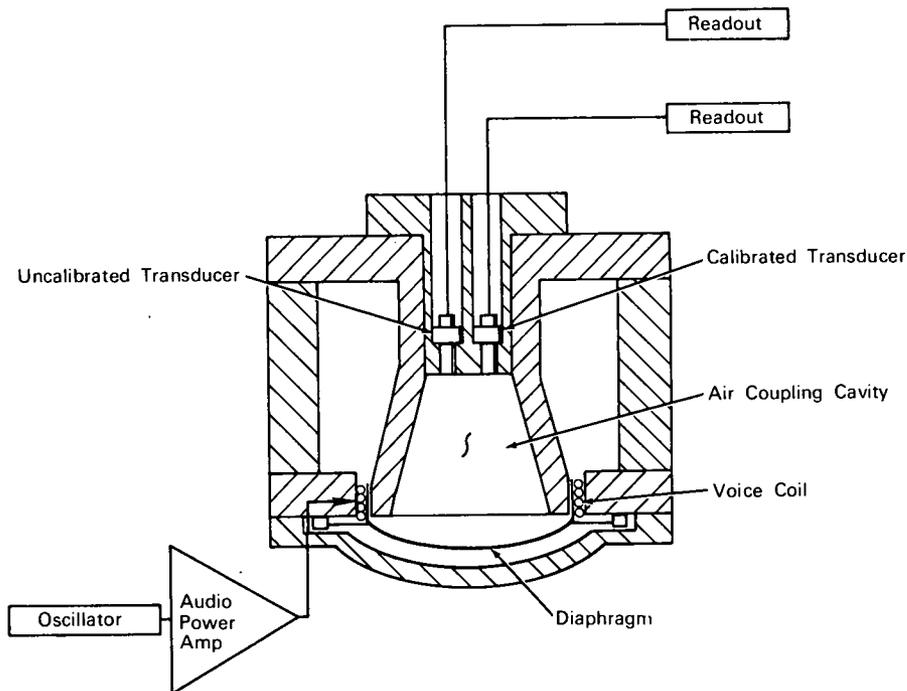


NASA TECH BRIEF



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Metal Diaphragm Used to Calibrate Miniature Transducers



The problem: To develop a dynamic system for miniature pressure transducers over a sine-wave sound range to 160 decibels at frequencies of 200 to 100,000 cycles per second. Such high frequency response is required of pressure transducers used in hypersonic test tunnel applications as well as in space vehicles during launch.

The solution: A dynamic comparative calibration system in which a calibrated transducer and an uncalibrated transducer are exposed to a single input at selected sound amplitudes and frequencies. It is a comparative system in which the unknown is calibrated by referring its readout to that of the known.

How it's done: An electromechanically-driven diaphragm is used to produce a sinusoidal sound pressure in the air coupling cavity. System frequency is determined by the oscillator and audio amplitude is controlled by the power amplifier. The use of a very lightweight metal diaphragm together with a minimum volume air chamber permits the generation of high sound-pressure levels to frequencies of 100,000 cps.

Notes:

1. The system measures only 12 inches by 12 inches and may be operated in a controlled atmosphere chamber at desired pressures greater or less than atmospheric.

(continued overleaf)

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B65-10059

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.
Source: Astro-Space Laboratories, Inc. under contract to Marshall Space Flight Center
(M-FS-207)