GR. LCC GROUP 1.2 (B)	A217 GR. WC6 GROUP 1.9 (C), (D), (E)	A217 GR. C5 GROUP 1.13 (C), (E)	A217 GR. C12 GROUP 1.14 (C), (E)	A351 GR. CF8M GROUP 2.2 (G)	A995 GR. CD3MN GROUP 2.8 (H)
500	150	2.8	2.8	2.8	2.8	2.8	2.8	-
	300	11.8	11.6	25.7	21.4	28.2	28.2	-
	600	23.5	23.2	51.5	42.8	56.5	56.5	-
	900	35.3	34.7	77.2	64.1	84.7	84.7	-
538	150	1.4	1.4	1.4	1.4	1.4	1.4	-
	300	5.9	5.9	14.9	13.7	17.5	25.2	-
	600	11.8	11.8	29.8	27.4	35	50	-
	900	17.7	17.7	44.7	41.1	52.5	75.2	-
550	150	-	-	1.4 (f)	1.4 (f)	1.4 (f)	1.4 (f)	-
	300	-	-	12.7	12	15	25	-
	600	-	-	25.4	24.1	30	49.8	-
	900	-	-	38.1	36.1	45	74.8	-
575	150	-	-	1.4 (f)	1.4 (f)	1.4 (f)	1.4 (f)	-
	300	-	-	8.8	8.9	10.5	24	-
	600	-	-	17.6	17.8	20.9	47.9	-
	900	-	-	26.4	26.7	31.4	71.8	-
600	150	-	-	1.4 (f)	1.4 (f)	1.4 (f)	1.4 (f)	-
	300	-	-	6.1	6.2	7.2	19.9	-
	600	-	-	12.2	12.5	14.4	39.8	-
	900	-	-	18.3	18.7	21.5	59.7	-
625	150	-	-	1.4 (f)	1.4 (f)	1.4 (f)	1.4 (f)	-
	300	-	-	4.3	4	5	15.8	-
	600	-	-	8.5	8	9.9	31.6	-
	900	-	-	12.8	12	14.9	47.4	-
650	150	-	-	1.1 (f)	0.9 (f)	1.4 (f)	1.4 (f)	-
	300	-	-	2.8	2.4	3.5	12.7	-
	600	-	-	5.7	4.7	7.1	25.3	-
	900	-	-	8.5	7.1	10.6	38	-
675	150	-	-	-	-	-	1.4 (f)	-
	300	-	-	-	-	-	10.3	-
	600	-	-	-	-	-	20.6	-
	900	-	-	-	-	-	31	-
700	150	-	-	-	-	-	1.4 (f)	-
	300	-	-	-	-	-	8.4	-
	600	-	-	-	-	-	16.8	-
	900	-	-	-	-	-	25.1	-
725	150	-	-	-	-	-	1.4 (f)	-
	300	-	-	-	-	-	7	-
	600	-	-	-	-	-	14	-
	900	-	-	-	-	-	21	-
750	150	-	-	-	-	-	1.4 (f)	-
	300	-	-	-	-	-	5.9	-
	600	-	-	-	-	-	11.7	-
	900	-	-	-	-	-	17.6	-
775	150	-	-	-	-	-	1.4 (f)	-
	300	-	-	-	-	-	4.6	-
	600	-	-	-	-	-	9	-
	900	-	-	-	-	-	13.7	-
800	150	-	-	-	-	-	1.2 (f)	-
	300	-	-	-	-	-	3.5	-
	600	-	-	-	-	-	7	-
	900	-	-	-	-	-	10.5	-
816	150	-	-	-	-	-	1 (f)	-
	300	-	-	-	-	-	2.8	-
	600	-	-	-	-	-	5.9	-
	900	-	-	-	-	-	8.6	-

ADDITIONAL NOTES FOR P/T CHARTS

- (a) Upon prolonged exposure to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800°F.
 (b) Not to be used over 650°F
 (c) Use normalized and tempered material only.
 (d) Not to be used over 1,100°F.

- (e) The deliberate addition of any element not listed in ASTM A217, Table 1 is prohibited, except that calcium (Ca) and manganese (Mn) may be added for deoxidation.
 (f) Flanged-end valve ratings terminate at 1,000°F.
 (g) At temperatures above 1,000°F, use only when the carbon content is 0.04% or higher.
 (h) This steel may become brittle after service at moderately elevated temperatures. Not to be used over 600°F.

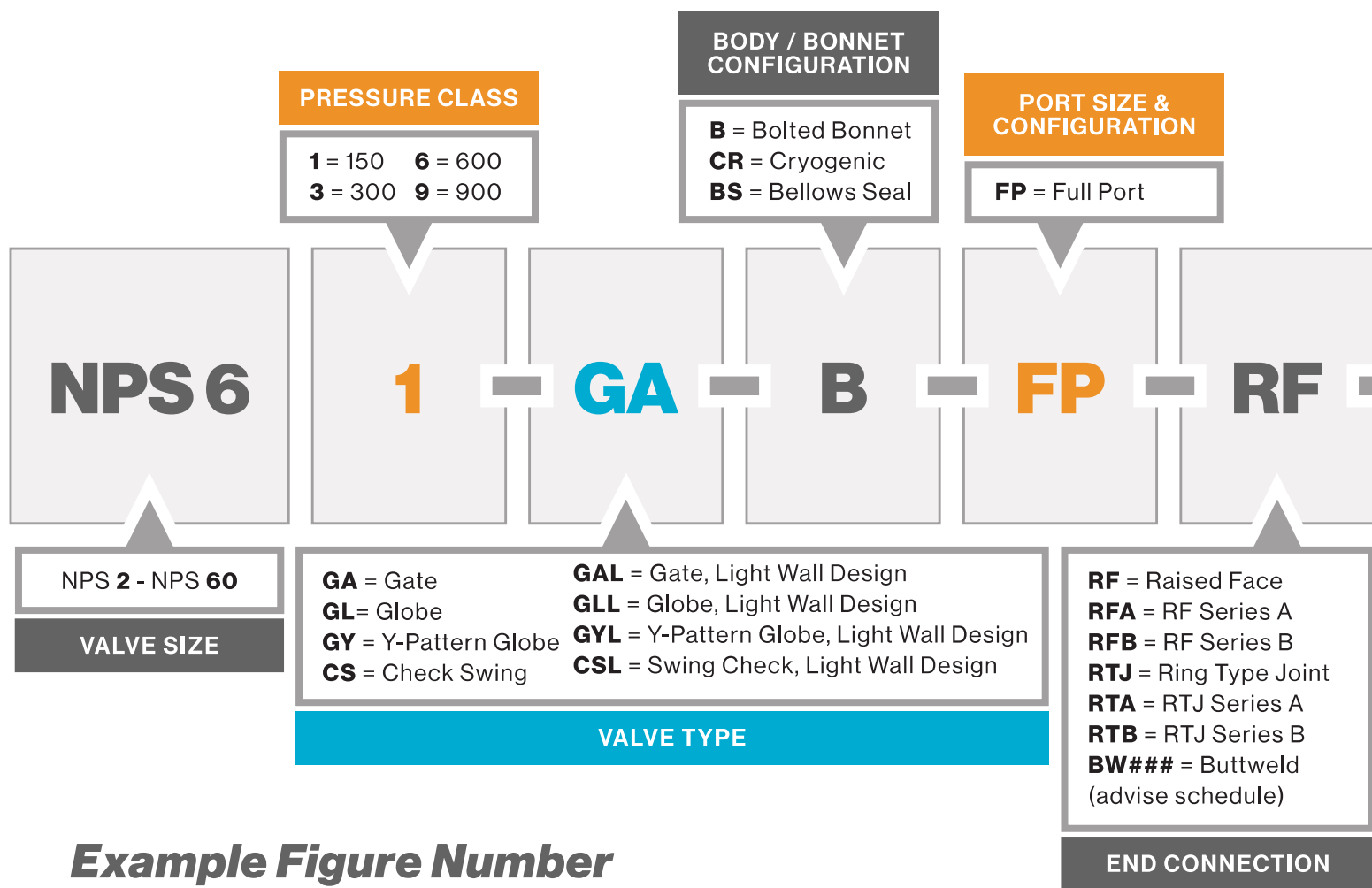
API 600 TRIM CHART

For Reference

API TRIM NUMBER	NOMINAL TRIM	WEDGE / DISC SURFACE	SEATING SURFACE	STEM/BACKSEAT
3	F310	310SS	310SS	310SS
4	Hard F6	13%Cr	13%Cr	410SS
5	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	410SS
5A	Hardfaced	HF (NiCr)	HF (NiCr)	410SS
6	F6 and Cu-Ni	13%Cr	Cu-Ni	410SS
7	F6 and Hard F6	13%Cr	Hard 13%Cr	410SS
8	F6 and Hardfaced	13%Cr	HF (CoCr-A)	410SS
8A	F6 and Hardfaced	13%Cr	HF (NiCr)	410SS
9	Monel®	Monel®	Monel®	Monel®
10	316	316SS	316SS	316SS
11	Monel® and Hardfaced	Monel®	HF (CoCr-A)	Monel®
12	316 and Hardfaced	316SS	HF (CoCr-A)	316SS
13	Alloy 20	Alloy 20	Alloy 20	Alloy 20
14	Alloy 20 and Hardfaced	Alloy 20	HF (CoCr-A)	Alloy 20
15	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	304SS
16	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	316SS
17	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	347SS
18	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	Alloy 20
19	Nickel	Ni Alloy	Ni Alloy	Ni Alloy
19A	Alloy 625	Inconel® 625	Inconel® 625	Inconel® 625
19B	Alloy C276	Hastelloy® C276	Hastelloy® C276	Hastelloy® C276
19C	Alloy 825	Incoloy® 825	Incoloy® 825	Incoloy® 825
20	Nickel and Hardfaced	Ni Alloy	HF (CoCr-A)	Ni Alloy
20A	Alloy 625 and Hardfaced	Inconel® 625	HF (CoCr-A)	Inconel® 625
20B	Alloy C276 and Hardfaced	Hastelloy® C276	HF (CoCr-A)	Hastelloy® C276
20C	Alloy 825 and Hardfaced	Incoloy® 825	HF (CoCr-A)	Incoloy® 825
21	Hardfaced	HF (CoCr-A)	HF (CoCr-A)	Ni Alloy

VALVE FIGURE NUMBER SYSTEM

How-To-Order Guide



Example Figure Number

NPS 6 1-GA-B-FP-RF-WCB-5-G-N-H

Example: NPS 6, Class 150, Gate Valve, Bolted Bonnet, Full Port, Raised Face, WCB Body, API Trim 5, NACE Compliant, Graphite Packing, Handwheel Operated

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

*API Trims are as listed in API Standard 600, 13th Edition.

** For all Buttweld End Valves: Customer to advise pipe schedule at time of PO.

*** For all Valves with Flanged Ends larger than NPS 24: Customer to advise flange series (A or B) at time of PO.

TRIM MATERIAL*

00 = Trim material same nominal chemistry as body material

HF = Trim base materials same nominal chemistry as body material, hardfacing on one seating surface

FHF = Trim base materials same nominal chemistry as body materials, hardfacing on both seating surfaces

40 = API Trim 1 / 410SS Trim

T2 = API Trim 2

3 = API Trim 3

4 = API Trim 4

5 = API Trim 5

5A = API Trim 5A

6 = API Trim 6

7 = API Trim 7

8 = API Trim 8

8A = API Trim 8A

9 = API Trim 9

10 = API Trim 10

11 = API Trim 11

12 = API Trim 12

13 = API Trim 13

14 = API Trim 14

15 = API Trim 15

16 = API Trim 16

17 = API Trim 17

18 = API Trim 18

19 = API Trim 19

19A = API Trim 19A

19B = API Trim 19B

19C = API Trim 19C

20 = API Trim 20

20A = API Trim 20A

20B = API Trim 20B

20C = API Trim 20C

21 = API Trim 21

X = Special Trim

NACE

N = NACE Compliant

***** = Omit If Not Required

WCB

5

G

N

H

WCB = A216 Gr. WCB

WCC = A216 Gr. WCC

LCB = A352 Gr. LCB

LCC = A352 Gr. LCC

WC6 = A217 Gr. WC6

WC9 = A217 Gr. WC9

C5 = A217 Gr. C5

C12 = A217 Gr. C12

C12A = A217 Gr. C12A

CF8 = A351 Gr. CF8

CF3 = A351 Gr. CF3

CF10 = A351 Gr. CF10

CF10M = A351 Gr. CF10M

CG8M = A351 Gr. CG8M

CG3M = A351 Gr. CG3M

CF8C = A351 Gr. CF8C

CK3MCUN = A351 Gr. CK3MCuN

CD4MCUN = A995 Gr. CD4MCuN - 1B

CE8MN = A995 Gr. CE8MN - 2A

CD3MN = A995 Gr. CD3MN - 4A

CE3MN = A995 Gr. CE3MN - 5A

CD3MWCUN = A995 Gr. CD3MWCuN - 6A

CN7M = A351 Gr. CN7M - Alloy 20

CN3MCU = A990 Gr. CM3MCu - Modified Alloy 20

CZ100 = A494 Gr. CZ100 - Nickel 200

M351 = A494 Gr. M35-1 - Monel

CY40 = A494 Gr. CY40 Cl. 1 - Inconel 600

CT15C = A351 Gr. CT15C Cl. 1 - Incoloy 800

CW6MC = A494 Gr. CW6MC - Inconel 625

CU5MCUC = A494 Gr. CU5MCuC - Incoloy 825

N12MV = A494 Gr. N-12MV - Hastelloy B

CW12MW = A494 Gr. CW-12MW - Hastelloy C-276

G = Graphite Packing & Gasket

P = PTFE Packing & Gasket

PACKING & GASKET

H = Handwheel Operator

G = Gear Operator

BS = Bare Stem

A = Actuated

***** = Omit If Not Required

OPERATOR

BODY MATERIAL

Stellite® is a registered trademark of Kennametal Inc.

Monel® is a registered trademark of Special Metals Corp.

Hastelloy® is a registered trademark of Haynes International, Inc.

Inconel® and **Incoloy®** are registered trademarks of Huntington Alloys Corp.



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