
DET NORSKE VERITAS
QS CERTIFICATE OF ASSESSMENT-EC


Bescheinigung
Certificate

Global quality. Total reliability. Two recurrent claims in present-day corporate strategies. But the transition from words to actions demands tangible measures. Specialization and organization underlie what amounts to a "quality culture" at B.F.E., not in the abstract but as a set of specific rules governing every stage of production. An operating model that is good to have in a partner who bears the responsability of supplying valves that are essential to plant safety and regulation.


DET NORSKE VERITAS
QUALITY SYSTEM CERTIFICATE

B.F.E. S.p.A. -DIVISIONE VALVOLE FORGIATE-
VIA Tonale, 70/a - 24061 Albano S. Alessandro (BG) - Italy
Via Eupilio, 52 - 22040 Bosisio Parini (CO) - Italy

SINCERT


TUV
CERTIFICATE

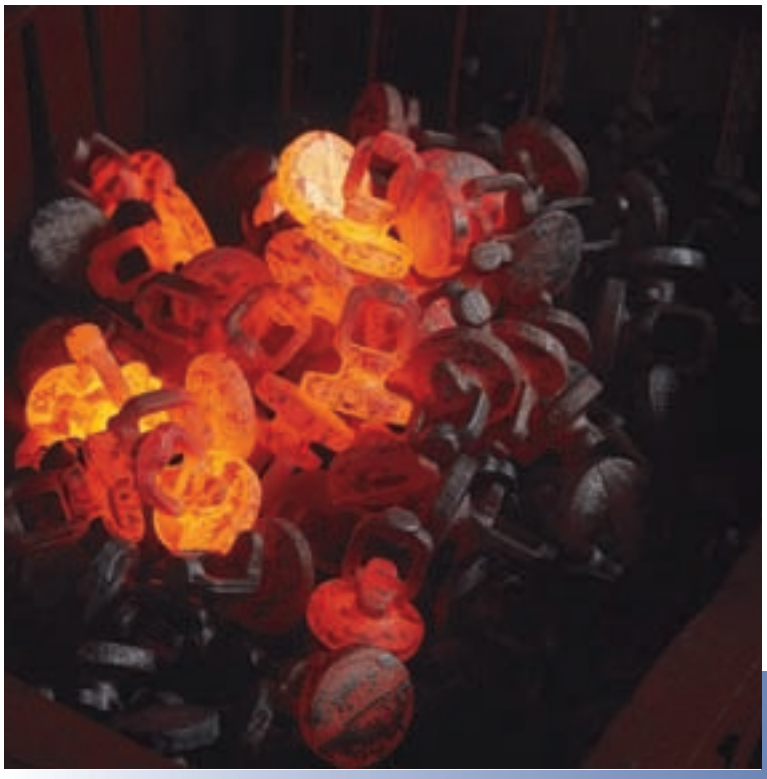
B.F.E. SpA

Developing industry has created the need for increasingly accurate and reliable plant control in order to improve, amongst other things, personnel safety, eco-environmental protection, and plant management. Increasingly complex and structured systems in which the function and the importance of valves play a vital role and are of the upmost importance. Such valve production is a highly specialized area in which the choice of one's supplier is extremely important.

TWO HIGHLY ADVANCED PRODUCTION UNITS

Wise investments have established B.F.E.'s domestic and international success. The Company has two production facilities. At Bosisio (Lecco) the main components for forged valves are forged and represent B.F.E.'s first basic factor of global quality, seeing that the entire manufacturing process is controlled and guaranteed by the Company Quality System. In Albano S. Alessandro (Bergamo) are located the management sales and operative offices, as well as the

machining, assembly and final testing workshop for forged valves. The total synergism between the two production plants offers top of the market products. One can clearly see at B.F.E. what distinguishes it as a model production facility, that is, its constant technological up-dating. Forged pieces are in compliance with all prescriptions of international standards. The entire process is controlled by a Quality Control System according to UNI EN ISO 9001. B.F.E.'s Plants are certified in conformity with a WO/HPO/TRD 100/TRB 801 N°45 Markblatt by the leading German Institute TÜV and 97/23/EC pressure equipment directive.



B.F.E. VALVES

B.F.E.'s engineering department is one of the mainstays of the Company. It is constantly engaged in studying up-to-date technological solutions utilising advanced C.A.D. systems.

B.F.E.'s range includes carbon, alloy, stainless and special forged steel valves.

The types include gate valves, globe valves, check, combination valves and API 6A and 6D valves with ratings of 150 to 4500 lbs. There are also bellow sealed valves, cryogenic valves for temperatures to -196°C, and valves with extended bodies.

B.F.E. also produces valves with special mountings for electric, pneumatic and hydraulic actuators and other specific accessories.

QUALITY CONTROL

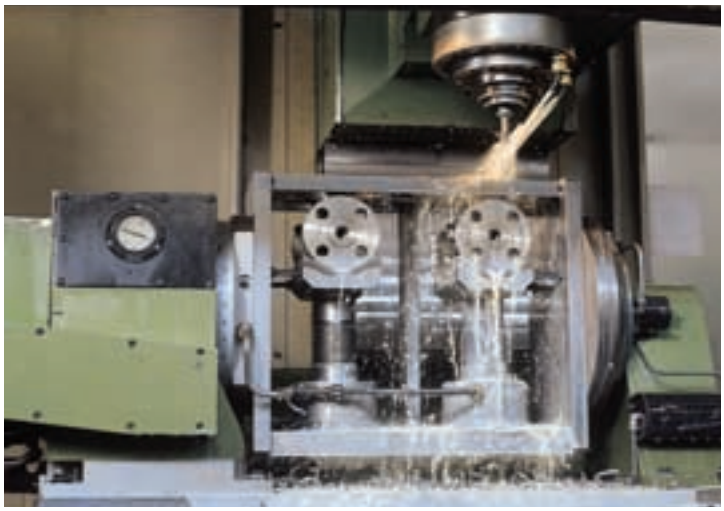
Quality control procedures underlie and permeate the entire production process.
The quality system was certified years ago in compliance with European Standards UNI EN ISO 9001. Testing techniques enable the execution of demanding quality tests. B.F.E. is in a position to supply their valves with a total guarantee of perfect operation and reliability.

STATE-OF-THE-ART PRODUCTION

Our production lines are automated with new-generation machining systems. Our staff's technical experience merges with the computer skills to provide a productive blend based on two fundamental methodological mainstays: multiple-head machines to handle large batches of valves ensuring consistent standards throughout; and interfaces with numerically-controlled machining centres assuring absolute accuracy and programming flexibility for shorter runs or special valves. The same attention devoted to main parts is also directed to the manufacture of internal components and is obtained by means of machinery designed and engineered specifically for high-precision processing. The high-precision assembly of these valves completes the production process, resulting in an efficient, reliable and long-lasting end product.

TESTING

B.F.E. has created and organized a complete and complex department for final testing. The department includes state of the art testing equipment such as chemical composition analisers, specialized test benches, spectrometers, instruments for testing cryogenic valves, fugitive emission test rig.



QUALITY AND UNLIMITED SERVICE

To be considered a world leader in one field is not only a great responsability, but also an exciting challange that we fully accept. All of our staff, including our Agents and Distributors are selected according to exacting standards of reliability. In fact our Distributors comply with the company trend towards total quality and operate in conformity with UNI EN ISO 9002 standards. Customer service is expressed in the capability of offering personalised advice based on individual need. This service extends to, and beyond the actual installation of the valves. B.F.E. therefore rightly enjoys a worldwide reputation not only as a supplier of forged valves, but also as a reliable partner in plant design, manufacture and maintenance.

DESIGN, CONSTRUCTION, MARKING FOR FORGED VALVES

B.F.E. valves are manufactured according to API 602, ANSI B16.34, B31.1, B31.3 and MSS-SP 84 Standards or BS 5352 when the valve design is not included in API, ANSI or MSS standards.

VALVE CLASSIFICATION

B.F.E. valves are available in API/ANSI 800, 1500, 2500 and 4500 Lbs classes, with socket weld, butt weld threaded ends.
Integral flanged valves are available in ANSI classes 150, 300, 600, 1500 and 2500.

END TO END DIMENSIONS

End to End dimensions for socket weld, threaded and butt welding ends class 150, 300, 600, 1500, 2500 and 4500 Lbs are according to B.F.E. standards.
End to end of flanged valves are in accordance with ANSI B16.5 and B16.10. B.F.E. can supply valves according to DIN Standard.

BODY/BONNET JOINT

B.F.E. valves are available in two designs:

a) Bolted Bonnet, with male-female joint, spiral gasket retained type, made in F316L/Graphite. Ring joint gaskets are also available on request. Body/bonnet bolting material is high strength molybdenum steel.

b) Welded Bonnet, obtained with screwed and seal welded joint. On request a full penetration strength welded joint is available.

OPERATING FEATURES

B.F.E. valves are OS & Y (Outside screw and yoke). The self aligning packing glands is two piece bolted style. The stem thread is ACME 2G.

- The stem surface in contact with the packing is lapped to a 2 r.m.s. max finish. This finish minimizes friction between the packing and the stem and lowers the required applied torque on the handwheel. This results in longer valve life.
- The stem contains a 45 degree seat for back-seating of the valve when valve is in the fully open position. This feature allows the valve to be repacked while under pressure and excludes the packing when the valve is fully open in service.
- In the gate valve design, the stem is coupled to the wedge by an integral "T" head. This special design feature ensures compliance with the stem pull test requirements of API 602, paragraph 2.8.2.

SEATING

In order to comply with the minimum hardness differentials specified by the various standards for the seating surfaces, and to ensure a tight seat closure, the valve seating surfaces (seats) are heat treated and precision machined (ground and lapped). Hardness differentials are not applicable when both seating surfaces (seats and disc/wedge) are made of austenitic stainless steel or when the seating surfaces are stellited (Stellite grade 6).

On globe, piston check and ball check valves the stellite overlay may be made directly on machined seating surface on the body of the valve.

PORT DESIGN / FLOW PASSAGE

Two designs are available:

a) Conventional or reduced port. Port dimensions for gate valves are per API 602 and BS 5352. Port dimensions for globe and check valves are per BS 5352.

b) Standard or full port. Port dimensions are per BS 5352 and are approximately equal to the corresponding size of schedule 80 pipe i.d.

MINIMUM THICKNESSES

Minimum wall requirements for pressure retaining components are in accordance with API 602, ANSI B16.34 and BS 5352 standards. End preparation details for socket weld and threaded end valves are in accordance with ANSI B16.11 nad MSS-SP 84.

MARKING AND IDENTIFICATION

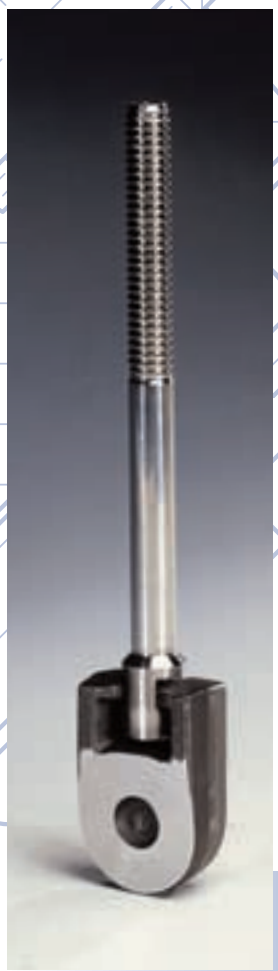
Each valve is identified on proper name plate and on valve body as required by MSS-SP 25, B16.34. Name plate carries all information on rating, size, valve body and trim material. On body, marking includes material designations (per ASTM) and heat symbol, size, rating and of course the trade mark.

Globe and check valves are supplementary marked with an arrow indicating flow direction.

ORDERING

When placing an order, the following information must be given: figure number covering the right valve type, class and size; end finish (threaded, S.W., flanged, etc.); body and trim material.

Specify also any special requirements relating to bolting, gasket or packing materials.



GENERAL SALE CONDITIONS

QUOTATION VALIDITY

Unless otherwise agreed, quotations are valid for four weeks from date of issue.
The delivery terms are always "ex-works" unless otherwise stated.
Prices and sale conditions can be changed without any previous notice.

ORDERS ACCEPTANCE

Orders are considered accepted at our general sale conditions clearly mentioned on order acknowledgment.

GOODS DELIVERY

The Company does not accept any responsability for delays is delivery which are always intended as indicative and not binding. Transport risks are at receiver's charge also in case of CIF delivery.

GUARANTEE

The Company warrantees all its products, from material and/or manufacturing defects, to be used as recommended by standards, and in accordance with approved piping practice and technique, for a period of one year from shipping date, unless otherwise agreed.
The Company liability covers eventual "free of charge" replacements for defective parts or products, providing it has not failed in the observance of above mentioned conditions and in use in compliance with standards, and, anyway, after return of defective goods. Any other liability, neither objective nor subjective will be accepted.

CLAIMS AND ORDER CANCELLATIONS

Claims will be considered only if made within 10 days from goods receipt.
Partial or complete cancellations of order can be accepted only upon previous agreement or by written consent and, however, not later than 15 days from order date.
Any controversy will be handled by the Court of Milan.

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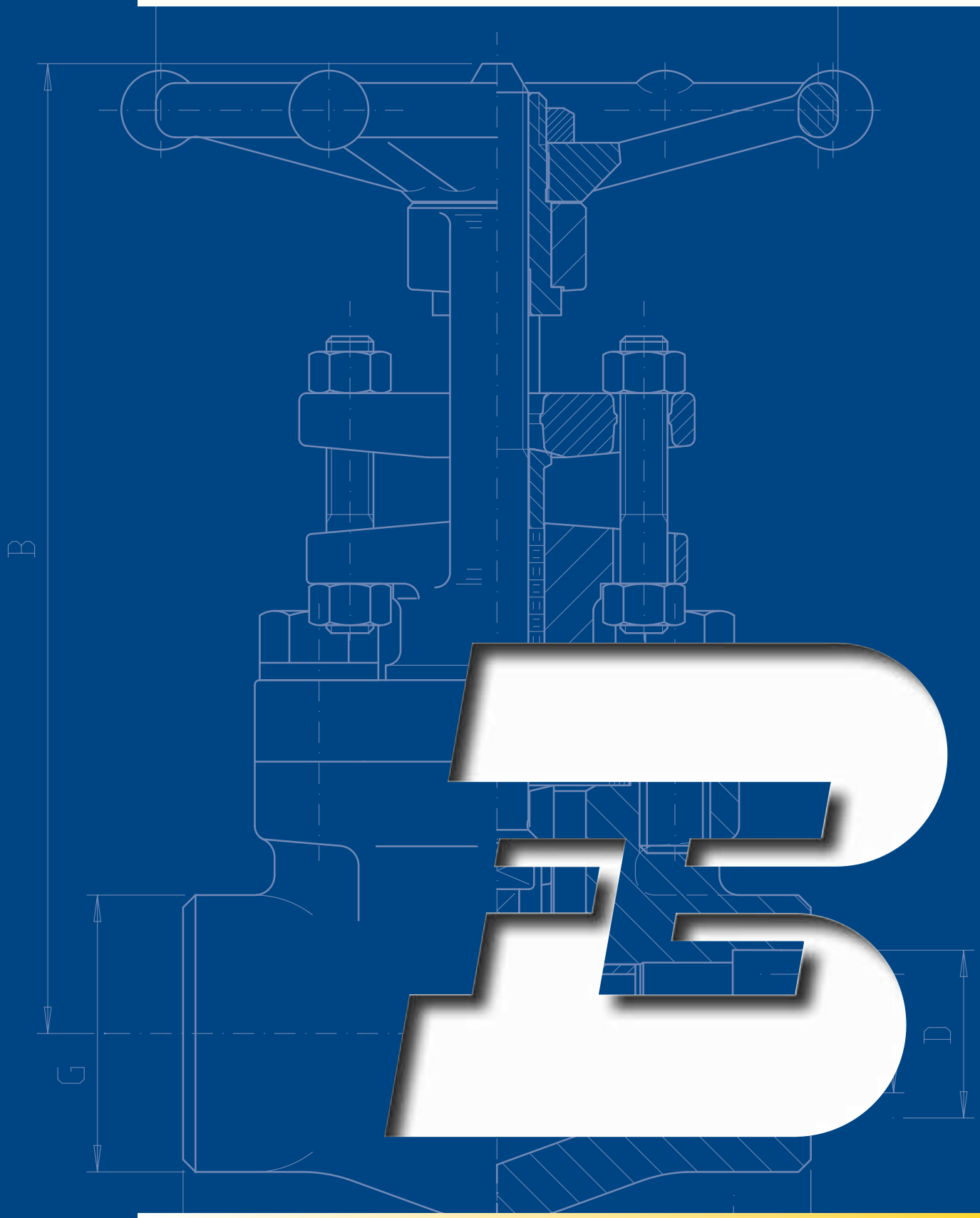
GATE VALVES



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Ed. 2002

GATE VALVES

BOLTED BONNET

CLASS	FIGURE
800 FB	H 100
800 RB	HL 100
1500 FB	9H 100
1500 RB	9HL 100
1500 FB	H9R 100
2500 FB	25HR 100

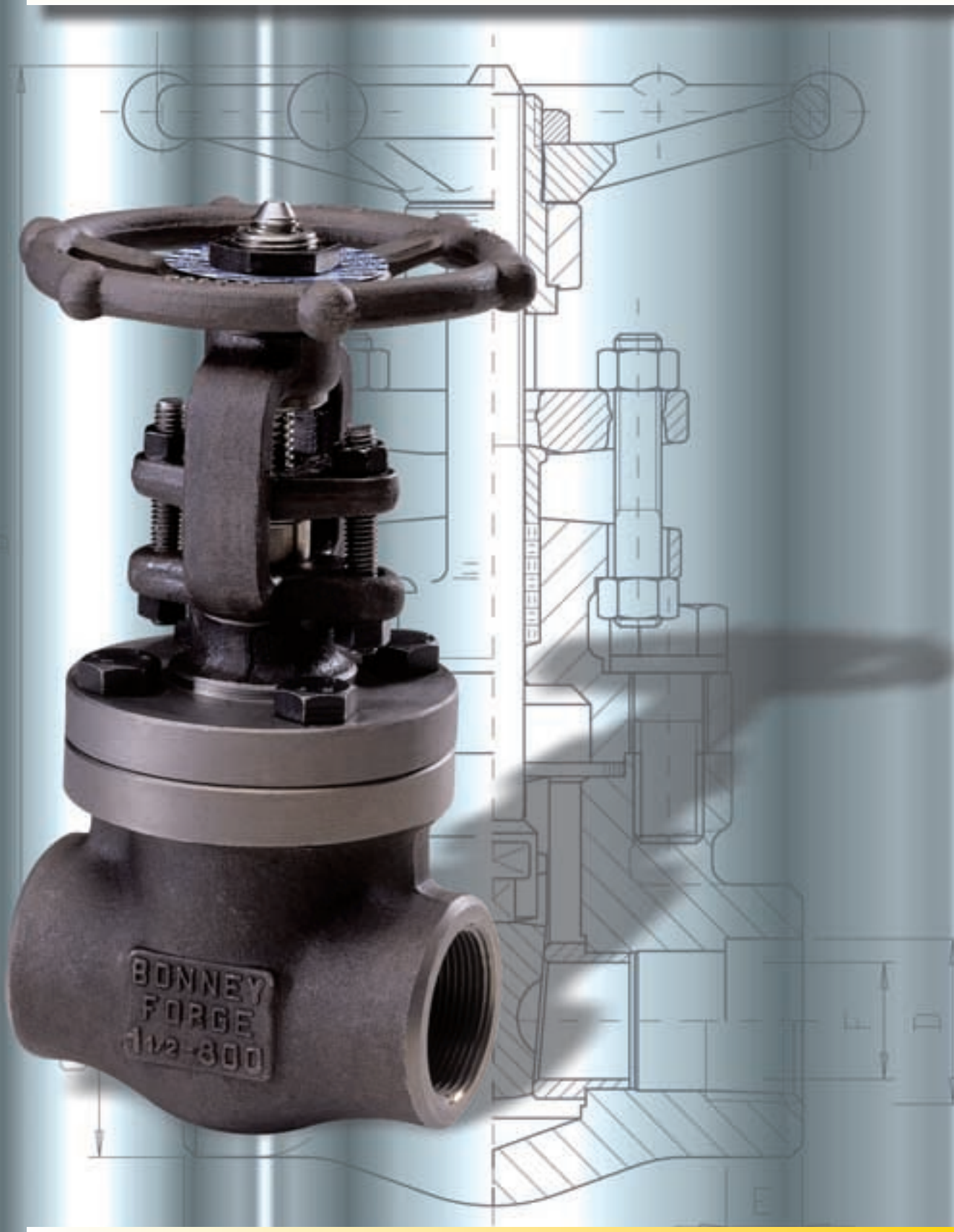
WELDED BONNET

CLASS	FIGURE
800 FB	W 100
800 RB	WL 100
1500 FB	9W 100
1500 RB	9WL 100
2500 FB	25W 100
4500 FB	45W 100

GATE VALVES

CLASS 800-1500

BOLTED BONNET - Full and reduced bore



Design construction:
API 602 - BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral-wound gasket retained type
Integral backseat

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type H 100

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		80	80	90	110	127	127	134	152
B open		152	152	158	196	225	255	290	358
C		88	88	88	97	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		2,1	2,1	2,3	3,7	5,9	7,4	8,3	12,5
FIGURE		H 101	H 102	H 103	H 104	H 105	H 106	H 107	H 108
PACKING		BH2	BH2	BH2	BH4	BH5	BH6/A	BY5/A	BH8
GASKET		G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type HL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	127	134
B open		152	158	196	255	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
WEIGHT kg ≅		1,9	2,3	3,6	7,3	7,6
FIGURE		HL 103	HL 104	HL 105	HL 107	HL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G6	G7

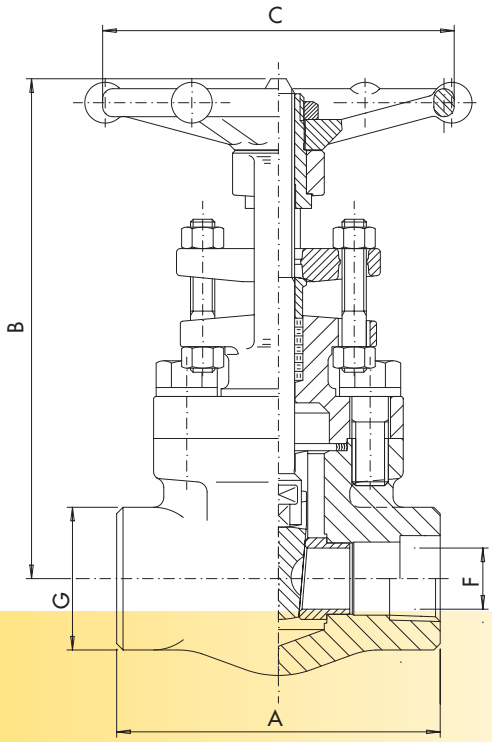
CLASS 1500

FULL BORE - Type 9H 100

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		90	90	110	127	127	127	127	210
B open		153	153	190	220	250	282	290	345
C		88	88	97	138	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		38	38	48	56	64	78	78	85
WEIGHT kg ≅		2,4	2,4	4,1	6,2	8	10,5	11	20
FIGURE		9H 101	9H 102	9H 103	9H 104	9H 105	9H 106	9H 107	9H 108
PACKING		BH3	BH3	BH5	BH6/A	2B4/A	BY7	2B5	9B8/A
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

REDUCED BORE - Type 9HL 100

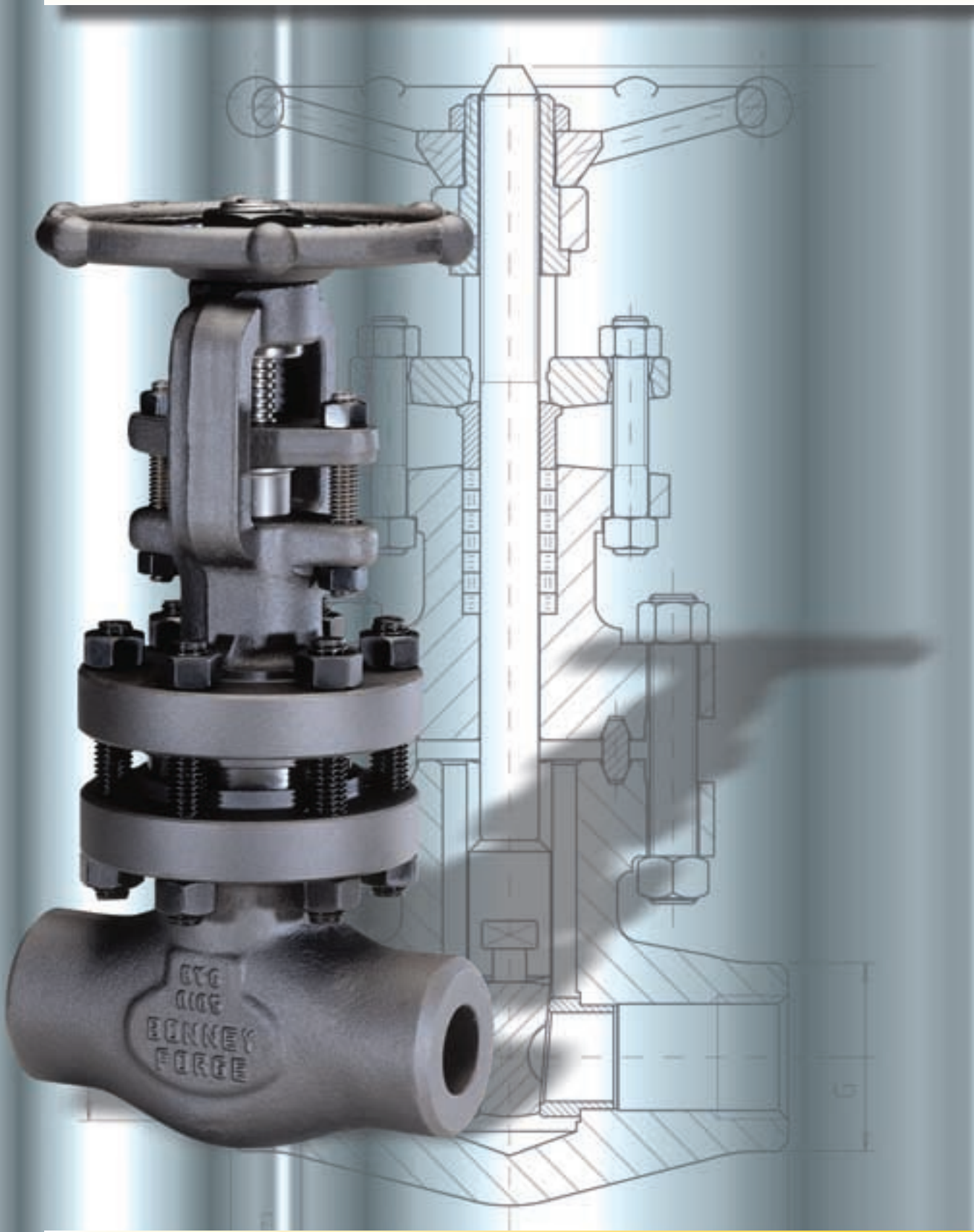
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	127	210
B open		152	190	220	282	345
C		88	97	138	138	138
F		9,6	14	18	30	36,6
G		38	48	56	78	85
WEIGHT kg ≅		2,4	3,9	6,1	10,8	20,5
FIGURE		9HL 103	9HL 104	9HL 105	9HL 107	9HL 108
PACKING		BH3	BH5	BH6/A	2B5	BH8
GASKET		G1	G2	G3	G5	G7



GATE VALVES

CLASS 1500-2500

BOLTED BONNET - Full bore



Design construction: BS 5352
ANSI B16.34 - NF M87.412

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Oval ring joint gasket

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 1500

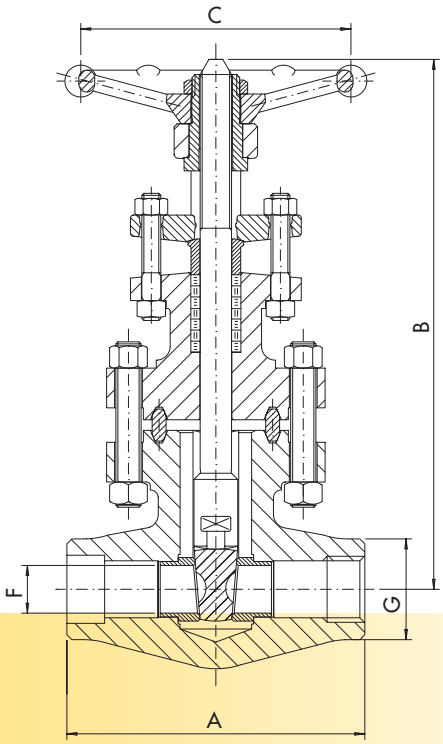
FULL BORE - Type H9R 100

SIZE inch	1/2	3/4	1	1.1/4	1.1/2	2
SIZE mm	15	20	25	32	40	50
A	110	150	150	210	210	230
B open	233	289	293	357	366	451
C	138	138	138	172	172	234
F	14	18	24	29,5	36,6	48
G	38	55	55	75	75	92
WEIGHT kg ≅	5	9,2	9,2	20	20	36
FIGURE	H9R 103	H9R 104	H9R 105	H9R 106	H9R 107	H9R 108
PACKING	2B3	2B4/A	2B4/A	2B5	2B5	2B8
GASKET	R12	R17	R17	R20	R20	R24

CLASS 2500

FULL BORE - Type 25HR 100

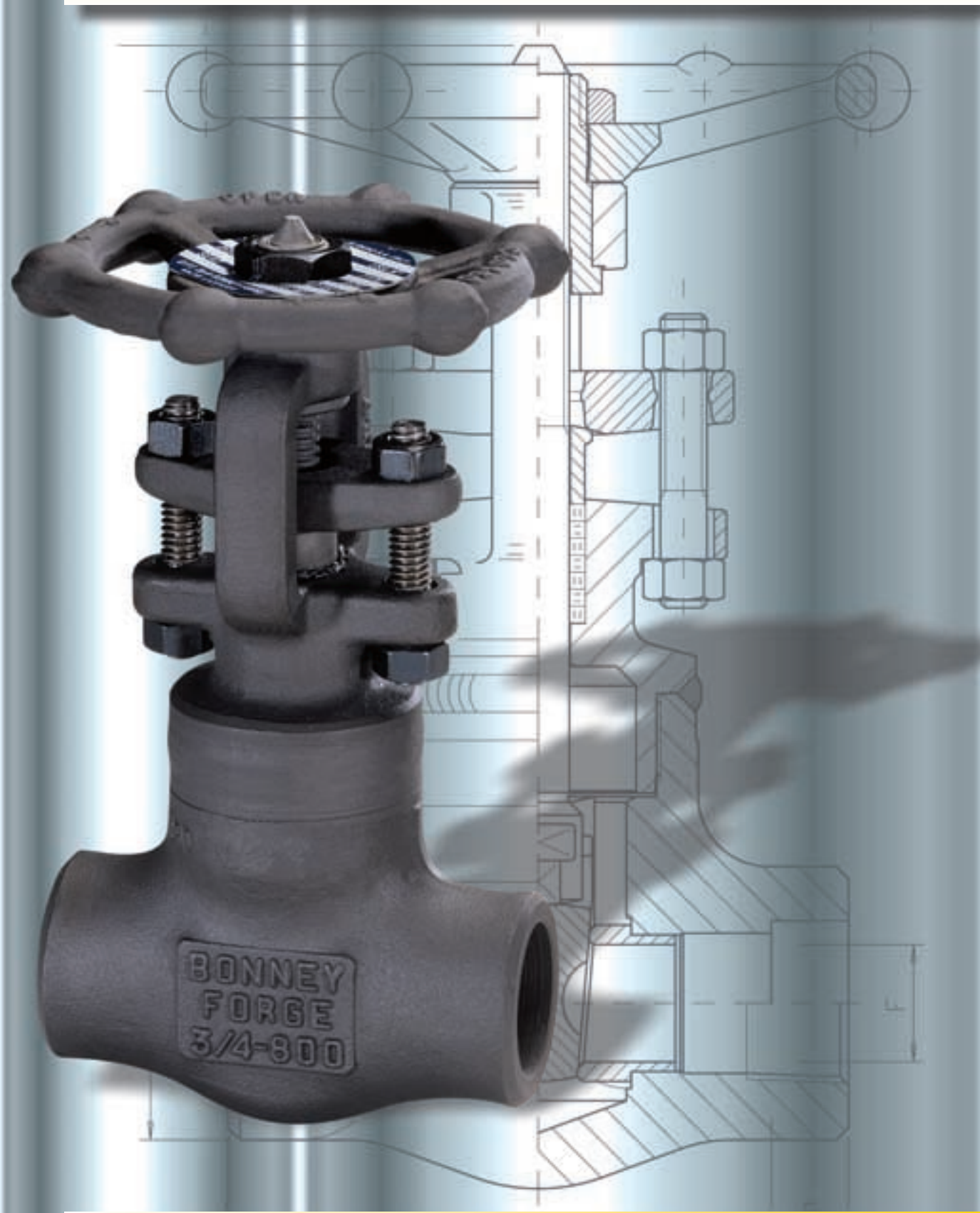
SIZE inch	1/2	3/4	1	1.1/2	2	
SIZE mm	15	20	25	40	50	
A	150	150	210	230	230	
B open	282	287	348	406	437	
C	138	138	172	234	234	
F	11,5	15	19,5	28	35	
G	55	55	75	92	92	
WEIGHT kg ≅	10	10	22	37	36	
FIGURE	25HR 103	25HR 104	25HR 105	25HR 107	25HR 108	
PACKING	2B4/A	2B4/A	BH8	9B8/A	25B8	
GASKET	R16	R16	R17	R20	R22	



GATE VALVES

CLASS 800-1500

WELDED BONNET - Full and reduced bore



Design construction:
API 602 - BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Body Bonnet weld to ASME IX

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type W 100

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		80	80	90	110	127	127	127	210
B open		152	152	158	196	225	255	290	358
C		88	88	88	97	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		1,5	1,5	2	3,5	5	6,5	9,5	16
FIGURE		W 101	W 102	W 103	W 104	W 105	W 106	W 107	W 108
PACKING		BH2	BH2	BH2	BH4	BH5	BH6/A	BY5/A	BH8

REDUCED BORE - Type WL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	127	127
B open		152	158	196	255	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
WEIGHT kg ≅		1,6	1,8	2,9	6,1	8,2
FIGURE		WL 103	WL 104	WL 105	WL 107	WL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A

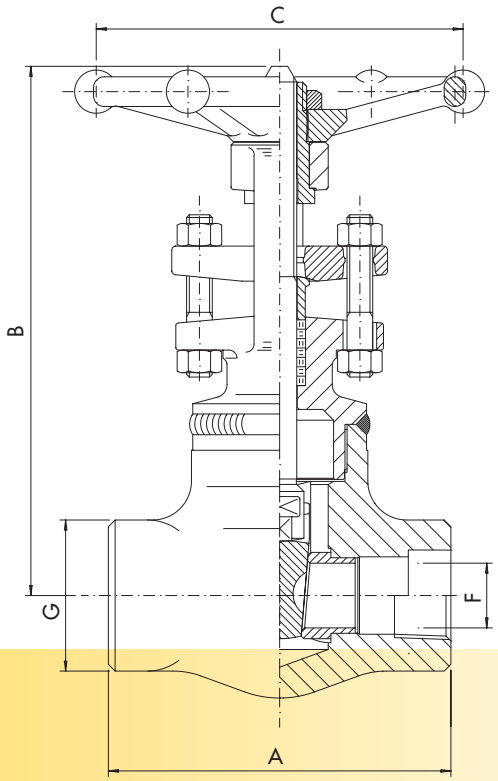
CLASS 1500

FULL BORE - Type 9W 100

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		90	90	110	127	127	127	127	210
B open		153	153	190	220	250	282	290	345
C		88	88	97	138	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		38	38	48	56	64	78	78	85
WEIGHT kg ≅		2,0	2,0	3,4	5,1	7	10	10,5	19
FIGURE		9W 101	9W 102	9W 103	9W 104	9W 105	9W 106	9W 107	9W 108
PACKING		BH3	BH3	BH5	BH6/A	2B4/A	BY7	2B5	9B8/A

REDUCED BORE - Type 9WL 100

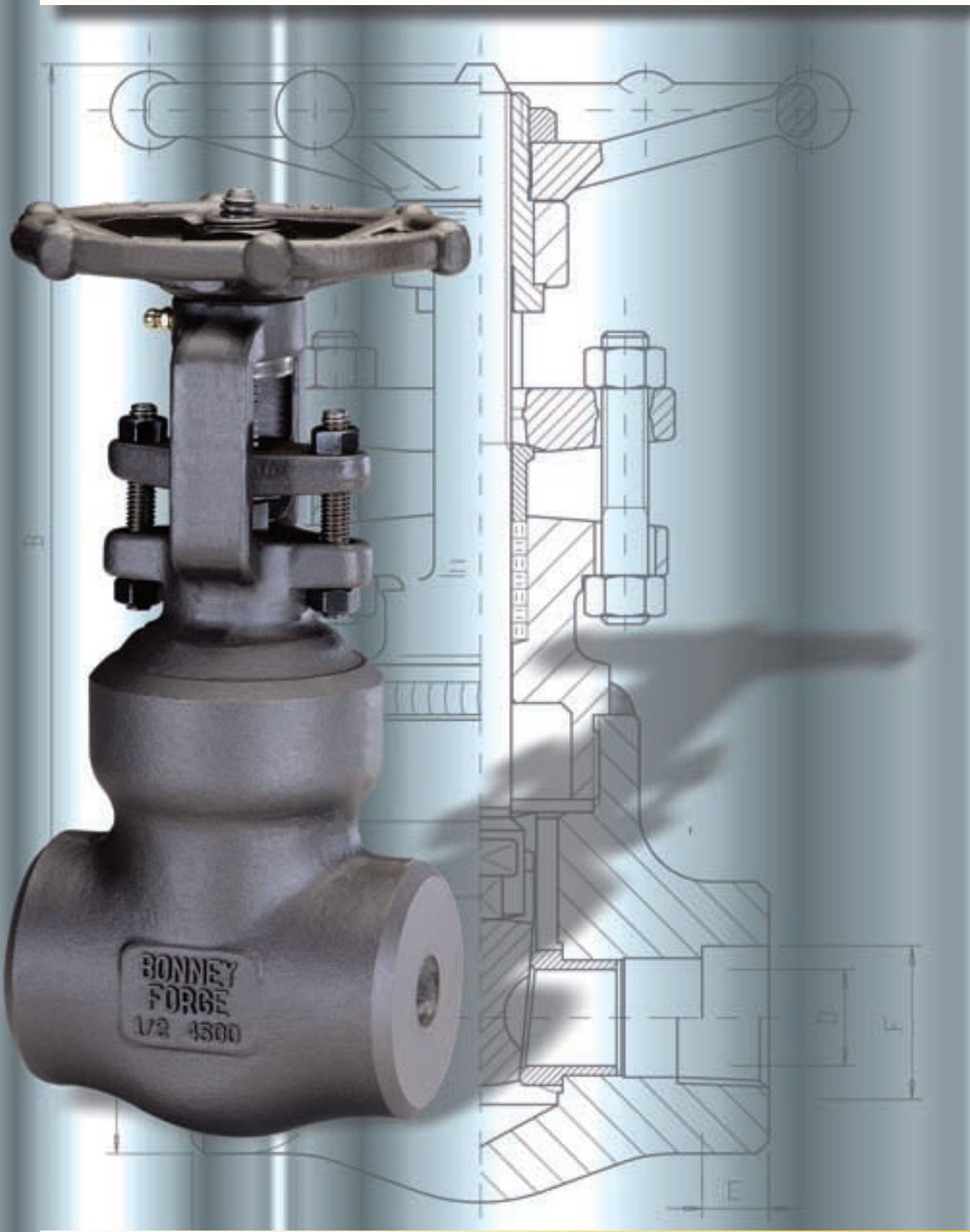
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	127	210
B open		153	190	220	282	345
C		88	97	138	138	138
F		9,6	14	18	30	36,6
G		38	48	56	78	85
WEIGHT kg ≅		2	3,3	5,3	9,8	18,3
FIGURE		9WL 103	9WL 104	9WL 105	9WL 107	9WL 108
PACKING		BH3	BH5	BH6/A	2B5	BH8



GATE VALVES

CLASS 2500-4500

WELDED BONNET - Full bore



Design construction: ANSI B16.34

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Body Bonnet weld to ASME IX

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 2500

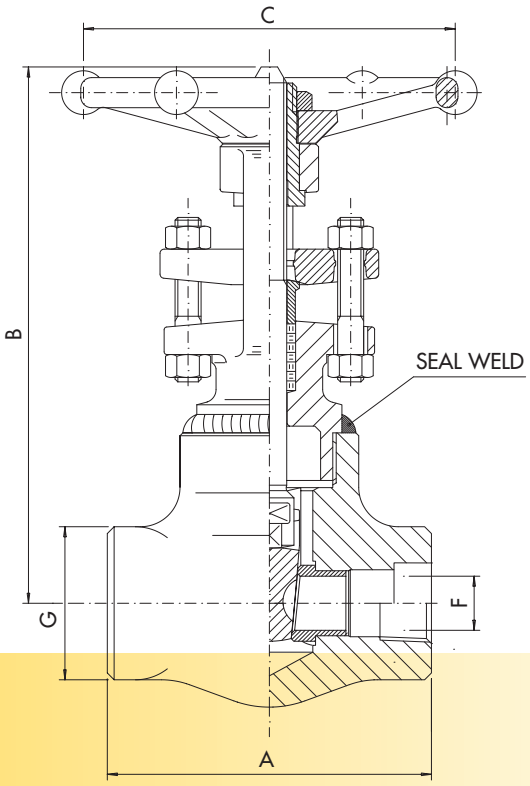
FULL BORE - Type 25W 100

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		110	110	127	127	127	127	210	230
B open		183	183	214	244	276	276	337	404
C		97	97	138	138	138	138	172	234
F		8	8	11,5	15	19,5	25	28	35
G		48	48	56	64	78	78	85	95
WEIGHT kg ≅		5,2	5,3	5,4	7,2	9,8	9,8	19,5	29
FIGURE		25W 101	25W 102	25W 103	25W 104	25W 105	25W 106	25W 107	25W 108
PACKING		2B3	2B3	2B3	2B4/A	2B5	2B5	2B5	2B8

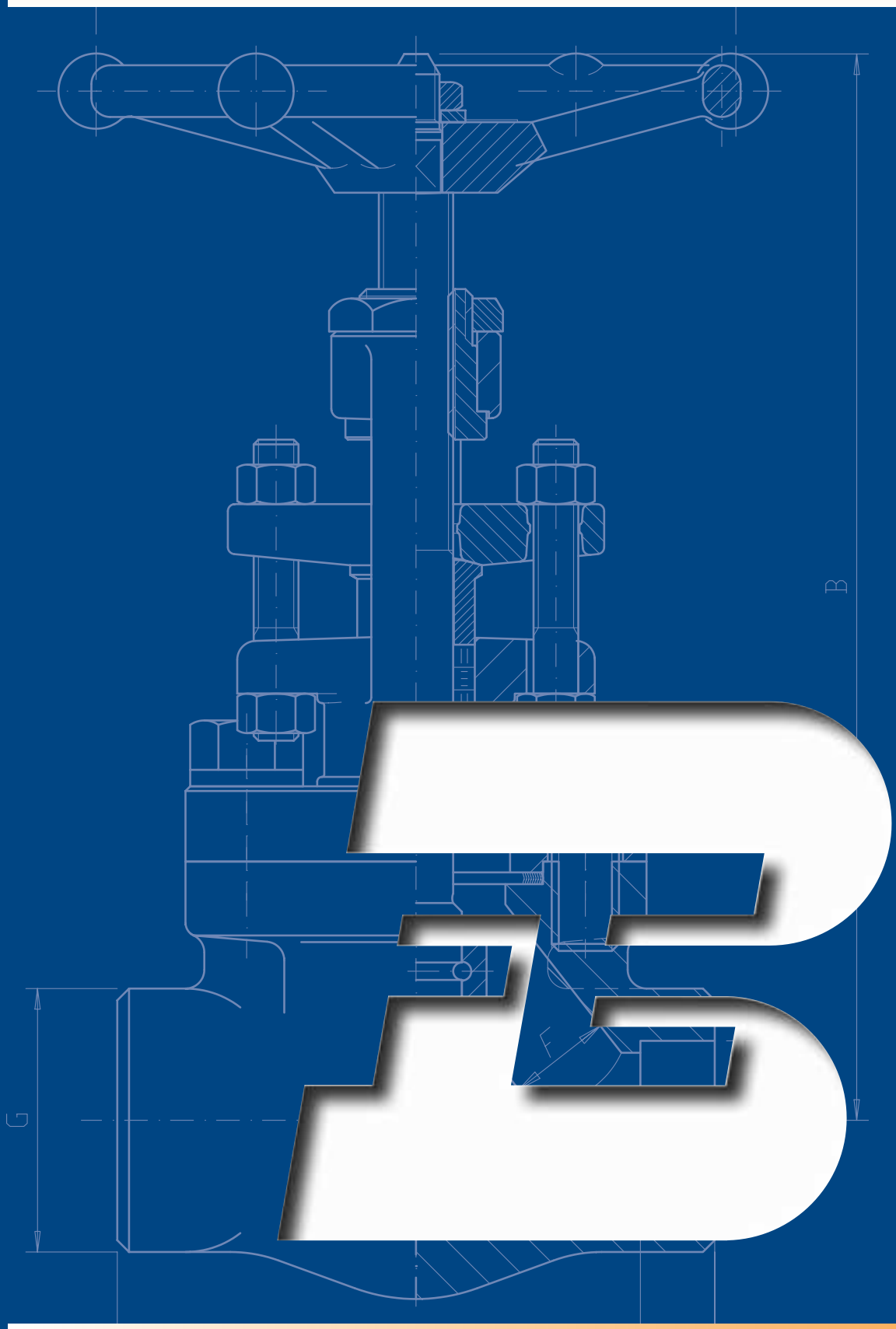
CLASS 4500

FULL BORE - Type 45W 100

SIZE	inch	1/2	3/4	1
	mm	15	20	25
A		127	127	230
B open		264	275	365
C		138	168	234
F		7,5	11,5	15
G		78	78	95
WEIGHT kg ≅				33
FIGURE		45W 103	45W 104	45W 105
PACKING		2B3	BH6/A	2B8



GLOBE VALVES



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GLOBE VALVES

BOLTED BONNET

CLASS	FIGURE
800 FB	H 300
800 RB	HL 300
1500 FB	9H 300
1500 RB	9HL 300
1500 FB	H9R 300
2500 FB	25HR 300

WELDED BONNET

CLASS	FIGURE
800 FB	W 300
800 RB	WL 300
1500 FB	9W 300
1500 RB	9WL 300
2500 FB	25W 300
4500 FB	45W 300

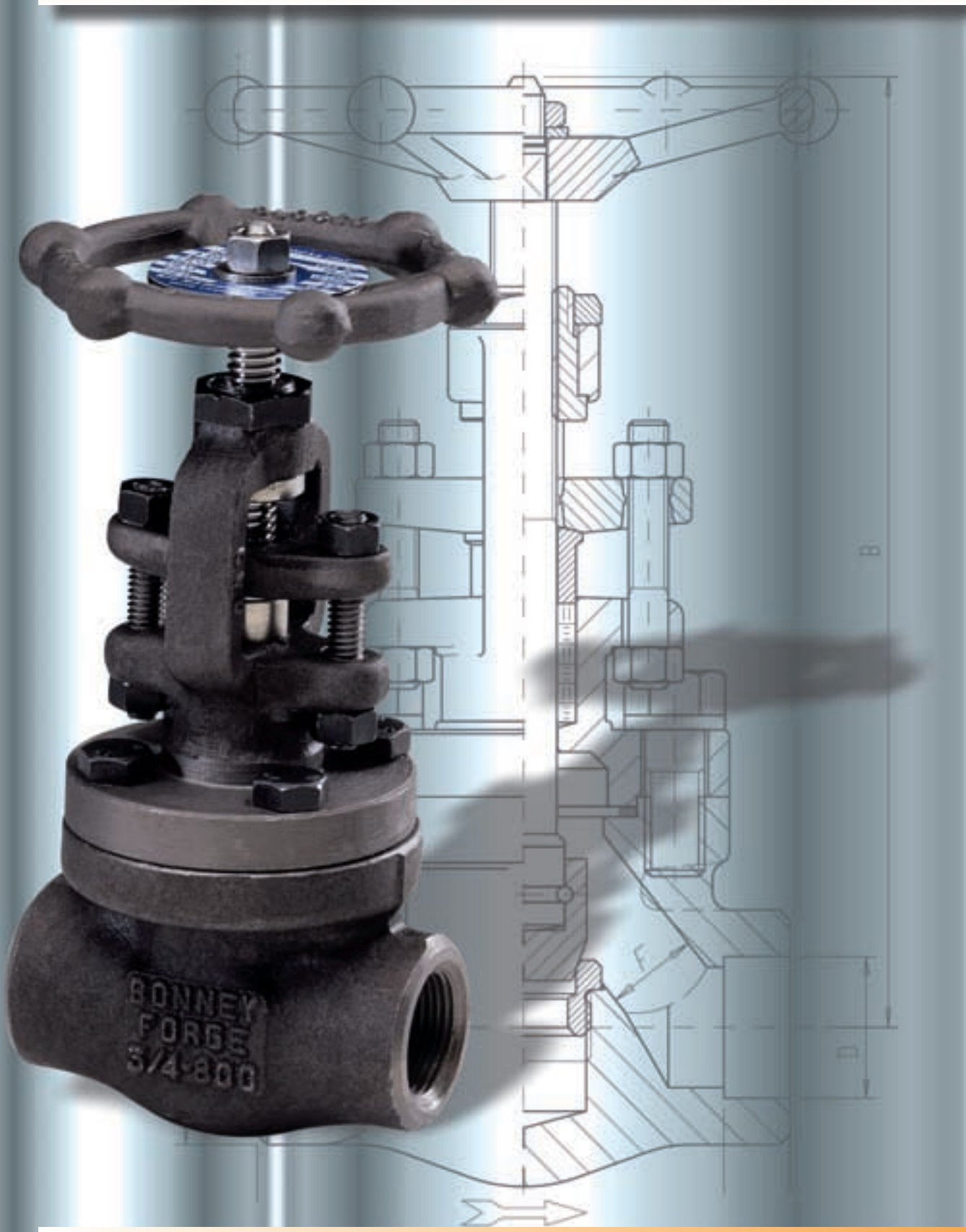
Y PATTERN WELDED BONNET

CLASS	FIGURE
800 FB	Y 300
1500 FB	9Y 300
2500 FB	25Y 300
4500 FB	45Y 300

GLOBE VALVES

CLASS 800-1500

BOLTED BONNET - Full and reduced bore



Design construction:
BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral-wound gasket retained type
Integral backseat
Loose solid disc

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type H 300

SIZE inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
SIZE mm	6	10	15	20	25	32	40	50
A	80	80	90	110	127	150	180	210
B open	166	166	171	213	247	258	300	375
C	88	88	88	97	138	138	172	172
F	7	9	13	17,5	22,5	29,5	35	45,5
G	32	32	38	48	56	64	78	85
WEIGHT kg ≅	2,2	2,2	2,4	3,8	6,1	7,6	12,5	19,6
FIGURE	H 301	H 302	H 303	H 304	H 305	H 306	H 307	H 308
PACKING	BH3	BH3	BH3	BH5	BY5/A	BY5/A	BY7	BH8
GASKET	G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type HL 300

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	80	90	110	150	180
B open	166	171	213	258	300
C	88	88	97	138	172
F	9	13	17,5	29,5	35
G	32	38	48	64	78
WEIGHT kg ≅	2,1	2,3	3,7	7,4	11,9
FIGURE	HL 303	HL 304	HL 305	HL 307	HL 308
PACKING	BH3	BH3	BH5	BY5/A	BY7
GASKET	G2	G2	G3	G6	G7

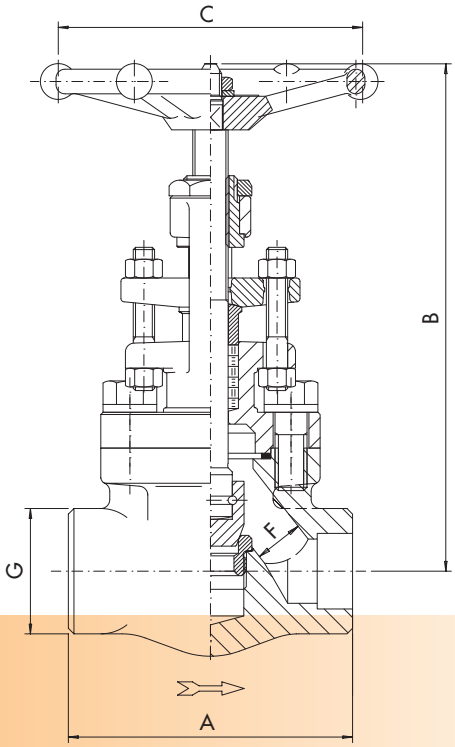
CLASS 1500

FULL BORE - Type 9H 300

SIZE inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
SIZE mm	6	10	15	20	25	32	40	50
A	90	90	110	127	150	180	210	230
B open	166	166	210	247	256	300	375	428
C	88	88	97	138	138	172	172	234
F	7	9	12	15	20	27	32	40
G	38	38	48	56	64	78	85	95
WEIGHT kg ≅	2,6	2,6	4,2	6,5	8,5	12,5	22,3	36
FIGURE	9H 301	9H 302	9H 303	9H 304	9H 305	9H 306	9H 307	9H 308
PACKING	BH3	BH3	BH5	2B4/A	2B4/A	2B5	BH8	9B8/A
GASKET	G1	G1	G2	G3	G4	G5	G7	G8

REDUCED BORE - Type 9HL 300

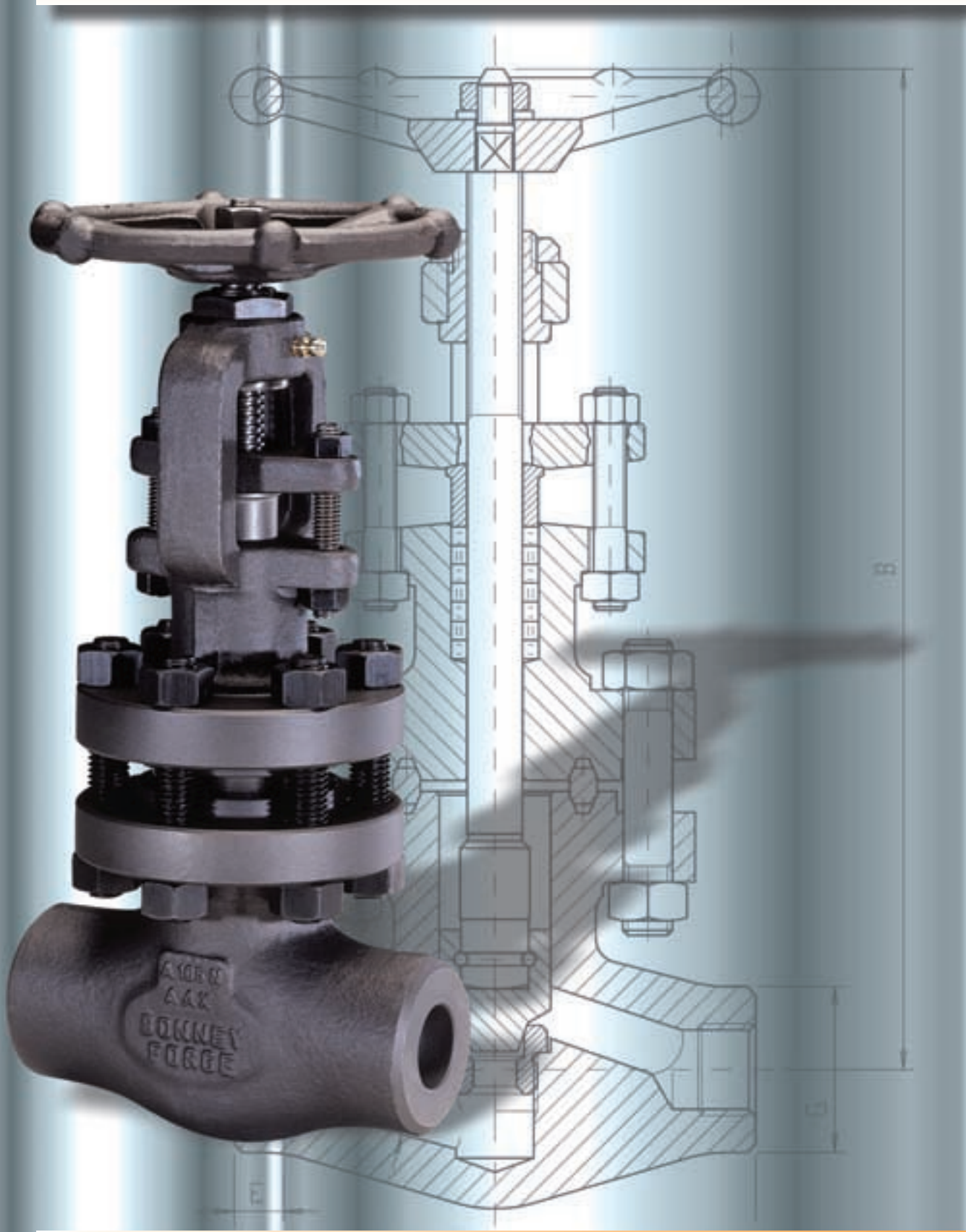
SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	90	110	127	180	210
B open	166	210	250	300	375
C	88	97	138	172	172
F	9	12	15	27	32
G	38	48	56	78	85
WEIGHT kg ≅	2,4	4	6,5	13	22
FIGURE	9HL 303	9HL 304	9HL 305	9HL 307	9HL 308
PACKING	BH3	BH5	2B4/A	2B5	BH8
GASKET	G1	G2	G3	G5	G7



GLOBE VALVES

CLASS 1500-2500

BOLTED BONNET - Full bore



Design construction:
BS 5352 - ANSI B16.34 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP55

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Oval ring joint gasket
Loose solid disc

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 1500

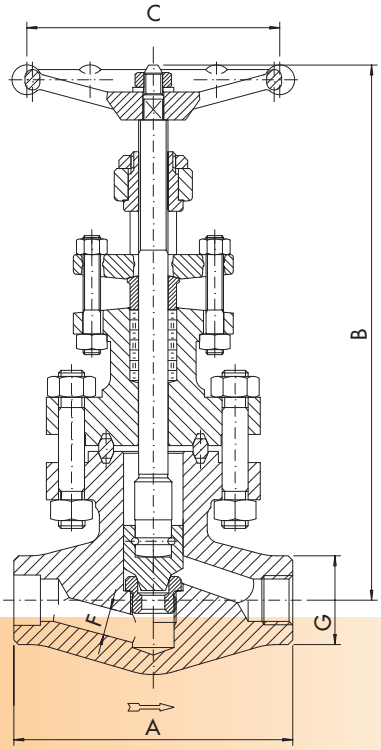
FULL BORE - Type H9R 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		110	150	150	210	230
B open		242	310	310	370	465
C		138	138	138	172	234
F		12	15	19	32	40
G		38	55	55	75	95
WEIGHT kg ≅		5	10	10	21	36
FIGURE		H9R 303	H9R 304	H9R 305	H9R 307	H9R 308
PACKING		2B3	2B4/A	2B4/A	2B5	2B8
GASKET		R12	R17	R17	R20	R24

CLASS 2500

FULL BORE - Type 25HR 300

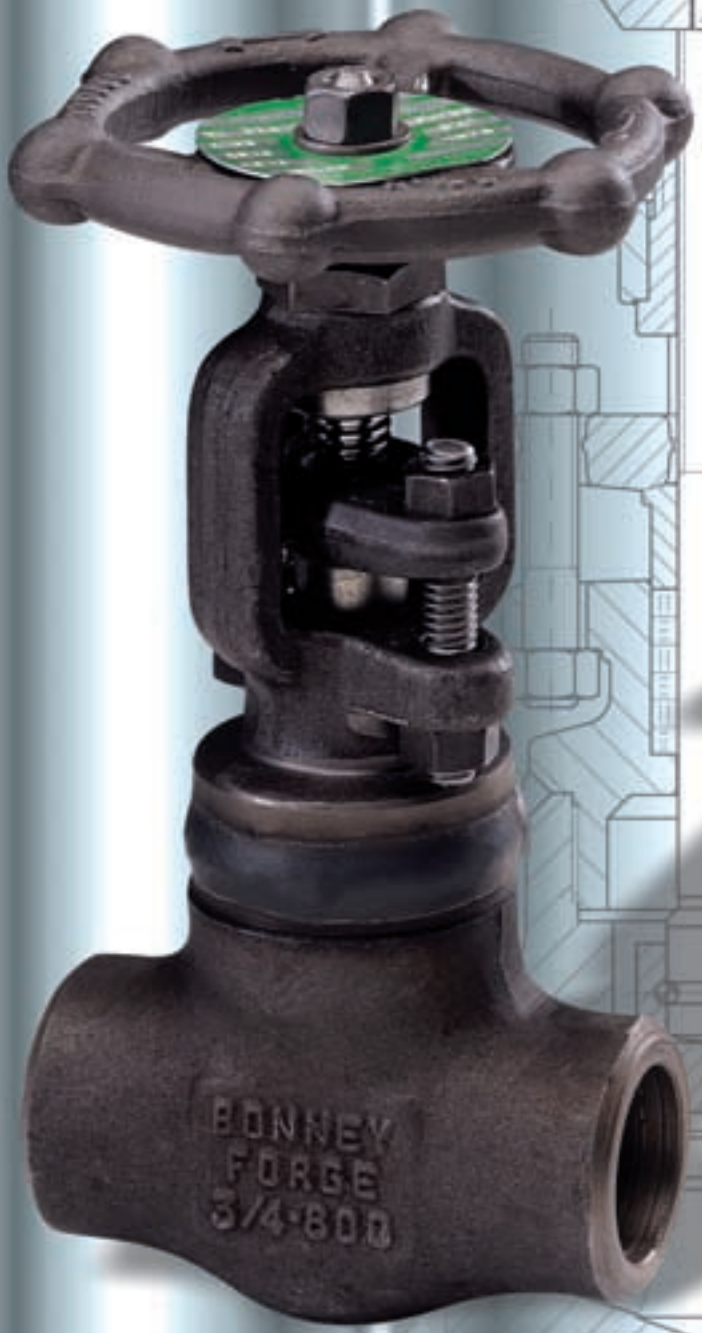
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		150	150	210	230	230
B open		304	304	362	436	436
C		138	138	138	234	234
F		11	14,5	19	28	38
G		55	55	75	95	95
WEIGHT kg ≅		10	10	22	38	38
FIGURE		25HR 303	25HR 304	25HR 305	25HR 307	25HR 308
PACKING		2B4/A	2B4/A	BH8	2B8	4B8
GASKET		R16	R16	R17	R20	R20



GLOBE VALVES

CLASS 800-1500

WELDED BONNET - Full and reduced bore



Design construction:
BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Body bonnet weld to ASME IX
Loose solid disc

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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

For special execution see special features
For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type W 300

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		80	80	90	110	127	150	180	210
B open		166	166	171	213	247	258	300	375
C		88	88	88	97	138	138	172	172
F		7	9	13	17,5	22,5	29,5	35	45
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		1,7	1,8	2	3	5	6,8	11	16,5
FIGURE		W 301	W 302	W 303	W 304	W 305	W 306	W 307	W 308
PACKING		BH3	BH3	BH3	BH5	BY5/A	BY5/A	BY7	BH8

REDUCED BORE - Type WL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	150	180
B open		166	171	213	258	300
C		88	88	97	138	172
F		9	13	17,5	29,5	35
G		32	38	48	64	78
WEIGHT kg ≅		1,7	2	3	6,6	10,4
FIGURE		WL 303	WL 304	WL 305	WL 307	WL 308
PACKING		BH3	BH3	BH5	BY5/A	BY7

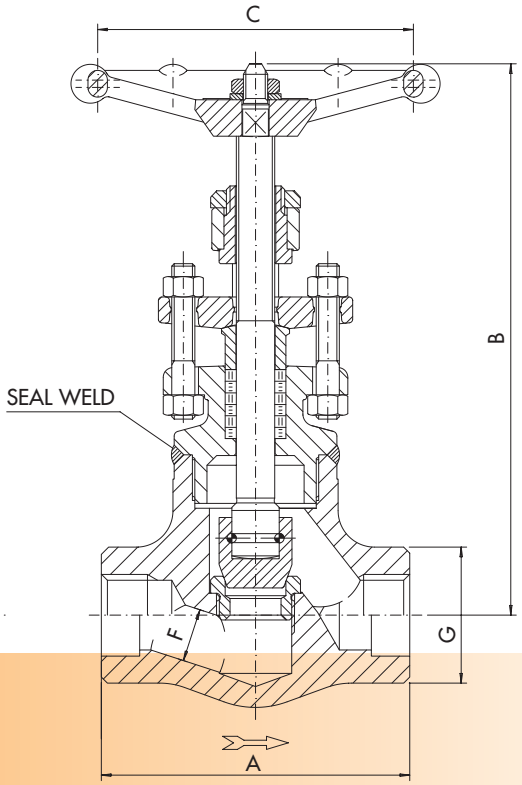
CLASS 1500

FULL BORE - Type 9W 300

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		90	90	110	127	150	180	210	230
B open		166	166	210	247	256	300	375	428
C		88	88	97	138	138	172	172	234
F		7	9	12	15	20	27	32	40
G		38	38	48	56	64	78	85	95
WEIGHT kg ≅		2,2	2,2	3,5	5,5	7,6	10	20	30
FIGURE		9W 301	9W 302	9W 303	9W 304	9W 305	9W 306	9W 307	9W 308
PACKING		BH3	BH3	BH5	2B4/A	2B4/A	2B5	BH8	2B8/A

REDUCED BORE - Type 9WL 300

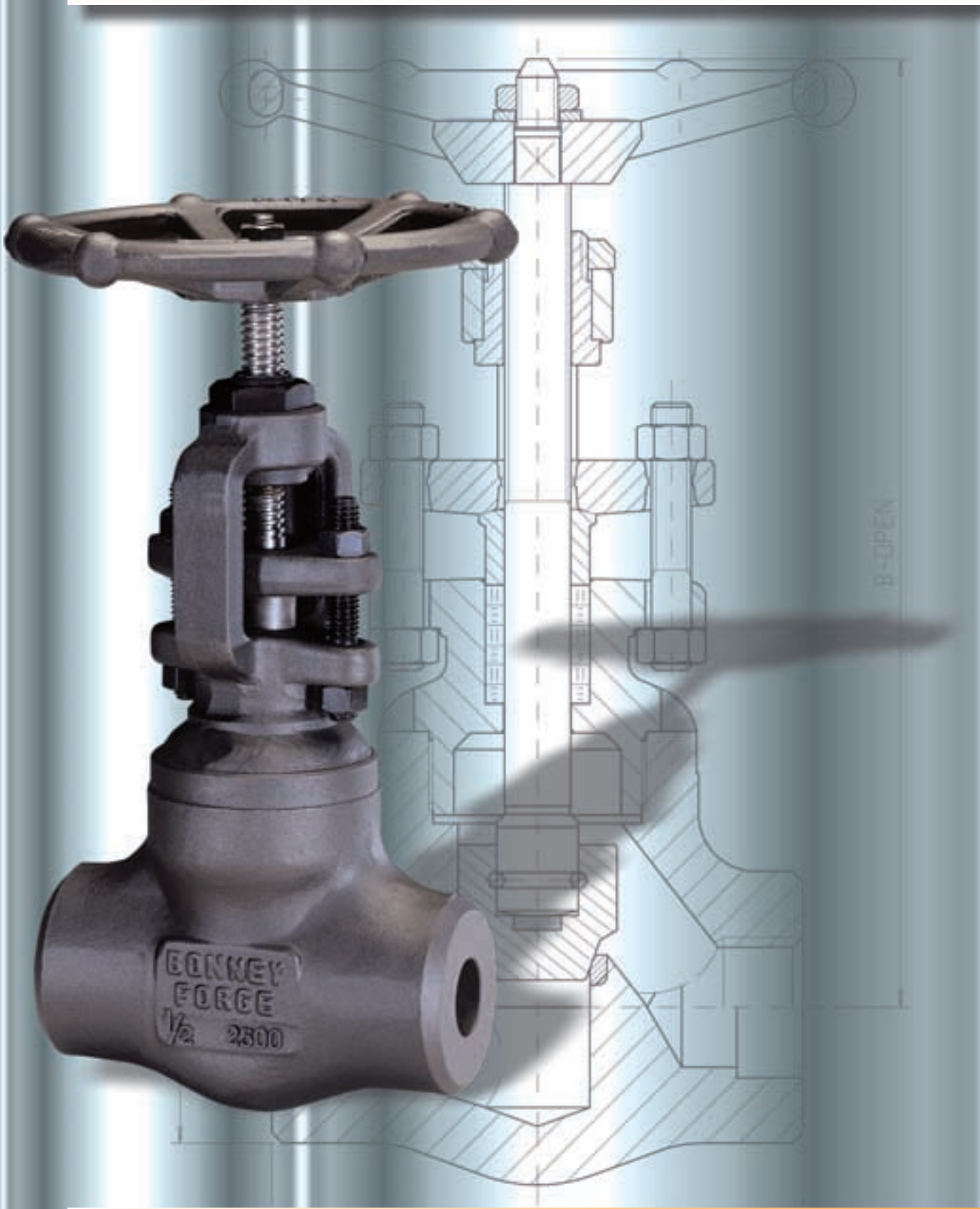
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	180	210
B open		166	210	247	300	375
C		88	97	138	172	172
F		9	12	15	27	32
G		38	48	56	78	85
WEIGHT kg ≅		2	3,5	5,5	12	19
FIGURE		9WL 303	9WL 304	9WL 305	9WL 307	9WL 308
PACKING		BH3	BH5	2B4/A	2B5	BH8



GLOBE VALVES

CLASS 2500-4500

WELDED BONNET - Full bore



Design construction:
ANSI B16.34
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Body bonnet weld to ASME IX
Loose solid disc

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

Ratings standard class:
- carbon steel class 2500 6170 psig @ 100°F
425 bar + 38°C
- carbon steel class 4500 11110 psig @ 100°F
765 bar + 38°C

For special execution see special features
For materials and testing pressure see technical data

CLASS 2500

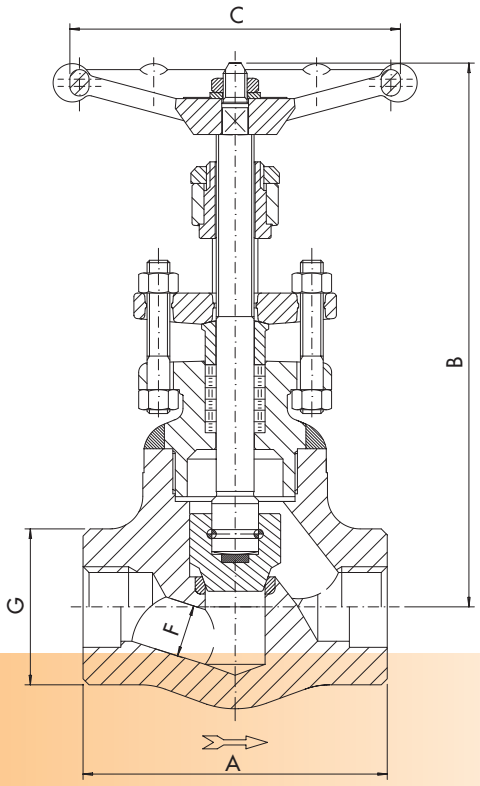
FULL BORE - Type 25W 300

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		110	110	127	150	180	180	210	230
B open		190	190	226	247	288	288	360	420
C		88	88	138	138	138	138	172	234
F		7	9	11	14,5	19	22	28	35
G		48	48	56	64	78	78	85	95
WEIGHT kg ≅		4,5	4,7	5,5	8	13	13	19,8	30
FIGURE		25W 301	25W 302	25W 303	25W 304	25W 305	25W 306	25W 307	25W 308
PACKING		BH4	BH4	2B3	2B4/A	2B5	2B5	2B5	2B8

CLASS 4500

FULL BORE - Type 45W 300

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2	
	mm	6	10	15	20	25	40	50	
A		127	127	127	180	180	230	230	
B open		230	230	235	300	300	370	400	
C		138	138	138	172	172	234	400	
F		7	7	8	11	14	25	32	
G		56	56	56	78	78	95	120	
WEIGHT kg ≅		6,5	6,5	6,5	15	15	25	30	
FIGURE		45W 301	45W 302	45W 303	45W 304	45W 305	45W 307	45W 308	
PACKING		2B3	2B3	2B3	2B4/A	2B4/A	2B8	4B8	



GLOBE VALVES

CLASS 800-1500-2500-4500

WELDED BONNET - Full bore (Y type)

Design construction:
BS 5352 - ANSI B16.34
Testing according to API 598 - BS 6755
Marking MSS SP25

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Integral backseat
Body bonnet weld to ASME IX
Loose solid disc

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
- carbon steel class 2500 6170 psig @ 100°F
  425 bar + 38°C
- carbon steel class 4500 11110 psig @ 100°F
  765 bar + 38°C

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

For special execution see special features
For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type Y 300

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		85	85	85	105	120	165	165	190
B open		174	174	174	215	255	255	318	375
C		88	88	88	97	138	172	172	172
F		7	9	13	17,5	22,5	35	35	45
G		38	38	38	48	56	78	78	85
WEIGHT kg ≅		2	2	2	3,3	5	11	11	15
FIGURE		Y 301	Y 302	Y 303	Y 304	Y 305	Y 306	Y 307	Y 308
PACKING		BH3	BH3	BH3	BH5	BY5/A	BY7	BY7	BH8

CLASS 2500

FULL BORE - Type 25Y 300

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		105	105	120	165	165	190	220
B open		220	220	240	275	310	360	440
C		88	88	138	138	138	172	234
F		7	9	11	14,5	19	28	35
G		48	48	56	78	78	85	95
WEIGHT kg ≅		3,5	3,5	5	11,5	12,5	17	26
FIGURE		25Y 301	25Y 302	25Y 303	25Y 304	25Y 305	25Y 307	25Y 308
PACKING		BH4	BH4	2B3	2B4/A	2B5	2B5	2B8

CLASS 1500

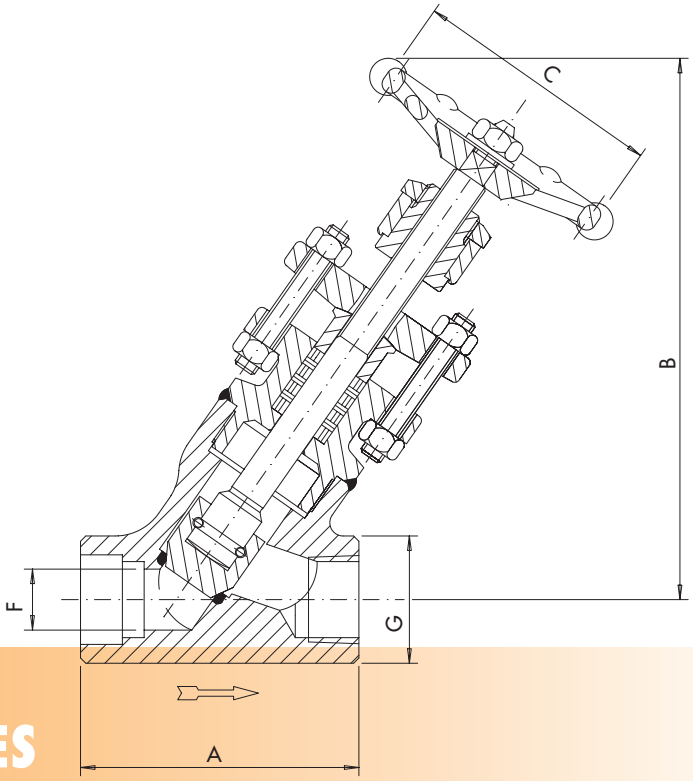
FULL BORE - Type 9Y 300

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		85	85	105	120	165	165	190	220
B open		175	175	215	255	280	315	380	450
C		88	88	97	138	138	172	172	234
F		7	9	12	15	20	27	32	40
G		38	38	48	56	78	78	85	95
WEIGHT kg ≅		2	2	3,5	5,3	11	11	16,5	26
FIGURE		9Y 301	9Y 302	9Y 303	9Y 304	9Y 305	9Y 306	9Y 307	9Y 308
PACKING		BH3	BH3	BH5	2B4/A	2B4/A	BY7	BH8	2B8

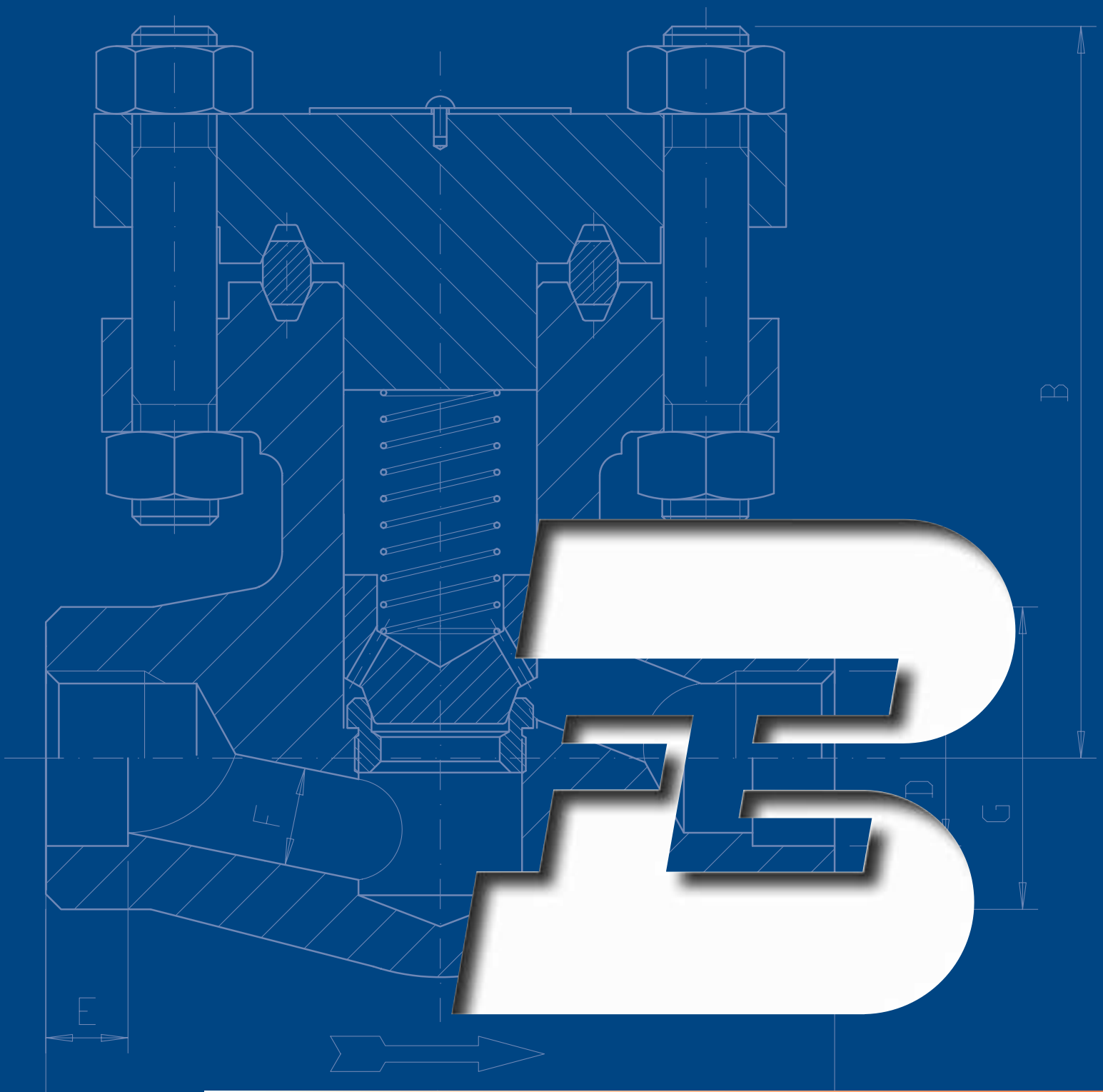
CLASS 4500

FULL BORE - Type 45Y 300

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		120	120	120	165	165	220	230
B open		240	240	245	305	310	420	450
C		138	138	138	172	172	234	400
F		7	7	8	11	14	25	32
G		56	56	56	78	78	95	120
WEIGHT kg ≅		5,5	5,5	5,6	14	14	28	32
FIGURE		45Y 301	45Y 302	45Y 303	45Y 304	45Y 305	45Y 307	45Y 308
PACKING		2B3	2B3	2B3	2B4/A	2B4/A	2B8	4B8



CHECK VALVES



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CHECK VALVES

BOLTED BONNET

CLASS	FIGURE		
	Piston	Ball	Swing
800 FB	H 400	H 500	H 600
800 RB	HL 400	HL 500	HL 600
1500 FB	9H 400	9H 500	9H 600
1500 RB	9HL 400	9HL 500	9HL 600
1500 FB	H9R 400	H9R 500	H9R 600
2500 FB	25HR 400	25HR 500	25HR 600

WELDED BONNET

CLASS	FIGURE		
	Piston	Ball	Swing
800 FB	W 400	W 500	WH 600
800 RB	WL 400	WL 500	WHL 600
1500 FB	9W 400	9W 500	9WH 600
1500 RB	9WL 400	9WL 500	9WHL 600
2500 FB	25W 400	25W 500	
4500 FB	45WH 400	45WH 500	

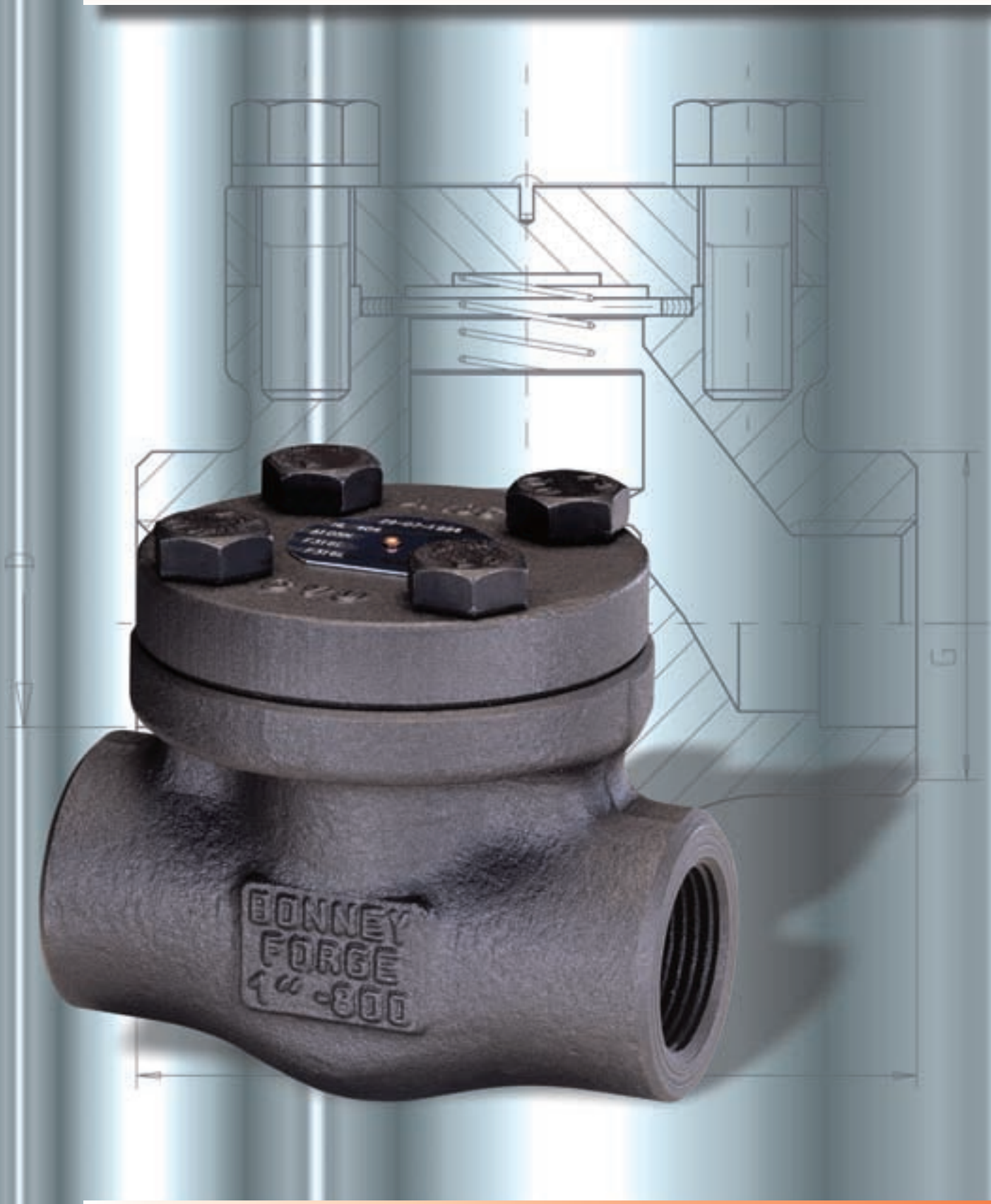
Y PATTERN WELDED BONNET

CLASS	FIGURE		
	Piston	Ball	-
800 FB	Y 400	Y 500	-
1500 FB	9Y 400	9Y 500	-
2500 FB	25Y 400	25Y 500	-
4500 FB	45Y 400	45Y 500	-

CHECK VALVES

CLASS 800-1500

BOLTED BONNET - Full and reduced bore



Design construction:
BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Spring only on request
Spiral-wound gasket retained type

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

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type H 400 - H 500 - H 600

SIZE inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
SIZE mm	6	10	15	20	25	32	40	50
A	80*	80	90	110	127	150	180	210
B	55	55	60	78	88	92	108	145
F Piston / F Ball	7	9	13	17,5	22,5	29,5	35	45
F Swing	8	9,6	14	18	24	30	36,6	48
G	32	32	38	48	56	64	78	85
WEIGHT kg ≅	1,4	1,4	1,6	3	4,3	5,6	10	16
FIGURE Piston	H 401	H 402	H 403	H 404	H 405	H 406	H 407	H 408
Ball	H 501	H 502	H 503	H 504	H 505	H 506	H 507	H 508
Swing	H 601	H 602	H 603	H 604	H 605	H 606	H 607	H 608
GASKET	G2	G2	G2	G3	G4	G6	G7	G9

* For swing type only A = 90

REDUCED BORE - Type HL 400 - HL 500 - HL 600

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	80	90	110	150	180
B	55	60	78	92	108
F Piston / F Ball	9	13	17,5	29,5	35
F Swing	9,6	14	18	30	36,6
G	32	38	48	64	78
WEIGHT kg ≅	1,3	1,6	2,8	5,6	9,0
FIGURE Piston	HL 403	HL 404	HL 405	HL 407	HL 408
Ball	HL 503	HL 504	HL 505	HL 507	HL 508
Swing	HL 603	HL 604	HL 605	HL 607	HL 608
GASKET	G2	G2	G3	G6	G7

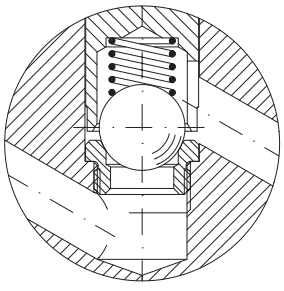
CLASS 1500

FULL BORE - Type 9H 400 - 9H 500 - 9H 600

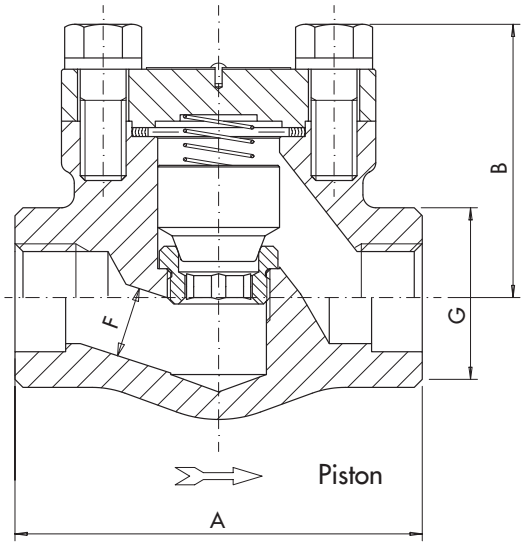
SIZE inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
SIZE mm	6	10	15	20	25	32	40	50
A	90	90	110	127	150	180	210	210
B	60	60	78	88	92	108	145	150
F Piston / F Ball	7	9	12	15	20	27	32	40
F Swing	-	-	14	18	24	30	36,6	48
G	38	38	48	56	64	78	85	95
WEIGHT kg ≅	1,7	1,7	3,1	4,6	6,5	10,6	19	19
FIGURE Piston	9H 401	9H 402	9H 403	9H 404	9H 405	9H 406	9H 407	9H 408
Ball	9H 501	9H 502	9H 503	9H 504	9H 505	9H 506	9H 507	9H 508
Swing	-	-	9H 603	9H 604	9H 605	9H 606	9H 607	9H 608
GASKET	G1	G1	G2	G3	G4	G5	G7	G8

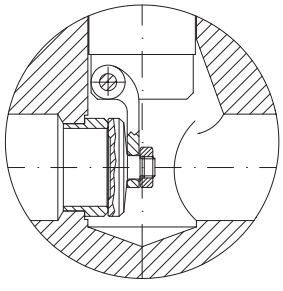
REDUCED BORE - Type 9HL 400 - 9HL 500 - 9HL 600

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	90	110	127	180	210
B	60	78	88	108	145
F Piston / F Ball	9	12	15	27	32
F Swing	9,6	14	18	30	36,6
G	38	48	56	78	85
WEIGHT kg ≅	1,7	3	4,4	10	18
FIGURE Piston	9HL 403	9HL 404	9HL 405	9HL 407	9HL 408
Ball	9HL 503	9HL 504	9HL 505	9HL 507	9HL 508
Swing	9HL 603	9HL 604	9HL 605	9HL 607	9HL 608
GASKET	G1	G2	G3	G5	G7



Ball



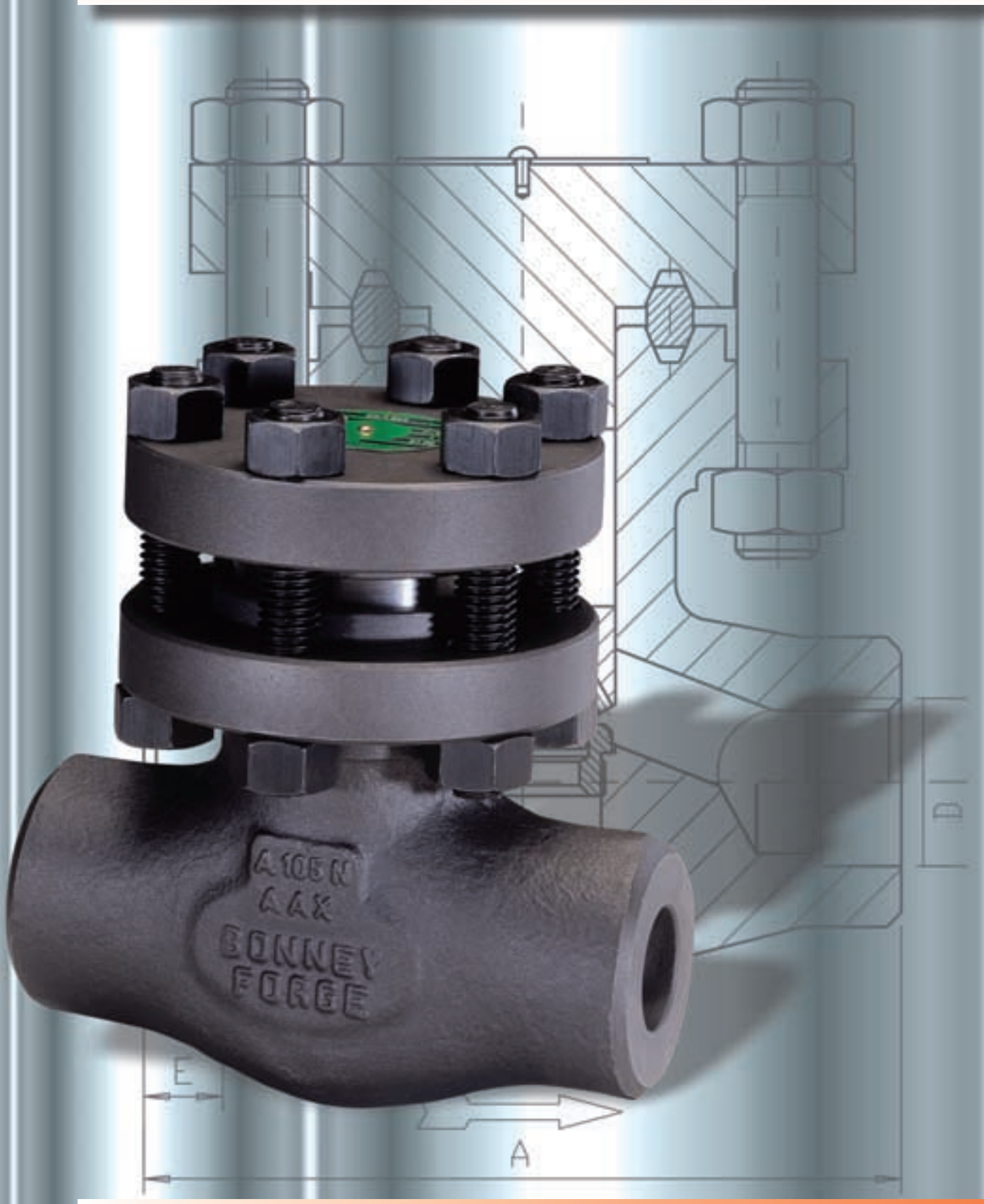


Swing

CHECK VALVES

CLASS 1500-2500

BOLTED BONNET - Full bore



Design construction:
BS 5352 - ANSI B16.34 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

Spring only on request
Spiral-wound gasket retained type

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

For materials and testing pressure see technical data

CLASS 1500

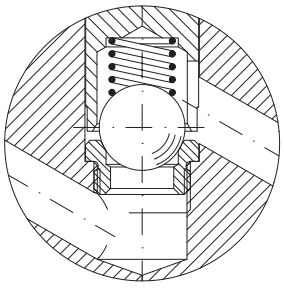
FULL BORE - Type H9R 400 - H9R 500 - H9R 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		110	150	150	210	230
B		96	128	128	155	195
F Piston / F Ball		12	15	19	32	38
F Swing		14	18	24	36,6	48
G		38	55	55	75	92
WEIGHT kg ≅		3,2	7,3	7,3	17	29
FIGURE Piston		H9R 403	H9R 404	H9R 405	H9R 407	H9R 408
Ball		H9R 503	H9R 504	H9R 505	H9R 507	H9R 508
Swing		H9R 603	H9R 604	H9R 605	H9R 607	H9R 608
GASKET		R12	R17	R17	R20	R24

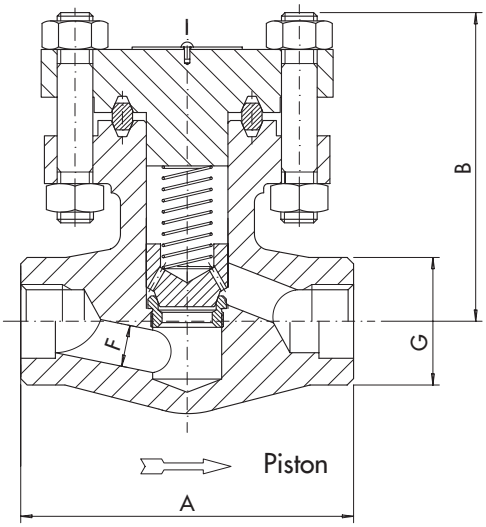
CLASS 2500

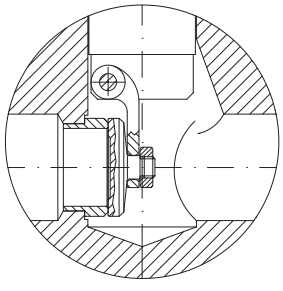
FULL BORE - Type 25HR 400 - 25HR 500 - 25HR 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		150	150	210	230	230
B		128	128	152	190	190
F Piston / F Ball		11	14,5	19	28	35
F Swing		11,5	15	19,5	28	35
G		55	55	75	95	95
WEIGHT kg ≅		7,5	7,5	18,5	30	30
FIGURE Piston		25HR 403	25HR 404	25HR 405	25HR 407	25HR 408
Ball		25HR 503	25HR 504	25HR 505	25HR 507	25HR 508
Swing		25HR 603	25HR 604	25HR 605	25HR 607	25HR 608
GASKET		R16	R16	R17	R20	R20



Ball





Swing

CHECK VALVES

CLASS 800-1500

WELDED BONNET - Full and reduced bore

Design construction:
BS 5352 - ANSI B16.34 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

Spring only on request
Body bonnet weld to ASME IX

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

For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type W 400 - W 500 - WH 600

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		80	80	90	110	127	150	180	210
B		55	55	60	78	88	92	110	150
F Piston / F Ball		7	9	13	17,5	22,5	29,5	35	45
F Swing		8	9,6	14	18	24	30	36,6	48
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		1	1	1,2	2,3	3,3	5,2	8,7	14
FIGURE	Piston	W 401	W 402	W 403	W 404	W 405	W 406	W 407	W 408
	Ball	W 501	W 502	W 503	W 504	W 505	W 506	W 507	W 508
	Swing	WH 601	WH 602	WH 603	WH 604	WH 605	WH 606	WH 607	WH 608

REDUCED BORE - Type WL 400 - WL 500 - WHL 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	150	180
B		54	60	76	92	110
F Piston / F Ball		9	13	17,5	29,5	35
F Swing		9,6	14	18	30	36,6
G		32	38	48	64	78
WEIGHT kg ≅		0,9	1,1	2,3	5	8,3
FIGURE	Piston	WL 403	WL 404	WL 405	WL 407	WL 408
	Ball	WL 503	WL 504	WL 505	WL 507	WL 508
	Swing	WHL 603	WHL 604	WHL 605	WHL 607	WHL 608

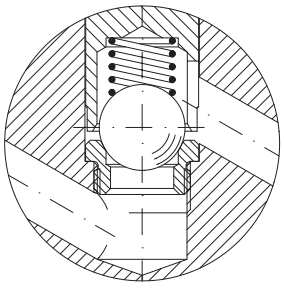
CLASS 1500

FULL BORE - Type 9W 400 - 9W 500 - 9WH 600

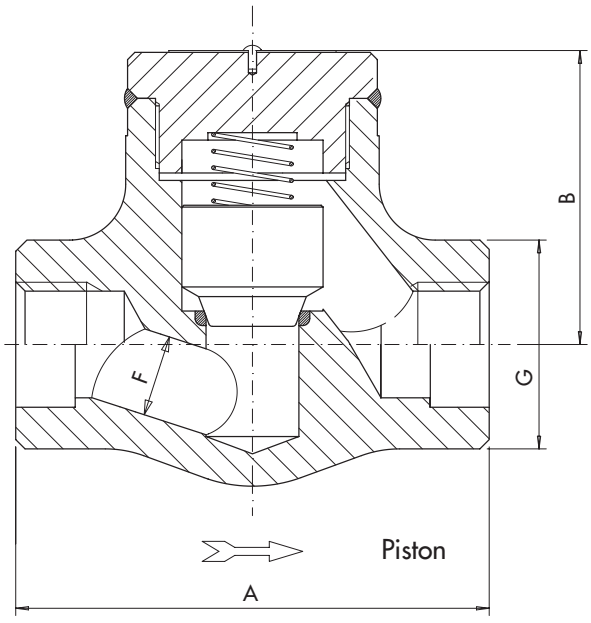
SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
	mm	6	10	15	20	25	32	40	50
A		90	90	110	127	150	180	210	230
B		55	55	76	84	90	110	150	230
F Piston / F Ball		7	9	12	15	20	27	32	40
F Swing		8	9,6	14	18	24	30	36,6	48
G		38	38	48	56	64	78	85	95
WEIGHT kg ≅		1,4	1,4	2,5	3,7	6	10	15,5	22
FIGURE	Piston	9W 401	9W 402	9W 403	9W 404	9W 405	9W 406	9W 407	9W 408
	Ball	9W 501	9W 502	9W 503	9W 504	9W 505	9W 506	9W 507	9W 508
	Swing	9WH 601	9WH 602	9WH 603	9WH 604	9WH 605	9WH 606	9WH 607	9WH 608

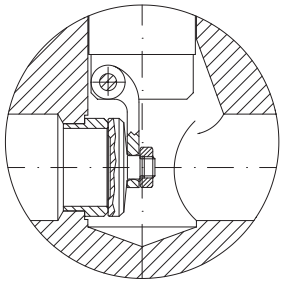
REDUCED BORE - Type 9WL 400 - 9WL 500 - 9WHL 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	180	210
B		54	76	86	110	150
F Piston / F Ball		9	12	15	27	32
F Swing		9,6	14	18	30	36,6
G		38	48	56	78	85
WEIGHT kg ≅		1,4	2,2	3	9,6	16
FIGURE	Piston	9WL 403	9WL 404	9WL 405	9WL 407	9WL 408
	Ball	9WL 503	9WL 504	9WL 505	9WL 507	9WL 508
	Swing	9WHL 603	9WHL 604	9WHL 605	9WHL 607	9WHL 608



Ball



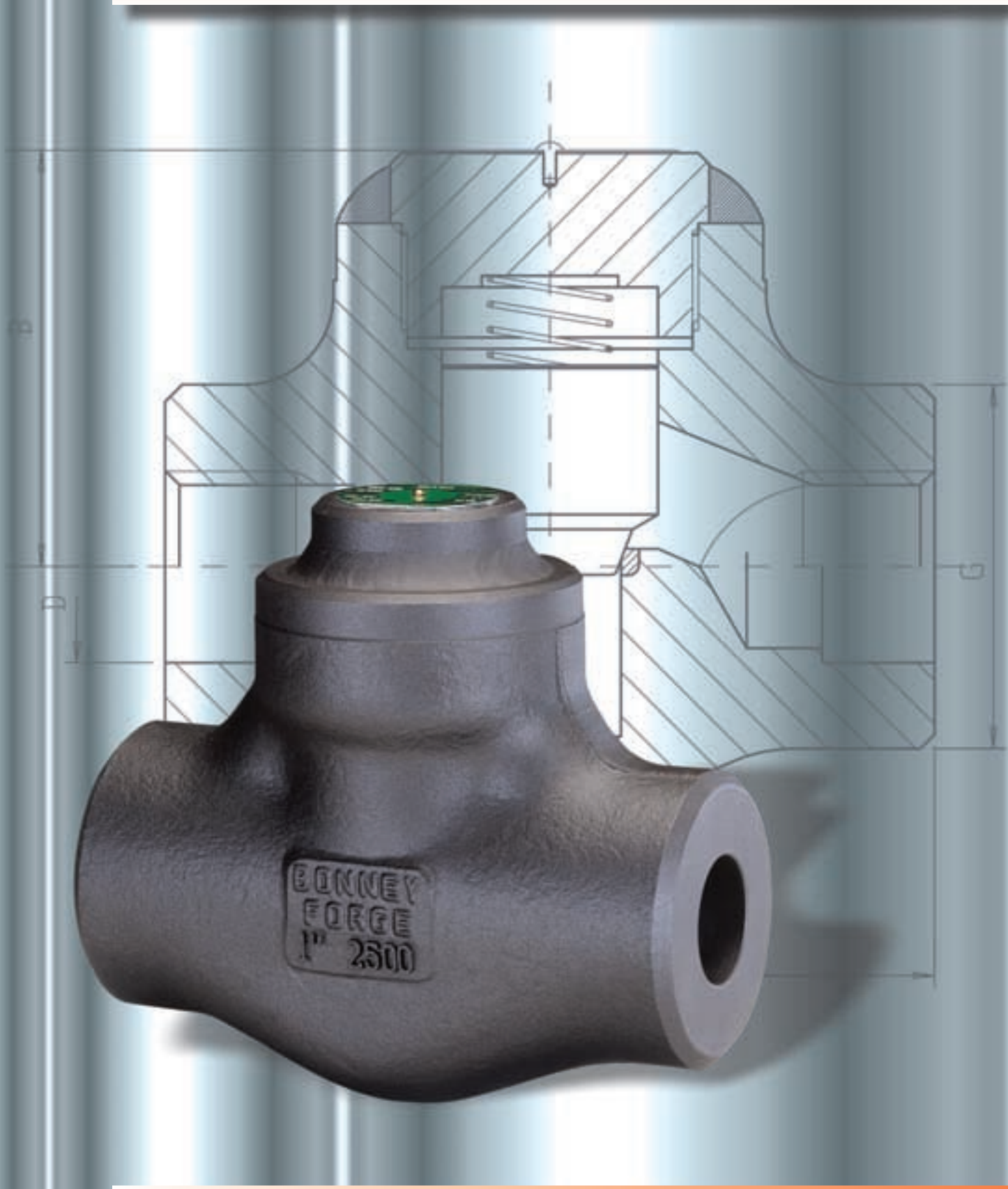


Swing

CHECK VALVES

CLASS 2500-4500

WELDED BONNET - Full bore



Design construction:
ANSI B16.34
Testing according to API 598 - BS 6755
Marking MSS SP25

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

Spring only on request
Body bonnet weld to ASME IX

Ratings:
- carbon steel class 2500 6170 psig @ 100°F
425 bar + 38°C
- carbon steel class 4500 11110 psig @ 100°F
765 bar + 38°C

For materials and testing pressure see technical data

CLASS 2500

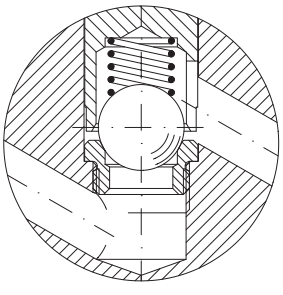
FULL BORE - Type 25W 400 - 25W 500

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		110	110	127	150	180	210	230
B		70	70	86	92	110	150	180
F		7	9	11	14,5	19	28	35
G		48	48	56	64	78	85	95
WEIGHT kg ≅		3,2	3,2	3,8	5,6	10	16	21
FIGURE	Piston	25W 401	25W 402	25W 403	25W 404	25W 405	25W 407	25W 408
	Ball	25W 501	25W 502	25W 503	25W 504	25W 505	25W 507	25W 508

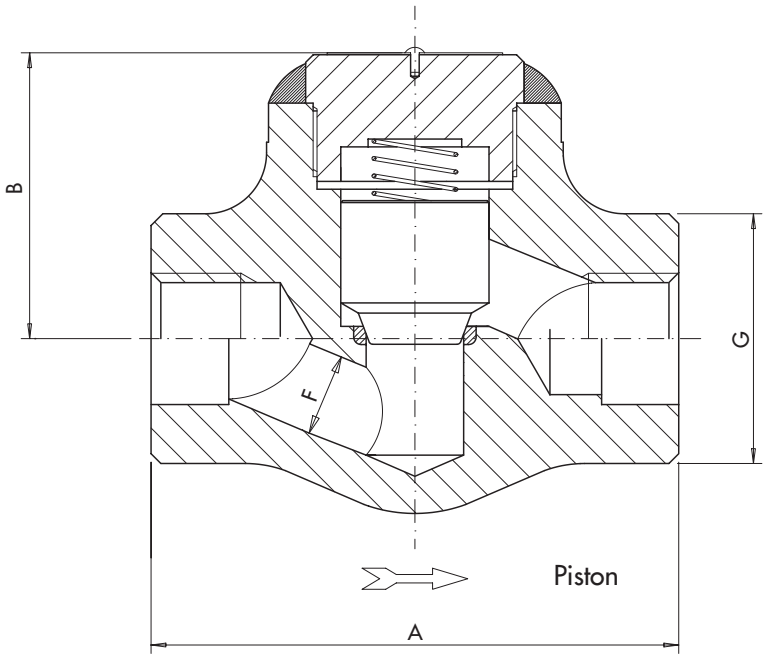
CLASS 4500

FULL BORE - Type 45WH 400 - 45WH 500

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		127	127	127	180	180	230	230
B		90	90	90	110	110	180	195
F		7	7	8	11	14	25	32
G		56	56	56	78	78	95	120
WEIGHT kg ≅		3,9	3,9	3,9	10,5	10,5	25,2	27
FIGURE	Piston	45WH 401	45WH 402	45WH 403	45WH 404	45WH 405	45WH 407	45WH 408
	Ball	45WH 501	45WH 502	45WH 503	45WH 504	45WH 505	45WH 507	45WH 508



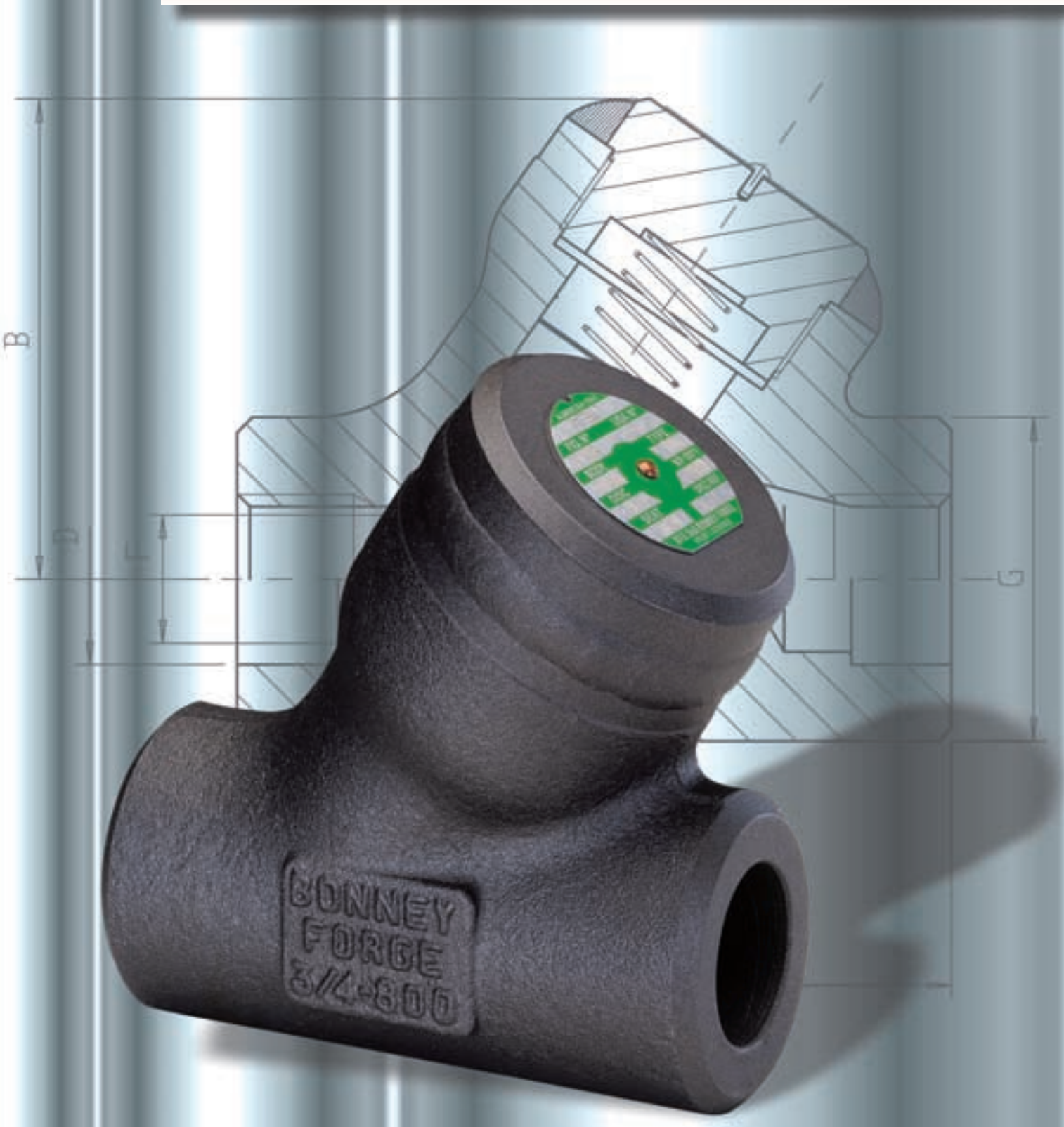
Ball



CHECK VALVES

CLASS 800-1500-2500-4500

WELDED BONNET - Full bore (Y type)



Design construction:
ANSI B16.34 - BS 5352 - NF M87.412
Testing according to API 598 - BS 6755
Marking MSS SP25

Body bonnet weld to ASME IX
Spring only request
Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

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
- carbon steel class 2500 6170 psig @ 100°F
425 bar + 38°C
- carbon steel class 4500 11110 psig @ 100°F
765 bar + 38°C

For materials and testing pressure see technical data

CLASS 800

FULL BORE - Type Y 400 - Y 500

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		85	85	85	105	120	165	165	190
B		70	70	70	90	100	130	130	160
F		7	9	13	17,5	22,5	29,5	35	45
G		38	38	38	48	56	78	78	85
WEIGHT kg ≅		1,2	1,2	1,2	2,3	3	8	8	12
FIGURE	Piston	Y 401	Y 402	Y 403	Y 404	Y 405	Y 406	Y 407	Y 408
	Ball	Y 501	Y 502	Y 503	Y 504	Y 505	Y 506	Y 507	Y 508

CLASS 2500

FULL BORE - Type 25Y 400 - 25Y 500

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		105	105	120	165	165	190	220
B		85	85	95	115	120	145	185
F		7	9	11	14,5	19	28	35
G		48	48	56	78	78	85	95
WEIGHT kg ≅		3,2	3,2	3,7	9	9	13,5	20
FIGURE	Piston	25Y 401	25Y 402	25Y 403	25Y 404	25Y 405	25Y 407	25Y 408
	Ball	25Y 501	25Y 502	25Y 503	25Y 504	25Y 505	25Y 507	25Y 508

CLASS 1500

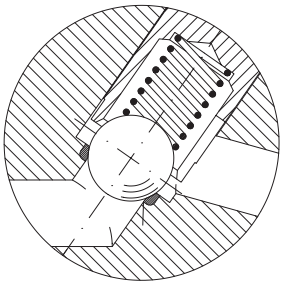
FULL BORE - Type 9Y 400 - 9Y 500

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		85	85	105	120	165	165	190	220
B		70	70	90	100	130	130	160	195
F		7	9	12	15	20	27	32	40
G		38	38	48	56	78	78	85	95
WEIGHT kg ≅		1,2	1,2	2,4	3,6	9,3	13	13,5	18
FIGURE	Piston	9Y 401	9Y 402	9Y 403	9Y 404	9Y 405	9Y 406	9Y 407	9Y 408
	Ball	9Y 501	9Y 502	9Y 503	9Y 504	9Y 505	9Y 506	9Y 507	9Y 508

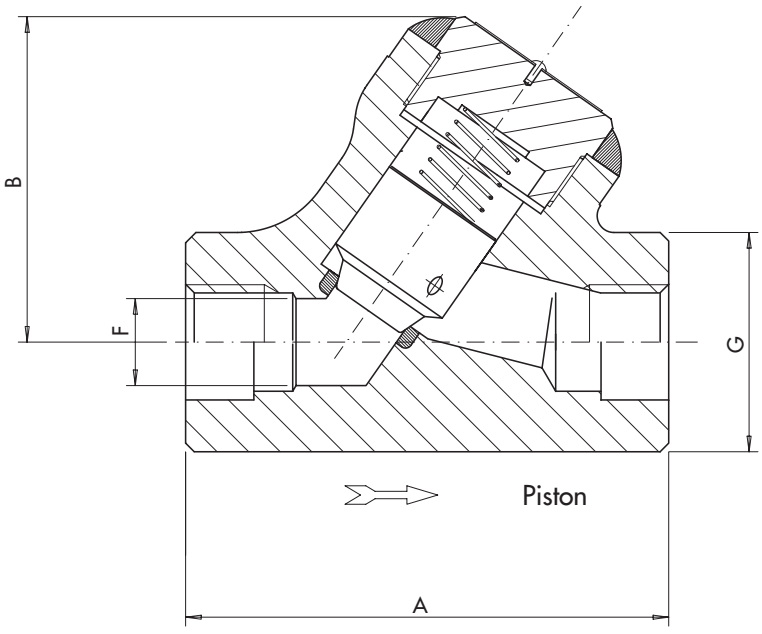
CLASS 4500

REDUCED BORE - Type 45Y 400 - 45Y 500

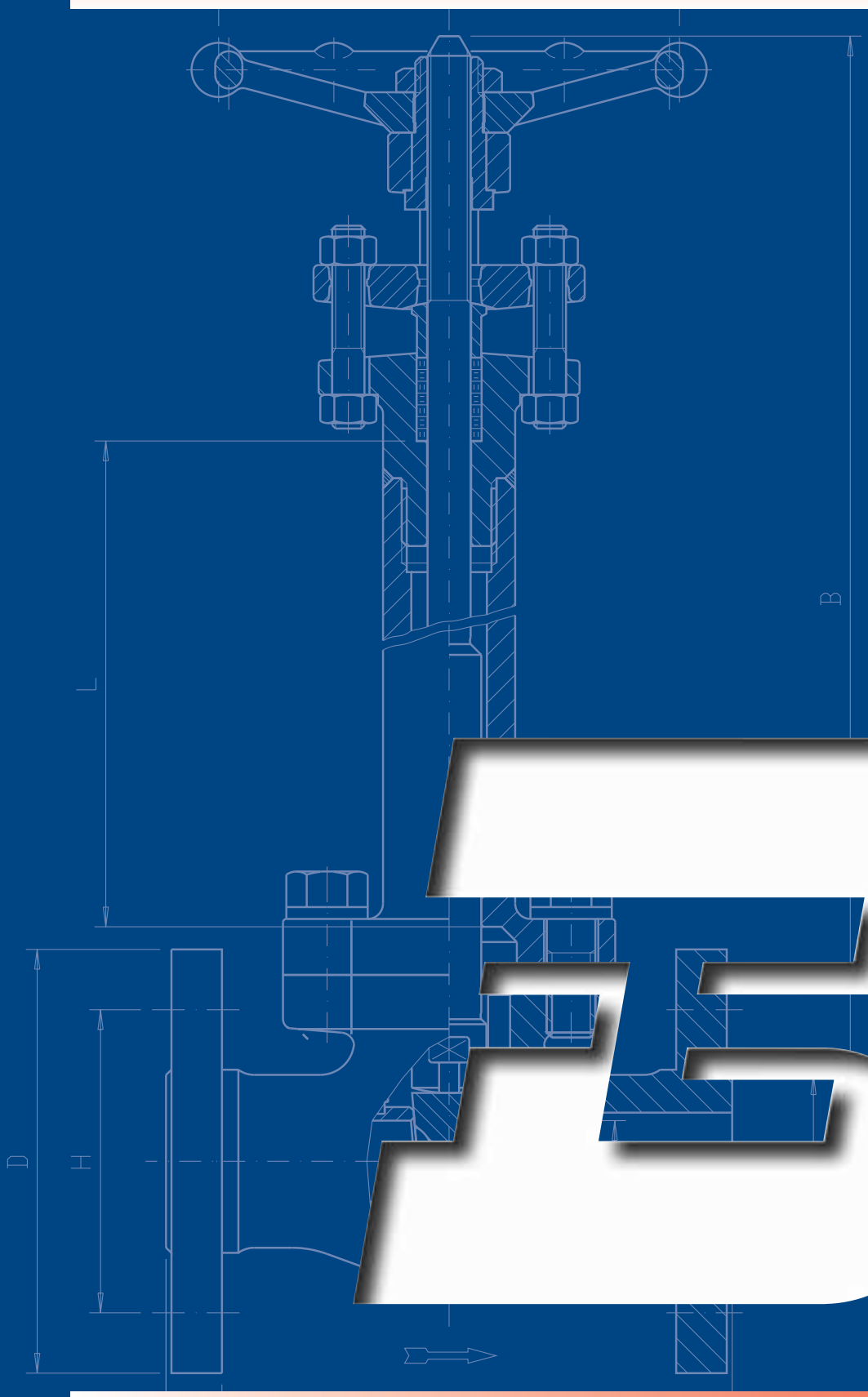
SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2
	mm	6	10	15	20	25	40	50
A		120	120	120	165	165	220	230
B		95	95	95	115	120	185	195
F		7	7	8	11	14	25	32
G		56	56	56	78	78	95	120
WEIGHT kg ≅		3,7	3,7	3,7	9	9	20	23
FIGURE	Piston	45Y 401	45Y 402	45Y 403	45Y 404	45Y 405	45Y 407	45Y 408
	Ball	45Y 501	45Y 502	45Y 503	45Y 504	45Y 505	45Y 507	45Y 508



Ball



CRYOGENIC VALVES



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Ed. 2002

CRYOGENIC VALVES

GATE VALVES

BOLTED BONNET		WELDED BONNET	
CLASS	FIGURE	CLASS	FIGURE
150 FB	1C 100	150 FB	1CWH 100
150 RB	1CL 100	150 RB	1CWHL 100
300 FB	3C 100	300 FB	3CWH 100
300 RB	3CL 100	300 RB	3CWHL 100
600 FB	6C 100	600 FB	6CWH 100
600 RB	6CL 100	600 RB	6CWHL 100
800 FB	C 100	800 FB	CW 100
800 RB	CL 100	800 RB	CWL 100
1500 FB	9C 100	1500 FB	9CW 100
1500 RB	9CL 100	1500 RB	9CWL 100
1500 FB	15CRR 100	1500 FB	15CWHR 100

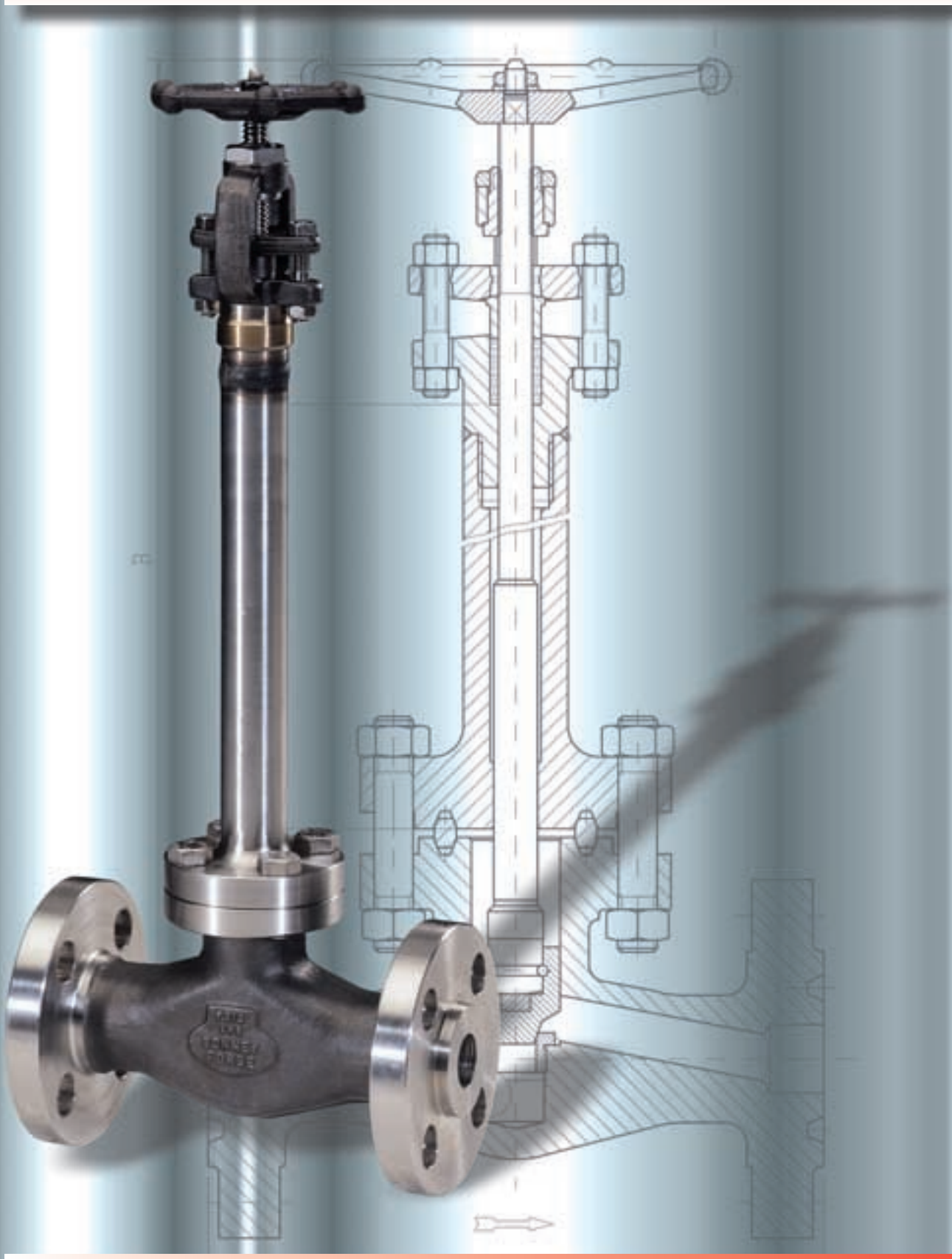
GLOBE VALVES

BOLTED BONNET		WELDED BONNET	
CLASS	FIGURE	CLASS	FIGURE
150 FB	1C 300	150 FB	1CWH 300
150 RB	1CL 300	150 RB	1CWHL 300
300 FB	3C 300	300 FB	3CWH 300
300 RB	3CL 300	300 RB	3CWHL 300
600 FB	6C 300	600 FB	6CWH 300
600 RB	6CL 300	600 RB	6CWHL 300
800 FB	C 300	800 FB	CW 300
800 RB	CL 300	800 RB	CWL 300
1500 FB	9C 300	1500 FB	9CW 300
1500 RB	9CL 300	1500 RB	9CWL 300
1500 FB	15CRR 300	1500 FB	15CWHR 300

CRYOGENIC VALVES

CLASS 150-300-600-800-1500

FOR COLD SERVICE (-196°C) - GATE and GLOBE Type - BOLTED BONNET/WELDED BONNET - Full and reduced bore



Applicable standards and specifications: BS 5352 - BS 6364

Ratings: stainless steel F304 type: at @ 100°F+38°C
- class 150 = 290 psig = 20 bar
- class 300 = 750 psig = 52 bar
- class 600 = 1500 psig = 104 bar
- class 800 = 1920 psig = 132 bar
- class 1500 = 3750 psig = 259 bar

GATE VALVES

CLASS 150

FULL BORE - Type 1C 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	108	117,5	127	165	178
B open	430	445	470	535	595
C	88	97	138	138	172
F	14	18	24	36,6	48
WEIGHT kg ≅	4,8	5,9	8,7	14,7	19
FIGURE	1C 103	1C 104	1C 105	1C 107	1C 108
PACKING	BH2	BH4	BH5	BY5/A	BH8
GASKET	G2	G3	G4	G7	G8

REDUCED BORE - Type 1CL 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	108	117,5	127	165	178
B open	420	435	450	510	535
C	88	88	97	138	138
F	9,6	14	18	30	36,6
WEIGHT kg ≅	4,3	5,1	6,4	12,4	16
FIGURE	1CL 103	1CL 104	1CL 105	1CL 107	1CL 108
PACKING	BH2	BH2	BH4	BH6/A	BY5/A
GASKET	G2	G2	G3	G5	G7

CLASS 300

FULL BORE - Type 3C 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	140	152,5	165	191	216
B open	430	445	470	535	595
C	88	97	138	138	172
F	14	18	24	36,6	48
WEIGHT kg ≅	5,1	7,2	9,9	16	22
FIGURE	3C 103	3C 104	3C 105	3C 107	3C 108
PACKING	BH2	BH4	BH5	BY5/A	BH8
GASKET	G2	G3	G4	G7	G8

REDUCED BORE - Type 3CL 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	140	152,5	165	191	216
B open	420	435	450	510	535
C	88	88	97	138	138
F	9,6	14	18	30	36,6
WEIGHT kg ≅	5,1	6,5	7,8	15	19
FIGURE	3CL 103	3CL 104	3CL 105	3CL 107	3CL 108
PACKING	BH2	BH2	BH4	BH6/A	BY5/A
GASKET	G2	G2	G3	G5	G7

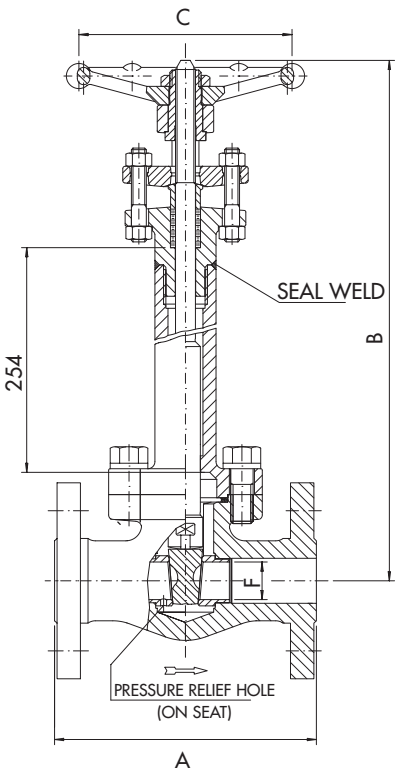
CLASS 600

FULL BORE - Type 6C 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	165	191	216	241	292
B open	430	445	470	535	595
C	88	97	138	138	172
F	14	18	24	36,6	48
WEIGHT kg ≅	6,2	8,4	10,5	20	32
FIGURE	6C 103	6C 104	6C 105	6C 107	6C 108
PACKING	BH2	BH4	BH5	BY5/A	BH8
GASKET	G2	G3	G4	G7	G9

REDUCED BORE - Type 6CL 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	165	191	216	241	292
B open	420	435	450	510	535
C	88	88	97	138	138
F	9,6	14	18	30	36,6
WEIGHT kg ≅	5,3	7,4	9,8	18	24
FIGURE	6CL 103	6CL 104	6CL 105	6CL 107	6CL 108
PACKING	BH2	BH2	BH4	BH6/A	BY5/A
GASKET	G2	G2	G3	G6	G7



Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts

Spiral-wound gasket retained type
Integral backseat

Pressure relief hole on seat (for Gate Valves only)
Welded body-bonnet joint also available

GATE VALVES

CLASS 800

FULL BORE - Type C 100

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		80	80	90	110	127	127	127	210
B open		400	400	400	445	475	505	530	598
C		88	88	88	97	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		3,4	3,4	3,5	5,1	8,2	12	16	23
FIGURE		C 101	C 102	C 103	C 104	C 105	C 106	C 107	C 108
PACKING		BH2	BH2	BH2	BH4	BH5	BH6/A	BY5/A	BH8
GASKET		G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type CL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	127	127
B open		400	400	445	505	530
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
WEIGHT kg ≅		3,4	3,5	5	9,6	12,5
FIGURE		CL 103	CL 104	CL 105	CL 107	CL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G6	G7

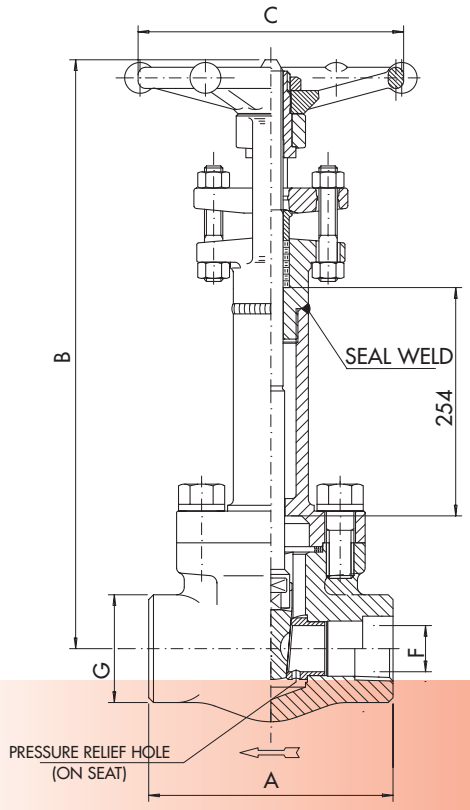
CLASS 1500

FULL BORE - Type 9C 100

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		90	90	110	127	127	127	210	230
B open		395	395	435	470	495	520	585	620
C		88	88	97	138	138	138	172	234
F		8	9,6	14	18	24	30	36,6	48
G		38	38	48	56	64	78	85	95
WEIGHT kg ≅		3,5	3,5	5,5	7,8	11	14,5	25,6	43
FIGURE		9C 101	9C 102	9C 103	9C 104	9C 105	9C 106	9C 107	9C 108
PACKING		BH3	BH3	BH5	BH6/A	2B4/A	BY7	2B5	9B8/A
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

REDUCED BORE - Type 9CL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	127	210
B open		405	440	470	525	590
C		88	97	138	138	172
F		9,6	14	18	30	36,6
G		32	38	48	64	78
WEIGHT kg ≅		3,7	5,3	8,5	13,6	26
FIGURE		9CL 103	9CL 104	9CL 105	9CL 107	9CL 108
PACKING		BH3	BH5	BH6/A	2B5	BH8
GASKET		G1	G2	G3	G5	G7



Face to face dimensions for classes 150 - 300 - 600 and 1500
flanged and BWE according to ANSI B16.10

GLOBE VALVES

CLASS 150

FULL BORE - Type 1C 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B open		445	470	500	560	630
C		88	97	138	138	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		4,8	5,9	8,7	14,7	21
FIGURE		1C 303	1C 304	1C 305	1C 307	1C 308
PACKING		BH3	BH5	BY5/A	BY7	BY7
GASKET		G2	G3	G4	G7	G8

REDUCED BORE - Type 1CL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B open		385	435	460	515	545
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		4,6	5,2	6,7	12,5	19
FIGURE		1CL 303	1CL 304	1CL 305	1CL 307	1CL 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G5	G8

CLASS 300

FULL BORE - Type 3C 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203	229	267
B open		420	460	510	550	610
C		88	97	138	172	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		6,2	7,9	12	21	31
FIGURE		3C 303	3C 304	3C 305	3C 307	3C 308
PACKING		BH3	BH5	BY5/A	BY7	BH8
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type 3CL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203	229	267
B open		390	440	480	540	565
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		5,6	6,7	9,8	17,5	24,5
FIGURE		3CL 303	3CL 304	3CL 305	3CL 307	3CL 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G6	G7

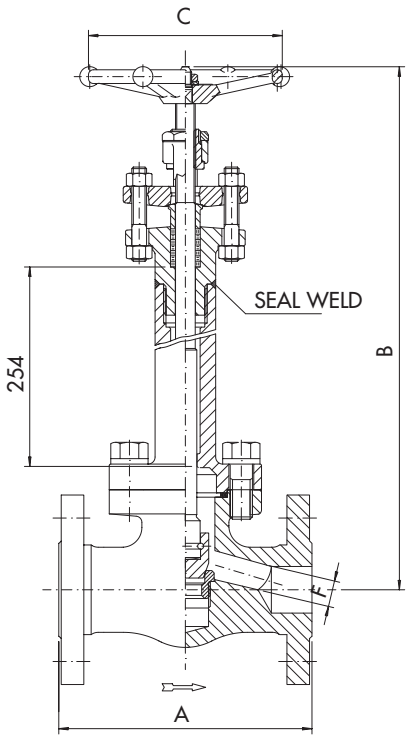
CLASS 600

FULL BORE - Type 6C 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		420	460	510	550	610
C		88	97	138	172	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		6,5	8,7	12,6	22	34
FIGURE		6C 303	6C 304	6C 305	6C 307	6C 308
PACKING		BH3	BH5	BY5/A	BY7	BH8
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type 6CL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		390	440	480	540	565
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		5,9	7,6	10,2	19	26
FIGURE		6CL 303	6CL 304	6CL 305	6CL 307	6CL 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G6	G7



Face to face dimensions for class 800 and 1500 socket weld and screwed ends according to B.F.E. standard

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25

GLOBE VALVES

CLASS 800

FULL BORE - Type C 300

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		80	80	90	110	127	150	180	210
B open		415	415	420	460	495	505	540	615
C		88	88	88	97	138	138	172	172
F		7	9	13	17,5	22,5	29,5	35	45
G		32	32	38	48	56	64	78	85
WEIGHT kg ≅		3,5	3,5	3,6	5,1	8,4	12,6	16,5	24
FIGURE		C 301	C 302	C 303	C 304	C 305	C 306	C 307	C 308
PACKING		BH3	BH3	BH3	BH5	BY5/A	BY5/A	BY7	BH8
GASKET		G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type CL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	150	180
B open		415	420	460	506	540
C		88	88	97	138	172
F		9	13	17,5	29,5	35
G		32	38	48	64	78
WEIGHT kg ≅		3,3	3,8	5,2	9,8	14,8
FIGURE		CL 303	CL 304	CL 305	CL 307	CL 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G6	G7

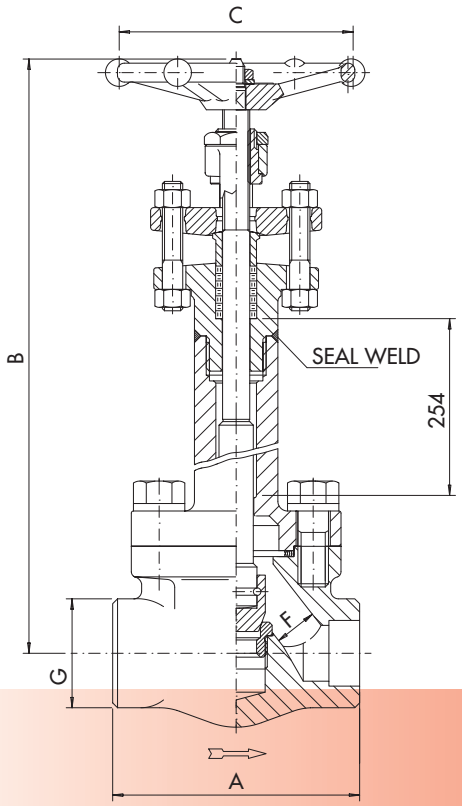
CLASS 1500

FULL BORE - Type 9C 300

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		90	90	110	127	150	180	210	230
B open		410	410	455	495	500	540	615	645
C		88	88	97	138	138	172	172	234
F		7	9	12	15	20	27	32	40
G		38	38	48	56	64	78	85	95
WEIGHT kg ≅		4	4	5,5	8	11	15,5	25	41
FIGURE		9C 301	9C 302	9C 303	9C 304	9C 305	9C 306	9C 307	9C 308
PACKING		BH3	BH3	BH5	2B4/A	2B4/A	2B5	BH8	9B8/A
GASKET		G1	G1	G2	G3	G4	G5	G7	G8

REDUCED BORE - Type 9CL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	150	180	210
B open		415	455	498	550	615
C		88	97	138	172	172
F		9	12	15	27	32
G		38	48	56	78	85
WEIGHT kg ≅		3,7	5,4	8,9	15,8	27,5
FIGURE		9CL 303	9CL 304	9CL 305	9CL 307	9CL 308
PACKING		BH3	BH5	2B4/A	2B5	BH8
GASKET		G1	G2	G3	G5	G7



End flanges according to ANSI B16.5
For special execution see special features
For materials and testing pressure see technical data

Special testing equipments are used to test the valves
at a temperature of -196°C

GATE VALVES

CLASS 1500

FULL BORE - Type 15CRR 100

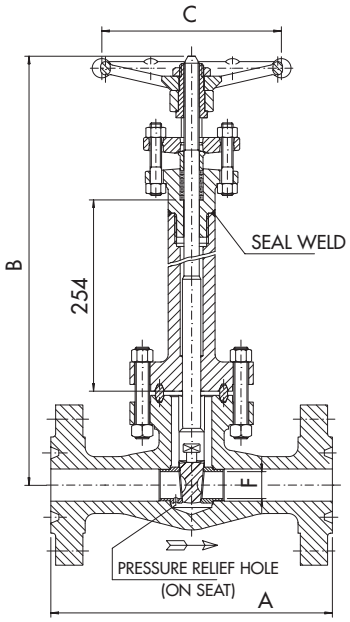
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		216	229	254	305	371,5
B open		455	490	500	575	630
C		97	138	138	172	234
F		14	18	24	36,6	48
WEIGHT kg ≅		10,2	14	17,5	31	59
FIGURE		15CRR 103	15CRR 104	15CRR 105	15CRR 107	15CRR 108
PACKING		BH5	BH6/A	2B4/A	BH8	4B8
GASKET		R12	R16	R16	R20	R22

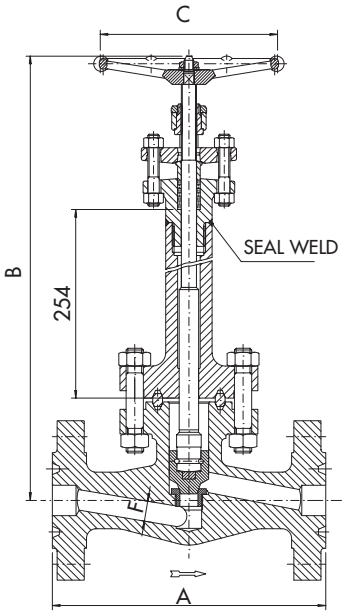
GLOBE VALVES

CLASS 1500

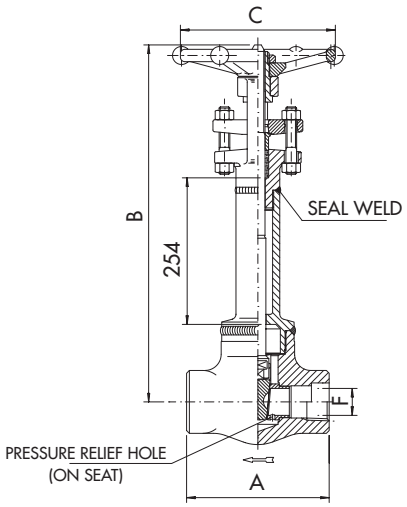
FULL BORE - Type 15CRR 300

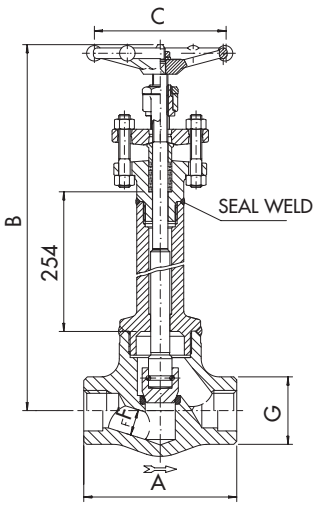
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		216	229	254	305	371,5
B open		470	510	525	595	650
C		97	138	138	172	234
F		12	14,5	19	31	40
WEIGHT kg ≅		10,5	14	18,5	32,5	62
FIGURE		15CRR 303	15CRR 304	15CRR 305	15CRR 307	15CRR 308
PACKING		BH5	2B4/A	2B4/A	BH8	9B8/A
GASKET		R12	R16	R16	R20	R22

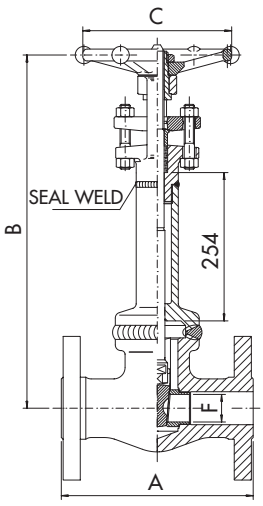




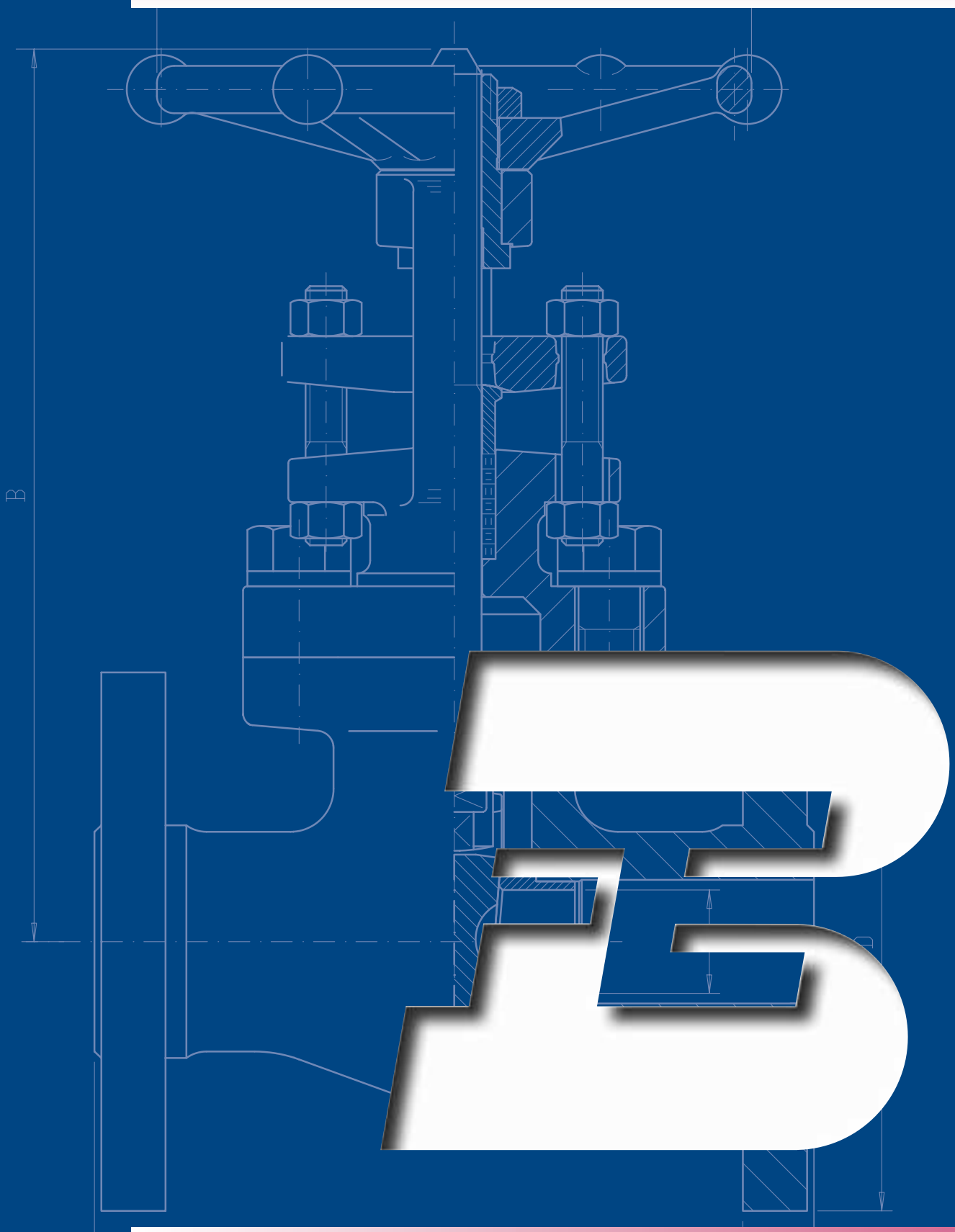
Typical drawing for Welded Bonnet







INTEGRAL FLANGED VALVES



Ed. 2002

INTEGRAL FLANGED VALVES

GATE VALVES

CLASS	FIGURE	
	Full Bore	Reduced Bore
150	1 - 100	L1 - 100
300	3 - 100	L3 - 100
600	6 - 100	L6 - 100
1500	15RR 100	-
2500	25RR 100	-

GLOBE VALVES

CLASS	FIGURE	
	Full Bore	Reduced Bore
150	1 - 300	L1 - 300
300	3 - 300	L3 - 300
600	6 - 300	L6 - 300
1500	15RR 300	-
2500	25RR 300	-

CHECK VALVES

PISTON TYPE

CLASS	FIGURE	
	Full Bore	Reduced Bore
150	1 - 400	L1 - 400
300	3 - 400	L3 - 400
600	6 - 400	L6 - 400
1500	15RR 400	-
2500	25RR 400	-

BALL TYPE

CLASS	FIGURE	
	Full Bore	Reduced Bore
150	1 - 500	L1 - 500
300	3 - 500	L3 - 500
600	6 - 500	L6 - 500
1500	15RR 500	-
2500	25RR 500	-

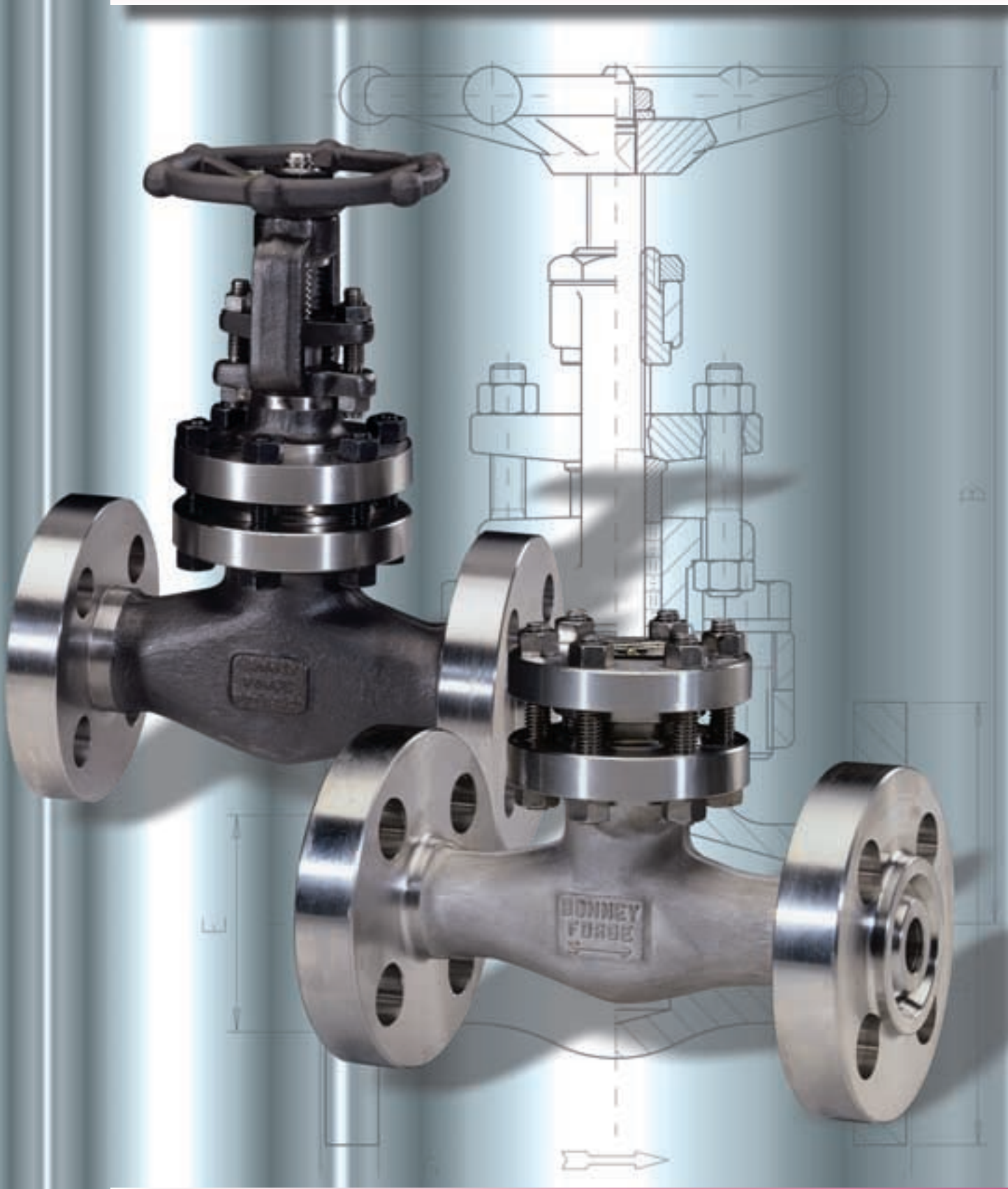
SWING TYPE

CLASS	FIGURE	
	Full Bore	Reduced Bore
150	1 - 600	L1 - 600
300	3 - 600	L3 - 600
600	6 - 600	L6 - 600
1500	15RR 600	-
2500	25RR 600	-

INTEGRAL FLANGED VALVES

CLASS 150-300-600-1500-2500

BOLTED BONNET - Full and reduced bore



Applicable standards and specifications: API 602 - BS 5352
Face to face according to ANSI B16.10
Flanges according to ANSI B16.5

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral-wound gasket retained type
Integral backseat
Integral body flanges

GATE VALVES

CLASS 150

FULL BORE - Type 1 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	178
B open		175	210	230	290	340
C		88	97	138	138	172
F		14	18	24	36,6	48
WEIGHT kg ≅		3,2	4,7	6,1	11,4	18
FIGURE		1 103	1 104	1 105	1 107	1 108
PACKING		BH2	BH4	BH5	BY5/A	BH8
GASKET		G2	G3	G4	G7	G8

REDUCED BORE - Type L1 100

SIZE	inch	1/2	3/4	1	1.1/2	2	3
	mm	15	20	25	40	50	75
A		108	117,5	127	165	178	203
B open		175	182	212	255	290	345
C		88	88	97	138	138	172
F		9,6	14	18	30	36,6	48
WEIGHT kg ≅		2,9	3,7	5,2	9,6	13,2	21,2
FIGURE		L1 103	L1 104	L1 105	L1 107	L1 108	L1 110
PACKING		BH2	BH2	BH4	BH6/A	BY5/A	BH8
GASKET		G2	G2	G3	G5	G7	G8

CLASS 300

FULL BORE - Type 3 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		140	152,5	165	191	216
B open		175	210	230	290	340
C		88	97	138	138	172
F		14	18	24	36,6	48
WEIGHT kg ≅		3,8	5,6	7,1	13,5	19
FIGURE		3 103	3 104	3 105	3 107	3 108
PACKING		BH2	BH4	BH5	BY5/A	BH8
GASKET		G2	G3	G4	G7	G8

REDUCED BORE - Type L3 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		140	152,5	165	191	216
B open		175	182	212	240	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
WEIGHT kg ≅		3,6	5,2	6,7	13	15,3
FIGURE		L3 103	L3 104	L3 105	L3 107	L3 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G5	G7

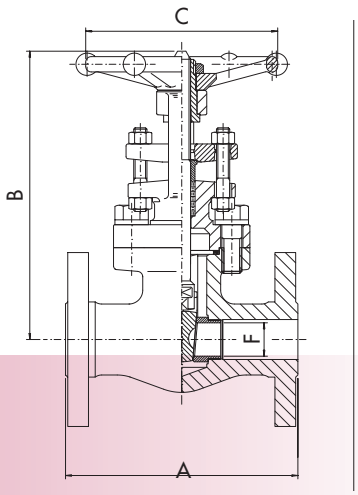
CLASS 600

FULL BORE - Type 6 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		175	215	240	295	360
C		88	97	138	138	172
F		14	18	24	36,6	48
WEIGHT kg ≅		4,3	7	10	18	28
FIGURE		6 103	6 104	6 105	6 107	6 108
PACKING		BH2	BH4	BH5	BY5/A	BH8
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type L6 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		159	185	215	255	305
C		88	88	97	138	138
F		9,6	14	18	30	36,6
WEIGHT kg ≅		4,3	7	10	18	28
FIGURE		L6 103	L6 104	L6 105	L6 107	L6 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G6	G7



For GLOBE VALVES only
Loosed disc on stem
Disc must be needle or parabolic type on request
Needle valves may have an integral disc/stem on request

Ratings standard class:
- carbon steel class 150 285 psig @ 100°F / 20 bar + 38°C
- carbon steel class 300 740 psig @ 100°F / 51 bar + 38°C
- carbon steel class 600 1480 psig @ 100°F / 102 bar + 38°C

GLOBE VALVES

CLASS 150

FULL BORE - Type 1 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B open		196	230	268	315	335
C		88	97	138	172	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		3,8	6,4	8,7	16,5	25
FIGURE		1 303	1 304	1 305	1 307	1 308
PACKING		BH3	BH5	BY5/A	BY7	BY7
GASKET		G2	G3	G4	G7	G8

REDUCED BORE - Type L1 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B open		196	196	226	273	300
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		3	3,8	5,5	10,3	15,8
FIGURE		L1 303	L1 304	L1 305	L1 307	L1 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G5	G8

CLASS 300

FULL BORE - Type 3 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203	229	267
B open		196	230	268	315	335
C		88	97	138	172	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		4,1	7	9,7	18,5	28
FIGURE		3 303	3 304	3 305	3 307	3 308
PACKING		BH3	BH5	BY5/A	BY7	BH8
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type L3 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203	229	267
B open		196	202	226	270	321
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		4,1	6	8,3	15,5	21,5
FIGURE		L3 303	L3 304	L3 305	L3 307	L3 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G6	G7

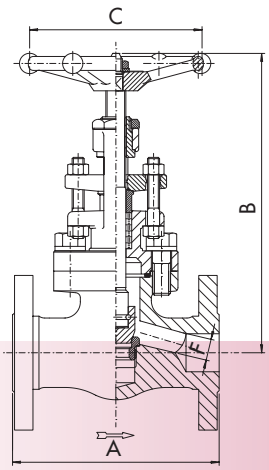
CLASS 600

FULL BORE - Type 6 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		196	230	268	315	370
C		88	97	138	172	172
F		13	17,5	22,5	35	45
WEIGHT kg ≅		5,9	8	10,5	19,5	28,5
FIGURE		6 303	6 304	6 305	6 307	6 308
PACKING		BH3	BH5	BY5/A	BY7	BH8
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type L6 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B open		177	202	234	270	321
C		88	88	97	138	172
F		9	13	17,5	29,5	35
WEIGHT kg ≅		4,4	6,2	8,7	16,5	23,6
FIGURE		L6 303	L6 304	L6 305	L6 307	L6 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G6	G7



For CHECK VALVES only
Spring only on request
Ball and piston type valves with full guided disc

CHECK VALVES

CLASS 150

FULL BORE - Type 1 400 - 1 500 - 1 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B		75	85	100	125	140
F Piston / F Ball		13	17,5	22,5	35	45
F Swing		14	18	24	36,6	48
WEIGHT kg ≅		2,8	3,6	5,2	10	16
FIGURE Piston		1 403	1 404	1 405	1 407	1 408
Ball		1 503	1 504	1 505	1 507	1 508
Swing		1 603	1 604	1 605	1 607	1 608
GASKET		G2	G3	G4	G7	G8

REDUCED BORE - Type L1 400 - L1 500 - L1 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B		75	75	85	110	125
F Piston / F Ball		9	13	17,5	29,5	35
F Swing		9,6	14	17,5	29,5	36,6
W kg ≅ Piston/Ball		2,3	3,1	4,5	8,4	14
W kg ≅ Swing		2,2	3,1	4,4	8,3	13
FIGURE Piston		L1 403	L1 404	L1 405	L1 407	L1 408
Ball		L1 503	L1 504	L1 505	L1 507	L1 508
Swing		L1 603	L1 604	L1 605	L1 607	L1 608
GASKET		G2	G2	G3	G5	G8

CLASS 300

FULL BORE - Type 3 400 - 3 500 - 3 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203*	229*	267
B		75	90	100	120	150
F Piston / F Ball		13	17,5	22,5	35	45
F Swing		14	18	24	36,6	48
WEIGHT kg ≅		3,6	6,4	8,2	15	21
FIGURE Piston		3 403	3 404	3 405	3 407	3 408
Ball		3 503	3 504	3 505	3 507	3 508
Swing		3 603	3 604	3 605	3 607	3 608
GASKET		G2	G3	G4	G7	G9

REDUCED BORE - Type L3 400 - L3 500 - L3 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		152,5	178	203*	229*	267
B		75	80	88	115	130
F Piston / F Ball		9	13	17,5	29,5	35
F Swing		9,6	14	17,5	29,5	36,6
W kg ≅ Piston/Ball		3,4	5,3	7,5	14	19
W kg ≅ Swing		3,3	5,2	7,4	13,5	18
FIGURE Piston		L3 403	L3 404	L3 405	L3 407	L3 408
Ball		L3 503	L3 504	L3 505	L3 507	L3 508
Swing		L3 603	L3 604	L3 605	L3 607	L3 608
GASKET		G2	G2	G3	G6	G7

CLASS 600

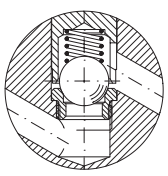
FULL BORE - Type 6 400 - 6 500 - 6 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B		75	90	100	120	150
F Piston / F Ball		13	17,5	22,5	35	45
F Swing		14	18	24	36,6	48
WEIGHT kg ≅		3,8	6,5	8,5	16	23
FIGURE Piston		6 403	6 404	6 405	6 407	6 408
Ball		6 503	6 504	6 505	6 507	6 508
Swing		6 603	6 604	6 605	6 607	6 608
GASKET		G2	G3	G4	G7	G9

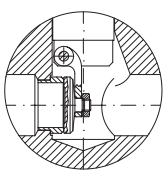
REDUCED BORE - Type L6 400 - L6 500 - L6 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		165	191	216	241	292
B		72	80	85	115	130
F Piston / F Ball		9	13	17,5	29,5	35
F Swing		9,6	14	17,5	29,5	36,6
WEIGHT kg ≅		3,5	5,7	8	14,5	19,5
FIGURE Piston		L6 403	L6 404	L6 405	L6 407	L6 408
Ball		L6 503	L6 504	L6 505	L6 507	L6 508
Swing		L6 603	L6 604	L6 605	L6 607	L6 608
GASKET		G2	G2	G3	G6	G7

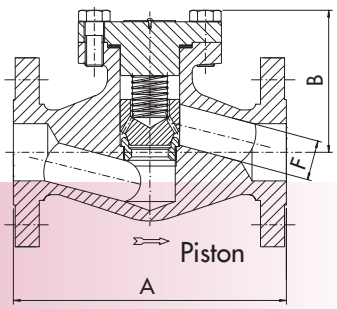
*A - dimensions for Swing Check valves only are 216 and 241 rispectively.



Ball



Swing



Design according to ANSI B16.34
Full bore type
Body Bonnet Gasket ring joint type
Spiral wound type on request

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

GATE VALVES

CLASS 1500

FULL BORE - Type 15RR 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		216	229	254	305	371,5
B open		215	250	270	350	445
C		97	138	138	172	234
F		14	18	24	36,6	48
WEIGHT kg ≅		8,2	13	16,2	29	55
FIGURE		15RR 103	15RR 104	15RR 105	15RR 107	15RR 108
PACKING		BH5	BH6/A	2B4/A	BH8	9B8/A
GASKET		R12	R16	R16	R20	R22

CLASS 2500

FULL BORE - Type 25RR 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		264	273	308	387,5	454
B open		282	290	335	406	415
C		138	138	172	234	320
F		11,5	15	19,5	28	38
WEIGHT kg ≅		16,2	17,6	29	60	65
FIGURE		25RR 103	25RR 104	25RR 105	25RR 107	25RR 108
PACKING		2B4/A	2B4/A	BH8	9B8/A	25B8
GASKET		R16	R16	R16	R19	R22

GLOBE VALVES

CLASS 1500

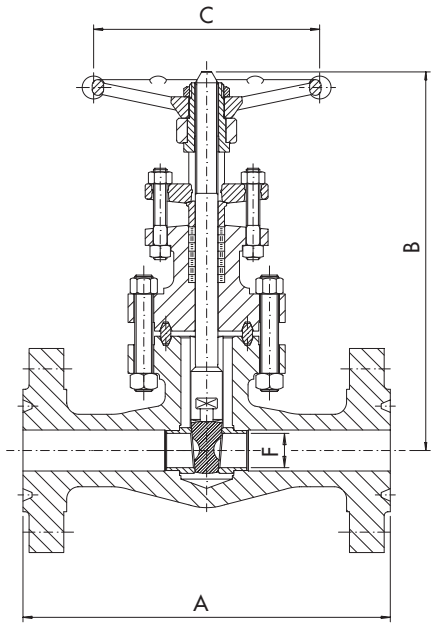
FULL BORE - Type 15RR 300

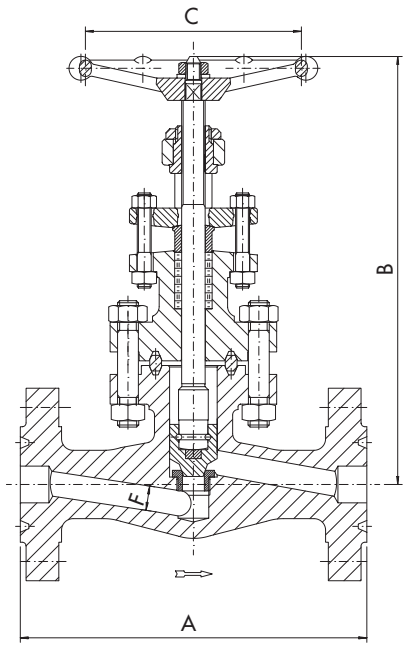
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		216	229	254	305	371,5
B open		240	280	295	370	465
C		97	138	172	172	234
F		12	14,5	19	31	40
WEIGHT kg ≅		8,5	12,9	17	30	58
FIGURE		15RR 303	15RR 304	15RR 305	15RR 307	15RR 308
PACKING		BH5	2B4/A	2B4/A	BH8	9B8/A
GASKET		R12	R16	R16	R20	R22

CLASS 2500

FULL BORE - Type 25RR 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		264	273	308	387,5	454
B open		310	315	350	450	460
C		138	138	172	234	320
F		11	14,5	19	28	35
WEIGHT kg ≅		16,5	18,5	30	61,5	67
FIGURE		25RR 303	25RR 304	25RR 305	25RR 307	25RR 308
PACKING		2B4/A	2B4/A	BH8	9B8/A	4B8
GASKET		R16	R16	R16	R19	R20





Design according to ANSI B16.34
Full bore type
Body Bonnet Gasket ring joint type
Spiral wound type on request

Spring only on request
Ball and piston type with full guided disc
Integral body flanges
Flanges according to ANSI B16.5

For materials and testing pressure see technical data
End flanges according to ANSI B16.5

CHECK VALVES

CLASS 1500

FULL BORE - Type 15RR 400 - 15RR 500 - 15RR 600

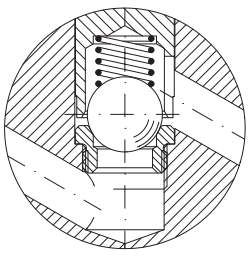
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		216	229	254	305	371,5
B		105	125	135	155	195
F Piston / F Ball		12	14,5	19	31	40
F Swing		14	18	24	36,6	48
WEIGHT kg ≅		7,5	11,2	14,5	26,5	50
FIGURE	Piston	15RR 403	15RR 404	15RR 405	15RR 407	15RR 408
	Ball	15RR 503	15RR 504	15RR 505	15RR 507	15RR 508
	Swing	15RR 603	15RR 604	15RR 605	15RR 607	15RR 608
GASKET		R12	R16	R16	R20	R22

CLASS 2500

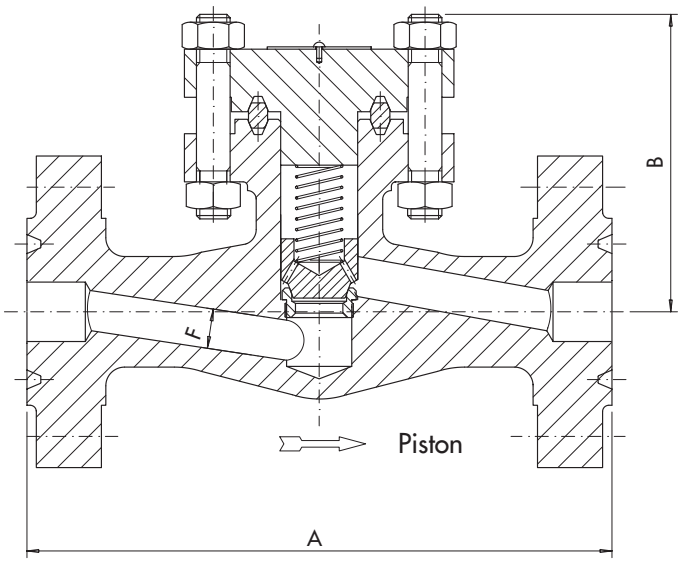
FULL BORE - Type 25RR 400 - 25RR 500 - 25RR 600

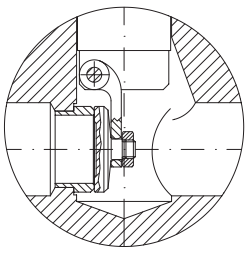
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		264	273	308	387,5	454
B		128	130	152	188	190
F Piston / F Ball		11	14,5	19	28	35
F Swing		11,5	15	19,5	28	35
WEIGHT kg ≅		14,3	16	26,3	54	56
FIGURE	Piston	25RR 403	25RR 404	25RR 405	25RR 407	25RR 408
	Ball	25RR 503	25RR 504	25RR 505	25RR 507	25RR 508
	Swing	25RR 603	25RR 604	25RR 605	25RR 607	25RR 608
GASKET		R16	R16	R16	R19	R20*

* R22 for 25RR 608 only



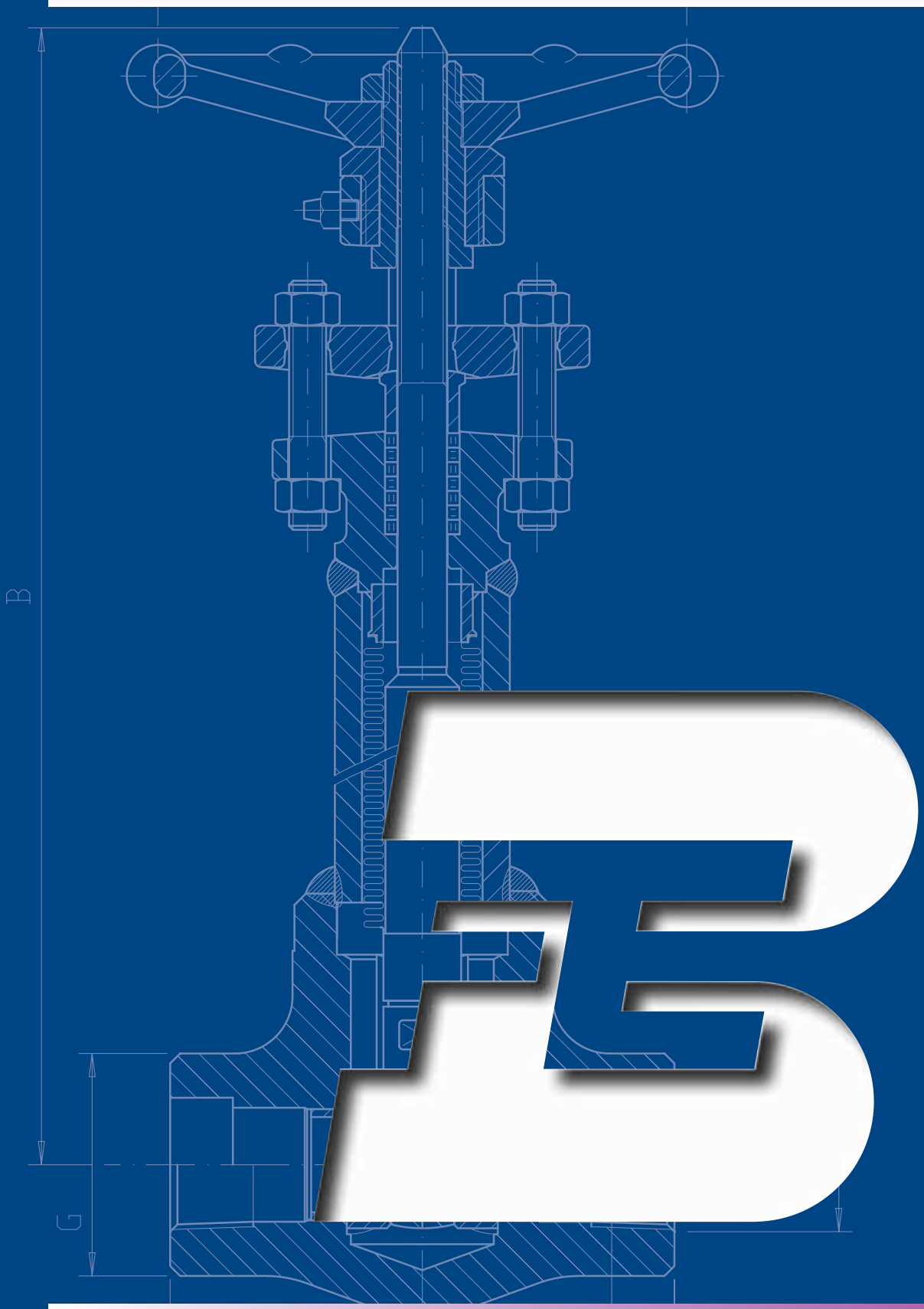
Ball





Swing

BELLOWS SEALED VALVES



Ed. 2002

BELLOWS SEALED VALVES

GATE VALVES

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800 FB	S 100	SHW 100
800 RB	SL 100	SHWL 100
1500 FB	9S 100	9SHW 100
1500 RB	9SL 100	9SHWL 100
2500 FB	S25HR 100	S25X 100

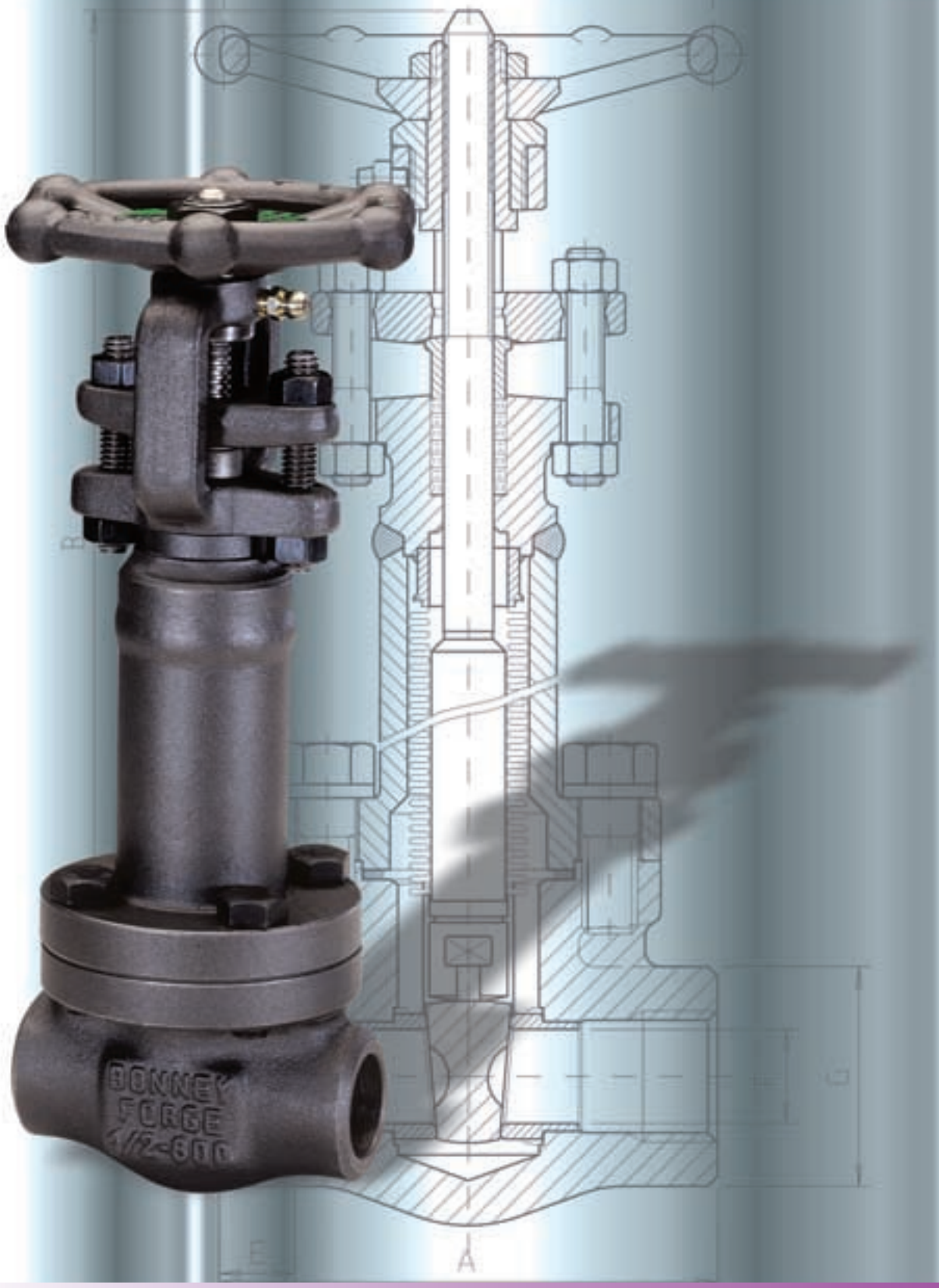
GLOBE VALVES

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800 FB	S 300	SHW 300
800 RB	SL 300	SHWL 300
1500 FB	9S 300	9SHW 300
1500 RB	9SL 300	9SHWL 300
2500 FB	S25HR 300	S25X 300
2500 FB	-	S25YX 300

BELLOWS SEALED VALVES

CLASS 800-1500-2500

GATE and GLOBE Type - BOLTED BONNET/WELDED BONNET - Full and reduced bore



Applicable standards specifications:
BS 5352 - ANSI B16.34

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral wound gasket retained type
Integral Backseat
Top entry type (only for classes 1500 and 2500)
Grease nipple for stem

GATE VALVES

CLASS 800

FULL BORE - Type S 100 - SHW 100

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		80	80	90	110	127	127	127	210
B open		230	230	234	285	325	370	435	530
C		88	88	88	97	138	138	138	172
F		8	9,6	14	18	24	30	36,6	48
G		32	32	38	48	56	64	78	85
W. kg ≅ Bolted B.		2,7	2,7	2,9	4,6	7,2	10	12,8	22
W. kg ≅ Welded B.		2,3	2,3	2,5	3,8	6,2	8,4	11,2	20
FIGURE Bolted B.		S 101	S 102	S 103	S 104	S 105	S 106	S 107	S 108
FIGURE Welded B.		SHW 101	SHW 102	SHW 103	SHW 104	SHW 105	SHW 106	SHW 107	SHW 108
PACKING		BH2	BH2	BH2	BH4	BH5	BH6/A	BY5	BH8
GASKET*		G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type SL 100 - SHWL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	127	127
B open		230	234	285	370	435
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
W. kg ≅ Bolted B.		2,7	3	4,4	9,4	12,3
W. kg ≅ Welded B.		2,1	2,4	3,9	8,6	11
FIGURE Bolted B.		SL 103	SL 104	SL 105	SL 107	SL 108
FIGURE Welded B.		SHWL 103	SHWL 104	SHWL 105	SHWL 107	SHWL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5
GASKET*		G2	G2	G3	G6	G7

CLASS 1500

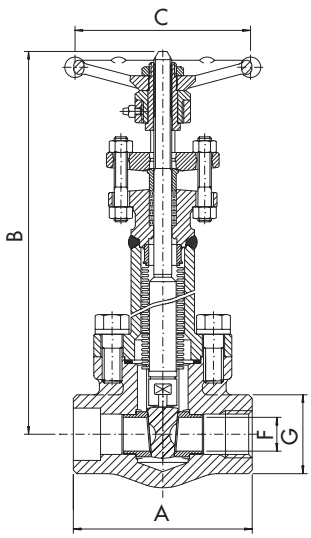
FULL BORE - Type 9S 100 - 9SHW 100

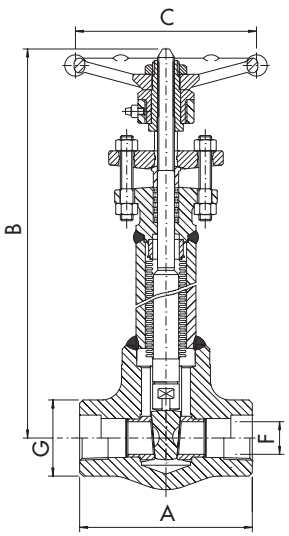
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		110	127	127	210	230
B open		293	343	388	588	590
C		138	138	172	234	320
F		14	18	24	36,6	48
G		48	56	64	85	95
W. kg ≅ Bolted B.		5	7	9,5	23,5	40
W. kg ≅ Welded B.		4,5	6,5	8,3	22	37
FIGURE Bolted B.		9S 103	9S 104	9S 105	9S 107	9S 108
FIGURE Welded B.		9SHW 103	9SHW 104	9SHW 105	9SHW 107	9SHW 108
PACKING		BH5	BH6/A	2B4/A	2B5	9B8/A
GASKET*		G2	G3	G4	G7	G8

REDUCED BORE - Type 9SL 100 - 9SHWL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	127	210
B open		238	293	343	450	588
C		138	138	138	234	234
F		9,6	14	18	30	36,6
G		38	48	56	78	85
W. kg ≅ Bolted B.		3	5	7	10	24
W. kg ≅ Welded B.		2,8	4,6	6,5	9	22
FIGURE Bolted B.		9SL 103	9SL 104	9SL 105	9SL 107	9SL 108
FIGURE Welded B.		9SHWL 103	9SHWL 104	9SHWL 105	9SHWL 107	9SHWL 108
PACKING		BH3	BH5	BH6/A	2B5	BH8
GASKET*		G1	G2	G3	G5	G7

* Only for Bolted Bonnet type.





Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25
Face to face according to BFE standard

Ratings:
- carbon steel class 800 1975 psig @ 100°F
  140 bar + 38°C
- carbon steel class 1500 3555 psig @ 100°F
  250 bar + 38°C
- carbon steel class 2500 5835 psig @ 100°F
  410 bar + 38°C

GLOBE VALVES

CLASS 800

FULL BORE - Type S 300 - SHW 300

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		80	80	90	110	127	150	180	210
B open		190	190	195	225	271	315	356	429
C		88	88	88	97	138	138	172	172
F		7	9	13	17,5	22,5	29,5	35	45
G		32	32	38	48	56	64	78	85
W. kg ≅ Bolted B.		2,5	2,5	3,5	5,2	8,7	10	18,5	30,5
W. kg ≅ Welded B.		2,3	2,3	3,2	5	8	9	17	28
FIGURE Bolted B.		S 301	S 302	S 303	S 304	S 305	S 306	S 307	S 308
FIGURE Welded B.		SHW 301	SHW 302	SHW 303	SHW 304	SHW 305	SHW 306	SHW 307	SHW 308
PACKING		BH2	BH2	BH2	BH4	BH5	BH6/A	BY5	BH8
GASKET*		G2	G2	G2	G3	G4	G6	G7	G9

REDUCED BORE - Type SL 300 - SHWL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		80	90	110	150	180
B open		190	195	225	315	356
C		88	88	97	138	172
F		9	13	17,5	29,5	35
G		32	38	48	64	78
W. kg ≅ Bolted B.		2,5	2,7	4,3	8,8	13,5
W. kg ≅ Welded B.		2,2	2,4	3,5	8,1	11,8
FIGURE Bolted B.		SL 303	SL 304	SL 305	SL 307	SL 308
FIGURE Welded B.		SHWL 303	SHWL 304	SHWL 305	SHWL 307	SHWL 308
PACKING		BH2	BH2	BH4	BH6/A	BY5
GASKET*		G2	G2	G3	G6	G7

CLASS 1500

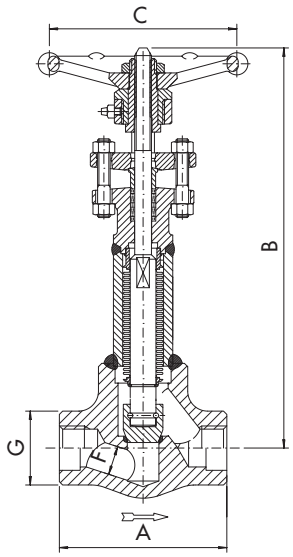
FULL BORE - Type 9S 300 - 9SHW 300

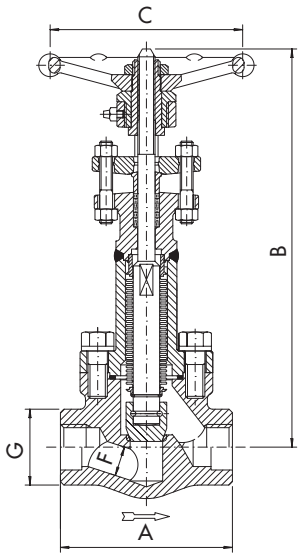
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		110	127	150	210	230
B open		243	286	311	445	510
C		138	172	234	320	320
F		12	15	20	32	40
G		48	56	64	85	95
W. kg ≅ Bolted B.		4,5	7	9	23	38
W. kg ≅ Welded B.		4	6,5	8,3	22	36,5
FIGURE Bolted B.		9S 303	9S 304	9S 305	9S 307	9S 308
FIGURE Welded B.		9SHW 303	9SHW 304	9SHW 305	9SHW 307	9SHW 308
PACKING		BH5	2B4/A	2B4/A	BH8	9B8/A
GASKET*		G2	G3	G4	G7	G8

REDUCED BORE - Type 9SL 300 - 9SHWL 300

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		90	110	127	180	210
B open		229	243	286	360	445
C		138	138	172	234	320
F		9	12	15	27	32
G		38	48	56	78	85
W. kg ≅ Bolted B.		3,5	4,5	7	9	23
W. kg ≅ Welded B.		3	4,6	6,5	8,9	21,5
FIGURE Bolted B.		9SL 303	9SL 304	9SL 305	9SL 307	9SL 308
FIGURE Welded B.		9SHWL 303	9SHWL 304	9SHWL 305	9SHWL 307	9SHWL 308
PACKING		BH3	BH5	2B4/A	2B5	BH8
GASKET*		G1	G2	G3	G5	G7

* Only for Bolted Bonnet type.





For special execution see special features
For materials and testing pressure see technical data

GATE VALVES

CLASS 2500

FULL BORE - Type S25X 100

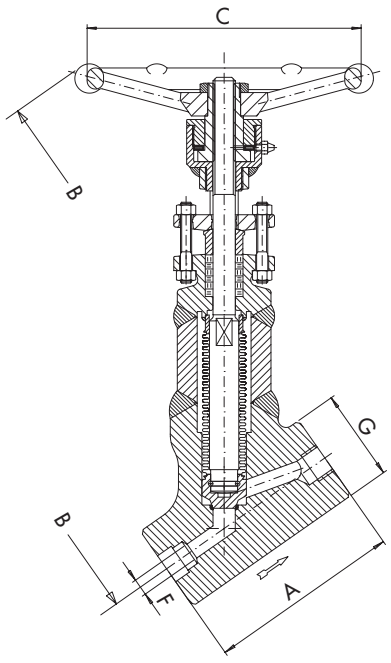
SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
	mm	6	10	15	20	25	32	40	50
A		110	110	127	127	127	127	210	230
B open		380	380	430	450	510	620	630	710
C		138	138	138	172	234	234	320	400
F		8	8	11,5	15	19,5	25	28	35
G		48	48	56	64	78	78	85	95
WEIGHT kg ≅		6,2	6,2	6,5	10,5	16	17	29	45
FIGURE		S25X 101	S25X 102	S25X 103	S25X 104	S25X 105	S25X 106	S25X 107	S25X 108
PACKING		BH6/A	BH6/A	2B4/A	2B4/A	BH8	BH8	9B8/A	25B8

GLOBE VALVES

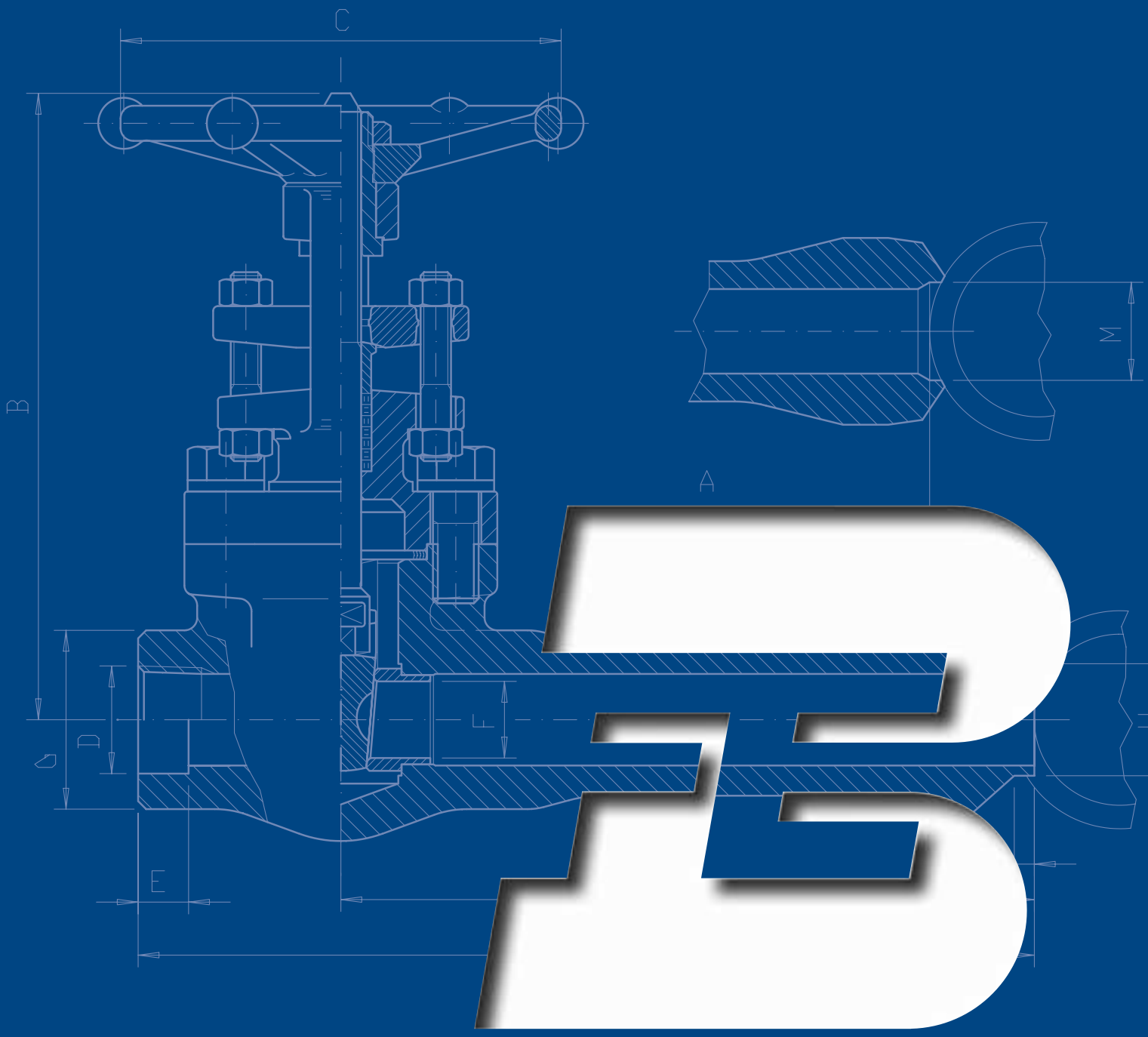
CLASS 2500

FULL BORE - Type S25YX 300

SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/2	2	
	mm	6	10	15	20	25	32	50	
A		105	105	120	165	165	190	220	
B open		350	350	370	400	440	490	570	
C		138	138	172	234	320	320	400	
F		7	9	11	14,5	19	28	35	
G		48	48	56	78	78	85	95	
WEIGHT kg ≅		6,5	6,5	8	15	18	24	38	
FIGURE		S25YX 301	S25YX 302	S25YX 303	S25YX 304	S25YX 305	S25YX 307	S25YX 308	
PACKING		BH7	BH7	BH7	BH8	9B8/A	9B8/A	4B7	



EXTENDED BODY GATE VALVES



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EXTENDED BODY GATE VALVES

VALV-O-LET

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800	VL 100	VOL 100
1500	9VL 100	9VOL 100

INTEGRAL REINFORCED

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800	VLL 100	VOLL 100
1500	9VLL 100	9VOLL 100

SOCKET WELD

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800	MLT 100	MFLT 100
1500	9MLT 100	9MFLT 100

BEVELED FOR WELDING

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800	MLB 100	MFLB 100
1500	9MLB 100	9MFLB 100

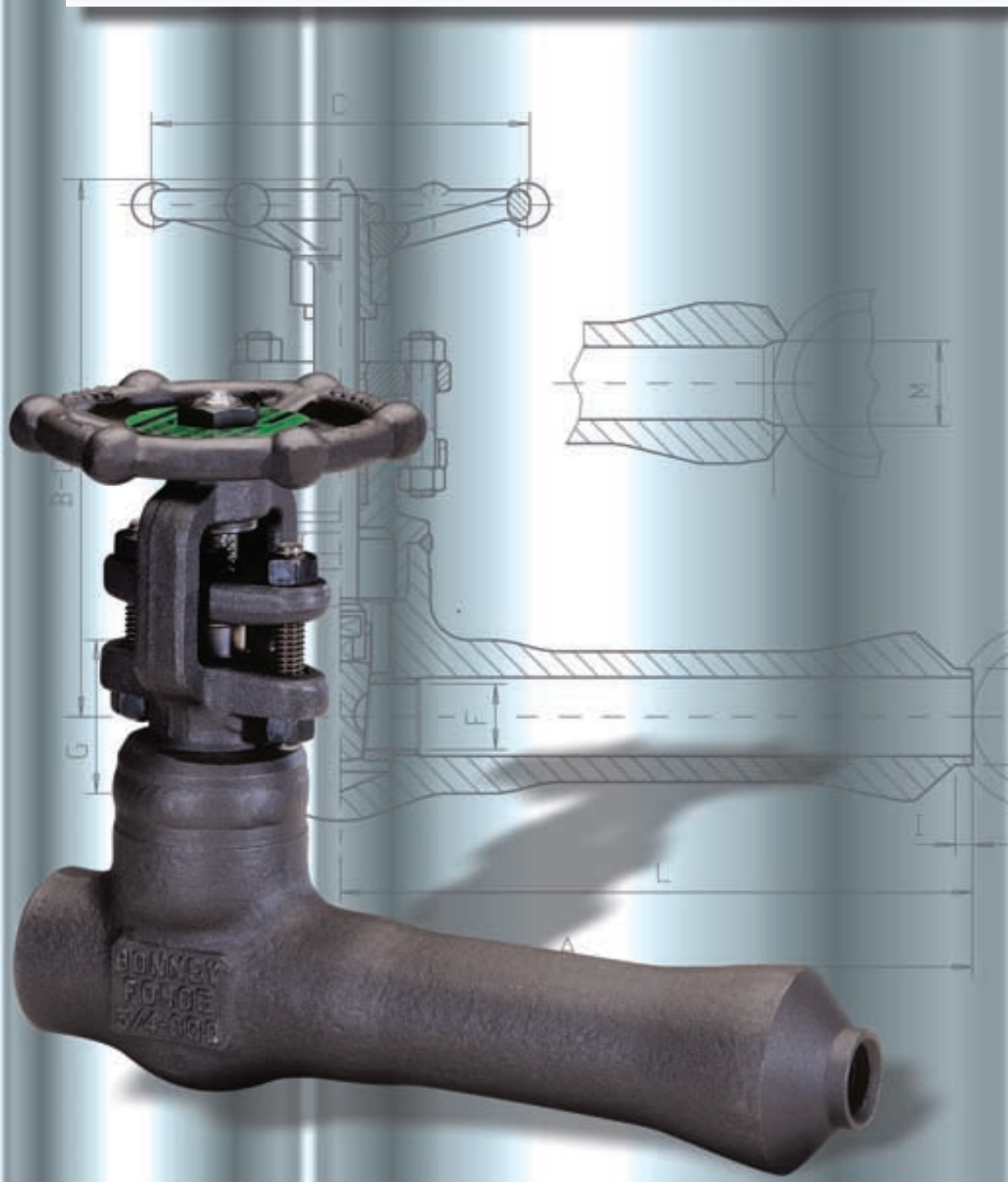
THREADED END

CLASS	FIGURE	
	Bolted Bonnet	Welded Bonnet
800	MLF 100	MFLF 100
1500	9MLF 100	9MFLF 100

EXTENDED BODY GATE VALVES

CLASS 800-1500

BOLTED BONNET/WELDED BONNET - Reduced bore



Applicable standards and Specifications: API 602

Integral extended body
Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral-wound gasket retained type
Body-bonnet weld to ASME IX
Integral backseat

VALV-O-LET

CLASS 800

BOLTED BONNET - Type VL 100 / WELDED BONNET - Type VOL 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		207	218,5	244,5	263,5	267,5
B open		152	158	196	255	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
L		167	173	190	200	204
M		22	30	36,5	50,5	65
W. kg ≅ Bolted B.		2,6	3,1	5,1	9,5	13
W. kg ≅ Welded B.		2,3	2,9	4,3	8,8	11,7
FIGURE Bolted B.		VL 103	VL 104	VL 105	VL 107	VL 108
FIGURE Welded B.		VOL 103	VOL 104	VOL 105	VOL 107	VOL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET*		G2	G2	G3	G6	G7

CLASS 1500

BOLTED BONNET - Type 9VL 100 / WELDED BONNET - Type 9VOL 100

SIZE	inch	1/2	3/4	1	1.1/2
	mm	15	20	25	40
A		218,5	244,5	263,5	267,5
B open		153	190	220	282
C		88	97	138	138
F		9,6	14	18	30
G		38	48	56	78
L		173	190	200	204
M		30	36,5	50,5	65
W. kg ≅ Bolted B.		3,6	5,6	10,5	14,5
W. kg ≅ Welded B.		2,9	4,7	9	12,5
FIGURE Bolted B.		9VL 103	9VL 104	9VL 105	9VL 107
FIGURE Welded B.		9VOL 103	9VOL 104	9VOL 105	9VOL 107
PACKING		BH3	BH5	BH6/A	2B5
GASKET*		G1	G2	G3	G5

INTEGRAL REINFORCED

CLASS 800

BOLTED BONNET - Type VLL 100 / WELDED BONNET - Type VOLL 100

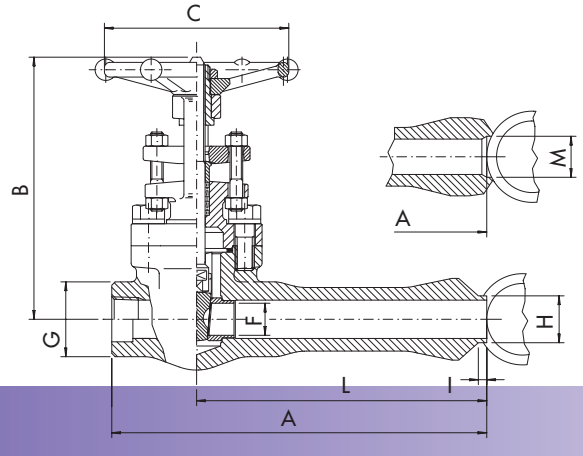
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		207	218,5	244,5	263,5	267,5
B open		152	158	196	255	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
H		17,5	22	28,5	41	46
I		4	4,8	4,8	6,3	8
L		167	173	190	200	204
W. kg ≅ Bolted B.		2,6	3,1	5,1	9,5	13
W. kg ≅ Welded B.		2,3	2,9	4,3	8,8	11,7
FIGURE Bolted B.		VLL 103	VLL 104	VLL 105	VLL 107	VLL 108
FIGURE Welded B.		VOLL 103	VOLL 104	VOLL 105	VOLL 107	VOLL 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET*		G2	G2	G3	G6	G7

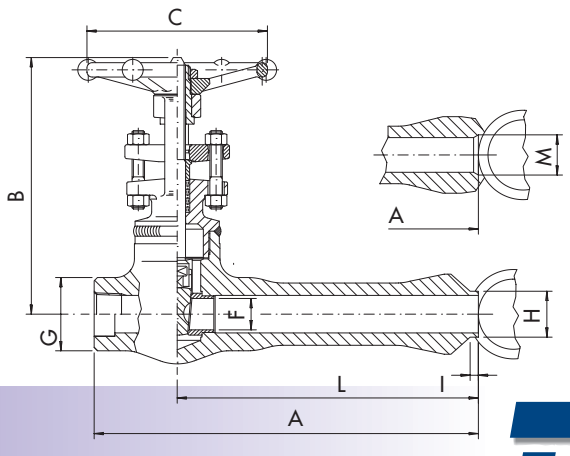
CLASS 1500

BOLTED BONNET - Type 9VLL 100 / WELDED BONNET - Type 9VOLL 100

SIZE	inch	1/2	3/4	1	1.1/2
	mm	15	20	25	40
A		218,5	244,5	263,5	267,5
B open		153	190	220	282
C		88	97	138	138
F		9,6	14	18	30
G		38	48	56	78
H		17,5	22	28,5	41
I		4	4,8	4,8	6,3
L		173	190	200	204
W. kg ≅ Bolted B.		3,6	5,6	10,5	14,5
W. kg ≅ Welded B.		2,9	4,7	9	12,5
FIGURE Bolted B.		9VLL 103	9VLL 104	9VLL 105	9VLL 107
FIGURE Welded B.		9VOLL 103	9VOLL 104	9VOLL 105	9VOLL 107
PACKING		BH3	BH5	BH6/A	2B5
GASKET*		G1	G2	G3	G5

* Only for Bolted Bonnet type





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

Socket weld Ends to ANSI B16.11
Screwed Ends (NPT) to ANSI B1.20.1
Butt Welding Ends to ANSI B.16.25
For special execution see special features
For materials and testing pressure see technical data

SOCKET WELD

CLASS 800

Type MLT 100 - MFLT 100

SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	141,5	146,5	166	190,5	216
B open	152	156	196	256	290
C	88	88	97	138	138
F	9,6	14	18	30	36,6
G	32	38	48	64	78
H	21,3	26,7	33,4	48,3	60,3
I	13	16	21	34	42
L	102	102	111	127	153
W. kg ≅ Bolted B.	2,4	2,6	4,2	8,1	11,8
W. kg ≅ Welted B.	1,7	2,1	3,2	7,2	10,3
FIGURE Bolted B.	MLT 103	MLT 104	MLT 105	MLT 107	MLT 108
FIGURE Welded B.	MFLT 103	MFLT 104	MFLT 105	MFLT 107	MFLT 108
PACKING	BH2	BH2	BH4	BH6/A	BY5/A
GASKET*	G2	G2	G3	G6	G7

CLASS 1500

Type 9MLT 100 - 9MFLT 100

SIZE inch	1/2	3/4	1	1.1/2
SIZE mm	15	20	25	40
A	146,5	166	190,5	216
B open	153	190	220	282
C	88	97	138	138
F	9,6	14	18	30
G	38	48	64	85
H	21,3	26,7	33,4	48,3
I	13	16	21	34
L	102	111	127	153
W. kg ≅ Bolted B.	2,6	4,6	9,1	13
W. kg ≅ Welded B.	2,1	3,8	8,1	12
FIGURE Bolted B.	9MLT 103	9MLT 104	9MLT 105	9MLT 107
FIGURE Welded B.	9MFLT 103	9MFLT 104	9MFLT 105	9MFLT 107
PACKING	BH3	BH5	BH6/A	2B5
GASKET*	G1	G2	G3	G5

BEVELED END FOR WELDING

CLASS 800

Type MLB 100 - MFLB 100

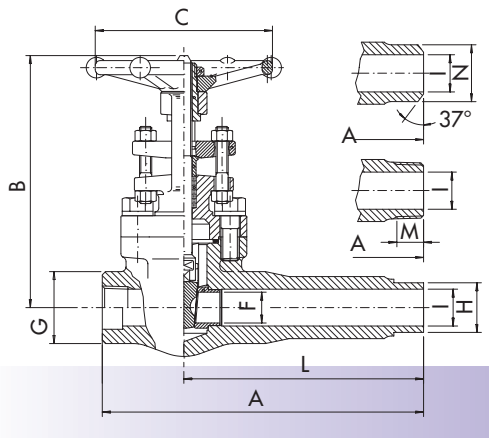
SIZE inch	1/2	3/4	1	1.1/2	2
SIZE mm	15	20	25	40	50
A	141,5	146,5	166	190,5	216
B open	152	156	196	256	290
C	88	88	97	138	138
F	9,6	14	18	30	36,6
G	32	38	48	64	78
I	13	16	21	34	42
L	102	102	111	127	153
N	23	28	36	52	62
W. kg ≅ Bolted B.	2,4	2,6	4,2	8,1	11,8
W. kg ≅ Welded B.	1,7	2,1	3,2	7,2	10,3
FIGURE Bolted B.	MLB 103	MLB 104	MLB 105	MLB 107	MLB 108
FIGURE Welded B.	MFLB 103	MFLB 104	MFLB 105	MFLB 107	MFLB 108
PACKING	BH2	BH2	BH4	BH6/A	BY5/A
GASKET*	G2	G2	G3	G6	G7

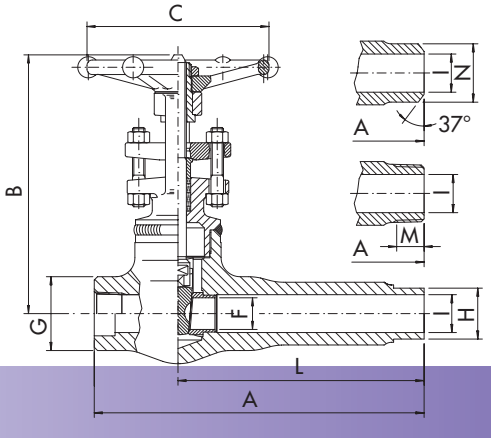
CLASS 1500

Type 9MLB 100 - 9MFLB 100

SIZE inch	1/2	3/4	1	1.1/2
SIZE mm	15	20	25	40
A	146,5	166	190,5	216
B open	153	190	220	282
C	88	97	138	138
F	9,6	14	18	30
G	38	48	64	85
I	13	16	21	34
L	102	111	127	153
N	23	28	36	52
W. kg ≅ Bolted B.	2,6	4,6	9,1	13
W. kg ≅ Welded B.	2,1	3,8	8,1	12
FIGURE Bolted B.	9MLB 103	9MLB 104	9MLB 105	9MLB 107
FIGURE Welded B.	9MFLB 103	9MFLB 104	9MFLB 105	9MFLB 107
PACKING	BH3	BH5	BH6/A	2B5
GASKET*	G1	G2	G3	G5

* Only for Bolted Bonnet type





EXTENDED BODY

THREADED END

CLASS 800

BOLTED BONNET - Type MLF 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		141,5	146,5	166	190,5	216
B open		152	156	196	256	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
I		13	16	21	34	42
L		102	102	111	127	153
N		19	22	27	28	30
WEIGHT kg ≅		2,4	2,6	4,2	8,1	11,8
FIGURE		MLF 103	MLF 104	MLF 105	MLF 107	MLF 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G6	G7

WELDED BONNET - Type MFLF 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		141,5	146,5	166	190,5	216
B open		152	156	196	256	290
C		88	88	97	138	138
F		9,6	14	18	30	36,6
G		32	38	48	64	78
I		13	16	21	34	42
L		102	102	111	127	153
N		19	22	27	28	30
WEIGHT kg ≅		1,7	2,1	3,2	7,2	10,3
FIGURE		MFLF 103	MFLF 104	MFLF 105	MFLF 107	MFLF 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A

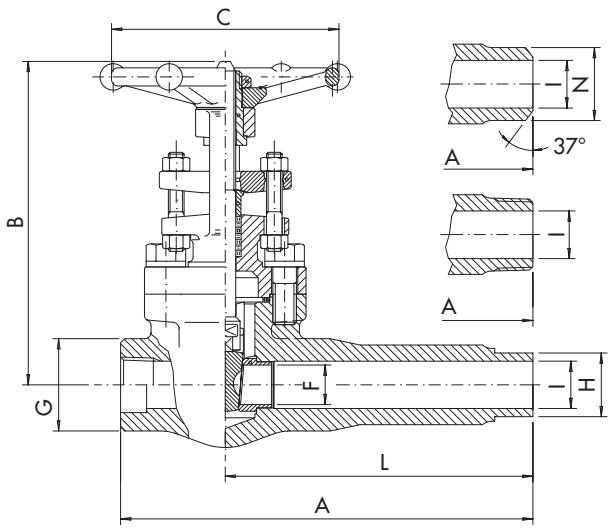
CLASS 1500

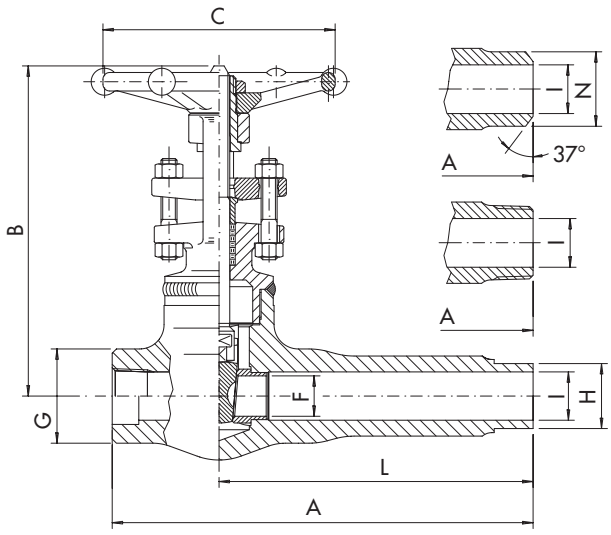
BOLTED BONNET - Type 9MLF 100

SIZE	inch	1/2	3/4	1	1.1/2
	mm	15	20	25	40
A		146,5	166	190,5	216
B open		153	190	220	282
C		88	97	138	138
F		9,6	14	18	30
G		38	48	64	85
I		13	16	21	34
L		102	111	127	153
N		19	22	27	28
WEIGHT kg ≅		2,6	4,6	9,1	13
FIGURE		9MLF 103	9MLF 104	9MLF 105	9MLF 107
PACKING		BH3	BH5	BH6/A	2B5
GASKET		G1	G2	G3	G5

WELDED BONNET - Type 9MFLF 100

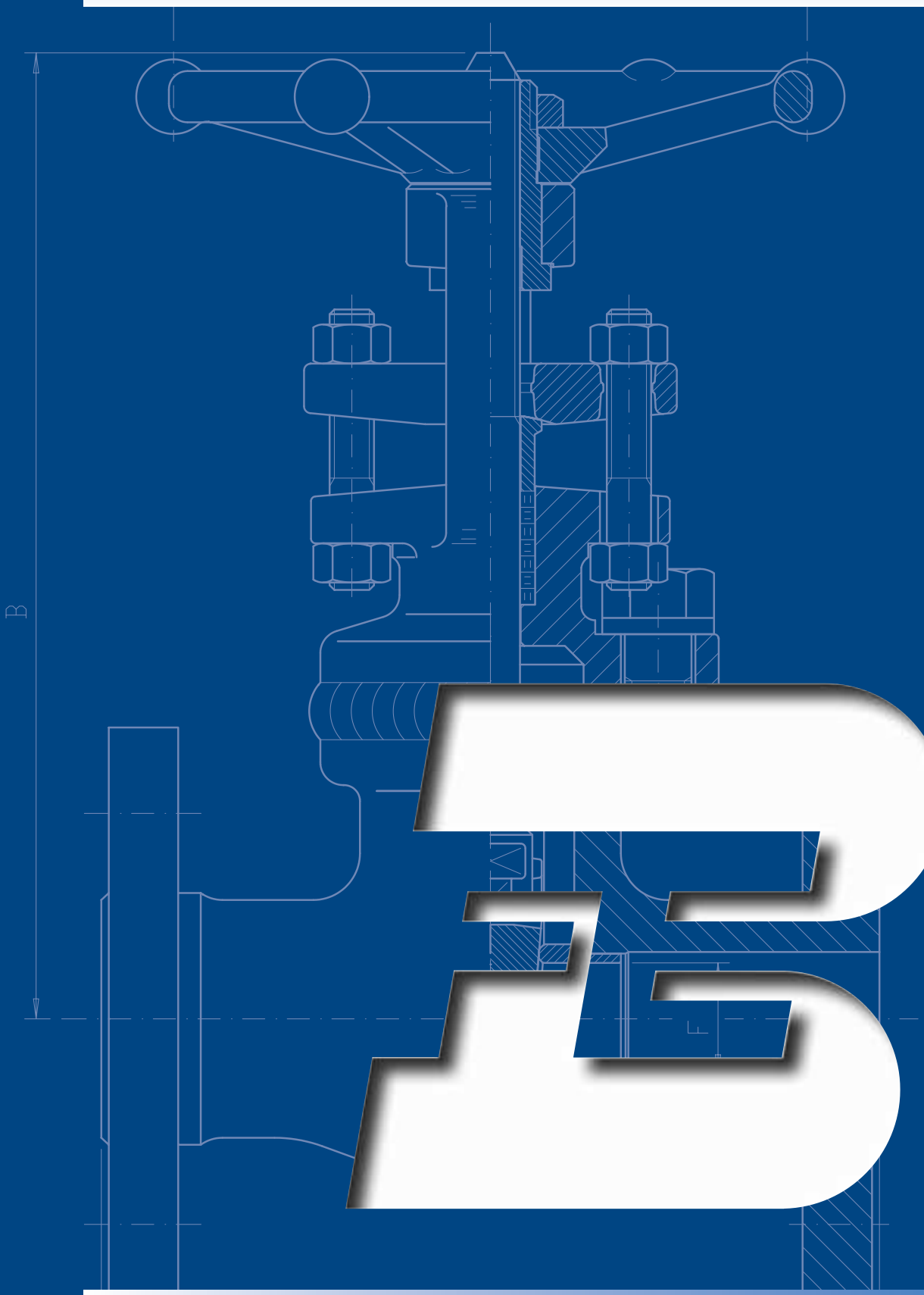
SIZE	inch	1/2	3/4	1	1.1/2
	mm	15	20	25	40
A		146,5	166	190,5	216
B open		153	190	220	282
C		88	97	138	138
F		9,6	14	18	30
G		38	48	64	85
I		13	16	21	34
L		102	111	127	153
N		19	22	27	28
WEIGHT kg ≅		2,1	3,8	8,1	12
FIGURE		9MFLF 103	9MFLF 104	9MFLF 105	9MFLF 107
PACKING		BH3	BH5	BH6/A	2B5





EXTENDED BODY

VALVES FROM FORGED BAR STOCK



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VALVES FROM FORGED BAR STOCK

GATE VALVES

CLASS	FIGURE
150 RB	L1B 100

GLOBE VALVES

CLASS	FIGURE
150 RB	L1B 300

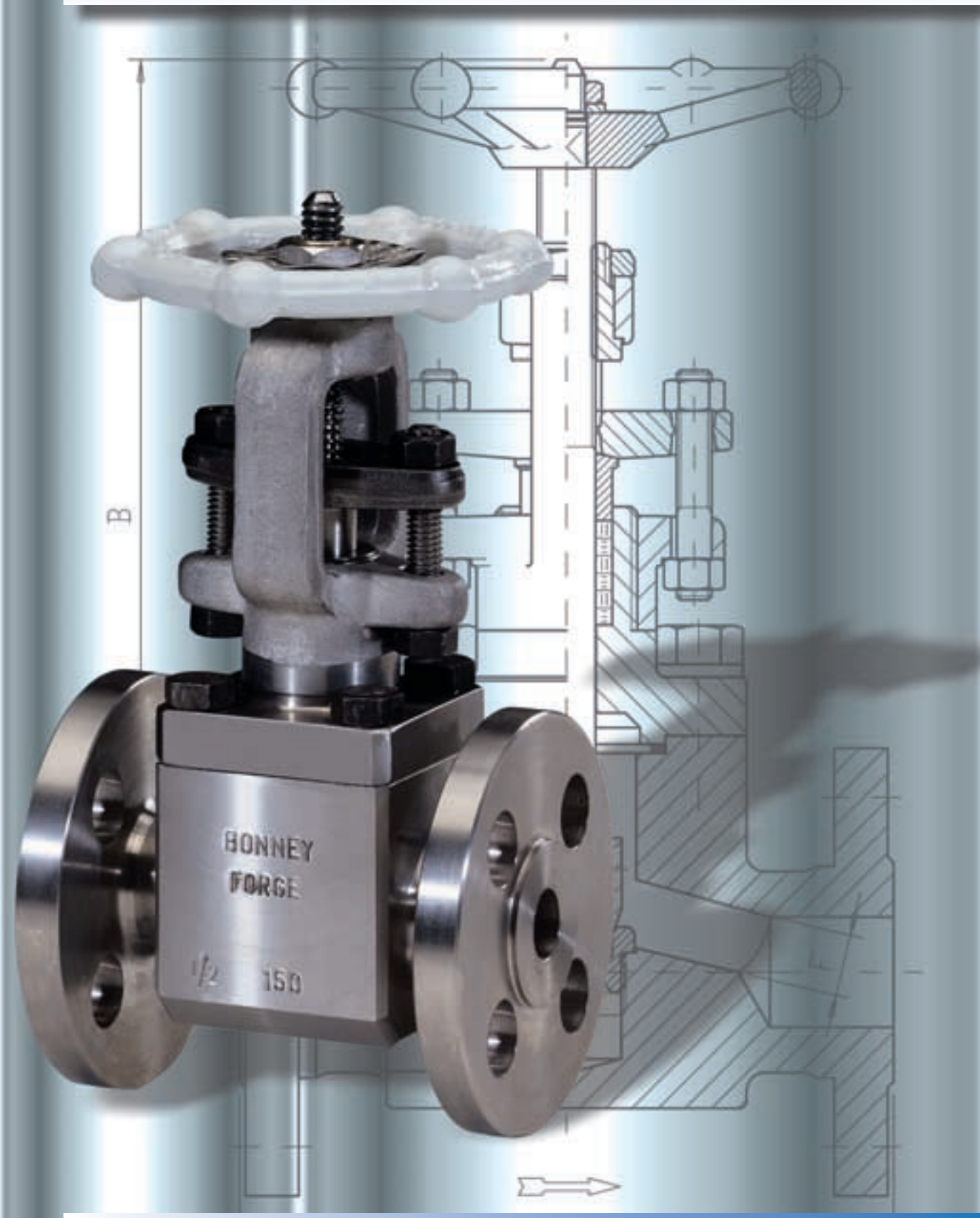
CHECK VALVES

CLASS	FIGURE		
	Piston	Ball	Swing
150 RB	L1B 400	L1B 500	L1B 600

VALVES FROM FORGED BAR STOCK

ALL CLASSES

BOLTED BONNET - Full and reduced bore



Applicable standards and specifications:
API 602 - BS 5352 - ANSI B16.34
Face to face according to ANSI B16.10

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral wound gasket retained type
Integral Backseat
Flanges according to ANSI B16.5

For special execution see special features
For materials and testing pressure see technical data
End flanges according to ANSI B16.5

FOR GLOBE VALVES ONLY
Loosed disc on stem
Needle or parabolic disc type on request
Needle valves may have a integral disc/stem on request

FOR CHECK VALVES ONLY
Valves for horizontal and/or vertical line
Spring only on request
Ball and piston type valves with full guided disc

CLASS 150

REDUCED BORE - Type L1B 100

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	178
B open		155	160	200	260	300
C		88	88	97	138	138
F		9,6	14	18	30	36,6
FIGURE		L1B 103	L1B 104	L1B 105	L1B 107	L1B 108
PACKING		BH2	BH2	BH4	BH6/A	BY5/A
GASKET		G2	G2	G3	G5	G7

CLASS 150

REDUCED BORE - Type L1B 300

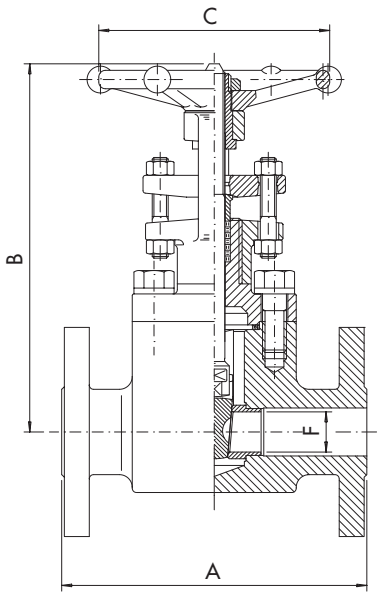
SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B open		170	170	200	250	270
C		88	88	97	138	138
F		9	13	17,5	29,5	35
FIGURE		L1B 303	L1B 304	L1B 305	L1B 307	L1B 308
PACKING		BH3	BH3	BH5	BY5/A	BY7
GASKET		G2	G2	G3	G5	G7

CLASS 150

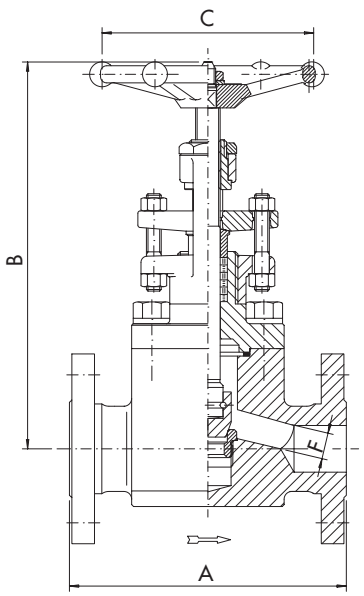
REDUCED BORE - Type L1B 400 - L1B 500 - L1B 600

SIZE	inch	1/2	3/4	1	1.1/2	2
	mm	15	20	25	40	50
A		108	117,5	127	165	203
B		55	60	80	95	110
F Piston / F Ball		10	14	17,5	29,5	35
F Swing		9,6	14	17,5	29,5	36,6
FIGURE	Piston	L1B 403	L1B 404	L1B 405	L1B 407	L1B 408
	Ball	L1B 503	L1B 504	L1B 505	L1B 507	L1B 508
	Swing	L1B 603	L1B 604	L1B 605	L1B 607	L1B 608
GASKET		G2	G2	G3	G5	G7

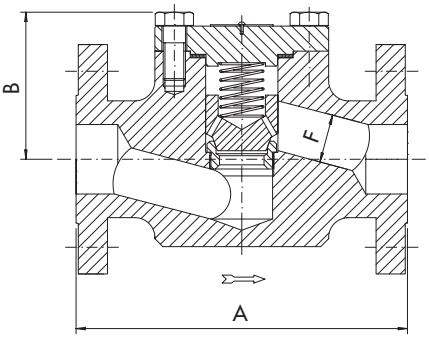
Other pressure rating classes are available on request



Gate

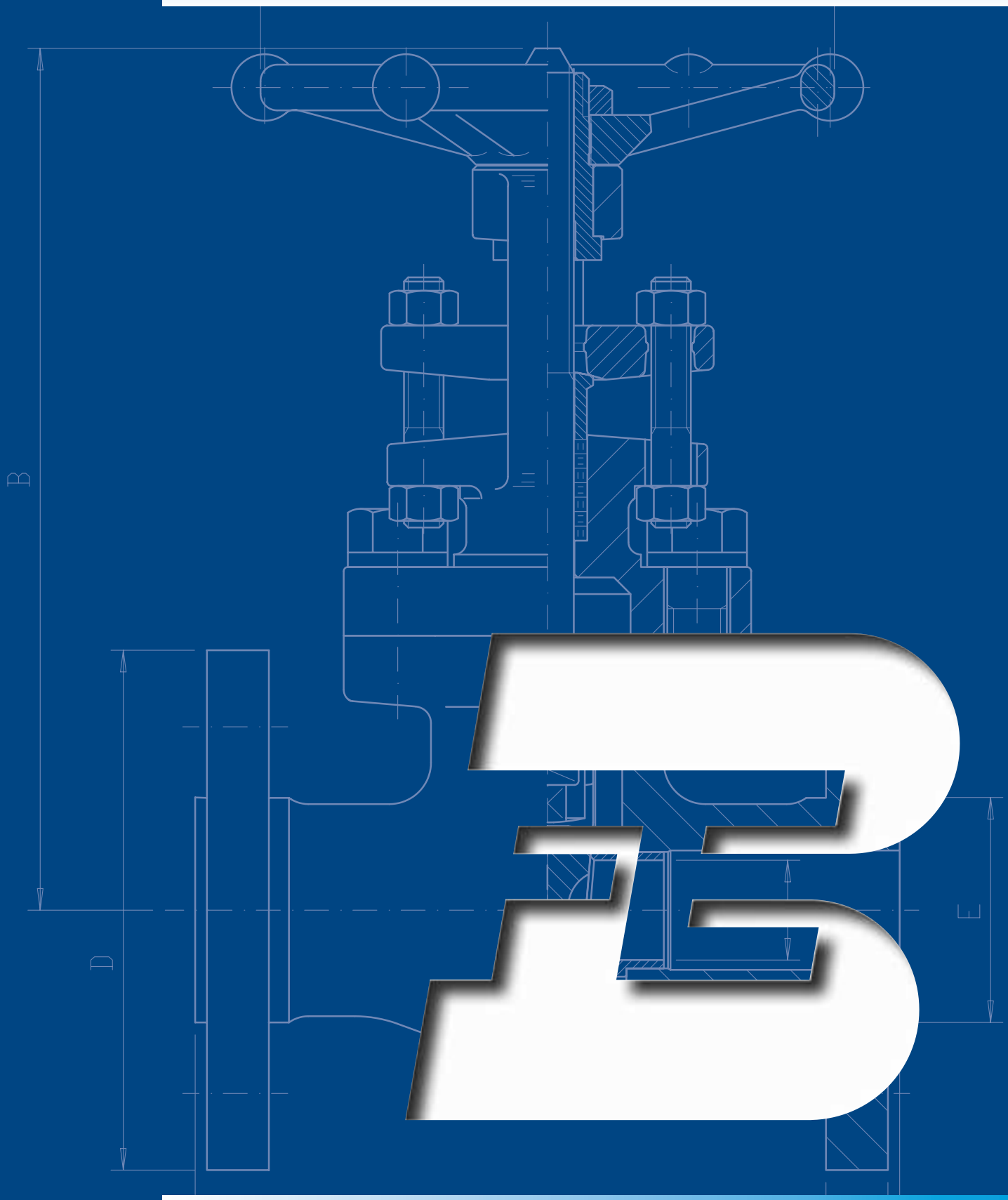


Globe



Check

DIN VALVES



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DIN VALVES

GATE VALVES

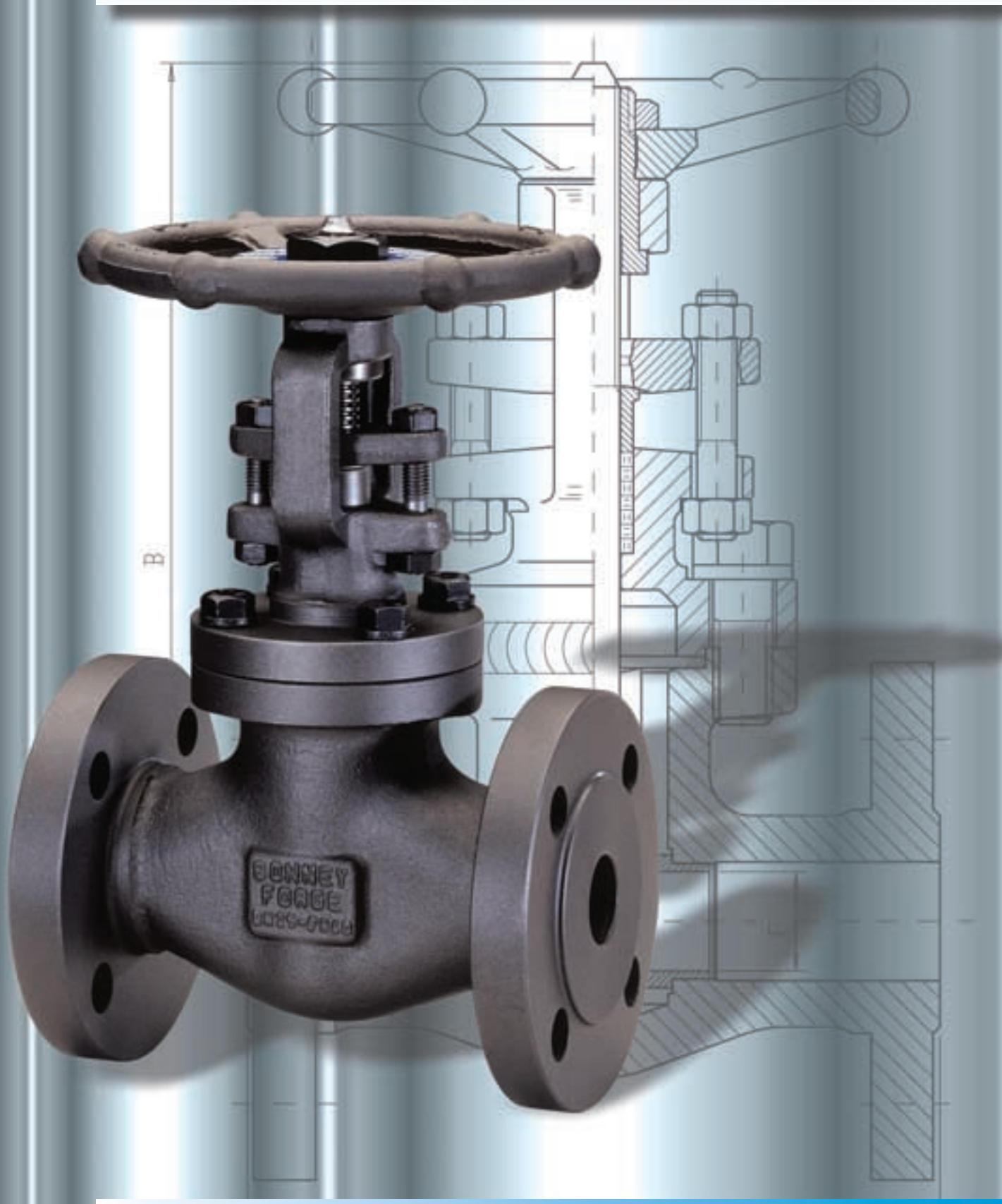
BOLTED BONNET

CLASS	FIGURE
PN 25-40	4U 100
PN 63	6U 100
PN 100	10U 100

DIN VALVES

PN 16-25-40-63-100

BOLTED BONNET/WELDED BONNET - Full bore



GATE VALVES
Design construction: DIN 3840 approved by TÜV

Face to face to DIN 3202
Flanges to DIN 2635 - 2636 - 2637
Butt welding ends to DIN 3239

Outside Screw and Yoke (OS&Y)
Self aligning packing gland in two parts
Spiral wound gasket retained type
Flanges finish to DIN 2526 form "C", "D", "E"
Antiestrusion seat design

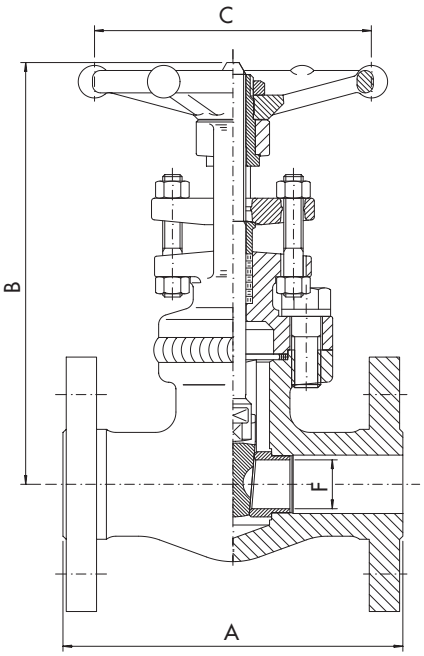
Forged materials approved according to
Ad-Merkblatt W0/TRD 100
Gate valves approved according to TRB 801 n°45

GLOBE and CHECK VALVES can be supplied on request

DN		15	20	25	40	50
A		130	150	160	240	250
B open		176	210	220	290	335
C		88	97	138	138	234
F		14	18	24	36,6	48
WEIGHT kg ≅	PN25-40	3,7	5,8	7,8	13	23
	PN63	4,2	7,3	9,7	15	25
	PN100	4,2	7,3	9,7	15	27
FIGURE	PN25-40	4U 103	4U 104	4U 105	4U 107	4U 108
	PN63	6U 103	6U 104	6U 105	6U 107	6U 108
	PN100	10U 103	10U 104	10U 105	10U 107	10U 108
PACKING		BH2	BH4	BH5	BY5/A	BY7
GASKET		G2	G3	G4	G7	G8

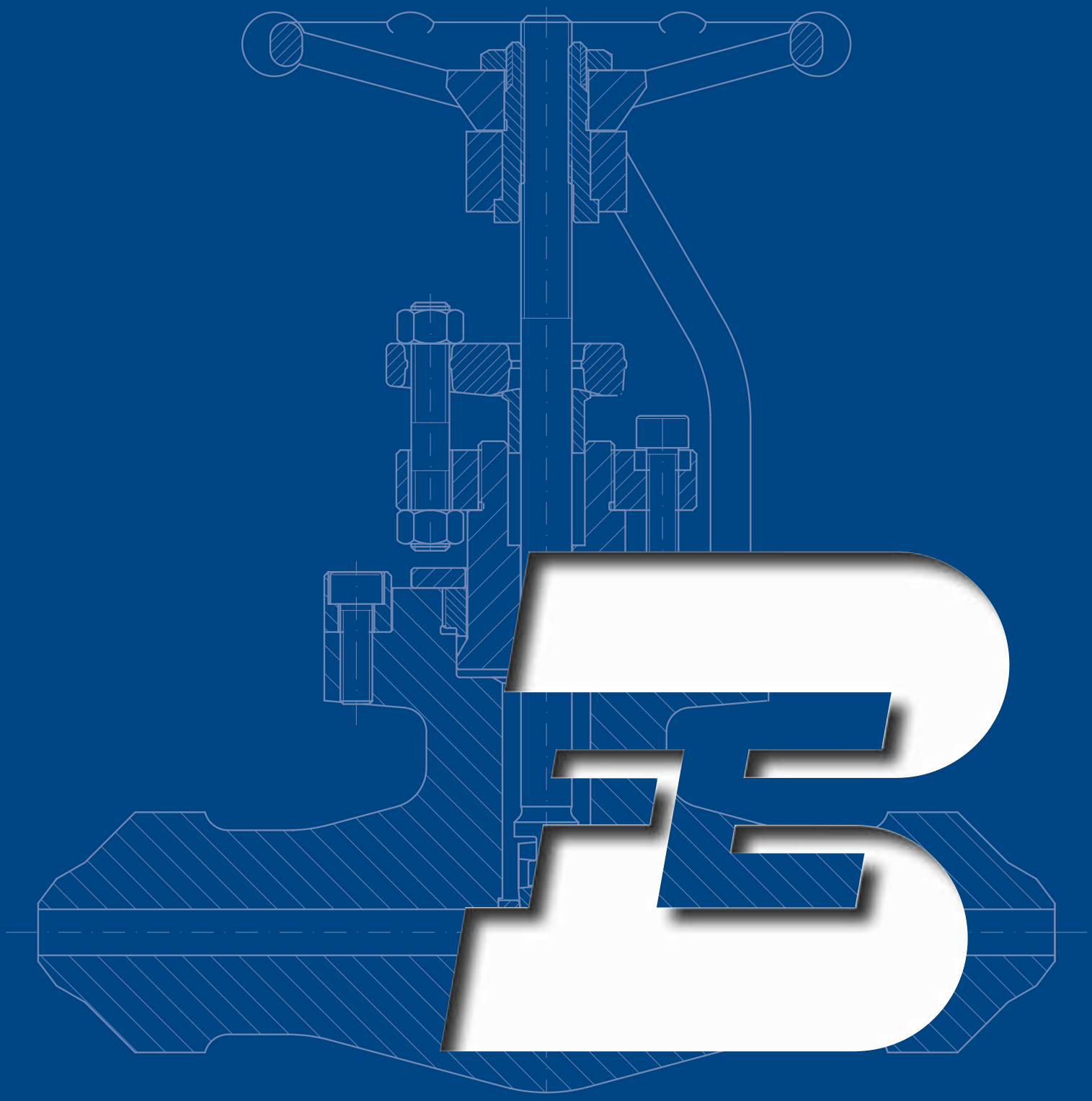
PART NAME	MATERIALS				
HANDWHEEL NUT	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
HANDWHEEL	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
YOKE SLEEVE	ASI 416	ASI 416	ASI 416	ASI 416	ASI 416
NAME PLATE	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
GLAND NUTS	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10
GLAND FLANGE	ASTM A105	ASTM A105	ASTM A105	1.4571	1.4571
PACKING GLAND	AISI 316L	AISI 316L	AISI 316L	AISI 316L	AISI 316L
BONNET	C 22.8	TSTE 355	13 CrMo 44	1.4571	1.4541
GLAND STUDS	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10	X 5 CrNi 18.10
B/B BOLTS	24 CrMo 5	X 5 CrNi 18.10	21 CrMo V57	X 5 CrNi 18.10	X 5 CrNi 18.10
PACKING	Graphite	Graphite	Graphite	Graphite	Graphite
STEM	1.4104	1.4104	1.4104	1.4571	1.4541
B/B GASKET	F316L + Graphite	F316L + Graphite	F316L + Graphite	F316L + Graphite	F316L + Graphite
WEDGE	AISI 410	AISI 410	AISI 410	1.4571	1.4541
SEAT RINGS	AISI 410	AISI 410	AISI 410	1.4571	1.4541
BODY	C 22.8	TSTE 355	13 CrMo 44	1.4571	1.4541

Stellite # 6 hardfacing on seats and wedge on request. Other material are available on request.



WELDED BONNET BOLTED BONNET

SPECIAL FEATURES



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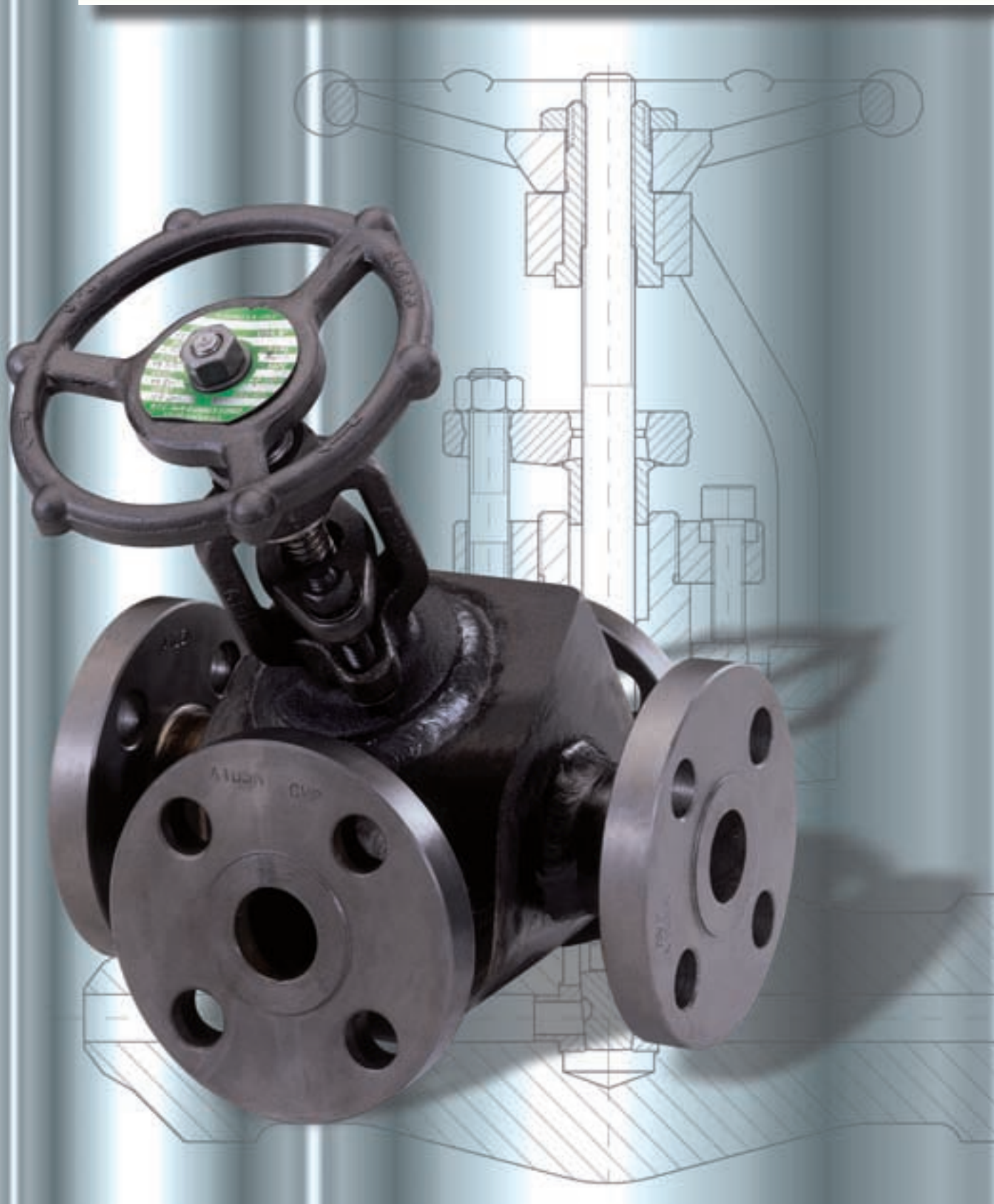
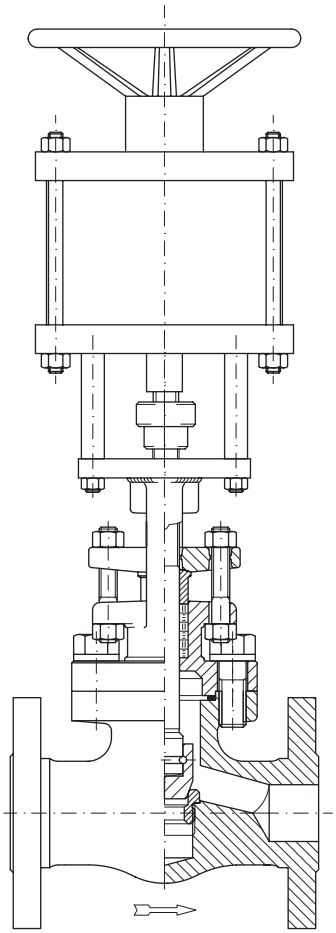
SPECIAL FEATURES



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

2 - Bellows seal valves full protected.
3 - Flexible and split wedge available on request.

4/5 - Position indicator and stem protection on Gate and Globe valves.



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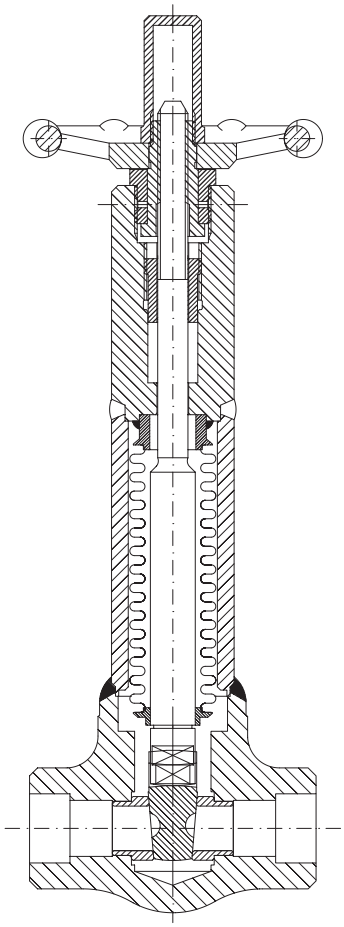

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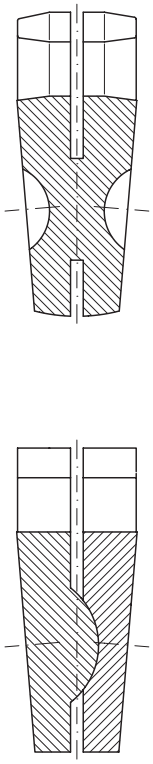

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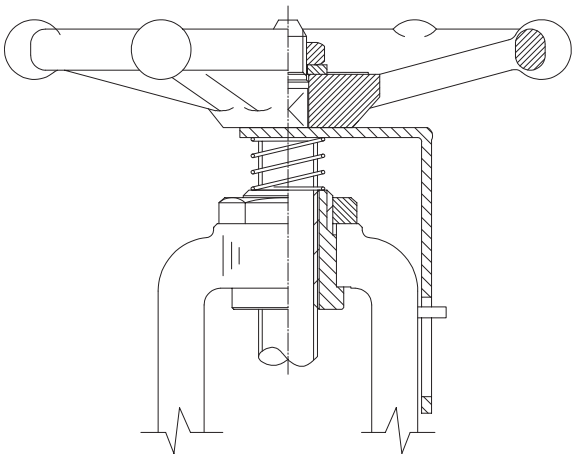

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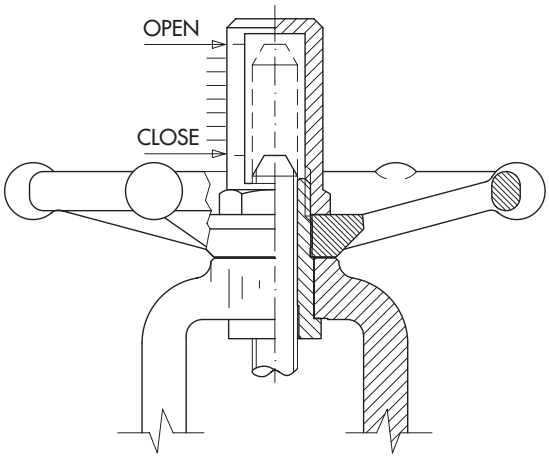
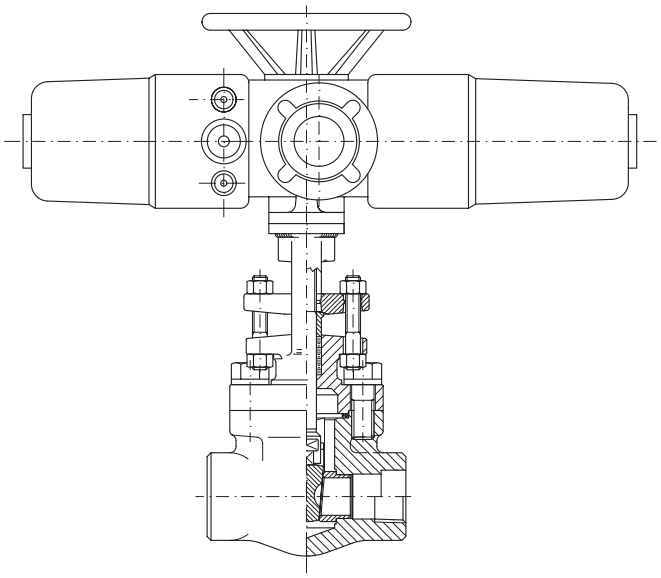


5

SPECIAL FEATURES

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

7 - Locking device with padlock.
8 - Stuffing box with live loading system.
9 - Quick opening Globe and Gate valves.



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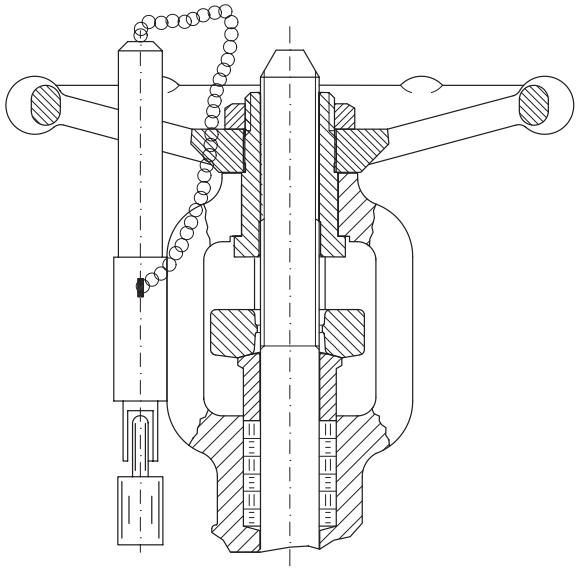

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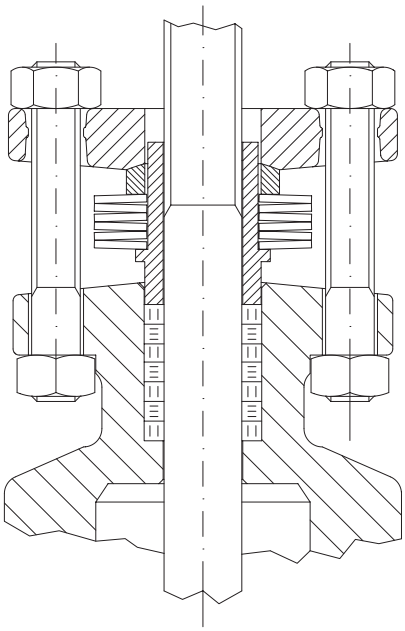

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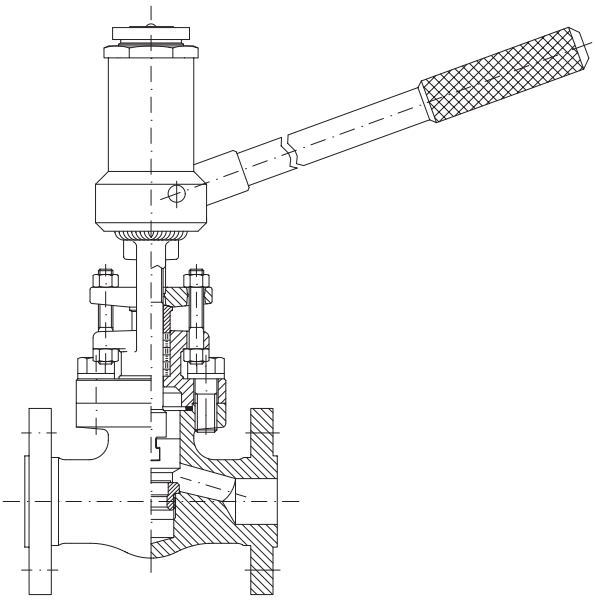
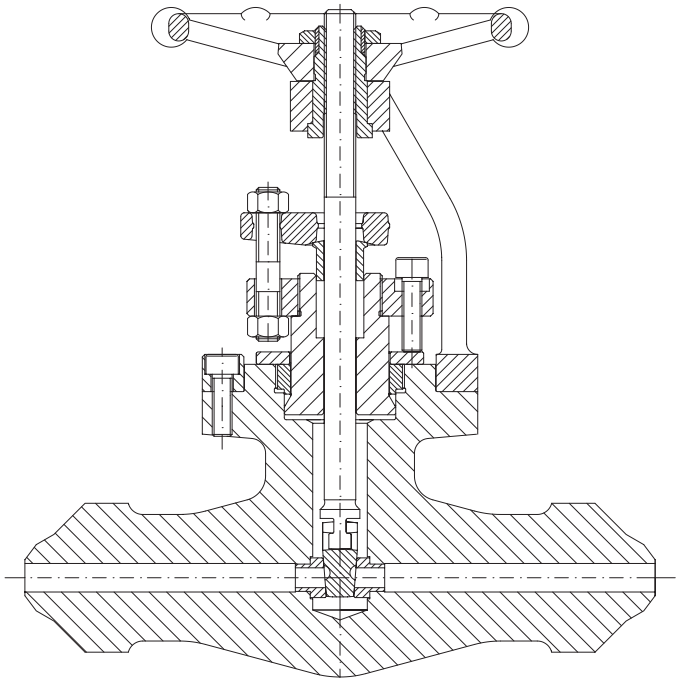


9

10 - Body Bonnet connection pressure seal design.
11 - Bonnet-Less type, non rotating stem, no rising handwheel, position indicator.

12 - Special pipe connection like clamp-lock, special B.W.E., nipples or other customer's request.
13 - All valves can be supplied with a deep stuffing box with lantern ring and a double ball grease injector.

14 - Typical floor stand application



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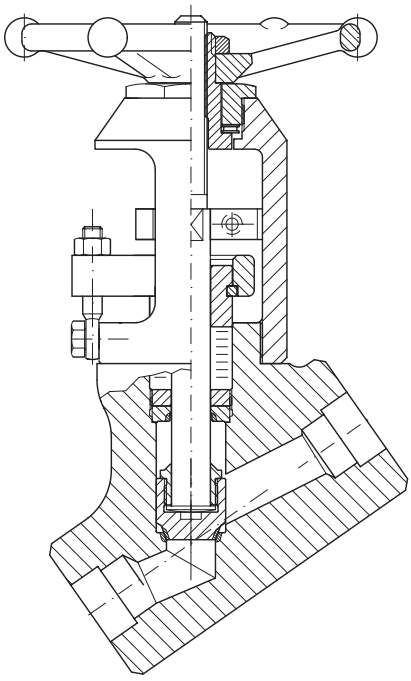

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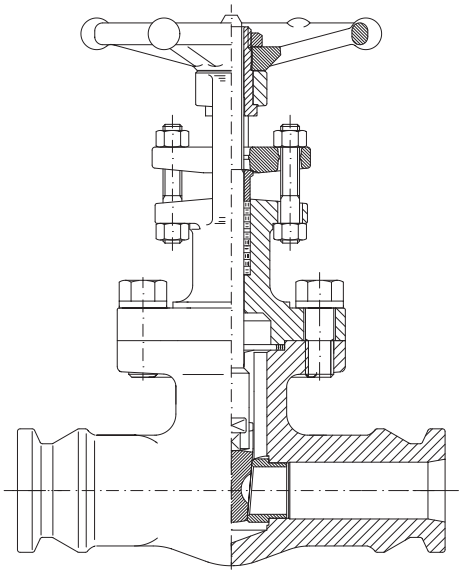

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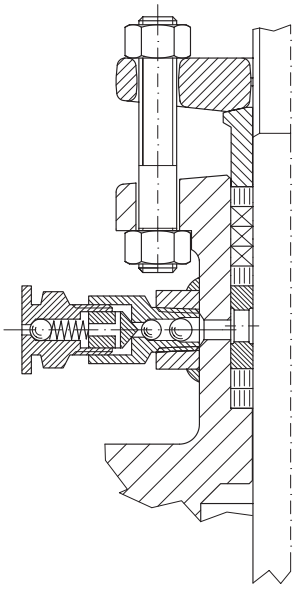

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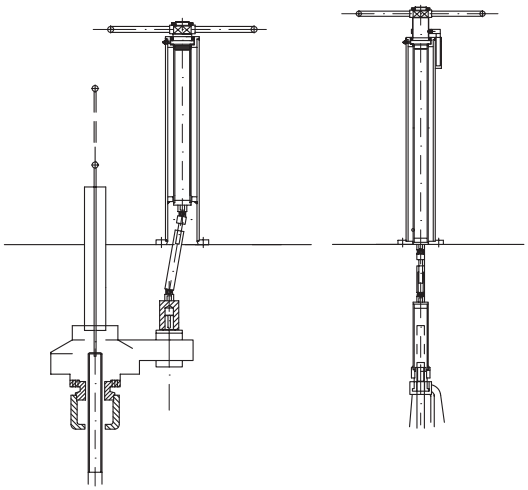
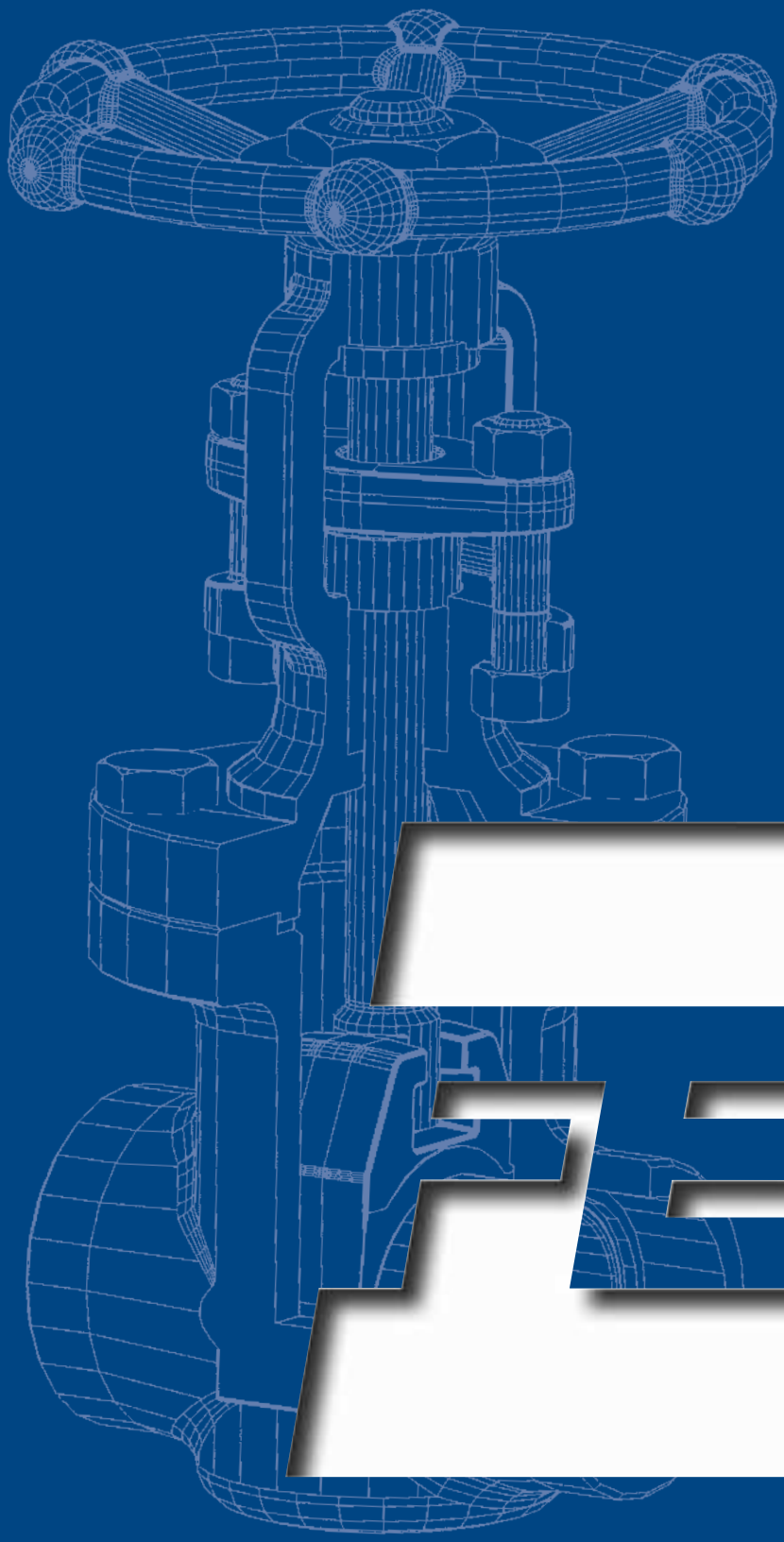


14

SPECIAL FEATURES

TECHNICAL DATA



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PSI - °F — MATERIALS: ASTM A105 N (a) - ASTM A350 LF2 (a)(b) - ASTM A216 WCB (a) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS

Temperature °F	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
200	260	675	900	1.350	1.800	2.025	3.375	5.625	10.120
300	230	655	875	1.315	1.750	1.970	3.280	5.470	9.845
400	200	635	845	1.270	1.690	1.900	3.170	5.280	9.505
500	170	600	800	1.200	1.595	1.795	2.995	4.990	8.980
600	140	550	730	1.095	1.460	1.640	2.735	4.560	8.210
650	125	535	715	1.075	1.430	1.610	2.685	4.475	8.055
700	110	535	710	1.065	1.420	1.600	2.665	4.440	7.990
750	95	505	670	1.010	1.345	1.510	2.520	4.200	7.560
800	80	410	550	825	1.100	1.235	2.060	3.430	6.170
850	65	270	355	535	715	805	1.340	2.230	4.010
900	50	170	230	345	460	515	860	1.430	2.570
950	35	105	140	205	275	310	515	860	1.545
1000	20	50	70	105	140	155	260	430	770

STANDARD CLASS

Temperature °C	150	300	400	600	800	900	1500	2500	4500
-29 +38	19,7	51,0	68,3	102,0	136,2	153,1	255,5	425,4	766,0
93,3	17,9	46,5	62,1	93,1	124,1	139,6	232,7	387,8	697,8
148,9	15,9	45,2	60,3	90,7	120,7	135,8	226,2	377,2	678,8
204,4	13,8	43,8	58,3	87,6	116,5	131,0	218,6	364,1	655,4
260,0	11,7	41,4	55,2	82,7	110,0	123,8	206,5	344,1	619,2
315,6	9,7	37,9	50,3	75,5	100,7	113,1	188,6	314,4	566,1
343,3	8,6	36,9	49,3	74,1	98,6	111,0	185,1	308,6	555,4
371,1	7,6	36,9	49,0	73,4	97,9	110,3	183,8	306,1	550,9
398,9	6,6	34,8	46,2	69,6	92,8	104,1	173,8	289,6	521,3
426,7	5,5	28,3	37,9	56,9	75,9	85,2	142,0	236,5	425,4
454,4	4,5	18,6	24,5	36,9	49,3	55,5	92,4	153,8	276,5
482,2	3,4	11,7	15,9	23,8	31,7	35,5	59,3	98,6	177,2
510,0	2,4	7,2	9,7	14,1	19,0	21,4	35,5	59,3	106,5
537,8	1,4	3,4	4,8	7,2	9,7	10,7	17,9	29,6	53,1

SPECIAL CLASS

Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
600	275	715	950	1.425	-	2.140	3.565	5.940	10.690
650	270	700	935	1.400	-	2.100	3.495	5.825	10.485
700	265	695	925	1.390	-	2.080	3.470	5.780	10.405
750	240	630	840	1.260	-	1.890	3.150	5.250	9.450
800	200	515	685	1.030	-	1.545	2.570	4.285	7.715
850	130	335	445	670	-	1.005	1.670	2.785	5.015
900	85	215	285	430	-	645	1.070	1.785	3.215
950	50	130	170	260	-	385	645	1.070	1.930
1000	25	65	85	130	-	195	320	535	965

SPECIAL CLASS

Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
315,6	19,0	49,3	65,5	98,3	-	147,6	245,8	409,6	737,1
343,3	18,6	48,3	64,5	96,5	-	144,8	241,0	401,6	722,9
371,1	18,3	47,9	63,8	95,8	-	143,4	239,3	398,5	717,4
398,9	16,5	43,4	57,9	86,9	-	130,3	217,2	362,0	651,6
426,7	13,8	35,5	47,2	71,0	-	106,5	177,2	295,5	531,9
454,4	9,0	23,1	30,7	46,2	-	69,3	115,1	192,0	345,8
482,2	5,9	14,8	19,7	29,6	-	44,5	73,8	123,1	221,7
510,0	3,4	9,0	11,7	17,9	-	26,5	44,5	73,8	133,1
537,8	1,7	4,5	5,9	9,0	-	13,4	22,1	36,9	66,5

PSI - °F — MATERIALS: ASTM A350 LF3 (b) - ASTM A352 LCC (b) - ASTM A352 LC2 (b) - ASTM A352 LC3 (b) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS

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
200	260	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
300	230	730	970	1.455	1.940	2.185	3.640	6.070	10.925
400	200	705	940	1.410	1.880	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.775	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.615	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.570	1.765	2.940	4.905	8.825
700	110	570	755	1.135	-	1.705	2.840	4.730	8.515
750	95	505	670	1.010	-	1.510	2.520	4.200	7.560
800	80	410	550	825	-	1.235	2.060	3.430	6.170
850	65	270	355	535	-	805	1.340	2.230	4.010
900	50	170	230	345	-	515	860	1.430	2.570
950	35	105	140	205	-	310	515	860	1.545
1000	20	50	70	105	-	155	260	430	770

STANDARD CLASS

Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
148,9	15,9	50,3	66,9	100,3	133,8	150,7	251,0	418,5	753,3
204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,4	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,3	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	-	117,6	195,8	326,1	587,1
398,9	6,6	34,8	46,2	69,6	-	104,1	173,8	289,6	521,3
426,7	5,5	28,3	37,9	56,9	-	85,2	142,0	236,5	425,4
454,4	4,5	18,6	24,5	36,9	-	55,5	92,4	153,8	276,5
482,2	3,4	11,7	15,9	23,8	-	35,5	59,3	98,6	177,2
510,0	2,4	7,2	9,7	14,1	-	21,4	35,5	59,3	106,5
537,8	1,4	3,4	4,8	7,2	-	10,7	17,9	29,6	53,1

SPECIAL CLASS

Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
600	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
650	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
700	275	710	950	1.425	-	2.135	3.560	5.930	10.670
750	240	630	840	1.260	-	1.890	3.150	5.250	9.450
800	195	515	685	1.030	-	1.545	2.570	4.285	7.715
850	130	335	445	670	-	1.005	1.670	2.785	5.015
900	80	215	285	430	-	645	1.070	1.785	3.215
950	50	130	170	260	-	385	645	1.070	1.930
1000	25	65	85	130	-	195	320	535	965

SPECIAL CLASS

Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
315,6	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
343,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
371,1	19,0	49,0	65,5	98,3	-	147,2	245,5	408,9	735,7
398,9	16,5	43,4	57,9	86,9	-	130,3	217,2	362,0	651,6
426,7	13,4	35,5	47,2	71,0	-	106,5	177,2	295,5	531,9
454,4	9,0	23,1	30,7	46,2	-	69,3	115,1	192,0	345,8
482,2	5,5	14,8	19,7	29,6	-	44,5	73,8	123,1	221,7
510,0	3,4	9,0	11,7	17,9	-	26,5	44,5	73,8	133,1
537,8	1,7	4,5	5,9	9,0	-	13,4	22,1	36,9	66,5

PSI - °F — MATERIALS: ASTM A352 LCB (b) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	265	695	925	1.390	1.855	2.085	3.470	5.785	10.415
200	250	655	875	1.315	1.750	1.970	3.280	5.470	9.845
300	230	640	850	1.275	1.700	1.915	3.190	5.315	9.565
400	200	620	825	1.235	1.645	1.850	3.085	5.145	9.260
500	170	585	775	1.165	1.550	1.745	2.910	4.850	8.735
600	140	535	710	1.065	1.420	1.600	2.665	4.440	7.990
650	125	525	695	1.045	1.395	1.570	2.615	4.355	7.840
700	110	520	690	1.035	-	1.555	2.590	4.320	7.775
750	95	475	630	945	-	1.420	2.365	3.945	7.100
800	80	390	520	780	-	1.175	1.955	3.260	5.865
850	65	270	355	535	-	805	1.340	2.230	4.010
900	50	170	230	345	-	515	860	1.430	2.570
950	35	105	140	205	-	310	515	860	1.545
1000	20	50	70	105	-	155	260	430	770

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	18,3	47,9	63,8	95,8	127,9	143,8	239,3	398,9	718,1
93,3	17,2	45,2	60,3	90,7	120,7	135,8	226,2	377,2	678,8
148,9	15,9	44,1	58,6	87,9	117,2	132,0	220,0	366,5	659,5
204,4	13,8	42,7	56,9	85,2	113,4	127,6	212,7	354,7	638,5
260,0	11,7	40,3	53,4	80,3	106,9	120,3	200,6	334,4	602,3
315,6	9,7	36,9	49,0	73,4	97,9	110,3	183,8	306,1	550,9
343,3	8,6	36,2	47,9	72,1	96,2	108,3	180,3	300,3	540,6
371,1	7,6	35,9	47,6	71,4	-	107,2	178,6	297,9	536,1
398,9	6,6	32,8	43,4	65,2	-	97,9	163,1	272,0	489,5
426,7	5,5	26,9	35,9	53,8	-	81,0	134,8	224,8	404,4
454,4	4,5	18,6	24,5	36,9	-	55,5	92,4	153,8	276,5
482,2	3,4	11,7	15,9	23,8	-	35,5	59,3	98,6	177,2
510,0	2,4	7,2	9,7	14,1	-	21,4	35,5	59,3	106,5
537,8	1,4	3,4	4,8	7,2	-	10,7	17,9	29,6	53,1

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	265	695	925	1.390	-	2.085	3.470	5.785	10.415
200	265	695	925	1.390	-	2.085	3.470	5.785	10.415
300	265	695	925	1.390	-	2.085	3.470	5.785	10.415
400	265	695	925	1.390	-	2.085	3.470	5.785	10.415
500	265	695	925	1.390	-	2.085	3.470	5.785	10.415
600	265	695	925	1.390	-	2.085	3.470	5.780	10.405
650	260	680	910	1.360	-	2.040	3.400	5.670	10.205
700	255	665	885	1.330	-	1.995	3.320	5.535	9.965
750	225	590	790	1.185	-	1.775	2.960	4.930	8.870
800	190	490	650	980	-	1.465	2.445	4.070	7.330
850	130	335	445	670	-	1.005	1.670	2.785	5.015
900	85	215	285	430	-	645	1.070	1.785	3.215
950	50	130	170	260	-	385	645	1.070	1.930
1000	25	65	85	130	-	195	320	535	965

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
93,3	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
148,9	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
204,4	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
260,0	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
315,6	18,3	47,9	63,8	95,8	-	143,8	239,3	398,5	717,4
343,3	17,9	46,9	62,7	93,8	-	140,7	234,4	390,9	703,6
371,1	17,6	45,9	61,0	91,7	-	137,6	228,9	381,6	687,1
398,9	15,5	40,7	54,5	81,7	-	122,4	204,1	339,9	611,6
426,7	13,1	33,8	44,8	67,6	-	101,0	168,6	280,6	505,4
454,4	9,0	23,1	30,7	46,2	-	69,3	115,1	192,0	345,8
482,2	5,9	14,8	19,7	29,6	-	44,5	73,8	123,1	221,7
510,0	3,4	9,0	11,7	17,9	-	26,5	44,5	73,8	133,1
537,8	1,7	4,5	5,9	9,0	-	13,4	22,1	36,9	66,5

PSI - °F — MATERIALS: ASTM A182 F1 (d) - ASTM A217 WC1 (d) - ASTM A352 LC1 (b) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	265	695	925	1.390	1.853	2.085	3.470	5.785	10.415
200	260	680	905	1.360	1.810	2.035	3.395	5.660	10.185
300	230	655	870	1.305	1.738	1.955	3.260	5.435	9.780
400	200	640	855	1.280	1.707	1.920	3.200	5.330	9.595
500	170	620	830	1.245	1.658	1.865	3.105	5.180	9.320
600	140	605	805	1.210	1.613	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.568	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.418	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.710
850	65	485	650	975	1.298	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	280	375	560	750	845	1.405	2.345	4.215
1000	20	165	220	330	440	495	825	1.370	2.470

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	18,3	47,9	63,8	95,8	127,8	143,8	239,3	398,9	718,1
93,3	17,9	46,9	62,4	93,8	124,8	140,3	234,1	390,3	702,3
148,9	15,9	45,2	60,0	90,0	119,9	134,8	224,8	374,7	674,3
204,4	13,8	44,1	59,0	88,3	117,7	132,4	220,6	367,5	661,6
260,0	11,7	42,7	57,2	85,8	114,3	128,6	214,1	357,2	642,6
315,6	9,7	41,7	55,5	83,4	111,2	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,1	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,5	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	19,3	25,9	38,6	51,7	58,3	96,9	161,7	290,6
537,8	1,4	11,4	15,2	22,8	30,3	34,1	56,9	94,5	170,3

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	265	695	925	1.390	-	2.085	3.470	5.785	10.415
200	265	695	925	1.390	-	2.085	3.470	5.785	10.415
300	265	695	925	1.390	-	2.085	3.470	5.785	10.415
400	265	695	925	1.390	-	2.085	3.470	5.785	10.415
500	265	695	925	1.390	-	2.085	3.470	5.785	10.415
600	265	695	925	1.390	-	2.085	3.470	5.785	10.415
650	265	695	925	1.390	-	2.085	3.470	5.785	10.415
700	265	695	925	1.390	-	2.085	3.470	5.785	10.415
750	265	695	925	1.390	-	2.085	3.470	5.785	10.415
800	265	695	925	1.390	-	2.085	3.470	5.785	10.415
850	260	680	905	1.355	-	2.030	3.335	5.645	10.160
900	225	590	785	1.175	-	1.760	2.935	4.895	8.810
950	135	350	470	705	-	1.055	1.755	2.930	5.270
1000	80	205	275	410	-	615	1.030	1.715	3.085

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
93,3	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
148,9	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
204,4	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
260,0	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
315,6	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
343,3	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
371,1	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
398,9	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
426,7	18,3	47,9	63,8	95,8	-	143,8	239,3	398,9	718,1
454,4	17,9	46,9	62,4	93,4	-	140,0	229,9	389,2	700,5
482,2	15,5	40,7	54,1	81,0	-	121,4	202,4	337,5	607,4
510,0	9,3	24,1	32,4	48,6	-	72,7	121,0	202,0	363,4
537,8	5,5	14,1	19,0	28,3	-	42,4	71,0	118,2	212,7

PSI - °F — MATERIALS: ASTM A182 F5 - ASTM A182 F5a - ASTM A217 C5 — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	260	745	995	1.490	2.000	2.235	3.725	6.205	11.170
300	230	715	955	1.430	1.940	2.150	3.580	5.965	10.740
400	200	705	940	1.410	1.880	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.775	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.615	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.570	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	705	1.055	1.420	1.585	2.640	4.400	7.920
800	80	510	675	1.015	1.325	1.525	2.540	4.230	7.610
850	65	485	645	965	1.170	1.450	2.415	4.030	7.250
900	50	370	495	740	940	1.110	1.850	3.085	5.555
950	35	275	365	550	695	825	1.370	2.285	4.115
1000	20	200	265	400	510	595	995	1.655	2.985
1050	20	145	190	290	375	430	720	1.200	2.160
1100	20	100	135	200	275	300	495	830	1.490
1150	20	60	80	125	185	185	310	515	925
1200	15	35	45	70	120	105	170	285	515

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,4	68,6	102,7	137,9	154,1	256,8	427,8	770,2
148,9	15,9	49,3	65,8	98,6	133,8	148,2	246,8	411,3	740,5
204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,4	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,3	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	48,6	72,7	97,9	109,3	182,0	303,4	546,1
426,7	5,5	35,2	46,5	70,0	91,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,5	66,5	80,7	100,0	166,5	277,9	499,9
482,2	3,4	25,5	34,1	51,0	64,8	76,5	127,6	212,7	383,0
510,0	2,4	19,0	25,2	37,9	47,9	56,9	94,5	157,6	283,7
537,8	1,4	13,8	18,3	27,6	35,2	41,0	68,6	114,1	205,8
565,6	1,4	10,0	13,1	20,0	25,9	29,6	49,6	82,7	148,9
593,3	1,4	6,9	9,3	13,8	19,0	20,7	34,1	57,2	102,7
621,1	1,4	4,1	5,5	8,6	12,8	12,8	21,4	35,5	63,8
648,9	1,0	2,4	3,1	4,8	8,3	7,2	11,7	19,7	35,5

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	280	730	970	1.455	-	2.185	3.645	6.070	10.930
400	275	720	960	1.440	-	2.160	3.600	6.000	10.800
500	275	720	960	1.440	-	2.160	3.600	6.000	10.800
600	270	705	945	1.415	-	2.120	3.535	5.895	10.605
650	270	700	930	1.395	-	2.095	3.495	5.820	10.480
700	265	685	915	1.370	-	2.055	3.430	5.715	10.285
750	255	660	880	1.320	-	1.980	3.300	5.500	9.900
800	245	640	850	1.275	-	1.915	3.195	5.320	9.580
850	230	605	805	1.210	-	1.815	3.020	5.035	9.065
900	175	465	615	925	-	1.390	2.315	3.855	6.945
950	130	345	455	685	-	1.030	1.715	2.855	5.145
1000	95	250	330	495	-	745	1.245	2.070	3.730
1050	70	180	240	360	-	540	900	1.500	2.700
1100	50	125	165	250	-	375	620	1.035	1.865
1150	30	75	105	155	-	230	385	645	1.155
1200	15	45	55	85	-	130	215	355	645

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	19,3	50,3	66,9	100,3	-	150,7	251,3	418,5	753,6
204,4	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
260,0	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
315,6	18,6	48,6	65,2	97,6	-	146,2	243,7	406,5	731,2
343,3	18,6	48,3	64,1	96,2	-	144,5	241,0	401,3	722,6
371,1	18,3	47,2	63,1	94,5	-	141,7	236,5	394,0	709,2
398,9	17,6	45,5	60,7	91,0	-	136,5	227,5	379,2	682,6
426,7	16,9	44,1	58,6	87,9	-	132,0	220,3	366,8	660,5
454,4	15,9	41,7	55,5	83,4	-	125,1	208,2	347,2	625,0
482,2	12,1	32,1	42,4	63,8	-	95,8	159,6	265,8	478,9
510,0	9,0	23,8	31,4	47,2	-	71,0	118,2	196,9	354,7
537,8	6,6	17,2	22,8	34,1	-	51,4	85,8	142,7	257,2
565,6	4,8	12,4	16,5	24,8	-	37,2	62,1	103,4	186,2
593,3	3,4	8,6	11,4	17,2	-	25,9	42,7	71,4	128,6
621,1	2,1	5,2	7,2	10,7	-	15,9	26,5	44,5	79,6
648,9	1,0	3,1	3,8	5,9	-	9,0	14,8	24,5	44,5

PSI - °F — MATERIALS: ASTM A182 F11 CL2 (c) - ASTM A182 F12 CL2 (c) - ASTM A217 WC6 (e) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	260	750	1.000	1.500	1.900	2.250	3.750	6.250	11.250
300	230	720	965	1.445	1.795	2.165	3.610	6.015	10.830
400	200	695	925	1.385	1.755	2.080	3.465	5.775	10.400
500	170	665	885	1.330	1.710	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.615	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.570	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.420	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610
850	65	485	650	975	1.300	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	320	425	640	1.005	955	1.595	2.655	4.785
1000	20	215	290	430	595	650	1.080	1.800	3.240
1050	20	145	190	290	365	430	720	1.200	2.160
1100	20	95	130	190	255	290	480	800	1.440
1150	20	60	80	125	140	185	310	515	925
1200	15	40	50	75	95	115	190	315	565

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	131,0	151,1	258,6	430,9	775,7
148,9	15,9	49,6	66,5	99,6	123,8	149,3	248,9	414,7	746,7
204,4	13,8	47,9	63,8	95,5	121,0	143,4	238,9	398,2	717,1
260,0	11,7	45,9	61,0	91,7	117,9	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,4	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,3	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,7	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	22,1	29,3	44,1	69,3	65,8	110,0	183,1	329,9
537,8	1,4	14,8	20,0	29,6	41,0	44,8	74,5	124,1	223,4
565,6	1,4	10,0	13,1	20,0	25,2	29,6	49,6	82,7	148,9
593,3	1,4	6,6	9,0	13,1	17,6	20,0	33,1	55,2	99,3
621,1	1,4	4,1	5,5	8,6	9,7	12,8	21,4	35,5	63,8
648,9	1,0	2,8	3,4	5,2	6,6	7,9	13,1	21,7	39,0

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
600	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
650	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
700	280	735	980	1.465	-	2.200	3.665	6.110	10.995
750	280	730	970	1.460	-	2.185	3.645	6.070	10.930
800	275	720	960	1.440	-	2.160	3.600	6.000	10.800
850	260	680	905	1.355	-	2.030	3.385	5.645	10.160
900	225	585	785	1.175	-	1.760	2.935	4.895	8.805
950	155	400	530	795	-	1.195	1.995	3.320	5.980
1000	105	270	360	540	-	810	1.350	2.250	4.050
1050	70	180	240	360	-	540	900	1.500	2.700
1100	45	120	160	240	-	360	600	1.000	1.800
1150	30	75	105	155	-	230	385	645	1.155
1200	20	45	65	95	-	140	235	395	705

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
93,3	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
148,9	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
204,4	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
260,0	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
315,6	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
343,3	20.0	51.7	69.0	103.4	-	155.1	258.6	430.9	775.7
371,1	19.3	50.7	67,6	101,0	-	151,7	252,7	421,3	758,1
398,9	19,3	50,3	66,9	100,7	-	150,7	251,3	418,5	753,6
426,7	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
454,4	17,9	46,9	62,4	93,4	-	140,0	233,4	389,2	700,5
482,2	15,5	40,3	54,1	81,0	-	121,4	202,4	337,5	607,1
510,0	10,7	27,6	36,5	54,8	-	82,4	137,6	228,9	412,3
537,8	7,2	18,6	24,8	37,2	-	55,8	93,1	155,1	279,2
565,6	4,8	12,4	16,5	24,8	-	37,2	62,1	103,4	186,2
593,3	3,1	8,3	11,0	16,5	-	24,8	41,4	69,0	124,1
621,1	2,1	5,2	7,2	10,7	-	15,9	26,5	44,5	79,6
648,9	1,4	3,1	4,5	6,6	-	9,7	16,2	27,2	48,6

PSI - °F — MATERIALS: ASTM A182 F22 CL3 (c) - ASTM A217 WC9 (e) — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	260	750	1.000	1.500	1.910	2.250	3.750	6.250	11.250
300	230	730	970	1.455	1.805	2.185	3.640	6.070	10.925
400	200	705	940	1.410	1.730	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.705	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.615	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.570	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.420	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610
850	65	485	650	975	1.300	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	375	505	755	1.005	1.130	1.885	3.145	5.665
1000	20	260	345	520	715	780	1.305	2.170	3.910
1050	20	175	235	350	530	525	875	1.455	2.625
1100	20	110	145	220	300	330	550	915	1.645
1150	20	70	90	135	275	205	345	570	1.030
1200	20	40	55	80	145	125	205	345	615

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	131,7	155,1	258,6	430,9	775,7
148,9	15,9	50,3	66,9	100,3	124,5	150,7	251,0	418,5	753,3
204,4	13,8	48,6	64,8	97,2	119,3	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	117,6	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,4	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,3	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,7	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	25,9	34,8	52,1	69,3	77,9	130,0	216,8	390,6
537,8	1,4	17,9	23,8	35,9	49,3	53,8	90,0	149,6	269,6
565,6	1,4	12,1	16,2	24,1	36,5	36,2	60,3	100,3	181,0
593,3	1,4	7,6	10,0	15,2	20,7	22,8	37,9	63,1	113,4
621,1	1,4	4,8	6,2	9,3	19,0	14,1	23,8	39,3	71,0
648,9	1,4	2,8	3,8	5,5	10,0	8,6	14,1	23,8	42,4

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	285	740	990	1.485	-	2.225	3.705	6.180	11.120
400	280	725	965	1.450	-	2.175	3.620	6.035	10.865
500	275	720	960	1.440	-	2.160	3.600	6.000	10.800
600	275	720	960	1.440	-	2.160	3.600	6.000	10.800
650	275	715	955	1.430	-	2.145	3.580	5.965	10.735
700	275	710	955	1.425	-	2.135	3.555	5.930	10.670
750	265	690	920	1.380	-	2.070	3.450	5.750	10.350
800	260	675	895	1.345	-	2.020	3.365	5.605	10.095
850	245	645	855	1.285	-	1.930	3.215	5.355	9.645
900	230	600	800	1.200	-	1.800	3.000	5.000	9.000
950	180	470	630	945	-	1.415	2.355	3.930	7.070
1000	125	325	435	650	-	975	1.630	2.715	4.885
1050	85	220	290	435	-	655	1.095	1.820	3.280
1100	55	135	185	275	-	410	685	1.145	2.055
1150	35	85	115	170	-	255	430	715	1.285
1200	25	50	70	105	-	155	255	430	770

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	19,7	51,0	68,3	102,4	-	153,4	255,5	426,1	766,7
204,4	19,3	50,0	66,5	100,0	-	150,0	249,6	416,1	749,1
260,0	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
315,6	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
343,3	19,0	49,3	65,8	98,6	-	147,9	246,8	411,3	740,2
371,1	19,0	49,0	65,8	98,3	-	147,2	245,1	408,9	735,7
398,9	18,3	47,6	63,4	95,2	-	142,7	237,9	396,5	713,6
426,7	17,9	46,5	61,7	92,7	-	139,3	232,0	386,5	696,1
454,4	16,9	44,5	59,0	88,6	-	133,1	221,7	369,2	665,0
482,2	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
510,0	12,4	32,4	43,4	65,2	-	97,6	162,4	271,0	487,5
537,8	8,6	22,4	30,0	44,8	-	67,2	112,4	187,2	336,8
565,6	5,9	15,2	20,0	30,0	-	45,2	75,5	125,5	226,2
593,3	3,8	9,3	12,8	19,0	-	28,3	47,2	78,9	141,7
621,1	2,4	5,9	7,9	11,7	-	17,6	29,6	49,3	88,6
648,9	1,7	3,4	4,8	7,2	-	10,7	17,6	29,6	53,1

PSI - °F — MATERIALS: ASTM A182 F9 - ASTM A217 C12 — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	260	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
300	230	730	970	1.455	1.940	2.185	3.640	6.070	10.925
400	200	705	940	1.410	1.880	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.775	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.615	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.570	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.420	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610
850	65	485	650	975	1.300	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	375	505	755	985	1.130	1.885	3.145	5.655
1000	20	255	340	505	780	760	1.270	2.115	3.805
1050	20	170	230	345	505	515	855	1.430	2.570
1100	20	115	150	225	300	340	565	945	1.695
1150	20	75	100	150	200	225	375	630	1.130
1200	20	50	70	105	140	155	255	430	770

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
148,9	15,9	50,3	66,9	100,3	133,8	150,7	251,0	418,5	753,3
204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	122,4	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,4	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,3	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,9	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,7	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	25,9	34,8	52,1	67,9	77,9	130,0	216,8	389,9
537,8	1,4	17,6	23,4	34,8	53,8	52,4	87,6	145,8	262,4
565,6	1,4	11,7	15,9	23,8	34,8	35,5	59,0	98,6	177,2
593,3	1,4	7,9	10,3	15,5	20,7	23,4	39,0	65,2	116,9
621,1	1,4	5,2	6,9	10,3	13,8	15,5	25,9	43,4	77,9
648,9	1,4	3,4	4,8	7,2	9,7	10,7	17,6	29,6	53,1

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
600	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
650	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
700	280	735	980	1.465	-	2.200	3.665	6.110	10.995
750	280	730	970	1.460	-	2.185	3.645	6.070	10.930
800	275	720	960	1.440	-	2.160	3.600	6.000	10.800
850	260	680	905	1.355	-	2.030	3.385	5.645	10.160
900	230	600	800	1.200	-	1.800	3.000	5.000	9.000
950	180	470	630	945	-	1.415	2.355	3.930	7.070
1000	120	315	425	635	-	950	1.585	2.645	4.755
1050	80	215	285	430	-	645	1.070	1.785	3.215
1100	55	140	190	285	-	425	710	1.180	2.120
1150	35	95	125	190	-	285	470	785	1.415
1200	25	65	85	130	-	195	320	535	965

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
315,6	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
343,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
371,1	19,3	50,7	67,6	101,0	-	151,7	252,7	421,3	758,1
398,9	19,3	50,3	66,9	100,7	-	150,7	251,3	418,5	753,6
426,7	19,0	49,6	66,2	99,3	-	148,9	248,2	413,7	744,7
454,4	17,9	46,9	62,4	93,4	-	140,0	233,4	389,2	700,5
482,2	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
510,0	12,4	32,4	43,4	65,2	-	97,6	162,4	271,0	487,5
537,8	8,3	21,7	29,3	43,8	-	65,5	109,3	182,4	327,9
565,6	5,5	14,8	19,7	29,6	-	44,5	73,8	123,1	221,7
593,3	3,8	9,7	13,1	19,7	-	29,3	49,0	81,4	146,2
621,1	2,4	6,6	8,6	13,1	-	19,7	32,4	54,1	97,6
648,9	1,7	4,5	5,9	9,0	-	13,4	22,1	36,9	66,5

PSI - °F — MATERIALS: ASTM A182 F304 - ASTM A351 CF8 — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	230	600	800	1.200	1.600	1.800	3.000	5.000	9.000
300	205	540	720	1.080	1.410	1.620	2.700	4.500	8.100
400	190	495	660	995	1.255	1.490	2.485	4.140	7.450
500	170	465	620	930	1.165	1.395	2.330	3.880	6.985
600	140	435	580	875	1.105	1.310	2.185	3.640	6.550
650	125	430	575	860	1.090	1.290	2.150	3.580	6.445
700	110	425	565	850	1.075	1.275	2.125	3.540	6.370
750	95	415	555	830	1.060	1.245	2.075	3.460	6.230
800	80	405	540	805	1.050	1.210	2.015	3.360	6.050
850	65	395	530	790	1.035	1.190	1.980	3.300	5.940
900	50	390	520	780	1.025	1.165	1.945	3.240	5.830
950	35	380	510	765	1.000	1.145	1.910	3.180	5.725
1000	20	320	430	640	860	965	1.605	2.675	4.815
1050	20	310	410	615	825	925	1.545	2.570	4.630
1100	20	255	345	515	685	770	1.285	2.145	3.855
1150	20	200	265	400	520	595	995	1.655	2.985
1200	20	155	205	310	415	465	770	1.285	2.315
1250	20	115	150	225	295	340	565	945	1.695
1300	20	85	115	170	220	255	430	715	1.285
1350	20	60	80	125	165	185	310	515	925
1400	20	50	65	95	130	145	240	400	720
1450	15	35	45	70	95	105	170	285	515
1500	10	25	35	55	65	80	135	230	410

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	19,0	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
93,3	15,9	41,4	55,2	82,7	110,3	124,1	206,9	344,8	620,6
148,9	14,1	37,2	49,6	74,5	97,2	111,7	186,2	310,3	558,5
204,4	13,1	34,1	45,5	68,6	86,5	102,7	171,3	285,5	513,7
260,0	11,7	32,1	42,7	64,1	80,3	96,2	160,7	267,5	481,6
315,6	9,7	30,0	40,0	60,3	76,2	90,3	150,7	251,0	451,6
343,3	8,6	29,6	39,6	59,3	75,2	88,9	148,2	246,8	444,4
371,1	7,6	29,3	39,0	58,6	74,1	87,9	146,5	244,1	439,2
398,9	6,6	28,6	38,3	57,2	73,1	85,8	143,1	238,6	429,6
426,7	5,5	27,9	37,2	55,5	72,4	83,4	138,9	231,7	417,1
454,4	4,5	27,2	36,5	54,5	71,4	82,1	136,5	227,5	409,6
482,2	3,4	26,9	35,9	53,8	70,7	80,3	134,1	223,4	402,0
510,0	2,4	26,2	35,2	52,7	69,0	78,9	131,7	219,3	394,7
537,8	1,4	22,1	29,6	44,1	59,3	66,5	110,7	184,4	332,0
565,6	1,4	21,4	28,3	42,4	56,9	63,8	106,5	177,2	319,2
593,3	1,4	17,6	23,8	35,5	47,2	53,1	88,6	147,9	265,8
621,1	1,4	13,8	18,3	27,6	35,9	41,0	68,6	114,1	205,8
648,9	1,4	10,7	14,1	21,4	28,6	32,1	53,1	88,6	159,6
676,7	1,4	7,9	10,3	15,5	20,3	23,4	39,0	65,2	116,9
704,4	1,4	5,9	7,9	11,7	15,2	17,6	29,6	49,3	88,6
732,2	1,4	4,1	5,5	8,6	11,4	12,8	21,4	35,5	63,8
760,0	1,4	3,4	4,5	6,6	9,0	10,0	16,5	27,6	49,6
787,8	1,0	2,4	3,1	4,8	6,6	7,2	11,7	19,7	35,5
815,6	0,7	1,7	2,4	3,8	4,5	5,5	9,3	15,9	28,3

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	255	670	890	1.335	-	2.005	3.345	5.570	10.030
300	230	600	800	1.200	-	1.800	3.000	5.000	9.000
400	210	555	735	1.105	-	1.660	2.765	4.605	8.295
500	200	520	690	1.035	-	1.555	2.595	4.320	7.780
600	185	490	650	975	-	1.465	2.440	4.065	7.315
650	185	480	640	960	-	1.440	2.395	3.995	7.190
700	180	470	630	945	-	1.415	2.355	3.930	7.070
750	175	465	615	925	-	1.390	2.315	3.855	6.945
800	175	450	600	900	-	1.350	2.250	3.750	6.750
850	170	440	590	885	-	1.325	2.205	3.680	6.620
900	165	435	575	865	-	1.300	2.165	3.605	6.495
950	165	425	565	850	-	1.275	2.120	3.535	6.365
1000	155	405	545	815	-	1.220	2.035	3.395	6.105
1050	150	385	515	770	-	1.155	1.930	3.215	5.785
1100	125	320	430	645	-	965	1.605	2.680	4.820
1150	95	250	330	495	-	745	1.245	2.070	3.730
1200	75	195	255	385	-	580	965	1.605	2.895
1250	55	140	190	285	-	425	705	1.180	2.120
1300	40	105	145	215	-	320	535	895	1.605
1350	30	75	105	155	-	230	385	645	1.155
1400	25	60	80	120	-	180	300	500	900
1450	15	45	55	85	-	130	215	355	645
1500	15	35	45	70	-	105	170	285	515

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	17,6	46,2	61,4	92,0	-	138,2	230,6	384,1	691,6
148,9	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
204,4	15,4	38,3	50,7	76,2	-	114,5	190,6	317,5	571,9
260,0	13,8	35,9	47,6	71,4	-	107,2	178,9	297,9	536,4
315,6	12,8	33,8	44,8	67,2	-	101,0	168,2	280,3	504,4
343,3	12,8	33,1	44,1	66,2	-	99,3	165,1	275,5	495,8
371,1	12,4	32,4	43,4	65,2	-	97,6	162,4	271,0	487,5
398,9	12,1	32,1	42,4	63,8	-	95,8	159,6	265,8	478,9
426,7	12,1	31,0	41,4	62,1	-	93,1	155,1	258,6	465,4
454,4	11,7	30,3	40,7	61,0	-	91,4	152,0	253,7	456,4
482,2	11,4	30,0	39,6	59,6	-	89,6	149,3	248,6	447,8
510,0	11,4	29,3	39,0	58,6	-	87,9	146,2	243,7	438,9
537,8	10,7	27,9	37,6	56,2	-	84,1	140,3	234,1	420,9
565,6	10,3	26,5	35,5	53,1	-	79,6	133,1	221,7	398,9
593,3	8,6	22,1	29,6	44,5	-	66,5	110,7	184,8	332,3
621,1	6,6	17,2	22,8	34,1	-	51,4	85,8	142,7	257,2
648,9	5,2	13,4	17,6	26,5	-	40,0	66,5	110,7	199,6
676,7	3,8	9,7	13,1	19,7	-	29,3	48,6	81,4	146,2
704,4	2,8	7,2	10,0	14,8	-	22,1	36,9	61,7	110,7
732,2	2,1	5,2	7,2	10,7	-	15,9	26,5	44,5	79,6
760,0	1,7	4,1	5,5	8,3	-	12,4	20,7	34,5	62,1
787,8	1,0	3,1	3,8	5,9	-	9,0	14,8	24,5	44,5
815,6	1,0	2,4	3,1	4,8	-	7,2	11,7	19,7	35,5

PSI - °F — MATERIALS: ASTM A182 F316 - ASTM A351 CF3A (b) - ASTM A351 CF8M — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
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
200	235	620	825	1.240	1.655	1.860	3.095	5.160	9.290
300	215	560	745	1.120	1.495	1.680	2.795	4.660	8.390
400	195	515	685	1.025	1.370	1.540	2.570	4.280	7.705
500	170	480	635	955	1.275	1.435	2.390	3.980	7.165
600	140	450	600	900	1.205	1.355	2.255	3.760	6.770
650	125	445	590	890	1.185	1.330	2.220	3.700	6.660
700	110	430	580	870	1.150	1.305	2.170	3.620	6.515
750	95	425	570	855	1.130	1.280	2.135	3.560	6.410
800	80	420	565	845	1.105	1.265	2.110	3.520	6.335
850	65	420	555	835	1.080	1.255	2.090	3.480	6.265
900	50	415	555	830	1.050	1.245	2.075	3.460	6.230
950	35	385	515	775	1.030	1.160	1.930	3.220	5.795
1000	20	350	465	700	970	1.050	1.750	2.915	5.245
1050	20	345	460	685	960	1.030	1.720	2.865	5.155
1100	20	305	405	610	860	915	1.525	2.545	4.575
1150	20	235	315	475	735	710	1.185	1.970	3.550
1200	20	185	245	370	550	555	925	1.545	2.775
1250	20	145	195	295	485	440	735	1.230	2.210
1300	20	115	155	235	365	350	585	970	1.750
1350	20	95	130	190	275	290	480	800	1.440
1400	20	75	100	150	200	225	380	630	1.130
1450	20	60	80	115	155	175	290	485	875
1500	20	40	55	85	110	125	205	345	620

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	19,0	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
93,3	16,2	42,7	56,9	85,5	114,1	128,2	213,4	355,8	640,5
148,9	14,8	38,6	51,4	77,2	103,1	115,8	192,7	321,3	578,5
204,4	13,4	35,5	47,2	70,7	94,5	106,2	177,2	295,1	531,3
260,0	11,7	33,1	43,8	65,8	87,9	98,9	164,8	274,4	494,0
315,6	9,7	31,0	41,4	62,1	83,1	93,4	155,5	259,3	466,8
343,3	8,6	30,7	40,7	61,4	81,7	91,7	153,1	255,1	459,2
371,1	7,6	29,6	40,0	60,0	79,3	90,0	149,6	249,6	449,2
398,9	6,6	29,3	39,3	59,0	77,9	88,3	147,2	245,5	442,0
426,7	5,5	29,0	39,0	58,3	76,2	87,2	145,5	242,7	436,8
454,4	4,5	29,0	38,3	57,6	74,6	86,5	144,1	239,9	432,0
482,2	3,4	28,6	38,3	57,2	72,4	85,8	143,1	238,6	429,6
510,0	2,4	26,5	35,5	53,4	71,0	80,0	133,1	222,0	399,6
537,8	1,4	24,1	32,1	48,3	66,9	72,4	120,7	201,0	361,6
565,6	1,4	23,8	31,7	47,2	66,2	71,0	118,6	197,5	355,4
593,3	1,4	21,0	27,9	42,1	59,3	63,1	105,1	175,5	315,4
621,1	1,4	16,2	21,7	32,8	50,7	49,0	81,7	135,8	244,8
648,9	1,4	12,8	16,9	25,5	37,9	38,3	63,8	106,5	191,3
676,7	1,4	10,0	13,4	20,3	33,4	30,3	50,7	84,8	152,4
704,4	1,4	7,9	10,7	16,2	25,2	24,1	40,3	66,9	120,7
732,2	1,4	6,6	9,0	13,1	19,0	20,0	33,1	55,2	99,3
760,0	1,4	5,2	6,9	10,3	13,8	15,5	26,2	43,4	79,9
787,8	1,4	4,1	5,5	7,9	10,7	12,1	20,0	33,4	60,3
815,6	1,4	2,8	3,8	5,9	7,6	8,6	14,1	23,8	42,7

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	265	690	920	1.380	-	2.070	3.450	5.750	10.350
300	240	625	830	1.250	-	1.870	3.120	5.200	9.360
400	220	570	760	1.140	-	1.710	2.850	4.750	8.550
500	205	530	710	1.065	-	1.595	2.655	4.430	7.970
600	195	505	670	1.005	-	1.510	2.520	4.195	7.555
650	190	495	655	985	-	1.480	2.465	4.105	7.395
700	185	485	645	970	-	1.455	2.420	4.035	7.265
750	180	475	635	950	-	1.425	2.380	3.965	7.135
800	180	470	630	945	-	1.415	2.355	3.930	7.070
850	180	465	620	930	-	1.400	2.330	3.885	6.990
900	175	465	615	925	-	1.390	2.315	3.855	6.945
950	175	460	610	915	-	1.375	2.290	3.815	6.870
1000	160	420	560	840	-	1.260	2.105	3.505	6.310
1050	160	420	560	840	-	1.260	2.105	3.505	6.310
1100	145	380	510	765	-	1.145	1.905	3.180	5.720
1150	115	295	395	590	-	885	1.480	2.465	4.435
1200	90	230	310	465	-	695	1.155	1.930	3.470
1250	70	185	245	370	-	555	920	1.535	2.765
1300	55	145	195	290	-	435	730	1.215	2.185
1350	45	120	160	240	-	360	600	1.000	1.800
1400	35	95	125	190	-	285	470	785	1.415
1450	30	75	100	145	-	220	365	610	1.095
1500	20	50	70	105	-	155	260	430	770

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	18,3	47,6	63,4	95,2	-	142,7	237,9	396,5	713,6
148,9	16,5	43,1	57,2	86,2	-	128,9	215,1	358,5	645,4
204,4	15,2	39,3	52,4	78,6	-	117,9	196,5	327,5	589,5
260,0	14,1	36,5	49,0	73,4	-	110,0	183,1	305,4	549,5
315,6	13,4	34,8	46,2	69,3	-	104,1	173,8	289,2	520,9
343,3	13,1	34,1	45,2	67,9	-	102,0	170,0	283,0	509,9
371,1	12,8	33,4	44,5	66,9	-	100,3	166,9	278,2	500,9
398,9	12,4	32,8	43,8	65,5	-	98,3	164,1	273,4	492,0
426,7	12,4	32,4	43,4	65,2	-	97,6	162,4	271,0	487,5
454,4	12,4	32,1	42,7	64,1	-	96,5	160,7	267,9	482,0
482,2	12,1	32,1	42,4	63,8	-	95,8	159,6	265,8	478,9
510,0	12,1	31,7	42,1	63,1	-	94,8	157,9	263,0	473,7
537,8	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
565,6	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
593,3	10,0	26,2	35,2	52,7	-	78,9	131,3	219,3	394,4
621,1	7,9	20,3	27,2	40,7	-	61,0	102,0	170,0	305,8
648,9	6,2	15,9	21,4	32,1	-	47,9	79,6	133,1	239,3
676,7	4,8	12,8	16,9	25,5	-	38,3	63,4	105,8	190,6
704,4	3,8	10,0	13,4	20,0	-	30,0	50,3	83,8	150,7
732,2	3,1	8,3	11,0	16,5	-	24,8	41,4	69,0	124,1
760,0	2,4	6,6	8,6	13,1	-	19,7	32,4	54,1	97,6
787,8	2,1	5,2	6,9	10,0	-	15,2	25,2	42,1	75,5
815,6	1,4	3,4	4,8	7,2	-	10,7	17,9	29,6	53,1

PSI - °F — MATERIALS: ASTM A182 F304 L (i) - ASTM A182 F316 L — BAR - °C

CLASS 800 ACCORDING TO API 602

STANDARD CLASS									
Temperature°F	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
200	195	505	675	1.015	1.350	1.520	2.530	4.220	7.595
300	175	455	605	910	1.210	1.360	2.270	3.780	6.805
400	160	415	550	825	1.100	1.240	2.065	3.440	6.190
500	145	380	510	765	1.020	1.145	1.910	3.180	5.725
600	140	360	480	720	960	1.080	1.800	3.000	5.400
650	125	350	470	700	935	1.050	1.750	2.920	5.255
700	110	345	460	685	915	1.030	1.715	2.860	5.150
750	95	335	450	670	895	1.010	1.680	2.800	5.040
800	80	330	440	660	875	985	1.645	2.740	4.930
850	65	320	430	645	860	965	1.610	2.680	4.825

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	15,9	41,4	55,2	82,7	110,3	124,1	206,9	344,8	620,6
93,3	13,4	34,8	46,5	70,0	93,1	104,8	174,4	291,0	523,7
148,9	12,1	31,4	41,7	62,7	83,4	93,8	156,5	260,6	469,2
204,4	11,0	28,6	37,9	56,9	75,8	85,5	142,4	237,2	426,8
260,0	10,0	26,2	35,2	52,7	70,4	78,9	131,7	219,3	394,7
315,6	9,7	24,8	33,1	49,6	66,2	74,5	124,1	206,9	372,3
343,3	8,6	24,1	32,4	48,3	64,5	72,4	120,7	201,3	362,3
371,1	7,6	23,8	31,7	47,2	63,1	71,0	118,2	197,2	355,1
398,9	6,6	23,1	31,0	46,2	61,7	69,6	115,8	193,1	347,5
426,7	5,5	22,8	30,3	45,5	60,3	67,9	113,4	188,9	339,9
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
-20 to 100	255	670	890	1.340	-	2.005	3.345	5.570	10.030
200	215	565	755	1.130	-	1.695	2.825	4.710	8.480
300	195	505	675	1.010	-	1.520	2.530	4.215	7.585
400	175	460	615	920	-	1.385	2.305	3.840	6.910
500	165	425	570	850	-	1.280	2.130	3.550	6.390
600	155	400	535	805	-	1.205	2.010	3.350	6.025
650	150	390	520	780	-	1.170	1.950	3.250	5.850
700	145	380	510	765	-	1.145	1.910	3.180	5.720
750	145	375	500	745	-	1.120	1.865	3.110	5.595
800	140	365	490	735	-	1.100	1.835	3.060	5.505
850	140	360	480	720	-	1.075	1.795	2.990	5.385

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	17,6	46,2	61,4	92,4	-	138,2	230,6	384,1	691,6
93,3	14,8	39,0	52,1	77,9	-	116,9	194,8	324,8	584,7
148,9	13,4	34,8	46,5	69,6	-	104,8	174,4	290,6	523,0
204,4	12,1	31,7	42,4	63,4	-	95,5	158,9	264,8	476,4
260,0	11,4	29,3	39,3	58,6	-	88,3	146,9	244,8	440,6
315,6	10,7	27,6	36,9	55,5	-	83,1	138,6	231,0	415,4
343,3	10,3	26,9	35,9	53,8	-	80,7	134,5	224,1	403,4
371,1	10,0	26,2	35,2	52,7	-	78,9	131,7	219,3	394,4
398,9	10,0	25,9	34,5	51,4	-	77,2	128,6	214,4	385,8
426,7	9,7	25,2	33,8	50,7	-	75,8	126,5	211,0	379,6
454,4	9,7	24,8	33,1	49,6	-	74,1	123,8	206,2	371,3

PSI - °F — MATERIALS: ASTM A182 F44 - ASTM A182 F51 (f) - ASTM A182 F53 (f) - ASTM A351 CK3MCuN — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
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
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
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
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
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

STANDARD CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
148,9	15,9	45,9	61,0	91,7	122,3	137,6	229,3	382,0	687,4
204,4	13,8	42,4	56,5	84,8	113,1	127,2	211,7	353,0	635,4
260,0	11,7	39,6	53,1	79,3	106,0	119,3	198,6	331,0	595,7
315,6	9,7	38,3	51,0	76,9	102,4	115,1	192,0	319,9	-
343,3	8,6	37,9	50,7	75,8	101,1	113,8	189,6	315,8	568,5
371,1	7,6	37,2	50,0	74,8	99,6	112,0	186,9	311,7	560,9
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	285	740	990	1.485	-	2.225	3.710	6.185	11.130
400	265	685	915	1.370	-	2.055	3.430	5.715	10.285
500	245	645	855	1.285	-	1.930	3.215	5.355	9.645
600	240	620	830	1.245	-	1.865	3.105	5.180	9.320
650	235	615	820	1.225	-	1.840	3.065	5.110	9.200
700	230	605	805	1.210	-	1.815	3.025	5.045	9.080
750	230	595	795	1.195	-	1.790	2.985	4.980	8.960

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	19,7	51,0	68,3	102,4	-	153,4	255,8	426,5	767,4
204,4	18,3	47,2	63,1	94,5	-	141,7	236,5	394,0	709,2
260,0	16,9	44,5	59,0	88,6	-	133,1	221,7	369,2	665,0
315,6	16,5	42,7	57,2	85,8	-	128,6	214,1	357,2	642,6
343,3	16,2	42,4	56,5	84,5	-	126,9	211,3	352,3	634,3
371,1	15,9	41,7	55,5	83,4	-	125,1	208,6	347,9	626,1
398,9	15,9	41,0	54,8	82,4	-	123,4	205,8	343,4	617,8

PSI - °F — MATERIALS: ASTM B564 N06600 — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800 (2)	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
200	260	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
300	230	730	970	1.455	1.942	2.185	3.640	6.070	10.925
400	200	705	940	1.410	1.880	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.773	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.613	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.568	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.418	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610
850	65	485	650	975	1.298	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	325	435	655	872	980	1.635	2.725	4.905
1000	20	215	290	430	577	650	1.080	1.800	3.240
1050	20	140	185	280	370	415	695	1.155	2.085
1100	20	95	125	185	248	280	465	770	1.390
1150	20	70	90	135	182	205	340	565	1.070
1200	20	60	80	125	165	185	310	515	925

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800 (2)	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
148,9	15,9	50,3	66,9	100,3	133,9	150,7	251,0	418,5	753,3
204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	122,3	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,2	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,1	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,5	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	22,4	30,0	45,2	60,1	67,6	112,7	187,9	338,2
537,8	1,4	14,8	20,0	29,6	39,8	44,8	74,5	124,1	223,4
565,6	1,4	9,7	12,8	19,3	25,5	28,6	47,9	79,6	143,8
593,3	1,4	6,6	8,6	12,8	17,1	19,3	32,1	53,1	95,8
621,1	1,4	4,8	6,2	9,3	12,5	14,1	23,4	39,0	73,8
648,9	1,4	4,1	5,5	8,6	11,4	12,8	21,4	35,5	63,8

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
600	285	745	995	1.495	-	2.240	3.735	6.230	11.210
650	280	735	980	1.470	-	2.200	3.670	6.115	11.010
700	275	725	965	1.445	-	2.170	3.615	6.025	10.850
750	270	710	945	1.420	-	2.130	3.550	5.915	10.645
800	270	700	930	1.400	-	2.095	3.495	5.825	10.485
850	260	680	905	1.355	-	2.030	3.385	5.645	10.160
900	230	600	800	1.200	-	1.800	3.000	5.000	9.000
950	165	425	570	850	-	1.280	2.130	3.550	6.390
1000	110	280	375	565	-	845	1.405	2.345	4.220
1050	70	180	240	360	-	540	905	1.505	2.710
1100	45	120	160	240	-	360	605	1.005	1.810
1150	35	90	120	175	-	265	440	735	1.325
1200	30	80	105	160	-	240	400	670	1.205

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
315,6	19,7	51,4	68,6	103,1	-	154,4	257,5	429,6	772,9
343,3	19,3	50,7	67,6	101,4	-	151,7	253,0	421,6	759,1
371,1	19,0	50,0	66,5	99,6	-	149,6	249,3	415,4	748,1
398,9	18,6	49,0	65,2	97,9	-	146,9	244,8	407,8	734,0
426,7	18,6	48,3	64,1	96,5	-	144,5	241,0	401,6	722,9
454,4	17,9	46,9	62,4	93,4	-	140,0	233,4	389,2	700,5
482,2	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
510,0	11,4	29,3	39,3	58,6	-	88,3	146,9	244,8	440,6
537,8	7,6	19,3	25,9	39,0	-	58,3	96,9	161,7	291,0
565,6	4,8	12,4	16,5	24,8	-	37,2	62,4	103,8	186,9
593,3	3,1	8,3	11,0	16,5	-	24,8	41,7	69,3	124,8
621,1	2,4	6,2	8,3	12,1	-	18,3	30,3	50,7	91,4
648,9	2,1	5,5	7,2	11,0	-	16,5	27,6	46,2	83,1

PSI - °F — MATERIALS: ASTM B564 N08800 — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800 (2)	900	1500	2500	4500
-20 to 100	275	720	960	1.440	1.920	2.160	3.600	6.000	10.800
200	255	660	885	1.325	1.768	1.990	3.310	5.520	9.935
300	230	625	830	1.250	1.663	1.870	3.120	5.200	9.360
400	200	600	800	1.200	1.600	1.800	3.000	5.000	9.000
500	170	580	770	1.155	1.542	1.735	2.890	4.820	8.875
600	140	575	765	1.145	1.528	1.720	2.870	4.780	8.605
650	125	570	760	1.140	1.517	1.705	2.845	4.740	8.530
700	110	565	750	1.130	1.503	1.690	2.820	4.700	8.460
750	95	530	710	1.065	1.418	1.595	2.660	4.430	7.970
800	80	505	675	1.015	1.352	1.520	2.535	4.230	7.610
850	65	485	650	975	1.298	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	385	515	775	1.032	1.160	1.930	3.220	5.795
1000	20	365	485	725	968	1.090	1.820	3.030	5.450
1050	20	360	480	720	960	1.080	1.800	3.000	5.400
1100	20	325	430	645	858	965	1.610	2.685	4.835
1150	20	275	365	550	733	825	1.370	2.285	4.115
1200	20	205	270	405	542	610	1.020	1.695	3.055
1250	20	130	175	260	347	390	650	1.080	1.945
1300	20	60	80	125	165	185	310	515	925
1350	20	50	65	100	133	150	245	410	740
1400	15	35	45	70	90	100	170	285	510
1450	10	30	40	60	83	95	155	255	465
1500	10	25	35	50	67	75	125	205	370

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800 (2)	900	1500	2500	4500
-29 +38	19,0	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
93,3	17,6	45,5	61,0	91,4	121,9	137,2	228,2	380,6	685,0
148,9	15,9	43,1	57,2	86,2	114,7	128,9	215,1	358,5	645,4
204,4	13,8	41,4	55,2	82,7	110,3	124,1	206,9	344,8	620,6
260,0	11,7	40,0	53,1	79,6	106,3	119,6	199,3	332,3	611,9
315,6	9,7	39,6	52,7	78,9	105,4	118,6	197,9	329,6	593,3
343,3	8,6	39,3	52,4	78,6	104,6	117,6	196,2	326,8	588,1
371,1	7,6	39,0	51,7	77,9	103,7	116,5	194,4	324,1	583,3
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5
426,7	5,5	34,8	46,5	70,0	93,2	104,8	174,8	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,5	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	26,5	35,5	53,4	71,1	80,0	133,1	222,0	399,6
537,8	1,4	25,2	33,4	50,0	66,8	75,2	125,5	208,9	375,8
565,6	1,4	24,8	33,1	49,6	66,2	74,5	124,1	206,9	372,3
593,3	1,4	22,4	29,6	44,5	59,2	66,5	111,0	185,1	333,4
621,1	1,4	19,0	25,2	37,9	50,6	56,9	94,5	157,6	283,7
648,9	1,4	14,1	18,6	27,9	37,3	42,1	70,3	116,9	210,6
676,7	1,4	9,0	12,1	17,9	23,9	26,9	44,8	74,5	134,1
704,4	1,4	4,1	5,5	8,6	11,4	12,8	21,4	35,5	63,8
732,2	1,4	3,4	4,5	6,9	9,2	10,3	16,9	28,3	51,0
760,0	1,0	2,4	3,1	4,8	6,2	6,9	11,7	19,7	35,2
787,8	0,7	2,1	2,8	4,1	5,7	6,6	10,7	17,6	32,1
815,6	0,7	1,7	2,4	3,4	4,6	5,2	8,6	14,1	25,5

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	285	740	985	1.480	-	2.220	3.695	6.160	11.090
300	265	695	930	1.395	-	2.090	3.480	5.805	10.445
400	255	670	895	1.340	-	2.010	3.350	5.580	10.045
500	245	645	860	1.290	-	1.935	3.230	5.380	9.685
600	245	640	855	1.280	-	1.920	3.200	5.335	9.605
650	245	635	845	1.270	-	1.905	3.175	5.290	9.520
700	240	630	840	1.260	-	1.890	3.145	5.245	9.440
750	240	625	830	1.250	-	1.870	3.120	5.200	9.360
800	235	615	820	1.230	-	1.850	3.080	5.135	9.240
850	235	615	820	1.230	-	1.845	3.075	5.125	9.220
900	230	600	800	1.200	-	1.800	3.000	5.000	9.000
950	180	470	630	945	-	1.415	2.360	3.930	7.070
1000	160	420	560	840	-	1.260	2.105	3.505	6.310
1050	160	420	560	840	-	1.260	2.105	3.505	6.310
1100	155	405	540	805	-	1.210	2.015	3.360	6.045
1150	130	345	460	685	-	1.030	1.715	2.860	5.145
1200	100	260	345	515	-	770	1.285	2.145	3.860
1250	65	170	225	335	-	505	845	1.405	2.530
1300	30	80	105	160	-	240	400	670	1.205
1350	25	65	85	130	-	195	320	535	965
1400	15	45	60	90	-	135	220	370	665
1450	15	40	55	80	-	120	200	335	605
1500	10	30	45	65	-	95	160	270	480

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	19,7	51,0	67,9	102,0	-	153,1	254,8	424,7	764,7
148,9	18,3	47,9	64,1	96,2	-	144,1	239,9	400,3	720,2
204,4	17,6	46,2	61,7	92,4	-	138,6	231,0	384,7	692,6
260,0	16,9	44,5	59,3	88,9	-	133,4	222,7	371,0	667,8
315,6	16,9	44,1	59,0	88,3	-	132,4	220,6	367,8	662,3
343,3	16,9	43,8	58,3	87,6	-	131,3	218,9	364,7	656,4
371,1	16,5	43,4	57,9	86,9	-	130,3	216,8	361,6	650,9
398,9	16,5	43,1	57,2	86,2	-	128,9	215,1	358,5	645,4
426,7	16,2	42,4	56,5	84,8	-	127,6	212,4	354,1	637,1
454,4	16,2	42,4	56,5	84,8	-	127,2	212,0	353,4	635,7
482,2	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
510,0	12,4	32,4	43,4	65,2	-	97,6	162,7	271,0	487,5
537,8	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
565,6	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
593,3	10,7	27,9	37,2	55,5	-	83,4	138,9	231,7	416,8
621,1	9,0	23,8	31,7	47,2	-	71,0	118,2	197,2	354,7
648,9	6,9	17,9	23,8	35,5	-	53,1	88,6	147,9	266,1
676,7	4,5	11,7	15,5	23,1	-	34,8	58,3	96,9	174,4
704,4	2,1	5,5	7,2	11,0	-	16,5	27,6	46,2	83,1
732,2	1,7	4,5	5,9	9,0	-	13,4	22,1	36,9	66,5
760,0	1,0	3,1	4,1	6,2	-	9,3	15,2	25,5	45,9
787,8	1,0	2,8	3,8	5,5	-	8,3	13,8	23,1	41,7
815,6	0,7	2,1	3,1	4,5	-	6,6	11,0	18,6	33,1

PSI - °F — MATERIALS: ASTM B564 N06625 (g) — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800 (2)	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
200	260	750	1.000	1.500	2.000	2.250	3.750	6.250	11.250
300	230	730	970	1.455	1.942	2.185	3.640	6.070	10.925
400	200	705	940	1.410	1.880	2.115	3.530	5.880	10.585
500	170	665	885	1.330	1.773	1.995	3.325	5.540	9.965
600	140	605	805	1.210	1.613	1.815	3.025	5.040	9.070
650	125	590	785	1.175	1.568	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.418	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610
850	65	485	650	975	1.298	1.460	2.435	4.060	7.305
900	50	450	600	900	1.200	1.350	2.245	3.745	6.740
950	35	385	515	775	1.032	1.160	1.930	3.220	5.795
1000	20	365	485	725	968	1.090	1.820	3.030	5.450
1050	20	360	480	720	960	1.080	1.800	3.000	5.400
1100	20	325	430	645	858	965	1.610	2.685	4.835
1150	20	275	365	550	733	825	1.370	2.285	4.115
1200	20	185	245	370	493	555	925	1.545	2.775
1250	20	145	195	295	392	440	735	1.220	2.200
1300	20	110	145	215	288	325	540	900	1.620

Note: for temperature > 1000°F valves in class 150 lbs are limitated at BW End only.

STANDARD CLASS									
Temperature°C	150	300	400	600	800 (2)	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
148,9	15,9	50,3	66,9	100,3	133,9	150,7	251,0	418,5	753,3
204,4	13,8	48,6	64,8	97,2	129,6	145,8	243,4	405,4	729,8
260,0	11,7	45,9	61,0	91,7	122,3	137,6	229,3	382,0	687,1
315,6	9,7	41,7	55,5	83,4	111,2	125,1	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,1	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7
454,4	4,5	33,4	44,8	67,2	89,5	100,7	167,9	279,9	503,7
482,2	3,4	31,0	41,4	62,1	82,7	93,1	154,8	258,2	464,7
510,0	2,4	26,5	35,5	53,4	71,1	80,0	133,1	222,0	399,6
537,8	1,4	25,2	33,4	50,0	66,8	75,2	125,5	208,9	375,8
565,6	1,4	24,8	33,1	49,6	66,2	74,5	124,1	206,9	372,3
593,3	1,4	22,4	29,6	44,5	59,2	66,5	111,0	185,1	333,4
621,1	1,4	19,0	25,2	37,9	50,6	56,9	94,5	157,6	283,7
648,9	1,4	12,8	16,9	25,5	34,0	38,3	63,8	106,5	191,3
676,7	1,4	10,0	13,4	20,3	27,0	30,3	50,7	84,1	151,7
704,4	1,4	7,6	10,0	14,8	19,9	22,4	37,2	62,1	111,7

Note: for temperature > 540°C valves in class 150 lbs are limitated at BW End only.

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1.000	1.500	-	2.250	3.750	6.250	11.250
500	285	740	990	1.485	-	2.225	3.710	6.185	11.130
600	275	725	965	1.445	-	2.170	3.615	6.025	10.850
650	270	710	945	1.420	-	2.130	3.550	5.915	10.645
700	265	695	930	1.395	-	2.090	3.480	5.805	10.445
750	265	690	920	1.380	-	2.075	3.455	5.760	10.365
800	265	685	915	1.370	-	2.055	3.430	5.715	10.285
850	260	675	900	1.350	-	2.025	3.375	5.625	10.125
900	230	600	800	1.200	-	1.800	3.000	5.000	9.000
950	180	470	630	945	-	1.415	2.360	3.930	7.070
1000	160	420	560	840	-	1.260	2.105	3.505	6.310
1050	160	420	560	840	-	1.260	2.105	3.505	6.310
1100	155	405	540	805	-	1.210	2.015	3.360	6.045
1150	130	345	460	685	-	1.030	1.715	2.860	5.145
1200	90	240	320	480	-	725	1.205	2.010	3.615
1250	75	190	255	380	-	575	955	1.590	2.865
1300	55	140	190	280	-	420	705	1.170	2.110

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	19,7	51,0	68,3	102,4	-	153,4	255,8	426,5	767,4
315,6	19,0	50,0	66,5	99,6	-	149,6	249,3	415,4	748,1
343,3	18,6	49,0	65,2	97,9	-	146,9	244,8	407,8	734,0
371,1	18,3	47,9	64,1	96,2	-	144,1	239,9	400,3	720,2
398,9	18,3	47,6	63,4	95,2	-	143,1	238,2	397,2	714,7
426,7	18,3	47,2	63,1	94,5	-	141,7	236,5	394,0	709,2
454,4	17,9	46,5	62,1	93,1	-	139,6	232,7	387,8	698,1
482,2	15,9	41,4	55,2	82,7	-	124,1	206,9	344,8	620,6
510,0	12,4	32,4	43,4	65,2	-	97,6	162,7	271,0	487,5
537,8	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
565,6	11,0	29,0	38,6	57,9	-	86,9	145,1	241,7	435,1
593,3	10,7	27,9	37,2	55,5	-	83,4	138,9	231,7	416,8
621,1	9,0	23,8	31,7	47,2	-	71,0	118,2	197,2	354,7
648,9	6,2	16,5	22,1	33,1	-	50,0	83,1	138,6	249,3
676,7	5,2	13,1	17,6	26,2	-	39,6	65,8	109,6	197,5
704,4	3,8	9,7	13,1	19,3	-	29,0	48,6	80,7	145,5

PSI - °F — MATERIALS: ASTM B464 N08020 — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800 (2)	900	1500	2500	4500
-20 to 100	290	750	1000	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
300	230	715	950	1.425	1.902	2.140	3.565	5.940	10.690
400	200	675	900	1.345	1.795	2.020	3.365	5.610	10.100
500	170	655	875	1.310	1.747	1.965	3.275	5.460	9.830
600	140	605	805	1.210	1.620	1.825	3.025	5.040	9.070
650	125	590	785	1.175	1.568	1.765	2.940	4.905	8.825
700	110	570	755	1.135	1.515	1.705	2.840	4.730	8.515
750	95	530	710	1.065	1.418	1.595	2.660	4.430	7.970
800	80	510	675	1.015	1.355	1.525	2.540	4.230	7.610

STANDARD CLASS									
Temperature°C	150	300	400	600	800 (2)	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	137,9	155,1	258,6	430,9	775,7
93,3	17,9	49,6	66,2	99,3	132,4	148,9	248,2	413,7	744,7
148,9	15,9	49,3	65,5	98,3	131,1	147,6	245,8	409,6	737,1
204,4	13,8	46,5	62,1	92,7	123,8	139,3	232,0	386,8	696,4
260,0	11,7	45,2	60,3	90,3	120,4	135,5	225,8	376,5	677,8
315,6	9,7	41,7	55,5	83,4	111,7	125,8	208,6	347,5	625,4
343,3	8,6	40,7	54,1	81,0	108,1	121,7	202,7	338,2	608,5
371,1	7,6	39,3	52,1	78,3	104,5	117,6	195,8	326,1	587,1
398,9	6,6	36,5	49,0	73,4	97,8	110,0	183,4	305,4	549,5
426,7	5,5	35,2	46,5	70,0	93,4	105,1	175,1	291,7	524,7

SPECIAL CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1000	1.500	-	2.250	3.750	6.250	11.250
200	290	750	1000	1.500	-	2.250	3.750	6.250	11.250
300	290	750	1000	1.500	-	2.250	3.750	6.250	11.250
400	290	750	1000	1.500	-	2.250	3.750	6.250	11.250
500	280	730	975	1.465	-	2.195	3.655	6.095	10.970
600	270	705	940	1.405	-	2.110	3.515	5.860	10.545
650	270	700	930	1.400	-	2.095	3.495	5.825	10.485
700	265	695	925	1.390	-	2.085	3.475	5.790	10.425
750	260	685	910	1.365	-	2.050	3.415	5.690	10.245
800	260	675	900	1.350	-	2.025	3.375	5.625	10.125

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
93,3	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
148,9	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
204,4	20,0	51,7	69,0	103,4	-	155,1	258,6	430,9	775,7
260,0	19,3	50,3	67,2	101,0	-	151,3	252,0	420,3	756,4
315,6	18,6	48,6	64,8	96,9	-	145,5	242,4	404,0	727,1
343,3	18,6	48,3	64,1	96,5	-	144,5	241,0	401,6	722,9
371,1	18,3	47,9	63,8	95,8	-	143,8	239,6	399,2	718,8
398,9	17,9	47,2	62,7	94,1	-	141,3	235,5	392,3	706,4
426,7	17,9	46,5	62,1	93,1	-	139,6	232,7	387,8	698,1

PSI - °F — MATERIALS: ASTM B564 N04400 — BAR - °C

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800 (2)	900	1500	2500	4500
-20 to 100	230	600	800	1.200	1.600	1.800	3.000	5.000	9.000
200	200	530	705	1.055	1.408	1.585	2.640	4.400	7.920
300	190	495	660	990	1.320	1.485	2.470	4.120	7.415
400	185	480	635	955	1.275	1.435	2.390	3.980	7.165
500	170	475	635	950	1.273	1.435	2.375	3.960	7.130
600	140	475	635	950	1.273	1.435	2.375	3.960	7.130
650	125	475	635	950	1.273	1.435	2.375	3.960	7.130
700	110	475	635	950	1.273	1.435	2.375	3.960	7.130
750	95	470	625	935	1.248	1.405	2.340	3.900	7.020
800	80	460	610	915	1.222	1.375	2.290	3.820	6.875
850	65	340	455	680	907	1.020	1.695	2.830	5.090
900	50	245	330	495	658	740	1.235	2.055	3.705

STANDARD CLASS									
Temperature°C	150	300	400	600	800 (2)	900	1500	2500	4500
-29 +38	15,9	41,4	55,2	82,7	110,3	124,1	206,9	344,8	620,6
93,3	13,8	36,5	48,6	72,7	97,1	109,3	182,0	303,4	546,1
148,9	13,1	34,1	45,5	68,3	91,0	102,4	170,3	284,1	511,3
204,4	12,8	33,1	43,8	65,8	87,9	98,9	164,8	274,4	494,0
260,0	11,7	32,8	43,8	65,5	87,8	98,9	163,8	273,0	491,6
315,6	9,7	32,8	43,8	65,5	87,8	98,9	163,8	273,0	491,6
343,3	8,6	32,8	43,8	65,5	87,8	98,9	163,8	273,0	491,6
371,1	7,6	32,8	43,8	65,5	87,8	98,9	163,8	273,0	491,6
398,9	6,6	32,4	43,1	64,5	86,1	96,9	161,3	268,9	484,0
426,7	5,5	31,7	42,1	63,1	84,2	94,8	157,9	263,4	474,0
454,4	4,5	23,4	31,4	46,9	62,5	70,3	116,9	195,1	351,0
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
-20 to 100	255	670	895	1.340	-	2.010	3.350	5.580	10.045
200	225	590	785	1.180	-	1.170	2.945	4.910	8.840
300	210	550	735	1.100	-	1.650	2.755	4.590	8.260
400	205	535	710	1.065	-	1.600	2.665	4.440	7.995
500	205	530	710	1.060	-	1.590	2.650	4.420	7.955
600	205	530	710	1.060	-	1.590	2.650	4.420	7.955
650	205	530	710	1.060	-	1.590	2.650	4.420	7.955
700	205	530	710	1.060	-	1.590	2.650	4.420	7.955
750	200	520	695	1.045	-	1.565	2.610	4.355	7.835
800	195	510	680	1.025	-	1.535	2.560	4.265	7.675
850	170	440	590	885	-	1.325	2.210	3.685	6.630
900	125	320	430	645	-	965	1.605	2.680	4.820

SPECIAL CLASS									
Temperature°C	150	300	400	600	800	900	1500	2500	4500
-29 +38	17,6	46,2	61,7	92,4	-	138,6	231,0	384,7	692,6
93,3	15,5	40,7	54,1	81,4	-	80,7	203,1	338,5	609,5
148,9	14,5	37,9	50,7	75,8	-	113,8	190,0	316,5	569,5
204,4	14,1	36,9	49,0	73,4	-	110,3	183,8	306,1	551,3
260,0	14,1	36,5	49,0	73,1	-	109,6	182,7	304,8	548,5
315,6	14,1	36,5	49,0	73,1	-	109,6	182,7	304,8	548,5
343,3	14,1	36,5	49,0	73,1	-	109,6	182,7	304,8	548,5
371,1	14,1	36,5	49,0	73,1	-	109,6	182,7	304,8	548,5
398,9	13,8	35,9	47,9	72,1	-	107,9	180,0	300,3	540,2
426,7	13,4	35,2	46,9	70,7	-	105,8	176,5	294,1	529,2
454,4	11,7	30,3	40,7	61,0	-	91,4	152,4	254,1	457,1
482,2	8,6	22,1	29,6	44,5	-	66,5	110,7	184,8	332,3

PSI - °F | **MATERIALS: ASTM A217 C12A - ASTM A217 CA15 - ASTM A182 F91 - ASTM A1582 F6a** | **BAR - °C**

CLASS 800 NOT INCLUDED ON API 602

STANDARD CLASS									
Temperature°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1000	1500	2000	2250	3750	6250	11250
200	260	750	1000	1500	2000	2250	3750	6250	11250
300	230	730	970	1455	1942	2185	3640	6070	10925
400	200	705	940	1410	1880	2115	3530	5880	10585
500	170	665	885	1330	1773	1995	3325	5540	9965
600	140	605	805	1210	1613	1815	3025	5040	9070
650	125	590	785	1175	1568	1765	2940	4905	8825
700	110	570	755	1135	1515	1705	2840	4730	8515
750	95	530	710	1065	1418	1595	2660	4430	7970
800	80	510	675	1015	1355	1525	2540	4230	7610
850	65	485	650	975	1298	1460	2435	4060	7305
900	50	450	600	900	1200	1350	2245	3745	6740
950	35	385	515	755	1025	1160	1930	3220	5795
1000	20	365	485	725	968	1090	1820	3030	5450
1050	20	360	480	720	960	1080	1800	3000	5400
1100	20	300	400	605	805	905	1510	2515	4525
1150	20	225	295	445	595	670	1115	1855	3345
1200	20	145	190	290	383	430	720	1200	2160

STANDARD CLASS									
Temp.°C	150	300	400	600	800	900	1500	2500	4500
-29 to 38	20.0	51.8	69.0	104	138	155	259	431	776
93.3	17.9	51.8	69.0	104	138	155	259	431	776
148.9	15.9	50.4	66.9	100	134	151	251	419	754
204.4	13.8	48.6	64.9	97	130	146	244	406	730
260	11.7	45.9	61.1	92	122	138	229	382	688
315.6	9.7	41.7	55.5	83.5	111	125	209	348	626
343.3	8.6	40.7	54.2	81.1	108	122	203	338	609
371.1	7.6	39.3	52.1	78.3	105	118	196	326	588
398.9	6.6	36.6	49.0	73.5	98	110	184	306	550
426.7	5.5	35.2	46.6	70.0	93	105	175	292	525
454.4	4.5	33.5	44.9	67.3	90	101	168	280	504
482.2	3.5	31.1	41.4	62.1	83	93	155	258	465
510	2.4	26.6	35.5	52.1	71	80	133	222	400
537.8	1.4	25.2	33.5	50.0	67	75	126	209	376
565.6	1.4	24.8	33.1	49.7	66	75	124	207	373
593.3	1.4	20.7	27.6	41.7	56	62	104	174	312
621.1	1.4	15.5	20.4	30.7	41	46	77	128	231
648.9	1.4	10.0	13.1	20.0	26	30	50	83	149

SPECIAL CLASS									
Temp.°F	150	300	400	600	800	900	1500	2500	4500
-20 to 100	290	750	1000	1500	2000	2250	3750	6250	11250
200	290	750	1000	1500	2000	2250	3750	6250	11250
300	290	750	1000	1500	2000	2250	3750	6250	11250
400	290	750	1000	1500	2000	2250	3750	6250	11250
500	290	750	1000	1500	2000	2250	3750	6250	11250
600	290	750	1000	1500	2000	2250	3750	6250	11250
650	290	750	1000	1500	2000	2250	3750	6250	11250
700	280	735	980	1465	1955	2200	3665	6110	10995
750	280	730	970	1460	1943	2185	3645	6070	10930
800	275	720	960	1440	1920	2160	3600	6000	10800
850	260	680	905	1355	1805	2030	3385	5645	10160
900	230	600	800	1200	1600	1800	3000	5000	9000
950	180	470	630	945	1258	1415	2360	3930	7070
1000	160	420	560	840	1120	1260	2105	3505	6310
1050	160	420	560	840	1120	1260	2105	3505	6310
1100	145	375	505	755	1005	1130	1885	3145	5655
1150	105	280	370	555	742	835	1395	2320	4180
1200	70	180	240	360	480	540	900	1500	2700

RATING SPECIAL CLASS in BAR									
Temp.°C	150	300	400	600	800	900	1500	2500	4500
-29 to 38	20.0	51.8	69.0	104	138	155	259	431	776
93.3	20.0	51.8	69.0	104	138	155	259	431	776
148.9	20.0	51.8	69.0	104	138	155	259	431	776
204.4	20.0	51.8	69.0	104	138	155	259	431	776
260	20.0	51.8	69.0	104	138	155	259	431	776
315.6	20.0	51.8	69.0	104	138	155	259	431	776
343.3	20.0	51.8	69.0	104	138	155	259	431	776
371.1	19.3	50.7	67.6	101	135	152	253	422	759
398.9	19.3	50.4	66.9	101	134	151	252	419	754
426.7	19.0	49.7	66.2	99	132	149	248	414	745
454.4	17.9	46.9	62.4	93.5	125	140	234	390	701
482.2	15.9	41.4	55.2	82.8	110	124	207	345	621
510	12.4	32.4	43.5	65.2	87	98	163	271	488
537.8	11.0	29.0	38.6	58.0	77	87	145	242	435
565.6	11.0	29.0	38.6	58.0	77	87	145	242	435
593.3	10.0	25.9	34.8	52.1	69	78	130	217	390
621.1	7.2	19.3	25.5	38.3	51	58	96	160	288
648.9	4.8	12.4	16.6	24.8	33	37	62	104	186

NOTE

a - Permissible, but not recommended for prolonged usage above about 800°F (427°C)

b - Not to be used over 650°F (343°C)

c - Permissible, but not recommended for prolonged usage above about 1100°F (593°C)

d - Permissible, but not recommended for prolonged usage above about 875°F (468°C)

e - Not to be used over 1100°F (593°C)

f - Not to be used over 600°F (316°C)

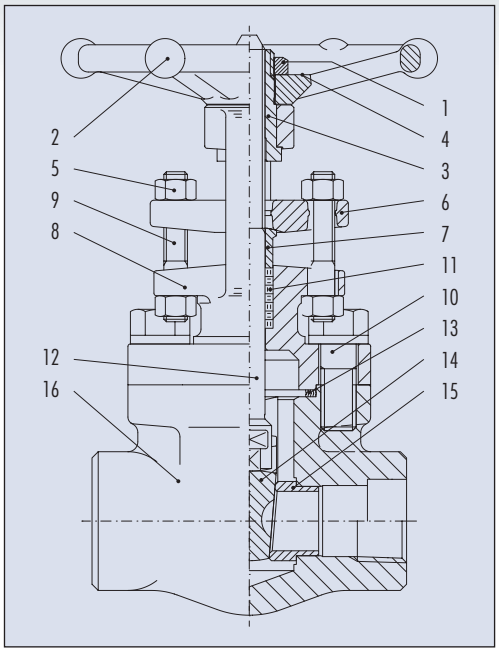
g - Not to be used over 1200°F (649°C) - Alloy N06625 in the annealed condition is subject to severe loss of impact strength at room temperature after exposure in the range of 1000°F to 1400°F (538°C to 742°C)

i - Not to be used over 800°F (427°C)

1 - For welding end valve only - Flanged end ratings terminate at 1000°F (538°C)

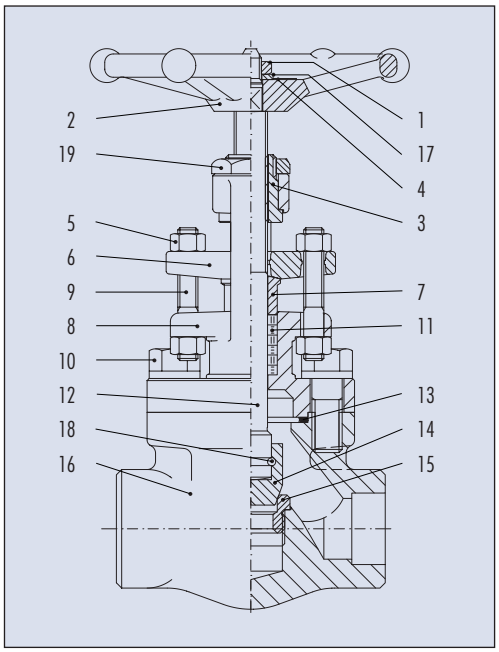
2 - Interpolated rating not included on API 602

STANDARD MATERIALS SPECIFICATION (FORGED)



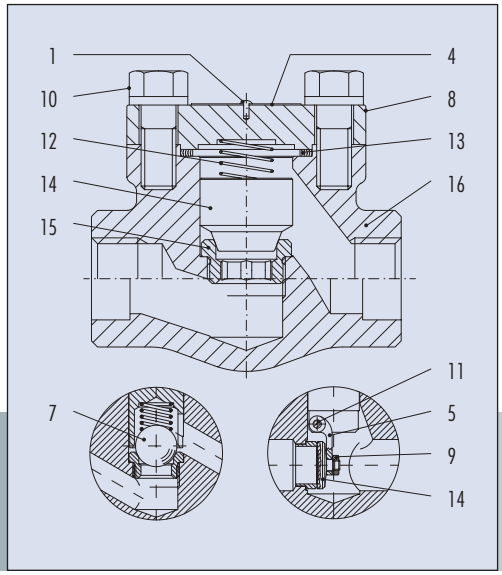
TYPICAL GATE

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
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	ASTM A479 410
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	ASTM A479 410
16	Body	ASTM A105 N

Stellite # 6 hardfacing on seat and disc on request. All carbon steel valves are phosphatized to prevent the atmospheric corrosion.

TEST PRESSURES

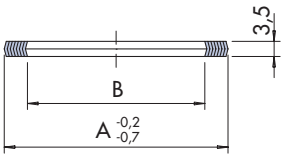
In accordance with API 598 - ANSI B16.34 - MSS SP 61 - BS 6755

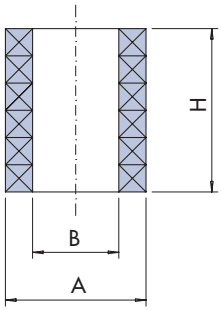
MATERIALS	GROUP	
	STD CLASS 150 TO 4500	CLASS 800 ONLY
ASTM A350 LF1 - LF1N	0	0
ASTM A105 - A105N - A105NGS8 - A350 LF2 - LF2N - A216 WCB - F42 - C22.8 (1.0460) - ALLOY 20 - UNS N080020	1	1
ASTM A350 LF3 - LF3N - A352 LCC - LC3 - ASTM A182 F5 - F5a - F6a - F9 - F11 - F12 - F22 - F44 - F51 - F53* - F55* - F91 - WC9 - 1.4462 - ASTM A217 C5 - WC6 - WC9 - C12 - A351 CK3MCuN - ASTM B564 N10276 - N10001 - N06600 - N06625 - N08028* - N08825 - ASTM B464 N08020 - ASTM A182 F44 - INCONEL 600 - UNS N06600 - N7M - INCONEL 625 - UNS N06625 - CW6MC - INCOLOY 825 - HASTELLOY B - UNS N10001 - HASTELLOY B-2 - UNS N10665 - HASTELLOY C276 - UNS N10276 - ZERON 100* - UNS S32760* - F53* - SAF2507* - UNS S32750*	2	2
ASTM A182 F304-L - F304H - F316-L - F316H - F316 U.G. - F316 TI - F317-L - F321-H - F347-H - AVESTA 904L - 1.4539 - INCOLOY 800 - UNS N08800 - ASTM B381 F2* - UNS R50400* - MONEL K500* - UNS N05500*	3	1
ASTM A182 F1 - A217 WC1 - A352 LCB - A352 LC1	3	3
MONEL 400 - UNS N04400 - CW12MW - N12MW - SANICRO 28* - UNS N080028*	4	3
ASTM A182 F304 - F316 - A351 CF8 - CF8M - CF3A - B564 N08800 - N05500* - B381 F2*	4	4
ASTM A182 F1	5	1
ASTM A182 F304L - F316L - A351 CN7M - ASTM B564 N04400	5	5
C95400	6	/

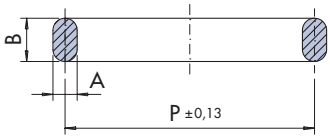
* Not included on ANSI B16.34

GROUP		CLASS 150		CLASS 300		CLASS 600		CLASS 800		CLASS 1500		CLASS 1690		CLASS 2500		CLASS 2680		CLASS 3000		CLASS 4000		CLASS 4500	
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
0	SEAT	260	18	685	48	1360	94	1815	125	3395	235	-	-	5660	395	-	-	6795	470	9055	625	10190	705
	BODY	375	26	950	66	1875	130	2475	175	4650	325	-	-	7725	535	-	-	9275	640	12350	855	13900	960
1	SEAT	315	22	815	57	1630	115	2175	150	4080	285	4650	325	6790	470	7370	510	8150	565	10865	750	12225	845
	BODY	450	32	1125	78	2225	155	2975	210	5575	385	6350	440	9275	640	10050	695	11125	770	14825	1025	16675	1150
2	SEAT	320	22	825	57	1650	115	2200	155	4125	285	4650	325	6875	475	7370	510	11250	570	11000	760	12375	1165
	BODY	450	32	1125	78	2250	160	3000	210	5625	390	6350	440	9375	650	10050	695	8250	780	15000	1035	16875	855
3	SEAT	305	21	795	55	1585	110	2115	150	3960	275	4650	325	6600	460	7370	510	7920	550	10560	730	11880	820
	BODY	425	30	1100	76	2175	150	2900	200	5400	375	6350	440	9000	625	10050	695	10800	745	14400	995	16200	1120
4	SEAT	255	18	660	46	1320	92	1760	125	3300	230	-	-	5500	380	-	-	6600	460	8800	610	9900	685
	BODY	350	25	900	63	1800	125	2400	170	4500	315	-	-	7500	520	-	-	9000	625	12000	830	13500	935
5	SEAT	295	21	765	53	1530	110	2040	145	3820	265	-	-	6365	440	-	-	7640	530	10190	705	11460	790
	BODY	400	28	1050	73	2100	145	2800	195	5225	365	-	-	8700	600	-	-	10425	720	13900	960	15625	1080
6	SEAT	250	18	550	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BODY	350	25	750	52	-	-	-	-	-	-	-	–	-	-	-	-	-	-	-	-	-	-

SPARE PARTS FOR FORGED VALVES





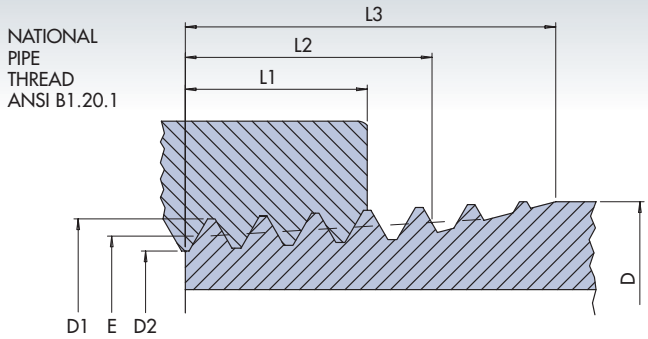


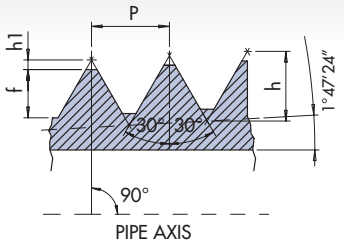
GASKET		
Type	A	B
G1	36	27
G2	40	31
G3	48	39
G4	54	44
G5	62	52
G6	66	54
G7	74	60
G8	85	73
G9	95	78
G10	87	76
G11	70	60

PACKING			
Type	A	B	H
BH2	15,7	9,5	22
BH3	17,2	11,1	22
BH4	17,2	11,1	26
BH5	19,2	12,7	26
BH6/A	24,5	14,5	30
BH8	32,2	19	36
BY5/A	26	16	30
BY7	28,2	19	30
2B3	19,2	12,7	35
2B4/A	26	16	35
2B5	28,2	19	40
2B8	35,7	22,2	52
25B8	38,5	25,4	52
4B8	40,5	28,5	54
9B8/A	35,7	22,2	42
9BE5	40,5	19	32

RING JOINT			
RTJ	P	A	B
R11	34,1	6,35	11,1
R12	39,6	7,94	14,3
R13	42,8	7,94	14,3
R14	44,4	7,94	14,3
R15	47,6	7,94	14,3
R16	50,8	7,94	14,3
R17	57,1	7,94	14,3
R18	60,3	7,94	14,3
R19	65,0	7,94	14,3
R20	68,2	7,94	14,3
R21	72,2	11,1	17,4
R22	82,5	7,94	14,3
R23	82,5	11,1	17,4
R24	95,2	11,1	17,4
R25	101,6	7,94	14,3
R26	101,6	11,1	17,4

THREAD STANDARDS ANSI B2.1





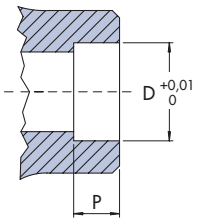
Pitch = P
h = 0,866 P
f = 0,800 P
h1 = 0,033 P

Dimensions in mm

NOMINAL PIPE SIZE	O.D. OF PIPE	THREADS PER INCH.	PITCH OF THREAD	O.D. AT BEGINNING OF THREAD	PITCH DIA. AT BEGINNING OF EXT. THRD.	ROOT DIA. AT BEGINNING OF EXT. THRD.	HANDTIGHT ENGAGEMENT	EFFECTIVE THREAD EXT. LENGTH	OVERALL LENGTH EXT. THREAD
	D	N	P	D1	E	D2	L1	L2	L3
1/8	10.29	27	0.940	9.982	9.233	6.484	4.572	6.703	9.967
1/4	13.72	18	1.412	13.259	12.126	10.998	5.080	10.206	15.103
3/8	17.14	18	1.412	16.662	15.545	14.427	6.096	10.358	15.255
1/2	21.34	14	1.814	20.726	19.263	17.805	8.128	13.556	19.850
3/4	26.67	14	1.814	26.035	24.580	23.139	8.611	13.861	20.155
1	33.40	11.1/2	2.210	32.588	30.825	29.058	10.160	17.343	25.006
1.1/4	42.16	11.1/2	2.210	41.326	39.550	37.795	10.668	17.953	25.616
1.1/2	48.26	11.1/2	2.210	47.396	45.621	43.866	10.668	18.377	26.040
2	60.32	11.1/2	2.210	59.411	57.633	55.855	11.074	19.215	26.878

SOCKET WELD - ANSI B16.11

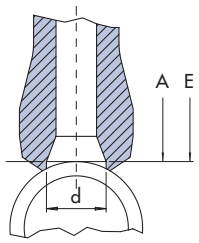
SIZE	inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2
	mm	6	10	15	20	25	32	40	50
D		14,10	17,53	21,72	27,05	33,78	42,54	48,64	61,11
P min.		9,6	9,6	9,6	12,7	12,7	12,7	12,7	15,8



VALV-O-LET

RUN PIPE CONSOLIDATION

The "Lip" extension end shown on Part 7-Extended Body represents an economical solution to stocking problems. In fact, the lip is inserted on the corresponding hole in the run and therefore a valve can be welded on different run size, independently. On the contrary, this solution creates some problems in welding, expecially when small run sizes are involved. In these cases, more amount of weld is required to compensate for lack of material in the transverse section. Where a certain number of valves is required and their location is known, B.F.E. suggests the use of the Weld-o-let end type for which all the well known advantages of the Weld-o-let fitting are met.



CLASS 800					
	1/2	3/4	1	1.1/2	2
Run pipe consolidation	1.1/4 ÷ 3/4 36 ÷ 1.1/2 -	1.1/4 ÷ 1 3.1/2 ÷ 1.1/2 36 ÷ 4	1.1/2 ÷ 1.1/4 5 ÷ 2 36 ÷ 6	2.1/2 ÷ 2 3 ÷ 5 36 ÷ 6	4 ÷ 3 8 ÷ 5 36 ÷ 10
d - Weldolet bore	22	30	36.5	50.5	65
Fig. N. - Bolted Bonnet	VL 103	VL 104	VL 105	VL 107	VL 108
Fig. N. - Welded Bonnet	VOL 103	VOL 104	VOL 105	VOL 107	VOL 108

CLASS 1500					
	1/2	3/4	1	1.1/2	2
Run pipe consolidation	1.1/4 ÷ 1 3.1/2 ÷ 1.1/2 36 ÷ 6	1.1/2 ÷ 1.1/4 5 ÷ 2 36 ÷ 6	2.1/2 ÷ 2 5 ÷ 3 36 ÷ 6	4 ÷ 3 8 ÷ 5 36 ÷ 10	- - -
d - Weldolet bore	30	36.5	50.5	65	-
Fig. N. - Bolted Bonnet	9VL 103	9VL 104	9VL 105	9VL 107	-
Fig. N. - Welded Bonnet	9VOL 103	9VOL 104	9VOL 105	9VOL 107	

A - E and other valve dimensions same as Part 7 - Extended Body

B.F.E. VALVES FLOW COEFFICIENT

"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 drops of one p.s.i.. It can be determinated by computing, but usually is obtained by flow tests. This data allows computing of pressure drop starting from a known flow rate or reverse and it is applicable both to fluid and gaseous media.

Formulas hereinafter represent a single example. For gaseous fluids, the engineering will use proper formulas on which factors resulting from fluid type (vapour, satured or superheated steam, etc.), differential pressure, temperature, flow velocity, etc., must be included.

FLOW RATE

water:

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

fluids other than water:

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

PRESSURE DROP

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

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

WHERE

Q = flow rate, gallon/minute
ΔP = pressure drop, p.s.i.
S = weight density of fluid handled, pound/cu.ft.
62.4 = weight density of water, pound/cu.ft.

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 100	FULL BORE	12	23	43	98	197
	HL 100	REDUCED BORE	5,6	11	25,5	77	97
GLOBE	H 300	FULL BORE	3,5	5,2	9,3	21	35
	HL 300	REDUCED BORE	1,5	3,9	6,5	16,5	23,5
	Y 300	FULL BORE	5,5	10	18	48	78
CHECK	H 400	FULL BORE	3	4,9	9,8	16	28
	HL 400	REDUCED BORE	1,2	2,8	5	12,5	17,5
	Y 400	FULL BORE	4,8	8,2	13	39	73

PROPER SIZING OF CHECK VALVES

It is the velocity of fluid that open the disc in a check valve.
The minimum velocity required to lift the disc to the full open and stable position has been determinated by the following formula:

$$\upsilon = 50\, \beta^2 \sqrt{\overline{V}}$$

WHERE

υ = flow velocity in feet per second
β = $\frac{\text{seat diameter}}{\text{pipe int. diameter}}$
$\overline{V}$ = specific volume of fluid in cu.ft. per pound

CONVERSION CHART

kg/sq. centimetre - Pound. sq. inch

1 kg/sq. cm = 14,2233 p.s.i.
1 p.s.i. = 0,070307 kg/sq. cm

kg/sq.cm	0	1	2	3	4	5	6	7	8	9
0	0,00	14,22	28,44	42,66	56,88	71,11	85,32	99,54	113,8	128,0
10	142,2	156,4	170,6	184,9	199,1	213,3	227,5	241,8	256,0	270,2
20	284,5	298,6	312,9	327,1	341,3	355,6	369,8	384,0	398,3	412,5
30	426,7	440,9	455,1	469,4	483,6	497,8	511,0	526,2	540,5	554,7
40	568,9	583,1	597,3	611,5	625,8	640,0	654,2	668,4	682,8	697,0
50	711,2	725,4	739,6	753,6	768,1	782,3	796,5	810,7	824,9	839,2
60	853,4	867,6	881,8	896,1	910,3	924,5	938,7	952,9	967,2	981,4
70	995,6	1010	1024	1038	1052	1067	1081	1095	1109	1123
80	1138	1152	1166	1180	1195	1209	1224	1238	1253	1267
90	1280	1294	1308	1323	1337	1351	1366	1381	1395	1408
100	1422	1436	1451	1465	1479	1493	1508	1522	1536	1550
110	1565	1579	1593	1607	1621	1636	1650	1664	1678	1693
120	1707	1721	1735	1749	1764	1778	1792	1806	1821	1835
130	1849	1863	1877	1892	1906	1920	1934	1949	1963	1977
140	1991	2005	2020	2034	2048	2062	2077	2091	2105	2119
150	2133	2148	2162	2176	2190	2205	2219	2233	2247	2261
160	2276	2290	2304	2318	2333	2347	2361	2375	2389	2404
170	2418	2432	2446	2461	2475	2489	2503	2517	2532	2546
180	2560	2574	2589	2603	2617	2631	2645	2660	2674	2688
190	2702	2717	2731	2745	2759	2773	2788	2802	2816	2830
200	2845	2859	2873	2887	2902	2916	2930	2944	2958	2973
210	2987	3001	3015	3029	3044	3058	3072	3086	3101	3115
220	3129	3143	3158	3172	3186	3200	3214	3229	3243	3257
230	3271	3286	3300	3314	3328	3342	3357	3371	3385	3399
240	3414	3428	3442	3456	3470	3485	3499	3513	3527	3542
250	3556	3570	3584	3598	3613	3627	3641	3655	3670	3684
260	3698	3712	3726	3741	3755	3769	3783	3798	3812	3826
270	3840	3854	3869	3883	3897	3911	3926	3940	3954	3968
280	3983	3997	4011	4025	4039	4054	4068	4082	4096	4110
290	4125	4139	4153	4167	4182	4196	4210	4224	4239	4253
300	4267	4281	4295	4310	4324	4338	4352	4366	4381	4395
310	4409	4423	4438	4452	4466	4480	4495	4509	4523	4537
320	4551	4566	4580	4514	4608	4622	4637	4651	4665	4679
330	4694	4708	4722	4736	4750	4765	4779	4793	4807	4822
340	4836	4850	4864	4879	4893	4907	4921	4935	4950	4964
350	4978	4992	5007	5021	5035	5049	5063	5078	5092	5106
360	5120	5135	5149	5163	5177	5191	5206	5220	5234	5248
370	5263	5277	5291	5305	5319	5334	5348	5362	5376	5391
380	5405	5419	5433	5447	5462	5476	5490	5504	5519	5533
390	5547	5561	5576	5590	5604	5618	5632	5647	5661	5675
400	5689	5703	5718	5732	5746	5760	5775	5789	5803	5817
410	5831	5846	5860	5874	5888	5903	5917	5931	5945	5959
420	5974	5988	6002	6016	6031	6045	6059	6073	6088	6102
430	6116	6130	6144	6159	6173	6187	6201	6216	6230	6244
440	6258	6272	6287	6301	6315	6329	6344	6358	6372	6386
450	6400	6415	6429	6443	6457	6472	6486	6500	6514	6528
460	6543	6557	6571	6585	6600	6614	6628	6642	6656	6671
470	6685	6699	6713	6728	6742	6756	6770	6784	6799	6813
480	6827	6841	6856	6870	6884	6898	6912	6927	6941	6955
490	6969	6983	6998	7012	7026	7040	7055	7069	7083	7097

CONVERSION CHART

Degrees Fahrenheit - Centigrade

General Formula °F = (°C x 9/5) + 32
°C = (°F – 32) x 5/9

°C	⇆	°F
– 169	– 273	– 459,4
– 168	– 270	– 454
– 165	– 265	– 445
– 162	– 260	– 436
– 159	– 255	– 427
– 157	– 250	– 418
– 154	– 245	– 409
– 151	– 240	– 400
– 148	– 235	– 391
– 146	– 230	– 382
– 143	– 225	– 373
– 140	– 220	– 364
– 137	– 215	– 355
– 134	– 210	– 346
– 132	– 205	– 337
– 129	– 200	– 328
– 126	– 195	– 319
– 123	– 190	– 310
– 121	– 185	– 301
– 118	– 180	– 292
– 115	– 175	– 283
– 112	– 170	– 274
– 109	– 165	– 265
– 107	– 160	– 256
– 104	– 155	– 247
– 101	– 150	– 238
– 98,3	– 145	– 229
– 95,6	– 140	– 220
– 92,8	– 135	– 211
– 90,0	– 130	– 202
– 87,2	– 125	– 193
– 84,4	– 120	– 184
– 81,6	– 115	– 175
– 78,9	– 110	– 166
– 76,1	– 105	– 157
– 73,3	– 100	– 148
– 70,6	– 95	– 139
– 67,8	– 90	– 130
– 65,0	– 85	– 121
– 62,2	– 80	– 112
– 59,4	– 75	– 103
– 56,7	– 70	– 94
– 53,9	– 65	– 85
– 51,1	– 60	– 76
– 48,3	– 55	– 67
– 45,6	– 50	– 58
– 42,8	– 45	– 49
– 40,0	– 40	– 40
– 37,2	– 35	– 31
– 34,4	– 30	– 22
– 31,7	– 25	– 13
– 28,9	– 20	– 4
– 26,1	– 15	5
– 23,3	– 10	14
– 20,6	– 5	23
– 17,8	0	32
– 15,0	5	41
– 12,2	10	50
– 9,4	15	59
– 6,7	20	68
– 3,9	25	77
– 1,1	30	86
1,7	35	95
4,4	40	104

°C	⇆	°F
7,2	45	113
10,0	50	122
12,8	55	131
15,6	60	140
18,3	65	149
21,1	70	158
23,9	75	167
26,7	80	176
29,4	85	185
32,2	90	194
35,0	95	203
37,8	100	212
40,6	105	221
43,3	110	230
46,1	115	239
48,9	120	248
51,7	125	257
54,4	130	266
57,2	135	275
60,0	140	284
62,8	145	293
65,6	150	302
68,3	155	311
71,1	160	320
73,9	165	329
76,7	170	338
79,4	175	347
82,2	180	356
85,0	185	365
87,8	190	374
90,6	195	383
93,3	200	392
96,1	205	401
98,9	210	410
102	215	419
104	220	428
107	225	437
110	230	446
113	235	455
115	240	464
118	245	473
121	250	482
124	255	491
127	260	500
129	265	509
132	270	518
135	275	527
138	280	536
141	285	545
143	290	554
146	295	563
149	300	572
152	305	581
154	310	590
157	315	599
160	320	608
163	325	617
166	330	626
168	335	635
171	340	644
174	345	653
177	350	662
179	355	671
182	360	680

°C	⇆	°F
185	365	689
188	370	698
191	375	707
193	380	716
196	385	725
199	390	734
202	395	743
204	400	752
207	405	761
210	410	770
213	415	779
216	420	788
218	425	797
221	430	806
224	435	815
227	440	824
229	445	833
232	450	842
235	455	851
238	460	860
241	465	869
243	470	878
246	475	887
249	480	896
252	485	905
254	490	914
257	495	923
260	500	932
263	505	941
266	510	950
268	515	959
271	520	968
274	525	977
277	530	986
279	535	995
282	540	1004
285	545	1013
288	550	1022
291	555	1031
293	560	1040
296	565	1049
299	570	1058
302	575	1067
304	580	1076
307	585	1085
310	590	1094
313	595	1103
316	600	1112
318	605	1121
321	610	1130
324	615	1139
327	620	1148
329	625	1157
332	630	1166
335	635	1175
338	640	1184
341	645	1193
343	650	1202
346	655	1211
349	660	1220
352	665	1229
354	670	1238
357	675	1247
360	680	1256

°C	⇆	°F
363	685	1265
366	690	1274
368	695	1283
371	700	1292
374	705	1301
377	710	1310
379	715	1319
382	720	1328
385	725	1337
388	730	1346
391	735	1355
393	740	1364
396	745	1373
399	750	1382
402	755	1391
404	760	1400
407	765	1409
410	770	1418
413	775	1427
416	780	1436
418	785	1445
421	790	1454
424	795	1463
427	800	1472
429	805	1481
432	810	1490
435	815	1499
438	820	1508
441	825	1517
443	830	1526
446	835	1535
449	840	1544
452	845	1553
454	850	1562
457	855	1571
460	860	1580
463	865	1589
466	870	1598
468	875	1607
471	880	1616
474	885	1625
477	890	1634
479	895	1643
482	900	1652
485	905	1661
488	910	1670
491	915	1679
493	920	1688
496	925	1697
499	930	1706
502	935	1715
504	940	1724
507	945	1733
510	950	1742
513	955	1751
516	960	1760
518	965	1769
521	970	1778
524	975	1787
527	980	1796
529	985	1805
532	990	1814
535	995	1823
538	1000	1832

°C	⇆	°F
541	1005	1841
543	1010	1850
546	1015	1859
549	1020	1868
552	1025	1877
554	1030	1886
557	1035	1895
560	1040	1904
563	1045	1913
566	1050	1922
568	1055	1931
571	1060	1940
574	1065	1949
577	1070	1958
579	1075	1967
582	1080	1976
585	1085	1985
588	1090	1994
590	1095	2003
593	1100	2012
596	1105	2021
599	1110	2030
602	1115	2039
604	1120	2048
607	1125	2057
610	1130	2066
613	1135	2075
616	1140	2084
618	1145	2093
621	1150	2102
624	1155	2111
627	1160	2120
629	1165	2129
632	1170	2138
635	1175	2147
638	1180	2156
641	1185	2165
643	1190	2174
646	1195	2183
649	1200	2192
652	1205	2201
654	1210	2210
657	1215	2219
660	1220	2228
663	1225	2237
666	1230	2246
668	1235	2255
671	1240	2264
674	1245	2273
677	1250	2282
679	1255	2291
682	1260	2300
685	1265	2309
688	1270	2318
691	1275	2327
693	1280	2336
696	1285	2345
699	1290	2354
702	1295	2363
704	1300	2372

The central column represents the know temperature in °C or °F.
The equivalent temperature in °F or °C is then read from the column to the right or the left.

WEIGHTS AND MEASURES

Metric conversion factors

Multiply	by	to obtain
LENGTH		
centimetre	0,03281	foot (ft)
centimetre	0,39370	inch
foot	0,3048	metre (m)
foot	304,8	millimetre (mm)
inch	25,4	millimetre
microinch	0,0254	micron (µm)
micron (micrometre)	39,37008	microinch
millimetre	0,039370	inch
AREA		
centimetre^2	0,15500	inch^2
centimetre^2	0,00108	foot^2
foot^2	0,09290	metre^2 (m^2)
foot^2	929,0304	centimetre^2 (cm^2)
inch^2	645,16	millimetre^2 (mm^2)
metre^2	1550,003	inch^2
metre^2	10,76391	foot^2
millimetre^2	0,00155	inch^2
VOLUME		
centimetre^3	0,06102	inch^3
foot^3	0,02832	metre^3 (m^3)
foot^3	28,31685	litre
gallon (U.K. liquid)	4,54609	litre
gallon (U.S. liquid)	3,78541	litre
inch^3	16,38706	centimetre^3 (cm^3)
litre	0,21997	gallon (U.K. liquid)
litre	0,26417	gallon (U.S. liquid)
VELOCITY and FLOW		
centimetre/minute	0,39307	inch/minute
foot/minute	18,288	metre/hour
foot/minute	0,3048	metre/minute
foot^3/minute	28,31685	litre/minute
gallon (U.S. liquid)/minute	3,78541	litre/minute
litre/minute	0,035315	foot^3/minute
litre/minute	0,26417	gallon (U.S. liquid)/minute
MASS and DENSITY		
gram (=0,001 kg)	0,035274	ounce (avoirdupois)
kilogram	2,20462	pound
kilogram/metre^3	0,06243	pound/foot^3
kilogram/metre^3	0,00835	pound/gallon (U.S.)
ounce (avoirdupois)	28,34952	gram
pound (avoirdupois)	0,45359	kilogram (kg)
ton (long = 2240 Lb)	1016,047	kilogram
ton (short = 2000 Lb)	907,1847	kilogram
FORCE and FORCE/LENGTH		
dyne	0,00001	newton (N)
kilogram · force	9,80665	newton
newton	0,10197	kilogram-force
newton	0,22481	pound-force
newton/metre	0,00571	pound/inch
pound/force	4,44822	newton
pound/inch	175,1268	newton/metre (N/m)
pound/foot	14,59390	newton/metre

Multiply	by	to obtain
BENDING MOMENT or TORQUE		
kilogram · metre	9,80665	newton · metre (N·m)
kilogram · metre	7,23299	pound · foot
newton · metre	0,73756	pound · foot
newton · metre	0,10197	kilogram · metre
pound · foot	1,35582	newton · metre
PRESSURE and STRESS		
atmosphere (atm)	101325	Pascal (Pa)
atmosphere	1,01325	bar
atmosphere	1,0333	kilogram/centimetre^2
bar	0,98692	atmosphere
bar	1,02668	kilogram/centimetre^2
bar	100000	Pascal (or N/m^2)
bar	14,50377	pound/inch^2
kilogram/centimetre^2	0,968	atmosphere
kilogram/centimetre^2	0,98066	bar
kilogram/centimetre^2	98066	Pascal (and N/m^2)
kilogram/centimetre^2	14,22334	pound/inch^2
kilogram/metre^2	9,80665	Pascal
newton/metre^2 (N/m^2)	0,000145	pound/inch^2
newton/metre^2 (or Pa)	0,10197	kilogram/metre^2
newton/metre^2	0,000010197	kilogram/centimetre^2
Pascal (and N/m^2)	0,00000987	atmosphere
Pascal	0,00001	bar
kPa	0,01	bar
MPa	10	bar
pound/inch^2	0,06895	bar
pound/inch^2	6895	Pa
pound/inch^2	0,07031	kilogram/metre^2
pound/inch^2	0,06805	atmosphere
ENERGY-WORK and POWER		
Btu (internat.)	1055,056	joule (J)
calorie	4,19002	joule
foot · pound	1,35582	joule
kilogram · metre	9,80665	joule
joule	0,73756	foot · pound
joule	0,101972	kilogram · metre
foot · pound/hour	0,0003766	watt (W)
horsepower (550 ft·lb/s)	0,7457	kilowatt (kW)
horsepower (electric)	746	watt
kilowatt	1,34102	horsepower (550 ft·lb/s)
MISCELLANEOUS		
atmosphere (atm)	760	mm Hg at 32°F
atmosphere	29,92	inch Hg at 32°F
atmosphere	10330	mm H_2O at 60°F
bar	14,70	pound/inch^2
bar	750	torr
bar	29,53	inch Hg at 32°F
feet of water (at 60°F)	0,8843	inch Hg at 60°F
feet of water	0,4331	pound/inch^2
inch of Hg (at 60°F)	0,03342	atmosphere
inch of Hg	1,131	feet of water
inch of Hg	0,4898	pound/inch^2
torr (and mm Hg)	0,0013116	atmosphere
torr	0,001333	bar (or 133,6 Pa)
torr	0,00136	kilogram/centimetre^2
torr	0,03937	inch of Hg (at 32°F)
torr	13,59	mm H_2O
torr	0,01934	pound/inch^2
torr l/sec	1,316	atm.cc/sec (or Std. cc/sec)
atm. cc/sec	0,76	torr l/sec
torr l/sec	1000	Lusec
Lusec	0,001	torr l/sec
drop of water or bubble	16	centimetre^3