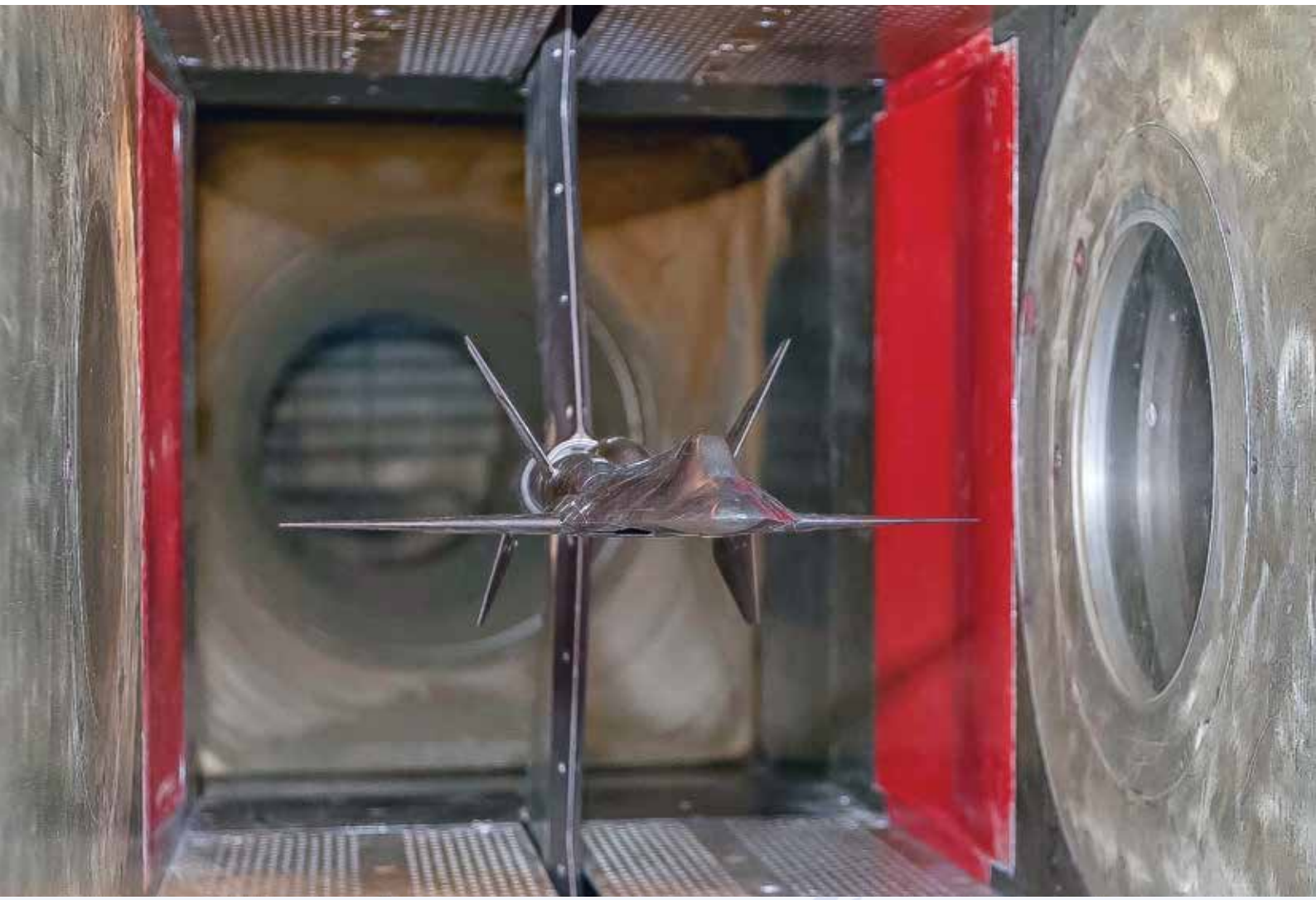
# T-112 WIND TUNNEL



## Main Technical Parameters

| | |
|---|---|
| Flow M number | 0.6…1.25; 1.5; 1.77 |
| Re number per 1 m | $(12…15)\cdot10^6$; $16\cdot10^6$; $15\cdot10^6$ |
| Total pressure | 102…100, 105, 106 kPa |
| Dynamic pressure | 20…42, 45, 42 kPa |
| Stagnation temperature | ambient |
| Run duration | not limited |
| Angle of attack (α) range | −4°…24° |

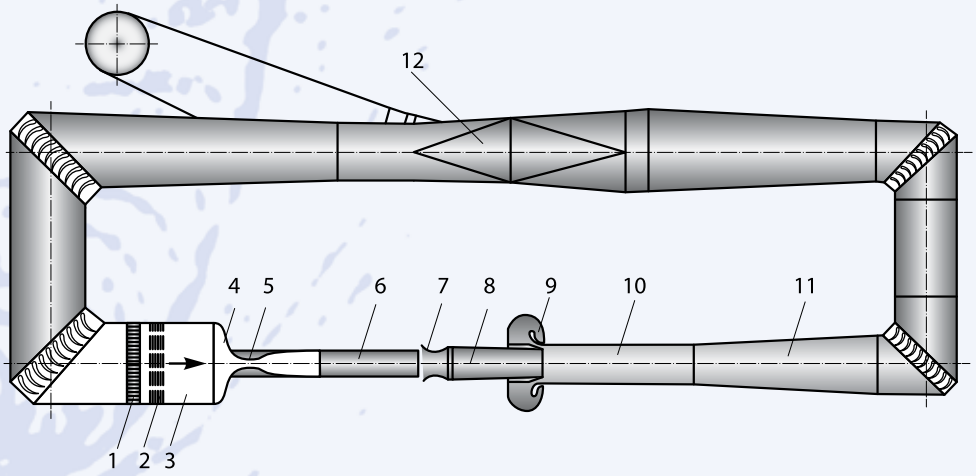
Test section sizes:

| | |
|---|---|
| Cross section | 0.6 × 0.6 m |
| Test section length | 2.55 m |

Tested object sizes:

| | |
|---|---|
| Model length | up to 0.6 m |
| Wingspan | up to 0.36 m |

1. Honeycomb
2. Detubulising screen
3. Settling chamber
4. Collector
5. Nozzle box
6. Test section
7. Flaps
8. Adaptors
9. Supersonic ejector
10. Mixing chamber
11. Diffuser
12. Air bleed collector



## General Description

Transonic wind tunnel T 112 — trans- and supersonic intermittent ejector-type semiclosed-circuit closed-jet wind tunnel. The wind tunnel is equipped with three removable nozzles to provide a range of required Mach numbers.

If the wind tunnel operates in a range of Mach numbers 0.6…1.25 and M = 1.53 the test section perforated walls are used. Depending on the type of tested model the used walls can be bilaterally (upper and lower panels) and tetralaterally (upper, lower and side panels) perforated. Open-area ratio of perforated walls σ can differ from 0 to 23 %. The tests at Mach number M = 1.77 are performed in the solid walls test section.

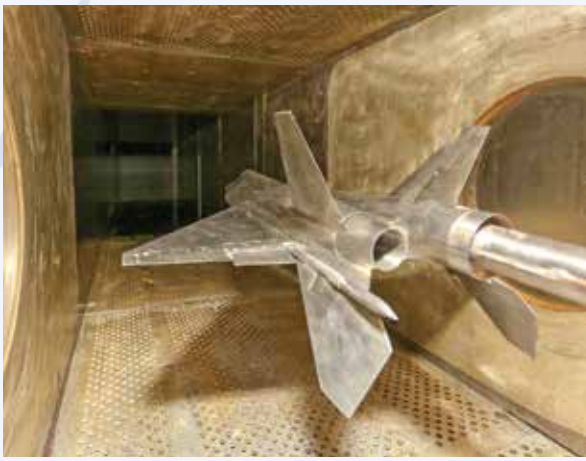
In a range of Mach number M = 0.6…1.25 the flow velocity is controlled with flaps located at the rear part of test section. At M = 1.53 the flaps are also used to arrange controlled automatic suction of air from the plenum chamber to obtain inside pressure equal to static pressure at the nozzle outlet.

The wind tunnel is equipped with four-component electro-mechanical balance and a set of strain gauge balances to measure forces and moments applying on tested models.

## Capabilities

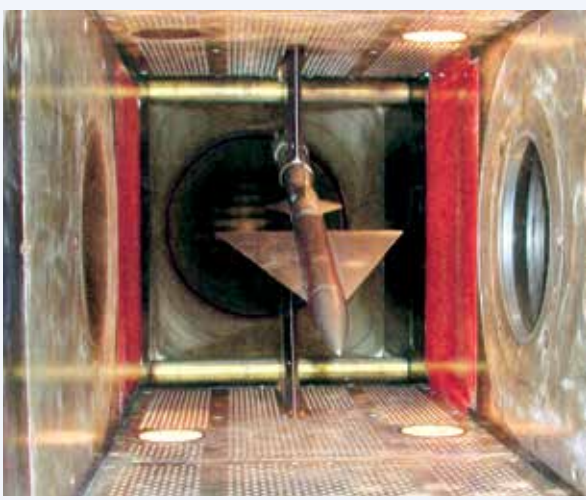
T-112 experimental capabilities allow to:

- Determine the total balance characteristics of aircraft models and their components;
- Determine the aircraft controls hinge moments;
- Measure the static pressure distribution over the aircraft model surface;
- Test half-wings and empennage models;
- Test infinite wing span models;
- Use flow field Schlieren visualization;
- Perform physical studies (laminar-turbulent transition visualization by China clay, PSP, etc.)..



## Technological Advantages

- Suspension for infinite wing span models allows performing the full range of experimental research.
- At M = 1.53 the perforation is efficient for suppressing perturbation in the joint between the nozzle and the test section thanks to controlled automated suction of air from the plenum chamber.



## Application

T-112 Wind Tunnel is an experimental facility for parametric studies of models of aircraft, missiles, and space vehicles. In addition the T-112 capabilities are widely used for physical research.

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