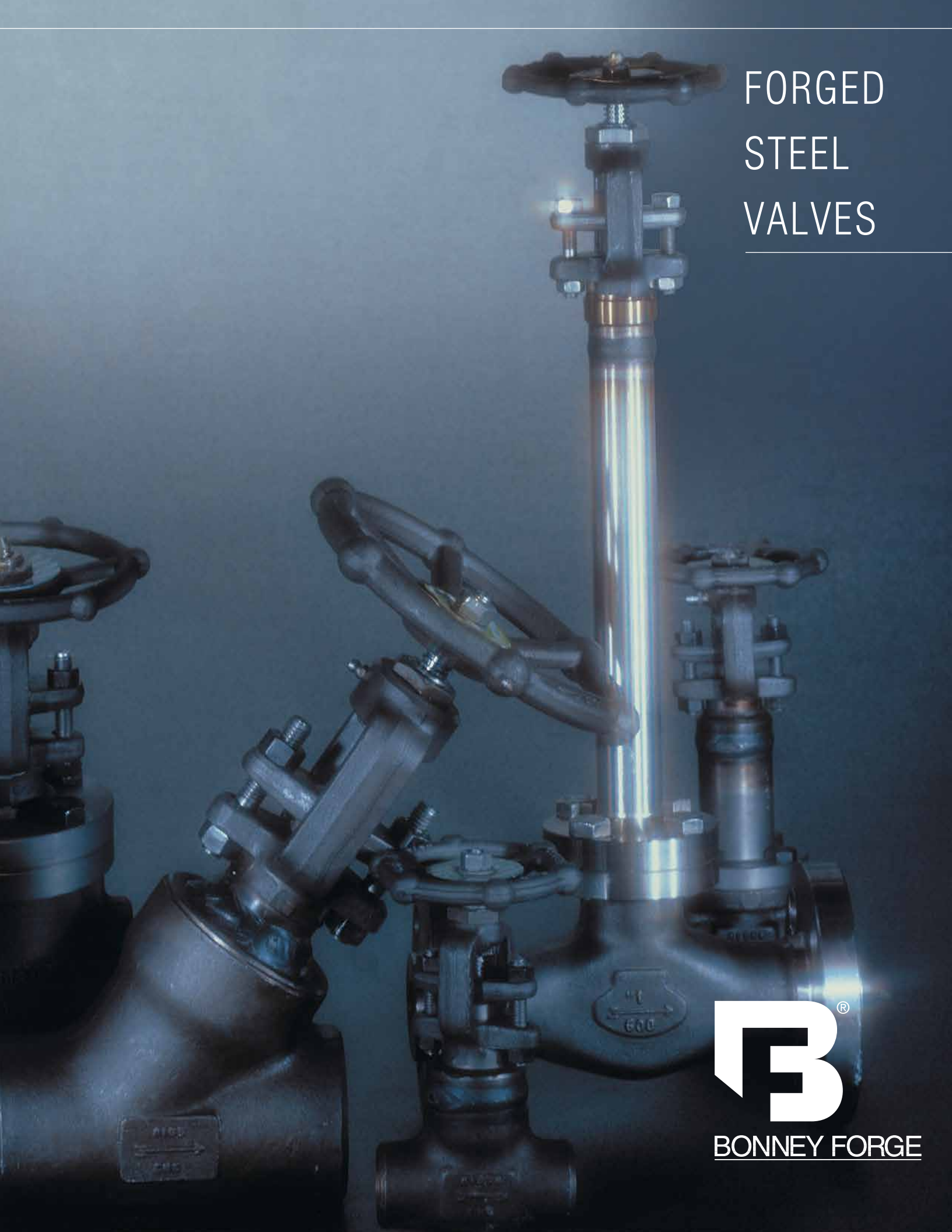


FORGED
STEEL
VALVES



BONNEY FORGE



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BONNEY FORGE

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Corporate Overview	2,3
How To Order	4-8
Gate Valves	9-14
Globe Valves	15-22
Check Valves	23-30
Cryogenic Valves	31-40
Integral Flanged Valves	41-54
Bellows Sealed Valves	55-60
Extended Body Gate Valves	61-64
Special Features	65-70
Technical Data	71-96



Bonney Forge—The Name You Trust for Forged Steel Valves

Bonney Forge's forged steel valves and piping components have led the way for over eighty years in state-of-the-art design and dependable performance. It is qualities like these, combined with a customer-driven culture, that maintains Bonney Forge's leadership position within the industry for exceeding customer expectations. Our goal is to make Bonney Forge your number one world-wide choice for forged valves.



FORGING AHEAD OF THE REST

The Industry's Widest Range of Forged Steel Valves

Bonney Forge's forged steel valve range includes carbon steel, alloys, stainless steel, and exotic alloys. Valve types include gate, globe and check with ratings of 150 lbs. to 4500 lbs. There are also bellows sealed valves, cryogenic valves for temperatures to -321°F (-196°C) and valves with extended bodies. All available from one source!

Production Capabilities that Meet Your Demands

Bonney Forge is an integrated supplier with in-house forging, machining and assembly-test operations. Our forge shop contains a complete line of forging and support equipment, including a forge die shop, all located in one modern facility. Automated production lines and next generation machining systems

offer high volume capabilities with uncompromising quality.

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Bonney Forge products are manufactured and tested in strict accordance to ASTM, ASME, ANSI, API and other applicable industry codes and specifications. Chemical and mechanical properties of all Bonney Forge products are fully traceable to the original forging lot and raw material heat. Our extensive quality control system carefully monitors our manufacturing processes to assure a product that performs to the highest industry standards. Quality assurance procedures include 100% hydrostatic



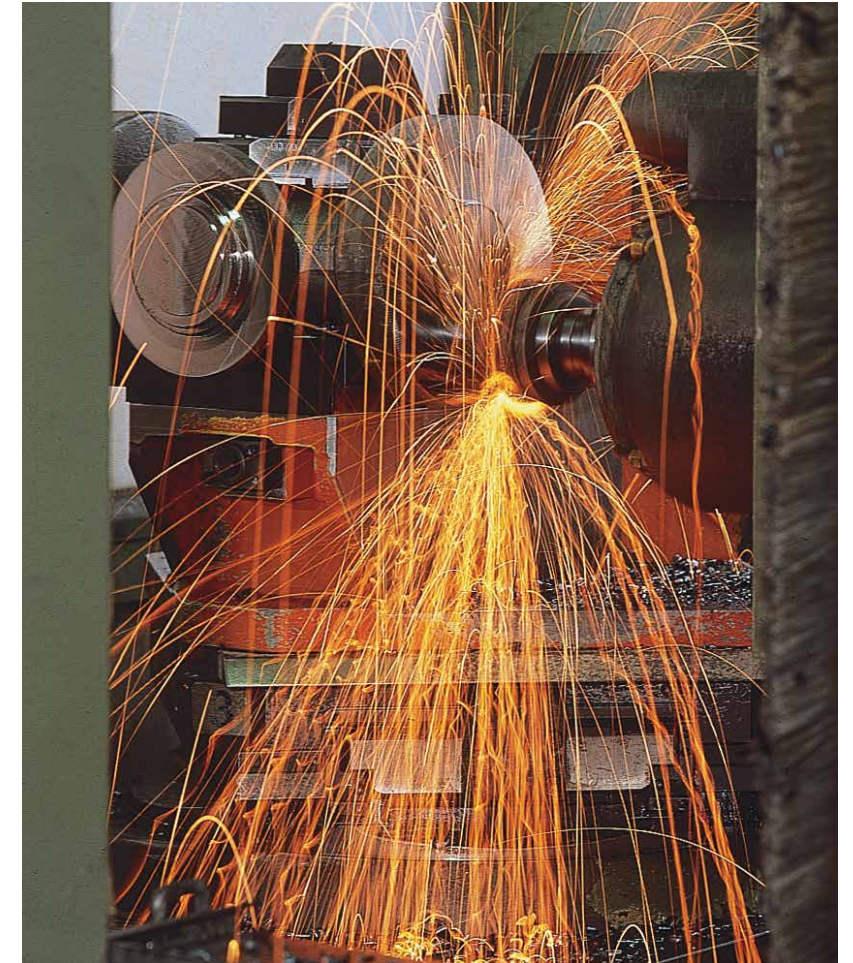
and pneumatic testing of all valves in full conformance to applicable API standards and industry codes. Bonney Forge has earned ISO 9001 designation through uncompromising, company-wide controls.

We're Here for You

This catalog offers a vast amount of product information and specifications. In the event that you need additional information or technical assistance please call our friendly and knowledgeable customer service personnel at 1-800-231-0655 or visit our web site at www.bonneyforge.com.



The Best Value - Price, Quality, Service All The Time.



1. Specify Valve Size
2. Select Valve Description from Section A
3. Select Valve Type desired from Section B
4. Indicate Body/Bonnet and Trim Material from Section C
5. Select End Configuration from Section D
6. Select Special Requirement(s) from Section E
7. Specify as a Suffix String, after Section D or E, any Body/Bonnet Material, Trim Material or Special Requirements not listed below

SECTION A- VALVE DESCRIPTION

H	Full Port, 800#, Bolted Bonnet
HL	Standard Port, 800#, Bolted Bonnet
W	Full Port, 800#, Welded Bonnet
WL	Standard Port, 800#, Welded Bonnet
9H	Full Port, 1500#, Bolted Bonnet
9HL	Standard Port, 1500#, Bolted Bonnet
9HR	Full Port, 1500#, RTJ Bolted Bonnet
25HR	Full Port, 2500#, RTJ Bolted Bonnet
9W	Full Port, 1500#, Welded Bonnet
9WL	Standard Port, 1500#, Welded Bonnet
25W	Full Port, 2500#, Welded Bonnet
45W	Full Port, 4500#, Welded Bonnet
Y	Full Port, 800#, Y-Pattern Body, Welded Bonnet
9Y	Full Port, 1500#, Y-Pattern Body, Welded Bonnet
1690Y	Full Port, 1690#, Y-Pattern Body, Welded Bonnet
25Y	Full Port, 2500#, Y-Pattern Body, Welded Bonnet
2680Y	Full Port, 2680#, Y-Pattern Body, Welded Bonnet
45Y	Full Port, 4500#, Y-Pattern Body, Welded Bonnet
1	150# Integral Flange, Full Port, Bolted Bonnet
3	300# Integral Flange, Full Port, Bolted Bonnet
6	600# Integral Flange, Full Port, Bolted Bonnet
15F	1500# Integral Flange, Full Port, Bolted Bonnet
25F	2500# Integral Flange, Full Port, Bolted Bonnet
L1	150# Integral Flange, Standard Port, Bolted Bonnet
L3	300# Integral Flange, Standard Port, Bolted Bonnet
L6	600# Integral Flange, Standard Port, Bolted Bonnet
C	Cryogenic, Full Port, 800#, Bolted Bonnet
CL	Cryogenic, Standard Port, 800#, Bolted Bonnet
CW	Cryogenic, Full Port, 800#, Welded Bonnet
CWL	Cryogenic, Standard Port, 800#, Welded Bonnet
9C	Cryogenic, Full Port, 1500#, Bolted Bonnet
9CL	Cryogenic, Standard Port, 1500#, Bolted Bonnet
9CW	Cryogenic, Full Port, 1500#, Welded Bonnet
9CWL	Cryogenic, Standard Port, 1500#, Welded Bonnet

SECTION A- VALVE DESCRIPTION (CONT.)

1C	Cryogenic, 150# Integral Flange, Full Port, Bolted Bonnet
1CL	Cryogenic, 150# Integral Flange, Standard Port, Bolted Bonnet
1CW	Cryogenic, 150# Integral Flange, Full Port, Welded Bonnet
1CWL	Cryogenic, 150# Integral Flange, Standard Port, Welded Bonnet
3C	Cryogenic, 300# Integral Flange, Full Port, Bolted Bonnet
3CL	Cryogenic, 300# Integral Flange, Standard Port, Bolted Bonnet
3CW	Cryogenic, 300# Integral Flange, Full Port, Welded Bonnet
3CWL	Cryogenic, 300# Integral Flange, Standard Port, Welded Bonnet
6C	Cryogenic, 600# Integral Flange, Full Port, Bolted Bonnet
6CL	Cryogenic, 600# Integral Flange, Standard Port, Bolted Bonnet
6CW	Cryogenic, 600# Integral Flange, Full Port, Welded Bonnet
6CWL	Cryogenic, 600# Integral Flange, Standard Port, Welded Bonnet
15CF	Cryogenic, 1500# Integral Flange, Full Port, Bolted Bonnet
15CWF	Cryogenic, 1500# Integral Flange, Full Port, Welded Bonnet
S	Bellows Sealed, Full Port, 800#, Bolted Bonnet
SL	Bellows Sealed, Standard Port, 800#, Bolted Bonnet
SHW	Bellows Sealed, Full Port, 800#, Welded Bonnet
SHWL	Bellows Sealed, Standard Port, 800#, Welded Bonnet
9S	Bellows Sealed, Full Port, 1500#, Bolted Bonnet
9SL	Bellows Sealed, Standard Port, 1500#, Bolted Bonnet
9SHW	Bellows Sealed, Full Port, 1500#, Welded Bonnet
9SHWL	Bellows Sealed, Standard Port, 1500#, Welded Bonnet
25SHW	Bellows Sealed, Full Port, 2500#, Welded Bonnet
1S	Bellows Sealed, 150# Integral Flange, Full Port, Bolted Bonnet
1SL	Bellows Sealed, 150# Integral Flange, Standard Port, Bolted Bonnet
1SHW	Bellows Sealed, 150# Integral Flange, Full Port, Welded Bonnet
1SHWL	Bellows Sealed, 150# Integral Flange, Standard Port, Welded Bonnet
3S	Bellows Sealed, 300# Integral Flange, Full Port, Bolted Bonnet
3SL	Bellows Sealed, 300# Integral Flange, Standard Port, Bolted Bonnet
3SHW	Bellows Sealed, 300# Integral Flange, Full Port, Welded Bonnet
3SHWL	Bellows Sealed, 300# Integral Flange, Standard Port, Welded Bonnet
6S	Bellows Sealed, 600# Integral Flange, Full Port, Bolted Bonnet
6SL	Bellows Sealed, 600# Integral Flange, Standard Port, Bolted Bonnet
6SHW	Bellows Sealed, 600# Integral Flange, Full Port, Welded Bonnet
6SHWL	Bellows Sealed, 600# Integral Flange, Standard Port, Welded Bonnet
15SF	Bellows Sealed, 1500# Integral Flange, Full Port, Bolted Bonnet
15SHWF	Bellows Sealed, 1500# Integral Flange, Full Port, Welded Bonnet
VOLL	Valvolet ® Extended Body, Lip End, Standard Port, 800#, Welded Bonnet
VOL	Valvolet ® Extended Body, O'Let End, Standard Port, 800#, Welded Bonnet
VLL	Valvolet ® Extended Body, Lip End, Standard Port, 800#, Bolted Bonnet
VL	Valvolet ® Extended Body, O'Let End, Standard Port, 800#, Bolted Bonnet

SECTION B- VALVE TYPE

9VOLL	Valvolet ® Extended Body, Lip End, Standard Port, 1500#, Welded Bonnet
9VOL	Valvolet ® Extended Body, O'Let End, Standard Port, 1500#, Welded Bonnet
9VLL	Valvolet ® Extended Body, Lip End, Standard Port, 1500#, Bolted Bonnet
9VL	Valvolet ® Extended Body, O'Let End, Standard Port, 1500#, Bolted Bonnet
MFL	Extended Body, Standard Port, 800#, Welded Bonnet
ML	Extended Body, Standard Port, 800#, Bolted Bonnet
9MFL	Extended Body, Standard Port, 1500#, Welded Bonnet
9ML	Extended Body, Standard Port, 1500#, Bolted Bonnet

SECTION B- VALVE TYPE

1	Gate
3	Globe
3R	Globe with renewable seats
4	Piston Check
4R	Piston Check with renewable seats
5	Ball Check
5R	Ball Check with renewable seats
6	Swing Check

1	A 105, Trim F6/HF, (API Trim #8)
2	A 105, Trim F6/FHF, (API Trim #5)
3	A 105, Trim F316/HF, (API Trim #12)
3F	A 105, Trim F316/FHF
4	A 105, Trim Monel, (API Trim #9) ¹
4S	A 105, Trim Monel 500/HF (API Trim #11) ²
4F	A 105, Trim Monel FHF
5	F22, Trim F6/HF, (API Trim #8)
5F	F22, Trim F6/FHF, (API Trim #5)
6	F5, Trim F6/HF, (API Trim #8)
6F	F5, Trim F6/FHF, (API Trim #5)
7	F304, Trim F304/HF
7F	F304, Trim F304/FHF
7L	F304L, Trim F304/HF
7LF	F304L, Trim F304/FHF
7H	F304H, Trim F304/HF
7HF	F304H, Trim F304/FHF
8	F316, Trim F316/HF, (API Trim #12)
8F	F316, Trim F316/FHF
8L	F316L, Trim F316/HF, (API Trim #12)
8LF	F316L, Trim F316/FHF
8H	F316H, Trim F316/HF, (API Trim #12)
8HF	F316H, Trim F316/FHF

1 - Gate, Swing Check provided with Monel 400 Wedge/Disc and Monel 500 Seat/Stem.
 2 - Offered for Globe, Ball, Piston Check only.

SECTION C- BODY/BONNET, TRIM MATERIAL (CONT.)

9	F11, Trim F6/HF, (API Trim #8)
9F	F11, Trim F6/FHF, (API Trim #5)
A	F9, Trim F6/HF, (API Trim #8)
AF	F9, Trim F6/FHF, (API Trim #5)
LS	LF2, Trim F6/HF, (API Trim #8)
LF	LF2, Trim F6/FHF, (API Trim #5)
L3S	LF2, Trim F316/HF, (API Trim #12)
L3F	LF2, Trim F316/FHF
0	Other, to be specified

For an item not listed above, a figure number can be determined from the following.

Body/Bonnet Material	First Code Number/Letter	Trim Material	Second Code Letter
A105	1	F6/HF	S
LF2	L	F6/FHF	F
<hr/>			
F5	6	F304/HF	7
F9	A	F304/FHF	7F
F91	K	F316/HF	3
F11	9	F316/FHF	3F
F22	5	F317/HF	B
<hr/>			
F304, 304L, 304H	7, 7L, 7H	F317/FHF	BF
F316, 316L, 316H	8, 8L, 8H	F321/HF	E
317, 317L	B, BL	F321/FHF	EF
F321, 321H	E, EH	F347/HF	G
F347, 347H	G, GH	F347/FHF	GF
F44	J	F44	J
<hr/>			
Alloy 20	A2	F44/HF	JS
Monel 400	M4	F44/FHF	JF
Monel K-500	M5	F51	D
Hastelloy B	HB	F51/HF	DS
Hastelloy C-276	HC	F51/FHF	DF
Incoloy 800	I800	Alloy 20	A2
Incoloy 825	I825	Alloy 20/HF	A2S
<hr/>			
F51	D	Alloy 20/FHF	A2F
<hr/>			
		Monel 400	M4
		Monel 400/HF	M4S
		Monel 400/FHF	M4F
		Monel 500	M5
		Monel 500/HF	M5S
		Monel 500/FHF	M5F

Body/Bonnet Material	First Code Number/Letter	Trim Material	Second Code Letter
Titanium	T	Hastelloy B	HB
		Hastelloy B/HF	HBS
		Hastelloy B/FHF	HBF
		Hastelloy C	HC
		Hastelloy C/HF	HCS
		Hastelloy C/FHF	HCF
		Incoloy 800/HF	I
		Incoloy 800/FHF	IF
		Incoloy 825/HF	N
		Incoloy 825/FHF	NF
		Titanium/HF	T
		Titanium/FHF	TF

Examples: 1" Standard Port, 800#, Bolted Bonnet, Gate, A 105, Alloy 20/FHF Trim, Threaded Ends **Fig. No. 1" HL-11A2F-T**

3/4" Standard Port, 1500#, Welded Bonnet, Globe, F5, F316/HF Trim, Socket Weld Ends **Fig. No. 3/4" 9WL-363-SW**

SECTION D- END CONFIGURATION

- T = Threaded
- SW = Socket Weld
- SW/T = Socket Weld Inlet x Threaded Outlet
- T/SW = Thread Inlet x Socket Weld Outlet
- BW = Butt Weld
- P = Plain End
- RF = Flanged, Raised Face
- RTJ = Flanged, Ring Type Joint
- FF = Flat Face Finish
- SF = Smooth Face Finish
- N = Nipples, Customer Specify

SECTION E- SPECIAL REQUIREMENTS

- ASME Section I
- NACE
- Oxygen Service
- Hydrogen Service
- PMI
- Special Packing/Gaskets
- Other – Customer Specify

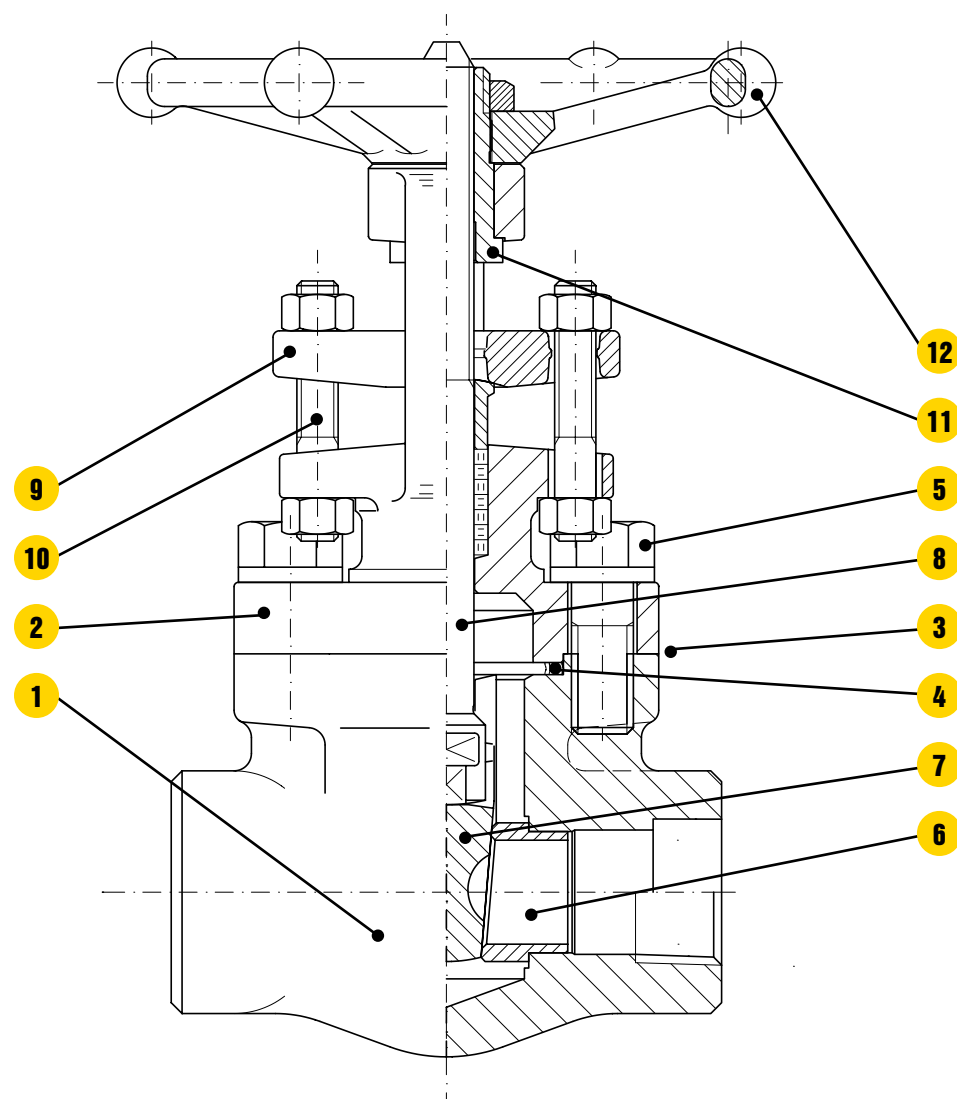
- Overview10
- Bolted Bonnet Gate- 800 lb. & 1500 lb. valves11
- Bolted Bonnet Gate- 1500 lb. & 2500 lb. valves12
- Welded Bonnet Gate- 800 lb. & 1500 lb. valves13
- Welded Bonnet Gate- 2500 lb. & 4500 lb. valves14

GATE VALVES



GATE VALVES

Forged steel, outside screw and yoke (OS&Y), rising stem, non-rising handwheel. Full or standard port. Bolted or welded bonnet joint. Integral backseat.

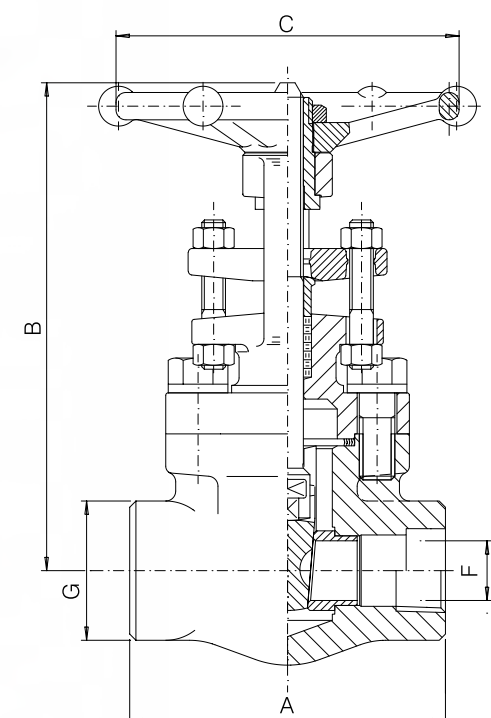


- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in both the full or standard port design.
- 2. BONNET.** The bonnet is forged steel, has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the bolted bonnet or the threaded and seal welded type.
- 4. GASKET.** The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket.
- 5. BONNET BOLTING.** The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT RINGS.** The seat rings are steel and makeup part of the valve trim. They are pressed into the valve body and wedged into place, forming a seal with the body. The seating surfaces are ground and lapped.
- 7. WEDGE.** The wedge, which is solid design, is forged or investment cast steel and is part of the valve trim. The seating surfaces are ground and lapped.

- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains it's parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.

800 LB.
1500 LB.

Design construction:
API 602 - ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral-wound gasket
Integral backseat
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Ratings:
- carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
- carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



		FULL PORT - FIG. H 10							
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.15	3.15	3.54	4.33	5	5	5.28	6
	mm	80	80	90	110	127	127	134	152
B open	inch	5.98	5.98	6.22	7.72	8.86	10.04	11.42	14.09
	mm	152	152	158	196	225	255	290	358
C	inch	3.46	3.46	3.46	3.82	5.43	5.43	5.43	6.77
	mm	88	88	88	97	138	138	138	172
F	inch	.31	.38	.55	.71	.94	1.18	1.48	1.83
	mm	8	9.6	14	18	24	30	36.5	46.5
G	inch	1.26	1.26	1.50	1.89	2.20	2.52	3.07	3.35
	mm	32	32	38	48	56	64	78	85
Weight	lb.	4.5	4.5	5	8.25	13	16.25	18.3	27.5
	kg	2.1	2.1	2.3	3.7	5.9	7.4	8.3	12.5
PACKING		BH2	BH2	BH2	BH4	BH5	BH6	BY5	BH8
GASKET		G2	G2	G2	G3	G4	G6	G11	G10

		STANDARD PORT - FIG. HL 10						
SIZE	inch	1/2	3/4	1	1 1/2	2	3	
	mm	15	20	25	40	50	80	
A	inch	3.15	3.54	4.33	5	5.28	8.86	
	mm	80	90	110	127	134	225	
B open	inch	5.98	6.22	7.72	10.04	11.42	12.35	
	mm	152	158	196	255	290	313	
C	inch	3.46	3.46	3.82	5.43	5.43	6.77	
	mm	88	88	97	138	138	172	
F	inch	.38	.55	.71	1.18	1.48	1.97	
	mm	9.6	14	18	30	36.5	50	
G	inch	1.26	1.5	1.89	2.52	3.07	4.65	
	mm	32	38	48	64	78	118	
Weight	lb.	4.25	5	7.75	16	16.75	38	
	kg	1.9	2.3	3.6	7.3	7.6	17.2	
PACKING		BH2	BH2	BH4	BH6	BY5	BH8	
GASKET		G2	G2	G3	G6	G11	G10	

		FULL PORT - FIG. 9H 10							
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.54	3.54	4.33	5	5	5	5	8.27
	mm	90	90	110	127	127	127	127	210
B open	inch	6.02	6.02	7.48	8.66	9.84	11.10	11.42	13.58
	mm	153	153	190	220	250	282	290	345
C	inch	3.46	3.46	3.82	5.43	5.43	5.43	5.43	6.77
	mm	88	88	97	138	138	138	138	172
F	inch	.31	.38	.55	.71	.94	1.18	1.48	1.89
	mm	8	9.6	14	18	24	30	36.5	48
G	inch	1.50	1.50	1.89	2.20	2.52	3.07	3.07	3.35
	mm	38	38	48	56	64	78	78	85
Weight	lb.	5.25	5.25	9	13.75	17.5	23	24.25	44
	kg	2.4	2.4	4.1	6.2	8	10.5	11	20
PACKING		BH3	BH3	BH5	BH6	2B4	BY7	2B5	9B8
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

		STANDARD PORT - FIG. 9HL 10						
SIZE	inch	1/2	3/4	1	1 1/2	2		
	mm	15	20	25	40	50		
A	inch	3.54	4.33	5	5	8.27		
	mm	90	110	127	127	210		
B open	inch	5.98	7.48	8.66	11.10	13.58		
	mm	152	190	220	282	345		
C	inch	3.46	3.82	5.43	5.43	5.43		
	mm	88	97	138	138	138		
F	inch	.38	.55	.71	1.18	1.48		
	mm	9.6	14	18	30	36.5		
G	inch	1.5	1.89	2.20	3.07	3.35		
	mm	38	48	56	78	85		
Weight	lb.	5.25	8.5	13.25	23.75	45.25		
	kg	2.4	3.9	6.1	10.8	20.5		
PACKING		BH3	BH5	BH6	2B5	BH8		
GASKET		G1	G2	G3	G5	G7		

B[®] GATE VALVES- WELDED BONNET- FULL PORT

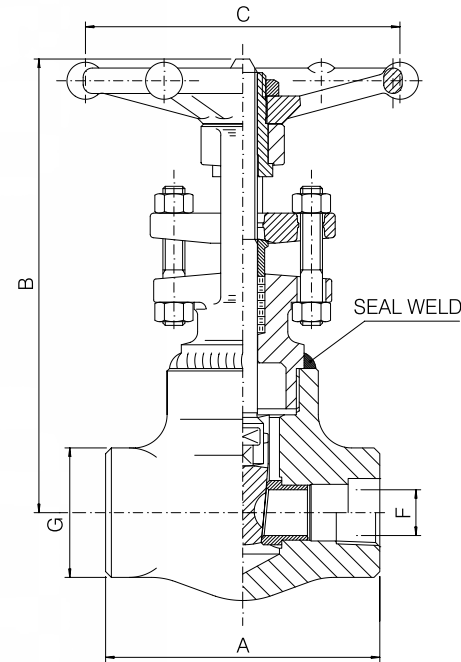
BONNEY FORGE

2500 LB.

4500 LB.

Design construction:

- ASME B16.34
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Body Bonnet Weld to ASME IX
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25
- Ratings standard class:
- carbon steel class 2500 6170 psig @ 100°F
425 bar + 38°C
- carbon steel class 4500 11100 psig @ 100°F
765 bar + 38°C



		FULL PORT – FIG. 25W 10									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
	mm	6	10	15	20	25	32	40	50		
A	inch	4.33	4.33	5	5	5	5	8.27	9.06		
	mm	110	110	127	127	127	127	210	230		
B open	inch	7.20	7.20	8.43	9.61	10.87	10.87	13.27	15.91		
	mm	183	183	214	244	276	276	337	404		
C	inch	3.82	3.82	5.43	5.43	5.43	5.43	6.77	9.21		
	mm	97	97	138	138	138	138	172	234		
F	inch	.31	.31	.45	.59	.77	.98	1.10	1.38		
	mm	8	8	11.5	15	19.5	25	28	35		
G	inch	1.89	1.89	2.20	2.52	3.07	3.07	3.35	3.74		
	mm	48	48	56	64	78	78	85	95		
Weight	lb.	11.25	11.5	11.75	15.75	21.5	21.5	43	63.75		
	kg	5.2	5.3	5.4	7.2	9.8	9.8	19.5	29		
PACKING		2B4	2B4	2B4	BH8	BH8	2B5	2B5	2B8		

		FULL PORT – FIG. 45W 10				
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	5	5	9.06	9.06	17.76
	mm	127	127	230	230	451
B open	inch	10.39	10.83	14.37	15.75	17.56
	mm	264	275	365	400	446
C	inch	5.43	6.61	9.21	12.60	12.60
	mm	138	168	234	320	320
F	inch	.30	.45	.59	1.02	1.02
	mm	7.5	11.5	15	26	26
G	inch	3.07	3.07	3.74	3.74	4.72
	mm	78	78	95	95	120
Weight	lb.	22	26.5	40.8	59.5	81.5
	kg	10	12	18.5	27	37
PACKING		2B3	BH6	BY7	2B8	4B8

Available with Socket Weld or Butt-Weld Ends Only.
Materials and trim specifications Page 91

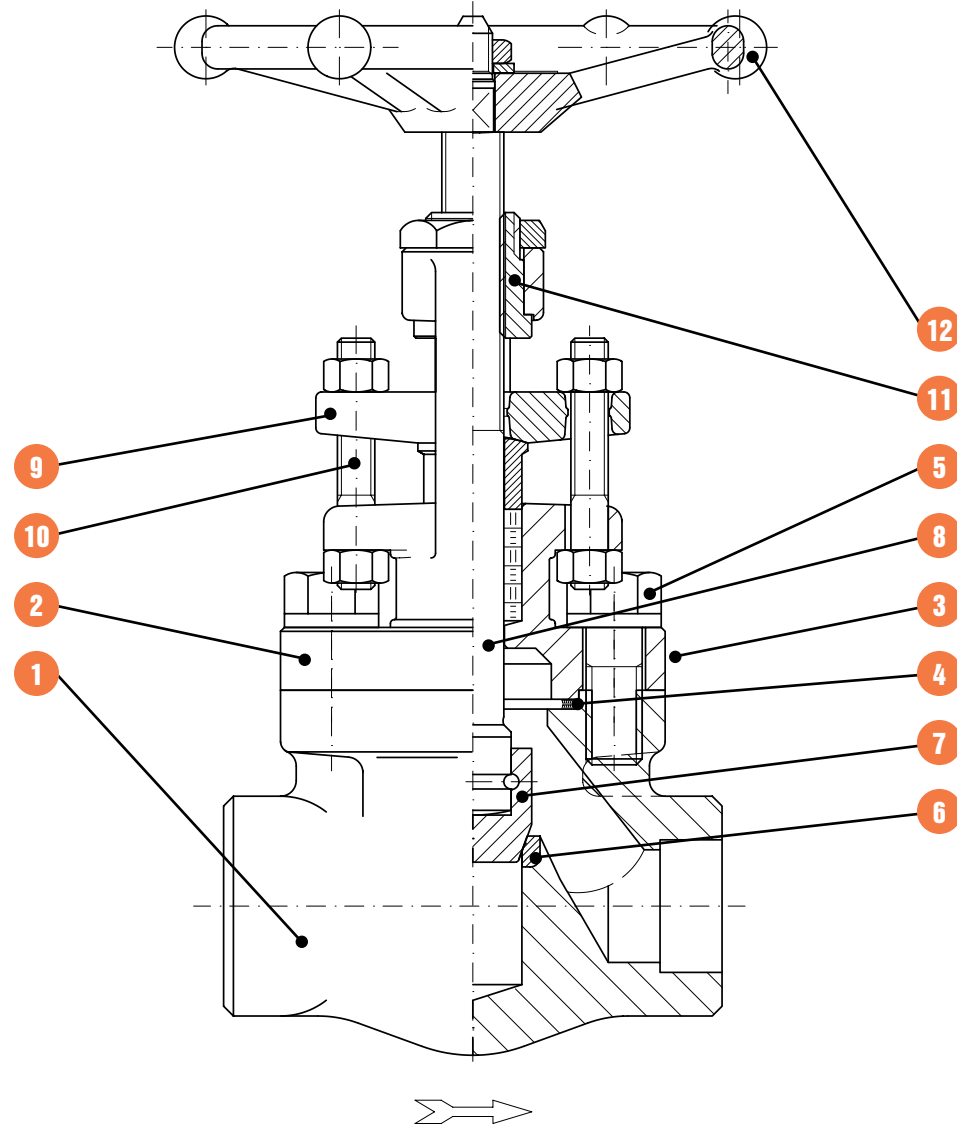
- Overview16
- Bolted Bonnet- 800 lb. & 1500 lb. valves17
- Bolted Bonnet- 1500 lb. & 2500 lb. valves18
- Welded Bonnet- 800 lb. & 1500 lb. valves19
- Welded Bonnet- 2500 lb. & 4500 lb. valves20
- Welded Bonnet (Y type)- 800 lb. & 1690 lb. valves21
- Welded Bonnet (Y type)- 2680 lb. & 4500 lb. valves22

GLOBE VALVES



GLOBE VALVES

Forged steel, outside screw and yoke (OS&Y), rotating rising stem, rising handwheel. Full or standard port. Bolted or welded bonnet joint. T-Pattern or Y-Pattern. Integral backseat. Integral body seat.

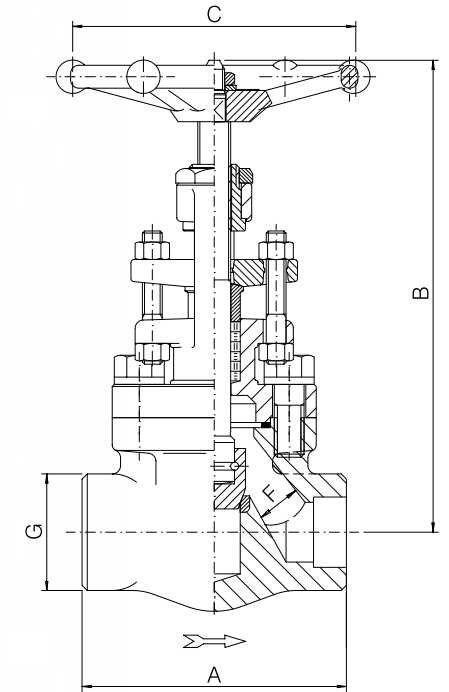


- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in both the full or standard port design. It is also available in either T-pattern or Y-pattern configuration.
- 2. BONNET.** The bonnet is forged steel, has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the bolted bonnet or the threaded and seal welded type.
- 4. GASKET.** The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket.
- 5. BONNET BOLTING.** The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT.** The body seat is an integral weld overlay and is part of the valve trim.
- 7. DISC.** The disc is forged steel and is part of the valve trim. The disc seating surface is of the tapered or plug type design. The disc is attached to the stem using a loose or swivel disc arrangement.

- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains its parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.

800 LB.
1500 LB.

Design construction:
ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral-wound gasket
Integral backseat
Loose solid disc
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Ratings:
- carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
- carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



800 LB.		FULL PORT - FIG. H 30									
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50		
A	inch mm	3.15 80	3.15 80	3.54 90	4.33 110	5 127	6 150	7.09 180	8.27 210		
B open	inch mm	6.54 166	6.54 166	6.73 171	8.39 213	9.72 247	10.16 258	11.81 300	14.76 375		
C	inch mm	3.46 88	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172	6.77 172		
F	inch mm	.28 7	.35 9	.51 13	.69 17.5	.89 22.5	1.16 29.5	1.38 35	1.79 45.5		
G	inch mm	1.26 32	1.26 32	1.5 38	1.89 48	2.20 56	2.52 64	3.07 78	3.35 85		
Weight	lb. kg	4.75 2.2	4.75 2.2	5.25 2.4	8.25 3.8	13.25 6.1	16.75 7.6	27.5 12.5	43.25 19.6		
PACKING		BH3	BH3	BH3	BH5	BY5	BY5	BY7	BH8		
GASKET		G2	G2	G2	G3	G4	G6	G7	G9		

800 LB.		STANDARD PORT - FIG. HL 30					
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50	
A	inch mm	3.15 80	3.54 90	4.33 110	6 150	7.09 180	
B open	inch mm	6.54 166	6.73 171	8.39 213	10.16 258	11.81 300	
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	6.77 172	
F	inch mm	.35 9	.51 13	.69 17.5	1.16 29.5	1.38 35	
G	inch mm	1.26 32	1.5 38	1.89 48	2.52 64	3.07 78	
Weight	lb. kg	4.5 2.1	5 2.3	8 3.7	16.25 7.4	26.25 11.9	
PACKING		BH3	BH3	BH5	BY5	BY7	
GASKET		G2	G2	G3	G6	G7	

1500 LB.		FULL PORT - FIG. 9H 30									
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50		
A	inch mm	3.54 90	3.54 90	4.33 110	5 127	6 150	7.09 180	8.27 210	9.06 230		
B open	inch mm	6.54 166	6.54 166	8.27 210	9.72 247	10.08 256	11.81 300	14.76 375	16.85 428		
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172	6.77 172	9.21 234		
F	inch mm	.28 7	.35 9	.47 12	.59 15	.79 20	1.06 27	1.26 32	1.57 40		
G	inch mm	1.5 38	1.5 38	1.89 48	2.20 56	2.52 64	3.07 78	3.35 85	3.74 95		
Weight	lb. kg	5.75 2.6	5.75 2.6	9.25 4.2	14.25 6.5	18.75 8.5	27.5 12.5	49 22.3	79.25 36		
PACKING		BH3	BH3	BH5	2B4	2B4	2B5	BH8	9B8		
GASKET		G1	G1	G2	G3	G4	G5	G7	G8		

1500 LB.		STANDARD PORT - FIG. 9HL 30					
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50	
A	inch mm	3.54 90	4.33 110	5 127	7.09 180	8.27 210	
B open	inch mm	6.54 166	8.27 210	9.84 250	11.81 300	14.76 375	
C	inch mm	3.46 88	3.82 97	5.43 138	6.77 172	6.77 172	
F	inch mm	.35 9	.47 12	.59 15	1.06 27	1.26 32	
G	inch mm	1.5 38	1.89 48	2.20 56	3.07 78	3.35 85	
Weight	lb. kg	5.25 2.4	8.75 4	14.25 6.5	28.5 13	48.5 22	
PACKING		BH3	BH5	2B4	2B5	BH8	
GASKET		G1	G2	G3	G5	G7	

B[®] GLOBE VALVES- BOLTED BONNET- FULL PORT

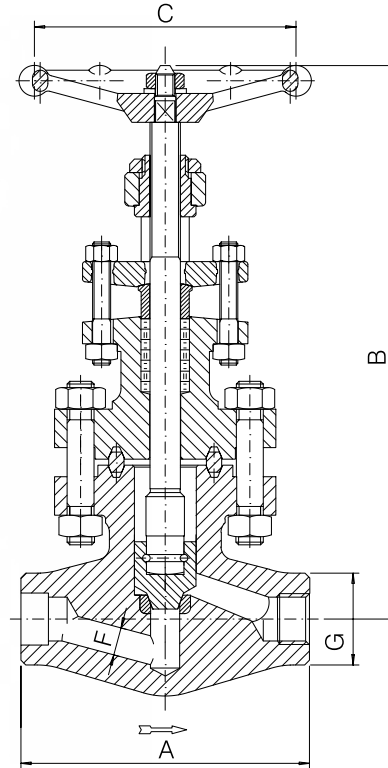
BONNEY FORGE

1500 LB.

2500 LB.

Design construction:

- ASME B16.34 - BS 5352
- Testing according to API 598
- Marking MSS SP55
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Oval ring joint gasket
- Loose solid disc
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25
- Ratings standard class:
 - carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C
 - carbon steel class 2500 6170 psig @ 100°F
425 bar + 38°C



B[®] GLOBE VALVES- WELDED BONNET- FULL & STANDARD PORT

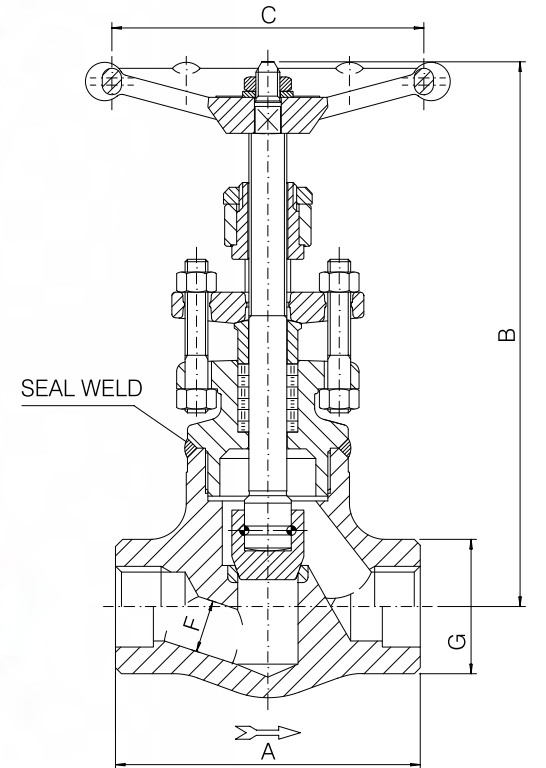
BONNEY FORGE

800 LB.

1500 LB.

Design construction:

- ASME B16.34 - BS 5352
- Testing according to API 598
- Marking MSS SP25
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Body bonnet weld to ASME IX
- Loose solid disc
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25
- Ratings:
 - carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
 - carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



1500 LB.						
FULL PORT – FIG. 9HR 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.33	5.91	5.91	8.27	9.06
	mm	110	150	150	210	230
B open	inch	9.53	12.20	12.20	14.57	18.31
	mm	242	310	310	370	465
C	inch	5.43	5.43	5.43	6.77	9.21
	mm	138	138	138	172	234
F	inch	.47	.59	.75	1.26	1.57
	mm	12	15	19	32	40
G	inch	1.5	2.17	2.17	2.95	3.74
	mm	38	55	55	75	95
Weight	lb.	11	22	22	46.25	79.25
	kg	5	10	10	21	36
PACKING		2B3	2B4	2B4	2B5	2B8
GASKET		R12	R17	R17	R20	R24

2500 LB.						
FULL PORT – FIG. 25HR 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	5.91	5.91	8.27	9.06	9.06
	mm	150	150	210	230	230
B open	inch	11.97	11.97	14.25	17.17	17.17
	mm	304	304	362	436	436
C	inch	5.43	5.43	5.43	9.21	9.21
	mm	138	138	138	234	234
F	inch	.43	.57	.75	1.10	1.5
	mm	11	14.5	19	28	38
G	inch	2.17	2.17	2.95	3.74	3.74
	mm	55	55	75	95	95
Weight	lb.	22	22	48.5	83.75	83.75
	kg	10	10	22	38	38
PACKING		2B4	2B4	BH8	2B8	4B8
GASKET		R16	R16	R17	R20	R20

800 LB.									
FULL PORT – FIG. W 30									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.15	3.15	3.54	4.33	5	5.91	7.09	8.27
	mm	80	80	90	110	127	150	180	210
B open	inch	6.54	6.54	6.73	8.39	9.72	10.12	11.81	14.76
	mm	166	166	171	213	247	258	300	375
C	inch	3.46	3.46	3.46	3.82	5.43	5.43	6.77	6.77
	mm	88	88	88	97	138	138	172	172
F	inch	.28	.35	.51	.69	.89	1.16	1.38	1.77
	mm	7	9	13	17.5	22.5	29.5	35	45
G	inch	1.26	1.26	1.5	1.89	2.20	2.52	3.07	3.35
	mm	32	32	38	48	56	64	78	85
Weight	lb.	3.75	3.75	4.25	6.5	11	14.75	24.25	36.25
	kg	1.7	1.8	2	3	5	6.8	11	16.5
PACKING		BH3	BH3	BH3	BH5	BY5	BY5	BY7	BH8

800 LB.						
STANDARD PORT – FIG. WL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.15	3.54	4.33	5.91	7.09
	mm	80	90	110	150	180
B open	inch	6.54	6.73	8.39	10.12	11.81
	mm	166	171	213	258	300
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
G	inch	1.26	1.5	1.89	2.52	3.07
	mm	32	38	48	64	78
Weight	lb.	3.75	4.25	6.5	14.5	22.75
	kg	1.7	2	3	6.6	10.4
PACKING		BH3	BH3	BH5	BY5	BY7

1500 LB.									
FULL PORT – FIG. 9W 30									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.54	3.54	4.33	5	5.91	7.09	8.27	9.06
	mm	90	90	110	127	150	180	210	230
B open	inch	6.54	6.54	8.27	9.72	10.08	11.81	14.76	16.85
	mm	166	166	210	247	256	300	375	428
C	inch	3.46	3.46	3.82	5.43	5.43	6.77	6.77	9.21
	mm	88	88	97	138	138	172	172	234
F	inch	.28	.35	.47	.59	.79	1.06	1.26	1.57
	mm	7	9	12	15	20	27	32	40
G	inch	1.5	1.5	1.89	2.20	2.52	3.07	3.35	3.74
	mm	38	38	48	56	64	78	85	95
Weight	lb.	4.75	4.75	7.75	12	16.75	22	44	66
	kg	2.2	2.2	3.5	5.5	7.6	10	20	30
PACKING		BH3	BH3	BH5	2B4	2B4	2B5	BH8	2B8

1500 LB.						
STANDARD PORT – FIG. 9WL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.54	4.33	5	7.09	8.27
	mm	90	110	127	180	210
B open	inch	6.54	8.27	9.72	11.81	14.76
	mm	166	210	247	300	375
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.35	.47	.59	1.06	1.26
	mm	9	12	15	27	32
G	inch	1.5	1.89	2.20	3.07	3.35
	mm	38	48	56	78	85
Weight	lb.	4.25	7.75	12	26.25	41.75
	kg	2	3.5	5.5	12	19
PACKING		BH3	BH5	2B4	2B5	BH8

Materials and trim specifications Page 91

B[®] GLOBE VALVES- WELDED BONNET- FULL PORT

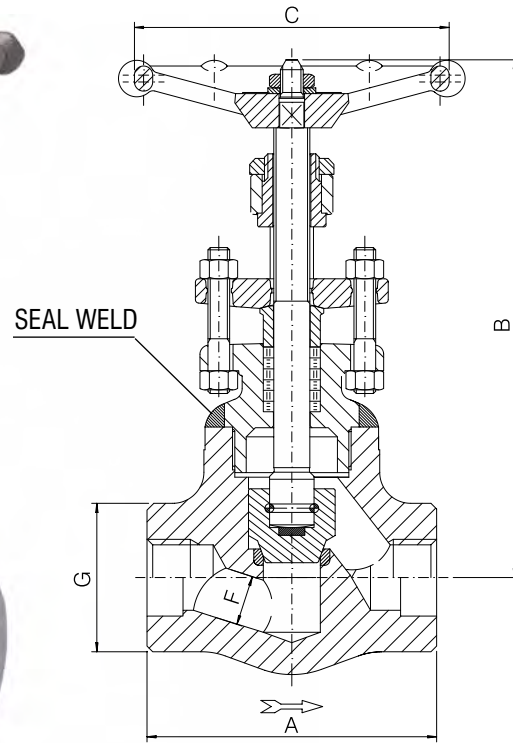
BONNEY FORGE

2500 LTD.

4500 LTD.

Design construction:

- ASME B16.34 Limited Class
- Testing according to API 598
- Marking MSS SP25
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Body bonnet weld to ASME IX
- Loose solid disc
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25
- Ratings standard class:
- carbon steel class 2500 6250 psig @ 100°F
431 bar + 38°C
- carbon steel class 4500 11250 psig @ 100°F
776 bar + 38°C



B[®] GLOBE VALVES- WELDED BONNET- FULL PORT (Y TYPE)

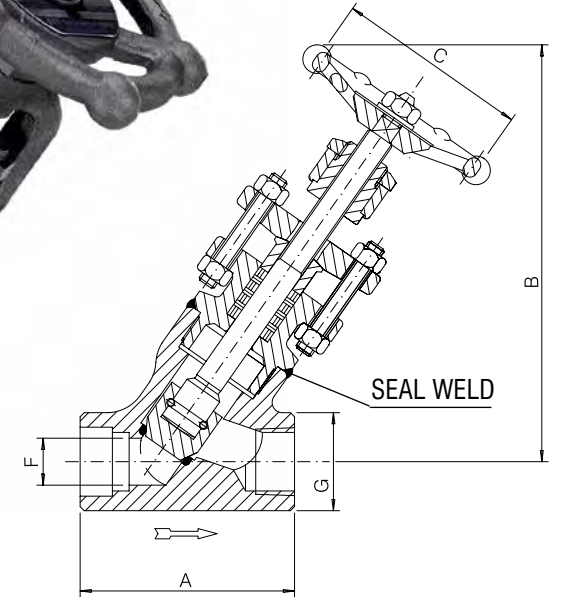
BONNEY FORGE

800 LTD.

1690 LTD.

Design construction:

- ASME B16.34 Limited Class
- Testing according to API 598
- Marking MSS SP25
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Body bonnet weld to ASME IX
- Loose solid disc
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25
- Ratings:
- carbon steel class 800 2000 psig @ 100°F
138 bar + 38°C
- carbon steel class 1690 4225 psig @ 100°F
291 bar + 38°C



		FULL PORT – FIG. 25W 30								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	
A	inch mm	4.33 110	4.33 110	5 127	5.91 150	7.09 180	7.09 180	8.27 210	9.06 230	
B open	inch mm	7.48 190	7.48 190	8.9 226	9.72 247	11.34 288	11.34 288	14.17 360	16.54 420	
C	inch mm	3.46 88	3.46 88	5.43 138	5.43 138	5.43 138	5.43 138	6.77 172	9.21 234	
F	inch mm	.28 7	.35 9	.43 11	.57 14.5	.75 19	.87 22	1.10 28	1.38 35	
G	inch mm	1.89 48	1.89 48	2.20 56	2.52 64	3.07 78	3.07 78	3.35 85	3.74 95	
Weight	lb. kg	9.75 4.5	10.25 4.7	12 5.5	17.5 8	28.5 13	28.5 13	43.5 19.8	66 30	
PACKING		BH4	BH4	2B3	2B4	2B5	2B5	2B5	2B8	

		FULL PORT – FIG. 45W 30								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	
A	inch mm	5 127	5 127	5 127	7.09 180	7.09 180	9.06 230	9.06 230		
B open	inch mm	9.06 230	9.06 230	9.25 235	11.81 300	11.81 300	14.57 370	15.75 400		
C	inch mm	5.43 138	5.43 138	5.43 138	6.77 172	6.77 172	9.21 234	15.75 400		
F	inch mm	.28 7	.28 7	.31 8	.43 11	.55 14	.98 25	1.26 32		
G	inch mm	2.20 56	2.20 56	2.20 56	3.07 78	3.07 78	3.74 95	4.72 120		
Weight	lb. kg	14.25 6.5	14.25 6.5	14.25 6.5	33 15	33 15	55 25	66 30		
PACKING		2B3	2B3	2B3	4B5	4B5	2B8	4B8		

Available with Socket Weld or Butt-Weld Ends only.
Materials and trim specifications Page 91

		FULL PORT – FIG. Y 30								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	
A	inch mm	3.35 85	3.35 85	3.35 85	4.13 105	4.72 120	6.5 165	6.5 165	7.48 190	
B open	inch mm	6.85 174	6.85 174	6.85 174	8.46 215	10.04 255	10.04 255	12.52 318	14.76 375	
C	inch mm	3.46 88	3.46 88	3.46 88	3.82 97	5.43 138	6.77 172	6.77 172	6.77 172	
F	inch mm	.28 7	.35 9	.51 13	.69 17.5	.89 22.5	1.38 35	1.38 35	1.77 45	
G	inch mm	1.5 38	1.5 38	1.5 38	1.89 48	2.20 56	3.07 78	3.07 78	3.35 85	
Weight	lb. kg	4.25 2	4.25 2	4.25 2	7.25 3.3	11 5	24.25 11	24.25 11	33 15	
PACKING		BH3	BH3	BH3	BH5	BY5	BY7	BY7	BH8	

		FULL PORT – FIG. 1690Y 30								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	
A	inch mm	3.35 85	3.35 85	4.13 105	4.72 120	6.5 165	6.5 165	7.48 190	8.66 220	
B open	inch mm	6.89 175	6.89 175	8.46 215	10.04 255	11.02 280	12.40 315	14.96 380	17.72 450	
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172	6.77 172	9.21 234	
F	inch mm	.28 7	.35 9	.47 12	.59 15	.79 20	1.06 27	1.26 32	1.57 40	
G	inch mm	1.5 38	1.5 38	1.89 48	2.20 56	3.07 78	3.07 78	3.35 85	3.74 95	
Weight	lb. kg	4.25 2	4.25 2	7.75 3.5	11.5 5.3	24.25 11	24.25 11	36.25 16.5	57.25 26	
PACKING		BH3	BH3	BH5	2B4	2B4	BY7	BH8	2B8	

Materials and trim specifications Page 91

B[®] GLOBE VALVES- WELDED BONNET- FULL PORT (Y TYPE)

BONNEY FORGE

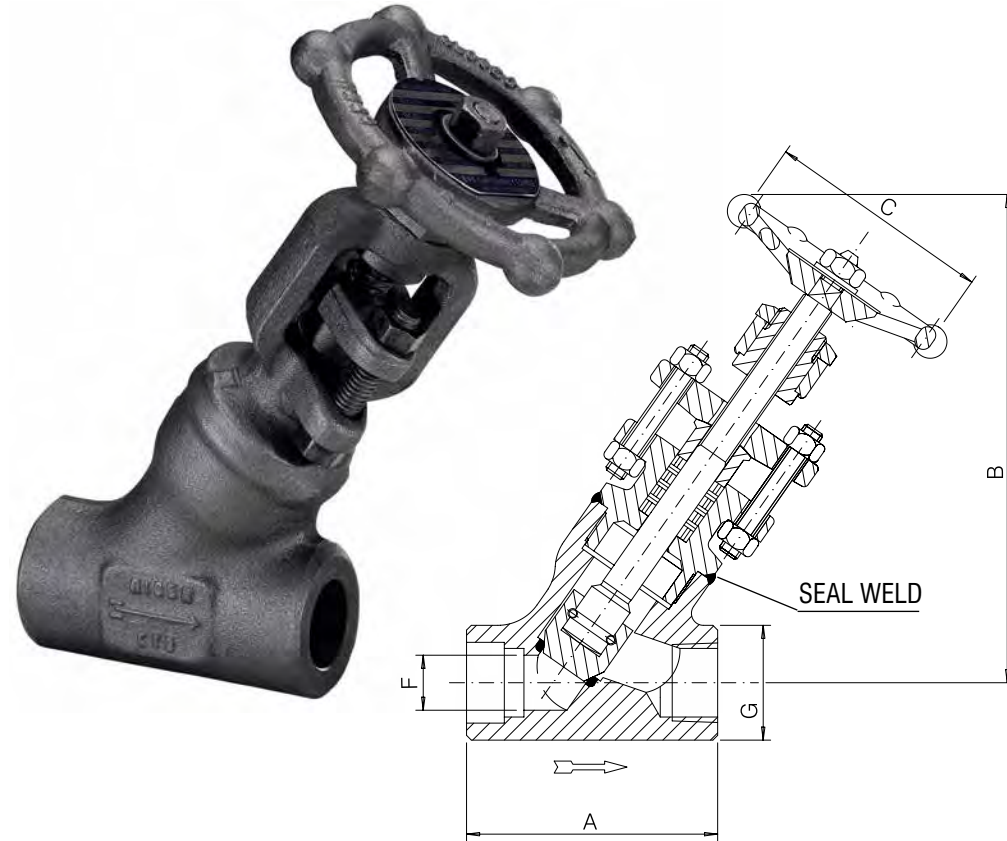
2680 LTD.

4500 LTD.

Design construction:

- ASME B16.34 Limited Class
- Testing according to API 598
- Marking MSS SP25
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Integral backseat
- Body bonnet weld to ASME IX
- Loose solid disc
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25

- Ratings:
- carbon steel class 2680 6700 psig @ 100°F
462 bar + 38°C
 - carbon steel class 4500 11250 psig @ 100°F
776 bar + 38°C



		FULL PORT – FIG. 2680Y 30							
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/2	2	
	mm	6	10	15	20	25	40	50	
A	inch	4.13	4.13	4.72	6.5	6.5	7.48	8.66	
	mm	105	105	120	165	165	190	220	
B open	inch	8.66	8.66	9.45	10.83	12.20	14.17	17.32	
	mm	220	220	240	275	310	360	440	
C	inch	3.46	3.46	5.43	5.43	5.43	6.77	9.21	
	mm	88	88	138	138	138	172	234	
F	inch	.28	.35	.43	.57	.75	1.10	1.38	
	mm	7	9	11	14.5	19	28	35	
G	inch	1.89	1.89	2.20	3.07	3.07	3.35	3.74	
	mm	48	48	56	78	78	85	95	
Weight	lb.	7.75	7.75	11	25.25	27.5	37.25	67	
	kg	3.5	3.5	5	11.5	12.5	17	30	
PACKING		BH4	BH4	2B3	2B4	2B5	2B5	2B8	

Note: Thread End Valves are limited to ASME B16.34, 2500 Pressure Class.

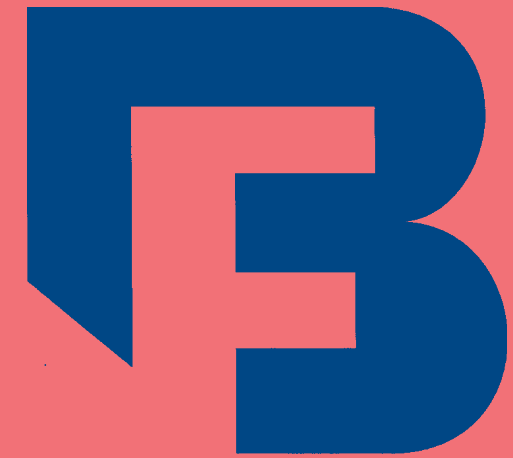
		FULL PORT – FIG. 45Y 30							
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/2	2	
	mm	6	10	15	20	25	40	50	
A	inch	4.72	4.72	4.72	6.5	6.5	8.66	9.06	
	mm	120	120	120	165	165	220	230	
B open	inch	9.45	9.45	9.65	12.01	12.20	16.54	17.72	
	mm	240	240	245	305	310	420	450	
C	inch	5.43	5.43	5.43	6.77	6.77	9.21	15.75	
	mm	138	138	138	172	172	234	400	
F	inch	.28	.28	.31	.43	.55	.98	1.26	
	mm	7	7	8	11	14	25	32	
G	inch	2.20	2.20	2.20	3.07	3.07	3.74	4.72	
	mm	56	56	56	78	78	95	120	
Weight	lb.	12	12	12.25	30.75	30.75	61.75	70.5	
	kg	5.5	5.5	5.6	14	14	28	32	
PACKING		2B3	2B3	2B3	2B4A	4B5	2B8	4B8	

Available with Socket Weld or Butt-Weld Ends only.

Materials and trim specifications Page 91

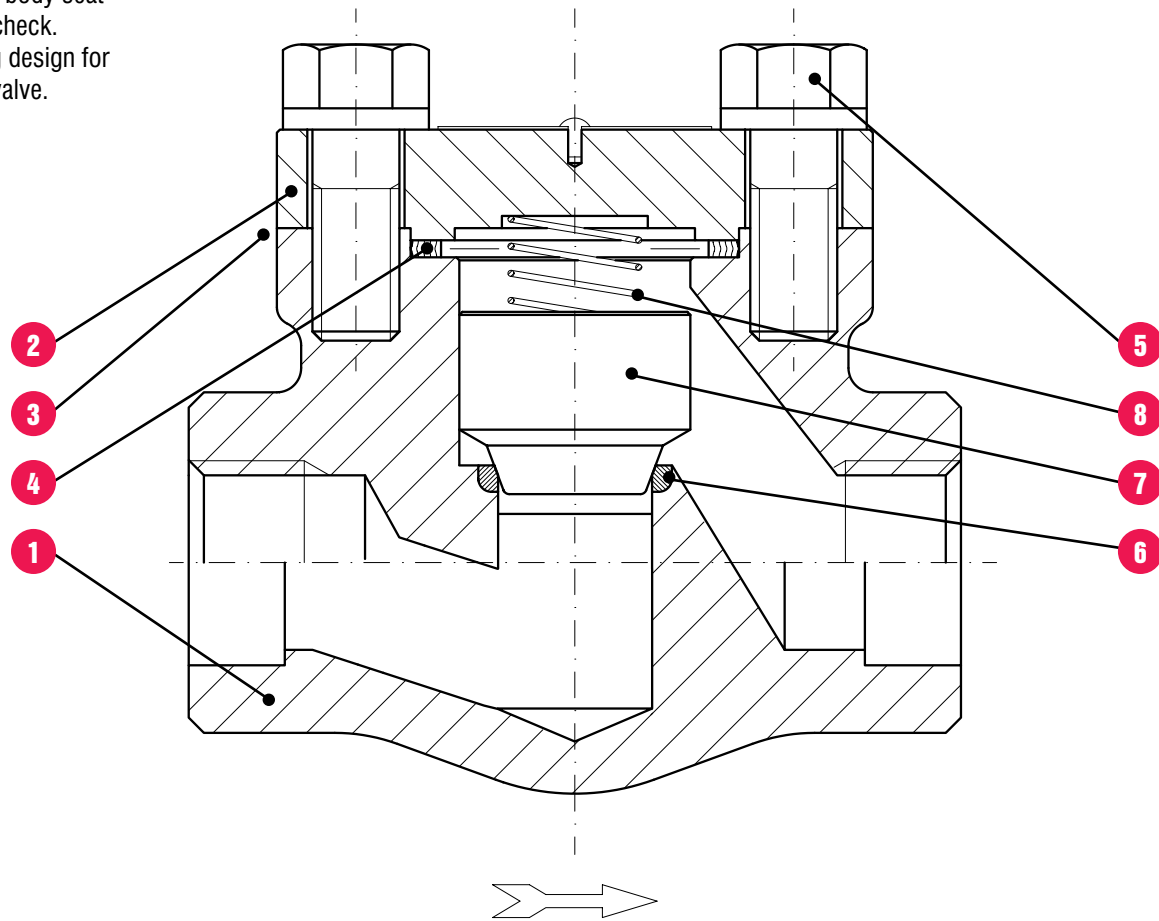
- Overview24
- Bolted Bonnet- 800 lb. & 1500 lb. valves25
- Bolted Bonnet- 1500 lb. & 2500 lb. valves26
- Welded Bonnet- 800 lb. & 1500 lb. valves27
- Welded Bonnet- 2500 lb. & 4500 lb. valves28
- Welded Bonnet (Y type)- 800 lb. & 1690 lb. valves29
- Welded Bonnet (Y type)- 2680 lb. & 4500 lb. valves30

CHECK VALVES



CHECK VALVES

Forged steel, piston, ball or swing check. Full or standard port. Bolted or welded cover joint. T-Pattern or Y-Pattern. Integral body seat for piston or ball check. Separate seat ring design for the swing check valve.

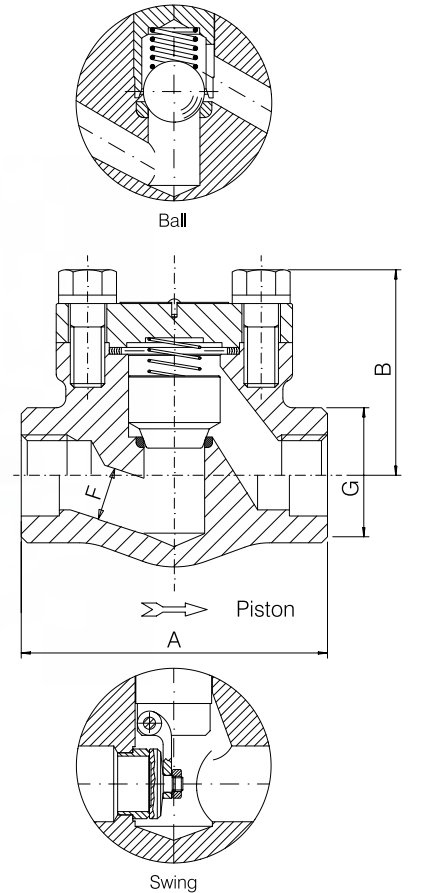


- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in both the full or standard port design. It is also available in either T-Pattern or Y-Pattern configurations.
- 2. COVER.** The cover is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34.
- 3. BODY-COVER JOINT.** Two different cover joint designs are available. These are either the bolted cover or the threaded and seal welded type.
- 4. GASKET.** The bolted cover joint design valve uses a contained, controlled compression, spiral wound type gasket.

- 5. COVER BOLTING.** The cover bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT.** The body seat for the piston and ball check valves is an integral weld overlay and is part of the valve trim. The swing check valve is supplied with a separate seat ring which is pressed into the valve body and wedged into place, forming a seal with the body.
- 7. PISTON, BALL OR DISC.** The piston, ball or disc is forged steel and is part of the valve trim. The seating surface of the piston and ball check is of the tapered or plug type design. The seating surface of the swing check is of the flat seat design.
- 8. SPRING.** The spring is optional and supplied only upon request.

800 LB.
1500 LB.

Design construction:
ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Spring on request only
Spiral-wound gasket
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Ratings:
- carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
- carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



		FULL PORT - FIG. H 40 - H 50 - H 60								
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
	mm	6	10	15	20	25	32	40	50	
A	inch	3.15	3.15	3.54	4.33	5	5.91	7.09	8.27	
	mm	80*	80	90	110	127	150	180	210	
B	inch	2.17	2.17	2.36	3.07	3.46	3.62	4.25	5.71	
	mm	55	55	60	78	88	92	108	145	
F Piston/ F Ball	inch	.28	.35	.51	.69	.89	1.16	1.38	1.77	
	mm	7	9	13	17.5	22.5	29.5	35	45	
F Swing	inch	.31	.38	.55	.71	.94	1.18	1.44	1.89	
	mm	8	9.6	14	18	24	30	36.6	48	
G	inch	1.26	1.26	1.50	1.89	2.20	2.52	3.07	3.35	
	mm	32	32	38	48	56	64	78	85	
Weight	lb.	3	3	3.5	6.5	9.5	12.25	22	35.25	
	kg	1.4	1.4	1.6	3	4.3	5.6	10	16	
GASKET		G2	G2	G2	G3	G4	G6	G7	G9	

*For swing type only A=90mm 3.54inch

		STANDARD PORT - FIG. HL 40 - HL 50 - HL 60					
SIZE	inch	1/2	3/4	1	1 1/2	2	
	mm	15	20	25	40	50	
A	inch	3.15	3.54	4.33	5.91	7.09	
	mm	80	90	110	150	180	
B	inch	2.17	2.36	3.07	3.62	4.25	
	mm	55	60	78	92	108	
F Piston/ F Ball	inch	.35	.51	.69	1.16	1.38	
	mm	9	13	17.5	29.5	35	
F Swing	inch	.38	.55	.71	1.18	1.44	
	mm	9.6	14	18	30	36.6	
G	inch	1.26	1.5	1.89	2.52	3.07	
	mm	32	38	48	64	78	
Weight	lb.	2.75	3.5	6.25	12.25	19.75	
	kg	1.3	1.6	2.8	5.6	9.0	
GASKET		G2	G2	G3	G6	G7	

		FULL PORT - FIG. 9H 40 - 9H 50 - 9H 60								
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
	mm	6	10	15	20	25	32	40	50	
A	inch	3.54	3.54	4.33	5	5.91	7.09	8.27	8.27	
	mm	90	90	110	127	150	180	210	210	
B	inch	2.36	2.36	3.07	3.46	3.62	4.25	5.71	5.91	
	mm	60	60	78	88	92	108	145	150	
F Piston/ F Ball	inch	.28	.35	.47	.59	.79	1.06	1.26	1.57	
	mm	7	9	12	15	20	27	32	40	
F Swing	inch	-	-	.55	.71	.94	1.18	1.44	1.89	
	mm	-	-	14	18	24	30	36.6	48	
G	inch	1.5	1.5	1.89	2.20	2.52	3.07	3.35	3.74	
	mm	38	38	48	56	64	78	85	95	
Weight	lb.	3.75	3.75	6.75	10	14.25	23.25	41.75	41.75	
	kg	1.7	1.7	3.1	4.6	6.5	10.6	19	19	
GASKET		G1	G1	G2	G3	G4	G5	G7	G8	

		STANDARD PORT - FIG. 9HL 40 - 9HL 50 - 9HL 60					
SIZE	inch	1/2	3/4	1	1 1/2	2	
	mm	15	20	25	40	50	
A	inch	3.54	4.33	5	7.09	8.27	
	mm	90	110	127	180	210	
B	inch	2.36	3.07	3.46	4.25	5.71	
	mm	60	78	88	108	145	
F Piston/ F Ball	inch	.35	.47	.59	1.06	1.26	
	mm	9	12	15	27	32	
F Swing	inch	.38	.55	.71	1.18	1.44	
	mm	9.6	14	18	30	36.6	
G	inch	1.5	1.89	2.20	3.07	3.35	
	mm	38	48	56	78	85	
Weight	lb.	3.75	6.5	9.75	22	39.5	
	kg	1.7	3	4.4	10	18	
GASKET		G1	G2	G3	G5	G7	

B[®] CHECK VALVES- WELDED BONNET- FULL PORT

BONNEY FORGE

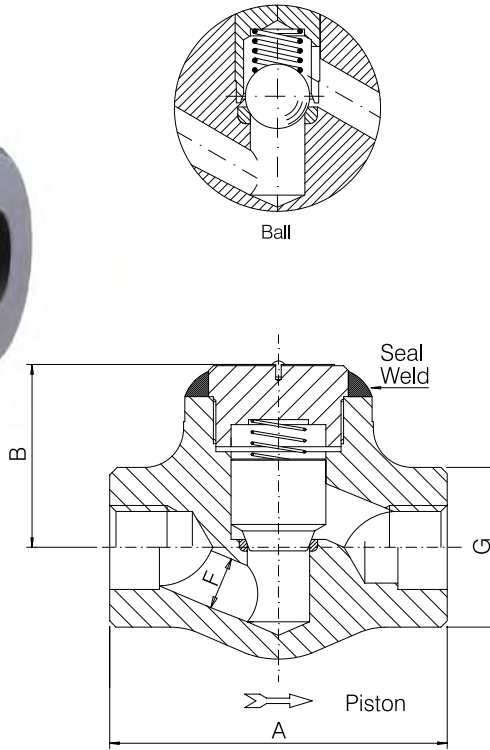
2500 LTD.

4500 LTD.

Design construction:

ASME B16.34 Limited Class
 Testing according to API 598
 Marking MSS SP25
 Spring on request only
 Body bonnet weld to ASME IX
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25

Ratings:
 - carbon steel class 2500 6250 psig @ 100°F
 431 bar + 38°C
 - carbon steel class 4500 11250 psig @ 100°F
 776 bar + 38°C



FULL PORT – FIG. 25W 40 - 25W 50								
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/2	2
	mm	6	10	15	20	25	40	50
A	inch	4.33	4.33	5	5.91	7.09	8.27	9.06
	mm	110	110	127	150	180	210	230
B	inch	2.76	2.76	3.39	3.62	4.33	5.91	7.09
	mm	70	70	86	92	110	150	180
F	inch	.28	.35	.43	.57	.75	1.10	1.38
	mm	7	9	11	14.5	19	28	35
G	inch	1.89	1.89	2.20	2.52	3.07	3.35	3.74
	mm	48	48	56	64	78	85	95
Weight	lb.	7	7	8.25	12.25	22	35.25	46.25
	kg	3.2	3.2	3.8	5.6	10	16	21

FULL PORT – FIG. 45W 40 - 45W 50								
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/2	2
	mm	6	10	15	20	25	40	50
A	inch	5	5	5	7.09	7.09	9.06	9.06
	mm	127	127	127	180	180	230	230
B	inch	3.54	3.54	3.54	4.33	4.33	7.09	7.68
	mm	90	90	90	110	110	180	195
F	inch	.28	.28	.31	.43	.55	.98	1.26
	mm	7	7	8	11	14	25	32
G	inch	2.20	2.20	2.20	3.07	3.07	3.74	4.72
	mm	56	56	56	78	78	95	120
Weight	lb.	8.5	8.5	8.5	23	23	55.5	59.5
	kg	3.9	3.9	3.9	10.5	10.5	25.2	27

Available with Socket Weld or Butt-Weld Ends only.
 Materials and trim specifications Page 91

B[®] CHECK VALVES- WELDED BONNET- FULL PORT (Y TYPE)

BONNEY FORGE

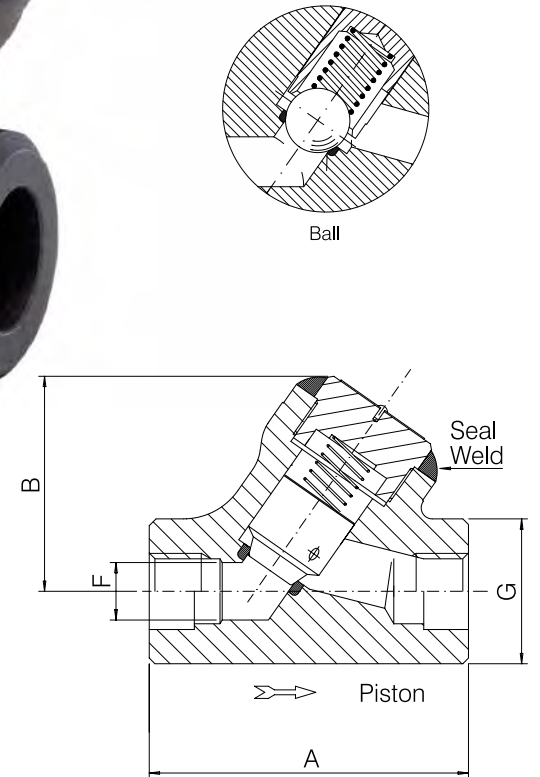
800 LTD.

1690 LTD.

Design construction:

ASME B16.34 Limited Class - BS 5352
 Testing according to API 598
 Marking MSS SP25
 Body bonnet weld to ASME IX
 Spring on request only
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25

Ratings:
 - carbon steel class 800 2000 psig @ 100°F
 138 bar + 38°C
 - carbon steel class 1690 4225 psig @ 100°F
 291 bar + 38°C



FULL PORT – FIG. Y 40 - Y 50									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.35	3.35	3.35	4.13	4.72	6.5	6.5	7.48
	mm	85	85	85	105	120	165	165	190
B	inch	2.76	2.76	2.76	3.54	3.93	5.12	5.12	6.3
	mm	70	70	70	90	100	130	130	160
F	inch	.28	.35	.51	.69	.89	1.16	1.38	1.77
	mm	7	9	13	17.5	22.5	29.5	35	45
G	inch	1.50	1.50	1.50	1.89	2.20	3.07	3.07	3.35
	mm	38	38	38	48	56	78	78	85
Weight	lb.	2.5	2.5	2.5	5	6.5	17.5	17.5	26.25
	kg	1.2	1.2	1.2	2.3	3	8	8	12

FULL PORT – FIG. 1690Y 40 - 1690Y 50									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.35	3.35	4.13	4.72	6.5	6.5	7.48	8.66
	mm	85	85	105	120	165	165	190	220
B	inch	2.76	2.76	3.54	3.93	5.12	5.12	6.3	7.68
	mm	70	70	90	100	130	130	160	195
F	inch	.28	.35	.47	.59	.79	1.06	1.26	1.57
	mm	7	9	12	15	20	27	32	40
G	inch	1.50	1.50	1.89	2.20	3.07	3.07	3.35	3.74
	mm	38	38	48	56	78	78	85	95
Weight	lb.	2.5	2.5	5.25	7.75	20.5	28.5	29.75	39.5
	kg	1.2	1.2	2.4	3.6	9.3	13	13.5	18

Materials and trim specifications Page 91

B[®] CHECK VALVES- WELDED BONNET- FULL PORT (Y TYPE)

BONNEY FORGE

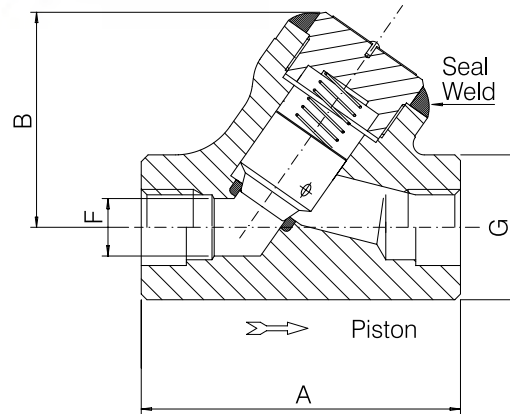
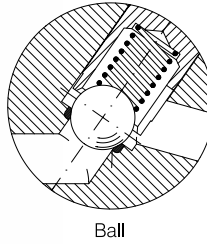
2680 LTD.

4500 LTD.

Design construction:

ASME B16.34 Limited Class - BS 5352
 Testing according to API 598
 Marking MSS SP25
 Body bonnet weld to ASME IX
 Spring on request only
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25

Ratings:
 - carbon steel class 2680 6700 psig @ 100°F
 462 bar + 38°C
 - carbon steel class 4500 11250 psig @ 100°F
 776 bar + 38°C



FULL PORT – FIG. 2680Y 40 - 2680Y 50								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	4.13 105	4.13 105	4.72 120	6.5 165	6.5 165	7.48 190	8.66 220
B	inch mm	3.35 85	3.35 85	3.74 95	4.53 115	4.72 120	5.71 145	7.28 185
F	inch mm	.28 7	.35 9	.43 11	.57 14.5	.75 19	1.10 28	1.38 35
G	inch mm	1.89 48	1.89 48	2.20 56	3.07 78	3.07 78	3.35 85	3.74 95
Weight	lb. kg	7 3.2	7 3.2	8 3.7	19.75 9	19.75 9	29.75 13.5	44 20

Note: Thread End Valves are limited to ASME B16.34 2500 Pressure Class.

STANDARD PORT – FIG. 45Y 40 - 45Y 50								
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	4.72 120	4.72 120	4.72 120	6.5 165	6.5 165	8.66 220	9.06 230
B	inch mm	3.74 95	3.74 95	3.74 95	4.53 115	4.72 120	7.28 185	7.68 195
F	inch mm	.28 7	.28 7	.31 8	.43 11	.55 14	.98 25	1.26 32
G	inch mm	2.20 56	2.20 56	2.20 56	3.07 78	3.07 78	3.74 95	4.72 120
Weight	lb. kg	8 3.7	8 3.7	8 3.7	19.75 9	19.75 9	44 20	50.5 23

Available with Socket Weld or Butt-Weld Ends only.
 Materials and trim specifications Page 91

Overview32

Gate Type- Bolted Bonnet- 150 lb.,
 & 300 lb. valves33

Gate Type- Bolted Bonnet-
 600 lb. valves34

Gate Type- Bolted Bonnet- 800 lb.
 & 1500 lb. valves35

Gate Type- Bolted Bonnet- 1500 lb. valves
 Welded Bonnet- 150 lb.-1500 lb valves36

Globe Type- Bolted Bonnet- 150 lb.,
 & 300 lb. valves37

Globe Type- Bolted Bonnet-
 600 lb. valves38

Globe Type- Bolted Bonnet- 800 lb.
 & 1500 lb. valves39

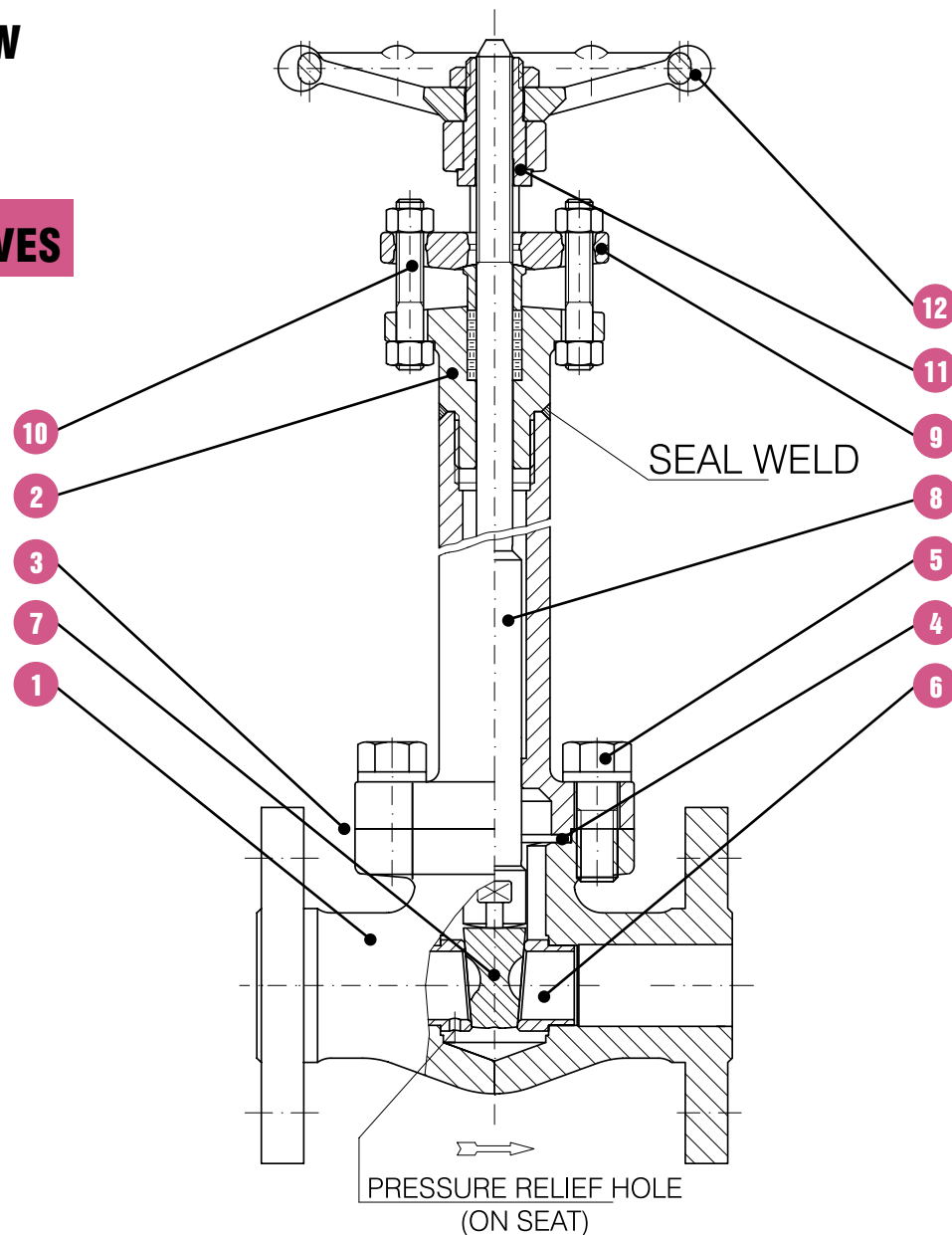
Globe Type- Bolted Bonnet- 1500 lb. valves
 Welded Bonnet- 150 lb. & 1500 lb. valves40

CRYOGENIC VALVES



CRYOGENIC VALVES

Typical cryogenic gate valve shown. Forged steel, outside screw and yoke (OS&Y), rising stem, non-rising handwheel. Full or standard port. Bolted or welded bonnet joint. Integral backseat.



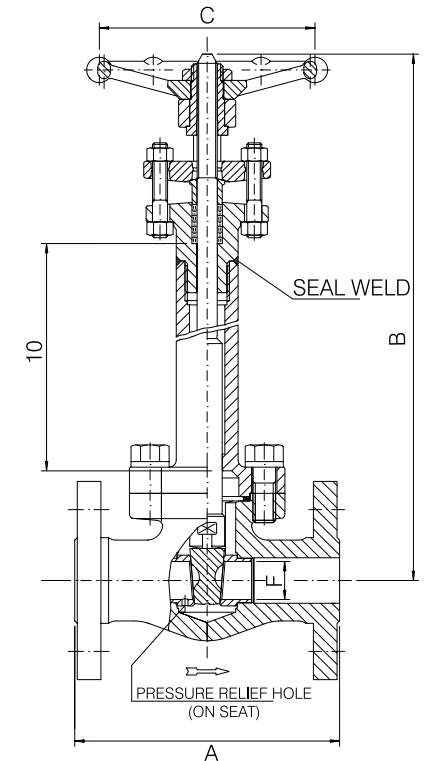
- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in both the full or standard port design.
- 2. BONNET.** The bonnet is forged steel and extended to act as a gas column to keep stem packing at a sufficient distance away from the frost line. The bonnet also has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the bolted bonnet or the threaded and seal welded type.
- 4. GASKET.** The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket.
- 5. BONNET BOLTING.** The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT RINGS.** The seat rings are steel and make up part of the valve trim. They are pressed into the valve body and wedged into place, forming a seal with the body. The seat ring is vented on the up-stream side to prevent high pressure build up if the temperature rises in the column. The seating surfaces are ground and lapped.

- 7. WEDGE.** The wedge, which is a solid design, is forged or investment cast steel and is part of the valve trim. The seating surfaces are ground and lapped.
- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains its parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.

150 LB.

300 LB.

Design construction:
API 602- ASME B16.34- BS 5352- BS 6364
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Welded body- bonnet joint also available
Ratings: stainless steel A182- F316
- class 150 = 275 psig @ 100°F
19 bar + 38°C
- class 300 = 720 psig @ 100°F
49 bar + 38°C



150 LB.

FULL PORT — FIG. 1C 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.5	7.01
	mm	108	117,5	127	165	178
B open	inch	16.93	17.52	18.50	21.06	23.42
	mm	430	445	470	535	595
C	inch	3.46	3.82	5.43	5.43	6.77
	mm	88	97	138	138	172
F	inch	.55	.71	.94	1.44	1.89
	mm	14	18	24	36,6	48
Weight	lb.	10.5	13	19.25	32.5	42
	kg	4.8	5.9	8.7	14.7	19
PACKING		BH2	BH4	BH5	BY5	BY7
GASKET		G2	G3	G4	G7	G8

150 LB.

STANDARD PORT — FIG. 1CL 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.5	7.01
	mm	108	117,5	127	165	178
B open	inch	16.54	17.13	17.72	20.08	21.06
	mm	420	435	450	510	535
C	inch	3.46	3.46	3.82	5.43	5.43
	mm	88	88	97	138	138
F	inch	.38	.55	.71	1.18	1.44
	mm	9,6	14	18	30	36,6
Weight	lb.	9.5	11.25	14	27.25	35.25
	kg	4.3	5.1	6.4	12.4	16
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET		G2	G2	G3	G5	G7

300 LB.

FULL PORT — FIG. 3C 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	5.51	6.00	6.5	7.52	8.50
	mm	140	152,5	165	191	216
B open	inch	16.93	17.52	18.50	21.06	23.42
	mm	430	445	470	535	595
C	inch	3.46	3.82	5.43	5.43	6.77
	mm	88	97	138	138	172
F	inch	.55	.71	.94	1.44	1.89
	mm	14	18	24	36,6	48
Weight	lb.	11.25	15.75	21.75	35.25	48.5
	kg	5,1	7,2	9,9	16	22
PACKING		BH2	BH4	BH5	BY5	BY7
GASKET		G2	G3	G4	G7	G8

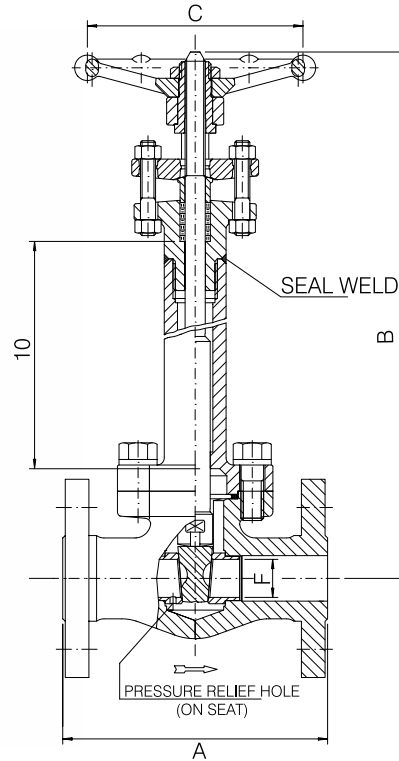
300 LB.

STANDARD PORT — FIG. 3CL 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	5.51	6.00	6.5	7.52	8.50
	mm	140	152,5	165	191	216
B open	inch	16.53	17.12	17.72	20.08	21.06
	mm	420	435	450	510	535
C	inch	3.46	3.46	3.82	5.43	5.43
	mm	88	88	97	138	138
F	inch	.38	.55	.71	1.18	1.44
	mm	9,6	14	18	30	36,6
Weight	lb.	11.25	14.25	17.25	33	42
	kg	5,1	6,5	7,8	15	19
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET		G2	G2	G3	G5	G7

B CRYOGENIC VALVES- GATE TYPE- BOLTED BONNET-
FULL & STANDARD PORT
BONNEY FORGE

600 LB.

Design construction:
API 602- ASME B16.34- BS 5352- BS 6364
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Welded body- bonnet Joint also available
Ratings: stainless steel A182- F316
-class
600 = 1440 psig @ 100°F
99 bar + 38°C

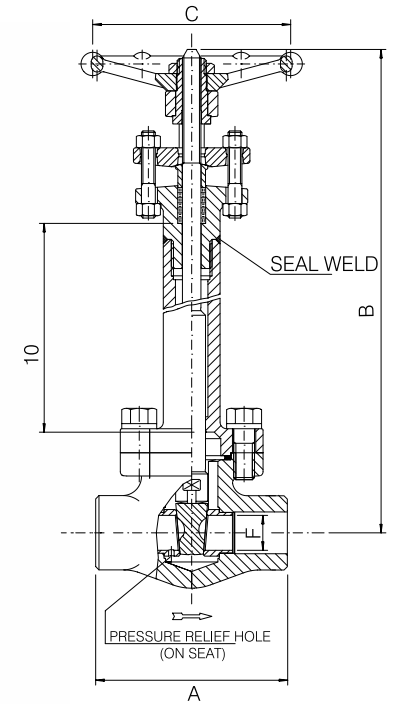


B CRYOGENIC VALVES- GATE TYPE- BOLTED BONNET-
FULL & STANDARD PORT
BONNEY FORGE

800 LB.

1500 LB.

Design construction:
API 602- ASME B16.34- BS 5352- BS 6364
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Welded body- bonnet joint also available
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Ratings: stainless steel A182- F316
-class 800 1920 psig @ 100°F
132 bar + 38°C
-class 1500 3600 psig @ 100°F
248 bar + 38°C



600 LB. FULL PORT – FIG. 6C 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.5 165	7.52 191	8.50 216	9.49 241	11.5 292
B open	inch mm	16.93 430	17.52 445	18.50 470	21.06 535	23.42 595
C	inch mm	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172
F	inch mm	.55 14	.71 18	.94 24	1.44 36.6	1.89 48
Weight	lb. kg	13.75 6.2	18.5 8.4	23 10.5	44 20	70.5 32
PACKING		BH2	BH4	BH5	BY5	BH8
GASKET		G2	G3	G4	G7	G9

600 LB. STANDARD PORT – FIG. 6CL 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.5 165	7.52 191	8.50 216	9.49 241	11.5 292
B open	inch mm	16.53 420	17.12 435	17.72 450	20.08 510	21.06 535
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6
Weight	lb. kg	11.75 5.3	16.25 7.4	21.5 9.8	39.75 18	53 24
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET		G2	G2	G3	G6	G7

800 LB. FULL PORT – FIG. C 10									
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50
A	inch mm	3.15 80	3.15 80	3.54 90	4.33 110	5 127	5 127	5 127	8.27 210
B open	inch mm	15.75 400	15.75 400	15.75 400	17.52 445	18.70 475	19.88 505	20.87 530	23.54 598
C	inch mm	3.46 88	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	5.43 138	6.77 172
F	inch mm	.31 8	.38 9.6	.55 14	.71 18	.94 24	1.18 30	1.44 36.6	1.89 48
G	inch mm	1.26 32	1.26 32	1.5 38	1.89 48	2.20 56	2.52 64	3.07 78	3.35 85
Weight	lb. kg	7.5 3.4	7.5 3.4	7.75 3.5	11.25 5.1	18 8.2	26.5 12	35.25 16	50.75 23
PACKING		BH2	BH2	BH2	BH4	BH5	BH6	BY5	BH8
GASKET		G2	G2	G2	G3	G4	G6	G7	G9

800 LB. STANDARD PORT – FIG. CL 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	3.15 80	3.54 90	4.33 110	5 127	5 127
B open	inch mm	15.75 400	15.75 400	17.52 445	19.88 505	20.87 530
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6
G	inch mm	1.26 32	1.5 38	1.89 48	2.52 64	3.07 78
Weight	lb. kg	7.5 3.4	7.75 3.5	11 5	21 9.6	27.5 12.5
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET		G2	G2	G3	G6	G7

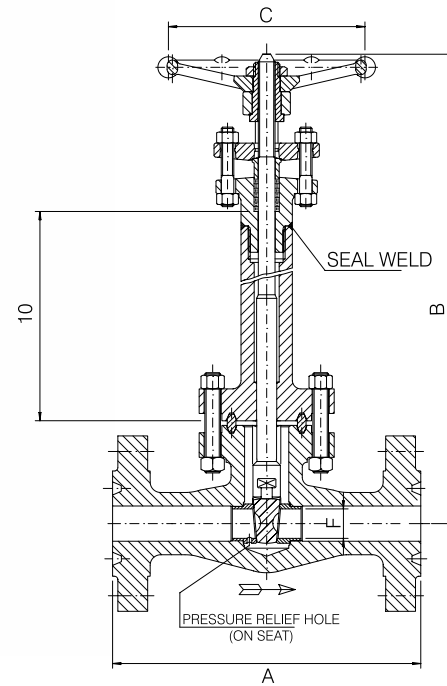
1500 LB. FULL PORT – FIG. 9C 10									
SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50
A	inch mm	3.54 90	3.54 90	4.33 110	5 127	5 127	5 127	8.27 210	9.05 230
B open	inch mm	15.55 395	15.55 395	17.12 435	18.50 470	19.49 495	20.47 520	23.03 585	24.41 620
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	5.43 138	6.77 172	9.21 234
F	inch mm	.31 8	.38 9.6	.55 14	.71 18	.94 24	1.18 30	1.44 36.6	1.89 48
G	inch mm	1.5 38	1.5 38	1.89 48	2.20 56	2.52 64	3.07 78	3.35 85	3.74 95
Weight	lb. kg	7.75 3.5	7.75 3.5	12 5.5	17 7.8	24.25 11	40 14.5	56.5 25.6	94.75 43
PACKING		BH3	BH3	BH5	BH6	2B4	BY7	2B5	9B8
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

1500 LB. STANDARD PORT – FIG. 9CL 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	3.54 90	4.33 110	5 127	5 127	8.27 210
B open	inch mm	15.94 405	17.32 440	18.50 470	20.67 525	23.23 590
C	inch mm	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6
G	inch mm	1.26 32	1.5 38	1.89 48	2.52 64	3.07 78
Weight	lb. kg	8 3.7	11.5 5.3	18.75 8.5	30 13.6	57.25 26
PACKING		BH3	BH5	BH6	2B5	BH8
GASKET		G1	G2	G3	G5	G7

CRYOGENIC VALVES- GATE TYPE- BOLTED BONNET- FULL PORT

1500 LB.

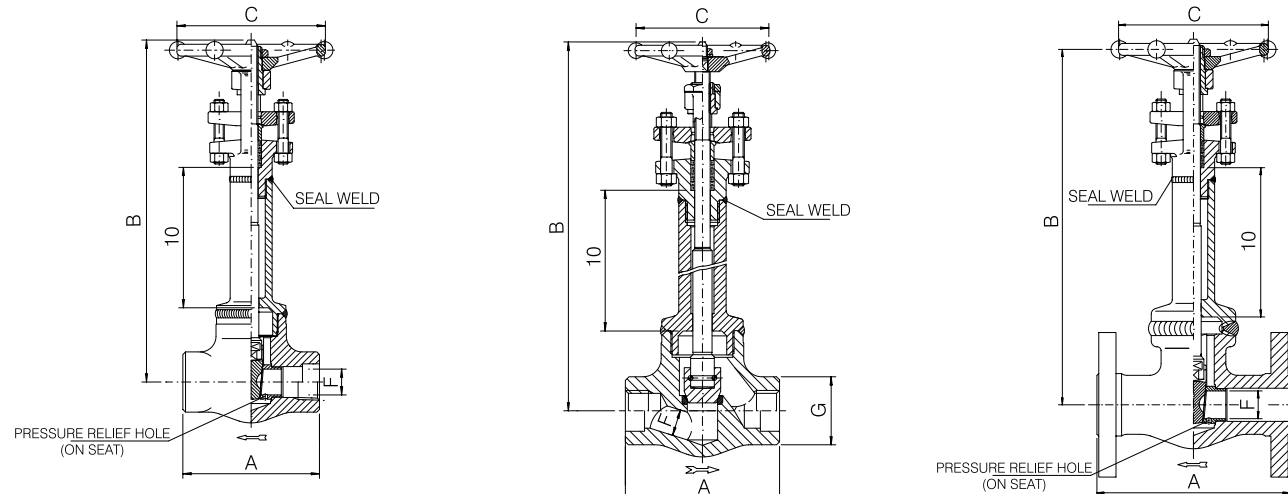
Design construction:
ASME B16.34- BS 5352
Full Port type
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Body bonnet gasket ring joint type
Spiral wound type gasket on request
Integral backseat
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Welded body bonnet joint also available
Ratings: stainless steel A182- F316
-class 1500 3600 psig @ 100°F
248 bar + 38°C



FULL PORT — FIG. 15CFR 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	8.50	9.01	10	12.01	14.62
	mm	216	229	254	305	371.5
B open	inch	17.91	19.29	19.68	22.64	24.80
	mm	455	490	500	575	630
C	inch	3.82	5.43	5.43	6.77	9.21
	mm	97	138	138	172	234
F	inch	.55	.71	.94	1.44	1.89
	mm	14	18	24	36.6	48
Weight	lb.	22.5	30.75	38.5	68.25	130
	kg	10.2	14	17.5	31	59
PACKING		BH5	BH6	2B4	BH8	4B8
GASKET		R12	R16	R16	R20	R22

Materials and trim specifications Page 91

TYPICAL DRAWING FOR GATE AND GLOBE WELDED BONNET CONSTRUCTION

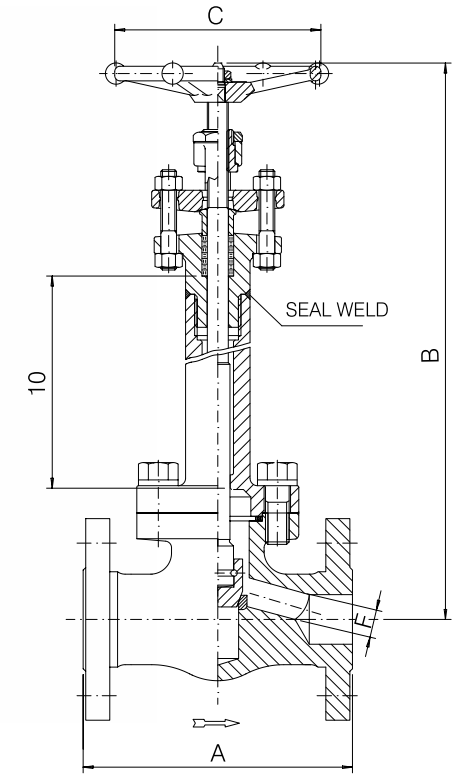


CRYOGENIC VALVES- GLOBE TYPE- BOLTED BONNET- FULL & STANDARD PORT

150 LB.

300 LB.

Design construction:
ASME B16.34- BS 5352- BS 6364
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Loose disc stem assembly
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Welded body - bonnet joint also available
Ratings: stainless steel A182- F316
- class 150 275 psig @ 100°F
19 bar + 38°C
- class 300 720 psig @ 100°F
49 bar + 38°C



FULL PORT — FIG. 1C 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.5	7.99
	mm	108	117.5	127	165	203
B open	inch	17.52	18.50	19.68	22.05	24.80
	mm	445	470	500	560	630
C	inch	3.46	3.82	5.43	5.43	6.77
	mm	88	97	138	138	172
F	inch	.51	.69	.88	1.38	1.77
	mm	13	17.5	22.5	35	45
Weight	lb.	10.5	13	19.25	32.5	46.25
	kg	4.8	5.9	8.7	14.7	21
PACKING		BH3	BH5	BY5	BY7	BY7
GASKET		G2	G3	G4	G7	G8

STANDARD PORT — FIG. 1CL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.5	7.99
	mm	108	117.5	127	165	203
B open	inch	15.16	17.12	18.11	20.27	21.46
	mm	385	435	460	515	545
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
Weight	lb.	10	11.5	14.75	27.5	42
	kg	4.6	5.2	6.7	12.5	19
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G5	G8

FULL PORT — FIG. 3C 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6.00	7.01	7.99	9.01	10.51
	mm	152.5	178	203	229	267
B open	inch	16.53	18.11	20.08	21.65	24.01
	mm	420	460	510	550	610
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.51	.69	.88	1.38	1.77
	mm	13	17.5	22.5	35	45
Weight	lb.	13.75	17.5	26.5	46.25	68.25
	kg	6.2	7.9	12	21	31
PACKING		BH3	BH5	BY5	BY7	BH8
GASKET		G2	G3	G4	G7	G9

STANDARD PORT — FIG. 3CL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6.00	7.01	7.99	9.01	10.51
	mm	152.5	178	203	229	267
B open	inch	15.35	17.32	18.90	21.26	22.24
	mm	390	440	480	540	565
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
Weight	lb.	12.25	14.75	21.5	38.5	54
	kg	5.6	6.7	9.8	17.5	24.5
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G6	G7

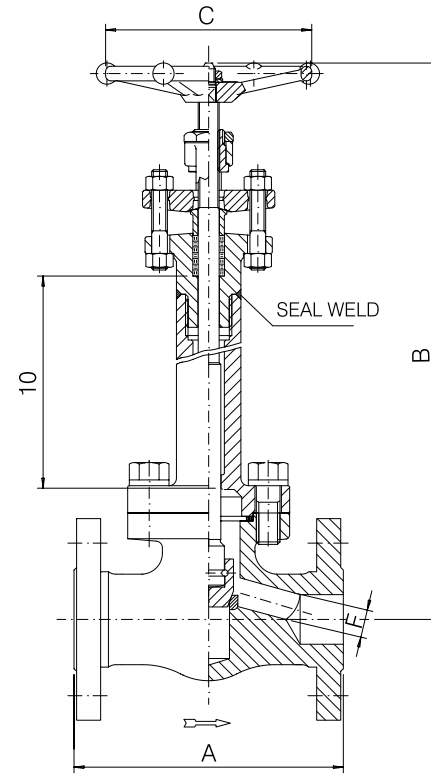
Materials and trim specifications Page 91



CRYOGENIC VALVES- GLOBE TYPE- BOLTED BONNET- FULL & STANDARD PORT

600 LB.

Design construction:
 ASME B16.34- BS 5352- BS 6364
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral wound gasket
 Integral backseat
 Loose disc stem assembly
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Welded body - bonnet joint also available
 Ratings: stainless steel A182 - F316
 -class 600 1440 psig @ 100°F
 99 bar + 38°C

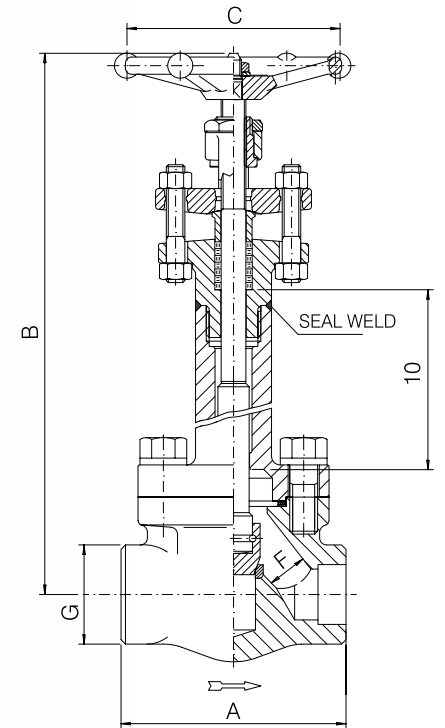


CRYOGENIC VALVES- GLOBE TYPE- BOLTED BONNET- FULL & STANDARD PORT

800 LB.

1500 LB.

Design construction:
 ASME B16.34- BS5352- BS6364
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral wound gasket
 Integral backseat
 Loose disc stem assembly
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25
 Welded body - bonnet joint also available
 Ratings: stainless steel A182- F316
 - class 800 1920 psig @ 100°F
 132 bar + 38°C
 - class 1500 3600 psig @ 100°F
 248 bar + 38°C



600 LB. FULL PORT - FIG. 6C 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6.5	7.52	8.50	9.49	11.5
	mm	165	191	216	241	292
B open	inch	16.53	18.11	20.08	21.65	24.01
	mm	420	460	510	550	610
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.51	.69	.88	1.38	1.77
	mm	13	17.5	22.5	35	45
Weight	lb.	14.25	19.25	27.75	48.5	75
	kg	6.5	8.7	12.6	22	34
PACKING		BH3	BH5	BY5	BY7	BH8
GASKET		G2	G3	G4	G7	G9

600 LB. STANDARD PORT - FIG. 6CL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6.5	7.52	8.50	9.49	11.5
	mm	165	191	216	241	292
B open	inch	15.35	17.32	18.90	21.26	22.24
	mm	390	440	480	540	565
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
Weight	lb.	13	16.75	22.5	42	57.25
	kg	5.9	7.6	10.2	19	26
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G6	G7

800 LB. FULL PORT - FIG. C 30									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.15	3.15	3.54	4.33	5	5.90	7.09	8.27
	mm	80	80	90	110	127	150	180	210
B open	inch	16.34	16.34	16.53	18.11	19.49	19.88	21.26	24.21
	mm	415	415	420	460	495	505	540	615
C	inch	3.46	3.46	3.46	3.82	5.43	5.43	6.77	6.77
	mm	88	88	88	97	138	138	172	172
F	inch	.27	.35	.51	.69	.88	1.16	1.38	1.77
	mm	7	9	13	17.5	22.5	29.5	35	45
G	inch	1.26	1.26	1.5	1.89	2.20	2.52	3.07	3.35
	mm	32	32	38	48	56	64	78	85
Weight	lb.	7.75	7.75	8	11.25	18.5	27.75	36.25	53
	kg	3.5	3.5	3.6	5.1	8.4	12.6	16.5	24
PACKING		BH3	BH3	BH3	BH5	BY5	BY5	BY7	BH8
GASKET		G2	G2	G2	G3	G4	G6	G7	G9

800 LB. STANDARD PORT - FIG. CL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.15	3.54	4.33	5.90	7.09
	mm	80	90	110	150	180
B open	inch	16.34	16.53	18.11	19.92	21.26
	mm	415	420	460	506	540
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
G	inch	1.26	1.5	1.89	2.52	3.07
	mm	32	38	48	64	78
Weight	lb.	7.25	8.25	11.5	21.5	32.5
	kg	3.3	3.8	5.2	9.8	14.8
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G6	G7

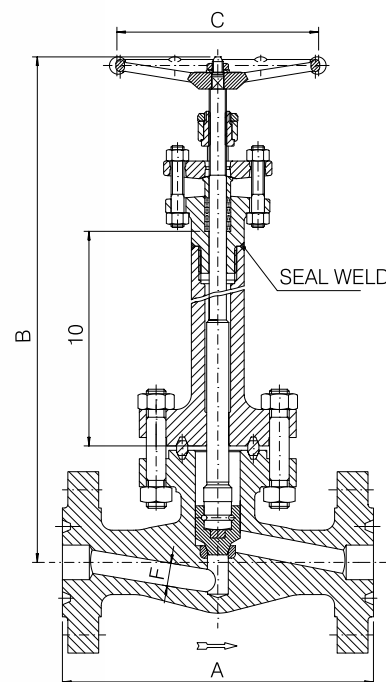
1500 LB. FULL PORT - FIG. 9C 30									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.54	3.54	4.33	5	5.90	7.09	8.27	9.05
	mm	90	90	110	127	150	180	210	230
B open	inch	16.14	16.14	17.91	19.49	19.68	21.26	24.21	25.39
	mm	410	410	455	495	500	540	615	645
C	inch	3.46	3.46	3.82	5.43	5.43	6.77	6.77	9.21
	mm	88	88	97	138	138	172	172	234
F	inch	.27	.35	.47	.59	.79	1.06	1.26	1.57
	mm	7	9	12	15	20	27	32	40
G	inch	1.5	1.5	1.89	2.20	2.52	3.07	3.35	3.74
	mm	38	38	48	56	64	78	85	95
Weight	lb.	8.75	8.75	12	17.5	24.25	34	55	90.25
	kg	4	4	5.5	8	11	15.5	25	41
PACKING		BH3	BH3	BH5	2B4	2B4	2B5	BH8	9B8
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

1500 LB. STANDARD PORT - FIG. 9CL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.54	4.33	5.90	7.09	8.27
	mm	90	110	150	180	210
B open	inch	16.34	17.91	19.61	21.65	24.21
	mm	415	455	498	550	615
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.35	.47	.59	1.06	1.26
	mm	9	12	15	27	32
G	inch	1.5	1.89	2.20	3.07	3.35
	mm	38	48	56	78	85
Weight	lb.	8	12	19.5	34.75	60.5
	kg	3.7	5.4	8.9	15.8	27.5
PACKING		BH3	BH5	2B4	2B5	BH8
GASKET		G1	G2	G3	G5	G7

CRYOGENIC VALVES- GLOBE TYPE- BOLTED BONNET- FULL PORT

1500 LB.

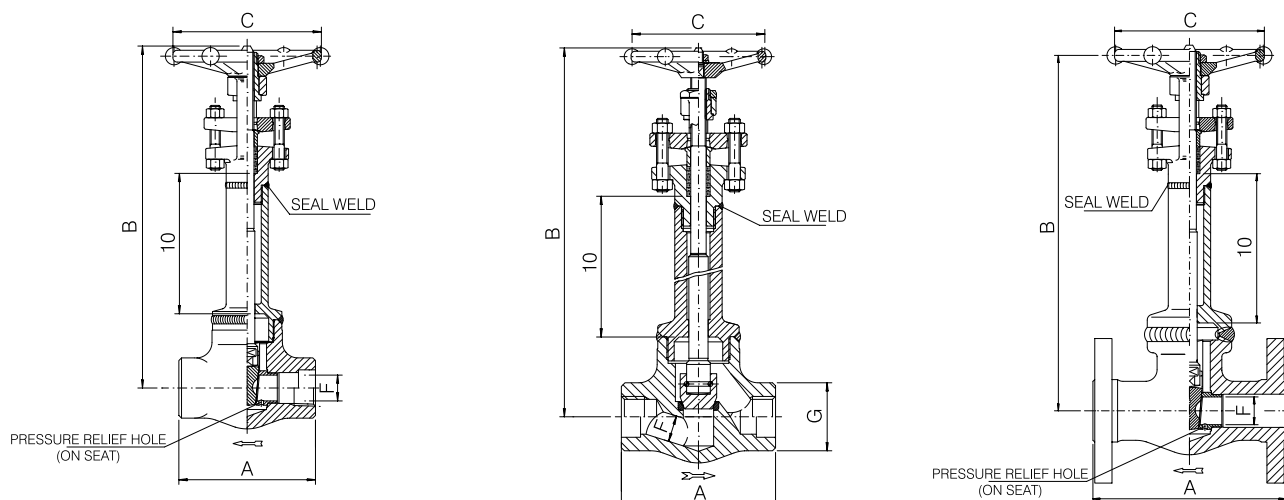
Design construction:
 ASME B16.34- BS 5352- BS6364
 Testing according to API- 598
 Marking MSS- SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Body bonnet gasket ring joint type
 Spiral wound gasket on request
 Integral backseat
 Loose disc stem assembly
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Welded body bonnet joint also available
 Full port type
 Ratings: stainless steel A182- F316
 - class 1500 3600 psig @ 100°F
 248 bar + 38°C



		FULL PORT - FIG. 15CFR 30				
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	8.50	9.01	10	12.01	14.62
	mm	216	229	254	305	371.5
B open	inch	18.50	20.08	20.67	23.42	25.59
	mm	470	510	525	595	650
C	inch	3.82	5.43	5.43	6.77	9.21
	mm	97	138	138	172	234
F	inch	.47	.57	.75	1.22	1.57
	mm	12	14.5	19	31	40
Weight	lb.	23	30.75	40.75	71.75	136.75
	kg	10.5	14	18.5	32.5	62
PACKING		BH5	2B4	2B4	BH8	9B8
GASKET		R12	R16	R16	R20	R22

Materials and trim specifications Page 91

TYPICAL DRAWING FOR GATE AND GLOBE WELDED BONNET CONSTRUCTION



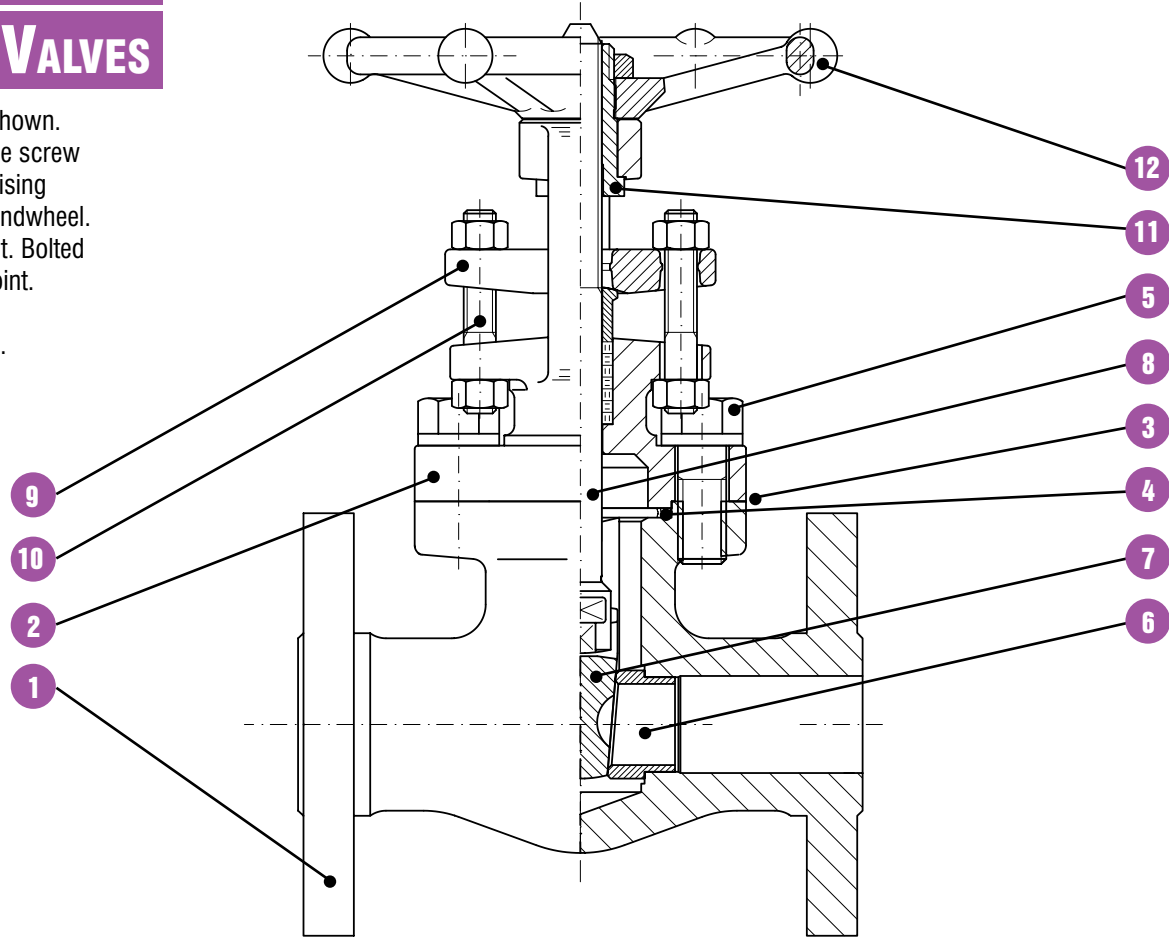
- Overview42
- Gate Type- Bolted Bonnet-
150 lb. & 300 lb. valves43
- Gate Type- Bolted Bonnet- 600 lb. valves44
- Gate Type- Bolted Bonnet- 1500 lb. valves45
- Gate Type- Bolted Bonnet- 2500 lb. valves46
- Globe Type- Bolted Bonnet-
150 lb. & 300 lb. valves47
- Globe Type- Bolted Bonnet- 600 lb. valves48
- Globe Type- Bolted Bonnet- 1500 lb. valves49
- Globe Type- Bolted Bonnet- 2500 lb. valves50
- Check Type- Bolted Bonnet-
150 lb. & 300 lb. valves51
- Check Type- Bolted Bonnet- 600 lb. valves52
- Check Type- Bolted Bonnet- 1500 lb. valves53
- Check Type- Bolted Bonnet- 2500 lb. valves54

INTEGRAL FLANGED VALVES



**INTEGRAL
FLANGED VALVES**

Typical gate valve shown.
Forged steel, outside screw
and yoke (OS&Y), rising
stem, non-rising handwheel.
Full or standard port. Bolted
or welded bonnet joint.
Integral backseat
Integral end flanges.



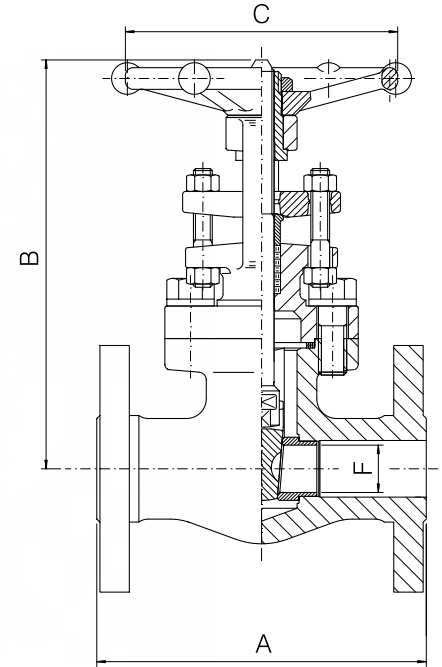
- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602, ASME B16.34, ASME B16.10 and ASME B16.5. The body is available in both the full or standard port design. End flanges are forged integral with the body.
- 2. BONNET.** The bonnet is forged steel, has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the bolted bonnet or the threaded and seal welded type.
- 4. GASKET.** The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket.
- 5. BONNET BOLTING.** The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT RINGS.** The seat rings are steel and make up part of the valve trim. They are pressed into the valve body and wedged into place, forming a seal with the body. The seating surfaces are ground and lapped.
- 7. WEDGE.** The wedge, which is a solid design, is forged or investment cast steel and is part of the valve trim. The seating surfaces are ground and lapped.

- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains its parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.

150 LB.

300 LB.

Design construction:
API 602 - ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral-wound gasket
Integral backseat
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Ratings:
-carbon steel class 150 285 psig@ 100°F
20 bar + 38°C
-carbon steel class 300 740 psig@ 100°F
51 bar + 38°C



		FULL PORT – FIG. 1 10					
SIZE	inch	1/2	3/4	1	1 1/2	2	
	mm	15	20	25	40	50	
A	inch	4.25	4.62	5	6.50	7	
	mm	108	117.5	127	165	178	
B open	inch	6.88	8.26	9.05	11.41	13.39	
	mm	175	210	230	290	340	
C	inch	3.46	3.82	5.43	5.43	6.77	
	mm	88	97	138	138	172	
F	inch	.55	.71	.94	1.44	1.89	
	mm	14	18	24	36.6	48	
Weight	lb.	7	10.25	13.25	25	39.5	
	kg	3.2	4.7	6.1	11.4	18	
PACKING		BH2	BH4	BH5	BY5	BY7	
GASKET		G2	G3	G4	G7	G8	

		STANDARD PORT – FIG. L1 10						
SIZE	inch	1/2	3/4	1	1 1/2	2	3	
	mm	15	20	25	40	50	75	
A	inch	4.25	4.62	5	6.50	7	8	
	mm	108	117.5	127	165	178	203	
B open	inch	6.88	7.16	8.35	10.04	11.41	13.58	
	mm	175	182	212	255	290	345	
C	inch	3.46	3.46	3.82	5.43	5.43	6.77	
	mm	88	88	97	138	138	172	
F	inch	.38	.55	.71	1.18	1.44	1.89	
	mm	9.6	14	18	30	36.6	48	
Weight	lb.	6.25	8	11.25	21	29	46.75	
	kg	2.9	3.7	5.2	9.6	13.2	21.2	
PACKING		BH2	BH2	BH4	BH6	BY5	BH8	
GASKET		G2	G2	G3	G5	G7	G8	

		FULL PORT – FIG. 3 10					
SIZE	inch	1/2	3/4	1	1 1/2	2	
	mm	15	20	25	40	50	
A	inch	5.51	6	6.50	7.51	8.50	
	mm	140	152.5	165	191	216	
B open	inch	6.89	8.26	9.05	11.42	13.39	
	mm	175	210	230	290	340	
C	inch	3.46	3.82	5.43	5.43	6.77	
	mm	88	97	138	138	172	
F	inch	.55	.71	.94	1.44	1.89	
	mm	14	18	24	36.6	48	
Weight	lb.	8.25	12.25	15.5	29.75	41.75	
	kg	3.8	5.6	7.1	13.5	19	
PACKING		BH2	BH4	BH5	BY5	BY7	
GASKET		G2	G3	G4	G7	G8	

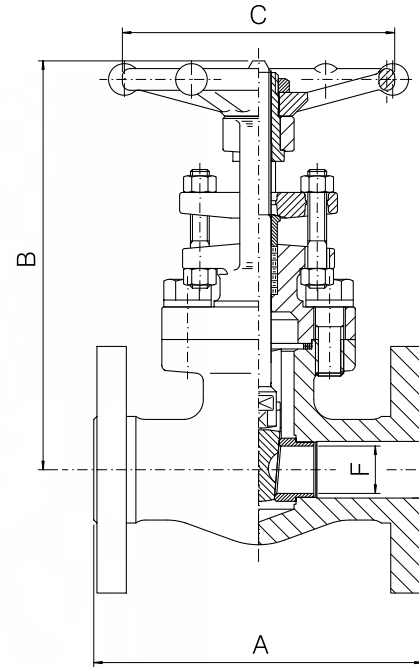
		STANDARD PORT – FIG. L3 10						
SIZE	inch	1/2	3/4	1	1 1/2	2		
	mm	15	20	25	40	50		
A	inch	5.51	6	6.50	7.51	8.5		
	mm	140	152.5	165	191	216		
B open	inch	6.89	7.17	8.35	9.84	11.42		
	mm	175	182	212	250	290		
C	inch	3.46	3.46	3.82	5.43	5.43		
	mm	88	88	97	138	138		
F	inch	.38	.55	.71	1.18	1.44		
	mm	9.6	14	18	30	36.6		
Weight	lb.	7.75	11.25	14.75	28.5	33.5		
	kg	3.6	5.2	6.7	13	15.3		
PACKING		BH2	BH2	BH4	BH6	BY5		
GASKET		G2	G2	G3	G5	G7		



INTEGRAL FLANGED VALVES- GATE TYPE- BOLTED BONNET- FULL & STANDARD PORT

600 LB.

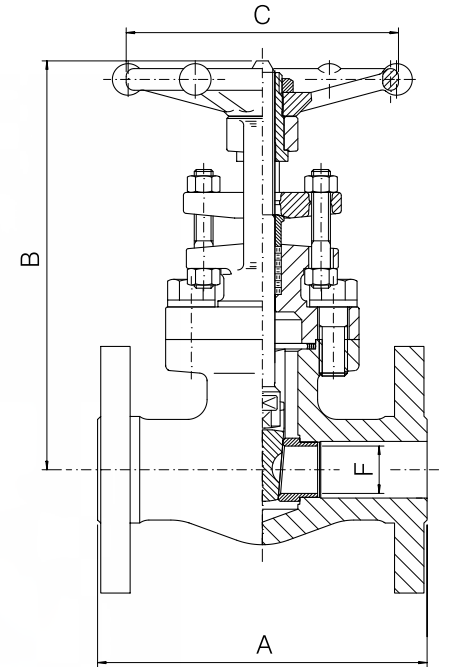
Design construction:
 API 602 - ASME B16.34 - BS 5352
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral-wound gasket
 Integral backseat
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ratings:
 - carbon steel class 600 1480 psig @ 100°F
 102 bar + 38°C



INTEGRAL FLANGED VALVES- GATE TYPE- BOLTED BONNET- FULL PORT

1500 LB.

Design construction:
 ASME B16.34 - BS 5352
 Full port type
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral wound gasket
 Integral backseat
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ring joint type gasket available on request
 Ratings:
 - carbon steel class 1500 3705 psig @ 100°F
 255 bar + 38°C



600 LB. FULL PORT - FIG. 6 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B open	inch mm	6.89 175	8.46 215	9.45 240	11.62 295	14.17 360
C	inch mm	3.46 88	3.82 97	5.43 138	5.43 138	6.77 172
F	inch mm	.55 14	.71 18	.94 24	1.44 36.6	1.88 48
Weight	lb. kg	9.25 4.3	15.25 7	22 10	39.5 18	63.5 28
PACKING		BH2	BH4	BH5	BY5	BH8
GASKET		G2	G3	G4	G7	G9

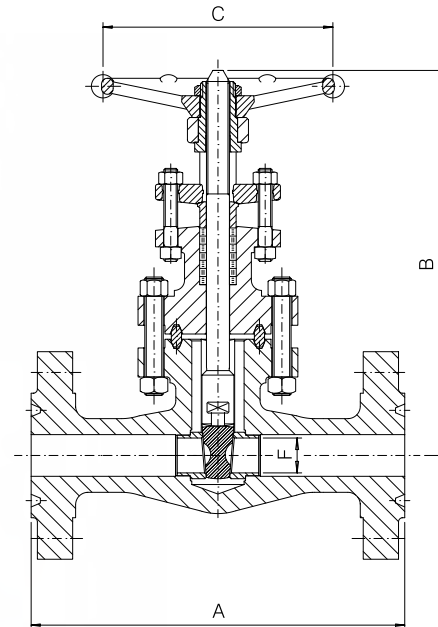
600 LB. STANDARD PORT - FIG. L6 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B open	inch mm	6.65 169	7.28 185	8.46 215	10.04 255	12.01 305
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6
Weight	lb. kg	9.25 4.3	15.25 7	22 10	39.5 18	63.5 28
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET		G2	G2	G3	G6	G7

1500 LB. FULL PORT - FIG. 15F 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	8.50 216	9.02 229	10 254	12.01 305	14.5 368.5
B open	inch mm	8.46 215	9.84 250	10.63 270	13.78 350	17.52 445
C	inch mm	3.82 97	5.43 138	5.43 138	6.77 172	9.21 234
F	inch mm	.55 14	.71 18	.94 24	1.44 36.6	1.89 48
Weight	lb. kg	18 8.2	28.5 13	35.5 16.2	63.75 29	121.25 55
PACKING		BH5	BH6	2B4	BH8	9B8
GASKET		G2	G3	G4	G7	G8

B[®] INTEGRAL FLANGED VALVES- GATE TYPE- BOLTED BONNET- FULL PORT

BONNEY FORGE

2500 LB.



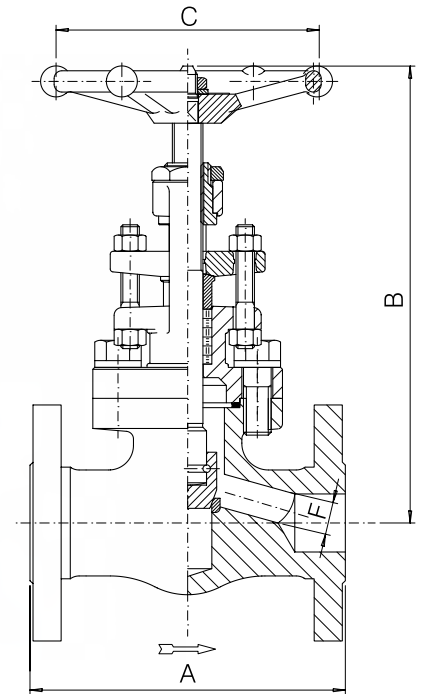
Design construction:
 ASME B16.34 - BS 5352
 Full port type
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Body Bonnet Gasket ring joint type
 Spiral wound type gasket on request
 Integral backseat
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ratings:
 - carbon steel class 2500 6170 psig @ 100°F
 425 bar + 38°C

B[®] INTEGRAL FLANGED VALVES- GLOBE TYPE- BOLTED BONNET- FULL & STANDARD PORT

BONNEY FORGE

150 LB.

300 LB.



Design construction:
 ASME B16.34 - BS 5352
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Loose disc stem assembly
 Self aligning two piece packing gland
 Spiral wound gasket
 Integral backseat
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ratings:
 - carbon steel class 150 285 psig @ 100°F
 20 bar + 38°C
 - carbon steel class 300 740 psig @ 100°F
 51 bar + 38°C

FULL PORT - FIG. 25RR 10						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	10.39	10.75	12.13	15.25	17.87
	mm	264	273	308	387.5	454
B open	inch	11.10	11.42	13.19	15.98	16.34
	mm	282	290	335	406	415
C	inch	5.43	5.43	6.77	9.21	12.60
	mm	138	138	172	234	320
F	inch	.45	.59	.76	1.10	1.50
	mm	11.5	15	19.5	28	38
Weight	lb.	35.5	38.75	63.75	132.25	143.25
	kg	16.2	17.6	29	60	65
PACKING		2B4	2B4	BH8	2B8	25B8
GASKET		R16	R16	R16	R19	R22

FULL PORT - FIG. 130						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.50	8
	mm	108	117.5	127	165	203
B open	inch	7.72	9.05	10.55	12.40	13.19
	mm	196	230	268	315	335
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.51	.68	.88	1.38	1.77
	mm	13	17.5	22.5	35	45
Weight	lb.	8.25	14	19	36.25	55
	kg	3.8	6.4	8.7	16.5	25
PACKING		BH3	BH5	BY5	BY7	BY7
GASKET		G2	G3	G4	G7	G8

STANDARD PORT - FIG. L1 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.25	4.62	5	6.50	8
	mm	108	117.5	127	165	203
B open	inch	7.72	7.72	8.90	10.75	11.81
	mm	196	196	226	273	300
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.68	1.16	1.38
	mm	9	13	17.5	29.5	35
Weight	lb.	6.5	8.25	12	22.5	34.75
	kg	3	3.8	5.5	10.3	15.8
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G5	G8

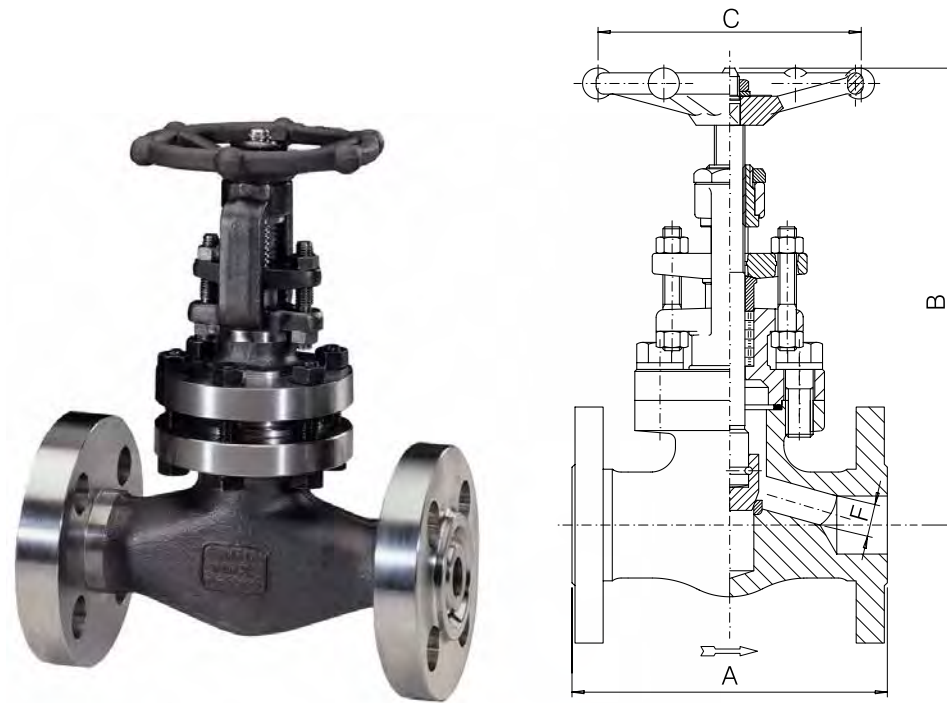
FULL PORT - FIG. 330						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6	7	8	9.02	10.51
	mm	152.5	178	203	229	267
B open	inch	7.72	9.05	10.55	12.40	13.19
	mm	196	230	268	315	335
C	inch	3.46	3.82	5.43	6.77	6.77
	mm	88	97	138	172	172
F	inch	.51	.68	.88	1.38	1.77
	mm	13	17.5	22.5	35	45
Weight	lb.	9	15.25	21.25	40.75	61.5
	kg	4.1	7	9.7	18.5	28
PACKING		BH3	BH5	BY5	BY7	BH8
GASKET		G2	G3	G4	G7	G9

STANDARD PORT - FIG. L3 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	6	7	8	9.02	10.51
	mm	152.5	178	203	229	267
B open	inch	7.72	7.95	8.90	10.63	12.64
	mm	196	202	226	270	321
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.68	1.16	1.38
	mm	9	13	17.5	29.5	35
Weight	lb.	9	13	18.25	36.25	47.25
	kg	4.1	6	8.3	15.5	21.5
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G6	G7

B INTEGRAL FLANGED VALVES- GLOBE TYPE- BOLTED BONNET-
FULL & STANDARD PORT
BONNEY FORGE

600 LB.

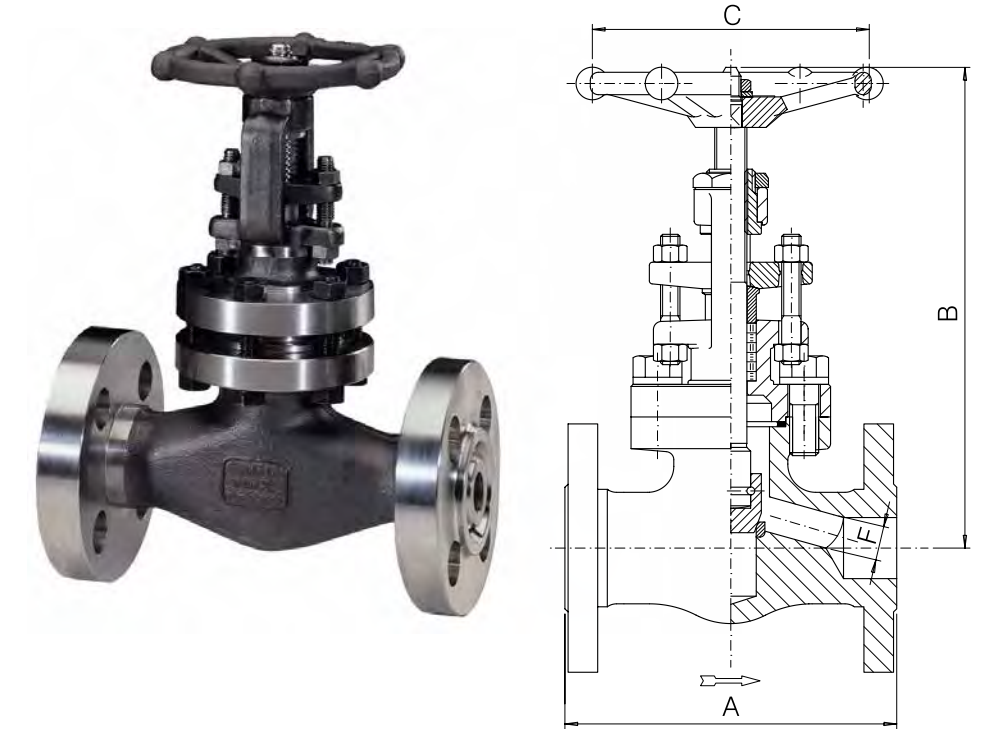
Design construction:
ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Loose disc stem assembly
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Ratings:
- carbon steel class 600 1480 psig @ 100°F
102 bar + 38°C



B INTEGRAL FLANGED VALVES- GLOBE TYPE- BOLTED BONNET-
FULL PORT
BONNEY FORGE

1500 LB.

Design construction:
ASME B16.34 - BS 5352
Full port type
Testing according to API 598
Marking MSS SP25
Outside Screw and Yoke (OS&Y)
Loose Disc Stem Assembly
Ring joint type gasket available on request
Self aligning two piece packing gland
Spiral wound gasket
Integral backseat
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Ratings:
- carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



600 LB. FULL PORT – FIG. 6 30						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B open	inch mm	7.72 196	9.06 230	10.55 268	12.40 315	14.57 370
C	inch mm	3.46 88	3.82 97	5.43 138	6.77 172	6.77 172
F	inch mm	.51 13	.68 17.5	.88 22.5	1.38 35	1.77 45
Weight	lb. kg	13 5.9	17.5 8	23 10.5	43 19.5	62.75 28.5
PACKING		BH3	BH5	BY5	BY7	BH8
GASKET		G2	G3	G4	G7	G9

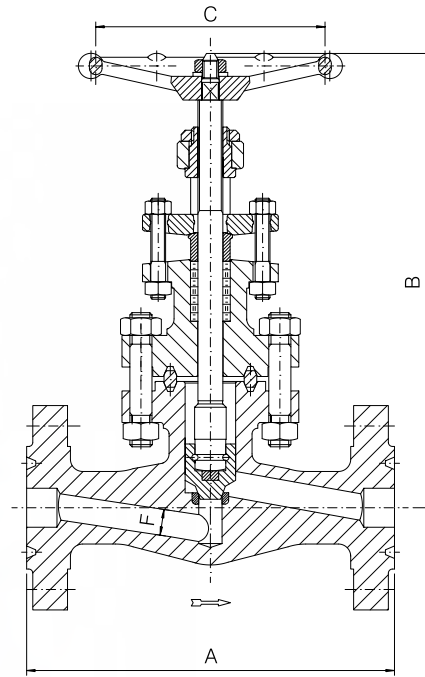
600 LB. STANDARD PORT – FIG. L6 30						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B open	inch mm	7.72 196	7.95 202	9.21 234	10.63 270	12.64 321
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	6.77 172
F	inch mm	.35 9	.51 13	.67 17.5	1.16 29.5	1.38 35
Weight	lb. kg	9.5 4.4	13.5 6.2	19 8.7	36.25 16.5	52 23.6
PACKING		BH3	BH3	BH5	BY5	BY7
GASKET		G2	G2	G3	G6	G7

1500 LB. FULL PORT – FIG. 15F 30						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	8.50 216	9.02 229	10 254	12.01 305	14.51 368.5
B open	inch mm	9.45 240	11.02 280	11.61 295	14.57 370	18.31 465
C	inch mm	3.82 97	5.43 138	6.77 172	6.77 172	9.21 234
F	inch mm	.47 12	.57 14.5	.75 19	1.22 31	1.57 40
Weight	lb. kg	18.5 8.5	28.25 12.9	37.25 17	66 30	127.75 58
PACKING		BH5	2B4	2B4	BH8	9B8
GASKET		G2	G3	G4	G7	G8

INTEGRAL FLANGED VALVES- GLOBE TYPE- BOLTED BONNET- FULL PORT

2500 LB.

Design construction:
 ASME B16.34 - BS 5352
 Full port type
 Testing according to API 598
 Marking MSS SP25
 Outside Screw and Yoke (OS&Y)
 Loose Disc Stem Assembly
 Body Bonnet Gasket ring joint type
 Spiral wound type gasket on request
 Self aligning two piece packing gland
 Integral backseat
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ratings:
 - carbon steel class 2500 6170 psig @ 100°F
 425 bar + 38°C



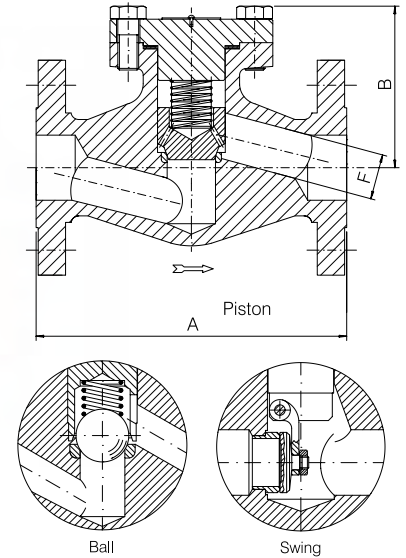
FULL PORT - FIG. 25FR 30						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	10.39 264	10.75 273	12.13 308	15.25 387.5	17.87 454
B open	inch mm	12.20 310	12.40 315	13.78 350	17.72 450	18.11 460
C	inch mm	5.43 138	5.43 138	6.77 172	9.21 234	12.6 320
F	inch mm	.43 11	.57 14.5	.75 19	1.10 28	1.38 35
Weight	lb. kg	36.25 16.5	40.75 18.5	66 30	135.5 61.5	147.5 67
PACKING		2B4	2B4	BH8	9B8	4B8
GASKET		R16	R16	R16	R19	R20

INTEGRAL FLANGED VALVES- CHECKTYPE- BOLTED BONNET- FULL & STANDARD PORT

150 LB.

300 LB.

Design construction:
 ASME B16.34 - BS 5352
 Testing according to API 598
 Marking MSS SP25
 Spring available on request for Piston and Ball Check Valves
 Spiral wound gasket
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
 Ratings:
 - carbon steel class 150 285 psig @ 100°F
 20 bar + 38°C
 - carbon steel class 300 740 psig @ 100°F
 51 bar + 38°C



FULL PORT - FIG. 1 40, 1 50, 1 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	4.25 108	4.62 117.5	5 127	6.50 165	8 203
B	inch mm	2.95 75	3.35 85	3.94 100	4.92 125	5.51 140
F Piston/ F Ball	inch mm	.51 13	.68 17.5	.88 22.5	1.38 35	1.77 45
F Swing	inch mm	.55 14	.71 18	.94 24	1.46 36.6	1.89 48
Weight	lb. kg	6 2.8	7.75 3.6	11.25 5.2	22 10	35.25 16
GASKET		G2	G3	G4	G7	G8

STANDARD PORT - FIG. L1 40, L1 50, L1 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	4.25 108	4.62 117.5	5 127	6.50 165	8 203
B	inch mm	2.95 75	2.95 75	3.35 85	4.33 110	4.92 125
F Piston/ F Ball	inch mm	.35 9	.51 13	.68 17.5	1.16 29.5	1.38 35
F Swing	inch mm	.39 9.6	.55 14	.68 17.5	1.16 29.5	1.46 36.6
Weight Piston/ Weight Ball	lb. kg	5 2.3	6.75 3.1	9.75 4.5	18.5 8.4	30.75 14
Weight Swing	lb. kg	4.75 2.2	6.75 3.1	9.5 4.4	18.25 8.3	28.5 13
GASKET		G2	G2	G3	G5	G8

FULL PORT - FIG. 3 40, 3 50, 3 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6 152.5	7 178	8* 203*	9.02* 229*	10.51 267
B	inch mm	2.95 75	3.54 90	3.94 100	4.72 120	5.91 150
F Piston/ F Ball	inch mm	.51 13	.68 17.5	.88 22.5	1.38 35	1.77 45
F Swing	inch mm	.55 14	.71 18	.94 24	1.46 36.6	1.89 48
Weight	lb. kg	7.75 3.6	14 6.4	18 8.2	33 15	46.25 21
GASKET		G2	G3	G4	G7	G9

STANDARD PORT - FIG. L3 40, L3 50, L3 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6 152.5	7 178	8* 203*	9.02* 229*	10.51 267
B	inch mm	2.95 75	3.15 80	3.46 88	4.53 115	5.12 130
F Piston/ F Ball	inch mm	.35 9	.51 13	.68 17.5	1.16 29.5	1.38 35
F Swing	inch mm	.39 9.6	.55 14	.68 17.5	1.16 29.5	1.46 36.6
Weight Piston/ Weight Ball	lb. kg	7.5 3.4	11.5 5.3	16.5 7.5	30.75 14	41.75 19
Weight Swing	lb. kg	7.25 3.3	11.25 5.2	16.25 7.4	29.75 13.5	39.5 18
GASKET		G2	G2	G3	G6	G7

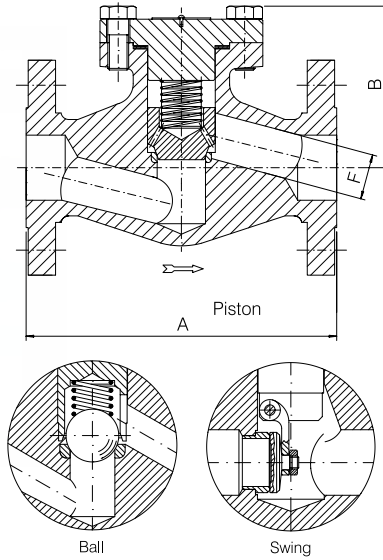
* A - dimensions for Swing Check Valves only are 8.5 in. / 216 mm and 9.5 in. / 241 mm respectively

B[®] INTEGRAL FLANGED VALVES- CHECK TYPE- BOLTED BONNET- FULL & STANDARD PORT

BONNEY FORGE

600 LB.

Design construction:
ASME B16.34 - BS 5352
Testing according to API 598
Marking MSS SP25
Spring available on request for Piston
and Ball Check Valves
Spiral wound gasket
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Ratings:
- carbon steel class 600 1480 psig @ 100°F
102 bar + 38°C

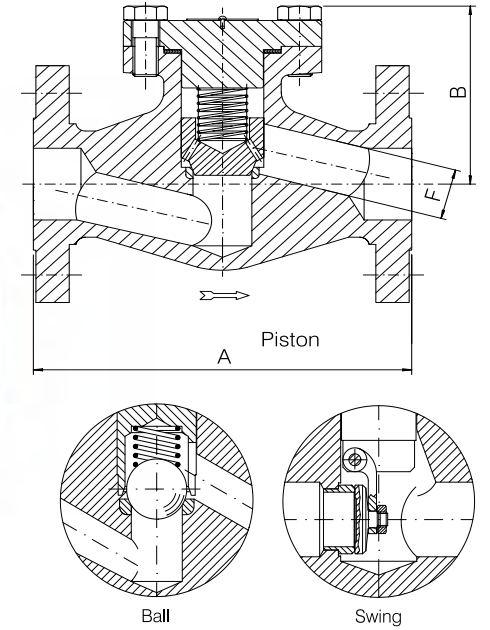


B[®] INTEGRAL FLANGED VALVES- CHECK TYPE- BOLTED BONNET- FULL PORT

BONNEY FORGE

1500 LB.

Design construction:
ASME B16.34 - BS 5352
Full Port Type
Testing according to API 598
Marking MSS SP25
Spring available on request for Piston
and Ball Check Valves
Ring joint type gasket available on request
Spiral wound gasket
Integral body flanges
Face to face according to ASME B16.10
Flanges according to ASME B16.5
Ratings:
- carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



600 LB. FULL PORT — FIG. 6 40, 6 50, 6 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B	inch mm	2.95 75	3.54 90	3.94 100	4.72 120	5.91 150
F Piston/ F Ball	inch mm	.51 13	.68 17.5	.88 22.5	1.38 35	1.77 45
F Swing	inch mm	.55 14	.71 18	.94 24	1.46 36.6	1.89 48
Weight	lb. kg	8.25 3.8	14.25 6.5	18.5 8.5	35.25 16	50.5 23
GASKET		G2	G3	G4	G7	G9

600 LB. STANDARD PORT — FIG. L6 40, L6 50, L6 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	6.50 165	7.51 191	8.50 216	9.50 241	11.50 292
B	inch mm	2.83 72	3.15 80	3.35 85	4.53 115	5.12 130
F Piston/ F Ball	inch mm	.35 9	.51 13	.68 17.5	1.16 29.5	1.38 35
F Swing	inch mm	.39 9.6	.55 14	.68 17.5	1.16 29.5	1.46 36.6
Weight	lb. kg	7.5 3.5	12.5 5.7	17.5 8	31.75 14.5	43 19.5
GASKET		G2	G2	G3	G6	G7

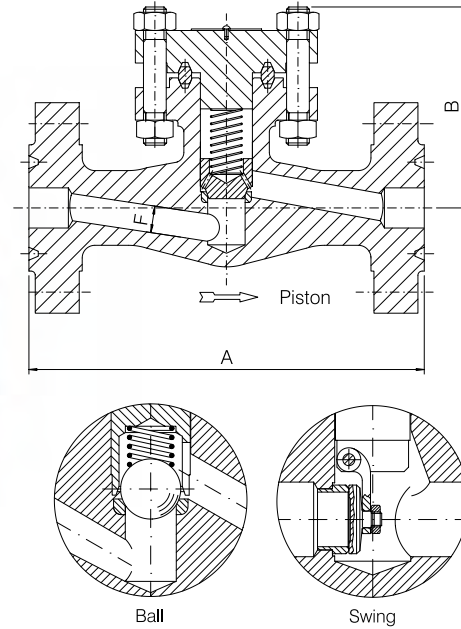
1500 LB. FULL PORT — FIG. 15F 40, 15F 50, 15F 60						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	8.50 216	9.02 229	10 254	12.01 305	14.50 368.5
B	inch mm	4.13 105	4.92 125	5.31 135	6.10 155	7.68 195
F Piston/ F Ball	inch mm	.47 12	.57 14.5	.75 19	1.22 31	1.57 40
F Swing	inch mm	.55 14	.71 18	.94 24	1.46 36.6	1.89 48
Weight	lb. kg	16.5 7.5	24.5 11.2	31.75 14.5	58.25 26.5	110 50
GASKET		G2	G3	G4	G7	G8

B INTEGRAL FLANGED VALVES- CHECK TYPE- BOLTED BONNET- FULL PORT

BONNEY FORGE

2500 LB.

Design construction:
 ASME B16.34 - BS 5352
 Full Port Type
 Testing according to API 598
 Marking MSS SP25
 Body Bonnet Gasket ring joint type
 Spiral wound type gasket on request
 Spring available on request for Piston
 and Ball Check Valves
 Integral body flanges
 Face to face according to ASME B16.10
 Flanges according to ASME B16.5
Ratings:
 - carbon steel class 2500 6170 psig @ 100°F
 425 bar + 38°C



FULL PORT – FIG. 25FR 40, 25FR 50, 25FR 60						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	10.39	10.75	12.13	15.25	17.87
	mm	264	273	308	387.5	454
B	inch	5.04	5.12	5.98	7.40	7.48
	mm	128	130	152	188	190
F Piston/ F Ball	inch	.43	.57	.75	1.10	1.38
	mm	11	14.5	19	28	35
F Swing	inch	.45	.59	.76	1.10	1.38
	mm	11.5	15	19.5	28	35
Weight	lb.	31.5	35.25	57.75	119	123.25
	kg	14.3	16	26.3	54	56
GASKET		R16	R16	R16	R19	R20*

Materials and trim specifications Page 91

*R22 for 2" Swing only.

Overview56

Gate Type- Bolted & Welded Bonnet-
800 lb. & 1500 lb. valves57

Gate Type- Welded Bonnet-
2500 lb. valves58

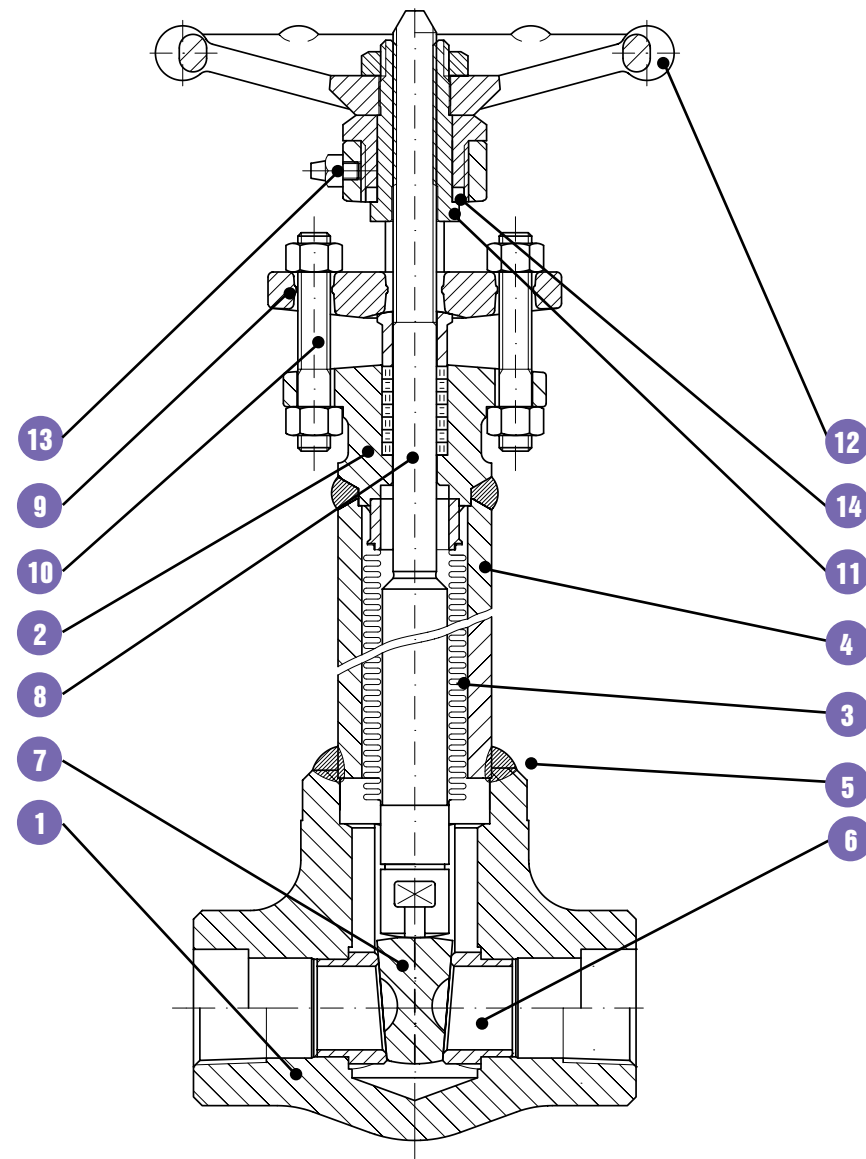
Globe Type- Bolted & Welded Bonnet-
800 lb. & 1500 lb. valves59

BELLOWS SEALED VALVES



**BELLOWS
SEALED VALVES**

Typical forged steel, outside screw and yoke (OS&Y), rising stem, non-rising handwheel. Full or standard port. Bolted or welded bonnet joint. Integral backseat.

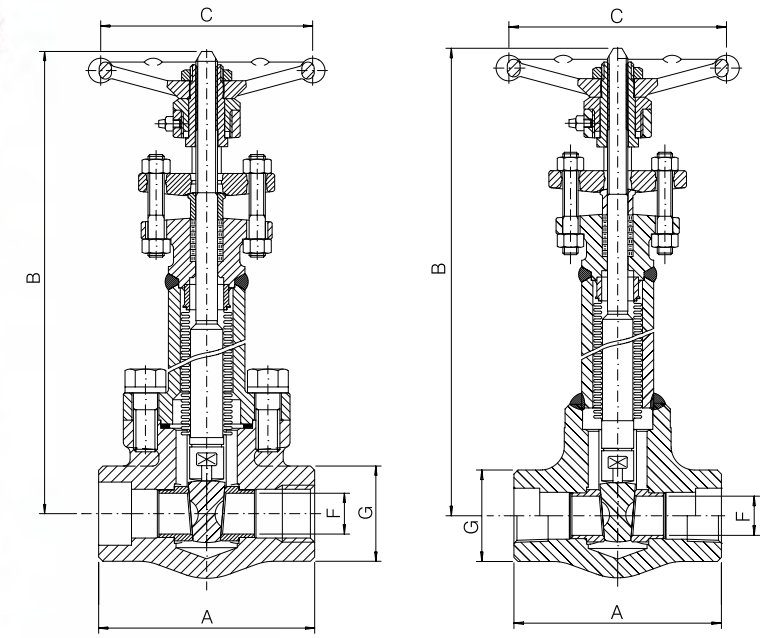


- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in both the full or standard port design.
- 2. BONNET.** The bonnet is forged steel, has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BELLOWS.** The hydroformed bellows design is in accordance with specifications API 602, and MSS-SP-117.
- 4. BONNET EXTENSION.** The bonnet extension is forged steel and of similar material as the body and bonnet and attached by a welded connection.
- 5. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the welded or the bolted bonnet type. The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket. The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT RINGS.** The seat rings are steel and make up part of the valve trim. They are pressed into the valve body and wedged into place, forming a seal with the body. The seating surfaces are ground and lapped.
- 7. WEDGE.** The wedge, which is a solid design, is forged or investment cast steel and is part of the valve trim. The seating surfaces are ground and lapped.

- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains its parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.
- 13. GREASE FITTING.** The grease fitting is incorporated in the bonnet for stem and yoke sleeve lubrication to ensure smooth operation.
- 14. THRUST WASHER.** The thrust washer is between the bonnet and yoke sleeve to help prevent excessive wear of the yoke bushing and reduce operating torque.

**800 LB.
1500 LB.**

Design construction:
API 602, ASME B16.34, MSS-SP-117, BS 5352
Testing according to API 598
Marking MSS-SP-25
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral wound gasket
Body Bonnet Weld to ASME IX
Integral Backseat
Hydroformed bellows
Grease nipple for stem
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Ratings:
-carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
-carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



800 LB.	FULL PORT — BOLTED BONNET FIG. S 10 - WELDED BONNET FIG. SHW 10									
	SIZE	inch mm	1/4 6	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50
A	inch mm	3.15 80	3.15 80	3.54 90	4.33 110	5 127	5 127	5 127	8.27 210	
B open	inch mm	9.05 230	9.05 230	9.64 245	11.22 285	13.19 335	14.96 380	16.42 417	20.87 530	
C	inch mm	3.46 88	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	5.43 138	6.77 172	
F	inch mm	.31 8	.38 9.6	.55 14	.71 18	.94 24	1.18 30	1.44 36.6	1.89 48	
G	inch mm	1.26 32	1.26 32	1.50 38	1.89 48	2.20 56	2.52 64	3.07 78	3.35 85	
Weight	lb.	6	6	6.25	10	15.75	22	28.25	48.5	
Bolted B.	kg	2.7	2.7	2.9	4.6	7.2	10	12.8	22	
Weight	lb.	5	5	5.5	8.25	13.5	18.5	24.5	44	
Welded B.	kg	2.3	2.3	2.5	3.8	6.2	8.4	11.2	20	
PACKING		BH2	BH2	BH2	BH4	BH5	BH6	BY5	BH8	
GASKET*		G2	G2	G2	G3	G4	G6	G7	G9	

800 LB.	STANDARD PORT — BOLTED BONNET FIG. SL 10 - WELDED BONNET FIG. SHWL 10						
	SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	3.15 80	3.54 90	4.33 110	5 127	5 127	5 127
B open	inch mm	9.05 230	9.64 245	11.22 285	14.96 380	16.42 417	
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138	
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6	
G	inch mm	1.26 32	1.50 38	1.89 48	2.52 64	3.07 78	
Weight	lb.	6	6.5	9.75	20.75	27	
Bolted B.	kg	2.7	3	4.4	9.4	12.3	
Weight	lb.	4.5	5.25	8.5	19	24.25	
Welded B.	kg	2.1	2.4	3.9	8.6	11	
PACKING		BH2	BH2	BH4	BH6	BY5	
GASKET*		G2	G2	G3	G6	G7	

1500 LB.	FULL PORT — BOLTED BONNET FIG. 9S 10 - WELDED BONNET FIG. 9SHW 10						
	SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	4.33 110	5 127	5 127	8.27 210	9.05 230	
B open	inch mm	13.98 355	14.96 380	17.72 450	21.65 550	23.23 590	
C	inch mm	5.43 138	5.43 138	6.77 172	9.21 234	12.6 320	
F	inch mm	.55 14	.71 18	.94 24	1.44 36.6	1.89 48	
G	inch mm	1.89 48	2.20 56	2.52 64	3.35 85	3.74 95	
Weight	lb.	11	15.5	21	51.75	88	
Bolted B.	kg	5	7	9.5	23.5	40	
Weight	lb.	10	14.25	18.25	48.5	81.5	
Welded B.	kg	4.5	6.5	8.3	22	37	
PACKING		BH5	BH6	2B4	2B5	9B8	
GASKET*		G2	G3	G4	G7	G8	

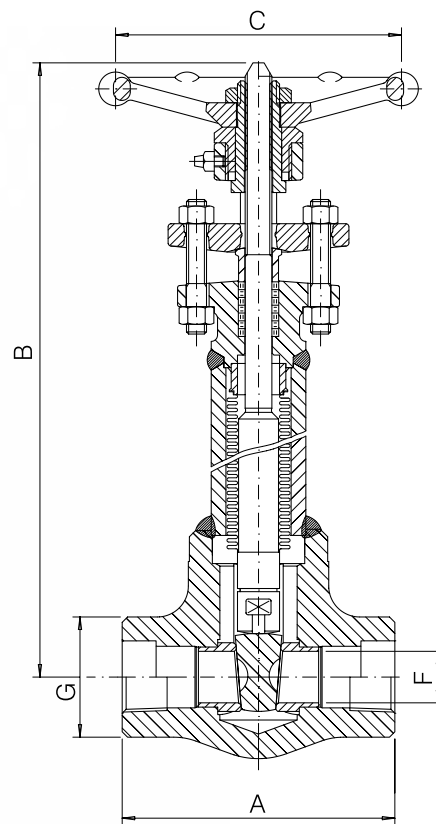
1500 LB.	STANDARD PORT — BOLTED BONNET FIG. 9SL 10 - WELDED BONNET FIG. 9SHWL 10						
	SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	3.54 90	4.33 110	5 127	5 127	8.27 210	
B open	inch mm	12.60 320	13.98 355	14.96 380	17.72 450	21.65 550	
C	inch mm	5.43 138	5.43 138	5.43 138	9.21 234	9.21 234	
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6	
G	inch mm	1.50 38	1.89 48	2.20 56	3.07 78	3.35 85	
Weight	lb.	6.5	11	15.5	22	53	
Bolted B.	kg	3	5	7	10	24	
Weight	lb.	6	10	14.25	19.75	48.5	
Welded B.	kg	2.8	4.6	6.5	9	22	
PACKING		BH3	BH5	BH6	2B5	BH8	
GASKET*		G1	G2	G3	G5	G7	

B[®] GATE VALVES- BELLOWS SEALED- WELDED BONNET- FULL PORT

BONNEY FORGE

2500 LB.

Design construction:
 ASME B16.34, MSS-SP-117, BS 5352
 Testing according to API 598
 Marking MSS-SP-25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral wound gasket
 Body Bonnet Weld to ASME IX
 Integral Backseat
 Hydroformed bellows
 Grease nipple for stem
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25
Ratings:
 -carbon steel class 2500 6170 psig @ 100°F
 425 bar + 38°C



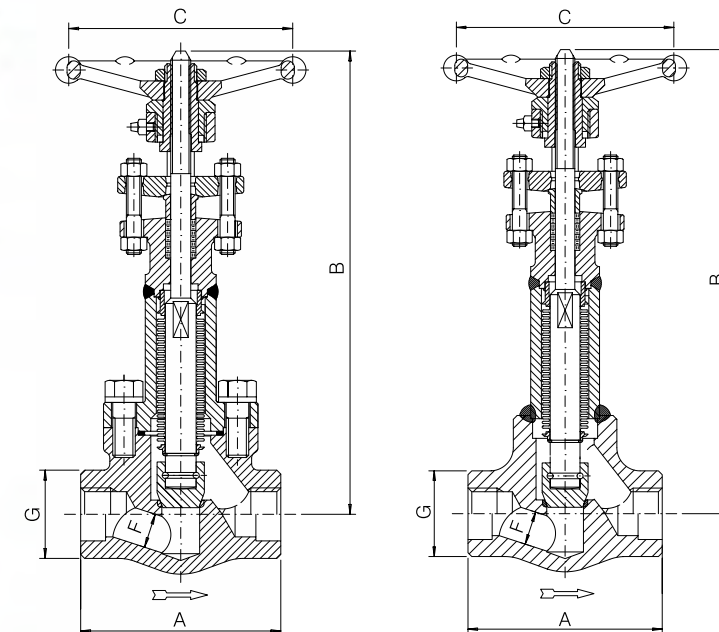
FULL PORT — FIG. 25SHW 10									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	4.33	4.33	5	5	5	5	8.27	9.05
	mm	110	110	127	127	127	127	210	230
B open	inch	14.96	14.96	16.93	17.72	20.08	24.41	24.80	27.95
	mm	380	380	430	450	510	620	630	710
C	inch	5.43	5.43	5.43	6.77	9.21	9.21	12.60	15.75
	mm	138	138	138	172	234	234	320	400
F	inch	.31	.31	.45	.59	.77	.98	1.10	1.38
	mm	8	8	11.5	15	19.5	25	28	35
G	inch	1.89	1.89	2.20	2.52	3.07	3.07	3.35	3.74
	mm	48	48	56	64	78	78	85	95
Weight	lb.	13.5	13.5	14.25	23	35.25	37.5	63.75	99.25
	kg	6.2	6.2	6.5	10.5	16	17	29	45
PACKING		BH6	BH6	2B4	2B4	BH8	BH8	9B8	25B8

B[®] GLOBE VALVES- BELLOWS SEALED- WELDED & BOLTED BONNET- FULL & STANDARD PORT

BONNEY FORGE

800 LB.
1500 LB.

Design construction:
 ASME B16.34, BS 5352, MSS-SP-117
 Testing according to API 598
 Marking MSS-SP-25
 Outside Screw and Yoke (OS&Y)
 Self aligning two piece packing gland
 Spiral wound gasket
 Body Bonnet Weld to ASME IX
 Integral Backseat
 Loose solid disc
 Socket Weld Ends to ASME B16.11
 Screwed Ends (NPT) to ASME B1.20.1
 Butt Welding Ends to ASME B16.25
Ratings:
 -carbon steel class 800 1975 psig @ 100°F
 138 bar + 38°C
 -carbon steel class 1500 3705 psig @ 100°F
 255 bar + 38°C



800 LB. FULL PORT — BOLTED BONNET FIG. S 30 - WELDED BONNET FIG. SHW 30									
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
A	inch	3.15	3.15	3.54	4.33	5	5.90	7.09	8.27
	mm	80	80	90	110	127	150	180	210
B open	inch	8.07	8.07	8.27	9.64	11.22	12.40	13.58	17.52
	mm	205	205	210	245	285	315	345	445
C	inch	3.46	3.46	3.46	3.82	5.43	5.43	6.77	6.77
	mm	88	88	88	97	138	138	172	172
F	inch	.27	.35	.51	.69	.87	1.16	1.38	1.77
	mm	7	9	13	17.5	22.5	29.5	35	45
G	inch	1.26	1.26	1.50	1.89	2.20	2.52	3.07	3.35
	mm	32	32	38	48	56	64	78	85
Weight	lb.	5.5	5.5	7.75	11.5	19.25	22	40.75	67.25
Bolted B.	kg	2.5	2.5	3.5	5.2	8.7	10	18.5	30.5
Weight	lb.	5	5	7	11	17.5	19.75	37.5	61.75
Welded B.	kg	2.3	2.3	3.2	5	8	9	17	28
PACKING		BH2	BH2	BH2	BH4	BH5	BH6	BY5	BH8
GASKET*		G2	G2	G2	G3	G4	G6	G7	G9

800 LB. STANDARD PORT — BOLTED BONNET FIG. SL 30 - WELDED BONNET FIG. SHWL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.15	3.54	4.33	5.90	7.09
	mm	80	90	110	150	180
B open	inch	8.07	8.27	9.64	12.40	13.58
	mm	205	210	245	315	345
C	inch	3.46	3.46	3.82	5.43	6.77
	mm	88	88	97	138	172
F	inch	.35	.51	.69	1.16	1.38
	mm	9	13	17.5	29.5	35
G	inch	1.26	1.50	1.89	2.52	3.07
	mm	32	38	48	64	78
Weight	lb.	5.5	6	9.5	19.5	29.75
Bolted B.	kg	2.5	2.7	4.3	8.8	13.5
Weight	lb.	4.75	5.25	7.75	17.75	26
Welded B.	kg	2.2	2.4	3.5	8.1	11.8
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET*		G2	G2	G3	G6	G7

1500 LB. FULL PORT — BOLTED BONNET FIG. 9S 30 - WELDED BONNET FIG. 9SHW 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	4.33	5	5.90	8.27	9.05
	mm	110	127	150	210	230
B open	inch	11.02	12.60	14.17	17.52	20.08
	mm	280	320	360	445	510
C	inch	5.43	6.77	9.21	12.60	12.60
	mm	138	172	234	320	320
F	inch	.47	.59	.79	1.26	1.57
	mm	12	15	20	32	40
G	inch	1.89	2.20	2.52	3.35	3.74
	mm	48	56	64	85	95
Weight	lb.	10	15.5	19.75	50.75	83.75
Bolted B.	kg	4.5	7	9	23	38
Weight	lb.	8.75	14.25	18.25	48.5	80.5
Welded B.	kg	4	6.5	8.3	22	36.5
PACKING		BH5	2B4	2B4	BH8	9B8
GASKET*		G2	G3	G4	G7	G8

1500 LB. STANDARD PORT — BOLTED BONNET FIG. 9SL 30 - WELDED BONNET FIG. 9SHWL 30						
SIZE	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
A	inch	3.54	4.33	5	7.09	8.27
	mm	90	110	127	180	210
B open	inch	9.45	11.02	12.60	14.17	17.52
	mm	240	280	320	360	445
C	inch	5.43	5.43	6.77	9.21	12.60
	mm	138	138	172	234	320
F	inch	.35	.47	.59	1.06	1.26
	mm	9	12	15	27	32
G	inch	1.50	1.89	2.20	3.07	3.35
	mm	38	48	56	78	85
Weight	lb.	7.75	10	15.5	19.75	50.75
Bolted B.	kg	3.5	4.5	7	9	23
Weight	lb.	6.5	10	14.25	19.5	47.25
Welded B.	kg	3	4.6	6.5	8.9	21.5
PACKING		BH3	BH5	2B4	2B5	BH8
GASKET*		G1	G2	G3	G5	G7



Lined writing area with horizontal lines.

Overview62

Valvolet® End- Bolted & Welded
Bonnet- 800 lb. & 1500 lb. valves63

Lip End- Bolted & Welded Bonnet-
800 lb. & 1500 lb. valves63

Socket Weld End- Bolted & Welded
Bonnet- 800 lb. & 1500 lb. valves64

Butt Weld End- Bolted & Welded
Bonnet- 800 lb. & 1500 lb. valves64

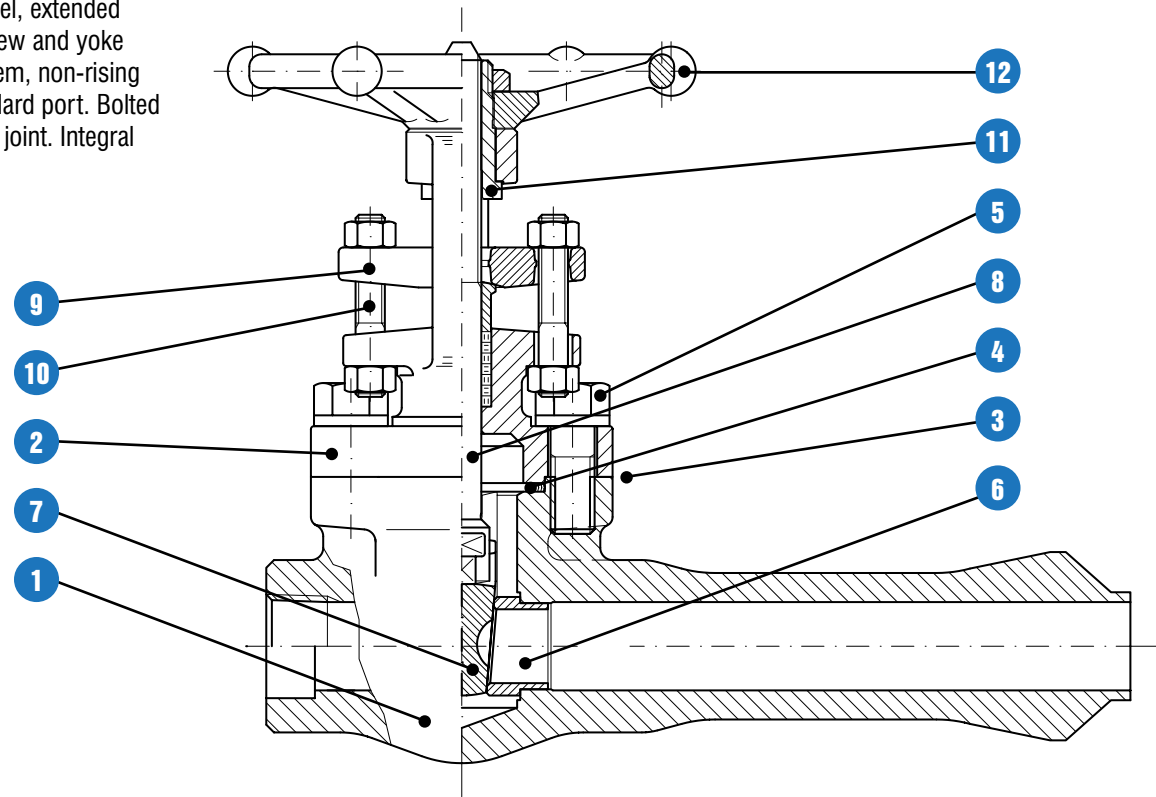
Threaded End- Bolted & Welded
Bonnet- 800 lb. & 1500 lb. valves64

EXTENDED BODY GATE VALVES



**EXTENDED BODY
GATE VALVES**

Typical forged steel, extended body, outside screw and yoke (OS&Y), rising stem, non-rising handwheel. Standard port. Bolted or welded bonnet joint. Integral backseat.



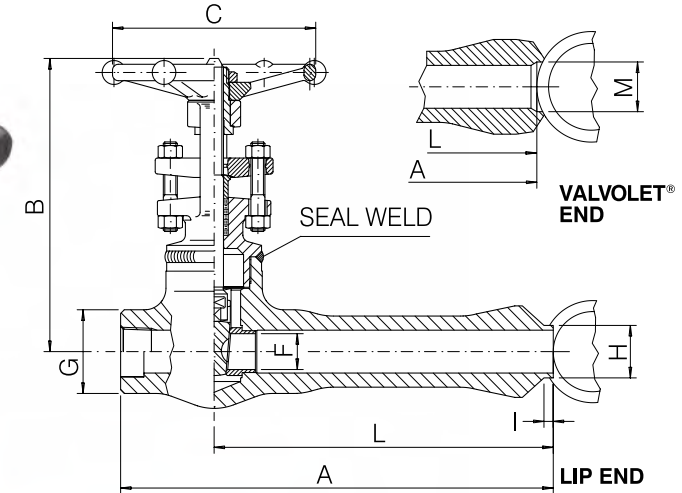
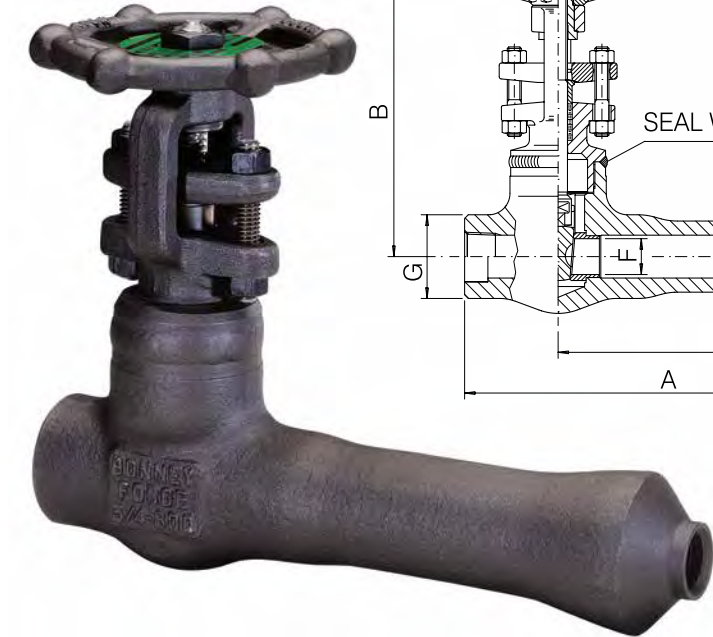
- 1. BODY.** The body is forged steel and designed to the basic dimensional requirements of the applicable specifications such as API 602 and ASME B16.34. The body is available in standard port design with Plane End (Socket Weld), Threaded End, Lip End and Weld-O-Let End.
- 2. BONNET.** The bonnet is forged steel, has an integral backseat and incorporates the stuffing box, which has dimensions per the applicable specifications such as API 602.
- 3. BODY-BONNET JOINT.** Two different bonnet joint designs are available. These are either the threaded and seal welded or bolted bonnet type.
- 4. GASKET.** The bolted bonnet joint design valve uses a contained, controlled compression, spiral wound type gasket.
- 5. BONNET BOLTING.** The bonnet bolting is manufactured of alloy steel in accordance with the requirements of the applicable specifications such as API 602 and ASME B16.34.
- 6. SEAT RINGS.** The seat rings are steel and make up part of the valve trim. They are pressed into the valve body and wedged into place, forming a seal with the body. The seating surfaces are ground and lapped.
- 7. WEDGE.** The wedge, which is a solid design, is forged or investment cast steel and is part of the valve trim. The seating surfaces are ground and lapped.

- 8. STEM.** The stem is forged steel and part of the valve trim. It contains an integral back seat shoulder, which mates with the integral backseat of the bonnet. The stem is designed to the basic dimensional requirements of the applicable specifications such as API 602.
- 9. GLAND AND FLANGE.** The gland, gland flange assembly utilizes a separate, two piece design. This self aligning design allows the flange to be unevenly tightened while the gland maintains its parallel alignment with the stem and stuffing box.
- 10. GLAND BOLTS AND NUTS.** The steel/stainless steel gland bolt and nut assembly is a stud, double nut arrangement. This design allows complete removal from the valve when service is required. The use of industry standard thread full length studs and nuts also allows easy replacement should these items be lost or in need of replacement.
- 11. YOKE SLEEVE.** The yoke sleeve is of forged stainless steel material having a high melting point and is resistant to wear and corrosion.
- 12. HANDWHEEL.** The handwheel is forged carbon steel of an open spoke design. This robust construction along with appropriate sizing allows for ease of operation.

**GATE VALVES- EXTENDED BODY- STANDARD PORT-
INTEGRAL REINFORCED - VALVOLET® END & LIP
END WELDED & BOLTED BONNET**

**800 LB.
1500 LB.**

Design construction:
API 602 - ASME B16.34
Testing according to API 598
Marking MSS-SP-25
Integral extended body
Outside Screw and Yoke (OS&Y)
Self aligning two piece packing gland
Spiral-wound gasket
Body-bonnet weld to ASME IX
Integral backseat
Socket Weld Ends to ASME B16.11
Screwed Ends (NPT) to ASME B1.20.1
Butt Welding Ends to ASME B16.25
Rating:
-carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
-carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



BOLTED BONNET – FIG. VLL 10 / WELDED BONNET – FIG. VOLL 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	8.15 207	8.60 218.5	9.62 244.5	10.37 263.5	10.53 267.5
B open	inch mm	5.98 152	6.22 158	7.72 196	10.04 255	11.42 290
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30	1.44 36.6
G	inch mm	1.26 32	1.50 38	1.89 48	2.52 64	3.07 78
H	inch mm	.69 17.5	.87 22	1.12 28.5	1.61 41	1.81 46
I	inch mm	.16 4	.19 4.8	.19 4.8	.25 6.3	.31 8
L	inch mm	6.57 167	6.81 173	7.48 190	7.87 200	8.03 204
M	inch mm	.87 22	1.18 30	1.44 36.5	1.99 50.5	2.56 65
Weight Bolted B.	lb. kg	5.75 2.6	6.75 3.1	11.25 5.1	21 9.5	28.5 13
Weight Welded B.	lb. kg	5 2.3	6.25 2.9	9.5 4.3	19.5 8.8	25.75 11.7
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET*		G2	G2	G3	G6	G7

BOLTED BONNET – FIG. 9VLL 10 / WELDED BONNET – FIG. 9VOLL 10					
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40
A	inch mm	8.60 218.5	9.62 244.5	10.37 263.5	10.53 267.5
B open	inch mm	6.02 153	7.48 190	8.66 220	11.10 282
C	inch mm	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9.6	.55 14	.71 18	1.18 30
G	inch mm	1.50 38	1.89 48	2.20 56	3.07 78
H	inch mm	.69 17.5	.87 22	1.12 28.5	1.61 41
I	inch mm	.16 4	.19 4.8	.19 4.8	.25 6.3
L	inch mm	6.81 173	7.48 190	7.87 200	8.03 204
M	inch mm	1.18 30	1.44 36.5	1.99 50.5	2.56 65
Weight Bolted B.	lb. kg	8 3.6	12.25 5.6	23 10.5	32 14.5
Weight Welded B.	lb. kg	6.25 2.9	10.25 4.7	19.75 9	27.5 12.5
PACKING		BH3	BH5	BH6	2B5
GASKET*		G1	G2	G3	G5



GATE VALVES- EXTENDED BODY- STANDARD PORT- SOCKET WELDED- PLAIN END, SCREWED END & BUTT WELD END - WELDED & BOLTED BONNET

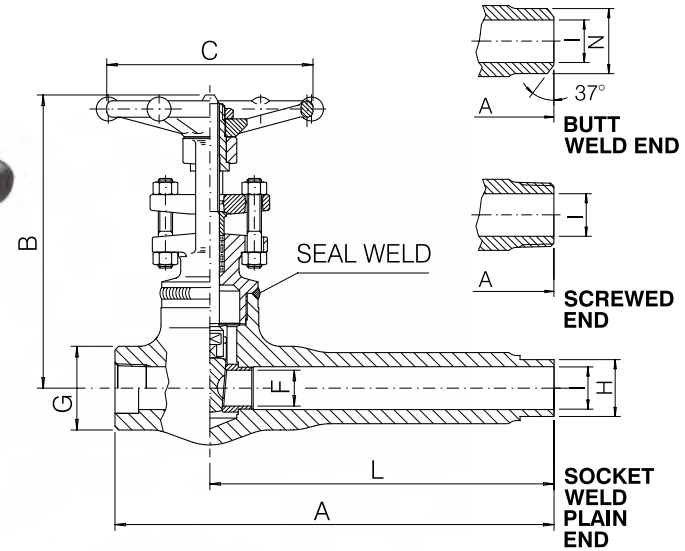
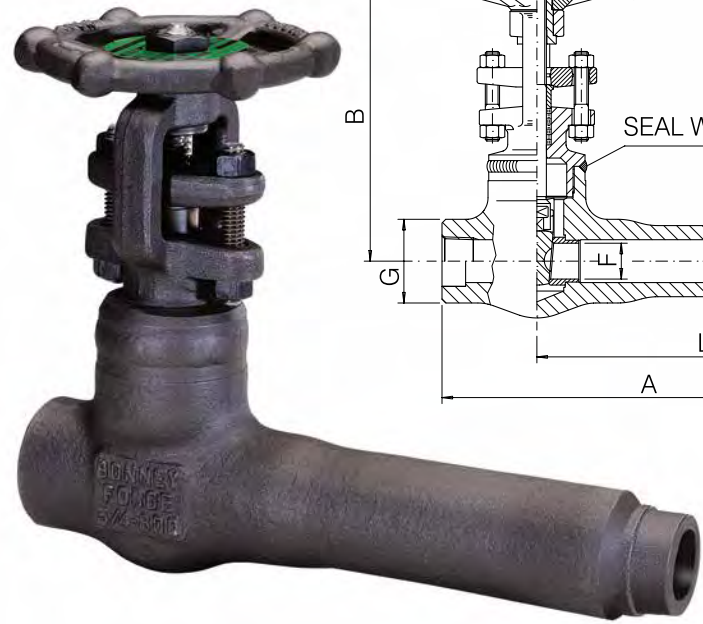
800 LB.

1500 LB.

Design construction:

- API 602 - ASME B16.34
- Testing according to API 598
- Marking MSS-SP-25
- Integral extended body
- Outside Screw and Yoke (OS&Y)
- Self aligning two piece packing gland
- Spiral-wound gasket
- Body-bonnet weld to ASME IX
- Integral backseat
- Socket Weld Ends to ASME B16.11
- Screwed Ends (NPT) to ASME B1.20.1
- Butt Welding Ends to ASME B16.25

- Rating:
- carbon steel class 800 1975 psig @ 100°F
138 bar + 38°C
 - carbon steel class 1500 3705 psig @ 100°F
255 bar + 38°C



BOLTED BONNET – FIG. 10 / WELDED BONNET – FIG. MFL 10						
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
A	inch mm	5.57 141,5	5.77 146,5	6.53 166	7.50 190,5	8.50 216
B open	inch mm	5.98 152	6.14 156	7.72 196	10.08 256	11.42 290
C	inch mm	3.46 88	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9,6	.55 14	.71 18	1.18 30	1.44 36,6
G	inch mm	1.26 32	1.50 38	1.89 48	2.52 64	3.07 78
H	inch mm	.84 21,3	1.05 26,7	1.31 33,4	1.90 48,3	2.37 60,3
I	inch mm	.51 13	.63 16	.83 21	1.34 34	1.65 42
L	inch mm	4.01 102	4.01 102	4.37 111	5 127	6.02 153
N	inch mm	.90 23	1.10 28	1.42 36	2.05 52	2.44 62
Weight Bolted B.	lb. kg	5.25 2,4	5.75 2,6	9.25 4,2	17.75 8,1	26 11,8
Weight Welded B.	lb. kg	3.75 1,7	4.5 2,1	7 3,2	15.75 7,2	22.75 10,3
PACKING		BH2	BH2	BH4	BH6	BY5
GASKET*		G2	G2	G3	G6	G7

BOLTED BONNET – FIG. 9ML 10 / WELDED BONNET – FIG. 9MFL 10					
SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40
A	inch mm	5.77 146,5	6.53 166	7.50 190,5	8.50 216
B open	inch mm	6.02 153	7.48 190	8.66 220	11.10 282
C	inch mm	3.46 88	3.82 97	5.43 138	5.43 138
F	inch mm	.38 9,6	.55 14	.71 18	1.18 30
G	inch mm	1.50 38	1.89 48	2.52 64	3.35 85
H	inch mm	.84 21,3	1.05 26,7	1.31 33,4	1.90 48,3
I	inch mm	.51 13	.63 16	.83 21	1.34 34
L	inch mm	4.02 102	4.37 111	5 127	6.02 153
N	inch mm	.90 23	1.10 28	1.42 36	2.05 52
Weight Bolted B.	lb. kg	5.75 2,6	10 4,6	20 9,1	28.5 13
Weight Welded B.	lb. kg	4.5 2,1	8.25 3,8	17.75 8,1	26.5 12
PACKING		BH3	BH5	BH6	2B5
GASKET*		G1	G2	G3	G5

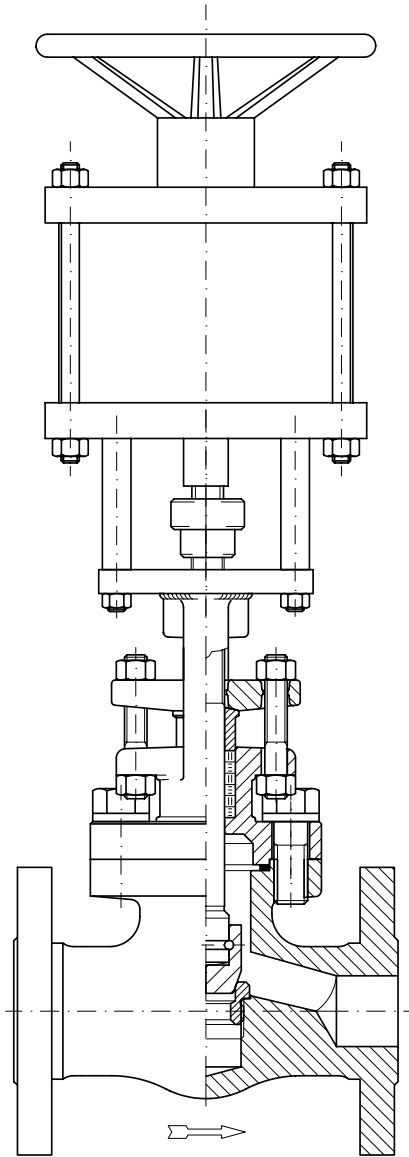
Materials and trim specifications Page 91
* Only for Bolted Bonnet type.

Male threaded ends in class 1500 lb. and NPS 1/2" in class 800 lb. not permitted by API 602

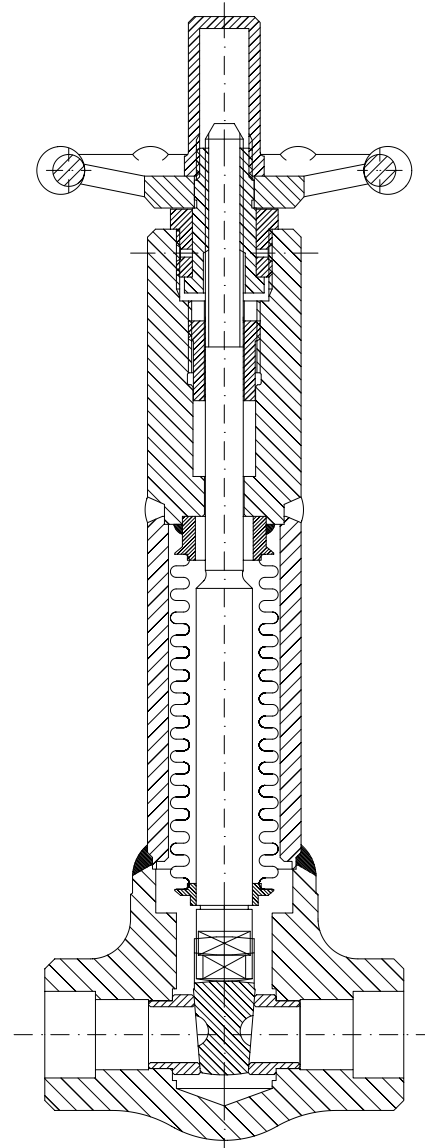
SPECIAL FEATURES



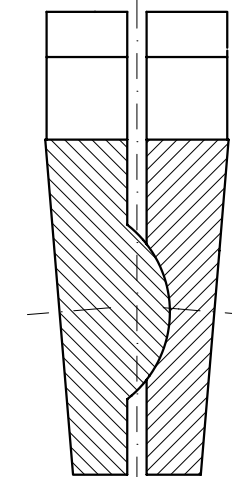
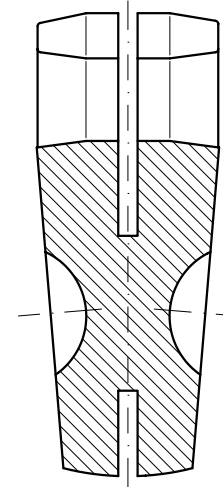
Special features are available on request.



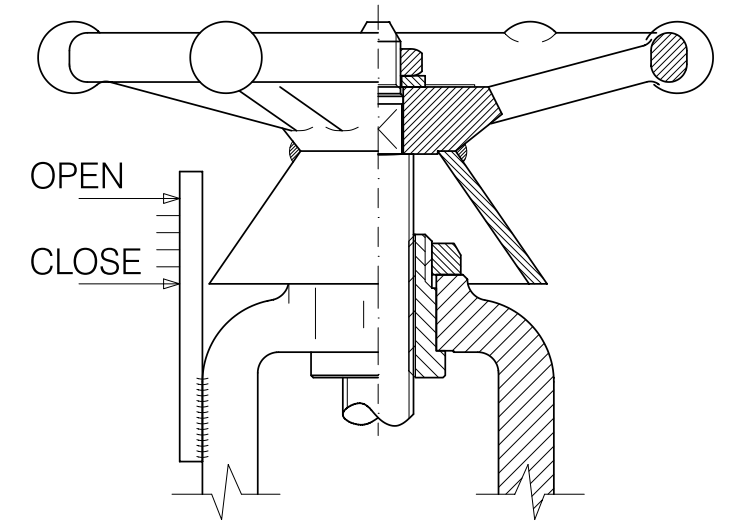
All Gate and Globe valves can be equipped with pneumatic or hydraulic actuator, double effect or spring action.



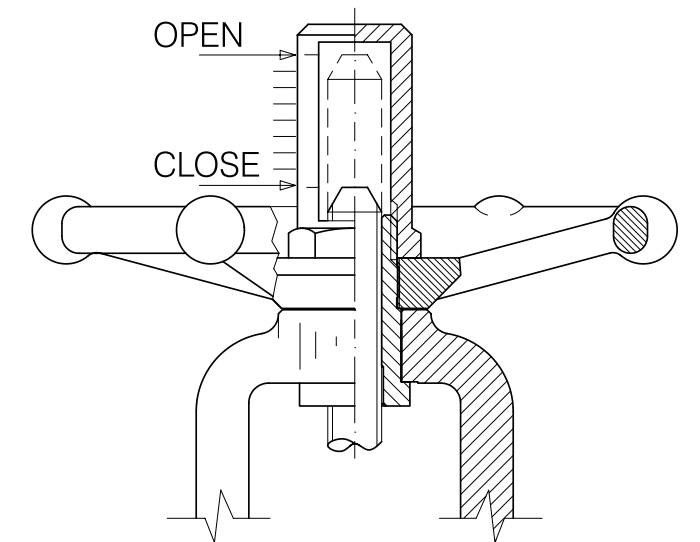
Bellows seal valves full protected.



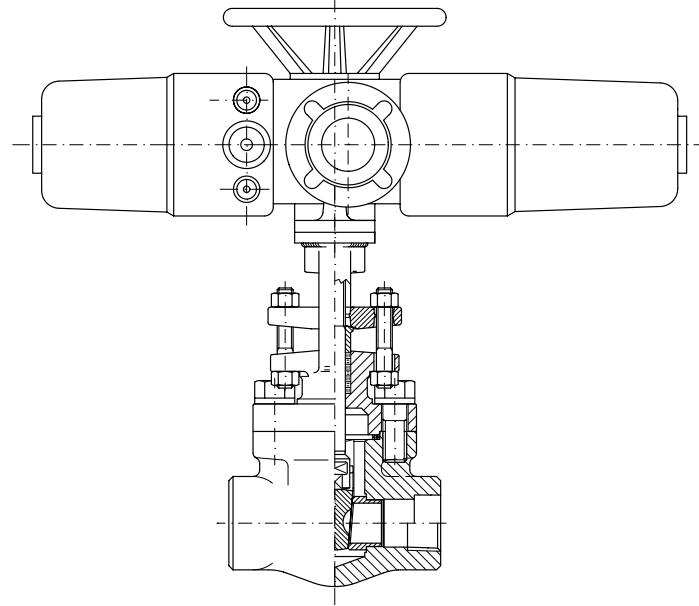
Flexible and split wedge available on request.



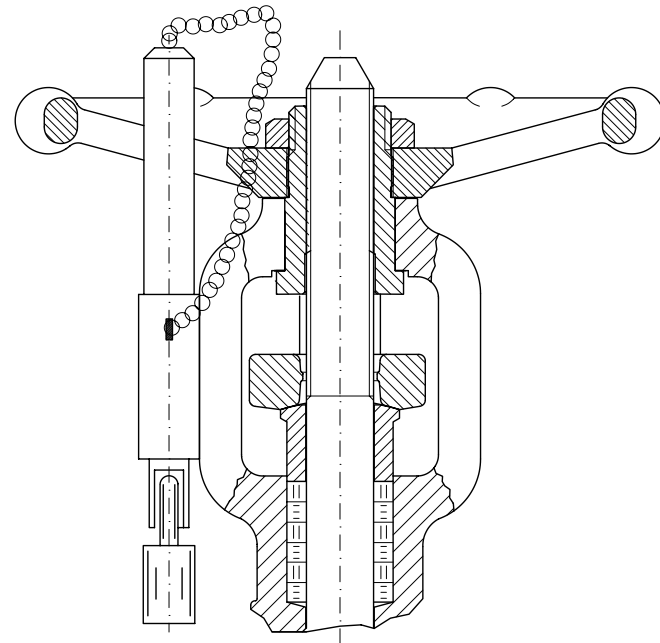
Position indicator and stem protection on Globe valves.



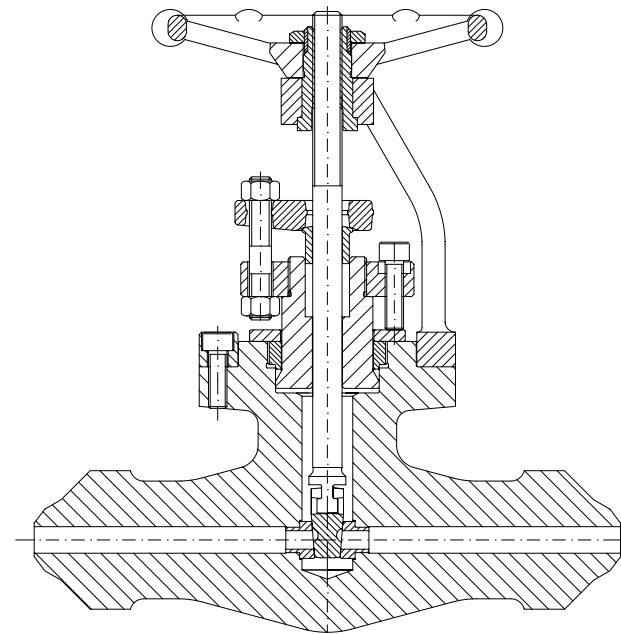
Position indicator and stem protection on Gate valves.



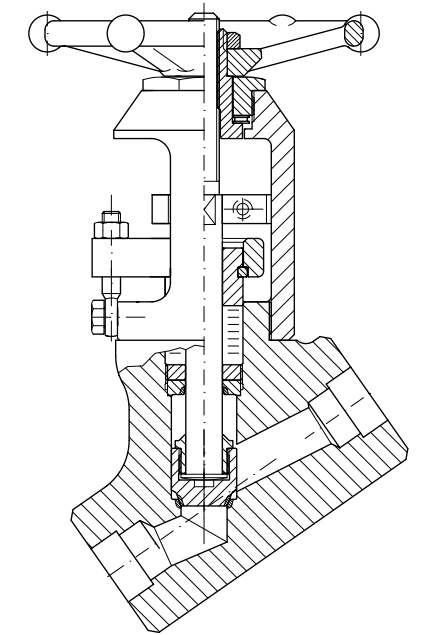
All Gate and Globe valves can be equipped with electric actuator, per customer's specification.



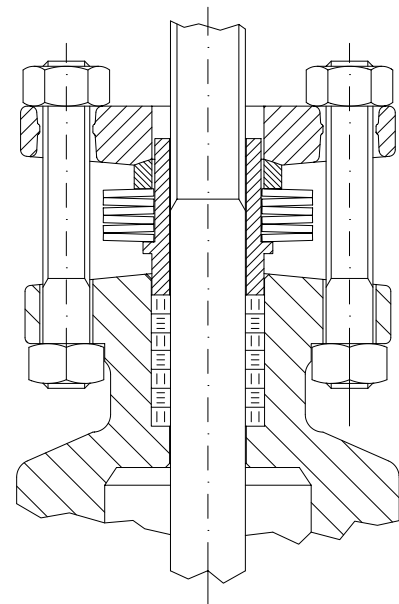
Locking device with padlock. One option shown. Other designs are supplied.



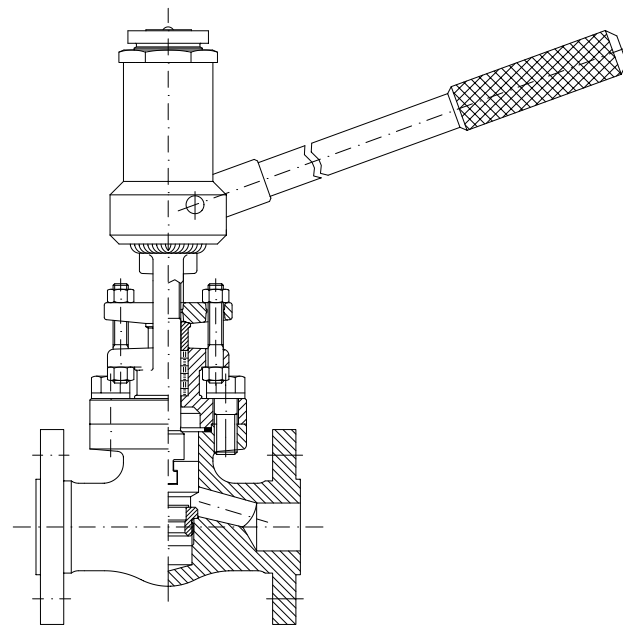
Body Bonnet connection pressure seal design.



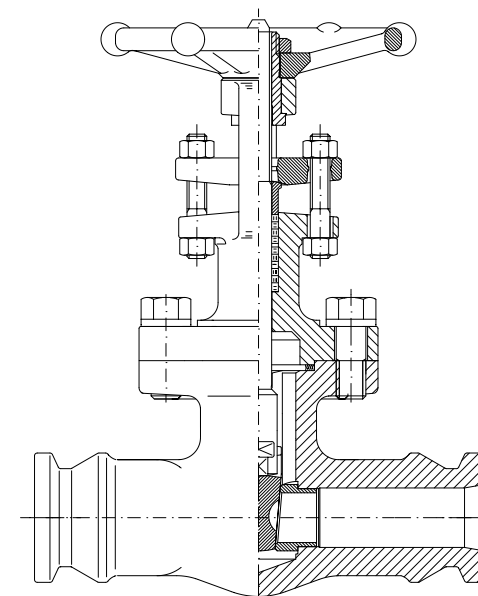
Bonnet-Less type, non rotating stem, no rising handwheel, position indicator.



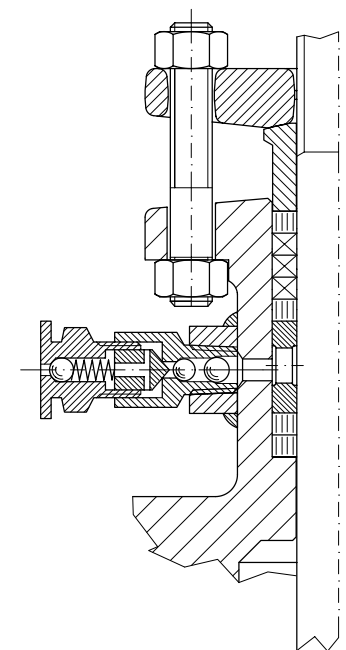
Stuffing box with live loading system. One option shown. Other designs are supplied.



Quick opening Globe and Gate valves.



Special pipe connection such as clamp-lock, special B.W.E., nipples or other customer's request.



Valves can be supplied with a deep stuffing box with lantern ring and a double ball grease injector.

Lined writing area for notes on page 70.

Pressure-Temperature Ratings 72-90
Standard Materials Specification.....91
Recommended Spare Parts
for Forged Valves92
Thread Standard ASME B1.20.193
Socket Weld Standard
ASME B16.1193
Valvolet® Run Pipe Consolidation.....93
Valve Flow Coefficient 94-95

TECHNICAL DATA



PSI - °F		MATERIALS: ASTM A105 N (a) - ASTM A350 LF2 (a)										BAR - °C							
STANDARD CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	285	740	990	1,480	1,975	2,220	3,705	6,170	11,110	-29 +38	19,7	51,0	68,3	102,0	136,2	153,1	255,5	425,4	766,0
200	260	675	900	1,350	1,800	2,025	3,375	5,625	10,120	93,3	17,9	46,5	62,1	93,1	124,1	139,6	232,7	387,8	697,8
300	230	655	875	1,315	1,750	1,970	3,280	5,470	9,845	148,9	15,9	45,2	60,3	90,7	120,7	135,8	226,2	377,2	678,8
400	200	635	845	1,270	1,690	1,900	3,170	5,280	9,505	204,4	13,8	43,8	58,3	87,6	116,5	131,0	218,6	364,1	655,4
500	170	600	800	1,200	1,595	1,795	2,995	4,990	8,980	260,0	11,7	41,4	55,2	82,7	110,0	123,8	206,5	344,1	619,2
600	140	550	730	1,095	1,460	1,640	2,735	4,560	8,210	315,6	9,7	37,9	50,3	75,5	100,7	113,1	188,6	314,4	566,1
650	125	535	715	1,075	1,430	1,610	2,685	4,475	8,055	343,3	8,6	36,9	49,3	74,1	98,6	111,0	185,1	308,6	555,4
700	110	535	710	1,065	1,420	1,600	2,665	4,440	7,990	371,1	7,6	36,9	49,0	73,4	97,9	110,3	183,8	306,1	550,9
750	95	505	670	1,010	1,345	1,510	2,520	4,200	7,560	398,9	6,6	34,8	46,2	69,6	92,7	104,1	173,8	289,6	521,3
800	80	410	550	825	1,100	1,235	2,060	3,430	6,170	426,7	5,5	28,3	37,9	56,9	75,8	85,2	142,0	236,5	425,4
850	65	270	355	535	715	805	1,340	2,230	4,010	454,4	4,5	18,6	24,5	36,9	49,3	55,5	92,4	153,8	276,5
900	50	170	230	345	460	515	860	1,430	2,570	482,2	3,4	11,7	15,9	23,8	31,7	35,5	59,3	98,6	177,2
950	35	105	140	205	275	310	515	860	1,545	510,0	2,4	7,2	9,7	14,1	19,0	21,4	35,5	59,3	106,5
1000	20	50	70	105	140	155	260	430	770	537,8	1,4	3,4	4,8	7,2	9,6	10,7	17,9	29,6	53,1
SPECIAL CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
300	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	148,9	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
400	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	204,4	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
500	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	260,0	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
600	275	715	950	1,425	1,900	2,140	3,565	5,940	10,690	315,6	19,0	49,3	65,5	98,3	131,0	147,6	245,8	409,6	737,1
650	270	700	935	1,400	1,865	2,100	3,495	5,825	10,485	343,3	18,6	48,3	64,5	96,5	128,6	144,8	241,0	401,6	722,9
700	265	695	925	1,390	1,850	2,080	3,470	5,780	10,405	371,1	18,3	47,9	63,8	95,8	127,5	143,4	239,3	398,5	717,4
750	240	630	840	1,260	1,680	1,890	3,150	5,250	9,450	398,9	16,5	43,4	57,9	86,9	115,8	130,3	217,2	362,0	651,6
800	200	515	685	1,030	1,375	1,545	2,570	4,285	7,715	426,7	13,8	35,5	47,2	71,0	94,8	106,5	177,2	295,5	531,9
850	130	335	445	670	895	1,005	1,670	2,785	5,015	454,4	9,0	23,1	30,7	46,2	61,7	69,3	115,1	192,0	345,8
900	85	215	285	430	575	645	1,070	1,785	3,215	482,2	5,9	14,8	19,7	29,6	39,6	44,5	73,8	123,1	221,7
950	50	130	170	260	345	385	645	1,070	1,930	510,0	3,4	9,0	11,7	17,9	23,8	26,5	44,5	73,8	133,1
1000	25	65	85	130	175	195	320	535	965	537,8	1,7	4,5	5,9	9,0	12,1	13,4	22,1	36,9	66,5

PSI - °F		MATERIALS: ASTM A182 F5 - ASTM A182 F5a										BAR - °C							
STANDARD CLASS												<i>Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.</i>							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	260	745	995	1,490	2,000	2,235	3,725	6,205	11,170	93,3	17,9	51,4	68,6	102,7	137,9	154,1	256,8	427,8	770,2
300	230	715	955	1,430	1,940	2,150	3,580	5,965	10,740	148,9	15,9	49,3	65,8	98,6	133,8	148,2	246,8	411,3	740,5
400	200	705	940	1,410	1,880	2,115	3,530	5,880	10,585	204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
500	170	665	885	1,330	1,775	1,995	3,325	5,540	9,965	260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315,6	9,7	41,7	55,5	83,4	111,3	125,1	208,6	347,5	625,4
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343,3	8,6	40,7	54,1	81,0	108,2	121,7	202,7	338,2	608,5
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371,1	7,6	39,3	52,1	78,3	104,4	117,6	195,8	326,1	587,1
750	95	530	705	1,055	1,420	1,585	2,640	4,400	7,920	398,9	6,6	36,5	48,6	72,7	97,9	109,3	182,0	303,4	546,1
800	80	510	675	1,015	1,325	1,525	2,540	4,230	7,610	426,7	5,5	35,2	46,5	70,0	91,3	105,1	175,1	291,7	524,7
850	65	485	645	965	1,170	1,450	2,415	4,030	7,250	454,4	4,5	33,4	44,5	66,5	80,7	100,0	166,5	277,9	499,9
900	50	370	495	740	940	1,110	1,850	3,085	5,555	482,2	3,4	25,5	34,1	51,0	64,8	76,5	127,6	212,7	383,0
950	35	275	365	550	695	825	1,370	2,285	4,115	510,0	2,4	19,0	25,2	37,9	47,9	56,9	94,5	157,6	283,7
1000	20	200	265	400	510	595	995	1,655	2,985	537,8	1,4	13,8	18,3	27,6	35,2	41,0	68,6	114,1	205,8
1050	20	145	190	290	375	430	720	1,200	2,160	565,6	1,4	10,0	13,1	20,0	25,8	29,6	49,6	82,7	148,9
1100	20	100	135	200	275	300	495	830	1,490	593,3	1,4	6,9	9,3	13,8	19,0	20,7	34,1	57,2	102,7
1150	20	60	80	125	185	185	310	515	925	621,1	1,4	4,1	5,5	8,6	12,7	12,8	21,4	35,5	63,8
1200	15	35	45	70	120	105	170	285	515	648,9	1,0	2,4	3,1	4,8	8,3	7,2	11,7	19,7	35,5
SPECIAL CLASS												<i>Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.</i>							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
300	280	730	970	1,455	1,940	2,185	3,645	6,070	10,930	148,9	19,3	50,3	66,9	100,3	133,8	150,7	251,3	418,5	753,6
400	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	204,4	19,0	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
500	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	260,0	19,0	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
600	270	705	945	1,415	1,885	2,120	3,535	5,895	10,605	315,6	18,6	48,6	65,2	97,6	129,9	146,2	243,7	406,5	731,2
650	270	700	9																

PSI - °F		MATERIALS: ASTM A182 F9										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
200	260	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
300	230	730	970	1,455	1,940	2,185	3,640	6,070	10,925	148,9	15,9	50,3	66,9	100,3	133,8	150,7	251,0	418,5	753,3				
400	200	705	940	1,410	1,880	2,115	3,530	5,880	10,585	204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8				
500	170	665	885	1,330	1,775	1,995	3,325	5,540	9,965	260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1				
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315,6	9,7	41,7	55,5	83,4	111,3	125,1	208,6	347,5	625,4				
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343,3	8,6	40,7	54,1	81,0	108,2	121,7	202,7	338,2	608,5				
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371,1	7,6	39,3	52,1	78,3	104,4	117,6	195,8	326,1	587,1				
750	95	530	710	1,065	1,420	1,595	2,660	4,430	7,970	398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5				
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7				
850	65	485	650	975	1,300	1,460	2,435	4,060	7,305	454,4	4,5	33,4	44,8	67,2	89,6	100,7	167,9	279,9	503,7				
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7				
950	35	375	505	755	985	1,130	1,885	3,145	5,655	510,0	2,4	25,9	34,8	52,1	67,9	77,9	130,0	216,8	389,9				
1000	20	255	340	505	780	760	1,270	2,115	3,805	537,8	1,4	17,6	23,4	34,8	53,8	52,4	87,6	145,8	262,4				
1050	20	170	230	345	505	515	855	1,430	2,570	565,6	1,4	11,7	15,9	23,8	34,8	35,5	59,0	98,6	177,2				
1100	20	115	150	225	300	340	565	945	1,695	593,3	1,4	7,9	10,3	15,5	20,7	23,4	39,0	65,2	116,9				
1150	20	75	100	150	200	225	375	630	1,130	621,1	1,4	5,2	6,9	10,3	13,8	15,5	25,9	43,4	77,9				
1200	20	50	70	105	140	155	255	430	770	648,9	1,4	3,4	4,8	7,2	9,6	10,7	17,6	29,6	53,1				
SPECIAL CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.										SPECIAL CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
300	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	148,9	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
400	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	204,4	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
500	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	260,0	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
600	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	315,6	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
650	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	343,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
700	280	735	980	1,465	1,955	2,200	3,665	6,110	10,995	371,1	19,3	50,7	67,6	101,0	134,7	151,7	252,7	421,3	758,1				
750	280	730	970	1,460	1,945	2,185	3,645	6,070	10,930	398,9	19,3	50,3	66,9	100,7	134,1	150,7	251,3	418,5	753,6				
800	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	426,7	19,0	49,6	66,2	99,3	132,3	148,9	248,2	413,7	744,7				
850	260	680	905	1,355	1,805	2,030	3,385	5,645	10,160	454,4	17,9	46,9	62,4	93,4	124,4	140,0	233,4	389,2	700,5				
900	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	482,2	15,9	41,4	55,2	82,7	110,3	124,1	206,9	344,8	620,6				
950	180	470	630	945	1,260	1,415	2,355	3,930	7,070	510,0	12,4	32,4	43,4	65,2	86,8	97,6	162,4	271,0	487,5				
1000	120	315	425	635	845	950	1,585	2,645	4,755	537,8	8,3	21,7	29,3	43,8	58,2	65,5	109,3	182,4	327,9				
1050	80	215	285	430	575	645	1,070	1,785	3,215	565,6	5,5	14,8	19,7	29,6	39,6	44,5	73,8	123,1	221,7				
1100	55	140	190	285	380	425	710	1,180	2,120	593,3	3,8	9,7	13,1	19,7	26,2	29,3	49,0	81,4	146,2				
1150	35	95	125	190	255	285	470	785	1,415	621,1	2,4	6,6	8,6	13,1	17,5	19,7	32,4	54,1	97,6				
1200	25	65	85	130	175	195	320	535	965	648,9	1,7	4,5	5,9	9,0	12,1	13,4	22,1	36,9	66,5				

PSI - °F		MATERIALS: ASTM A182 F91										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
200	260	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
300	230	730	970	1,455	1,940	2,185	3,640	6,070	10,925	148,9	15,9	50,3	66,9	100,3	133,8	150,7	251,0	418,5	753,3				
400	200	705	940	1,410	1,880	2,115	3,530	5,880	10,585	204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8				
500	170	665	885	1,330	1,775	1,995	3,325	5,540	9,965	260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1				
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315,6	9,7	41,7	55,5	83,4	111,3	125,1	208,6	347,5	625,4				
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343,3	8,6	40,7	54,1	81,0	108,2	121,7	202,7	338,2	608,5				
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371,1	7,6	39,3	52,1	78,3	104,4	117,6	195,8	326,1	587,1				
750	95	530	710	1,065	1,420	1,595	2,660	4,430	7,970	398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5				
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7				
850	65	485	650	975	1,300	1,460	2,435	4,060	7,305	454,4	4,5	33,4	44,8	67,2	89,6	100,7	167,9	279,9	503,7				
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7				
950	35	385	515	775	1,030	1,160	1,930	3,220	5,795	510,0	2,4	26,6	35,5	53,4	71,0	80,0	133,1	222,0	339,7				
1000	20	365	485	725	970	1,090	1,820	3,030	5,450	537,8	1,4	25,1	33,4	50,0	66,9	75,1	125,5	209,0	375,9				
1050	20	360	480	720	960	1,080	1,800	3,000	5,400	565,6	1,4	24,8	33,1	49,7	66,2	74,5	124,1	206,9	372,4				
1100	20	300	400	605	805	905	1,510	2,515	4,525	593,3	1,4	20,7	27,6	41,7	55,5	62,4	104,1	173,4	312,0				
1150	20	225	295	445	595	670	1,115	1,855	3,345	621,1	1,4	15,5	20,3	30,7	41,0	46,2	76,9	127,9	230,7				
1200	20	145	190	290	385	430	720	1,200	2,160	648,9	1,4	10,0	13,1	20,0	26,5	29,7	49,7	82,8	149,0				
SPECIAL CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.										SPECIAL CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7				
300	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	148,9	20,0	51,7	69,0	103,4	137,9	155,							

PSI - °F		MATERIALS: ASTM A182 F11 CL2 (b) - ASTM A182 F12 CL2 (b)										BAR - °C							
STANDARD CLASS												Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	260	750	1,000	1,500	1,900	2,250	3,750	6,250	11,250	93,3	17,9	51,7	69,0	103,4	131,0	151,1	258,6	430,9	775,7
300	230	720	965	1,445	1,795	2,165	3,610	6,015	10,830	148,9	15,9	49,6	66,5	99,6	123,8	149,3	248,9	414,7	746,7
400	200	695	925	1,385	1,755	2,080	3,465	5,775	10,400	204,4	13,8	47,9	63,8	95,5	121,0	143,4	238,9	398,2	717,1
500	170	665	885	1,330	1,710	1,995	3,325	5,540	9,965	260,0	11,7	45,9	61,0	91,7	117,9	137,6	229,3	382,0	687,1
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315,6	9,7	41,7	55,5	83,4	111,3	125,1	208,6	347,5	625,4
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343,3	8,6	40,7	54,1	81,0	108,2	121,7	202,7	338,2	608,5
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371,1	7,6	39,3	52,1	78,3	104,4	117,6	195,8	326,1	587,1
750	95	530	710	1,065	1,420	1,595	2,660	4,430	7,970	398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
850	65	485	650	975	1,300	1,460	2,435	4,060	7,305	454,4	4,5	33,4	44,8	67,2	89,6	100,7	167,9	279,9	503,7
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
950	35	320	425	640	1,005	955	1,595	2,655	4,785	510,0	2,4	22,1	29,3	44,1	69,3	65,8	110,0	183,1	329,9
1000	20	215	290	430	595	650	1,080	1,800	3,240	537,8	1,4	14,8	20,0	29,6	41,0	44,8	74,5	124,1	223,4
1050	20	145	190	290	365	430	720	1,200	2,160	565,6	1,4	10,0	13,1	20,0	25,2	29,6	49,6	82,7	148,9
1100	20	95	130	190	255	290	480	800	1,440	593,3	1,4	6,6	9,0	13,1	17,6	20,0	33,1	55,2	99,3
1150	20	60	80	125	140	185	310	515	925	621,1	1,4	4,1	5,5	8,6	9,6	12,8	21,4	35,5	63,8
1200	15	40	50	75	95	115	190	315	565	648,9	1,0	2,8	3,4	5,2	6,5	7,9	13,1	21,7	39,0
SPECIAL CLASS												Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
300	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	148,9	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
400	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	204,4	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
500	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	260,0	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
600	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	315,6	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
650	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	343,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
700	280	735	980	1,465	1,955	2,200	3,665	6,110	10,995	371,1	19,3	50,7	67,6	101,0	134,7	151,7	252,7	421,3	758,1
750	280	730	970	1,460	1,945	2,185	3,645	6,070	10,930	398,9	19,3	50,3	66,9	100,7	134,1	150,7	251,3	418,5	753,6
800	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	426,7	19,0	49,6	66,2	99,3	132,3	148,9	248,2	413,7	744,7
850	260	680	905	1,355	1,805	2,030	3,385	5,645	10,160	454,4	17,9	46,9	62,4	93,4	124,4	140,0	233,4	389,2	700,5
900	225	585	785	1,175	1,565	1,760	2,935	4,895	8,805	482,2	15,5	40,3	54,1	81,0	107,9	121,4	202,4	337,5	607,1
950	155	400	530	795	1,060	1,195	1,995	3,320	5,980	510,0	10,7	27,6	36,5	54,8	73,1	82,4	137,6	228,9	412,3
1000	105	270	360	540	720	810	1,350	2,250	4,050	537,8	7,2	18,6	24,8	37,2	49,6	55,8	93,1	155,1	279,2
1050	70	180	240	360	480	540	900	1,500	2,700	565,6	4,8	12,4	16,5	24,8	33,1	37,2	62,1	103,4	186,2
1100	45	120	160	240	320	360	600	1,000	1,800	593,3	3,1	8,3	11,0	16,5	22,1	24,8	41,4	69,0	124,1
1150	30	75	105	155	205	230	385	645	1,155	621,1	2,1	5,2	7,2	10,7	14,1	15,9	26,5	44,5	79,6
1200	20	45	65	95	125	140	235	395	705	648,9	1,4	3,1	4,5	6,6	8,6	9,7	16,2	27,2	48,6

PSI - °F		MATERIALS: ASTM A182 F22 CL3 (b)										BAR - °C							
STANDARD CLASS												Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	260	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
300	230	730	970	1,455	1,940	2,185	3,640	6,070	10,925	148,9	15,9	50,3	66,9	100,3	133,7	150,7	251,0	418,5	753,3
400	200	705	940	1,410	1,880	2,115	3,530	5,880	10,585	204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
500	170	665	885	1,330	1,775	1,995	3,325	5,540	9,965	260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315,6	9,7	41,7	55,5	83,4	111,3	125,1	208,6	347,5	625,4
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343,3	8,6	40,7	54,1	81,0	108,2	121,7	202,7	338,2	608,5
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371,1	7,6	39,3	52,1	78,3	104,4	117,6	195,8	326,1	587,1
750	95	530	710	1,065	1,420	1,595	2,660	4,430	7,970	398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
850	65	485	650	975	1,300	1,460	2,435	4,060	7,305	454,4	4,5	33,4	44,8	67,2	89,6	100,7	167,9	279,9	503,7
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
950	35	375	505	755	1,005	1,130	1,885	3,145	5,665	510,0	2,4	25,9	34,8	52,1	69,3	77,9	130,0	216,8	390,6
1000	20	260	345	520	695	780	1,305	2,170	3,910	537,8	1,4	17,9	23,8	35,9	48,0	53,8	90,0	149,6	269,6
1050	20	175	235	350	465	525	875	1,455	2,625	565,6	1,4	12,1	16,2	24,1	32,1	36,2	60,3	100,3	181,0
1100	20	110	145	220	295	330	550	915	1,645	593,3	1,4	7,6	10,0	15,2	20,3	22,8	37,9	63,1	113,4
1150	20	70	90	135	180	205	345	570	1,030	621,1	1,4	4,8	6,2	9,3	12,4	14,1	23,8	39,3	71,0
1200	20	40	55	80	110	125	205	345	615	648,9	1,4	2,8	3,8	5,5	7,6	8,6	14,1	23,8	42,4
SPECIAL CLASS												Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93,3	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
300	285	740	990	1,485	1,980	2,225	3,705	6,180	11,120	148,9	19,7	51,0	68,3	102,4	136,5	153,4	255,5	426,1	766,7
400	280	725	965	1,450	1,935	2,175	3,620	6,035	10,865	204,4	19,3	50,0	66,5	100,0	133,4	150,0	249,6	416,1	749,1
500	275	720																	

PSI - °F		MATERIALS: ASTM A182 F304 (c) - ASTM A182 F304H										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	-29 +38	19.0	49.6	66.2	99.3	132.4	148.9	248.2	413.7	744.7				
200	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	93.3	15.9	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6				
300	205	540	720	1,080	1,410	1,620	2,700	4,500	8,100	148.9	14.1	37.2	49.6	74.5	97.2	111.7	186.2	310.3	558.5				
400	190	495	660	995	1,255	1,490	2,485	4,140	7,450	204.4	13.1	34.1	45.5	68.6	86.5	102.7	171.3	285.5	513.7				
500	170	465	620	930	1,165	1,395	2,330	3,880	6,985	260.0	11.7	32.1	42.7	64.1	80.3	96.2	160.7	267.5	481.6				
600	140	435	580	875	1,105	1,310	2,185	3,640	6,550	315.6	9.7	30.0	40.0	60.3	76.2	90.3	150.7	251.0	451.6				
650	125	430	575	860	1,090	1,290	2,150	3,580	6,445	343.3	8.6	29.6	39.6	59.3	75.1	88.9	148.2	246.8	444.4				
700	110	425	565	850	1,075	1,275	2,125	3,540	6,370	371.1	7.6	29.3	39.0	58.6	74.1	87.9	146.5	244.1	439.2				
750	95	415	555	830	1,060	1,245	2,075	3,460	6,230	398.9	6.6	28.6	38.3	57.2	73.1	85.8	143.1	238.6	429.6				
800	80	405	540	805	1,050	1,210	2,015	3,360	6,050	426.7	5.5	27.9	37.2	55.5	72.4	83.4	138.9	231.7	417.1				
850	65	395	530	790	1,035	1,190	1,980	3,300	5,940	454.4	4.5	27.2	36.5	54.5	71.4	82.1	136.5	227.5	409.6				
900	50	390	520	780	1,025	1,165	1,945	3,240	5,830	482.2	3.4	26.9	35.9	53.8	70.7	80.3	134.1	223.4	402.0				
950	35	380	510	765	1,000	1,145	1,910	3,180	5,725	510.0	2.4	26.2	35.2	52.7	68.9	78.9	131.7	219.3	394.7				
1000	20	320	430	640	860	965	1,605	2,675	4,815	537.8	1.4	22.1	29.6	44.1	59.3	66.5	110.7	184.4	332.0				
1050	20	310	410	615	825	925	1,545	2,570	4,630	565.6	1.4	21.4	28.3	42.4	56.9	63.8	106.5	177.2	319.2				
1100	20	255	345	515	685	770	1,285	2,145	3,855	593.3	1.4	17.6	23.8	35.5	47.2	53.1	88.6	147.9	265.8				
1150	20	200	265	400	520	595	995	1,655	2,985	621.1	1.4	13.8	18.3	27.6	35.8	41.0	68.6	114.1	205.8				
1200	20	155	205	310	415	465	770	1,285	2,315	648.9	1.4	10.7	14.1	21.4	28.6	32.1	53.1	88.6	159.6				
1250	20	115	150	225	295	340	565	945	1,695	676.7	1.4	7.9	10.3	15.5	20.3	23.4	39.0	65.2	116.9				
1300	20	85	115	170	220	255	430	715	1,285	704.4	1.4	5.9	7.9	11.7	15.2	17.6	29.6	49.3	88.6				
1350	20	60	80	125	165	185	310	515	925	732.2	1.4	4.1	5.5	8.6	11.4	12.8	21.4	35.5	63.8				
1400	20	50	65	95	130	145	240	400	720	760.0	1.4	3.4	4.5	6.6	9.0	10.0	16.5	27.6	49.6				
1450	15	35	45	70	95	105	170	285	515	787.8	1.0	2.4	3.1	4.8	6.5	7.2	11.7	19.7	35.5				
1500	10	25	35	55	65	80	135	230	410	815.6	0.7	1.7	2.4	3.8	4.5	5.5	9.3	15.9	28.3				

SPECIAL CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										SPECIAL CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7				
200	255	670	890	1,335	1,780	2,005	3,345	5,570	10,030	93.3	17.6	46.2	61.4	92.0	122.7	138.2	230.6	384.1	691.6				
300	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	148.9	15.9	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6				
400	210	555	735	1,105	1,475	1,660	2,765	4,605	8,295	204.4	15.4	38.3	50.7	76.2	101.7	114.5	190.6	317.5	571.9				
500	200	520	690	1,035	1,380	1,555	2,595	4,320	7,780	260.0	13.8	35.9	47.6	71.4	95.1	107.2	178.9	297.9	536.4				
600	185	490	650	975	1,300	1,465	2,440	4,065	7,315	315.6	12.8	33.8	44.8	67.2	89.6	101.0	168.2	280.3	504.4				
650	185	480	640	960	1,280	1,440	2,395	3,995	7,190	343.3	12.8	33.1	44.1	66.2	88.2	99.3	165.1	275.5	495.8				
700	180	470	630	945	1,260	1,415	2,355	3,930	7,070	371.1	12.4	32.4	43.4	65.2	86.9	97.6	162.4	271.0	487.5				
750	175	465	615	925	1,235	1,390	2,315	3,855	6,945	398.9	12.1	32.1	42.4	63.8	85.1	95.8	159.6	265.8	478.9				
800	175	450	600	900	1,200	1,350	2,250	3,750	6,750	426.7	12.1	31.0	41.4	62.1	82.7	93.1	155.1	258.6	465.4				
850	170	440	590	885	1,180	1,325	2,205	3,680	6,620	454.4	11.7	30.3	40.7	61.0	81.4	91.4	152.0	253.7	456.4				
900	165	435	575	865	1,155	1,300	2,165	3,605	6,495	482.2	11.4	30.0	39.6	59.6	79.6	89.6	149.3	248.6	447.8				
950	165	425	565	850	1,135	1,275	2,120	3,535	6,365	510.0	11.4	29.3	39.0	58.6	78.2	87.9	146.2	243.7	438.9				
1000	155	405	545	815	1,085	1,220	2,035	3,395	6,105	537.8	10.7	27.9	37.6	56.2	74.8	84.1	140.3	234.1	420.9				
1050	150	385	515	770	1,025	1,155	1,930	3,215	5,785	565.6	10.3	26.5	35.5	53.1	70.7	79.6	133.1	221.7	398.9				
1100	125	320	430	645	860	965	1,605	2,680	4,820	593.3	8.6	22.1	29.6	44.5	59.3	66.5	110.7	184.8	332.3				
1150	95	250	330	495	660	745	1,245	2,070	3,730	621.1	6.6	17.2	22.8	34.1	45.5	51.4	85.8	142.7	257.2				
1200	75	195	255	385	515	580	965	1,605	2,895	648.9	5.2	13.4	17.6	26.5	35.5	40.0	66.5	110.7	199.6				
1250	55	140	190	285	380	425	705	1,180	2,120	676.7	3.8	9.7	13.1	19.7	26.2	29.3	48.6	81.4	146.2				
1300	40	105	145	215	285	320	535	895	1,605	704.4	2.8	7.2	10.0	14.8	19.6	22.1	36.9	61.7	110.7				
1350	30	75	105	155	205	230	385	645	1,155	732.2	2.1	5.2	7.2	10.7	14.1	15.9	26.5	44.5	79.6				
1400	25	60	80	120	160	180	300	500	900	760.0	1.7	4.1	5.5	8.3	11.0	12.4	20.7	34.5	62.1				
1450	15	45	55	85	115	130	215	355	645	787.8	1.0	3.1	3.8	5.9	8.0	9.0	14.8	24.5	44.5				
1500	15	35	45	70	95	105	170	285	515	815.6	1.0	2.4	3.1	4.8	6.5	7.2	11.7	19.7	35.5				

PSI - °F		MATERIALS: ASTM A182 F316 (c) - ASTM A182 F316H										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	-29 +38	19.0	49.6	66.2	99.3	132.4	148.9	248.2	413.7	744.7				
200	235	620	825	1,240	1,655	1,860	3,095	5,160	9,290	93.3	16.2	42.7	56.9	85.5	114.1	128.2	213.4	355.8	640.5				
300	215	560	745	1,120	1,495	1,680	2,795	4,660	8,390	148.9	14.8	38.6	51.4	77.2	103.1	115.8	192.7	321.3	578.5				
400	195	515	685	1,025	1,370	1,540	2,570	4,280	7,705	204.4	13.4	35.5	47.2	70.7	94.5	106.2	177.2	295.1	531.3				
500	170	480	635	955	1,275	1,435	2,390	3,980	7,165	260.0	11.7	33.1	43.8	65.8	87.9	98.9	164.8	274.4	494.0				
600	140	450	600	900	1,205	1,355	2,255	3,760	6,770	315.6	9.7	31.0	41.4	62.1	83.1	93.4	155.5	259.3	466.8				
650	125	445	590	890	1,185	1,330	2,220	3,700	6,660	343.3	8.6	30.7	40.7	61.4	81.7	91.7	153.1	255.1	459.2				
700	110	430	580	870	1,150	1,305	2,170	3,620	6,515	371.1	7.6	29.6	40.0	60.0	79.3	90.0	149.6	249.6	449.2				
750	95	425	570	855	1,130	1,280	2,135	3,560	6,410	398.9	6.6	29.3	39.3	59.0	77.9	88.3	147.2	245.5	442.0				
800	80	420	565	845	1,105	1,265	2,110	3,520	6,335	426.7	5.5	29.0	39.0	58.3	76.2	87.2	145.5	242.7	436.8				
850	65	420	555	835	1,080	1,255	2,090	3,480	6,265	454.4	4.5	29.0	38.3	57.6	74.5	86.5	144.1	239.9	432.0				
900	50	415	555	830	1,050	1,245	2,075	3,460	6,230	482.2													

PSI - °F		MATERIALS: ASTM A182 F304 L (d) - ASTM A182 F316 L										BAR - °C							
STANDARD CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	-29 +38	15.9	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6
200	195	505	675	1,015	1,350	1,520	2,530	4,220	7,595	93.3	13.4	34.8	46.5	70.0	93.1	104.8	174.4	291.0	523.7
300	175	455	605	910	1,210	1,360	2,270	3,780	6,805	148.9	12.1	31.4	41.7	62.7	83.4	93.8	156.5	260.6	469.2
400	160	415	550	825	1,100	1,240	2,065	3,440	6,190	204.4	11.0	28.6	37.9	56.9	75.8	85.5	142.4	237.2	426.8
500	145	380	510	765	1,020	1,145	1,910	3,180	5,725	260.0	10.0	26.2	35.2	52.7	70.3	78.9	131.7	219.3	394.7
600	140	360	480	720	960	1,080	1,800	3,000	5,400	315.6	9.7	24.8	33.1	49.6	66.2	74.5	124.1	206.9	372.3
650	125	350	470	700	935	1,050	1,750	2,920	5,255	343.3	8.6	24.1	32.4	48.3	64.5	72.4	120.7	201.3	362.3
700	110	345	460	685	915	1,030	1,715	2,860	5,150	371.1	7.6	23.8	31.7	47.2	63.1	71.0	118.2	197.2	355.1
750	95	335	450	670	895	1,010	1,680	2,800	5,040	398.9	6.6	23.1	31.0	46.2	61.7	69.6	115.8	193.1	347.5
800	80	330	440	660	875	985	1,645	2,740	4,930	426.7	5.5	22.8	30.3	45.5	60.3	67.9	113.4	188.9	339.9
850	65	320	430	645	860	965	1,610	2,680	4,825	454.4	4.5	22.1	29.6	44.5	59.3	66.5	111.0	184.8	332.7
SPECIAL CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	255	670	890	1,340	1,785	2,005	3,345	5,570	10,030	-29 +38	17.6	46.2	61.4	92.4	123.1	138.2	230.6	384.1	691.6
200	215	565	755	1,130	1,505	1,695	2,825	4,710	8,480	93.3	14.8	39.0	52.1	77.9	103.8	116.9	194.8	324.8	584.7
300	195	505	675	1,010	1,350	1,520	2,530	4,215	7,585	148.9	13.4	34.8	46.5	69.6	93.1	104.8	174.4	290.6	523.0
400	175	460	615	920	1,230	1,385	2,305	3,840	6,910	204.4	12.1	31.7	42.4	63.4	84.8	95.5	158.9	264.8	476.4
500	165	425	570	850	1,135	1,280	2,130	3,550	6,390	260.0	11.4	29.3	39.3	58.6	78.2	88.3	146.9	244.8	440.6
600	155	400	535	805	1,070	1,205	2,010	3,350	6,025	315.6	10.7	27.6	36.9	55.5	73.8	83.1	138.6	231.0	415.4
650	150	390	520	780	1,040	1,170	1,950	3,250	5,850	343.3	10.3	26.9	35.9	53.8	71.7	80.7	134.5	224.1	403.4
700	145	380	510	765	1,020	1,145	1,910	3,180	5,720	371.1	10.0	26.2	35.2	52.7	70.3	78.9	131.7	219.3	394.4
750	145	375	500	745	995	1,120	1,865	3,110	5,595	398.9	10.0	25.9	34.5	51.4	68.6	77.2	128.6	214.4	385.8
800	140	365	490	735	980	1,100	1,835	3,060	5,505	426.7	9.7	25.2	33.8	50.7	67.6	75.8	126.5	211.0	379.6
850	140	360	480	720	955	1,075	1,795	2,990	5,385	454.4	9.7	24.8	33.1	49.6	65.8	74.1	123.8	206.2	371.3

PSI - °F		MATERIALS: ASTM A182 F321 (f) - ASTM A182 F321H (g)										BAR - °C							
STANDARD CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	-29 +38	19.0	49.6	66.2	99.3	132.4	149.0	248.2	413.7	744.7
200	245	645	860	1,290	1,720	1,935	3,230	5,380	9,685	93.3	16.9	44.5	59.3	89.0	118.6	133.4	222.7	370.9	667.8
300	230	595	795	1,190	1,585	1,785	2,975	4,960	8,930	148.9	15.9	41.0	54.8	82.0	109.3	123.1	205.1	342.0	615.7
400	200	550	735	1,105	1,470	1,655	2,760	4,600	8,280	204.4	13.8	38.0	50.7	76.2	101.3	114.1	190.3	317.2	571.0
500	170	515	685	1,030	1,375	1,545	2,570	4,285	7,715	260.0	11.7	35.5	47.2	71.0	94.8	106.5	177.2	295.5	532.0
600	140	485	650	975	1,300	1,460	2,435	4,060	7,310	315.6	9.6	33.4	44.8	67.2	89.6	100.7	167.9	280	504
650	125	480	635	955	1,275	1,435	2,390	3,980	7,165	343.3	8.6	33.1	43.8	65.8	87.9	99.0	164.8	274.4	494
700	110	465	620	930	1,240	1,395	2,330	3,880	6,985	371.1	7.6	32.1	43.1	64.1	85.5	96.2	160.6	267.5	481.6
750	95	460	610	915	1,220	1,375	2,290	3,820	6,875	398.9	6.5	31.7	42.0	63.1	84.1	94.8	157.9	263.4	474.0
800	80	450	600	900	1,205	1,355	2,255	3,760	6,770	426.7	5.5	31.0	41.4	62.0	83.1	93.4	155.5	259.2	466.8
850	65	445	595	895	1,190	1,340	2,230	3,720	6,695	454.4	4.5	30.7	41.0	61.7	82.0	92.4	153.7	256.5	461.6
900	50	440	590	885	1,180	1,325	2,210	3,680	6,625	482.2	3.4	30.3	40.7	61.0	81.4	91.3	152.4	253.7	456.8
950	35	385	515	775	1,030	1,160	1,930	3,220	5,795	510.0	2.4	26.5	35.5	53.4	71.0	80.0	133.1	222.0	399.6
1000	20	355	475	715	950	1,070	1,785	2,970	5,350	537.8	1.4	24.5	32.7	49.3	65.5	73.8	123.1	204.8	368.9
1050	20	315	415	625	835	940	1,565	2,605	4,690	565.6	1.4	21.7	28.6	43.1	57.6	64.8	107.9	179.6	323.4
1100	20	270	360	545	725	815	1,360	2,265	4,075	593.3	1.4	18.6	24.8	37.6	50.0	56.2	93.8	156.2	281.0
1150	20	235	315	475	630	710	1,185	1,970	3,550	621.1	1.4	16.2	21.7	32.7	43.4	49.0	81.7	135.8	244.8
1200	20	185	245	370	495	555	925	1,545	2,775	648.9	1.4	12.7	16.9	25.5	34.1	38.3	63.8	106.5	191.3
1250	20	140	185	280	375	420	705	1,170	2,110	676.7	1.4	9.6	12.7	19.3	25.8	29.0	48.6	80.7	145.5
1300	20	110	145	220	295	330	550	915	1,645	704.4	1.4	7.6	10.0	15.2	20.3	22.7	37.9	63.1	113.4
1350	20	85	115	170	225	255	430	715	1,285	732.2	1.4	5.9	7.9	11.7	15.5	17.6	29.6	49.3	88.6
1400	20	65	85	130	175	195	325	545	975	760.0	1.4	4.5	5.9	9.0	12.1	13.4	22.4	37.6	67.2
1450	20	50	70	105	140	155	255	430	770	787.8	1.4	3.4	4.8	7.2	9.6	10.7	17.6	29.6	53.1
1500	20	40	50	75	100	115	190	315	565	815.6	1.4	1.6	3.4	5.2	6.9	7.9	13.1	21.7	39.0
SPECIAL CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20.0	51.7	68.9	103.4	137.9	155.1	258.6	431.0	775.7
200	260	680	910	1,365	1,820	2,045	3,405	5,680	10,220	93.3	17.9	46.9	62.7	94.1	125.5	141.0	234.8	391.6	704.7
300	235	610	810	1,215	1,620	1,825	3,045	5,070	9,130	148.9	16.2	42	55.8	83.8	111.7	125.8	210.0	349.6	629.5
400	210	555	735	1,105	1,475	1,660	2,765	4,605	8,295	204.4	14.5	38.3	50.7	76.2	101.7	114.4	190.6	317.5	572.0
500	195	515	685	1,030	1,375	1,545	2,570	4,285	7,715	260.0	13.4	35.5	47.2	71.0	94.8	106.5	177.2	295.4	531.9
600	185	490	650	975	1,300	1,465	2,445	4,070	7,330	315.6	12.7	33.8	44.8	67.2	89.6	101.0	168.6	280.6	505.4
650	185	480	640	960	1,280	1,440	2,400	4,000	7,200	343.3	12.7	33.1	44.1	66.2	88.2	99.3	165.5	275.8	496.4

PSI - °F										MATERIALS: ASTM A182 F347 (f) - ASTM A182 F347H (g)										BAR - °C									
STANDARD CLASS										STANDARD CLASS										STANDARD CLASS									
Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.										Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500	Temperature °F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	-29 +38	19.0	49.6	66.2	99.3	132.4	149.0	248.2	413.7	744.6	-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250
200	255	660	880	1,320	1,760	1,980	3,300	5,500	9,900	93.3	17.6	45.5	60.7	91.0	121.3	136.5	227.5	379.2	682.6	200	260	720	960	1,440	1,920	2,160	3,600	6,000	10,800
300	230	615	820	1,230	1,640	1,845	3,070	5,120	9,215	148.9	15.8	42.4	56.5	84.8	113.1	127.2	211.7	353.0	635.4	300	230	665	885	1,330	1,773	1,995	3,325	5,540	9,970
400	200	575	765	1,145	1,530	1,720	2,870	4,780	8,605	204.4	13.8	39.6	52.7	79.0	105.5	118.6	197.9	329.7	593.3	400	200	615	820	1,230	1,640	1,845	3,070	5,120	9,215
500	170	540	720	1,080	1,440	1,620	2,700	4,500	8,100	260.0	11.7	37.2	49.6	74.5	99.3	111.7	186.2	310.3	558.5	500	170	575	770	1,150	1,537	1,730	2,880	4,800	8,640
600	140	515	685	1,025	1,370	1,540	2,570	4,280	7,705	315.6	9.6	35.5	47.2	70.7	94.5	106.2	177.2	295.1	531.2	600	140	555	740	1,115	1,485	1,670	2,785	4,640	8,350
650	125	505	670	1,010	1,345	1,510	2,520	4,200	7,560	343.3	8.6	34.8	46.2	69.6	92.8	104.1	173.7	289.6	521.3	650	125	550	735	1,100	1,467	1,650	2,750	4,580	8,245
700	110	495	660	990	1,320	1,485	2,470	4,120	7,415	371.1	7.6	34.1	45.5	68.3	91.0	102.4	170.3	284.1	511.3	700	110	540	725	1,085	1,445	1,625	2,710	4,520	8,135
750	95	490	655	985	1,310	1,475	2,460	4,100	7,380	398.9	6.5	33.8	45.2	67.9	90.3	101.7	169.6	282.7	508.8	750	95	530	710	1,065	1,418	1,595	2,660	4,430	7,970
800	80	485	650	975	1,300	1,460	2,435	4,060	7,310	426.7	5.5	33.4	44.8	67.2	89.6	100.7	167.9	280.0	504.3	800	80	485	650	975	1,298	1,460	2,435	4,060	7,305
850	65	485	645	970	1,295	1,455	2,425	4,040	7,270	454.4	4.5	33.4	44.5	66.9	89.3	100.3	167.2	278.5	501.3	850	65	485	645	970	1,295	1,455	2,425	4,040	7,270
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482.2	3.4	31.0	41.4	62.0	82.7	93.1	154.8	258.2	464.7	900	50	450	600	900	1,200	1,350	2,245	3,745	6,740
950	35	385	515	775	1,030	1,160	1,930	3,220	5,795	510.0	2.4	26.5	35.5	53.4	71.0	80.0	133.1	222.0	399.6	950	35	385	515	775	1,030	1,160	1,930	3,220	5,795
1000	20	365	485	725	970	1,090	1,820	3,030	5,450	537.8	1.4	25.2	33.4	50.0	66.9	75.1	125.5	208.9	375.8	1000	20	365	485	725	970	1,090	1,820	3,030	5,450
1050	20	360	480	720	960	1,080	1,800	3,000	5,400	565.6	1.4	24.8	33.1	49.6	66.2	74.5	124.1	206.8	372.3	1050	20	360	480	720	960	1,080	1,800	3,000	5,400
1100	20	325	430	645	860	965	1,610	2,685	4,835	593.3	1.4	22.4	29.6	44.5	59.3	66.5	111.0	185.1	333.4	1100	20	325	430	645	860	965	1,610	2,685	4,835
1150	20	275	365	550	735	825	1,370	2,285	4,115	621.1	1.4	19.0	25.2	37.9	50.7	56.9	94.5	157.5	283.7	1150	20	275	365	550	735	825	1,370	2,285	4,115
1200	20	170	230	345	460	515	855	1,430	2,570	648.9	1.4	11.7	15.8	23.8	31.7	35.5	58.9	98.6	177.2	1200	20	170	230	345	460	515	855	1,430	2,570
1250	20	125	165	245	330	370	615	1,030	1,850	676.7	1.4	8.6	11.4	16.9	22.7	25.5	42.4	71.0	127.5	1250	20	125	165	245	330	370	615	1,030	1,850
1300	20	95	125	185	250	280	465	770	1,390	704.4	1.4	6.5	8.6	12.7	17.2	19.3	32.1	53.1	95.8	1300	20	95	125	185	250	280	465	770	1,390
1350	20	70	90	135	180	205	345	570	1,030	732.2	1.4	4.8	6.2	9.3	12.4	14.1	23.8	39.3	71.0	1350	20	70	90	135	180	205	345	570	1,030
1400	20	55	75	110	145	165	275	455	825	760.0	1.4	3.8	5.2	7.6	10.0	11.4	19.0	31.4	56.9	1400	20	55	75	110	145	165	275	455	825
1450	15	40	55	80	110	125	205	345	615	787.8	1.0	2.7	3.8	5.5	7.6	8.6	14.1	23.8	42.4	1450	15	40	55	80	110	125	205	345	615
1500	15	35	45	70	95	105	170	285	515	815.6	1.0	2.4	3.1	4.8	6.5	7.2	11.7	19.6	35.5	1500	15	35	45	70	95	105	170	285	515

PSI - °F										MATERIALS: ASTM A182 F44 - ASTM A182 F51 (e) - ASTM A182 F53 (e)										BAR - °C									
STANDARD CLASS										STANDARD CLASS										STANDARD CLASS									
Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.										Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500	Temperature °F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7	-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250
200	260	720	960	1,440	1,920	2,160	3,600	6,000	10,800	93.3	17.9	49.6	66.2	99.3	132.4	148.9	248.2	413.7	744.7	200	260	720	960	1,440	1,920	2,160	3,600	6,000	10,800
300	230	665	885	1,330	1,773	1,995	3,325	5,540	9,970	148.9	15.9	45.9	61.0	91.7	122.2	137.6	229.3	382.0	687.4	300	230	665	885	1,330	1,773	1,995	3,325	5,540	9,970
400	200	615	820	1,230	1,640	1,845	3,070	5,120	9,215	204.4	13.8	42.4	56.5	84.8	113.1	127.2	211.7	353.0	635.4	400	200	615	820	1,230	1,640	1,845	3,070	5,120	9,215
500	170	575	770	1,150	1,537	1,730	2,880	4,800	8,640	260.0	11.7	39.6	52.7	79.0	105.5	118.6	197.9	329.7	593.3	500	170	575	770	1,150	1,537	1,730	2,880	4,800	8,640
600	140	555	740	1,115	1,485	1,670	2,785	4,640	8,350	315.6	9.6	35.5	47.2	70.7	94.5	106.2	177.2	295.1	531.2	600	140	555	740	1,115	1,485	1,670	2,785	4,640	8,350
650	125	550	735	1,100	1,467	1,650	2,750	4,580	8,245	343.3	8.6	34.8	46.2	69.6	92.8	104.1	173.7	289.6	521.3	650	125	550	735	1,100	1,467	1,650	2,750	4,580	8,245
700	110	540	725	1,085	1,445	1,625	2,710	4,520	8,135	371.1	7.6	34.1	45.5	68.3	91.0	102.4	170.3	284.1	511.3	700	110	540	725	1,085	1,445	1,625	2,710	4,520	8,135
750	95	530	710	1,065	1,418	1,595	2,660	4,430	7,970	398.9	6.6	36.5	49.0	73.4	97.8	110.0	183.4	305.4	549.5	750	95	530	710	1,065	1,418	1,595	2,660	4,430	7,970

PSI - °F		MATERIALS: ASTM B564 N08800										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	275	720	960	1,440	1,920	2,160	3,600	6,000	10,800	-29 +38	19.0	49.6	66.2	99.3	132.4	148.9	248.2	413.7	744.7				
200	255	660	885	1,325	1,768	1,990	3,310	5,520	9,935	93.3	17.6	45.5	61.0	91.4	121.9	137.2	228.2	380.6	685.0				
300	230	625	830	1,250	1,663	1,870	3,120	5,200	9,360	148.9	15.9	43.1	57.2	86.2	114.7	128.9	215.1	358.5	645.4				
400	200	600	800	1,200	1,600	1,800	3,000	5,000	9,000	204.4	13.8	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6				
500	170	580	770	1,155	1,542	1,735	2,890	4,820	8,875	260.0	11.7	40.0	53.1	79.6	106.3	119.6	199.3	332.3	611.9				
600	140	575	765	1,145	1,528	1,720	2,870	4,780	8,605	315.6	9.7	39.6	52.7	78.9	105.3	118.6	197.9	329.6	593.3				
650	125	570	760	1,140	1,517	1,705	2,845	4,740	8,530	343.3	8.6	39.3	52.4	78.6	104.6	117.6	196.2	326.8	588.1				
700	110	565	750	1,130	1,503	1,690	2,820	4,700	8,460	371.1	7.6	39.0	51.7	77.9	103.6	116.5	194.4	324.1	583.3				
750	95	530	710	1,065	1,418	1,595	2,660	4,430	7,970	398.9	6.6	36.5	49.0	73.4	97.8	110.0	183.4	305.4	549.5				
800	80	505	675	1,015	1,352	1,520	2,535	4,230	7,610	426.7	5.5	34.8	46.5	70.0	93.2	104.8	174.8	291.7	524.7				
850	65	485	650	975	1,298	1,460	2,435	4,060	7,305	454.4	4.5	33.4	44.8	67.2	89.5	100.7	167.9	279.9	503.7				
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482.2	3.4	31.0	41.4	62.1	82.7	93.1	154.8	258.2	464.7				
950	35	385	515	775	1,032	1,160	1,930	3,220	5,795	510.0	2.4	26.5	35.5	53.4	71.1	80.0	133.1	222.0	399.6				
1000	20	365	485	725	968	1,090	1,820	3,030	5,450	537.8	1.4	25.2	33.4	50.0	66.7	75.2	125.5	208.9	375.8				
1050	20	360	480	720	960	1,080	1,800	3,000	5,400	565.6	1.4	24.8	33.1	49.6	66.2	74.5	124.1	206.9	372.3				
1100	20	325	430	645	858	965	1,610	2,685	4,835	593.3	1.4	22.4	29.6	44.5	59.1	66.5	111.0	185.1	333.4				
1150	20	275	365	550	733	825	1,370	2,285	4,115	621.1	1.4	19.0	25.2	37.9	50.5	56.9	94.5	157.6	283.7				
1200	20	205	270	405	542	610	1,020	1,695	3,055	648.9	1.4	14.1	18.6	27.9	37.4	42.1	70.3	116.9	210.6				
1250	20	130	175	260	347	390	650	1,080	1,945	676.7	1.4	9.0	12.1	17.9	23.9	26.9	44.8	74.5	134.1				
1300	20	60	80	125	165	185	310	515	925	704.4	1.4	4.1	5.5	8.6	11.4	12.8	21.4	35.5	63.8				
1350	20	50	65	100	133	150	245	410	740	732.2	1.4	3.4	4.5	6.9	9.2	10.3	16.9	28.3	51.0				
1400	15	35	45	70	90	100	170	285	510	760.0	1.0	2.4	3.1	4.8	6.2	6.9	11.7	19.7	35.2				
1450	10	30	40	60	83	95	155	255	465	787.8	0.7	2.1	2.8	4.1	5.7	6.6	10.7	17.6	32.1				
1500	10	25	35	50	67	75	125	205	370	815.6	0.7	1.7	2.4	3.4	4.6	5.2	8.6	14.1	25.5				

SPECIAL CLASS		MATERIALS: ASTM B564 N08800										SPECIAL CLASS							
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
200	285	740	985	1,480	1,975	2,220	3,695	6,160	11,090	93.3	19.7	51.0	67.9	102.0	136.2	153.1	254.8	424.7	764.7
300	265	695	930	1,395	1,860	2,090	3,480	5,805	10,445	148.9	18.3	47.9	64.1	96.2	128.2	144.1	239.9	400.3	720.2
400	255	670	895	1,340	1,785	2,010	3,350	5,580	10,045	204.4	17.6	46.2	61.7	92.4	123.0	138.6	231.0	384.7	692.6
500	245	645	860	1,290	1,720	1,935	3,230	5,380	9,685	260.0	16.9	44.5	59.3	88.9	118.6	133.4	222.7	371.0	667.8
600	245	640	855	1,280	1,705	1,920	3,200	5,335	9,605	315.6	16.9	44.1	59.0	88.3	117.5	132.4	220.6	367.8	662.3
650	245	635	845	1,270	1,695	1,905	3,175	5,290	9,520	343.3	16.9	43.8	58.3	87.6	116.9	131.3	218.9	364.7	656.4
700	240	630	840	1,260	1,680	1,890	3,145	5,245	9,440	371.1	16.5	43.4	57.9	86.9	115.8	130.3	216.8	361.6	650.9
750	240	625	830	1,250	1,665	1,870	3,120	5,200	9,360	398.9	16.5	43.1	57.2	86.2	114.8	128.9	215.1	358.5	645.4
800	235	615	820	1,230	1,645	1,850	3,080	5,135	9,240	426.7	16.2	42.4	56.5	84.8	113.4	127.6	212.4	354.1	637.1
850	235	615	820	1,230	1,640	1,845	3,075	5,125	9,220	454.4	16.2	42.4	56.5	84.8	113.1	127.2	212.0	353.4	635.7
900	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	482.2	15.9	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6
950	180	470	630	945	1,260	1,415	2,360	3,930	7,070	510.0	12.4	32.4	43.4	65.2	86.9	97.6	162.7	271.0	487.5
1000	160	420	560	840	1,120	1,260	2,105	3,505	6,310	537.8	11.0	29.0	38.6	57.9	77.2	86.9	145.1	241.7	435.1
1050	160	420	560	840	1,120	1,260	2,105	3,505	6,310	565.6	11.0	29.0	38.6	57.9	77.2	86.9	145.1	241.7	435.1
1100	155	405	540	805	1,075	1,210	2,015	3,360	6,045	593.3	10.7	27.9	37.2	55.5	74.1	83.4	138.9	231.7	416.8
1150	130	345	460	685	915	1,030	1,715	2,860	5,145	621.1	9.0	23.8	31.7	47.2	63.1	71.0	118.2	197.2	354.7
1200	100	260	345	515	685	770	1,285	2,145	3,860	648.9	6.9	17.9	23.8	35.5	47.2	53.1	88.6	147.9	266.1
1250	65	170	225	335	450	505	845	1,405	2,530	676.7	4.5	11.7	15.5	23.1	31.0	34.8	58.3	96.9	174.4
1300	30	80	105	160	215	240	400	670	1,205	704.4	2.1	5.5	7.2	11.0	14.8	16.5	27.6	46.2	83.1
1350	25	65	85	130	175	195	320	535	965	732.2	1.7	4.5	5.9	9.0	12.1	13.4	22.1	36.9	66.5
1400	15	45	60	90	120	135	220	370	665	760.0	1.0	3.1	4.1	6.2	8.3	9.3	15.2	25.5	45.9
1450	15	40	55	80	105	120	200	335	605	787.8	1.0	2.8	3.8	5.5	7.2	8.3	13.8	23.1	41.7
1500	10	30	45	65	85	95	160	270	480	815.6	0.7	2.1	3.1	4.5	5.9	6.6	11.0	18.6	33.1

PSI - °F		MATERIALS: ASTM B564 N06625 (h)										BAR - °C											
STANDARD CLASS		Note: for temperature > 1000°F valves in class 150 lbs are limited to BW Ends only.										STANDARD CLASS		Note: for temperature > 540°C valves in class 150 lbs are limited to BW Ends only.									
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500				
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 +38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7				
200	260	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93.3	17.9	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7				
300	230	730	970	1,455	1,942	2,185	3,640	6,070	10,925	148.9	15.9	50.3	66.9	100.3	133.9	150.7	251.0	418.5	753.3				
400	200	705	940	1,410	1,880	2,115	3,530	5,880	10,585	204.4	13.8	48.6	64.8	97.2	129.6	145.8	243.4	405.4	729.8				
500	170	665	885	1,330	1,773	1,995	3,325	5,540	9,965	260.0	11.7	45.9	61.0	91.7	122.2	137.6	229.3	382.0	687.1				
600	140	605	805	1,210	1,613	1,815	3,025	5,040	9,070	315.6	9.7	41.7	55.5	83.4	111.2	125.1	208.6	347.5	625.4				
650	125	590	785	1,175	1,568	1,765	2,940	4,905	8,825	343.3	8.6	40.7	54.1	81.0	108.1	121.7	202.7	338.2	608.5				
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371.1	7.6	39.3	52.1	78.3	104.4	117.6	195.8	326.1	587.1				
750	95	530	710	1,065	1,418	1,595	2,600	4,430	7,970	398.9	6.6	36.5	49.0	73.4	97.8	110.0	183.4	305.4	549.5				
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426.7	5.5	35.2	46.5	70.0	93.4	105.1	175.1	291.7	524.7				
850	65	485	650	975	1,298	1,460	2,435	4,060	7,305	454.4	4.5	33.4	44.8	67.2	89.5	100.7	167.9	279.9	503.7				
900	50	450	600	900	1,200	1,350	2,245	3,745	6,740	482.2</													

PSI - °F		MATERIALS: ASTM B462 N08020										BAR - °C							
STANDARD CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 + 38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
200	260	720	960	1,440	1,920	2,160	3,600	6,000	10,800	93.3	17.9	49.6	66.2	99.3	132.4	148.9	248.2	413.7	744.7
300	230	715	950	1,425	1,905	2,140	3,565	5,940	10,690	148.9	15.8	49.3	65.5	98.2	131.3	147.5	245.8	409.6	737.1
400	200	675	900	1,345	1,795	2,020	3,365	5,610	10,100	204.4	13.8	46.5	62.0	92.7	123.8	139.3	232.0	386.8	696.3
500	170	655	875	1,310	1,745	1,965	3,275	5,460	9,830	260.0	11.7	45.2	60.3	90.3	120.3	135.5	225.8	376.5	677.8
600	140	605	805	1,210	1,615	1,815	3,025	5,040	9,070	315.6	9.6	41.7	55.5	83.4	111.3	125.1	208.6	347.5	625.4
650	125	590	785	1,175	1,570	1,765	2,940	4,905	8,825	343.3	8.6	40.7	54.1	81.0	108.2	121.7	202.7	338.2	608.5
700	110	570	755	1,135	1,515	1,705	2,840	4,730	8,515	371.1	7.6	39.3	52.0	78.2	104.4	117.5	195.8	326.1	587.1
750	95	530	710	1,065	1,420	1,595	2,660	4,430	7,970	398.9	6.5	36.5	48.9	73.4	98.0	110.0	183.4	305.4	549.5
800	80	510	675	1,015	1,355	1,525	2,540	4,230	7,610	426.7	5.5	35.2	46.5	70.0	93.4	105.1	175.1	291.6	524.7
SPECIAL CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	-29 + 38	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
200	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	93.3	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
300	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	148.9	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
400	290	750	1,000	1,500	2,000	2,250	3,750	6,250	11,250	204.4	20.0	51.7	69.0	103.4	137.9	155.1	258.6	430.9	775.7
500	280	730	975	1,465	1,950	2,195	3,655	6,095	10,970	260.0	19.3	50.3	67.2	101.0	134.4	151.3	252.0	420.2	756.4
600	270	705	940	1,405	1,875	2,110	3,515	5,860	10,545	315.6	18.6	48.6	64.8	96.9	129.3	145.5	242.3	404.0	727.1
650	270	700	930	1,400	1,865	2,095	3,495	5,825	10,485	343.3	18.6	48.3	64.1	96.5	128.6	144.4	241.0	401.6	722.9
700	265	695	925	1,390	1,855	2,085	3,475	5,790	10,425	371.1	18.3	47.9	63.8	95.8	128.0	143.8	239.6	399.2	718.8
750	260	685	910	1,365	1,820	2,050	3,415	5,690	10,245	398.9	17.9	47.2	62.7	94.1	125.5	141.3	235.5	392.3	706.4
800	260	675	900	1,350	1,800	2,025	3,375	5,625	10,125	426.7	17.9	46.5	62.1	93.1	124.1	139.6	232.7	387.8	698.1

PSI - °F		MATERIALS: A105 N (a)						BAR - °C			
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	431.0	462.0	775.7
200	2,000	4,225	6,250	6,700	11,250	93.3	137.9	291.3	431.0	462.0	775.7
300	2,000	4,225	6,250	6,700	11,250	148.9	137.9	291.3	431.0	462.0	775.7
400	2,000	4,225	6,250	6,700	11,250	204.4	137.9	291.3	431.0	462.0	775.7
500	2,000	4,225	6,250	6,700	11,250	260.0	137.9	291.3	431.0	462.0	775.7
600	1,900	4,015	5,940	6,370	10,690	315.6	131.0	276.8	409.6	439.2	737.1
650	1,865	3,940	5,825	6,245	10,485	343.3	128.6	271.7	408.5	430.6	722.9
700	1,850	3,910	5,780	6,195	10,405	371.1	127.5	269.6	398.5	427.1	717.4
750	1,680	3,550	5,250	5,630	9,450	398.9	115.8	244.8	362.0	388.2	651.6
800	1,375	2,895	4,285	4,595	7,715	426.7	94.8	199.6	295.4	316.8	531.9
850	895	1,880	2,785	2,985	5,015	454.4	61.7	129.6	192.0	205.8	345.8
900	575	1,205	1,785	1,915	3,215	482.2	83.1	83.1	123.1	132.0	221.7
950	350	745	1,110	1,195	2,060	510.0	24.1	51.4	76.5	82.4	142.0
1000	180	390	600	650	1,195	537.8	12.4	26.9	41.4	44.8	82.4

PSI - °F		MATERIALS: ASTM B564 N04400										BAR - °C							
STANDARD CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	230	600	800	1,200	1,600	1,800	3,000	5,000	9,000	-29 + 38	15.9	41.4	55.2	82.7	110.3	124.1	206.9	344.8	620.6
200	200	530	705	1,055	1,408	1,585	2,640	4,400	7,920	93.3	13.8	36.5	48.6	72.7	97.1	109.3	182.0	303.4	546.1
300	190	495	660	990	1,320	1,485	2,470	4,120	7,415	148.9	13.1	34.1	45.5	68.3	91.0	102.4	170.3	284.1	511.3
400	185	480	635	955	1,275	1,435	2,390	3,980	7,165	204.4	12.8	33.1	43.8	65.8	87.9	98.9	164.8	274.4	494.0
500	170	475	635	950	1,273	1,435	2,375	3,960	7,130	260.0	11.7	32.8	43.8	65.5	87.8	98.9	163.8	273.0	491.6
600	140	475	635	950	1,273	1,435	2,375	3,960	7,130	315.6	9.7	32.8	43.8	65.5	87.8	98.9	163.8	273.0	491.6
650	125	475	635	950	1,273	1,435	2,375	3,960	7,130	343.3	8.6	32.8	43.8	65.5	87.8	98.9	163.8	273.0	491.6
700	110	475	635	950	1,273	1,435	2,375	3,960	7,130	371.1	7.6	32.8	43.8	65.5	87.8	98.9	163.8	273.0	491.6
750	95	470	625	935	1,248	1,405	2,340	3,900	7,020	398.9	6.6	32.4	43.1	64.5	86.0	96.9	161.3	268.9	484.0
800	80	460	610	915	1,222	1,375	2,290	3,820	6,875	426.7	5.5	31.7	42.1	63.1	84.2	94.8	157.9	263.4	474.0
850	65	340	455	680	907	1,020	1,695	2,830	5,090	454.4	4.5	23.4	31.4	46.9	62.5	70.3	116.9	195.1	351.0
900	50	245	330	495	658	740	1,235	2,055	3,705	482.2	3.4	16.9	22.8	34.1	45.4	51.0	85.2	141.7	255.5
SPECIAL CLASS																			
Temperature °F	150	300	400	600	800	900	1500	2500	4500	Temperature °C	150	300	400	600	800	900	1500	2500	4500
-20 to 100	255	670	895	1,340	1,790	2,010	3,350	5,580	10,045	-29 + 38	17.6	46.2	61.7	92.4	123.4	138.6	231.0	384.7	692.6
200	225	590	785	1,180	1,575	1,770	2,945	4,910	8,840	93.3	15.5	40.7	54.1	81.4	108.6	122.0	203.1	338.5	609.5
300	210	550	735	1,100	1,465	1,650	2,755	4,590	8,260	148.9	14.5	37.9	50.7	75.8	101.0	113.8	190.0	316.5	569.5
400	205	535	710	1,065	1,420	1,600	2,665	4,440	7,995	204.4	14.1	36.9	49.0	73.4	98.0	110.3	183.8	306.1	551.3
500	205	530	710	1,060	1,415	1,590	2,650	4,420	7,955	260.0	14.1	36.5	49.0	73.1	97.6	109.6	182.7	304.8	548.5
600	205	530	710	1,060	1,415	1,590	2,650	4,420	7,955	315.6	14.1	36.5	49.0	73.1	97.6	109.6	182.7	304.8	548.5
650	205	530	710	1,060	1,415	1,590	2,650	4,420	7,955	343.3	14.1	36.5	49.0	73.1	97.6	109.6	182.7	304.8	548.5
700	205	530	710	1,060	1,415	1,590	2,650	4,420	7,955	371.1	14.1	36.5	49.0	73.1	97.6	109.6	182.7	304.8	548.5
750	200	520	695	1,045	1,390	1,565	2,610	4,355	7,835	398.9	13.8	35.9	47.9	72.1	95.8	107.9	180.0	300.3	540.2
800	195	510	680	1,025	1,365	1,535	2,560	4,265	7,675	426.7	13.4	35.2	46.9	70.7	94.1</				

PSI - °F		MATERIALS: A 182 F91					BAR - °C				
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	431.0	462.0	775.7
200	2,000	4,225	6,250	6,700	11,250	93.3	137.9	291.3	431.0	462.0	775.7
300	2,000	4,225	6,250	6,700	11,250	148.9	137.9	291.3	431.0	462.0	775.7
400	2,000	4,225	6,250	6,700	11,250	204.4	137.9	291.3	431.0	462.0	775.7
500	2,000	4,225	6,250	6,700	11,250	260.0	137.9	291.3	431.0	462.0	775.7
600	2,000	4,225	6,250	6,700	11,250	315.6	137.9	291.3	431.0	462.0	775.7
650	2,000	4,225	6,250	6,700	11,250	343.3	137.9	291.3	431.0	462.0	775.7
700	1,955	4,130	6,110	6,550	10,995	371.1	134.8	284.8	421.3	451.6	758.1
750	1,945	4,105	6,070	6,505	10,930	398.9	134.1	283.0	418.6	448.5	753.6
800	1,920	4,055	6,000	6,430	10,800	426.7	132.4	279.6	413.7	443.3	744.7
850	1,805	3,815	5,645	6,050	10,160	454.4	124.4	263.0	389.2	417.1	700.5
900	1,600	3,380	5,000	5,360	9,000	482.2	110.3	233.0	344.7	369.6	620.5
950	1,275	2,725	4,025	4,385	7,555	510.0	87.9	187.9	277.5	302.3	520.9
1000	1,160	2,555	3,780	4,240	7,820	537.8	80.0	176.2	260.7	292.3	539.2
1050	1,160	2,555	3,780	4,240	7,820	565.6	80.0	176.2	260.7	292.3	539.2
1100	1,040	2,290	3,390	3,805	7,005	593.3	71.7	157.9	233.7	262.3	483.0
1150	765	1,695	2,500	2,805	5,180	621.1	52.7	116.9	172.4	193.4	357.2
1200	495	1,095	1,615	1,820	3,345	648.9	34.1	75.5	111.3	125.5	230.6

PSI - °F		MATERIALS: A 182 F304 (c) - ASTM A-182 F304H					BAR - °C				
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	430.9	462.0	775.7
200	1,780	3,770	5,570	5,970	10,030	93.3	122.7	260.0	384.0	411.6	691.6
300	1,600	3,380	5,000	5,360	9,000	148.9	110.3	233.0	344.7	369.6	620.5
400	1,475	3,115	4,605	4,935	8,295	204.4	101.7	214.8	317.5	340.3	571.9
500	1,380	2,925	4,320	4,630	7,780	260.0	95.1	201.7	297.9	319.2	536.4
600	1,300	2,750	4,065	4,385	7,315	315.6	89.6	189.6	280.3	302.3	504.4
650	1,280	2,700	3,995	4,285	7,190	343.3	88.2	186.2	275.4	295.4	495.7
700	1,260	2,655	3,930	4,215	7,070	371.1	86.9	183.1	271.0	290.6	487.5
750	1,235	2,610	3,855	4,135	6,945	398.9	85.1	180.0	265.8	285.1	478.8
800	1,200	2,535	3,750	4,020	6,750	426.7	82.7	174.8	258.6	277.2	465.4
850	1,180	2,485	3,680	3,945	6,620	454.4	81.4	171.3	253.7	272.0	456.4
900	1,155	2,440	3,605	3,865	6,495	482.2	79.6	168.2	248.6	266.5	447.8
950	1,135	2,390	3,535	3,790	6,365	510.0	78.2	164.8	243.7	261.3	438.9
1000	1,085	2,295	3,395	3,640	6,105	537.8	74.8	158.2	234.1	251.0	420.9
1050	1,025	2,175	3,215	3,445	5,785	565.6	70.7	150.0	221.7	237.5	399.0
1100	870	1,855	2,745	2,985	5,150	593.3	60.0	127.9	189.3	205.8	355.0
1150	690	1,510	2,230	2,505	4,620	621.1	47.6	104.1	153.7	172.7	318.5
1200	535	1,170	1,730	1,945	3,585	648.9	36.9	80.7	119.3	134.1	247.2
1250	390	855	1,270	1,430	2,625	676.7	26.9	59.0	87.6	98.6	181.0
1300	295	850	965	1,085	1,990	704.4	20.3	58.6	66.5	74.8	137.2
1350	210	470	695	780	1,430	732.2	14.5	32.4	47.9	53.8	98.6
1400	165	365	540	605	1,115	760.0	11.4	25.2	37.2	41.7	76.9
1450	120	260	385	430	780	787.8	8.3	17.9	26.5	29.6	53.8
1500	95	205	305	345	640	815.6	6.5	14.1	21.0	23.8	44.1

PSI - °F		MATERIALS: A 182 F11 CL2 (b)					BAR - °C				
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	431.0	462.0	775.7
200	2,000	4,225	6,250	6,700	11,250	93.3	137.9	291.3	431.0	462.0	775.7
300	2,000	4,225	6,250	6,700	11,250	148.9	137.9	291.3	431.0	462.0	775.7
400	2,000	4,225	6,250	6,700	11,250	204.4	137.9	291.3	431.0	462.0	775.7
500	2,000	4,225	6,250	6,700	11,250	260.0	137.9	291.3	431.0	462.0	775.7
600	2,000	4,225	6,250	6,700	11,250	315.6	137.9	291.3	431.0	462.0	775.7
650	2,000	4,225	6,250	6,700	11,250	343.3	137.9	291.3	431.0	462.0	775.7
700	1,955	4,130	6,110	6,550	10,995	371.1	134.8	284.8	421.3	451.6	758.1
750	1,945	4,110	6,070	6,505	10,930	398.9	134.1	283.0	418.5	448.5	753.6
800	1,920	4,055	6,000	6,430	10,800	426.7	132.4	279.6	413.7	443.3	744.7
850	1,805	3,815	5,645	6,050	10,160	454.4	124.4	263.0	389.2	417.1	700.5
900	1,565	3,310	4,895	5,245	8,805	482.2	107.9	228.2	337.5	361.6	607.1
950	1,070	2,305	3,445	3,700	6,390	510.0	73.8	159.0	237.5	255.1	440.6
1000	745	1,640	2,520	2,725	5,020	537.8	51.4	113.1	173.7	187.9	346.1
1050	495	1,095	1,680	1,820	3,345	565.6	34.1	75.5	115.8	125.5	230.6
1100	330	730	1,120	1,210	2,230	593.3	22.7	50.3	77.2	83.4	153.7
1150	210	470	720	780	1,430	621.1	14.5	32.4	49.6	53.8	98.6
1200	130	285	440	480	875	648.9	9.0	19.6	30.3	33.1	60.3

PSI - °F		MATERIALS: A 182 F316 (c) - ASTM A182 F316H					BAR - °C				
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	430.9	462.0	775.7
200	1,840	3,885	5,750	6,165	10,350	93.3	126.9	267.9	396.5	425.1	713.6
300	1,665	3,515	5,200	5,575	9,360	148.9	114.8	242.3	358.5	384.4	645.4
400	1,520	3,210	4,750	5,090	8,550	204.4	104.8	221.3	327.5	350.9	589.5
500	1,420	2,990	4,430	4,750	7,970	260.0	97.9	206.2	305.4	327.5	549.5
600	1,340	2,840	4,195	4,500	7,555	315.6	92.4	195.8	289.3	310.3	520.9
650	1,315	2,775	4,105	4,400	7,395	343.3	90.7	191.3	283.0	303.4	509.9
700	1,295	2,725	4,035	4,325	7,265	371.1	89.3	187.9	273.4	298.2	500.9
750	1,265	2,680	3,965	4,250	7,135	398.9	87.2	184.8	273.4	293.0	491.9
800	1,260	2,655	3,930	4,215	7,070	426.7	86.9	183.1	271.0	290.6	487.5
850	1,245	2,625	3,885	4,165	6,990	454.4	85.8	181.0	267.9	287.2	482.0
900	1,235	2,610	3,855	4,135	6,945	482.2	85.1	180.0	265.9	285.1	478.8
950	1,220	2,580	3,815	4,090	6,870	510.0	84.1	179.9	263.0	282.0	473.7
1000	1,120	2,370	3,505	3,760	6,310	537.8	77.2	163.4	241.7	259.2	435.1
1050	1,120	2,370	3,505	3,760	6,310	565.6	77.2	163.4	241.7	259.2	435.1
1100	1,030	2,200	3,260	3,545	6,115	593.3	71.0	151.7	224.8	244.4	421.6
1150	815	1,795	3,655	2,985	5,495	621.1	56.2	123.8	252.0	205.8	378.9
1200	640	1,400	2,080	2,340	4,300	648.9	44.1	96.5	143.4	164.8	296.5
1250	510	1,115	1,655	1,865	3,425	676.7	35.2	76.9	114.1	128.6	236.1
1300	400	885	1,310	1,470	2,705	704.4	27.6	61.0	90.3	101.3	186.5
1350	330	730	1,075	1,210	2,230	732.2	22.7	50.3	74.1	83.4	153.7
1400	260	570	845	950	1,755	760.0	17.9	39.3	58.3	66.5	121.0
1450	200	440	660	740	1,355	787.8	13.8	30.3	45.5	51.0	93.4
1500	140	315	465	520	955	815.6	9.6	21.7	32.1	35.8	65.8

PSI - °F		MATERIALS: A 182 F22 CL3 (b)					BAR - °C				
LIMITED CLASS											
Temperature °F	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD	Temperature °C	800#LTD	1690#LTD	2500#LTD	2680#LTD	4500#LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137.9	291.3	431.0	462.1	775.7
200	2,000	4,225	6,250	6,700	11,250	93.3	137.9	291.3	431.0	462.1	775.7
300	1,980	4,175	6,180	6,625	11,120	148.9	136.5	287.9	426.1	456.8	766.7
400	1,935	4,080	6,035	6,470	10,865	204.4	133.4	281.3	416.1	446.1	749.1
500	1,920	4,055	6,000	6,430	10,800	260.0	132.4	279.6	413.7	443.3	

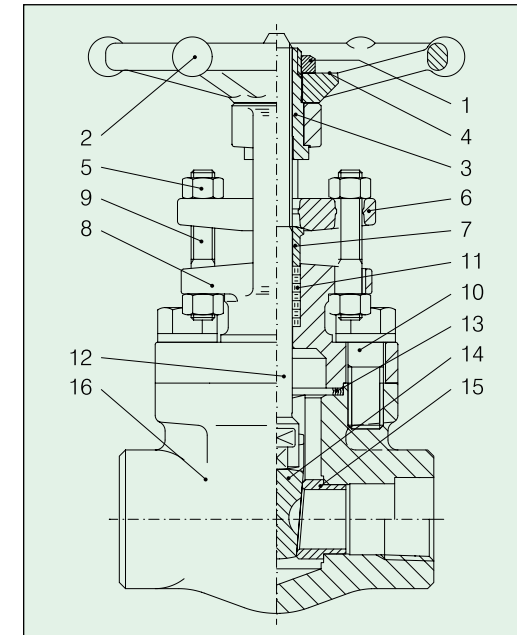
PSI - °F		MATERIALS: A 182 F304L (d) - ASTM A182 F316L					BAR - °C				
LIMITED CLASS											
Temperature °F	800 #LTD	1690 #LTD	2500 #LTD	2680 #LTD	4500 #LTD	Temperature °C	800 #LTD	1690 #LTD	2500 #LTD	2680 #LTD	4500 #LTD
-20 to 100	1,785	3,770	5,570	5,970	10,030	-29 to 38	123,1	259,9	384,0	411,6	691,6
200	1,505	3,185	4,710	5,050	8,480	93,3	103,8	219,6	324,7	348,2	584,7
300	1,350	2,850	4,215	4,520	7,585	148,9	93,1	196,5	290,6	311,6	523,0
400	1,230	2,595	3,840	4,115	6,910	204,4	84,8	178,9	264,8	283,7	476,4
500	1,135	2,400	3,550	3,805	6,390	260,0	78,2	165,5	244,8	262,3	440,6
600	1,070	2,265	3,350	3,590	6,025	315,6	73,8	156,2	231,0	247,5	415,4
650	1,040	2,195	3,250	3,485	5,850	343,3	71,7	151,3	224,1	240,3	403,3
700	1,020	2,150	3,180	3,410	5,720	371,1	70,3	148,2	219,3	235,1	394,4
750	995	2,100	3,110	3,335	5,595	398,9	68,6	144,8	214,4	229,9	385,6
800	980	2,070	3,060	3,280	5,505	426,7	67,6	142,7	211,0	226,1	379,6
850	955	2,020	2,990	3,205	5,385	454,4	65,8	139,3	206,2	221,0	371,3

PSI - °F		MATERIALS: A 182 F321 (f) - ASTM A182 F321H (g)					BAR - °C				
LIMITED CLASS											
Temperature °F	800 #LTD	1690 #LTD	2500 #LTD	2680 #LTD	4500 #LTD	Temperature °C	800 #LTD	1690 #LTD	2500 #LTD	2680 #LTD	4500 #LTD
-20 to 100	2,000	4,225	6,250	6,700	11,250	-29 to 38	137,9	291,4	431,0	462,1	775,9
200	1,820	3,835	5,680	6,090	10,220	93,3	125,5	264,5	391,7	420,0	704,8
300	1,620	3,430	5,070	5,435	9,130	148,9	111,7	236,6	349,7	374,8	629,7
400	1,475	3,155	4,605	4,935	8,295	204,4	101,7	217,6	317,6	340,3	572,1
500	1,375	2,895	4,285	4,595	7,715	260,0	94,8	199,7	295,5	316,9	532,1
600	1,300	2,755	4,070	4,365	7,330	315,6	89,7	190,0	280,7	301,0	505,5
650	1,280	2,705	4,000	4,290	7,200	343,3	88,3	186,6	275,9	295,9	496,6
700	1,260	2,655	3,930	4,215	7,070	371,1	86,9	183,1	271,0	290,7	487,6
750	1,245	2,630	3,895	4,175	7,005	398,9	85,9	181,4	268,6	287,9	483,1
800	1,235	2,610	3,855	4,135	6,945	426,7	85,2	180,0	265,9	285,2	479,0
850	1,220	2,585	3,820	4,095	6,880	454,4	84,1	178,3	263,4	282,4	474,5
900	1,215	2,560	3,785	4,060	6,815	482,2	83,8	176,6	261,0	280,8	470,0
950	1,215	2,560	3,785	4,060	6,815	510,0	83,8	176,6	261,0	280,0	470,0
1000	1,120	2,370	3,505	3,755	6,310	537,8	77,2	163,4	241,7	259,0	435,2
1050	1,085	2,295	3,395	3,640	6,105	565,6	74,8	158,3	234,1	251,0	421,0
1100	955	2,040	3,020	3,285	5,670	593,3	65,9	140,7	208,3	226,6	391,0
1150	815	1,795	2,655	2,985	5,495	621,1	56,2	123,8	183,1	205,9	379,0
1200	640	1,405	2,080	2,335	4,300	648,9	44,1	96,9	143,4	161,0	296,6
1250	185	1,070	1,580	1,775	3,265	676,7	33,4	73,8	109,0	122,4	225,2
1300	380	830	1,235	1,385	2,545	704,4	26,2	57,2	85,2	95,5	175,5
1350	295	650	965	1,085	1,990	732,2	20,3	44,8	66,6	74,8	137,2
1400	225	495	735	825	1,210	760,0	15,5	23,1	50,7	56,9	83,4
1450	180	390	575	650	1,195	787,8	12,4	26,9	39,7	44,8	82,4
1500	130	285	425	480	875	815,6	9,0	19,7	29,3	33,1	60,3

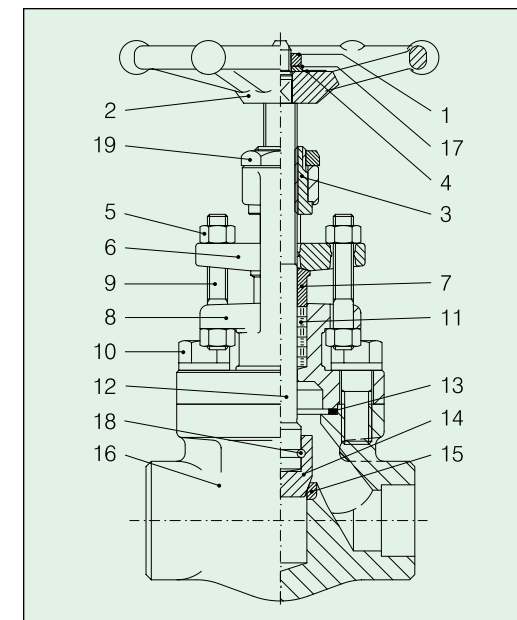
Notes:
a - Permissible, but not recommended for prolonged use above 800°F (427°C)
b - Permissible, but not recommended for prolonged use above 1100°F (593°C)
c - At temperatures over 1000°F (540°C), use only when the carbon content is 0.04% or higher
d - Not to be used over 800°F (427°C)
e - Not to be used over 600°F (316°C)
f - Not to be used over 1000°F (540°C)
g - At temperatures over 1000°F (540°C), use only if the material is heat treated by heating to a minimum temperature of 2000°F (1093°C)

h - Not to be used over 1200°F (649°C) - Alloy N06625 in the annealed condition is subject to severe loss of impact strength at room temperature after exposure in the range of 1000°F to 1400°F (540°C to 742°C)

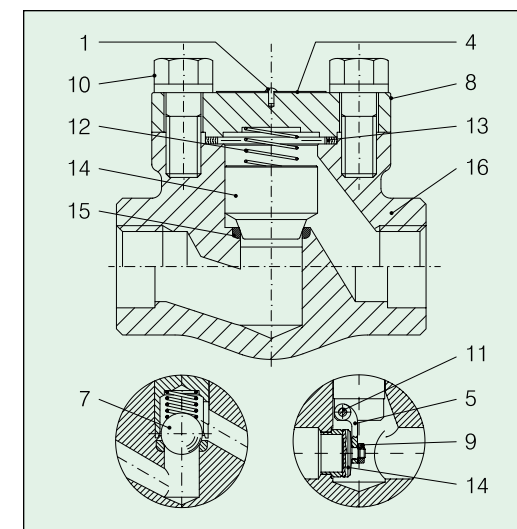
Ratings are in accordance with ASME B16.34a - 1998
Flanged end valves are rated as Standard Class only
Class 4500 applies to weld end valves only
A rating temperature greater than 1000°F (540°C) does not apply to thread end valves
Limited Class ratings apply to weld end and thread end valves only



TYPICAL GATE		
PART	NAME	MATERIALS
1	Handwheel nut	CARBON STEEL
2	Handwheel	CARBON STEEL
3	Yoke sleeve	AISI 416
4	Name plate	ALUMINUM
5	Gland nuts	ASTM A194 2H
6	Gland flange	ASTM A105
7	Packing gland	AISI 316
8	Bonnet	ASTM A105 N
9	Gland studs	ASTM A193 B6
10	B/B bolts	ASTM A193 B7
11	Packing	GRAPHITE
12	Stem	ASTM A479 410
13	B/B gasket	F316L + GRAPHITE
14	Wedge	ASTM A182 F6a
15	Seat rings	ASTM A479 410 HF
16	Body	ASTM A105 N



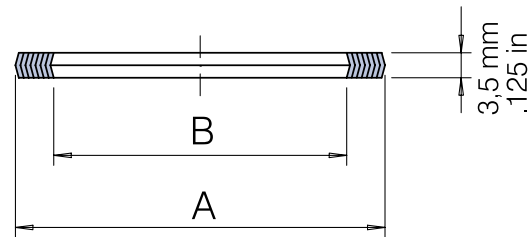
TYPICAL GLOBE		
PART	NAME	MATERIALS
1	Handwheel nut	CARBON STEEL
2	Handwheel	CARBON STEEL
3	Yoke sleeve	AISI 416
4	Name plate	ALUMINUM
5	Gland nuts	ASTM A194 - 2H
6	Gland flange	ASTM A105
7	Packing gland	AISI 316
8	Bonnet	ASTM A105 N
9	Gland studs	ASTM A193 B6
10	B/B bolts	ASTM A193 B7
11	Packing	GRAPHITE
12	Stem	ASTM A479 410
13	B/B gasket	F316L + GRAPHITE
14	Disc	ASTM A479 410
15	Seat rings	INTEGRAL HF
16	Body	ASTM A105 N
17	Washer	CARBON STEEL
18	Connection wire	ASTM A479 316
19	Yoke nut	CARBON STEEL



TYPICAL CHECK		
PART	NAME	MATERIALS
1	Rivet	CARBON STEEL
4	Name plate	ALUMINUM
5	Hinge	AISI 410
7	Ball	AISI 420
8	Bonnet	ASTM A105 N
9	Disc nut	ASTM A194 - 8
10	B/B bolts	ASTM A193 B7
11	Hinge pin	ASTM A479 316
12	Spring*	ASTM A479 316
13	B/B gasket	F316L + GRAPHITE
14	Disc	ASTM A479 410
15	Seat rings	INTEGRAL HF
16	Body	ASTM A105 N

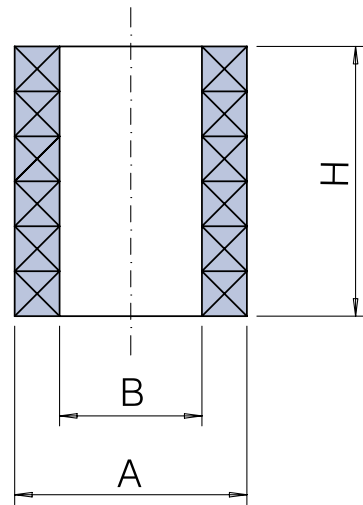
*Supplied Upon Request Only

BOLTED BONNET GASKET



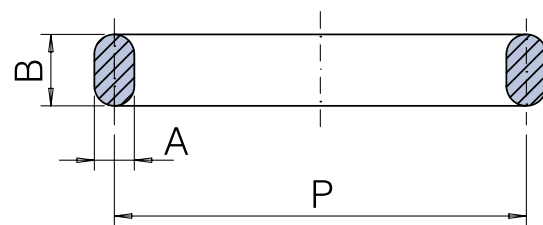
GASKET				
Type	A		B	
	mm	in.	mm	in.
G1	36	1.42	27	1.06
G2	40	1.57	31	1.22
G3	48	1.89	39	1.54
G4	54	2.13	44	1.73
G5	62	2.44	52	2.05
G6	66	2.60	54	2.13
G7	74	2.91	60	2.36
G8	85	3.35	73	2.87
G9	95	3.74	78	3.07
G10	87	3.43	76	2.99
G11	70	2.76	60	2.36

STEM PACKING

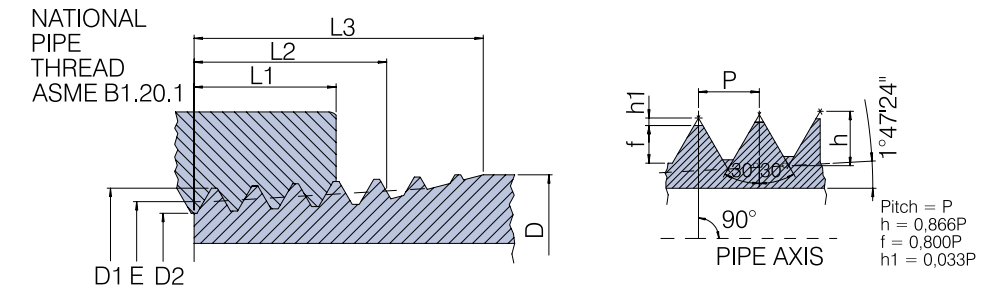


PACKING						
Type	A		B		H	
	mm	in.	mm	in.	mm	in.
BH2	15,7	.62	9,5	.37	22	.87
BH3	17,2	.68	11,1	.44	22	.87
BH4	17,2	.68	11,1	.44	26	1.02
BH5	19,2	.76	12,7	.50	26	1.02
BH6/A	24,5	.96	14,5	.57	30	1.18
BH8	32,2	1.27	19	.75	36	1.42
BY5/A	26	1.02	16	.63	30	1.18
BY7	28,2	1.11	19	.75	30	1.18
2B3	19,2	.76	12,7	.5	35	1.38
2B4/A	26	1.02	16	.75	35	1.38
2B5	28,2	1.11	19	.63	40	1.57
2B8	35,7	1.41	22,2	.87	52	2.05
25B8	38,5	1.52	25,4	1	52	2.05
4B8	40,5	1.59	28,5	1.12	54	2.13
9B8/A	35,7	1.41	22,2	.87	42	1.65
9BE5	40,5	1.59	19	.75	32	1.26

BOLTED BONNET RTJ GASKET



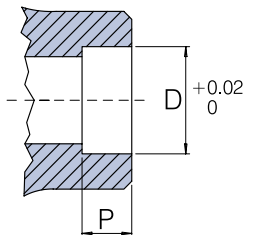
RING JOINT						
RTJ	P		A		B	
	mm	in.	mm	in.	mm	in.
R11	34,1	1.34	6,35	.25	11,1	.44
R12	39,6	1.56	7,94	.31	14,3	.56
R13	42,8	1.69	7,94	.31	14,3	.56
R14	44,4	1.75	7,94	.31	14,3	.56
R15	47,6	1.87	7,94	.31	14,3	.56
R16	50,8	2	7,94	.31	14,3	.56
R17	57,1	2.25	7,94	.31	14,3	.56
R18	60,3	2.37	7,94	.31	14,3	.56
R19	65,0	2.56	7,94	.31	14,3	.56
R20	68,2	2.69	7,94	.31	14,3	.56
R21	72,2	2.84	11,1	.44	17,4	.69
R22	82,5	3.25	7,94	.31	14,3	.56
R23	82,5	3.25	11,1	.44	17,4	.69
R24	95,2	3.75	11,1	.44	17,4	.69
R25	101,6	4	7,94	.31	14,3	.56
R26	101,6	4	11,1	.44	17,4	.69s



NOMINAL PIPE SIZE	O.D. OF PIPE	THREADS PER IN.	PITCH OF THREAD	O.D. AT BEGINNING OF THREAD	PITCH DIA. AT BEGINNING OF EXT. THREAD	ROOT DIA. AT BEGINNING OF EXT. THREAD	HANDTIGHT ENGAGEMENT	EFFECTIVE THREAD EXT. LENGTH	OVERALL LENGTH EXT. THREAD
1/8	inch .41	1.06	.04	.39	9.233	6.484	4.572	.26	.39
1/8	mm 10.29	27	0.940	9.982	9.233	6.484	4.572	6.703	9.967
1/4	inch .54	.71	.06	.52	12.126	8.43	5.080	.40	.59
1/4	mm 13.72	18	1.412	13.259	12.126	10.998	5.080	10.206	15.103
3/8	inch .67	.71	.06	.66	15.545	10.696	6.096	.41	.60
3/8	mm 17.14	18	1.412	16.662	15.545	14.427	6.096	10.358	15.255
1/2	inch .84	.55	.07	.82	19.263	12.70	8.128	.53	.78
1/2	mm 21.34	14	1.814	20.726	19.263	17.805	8.128	13.556	19.850
3/4	inch 1.05	.55	.07	1.03	24.580	15.91	9.611	.55	.79
3/4	mm 26.67	14	1.814	26.035	24.580	23.139	9.611	13.861	20.155
1	inch 1.31	.45	.09	1.28	30.825	19.14	10.668	.68	.98
1	mm 33.40	11.1/2	2.210	32.588	30.825	29.058	10.668	17.343	25.006
1 1/4	inch 1.66	.45	.09	1.63	39.550	23.49	12.668	.71	1.01
1 1/4	mm 42.16	11.1/2	2.210	41.326	39.550	37.795	12.668	17.953	25.616
1 1/2	inch 1.90	.45	.09	1.87	45.621	27.73	13.668	.72	1.03
1 1/2	mm 48.26	11.1/2	2.210	47.396	45.621	43.866	13.668	18.377	26.040
2	inch 2.37	.45	.09	2.34	57.633	32.20	15.668	.76	1.06
2	mm 60.32	11.1/2	2.210	59.411	57.633	55.855	15.668	19.215	26.878

SOCKET WELD STANDARD ASME B16.11

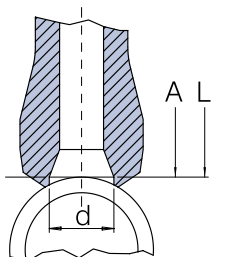
SIZE	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	6	10	15	20	25	32	40	50
D	inch .555	.690	.855	1.065	1.330	1.675	1.915	2.406	
D	mm 14.10	17.53	21.72	27.05	33.78	42.54	48.64	61.11	
P min.	inch .38	.38	.38	.50	.50	.50	.50	.62	
P min.	mm 9.6	9.6	9.6	12.7	12.7	12.7	12.7	15.8	



VALVOLET®

RUN PIPE CONSOLIDATION

The "Lip" extension end shown on Page 61 - Extended Body Valve represents an economical solution to stocking various different items. In fact, the lip is inserted into the corresponding hole in the run pipe, and therefore a valve can be welded on different run sizes, independently. Where a certain number of valves is required and their location is known, we suggest the use of the Weld-o-let end type for which all the well known advantages of the Weld-o-let fitting are utilized.



CLASS 800						
	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
Run pipe consolidation	inch	1 1/4 ÷ 3/4	1 1/4 ÷ 1	1 1/2 ÷ 1 1/4	2 1/2 ÷ 2	4 ÷ 3
Run pipe consolidation	mm	36 ÷ 1 1/2	3 1/2 ÷ 1 1/2	5 ÷ 2	3 ÷ 5	8 ÷ 5
d - Weldolet bore	inch	.87	1.18	1.44	1.99	2.56
d - Weldolet bore	mm	22	30	36.5	50.5	65

CLASS 1500						
	inch	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
Run pipe consolidation	inch	1 1/4 ÷ 1	1 1/2 ÷ 1 1/4	2 1/2 ÷ 2	4 ÷ 3	-
Run pipe consolidation	mm	36 ÷ 6	36 ÷ 6	36 ÷ 6	36 ÷ 6	-
d - Weldolet bore	inch	1.18	1.44	1.99	2.56	-
d - Weldolet bore	mm	30	36.5	50.5	65	-

A - L and other valve dimensions are the same as Page 61 - Extended Body Valves

“CV” factor is the most common data used to determine valve flow characteristics. “CV” indicates the number of U.S. Gallons per minute of water at 70°F which flows through the valve at a pressure drop of one p.s.i.. This data allows computing of pressure drop starting from a known flow rate and is applicable to both fluid and gaseous media.

Formulas hereinafter represent a single example. For gaseous fluids, the engineer should use proper formula factors for the fluid type (vapor, saturated or superheated steam, etc.), differential pressure, temperature, flow velocity, etc., must also be considered.

FLOW RATE

water:

$$Q = C_v \sqrt{\Delta P}$$

fluids other than water:

$$Q = C_v \sqrt{\frac{\Delta P \cdot 62.4}{S}}$$

PRESSURE DROP

$$\Delta P = \left(\frac{Q}{C_v}\right)^2$$

$$\Delta P = \frac{S}{62.4} \left(\frac{Q}{C_v}\right)^2$$

WHERE

Q = flow rate, gallon/minute

Δ P = pressure drop, p.s.i.

S = weight density of fluid handled, pound/cu.ft.

62.4 = weight density of water, pound/cu.ft.

See page 95 for valve flow coefficient chart

PROPER SIZING OF CHECK VALVES

It is the velocity of fluid that opens the disc in a check valve. The minimum velocity required to lift the disc to the full open and stable position can be determined by the following formula:

$$v = 50 \beta^2 \sqrt{V}$$

WHERE

v = flow velocity in feet per second

β = $\frac{\text{seat diameter}}{\text{pipe int. diameter}}$

V = specific volume of fluid in cu.ft. per pound

FLOW COEFFICIENT “CV” FOR FORGED STEEL VALVES							
VALVE TYPE	SIZE	inch mm	1/2 15	3/4 20	1 25	1 1/2 40	2 50
GATE	H -10	FULL PORT	12	23	43	98	197
	HL -10	STANDARD PORT	5.6	11	25.5	77	97
	9H -10	FULL PORT	8.9	18	39	96	185
	9HL -10	STANDARD PORT	5.3	11	21.5	77	97
	15F-10	FULL PORT	9	22	39	140	185
	25W-10	FULL PORT	8.2	18.5	25.7	56.6	82.5
	L1-10	STANDARD PORT	6.3	10	25.6	67.5	97
	L3-10	STANDARD PORT	6.3	10	25.6	67.5	97
	L6-10	STANDARD PORT	6.3	10	25.6	67.5	97
	H -30	FULL PORT	3.5	5.2	9.3	21	35
GLOBE	HL -30	STANDARD PORT	1.5	3.9	6.5	16.5	23.5
	Y -30	FULL PORT	5.5	10	18	48	78
	9H -30	FULL PORT	3.1	4.5	9.5	18	27
	9HL -30	STANDARD PORT	1.4	3.1	5.5	14.5	20
	1690Y-30	FULL PORT	6	11	19	50	82
	15F-30	FULL PORT	4.5	6.5	11	22	39
	25W-30	FULL PORT	3.2	5.9	6.8	18.2	27.6
	2680Y-30	FULL PORT	6.1	11.2	19.5	52	84
	L1-30	STANDARD PORT	1.3	3.9	7.1	17.5	21.4
	L3-30	STANDARD PORT	1.3	3.9	7.1	17.5	21.4
	L6-30	STANDARD PORT	1.3	3.9	7.1	17.5	21.4
	H -40	FULL PORT	3	4.9	9.8	16	28
	HL -40	STANDARD PORT	1.2	2.8	5	12.5	17.5
	Y -40	FULL PORT	4.8	8.2	13	39	73
CHECK	9H -40	FULL PORT	2.7	4.2	8.5	9.7	21
	9HL -40	STANDARD PORT	1.1	2.4	4.3	7	14.8
	1690Y-40	FULL PORT	4.8	7.9	14.6	38.5	61
	15F-40	FULL PORT	4.5	6.5	11	22	39
	25W-40	FULL PORT	2.8	5.2	5.8	21	42
	2680Y-40	FULL PORT	3.4	7.4	11.5	39.6	66.8
	L1-40	STANDARD PORT	1	2.8	5.5	13.2	16
	L3-40	STANDARD PORT	1	2.8	5.5	13.2	16
	L6-40	STANDARD PORT	1	2.8	5.5	13.2	16
	H-50	FULL PORT	2.7	4.5	7.2	14	24
	HL-50	STANDARD PORT	1.1	2.6	4.2	11	14.5
	9H-50	FULL PORT	2.5	3.9	6.9	8.5	19.6
	9HL-50	STANDARD PORT	1	2.2	3.6	6.3	12.3
	15F-50	FULL PORT	4.5	6.5	11	22	39
	H-60	FULL PORT	6.7	13	24	63	115
	HL-60	STANDARD PORT	2.7	7.5	12.5	34	58
	9H-60	FULL PORT	5	10.3	21.8	62	108
	9HL-60	STANDARD PORT	2.5	7.5	10.5	33	57
15F-60	FULL PORT	6	15	30	100	130	

GENERAL TERMS AND CONDITIONS OF SALE OF: BONNEY FORGE (HEREAFTER REFERRED TO AS "BF")

WARRANTY	BF expressly warrants to the Purchaser (the "Purchaser") that all BF products (each, a "Product") will be free from manufacturing defects for the one (1) year period immediately following the date of shipment (the "Warranty Period"). BF HEREBY DISCLAIMS ALL OTHER WARRANTIES WITH RESPECT TO BOTH THE PRODUCTS AND THIS AGREEMENT, INCLUDING THESE TERMS AND CONDITIONS, WHETHER EXPRESS OR IMPLIED INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF DEALING OR COURSE OF PERFORMANCE. The foregoing warranty shall not apply: (1) to any use of a Product in aircraft or aerospace applications ("Prohibited Applications"), (2) if a Product was not used as recommended and in accordance with approved installation and operating practices, (3) if the failure of a Product results from any cause other than a manufacturing defect, including but not limited to damage due to corrosive, abrasive or other wear normally to be expected in the use of the Product, (4) if the Product was modified or changed (unless written approval was given in advance by BF), and (5) if Purchaser fails to deliver written notice of such defect to BF during the Warranty Period.
EXCLUSIONS	Do not use BF Products in aircraft or aerospace applications. Purchaser assumes all risk of loss that arises from or relates to any use of Product in a Prohibited Application and Purchaser shall, at its own expense, indemnify, defend and hold BF harmless against all claims or losses (including legal and accounting fees) that arise from or relate to the use of any Product in a Prohibited Application.
PURCHASER'S REMEDIES	Purchaser's remedies with respect to any Product furnished by BF hereunder that is found not to be in conformity with the terms and conditions of the contract because of breach of contract, breach of express or implied warranty, or negligence shall be limited exclusively to the right of replacement of such defective Product or, at the option of BF, repayment of the sale price for the particular Product that gives rise to the claim. BF shall have no liability to Purchaser or to any other person, in tort, contract or otherwise, for claims losses, damages or injuries arising out of this purchase or use of any Product, except for the return by BF of an amount not in excess of the payments made by the Purchaser to BF for the particular Products giving rise to Purchaser's claim. No action, whether based on contract, tort or otherwise, arising out of or related to Products furnished pursuant to the Agreement may be brought by Purchaser more than one year after the cause of action has accrued and no claims for breach of warranty may be brought by Purchaser unless Purchaser notifies the BF in writing within 10 days of discovery of the breach. Any claim made after the time periods specified in the foregoing sentence shall be deemed to be null and void. UNDER NO CIRCUMSTANCES WILL BF BE LIABLE TO PURCHASER FOR DAMAGES IN EXCESS OF THE AMOUNTS PAID BY PURCHASER TO BF UNDER THE AGREEMENT OR FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR EXEMPLARY DAMAGES (EVEN IF BF HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES), SUCH AS, BUT NOT LIMITED TO, LOSS OF REVENUE OR ANTICIPATED PROFITS OR LOST BUSINESS.
PRICES	Prices, and other terms of sale and payment, are subject to change by BF without notice. Unless a contrary provision appears in this price schedule, quotation, or order acknowledgement, prices may be withdrawn without notice at any time. Stenographic or clerical errors are subject to correction.
ACCEPTANCE OF ORDERS	All orders are subject to BF credit department approval prior to acceptance by BF.
REMITTANCES	All accounts are payable in United States funds, free of exchange, collection, or any other charges. If, in the sole discretion of BF, the financial condition of the Purchaser at any time so requires, BF retains the right to require full or partial payment in advance.
PARTIAL SHIPMENTS AND PAYMENTS	BF reserves the right to make partial shipments from time to time, and to render invoices therefore which shall be due and payable as provided in said invoices and the paragraph entitled "REMITTANCES". If the Purchaser becomes overdue in any such partial payment, BF shall be entitled to suspend work and/or avail itself of other legal remedies.
TAXES	Unless otherwise specifically noted, the amount of any federal, state or local sales, use, occupancy, excise tax, or other tax of any nature, for which BF is legally liable, either intentionally or through failure of payment by Purchaser, shall be added or be in addition to the price quoted and Purchaser agrees to pay same to BF.
SHORTAGES & DAMAGES IN TRANSIT	All claims for loss, damages, shortages, etc. must be made by Purchaser in writing within 10 days after receipt of shipment. Loss or damage to materials in transit is the responsibility of the carrier and not BF.
FREIGHT POLICY; TITLE AND RISK OF LOSS	Unless otherwise specifically negotiated with the customer, BF's standard freight policy is to ship all product FCA (plant of manufacture) with BF's responsibility ceasing after delivery to the carrier. Title to and all risk of loss or damage to the Products vests in Purchaser at the time BF delivers the Products to the carrier regardless of any shipping and insurance arrangements made by BF on Purchaser's behalf. However, BF reserves and Purchaser grants, until full payment is received, a purchase money security interest in each of the Products delivered. Purchaser hereby authorizes BF to file such financing statements and deliver such notices as BF may reasonably require to perfect such purchase money security interest. BF shall have all rights and may exercise all remedies of a secured creditor under Article 9 of the Uniform Commercial Code as adopted from time to time in the Commonwealth of Pennsylvania. The remedies reserved herein shall be cumulative and in addition to any other remedies provided in law or equity. No waiver of the remedy for any breach of any provision in these terms shall constitute a waiver of any other remedy.
DELAYS	All shipping dates are good faith estimates by BF. BF makes no guarantee to ship on any date. BF shall assume no obligation to ship Products on any date and BF shall not be liable for the failure to ship Product on any date. Materials slated to be in stock are subject to prior sales.
CANCELLATION & SUSPENSION	Purchaser may cancel this order or contract, or delay work or delivery, only upon receipt of written notification by BF from Purchaser and with BF's prior consent, and upon agreement to pay BF's adjustment charge. Orders for special products (usually "price on application items") may be changed and/or cancelled only upon receipt of written instructions by BF from Purchaser and with BF's prior consent, and Purchaser shall make payment to BF for material used and work already performed.
RETURN OF MATERIAL	No Product may be returned without the prior written consent of BF. All goods returned are subject to a handling charge plus freight in both directions and charges for any required reconditioning, unless otherwise specified in writing by BF.
INDEMNITY	Purchaser shall defend, indemnify and hold BF and its affiliates harmless from any and all loss or damage sustained by BF and from and against all claims asserted against BF with respect to the Products covered hereunder arising in whole or in part out of (1) failure of Purchaser, its agents, employees, or customers to follow specifications, instructions, warnings or recommendations furnished by BF or others; (2) failure of Purchaser, its agents, employees or customers to comply with all applicable legal requirements; (3) misuse of the Products by Purchaser, its agents, employees or customers; (4) misrepresentation by Purchaser, its agents, employees or customers; (5) the full extent of the negligence of Purchaser, its agents, employees or customers; or, (6) alleged infringement of any patent, trademark, trade secret, copyright, or other intellectual property or proprietary right of Purchaser or a third party as a result of BF's performance in accordance with Purchaser's designs, plans or specifications. Purchaser hereby waives and releases BF and its affiliates from all rights of contribution or indemnity to which it may otherwise be entitled.
GOVERNING LAW	The contract shall be governed by, construed, and enforced in accordance with the laws of the Commonwealth of Pennsylvania without regard to the conflict-of-law principles of any jurisdiction. Purchaser and BF (i) agree that all actions and proceedings arising out of or relating to this Agreement shall be litigated exclusively in the state courts located in Huntingdon County, Pennsylvania and/or the United States District Court for the Middle District of Pennsylvania; (ii) consent to the jurisdiction and venue of such courts; and (iii) waive any and all rights to object to the jurisdiction and venue of such courts, to transfer or change the venue of any such action or proceeding, including but not limited to upon the basis of forum non conveniens. PURCHASER AND BF FURTHER EACH WAIVE THE RIGHT TO TRIAL BY JURY IN ANY ACTION OR PROCEEDING BASED UPON, ARISING OUT OF, OR IN ANY WAY RELATING TO, THIS AGREEMENT.
NO WAIVER	The failure of BF to exercise any of its rights under this Agreement for a breach thereof shall not be deemed to be a waiver of such rights nor shall the same be deemed to be a waiver of any subsequent breach.
DIES, TOOLS AND PATTERNS	Dies, tools and patterns used by BF to produce any Product (collectively, the "Material") shall be and remain the exclusive property of BF. Payment by Purchaser of any preparation charge with respect to such Material shall not give the Purchaser any right, title or interest in or to such Material. BF shall not be responsible for retention of dies or patterns on which no orders are received for two years or more.
FORCE MAJEURE	Neither party shall be liable to the other under this Agreement if delayed or prevented from performance by causes beyond its control including, but not limited to, fires, floods, strikes, acts of God, war, insurrection, government restrictions, or other causes of a like or different nature.
ASSIGNMENT	No assignment of the Purchaser's rights or obligations may be made without the prior, written consent of BF.
PURCHASER'S ACCEPTANCE OF BF TERMS	BF is not bound by any terms on the Purchaser's order form or any other document emanating from the Purchaser which attempts to impose any condition at variance with BF's terms and conditions of sale included herein or stated on BF's packages, invoices, technical data sheets or any other BF documents. BF's failure to object to provisions contained in the aforementioned forms of the Purchaser shall not be deemed a waiver of the provisions of BF's terms and conditions of sale which shall constitute the entire contract between BF and the Purchaser. No waiver, alteration, or modification of the terms and conditions of this document shall be binding unless in writing and signed by an authorized representative of BF. These BF terms and conditions constitute the entire understanding between the parties with respect to the subject matter hereof and supersede any and all prior understandings, statements, warranties, representations and agreements, oral and written, relating hereto. In the event of any discrepancy or inconsistency between these terms and conditions and any other purchase order or acceptance form used by the Purchaser in connection herewith, these BF terms and conditions shall govern, and such Purchaser purchase order, or acceptance form shall not amend, modify or add to the BF terms and conditions stated herein.
PROPRIETARY INFORMATION	Any Purchaser information provided to BF shall not be considered confidential unless otherwise agreed to by BF in a separate agreement. All drawings, works of authorship, trade secrets, inventions, improvements or other items made or developed by or for BF in connection with the performance of its obligations hereunder (the "Works") shall be BF's property. Purchaser hereby assigns all right and title in and to such Works to BF. Purchaser shall not use or disclose any of BF's trade secrets or other confidential information, whether or not designated as such, except as required in connection with the use of the Products covered hereunder.
SEVERABILITY	If any provisions of this Agreement are held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the other portions hereof, all of which provisions are hereby declared severable.

