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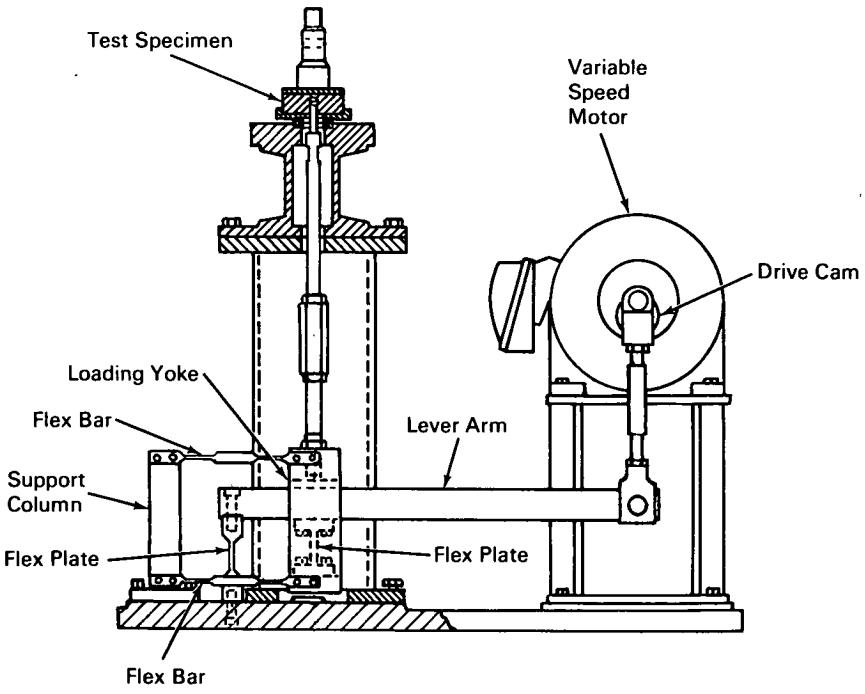
NASA TECH BRIEF

Fatigue Tester Achieves True Axial Motion Through Flex Plates and Bars



The problem:

To design an inexpensive lever load-amplifying fatigue testing machine with a load cycle frequency of 100 to 900 cycles per minute that will apply the load through true axial motion. Pivot friction and bearing wear introduce inaccuracies in present devices.

The solution:

A tester that replaces pivots and bearings with flex plates and bars to achieve true axial motion.

How it's done:

A variable speed motor and commercially available cam operate the lever arm. The arm applies an axial load to the specimen under test through two frictionless flex plates, one to take the place of the usual knife blade pivot, and the other to take the place of the usual bearing on the load bar. Parallel flex bars link a loading yoke and the flex plates with a support column to achieve true axial motion of the load against the test specimen.

(continued overleaf)

Notes:

1. In this design, a load amplification ratio of 5 to 1 has been obtained.
2. 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: B66-10164

Patent status:

No patent action is contemplated by NASA.

Source: C. D. Kurinko and T. F. Hengstenberg of Westinghouse Astronuclear Laboratory under contract to Space Nuclear Propulsion Office (NU-0021)