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Storage/Maintenance Instructions For Plidco Repair Products

Listed below are the basic requirements that should be adhered to in order to protect Plidco Repair Products while in storage.

The fittings should be stored in warehouse and protected as much as possible. We suggest putting a heavy grease over the elastomer packing, studs, and nuts, to keep them from rusting and suffering from other deteriorating environmental conditions.

Along with the grease, the following conditions are suggested to protect the packing:

1. Ambient temperature not to exceed 120 Degrees Farenheit (49° C)
2. Exclusion from air (oxygen)
3. Exclusion from contamination
4. Exclusion from light (particularly sunlight)
5. Exclusion from Ozone generating electrical devices
6. Exclusion from Radiation

*Manufacturers of packing tell us it has a shelf life of two (2) to twenty (20) years, but this can vary with the precautions taken to protect it as specified above. One practical way of checking the packing would be to use the thumb nail test. Push your thumb into the exposed packing, and if it responds to original shape, it should be all right. If the thumb nail imprint stays, it should be replaced.

As you can see, our main concern is the packing, with the studs and nuts second.

***AGE RESISTANCE**

Maximum	Average	Minimum
Up to 20 Years	5 to 10 Years	2 to 5 Years
Silicone	Neoprene	Nitrile (Buna-N)
Fluorocarbon (Viton)	Ethylene Propylene	

CONVERSION FACTORS:		
Multiply	by	to obtain
feet	0.3048	meters
inches	0.0254	meters
cubic feet	0.0283	cubic meters
pounds	0.4536	kilos
gallons	3.7853	liters

STEEL: .283 lbs./cubic inch

METRIC EQUIVALENTS (Based on National Bureau of Standards)			
Length			
CM.	= 0.3937 in.	In.	= 2.5400 cm.
Meter	= 3.2808 ft.	Ft.	= 0.3048 m.
Meter	= 1.0936 yd.	Yd.	= 0.9144 m.
Km.	= 0.6214 mile	Mile	= 1.6093 km.
Area			
Sq. cm.	= 0.1550 sq. in.	Sq. in.	= 6.4516 sq. cm.
Sq. m.	= 10.7639 sq. ft.	Sq. ft.	= 0.0929 sq. m.
Sq. m.	= 1.1960 sq. yd.	Sq. yd.	= 0.8361 sq. m.
Hectare	= 2,4710 acres	Acre	= 0.4047 hectare
Sq. km.	= 0.3861 sq. mile	Sq. mile	= 2.5900 sq. km.
Volume			
Cu. cm.	= 0.0610 cu. in.	Cu. in.	= 16.3872 cu. cm.
Cu. m.	= 35.3145 cu. ft.	Cu. ft.	= 0.0283 cu. m.
Cu. m.	= 1.3079 cu. yd.	Cu. yd.	= 0.7646 cu. m.
Capacity			
Liter	= 61.0250 cu. in.	Cu. in.	= 0.0164 liter
Liter	= 0.0353 cu. ft.	Cu. ft.	= 28.3162 liter
Liter	= 0.2642 gal. (U.S.)	Gal.	= 3.7853 liters
Liter	= 0.0284 bu. (U.S.)	Bu.	= 35.2383 liters
Liter	= { 1000.027 cu. cm. 1.0567 qt. (liquid) or 0.9081 qt. (dry) 2.2046 lb. of pure water at 4 C = 1 kg.		
Weight			
Gram	= 15.4324 grains	Grain	= 0.0648 g.
Gram	= 0.0353 oz.	Oz.	= 28.3496 g.
Kg.	= 2.2046 lb.	Lb.	= 0.4536 kg.
Kg.	= 0.0011 ton (sh.t.)	Ton (sh.t.)	= 907.1848 kg.
Ton (met.)	= 1.1023 ton (sh.t.)	Ton (sh.t.)	= 0.9072 ton (met.)
Ton (met.)	= 0.9842 ton (lg.)	Ton (lg.)	= 1.0160 ton (met.)
Pressure			
1 kg. per sq. cm.	= 14.223 lb. per sq. in.		
1 lb. per sq. in.	= 0.0703 kg. per sq. cm.		
1 kg. per sq. m.	= 0.2048 lb. per sq. ft.		
1 lb. per sq. ft.	= 4.8824 kg. per sq. m.		
1 kg. per sq. cm.	= 0.9678 normal atmosphere		
1 normal atmosphere	= { 1.0332 Kg. per sq. cm. 1.0133 bars 14.696 lb. per sq. in.		

1/64	= .015625	33/64	= .515625
1/32	= .03125	17/32	= .53125
3/64	= .046875	35/64	= .546875
1/16	= .0625	9/16	= .5625
5/64	= .078125	27/64	= .578125
3/32	= .09375	19/32	= .59375
7/64	= .109375	39/64	= .609375
1/8	= .125	5/8	= .625
9/64	= .140625	41/64	= .640625
5/32	= .15625	21/32	= .65625
11/64	= .171875	43/64	= .671875
3/16	= .1875	11/16	= .6875
13/64	= .203125	45/64	= .703125
7/32	= .21875	23/32	= .71875
15/64	= .234375	47/64	= .734375
1/4	= .25	3/4	= .75
17/64	= .265625	49/64	= .765625
9/32	= .28125	25/32	= .78125
19/64	= .296875	51/64	= .796875
5/16	= .3125	13/16	= .8125
21/64	= .328125	33/64	= .828125
11/32	= .34375	27/32	= .84375
23/64	= .359375	55/64	= .859375
3/8	= .375	7/8	= .875
25/64	= .390625	57/64	= .890625
13/32	= .40625	29/32	= .90625
27/64	= .421875	59/64	= .921875
7/16	= .4375	15/16	= .9375
29/64	= .453125	61/64	= .953125
15/32	= .46875	31/32	= .96875
31/64	= .484375	63/64	= .984375
1/2	= .5	1	= 1.

ABSOLUTE PRESSURE PSI	TEMP. DEG. FAHR.	SPECIFIC VOLUME CU. FT. PER LB.		ENTHALPY B. T. U. PER LB.			ENTROPY B. T. U. PER DEG. FAHR. PER LB.			INTERNAL ENERGY B. T. U. PER LB.		ABSOLUTE PRESSURE PSI
		SAT. LIQUID V_f	SAT. VAPOR V_g	SAT. LIQUID h_f	EVAP. h_{fg}	SAT. VAPOR h_g	SAT. LIQUID S_f	EVAP. S_{fg}	SAT. VAPOR S_g	SAT. LIQUID U_f	SAT. VAPOR U_g	
1.0	101.74	0.01614	333.6	69.70	1036.3	1106.0	0.1326	1.8456	1.9782	69.70	1044.3	1.0
2.0	126.08	0.01623	173.73	93.99	1022.2	1116.2	0.1749	1.7451	1.9200	93.98	1051.9	2.0
3.0	141.48	0.01630	118.71	109.37	1013.2	1122.6	0.2008	1.6855	1.8863	109.36	1056.7	3.0
4.0	152.97	0.01636	90.63	120.86	1006.4	1127.3	0.2198	1.6427	1.8625	120.85	1060.2	4.0
5.0	162.24	0.01640	73.52	130.13	1001.0	1131.1	0.2347	1.6094	1.8441	130.12	1063.1	5.0
6.0	170.06	0.01645	61.98	137.96	996.2	1134.2	0.2472	1.5820	1.8292	137.94	1065.4	6.0
7.0	176.85	0.01649	53.64	144.76	992.1	1136.9	0.2581	1.5586	1.8167	144.74	1067.4	7.0
8.0	182.86	0.01653	47.34	150.79	988.5	1139.3	0.2674	1.5383	1.8057	150.77	1069.2	8.0
9.0	188.28	0.01656	42.40	156.22	985.2	1141.4	0.2759	1.5203	1.7962	156.19	1070.8	9.0
10	193.21	0.01659	38.42	161.17	982.1	1143.3	0.2835	1.5041	1.7876	161.14	1072.2	10
14.696	212.00	0.01672	26.80	180.07	970.3	1150.4	0.3120	1.4446	1.7566	180.02	1077.5	14.696
15	213.03	0.01672	26.29	181.11	969.7	1150.8	0.3135	1.4415	1.7549	181.06	1077.8	15
20	227.96	0.01683	20.089	196.16	960.1	1156.3	0.3356	1.3962	1.7319	196.10	1081.9	20
25	240.07	0.01692	16.303	208.42	952.1	1160.6	0.3533	1.3606	1.7139	208.34	1085.1	25
30	250.33	0.01701	13.746	218.82	945.3	1164.1	0.3680	1.3313	1.6993	218.73	1087.8	30
35	259.28	0.01708	11.898	227.91	939.2	1167.1	0.3807	1.3063	1.6870	227.80	1090.1	35
40	267.25	0.01715	10.498	236.03	933.7	1169.7	0.3919	1.2844	1.6763	235.90	1092.0	40
45	274.44	0.01721	9.401	243.36	928.6	1172.0	0.4019	1.2650	1.6669	243.22	1093.7	45
50	281.01	0.01727	8.515	250.09	924.0	1174.1	0.4110	1.2474	1.6585	249.93	1095.3	50
55	287.07	0.01732	7.787	256.30	919.6	1175.9	0.4193	1.2316	1.6509	256.12	1096.7	55
60	292.71	0.01738	7.175	262.09	915.5	1177.6	0.4270	1.2168	1.6438	261.90	1097.9	60
65	297.97	0.01743	6.655	267.50	911.6	1179.1	0.4342	1.2032	1.6374	267.29	1099.1	65
70	302.92	0.01748	6.206	272.61	907.9	1180.6	0.4409	1.1906	1.6315	272.38	1100.2	70
75	307.60	0.01753	5.816	277.43	904.5	1181.9	0.4472	1.1787	1.6259	277.19	1101.2	75
80	312.03	0.01757	5.472	282.02	901.1	1183.1	0.4531	1.1676	1.6207	281.76	1102.1	80
85	316.25	0.01761	5.168	286.39	897.8	1184.2	0.4587	1.1571	1.6158	286.11	1102.9	85
90	320.27	0.01766	4.896	290.56	894.7	1185.3	0.4641	1.1471	1.6112	290.27	1103.7	90
95	324.12	0.01770	4.652	294.56	891.7	1186.2	0.4692	1.1376	1.6068	294.25	1104.5	95
100	327.81	0.01774	4.432	298.40	888.8	1187.2	0.4740	1.1286	1.6026	298.08	1105.2	100
110	334.77	0.01782	4.049	305.66	883.2	1188.9	0.4832	1.1117	1.5948	305.30	1106.5	110
120	341.25	0.01789	3.728	312.44	877.9	1190.4	0.4916	1.0962	1.5878	312.05	1107.6	120
130	347.32	0.01796	3.455	318.81	872.9	1191.7	0.4995	1.0817	1.5812	318.38	1108.6	130
140	353.02	0.01802	3.220	324.82	868.2	1193.0	0.5069	1.0682	1.5751	324.35	1109.6	140
150	358.42	0.01809	3.015	330.51	863.6	1194.1	0.5138	1.0556	1.5694	330.01	1110.5	150
160	363.53	0.01815	2.834	335.93	859.2	1195.1	0.5204	1.0436	1.5640	335.39	1111.2	160
170	368.41	0.01822	2.675	341.09	854.9	1196.0	0.5266	1.0324	1.5590	340.52	1111.9	170
180	373.06	0.01827	2.532	346.03	850.8	1196.9	0.5325	1.0217	1.5542	345.42	1112.5	180
190	377.51	0.01833	2.404	350.79	846.8	1197.6	0.5381	1.0116	1.5497	350.15	1113.1	190
200	381.79	0.01839	2.288	355.36	843.0	1198.4	0.5435	1.0018	1.5453	354.68	1113.7	200
250	400.95	0.01865	1.8438	376.00	825.1	1201.1	0.5675	0.9588	1.5263	375.14	1115.8	250
300	417.33	0.01890	1.5433	393.84	809.0	1202.8	0.5879	0.9225	1.5104	392.79	1117.1	300
350	431.72	0.01913	1.3260	409.69	794.2	1203.9	0.6056	0.8910	1.4966	408.45	1118.0	350
400	444.59	0.0193	1.1613	424.0	780.5	1204.5	0.6214	0.8630	1.4844	422.6	1118.5	400
450	456.28	0.0195	1.0320	437.2	767.4	1204.6	0.6356	0.8378	1.4734	435.5	1118.7	450
500	467.01	0.0197	0.9278	449.4	755.0	1204.4	0.6487	0.8147	1.4634	447.6	1118.6	500
600	486.21	0.0201	0.7698	471.6	731.6	1203.2	0.6720	0.7734	1.4454	469.4	1117.7	600
700	503.10	0.0205	0.6554	491.5	709.7	1201.2	0.6925	0.7371	1.4296	488.8	1116.3	700
800	518.23	0.0209	0.5687	509.7	688.9	1198.6	0.7108	0.7045	1.4153	506.6	1114.4	800
900	531.98	0.0212	0.5006	526.6	668.8	1195.4	0.7275	0.6744	1.4020	523.1	1112.1	900
1000	544.61	0.0216	0.4456	542.4	649.4	1191.8	0.7430	0.6467	1.3897	538.4	1109.4	1000
1100	556.31	0.0220	0.4001	557.4	630.4	1187.8	0.7575	0.6205	1.3780	552.9	1106.4	1100
1200	567.22	0.0223	0.3619	571.7	611.7	1183.4	0.7711	0.5956	1.3667	566.7	1103.0	1200
1300	577.46	0.0227	0.3293	585.4	593.2	1178.6	0.7840	0.5719	1.3559	580.0	1099.4	1300
1400	587.10	0.0231	0.3012	598.7	574.7	1173.4	0.7963	0.5491	1.3454	592.7	1095.4	1400
1500	596.23	0.0235	0.2765	611.6	556.3	1167.9	0.8082	0.5269	1.3351	605.1	1091.2	1500
2000	635.82	0.0257	0.1878	671.7	463.4	1135.1	0.8619	0.4230	1.2849	662.2	1065.6	2000
2500	668.13	0.0287	0.1307	730.6	360.5	1091.1	0.9126	0.3197	1.2322	717.3	1030.6	2500
3000	695.36	0.0346	0.0858	802.5	217.8	1020.3	0.9731	0.1885	1.1615	783.4	972.7	3000
3206.2	705.40	0.0503	0.0503	902.7	0	902.7	1.0580	0	1.0580	872.9	872.9	3206.2

*Abridged by permission from "Thermodynamic Properties of Steam" by J. H. Keenan and F. G. Keyes, published by John Wiley & Sons, Inc.
 v—specific volume, cu. ft. per lb.
 h—enthalpy, B.T.U. per lb.
 s—entropy, B.T.U. per deg. F. per lb.
 u—internal energy, B.T.U. per lb.
 f (subscript)—refers to a property of the saturated liquid.
 g (subscript)—refers to a property of the saturated vapor.
 fg (subscript)—refers to a change by evaporation.

PLIDCO®

EQUIVALENT FAHRENHEIT AND CENTIGRADE SCALES

$$F^{\circ} = \frac{9}{5} C + 32^{\circ}$$

$$C^{\circ} = \frac{5}{9} (F^{\circ} - 32^{\circ})$$

FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.	FAHRENHEIT DEG.	CENTI- GRADE DEG.
-459.4	-273.	-21.	-29.4	+17.6	- 8.	+56.	+13.3	+ 95.	+35.	+134.	+56.7	+172.4	+78.	+211.	+ 99.4
-436.	-260.	-20.2	-29.	+18.	- 7.8	+57.	+13.9	+ 96.	+35.6	+134.6	+57.	+173.	+78.3	+212.	+100.
-418.	-250.	-20.	-28.9	+19.	- 7.2	+57.2	+14.	+ 96.8	+36.	+135.	+57.2	+174.	+78.9	+213.	+100.6
-400.	-240.	-19.	-28.3	+19.4	- 7.	+58.	+14.4	+ 97.	+36.1	+136.	+57.8	+174.2	+79.	+213.8	+101.
-382.	-230.	-18.4	-28.	+20.	- 6.7	+59.	+15.	+ 98.	+36.7	+136.4	+58.	+175.	+79.4	+214.	+101.1
-364.	-220.	-18.	-27.8	+21.	- 6.1	+60.	+15.6	+ 98.6	+37.	+137.	+58.3	+176.	+80.	+215.	+101.7
-346.	-210.	-17.	-27.2	+21.2	- 6.	+60.8	+16.	+ 99.	+37.2	+138.	+58.9	+177.	+80.6	+215.6	+102.
-328.	-200.	-16.6	-27.	+22.	- 5.6	+61.	+16.1	+100.	+37.8	+138.2	+59.	+177.8	+81.	+216.	+102.2
-310.	-190.	-16.	-26.7	+23.	- 5.	+62.	+16.7	+100.4	+38.	+139.	+59.4	+178.	+81.1	+217.	+102.8
-292.	-180.	-15.	-26.1	+24.	- 4.4	+62.6	+17.	+101.	+38.3	+140.	+60.	+179.	+81.7	+217.4	+103.
-274.	-170.	-14.8	-26.	+24.8	- 4.	+63.	+17.2	+102.	+38.9	+141.	+60.6	+179.6	+82.	+218.	+103.3
-256.	-160.	-14.	-25.6	+25.	- 3.9	+64.	+17.8	+102.2	+39.	+141.8	+61.	+180.	+82.2	+219.	+103.9
-238.	-150.	-13.	-25.	+26.	- 3.3	+64.4	+18.	+103.	+39.4	+142.	+61.1	+181.	+82.8	+219.2	+104.
-220.	-140.	-12.	-24.4	+26.6	- 3.	+65.	+18.3	+104.	+40.	+143.	+61.7	+181.4	+83.	+220.	+104.4
-202.	-130.	-11.2	-24.	+27.	- 2.8	+66.	+18.9	+105.	+40.6	+143.6	+62.	+182.	+83.3	+221.	+105.
-184.	-120.	-11.	-23.9	+28.	- 2.2	+66.2	+19.	+105.8	+41.	+144.	+62.2	+183.	+83.9	+222.	+105.6
-166.	-110.	-10.	-23.3	+28.4	- 2.	+67.	+19.4	+106.	+41.1	+145.	+62.8	+183.2	+84.	+222.8	+106.
-148.	-100.	- 9.4	-23.	+29.	- 1.7	+68.	+20.	+107.	+41.7	+145.4	+63.	+184.	+84.4	+223.	+106.1
-139.	- 95.	- 9.	-22.8	+30.	- 1.1	+69.	+20.6	+107.6	+42.	+146.	+63.3	+185.	+85.	+224.	+106.7
-130.	- 90.	- 8.	-22.2	+30.2	- 1.	+69.8	+21.	+108.	+42.2	+147.	+63.9	+186.	+85.6	+224.6	+107.
-121.	- 85.	- 7.6	-22.	+31.	- 0.6	+70.	+21.1	+109.	+42.8	+147.2	+64.	+186.8	+86.	+225.	+107.2
-112.	- 80.	- 7.	-21.7	+32.	0.	+71.	+21.7	+109.4	+43.	+148.	+64.4	+187.	+86.1	+226.	+107.8
-103.	- 75.	- 6.	-21.1	+33.	+ 0.6	+71.6	+22.	+110.	+43.3	+149.	+65.	+188.	+86.7	+226.4	+108.
- 94.	- 70.	- 5.8	-21.	+33.8	+ 1.	+72.	+22.2	+111.	+43.9	+150.	+65.6	+188.6	+87.	+227.	+108.3
- 85.	- 65.	- 5.	-20.6	+34.	+ 1.1	+73.	+22.8	+111.2	+44.	+150.8	+66.	+189.	+87.2	+228.	+108.9
- 76.	- 60.	- 4.	-20.	+35.	+ 1.7	+73.4	+23.	+112.	+44.4	+151.	+66.1	+190.	+87.8	+228.2	+109.
- 67.	- 55.	- 3.	-19.4	+35.6	+ 2.	+74.	+23.3	+113.	+45.	+152.	+66.7	+190.4	+88.	+229.	+109.4
- 58.	- 50.	- 2.2	-19.	+36.	+ 2.2	+75.	+23.9	+114.	+45.6	+152.6	+67.	+191.	+88.3	+230.	+110.
- 49.	- 45.	- 2.	-18.9	+37.	+ 2.8	+75.2	+24.	+114.8	+46.	+153.	+67.2	+192.	+88.9	+231.	+110.6
- 40.	- 40.	- 1.	-18.3	+37.4	+ 3.	+76.	+24.4	+115.	+46.1	+154.	+67.8	+192.2	+89.	+231.8	+111.
- 39.	- 39.4	- 0.4	-18.	+38.	+ 3.3	+77.	+25.	+116.	+46.7	+154.4	+68.	+193.	+89.4	+232.	+111.1
- 38.2	- 39.	0.	-17.8	+39.	+ 3.9	+78.	+25.6	+116.6	+47.	+155.	+68.3	+194.	+90.	+233.	+111.7
- 38.	- 38.9	+ 1.	-17.2	+39.2	+ 4.	+78.8	+26.	+117.	+47.2	+156.	+68.9	+195.	+90.6	+233.6	+112.
- 37.	- 38.3	+ 1.4	-17.	+40.	+ 4.4	+79.	+26.1	+118.	+47.8	+156.2	+69.	+195.8	+91.	+234.	+112.3
- 36.4	- 38.	+ 2.	-16.7	+41.	+ 5.	+80.	+26.7	+118.4	+48.	+157.	+69.4	+196.	+91.1	+235.	+112.8
- 36.	- 37.8	+ 3.	-16.1	+42.	+ 5.6	+80.6	+27.	+119.	+48.3	+158.	+70.	+197.	+91.7	+235.4	+113.
- 35.	- 37.2	+ 3.2	-16.	+42.8	+ 6.	+81.	+27.2	+120.	+48.9	+159.	+70.6	+197.6	+92.	+236.	+113.3
- 34.6	- 37.	+ 4.	-15.6	+43.	+ 6.1	+82.	+27.8	+120.2	+49.	+159.8	+71.	+198.	+92.2	+237.	+113.9
- 34.	- 36.7	+ 5.	-15.	+44.	+ 6.7	+82.4	+28.	+121.	+49.4	+160.	+71.1	+199.	+92.8	+237.2	+114.
- 33.	- 36.1	+ 6.	-14.4	+44.6	+ 7.	+83.	+28.3	+122.	+50.	+161.	+71.7	+199.4	+93.	+238.	+114.4
- 32.8	- 36.	+ 6.8	-14.	+45.	+ 7.2	+84.	+28.9	+123.	+50.6	+161.6	+72.	+200.	+93.3	+239.	+115.
- 32.	- 35.6	+ 7.	-13.9	+46.	+ 7.8	+84.2	+29.	+123.8	+51.	+162.	+72.2	+201.	+93.9	+240.	+115.6
- 31.	- 35.	+ 8.	-13.3	+46.4	+ 8.	+85.	+29.4	+124.	+51.1	+163.	+72.8	+201.2	+94.	+240.8	+116.
- 30.	- 34.4	+ 8.6	-13.	+47.	+ 8.3	+86.	+30.	+125.	+51.7	+163.4	+73.	+202.	+94.4	+241.	+116.1
- 29.2	- 34.	+ 9.	-12.8	+48.	+ 8.9	+87.	+30.6	+125.6	+52.	+164.	+73.3	+203.	+95.	+242.	+116.7
- 29.	- 33.9	+10.	-12.2	+48.2	+ 9.	+87.8	+31.	+126.	+52.2	+165.	+73.9	+204.	+95.6	+242.6	+117.
- 28.	- 33.3	+10.4	-12.	+49.	+ 9.4	+88.	+31.1	+127.	+52.8	+165.2	+74.	+204.8	+96.	+243.	+117.2
- 27.4	- 33.	+11.	-11.7	+50.	+10.	+89.	+31.7	+127.4	+53.	+166.	+74.4	+205.	+96.1	+244.	+117.8
- 27.	- 32.8	+12.	-11.1	+51.	+10.6	+89.6	+32.	+128.	+53.3	+167.	+75.	+206.	+96.7	+244.4	+118.
- 26.	- 32.2	+12.2	-11.	+51.8	+11.	+90.	+32.2	+129.	+53.9	+168.	+75.6	+206.6	+97.	+245.	+118.3
- 25.6	- 32.	+13.	-10.6	+52.	+11.1	+91.	+32.8	+129.2	+54.	+168.8	+76.	+207.	+97.2	+246.	+118.9
- 25.	- 31.7	+14.	-10.	+53.	+11.7	+91.4	+33.	+130.	+54.4	+169.	+76.1	+208.	+97.8	+246.2	+119.
- 24.	- 31.1	+15.	- 9.4	+53.6	+12.	+92.	+33.3	+131.	+55.	+170.	+76.7	+208.4	+98.	+247.	+119.4
- 23.8	- 31.	+15.8	- 9.	+54.	+12.2	+93.	+33.9	+132.	+55.6	+170.6	+77.	+209.	+98.3	+248.	+120.
- 23.	- 30.6	+16.	- 8.9	+55.	+12.8	+93.2	+34.	+132.8	+56.	+171.	+77.2	+210.	+98.9	+249.	+120.6
- 22.	- 30.	+17.	- 8.3	+55.4	+13.	+94.	+34.4	+133.	+56.1	+172.	+77.8	+210.9	+99.	+249.8	+121.



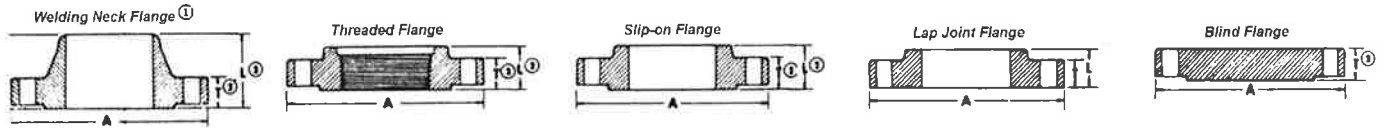
CENTIGRADE-FAHRENHEIT CONVERSION TABLE

Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.
-100	-148	100	212	300	572	500	932	700	1292	900	1652
-95	-139	105	221	305	581	505	941	705	1301	905	1661
-90	-130	110	230	310	590	510	950	710	1310	910	1670
-85	-121	115	239	315	599	515	959	715	1319	915	1679
-80	-112	120	248	320	608	520	968	720	1328	920	1688
-75	-103	125	257	325	617	525	977	725	1337	925	1697
-70	-94	130	266	330	626	530	986	730	1346	930	1706
-65	-85	135	275	335	635	535	995	735	1355	935	1715
-60	-76	140	284	340	644	540	1004	740	1364	940	1724
-55	-67	145	293	345	653	545	1013	745	1373	945	1733
-50	-58	150	302	350	662	550	1022	750	1382	950	1742
-45	-49	155	311	355	671	555	1031	755	1391	955	1751
-40	-40	160	320	360	680	560	1040	760	1400	960	1760
-35	-31	165	329	365	689	565	1049	765	1409	965	1769
-30	-22	170	338	370	698	570	1058	770	1418	970	1778
-25	-13	175	347	375	707	575	1067	775	1427	975	1787
-20	-4	180	356	380	716	580	1076	780	1436	980	1796
-15	5	185	365	385	725	585	1085	785	1445	985	1805
-10	14	190	374	390	734	590	1094	790	1454	990	1814
-5	23	195	383	395	743	595	1103	795	1463	995	1823
0	32	200	392	400	752	600	1112	800	1472	1000	1832
5	41	205	401	405	761	605	1121	805	1481	1005	1841
10	50	210	410	410	770	610	1130	810	1490	1010	1850
15	59	215	419	415	779	615	1139	815	1499	1015	1859
20	68	220	428	420	788	620	1148	820	1508	1020	1868
25	77	225	437	425	797	625	1157	825	1517	1025	1877
30	86	230	446	430	806	630	1166	830	1526	1030	1886
35	95	235	455	435	815	635	1175	835	1535	1035	1895
40	104	240	464	440	824	640	1184	840	1544	1040	1904
45	113	245	473	445	833	645	1193	845	1553	1045	1913
50	122	250	482	450	842	650	1202	850	1562	1050	1922
55	131	255	491	455	851	655	1211	855	1571	1055	1931
60	140	260	500	460	860	660	1220	860	1580	1060	1940
65	149	265	509	465	869	665	1229	865	1589	1065	1949
70	158	270	518	470	878	670	1238	870	1598	1070	1958
75	167	275	527	475	887	675	1247	875	1607	1075	1967
80	176	280	536	480	896	680	1256	880	1616	1080	1976
85	185	285	545	485	905	685	1265	885	1625	1085	1985
90	194	290	554	490	914	690	1274	890	1634	1090	1994
95	203	295	563	495	923	695	1283	895	1643	1095	2003

Conversion Formulas

$C = 5/9 (F-32)$ $F = (9/5) C + 32$

NOTE: When using readings below zero, carry negative sign in formula.



150 LB. FLANGES										300 LB. FLANGES										400 LB. FLANGES									
Nom. Pipe Size	A	T [ⓐ]	Weld Neck	L [ⓑ] Thrd. Slip on	Lap Joint	Bolt Circle	No. and Size of Holes	A	T [ⓐ]	Weld Neck	L [ⓑ] Thrd. Slip on	Lap Joint	Bolt Circle	No. and Size of Holes	A	T [ⓐ]	Weld Neck	L [ⓑ] Thrd. Slip on	Lap Joint	Bolt Circle	No. and Size of Holes	Nom. Pipe Size							
1/2	3 1/2	3/4	1 1/4	3/8	3/8	2 3/4	4-3/8	3 3/4	3/8	2 1/4	1/2	1/2	2 3/4	4-3/8	3 3/4	3/4	2 1/4	1/2	1/2	2 3/4	4-3/8	3 3/4	1/2						
3/4	3 3/4	1/2	2 1/4	3/8	3/8	2 3/4	4-3/8	4 1/4	3/8	2 1/4	1	1	3 3/4	4-3/8	4 1/4	3/4	2 1/4	1	1	3 3/4	4-3/8	4 1/4	3/4						
1	4 1/4	3/4	2 3/4	1 1/4	1 1/4	3 3/4	4-3/8	4 3/4	1 1/4	2 3/4	1 1/4	1 1/4	3 3/4	4-3/8	4 3/4	1 1/4	2 3/4	1 1/4	1 1/4	3 3/4	4-3/8	4 3/4	1						
1 1/4	4 3/4	3/4	2 3/4	1 3/4	1 3/4	3 1/2	4-3/8	5 1/4	1 3/4	2 3/4	1 1/4	1 1/4	3 3/4	4-3/8	5 1/4	1 3/4	2 3/4	1 1/4	1 1/4	3 3/4	4-3/8	5 1/4	1 1/4						
1 1/2	5	1 1/4	2 3/4	1 3/4	1 3/4	3 3/4	4-3/8	6 1/4	1 3/4	2 1/4	1 3/4	1 3/4	4 1/2	4-3/8	6 1/4	1 3/4	2 3/4	1 1/4	1 1/4	4 1/2	4-3/8	6 1/4	1 1/2						
2	6	3/4	2 1/2	1	1	4 3/4	4-3/8	6 1/2	3/4	2 3/4	1 3/4	1 3/4	5	8-3/4	6 1/2	1	2 3/4	1 3/4	1 3/4	5	8-3/4	6 1/2	2						
2 1/2	7	3/4	2 3/4	1 1/4	1 1/4	5 1/2	4-3/8	7 1/2	1	3	1 1/2	1 1/2	5 3/4	8-7/8	7 1/2	1 1/4	3 3/4	1 1/4	1 1/4	5 3/4	8-7/8	7 1/2	2 1/2						
3	7 1/2	1 1/4	2 3/4	1 3/4	1 3/4	6	4-3/8	8 1/4	1 1/4	3 1/4	1 1/4	1 1/4	6 3/4	8-7/8	8 1/4	1 1/4	3 3/4	1 1/4	1 1/4	6 3/4	8-7/8	8 1/4	3						
3 1/2	8 1/2	1 3/4	2 3/4	1 1/4	1 1/4	7	8-3/4	9	1 3/4	3 3/4	1 3/4	1 3/4	7 1/4	8-7/8	9	1 3/4	3 3/4	1 1/4	1 1/4	7 1/4	8-1	9	3 1/2						
4	9	1 3/4	3	1 3/4	1 3/4	7 1/2	8-3/4	10	1 3/4	3 3/4	1 3/4	1 3/4	7 3/4	8-7/8	10	1 3/4	3 3/4	2	2	7 3/4	8-1	10	4						
5	10	1 3/4	3 1/2	1 3/4	1 3/4	8 3/4	8-7/8	11	1 3/4	3 3/4	2	2	9 3/4	8-7/8	11	1 3/4	4	2 1/4	2 1/4	9 3/4	8-1	11	5						
6	11	1	3 1/2	1 3/4	1 3/4	9 3/4	8-7/8	12 1/2	1 3/4	3 3/4	2 1/4	2 1/4	10 3/4	12-7/8	12 1/2	1 3/4	4 1/4	2 1/4	2 1/4	10 3/4	12-1	12 1/2	6						
8	13 1/2	1 1/4	4	1 3/4	1 3/4	11 3/4	8-7/8	15	1 3/4	4 3/4	2 3/4	2 3/4	13	12-1	15	1 3/4	4 3/4	2 1/4	2 1/4	13	12-1 1/2	15	8						
10	16	1 3/4	4	1 3/4	1 3/4	14 1/4	12-1	17 1/2	1 3/4	4 3/4	2 3/4	3 3/4	15 1/4	16-1 1/2	17 1/2	2 1/4	4 3/4	2 1/4	4	15	16-1 1/2	18	10						
12	19	1 3/4	4 1/2	2 1/4	2 1/4	17	12-1	20 1/2	2	5 1/4	2 3/4	4	17 3/4	16-1 1/2	20 1/2	2 1/4	5 3/4	3 1/4	4 1/4	17 3/4	16-1 3/4	20 1/2	12						
14	21	1 3/4	5	2 1/4	3 3/8	18 3/4	12-1 1/4	23	2 1/4	5 3/4	3	4 3/4	20 1/4	20-1 1/4	23	2 3/4	5 3/4	3 3/4	4 3/4	20 1/4	20-1 3/4	23	14						
16	23 1/2	1 3/4	5	2 1/2	3 3/4	21 1/4	16-1 1/4	25 1/2	2 1/4	5 3/4	3 3/4	4 3/4	22 1/2	20-1 3/4	25 1/2	2 1/2	6	3 1/4	5	22 1/2	20-1 1/2	25 1/2	16						
18	25	1 3/4	5 1/2	2 1/4	3 3/4	22 3/4	16-1 1/4	28	2 3/4	6 1/4	3 1/2	5 1/4	24 1/2	24-1 3/4	28	2 3/4	6 1/2	3 3/4	5 3/4	24 1/2	24-1 1/2	28	18						
20	27 1/2	1 3/4	5 1/4	2 3/4	4 1/4	25	20-1 1/4	30 1/2	2 1/2	6 3/4	3 3/4	5 1/2	27	24-1 3/4	30 1/2	2 3/4	6 3/4	4	5 3/4	27	24-1 3/4	30 1/2	20						
24	32	1 3/4	6	3 1/4	4 3/4	29 1/2	20-1 3/4	36	2 3/4	6 3/4	4 3/4	6	32	24-1 3/4	36	3	6 3/4	4 1/2	6 1/4	32	24-1 3/4	36	24						
600 LB. FLANGES										900 LB. FLANGES										1500 LB. FLANGES									
1/2	3 3/4	3/4	2 1/4	1	1	2 3/4	4-3/8	4 3/4	1	2 3/4	1 1/4	1 1/4	3 1/4	4-7/8	4 3/4	1	2 3/4	1 1/4	1 1/4	3 1/4	4-7/8	4 3/4	1/2						
3/4	4 3/4	3/4	2 1/4	1	1	3 1/4	4-3/8	5 1/4	1	2 3/4	1 1/4	1 1/4	3 3/4	4-7/8	5 1/4	1	2 3/4	1 1/4	1 1/4	3 3/4	4-7/8	5 1/4	3/4						
1	4 7/8	1 1/4	2 1/4	1 1/4	1 1/4	3 1/2	4-3/8	5 3/4	1 1/4	2 3/4	1 1/4	1 1/4	4	4-1	5 1/4	1 1/4	2 3/4	1 1/4	1 1/4	4	4-1	5 1/4	1						
1 1/4	5 1/4	1 3/4	2 1/4	1 1/4	1 1/4	3 3/4	4-3/8	6 1/4	1 1/4	2 3/4	1 1/4	1 1/4	4 1/4	4-1	6 1/4	1 1/4	2 3/4	1 1/4	1 1/4	4 1/4	4-1	6 1/4	1 1/4						
1 1/2	6 1/4	1 3/4	2 3/4	1 1/4	1 1/4	4 1/2	4-7/8	7	1 1/4	3 1/4	1 1/4	1 1/4	4 3/4	4-1 1/4	7	1 1/4	3 3/4	1 1/4	1 1/4	4 3/4	4-1 1/4	7	1 1/2						
2	6 1/2	1	2 3/4	1 1/4	1 1/4	5	8-3/4	8 1/2	1 1/2	4	2 1/4	2 1/4	6 1/2	8-1	8 1/2	1 1/2	4	2 1/4	2 1/4	6 1/2	8-1	8 1/2	2						
2 1/2	7 1/4	1 1/4	3 1/4	1 3/4	1 3/4	5 3/4	8-7/8	9 3/4	1 3/4	4 1/4	2 1/2	2 1/2	7 1/2	8-1 1/4	9 3/4	1 3/4	4 1/4	2 1/2	2 1/2	7 1/2	8-1 1/4	9 3/4	2 1/2						
3	8 1/4	1 1/4	3 1/4	1 3/4	1 3/4	6 3/4	8-7/8	9 1/2	1 1/2	4	2 1/4	2 1/4	7 1/2	8-1	10 1/2	1 3/4	4 3/4	2 3/4	2 3/4	8	8-1 1/4	10 1/2	3						
3 1/2	9	1 3/4	3 3/4	1 3/4	1 3/4	7 1/4	8-1	11 1/4	1 3/4	4 1/2	2 3/4	2 3/4	9 1/4	8-1 1/4	12 1/4	2 1/4	4 3/4	3 3/4	3 3/4	9 1/2	8-1 1/4	12 1/4	3 1/2						
4	10 3/4	1 1/2	4	2 1/4	2 1/4	8 1/2	8-1	11 1/2	1 3/4	4 1/2	2 3/4	2 3/4	9 3/4	8-1 1/4	12 1/4	2 1/4	4 3/4	3 3/4	3 3/4	9 1/2	8-1 1/4	12 1/4	4						
5	13	1 3/4	4 1/2	2 3/4	2 3/4	10 3/4	8-1 1/4	13 3/4	2	5	3 3/4	3 3/4	11	8-1 3/4	14 3/4	2 3/4	6 3/4	4 3/4	4 3/4	11 1/2	8-1 1/4	14 3/4	5						
6	14	1 3/4	4 3/4	2 3/4	2 3/4	11 1/2	12-1 1/4	15	2 3/4	5 3/4	3 3/4	3 3/4	12 1/2	12-1 1/4	15 3/4	3 3/4	6 3/4	4 1/4	4 1/4	12 1/2	12-1 1/4	15 3/4	6						
8	16 1/2	2 1/4	5 1/4	3	3	13 3/4	12-1 1/4	18 1/2	2 1/2	6 3/4	4	4 1/4	15 1/2	12-1 1/2	19	3 3/4	8 3/4	5 3/4	5 3/4	15 1/2	12-1 3/4	19	8						
10	20	2 1/2	6	3 3/4	4 3/4	17	16-1 1/4	21 1/2	2 3/4	7 1/4	4 1/4	5	18 1/2	16-1 1/2	23	4 1/4	10	6 1/4	7	19	12-2	23	10						
12	22	2 3/4	6 1/4	3 3/4	4 3/4	19 1/4	20-1 3/4	24	3 3/4	7 3/4	4 3/4	5 3/4	21	20-1 1/2	26 1/2	4 3/4	11 1/4	7 3/4	8 3/4	22 1/2	16-2 1/4	26 1/2	12						
14	23 3/4	2 3/4	6 1/2	3 1/4	5	20 3/4	20-1 1/2	25 1/4	3 3/4	8 3/4	5 3/4	6 3/4	22	20-1 1/4	29 1/2	5 1/4	11 3/4	9 3/4	9 3/4	25	16-2 3/4	29 1/2	14						
16	27	3	7	4 3/4	5 1/2	23 3/4	20-1 3/4	27 3/4	3 3/4	8 3/4	5 3/4	6 3/4	24 1/4	20-1 3/4	32 1/4	5 3/4	12 1/4	10 3/4	10 3/4	27 3/4	16-2 3/4	32 1/4	16						
18	29 3/4	3 3/4	7 1/4	4 3/4	6	25 3/4	20-1 3/4	31 1/4	4	9	6	7 1/2	27	20-2	36	6 3/4	12 3/4	10 3/4	10 3/4	30 1/2	16-2 3/4	36	18						
20	32	3 1/2	7 1/2	5	6 1/2	28 1/2	24-1 3/4	33 3/4	4 1/4	9 3/4	6 3/4	8 3/4	29 1/2	20-2 1/4	38 3/4	7	14	11 1/4	11 1/4	32 3/4	16-3 1/4	38 3/4	20						
24	37	4	8	5 1/2	7 1/4	33	24-2	41	5 1/2	11 1/2	8	10 1/2	35 1/2	20-2 3/4	46	8	16	13	13	39	16-3 3/4	46	24						
2500 LB. FLANGES										WELDING NECK FLANGE BORES [ⓐ]																			
1/2	5 1/4	1 3/4	2 3/4	1 1/4	1 1/4	3 1/2	4-7/8		Nom. Pipe Size	Outside Diameter	Sched. 10	Sched. 20	Sched. 30	Standard Wall	Sched. 40	Sched. 80	Extra Strong	Sched. 80	Sched. 100	Sched. 120	Sched. 140	Sched. 180	Double Extra Strong						
3/4	5 3/4	1 1/4	3 3/4	1 1/4	1 1/4	3 3/4	4-7/8		1/2	0.840				0.622	0.622		0.948	0.948					0.466	0.252					
1	6 1/4	1 3/4	3 3/4	1 1/4	1 1/4	4 1/4	4-1		3/4	1.050				0.824	0.824		0.742	0.742					0.614	0.434					
1 1/4	7 1/4	1 1/2	3 3/4	2 1/4	2 1/4	5 1/4	4-1 1/4		1	1.315				1.049	1.049		0.957	0.957					0.815	0.597					
1 1/2	8	1 3/4	4 3/4	2 3/4	2 3/4	5 3/4	4-1 1/4		1 1/4	1.660				1.380	1.380		1.278	1.278					1.160	0.896					
2	9 1/4	2	5	2 3/4	2 3/4	6 3/4	8-1 1/4		1 1/2	1.900				1.610	1.610		1.500	1.500					1.338	1.100					
2 1/2	10 1/2	2 1/4	5 3/4	3 3/4	3 3/4	7 3/4	8-1 1/4																						

Bold Face Figures: Wall Thickness in Inches
Light Face Figures: Wall Thickness in Millimeters

PIPE SIZE	O.D.	5	10	20	30	40	STD	60	80	E.H.	100	120	140	160	DBLE. E.H.
1/8 3.13	.405 10.29	.035 0.89	.049 1.24			.068 1.73	.068 1.73		.095 2.41	.095 2.41					
1/4 6.25	.540 13.72	.049 1.24	.065 1.65			.088 2.24	.088 2.24		.119 3.02	.119 3.02					
3/8 9.39	.675 17.15	.049 1.24	.065 1.65			.091 2.31	.091 2.31		.126 3.20	.126 3.20					
1/2 12.50	.840 21.34	.065 1.65	.083 2.11			.109 2.77	.109 2.77		.147 3.73	.147 3.73				.187 4.75	.294 7.47
3/4 18.75	1.050 26.67	.065 1.65	.083 2.11			.113 2.87	.113 2.87		.154 3.91	.154 3.91				.218 5.54	.308 7.82
1 25	1.315 33.40	.065 1.65	.109 2.77			.133 3.38	.133 3.38		.179 4.55	.179 4.55				.250 6.35	.358 9.09
1 1/4 31.25	1.660 42.16	.065 1.65	.109 2.77			.140 3.56	.140 3.56		.191 4.85	.191 4.85				.250 6.35	.382 9.70
1 1/2 37.50	1.900 48.26	.065 1.65	.109 2.77			.145 3.68	.145 3.68		.200 5.08	.200 5.08				.281 7.14	.400 10.16
2 50	2.375 60.33	.065 1.65	.109 2.77			.154 3.91	.154 3.91		.218 5.54	.218 5.54				.343 8.71	.436 11.07
2 1/2 62.50	2.875 73.02	.083 2.11	.120 3.05			.203 5.16	.203 5.16		.276 7.01	.276 7.01				.375 9.53	.552 14.02
3 75	3.5 88.90	.083 2.11	.120 3.05			.216 5.49	.216 5.49		.300 7.62	.300 7.62				.438 11.13	.600 15.24
3 1/2 87.50	4.0 101.60	.083 2.11	.120 3.05			.226 5.74	.226 5.74		.318 8.08	.318 8.08					.636 16.15
4 100	4.5 114.30	.083 2.11	.120 3.05			.237 6.02	.237 6.02	.281 7.14	.337 8.56	.337 8.56		.438 11.13		.531 13.49	.674 17.12
5 125	5.563 141.30	.109 2.77	.134 3.40			.258 6.55	.258 6.55		.375 9.53	.375 9.53		.500 12.70		.625 15.88	.750 19.05
6 150	6.625 168.28	.109 2.77	.134 3.40			.280 7.11	.280 7.11		.432 10.97	.432 10.97		.562 14.27		.719 18.26	.864 21.95
8 200	8.625 219.08	.109 2.77	.148 3.76	.250 6.35	.277 7.04	.322 8.18	.322 8.18	.406 10.31	.500 12.70	.500 12.70	.594 15.09	.719 18.26	.812 20.62	.906 23.01	.875 22.23
10 250	10.75 273.05	.134 3.40	.165 4.19	.250 6.35	.307 7.80	.365 9.27	.365 9.27	.500 12.70	.594 15.09	.500 12.70	.719 18.26	.844 21.44	1.000 25.4	1.125 28.58	
12 300	12.75 323.85	.165 4.19	.180 4.57	.250 6.35	.330 8.38	.406 10.31	.375 9.53	.562 14.27	.688 17.48	.500 12.70	.844 21.44	1.000 25.4	1.125 28.58	1.312 33.32	
14 350	14.0 355.60		.250 6.35	.312 7.92	.375 9.53	.437 11.10	.375 9.53	.594 15.09	.750 19.05	.500 12.70	.938 23.83	1.094 27.79	1.250 31.75	1.406 35.71	
16 400	16.0 406.40		.250 6.35	.312 7.92	.375 9.53	.500 12.70	.375 9.53	.656 16.66	.844 21.44	.500 12.70	1.031 26.19	1.219 30.96	1.438 36.53	1.593 40.46	
18 450	18.0 457.20		.250 6.35	.312 7.92	.437 11.10	.562 14.27	.375 9.53	.750 19.05	.938 23.83	.500 12.70	1.156 29.36	1.375 34.93	1.562 39.67	1.781 45.24	
20 500	20.0 508.00		.250 6.35	.375 9.53	.500 12.70	.594 15.09	.375 9.53	.812 20.62	1.031 26.19	.500 12.70	1.281 32.54	1.500 38.10	1.750 44.45	1.968 49.99	
22 550	22.0 588.80		.250 6.35	.375 9.53	.500 12.70		.375 9.53	.875 22.23	1.125 28.58	.500 12.70	1.357 34.47	1.625 41.28	1.875 47.63	2.125 53.98	
24 600	24.0 609.60		.250 6.35	.375 9.53	.562 14.27	.687 17.45	.375 9.53	.969 24.61	1.219 30.96	.500 12.70	1.531 38.89	1.812 46.02	2.062 52.37	2.343 59.51	
26 650	26.0 660.40		.312 7.92				.375 9.53			.500 12.70					
28 700	28.0 711.2		0.312 7.92	0.500 12.70	0.625 15.88		0.375 9.53			0.500 12.70					
30 750	30.0 762.00		.312 7.92		.625 15.88		.375 9.53			.500 12.70					
32 800	32.0 812.8		0.312 7.92	0.500 12.70	0.625 15.88	0.688 17.48	0.375 9.53			0.500 12.70					
34 850	34.0 863.60		.312 7.92		.625 15.88	.688 17.48	.375 9.53			.500 12.70					
36 900	36.0 914.40		.312 7.92		.625 15.88	.688 17.48	.375 9.53			.500 12.70					
42 1050	42.0 1066.80				.625 15.88	.688 17.48	.375 9.53			.500 12.70					
46 1150	46.0 1168.40						.375 9.53			.500 12.70					
48 1200	48 1219.20						.375 9.53			.500 12.70					

$$\text{Area} = .7853981634XD^2$$

Diam.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Diam.
0	.7854	3.1416	7.0686	12.566	19.635	28.274	38.485	50.266	63.617	78.540	95.033	113.10	132.73	153.94	176.71	201.06	226.98	0	
1/64	.000192	.8101	3.1909	7.1424	12.665	19.753	28.422	38.656	50.462	63.838	78.785	95.303	113.39	133.05	154.28	177.08	201.45	227.40	1/64
1/32	.000767	.8352	3.2405	7.2166	12.763	19.881	28.570	38.829	50.659	64.060	79.031	95.574	113.69	133.37	154.63	177.45	201.85	227.82	1/32
3/64	.001726	.8607	3.2906	7.2912	12.863	20.005	28.718	39.002	50.856	64.282	79.278	95.845	113.98	133.69	154.97	177.82	202.24	228.23	3/64
1/8	.003068	.8866	3.3410	7.3662	12.962	20.129	28.866	39.175	51.054	64.504	79.525	96.116	114.23	134.01	155.32	178.19	202.64	228.65	1/8
5/64	.004794	.9129	3.3918	7.4415	13.062	20.253	29.015	39.348	51.252	64.727	79.772	96.388	114.57	134.33	155.66	178.56	203.03	229.07	5/64
3/32	.006903	.9306	3.4430	7.5173	13.162	20.378	29.165	39.522	51.450	64.950	80.019	96.660	114.87	134.65	156.01	178.93	203.43	229.49	3/32
7/64	.009396	.9666	3.4946	7.5934	13.263	20.503	29.315	39.696	51.649	65.173	80.267	96.932	115.17	134.98	156.35	179.30	203.82	229.91	7/64
1/4	.01227	.9940	3.5466	7.6699	13.364	20.629	29.465	39.871	51.849	65.397	80.516	97.205	115.47	135.30	156.70	179.67	204.22	230.33	1/4
9/64	.01553	1.0218	3.5989	7.7468	13.465	20.755	29.615	40.046	52.048	65.621	80.764	97.479	115.76	135.62	157.05	180.04	204.61	230.75	9/64
5/32	.01917	1.0500	3.6516	7.8241	13.567	20.881	29.766	40.222	52.248	65.845	81.013	97.752	116.06	135.94	157.39	180.42	205.01	231.17	5/32
11/64	.02320	1.0786	3.7048	7.9017	13.669	21.008	29.917	40.398	52.448	66.070	81.263	98.026	116.36	136.27	157.74	180.79	205.40	231.59	11/64
3/16	.02761	1.1075	3.7583	7.9798	13.772	21.135	30.069	40.574	52.649	66.296	81.513	98.301	116.66	136.59	158.09	181.16	205.80	232.01	3/16
13/64	.03240	1.1369	3.8121	8.0582	13.875	21.263	30.221	40.750	52.850	66.521	81.763	98.575	116.96	136.91	158.44	181.53	206.20	232.44	13/64
7/32	.03758	1.1666	3.8664	8.1370	13.978	21.391	30.374	40.927	53.052	66.747	82.014	98.850	117.26	137.24	158.79	181.91	206.60	232.86	7/32
15/64	.04314	1.1967	3.9211	8.2162	14.082	21.519	30.526	41.105	53.254	66.974	82.265	99.126	117.56	137.56	159.14	182.28	206.99	233.28	15/64
1/4	.04909	1.2272	3.9761	8.2958	14.186	21.648	30.680	41.282	53.456	67.201	82.516	99.402	117.86	137.89	159.48	182.65	207.39	233.71	1/4
17/64	.05541	1.2577	4.0315	8.3757	14.291	21.777	30.833	41.461	53.659	67.428	82.768	99.678	118.16	138.21	159.83	183.03	207.79	234.13	17/64
9/32	.06213	1.2893	4.0873	8.4561	14.396	21.906	30.987	41.639	53.862	67.655	83.020	99.955	118.46	138.54	160.19	183.40	208.19	234.55	9/32
19/64	.06922	1.3209	4.1435	8.5368	14.501	22.036	31.141	41.818	54.065	67.883	83.272	100.232	118.76	138.86	160.54	183.78	208.59	234.98	19/64
5/16	.07670	1.3530	4.2000	8.6179	14.607	22.166	31.296	41.997	54.269	68.112	83.525	100.509	119.06	139.19	160.89	184.15	208.99	235.40	5/16
21/64	.08456	1.3854	4.2570	8.6994	14.713	22.297	31.451	42.177	54.473	68.341	83.779	100.787	119.37	139.52	161.24	184.53	209.39	235.83	21/64
11/32	.09281	1.4182	4.3143	8.7813	14.819	22.428	31.607	42.357	54.678	68.570	84.032	101.066	119.67	139.84	161.59	184.91	209.79	236.25	11/32
23/64	.1014	1.4513	4.3720	8.8636	14.926	22.559	31.763	42.537	54.883	68.799	84.286	101.344	119.97	140.17	161.94	185.28	210.20	236.68	23/64
3/8	.1104	1.4849	4.4301	8.9462	15.033	22.691	31.919	42.718	55.088	69.029	84.541	101.623	120.28	140.50	162.30	185.66	210.60	237.10	3/8
25/64	.1198	1.5188	4.4886	9.0292	15.141	22.823	32.076	42.899	55.294	69.259	84.796	101.903	120.58	140.83	162.65	186.04	211.00	237.53	25/64
13/32	.1296	1.5532	4.5475	9.1126	15.249	22.955	32.233	43.081	55.500	69.490	85.051	102.182	120.88	141.16	163.00	186.42	211.40	237.96	13/32
27/64	.1398	1.5879	4.6067	9.1964	15.357	23.088	32.390	43.263	55.707	69.721	85.306	102.462	121.19	141.49	163.36	186.79	211.80	238.39	27/64
7/16	.1503	1.6230	4.6664	9.2806	15.466	23.221	32.548	43.445	55.914	69.953	85.562	102.743	121.49	141.82	163.71	187.17	212.21	238.81	7/16
29/64	.1613	1.6584	4.7264	9.3652	15.575	23.355	32.706	43.628	56.121	70.184	85.819	103.024	121.80	142.15	164.06	187.55	212.61	239.24	29/64
15/32	.1726	1.6943	4.7868	9.4501	15.684	23.489	32.865	43.811	56.329	70.417	86.075	103.305	122.11	142.48	164.42	187.93	213.02	239.67	15/32
31/64	.1843	1.7305	4.8476	9.5354	15.794	23.623	33.024	43.995	56.537	70.649	86.333	103.587	122.43	142.81	164.77	188.31	213.42	240.10	31/64
1/2	.1963	1.7671	4.9088	9.6212	15.904	23.758	33.183	44.179	56.745	70.882	86.590	103.869	122.72	143.14	165.13	188.69	213.82	240.53	1/2
33/64	.2088	1.8042	4.9703	9.7072	16.015	23.893	33.343	44.363	56.954	71.116	86.848	104.151	123.03	143.47	165.49	189.07	214.23	240.96	33/64
17/32	.2217	1.8415	5.0322	9.7937	16.126	24.029	33.503	44.548	57.163	71.349	87.106	104.434	123.33	143.80	165.84	189.45	214.64	241.39	17/32
35/64	.2349	1.8793	5.0946	9.8806	16.237	24.165	33.663	44.733	57.373	71.583	87.365	104.717	123.64	144.13	166.20	189.83	215.04	241.82	35/64
9/16	.2485	1.9175	5.1573	9.9678	16.349	24.301	33.824	44.918	57.583	71.818	87.624	105.001	123.95	144.47	166.56	190.22	215.45	242.25	9/16
17/64	.2625	1.9560	5.2203	10.0554	16.461	24.438	33.985	45.104	57.793	72.053	87.883	105.285	124.26	144.80	166.91	190.60	215.85	242.68	17/64
19/32	.2769	1.9949	5.2838	10.1435	16.574	24.575	34.147	45.290	58.004	72.288	88.143	105.569	124.57	145.13	167.27	190.98	216.26	243.11	19/32
39/64	.2916	2.0342	5.3477	10.2318	16.687	24.713	34.309	45.477	58.215	72.524	88.404	105.804	124.88	145.47	167.63	191.36	216.67	243.54	39/64
5/8	.3068	2.0739	5.4119	10.3206	16.800	24.850	34.472	45.664	58.426	72.760	88.664	106.139	125.19	145.80	167.99	191.75	217.08	243.98	5/8
41/64	.3223	2.1140	5.4765	10.4098	16.914	24.989	34.634	45.851	58.638	72.996	88.925	106.425	125.50	146.14	168.35	192.13	217.48	244.41	41/64
21/32	.3382	2.1545	5.5415	10.4994	17.028	25.127	34.798	46.039	58.850	73.233	89.186	106.711	125.81	146.47	168.71	192.52	217.89	244.84	21/32
43/64	.3545	2.1953	5.6069	10.5893	17.142	25.266	34.961	46.227	59.063	73.470	89.448	107.000	126.12	146.81	169.07	192.90	218.30	245.28	43/64
11/16	.3712	2.2365	5.6727	10.6796	17.257	25.406	35.125	46.415	59.276	73.708	89.710	107.284	126.43	147.14	169.43	193.28	218.71	245.71	11/16
45/64	.3883	2.2782	5.7388	10.7703	17.372	25.546	35.289	46.604	59.489	73.946	89.973	107.571	126.74	147.48	169.79	193.67	219.12	246.14	45/64
23/32	.4057	2.3201	5.8054	10.8614	17.488	25.686	35.454	46.793	59.703	74.184	90.236	107.858	127.05	147.82	170.15	194.06	219.53	246.58	23/32
47/64	.4236	2.3623	5.8723	10.9528	17.604	25.826	35.619	46.983	59.917	74.423	90.499	108.146	127.36	148.15	170.51	194.44	219.94	247.01	47/64
3/4	.4418	2.4053	5.9396	11.0447	17.721	25.967	35.785	47.173	60.132	74.662	90.763	108.434	127.68	148.49	170.87	194.83	220.35	247.45	3/4
49/64	.4604	2.4484	6.0073	11.1369	17.837	26.108	35.951	47.363	60.347	74.901	91.027	108.723	127.99	148.83	171.24	195.21	220.76	247.89	49/64
25/32	.4794	2.4929	6.0753	11.2295	17.954	26.250	36.117	47.554	60.562	75.141	91.291	109.012	128.30	149.17	171.60	195.60	221.18	248.32	25/32
51/64	.4987	2.5359	6.1438	11.3236	18.072	26.392	36.283	47.745	60.778	75.382	91.556	109.301	128.62	149.50	171.96	195.99	221.59	248.76	51/64
13/16	.5185	2.5802	6.2126	11.4159	18.190	26.535	36.450	47.937	60.994	75.622	91.821	109.591	128.93	149.84	172.32	196.38	222.00	249.20	13/16
53/64	.5386	2.6248	6.2819	11.5096	18.308	26.678	36.618	48.129	61.211	75.863	92.087	109.881	129.25	150.18	172.69	196.77	222.41	249.63	53/64
27/32	.5591	2.6699	6.3515	11.6038	18.427	26.821	36.787	48.321	61.427										

Area = .7853981634XD²

Concluded

Diam.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	Diam.
0	254.47	283.53	314.16	346.36	380.13	415.48	452.39	490.87	530.93	572.56	615.75	660.52	706.86	754.77	804.25	855.30	907.92	962.11	0
1/16	256.24	285.40	316.13	348.43	382.30	417.74	454.75	493.33	533.48	575.21	618.50	663.37	709.81	757.81	807.39	858.54	911.26	965.55	1/16
1/8	258.02	287.27	318.10	350.50	384.46	420.00	457.11	495.79	536.05	577.87	621.26	666.23	712.76	760.87	810.54	861.79	914.61	969.00	1/8
3/16	259.80	289.15	320.08	352.57	386.64	422.28	459.49	498.26	538.61	580.54	624.03	669.09	715.72	763.93	813.70	865.05	917.96	972.45	3/16
1/4	261.59	291.04	322.06	354.66	388.82	424.56	461.86	500.74	541.19	583.21	626.80	671.96	718.69	766.99	816.86	868.31	921.32	975.91	1/4
5/16	263.38	292.93	324.05	356.75	391.01	426.84	464.25	503.22	543.77	585.89	629.57	674.83	721.66	770.06	820.03	871.57	924.69	979.37	5/16
3/8	265.18	294.83	326.05	358.84	393.20	429.13	466.64	505.71	546.35	588.57	632.36	677.71	724.64	773.14	823.21	874.85	928.06	982.84	3/8
7/16	266.99	296.74	328.05	360.94	395.40	431.43	469.03	508.20	548.95	591.26	635.14	680.60	727.63	776.22	826.39	878.13	931.44	986.32	7/16
1/2	268.80	298.65	330.06	363.05	397.61	433.74	471.44	510.71	551.55	593.96	637.94	683.49	730.62	779.31	829.58	881.41	934.82	989.80	1/2
9/16	270.62	300.57	332.08	365.16	399.82	436.05	473.84	513.21	554.15	596.66	640.74	686.39	733.61	782.41	832.77	884.71	938.21	993.29	9/16
5/8	272.45	302.49	334.10	367.28	402.04	438.36	476.26	515.72	556.76	599.37	643.55	689.30	736.62	785.51	835.97	888.00	941.61	996.78	5/8
11/16	274.28	304.42	336.13	369.41	404.26	440.69	478.68	518.24	559.38	602.08	646.36	692.21	739.63	788.62	839.18	891.31	945.01	1000.28	11/16
3/4	276.12	306.35	338.16	371.54	406.49	443.01	481.11	520.77	562.00	604.81	649.18	695.13	742.64	791.73	842.39	894.62	948.42	1003.79	3/4
13/16	277.96	308.30	340.20	373.68	408.73	445.35	483.54	523.30	564.63	607.53	652.01	698.05	745.67	794.85	845.61	897.93	951.83	1007.30	13/16
7/8	279.81	310.24	342.25	375.83	410.97	447.69	485.98	525.84	567.27	610.27	654.84	700.98	748.69	797.98	848.83	901.26	955.25	1010.82	7/8
15/16	281.67	312.20	344.30	377.98	413.22	450.04	488.42	528.38	569.91	613.01	657.68	703.92	751.73	801.11	852.06	904.59	958.68	1014.34	15/16

Diam.	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	Diam.
0	1017.9	1075.2	1134.1	1194.6	1256.6	1320.3	1385.4	1452.2	1520.5	1590.4	1661.9	1734.9	1809.6	1885.7	1963.5	2042.8	2123.7	2206.2	0
1/8	1025.0	1082.5	1141.6	1202.3	1264.5	1328.3	1393.7	1460.7	1529.2	1599.3	1670.9	1744.2	1819.0	1895.4	1973.3	2052.8	2133.9	2216.6	1/8
1/4	1032.1	1089.8	1149.1	1210.0	1272.4	1336.4	1402.0	1469.1	1537.9	1608.2	1680.0	1753.5	1828.5	1905.0	1983.2	2062.9	2144.2	2227.0	1/4
3/8	1039.2	1097.1	1156.6	1217.7	1280.3	1344.5	1410.3	1477.6	1546.6	1617.0	1689.1	1762.7	1837.9	1914.7	1993.1	2073.0	2154.5	2237.5	3/8
1/2	1046.3	1104.5	1164.2	1225.4	1288.2	1352.7	1418.6	1486.2	1555.3	1626.0	1698.2	1772.1	1847.5	1924.4	2003.0	2083.1	2164.8	2248.0	1/2
5/8	1053.5	1111.8	1171.7	1233.2	1296.2	1360.8	1427.0	1494.7	1564.0	1634.9	1707.4	1781.4	1857.0	1934.2	2012.9	2093.2	2175.1	2258.5	5/8
3/4	1060.7	1119.2	1179.3	1241.0	1304.2	1369.0	1435.4	1503.3	1572.8	1643.9	1716.5	1790.8	1866.5	1943.9	2022.8	2103.3	2185.4	2269.1	3/4
7/8	1068.0	1126.7	1186.9	1248.8	1312.2	1377.2	1443.8	1511.9	1581.6	1652.9	1725.7	1800.1	1876.1	1953.7	2032.8	2113.5	2195.8	2279.6	7/8

Diam.	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	Diam.
0	2290.2	2375.8	2463.0	2551.8	2642.1	2734.0	2827.4	2922.5	3019.1	3117.2	3217.0	3318.3	3421.2	3525.7	3631.7	3739.3	3848.5	0
1/4	2311.5	2397.5	2485.0	2574.2	2664.9	2757.2	2851.0	2946.5	3043.5	3142.0	3242.2	3343.9	3447.2	3552.0	3658.4	3766.4	3876.0	1/4
1/2	2332.8	2419.2	2507.2	2596.7	2687.8	2780.5	2874.8	2970.6	3068.0	3166.9	3267.5	3369.6	3473.2	3578.5	3685.3	3793.7	3903.6	1/2
3/4	2354.3	2441.1	2529.4	2619.4	2710.9	2803.9	2898.6	2994.8	3092.6	3191.9	3292.8	3395.3	3499.4	3605.0	3712.2	3821.0	3931.4	3/4

Diam.	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	Diam.
0	3959.2	4071.5	4185.4	4300.8	4417.9	4536.5	4656.6	4778.4	4901.7	5026.5	5153.0	5281.0	5410.6	5541.8	5674.5	5808.8	0
1/4	3987.1	4099.8	4214.1	4329.9	4447.4	4566.4	4686.9	4809.0	4932.7	5058.0	5184.9	5313.3	5443.3	5574.8	5707.9	5842.6	1/4
1/2	4015.2	4128.2	4242.9	4359.2	4477.0	4596.3	4717.3	4839.8	4963.9	5089.6	5216.8	5345.6	5476.0	5607.9	5741.5	5876.5	1/2
3/4	4043.3	4156.8	4271.8	4388.5	4506.7	4626.4	4747.8	4870.7	4995.2	5121.2	5248.9	5378.1	5508.8	5641.2	5775.1	5910.6	3/4

Diam.	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	Diam.
0	5944.7	6082.1	6221.1	6361.7	6503.9	6647.6	6792.9	6939.8	7088.2	7238.2	7389.8	7543.0	7697.7	7854.0	8011.8	8171.3	0
1/4	5978.9	6116.7	6256.1	6397.1	6539.7	6683.8	6829.5	6976.7	7125.6	7276.0	7428.0	7581.5	7736.6	7893.3	8051.6	8211.4	1/4
1/2	6013.2	6151.4	6291.2	6432.6	6575.6	6720.1	6866.1	7013.8	7163.0	7313.8	7466.2	7620.1	7775.6	7932.7	8091.4	8251.6	1/2
3/4	6047.6	6186.2	6326.4	6468.2	6611.5	6756.4	6902.9	7051.0	7200.6	7351.8	7504.5	7658.9	7814.8	7972.2	8131.3	8291.9	3/4

Diam.	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	Diam.
0	8332.3	8494.9	8659.0	8824.7	8992.0	9160.9	9331.3	9503.3	9676.9	9852.0	10029	10207	10387	10568	10751	10936	0
1/4	8372.8	8535.8	8700.3	8866.4	9034.1	9203.3	9374.7	9546.6	9720.5	9896.1	10073	10252	10432	10614	10797	10982	1/4
1/2	8413.4	8576.7	8741.7	8908.2	9076.3	9245.9	9417.1	9589.9	9764.3	9940.2	10118	10297	10477	10660	10843	11029	1/2
3/4	8454.1	8617.8	8783.2	8950.0	9118.5	9288.6	9460.2	9633.3	9808.1	9984.4	10162	10342	10523	10705	10890	11075	3/4

Diam.	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	Diam.
0	11122	11310	11499	11690	11882	12076	12272	12469	12668	12868	13070	13273	13478	13685	13893	14103	0
1/4	11169	11357	11547	11738	11931	12125	12321	12519	12718	12918	13121	13324	13530	13737	13945	14155	1/4
1/2	11216	11404	11594	11786	11979	12174	12370	12568	12768	12969	13171	13376	13581	13789	13998	14208	1/2
3/4	11263	11452	11642	11834	12028	12223	12420	12618	12818	13019	13222	13427	13633	13841	14050	14261	3/4