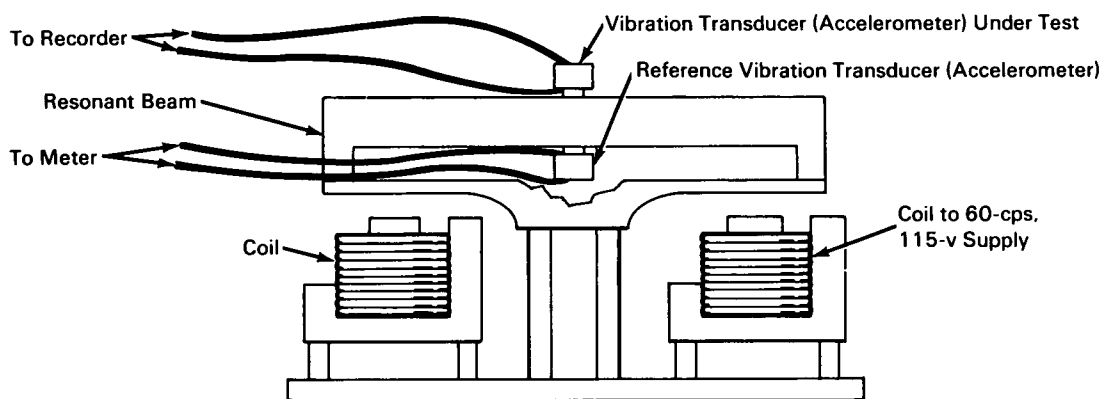


# NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

## Device Calibrates Vibration Transducers at Amplitudes Up to 20g.



**The problem:** Accurately calibrating piezoelectric vibration transducers (accelerometers) and associated recorders at vibration amplitudes of up to 20g. The calibration system must be portable for use at field sites.

**The solution:** A portable (20 lb) calibration system employing an electromagnetically driven resonant beam to generate mechanical vibrations at a fixed frequency (120 cps) and amplitudes which can be adjusted to any value in the range from 0 to 20g. A standard piezoelectric transducer mounted on one surface of the beam provides a reference output voltage to a meter which gives a direct indication of vibration amplitude.

**How it's done:** The reference transducer, mounted on the underside of the resonant beam, is connected through a conventional amplifier circuit to a meter which gives a direct indication of vibration amplitude, or acceleration, with an accuracy of 1%. The meter

dial is calibrated for a full-scale range from 0 to 1g. A grid tap from one stage of the amplifier may be positioned to give full-scale deflections corresponding to 1, 5, 10, and 20g. The piezoelectric transducer to be calibrated is mounted on the top side of the beam. This transducer is electrically connected to the recorder normally used for readout of the vibration amplitude to be measured. The resonant beam is electromagnetically driven from a 60-cps, 115-volt power source. This drive is adjustable to provide discrete vibration amplitudes over the range from 0 to 20g. A calibration is carried out by taking a reading on the recorder for a given amplitude on the meter connected to the reference transducer.

### Notes:

1. The system can be simply modified to permit calibration at a frequency of 240 cps.

(continued overleaf)

2. For further information about this invention inquiries may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama, 35812  
Reference: B63-10572

**Patent status:** NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA Headquarters, Washington, D.C., 20546.

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(M-FS-86)