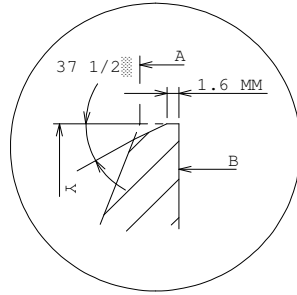
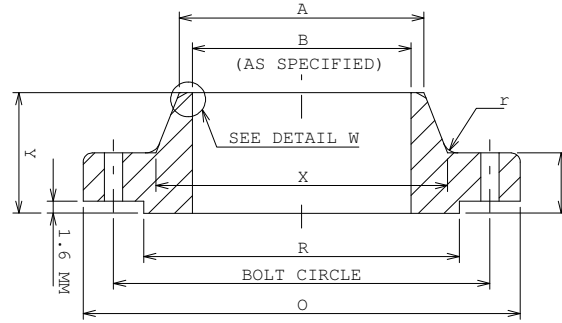


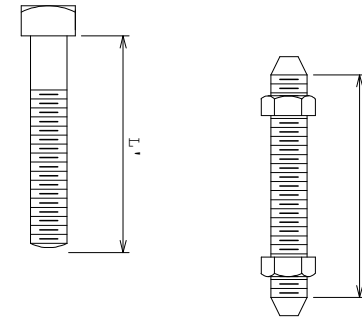
TABLE B-2-S1 DIMENSIONS FOR CLASS 150 WELDING-NECK AND INTEGRAL FLANGES (MILLIMETERS)



**DETAIL W
TYPICAL WELDING-
END PREPARATION**



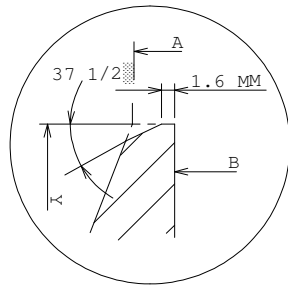
WELDING-NECK FLANGE



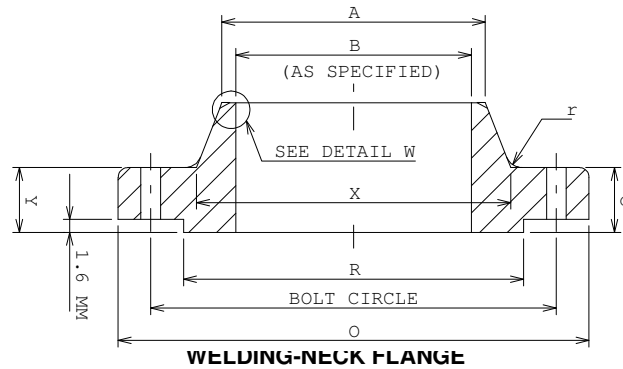
STUD BOLT

NPS	FLANGE OUTSIDE DIAMETER O	FLANGE THICK- NESS C	RAISED FACE DIAMETER R	DRILLING				BOLT LENGTH		DIAMETER AT LARGE END OF HUB X	DIAMETER AT SMALL END OF HUB A	OVERALL LENGTH Y	FILLET RADIUS r	MAXIMUM INSIDE DIAMETER ²		INTEGRAL FLANGES ³			
				BOLT CIRCLE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER (INCHES)	BOLT- HOLE DIAMETER	MACHINE BOLT L'	STUD BOLT L					ASME CODE B	ASME B31.3 B	DIAMETER AT LARGE END OF NECK X'	DIAMETER AT SMALL END OF NECK A'	INSIDE DIAMETER B' ^c	FILLED RADIUS r'
26	786	41.3	711.2	744.5	36	3/4	22.2	121	140	684.2	662.0	88.9	9.5	646.1	647.7	687.4	676.3	642.9	12.7
28	837	44.4	762.0	795.3	40	3/4	22.2	127	146	735.0	712.0	95.2	9.5	696.5	698.5	738.2	727.1	690.6	12.7
30	887	44.4	812.8	846.1	44	3/4	22.2	127	146	787.4	763.6	100.0	9.5	747.7	749.3	789.0	777.9	739.8	12.7
32	941	46.0	863.6	900.1	48	3/4	22.2	133	146	839.8	814.4	108.0	9.5	798.5	800.1	843.0	831.8	792.2	12.7
34	1005	49.2	920.8	957.3	40	7/8	25.4	146	159	892.2	865.2	110.3	9.5	847.7	850.9	893.8	882.6	839.8	12.7
36	1057	52.4	971.6	1009.6	44	7/8	25.4	152	165	944.6	916.0	117.5	9.5	898.5	901.7	946.2	935.0	890.6	12.7
38	1124	54.0	1022.4	1070.0	40	1	28.6	159	178	997.0	968.4	123.8	9.5	949.3	925.5	1000.1	989.0	939.8	12.7
40	1175	55.6	1079.5	1120.8	44	1	28.6	165	178	1049.3	1019.2	128.6	9.5	998.5	1003.3	1050.9	1039.8	989.0	12.7
42	1226	58.7	1130.3	1171.6	48	1	28.6	165	184	1101.7	1070.0	133.4	11.1	1049.3	1054.1	1101.7	1090.6	1038.2	15.9
44	1276	60.3	1181.1	1222.4	52	1	28.6	171	190	1152.5	1120.8	136.5	11.1	1098.6	1104.9	1152.5	1141.4	1089.0	15.9
46	1341	61.9	1235.1	1284.3	40	1 1/8	31.8	178	203	1204.9	1171.6	144.5	11.1	1147.8	1155.7	1208.1	1197.0	1138.2	15.9
48	1392	65.1	1289.0	1335.1	44	1 1/8	31.8	184	203	1257.3	1222.4	149.2	11.1	1198.6	1204.9	1258.9	1247.8	1187.4	15.9
50	1443	68.3	1339.8	1385.9	48	1 1/8	31.8	190	210	1308.1	1273.2	154.0	11.1	1247.8	1255.7	1309.7	1298.6	1238.2	15.9
52	1494	69.8	1390.6	1436.7	52	1 1/8	31.8	197	216	1369.5	1324.0	157.2	11.1	1298.6	1306.5	1360.5	1349.4	1289.0	15.9
54	1549	71.4	1441.4	1492.2	56	1 1/8	31.8	197	216	1412.9	1374.8	161.9	11.1	1347.8	1354.1	1416.0	1404.9	1339.8	15.9
56	1600	73.0	1492.3	1543.0	60	1 1/8	31.8	203	222	1465.3	1425.6	166.7	14.3	1398.6	1406.5	1466.8	1455.7	1390.6	19.0
58	1675	74.6	1543.0	1611.3	48	1 1/4	34.9	210	229	1516.1	1476.4	174.6	14.3	1449.4	1457.3	1522.4	1511.3	1438.2	19.0
60	1726	76.2	1600.2	1662.1	52	1 1/4	34.9	210	235	1570.0	1527.2	179.4	14.3	1498.6	1505.0	1573.2	1562.1	1485.9	19.0

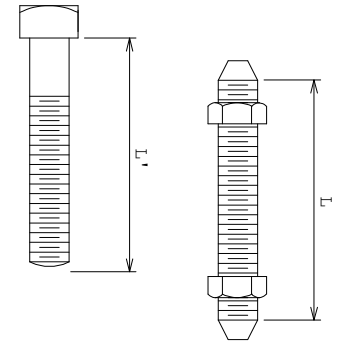
TABLE B-3-S1 DIMENSIONS FOR CLASS 300 WELDING-NECK AND INTEGRAL FLANGES (MILLIMETERS)



**DETAIL W
TYPICAL WELDING-
END PREPARATION**



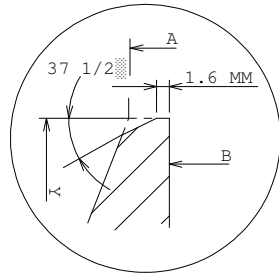
INTEGRAL FLANGE



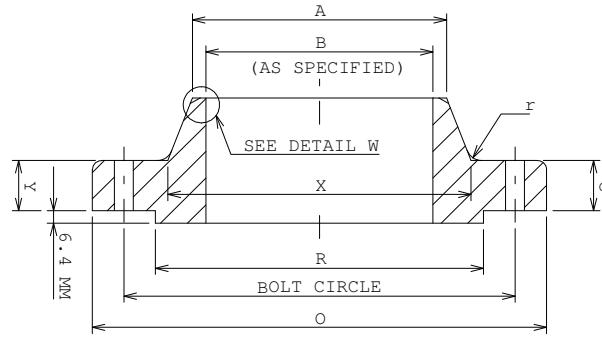
STUD BOLT

NPS	FLANGE OUTSIDE DIAMETER O	FLANGE THICK- NESS C	RAISED FACE DIAMETER R	DRILLING				BOLT LENGTH		DIAMETER AT LARGE END OF HUB X	DIAMETER AT SMALL END OF HUB A	OVERALL LENGTH Y	FILLET RADIUS r	MAXIMUM INSIDE DIAMETER			DIAMETER AT LARGE END OF NECK X'	DIAMETER AT SMALL END OF NECK A'	INSIDE DIAMETER B'°	FILLED RADIUS r'
				BOLT- CIRCLE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER (INCHES)	BOLT HOLE DIAMETER	MACHINE BOLT L'	STUD BOLT L					ASME CODE B	ASME B31.3 B	ASME B31.4/ B31.8 ^b B ^c				
26	867	88.9	736.6	803.3	32	1 1/4	34.9	235	260	701.7	665.2	144.5	14.3	631.8	641.4	647.7	714.4	689.0	635.0	15.9
28	921	88.9	787.4	857.2	36	1 1/4	34.9	235	260	755.6	716.0	149.2	14.3	679.4	689.0	698.5	768.4	743.0	685.8	15.9
30	991	93.7	844.6	920.8	36	3/8	38.1	248	273	812.8	768.4	158.0	14.3	727.1	738.2	749.3	825.5	800.1	736.6	15.9
32	1054	103.2	901.7	977.9	32	1 1/2	41.3	273	298	863.6	819.2	168.3	15.9	776.3	787.4	793.7	876.3	850.9	781.0	19.0
34	1108	103.2	952.5	1031.9	36	1 1/2	41.3	273	298	917.6	870.0	173.0	15.9	823.9	835.0	844.5	930.3	904.9	831.8	19.0
36	1172	103.2	1009.6	1089.0	32	5/8	44.4	273	305	965.2	920.8	181.0	15.9	871.5	885.8	892.2	981.1	955.7	876.3	19.0
38	1222	111.1	1060.4	1139.8	36	5/8	44.4	292	324	1016.0	971.6	192.1	15.9	920.8	941.4	943.0	1031.9	1006.5	927.1	19.0
40	1273	115.9	1114.4	1190.6	40	5/8	44.4	298	330	1066.8	1022.4	198.4	15.9	971.6	992.2	993.8	1082.7	1050.9	977.9	19.0
42	1334	119.1	1168.4	1244.6	36	3/4	47.6	311	343	1117.6	1074.7	204.8	15.9	1016.0	1038.2	1044.6	1130.3	1101.7	1022.4	19.0
44	1384	127.0	1219.2	1295.4	40	3/4	47.6	324	362	1173.2	1125.5	214.3	15.9	1066.8	1092.2	1092.2	1181.1	1158.9	1071.6	19.0
46	1460	128.6	1270.0	1365.2	36	7/8	50.8	330	368	1228.7	1176.3	222.2	15.9	1117.6	1139.8	1139.8	1244.6	1216.0	1120.8	19.0
48	1511	128.6	1327.2	1416.0	40	1/8	50.8	330	368	1277.9	1277.1	223.8	15.9	1162.0	1182.7	1189.0	1295.4	1266.8	1168.4	19.0
50	1562	138.1	1378.0	1466.8	44	7/8	50.8	349	387	1330.3	1277.9	235.0	15.9	1212.8	1236.7	1236.7	1346.2	1317.6	1217.6	19.0
52	1613	142.9	1428.8	1517.6	48	7/8	50.8	362	400	1382.7	1328.7	242.9	15.9	1263.6	1285.9	1287.5	1397.0	1368.4	1266.8	19.0
54	1673	136.5	1479.6	1578.0	48	1/8	50.8	349	387	1435.1	1379.5	239.7	15.9	1308.1	1328.7	1335.0	1457.3	1428.8	1314.4	22.2
56	1765	154.0	1536.7	1651.0	38	2 1/4	60.3	394	438	1493.8	1430.3	268.3	17.5	1362.1	1381.1	1385.8	1511.3	1482.7	1363.7	22.2
58	1827	154.0	1593.8	1712.9	40	2 1/4	60.3	394	438	1547.8	1481.1	274.6	17.5	1409.7	1431.9	1433.6	1573.2	1544.6	1412.9	22.2
60	1878	150.8	1651.0	1763.7	40	2 1/4	60.3	387	432	1598.6	1531.9	271.5	17.5	1454.2	1478.0	1482.8	1624.0	1692.3	1460.5	22.2

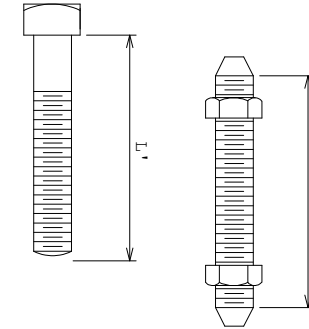
TABLE B-5-S1 DIMENSIONS FOR CLASS 600 WELDING-NECK AND INTEGRAL FLANGES (MILLIMETERS)



**DETAIL W
TYPICAL WELDING-
END PREPARATION**



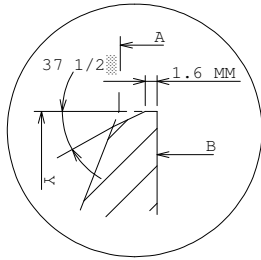
**WELDING-NECK FLANGE
&
INTEGRAL FLANGE**



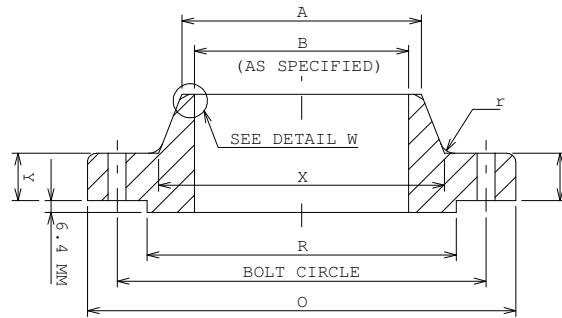
STUD BOLT

NPS	FLANGE OUTSIDE DIAMETER O	FLANGE THICK- NESS C	RAISED FACE DIAMETER R	DRILLING				BOLT LENGTH		DIAMETER AT LARGE END OF HUB X	DIAMETER AT SMALL END OF HUB A	OVERALL LENGTH Y ^a	FILLET RADIUS r	MAXIMUM INSIDE DIAMETER		
				BOLT- CIRCLE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER (INCHES)	BOLT HOLE DIAMETER	MACHINE BOLT L'	STUD BOLT L					ASME CODE B	ASME B31.3 B	ASME B31.4/ B31.3 B ^c
26	889	111.1	727.1	806.4	28	1 ⁵ / ₈	44.4	305	337	698.5	660.4	181.0	12.7	598.5	631.8	638.2
28	952	115.9	784.2	863.6	28	1 ³ / ₄	47.6	318	349	752.5	711.2	190.5	12.7	646.1	681.0	687.4
30	1022	125.4	841.4	927.1	28	1 ⁷ / ₈	50.8	337	375	806.4	762.0	204.8	12.7	693.7	731.8	736.6
32	1086	130.2	895.4	984.2	28	2	54.0	349	394	860.4	812.8	215.9	12.7	741.4	779.5	785.8
34	1162	141.3	952.5	1054.1	24	2 ¹ / ₄	60.3	381	425	914.4	863.6	233.4	14.3	787.4	828.7	835.0
36	1213	146.0	1009.6	1104.9	28	2 ¹ / ₄	60.3	387	438	968.4	914.4	242.9	14.3	838.2	879.5	884.2
38	1270	152.4	1054.1	1162.0	28	2 ¹ / ₄	60.3	400	451	1022.4	965.2	254.0	14.3	884.2	930.3	933.4
40	1321	158.8	1111.2	1212.8	32	2 ¹ / ₄	60.3	413	464	1073.2	1016.0	263.5	14.3	931.9	974.7	982.7
42	1403	168.3	1168.4	1282.7	28	2 ¹ / ₂	66.7	438	495	1127.1	1066.8	279.4	14.3	977.9	1022.4	1031.9
44	1454	173.0	1225.6	1333.5	32	2 ¹ / ₂	66.7	451	508	1181.1	1117.6	288.9	14.3	1027.1	1073.2	1081.9
46	1511	179.4	1276.4	1390.6	32	2 ¹ / ₂	66.7	464	521	1235.1	1168.4	300.0	14.3	1074.7	1122.4	1130.3
48	1594	188.9	1333.5	1460.5	32	2 ³ / ₄	73.0	489	552	1289.0	1219.2	315.9	14.3	1120.8	1171.6	1179.5
50	1670	196.8	1384.3	1524.0	28	3	79.4	508	578	1343.0	1270.0	328.6	14.3	1168.4	1220.8	1228.7
52	1721	203.2	1435.1	1574.8	32	3	79.4	521	591	1393.8	1320.8	336.6	14.3	1216.0	1266.8	1277.9
54	1778	209.6	1492.2	1632.0	32	3	79.4	533	603	1447.8	1371.6	349.2	14.3	1262.1	1316.0	1327.2
56	1854	217.5	1543.0	1691.4	32	3 ¹ / ₄	85.7	559	635	1501.8	1422.4	362.0	15.9	1308.1	1363.7	1376.4
58	1905	222.2	1600.2	1746.2	32	3 ¹ / ₄	85.7	565	641	1552.6	1413.2	369.9	15.9	1354.1	1411.3	1425.6
60	1994	233.4	1657.4	1822.4	28	3 ¹ / ₂	92.1	597	679	1609.7	1524.0	388.9	17.5	1403.4	1462.1	1474.8

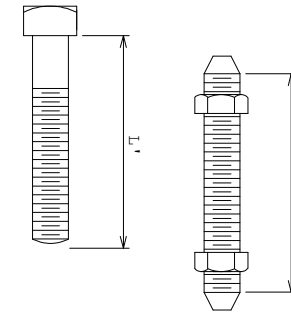
TABLE B-6-S1 DIMENSIONS FOR CLASS 900 WELDING-NECK AND INTEGRAL FLANGES (MILLIMETERS)



**DETAIL W
TYPICAL WELDING-
END PREPARATION**



**WELDING-NECK FLANGE
&
INTEGRAL FLANGE**



STUD BOLT

NPS	FLANGE OUTSIDE DIAMETER O	FLANGE THICK- NESS C	RAISED FACE DIAMETER R	DRILLING				BOLT LENGTH		DIAMETER AT LARGE END OF HUB X	DIAMETER AT SMALL END OF HUB A	OVERALL LENGTH Y ^a	FILLET RADIUS r	MAXIMUM INSIDE DIAMETER	
				BOLT CIRCLE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER (INCHES)	BOLT HOLE DIAMETER	MACHINE BOLT L'	STUD BOLT L					ASME B31.3 B	ASME B31.4/ B31.3 B ^c
26	1022	134.9	762.0	901.7	20	2 ¹ / ₂	66.7	375	425	743.0	660.4	258.8	11.1	619.1	628.6
28	1105	147.6	819.2	971.6	20	2 ³ / ₄	73.0	406	470	796.9	711.2	276.2	12.7	666.8	676.3
30	1181	155.6	876.3	1035.0	20	3	79.4	425	495	850.9	762.0	288.9	12.7	712.8	725.5
32	1238	160.3	927.1	1092.2	20	3	79.4	438	508	908.0	812.8	303.2	12.7	762.0	773.1
34	1314	171.4	990.6	1155.7	20	3 ¹ / ₄	85.7	464	540	962.0	863.6	319.1	14.3	811.2	822.3
36	1346	173.0	1028.7	1200.2	24	3	79.4	464	533	1016.0	914.4	325.4	14.3	858.8	870.0
38	1460	190.5	1099.0	1289.0	20	3 ¹ / ₂	92.1	508	591	1073.2	965.2	352.4	19.0	904.9	919.2
40	1511	196.8	1162.0	1339.8	24	3 ¹ / ₂	92.1	521	603	1127.1	1016.0	363.5	20.6	952.5	966.8
42	1562	206.4	1212.8	1390.6	24	3 ¹ / ₂	92.1	540	622	1176.3	1066.8	371.5	20.6	1001.7	1016.0
44	1648	214.3	1270.0	1463.7	24	3 ³ / ₄	98.4	565	654	1235.1	1117.6	390.5	22.2	1047.8	1063.6
46	1734	225.4	1333.5	1536.7	24	4	104.8	591	686	1292.2	1168.4	411.2	22.2	1095.4	1112.8
48	1784	233.4	1384.3	1587.5	24	4	104.8	610	705	1343.0	1219.2	419.7	23.8	1144.6	1160.5

^a DIMENSION Y (OVERALL LENGTH) DOES NOT INCLUDE THE RAISED-FACE HEIGHT OF 0.25 INCH.

^b DIMENSION B (INSIDE DIAMETER) SHALL BE SPECIFIED BY THE PURCHASER (SEE 2.1). THE MAXIMUM INSIDE DIAMETER INCLUDES THE MANUFACTURING TOLERANCE ALLOWED IN 3.1.

^c THE MAXIMUM INSIDE DIAMETER FOR MATING TO PIPE HAVING A SPECIFIED MINIMUM YIELD STRENGTH OF 42 KIPS PER SQUARE INCH AND A DESIGN FACTOR OF 0.72 IS BASED ON THE FLANGED MATERIAL HAVING A SPECIFIED MINIMUM YIELD STRENGTH OF 42 KIPS PER SQUARE INCH IN THE RING SECTION OF THE FLANGE AND A MINIMUM YIELD STRENGTH AT THE WELDING END OF 65 KIPS PER SQUARE INCH.