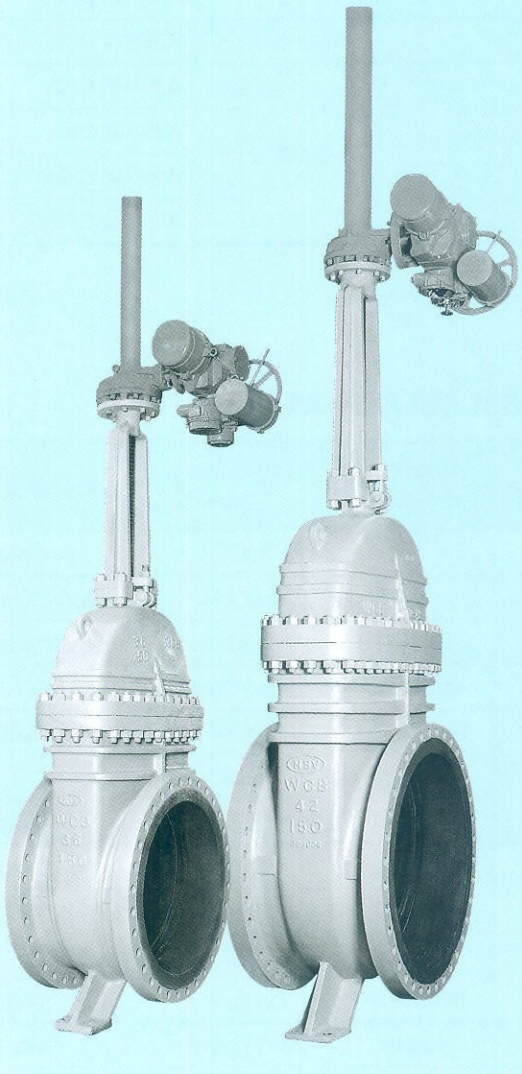
CAST STEEL GATE VALVES

BOLTED BONNET



CAST STEEL
BOLTED BONNET

GATE VALVES

① BODY

The body is in cast steel and is carefully designed in all its details. The basic dimension,i.e.wall thickness, face to face and flange comply with the relevant API and ANSI standards. The body-to-bonnet flange is normally circular, except in the 150 lb Class which is oval. The sealing surface for connection to the bonnet are flat finish in the 150 lb Class, male and female in the 300lb Class or may be ring joint in the 600 lb Class and above. The body is threaded or seal welded for renewable seats. Bosses are provided for drain taps or by-pass piping.

② BONNET

The bonnet is in cast steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the API standard.

③ WEDGE

The wedge is part of the trim. It is in cast stainless and alloy steel for diameters up to 10" and in cast steel for larger valves. It is connected to the stem by means of a T-joint. The guides on each side of the wedge are machined for proper alignment with the body guides. Special attention is given to the seating surface which are ground and lapped to insure a perfectly tight seal.

④ SEAT RINGS

The seat rings are part of the trim. They are completely threaded outside and notched on their inner surface to ease installing and dismantling. Special attention is given to the sealing surface which are ground and lapped for a perfectly tight seal.

⑤ STEM

The stem is part of the trim. The stem is provided with a T-head. A ground backseat is provided to ensure a perfectly tight seal to the stuffing box when the valve is fully open. The stem is ground to minimize friction and prevent damage to gland packing. The threading is trapezoidal ACME type. Dimensions comply with the API 600 standard.

⑥ BONNET BUSHING

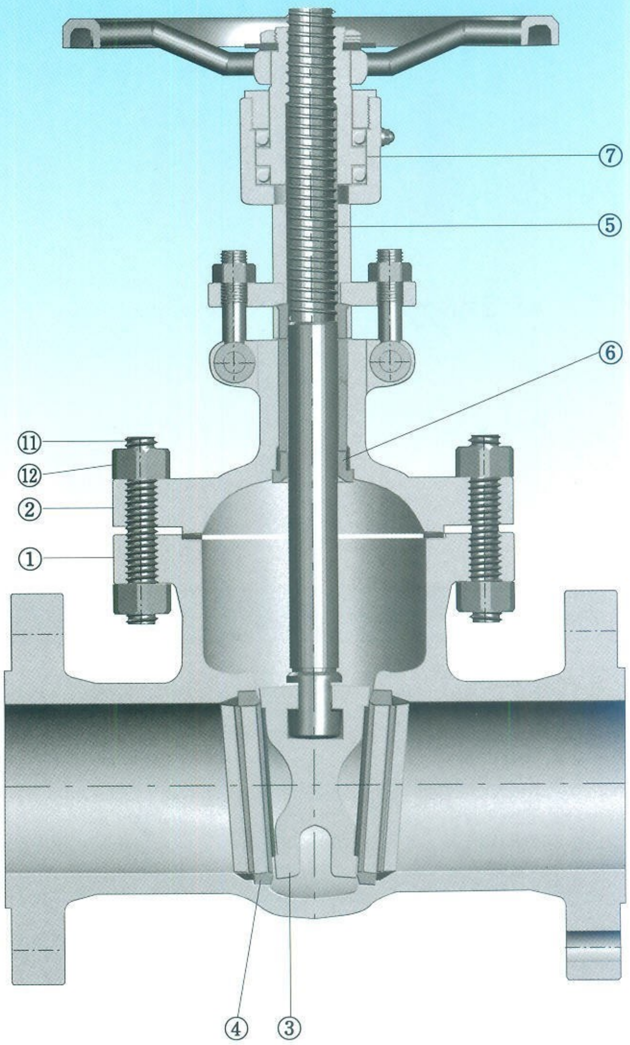
The bonnet bushing or backseat is part of the trim. Special attention is given both to its machining and heat treatment to insure a proper seat.

⑦ YOKE SLEEVE

The yoke sleeve is made from cast austenitic ductile iron having high resistance to wear and a high melting point. It is designed to permit removal from the bonnet or the yoke while the valve is in service. Gate valves 6" 600lb. Class and above are fitted with a ball thrust bearing.

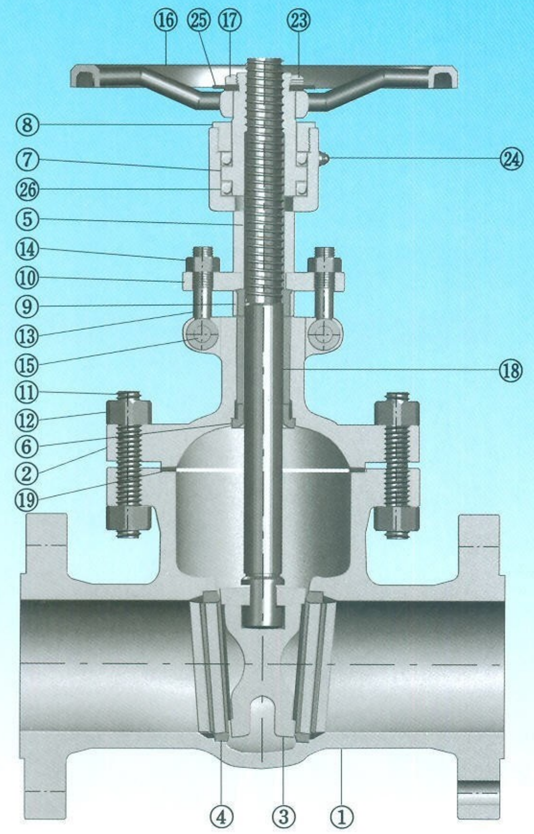
⑪,⑫ BONNET BOLTING

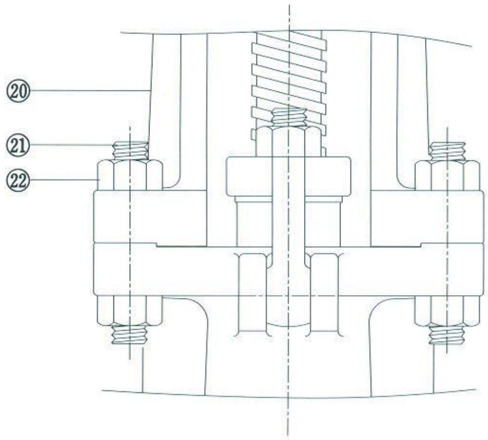
Bonnet studs and nuts are manufactured from alloy steel to the relevant ASTM standard.



CAST STEEL
BOLTED BONNET

GATE VALVES



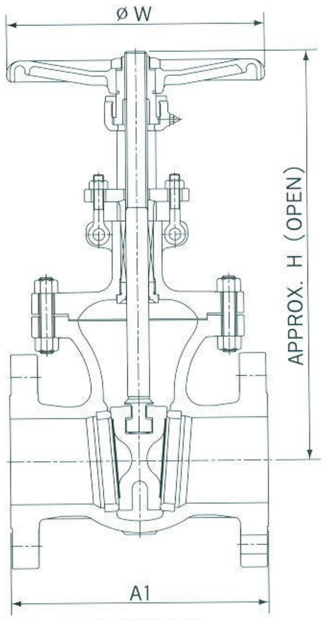


No	PARTS NAME	ASTM SPECIFICATIONS						REMARKS
		STANDARD	LOW TEMP. SERVICE		HIGH TEMP. SERVICE			
1	BODY	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
2	BONNET	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	WEDGE	A217-CA15	A351-CF8	A351-CF8	A217-CA15	A217-CA15	A217-CA15	NOTE 1
4	BODY SEAT RING	A108-C/S1020+HF	A182-F304+HF	A182-F304+HF	A182-F11+HF	A182-F22+HF	A182-F5a+HF	
5	STEM	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
6	BACK SEAT RING	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
7	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
8	YOKE CAP	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
9	PACKING GLAND	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
10	GLAND FLANGE	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	
11	BONNET BOLT	A193-B7	A320-L7	A320-L7	A193-B16	A193-B16	A193-B16	
12	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-4	A194-4	
13	GLAND BOLT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
14	GLAND NUT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
15	HINGE PIN	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	
16	HAND WHEEL	A536	A536	A536	A536	A536	A536	
17	HAND WHEEL NUT	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	
18	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
19	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
20	YOKE	A216-WCB	A352-LCB/A216-WCB	A352-LCB/A216-WCB	A217-WC6/A216-WCB	A217-WC9/A216-WCB	A217-C5/A216-WCB	
21	YOKE BOLT	A193-B7	A193-B7	A193-B7	A193-B7	A193-B7	A193-B7	
22	YOKE NUT	A194-2H	A194-2H	A194-2H	A194-2H	A194-2H	A194-2H	
23	SET SCREW	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
24	GREASE NIPPLE	B16	B16	B16	B16	B16	B16	
25	NAME PLATE	AL./A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	
26	BEARING	A295-52100	A295-52100	A295-52100	A295-52100	A295-52100	A295-52100	

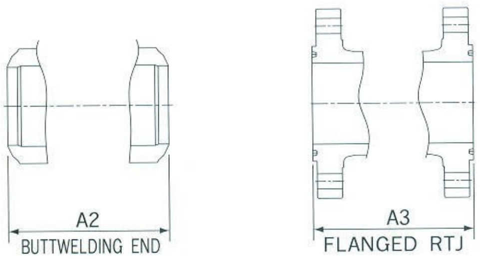
NOTE 1. Size 10" & larger : body material with trim material overlayed
2. Packing & gasket material : customer's requirements

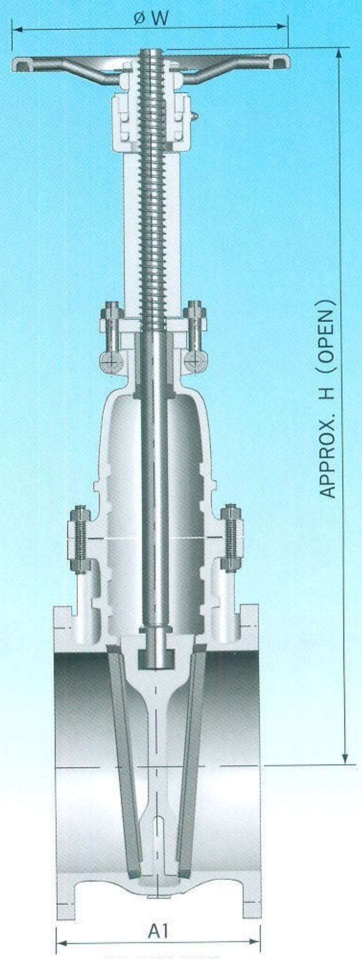
GATE VALVES
BOLTED BONNET

CLASS 150/300



CLASS 300





CLASS 150

■ BB GATE 150LB TABLE

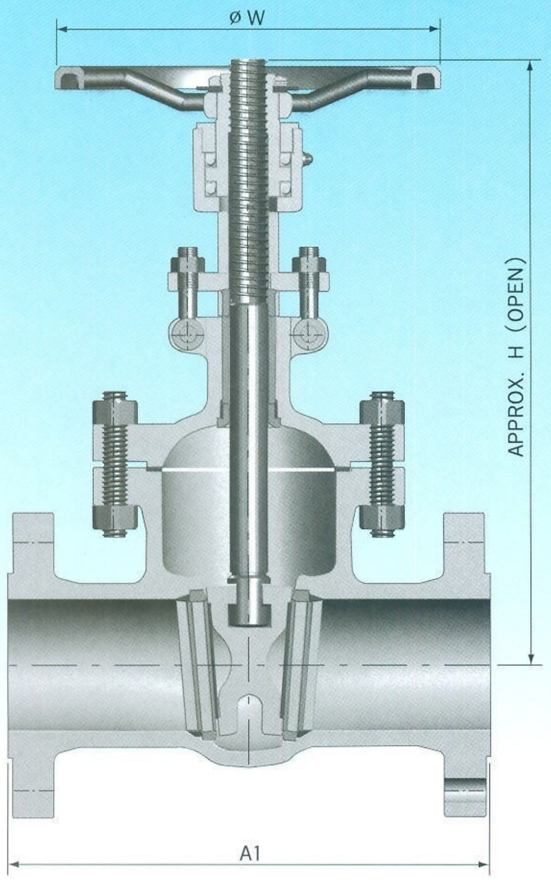
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48	52
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	900	1000	1050	1200	1300
A1 (RF)	inch	7	7.5	8	9	10	10.5	11.5	13	14	15	16	17	18	20	24	24	28	30	32	34	36
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508	610	610	711	762	813	864	914
A2 (BW)	inch	8.5	9.5	11.12	12	15.9	15.87	16.5	18	19.75	22.5	24	26	28	32	36	36	40	42	43	46	54
	mm	216	241	282	305	381	403	419	457	502	572	610	660	711	813	914	914	1016	1067	1092	1168	1372
H (OPEN HEIGHT)	inch	15.75	16.14	18.50	20.87	26.38	30.39	39.17	46.26	55.12	60.24	69.29	76.77	84.25	99.21	113	125	142.5	160	172	205	225
	mm	400	410	470	530	670	772	995	1175	1400	1530	1760	1950	2140	2520	2870	3175	3620	4064	4369	5207	5715
W (HANDWHEEL DIA.)	inch	7.87	7.87	8.82	9.84	12.4	12.4	13.98	15.75	17.72	19.69	24.80	24.80	27.95	27.95	31.5	31.5	31.5	31.5	31.5	31.5	31.5
	mm	200	200	224	250	315	315	355	400	450	500	630	630	710	710	800	800	800	800	800	800	800

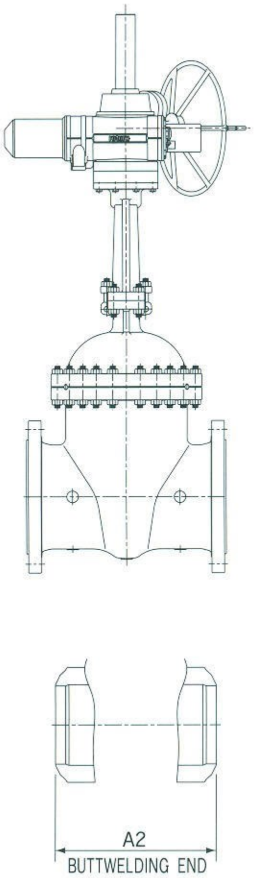
■ BB GATE 300LB TABLE

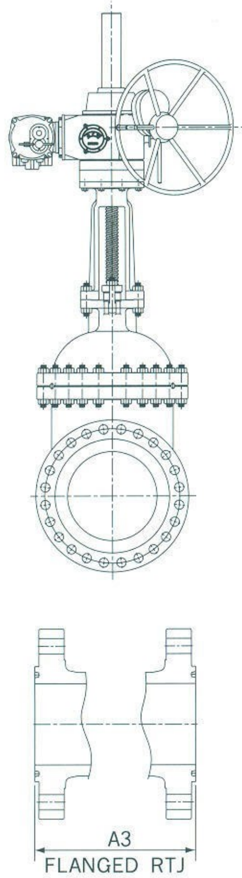
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	900
A1&A2 (RF)&(BW)	inch	8.5	9.5	11.12	12	15	15.87	16.5	18	19.75	30	33	36	39	45	53	55	68
	mm	216	241	282	305	381	403	419	457	502	762	838	914	991	1143	1346	1397	1727
A3 (RTJ)	inch	9.12	10.12	11.75	12.62	15.62	16.5	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88	54	56	69.12
	mm	232	257	298	321	397	419	435	473	517	778	854	930	1010	1165	1372	1422	1756
H (OPEN HEIGHT)	inch	16.93	17.12	18.90	23.23	27.56	29.76	38.58	46.41	56.89	70.08	77.17	84.45	98.62	110.04	126	142	165.5
	mm	430	435	480	590	700	756	980	1179	1445	1780	1960	2145	2505	2795	3200	3607	4204
W (HANDWHEEL DIA.)	inch	7.87	7.87	8.82	9.84	12.4	13.98	15.75	17.72	19.69	19.69	24.80	27.95	31.5	31.5	31.5	31.5	31.5
	mm	200	200	224	250	315	355	400	450	500	500	630	710	800	800	800	800	800

GATE VALVES
BOLTED BONNET

CLASS 600/900







■ BB GATE 600LB TABLE

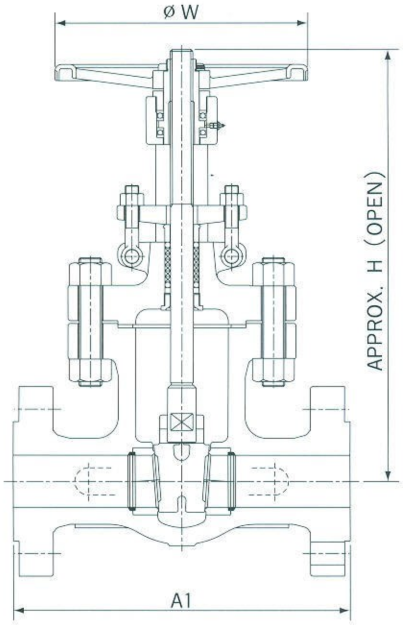
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750
A1&A2 (RF)&(BW)	inch	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55	61	65
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397	1549	1651
A3 (RTJ)	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	61.5	65.5
	mm	295	333	359	435	511	562	663	790	841	892	994	1095	1200	1407	1562	1664
H (OPEN HEIGHT)	inch	15.35	16.93	18.68	24.13	29.84	32.60	40.59	55.12	63.39	70.47	78.35	84.65	94.09	117.52	138.5	151.2
	mm	390	430	500	613	758	828	1031	1400	1610	1790	1990	2150	2390	2985	3518	3840
W (HANDWHEEL DIA.)	inch	7.87	8.82	9.84	13.98	15.75	17.72	19.69	27.95	27.95	31.5	31.5	31.5	31.5	31.5	31.5	31.5
	mm	200	224	250	355	400	450	500	710	710	800	800	800	800	800	800	800

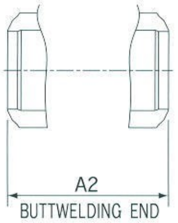
■ BB GATE 900LB TABLE

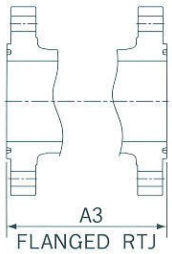
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2 (RF)&(BW)	inch	14.5	16.5	15	18	22	24	29	33	38	40.5	44.5	48	52	61
	mm	368	419	381	457	559	610	737	838	965	1029	1130	1219	1321	1549
A3 (RTJ)	inch	14.62	16.62	15.12	18.12	22.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
	mm	371	422	384	460	562	613	740	841	968	1038	1140	1232	1334	1568
H (OPEN HEIGHT)	inch	22.44	24.02	24.80	31.89	36.5	41.34	53.54	55.51	66.93	74.41	77.95	84.65	93.70	117.50
	mm	570	610	630	810	927	1050	1360	1410	1700	1890	1980	2150	2380	2985
W (HANDWHEEL DIA.)	inch	9.84	9.84	12.4	13.98	15.75	17.72	19.69	19.69	27.95	31.5	31.5	31.5	31.5	31.5
	mm	250	250	315	355	400	450	500	500	710	800	800	800	800	800

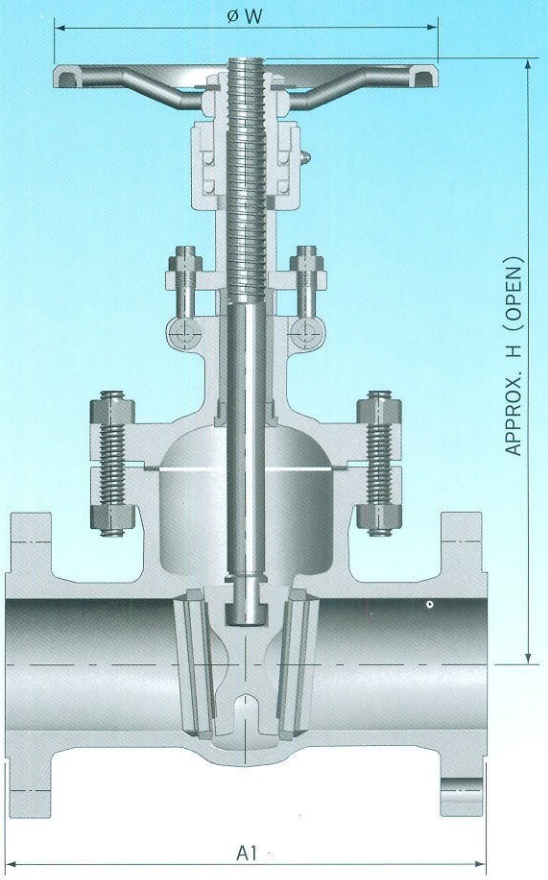
GATE VALVES
BOLTED BONNET

CLASS 1500/2500









■ BB GATE 1500LB TABLE

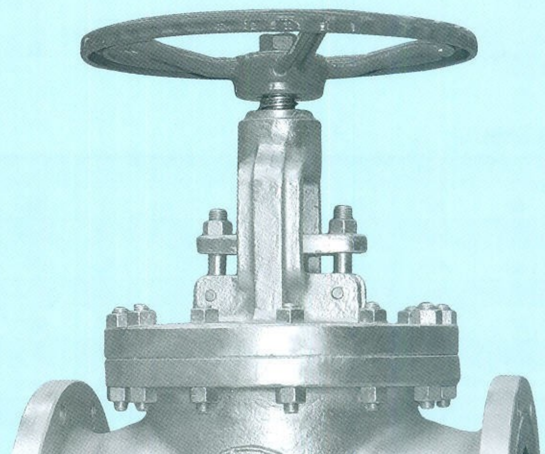
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
(RF)&(BW)	mm	368	419	470	546	673	705	832	991	1130	1257	1384	1537	1664	1943
A3	inch	14.62	16.62	18.62	21.62	26.62	28	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
(RTJ)	mm	371	422	473	549	676	711	842	1000	1146	1276	1407	1559	1686	1972
H	inch	22.44	24.02	28.5	29.3	36.5	45.5	58.5	64.5	79.5	83.5	95.3	106.5	119.3	142.5
(OPEN HEIGHT)	mm	570	610	724	744	927	1156	1486	1638	2019	2121	2421	2705	3030	3620
W	inch	9.84	9.84	13.98	15.75	17.72	19.69	27.95	27.95	31.50	31.50	31.50	31.50	31.50	31.50
(HANDWHEEL DIA.)	mm	250	250	355	400	450	500	710	710	800	800	800	800	800	800

■ BB GATE 2500LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56
(RF)&(BW)	mm	451	508	578	673	794	914	1022	1270	1422
A3	inch	17.87	20.25	23	26.88	31.75	36.5	40.87	50.88	56.88
(RTJ)	mm	454	514	584	683	806	927	1038	1292	1445
H	inch	23.50	30.50	30.50	41.50	38.5	56.50	61.30	79.50	88.50
(OPEN HEIGHT)	mm	597	775	775	1054	978	1435	1557	2019	2248
W	inch	12.40	13.98	15.75	19.69	19.69	27.95	31.50	31.50	31.50
(HANDWHEEL DIA.)	mm	315	355	400	500	500	710	800	800	800

CAST STEEL GLOBE VALVES

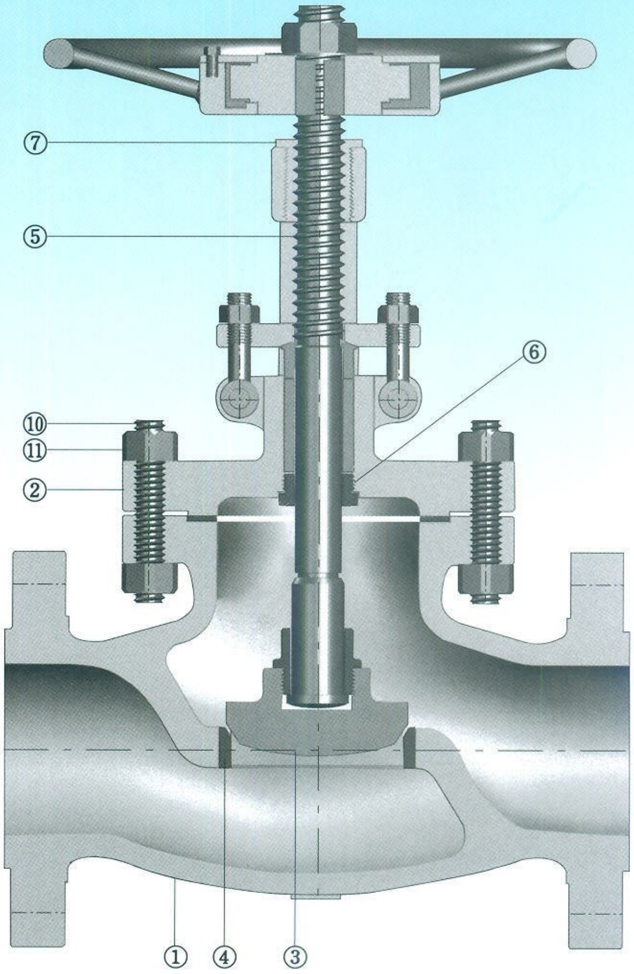
BOLTED BONNET



CAST STEEL

BOLTED BONNET

GLOBE VALVES



① BODY

The body is in cast steel. The basic dimension,i.e.wall thickness, face to face and flange comply with the relevant API and ANSI standards. The body-to-bonnet flange is circular and the sealing surface for connection to the bonnet are recessed in the 150lb and 300lb class or may be ring joint in the high classes. The body is threaded for renewable seats. Bosses are provided for drain taps or by-pass piping.

② BONNET

The bonnet is in cast steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the API standard.

③ DISC

The disc is part of the trim. It is in cast stainless steel for diameters up to 8" and in cast steel for larger valves. It is normally supplied of the flat, tapered or plug type or, on request, of the parabolic regulating type, always free to rotate on the stem. Special attention is given to the seating face which is ground and lapped, for a perfectly tight seal.

④ SEAT RING

The seat ring is part of the trim. Its outer diameter is threaded and its bore is notched to ease installing and dismantling. Special attention is given to the seating face which is ground and lapped, for a perfectly tight seal.

⑤ STEM

The stem is part of the trim. A ground backseat is provided to ensure a perfectly tight seal to the stuffing box when the valve is fully open. The stem is attached to the disc by means of a threaded ring which allows the disc to rotate. The stem is ground to minimize friction and prevent damage to gland packing.

⑥ BONNET BUSHING

The bonnet bushing or backseat is part of the trim. Special attention is give to its machining and heat treatment to insure a proper seat for gland repacking under pressure. Special attention is given to the seating face which is ground and lapped, for a perfectly tight seal.

⑦ YOKE SLEEVE

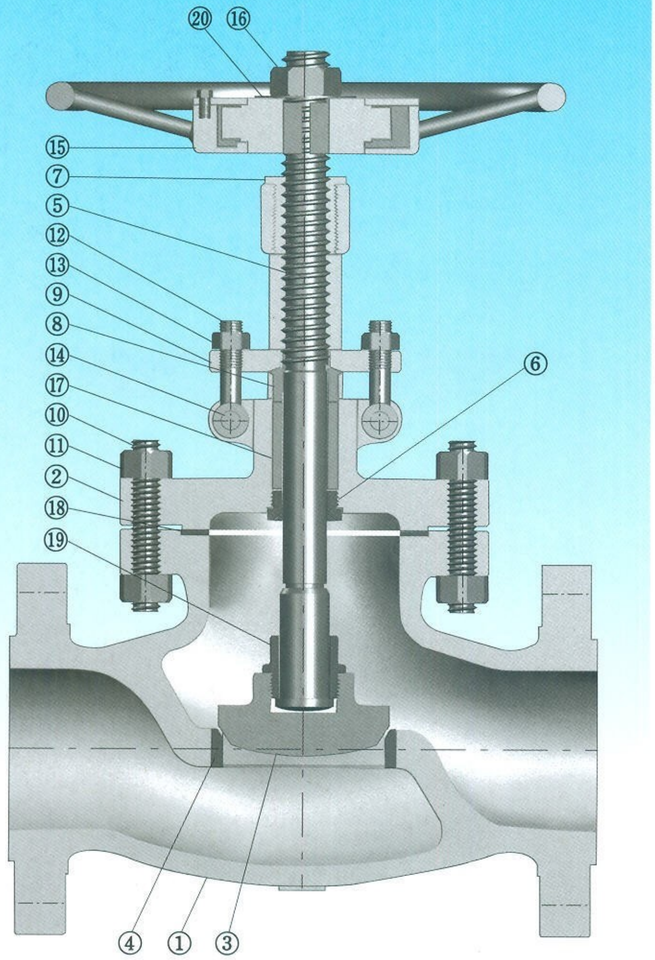
The yoke sleeve is made from cast austenitic ductile iron having high resistance to wear and a high melting point. It is screwed into the bonnet and properly sized to withstand the stresses which develop when opening and closing the valve.

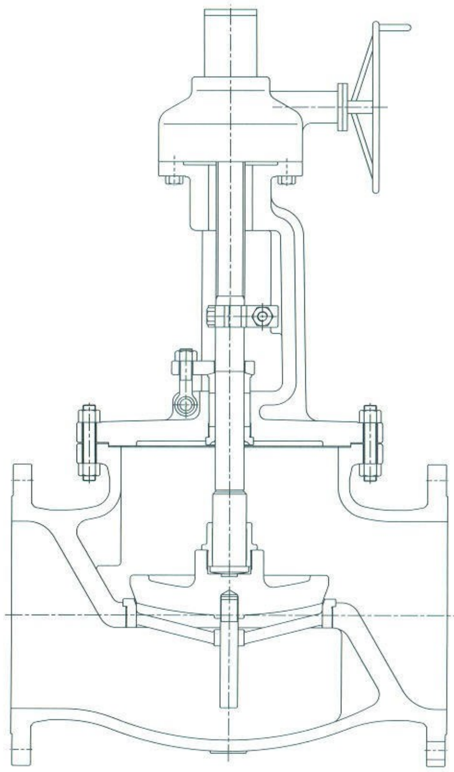
⑩, ⑪ BONNET BOLTING

Bonnet studs and nuts are manufactured from alloy steel to the relevant ASTM standard.

CAST STEEL
BOLTED BONNET

GLOBE VALVES



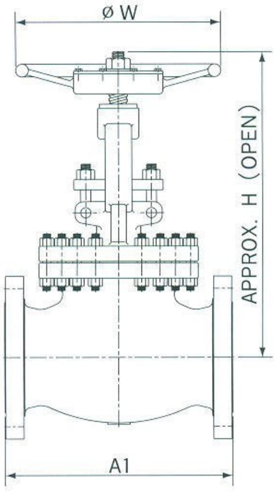


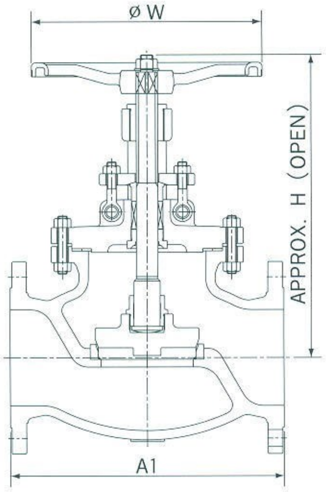
No	PARTS NAME	ASTM SPECIFICATIONS						REMARKS
		STANDARD	LOW TEMP. SERVICE		HIGH TEMP. SERVICE			
1	BODY	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
2	BONNET	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	DISC	A217-CA15	A351-CF8	A351-CF8	A217-CA15	A217-CA15	A217-CA15	NOTE 1,2
4	BODY SEAT RING	A108-C/S1020+HF	A182-F304+HF	A182-F304+HF	A182-F11+HF	A182-F22+HF	A182-F5a+HF	NOTE 2
5	STEM	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
6	BACK SEAT RING	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
7	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
8	PACKING GLAND	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
9	GLAND FLANGE	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	
10	BONNET BOLT	A193-B7	A320-L7	A320-L7	A193-B16	A193-B16	A193-B16	
11	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-4	A194-4	
12	GLAND BOLT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
13	GLAND NUT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
14	HINGE PIN	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	
15	HAND WHEEL	A536	A536	A536	A536	A536	A536	
16	HAND WHEEL NUT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
17	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 3
18	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 3
19	DISC LOCK NUT	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
20	NAME PLATE	AL./A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	AL./ A240-304	

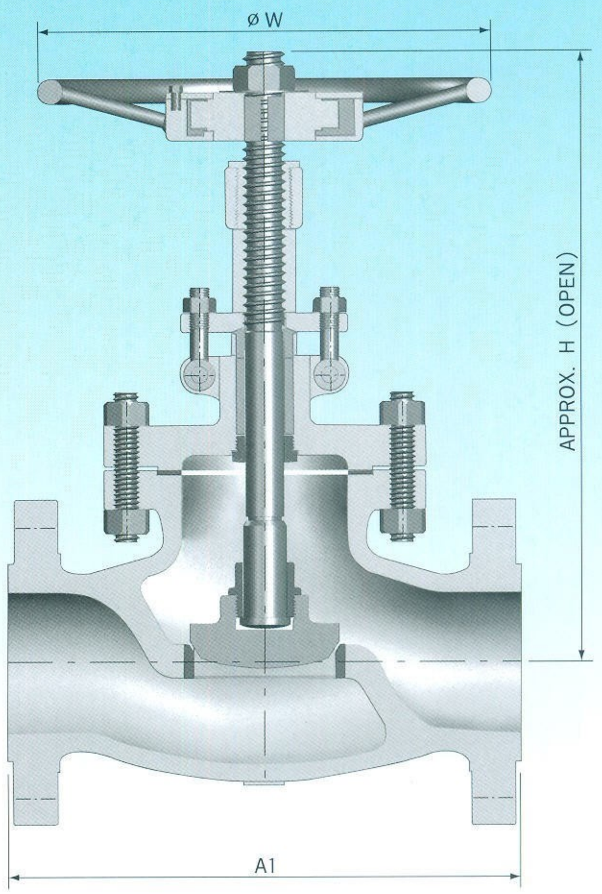
NOTE 1. Size 10" & larger : body material with trim material overlayed
2. Size 8" & larger : bottom guide type
3. Packing & gasket material : customer's requirements

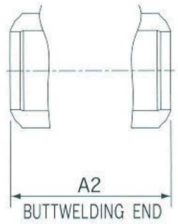
GLOBE VALVES
BOLTED BONNET

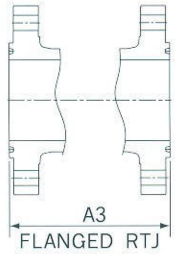
CLASS 150/300











■ BB GLOBE 150LB TABLE

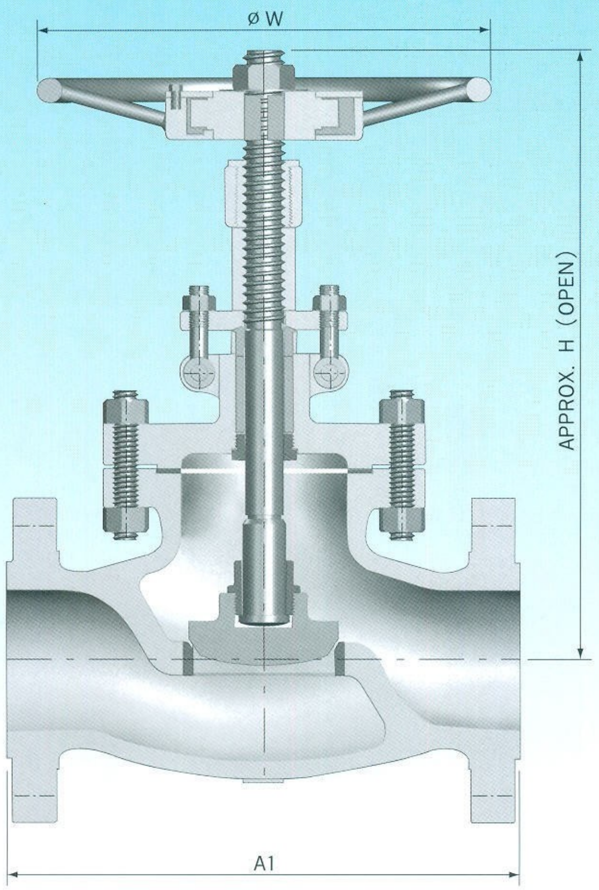
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18
	mm	50	65	80	100	125	150	200	250	300	350	400	450
A1&A2 (RF)&(BW)	inch	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5	31	36	38.5
	mm	203	216	241	292	356	406	495	622	699	787	914	978
H (OPEN HEIGHT)	inch	14.57	15.35	17.32	18.11	19.29	20.47	25.59	31.50	35.04	40.94	46.85	53.94
	mm	370	390	440	460	490	520	650	800	890	1040	1190	1370
W (HANDWHEEL DIA.)	inch	7.87	7.87	8.82	9.84	12.4	12.4	13.98	15.75	17.72	19.69	27.95	27.95
	mm	200	200	224	250	315	315	355	400	450	500	710	710

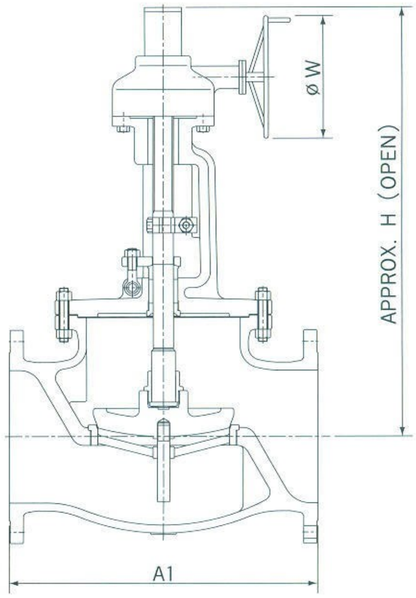
■ BB GLOBE 300LB TABLE

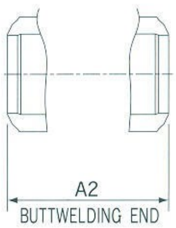
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
A1&A2 (RF)&(BW)	inch	10.5	11.5	12.5	14	15.75	17.5	22	24.5	28	33	34
	mm	267	292	318	356	400	445	559	622	711	838	864
A3 (RTJ)	inch	11.12	12.12	13.12	14.62	16.37	18.12	22.62	25.12	28.62	33.62	34.62
	mm	282	308	333	371	424	460	575	638	727	854	880
H (OPEN HEIGHT)	inch	15.75	17.32	18.50	22.05	25.59	28.35	33.86	41.73	51.18	57.09	62.99
	mm	400	440	470	560	650	720	860	1060	1300	1450	1600
W (HANDWHEEL DIA.)	inch	7.87	7.87	9.84	12.4	13.98	13.98	15.75	19.69	19.69	27.95	27.95
	mm	200	200	250	315	355	355	400	500	500	710	710

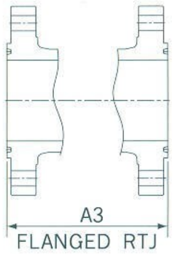
GLOBE VALVES
BOLTED BONNET

CLASS 600/900









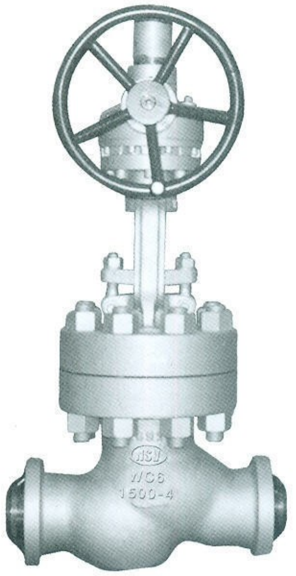
■ BB GLOBE 600LB TABLE

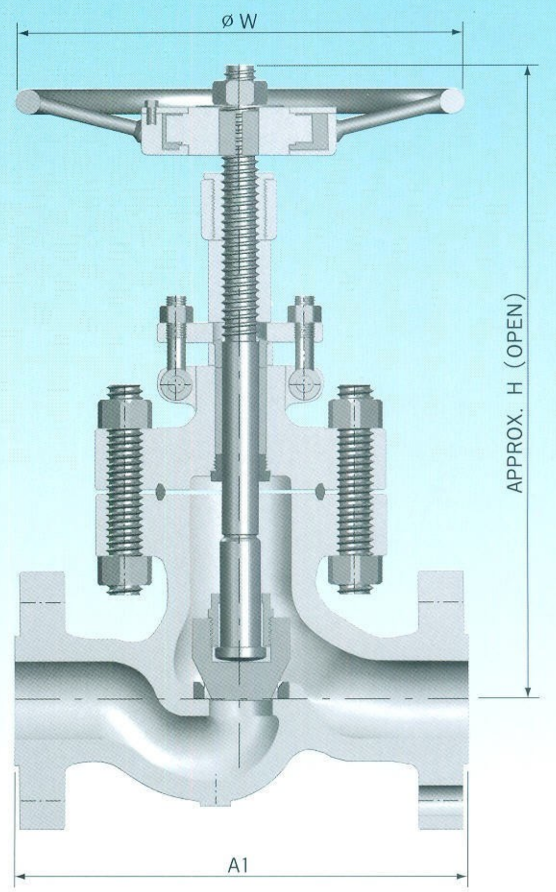
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	11.5	13	14	17	20	22	26	31	33
(RF)&(BW)	mm	292	330	356	432	508	559	660	787	838
A3	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12
(RTJ)	mm	295	333	359	435	511	562	663	790	841
H	inch	20.47	22.44	23.62	31.50	35.43	39.76	47.24	55.12	59.84
(OPEN HEIGHT)	mm	520	570	600	800	900	1010	1200	1400	1520
W	inch	9.84	12.4	13.98	17.72	17.72	17.72	19.69	31.5	31.5
(HANDWHEEL DIA.)	mm	250	315	355	450	450	450	500	800	800

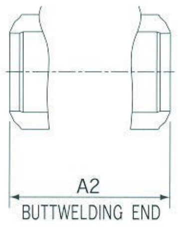
■ BB GLOBE 900LB TABLE

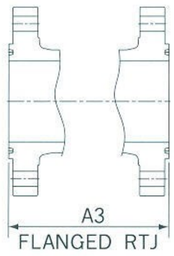
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	14.5	16.5	15	18	22	24	29	33	38
(RF)&(BW)	mm	368	419	381	457	559	610	737	838	965
A3	inch	14.62	16.62	15.12	18.12	22.12	24.12	29.12	33.12	38.12
(RTJ)	mm	371	422	384	460	562	613	740	841	968
H	inch	22.05	23.23	25.20	31.89	36.61	41.34	53.54	61.81	66.93
(OPEN HEIGHT)	mm	560	590	640	810	930	1050	1360	1570	1700
W	inch	12.4	13.98	13.98	15.75	19.69	19.69	27.56	31.5	31.5
(HANDWHEEL DIA.)	mm	315	355	355	400	500	500	700	800	800

CLASS 1500/2500









■ BB GLOBE 1500LB TABLE

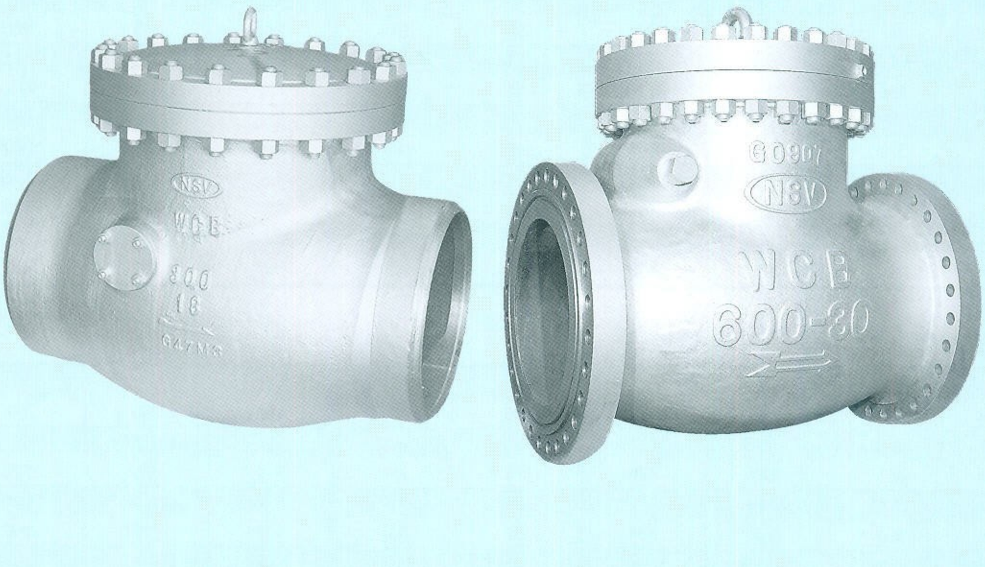
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
A1&A2 (RF)&(BW)	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5
	mm	368	419	470	546	673	705	832	991	1130
A3 (RTJ)	inch	14.62	16.62	18.62	21.62	26.62	28	33.13	39.38	45.12
	mm	371	422	473	549	676	711	842	1000	1146
H (OPEN HEIGHT)	inch	22.05	23.23	29.53	36.02	42.5	48.62	64.96	83.46	96.46
	mm	560	590	750	915	1080	1235	1650	2120	2450
W (HANDWHEEL DIA.)	inch	12.40	13.98	15.75	19.69	23.62	27.56	27.56	31.50	31.50
	mm	315	355	400	500	600	700	700	800	800

■ BB GLOBE 2500LB TABLE

VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
A1&A2 (RF)&(BW)	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56
	mm	451	508	578	673	794	914	1022	1270	1422
A3 (RTJ)	inch	17.87	20.25	23	26.88	31.75	36.5	40.87	50.88	56.88
	mm	454	514	584	683	806	927	1038	1292	1445
H (OPEN HEIGHT)	inch	25.59	28.15	32.48	47.05	53.25	70.47	91.14	105.31	127.95
	mm	650	715	825	1195	1353	1790	2315	2675	3250
W (HANDWHEEL DIA.)	inch	13.98	17.72	19.69	27.56	27.56	27.56	31.50	31.50	31.50
	mm	355	450	500	700	700	700	800	800	800

CAST STEEL SWING CHECK VALVES

BOLTED COVER

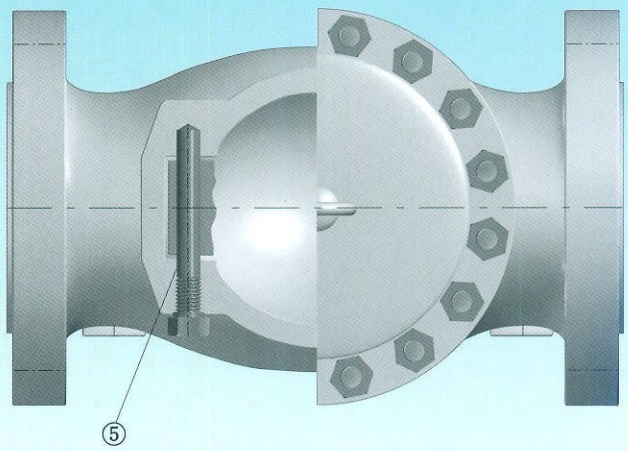


CAST STEEL
BOLTED COVER

SWING CHECK VALVES

① BODY

The body is in cast steel, carefully designed to keep pressure drops to a minimun. A wide opening on top of the body permits easy inspection and maintenance. The basic dimension,i.e.wall thickness, face to face and flanges, comply with the relevant API and ANSI standards. The body-to-cover flange is circular. The body is threaded for a renewable seats and an integral over-travel stop is incorporated for the disc. Bosses are provided for drain taps or by-pass piping.

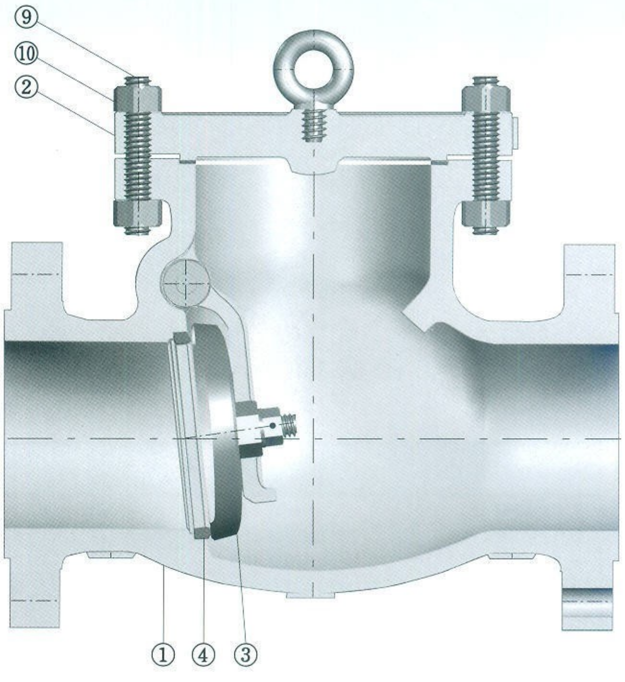


② COVER

The cover is in cast steel. The sealing surface for the connection to the body are recessed in the 150 and 300 class and ring joint in the higher classes.

③ DISC

The disc is part of the trim. The back side has a threaded stud for attachment to the hinge with a stainless steel nut and split pin to insure a strong connection. The seating face is ground and lapped, for a perfectly tight seal.



④ BODY SEAT RING

The seat ring is part of the trim. Its outer diameter is threaded and its bore is notched to ease installing and dismantling. Special attention is given to the seating face which is ground and lapped, for a perfectly tight seal.

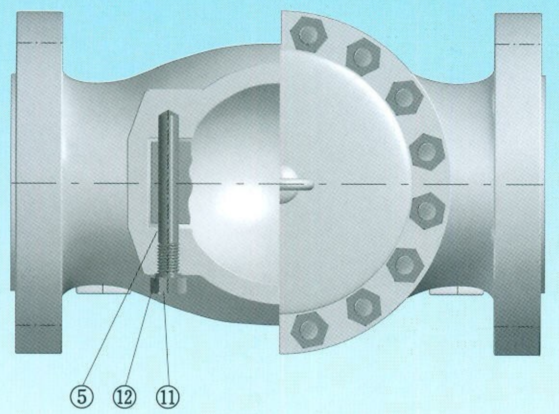
⑤ HINGE PIN

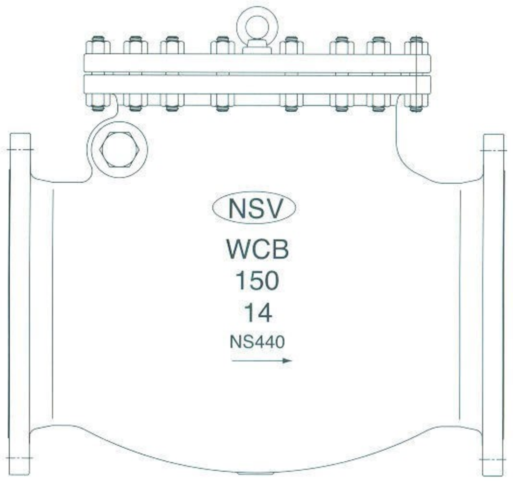
The hinge pin is part of the trim. The hinge pin is retained in the body by threaded plugs and sealed by metallic or non-asbestos gaskets. The pin can be easily removed for maintenance of the valve.

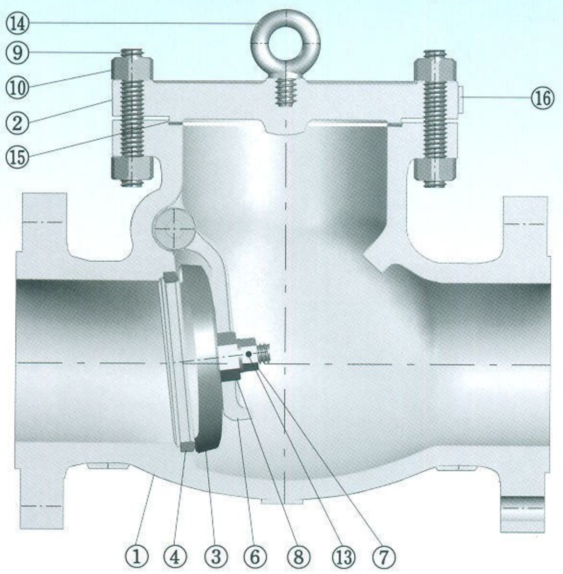
⑨,⑩ COVER BOLTING

Cover studs and nuts are manufactured from alloy steel to the relevant ASTM standard.

SWING CHECK VALVES





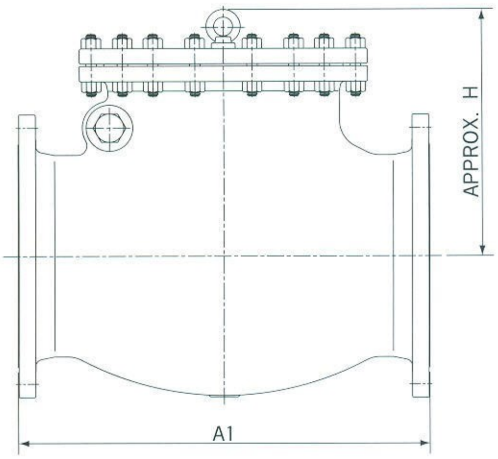


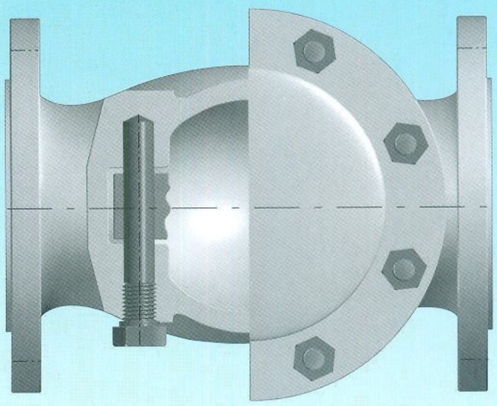
No	PARTS NAME	ASTM SPECIFICATIONS						REMARKS
		STANDARD	LOW TEMP. SERVICE		HIGH TEMP. SERVICE			
1	BODY	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
2	COVER	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	DISC	A217-CA15	A351-CF8	A351-CF8	A217-CA15	A217-CA15	A217-CA15	NOTE 1
4	BODY SEAT RING	A108-C/S1020+HF	A182-F304+HF	A182-F304+HF	A182-F11+HF	A182-F22+HF	A182-F5a+HF	
5	HINGE PIN	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
6	ARM	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
7	DISC NUT	A194-8	A194-8	A194-8	A194-8	A194-8	A194-8	
8	WASHER	A240-304	A240-304	A240-304	A240-304	A240-304	A240-304	
9	COVER BOLT	A193-B7	A320-L7	A320-L7	A193-B16	A193-B16	A193-B16	
10	COVER NUT	A194-2H	A194-4	A194-4	A194-4	A194-4	A194-4	
11	PLUG BOLT	A307-B	A276-304	A276-304	A276-410	A276-410	A276-410	
12	PLUG GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
13	SPLIT PIN	A580-304	A580-304	A580-304	A580-304	A580-304	A580-304	
14	EYE BOLT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
15	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
16	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	

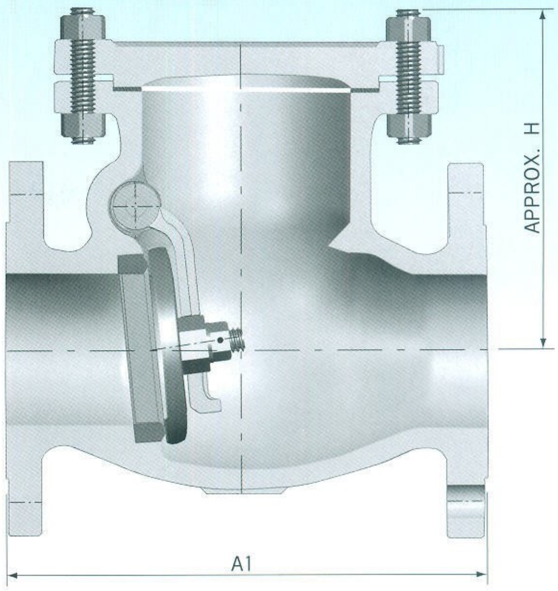
NOTE 1. Size 10" & larger : body material with trim material overlayed
2. gasket material : customer's requirements

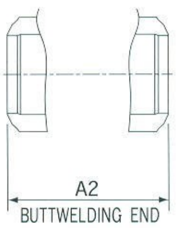
SWING CHECK VALVES
BOLTED COVER

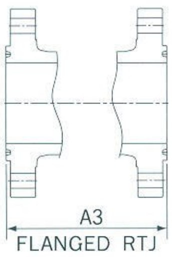
CLASS 150/300











■ BC SW-CH 150LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	900
A1&A2	inch	8	8.5	9.5	11.5	14	14	19.5	24.5	27.5	31	34	38.5	38.5	51	57	60	77
(RF)&(BW)	mm	203	216	241	292	305	356	495	622	699	787	864	978	978	1295	1448	1524	1956
H	inch	5.51	6.30	6.69	8.27	8.95	9.84	11.02	12.60	12.99	15.55	17.72	20.87	22.44	26.38	35.24	36.42	45.28
(VALVE HEIGHT)	mm	140	160	170	210	227	250	280	320	330	395	450	530	570	670	895	925	1150

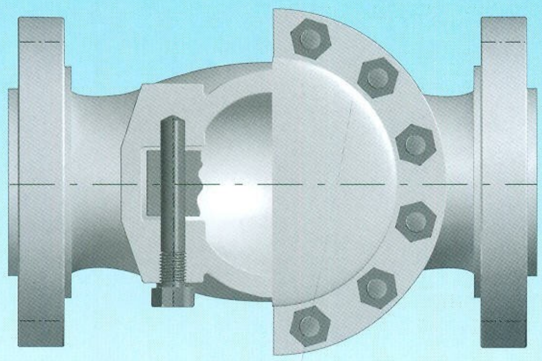
■ BC SW-CH 300LB TABLE

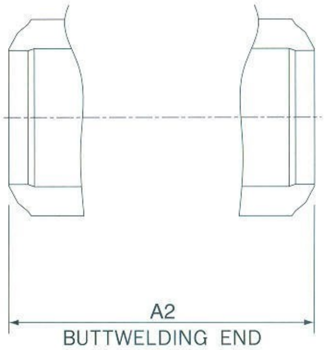
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	900
A1&A2	inch	10.5	11.5	12.5	14	15.75	17.5	21	24.5	28	33	34	38.5	40	53	59	62.75	82
(RF)&(BW)	mm	267	292	318	356	400	445	533	622	711	838	864	978	1016	1346	1499	1594	2083
A3	inch	11.12	12.12	13.12	14.62	16.37	18.12	21.62	25.12	28.62	33.62	34.62	39.12	40.75	53.88	60	63.75	83.12
(RTJ)	mm	282	308	333	371	424	460	549	638	727	854	879	994	1035	1369	1524	1619	2111
H	inch	6.30	6.69	7.28	9.06	10.51	11.61	13.58	15.35	17.52	18.50	20.08	21.46	23.62	27.17	36.42	37.99	49.21
(VALVE HEIGHT)	mm	160	170	185	230	267	295	345	390	445	470	510	545	600	690	925	965	1250

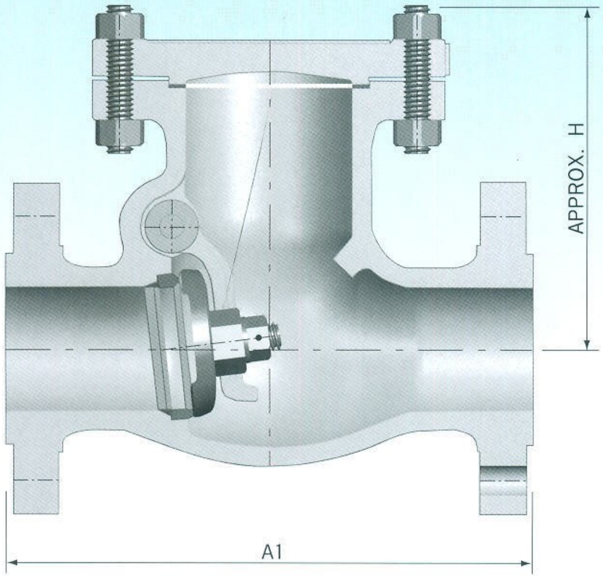
SWING CHECK VALVES

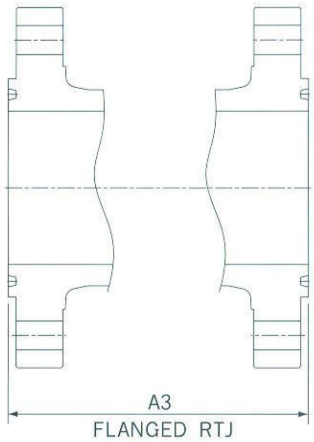
BOLTED COVER

CLASS 600/900









■ BC SW-CH 600LB TABLE

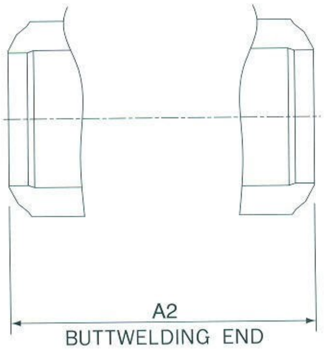
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750
A1&A2 (RF)&(BW)	inch	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55	63	65
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397	1600	1651
A3 (RTJ)	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	63.5	65.5
	mm	295	333	359	435	511	562	663	790	841	892	994	1095	1200	1407	1613	1664
H (VALVE HEIGHT)	inch	7.50	7.87	9.50	10.10	11.54	12.65	14.96	17.55	18.50	21.75	26.50	27.75	29.55	31.50	34.5	38.5
	mm	191	200	241	257	293	321	380	446	470	552	673	705	751	800	876	978

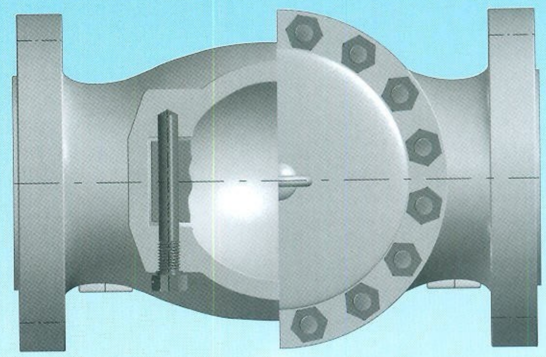
■ BC SW-CH 900LB TABLE

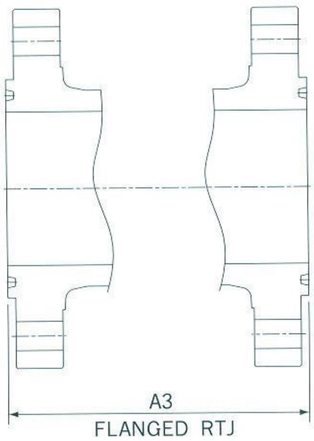
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2 (RF)&(BW)	inch	14.5	16.5	15	18	22	24	29	33	38	40.5	44.5	48	52	61
	mm	368	419	381	457	559	610	737	838	965	1029	1130	1219	1321	1549
A3 (RTJ)	inch	14.62	16.62	15.12	18.12	22.12	24.13	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
	mm	371	422	384	460	562	613	740	841	968	1038	1140	1232	1334	1568
H (VALVE HEIGHT)	inch	7.87	9.06	9.84	11.42	12.34	12.99	16.14	18.31	20.47	22.83	27.48	28.43	31.42	33.27
	mm	200	230	250	290	313	330	410	465	520	580	698	722	798	845

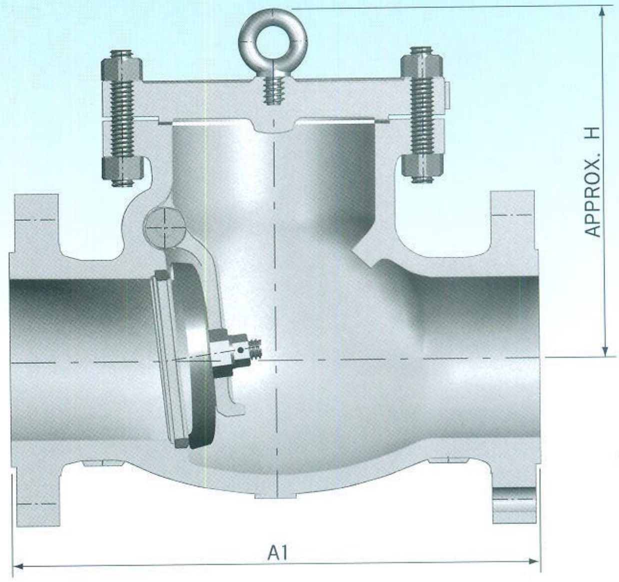
SWING CHECK VALVES
BOLTED COVER

CLASS 1500/2500









■ BC SW-CH 1500LB TABLE

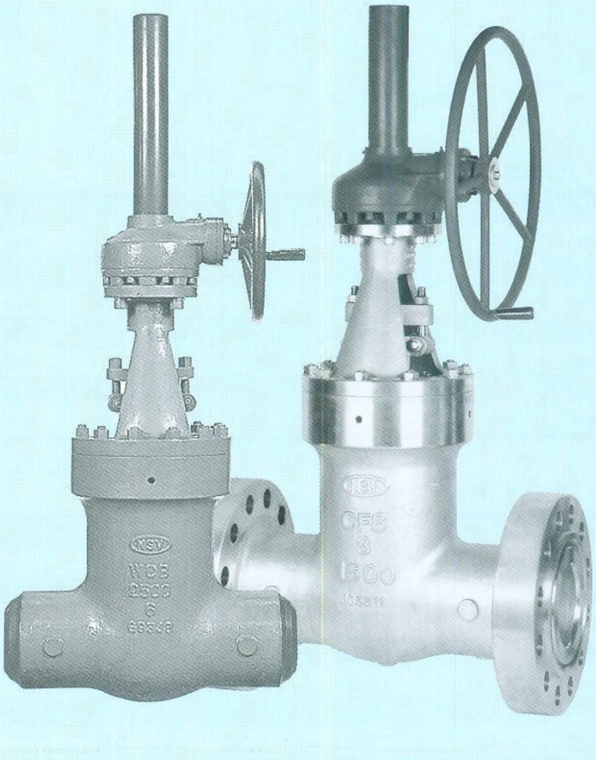
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
(RF)&(BW)	mm	368	419	470	546	673	705	832	991	1130	1257	1384	1537	1664	1943
A3	inch	14.62	16.62	18.62	21.62	26.62	28	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
(RTJ)	mm	371	422	473	549	676	711	842	1000	1146	1276	1407	1559	1686	1972
H	inch	7.87	9.06	12.99	14.76	15.55	16.54	20.87	23.43	25.98	29.13	30.91	32.87	34.06	37.40
(VALVE HEIGHT)	mm	200	230	330	375	395	420	530	595	660	740	785	835	865	950

■ BC SW-CH 2500LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56
(RF)&(BW)	mm	451	508	578	673	794	914	1022	1270	1422
A3	inch	17.87	20.25	23	26.88	31.75	36.5	40.87	50.88	56.88
(RTJ)	mm	454	514	584	683	806	927	1038	1292	1445
H	inch	10.83	13.19	13.78	15.16	16.53	18.70	24.61	28.03	35.63
(VALVE HEIGHT)	mm	275	335	350	385	420	475	625	712	905

CAST STEEL GATE VALVES

PRESSURE SEAL BONNET

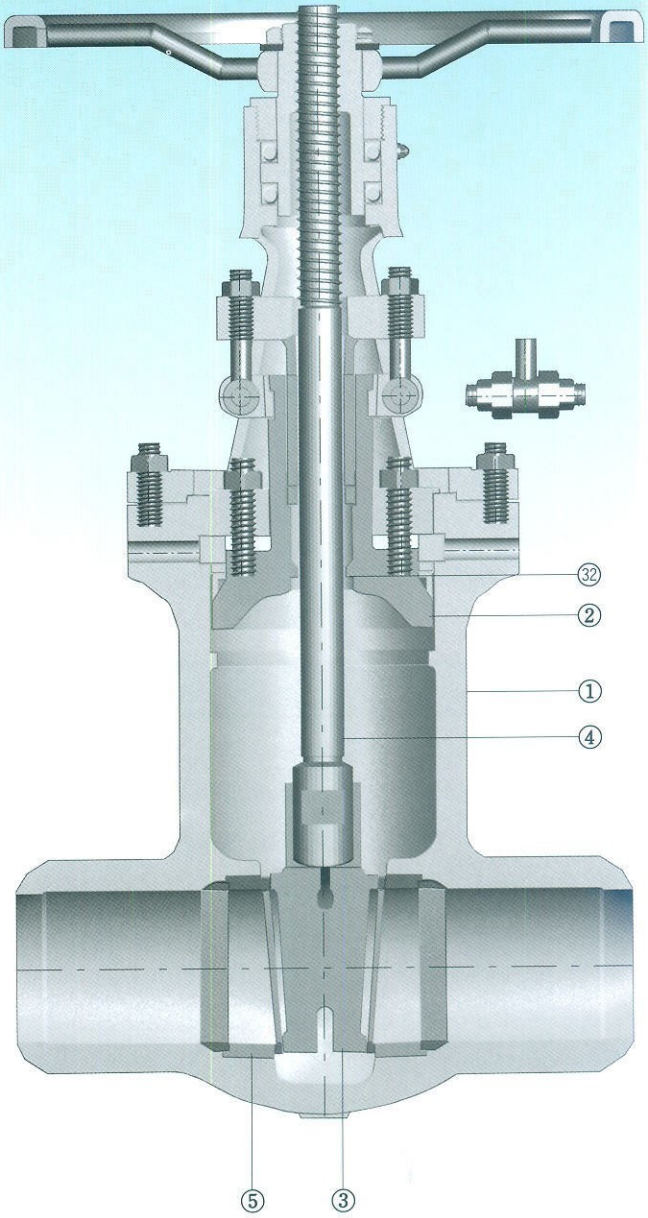


CAST STEEL
PRESSURE SEAL BONNET

GATE VALVES

① BODY

The body of the high pressure gate valve is designed as an one piece casting, with smooth inside contour providing maximum flow efficiency.
The body has an integral casting guiding system to guide the wedge full throught the valve stroke.
The pressure seal type gate valve is designed with 4 holes in the neck at the region of the segmental retainer for a proper disassembly.
The contacting surface the pressure seal gasket outside has a stainless steel 18-8 inlay to assure soundness and corrosion resistance for carbon and alloy steel valves.
The body is seal welding for body seatrings.



② BONNET

The bonnet is designed and manufactured in order to ensure a perfect seal, as well as to allow for easy dismounting and reassembly.
A longer packing life is ensured by a condensation chamber inserted between the backseat and the packing.

③ FLEXIBLE WEDGE

The flexible wedge is circumferentially symmetrical in order to ensure a complete distribution of forces and to ensure that possible irrgularities of alignment can be compensated.
The flexible wedge design is based upon the elasticity of the wedge material.
The flexible wedge contacting surface with deposit stellite no.6 hard facing is ensured by pressure tightness and freedom from sticking. It is connected to the stem by means of a T-joint.
Special attention is given to the seating surfaces which are ground and lapped to ensure a perfectly tight seal.

④ STEM

The non-rotating rising stem has trapezoidal thread.
The stem is ground to minimize friction and prevent damage to gland packing. The stem is jointed to the wedge by means of a T-connection which is an integral part of the stem itself. The stemhead has a tapered shoulder for backseating purposes.

⑤ BODY SEAT RINGS

The seat rings are made of the same material as the body, and surfaces have stellite no.6 hardfacing.
Special attention is given to the seating surfaces which are ground and lapped to ensure a perfectly tight seal.

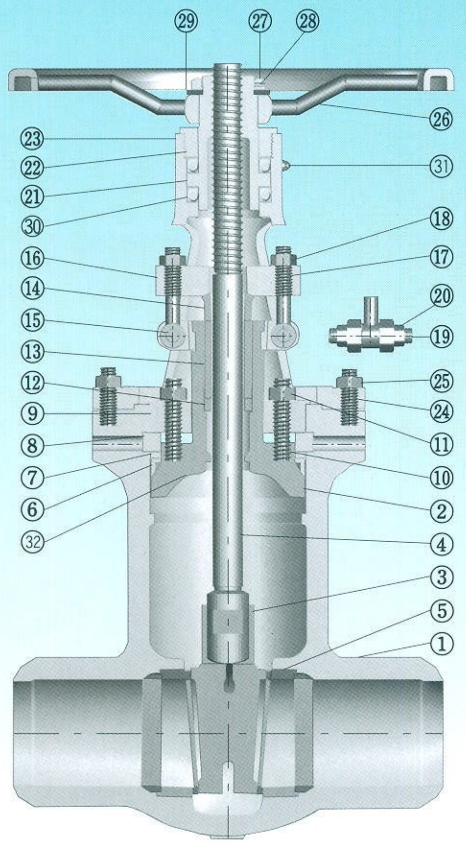
㉜ BACKSEAT

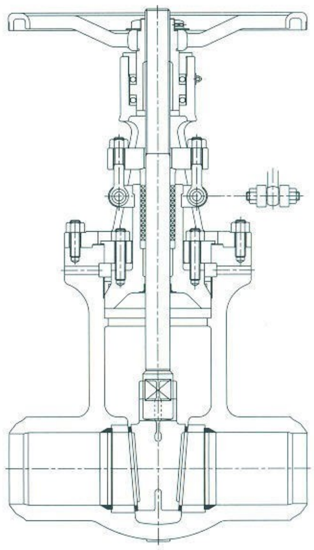
The bonnet of the high pressure gate valve has an integral backseat design with hardfacing and provides tight sealablity due to contact between the backseat and the taperes shoulder stem.
Backseating of the valve results in positive isolation of the stuffing box from the pressure area in case of packing failure.
A ground backseat is provided to ensure a perfectly tight seal to the stuffing box when the valve is full open.

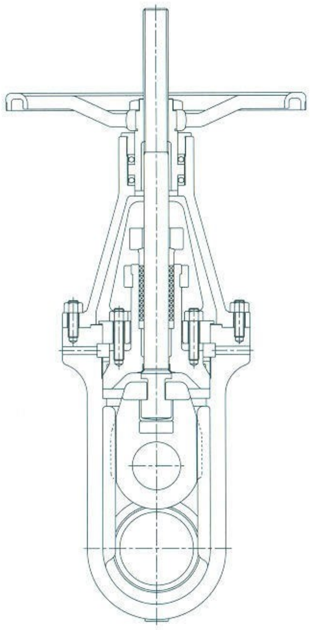
CAST STEEL

PRESSURE SEAL BONNET

GATE VALVES







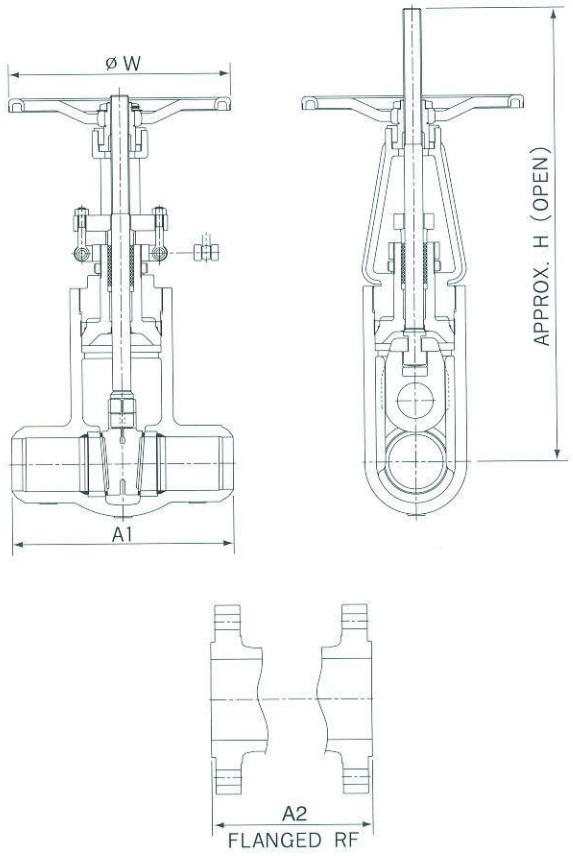
No	PARTS NAME	ASTM SPECIFICATIONS					REMARKS
		STANDARD	HIGH TEMP. SERVICE			CORROSION SERVICE	
1	BODY	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
2	BONNET	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
3	WEDGE	A216-WCS+HF	A217-WC6+HF	A217-WC9+HF	A217-C5+HF	A351-CF8M+HF	
4	STEM	A276-410	A276-410	A276-410	A276-410	A276-316	
5	BODY SEAT RING	A108-C/S1020+HF	A182-F11+HF	A182-F22+HF	A182-F5a-HF	A182-F316+HF	
6	GASKET RING	SOFT STEEL	SOFT STEEL	SOFT STEEL	SOFT STEEL	A276-316	
7	ADAPTER RING	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
8	RETAINER	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
9	BONNET CLAMP	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
10	BONNET BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A193-B8	
11	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-8	
12	PACKING RING	A276-410	A276-410	A276-410	A276-410	A276-316	
13	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 1
14	PACKING GLAND	A276-410	A276-410	A276-410	A276-410	A276-316	
15	HINGE CLAMP	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
16	GLAND FLANGE	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A351-CF8/A240-304	
17	GLAND BOLT	A307-B	A193-B7	A193-B7	A193-B7	A193-B8	
18	GLAND NUT	A307-B	A194-2H	A194-2H	A194-2H	A194-8	
19	HINGE CLAMP BOLT	A307-B	A193-B7	A193-B7	A193-B7	A193-B8	
20	HINGE CLAMP NUT	A307-B	A194-2H	A194-2H	A194-2H	A194-8	
21	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
22	YOKE CAP	A307-B	A307-B	A307-B	A307-B	A307-B+CR.PLATED	
23	YOKE	A216-WCB	A217-WC6/A216-WCB	A217-WC9/A216-WCB	A217-C5/A216-WCB	A351-CF8/351-CF8M	
24	YOKE BOLT	A193-B7	A193-B7	A193-B7	A193-B7	A193-B8	
25	YOKE NUT	A194-2H	A194-2H	A194-2H	A194-2H	A194-8	
26	HAND WHEEL	A536	A536	A536	A536	A536	
27	HAND WHEEL NUT	A307-B+ZN.PLATE	A307-B+ZN.PLATED	A307-B+ZN.PLATE	A307-B+ZN.PLATED	A307-B+ZN.PLATED	
28	SET SCREW	A307-B	A307-B	A307-B	A307-B	A307-B	
29	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	
30	THRUST BEARING	A295-52100	A295-52100	A295-52100	A295-52100	A295-52100	
31	GREASE NIPPLE	B16	B16	B16	B16	B16	
32	BACK SEAT	A216-WCB+STL.	A217-WC6+STL.	A217-WC9+STL.	A217-C5+STL.	A351-CF8M+STL.	

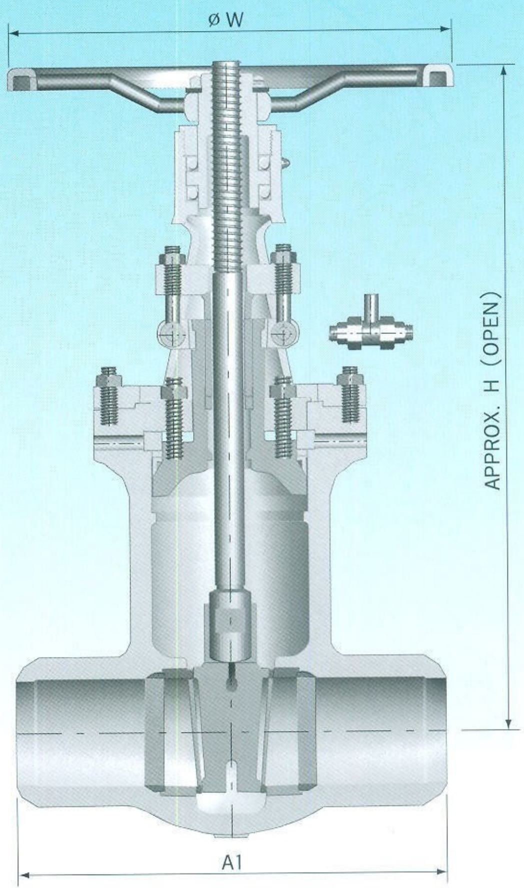
NOTE 1. Packing material : customer's requirements

GATE VALVES

PRESSURE SEAL BONNET

CLASS 600/900





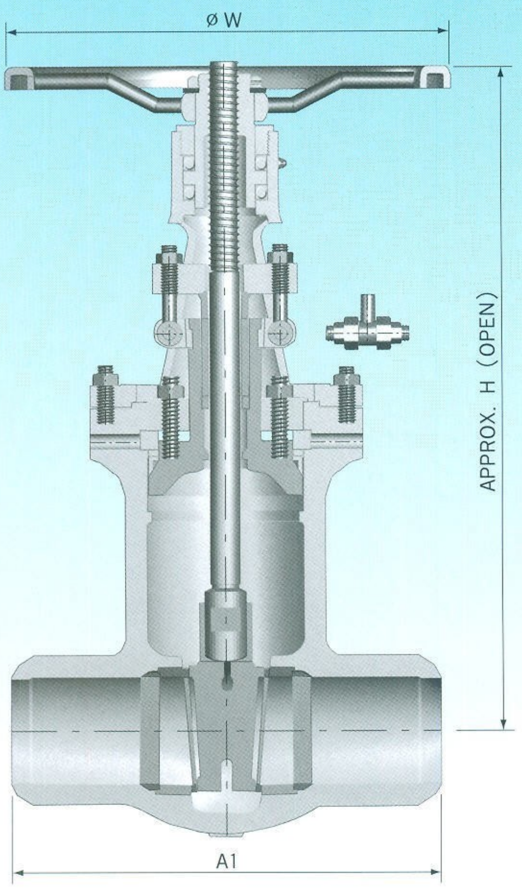
■ PSB GATE 600LB TABLE

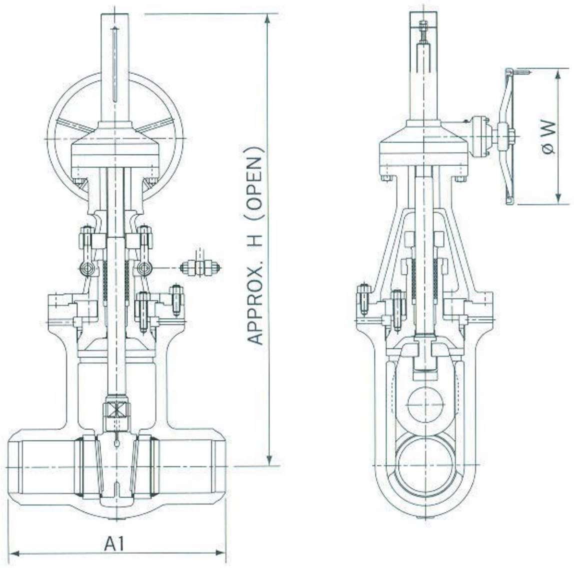
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1 (BW)	inch	7	8.5	10	12	15	18	23	28	32	35	39	43	47	55
	mm	178	216	254	305	381	457	584	711	813	889	991	1092	1194	1397
A2 (RF)	inch	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
H (OPEN HEIGHT)	inch	19.49	20.47	22.05	27.56	32.57	35.04	41.34	50.79	57.09	63.78	76.38	82.48	92.52	106.30
	mm	495	520	560	700	827	890	1050	1290	1450	1620	1940	2095	2350	2700
W (HANDWHEEL DIA.)	inch	7.87	8.82	9.84	13.98	15.75	17.72	19.69	27.95	27.95	31.5	31.5	31.5	31.5	31.5
	mm	200	224	250	355	400	450	500	710	710	800	800	800	800	800

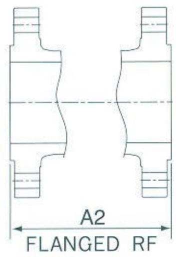
■ PSB GATE 900LB TABLE

VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1 (BW)	inch	8.5	10	12	14	17	20	26	31	36	39	43	48	52	61
	mm	216	254	305	356	432	508	660	787	914	991	1092	1219	1321	1549
A2 (RF)	inch	14.5	16.5	15	18	22	24	29	33	38	40.5	44.5	48	52	61
	mm	368	419	381	457	559	610	737	838	965	1029	1130	1219	1321	1549
H (OPEN HEIGHT)	inch	22.44	23.23	24.02	28.54	32.53	35.63	43.90	55.31	62.99	67.32	82.48	89.96	96.46	116.14
	mm	570	590	610	725	826	905	1115	1405	1600	1710	2095	2285	2450	2950
W (HANDWHEEL DIA.)	inch	9.84	9.84	12.4	13.98	15.75	17.72	19.69	19.69	27.95	31.5	31.5	31.5	31.5	31.5
	mm	250	250	315	355	400	450	500	500	710	800	800	800	800	800

CLASS 1500/2500







■ PSB GATE 1500LB TABLE

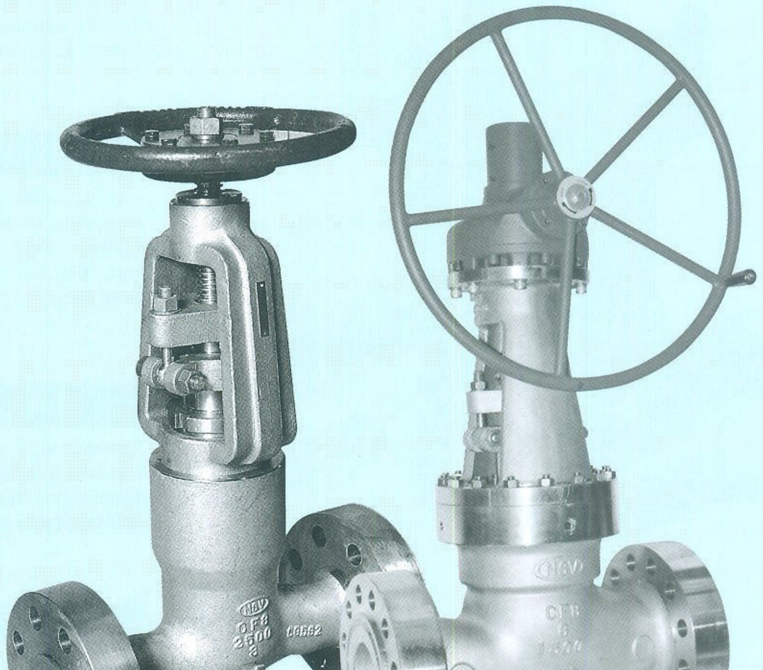
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	8.5	10	12	16	19	22	28	34	39	42	47	53	58	76.5
(BW)	mm	216	254	305	406	483	559	711	864	991	1067	1194	1346	1473	1943
A2	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
(RF)	mm	368	419	470	546	673	705	832	991	1130	1257	1384	1537	1664	1943
H	inch	22.44	23.23	26.77	31.3	34.45	39.76	43.11	50.98	55.90	59.45	77.16	79.13	100	139.76
(OPEN HEIGHT)	mm	570	590	680	795	875	1010	1095	1295	1420	1510	1960	2010	2540	3550
W	inch	9.84	9.84	13.98	15.75	17.72	19.69	27.95	27.95	31.50	31.50	31.50	31.50	31.50	31.50
(HANDWHEEL DIA.)	mm	250	250	355	400	450	500	710	710	800	800	800	800	800	800

■ PSB GATE 2500LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450
A1	inch	11	13	14.5	18	21	24	30	36	41	44	49	55
(BW)	mm	279	330	368	457	533	610	762	914	1041	1118	1245	1397
A2	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56	-	-	-
(RF)	mm	451	508	578	673	794	914	1022	1270	1422	-	-	-
H	inch	24.80	24.80	25.79	30.71	35.51	36.02	47.83	55.51	59.45	67.52	84.65	92.52
(OPEN HEIGHT)	mm	630	630	655	780	902	915	1215	1410	1510	1715	2150	2350
W	inch	12.40	13.98	15.75	19.69	19.69	27.95	31.50	31.50	31.50	31.50	31.50	31.50
(HANDWHEEL DIA.)	mm	315	355	400	500	500	710	800	800	800	800	800	800

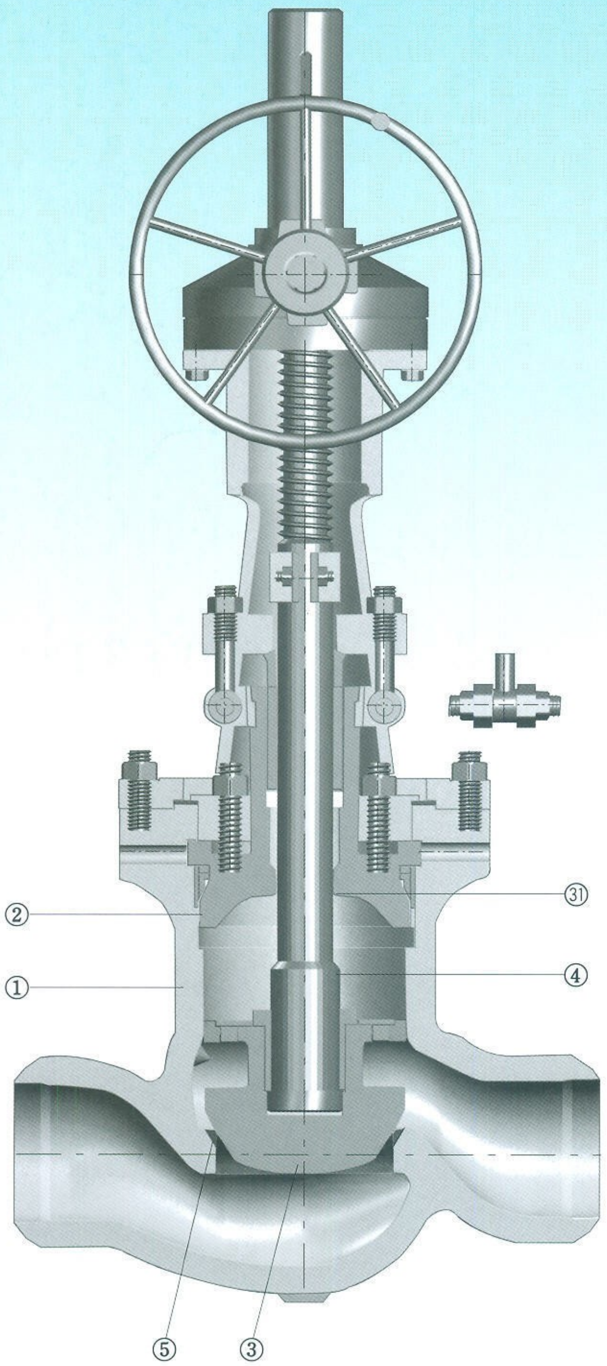
CAST STEEL GLOBE VALVES

PRESSURE SEAL BONNET



CAST STEEL
PRESSURE SEAL BONNET

GLOBE VALVES



① BODY

The body of the high pressure globe valve is designed as an one piece casting, with smooth inside contour providing maximum flow efficiency.
The body has an integral casting guiding system to guide the disc full throught the valve stroke.
The pressure seal type globe valve is designed with 4 holes in the neck at the region of the segmental retainer for a proper disassembly.
The contacting surface the pressure seal gasket outside has a stainless steel 18-8 inlay to assure soundness and corrosion resistance for carbon and alloy steel valves.

② BONNET

The bonnet is designed and manufactured in order to ensure a perfect seal, as well as to allow for easy dismounting and reassembly.
A longer packing life is ensured by a condensation chamber inserted between the backseat and the packing.

③ DISC

The disc contacting surface with deposit stellite no.6 hard facing is ensured by pressure tightness and freedom from sticking. It is connected to the stem by means of a lock nut.
Special attention is given to the seating face which are ground and lapped to a perfectly tight seal.

④ STEM

The non-rotating or rotating rising stem has trapezoidal thread.
The stem is ground to minimize friction and prevent damage to gland packing. The stem is jointed to the disc by means of a lock nut. The stemhead has a tapered shoulder for backseating purpose.

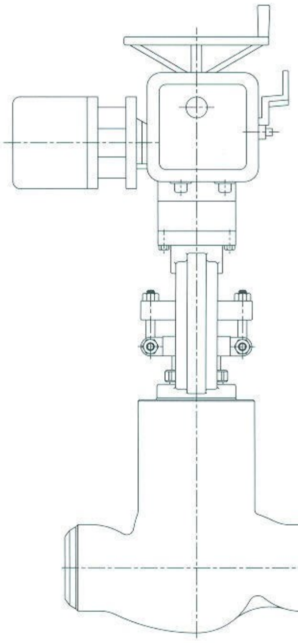
⑤ SEAT

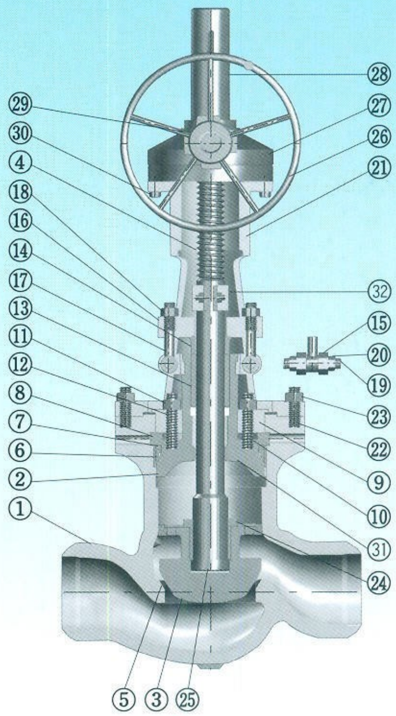
The seat is integral welded to the valve body and is provided with a hardfaced sealing to assure better wear and longer valve life.
Special attention is given to the seating surfaces which are ground and lapped to ensure a perfectly tight seal.

31 BACKSEAT

The bonnet of the high pressure globe valve has an integral backseat design with hardfacing and provides tight sealablity due to contact between the backseat and the tapered shoulder stem.
Backseating of the valve results in positive isolation of the stuffing box from the pressure area in case of packing failure.
A ground backseat is provided to ensure a perfectly tight seal to the stuffing box when the valve is full open.

GLOBE VALVES





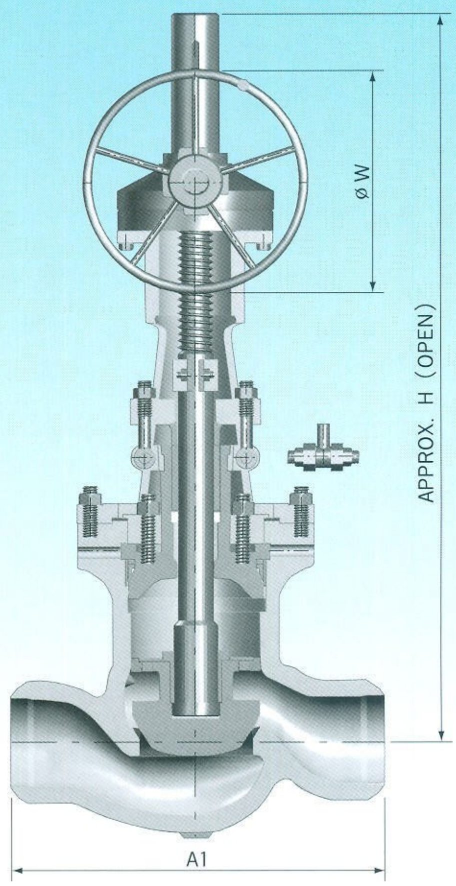
No	PARTS NAME	ASTM SPECIFICATIONS					REMARKS
		STANDARD	HIGH TEMP. SERVICE			CORROSION SERVICE	
1	BODY	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
2	BONNET	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
3	DISC	A216-WCB+HF	A217-WC6+HF	A217-WC9+HF	A217-C5+HF	A351-CF8M+HF	
4	STEM	A276-410	A276-410	A276-410	A276-410	A276-316	
5	BODY SEAT	A216-WCB+HF	A217-WC6+HF	A217-WC9+HF	A217-C5-HF	A351-CF8M+HF	
6	GASKET RING	SOFT STEEL	SOFT STEEL	SOFT STEEL	SOFT STEEL	A276-316	
7	ADAPTER RING	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
8	RETAINER	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
9	BONNET CLAMP	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
10	BONNET BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A193-B8	
11	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-8	
12	PACKING RING	A276-410	A276-410	A276-410	A276-410	A276-316	
13	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 1
14	PACKING GLAND	A276-410	A276-410	A276-410	A276-410	A276-316	
15	HINGE CLAMP	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
16	GLAND FLANGE	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A351-CF8/A240-304	
17	GLAND BOLT	A307-B	A193-B7	A193-B7	A193-B7	A194-8	
18	GLAND NUT	A307-B	A194-2H	A194-2H	A194-2H	A193-B8	
19	HINGE CLAMP BOLT	A307-B	A193-B7	A193-B7	A193-B7	A194-8	
20	HINGE CLAMP NUT	A307-B	A194-2H	A194-2H	A194-2H	A194-8	
21	YOKE	A216-WCB	A217-WC6/A216-WCB	A217-WC9/A216-WCB	A217-C5/A216-WCB	A351-CF8/351-CF8M	
22	YOKE BOLT	A193-B7	A193-B7	A193-B7	A193-B7	A193-B8	
23	YOKE NUT	A194-2H	A194-2H	A194-2H	A194-2H	A194-8	
24	LOCK NUT	A276-410	A276-410	A276-410	A276-410	A276-316	
25	THRUST WASHER	A276-410	A276-410	A276-410	A276-410	A276-316	
26	HAND WHEEL	A536/STEEL	A536/STEEL	A536/STEEL	A536/STEEL	A536/STEEL	
27	GEAR ACTUATOR	A216-WCB	A216-WCB	A216-WCB	A216-WCB	A216-WCB	
28	INDICATOR PIPE	A120	A120	A120	A120	A120	
29	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	
30	MOUNTING BOLT	A307-B	A307-B	A307-B	A307-B	A194-8	
31	BACK SEAT	A216-WCB+STL.	A217-WC6+STL.	A217-WC9+STL.	A217-C5+STL.	A351-CF8M+STL.	
32	STOPPER	A216-WCB	A216-WCB	A216-WCB	A216-WCB	A351-CF8M	

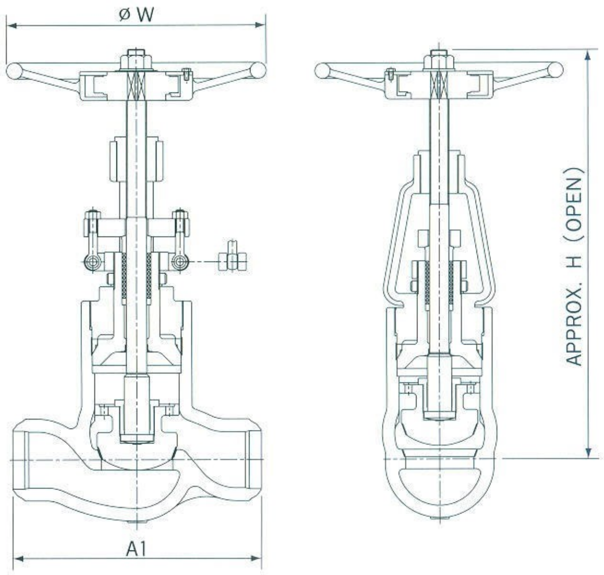
NOTE 1. Packing material : customer's requirements

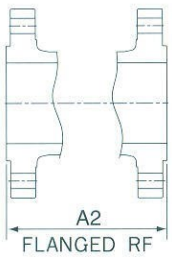
GLOBE VALVES

PRESSURE SEAL BONNET

CLASS 600/900







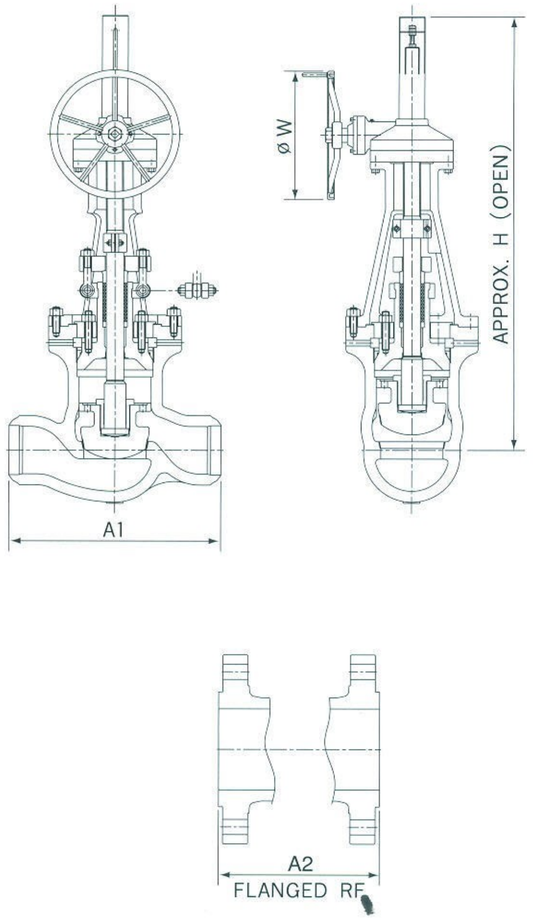
■ PSB GLOBE 600LB TABLE

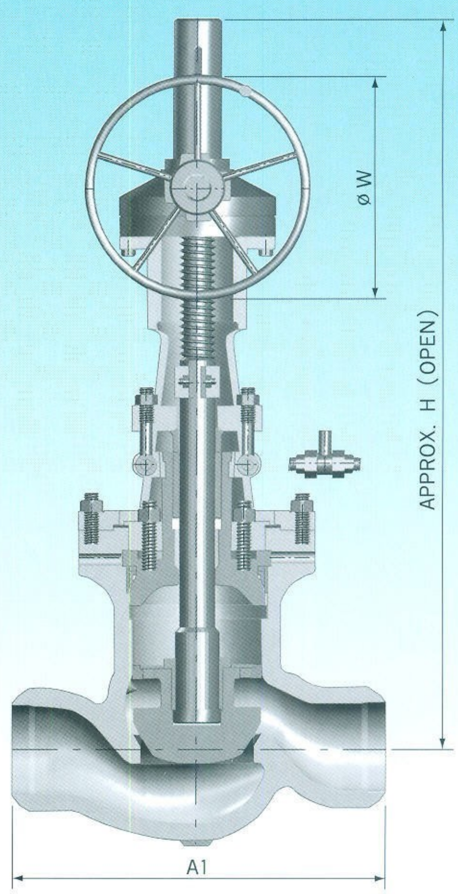
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1	inch	7	8.5	10	12	15	18	23	28	32
(BW)	mm	178	216	254	305	381	457	584	711	813
A2	inch	11.5	13	14	17	20	22	26	31	33
(RF)	mm	292	330	356	432	508	559	660	787	838
H	inch	21.26	24.41	25.98	28.94	37.55	44.09	47.64	53.94	56.10
(OPEN HEIGHT)	mm	540	620	660	735	954	1120	1210	1370	1425
W	inch	9.84	12.4	13.98	17.72	17.72	17.72	19.69	31.5	31.5
(HANDWHEEL DIA.)	mm	250	315	355	450	450	450	500	800	800

■ PSB GLOBE 900LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1	inch	8.5	10	12	14	17	20	26	31	36
(BW)	mm	216	254	305	356	432	508	660	787	914
A2	inch	14.5	16.5	15	18	22	24	29	33	38
(RF)	mm	368	419	381	457	559	610	737	838	965
H	inch	23.82	24.80	27.95	32.48	38.65	43.50	48.62	54.72	61.42
(OPEN HEIGHT)	mm	605	630	710	825	982	1105	1235	1390	1560
W	inch	12.4	13.98	13.98	15.75	19.69	19.69	27.56	31.5	31.5
(HANDWHEEL DIA.)	mm	315	355	355	400	500	500	700	800	800

CLASS 1500/2500





■ PSB GLOBE 1500LB TABLE

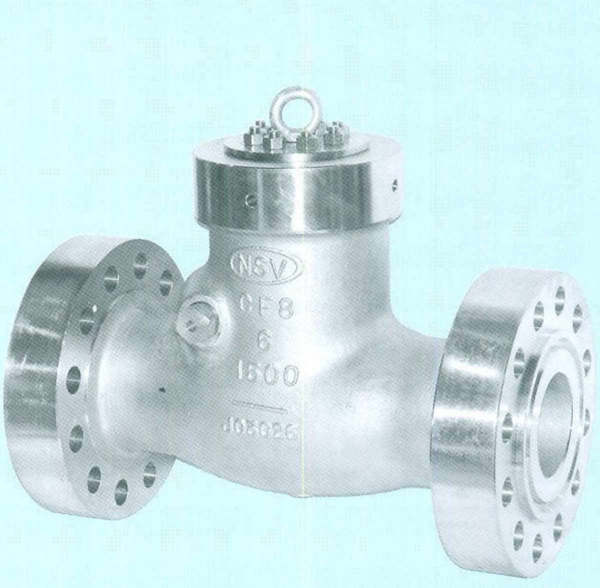
VALVE SIZE										
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
A1 (BW)	inch	8.5	10	12	16	19	22	28	34	39
	mm	216	254	305	406	483	559	711	864	991
A2 (RF)	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5
	mm	368	419	470	546	673	705	832	991	1130
H (OPEN HEIGHT)	inch	23.82	24.80	31.30	31.89	41.65	45.47	61.02	68.90	72.83
	mm	605	630	795	810	1058	1155	1550	1750	1850
W (HANDWHEEL DIA.)	inch	12.40	13.98	15.75	19.69	23.62	27.56	27.56	31.50	31.50
	mm	315	355	400	500	600	700	700	800	800

■ PSB GLOBE 2500LB TABLE

VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
A1 (BW)	inch	11	13	14.5	18	21	24	30	36	41
	mm	279	330	368	457	533	610	762	914	1041
A2 (RF)	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56
	mm	451	508	578	673	794	914	1022	1270	1422
H (OPEN HEIGHT)	inch	24.02	28.35	29.53	37.40	45.55	49.21	66.34	72.83	78.35
	mm	610	720	750	950	1157	1250	1685	1850	1990
W (HANDWHEEL DIA.)	inch	13.98	17.72	19.69	27.56	27.56	27.56	31.50	31.50	31.50
	mm	355	450	500	700	700	700	800	800	800

CAST STEEL
SWING CHECK VALVES

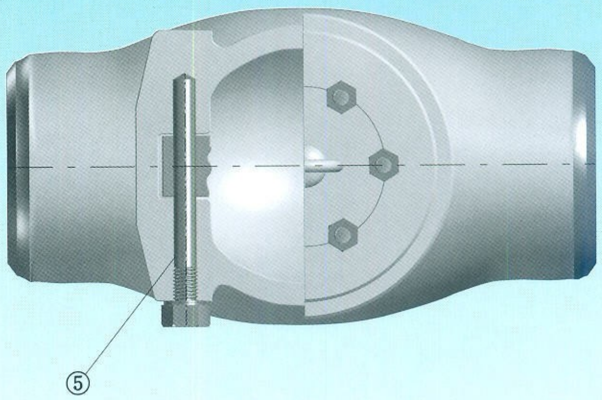
PRESSURE SEAL BONNET



SWING CHECK VALVES

① BODY

The body of the high pressure sw-ch valve is designed as an one piece casting, with smooth inside contour providing maximum flow efficiency.
The pressure seal type sw-ch valve is designed with 4 holes in the neck at the region of the segmental retainer for a proper disassembly.
The contacting surface the pressure seal gasket outside has a stainless steel 18-8 inlay to assure soundness and corrosion resistance for carbon and alloy steel valves.
The body is seal welding for body seatring.

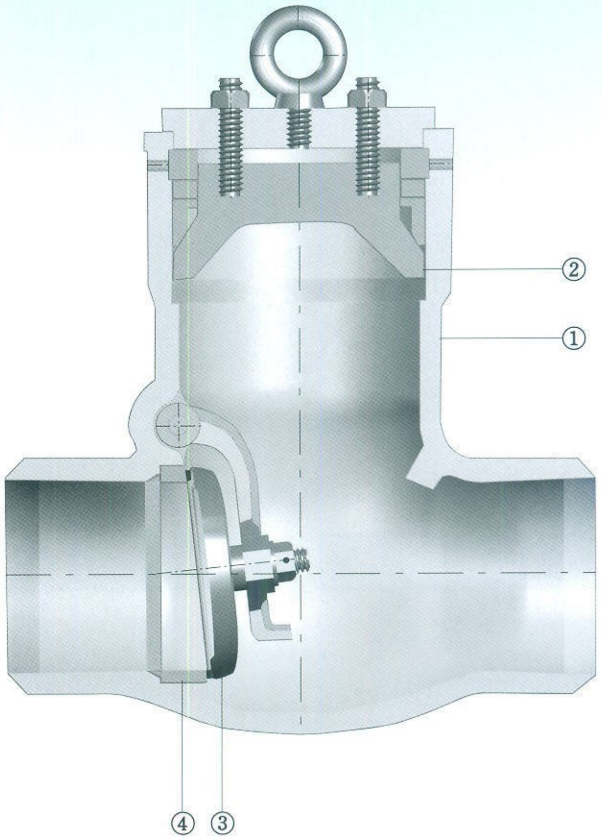


② BONNET

The bonnet is designed and manufactured in order to ensure a perfect seal, as well as to allow for easy dismounting and reassembly.

③ DISC

The disc contacting surface with deposit stellite no.6 hard facing is ensured by pressure tightness and freedom from sticking. It is connected to the arm by means of a disc nut.
Special attention is given to the seating face which are ground and lapped to ensure a perfectly tight seal.



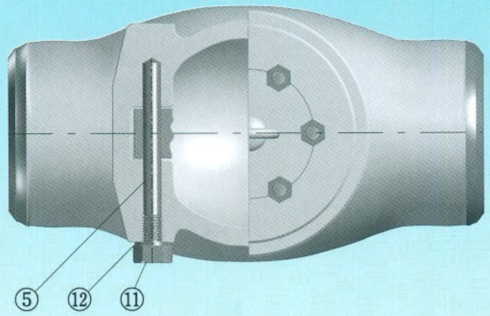
④ SEAT RING

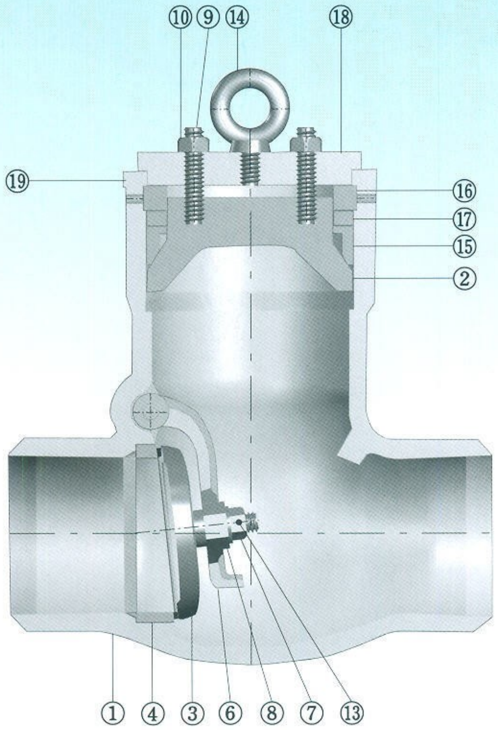
The seat ring are made of the same material as the body, and the surface have stellite no.6 hardfacing. The seat is welded into the valve body preventing leakage between seat and body.
Special attention is given to the seating surface which are ground lapped to ensure a perfectly tight seal.

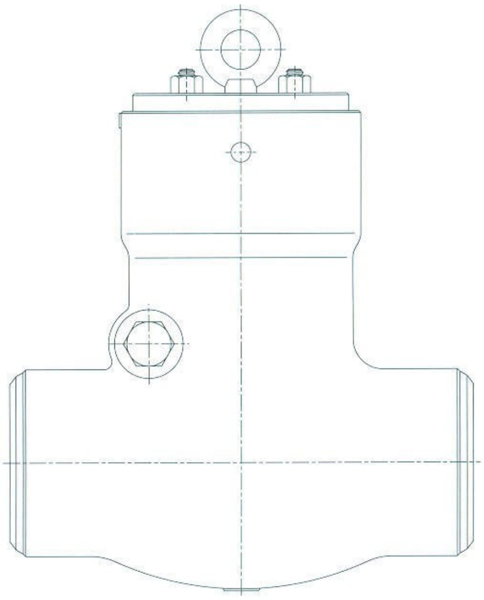
⑤ HINGE PIN

The hinge pin is part of trim. The hinge is retained in the body a thread plug and sealed by metallic gasket.
The hinge pin can be easily removed for maintenance of the valve.

SWING CHECK VALVES



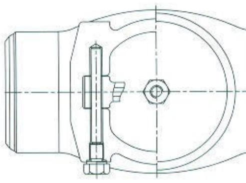


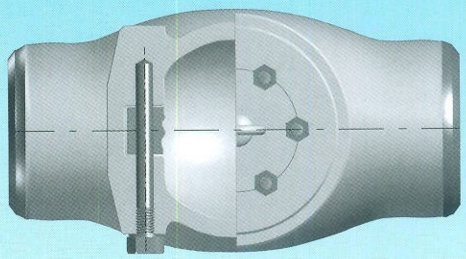


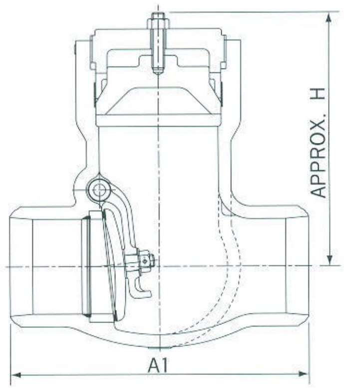
No	PARTS NAME	ASTM SPECIFICATIONS					REMARKS
		STANDARD	HIGH TEMP. SERVICE			CORROSION SERVICE	
1	BODY	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
2	BONNET	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
3	DISC	A216-WCB+HF	A217-WC6+HF	A217-WC9+HF	A217-C5+HF	A351-CF8M+HF	
4	BODY SEAT RING	A108-C/S1020+HF	A182-F11+HF	A182-F22+HF	A182-F5a+HF	A182-F316+HF	
5	HINGE PIN	A276-410	A276-410	A276-410	A276-410	A276-316	
6	ARM	A216-WCB	A217-WC6	A276-WC9	A217-C5	A351-CF8M	
7	DISC NUT	A194-8	A194-8	A194-8	A194-8	A194-8	
8	WASHER	A240-304	A240-304	A240-304	A240-304	A240-316	
9	BONNET BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A193-B8	
10	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-8	
11	PLUG BOLT	A307-B	A276-410	A276-410	A276-410	A276-316	
12	PLUG GASKET	SOFT STEEL	SOFT STEEL	SOFT STEEL	SOFT STEEL	A276-316	
13	SPLIT PIN	A580-304	A580-304	A580-304	A580-304	A580-304	
14	EYE BOLT	A307-B	A307-B	A307-B	A307-B	A307-B	
15	GASKET RING	SOFT STEEL	SOFT STEEL	SOFT STEEL	SOFT STEEL	A276-316	
16	RETAINER	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
17	ADAPTER RING	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
18	COVER	A216-WCB	A217-WC6	A217-WC9	A217-C5	A351-CF8M	
19	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	

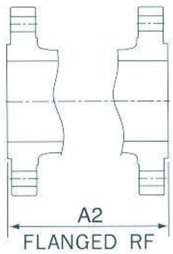
SWING CHECK VALVES
PRESSURE SEAL BONNET

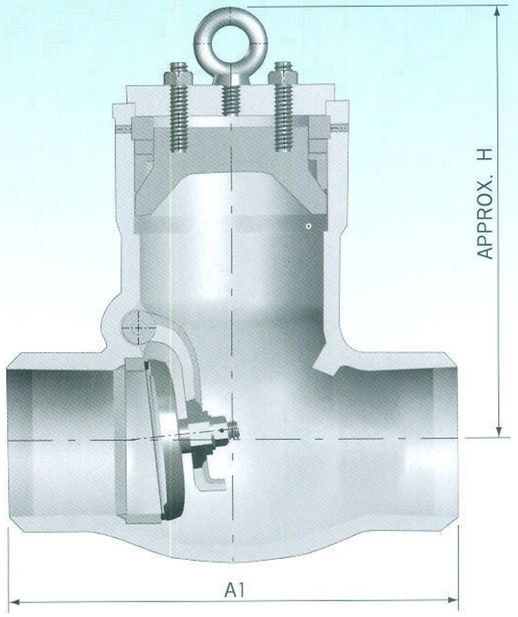
CLASS 600/900











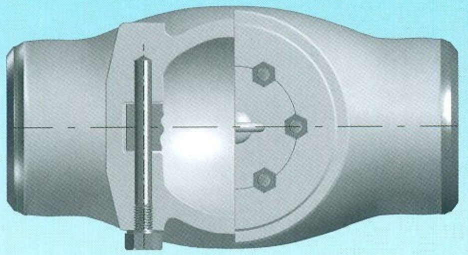
■ PC SW-CH 600LB TABLE

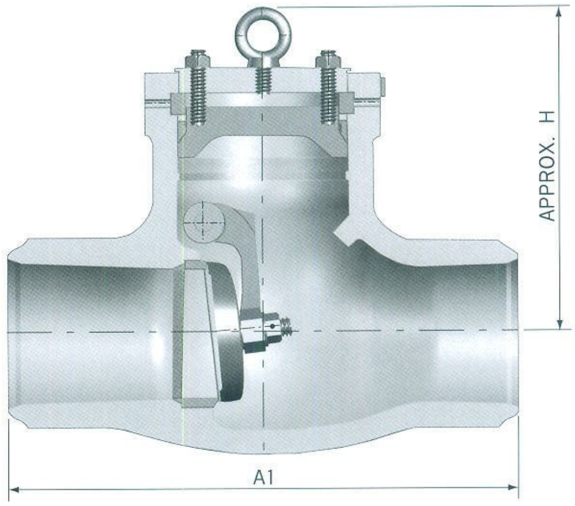
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	7	8.5	10	12	15	18	23	28	32	35	39	43	47	55
(BW)	mm	178	216	254	305	381	457	584	711	813	889	991	1092	1194	1397
A2	inch	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55
(RF)	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
H	inch	9.25	10.24	11.22	12.20	13.50	15.16	19.09	21.26	23.62	26.77	28.74	30.91	31.89	35.24
(VALVE HEIGHT)	mm	235	260	285	310	343	385	485	540	600	680	730	785	810	895

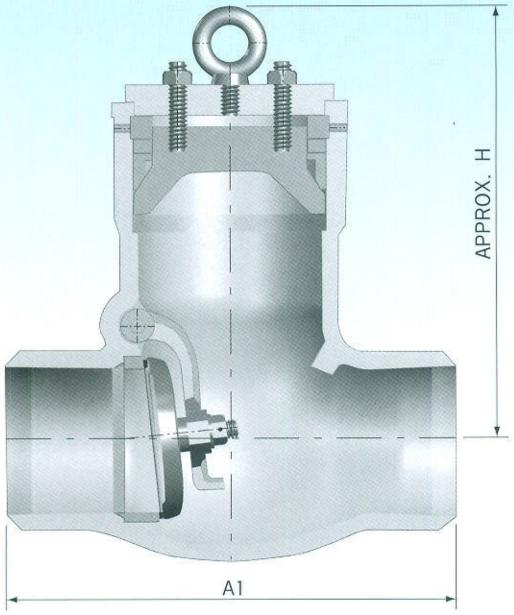
■ PC SW-CH 900LB TABLE

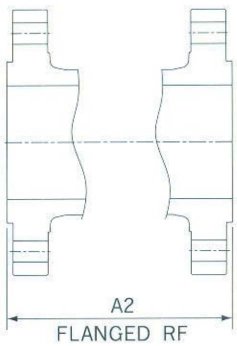
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	8.5	10	12	14	17	20	26	31	36	39	43	48	52	61
(BW)	mm	216	254	305	356	432	508	660	787	914	991	1092	1219	1321	1549
A2	inch	14.5	16.5	15	18	22	24	29	33	38	40.5	44.5	48	52	61
(RF)	mm	368	419	381	457	559	610	737	838	965	1029	1130	1219	1321	1549
H	inch	9.45	10.43	12.20	13.58	14.25	15.75	20.08	22.44	24.61	28.54	29.53	31.89	32.87	36.02
(VALVE HEIGHT)	mm	240	265	310	345	362	400	510	570	625	725	750	810	835	915

CLASS 1500/2500









■ PC SW-CH 1500LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	8.5	10	12	16	19	22	28	34	39	42	47	53	58	76.5
(BW)	mm	216	254	305	406	483	559	711	864	991	1067	1194	1346	1473	1943
A2	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
(RF)	mm	368	419	470	546	673	705	832	991	1130	1257	1384	1537	1664	1943
H	inch	9.45	10.43	12.99	14.76	15.55	16.54	20.87	23.44	25.98	29.13	30.91	32.87	34.06	37.40
(VALVE HEIGHT)	mm	240	265	330	375	395	420	530	595	660	740	785	835	865	950

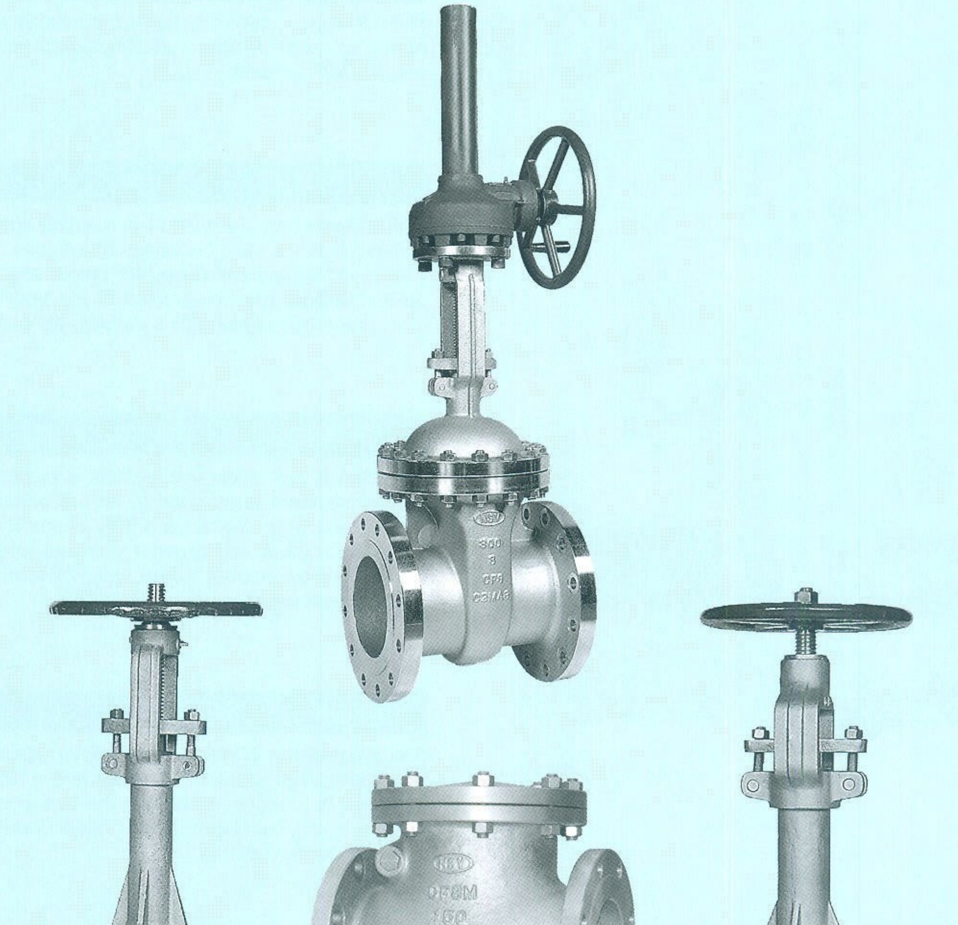
■ PC SW-CH 2500LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450
A1	inch	11	13	14.5	18	21	24	30	36	41	44	49	55
(BW)	mm	279	330	368	457	533	610	762	914	1041	1118	1245	1397
A2	inch	17.75	20	22.75	26.5	31.25	36	40.25	50	56	-	-	-
(RF)	mm	451	508	578	673	794	914	1022	1270	1422	-	-	-
H	inch	9.84	11.02	13.78	15.75	16.53	17.72	21.26	24.21	26.97	30.12	31.97	34.84
(VALVE HEIGHT)	mm	250	280	350	400	420	450	540	615	685	765	812	885

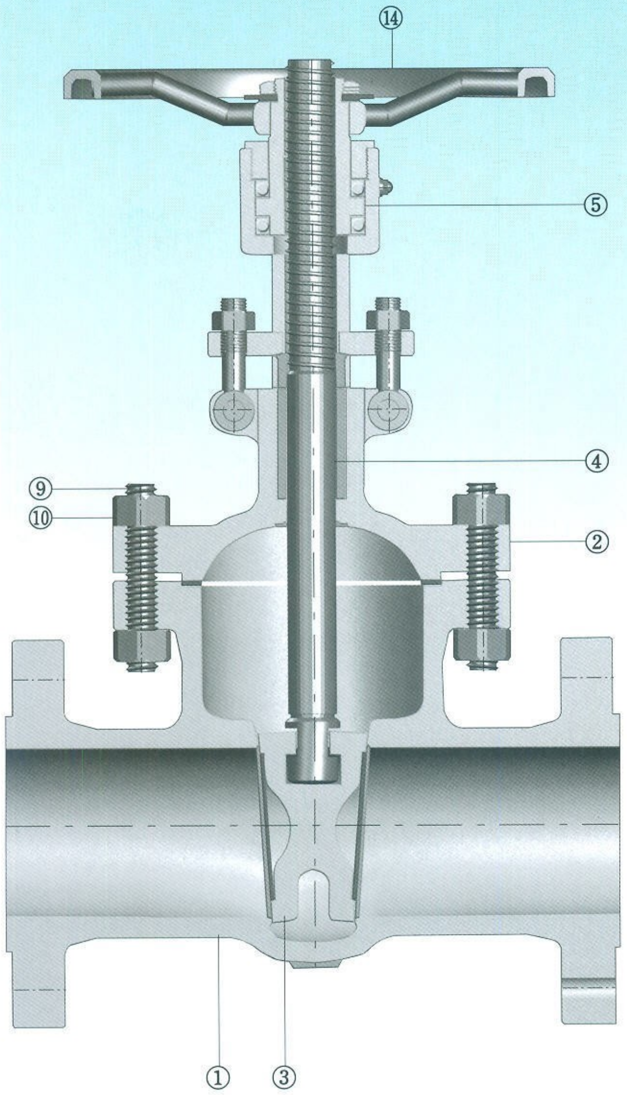
CAST STAINLESS STEEL VALVES

BOLTED BONNET & COVER

- GATE VALVES
- GLOBE VALVES
- SWING CHECK VALVES



GATE VALVES



① BODY

The body is in cast stainless steel and is carefully designed in all its details. The basic dimension,i.e.wall thickness, face to face and flanges comply with the relevant API and ANSI standards. The sealing surfaces for connection to the bonnet are flat finish in the 150lb Class, recessed in the 300lb Class or may be ring joint in the 600lb Class and above. Bosses may be provided for drain taps or by-pass piping.

② BONNET

The bonnet is in stainless steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the API standard.

③ WEDGE

The wedge is part of the trim. It is normally supplied as flexible. It is connected to the stem by means of a T-joint. The guides on each side of the wedge are casted for proper alignment with the body guides. Special attention is given to the seating surface which are ground and lapped to insure a perfectly tight seal.

④ STEM

The stem is part of the trim. A stem is provided with a T-head. A ground backseat is provided to ensure perfectly tight seal to the stuffing box when the valve is fully open. The stem is ground to minimize friction and prevent damage to gland packing. The threading is trapezoidal ACME type. Dimensions comply with the applicable standard.

⑤ YOKE SLEEVE

The yoke sleeve is made from bronze, stainless steel or ductile iron having high resistance to wear and a high melting point. It is designed to permit removal from the bonnet or the yoke while the valve is in service. Gate valves 6" 600lb Class and above are fitted with a ball thrust bearing.

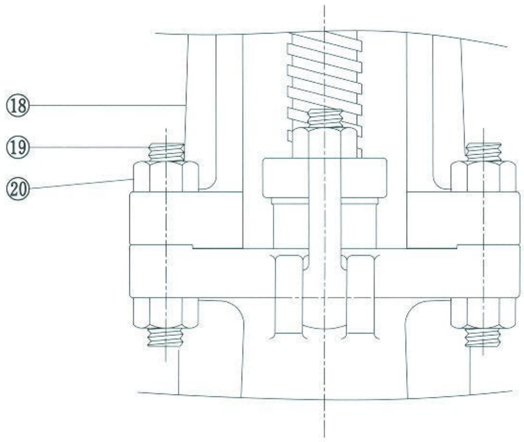
⑨,⑩ BONNET BOLTING

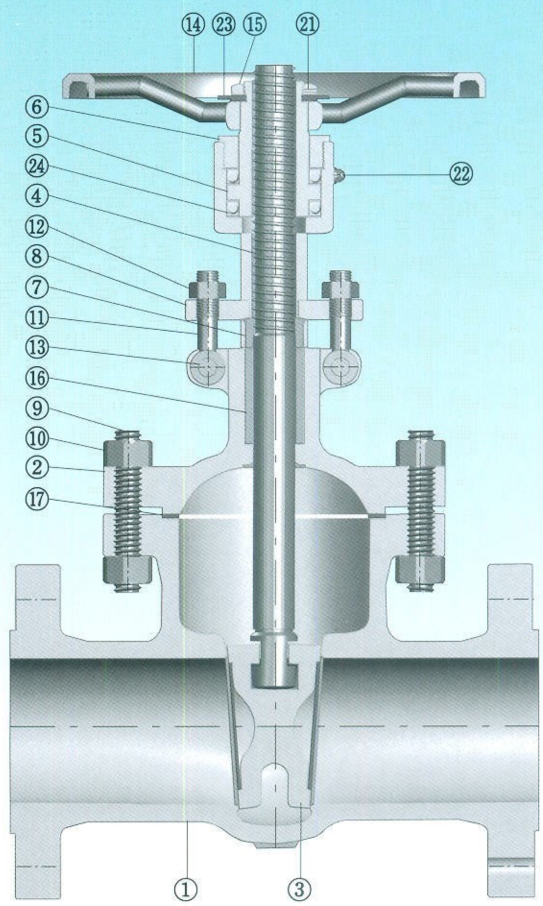
Bonnet studs and nuts are manufactured from alloy or stainless steel to the relevant ASTM standard.

⑭ HANDWHEEL

The steel or nodular iron handwheels are well shaped and large enough to give ease of movement when operating the valve, even under maximum differential pressure.

GATE VALVES



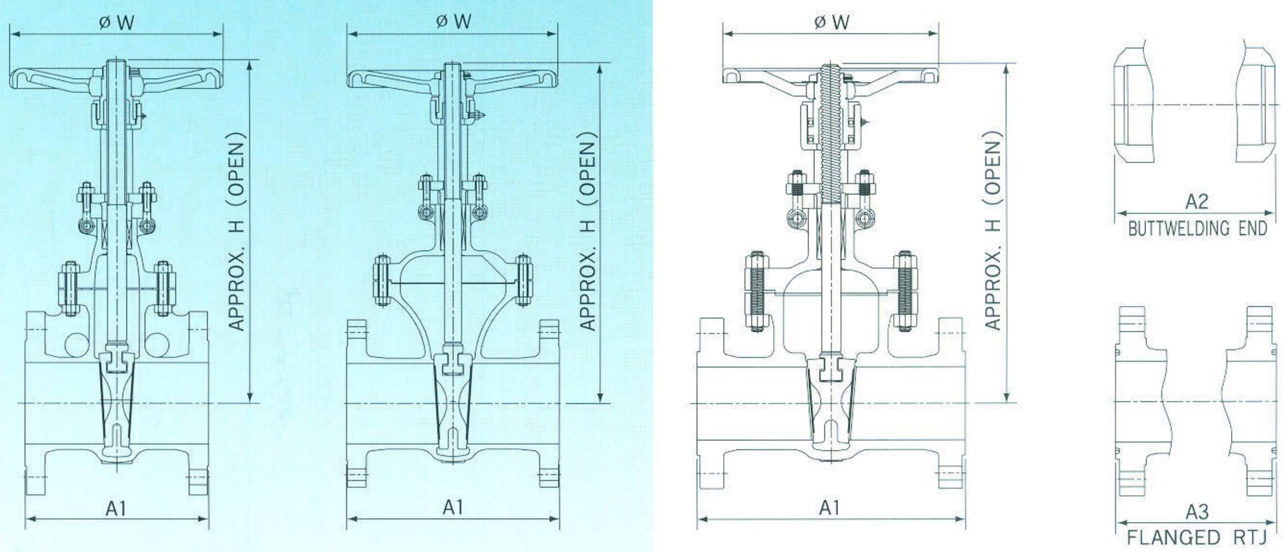


No	PARTS NAME	ASTM SPECIFICATIONS CORROSION SERVICE				REMARKS
1	BODY	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	WEDGE	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
4	STEM	A276-304	A276-316	A276-304L	A276-316L	
5	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
6	YOKE CAP	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	
7	PACKING GLAND	A276-304	A276-316	A276-304L	A276-316L	
8	GLAND FLANGE	A351-CF8/A240-304	A351-CF8/A240-304	A351-CF8/A240-304	A351-CF8/A240-304	
9	BONNET BOLT	A193-B8	A193-B8	A193-B8	A193-B8	
10	BONNET NUT	A194-8	A194-8	A194-8	A194-8	
11	GLAND BOLT	A193-B8	A193-B8	A193-B8	A193-B8	
12	GLAND NUT	A194-8	A194-8	A194-8	A194-8	
13	HINGE PIN	A276-304	A276-304	A276-304	A276-304	
14	HAND WHEEL	A536	A536	A536	A536	
15	HAND WHEEL NUT	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	
16	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 1
17	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 1
18	YOKE	A351-CF8	A351-CF8/CF8M	A351-CF8/CF3	A351-CF8/CF3M	
19	YOKE BOLT	A193-B8	A193-B8	A193-B8	A193-B8	
20	YOKE NUT	A194-8	A194-8	A194-8	A194-8	
21	SET SCREW	A307-B	A307-B	A307-B	A307-B	
22	GREASE NIPPLE	B16	B16	B16	B16	
23	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	
24	BEARING	A295-52100	A295-52100	A295-52100	A295-52100	

NOTE 1. Packing & gasket material : customer's requirements

GATE VALVES
BOLTED BONNET

CLASS 150/300/600



■ BB GATE 150LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	900
A1	inch	7	7.5	8	9	10	10.5	11.5	13	14	15	16	17	18	20	24	24	28
(RF)	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508	610	610	711
A2	inch	8.5	9.5	11.12	12	15	15.87	16.5	18	19.75	22.5	24	26	28	32	36	36	40
(BW)	mm	216	241	282	305	381	403	419	457	502	572	610	660	711	813	914	914	1016
H	inch	12.60	15.00	17.72	21.30	25.59	28.50	36.61	46.26	55.91	59.49	68.31	76.77	84.25	99.21	113	125	142.5
(OPEN HEIGHT)	mm	320	381	450	541	650	724	930	1175	1420	1511	1735	1950	2140	2520	2870	3175	3620
W	inch	7.09	7.09	7.87	7.87	9.84	12.4	13.98	15.75	17.72	19.69	24.80	24.80	27.95	27.95	31.5	31.5	31.5
(HANDWHEEL DIA.)	mm	180	180	200	200	250	315	335	400	450	500	630	630	710	710	800	800	800

■ BB GATE 300LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2	inch	8.5	9.5	11.12	12	15	15.87	16.5	18	19.75	30	33	36	39	45
(RF)&(BW)	mm	216	241	282	305	381	404	419	457	503	762	838	914	991	1143
A3	inch	9.12	10.12	11.75	12.62	15.62	16.5	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88
(RTJ)	mm	232	257	298	321	397	419	435	473	517	778	854	930	1010	1165
H	inch	13.50	15.75	18.5	22.01	26.30	30.00	37.52	48.50	56.50	60.71	70.00	84.45	98.62	110.04
(OPEN HEIGHT)	mm	343	400	470	559	668	762	953	1232	1435	1542	1778	2145	2505	2795
W	inch	7.87	7.87	8.82	9.84	12.4	13.98	15.75	17.72	19.69	19.69	24.80	27.95	31.5	31.5
(HANDWHEEL DIA.)	mm	200	200	224	250	315	355	400	450	500	500	630	710	800	800

■ BB GATE 600LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450
A1&A2	inch	11.5	13	14	17	20	22	26	31	33	35	39	43
(RF)&(BW)	mm	292	330	356	432	508	559	660	787	838	889	991	1092
A3	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12
(RTJ)	mm	295	333	359	435	511	562	663	790	841	892	994	1095
H	inch	22.05	23.62	24.41	28.74	35.23	38.98	46.57	55.12	63.39	70.47	78.35	84.65
(OPEN HEIGHT)	mm	560	600	620	730	895	990	1183	1400	1610	1790	1990	2150
W	inch	8.82	9.84	12.4	13.98	15.75	17.72	19.69	27.95	27.95	31.5	31.5	31.5
(HANDWHEEL DIA.)	mm	224	250	315	355	400	450	500	710	710	800	800	800

GLOBE VALVES

① BODY

The body is in stainless steel. The basic dimension,i.e.wall thickness, face to face and flanges comply with the relevant API and ANSI standards. The body-to-bonnet flange is circular and the sealing surface for connection to the bonnet are recessed in the 150lb and 300lb class or may be ring joint in the higher classes. The body may be threaded for a renewable seats. Bosses may be provided for drain taps or by-pass piping.

② BONNET

The bonnet is in stainless steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the BS standard.

③ DISC

The disc is part of the trim. It is normally supplied of the flat, tapered or plug type or, on request, of the parabolic regulating type, always free to rotate on the stem. Special attention is given to the seating face which is ground and lapped for a perfectly tight seal.

④ STEM

The stem is part of the trim. A ground backseat is provided to ensure perfectly tight seal to the stuffing box when the valve is fully open. The stem is attached to the disc by means of a threaded ring which allows the disc to rotate. The stem is ground to minimize friction and prevent damage to gland packing.

⑤ YOKE SLEEVE

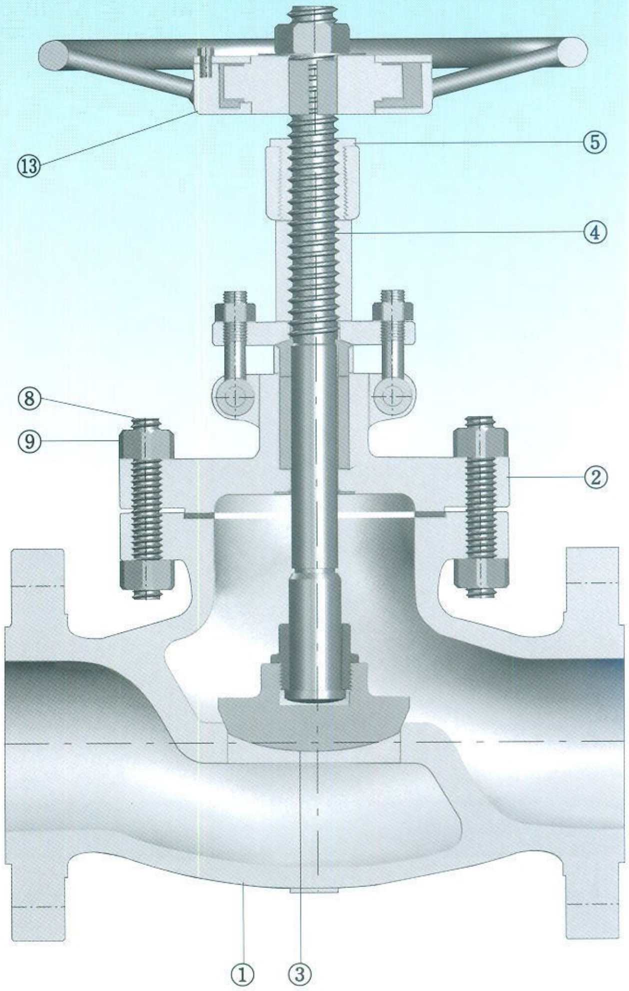
The yoke sleeve is made from bronze, stainless steel or ductile iron having high resistance to wear and a high melting point. It is screwed into the bonnet and properly sized to withstand the stresses which develop when opening and closing the valve.

⑧,⑨ BONNET BOLTING

Bonnet studs and nuts are manufactured from alloy or stainless steel to the relevant ASTM standard.

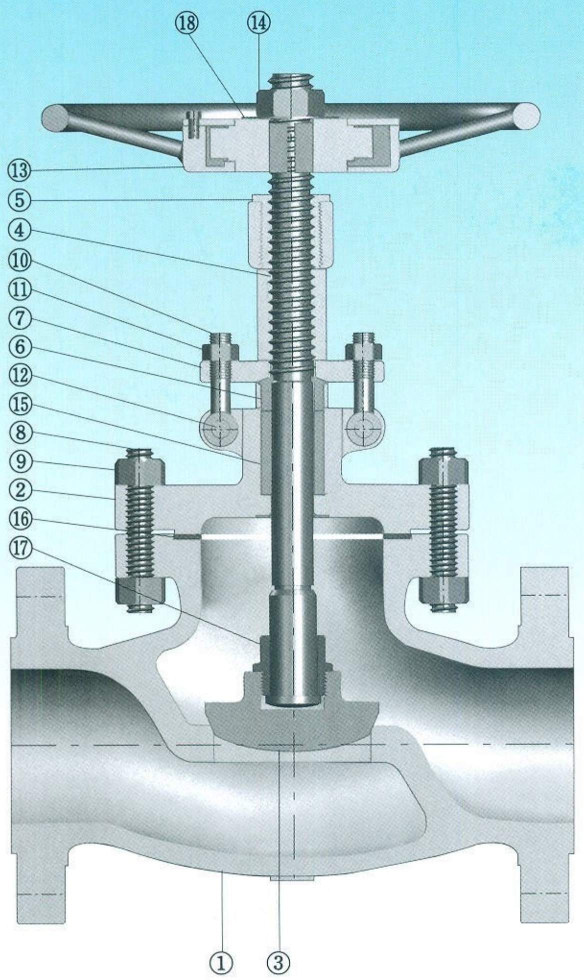
⑬ HANDWHEEL

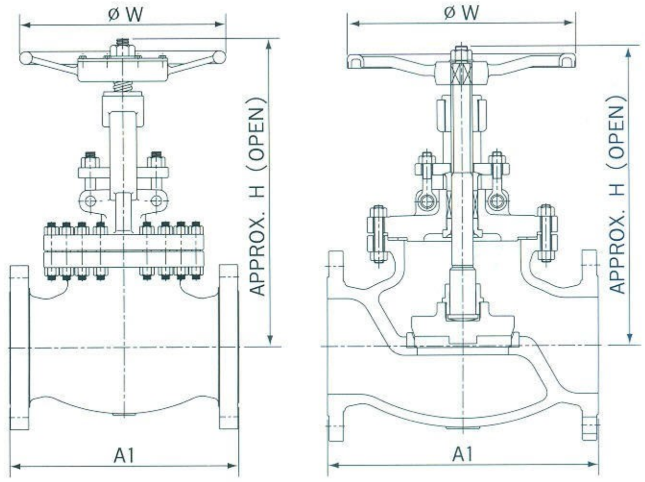
The steel or nodular iron handwheels are well shaped and large enough to give ease of movement when operating the valve, even under maximum differential pressure.

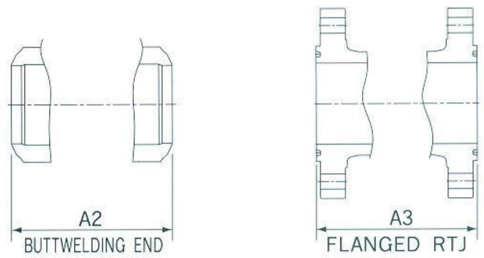


CAST STAINLESS STEEL
BOLTED BONNET

GLOBE VALVES





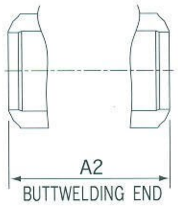


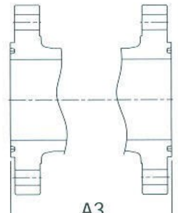
No	PARTS NAME	ASTM SPECIFICATIONS				REMARKS
		CORROSION SERVICE				
1	**BODY**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	**BONNET**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	**DISC**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	NOTE 1
4	**STEM**	A276-304	A276-316	A276-304L	A276-316L	
5	**YOKE SLEEVE**	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
6	**PACKING GLAND**	A276-304	A276-316	A276-304L	A276-316L	
7	**GLAND FLANGE**	A351-CF8/A240-304	A351-CF8/A240-304	A351-CF8/A240-304	A351-CF8/A240-304	
8	**BONNET BOLT**	A193-B8	A193-B8	A193-B8	A193-B8	
9	**BONNET NUT**	A194-8	A194-8	A194-8	A194-8	
10	**GLAND BOLT**	A193-B8	A193-B8	A193-B8	A193-B8	
11	**GLAND NUT**	A194-8	A194-8	A194-8	A194-8	
12	**HINGE PIN**	A276-304	A276-304	A276-304	A276-304	
13	**HAND WHEEL**	A536	A536	A536	A536	
14	**HAND WHEEL NUT**	A307-B	A307-B	A307-B	A307-B	
15	**PACKING**	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
16	**GASKET**	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
17	**DISC LOCK NUT**	A276-304	A276-316	A276-304L	A276-316L	
18	**NAME PLATE**	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	

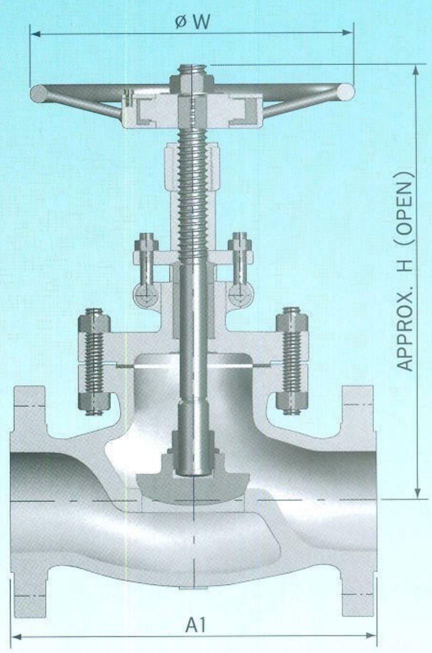
NOTE 1. Size 8" & larger : bottom guide type
2. Packing & gasket material : customer's requirements

GLOBE VALVES
BOLTED BONNET

CLASS 150/300/600







■ BB GLOBE 150LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5
(RF)&(BW)	mm	203	216	241	292	356	406	495	622	699
H	inch	10.24	11.42	12.60	14.96	17.72	19.69	22.05	24.80	28.35
(OPEN HEIGHT)	mm	260	290	320	380	450	500	560	630	720
W	inch	7.87	7.87	8.82	9.84	9.84	12.4	13.98	15.75	17.72
(HANDWHEEL DIA.)	mm	200	200	224	250	250	315	355	400	450

■ BB GLOBE 300LB TABLE

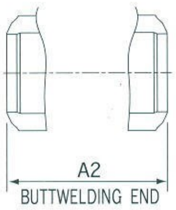
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	10.5	11.5	12.5	14	15.75	17.5	22	24.5	28
(RF)&(BW)	mm	267	292	318	356	400	445	559	622	711
A3	inch	11.12	12.12	13.12	14.62	16.37	18.12	22.62	25.12	28.62
(RTJ)	mm	282	308	333	371	416	460	575	638	727
H	inch	10.63	11.81	12.99	15.35	18.31	20.28	22.64	25.39	28.94
(OPEN HEIGHT)	mm	270	300	330	390	465	515	575	645	735
W	inch	7.87	7.87	9.84	12.4	12.4	13.98	15.75	19.69	19.69
(HANDWHEEL DIA.)	mm	200	200	250	315	315	355	400	500	500

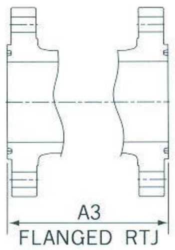
■ BB GLOBE 600LB TABLE

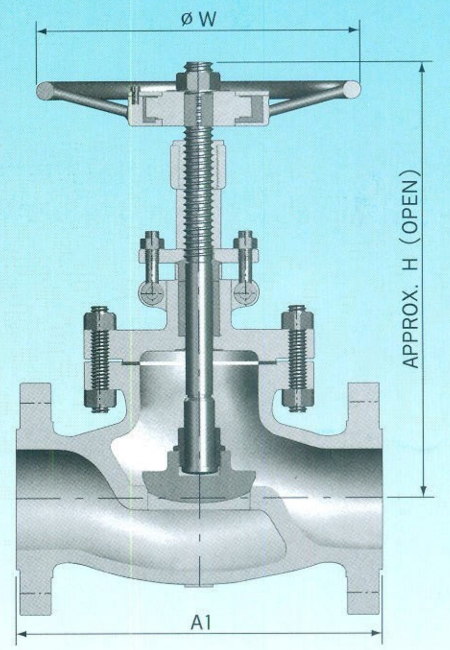
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	11.5	13	14	17.	20	22	26	31	33
(RF)&(BW)	mm	292	330	356	432	508	559	660	787	838
A3	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12
(RTJ)	mm	295	333	359	435	511	562	663	790	841
H	inch	20.47	22.44	23.62	31.50	35.43	39.76	47.24	55.12	59.84
(OPEN HEIGHT)	mm	520	570	600	800	900	1010	1200	1400	1520
W	inch	9.84	12.4	13.98	17.72	17.72	17.72	19.69	31.5	31.5
(HANDWHEEL DIA.)	mm	250	315	355	450	450	450	500	800	800

GLOBE VALVES
BOLTED BONNET

CLASS 150/300/600







■ BB GLOBE 150LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5
(RF)&(BW)	mm	203	216	241	292	356	406	495	622	699
H	inch	10.24	11.42	12.60	14.96	17.72	19.69	22.05	24.80	28.35
(OPEN HEIGHT)	mm	260	290	320	380	450	500	560	630	720
W	inch	7.87	7.87	8.82	9.84	9.84	12.4	13.98	15.75	17.72
(HANDWHEEL DIA.)	mm	200	200	224	250	250	315	355	400	450

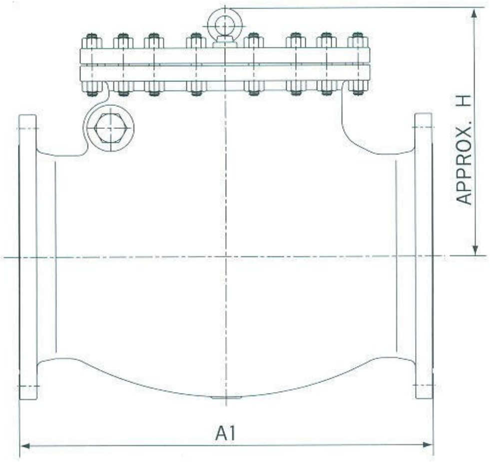
■ BB GLOBE 300LB TABLE

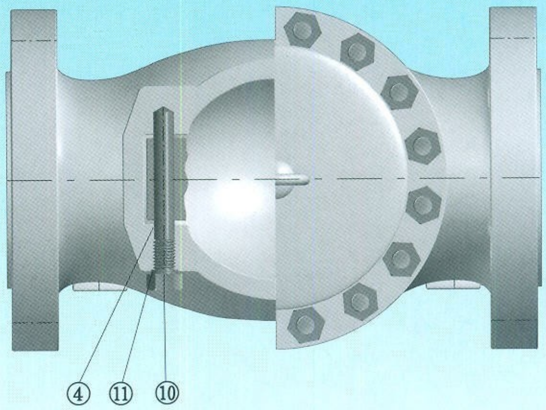
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	10.5	11.5	12.5	14	15.75	17.5	22	24.5	28
(RF)&(BW)	mm	267	292	318	356	400	445	559	622	711
A3	inch	11.12	12.12	13.12	14.62	16.37	18.12	22.62	25.12	28.62
(RTJ)	mm	282	308	333	371	416	460	575	638	727
H	inch	10.63	11.81	12.99	15.35	18.31	20.28	22.64	25.39	28.94
(OPEN HEIGHT)	mm	270	300	330	390	465	515	575	645	735
W	inch	7.87	7.87	9.84	12.4	12.4	13.98	15.75	19.69	19.69
(HANDWHEEL DIA.)	mm	200	200	250	315	315	355	400	500	500

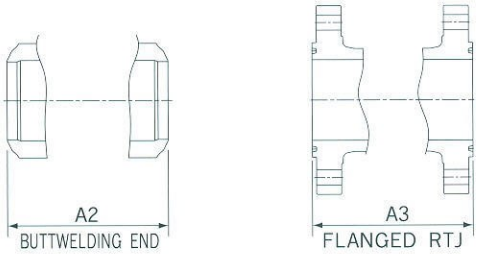
■ BB GLOBE 600LB TABLE

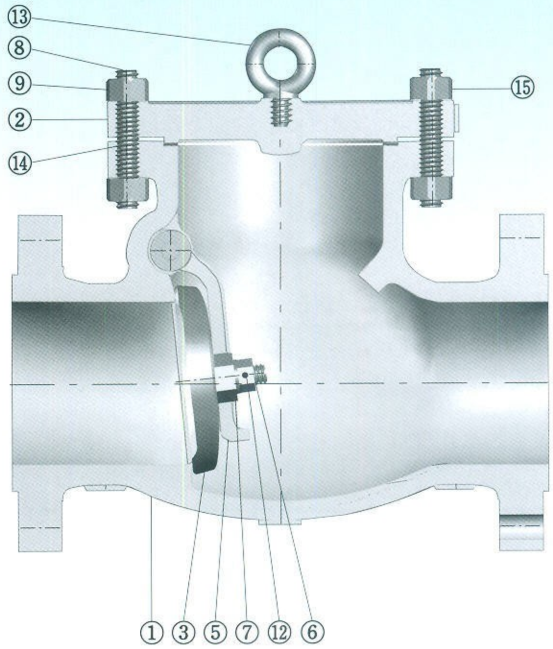
VALVE	inch	2	2.5	3	4	5	6	8	10	12
SIZE	mm	50	65	80	100	125	150	200	250	300
A1&A2	inch	11.5	13	14	17.	20	22	26	31	33
(RF)&(BW)	mm	292	330	356	432	508	559	660	787	838
A3	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12
(RTJ)	mm	295	333	359	435	511	562	663	790	841
H	inch	20.47	22.44	23.62	31.50	35.43	39.76	47.24	55.12	59.84
(OPEN HEIGHT)	mm	520	570	600	800	900	1010	1200	1400	1520
W	inch	9.84	12.4	13.98	17.72	17.72	17.72	19.69	31.5	31.5
(HANDWHEEL DIA.)	mm	250	315	355	450	450	450	500	800	800

SWING CHECK VALVES







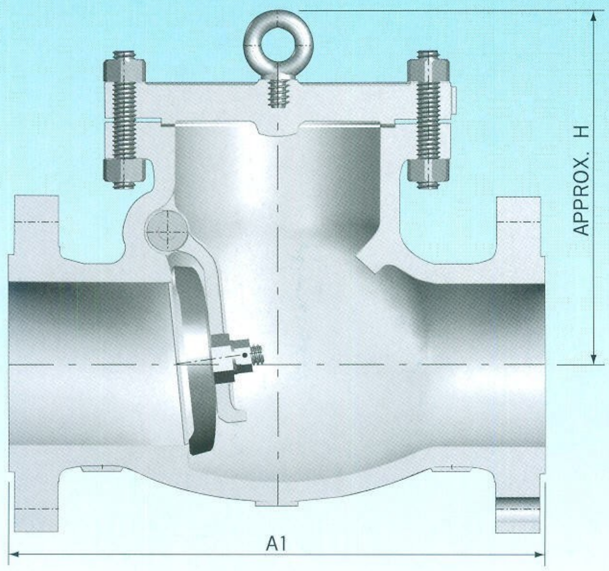


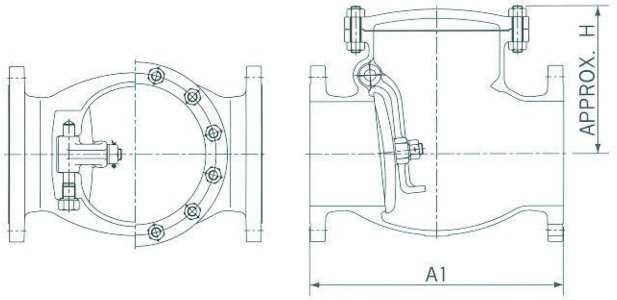
No	PARTS NAME	ASTM SPECIFICATIONS CORROSION SERVICE				REMARKS
1	BODY	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	COVER	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	DISC	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
4	HINGE PIN	A276-304	A276-316	A276-304L	A276-316L	
5	ARM	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
6	DISC NUT	A194-8	A194-8M	A194-8M	A194-8M	
7	WASHER	A240-304	A240-316	A240-304L	A240-316L	
8	COVER BOLT	A193-B8	A193-B8	A193-B8	A193-B8	
9	COVER NUT	A194-8	A194-8	A194-8	A194-8	
10	PLUG BOLT	A276-304	A276-316	A276-304L	A276-316L	
11	PLUG GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
12	SPLIT PIN	A580-304	A580-304	A580-304	A580-304	
13	EYE BOLT	A307-B	A307-B	A307-B	A307-B	
14	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 1
15	NAME PLATE	AL./A240-304	AL./A240-304	AL./A240-304	AL./A240-304	

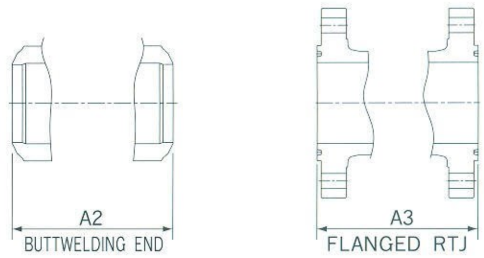
NOTE 1. Gasket material : customer's requirements

SWING CHECK VALVES
BOLTED COVER

CLASS 150/300/600







■ BC SW-CH 150LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750
A1&A2	inch	8	8.5	9.5	11.5	13	14	19.5	24.5	27.5	31	34	38.5	38.5	51	57	60
(RF)&(BW)	mm	203	216	241	292	330	356	495	622	699	787	864	978	978	1295	1448	1524
H	inch	5.31	5.94	6.38	7.80	8.51	9.61	11.14	12.80	13.43	15.08	16.34	20.87	22.44	26.38	35.24	36.42
(VALVE HEIGHT)	mm	135	151	162	198	216	244	283	325	341	383	415	530	570	670	895	925

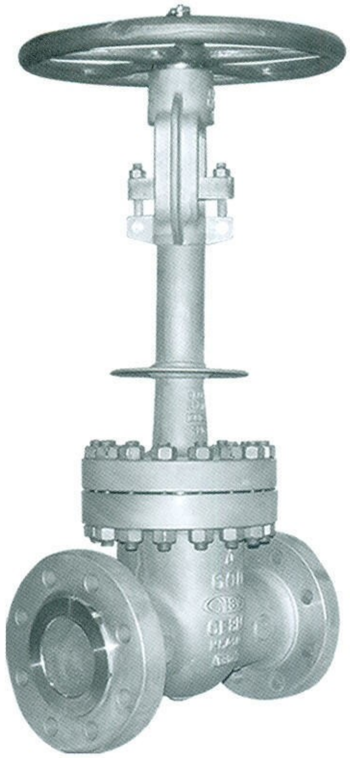
■ BC SW-CH 300LB TABLE

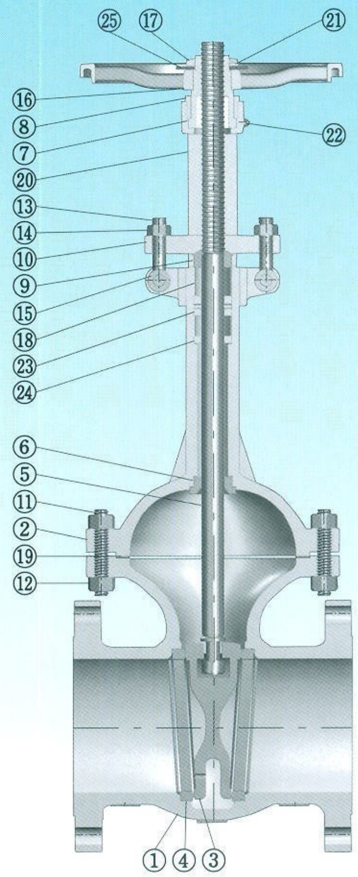
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1&A2	inch	10.5	11.5	12.5	14	15.75	17.5	21	24.5	28	33	34	38.5	40	53
(RF)&(BW)	mm	267	292	318	356	400	445	533	622	711	838	864	978	1016	1346
A3	inch	11.12	12.12	13.12	14.62	16.37	18.12	21.62	25.12	28.62	33.62	34.62	39.12	40.75	53.88
(RTJ)	mm	282	308	333	371	416	460	549	638	727	854	879	994	1035	1369
H	inch	6.10	6.89	7.09	7.87	9.53	10.43	11.81	13.58	15.35	16.93	18.50	21.46	23.62	27.17
(VALVE HEIGHT)	mm	155	175	180	200	242	265	300	345	390	430	470	545	600	690

■ BC SW-CH 600LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750
A1&A2	inch	11.5	13	14	17	20	22	26	31	33	35	39	43	47	55	63	65
(RF)&(BW)	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397	1600	1651
A3	inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	63.5	65.5
(RTJ)	mm	295	333	359	435	511	562	663	790	841	892	994	1095	1200	1407	1613	1664
H	inch	7.50	7.87	9.50	10.10	11.54	12.65	14.96	17.55	18.50	21.75	26.50	27.75	29.55	31.50	34.5	38.5
(VALVE HEIGHT)	mm	191	200	241	257	293	321	380	446	470	552	673	705	751	800	876	978

CRYOGENIC GATE VALVE



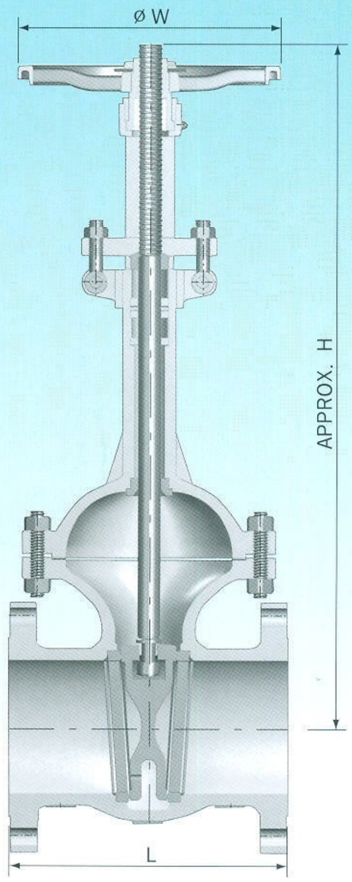


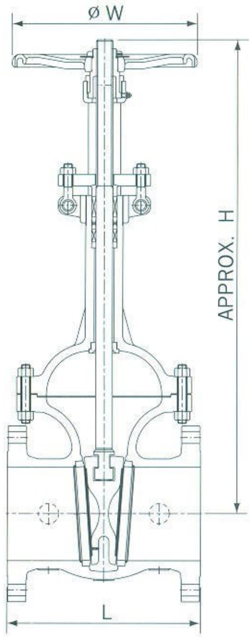
No	PARTS NAME	ASTM SPECIFICATIONS				REMARKS
1	**BODY**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	**BONNET**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	**DISC**	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	NOTE 1
4	**BODY SEATRING**	A479-304	A479-316	A479-304L	A479-316L	NOTE 1
5	**STEM**	A479-304	A479-316	A479-304L	A479-316L	
6	**BACK SEATRING**	A479-304	A479-316	A479-304L	A479-316L	
7	**YOKE SLEEVE**	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
8	**YOKE CAP**	A351-CF8	A351-CF8	A351-CF8	A351-CF8	
9	**PACKING GLAND**	A479-304	A479-316	A479-304L	A479-316L	
10	**GLAND FLANGE**	A351-CF8/A240-30	A351-CF8/A240-304	A351-CF8/A240-304	A351-CF8/A240-304	
11	**BONNET BOLT**	A320-B8	A320-B8	A320-B8	A320-B8	
12	**BONNET NUT**	A194-8	A194-8	A194-8	A194-8	
13	**GLAND BOLT**	A193-B8	A193-B8	A193-B8	A193-B8	
14	**GLAND NUT**	A194-8	A194-8	A194-8	A194-8	
15	**HINGE PIN**	A479-304	A479-304	A479-304	A479-304	
16	**HAND WHEEL**	A536	A536	A536	A536	
17	**HAND WHEEL NUT**	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	A307-B+ZN PLATED	
18	**PACKING**	TEFLON	TEFLON	TEFLON	TEFLON	
19	**GASKET**	SPIRAL WOUND	SPIRAL WOUND	SPIRAL WOUND	SPIRAL WOUND	
20	**YOKE**	A351-CF8	A351-CF8	A351-CF8	A351-CF8	
21	**SET SCREW**	A307-B	A307-B	A307-B	A307-B	
22	**GREASE NIPPLE**	B16	B16	B16	B16	
23	**LANTERN RING**	A479-304	A479-316	A479-304L	A479-316L	
24	**PACKING RING**	A479-304	A479-316	A479-304L	A479-316L	
25	**NAME PLATE**	A240-304	A240-304	A240-304	A240-304	

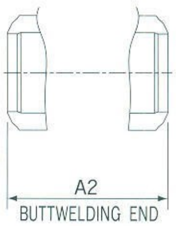
NOTE 1. Stellite hard faced min. 1.6mm

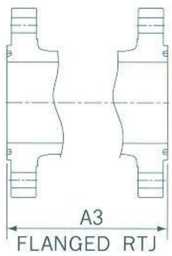
GATE VALVES
BOLTED BONNET

CLASS 150/300









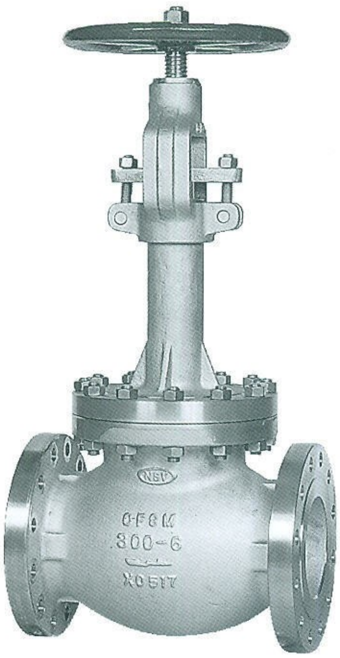
■ BB GATE 150LB TABLE

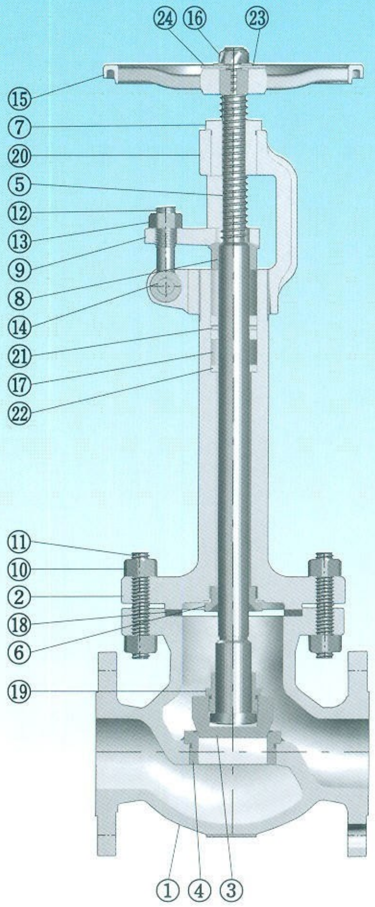
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	75	100	125	150	200	250	300	350	400	450	500	600
A1	inch	7	7.5	8	9	10	10.5	11.5	13	14	15	16	17	18	20
(RF)	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508
A2	inch	8.5	9.5	11.1	12	15.9	15.87	16.5	18	19.75	22.5	24	26	28	32
(BW)	mm	216	241	282	305	381	403	419	457	502	572	610	660	711	813
H	inch	22.63	24.01	26.37	31.30	35.62	39.37	47.32	57.12	65.07	73.70	82.67	91.14	100.00	114.50
(OPEN HEIGHT)	mm	575	610	670	795	905	1000	1202	1451	1653	1872	2100	2315	2540	2908
W	inch	7.87	7.87	8.82	9.84	12.4	12.4	13.98	15.75	17.72	19.69	24.80	24.80	27.95	27.95
(HANDWHEEL DIA.)	mm	200	200	224	250	315	315	355	400	450	500	630	630	710	710

■ BB GATE 300LB TABLE

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	75	100	125	150	200	250	300	350	400	450	500	600
A1&A2	inch	8.5	9.5	11.1	12	15	15.9	16.5	18	19.8	30	33	36	39	45
(RF)&(BW)	mm	216	241	282	305	381	404	419	457	503	762	838	914	991	1143
A3	inch	9.12	10.12	11.75	12.62	15.62	16.5	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88
(RTJ)	mm	232	257	298	321	397	419	435	473	517	778	854	930	1010	1165
H	inch	22.63	24.01	26.37	31.30	36.62	39.37	47.32	57.12	65.07	73.70	84.64	93.22	101.80	117.30
(OPEN HEIGHT)	mm	575	610	670	795	905	1000	1202	1451	1653	1872	2150	2368	2586	2979
W	inch	7.87	7.87	8.82	9.84	12.4	13.98	15.75	17.72	19.69	19.69	24.80	27.95	31.5	31.5
(HANDWHEEL DIA.)	mm	200	200	224	250	315	355	400	450	500	500	630	710	800	800

CRYOGENIC GLOBE VALVE



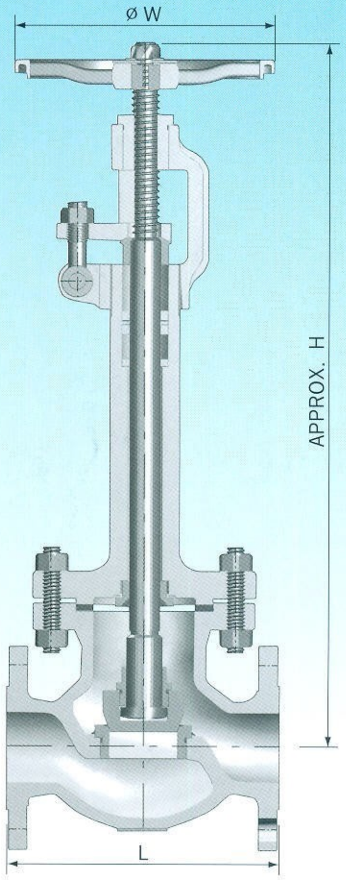


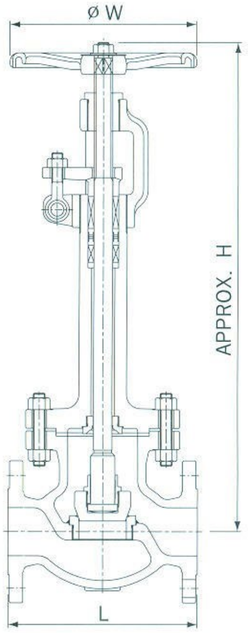
No	PARTS NAME	ASTM SPECIFICATIONS				REMARKS
1	BODY	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	DISC	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	NOTE 1, 2
4	BODY SEATRING	A479-304	A479-316	A479-304L	A479-316L	NOTE 1, 2
5	STEM	A479-304	A479-316	A479-304L	A479-316L	
6	BACK SEATRING	A479-304	A479-316	A479-304L	A479-316L	
7	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
8	PACKING GLAND	A479-304	A479-316	A479-304L	A479-316L	
9	GLAND FLANGE	A351-CF8/A240-30	A351-CF8/A240-30	A351-CF8/A240-30	A351-CF8/A240-304	
10	BONNET BOLT	A320-B8	A320-B8	A320-B8	A320-B8	
11	BONNET NUT	A194-8	A194-8	A194-8	A194-8	
12	GLAND BOLT	A193-B8	A193-B8	A193-B8	A193-B8	
13	GLAND NUT	A194-8	A194-8	A194-8	A194-8	
14	HINGE PIN	A479-304	A479-304	A479-304	A479-304	
15	HAND WHEEL	A536	A536	A536	A536	
16	HAND WHEEL NUT	A307-B	A307-B	A307-B	A307-B	
17	PACKING	TEFLON	TEFLON	TEFLON	TEFLON	
18	GASKET	SPIRAL WOUND	SPIRAL WOUND	SPIRAL WOUND	SPIRAL WOUND	
19	DISC LOCK NUT	A479-304	A479-316	A479-304L	A479-316L	
20	YOKE	A351-CF8	A351-CF8	A351-CF8	A351-CF8	
21	LANTERN RING	A479-304	A479-316	A479-304L	A479-316L	
22	PACKING RING	A479-304	A479-316	A479-304L	A479-316L	
23	WASHER	A307-B	A307-B	A307-B	A307-B	
24	NAME PLATE	A240-304	A240-304	A240-304	A240-304	

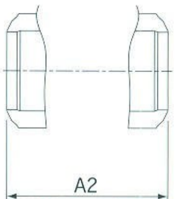
NOTE 1. Stellite hard faced min. 1.6mm
2. Size 8″ & larger : bottom guide type

GLOBE VALVES
BOLTED BONNET

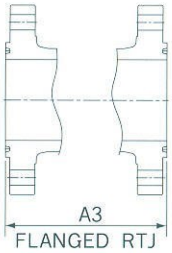
CLASS 150/300







BUTTWELDING END



FLANGED RTJ

■ BB GLOBE 150LB TABLE

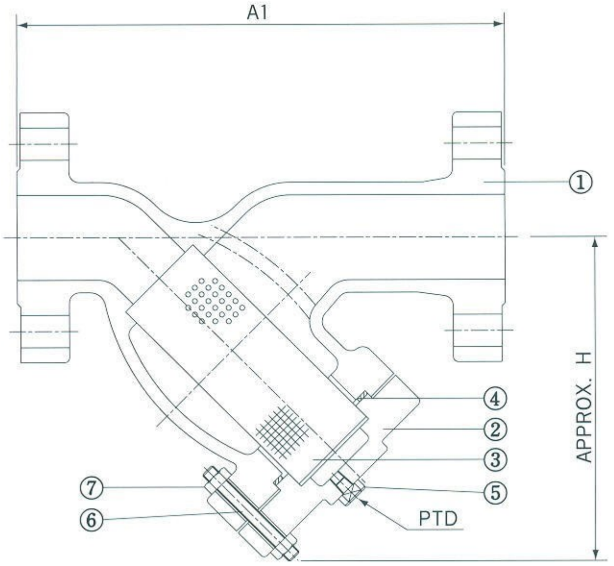
VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	75	100	125	150	200	250	300
A1 (RF)&(BW)	inch	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5
	mm	203	216	241	292	305	406	495	622	699
H (OPEN HEIGHT)	inch	20.27	21.06	22.51	25.23	26.77	29.49	37.60	47.48	49.41
	mm	515	535	572	641	680	749	955	1206	1255
W (HANDWHEEL DIA.)	inch	7.87	7.87	8.82	9.84	12.4	12.4	13.98	15.75	17.72
	mm	200	200	224	250	315	315	355	400	450

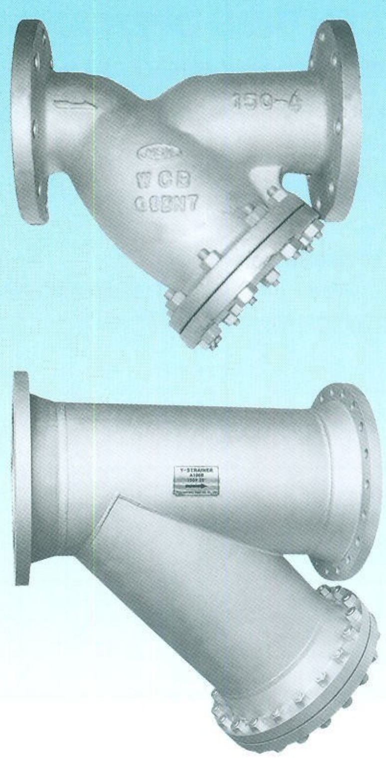
■ BB GLOBE 300LB TABLE

VALVE SIZE	inch	2	2.5	3	4	5	6	8	10	12
	mm	50	65	75	100	125	150	200	250	300
A1&A2 (RF)&(BW)	inch	10.5	11.5	12.5	14	15.75	17.5	22	24.5	28
	mm	267	292	318	356	400	445	559	622	711
A3 (RTJ)	inch	11.12	12.12	13.12	14.62	16.37	18.12	22.62	25.12	28.62
	mm	282	308	333	371	424	460	575	638	727
H (OPEN HEIGHT)	inch	22.87	23.54	24.45	27.64	30.83	32.64	39.76	53.97	58.38
	mm	581	598	621	702	783	829	1010	1371	1483
W (HANDWHEEL DIA.)	inch	7.87	7.87	9.84	9.84	13.98	13.98	15.75	19.69	19.69
	mm	200	200	250	250	355	355	400	500	500

CAST CARBON & STAINLESS STEEL
Y-STRAINER

CLASS 150/300





No	PARTS NAME	ASTM SPECIFICATIONS		REMARKS
		STANDARD	CORROSION SERVICE	
1	BODY	A216-WCB	A351-CF8M	
2	COVER	A216-WCB	A351-CF8M	
3	SCREEN	A240-304	A240-316	
4	GASKET	NON-ASBESTOS	NON-ASBESTOS	
5	PLUG	A307-B	A193-B8	
6	COVER BOLT	A193-B7	A193-B8	
7	COVER NUT	A194-2H	A194-8	

■ BC Y-STRAINER 150LB

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450
A1	inch	8.65	10.63	11.4	14.25	15.75	17.34	21.25	26.77	33.38	41.34	41.73	42.6
(RF)	mm	220	270	290	360	400	450	540	680	840	1050	1060	1082
H	inch	5.12	7.09	7.87	9.45	10.82	12.60	14.96	18.90	23.62	15.55	17.72	20.87
(VALVE HEIGHT)	mm	130	180	200	240	275	320	380	480	600	710	860	900
PTD	inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1	1	1	1

■ BC Y-STRAINER 300LB

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14
SIZE	mm	50	65	80	100	125	150	200	250	300	350
A1	inch	10.16	11.81	12.32	15.98	17.32	20.48	24	29.92	35.1	41.34
(RF)	mm	260	300	315	405	440	520	610	760	892	1050
H	inch	5.51	7.09	8.27	10.63	12.2	14.57	19.29	22.24	25.0	28.74
(VALVE HEIGHT)	mm	140	180	210	270	310	370	490	565	635	730
PTD	inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1	1

PUNCHING SCREEN

1. PERCENTAGE OPEN AREA

Even the "MESH" is same, OPEN AREA is not always same due to the diameter of wire.

The formula of OPEN AREA PERCENTAGE is as follows;

OPEN AREA PERCENTAGE = $(\frac{a}{a \times b})^2 \times 100(\%)$

a : Width of Opening
b : Diameter of Wire

The details of wire as follows;

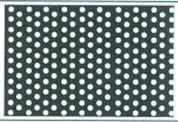
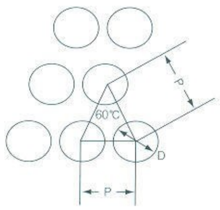
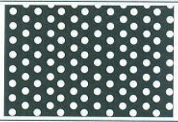
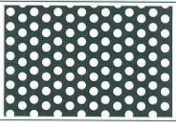
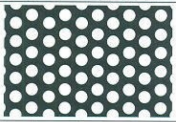
A : Number of Wire B : Diameter of Wire C : Width of Opening D : Percentage of OPEN AREA

MESH	A SWG	B m/m ø	C m/m	D
5	20	0.914	4.166	67.3
10	22	0.711	1.829	51.8
20	28	0.356	0.914	51.8
30	32	0.274	0.572	45.7
40	36	0.193	0.442	48.4
50	37	0.172	0.336	43.6
60	38	0.152	0.271	41.0
80	40	0.122	0.195	37.8

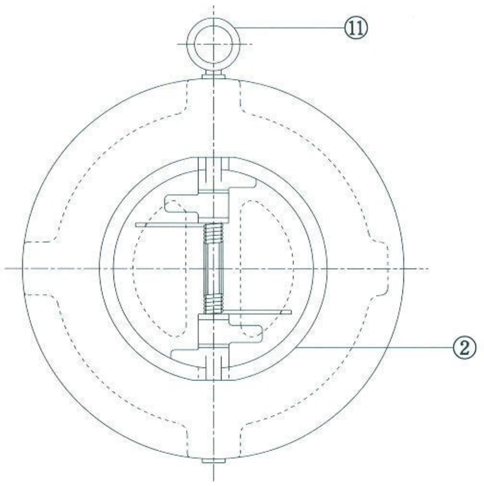
MESH	A SWG	B m/m ø	C m/m	D
100	42	0.102	0.152	35.8
120	43	0.092	0.119	31.8
150	45½	0.066	0.103	37.1
180	46½	0.053	0.088	38.9
200	47	0.051	0.076	35.8
250	48	0.039	0.062	37.7
300	48	0.040	0.044	27.6

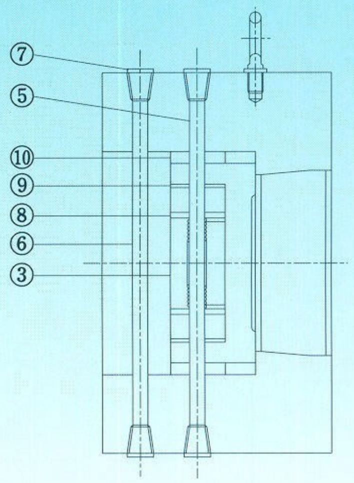
2. OUTSIDE SCREEN (protecting net)

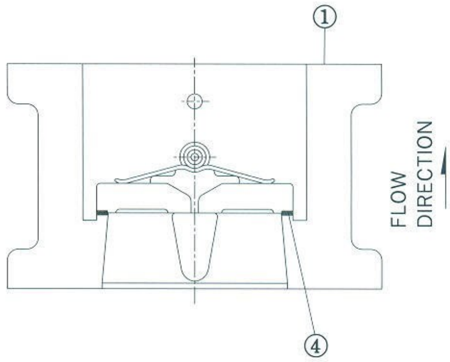
For the outside Screen a stainless steel plate perforated in 60-degree staggered arrangment is used.
For the OPEN AREA you can use the formula below.

OUTSIDE screen	DESCRIPTION	OPEN AREA	Models of strainers	Remarks
	ø 0.8 × P1.6	22.8	15~50 (STANDARD)	 $R = \frac{\sqrt{3} \times \pi}{6} \times (\frac{D}{P})^2 \times 100(\%)$ $= \frac{91 \times D^2}{P^2}$ R : OPEN AREA P : Pitch(mm) D : Diamenter of Hole(mm)
	ø 1 × P2	22.8	32~50 (REQUEST)	
	ø 1.2 × P2	32.8	65~100	
	ø 1.5 × P2.5	32.8	125~100	
	ø 2.5 × P4	35.5	200~250	
	ø 3 × P5	32.8	300~450	

DUO-CHECK VALVES







No	PARTS NAME	MATERIAL		
1	BODY	A216-WCB	A351-CF8	A351-CF8M
2	PLATE DISC	A351-CF8	A351-CF8	A351-CF8M
3	SPRING	A276-304	A276-304	A276-316
4	SEAT	A216-WCB+HF	A351-CF8	A351-CF8M
5	HINGE PIN	A276-304	A276-304	A276-316
6	STOP PIN	A276-304	A276-304	A276-316
7	PLUG	A307-B	A276-304	A276-316
8	BEARING	TEFLON	TEFLON	TEFLON
9	BEARING	TEFLON	TEFLON	TEFLON
10	BEARING	TEFLON	TEFLON	TEFLON
11	EYE BOLT	A307-B	A307-B	A307-B

Features & Advantages

1. Compact Wafer Design

   Extremely light weight and economical compared with traditional flanged type, swing-check valve.

2. Prevention of Water Hammer

   The sensitive spring incorporated in the valve closes the valve plate before reverse flow occurs preventing water hammer and giving complete pipe line protection even in high head installations.

3. Complete Freedom of Installation

   Space saving design simplifies installation. Furthermore, NAMSUNG Duo-Check Valves can be installed in any position and at any angle allowing rationalized piping layout.

4. Long Service Life

   NAMSUNG Duo-Check Valves incorporate teflon spring bearings to minimize spring wear and assure long service life.

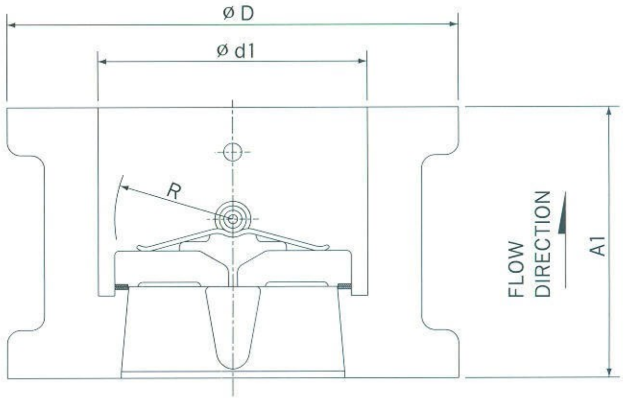
5. Smooth Operation

   Teflon Bearings minimize friction for smooth valve plate operation.

6. Tight Sealing

   Shock-easening and tight sealing effect ensureed by resilient seat.

CLASS 150/300/600



■ DUO-CHECK 150LB

VALVE SIZE															
VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	2.36	2.64	2.87	2.87	3.86	3.86	5.00	5.75	7.13	7.24	7.48	7.99	8.62	8.74
(WAFER)	mm	60	67	73	73	86	98	127	146	181	184	190	203	219	222
D	inch	4.13	4.88	5.39	6.89	7.76	8.74	10.98	13.39	16.14	17.72	20.24	21.61	23.86	28.27
(OUTSIDE DIA.)	mm	105	124	137	175	197	222	279	340	410	450	514	549	606	718
d1	inch	2.36	2.87	3.50	4.49	5.55	6.61	8.62	10.75	12.76	14.02	15.98	17.99	20.00	24.02
(OUTLET DIA.)	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R	inch	1.06	1.30	1.61	2.13	2.56	3.11	4.02	4.96	5.98	6.69	7.68	8.62	9.61	11.50
(DISC OPEN RADIUS)	mm	27	33	41	54	65	79	102	126	152	170	195	219	244	292

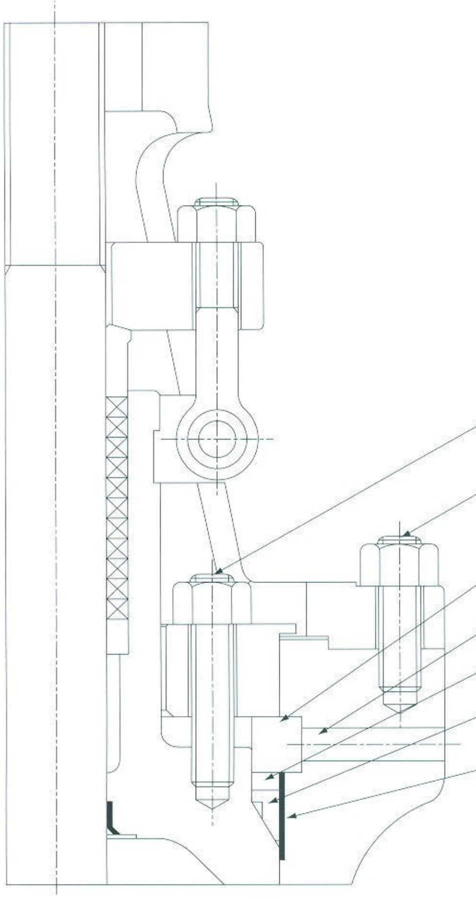
■ DUO-CHECK 300LB

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	2.36	2.64	2.87	2.87	3.86	3.86	5.00	5.75	7.13	8.74	9.13	10.35	11.50	12.52
(WAFER)	mm	60	67	73	73	86	98	127	146	181	222	232	263	292	318
D	inch	4.37	5.12	5.87	7.13	8.5	9.88	12.13	14.25	16.61	19.13	21.26	23.50	25.75	30.51
(OUTSIDE DIA.)	mm	111	130	149	181	216	251	308	362	422	486	540	597	654	775
d1	inch	2.36	2.87	3.50	4.49	5.55	6.61	8.62	10.75	12.76	14.02	15.98	17.99	20.00	24.02
(OUTLET DIA.)	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R	inch	1.06	1.30	1.61	2.13	2.56	3.11	4.02	4.96	5.98	6.69	7.68	8.62	9.61	11.50
(DISC OPEN RADIUS)	mm	27	33	41	54	65	79	102	126	152	170	195	219	244	292

■ DUO-CHECK 600LB

VALVE	inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
SIZE	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A1	inch	2.36	2.64	2.87	3.11	4.13	5.35	6.50	8.39	9.02	8.74	12.01	14.29	14.49	17.24
(WAFER)	mm	60	67	73	79	105	136	165	213	229	222	305	363	368	438
D	inch	4.37	5.12	5.87	7.60	9.49	10.51	12.60	15.75	17.99	19.37	22.24	24.13	26.89	31.14
(OUTSIDE DIA.)	mm	111	130	149	193	241	267	320	400	457	492	565	613	683	791
d1	inch	2.36	2.87	3.50	4.49	5.55	6.61	8.62	10.75	12.76	14.02	15.98	17.99	20.00	24.02
(OUTLET DIA.)	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R	inch	1.06	1.30	1.61	2.17	2.56	3.23	4.13	5.24	5.98	6.89	7.80	8.98	9.76	11.61
(DISC OPEN RADIUS)	mm	27	33	41	55	65	82	105	133	152	175	198	228	248	295

ADVANCED PRESSURE SEAL DESIGN

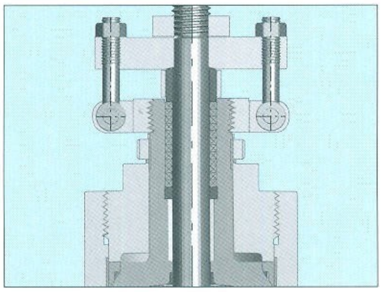


NAMSUNG pressure valves are designed for high pressure, and high temperature applicable service in nuclear power plants, chemical plants and thermal power plant. The pressure seal bonnet joint remains tight under all conditions. The initial seal is established by the inner row of studs. The higher the internal pressure. The greater is the sealing force.

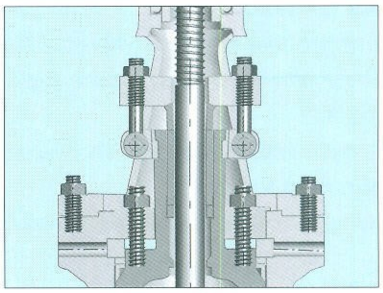
- **EASY DISMANTLING**
  by dropping bonnet assembly into body cavity and driving the 4-segmental thrust rings by means of a push pin. A 1° body taper above the 18-8 inlay insures easy sliding of the gasket even after years of service.
- **INNER ROW OF STUDS**
  establishes the initial seal of the Pressure Seal joint.
- **OUTER ROW OF STUDS**
  secures the yoke to the body.
- **SEGMENTAL RETAINER**
  absorbs all the thrust applied by internal pressure.
- **DRILLED KNOCK-OUT HOLES**
  for driving out thrust rings. using pins.
- **ADAPTER RING**
  provides bearing surface and prevents deformation of the gasket.
- **SOFT STEEL SEALING GASKET**
  of 100 Brinnel. silver-plated for soft corrosion-resistant coating. provides large contact area for perfect sealing.
- **18-8 INLAY**
  assures soundness and corrosion resistance in the vital body sealing zone for carbon and alloy steel valves.

All seating faces and important wear surface are hard-faced with Stellite 6. The hard erosion and abrasion resistant cobalt-chrome alloy ensures long life of all working parts. such as seats, backseats, wedges, and disc surfaces.

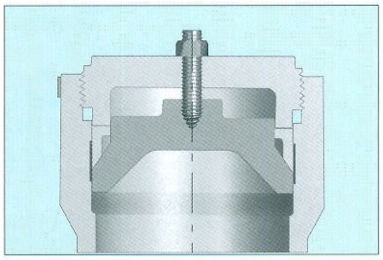
BODY & BONNET CONSTRUCTION



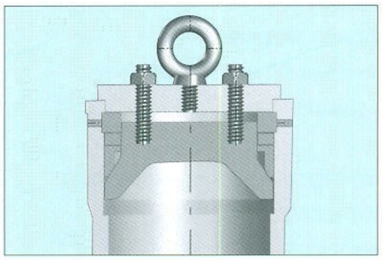
GATE, GLOBE
SIZE 4" & SMALLER



GATE, GLOBE
SIZE 6" & LARGER



SWING
CHECK VALVE
SIZE 4" & SMALLER

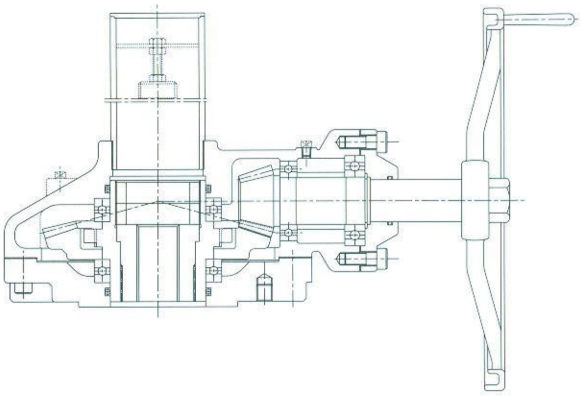


SWING
CHECK VALVE
SIZE 6" & LARGER

Bevel Gear Actuator

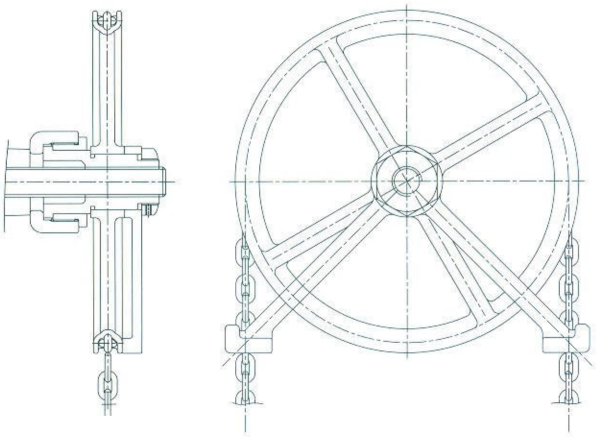
Auxiliary gearing is often desireable to facilitate the operation of large size valves required to close against high pressure.
Namsung Cast Steel Valves can be furnished with a fully enclosed light weight and maintenance free bevel gear actuators.
Inquiries or order for valves with gear actuators should include the following information:

- Size and figure number of valve
- Service media, pressure and temperature
- Maximum pressure against which valve must close
- Any handwheel torque or rim pull limitation
- Desired orientation of handwheel to stem
- Desired orientation of handwheel to pipe run
- Limitations, if any, on the type or brand of actuator



Chainwheels

Chainwheels can be furnished complete with chainwheel and chain guide. They are means of safe and convenient floor operation of valves in overhead or inaccessible locations.

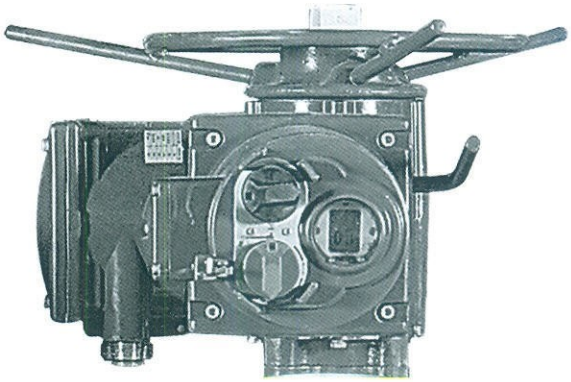


Electric Motor Actuators

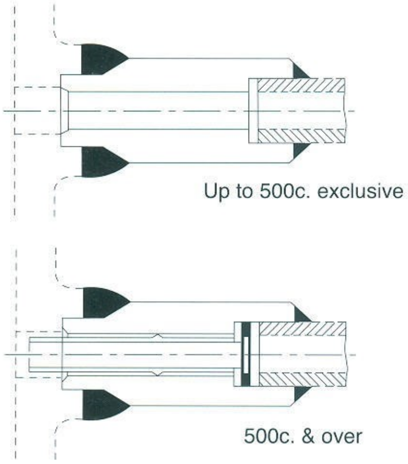
Electric Motor Actuators are available for valves which are in accessibly located, or where emergency may require rapid, positive operation from a remote point.
Namsung can supplies electric motor actuators for each type of Namsung Cast Steel Valves when required.
Show on this page are examples of various available actuators.

Inquiries or orders for electric motor actuated valves should include the following information:

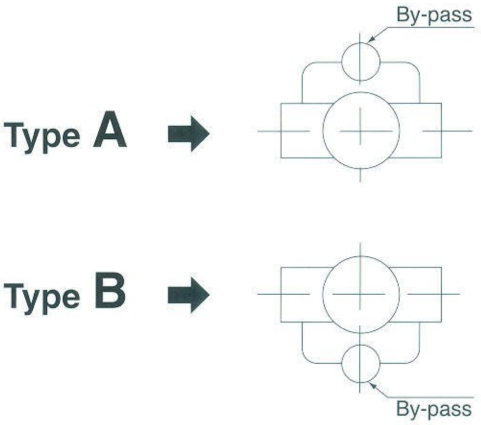
- Size and figure number of valve
- Service media, pressure and temperature
- Maximum pressure against which valve must close
- Desired stem speed or closing time
- Frequency of operation
- Electric power available(voltage, frequency & phases)
- Nema type of electrical enclosure
- Reversing controller specifications
- Control station specifications
- Accessories(Position indicator, dial position indicator, etc.)



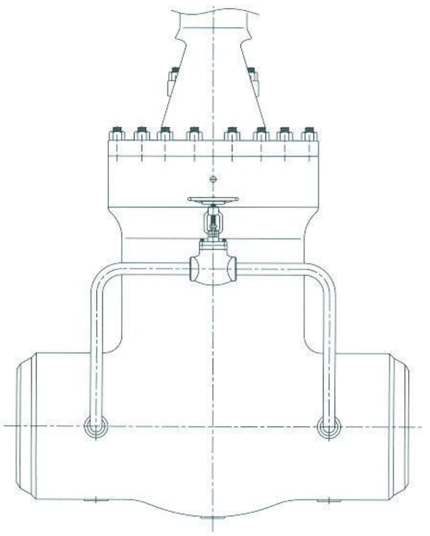
By-pass Locations

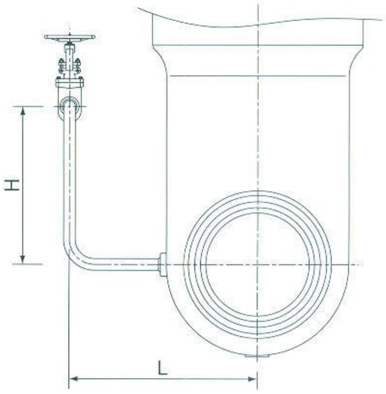


By-pass Connections

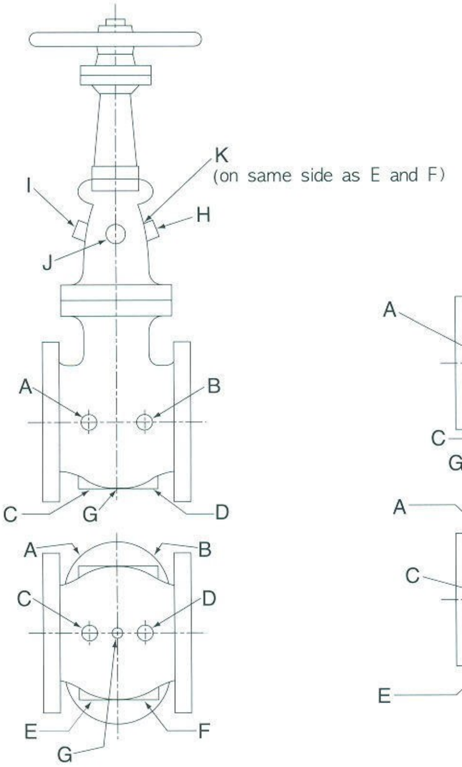


By-pass Sizes & Dimensions

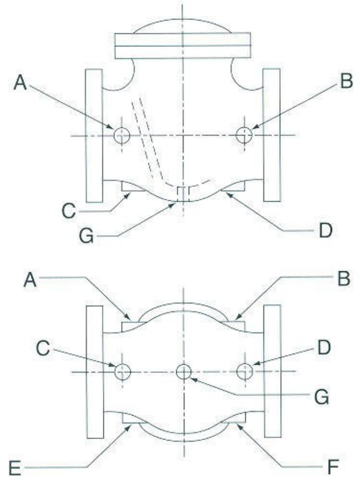




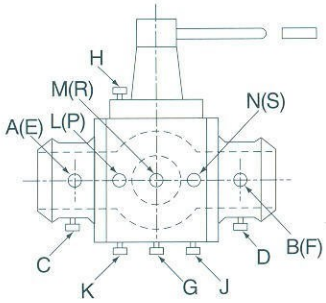
CLASS		1500							2500						
Main Valve Size		8	10	12	14	16	18	20	6	8	10	12	14	16	18
L	mm	305	335	370	390	445	500	560	290	350	390	450	450	500	550
	inch	12.01	13.19	14.57	15.35	17.52	19.69	22.05	11.42	13.78	16.35	17.72	17.72	19.69	21.65
H	mm	400	420	520	570	650	670	700	420	430	510	600	700	750	800
	inch	15.75	16.54	20.47	22.44	25.59	26.38	27.56	16.54	16.93	20.08	23.62	27.56	29.53	31.50
By-pass Size (NPS)		3/4	1	1	1	1	1	1	3/4	3/4	1	1	1	1	1



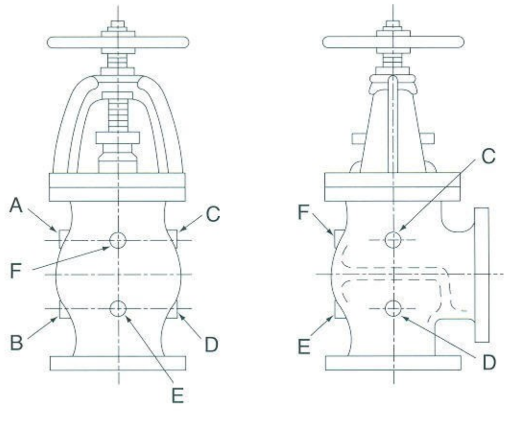
(a) Gate Valve



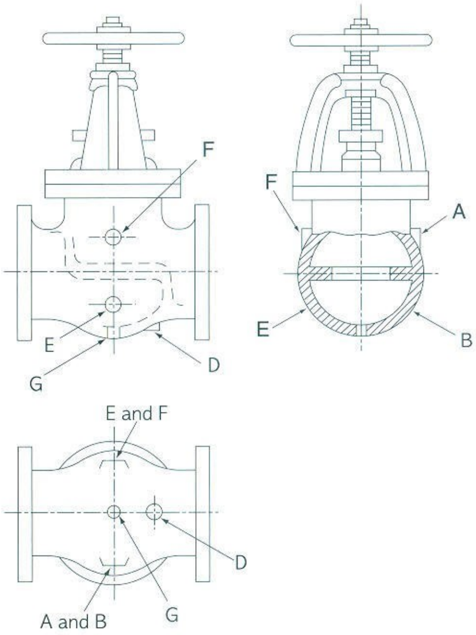
(b) Check Valve



(c) Ball Valve

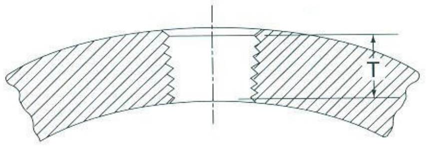


(d) Angle Valve



(e) Globe Valve

METHOD OF DESIGNATING LOCATION OF AUXILIARY CONNECTIONS WHEN SPECIFIED

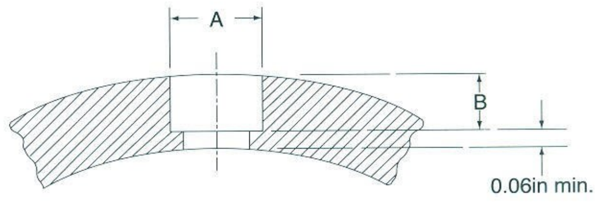


Conn. Size, NPS	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Length of Thread T, in. (Note (1))	0.41	0.53	0.55	0.68	0.71	0.72	0.76

NOTE:

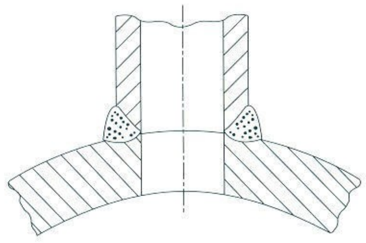
(1) In no case shell the effective length of thread T be less than that shown in table above. These lengths are equal to the effective thread length of American National Standard External Pipe Threads(ANSI/ASME B1.20.1).

THREAD LENGTH FOR AUXILIARY CONNECTIONS

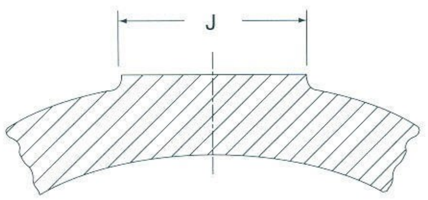


Conn. Size, NPS	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Min. Dia. of Socket A, in.	0.690	0.855	1.065	1.330	1.675	1.915	2.406
Min. Depth. of Socket B, in.	0.19	0.19	0.25	0.25	0.25	0.25	0.31

SOCKET WELDING FOR AUXILIARY CONNECTIONS



BUTT WELDING FOR AUXILIARY CONNECTIONS



Conn. Size, NPS	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Dia. of Boss, J, in	1.25	1.50	1.75	2.12	2.50	2.75	3.38

BOSSES FOR AUXILIARY CONNECTIONS

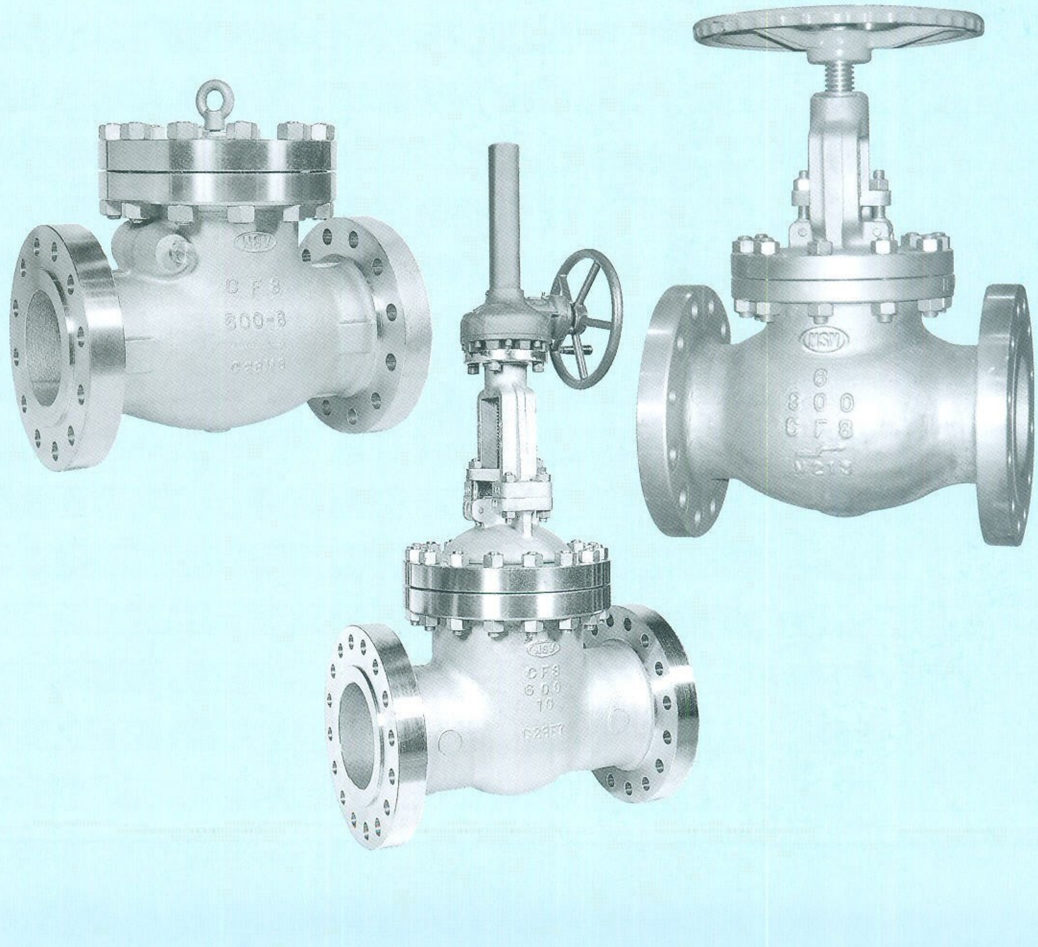
REFERENCE STANDARD & SPECIFICATION

NamSung VALVES CONFORM TO THE FOLLOWING STANDARDS AS APPLICBLE TO CUSTOMER REQUIREMENTS.

API Spec 6D Latest Edition	: API Specification for Pipeline Valves
API Standard 598 Latest Edition	: Valve Inspection and Test
API Standard 600 Latest Edition	: Steel Gate Valves, Flanged and Butt-Welding Ends
API Standard 603 Latest Edition	: Class 150, Cast Corrosion-Resistant Flanged-End Gate Valves
API Standard 605 Latest Edition	: Large-Diameter Carbon Steel Flanges
ANSI B16.5 Latest Edition	: Steel Pipe Flanges and Flanged Fittings
ANSI B16.10 Latest Edition	: Face-to-Face and End-to-End Dimensions of Ferrous Valves
ANSI B16.25 Latest Edition	: Butt-welding Ends
ANSI B16.34 Latest Edition	: Valves-Flanged, Threaded, And Welding End
MSS Standard Practice SP-6 Latest Edition	: Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
MSS Standard Practice SP-25 Latest Edition	: Standard Marking System for Valves, Fittings, Flanges and Unions
MSS Standard Practice SP-44 Latest Edition	: Steel Pipe Line Flanges
MSS Standard Practice SP-45 Latest Edition	: By-Pass and Drain Connection Standard
BS 1414 Latest Edition	: Steel wedge gate valve (flange and butt-welding ends)
BS 1868 Latest Edition	: Steel check valve (flange and butt-welding ends)
BS 1873 Latest Edition	: Steel globe and globe stop and check valve (flange and butt-welding ends)
BS 5352 Latest Edition	: Steel wedge gate, globe and check valve (50mm & smaller)
BS 6364 Latest Edition	: Valve for cryogenic service

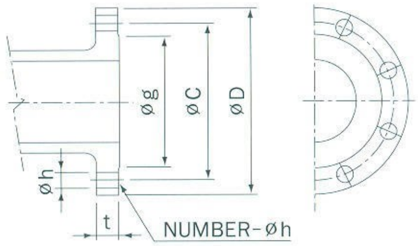
API	: American Petroleum Institute
ANSI	: American National Standards Institute
ASTM	: American Society for Testing and Materials
ASME	: American Society of Mechanical Engineers
MSS	: Manufacturer Standardization society of the Valve and Fitting Industry
BS	: British Standards Institution
JIS	: Japanese Industrial Standards
JPI	: Japan Petroleum Industitute
NACE	: National Association of corrosion Engineers
AWS	: American welding Society

ENGINEERING DATA



COMPARISON LIST FOR CASTING & FORGING

General classification	Castings			Forgings		
	ASTM	JIS	BS	ASTM	JIS	BS
Cast Iron	A126 - Class A	G5501 - FC20	1452 - 14	-	-	-
	- Class B	- FC25	- 17	-	-	-
	- Class C	- FC30	- 20	-	-	-
Malleable Iron	A197	G5702 - FCMB28	310 - B18/6	-	-	-
	A 47 - 32510	- FCMB35	- B22/14	-	-	-
	- 35018	- FCMB37	-	-	-	-
Ductile Iron	A395	G5502 - FCD40	-	-	-	-
	-	- FCD45	-	-	-	-
	A536	- FCD55	-	-	-	-
Carbon steel	A216 - WCA	G5151 - SCPH1	-	A105	G3201 - SF45	1503 - 161B
	-	G5101 - SC46	1504 - 161	-	-	-
	A216 - WCB	G5151 - SCPH2	- B	A105	G3201 - SF50	1503 - 161C
	- WCC		-	-	-	-
	-	G5101 - SC55	- C	-	-	-
Carbon-½ Mo	A217 - WC1	G5111 - SCA41	1504 - 240	A182 - F1	-	1503 - 240B
½Cr-½ Mo½ Ni	- WC4	-	-	-	-	-
1Cr-½ Mo-½ Ni	- WC5	-	-	A182 - F12	-	1503 - 620
1¼Cr-½ Mo	- WC6	G5111 - SCA51	1504 - 621	- F11	-	-
2¼Cr-1 Mo	- WC9	-	- 622	- F22	-	1503 - 622
3Cr-1Mo	-	-	-	- F21	-	-
5Cr-½ Mo(C 0.15)	-	-	-	- F5	-	-
5Cr-½ Mo(C 0.25)	A217 - C5	G5111 - SCA52	1504 - 625	- F5a	-	1503 - 625
7Cr-½ Mo	-	-	-	- F7	-	-
9Cr-1Mo	A217 - C12	-	1504 - 629	- F9	-	-
Carbon Steel for Low Temp	A352 - LCB	-	4242 - GRA	A350 - LF1	-	-
Carbon-Si	-	-	-	- LF2	-	-
Carbon-1Mo for Low Temp	A352 - LC1	-	-	-	-	-
2½Ni	- LC2	-	-	-	-	-
3½Ni	- LC3	-	-	A350 - LF3	-	-
Cr-Ni-Cu-Al	-	-	-	- LF4	-	-
13Cr	A217 - CA15	G51212 - SCS1	-	A182 - F6	G4303 - SUS51B	1503 - 713
18Cr-8Ni(C 0.03)	A351 - CF3	-	-	- F304L	- SUS28B	-
18Cr-8Ni(C 0.08)	- CF8	G5121 - SCS13	-	- F304	- SUS27B	1503 - 801
18Cr-8Ni(C 0.10)	-	-	1504 - 801	- F304H	-	-
18Cr-8Ni-2Mo(C 0.03)	A351 - CF3M	G5121 - SCS16	-	- F316L	G4303 - SUS33B	-
18Cr-8Ni-2Mo(C 0.08)	- CF8M	- SCS14	1632 - GRC	- F316	- SUS32B	1503 - 845B
18Cr-8Ni-2Mo(C 0.10)	-	-	-	- F316H	-	-
18Cr-8Ni-Ti(C 0.08)	-	-	-	- F321	G4303 - SUS29B	-
18Cr-8Ni-Ti(C 0.10)	-	-	1504 - 821Ti	-	- F321H	1503 - 821Ti
18Cr-8Ni-Cb(C 0.08)	A351 - CF8C	-	-	- F347	G4303 - SUS43B	- 821Nb
18Cr-8Ni-Cb(C 0.10)	-	-	1504 - 821Nb	- F347H	-	-
18Cr-8Ni-Ta-Cb(C 0.08)	-	-	-	- F348	-	-
18Cr-8Ni-Ta-Cb(C 0.10)	-	-	-	- F348H	-	-
25Cr-2Ni(C 0.15)	-	-	-	- F310	-	-
22Cr-12Ni(C 0.08)	A351 - CH18	-	-	-	-	-
22Cr-12Ni(C 0.10)	- CH10	-	-	-	-	-
22Cr-12Ni(C 0.20)	- CH20	-	-	-	-	-
23Cr-19Ni(C 0.20)	- CK20	-	-	-	-	-
23Cr-19Ni(C 0.35)	- HK30	-	-	-	-	-
23Cr-19Ni(C 0.45)	- HK40	-	-	-	-	-
13Cr-33Ni-Mo(C 0.35)	- HT30	-	-	-	-	-
15Cr-13Ni-2Mo-Cb(C 0.10)	CF10MC	-	-	-	-	-
19Cr-27Ni-2Mo-3Cu(C 0.07)	- CN7M	-	-	-	-	-
8Cr-20Ni(C 0.20)	-	-	-	A182 - F10	-	-
HASTELLOY B	A494-N-12MV	-	-	-	-	-



ANSI B16.5 CLASS 150

UNIT : mm

Nominal Size (In Inches)	D	C	g	t	h	Bolt	
						NUMBER	DIAM.
½	88.9	60.5	35.1	11.2	15.8	4	½
¾	98.6	69.9	42.9	12.7(11.2)	15.8	4	½
1	108.0	79.2	50.8	14.3(11.2)	15.8	4	½
1½	127.0	98.6	73.2	17.6(14.3)	15.8	4	½
2	152.4	120.7	91.9	19.1(15.8)	19.1	4	⅝
2½	177.8	139.7	104.6	22.4(17.6)	19.1	4	⅝
3	190.5	152.4	127.0	23.9(19.1)	19.1	4	⅝
4	228.6	190.5	157.2	23.9	19.1	8	⅝
5	254.0	215.9	185.7	23.9	22.4	8	¾
6	279.4	241.3	215.9	25.4	22.4	8	¾
8	342.9	298.5	269.7	28.5	22.4	8	¾
10	406.4	362.0	323.9	30.3	25.4	12	⅞
12	482.6	431.8	381.0	31.8	25.4	12	⅞
14	533.4	476.3	412.8	35.1	28.4	12	1
16	596.9	539.8	469.9	36.6	28.4	16	1
18	635.0	577.9	533.4	39.7	31.8	16	1⅛
20	698.5	635.0	584.2	43.0	31.8	20	1⅛
24	812.8	749.3	692.2	47.8	35.1	20	1¼

Includes 1.6 raised face.
Dimensions in ( ) are for valve flanges.

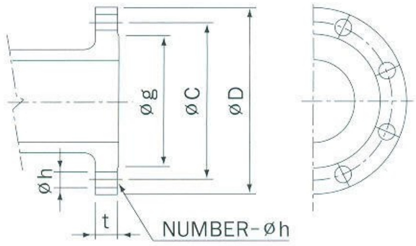
ANSI B16.5 CLASS 300

UNIT : mm

Nominal Size (In Inches)	D	C	g	t	h	Bolt	
						NUMBER	DIAM.
½	95.3	66.5	35.1	14.3	15.8	4	½
¾	117.3	82.6	42.9	15.8	19.1	4	⅝
1	124.0	88.9	50.8	17.6	19.1	4	⅝
1½	155.4	114.3	73.2	20.6	22.4	4	¾
2	165.1	127.0	91.9	22.4	19.1	8	⅝
2½	190.5	149.4	104.6	25.4	22.4	8	¾
3	209.6	168.1	127.0	28.5	22.4	8	¾
4	254.0	200.2	157.2	31.8	22.4	8	¾
5	279.4	235.0	185.7	35.1	22.4	8	¾
6	317.5	269.7	215.9	36.6	22.4	12	¾
8	381.0	330.2	269.7	41.2	25.4	12	⅞
10	444.5	387.4	323.9	47.8	28.4	16	1
12	520.7	450.9	381.0	50.8	31.8	16	1⅛
14	584.2	514.4	412.8	53.9	31.8	20	1⅛
16	647.7	571.5	469.9	57.2	35.1	20	1¼
18	711.2	628.7	533.4	60.5	35.1	24	1¼
20	774.7	685.8	584.2	63.5	35.1	24	1¼
24	914.4	812.8	692.2	69.9	41.2	24	1½

Includes 1.6 raised face.

STEEL PIPE FLANGE



ANSI B16.5 CLASS 600

UNIT : mm

Nominal Size (In Inches)	D	C	g	t	h	Bolt	
						NUMBER	DIAM.
½	95.3	66.5	44.5	14.3	15.8	4	½
¾	117.3	82.6	52.3	15.8	19.1	4	⅝
1	124.0	88.9	57.2	17.6	19.1	4	⅝
1½	155.4	114.3	73.2	22.4	22.4	4	¾
2	165.1	127.0	91.9	25.4	19.1	8	⅝
2½	190.5	149.4	104.6	28.5	22.4	8	¾
3	209.6	168.1	127.0	31.8	22.4	8	¾
4	273.1	215.9	157.2	38.1	25.4	8	⅞
5	330.2	266.7	185.7	44.5	28.4	8	1
6	355.6	292.1	215.9	47.8	28.4	12	1
8	419.1	349.3	269.7	55.7	31.8	12	1⅛
10	508.0	431.8	323.9	63.5	35.1	16	1¼
12	558.8	489.0	381.0	66.6	35.1	20	1¼
14	603.3	527.1	412.8	69.9	38.1	20	1⅜
16	685.8	603.3	469.9	76.2	41.2	20	1½
18	743.0	654.1	533.4	82.6	44.5	20	1⅝
20	812.8	723.9	584.2	88.9	44.5	24	1⅝
24	939.8	838.2	692.2	101.6	50.8	24	1⅞

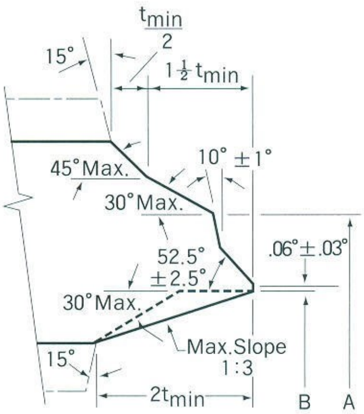
6.4 raised face not included.

ANSI B16.5 CLASS 900

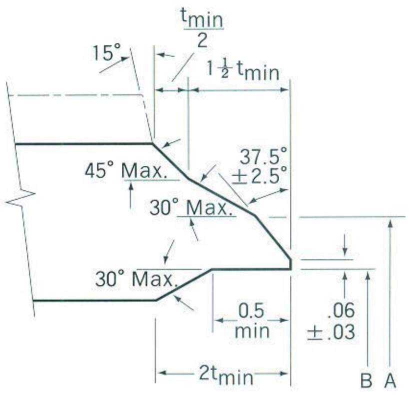
UNIT : mm

Nominal Size (In Inches)	D	C	g	t	h	Bolt	
						NUMBER	DIAM.
½	120.7	82.6	44.5	22.4	22.4	4	¾
¾	130.0	88.9	52.3	25.4	22.4	4	¾
1	149.4	101.6	57.2	28.5	25.4	4	⅞
1½	177.8	124.0	73.2	31.8	28.4	4	1
2	215.9	165.1	91.9	38.1	25.4	8	⅞
2½	244.3	190.5	104.6	41.2	28.4	8	1
3	241.3	190.5	127.0	38.1	25.4	8	⅞
4	292.1	235.0	157.2	44.5	31.8	8	1⅛
5	349.3	279.4	185.7	50.8	35.1	8	1¼
6	381.0	317.5	215.9	55.7	31.8	12	1⅛
8	469.9	393.7	269.7	63.5	38.1	12	1⅜
10	546.1	469.9	323.9	69.9	38.1	16	1⅜
12	609.6	533.4	381.0	79.3	38.1	20	1⅜
14	641.4	558.8	412.8	85.9	41.2	20	1½
16	704.9	616.0	469.9	89.9	44.5	20	1⅝
18	787.4	685.8	533.4	101.6	50.8	20	1⅞
20	857.3	749.3	584.2	108.0	53.9	20	2
24	1041.4	901.7	692.2	139.7	66.6	20	2½

6.4 raised face not included.



Compound Bevel
CONNECTION PIPE WALL THICKNESS
LARGER Than ⅞" SIZE



Plain Bevel
CONNECTION PIPE WALL THICKNESS
⅞" And SMALLER SIZE

A = Outside diameter of matching pipe, wrought or fabricated component
B = Nominal inside diameter
t = Min. wall thickness

TOLERANCE

VALVE SIZE	2" ~ 10"	12" ~ 10"	20" ~ 24"
A	$^{+0}_{-0.8}$		
B	±0.8	±1.6	$^{+3.2}_{-1.6}$

■ Nominal inside diameter "B" Dimensions (ANSI & JIS)

UNIT : mm

NOMINAL PIPE SIZE	O.D(A)		SCH10		SCH20		SCH30		STD	SCH40		SCH60		XH	SCH80	
	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	JIS	ANSI	JIS	ANSI	ANSI	JIS	ANSI
2"	60.5	60.33	-	-	54.1	-	-	-	52.5	52.7	52.50	50.7	-	49.25	49.5	49.25
2½"	76.3	73.03	-	-	67.3	-	-	-	62.713	65.9	62.71	64.3	-	59.00	62.3	59.00
3"	89.1	88.90	-	-	80.1	-	-	-	77.93	78.1	77.93	75.9	-	73.66	73.9	73.66
4"	114.3	114.30	-	-	104.5	-	-	-	102.26	102.3	102.26	100.1	-	97.18	97.1	97.18
5"	139.8	141.30	-	-	129.6	-	-	-	128.19	126.6	128.19	123.6	-	122.25	120.8	122.25
6"	165.2	168.28	-	-	154.2	-	-	-	154	151	154.0	146.6	-	146.33	143.2	146.33
8"	216.3	219.08	-	-	203.5	206.38	202.3	205.0	202.72	199.9	202.72	195.7	198.45	193.68	190.9	193.68
10"	267.4	273.05	-	-	254.5	260.35	251.7	257.45	254.51	248.7	254.51	242.0	247.65	247.65	237.2	242.93
12"	318.5	323.85	-	-	305.7	311.15	301.7	307.09	304.8	297.9	303.23	289.9	295.30	298.45	283.7	288.95
14"	355.6	355.60	342.8	342.9	339.8	339.70	336.6	336.55	336.55	333	333.35	325.4	325.48	330.2	317.6	317.50
16"	406.4	406.40	393.6	393.7	390.6	390.53	387.4	387.35	387.35	381.0	381.0	373.4	373.07	381.0	363.6	363.58
18"	457.2	457.20	444.4	444.5	441.4	441.33	435.0	434.95	483.15	428.6	428.65	419.2	419.1	431.8	409.6	409.6
20"	508.0	508.0	495.2	495.3	489.0	489.95	482.6	482.60	488.95	477.8	477.88	466.8	466.75	482.6	455.6	455.63
24"	-	609.6	-	-	-	590.55	-	581.05	590.55	-	574.8	-	560.43	584.2	-	547.73

VALVE INSIDE DIAMETER DIMENSION

STANDARD : ANSI B 16.34

UNIT : mm

Nominal Size	FULL BORE						REDUCED BORE
	150#	300#	600#	900#	1500#	2500#	150#, 300#, 600#
½	13	13	13	13	13	11	9.5
¾	19	19	19	17	17	14	12.5
1	25	25	25	22	22	19	17.0
1¼	32	32	32	28	28	25	24.0
1½	38	38	38	35	35	28	30.0
2	51	51	51	47	47	38	36.5
2½	64	64	64	57	57	47	51.0
3	76	76	76	73	70	57	58.0
4	102	102	102	98	92	73	76.0
5	127	127	127	121	111	92	95.0
6	152	152	152	146	136	111	111.0
8	203	203	200	190	178	146	144.0
10	254	254	248	238	222	184	187.0
12	305	305	298	282	263	219	241.0
14	337	337	327	311	289	241	267.0
16	387	387	375	356	330	276	305.0
18	438	432	419	400	371	311	-
20	489	483	464	444	416	343	-
22	540	533	511	489	457	378	-
24	591	584	559	533	498	413	-
26	641	635	603	578	540	448	-
28	692	686	648	622	584	483	-
30	743	737	695	667	625	517	-

STANDARD : KS B2305

UNIT : mm

Nominal Size	5K	10K	16K	20K	30K	40K	63K
15A	15	15	15	15	15	15	12
20A	20	20	20	20	20	20	17
25A	25	25	25	25	25	25	22
32A	32	32	32	32	32	32	29
40A	40	40	40	40	40	38	35
50A	50	50	50	50	50	50	48
65A	65	65	65	65	65	62	57
80A	80	80	80	80	80	75	73
100A	100	100	100	100	100	100	98
125A	125	125	125	125	125	120	120
150A	150	150	150	150	150	150	146
200A	200	200	200	200	200	200	190
250A	250	250	250	250	250	245	238
300A	300	300	300	300	300	295	283
350A	340	340	335	335	335	325	310
400A	400	400	380	380	380	375	355
450A	450	450	430	430	430	420	400
500A	500	500	480	480	480	465	445
550A	550	550	530	530	-	-	-
600A	600	600	580	580	575	560	533

LIGHT WALL

STD : ANSI B16.34

NOMINAL SIZE	RATINGS											
	150#		300#		600#		900#		1500#		2500#	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
½	0.11	3.0	0.12	3.1	0.13	3.4	0.16	4.1	0.19	4.8	0.25	6.3
¾	0.12	3.1	0.15	3.8	0.16	4.1	0.18	4.6	0.23	5.8	0.29	7.4
1	0.16	4.1	0.19	4.8	0.19	4.8	0.22	5.6	0.26	6.6	0.35	8.9
1¼	0.19	4.8	0.19	4.8	0.19	4.8	0.25	6.4	0.31	7.8	0.44	11.2
1½	0.19	4.8	0.19	4.8	0.22	5.6	0.28	7.1	0.38	9.6	0.50	12.7
2	0.22	5.6	0.25	6.4	0.25	6.4	0.31	7.9	0.44	11.2	0.62	15.8
2½	0.22	5.6	0.25	6.4	0.28	7.1	0.34	8.6	0.50	12.7	0.75	19.0
3	0.22	5.6	0.28	7.1	0.31	7.9	0.41	10.4	0.62	15.7	0.88	22.4
4	0.25	6.4	0.31	7.8	0.38	9.6	0.50	12.7	0.75	19.0	1.09	27.7
5	0.28	7.1	0.38	9.6	0.44	11.2	0.59	15.0	0.91	23.1	1.34	34.0
6	0.28	7.1	0.38	9.6	0.50	12.7	0.72	18.3	1.09	27.7	1.59	40.4
8	0.31	8.1	0.44	11.2	0.62	15.8	0.88	22.4	1.41	35.8	2.06	52.3
10	0.34	8.6	0.50	12.7	0.75	19.0	1.06	26.9	1.72	43.7	2.59	65.8
12	0.38	9.6	0.56	14.2	0.91	23.1	1.25	31.8	2.00	50.8	3.03	77.0
14	0.41	10.4	0.62	15.8	0.97	24.6	1.38	35.0	2.19	55.6	3.34	84.8
16	0.44	11.2	0.69	17.5	1.09	27.7	1.56	39.6	2.50	63.5	3.81	96.8
18	0.47	11.9	0.75	19.0	1.22	31.0	1.75	44.4	2.81	71.4	4.27	108.5
20	0.50	12.7	0.81	20.6	1.34	34.0	1.91	48.5	3.12	79.2	4.69	119.1
24	0.57	14.5	0.94	23.9	1.59	40.4	2.28	57.9	3.72	94.5	5.72	145.3

HEAVY WALL

STD : API 600

NOMINAL SIZE	RATINGS											
	150#		300#		600#		900#		1500#		2500#	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
½	-	-	-	-	-	-	-	-	-	-	-	-
¾	-	-	-	-	-	-	-	-	-	-	-	-
1	0.25	6.4	0.25	6.4	0.31	7.9	0.50	12.7	0.50	12.7	0.59	15.0
1¼	0.25	6.4	0.25	6.4	0.34	8.6	0.56	14.2	0.56	14.2	0.69	17.5
1½	0.25	6.4	0.31	7.9	0.37	9.4	0.59	15.0	0.59	15.0	0.75	19.1
2	0.34	8.6	0.38	9.7	0.44	11.2	0.75	19.1	0.75	19.1	0.88	22.4
2½	0.38	9.7	0.44	11.2	0.47	11.9	0.88	22.4	0.88	22.4	1.00	25.4
3	0.41	10.4	0.47	11.9	0.50	12.7	0.75	19.1	0.94	23.9	1.19	30.2
4	0.44	11.2	0.50	12.7	0.63	16.0	0.84	21.3	1.13	28.7	1.41	35.8
5	-	-	-	-	-	-	-	-	-	-	-	-
6	0.47	11.9	0.63	16.0	0.75	19.1	1.03	26.2	1.50	38.1	1.91	48.5
8	0.50	12.7	0.69	17.5	1.00	25.4	1.25	31.8	1.88	47.8	2.44	62.0
10	0.56	14.2	0.75	19.1	1.13	28.7	1.44	36.6	2.25	57.2	2.66	67.6
12	0.63	16.0	0.81	20.6	1.25	31.8	1.66	42.2	2.63	66.8	3.41	86.6
14	0.66	16.8	0.88	22.4	1.38	35.1	1.81	46.0	2.75	69.9	-	-
16	0.69	17.5	0.94	23.9	1.50	38.1	2.06	52.3	3.13	79.5	-	-
18	0.72	18.3	1.00	25.4	1.63	41.4	2.25	57.2	3.50	88.9	-	-
20	0.75	19.1	1.06	26.9	1.75	44.5	2.50	63.5	3.88	98.6	-	-
24	0.81	20.6	1.19	30.2	2.00	50.8	2.88	73.2	4.50	114.3	-	-

GASKET MATERIALS & CONSTRUCTION

NAME	MAKERS					CROSS SECTION
	CRANE	JEIL	PILLAR	TOMBO	VALQUE	
Universal Asbestos Joint Sheet	890 891	5700S	5000	1100	1500	
Lip Type Enveloped Gasket	11-C	-	4430	9010A	7030	
Spiral Wound Gasket	911	1804	2200	1804	590	 Basic Type
	-	3804-TF	2300	9090	7590	 Inner Ring Type
	-	3804-SF	2600	1804GR	6590V	 Outer Ring Type  Inner % Outer Ring Type
Single Metal Jacketed Gasket	923	1840	1000	1840	520	
Double Metal Jacketed Gasket	-	1841	1004	1840	580	
Corrugated Gasket Soft iron	900	1870	1200	1880	500	
Serrated Gasket Metal	941	-	1300	1850-s	540	
Octagonal Ring Joint Gasket	954	-	1500	1850-L	550SZ	
Oval Ring Joint Gasket	-	-	1501	1850V	550OZ	

TEFLON SHEET BEING USED IN STAINLESS STEEL VALVES #150 & #300

PERFORMANCE	CONTRUCTION & FEATURES	MAIN APPLICATIONS
TEMP : 930° F(500℃) PRESS : 500PSIG(35Kgf/㎠)	Compressed asbestos joint sheet made by using selected chrysotile asbestos as main material, adding a small amount of a synthetic rubber binder. For its high resilience, sealability and good chemical resistance, it can be used for a wide range of fluids and apparatus.	Water, sea water, hot water, highpressure steam, air, acids, alkalis, aqueous salt solutions, animal and vegetable oils, alcohols, fuel oils, hydraulic fluids, lubricating oil, aliphatic solvents and their vapors, various gases and liquefied gases.
TEMP : -150° F~300° F (100℃~150℃) PRESS : 285PSIG(20Kgf/㎠)	An enveloped type gasket mode by lancing a 1mm thick teflon disk and inserting a core inside.	strong acids strong alkalis, oxygen, chlorine gas and organic solvents.
TEMP :1,100° F(600℃) PRESS : 6,000PSIG(425Kgf/㎠)	A spirai wound gasket made by alternately winding the metal hoops formed to a V shape and the asbestos sheets subjected to impermeability treatment, Featuring excellent gas sealability, heat resistance and elasticity, this gasket is usable for a wide range of applications. Standard Materials · HOOP ········· SUS304 · Filler ········· Asbestos sheet · Inner ring ········· SPCC · Outer ring ········· SPCC	Water, steam, oils, oil gas, gases and solvents.
TEMP : 1,100° F(600℃) PRESS : 6,000PSIG(425Kgf/㎠)	This is and ontirely new type of spiral wound gasket using teflon soft tapes of 100% PTFE having high resilence and elasticity for the filler material. It has superior gas sealabitity, chemical resistance and other property advantages and is usable for virtually any kind of fluids. Standard Materials · HOOP ········· SUS304 · Filler ········· Soft teflon · Inner ring ········· SUS304 · Outer ring ········· SUS304	General chemicals, corrosive fluids, gases and dangerous fluids.
TEMP : 1,600° F(870℃) PRESS : 6,000PSIG(425Kgf/㎠)	A spiral wound gasket using grafoil tapes for filler material, and featuring excellent gas sealability, heat resistance and chemical resistance. This provides the highest level of performances among all the existing gaskets. Standard Materials · HOOP ········· SUS304 · Filler ········· Grafoil Tapes · Inner ring ········· SPCC · Outer ring ········· SPCC	Steam of high temperatures and high pressures, dangerous gases. He, gas, ammonia and LNG.
Depends on metal materials.	Flat-shaped metallic gasket with an asbestos mill board is jacketed with a single ply of metal sheet.	Steam of high temperatures and high pressures, gases, oil gas, solvent vapors, pipeflange, solvent vapors, and covers of pressure vessels.
Depends on metal materials.	Flat-shaped metallic gasket made by jacketing an asbestos mill board with a metal sheet in double.	Pipe flanges and heat exchangers of petroleum refining industry and petrochemical industry.
Depends on metal materials.	Metallic gasket made by fabricating a metal sheet to concentrical waveforms to enable more contact face pressure to be taken, and adding the spring effect of improve sealability.	Bonnets of various valves for steam of high temperatures and low pressures, oil, gas, solvent vapors and heat medium oil.
Depends on metal materials.	Metallic gasket made by machining concentrical sharp V-grooves of 60° or 90° to a flat metal gasket at roughly 1mm pitch.	Pipe flanges and valve bonnets for steam of high temperatures and high pressures, and gases.
Depends on metal materials.	Metallic ring joint by machining various metal materials to an octagonal shope.	High-temperature high-pressure pipe flanges, valve bonnets and heat exchangers.
Depends on metal materials.	Metallic ring joint gasket made by machining various metal materials into an oval Section.	High-temperature high pressure pipe flanges, valve bonnets, and heat exchangers.

PACKING MATERIALS & CONSTRUCTION

MAKERS							PERFORMANCE
CRANE	GARLOCK	JEIL	PILLAR	TBA	TOMBO	VALQUE	
814 815	234	2130	114	20	3506	132	TEMP : 660° F(350℃) PRESS : 570PSI(40Kgf/㎠)
187	127N	2605	315	-	2921	1272	TEMP : 1200° F(650℃) PRESS : 6000PSI(425Kgf/㎠)
1066	127	2405	316	FPM500	2920	1273	TEMP : 1200° F(650℃) PRESS : 6000PSI(425Kgf/㎠)
C-58	5234	3031	4513S	23L	9075	7136	TEMP : -150° F~500° F (100℃~260℃) PRESS : 1420PSI(100Kgf/㎠)
-	5861	3036	4533	23D	9075P	-	TEMP : -330° F~500° F (200℃~260℃) PRESS : 2840PSI(200Kgf/㎠)
C1050	5889	3064	4505	26L	9034	7233	TEMP : -150° F~500° F (100℃~260℃) PRESS : 1420PSI(100Kgf/㎠)
C1045	5888	3063	4525	26D	9033	7232	TEMP : -330° F~500° F (-200℃~260℃) PRESS : 2840PSI(200Kgf/㎠)
-	-	-	6610	-	-	-	PH : 0 to 14 TEMP : -270 to 600℃ PRESS : 43.1MPa(440Kgf/㎠) (ANSI class 2500)
1630G	98	-	6528	-	-	-	TEMP : 1200° F(650℃) PRESS : 2500PSI(175Kgf/㎠)

CONSTRUCTION & FEATURES	MAIN APPLICATIONS
General-purpose economical packing, made by braiding the outside circumference of a plastic core, braid over braid, and treating the surface with graphite.	Water, saturated steam, general-purpose valves.
A packing for valves made by double braiding the outside circumference of a plastic core, braid, with the finest-quality asbestos yarn reinforced with monel wires and backing graphite to the surface. Featuring good sealing properties, small stem torque and ease of replacement at the repair, this packing is used as a standard packing for steam service.	Saturated steam, hot oils, petroleum-base hydrocarbons valves, cocks, and soot blowers.
Made by double braiding the outside circumference of the core made by blending and molding high-eased asbestos and a heat-resistant antifriction compound, with finest-quality asbestos yarn reinfroced with inconel wires, braid over braid, and backing graphite to the surface.	Saturated steam, hot oils, petroleum base hydrocarbons, solvents, gas, ammonia, valves, cocks.
Made by impregnating asbestos yorn with PTFE dispersion and lubricant, square-braiding the core and braiding the outside circumference, braid over braid.	Water, solvents, acids and alkalis.
Made by impregnating premium-quality asbestos with PTFE dispersion and lattice-braiding the yarn to the densiest construction.	Solvents, acids, alkalis, oxygen and LNG.
Square-braiding Teflon(P.T.F.E) fibers packing, impregnated with P.T.F.E and lubricant. It features good chemical and solvent resistances, good sealability lack of shaft abrasion, and low operating torque.	Solvents, strong acids, strong alkalis, fluids which does not allow pollotion.
Lattice-braiding Pure Teflon(P.T.F.E) fibers packing to the highest density and impregnating the fibers with P.T.F.E. dispersion.	Solvents, strong acids, strong alkalis, and fluids which does not allow pollotion.
Pure graphite preformed, one cut type packing. It is superior for heat, chemical and radiation resistance. The combination use with Style 6710 is recommended. Recommendation for nuclear power station : Style 6610N	Water, steam, oil, heat transfer oil, solvent, gas, LNG, strong acid, strong alkali, high pressure & high temperature valves, cryogenic valves, high pressure gas valves.
This award-winning #, carbon fiber packing is a favorite in many applications. Long life, low coefficient of friction and high thermal conductivity plus fast start-up time are featured, along with high chemical resistance.	Oil drilling and down-hole tools, handles acids, strong casustics, hot oils, solvents, and boiler feed.

PRESSURE-TEMPERATURE RATINGS

		WORKING PRESSURE. PSIG								
CLASS	TEMP °F	A216 WCB A105	A217 C5 A182 F5a	A217 WC6 A182 F11	A217 WC9 A182 F22	A352 LC3 A350 LF3	A351 CF8M A182 F315	A351 CF3M	A351 CF8 A182 F304	A351 CF3
CLASS 150	-20 to 100°	285	290	290	290	290	275	275	275	275
	200	260	260	260	260	260	240	240	235	235
	300	230	230	230	230	230	215	215	205	205
	400	200	200	200	200	200	195	195	180	180
	500	170	170	170	170	170	170	170	170	170
	600	140	140	140	140	140	140	140	140	140
	650	125	125	125	125	125	125	125	125	125
	700	110	110	110	110	-	110	110	110	110
	750	95	95	95	95	-	95	95	95	95
	800	80	80	80	80	-	80	80	80	80
	850	65	65	65	65	-	65	65	65	-
	900	50	50	50	50	-	50	-	50	-
	950	35	35	35	35	-	35	-	35	-
	1000	20	20	20	20	-	20	-	20	-
	1050	-	20	20	20	-	20	-	20	-
	1100	-	20	20	20	-	20	-	20	-
	1150	-	20	-	-	-	20	-	20	-
	1200	-	20	-	-	-	20	-	20	-
	1250	-	-	-	-	-	20	-	20	-
	1300	-	-	-	-	-	20	-	20	-
	1350	-	-	-	-	-	20	-	20	-
	1400	-	-	-	-	-	20	-	20	-
	1450	-	-	-	-	-	20	-	15	-
	1500	-	-	-	-	-	15	-	10	-
CLASS 300	-20 to 100°	740	750	750	750	750	720	720	720	720
	200	675	750	710	715	750	620	620	600	600
	300	655	730	675	675	730	560	560	530	530
	400	635	705	660	650	705	515	515	470	470
	500	600	665	640	640	685	480	480	435	435
	600	550	605	605	605	605	450	450	415	415
	650	535	590	590	590	590	445	445	410	410
	700	535	570	570	570	-	430	430	405	405
	750	505	530	530	530	-	425	425	400	400
	800	410	500	510	510	-	415	415	395	395
	850	270	440	485	485	-	405	405	390	-
	900	170	355	460	450	-	395	-	385	-
	950	105	260	380	380	-	385	-	375	-
	1000	50	190	225	270	-	365	-	325	-
	1050	-	140	140	200	-	360	-	310	-
	1100	-	105	95	115	-	325	-	260	-
	1150	-	70	-	-	-	275	-	195	-
	1200	-	45	-	-	-	205	-	155	-
	1250	-	-	-	-	-	180	-	110	-
	1300	-	-	-	-	-	140	-	85	-
	1350	-	-	-	-	-	105	-	60	-
	1400	-	-	-	-	-	75	-	50	-
	1450	-	-	-	--	-	60	-	35	-
	1500	-	-	-	-	-	40	-	25	-
CLASS 600	-20 to 100°	1480	1500	1500	1500	1500	1440	1440	1440	1440
	200	1350	1500	1425	1430	1500	1240	1240	1200	1200
	300	1315	1455	1345	1355	1455	1120	1120	1055	1055
	400	1270	1410	1315	1295	1410	1030	1030	940	940
	500	1200	1330	1285	1280	1330	955	955	875	875
	600	1095	1210	1210	1210	1210	905	905	830	830
	650	1075	1175	1175	1175	1175	890	890	815	815
	700	1065	1135	1135	1135	-	885	865	805	805
	750	1010	1065	1065	1065	-	845	845	795	795
	800	825	995	1015	1015	-	830	830	790	790
	850	535	880	975	975	-	810	810	780	-
	900	345	705	900	900	-	790	-	770	-
	950	205	520	755	755	-	775	-	750	-
	1000	105	385	445	535	-	725	-	645	-
	1050	-	280	275	400	-	720	-	620	-
	1100	-	205	190	225	-	645	-	515	-
	1150	-	140	-	-	-	550	-	390	-
	1200	-	90	-	-	-	410	-	310	-
	1250	-	-	-	-	-	365	-	220	-
	1300	-	-	-	-	-	275	-	165	-
	1350	-	-	-	-	-	205	-	125	-
	1400	-	-	-	-	-	150	-	95	-
	1450	-	-	-	-	-	115	-	70	-
	1500	-	-	-	-	-	85	-	50	-
		HYDROSTATIC TEST PRESSURES IN POUNDS PER SQUARE INCH GAUGE(psig)								
CLASS 150	SHELL	450	450	450	450	400	375	375	375	375
	SEAT	315	315	315	315	290	260	260	260	260
CLASS 300	SHELL	1125	1125	1125	1125	1050	925	925	925	925
	SEAT	815	825	825	825	765	675	675	675	675
CLASS 600	SHELL	2225	2250	2250	2250	2100	1875	1875	1875	1875
	SEAT	1630	1650	1650	1650	1530	1360	1360	1360	1360

CLASS	TEMP °F	A216 WCB A105	A217 C5 A182 F5a	A217 WC6 A182 F11	A217 WC9 A182 F22	A352 LC3 A350 LF3	A351 CF8M A182 F315	A351 CF3M	A351 CF8 A182 F304	A351 CF3
		WORKING PRESSURE. PSIG								
CLASS 900	-20 to 100°	2220	2250	2250	2250	2250	2160	2160	2160	2160
	200	2025	2250	2135	2150	2250	1860	1850	1800	1800
	300	1970	2185	2020	2030	2185	1540	1540	1410	1410
	400	1900	2115	1975	1945	2115	1540	1540	1410	1410
	500	1795	1995	1925	1920	1995	1435	1435	1310	1310
	600	1640	1815	1815	1815	1815	1355	1355	1245	1245
	650	1610	1765	1765	1765	1765	1330	1330	1225	1225
	700	1600	1705	1705	1705	-	1295	1295	1210	1210
	750	1510	1595	1595	1595	-	1270	1270	1195	1195
	800	1235	1490	1525	1525	-	1245	1245	1180	1180
	850	850	1315	1460	1460	-	1215	1215	1165	-
	900	515	1060	1350	1350	-	1180	-	1150	-
	950	310	780	1130	1130	-	1160	-	1125	-
	1000	155	575	670	805	-	1090	-	965	-
	1050	-	420	410	595	-	1080	-	925	-
	1100	-	310	290	340	-	965	-	770	-
	1150	-	205	-	-	-	825	-	585	-
	1200	-	135	-	-	-	620	-	465	-
	1250	-	-	-	-	-	545	-	330	-
	1300	-	-	-	-	-	410	-	245	-
	1350	-	-	-	-	-	310	-	185	-
	1400	-	-	-	-	-	225	-	145	-
	1450	-	-	-	-	-	175	-	105	-
	1500	-	-	-	-	-	125	-	70	-
CLASS 1500	-20 to 100°	3750	3750	3750	3750	3750	3600	3600	3600	3600
	200	3375	3750	3560	3580	3750	3095	3095	3000	3000
	300	3280	3640	3365	3385	3640	2795	2795	2640	2640
	400	3170	3530	3290	3240	3530	2570	2570	2350	2350
	500	2995	3325	3210	3200	3325	2390	2390	2185	2185
	600	2735	3025	3025	3025	3025	2255	2255	2075	2075
	650	2685	2940	2940	2940	2940	2220	2220	2040	2040
	700	2665	2840	2840	2840	-	2160	2160	2015	2015
	750	2520	2660	2660	2660	-	2110	2110	1990	1990
	800	2060	2485	2540	2540	-	2075	2075	1970	1970
	850	1340	2195	2435	2435	-	2030	2030	1945	-
	900	860	1765	2245	2245	-	1970	-	1920	-
	950	515	1305	1885	1885	-	1930	-	1870	-
	1000	260	960	1115	1340	-	1820	-	1610	-
	1050	-	705	685	995	-	1800	-	1545	-
	1100	-	515	480	565	-	1610	-	1285	-
	1150	-	345	-	-	-	1370	-	980	-
	1200	-	225	-	-	-	1030	-	770	-
	1250	-	-	-	-	-	910	-	550	-
	1300	-	-	-	-	-	685	-	410	-
	1350	-	-	-	-	-	515	-	310	-
	1400	-	-	-	-	-	380	-	240	-
	1450	-	-	-	--	-	290	-	170	-
	1500	-	-	-	-	-	205	-	120	-
CLASS 2500	-20 to 100°	6170	6250	6250	6250	6250	6000	6000	6000	6000
	200	5625	6250	5930	5965	6250	5160	5160	5000	5000
	300	5470	6070	5605	5640	6070	4660	4660	4400	4400
	400	5280	5880	5485	5400	5880	4280	4280	3920	3920
	500	4990	5540	5350	5330	5540	3980	3980	3640	3640
	600	4560	5040	5040	5040	5040	3760	3760	3460	3460
	650	4475	4905	4905	4905	4905	3700	3700	3400	3400
	700	4440	4730	4730	4730	-	3600	3600	3360	3360
	750	4200	4430	4430	4430	-	3520	3520	3320	3320
	800	3430	4145	4230	4320	-	3460	3450	3280	3280
	850	2230	3660	4060	4060	-	3320	3320	3240	-
	900	1430	2945	3745	3745	-	3280	-	3200	-
	950	860	2170	3145	3145	-	3220	-	3120	-
	1000	430	1600	1860	2230	-	3030	-	2685	-
	1050	-	1170	1145	1660	-	3000	-	2570	-
	1100	-	860	800	945	-	2685	-	2145	-
	1150	-	570	-	-	-	2285	-	1630	-
	1200	-	370	-	-	-	1715	-	1285	-
	1250	-	-	-	-	-	1515	-	915	-
	1300	-	-	-	-	-	1145	-	685	-
	1350	-	-	-	-	-	860	-	515	-
	1400	-	-	-	-	-	630	-	400	-
	1450	-	-	-	-	-	485	-	285	-
	1500	-	-	-	-	-	345	-	200	-
		HYDROSTATIC TEST PRESSURES IN POUNDS PER SQUARE INCH GAUGE(psig)								
CLASS 900	SHELL	3350	3375	3375	3375	3150	2775	2775	2775	2775
	SEAT	2440	2475	2475	2475	2295	2035	2035	2035	2035
CLASS 1500	SHELL	5575	5629	5625	5625	5225	4650	4650	4650	4650
	SEAT	4075	4125	4125	4125	3815	3395	3395	3395	3395
CLASS 2500	SHELL	9275	9375	9375	9375	8700	7725	7725	7725	7725
	SEAT	6785	6875	6875	6875	6365	5660	5660	5660	5660

NOMINAL SEATING SURFACE MATERIALS

Trim Number	Nominal Trim	Seat Hardness (HB[a], minimum)	Material Type	Typical Specification(Grade)		
				Cast	Forged	Welded
1	F6	b	13 Cr	ASTM A217(CA15)	ASTM A182(F6a)	AWS A5.9 ER410
2	304	c	18-8 Cr-Ni	ASTM A351(CF8)	ASTM A182(F304)	AWS A5.9 ER308
3	F310	c	25-20 Cr-Ni		ASTM A182(F310)	AWS A5.9 ER310
4	Hard F6	750[d]	Hard 13 Cr		e	
5	Hardfaced	350[d]	Co Cr-A[h]			AWS A5.13 ERCoCr-A
5A	Hardfaced	350[d]	Ni-Cr			
6	F6 and	250[f]	13 Cr	ASTM A217(CA15)	ASTM A182(F6a)	AWS A5.9 ER410
	Cu-Ni	175[f]	Cu-Ni		g	
7	F6 and	300[f]	13 Cr	ASTM A217(CA15)	ASTM A182(F6a)	AWS A5.9 ER410
	Hard F6	750[f]	Hard 13 Cr		e	
8	F6 and	300[f]	13 Cr	ASTM A217(CA15)	ASTM A182(F6a)	AWS A5.9 ER410
	Hardfaced	350[f]	Co Cr-A[h]			AWS A5.13 ERCoCr-A
8A	F6 and	300[f]	13 Cr	ASTM A217(CA15)	ASTM A182(F6a)	AWS A5.9 ER41
	Hardfaced	350[f]	Ni-Cr			
9	Monel	c	Ni-Cu alloy		Manufacturer's standard	
10	316	c	18-8 Cr-Ni	ASTM A351(CF8M)	ASTM A182(F316)	AWS A5.9 ER316
11	Monel and	c	Ni-Cu alloy		Manufacturer's standard	
	Hardfaced	350[f]	Trim 5 or 5A			See Trim 5 or 5A
12	316 and	c	18-8 Cr-Ni	ASTM A351(CF8M)	ASTM A182(F316)	AWS A5.9 ER316
	Hardfaced	350[f]	Trim 5 or 5A			See Trim 5 or 5A
13	Alloy 20	c	19-29 Cr-Ni	ASTM A351(CN7M)	ASTM B473	AWS A5.9 ER320
14	Alloy 20	c	19-29 Cr-Ni	ASTM A351(CN7M)	ASTM B473	AWS A5.9 ER320
	and					
	Hardfaced	350[f]	Trim 5 or 5A			See Trim 5 or 5A

a) HB is Brinell hardness number symbol per ASTM E10(formerly BHN)
b) Body and gate seats 250 HB minimum, with 50 HB minimum differential between body and gate seats.
c) Manufacturer's standard hardness.
d) Differential hardness between body and gate seat surfaces not required.
e) Case hardened by nitriding to thickness of 0.005-inch(0.13 millimeters) minimum.
f) Hardness differential between body and gate seats shall be the manufacturer's standard.
g) Manufacturer's standard, with 30 Ni minimum.
h) This classification includes such trademarked materials as Stellite 6, Stoody 6, and Wallex 6.
i) Manufacturer's standard hardfacing, with 25 percent Fe maximum.

COMPARISON ASTM. KS & JIS

Material Classi-fication	Material			Chemical Composition									Tensile Requirements			
	ASTM	KS	JIS	C	Si	Mn	P	S	Ni	Cr	Mo	Other Requirements	Yield Strength min Kg f/㎟	Yield Strength min Kg f/㎟	Elonga-tion min %	Reduc-tion of Area min %
Cast Steel & Cast Iron	A-216 -WCB			≤0.30	≤0.60	≤1.00	≤0.040	≤0.045	≤0.50	≤0.40	≤0.25	V ≦0.03, Cu≦0.50	49~67	25	22	35
		SCPH2	SCPH2	≤0.30	≤0.60	≤1.00	≤0.040	≤0.040	≤0.50	≤0.25	≤0.25	Cu≤0.50	49	25	22	35
	A-216 -CLB						≤0.75	≤0.15					22			
		GC20	FC20										20			
	A-536-60 -40-18												42	28	18	
		GCD40	FCD40										40	26	15	
	A-197-40 -30-5												28	21	5	
		BMC28	FCMB28										28	17	5	
Bolt & Nut	A-307-B						≤0.04	≤0.05					70		18	
		SB50	SS50				≤0.05	≤0.05					50~62			
		SB41	SS41				≤0.05	≤0.05					41~52			
	A-193-B7			0.38~048	0.20~0.35	0.75~1.00	≤0.04	≤0.04		0.80~1.10	0.15~0.25		88	74	16	50
		SNB7	SNB7	0.36~0.50	0.18~0.37	0.71~1.04	≤0.045	≤0.045		0.75~1.15	0.13~0.27		88	74	16	50
		SCM3	SCM3	0.33~0.38	0.15~0.35	0.60~0.85	≤0.030	≤0.030		0.90~1.20	0.15~0.30		95	80	15	50
	A-194-2H			≥0.40			≤0.040	≤0.050								
		SM45C	S45C	0.42~0.48	0.15~0.35	0.60~0.90	≤0.030	≤0.035					58	35	20	
				Cu	Al	Pb	Zn	Fe	Sn	Mn	Si					
Copper & Copper Alloy	B584 N865			55.0~60.0	0.5~1.50	≤0.40	36.0~42.0	0.40~2.0	≤1.00	0.1~1.5		Ni ≤ 1.00	46	18	20	
		HBsC2	HBsC2	55.0~60.0	0.5~2.0	≤0.40	Remai-nder	0.50~2.0	≤1.00	≤0.1	≦0.1	Ni ≤ 1.00	50		18	
	B16 NO360			60.0~63.0		2.5~3.7	〃	≤0.35				other Than Cu, Pb, Zn, Fe ≤ 0.5	31	13	20	
		MBsBE2	BsBM2	56.5~61.5		1.5~3.7	〃	≤0.80				(Fe+Sn≦1.8)				
	B124 NO377			58.0~62.0		1.5~2.5	〃	≤0.30				total other Element Max 0.50				
		FBsBE2	BsBF2	57.0~61.0		0.5~2.5	〃					(Fe+Sn≤1.5)	32		15	

COMPARISON ASTM. KS & JIS

Material Classification	Material			Chemical Composition								Other Requirements	Tensile Requirements			
	ASTM	KS	JIS	C	Si	Mn	P	S	Ni	Cr	Mo		Yield Strength min Kg f/㎟	Yield Strength min Kg f/㎟	Elongation min %	Reduction of Area min %
Stainless Steel (Casting)	A-351 -CF8			≤0.08	≤2.00	≤1.50	≤0.04	≤0.04	8.0~11.0	18.0~21.0			49	21	35	
		SSC13	SCS13	≤0.08	≤2.00	≤2.00	≤0.04	≤0.04	8.0~11.0	18.0~21.0			45	19	30	
	A-351 -CF3M			≤0.03	≤1.50	≤1.50	≤0.04	≤0.04	9.0~13.0	17.0~21.0	2.0~3.0		49	21	30	
		SSC16	SCS16	≤0.03	≤1.50	≤2.00	≤0.04	≤0.04	12.0~16.0	17.0~20.0	2.0~3.0		40	18	33	
	A-351 -CF8M			≤0.08	≤1.50	≤1.50	≤0.04	≤0.04	8.0~12.0	18.0~21.0	2.0~3.0		49	21	30	
		SSC14	SCS14	≤0.08	≤2.00	≤2.00	≤0.04	≤0.04	10.0~14.0	17.0~20.0	2.0~3.0		45	19	28	
	A-351 -CF3			≤0.03	≤2.00	≤1.50	≤0.04	≤0.04	8.0~12.0	17.0~21.0			49	21	35	
		SSC19	SCS19	≤0.03	≤2.00	≤2.00	≤0.04	≤0.04	8.0~12.0	17.0~21.0			40	19	33	
	A-296 CG3M			≤0.03	≤1.50	≤1.50	≤0.04	≤0.04	9.0~13.0	18.0~21.0	3.0~4.0		49	21	30	
Stainless Steel (Bar & Plate)	A-276 -304			≤0.08	≤1.00	≤2.00	≤0.045	≤0.03	8.0~10.50	18.0~20.0			21	53	40	50
		STS304	SUS304	≤0.08	≤1.00	≤2.50	≤0.045	≤0.03	8.0~10.50	18.0~20.0			21	53	40	60
	A-276 -316			≤0.08	≤1.00	≤2.00	≤0.045	≤0.03	10.0~14.0	16.0~18.0	2.0~3.0		21	53	40	50
		STS316	SUS316	≤0.08	≤1.00	≤2.00	≤0.045	≤0.03	10.0~14.0	16.0~18.0	2.0~3.0		21	53	40	60
	A-276 -316L			≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	10.0~14.0	16.0~18.0	2.0~3.0		21	53	40	60
		STS316L	SUS316L	≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	10.0~15.0	16.0~18.0	2.0~3.0		18	49	40	60
		STS317L	SUS317L	≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	12.0~15.0	18.0~20.0	3.0~4.0		18	49	40	60
	AP276 -403			≤0.15	≤0.50	≤1.00	≤0.04	≤0.03	11.0~15.0	11.50~13.0			28	49	20	45
		STS403	SUS403	≤0.15	≤0.50	≤1.00	≤0.04	≤0.03		11.50~13.0			40	60	25	55
	A-276 -410			≤0.15	≤1.00	≤1.00	≤0.04	≤0.03		11.50~13.50			56	70	15	45
		STS410	SUS410	≤0.15	≤1.00	≤1.00	≤0.04	≤0.03		11.50~13.50			35	55	25	55
	A-276 -420			≥0.15	≤1.00	≤1.00	≤0.04	≤0.03		12.0~14.0			-	-	-	-
		STS420J2	SUS420J2	0.26~0.40	≤1.00	≤1.00	≤0.04	≤0.03		12.00~14.00			55	75	12	40