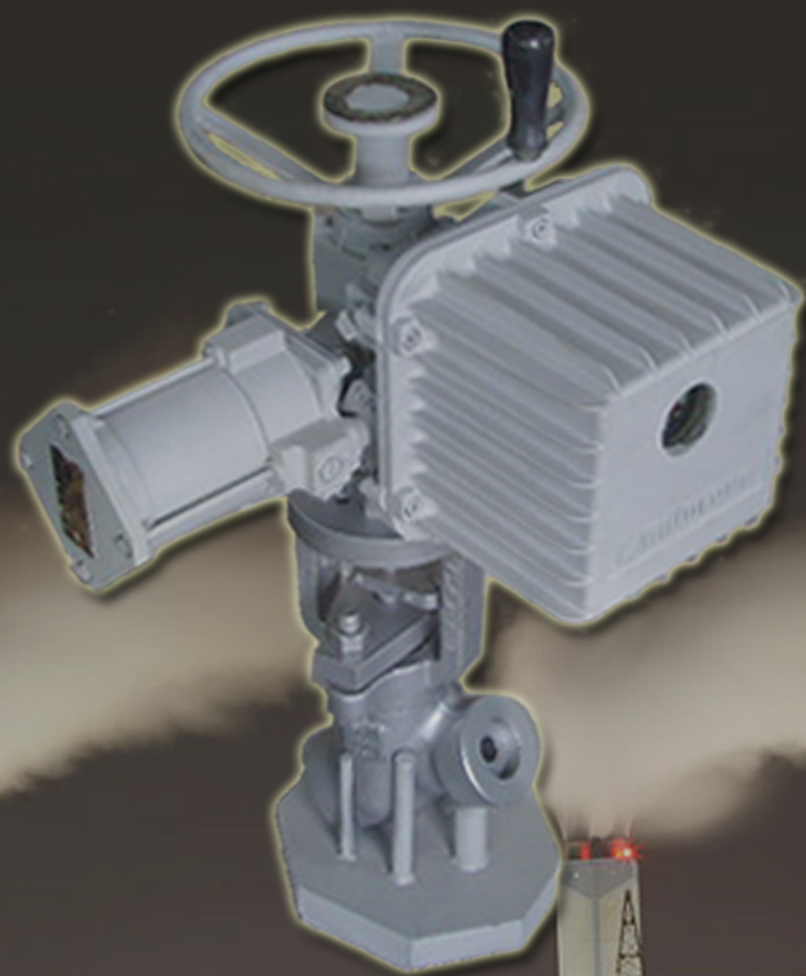


YUSUNG

CAST STEEL VALVES

BALL / KNIFE GATE / SWING-CHECK / GATE / GLOBE / STRAINER
ANSI CLASS 150 / 300 / 600 / 900 / 1500 / 2500 / 3500



안녕 하십니까
저희 (주)유성은 2003년
설립하였으며, 전사원이 밸브제작
및 보수 경력이 평균 15년 이상
으로 고객만족의 품질방침 아래
최고의 제품을 고객에게 공급하고 있습니다.



또한 발전소, 석유화학 및 철강회사에 국내제품이
아닌 외산밸브로 설치되어있는 제품을 국산화로
제작 대치하여 원가절감 하는데 노력을 다하고
있습니다.

이러한 노력으로 당사에서 는 밸브분해, 조립 진단
사업을 태안, 당진, 평택, 하동, 부산복합화력 외
공사실적이 있으며, 석유화학공장으로 는 현대오일
뱅크 대산공장과 한국석유공사, 대한 송유관공사
와 밸브 유지보수를 위한 연간 단가계약을
체결하여 고객 지원 하고 있습니다.

향후 당사는 중장기사업계획으로 밸브유지보수
하는데 좀더 편리하도록 설계 개선하여 기술의
선진기업이 되도록 노력하겠습니다.

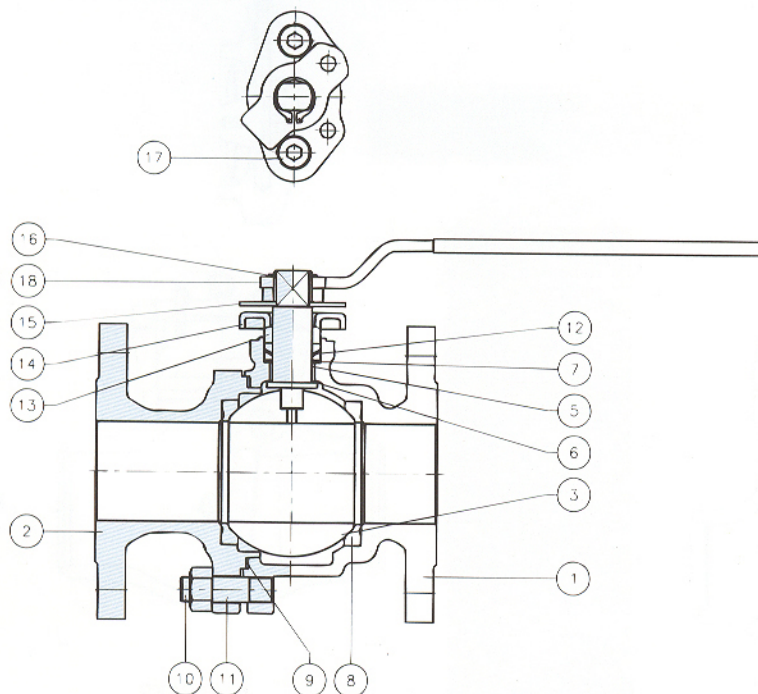
아울러 저희회사가 성장 발전 할 수 있도록
고객여러분의 아낌없는 사랑과 도움을
부탁드립니다.

대 표 정 성 욱

- Mar 01, 2003 : 유성 엔지니어링 창립
- Jul 01, 2003 : 공장신축이전
- Jun 01, 2002 : 하동화력본부 탈황 밸브 분해 정비공사 참여
- Sep 29, 2002 : 필리핀 말라야 발전소 고온, 고압밸브 분해 정비공사 참여
- Mar 30, 2003 : 국내최초 디지털 레코딩 밸브 검사장비 도입 (0 ~ 1100kg/cm²)
- Mar 30, 2003 : 국내최초 디지털 레코딩 Trevitest 장비개발 (Setting Pr. Max.300kg/cm²)
- Apr 23, 2003 : 당진화력본부 제2호기 보일러밸브(315개) 분해 정비공사 참여
- May 23, 2003 : 조달청 제조 및 수리부문 등록
- Sep 09, 2003 : 한국서부발전(주) 발전설비 정비적격업체 등록
- Oct 24, 2003 : 한국남부발전(주) 발전설비 정비적격업체 등록
- Dec 01, 2003 : 한국남동발전(주) 발전설비 정비적격업체 등록
- Dec 15, 2003 : 한국중부발전(주) 발전설비 정비적격업체 등록
- May 26, 2004 : 한국동서발전(주) 발전설비 정비적격업체 등록
- Jul 23, 2004 : 현대오일뱅크(주) 밸브수리작업 단가계약체결
- Oct 10, 2005 : 하동화력 LP BP Stem 굽힘부 저온 R/Coating 개발
- Dec 05, 2006 : ISO 9001 : 2000 품질 인증취득 (ABS)
- Feb 15, 2007 : 유성엔지니어링 --> (주)유성 상호변경
- Apr 03, 2008 : 한국중부발전(주) 선정품목 공급자유자격자 등록 일반 주강밸브(General Manual Casting Valve)



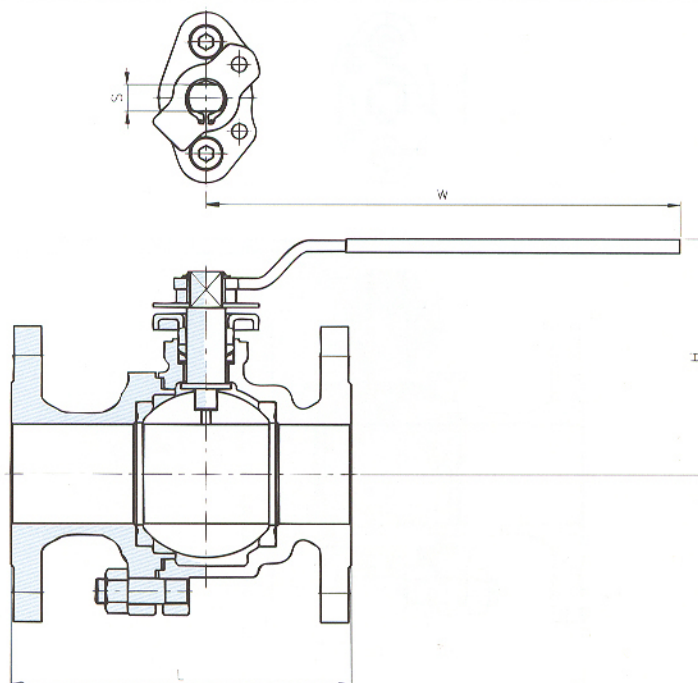
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FULL PORT
2-PIECES FLOATING TYPE
FLANGED ENDS
PRESSURE TEST
- MSS SP-61

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)		
1	Body	1	A216-WCB	A351-CF8	A351-CF8M
2	Body Cap	1	A216-WCB	A351-CF8	A351-CF8M
3	Ball	1	A276-304/A351-CF8		A276-316/A351-CF8M
4	Stem	1	A276-304/A351-CF8		A276-316/A351-CF8M
5	Stem Bearing	1	REINFORCED PTFE		
6	Thrust Bearing	1	PTFE		
7	Thrust Washer	1	A276-316		
8	Seat	2	PTFE		
9	Gasket	1	ASBESTOS	REINFORCED PTFE	
10	Cap Bolt	1 set	A193-B7	A193-B8	
11	Cap Bolt Nut	1 set	A194-2H	A194-8	
12	Gland Packing	1	PTFE		
13	Gland	1	A276-304		
14	Gland Flange	1	A167-304		
15	Stopper	1	A167-304		
16	Retaining Ring	1	A686-W1		
17	Gland Bolt	2	A193-B8		
18	Handle	1	A108-1020/FCD45		
19	Handle Head	1	FCD45		
20	Pipe	1	SGP		
21	Nameplate	1	A167-304		



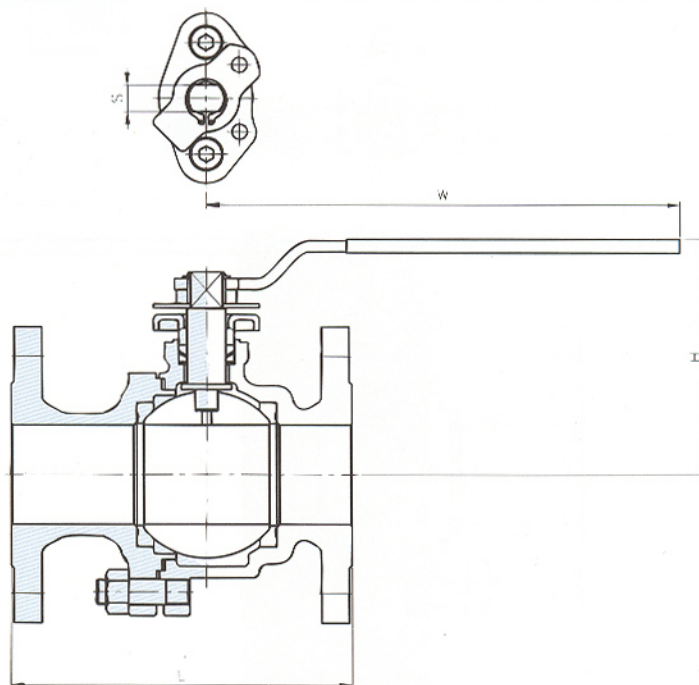
DIMENSIONS

CLASS 150

NPS	In.	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8
	DN	15	20	25	40	50	65	80	100	125	150	200
L	inch	4-1/4	4-5/8	5	6-1/2	7	7-1/2	8	9	14	15-1/2	18
	mm	108	117	127	165	178	190	203	229	356	394	457
H	inch	2.32	2.48	2.95	3.82	4.21	5.59	5.98	7.01	9.92	10.71	13.46
	mm	59	63	75	97	107	142	152	178	252	272	342
d	inch	0.51	0.75	0.98	1.50	2.01	2.52	2.99	4.02	5.00	5.98	7.99
	mm	13	19	25	38	51	64	76	102	127	152	203
W	inch	5.12	5.12	6.30	9.06	9.06	15.75	15.75	25.59	41.34	41.34	55.51
	mm	130	130	160	230	230	400	400	650	1050	1050	1410
S	inch	0.24	0.24	0.31	0.47	0.47	0.67	0.67	0.87	1.06	1.06	1.26
	mm	6	6	8	12	12	17	17	22	27	27	32
Weight	lbs	5.1	6.6	9.9	15.4	23.1	35.3	50.7	74.5	127.9	149.9	238.1
	kg	2.3	3.0	4.5	7.0	10.5	16.0	23.0	33.8	58.0	68.0	108.0

JIS 10kg/cm²

NPS	In.	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8
	DN	15	20	25	40	50	65	80	100	125	150	200
L	inch	4.25	4.61	5.00	6.50	7.01	7.48	7.99	9.12	14.02	15.51	17.99
	mm	108	117	127	165	178	190	203	229	356	394	457
H	inch	2.32	2.48	2.95	3.82	4.21	5.59	5.98	7.01	9.92	10.71	13.46
	mm	59	63	75	97	107	142	152	178	252	272	342
d	inch	0.51	0.75	0.98	1.50	2.01	2.52	2.99	4.02	5.00	5.98	7.99
	mm	13	19	25	38	51	64	76	102	127	152	203
W	inch	5.12	5.12	6.30	9.06	9.06	15.75	15.75	25.59	41.34	41.34	55.51
	mm	130	130	160	230	230	400	400	650	1050	1050	1410
S	inch	0.24	0.24	0.31	0.47	0.47	0.67	0.67	0.87	1.06	1.06	1.26
	mm	6	6	8	12	12	17	17	22	27	27	32
Weight	lbs	5.1	6.6	9.9	15.4	23.1	35.3	50.7	74.5	127.9	149.9	238.1
	kg	2.3	3.0	4.5	7.0	10.5	16.0	23.0	33.8	58.0	68.0	108.0



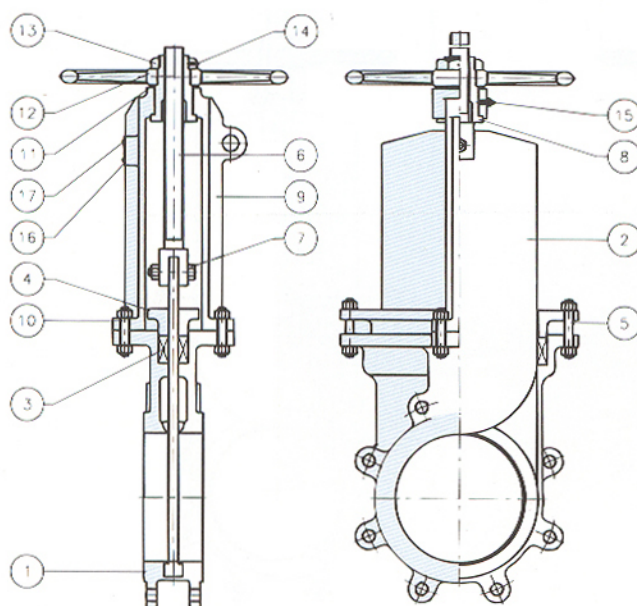
DIMENSIONS

CLASS 300

NPS	In.	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8
	DN	15	20	25	40	50	65	80	100	125	150	200
L	inch	5-1/2	6.00	6-1/2	7-1/2	8-1/2	9-1/2	11-1/8	12	15	15-7/8	19-3/4
	mm	140	152	165	190	216	241	283	305	381	403	502
H	inch	2.32	2.48	2.95	3.82	4.21	5.59	5.98	7.01	9.92	10.71	13.47
	mm	59	63	75	97	107	142	152	178	252	272	342
d	inch	0.51	0.75	0.98	1.50	2.00	2.52	2.99	4.02	5.00	5.98	7.99
	mm	13	19	25	38	51	64	76	102	127	152	203
S	inch	0.24	0.24	0.31	0.47	0.47	0.67	0.67	0.87	1.06	1.06	1.26
	mm	6	6	8	12	12	17	17	22	27	27	32
W	inch	5.12	5.12	6.30	9.06	9.06	15.75	15.75	25.59	41.34	41.34	55.51
	mm	130	130	160	230	230	400	400	650	1050	1050	1410
Weight	lbs	5.5	7.7	12.1	23.1	32.6	51.8	79.6	91.3	154.3	231.5	319.7
	kg	2.5	3.5	5.5	10.5	14.8	23.5	36.1	41.4	70.0	105.0	145.0

JIS 20kg/cm²

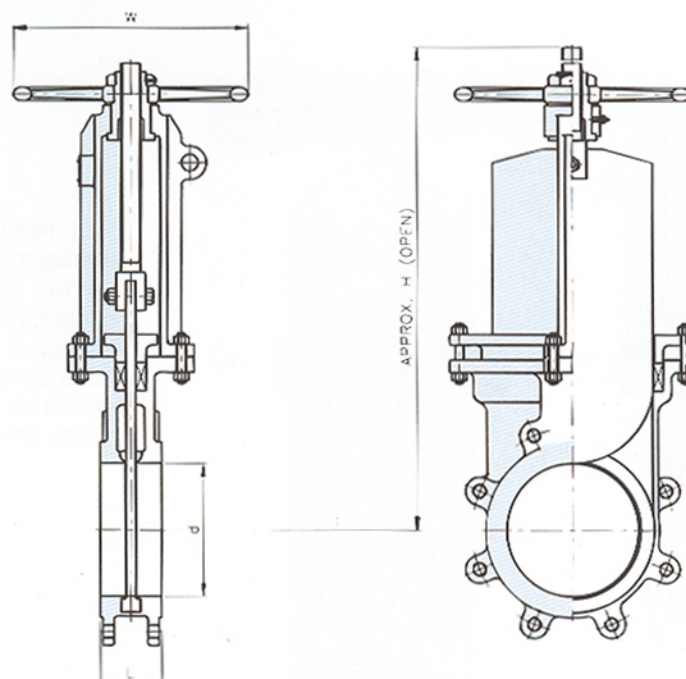
NPS	In.	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8
	DN	15	20	25	40	50	65	80	100	125	150	200
L	inch	5.51	5.98	6.50	7.48	8.50	9.49	11.14	12.01	15.00	15.87	19.76
	mm	140	152	165	190	216	241	283	305	381	403	502
H	inch	2.32	2.48	2.95	3.82	4.21	5.59	5.98	7.01	9.92	10.71	13.47
	mm	59	63	75	97	107	142	152	178	252	272	342
d	inch	0.51	0.75	0.98	1.50	2.00	2.52	2.99	4.02	5.00	5.98	7.99
	mm	13	19	25	38	51	64	76	102	127	152	203
S	inch	0.24	0.24	0.31	0.47	0.47	0.67	0.67	0.87	1.06	1.06	1.26
	mm	6	6	8	12	12	17	17	22	27	27	32
W	inch	5.12	5.12	6.30	9.06	9.06	15.75	15.75	25.59	41.34	41.34	55.51
	mm	130	130	160	230	230	400	400	650	1050	1050	1410
Weight	lbs	5.5	7.7	12.1	23.1	32.6	51.8	79.6	91.3	154.3	231.5	319.7
	kg	2.5	3.5	5.5	10.5	14.8	23.5	36.1	41.4	70.0	105.0	145.0



FULL PORT
DURABLE INTERNAL THREAD
"METAL, RESILIENT,"
& RESILIENT PTFE SEAT
LUGGED &
FLANGED ENDS
PRESSURE TEST
- MSS SP-61

BILL OF MATERIALS

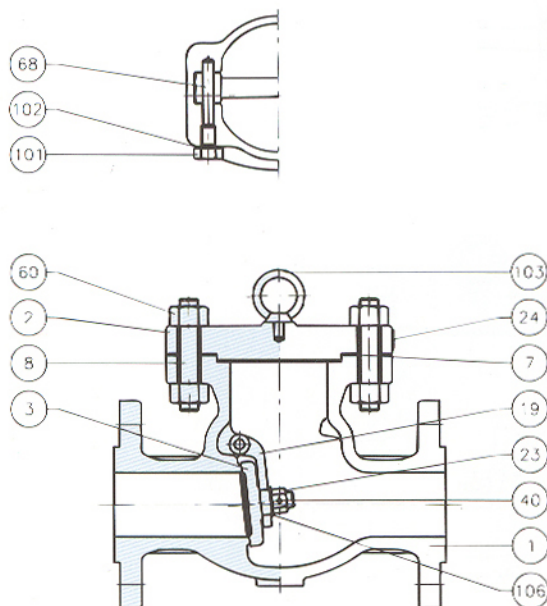
No.	Part Name	Q'ty	Materials (ASTM Specification)	
1	Body	1	A351-CF8	A351-CF8M
2	Disc	1	A240-304	A240-316
3	Packing	1 set	PTFE Impregnated Syntax Yarn	
4	Packing Gland	1	A351-CF8	A351-CF8M
5	Gland Bolt and Nut	1 set	A193-B8/A194-8	
6	Stem	1	A276-304	
7	Disc Bolt and Nut	1	A193-B8/A194-8	
8	Yoke Sleeve	1	BRASS	
9	Yoke	1	A351-CF8	
10	Yoke Bolt and Nut	1 set	A193-B8/A194-8	
11	Thrust Bearing Washer	1	BRASS (SIZES 300 mm and SMALLAR)	
12	Handwheel	1	CAST DUCTILE IRON	
13	Handwheel Nut	1	BRASS SS41	
14	Set Screw	1	A193-B7	
15	Grease Nipple	1	COMMERCIAL	
16	Nameplate	1	A240-304	
17	River	1 set	ALUMINUM	
18	Body Seat	1	BUNA-N	
19	Stopper and Nut	1	A276-304	
20	Body Seat Ring	1	REINFORCED PTFE	
21	V-Port Body Seat Ring	1	A351-CF8	A351-CF8M
22	O-Ring	1	HYCAR RUBBER	
23	Seat Retainer	1	A351-CF8	A351-CF8M
24	Wrench Bolt	1 set	A193-B8	A193-B8M
25	Bearing Housing	1	A351-CF8	
26	Housing Bolt and Nut	1 set	A193-B8/A194-8	
27	Thrust Ball Bearing	1	COMMERCIAL	
28	Sleeve Gland	1	A351-CF8	


DIMENSIONS

CLASS 150

NPS	In.	2	2-1/2	3	4	5	6	8	10	12
	DN	50	65	80	100	125	150	200	250	300
L	inch	1.85	2.01	2.01	2.01	2.24	2.24	2.76	2.76	2.99
	mm	47.6	51	51	51	57	57	70	70	76
H	inch	13.78	15.91	17.13	20.35	23.50	25.39	32.76	40.08	46.19
	mm	350	404	435	517	597	645	832	1018	1173
d	inch	2.01	2.52	2.99	4.02	5.00	5.98	7.99	10.00	12.01
	mm	51	64	76	102	127	152	203	254	305
W	inch	7.87	7.87	7.87	7.87	8.86	8.86	11.81	13.78	13.78
	mm	200	200	200	200	225	225	300	350	350

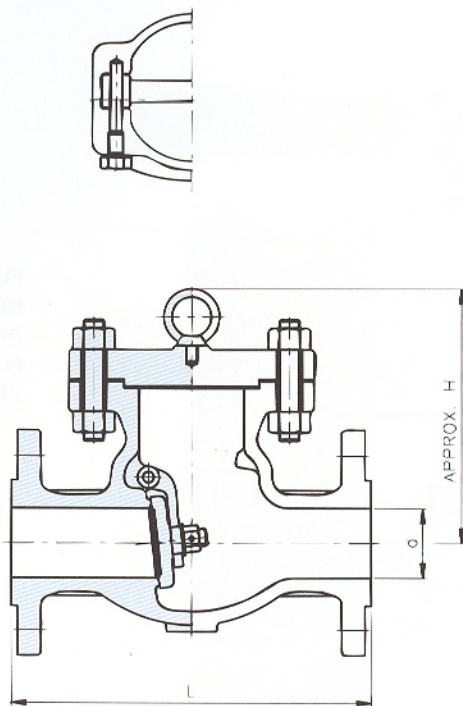
NPS	In.	14	16	18	20	24	28	30	32	36
	DN	350	400	450	500	600	700	750	800	900
L	inch	2.99	3.50	3.50	4.49	4.49	4.49	4.76	4.76	5.91
	mm	76	89	89	114	114	114	121	121	150
H	inch	52.36	60.24	67.32	75.20	85.43	100.00	104.57	112.20	133.66
	mm	1330	1530	1710	1910	2170	2540	2656	2850	3395
d	inch	13.27	15.24	17.24	19.25	23.27	27.24	29.25	31.26	35.24
	mm	337	387	438	489	591	692	743	794	895
W	inch	15.75	15.75	19.69	19.69	19.69	19.69	22.05	22.05	31.50
	mm	400	400	500	500	500	500	560	560	800



FULL PORT
BOLTED BONNET
INTEGRAL SEAT
FLANGED ENDS
PRESSURE TEST
- API 598

BILL OF MATERIALS

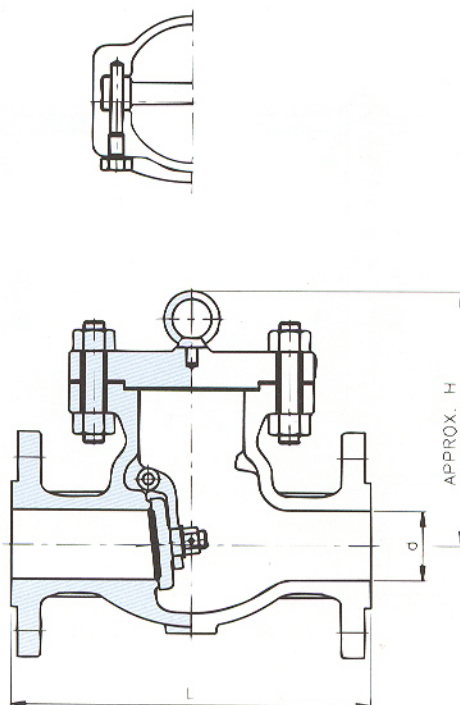
No.	Part Name	Q' ty	Materials (ASTM Specification)					
			A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
1	Body	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
2	Bonnet	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
3	Disc	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
4	Seat Ring	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
7	Gasket	1	ASBESTOS JOINT SHEET/SS316 + ASBESTOS *					
8	Bonnet Bolt	1 set	A193-B8					
19	Hinge	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
23	Retaining Nut	1	A194-8					
24	Nameplate	1	ALUMINUM					
40	Split Pin	1	A276-304					
60	Bonnet Bolt Nut	1 set	A194-8					
68	Hinge Pin	1	A276-304					
101	Hinge Pin Plug	1	A276-304					
102	Plug Gasket	1	Non Asbesots Sheet					
103	Eye Bolt **	1	A108-1020					
106	Disc Washer	1	A276-304					


DIMENSIONS
CLASS 150

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
Size	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	8	8-1/2	9-1/2	11-1/2	14	16	19-1/2	24-1/2	27-1/2	31	36	38-1/2	38-1/2
	mm	203	216	241	292	356	406	495	622	698	787	914	978	978
H	inch	4.72	5.31	5.79	6.65	7.48	8.39	9.96	10.98	12.28	14.13	16.26	18.70	21.50
	mm	120	135	147	169	190	213	253	279	312	359	413	475	546
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489

JIS 10kg/cm²

NPS	In.	2	2-1/2	3	4	5	6	8	10	12
	DN	50	65	80	100	125	150	200	250	300
L	inch	7.99	8.50	9.49	11.50	14.02	15.98	19.49	24.49	27.48
	mm	203	216	241	292	356	406	495	622	698
d	inch	1.97	2.56	3.15	3.94	4.92	5.91	7.87	9.84	11.81
	mm	50	65	80	100	125	150	200	250	300
H	inch	4.72	5.31	5.79	6.65	7.48	8.39	9.96	10.98	12.28
	mm	120	135	147	169	190	213	253	279	312



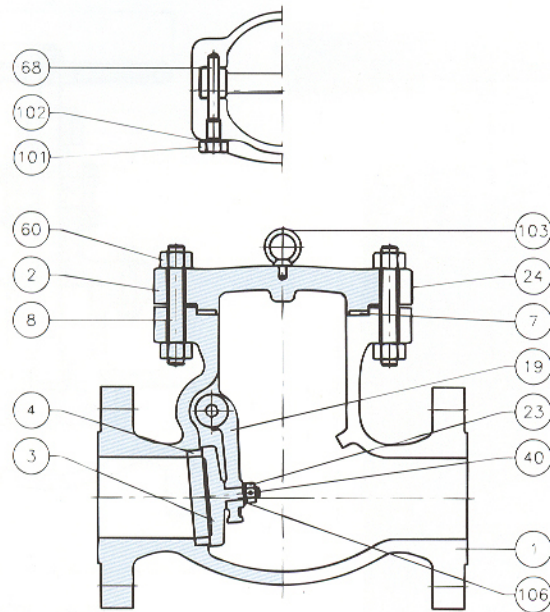
DIMENSIONS

CLASS 300

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	10-1/2	11-1/2	12-1/2	14	15-3/4	17-1/2	22	24-1/2	28	30	33	36	39
	mm	267	292	318	356	400	444	559	622	711	765	838	915	991
H	inch	6.50	7.48	8.07	8.86	10.71	13.00	13.39	18.11	19.88	20.28	21.50	22.82	24.53
	mm	165	190	205	225	272	330	340	460	505	515	546	577	623
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.00	19.00
	mm	51	64	76	102	127	152	203	254	305	337	387	432	483

JIS 20kg/cm²

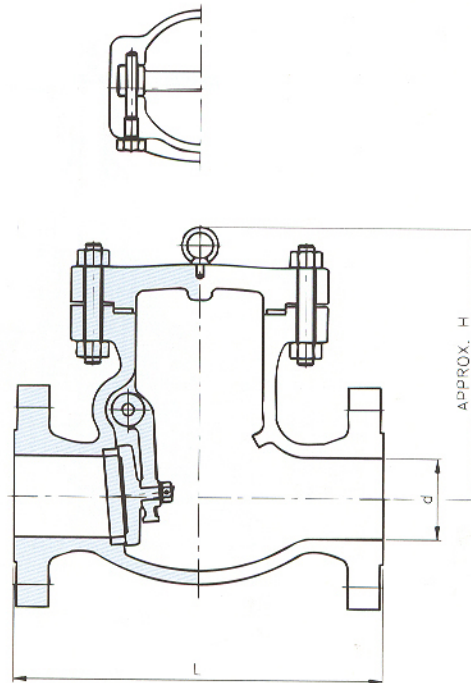
NPS	In.	2	2-1/2	3	4	6	8	10	12
	DN	50	65	80	100	150	200	250	300
L	inch	10.51	11.50	12.52	14.02	17.48	22.01	24.49	27.99
	mm	267	292	318	356	444	559	622	711
d	inch	1.97	2.56	3.15	3.94	5.91	7.87	9.84	11.81
	mm	50	65	80	100	150	200	250	300
H	inch	6.50	7.48	8.07	8.86	10.71	12.99	14.17	15.98
	mm	165	190	205	225	272	330	360	406



FULL PORT
BOLTED BONNET
RENEWABLE SEAT
BUTT WELDING &
FLANGED ENDS
PRESSURE TEST
- API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
2	Bonnet	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
3	Disc	1	A217-CA15				A351-CF8	
4	Seat Ring	1	A217-CA15				A351-CF8	
6	Stem	1	A276-410				A276-304	
7	Gasket	1	-					
8	Bonnet Bolt	1 set	A193-B7	A193-B7/B16			A193-B8	
19	Hinge	1	A276-410				A276-304	
23	Retaining Nut	1	A194-2H				A194-8	A194-2H
24	Nameplate	1	ALUMINUM					
40	Split Pin	1	A276-304					
60	Bonnet Bolt Nut	1 set	A194-2H	A194-2H/4			A194-8	
68	Hinge Pin	1	A276-410				A276-304	
100	Hinge Pin Washer	1	A108-1020	A276-316	A108-1020		A276-304	
101	Hinge Pin Plug	1	A105	A276-316	A182-F22		A276-304	
103	Eye Bolt	1	A108-1020					
106	Disc Washer	1	A276-304					



DIMENSIONS

CLASS 150

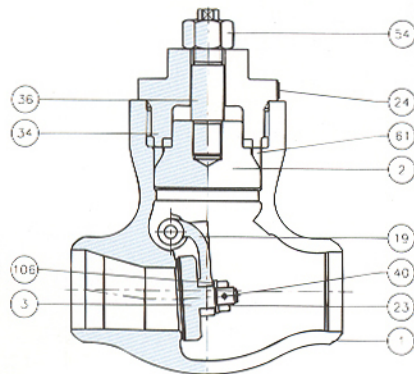
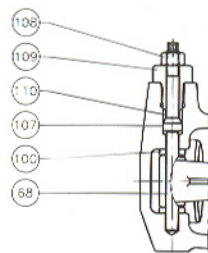
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	8	8-1/2	9-1/2	11-1/2	14	16	19-1/2	24-1/2	27-1/2	31	34	38-1/2	38-1/2	51
	mm	203	216	241	292	356	406	495	622	698	787	864	978	978	1295
H	inch	5.91	6.50	7.09	7.87	9.06	9.84	11.61	13.19	15.12	17.64	21.26	22.01	24.41	25.59
	mm	150	165	180	200	230	250	295	335	384	448	540	559	620	650
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489	590

CLASS 300

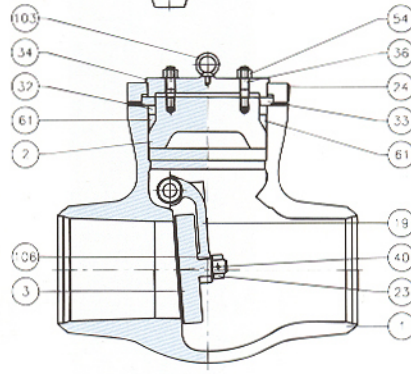
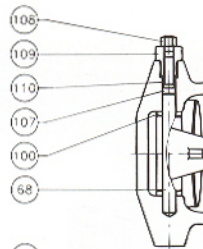
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	10-1/2	11-1/2	12-1/2	14	15-3/4	17-1/2	21	24-1/2	28	33	34	38-1/2	40	53
	mm	267	292	318	356	400	444	533	622	711	838	864	978	1016	1346
H	inch	7.05	7.56	8.07	8.66	10.12	10.63	11.61	13.27	14.57	16.14	18.66	22.83	25.39	29.88
	mm	179	192	205	220	257	270	295	337	370	410	474	580	645	759
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.00
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489	585

CLASS 600

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	11-1/2	13.0	14.0	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	inch	8.27	8.62	10.51	11.77	13.27	15.00	17.72	19.09	21.85	22.44	24.02	25.59	26.77	28.35
	mm	210	219	267	299	337	381	450	485	555	570	610	650	680	720
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	7.88	9.75	11.75	12.88	14.75	16.50	18.25	22.00
	mm	51	64	76	102	127	152	200	248	298	327	375	419	464	560



2" ~ 5"

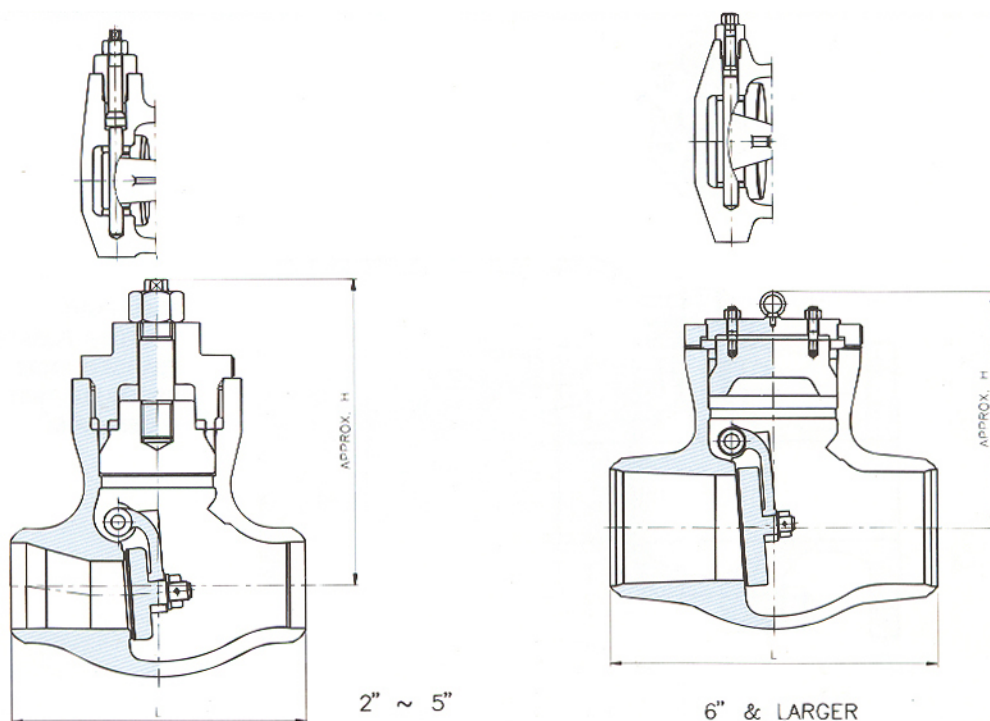


6" & LARGER

ASME/ANSI B16.34
 FULL PORT
 PRESSURE SEAL BONNET
 INTEGRAL SEAT
 BUTTWELDING &
 FLANGED ENDS
 PRESSURE TEST
 - MSS SP-61
 - API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)						
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
3	Disc	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
19	Hinge	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
23	Retaining Nut	1	A194-2H	A194-8					
24	Nameplate	1	ALUMINUM						
32	Spacer Ring	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
33	Split Ring	1 set	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
34	Retainer	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
36	Retainer Bolt	1/1 set	A193-B7 A193-B7/A193-B16						
40	Split Pin	1	STEEL						
54	Retainer Bolt Nut	1/1 set	A194-2H/A194-8						
61	Seal Ring	1	SOFT STEEL						A182-F316L
68	Hinge Pin	1	A276-431						
100	Hinge Pin Washer	2	A276-410						
103	Eye Bolt	1	A108-1020						
106	Disc Washer	1	A108-1020	A276-304					
107	Plug Bolt	2	A276-431						
108	Plug Bolt Nut	2	A194-2H	A194-2H/A194-8					
109	Plug Bolt Retainer	2	A276-410						
110	Hinge Pin Seal Ring	2	SOFT STEEL						A182-F316L



DIMENSIONS

CLASS 900

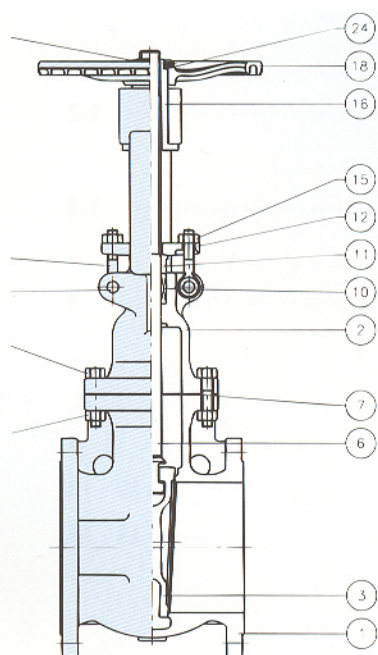
NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16	18
DN	65	80	100	125	150	200	250	300	350	400	450	
L (BW)	inch	10	12	14	17	20	26	31	36	39	43	48
	mm	254	305	356	432	508	660	787	914	991	1092	1219
L (FLG' D)	inch	16-1/2	15	18	22	24	29	33	38	40-1/2	44-1/2	48
	mm	419	381	457	559	610	737	838	956	1029	1130	1219
H	inch	10.83	11.81	12.72	16.54	20.00	24.09	27.28	31.42	34.33	37.20	40.55
	mm	275	300	323	420	508	612	693	798	872	945	1030
d	inch	2.05	2.05	2.91	6.32	4.25	5.51	6.77	8.19	9.21	10.47	11.89
	mm	52	52	74	92	108	140	172	208	234	266	302
Weight (BW)	lbs	110	121	220	375	529	915	1323	1488	2039	2557	3781
	kg	50	55	100	170	240	415	600	675	925	1160	1715
Weight (FLG' D)	lbs	132	413	39	529	717	1246	1687	1984	2601	3362	4398
	kg	60	65	140	240	325	565	765	900	1180	1525	1995

CLASS 1500

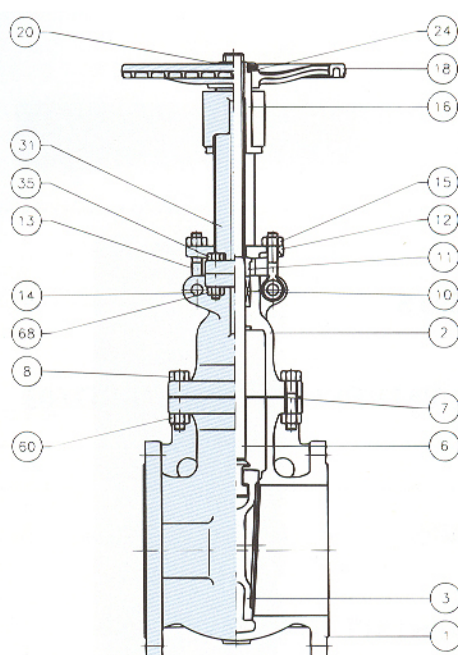
NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16
DN	65	80	100	125	150	200	250	300	350	400	
L	inch	10	12	16	19	22	28	34	39	42	47
	mm	254	305	406	483	559	711	864	991	1067	1194
H	inch	9.92	11.85	13.70	16.69	15.75	19.33	21.26	25.67	27.87	31.38
	mm	252	301	348	424	400	491	540	652	708	797
d	inch	1.89	2.17	2.95	3.90	4.53	6.06	6.89	8.46	9.25	9.92
	mm	48	55	75	99	115	154	175	215	235	252
Weight	lbs	77	99	176	253	396	594	946	1386	3080	3520
	kg	35	45	80	115	180	270	430	630	1400	1600

CLASS 2500

NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16
DN	65	80	100	125	150	200	250	300	350	400	
L	inch	13	14-1/2	18	21	24	30	36	41	44	49
	mm	330	368	457	533	610	762	914	1041	1118	1245
H	inch	9.84	10.67	15.20	16.22	17.95	21.89	24.21	28.03	30.83	34.49
	mm	250	271	386	412	456	556	615	712	783	876
d	inch	1.73	1.93	2.17	3.27	3.78	5.00	6.30	7.28	8.46	9.17
	mm	44	49	55	83	96	127	160	185	215	233
Weight	lbs	110	154	242	286	396	836	1606	2464	3289	3960
	kg	50	70	110	130	180	380	730	1120	1495	1800



2" ~ 6"

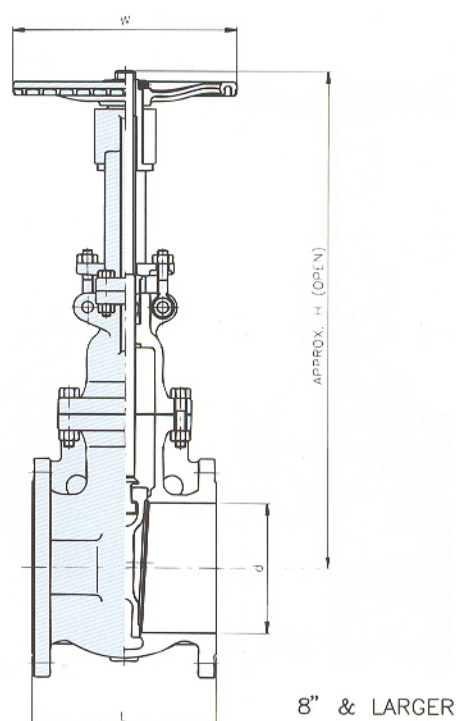
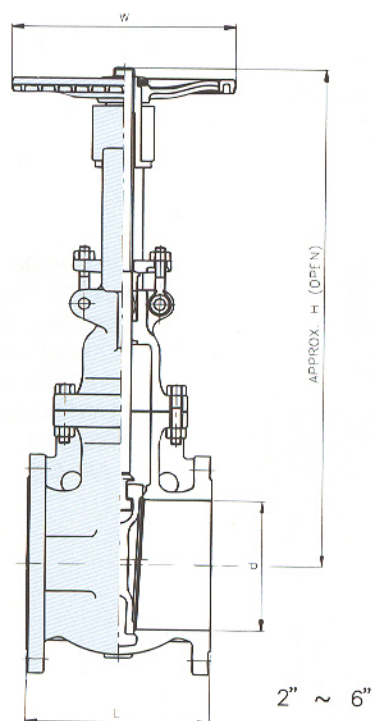


8" & LARGER

FULL PORT
BOLTED BONNET
OUTSIDE SCREW & YOKE
FLEXIBLE WEDGE DISC
INTEGRAL SEATS
FLANGED ENDS
PRESSURE TEST
- API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
2	Bonnet	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
3	Disc	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
4	Seat Ring	2	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
6	Stem	1	A276-304	A276-316				
7	Gasket	1	ASBESTOS JOINT SHEET					
8	Bonnet Bolt	1 set	A193-B8					
10	Gland Packing	1 set	TEFLON IMPREGNATED ASBESTOS					
11	Gland	1	A276-304	A276-316				
12	Gland Flange	1	A351-CF8					
13	Gland Bolt	2	A193-B8					
14	Gland Bolt Pin	2	A276-304					
15	Gland Bolt Nut	2	A194-8					
16	Sleeve	1	A439-D2C					
17	Sleeve Washer	1	-					
18	Handwheel	1	A536					
20	Handwheel Nut	1	A108-1020					
24	Nameplate	1	ALUMINUM					
31	Yoke	1	A351-CF8					
35	Yoke Bolt	1	A193-B8					
60	Bonnet Bolt Nut	1 set	A194-8					
68	Yoke Bolt Nut	4	A194-8					



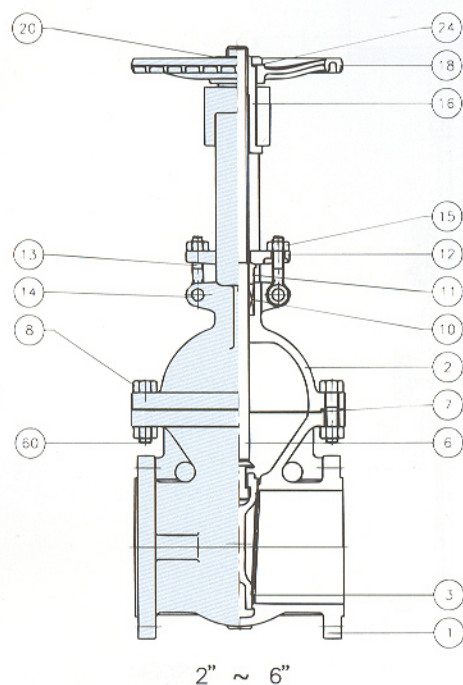
DIMENSIONS

CLASS 150

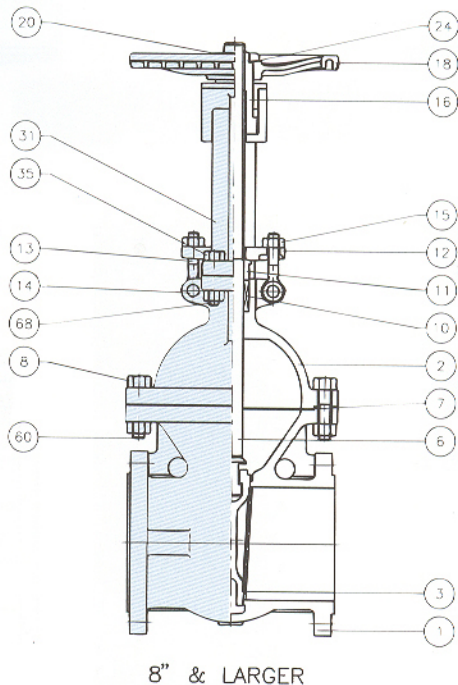
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	7	7-1/2	8	9	10	10-1/2	11-1/2	13	14	15	16	17	18
	mm	178	190	203	229	254	267	292	330	356	381	406	432	457
H	inch	13.43	15.31	18.50	22.83	25.20	30.71	38.58	47.64	55.91	59.92	69.49	75.31	84.17
	mm	341	389	470	580	640	780	980	1210	1420	1522	1765	1913	2138
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489
W	inch	6.30	7.09	7.87	8.86	9.84	9.84	11.81	13.78	15.75	17.72	19.69	22.05	24.80
	mm	160	180	200	225	250	250	300	350	400	450	500	560	630

JIS 10kg/cm²

Nom.	In.	2	2-1/2	3	4	5	6	8	10	12
Size	DN	50	65	80	100	125	150	200	250	300
L	inch	7.01	7.48	7.99	9.02	10.00	10.51	11.50	13.00	14.02
	mm	178	190	203	229	254	267	292	330	356
H	inch	13.40	15.30	18.50	22.80	25.20	30.70	38.60	47.60	55.90
	mm	320	375	445	523	606	710	910	1117	1324
d	inch	1.97	2.56	3.15	3.94	4.92	5.91	7.87	9.84	11.81
	mm	50	65	80	100	125	150	200	250	300
W	inch	6.30	7.09	7.87	8.86	9.84	9.84	11.81	13.78	15.75
	mm	160	180	200	225	250	250	300	350	400



2" ~ 6"

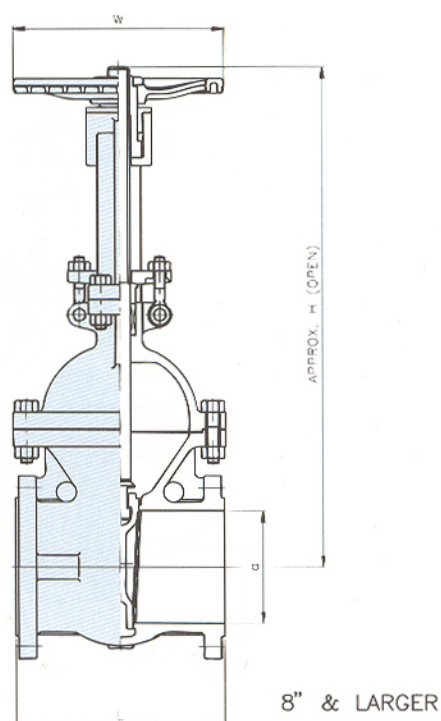
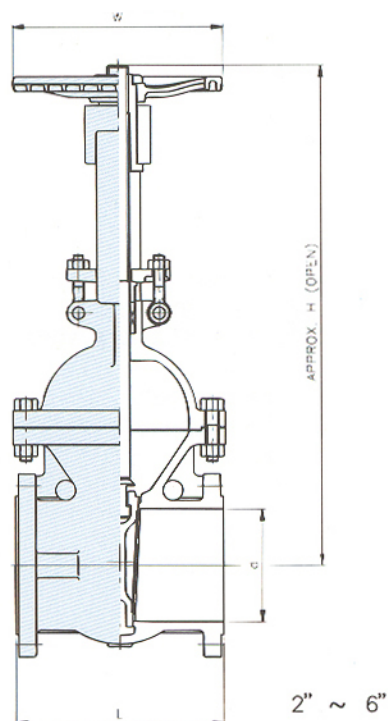


8" & LARGER

FULL PORT
BOLTED BONNET
OUT SIDE SCREW & YOKE
FLEXIBLE WEDGE DISC
INTEGRAL SEATS
FLANGED ENDS
PRESSURE TEST
- API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
2	Bonnet	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
3	Disc	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
4	Seat Ring	2	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
6	Stem	1	A276-304	A276-316				
7	Gasket	1	SS304 + ASBESTOS					
8	Bonnet Bolt	1 set	A193-B8					
10	Gland Packing	1 set	TEFLON IMPREGNATED ASBESTOS					
11	Gland	1	A276-304	A276-316				
12	Gland Flange	1	A351-CF8					
13	Gland Bolt	2	A193-B8					
14	Gland Bolt Pin	2	A276-304					
15	Gland Bolt Nut	2	A194-8					
16	Sleeve	1	A439-D2C					
17	Sleeve Washer	1	-					
18	Handwheel	1	A536					
20	Handwheel Nut	1	A108-1020					
24	Nameplate	1	ALUMINUM					
31	Yoke	1	A351-CF8					
35	Yoke Bolt	1	A193-B8					
60	Bonnet Bolt Nut	1 set	A194-8					
68	Yoke Bolt Nut	4	A194-8					



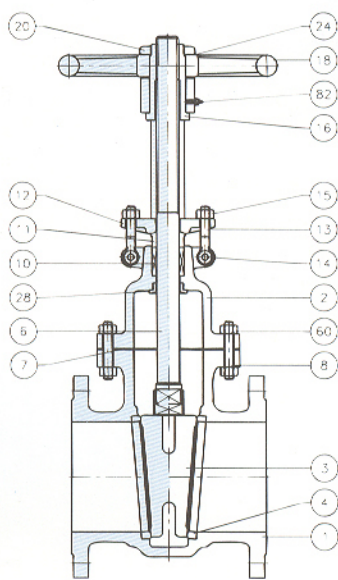
DIMENSIONS

CLASS 300

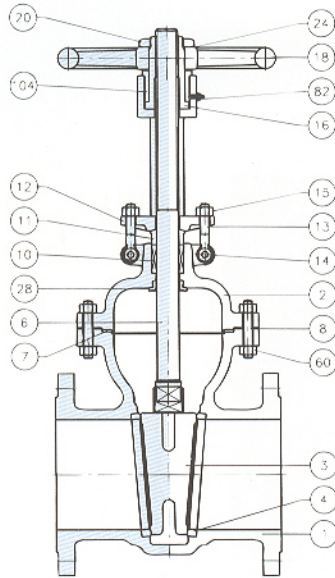
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	8-1/2	9-1/2	11-1/8	12	15	15-7/8	16-1/2	18	19-3/4	30	33	36	39
	mm	216	241	283	304	381	403	419	457	502	762	838	914	991
H	inch	16.22	17.72	20.55	24.88	28.15	34.06	39.92	49.25	56.50	63.46	-	-	-
	mm	412	450	522	632	715	865	1014	1251	1435	1612	-	-	-
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489
W	inch	7.68	7.68	8.47	10.63	13.98	13.98	15.75	17.72	19.69	22.05	-	-	-
	mm	195	195	215	270	355	355	400	450	500	560	-	-	-

JIS 20kg/cm²

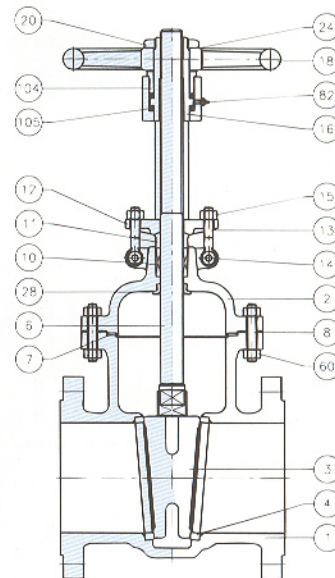
NPS	In.	2	2-1/2	3	4	6	8	10	12
	DN	50	65	80	100	150	200	250	300
L	inch	8.50	9.49	11.14	11.97	15.87	16.50	18.00	19.76
	mm	216	241	283	304	403	419	457	502
H	inch	16.38	17.91	20.79	24.21	31.42	40.16	48.11	56.73
	mm	416	455	528	615	798	1020	1222	1441
d	inch	1.97	2.56	3.15	3.94	5.91	7.87	9.84	11.81
	mm	50	65	80	100	150	200	250	300
W	inch	7.87	7.87	9.84	9.84	13.78	15.75	17.72	15.75
	mm	200	200	250	250	350	400	450	500



Class 150



Class 300

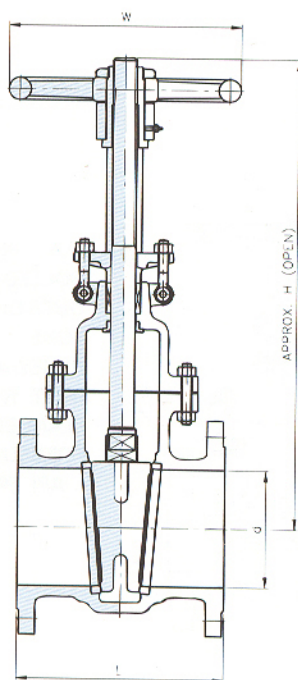


Class 600

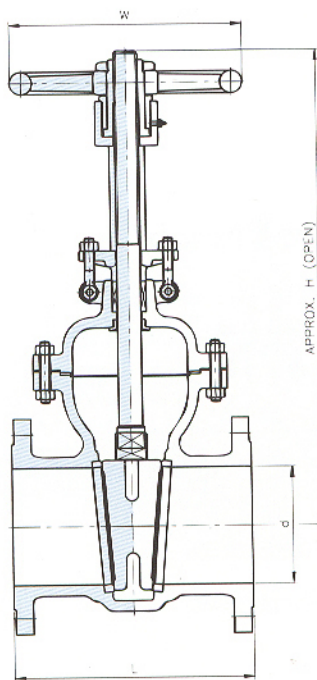
FULL PORT
BOLTED BONNET
OUTSIDE SCREW &
YOKE
FLEXIBLE WEDGE
DISC
RENEWABLE SEATS
BUTT WELDING &
FLANGED ENDS
PRESSURE TEST
- API 598

BILL OF MATERIALS

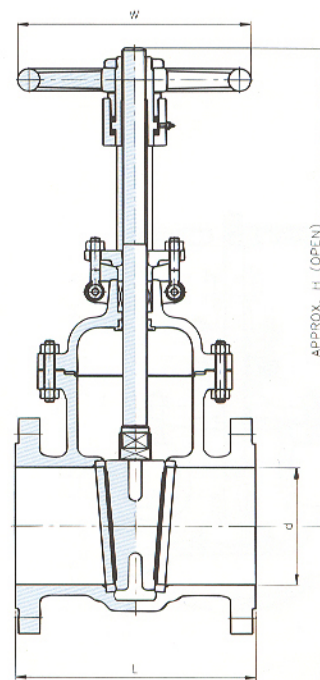
No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
2	Bonnet	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
3	Disc	1	A217-CA15				A351-CF8	
4	Seat Ring	2	A217-CA15				A351-CF8	
6	Stem	1	A276-410				A276-304	
7	Gasket	1	-					
8	Bonnet Bolt	1 set	A193-B7	A193-B7/B16			A193-B8	
10	Gland Packing	1 set	-					
11	Gland	1	A276-410				A276-304	
12	Gland Flange	1	A216-WCB					
13	Gland Bolt	2	A307-B					
14	Gland Bolt Pin	2	A276-410					
15	Gland Bolt Nut	2	A563-B					
16	Sleeve	1	A439-D2C					
18	Handwheel	1	A536					
20	Handwheel Nut	1	A108-1020					
24	Nameplate	1	ALUMINUM					
28	Backseat Bush	1	A276-410					
35	Yoke Bolt	1 set	A307-B					
60	Bonnet Bolt Nut	1 set	A194-2H	A194-2H/4			A194-8	
68	Yoke Bolt Nut	1 set	A563-B					
82	Grease Nipple	1	Brass					
104	Sleeve Nut	1	A216-WCB					
105	Thrust Bearing	1 set	Commercial					



Class 150



Class 300



Class 600

DIMENSIONS

CLASS 150

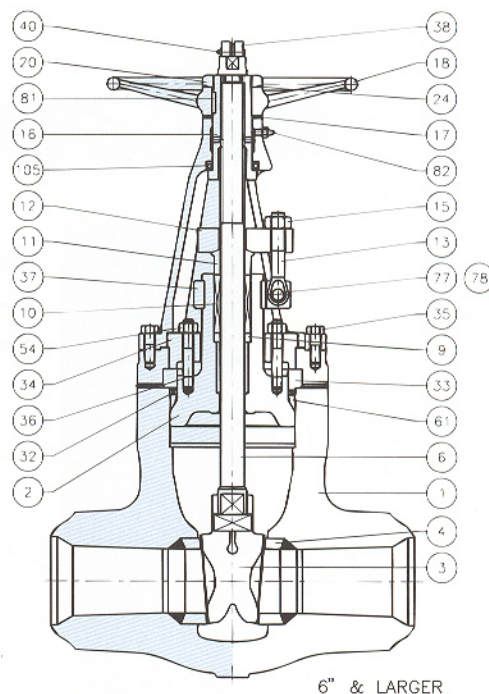
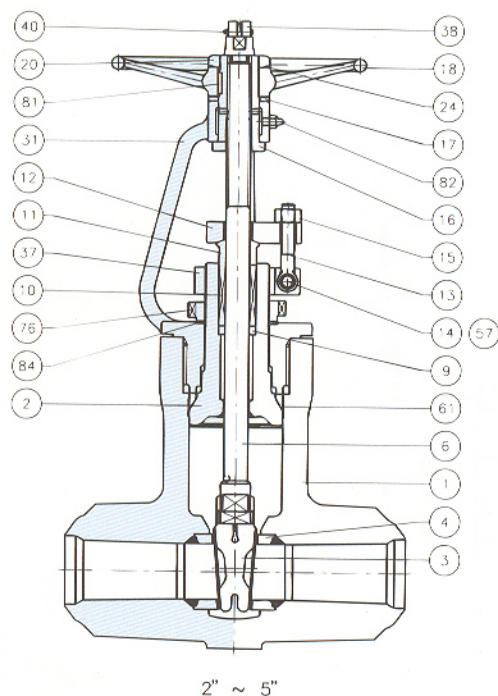
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	7	7-1/2	8	9	10	10-1/2	11-1/2	13	14	15	16	17	18	20
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508
H	inch	14.88	17.52	18.74	22.76	27.64	30.39	37.99	47.24	55.00	60.12	68.50	81.77	89.37	105.00
	mm	378	445	476	578	702	772	965	1200	1397	1527	1740	2077	2270	2667
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489	590
W	inch	7.87	7.87	9.84	9.84	11.81	11.81	13.78	15.75	17.72	19.69	19.69	23.62	23.62	23.62
	mm	200	200	250	250	300	300	350	400	450	500	500	600	600	600

CLASS 300

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	8-1/2	9-1/2	11-1/8	12	15	15-7/8	16-1/2	18	19-3/4	30	33	36	39	45
	mm	216	241	283	305	381	403	419	457	502	762	838	914	991	1143
H	inch	16.26	18.74	19.88	23.78	30.75	31.89	40.39	49.25	57.01	66.85	80.12	89.65	96.77	112.84
	mm	413	476	505	604	781	810	1026	1251	1448	1698	2035	2277	2458	2867
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.00
	mm	51	64	76	102	127	152	203	254	305	337	387	438	489	585
W	inch	7.87	7.87	9.84	9.84	11.81	13.78	15.75	17.72	19.69	19.69	21.65	21.65	23.62	23.62
	mm	200	200	250	250	300	350	400	450	500	500	550	550	600	600

CLASS 600

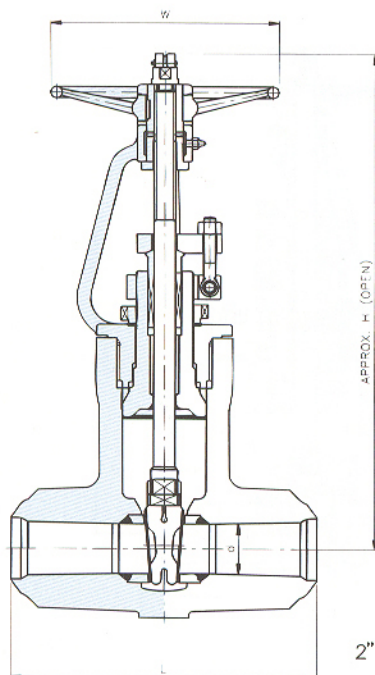
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L	inch	11-1/2	13.0	14.0	17	20	22	26	31	33	35	39	43	47	55
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
H	inch	17.36	19.25	20.87	25.75	33.74	40.98	49.25	60.24	70.24	73.23	85.04	94.49	96.85	118.50
	mm	441	489	530	654	857	1041	1251	1530	1784	1860	2160	2400	2460	3010
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	7.88	9.75	11.75	12.88	14.75	16.50	18.25	22.00
	mm	51	64	76	102	127	152	200	248	298	327	375	419	464	560
W	inch	7.87	9.84	9.84	11.81	15.75	19.69	19.69	23.62	23.62	23.62	23.62	27.56	27.56	31.50
	mm	200	250	250	300	400	500	500	600	600	600	600	700	700	800



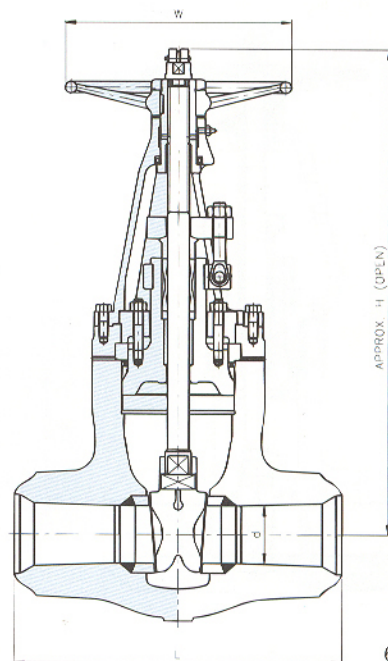
FULL PORT
PRESSURE SEAL
BONNET
OUTSIDE SCREW &
YOKE
SOLID & FLEXIBLE
WEDGE DISC
RENEWABLE SEATS
BUTTWELDING &
FLANGED ENDS
PRESSURE TEST
- MSS SP-61
- API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)						
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
3	Disc	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
4	Seat Ring	2	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
6	Stem	1	A276-431						
9	Packing Washer	1	A276-410						
10	Gland Packing	1 set	GRAPHITED ASBESTOS WITH INCONEL WIRE						
11	Gland	1	JIS C6782	A276-410					
12	Gland Flange	1	A105						
13	Gland Bolt	2	A276-410						
14	Gland Bolt Pin	2	A194-2H						
15	Gland Bolt Nut	2	A276-410						
16	Sleeve	1	JIS C6782						
17	Sleeve Washer	1	JIS C6782						
18	Handwheel	1	A536						
20	Handwheel Nut	1	A108-1020						
24	Nameplate	1	ALUMINUM						
31	Yoke	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
32	Spacer Ring	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
33	Split Ring	1 set	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M
34	Retainer	1	A105/A216-WCB						
35	Yoke Bolt	1 set	A193-B7						
36	Retainer Bolt	1 set	A139-B7/B16						
37	Gland Bolt Holder	1	A216-WCB						
38	Stopper	1	A108-1020						
40	Split Pin	1	STEEL						
54	Retainer Bolt Nut	1 set	A194-2H/4						
57	Retaining Ring	4	A686-W1						
61	Seal Ring	1	SOFT STEEL					A182-F316L	
76	Bonnet Clamp	1	A105/A216-WCB						
77	Holder Bolt	2	A193-B7						
78	Holder Bolt Nut	4	A194-2H						
81	Handwheel Key	1	A108-1045						
82	Grease Nipple	1	STEEL						
84	Clamp Washer	1	A108-1045						
105	Thrust Bearing	1 set	COMMERCIAL						



2" ~ 5"



6" & LARGER

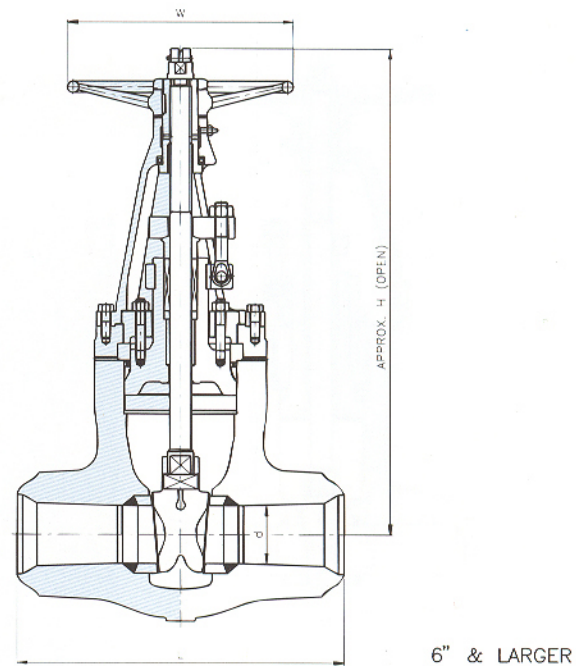
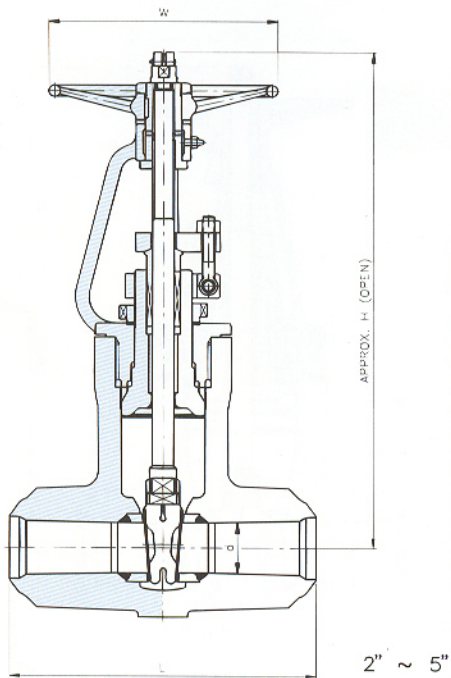
DIMENSIONS

CLASS 900

NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	10	12	14	17	20	26	31	36	39	43	48	52
(BW)	mm	254	305	356	432	508	660	787	914	991	1092	1219	1321
L	inch	16-1/2	15	18	22	24	29	33	38	40-1/2	44-1/2	48	52
(FLG' D)	mm	419	381	457	559	610	737	838	956	1029	1130	1219	1321
H	inch	25.98	27.12	33.46	36.22	41.34	55.91	58.86	71.65	77.76	81.89	88.19	96.65
	mm	660	690	850	920	1050	1420	1495	1820	1975	2080	2240	2455
d	inch	2.56	2.56	3.54	3.94	4.92	6.89	7.87	9.84	10.83	11.81	13.78	14.76
	mm	65	65	90	100	125	175	200	250	275	300	350	375
W	inch	10.24	10.24	14.17	14.17	18.11	22.05	22.05	27.56	31.50	31.50	35.43	39.37
	mm	260	260	360	360	460	560	560	700	800	800	900	1000
Weight	lbs	187	209	320	419	628	1168	1433	2315	2910	3274	3814	5313
(BW)	kg	85	95	145	190	285	530	650	1050	1320	1485	1730	2410
Weight	lbs	209	231	419	584	816	1499	1797	2780	3483	4101	4409	5975
(FLG' D)	kg	95	105	190	265	370	680	815	1270	1580	1860	2000	2710

CLASS 1500

NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	10	12	16	19	22	28	34	39	42	47	53	58
	mm	254	305	406	483	559	711	864	991	1067	1194	1346	1473
H	inch	24.09	24.76	28.70	37.01	37.17	46.97	52.36	60.08	65.47	72.56	82.76	95.63
	mm	612	629	729	940	944	1193	1330	1526	1663	1843	2102	2429
d	inch	1.89	2.17	2.95	3.90	4.53	6.06	6.89	8.46	9.25	9.92	11.18	13.39
	mm	48	55	75	99	115	154	175	215	235	252	284	340
W	inch	10.24	10.24	11.81	16.14	16.14	20.08	24.02	27.56	31.50	35.43	39.37	47.24
	mm	260	260	300	410	410	510	610	700	800	900	1000	1200
Weight	lbs	99	110	220	352	418	858	1430	1914	2662	4928	7920	9658
	kg	45	50	100	160	190	390	650	870	1210	2240	3600	4390



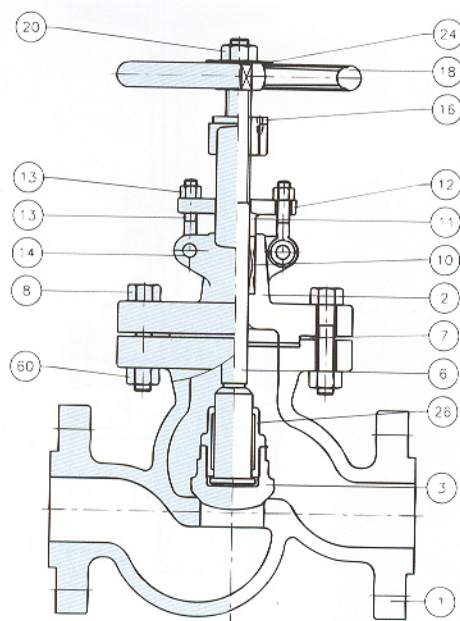
DIMENSIONS

CLASS 2500

NPS	In.	2-1/2	3	4	5	6	8	10	12	14	16	18
	DN	65	80	100	125	150	200	250	300	350	400	450
L	inch	13	14-1/2	18	21	24	30	36	41	44	49	55
	mm	330	368	457	533	610	762	914	1041	1118	1245	1397
H	inch	22.13	25.12	28.70	38.03	41.18	48.50	57.52	64.65	71.61	79.13	90.87
	mm	562	638	729	966	1046	1232	1461	1642	1819	2010	2308
d	inch	1.73	1.93	2.17	3.27	3.78	5.00	6.30	7.28	8.46	9.17	10.08
	mm	44	49	55	83	96	127	160	185	215	233	256
W	inch	9.06	10.24	11.81	16.14	18.11	22.05	27.56	31.50	39.37	43.31	55.12
	mm	230	260	300	410	460	560	700	800	1000	1100	1400
Weight	lbs	110	220	330	506	660	1562	2530	3740	4400	4994	8360
	kg	50	100	150	230	300	710	1150	1700	2000	2270	3800

CLASS 3500

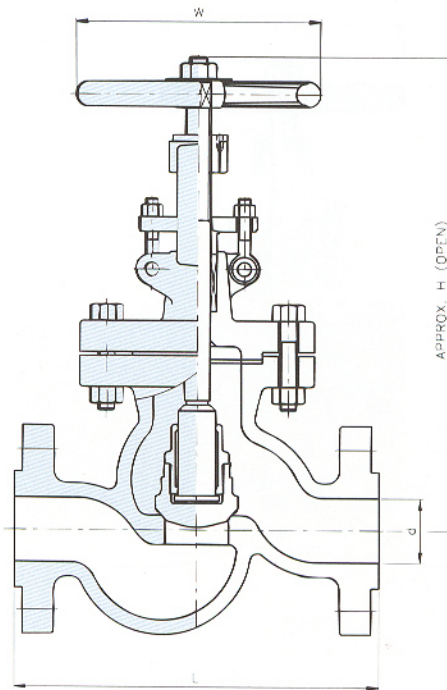
NPS	In.	2-1/2	3	4	5	6	8	10
	DN	65	80	100	125	150	200	250
L	inch	15.35	17.32	21.26	24.25	27.24	33.31	39.37
	mm	390	440	540	616	692	846	1000
H	inch	21.97	26.46	34.53	38.90	41.61	54.96	64.25
	mm	558	672	877	988	1057	1396	1632
d	inch	1.57	1.73	2.36	2.76	3.31	4.33	5.35
	mm	40	44	60	70	84	110	136
W	inch	9.06	11.81	16.14	16.14	18.11	22.05	27.56
	mm	230	300	410	410	460	560	700
Weight	lbs	209	396	704	990	1430	1870	4730
	kg	95	180	320	450	650	850	2150



**FULL PORT
BOLTED BONNET
OUTSIDE SCREW & YOKE
INTEGRAL SEAT
FLANGED ENDS
PRESSURE TEST
- API 598**

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
2	Bonnet	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
3	Disc	1	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A351-CF8C	A351-CN7M
6	Stem	1	A276-304	A276-316				
7	Gasket	1	ASBESTOS JOINT SHEET/SS316 + ASBESTOS *					
8	Bonnet Bolt	1 set	A193-B8					
10	Gland Packing	1 set	TEFLON IMPREGNATED ASBESTOS					
11	Gland	1	A276-304	A276-316				
12	Gland Flange	1	A351-CF8					
13	Gland Bolt	2	A193-B8					
14	Gland Bolt Pin	2	A276-304					
15	Gland Bolt Nut	2	A194-8					
16	Sleeve	1	A439-D2C					
18	Handwheel	1	A536					
20	Handwheel Nut	1	A108-1020					
24	Nameplate	1	ALUMINUM					
26	Disc Nut	1	A351-CF8					
35	Yoke Bolt	1	A193-B8					
60	Bonnet Bolt Nut	1 set	A194-8					



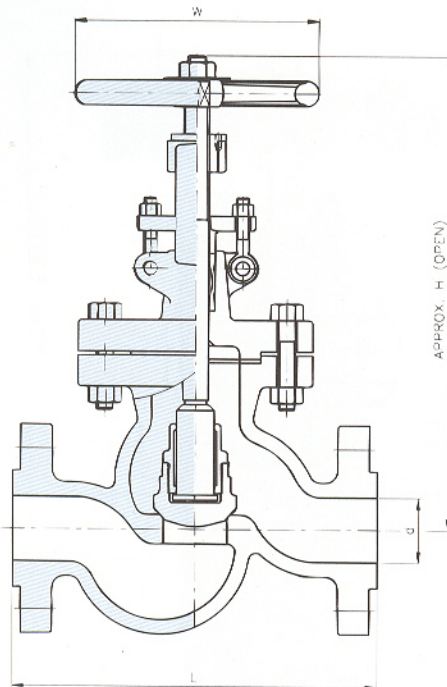
DIMENSIONS

CLASS 150

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	8	8-1/2	9-1/2	11-1/2	14	16	19-1/2	24-1/2	27-1/2	31	36	38-1/2	38-1/2
	mm	203	216	241	292	356	406	495	622	698	787	914	978	978
H	inch	13.43	15.67	18.50	22.83	27.17	30.71	37.52	48.50	56.50	60.71	70.00	-	-
	mm	341	398	470	580	690	780	953	1232	1435	1542	1778	-	-
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25	-	-
	mm	51	64	76	102	127	152	203	254	305	337	387	-	-
W	inch	7.09	7.09	7.87	8.82	11.02	11.02	13.78	15.75	17.72	19.69	22.05	-	-
	mm	180	180	200	224	280	280	350	400	450	500	560	-	-

JIS 10kg/cm²

NPS	In.	2	2-1/2	3	4	5	6	8	10	12
	DN	50	65	80	100	125	150	200	250	300
L	inch	7.99	8.50	9.49	11.50	14.02	15.98	19.49	24.49	27.48
	mm	203	216	241	292	356	406	495	622	698
H	inch	9.06	9.57	11.26	12.80	14.96	17.52	21.46	25.59	28.98
	mm	230	243	286	325	380	445	545	650	736
d	inch	1.97	2.56	3.15	3.94	4.92	5.91	7.87	9.84	11.81
	mm	50	65	80	100	125	150	200	250	300
W	inch	6.30	7.09	7.87	8.86	9.84	11.81	13.78	17.72	19.69
	mm	160	180	200	225	250	300	350	450	500



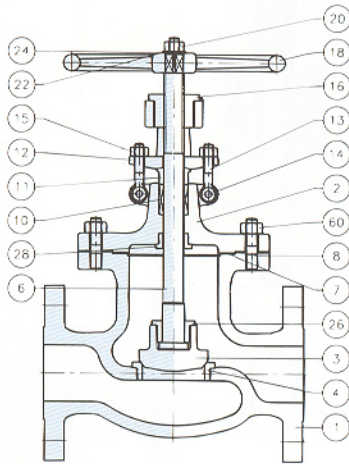
DIMENSIONS

CLASS 300

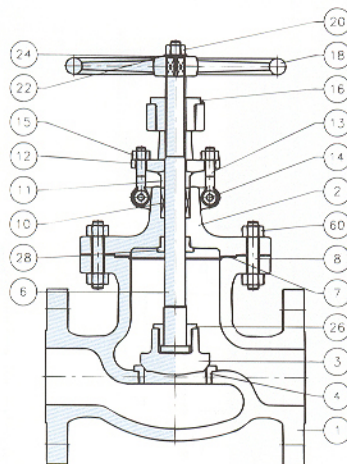
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
	DN	50	65	80	100	125	150	200	250	300	350	400	450	500
L	inch	10-1/2	11-1/2	12-1/2	14	15-3/4	17-1/2	22	24-1/2	28	30	33	36	39
	mm	267	292	318	356	400	444	559	622	711	765	838	915	991
H	inch	9.45	12.09	14.17	16.93	22.83	26.38	31.10	34.84	37.01	45.51	-	-	-
	mm	240	307	360	430	580	670	790	885	940	1156	-	-	-
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	-	-	-
	mm	51	64	76	102	127	152	203	254	305	337	-	-	-
W	inch	7.87	9.84	9.84	13.78	17.72	22.05	22.05	26.77	29.92	29.92	-	-	-
	mm	200	250	250	350	450	560	560	680	760	760	-	-	-

JIS 20kg/cm²

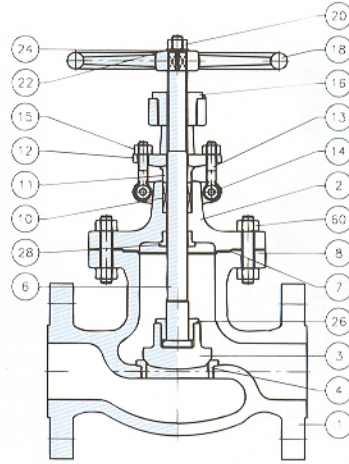
NPS	In.	2	2-1/2	3	4	6	8	10	12
	DN	50	65	80	100	150	200	250	300
L	inch	10.51	11.50	12.52	14.02	17.48	22.01	24.49	27.99
	mm	267	292	318	356	444	559	622	711
H	inch	13.86	15.75	17.32	20.04	26.38	31.10	34.84	37.20
	mm	352	400	440	509	670	790	885	945
d	inch	1.97	2.56	3.15	3.94	5.91	7.87	9.84	11.81
	mm	50	65	80	100	150	200	250	300
W	inch	7.87	9.84	9.84	13.78	17.72	22.05	26.77	29.92
	mm	200	250	250	350	450	560	680	760



Class 150



Class 300

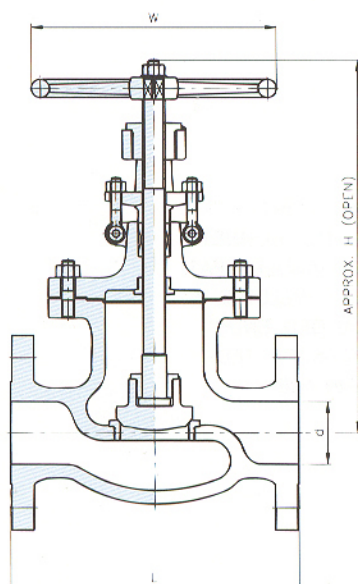


Class 600

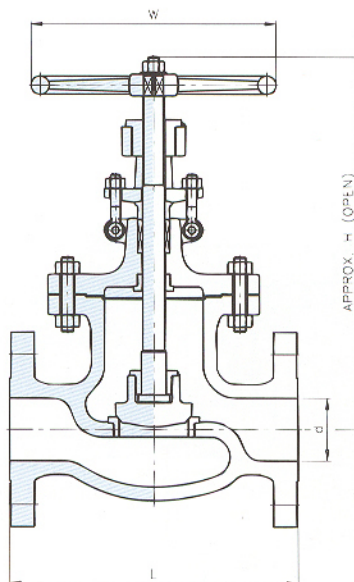
**FULL PORT
BOLTED BONNET
OUTSIDE SCREW &
YOKE
RENEWABLE SEAT
BUTT WELDING &
FLANGED ENDS
PRESSURE TEST
- API 598**

BILL OF MATERIALS

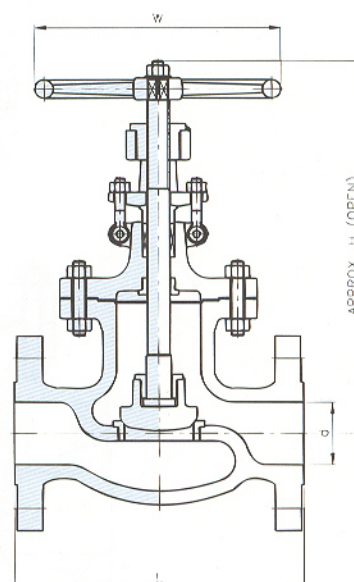
No.	Part Name	Q' ty	Materials (ASTM Specification)					
1	Body	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
2	Bonnet	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
3	Disc	1	A217-CA15				A351-CF8	
4	Seat Ring	1	A217-CA15				A351-CF8	
6	Stem	1	A276-410				A276-304	
7	Gasket	1	-					
8	Bonnet Bolt	1 set	A193-B7	A193-B7/B16			A193-B8	
10	Gland Packing	1 set	-					
11	Gland	1	A276-410				A276-304	
12	Gland Flange	1	A216-WCB					
13	Gland Bolt	2	A307-B					
14	Gland Bolt Pin	2	A276-410					
15	Gland Bolt Nut	2	A563-B					
16	Sleeve	1	A439-D2C					
18	Handwheel	1	A536					
20	Handwheel Nut	1	A194-8					
22	Handwheel Washer	1	A276-304					
24	Nameplate	1	ALUMINUM					
26	Disc Nut	1	A216-WCB	A217-WC1	A217-WC6	A217-WC9	A352-LC3	A352-LCB
28	Backseat Bush	1	A276-410					
60	Bonnet Bolt Nut	1 set	A194-2H	A194-2H/4			A194-8	



Class 150



Class 300



Class 600

DIMENSIONS

CLASS 150

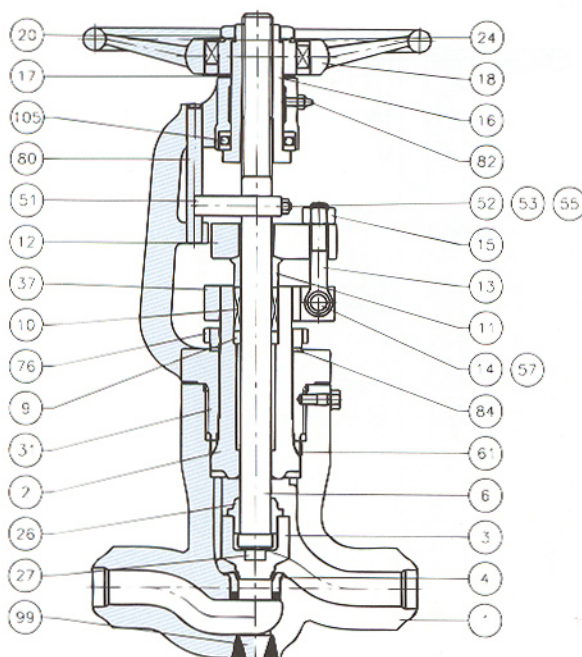
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16
	DN	50	65	80	100	125	150	200	250	300	350	400
L	inch	8	8-1/2	9-1/2	11-1/2	14	16	19-1/2	24-1/2	27-1/2	31	36
	mm	203	216	241	292	356	406	495	622	698	787	914
H	inch	12.60	13.78	15.35	18.11	19.29	20.08	24.02	28.74	35.04	50.79	63.78
	mm	320	350	390	460	490	510	610	730	890	1290	1620
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25
	mm	51	64	76	102	127	152	203	254	305	337	387
W	inch	7.87	7.87	9.84	11.81	11.81	13.98	17.72	19.69	22.05	23.62	23.62
	mm	200	200	250	300	300	355	450	500	560	600	600

CLASS 300

NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16
	DN	50	65	80	100	125	150	200	250	300	350	400
L	inch	10-1/2	11-1/2	12-1/2	14	15-3/4	17-1/2	22	24-1/2	28	-	-
	mm	267	292	318	356	400	444	559	622	711	991	1067
H	inch	13.78	17.32	17.32	20.08	23.62	26.57	28.35	37.01	51.57	61.02	66.93
	mm	350	440	440	510	600	675	720	940	1310	1550	1700
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25	15.25
	mm	51	64	76	102	127	152	203	254	305	337	387
W	inch	7.87	11.81	11.81	13.78	15.75	17.72	19.69	19.69	19.69	23.62	23.62
	mm	200	300	300	350	400	450	500	500	500	600	600

CLASS 600

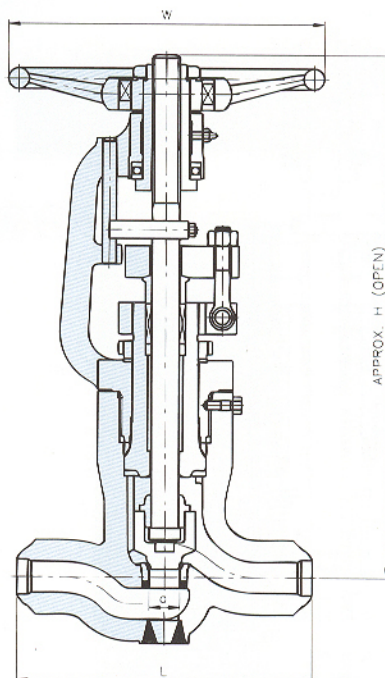
NPS	In.	2	2-1/2	3	4	5	6	8	10	12	14	16
	DN	50	65	80	100	125	150	200	250	300	350	400
L	inch	11-1/2	13.0	14.0	17	20	22	26	31	33	35	39
	mm	292	330	356	432	508	559	660	787	838	889	991
H	inch	17.99	20.59	23.74	27.01	31.77	36.22	55.12	62.01	66.14	70.87	75.98
	mm	457	523	603	686	807	920	1400	1575	1680	1800	1930
d	inch	2.00	2.50	3.00	4.00	5.00	6.00	7.88	9.75	11.75	12.88	14.75
	mm	51	64	76	102	127	152	200	248	298	327	375
W	inch	9.84	11.81	11.81	17.72	19.69	19.69	23.62	23.62	23.62	23.62	27.56
	mm	250	300	300	450	500	500	600	600	600	600	700



ASME/ANSI B16.34
 FULL PORT
 PRESSURE SEAL BONNET
 OUTSIDE SCREW & YOKE
 RENEWABLE SEAT
 BUTTWELDING &
 FLANGED ENDS
 PRESSURE TEST
 - MSS SP-61
 - API 598

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)							
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M	
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M	
3	Disc	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M	
4	Seat Ring	2	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M	
6	Stem	1	A276-431							
9	Packing Washer	1	A276-410							
10	Gland Packing	1 set	GRAPHITED ASBESTOS WITH INCONEL WIRE							
11	Gland	1	JIS C6782	A276-410						
12	Gland Flange	1	A105							
13	Gland Bolt	2	A276-410							
14	Gland Bolt Pin	2	A194-2H							
15	Gland Bolt Nut	2	A276-410							
16	Sleeve	1	JIS C6782							
17	Sleeve Washer	1	JIS C6782							
18	Handwheel	1	A536							
20	Handwheel Nut	1	A108-1020							
24	Nameplate	1	ALUMINUM							
26	Disc Nut	1	A276-410							
27	Disc Center	1	A193-B7							
31	Yoke	1	A216-WCB	A217-WC6	A217-WC9	A217-C5	A217-C12	A351-CF8	A351-CF8M	
51	Guide Plate	1 set	A108-1020							
52	Guide Plate Bolt	2	A108-1020							
53	Guide Plate Bolt Nut	2	A108-1020							
55	Guide Plate Pin	1	A108-1045							
80	Guide Bar	1	A276-304							
57	Retaining Ring	4	A686-W1							
61	Seal Ring	1	SOFT STEEL						A182-F316L	
76	Bonnet Clamp	1	A105/A216-WCB							
82	Grease Nipple	1	STEEL							
84	Clamp Washer	1	A108-1045							
99	Body Plug	1	A105	A182-F11	A182-F22	A182-F5	A192-F9	A182-F304	A182-F316	
105	Thrust Bearing	1 set	COMMERCIAL							



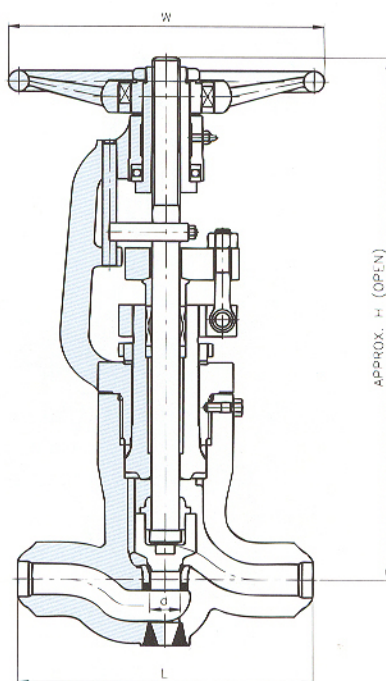
DIMENSIONS

CLASS 900

NPS	In.	2-1/2	3	4	5	6	8	10	12	14
	DN	65	80	100	125	150	200	250	300	350
L (BW)	inch	8-1/2	10	12	15	18	23	28	32	35
	mm	216	254	305	381	457	584	711	813	889
L (FLG' D)	inch	13	14	17	20	22	26	31	33	35
	mm	330	356	432	508	559	660	787	838	889
H	inch	25.79	27.95	32.87	38.98	43.31	52.17	61.42	69.49	75.20
	mm	655	710	835	990	1110	1325	1560	1765	1910
d	inch	2.56	2.95	3.94	4.92	5.91	7.87	9.84	11.81	13.78
	mm	65	75	100	125	150	200	250	300	350
W	inch	11.81	14.17	20.08	24.02	27.56	35.43	47.24	47.24	55.12
	mm	300	360	510	610	700	900	1200	1200	1400
Weight (BW)	lbs	110	165	309	463	650	1036	1808	250	3217
	kg	50	75	140	210	295	470	820	1175	1495
Weight (FLG' D)	lbs	143	187	386	606	805	1279	2050	2998	4134
	kg	65	85	175	275	365	580	930	1360	1875

CLASS 1500

NPS	In.	2-1/2	3	4	5	6	8	10	12
	DN	65	80	100	125	150	200	250	300
L	inch	13.39	15.35	18.90	22.83	24.80	30.31	36.61	41.73
	mm	340	390	480	580	630	770	930	1060
H	inch	28.82	32.80	36.61	39.29	44.29	52.13	56.10	65.87
	mm	732	833	930	998	1125	1324	1425	1637
d	inch	2.17	2.56	3.35	3.94	4.92	6.10	7.28	8.86
	mm	55	65	85	100	125	155	185	225
W	inch	16.14	20.08	22.05	24.02	31.50	35.43	39.37	47.24
	mm	410	510	560	610	800	900	1000	1200
Weight	lbs	220	352	528	594	968	1100	1540	2420
	kg	100	160	240	270	440	500	700	1100



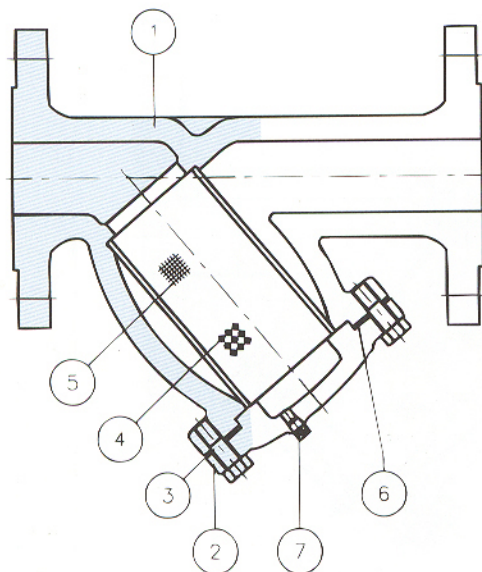
DIMENSIONS

CLASS 2500

NPS	In.	2-1/2	3	4	5	6	8	10
	DN	65	80	100	125	150	200	250
L	inch	16.54	18.50	22.44	25.99	29.92	35.04	42.91
	mm	420	470	570	660	760	890	1090
H	inch	33.62	37.28	42.72	51.65	54.84	61.57	72.36
	mm	854	947	1085	1312	1393	1564	1838
d	inch	1.93	2.17	2.95	3.94	4.53	5.35	7.48
	mm	49	55	75	100	115	136	190
W	inch	20.08	22.05	27.56	39.37	43.31	47.24	47.24
	mm	510	560	700	1000	1100	1200	1200
Weight	lbs	550	638	770	880	1100	1650	2640
	kg	250	290	350	400	500	750	1200

CLASS 3500

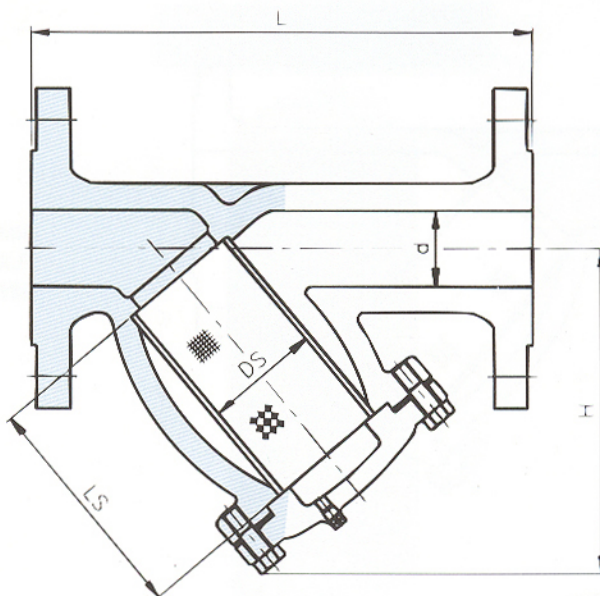
NPS	In.	2-1/2	3	4	5
	DN	65	80	100	125
L	inch	18.90	25.20	31.50	36.61
	mm	480	640	800	930
H	inch	32.60	41.50	43.11	52.36
	mm	828	1054	1095	1330
d	inch	1.73	1.93	2.56	3.35
	mm	44	49	65	85
W	inch	16.14	20.08	24.02	35.43
	mm	410	510	610	900
Weight	lbs	517	935	1100	1650
	kg	235	425	500	750



SIMPLEX / DUPLEX /
FLANGED / BUTT WELD /
RING JOINT ENDS

BILL OF MATERIALS

No.	Part Name	Q' ty	Materials (ASTM Specification)				
			A216-WCB	A217-WC6	A217-WC9	A351-CF8	A351-CF8M
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A351-CF8	A351-CF8M
2	Cover	1	A216-WCB	A217-WC6	A217-WC9	A351-CF8	A351-CF8M
3	Bonnet Bolt	1 set	A193-B7			A193-B8	
4	Holder of Screen	1	A672-B70			A312-TP304	
5	Screen	1	A515-70			A240-304	
6	Gasket	1	ASBESTOS			PTFE	
7	Drain Plug	1	A105	A182-F11	A182-F22	A182-F304	



DIMENSIONS

CLASS 150

NPS	In.	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12	14
	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
L	inch	4.92	5.51	6.50	7.01	7.68	8.66	10.31	11.42	13.46	15.75	18.70	22.44	25.98	31.50	35.43
	mm	125	140	165	178	195	220	262	290	342	400	475	570	660	800	900
H	inch	2.56	2.95	3.35	3.74	4.33	4.92	7.09	8.27	9.06	11.81	12.60	16.54	18.50	22.05	23.62
	mm	65	75	85	95	110	125	180	210	230	300	320	420	470	560	600
d	inch	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	13.25
	mm	15	20	25	32	38	51	64	76	102	127	152	203	254	305	337
DS	inch	0.83	1.02	1.22	1.50	1.81	2.32	2.95	3.50	0.43	5.55	6.57	8.62	10.39	12.76	14.37
	mm	21	26	31	38	46	59	75	89	109	141	167	219	264	324	365
LS	inch	1.22	1.91	2.15	2.48	2.56	3.44	4.53	5.43	6.22	10.16	10.71	13.82	14.37	16.73	18.31
	mm	31	48.5	54.5	63	65	87.5	115	138	158	258	272	351	365	425	465

JIS 10kg/cm²

NPS	In.	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12	14
	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
L	inch	4.92	5.51	6.50	7.01	7.68	8.66	10.31	11.42	13.46	15.75	18.70	22.44	25.98	31.50	35.43
	mm	125	140	165	178	195	220	262	290	342	400	475	570	660	800	900
H	inch	2.56	2.95	3.35	3.74	4.33	4.92	7.09	8.27	9.06	11.81	12.60	16.54	18.50	22.05	23.62
	mm	65	75	85	95	110	125	180	210	230	300	320	420	470	560	600
d	inch	0.59	0.79	0.98	1.26	1.57	1.97	2.56	3.15	3.94	4.92	5.91	7.87	9.84	11.81	13.39
	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300	340
DS	inch	0.83	1.02	1.22	1.50	1.81	2.32	2.95	3.50	0.43	5.55	6.57	8.62	10.39	12.76	14.37
	mm	21	26	31	38	46	59	75	89	109	141	167	219	264	324	365
LS	inch	1.22	1.91	2.15	2.48	2.56	3.44	4.53	5.43	6.22	10.16	10.71	13.82	14.37	16.73	18.31
	mm	31	48.5	54.5	63	65	87.5	115	138	158	258	272	351	365	425	465

LIST OF MATERIAL SPECIFICATIONS TO ASME/ANSI B16.34

Material Group No.	Normal Designation Steel	Forgings			Castings		
		ASTM (Spec-Grade)	JIS Equiv*	Notes	ASTM (Spec-Grade)	JIS Equiv*	Notes
1.1	Carbon	A105 A350-LF2	G3202-SFVC2A G2104-SFL2	(1) (3) (5) (10)	A216-WCB	G5151-SCPH2	(1)
1.2	Carbon				A216-WCC	G5102-SCW49	(1)
	2½Ni				A352-LC2	G5152-SCPL21	(10)
	3½Ni	A350-LF3	G3205-SFL3	(10)	A352-LC3	G5152-SCPL1	(10)
1.3	Carbon				A352-LCB	G5152-SCPL1	
1.4	Carbon	A350-LF1	G3205-SFL1	(10)			
1.5	C-½Mo	A182-F1	G3203-SFVAF2	(2) (11)	A217-WC1 A352-LC1	G5151-SCPH11 G5152-SCPL11	(2) (11) (10)
1.7	½Cr-½Mo	A182-F2	G3203-SFVAF1	(12)			
	Ni-Cr-½Mo				A217-WC4		(4) (12)
	Ni-Cr-1Mo				A217-WC5		(4) (13)
1.9	1Cr-½Mo	A182-F12	G3203-SFVA12	(4) (14)			
	1¼Cr-½Mo	A182-F11	G3203-SFVA11A	(4) (14)	A217-WC6	G5151-SCPH21	(4) (15)
1.10	2¼Cr-1Mo	A182-F22	GS203-SFVA22B	(14)	A217-WC9	G5151-SCPH32	(4) (15)
1.11	3Cr-1Mo	A182-F21	G3203-SFVA21B	(14)			
1.13	5Cr-½Mo	A182-F5a A182-F5	G3203-SFVAF5D G3203-SFVAF5B		A217-C5	G5151-SCPH61	(4)
1.14	9Cr-1Mo	A182-F9	G3203-SFVAF9		A217-C12		(4)
2.1	18Cr-8Ni	A182-F304 A182-F304H	G3214-SUSF304 G3214-SUSF304H	(6)			
	18Cr-8Ni				A351-CF3 A351-CF8	G5121-SCS19A G5121-SCS13A	(16) (6)
2.2	16Cr-12Ni-2Mo	A182-F316 A182-F316H	G3214-SUSF316 G3214-SUS3F316H	(6)			
	18Cr-8Ni				A351-CF3A A351-CF8A		(10) (10)
	18Cr-9Ni-2Mo	A351-CF3M	G5121-SCS16A	(17)	A351-CF8M	G5121-SCS14A	(6)
2.3	18Cr-8Ni	A182-F304L	G3214-SUSF304L	(16)			
	16Cr-12Ni-2Mo	A182-F316L	G3214-SUSF316L				
2.4	18Cr-10Ni-Ti	A182-F321 A182-F321H	G3214-SUSF321 G3214-SUSF321H	(6) (12)			
	18Cr-10Ni-Cb	A182-F347 A182-F347H A182-F348 A182-F348H	G3214-SUSF347 G3214-SUSF347H	(6) (12) (6) (12)	A351-CF8C	G5121-SCS21	(6)
2.6	25Cr-12Ni				A351-CH8 A351-CH20	G5121-SCS17	(6) (6)
	25Cr-20Ni	A182-F310	G3214-SUSF310	(6) (7)	A351-CK20	G5121-SCS18	(6)
3.1	Cr-Ni-Fe-Mo Cu-Cb Alloy 20Cb	B462		(8)	A351-CN7M	G5121-SCS23	(9)

Notes.

- (1) Upon prolonged exposure to temperatures above about 800°F (425°C) the carbide
- (2) Upon prolonged exposure to temperatures above about 875°F (470°C) the carbide
- (3) Only killed steel shall be used above 850°F (455°C).
- (4) Use normalized and tempered material only.
- (5) Permissible, but not recommended for prolonged usage above 800°F (425°C).
- (6) At temperatures over 100°F (540°C) use when the carbon is 0.04% or high.
- (7) For service temperature of 1050°F (565°C) and above assurance must be provided
- (8) Use annealed material only, phase carbon steel may be converted to graphite.
- (9) Use solution annealed material only.
- * Given for reference only

- (10) Not to be used over 650°F (345°C), phase carbon molybdenum steel may be converted to graphite.
- (11) Permissible, but not recommended for prolonged upon above about 850°F (455°C).
- (12) Not to be used over 1000°F (540°C).
- (13) Not to be used over 1050°F (565°C).
- (14) Permissible, but not recommended for prolonged upon above about 1100°F (595°C).
- (15) Not to be used over 1100°F (595°C).
- (16) Not to be used over 800°F (425°C), that grain size is not finer than ASTM No. 6.
- (17) Not to be used over 850°F (455°C).

LIST OF CONVERSION TABLE KILOGRAM/CENTIMETER² TO POUND/INCH²

1 to 60			61 to 200			205 to 700			710 to 1600			1620 to 2800		
Kgs./cm ²			Kgs./cm ²			Kgs./cm ²			Kgs./cm ²			Kgs./cm ²		
Lbs./in. ²			Lbs./in. ²			Lbs./in. ²			Lbs./in. ²			Lbs./in. ²		
1 Kgs./cm ² = 14.223 Lbs./in. ²			1 Lbs./in. ² = 0.0703 Kgs./cm ²											
0.07	1	14.22	4.29	61	868	14.41	205	2,916	49.92	710	10,098	113.90	1,620	23,041
0.14	2	28.45	4.36	62	882	14.76	210	2,987	50.62	720	10,241	115.30	1,640	23,326
0.21	3	42.67	4.43	63	896	15.12	215	3,058	51.32	730	10,383	116.71	1,660	23,610
0.28	4	56.89	4.50	64	910	15.47	220	3,129	52.03	740	10,525	118.12	1,680	23,895
0.35	5	71.12	4.57	65	925	15.82	225	3,200	52.73	750	10,667	119.52	1,700	24,179
0.42	6	85.34	4.64	66	939	16.17	230	3,271	53.43	760	10,809	120.93	1,720	24,464
0.49	7	99.56	4.71	67	953	16.52	235	3,342	54.14	770	10,952	122.33	1,740	24,748
0.56	8	113.78	4.78	68	967	16.87	240	3,414	54.84	780	11,094	123.74	1,760	25,032
0.63	9	128.01	4.85	69	981	17.23	245	3,485	55.54	790	11,236	125.15	1,780	25,317
0.70	10	142.23	4.92	70	996	17.58	250	3,556	56.25	800	11,378	126.56	1,800	25,601
0.77	11	156.46	4.99	71	1,010	17.93	255	3,627	56.95	810	11,521	127.96	1,820	25,886
0.84	12	170.68	5.06	72	1,024	18.28	260	3,698	57.65	820	11,663	129.36	1,840	26,170
0.91	13	184.90	5.13	73	1,038	18.63	265	3,769	58.35	830	11,805	130.76	1,860	26,455
0.98	14	199.12	5.20	74	1,053	18.98	270	3,840	59.06	840	11,947	132.18	1,880	26,739
1.05	15	213.35	5.27	75	1,067	19.33	275	3,911	59.76	850	12,090	133.58	1,900	27,024
1.12	16	227.57	5.34	76	1,081	19.69	280	3,982	60.46	860	12,232	134.99	1,920	27,308
1.20	17	241.79	5.41	77	1,095	20.04	285	4,054	61.17	870	12,374	136.39	1,940	27,593
1.27	18	256.01	5.48	78	1,109	20.39	290	4,125	61.87	880	12,516	137.80	1,960	27,877
1.34	19	270.24	5.55	79	1,124	20.74	295	4,195	62.57	890	12,658	139.21	1,980	28,162
1.41	20	284.46	5.62	80	1,138	21.09	300	4,267	63.27	900	12,801	140.61	2,000	28,446
1.48	21	298.68	5.69	81	1,152	21.80	310	4,409	63.98	910	12,943	142.02	2,020	28,730
1.55	22	312.91	5.77	82	1,166	22.50	320	4,551	64.68	920	13,085	143.43	2,040	29,015
1.62	23	327.13	5.84	83	1,181	23.20	330	4,694	65.39	930	13,227	144.83	2,060	29,299
1.69	24	341.35	5.91	84	1,195	23.90	340	4,836	66.09	940	13,370	146.24	2,080	29,584
1.76	25	355.58	5.98	85	1,209	24.61	350	4,978	66.79	950	13,512	147.64	2,100	29,868
1.83	26	369.80	6.05	86	1,223	25.31	360	5,120	67.49	960	13,654	149.05	2,120	30,153
1.90	27	384.02	6.12	87	1,237	26.01	370	5,263	68.20	970	13,796	150.46	2,140	30,437
1.97	28	398.24	6.19	88	1,252	26.72	380	5,405	68.90	980	13,939	151.86	2,160	30,722
2.04	29	412.47	6.26	89	1,266	27.42	390	5,547	69.60	990	14,081	153.27	2,180	31,006
2.11	30	426.69	6.33	90	1,280	28.12	400	5,689	70.31	1,000	14,223	154.67	2,200	31,291
2.18	31	440.91	6.40	91	1,294	28.83	410	5,831	71.71	1,020	14,507	156.08	2,220	31,575
2.25	32	455.14	6.47	92	1,309	29.53	420	5,974	73.12	1,040	14,792	157.49	2,240	31,860
2.32	33	469.36	6.54	93	1,323	30.23	430	6,116	74.52	1,060	15,076	158.89	2,260	32,144
2.39	34	483.58	6.61	94	1,337	30.93	440	6,258	75.93	1,080	15,361	160.30	2,280	32,428
2.46	35	497.81	6.68	95	1,351	31.64	450	6,400	77.34	1,100	15,645	161.71	2,300	32,713
2.53	36	512.03	6.75	96	1,365	32.34	460	6,543	78.74	1,120	15,930	163.11	2,320	32,997
2.60	37	526.25	6.82	97	1,380	33.04	470	6,685	80.15	1,140	16,214	164.52	2,340	33,282
2.67	38	540.47	6.89	98	1,394	33.75	480	6,827	81.56	1,160	16,499	165.92	2,360	33,566
2.74	39	554.70	6.96	99	1,408	34.45	490	6,969	82.96	1,180	16,783	167.33	2,380	33,851
2.81	40	568.92	7.03	100	1,422	35.15	500	7,112	84.37	1,200	17,068	168.74	2,400	34,135
2.88	41	583.14	7.38	105	1,493	35.86	510	7,254	85.77	1,220	17,352	170.14	2,420	34,420
2.95	42	597.40	7.73	110	1,565	36.56	520	7,396	87.18	1,240	17,637	171.55	2,440	34,704
3.02	43	611.59	8.09	115	1,636	37.26	530	7,538	88.59	1,260	17,921	172.95	2,460	34,989
3.09	44	625.81	8.44	120	1,707	37.97	540	7,680	89.99	1,280	18,205	174.36	2,480	35,273
3.16	45	640.04	8.79	125	1,778	38.67	550	7,823	91.40	1,300	18,490	175.77	2,500	35,558
3.23	46	654.26	9.14	130	1,849	39.37	560	7,965	92.80	1,320	18,774	177.16	2,520	35,842
3.30	47	668.48	9.49	135	1,920	40.07	570	8,107	94.21	1,340	19,059	178.56	2,540	36,126
3.37	48	682.70	9.84	140	1,991	40.78	580	8,249	95.62	1,360	19,343	180.00	2,560	36,411
3.45	49	696.93	10.19	145	2,062	41.48	590	8,392	97.02	1,380	19,628	181.37	2,580	36,695
3.52	50	711.15	10.55	150	2,133	42.18	600	8,534	98.43	1,400	19,912	182.78	2,600	36,980
3.59	51	725.37	10.90	155	2,205	42.89	610	8,676	99.84	1,420	20,197	184.19	2,620	37,264
3.66	52	739.60	11.25	160	2,276	43.59	620	8,818	101.24	1,440	20,481	185.59	2,640	37,549
3.73	53	753.82	11.60	165	2,347	44.29	630	8,960	102.65	1,460	20,766	187.00	2,660	37,833
3.80	54	768.04	11.95	170	2,418	45.00	640	9,103	104.05	1,480	21,050	188.40	2,680	38,118
3.87	55	782.27	12.30	175	2,489	45.70	650	9,245	105.46	1,500	21,335	189.81	2,700	38,402
3.94	56	796.49	12.66	180	2,560	46.40	660	9,387	106.87	1,520	21,619	191.22	2,720	38,687
4.01	57	810.71	13.01	185	2,631	47.11	670	9,529	108.27	1,540	21,903	192.62	2,740	38,971
4.08	58	824.93	13.36	190	2,702	47.81	680	9,672	109.68	1,560	22,188	194.03	2,760	39,255
4.15	59	839.16	13.71	195	2,773	48.51	690	9,814	111.08	1,580	22,472	195.43	2,780	39,540
4.22	60	853.38	14.06	200	2,845	49.21	700	9,956	112.49	1,600	22,757	196.84	2,800	39,824

LIST OF CONVERSION TABLE CENTIGRADE TO FAHRENHITS

(Centigrade To Fahrenheit - Fahrenheit To Centigrade)														
-459.4° to 0°			1° to 60°			61° to 290°			300° to 890°			900° to 3000°		
C	CENT. OR FAH.	F	C	CENT. OR FAH.	F	C	CENT. OR FAH.	F	C	CENT. OR FAH.	F	C	CENT. OR FAH.	F
-273	-459.4		-17.2	1	33.8	16.1	61	141.8	149	300	572	482	900	1652
-268	-450		-16.7	2	35.6	16.7	62	143.6	154	310	590	488	910	1670
-262	-440		-16.1	3	37.4	17.2	63	145.4	160	320	608	493	920	1688
-257	-430		-15.6	4	39.2	17.8	64	147.2	166	330	626	499	930	1706
-251	-420		-15	5	41.0	18.3	65	149.0	171	340	644	504	940	1724
-246	-410		-14.4	6	42.8	18.9	66	150.8	177	350	662	510	950	1742
-240	-400		-13.9	7	44.6	19.4	67	152.6	182	360	680	516	960	1760
-234	-390		-13.3	8	46.4	20.0	68	154.4	188	370	698	521	970	1778
-229	-380		-12.8	9	48.2	20.6	69	156.2	193	380	716	527	980	1796
-223	-370		-12.2	10	50.0	21.1	70	158.0	199	390	734	532	990	1814
-218	-360		-11.7	11	51.8	21.7	71	159.8	204	400	752	538	1000	1832
-212	-350		-11.1	12	53.6	22.2	72	161.6	210	410	770	549	1020	1868
-207	-340		-10.6	13	55.4	22.8	73	163.4	215	420	788	560	1040	1904
-201	-330		-10.0	14	57.2	23.3	74	165.2	221	430	806	571	1060	1940
-196	-320		-9.4	15	59.0	23.9	75	167.0	227	440	824	582	1080	1976
-190	-310		-8.9	16	60.8	24.4	76	168.8	232	450	842	593	1100	2012
-184	-300		-8.3	17	62.6	25.0	77	170.6	238	460	860	604	1120	2048
-179	-290		-7.8	18	64.4	25.6	78	172.4	243	470	878	616	1140	2084
-173	-280		-7.2	19	66.2	26.1	79	174.2	249	480	896	627	1160	2120
-169	-273	-459.4	-6.7	20	68.0	26.7	80	176.0	254	490	914	638	1180	2156
-168	-270	-454	-6.1	21	69.8	27.2	81	177.8	260	500	932	649	1200	2192
-162	-260	-436	-5.6	22	71.6	27.8	82	179.6	266	5140	950	660	1220	2228
-157	-250	-418	-5.0	23	73.4	28.3	83	181.4	271	520	968	671	1240	2264
-151	-240	-400	-4.4	24	75.2	28.9	84	183.2	277	530	986	682	1260	2300
-146	-230	-382	-3.9	25	77.0	29.4	85	185.0	282	540	1004	693	1280	2336
-140	-220	-364	-3.3	26	78.8	30.0	86	186.8	288	550	1022	704	1300	2372
-134	-210	-346	-2.8	27	80.6	30.6	87	188.6	293	560	1040	732	1350	2462
-129	-200	-328	-2.2	28	82.4	31.1	88	190.4	299	570	1058	760	1400	2552
-123	-190	-310	-1.7	29	84.2	31.7	89	192.2	304	580	1076	788	1450	2642
-118	-180	-292	-1.1	30	86.0	32.2	90	194.0	310	590	1094	816	1500	2732
-112	-170	-274	-0.6	31	87.8	32.8	91	195.8	316	600	1112	843	1550	2822
-107	-160	-256	0.0	32	89.6	33.3	92	197.6	321	610	1130	871	1600	2912
-101	-150	-238	0.6	33	91.4	33.9	93	199.4	327	620	1148	899	1650	3002
-96	-140	-220	1.1	34	93.2	34.4	94	201.2	332	630	1166	927	1700	3092
-90	-130	-202	1.7	35	95.0	35.0	95	203.0	338	640	1184	954	1750	3182
-84	-120	-184	2.2	36	96.8	35.6	96	204.8	343	650	1202	982	1800	3272
-79	-110	-166	2.8	37	98.6	36.1	97	206.6	349	660	1220	1010	1850	3362
-73	-100	-148	3.3	38	100.4	36.7	98	208.4	354	670	1238	1038	1900	3452
-68	-90	-130	3.9	39	102.2	37.2	99	210.2	360	680	1256	1066	1950	3542
-62	-80	-112	4.4	40	104.0	37.8	100	212.0	366	690	1274	1093	2000	3632
-57	-70	-94	5.0	41	105.6	43	110	230	371	700	1292	1121	2050	3722
-51	-60	-76	5.6	42	107.6	49	120	248	377	710	1310	1149	2100	3812
-46	-50	-58	6.1	43	109.4	54	130	266	382	720	1328	1177	2150	3902
-40	-40	-40	6.7	44	111.2	60	140	284	388	730	1346	1204	2200	3992
-34	-30	-22	7.2	45	113.0	66	150	302	393	740	1364	1232	2250	4082
-29	-20	-4	7.8	46	114.8	71	160	320	399	750	1382	1260	2300	4172
-23	-10	14	8.3	47	116.6	77	170	338	404	760	1400	1288	2350	4262
-17.8	0	32	8.9	48	118.4	82	180	356	410	770	1418	1316	2400	4352
			9.4	49	120.2	88	190	374	416	780	1436	1343	2450	4442
			10.0	50	122.0	93	200	392	421	790	1454	1371	2500	4532
			10.6	51	123.8	99	210	410	427	800	1472	1399	2550	4662
			11.1	52	125.6	100	212	413.6	432	810	1490	1427	2600	4712
			11.7	53	127.4	104	220	428	438	820	1508	1454	2650	4802
			12.2	54	129.2	110	230	446	443	830	1526	1482	2700	4892
			12.8	55	131.0	116	240	464	449	840	1544	1510	2750	4982
			13.3	56	132.8	121	250	482	454	850	1562	1538	2800	5072
			13.9	57	134.6	127	260	500	460	860	1580	1566	2850	5162
			14.4	58	136.4	132	270	518	466	870	1598	1593	2900	5252
			15.0	59	138.2	138	280	536	471	880	1616	1621	2950	5342
			15.6	60	140.0	143	290	554	477	890	1634	1649	3000	5432

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