

TUBE CONFIGURATION (External Pressure)

Inner Diameter : 7.5000 in
 Outer Diameter : 10.250 in
 Wall Thickness : 1.3750 in
 Tube Length : 11.000 in

Weight in air : 42.593 lbs
 Weight in water: 8.9724 lbs

Failure Mode: Shell failure at 16.631 Ksi (Thick wall eq's)

Thin Wall Buckling at 193.65 Ksi by 2 nodes
 Seat failure N/A
 Shear failure N/A

ALUMINUM, 7075-T6 Properties:

Yield Strength : 62 Ksi
 Elastic Modulus : 10.3 Mpsi
 Density : 0.101 lb/cu in
 Poisson's Ratio : 0.33
 Comments :
 Compressive Young's Modulus = 10.5 Mpsi

Tube distortion values:

Pressure Ksi	Depth m (sea)	Max Axial Stress, Ksi	Max Hoop Stress, Ksi	Max Equiv Stress, Ksi	d ID Inches
1.0000	685.44	-2.1524	-4.3047	3.7280	-0.0026173
2.0000	1368.8	-4.3047	-8.6095	7.4560	-0.0052346
3.0000	2050.1	-6.4571	-12.914	11.184	-0.0078520
4.0000	2729.4	-8.6095	-17.219	14.912	-0.010469
5.0000	3406.7	-10.762	-21.524	18.640	-0.013087
6.0000	4082.0	-12.914	-25.828	22.368	-0.015704
7.0000	4755.3	-15.067	-30.133	26.096	-0.018321
8.0000	5426.6	-17.219	-34.438	29.824	-0.020939
9.0000	6096.0	-19.371	-38.743	33.552	-0.023556
10.000	6763.5	-21.524	-43.047	37.280	-0.026173
11.000	7429.0	-23.676	-47.352	41.008	-0.028791
12.000	8092.7	-25.828	-51.657	44.736	-0.031408
13.000	8754.4	-27.981	-55.962	48.464	-0.034025
14.000	9414.3	-30.133	-60.266	52.192	-0.036643
15.000	10072	-32.286	-64.571	55.920	-0.039260
16.000	10729	-34.438	-68.876	59.648	-0.041877
16.631*	11142	-35.796	-71.591	62.000	-0.043528
17.000*	11383	-36.590	-73.181	63.376	-0.044494
18.000*	12036	-38.743	-77.485	67.104	-0.047112
19.000*	12686	-40.895	-81.790	70.832	-0.049729
20.000*	13336	-43.047	-86.095	74.560	-0.052346

* = after housing failure

Tube distortion values:

d OD Inches	d Length Inches
-0.0022535	-0.00078154
-0.0045069	-0.0015631
-0.0067604	-0.0023446
-0.0090139	-0.0031262
-0.011267	-0.0039077
-0.013521	-0.0046892
-0.015774	-0.0054708
-0.018028	-0.0062523
-0.020281	-0.0070339
-0.022535	-0.0078154
-0.024788	-0.0085969
-0.027042	-0.0093785
-0.029295	-0.010160
-0.031548	-0.010942
-0.033802	-0.011723
-0.036055	-0.012505
-0.037477	-0.012998
-0.038309	-0.013286
-0.040562	-0.014068
-0.042816	-0.014849
-0.045069	-0.015631

* = after housing failure