

JAN, 2021

AFFCO FLOWCONTROL

Gate Valve



Standards

Design and Manufacture:

Cast steel gate valve to API 600 (ISO 10434);

Cast stainless steel gate valve to API 600;

Forged steel gate valve to API 602.

Inspection and Test: API 598, API 600 or API 6D

End flange dimension:

NPS \leq 24, ASME B 16.5;

NPS $>$ 24, ASME B 16.47 series B, API 605 or ASME B 16.47 series

A. MSS SP-44.

BW end dimension: ASME B 16.25.

Socket-weld dimension: ASME B 16.11.

Face to face and end to end: ASME B 16.10.

Pressure-temperature ratings: ASME B 16.34.

Packing Seal

Moulded flexible graphite is used as stem packing material. Teflon or combined stem packing can also be used if required by customer. The inner surface of the stuffing box, in which the part in contact with the packing, has a roughness of $ra3.2\mu m$. Stem surface, part of the stem packing in contact, machined accurately after rolling to achieve high accuracy $ra0.8\mu m$ to ensure reliable sealing of the stem area..

Belleville Spring Loaded Packing Impacting System

Belleville spring packing impact system is available on request to improve the durability and reliability of packing seals..

Backseat Design

All of Affco gate valves are backseat construction. In most cases, carbon steel gate valves come with a replaceable backseat. For stainless steel gate valves, the backseat is machined directly inside the bonnet or after welding. The backseat seal is very reliable when the gate valve is in the full open position. However, according to API 600, adding or changing the packing through the backseat is not recommended when the valve is free of impurities.

Seat

Carbon steel gate valves have forged steel seats. Seating surface is Stellite overlay, renewable with threaded seat NPS \leq 10 gate valves upon request. Welded seat is also available NPS \leq 10 cast carbon steel gate valve. Stainless steel gate valves usually have integral seats, or integral directly welded with Stellite. Threaded or welded seats are also available for stainless steel gate valves.

Stem Nut

In general, stem nuts are A439 D2 material. Copper alloys can also be used if requested by the customer, For large sized gate valves (NPS \geq 10 for class 150, NPS \geq 8 for Class 300, NPS \geq 6 for class 600, NPS \geq 5 for Class 900), rolling bearing is fitted at the two sides of the stem nut in order to minimize the open and close torque of the gate valve.

Gasket of Bonnet Flange

Carbon steel or stainless steel+ flexible graphite combined gasket is used for Class 150 gate valve; Stainless steel + flexible graphite wounded gasket is used for Class 300 gate valve; Stainless steel + flexible graphite wounded gasket is used for Class 600 gate valve, and ring joint gasket is also optional for Class 600 gate valve; Ring Joint gasket is used for Class 900 gate valve; Pressurized seal design is used for Class 1500- Class 2500 gate valve.

Body and Bonnet Connection

The body and bonnet of Class 150-Class900 gate valves are usually connected with studs and nuts. Class 1500-2500 gate valves are typically designed with a pressurized seal on the body and bonnet.

Actuation

Gate valves are usually operated by hand wheel or gearbox. Chain wheel or electric actuator is available upon request.

Design of Gate

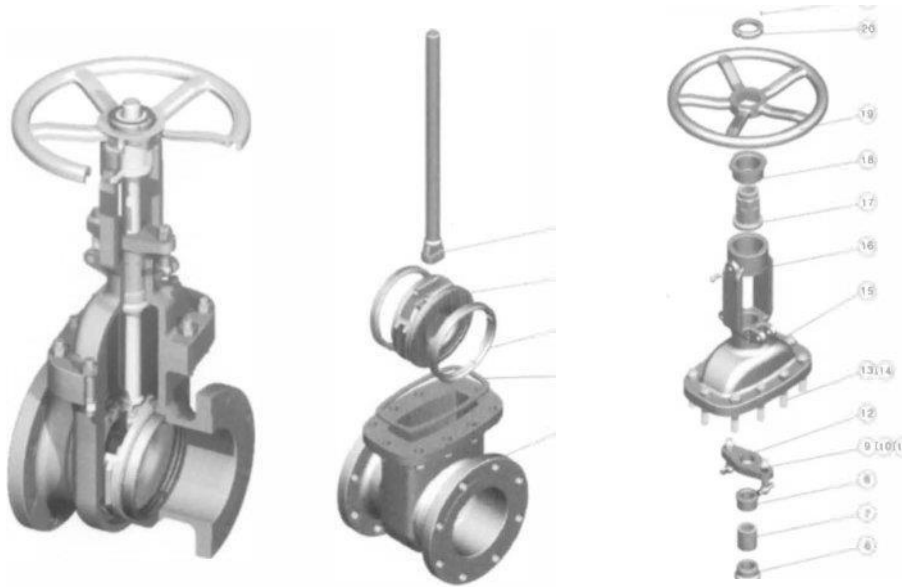
Gate Valves with NPS \geq 2 are of wedge flexible gate;
Gate Valves with NPS $<$ 2 are of wedge solid gate.

Stem Design

The stem is of integral forged design. The minimum diameter of the stem shall as per the standard requirement. The connection of the stem and disc is T type. The strength of the connecting area is bigger than that of the T stem threaded area. The strength test of that area conforms to API 591.

Special Gate Valve

In addition to common gate valves, Affco also produce low temperature gate valves, jacketed gate valves, bellows sealed gate valves, underground extension stem gate valves, flat gate valves, etc.

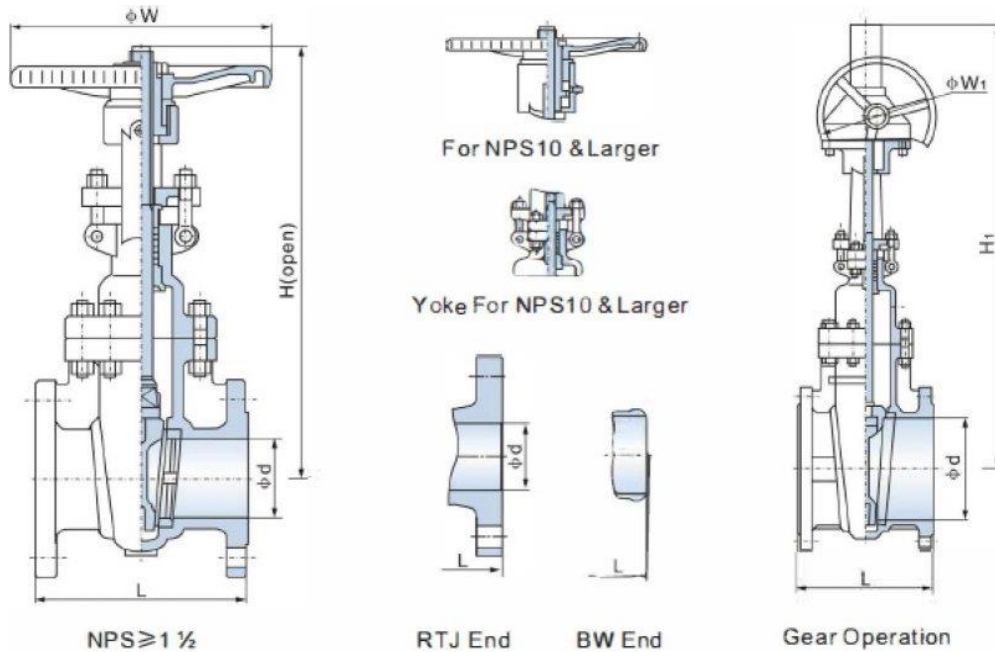


Parts and Material list

Parts No.	Parts Name	Materials				
		WCB/Trim 1	WCB/Trim 5	WCB/Trim 8	CF8/304	CF8M/316
1	Body	ASTMA216 WCB	ASTMA216 WCB	ASTMA216 WCB	ASTMA351 CF8	ASTMA351 CF8M
2	Gasket	Soft Iron + Graphite or 304 + Graphite			304 + Graphite	316 + Graphite
3	Seat ring	A105+13Cr	A105+STL	A105+STL	ASTM A351 CF8	ASTM A351 CF8M
4	Gate	ASTMA216 WCB+13Cr	ASTMA216 WCB+STL	ASTM A216 WCB+13Cr	ASTM A351 CF8	ASTM A351 CF8M
5	Stem	ASTMA182F6a	ASTMA182F6a	ASTMA182F6a	ASTM A182 F304	ASTM A182 F316
6	Backseat bushing	ASTMA182F6a	ASTMA182F6a	ASTMA182F6a	ASTM A351 CF8	ASTM A351 CF8M
7	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
8	Gland	ASTMA182F6a	ASTMA182F6a	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316
9	Gland eyebolt	ASTMA193B7	ASTMA193B7	ASTM A193 B7	ASTMA193B8	ASTMA193B8M
10	Eyebolt nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M
11	Eyebolt pin	ASTM A36	ASTM A36	ASTM A36	304ss	316ss
12	Gland flange	ASTM A216 WCB	ASTM A216 WCB	ASTMA216 WCB	ASTM A351 CF8	ASTM A351 CF8M
13	Bonnet bolt	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
14	Bonnet nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M
15	Bonnet	ASTM A216 WCB	ASTM A216 WCB	ASTMA216 WCB	ASTM A351 CF8	ASTM A351 CF8M
16	Nipple	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
17	Stem nut	ASTM A439 D2	ASTM A439 D2	ASTM A439 D2	ASTM A439D2	ASTM A439 D2
18	Yoke sleeve nut	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
19	Hand wheel	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron
20	Hand wheel nut	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
21	Set screw	ASTM A193 B7	ASTM A193B7	ASTM A193B7	ASTM A193 B7	ASTM A193 B7

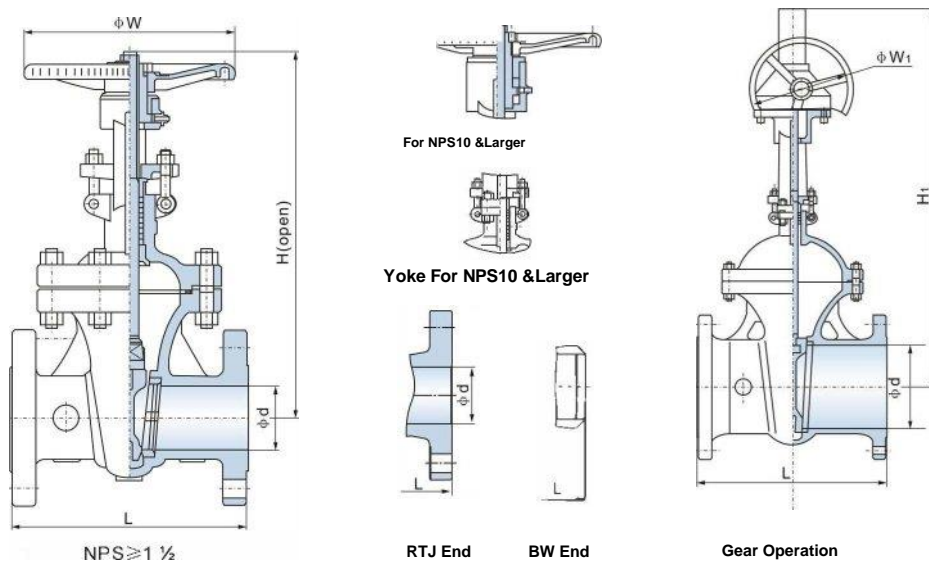
Note: Only some common steel gate valve components are listed in the table. Other material can be provided according to customer requirements or actual valve working conditions..

Class 150 Cast Steel Gate Valve



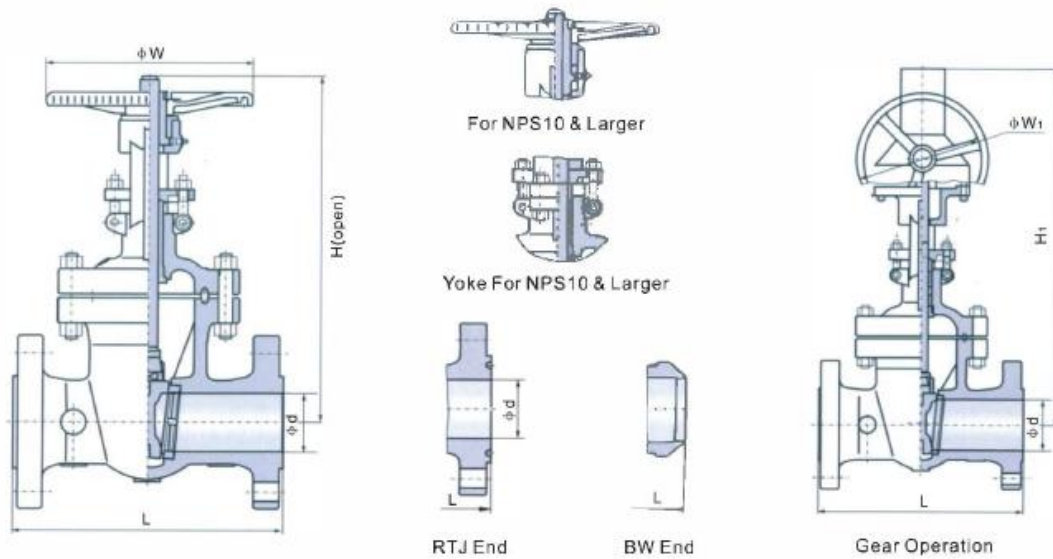
Pressure Class	Size		Dimensions(mm)								Weight (kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand Wheel	Gear Box
			RF	FF	BW							
Class 150	2	50	178	178	216	51	400	-	200	-	19	-
	2 1/2	65	190	190	241	64	435	-	200	-	25	-
	3	80	203	203	283	76	515	-	250	-	33	-
	4	100	229	229	305	102	595	-	280	-	49	-
	5	125	254	254	381	127	725	-	280	-	62	-
	6	150	267	267	403	152	780	820	300	310	77	104
	8	200	292	292	419	203	975	1020	350	310	123	150
	10	250	330	330	457	254	1150	1200	400	310	188	215
	12	300	356	356	502	305	1380	1430	450	310	288	315
	14	350	381	381	572	337	1545	1580	500	310	385	435
	16	400	406	406	610	387	1733	1780	500	460	500	552
	18	450	432	432	660	438	1915	1990	500	460	601	653
	20	500	457	457	711	489	2122	2220	600	460	764	816
	24	600	508	508	813	591	2520	2600	600	460	1007	1185
	26	650	559	559	864	633	-	2800	-	600	-	1550
	28	700	610	610	914	684	-	3050	-	600	-	1880
	30	750	610	610	914	735	-	3130	-	600	-	2300
32	800	711	711	965	779	-	3280	-	600	-	2550	
34	850	762	762	1016	830	-	3500	-	600	-	2950	
36	900	711	711	1016	874	-	3720	-	600	-	3390	

Class 300 Cast Steel Gate Valve



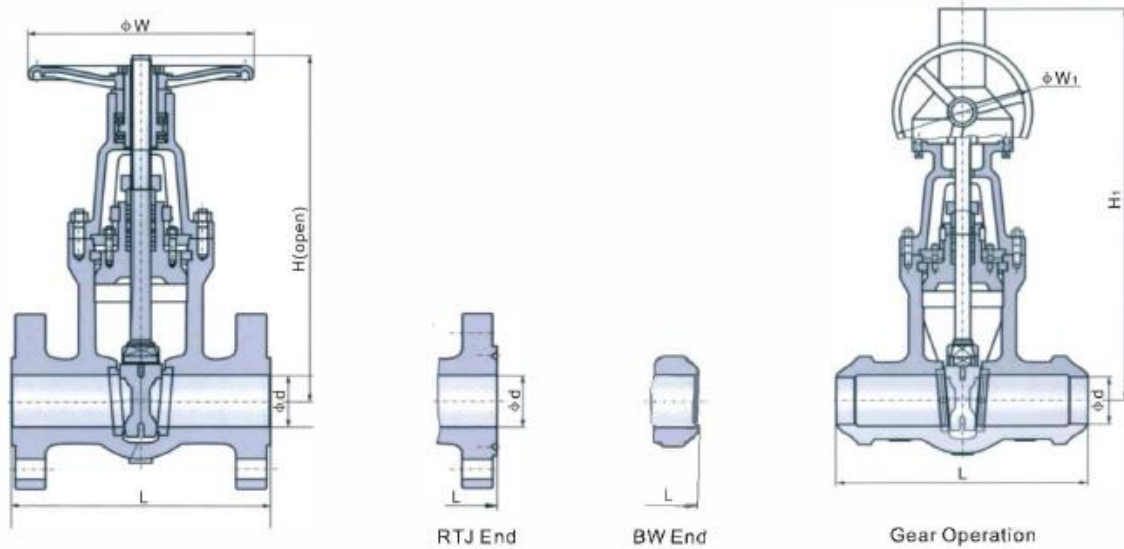
Pressure Class	Size		Dimensions(mm)								Weight(kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand Wheel	Gear Box
			RF	FF	BW							
Class 300	2	50	216	216	216	51	420	-	200	-	25	-
	2 1/2	65	241	241	241	64	446	-	200	-	30	-
	3	80	283	283	283	76	537	-	250	-	48	-
	4	100	305	305	305	102	619	650	280	310	73	100
	5	125	381	381	381	127	722	750	300	310	99	126
	6	150	403	403	403	152	806	835	350	310	130	186
	8	200	419	419	419	203	1000	1030	400	310	208	235
	10	250	457	457	457	254	1240	1280	450	310	334	386
	12	300	502	502	502	305	1425	1460	500	310	450	502
	14	350	762	762	762	337	1585	1620	600	460	704	756
	16	400	838	838	838	387	1790	1830	500	460	923	965
	18	450	914	914	914	438	1960	2000	650	460	1131	1224
	20	500	991	991	991	489	2158	2220	750	460	1345	1400
	24	600	1143	1143	1143	591	2576	2620	900	600	2122	2385
	26	650	1245	1245	1245	633	-	2850	-	600	-	3000
	28	700	1346	1346	1346	684	-	3080	-	600	-	3300
	30	750	1397	1397	1397	735	-	3180	-	600	-	3550
	32	800	1524	1524	1524	779	-	3300	-	600	-	4400
34	850	1626	1626	1626	830	-	3550	-	600	-	5200	
36	900	1727	1727	1727	874	-	3760	-	600	-	6050	

Class 600 & Class 900 Cast Steel Gate Valve



Pressure Class	Size		Dimensions(mm)								Weight(kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand Wheel	Gear Box
			RF	FF	BW							
Class 600	2	50	292	295	292	51	444	-	200	-	32	-
	2 1/2	65	330	333	330	64	500	-	250	-	52	-
	3	80	356	359	356	76	558	585	280	310	60	87
	4	100	432	435	432	102	665	695	300	310	107	134
	5	125	508	511	508	127	760	790	350	310	175	227
	6	150	559	562	559	152	868	900	450	310	216	268
	8	200	660	664	660	203	1073	1110	500	310	399	451
	10	250	787	791	787	254	1263	1300	650	460	605	657
	12	300	838	841	838	305	1600	1650	700	460	851	893
	14	350	889	892	889	337	1705	1750	900	460	1177	1232
	16	400	991	994	991	387	1835	1900	900	460	1513	1568
	18	450	1092	1095	1092	438	-	2020	-	600	-	1980
20	500	1194	1200	1194	489	-	2172	-	600	-	2460	
24	600	1397	1407	1397	591	-	2650	-	600	-	3650	
Class 900	2	50	368	371	368	51	500	-	280	-	70	-
	2 1/2	65	419	422	419	64	550	-	280	-	110	-
	3	80	381	384	381	76	610	660	300	310	140	167
	4	100	457	460	457	102	702	750	350	310	200	227
	5	125	559	562	559	127	850	900	400	310	258	285
	6	150	610	613	610	152	980	1060	500	460	358	410
	8	200	737	740	737	203	1100	1140	650	460	550	600
	10	250	838	841	838	254	1320	1370	700	460	1000	1100
	12	300	965	968	965	305	1500	1560	900	460	1215	1310
	14	350	1029	1038	1029	322	1900	1950	900	600	1600	1700
16	400	1130	1140	1130	373	2050	2100	900	600	2150	2330	

Class 1500 & Class 2500 Cast Steel Gate Valve



Pressure Class	Size		Dimensions(mm)								Weight(kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand Wheel	Gear Box
			RF	FF	BW							
Class 1500	2	50	368	371	368	51	510	-	280	-	70	-
	2 1/2	65	419	422	419	64	560	-	300	-	110	-
	3	80	470	473	470	76	620	670	350	310	175	202
	4	100	546	549	546	102	728	770	400	310	270	300
	5	125	673	676	673	127	870	920	450	310	378	405
	6	150	705	711	705	144	1000	1070	500	460	520	575
	8	200	832	841	832	192	1130	1180	750	460	820	915
	10	250	991	1000	991	239	1360	1410	900	600	1560	1750
	12	300	1130	1146	1130	287	-	1620	-	600	-	2120
	14	350	1257	1276	1257	315	-	2020	-	600	-	2600
Class 2500	2	50	451	454	451	42	530	580	280	310	100	130
	2 1/2	65	508	514	508	52	580	630	300	310	150	180
	3	80	578	584	578	62	650	700	350	310	245	275
	4	100	673	683	673	87	750	800	400	310	390	420
	5	125	794	807	794	96	900	960	500	460	550	580
	6	150	914	927	914	131	1040	1100	600	460	780	835
	8	200	1022	1038	1022	179	1150	1200	750	460	1260	1355
	10	250	1270	1292	1270	223	1400	1460	900	600	2380	2565
	12	300	1422	1445	1422	265	-	1660	-	600	-	3250