

## HM 225.08

### Visualisation of streamlines



#### Learning objectives/experiments

- illustrative demonstration without detection or analysis of measured values
- flow patterns in real fluids when flowing around and through models
  - ▶ aerofoil with adjustable angle of attack
  - ▶ cylinder
  - ▶ orifice plate for change in cross-section
- flow separation and stall

#### Description

- visualisation of streamlines flowing around and through models
- fog generator is included
- accessories for aerodynamics trainer HM 225

Streamlines can be visualised in steady flow in the wind tunnel by using fog, smoke or tufts. In this way, a clear impression of an instantaneous flow field flow can be presented and problematic flow areas, such as stall, can be shown.

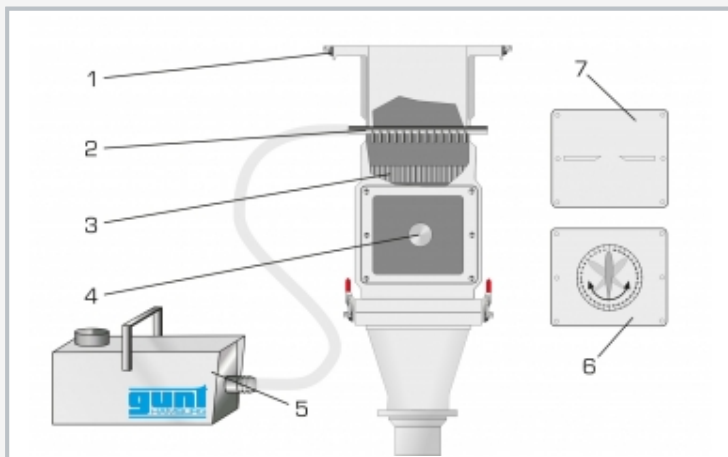
The HM 225.08 experimental unit – used in the aerodynamics trainer HM 225 – allows the streamlines to be visualised using fog. In the fog generator supplied a fog fluid is evaporated and inlet into the wind tunnel via a slotted pipe. A model (aerofoil, cylinder, orifice plate) is located in the measuring section, around and through which the fog flows. The flow course for the flow around and through becomes visible, as does flow separation.

The measuring section has a black background and a transparent front plate for better observation of the streamlines. The aerofoil model's angle of attack is adjustable. The fog fluid is non-toxic, water soluble and the precipitate does not affect common materials. Precipitates can be easily wiped off with a cloth.

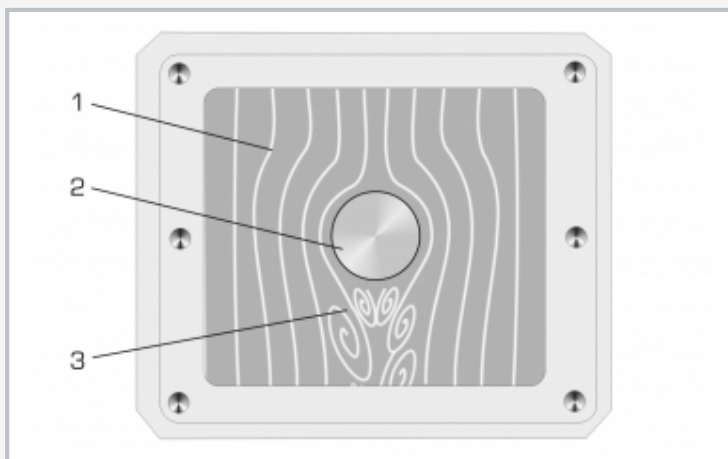
The experimental unit is attached to the HM 225 trainer, simply and precisely with quick release fasteners.

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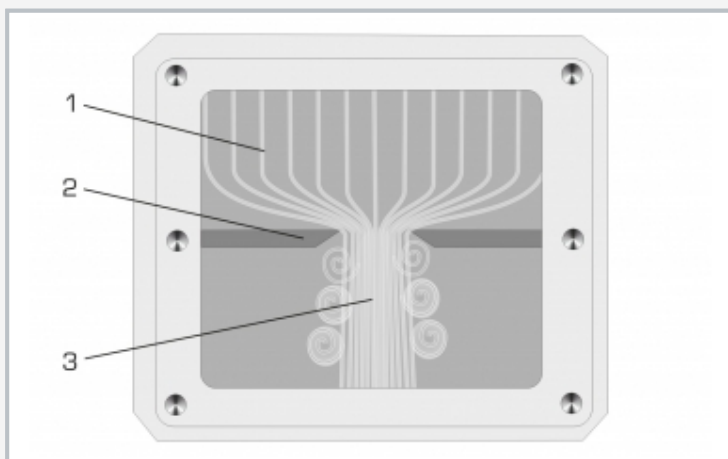
## Visualisation of streamlines



1 quick release fastener for connecting to HM 225, 2 distributor for fog with nozzles, 3 flow straightener, 4 cylinder drag body, 5 fog generator, 6 rotating aerofoil drag body, 7 orifice plate model



Flow course around a cylinder: 1 streamlines, 2 drag body, 3 flow separation with turbulence



Flow pattern through an orifice plate: 1 streamlines, 2 orifice plate, 3 constricted flow in the middle, turbulence at the edge

### Specification

- [1] visualisation of streamlines by using fog
- [2] accessories for HM 225 Aerodynamics Trainer
- [3] vertical measuring section with transparent front plate and black background
- [4] fog generator, operation with non-toxic and water-soluble fog fluid
- [5] three models for insertion into the wind tunnel
- [6] aerofoil with adjustable angle of attack
- [7] scale for displaying the angle of attack

### Technical data

#### Measuring section

- cross-section in the viewing area: 252x42mm

#### Models

- aerofoil, adjustable angle of attack
- orifice plate
- cylinder

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase

(fog generator)

LxWxH: 480x380x1060mm (wind tunnel)

LxWxH: 420x240x220mm (fog generator)

Total weight: approx. 23kg

### Scope of delivery

- 1 experimental unit
- 1 set of models
- 1 fog generator
- 1 fog fluid (5L)
- 1 Satz set of instructional material

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## Visualisation of streamlines

Required accessories

070.22500      HM 225      Aerodynamics trainer