HM 225 Aerodynamics trainer
Flow around bodies in air

The trainer

Fluid mechanics experiments with a gaseous fluid – usually air – are as important in engineering education as experiments with a liquid medium. Comparison and working out analogies between liquid and air flow, lead the student to a deeper understanding of the interrelationships and common principles.

The aerodynamics trainer, together with the appropriate accessories, offers selected experiments in the field of flow around bodies in air. The illustrative experiments deal with typical topics such as boundary layer, drag forces, or visualisation of streamlines.

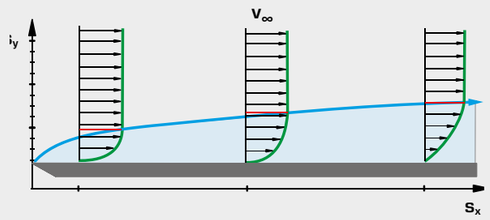
The figure shows the HM 225 trainer with the accessory HM 225.02 Boundary layers. The pressures are measured with a Pitot tube and displayed on the 16 tube manometers

The topics

Investigation of the boundary layer on a flat plate

HM 225.02 Boundary layers

- study boundary layer at two different surfaces (rough and smooth)
- removable side body for studying boundary layer interference with degressive or progressive pressure profile

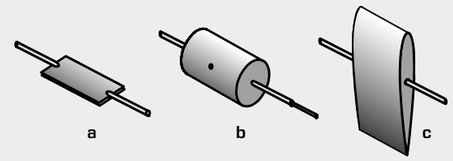


velocity distribution,
boundary layer thickness on the smooth surface

Determining drag forces in different bodies

HM 225.04 Drag forces

- direct measurement of drag by using a beam scale
- determining drag coefficients for different bodies



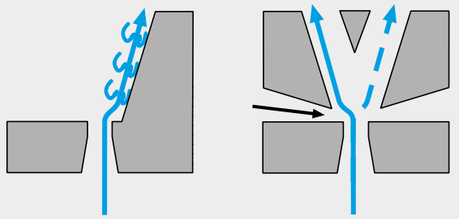
Various drag bodies

a plate, **b** cylinder, **c** aerofoil

Demonstration of the Coanda effect

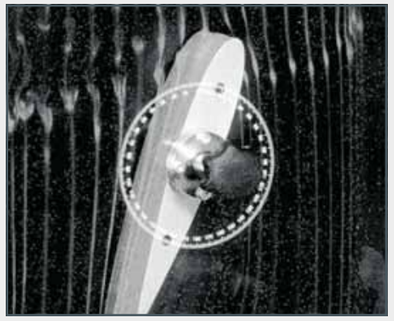
HM 225.06 Coanda effect

- investigation of wall-guided flow
- amplification effect in pneumatic elements



left adherence of the jet through a pressure difference
right the air jet can be diverted by a control jet (black arrow)

Using fog to show streamlines



Separation of the flow on the right side by changing the angle of attack

HM 225.08
Visualisation of streamlines

- generate flow patterns of bodies under surrounding flow
- represent stall phenomena