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Brief 69-10740

NASA TECH BRIEF

Burn-Rate Testing Apparatus

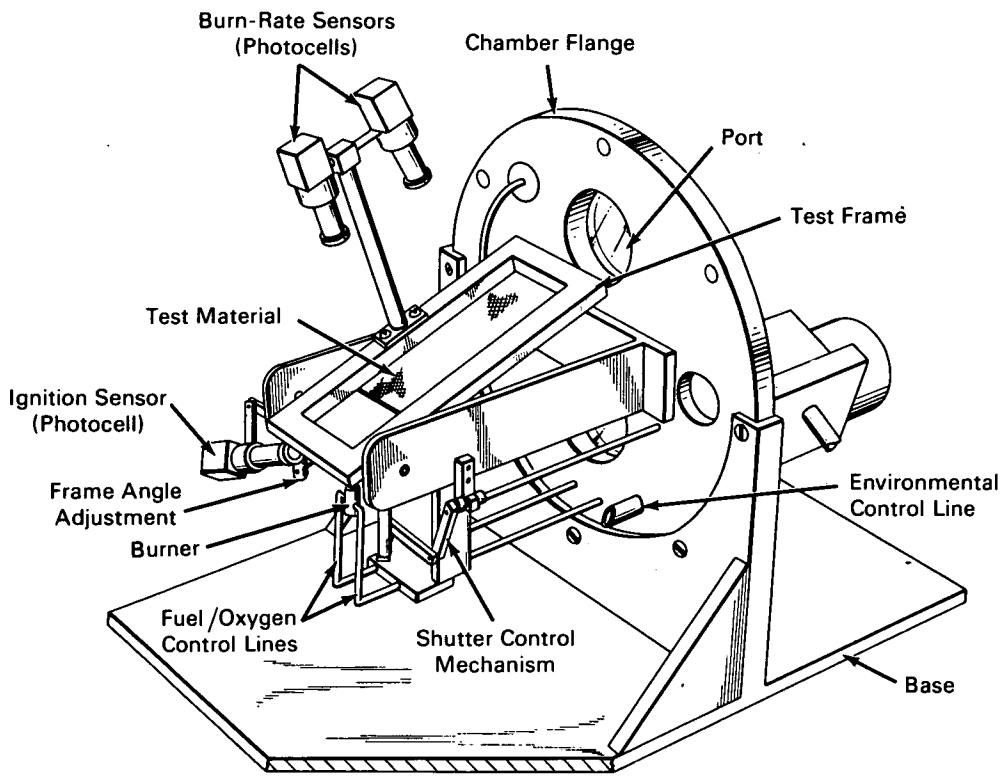

Figure 1. Perspective Drawing of Burn-Rate Test Apparatus

Various improvements have been made in the design of a combustibility tester. The tester is shown in perspective on Figure 1, and a schematic diagram is shown on Figure 2.

The apparatus has been designed to fit into a sealed chamber, so that tests may be performed under controlled atmospheric pressure and composition.

The material support frame has been modified to allow rotation of the test sample, so that ignition and combustion may be tested in various orientations from horizontal to vertical.

A remote-controlled ignition system has been incorporated, consisting of a burner externally supplied with fuel and oxygen, a spark-gap igniter, a shutter which masks the flame from the sample until the flame reaches the desired intensity, and a calibration thermocouple which senses the flame temperature.

A photocell has been placed to sense the start of the

(continued overleaf)

test, the application of flame to the sample as the shutter is removed.

Two photocells have been mounted on the test frame above the sample. One cell responds to ignition of that part of the sample immediately over the point of application of the flame; the other responds to ignition of another part of the test material.

The readings provided by the three photocells allow determination both of the time required for burn-through and of the rate of flame propagation along the sample.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas
Reference: B69-10740

Patent status:

This invention is owned by NASA, and a patent application has been filed. Royalty-free, non-exclusive licenses for its commercial use will be granted by NASA. Inquiries concerning license rights should be made to NASA, Code GP, Washington, D. C. 20546.

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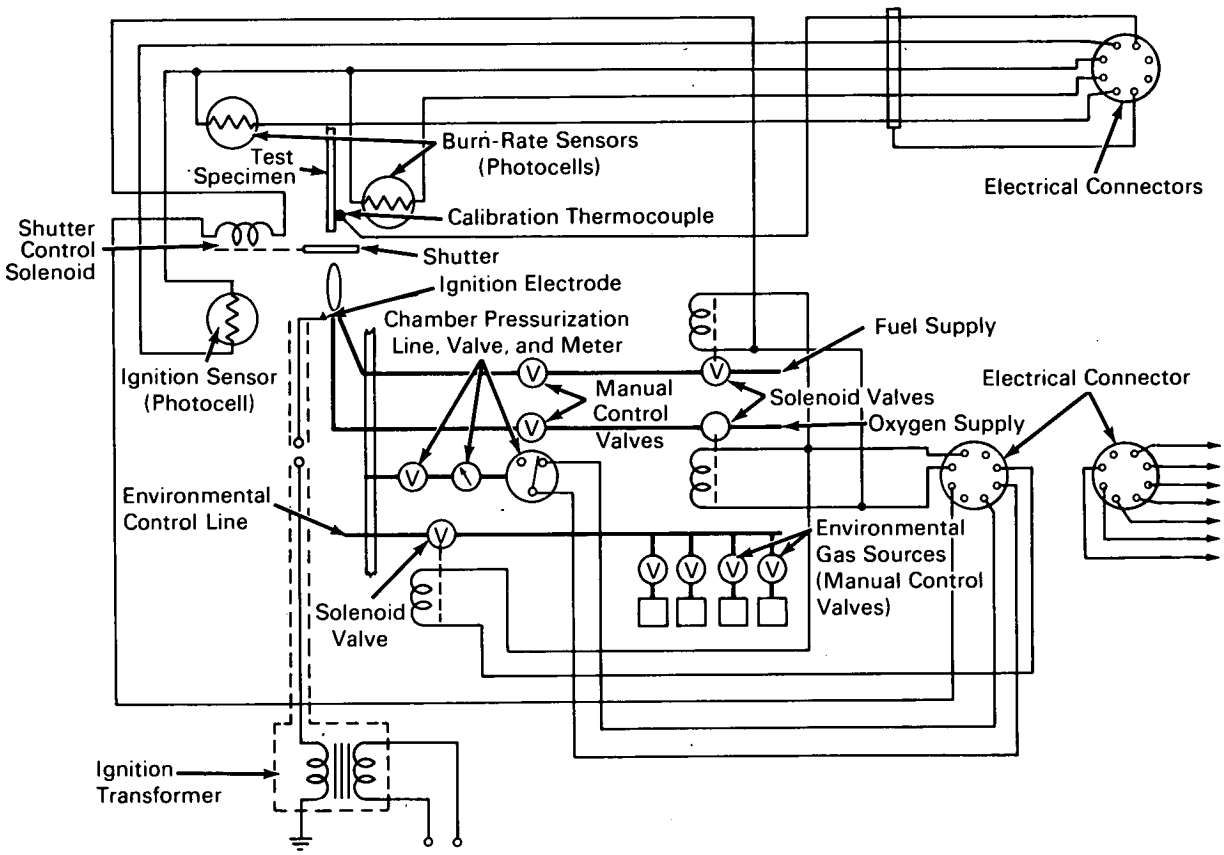

Figure 2. Schematic Diagram of Burn Rate Apparatus