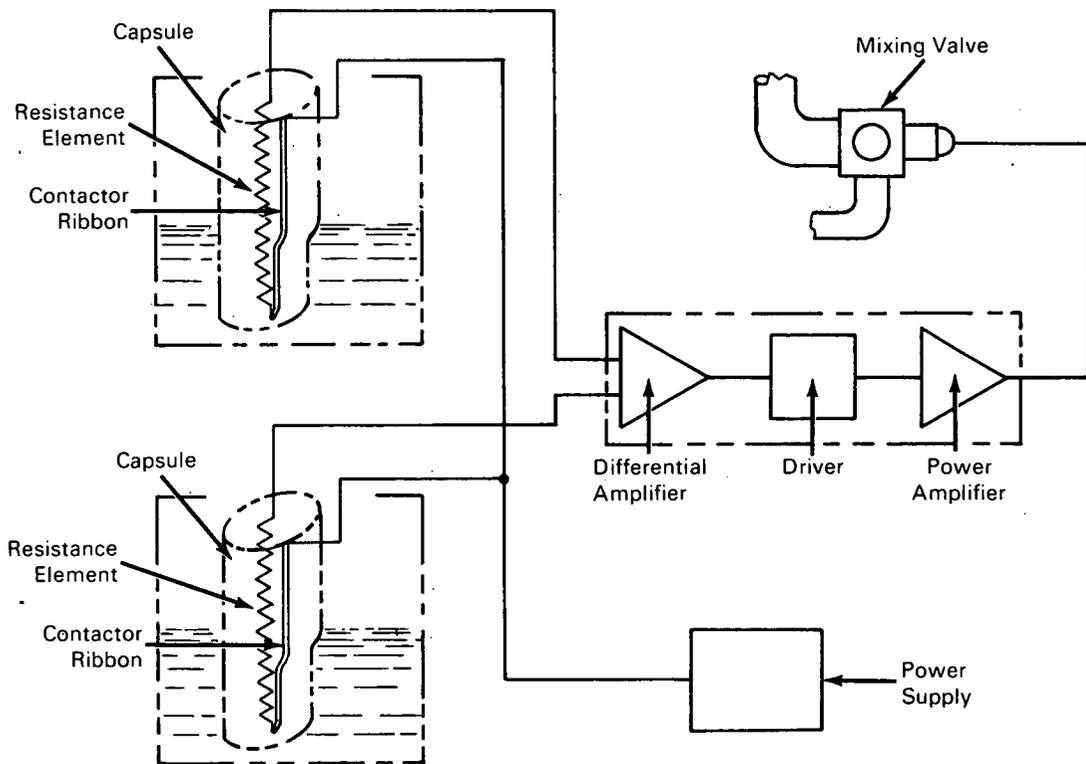


NASA TECH BRIEF



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Liquid Level Sensor



Dual Application Sensing Probe

A liquid level probe has been conceived which is essentially a potentiometer-type pressure transducer. The design improves liquid level sensing by using the pressure-induced motion of a diaphragm to alter the resistance of the sensor.

Each probe consists of an electrical resistor and a continuous contractor ribbon, mounted in a capsule and wired in series to external circuitry. The resistor is held in a fixed position by a mounting frame (not shown). The contractor is attached to the capsule

wall opposite the resistor. The capsule itself, made from elliptical cross-section flexible tubing, functions as the pressure-sensitive diaphragm.

In the sketch, two probes are shown applied to meter two liquids in a preset ratio. With the tanks full, each probe's contact ribbon is pressed against the full length of its resistor by the pressure-induced collapse of the tubing. As the liquid levels fall, however, the pressures decrease, allowing the tubes gradually to return to their uncompressed shape. This

(continued overleaf)

progressively reduces the length of the contactor ribbons which touch the resistors, and the resistance of the probes gradually increases.

A constant voltage from the power supply is placed across each probe resistance, producing a current which varies with the liquid level. The output currents from the two probes are compared in the differential amplifier. Any imbalance between the two currents is routed to the driver as an error signal. After amplification, the error signal is used to actuate the mixing valve, to change the rate of flow of one liquid or the other, thus maintaining the desired liquid mixture ratio.

Notes:

1. This development is in conceptual stage only, and, as of the date of publication of this Tech Brief, neither a model nor prototype has been constructed.
2. Requests for further information may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
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Patent status:

No patent action is contemplated by NASA.

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