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# ASME, ANSI клапаны KSB. Техническое описание

Globe Valve

## ECOLINE GLB 800

Class 150-600, Class 800  
NPS ½"-2"  
Forged Steel/Stainless Steel  
Bellows  
Flanged/Socket Weld Ends  
or Threaded Ends

## Type Series Booklet



## Globe Valves

### Bellows-type Globe Valves to ANSI/ASME

## ECOLINE GLB 800



#### Main applications

- Petrochemical industry
- Process engineering
- General industry
- Food and beverage industry
- Sugar industry

#### Fluids handled

- Steam
- Explosive fluids
- Combustible fluids
- Liquids containing gas or vapour
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Valuable fluids
- Volatile fluids
- Fluids containing mineral oils
- Oil
- Feed water
- Thermal oil
- Other fluids on request.

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 800
Nominal size	NPS ½" - 2"
Max. permissible pressure	136 bar
Max. permissible temperature	425 °C

Selection as per pressure/temperature ratings (⇒ Page 4)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 105	Up to 425 °C
ASTM A 182 F304	Up to 425 °C
ASTM A 182 F316	Up to 425 °C

Other materials on request.

#### Design details

##### Design

- Valve design to ASME B16.34, API 602 and MSS SP-117
- Bolted bonnet
- Outside screw
- Outside yoke
- Reduced/full bore
- Tapered valve disc
- Integrated seat ring
- Metal-seated
- Rising stem
- Graphite gland packing
- Stainless steel/graphite gaskets
- Travel stop
- Guided valve disc
- Stem sealed by double-walled bellows and back-up gland packing
- Positive anti-rotation feature between stem and bellows
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 94/9/EC.

#### Variants

- Throttling plug
- Needle valve disc
- Full bore
- PTFE gasket (up to 200 °C)
- PTFE gland packing (up to 200 °C)
- Locking device
- Position switch(es)
- Position indicator
- Seal-welded body/bonnet joint

- Stellited seat/disc interface
- Version with free stem end and top flange to ISO 5210
- Y-pattern
- Body extension with nipple
- NACE standard
- TA-Luft-compliant model (with or without spring loading) for applications to VDI 2440 at temperatures up to 250 °C and above 250 °C (400 °C max.)
- Electric actuators
- Other flanged end designs or butt weld ends to ASME B16.25

**Product benefits**

- Leak-free stem seal
  - Primary sealing to atmosphere is provided by a multi-walled metal bellows welded to the stem and a graphite gasket between body and bonnet.
  - Secondary sealing of the stem passage to atmosphere is provided by a minimum of five graphite packing rings plus lower gland section for added safety.
  - In the event of a ruptured bellows, fluid leakage along the stem passage is temporarily contained by the integral back seat.
- Longer service lives of valve and bellows
  - Specially designed multi-ply stainless steel bellows offers excellent corrosion resistance and flexibility; designed to withstand 1.5 times the nominal valve pressure.
  - Thanks to its position well outside the flow path, the bellows is not exposed to abrupt changes in fluid pressure which could result in lateral deformation and subsequent failure.
  - The valve disc is accurately guided along the inner body wall, resulting in a straight movement of the stem and bellows without seizing or jamming.
  - The guide pin on the stem moves in a groove in the bonnet, ensuring straight, non-rotating movement of the stem and bellows and preventing circumferential deformation at the bellows.
  - Stellite hard-facing applied to the seating surfaces of the seat rings and the valve disc prevents the valve disc from seizing on the seat rings and reduces wear. A minimum hard-faced layer of 1.6 mm is retained after machining.
- Reliable leakage protection of body
  - Integrally forged extension; no further potential leakage points (compared to welded design).
  - Valve body with integrally forged flanged ends withstands higher pressures than body with welded flanges.
  - Gaskets are fitted above and below the end fitting of the bellows assembly and firmly compressed by a set of bolts. The lower gasket is confined by the body shoulder and the end fitting of the bellows to prevent excessive compression.

- Ease of service without additional costs
  - No costs for daily or frequent maintenance work during valve duty thanks to reliable bellows seal between the stem and the body.
  - If required, a leakage monitoring hole can be provided in the gland packing area.
  - The bolted bonnet and the design of the stem and bellows assembly enable straightforward dismantling in the event that defective internal components need to be replaced.
  - Damage on valve disc and seat rings can easily be remedied due to the "T"-shaped connection between valve disc and stem.
- Operating reliability
  - Standard travel stop prevents excessive valve travel which could destroy the bellows or reduce the expected service life of the bellows.
  - Anti-blow out stem design prevents stem from being blown out of the valve body under high internal valve pressure.
- Suitable for various installation positions
  - Design with valve disc accurately guided in the body enables special installation positions (in vertical pipes or with inclined but upward stem position). No chattering or jamming of valve disc during valve travel.
- Available for all kinds of fluids
  - Several material variants available for body and bellows to suit a variety of fluids and applications.

**Related documents**

- Gate valve, type ECOLINE GTB 800, see type series booklet 7372.1
- Operating manual 7368.8

**On all enquiries/orders please specify**

1. Type
2. Class
3. Nominal size
4. Design pressure/temperature
5. Operating pressure
6. Operating temperature
7. Differential pressure
8. Material
9. Fluid handled
10. Flow rate
11. Pipe connection
12. Pipe schedule
13. Variants
14. Number of type series booklet

**Pressure/temperature ratings**

Permissible operating pressures in bar at temperatures in °C (to API 602 and ASME B16.34)

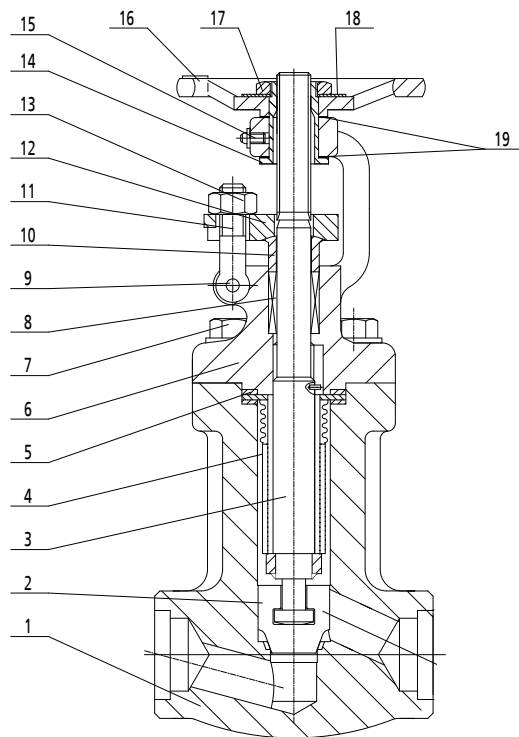
Class	Material	0 to 38	93	149	204	260	316	343	371	399	427
150	A 105	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9
800		136,0	124,8	120,5	116,4	110,9	104,5	101,1	97,4	93,2	75,7
150	A 182 F304	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8
800		132,4	110,3	98,9	91,4	85,5	81,2	79,4	77,6	76,0	74,5
150	A 182 F316	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3
800		132,4	114,0	102,9	94,3	87,9	82,9	81,2	80,0	78,5	77,6

Test pressures

Test	Test medium	Class 150		Class 300		Class 600		Class 800	
		bar	psi	bar	psi	bar	psi	bar	psi
Shell	Water	31,0	450	77,6	1125	153,4	2225	205,1	2975
Leak test (seat)		22,4	325	56,9	825	113,8	1650	149,8	2173
Leak test (seat)	Air	5,5	80	5,5	80	5,5	80	5,5	80

Materials



Overview of available materials

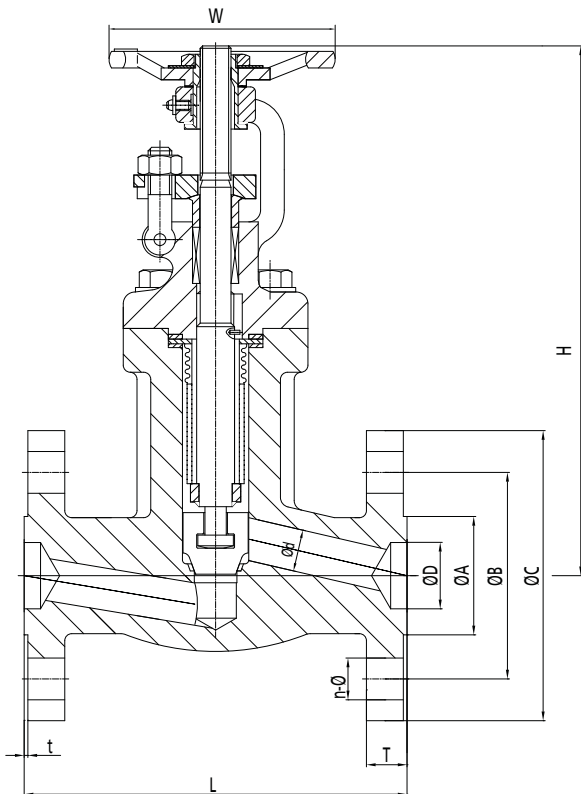
Part No.	Description	Material		
		Trim 8	Trim 2	Trim 10
1	Body	A 105	A 182 F304	A 182 F316
2	Valve disc	A 276 410 + STL6	A 276 304	A 276 316
3	Stem	A 182 F6a	A 182 F304	A 182 F316
4 <sup>1)</sup>	Bellows	SS304	SS316L	SS316L
5	Bonnet gasket	SS316 + graphite	SS316 + graphite	316 + graphite
6	Bonnet	A 105	A 182 F304	A 182 F316
7	Bolt	A 193 B7	A 193 B8	A 193 B8M
8	Gland packing	Graphite	Graphite	Graphite

1) Other bellows materials on request.

Part No.	Description	Material		
		Trim 8	Trim 2	Trim 10
9	Pin	A 276 410	A 276 304	A 276 316
10	Lower gland section	A 276 420	A 276 304	A 276 316
11	Eyebolt	A 193 B7	A 193 B8	A 193 B8
12	Gland follower	A 105	A 182 F304	A 182 F316
13	Nut	A 194 2H	A 194 8	A 194 8
14	Stem nut	A 276 410	A 276 410	A 276 410
15	Lubricating nipple	Brass	Brass	Brass
16	Handwheel	A 197	A 197	A 197
17	Nut	A 194 2H	A 194 8	A 194 8
18	Name plate	SS304	SS304	SS304
19	Washer	A 276 410	A 276 410	A 276 410

**Dimensions**

**Dimensions Class 150 to 600**



Dimensions in mm

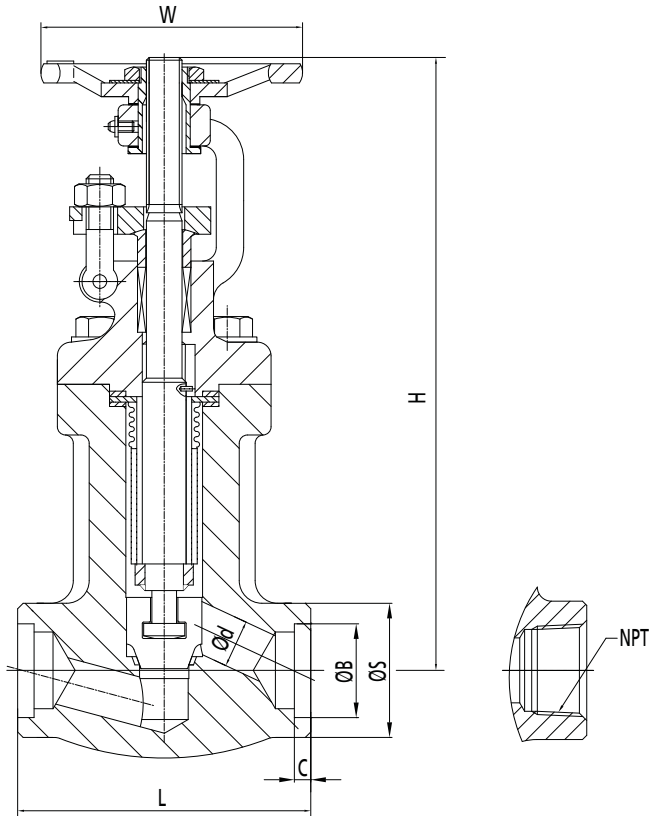
Class	NPS	L	T	t	n-Ø	Ød	ØD	ØA	ØB	ØC	H <sup>2)</sup>	W	[kg]
150	½"	108	9,6	1,6	4-16	10	15	34,9	60,3	90	212	100	4,5
	¾"	117	10,5	1,6	4-16	13	20	42,9	69,9	100	212	100	6,9
	1"	127	11,2	1,6	4-16	17,5	25	50,8	79,4	110	238	125	9,8
	1 ¼"	140	12,8	1,6	4-16	23	32	63,5	89,9	115	306	160	13,5
	1 ½"	165	14,3	1,6	4-16	28,5	40	73,0	98,4	125	306	160	19,5
	2"	203	15,9	1,6	4-19	35	50	92,1	120,7	150	336	180	29,0
300	½"	152	14,3	1,6	4-16	10	15	34,9	66,7	95	212	100	4,8
	¾"	178	15,9	1,6	4-19	13	20	42,9	82,6	115	212	100	7,7
	1"	203	17,5	1,6	4-19	17,5	25	50,8	88,9	125	238	125	11,0
	1 ¼"	216	19,1	1,6	4-19	23	32	63,5	98,4	135	306	160	16,8
	1 ½"	229	20,7	1,6	4-22	28,5	40	73,0	114,3	155	306	160	21,2
	2"	267	22,3	1,6	8-19	35	50	92,1	127,0	165	336	180	32,6
600	½"	165	20,7	6,4	4-16	10	15	34,9	66,7	95	212	100	5,6
	¾"	190	22,3	6,4	4-19	13	20	42,9	82,6	115	212	100	7,6
	1"	216	23,9	6,4	4-19	17,5	25	50,8	88,9	125	238	125	12,5
	1 ¼"	229	27,1	6,4	4-19	23	32	63,5	98,4	135	306	160	17,0
	1 ½"	241	28,7	6,4	4-22	28,5	40	73,0	114,3	155	306	160	23,5
	2"	292	31,8	6,4	8-19	35	50	92,1	127,0	165	336	180	38,8

**Mating dimensions - Standards**

Face-to-face ASME B16.5  
lengths:  
Flanges: ASME B16.5

<sup>2)</sup> Open

**Dimensions Class 800**



Dimensions in mm

Class	NPS	L	Ød	ØB	C	S	NPT	H <sup>3)</sup>	W	[kg]
800	1/2"	79	10	21,8	10	34	1/2"	212	100	3,0
	3/4"	92	13	27,2	13	40	3/4"	212	100	4,8
	1"	111	18	33,9	13	49	1"	238	125	7,9
	1 1/4"	152	23	42,7	13	58	1 1/4"	306	160	11,0
	1 1/2"	152	29	48,8	13	64	1 1/2"	306	160	16,8
	2"	172	36	61,2	16	78	2"	336	180	25,2

**Mating dimensions - Standards**

Face-to-face lengths: see table  
 Threaded ends: ASME B1.20.1  
 Socket weld ends: ASME B16.11

**Notes on installation**

The valve bodies are marked with an arrow indicating the flow direction.

Globe valves should always be installed in such a way that the actual flow direction of the fluid matches the arrow on the body, unless otherwise requested by the customer.

<sup>3)</sup> Open



Globe Valve

## ECOLINE GLV 150-300

Class 150-300  
NPS ½"-12"

### Type Series Booklet



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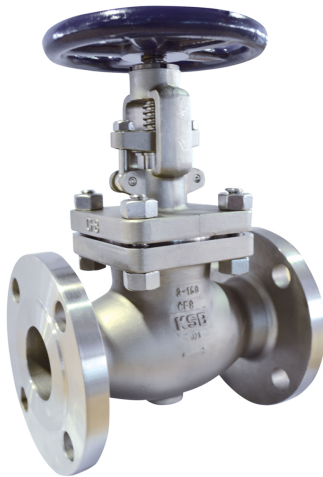
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## Globe Valves

### Globe Valves with Gland Packing to ANSI/ASME

## ECOLINE GLV 150-300



#### Main applications

- Chemical industry
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering

#### Fluids handled

- Steam
- Gas
- Fluids containing gas
- Hot water
- Fluids containing mineral oils
- Oil
- Feed water

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 300
Nominal size	NPS ½" - 12"
Max. permissible pressure	50 bar / 720 PSI
Min. permissible temperature	-29 °C / °F
Max. permissible temperature	+816 °C / +1500 °F

Temperatures < 0 °C on request

Selection as per pressure/temperature ratings (⇒ Page 6)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 351 CF8	Up to 816 °C / 1500 °F
ASTM A 351 CF8M	Up to 816 °C / 1500 °F

Other materials on request.

#### Design details

##### Design

- Globe valve to ASME B16.34
- Tested to API 598
- Compact design to API 603
- Valve made of corrosion-resistant materials
- Body made of stainless steel
- Bolted bonnet
- Outside screw
- Rotating stem
- Stem with burnished shank
- Stem nut made of nickel steel
- Rising handwheel
- Outside yoke
- Yoke head suitable for mounting electric and pneumatic actuators (DIN ISO 5210)
- Fully confined bonnet gasket
- Stem sealed by gland packing
- Two-piece self-aligning gland follower
- Die-moulded graphite gland packing, packing end rings made of braided graphite
- Stainless steel/graphite gaskets
- Back seat
- Integrated seat ring
- Minimum wall thickness as per ASME B16.34
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

#### Variants

- Hard-faced back seat
- Hard-faced sealing surface (single or double)
- PTFE packing
- PTFE gasket
- Drain plug
- Locking device
- Position indicator
- Limit switches
- Grease-free version
- Version with free stem end and top flange to ISO 5210
- Gearboxes
- Electric actuators

- Non-destructive testing, e.g. radiographic testing
- NACE standard
- Other flange designs
- Larger nominal sizes and other variants on request

### Product benefits

Long gland life and high functional reliability

- Stem with shank burnished to a surface finish of 0.2 µm for reduced friction, lower actuating torque and improved sealing to atmosphere.
- Packing end rings enable higher compressive force by gland follower and prevent extrusion of middle graphite packing rings.
- Two-piece self-aligning gland follower prevents distortion on stem surface caused by improper assembly.

Reliable sealing and longer service life

- Male/female joint between body and bonnet prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.
- Potential internal and external leakage points eliminated by integral back seat and body seat.

Additional safety and blow-out protection

- Standard metal back seat prevents blow-out of stem and other internal components from the valve body and bonnet as a result of fluid pressure inside the valve body.

Versatile application

- Stem nut made of nickel steel is suitable for numerous applications, particularly fluids which must not come into contact with component materials containing copper.

Extended maintenance-free service life

- Integral seat is highly resistant to wear and easy to repair after long-term operation.

### Related documents

- Operating manual 7255.81

### Purchase order specifications

- Type
- Class
- Nominal size
- Design pressure
- Design temperature
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Variants
- Reference number

**Pressure/temperature ratings**

Permissible operating pressures [bar] (to ASME B16.34)

Class	Material	[°C]																								
		-29 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816	
150	A 351 CF8 <sup>1)</sup>	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,0 <sup>2)</sup>
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9	27,2	26,9	26,2	24,5	22,4	17,6	14,1	11,4	9,3	7,9	6,6	5,2	4,1	2,8	
150	A 351 CF8M <sup>1)</sup>	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,4 <sup>2)</sup>	1,0 <sup>2)</sup>
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0	29,0	28,6	26,5	25,2	24,8	21,0	16,2	12,8	10,0	7,9	6,6	5,2	4,1	2,8	

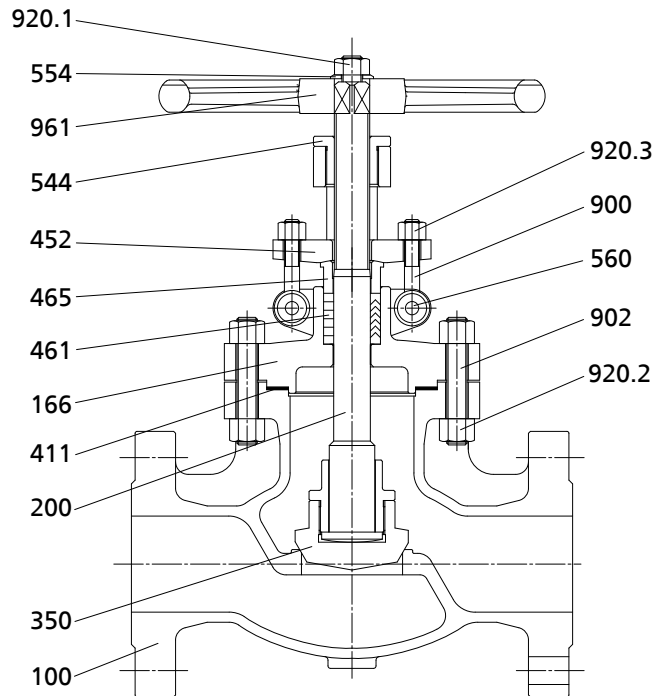
Permissible operating pressures [psi] (to ASME B16.34)

Class	Material	[°F]																								
		-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
150	A 351	275	230	205	190	170	140	125	110	95	80	65	50	35	20	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	15 <sup>2)</sup>
300	CF8 <sup>1)</sup>	720	600	540	495	465	440	430	420	415	405	395	390	380	355	325	255	205	165	135	115	95	75	60	40	
150	A 351	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	20 <sup>2)</sup>	15 <sup>2)</sup>
300	CF8M <sup>1)</sup>	720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40	

Test pressures

Test	Test medium	Class 150		Class 300	
		[bar]	[psi]	[bar]	[psi]
Shell	Water	32	450	78	1125
Leak test (seat)		23	315	56	815
Leak test (back seat)		23	315	56	815
Leak test (seat)	Air	4 to 7	60 to 100	4 to 7	60 to 100

**Materials**



ECOLINE GLV 150-300

1) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.  
 2) For butt weld end valves only. Flanged end ratings terminate at 538 °C (1000 °F).

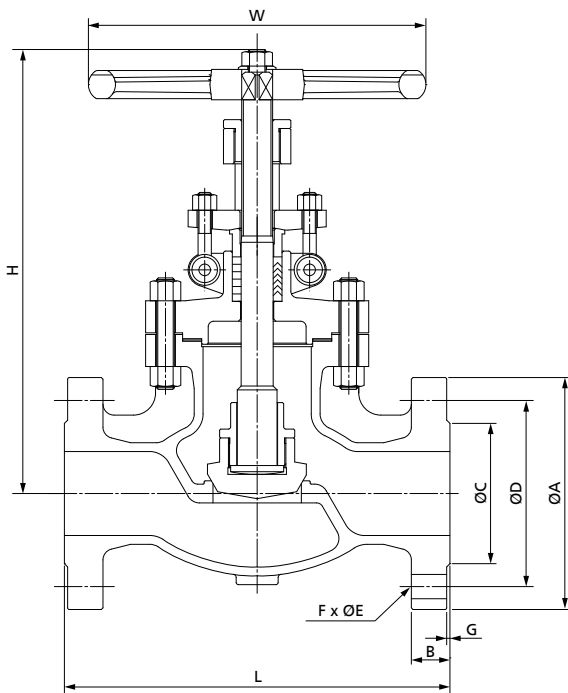
Parts list

Part No.	Description	Material	
		A 351 CF8	A 351 CF8M
100	Body	A 351 CF8	A 351 CF8M
350	Valve disc	A 276 304	A 276 304
200	Stem	A 276 304	A 276 316
411	Joint ring	Stainless steel/graphite	Stainless steel/graphite
166	Yoke	A 351 CF8	A 351 CF8M
461	Gland packing	Graphite	Graphite
465	Lower gland section	A 276 304	A 276 316
452	Gland follower	A 351 CF8	A 351 CF8
544	Threaded bush	A 439 D2	A 439 D2
961	Handwheel	A 395 65 45 15	A 395 65 45 15
554	Washer	A 276 420	A 276 420
920.1	Handwheel nut	A 194 8	A 194 8
920.2	Nut	A 194 8	A 194 8
902	Stud	A 193 B8	A 193 B8
560	Pin	A 276 304	A 276 304
900	Eyebolt	A 193 B8	A 193 B8
920.3	Nut	A 194 8	A 194 8

Trim materials

Part No.	Description	Trim 2	Trim 10
		304 / 304	316 / 316
100	Body	304 stainless steel	316 stainless steel
350	Valve disc	304 stainless steel	316 stainless steel
200	Stem	304 stainless steel	316 stainless steel

Dimensions and weights



ECOLINE GLV 150-300

Dimensions [mm]

Class	NPS	L	H <sup>3)</sup>	W	B	G	ØC	ØD	ØA	F x ØE	[kg]
150	1/2"	108	185	100	11	1,6	35	60,5	89	4 x 16	3,4
	3/4"	117	195	100	11,5	1,6	43	70	98	4 x 16	3,8
	1"	127	212	100	12	1,6	51	79,5	108	4 x 16	5
	1 1/2"	165	255	138	15	1,6	73	98,5	127	4 x 16	7,4
	2"	203	274,0	160	15,7	1,6	91,9	120,7	152	4 x 19,1	11
	2 1/2"	216	379,5	200	17,5	1,6	104,6	139,7	178	4 x 19,1	25
	3"	241	400,0	224	19,1	1,6	127,0	152,4	191	4 x 19,1	34
	4"	292	469,0	280	23,9	1,6	157,2	190,5	229	8 x 19,1	56
	6"	406	649,0	350	25,4	1,6	215,9	241,3	279	8 x 22,4	97
	8"	495	794,0	450	28,4	1,6	269,7	298,5	343	8 x 22,4	165
	10"	622	924,0	600	30,2	1,6	323,9	362,0	406	12 x 25,4	285
	12"	698	1060,5	700	31,8	1,6	381,0	431,8	483	12 x 25,4	450
300	1/2"	152	188	100	15	1,6	35	66,5	95	4 x 16	4
	3/4"	178	191	100	16	1,6	43	82,5	117	4 x 19	5
	1"	203	225	138	18	1,6	51	89	124	4 x 19	7,5
	1 1/2"	229	270	200	21	1,6	73	114,5	156	4 x 22	12,5
	2"	267	276,0	200	22,4	1,6	91,9	127,0	165	8 x 19,1	16
	2 1/2"	292	381,0	224	25,4	1,6	104,6	149,4	191	8 x 22,4	31
	3"	318	405,0	280	28,4	1,6	127,0	168,1	210	8 x 22,4	39
	4"	356	469,0	350	31,8	1,6	157,2	200,2	254	8 x 22,4	64
	6"	445	690,0	400	36,6	1,6	215,9	269,7	318	12 x 22,4	138
	8"	559	799,0	500	41,1	1,6	269,7	330,2	381	12 x 25,4	273
	10"	622	924,0	600	47,8	1,6	323,9	387,4	445	16 x 28,4	468
	12"	711	1060,5	700	50,8	1,6	381,0	450,9	521	16 x 31,8	692

3) Open

**Mating dimensions as per standard**

Face-to-face lengths: ASME B16.10  
Flanges: ASME B16.5

**Notes on installation**

The valve bodies are marked with an arrow indicating the flow direction.

Globe valves must always be installed in such a way that the actual flow direction of the fluid matches the arrow on the body, unless otherwise requested by the customer.



Globe Valve

## ECOLINE GLF 800-2500

Class 800-2500  
NPS ½"-2"  
Forged Steel  
Bolted Bonnet or  
Welded Bonnet

### Type Series Booklet



## Globe Valves

### Globe Valves with Gland Packing to ANSI/ASME

## ECOLINE GLF 800-2500



### Main applications

- Boiler feed applications
- Fossil-fuelled power stations
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering

### Fluids handled

- Steam
- Fluids containing gas
- Gas
- Hot water
- Fluids containing mineral oils
- Oil
- Feed water

### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 800 - 2500
Nominal size	NPS 1/2" - 2"
Max. permissible pressure	431 bar / 6250 PSI
Min. permissible temperature	0 °C / 32 °F
Max. permissible temperature	+538 °C / +1500 °F

Temperatures < 0 °C on request

Selection as per pressure/temperature ratings (⇒ Page 4)

### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 105	Up to 425 °C / 800 °F
ASTM A 182 F11	Up to 593 °C / 1100 °F
ASTM A 182 F22	Up to 593 °C / 1100 °F
ASTM A 182 F91	Up to 650 °C / 1200 °F
ASTM A 182 F304	Up to 816 °C / 1500 °F
ASTM A 182 F316	Up to 816 °C / 1500 °F
ASTM A 182 F304L	Up to 425 °C / 800 °F
ASTM A 182 F316L	Up to 450 °C / 850 °F

Other materials on request.

### Design details

#### Design

- Globe valve to API 602
- Tested to API 598
- Body made of forged steel
- Bolted bonnet (Class 800)
- Welded bonnet
- Outside screw
- Outside yoke
- Rotating stem
- Rising handwheel
- Stem sealed by gland packing
- Reduced bore
- Two-piece self-aligning gland follower
- Graphite gland packing
- Stem with burnished shank
- Fully confined bonnet gasket (Class 800)
- Back seat
- Solid valve disc
- Integral seat - ST6 (HF)
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

### Variants

- Full bore
- Hard-faced back seat
- Extended bonnet
- Locking device
- Position indicator
- Electric actuators
- Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for temperatures up to 400 °C
- Butt weld ends
- NACE standard
- Other threaded ends or butt weld ends to ASME B16.25
- Other trims
- Other material variants

**Product benefits**

Long gland life and high functional reliability

- Stem with shank burnished to a surface finish of 0.3 µm for reduced friction, lower actuating torque and improved sealing to atmosphere.
- Packing end rings enable higher compressive force by gland follower and prevent extrusion of middle graphite packing rings.
- Two-piece self-aligning gland follower prevents distortion on stem surface caused by improper assembly.

Reliable sealing and longer service life

- Hard-faced body seat and solid disc seat made of wear-resistant and corrosion-proof materials for handling all kinds of corrosive and erosive fluids.
- Male/female joint between body and bonnet of Class 800 model prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.
- Zero leakage due to seal-welded threaded joint between body and bonnet of Class 1500 and Class 2500 models

Additional safety and blow-out protection

- Standard metal back seat prevents blow-out of stem and other internal components from the valve body and bonnet as a result of fluid pressure inside the valve body.

Versatile application

- Stem nut made of chrome nickel steel is suitable for numerous applications, particularly fluids which must not come into contact with component materials containing copper.

Extended maintenance-free service life

- Hard-facing applied to valve disc and seat rings by deposit welding provides extra wear allowance and ensures reliable long-term shut-off even with frequent opening/closing cycles.
- Integral seating surface is highly resistant to wear and easy to repair after long-term operation.

**Related documents**

- Globe valve, type ECOLINE GLF 150-600, see type series booklet 7361.13
- Gate valve, type ECOLINE GTF 150-600, see type series booklet 7361.11
- Gate valve, type ECOLINE GTF 800-2500, see type series booklet 7361.12
- Lift check valve, type ECOLINE PTF 800-2500, see type series booklet 7361.18
- Swing check valve, type ECOLINE SCF 800-2500, see type series booklet 7361.16
- Operating manual 7361.81

**On all enquiries/orders please specify**

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Reduced or full bore
- Variants
- Number of type series booklet

**Pressure/temperature ratings**

Permissible operating pressures in bar at temperatures in °C (to ASME B16.34)

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816		
800	A 105	136,0	124,8	120,5	116,4	110,9	104,5	101,1	97,4	93,2	75,7																
1500		255,3	233,0	225,4	219,0	209,7	193,6	187,8	181,8	173,6	143,8																
2500		425,5	388,3	375,6	365,0	349,5	322,6	313,0	303,1	289,3	239,7																
800	A 182 F11 <sup>1)</sup>	137,9	137,9	132,7	127,4	122,2	111,2	108,1	104,5	97,8	93,4	89,5	82,7	58,6	39,8	26,4	17,7										
1500		258,6	257,4	248,7	239,8	231,8	206,6	201,1	194,1	183,1	175,1	169,0	158,2	128,6	74,5	44,0	30,5										
2500		430,9	429,0	414,5	399,6	386,2	344,3	335,3	323,2	304,9	291,6	281,8	263,9	214,4	124,1	73,4	50,9										
800	A 182 F22	137,9	137,9	133,9	129,6	122,2	111,2	108,1	104,5	97,8	93,4	89,5	82,7	70,7	49,1	32,2	20,2										
1500		258,6	257,6	250,8	243,4	231,8	206,6	201,1	194,1	183,1	175,1	169,0	158,2	140,9	92,2	52,6	34,4										
2500		430,9	429,4	418,2	405,4	386,2	344,3	335,3	323,2	304,9	291,6	281,8	263,9	235,0	153,7	87,7	57,4										
800	A 182 F304 <sup>2)</sup>	132,4	110,3	98,9	91,4	85,5	81,2	79,4	77,6	76,0	74,5	72,9	71,5	70,2	65,3	59,8	47,2	37,7	30,3	24,5	20,8	17,1	13,8	10,7	7,7		
1500		248,2	204,3	185,0	172,4	162,4	151,1	148,1	145,2	142,2	140,0	137,0	134,7	132,4	122,1	104,2	84,4	68,9	56,3	46,7	40,1	33,8	28,9	17,4	14,1		
2500		413,7	340,4	308,4	287,3	270,7	251,9	246,9	241,9	237,0	233,3	228,4	224,5	220,7	203,6	173,7	140,7	114,9	93,8	77,9	66,9	56,3	48,1	29,2	23,8		
800	A 182 F316 <sup>2)</sup>	132,4	114,0	102,9	94,3	87,9	82,9	81,2	80,0	78,5	77,6	76,9	76,3	71,2	66,7	66,2	56,1	43,6	34,0	27,0	21,5	17,7	13,8	10,7	7,7		
1500		248,2	211,0	192,5	178,3	166,9	154,4	151,6	149,4	147,2	145,7	144,2	143,4	140,9	125,5	119,7	99,5	79,1	63,3	51,6	41,9	34,9	29,3	17,4	14,1		
2500		413,7	351,6	320,8	297,2	278,1	257,4	252,7	249,0	245,3	242,9	240,4	238,9	235,0	208,9	199,5	165,9	131,8	105,5	86,0	69,8	58,2	48,9	29,2	23,8		
800	A 182 F304L	110,3	94,0	83,9	77,2	72,3	68,4	67,1	66,2	64,9	63,4																
1500		206,8	173,9	157,0	145,8	137,3	127,4	125,4	123,8	121,5	119,3																

1) Use normalised and tempered materials only.  
2) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816
2500		344,7	289,9	261,6	243,0	228,9	212,3	208,9	206,3	202,5	198,8														
800	A 182 F316L	110,3	94,0	83,9	77,2	72,3	68,4	67,1	66,2	64,9	63,4	62,2													
1500		206,8	173,9	157,0	145,8	137,3	127,4	125,4	123,8	121,5	119,3	117,1													
2500		344,7	289,9	261,6	243,0	228,9	212,3	208,9	206,3	202,5	198,8	195,1													
1500	A 182 F91	258,6	257,6	250,8	243,4	231,8	206,6	201,1	194,1	183,1	175,1	169,0	158,2	140,9	125,5	119,7	97,5	73,0	49,6						
2500		430,9	429,4	418,2	405,4	386,2	344,3	335,3	323,2	304,9	291,6	281,8	263,9	235,0	208,9	199,5	162,5	121,7	82,7						

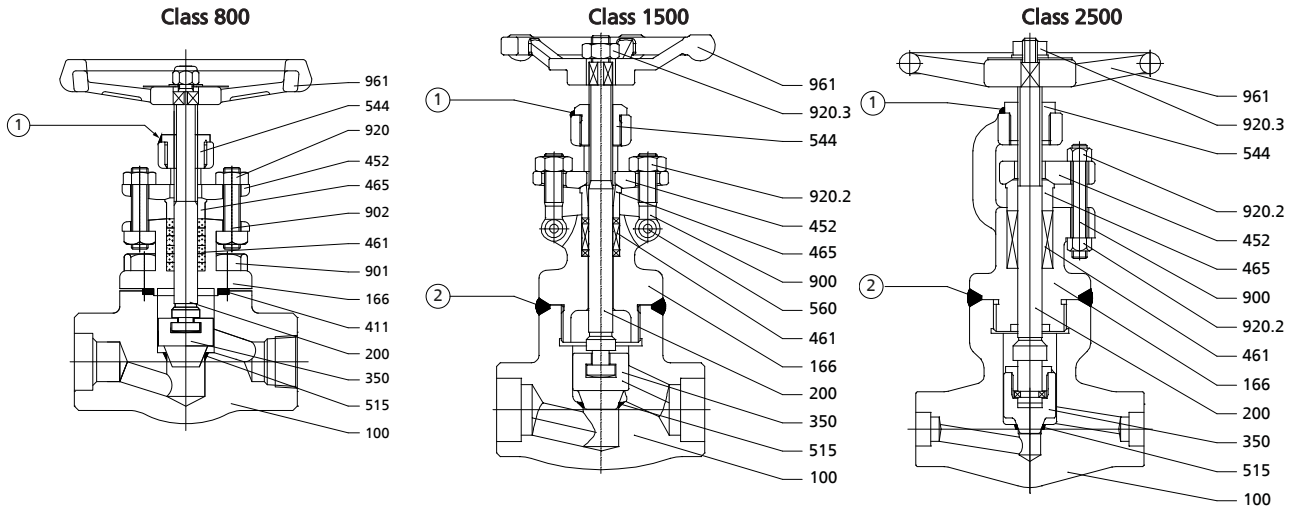
Permissible operating pressures in PSI at temperatures in °F (to ASME B16.34)

Class	Material	32 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
800	A 105	1973	1810	1747	1688	1608	1515	1467	1413	1352	1098														
1500		3705	3395	3270	3170	3015	2840	2745	2665	2535	2055														
2500		6170	5655	5450	5280	5025	4730	4575	4425	4230	3430														
800	A 182 F11 <sup>1)</sup>	2000	2000	1925	1848	1773	1613	1568	1515	1418	1355	1298	1200	850	577	383	257								
1500		3750	3750	3610	3465	3325	3025	2940	2840	2660	2540	2435	2245	1595	1080	720	480								
2500		6250	6250	6015	5775	5540	5040	4905	4730	4430	4230	4060	3745	2655	1800	1200	800								
800	A 182 F22	2000	2000	1942	1880	1773	1613	1568	1515	1418	1355	1298	1200	1025	712	467	293								
1500		3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1335	875	550								
2500		6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	2230	1455	915								
800	A 182 F304 <sup>2)</sup>	1920	1600	1435	1325	1240	1178	1152	1125	1102	1080	1057	1037	1018	947	867	685	547	440	355	302	248	200	155	112
1500		3600	3000	2690	2485	2330	2210	2160	2110	2065	2030	1980	1945	1910	1770	1630	1285	1030	825	670	565	465	380	290	205
2500		6000	5000	4480	4140	3880	3680	3600	3520	3440	3380	3300	3240	3180	2950	2715	2145	1715	1370	1115	945	770	630	485	345
800	A 182 F316 <sup>2)</sup>	1920	1653	1493	1368	1275	1203	1178	1160	1138	1125	1115	1107	1032	968	960	813	632	493	392	312	257	200	155	112
1500		3600	3095	2795	2570	2390	2255	2210	2170	2135	2110	2090	2075	1930	1820	1800	1525	1185	925	735	585	480	380	290	205
2500		6000	5160	4660	4280	3980	3760	3680	3620	3560	3520	3480	3460	3220	3030	3000	2545	1970	1545	1230	970	800	630	485	345
800	A 182 F304L	1600	1363	1217	1120	1048	992	973	960	942	920														
1500		3000	2555	2280	2100	1970	1860	1825	1800	1765	1730														
2500		5000	4260	3800	3500	3280	3100	3040	3000	2940	2880														
800	A 182 F316L	1600	1363	1217	1120	1048	992	973	960	942	920	902													
1500		3000	2555	2280	2100	1970	1860	1825	1800	1765	1730	1690													
2500		5000	4260	3800	3500	3280	3100	3040	3000	2940	2880	2820													
1500	A 182 F91	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1820	1800	1510	1115	720						
2500		6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	3030	3000	2515	1855	1200						

Test pressures

Test	Test medium	Class 800		Class 1500		Class 2500	
		[bar]	[psi]	[bar]	[psi]	[bar]	[psi]
Shell	Water	205,1	2975	396	5625	660	9375
Leak test (back seat)		149,8	2173	291	4125	484	6875
Leak test (seat)		149,8	2173	291	4125	484	6875
Optional leak test (seat)	Air	5,5	80	4 to 7	58 to 100	4 to 7	58 to 100

**Materials**



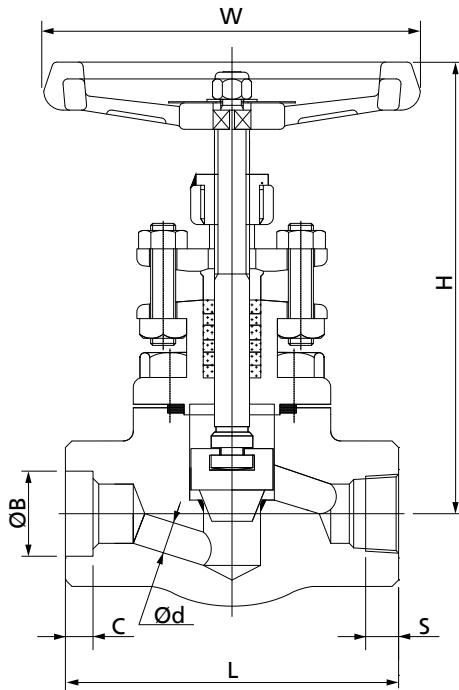
- ① Tack-welded
- ② Seal-welded

**Parts list**

Part No.	Description	Class	Material					
			A 105 Trim 8	A 182 F11 Trim 5	A 182 F22 Trim 5	A 182 F304 Trim 2	A 182 F316 Trim 10	A 182 F91 Trim 5
100	Body		A 105	A 182 F11	A 182 F22	A 182 F304	A 182 F316	A 182 F91
166	Yoke		A 105	A 182 F11	A 182 F22	A 182 F304	A 182 F316	A 182 F91
200	Stem	800	A 182 F6a	A 182 F6a	A 182 F6a	A 182 F304	A 182 F316	
		1500/2500	A 479-410-2	A 479-410-2	A 479-410-2	A 182 F304	A 182 F316	A 479-XM19
350	Valve disc	800	A 182 F6a	A 182 F6a + STL6	A 182 F6a + STL6	A 182 F304	A 182 F316	
		1500/2500	A 276-410/ A 276-410+ST6	A 276-410/ A 276-410+ST6	A 276-410/ A 276-410+ST6	A 276-304/ A 276-304+ST6	A 276-304/ A 276-304+ST6	A 276-410/ A 276-410+ST6
411	Joint ring		304 + graphite	304 + graphite	304 + graphite	304 + graphite	316 + graphite	
452	Gland follower	800	A 105	A 105	A 105	A 182 F304	A 182 F316	
		1500/2500	A 105	A 105	A 105	A 182 F304	A 182 F304	A 182 F22
465	Lower gland section	800	A 276-410	A 276-410	A 276-410	A 276-304	A 276-316	
		1500/2500	A 276-420	A 276-420	A 276-420	A 276-304	A 276-316	A 276-420
461	Gland packing		Flexible graphite	Flexible graphite	Flexible graphite	Flexible graphite	Flexible graphite	Flexible graphite
515	Seat ring	800	A 276-410 + ST6	A 276-410 + ST6	A 276-410 + ST6	A 276-304	A 276-316	
		1500/2500	A 276-410/ A 276-410+ST6	A 276-410/ A 276-410+ST6	A 276-410/ A 276-410+ST6	A 276-304/ A 276-304+ST6	A 276-304/ A 276-304+ST6	A 276-410/ A 276-410+ST6
544	Threaded bush		A 276-410	A 276-410	A 276-410	A 276-410	A 276-410	A 276-410
560	Pin	1500/2500	A 276-410	A 276-410	A 276-410	A 276-410	A 276-410	A 276-410
900	Eyebolt	1500/2500	A 193 B8	A 193 B8	A 193 B8	A 193 B8	A 193 B8	A 193 B8
901	Bolt	800	A 193 B7	A 193 B16	A 193 B16	A 193 B8	A 193 B8M	
902	Stud	800	A 193 B8	A 193 B16	A 193 B16	A 193 B8	A 193 B8	
920	Nut	800	A 194 2H	A 194 8	A 194 8	A 194 8	A 194 8M	
920.2	Nut	1500/2500	A 194 2H	A 194 2H	A 194 2H	A 194 8	A 194 8	A 194 4/7
920.3	Handwheel nut	1500/2500	A 194 2H	A 194 2H	A 194 2H	A 194 8	A 194 8	A 194 2H
961	Handwheel		A 197	A 197	A 197	A 197	A 197	A 197

**Dimensions**

**Dimensions of ECOLINE GLF 800**



Dimensions in mm

Class	NPS	L	S	C	Ød	ØB	H <sup>3)</sup>	W	[kg]
800	½"	79	13,6	10	10,0	21,8	168	100	2,25
	¾"	92	13,9	13	13,0	27,2	170	100	2,40
	1"	111	17,4	13	17,5	33,9	205	120	4,20
	1 ¼"	118	18,0	13	22,5	42,7	233	150	6,00
	1 ½"	140	18,4	13	28,6	48,8	235	150	8,13
	2"	172	19,2	16	36,5	61,2	282	180	12,14

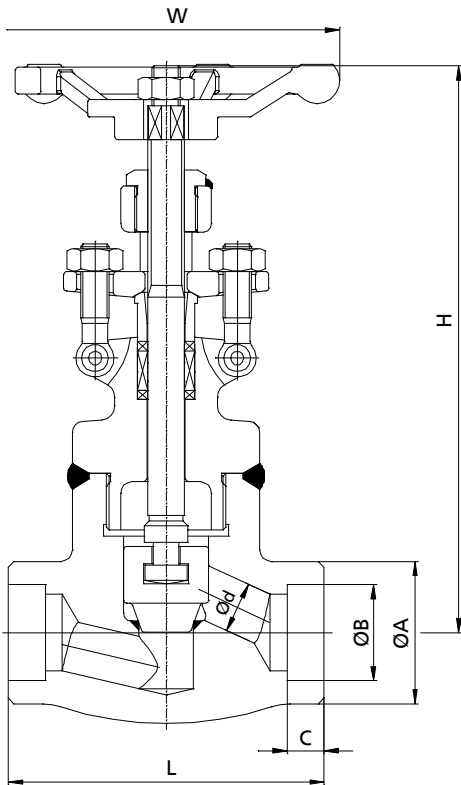
**Mating dimensions - Standards**

Face-to-face lengths: see table  
 Threaded ends: ASME B1.20.1  
 Socket weld ends: ASME B16.11

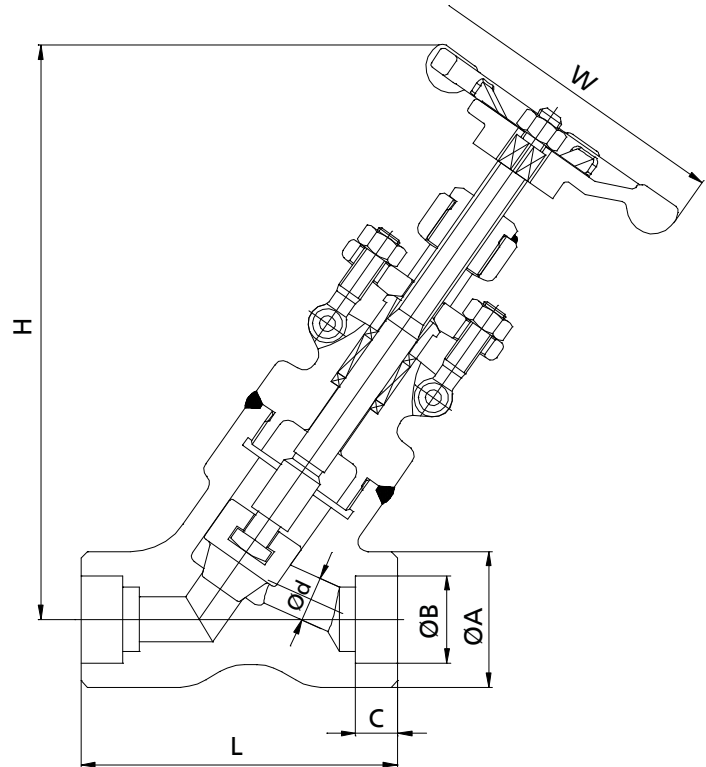
<sup>3)</sup> Open

**Dimensions of ECOLINE GLF 1500-2500**

**Straight-pattern body**



**Y-pattern body**



**Straight-pattern body**

Dimensions in mm

Class	NPS	L	Ød	C	ØB	ØA	H <sup>4)</sup>	H <sup>5)</sup>	W	[kg]
1500	½"	92	10	10	21,8	42	187	177	125	3,3
	¾"	111	13	13	27,2	49	187	177	125	3,8
	1"	120	17,5	13	33,9	58	227	211	160	6,1
	1 ¼"	152	23	13	42,7	64	242	224	160	7,8
	1 ½"	172	28,5	13	48,8	78	278	258	180	12,3
2500	2"	220	35	16	61,2	88	325	301	200	19,3
	½"	150	11	10	21,8	52	262	249	200	8,5
	¾"	150	14	13	27,2	52	262	249	200	8,7
	1"	170	19	13	33,9	64	298	282	200	12,5
	1 ¼"	200	25	13	42,7	80	347	327	300	20,7
1 ½"	200	28	13	48,8	80	347	327	300	21,0	
2"	230	35	16	61,2	95	406	381	300	36,0	

**Y-pattern body**

Dimensions in mm

Class	NPS	L	Ød	C	ØB	ØA	H <sup>6)</sup>	H <sup>7)</sup>	W	[kg]
1500	½"	120	10	10	21,8	50	192	182	125	4,0
	¾"	120	13	13	27,2	50	192	182	125	3,8
	1"	152	17,5	13	33,9	64	240	226	160	7,1
	1 ¼"	152	23	13	42,7	64	240	226	160	12,3
	1 ½"	180	28,5	13	48,8	80	273	256	180	12,1
2500	2"	200	35	16	61,2	90	316	297	200	16,7
	½"	152	11	10	21,8	64	243	234	200	9,6

- 4) Open
- 5) Closed
- 6) Open
- 7) Closed

Class	NPS	L	Ød	C	ØB	ØA	H <sup>6)</sup>	H <sup>7)</sup>	W	[kg]
	¾"	152	14	13	27,2	64	243	234	200	9,6
	1"	180	19	13	33,9	80	290	278	200	15,4
	1 ¼"	200	25	13	42,7	90	335	321	300	23,0
	1 ½"	200	28	13	48,8	90	335	321	300	22,8
	2"	200	35	16	61,2	98	390	373	300	30,8

Butt weld ends

NPS	SCH5	SCH10	SCH30	SCH40/STD	SCH80/XS	SCH160	SCHXXS
½"	Available						Not available
¾"							
1"							
1 ¼"							
1 ½"							
2"							

**Mating dimensions - Standards**

Face-to-face lengths: see table  
 Socket weld ends: ASME B16.11  
 Butt weld ends: ASME B16.25, ASME B36.10

**Notes on installation**

The valve bodies are marked with an arrow indicating the flow direction.

Globe valves should always be installed in such a way that the actual flow direction of the fluid matches the arrow on the body, unless otherwise requested by the customer.

6) Open  
 7) Closed



Strainer

## ECOLINE FYF 800

Class 800  
NPS ½"-2"  
Forged Steel  
Threaded Ends or  
Socket Weld Ends

### Type Series Booklet



## Check Valves and Strainers

### Strainers to ANSI/ASME

## ECOLINE FYF 800



### Main applications

- Boiler feed applications
- Fossil-fuelled power stations
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering

### Fluids handled

- Steam
- Fluids containing gas
- Gas
- Hot water
- Fluids containing mineral oils
- Oil
- Feed water

### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 800
Nominal size	NPS ½" - 2"
Max. permissible pressure	141 bar / 2000 PSI
Min. permissible temperature	0 °C / 32 °F
Max. permissible temperature	816 °C / 1500 °F

Temperatures < 0 °C on request

Selection as per pressure/temperature ratings (⇒ Page 4)

### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 105	Up to 427 °C / 800 °F
ASTM A 182 F304	Up to 816 °C / 1500 °F
ASTM A 182 F316	Up to 816 °C / 1500 °F

Other materials on request.

### Design details

#### Design

- Strainer to ASME B16.34
- Tested to API 598
- Y-pattern strainer
- Body made of forged steel
- Bolted cover
- Reduced bore
- Fully confined cover gasket
- Cylindrical screen made of stainless steel
- Cover equipped with screw plug
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

### Variants

- PTFE gasket
- Other mesh widths on request
- Other screen materials
- NACE standard

### Product benefits

Reliable sealing and longer service life

- Male/female joint between body and cover prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.

Cost-efficient

- Y-pattern body with hydraulically favourable flow path: higher flow rates and lower pressure losses result in energy cost savings.

Extended maintenance-free service life

- Screen fine-machined to a smooth finish, causing foreign particles to slide smoothly down to the bottom of the screen. As a result, cleaning intervals and maintenance costs are reduced.

Versatile application

- Wide range of mesh widths and materials for handling various fluid types and properties, e.g. water, oil, gas and other process fluids.

### Related documents

- Operating manual 7361.81

**On all enquiries/orders please specify**

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Variants
- Number of type series booklet

**Pressure/temperature ratings**

Permissible operating pressures in bar at temperatures in °C (to ASME B16.34)

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816
800	A 105	136,0	124,8	120,5	116,4	110,9	104,5	101,1	97,4	93,2	75,7														
800	A 182 F304 <sup>1)</sup>	132,4	110,3	98,9	91,4	85,5	81,2	79,4	77,6	76,0	74,5	72,9	71,5	70,2	65,3	59,8	47,2	37,7	30,3	24,5	20,8	17,1	13,8	10,7	7,7
800	A 182 F316 <sup>1)</sup>	132,4	114,0	102,9	94,3	87,9	82,9	81,2	80,0	78,5	77,6	76,9	76,3	71,2	66,7	66,2	56,1	43,6	34,0	27,0	21,5	17,7	13,8	10,7	7,7

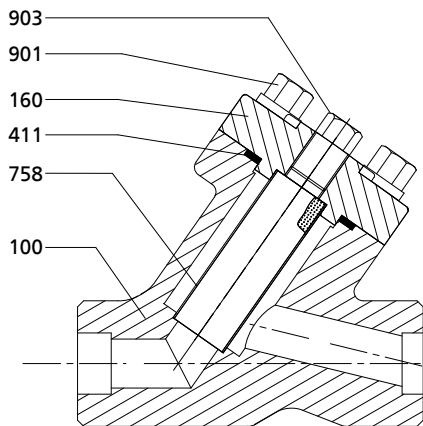
Permissible operating pressures in PSI at temperatures in °F (to ASME B16.34)

Class	Material	32 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
800	A 105	1973	1810	1747	1688	1608	1515	1467	1413	1352	1098														
800	A 182 F304 <sup>1)</sup>	1920	1600	1435	1325	1240	1178	1152	1125	1102	1080	1057	1037	1018	947	867	685	547	440	355	302	248	200	155	112
800	A 182 F316 <sup>1)</sup>	1920	1653	1493	1368	1275	1203	1178	1160	1138	1125	1115	1107	1032	968	960	813	632	493	392	312	257	200	155	112

**Test pressures**

Test	Test medium	Class 800	
		bar	psi
Shell	Water	205,1	2975

**Materials**



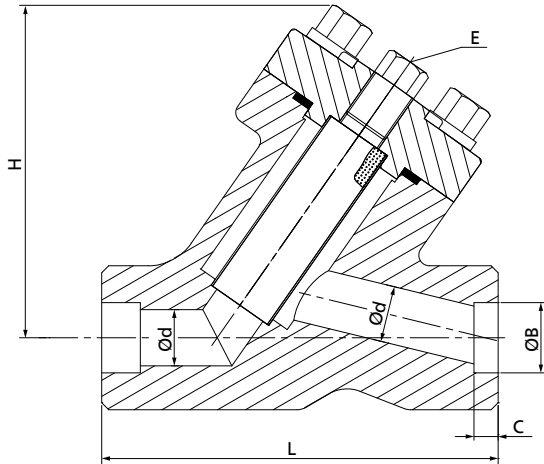
**Parts list**

Part No.	Description	Material		
		A 105 Trim 2	A 182 F304 Trim 2	A 182 F316 Trim 10
903	Drain plug	A 105N	A 182 F304	A 182 F316
160	Cover	A 105N	A 182 F304	A 182 F316

<sup>1)</sup> At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.

Part No.	Description	Material		
		A 105 Trim 2	A 182 F304 Trim 2	A 182 F316 Trim 10
411	Joint ring	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite
758	Screen	AISI 304	AISI 304	AISI 316
100	Body	A 105N	A 182 F304	A 182 F316
901	Bolt	A 193-B7	A 193-B8	A 193-B8

### Dimensions



Dimensions in mm

Class	NPS	L	C	ØB	H	E	Ød	Mesh width	[kg]
800	1/2"	94	10	21,8	92	1/4"-18NPT	10,0	0,42	1,2
	3/4"	98	13	27,2	92	1/4"-18NPT	13,0	0,42	1,4
	1"	120	13	33,9	114	1/4"-18NPT	17,5	0,42	2,5
	1 1/4"	140	13	42,7	137	1/4"-18NPT	23,0	0,42	3,7
	1 1/2"	140	13	48,8	137	1/4"-18NPT	28,5	0,42	3,9
	2"	170	16	61,2	143	1"-11,5NPT	36,5	0,42	6,6

### Mating dimensions - Standards

Face-to-face lengths: see table  
Threaded ends: ASME B1.20.1  
Socket weld ends: ASME B16.11

Y-type strainers can be installed in horizontal or vertical pipes. The fluid must always enter through the screen inlet. Flow through Y-type strainers installed in vertical pipes must always be downwards.

### Notes on installation

The valve bodies are marked with an arrow indicating the flow direction.

Gate Valve

## ECOLINE GTC 150-600

Class 150-600  
NPS 2"-36"  
Cast Steel / Stainless Steel  
Bolted Bonnet  
Flanged Ends

### Type Series Booklet



## Gate Valves

### Gate Valves with Bolted Bonnet to ANSI/ASME

## ECOLINE GTC 150-600



#### Main applications

- Boiler feed applications
- Fossil-fuelled power stations
- Petrochemical industry
- Refineries
- Process engineering

#### Fluids handled

- Steam
- Fluids containing gas
- Gas
- Hot water
- Feed water

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size	NPS 2" - 36"
Max. permissible pressure	106 bar / 1500 PSI
Min. permissible temperature	0 °C / 32 °F
Max. permissible temperature	816 °C / 1500 °F

Temperatures < 0 °C on request

Selection as per pressure/temperature ratings (⇒ Page 5)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 216 WCB	Up to 427 °C / 800 °F
ASTM A 217 WC6	Up to 593 °C / 1100 °F
ASTM A 217 WC9	Up to 593 °C / 1100 °F
ASTM A 217 C5	Up to 649 °C / 1200 °F
ASTM A 217 C12	Up to 649 °C / 1200 °F
ASTM A 352 LCB	Up to 343 °C / 650 °F
ASTM A 352 LCC	Up to 343 °C / 650 °F
ASTM A 351 CF8	Up to 816 °C / 1500 °F
ASTM A 351 CF8M	Up to 816 °C / 1500 °F

Other materials on request.

#### Design details

##### Design

- Gate valve to API 600-2009
- Tested to API 598
- Body made of cast steel or stainless steel
- Flexible wedge
- Bolted bonnet
- Non-rotating stem
- Non-rising handwheel
- Stem sealed by gland packing
- Two-piece self-aligning gland follower
- Die-moulded graphite gland packing, packing end rings made of braided graphite
- Stainless steel/graphite gaskets
- Stem with burnished shank
- Stem nut made of nickel steel
- Outside screw
- Sealing surfaces made of wear and corrosion resistant materials
- Back seat
- Hardened back seat bush
- Outside yoke
- Yoke head suitable for mounting electric and pneumatic actuators (DIN ISO 5210)
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

##### Variants

- Position switch(es)
- Locking device
- Stem protecting tube
- Stem protecting tube with position indicator
- Drain plug
- Hard-faced back seat
- Pressure relief arrangement
- Bypass

- Version with free stem end and top flange to ISO 5210
  - Gearboxes
  - Electric actuators
  - Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for temperatures up to 400 °C
  - Non-destructive testing, e.g. radiographic testing
  - Inspections to technical codes such as AD2000 or IBR
  - Gate valve to API 600-2015
  - NACE standard
  - Other flanged end designs or butt weld ends to ASME B16.25
  - Larger nominal sizes and other variants on request
- Temperature rating
  - Differential pressure
  - Fluid handled
  - Material
  - Trim material (API trim number)
  - Line connection
  - Pipe schedule (for butt weld ends)
  - Variants
  - Number of type series booklet

### Product benefits

#### Long gland life and high functional reliability

- Stem with shank burnished to a surface finish of 0.2 µm for reduced friction, lower actuating torque and improved sealing to atmosphere.
- Packing end rings enable higher compressive force by gland follower and prevent extrusion of middle graphite packing rings.
- Two-piece self-aligning gland follower prevents distortion on stem surface caused by improper assembly.

#### Reliable sealing and longer service life

- Hard-faced body seat and solid sealing surface of flexible wedge made of wear-resistant and corrosion-proof materials for handling all kinds of corrosive and erosive fluids.
- Male/female joint between body and bonnet prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance. (Exception: Class 150; flat body/bonnet interface due to square or oval flange design to comply with limited face-to-face length specified by design standard).

#### Additional safety and blow-out protection

- Standard metal back seat prevents blow-out of stem and other internal components from the valve body and bonnet as a result of fluid pressure inside the valve body.

#### Versatile application

- Stem nut made of nickel steel is suitable for numerous applications, particularly fluids which must not come into contact with component materials containing copper.

#### Extended maintenance-free service life

- Wear allowance higher than specified in relevant standard, for substantially increased service life.
- Hard-facing applied to wedge and seat rings by deposit welding provides extra wear allowance and ensures reliable long-term sealing even with frequent opening/closing cycles.

### Related documents

- Operating manual 7362.81

### On all enquiries/orders please specify

- Type
- Class
- Nominal size
- Pressure rating

**Pressure/temperature ratings**

Permissible operating pressures in bar at temperatures in °C (to ASME B16.34)

Class	Material	-29 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816	
150	A 216 WCB <sup>1)</sup>	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4											
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3	22,1	15,9	9,3	5,9											
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9	44,1	31,7	19,0	11,7											
150	A 217 WC6 <sup>2)</sup>	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>									
300		51,7	51,7	49,6	47,9	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	22,1	14,8	10,0	6,6									
600		103,4	103,4	99,6	95,5	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	44,1	29,6	20,0	13,1									
150	A 217 WC9	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>									
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	26,5	18,3	12,1	7,6									
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	52,1	36,9	24,1	15,2									
150	A 217 C5	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,0 <sup>3)</sup>							
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	25,9	19,0	13,8	10,0	6,9	4,1	2,4							
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	51,4	37,9	27,6	20,0	13,8	8,6	4,8							
150	A 217 C12	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>							
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	25,9	17,6	11,7	7,9	5,2	3,4							
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	52,1	34,8	23,8	15,5	10,3	7,2							
150	A 352 LCB <sup>4)</sup>	18,3	17,6	15,9	13,8	11,7	9,7	8,6																		
300		47,9	45,5	44,1	42,4	40,3	37,9	36,9																		
600		96,2	91,0	87,9	84,8	81,0	76,2	73,4																		
150	A 352 LCC	20,0	17,9	15,9	13,8	11,7	9,7	8,6																		
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7																		
600		103,4	103,4	100,3	96,6	91,7	83,4	81,0																		
150	A 351 CF8 <sup>5)</sup>	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,0 <sup>3)</sup>	
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9	27,2	26,9	26,2	24,5	22,4	17,6	14,1	11,4	9,3	7,9	6,6	5,2	4,1	2,8	
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8	54,5	53,8	52,7	49,0	44,8	35,5	28,3	22,8	18,3	15,5	12,8	10,3	7,9	5,9	
150	A 351 CF8M <sup>5)</sup>	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,0 <sup>3)</sup>	
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0	29,0	28,6	26,5	25,2	24,8	21,0	16,2	12,8	10,0	7,9	6,6	5,2	4,1	2,8	
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3	57,6	57,2	53,4	50,0	49,6	42,1	32,8	25,5	20,3	16,2	13,1	10,3	7,9	5,9	

Permissible operating pressures in PSI at temperatures in °F (to ASME B16.34)

Class	Material	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
150	A 216 WCB <sup>1)</sup>	285	260	230	200	170	140	125	110	95	80	65	50	35	20											
300		740	680	655	635	605	570	550	530	505	410	320	230	135	85											
600		1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170											
150	A 217 WC6 <sup>2)</sup>	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>									
300		750	750	720	695	665	605	590	570	530	510	485	450	320	215	145	95									
600		1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	430	290	190									
150	A 217 WC9	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>									
300		750	750	730	705	665	605	590	570	530	510	485	450	385	265	175	110									
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	535	350	220									
150	A 217 C5	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	15 <sup>3)</sup>							
300		750	750	730	705	665	605	590	570	530	510	485	375	275	200	145	100	60	35							
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	745	550	400	290	200	125	70							
150	A 217 C12	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>							
300		750	750	730	705	665	605	590	570	530	510	485	450	375	255	170	115	75	50							
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	505	345	225	150	105							
150	A 352 LCB <sup>4)</sup>	265	255	230	200	170	140	125																		
300		695	660	640	615	585	550	535																		

1) Permissible but not recommended for prolonged use above 427 °C (800 °F).  
2) Cannot be used for temperatures above 593 °C (1100 °F).  
3) For butt weld end valves only. Flanged end ratings terminate at 538 °C (1000 °F).  
4) Cannot be used for temperatures above 343 °C (650 °F).  
5) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.

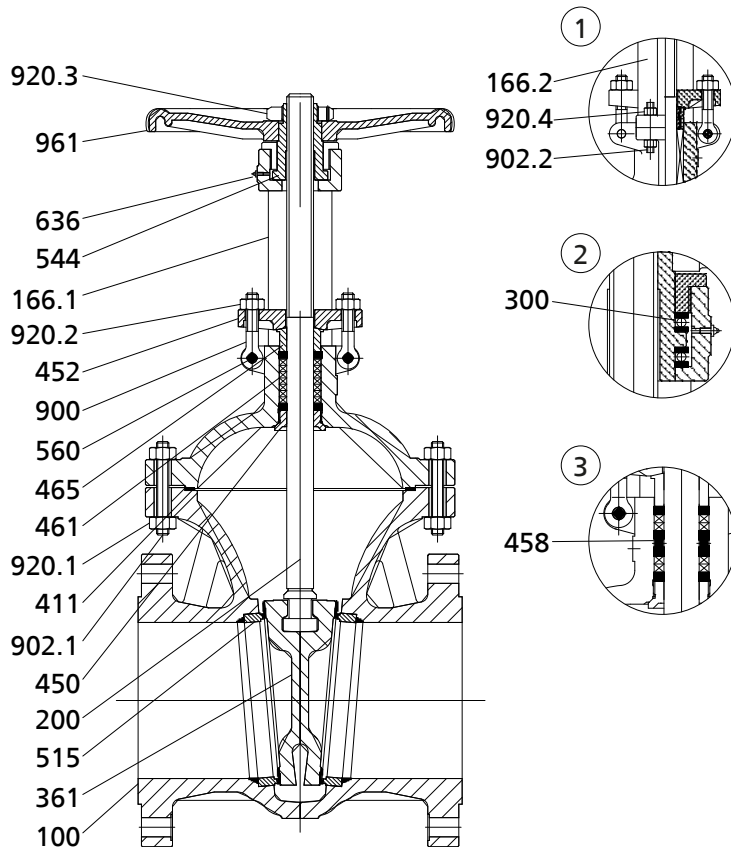


Class	Material	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500		
600		1395	1320	1275	1230	1175	1105	1065																			
150	A 352 LCC	290	260	230	200	170	140	125																			
300		750	750	730	705	665	605	590																			
600		1500	1500	1455	1405	1330	1210	1175																			
150		A 351 CF8	275	230	205	190	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	15 <sup>3)</sup>
300	<sup>5)</sup>	720	600	540	495	465	440	430	420	415	405	395	390	380	355	325	255	205	165	135	115	95	75	60	40		
600		1440	1200	1075	995	930	885	865	845	825	810	790	780	765	710	650	515	410	330	265	225	185	150	115	85		
150	A 351 CF8M <sup>5)</sup>	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	15 <sup>3)</sup>	
300		720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40		
600		1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720	610	475	370	295	235	190	150	115	85		

Test pressures

Test	Test medium	Class 150		Class 300		Class 600	
		bar	psi	bar	psi	bar	psi
Shell	Water	32	450	78	1125	153	2225
Leak test (back seat)		23	315	56	815	112	1630
Leak test (seat)	Air	4-7	60-100	4-7	60-100	4-7	60-100

**Materials**



- ① Yoke (14"-36" Class 150, 14"-36" Class 300)
- ② Bearing (6"-36" Class 600)
- ③ Lantern ring (optional)

**Parts list**

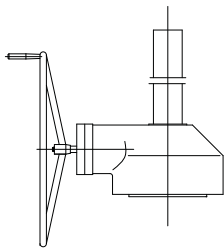
Part No.	Description	Material									
		A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M	
100	Body	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M	
166.1	Yoke	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M	
166.2	Yoke	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M	
361	Flexible wedge	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M	
515	Seat ring	A 105	A 182 F11	A 182 F22	A 182 F5	A 182 F9	A 182 LF2	A 350 LF2	A 182 F304	A 182 F316	
200	Stem	See "Trim materials" table									
450	Back seat bush	See "Trim materials" table									
465	Lower gland section	13Cr	13Cr	13Cr	13Cr	13Cr	304	304	304	304	
452	Gland follower	A 216 WCB	A 216 WCB	A 216 WCB	A 351 CF8	A 351 CF8	A 351 CF8	A 351 CF8	A 351 CF8	A 351 CF8	
544	Threaded bush	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	A 439 D-2	
902.1	Stud	A 193 B7	A 193 B16	A 193 B16	A 193 B16	A 193 B16	A 320 L7	A 320 L7	A 193 B8	A 193 B8	
920.1	Nut	A 194 2H	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 8	A 194 Gr. 8	
461	Gland packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	
411	Joint ring	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	
900	Eyebolt	A 307 B	A 193 B16	A 193 B16	A 193 B16	A 193 B16	A 320 L7	A 320 L7	A 193 B8	A 193 B8	
920.2	Nut	A 194 2H	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 8	A 194 Gr. 8	
560	Pin	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel	
961	Handwheel	Nodular cast iron or malleable cast iron									
920.3	Handwheel nut	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel	
300	Bearing	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	
458	Lantern ring	13Cr	13Cr	13Cr	13Cr	13Cr	304	304	304	316	

Part No.	Description	Material								
		A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
636	Lubricating nipple	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Stainless steel	Stainless steel
902.2	Stud	A 193 B7	A 193 B16	A 193 B16	A 193 B16	A 193 B16	A 320 L7	A 320 L7	A 193 B8	A 193 B8
920.4	Nut	A 194 2H	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 8	A 194 Gr. 8

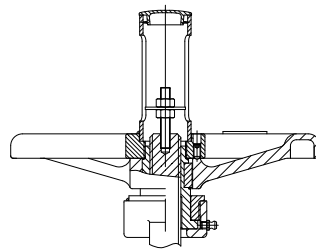
Trim materials

Part No.	Description	Trim 1	Trim 2	Trim 5	Trim 8	Trim 10
		13% chrome steel (Cr) / 13% chrome steel (Cr)	304 / 304	Stellite / Stellite	Stellite / 13% chrome steel (Cr)	316 / 316
361	Flexible wedge	13% chrome steel (Cr)	304 stainless steel	Stellite	13% chrome steel (Cr)	316 stainless steel
515	Seat ring	13% chrome steel (Cr)	304 stainless steel	Stellite	Stellite	316 stainless steel
200	Stem	13% chrome steel (Cr)	304 stainless steel	13% chrome steel (Cr)	13% chrome steel (Cr)	316 stainless steel
450	Back seat bush	13% chrome steel (Cr)	304 stainless steel	13% chrome steel (Cr)	13% chrome steel (Cr)	316 stainless steel

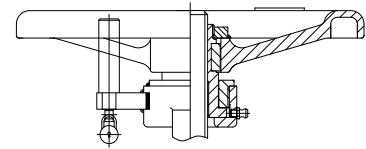
Variants



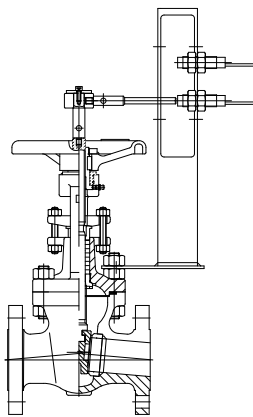
Gearbox



Position indicator

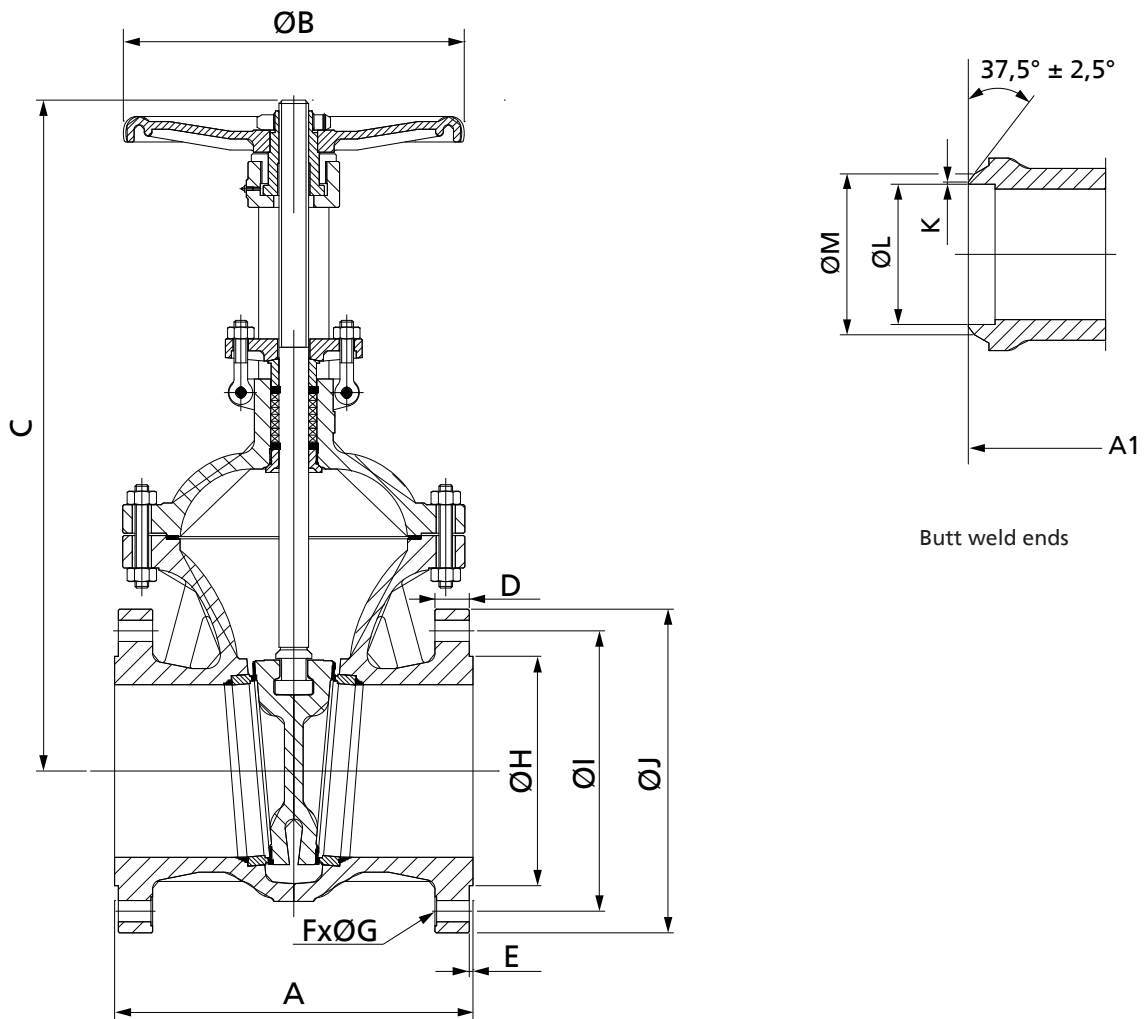


Locking device



Position switches

**Dimensions**



Dimensions in mm

Class	NPS	A	C <sup>6)</sup>	ØB	D	E	ØH	ØI	ØJ	F	ØG	A1	[kg]
150	2"	178	372	200	14,3	2	92,1	120,7	150	4	19,1	216	15
	2 ½"	190	439	200	15,9	2	104,8	139,7	180	4	19,1	241	23
	3"	203	433	250	17,5	2	127,0	152,4	190	4	19,1	282	25
	4"	229	510	250	22,3	2	157,2	190,5	230	8	19,1	305	40
	6"	267	730	350	23,9	2	215,9	241,3	280	8	22,4	403	70
	8"	292	933	350	27,0	2	269,9	298,5	345	8	22,4	419	125
	10"	330	1158	450	28,6	2	323,8	362,0	405	12	25,4	457	200
	12"	356	1395	500	30,2	2	381,0	431,8	485	12	25,4	502	280
	14"	381	1657	500	33,4	2	412,8	476,3	535	12	28,4	572	430
	16"	406	1908	610	35,0	2	469,9	539,8	595	16	28,4	610	585
	18"	432	2051	700	38,1	2	533,4	577,9	635	16	31,8	660	710
	20"	457	2260	800	41,3	2	584,2	635,0	700	20	31,8	711	860
24"	508	2669	800	46,1	2	692,2	749,3	815	20	35,1	813	1260	
30"	610	3606	610	74,7	2	857,3	914,4	984	28	35,1	914	2380	
36"	711	3924	610	90,4	2	1022,0	1086,0	1168	32	41,1	1016	3600	
300	2"	216	394	200	20,7	2	92,1	127,0	165	8	19,1	216	28
	2 ½"	241	505	250	23,9	2	104,8	149,2	190	8	22,4	241	45

<sup>6)</sup> Open

Class	NPS	A	C <sup>6)</sup>	ØB	D	E	ØH	ØI	ØJ	F	ØG	A1	[kg]
	3"	282	496	250	27,0	2	127,0	168,3	210	8	22,4	282	45
	4"	305	618	250	30,2	2	157,2	200,0	255	8	22,4	305	65
	6"	403	831	350	35,0	2	215,9	269,9	320	12	22,4	403	135
	8"	419	1022	450	39,7	2	269,9	330,2	380	12	25,4	419	220
	10"	457	1237	500	46,1	2	323,8	387,4	445	16	28,4	457	375
	12"	502	1427	500	49,3	2	381,0	450,8	520	16	31,8	502	470
	14"	762	1738	610	52,4	2	412,8	514,4	585	20	31,8	762	855
	16"	838	1920	700	55,6	2	469,9	571,5	650	20	35,1	838	1110
	18"	914	2053	800	58,8	2	533,4	628,6	710	24	35,1	914	1235
	20"	991	2194	610	62,0	2	584,2	685,8	775	24	35,1	991	1655
600	24"	1143	2598	610	68,3	2	692,2	812,8	915	24	41,1	1143	2320
	30"	1397	3320	610	91,9	2	857,3	997,0	1092	28	41,1	1397	4930
	2"	292	428	200	25,4	7	92,1	127,0	165	8	19,1	292	32
	2 ½"	330	588	250	28,6	7	104,8	149,4	190	8	22,4	330	55
	3"	356	526	250	31,8	7	127,0	168,3	210	8	22,4	356	60
	4"	432	641	350	38,1	7	157,2	215,9	275	8	25,4	432	105
	6"	559	884	500	47,7	7	215,9	292,1	355	12	28,4	559	210
	8"	660	1060	500	55,6	7	269,9	349,2	420	12	31,8	660	365
	10"	787	1246	500	63,5	7	323,8	431,8	510	16	35,1	787	600
	12"	838	1546	610	66,7	7	381,0	489,0	560	20	35,1	838	820
	14"	889	1623	610	69,9	7	412,8	527,1	605	20	38,1	889	1316
	16"	991	1816	610	76,2	7	469,9	603,3	685	20	41,1	991	1672
	18"	1092	2260	610	82,6	7	533,4	654,1	745	20	44,5	1092	2070
	20"	1194	2705	610	88,9	7	584,2	723,9	815	24	44,5	1194	2405
	24"	1397	2810	610	101,6	7	692,2	838,2	940	24	50,8	1397	4550

Butt weld end dimensions in mm

NPS	Pipe OD	K	ØM	ØL for various pipe schedules												
				10	20	30	40	60	80	100	120	140	160	STD	XS	XXS
2"	60,30	1,6 ±0,8	60,30	54,79			52,51		49,25				42,85	Sch 40	Sch 80	38,19
2 ½"	73,03	1,6 ±0,8	75,2	66,93			62,71		59,00				53,98	Sch 40	Sch 80	44,98
3"	88,90	1,6 ±0,8	91,2	82,80			77,93		73,66				66,65	Sch 40	Sch 80	58,42
4"	114,30	1,6 ±0,8	117,3	108,20			102,26		97,18		92,05		87,07	Sch 40	Sch 80	80,06
6"	168,28	1,6 ±0,8	172,2	161,47			154,05		146,33		139,73		131,75			
8"	219,08	1,6 ±0,8	223,0	211,56	206,38		202,72	198,45	193,68	188,90	182,55	177,83	173,05	Sch 40	Sch 80	174,63
10"	273,05	1,6 ±0,8	277,9	264,67	260,35		254,51	247,65	242,87	236,52	230,17	222,25	215,90	Sch 40	Sch 60	Sch 140
12"	323,85	1,6 ±0,8	329,4	314,71	311,15		303,23	295,30	288,90	280,97	273,05	266,70	257,20	304,80	298,45	Sch 120
14"	355,60	1,6 ±0,8	362,0	342,90	339,75	336,55	333,35	325,42	317,50	307,95	300,02	292,10	284,18	Sch 30	330,20	
16"	406,40	1,6 ±0,8	412,8	393,70	390,55	387,35	381,00	373,08	363,52	354,03	344,47	333,35	325,42	Sch 30	Sch 40	
18"	457,20	1,6 ±0,8	464,3	444,50	441,35		428,65	419,10	409,55	398,48	387,35	377,85	366,73	438,15	431,80	
20"	508,00	1,6 ±0,8	515,9	495,30	488,95	482,60	477,82	466,75	455,63	442,93	431,80	419,10	407,97	Sch 20	Sch 30	
24"	609,60	1,6 ±0,8	619,3	596,90	590,55	581,05	574,65	560,37	547,67	531,83	517,55	504,85	490,52	Sch 20	584,20	
30"	762,00	1,6 ±0,8	771,7	746,15	736,60	730,25								742,95	Sch 20	
36"	914,40	1,6 ±0,8	927,1	898,55	889,00	882,65	876,30							895,35	Sch 20	

**Mating dimensions - Standards**

Face-to-face lengths: ASME B16.10  
 Flanges (2"-24"): ASME B16.5  
 Flanges (30"-36"): ASME B16.47  
 Butt weld ends: ASME B16.25

**Notes on installation**

Flow may pass a gate valve in either direction. High-pressure valves with pressure relief arrangement are unidirectional, however.

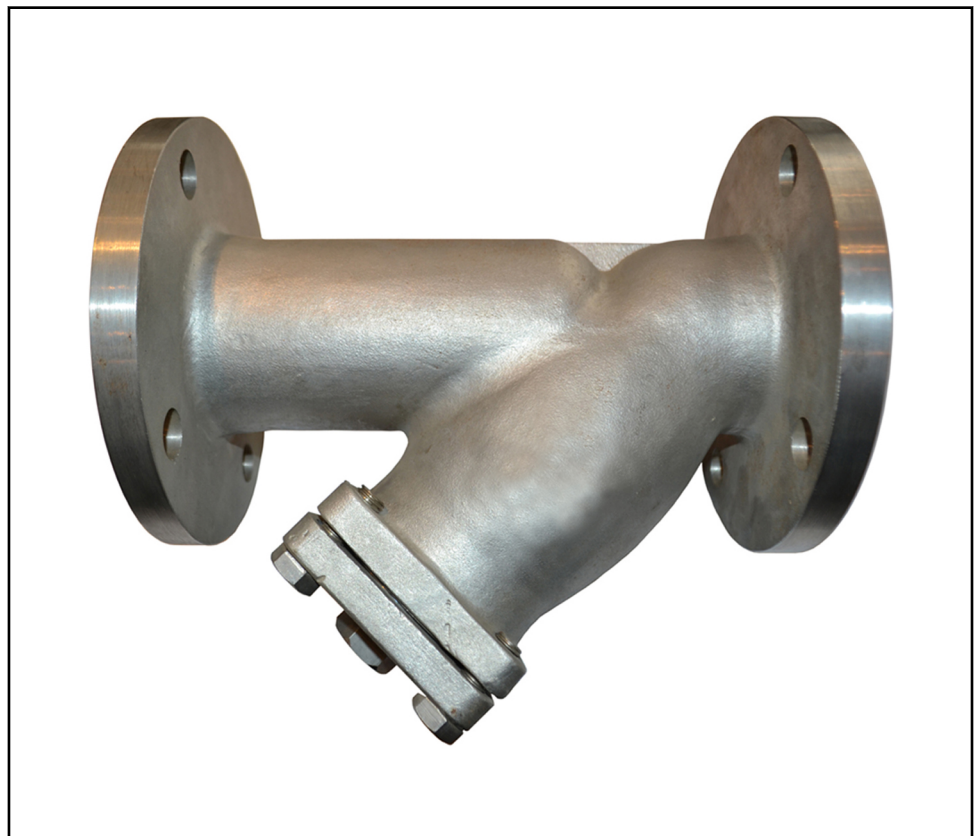
<sup>6)</sup> Open

Strainer

## ECOLINE FYC 150-600

Class 150-600  
NPS 2"-12"  
Cast Steel / Stainless Steel  
Bolted Cover  
Flanged Ends

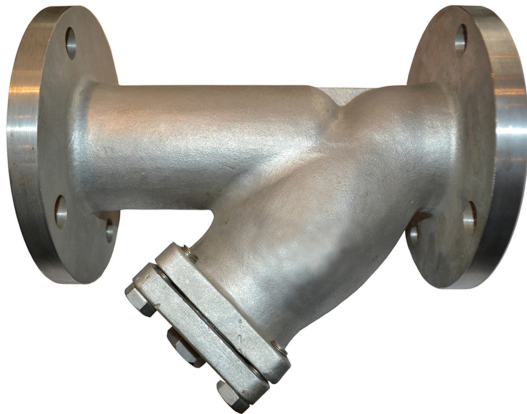
### Type Series Booklet



## Check Valves and Strainers

### Strainers to ANSI/ASME

## ECOLINE FYC 150-600



#### Main applications

- Fossil-fuelled power stations
- Refineries
- Process engineering

#### Fluids handled

- Steam
- Fluids containing gas
- Fluids containing mineral oils
- Gas
- Oil

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size	NPS 2" - 12"
Max. permissible pressure	106 bar / 1500 PSI
Min. permissible temperature	0 °C / 32 °F
Max. permissible temperature	816 °C / 1500 °F

Temperatures < 0 °C on request

Selection as per pressure/temperature ratings (⇒ Page 4)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 216 WCB	Up to 427 °C / 800 °F
ASTM A 351 CF8	Up to 816 °C / 1500 °F
ASTM A 351 CF8M	Up to 816 °C / 1500 °F

Other materials on request.

#### Design details

##### Design

- Strainer to ASME B16.34
- Tested to API 598
- Y-pattern strainer
- Body made of cast steel or stainless steel
- Bolted cover
- Fully confined cover gasket
- Cover made of wear and corrosion-resistant materials
- Stainless steel/graphite gaskets
- Cylindrical screen made of stainless steel
- Drain plug
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

#### Variants

- Other mesh widths on request
- Other screen materials
- Other drain plug sizes
- Butt weld ends
- Non-destructive testing, e.g. radiographic testing
- NACE standard
- Other flanged end designs or butt weld ends to ASME B16.25
- Other material variants
- Larger nominal sizes and other variants on request

#### Product benefits

Long service life and high functional reliability

- All-stainless steel screen and holder suitable for the majority of application conditions; no risk of corrosion in the piping.

Reliable sealing and longer service life

- Male/female joint between body and cover prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.

Cost-efficient

- Y-pattern body with hydraulically favourable flow path: higher flow rates and lower pressure losses result in energy cost savings.

Extended maintenance-free service life

- Screen fine-machined to a smooth finish, causing foreign particles to slide smoothly down to the bottom of the screen. As a result, cleaning intervals and maintenance costs are reduced.

Versatile application

- Wide range of mesh widths and materials for handling various fluid types and properties, e.g. water, oil, gas and other process fluids.

**Related documents**

- Operating manual 7362.81

**On all enquiries/orders please specify**

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating

- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Pipe schedule (for butt weld ends)
- Variants
- Number of type series booklet

**Pressure/temperature ratings**

Permissible operating pressures in bar at temperatures in °C (to ASME B16.34)

Class	Material	-29 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816	
150	A 216 WCB <sup>1)</sup>	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4											
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3	22,1	15,9	9,3	5,9											
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9	44,1	31,7	19,0	11,7											
150	A 351 CF8 <sup>2)</sup>	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,0 <sup>3)</sup>
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9	27,2	26,9	26,2	24,5	22,4	17,6	14,1	11,4	9,3	7,9	6,6	5,2	4,1	2,8	
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8	54,5	53,8	52,7	49,0	44,8	35,5	28,3	22,8	18,3	15,5	12,8	10,3	7,9	5,9	
150	A 351 CF8M <sup>2)</sup>	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,4 <sup>3)</sup>	1,0 <sup>3)</sup>
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0	29,0	28,6	26,5	25,2	24,8	21,0	16,2	12,8	10,0	7,9	6,6	5,2	4,1	2,8	
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3	57,6	57,2	53,4	50,0	49,6	42,1	32,8	25,5	20,3	16,2	13,1	10,3	7,9	5,9	

Permissible operating pressures in PSI at temperatures in °F (to ASME B16.34)

Class	Material	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
150	A 216 WCB <sup>1)</sup>	285	260	230	200	170	140	125	110	95	80	65	50	35	20											
300		740	680	655	635	605	570	550	530	505	410	320	230	135	85											
600		1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170											
150	A 351 CF8 <sup>2)</sup>	275	230	205	190	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	15 <sup>3)</sup>
300		720	600	540	495	465	440	430	420	415	405	395	390	380	355	325	255	205	165	135	115	95	75	60	40	
600		1440	1200	1075	995	930	885	865	845	825	810	790	780	765	710	650	515	410	330	265	225	185	150	115	85	
150	A 351 CF8M <sup>2)</sup>	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	20 <sup>3)</sup>	15 <sup>3)</sup>
300		720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40	
600		1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720	610	475	370	295	235	190	150	115	85	

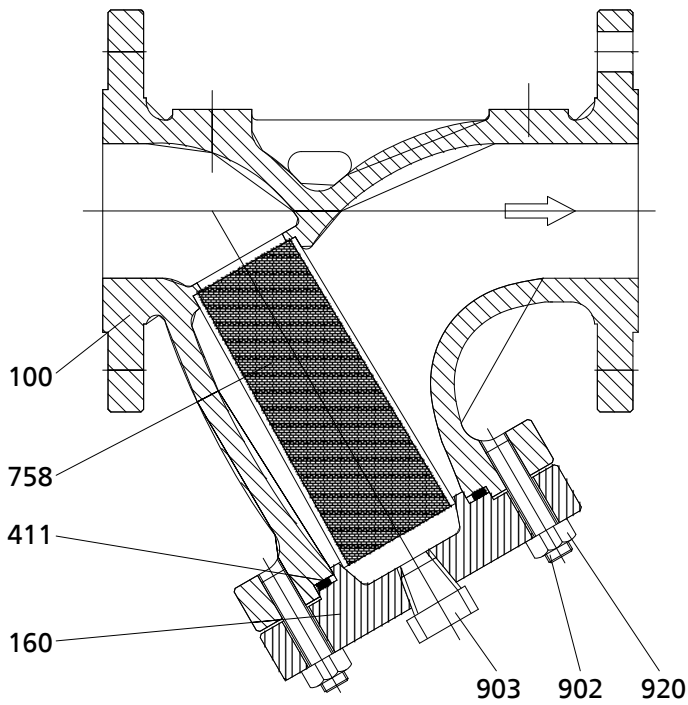
**Test pressures**

Test	Test medium	Class 150		Class 300		Class 600	
		bar	psi	bar	psi	bar	psi
Shell	Water	32	450	78	1125	153	2225

1) Permissible but not recommended for prolonged use above 427 °C (800 °F).  
 2) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.  
 3) For butt weld end valves only. Flanged end ratings terminate at 538 °C (1000 °F).



Materials



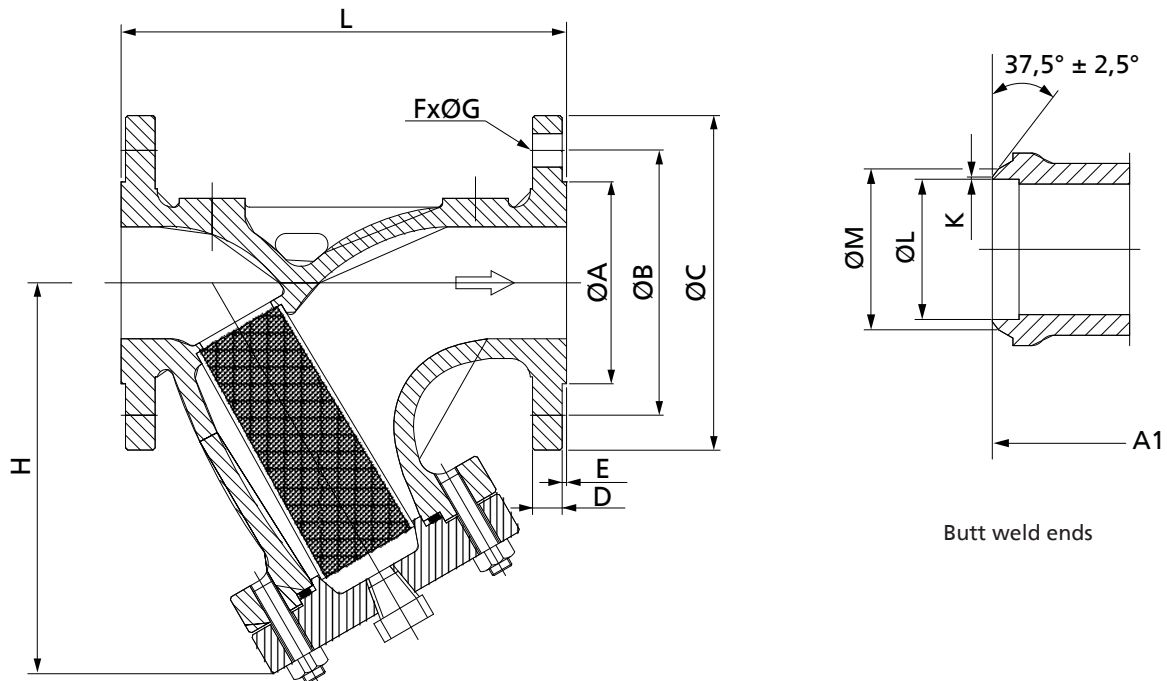
Parts list

Part No.	Description	Material		
		A 216 WCB	A 351 CF8	A 351 CF8M
100	Body	A 216 WCB	A 351 CF8	A 351 CF8M
758	Screen	See "Trim materials" table		
411	Joint ring	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel
160	Cover	A 216 WCB	A 351 CF8	A 351 CF8M
903	Drain plug	A 105	A 182 F304	A 182 F316
902	Stud	A 193 B7	A 193 B8	A 193 B8
920	Nut	A 194 2H	A 194 Gr. 8	A 194 Gr. 8

Trim materials

Part No.	Description	Trim 2	Trim 10
		304 / 304	316 / 316
758	Screen	304 stainless steel	316 stainless steel

Dimensions



Dimensions in mm

Class	NPS	L	H	D	E	ØA	ØB	ØC	F	ØG	A1	[kg]
150	2"	203	145	15,7	1,6	91,9	120,7	152	4	19,1	203	12
	2 ½"	216	183	17,5	1,6	104,6	139,7	178	4	19,1	216	18
	3"	241	206	19,1	1,6	127,0	152,4	191	4	19,1	241	21
	4"	292	228	23,9	1,6	157,2	190,5	229	8	19,1	292	32
	6"	356	329	25,4	1,6	215,9	241,3	279	8	22,4	356	48
	8"	495	440	28,4	1,6	269,7	298,5	343	8	22,4	495	105
	10"	622	507	30,2	1,6	323,9	362,0	406	12	25,4	622	169
	12"	699	594	31,8	1,6	381,0	431,8	483	12	25,4	699	215
300	2"	267	170	22,4	1,6	91,9	127,0	165	8	19,1	267	15
	2 ½"	292	185	25,4	1,6	104,6	149,4	191	8	22,4	292	18
	3"	318	235	28,4	1,6	127,0	168,1	210	8	22,4	318	35
	4"	356	290	31,8	1,6	157,2	200,2	254	8	22,4	356	51
	6"	445	375	36,6	1,6	215,9	269,7	318	12	22,4	445	92
	8"	533	450	41,1	1,6	269,7	330,2	381	12	25,4	533	182
	10"	622	575	47,8	1,6	323,9	387,4	445	16	28,4	622	285
	12"	711	665	50,8	1,6	381,0	450,9	521	16	31,8	711	307
600	2"	292	185	22,4	6,4	91,9	127,0	165	8	19,1	292	35
	2 ½"	330	200	25,4	6,4	104,6	149,4	191	8	22,4	330	40
	3"	356	250	28,4	6,4	127,0	168,1	210	8	22,4	356	48
	4"	432	300	31,8	6,4	157,2	200,2	254	8	22,4	432	90
	6"	559	415	36,6	6,4	215,9	269,7	318	12	22,4	559	220
	8"	660	490	41,1	6,4	269,7	330,2	381	12	25,4	660	360
	10"	787	595	47,8	6,4	323,9	387,4	445	16	28,4	787	781
	12"	838	680	50,8	6,4	381,0	450,9	521	16	31,8	838	1210

Butt weld end dimensions in mm

NPS	Pipe OD	K	ØM	ØL for various pipe schedules													
				10	20	30	40	60	80	100	120	140	160	STD	XS	XXS	
2"	60,30	1,6 ± 0,8	60,30	54,79			52,51		49,25					42,85	Sch 40	Sch 80	38,19
2 ½"	73,03	1,6 ± 0,8	75,2	66,93			62,71		59,00					53,98	Sch 40	Sch 80	44,98

NPS	Pipe OD	K	ØM	ØL for various pipe schedules													
				10	20	30	40	60	80	100	120	140	160	STD	XS	XXS	
3"	88,90	1,6 ±0,8	91,2	82,80			77,93		73,66					66,65	Sch 40	Sch 80	58,42
4"	114,30	1,6 ±0,8	117,3	108,20			102,26		97,18		92,05		87,07	Sch 40	Sch 80	80,06	
6"	168,28	1,6 ±0,8	172,2	161,47			154,05		146,33		139,73		131,75				
8"	219,08	1,6 ±0,8	223,0	211,56	206,38		202,72	198,45	193,68	188,90	182,55	177,83	173,05	Sch 40	Sch 80	174,63	
10"	273,05	1,6 ±0,8	277,9	264,67	260,35		254,51	247,65	242,87	236,52	230,17	222,25	215,90	Sch 40	Sch 60	Sch 140	
12"	323,85	1,6 ±0,8	329,4	314,71	311,15		303,23	295,30	288,90	280,97	273,05	266,70	257,20	304,80	298,45	Sch 120	

**Mating dimensions - Standards**

Face-to-face lengths: ASME B16.10  
 Flanges: ASME B16.5  
 Butt weld ends: ASME B16.25

Y-type strainers can be installed in horizontal or vertical pipes. The fluid must always enter through the screen inlet. Flow through Y-type strainers installed in vertical pipes must always be downwards.

**Notes on installation**

The valve bodies are marked with an arrow indicating the flow direction.

Globe Valve

## ECOLINE GLF 150-600

Class 150-600  
NPS ½"-2"  
Forged Steel  
Bolted Bonnet  
Flanged Ends

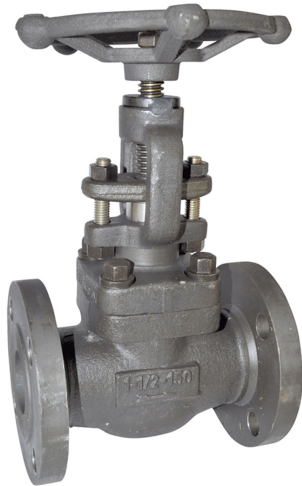
### Type Series Booklet



## Globe Valves

### Globe Valves with Gland Packing to ANSI/ASME

## ECOLINE GLF 150-600



#### Main applications

- Boiler feed applications
- Fossil-fuelled power stations
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering

#### Fluids handled

- Steam
- Fluids containing gas
- Gas
- Hot water
- Fluids containing mineral oils
- Oil
- Feed water

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size	NPS ½" - 2"
Max. permissible pressure	104 bar / 1480 PSI
Max. permissible temperature	816 °C / 1500 °F

Selection as per pressure/temperature ratings (⇒ Page 5)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 105	Up to 427 °C / 800 °F
ASTM A 182 F11	Up to 593 °C / 1100 °F
ASTM A 182 F22	Up to 593 °C / 1100 °F
ASTM A 182 F304	Up to 816 °C / 1500 °F
ASTM A 182 F316	Up to 816 °C / 1500 °F
ASTM A 182 F304L	Up to 427 °C / 800 °F
ASTM A 182 F316L	Up to 450 °C / 850 °F

Other materials on request.

#### Design details

##### Design

- Globe valve to API 602
- Tested to API 598
- Body made of forged steel
- Bolted bonnet
- Outside screw
- Outside yoke
- Rotating stem
- Rising handwheel
- Stem sealed by gland packing
- Reduced bore
- Two-piece self-aligning gland follower
- Graphite gland packing
- Stem with burnished shank
- Fully confined bonnet gasket
- Back seat
- Solid valve disc
- Integral seat - ST6 (HF)
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 94/9/EC.

#### Variants

- Seal-welded body/bonnet joint
- Full bore
- Hard-faced back seat
- Extended bonnet
- Locking device
- Position indicator
- Electric actuators
- Butt weld ends
- NACE standard
- Other flanged end designs or butt weld ends to ASME B16.25
- Other trims

### Product benefits

Long gland life and high functional reliability

- Stem with shank burnished to a surface finish of 0.2 µm for reduced friction, lower actuating torque and improved sealing to atmosphere.
- Packing end rings enable higher compressive force by gland follower and prevent extrusion of middle graphite packing rings.
- Two-piece self-aligning gland follower prevents distortion on stem surface caused by improper assembly.

Reliable sealing and longer service life

- Hard-faced body seat and solid disc seat made of wear-resistant and corrosion-proof materials for handling all kinds of corrosive and erosive fluids.
- Male/female joint between body and bonnet prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.

Additional safety and blow-out protection

- Standard metal back seat prevents blow-out of stem and other internal components from the valve body and bonnet as a result of fluid pressure inside the valve body.

Versatile application

- Stem nut made of chrome nickel steel is suitable for numerous applications, particularly fluids which must not come into contact with component materials containing copper.

Extended maintenance-free service life

- Hard-facing applied to valve disc and seat rings by deposit welding provides extra wear allowance and ensures reliable long-term shut-off even with frequent opening/closing cycles.

- Integral seating surface is highly resistant to wear and easy to repair after long-term operation.

### Related documents

- Globe valve, type ECOLINE GLF 800, see type series booklet 7361.14
- Operating manual 7361.81

### On all enquiries/orders please specify

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Reduced or full bore
- Variants
- Number of type series booklet

**Pressure/temperature ratings**

Permissible operating pressures in bar at a temperature of °C (to ASME B16.34)

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816
150	A 105	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5														
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3														
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9														
150	A 182 F11 1)	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 2)	1,4 2)								
300		51,7	51,7	49,6	47,9	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	22,1	14,8	10,0	6,6								
600		103,4	103,4	99,6	95,5	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	44,1	29,6	20,0	13,1								
150	A 182 F304 3)	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,0 2)
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9	27,2	26,9	26,2	24,5	22,4	17,6	14,1	11,4	9,3	7,9	6,6	5,2	4,1	2,8
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3	57,6	57,2	53,4	50,0	44,8	35,5	28,3	22,8	18,3	15,5	12,8	10,3	7,9	5,9
150	A 182 F22	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 2)	1,4 2)								
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	26,5	18,3	12,1	7,6								
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	52,1	36,9	24,1	15,2								
150	A 182 F316 3)	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,4 2)	1,0 2)
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0	29,0	28,6	26,5	25,2	24,8	21,0	16,2	12,8	10,0	7,9	6,6	5,2	4,1	2,8
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3	57,6	57,2	53,4	50,0	49,6	42,1	32,8	25,5	20,3	16,2	13,1	10,3	7,9	5,9
150	A 182 F304L	15,9	13,4	12,1	11,0	10,3	9,7	8,6	7,6	7,6	5,5														
300		41,4	35,2	31,4	30,0	27,2	25,5	25,2	24,8	24,5	23,8														
600		82,7	70,3	62,7	57,9	54,1	51,4	50,3	49,6	48,6	47,6														
150	A 182 F316L	15,9	13,4	12,1	11,0	10,3	9,7	8,6	7,6	7,6	5,5	4,5													
300		41,4	35,2	31,4	29,0	27,2	25,5	25,2	24,8	24,5	23,8	23,4													
600		82,7	70,3	62,7	57,9	54,1	51,4	50,3	49,6	48,6	47,6	46,5													

Permissible operating pressures in PSI at a temperature of °F (to ASME B16.34)

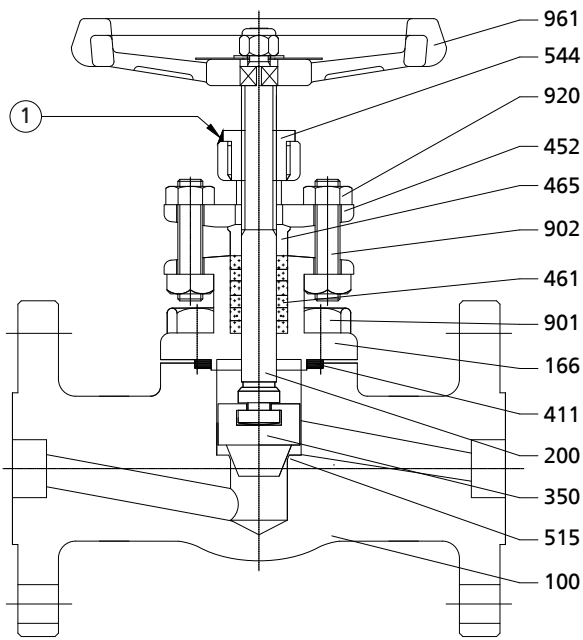
Class	Material	32 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
150	A 105	285	260	230	200	170	140	125	110	95	80														
300		740	680	655	635	605	570	550	530	505	410														
600		1480	1360	1310	1265	1205	1135	1100	1060	1015	825														
150	A 182 F11 1)	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 2)	20 2)								
300		750	750	720	695	665	605	590	570	530	510	485	450	320	215	145	95								
600		1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	430	290	190								
150	A 182 F304 3)	275	230	205	190	170	140	125	110	95	80	65	50	35	20	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	15 2)
300		720	600	540	495	465	440	430	420	415	405	395	390	380	355	325	255	205	165	135	115	95	75	60	40
600		1440	1200	1075	995	930	885	865	845	825	810	790	780	765	710	650	515	410	330	265	225	185	150	115	85
150	A 182 F22	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 2)	20 2)								
300		750	750	730	705	665	605	590	570	530	510	485	450	385	265	175	110								
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	535	350	220								
150	A 182 F316 3)	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	20 2)	15 2)
300		720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40
600		1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720	610	475	370	295	235	190	150	115	85
150	A 182 F304L	230	195	175	160	150	140	125	110	110	80														
300		600	510	455	420	395	370	365	360	355	345														
600		1200	1020	910	840	785	745	730	720	705	690														
150	A 182 F316L	230	195	175	160	150	140	125	110	110	80	65													
300		600	510	455	420	395	370	365	360	355	345	340													
600		1200	1020	910	840	785	745	730	720	705	690	675													

Test pressures

Test	Test medium	Class 150		Class 300		Class 600	
		bar	psi	bar	psi	bar	psi
Shell	Water	31,0	450	77,6	1125	153,4	2225
Leak test (back seat)		22,4	325	56,9	825	113,8	1650
Leak test (seat)		22,4	325	56,9	825	113,8	1650
Leak test (seat)	Air	5,5	80	5,5	80	5,5	80

- 1) Use normalised and tempered materials only.
- 2) Flanged end ratings terminate at 538 °C (1000 °F).
- 3) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.

**Materials**



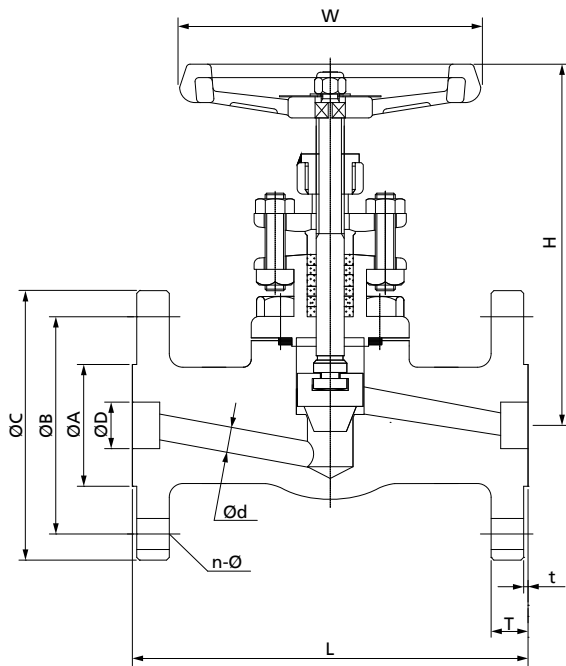
① Tack weld

Overview of available materials

Part No.	Description	Material				
		A 105 Trim 8	A 182 F11 Trim 5	A 182 F22 Trim 5	A 182 F304 Trim 2	A 182 F316 Trim 10
100	Body	A 105	A 182 F11	A 182 F22	A 182 F304	A 182 F316
166	Yoke	A 105	A 182 F11	A 182 F22	A 182 F304	A 182 F316
200	Stem	A 182 F6a	A 182 F6a	A 182 F6a	A 182 F304	A 182 F316
350	Valve disc	A 182 F6a	A 182 F6a + STL6	A 182 F6a + STL6	A 182 F304	A 182 F316
411	Joint ring	304 + graphite	304 + graphite	304 + graphite	304 + graphite	316 + graphite
452	Gland follower	A 105	A 105	A 105	A 182 F304	A 182 F316
465	Lower gland section	A 276 410	A 276 410	A 276 410	A 276 304	A 276 316
461	Gland packing	Flexible graphite	Flexible graphite	Flexible graphite	Flexible graphite	Flexible graphite
515	Seat ring	STL6 (integral)	STL6 (integral)	STL6 (integral)	304 (integral)	316 (integral)
544	Threaded bush	A 276 410	A 276 410	A 276 410	A 276 410	A 276 410
901	Bolt	A 193 B7	A 193 B16	A 193 B16	A 193 B8	A 193 B8M
902	Stud	A 193 B8	A 193 B16	A 193 B16	A 193 B8	A 193 B8
920	Nut	A 194 2H	A 194 8	A 194 8	A 194 8	A 194 8M
961	Handwheel	A 197	A 197	A 197	A 197	A 197



**Dimensions**



Dimensions in mm

Class	NPS	L	T	t	n-Ø	Ød	ØD	ØA	ØB	ØC	H <sup>4)</sup>	W	[kg]
150	½"	108	11,5	1,6	4-16	9,5	15	35	60,5	89	155	100	2,70
	¾"	117	13,0	1,6	4-16	12,7	20	43	70,0	98	160	100	3,20
	1"	127	14,5	1,6	4-16	17,5	25	51	79,5	108	185	120	4,84
	1 ½"	165	17,5	1,6	4-16	28,6	40	73	98,5	127	235	150	8,00
	2"	178	19,5	1,6	4-19	36,5	50	92	120,5	152	282	180	12,50
300	½"	152	14,5	1,6	4-16	9,5	15	35	66,5	95	155	100	3,75
	¾"	178	16,0	1,6	4-19	12,7	20	43	82,5	117	160	100	5,40
	1"	203	17,5	1,6	4-19	17,5	25	51	89,0	124	185	120	8,36
	1 ½"	229	21,0	1,6	4-22	28,6	40	73	114,5	156	235	150	11,70
	2"	267	22,5	1,6	8-19	36,5	50	92	127,0	165	282	180	24,50
600	½"	165	20,7	6,4	4-16	9,5	15	35	66,5	95	155	100	5,00
	¾"	190	22,3	6,4	4-19	12,7	20	43	82,5	117	160	100	5,75
	1"	216	23,9	6,4	4-19	17,5	25	51	89,0	124	185	120	6,53
	1 ½"	241	28,7	6,4	4-22	28,6	40	73	114,5	156	235	150	12,50
	2"	292	31,8	6,4	8-19	36,5	50	92	127,0	165	282	180	17,90

**Mating dimensions - Standards**

Face-to-face lengths: ASME B16.10  
Flanges: ASME B16.5

Globe valves should always be installed in such a way that the actual flow direction of the fluid matches the arrow on the body, unless otherwise requested by the customer.

**Notes on installation**

The valve bodies are marked with an arrow indicating the flow direction.

4) Open

Globe Valve

## ECOLINE GLB 150-600

Class 150-600  
NPS 2"-12"  
Cast Steel / Stainless Steel  
Bellows  
Flanged Ends

### Type Series Booklet



## Globe Valves

### Bellows-type Globe Valves to ANSI/ASME

## ECOLINE GLB 150-600



#### Main applications

- Petrochemical industry
- Process engineering
- General industry
- Food and beverage industry
- Energy

#### Fluids handled

- Steam
- Thermal oil
- Explosive fluids
- Combustible fluids
- Fluids containing gas
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Valuable fluids
- Volatile fluids
- Fluids containing mineral oils
- Oil
- Feed water
- Other fluids on request.

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size	NPS 2" - 12"
Max. permissible pressure	106 bar
Max. permissible temperature	427 °C

Selection as per pressure/temperature ratings (⇒ Page 5)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 216 WCB	Up to 427 °C
ASTM A 351 CF8	Up to 427 °C
ASTM A 351 CF8M	Up to 427 °C

Other materials on request.

#### Design details

##### Design

- Valve design to BS 1873 and MSS SP-117
- On/off disc
- Bolted bonnet
- Outside screw
- Outside yoke
- Integrated seat ring
- Metal-seated
- Rising stem
- Non-rising handwheel
- Graphite gland packing
- Stainless steel/graphite gaskets
- Travel stop
- Stem sealed by double-walled bellows and back-up gland packing
- Positive anti-rotation feature between stem and bellows
- Position indicator
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 94/9/EC.

#### Variants

- Locking device
- Position switch(es)
- Version with free stem end and top flange to ISO 5210
- NACE standard
- Electric actuators
- Seal-welded body/bonnet joint
- Leakage monitoring hole in the gland packing area
- Replaceable seat ring

- TA-Luft-compliant model (with or without spring loading) for applications to VDI 2440 at temperatures up to 250 °C and above 250 °C (400 °C max.)
- Other flanged end designs or butt weld ends to ASME B16.25

### Product benefits

- Leak-free stem seal
  - Primary sealing to atmosphere is provided by a multi-walled metal bellows welded to the stem and a graphite gasket between bonnet and yoke.
  - Secondary sealing of the stem passage to atmosphere is provided by a minimum of five graphite packing rings plus lower gland section for added safety.
- Longer service lives of valve and bellows
  - Specially designed multi-ply stainless steel bellows offers excellent corrosion resistance and flexibility; designed to withstand 1.5 times the nominal valve pressure.
  - Thanks to its position well outside the flow path, the bellows is not exposed to abrupt changes in fluid pressure which could result in lateral deformation and subsequent failure.
  - A stop attached to the stem by means of a pin ensures straight, non-rotating movement of the stem and bellows and prevents circumferential deformation at the bellows.
  - On some of the larger sizes, an additional valve disc guide accurately seats the valve disc on the body seat and prevents deformation of the long stem/bellows assembly.
  - Stellite-6 hard-facing applied to the seating surfaces of the body and the valve disc prevents the valve disc from seizing in the body seat and reduces wear.
- Reliable leakage protection of body
  - Yoke gaskets are fitted above and below the end plate of the bellows assembly and firmly compressed by a set of studs and nuts. The lower gasket is confined by the body shoulder and the end fitting of the bellows to prevent excessive compression.
  - Identical design of bonnet gasket and yoke gasket prevents excessive compression.
- Ease of service without additional costs
  - No costs for daily or frequent maintenance work during valve duty thanks to reliable bellows seal between the stem and the body.
  - If required, a leakage monitoring hole can be provided in the gland packing area.
  - The bolted bonnet and the design of the stem and bellows assembly enable straightforward dismantling in the event that defective internal components need to be replaced.
- The valve disc dismantles from the stem to allow straightforward repair in the event of damage to the valve disc and body seating surfaces.
- Operating reliability
  - When the valve is in the fully open position, the stop acts as a travel stop preventing excessive valve travel which could destroy the bellows or reduce the expected service life of the bellows.
  - The stop also provides anti-blow out protection, preventing the stem from being blown out of the valve body under high internal valve pressure when the valve is fully open.
- Suitable for various installation positions
  - Design with valve disc accurately guided onto the seat by means of a guiding plate enables special installation positions (in vertical pipes or with inclined but upward stem position). No chattering or jamming of valve disc during valve travel.
- Available for all kinds of fluids
  - Several material variants available for body and bellows to suit a variety of fluids and applications.

### Related documents

- Gate valve, type ECOLINE GTB 800, see type series booklet 7372.1
- Globe valves, type ECOLINE GLB 800, see type series booklet 7368.1
- Operating manual 7366.8

### On all enquiries/orders please specify

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Pipe schedule (for butt weld ends)
- Variants
- Number of type series booklet

**Pressure/temperature ratings**

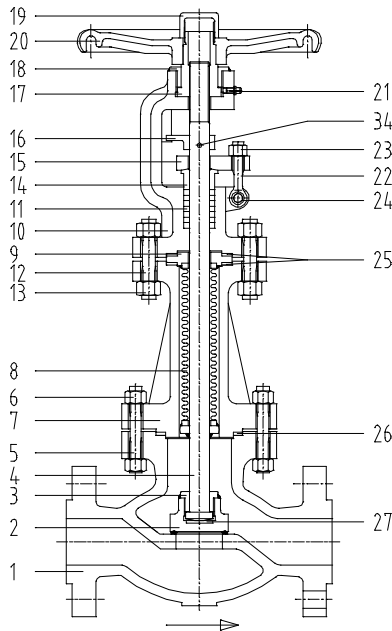
Permissible operating pressures in bar at temperatures in °C (to ASME B16.34)

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427
150	A 216 WCB	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9
150	A 351 CF8	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8
150	A 351 CF8M	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3

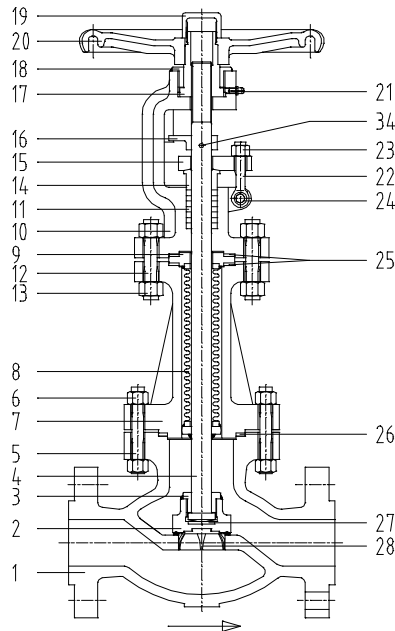
**Test pressures**

Test	Test medium	Class 150		Class 300		Class 600	
		bar	psi	bar	psi	bar	psi
Shell	Water	32	450	78	1125	153	2225
Leak test (seat)		23	315	56	815	112	1630
Leak test (seat)	Air	5,5	80	5,5	80	5,5	80

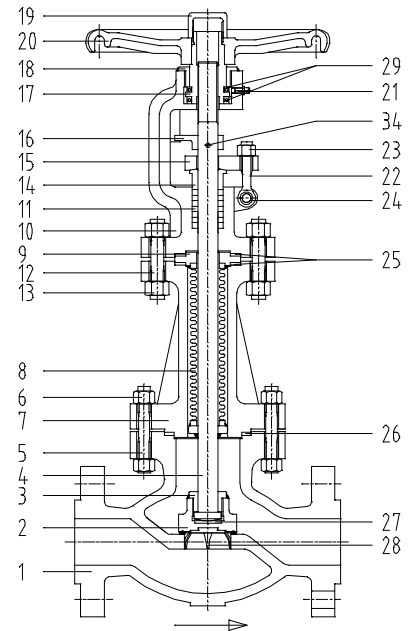
**Materials**



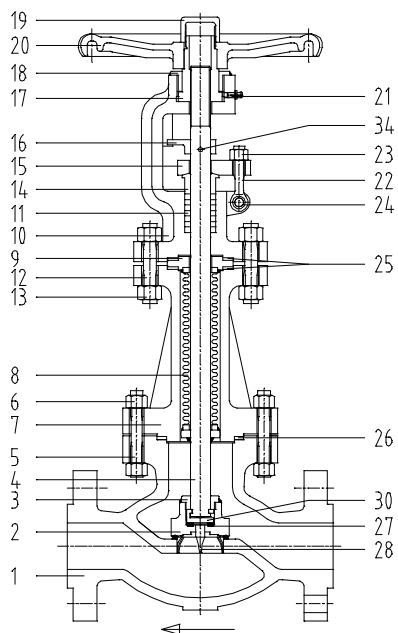
Class 150: 2" - 4"  
Class 300: 2" - 4"  
Class 600: 2" - 3"



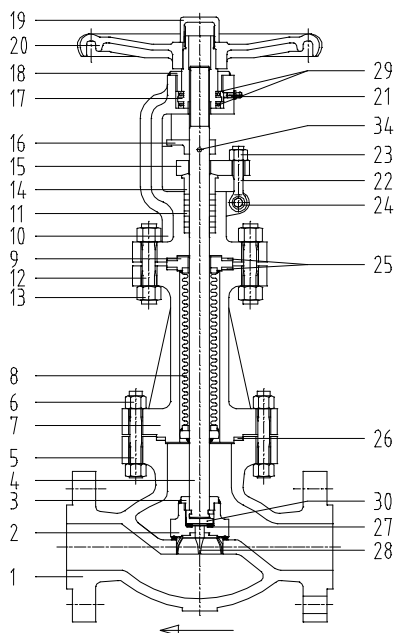
Class 150: 6"



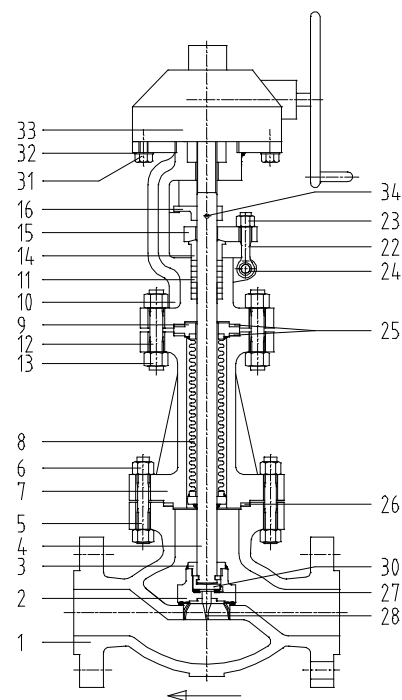
Class 150: 8"



Class 300: 6"  
Class 600: 4"



Class 300: 8"  
Class 600: 6"



Class 150: 10" - 12"  
Class 300: 10" - 12"  
Class 600: 8"

Overview of available materials

Part No.	Description	Material			
		Bellows: A 182 F316L <sup>1)</sup>			
		A 216 WCB/Trim 8	A 216 WCB/Trim 5	A 351 CF8/Trim 2	A 351 CF8M/Trim 10
1	Body	A 216 WCB	A 216 WCB + ST6	A 351 CF8	A 351 CF8M
2	Valve disc	A 105 + 13 % chrome (Cr)	A 105 + ST6	A 182 F304	A 182 F316
3	Nut	A 105	A 105	A 182 F304	A 182 F316
4 <sup>2)</sup>	Stem	2 Cr 13	2 Cr 13	A 182 F304	A 182 F316
5	Stud	A 193 B7	A 193 B7	A 193 B8	A 193 B8
6	Nut	A 194 2H	A 194 2H	A 194 Gr. 8	A 194 Gr. 8
7	Bonnet	A 216 WCB	A 216 WCB	A 351 CF8	A 351 CF8M
8 <sup>2)</sup>	Bellows	SS 316L	SS 316L	SS 316L	SS 316L
9 <sup>2)</sup>	End plate <sup>3)</sup>	SS 316L	SS 316L	SS 316L	SS 316L
10	Yoke	A 216 WCB	A 216 WCB	A 351 CF8	A 351 CF8M
11 <sup>2)</sup>	Gland packing	Graphite	Graphite	Graphite	Graphite
12	Stud	A 193 B7	A 193 B7	A 193 B8	A 193 B8
13	Nut	A 194 2H	A 194 2H	A 194 Gr. 8	A 194 Gr. 8
14	Lower gland section	1 Cr 13	1 Cr 13	SS 304	SS 316
15	Gland follower	Carbon steel	Carbon steel	Stainless steel	Stainless steel
16 <sup>2)</sup>	Stop	Carbon steel	Carbon steel	Stainless steel	Stainless steel
17	Stem nut	D-2	D-2	D-2	D-2
18	Threaded ring	Carbon steel	Carbon steel	Stainless steel	Stainless steel
19	Cap	Carbon steel	Carbon steel	Stainless steel	Stainless steel
20	Handwheel	Nodular cast iron	Nodular cast iron	Nodular cast iron	Nodular cast iron
21	Lubricating nipple	Stainless steel	Stainless steel	Stainless steel	Stainless steel
22	Eyebolt	A 193 B7	A 193 B7	A 193 B8	A 193 B8
23	Nut	A 194 2H	A 194 2H	A 194 Gr. 8	A 194 Gr. 8
24	Pin	Carbon steel	Carbon steel	Stainless steel	Stainless steel

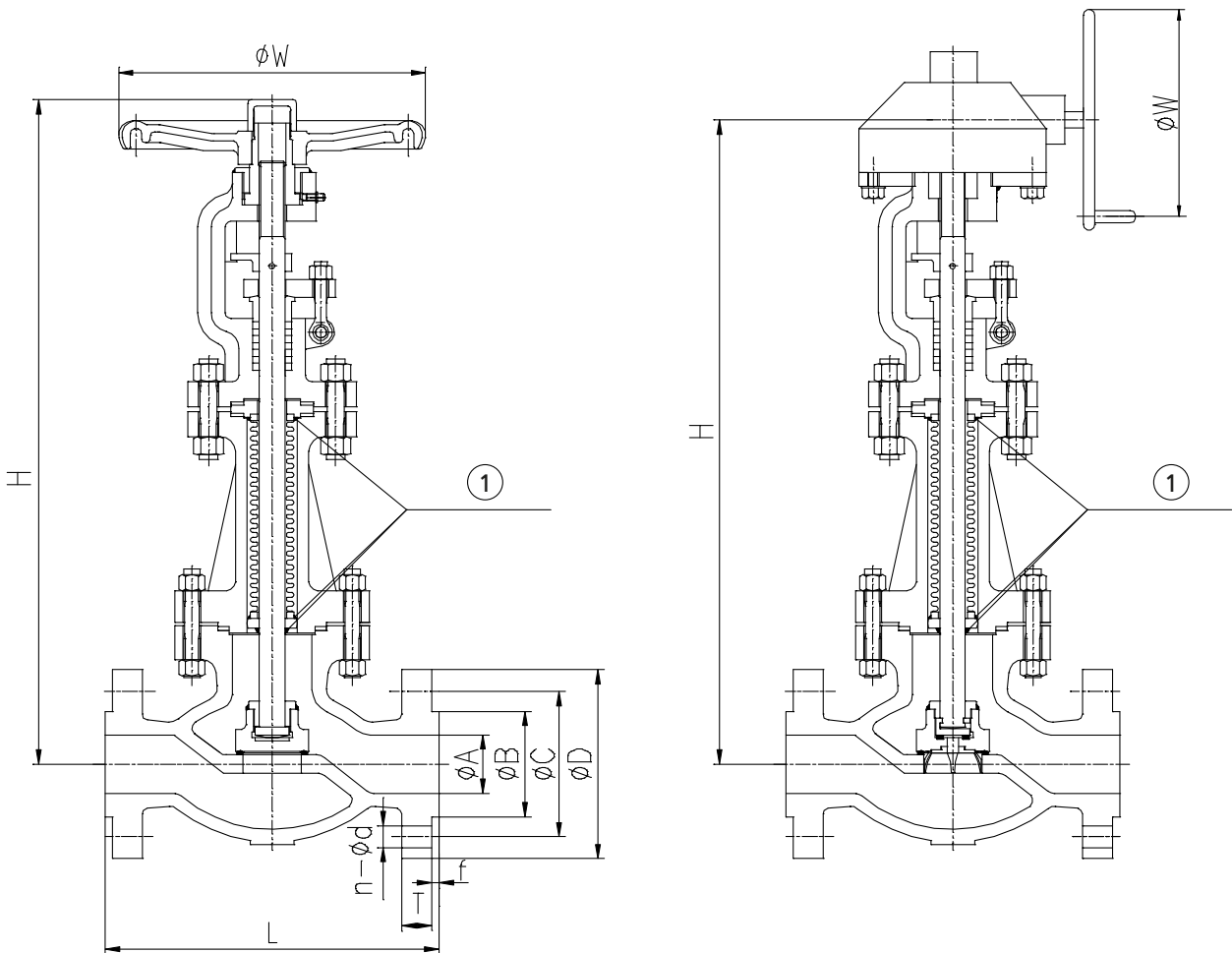
1) Other bellows materials on request, e.g. SS316Ti.

2) Recommended spare parts

3) Welded to bellows

Part No.	Description	Material			
		Bellows: A 182 F316L <sup>1)</sup>			
		A 216 WCB/Trim 8	A 216 WCB/Trim 5	A 351 CF8/Trim 2	A 351 CF8M/Trim 10
25 <sup>2)</sup>	Gasket	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite
26 <sup>2)</sup>	Gasket	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite
27	Disc thrust plate	1 Cr 13	1 Cr 13	SS 304	SS 316
28	Valve disc guide	Carbon steel	Carbon steel	Stainless steel	Stainless steel
29	Bearing	-	-	-	-
30	Pilot plug	A 105 + 13 % chrome (Cr)	A 105 + ST6	A 182 F304	A 182 F316
31	Bolt	Carbon steel	Carbon steel	Stainless steel	Stainless steel
32	Washer	Carbon steel	Carbon steel	Stainless steel	Stainless steel
33	Gearbox	-	-	-	-
34 <sup>2)</sup>	Pin	Carbon steel	Carbon steel	Stainless steel	Stainless steel

**Dimensions**



①	Seal-welded
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Dimensions in mm

Class	NPS	L	$\phi A$	$\phi B$	$\phi C$	$\phi D$	T	f	n - $\phi d$	H <sup>4)</sup>	$\phi W$	Travel	[kg]
150	2"	203	50,8	92,1	120,7	150	14,3	2	4 - 19	391	200	15	23
	2 1/2"	216	63,5	104,8	139,7	180	15,9	2	4 - 19	459	200	20	31

1) Other bellows materials on request, e.g. SS316Ti.  
4) Open

Class	NPS	L	Ø A	Ø B	Ø C	Ø D	T	f	n - Ø d	H <sup>4)</sup>	Ø W	Travel	[kg]	
300	3"	241	76,2	127,0	152,4	190	17,5	2	4 - 19	500	250	25	45	
	4"	292	101,6	157,2	190,5	230	22,3	2	8 - 19	593	300	30	63	
	6"	406	152,4	215,9	241,3	280	23,9	2	8 - 22	682	400	40	115	
	8"	495	203,2	269,9	298,5	345	27,0	2	8 - 22	779	450	55	204	
	10"	622	254,0	323,8	362,0	405	28,6	2	8 - 19	956	460 <sup>5)</sup>	65	351	
	12"	698	304,5	381,0	431,8	458	30,2	2	8 - 19	1159	540 <sup>5)</sup>	80	534	
	2"	267	50,8	92,1	127,0	165	20,7	2	8 - 19	409	250	15	31	
	2 ½"	292	63,5	104,8	149,2	190	23,9	2	8 - 22	481	250	20	44	
	3"	318	76,2	127,0	168,3	210	27,0	2	8 - 22	529	250	25	62	
	4"	356	101,6	157,2	200,0	255	30,2	2	8 - 22	621	300	30	84	
300	6"	444	152,4	215,9	269,9	320	35,0	2	12 - 22	808	400	40	182	
	8"	559	203,2	269,9	330,2	380	39,7	2	12 - 25	976	450	55	300	
	10"	622	254,0	323,8	387,4	445	46,1	2	16 - 28	1118	610 <sup>5)</sup>	65	541	
	12"	711	304,8	381,0	450,8	520	49,3	2	16 - 32	1287	610 <sup>5)</sup>	80	725	
	600	2"	292	50,8	92,1	127,0	165	25,4	7	8 - 19	474	250	15	49
		2 ½"	330	63,5	104,8	149,4	190	28,6	7	8 - 22	549	250	20	65
3"		356	76,2	127,0	168,3	210	31,8	7	8 - 22	608	350	25	80	
4"		432	101,6	157,2	215,9	275	38,1	7	8 - 25	724	400	30	134	
6"		559	152,4	215,9	292,1	355	47,7	7	12 - 28	1016	500	40	333	
8"		660	199,9	269,9	349,2	420	55,6	7	12 - 32	1271	610 <sup>5)</sup>	55	620	

### Mating dimensions - Standards

Face-to-face lengths: ASME B16.10  
Flanges: ASME B16.5

### Overview of available materials

Overview of variants

Class	NPS	Single valve disc	Double valve disc (with pilot plug)	Guided valve disc	Handwheel-operated	Gearbox-operated
150	2	✓	✗	○	✓	○
	2 ½"	✓	✗	○	✓	○
	3	✓	✗	○	✓	○
	4	✓	✗	○	✓	○
	6	✓	✗	✓	✓	○
	8	✓	✗	✓	✓	○
	10	✗	✓	✓	✗	✓
	12	✗	✓	✓	✗	✓
300	2	✓	✗	○	✓	○
	2 ½"	✓	✗	○	✓	○
	3	✓	✗	○	✓	○
	4	✓	✗	○	✓	○
	6	✗	✓	✓	✓	○
	8	✗	✓	✓	✓	○
	10	✗	✓	✓	✗	✓
	12	✗	✓	✓	✗	✓
600	2	✓	✗	○	✓	○
	2 ½"	✓	✗	○	✓	○
	3	✓	✗	○	✓	○
	4	✗	✓	✓	✓	○
	6	✗	✓	✓	✓	○
	8	✗	✓	✓	✗	✓

### Key to the symbols

Symbol	Description
✓	Standard design
○	Optional, available on request
✗	Not available

### Notes on installation

The valve bodies are marked with an arrow indicating the flow direction.

- 4) Open  
5) Diameter of gearbox handwheel



Globe valves should always be installed in such a way that the actual flow direction of the fluid matches the arrow on the body, unless otherwise requested by the customer.

Gate Valve

## ECOLINE GTB 800

Class 150-600, Class 800  
NPS ½"-2"  
Forged Steel/Stainless Steel  
Bellows  
Flanged/Socket Weld Ends  
or Threaded Ends

## Type Series Booklet



## Gate Valves

### Gate Valves with Bolted Bonnet to ANSI/ASME

## ECOLINE GTB 800



#### Main applications

- Petrochemical industry
- Process engineering
- General industry
- Food and beverage industry
- Sugar industry

#### Fluids handled

- Steam
- Explosive fluids
- Combustible fluids
- Liquids containing gas or vapour
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Valuable fluids
- Volatile fluids
- Fluids containing mineral oils
- Oil
- Feed water
- Thermal oil
- Other fluids on request.

#### Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 800
Nominal size	NPS ½" - 2"
Max. permissible pressure	136 bar
Max. permissible temperature	425 °C

Selection as per pressure/temperature ratings (⇒ Page 5)

#### Body materials

Overview of available materials

Material	Temperature limit
ASTM A 105	Up to 425 °C
ASTM A 182 F304	Up to 425 °C
ASTM A 182 F316	Up to 425 °C

Other materials on request.

#### Design details

##### Design

- Valve design to ASME B16.34, API 602 and MSS SP-117
- Bolted bonnet
- Outside screw
- Outside yoke
- Reduced/full bore
- Single-piece wedge
- Integrated seat ring
- Metal-seated
- Rising stem
- Non-rotating stem
- Non-rising handwheel
- Graphite gland packing
- Stainless steel/graphite gaskets
- Travel stop
- Wedge guided in the body
- Stem sealed by double-walled bellows and back-up gland packing
- Positive anti-rotation feature between stem and bellows
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 94/9/EC.

#### Variants

- Full bore
- PTFE gasket (up to 200 °C)
- PTFE gland packing (up to 200 °C)
- Locking device
- Position switch(es)
- Position indicator
- Seal-welded body/bonnet joint

- Stellite seat/disc interface
- Version with free stem end and top flange to ISO 5210
- Pressure relief hole in wedge inlet side
- Y-pattern
- Body extension with nipple
- NACE standard
- TA-Luft-compliant model (with or without spring loading) for applications to VDI 2440 at temperatures up to 250 °C and above 250 °C (400 °C max.)
- Electric actuators
- Other flanged end designs or butt weld ends to ASME B16.25

### Product benefits

- Leak-free stem seal
  - Primary sealing to atmosphere is provided by a multi-walled metal bellows welded to the stem and a graphite gasket between body and bonnet.
  - Secondary sealing of the stem passage to atmosphere is provided by a minimum of five graphite packing rings plus lower gland section for added safety.
  - In the event of a ruptured bellows, fluid leakage along the stem passage is temporarily contained by the integral back seat.
- Longer service lives of valve and bellows
  - Specially designed multi-ply stainless steel bellows offers excellent corrosion resistance and flexibility; designed to withstand 1.5 times the nominal valve pressure.
  - Thanks to its position well outside the flow path, the bellows is not exposed to abrupt changes in fluid pressure which could result in lateral deformation and subsequent failure.
  - The wedge is accurately guided in a square groove in the body, ensuring straight, non-rotating movement of the stem and bellows and preventing circumferential deformation at the bellows.
  - Stellite hard-facing applied to the seating surfaces of the seat rings and the wedge prevents the wedge from seizing on the seat rings and reduces wear. A minimum hard-faced layer of 1.6 mm is retained after machining.
- Reliable leakage protection of body
  - Integrally forged extension; no further potential leakage points (compared to welded design).
  - Valve body with integrally forged flanged ends withstands higher pressures than body with welded flanges.
  - Gaskets are fitted above and below the end fitting of the bellows assembly and firmly compressed by a set of bolts. The lower gasket is confined by the body shoulder and the end fitting of the bellows to prevent excessive compression.

- Ease of service without additional costs
  - No costs for daily or frequent maintenance work during valve duty thanks to reliable bellows seal between the stem and the body.
  - If required, a leakage monitoring hole can be provided in the gland packing area.
  - The bolted bonnet and the design of the stem and bellows assembly enable straightforward dismantling in the event that defective internal components need to be replaced.
  - Damage on wedge and seat rings can easily be remedied due to the "T"-shaped connection between wedge and stem.
- Operating reliability
  - Standard travel stop prevents excessive valve travel which could destroy the bellows or reduce the expected service life of the bellows.
  - Anti-blow out stem design prevents stem from being blown out of the valve body under high internal valve pressure.
- Suitable for various installation positions
  - Design with wedge accurately guided in the body enables special installation positions (in vertical pipes or with inclined but upward stem position). No chattering or jamming of wedge during valve travel.
- Available for all kinds of fluids
  - Several material variants available for body and bellows to suit a variety of fluids and applications.

### Related documents

- Globe valves, type ECOLINE GLB 800, see type series booklet 7368.1
- Operating manual 7368.8

### On all enquiries/orders please specify

1. Type
2. Class
3. Nominal size
4. Design pressure/temperature
5. Operating pressure
6. Operating temperature
7. Differential pressure
8. Material
9. Fluid handled
10. Flow rate
11. Pipe connection
12. Pipe schedule
13. Variants
14. Number of type series booklet

**Pressure/temperature ratings**

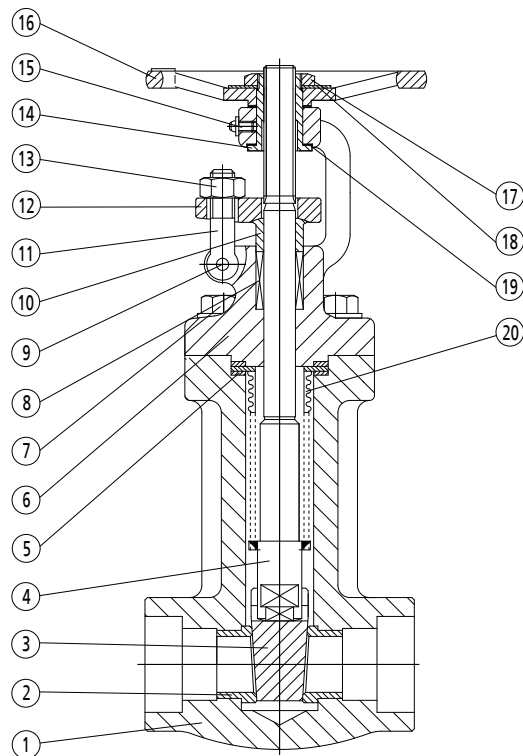
Permissible operating pressures in bar at temperatures in °C (to API 602 and ASME B16.34)

Class	Material	0 to 38	93	149	204	260	316	343	371	399	427
150	A 105	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9
800		136,0	124,8	120,5	116,4	110,9	104,5	101,1	97,4	93,2	75,7
150	A 182 F304	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8
800		132,4	110,3	98,9	91,4	85,5	81,2	79,4	77,6	76,0	74,5
150	A 182 F316	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3
800		132,4	114,0	102,9	94,3	87,9	82,9	81,2	80,0	78,5	77,6

**Test pressures**

Test	Test medium	Class 150		Class 300		Class 600		Class 800	
		bar	psi	bar	psi	bar	psi	bar	psi
Shell	Water	31,0	450	77,6	1125	153,4	2225	205,1	2975
Leak test (seat)		22,4	325	56,9	825	113,8	1650	149,8	2173
Leak test (seat)	Air	5,5	80	5,5	80	5,5	80	5,5	80

**Materials**



**Overview of available materials**

Part No.	Description	Material		
		Trim 8	Trim 2	Trim 10
1	Body	A 105	A 182 F304	A 182 F316
2	Seat ring	A 276 410 + STL6	A 276 304	A 276 316
3	Wedge	A 182 F6a	A 182 F304	A 182 F316
4	Stem	A 182 F6a	A 182 F304	A 182 F316
5	Bonnet gasket	SS316 + graphite	SS316 + graphite	316 + graphite
6	Bonnet	A 105	A 182 F304	A 182 F316

Part No.	Description	Material		
		Trim 8	Trim 2	Trim 10
7	Bolt	A 193 B7	A 193 B8	A 193 B8M
8	Gland packing	Graphite	Graphite	Graphite
9	Pin	A 276 410	A 276 304	A 276 316
10	Lower gland section	A 276 420	A 276 304	A 276 316
11	Eyebolt	A 193 B7	A 193 B8	A 193 B8
12	Gland follower	A 105	A 182 F304	A 182 F316
13	Nut	A 194 2H	A 194 8	A 194 8
14	Stem nut	A 276 410	A 276 410	A 276 410
15	Lubricating nipple	Brass	Brass	Brass
16	Handwheel	A 197	A 197	A 197
17	Nut	A 194 2H	A 194 8	A 194 8
18	Name plate	SS304	SS304	SS304
19	Washer	A 276 410	A 276 410	A 276 410
20 <sup>1)</sup>	Bellows	SS304	SS316L	SS316L

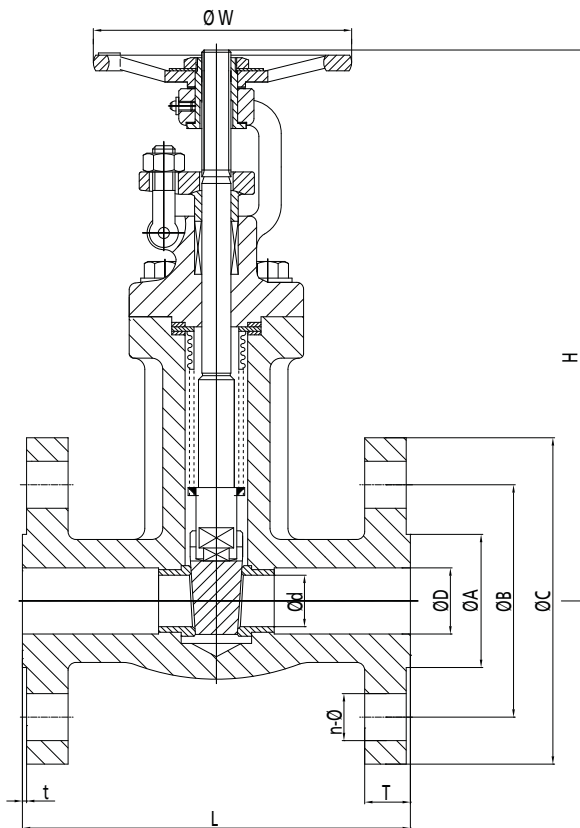
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1) Other bellows materials on request.

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**Dimensions**

**Dimensions Class 150 to 600**



Dimensions in mm

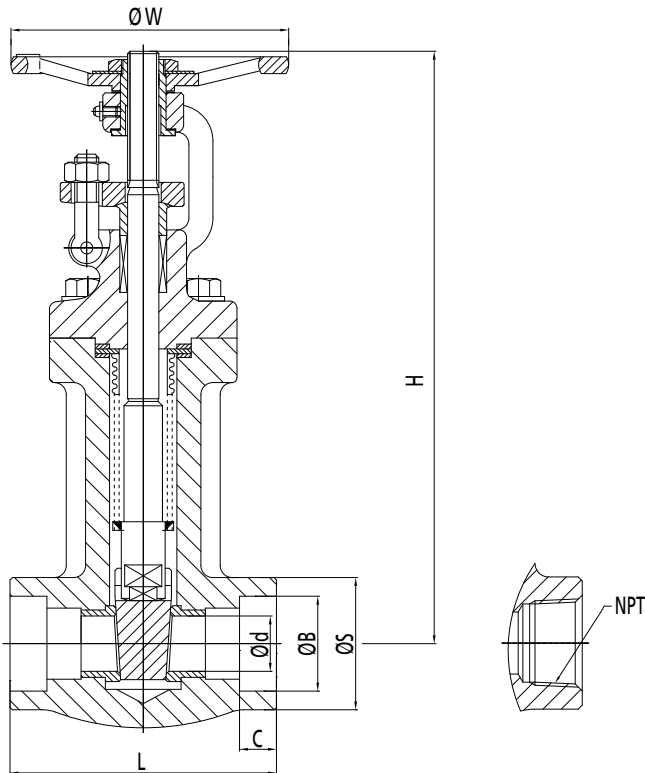
Class	NPS	L	T	t	n-Ø	Ød	ØD	ØA	ØB	ØC	H <sup>2)</sup>	W	[kg]
150	½"	108	9,6	1,6	4-16	13	15	34,9	60,3	90	242	100	3,0
	¾"	117	10,5	1,6	4-16	13	20	42,9	69,9	100	242	100	3,5
	1"	127	11,2	1,6	4-16	18	25	50,8	79,4	110	287	125	5,5
	1 ¼"	140	12,8	1,6	4-16	24	32	63,5	89,9	115	384	160	6,8
	1 ½"	165	14,3	1,6	4-16	29	40	73,0	98,4	125	384	160	10,4
	2"	178	15,9	1,6	4-19	36,8	50	92,1	120,7	150	454	180	14,4
300	½"	140	14,3	1,6	4-16	13	15	34,9	66,7	95	242	100	3,6
	¾"	152	15,9	1,6	4-19	13	20	42,9	82,6	115	242	100	4,9
	1"	165	17,5	1,6	4-19	18	25	50,8	88,9	125	287	125	7,0
	1 ¼"	178	19,1	1,6	4-19	24	32	63,5	98,4	135	384	160	9,4
	1 ½"	190	20,7	1,6	4-22	29	40	73,0	114,3	155	384	160	13,3
	2"	216	22,3	1,6	8-19	36,8	50	92,1	127,0	165	454	180	18,0
600	½"	165	20,7	6,4	4-16	13	15	34,9	66,7	95	242	100	4,2
	¾"	190	22,3	6,4	4-19	13	20	42,9	82,6	115	242	100	5,8
	1"	216	23,9	6,4	4-19	18	25	50,8	88,9	125	284	125	8,8
	1 ¼"	229	27,1	6,4	4-19	24	32	63,5	98,4	135	384	160	12,1
	1 ½"	241	28,7	6,4	4-22	29	40	73,0	114,3	155	384	160	15,6
	2"	292	31,8	6,4	8-19	36,8	50	92,1	127,0	165	454	180	19,5

**Mating dimensions - Standards**

Face-to-face ASME B16.5  
lengths:  
Flanges: ASME B16.5

2) Open

**Dimensions Class 800**



Dimensions in mm

Class	NPS	L	Ød	ØB	C	S	NPT	H <sup>3)</sup>	W	[kg]
800	½"	79	10	21,8	10	34	½"	242	100	2,9
	¾"	92	13	27,2	13	40	¾"	242	100	3,2
	1"	111	18	33,9	13	49	1"	287	125	5,9
	1 ¼"	120	24	42,7	13	58	1 ¼"	384	160	8,7
	1 ½"	120	29	48,8	13	64	1 ½"	384	160	10,2
	2"	140	36	61,2	16	78	2"	454	180	16,0

**Mating dimensions - Standards**

Face-to-face lengths: see table  
 Threaded ends: ASME B1.20.1  
 Socket weld ends: ASME B16.11

**Notes on installation**

Flow may pass a gate valve in either direction. High-pressure valves with pressure relief arrangement are unidirectional, however.

<sup>3)</sup> Open



## ANSI/ASME Two-Piece Ball Valves



Floating Ball  
Full Bore  
Flanged End

Class 150 – 300  
½" – 12"

### Applications

- Process and general industry
- For water, steam, gas, oil, and other media
- Other applications on request

### Operating Data

- Maximum allowable pressure 740 psi (51 bar)
- Maximum allowable temperature 392°F (200°C)
- Pressure/Temperature ratings per ASME B16.34
- Temperature below 0°C on request

### Body Materials

- ASTM A216 WCB Carbon Steel
- ASTM A351 CF8 Type 304 Stainless Steel
- ASTM A351 CF8M Type 316 Stainless Steel

### Ball Materials

- ASTM A351 CF8 Type 304 Stainless Steel
- ASTM A351 CF8M Type 316 Stainless Steel

### Seat Material

- PTFE up to 320°F (160°C)

### Design

- Design per ASME B16.34
- Pressure/temperature rating per ASME B16.34
- End-end dimension per ASME B16.10
- Flange dimensions per ASME B16.5
- Testing per API 598
- Full bore
- Two-piece body
- Blowout proof stem
- ISO 5211 mounting pad
- Locking device
- Solid ball
- Antistatic device

The valves meet the safety requirements of the Pressure Equipment Directive 97/23/EC (PED) of Annex I for Fluid Groups 1 and 2.

### Variants on request

- Gear operators
- Fire safe configuration
- RPTFE seats up to 392°F (200°C)
- PTFE + graphite seats up to 392°F (200°C)
- Pneumatic actuator
- Electric actuator

### Remarks

- Operating Instructions No. 8222.81
- ECOLINE-BLC 1000 type series booklet no. 8222.53
- ECOLINE-GT type series booklet no. 7247.11
- ECOLINE-GL type series booklet no. 7247.12
- ECOLINE-SC type series booklet no. 7247.13

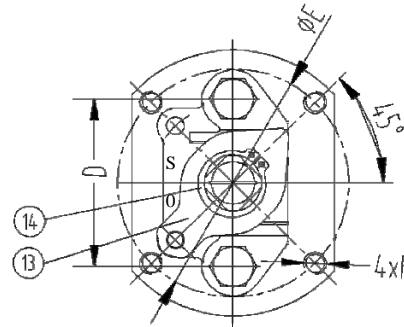
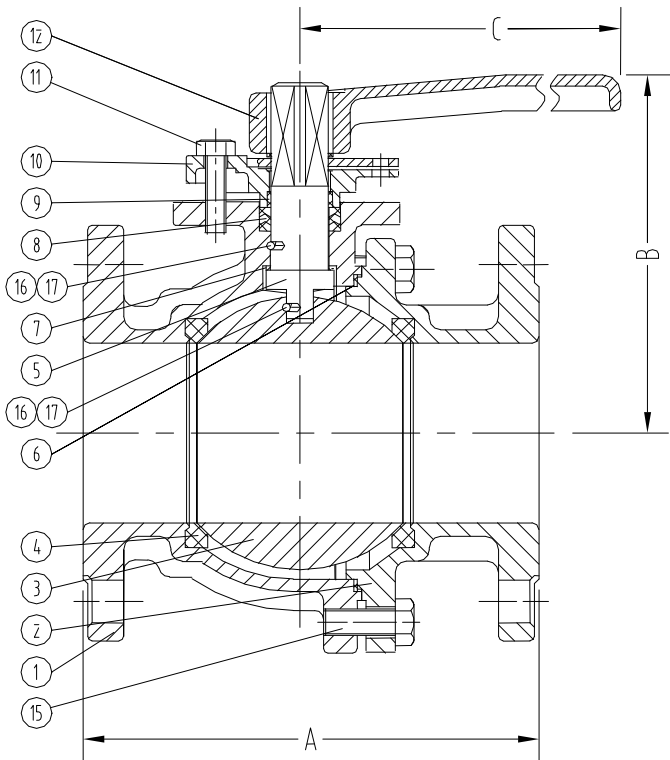
### On all enquiries/orders please specify

1. Valve type
2. ANSI pressure class
3. Size
4. Design pressure
5. Design temperature
6. Differential pressure-shut off
7. Flow medium
8. Material of construction
9. Variants
10. Type series booklet number
11. Valve data sheet if applicable

When ordering spare parts, indicate valve product code. (shown on nameplate) and serial number.

**Two-Piece Ball Valves – Type BLT 150 – 300**
**Design Specifications**

General Valve Design	: ASME B16.34
Pressure/Temperature Rating	: ASME B16.34
Flange Dimensions	: ASME B16.5
End-to-End	: ASME B16.10
Testing	: API 598


**Dimensions and Data**

CLASS	NPS	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12
150	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
A	inch	4.25	4.63	5.00	5.50	6.50	7.00	7.50	8.00	9.00	14.00	15.50	18.00	21.00	24.00
	mm	108	117	127	140	165	178	190	203	229	356	394	457	533	610
B	inch	2.83	2.99	3.62	3.74	4.09	4.49	5.59	6.02	6.54	8.82	9.72	12.01	12.87	Gear
	mm	72	76	92	95	104	114	142	153	166	224	247	305	327	
C	inch	4.84	4.84	7.20	6.02	7.32	7.32	12.76	12.76	12.76	29.53	29.53	39.37	39.37	Gear
	mm	123	123	183	153	186	186	324	324	324	750	750	1000	1000	
D	inch	-	-	-	-	2.44	2.44	2.44	2.95	2.95	3.50	3.50	3.94	3.94	3.94
	mm	-	-	-	-	62	62	75	75	75	89	89	100	100	100
E	inch	1.42	1.42	11.97	1.65	2.76	2.76	2.76	4.02	4.02	4.92	4.92	4.92	5.51	5.51
	mm	36	36	50	42	70	70	70	102	102	125	125	125	140	140
F	--	M5	M5	M6	M5	M8	M8	M8	M10	M10	M12	M12	M12	M16	M16
	lbs	3.3	4.0	6.1	7.9	12	18	29	40	62	101	146	268	513	671
Weight	kg	1.5	1.8	2.8	3.6	5.6	8.3	13.3	18	28	46	66.5	122	233	305
	--	26	50	94	143	260	480	750	1300	2300	3200	5400	10000	15000	21000
Cv	ft.lb.	9	10	13	16	18	22	26	44	59	89	133	184	280	332
	Nm	12	14	18	21	25	30	35	60	80	120	180	250	380	450
Torque															
Mounting Pad		F03	F03	F05	F04	F07	F07	F07	F10	F10	F12	F12	F12	F14	F14

CLASS	NPS	1/2	3/4	1	1-1/2	2	2-1/2	3	4	6	8
300	DN	15	20	25	40	50	65	80	100	150	200
A	inch	5.50	6.00	6.50	7.50	8.50	9.50	11.14	12.00	15.87	19.75
	mm	140	152	165	190	216	241	283	305	403	502
B	inch	2.83	2.91	3.23	4.09	4.49	5.59	6.10	6.65	9.72	12.01
	mm	72	74	82	104	114	142	155	169	247	305
C	inch	6.3	6.3	6.3	7.32	7.32	12.8	12.8	12.76	29.53	39.37
	mm	160	160	160	186	186	324	324	324	750	1000
D	inch	1.97	1.97	1.97	2.44	2.44	2.95	2.95	2.95	3.50	3.94
	mm	50	50	50	62	62	75	75	75	89	100
E	inch	1.65	1.65	1.97	2.76	2.76	2.76	4.02	4.02	4.92	4.92
	mm	42	42	50	70	70	70	102	102	125	125
F	--	M5	M5	M6	M8	M8	M8	M10	M10	M12	M12
	lbs	5.9	7.3	14.0	20.0	25	40	56	85	191	343
Weight	kg	2.7	3.3	6.5	8.9	11.5	18.1	25.3	38.5	87	156
	--	26	50	94	260	480	750	1300	2300	5400	10000
Cv	ft.lb.	12	13	15	22	26	33	52	74	148	207
	Nm	16	18	20	30	35	45	70	100	200	280
Torque											
Mounting Pad		F04	F04	F05	F07	F07	F07	F10	F10	F12	F12

**Standard Ball Valve Materials**

Part No.	Part Name	WCB/304	WCB/316	CF8/CF8	CF8M/CF8M
1	Body	A216 WCB	A216 WCB	A351 CF8	A351 CF8M
2	Cap	A216 WCB	A216 WCB	A351 CF8	A351 CF8M
3	Ball	A351 CF8	A351 CF8M	A351 CF8	A351 CF8M
4	Seat	PTFE			
5	Stem	304 SS	316 SS	304 SS	316 SS
6	Gasket	PTFE			
7	Thrust Washer	PTFE			
8	Packing	PTFE			
9	Stem Packing	PTFE			
10	Gland	304 SS			
11	Gland Bolt	A194 B8			
12	Handle	Steel			
13	Stopper	304 SS			
14	Snap Ring	304 SS			
15	Body Bolt	A194 B8			
16	Antistatic Spring	SS			
17	Antistatic Ball	SS			

**Test Requirements**

Test	Medium	Class 150		Class 300	
		psi	bar	psi	bar
Shell	Water	450	32	1125	80
Seat	Air	85	6	85	6
Seat	Water	315	22	815	58

Note: A216 WCB test pressures



**Pressure/Temperature Ratings: PTFE Seats (Standard)**

**CLASS 150 ASTM A216 WCB**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	285	19.7	285	19.7	285	19.7	285	19.7	285	19.7
150	66	273	18.8	273	18.8	273	18.8	273	18.8	273	18.8
200	93	260	17.9	260	17.9	260	17.9	260	17.9	260	17.9
250	121	245	16.9	245	16.9	236	16.3	212	14.6	189	13.0
300	149	130	9.0	92	6.3	67	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A216 WCB**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	740	51.0	740	51.0	725	50	653	45	580	40
150	66	708	48.8	708	48.8	568	39.2	511	35.3	454	31.3
200	93	675	46.5	559	38.5	405	27.9	365	25.1	324	22.3
250	121	462	31.9	325	22.4	236	16.3	212	14.6	189	13.0
300	149	130	9.0	92	6.3	66	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

**CLASS 150 ASTM A351 CF8**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	275	19.0	275	19.0	275	19.0	275	19.0	275	19.0
150	66	253	17.5	253	17.5	253	17.5	253	17.5	253	17.5
200	93	230	15.9	230	15.9	230	15.9	230	15.9	230	15.9
250	121	218	15.0	218	15.0	218	15.0	212	14.6	189	13.0
300	149	130	9.0	92	6.3	67	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A351 CF8**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	720	49.6	720	49.6	720	49.6	653	45	580	40
150	66	660	45.5	660	45.5	568	39.2	511	35.3	454	31.3
200	93	600	41.4	559	38.5	405	27.9	365	25.1	324	22.3
250	121	462	31.9	325	22.4	236	16.3	212	14.6	189	13.0
300	149	130	9.0	92	6.3	66	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

**CLASS 150 ASTM A351 CF8M**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	275	19.0	275	19.0	275	19.0	275	19.0	275	19.0
150	66	255	17.6	255	17.6	255	17.6	255	17.6	255	17.6
200	93	235	16.2	235	16.2	235	16.2	235	16.2	235	16.2
250	121	225	15.5	225	15.5	225	15.5	212	14.6	189	13.0
300	149	130	9.0	92	6.3	67	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A351 CF8M**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	720	49.6	720	49.6	720	49.6	653	45	580	40
150	66	670	46.2	670	46.2	568	39.2	511	35.3	454	31.3
200	93	620	42.7	559	38.5	405	27.9	365	25.1	324	22.3
250	121	462	31.9	325	22.4	236	16.3	212	14.6	189	13.0
300	149	130	9.0	92	6.3	66	4.6	60	4.1	53	3.7
320	160	0	0	0	0	0	0	0	0	0	0

Note 1. PTFE seats are limited to 320°F (160°C).

**Pressure/Temperature Ratings: RPTFE or PTFE + Graphite Seats (Variant)**
**CLASS 150 ASTM A216 WCB**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	285	19.7	285	19.7	285	19.7	285	19.7	285	19.7
150	66	273	18.8	273	18.8	273	18.8	273	18.8	273	18.8
200	93	260	17.9	260	17.9	260	17.9	260	17.9	260	17.9
250	121	245	16.9	245	16.9	245	16.9	245	16.9	245	16.9
300	149	230	15.9	230	15.9	230	15.9	208	14.3	185	12.8
350	177	205	14.1	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A216 WCB**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	740	51.0	740	51.0	725	50	653	45.0	580	40.0
150	66	708	48.8	708	48.8	607	41.9	547	37.7	486	33.5
200	93	675	46.5	670	46.2	485	33.4	436	30.0	388	26.8
250	121	665	45.9	494	34.1	358	24.7	322	22.2	286	19.8
300	149	453	31.2	319	22.0	231	15.9	208	14.3	185	12.8
350	177	205	14.1	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

**CLASS 150 ASTM A351 CF8**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	275	19.0	275	19.0	275	19.0	275	19.0	275	19.0
150	66	253	17.5	253	17.5	253	17.5	253	17.5	253	17.5
200	93	230	15.9	230	15.9	230	15.9	230	15.9	230	15.9
250	121	218	15.0	218	15.0	218	15.0	218	15.0	218	15.0
300	149	205	14.1	205	14.1	205	14.1	205	14.1	185	12.8
350	177	197	13.6	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A351 CF8**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	720	49.6	720	49.6	720	49.6	653	45.0	580	40.0
150	66	660	45.5	660	45.5	607	41.9	547	37.7	486	33.5
200	93	600	41.4	600	41.4	485	33.4	436	30.0	388	26.8
250	121	570	39.3	494	34.1	358	24.7	322	22.2	286	19.8
300	149	453	31.2	319	22.0	231	15.9	208	14.3	185	12.8
350	177	205	14.1	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

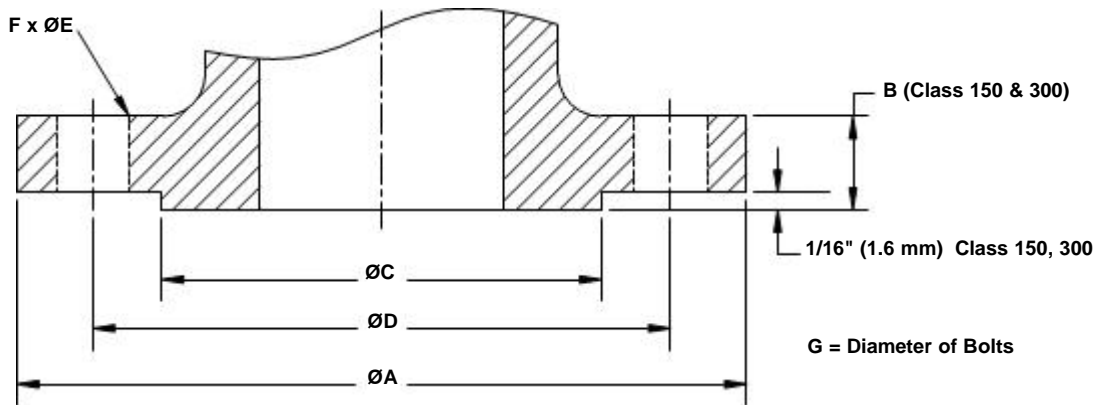
**CLASS 150 ASTM A351 CF8M**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	275	19.0	275	19.0	275	19.0	275	19.0	275	19.0
150	66	255	17.6	255	17.6	255	17.6	255	17.6	255	17.6
200	93	235	16.2	235	16.2	235	16.2	235	16.2	235	16.2
250	121	225	15.5	225	15.5	225	15.5	225	15.5	225	15.5
300	149	215	14.8	215	14.8	215	14.8	208	14.3	185	12.8
350	177	205	14.1	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

**CLASS 300 ASTM A351 CF8M**

Temperature		1/2"-3/4"		1"-2"		2.5"-4"		5"-8"		10"-12"	
°F	°C	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	720	49.6	720	49.6	720	49.6	653	45.0	580	40.0
150	66	670	46.2	670	46.2	607	41.9	547	37.7	486	33.5
200	93	620	42.7	620	42.7	485	33.4	436	30.0	388	26.8
250	121	590	40.7	494	34.1	358	24.7	322	22.2	286	19.8
300	149	453	31.2	319	22.0	231	15.9	208	14.3	185	12.8
350	177	205	14.1	144	9.9	104	7.2	94	6.5	84	5.8
392	200	0	0	0	0	0	0	0	0	0	0

Note 1. RPTFE and PTFE + graphite seats are limited to 392°F (200°C).

**Flange Dimensions per ASME B16.5**

**Class 150**

Inches							
Size	A	B	C	D	E	F	G
0.5	3.50	0.38	1.38	2.38	0.62	4	½
0.75	3.88	0.41	1.69	2.75	0.62	4	½
1	4.25	0.44	2.00	3.12	0.62	4	½
1.25	4.62	0.50	2.50	3.50	0.62	4	½
1.5	5.00	0.56	2.88	3.88	0.62	4	½
2	6.00	0.62	3.62	4.75	0.75	4	5/8
2.5	7.00	0.69	4.12	5.50	0.75	4	5/8
3	7.50	0.75	5.00	6.00	0.75	4	5/8
4	9.00	0.94	6.19	7.50	0.75	8	5/8
5	10.00	0.94	7.31	8.50	0.88	8	¾
6	11.00	1.00	8.50	9.50	0.88	8	¾
8	13.50	1.12	10.62	11.75	0.88	8	¾
10	16.00	1.19	12.75	14.25	1.00	12	7/8
12	19.00	1.25	15.00	17.00	1.00	12	7/8

Millimeters							
DN	A	B	C	D	E	F	G
15	89	9.7	35	60.5	16	4	12.7
20	98	10.4	43	70.0	16	4	12.7
25	108	11.1	51	79.5	16	4	12.7
32	117	12.7	64	89.0	16	4	12.7
40	127	14.3	73	98.5	16	4	12.7
50	152	15.9	92	120.5	19.1	4	15.9
65	178	17.5	105	139.5	19.1	4	15.9
80	190	19.1	127	152.5	19.1	4	15.9
100	229	23.9	157	190.5	19.1	8	15.9
125	254	23.9	186	216.0	22.4	8	19.1
150	279	25.4	216	241.5	22.4	8	19.1
200	343	28.6	270	298.5	22.4	8	19.1
250	406	30.2	324	362.0	25.4	12	22.2
300	483	31.8	381	432.0	25.4	12	22.2

**Class 300**

Inches							
Size	A	B	C	D	E	F	G
0.5	3.75	0.56	1.38	2.62	0.62	4	½
0.75	4.62	0.62	1.69	3.25	0.75	4	5/8
1	4.88	0.69	2.00	3.50	0.75	4	5/8
1.5	6.12	0.81	2.88	4.50	0.88	4	¾
2	6.50	0.88	3.62	5.00	0.75	8	5/8
2.5	7.50	1.00	4.12	5.88	0.88	8	¾
3	8.25	1.12	5.00	6.62	0.88	8	¾
4	10.00	1.25	6.19	7.88	0.88	8	¾
6	12.50	1.44	8.50	10.62	0.88	12	¾
8	15.00	1.62	10.62	13.00	1.00	12	7/8

Millimeters							
DN	A	B	C	D	E	F	G
15	95	14.3	35	66.5	16	4	12.7
20	117	15.9	43	82.5	19	4	15.9
25	124	17.5	51	89.0	19	4	15.9
40	156	20.7	73	114.5	22	4	19.1
50	165	22.4	91.9	127.0	19.1	8	15.9
65	191	25.4	104.6	149.4	22.4	8	19.1
80	210	28.4	127.0	168.1	22.4	8	19.1
100	254	31.8	157.2	200.2	22.4	8	19.1
150	318	36.6	215.9	269.7	22.4	12	19.1
200	381	41.1	269.7	330.2	25.4	12	22.2

**Tolerances**

B	+0.12/-0 inch	+3/-0 mm	
C	+/- 0.06 inch	+/- 1.6 mm	(Class 150 and 300)
D	+/- 0.08 inch	+/- 2 mm	

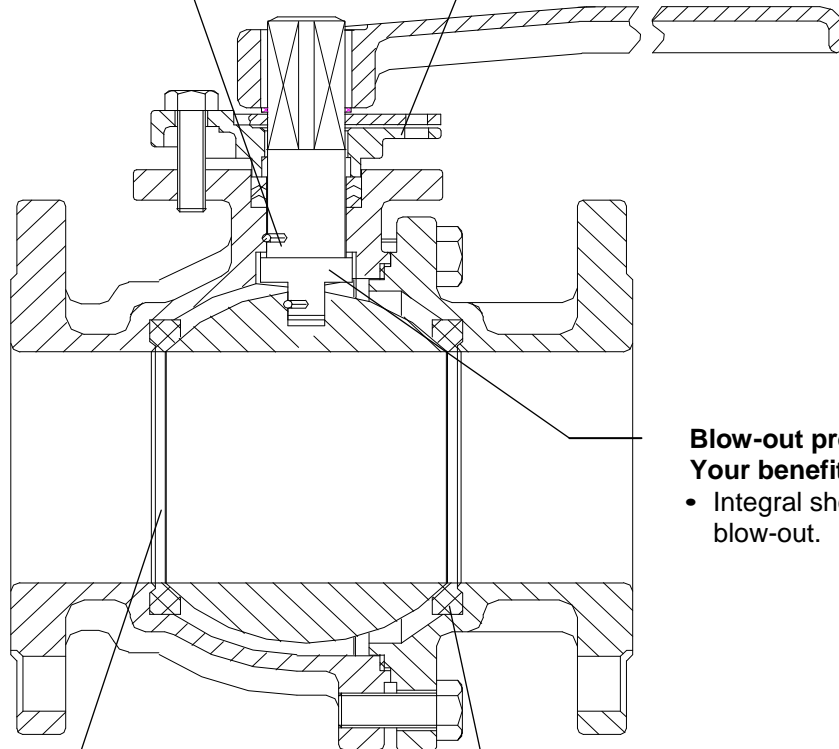
**Product features – to our customers' benefit**

**Anti-Static Connection**  
**Your benefit**

- Prevents buildup of static charge during operation.

**ISO 5211 Mounting Pad**  
**Your benefit**

- For gear or actuator mounting.



**Blow-out proof stem**  
**Your benefit**

- Integral shoulder prevents blow-out.

**Full Port**  
**Your benefit**

- For maximum flow with minimum pressure drop.

**PTFE Seats**  
**Your benefit**

- Resilient seats provide tight shut-off.

Subject to technical modification without prior notice

16.3.2010

8222.51-10

## ANSI/ASME Three-Piece Ball Valves



Floating Ball  
Full Bore  
Socket Weld or Threaded End

1000 WOG: ¼" – 4"

### Applications

- Process and general industry
- For water, steam, gas, oil, and other media
- Other applications on request

### Operating Data

- Maximum allowable pressure 1220 psi (84.1 bar)
- Maximum allowable temperature 392°F (200°C)
- Pressure/Temperature ratings per ASME B16.34
- Temperature below 0°C on request

### Body Materials

- ASTM A216 WCB                      Carbon Steel
- ASTM A351 CF8M                    Type 316 Stainless Steel

### Ball Material

- ASTM A351 CF8M                    Type 316 Stainless Steel

### Seat Material

- PTFE                                      up to 320°F (160°C)

### Design

- Design and test per ASME B16.34
- Socket weld ends per ASME B16.11
- NPT pipe thread ends per ASME B1.20.1
- Full bore
- Three-piece body
- Blowout proof stem
- Locking device
- Solid ball
- Antistatic device

### Variants on request

- RPTFE or PTFE + Graphite seats up to 392°F (200°C)
- Pneumatic actuator
- Electric actuator

### Remarks

- Operating Instructions No. 8222.81
- ECOLINE-BLT 150-300 type series booklet no. 8222.51
- ECOLINE-GT type series booklet no. 7247.11
- ECOLINE-GL type series booklet no. 7247.12
- ECOLINE-SC type series booklet no. 7247.13

### On all enquiries/orders please specify

1. Valve type
2. ANSI pressure class
3. Size
4. Design pressure
5. Design temperature
6. Differential pressure-shut off
7. Flow medium
8. Material of construction
9. Variants
10. Type series booklet number
11. Valve data sheet if applicable

The valves meet the safety requirements of the Pressure Equipment Directive 97/23/EC (PED) of Annex I for Fluid Groups 1 and 2.

When ordering spare parts, indicate valve product code. (shown on nameplate) and serial number.

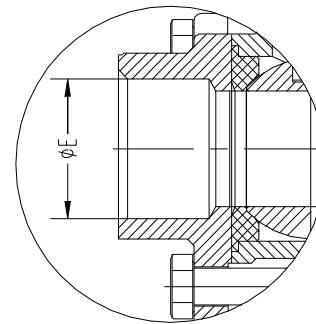
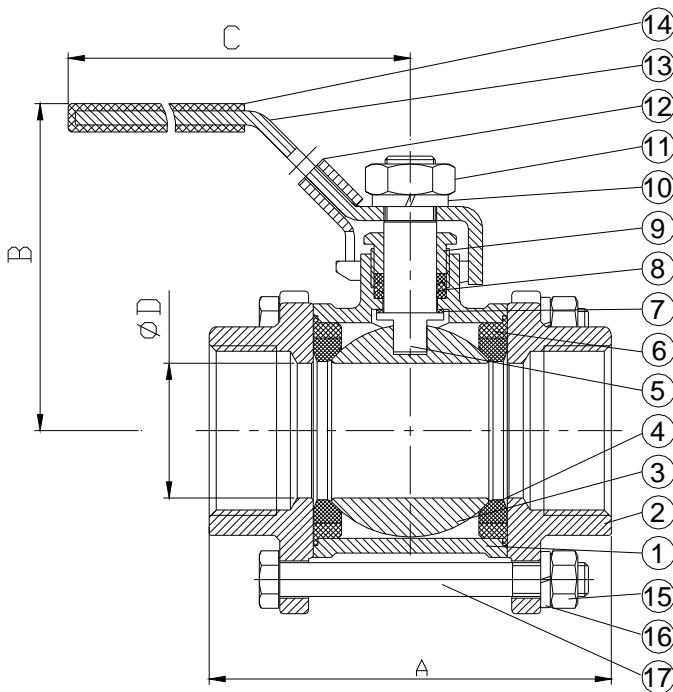




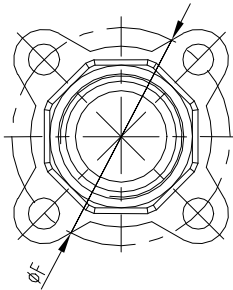
**Three-Piece Ball Valves – Type BLC 1000**

**Design Specifications**

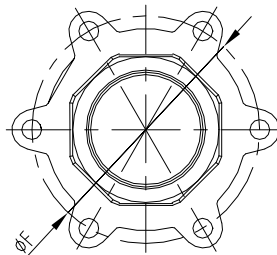
- General Valve Design : ASME B16.34
- Pressure/Temperature Rating : KSB standard
- Socket Weld Dimensions : ASME B16.11
- Pipe Thread Dimensions : ASME B1.20.1
- End-to-End Dimensions : KSB standard
- Testing : API 598



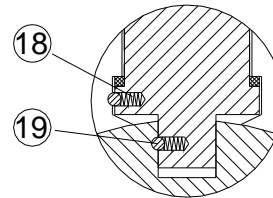
SOCKET WELD TYPE



1/4" - 2 1/2"



3" - 4"



ANTISTATIC DEVICE

**Dimensions and Data**

	NPS DN	1/4 8	3/8 10	1/2 15	3/4 20	1 25	1-1/4 32	1-1/2 40	2 50	2-1/2 65	3 80	4 100
<b>A</b>	inch	2.28	2.28	2.48	2.87	3.35	3.78	4.49	5.28	7.09	7.87	8.98
	mm	58	58	63	73	85	96	114	134	180	200	228
<b>B</b>	inch	2.20	2.20	2.56	2.64	3.11	3.31	3.62	3.90	5.35	5.75	6.61
	mm	56	56	65	67	79	84	92	99	136	146	168
<b>C</b>	inch	4.02	4.02	4.84	4.84	6.02	6.02	7.20	7.20	9.69	9.69	19.8
	mm	102	102	123	123	153	153	183	183	246	246	503
<b>D</b>	inch	0.46	0.50	0.59	0.79	0.98	1.26	1.50	1.97	2.56	3.15	3.94
	mm	11.6	12.7	15	20	25	32	38	50	65	80	100
<b>E</b>	inch	0.56	0.69	0.85	1.07	1.33	1.68	1.92	2.41	3.03	3.54	4.55
	mm	14.1	17.6	21.7	27.1	33.8	42.6	48.7	61.1	76.9	89.8	115.5
<b>F</b>	inch	1.59	1.59	1.85	2.11	2.35	2.92	3.31	3.98	5.20	6.36	7.52
	mm	40.5	40.5	47	53.5	59.6	74.2	84	101	132	161.5	191
<b>Weight</b>	lbs	0.81	0.75	1.1	1.5	2.1	3.3	4.8	7.3	15.9	27.7	43.1
	kg	0.37	0.34	0.51	0.66	0.96	1.5	2.2	3.3	7.21	12.6	19.6
<b>Cv</b>	--	6	7	10	25	35	46	80	110	310	360	820
	ft.lb.	3	3	6	7	10	13	26	31	37	59	74
<b>Torque</b>	Nm	4	4	8	9	14	17	35	42	50	80	100

**Standard Ball Valve Materials**

Part No.	Part Name	WCB	CF8M
1	Body	A216 WCB	A351 CF8M
2	Cap	A216 WCB	A351 CF8M
3	Ball	A351 CF8M	A351 CF8M
4	Seat	PTFE	
5	Stem	316 SS	
6	Gasket	PTFE	
7	Thrust Washer	PTFE	
8	Packing	PTFE	
9	Gland	304 SS	
10	Spring Washer	304 SS	
11	Stem Nut	304 SS	
12	Locking Device	304 SS	
13	Handle	304 SS	
14	Plastic Cover	Plastic	
15	Nut	304 SS	
16	Bolt Washer	304 SS	
17	Bolt	304 SS	
18	Antistatic Spring	Stainless Steel	
19	Antistatic Ball	Stainless Steel	

**Test Requirements**

Test	Medium	1/4" - 4"	
		psi	bar
Shell	Water	1500	105
Seat	Air	85	6
Seat	Water	1100	77

Note: A216 WCB test pressures

**Pressure/Temperature Ratings**
**ASTM A216 WCB and A351 CF8M (PTFE)**

Temperature		1/4" - 1"		1 1/4" - 1 1/2"		2" - 4"	
°F	°C	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	1220	84.1	1000	69.0	725	50.0
150	66	956	65.9	784	54.1	568	39.2
200	93	681	47.0	559	38.5	406	28.0
250	121	396	27.3	325	22.4	236	16.3
300	149	112	7.7	92	6.3	67	4.6
320	160	0	0	0	0	0	0

**ASTM A216 WCB and A351 CF8M (RPTFE and PTFE + Graphite)**

Temperature		1/4" - 1"		1 1/4" - 1 1/2"		2" - 4"	
°F	°C	psi	bar	psi	bar	psi	bar
32 to 100	0 to 38	1220	84.1	1000	69.0	725	50.0
150	66	1022	70.4	838	57.8	608	41.9
200	93	816	56.2	669	46.1	485	33.4
250	121	602	41.5	494	34.1	363	25.0
300	149	389	26.8	319	22.0	231	15.9
350	177	173	11.9	144	9.9	105	7.2
392	200	0	0	0	0	0	0

Note 1. PTFE seats are limited to 320°F (160°C).  
RPTFE and PTFE + Graphite seats are limited to 392°F (200°C).

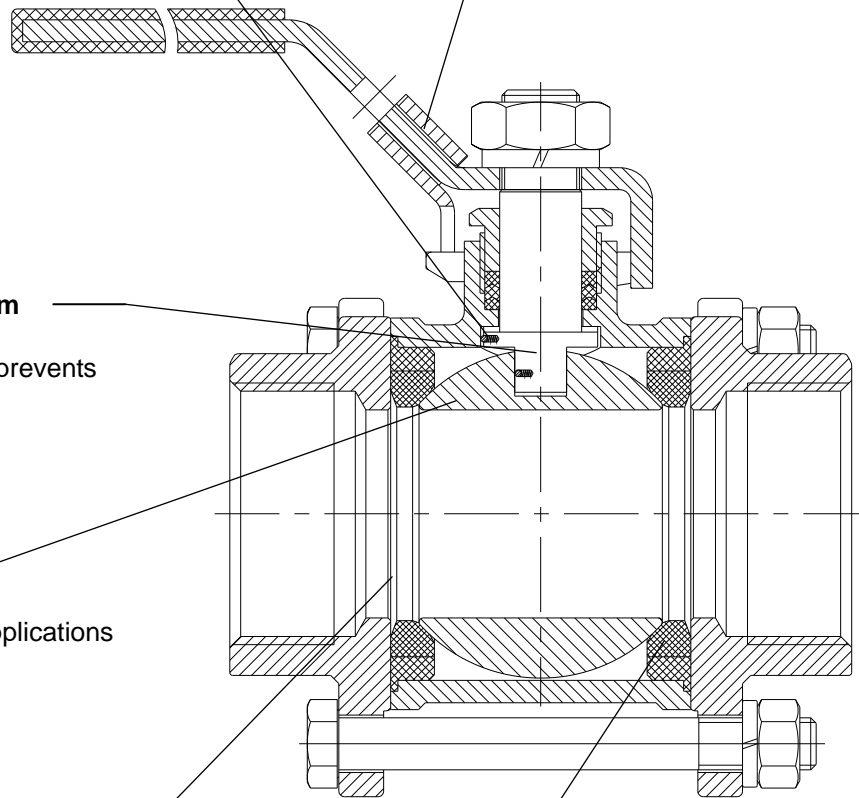
**Product features – to our customers' benefit**

**Anti-Static Connection  
Your benefit**

- Prevents buildup of static charge during operation.

**Locking Device  
Your benefit**

- Valve can be locked open or shut



**Blow-out proof stem  
Your benefit**

- Integral shoulder prevents blow-out.

**Solid Ball  
Your benefit**

- For heavy duty applications

**Full Port  
Your benefit**

- For maximum flow with minimum pressure drop

**PTFE Seats  
Your benefit**

- Resilient seats provide tight shut-off.

Subject to technical modification without prior notice

16.3.2010

8222.53-10

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