January 1965

Brief 65-10021

NASA TECH BRIEF

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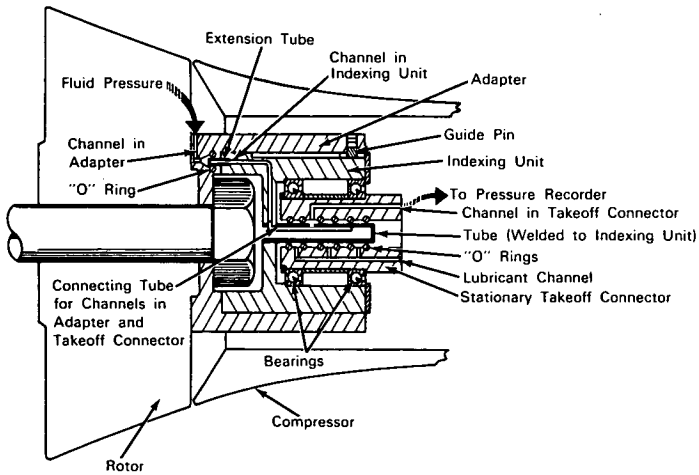
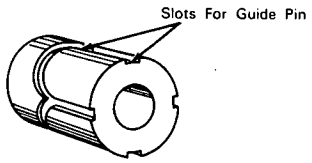
Pickup Device Reads Pressures from Ports in Rotating Mechanisms





The problem: Reading fluid pressures from ports located at various angles on a rotating mechanism, such as a turbine rotor, under operational conditions. Conventional rotating pickups of the nonindexing type, which have been used for this purpose, are of relatively complicated construction. Pressure pickups of the indexing type, which have been commonly used, although of simpler construction, cannot be indexed during rotation, and consequently rotation of the mechanism must be stopped for each pressure measurement.

The solution: An indexing pickup that monitors fluid pressures from several ports on high- or low-speed rotating mechanisms. The pickup employs an indexing unit that permits indexing (angle changing) at any speed by a simple axial movement of a takeoff connector.

How it's done: The illustration shows the device connected to one pressure port in the rotor of a compressor. Fluid pressure is transmitted from a channel in the adapter into a channel in the indexing unit which opens into a channel in the stationary takeoff connector. When it is desired to check the pressure at a different location in the rotor, the stationary takeoff connector is moved away from the rotor in a direction parallel to the axis of rotation. This movement of the takeoff connector causes the indexing unit to move in the same direction and, at the same time, to rotate (relative to the adapter) until the guide pin is positioned in the bottom of one of the curved grooves in the indexing unit. The stationary takeoff connector is then moved toward the rotor to permit the indexing unit to complete its rotational cycle and consequently connect (index) a different pressure port in the rotor.

(continued overleaf)

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Notes:

1. The pickup can also be used to provide variable fluid coupling in rotating machinery.
2. With relatively simple modification, the device can be adapted for monitoring electrical currents, such as from thermocouples, from various locations on a rotating structure.
3. A related invention is described in NASA Tech Brief B64-10031, September 1964. Inquiries may also be directed to:

   Technology Utilization Officer
   Lewis Research Center
   21000 Brookpark Road
   Cleveland, Ohio, 44135
   Reference: B65-10021

Patent status: NASA encourages the commercial use of this invention. It was invented by a NASA employee, and U.S. Patent No. 2,913,002 has been issued to him. Inquiries about obtaining license rights for its commercial development should be addressed to the inventor, Mr. Bronislaus Janas at Lewis Research Center, 21000 Brookpark Road, Cleveland, Ohio, 44135.

Source: (Lewis-158)