

TUBE CONFIGURATION (External Pressure)

Inner Diameter : 5.2500 in
 Outer Diameter : 5.8750 in
 Wall Thickness : 0.31250 in
 Tube Length : 16.000 in

Weight in air : 3.8840 kg
 Weight in water: -3.4032 kg

Failure Mode: Shell failure at 4070.7 psi (Thick wall eq's)

Thin Wall Buckling at 5710.6 psi by 2 nodes

Seat failure N/A

Shear failure N/A

ALUMINUM, 6061-T6 Properties:

Yield Strength : 35 Ksi

Elastic Modulus : 9.9 Mpsi

Density : 0.098 lb/cu in

Poisson's Ratio : 0.33

Comments :

Compressive Young's Modulus = 10.1 Mpsi Compressive

Yield Strength = 34 Ksi Minimum Welded Yield Strength

= 15 kpsi

Tube distortion values:

Pressure Kbar	Depth m (sea)	Max Axial Stress, psi	Max Hoop Stress, psi	Max Equiv Stress, psi	d ID cm
0.068948	685.44	-4964.0	-9928.1	8598.0	-0.011166
0.13790	1368.8	-9928.1	-19856	17196	-0.022333
0.20684	2050.1	-14892	-29784	25794	-0.033499
0.27579	2729.4	-19856	-39712	34392	-0.044665
0.28067*	2777.4	-20207	-40415	35000	-0.045455
0.34474*	3406.7	-24820	-49640	42990	-0.055832
0.41369*	4082.0	-29784	-59569	51588	-0.066998
0.48263*	4755.3	-34748	-69497	60186	-0.078164
0.55158*	5426.6	-39712	-79425	68784	-0.089331
0.62053*	6096.0	-44676	-89353	77382	-0.10050
0.68948*	6763.5	-49640	-99281	85980	-0.11166
0.75842*	7429.0	-54604	-109210	94578	-0.12283
0.82737*	8092.7	-59569	-119140	103180	-0.13400
0.89632*	8754.4	-64533	-129070	111770	-0.14516
0.96527*	9414.3	-69497	-138990	120370	-0.15633
1.0342*	10072	-74461	-148920	128970	-0.16749
1.1032*	10729	-79425	-158850	137570	-0.17866
1.1721*	11383	-84389	-168780	146170	-0.18983
1.2411*	12036	-89353	-178710	154760	-0.20099
1.3100*	12686	-94317	-188630	163360	-0.21216
1.3790*	13336	-99281	-198560	171960	-0.22333

* = after housing failure

Tube distortion values:

d OD cm	d Length cm
-0.010491	-0.0069284
-0.020982	-0.013857
-0.031473	-0.020785
-0.041964	-0.027714
-0.042706	-0.028204
-0.052455	-0.034642
-0.062945	-0.041570
-0.073436	-0.048499
-0.083927	-0.055427
-0.094418	-0.062356
-0.10491	-0.069284
-0.11540	-0.076212
-0.12589	-0.083141
-0.13638	-0.090069
-0.14687	-0.096998
-0.15736	-0.10393
-0.16785	-0.11085
-0.17835	-0.11778
-0.18884	-0.12471
-0.19933	-0.13164
-0.20982	-0.13857

* = after housing failure