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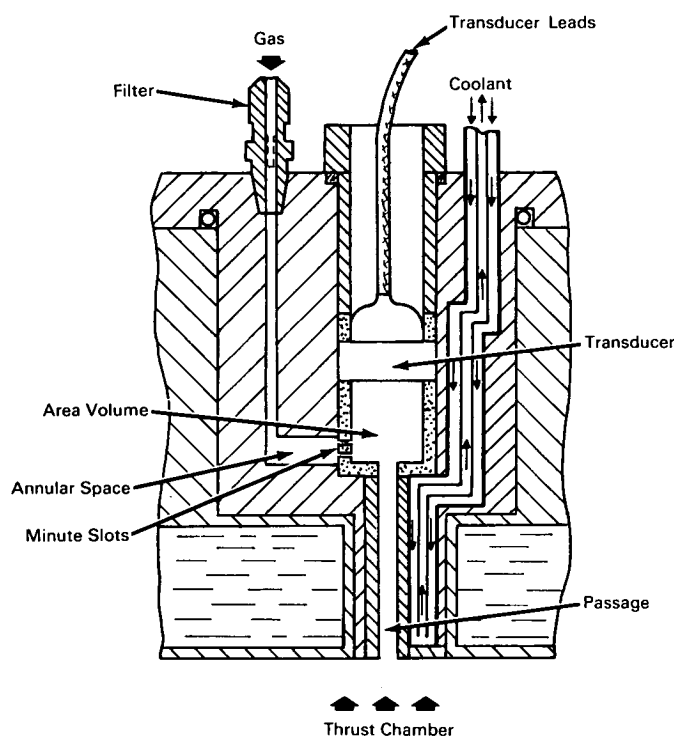
Brief 66-10021

NASA TECH BRIEF



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Special Mount Improves Remote Transducer Accuracy



The problem:

To measure transient pressures in a hostile environment, such as the thrust chamber of a rocket motor. It is necessary in such cases to locate a transducer away from this environment. A number of complicating factors are thus introduced, such as: length, diameter, and configuration of the passage leading to the transducer, in addition to the composition and temperature of the fluid in the passage. Heat transfer to the transducer and its connecting passage and clogging by com-

bustion products are common problems in such systems.

The solution:

A transducer-mounting device that provides free passage areas and a controlled environment for the measuring instrument.

How it's done:

The transducer is mounted in a body with a sleeve designed to provide a precise volume between the

(continued overleaf)

transducer diaphragm and a small diameter passage leading to the chamber where the pressure transients occur. A control gas is fed through a filter into an annular space that leads through four minute slots to the volume and small passage. This control gas provides a known acoustic medium between transducer diaphragm and thrust chamber and prevents clogging of the small passage by combustion products.

Thermal equilibrium is maintained in the transducer and small passage by a conditioning fluid that is circulated through an external pipe adjacent to the body of the transducer and small passage. The conditioning

fluid exits by an internal pipe to compensate for heat passing through the chamber wall, or to obtain the chilling effect of a cryogenic regenerative coolant.

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act (42 U.S.C. 2457 (f)) to Princeton University, P.O. Box 172, Princeton, New Jersey.

Source: James Preston Layton of
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