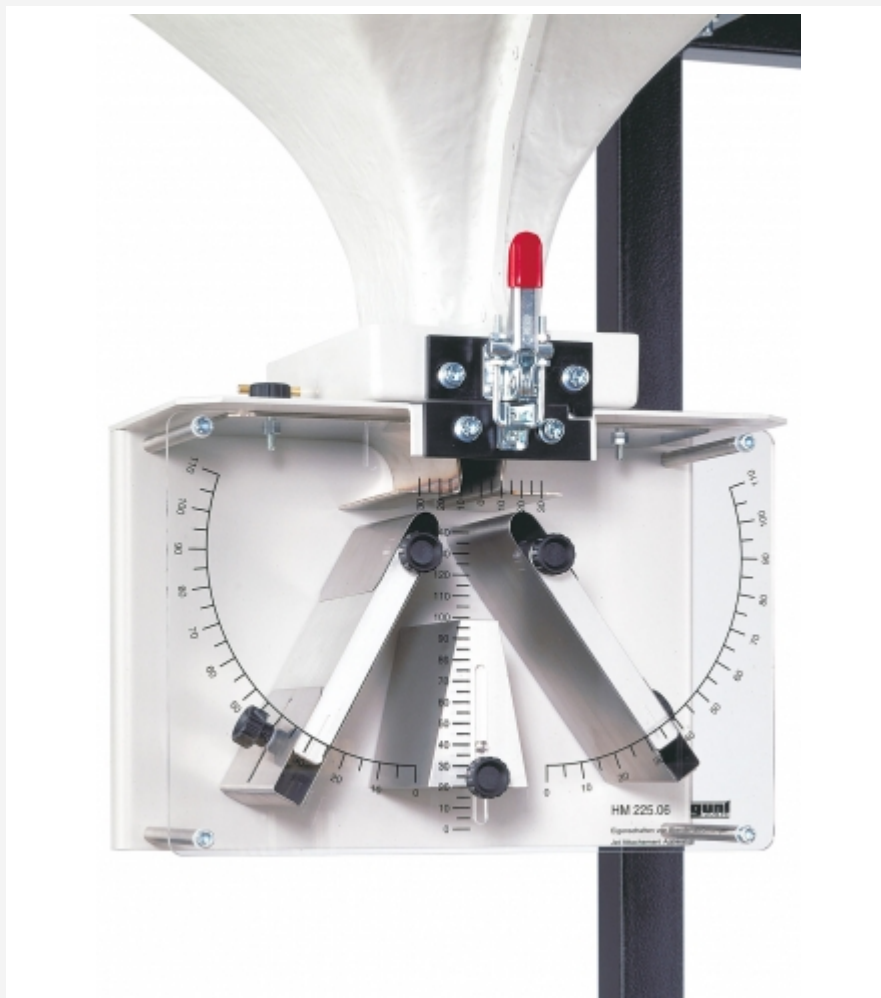


## HM 225.06

### Coanda effect



#### Learning objectives/experiments

- investigation of wall-guided air flow (Coanda effect)
- familiarisation with the principle of pneumatic logic elements
- study amplification effect in pneumatic elements

#### Description

- **demonstration of the Coanda effect at a pneumatic logic element**
- **accessories for aerodynamics trainer HM 225**

The Coanda effect refers to the characteristic of flowing fluids to follow the curvature of a convex surface instead of continuing in the original direction of flow. Nowadays this effect is applied in various fields of engineering, e.g. to increase lift in air travel, to control the air flow in air conditioning or as a pneumatic logic element in industrial control systems. Pneumatic logic elements have the advantage that they do not wear out, they work reliably and are resistant to heat, ionising radiation and vibration.

The direction of flow in pneumatic logic elements is switched with a turbulent free jet (control jet), which for example, emerges from a nozzle and entrains the fluid from the environment (boundary layer). Since the control jet is usually weaker than the jet to be deflected, we refer to the amplification effect.

The HM 225.06 experimental unit – used in the aerodynamics trainer HM 225 – allows the demonstration of the Coanda effect on a pneumatic logic element.

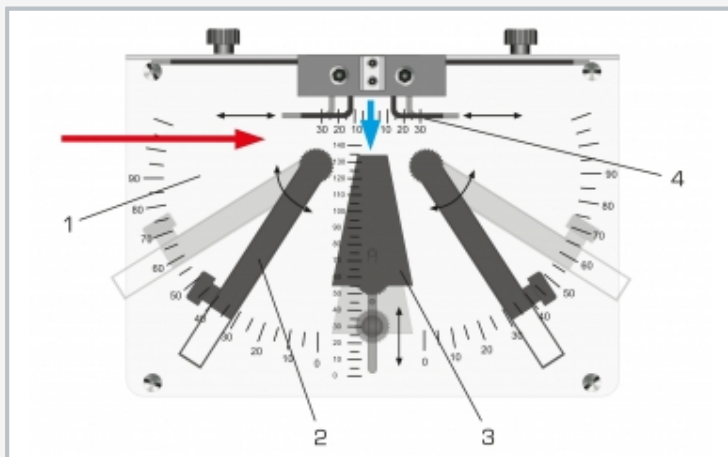
The air flows through a Y-shaped channel with two outlets. The lateral inflow of air into the channel (control jet) can switch the air flow between the two outlets.

The contour of the channel is varied via pivoting and sliding elements, so as to study how the switchover works. Scales allow precise adjustment of the elements.

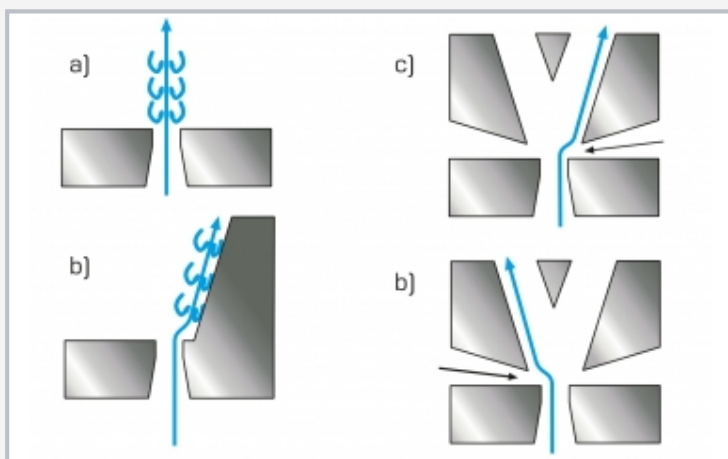
The experimental unit is attached to the HM 225 trainer, simply and precisely with quick release fasteners.

# HM 225.06

## Coanda effect



1 transparent plate with different scales, 2 pivoting and sliding side panels, 3 sliding wedge, 4 adjustable nozzle; blue arrow: air intake, red arrow: control jet



Controlled guidance of air flow in wall elements  
a: freely escaping jet of air  
b: guidance of the air flow on a wall  
c, d: deflection of the air flow by a control jet  
blue: air flow, black: control jet

### Specification

- [1] demonstration of the Coanda effect in pneumatic logic elements
- [2] accessories for HM 225 Aerodynamics Trainer
- [3] transparent plate with vertical, horizontal and radial scales
- [4] Y-channel with pivoting and sliding elements and vertical sliding wedge for adjusting different contours
- [5] adjustable contours for varying the air flow

### Technical data

Nozzle outlet

■ width: 0...50mm

■ length: 100mm

Pivoting and sliding elements: 0...90°

Wedge, sliding: 0...140mm

LxWxH: 300x230x230mm

Weight: approx. 6kg

### Scope of delivery

- 1 experimental unit
- 1 set of instructional material

# HM 225.06

## Coanda effect

Required accessories

070.22500      HM 225      Aerodynamics trainer