



## 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 B16.34-2009.

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

Temperature, °F	Working Pressure by Classes, psig A216 WCB & A350 LF2						
	150	300	600	900	1500	2500	4500
-20 to 100	285	740	1480	2220	3705	6170	11110
200	260	680	1360	2035	3395	5655	10185
300	230	655	1310	1965	3270	5450	9815
400	200	635	1265	1900	3170	5280	9505
500	170	605	1205	1810	3015	5025	9040
600	140	570	1135	1705	2840	4730	8515
650	125	550	1100	1650	2745	4575	8240
700	110	530	1060	1590	2665	4425	7960
750	95	505	1015	1520	2535	4230	7610
800	80	410	825	1235	2055	3430	6170
850	65	320	640	955	1595	2655	4785
900	50	230	460	690	1150	1915	3455
950	35	135	275	410	680	1145	2055
1000	20	85	170	255	430	715	1285

WCB - Not recommended for prolonged usage above 800 °F

At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher.

**TABLE VII-2-2.2 STANDARD CLASS ASME / ANSI B16.34**

Temperature, °F	Working Pressure by Classes, psig A351 CF8M - 316 Stainless						
	150	300	600	900	1500	2500	4500
-20 to 100	275	720	1440	2160	3600	6000	10800
200	235	620	1240	1860	3095	5160	9290
300	215	560	1120	1680	2795	4660	8390
400	195	515	1025	1540	2570	4280	7705
500	170	480	955	1435	2390	3980	7165
600	140	450	900	1355	2255	3760	6770
650	125	440	885	1325	2210	3680	6625
700	110	435	870	1305	2170	3620	6515
750	95	425	855	1280	2135	3560	6410
800	80	420	845	1265	2110	3520	6335
850	65	420	835	1255	2090	3480	6265
900	50	415	830	1245	2075	3460	6230
950	35	385	775	1160	1930	3220	5795
1000	20	365	725	1090	1820	3030	5450
1050	20(1)	360	720	1080	1800	3000	5400
1100	20(1)	305	610	915	1525	2545	4575
1150	20(1)	235	475	710	1185	1970	3550
1200	20(1)	185	370	555	925	1545	2775
1250	20(1)	145	295	440	735	1230	2210
1300	20(1)	115	235	350	585	970	1750
1350	20(1)	95	190	290	480	800	1440
1400	20(1)	75	150	225	380	630	1130
1450	20(1)	60	115	175	290	485	875
1500	15(1)	40	85	125	205	345	620

NOTE: (1) 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	
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 1/4	6.75	7.25	6.00

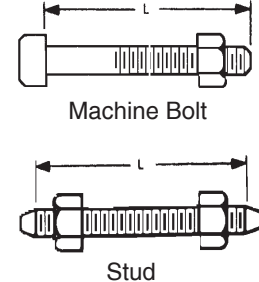
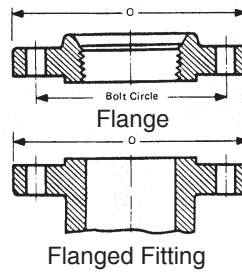
TEMPLATES FOR DRILLING CLASS 300 FLANGES								
Nominal Pipe Size	Outside Diameter of Flange O	Drilling				Length of Bolts - L		
		Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	STUD		M. BOLT
						0.06 in. Raised Face	Ring Joint	
1/2	3.75	2.62	0.62	4	1/2	2.50	3.00	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	20	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 & 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 1/16" 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 centerline 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 lbs or 300 lbs valves, fittings, or companion flanges with 1/16" 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



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