Globe Valve

ECOLINE GLB 150-600

Type Series Booklet

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Type Series Booklet ECOLINE GLB 150-600

Contents

Globe Valves

Bellows-type Globe Valves to ANSI/ASME

ECOLINE GLB 150-600

Main applications

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

Fluids handled

- Steam
- Fluids containing gas
- Gas
- High-temperature hot water
- Condensate
- Volatile fluids
- Thermal oil
- Explosive fluids
- Combustible fluids
- Fluids posing a health hazard
- Toxic fluids
- Highly aggressive fluids
- Corrosive fluids
- Valuable fluids
- Fluids containing mineral oils
- 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 - 10
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 7)

Valve body materials

Table 2: Overview of available materials

Material	Temperature limit
ASTM A216 WCB	≤ 427 °C
ASTM A351 CF8	≤ 427 °C
ASTM A351 CF8M	≤ 427 °C

Other materials on request.

Design details

- Valve design to BS 1873 and MSS SP-117
- On/off disc
- Bolted bonnet
- Outside screw
- Outside yoke
- Integral seat ring
- Metal-seated
- 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

Variants

- Locking device
- Limit switch(es)
- 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

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- Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for temperatures up to 400 °C
- Other flanged end designs or butt weld ends to ASME B16.25
- Customised design for molten salt application (ECOLINE GLB-HS type series)

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.
- 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).
- Available for all kinds of fluids
  - Several material variants available for body and bellows to suit a variety of fluids and applications.

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Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see https://www.ksb.com/en-global/company/corporate-responsibility/reach.

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 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.

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 GTB 150-600 type series booklet (bellows-type gate valves)	7355.5
Operating manual	0570.86
Operating manual (valves for molten salt application)	7372.81

Purchase order specifications

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

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. Actuation frequency
11. Line connection
12. Pipe schedule
13. Variants
14. Reference number

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Pressure/temperature ratings

Table 4: Permissible operating pressure [bar] (to ASME B16.34)

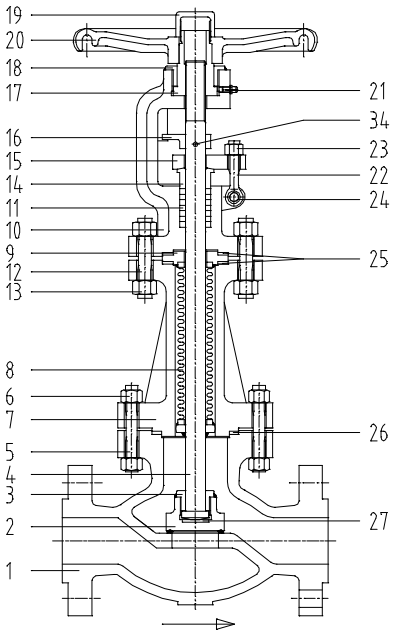
Class	Material	[°C]									
		-29 to 38	93	149	204	260	316	343	371	399	427
150	A 216 WCB	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9
150	A 351 CF8	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	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

Table 5: Test pressure

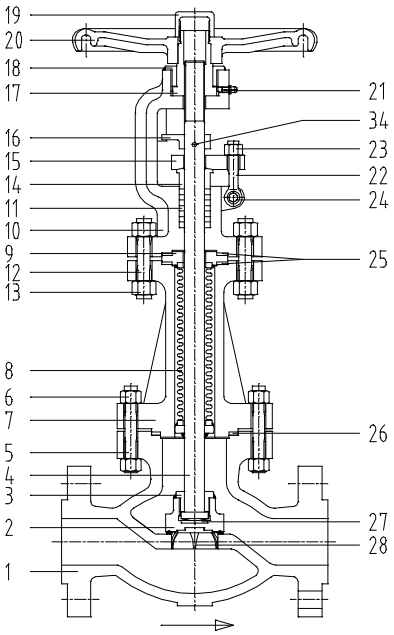
Test	Test fluid	Class 150		Class 300		Class 600	
		[bar]	[psi]	[bar]	[psi]	[bar]	[psi]
Shell	Water	32	450	78	1125	153	2225
Seat tightness test		23	315	56	815	112	1630
Seat tightness test[1)]	Air	5,5	80	5,5	80	5,5	80

1 Optional for globe valves

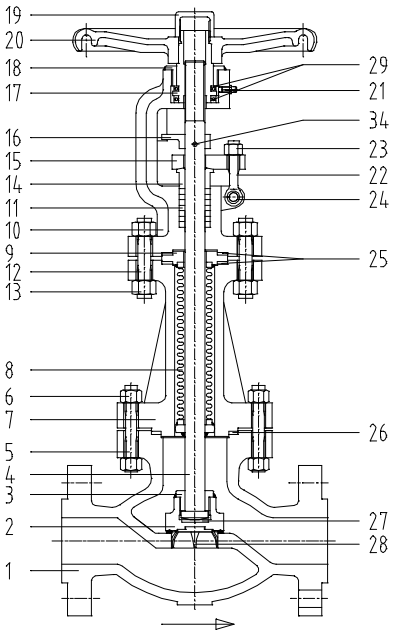
Materials



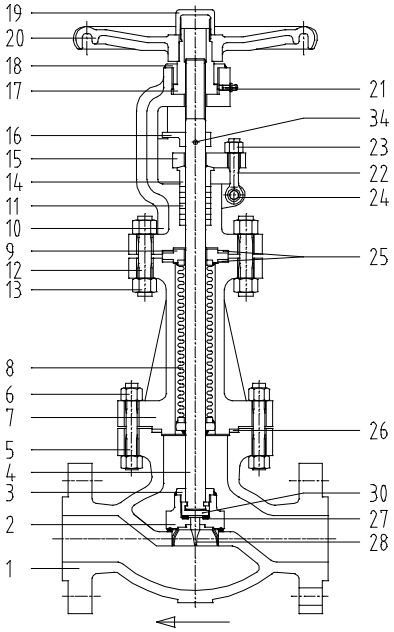
Class 150: 2" - 4"
Class 300: 2" - 4"
Class 600: 2" - 3"



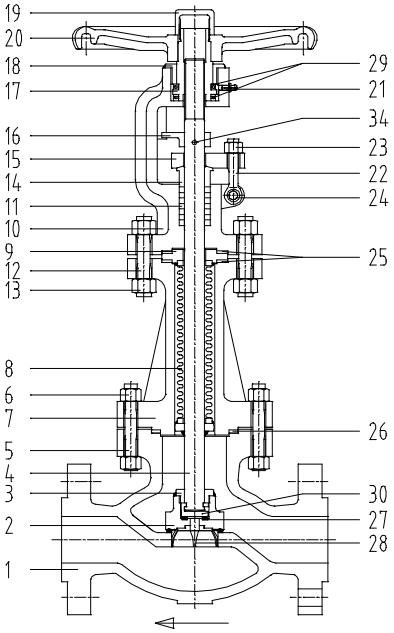
Class 150: 6"



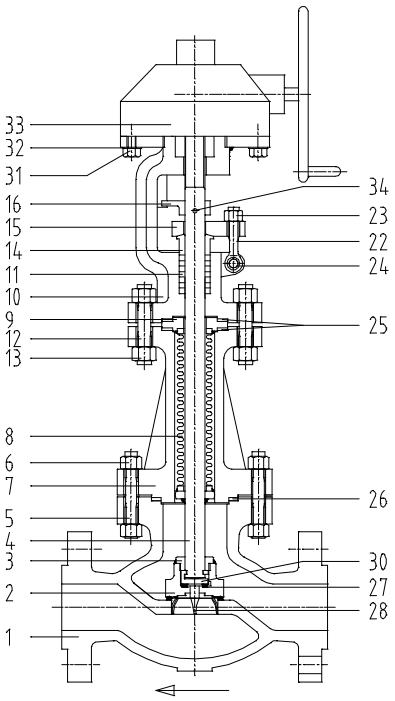
Class 150: 8"



Class 300: 6"
Class 600: 4"



Class 300: 8"
Class 600: 6"



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

Table 6: Parts list

Part No.	Description	Material			
		Bellows: A 182 F316L[2)]			
		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 + ST6	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

2 Other bellows materials on request, e.g. SS316Ti.

Part No.	Description	Material			
		Bellows: A 182 F316L[2)]			
		A 216 WCB/Trim 8	A 216 WCB/Trim 5	A 351 CF8/Trim 2	A 351 CF8M/Trim 10
4[3)]	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[3)]	Bellows	SS 316L	SS 316L	SS 316L	SS 316L
9[3)]	End plate[4)]	SS 316L	SS 316L	SS 316L	SS 316L
10	Yoke	A 216 WCB	A 216 WCB	A 351 CF8	A 351 CF8M
11[3)]	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[3)]	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
25[3)]	Gasket	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite
26[3)]	Gasket	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite	SS 316 + graphite
27	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[3)]	Pin	Carbon steel	Carbon steel	Stainless steel	Stainless steel

3 Recommended spare parts
4 Welded to bellows

Dimensions and weights

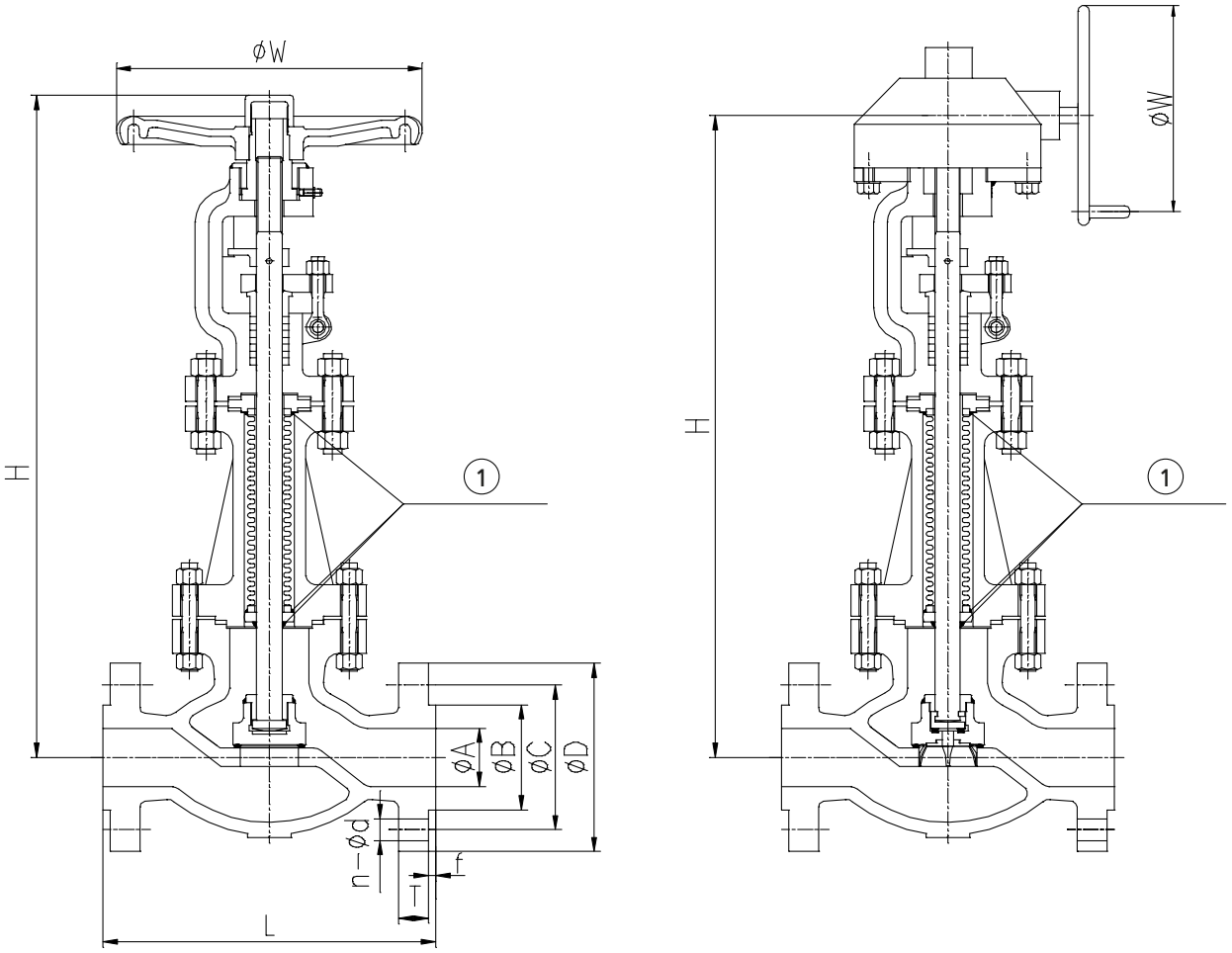


Fig. 1: ECOLINE GLB 150-600

①	Seal-welded

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

Class	NPS	L	Ø A	Ø B	Ø C	Ø D	T	f	n - Ø d	H[5)]	Ø W	Travel	[kg]
150	2''	203	50,8	92,1	120,7	150	14,3	2	4 - 19	391	200	15	23
	2 ½''	216	63,5	104,8	139,7	180	15,9	2	4 - 19	459	200	20	31
	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[6)]	65	351
	12''	698	304,5	381,0	431,8	458	30,2	2	8 - 19	1159	540[6)]	80	534
300	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
	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[6)]	65	541
	12''	711	304,8	381,0	450,8	520	49,3	2	16 - 32	1287	610[6)]	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

5 Closed
6 Diameter of gearbox handwheel

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Class	NPS	L	Ø A	Ø B	Ø C	Ø D	T	f	n - Ø d	H[5)]	Ø W	Travel	[kg]
600	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[6)]	55	620

Mating dimensions as per standard

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

Overview of available materials

Table 8: Symbols key

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

Table 9: Overview of variants

Class	NPS	Single valve disc	Double valve disc (with pilot plug)	Valve disc guide	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	✘	✓	✓	✘	✓

Installation information

Install shut-off globe valves in such a way that the fluid enters the valve beneath the valve disc and flows out above the valve disc. Installation in piping with alternating flow is also possible.

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

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