

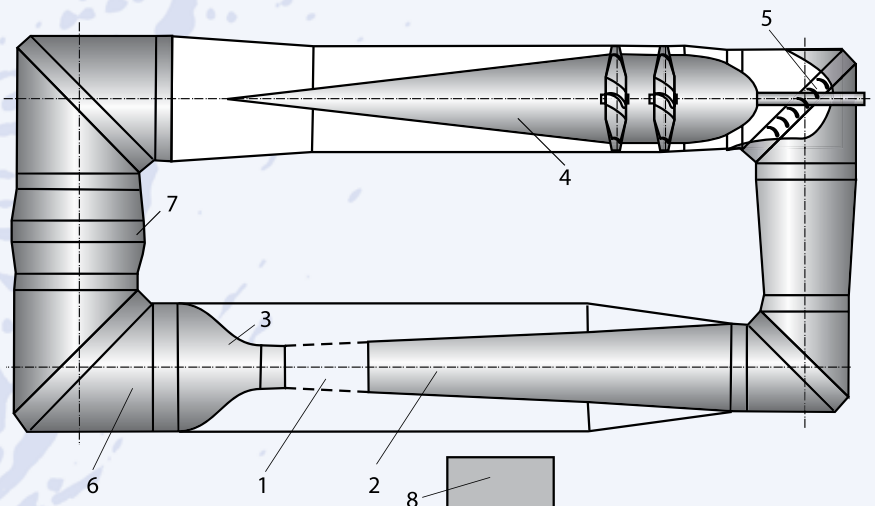


## Main Technical Parameters

Flow M number (at  $P_0 = 20 \dots 100$  kPa) ..... 0.15...1.1  
 Re number per 1 m ..... up to  $35 \cdot 10^6$   
 Total pressure ..... 50...500 kPa  
 Dynamic pressure ..... up to 58 kPa  
 Stagnation temperature ..... 290...330 K  
 Angle of attack ( $\alpha$ ) range .....  $-10^\circ \dots 23^\circ$  ( $0^\circ \dots 33^\circ$ )  
 Porosity coefficient of test section wall ..... 15%

Test section sizes:  
 Cross section diameter ..... 2.48 m  
 Length ..... 4.85 m  
 Tested object sizes:  
 Length ..... up to 2.2 m  
 Wing span ..... up to 2.1 m  
 Wing area ..... up to 0.5 m<sup>2</sup>  
 Model weight ..... up to 200 kg

1. Test section
2. Diffuser
3. Collector
4. Compressor
5. Adjustable guide blades
6. Settling chamber
7. Cooler
8. Operator's cabin





## General Description

T-106 Wind Tunnel is a closed-layout, continuous-operation, and variable-density facility designed for investigating the aerodynamic characteristics of aircraft models and their components at subsonic and transonic velocities.

The test section that has a circular cross-section and perforated walls is equipped with six-component electric-mechanical balance for measuring the aerodynamic forces and moments that influence the model. The primary suspending unit (swept belt suspension) provides the minimal external layout geometry distortion of model.

## Capabilities

T-106 WT provides the following experimental studies to be carried out:

- Balance tests of entire aircraft models configurations at cruising;
- Balance tests of entire aircraft models configurations with high-lift devices under take-off and landing conditions at higher Re-numbers;
- Assessment of model separate parts loads by strain gage balance;
- Pressure distribution tests;
- Model surface flow visualization by tufts and oily paints techniques;
- Research of air inlet models by engine air consumption simulation;
- Research of aeroelasticity and flutter;
- Half-model tests;
- Tests of models with active flow control simulation;
- Ice-accretion simulator tests;
- Tail sting simulator tests.

## Technological Advantages

- Robust and cost-saving test-bench that enables enhancing the aircraft cruising shape and the high-lift-devices parameters.
- The maximal boost pressure (500 kPa) provides the maximally available Re number at take-off and landing regimes in TsAGI wind tunnels.
- Wide range of  $(\alpha)$ -assembly and balance.

## Application

During 70 years, T-106 WT has been one of the most loaded TsAGI's aerodynamic facilities that are used to research various purposes aircraft of wide subsonic and transonic velocities range. The aircraft lift-to-drag ratio level was certified based on results been obtained in T-106 WT. Currently T-106 WT is actively used to enhance the aerodynamic configurations of such aircraft as MC-21 and the flight of the fifth generation.

