

HM 170.22

Pressure distribution on an aerofoil NACA 0015



Learning objectives/experiments

- record pressure distribution on an aerofoil immersed in a flow
 - ▶ as a function of the angle of attack

Description

- **pressure distribution on an aerofoil immersed in a flow**
- **experiments with different aerofoil angles of attack**
- **aerofoil profile NACA 0015**

Measuring the pressure distribution around an aerofoil profile immersed in a flow teaches students the fundamental knowledge for developing effective lift on the aerofoil. In order for lift to occur on a body immersed in a flow, there must be low pressure on the underside of the body and high pressure on the upper side. The pressure distribution on a body immersed in a flow is clearly demonstrated with this experiment.

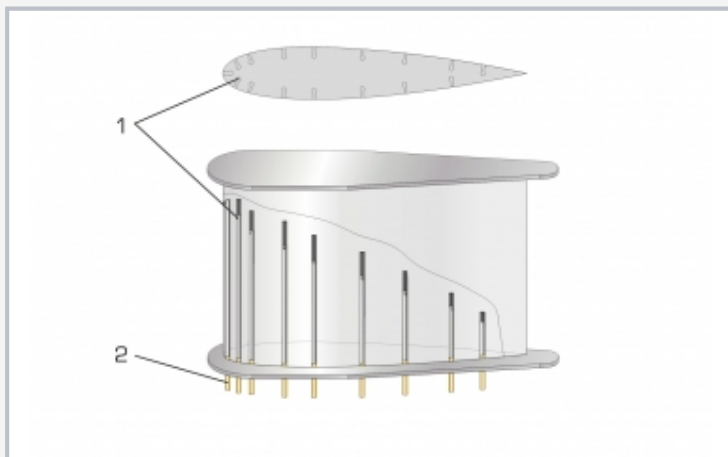
HM 170.22 with the airfoil profile NACA 0015 – used in the wind tunnel HM 170 – allows the pressure distribution to be recorded. As further aerofoil profiles are optionally available NACA 54118 (HM 170.26) and NACA 4415 (HM 170.27).

The aerofoil is used in the wind tunnel's force sensor. The angle of attack is varied by rotating the mount. The surface of the aerofoil is fitted with measuring holes, which are arranged so that interaction is virtually eliminated. Each measuring point is fitted with a hose connection. The aerofoil is enclosed by two side panels to prevent secondary flows.

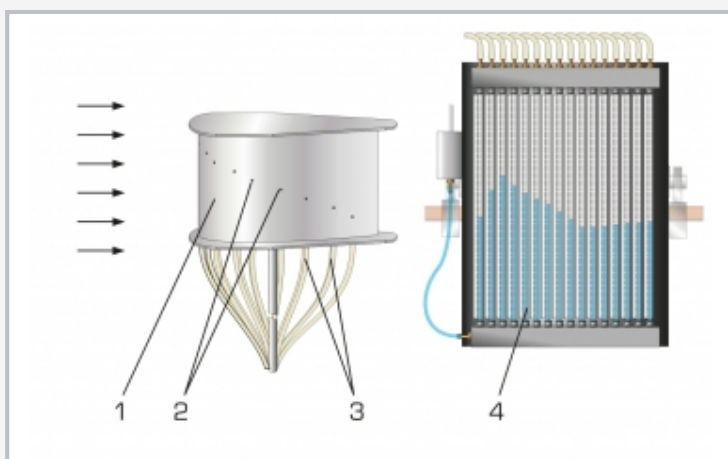
The static pressures are displayed on the tube manometers HM 170.50 or in the electronic pressure measurement HM 170.55.

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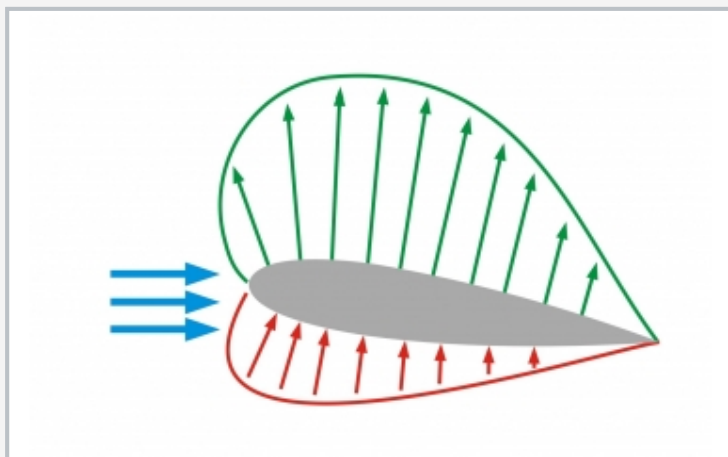
Pressure distribution on an aerofoil NACA 0015



1 measuring point, 2 hose connection



Experimental setup with tube manometer: 1 aerofoil, 2 measuring point, 3 measuring hose, 4 HM 170.50 tube manometer



Pressure distribution on an aerofoil
green: low pressure, red: high pressure, blue: incident flow

Specification

- [1] determining the pressure distribution on an aerofoil immersed in a flow
- [2] accessory for the wind tunnel HM 170
- [3] aerofoil profile NACA 0015
- [4] 16 measuring points with hose connections
- [5] display of the static pressures on the tube manometers HM 170.50 or in the electronic pressure measurement HM 170.55
- [6] further aerofoil profiles available: HM 170.26, NACA 54118, LxBxH: 100x60x19,65mm and HM 170.27, NACA 4415, LxBxH: 100x60x15,5mm

Technical data

Aerofoil

- profile: NACA 0015, symmetrical
- LxWxH: 100x60x15mm

LxWxH: 115x30x270mm

Weight: approx. ca. 0,6kg

Scope of delivery

- 1 aerofoil
- 1 set of hoses
- 1 set of instructional material

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Pressure distribution on an aerofoil NACA 0015

Required accessories

070.17000	HM 170	Open wind tunnel
070.17050	HM 170.50	16 tube manometers, 600mm
or		
070.17055	HM 170.55	Electronic pressure measurement for HM 170