



## Cast Steel Bolted Bonnet Valves

### Gate valves

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#### Design

HFSH cast steel gate valve has been designed to conform to API600,BS1414, and ASME B16.34.

Wall thickness dimensions comply with API 600.

Face to face, end to end, and center to face dimensions of flanged and butt welded valves are in accordance with ASME B16.10 BS 2080, and ISO 5752.

End flange dimension conform to ASME B16.5 for sizes NPS 24 and smaller, ASME B16.47 series A for sizes NPS 26 and larger.

BW end dimension conform to ASME B16.25.

Inspection and test are in accordance with API 598 and BS EN 12266.

#### Body and Bonnet

Castings are precisely machined.

The gasket contacting surface is smooth finish that has a roughness between Ra 3.2 and 6.3 micrometer (125-250microinch).

The surface roughness of gasket grooves of ring joint faces do not exceed 63 micro inch.

Body seat construction of HFSH cast steel valves has three types: threaded seat ring, welded seat ring and integral seat ring.

Provided with bosses for optional by-passes or drains.

#### Stem

Non-rotating stem with precision Acme threads and burnished finish. Double Acme for faster operation.

All wedge gate valves are provided with upset forged T-head stems.

16 to 32 RMS stem surface finish, straightness and roundness are precisely controlled according to HFSH design and Manufacturing standards.

#### Stuffing Box

Maximum 125 RMS surface finish. Cylindricity and verticality are precisely controlled according to HFSH design and manufacturing Standards.

Optional lantern rings and grease injectors are available.

#### Gland and Packing

Gland has a two-piece construction for easy alignment.

Middle rings die-formed 100% laminated flexible graphite rings, top and bottom rings lattice braided graphite fiber with corrosion inhibitor.

#### Bonnet Gasket

Class 150: Jacketed graphite with stainless steel.

Class 300 Class 600 :Jacketed graphite with stainless steel or Spiral wound graphite with stainless steel.

Class 900 and over: Ring joint metal gasket.

#### Bonnet Bolting

Coarse thread series for bolt sizes 1 inch and smaller,8-thread series for bolt sizes 1 1/8 inch and larger, both conform to Class 2A/2B tolerances.

#### Operators

Gate valves normally are to be supplied to complete with the suitable hand wheel.

An available with gear, electric motor actuators, or cylinder actuators for remote operation. “ ”

All valve with hand-wheels operator, including those on gear operators, be marked open or close with an arrow indicating the direction of rotation.

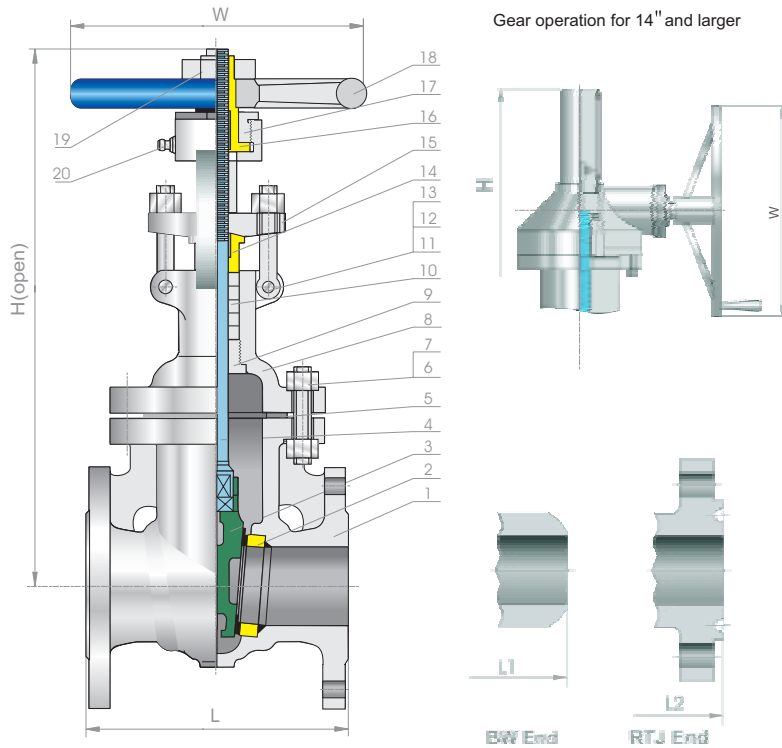
Under maximum differential pressure, maximum allowable Rim Pull is 350N.



# Cast Steel Bolted Bonnet Gate Valves

**Class 150**

*Bolted bonnet , Outside screw and yoke,Rising stem, Non-rising handwheel , Flexible wedge.*



### Parts List

No:	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat ring	ASTM A105+STL No.6
3	Wedge	ASTM A216 WCB+13Cr
4	Stem	ASTM A182 F6a
5	Gasket	304S.S. Jacketed Graphite
6	Bonnet bolt	ASTM A193 Gr.B7
7	Bonnet nut	ASTM A194 Gr.2H
8	Bonnet	ASTM A216 Gr.WCB
9	Back seat	ASTM A276 410
10	Packing	Graphite
11	Pin	C.S.
12	Gland bolt	ASTM A193 Gr.B7
13	Gland nut	ASTM A194 Gr.2H
14	Gland	ASTM A276 410
15	Gland flange	ASTM A216 Gr.WCB
16	Stem nut	Aluminum Bronze
17	Retaining nut	C.S.
18	Handwheel	Malleable Iron
19	H.W. lock nut	C.S.
20	Lubricator	Assem.

### Features

- Face to face and end to end dimension: 36"and smaller to ASME B16.10  
40"and larger to manufacturer's standard
- Flange dimension: 24"and smaller to ASME B16.5  
28"and larger to ASME B16.47 series A
- Shell wall thickness: 24"and smaller to API 600  
28"and larger to manufacturer's standard
- B.W. end to ASME B16.25
- 8"and smaller valves have a one-piece bonnet and yoke design  
10"and larger valves have a two-piece bonnet and yoke design.

### Dimensions and Weights

Valve Size	in.	11/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	28	30	32	36	40	42	48
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000	1050	1200
L (RF)	in.	6.5	7	7.5	8	9	10	10.5	11.5	13	14	15	16	17	18	20	24	24	26	28	30	31	34
	mm	165	178	190	203	229	254	267	292	330	356	381	406	432	457	508	610	610	660	711	762	787	864
L1 (BW)	in.	6.5	8.5	9.5	11.13	12	15	15.88	16.5	18	19.75	22.5	24	26	28	32	36	36	38	40	42	43	46
	mm	165	216	241	283	305	381	403	419	457	502	572	610	660	711	813	914	914	965	1016	1067	1092	1168
L2 (RTJ)	in.	7.0	7.5	8	8.5	9.5	10.5	11	12	13.5	14.5	15.5	16.5	17.5	18.5	20.5	24.5	24.5	26.5	28.5	-	-	-
	mm	178	191	203	216	242	267	279	305	343	368	394	419	445	470	521	622	622	673	724	-	-	-
H (open)	in.	15.7	16.13	18.56	20.94	24.13	27.94	31.75	39	46.69	55.31	63.56	71.31	78.19	87	106.25	119.31	130.56	137.25	150.56	183.86	193.75	217.5
	mm	392	409	472	532	612	710	806	990	1186	1405	1615	1811	1986	2210	2698	3030	3317	3487	3825	4670	4920	5525
W	in.	7.86	7.86	7.86	9.86	9.86	11.81	11.81	13.75	17.69	19.69	18.13	18.13	18.13	24	24	24	24	24	30	30	30	30
	mm	200	200	200	250	250	300	300	350	450	500	460	460	460	610	610	610	610	610	760	760	760	760
WT (kg)	RF	18.5	20	30	36	53	71	85	136	220	323	387	553	660	810	1250	1931	2380	2490	3600	4815	5300	7110
	BW	15.5	17	26	29	46	66	77	116	202	294	350	506	575	720	1130	1765	2028	2280	3080	4840	5275	7050



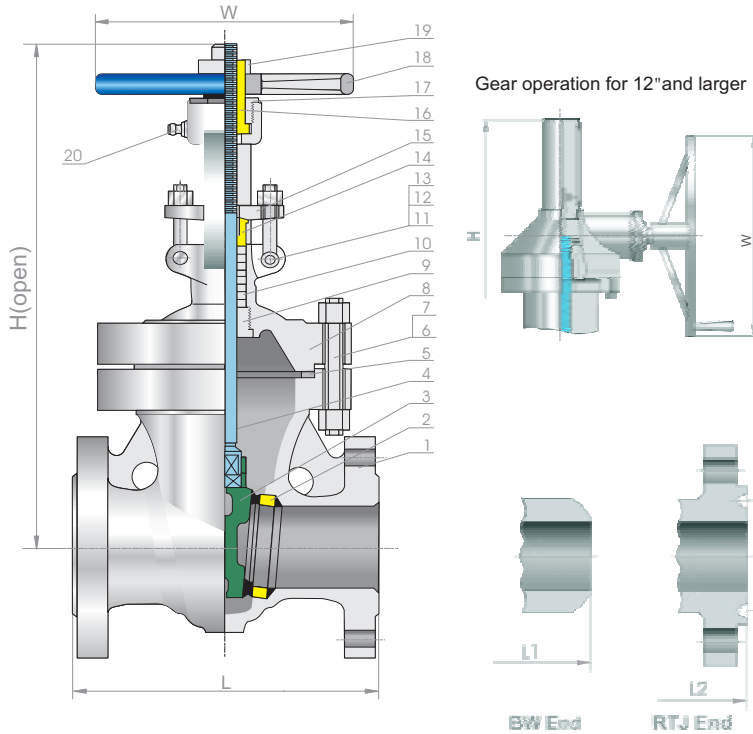
# Cast Steel Bolted Bonnet Gate Valves

**Class 300**

*Bolted bonnet, Outside screw and yoke, Rising stem, Non-rising handwheel, Flexible wedge.*

### Parts List

No:	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat ring	ASTM A105+STL No.6
3	Wedge	ASTM A216 WCB+13Cr
4	Stem	ASTM A182 F6a
5	Gasket	304S.S. Jacketed Graphite
6	Bonnet bolt	ASTM A193 Gr.B7
7	Bonnet nut	ASTM A194 Gr.2H
8	Bonnet	ASTM A216 Gr.WCB
9	Back seat	ASTM A276 410
10	Packing	Graphite
11	Pin	C.S.
12	Gland bolt	ASTM A193 Gr.B7
13	Gland nut	ASTM A194 Gr.2H
14	Gland	ASTM A276 410
15	Gland flange	ASTM A216 Gr.WCB
16	Stem nut	Aluminum Bronze
17	Retaining nut	C.S.
18	Handwheel	Malleable Iron
19	H.W. lock nut	C.S.
20	Lubricator	Assem.



### Features

- Face to face and end to end dimension: 36"and smaller to ASME B16.10, 40"and larger to manufacturer's standard
- Flange dimension: 24"and smaller to ASME B16.5, 28"and larger to ASME B16.47 series A
- Shell wall thickness: 24"and smaller to API 600, 28"and larger to manufacturer's standard
- B.W. end to ASME B16.25
- 8"and smaller valves have a one-piece bonnet and yoke design, 10"and larger valves have a two-piece bonnet and yoke design.

### Dimensions and Weights

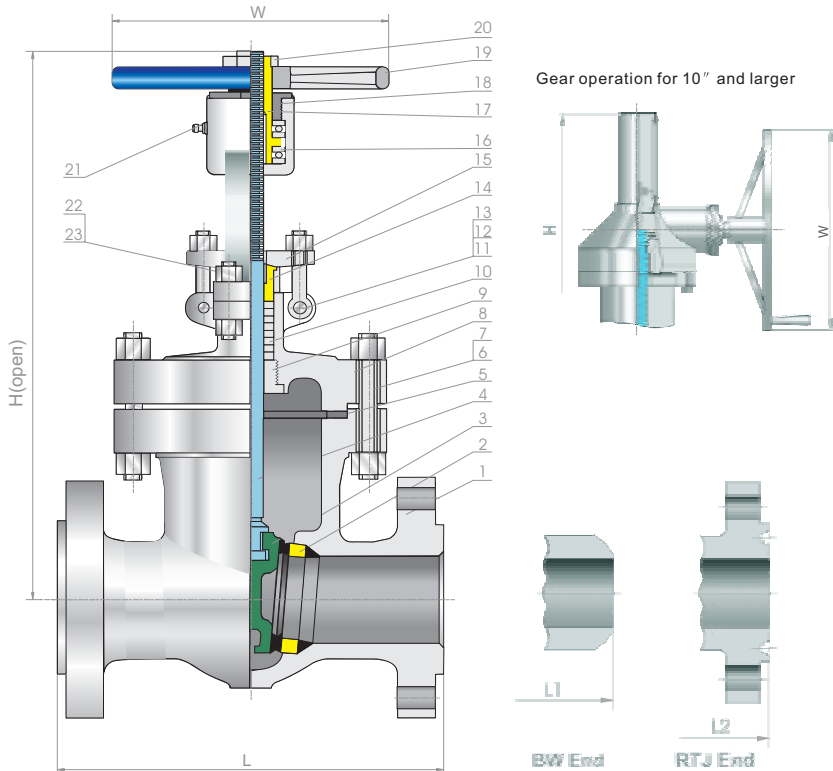
Valve Size	in.	11/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	28	30	32	36	40	42	48
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000	1050	1200
L-L1 (RF-BW)	in.	7.5	8.5	9.5	11.12	12	15	15.88	16.5	18	19.75	30	33	36	39	45	54	55	61.12	68	76	78	88
	mm	190	216	241	283	305	381	403	419	457	502	762	838	914	991	1143	1372	1397	1553	1727	1930	1981	2235
L2 (RTJ)	in.	8.0	9.12	10.12	11.74	12.62	15.62	16.5	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88	54	56	61.12	69.12	-	-	-
	mm	203	232	257	298	321	397	419	435	473	518	778	854	930	1010	1165	1372	1422	1553	1756	-	-	-
H (open)	in.	14.7	15.75	18.75	21.38	25.63	30.31	34.63	40.81	50.19	56.63	65	72.44	79.94	88.19	114.19	122	139.38	152	169.75	188.63	198.13	217.38
	mm	374	400	477	543	650	770	880	1037	1275	1438	1650	1840	2030	2240	2900	3100	3540	3860	4312	4791	5032	5522
W	in.	7.88	7.88	9.88	9.88	11.81	11.81	13.75	17.69	19.69	22.06	18.13	18.13	24	24	24	24	30	30	30	24	24	24
	mm	200	200	250	250	300	300	350	450	500	560	460	460	610	610	610	610	760	760	760	610	610	610
WT (kg)	RF	26	30	39	55	83	92	137	240	333	536	699	1010	1205	1720	2800	3150	3786	4210	6850	8460	9500	12400
	BW	22	26	34	47	68	77	118	195	271	432	595	848	1025	1460	2294	2870	3220	3675	4990	6160	6800	9000



# Cast Steel Bolted Bonnet Gate Valves

**Class 600**

*Bolted bonnet , Outside screw and yoke,Rising stem,Non-rising handwheel , Flexible wedge.*



### Parts List

No:	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat ring	ASTM A105+STL No.6
3	Wedge	ASTM A216 Gr.WCB+13Cr
4	Stem	ASTM A182 F6a
5	Gasket	304S.S. Jacketed Graphite
6	Bonnet bolt	ASTM A193 Gr.B7
7	Bonnet nut	ASTM A194 Gr.2H
8	Bonnet	ASTM A216 Gr.WCB
9	Back seat	ASTM A276 410
10	Packing	Graphite
11	Pin	C.S.
12	Gland bolt	ASTM A193 Gr.B7
13	Gland nut	ASTM A194 Gr.2H
14	Gland	ASTM A276 410
15	Gland flange	ASTM A216 Gr.WCB
16	Bearing	Assem.
17	Stem nut	Aluminum Bronze
18	Retaining nut	C.S.
19	Handwheel	Malleable Iron
20	H.W. lock nut	C.S.
21	Lubricator	Assem.
22	Yoke bolt	ASTM A193 Gr.B7
23	Yoke nut	ASTM A194 Gr.2H

### Features

- Face to face and end to end dimension: ASME B16.10
- Flange dimension: 24"and smaller to ASME B16.5 28"and larger to ASME B16.47 series A
- Shell wall thickness: 24"and smaller to API 600 28"and larger to manufacturer's standard
- B.W. end to ASME B16.25
- 6"and smaller valves have a one-piece bonnet and yoke design 8"nd larger valves have a two-piece bonnet and yoke design.

### Dimensions and Weights

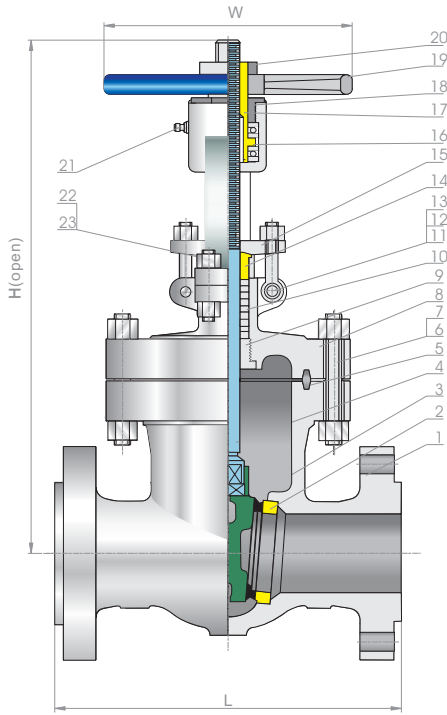
Valve Size	in.	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L-L1 (RF-BW)	in.	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55	57	61	65	70	82
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397	1448	1549	1651	1778	2083
L2 (RTJ)	in.	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	-	-	-	-	-
	mm	295	333	359	435	511	562	663	790	841	892	994	1095	1200	1407	-	-	-	-	-
H (open)	in.	18.63	21.75	23.38	28.06	30.3	38.19	44.19	52.38	59.81	68.13	72.75	90.13	98.81	119	127.25	140.25	152.75	163	179.5
	mm	474	553	593	713	770	970	1122	1330	1519	1730	1835	2290	2510	3022	3232	3562	3880	4140	4560
W	in.	9.88	9.88	11.81	13.75	15.7	19.69	22.06	28.38	24	24	24	24	30	30	30	30	24	24	24
	mm	250	250	300	350	400	500	560	720	610	610	610	610	760	760	760	760	610	610	610
WT (kg)	RF	41	58	88	131	7.56	253	413	623	784	1288	1820	2150	2540	4080	5220	6050	6945	7965	10000
	BW	35	50	68	104	192	208	328	496	637	1120	1448	1828	2201	3360	4295	4980	5710	5223	8220



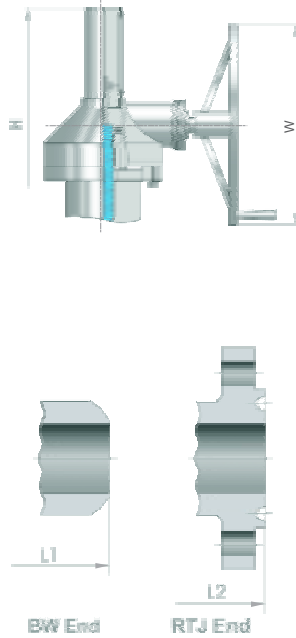
# Cast Steel Bolted Bonnet Gate Valves

**Class 900/1500/2500**

*Bolted bonnet , Outside screw and yoke,Rising stem, Non-rising handwheel , Flexible wedge.*



Gear operation for  
900lb 6 " and larger  
1500lb 4 " and larger  
2500lb 3 " and larger



### Parts List

No:	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat ring	ASTM A105+STL No.6
3	Wedge	ASTM A216 Gr.WCB+13Cr
4	Stem	ASTM A182 F6a
5	Gasket	Soft Iron
6	Bonnet bolt	ASTM A193 Gr.B7
7	Bonnet nut	ASTM A194 Gr.2H
8	Bonnet	ASTM A216 Gr.WCB
9	Back seat	ASTM A276 410
10	Packing	Graphite
11	Pin	C.S.
12	Gland bolt	ASTM A193 Gr.B7
13	Gland nut	ASTM A194 Gr.2H
14	Gland	ASTM A276 410
15	Gland flange	ASTM A216 Gr.WCB
16	Bearing	Assem.
17	Stem nut	Aluminum Bronze
18	Retaining nut	C.S.
19	Handwheel	Malleable Iron
20	H.W. lock nut	C.S.
21	Lubricator	Assem.
22	Yoke bolt	ASTM A193 Gr.B7
23	Yoke nut	ASTM A194 Gr.2H

### Features

- Face to face and end to end dimension: ASME B16.10
- Flange dimension: ASME B16.5
- Shell wall thickness: API 600
- B.W. end to ASME B16.25
- 4" and smaller valves have a one-piece bonnet and yoke design
- 6" and larger valves have a two-piece bonnet and yoke design.

### Dimensions and Weights

	Valve Size	in.	2	2 1/2	3	4	6	8	10	12
		mm	50	65	80	100	150	200	250	300
900lb	L-L1 (RF-BW)	in.	14.5	16.5	15	18	24	29	33	38
		mm	368	419	381	457	610	737	838	965
	L2 (RTJ)	in.	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12
		mm	371	422	384	460	613	740	841	968
	H (open)	in.	21.56	27.56	25.5	28.69	41	49.63	62.63	70.69
	mm	547	700	715	729	1041	1260	1590	1795	
	W	in.	11.81	14	15.75	17.69	22.06	24	24	24
		mm	300	355	400	450	560	610	610	610
	WT (kg)	RF	90	110	123	148	420	650	1160	1700
		BW	82	93	108	122	359	566	980	1450
1500lb	L-L1 (RF-BW)	in.	14.5	16.5	18.5	21.5	27.75	32.75	39	44.5
		mm	368	419	470	546	705	832	991	1130
	L2 (RTJ)	in.	14.62	16.62	18.62	21.62	28	33.13	39.38	45.12
		mm	371	422	473	549	711	841	1000	1146
	H (open)	in.	22.63	27.56	31.75	34.94	42.5	53.94	59.81	65
	mm	574	700	806	887	1079	1370	1520	1651	
	W	in.	13.75	15.75	17.75	22.06	24	24	30	30
		mm	350	400	450	560	610	610	760	760
	WT (kg)	RF	117	175	240	337	680	1228	2278	3260
		BW	93	144	185	285	584	978	1990	2850
2500lb	L-L1 (RF-BW)	in.	17.75	20	22.75	26.5	36	40.25	50	—
		mm	451	508	578	673	914	1022	1270	—
	L2 (RTJ)	in.	17.87	20.25	23	26.88	36.5	40.87	50.88	—
		mm	454	514	584	683	927	1038	1292	—
	H (open)	in.	27.56	29.5	34.63	42.5	53.94	60.25	80.5	—
	mm	700	750	887	1079	1370	1530	2045	—	
	W	in.	13.75	17.75	22.06	28.38	18.13	24	30	—
		mm	350	450	560	720	460	610	760	—
	WT (kg)	RF	132	206	256	498	1550	2395	4460	—
		BW	99	155	192	390	1230	1980	3700	—