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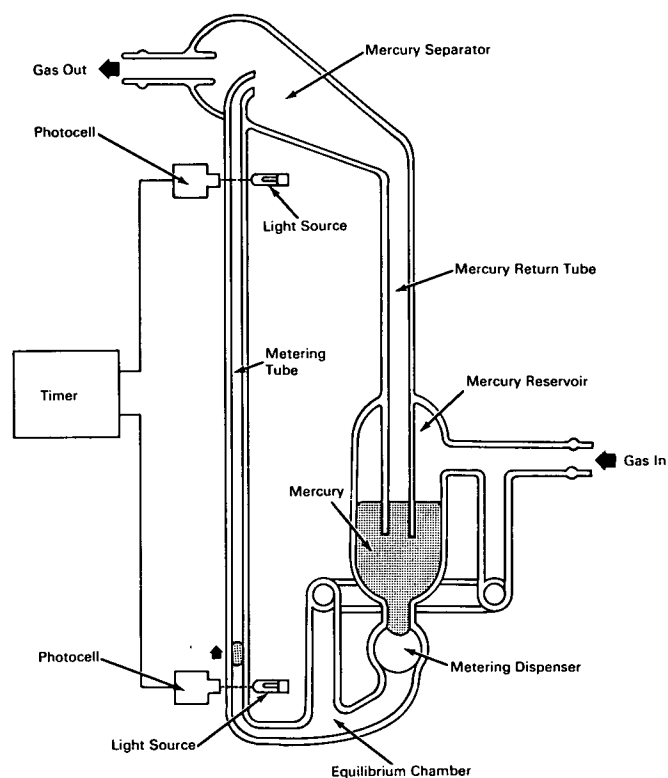
Brief 66-10036

NASA TECH BRIEF



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Flowmeter Measures Low Gas-Flow Rates



The problem:

To design a meter that will measure low gas-flow rates (0.015 to 0.5 cu in./min at standard pressure and temperature).

The solution:

A positive-displacement flowmeter that measures the time required for a slug of mercury to pass between two reference levels in a tube of known volume.

How it's done:

The gas admitted to the inlet tube flows in a continuous path through the equilibrium chamber, the metering tube, and the outlet connection.

In making a measurement, the mercury metering dispenser is opened to introduce a precise amount of mercury into the equilibrium chamber. The slug of mercury (approximately twice as long as the inside diameter of the metering tube) will be pushed along

(continued overleaf)

by the gas flow through the metering tube until it reaches the mercury separator, at which point it returns to the mercury reservoir for reuse. The gas flow leaves the meter through the outlet tube.

The gas flow rate is calculated by dividing the known volume of the metering tube between the lower and upper photocell reference levels by the time required for the slug of mercury to pass between the two light beams intercepted by the photocells.

Notes:

1. This laboratory flowmeter can be used for direct measurement of low gas-flow rates and as a secondary standard for calibrating other types of flowmeters.

2. A related invention is described in NASA Tech Brief 65-10137, May 1965. Inquiries may also be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10036

Patent status

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

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(M-FS-215)