

Gate Valve

## ECOLINE GTB 150-600

### Type Series Booklet



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Type Series Booklet ECOLINE GTB 150-600

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## Contents

<b>Gate Valves.....</b>	<b>4</b>
Gate Valves to ANSI/ASME.....	4
ECOLINE GTB 150-600 .....	4
Main applications.....	4
Fluids handled .....	4
Operating data.....	4
Valve body materials.....	4
Design details .....	4
Product information .....	5
Product benefits.....	5
Related documents .....	5
Purchase order specifications .....	5
Pressure/temperature ratings.....	6
Materials.....	7
Dimensions and weights.....	8
Installation instructions .....	9

## Gate Valves

### Gate Valves to ANSI/ASME

# ECOLINE GTB 150-600



#### Main applications

- Petrochemical industry
- Process engineering
- General industry
- Beverage industry and food industry
- Energy

#### Fluids handled

- Steam
- Thermal oil
- Explosive fluids
- Flammable 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 oil
- Oil
- Boiler feed water
- Other fluids on request.

#### Operating data

**Table 1:** Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size [inch]	NPS 2 - 12
Max. permissible pressure [bar]	106
Min. permissible temperature [°C]	≥ 0
Max. permissible temperature [°C]	≤ +427

Temperatures < 0 °C on request

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

#### Valve body materials

**Table 2:** Overview of available materials

Material	Temperature limit	
	[°C]	[°F]
ASTM A216 WCB	≤ 427	≤ 800
ASTM A351 CF8	≤ 427	≤ 800
ASTM A351 CF8M	≤ 427	≤ 800

Other materials on request.

#### Design details

##### Design

- Valve design to API 600 and MSS SP-117
- Flexible wedge
- Bolted cover
- Outside screw
- Outside yoke
- Metal-seated
- Back seat
- Rising stem
- Non-rotating stem
- Non-rising handwheel
- Graphite gland packing
- Stainless steel/graphite gaskets
- Stem sealed by multi-walled bellows and back-up gland

##### Variants

- Limit switches
- Locking device
- Position indicator
- Drain plug
- Free stem end and top flange to ISO 5210
- NACE standard
- Gearbox
- Electric actuators
- Pneumatic actuators
- Seal-welded body/bonnet joint (except Class 150)
- Leakage monitoring hole in the gland packing area
- Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for temperatures up to 400 °C

- Design in compliance with ISO 15848-1/2 fugitive emission requirements
- Customised design for special fluids, e.g. molten salt (ECOLINE GTB-HS)
- Other flanged end designs or butt weld ends to ASME B16.25

### Product information

#### Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/>.

#### Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

#### Product information as per Directive 2014/34/EU (ATEX)

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 (zone 2+22) to ATEX 2014/34/EU.

### 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.
- Longer service life 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.
  - Stellite hard-facing applied to the seating surfaces of the body and valve disc prevents the valve disc from seizing on the seat and reduces wear.
- Reliable leakage protection of body
  - Gaskets are fitted above and below the end fitting of the bellows assembly and firmly compressed by a set of bolts and nuts. The lower gasket is confined by the body shoulder and the end fitting of the bellows to prevent excessive compression.
  - Identical joint rings of bonnet seal and yoke seal 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.
- Operating reliability
  - Standard travel stop prevents excessive valve travel which could destroy the bellows or reduce the expected service life of the bellows.
  - Available for all kinds of fluids
  - Several material variants available for body and bellows to suit a variety of fluids and applications.

### Related documents

**Table 3:** Information/documents

Document	Reference number
ECOLINE GTB 800 type series booklet (bellows-type gate valves)	7372.1
ECOLINE GLB 800 type series booklet (bellows-type globe valve)	7368.1
ECOLINE GLB 150-600 type series booklet (bellows-type globe valves)	7366.1
ECOLINE GTB 150-600 operating manual	7355.81
ECOLINE GTB-HS operating manual	7372.81

### Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

1. Type
2. Class
3. Nominal size
4. Pressure/temperature ratings
5. Operating pressure
6. Operating temperature
7. Differential pressure
8. Material
9. Fluid handled
10. Actuation (manual or by actuator)
11. Actuating speed (frequency of actuation)
12. Pipe connection
13. Pipe schedule number
14. Installation position
15. Variants
16. Reference number

### Pressure/temperature ratings

**Table 4:** Permissible operating pressures [bar] (to ASME B16.34 Standard Class)

Class	Material	[°C]									
		0 to +38	93	149	204	260	316	343	371	399	427
150	A216 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	A351 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		99,6	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8
150	A351 CF8M	19,6	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

**Table 5:** Test pressure

	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) <sup>1)</sup>		23	315	56	815	112	1630
Leak test (seat)	Air	5,5	80	5,5	80	5,5	80

<sup>1)</sup> Optional seat leak test with water upon customer request

Materials

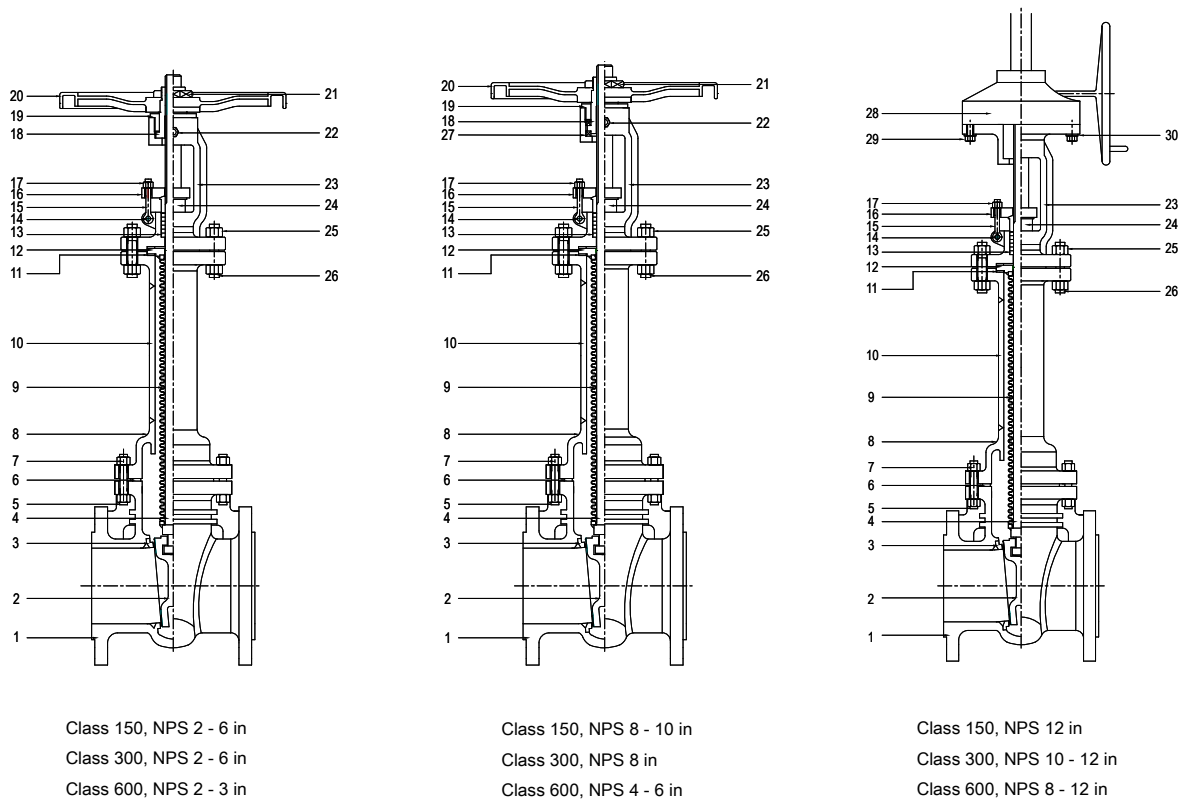


Fig. 1: ECOLINE GTB 150-600

Table 6: Parts list

Part No.	Description	Material <sup>2)</sup>		
		A216 WCB - Trim 8	A351 CF8/304 + HF	A351 CF8M - Trim 12
1	Body	A216 WCB	A351 CF8 + STL6	A351 CF8M + STL6
2	Wedge	A216 WCB + 13 % Cr	A351 CF8	A351 CF8M
3	Seat ring	A105 + STL6	Integrated body	
4 <sup>3)</sup>	Stem <sup>4)</sup>	A479 410	A182 F304	A182 F316
5	Stud	A193 B7	A193 B8	A193 B8M
6 <sup>3)</sup>	Gasket	304 + graphite	304 + graphite	316 + graphite
7	Nut	A194 2H	A194 8	A194 8M
8	Bonnet	A216 WCB	A351 CF8	A351 CF8M
9 <sup>3)</sup>	Bellows <sup>4)</sup>	SS304	SS304	SS316L
10	Bonnet extension	A216 WCB	A351 CF8	A351 CF8M
11 <sup>3)</sup>	Gasket	304 + graphite	304 + graphite	316 + graphite
12 <sup>3)</sup>	End fitting <sup>4)</sup>	A276 304	A276 316	A276 316
13 <sup>3)</sup>	Gland packing	Graphite	Graphite	Graphite
14	Pin	SS304	SS304	SS304
15	Eyebolt	A193 B7	A193 B8	A193 B8M
16	Gland follower	A216 WCB	A351 CF8	A351 CF8M
17	Nut	A194 2H	A194 8	A194 8M
18	Stem nut	A439 D-2	A439 D-2	A439 D-2
19	Retaining ring	Carbon steel	SS304	SS304
20	Handwheel	QT400-18	QT400-18	QT400-18
21	Nut	Carbon steel	Carbon steel	Carbon steel

<sup>2)</sup> Other materials on request.

<sup>3)</sup> Recommended spare parts

<sup>4)</sup> The bellows and its end fitting are welded to the stem.

Part No.	Description	Material <sup>2)</sup>		
		A216 WCB - Trim 8	A351 CF8/304 + HF	A351 CF8M - Trim 12
22	Lubricating nipple	Brass	Brass	Brass
23	Yoke	A216 WCB	A351 CF8	A351 CF8M
24	Lower gland section	A479 410	A276 304	A 276 316
25	Nut	A194 2H	A194 8	A194 8M
26	Stud	A193 B7	A193 B8	A193 B8M
27	Bearing	-	-	-
28	Gearbox	-	-	-
29	Bolt/screw	Carbon steel	Stainless steel	Stainless steel
30	Washer	Carbon steel	Stainless steel	Stainless steel

Dimensions and weights

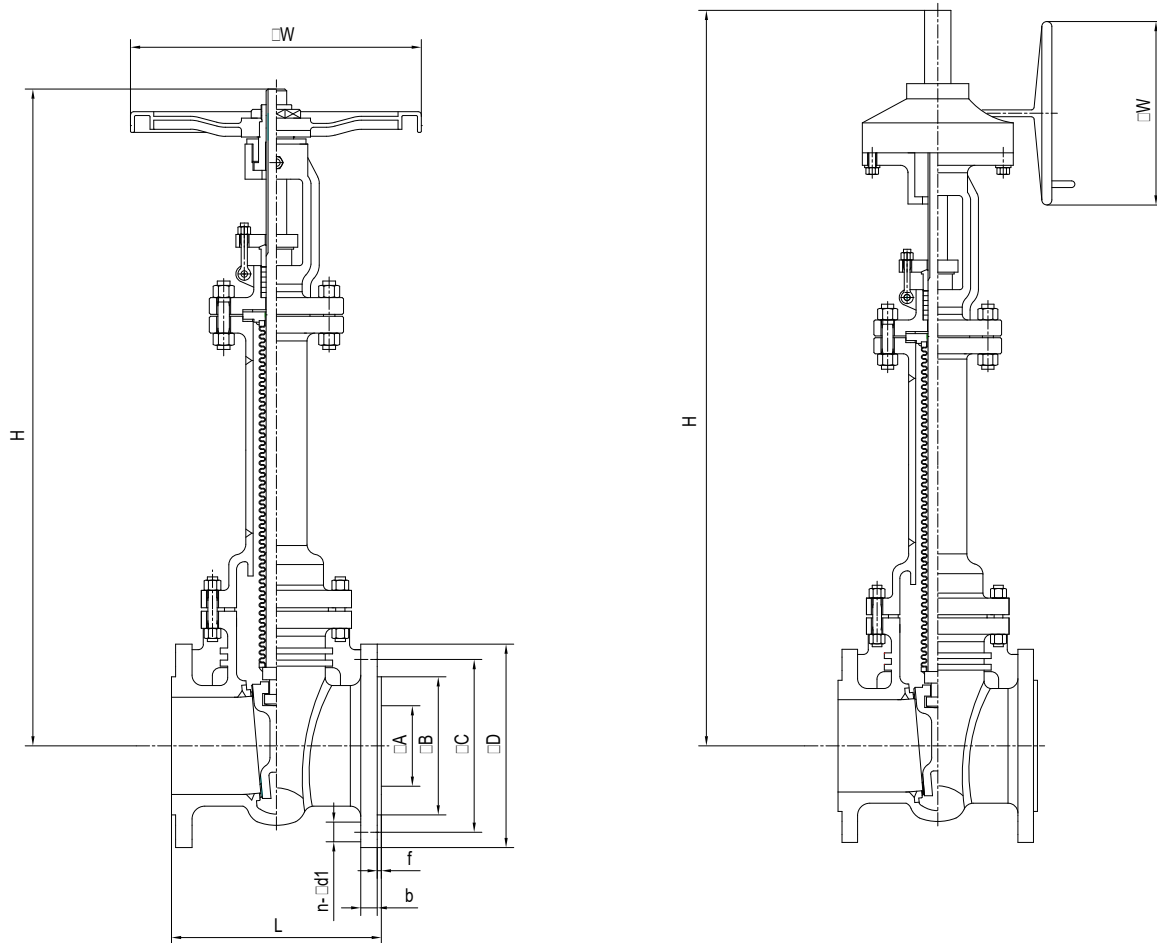


Fig. 2: Sectional drawings of ECOLINE GTB 150-600

Table 7: Dimensions [mm] and weights [kg]

Class	NPS	L	øA	øB	øC	øD	b	f	n-ød1	H <sup>5)</sup>	H <sup>6)</sup>	ØW	[kg]
	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
150	2	178	51	92,1	120,7	150	14,3	2	4-ø19	580	640	250	34
	2 1/2	190	64	104,8	139,7	180	15,9	2	4-ø19	620	695	250	44
	3	203	76	127,0	152,4	190	17,5	2	4-ø19	750	840	300	56
	4	229	102	157,2	190,5	230	22,3	2	8-ø19	870	980	350	85
	5	254	127	185,7	215,9	255	22,3	2	8-ø22	1000	1140	400	117
	6	267	152	215,9	241,3	280	23,9	2	8-ø22	1120	1285	400	154
	8	292	203	269,9	298,5	345	27,0	2	8-ø22	1420	1640	450	223

5 Closed

6 Open



Class	NPS	L	øA	øB	øC	øD	b	f	n-ød1	H <sup>5)</sup>	H <sup>6)</sup>	ØW	[kg]
	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
150	10	330	254	323,8	362,0	405	28,6	2	12-ø25	1660	1920	500	323
	12	356	305	381,0	431,8	485	30,2	2	12-ø25	2370	2370	460	583
300	2	216	51	92,1	127,0	165	20,7	2	8-ø19	580	640	250	48
	2 1/2	241	64	104,8	149,2	190	23,9	2	8-ø22	620	695	250	67
	3	282	76	127,0	168,3	210	27,0	2	8-ø22	750	840	300	85
	4	305	102	157,2	200,0	255	30,2	2	8-ø22	870	980	350	126
	5	381	127	185,7	235,0	280	33,4	2	8-ø22	1000	1140	400	181
	6	403	152	215,9	269,9	320	35,0	2	12-ø22	1120	1285	400	231
	8	419	203	269,9	330,2	380	39,7	2	12-ø25	1420	1640	450	342
	10	457	254	323,8	387,4	445	46,1	2	16-ø29	2170	2170	460	524
600	12	502	305	381,0	450,8	520	49,3	2	16-ø32	2450	2450	460	673
	2	292	51	92,1	127,0	165	25,4	7	8-ø19	620	680	300	62
	2 1/2	330	64	104,8	149,2	190	28,6	7	8-ø22	680	755	350	88
	3	356	76	127,0	168,3	210	31,8	7	8-ø22	790	875	400	112
	4	432	102	157,2	215,9	275	38,1	7	8-ø25	960	1070	400	186
	5	508	127	185,7	266,7	330	44,5	7	8-ø29	1100	1250	450	271
	6	559	152	215,9	292,1	355	47,7	7	12-ø29	1220	1385	500	352
	8	660	203	269,9	349,2	420	55,6	7	12-ø32	1990	1990	550	601
	10	787	254	323,8	431,8	510	63,5	7	16-ø35	2320	2320	550	846
12	838	305	381,0	489,0	560	66,7	7	20-ø35	2790	2790	550	1110	

**Mating dimensions as per standard**

Face-to-face lengths: ASME B16.10

Flanges: ASME B16.5

**Installation instructions**

Always install the bellows-type gate valve vertically in a horizontal pipe. Installation in an inclined, horizontal or suspended position (as in, e.g. a vertical pipe) is not permitted.







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