

NASA TECH BRIEF

Manned Spacecraft Center

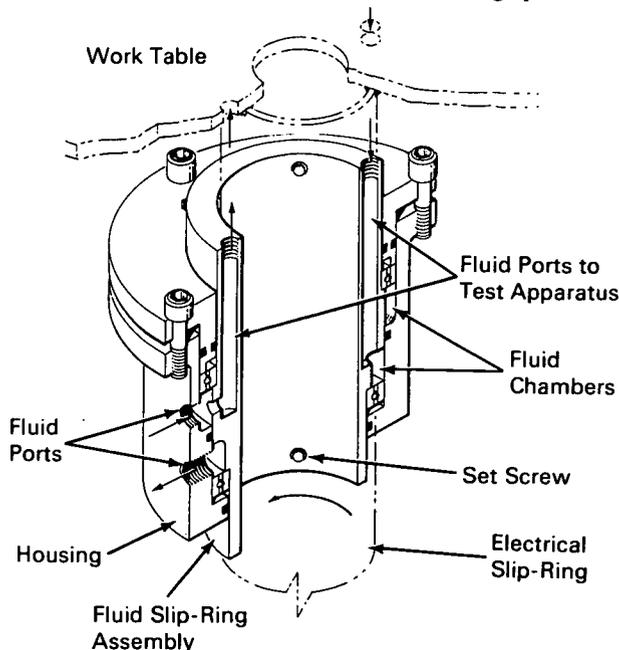


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Fluid Slip Ring Transfers Coolant to Rotating Equipment

The problem:

To transfer cooling fluid to instrumentation undergoing environmental tests on a rotating platform.



The solution:

A rotating fluid coupler (see fig.), consisting of a rotor and housing made of aluminum, that is concentric with an electrical slip-ring assembly.

How it's done:

The fluid coupler rotor and housing are designed to mate with an electrical slip-ring bore. Inlet and outlet fluid passages in the rotor and housing are separated by carefully selected O-ring seals. Compression of the seals is carefully controlled to ap-

proximately 125 microns (0.005 in.) in order to maintain adequate coolant sealing and, at the same time, provide a minimal frictional torque. Two sets of ball bearings are used to reduce the rotational friction and center the rotor with respect to the fluid housing. One of the bearings is clamped on the inner and outer races to secure the rotor to the housing; the other is floated to compensate for fabrication tolerances and thermal expansion. Fluid lines are connected to the housing o.d. with pipe connections and to the rotor with a tube extended axially toward the rotating platform.

The rotating fluid coupler permits unlimited revolutions of the platform and eliminates the danger of the lines being pulled loose from the supply. The capability of mating with the electrical slip-ring while retaining a small outline is made possible by the use of slim-line bearings and dynamic O-ring seals.

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Manned Spacecraft Center, Code JM7
Houston, Texas 77058
Reference: B71-10083

Patent status:

No patent action is contemplated by NASA.

Source: David K. Mains of
Lockheed Electronics Co.
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