

PSI DEVELOPS STIFF ELASTOMERIC DIAPHRAGMS

Pressures Systems, Inc. the world's leading titanium pressure vessel manufacturer, has developed a new product line: propellant tanks containing "stiff" AF-E-332 elastomeric diaphragms.

These new stiff diaphragms are not meant to replace the aerospace industry's workhorse - our "standard" AF-E-332 elastomeric diaphragms. They are offered to fill the need where there is a requirement to increase the damping of the diaphragm on fluid motion and limit the shifting of propellant center of gravity.

There are other favorable features of this stiff elastomeric diaphragm, such as improved stability over the standard elastomeric diaphragm, predictable propellant C.G., and repeatability of propellant expulsion. And unlike metal diaphragms, the stiff elastomeric diaphragms are ground testable.

Several sizes of stiff diaphragms have been made, including our most popular 16.5 inch and 22 inch diaphragms. These new diaphragms have completed compliance tests such as expulsion, cycling, and slosh. See Figures 1 and 2. We are confident that these stiff diaphragms will offer the same reliable service as its standard AF-E-332 diaphragm predecessor.

The best part of this new product line may be that there is almost no non-recurring cost. The stiff diaphragms are made using existing diaphragm molds. They are interchangeable with our standard AF-E-332 diaphragms, and they can be installed into existing, qualified tank shells without modification to the tank shell and diaphragm retaining features, thus eliminating the need for a qualification test program.

Although stiff diaphragms are still in its infancy, it already holds many potentials and promises. PSI's General Manager, Mr. Gary Kawahara, sums up our new offer with a simple statement: "The stiff diaphragm offers the best of all worlds. We can bring a it to the market quickly, cheaply, and still offer our customers our unrivaled heritage and reliability."

If you are interested in this new product line, please contact Walter Tam, PSI Manager for Programs and Program Development.

Figure 1: Wet Expulsion Test, Stiff Diaphragm



Figure 2: Slosh Test, Stiff Diaphragm

