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Langley Research Center

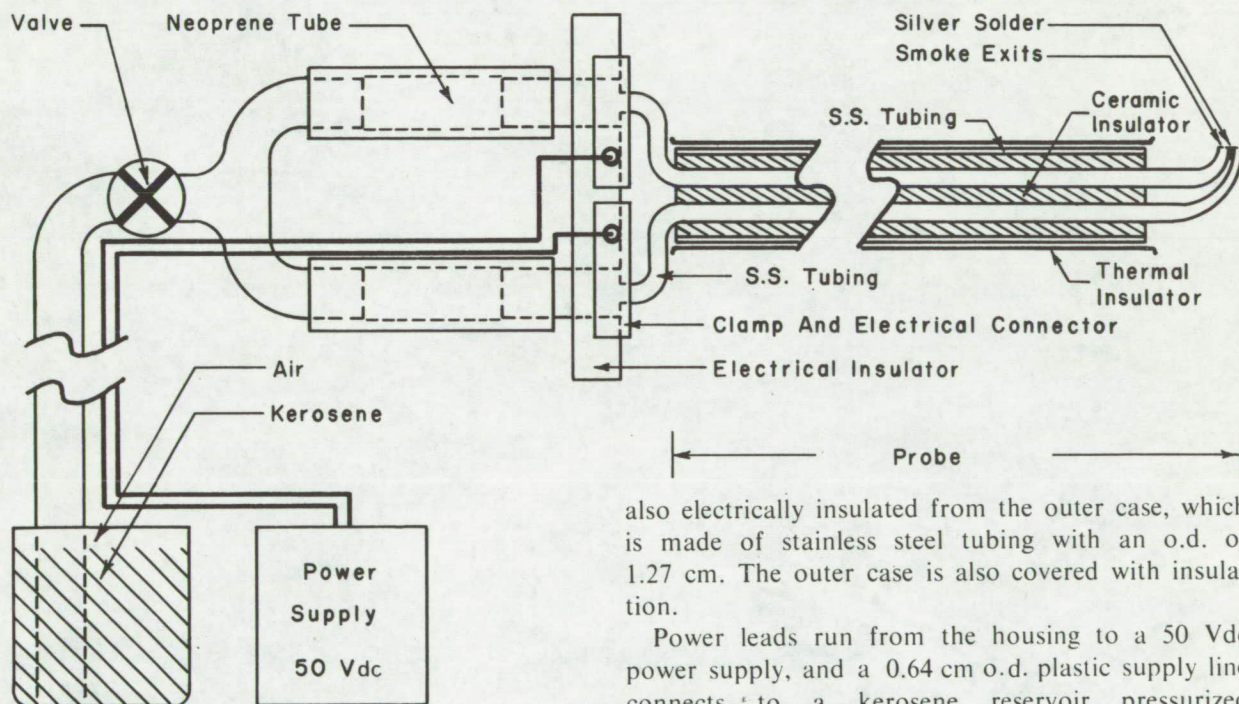


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Improved Smoke Generator for Low-Speed Wind Tunnels

A new smoke generator produces a sufficient quantity of smoke for analytical studies of low-speed wind tunnel flow fields, and has a probe that is so small (1.8 cm in diameter) that it doesn't disturb the airstream.

The heating elements are stainless steel tubing with an o.d. of 0.23 cm and a wall thickness of 0.04 cm. These heating elements are electrically insulated from each other everywhere except at the orifice end, where they are silver-soldered together. They are



The device incorporates a smoke generation concept used in European devices: Kerosene is vaporized by electrically heating the tubes that carry the kerosene down the probe. Smoke is emitted from orifices at one end of the 18-cm-long probe. At the other end, a 2.54-cm-long housing (5.08 cm in diameter) encloses the kerosene and electrical connections, and serves as a handle. A kerosene flow adjust valve is attached to the housing.

also electrically insulated from the outer case, which is made of stainless steel tubing with an o.d. of 1.27 cm. The outer case is also covered with insulation.

Power leads run from the housing to a 50 Vdc power supply, and a 0.64 cm o.d. plastic supply line connects to a kerosene reservoir pressurized to approximately 34 kN/m².

The probe assembly is light and easy to handle, and the probe takes only about three minutes to bring to operating temperature. The maximum duration of operation is limited only by the capacity of the kerosene tank. The smoke generator as a unit is inexpensive and trouble free, and neither the 50 Vdc nor the low concentration of kerosene vapor constitutes a safety hazard.

(continued overleaf)

Note:

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

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Patent status:

No patent action is contemplated by NASA.

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(LAR-10885)