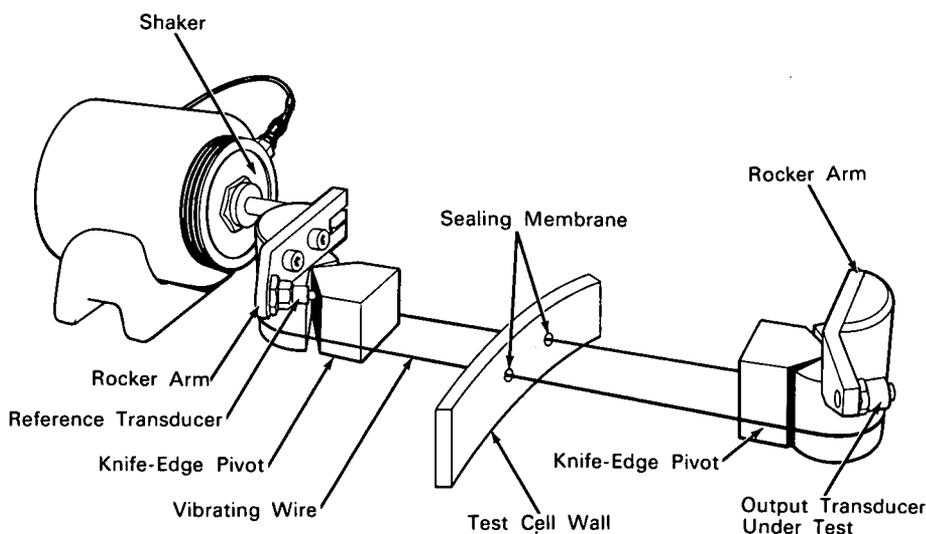


# NASA TECH BRIEF



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## System Transmits Mechanical Vibration into Hazardous Environment



**The problem:** To test the action of vibration transducers in a nuclear radiation field or other hazardous environment. Shaker tables necessary for such tests cannot survive a nuclear or chemically contaminated environment. A system is required to transmit vibratory forces generated outside a nuclear radiation environment to transducers and reactor components under test inside that environment.

**The solution:** A single-axis transmission system uses an electromagnetic shaker table and vibrating

wires to drive identical rocker arms, one within and one outside the hazardous environment.

**How it's done:** The identical rocker arms are joined by two wires, in a condition of high tensile stress, that pass through sealing membranes in the test cell wall. The rocker arms pivot on knife edges to which they are held by the tension in the wires. The rocker arm outside the test cell is vibrated directly by the shaker and this energy is transmitted to the arm inside the cell by the wires. A transducer mounted on the outside rocker arm provides a reference for evaluation of the transducer under test.

(continued overleaf)

**Notes:**

1. This system has been successfully used in a nuclear reactor.
2. With modification this system could be used in a multiaxis configuration.
3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
AEC-NASA Space Nuclear  
Propulsion Office  
U.S. Atomic Energy Commission  
Washington, D.C., 20545  
Reference: B65-10248

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

Source: A. E. Gaal and D. G. Armstrong  
of Westinghouse Astronuclear Laboratory  
under contract to  
Space Nuclear Propulsion Office  
(NU-0025)