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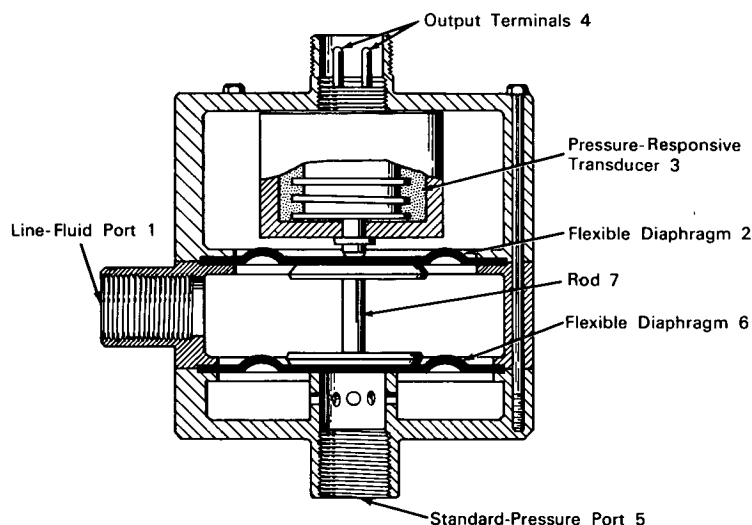
Brief 63-10502

# 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 NASA space program.

## Fluid-Pressure Meter Can Be Calibrated Without Removal from Flow Line



**The problem:** A conventional way of measuring fluid-line pressure is by means of a meter tapped into the line. When the meter needs calibration, one of two methods can be used: (1) The meter is physically removed from the line and connected to a source of standard pressures; after calibration, the meter is reinstalled in the line. (2) Without physically removing the meter, it is disconnected from the line and then connected through the inlet port to the standard pressure source; after calibration, the meter is reconnected in the line. Both methods are troublesome and time-consuming. Furthermore, the latter method contaminates the line fluid with the calibrating fluid.

**The solution:** A meter having (1) two inlet ports, one of which can be connected to the line, and the other to a source of standard pressures for calibration;

and (2) an additional diaphragm separating the chamber containing line pressure from the chamber containing standard calibration pressure.

**How it's done:** In normal operation of the meter, the line fluid enters port 1 and forces up flexible diaphragm 2, actuating a pressure-responsive transducer 3, such as, for example, a variable carbon-pile resistor. The output terminals 4 of the transducer are connected to a suitable readout device. When it is desired to calibrate the meter, the line pressure is shut off and the standard pressure is introduced through port 5, where it forces up diaphragm 6, rod 7, and diaphragm 2, which provides an input to the transducer. The meter reading is then made to conform to the standard pressure. On removal of the standard pressure, both diaphragms return to their rest posi-

(continued overleaf)

tions, and the line pressure may be reconnected to the inlet port.

The new meter not only makes calibration faster and more convenient, but also prevents contamination of line fluid with the standard fluid, increases the measurement accuracy by minimizing valve leakage, and makes possible remote calibration.

**Patent status:** NASA encourages the immediate commercial use of this invention. It was invented by a NASA employee and a patent application has been filed. Inquiries concerning license rights may be made directly to the inventor, D. E. Melton at Marshall Space Flight Center, Huntsville, Alabama.

Source: Marshall Space Flight Center (M-FS-98)