

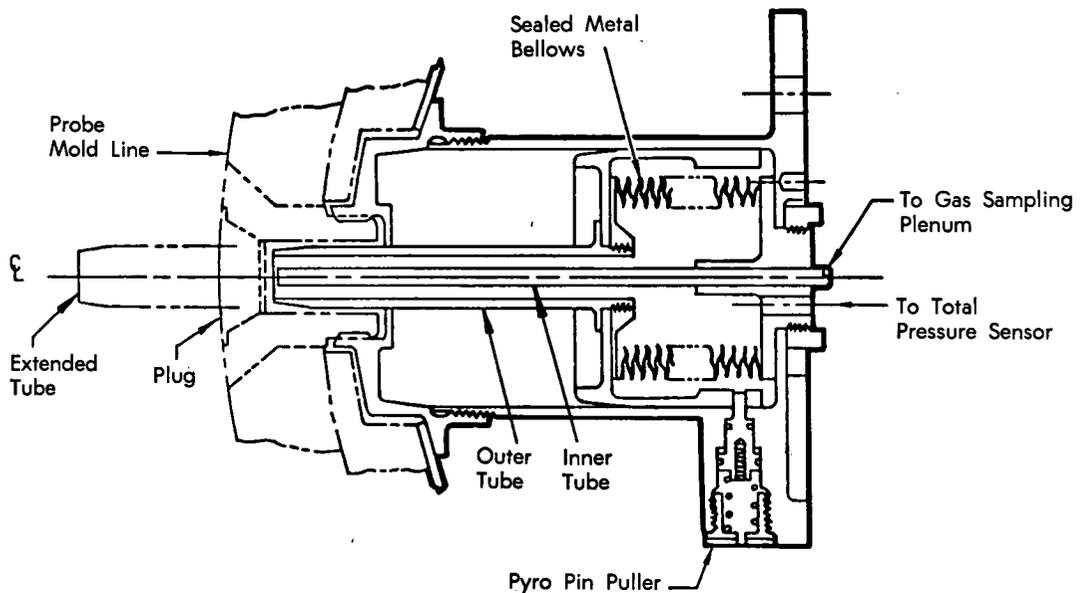
NASA TECH BRIEF

Ames Research Center



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Extendible Probe for Atmosphere Sampling



The problem:

To sample a planetary atmosphere for compositional analysis and total pressure during entry of a space probe it is necessary to deploy a probe through the heat shield which covers the cone of the probe.

The solution:

A sampling probe which is extended through a small plug in the heat shield by a loaded bellows.

How it's done:

As indicated in the diagram, gas samples are ducted to a sampling plenum through a tube which is concentrically housed within an extendible outer tube. Deployment is initiated by a pyrotechnic pin-puller device, which releases the preloaded metal bellows; the thrust from the bellows causes the deployable tube to push a plug out of the forward heat

shield and to extend 5 cm beyond the mold line of the shield into the flow field. Ambient gases enter the extended tube and are then routed by the inner tube to a mass spectrometer for compositional analysis; the outer tube routes the gases to a pressure sensor for total pressure measurement.

The bellows assembly also prevents contamination of the sample by gases from the pyrotechnic device and serves as a sealed plenum for the atmospheric pressure sensor.

Note:

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

Technology Utilization Officer
Ames Research Center
Moffett Field, California 94035
Reference: B74-10054

(continued overleaf)

Patent status:

NASA has decided not to apply for a patent.

Source: Walter J. Jones, George D. Mitchell,
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