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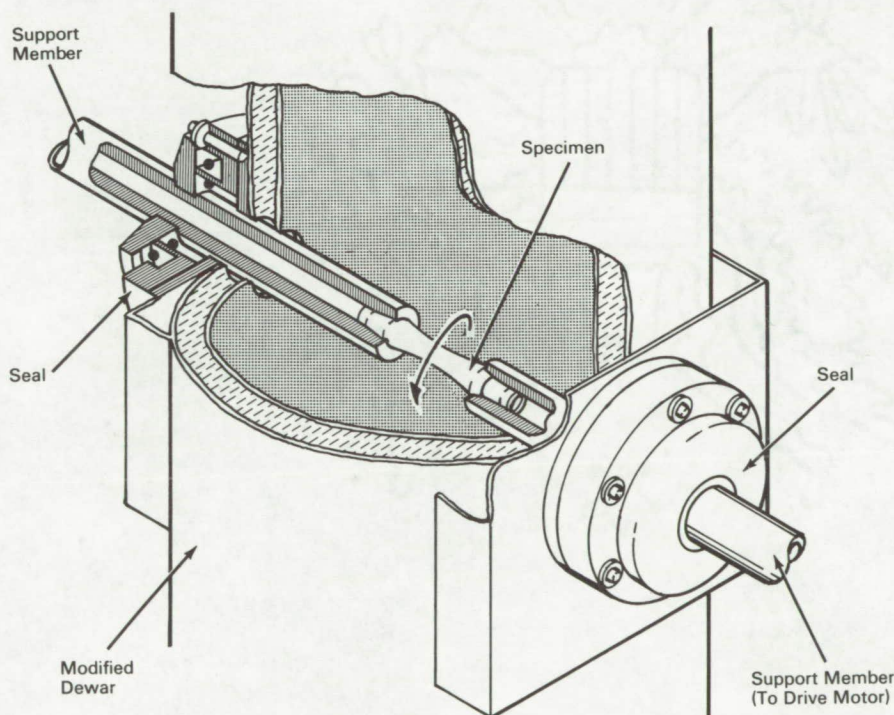
Brief 66-10083

NASA TECH BRIEF



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Cryostat Modified to Aid Rotating Beam Fatigue Test



The problem:

To perform a rotating beam fatigue test in a cryogenic environment. Since the test specimen must be rotated at speeds up to 10,000 rpm, successfully sealing the cryogenic environment from the ambient becomes a critical consideration.

The solution:

A stainless steel Dewar is modified to receive extended specimen supporting members through specially designed rotary seals.

How it's done:

Radially stacked, bellows mounted graphite seals are mounted on opposite sides of the modified Dewar with the specimen, in its supporting members, between them in the cryogenic environment. The Dewar is supported on a platform that may be adjusted in elevation so that no extraneous weight will load the specimen during test. The Dewar is equipped with a liquid level control plus a shut-off switch that is actuated by test specimen catastrophic failure, permitting unattended operation for considerable periods.

(continued overleaf)

Notes:

1. The Dewar, loading members, motor, counter, and electrical harness making up the test set can be fully enclosed and pressurized with an inert gas to make the system explosion proof.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10083

Patent status:

No patent action is contemplated by NASA.

Source: Thomas F. Durham
of North American Aviation, Inc.,
under contract to
Marshall Space Flight Center
(M-FS-435)