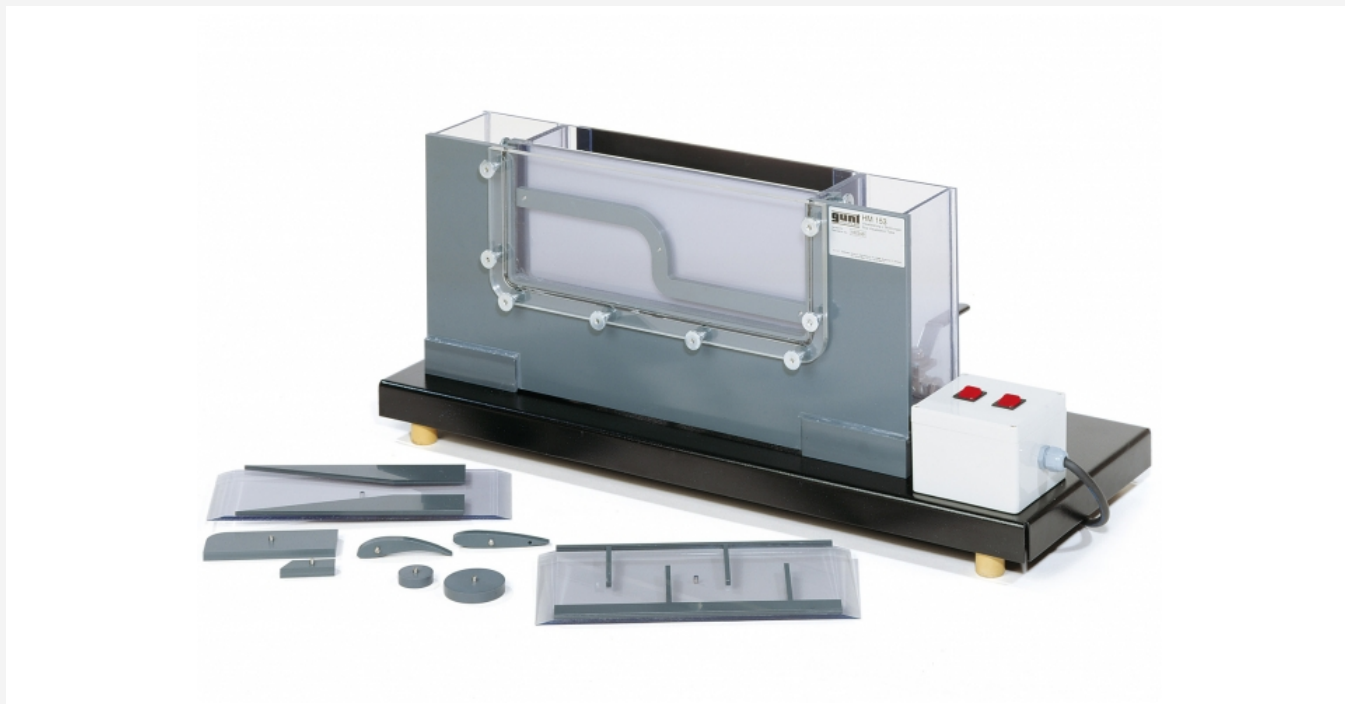


## HM 153

### Visualisation of different flows



The illustration shows a similar unit.

#### Description

- visualisation of streamlines
- illuminated flow section
- flow over weirs
- different models: drag bodies, weirs and changes in cross-section

In research and training, flow processes are often considered in simplified models, e.g. in pipe flows, open channel drainage processes or the incident flow of structures.

HM 153 can be used to visualise flow around bodies, pipe flows and flow phenomena in open channels. Various models are fixed in the flow section. The streamlines are made visible by using injected ink as a contrast medium. The flow section is illuminated from behind and has a transparent front plate.

Open-channel flow is demonstrated with two weirs. The downstream water level can be adjusted with the aid of another weir. Flow through is shown in three models with change in cross-section and in the model "pipe bundle". Streamlines in flow around bodies are demonstrated on four drag bodies.

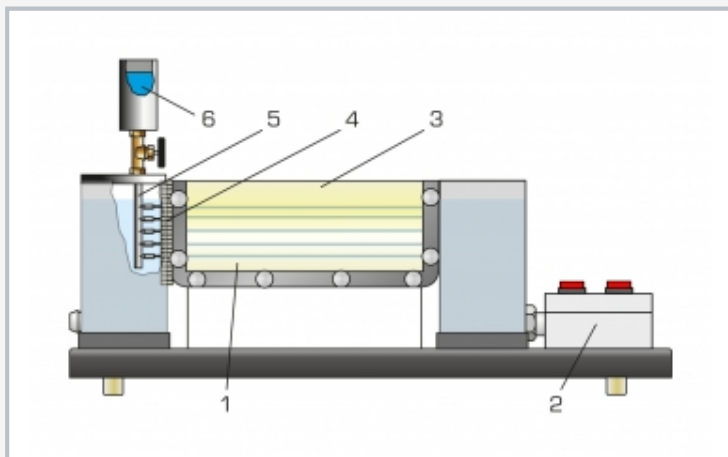
HM 153 includes a closed water circuit. Alternatively, the experimental unit can be operated by the laboratory supply.

#### Learning objectives/experiments

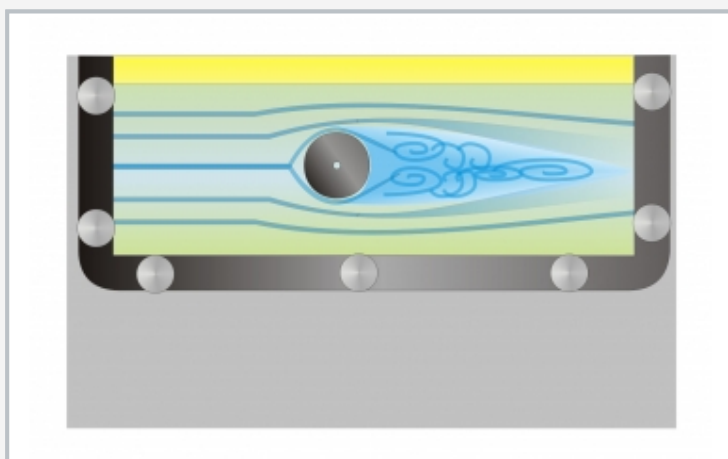
- streamlines when flowing around different solid drag bodies
- streamlines when flowing through different shaped models
- flow over different weirs

# HM 153

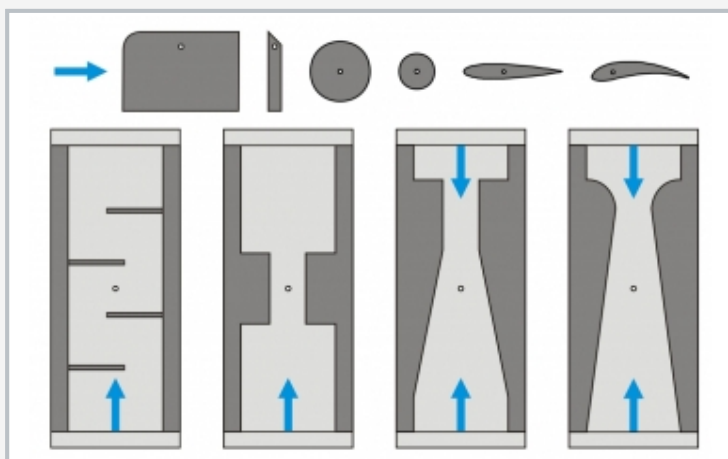
## Visualisation of different flows



1 flow section, 2 control unit for pump and illumination, 3 transparent front panel, 4 nozzles, 5 distributor for ink, 6 ink reservoir



Visualisation of the streamlines on a cylinder and the formation of vortices



Accessories supplied: set of models with weirs, drag bodies and models to demonstrate flow through; blue: direction of flow

### Specification

- [1] experimental unit for visualisation of various flow processes
- [2] illuminated flow section with transparent front panel
- [3] open-channel flow demonstrated on 2 weirs
- [4] flow through demonstrated with 4 differently shaped models
- [5] flow around solid bodies demonstrated on four drag bodies
- [6] contrast medium: ink
- [7] optional operation via laboratory supply or as closed water circuit

### Technical data

Flow section: approx. 5L

Contrast medium: ink

Injection of the contrast medium

- 5 nozzles

Pump

- flow rate: 10L/min
- head: 5,7m

Weirs

- broad-crested
- sharp-crested

Drag body

- 2 cylinder cross-sections
- aerofoil, symmetrical
- aerofoil, asymmetrical

Change in cross-section / flow through

- gradual contraction / sudden enlargement
- sudden contraction / gradual enlargement
- sudden contraction / enlargement
- tube bundle

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 1000x310x680mm

Weight: approx. 25kg

### Required for operation

water connection, drain

### Scope of delivery

- 1 experimental unit
- 1 set of models
- 1 ink (1L)
- 1 set of instructional material

# HM 153

## Visualisation of different flows

Optional accessories

020.30009

WP 300.09

Laboratory trolley