



## VALVE BODY MATERIALS DESIGN SELECTION

Our listing of valve body materials has been prepared to assist the specifying engineer in the proper design, pressure temperature rating in accordance with ASME/ANSI B16.34-1988.

**IMPORTANT:** The seat rating of the Ball Valve determines the practical pressure limitation in actual service. This information should be used in conjunction with the pressure temperature rating graph found in this catalog for the applicable valve.

**TABLE 2-1.1A STANDARD CLASS ASME / ANSI B16.34**

Temperature, °F	Working Pressure by Classes, psig A216 WCB & A350 LF2							
	150	300	400	600	900	1500	2500	4500
-20 to 100	285	740	990	1480	2220	3705	6170	11110
200	260	675	900	1350	2025	3375	5625	10120
300	230	655	875	1315	1970	3280	5470	9845
400	200	635	845	1270	1900	3170	5280	9505
500	170	600	800	1200	1795	2995	4990	8980
600	140	550	730	1095	1640	2735	4560	8210
650	125	535	715	1075	1610	2685	4475	8055
700	110	535	710	1065	1600	2665	4440	7990
750	95	505	670	1010	1510	2520	4200	7560
800	80	410	550	825	1235	2060	3430	6170
850	65	270	355	535	805	1340	2230	4010
900	50	170	230	345	515	860	1430	2570
950	35	105	140	205	310	515	860	1545
1000	20	50	70	105	155	260	430	770

WCB - Not recommended for prolonged usage above 800 °F / LF2 650 °F

**TABLE 2-1.1A STANDARD CLASS ASME / ANSI B16.34**

Temperature, °F	Working Pressure by Classes, psig A351 CF8M - 316 Stainless							
	150	300	400	600	900	1500	2500	4500
-20 to 100	275	720	960	1440	2160	3600	6000	10800
200	240	620	825	1240	1860	3095	5160	9290
300	215	560	745	1120	1680	2795	4660	8390
400	195	515	685	1030	1540	2570	4280	7705
500	170	480	635	955	1435	2390	3980	7165
600	140	450	600	905	1355	2255	3760	6770
650	125	445	590	890	1330	2220	3700	6660
700	110	430	575	865	1295	2160	3600	6480
750	95	425	565	845	1270	2110	3520	6335
800	80	415	555	835	1245	2075	3460	6230
850	65	405	540	810	1215	2030	3380	6085
900	50	395	525	790	1180	1970	3280	5905
950	35	385	515	775	1160	1930	3220	5795
1000	20	365	485	725	1090	1820	3030	5450
1050	20(1)	360	480	720	1080	1800	3000	5400
1100	20(1)	325	430	645	965	1610	2685	4835
1150	20(1)	275	365	550	825	1370	2285	4115
1200	20(1)	205	275	410	620	1030	1715	3085
1250	20(1)	180	245	365	545	910	1515	2725
1300	20(1)	140	185	275	410	685	1145	2060
1350	20(1)	105	140	205	310	515	860	1545
1400	20(1)	75	100	150	225	380	630	1130
1450	20(1)	60	80	115	175	290	485	875
1500	15(1)	40	55	85	125	205	345	620

**NOTE:** (1) For welding end valves only. Flanged end ratings terminate at 1000 °F

*Many valve users ask for valves by working pressure requirements, 600 WOG should not be confused with 600 ANSI class valves.*

**WOG - Water Oil or Gas at ambient temperatures (non-shock)**

**SWP - Steam Working Pressure**

**CWP - Cold Working Pressure - temperatures down to -20 MAX**

**PSI - lb per sq. in.**

## VALVE FLANGES ACCORDING TO ANSI B16.5

TEMPLATES FOR DRILLING CLASS 150 FLANGES									
Nominal Pipe Size	Outside Diameter of Flange O	Drilling			Length of Bolts - L				
		Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	STUD			M. BOLT
						0.06 in. Raised Face	Ring Joint	0.06 in. Raised Face	
1/2	3.50	2.38	0.62	4	1/2	2.25	---	2.00	
3/4	3.88	2.75	0.62	4	1/2	2.50	---	2.00	
1	4.25	3.12	0.62	4	1/2	2.50	3.00	2.25	
1 1/4	4.62	3.50	0.62	4	1/2	2.75	3.25	2.25	
1 1/2	5.00	3.88	0.62	4	1/2	2.75	3.25	2.50	
2	6.00	4.75	0.75	4	5/8	3.25	3.75	2.75	
2 1/2	7.00	5.50	0.75	4	5/8	3.50	4.00	3.00	
3	7.50	6.00	0.75	4	5/8	3.50	4.00	3.00	
3 1/2	8.50	7.00	0.75	8	5/8	3.50	4.00	3.00	
4	9.00	7.50	0.75	8	5/8	3.50	4.00	3.00	
5	10.00	8.50	0.88	8	3/4	3.75	4.25	3.25	
6	11.00	9.50	0.88	8	3/4	4.00	4.50	3.25	
8	13.50	11.75	0.88	8	3/4	4.25	4.75	3.50	
10	16.00	14.25	1.00	12	7/8	4.50	5.00	4.00	
12	19.00	17.00	1.00	12	7/8	4.75	5.25	4.00	
14	21.00	18.75	1.12	12	1	5.25	5.75	4.50	
16	23.50	21.25	1.12	16	1	5.25	5.75	4.50	
18	25.00	22.75	1.25	16	1 1/8	5.75	6.25	5.00	
20	27.50	25.00	1.25	20	1 1/8	6.25	6.75	5.50	
24	32.00	29.50	1.38	20	1 1/8	6.75	7.25	6.00	

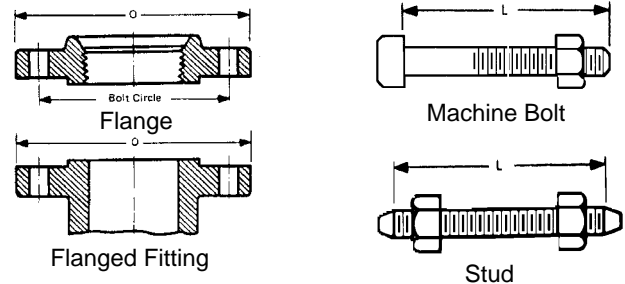
TEMPLATES FOR DRILLING CLASS 300 FLANGES									
Nominal Pipe Size	Outside Diameter of Flange O	Drilling			Length of Bolts - L				
		Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	STUD			M. BOLT
						0.06 in. Raised Face	Ring Joint	0.06 in. Raised Face	
1/2	3.75	2.62	0.62	4	1/2	2.50	3.00	2.25	
3/4	4.62	3.25	0.75	4	5/8	3.00	3.50	2.50	
1	4.88	3.50	0.75	4	5/8	3.00	3.50	2.50	
1 1/4	5.25	3.88	0.75	4	5/8	3.25	3.75	2.75	
1 1/2	6.12	4.50	0.88	4	3/4	3.50	4.00	3.00	
2	6.50	5.00	0.75	8	5/8	3.50	4.00	3.00	
2 1/2	7.50	5.88	0.88	8	3/4	4.00	4.50	3.25	
3	8.25	6.62	0.88	8	3/4	4.25	4.75	3.50	
3 1/2	9.00	7.25	0.88	8	3/4	4.25	5.00	3.75	
4	10.00	7.88	0.88	8	3/4	4.50	5.00	3.75	
5	11.00	9.25	0.88	8	3/4	4.75	5.25	4.25	
6	12.50	10.62	0.88	12	3/4	4.75	5.50	4.25	
8	15.00	13.00	1.00	12	7/8	5.50	6.00	4.75	
10	17.50	15.25	1.12	16	1	6.25	6.75	5.50	
12	20.50	17.75	1.25	16	1 1/8	6.75	7.25	5.75	
14	23.00	20.25	1.25	120	1 1/8	7.00	7.50	6.25	
16	25.50	22.50	1.38	20	1 1/4	7.50	8.00	6.50	
18	28.00	24.75	1.38	24	1 1/4	7.75	8.25	6.75	
20	30.50	27.00	1.38	24	1 1/4	8.00	8.75	7.25	
24	36.00	32.00	1.62	24	1 1/2	9.00	10.00	8.00	

TEMPLATES FOR DRILLING CLASS 600 FLANGES									
Nominal Pipe Size	Outside Diameter of Flange O	Drilling			Length of Bolt				
		Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.25 in. Raised Face	M/F Tongue & Groove	Ring Joint	
1/2	3.75	2.62	0.62	4	1/2	3.00	2.75	3.00	
3/4	4.62	3.25	0.75	4	5/8	3.50	3.25	3.50	
1	4.88	3.50	0.75	4	5/8	3.50	3.25	3.50	
1 1/4	5.25	3.88	0.75	4	5/8	3.75	3.50	3.75	
1 1/2	6.12	4.50	0.88	4	3/4	4.25	4.00	4.25	
2	6.50	5.00	0.75	8	5/8	4.25	4.00	4.25	
2 1/2	7.50	5.88	0.88	8	3/4	4.75	4.50	4.75	
3	8.25	6.62	0.88	8	3/4	5.00	4.75	5.00	
3 1/2	9.00	7.25	1.00	8	7/8	5.50	5.25	5.50	
4	10.75	8.50	1.00	8	7/8	5.75	5.50	5.75	
5	13.00	10.50	1.12	8	1	6.50	6.25	6.50	
6	14.00	11.50	1.12	12	1	6.75	6.50	6.75	
8	16.50	13.75	1.25	12	1 1/8	7.50	7.25	7.75	
10	20.00	17.00	1.38	16	1 1/4	8.50	8.25	8.50	
12	22.00	19.25	1.38	20	1 1/4	8.75	8.50	8.75	
14	23.75	20.75	1.50	20	1 3/8	9.25	9.00	9.25	
16	27.00	23.75	1.62	20	1 1/2	10.00	9.75	10.00	
18	29.25	25.75	1.75	20	1 5/8	10.75	10.50	10.75	
20	32.00	28.50	1.75	24	1 5/8	11.25	11.00	11.50	
24	37.00	33.00	2.00	24	1 7/8	13.00	12.75	13.25	

**NOTE:**

- FACING: Unless otherwise ordered, 150 and 300 Pound Steel Flanged Valves are regularly furnished with a 1 1/16-inch high raised face
- Facing Finish Per ANSI/MSS SP-6, Serrated concentric or spiral finish having a resultant surface finish from 125-250 RMS.

150 and 300 Pound



- Drilling templates are in multiples of four, so that valves or fittings may be turned to face in any quarter when installed. Bolt holes are drilled to straddle the center-line unless otherwise ordered.
- BOLT AND BOLT-STUD LENGTHS: The lengths indicated as dimensions L in the above table apply for flanged joints made up of combinations of 150-Pound or 300-Pound valves, fittings, or companion flanges with 1/16 inch high raised faces and 600 lbs. 1/4" high raised faces.

### BODY MATERIALS - ASTM / ANSI

Carbon Steel	WCB	A216
Low Carbon	LCB	A352
Stainless	316	A351-CF8M
Stainless	316L	A351-CF3M
Stainless	304	A351-CF8
Alloy 20	A20	A351-CN7M

### Valve - ANSI Body Rating/Face-to-Face

Class 150 Flanged 1-20" (25-500mm)	Flanged Class 150 ANSI B16.10 ISO 5752 PN 10/16 BN 558-1 PN 10/16 1-12" (25-300mm) only
	Flanged Class 150 ISA 75.04 or EC534-3-2: 1-20" (25-500mm)
Class 150 Flangeless 1-12" (25-300mm)	Flanged Class 150 Long Body B16.10, ISO 5752 and EN 558-1PN 10/16, 1-12" (25-300mm) except 2.5" (65mm)
	Flangeless Class 150 ISA 75.04 or IEC534-3-2
Class 300 Flanged 1-12" (25-300mm)	Flanged Class 300 ISA 75.04 or IEC534-3-2