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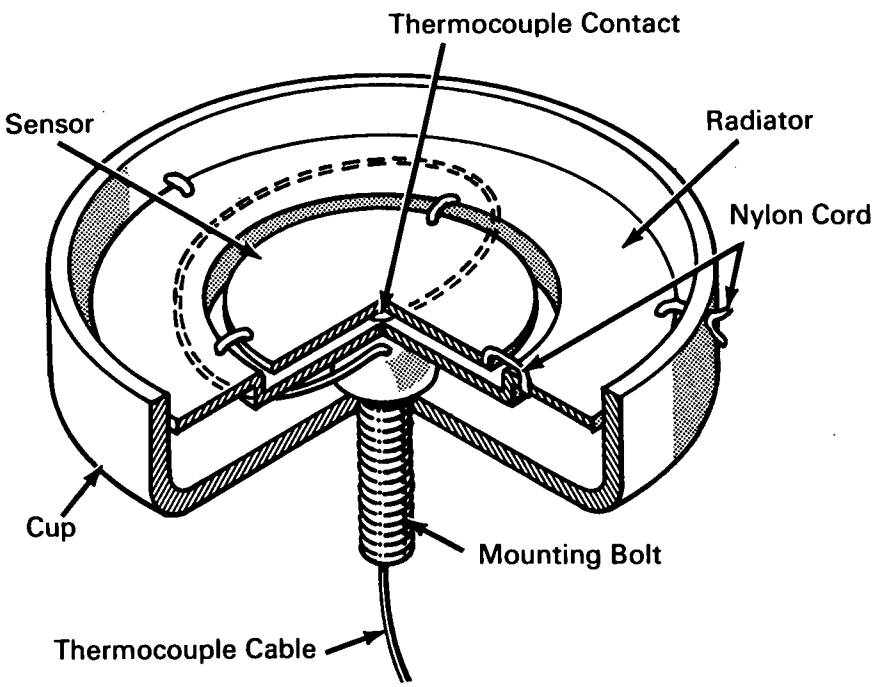
Brief 66-10531

NASA TECH BRIEF

Heat Flux Sensor Design Reduces Extraneous Source Effects



The problem:

To design a heat flux sensor (temperature transducer) that features good thermal isolation from undesirable heat sources, and is reliable and relatively inexpensive to produce.

The solution:

A heat flux sensor that isolates the sensor and its transmitting thermocouple from undesirable heat sources by incorporating a radiator section that forms a radiation shield between mounting cup and sensor.

How it's done:

The sensor, radiator, and cup are all of gold-plated aluminum. The radiator is held in place in the mounting cup by nylon cord tied in three places equidistant about the periphery of each. In like fashion, the sensor is held in place within the circular depression in the center of the radiator. The thermocouple is bonded to the underside of the sensor at its center and the thermocouple cable is routed around and bonded to the underside of the radiator, then led out through the drilled passage in the mounting bolt.

(continued overleaf)

The mounting cup is highly polished on its outer surface to reflect radiant heat.

Notes:

1. Bonding of the thermocouple cable to the underside of the radiator provides a conductive path to dissipate extraneous heat that might otherwise reach the sensor.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Manned Spacecraft Center
   Houston, Texas 77058
   Reference: B66-10531

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: G. P. Robinson and E. D. Crofts
of McDonnell Aircraft Corp.
under contract to
Manned Spacecraft Center
(MSC-400)