



# DHV Figure Numbers

## Forged Steel Valves

### Type

- 1 = Gate
- 2 = Globe
- 3 = Y Pattern Globe
- 4 = Piston Check
- 5 = Lift Check With Spring
- 6 = Swing Check
- 7 = Y Pattern Check
- 8 = Needle Globe
- 9 = Cryogenic Gate
- 0 = Cryogenic Globe
- X = Special

### Code

- C = Cast Steel Valves
- F = Forged Steel Valves
- I = Cast Iron Valves
- B = Ball Valves
- W = Wellhead Valves
- WB = Wafer Butterfly Valves

### Pressure Class

- 15 = Class 150
- 30 = Class 300
- 40 = Class 400
- 60 = Class 600
- 80 = Class 800
- 90 = Class 900
- 150 = Class 1500
- 250 = Class 2500

### Body Material

- 0 = ASTM A105
- 1 = ASTM A350 LF2
- 2 = ASTM A182 F5
- 3 = ASTM A350 LF3
- 4 = ASTM A182 F11
- 5 = ASTM A182 F22
- 6 = ASTM A182 F304
- 7 = ASTM A182 F316
- 8 = ASTM A182 F304L
- 9 = ASTM A182 F316L
- A = ASTM A182 F51
- X = Special

*2" Forged Steel Gate Valve, Class 800, A105 Body & Bonnet, Socket Weld End, With HF / HF Trim, Bolted Bonnet, Full Bore.*

**Example: 2" - F1800 S21**

### End Connection

- F = Raised Face Flanged End
- P = Plain Flate Face Flanged End
- R = Ring Type Joint End
- B = Butt weld End
- T = Threaded End
- S = Socket Weld End

### Trim Material

	Seat	Disc	Stem
1	13CR	13CR	F6
2	HF	HF	F6
3	HF	13CR	F6
4	MONEL	MONEL	MONEL
5	316SS	316SS	F316
6	HF	MONEL	MONEL
7	HF	316SS	F316
8	304SS	304SS	F304
9	304L	304L	304L
0	316L	316L	316L
A	F51	F51	F51
B	Inconel 625		
X	Special		

### Bonnet Connection

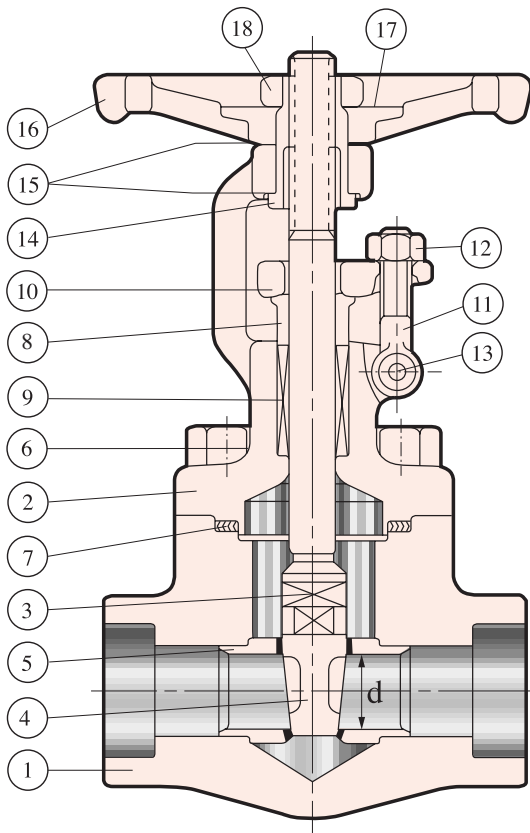
- 1 = Bolted Bonnet - Full Bore
- 2 = Welded Bonnet - Full Bore
- 3 = Bolted Bonnet - Reduced Bore
- 4 = Welded Bonnet - Reduced Bore



# Forged Steel Gate Valves

## Standard Material Specifications

Part No.	Part Name	ASTM Specifications									
		Carbon Steel		Alloy Steel			Stainless Steel				
		A 105	A350	A182							
		(b, c)	LF2	F5	F11(d)	F22	F304 (e)	F304L	F316(e)	F316L	F51
1	Body	A 105	LF2	F5	F11	F22	F304	F304L	F316	F316L	F51
2	Bonnet	A 105	LF2	F5	F11	F22	F304	F304L	F316	F316L	F51
3	Stem	A276 - 410					A276 - 304	A276 - 304L	A276 - 316	A276 - 316L	F51
4	Disc	A276 - 420					304 + STL	304L + STL	316 + STL	316L + STL	F51
5	Seat Ring	A276 - 410 + STL					304 + STL	304L + STL	316 + STL	316L + STL	F51
6	Bonnet Bolt (a)	A193 - B7	A320 - L7	A193 - B16			A193 - B8		A193 - B8M		
7	Gasket	304 + Graphite					316 + Graphite				
8	Gland	A276 - 410					A276 - 304		A276 - 316		F51
9	Packing	Flexible Graphite					PTFE				
10	Gland Flange	A105	LF2	F11			CF8				F51
11	Gland Bolt	A193-B7	A320-L7	A193 - B16			A193 - B8 / B8M				
12	Gland Bolt Nut	A194-2H	A194-7	A194 - 4			A194 - 8				
13	Gland Bolt Pin	A276 - 410					A276 - 304				F51
14	Sleeve						A276 - 410				
15	Sleeve Washer						A276 - 410				
16	Handwheel						A197				
17	Nameplate	Aluminum					304				
18	Handwheel Nut						A108 - 1020				



Gate Valve

### Notes:

- Temperature limitations on bolting are as following:  
Gr B7, 1000°F(538°C); Gr L7, 1000°F(538°C);  
Gr B16, 1100°F(595°C); Gr B8-CL1, 1500°F(816°C);  
Gr B8M-CL1, 1500°F(816°C); Gr B8-CL2, 1000°F(538°C);  
and Gr B8M-CL2, 1000°F(538°C).
- Upon prolonged exposure to temperatures above 800°F(425°C), the carbide phase of carbon steel may be converted to graphite.
- Only killed steel shall be used above 850°F(455°C).
- Use normalized and tempered material only.
- At temperatures over 1000°F(538°C), use only when the carbon is 0.04 percent or higher.



# Class 800 Forged Steel Gate Valves

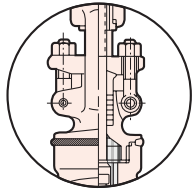
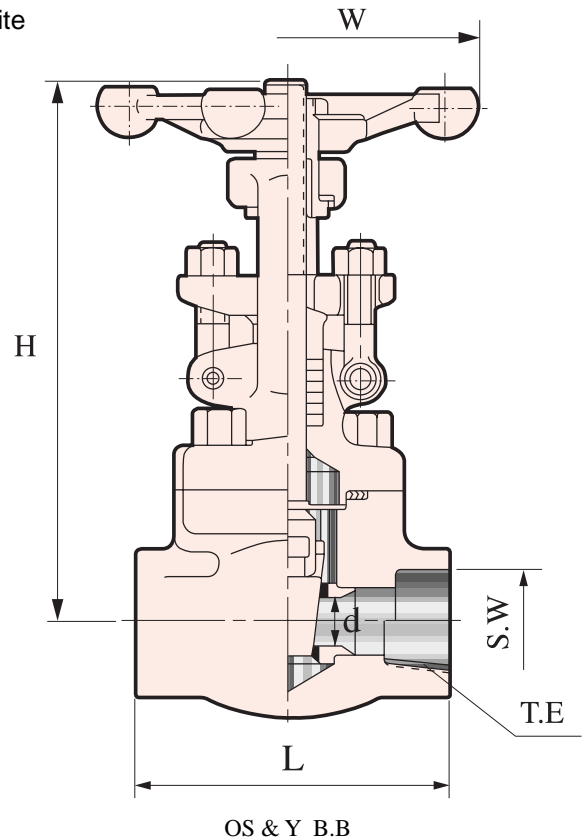
## Features:

- Bolted Bonnet (B.B) or Welded Bonnet (W.B).
- Spiral Wound Gasket of Stainless Steel and Flexible Graphite with Controlled Compression.
- Reduced or Full Port.
- Compact Outside Screw & Yoke or Compact Inside Screw.
- Renewable Hardfaced Seats.
- Socket Weld (S.W) or Threaded End (T.E).

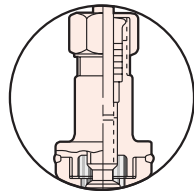
## Specifications:

- Basic Design: **API-602 & ANSI B16.34**
- Socket Weld End(S.W): **ANSI B16.11**
- Threaded End (T.E): **ANSI B1.20.1**
- Test and Inspect: **API-598**
- Standard Material: **See Page 3**

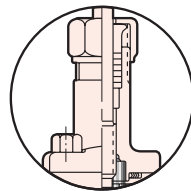
**Fig. No. F1800T21**  
**Fig. No. F1800S21**



OS & Y W.B



Inside Screw W.B



Inside Screw B.B

OS & Y B.B

## Dimensions and Weights

Normal Diameter	Reduced Port	inch	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
	Full Port	inch	-	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	-
d	inch	0.28	0.39	0.51	0.71	0.94	1.14	1.46	1.81	2.00	
	mm	7	10	13	18	24	29	37	46	51	
L	inch	3.12	3.12	3.62	4.37	4.75	4.75	5.50	7.00	7.28	
	mm	79	79	92	111	120	120	140	178	185	
H (OPEN)	Outside Screw & Yoke	inch	6.22	6.22	6.70	7.76	9.30	9.68	11.14	12.99	14.13
		mm	158	158	169	197	236	246	283	330	359
	Inside Screw	inch	6.65	6.65	7.20	8.19	10.60	11.42	12.99	-	-
		mm	169	169	182	208	254	290	330	-	-
W	inch	3.93	3.93	3.90	4.92	6.29	6.29	7.08	7.87	7.87	
	mm	100	100	100	125	160	160	180	200	200	
Weight	B.B	lb	4.84	4.62	5.06	8.80	13.00	15.20	24.60	34.76	44.00
		kg	2.2	2.1	2.3	4.0	5.9	6.9	11.2	15.8	20.0
	W.B	lb	3.96	3.74	4.62	8.14	11.44	13.64	22.88	32.56	-
		kg	1.8	1.7	2.1	3.7	5.2	6.2	10.4	14.8	-



# DHV Figure Numbers

Cast Steel Valves

## Type C

- 1= OS & Y Gate
- 2 = Globe
- 3 = Swing Check
- 4 = NRS GATE
- 5 = Pressure Seal Bonnet Gate
- 6 = Pressure Seal Bonnet Globe
- 7 = Pressure Seal Bonnet Check
- 8 = Y Pattern
- 9 = Angle
- A = Conduit Gate
- B = Plug Valve
- C = Strainer
- D = Soft Seat Block & Bleed Gate
- E = API 6D Swing Check
- F = Twin Seal Plug Valve
- X = Special

## Type WC

- 1 = Single-Plate Wafer Check
- 2 = Dual-Plate Wafer Check
- 3 = Lift Wafer Check
- X = Special

## Pressure Class

- 1 = Class 150
- 2 = Class 300
- 3 = Class 600
- 4 = Class 900
- 5 = Class 1500
- 6 = Class 2500

## Body and Bonnet Material

- 0 = ASTM A216 WCB
- 1 = ASTM A216 WCC
- 2 = ASTM A352 LCB
- 3 = ASTM A352 LCC
- 4 = ASTM A351 CF8M
- 5 = ASTM A351 CF8
- 6 = ASTM A351 CF3M
- 7 = ASTM A351 CF3
- 8 = ASTM A890 4A
- X = Special

## End Connections

- F = Raised Face Flanged End
- R = Ring Type Joint Flanged End
- P = Plain Flate Face Flanged End
- B = Butt-welding End
- T = Threaded End
- S = Socket-welding End
- W = Wafer-Type
- L = Lug-Tpye or Full Flange
- D = Double Flange-Type
- X = Other Type End Connection

## Conduit Gate & Plug Valve Seat Type

- None = Other Valves
- S = Soft Seal
- M = Metal Seal

*8" OS & Y Gate valve, class 300, A216 WCB body & bonnet, raised face, flanged end, with HF / HF Trim, Gear Operated*

**Example: 8" - C120F2-XX-X-GO**

## Code

- C = Cast Steel Valves
- F = Forged Steel Valves
- I = Cast Iron Valves
- B = Ball Valves
- WB = Wafer Butterfly
- WC = Wafer Check Valve
- W = Wellhead Valves

## Trim Material

	Seat Seal Face	Disc Seal Face	Stem Material
1 =	13CR	13CR	F6
2 =	HF	HF	F6
3 =	HF	13CR	F6
4 =	Monel	Monel	Monel
5 =	316 SS	316 SS	F316
6 =	HF	316 SS	F316
7 =	304 SS	304 SS	F304
8 =	HF	304 SS	F304
9 =	Inconel	Inconel	Inconel
A =	HF	HF	F316
B =	Duplex S.S.		
X =	Special		

## Operator

- None = Lever or Handwheel Operator
- CO = Chain Wheel Operator
- GO = Gear Operator
- BS = Bare Stem
- EM = Electric Motor Operator
- PA = Pneumatic Actuator
- HA = Hydraulic Actuator
- PH = Pneumatic-Hydraulic Actuator

## Conduit Gate Type

- None = Other Valves
- EG = Expanding Gate
- SG = Slab Gate



# Body & Bonnet Material

Material Type	ASTM Specification	Recommended Service Condition	Standard Trim *		
			#150, #300	#600-#1500	#2500
Carbon Steel	A216 WCB	Non-corrosive water, oil and gases between -29°C & 425°C	1 or 8	8 or 5	5
Low Temp. Carbon Steel	A352 LCB	Low Temp. Service between -46°C & 345°C	2 or 12	12 or 5	5
Low Temp. Carbon Steel	A352 LC1	Low Temp. Service between -60°C & 345°C	2 or 12	12 or 5	5
3 1/2% Nickel	A352 LC3	Low Temp. Service between -101°C & 345°C	2 or 12	12 or 5	5
Low Temp. Carbon Steel	A352 LCC	Low Temp. Service between -46°C & 345°C	2 or 12	12 or 5	5
1 1/4% Chrome 1/2% Moly	A217 WC6	Non-corrosive water, oil and gases between -26°C & 595°C	8 or 5	5	5
5% Chrome 1/2% Moly	A217 C5	Corrosive, non-corrosive or erosive water, oil and gases between -29°C & 649°C	8 or 5	5	5
9% Chrome 1/2% Moly	A217 C12	Corrosive, non-corrosive or erosive water, oil and gases between -10°C & 649°C	8 or 5	5	5
Cast 304	A351 CF8	Corrosive, cryogenic or high temp. service between -254°C & 649°C	10 or 12	12 or 5	5
Cast 316	A351 CF8M	Corrosive, cryogenic or high temp. service between -254°C & 649°C	10 or 12	12 or 5	5

\* API Trim No.



# Trim Materials & Comparison Chart

Material			DHV Trim No.	API Trim No.	CRANE	WALWORTH	PACIFIC	VELAN	STOCKHAN
Seat	Disc	Stem							
13CR	13CR	F6A	1	1	X	AA	1	/	1
HF	HF	F6A	2	5	U	HF	7	TS(316SS Stem)	11
HF	13CR	F6A	3	8	XU	UT	2	TY	UOR11
MONEL	MONEL	MONEL	4	9	A	AA	8	XY(HF Seat)	8
316	316	F316	5	10	L	18-8M	12	SX	12
HF	316	F316	6	12	/	/	/	/	/
304	304	F304	7	/	/	/	/	/	/
HF	304	F304	8	/	/	/	/	/	/
INCONEL	INCONEL	INCONEL	9	/	/	/	/	/	/
SPECIAL	SPECIAL	SPECIAL	0	/	/	/	/	/	/

## Bolting Material

Application		Bonnet Bolting		Gland Bolting	
		Bolts	Nuts	Bolts	Nuts
High-Temperature Service	Up to 454°C	A193 Gr. B7, B7M	A194 Gr. 2H, 2HM	A193 Gr. B7, B7M	A194 Gr. 2H, 2HM
	593°C	A193 Gr. B16	A194 Gr. 4	A193 Gr. B16	A194 Gr. 4
	816°C	A193 Gr. B8M	A194 Gr. 8M	A193 Gr. B8M	A194 Gr. 8M
Low-Temperature Service		A320 Gr. L7M	A194 Gr. 7M	A193 Gr. B8M	A194 Gr. 8M
Cryogenic Service		A193 Gr. B8M	A194 Gr. 8M	A193 Gr. B8M	A194 Gr. 8M
Corrosive Service		A193 Gr. B7, B7M	A194 Gr. 2H, 2HM	A193 Gr. B8M	A194 Gr. 8M



# Gland Packing Materials

*Die-Formed Graphoil with braided graphite yarn as top and bottom rings are the standard gland packing materials for cast steel valves. Other special packing materials are also available optionally upon request as follows:*

<b>Packing material</b>		<b>Service Conditions</b>
Flexible Graphite	Die-Formed Rings	1500°F(816°C) Corrosion Resistant
	Braided Graphite Yarn	
PTFE Filament Yarn Braided		450°F(232°C) Corrosion Resistant
Virgin PTFE		450°F(232°C) Corrosion Resistant
Inconel or SS wire Braided Graphite		1200°F(649°C) High Pressure

# Bonnet Gasket Materials

*Upon request various materials are available for body/bonnet flange gaskets used for cast steel valves.*

<b>Gasket Material</b>	<b>ANSI Class</b>				
	150	300	600	900	1500
Reinforced Graphite*	•				
Corrugated Soft Iron	•	•			
Spiral wound 316SS Graphite filled	•	•	•		
Spiral wound 316SS PTFE filled	•	•	•		
Ring joint metal		•	•	•	•
Virgin PTFE	•	•			
Glass filled PTFE	•	•			

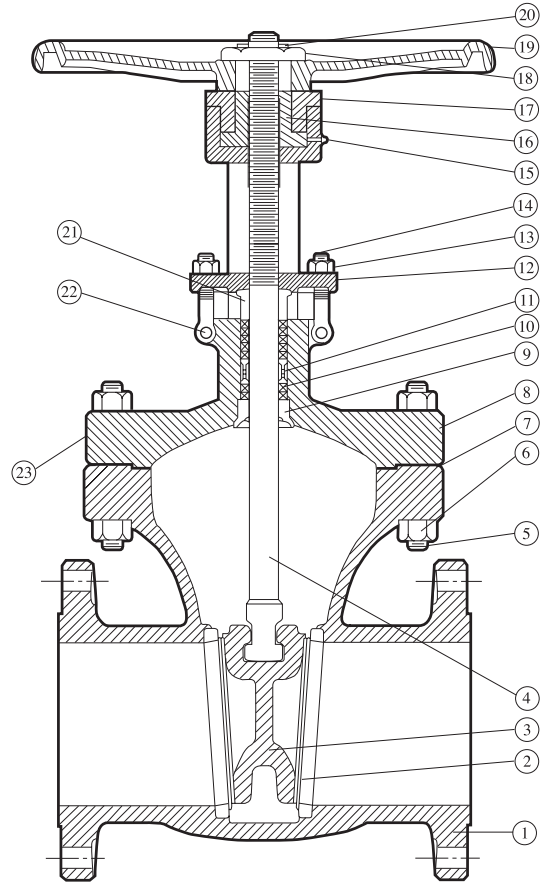
\* Only for Gate valve, Class 150



# Gate Valve

## Trim Material to API 600

DHV Trim Code	Seat Ring Surface Part No.2	Wedge Seat Surface Part No.3	Stem Part No.4	Backseat Part No.9
1	13CR	13CR	F6A	F6A
2	HF	HF	F6A	F6A
3	HF	13CR	F6A	F6A
4	Monel	Monel	Monel	Monel
5	316	316	F316	F316
6	HF	316	F316	F316
7	304	304	F304	F304
8	HF	304	F304	F304
9	INCONEL	INCONEL	INCONEL	INCONEL
0	SPECIAL	SPECIAL	SPECIAL	SPECIAL



## Standard Material Specifications

Part Name	Carbon Steel to ASTM					Alloy Steel to ASTM			Stainless Steel to ASTM	
1 Body	A216 WCB	A352 LCB	A352 LC1	A352 LC3	A352-LCC	A217 WC6	A217 C5	A217 C12	A351 CF8	A351 CF8M
8 Bonnet	A216 WCB	A352 LCB	A352 LC1	A352 LC3	A352-LCC	A217 WC6	A217 C5	A217 C12	A351 CF8	A351 CF8M
5 Bolts	A193 B7M	A320 L7M	A320 L7M	A320 L7M	A320 L7M	A193 B16	A193 B16	A193 B16	A193 B8M	A193 B8M
6 Nuts	A194 2HM	A194 7M	A194 7M	A194 7M	A194 7M	A194-4	A194-4	A194-4	A194 8M	A194 8M
22 Pins	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	S.S.	S.S.
21 Gland	A182 F6	A182 F6	A182 F6	A182 F6	A182 F6	A182 F6	A182 F6	A182 F6	304	316
11 Lantern	410	410	410	410	410	410	410	410	304	316
12 Gland Flange	A105	A350 LF2	A350 LF2	A350 LF2	A350 LF2	A105	A105	A105	304	316
13 Nuts	A194 2HM	A194 7M	A194 7M	A194 7M	A194 7M	A194 2HM	A194 2HM	A194 2HM	A194 8M	A194 8M
14 Gland Eyebolts	A193 B7M	A320 L7M	A320 L7M	A320 L7M	A320 L7M	A193 B7M	A193 B7M	A193 B7M	A193 B8M	A193 B8M
7 Gasket	See Gasket Materials Chart									
10 Packing	See Packing Materials Chart									
15 Lubricator	Steel									
16 Stem Nut	A439-D2									
17 Retainer Nut	Steel									
18 Handwheel Nut	Steel									
19 Handwheel	Ductile Iron									
20 Set Screw	Commercial									
23 Nameplate	Stainless Steel									

\* Lantern ring shall be furnished only if specified in purchase order.



# Class 150 Gate Valve

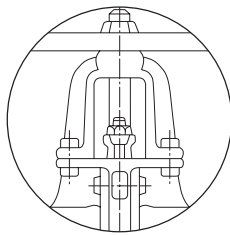
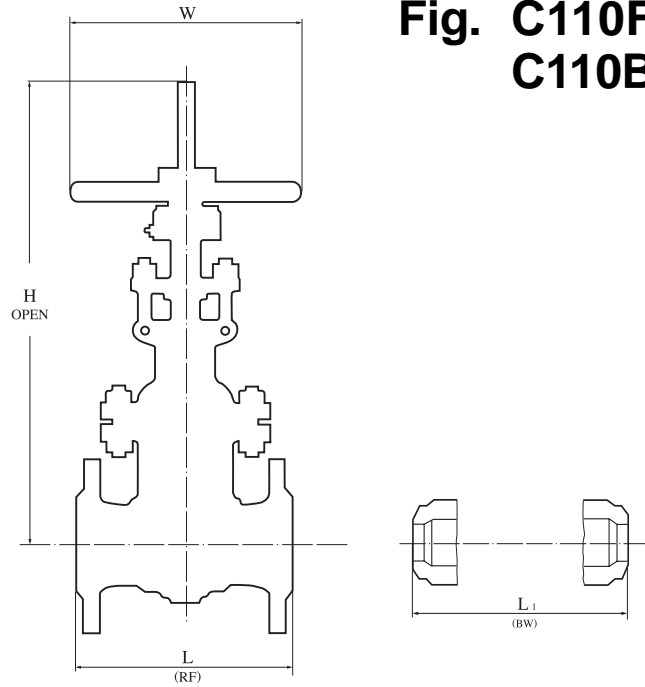
## Features

- OS & Y, Rising Stem
- Flexible Wedge ( 2" Solid Wedge )
- Bolted Bonnet
- Renewable Seat Rings Welded or Threaded
- Flanged Ends or Buttwelding Ends

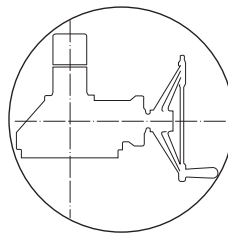
## Specifications

Basic Design:	<b>API-600 ANSI B16.34</b>
Face to Face:	<b>ANSI B16.10</b>
End to End:	<b>ANSI B16.10</b>
End Flange:	
2"–24"	<b>ANSI B16.5</b>
26"– 36"	<b>ANSI B16.47</b>
B.W End:	<b>ANSI B16.25</b>
Test and Inspection:	<b>API-598</b>
Manufacturing to NACE MR0175 on request	

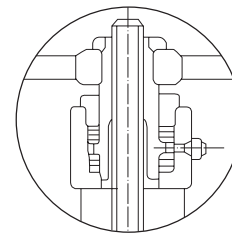
**Fig. C110F3  
C110B3**



**Separate Yoke**  
≥10"



**Bevel Gear**  
≥16"



**Bearing Yoke**  
≥16"

## Dimensions and Weights

Description			Valve Size																
			2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
Flanged End L	in		7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	20.00	24.00	24.00	26.00	28.00
	mm		178	190	203	229	267	292	330	356	381	406	432	457	508	610	610	660	711
Weld End L <sub>1</sub>	in		8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	22.50	24.00	26.00	28.00	32.00	36.00	36.00	38.00	40.00
	mm		216	241	283	305	403	419	457	502	572	610	660	711	813	914	914	965	1016
Height to Open H	in		14.88	18.11	20.47	23.90	31.61	38.39	46.38	55.71	60.37	69.56	77.32	83.82	100.98	117.16	125.19	130.31	148.08
	mm		378	460	520	607	803	975	1178	1415	1531	1767	1964	2129	2565	2976	3180	3310	3736
Handwheel Dia W	in		7.87	7.87	9.84	9.84	13.78	15.75	17.72	19.69	12.00	12.00	18.00	28.00	31.50	24.00	24.00	30.00	39.38
	mm		200	200	250	250	350	400	450	500	305	305	457	711	800	610	610	762	1000
Turns to Open			12.40	15.70	19.30	24.00	34.30	43.70	44.30	56.20	63.00	71.00	77.00	66.50	76.00	-	-	-	-
Weight	RF	lb	40	57	75	115	187	298	419	573	947	1101	1608	1982	3194	3400	3950	4500	6850
	BW	lb	34	47	65	95	176	268	377	516	909	991	1398	1724	2810	3150	3750	4200	6500



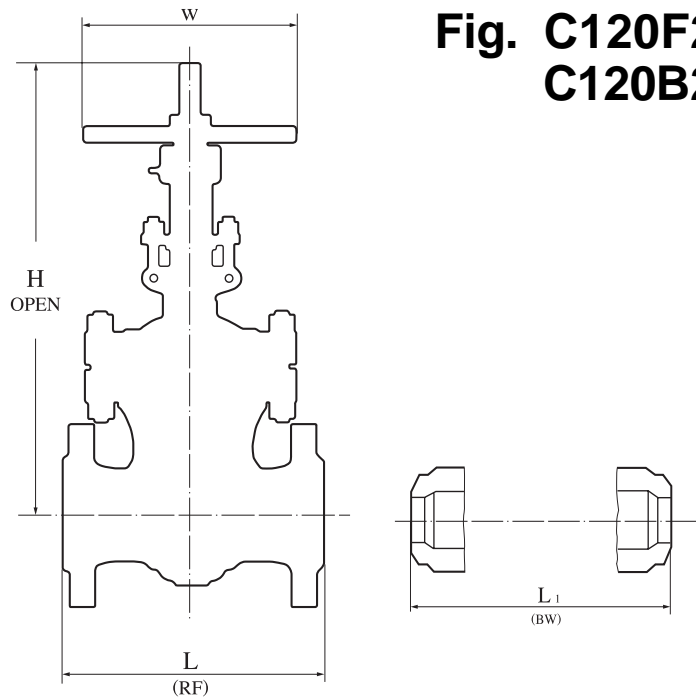
# Class 300 Gate Valve

## Features

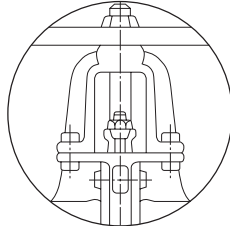
- OS & Y, Rising Stem
- Flexible Wedge ( 2" Solid Wedge )
- Bolted Bonnet
- Renewable Seat Rings Welded or Threaded
- Flanged Ends or Buttwelding Ends

## Specifications

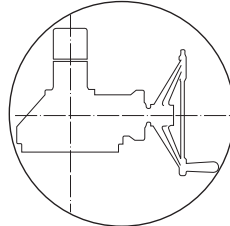
Basic Design:	<b>API-600 ANSI B16.34</b>
Face to Face:	<b>ANSI B16.10</b>
End to End:	<b>ANSI B16.10</b>
End Flange:	
2" - 24"	<b>ANSI B16.5</b>
26" - 36"	<b>ANSI B16.47</b>
B.W End:	<b>ANSI B16.25</b>
Test and Inspection:	<b>API-598</b>
Manufacturing to NACE MR0175 on request	



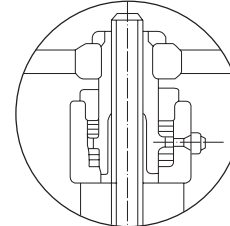
**Fig. C120F2  
C120B2**



**Separate Yoke**  
≥10"



**Bevel Gear**  
≥16"



**Bearing Yoke**  
≥16"

## Dimensions and Weights

Description		Valve Size													
		2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
RF/BW L / L1	in	8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	30.00	33.00	36.00	39.00	45.00	55.00
	mm	178	241	282	305	403	419	457	502	762	838	914	991	1143	1397
Height to Open H	in	15.75	18.98	21.06	24.80	31.81	39.76	48.90	56.53	64.01	70.66	78.46	86.45	103.19	127.20
	mm	400	482	535	630	808	1010	1242	1436	1626	1795	1993	2196	2621	3231
Handwheel Dia W	in	7.87	9.84	9.84	11.81	15.75	17.72	17.72	19.69	23.60	18.00	18.00	24.00	35.40	39.40
	mm	200	250	250	300	400	450	450	500	599	457	457	610	899	1001
Turns to Open		12.2	15.7	19.1	24.0	33.5	35.0	45.0	52.0	59.6	67.0	75.0	82.0	75.0	-
Weight	RF lb	49	79	115	172	330	507	837	1278	1630	2203	2863	3306	5441	10846
	BW lb	39	64	95	137	282	420	705	1080	1520	1950	2650	2900	4701	9683