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NASA TECH BRIEF

Langley Research Center

Magnetic-Heading Reference Device

An unusually inexpensive and reliable magnetic-heading reference device has been designed for use in conjunction with the fluidic-electronic wing-leveler system developed by Langley Research Center. In this application a single magnetometer is placed so that the pilot can make adjustments in aircraft heading simply by rotating the magnetometer itself.

This system utilizes a magnetometer mounted directly to the structure of the aircraft. The magnetometer has a compass scale attached; this assembly is free to rotate about an axis parallel to the yaw axis of the aircraft. Mounted in this manner it can be manually adjusted by the pilot to the desired heading. An electrical circuit is used to compensate for errors in the output of the magnetometer due to the roll of the aircraft.

The application of the magnetometer and the correction network to an actual aircraft control system depends, to some extent, on the related instrumentation available in the aircraft. The compensated magnetometer output can be used directly as a magnetic-heading reference for a wing-leveler type of stability augmentation system or for a more conventional automatic pilot system. It can also serve as a visual-heading reference for a manually steered vehicle.

Notes:

1. The following documentation may be obtained from:
   National Technical Information Service
   Springfield, Virginia 22151
   Single document price $3.75
   (or microfiche $2.25)
   Reference: NASA TN D-7460 (N74-19282), Development and Flight Tests of a Gyroless Wing Leveler and Directional Autopilot
2. Technical questions may be directed to:
   Technology Utilization Officer
   Langley Research Center
   Mail Stop 139-A
   Hampton, Virginia 23665
   Reference: B74-10176

Patent status:

Inquiries concerning rights for the commercial use of this invention should be addressed to:

Patent Counsel
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Category 02, 03