CALCULATION FACTOR TABLE
USE FACTORS TO CALCULATE YIELD, BURST
AND ALLOWABLE WORKING PRESSURE

1. Allowable Working Pressure   = Factor X Allowable Stress Value (PSI)

2. Calculated Yield Pressure   = Factor X Minimum Yield Strength (PSI)

3. Calculated Burst Pressure   = Factor X Minimum Tensile Strength (PSI)

See table of "Allowable Stress Values for Material at Various Temperatures" (Page 10)

	TUBING WALL THICKNESS										
Tubing O.D	.016	.020	.028	.032	.035	.049	.065	.083	.095	.109	.120
1/8	0.285	0.367	0.533	0.615	.6756*						
3/16	0.183	0.233	0.339	0.395	0.436	.6289*					
1/4	0.135	0.171	0.246	0.285	0.315	0.460	.6255*				
5/16		0.135	0.193	0.223	0.246	0.359	0.491				
3/8			0.151	0.183	0.202	0.292	0.402	0.526			
1/2			0.117	0.135	0.148	0.213	0.290	0.383	0.445		
5/8					0.117	0.167	0.227	0.297	0.346	0.405	
3/4					0.097	0.138	0.186	0.243	0.282	0.329	0.367
7/8					0.083	0.117	0.158	0.205	0.238	0.277	0.308
1					0.072	0.102	0.137	0.178	0.206	0.239	0.266

Factor to left of heavy black line were calculated using the "Boardman Formula", those to the right were calculated using the "Lame Formula".

Chart Factors have been established per "ASME Boiler and Pressure Vessel Code, Pressure Vessels, Section VIII - Par. UG-27 and Appendix 1, Par. 1-2", and ASME Code for Pressure Piping, Chemical Plant and Petroleum Refinery Piping, ANSI B31.3. Par. 304.1.2.

* Factors marked with * are not covered by ANSI B31.3

How To Use " THE CALCULATION FACTOR TABLE"

The values listed on the "CALCULATION FACTOR TABLE" may be used to determine the allowable pressure, yield pressure, burst pressure or any other pressure for which a stress value is available. Stress values may be obtained from "ALLOWABLE STRESS VALUES FOR MATERIALS AT VARIOUS TEMPERATURES" table or other sources. This table can prove quite useful in calculating allowable burst pressures of tubes not included on the prepared tables. This would include different materials as well as materials at various temperatures.

The following example illustrates the proper use of the "CALCULATION FACTOR TABLE"

Suppose that you want to know the maximum allowable pressure of 304 S. Steel seamless, ASTM A-213, 1/4" O.D by .035 wall tubing with a fluid temperature of 100°F. This information can be directly obtained from the table "ALLOWABLE WORKING PRESSURE - 304 STAINLESS STEEL" or calculated as follows:

First: Find the factor (K) corresponding to 1/4" O.D. x .035 wall on the "CALCULATION FACTOR TABLE". K = .3153

Second: Find the allowable stress (S_A) for 304 S. Steel at 100°F on the "ALLOWABLE STRESS VALUES FOR MATERIALS AT VARIOUS TEMPERATURES".

S_A = 18,700 PSI

Third: According to "CALCULATION FACTOR TABLE", Allowable Working Pressure (P_A) = Factor (K) = Allowable Stress (S) Value in PSI.

Therefore, $P_A = K \times S_A$

P_A = .3153 x 18,700 PSI

P_A = 5890 PSI (Max, Allowable Pressure at 100°F)