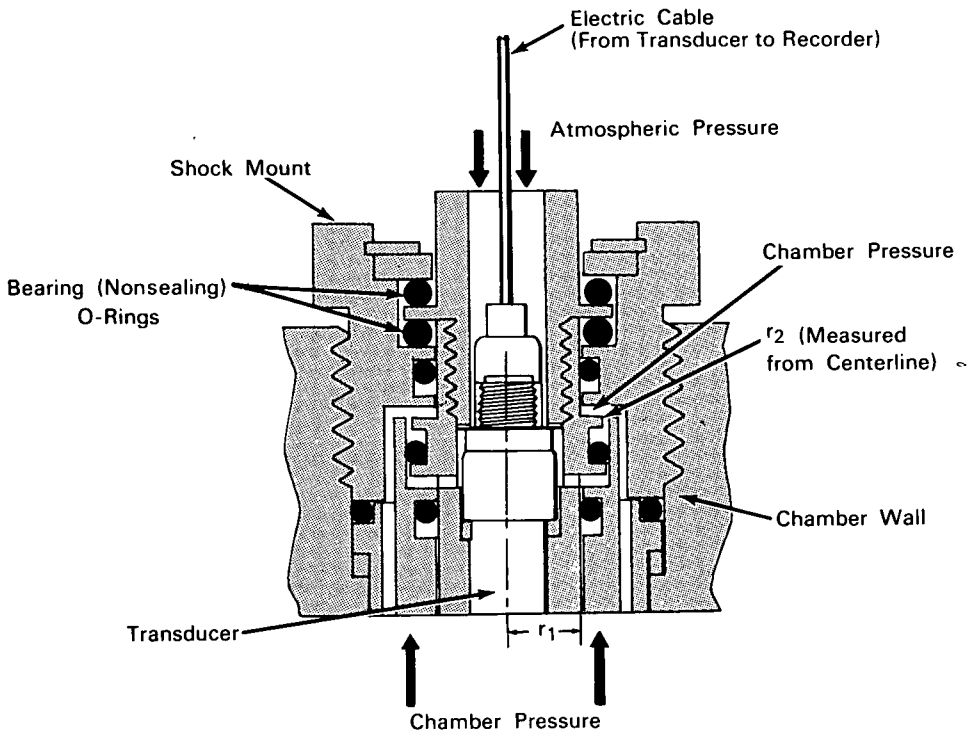
# NASA TECH BRIEF



## Shock Mount Isolates Pressure Transducers from Vibration




**The problem:** Accurately measuring chamber pressures with flush-diaphragm transducers in severe shock and vibration environments. The preloading of the chamber pressure on padding material used in conventional shock mounts for the transducers compresses and stiffens the material, thus reducing its effectiveness as a shock and vibration damper.

**The solution:** A pressure-compensated shock mount that effectively isolates the pressure transducer from shock and vibration forces.

**How it's done:** The shock mount contains a number of silicone elastomer O-rings which serve as shock- and vibration-damping pads. Through a series of passages in the mount, the chamber pressure acts to cancel the preloading forces so that the pads remain relatively soft and retain their damping characteristics. This cancellation is accomplished by making area $A_1$ (represented by radius $r_1$) equal to area $A_2$ (represented by $r_2$-$r_1$), so that the force due to the chamber pressure on $A_1$ is equal to the force due to the chamber pressure on $A_2$. With the preload eliminated, the

(continued overleaf)

"spring constant" of the upper pads (silicone elastomer O-rings) may be very low, and the pads are required only to reposition the transducer in the event it should be displaced by instantaneous differences in pressure on $A_1$ and $A_2$.

**Notes:**

1. This device would be effective for shock mounting transducers used for measurement of pressures in shock tubes and other systems subject to intense shock and vibration forces.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Jet Propulsion Laboratory
   4800 Oak Grove Drive
   Pasadena, California, 91103
   Reference: B65-10113

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated.

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(JPL-631)