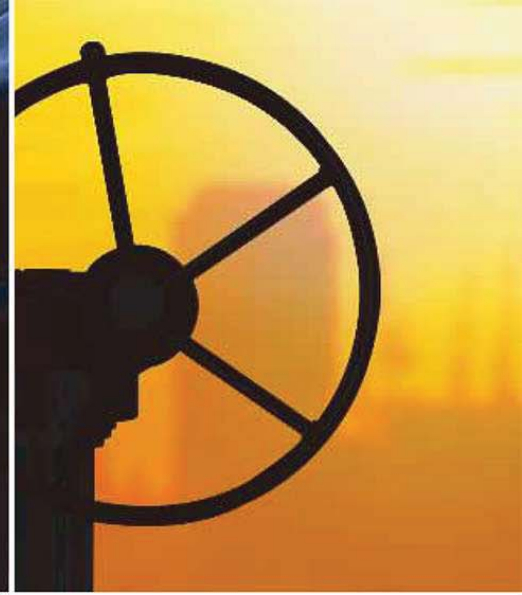




Bellows Seal & Cryogenic Service Valves

SWI
VALVE

SWI Valve Co., Ltd.

Reliable Performance In Extreme Conditions

www.swivalve.com



● SWI Global Footprint

Wherever industrial valves are needed in the world, SWI is nearby. We maintain strong partnerships with authorized stocking distributors on every continent. For your nearest authorized stocking distributor or representative, full contact details can be obtained from our web site: www.swivalve.com



● Foreword

SWI Valve Co., Ltd. is a leading industrial valve manufacturing company, specializing in the design and manufacture of Ball, Gate, Globe, Check, Cryogenic and Bellows Seal valves.

Our facilities incorporate all aspects of valve design, development and manufacture ensuring that SWI can offer a degree of flexibility rarely encountered elsewhere.

At SWI, we stand for three values - quality, innovation and service. We know the worlds Oil, Chemical, Petrochemical and Process industries require precision flow control products. We have dedicated ourselves to supplying that need with an extensive range of industrial valves, manufactured in our own factories and designed for environmental sensitivity.

The Quality Policy of SWI Valve Co., Ltd. is to consistently provide product that meets customer and applicable regulatory requirements, with the aim to enhance customer satisfaction by providing exactly what has been agreed contractually, to the required quality and time stated.

The company operates under the Quality Assurance Scheme which is in accordance with ISO 9001 and API Monogram.

We are pleased to introduce our range of Bellows Seal & Cryogenic Service Valves and trust this catalogue will assist our customers in the selection and application of SWI product.



BELLOWS SEAL DESIGN FEATURES

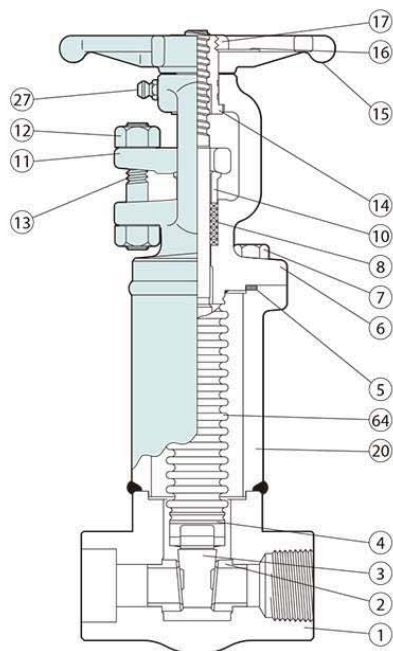


- **General Design & Wall Thickness**
Forged Gate Valves - API 602 / ASME B16.34 / ISO 15761
Forged Globe Valves - API 602 / ASME B16.34 / BS5352 / ISO 15761
Cast Gate Valves - API 600 / ASME B16.34 / ISO 10434
Cast Globe Valves - API 623 / ASME B16.34 / BS1873
- **Bellows Inspection & Test** : MSS SP-117 / API 602
- **Cycle Life up to and including Class 800# Forged Valves**
- As per BS 5352 / API 602
- Min. 10,000 Cycles for Globe Valves
- Min. 2,000 Cycles for Gate Valves
- **Cycle Life for Class 1500 Forged Valves and all Classes of Cast Valve**
- As per MSS SP-117

Size(inch)	Classes 150# ~ 600#		Classes 900# & 1500#	
	Gate Valve	Globe Valve	Gate Valve	Globe Valve
≤2"	2,000	5,000	2,000	2,000
2½" ~4"	2,000	5,000	1,000	2,000
>4"	1,000	2,000	1,000	1,000

- **Cycle Life Test** : Performed under the maximum pressure condition.
- **Non-Rotating stem** : Prevents torsion of bellows.
- **Two Secondary Stem Seals** : Stem backseat and stem packing ensure the perfect sealing in the event of bellows damage.
- **Long Life Seating Surface** : Stellite 6 faced both seat and wedge / disc to prevent seizing and galling is available.
- **End Flange Dimensions** : ASME B16.5
- **Butt Weld End Dimensions** : ASME B16.25
- **End to End Dimensions** :
Flanged - ASME B16.10
Butt Weld - Cast Valves: ASME B16.10
- Forged Valves: Makers Standard
Screwed & Socket - Makers standard
- **Helium Leak Test** : Performed for each bellows assembly using helium detector with sensitivity of 10⁻⁷cc/sec.
- **Bellows Material** : SS321, Inconel 625, Hastelloy, Monel etc...
- **Fully Welded or Modular Design** : Two or three section assembly.
- **Hydroformed Multiply Bellows** : Minimum of two plies.
- **Soft Seat Insert on Globe Valves** : Soft seat option is available for gas or vacuum service.
- **Impact Handwheel** : Globe Valves fitted with impact handwheels which may be used to give effectively 3 ~ 10 times higher closing force.

BELLOWS SEAL GATE VALVES – BOLTED / WELDED BONNET – REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat Ring	Stellite 6 faced A276-316	
3	Wedge	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 600 / 800 - API 602 / ASME B16.34

Unit : mm(inch)

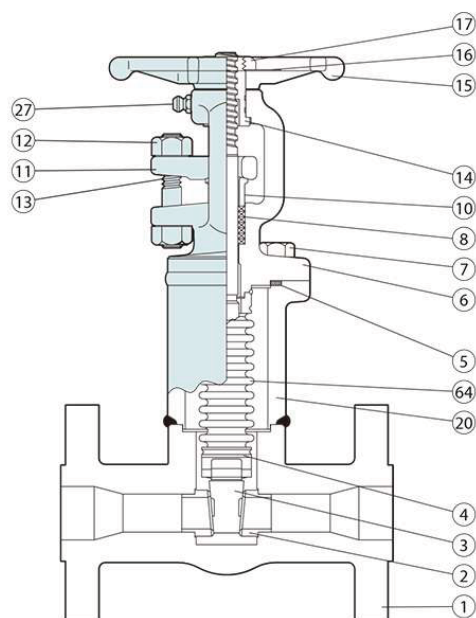
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	76 (2.99)	210 (8.27)	9.8 (0.39)	2.4 (5.3)
	3/4	86 (3.39)	86 (3.39)	227 (8.94)	13.0 (0.51)	3.1 (6.8)
	1	99 (3.90)	102 (4.02)	306 (12.05)	18.0 (0.71)	4.0 (8.8)
	1 1/4	124 (4.88)	117 (4.61)	400 (15.75)	31.0 (1.22)	8.1 (17.9)
	1 1/2	124 (4.88)	117 (4.61)	400 (15.75)	31.0 (1.22)	8.1 (17.9)
	2	138 (5.43)	133 (5.24)	500 (19.69)	37.0 (1.46)	12.9 (28.5)
Full	1/2	86 (3.39)	86 (3.39)	227 (8.94)	13.0 (0.51)	3.1 (6.8)
	3/4	99 (3.90)	102 (4.02)	306 (12.05)	18.0 (0.71)	4.0 (8.8)
	1	124 (4.88)	117 (4.61)	400 (15.75)	23.0 (0.91)	8.1 (17.9)
	1 1/4	138 (5.43)	133 (5.24)	500 (19.69)	37.0 (1.46)	12.9 (28.5)
	1 1/2	138 (5.43)	133 (5.24)	500 (19.69)	37.0 (1.46)	12.9 (28.5)
	2	157 (6.18)	218 (8.58)	610 (24.02)	50.8 (2.00)	18.5 (40.8)

CLASS 1500 - API 602 / ASME B16.34

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	157 (6.18)	86 (3.39)	316 (12.44)	9.8 (0.39)	4.0 (8.8)
	3/4	157 (6.18)	102 (4.02)	348 (13.70)	13.0 (0.51)	5.5 (12.1)
	1	157 (6.18)	117 (4.61)	410 (16.14)	18.0 (0.71)	9.0 (19.9)
	1 1/4	200 (7.87)	133 (5.24)	550 (21.65)	31.0 (1.22)	16.0 (35.3)
	1 1/2	200 (7.87)	133 (5.24)	550 (21.65)	31.0 (1.22)	16.0 (35.3)
	2	230 (9.06)	210 (8.27)	620 (24.41)	37.0 (1.46)	20.0 (44.1)

BELLOWS SEAL GATE VALVES – BOLTED / WELDED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat Ring	Stellite 6 faced A276-316	
3	Wedge	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 150 / 300 / 600 - API 602 / ASME B16.34

Unit : mm(inch)

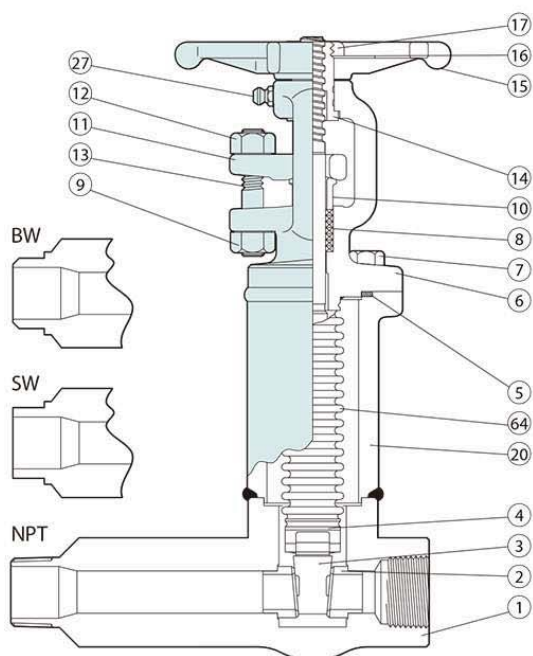
Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face			Weight Kg(Lb)		
					Class 150	Class 300	Class 600	Class 150	Class 300	Class 600
Reduced	1/2	86 (3.39)	210 (8.27)	9.8 (0.39)	108 (4.25)	140 (5.50)	165 (6.50)	3.4 (7.5)	3.9 (8.6)	4.2 (9.3)
	3/4	86 (3.39)	227 (8.94)	13.0 (0.51)	117 (4.62)	152 (6.00)	190 (7.50)	4.2 (9.3)	5.1 (11.3)	5.7 (12.6)
	1	99 (3.90)	306 (12.05)	18.0 (0.71)	127 (5.00)	165 (6.50)	216 (8.50)	5.9 (13.0)	7.2 (15.9)	7.8 (17.2)
	1 1/2	124 (4.88)	400 (15.75)	31.0 (1.22)	165 (6.50)	190 (7.50)	241 (9.50)	11.6 (25.6)	13.9 (30.7)	15.1 (33.3)
	2	138 (5.43)	500 (19.69)	37.0 (1.46)	178 (7.00)	216 (8.50)	292 (11.50)	16.9 (37.3)	18.7 (41.2)	20.5 (45.2)

CLASS 1500 - API 602 / ASME B16.34

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face of Face	Weight Kg(Lb)
Reduced	1/2	157 (6.18)	316 (12.44)	9.8 (0.39)	216 (8.50)	8.5 (18.7)
	3/4	157 (6.18)	348 (13.70)	13.0 (0.51)	229 (9.00)	11.1 (24.5)
	1	157 (6.18)	410 (16.14)	18.0 (0.71)	254 (10.00)	17.0 (37.5)
	1 1/2	200 (7.87)	550 (21.65)	31.0 (1.22)	305 (12.00)	29.7 (65.5)
	2	200 (7.87)	620 (24.41)	37.0 (1.46)	368 (14.25)	41.5 (91.5)

BELLOWS SEAL GATE VALVES – BOLTED / WELDED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat Ring	Stellite 6 faced A276-316	
3	Wedge	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 800 - API 602 / ASME B16.34

Unit : mm(inch)

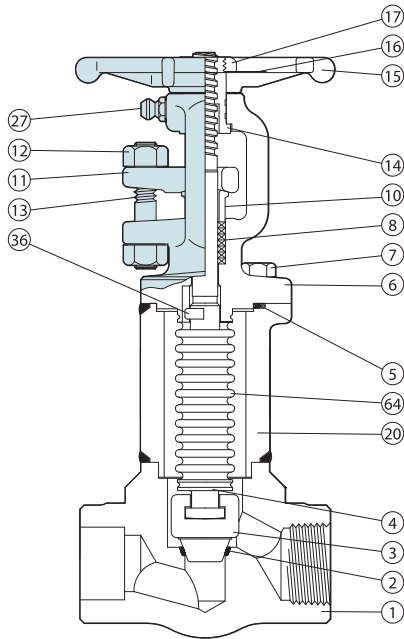
Port	Valve Size	Handwheel Diameter	End to End	Center to Male End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	142 (5.59)	104 (4.10)	210 (8.27)	9.8 (0.39)	2.5 (5.5)
	3/4	86 (3.39)	157 (6.18)	114 (4.49)	227 (8.94)	13.0 (0.51)	4.8 (10.6)
	1	99 (3.90)	165 (6.50)	114 (4.49)	306 (12.05)	18.0 (0.71)	8.8 (19.4)
	1 1/2	124 (4.88)	193 (7.60)	135 (5.32)	400 (15.75)	31.0 (1.22)	11.8 (26.0)
	2	138 (5.43)	212 (8.35)	146 (5.75)	500 (19.69)	37.0 (1.46)	15.0 (33.1)

CLASS 1500 - API 602 / ASME B16.34

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Male End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	157 (6.18)	157 (6.18)	114 (4.49)	316 (12.44)	9.8 (0.39)	4.8 (10.6)
	3/4	157 (6.18)	165 (6.50)	114 (4.49)	348 (13.70)	13.0 (0.51)	8.2 (18.1)
	1	157 (6.18)	193 (7.60)	135 (5.32)	410 (16.14)	18.0 (0.71)	11.2 (24.7)
	1 1/2	200 (7.87)	212 (8.35)	146 (5.75)	550 (21.65)	31.0 (1.22)	15.0 (33.1)

BELLOWS SEAL GLOBE VALVES – BOLTED / WELDED BONNET – REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 600 / 800 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

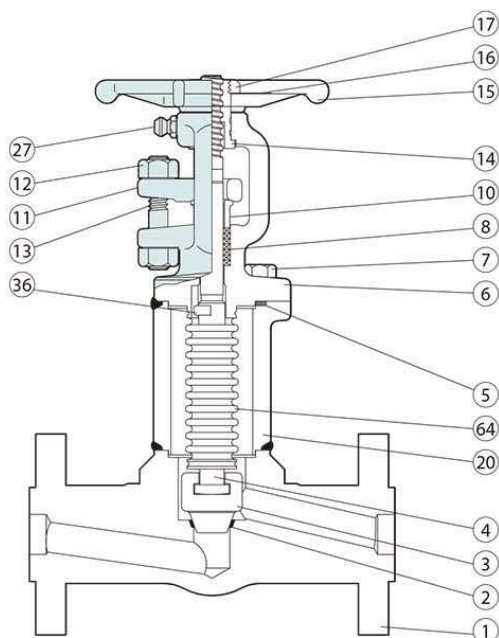
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	76 (2.99)	202 (7.95)	9.5 (0.37)	2.1 (4.6)
	3/4	86 (3.39)	86 (3.39)	202 (7.95)	12.7 (0.50)	2.6 (5.7)
	1	99 (3.90)	102 (4.02)	233 (9.17)	17.5 (0.69)	3.4 (7.5)
	1 1/4	124 (4.88)	152 (5.98)	269 (10.59)	22.5 (0.89)	7.0 (15.4)
	1 1/2	124 (4.88)	152 (5.98)	269 (10.59)	29.5 (1.16)	7.0 (15.4)
	2	138 (5.43)	172 (6.77)	351 (13.82)	35.0 (1.38)	11.7 (25.8)
Full	1/2	86 (3.39)	86 (3.39)	202 (7.95)	12.7 (0.50)	2.6 (5.7)
	3/4	99 (3.90)	102 (4.02)	233 (9.17)	17.5 (0.69)	3.4 (7.5)
	1	124 (4.88)	152 (5.98)	269 (10.59)	23.0 (0.91)	7.0 (15.4)
	1 1/4	138 (5.43)	172 (6.77)	351 (13.82)	29.5 (1.16)	11.7 (25.8)
	1 1/2	138 (5.43)	172 (6.77)	351 (13.82)	35.0 (1.38)	11.7 (25.8)
	2	157 (6.18)	218 (8.58)	420 (16.54)	45.5 (1.79)	19.5 (43.0)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	157 (6.18)	86 (3.39)	147 (5.79)	9.5 (0.37)	2.9 (6.4)
	3/4	157 (6.18)	102 (4.02)	185 (7.28)	12.7 (0.50)	5.2 (11.5)
	1	157 (6.18)	152 (5.98)	210 (8.27)	17.5 (0.69)	7.6 (16.8)
	1 1/4	200 (7.87)	172 (6.77)	245 (9.65)	22.5 (0.89)	13.7 (30.2)
	1 1/2	200 (7.87)	172 (6.77)	245 (9.65)	29.5 (1.16)	13.7 (30.2)
	2	230 (9.06)	210 (8.27)	308 (12.13)	35.0 (1.38)	20.5 (45.2)

BELLOWS SEAL GLOBE VALVES – BOLTED / WELDED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 150 / 300 / 600 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

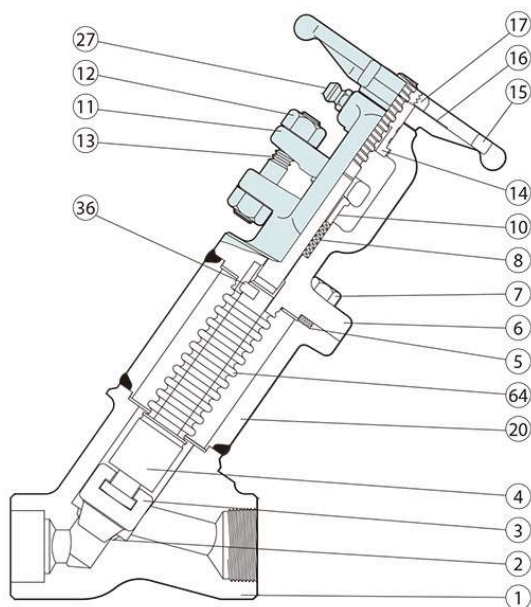
Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face			Weight Kg(Lb)		
					Class 150	Class 300	Class 600	Class 150	Class 300	Class 600
Reduced	1/2	86 (3.39)	146 (5.75)	9.5 (0.37)	108 (4.25)	152 (6.00)	165 (6.50)	2.8 (6.2)	3.3 (7.3)	3.6 (7.9)
	3/4	86 (3.39)	152 (5.98)	12.7 (0.50)	117 (4.62)	178 (7.00)	190 (7.50)	3.6 (7.9)	4.5 (9.9)	5.1 (11.2)
	1	99 (3.90)	188 (7.40)	17.5 (0.69)	127 (5.00)	203 (8.00)	216 (8.50)	5.4 (11.9)	6.7 (14.8)	7.3 (16.1)
	1 1/2	124 (4.88)	219 (8.62)	29.5 (1.16)	165 (6.50)	229 (9.00)	241 (9.50)	10.8 (23.8)	12.0 (26.5)	13.3 (29.3)
	2	138 (5.43)	260 (10.24)	35.0 (1.38)	203 (8.00)	267 (10.50)	292 (11.50)	15.9 (35.1)	17.4 (38.4)	18.3 (40.4)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face of Face	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	147 (5.79)	9.5 (0.37)	216 (8.50)	7.4 (16.3)
	3/4	99 (3.90)	185 (7.28)	12.7 (0.50)	229 (9.00)	10.8 (23.8)
	1	124 (4.88)	210 (8.27)	17.5 (0.69)	254 (10.00)	15.6 (34.4)
	1 1/2	138 (5.43)	245 (9.65)	29.5 (1.16)	305 (12.00)	27.4 (60.4)
	2	157 (6.18)	308 (12.13)	35.0 (1.38)	368 (14.25)	37.0 (81.6)

BELLOWS SEAL GLOBE VALVES - BOLTED / WELDED BONNET - REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A351-CF8M	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
20	Connector	Forged Steel	A105N
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	

CLASS 600 / 800 - API 602 / ASME B16.34 / BS 5352

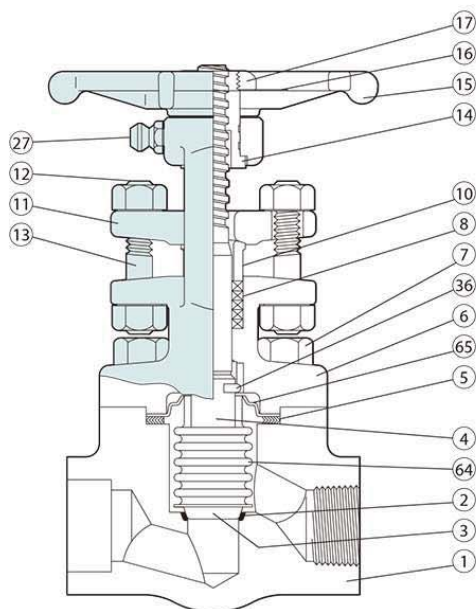
Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	84 (3.31)	171 (6.73)	9.5 (0.37)	2.1 (4.6)
	3/4	86 (3.39)	95 (3.74)	183 (7.21)	12.7 (0.50)	2.6 (5.7)
	1	99 (3.90)	106 (4.17)	213 (8.39)	17.5 (0.69)	3.9 (8.6)
	1 1/4	124 (4.88)	137 (5.39)	259 (10.20)	22.5 (0.89)	7.0 (15.4)
	1 1/2	124 (4.88)	137 (5.39)	259 (10.20)	29.5 (1.16)	7.0 (15.4)
	2	138 (5.43)	172 (6.77)	329 (12.95)	35.0 (1.38)	11.7 (25.8)
Full	1/2	86 (3.39)	95 (3.74)	171 (6.73)	12.7 (0.50)	2.5 (5.5)
	3/4	99 (3.90)	106 (4.17)	220 (8.66)	17.5 (0.69)	4.9 (10.8)
	1	124 (4.88)	137 (5.39)	251 (9.88)	23.0 (0.91)	8.0 (17.6)
	1 1/4	138 (5.43)	172 (6.77)	325 (12.80)	29.5 (1.16)	12.7 (28.0)
	1 1/2	138 (5.43)	172 (6.77)	325 (12.80)	35.0 (1.38)	12.7 (28.0)
	2	157 (6.18)	200 (7.87)	358 (14.10)	45.5 (1.79)	20.5 (45.2)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	95 (3.74)	177 (6.97)	9.5 (0.37)	2.9 (6.4)
	3/4	99 (3.90)	106 (4.17)	215 (8.47)	12.7 (0.50)	6.2 (13.7)
	1	124 (4.88)	137 (5.39)	257 (10.12)	17.5 (0.69)	8.5 (18.7)
	1 1/4	138 (5.43)	172 (6.77)	307 (12.09)	22.5 (0.89)	15.0 (33.1)
	1 1/2	138 (5.43)	172 (6.77)	307 (12.09)	27.0 (1.06)	15.0 (33.1)
	2	157 (6.18)	200 (7.87)	367 (14.45)	35.0 (1.38)	21.5 (47.4)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – REDUCED / FULL PORT


NO.	Parts		A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A276-316	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	
65	End Fitting	321 Stainless Steel or Inconel 625	

CLASS 600 / 800 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

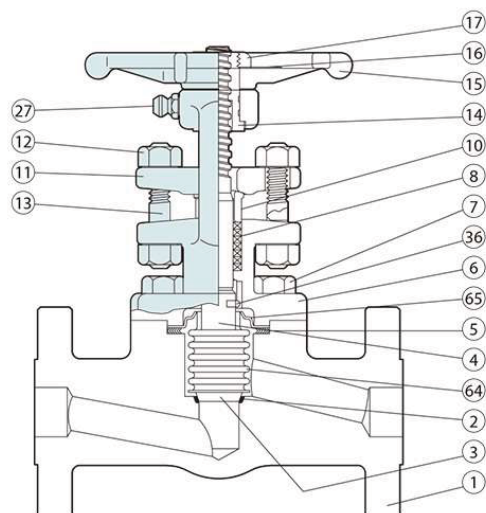
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	76 (2.99)	146 (5.75)	9.5 (0.37)	1.8 (4.0)
	3/4	86 (3.39)	86 (3.39)	152 (5.98)	12.7 (0.50)	2.1 (4.6)
	1	99 (3.90)	102 (4.02)	188 (7.40)	17.5 (0.69)	2.9 (6.4)
	1 1/4	124 (4.88)	152 (5.98)	219 (8.62)	22.5 (0.89)	6.4 (14.1)
	1 1/2	124 (4.88)	152 (5.98)	219 (8.62)	29.5 (1.16)	6.4 (14.1)
	2	138 (5.43)	172 (6.77)	260 (10.24)	35.0 (1.38)	9.7 (21.4)
Full	1/2	86 (3.39)	86 (3.39)	157 (6.18)	12.7 (0.50)	2.1 (4.6)
	3/4	99 (3.90)	102 (4.02)	190 (7.48)	17.5 (0.69)	2.9 (6.4)
	1	124 (4.88)	152 (5.98)	225 (8.86)	23.0 (0.91)	6.4 (14.1)
	1 1/4	138 (5.43)	172 (6.77)	267 (10.51)	29.5 (1.16)	9.7 (21.4)
	1 1/2	138 (5.43)	172 (6.77)	267 (10.51)	35.0 (1.38)	9.7 (21.4)
	2	157 (6.18)	218 (8.58)	324 (12.76)	45.5 (1.79)	14.0 (30.9)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	86 (3.39)	147 (5.79)	9.5 (0.37)	2.0 (4.4)
	3/4	99 (3.90)	102 (4.02)	185 (7.28)	12.7 (0.50)	3.4 (7.5)
	1	124 (4.88)	152 (5.98)	210 (8.27)	17.5 (0.69)	6.5 (14.3)
	1 1/4	138 (5.43)	172 (6.77)	245 (9.65)	22.5 (0.89)	9.6 (21.2)
	1 1/2	138 (5.43)	172 (6.77)	245 (9.65)	29.5 (1.16)	9.6 (21.2)
	2	157 (6.18)	210 (8.27)	308 (12.13)	35.0 (1.38)	14.0 (30.9)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A276-316	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	
65	End Fitting	321 Stainless Steel or Inconel 625	

CLASS 150 / 300 / 600 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

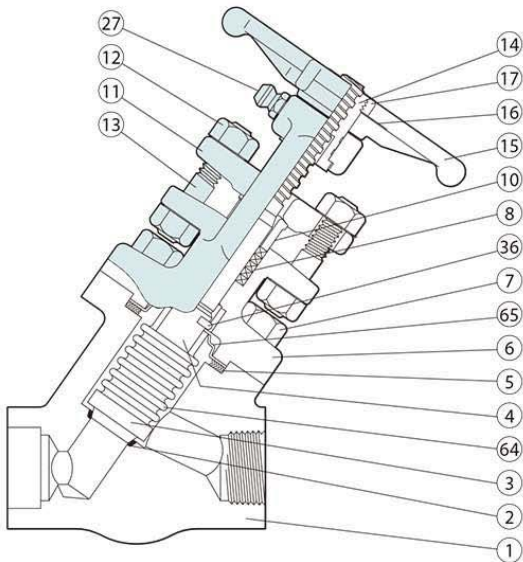
Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face			Weight Kg(Lb)		
					Class 150	Class 300	Class 600	Class 150	Class 300	Class 600
Reduced	1/2	86 (3.39)	146 (5.75)	9.5 (0.37)	108 (4.25)	152 (6.00)	165 (6.50)	2.5 (5.5)	3.0 (6.6)	3.3 (7.3)
	3/4	86 (3.39)	152 (5.98)	12.7 (0.50)	117 (4.62)	178 (7.00)	190 (7.50)	3.1 (6.8)	4.0 (8.8)	4.6 (10.1)
	1	99 (3.90)	188 (7.40)	17.5 (0.69)	127 (5.00)	203 (8.00)	216 (8.50)	4.9 (10.8)	6.2 (13.7)	6.8 (15.0)
	1 1/2	124 (4.88)	219 (8.62)	29.5 (1.16)	165 (6.50)	229 (9.00)	241 (9.50)	9.2 (20.3)	11.4 (25.1)	12.7 (28.0)
	2	138 (5.43)	260 (10.24)	35.0 (1.38)	203 (8.00)	267 (10.50)	292 (11.50)	13.9 (30.7)	15.4 (34.0)	16.3 (35.9)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face of Face	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	147 (5.79)	9.5 (0.37)	216 (8.50)	6.5 (14.3)
	3/4	99 (3.90)	185 (7.28)	12.7 (0.50)	229 (9.00)	9.0 (19.9)
	1	124 (4.88)	210 (8.27)	17.5 (0.69)	254 (10.00)	14.5 (32.0)
	1 1/2	138 (5.43)	245 (9.65)	29.5 (1.16)	305 (12.00)	23.3 (51.4)
	2	157 (6.18)	308 (12.13)	35.0 (1.38)	368 (14.25)	35.5 (78.3)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A105N
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stellite 6 faced A276-316	
4	Stem	Stainless Steel	A276-316
5	Gasket	304 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A105N
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A105
12	Gland Nut	Carbon Steel	A194-2H
13	Gland Bolt	Stainless Steel	A193-B6
14	Yoke Sleeve	13Cr Stainless Steel	A582-416
15	Handwheel	Malleable Iron	A47
16	Name Plate	Aluminum	
17	Handwheel Nut	Carbon Steel	A563A
27	Grease Nipple	Cr Plated Carbon Steel	
36	Guide Pin	13Cr Stainless Steel	A276-410
64	Bellows	321 Stainless Steel or Inconel 625	
65	End Fitting	321 Stainless Steel or Inconel 625	

CLASS 600 / 800 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

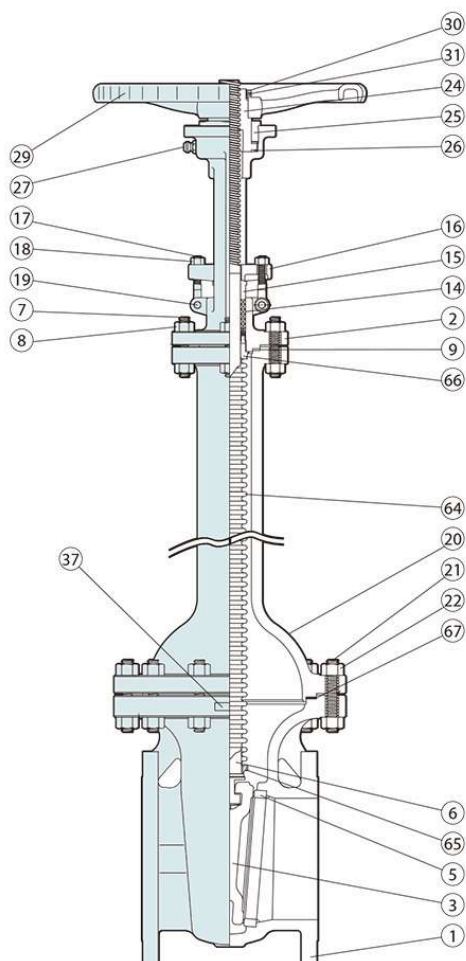
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	84 (3.31)	171 (6.73)	9.5 (0.37)	1.8 (4.0)
	3/4	86 (3.39)	95 (3.74)	183 (7.21)	12.7 (0.50)	2.1 (4.6)
	1	99 (3.90)	106 (4.17)	213 (8.39)	17.5 (0.69)	3.4 (7.5)
	1 1/4	124 (4.88)	137 (5.39)	259 (10.20)	22.5 (0.89)	6.4 (14.1)
	1 1/2	124 (4.88)	137 (5.39)	259 (10.20)	29.5 (1.16)	6.4 (14.1)
	2	138 (5.43)	172 (6.77)	329 (12.95)	35.0 (1.38)	9.7 (21.4)
Full	1/2	86 (3.39)	95 (3.74)	171 (6.73)	12.7 (0.50)	2.0 (4.4)
	3/4	99 (3.90)	106 (4.17)	220 (8.66)	17.5 (0.69)	4.4 (9.7)
	1	124 (4.88)	137 (5.39)	251 (9.88)	23.0 (0.91)	7.4 (16.3)
	1 1/4	138 (5.43)	172 (6.77)	325 (12.80)	29.5 (1.16)	10.9 (24.0)
	1 1/2	138 (5.43)	172 (6.77)	325 (12.80)	35.0 (1.38)	10.7 (23.6)
	2	157 (6.18)	200 (7.87)	358 (14.10)	45.5 (1.79)	15.0 (33.1)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	95 (3.74)	177 (6.97)	9.5 (0.37)	2.0 (4.4)
	3/4	99 (3.90)	106 (4.17)	215 (8.47)	12.7 (0.50)	4.4 (9.7)
	1	124 (4.88)	137 (5.39)	257 (10.12)	17.5 (0.69)	7.4 (16.3)
	1 1/4	138 (5.43)	172 (6.77)	307 (12.09)	22.5 (0.89)	10.9 (24.0)
	1 1/2	138 (5.43)	172 (6.77)	307 (12.09)	29.5 (1.16)	10.7 (23.6)
	2	157 (6.18)	200 (7.87)	367 (14.45)	35.0 (1.38)	15.0 (33.1)

BELLOWS SEAL GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
24	Yoke Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
26	Thrust Bearing	Commercial (12" only)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

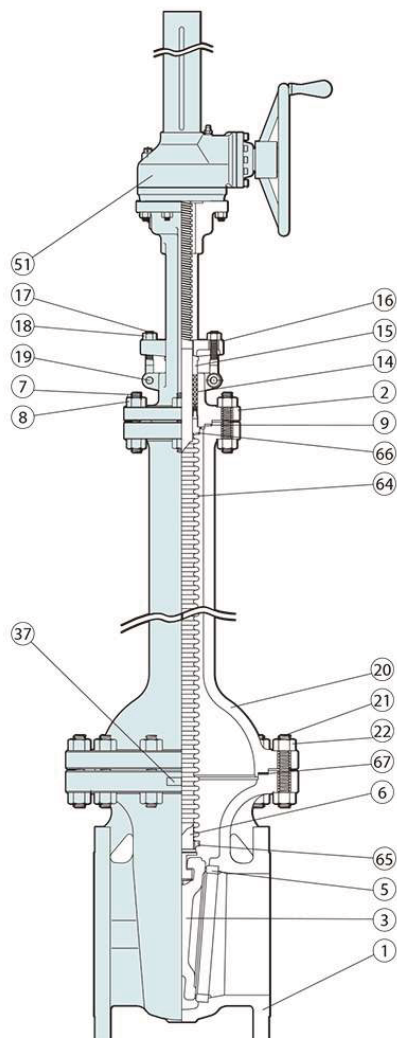
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel
- Round Bonnet fully encapsulated Gasket

CLASS 150 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	625 (24.61)	50 (1.97)	178 (7.00)	35 (77)
2 1/2	250 (9.84)	690 (27.17)	63 (2.48)	190 (7.50)	45 (99)
3	250 (9.84)	800 (31.50)	76 (2.99)	203 (8.00)	57 (126)
4	315 (12.40)	960 (37.80)	100 (3.94)	229 (9.00)	75 (165)
6	355 (13.98)	1120 (44.10)	150 (5.91)	267 (10.50)	105 (232)
8	355 (13.98)	1350 (53.15)	200 (7.87)	292 (11.50)	160 (353)
10	450 (17.72)	1675 (65.95)	254 (10.00)	330 (13.00)	220 (485)
12	500 (19.69)	1830 (72.05)	305 (12.01)	356 (14.00)	340 (750)

BELLOWS SEAL GATE VALVES - BOLTED BONNET - FULL PORT - GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
37	Name Plate	Stainless Steel	304SS
51	Gear Box	Commercial	
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

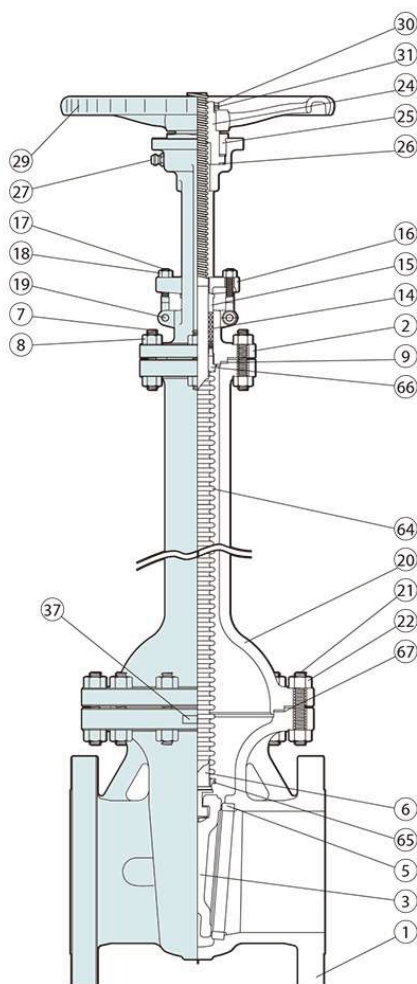
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel
- Round Bonnet fully encapsulated Gasket

CLASS 150 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	300 (11.81)	1585 (62.40)	200 (7.87)	292 (11.50)	170 (375)
10	400 (15.75)	1860 (73.23)	254 (10.00)	330 (13.00)	230 (507)
12	400 (15.75)	1960 (77.17)	305 (12.01)	356 (14.00)	350 (772)
14	400 (15.75)	2155 (84.84)	337 (13.27)	381 (15.00)	450 (992)
16	500 (19.69)	2430 (95.67)	388 (15.28)	406 (16.00)	550 (1213)
18	500 (19.69)	2810 (110.63)	439 (17.28)	432 (17.00)	800 (1764)
20	630 (24.80)	3210 (126.38)	489 (19.25)	457 (18.00)	990 (2183)
24	630 (24.80)	3600 (141.73)	591 (23.27)	508 (20.00)	1500 (3308)

BELLOWS SEAL GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
24	Yoke Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
26	Thrust Bearing	Commercial (10" & over)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

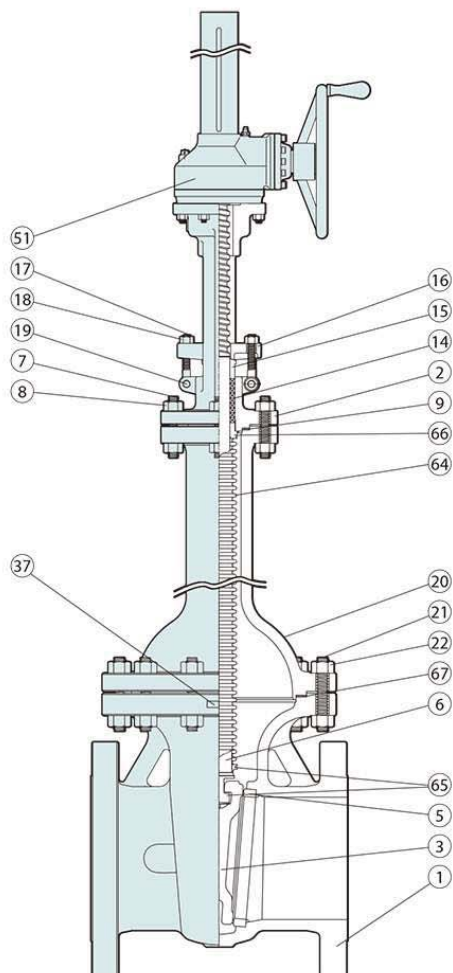
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel

CLASS 300 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	625 (24.61)	50 (1.97)	216 (8.50)	40 (88)
2 1/2	250 (9.84)	690 (27.17)	63 (2.48)	241 (9.50)	47 (104)
3	250 (9.84)	800 (31.50)	76 (2.99)	282 (11.12)	60 (132)
4	315 (12.40)	960 (37.80)	100 (3.94)	305 (12.00)	90 (198)
6	355 (13.98)	1250 (49.21)	150 (5.91)	403 (15.88)	160 (353)
8	450 (17.72)	1560 (61.42)	200 (7.87)	419 (16.50)	250 (551)
10	500 (19.69)	1730 (68.11)	254 (10.00)	457 (18.00)	360 (794)
12	560 (22.05)	1940 (76.38)	305 (12.01)	502 (19.75)	520 (1147)

BELLOWS SEAL GATE VALVES - BOLTED BONNET - FULL PORT - GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
37	Name Plate	Stainless Steel	304SS
51	Gear Box	Commercial	
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

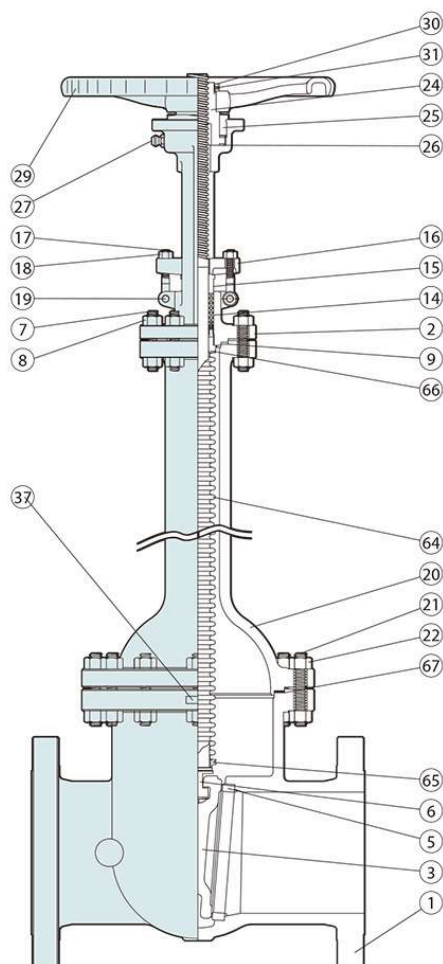
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel

CLASS 300 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	400 (15.75)	1585 (62.40)	200 (7.87)	419 (16.50)	260 (573)
10	400 (15.75)	1860 (73.23)	254 (10.00)	457 (18.00)	370 (816)
12	500 (19.69)	2100 (82.68)	305 (12.00)	502 (19.75)	540 (1191)
14	500 (19.69)	2370 (93.31)	337 (13.25)	762 (30.00)	750 (1654)
16	500 (19.69)	2680 (105.51)	388 (15.25)	838 (33.00)	950 (2095)
18	630 (24.80)	3050 (120.08)	432 (17.00)	914 (36.00)	1350 (2976)
20	630 (24.80)	3600 (141.73)	483 (19.00)	991 (39.00)	1700 (3749)
24	710 (27.95)	4100 (161.42)	585 (23.00)	1143 (45.00)	2600 (5733)

BELLOWS SEAL GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
24	Yoke Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
26	Thrust Bearing	Commercial (6" & over)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

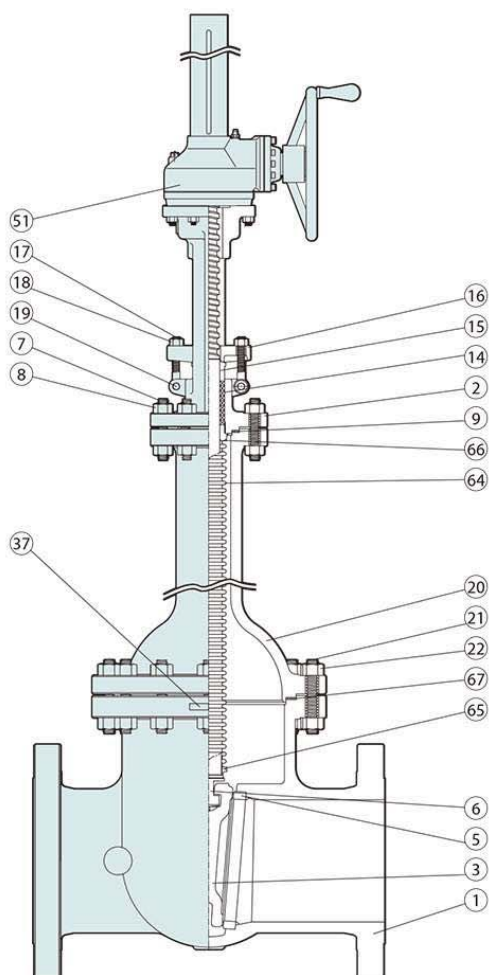
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel

CLASS 600 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	665 (26.18)	50 (1.97)	292 (11.50)	50 (10)
2 1/2	250 (9.84)	750 (29.53)	63 (2.48)	330 (13.00)	70 (154)
3	315 (12.40)	845 (33.27)	76 (2.99)	356 (14.00)	90 (198)
4	355 (13.98)	1030 (40.55)	100 (3.94)	432 (17.00)	150 (331)
6	500 (19.69)	1270 (50.00)	150 (5.91)	559 (22.00)	300 (661)
8	560 (22.05)	1570 (61.81)	200 (7.87)	661 (26.00)	500 (1102)

BELLOWS SEAL GATE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
37	Name Plate	Stainless Steel	304SS
51	Gear Box	Commercial	
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

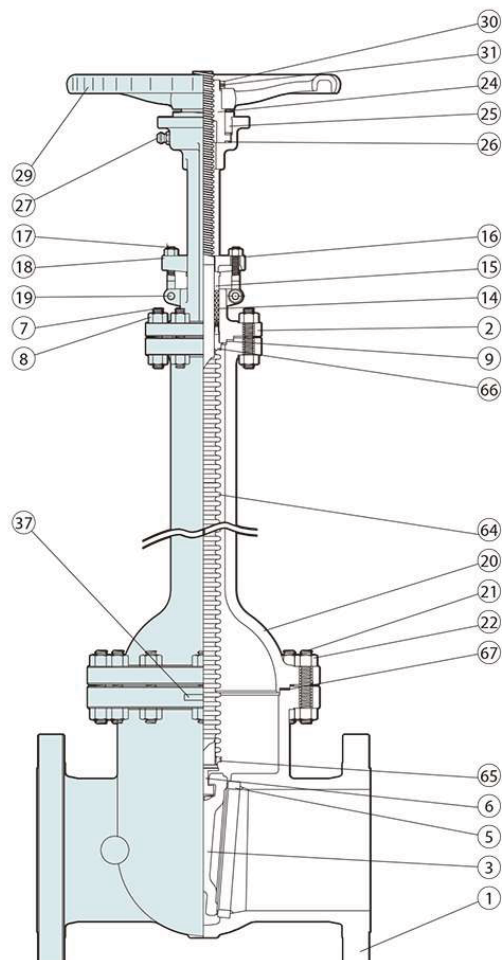
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel

CLASS 600 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1695 (66.73)	200 (7.87)	600 (26.00)	520 (1147)
10	500 (19.69)	2000 (78.74)	250 (9.84)	787 (31.00)	600 (1323)
12	630 (24.80)	2250 (88.56)	300 (11.81)	838 (33.00)	1050 (2315)
14	630 (24.80)	2550 (100.39)	327 (12.87)	889 (35.00)	1400 (3087)
16	710 (27.95)	2900 (114.17)	375 (14.76)	991 (39.00)	1800 (3969)
18	710 (27.95)	3350 (131.89)	420 (16.54)	1092 (43.00)	2200 (4851)
20	800 (31.50)	4000 (157.48)	464 (18.27)	1194 (47.00)	2700 (5954)
24	900 (35.43)	4650 (183.07)	559 (22.00)	1397 (55.00)	4000 (8820)

BELLOWS SEAL GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL / GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Wedge	Stellite 6 faced A216-WCB	
5	Seat Ring	Stellite 6 faced Carbon Steel	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
20	Connector	Cast Steel	A216-WCB
21	Connector Bolt	Alloy Steel	A193-B7M
22	Connector Nut	Carbon Steel	A194-2HM
24	Yoke Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
26	Thrust Bearing	Commercial	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321
67	Connector Gasket	304 Spiral Wound Graphite	

- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- 13Cr SS : 13Chrome Stainless Steel
- Gear Operated : 6" for class 900, 4" & over for class 1500

CLASS 900 - API 600

Unit : mm(inch)

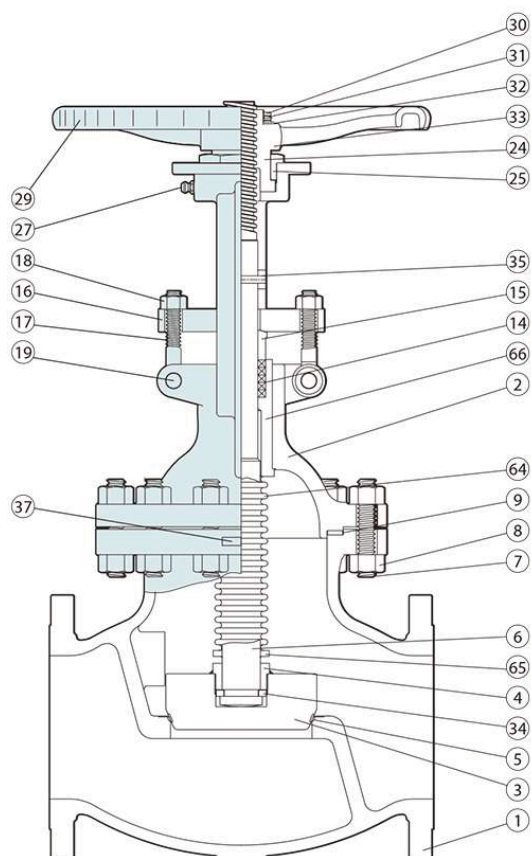
Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	315 (12.40)	820 (32.28)	47 (1.85)	368 (14.50)	110 (243)
3	355 (13.98)	970 (38.19)	72 (2.83)	381 (15.00)	140 (309)
4	500 (19.69)	1150 (45.28)	98 (3.86)	457 (18.00)	190 (419)
6	560 (22.05)	1400 (55.12)	146 (5.75)	610 (24.00)	440 (970)

CLASS 1500 - API 600

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	315 (12.40)	820 (32.28)	47 (1.85)	368 (14.50)	110 (243)
3	355 (13.98)	970 (38.19)	69 (2.72)	470 (18.50)	210 (463)
4	500 (19.69)	1150 (45.28)	92 (3.62)	546 (21.50)	320 (706)
6	560 (22.05)	1550 (61.02)	136 (5.35)	705 (27.75)	600 (1323)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Disc	Stellite 6 faced A105/A216-WCB	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
32	Wheel Washer	Carbon Steel (for 10" & over)	
33	Pounding Receiver	Carbon Steel (for 10" & over)	
34	Stopper	13Cr Stainless Steel	A276-410
35	Stem Guide	Carbon Steel	A283-C
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321

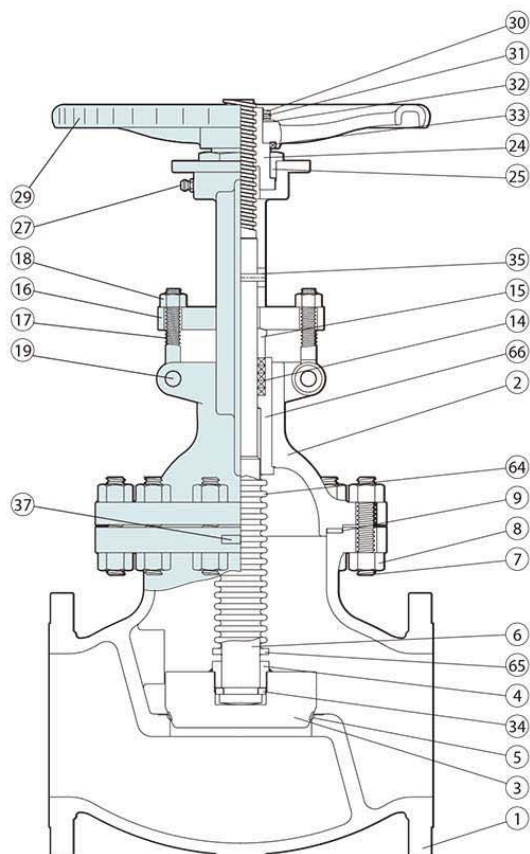
- Disc Material : A105 up to 6", WCB for the other sizes
- Hammer Blow Handwheel : 10" & over

CLASS 150 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	410 (16.14)	50 (1.97)	203 (8.00)	20 (44)
2 1/2	250 (9.84)	495 (19.49)	64 (2.52)	216 (8.50)	30 (66)
3	315 (12.40)	495 (19.49)	76 (3.00)	241 (9.50)	43 (95)
4	355 (13.98)	620 (24.41)	100 (3.94)	292 (11.50)	60 (132)
6	400 (15.75)	730 (28.74)	150 (5.91)	406 (16.00)	150 (331)
8	560 (22.05)	880 (34.65)	200 (7.87)	495 (19.50)	230 (507)
10	610 (24.02)	1030 (40.55)	250 (9.84)	622 (24.50)	340 (750)
12	610 (24.02)	1170 (46.06)	300 (11.81)	698 (27.50)	500 (1103)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Disc	Stellite 6 faced A105/A216-WCB	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
32	Wheel Washer	Carbon Steel (for 8" & over)	
33	Pounding Receiver	Carbon Steel (for 8" & over)	
34	Stopper	13Cr Stainless Steel	A276-410
35	Stem Guide	Carbon Steel	A283-C
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321

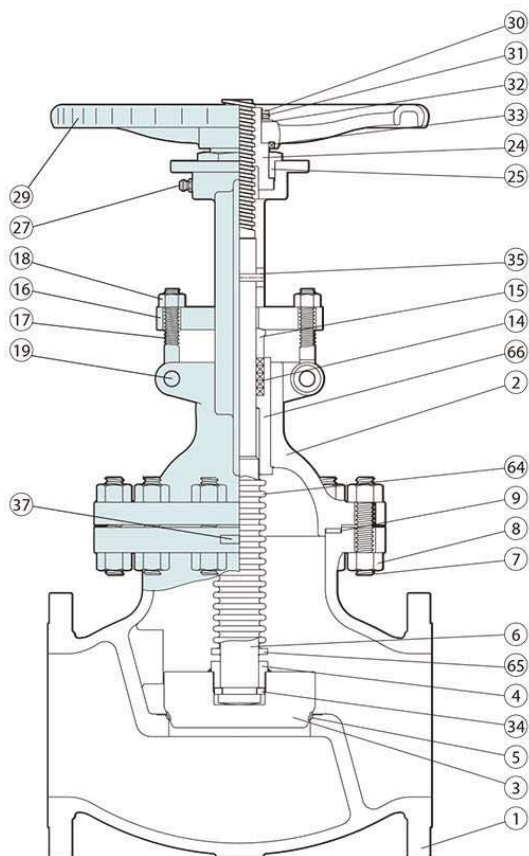
- Disc Material : A105 up to 6", WCB for the other sizes
- Hammer Blow Handwheel : 8" & over

CLASS 300 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	410 (16.14)	50 (1.97)	267 (10.50)	26 (57)
2 1/2	250 (9.84)	495 (19.49)	64 (2.52)	292 (11.50)	50 (110)
3	315 (12.40)	495 (19.49)	76 (3.00)	318 (12.50)	55 (121)
4	355 (13.98)	620 (24.41)	100 (3.94)	356 (14.00)	77 (170)
6	400 (15.75)	730 (28.74)	150 (5.91)	444 (17.50)	180 (397)
8	560 (22.05)	880 (34.65)	200 (7.87)	559 (22.00)	270 (595)
10	610 (24.02)	1210 (47.64)	250 (9.84)	622 (24.50)	420 (926)
12	610 (24.02)	1450 (57.09)	300 (11.81)	711 (28.00)	600 (1323)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Disc	Stellite 6 faced A105/A216-WCB	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
32	Wheel Washer	Carbon Steel (for 6" & over)	
33	Pounding Receiver	Carbon Steel (for 6" & over)	
34	Stopper	13Cr Stainless Steel	A276-410
35	Stem Guide	Carbon Steel	A283-C
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321

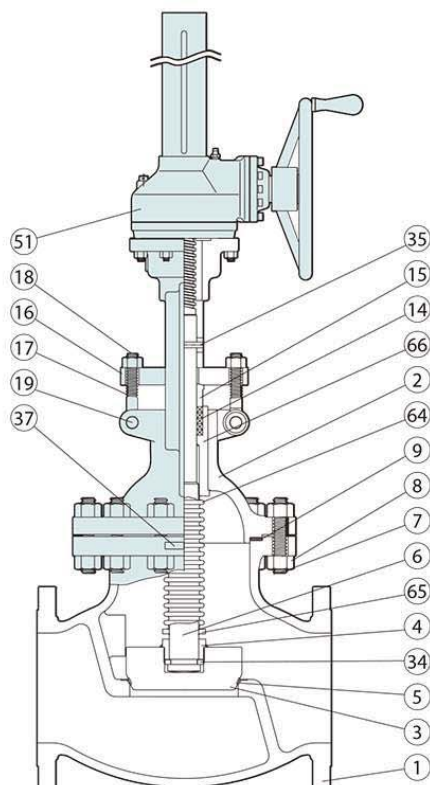
- Disc Material : A105 up to 6", WCB for the other sizes
- Hammer Blow Handwheel : 6" & over

CLASS 600 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	460 (18.11)	50 (1.97)	292 (11.50)	45 (99)
2 1/2	315 (12.40)	495 (19.49)	64 (2.52)	330 (13.00)	55 (121)
3	355 (13.98)	640 (25.20)	76 (3.00)	356 (14.00)	130 (287)
4	450 (17.72)	690 (27.17)	100 (3.94)	432 (17.00)	160 (353)
6	560 (22.05)	810 (31.89)	150 (5.91)	559 (22.00)	310 (684)
8	610 (24.02)	1080 (42.52)	200 (7.87)	660 (26.00)	480 (1058)
10	610 (24.02)	1350 (53.15)	250 (9.84)	787 (31.00)	630 (1389)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Disc	Stellite 6 faced A105/A216-WCB	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
34	Stopper	13Cr Stainless Steel	A276-410
35	Stem Guide	Carbon Steel	A283-C
37	Name Plate	Stainless Steel	304SS
51	Gear Box	Commercial	
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321

• Disc Material : A105 up to 6", WCB for the other sizes

CLASS 150 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1250 (49.21)	200 (7.87)	495 (19.50)	250 (551)
10	500 (19.69)	1450 (57.09)	250 (9.84)	622 (24.50)	360 (794)
12	630 (24.80)	1700 (66.93)	300 (11.81)	698 (27.50)	550 (1213)
14	630 (24.80)	1950 (76.77)	337 (13.27)	698 (27.50)	650 (1433)
16	710 (27.95)	2300 (90.55)	388 (15.28)	914 (36.00)	900 (1985)
18	710 (27.95)	2700 (106.30)	439 (17.28)	978 (38.50)	1200 (2646)

CLASS 300 - API 623 / BS 1873

Unit : mm(inch)

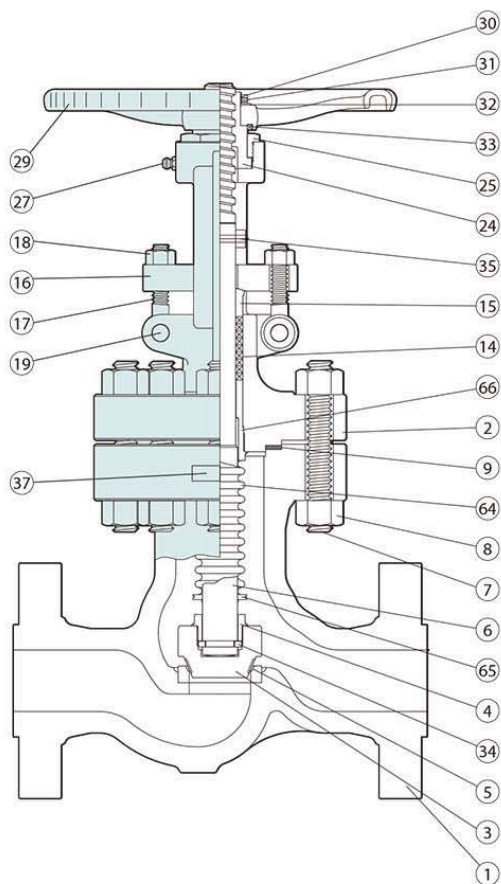
Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1300 (51.18)	200 (7.87)	559 (22.00)	290 (640)
10	630 (24.80)	1500 (59.06)	250 (9.84)	622 (24.50)	450 (992)
12	710 (27.95)	1750 (68.90)	300 (11.81)	711 (28.00)	650 (1433)
14	800 (31.50)	2000 (78.84)	337 (13.27)	838 (33.00)	950 (2095)
16	900 (35.43)	2400 (94.50)	388 (15.28)	863 (34.00)	1300 (2867)
18	900 (35.43)	2800 (110.23)	439 (17.28)	978 (38.50)	1700 (3749)

CLASS 600 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
6	630 (24.80)	1550 (61.02)	150 (5.91)	559 (22.00)	350 (772)
8	710 (27.95)	1700 (66.93)	200 (7.87)	660 (26.00)	550 (1213)
10	800 (31.50)	2000 (78.74)	250 (9.84)	787 (31.00)	700 (1544)

BELLOWS SEAL GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A216-WCB
2	Bonnet	Cast Steel	A216-WCB
3	Disc	Stellite 6 faced A105	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	13Cr Stainless Steel	A276-410
7	Bonnet Bolt	Alloy Steel	A193-B7M
8	Bonnet Nut	Carbon Steel	A194-2HM
9	Bonnet Gasket	304 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	13Cr Stainless Steel	A276-410
16	Gland Flange	Carbon Steel	
17	Eye Bolt	Carbon Steel	A668-C
18	Eye Bolt Nut	Carbon Steel	A563A
19	Eye Bolt Pin	Carbon Steel	
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	Carbon Steel	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	Commercial	
32	Wheel Washer	Carbon Steel (for 4" & over)	
33	Pounding Receiver	Carbon Steel (for 4" & over)	
34	Stopper	13Cr Stainless Steel	A276-410
35	Stem Guide	Carbon Steel	A283-C
37	Name Plate	Stainless Steel	304SS
64	Bellows	Stainless Steel	321SS
65	End Fitting	Stainless Steel	A276-321
66	Backseat Ring	Stainless Steel	A276-321

• Hammer Blow Handwheel : 4" & over

CLASS 900 - API 623 / BS 1873

Unit : mm(inch)

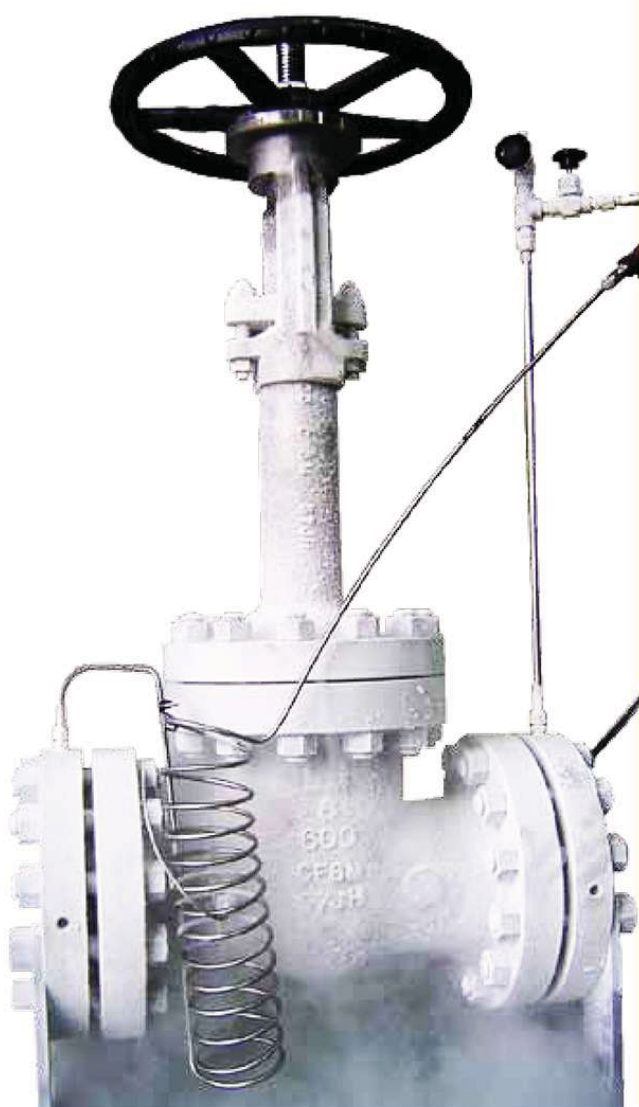
Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	355 (13.98)	605 (23.82)	47 (1.85)	368 (14.50)	95 (209)
3	450 (17.72)	720 (28.35)	72 (2.83)	381 (15.00)	150 (331)
4	560 (22.05)	820 (32.28)	98 (3.86)	457 (18.00)	190 (419)
6	610 (24.02)	1050 (41.34)	146 (5.75)	610 (24.00)	440 (970)

CLASS 1500 - API 623 / BS 1873

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	355 (13.98)	605 (23.82)	47 (1.85)	368 (14.50)	95 (209)
3	450 (17.72)	720 (28.35)	69 (2.72)	470 (18.50)	190 (419)
4	560 (22.05)	820 (32.28)	92 (3.62)	546 (21.50)	330 (728)
6	610 (24.02)	1050 (41.34)	136 (5.35)	705 (27.75)	840 (1852)

CRYOGENIC DESIGN FEATURES



• General Design & Wall Thickness

- Forged Gate Valves - API 602 / ASME B16.34 / ISO 15761
- Forged Globe Valves - API 602 / ASME B16.34 / BS5352 / ISO 15761
- Cast Gate Valves - ASME B16.34
- Cast Globe Valves - ASME B16.34

• Inspection & Test : BS 6364

- **Long Life Seating Surface** : Stellite 6 faced both seat and wedge / disc to prevent seizing and galling.

• End Flange Dimensions : ASME B16.5

• Butt Weld End Dimensions : ASME B16.25

• End to End Dimensions :

- Flanged - ASME B16.10
- Butt Weld - Cast Valves : ASME B16.10
- Forged Valves : Makers Standard
- Screwed & Socket - Makers standard.

- **Extended Bonnet** : Bolted or integral vapour space extended bonnet of sufficient length to keep stem packing out of the cold zone and free of ice formation.

- **Austenitic Stainless Steel Forgings or Castings** : Tough at cryogenic temperatures and can be classed as a 'cryogenic steel' with good impact strength and corrosion resistance.

- **Shell and Trim Parts** are all austenitic stainless steel and sub-zero treated in LN₂.

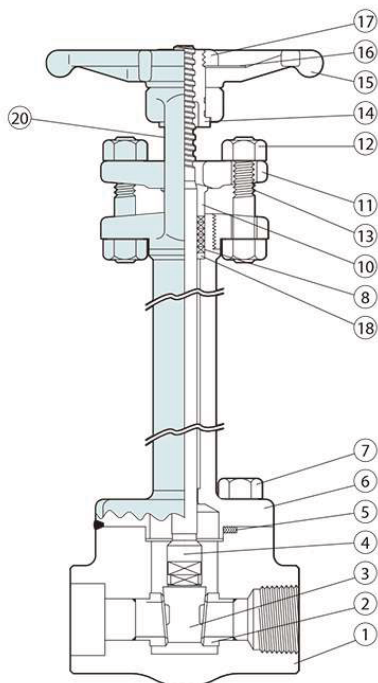
- **Insulation Collar / Drip Plate** : A "welded" insulation collar/drip plate or a "clamped on" insulation collar/drip plate can be provided on request.

• Boiling Point of Liquefied Gases

Liquefied Gases	Boiling Point		Liquefied Gases	Boiling Point	
	°C	°F		°C	°F
Ammonia (NH ₃)	-64.4	-84	Oxygen (O ₂)	-183.3	-298
Propane (C ₃ H ₈)	-76.7	-106	Argon (Ar)	-186.1	-303
Carbon Dioxide (CO ₂)	-78.5	-109	Air	-194.4	-318
Acetylene (C ₂ H ₂)	-83.9	-119	Nitrogen (N ₂)	-195.6	-320
Ethylene (C ₂ H ₄)	-103.9	-155	Neon (Ne)	-246.1	-411
Methane (CH ₄)	-161.7	-259	Hydrogen (H ₂)	-252.8	-423
Natural Gas (LNG)	-167.8	-270	Helium (He)	-268.9	-452

- Lift and Swing Check valves can also be provided

CRYOGENIC GATE VALVES – BOLTED / WELDED BONNET – REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A182-F316
2	Seat Ring	Stellite 6 faced A276-316	
3	Wedge	Stainless Steel	A351-CF8M
4	Stem	Stainless Steel	A276-316
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A182-F316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A182-F304
12	Gland Nut	Stainless Steel	A194-8
13	Gland Bolt	Stainless Steel	A193-B8
14	Yoke Sleeve	13Cr Stainless Steel	A276-410
15	Handwheel	Malleable Iron	A47
16	Name Plate	Stainless Steel	A240-304
17	Handwheel Nut	Carbon Steel	A563A
18	Packing Ring	Stainless Steel	A276-316
20	Yoke	Forged Steel	A182-F304

CLASS 600 / 800 - API 602 / ASME B16.34

Unit : mm(inch)

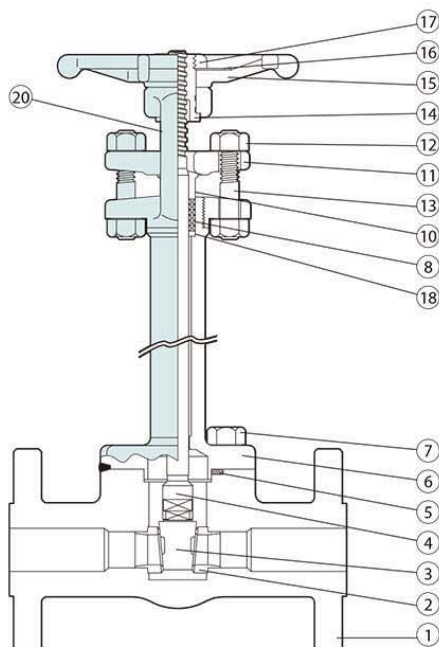
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Approx. Wt . Kg(Lb)
Reduced	1/2	86 (3.39)	86 (3.39)	379 (14.92)	9.8 (0.39)	3.0 (7)
	3/4	86 (3.39)	86 (3.39)	379 (14.92)	13.0 (0.51)	3.0 (7)
	1	99 (3.90)	102 (4.02)	418 (16.46)	18.0 (0.71)	4.2 (9)
	1 1/4	124 (4.88)	117 (4.61)	450 (17.72)	31.0 (1.22)	7.2 (16)
	1 1/2	124 (4.88)	117 (4.61)	450 (17.72)	31.0 (1.22)	7.2 (16)
	2	138 (5.43)	133 (5.24)	547 (21.54)	37.0 (1.46)	12.3 (27)
Full	1/2	86 (3.39)	86 (3.39)	379 (14.92)	13.0 (0.51)	3.0 (7)
	3/4	99 (3.90)	102 (4.02)	418 (16.46)	18.0 (0.71)	4.2 (9)
	1	124 (4.88)	117 (4.61)	450 (17.72)	23.0 (0.91)	7.2 (16)
	1 1/4	138 (5.43)	133 (5.24)	547 (21.54)	37.0 (1.46)	7.2 (16)
	1 1/2	138 (5.43)	133 (5.24)	547 (21.54)	37.0 (1.46)	12.3 (27)
	2	157 (6.18)	218 (8.58)	594 (23.39)	50.8 (2.00)	16.0 (35)

CLASS 1500 - API 602 / ASME B16.34

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Approx. Wt . Kg(Lb)
Reduced	1/2	86 (3.39)	86 (3.39)	418 (16.46)	9.8 (0.39)	3.0 (7)
	3/4	99 (3.90)	102 (4.02)	450 (17.72)	13.0 (0.51)	4.8 (11)
	1	124 (4.88)	117 (4.61)	547 (21.54)	18.0 (0.71)	8.0 (18)
	1 1/4	138 (5.43)	133 (5.24)	547 (21.54)	31.0 (1.22)	12.5 (28)
	1 1/2	138 (5.43)	133 (5.24)	594 (23.39)	31.0 (1.22)	12.5 (28)
	2	157 (6.18)	210 (8.27)	600 (23.62)	37.0 (1.46)	15.0 (33)

CRYOGENIC GATE VALVES – BOLTED / WELDED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A182-F316
2	Seat Ring	Stellite 6 faced A276-316	
3	Wedge	Stainless Steel	A351-CF8M
4	Stem	Stainless Steel	A276-316
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A182-F316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A182-F304
12	Gland Nut	Stainless Steel	A194-8
13	Gland Bolt	Stainless Steel	A193-B8
14	Yoke Sleeve	13Cr Stainless Steel	A276-410
15	Handwheel	Malleable Iron	A47
16	Name Plate	Stainless Steel	A240-304
17	Handwheel Nut	Carbon Steel	A563A
18	Packing Ring	Stainless Steel	A276-316
20	Yoke	Forged Steel	A182-F304

CLASS 150 / 300 / 600 - API 602 / ASME B16.34

Unit : mm(inch)

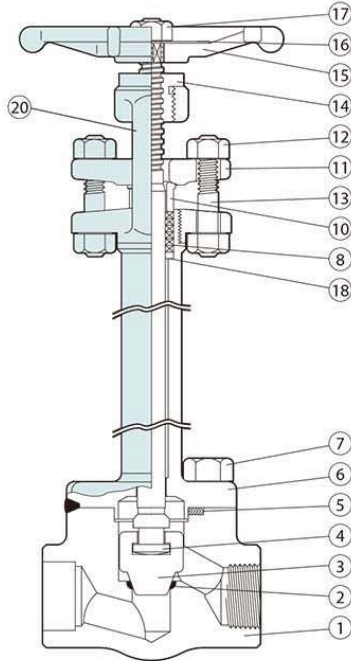
Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face			Weight Kg(Lb)		
					Class 150	Class 300	Class 600	Class 150	Class 300	Class 600
Reduced	1/2	86 (3.39)	379 (14.92)	9.8 (0.39)	108 (4.25)	140 (5.50)	165 (6.50)	3.5 (8)	4.5 (10)	4.8 (11)
	3/4	86 (3.39)	379 (14.92)	13.0 (0.51)	117 (4.62)	152 (6.00)	190 (7.50)	4.1 (9)	5.0 (11)	5.6 (12)
	1	99 (3.90)	418 (16.46)	18.0 (0.71)	127 (5.00)	165 (6.50)	216 (8.50)	6.6 (15)	7.4 (16)	8.0 (18)
	1 1/2	124 (4.88)	450 (17.72)	31.0 (1.22)	165 (6.50)	190 (7.50)	241 (9.50)	10.7 (24)	13.0 (29)	14.5 (32)
	2	138 (5.43)	547 (21.54)	37.0 (1.46)	178 (7.00)	216 (8.50)	292 (11.50)	16.3 (36)	18.0 (40)	20.0 (44)

CLASS 1500 - API 602 / ASME B16.34

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face of Face	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	418 (16.46)	9.8 (0.39)	216 (8.50)	7.5 (17)
	3/4	99 (3.90)	450 (17.72)	13.0 (0.51)	229 (9.00)	10.5 (23)
	1	124 (4.88)	547 (21.54)	18.0 (0.71)	254 (10.00)	16.0 (35)
	1 1/2	138 (5.43)	594 (23.39)	31.0 (1.22)	305 (12.00)	26.0 (57)
	2	157 (6.18)	600 (23.62)	37.0 (1.46)	368 (14.25)	36.5 (81)

CRYOGENIC GLOBE VALVES – BOLTED / WELDED BONNET – REDUCED / FULL PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A182-F316
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stainless Steel	A351-CF8M
4	Stem	Stainless Steel	A276-316
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A182-F316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A182-F304
12	Gland Nut	Stainless Steel	A194-8
13	Gland Bolt	Stainless Steel	A193-B8
14	Yoke Bush	13Cr Stainless Steel	A276-410
15	Handwheel	Malleable Iron	A47
16	Name Plate	Stainless Steel	A240-304
17	Handwheel Nut	Carbon Steel	A563A
18	Packing Ring	Stainless Steel	A276-316
20	Yoke	Forged Steel	A182-F304

CLASS 600 / 800 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

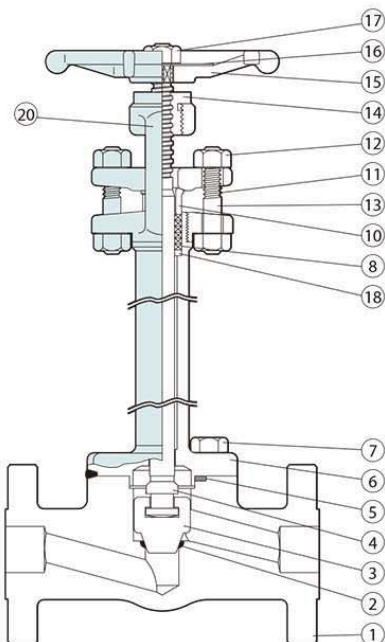
Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	86 (3.39)	377 (14.84)	9.5 (0.37)	2.8 (6)
	3/4	86 (3.39)	86 (3.39)	377 (14.84)	12.7 (0.50)	2.8 (6)
	1	99 (3.90)	102 (4.02)	415 (16.34)	17.5 (0.69)	3.9 (9)
	1 1/4	124 (4.88)	152 (5.98)	460 (18.11)	22.5 (0.89)	8.1 (18)
	1 1/2	124 (4.88)	152 (5.98)	460 (18.11)	29.5 (1.16)	8.1 (18)
	2	138 (5.43)	172 (6.77)	525 (20.67)	35.0 (1.38)	11.6 (26)
Full	1/2	86 (3.39)	86 (3.39)	377 (14.84)	12.7 (0.50)	2.8 (6)
	3/4	99 (3.90)	102 (4.02)	415 (16.34)	17.5 (0.69)	3.9 (9)
	1	124 (4.88)	152 (5.98)	460 (18.11)	23.0 (0.91)	8.1 (18)
	1 1/4	138 (5.43)	172 (6.77)	525 (20.67)	29.5 (1.16)	8.1 (18)
	1 1/2	138 (5.43)	172 (6.77)	525 (20.67)	35.0 (1.38)	11.6 (26)
	2	157 (6.18)	218 (8.58)	590 (23.23)	45.5 (1.79)	16.0 (35)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	End to End	Center to Top (Open)	Dia. of Port Openings	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	86 (3.39)	327 (12.87)	9.5 (0.37)	2.8 (6)
	3/4	99 (3.90)	102 (4.02)	410 (16.14)	12.7 (0.50)	4.5 (10)
	1	124 (4.88)	152 (5.98)	445 (17.52)	17.5 (0.69)	8.1 (18)
	1 1/4	138 (5.43)	172 (6.77)	504 (19.84)	22.5 (0.89)	11.6 (26)
	1 1/2	138 (5.43)	172 (6.77)	504 (19.84)	29.5 (1.16)	11.6 (26)
	2	157 (6.18)	210 (8.27)	574 (22.60)	35.0 (1.38)	16.0 (35)

CRYOGENIC GLOBE VALVES – BOLTED / WELDED BONNET – REDUCED PORT



NO.	Parts	Material	A.S.T.M
1	Body	Forged Steel	A182-F316
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	Stainless Steel	A351-CF8M
4	Stem	Stainless Steel	A276-316
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	Forged Steel	A182-F316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Gland Packing	Graphoil	
10	Gland	Stainless Steel	A276-316
11	Gland Flange	Forged Steel	A182-F304
12	Gland Nut	Stainless Steel	A194-8
13	Gland Bolt	Stainless Steel	A276-304
14	Yoke Bush	13Cr Stainless Steel	A276-410
15	Handwheel	Malleable Iron	A47
16	Name Plate	Stainless Steel	A240-304
17	Handwheel Nut	Carbon Steel	A563A
18	Packing Ring	Stainless Steel	A276-316
20	Yoke	Forged Steel	A182-F304

CLASS 150 / 300 / 600 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

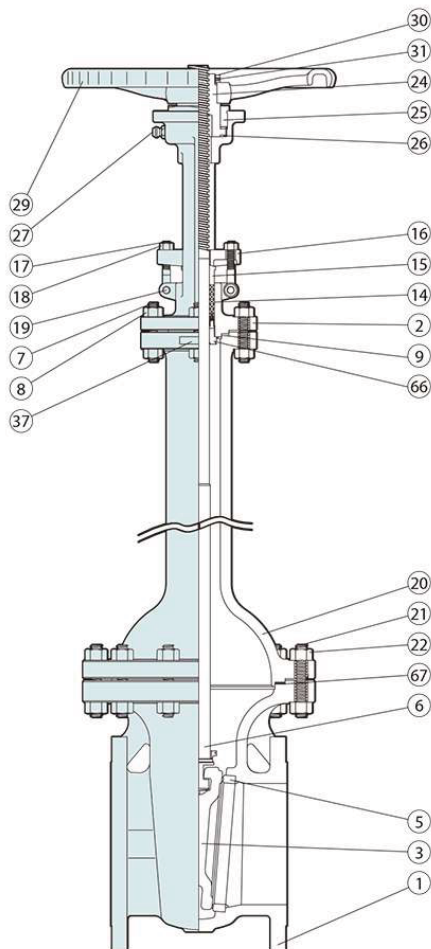
Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face			Weight Kg(Lb)		
					Class 150	Class 300	Class 600	Class 150	Class 300	Class 600
Reduced	1/2	86 (3.39)	377 (14.84)	9.5 (0.37)	108 (4.25)	152 (6.00)	165 (6.50)	3.5 (8)	4.0 (9)	4.3 (10)
	3/4	86 (3.39)	377 (14.84)	12.7 (0.50)	117 (4.62)	178 (7.00)	190 (7.50)	3.8 (9)	4.7 (10)	5.3 (12)
	1	99 (3.90)	415 (16.34)	17.5 (0.69)	127 (5.00)	203 (8.00)	216 (8.50)	6.0 (13)	11.5 (25)	7.8 (17)
	1 1/2	124 (4.88)	460 (18.11)	29.5 (1.16)	165 (6.50)	229 (9.00)	241 (9.50)	11.0 (24)	13.0 (29)	14.5 (32)
	2	138 (5.43)	525 (20.67)	35.0 (1.38)	203 (8.00)	267 (10.50)	292 (11.50)	16.0 (35)	17.5 (39)	18.0 (40)

CLASS 1500 - API 602 / ASME B16.34 / BS 5352

Unit : mm(inch)

Port	Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face of Face	Weight Kg(Lb)
Reduced	1/2	86 (3.39)	147 (5.79)	9.5 (0.37)	216 (8.50)	7.5 (17)
	3/4	99 (3.90)	185 (7.28)	12.7 (0.50)	229 (9.00)	10.0 (22)
	1	124 (4.88)	210 (8.27)	17.5 (0.69)	254 (10.00)	14.5 (32)
	1 1/2	138 (5.43)	245 (9.65)	29.5 (1.16)	305 (12.00)	25.5 (56)
	2	157 (6.18)	308 (12.13)	35.0 (1.38)	368 (14.25)	37.5 (83)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	304SS
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	304 Stainless Steel	
26	Thrust Bearing	Commercial (12" only)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	304 Stainless Steel	
37	Name Plate	Stainless Steel	A240-304
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

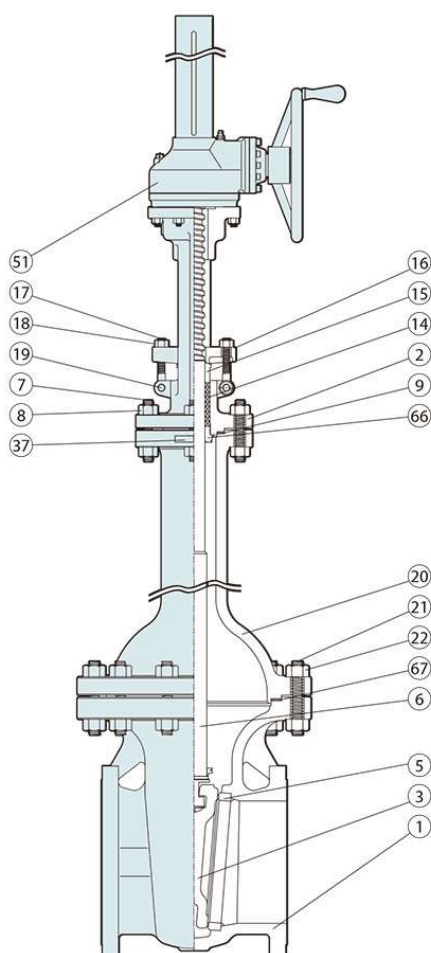
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- Round Bonnet fully encapsulated Gasket

CLASS 150 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	625 (24.61)	50 (1.97)	178 (7.00)	25 (55)
2 1/2	250 (9.84)	690 (27.17)	63 (2.48)	190 (7.50)	35 (77)
3	250 (9.84)	800 (31.50)	76 (2.99)	203 (8.00)	43 (95)
4	315 (12.40)	960 (37.80)	100 (3.94)	229 (9.00)	55 (121)
6	355 (13.98)	1120 (44.10)	150 (5.91)	267 (10.50)	80 (176)
8	355 (13.98)	1350 (53.15)	200 (7.87)	292 (11.50)	120 (265)
10	450 (17.72)	1675 (65.95)	254 (10.00)	330 (13.00)	170 (375)
12	500 (19.69)	1830 (72.05)	305 (12.01)	356 (14.00)	260 (573)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
37	Name Plate	Stainless Steel	A240-304
51	Gear Box	Commercial	
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

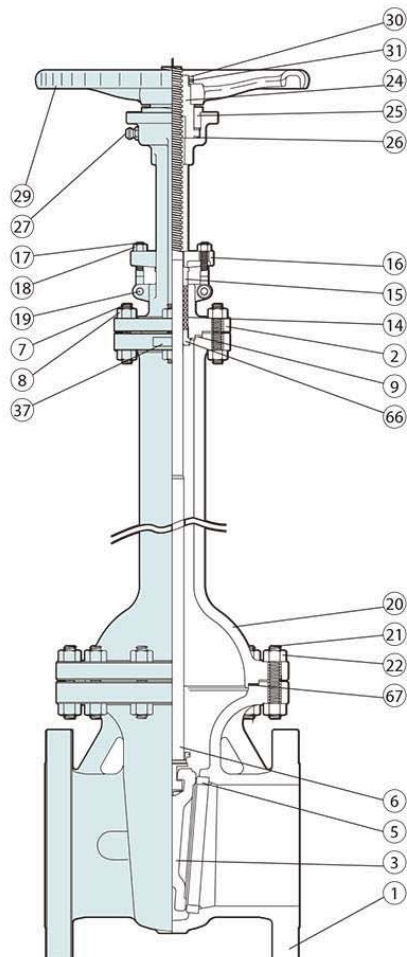
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- Round Bonnet fully encapsulated Gasket

CLASS 150 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Approx. Wt . Kg(Lb)
8	300 (11.81)	1585 (62.40)	200 (7.87)	292 (11.50)	130 (287)
10	400 (15.75)	1860 (73.23)	254 (10.00)	330 (13.00)	180 (397)
12	400 (15.75)	1960 (77.17)	305 (12.01)	356 (14.00)	270 (595)
14	400 (15.75)	2155 (84.84)	337 (13.27)	381 (15.00)	340 (750)
16	500 (19.69)	2430 (95.67)	388 (15.28)	406 (16.00)	420 (926)
18	500 (19.69)	2810 (110.63)	439 (17.28)	432 (17.00)	600 (1323)
20	630 (24.80)	3210 (126.38)	489 (19.25)	457 (18.00)	740 (1632)
24	630 (24.80)	3600 (141.73)	591 (23.27)	508 (20.00)	1200 (2646)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	304 Stainless Steel	
26	Thrust Bearing	Commercial (10" & over)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	304 Stainless Steel	
37	Name Plate	Stainless Steel	A240-304
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

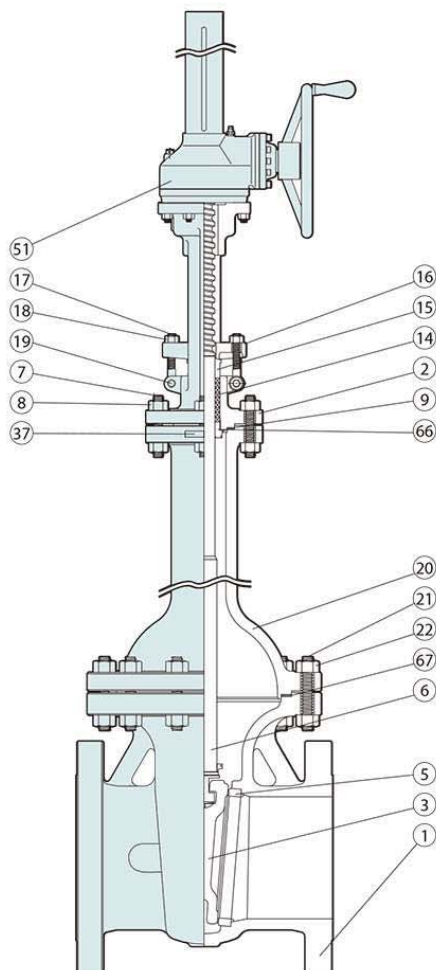
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge

CLASS 300 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	625 (24.61)	50 (1.97)	216 (8.50)	30 (66)
2 1/2	250 (9.84)	690 (27.17)	63 (2.48)	241 (9.50)	35 (77)
3	250 (9.84)	800 (31.50)	76 (2.99)	282 (11.12)	45 (99)
4	315 (12.40)	960 (37.80)	100 (3.94)	305 (12.00)	65 (143)
6	355 (13.98)	1250 (49.21)	150 (5.91)	403 (15.88)	120 (265)
8	450 (17.72)	1560 (61.42)	200 (7.87)	419 (16.50)	190 (419)
10	500 (19.69)	1730 (68.11)	254 (10.00)	457 (18.00)	270 (595)
12	560 (22.05)	1940 (76.38)	305 (12.01)	502 (19.75)	390 (860)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
37	Name Plate	Stainless Steel	A240-304
51	Gear Box	Commercial	
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

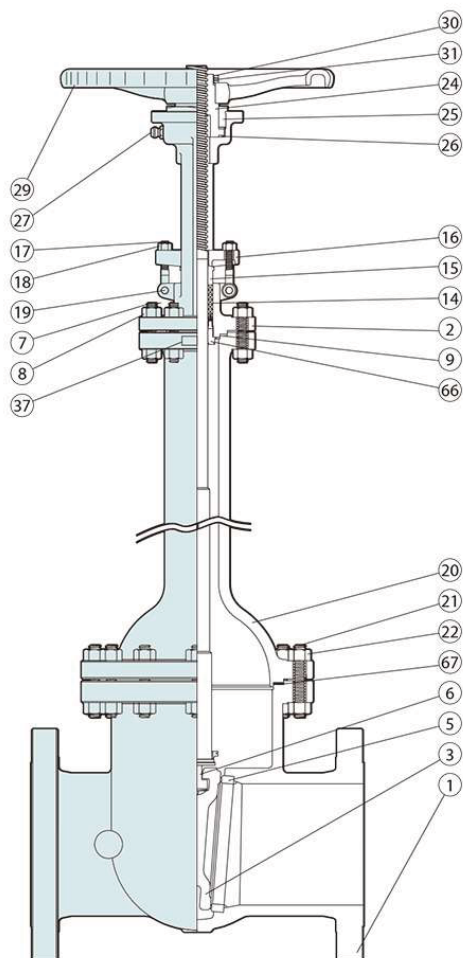
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge

CLASS 300 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	400 (15.75)	1585 (62.40)	200 (7.87)	419 (16.50)	200 (441)
10	400 (15.75)	1860 (73.23)	254 (10.00)	457 (18.00)	280 (617)
12	500 (19.69)	2100 (82.68)	305 (12.00)	502 (19.75)	410 (904)
14	500 (19.69)	2370 (93.31)	337 (13.25)	762 (30.00)	560 (1235)
16	500 (19.69)	2680 (105.51)	388 (15.25)	838 (33.00)	710 (1566)
18	630 (24.80)	3050 (120.08)	432 (17.00)	914 (36.00)	1000 (2205)
20	630 (24.80)	3600 (141.73)	483 (19.00)	991 (39.00)	1300 (2867)
24	710 (27.95)	4100 (161.42)	585 (23.00)	1143 (45.00)	2000 (4410)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	304 Stainless Steel	
26	Thrust Bearing	Commercial (6" & over)	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	304 Stainless Steel	
37	Name Plate	Stainless Steel	A240-304
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

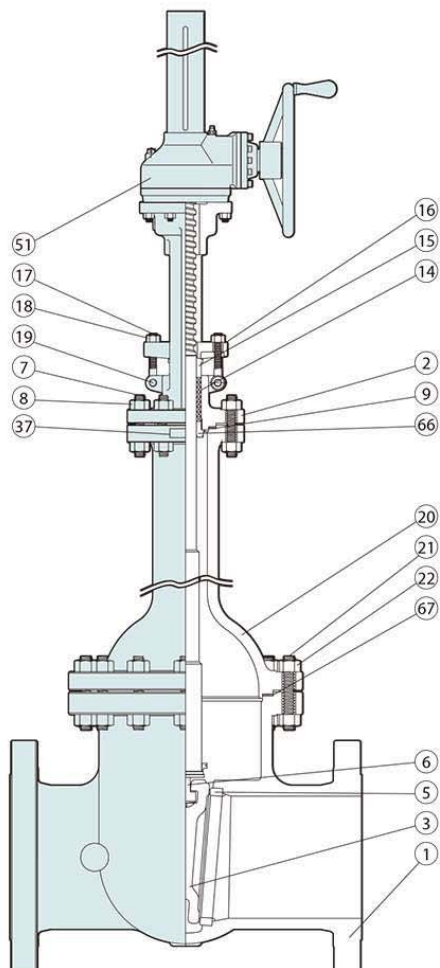
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge

CLASS 600 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	665 (26.18)	50 (1.97)	292 (11.50)	40 (88)
2 1/2	250 (9.84)	750 (29.53)	63 (2.48)	330 (13.00)	55 (121)
3	315 (12.40)	845 (33.27)	76 (2.99)	356 (14.00)	70 (154)
4	355 (13.98)	1030 (40.55)	100 (3.94)	432 (17.00)	110 (243)
6	500 (19.69)	1270 (50.00)	150 (5.91)	559 (22.00)	230 (507)
8	560 (22.05)	1570 (61.81)	200 (7.87)	661 (26.00)	380 (838)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
37	Name Plate	Stainless Steel	A240-304
51	Gear Box	Commercial	
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

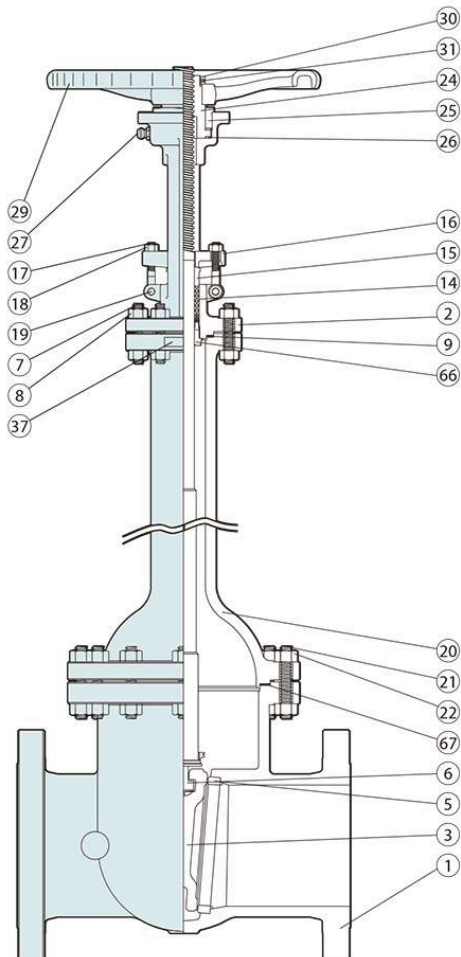
- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge

CLASS 600 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1695 (66.73)	200 (7.87)	600 (26.00)	390 (860)
10	500 (19.69)	2000 (78.74)	250 (9.84)	787 (31.00)	450 (992)
12	630 (24.80)	2250 (88.56)	300 (11.81)	838 (33.00)	790 (1742)
14	630 (24.80)	2550 (100.39)	327 (12.87)	889 (35.00)	1050 (2315)
16	710 (27.95)	2900 (114.17)	375 (14.76)	991 (39.00)	1400 (3087)
18	710 (27.95)	3350 (131.89)	420 (16.54)	1092 (43.00)	1700 (3749)
20	800 (31.50)	4000 (157.48)	464 (18.27)	1194 (47.00)	2000 (4410)
24	900 (35.43)	4650 (183.07)	559 (22.00)	1397 (55.00)	3000 (6615)

CRYOGENIC GATE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Wedge	Stellite 6 faced A351-CF8M	
5	Seat Ring	Stellite 6 faced SS316	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Connector	Cast Steel	A351-CF8M
21	Connector Bolt	Stainless Steel	A193-B8
22	Connector Nut	Stainless Steel	A194-8
24	Sleeve	Ductile Iron	A439-D2C
25	Yoke Cap	304 Stainless Steel	
26	Thrust Bearing	Commercial	
27	Grease Nipple	Cr Plated Carbon Steel	
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A563A
31	Set Screw	304 Stainless Steel	
37	Name Plate	Stainless Steel	A240-304
66	Backseat Ring	Stainless Steel	A276-316
67	Connector Gasket	316 Spiral Wound Graphite	

- UP to 4" : Solid Wedge
- 6" & above : Flexible Wedge
- Gear Type : 6" for class 900, 4" & over class 1500

CLASS 900 - ASME B16.34

Unit : mm(inch)

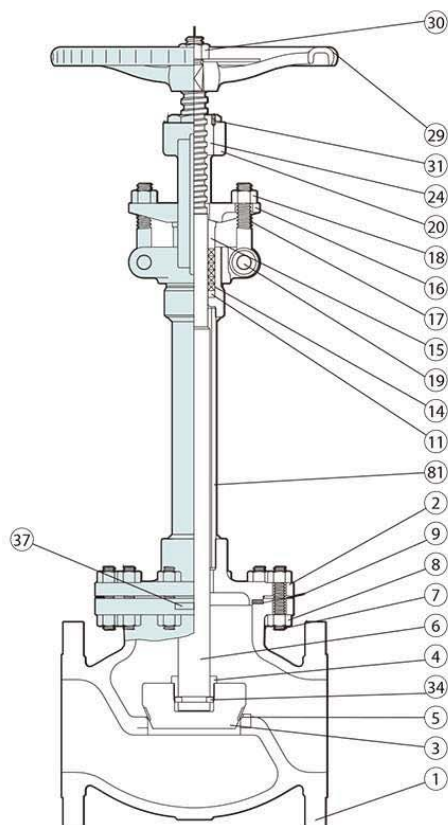
Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	315 (12.40)	820 (32.28)	47 (1.85)	368 (14.50)	110 (243)
3	355 (13.98)	970 (38.19)	72 (2.83)	381 (15.00)	140 (309)
4	500 (19.69)	1150 (45.28)	98 (3.86)	457 (18.00)	190 (419)
6	560 (22.05)	1400 (55.12)	146 (5.75)	610 (24.00)	440 (970)

CLASS 1500 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	315 (12.40)	820 (32.28)	47 (1.85)	368 (14.50)	110 (243)
3	355 (13.98)	970 (38.19)	69 (2.72)	470 (18.50)	210 (463)
4	500 (19.69)	1150 (45.28)	92 (3.62)	546 (21.50)	320 (706)
6	560 (22.05)	1550 (61.02)	136 (5.35)	705 (27.75)	600 (1323)

CRYOGENIC GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Disc	Stellite 6 faced 316SS	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
11	Packing Ring	Stainless Steel	A276-316
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Yoke	Carbon Steel	A351-CF8M
24	Yoke Bush	Ductile Iron	A439-D2C
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A194-2H
31	Set Screw	304 Stainless Steel	
34	Stopper	Stainless Steel	A276-316
37	Name Plate	Stainless Steel	A240-304
81	Extension Piece	316 Stainless Steel	

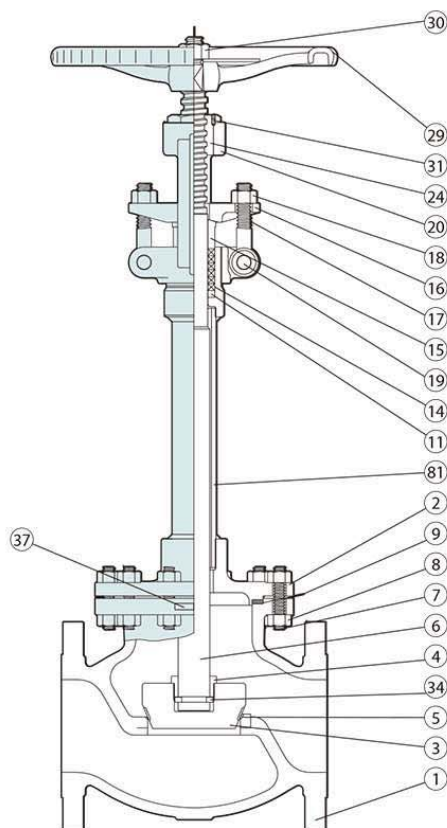
• Hammer Blow Handwheel : 10 " & over

CLASS 150 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Approx. Wt . Kg(Lb)
2	250 (9.84)	685 (26.97)	50 (1.97)	203 (8.00)	16 (35)
2 1/2	250 (9.84)	695 (27.36)	64 (2.52)	216 (8.50)	25 (55)
3	315 (12.40)	730 (27.74)	76 (3.00)	241 (9.50)	35 (77)
4	355 (13.98)	820 (32.28)	100 (3.94)	292 (11.50)	40 (88)
6	400 (15.75)	955 (37.60)	150 (5.91)	406 (16.00)	120 (245)
8	560 (22.05)	1010 (39.76)	200 (7.87)	495 (19.50)	180 (397)
10	610 (24.02)	1275 (50.20)	250 (9.84)	622 (24.50)	270 (595)
12	610 (24.02)	1440 (56.69)	300 (11.81)	698 (27.50)	400 (882)

CRYOGENIC GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Disc	Stellite 6 faced 316SS	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
11	Packing Ring	Stainless Steel	A276-316
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Yoke	Carbon Steel	A351-CF8M
24	Yoke Bush	Ductile Iron	A439-D2C
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A194-2H
31	Set Screw	304 Stainless Steel	
34	Stopper	Stainless Steel	A276-316
37	Name Plate	Stainless Steel	A240-304
81	Extension Piece	316 Stainless Steel	

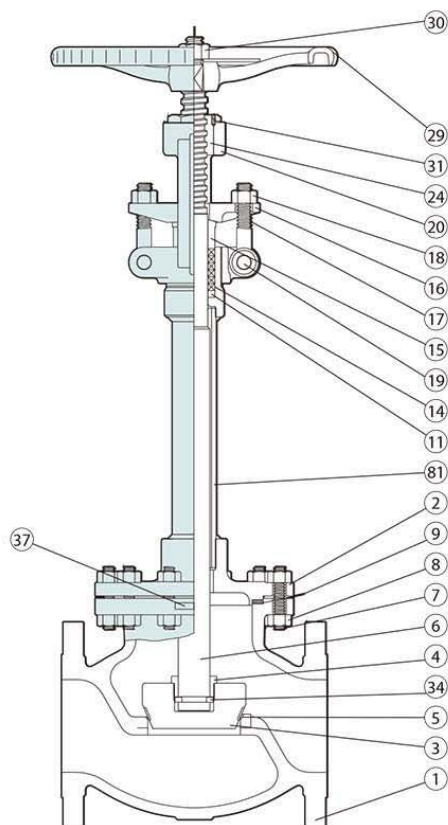
• Hammer Blow Handwheel : 8 " & over

CLASS 300 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	685 (26.97)	50 (1.97)	267 (10.50)	20 (44)
2 1/2	250 (9.84)	695 (27.36)	64 (2.52)	292 (11.50)	40 (88)
3	315 (12.40)	730 (27.74)	76 (3.00)	318 (12.50)	50 (110)
4	355 (13.98)	820 (32.28)	100 (3.94)	356 (14.00)	60 (132)
6	400 (15.75)	955 (37.60)	150 (5.91)	444 (17.50)	140 (309)
8	560 (22.05)	1265 (49.80)	200 (7.87)	559 (22.00)	220 (485)
10	610 (24.02)	1395 (54.92)	250 (9.84)	622 (24.50)	340 (750)
12	610 (24.02)	1520 (59.84)	300 (11.81)	711 (28.00)	480 (1058)

CRYOGENIC GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Disc	Stellite 6 faced 316SS	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
11	Packing Ring	Stainless Steel	A276-316
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Yoke	Cast Steel	A351-CF8M
24	Yoke Bush	Ductile Iron	A439-D2C
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A194-2H
31	Set Screw	304 Stainless Steel	
34	Stopper	Stainless Steel	A276-316
37	Name Plate	Stainless Steel	A240-304
81	Extension Piece	316 Stainless Steel	

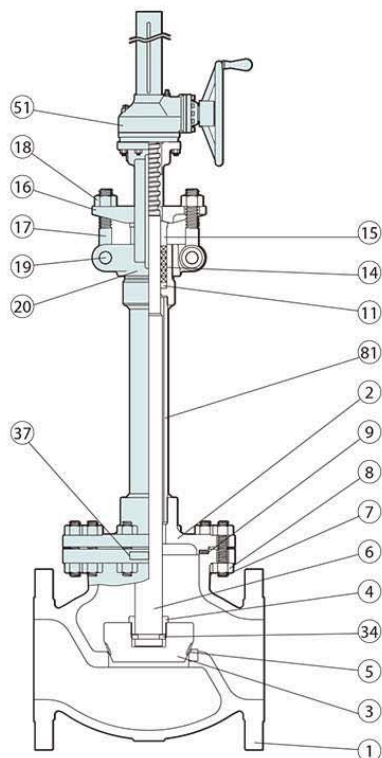
• Hammer Blow Handwheel : 6 " & over

CLASS 600 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	250 (9.84)	685 (26.97)	50 (1.97)	292 (11.50)	35 (77)
2 1/2	315 (12.40)	745 (29.33)	64 (2.52)	330 (13.00)	45 (99)
3	355 (13.98)	790 (31.10)	76 (3.00)	356 (14.00)	110 (243)
4	450 (17.72)	915 (36.02)	100 (3.94)	432 (17.00)	130 (287)
6	560 (22.05)	1160 (45.67)	150 (5.91)	559 (22.00)	250 (551)
8	610 (24.02)	1435 (56.50)	200 (7.87)	660 (26.00)	390 (860)
10	610 (24.02)	1550 (61.02)	250 (9.84)	787 (31.00)	500 (1103)

CRYOGENIC GLOBE VALVES – BOLTED BONNET – FULL PORT – GEAR OPERATED



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Disc	Stellite 6 faced 316SS	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
11	Packing Ring	Stainless Steel	A276-316
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
34	Stopper	Stainless Steel	A276-316
35	Stem Guide	Stainless Steel	304SS
37	Name Plate	Stainless Steel	A240-304
51	Gear Box	Commercial	
81	Extension Piece	316 Stainless Steel	

CLASS 150 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1380 (54.33)	200 (7.87)	495 (19.50)	200 (441)
10	500 (19.69)	1700 (66.93)	250 (9.84)	622 (24.50)	290 (640)
12	630 (24.80)	1970 (77.56)	300 (11.81)	698 (27.50)	430 (948)
14	630 (24.80)	2500 (98.43)	337 (13.27)	698 (27.50)	520 (1147)
16	710 (27.95)	2850 (112.21)	388 (15.28)	914 (36.00)	720 (1588)
18	710 (27.95)	3250 (127.95)	439 (17.28)	978 (38.50)	960 (2117)

CLASS 300 - ASME B16.34

Unit : mm(inch)

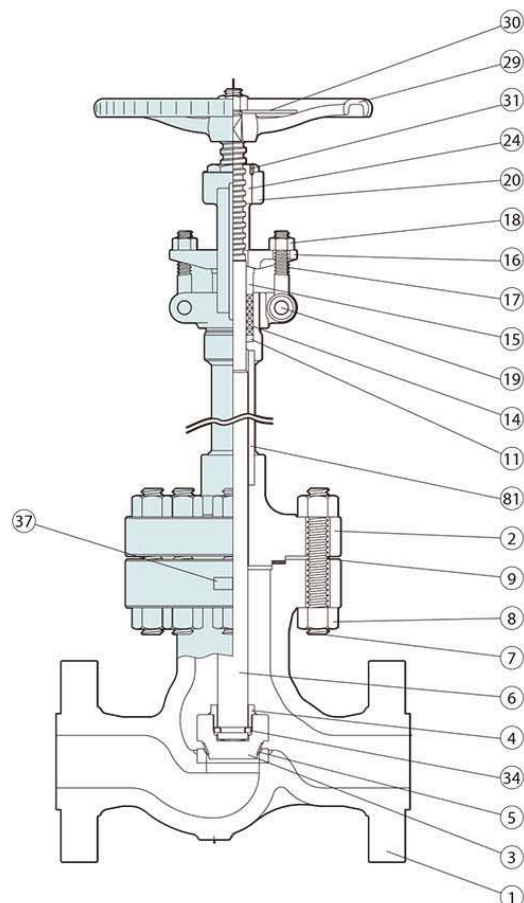
Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
8	500 (19.69)	1690 (66.54)	200 (7.87)	559 (22.00)	240 (529)
10	630 (24.80)	1920 (75.59)	250 (9.84)	622 (24.50)	370 (816)
12	710 (27.95)	2050 (80.71)	300 (11.81)	711 (28.00)	520 (1147)
14	800 (31.50)	2600 (102.36)	337 (13.27)	838 (33.00)	760 (1676)
16	900 (35.43)	2950 (116.14)	388 (15.28)	863 (34.00)	1050 (2315)
18	900 (35.43)	3400 (133.86)	439 (17.28)	978 (38.50)	1350 (2977)

CLASS 600 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
6	630 (24.80)	1900 (74.80)	150 (5.91)	559 (22.00)	280 (617)
8	710 (27.95)	2060 (81.10)	200 (7.87)	660 (26.50)	430 (948)
10	800 (31.50)	2200 (86.61)	250 (9.84)	787 (31.00)	570 (1257)

CRYOGENIC GLOBE VALVES – BOLTED BONNET – FULL PORT – HANDWHEEL TYPE



NO.	Parts	Material	A.S.T.M
1	Body	Cast Steel	A351-CF8M
2	Bonnet	Cast Steel	A351-CF8M
3	Disc	Stellite 6 faced 316SS	
4	Disc Nut	Stainless Steel	316SS
5	Seat	Integral Hardfaced Stellite 6	
6	Stem	Stainless Steel	A276-316
7	Bonnet Bolt	Stainless Steel	A193-B8
8	Bonnet Nut	Stainless Steel	A194-8
9	Bonnet Gasket	316 Spiral Wound Graphite	
11	Packing Ring	Stainless Steel	A276-316
14	Gland Packing	Graphoil	
15	Gland	Stainless Steel	A276-316
16	Gland Flange	304 Stainless Steel	
17	Eye Bolt	Stainless Steel	A193-B8
18	Eye Bolt Nut	Stainless Steel	A194-8
19	Eye Bolt Pin	Stainless Steel	A276-304
20	Yoke	Cast Steel	A351-CF8M
24	Yoke Bush	Ductile Iron	A439-D2C
29	Handwheel	Ductile Iron	A395
30	Wheel Nut	Carbon Steel	A194-2H
31	Set Screw	304 Stainless Steel	
34	Stopper	Stainless Steel	A276-316
37	Name Plate	Stainless Steel	A240-304
81	Extension Piece	316 Stainless Steel	

• Hammer Blow Handwheel : 4 " & over

CLASS 900 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	355 (13.98)	830 (32.68)	47 (1.85)	368 (14.50)	105 (232)
3	450 (17.72)	880 (34.65)	72 (2.83)	381 (15.00)	170 (375)
4	560 (22.05)	1050 (41.34)	98 (3.86)	457 (18.00)	210 (463)
6	610 (24.02)	1400 (55.12)	146 (5.75)	610 (24.00)	470 (1036)

CLASS 1500 - ASME B16.34

Unit : mm(inch)

Valve Size	Handwheel Diameter	Center to Top (Open)	Dia. of Port Openings	Face to Face	Weight Kg(Lb)
2	355 (13.98)	830 (32.68)	47 (1.85)	368 (14.50)	105 (232)
3	450 (17.72)	880 (34.65)	69 (2.72)	470 (18.50)	210 (463)
4	560 (22.05)	1050 (41.34)	92 (3.62)	546 (21.50)	360 (794)
6	610 (24.02)	1400 (55.12)	136 (5.53)	705 (27.75)	900 (1985)

A105(a) A216-WCB(a) A350-LF2(a)

STANDARD CLASS

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

Working Pressure by Classes, psig

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		450	1,125	2,225	2,975	3,350	5,575	6,275	9,275	9,925	16,675
Seat Test, psig		325	825	1,650	2,175	2,450	4,100	4,600	6,800	7,300	12,225
-20 to 100°F	-29 to 38°C	285	740	1,480	1,975	2,220	3,705	4,175	6,170	6,615	11,110
200	93.5	260	680	1,360	1,810	2,035	3,395	3,825	5,655	6,065	1,085
300	149.0	230	655	1,310	1,745	1,965	3,270	3,685	5,845	5,845	9,815
400	204.5	200	635	1,265	1,690	1,900	3,170	3,570	5,280	5,660	9,505
500	260.0	170	605	1,205	1,610	1,810	3,015	3,395	5,025	5,385	9,040
600	315.5	140	570	1,135	1,515	1,705	2,840	3,195	4,730	5,070	8,515
650	343.5	125	550	1,100	1,465	1,650	2,745	3,095	4,575	4,905	8,240
700	371.0	110	530	1,060	1,415	1,590	2,665	2,995	4,425	4,745	7,960
750	399.0	95	505	1,015	1,350	1,520	2,535	2,855	4,230	4,535	7,610
800	426.5	80	410	825	1,100	1,235	2,055	2,315	3,430	3,675	6,170
850	454.5	65	320	640	850	955	1,595	1,795	2,655	2,845	4,785
900	482.0	50	230	460	615	690	1,150	1,295	1,915	2,055	3,455
950	510.0	35	135	275	365	410	685	775	1,145	1,225	2,055
1000	538.0	20	85	170	225	255	430	485	715	765	1,285

A182-F11 CL.2(a) A217-WC6(b)

STANDARD CLASS

NOTE : (a) Permissible, but not recommended for prolonged usage above about 1100°F (593°C)
(b) Not to be used over 1100°F

Working Pressure by Classes, psig

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		450	1,125	2,250	3,000	3,375	5,625	6,350	9,375	10,050	16,875
Seat Test, psig		325	825	1,650	2,200	2,475	4,125	4,650	6,875	7,375	12,375
-20 to 100°F	-29 to 38°C	290	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
200	93.5	260	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
300	149.0	230	720	1,445	1,925	2,165	3,610	4,065	6,015	6,450	10,830
400	204.5	200	695	1,385	1,850	2,080	3,465	3,905	5,775	6,190	10,400
500	260.0	170	665	1,330	1,775	1,995	3,325	3,745	5,540	5,940	9,965
600	315.5	140	605	1,210	1,615	1,815	3,025	3,410	5,040	5,405	9,070
650	343.5	125	590	1,175	1,570	1,765	2,940	3,315	4,905	5,260	8,825
700	371.0	110	570	1,135	1,515	1,705	2,840	3,200	4,730	5,070	8,515
750	399.0	95	530	1,065	1,420	1,595	2,660	2,995	4,430	4,750	7,970
800	426.5	80	510	1,015	1,355	1,525	2,540	2,860	4,230	4,535	7,610
850	454.5	65	485	975	1,300	1,460	2,435	2,745	4,060	4,350	7,305
900	482.0	50	450	900	1,200	1,350	2,245	2,530	3,745	4,015	6,740
950	510.0	35	320	640	850	955	1,595	1,795	2,655	2,845	4,785
1000	538.0	20	215	430	575	650	1,080	1,215	1,800	1,930	3,240
1050	565.5	20 (1)	145	290	385	430	720	810	1,200	1,285	2,160
1100	593.5	20 (1)	95	190	255	290	480	540	800	860	1,440
1150	621.0	20 (1)	65	130	175	195	325	385	545	585	975
1200	649.0	15 (1)	40	80	110	125	205	235	345	365	615

NOTE : (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F22 CL.3(a) A217-WC9(b)

STANDARD CLASS

NOTE : (a) Permissible, but not recommended for prolonged usage above about 1100°F (593°C)
(b) Not to be used over 1100°F

Working Pressure by Classes, psig

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		450	1,125	2,250	3,000	3,375	5,625	6,350	9,375	10,050	16,875
Seat Test, psig		325	825	1,650	2,200	2,475	4,125	4,650	6,875	7,375	12,375
-20 to 100°F	-29 to 38°C	290	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
200	93.5	260	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
300	149.0	230	730	1,455	1,940	2,185	3,640	4,100	6,070	6,505	10,925
400	204.5	200	705	1,410	1,880	2,115	3,530	3,975	5,880	6,305	10,585
500	260.0	170	665	1,330	1,775	1,995	3,325	3,745	5,540	5,940	9,965
600	315.5	140	605	1,210	1,615	1,815	3,025	3,410	5,040	5,405	9,070
650	343.5	125	590	1,175	1,570	1,765	2,940	3,315	4,905	5,260	8,825
700	371.0	110	570	1,135	1,515	1,705	2,840	3,200	4,730	5,070	8,515
750	399.0	95	530	1,065	1,420	1,595	2,660	2,995	4,430	4,750	7,970
800	426.5	80	510	1,015	1,355	1,525	2,540	2,860	4,230	4,535	7,610
850	454.5	65	485	975	1,300	1,460	2,435	2,745	4,060	4,350	7,305
900	482.0	50	450	900	1,200	1,350	2,245	2,530	3,745	4,015	6,740
950	510.0	35	385	755	1,025	1,160	1,930	2,175	3,220	3,455	5,795
1000	538.0	20	265	535	710	800	1,335	1,695	3,230	3,300	4,010
1050	565.5	20 (1)	175	350	465	525	875	985	1,455	1,560	2,625
1100	593.5	20 (1)	110	220	295	330	550	620	915	980	1,645
1150	621.0	20 (1)	70	135	180	205	345	390	570	610	1,030
1200	649.0	15 (1)	40	80	110	125	205	230	345	370	615

NOTE : (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F5 A217-C5

STANDARD CLASS

CLASS		Working Pressure by Classes, psig									
Shell Test, psig		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Seat Test, psig		450	1,125	2,225	3,000	3,375	5,625	6,350	9,375	10,050	16,875
		325	825	1,650	2,200	2,475	4,125	4,650	6,875	7,375	12,375
-20 to 100°F	-29 to 38°C	290	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
200	93.5	260	735	1,470	1,965	2,210	3,680	4,145	6,135	6,575	11,040
300	149.0	230	700	1,400	1,865	2,100	3,495	3,935	5,830	6,245	10,490
400	204.5	200	670	1,335	1,780	2,005	3,345	3,765	5,570	5,975	10,030
500	260.0	170	645	1,290	1,725	1,940	3,230	3,635	5,385	5,775	9,690
600	315.5	140	605	1,210	1,615	1,815	3,025	3,410	5,040	5,405	9,070
650	343.5	125	590	1,175	1,570	1,765	2,940	3,315	4,905	5,260	8,825
700	371.0	110	570	1,135	1,515	1,705	2,840	3,200	4,730	5,070	8,515
750	399.0	95	530	1,065	1,420	1,595	2,660	2,995	4,430	4,745	7,970
800	426.5	80	510	1,015	1,355	1,525	2,540	2,860	4,230	4,535	7,610
850	454.5	65	485	975	1,300	1,460	2,435	2,745	4,060	4,355	7,305
900	482.0	50	475	945	1,270	1,420	2,375	2,665	3,975	4,255	6,995
950	510.0	35	455	905	1,225	1,375	2,285	2,565	3,855	4,125	6,715
1000	538.0	20	435	865	1,180	1,325	2,195	2,465	3,735	3,995	6,435
1050	565.5	20(1)	415	825	1,135	1,275	2,105	2,365	3,605	3,855	6,155
1100	593.5	20(1)	395	785	1,090	1,225	2,015	2,265	3,495	3,735	5,875
1150	621.0	20(1)	375	745	1,045	1,175	1,925	2,165	3,325	3,555	5,595
1200	649.0	15(1)	355	705	1,000	1,125	1,835	2,065	3,155	3,375	5,315

NOTE: (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F9 A217-C12

STANDARD CLASS

CLASS		Working Pressure by Classes, psig									
Shell Test, psig		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Seat Test, psig		450	1,125	2,225	3,000	3,375	5,625	6,350	9,375	10,050	16,875
		325	825	1,650	2,200	2,475	4,125	4,650	6,875	7,375	12,375
-20 to 100°F	-29 to 38°C	290	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
200	93.5	260	735	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
300	149.0	230	730	1,455	1,940	2,185	3,640	4,100	6,070	6,505	10,925
400	204.5	200	705	1,410	1,880	2,115	3,530	3,975	5,880	6,305	10,585
500	260.0	170	665	1,330	1,775	1,995	3,325	3,745	5,540	5,940	9,965
600	315.5	140	605	1,210	1,615	1,815	3,025	3,410	5,040	5,405	9,070
650	343.5	125	590	1,175	1,570	1,765	2,940	3,315	4,905	5,260	8,825
700	371.0	110	570	1,135	1,515	1,705	2,840	3,200	4,730	5,070	8,515
750	399.0	95	530	1,065	1,420	1,595	2,660	2,995	4,430	4,750	7,920
800	426.5	80	510	1,015	1,355	1,525	2,540	2,860	4,230	4,535	7,610
850	454.5	65	485	975	1,300	1,460	2,435	2,745	4,060	4,350	7,305
900	482.0	50	450	900	1,200	1,350	2,245	2,530	3,745	4,015	6,740
950	510.0	35	435	855	1,155	1,305	2,155	2,425	3,615	3,875	6,465
1000	538.0	20	415	815	1,110	1,255	2,065	2,325	3,505	3,755	6,185
1050	565.5	20(1)	395	775	1,065	1,205	1,975	2,225	3,395	3,635	5,905
1100	593.5	20(1)	375	735	1,020	1,155	1,885	2,125	3,285	3,515	5,625
1150	621.0	20(1)	355	695	975	1,110	1,795	2,025	3,115	3,335	5,345
1200	649.0	20(1)	335	655	930	1,065	1,705	1,925	2,925	3,135	5,065

NOTE: (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F91 A217-C12A

STANDARD CLASS

CLASS		Working Pressure by Classes, psig									
Shell Test, psig		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Seat Test, psig		450	1,125	2,225	3,000	3,375	5,625	6,350	9,375	10,050	16,875
		325	825	1,650	2,200	2,475	4,125	4,650	6,875	7,375	12,375
-20 to 100°F	-29 to 38°C	290	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
200	93.5	260	750	1,500	2,000	2,250	3,750	4,225	6,250	6,700	11,250
300	149.0	230	730	1,455	1,940	2,185	3,640	4,100	6,070	6,505	10,925
400	204.5	200	705	1,410	1,880	2,115	3,530	3,975	5,880	6,305	10,585
500	260.0	170	665	1,330	1,775	1,995	3,325	3,745	5,540	5,940	9,965
600	315.5	140	605	1,210	1,615	1,815	3,025	3,410	5,040	5,405	9,070
650	343.5	125	590	1,175	1,570	1,765	2,940	3,315	4,905	5,260	8,825
700	371.0	110	570	1,135	1,515	1,705	2,840	3,200	4,730	5,070	8,515
750	399.0	95	530	1,065	1,420	1,595	2,660	2,995	4,430	4,750	7,920
800	426.5	80	510	1,015	1,355	1,525	2,540	2,860	4,230	4,535	7,610
850	454.5	65	485	975	1,300	1,460	2,435	2,745	4,060	4,350	7,305
900	482.0	50	450	900	1,200	1,350	2,245	2,530	3,745	4,015	6,740
950	510.0	35	435	855	1,155	1,305	2,155	2,425	3,615	3,875	6,465
1000	538.0	20	415	815	1,110	1,255	2,065	2,325	3,505	3,755	6,185
1050	565.5	20(1)	395	775	1,065	1,205	1,975	2,225	3,395	3,635	5,905
1100	593.5	20(1)	375	735	1,020	1,155	1,885	2,125	3,285	3,515	5,625
1150	621.0	20(1)	355	695	975	1,110	1,795	2,025	3,115	3,335	5,345
1200	649.0	20(1)	335	655	930	1,065	1,705	1,925	2,925	3,135	5,065

NOTE: (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F304(a) A351-CF8(a) A182-F304H

STANDARD CLASS

NOTE : (a) At Temperatures over 1000 °F, use only when the carbon content is 0.04% or higher.
(b) Not to be used over 800 °F.

Working Pressure by Classes, psig

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		425	1,100	2,175	2,900	3,250	5,400	6,100	9,000	9,650	16,200
Seat Test, psig		325	800	1,600	2,125	2,400	3,975	4,475	6,600	7,075	11,900
-20 to 100°F	-29 to 38°C	275	720	1,440	1,920	2,160	3,600	4,056	6,000	6,432	10,800
200	93.5	230	600	1,200	1,600	1,800	3,000	3,380	5,000	5,360	9,000
300	149.0	205	540	1,075	1,435	1,615	2,690	3,030	4,480	4,805	8,065
400	204.5	190	495	995	1,325	1,490	2,485	2,800	4,140	4,440	7,450
500	260.0	170	465	930	1,240	1,395	2,330	2,625	3,880	4,160	6,985
600	315.5	140	440	885	1,180	1,325	2,210	2,485	3,680	3,945	6,625
650	343.5	125	430	865	1,150	1,295	2,160	2,435	3,600	3,855	6,480
700	371.0	110	420	845	1,125	1,265	2,110	2,375	3,520	3,775	6,335
750	399.0	95	415	825	1,100	1,240	2,065	2,325	3,440	3,685	6,190
800	426.5	80	405	810	1,080	1,215	2,030	2,285	3,380	3,625	6,085
850	454.5	65	395	790	1,055	1,190	1,980	2,230	3,300	3,540	5,940
900	482.0	50	390	780	1,035	1,165	1,945	2,190	3,240	3,475	5,830
950	510.0	35	380	765	1,020	1,145	1,910	2,150	3,180	3,410	5,725
1000	538.0	20	355	710	945	1,065	1,770	1,995	2,950	3,165	5,315
1050	565.5	20(1)	325	650	865	975	1,630	1,835	2,715	2,915	4,885
1100	593.5	20(1)	255	515	685	770	1,285	1,450	2,145	2,300	3,855
1150	621.0	20(1)	205	410	545	615	1,030	1,160	1,715	1,835	3,085
1200	649.0	20(1)	165	330	440	495	825	925	1,370	1,465	2,470
1250	676.5	20(1)	135	265	355	400	670	755	1,115	1,195	2,005
1300	704.5	20(1)	115	225	300	340	565	635	945	1,015	1,695
1350	732.0	20(1)	95	185	250	280	465	525	770	825	1,390
1400	760.0	20(1)	75	150	200	225	380	425	630	675	1,130
1450	788.0	20(1)	60	115	155	175	290	325	485	520	875
1500	815.5	15(1)	40	85	110	125	205	235	345	365	620

NOTE : (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F316(a) A351-CF8M(a) A182-F316H

STANDARD CLASS

NOTE : (a) At Temperatures over 1000 °F, use only when the carbon content is 0.04% or higher.
(b) Not to be used over 850 °F.

Working Pressure by Classes, psig

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		425	1,100	2,175	2,900	3,250	5,400	6,100	9,000	9,650	16,200
Seat Test, psig		325	800	1,600	2,125	2,400	3,975	4,475	6,600	7,075	11,900
-20 to 100°F	-29 to 38°C	275	720	1,440	1,920	2,160	3,600	4,055	6,000	6,430	10,800
200	93.5	235	620	1,240	1,655	1,860	3,095	3,485	5,160	5,530	9,290
300	149.0	215	560	1,120	1,495	1,680	2,795	3,150	4,660	4,995	8,390
400	204.5	195	515	1,025	1,370	1,540	2,570	2,895	4,280	4,590	7,705
500	260.0	170	480	955	1,275	1,435	2,390	2,690	3,980	4,265	7,165
600	315.5	140	450	900	1,205	1,355	2,255	2,540	3,760	4,030	6,770
650	343.5	125	440	885	1,180	1,325	2,210	2,485	3,680	3,945	6,625
700	371.0	110	435	870	1,160	1,305	2,170	2,445	3,620	3,880	6,515
750	399.0	95	425	855	1,140	1,280	2,135	2,405	3,560	3,815	6,410
800	426.5	80	420	845	1,125	1,265	2,110	2,380	3,520	3,775	6,335
850	454.5	65	420	835	1,115	1,255	2,090	2,355	3,480	3,730	6,265
900	482.0	50	415	830	1,105	1,245	2,075	2,340	3,460	3,710	6,230
950	510.0	35	385	775	1,030	1,160	1,930	2,175	3,220	3,450	5,795
1000	538.0	20	365	725	970	1,090	1,820	2,045	3,030	3,245	5,450
1050	565.5	20(1)	360	720	960	1,080	1,800	2,025	3,000	3,215	5,400
1100	593.5	20(1)	305	610	815	915	1,525	1,720	2,545	2,730	4,575
1150	621.0	20(1)	235	475	630	710	1,185	1,335	1,970	2,110	3,550
1200	649.0	20(1)	185	370	495	555	925	1,045	1,545	1,655	2,775
1250	676.5	20(1)	145	295	390	440	735	830	1,230	1,320	2,210
1300	704.5	20(1)	115	235	310	350	585	660	970	1,040	1,750
1350	732.0	20(1)	95	190	255	290	480	540	800	860	1,440
1400	760.0	20(1)	75	150	200	225	380	430	630	675	1,130
1450	788.0	20(1)	60	115	155	175	290	325	485	520	875
1500	815.5	15(a)	40	85	110	125	205	230	345	370	620

NOTE : (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F304L(a) A182-F316L A351-CF3(a) A351-CF3M(a)

STANDARD CLASS

NOTE: (a) Not to be used over 800°F. (427°C)

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		350	900	1,800	2,400	2,700	4,500	5,075	7,500	8,050	13,500
Seat Test, psig		275	675	1,325	1,775	2,000	3,300	3,725	5,500	5,900	9,900
-20 to 100°F	-29 to 38°C	230	600	1,200	1,600	1,800	3,000	3,380	5,000	5,360	9,000
200	93.5	195	510	1,020	1,365	1,535	2,555	2,875	4,260	4,565	7,670
300	149.0	175	455	910	1,370	1,370	2,280	2,565	3,800	4,075	6,840
400	204.5	160	420	840	1,120	1,260	2,100	2,365	3,500	3,755	6,300
500	260.0	150	395	785	1,050	1,180	1,970	2,215	3,280	3,515	5,905
600	315.5	140	370	745	990	1,115	1,860	2,095	3,100	3,325	5,580
650	343.5	125	365	730	975	1,095	1,825	2,055	3,040	3,255	5,470
700	371.0	110	360	720	960	1,080	1,800	2,025	3,000	3,215	5,400
750	399.0	110	355	705	940	1,060	1,765	1,985	2,940	3,155	5,290
800	426.5	80	345	690	920	1,035	1,730	1,945	2,880	3,085	5,185
850	454.5	65	340	675	900	1,015	1,690	1,905	2,820	3,025	5,075

Working Pressure by Classes, psig

A182-F321(a)

STANDARD CLASS

NOTE: (a) Not to be used over 1000°F. (538°C)

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		413	1,080	2,160	2,880	3,240	5,400	6,083	9,000	9,645	16,200
Seat Test, psig		303	792	1,584	2,112	2,376	3,960	4,461	6,600	7,073	11,880
-20 to 100°F	-29 to 38°C	275	720	1,440	1,920	2,160	3,600	4,055	6,000	6,430	10,800
200	93.5	250	650	1,295	1,730	1,945	3,240	3,650	5,400	5,785	9,720
300	149.0	230	595	1,190	1,585	1,785	2,975	3,350	4,960	5,315	8,930
400	204.5	200	550	1,105	1,470	1,655	2,760	3,110	4,600	4,930	8,280
500	260.0	170	515	1,030	1,375	1,550	2,580	2,905	4,300	4,605	7,740
600	315.5	140	485	975	1,300	1,460	2,435	2,745	4,060	4,355	7,310
650	343.5	125	475	950	1,265	1,425	2,375	2,675	3,960	4,245	7,130
700	371.0	110	465	930	1,240	1,395	2,330	2,625	3,880	4,160	6,985
750	399.0	95	460	915	1,220	1,375	2,290	2,580	3,820	4,095	6,875
800	426.5	80	450	900	1,205	1,355	2,255	2,540	3,760	4,030	6,770
850	454.5	65	445	895	1,190	1,340	2,230	2,515	3,720	3,990	6,695
900	482.0	50	440	885	1,180	1,325	2,210	2,490	3,680	3,945	6,625
950	510.0	35	385	775	1,030	1,160	1,930	2,175	3,220	3,450	5,795
1000	538.0	20	365	725	970	1,090	1,820	2,045	3,030	3,235	5,450
1050	565.5	20(1)	360	720	960	1,080	1,800	2,025	3,000	3,215	5,400
1100	593.5	20(1)	310	625	830	935	1,560	1,755	2,600	2,785	4,680
1150	621.0	20(1)	235	475	630	710	1,185	1,335	1,970	2,110	3,550
1200	649.0	20(1)	185	370	495	555	925	1,045	1,545	1,655	2,775
1250	676.5	20(1)	140	280	375	420	705	795	1,170	1,255	2,110
1300	704.5	20(1)	110	220	295	330	550	620	915	980	1,645
1350	732.0	20(1)	185	170	225	255	430	485	715	765	1,285
1400	760.0	20(1)	65	130	175	195	325	365	545	585	975
1450	788.0	20(1)	50	105	140	155	255	290	430	460	770
1500	815.5	15(1)	40	75	100	115	190	215	315	340	565

Working Pressure by Classes, psig

NOTE: (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

A182-F347(a) A351-CF8C(b)

STANDARD CLASS

NOTE: (a) Not to be used over 1000°F (538°C)

(b) At Temperatures over 1000 °F, use only when the carbon content is 0.04% or higher

CLASS		150	300	600	800	900	1,500	1,690	2,500	2,680	4,500
Shell Test, psig		413	1,080	2,160	2,880	3,240	5,400	6,083	9,000	9,645	16,200
Seat Test, psig		303	792	1,584	2,112	2,376	3,960	4,461	6,600	7,073	11,880
-20 to 100°F	-29 to 38°C	275	720	1,440	1,920	2,160	3,600	4,055	6,000	6,430	10,800
200	93.5	255	660	1,325	1,765	1,985	3,310	3,725	5,520	5,915	9,935
300	149.0	230	615	1,235	1,645	1,850	3,085	3,475	5,140	5,505	9,250
400	204.5	200	575	1,150	1,535	1,730	2,880	3,245	4,800	5,145	8,640
500	260.0	170	540	1,085	1,445	1,625	2,710	3,055	4,520	4,845	8,135
600	315.5	140	515	1,030	1,375	1,550	2,580	2,905	4,300	4,605	7,740
650	343.5	125	505	1,015	1,350	1,520	2,530	2,851	4,220	4,525	7,595
700	371.0	110	495	995	1,325	1,490	2,485	2,795	4,140	4,435	7,450
750	399.0	95	490	985	1,310	1,475	2,460	2,770	4,100	4,395	7,380
800	426.5	80	485	975	1,300	1,460	2,435	2,745	4,060	4,355	7,310
850	454.5	65	485	970	1,295	1,455	2,425	2,730	4,040	4,330	7,270
900	482.0	50	450	900	1,200	1,350	2,245	2,530	3,745	4,015	6,740
950	510.0	35	385	775	1,030	1,160	1,930	2,175	3,220	3,450	5,795
1000	538.0	20	365	725	970	1,090	1,820	2,050	3,030	3,250	5,450
1050	565.5	20(1)	360	720	960	1,080	1,800	2,030	3,000	3,215	5,400
1100	593.5	20(1)	325	645	860	965	1,610	1,815	2,685	2,880	4,835
1150	621.0	20(1)	275	550	735	825	1,370	1,545	2,285	2,450	4,115
1200	649.0	20(1)	205	410	550	620	1,030	1,160	1,715	1,835	3,085
1250	676.5	20(1)	180	365	485	545	910	1,025	1,515	1,625	2,725
1300	704.5	20(1)	140	275	365	410	685	775	1,145	1,225	2,060
1350	732.0	20(1)	105	205	375	410	515	580	860	925	1,545
1400	760.0	20(1)	75	150	200	225	380	425	630	675	1,130
1450	788.0	20(1)	60	115	155	175	290	325	485	520	875
1500	815.5	15(1)	40	85	110	125	205	235	345	365	620

Working Pressure by Classes, psig

NOTE: (1) For welding end valves only. Flanged end ratings terminate at 1000°F (538°C)

FORGED STEEL BELLOWS SEAL GATE VALVE – API 602 / ASME B16.34

No.	ASTM Designation Parts	A105N	A350		A182					A182				
			LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
1	Body	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
2	Seat Ring	A276-316+STL					A276 -321 +STL	A276 -347 +STL	UNS S31803 +STL	A276-316+STL				
3	Wedge	A351-CF8M+STL					A276 -321 +STL	A276 -347 +STL	UNS S31803 +STL	A351-CF8M+STL				
4	Stem	A276-316					A276 -321	A276 -347	UNS S31803	A276-316				
5	Gasket*	304 Spiral Wound Graphite				316 SWG	321 SWG	347 SWG	Duplex SWG	304 Spiral Wound Graphite				
6	Bonnet	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
7	Bonnet Bolt*	A193-B7M	A320-L7M		A193-B8A					A193-B16				
8	Gland Packing	Graphoil												
10	Gland	316 Stainless Steel												
11	Gland Flange	A105		A182-F304					A105					
12	Gland Nut	A194-2H		A194-8					A194-2H					
13	Gland Bolt	A193-B6		A193-B8					A193-B6					
14	Yoke Sleeve	A582-416												
15	Handwheel	A47												
16	Name Plate	Aluminium			304 Stainless Steel					Aluminium				
17	Handwheel Nut	A563-A												
20	Connector	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
27	Grease Nipple	Cr Plated Carbon Steel												
64	Bellows	321 Stainless Steel or Inconel 625												

Complies with NACE MR0175

· Other materials also available on request

STL : Stellite 6 faced

SWG : Spiral Wound Graphite

A182-F304/L : Dual Certificate Material for A182-F304 & A182-F304L

A182-F316/L : Dual Certificate Material for A182-F316 & A182-F316L

DUPLEX : Duplex Stainless Steel

Cr Plated : Chrome Plated

* : Bolted Bonnet

FORGED STEEL BELLOWS SEAL GLOBE VALVE – ASME B16.34 / BS 5352

No.	ASTM Designation Parts	A105N	A350		A182					A182				
			LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
1	Body	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
2	Seat	Integral Hardfaced Stellite 6												
3	Disc	A351-CF8M+STL					A276 -321 +STL	A276 -347 +STL	UNS S31803 +STL	A351-CF8M+STL				
4	Stem	A276-316					A276 -321	A276 -347	UNS S31803	A276-316				
5	Gasket*	304 Spiral Wound Graphite				316 SWG	321 SWG	347 SWG	Duplex SWG	304 Spiral Wound Graphite				
6	Bonnet	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
7	Bonnet Bolt*	A193-B7M	A320-L7M		A193-B8A					A193-B16				
8	Gland Packing	Graphoil												
10	Gland	316 Stainless Steel												
11	Gland Flange	A105		A182-F304					A105					
12	Gland Nut	A194-2H		A194-8					A194-2H					
13	Gland Bolt	A193-B6		A193-B8					A193-B6					
14	Yoke Sleeve	A582-416												
15	Handwheel	A47												
16	Name Plate	Aluminium			304 Stainless Steel					Aluminium				
17	Handwheel Nut	A194-2H												
20	Connector	A105N	LF2	LF3	F304/L	F316/L	F321	F347	F51	F5	F9	F11	F22	F91
27	Grease Nipple	Cr Plated Carbon Steel												
36	Guide Pin	A276-410												
64	Bellows	321 Stainless Steel or Inconel 625												

Complies with NACE MR0175

Other materials also available on request

STL : Stellite 6 faced

SWG : Spiral Wound Graphite

A182-F304/L : Dual Certificate Material for A182-F304 & A182-F304L

A182-F316/L : Dual Certificate Material for A182-F316 & A182-F316L

DUPLEX : Duplex Stainless Steel

Cr Plated : Chrome Plated

* : Bolted Bonnet

CAST STEEL BELLOWS SEAL GATE VALVE – API 600

No.	ASTM Designation Parts	A216	A352		A351				A890	A217				
		WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	A995	C5	C12	WC6	WC9	C12A
1	Body	WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	4A	C5	C12	WC6	WC9	C12A
2	Bonnet	WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	4A	C5	C12	WC6	WC9	C12A
3	Wedge	WCB +STL	LCB +STL	LCC +STL	CF8M+STL		CF8C +STL	Alloy 20 +STL	UNS S31803 +STL	C5 +STL	C12 +STL	WC6 +STL	WC9 +STL	C12A +STL
5	Seat Ring	A105/ WCB +STL	304SS+STL		316SS+STL		347SS +STL	Alloy 20 +STL	UNS S31803 +STL	304SS+STL				
6	Stem	A276-410			A276-316		A276 -327	Alloy 20	UNS S31803	A276-410				
7	Bonnet Bolt	A193-B7M	A320-L7M		A193-B8A					A193-B16				
8	Bonnet	A194-2HM	A194-7M		A194-8A					A194-4				
9	Bonnet Gasket	304 Spiral Wound Graphite			316 SWG	316L SWG	321 SWG	Alloy 20 SWG	Duplex SWG	304 Spiral Wound Graphite				
14	Gland Packing	Graphoil												
15	Gland	13Cr Stainless Steel			316 Stainless Steel					13Cr Stainless Steel				
16	Gland Flange	A105/WCB			304 Stainless Steel					A105/WCB				
17	Eye Bolt	A668-C			A193-B8					A668-C				
18	Eye Bolt Nut	A563-A			A194-8					A563-A				
19	Eye Bolt Pin	A108			A276-304					A108				
20	Connector	WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	4A	C5	C12	WC6	WC9	C12A
21	Connector Bolt	A193-B7M	A320-L7M		A193-B8A					A193-B16				
22	Connector Nut	A194-2HM	A194-7M		A194-8A					A194-4				
24	Yoke Sleeve	A439-D2C / D2												
25	Yoke Cap	Carbon Steel			304 Stainless Steel					Carbon Steel				
26	Thrust Bearing	Commercial												
27	Grease Nipple	Cr Plated Carbon Steel												
29	Handwheel	A395												
30	Wheel Nut	A563A												
37	Name Plate	304 Stainless Steel												
64	Bellows	321 Stainless Steel or Inconel 625												
65	End Fitting	321 Stainless Steel or Inconel 625												
66	Backseat Ring	321 Stainless Steel or Inconel 625												
67	Connector Gasket	304 Spiral Wound Graphite			316 SWG	316L SWG	321 SWG	Alloy 20 SWG	Duplex SWG	304 Spiral Wound Graphite				

Complies with NACE MR0175

· Other materials also available on request

STL : Stellite 6 faced

SWG : Spiral Wound Graphite

DUPLEX : Duplex Stainless Steel

Cr Plated : Chrome Plated

CAST STEEL BELLOWS SEAL GLOBE VALVE – API 623

No.	ASTM Designation Parts	A216	A352		A351				A890	A217				
		WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	A995	C5	C12	WC6	WC9	C12A
1	Body	WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	4A	C5	C12	WC6	WC9	C12A
2	Bonnet	WCB	LCB	LCC	CF8M	CF3M	CF8C	CN7M	4A	C5	C12	WC6	WC9	C12A
3	Disc	A105/ WCB +STL	LF2/ LCB +STL	LF2/ LCC +STL	F316/ CF8M+STL		F347/ CF8C +STL	Alloy 20 +STL	UNS S31803 +STL	F5/ C5 +STL	F9/ C12 +STL	F11/ WC6 +STL	F22/ WC9 +STL	F91/ C12A +STL
4	Disc Nut	316 Stainless Steel												
5	Seat Ring	A105/ WCB +STL	304SS+STL		316SS+STL		347SS +STL	Alloy 20 +STL	UNS S31803 +STL	304SS+STL				
6	Stem	A276-410			A276-316		A276 -327	Alloy 20	UNS S31803	A276-410				
7	Bonnet Bolt	A193-B7M	A320-L7M		A193-B8A					A193-B16				
8	Bonnet	A194-2HM	A194-7M		A194-8A					A194-4				
9	Bonnet Gasket	304 Spiral Wound Graphite			316 SWG	316L SWG	321 SWG	Alloy 20 SWG	Duplex SWG	304 Spiral Wound Graphite				
14	Gland Packing	Graphoil												
15	Gland	13Cr Stainless Steel			316 Stainless Steel					13Cr Stainless Steel				
16	Gland Flange	A105/WCB			304 Stainless Steel					A105/WCB				
17	Eye Bolt	A668-C			A193-B8					A668-C				
18	Eye Bolt Nut	A563-A			A194-8					A563-A				
19	Eye Bolt Pin	A108			A276-304					A108				
24	Sleeve	A439-D2C / D2												
25	Yoke Cap	Carbon Steel			304 Stainless Steel					Carbon Steel				
27	Grease Nipple	Cr Plated Carbon Steel												
29	Handwheel	A395												
30	Wheel Nut	A563A												
33	Pounding Receiver	Carbon Steel												
34	Stopper	13Cr Stainless Steel			316 Stainless Steel					13Cr Stainless Steel				
35	Stem Guide	Carbon Steel			304 Stainless Steel					Carbon Steel				
37	Name Plate	304 Stainless Steel												
64	Bellows	321 Stainless Steel or Inconel 625												
65	End Fitting	321 Stainless Steel or Inconel 625												
66	Backseat Ring	321 Stainless Steel or Inconel 625												

Complies with NACE MR0175

Other materials also available on request

STL : Stellite 6 faced
 SWG : Spiral Wound Graphite
 DUPLEX : Duplex Stainless Steel
 Cr Plated : Chrome Plated

FORGED STEEL CRYOGENIC VALVES
GATE – API 602 / ASME B16.34

No.	ASTM Designation Parts	A182	
		F304/L	F316/L
1	Body	F304/L	F316/L
2	Seat Ring	A276-316+STL	
3	Wedge	A351-CF8M+STL	
4	Stem	A276-316	
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	F304/L	F316/L
7	Bonnet Bolt	A193-B8A	
8	Gland Packing	Graphoil	
10	Gland	316 Stainless Steel	
11	Gland Flange	A182-F304	
12	Gland Nut	A194-8	
13	Gland Bolt	A193-B8	
14	Yoke Sleeve	A582-416	
15	Handwheel	A47	
16	Name Plate	304 Stainless Steel	
17	Handwheel Nut	A563A	
18	Packing Ring	A276-316	
20	Yoke	A182-F304	

Complies with NACE MR0175

STL : Stellite 6 faced

SWG : Spiral Wound Graphite

A182-F304/L : Dual Certificate Material for A182-F304 & A182-F304L

A182-F316/L : Dual Certificate Material for A182-F316 & A182-F316L

GLOBE – ASME B16.34 / BS 5352

No.	ASTM Designation Parts	A182	
		F304/L	F316/L
1	Body	F304/L	F316/L
2	Seat	Integral Hardfaced Stellite 6	
3	Disc	A351-CF8M+STL	
4	Stem	A276-316	
5	Gasket	316 Spiral Wound Graphite	
6	Bonnet	F304/L	F316/L
7	Bonnet Bolt	A193-B8A	
8	Gland Packing	Graphoil	
10	Gland	316 Stainless Steel	
11	Gland Flange	A182-F304	
12	Gland Nut	A194-8	
13	Gland Bolt	A193-B8	
14	Yoke Brush	A582-416	
15	Handwheel	A47	
16	Name Plate	304 Stainless Steel	
17	Handwheel Nut	A194-2H	
18	Packing Ring	A276-316	
20	Yoke	A182-F304	

· Other materials also available on request

CAST STEEL CRYOGENIC VALVES

GATE - ASME B 16.34

No.	ASTM Designation Parts	A351			
		CF8	CF3	CF8M	CF3M
1	Body	CF8	CF3	CF8M	CF3M
2	Bonnet	CF8	CF3	CF8M	CF3M
3	Wedge	CF8+STL		CF8M+STL	
5	Seat Ring	304SS+STL		316SS+STL	
6	Stem	A276-304		A276-316	
7	Bonnet Bolt	A193-B8M, CL2			
8	Bonnet Nut	A194-8M			
9	Bonnet Gasket	304 SWG		316 SWG	
14	Gland Packing	Graphoil			
15	Gland	A276-304		A276-316	
16	Gland Flange	304 Stainless Steel			
17	Eye Bolt	A193-B8			
18	Eye Bolt Nut	A194-8			
19	Eye Bolt Pin	A276-304			
20	Connector	CF8	CF3	CF8M	CF3M
21	Connector Bolt	A193-B8M, CL2			
22	Connector Nut	A194-8M			
24	Yoke Sleeve	A439-D2C/D2			
25	Yoke Cap	304 Stainless Steel			
26	Thrust Bearing	Commercial			
27	Grease Nipple	Cr Plated Carbon Steel			
29	Handwheel	A395			
30	Wheel Nut	A563A			
37	Name Plate	304 Stainless Steel			
66	Backseat Ring	A276-316			
67	Connector Gasket	304 SWG		316 SWG	

Complies with NACE MR0175

STL : Stellite 6 faced

SWG : Spiral Wound Graphite

Cr Plated : Chrome Plated

GLOBE - ASME B 16.34

No.	ASTM Designation Parts	A351			
		CF8	CF3	CF8M	CF3M
1	Body	CF8	CF3	CF8M	CF3M
2	Bonnet	CF8	CF3	CF8M	CF3M
3	Disc	304SS+STL		316SS+STL	
4	Disc Nut	304SS+STL		316SS+STL	
5	Seat	Integral Hardfaced Stellite 6			
6	Stem	A276-304		A276-316	
7	Bonnet Bolt	A193-B8A, CL2			
8	Bonnet Nut	A194-8M			
9	Bonnet Gasket	304 SWG		316 SWG	
14	Gland Packing	Graphoil			
15	Gland	A276-304		A276-316	
16	Gland Flange	304 Stainless Steel			
17	Eye Bolt	A193-B8			
18	Eye Bolt Nut	A194-8			
19	Eye Bolt Pin	A276-304			
20	Yoke	A351-CF8		A351-CF8M	
24	Yoke Brush	A439-D2C/D2			
29	Handwheel	A395			
30	Wheel Nut	A194-2H			
31	Set Screw	304 Stainless Steel			
33	Pounding Receiver	Carbon Steel(Hammer Blow Handwheel)			
34	Stopper	316 Stainless Steel			
37	Name Plate	304 Stainless Steel			
81	Extension Piece	304 Stainless Steel		316 Stainless Steel	

· Other materials also available on request

FORGED STEEL VALVES

Valve Type	Class	Port Size	1/2	3/4	1	1-1/4	1-1/2	2
Gate	150~800	Reduced	7	14	29	84	93	155
	1500	Reduced	13	15	29	81	100	148
	800	Full	17	33	57	154	154	288
	1500	Full	15	28	45	122	122	220
Globe	150~800	Reduced	2	3	4	8	15	30
	1500	Reduced	2	3	5	10	18	21
	800	Full	3	5	9	15	21	38
	1500	Full	3	4	7	12	18	28
Y Pattern Globe	150~800	Reduced	3	6	11	19	34	48
	1500	Reduced	3	5	10	15	29	41
	800	Full	6	12	21	35	51	90

CAST STEEL VALVES

Valve Type	Class	Port Size	2	2-1/2	3	4	6	8	10	12	14	16	18	20	24
Gate	150	Full	350	550	700	1300	3100	5700	8900	13400	16300	21500	28700	35700	52000
	300	Full	350	550	700	1300	3100	5700	8900	13400	16300	21500	27900	34800	51000
	600	Full	350	550	700	1300	3100	5700	8900	13400	15800	20800	27000	33700	49500
	900	Full	330	-	650	1200	3000	-	-	-	-	-	-	-	-
	1500	Full	330	-	600	1100	2900	-	-	-	-	-	-	-	-
Globe	150	Full	55	80	100	180	400	800	1200	1800	2400	3200	4300	-	-
	300	Full	55	80	100	180	400	800	1200	1800	2400	3200	4300	-	-
	600	Full	55	80	100	180	400	800	1200	-	-	-	-	-	-
	900	Full	50	-	90	170	350	-	-	-	-	-	-	-	-
	1500	Full	50	-	85	160	300	-	-	-	-	-	-	-	-



CODE TABLE

SAMPLE VALVE

GATE INCONEL 625 BELLOWS, CLASS 800, 316/L, 316FHF TRIM NACE, SOCKET WELD, WELDED BONNET, RED. PORT, GRAPHOIL PACKING

1	2	3	4
VALVE TYPE	CLASS	SHELL MATERIAL	TRIM MATERIAL
AA GATE	A 125	11 A105N, WCB	AB CR13
AB GLOBE	B 150	13 LF2, LC2	AC CR13
AC PISTON CHECK	C 200	14 LF3, LC3	AF 304
AD SWING CHECK	D 300	15 F5, C5	AG 304
AE BALL CHECK	E 600	16 F9, C12	AL 316
AF NEEDLE GLOBE	F 800	17 F11, WC6	AM 316
AG ANGLE GLOBE	G 900	18 F22, WC9	AN 316
AH GLOBE STOP CHECK	H 1500	19 F304, CF8	AO 316L
AJ PISTON CHECK (SPRING LOADED)	J 2500	21 F304 / F304L	AQ 317
AK BALL CHECK (SPRING LOADED)	K 4500	22 F304H	AR 317L
AL BOILER BLOWDOWN	L 1690	23 F316, CF8M	AT 321
BA GATE (321 STAINLESS BELLOWS)	M 2680	24 F316 / F316L	AU 347
BB GLOBE (321 STAINLESS BELLOWS)	Z SPECIAL	25 F316H	AW F51
BG GATE (INCONEL 625 BELLOWS)		26 F321	AY F44
BH GLOBE (INCONEL 625 BELLOWS)		27 F321H	BC MONEL
BI Y GLOBE (321 STAINLESS BELLOWS)		28 F347, CF8C	BD MONEL
BJ Y GLOBE (INCONEL 625 BELLOWS)		29 F51	BE INCOLOY
CG ANGLE GLOBE STOP CHECK		31 F53	BH HASTELLOY-B
DB Y GLOBE			BJ HASTELLOY-C
DC Y PISTON CHECK (SPRING LOADED)			BK ALLOY 20
DD Y NEEDLE GLOBE			BR ALLOY 20
DE Y BALL CHECK (SPRING LOADED)			BL TITANIUM
DF Y GLOBE STOP CHECK			BW F53
ZZ SPECIAL			BY F55
			CA ALLOY 825
			CB ALLOY 825
			CD ALLOY 625
			CH ALLOY 625
			SB CR13 (1)
			SC CR13 (1)
			SM 316 (1)
			SN 316 (1)
			SY MONEL (1)
			SZ MONEL (1)
			ZY SAME AS BODY
			ZZ SPECIAL

(1) NACE MR01-75 and MR01-03 SERVICE
(2) BASE MATERIAL SOLID OR OVERLAY AT MANUFACTURES OPTION

5	6	7	8
END CONNECTION	BONNET STYLE	BORE TYPE	GASKET AND PACKING
A SOCKET WELD (ASME)	A BOLTED BONNET	1 REDUCED	A 304 SPIRAL WOUND+GRAPHITE
B BW (SPECIFY BORE)	B WELDED BONNET	2 FULL	B 304L SPIRAL WOUND+GRAPHITE
C NIPPLE STUB ENDS	C SEAL WELDED BONNET	3 SPECIAL	C 316 SPIRAL WOUND+GRAPHITE
E BW (SPECIFY BORE) x FNPT	D PRESSURE SEAL BONNET		D 316L SPIRAL WOUND+GRAPHITE
G EXTENDED BODY MSW x FNPT	E RING JOINT BONNET		E MONEL SPIRAL WOUND+GRAPHITE
H EXTENDED BODY MSW x FSW	F		F A20 SPIRAL WOUND+GRAPHITE
J SW x NIPPLE (STUB END)	G COMPACT BOLTED BONNET BELLOWSEAL (globe only)		G 304 SPIRAL WOUND+TEFLON
K NPT x NIPPLE (STUB END)	H BONNETLESS		H 304L SPIRAL WOUND+TEFLON
L EXTENDED BODY MNPT x FNPT	J EXTENDED BOLTED BONNET		J 316 SPIRAL WOUND+TEFLON
M EXTENDED BODY MNPT x FSW	K EXTENDED WELDED BONNET		K 316L SPIRAL WOUND+TEFLON
N FNPT THREADED BOTH ENDS	L CRYOGENIC BOLTED BONNET		L MONEL SPIRAL WOUND+TEFLON
P PT	M CRYOGENIC WELDED BONNET		M A20 SPIRAL WOUND+TEFLON
Q FLAT FACE	Z SPECIAL		N ALLOY 625 SPIRAL WOUND+GRAPHITE
R RAISED FACE			P ALLOY 825 SPIRAL WOUND+GRAPHITE
S SOCKET WELD x FNPT			Q ALLOY 800 SPIRAL WOUND+GRAPHITE
T RING TYPE JOINT FACE			R ALLOY 800H SPIRAL WOUND+GRAPHITE
V SW (JIS)			S 317 SPIRAL WOUND+GRAPHITE
X SW (JIS) x PT			T 317L SPIRAL WOUND+GRAPHITE
2 IREB (BW x FNPT)			V 321 SPIRAL WOUND+GRAPHITE
3 IREB (BW x FSW)			W 321L SPIRAL WOUND+GRAPHITE
4 IREB (BW-LIP END x FNPT)			X 347 SPIRAL WOUND+GRAPHITE
5 IREB (BW-LIP END x FSW)			Y 347H SPIRAL WOUND+GRAPHITE
Z SPECIAL			Z SPECIAL



LOW TEMPERATURE & CRYOGENIC SERVICE

Gate and Globe valves have been widely used in low temperature and cryogenic applications, including LNG (Liquefied Natural Gas) plants by major users and engineering contractors worldwide. SWI valve designs are available with extended bonnets and special preparation for applications in extreme temperature service conditions.

Extended bonnets are recommended for valves which are required to be operated (cycled open & closed) for service at temperatures below -30°C (-22°F) down to -196°C (-320°F).

SWI low temperature and cryogenic valves are designed with special consideration in the following areas.

- Vapour space extended bonnet to relocate the stem seals outside of the cold zone.

- Excellent seat / sealing to minimize potential for leakage. Gate valves provided with positive cavity relief as standard. Lower operational torque for reliable and smoother operation.

- Rigid body construction to minimize effects of thermal shock.

- Fugitive emission compliance in accordance with recognized standards.

- Modular design for ease of maintenance or welded bonnet design available.

- Insulation collar / drip plate available on request.

- Inspection and acceptance test in accordance with BS6364 or per customer specific requirements.

BELLOWS DESIGN PARAMETERS & TESTING

SWI Valve Company Ltd. is committed to manufacturing product which exceeds industry standards. Our Bellows Seal Valves carry an exclusive SWI 5 year warranty against defects in material and workmanship.

We offer our Bellows Seal Valves with a variety of features unique to SWI. Our API 602 line is manufactured in Classes 150, 300, 600, 800 and 1500 with SS316 stem and wedge / disc Stellite 6 hardfaced. Our API 600 & API 623 line is available in Classes 150, 300, 600, 900 and 1500. Class 150 valves are manufactured with round bonnet permitting a fully enclosed spiral wound bonnet gasket with superior sealing capability over flat bonnet gasket.

All Bellows Seal valves are manufactured with SS321 or Inconel 625 hydroformed multi-ply bellows, welded to the stem and bonnet, creating a hermetic seal.

Extensive and continuous bellows seal testing and qualification in accordance with MSS SP-117 and API602 is performed in our Research and Development Laboratory to prove the bellows quality and cycle life. Specialist testing equipment allowing full performance cycle testing with fugitive emission control at full rated operational pressures endorses our commitment and SWI 5 year warranty.





APPLICATIONS & RELIABILITY

The use of bellows seal valves has always been considered as the safest and most reliable method / sealing technology for containment of toxic and aggressive fluids whilst providing operators and the environment the highest levels of assurance over any other sealing method.

SWI bellows seal valves have been designed to safeguard and increase the durability of a packed stem seal valve with the addition of a reliable multi-ply metallic bellows sealed stem design which hermetically seals the moving stem.

A standard packed gate or globe valve has a compression packing sealing system on the stem along with a full open shut-off metal to metal back seat between the stem and body.

The addition of a bellows seal is the primary stem seal of the bellows seal valve, but includes the secondary packing and back seat in the design.

Bellows seal valves reduce fugitive emissions of toxic, lethal, or regulated fluids/gases, minimize maintenance, reduce life cycle costs, and optimize productivity in process plants. This includes steam, cryogenic, and vacuum systems. Optionally, in order to monitor the bellows and packing performance, the valve can be manufactured with a leak detection port in the Bonnet in order to access the cavity between the bellows and the packing. The detection port may be used for leak testing purposes, as well as in line leak detection monitoring.

SOUR SERVICE

Valves are available conforming to the requirements of the NACE specification MR 01-75 / ISO 15156 / MR 01-03 for use on applications where the presence of wet H₂S generates a risk of stress corrosion cracking. NACE compliance certificates are available on request.



QUALITY

SWI Valves operate under a Quality Assurance system which is approved by Bureau Veritas to ISO 9001:2008 / KS Q ISO 9001: 2009 / KEPIC-MN and API Q1. The company is licensed to use the API Monogram in respect of API 6D valves and our facilities are always open to customer audits.

SWI valves have been independently accredited for Design and Fire Safety. In addition, manufacture and materials comply with the essential safety requirements of the Pressure Equipment Directive 97/23/EC (PED).





Products Manufactured by SWI Include :

- Ball Valves, Soft & Metal Seated
- Forged Steel Gate, Globe & Check Valves
- Cast & Forged Bellows Seal Gate and Globe Valves
- Cryogenic Valves down to minus 196 °C
- High Alloy Valves
- Top Entry Valves
- Fully Automated Valves, Pneumatic, Electric, Hydraulic & Gas Over Oil Systems

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