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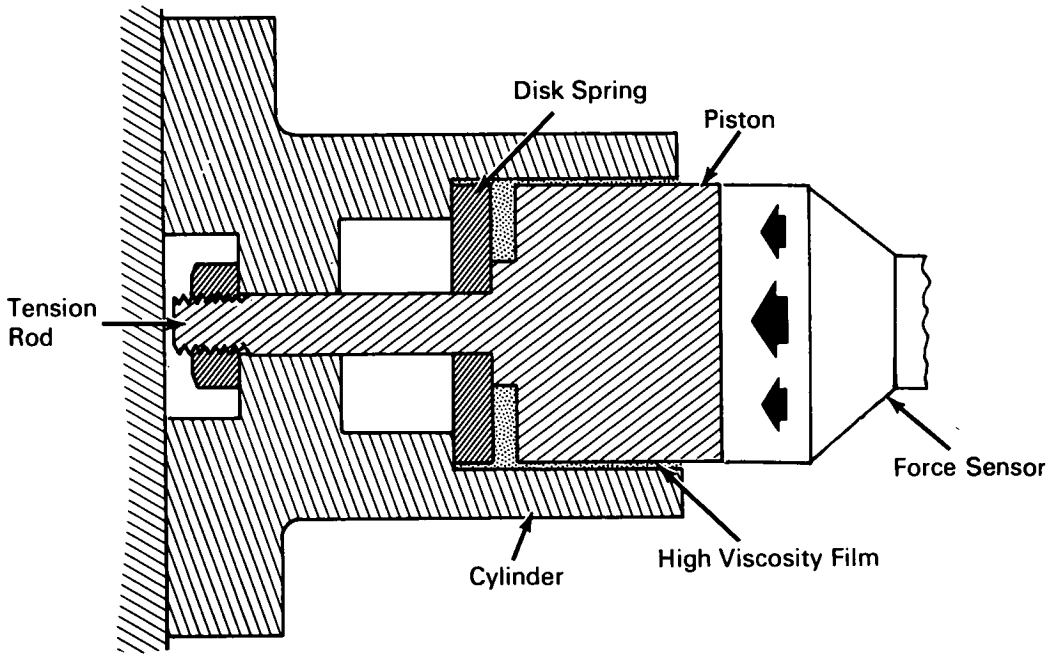
NASA TECH BRIEF

Damper Reduces Effects of Resonance on Force Transducer



The problem:

Resonance generated noise tends to interfere with a transducer signal when critical measurements of small thrust components are being made. Straight mechanical damping has proven unsatisfactory due to response lag that degrades the signal.

The solution:

A viscous-film damper that eliminates response lag is inserted into the thrust measuring system.

How it's done:

The damper assembly consists of a piston, axially restrained by a tension rod that is opposedly held by a disk spring and close fit in a fixed cylinder. A thin layer of high viscosity fluid between the annular surfaces of piston and cylinder produces a laminar damping force.

Notes:

1. This technique can be applied to automated devices where pulsed force or low order impact is involved, as in production machines, dispenser, etc., where signal noise is produced by stopping or reversal of mechanical travel or by water hammer.
2. The damper may be installed either in series with or parallel to the thrust transducer. Series installation is required in a system including acceleration compensation.

(continued overleaf)

3. Piston travel is limited by spring tension to the microinch level.
4. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Western Support Office
   150 Pico Boulevard
   Santa Monica, California 90406
   Reference: B66-10550

Patent status:

No patent action is contemplated by NASA.

Source: R. W. Postma
of North American Aviation, Inc.
under contract to
Western Support Office
(WSO-321)