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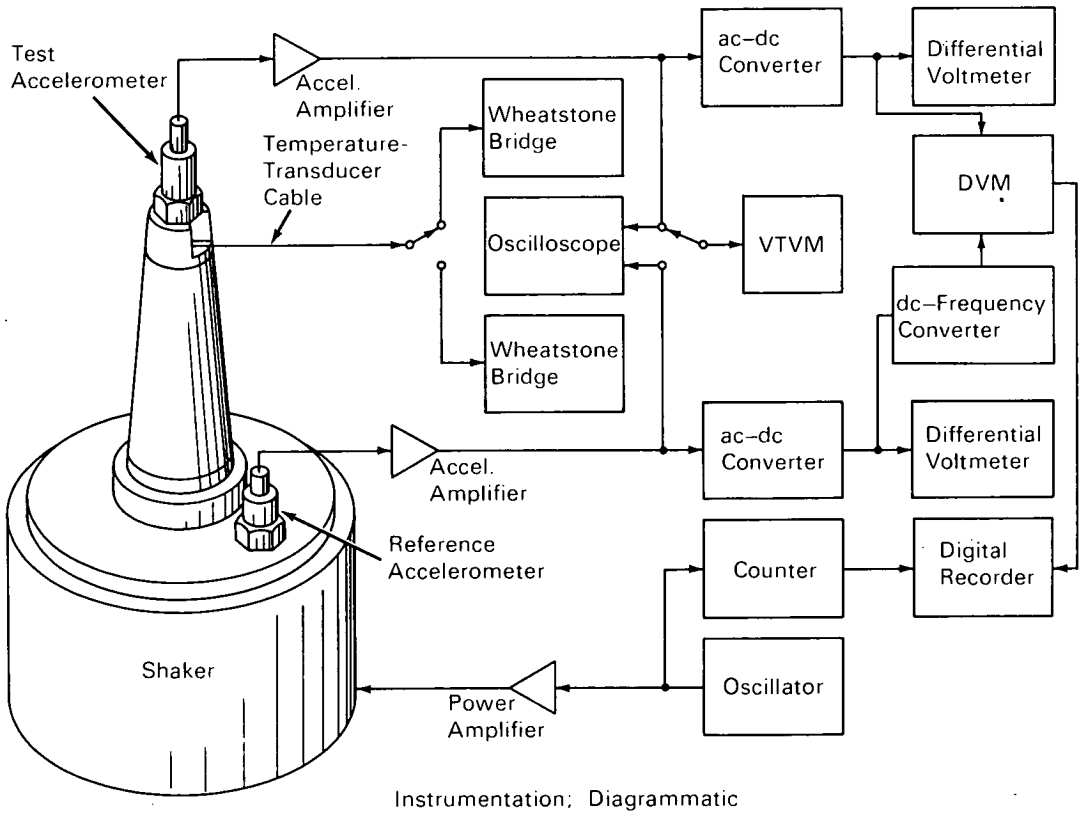
Brief 70-10173

NASA TECH BRIEF

Improved Calibration of Accelerometers at Temperatures Down to -450° F



Instrumentation; Diagrammatic

By a new, more rapid, and less expensive technique piezoelectric accelerometers can be calibrated throughout the temperature range from ambient to −450°F; calibration was previously possible only between 750° and −300°F.

Liquid helium is used as the coolant, instead of liquid nitrogen. The technique employs a cryogenic-temperature chamber, a vibration-measurement system, and a temperature-measurement system. A reference accelerometer is mounted on the vibrator's head and maintained at ambient temperature. The test accelerometer is mounted in the cryostat's test cavity and subjected to vibration in a predetermined sequential mode of reduction in temperature. The differences in outputs of reference and test accelerometers reflect deviations caused by changes in temperature.

The technique may be applied to most components requiring vibratory or rotary motion, or electromagnetic actuation—such as valves, regulators, transducers, and switches.

(continued overleaf)

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Code A&TS-TU
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Reference: TSP70-10173

Patent status:

No patent action is contemplated by NASA.

Source: T. A. DeCarlo, W. E. Perkins, and R. D. Buffum of North American Rockwell Corp. under contract to Marshall Space Flight Center (MFS-18561)