

GAC

GATE VALVE
API 600



TERMOVENT
since 1963 **SC**

TECHNICAL DATA SHEET

1. GENERAL FEATURES

Gate Valves [GAC] acc. to API 600

NPS 2" ÷ DN 26"

Class 150 ÷ Class 1500

Design

- Cast body and bonnet
- Bolted bonnet (BB)
- Rising stem (RS), outside screw and yoke (OS&Y)
- Flexible, split, solid or parallel slide wedge
- Hard-faced seats

Applications

- The main purpose of the GAC is to isolate fluid flow through the pipeline for Power plant, Chemical, Petrochemical, Refining, Water supply and other

Media

- Water, steam, gas, oil and other non-aggressive media

Pressure and temperature ratings

- Class 150 ÷ Class 1500
- Temperatures up to 600°C
- p/T according to ASME B16.34

Materials

- Carbon, low temperature and heat-resistant alloys and stainless steels

Advantages

- Long service life
- Respect for emission standards
- Easy handling and maintenance

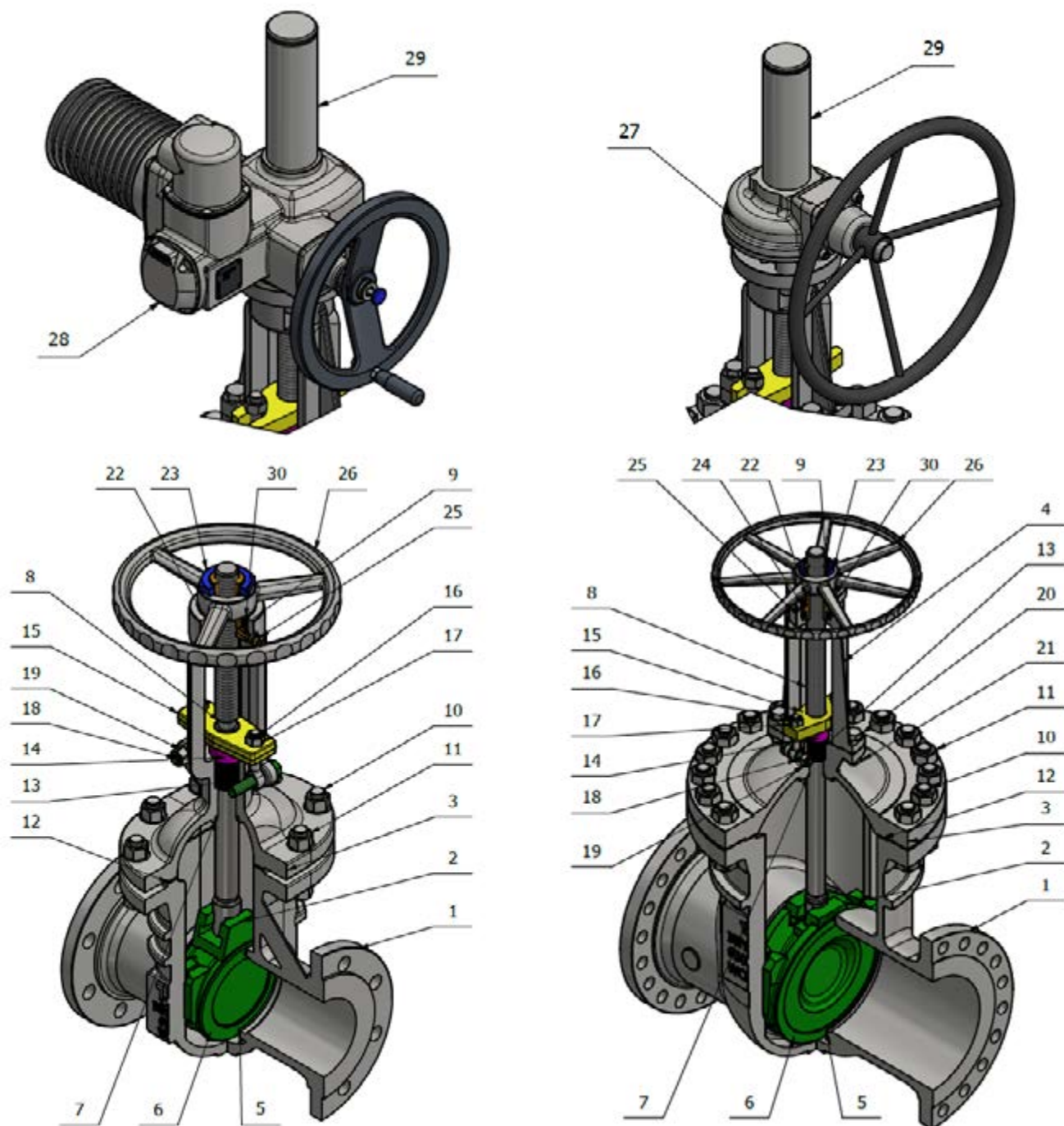
Options

- Electric actuator
- Pneumatic actuator
- Spring loaded stuffing box (SLSB)
- Lantern ring
- Position indicator
- Limit switches
- Locking device
- Over pressure safety devices
- Flanged or welded ends according to other Standards and Norms.

Testing

- Every produced gate valve shall be tested according to API 598

2. PARTS & MATERIALS



- Class 150: Bonnet < NPS 10" ≥ Bonnet + Yoke
- Class 300: Bonnet < NPS 6" ≥ Bonnet + Yoke
- Class 600: Bonnet < NPS 6" ≥ Bonnet + Yoke
- Class 900: Bonnet < NPS 6" ≥ Bonnet + Yoke
- Class 1500: Bonnet < NPS 6" ≥ Bonnet + Yoke

Figure D.2.1 Parts

List of materials

Table D.2.1

Pos.	Name	Material Group acc. to ASME B16.34						
1	Body ⁽¹⁾	A216 WCB	A352 LCB	A217 WC6	A217 WC9	A217 C12A	A351 CF8	A351 CF8M
2	Wedge ⁽¹⁾							
3	Bonnet ⁽¹⁾							
4	Yoke	A216 WCB	A352 LCB	A217 WC6			A351 CF8	
5	Body overlay ⁽²⁾	Trim No. acc. to API 600 (table below D.2.1.1)						
6	Wedge overlay ⁽²⁾							
7	Backseat overlay ⁽²⁾							
8	Stem							
9	Stem nut	Cu-Alloy						
10	Stud bolts	A193 B7		A193 B16			A193 B8	A193 B8M
11	Nuts	A194 2H		A194 7			A194 8	A194 8M
12	Bonnet gasket	reinforced graphite (Class 150) / spiral wound / oval metal ring						
13	Stem packing rings	graphite with corrosion inhibitor						
14	Packing gland	SS420					SS304	
15	Gland flange	A516 Gr.60					SS304	
16	Gland bolts	AISI 1035					SS304	
17	Gland nuts	A194 2H					A194 8	
18	Head bolts	steel					stainless steel	
19	Nuts	steel					stainless steel	
20	Head bolts	steel					stainless steel	
21	Nuts	steel					stainless steel	
22	Cover bearing	AISI 1045					SS304	
23	Handwheel nut	AISI 1045					SS304	
24	Bearings	axial						
25	Grease injector	Cu-Alloy / steel						
26	Handwheel	steel						
27	Gearbox	commercial						
28	Electric actuator	commercial						
29	Protect tube	steel						
30	Slotted set screw	steel						

TM trademark materials

⁽¹⁾ Other materials available acc. to ASTM Specification⁽²⁾ Hardness differential between the body and wedge seating surfaces shall be min. 50 HB

Materials for Trim No.

Table D.2.1.1

Trim No.	Body overlay	Wedge overlay	Backseat overlay	Stem
1	13Cr	13Cr	13Cr	SS420
2	304	304	304	SS304
5	Stellite™	Stellite™	Stellite™	SS420
8	Stellite™	13Cr	13Cr	SS420
10	316	316	316	SS316
12	Stellite™	316	316	SS316
15	Stellite™	Stellite™	Stellite™	SS304
16	Stellite™	Stellite™	Stellite™	SS316

3. STANDARDS & DIMENSIONS

Standards

Table D.2.2

GAC	Class 150 ÷ Class 1500
General design	API 600
Wall thickness	API 600
Pressure / temperature rating	ASME B16.34
FTF according to	ASME B16.10
ETE according to	ASME B16.10
Flanged Ends according to	ASME B16.5 and ASME B16.47
Welding Ends according to	ASME B16.25
Testing according to	API 598

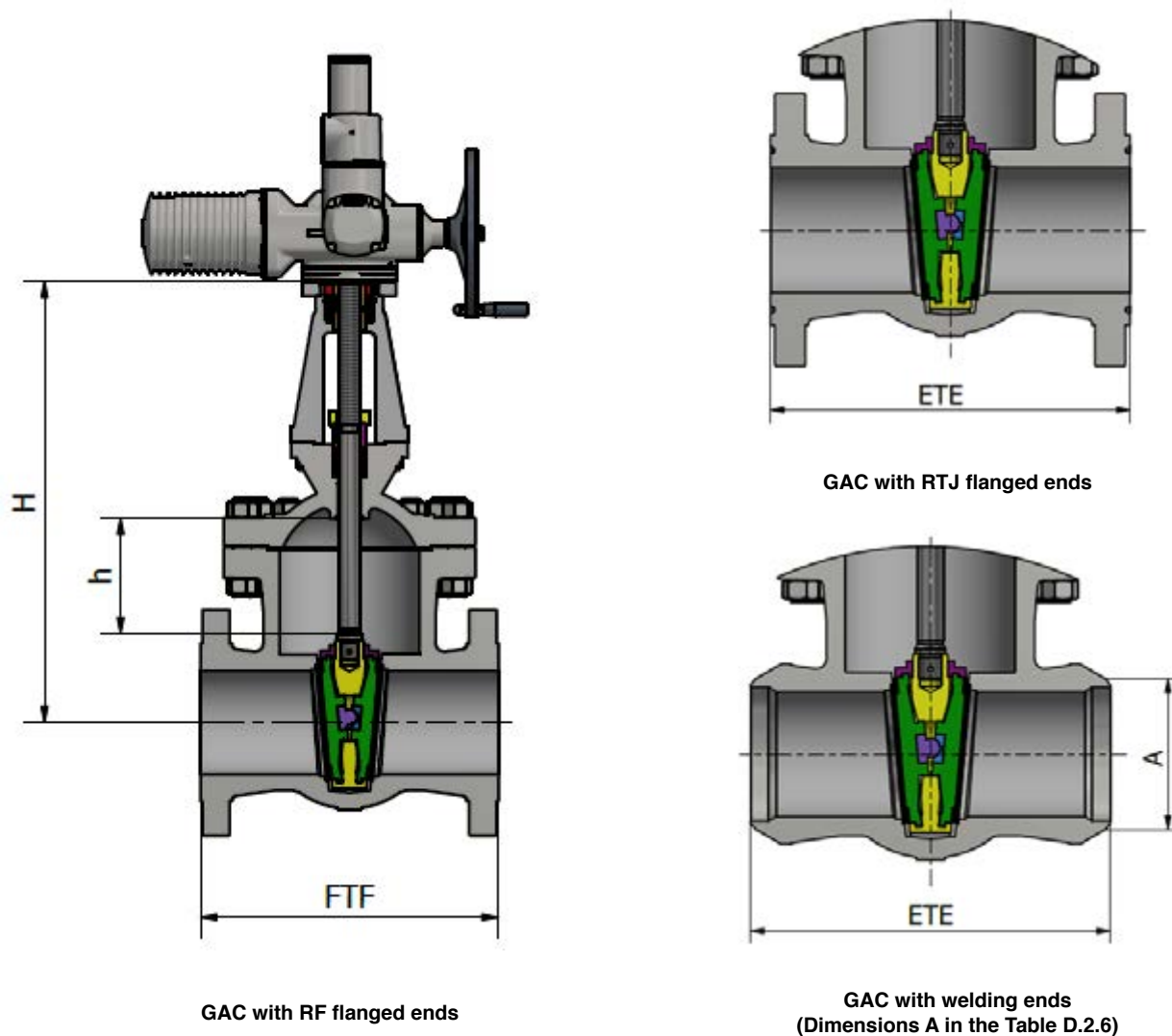


Figure D.2.2 – Dimensions

GAC Dimensions

Table D.2.3

Pressure Class	Nominal pipe size	Face-To-Face (RF)	End-To-End (RTJ)	End-To-End	Centre-to-Connection Flange	Stroke	Connection Flange ISO 5210	Kvs	Weight ⁽¹⁾	
Class	NPS	FTF	ETE		H	h		m³/h	FTF	ETE ⁽²⁾
		mm							kg	
Class 150	2"	178	191	216	334	70	F10-B1	332	23	19
	2 1/2"	190	203	241	420	83	F10-B1	518	30	26
	3"	203	216	282	442	91	F10-B1	747	37	34
	4"	229	242	305	553	116	F10-B1	1327	49	43
	5"	254	267	381	607	145	F10-B1	2074	74	61
	6"	267	280	403	707	168	F10-C	2986	86	80
	8"	292	305	419	791	223	F10-C	5309	144	130
	10"	330	343	457	908	276	F14-B1	8296	220	210
	12"	356	369	502	1085	332	F14-B1	11946	323	300
	14"	381	394	572	1171	365	F14-C	14568	410	396
	16"	406	419	610	1447	426	F14-C	19298	605	575
	18"	432	445	660	1558	462	F16-B1	24690	740	690
	20"	457	470	711	1710	526	F16-B1	30747	910	868
24"	508	521	813	2103	646	F14-B3	44851	1600	1505	
26"	559	572	864	2400	700	F14-B3	52898	2010	1926	
Class 300	2"	216	232	216	384	74	F10-B1	332	33	26
	2 1/2"	241	257	241	431	86	F10-B1	518	44	35
	3"	282	298	282	463	90	F10-B1	747	53	42
	4"	305	321	305	540	118	F10-B1	1327	81	63
	5"	381	397	381	625	144	F10-B1	2074	153	125
	6"	403	419	403	671	164	F14-B1	2986	181	150
	8"	419	435	419	830	225	F14-B1	5309	254	216
	10"	457	473	457	1066	311	F14-B1	8296	386	328
	12"	502	518	502	1236	331	F16-B1	11946	587	490
	14"	762	776	762	1296	370	F16-B1	14568	880	730
	16"	838	854	838	1396	408	F14-B3	19298	1100	944
	18"	914	930	914	1547	475	F14-B3	23974	1415	1266
	20"	991	1010	991	1651	517	F14-B3	29947	1855	1594
24"	1143	1165	1143	2051	621	F16-B3	43884	2786	2497	
Class 600	2"	292	295	292	388	74	F10-B1	332	42	34
	2 1/2"	330	333	330	431	85	F10-B1	518	54	44
	3"	356	359	356	490	94	F10-B1	747	63	54
	4"	432	435	432	597	120	F10-C	1327	125	90
	5"	508	511	508	625	144	F14-B1	2000	187	137
	6"	559	562	559	691	160	F14-B1	2986	250	205
	8"	660	663	660	830	216	F14-B1	5138	424	363
	10"	787	790	787	1041	312	F16-B1	7889	685	545
	12"	838	841	838	1235	340	F14-B3	11457	970	856
	14"	889	892	889	1293	370	F14-B3	13741	1280	1173
	16"	991	994	991	1450	425	F16-B3	18053	1848	1619
	18"	1092	1095	1092	1609	478	F16-B3	22585	2249	1897
	20"	1194	1200	1194	1732	505	F16-B3	26846	2953	2635
24"	1397	1407	1397	2071	617	F16-B3	40151	4478	3856	
Class 900	2"	368	371	368	458	69	F10-B1	290	73	57
	2 1/2"	419	422	419	511	75	F10-B1	4212	130	107
	3"	381	384	381	508	88	F10-B1	628	107	83
	4"	457	460	457	571	120	F14-B1	1086	170	137
	5"	559	562	559	667	152	F14-B1	1873	285	238
	6"	610	613	610	835	171	F14-B1	2745	350	272
	8"	737	740	737	837	210	F16-B1	4666	620	490
	10"	838	841	838	1081	275	F14-B3	7283	960	789
	12"	965	968	965	1182	318	F14-B3	10254	1367	990
	16"	1130	1140	1130	1505	426	F16-B3	16259	2545	2110
Class 1500	2"	368	371	368	458	69	F10-B1	290	73	57
	2 1/2"	419	422	419	511	75	F10-B1	421	130	107
	3"	470	473	470	592	88	F14-B1	628	170	124
	4"	546	549	546	650	117	F14-B1	1086	285	158
	6"	705	711	705	930	179	F14-B1	2392	690	426

(1) Weight without actuators

(2) Weight for butt welding ends

- Depending on the executions weights are subject to modification



4. FLANGED ENDS DESIGN & DIMENSIONS

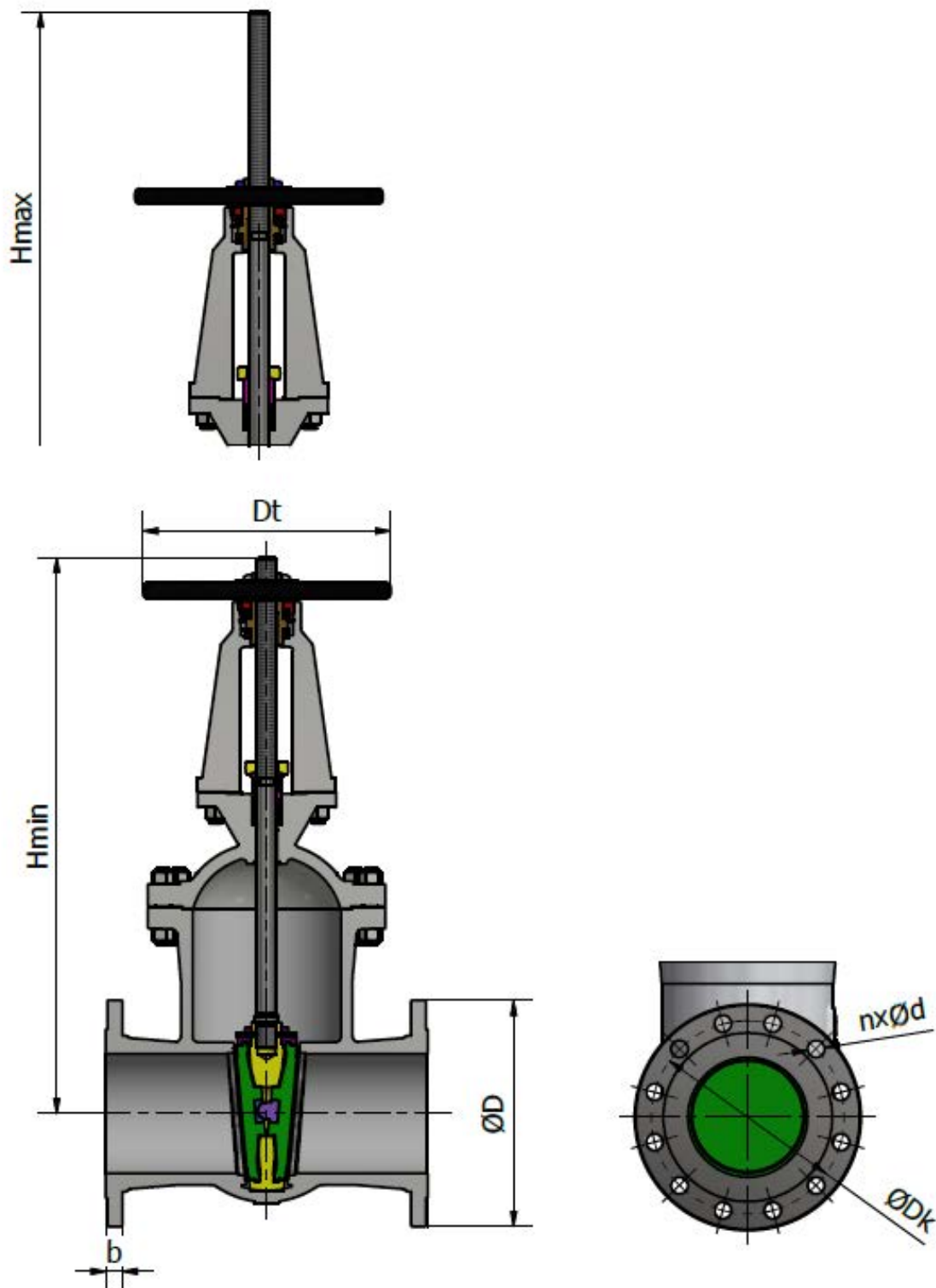


Figure D.2.3 – GAC with flanged ends - dimensions

Flanged ends dimensions

Table D.2.4

NPS		2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"
Class 150																
mm	øD	152	178	190	229	254	279	343	406	483	533	597	635	693	813	870
	øDk	120,6	139,7	152,4	190,5	215,9	241,3	298,4	362,0	431,8	476,2	539,8	577,8	635,0	749,3	806,4
	nxød	4x19,0	4x19,0	4x19,0	8x19,0	8x22,2	8x22,2	8x22,2	12x25,4	12x25,4	12x28,6	16x28,6	16x31,8	20x31,8	20x34,9	24x34,9
	b (RF)	15,7	17,2	19,0	23,9	24,0	25,4	28,4	29,9	31,7	34,8	36,6	39,6	42,6	47,5	68,2
	b (RTJ)	20,5	22,0	23,8	28,7	28,8	30,2	33,2	34,7	36,5	39,6	41,4	44,4	47,5	52,3	79,4
	Hmax	429	492	534	669	769	851	1026	1267	1482	1584	1907	2104	2321	2873	3632
	Hmin	359	409	443	553	624	683	803	991	1150	1219	1481	1642	1795	2227	2932
	Dt	250	250	250	250	300	300	400	500	500	500	630	730	730	730	GB ⁽¹⁾
Class 300																
mm	øD	165	190	210	254	279	318	381	444	521	584	648	711	775	914	-
	øDk	127,0	149,4	168,1	200,2	235,0	269,7	330,2	387,4	450,8	514,4	571,5	628,6	685,8	812,8	-
	nxød	8x19,0	8x22,2	8x22,2	8x22,2	8x22,2	12x22,2	12x25,4	16x28,6	16x31,7	20x31,7	20x34,9	24x34,9	24x34,9	24x41,3	-
	b (RF)	22,1	25,4	28,4	31,7	34,8	36,6	41,1	47,5	50,8	53,8	57,1	60,2	63,5	69,8	-
	b (RTJ)	28,5	91,8	34,8	38,1	41,2	43,0	47,5	53,9	57,2	60,2	62,5	66,6	71,5	79,4	-
	Hmax	468	522	555	671	784	919	1130	1439	1623	1742	1889	2159	2901	3563	-
	Hmin	394	436	465	553	640	755	905	1128	1292	1372	1481	1684	2384	2942	-
	Dt	250	250	250	300	400	400	500	500	500	630	730	730	GB ⁽¹⁾	GB ⁽¹⁾	-
Class 600																
mm	øD	165	190	210	273	330	356	419	508	559	603	686	743	813	940	-
	øDk	127,0	149,4	168,1	215,9	266,7	292,1	349,2	431,8	489,0	527,0	603,2	654,0	723,9	838,2	-
	nxød	8x19,0	8x22,2	8x22,2	8x25,4	8x28,6	12x28,6	12x31,7	16x34,9	20x34,9	20x38,1	20x41,3	20x44,4	24x44,4	24x50,8	-
	b (RF)	31,8	34,8	38,2	44,5	50,8	54,2	52,0	69,9	72,9	76,2	82,6	89,0	15,3	108,0	-
	b (RTJ)	33,3	36,3	39,7	46,0	52,3	55,7	63,5	71,4	74,4	77,7	84,1	90,5	98,4	112,7	-
	Hmax	468	521	569	671	784	925	1129	1460	1647	2225	2516	2828	3034	3549	-
	Hmin	394	436	475	551	640	765	913	1148	1307	1855	2091	2350	2529	2932	-
	Dt	250	250	250	300	400	500	500	630	730	GB ⁽¹⁾	GB ⁽¹⁾	GB ⁽¹⁾	GB ⁽¹⁾	GB ⁽¹⁾	-
Class 900																
mm	øD	216	244	241	292	349	381	470	546	610	-	705	-	-	-	-
	øDk	165,1	190,5	190,5	235,0	279,4	317,5	393,7	469,9	533,4	-	616,0	-	-	-	-
	nxød	8x25,4	8x28,6	8x25,4	8x31,7	8x34,9	12x31,7	12x38,1	16x38,1	20x38,1	-	20x44,4	-	-	-	-
	b (RF)	44,5	47,5	44,5	50,9	57,2	62,0	69,9	76,2	85,6	-	95,3	-	-	-	-
	b (RTJ)	46,0	49,0	46,0	52,4	58,7	63,5	71,4	77,7	87,1	-	100,0	-	-	-	-
	Hmax	535	651	596	736	925	956	1158	1492	1626	-	2117	-	-	-	-
	Hmin	466	576	508	616	773	785	948	1217	1308	-	1691	-	-	-	-
	Dt	300	400	400	400	500	500	630	GB ⁽¹⁾	GB ⁽¹⁾	-	GB ⁽¹⁾	-	-	-	-
Class 1500																
mm	øD	216	244	267	311	-	394	-	-	-	-	-	-	-	-	-
	øDk	165,1	190,5	203,2	241,3	-	317,5	-	-	-	-	-	-	-	-	-
	nxød	8x25,4	8x28,6	8x31,7	8x34,9	-	12x38,1	-	-	-	-	-	-	-	-	-
	b (RF)	44,5	47,5	54,2	60,2	-	89,0	-	-	-	-	-	-	-	-	-
	b (RTJ)	46,0	49,0	55,7	61,7	-	92,1	-	-	-	-	-	-	-	-	-
	Hmax	535	651	701	843	-	1210	-	-	-	-	-	-	-	-	-
	Hmin	466	576	613	726	-	1031	-	-	-	-	-	-	-	-	-
	Dt	300	400	400	500	-	630	-	-	-	-	-	-	-	-	-

⁽¹⁾ with Gearbox

5. BUTT WELDING ENDS DESIGN

Symbols

Table D.2.5

A	- outside diameter of the Valve butt welding end in mm
B	- outside diameter of the Pipe butt welding end in mm
T	- wall thickness of the pipe in mm

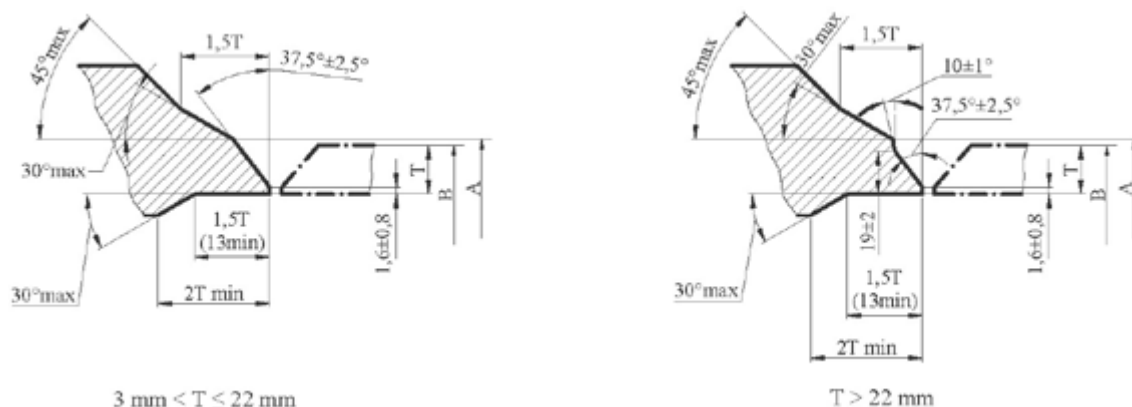


Figure D.2.4 - Form of the butt welding ends ASME B16.25

Dimensions of outside diameter and wall thickness

Table D.2.6

NPS	B	A	T											
			Sch. 20	Sch. 30	Sch. Std	Sch. 40	Sch. 60	Sch. XS	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	Sch. XXS
2"	60,3	---	---	3,18	3,91	3,91	---	5,54	5,53	---	---	---	8,74	11,07
2 1/2"	73,0	75	---	4,78	5,16	5,16	---	7,01	7,01	---	---	---	9,53	14,02
3"	88,9	91	---	4,78	5,49	5,49	---	7,62	7,62	---	---	---	11,13	15,24
4"	114,3	117	---	4,78	6,02	6,02	---	8,56	8,55	---	11,13	---	13,49	17,12
5"	141,3	144	---	---	6,55	6,55	---	9,52	9,52	---	12,7	---	15,88	19,05
6"	168,3	172	---	---	7,11	7,11	---	10,97	10,97	---	14,27	---	18,26	21,95
8"	219,1	223	6,35	7,04	8,18	8,18	10,31	12,70	12,7	15,09	18,26	20,62	23,01	22,22
10"	273,0	278	6,35	7,8	9,27	9,27	12,7	12,70	15,08	18,26	21,44	25,4	28,58	25,40
12"	323,8	329	6,35	8,38	9,52	10,31	14,27	12,70	17,47	21,44	25,4	28,57	33,32	---
14"	355,6	362	7,92	9,52	9,52	11,12	15,08	12,70	19,05	23,83	27,76	31,75	35,71	---
16"	406,4	413	7,92	9,52	9,52	12,7	16,66	12,70	21,43	26,19	30,94	36,52	40,46	---
18"	457,2	464	7,92	11,13	9,52	14,27	19,05	12,7	23,82	29,36	34,92	39,67	45,24	---
20"	508,0	516	9,52	12,7	9,52	15,08	20,62	12,7	26,18	32,54	38,1	44,45	49,99	---
24"	609,6	619	9,52	14,27	9,52	17,47	24,61	12,7	30,96	38,89	46,02	52,37	59,51	---
26"	660,45	670	12,7	---	9,53	---	---	---	---	---	---	---	---	---

6. WEDGE DESIGNS

6.1 Flexible wedge



Figure D.2.5 - Flexible wedge

The flexible wedge can bend and better conform to the valve seats, ensuring reliable sealing even under temperature and pressure fluctuations.

This design reduces the risk of sticking and wear, extending the valve's service life and making maintenance easier.

6.2 Split wedge

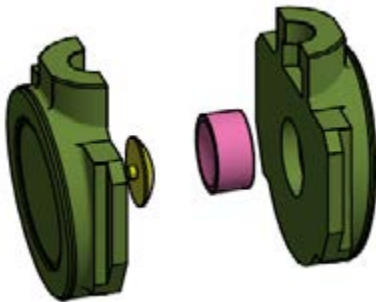


Figure D.2.6 - Split wedge

The split wedge allows each half of the gate to adjust independently to the valve seats, improving sealing even when the surfaces are misaligned or worn.

It also reduces friction and stress during valve operation, extending its service life and increasing reliability.

6.3 Solid wedge



Figure D.2.7 - Solid wedge

This type of wedge is suitable for small DN.

This type of wedge is not suitable for high pressure and temperature.

If the gate valve is closed while hot, the wedge can become stuck.

6.4 Parallel Slides Wedge

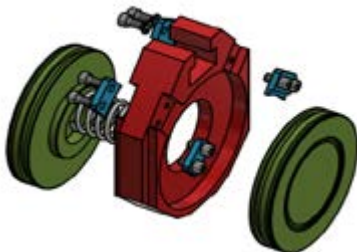


Figure D.2.8 - Parallel slide wedge

This type of valve is designed with two parallel discs, each sliding over its own seat.

It relies on upstream pressure to act on the downstream disc, ensuring a good seal.

There is no wedging or additional load on the seats, which allows for a smaller actuator torque. However, a drawback is the wear on the seat caused by the sliding disc during operation.

7. OPTIONAL EXECUTIONS

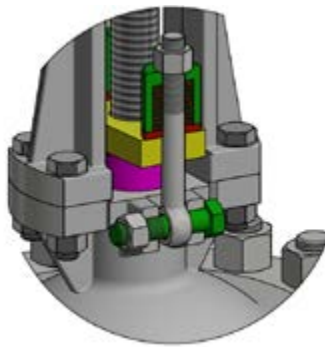


Figure D.2.9 –
Spring loaded stuffing box

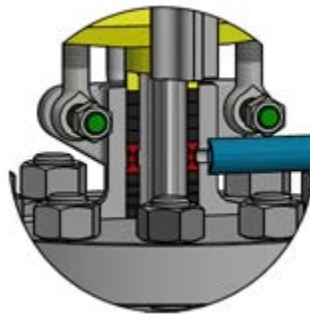
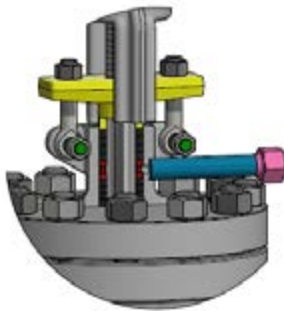


Figure D.2.10 - Lantern ring



Figure D.2.11 – Position indicator

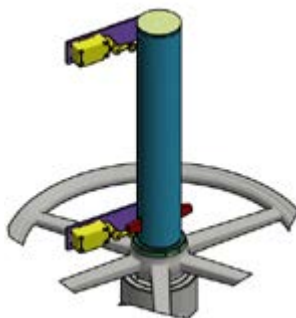


Figure D.2.12 – Limit switches

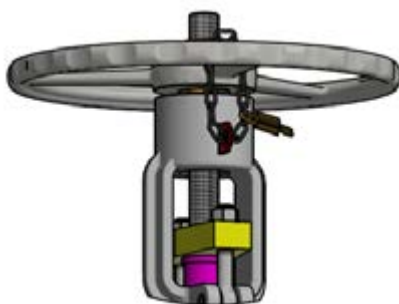


Figure D.2.13 - Locking devices

8. OVER PRESSURIZATION, PRESSURE LOCKING & THERMAL BINDING PROCESS CONDITIONS

In case when GAC in the closed position the temperature of the fluid (mainly water) increase in the chamber above the wedge impermissibly high pressure can occur.

To prevent failure or damage of pressure-relating parts gate valves should be equipped with some of the presented constructive solutions:

8.1 Solutions for Over-Pressurization & Pressure Locking

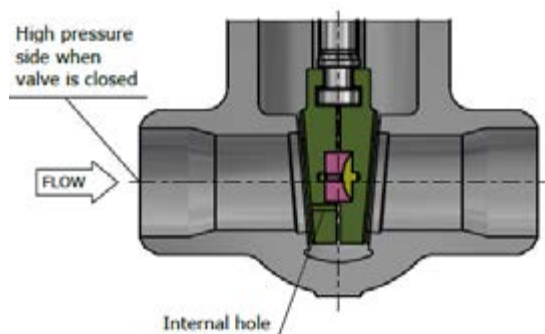


Figure D.2.14 - With a hole in the wedge

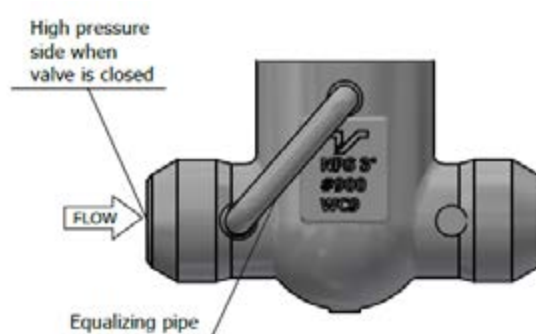


Figure D.2.15 - With equalizing pipe

- **One side wedge hole** connecting the body cavity to the high-pressure side of the valve.
- **Equalizing pipe** connecting the body cavity to the high-pressure side of the valve.

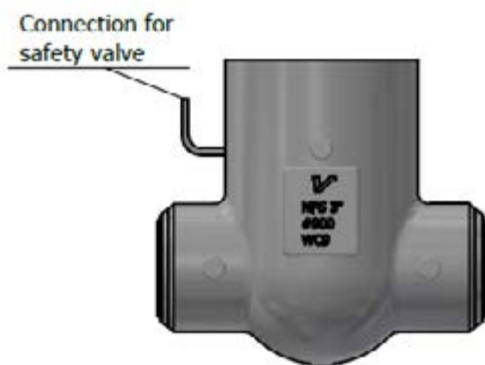


Figure D.2.16 - With closed nozzle for safety valve

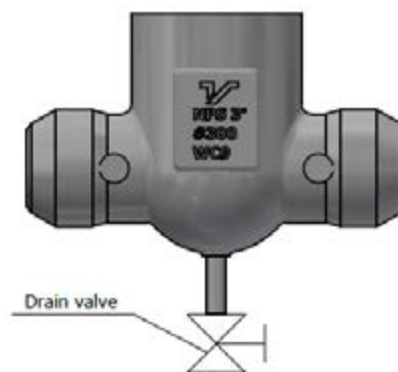


Figure D.2.17 - With drain valve

- **With closed nozzle for safety valve.**
Safety valve connecting the body cavity to the atmosphere.
The discharge of this valve must be made to a safe location (safety valve is not scope of delivery).
- **With a drain valve** connecting the body cavity to the atmosphere.
The discharge of this valve must be made to a safe location.

8.2 Solutions for Thermal Biding

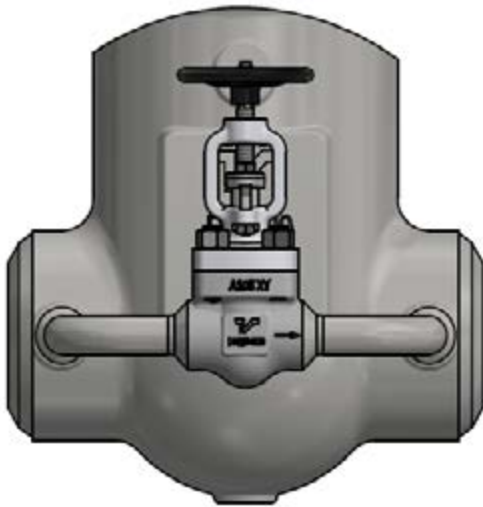


Figure D.2.18 – With By-pass valve

- **By-pass valve** in addition to equalizing pressure differential across the wedge, will allow warm up of both sides of the wedge.
- After reaching the operating parameters By-pass valve on opened GAC, should be closed.
- After closing a GAC, back up the stem (1/8 turn). This will give room for dimensional changes due to temperature variation. This is only applicable for manually operated valves or on electric actuator- operated valves (by handwheel).
- Adequate supports can reduce the thermal binding problem by reducing pipe stresses
- Parallel slide GAC is not subjected to thermal binding. If parallel slide GAC is selected as a possible solution for thermal binding, it is very important to know that such a valve: subject to pressure lock, higher seat wear and poor sealing under low pressure.

8.3 Combined Effects of Over-Pressurization, Pressure Locking & Thermal Binding

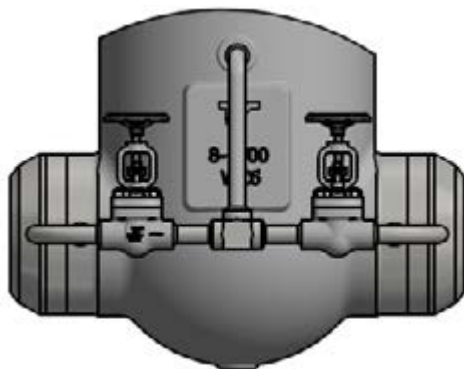


Figure D.2.19 – With double by-pass & equalizing pipe

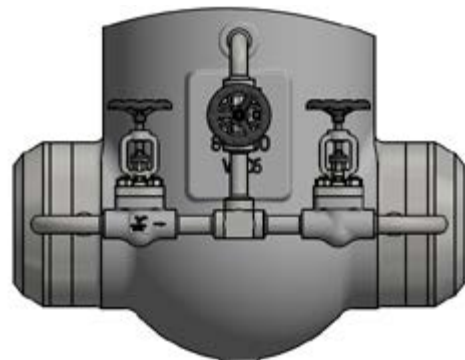


Figure D.2.20 – With double by-pass & equalizing pipe with a valve

- After reaching the operating parameters By-pass valves on the pressurized side of closed GAC should be in open position. When GAC is opened By-pass valves should be closed.

8.4 By-pass Valve Size Selection

When by-pass valves are required, they shall be in accordance with Table D.2.7

Table D.2.7

Valve nominal size	By-pass nominal size
NPS	NPS
2" ≤ 4"	1/2"
5" ≤ 8"	3/4"
8" ≤ 26"	1"

9. PRESSURE & TEMPERATURE RATINGS

Pressure (bar) / Temperature (°C) ratings according to ASME B16.34

Table D.2.8

Materials	Class	-29+38	50	100	150	200	250	300	325	345	375	400	425	450	475	500	538	550	595	600
WCB	150	19,6	19,2	17,7	15,8	13,8	12,1	10,2	8,6	8,4	7,4	6,5	5,5							
	300	51,1	50,1	46,6	45,1	43,8	41,9	39,8	37,8	37,6	36,4	34,7	28,8							
	600	102,1	100,3	93,2	90,1	87,6	83,9	79,6	75,6	75,1	72,7	69,4	57,5							
	900	153,2	150,4	139,8	135,2	131,4	125,8	119,5	113,4	112,7	109,1	104,2	86,3							
	1500	255,3	250,6	233,0	225,4	219,0	209,7	199,1	189,0	187,8	181,8	173,6	143,8							
LCB	150	19,8	19,5	17,7	15,8	13,8	12,1	10,2	9,3	8,6										
	300	51,7	51,7	51,5	50,2	48,6	46,3	42,8	41,3	40,3										
	600	103,4	103,4	103,1	100,3	97,3	92,6	85,7	82,6	80,6										
	900	155,1	155,1	154,6	150,5	145,9	139,0	128,5	123,9	120,8										
	1500	258,6	258,6	257,7	250,9	243,2	231,6	214,2	206,5	201,4										
WC6	150	19,8	19,5	17,7	15,8	13,8	12,1	10,2	9,3	8,6	8,4	7,4	6,5	5,5	4,6	3,7	2,8	1,4 ⁽¹⁾	1,4 ⁽¹⁾	1,4 ⁽¹⁾
	300	51,7	51,7	51,5	49,7	48,0	46,3	42,8	41,3	40,4	40,2	38,8	36,6	35,0	33,8	31,7	25,7	14,9	12,7	6,6
	600	103,4	103,4	103,0	99,5	95,9	92,6	85,7	82,6	80,9	80,4	77,6	73,1	70,0	67,6	63,3	51,5	29,8	25,4	13,3
	900	155,1	155,1	154,4	149,2	143,9	139,0	128,5	123,9	121,3	120,7	116,4	109,7	104,9	101,4	95,0	77,2	44,7	38,1	19,9
	1500	258,6	258,6	257,4	248,7	239,8	231,6	214,2	206,5	202,2	201,1	193,9	182,8	174,9	169,0	158,3	128,6	74,5	63,5	33,2
WC9	150	19,8	19,5	17,7	15,8	13,8	12,1	10,2	9,3	8,6	7,4	6,5	5,5	4,6	3,7	2,8	1,4	1,4 ⁽¹⁾	1,4 ⁽¹⁾	1,4 ⁽¹⁾
	300	51,78	51,7	51,5	50,2	48,7	46,3	42,8	41,3	40,4	38,8	36,6	35,0	33,8	31,7	28,2	18,4	15,6	7,6	6,9
	600	103,4	103,4	103,1	100,4	97,3	92,6	85,7	82,6	80,9	77,6	73,1	70,0	67,6	63,3	56,4	36,9	31,3	15,2	13,8
	900	155,1	155,1	154,6	150,6	146,0	139,0	128,5	123,9	121,3	116,4	109,7	104,9	101,4	95,0	84,6	55,3	46,9	22,8	20,7
	1500	258,6	258,6	257,7	250,9	243,3	231,6	214,2	206,5	202,2	193,9	182,8	174,9	169,0	158,3	141,0	92,2	78,2	38,1	34,4
C12A	150	20,0	19,5	17,7	15,8	13,8	12,1	10,2	9,3	8,6	7,4	6,5	5,5	4,6	3,7	2,8	1,4	1,4 ⁽¹⁾	1,4 ⁽¹⁾	1,4 ⁽¹⁾
	300	51,7	51,7	51,5	50,2	48,7	46,3	42,8	41,3	40,4	38,8	36,6	35,0	33,8	31,7	28,2	25,1	24,9	19,9	19,5
	600	103,4	103,4	103,1	100,4	97,3	92,6	85,7	82,6	80,9	77,6	73,1	70,0	67,6	63,3	56,4	50,1	49,9	39,7	39,0
	900	155,1	155,1	154,6	150,6	146,0	139,0	128,5	123,9	121,3	116,4	109,7	104,9	101,4	95,0	84,6	75,2	74,8	59,6	58,5
	1500	258,6	258,6	257,7	250,9	243,3	231,6	214,2	206,5	202,2	193,9	182,8	174,9	169,0	158,3	141,0	125,3	124,7	99,3	97,5
CF8	150	19,0	18,3	15,7	14,2	13,2	12,1	10,2	9,3	8,6	7,4	6,5	5,5	4,6	3,7	2,8	1,4	1,4 ⁽¹⁾	1,4 ⁽¹⁾	1,4 ⁽¹⁾
	300	49,6	47,8	40,9	37,0	34,5	32,5	30,9	30,2	29,7	29,0	28,4	28,0	27,4	26,9	26,5	24,4	23,6	17,7	16,9
	600	99,3	95,6	81,7	74,0	69,0	65,0	61,8	60,4	59,5	58,1	56,9	56,0	54,8	53,9	53,0	48,9	47,1	35,3	33,8
	900	148,9	143,5	122,6	111,0	103,4	97,5	92,7	90,7	89,2	87,1	85,3	84,0	82,2	80,8	79,5	73,3	70,7	53,0	50,6
	1500	248,2	239,1	204,3	185,0	172,4	162,4	154,6	151,1	148,7	145,2	142,2	140,0	137,0	134,7	132,4	122,1	117,8	88,4	84,4
CF8M	150	19,0	18,4	16,2	14,8	13,7	12,1	10,2	9,3	8,6	7,4	6,5	5,5	4,6	3,7	2,8	1,4	1,4 ⁽¹⁾	1,4 ⁽¹⁾	1,4 ⁽¹⁾
	300	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,9	30,4	29,9	29,4	29,1	28,8	28,7	28,2	25,1	24,9	20,7	19,9
	600	99,3	96,2	84,4	77,0	71,3	66,7	63,2	61,8	60,9	59,8	58,9	58,3	57,7	57,3	56,4	50,1	49,9	41,4	39,8
	900	148,9	144,3	126,6	115,5	107,0	100,1	94,9	92,7	91,3	89,6	88,3	87,4	86,5	86,0	84,6	75,2	74,8	62,1	59,7
	1500	248,2	240,6	211,0	192,5	178,3	166,9	158,1	154,4	152,2	149,4	147,2	145,7	144,2	143,4	141,0	125,3	124,7	103,6	99,5

Note: Presented values belong to Standard Rating. For Special class contact Tervovent SC.

(1) For welding-end valves only. Class 150 flanged end valves terminate at 538°C.

10. MARKING & LABELING

Gate valve shall be marked in accordance with general design specification and the requirements of standard API 600, ASME B16.34 or ANSI/MSS SP-25-2018.

10.1 Marking

General marking of the valve

Table D.2.9

Item ^a	Subject Class designed valves		Marking
1	Product identification	Type	GAC
		Serial number	xxxx.xx.xx/xx
2	Nominal size		NPS xxx
3	Class designation		Class xxx
4	Body Material		xxx
5	Cast (heat) identification		xxx
6	Allowable flow direction arrow		
7	Manufacturer's name and registered trade details		Termovent SC Serbia
8	Ring joint number		-
9	Maximum allowable temperature, T_{Smax}		xx °C or xx C
	Minimum allowable temperature, T_{Smin}		xx °C or xx C
10	Maximum allowable pressure PS		xx bar
11	Trim identification		xxx
12	Month / year of manufacturing		mm/yy

^a Other (additional) markings may be requested by the user or recommended by the manufacturer.

10.1.1 Additional Marking

Equipment that meets specific requirements for safety and operation in potentially explosive atmospheres should be marked with an additional mark as follows:



The valves satisfy the requirements of API Standard 600.



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.



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.

10.2 Labeling

Valve information can be found on the valve body, and the typical valve nameplate is shown on Figure D.2.21.

The nameplate is a rectangular label with a border. On the left side, there is a logo for 'TERMOVENT SC' with 'SERBIA' underneath it. Below the logo is a box labeled 'Additional marking'. To the right of the logo, there are several fields for valve information: 'TYPE', 'DN/NPS', 'PN/Class', 'Body', 'PS/TS', 'Trim', 'S/N No.', and 'Date'. Each field is represented by a rectangular box. The 'Trim' field is a single long box, while the others are smaller. The 'S/N No.' and 'Date' fields are also rectangular boxes.

TYPE	Type of valve
DN / NPS	Nominal valve size
Rating designation	Pressure Class
Body	Material
PS / TS	Pressure-temperature rating
Trim Identification	Material of stem and sealing faces
S / N No.	Serial Number
Date	Date of manufacture
Additional marking	As per 10.1.1

Figure D.2.21

11. SURFACE PROTECTION *

The supplied valves are already protected against corrosion with a manufacturer-standard paint system. The protective paint system meets the requirements of ISO 12944 for corrosion category C3-M.

** Note: At the customer's request, a special surface protection and color different from the standard can be applied.*

12. PACKAGING

Termovent SC products are packed in standard boxes to ensure safe transport by truck to their destination. The standard packaging includes boxes made of OSB-3 panels fixed on a heat-treated wooden pallet and further protected by outer nylon foil.

It's important to note that standard crates are not stackable.

However, upon request, the packaging can be customized to meet specific customer requirements, such as stackable or sea-worthy packaging.



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