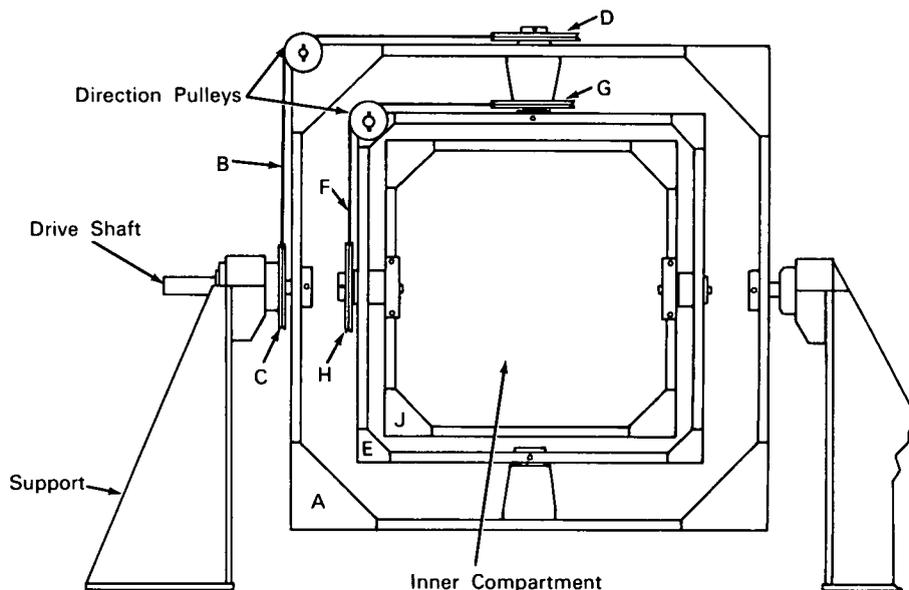


NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Apparatus Alters Position of Objects to Facilitate Demagnetization



The problem: To provide an apparatus in which objects will be positioned in randomly varying orientations. Such an apparatus was required to expedite demagnetization of spacecraft components in a periodically varying magnetic field (produced by an ac source).

The solution: An apparatus containing an inner compartment in which mounted components assume various spatial orientations when the compartment is driven through a system of pulley linkages.

How it's done: The components to be demagnetized are securely mounted in the inner compartment of the apparatus. During operation, the drive shaft turns the outer rectangular frame A and winds belt B around fixed pulley C. As a consequence, this belt causes pulley D to rotate and drive frame E about

an axis perpendicular to that of frame A. As frame E rotates, belt F is wound around pulley G, which is fixed to frame A, and causes pulley H to turn. The inner compartment, which is mounted on a shaft connected to pulley H, will therefore rotate about an axis perpendicular to that of frame E.

There are always two mutually perpendicular axes of rotation. The third axis cycles from a position parallel to one of these axes to a position of mutual perpendicularity with both of these axes. The speeds of rotation of the three frames, A, E, and J (of the inner compartment), are in the ratio 18:19:20, with the inner frame rotating at the fastest speed and the outer frame turning at the slowest speed. At this speed ratio, every point on a component mounted in the inner compartment of the apparatus is cycled through an optimum locus in the demagnetization field.

(continued overleaf)

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland, 20771
Reference: B64-10277

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA Headquarters, Washington, D.C., 20546.

Source: John D. Watson and George Rinard
(GSFC-234)