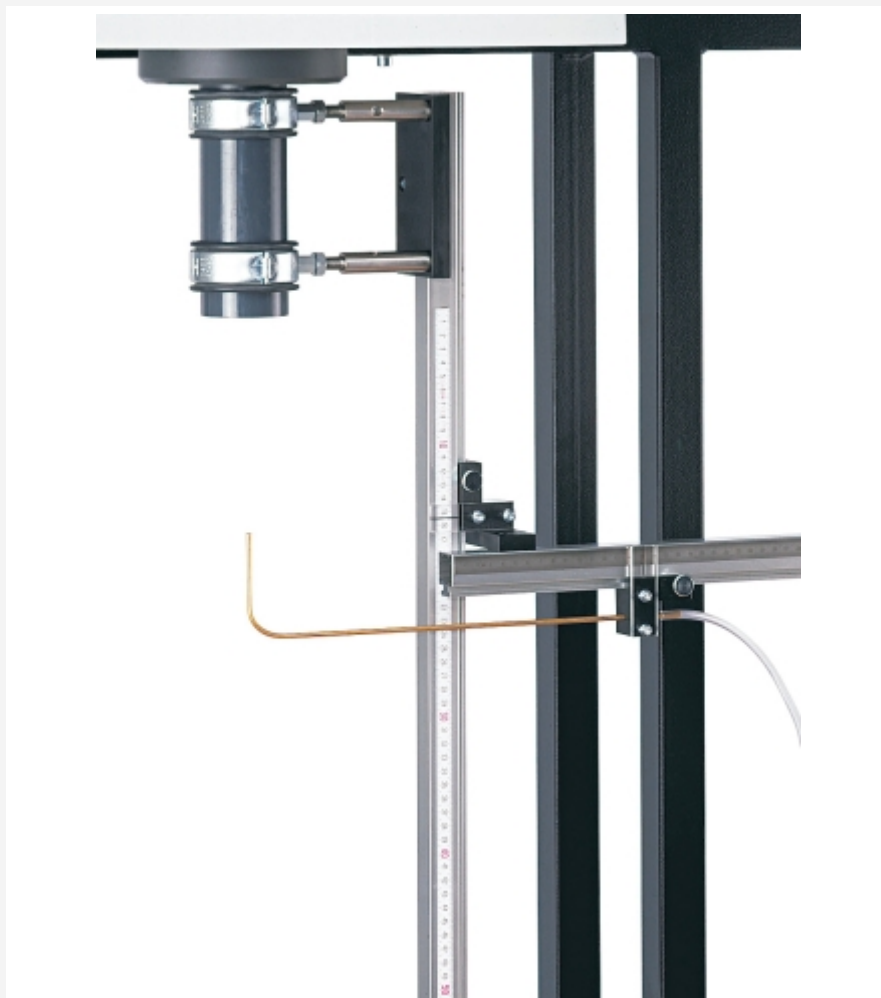


HM 225.07

Free jet



Learning objectives/experiments

- recording the pressure curve at the outlet of a parallel flow into resting surroundings
- representation of velocity profiles

Description

- investigation of flow course and pressure losses at flow outlet into resting surroundings
- accessory for aerodynamics trainer HM 225

Flow and pressure losses occur when a parallel flow exits into stationary surroundings. The velocity of the exiting flow decreases depending on the distance and diameter of the outlet area. The velocity decreases with increasing distance from the middle jet. The findings from the velocity profiles are used for example in the construction of nozzles and turbomachines.

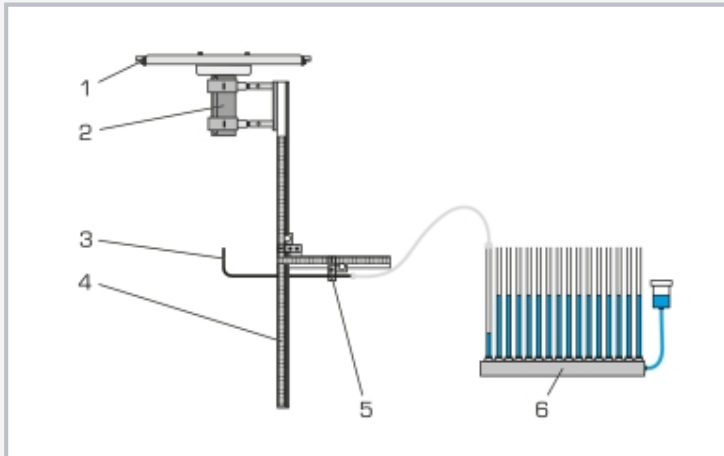
The HM 225.07 experimental unit – used in the aerodynamics trainer HM 225 – allows the measurement of the velocity curve in the outlet jet. The total pressures are measured at defined distances from the outlet area in the vertical and horizontal direction by means of a movable Pitot tube.

Pressures read on the tube manometers in HM 225 can be used to determine the velocity. The graphical representation of the velocity profile indicates a decrease in velocity with increasing distance of the measurement from the middle jet and the outlet area. Vortex formation at boundary layers leads to the reduction in velocity due to the loss of energy.

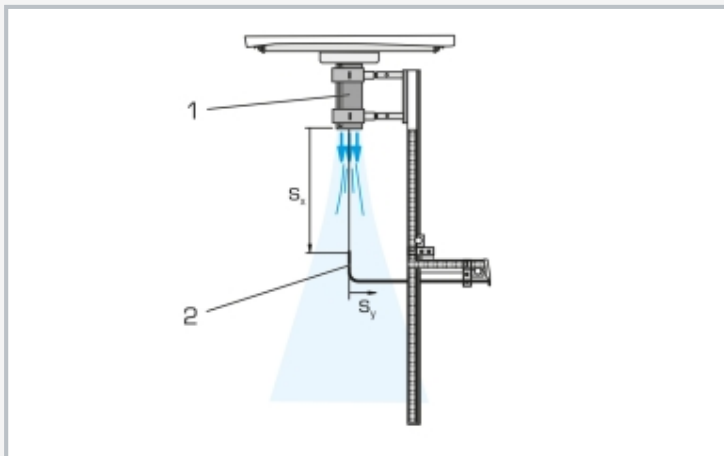
The experimental unit is attached to the HM 225 trainer, simply and precisely with quick release fasteners.

HM 225.07

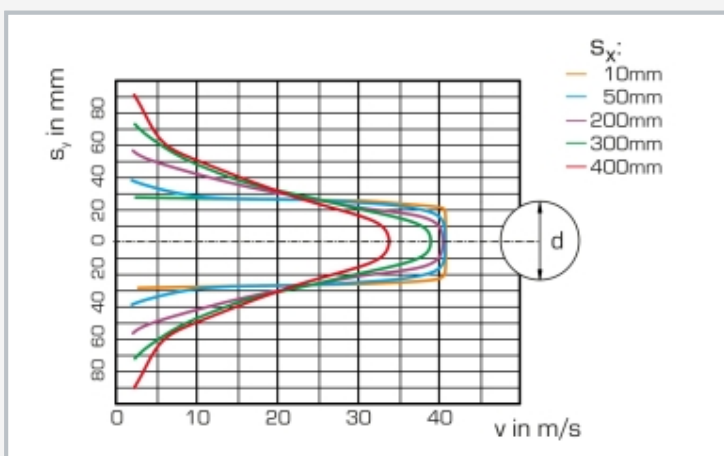
Free jet



1 quick connector for connection to HM 225, 2 pipe socket for the outlet of the air flow, 3 Pitot tube, 4 scale for adjusting the vertical displacement, 5 horizontal displacement of the Pitot tube, 6 tube manometers (HM 225)



Measuring principle with schematic representation of the flow course: 1 pipe for the outlet of the air flow, 2 Pitot tube; blue area: flow course



Velocity profile in the air outlet jet: s_x vertical distance between the opening on the Pitot tube to the air outlet, s_y horizontal distance of the opening on the Pitot tube to the centre line of the air flow, v flow velocity, d pipe inner diameter

Specification

- [1] determination of the pressure loss in the flow outlet into stationary surroundings
- [2] accessory for aerodynamics trainer HM 225
- [3] Pitot tube, can be moved horizontally and vertically
- [4] 16 tube manometers of HM 225 for displaying the pressures

Technical data

Pipe socket, plastic
 ■ inner diameter: 54mm

Pitot tube, sliding
 ■ horizontal: ± 150 mm
 ■ vertical: 0...700mm
 ■ inner diameter: 2mm

LxWxH: 720x380x940mm
 Weight: approx. 7kg

Scope of delivery

- 1 experimental unit
- 1 set of instructional material

HM 225.07

Free jet

Required accessories

HM 225 Aerodynamics trainer