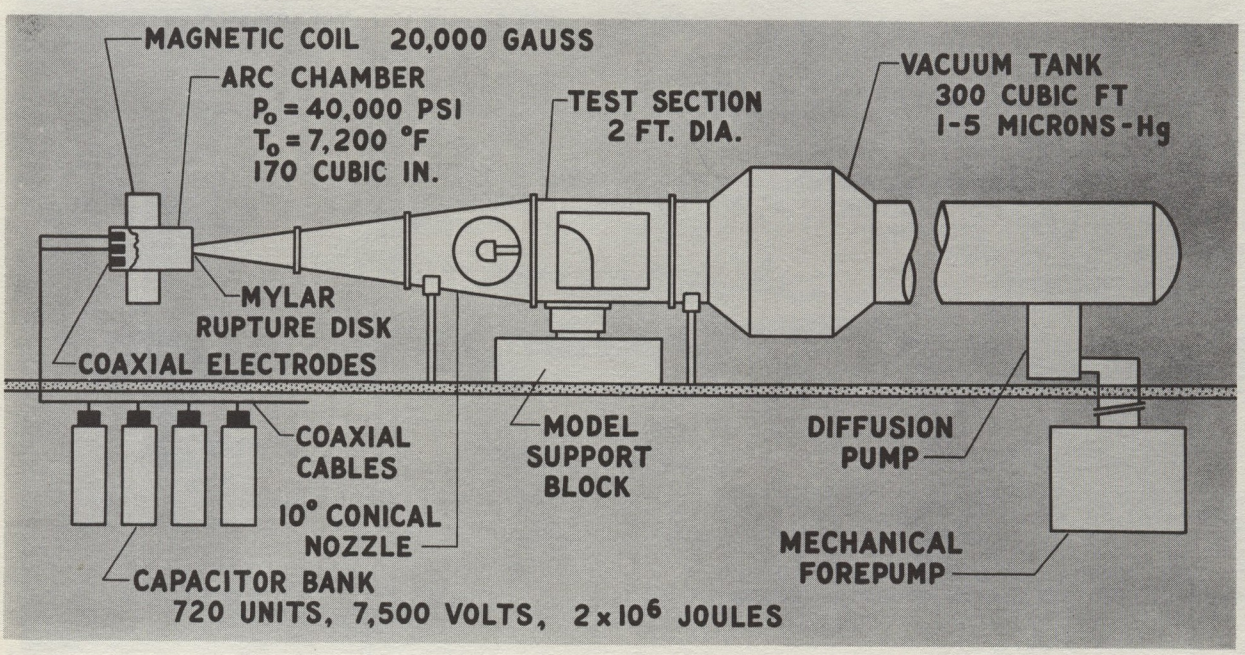

L-1716-A

The Langley hotshot tunnel is located in Building 1247B and is under the direction of the Aero-Physics Division. This tunnel is used for force and moment, pressure distribution, and heat-transfer-rate studies on reentry configurations. In addition, fundamental studies of high-energy flows can be made. Test medium can be nitrogen, air, or helium. Model mounting consists of a sting support. The conical nozzle has a 10° total angle. The nozzle throat is 0.025 to 0.5 inch in diameter. The test section, 24 inches in diameter with core 8 to 12 inches in diameter, exhausts into a vacuum chamber. The tunnel utilizes a pressure vessel or arc chamber to store the test gas precharged to elevated pressures. A bank of 720 capacitors charged to 7500 volts is capable of discharging 2×10^6 Joules to the test gas across a pair of electrodes in the arc chamber, increasing the potential temperature and pressure of the gas. This tunnel has been charged with helium and Mach numbers in the 60 range have been realized. Examples of operating conditions using nitrogen as the test medium are as follows:

Mach number	12 to 28
Stagnation pressure, psia	15 000
Stagnation temperature, °R	5400
Reynolds number per foot	0.01×10^6 to 1.0×10^6
Running time, msec	40 to 120