NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U.S. space program, to encourage their commercial application. Copies are available to the public at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.





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)

This document was prepared under the sponsorship of the National Aeronautics and Space Administration. Neither the United States Government nor any person acting on behalf of the United States Government assumes any liability resulting from the use of the information contained in this document, or warrants that such use will be free from privately owned rights.

- 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)