BVALVE®

Bellows sealed Globe Valves
Bellows sealed Gate Valves


BVALVE
12
900
WCB
L10226A
CE0035

Sumario

BVALVE® Flow, Systems & Controls

BVALVE VALVES

Introduction

A large volume and wide variety of hazardous and toxic materials are currently in use. Coupled with increasingly stringent regulatory requirements, positive containment and control measures have become mandatory. Bvalve valves are well qualified to provide technological assistance for applications involving hazardous and difficult-to-handle fluids and gases.

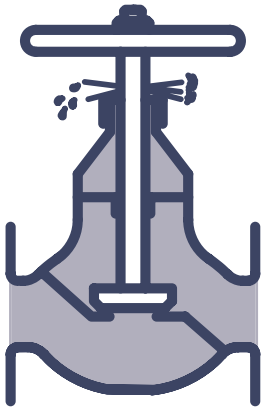
Our engineers combine more than 20 years of experience in valve design and development with expertise in metallurgical techniques. Their strategic use of Stainless Steel, Inconel, Monel, Hastelloy and other high performance metals and alloys makes Bellows Sealed Valves the optimum choice worldwide for a broad range of applications.

The exceptional versatility, superior operating characteristics, robust construction and consistent dependability of Bvalve Valves have won us widespread acceptance across the industry, especially chemical, energy and hydrocarbon processing industries. Typical applications of our valves include: Thermal fluid, Ammonia, Chlorine, Phosgene, Butadine, Benzene, Ethylene, Hydrochloric acid, Hydrogen, Steam, Fatty acid to name just a fraction of the many possible uses.

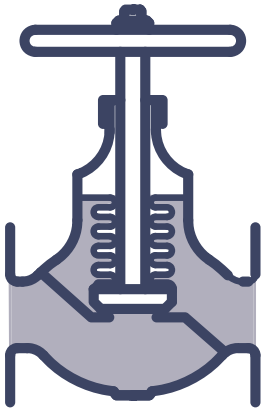
Our performance tested Bellows Sealed Valves guarantee safer operating conditions and compliance with anti-pollution regulations. Our 'Zero Stem' leakage design eliminates product losses, hazards to humans, the environment, and costly downtime required for packing maintenance. Our Valves are available in all popular sizes in flanged, threaded as well as weld end configurations.

Why Bellows Sealed Valves

One of the most frequent and serious problems valves face is gland leakage what results in wasted and increased plant downtime. Apart from the high cost of energy losses, gland leakages can also cause serious environmental, ecological and health hazards to plant workers and personnel. Leakage of sensitive material can also constitute to a fire hazard, explosion, or damage to equipment by corrosive material. Air entering the pipeline could produce inflammable explosive or poisonous mixtures. Gland packed valves often demand continuous maintenance in accessibility creating particular difficulties. The bellows comply to conditions at high temperatures and are capable of withstanding over 10,000 cycles without failure.



Gland Valve



Bellows Sealed Valve


BVALVE

Critical Test For Bellows

Fatigue / Cycle Test

Cyclic Test for the bellow is carried out for testing the fatigue strength of the bellows. Minimum 10,000 cycles are carried out for each type of the bellow on a special spring rate testing fixture and bellow cyclic testing machine available in house. Testing as per MSS SP117 and API 602 Annex C can also be performed.

Helium Leak Test (On Mass spectrometer leak detector)

Bellows Sealed Valves for Vaccum Services, Helium Leak test is essential. This test is carried in-house at our works where the valves will be tested at 10 Torr with Helium Gas. This would only help to certify whether the valve is suitable for Vaccum and other critical application or not.

Range Of Production

Material of Contruction :

1) **Shell Material :** Cast Steel - WCB / WCC / WC6 / WC9 / LCC / LCB / LC1 / LC3
Cast Stainless Steel - CF8 / CF8M / CF3 / CF3M / CG8 / CG8M

2) Special Alloys : Inconel - 625 (CW6MC) / Inconnel 600 (CY40) / Hastelloy

3) Forged Steel : A 105 / F304 / F316 / F304L / F316L / LF2

4) Bellow Material : AISI - 321 / AISI - 316 Ti / Inconnel - 625 / Hastelloy C - 276

- Radiography of the casting is carried out at the foundry level as per ASME SEC V / ASME SEC VIII, ASME SEC III as per customers requirement
- Visual method for evaluation of Surface Irregularities to MSS SP - 55
- LP Examination as per ASME Section VIII Div1, ASTM E165, ASME Section V & ASME B 16.34
- Magnetic Particle Examination Method to ASTM E 709.
- Single weld Examination of forgings to ASTM E 388

Type of Valve :

- Bellows Sealed Gate Valve
- Bellows Sealed Globe Valve
- Bellows Sealed Jacketed Valve
- Bellows Sealed Flush Bottom Valve
- Jacketed Fabricated Gate Valve

Size and Class :	
ASA 150# 1/2" to 24"	1/2" to 2" in Forging*
ASA 300# 1/2" to 20"	1/2" to 2" in Forging*
ASA 600# 1/2" to 14"	1/2" to 2" in Forging*
ASA 800# 1/2" to 2"	Forging*
ASA 1500# 1/2" to 6"	1/2" to 2" in Forging*
ASA 2500# 1/2" to 4"	1/2" to 2" in Forging*

* Reduce bore or full bore

Quality Control Activities

Quality Assurance Systems are being followed to ISO 9001: 2008 (TUV Ce r t i f i e d) standards in achieving a high degree of efficiency in operations. Constant efforts are made for the improvement of techniques, the following inspection methods are followed during manufacturing.

- Visual Inspection
- Dye - Penetrant Testing
- Hydro and Air Testing
- Helium Leak Testing
- Bellow Cyclic Testing

Other tests can be implemented under request

Cast Bellows Sealed Globe Valve

Forged Bellows Sealed Gate Valve

Comparison Between Bellows Sealed & Traditional Valves

	BELLOWS SEALED VALVES	PISTON VALVES	CONVENTIONAL VALVES
Primary stem seal	Metallic Bellow	Piston ring	Gland Packing
Secondary stem seal	Gland packing	None	None
Stem Leakage	Not Possible since Metallic Bellows are designed to last several thousand cycles	Occurs as soon as the rings wear out.	Very common. Due to friction between stem occurs within a few cycle no matter which make valve or quality of gland packing
Packing Replacement	Not applicable	Rings need to be changed frequently	Packing needs to be replaced very often
Replacement Cost	Not applicable	Very high	High
Media Loss	Zero Loss. As the isolation is by metallic bellows, leakage (in ppm) is not possible.	Large in case of leaks	Large in case of leaks
Equipment Downtime	Nil	Very high for replacing rings	Very high for replacing gland packing
Maintenance Cost often	Nil	High as rings need to be changed atleast once in six a months	Normally large amount when leakage remains unattended.Considerable amount through gland leakages.
Valve Life	High-in years	Low	VeryLow - in months. Due to leakage throughgland, certain parts erode, making the valveirreparable after some months.
Safety	Can be used safely for almost any media	Can be used for limited media like steam, hot water	Highly unsafe when the media is hazar-dous/poisonous
Cost	Comparatively higher initially but lowest total cost of ownership	High compared to the benefits	Initially low but very high after some years if cost of packing, down time, man-hours spent, number of valves replaced act. are taken in to account.

Third Party Inspection

List Of Approved Inspection Agencies (Inspection is carried out at our works)

- Lloyds Register Ltd.
- Bureau Veritas Ltd.
- TUV
- DNV
- SGS
- Atisae

EPC Contractor / engineering

- Abeinsa Engineering
- Abengoa
- Acciona
- Cobra
- Duro Felguera
- Ferrostaal
- Foster Wheeler
- IBI Chematur (Engineering & Consultancy) Ltd. / Chematur Engineering
- Initec Industrial
- Jacobs H & G Ltd.
- Krupps Uhde Ltd.
- Kvaerner Power Gas
- Linde Process Technologies Ltd.
- OHL Industrial
- Sener
- Seridom
- Technimont ICB Ltd.
- Técnicas Reunidas
- Toyo Engineering Ltd.
- TSK

Critical Test For Bellows

· **Design Standards**

API 602 for forged gate valves

BS EN ISO15761 for forged globe valves

API 600 for Cast Gate Valves

BS1873 for Cast Globe Valves

ASME B 16.34 for Cast Globe and Gate Valve

· **Bellow Inspection and Test :** MSS SP -117

· **Cycle Life** upto and including class 800 Forged Valves : as per MSS-SP 117

Min. 5,000 Cycles for Globe Valves

Min. 2,000 Cycles for Gate Valves

For class above 800,

Minimum 2000 cycles for Globe Valve,

Minimum 2000 cycles for Gate Valve

· **Cycle Life for Forged Valves & all classes Cast Valves :** as per MSS 117

Size(inch)	upto and including class 800		above class 800	
	Gate Valve	Globe Valve	Gate Valve	Globe Valve
<2	2,000	5,000	2,000	2,000
2-1/2 ~ 4	2,000	5,000	1,000	2,000
>4	1,000	2,000	1,000	1,000

· **Cycle Life Test** is performed with the valve under the pressurised conditions.

· **Non-Rotating stem** prevents torsion of bellows.

· **Two Secondary Stem Seals :**

Stem backseat and stem packing ensure perfect sealing when a bellow is damaged.

· **Long Life Seating Surface :**

Hard faced with Stellite grade 6 for both seat and wedge/disc to prevent seizing and galling.

· **End Flanged Dimension :** ASME B16.5

· **Butt Weld End Dimension :** ASME B16.25

· **Face to Face & End to End :** ASME B16.10

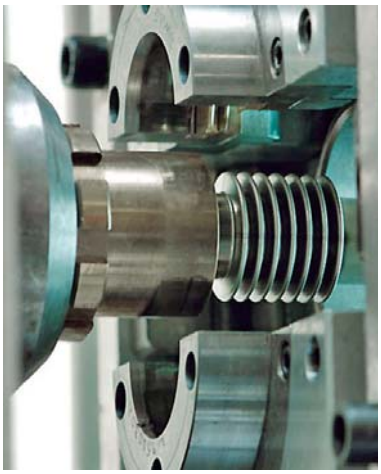
· **Helium Leak Test** is performed for each bellow assembly using a Helium detector with sensitivity of 10-9 Std cc/sec.

· **Bellow Material :** SS321, SS316Ti, Inconel 625, Hastelloy C276, etc.

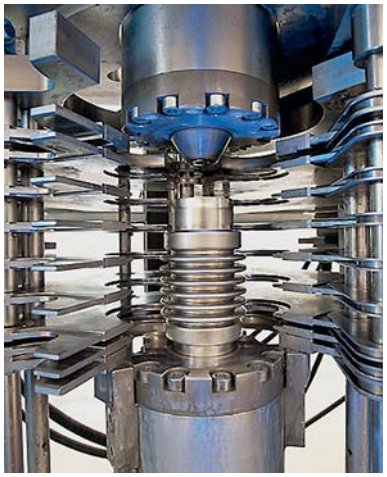
· **Multi-Ply Bellows :** Minimum 2 ply bellows

· **Soft Seat Insert on Globe Disc :**

Soft seat also available for Gas or Vacuum Service.



Metal Bellows Production Tube Welding



Simultaneous hydroforming

Laser welding "bellows to end parts"

Helium leak testing


BVALVE®

FORGED BELLOWS SEALED GLOBE VALVE

Non rising hand wheel
• Ideal in restricted spaces

Provision for lubrication on Yoke sleeve
• Ensures smooth operation

Ease of operation for secondary packing
• Ease for replacing packing
• Improves proper sealing

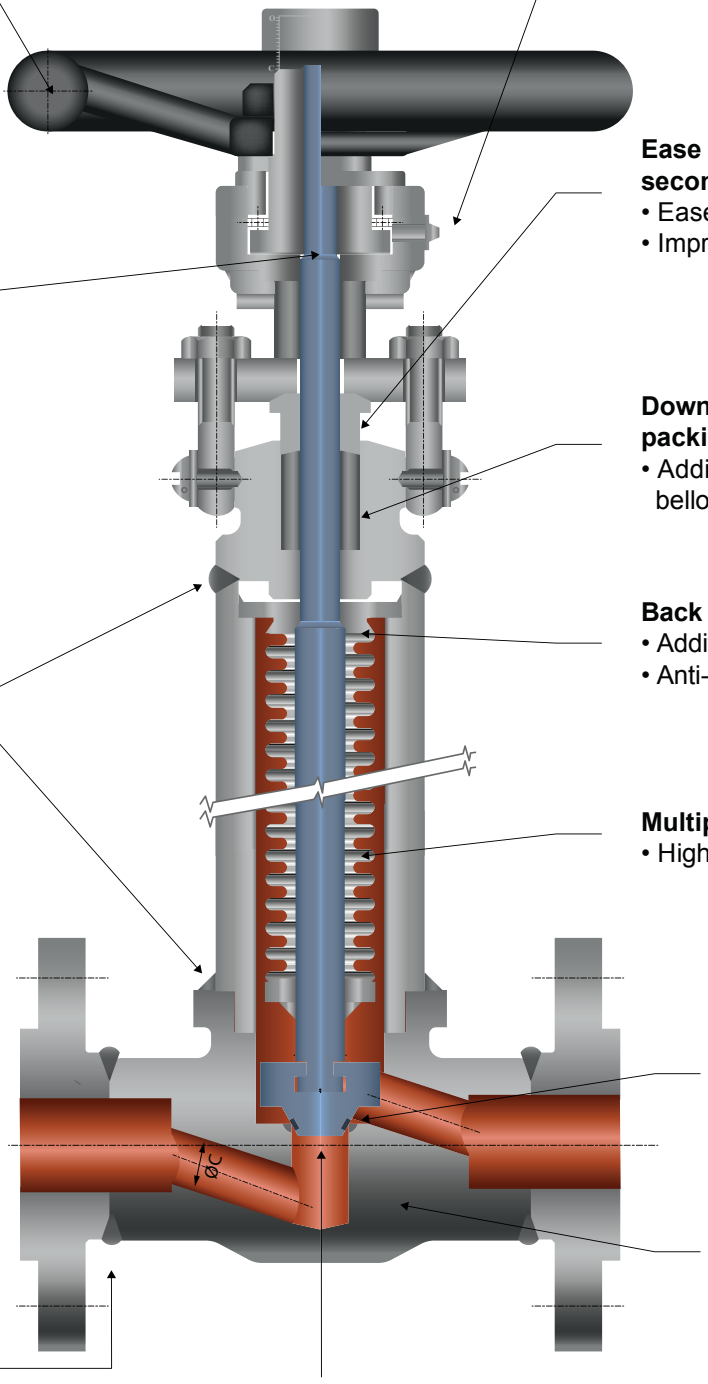
Non rotating stem
• High reliability
• Twist of bellow is avoided
• Longer packing life

Downstream safety gland packing with graphite
• Additional reliability against bellow failure

Back seat arrangement on stem
• Additional tertiary safety
• Anti-blow out under line pressure

Body - bonnet - cylinder connection
• Fillet Weld

Multiply bellows
• High service life



Hardfacing or steliting
• Increased service life

Integral body seat
• Avoid leak through seatring

Body - Flange connection
• Full penetration butt weld

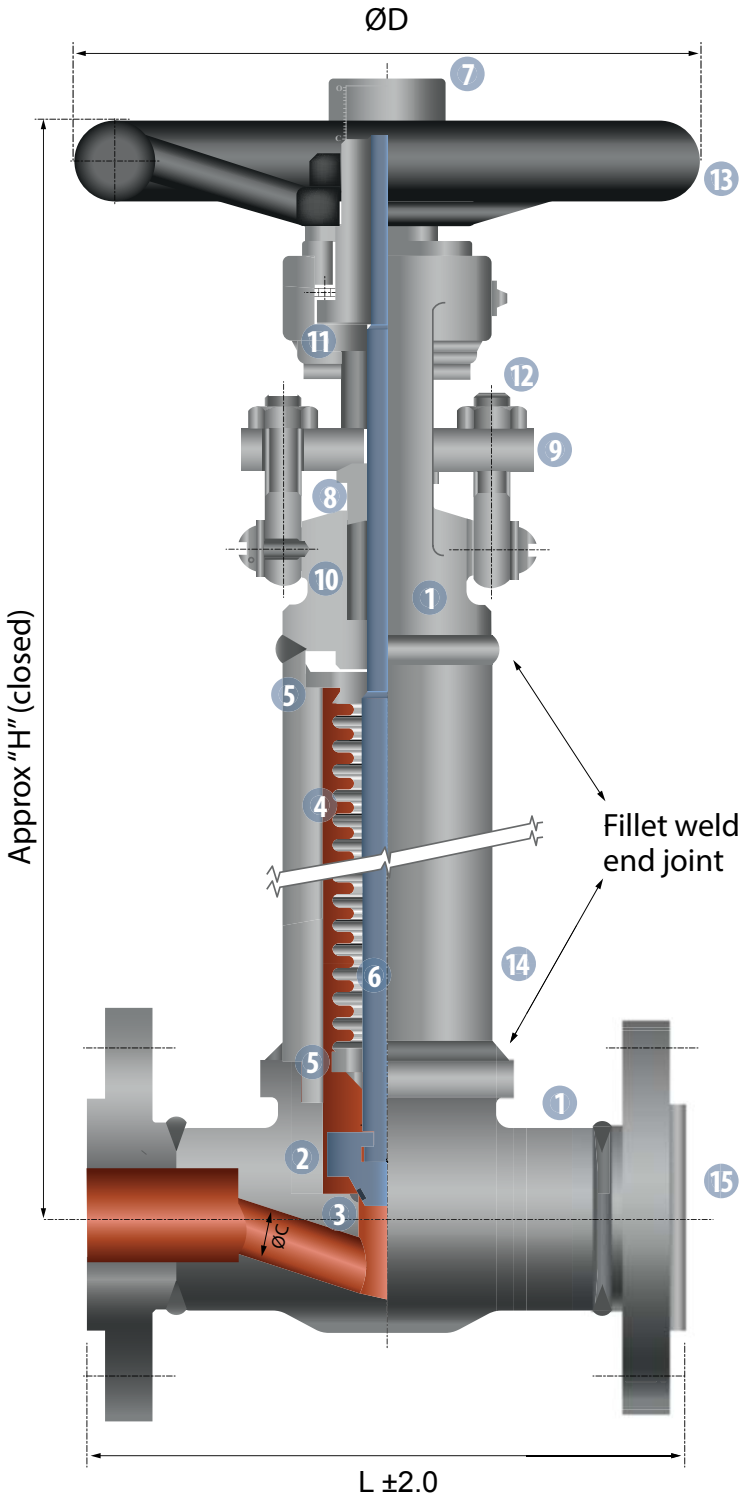
Free rotation plug

FORGED BELLOWS SEALED GLOBE VALVE

Size 1/2" - 2"			
150# / 300# / 600#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC	+425 ºC

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Soft sealing and regulating disc, needle type disc.
- Optional Bolted bonnet.
- Optional Full Port design upto 1".
- Optional Flanged end with large groove, large tongue and RTJ end.
- Optional valve with CE marking above 1".
- Optional valve with High Pressure Ratings.



Forged Bellows Sealed Globe Valve, with flanges acc. to ASME B 16.5, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE.

Carbon steel: Body and Bonnet made of forged material A 105, seat hardfaced with stellite, disc with conical plug made of stainless steel SS 410, hardfaced with stellite.

Stainless steel: Body and Bonnet made of forged material A 182 GR F316/F304, seat hardfaced with stellite, disc with conical plug made of stainless steel SS 316/SS 304, hardfaced with stellite.

Low temperature steel: Body and Bonnet made of Forged material (A 350 GR LF2), seat hardfaced with stellite, disc with conical plug made of LF2/SS 304, hardfaced with stellite.

FLANGED ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	FBGL-S-CS	FBGL-S-SS	FBGL-S-LT
1. Body & Bonnet	A105	316/F304	LF2
2. Plug	SS410 +HF	SS316 / 304 + HF	SS304 +HF
3. Integral Seat	A 105 +HF	F316 / 304 + HF	LF2 + HF
4. Bellow	SS316Ti / SS 321	SS316Ti /SS 321	SS316Ti /SS 321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	S S304
7. Hand Wheel Nut	Carbon Steel	SS304	SS304
8. Gland Bush	SS 410	SS316	SS304
9. Gland Flange	CS / A105	SS316 / 304	SS304
10. Packings	Graphite / PTFE		
11. Yoke Sleeve	SG Iron/NI Resist / 416*		
12. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304
13. Hand Wheel	SG Iron		
14. Cylinder	A106 Gr. B	A312 TP316 / 304	A312 TP304
15. End Flange	A105	SS 316/304	LF2/304

* Available on request

Testing Pressure in bar (API 598) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details 150#:

Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	108	200	100	9	2.5	3
3/4	117	210	100	12	3.5	4
1	127	220	100	17	6	5
1 1/4	140	290	150	23	12	10
1 1/2	165	300	150	25	12	10.5
2	203	315	150	30	28	18.5

Dimensional details 300#:

Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	152	200	100	9	2.5	4
3/4	178	210	100	12	3.5	5.5
1	203	220	100	17	6	7
1 1/4	216	290	150	23	12	13.5
1 1/2	229	300	150	25	12	15
2	267	315	150	30	28	20

Dimensional details 600#:

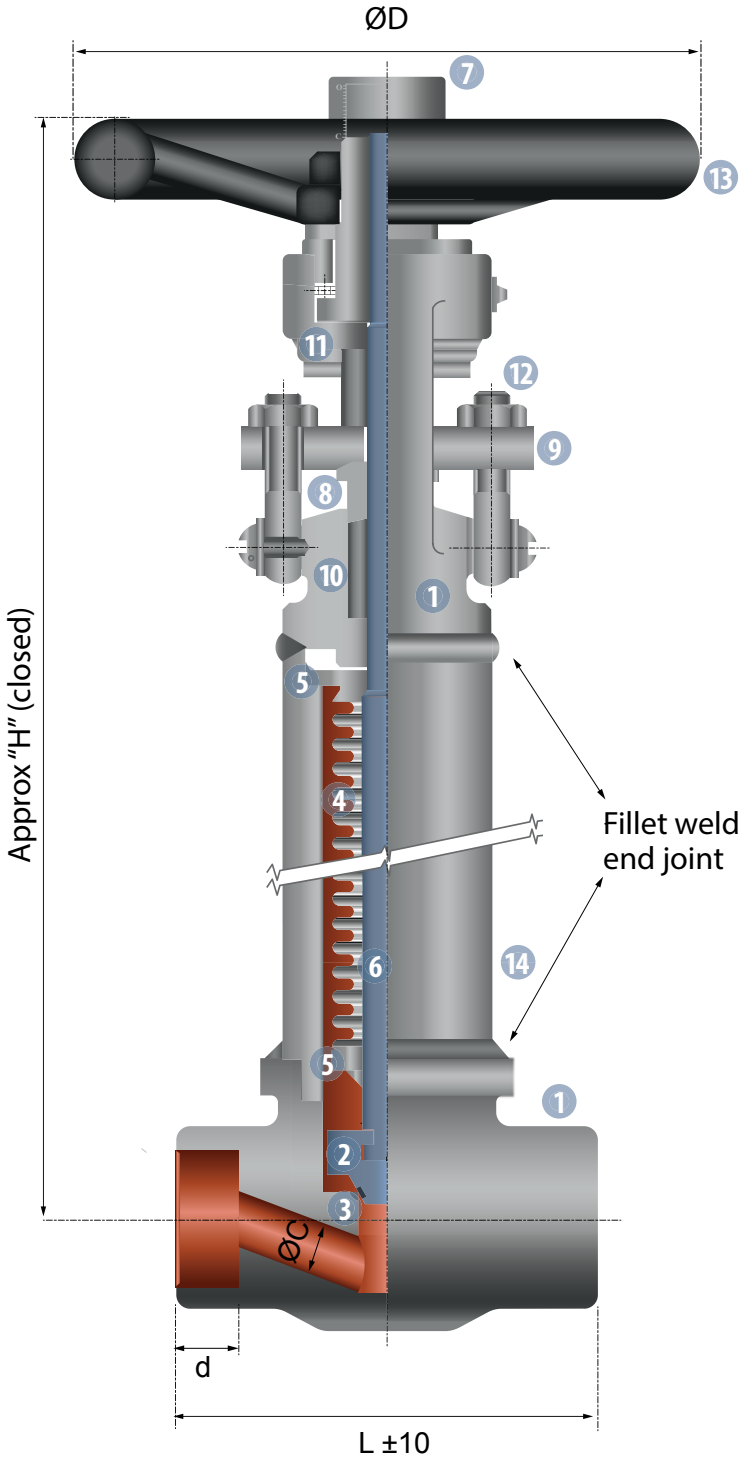
Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	165	250	150	9	2.5	6.0
3/4	190	255	150	12	3.5	6.5
1	216	285	150	17	6	8.5
1 1/4	229	345	150	23	12	-
1 1/2	241	360	150	28	12	14.5
2	292	380	150	30	28	19.0

FORGED BELLOWS SEALED GLOBE VALVE

FBGL-S Size 1/2" - 2"			
150# / 300#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC	+425 ºC

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Soft sealing and regulating disc, needle type disc.
- Optional Bolted Bonnet.
- Optional Full Port design upto 1".
- Optional Screwed End (BSP/NPT) and Butt Weld End.
- Optional valve with CE marking above 1".
- Optional valve with High Pressure Ratings.



Forged Bellows Sealed Globe Valve, with socket weld end acc.to ASME B 16.11 (Optional: butt weld end acc. to ASME B 16.25/screwed end acc. to ASME B 1.20.1), end to end as per manufacturers std. and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat,safety stuffing box packing made of pure graphite/PTFE.

Carbon steel: Body and Bonnet made of forged material A 105, seat hardfaced with stellite, disc with conical plug made of stainlesssteel SS 410, hardfaced with stellite.

Stainless steel: Body and Bonnet made of forged material F316/F304, seat hardfaced with stellite, disc with conical plug made of stainless steel SS 316/SS 304,hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of forged material A 350 GR LF2, seat hardfaced with stellite, disc with conical plug made of LF2/SS 304, hardfaced with stellite.

WELDED ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	FBGL-S-CS	FBGL-S-SS	FBGL-S-LT
1. Body & Bonnet	A105	316/F304	LF2
2. Plug	SS410 +HF	SS316 / 304 + HF	SS304 +HF
3. Integral Seat	A 105 +HF	F316 / 304 + HF	LF2 + HF
4. Bellow	SS316Ti / SS 321	SS316Ti /SS 321	SS316Ti /SS 321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	S S304
7. Hand Wheel Nut	Carbon Steel	SS304	SS304
8. Gland Bush	SS 410	SS316	SS304
9. Gland Flange	CS / A105	SS316 / 304	SS304
10. Packings	Graphite / PTFE		
11. Yoke Sleeve	SG Iron/NI Resist / 416*		
12. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304
13. Hand Wheel	SG Iron		
14. Cylinder	A106 Gr. B	A312 TP316 / 304	A312 TP304

* Available on request

Testing Pressure in bar (API 598) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details 150#:

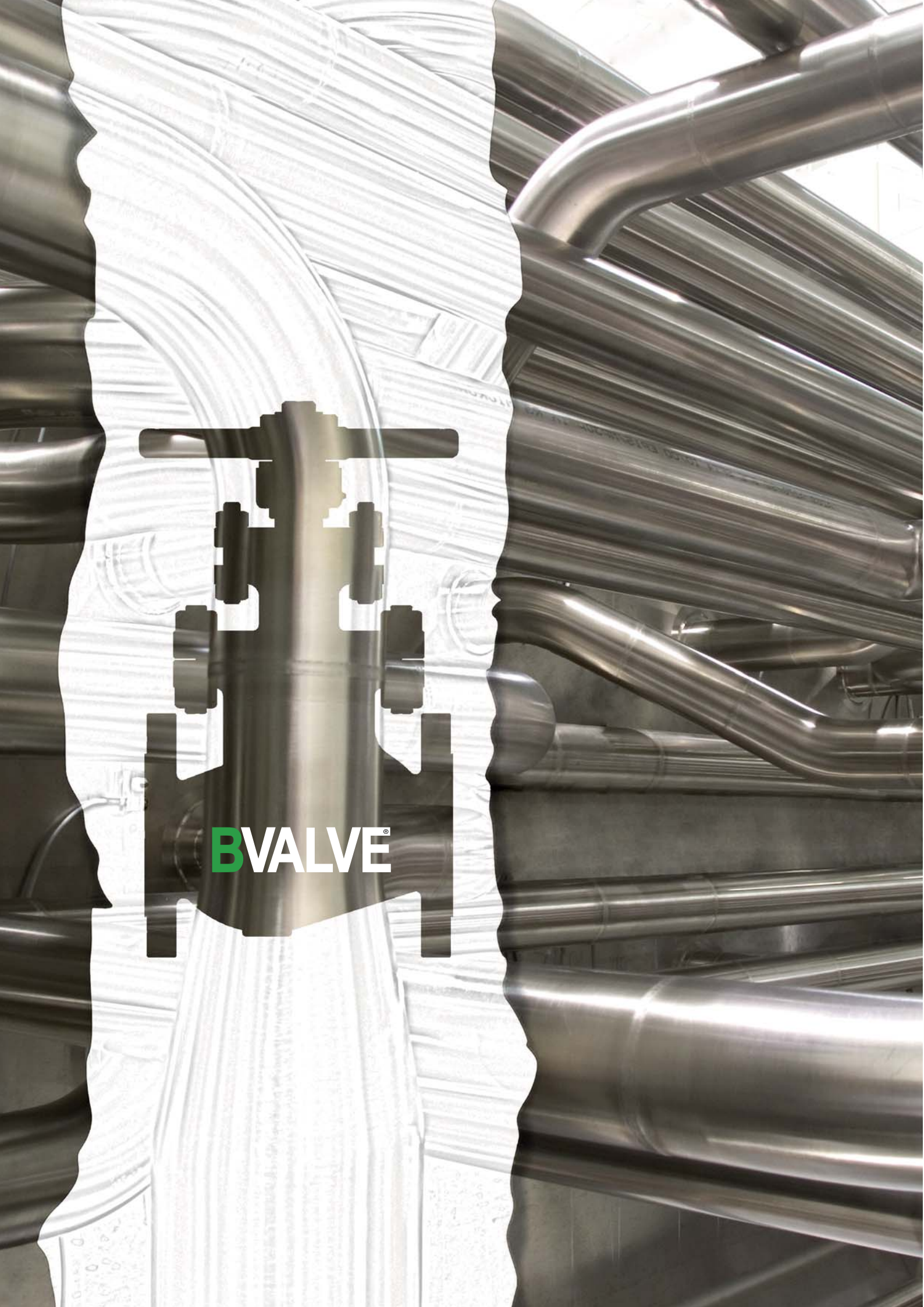
Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	200	100	9	2.5	2.5
3/4	92	210	100	12	3.5	2.5
1	106	220	100	17	6	4
1 1/4	130	290	150	23	12	7.5
1 1/2	130	300	150	25	12	8
2	145	315	150	30	28	13.5

Dimensional details 300#:

Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	200	100	9	2.5	2.5
3/4	92	210	100	12	3.5	2.5
1	106	220	100	17	6	4
1 1/4	130	290	150	23	12	7.5
1 1/2	130	300	150	25	12	8
2	145	315	150	30	28	13.5

Dimensional details 600#:

Size	L	H closed	ØD	ØC	Cv	Weight
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	250	150	9	2.5	3.5
3/4	92	255	150	12	3.5	3.9
1	106	285	150	17	6	5.0
1 1/4	130	345	150	23	12	-
1 1/2	130	360	150	28	12	8.4
2	145	380	150	30	28	13.5


BVALVE®

CAST BELLOWS SEALED GLOBE VALVE

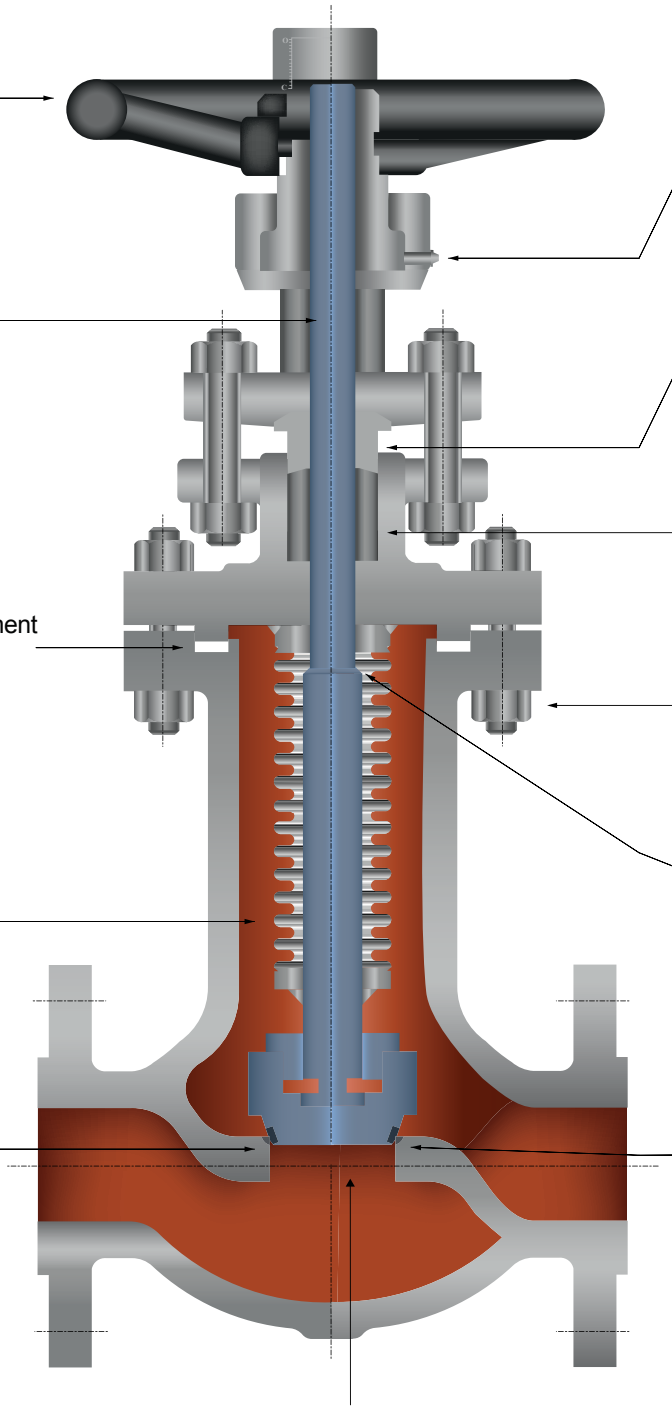
Non Rising Hand Wheel
• Ideal in restricted spaces

Non Rotating stem
• High reliability
• Twist of bellow is avoide
• Longer packing life

Body-bonnet Joints
• Tougue and groove arrangement
• No gasket slip possible, long service life

Multiply Bellows
• High service life

Hardfacing or Steliting
• Increased service life



Provision For Lubrication on Yoke Sleeve
• Ensures smooth operation

Ease of operation for Secondary Packing
• Ease for replacing packing
• Improves proper sealing

Downstream Safety Gland Packing With Graphite
• Additional reliability
• Against bellow failure

Body Bonnet Joint With Studs And Nuts
• Additional strenth for the joints
• Ensure joint tightness

Back Seat Arrangement on Stem
• Additional tertiary safety
• Anti-blow out under line pressure

Integral Body Seat
• Avoid leak through seat ring

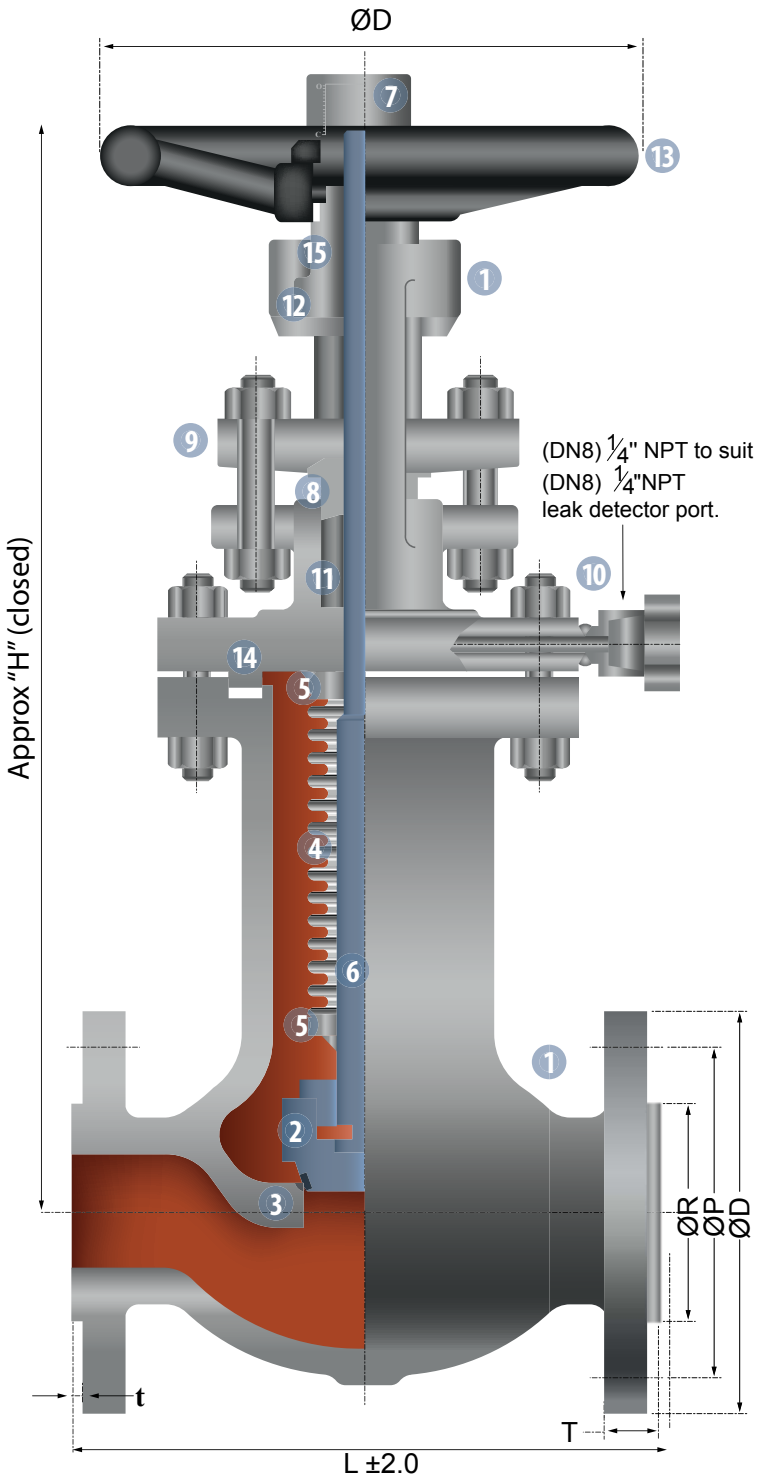
Free rotation plug

CAST BELLOWS SEALED GLOBE VALVE

Size 2" - 12"		
150# - 300# - 600#		
	C.S	S.S
T min.	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Optional regulating disc, needle type disc.
- Optional Actuator/Gear Operator.
- Optional Flanged end with large groove, large tongue and RTJ end.
- Optional valves with CE markings.



Cast Bellows Sealed Globe Valve, with flanges acc. to ASME B 16.5, face to face as per ASME B16.10 and with ACME stem screwthread and grounded shaft.

Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE, spiral wound bonnet gasket made of stainless steel with graphite or PTFE filler material, housed in a tongue and grooved flange.

Carbon steel: Body and Bonnet made of cast material WCB, seat hardfaced with stellite, disc with conical plug made of WCB, hardfaced with stellite.

Stainless steel: Body and Bonnet made if cast material CF8M/CF8, seat hardfaced with stellite, disc with conical plug made of stainless steel CF8M/CF8, hardfaced with stellite.

FLANGED ENDS

Design may be changed without prior notice.

Component	Materials	
	C.S	S.S
	CCBGL-F-CS	CCBGL-F-SS
1. Body & Bonnet	WCB	CF8M / CF8
2. Plug	WCB + HF	CF8M / CF8 + HF
3. Integral Seat	WCB + HF	CF8M / CF8 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321
5. Top/Bottom Bellow collar	SS316 / SS321	S S316 / SS321
6. Stem	SS410	SS316 / 304
7. Hand Wheel Nut	Carbon Steel	SS304
8. Gland Bush	SS410	SS316 / 304
9. Gland Flange	Carbon Steel	SS316 / 304
10. Fasteners	A193 Gr.B7 / A194	A193 Gr.B8 / A194 Gr.8
11. Packings	Graphite/PTFE	
12. Yoke Sleeve	SG Iron/ NI Resist / 416*	
13. Hand Wheel	Cast Iron/ MI*	
14 Gasket	SPW SS304 / SS316 + Graphite	
15. Yoke Nut	SS410	SS304

* Available on request

Testing Pressure in bar (API 598/EN 12266-1) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	267	285	200	52	21
2 1/2	292	315	200	86	27
3	318	365	250	132	37.5
4	356	425	300	204	52
5	400	475	350	339	74
6	444	525	350	482	95
8	559	645	450	853	238
10	622	790	500	1347	340
12	711	1213	600	1924	

Dimensional details:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	203	280	200	52	27
2 1/2	216	300	250	86	34
3	241	340	300	132	51
4	292	390	300	204	74
5	356	455	350	339	100
6	406	495	350	482	135
8	495	595	450	853	253
10	622	775	500	1347	370
12	699	1138	600	1924	

Dimensional details:

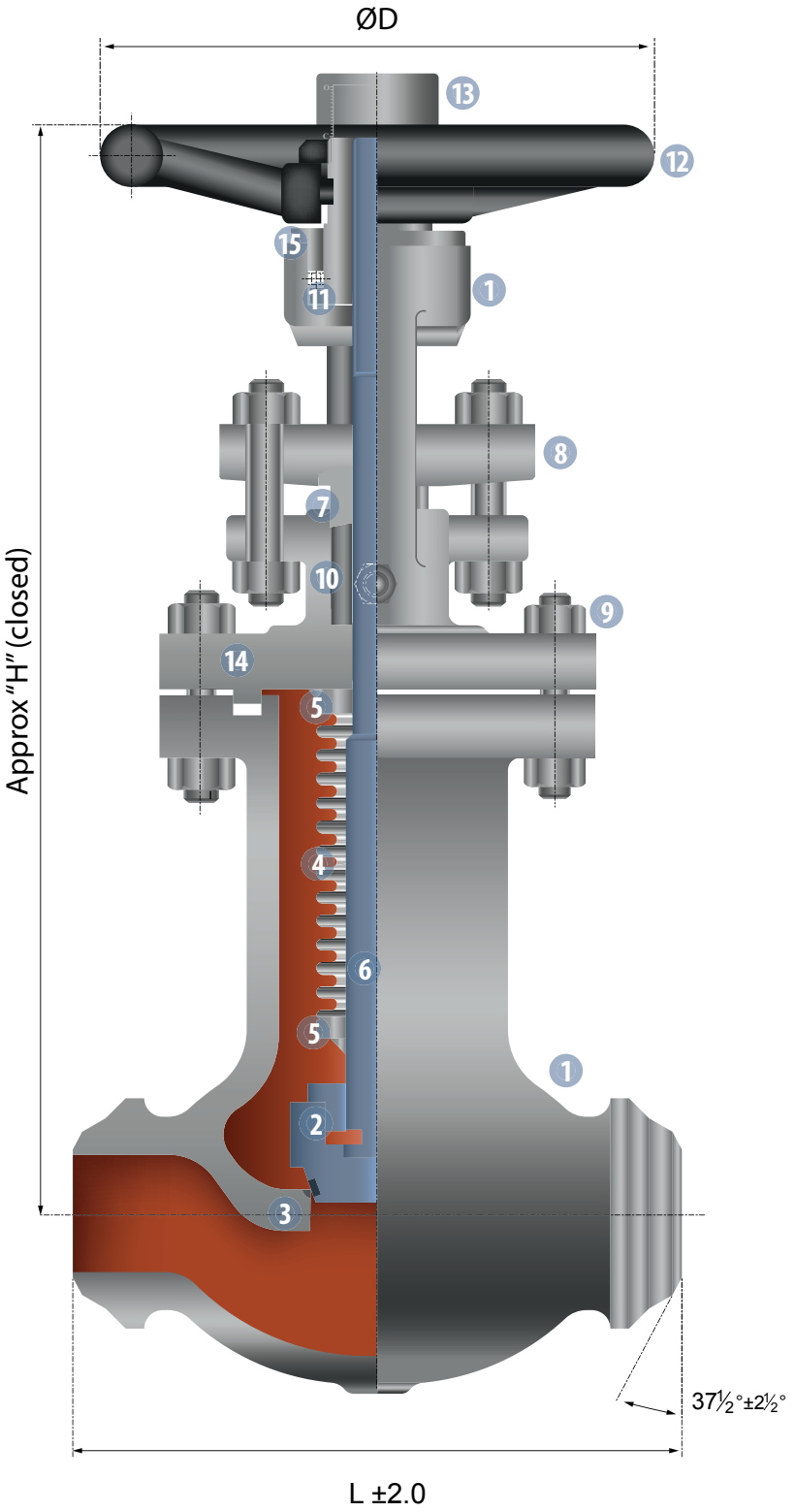
Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	292	445	250	35	45
2 1/2	330	510	300	60	65
3	356	535	300	92	74
4	432	-	350	180	166
5	508	-	350	320	-
6	559	-	450	430	306
8	660	-	600	800	490
10	787	-	-	1.250	-
12	838	-	-	1.950	-

CAST BELLOWS SEALED GLOBE VALVE

Size 2" - 12"		
150# - 300# - 600#		
	C.S	S.S
T min.	-29 °C	-29 °C
T max.	+425 °C	+538 °C

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Optional regulating disc, needle type disc.
- Optional Actuator/Gear Operator.
- Optional valves with CE markings.



Cast Bellows Sealed Globe Valve, butt weld end acc. to ASME B 16.25, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE, spiral wound bonnet gasket made of stainless steel with graphite or PTFE filler material, housed in a tongue and grooved flange.

Carbon steel: Body and Bonnet made of cast material WCB, seat hardfaced with stellite, disc with conical plug made of WCB, hardfaced with stellite.

Stainless steel: Body and Bonnet made if cast material CF8M/CF8, seat hardfaced with stellite, disc with conical plug made of stainless steel CF8M/CF8, hardfaced with stellite.

WELDED ENDS

Design may be changed without prior notice.

Component	Materials	
	C.S	S.S
	CCBGL-F-CS	CCBGL-F-SS
1. Body & Bonnet	WCB	CF8M / CF8
2. Plug	WCB + HF	CF8M / CF8 + HF
3. Integral Seat	WCB + HF	CF8M / CF8 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321
5. Top/Bottom Bellow collar	SS316 / SS321	S S316 / SS321
6. Stem	SS410	SS316 / 304
Hand Wheel Nut	Carbon Steel	SS304
7. Gland Bush	SS410	SS316 / 304
8. Gland Flange	Carbon Steel	SS316 / 304
9. Fasteners	A193 Gr.B7 / A194 Gr.2H	A193 Gr.B8 / A194 Gr.8
10. Packings	Graphite/PTFE	
11. Yoke Sleeve	SG Iron/ NI Resist / 416*	
12. Hand Wheel	Cast Iron/ MI*	
13. Hand Wheel Nut	Carbon Steel	SS304
14. Gasket	SPW SS304 / SS316 + Graphite	
15. Yoke Nut	SS410	SS304

* Available on request

Testing Pressure in bar (API 598/EN 12266-1) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details 150#:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	203	280	200	52	17
2 1/2	216	300	200	86	21
3	241	340	250	132	29.5
4	292	390	300	204	41.5
5	356	455	350	339	63.5
6	406	495	350	482	82
8	495	595	450	853	219
10	622	775	500	1347	312
12	698	925	600	1924	

150

Dimensional details 300#:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	267	285	200	52	21
2 1/2	292	315	250	86	29.5
3	318	365	300	132	41
4	356	425	300	204	58.5
5	400	475	350	339	86
6	444	525	350	482	107
8	559	645	450	853	226
10	622	790	500	1347	345
12	711	1213	600	1924	

300

Dimensional details 600#:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
2	292	445	250	35	33
2 1/2	330	510	300	60	55
3	356	535	300	92	61
4	432	-	350	180	135
5	508	-	350	320	-
6	559	-	450	430	275
8	660	-	600	800	445
10	787	-	-	1.250	-
300	838	-	-	1.950	-

600


BVALVE®

FORGED BELLOWS SEALED GATE VALVE

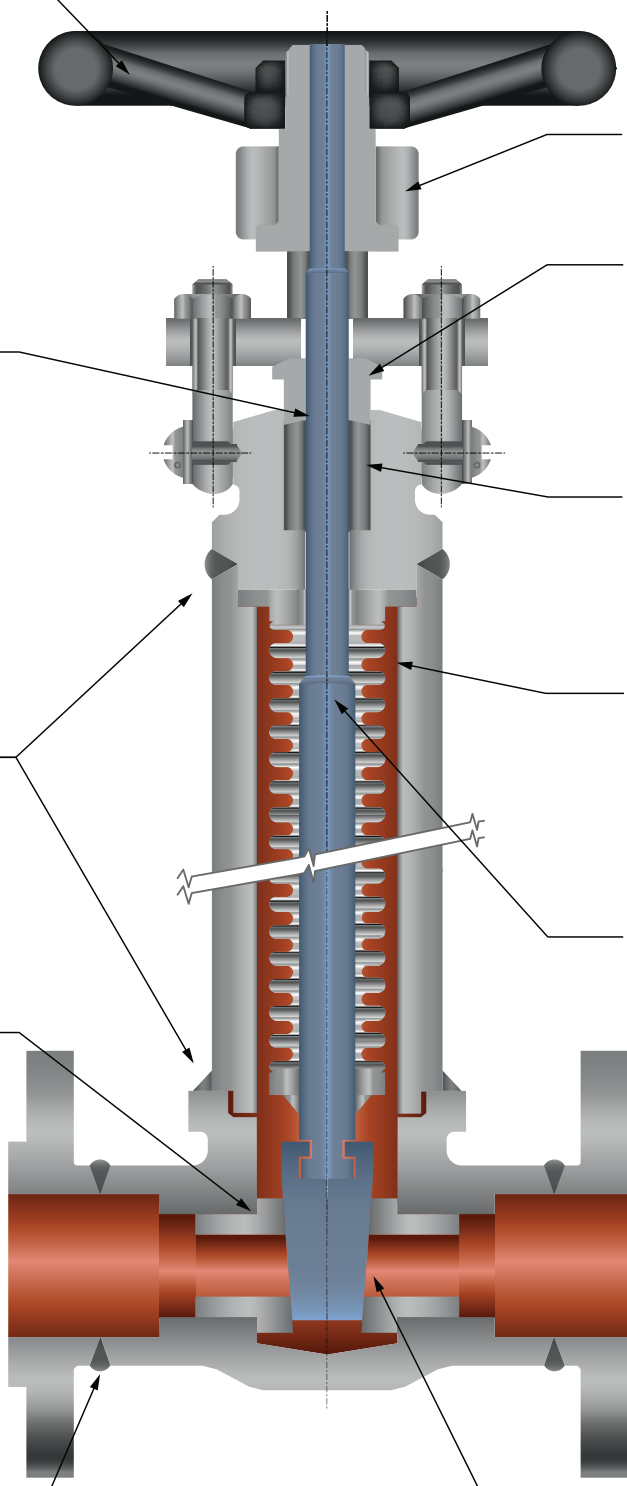
Non Rising Hand Wheel
• Ideal in restricted spaces

Provision For Lubrication on Yoke Sleeve
• Ensures smooth operation

Ease of operation for SecondaryPacking
• Ease for replacing packing
• Improves proper sealing

Non Rotating stem
• High reliability
• Twist of bellow is avoided
• Longer packing life

Downstream Safety Gland Packing With Graphite
• Additional reliability against bellow failure



Multiply Bellows
• High service life

Body - Bonnet - Cylinder connection
• Fillet Weld

Back Seat Arrangement on Stem
• Additional tertiary safety
• Anti-blow out under line pressure

Hardfacing or Steliting
• Increased service life

Body - Flange connection
• Full penetration butt weld

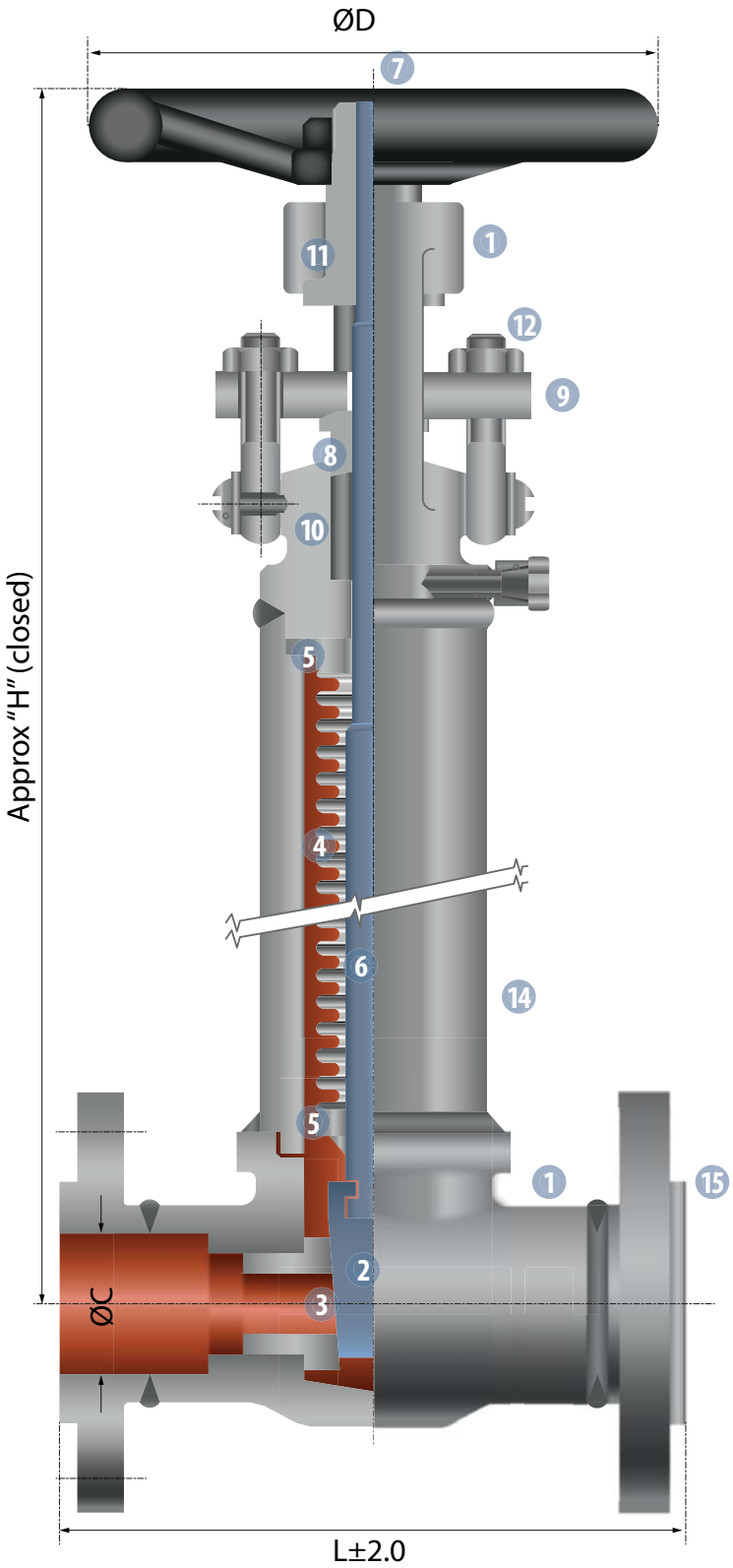
Solid one piece wedge

FORGED BELLOWS SEALED GATE VALVE

Size 1/2" - 2"			
150# - 300# - 600#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC	+425 ºC

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim.
- Optional Full Port design up to 1 1/2".
- Optional Flanged end with large groove, large tongue and RTJ end.
- Optional valve with CE marking size above 1"
- Optional valve with High Pressure Ratings.



Forged Bellows Sealed Gate Valve, with flanges acc. to ASME B 16.5, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE.

Carbon steel: Body and Bonnet made of forged material A 105, seat ring hardfaced with stellite, wedge made of SS 410/CA15, hardfaced with stellite.

Stainless steel: Body and Bonnet made of forged material A 182 GR F316/F304, seat ring hardfaced with stellite, wedge made of CF8M/CF8, hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of Forged material A 350 GR LF2 , seat ring hardfaced with stellite, wedge made of CF8/SS 304, hardfaced with stellite.

FLANGE ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	FBGT-F-CS	FBGT-F-SS	FBGT-F-LT
1. Body & Bonnet	A105	F316/F304	LF2
2. Wedge	SS410 / CA15 + HF	CF8M / CF8 + HF	SS304 + HF
3. Seat Ring	SS410 + HF	SS316 / SS304 + HF	SS304 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321	SS316Ti / SS 321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	SS304
7. Hand Wheel Nut	Carbon Steel	SS304	SS304
8. Gland Bush	SS 410	SS316 / 304	SS304
9 Gland Flange	CS / A105	SS316 / 304	SS304
10. Packings	Graphite / PTFE		
11. Yoke Sleeve	SG Iron/NI Resist / 416*		
12. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304
13. Hand Wheel	Cast Iron		
14. Cylinder	A106 Gr. B	A312 TP316 / 304	A312 TP304
15. End Flange	A105	SS316 / 304	LF 2

* Available on request

Testing Pressure in bar (API 598/EN 12266-1) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details 150 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	108	237	100	9	7	3.5
3/4	117	266	100	12	14	4.5
1	127	288	100	17	30	6.5
1 1/4	140	420	150	23	85	11.5
1 1/2	165	422	150	28	100	12.5
2	178	500	150	36	160	17

Dimensional details 300 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	140	237	100	9	7	4.5
3/4	152	266	100	12	14	5.5
1	165	288	100	17	30	7.5
1 1/4	178	420	150	23	85	12.5
1 1/2	190	422	150	28	100	13.5
2	216	500	150	36	160	18

Dimensional details 600 #

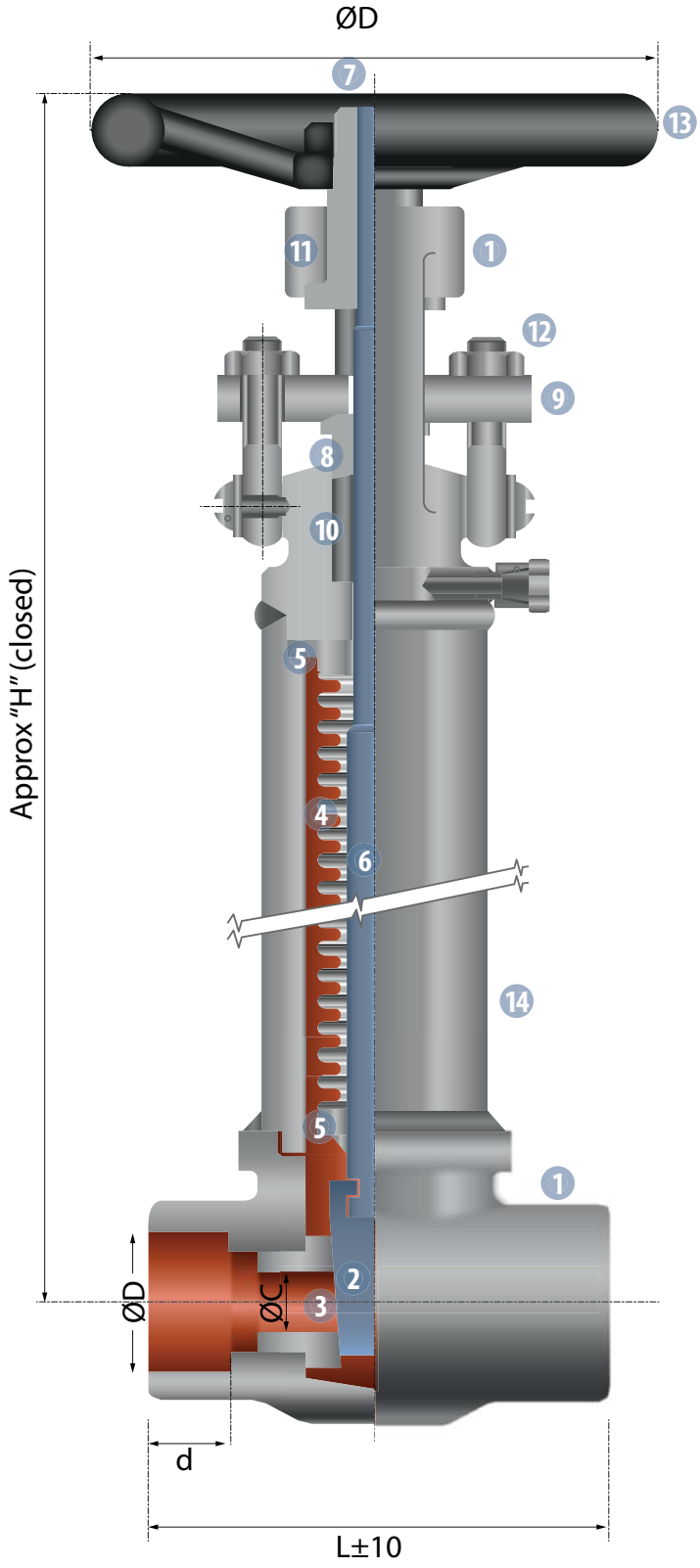
Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	165	300	150	9	7	6.8
3/4	190	330	150	12	14	7.5
1	216	370	150	17	30	10.0
1 1/4	229	470	150	23	85	-
1 1/2	241	490	150	28	100	16.0
2	292	550	150	36	160	21.0

FORGED BELLOWS SEALED GATE VALVE

Size 1/2" - 2"			
150# - 300# - 600#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC	+425 ºC

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Optional Full Port design upto 1 1/2".
- Optional Screwed End (BSP/NPT).
- Optional valve with CE marking above 1".
- Optional valve with High Pressure Ratings.



Forged Bellows Sealed Gate Valve, socket weld ends acc. to ASME B 16.11 (Optional: butt weld end acc. to ASME B 16.25/ screwed end acc. to B 1.20.1), end to end as per manufacturers std. and with ACME stem screw thread and grounded shaft. Multiplybellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safetystuffing box packing made of pure graphite/PTFE.

Carbon steel: Body and Bonnet made of forged material A 105, seat ring hardfaced with stellite, wedge made of SS 410/CA15, hardfaced with stellite.

Stainless steel: Body and Bonnet made of forged material A 182 GR F316/F304, seat ring hardfaced with stellite, wedge made of CF8M/CF8, hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of Forged material A 350 GR LF2, seat ring hardfaced with stellite, wedge made of CF8/SS 304, hardfaced with stellite.

WELDED ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	FBGT-F-CS	FBGT-F-SS	FBGT-F-LT
1. Body & Bonnet	A105	F316/F304	LF2
2. Wedge	SS410 / CA15 + HF	CF8M / CF8 + HF	SS304 + HF
3. Seat Ring	SS410 + HF	SS316 / SS304 + HF	SS304 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321	SS316Ti / SS 321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	SS304
7. Hand Wheel Nut	Carbon Steel	SS304	SS304
8. Gland Bush	SS 410	SS316 / 304	SS304
9. Gland Flange	CS / A105	SS316 / 304	SS304
10. Packings	Graphite / PTFE		
11. Yoke Sleeve	SG Iron/NI Resist / 416*		
12. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304
13. Hand Wheel	Cast Iron		
14. Cylinder	A106 Gr. B	A312 TP316 / 304	A312 TP304

* Available on request

Testing Pressure in bar (API 598/EN 12266-1) 150#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	30	29
	SEAT	22	21
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 300#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	77	75
	SEAT	57	55
AIR	SEAT	07	07

Testing Pressure in bar (API 598/EN 12266-1) 600#:

Materials		WCB	CF8M / CF8
HYDRO	SHELL	154	149
	SEAT	113	110
AIR	SEAT	07	07

Dimensional details 150 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	237	100	9	7	2.5
3/4	92	266	100	12	14	3
1	106	288	100	17	30	5
1 1/4	130	420	150	23	85	9
1 1/2	130	422	150	28	100	10.5
2	145	500	150	36	160	15

Dimensional details 300 #

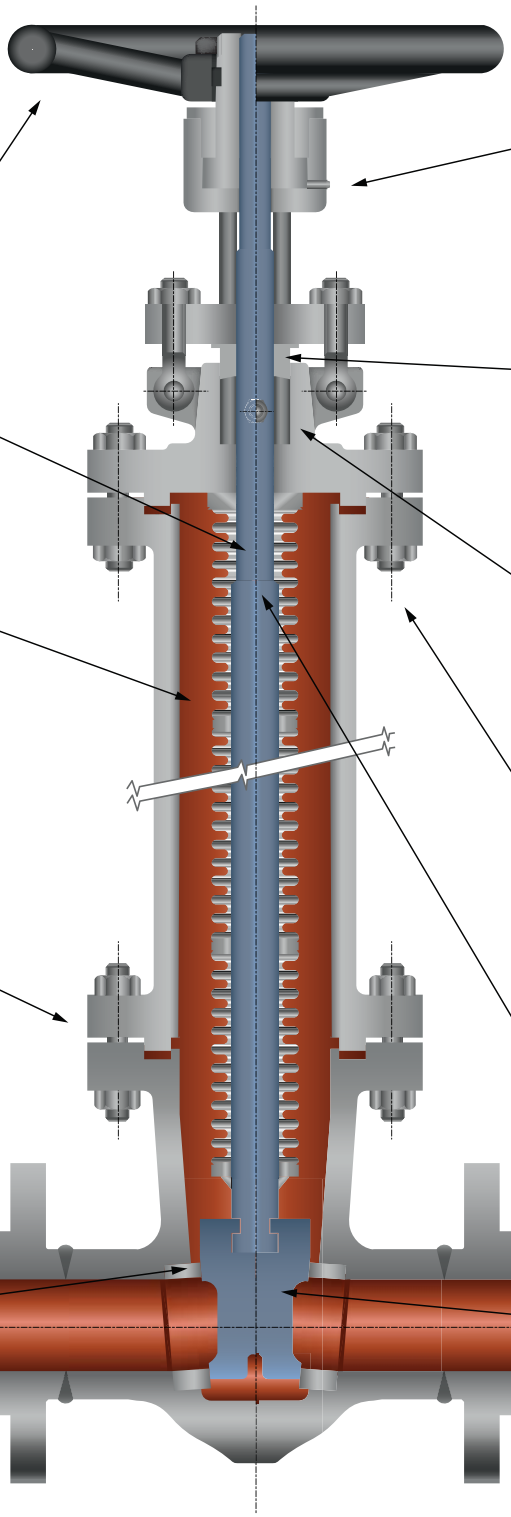
Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	237	100	9	7	2.5
3/4	92	266	100	12	14	3
1	106	288	100	17	30	5
1 1/4	130	420	150	23	85	9
1 1/2	130	422	150	28	100	10.5
2	145	500	150	36	160	15

Dimensional details 600 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
1/2	86	300	150	9	7	4.0
3/4	92	330	150	12	14	4.3
1	106	370	150	17	30	5.6
1 1/4	130	470	150	23	85	-
1 1/2	130	490	150	28	100	10.0
2	145	550	150	36	160	15.0


BVALVE®

CAST BELLOWS SEALED GATE VALVE



Non Rising Hand Wheel
•Ideal in restricted spaces

Non Rotating stem
• High reliability
• Twist of bellow is avoided
• Longer packing life

Multiply Bellows
•High service life

Body-Cylinder Joints
•Tougue and grove arrangement
•No gasket slip possible,
•Long service life

Hardfacing or Steliting
• increased service life

Provision For Lubrication on Yoke Sleeve
•Ensures smooth operation

Ease of operation for Secondary Packing
•Ease for replacing packing
•Improves proper sealing

Downstream Safety Gland Packing With Graphite
• Additional reliability against bellow failure

Cylinder bonnet joint with studs and nuts
•Additional strenth for the joints
•Ensure joint tightness

Back Seat Arrangement on Stem
•Additional tertiary safety
•Anti-blow out under line pressure

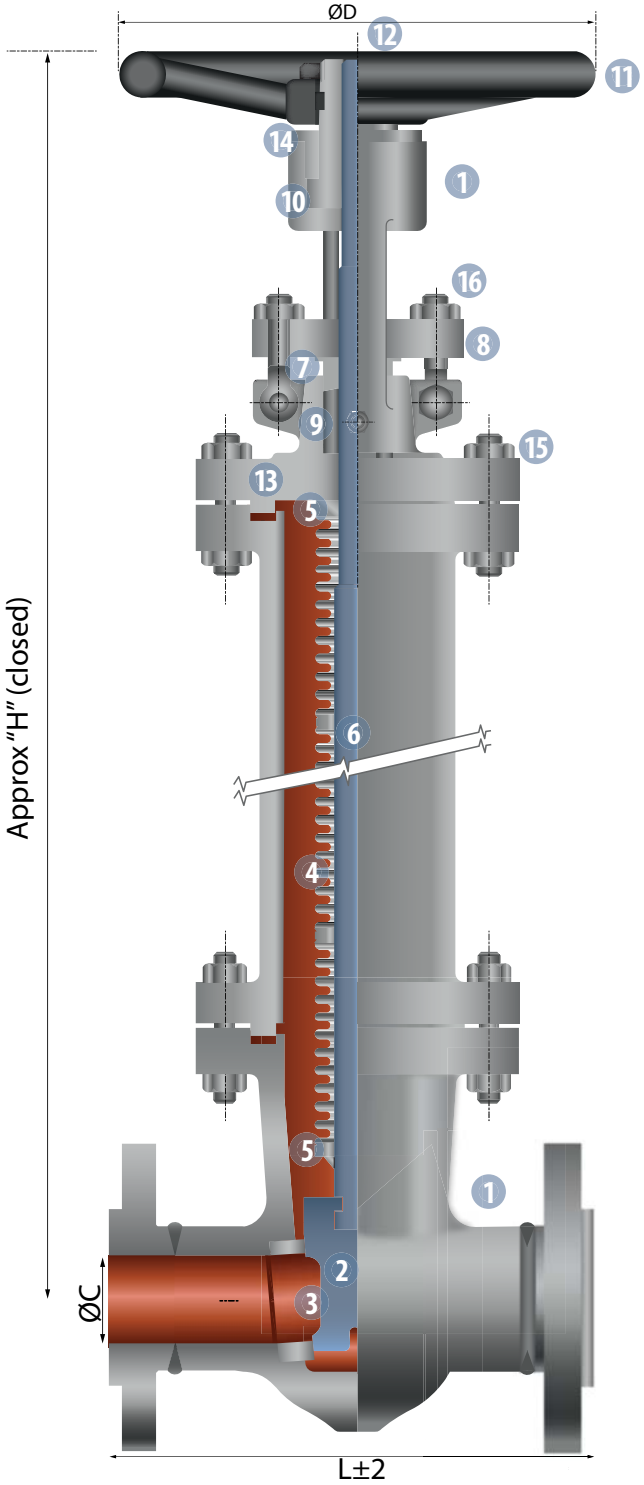
Flexible one piece wedge
•improves sealing effect

CAST BELLOWS SEALED GATE VALVE

Size 2" - 12"			
150# - 300# - 600#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-46 ºC
T max.	+425 ºC	+538 ºC	+345°C

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Optional Actuator/Gear Operator.
- Optional Flanged end with large groove, large tongue and RTJ end.
- Optional valves with CE and API 6D markings.
- Optional valve with High Pressure Ratings.



Cast Bellows Sealed Gate Valve, with flanges acc. to ASME B 16.5, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE, spiral wound bonnet gasket made of stainless steel with graphite or PTFE filler material, housed in a tongue and grooved flange.

Carbon steel: Body and Bonnet made of cast material WCB, seat ring hardfaced with stellite, wedge made of SS 410/WCB, hardfaced with stellite.

Stainless steel: Body and Bonnet made if cast material CF8M/CF8, seat ring hardfaced with stellite, wedge made of CF8M/CF8, hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of cast material LCC/LCB/LC3, seat ring hardfaced with stellite, wedge made of LCC/LCB/LC3, hardfaced with stellite.

FLANGED ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	CBGT-B-CS	CBGT-B-SS	CBGT-B-LT
1. Body & Bonnet & Cylinder	WCB	CF8M / CF8	LCC / LCB / LC3
2. Wedge	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
3. Seat Ring	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321	SS316Ti / SS321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	SS304
7. Gland Bush	SS410	SS316 / 304	SS304
8. Gland Flange	Carbon Steel	SS316 / 304	SS304
9. Packings	Graphite / PTFE		
10. Yoke Sleeve	SG Iron/NI Resist / 416*		
11. Hand Wheel	Cast Iron / MI*		
12. Hand Wheel Nut	Carbon Steel	SS304	SS304
13. Gasket	SPW SS304 / SS316 + Graphite / PTFE		
14. Yoke Nut	SS410	SS304	SS304
15. Fasteners	A193 Gr.B7/A 194 Gr.2H	A193 Gr.B8/A 194 Gr.8	A 320 Gr.L7/A 194 Gr.7
16. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304

* Available on request

Testing Pressure in bar (API 598) 150#:

Materials		WCB & LCC/LC3	CF8M /CF8	LCB
HYDRO	SHELL	30	29	28
	SEAT	22	21	21
AIR	SEAT	07	07	07

Testing Pressure in bar (API 598) 300#:

Materials		WCB	CF8M /CF8	LCC/LC3	LCB
HYDRO	SHELL	77	75	78	72
	SEAT	57	55	57	53
AIR	SEAT	07	07	07	07

Testing Pressure in bar (API 598) 600#:

Materials		WCB	CF8M /CF8	LCC/LC3	LCB
HYDRO	SHELL	154	149	156	144
	SEAT	113	110	114	106
AIR	SEAT	07	07	07	07

Dimensional details 150 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	178	663	200	50.8	260	40
2 1/2	190	698	200	63.5	420	60
3	203	875	250	76.2	625	80
4	229	1075	300	101.6	1150	120
5	254	1315	300	127	1710	170
6	267	1445	300	152.4	2650	200
8	292	1880	350	203.2	4850	360
10	330	2070	500	254	7750	375
12	356	2340	500	304.8	11500	800

Dimensional details 300 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	216	668	200	50.8	260	50
2 1/2	241	698	250	63.5	420	90
3	282	875	250	76.2	625	125
4	305	1075	300	101.6	1150	145
5	381	1320	300	127	1750	190
6	403	1448	300	152.4	2650	215
8	419	1900	350	203.2	4850	410
10	457	2070	500	254	7750	780
12	502	2340	500	304.8	11500	860

Dimensional details 600 #

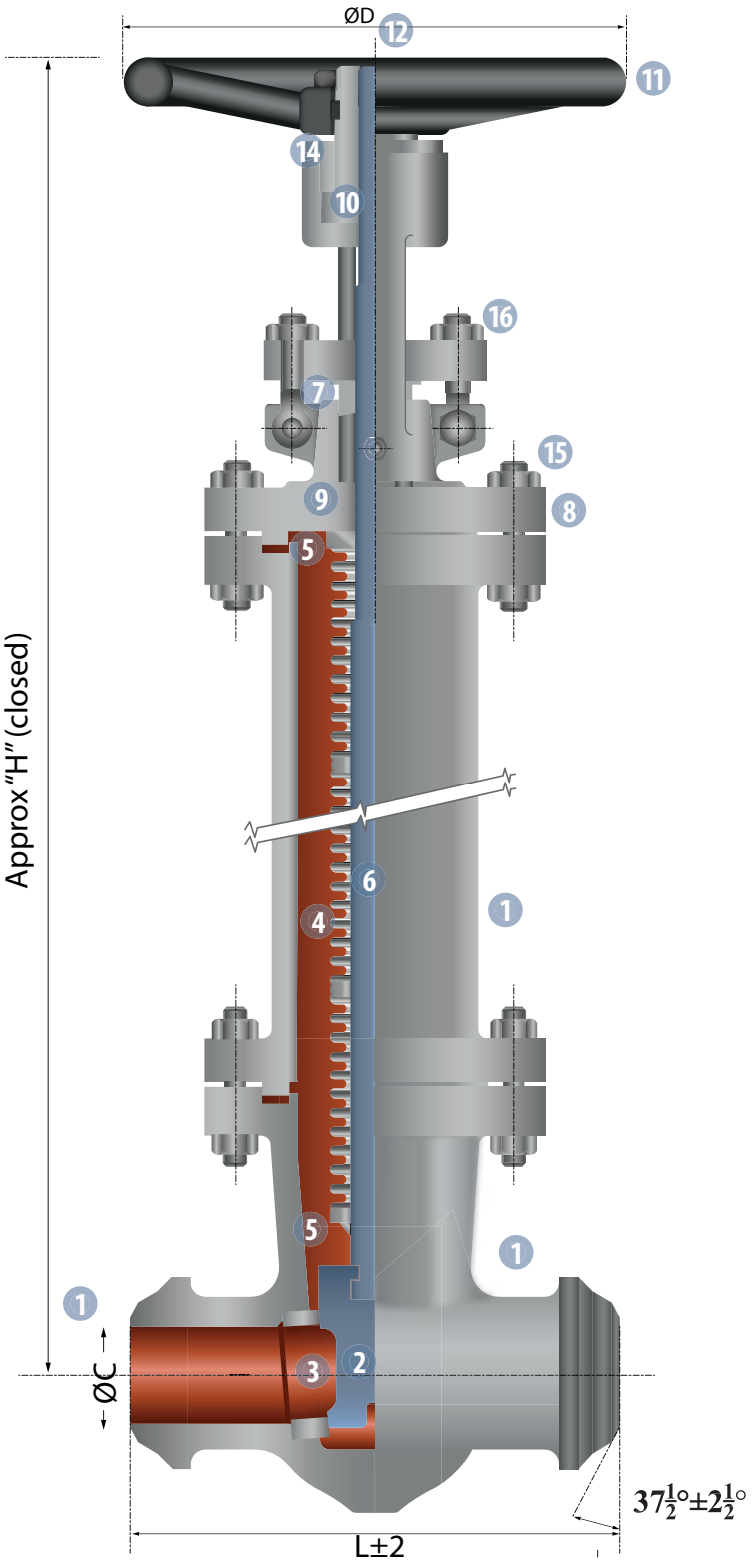
Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	292	880	250	50.8	260	76
2 1/2	330	1000	300	63.5	420	-
3	356	1020	350	76.2	625	138
4	432	1230	350	101.6	1150	234
5	508	-	350	127	1750	-
6	559	1545	450	152.4	2650	460
8	660	-	-	203.2	4850	-
10	787	-	-	254	7750	-
12	838	2340	500	304.8	11500	-

CAST BELLOWS SEALED GATE VALVE

Size 1/2" - 2"			
150# - 300# - 600#			
	c.s	s.s	Low temp.
T min.	-29 °C	-268 °C	-46 °C
T max.	+427 °C	+538 °C	+343°C

Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Optional Actuator/Gear Operator.
- Optional valves with CE and API 6D markings.
- Optional valve with High Pressure Ratings.



Cast Bellows Sealed Gate Valve, butt weld end acc. to ASME B 16.25, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiply bellow with long service life made of stainless steel. Min. life cycle of Bellow tested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE, spiral wound bonnet gasket made of stainless steel with graphite or PTFE filler material, housed in a tongue and grooved flange.

Carbon steel: Body and Bonnet made of cast material WCB, seat ring hardfaced with stellite, wedge made of SS 410/WCB, hardfaced with stellite.

Stainless steel: Body and Bonnet made of cast material CF8M/CF8, seat ring hardfaced with stellite, wedge made of CF8M/CF8, hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of cast material LCC/LCB/LC3, seat ring hardfaced with stellite, wedge made of LCC/LCB/LC3, hardfaced with stellite.

WELDED ENDS

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	CBGT-B-CS	CBGT-B-SS	CBGT-B-LT
1. Body & Bonnet & Cylinder	WCB	CF8M / CF8	LCC / LCB / LC3
2. Wedge	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
3. Seat Ring	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321	SS316Ti / SS321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	SS304
7. Gland Bush	SS410	SS316 / 304	SS304
8. Gland Flange	Carbon Steel	SS316 / 304	SS304
9. Packings	Graphite / PTFE		
10. Yoke Sleeve	SG Iron/NI Resist / 416*		
11. Hand Wheel	Cast Iron / MI*		
12. Hand Wheel Nut	Carbon Steel	SS304	SS304
13. Gasket	SPW SS304 / SS316 + Graphite / PTFE		
14. Yoke Nut	SS410	SS304	SS304
15. Fasteners	A193 Gr.B7/A 194 Gr.2H	A193 Gr.B8/A 194 Gr.8	A 320 Gr.L7/A 194 Gr.7
16. Eye Bolt/Nut	Carbon Steel	SS 316 / 304	SS304

* Available on request

Testing Pressure in bar (API 598) 150#:

Materials		WCB & LCC/LC3	CF8M /CF8	LCB
HYDRO	SHELL	30	29	28
	SEAT	22	21	21
AIR	SEAT	07	07	07

Testing Pressure in bar (API 598) 300#:

Materials		WCB & LCC/LC3	CF8M /CF8	LCC/LC3	LCB
HYDRO	SHELL	77	75	78	72
	SEAT	57	55	57	53
AIR	SEAT	07	07	07	07

Testing Pressure in bar (API 598) 600#:

Materials		WCB & LCC/LC3	CF8M /CF8	LCC/LC3	LCB
HYDRO	SHELL	154	149	156	144
	SEAT	113	110	114	106
AIR	SEAT	07	07	07	07

Dimensional details 150 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	216	668	200	50.8	260	40
2 1/2	241	698	200	63.5	420	55
3	282	875	250	76.2	625	100
4	305	1075	300	101.6	1150	140
5	381	1315	300	127	1750	160
6	403	1445	300	152.4	2650	205
8	419	1900	350	203.2	4850	350
10	457	2000	500	254	7750	710
12	502	2340	500	304.8	11500	770

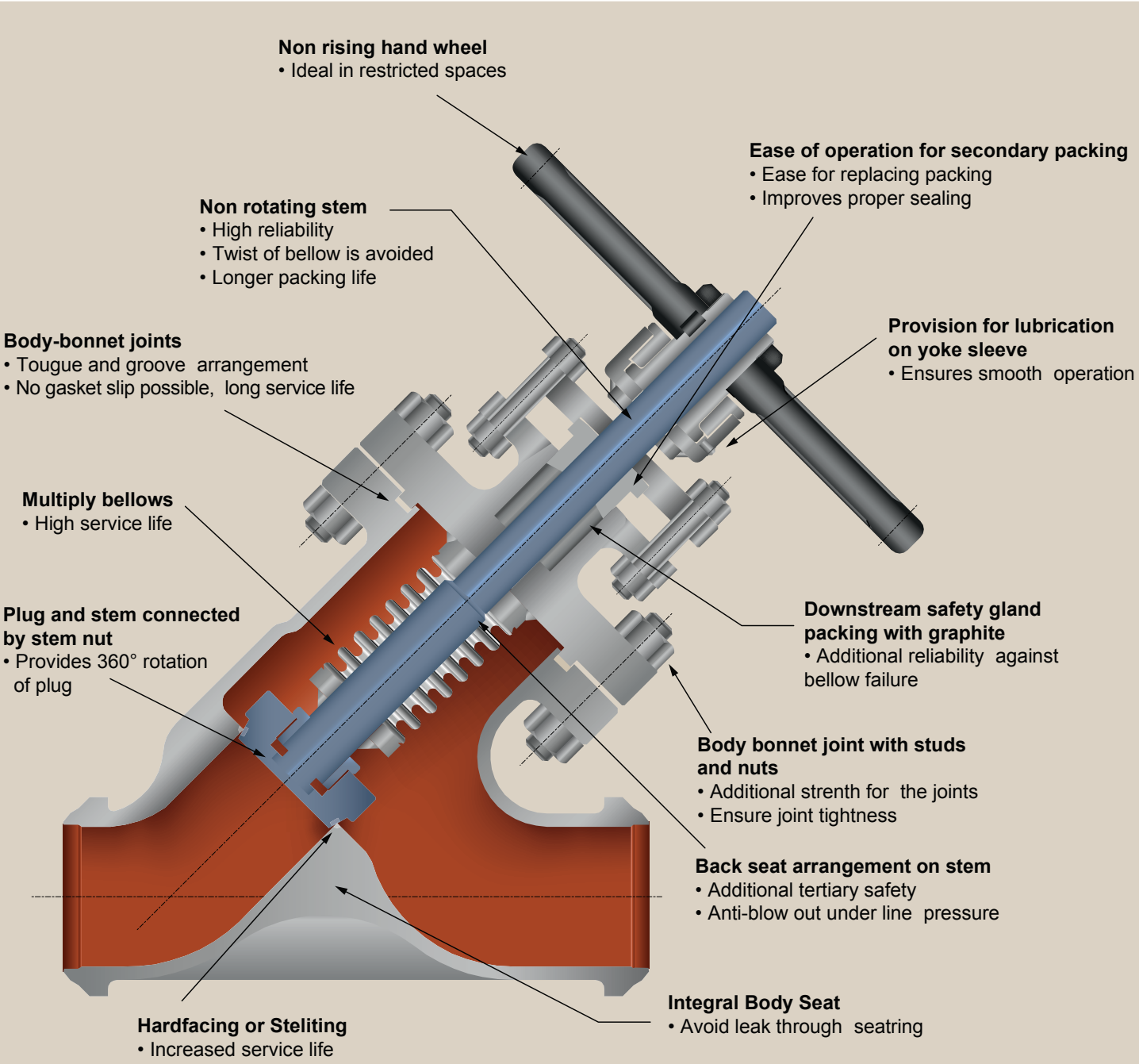
Dimensional details 300 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	216	668	200	50.8	260	45
2 1/2	241	698	200	63.5	420	80
3	282	875	250	76.2	625	100
4	305	1075	300	101.6	1150	140
5	381	1315	300	127	1750	171
6	403	1445	300	152.4	2650	205
8	419	1900	350	203.2	4850	360
10	457	2000	500	254	7750	720
12	502	2340	500	304.8	11500	780

Dimensional details 600 #

Size	L	H closed	ØD	ØC	Cv	Weight (approx.)
	[mm]	[mm]	[mm]	[mm]		[kgs]
2	292	880	250	50.8	260	65
2 1/2	330	1000	300	63.5	420	-
3	356	1020	350	76.2	625	121
4	432	1230	350	101.6	1150	214
5	508	-	350	127	1750	-
6	559	1545	450	152.4	2650	440
8	660	-	-	203.2	4850	-
10	787	-	-	254	7750	-
12	838	2340	500	304.8	11500	-

‘Y’ TYPE BELLOWS SEALED GLOBE VALVE



Cast Bellows Sealed Y-type globe valve, with butt weld end acc. to ASME B 16.25, face to face as per ASME B16.10 and with ACME stem screw thread and grounded shaft. Multiple wall liquid contacted bellows made of stainless steel. Min. life cycle of Bellowtested for 10,000 cycles, metal back seat, safety stuffing box packing made of pure graphite/PTFE, Spiral wound bonnet gasketmade of stainless steel with graphite or PTFE filler material, housed in a tongue and grooved flange.

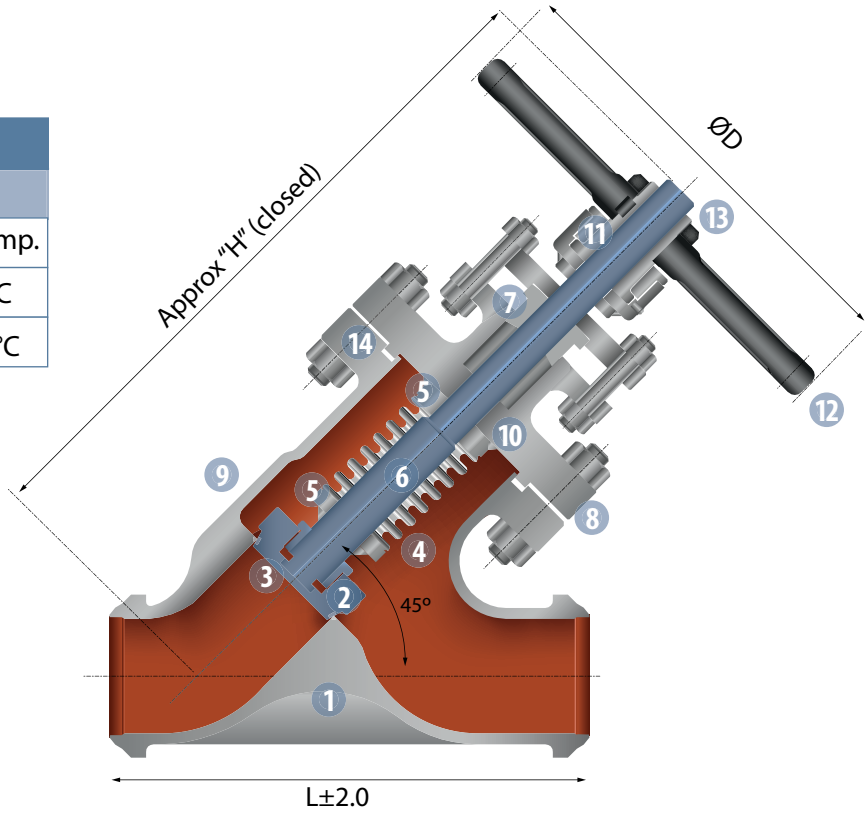
Carbon steel: Body and Bonnet made of cast material WCB, seat hardfaced with stellite, disc with conical plug made of WCB, hardfaced with stellite.

Stainless steel: Body and Bonnet made of cast material CF8M/CF8, seat hardfaced with stellite, disc with conical plug made of CF8M/CF8, hardfaced with stellite.

Low temperature carbon steel: Body and Bonnet made of cast material LCC/LCB/LC3, seat hardfaced with stellite, disc with conical plug made of LCC/LCB/LC3, hardfaced with stellite.

WELDED ENDS

Size 1/2 "- 12"			
300#			
	c.s	s.s	Low temp.
T min.	-29 ºC	-29 ºC	-29 ºC
T max.	+425 ºC	+538 ºC	+345°C



Available on request :

- Special corrosion resistant materials for: Complete valve, Bellows and Trim
- Soft sealing and regulating disc, needle type disc.
- Optional Actuator/Gear Operator
- Optional valve with CE marking above 1".
- Optional valve with High Pressure Ratings.

Design may be changed without prior notice.

Component	Materials		
	C.S	S.S	Low temp.
	CBGL(Y)-B-CS	CBGL(Y)-B-SS	CBGL(Y)-B-LT
1. Body & Bonnet & Cylinder	WCB	CF8M / CF8	LCC / LCB / LC3
2. Plug	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
3. Integral Seat	WCB + HF	CF8M / CF8 + HF	LCC / LCB / LC3 + HF
4. Bellow	SS316Ti / SS321	SS316Ti / SS321	SS316Ti / SS321
5. Top/Bottom Bellow collar	SS316 / SS321	SS316 / SS321	SS316 / SS321
6. Stem	SS410	SS316 / 304	SS304
7. Gland Bush	SS410	SS316 / 304	SS304
8. Gland Flange	Carbon Steel	SS316 / 304	SS304
9. Guide Plate	Carbon Steel	SS304	SS304
10. Packings	Graphite / PTFE		
11. Yoke Sleeve	SG Iron / NI Resist / 416*		
12. Hand Wheel	Cast Iron / MI*		
13. Hand Wheel Nut	Carbon Steel	SS304	SS304
14. Gasket	SPW SS304 + Graphite		
15. Yoke Nut	SS410	SS304	SS304
16. Fasteners	A193 Gr.B7 / A194 Gr.2H	A193 Gr.B8 / A194 Gr.8	A320 Gr.L7 / A194 Gr.7

* Available on request

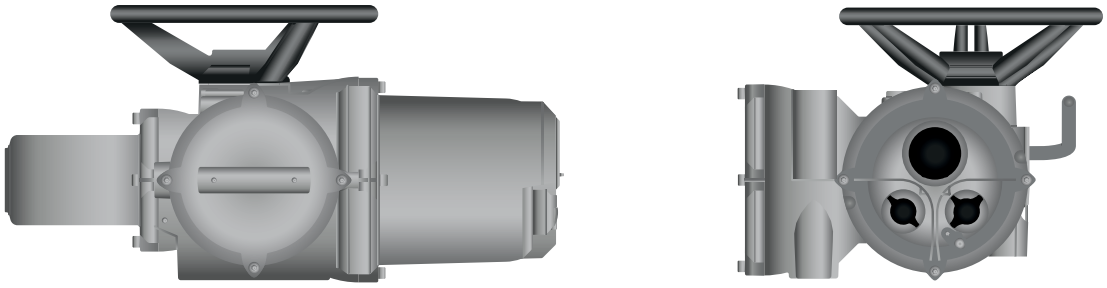
Testing Pressure in bar (API 598) :

Materials		WCB	CF8M /CF8	LCC / LC3	LCB
HYDRO	SHELL	77	75	78	72
	SEAT	57	55	57	53
AIR	SEAT	07	07	07	07

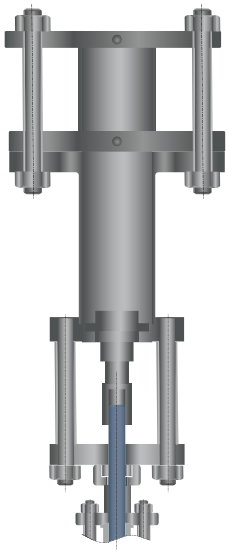
Dimensional Details:

Size	L	H closed	ØD	Cv	Weight (approx.)
	[mm]	[mm]	[mm]		[kgs]
1/2	152	238	150	7	8
3/4	178	260	150	10	9
1	203	330	150	15	10
1 1/2	229	355	200	50	12
2	267	410	200	69	17
2 1/2	292	455	250	106	22
3	318	505	300	149	33
4	356	575	300	241	44
6	444	725	350	482	95
8	559	920	450	942	165
10	622	1065	500	1497	300
12	711	1380	600	2138	500

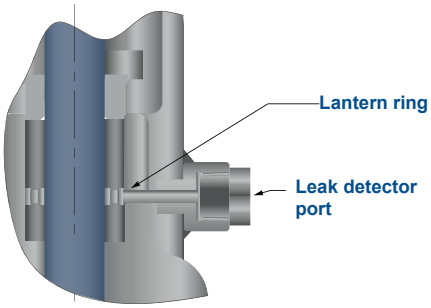
OPTIONAL VALVE WITH ELECTRIC ACTUATOR



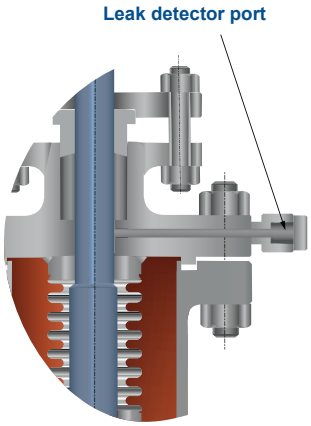
OPTIONAL VALVE WITH ACTUATOR OPERATION



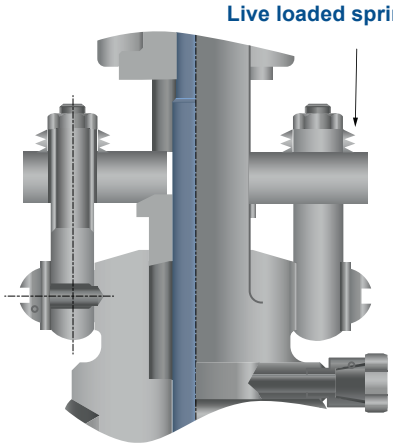
VALVE WITH LANTERN RING ARRANGEMENT



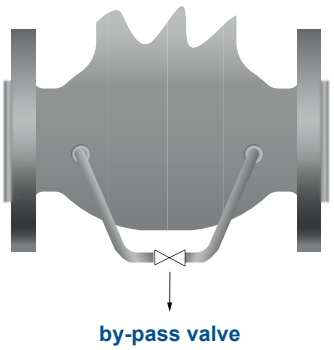
VALVE WITH LEAK DETECTOR PORT ARRANGE MENT BETWEEN BELLOW AND SECONDARY SEALING



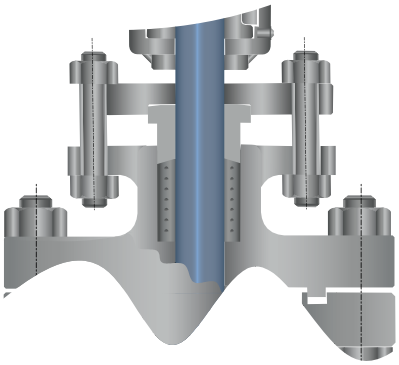
OPTIONAL LIVE LOADED PACKINGS



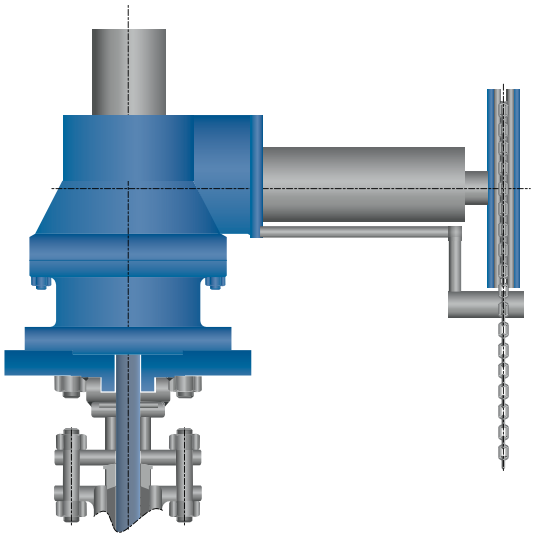
OPTIONAL VALVE WITH BY-PASS ARRANGEMENT (HIGH PRESSURE RATINGS)



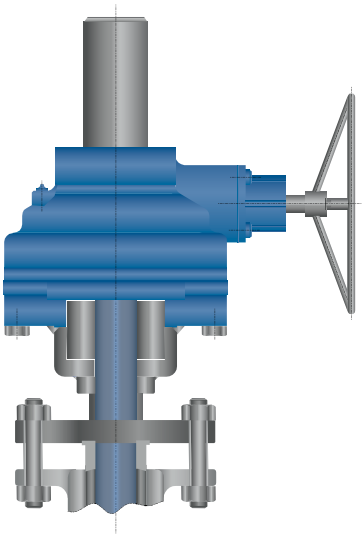
OPTIONAL V-PACKINGS ARRANGEMENT V-PACKINGS



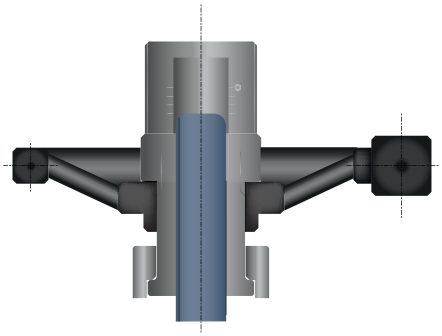
OPTIONAL VALVE WITH GEARBOX CHAIN OPERATION



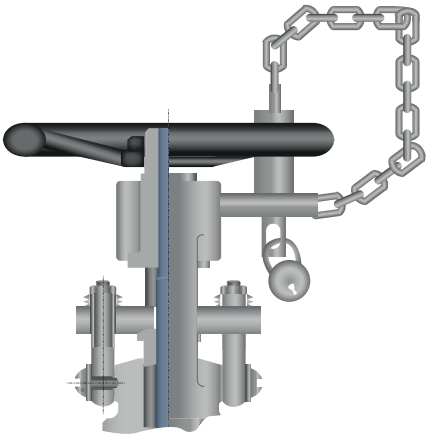
OPTIONAL VALVE WITH GEAR OPERATION



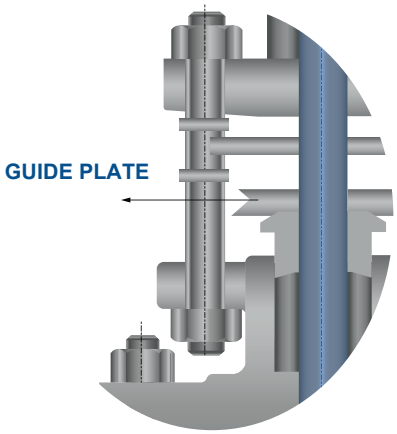
VALVE WITH POSITION INDICATOR FOR OPEN AND CLOSE



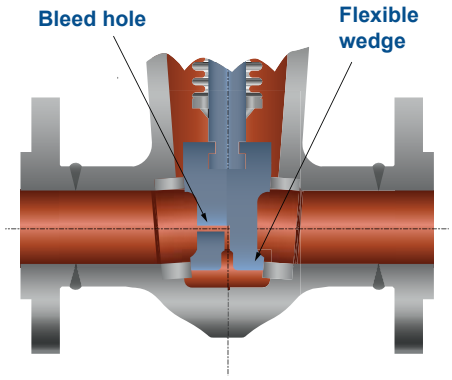
OPTIONAL VALVE WITH LOCKING ARRANGEMENT



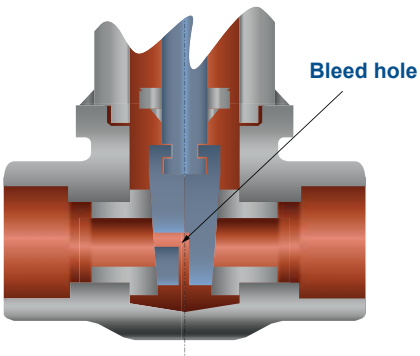
OPTIONAL VALVE WITH POSITION INDICATOR



OPTIONAL FLEXIBLE WEDGE WITH BLEED HOLE



OPTIONAL BLEED HOLE ON WEDGE UPSTREAM SIDE



PRESSURE TEMPERATURE RATINGS ASME B 16.34														
Materials		WCB(a)	WCC(a)		WC1(b)	WC4(h)	WC6(i)	WC9(i)	C5	C12	CF8(j)	CF8M(j)	CF3(f)	CF8C(h)
		LF3(d)	LCC(d)		LC1(d)	WC5							CF3M(f)	
		A105(a)	LC2(d)										F304L(f)	
		LF2(a)	LC3(d)	F1(b)	LCB(d)	F2(h)	F11(C)	F22(c)	F5a	F9	F304(j)	F316(j)	F316L(f)	F347(h)
Class	Temperature °c	Working pressures in bars												
150	-29 to 38	19.6	19.8	18.4	18.4	19.8	19.8	19.8	20	20	19	19	15.9	19
	100	17.7	17.7	17.7	17.4	17.7	17.7	17.7	17.7	17.7	15.7	16.2	13.3	17.4
	150	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	14.2	14.8	12	15.8
	200	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.2	13.7	11.2	13.8
	250	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	10.5	12.1
	300	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10	10.2
	350	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
	400	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	450	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	500	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8		2.8
	538	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4		1.4
	SHELL TEST	30	30	28	28	30	30	30	30	30	29	29	24	29
	SEAT TEST	22	22	21	21	22	22	22	22	22	21	21	18	21

300	-29 to 38	51.1	51.7	48	48	51.7	51.7	51.7	51.7	51.7	49.6	49.6	41.4	49.6
	100	46.6	51.5	47.9	45.3	51.5	51.5	51.5	51.5	51.5	40.9	42.2	34.8	45.3
	150	45.1	50.2	47.3	43.9	50.3	49.7	50.3	50.3	50.3	37.0	29.5	31.4	42.5
	200	43.8	48.6	45.8	42.5	48.6	48	48.6	48.6	48.6	34.5	35.7	29.2	39.9
	250	41.9	46.3	44.5	40.8	46.3	46.3	46.3	46.3	46.3	32.5	33.4	27.5	37.8
	300	39.8	42.9	42.9	38.7	42.9	42.9	42.9	42.9	42.9	30.9	31.6	26.1	36.1
	350	37.6	40	40.3	36.4	40.3	40.3	40.3	40.3	40.3	29.6	30.3	25.1	34.8
	400	34.7	34.7	36.5	32.6	36.5	36.5	36.5	36.5	36.5	28.4	29.4	24.3	33.9
	450	23	23	33.7	21.6	33.7	33.7	33.7	33.7	33.7	27.4	28.8	23.4	33.5
	500	11.8	11.6	24.1	11.1	26.7	25.7	28.2	21.4	28.2	26.5	28.2		28.2
	538	5.9	5.9	11.3	5.9	13.9	14.9	18.4	13.7	17.5	24.4	25.2		25.2
	600						6.1	6.9	6.2	7.2	16.9	19.9		21.6
	650						2.8	2.8	2.4	3.5	11.3	12.7		14.1
	700										8	8.4		10.1
	750										5.8	5.9		5.9
	800										3.5	3.5		3.5
	SHELL TEST	77	78	72	72	78	78	78	78	78	75	75	63	75
	SEAT TEST	57	57	53	53	57	57	57	57	57	55	55	46	55

600	-29 to 38	102.1	103.4	96	96	106.4	103.4	103.4	103.4	103.4	99.3	99.3	82.7	99.3
	100	93.2	103	95.9	90.7	103	103	103	103	103	81.7	84.4	69.6	90.6
	150	90.2	100.3	94.7	87.9	100.3	99.5	100.3	100.3	100.3	74	77	62.8	84.9
	200	87.6	97.2	91.6	85.1	97.2	95.9	97.2	97.2	97.2	69	71.3	58.6	79.9
	250	83.9	92.7	89	81.6	92.7	92.7	92.7	92.7	92.7	65	66.8	54.9	75.6
	300	79.6	85.7	85.7	77.4	85.7	85.7	85.7	85.7	85.7	61.8	63.2	52.1	72.2
	350	75.1	80	80.4	72.8	80.4	80.4	80.4	80.4	80.4	59.3	60.7	50.1	69.5
	400	69.4	68.4	73.3	65.2	73.3	73.3	73.3	73.3	73.3	56.9	58.9	48.6	67.8
	450	46	46	67.7	43.2	67.7	67.7	67.7	67.7	67.7	54.8	57.7	46.8	66.9
	500	23.5	23.2	48.1	22.1	53.4	51.5	56.5	42.8	56.5	53	56.5		56.5
	538	11.8	11.8	22.7	11.8	27.9	29.8	36.9	27.4	35	48.9	50		50
	600						12.2	13.8	12.5	14.4	33.8	39.8		42.9
	650						5.7	5.7	4.7	7.1	22.5	25.3		28.1
	700										16.1	16.8		20
	750										11.6	11.7		11.7
	800										7	7		7
	SHELL TEST	154	154	144	144	156	156	156	156	156	149	149	125	149
	SEAT TEST	113	114	106	106	114	114	114	114	114	110	110	91	110

PRESSURE TEMPERATURE RATINGS ASME B 16.34														
Materials		WCB(a)	WCC(a)		WC1(b)	WC4(h)	WC6(i)	WC9(i)	C5	C12	CF8(j)	CF8M(j)	CF3(f)	CF8C(h)
		LF3(d)	LCC(d)		LC1(d)	WC5							CF3M(f)	
		A105(a)	LC2(d)										F304L(f)	
		LF2(a)	LC3(d)	F1(b)	LCB(d)	F2(h)	F11(C)	F22(c)	F5a	F9	F304(j)	F316(j)	F316L(f)	F347(h)
Class	Temperature °c	Working pressures in bars												
900	-29 to 38	153.2	155.1	144.1	144.1	155.1	155.1	155.1	155.1	155.1	148.9	148.9	124.1	148.9
	100	139.8	154.6	143.8	136	154.6	154.4	154.6	154.6	154.6	122.6	126.6	104.4	135.9
	150	135.2	150.5	142	131.8	150.6	149.2	150.6	150.6	150.6	111	115.5	94.2	127.4
	200	131.4	145.8	137.4	127.6	145.8	143.9	145.8	145.8	145.8	103.4	107	87.5	119.8
	250	125.8	139	133.5	122.3	139	139	139	139	139	97.5	100.1	82.4	113.4
	300	119.5	128.6	128.6	116.1	128.6	128.6	128.6	128.6	128.6	92.7	94.9	78.2	108.3
	350	112.7	120.7	120.7	109.2	120.7	120.7	120.7	120.7	120.7	88.9	91	75.2	104.3
	400	104.2	104.2	109.8	97.9	109.8	109.8	109.8	109.8	109.8	85.3	88.3	72.9	101.7
	450	69	69	101.4	64.8	101.4	101.4	101.4	101.4	101.4	82.2	86.5	70.2	100.4
	500	35.3	34.7	72.2	33.2	80.1	77.2	84.7	64.1	84.7	79.5	84.7		84.7
	538	17.7	17.7	34	17.7	41.8	44.7	55.3	41.1	52.5	73.3	75.2		75.2
	600						18.3	20.7	18.7	21.5	50.6	59.7		64.2
	650						8.5	8.5	7.1	10.6	33.8	38		42.5
	700										24.1	25.1		29.8
	750										17.3	17.6		17.6
	800										10.5	10.5		10.5
	SHELL TEST	230	233	217	216	233	233	233	233	233	224	224	187	224
	SEAT TEST	169	171	159	159	171	171	171	171	171	164	164	137	164
1500	-29 to 38	255.3	258.6	240.1	240.1	258.6	258.6	258.6	258.6	258.6	248.2	248.2	206.8	248.2
	100	233	257.6	239.7	226.7	257.6	257.4	257.6	257.6	257.6	204.3	211	173.9	226.5
	150	225.4	250.8	236.7	219.7	250.8	248.7	250.8	250.8	250.8	185	192.5	157	212.4
	200	219	243.2	229	212.7	243.4	239.8	243.4	243.4	243.4	172.4	178.3	145.8	199.7
	250	209.7	231.8	222.5	203.9	231.8	231.8	231.8	231.8	231.8	162.4	166.9	137.2	189.1
	300	199.1	214.4	214.4	193.4	214.4	214.4	214.4	214.4	214.4	154.6	158.1	130.3	180.4
	350	187.8	200.1	201.1	182	201.1	201.1	201.1	201.1	201.1	148.1	151.6	125.4	173.8
	400	173.6	173.6	183.1	163.1	183.1	183.1	183.1	183.1	183.1	142.2	147.2	121.5	169.5
	450	115	115	169	107.9	169	169	169	169	169	137	144.2	117.1	167.3
	500	58.8	57.9	120.3	55.4	133.4	128.6	140.9	106.9	140.9	132.4	140.9		140.9
	538	29.5	29.5	56.7	29.5	69.7	74.5	92.2	68.6	87.5	122.1	125.5		125.5
	600						30.5	34.4	31.2	35.9	84.4	99.5		107
	650						14.2	14.2	11.8	17.7	56.3	63.3		70.7
	700										40.1	41.9		49.7
	750										28.9	29.3		29.6
	800										17.4	17.4		17.4
	SHELL TEST	383	388	361	361	388	388	388	388	388	373	373	311	373
	SEAT TEST	281	285	265	265	285	285	285	285	285	274	274	228	274
2500	-29 to 38	245.5	430.9	400.1	400.1	430.9	430.9	430.9	430.9	430.9	413.7	413.7	344.7	413.7
	100	388.3	429.4	399.5	377.8	429.4	429.0	429.4	429.4	429.4	340.4	351.6	289.9	377.4
	150	375.6	418.1	394.5	366.1	418.2	414.5	418.2	148.2	148.2	308.4	320.8	261.6	353.9
	200	365	405.4	381.7	354.4	405.4	399.6	405.4	405.4	405.4	287.3	297.2	243	332.8
	250	349.5	386.2	370.9	339.8	386.2	386.2	386.2	386.2	386.2	270.7	278.1	228.9	315.1
	300	331.8	357.1	357.1	322.4	357.1	357.1	357.1	357.1	357.2	357.6	262.5	217.2	300.7
	350	313	333.5	335.3	303.3	335.3	335.3	335.3	335.3	335.3	246.9	252.7	208.9	289.6
	400	289.3	289.3	304.9	271.9	304.9	304.9	304.9	304.9	304.9	237	245.3	202.5	282.6
	450	191.7	191.7	281.8	179.9	281.8	281.8	281.8	281.8	281.8	228.4	240.4	195.1	278.8
	500	97.9	96.5	200.5	92.3	222.4	214.4	235	178.2	235	220.7	235		235
	538	49.2	49.2	94.6	49.2	116.2	124.1	153.7	114.3	145.8	203.6	208.9		208.9
	600						50.9	57.4	51.9	59.8	140.7	165.9		178.5
	650						23.6	23.6	19.7	29.5	93.8	105.5		117.7
	700										66.9	69.8		83
	750										48.1	48.9		49.1
	800										29.2	29.2		29.2
	SHELL TEST	638	647	601	601	647	647	647	647	647	621	621	518	621
	SEAT TEST	468	474	441	441	474	474	474	474	474	456	456	380	456

Materials shall not be used beyond temperature limits specified in the governing Code
(a) Permissible, but not recommended for prolonged usage above about 425ºC
(b) Permissible, but not recommended for prolonged usage above about 455ºC
(c) Permissible, but not recommended for prolonged usage above about 595ºC
(d) Not to be used over 345ºC
(e) Not to be used over 370ºC
(f) Not to be used over 425ºC
(g) Not to be used over 455ºC
(h) Not to be used over 538ºC
(i) Not to be used over 595ºC
(j) At temperature above 538ºC use only when the carbon contest is 0.04% or higher

Data for Calculation of Flow and Pressure Drop

A valve coefficient Cv is used to calculate pressure drop through a particular valve for a given flow rate. The coefficient of flow Cv expresses the rate of flow in gallons per minute at 60°F water with a pressure drop of 1 psi across the valve. The Cv coefficients for the various types of size, shown in the tables, have been determined form calculations and actual flow tests

$$Kv = Cv \times 0.85$$

$$\frac{m^3/h}{\sqrt{Kg/cm^2}}$$

Note: Kv is the metric equivalent of Cv

For Liquids:

$$(1)\ Q_L = Cv\sqrt{\frac{\triangle P}{G_L}} \qquad (2)\ \triangle P = G_L\left[\frac{Q_L}{Cv}\right]^2$$

Where Q_L= Flow in U.S. Gallons per minute.

$\triangle P$ (P_1-P_2) Pressure drop in psi

GL: Specific gravity of Liquid (Water =1 at 60°F)

For Gas:

$$(3)\ Q_G = 1360Cv\sqrt{\frac{\triangle P}{C_G T}}\ \sqrt{\frac{P_1+P_2}{2}} \qquad (4)\ \triangle P = P_1 - \sqrt{P_1^2 + 2G_G T\left[\frac{Q_G}{1360Cv}\right]}$$

Where Q_G = Volumetric flow of gas (SCFH)

G_G = Specific gravity of gas at standard conditions (air at atmosphere and 60° F=1)

T= Absolute temperature of gas (°F+460)

$\triangle P$ =(P_1-P_2) Pressure drop in psi

For Steam:

$$(5)\ W = \sqrt{\frac{2.1}{1+0.0007Ts}} \times \sqrt{\triangle P = (P_1+P_2)} \qquad (6)\ \triangle P = P_1 - \sqrt{P_1^2 - K^2}$$

$$Where:\ K = \left[\frac{1-0.0007Ts}{2.1\ Cv}\right] W$$

Note: For saturated Ts=0

W=Pound per hour of steam

$\triangle P$ =(P_1-P_2) Pressure drop in psi

Ts= Degree of superheat (°F)

Note: For gas and steam max. $\triangle P$= 1/2P_1 and min. P2= 1/2P_1

P_1, P_2 are absolute pressure (psia)

P_1=inlet pressure, P_2 = outlet pressure.

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