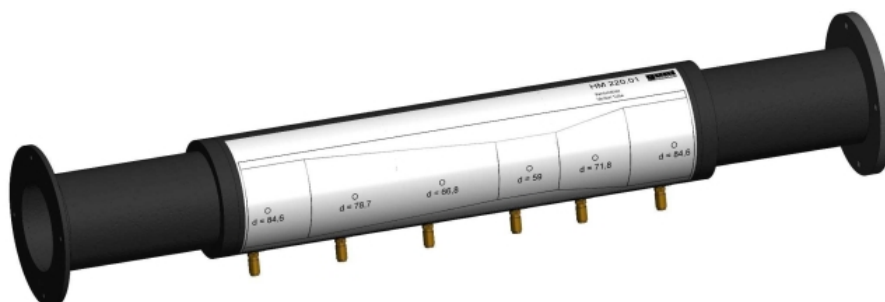


# HM 220.01

## Venturi tube



### Description

- **accessory for experimental plant HM 220**
- **investigation of the continuity equation and Bernoulli's principle**

Fundamentals of fluid mechanics include Bernoulli's principle and the continuity equation. The continuity equation states that the flow velocity in a steady, incompressible and friction-free flow is inversely proportional to the cross-sectional area. The sum of the static and dynamic pressure is constant in a steady flow, according to Bernoulli's principle. A change in the cross-sectional area leads to a corresponding change in the static pressure. These physical laws make it possible to calculate the dynamic pressure and the flow velocity of an incompressible fluid in a steady flow.

Using the Venturi tube HM 220.01 in the experimental plant HM 220 allows the continuity equation and Bernoulli's equation to be clearly and practically evaluated and applied. An in-depth understanding of the laws is promoted by means of illustrative experiments.

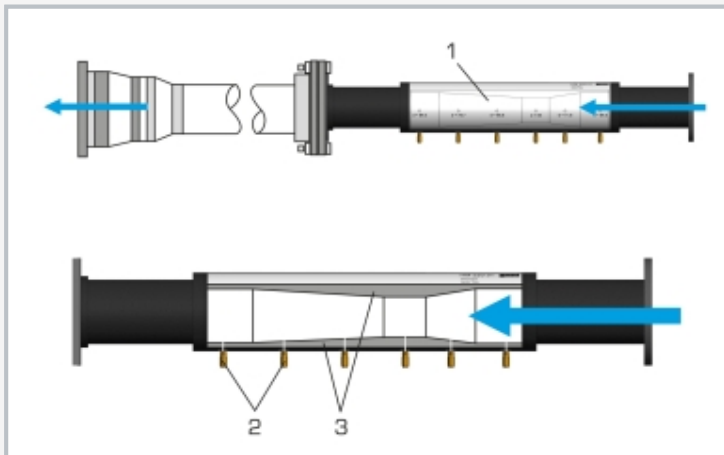
The accessory is placed in the measuring section to generate a Venturi-shaped cross-sectional profile of the flow. The static pressure is measured via various pressure measuring points along the measuring section and read on the manometer. The difference to the total pressure is the dynamic pressure.

### Learning objectives/experiments

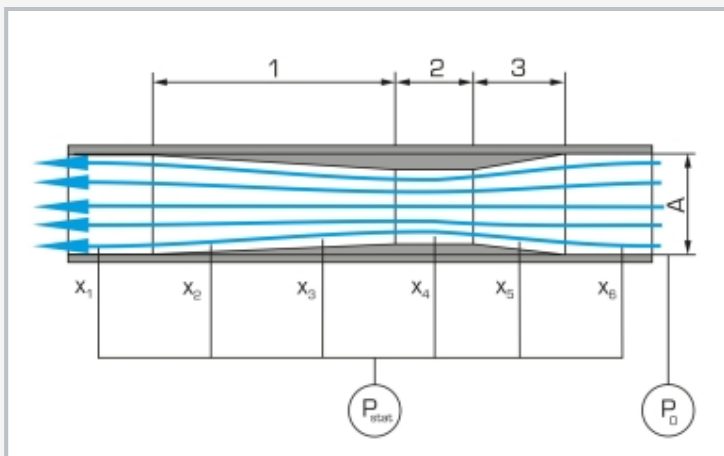
- examination of the continuity equation and Bernoulli's principle
- determination of the dynamic pressure
- calculation of the flow velocity
- representation of the pressure curve as a function of the cross-sectional area

# HM 220.01

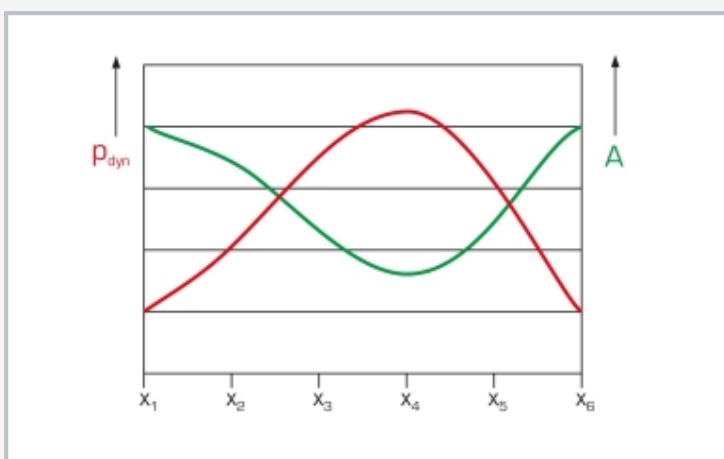
## Venturi tube



1 Venturi tube, 2 pressure measuring point, 3 Venturi-shaped contour



Measuring principle of the Venturi tube: 1 divergent part, 2 narrowest cross-section, 3 convergent part; A cross-sectional area,  $P_{stat}$  static pressure,  $P_0$  total pressure,  $x_1 \dots x_6$  pressure measuring points



Contraction of the cross-sectional area leads to an increase of the dynamic pressure  $x_1 \dots x_6$  pressure measuring points, A cross-sectional area,  $p_{dyn}$  dynamic pressure

### Specification

- [1] Venturi tube for investigating the continuity equation and Bernoulli's principle
- [2] six pressure measurement points along the measuring section for measuring the static pressure
- [3] accessory for experimental plant HM 220

### Technical data

Venturi tube  
 ■ inner diameter: 84,6...59mm  
 ■ 6 pressure measuring points

LxWxH: 805x150x150mm  
 Weight: approx. 4kg

### Scope of delivery

- 1 experimental unit
- 1 set of instructional material

# HM 220.01

## Venturi tube

Required accessories

HM 220      Air flow experimental plant