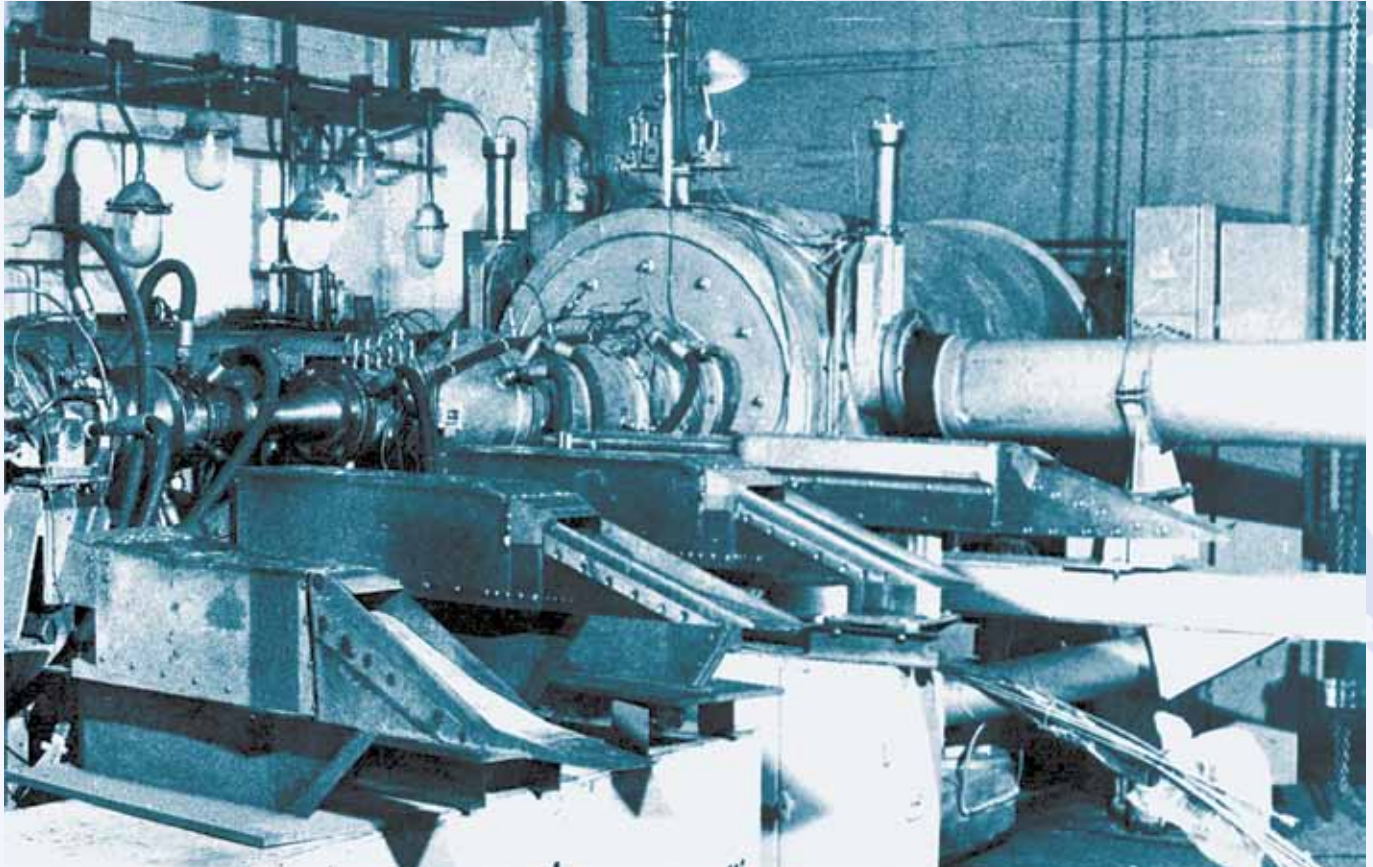


T-131 complex is composed of two installations:

- T-131B WT for high speed ramjet engines units testing when free air blow-off;
- T-131V Test Bench for high speed ramjet combustor and its components models testing within the joined air duct.



## Main Complex Performance

Investigating:

- High speed ramjet engines physics
- Supersonic and subsonic combustors physics
- Hypersonic air intake behavior
- High speed aircraft models
- Combustion action
- Structural materials

Simulating:

Full-scale flight with M ..... up to 7  
 Flight altitude ..... up to 35 km

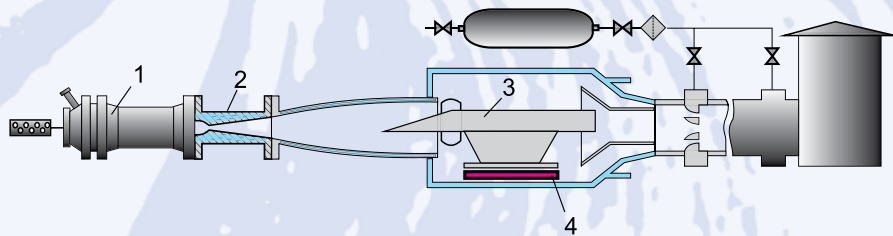
Parameters:

Flow Mach number ..... M = 2...10  
 Total pressure ..... up to 11 MPa  
 Stagnation temperature ..... up to 2350 K

# T-131B WIND TUNNEL

## General Description

T-131B is a high-speed wind tunnel of a cyclic operation type with open loop and open-type test section. The T-131B is equipped with a four-stage ejector, a gas-flame air-heater and flow oxygen enrichment. Is also equipped with TV and photo cameras, the optical Toepler device for flow visualization, the gauging equipment for pressure, temperature, heat flow and flow rate; the six-component strain gauge balance, the high-efficiency computer system for the data acquisition and processing.



1. Air heater
2. Nozzle
3. Model
4. Balance

## Main Technical Parameters

Flow Mach number ..... 5...10  
Reynolds number per 1 m ..... up to  $10 \cdot 10^6$   
Total pressure ..... up to 11 MPa  
Dynamic pressure ..... up to 100 kPa  
Stagnation temperature ..... up to 2350 K  
Run duration ..... 180 s

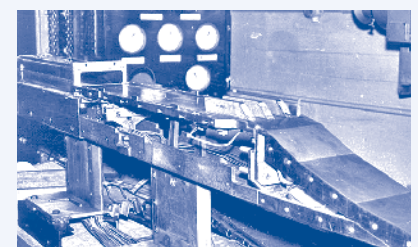
Test section dimensions:

Diameter ..... 1.2 m  
Length ..... 2.3 m  
Nozzle diameter ..... 0.4 m  
Model length ..... up to 2.0 m

## Capabilities

T-131B WT is intended to investigate:

- high speed ramjet models (inlet, combustion chamber, and nozzle) in free flow;
- thermo-chemical conversion of hydrocarbon fuels;
- various fuels mixing and combustion in supersonic and subsonic flows;
- external surfaces burning;
- jet engine inlets;
- materials and integral units strength.



## Technological Advantages

- Flow parameters simulation in free jet corresponding to aircraft flight speed at  $M = 5...7$ .
- Investigating operation processes in jet engines components under joint action of inlet and combustion chamber when burning.
- Testing the ramjet engine models.

## Application

The T-131B WT is being used to investigate the high speed ramjet models and engine units.



