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At Your Service

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our top priority”**

Distributor



中華五金有限公司
CHUNG WAH METAL CO., LTD.



FIGURE NUMBERING

EXAMPLE) FIGURE NUMBER 0 GA 150 4" 1 1 HW : A216 Gr WCB Gate Valve CLASS 150 4" Bolted Bonnet, OS & Y, Raised Face 13CR HAND WHEEL

0	GA	150	4"	1	1	HW
MATERIAL	TYPE	RATING	SIZE	END CONNECTION	TRIM	OPERATION
0 : A216 WCB	GA :	150 : 150LB	2"	1 : RF	1 : 13CR	HW : HAND WHEEL
1 : A217 C5	GATE	300 : 300LB	2½"	2 : FF	2 : 304	CW : CHAIN WHEEL
2 : A217 WC6	GL :	600 : 600LB	3"	3 : BW	3 : 316	GO : GEAR OPERATOR
3 : A217 WC9	GLOBE	900 : 900LB	4"	4 : RTJ	4 : 304L	MO : MOTOR
4 : A351 CF8	CH :	1500 : 1500LB	5"	5 : TG	5 : 316L	OPERATOR
5 : A351 CF8M	CHECK	2500 : 2500LB	6"		6 : 317	PO : PNEUMATIC
6 : A351 CF3	YS :		8"		7 : MONEL	OPERATOR
7 : A351 CF3M	Y-STRAINER		10"			
	DC:		12"			
	DUO-CHECK		36"			

MAIN PRODUCTION ITEMS



■ GATE VALVES

TYPE \ CLASS	150	300	600	900	1500	2500
BB	2" ~56"	2" ~36"	2" ~30"	2" ~24"	2" ~24"	2" ~12"
PSB	—	—	2" ~24"	2" ~24"	2" ~24"	2" ~18"

■ GLOBE VALVES

TYPE \ CLASS	150	300	600	900	1500	2500
BB	2" ~18"	2" ~16"	2" ~12"	2" ~12"	2" ~12"	2" ~12"
PSB	—	—	2" ~12"	2" ~12"	2" ~12"	2" ~12"

■ SW-CH VALVES

TYPE \ CLASS	150	300	600	900	1500	2500
B C	2" ~36"	2" ~36"	2" ~30"	2" ~24"	2" ~24"	2" ~12"
PS B	—	—	2" ~24"	2" ~24"	2" ~24"	2" ~18"

■ Y-STRAINER

TYPE \ CLASS	150	300
B C	2" ~18"	2" ~14"

■ DUO-CHECK VALVES

TYPE \ CLASS	150	300	600
WAFER	2" ~24"	2" ~24"	2" ~24"

MATERIAL SELECTIONS

SHELL MATERIAL

Service Temperature	Material Specifications			
	ASTM		JIS	
Over -5°C Up to 425°C	A216Gr. WCB	A105	SCPH2	S25C
455°C	A217Gr. WC1	A182Gr. F1	SCPH11	
593°C	A217Gr.WC6	A182Gr. F11	SCPH21	
	A217Gr. WC9	A182Gr. F22	SCPH32	
650°C	A217Gr. C5	A182Gr. F5a	SCPH61	
800°C	A351Gr. CF8	A182Gr. F304	SCS13	SUSF304
Down to -29°C	A350Gr. LF1			
-46°C	A352Gr. LCB	A350Gr. LF2	SCPL1	
-59°C	A352Gr. LC1		SCPL11	
-73°C	A352Gr. LC2		SCPL21	
-101°C	A352Gr. LC3	A350Gr. LF3	SCPL31	
-196°C	A351Gr. CF8	A182Gr. F304	SCS13	SUSF304
	A351Gr. CF3	A182Gr. F304L	SCS19	SUSF304L
	A351Gr. CF8M	A182Gr. F316	SCS14	SUSF316
	A351Gr. CF3M	A182Gr. F316L	SCS16	SUSF316L

TRIM MATERIAL

Trim No.	Nominal Trim	Material Type	Body Seat Surface	Disc Seat Surface	Stem and other trim
1	F6	13Cr	13% Chromium	13% Chromium	13% Chromium
2	304	18-8Cr-Ni	Type304 Stainless Steel	Type304 Stainless Steel	Type304 Stainless Steel
3	F310	25-20Cr-Ni	Type310 Stainless Steel	Type310 Stainless Steel	Type310 Stainless Steel
4	Hard F6	Hard13Cr	Hard13% Chromium	Hard13% Chromium	13% Chromium
5	Hardfaced	Co Cr-A	Stellite	Stellite	13% Chromium
6	F6 and Cu-Ni	13Cr		13% Chromium	13% Chromium
		Cu-Ni	Cu-Ni		
7	F6 and Hard F6	13Cr	13% Chromium	13% Chromium	13% Chromium
		Hard13Cr	Hard13% Chromium		
8	F6 and Hardfaced	13Cr		13% Chromium	13% Chromium
		Co Cr-A	Stellite		
9	Monel	Ni-Cu alloy	Monel	Monel	Monel
10	316	18-8Cr-Ni	Type316 Stainless-Steel	Type316 Stainless-Steel	Type316 Stainless-Steel

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 as a welded-in type is designed to prevent any turbulence and damage by corrosion. It is are forged or rolled into one piece for all dimensions, heat treated to obtain the desired surface hardness, and cleaned thoroughly before assembling.

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

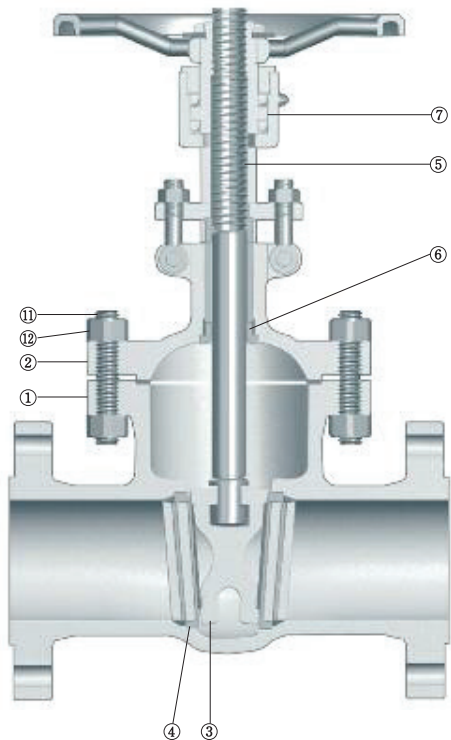
The bonnet bushing or backseat is part of the trim. Special attention is given both to its machining and heat treatment to insure a proper seat.

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

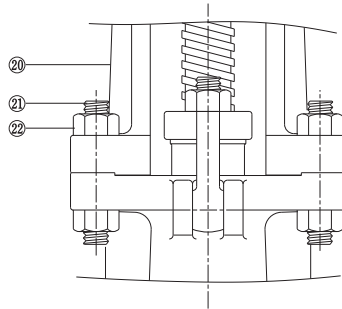
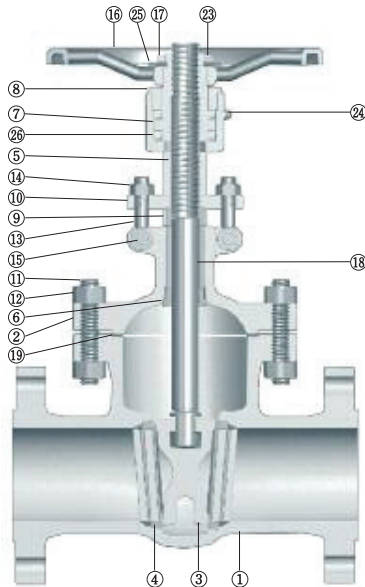
Bonnet studs and nuts are manufactured from alloy steel to the relevant ASTM standard.



CAST STEEL

BOLTED BONNET

GATE VALVES



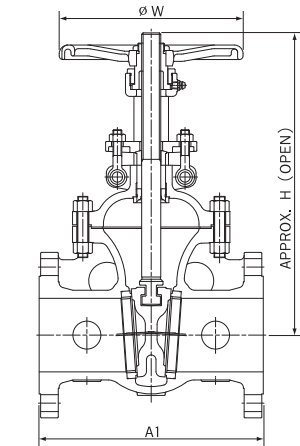
No	PARTS NAME	ASTM SPECIFICATIONS						REMARKS
		STANDARD	LOW TEMP. SERVICE		HIGH TEMP. SERVICE			
1	BODY	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	NOTE 1
2	BONNET	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	WEDGE	A216-WCB/A217-CA15	A351-CF8	A351-CF8	A217-WCB/A217-CA15	A217-WCB/A217-CA15	A217-CA15	
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	NOTE 2
8	YOKE CAP	A576-1020	A576-1020	A576-1020	A576-1020	A576-1020	A576-1020	
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	NOTE 2
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	NOTE 2
14	GLAND NUT	A563-A	A563-A	A563-A	A563-A	A563-A	A563-A	
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	NOTE 2
17	HAND WHEEL NUT	A576-1020+ZN PLATED	A576-1020+ZN PLATED	A576-1020+ZN PLATED	A576-1020+ZN PLATED	A576-1020+ZN PLATED	A576-1020+ZN PLATED	
18	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
19	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
20	YOKE	A216-WCB	A216-WCB	A216-WCB	A216-WCB	A216-WCB	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	NOTE 2
23	SET SCREW	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
24	GREASE NIPPLE	STEEL+Cr	STEEL+Cr	STEEL+Cr	STEEL+Cr	STEEL+Cr	STEEL+Cr	
25	NAME PLATE	AL/A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	NOTE 2
26	BEARING	A295-52100	A295-52100	A295-52100	A295-52100	A295-52100	A295-52100	

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

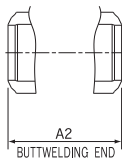
GATE VALVES

BOLTED BONNET

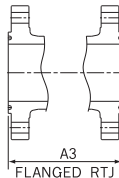
CLASS 150 / 300



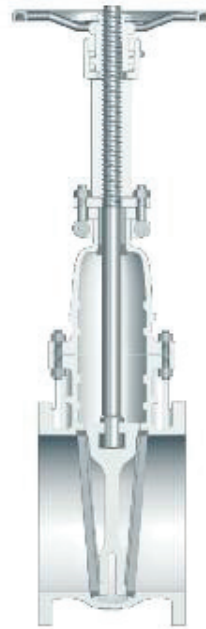
CLASS 300



BUTT WELDING END



FLANGED RTJ



■ CLASS 150

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

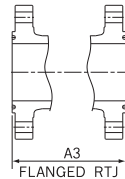
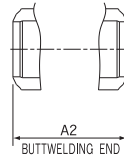
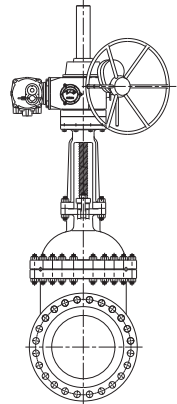
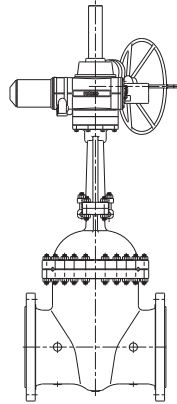
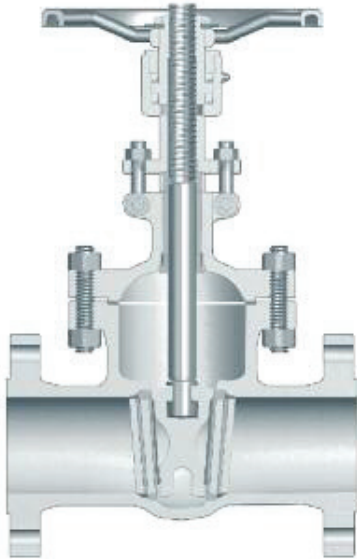
■ CLASS 300

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



CLASS 600

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30
mm	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	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	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	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	mm	200	224	250	355	400	450	500	710	710	800	800	800	800	800	800	800

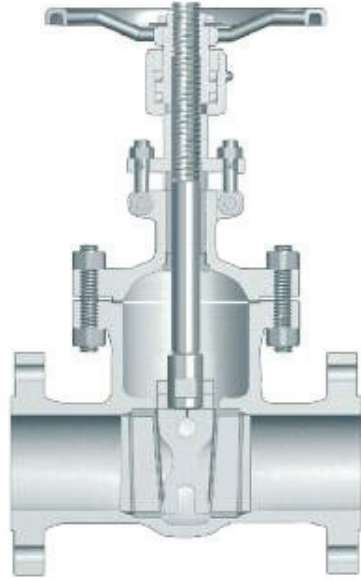
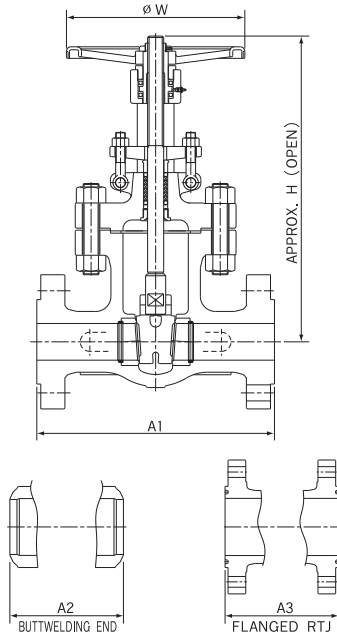
CLASS 900

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
mm	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	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	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	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	mm	250	250	315	355	400	450	500	500	710	800	800	800	800	800

GATE VALVES

BOLTED BONNET

CLASS 1500 / 2500



■ CLASS 1500

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	18.5	21.5	26.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
	mm	368	419	470	546	673	705	832	991	1130	1257	1384	1537	1664	1943
A3 (RTJ)	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
	mm	371	422	473	549	676	711	842	1000	1146	1276	1407	1559	1686	1972
H (OPEN HEIGHT)	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
	mm	570	610	724	744	927	1156	1486	1638	2019	2121	2421	2705	3030	3620
W (HANDWHEEL DIA.)	Inch	9.84	9.84	13.98	15.75	17.72	19.69	27.95	31.50	31.50	31.50	31.50	31.50	31.50	31.50
	mm	250	250	355	400	450	500	710	710	800	800	800	800	800	800

■ CLASS 2500

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	23.50	30.50	30.50	41.50	38.5	56.50	61.30	79.50	88.50
	mm	597	775	775	1054	978	1435	1557	2019	2248
W (HANDWHEEL DIA.)	Inch	12.40	13.98	15.75	19.69	19.69	27.95	31.50	31.50	31.50
	mm	315	355	400	500	500	710	800	800	800

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 is recessed in the 150lb and 300lb class or may be ring joint in the high classes. 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 BODY SEAT

The integral seat overlaid with stellite on the body has strong resistance for seat damage and keeps stable seal constantly.

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

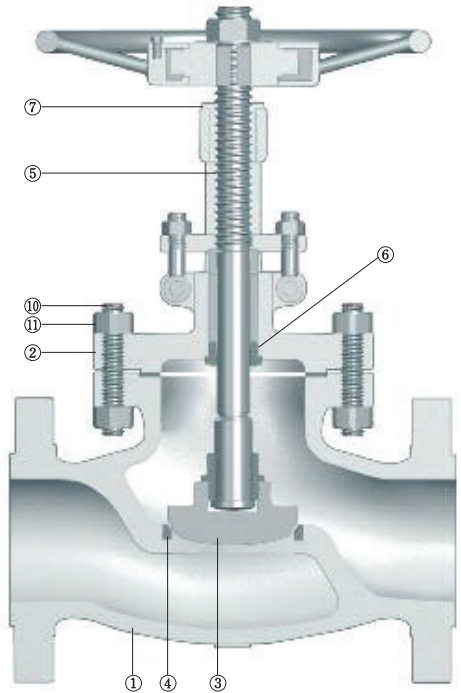
The bonnet bushing or backseat is part of the trim. Special attention is given to its machining and heat treatment to insure a proper seat for gland repacking under pressure. Special attention is given to the seating face which is ground and lapped, for a perfectly tight seal.

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

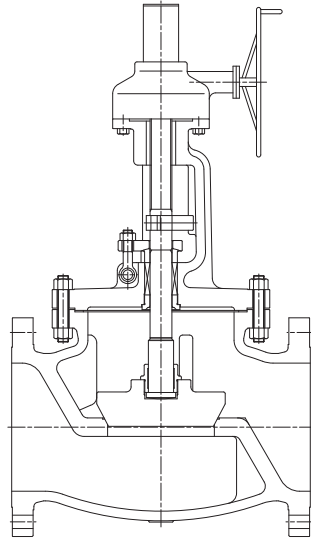
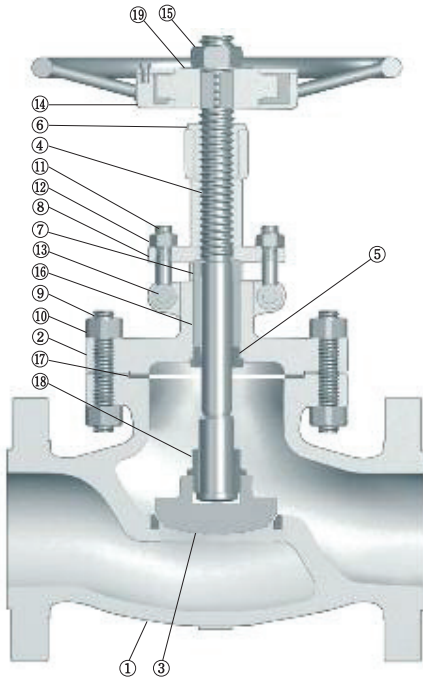
Bonnet studs and nuts are manufactured from alloy steel to the relevant ASTM standard.



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	NOTE 1
2	BONNET	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	DISC	A216-WCB/A217-CA15	A351-CF8	A351-CF8	A217-CA15	A217-CA15	A217-CA15	
4	STEM	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
5	BACK SEAT RING	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
6	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
7	PACKING GLAND	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	
8	GLAND FLANGE	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	A105/A283-D	
9	BONNET BOLT	A193-B7	A320-L7	A320-L7	A193-B16	A193-B16	A193-B16	
10	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-4	A194-4	
11	GLAND BOLT	A307-B	A307-B	A307-B	A307-B	A307-B	A307-B	
12	GLAND NUT	A563-A	A563-A	A563-A	A563-A	A563-A	A563-A	
13	HINGE PIN	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	A108-C/S1020	
14	HAND WHEEL	A536	A536	A536	A536	A536	A536	
15	HAND WHEEL NUT	A563-A	A563-A	A563-A	A563-A	A563-A	A563-A	
16	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
17	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	NOTE 2
18	DISC LOCK NUT	A276-410	A276-304	A276-304	A276-410	A276-410	A276-410	NOTE 2
19	NAME PLATE	AL/A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	AL/ A240-304	

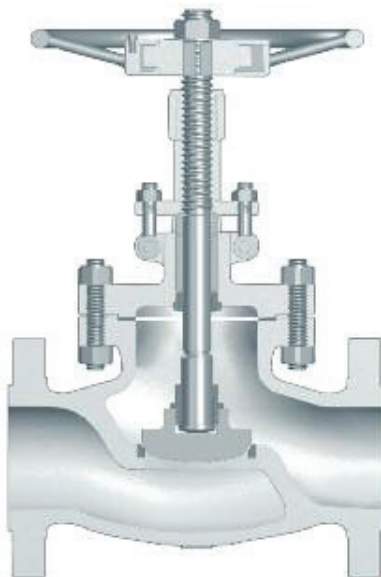
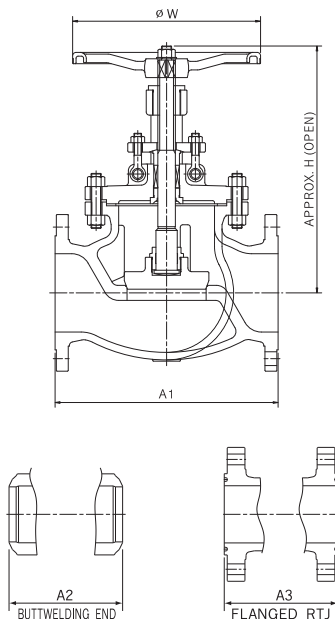
NOTE 1. Size 10" & larger : body material with trim material overlaid

2. Packing & gasket material : customer's requirements

GLOBE VALVES

BOLTED BONNET

CLASS 150 / 300



■ CLASS 150

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18
mm	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	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	mm	370	390	440	460	490	520	650	800	890	1040	1190	1370
W (HAND/WHEEL 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	mm	200	200	224	250	315	315	355	400	450	500	710	710

■ CLASS 300

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16
mm	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	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	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	mm	400	440	470	560	650	720	860	1060	1300	1450	1600
W (HAND/WHEEL 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	mm	200	200	250	315	355	355	400	500	500	710	710

CAST STEEL

BOLTED COVER

SWING CHECK VALVES

① BODY

The body is in cast steel, carefully designed to keep pressure drops to a minimum. 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 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

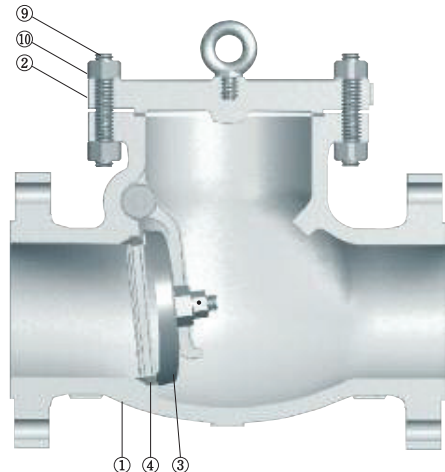
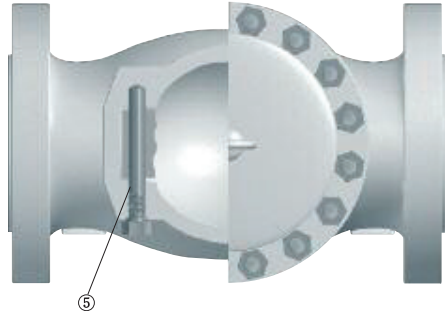
The seat rings as a welded-in type is designed to prevent any turbulence and damage by corrosion. It is forged or rolled into one piece for all dimensions, heat treated to obtain the desired surface hardness, and cleaned thoroughly before assembling.

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

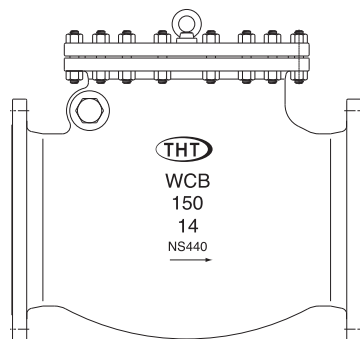
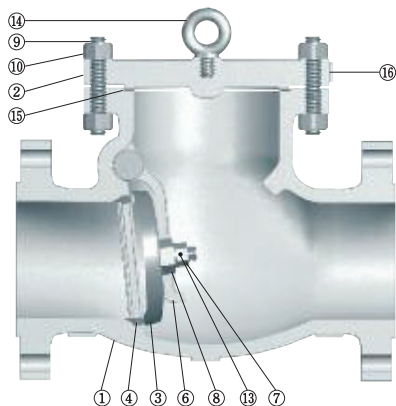
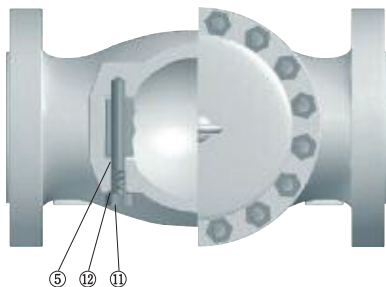
Cover studs and nuts are manufactured from alloy steel to the relevant ASTM standard.



CAST STEEL

BOLTED COVER

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	NOTE 1
2	COVER	A216-WCB	A352-LCB	A352-LC2	A217-WC6	A217-WC9	A217-C5	
3	DISC	A216-WCB/A217-CA15	A352-LCB/A351-CF8	A352-LC2/A351-CF8	A217-CA15	A217-CA15	A217-CA15	
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	NOTE 2
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	A105	A276-304	A276-304	A276-410	A276-410	A276-410	NOTE 2
12	PLUG GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
13	SPLIT PIN	A580-304	A580-304	A580-304	A580-304	A580-304	A580-304	
14	EYE BOLT	A105	A105	A105	A105	A105	A105	
15	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
16	NAME PLATE	AL/A240-304	AL/A240-304	AL/A240-304	AL/A240-304	AL/A240-304	AL/A240-304	NOTE 2

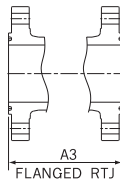
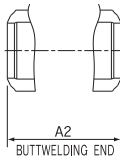
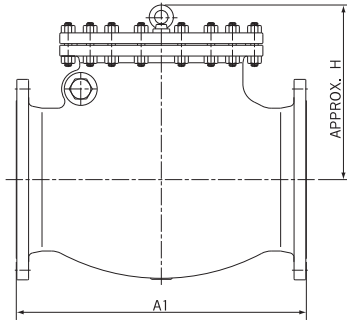
NOTE 1. Size 10" & larger : body material with trim material overlaid

2. gasket material : customer's requirements

SWING CHECK VALVES

BOLTED COVER

CLASS 150 / 300



■ CLASS 150

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
A1&A2 (RF) & (BW)	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
	mm	203	216	241	292	305	356	495	622	699	787	864	978	978	1295	1448	1524	1956
H (VALVE HEIGHT)	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
	mm	140	160	170	210	227	250	280	320	330	395	450	530	570	670	895	925	1150

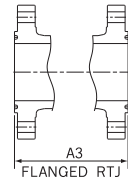
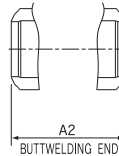
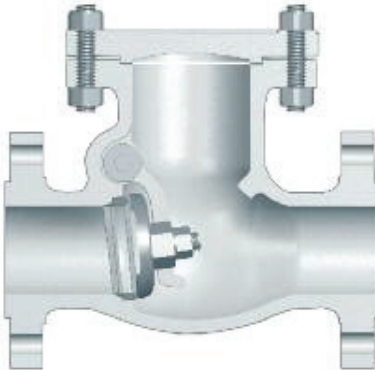
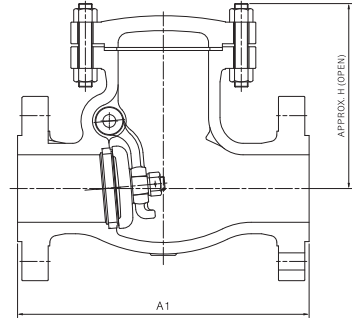
■ CLASS 300

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36
A1&A2 (RF) & (BW)	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
	mm	267	292	318	356	400	445	533	622	711	838	864	978	1016	1346	1499	1594	2083
A3 (RTJ)	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
	mm	282	308	333	371	424	460	549	638	727	854	879	994	1035	1369	1524	1619	2111
H (VALVE HEIGHT)	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
	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



■ CLASS 600

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

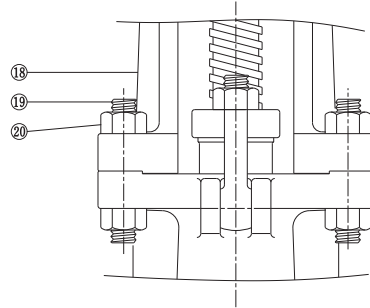
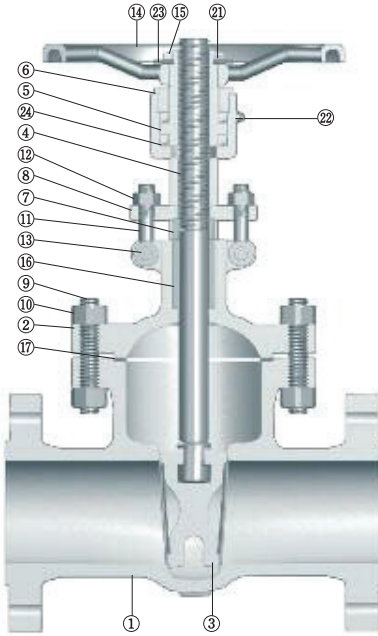
■ CLASS 900

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

CAST STAINLESS STEEL

BOLTED BONNET

GATE VALVES



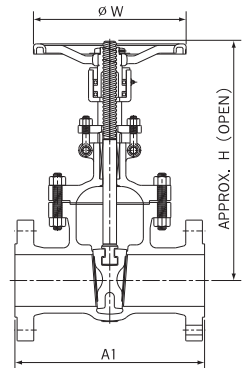
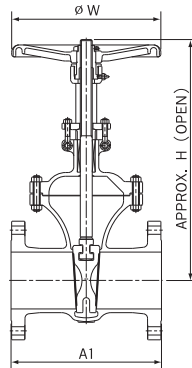
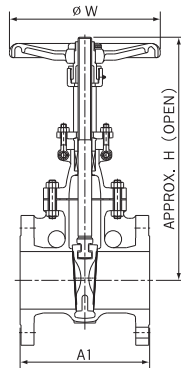
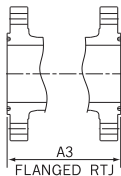
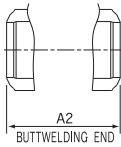
No	PARTS NAME	ASTM SPECIFICATIONS				REMARKS
		CORROSION SERVICE				
1	BODY	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	WEDGE	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
4	STEM	A276-304	A276-316	A276-304L	A276-316L	
5	YOKE SLEEVE	A439-D2C	A439-D2C	A439-D2C	A439-D2C	
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	A193-88	A193-88	A193-88	A193-88	
10	BONNET NUT	A194-8	A194-8	A194-8	A194-8	
11	GLAND BOLT	A193-88	A193-88	A193-88	A193-88	
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	A240-304	A240-304	A240-304	A240-304	
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	A193-88	A193-88	A193-88	A193-88	
20	YOKE NUT	A194-8	A194-8	A194-8	A194-8	
21	SET SCREW	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	
22	GREASE NIPPLE	STEEL+Cr	STEEL+Cr	STEEL+Cr	STEEL+Cr	
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



■ CLASS 150

VALVE SIZE	Inch mm	2 50	2.5 65	3 80	4 100	5 125	6 150	8 200	10 250	12 300	14 350	16 400	18 450	20 500	24 600	28 700	30 750	36 900
A1 (RF)	Inch	7	7.5	8	9	10	10.5	11.5	13	14	15	16	17	18	20	24	28	36
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508	610	610	711
A2 (BW)	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
	mm	216	241	282	305	381	403	419	457	502	572	610	660	711	813	914	914	1016
H (OPEN HEIGHT)	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
	mm	320	381	450	541	650	724	930	1175	1420	1511	1735	1950	2140	2520	2870	3175	3620
W (HANDWHEEL DIA.)	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
	mm	180	180	200	200	250	315	335	400	450	500	630	630	710	710	800	800	800

■ CLASS 300

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
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
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
H (OPEN HEIGHT)	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
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
	mm	200	200	224	250	315	355	400	450	500	500	630	710	800	800

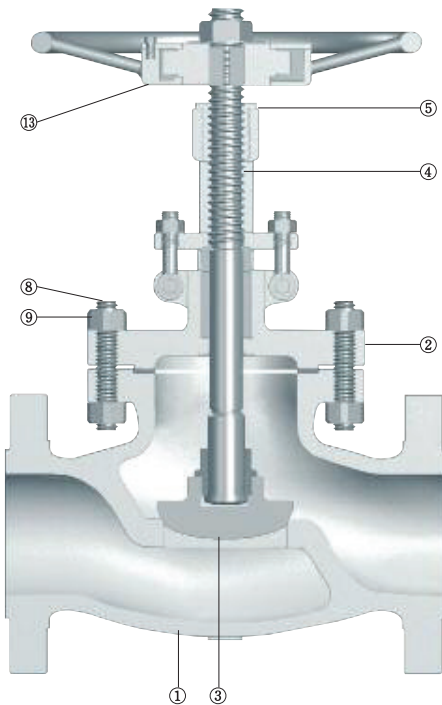
■ CLASS 600

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16	18
A1&A2 (RF)&(BW)	Inch	11.5	13	14	17	20	22	26	31	33	35	39	43
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
H (OPEN HEIGHT)	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
W (HANDWHEEL DIA.)	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
	mm	224	250	315	355	400	450	500	710	710	800	800	800

CAST STAINLESS STEEL

BOLTED BONNET

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.

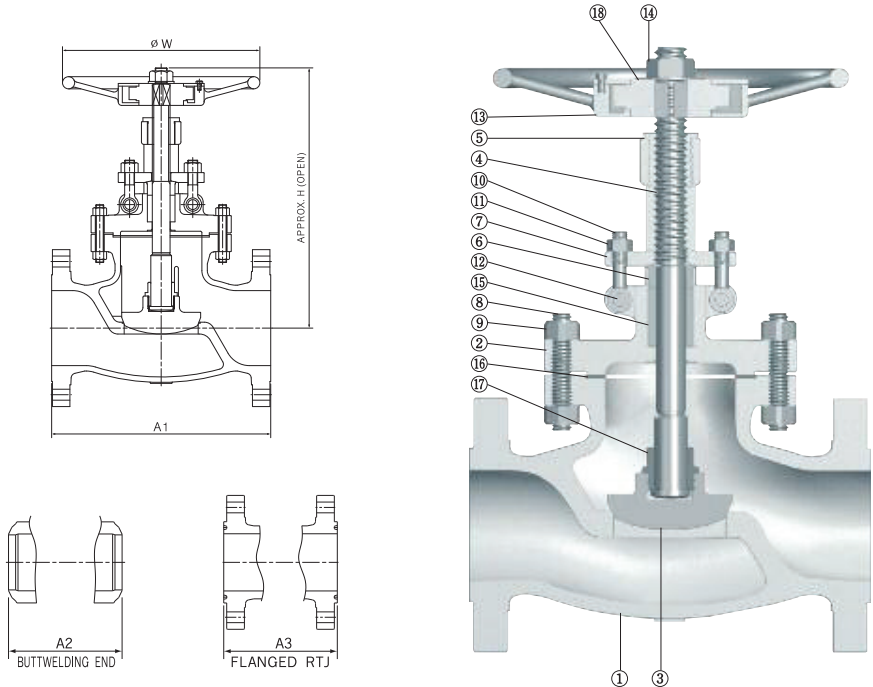
⑬ HANDWHEEL

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	NOTE 1
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	DISC	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	NOTE 2
6	PACKING GLAND	A276-304	A276-304	A276-304	A276-304	
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	NOTE 2
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	NOTE 2
14	HAND WHEEL NUT	A194-8	A194-8	A194-8	A194-8	
15	PACKING	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
16	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
17	DISC LOCK NUT	A276-304	A276-316	A276-304L	A276-316L	NOTE 2
18	NAME PLATE	AL/A240-304	AL/A240-304	AL/A240-304	AL/A240-304	

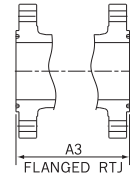
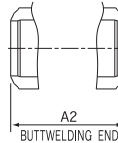
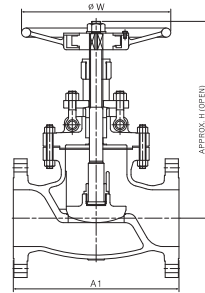
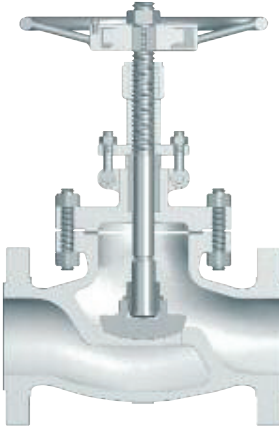
NOTE 1. Size 8" & larger : bottom guide type

2. Packing & gasket material : customer's requirements

GLOBE VALVES

BOLTED BONNET

CLASS 150 / 300 / 600



■ CLASS 150

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	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5
	mm	203	216	241	292	356	406	495	622	699
H (OPEN HEIGHT)	Inch	10.24	11.42	12.60	14.96	17.72	19.69	22.05	24.80	28.35
	mm	260	290	320	380	450	500	560	630	720
W (HANDWHEEL DIA.)	Inch	7.87	7.87	8.82	9.84	9.84	12.4	13.98	15.75	17.72
	mm	200	200	224	250	250	315	355	400	450

■ CLASS 300

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	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	416	460	575	638	727
H (OPEN HEIGHT)	Inch	10.63	11.81	12.99	15.35	18.31	20.28	22.64	25.39	28.94
	mm	270	300	330	390	465	515	575	645	735
W (HANDWHEEL DIA.)	Inch	7.87	7.87	9.84	12.4	12.4	13.98	15.75	19.69	19.69
	mm	200	200	250	315	315	355	400	500	500

■ CLASS 600

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	11.5	13	14	17	20	22	26	31	33
	mm	292	330	356	432	508	559	660	787	838
A3 (RTJ)	Inch	11.62	13.12	14.12	17.12	20.12	22.12	26.12	31.12	33.12
	mm	295	333	359	435	511	562	663	790	841
H (OPEN HEIGHT)	Inch	20.47	22.44	23.62	31.50	35.43	39.76	47.24	55.12	59.84
	mm	520	570	600	800	900	1010	1200	1400	1520
W (HANDWHEEL DIA.)	Inch	9.84	12.4	13.98	17.72	17.72	17.72	19.69	31.5	31.5
	mm	250	315	355	450	450	450	500	800	800

CAST STAINLESS STEEL

BOLTED COVER

SWING CHECK VALVES

① BODY

The body is in stainless steel, carefully designed to keep pressure drops to a minimum. 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. Threaded bosses are incorporated to ensure correct alignment of the hinge pin. Bosses may be provided for drain taps or by-pass piping.

② COVER

The cover is in stainless 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

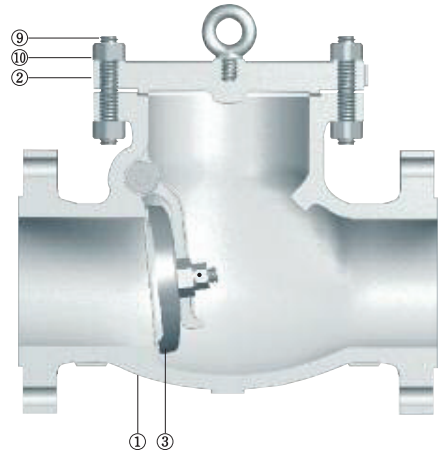
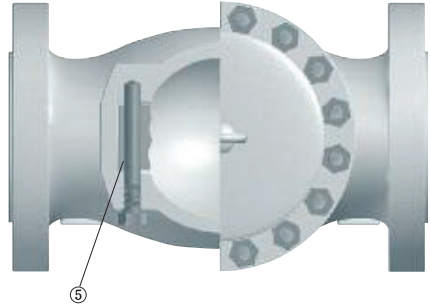
The disc is part of the trim. The back side has a threaded stud for attachment to the hinge with a stainless steel nut and split pin to insure a strong connection. The seating face is ground and lapped, for a perfectly tight seal.

⑤ HINGE PIN

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

⑨, ⑩ COVER BOLTING

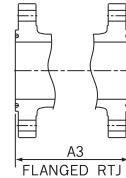
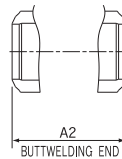
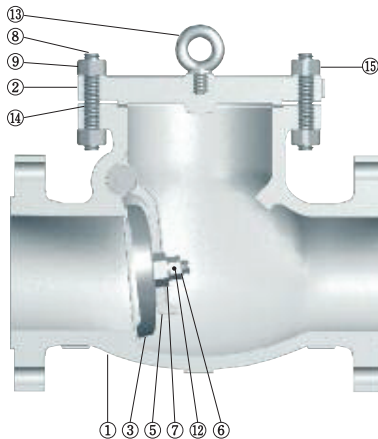
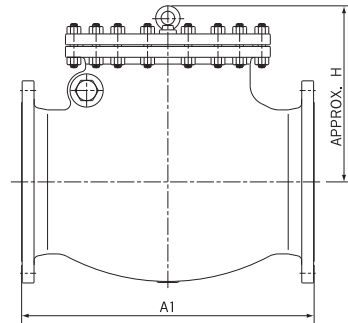
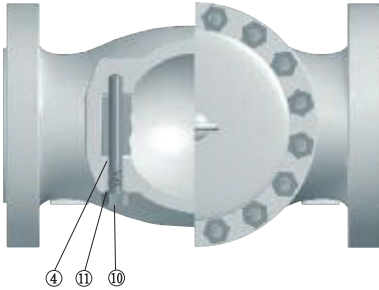
The cover studs and nuts are manufactured from alloy or stainless steel to the relevant ASTM standard.



CAST STAINLESS STEEL

BOLTED COVER

SWING CHECK VALVES



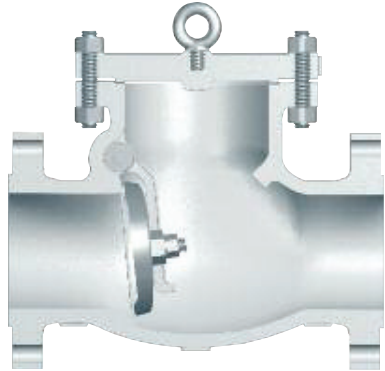
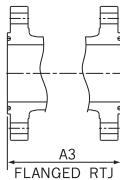
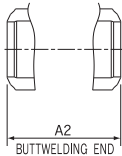
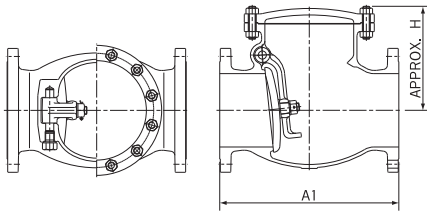
No	PARTS NAME	ASTM SPECIFICATIONS				REMARKS
		CORROSION SERVICE				
1	BODY	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	NOTE 1
2	COVER	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
3	DISC	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
4	HINGE PIN	A276-304	A276-316	A276-304L	A276-316L	
5	ARM	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	
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	A105	A105	A105	A105	
14	GASKET	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	
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



■ CLASS 150

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	8	8.5	9.5	11.5	13	14	19.5	24.5	27.5	31	34	38.5	38.5	51	57	60
mm	203	216	241	292	330	356	495	622	699	787	864	978	978	1295	1448	1524	
H (VALVE HEIGHT)	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
mm	135	151	162	198	216	244	283	325	341	383	415	530	570	670	895	925	

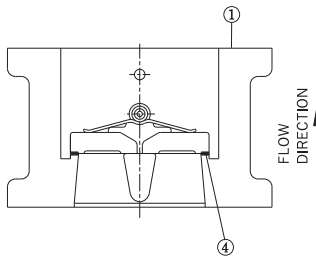
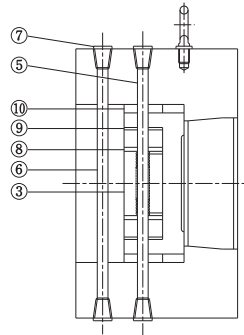
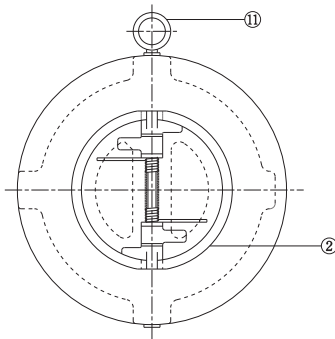
■ CLASS 300

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	10.5	11.5	12.5	14	15.75	17.5	21	24.5	28	33	34	38.5	40	53	
mm	267	292	318	356	400	445	533	622	711	838	864	978	1016	1346		
A3 (RTJ)	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	
mm	282	308	333	371	416	460	549	638	727	854	879	994	1035	1369		
H (VALVE HEIGHT)	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	
mm	155	175	180	200	242	265	300	345	390	430	470	545	600	690		

■ CLASS 600

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	

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

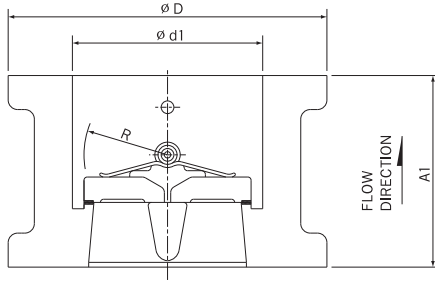
Teflon Bearings minimize friction for smooth valve plate operation.

6. Tight Sealing

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

DUO-CHECK VALVES

CLASS 150 / 300 / 600



■ CLASS 150

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 (WAFFER)	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
	mm	60	67	73	73	86	98	127	146	181	184	190	203	219	222
D (OUTSIDE DIA.)	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
	mm	105	124	137	175	197	222	279	340	410	450	514	549	606	718
d1 (OUTLET DIA.)	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
	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R (DISC OPEN RADIUS)	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
	mm	27	33	41	54	65	79	102	126	152	170	195	219	244	292

■ CLASS 300

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 (WAFFER)	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
	mm	60	67	73	73	86	98	127	146	181	222	232	263	292	318
D (OUTSIDE DIA.)	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
	mm	111	130	149	181	216	251	308	362	422	486	540	597	654	775
d1 (OUTLET DIA.)	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
	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R (DISC OPEN RADIUS)	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
	mm	27	33	41	54	65	79	102	126	152	170	195	219	244	292

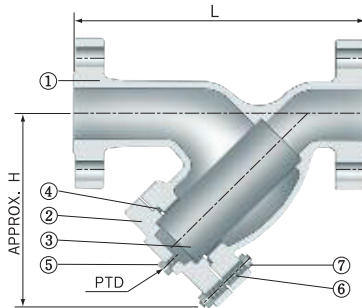
■ CLASS 600

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 (WAFFER)	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
	mm	60	67	73	79	105	136	165	213	229	222	305	363	368	438
D (OUTSIDE DIA.)	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
	mm	111	130	149	193	241	267	320	400	457	492	565	613	683	791
d1 (OUTLET DIA.)	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
	mm	60	73	89	114	141	168	219	273	324	356	406	457	508	610
R (DISC OPEN RADIUS)	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
	mm	27	33	41	55	65	82	105	133	152	175	198	228	248	295

CAST CARBON STEEL

Y-STRAINER BC

CLASS 150 / 300



No	PARTS NAME	KS SPECIFICATIONS	REMARKS
		STANDARD	
1	BODY	A216-WCB / SCPH2	NOTE 1
2	COVER	A216-WCB / SCPH2	
3	SCREEN	A580-304 / STS304	
4	GASKET	COMMERCIAL	
5	PLUG	A105 / SB50/SNB7/SM35C	
6	COVER BOLT	A193-B7 / SB50/SNB7/SM35C	
7	COVER NUT	A194-2H / SB41/SM45C/SM25C	

NOTE 1. Gasket material : customer' s requirements

■ BC Y-STRAINER CLASS 150

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16
mm	mm	50	65	80	100	125	150	200	250	300	350	400
L (RF, FF)	mm	220	270	290	350	390	440	540	680	800	1050	1060
H (VALVE HEIGHT)	mm	130	180	200	240	275	320	380	480	600	770	890
PTD	Inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1	1	1

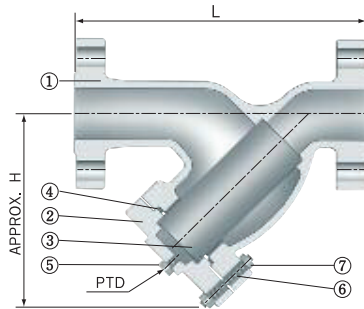
■ BC Y-STRAINER CLASS 300

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12
mm	mm	50	65	80	100	125	150	200	250	300
L (RF, FF)	mm	260	290	315	405	440	520	610	760	892
H (VALVE HEIGHT)	mm	140	180	210	270	310	370	490	565	650
PTD	Inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1

STAINLESS STEEL

Y—STRAINER BC

CLASS 150 / 300



No	PARTS NAME	ASTM SPECIFICATIONS		REMARKS
		STANDARD	CORROSION SERVICE	
1	BODY	A351—CF8 / SSC13	SSC14 / CF8M	NOTE 1
2	COVER	A351—CF8 / SSC13	SSC14 / CF8M	
3	SCREEN	A580—304 / STS304	STS316 / A580—316	
4	GASKET	COMMERCIAL	COMMERCIAL	
5	PLUG	A276—304 / STS304	STS316 / A276—316	
6	COVER BOLT	A193—B8 / STS304	STS316 / A193—B8M	
7	COVER NUT	A194—8 / STS304	STS316 / A194—8M	

NOTE 1. Gasket material : customer's requirements

■ BC Y—STRAINER CLASS 150

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12	14	16
mm	mm	50	65	80	100	125	150	200	250	300	350	400
L (RF, FF)	mm	220	270	290	350	390	440	540	680	800	1050	1060
H (VALVE HEIGHT)	mm	130	180	200	240	275	320	380	480	600	770	890
PTD	Inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1	1	1

■ BC Y—STRAINER CLASS 300

VALVE SIZE	Inch	2	2.5	3	4	5	6	8	10	12
mm	mm	50	65	80	100	125	150	200	250	300
L (RF, FF)	mm	260	290	315	405	440	520	610	760	892
H (VALVE HEIGHT)	mm	140	180	210	270	310	370	490	565	650
PTD	Inch	3/8	3/8	1/2	1/2	3/4	3/4	3/4	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;

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

a : Width of Opening
b : Diameter of Wire

The details of wire as follows;

A : Number of Wire B : Diameter of Wire

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

C : Width of Opening

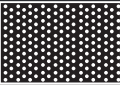
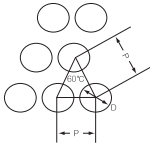
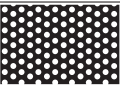
D : Percentage of OPEN AREA

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 arrangement is used.

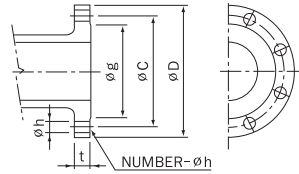
For the OPEN AREA you can use the formula below.

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

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
½ Cr – ½ Mo ½ Ni	– WC4	–	–	–	–	–
1 Cr – ½ Mo – ½ Ni	– WC5	–	–	A182 – F12	–	1503 – 620
1 ¼ Cr – ½ Mo	– WC6	G5111 – SCA51	1504 – 621	– F11	–	–
2 ¼ Cr – 1 Mo	– WC9	–	– 622	– F22	–	1503 – 622
3 Cr – 1 Mo	–	–	–	– F21	–	–
5 Cr – ½ Mo (C 0.15)	–	–	–	– F5	–	–
5 Cr – ½ Mo (C 0.25)	A217 – C5	G5111 – SCA52	1504 – 625	– F5a	–	1503 – 625
7 Cr – ½ Mo	–	–	–	– F7	–	–
9 Cr – 1 Mo	A217 – C12	–	1504 – 629	– F9	–	–
Carbon Steel for Low Temp	A352 – LCB	–	4242 – GRA	A350 – LF1	–	–
Carbon – Si	–	–	–	– LF2	–	–
Carbon – 1 Mo for Low Temp	A352 – LC1	–	–	–	–	–
2 ½ Ni	– LC2	–	–	–	–	–
3 ½ Ni	– LC3	–	–	A350 – LF3	–	–
Cr – Ni – Cu – Al	–	–	–	– LF4	–	–
13 Cr	A217 – CA15	G51212 – SC51	–	A182 – F6	G4303 – SUS51B	1503 – 713
18 Cr – 8 Ni (C 0.03)	A351 – CF3	–	–	– F304L	– SUS28B	–
18 Cr – 8 Ni (C 0.08)	– CF8	G5121 – SC513	–	– F304	– SUS27B	1503 – 801
18 Cr – 8 Ni (C 0.10)	–	–	1504 – 801	– F304H	–	–
18 Cr – 8 Ni – 2 Mo (C 0.03)	A351 – CF3M	G5121 – SC516	–	– F316L	G4303 – SUS33B	–
18 Cr – 8 Ni – 2 Mo (C 0.08)	– CF8M	– SC514	1632 – GRC	– F316	– SUS32B	1503 – 845B
18 Cr – 8 Ni – 2 Mo (C 0.10)	–	–	–	– F316H	–	–
18 Cr – 8 Ni – Ti (C 0.08)	–	–	–	– F321	G4303 – SUS29B	–
18 Cr – 8 Ni – Ti (C 0.10)	–	–	1504 – 821Ti	–	– F321H	1503 – 821Ti
18 Cr – 8 Ni – Cb (C 0.08)	A351 – CF8C	–	–	– F347	G4303 – SUS43B	– 821Nb
18 Cr – 8 Ni – Cb (C 0.10)	–	–	1504 – 821Nb	– F347H	–	–
18 Cr – 8 Ni – Ta – Cb (C 0.08)	–	–	–	– F348	–	–
18 Cr – 8 Ni – Ta – Cb (C 0.10)	–	–	–	– F348H	–	–
25 Cr – 2 Ni (C 0.15)	–	–	–	– F310	–	–
22 Cr – 12 Ni (C 0.08)	A351 – CH18	–	–	–	–	–
22 Cr – 12 Ni (C 0.10)	– CH10	–	–	–	–	–
22 Cr – 12 Ni (C 0.20)	– CH20	–	–	–	–	–
23 Cr – 19 Ni (C 0.20)	– CK20	–	–	–	–	–
23 Cr – 19 Ni (C 0.35)	– HK30	–	–	–	–	–
23 Cr – 19 Ni (C 0.45)	– HK40	–	–	–	–	–
13 Cr – 33 Ni – Mo (C 0.35)	– HT30	–	–	–	–	–
15 Cr – 13 Ni – 2 Mo – Cb (C 0.10)	CF10MC	–	–	–	–	–
19 Cr – 27 Ni – 2 Mo – 3 Cu (C 0.07)	– CN7M	–	–	–	–	–
8 Cr – 20 Ni (C 0.20)	–	–	–	A182 – F10	–	–
HASTELLOY B	A494 – N – 12MV	–	–	–	–	–

STEEL PIPE FLANGE



ANSI B16.5 CLASS 150

UNIT : mm

Nominal Size (in Inches)	D	C	g	t	h	Bolt	
						NUMBER	DIAM.
1/2	88.9	60.5	35.1	11.2	15.8	4	1/2
3/4	98.6	69.9	42.9	12.7(11.2)	15.8	4	1/2
1	108.0	79.2	50.8	14.3(11.2)	15.8	4	1/2
1 1/2	127.0	98.6	73.2	17.6(14.3)	15.8	4	1/2
2	152.4	120.7	91.9	19.1(15.8)	19.1	4	5/8
2 1/2	177.8	139.7	104.6	22.4(17.6)	19.1	4	5/8
3	190.5	152.4	127.0	23.9(19.1)	19.1	4	5/8
4	228.6	190.5	157.2	23.9	19.1	8	5/8
5	254.0	215.9	185.7	23.9	22.4	8	3/4
6	279.4	241.3	215.9	25.4	22.4	8	3/4
8	342.9	298.5	269.7	28.5	22.4	8	3/4
10	406.4	362.0	323.9	30.3	25.4	12	3/4
12	482.6	431.8	381.0	31.8	25.4	12	3/4
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	1 1/8
20	698.5	635.0	584.2	43.0	31.8	20	1 1/8
24	812.8	749.3	692.2	47.8	35.1	20	1 3/4

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

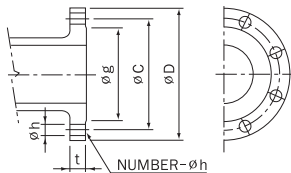
ANSI B16.5 CLASS 300

UNIT : mm

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

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	¾
1	124.0	88.9	57.2	17.6	19.1	4	¾
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	¾
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	¾
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	1½
10	508.0	431.8	323.9	63.5	35.1	16	1½
12	558.8	489.0	381.0	66.6	35.1	20	1½
14	603.3	527.1	412.8	69.9	38.1	20	1½
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	1½
20	812.8	723.9	584.2	88.9	44.5	24	1½
24	939.8	838.2	692.2	101.6	50.8	24	1½

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	¾
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	¾
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	¾
4	292.1	235.0	157.2	44.5	31.8	8	1½
5	349.3	279.4	185.7	50.8	35.1	8	1½
6	381.0	317.5	215.9	55.7	31.8	12	1½
8	469.9	393.7	269.7	63.5	38.1	12	1½
10	546.1	469.9	323.9	69.9	38.1	16	1½
12	609.6	533.4	381.0	79.3	38.1	20	1½
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	1½
18	787.4	685.8	533.4	101.6	50.8	20	1½
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.

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

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)		AWS A5.9 ER410
2	304	^c	18–8 Cr–Ni	ASTM A351(CF8)	ASTM A182(F6a)	AWS A5.9 ER308
3	F310	^c	25–20 Cr–Ni		ASTM A182(F304)	AWS A5.9 ER308
4	Hard F6	750 ^d	Hard 13 Cr		ASTM A182(F310)	AWS A5.9 ER310
5	Hardfaced	350 ^d	Co Cr–A ^h		^e	
5A	Hardfaced	350 ^d	Ni–Cr			AWS A5.13 ERCoCr–A
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 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, Stoddy 6, and Walex 6.

i) Manufacturer' s standard hardfacing, with 25 percent Fe maximum.

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 kg f/mm ² min	Elongation mm min	Reduction 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	49-67	25	22
	A-216-CLB	SCPH2		≤0.30	≤0.60	≤1.00	≤0.040	≤0.040	≤0.50	≤0.25	≤0.25	49	25	22
	A-536-60-40-18	GC20					≤0.75	≤0.15				22		
	A-197-40-30-5	GCD40										20		
	BMC28	FCM28										42	28	18
Bolt & Nut	A-307-B						≤0.04	≤0.05				70	18	
	SB50						≤0.05	≤0.05				50-62		
	SB41						≤0.05	≤0.05				41-52		
	A-193-B7	SNB7		0.38-0.48 0	0.20-0.35 7	0.75-1.0 4	≤0.04	≤0.045		0.80-1.1 0	0.15-0.2 5	88	74	16
	SCM3	SCM3		0.36-0.50 0	0.18-0.37 7	0.71-1.0 4	≤0.045	≤0.045		0.75-1.1 5	0.13-0.2 7	88	74	16
Copper & Copper Alloy	A-194-2H	SCM3		0.33-0.38 8	0.15-0.35 5	0.60-0.8 5	≤0.030	≤0.030		0.90-1.2 0	0.15-0.3 0	95	80	15
	SM45C			≥0.40			≤0.040	≤0.050						
	B584 N865	HBxC2		55.0-60.0 0	0.5-1.50 5	≤0.40 0	36.0-42.0 0	0.40-2.0	≤1.00	0.1-1.5		46	18	20
	B16 NO360	HBxC2		55.0-60.0 0	0.5-2.0 0	≤0.40	Remainder	0.50-2.0	≤1.00	≤0.1		50	18	
	B124 NO377	MBxBE2		56.5-61.5 0		2.5-3.7 0	-	≤0.35				31	13	20
			56.5-62.0 0		1.5-3.7 0	-	≤0.80				(Fe+Sn ≤1.8)			
			57.0-61.0 0		1.5-2.5 0	-	≤0.30				total other Element Max 0.50			
					0.5-2.5 0	-					(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 Kg f/mm ²	Strength min	Elongation %	Reduction of Area min %	
Stainless Steel (Castling)	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	
	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
Stainless Steel (Bar & Plate)	304	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
		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
		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
		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
		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
		SUS410		≤0.15	≤1.00	≤1.00	≤0.04	≤0.03	11.50-13.50				35	55	25	55
Stainless Steel (Welding)	A-276-420			≥0.15	≤1.00	≤1.00	≤0.04	≤0.03	12.0-14.0			-	-	-	-	-
		SUS420J2	0.28-0.40	≤1.00	≤1.00	≤1.00	≤0.04	≤0.03	12.00-14.00			55	75	12	40	40



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