

# HM 150.03

## Plate weirs for HM 150



The illustration shows the HM 150 base module with built-in Rehbock weir and the GUNT Science Media Center, tablet not included.

### Description

- flow over sharp-crested weirs
- typical measuring weirs: Thomson weir and Rehbock weir
- flow visualisation using CFD technology
- multimedia teaching material online in the GUNT Science Media Center: E-Learning course, prepared CFD simulations, worksheets, videos

Sharp-crested weirs are a type of control structure that dam up an open channel in a defined manner. They are often used to determine the discharge of an open channel.

HM 150.03 contains two different plate weirs as sharp-crested weirs. The two weirs are typical measuring weirs with defined weir openings: in the Thomson weir the opening is triangular; in the Rehbock weir it is rectangular.

The weirs are installed and screwed in place into the HM 150 base module. The weir can be installed and replaced quickly and easily.

Water from the small experimental flume in HM 150 flows over the weir being investigated. A level gauge for detecting the head is included in the delivery. The head is used to determine the discharge, which is then compared to the measured values from HM 150.

In order to perform a virtual analysis of flow behaviour, CFD simulations are often used in practice. Such simulations allow, for example, flow visualisations in areas that cannot be visualised experimentally. In the GUNT Science Media Center, flow visualisations based on CFD calculations are available online. There are also multimedia teaching materials including E-Learning courses on basic knowledge and calculations. Videos show a complete experiment with preparation, execution and evaluation. Worksheets with solutions supplement the teaching material.

### Learning objectives/experiments

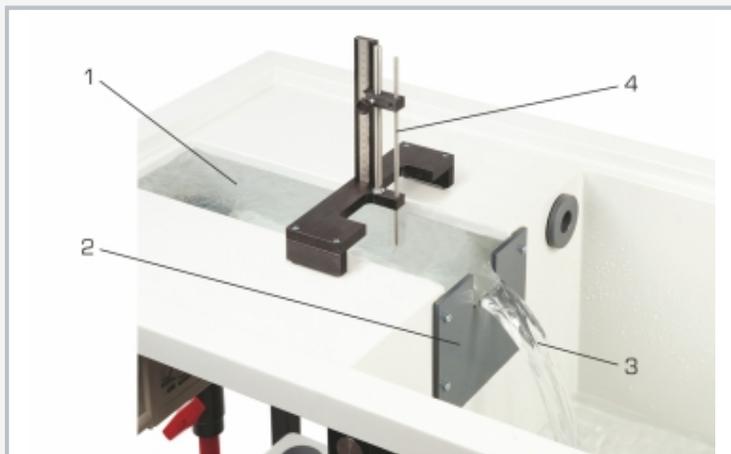
- free overfall at the sharp-crested weir
- plate weirs as measuring weirs
  - ▶ determining the discharge coefficient
  - ▶ comparison of measuring weirs (Rehbock, Thomson)
- determining the discharge
- comparison of theoretical and measured discharge

GUNT Science Media Center, develop digital skills

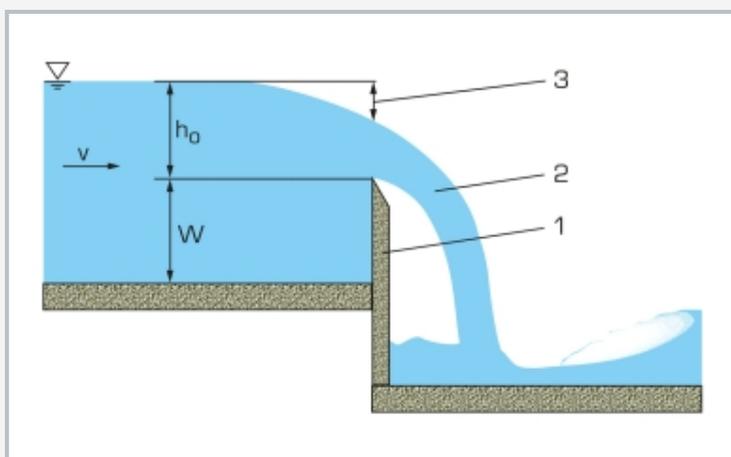
- E-Learning course with fundamental knowledge and calculations
- prepared CFD simulations for flow visualisation
- videos with detailed demonstration of the experiments: preparation, execution, evaluation
- assured learning success through digital worksheets
- retrieve information from digital networks

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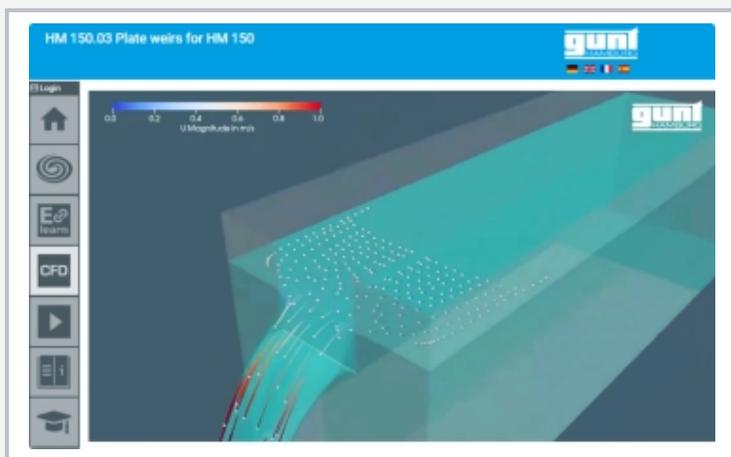
## Plate weirs for HM 150



1 experimental flume from HM 150, 2 Rehbock weir, 3 nappe, 4 level gauge



Free overfall at the plate weir: 1 plate weir, 2 nappe, 3 draw down;  $v$  flow velocity,  $h_0$  head,  $W$  height of weir



Screenshot of the GUNT Science Media Center

### Specification

- [1] discharge measurement in open channels using 2 measuring weirs
- [2] measuring weirs for installation in the HM 150 experimental flume
- [3] Thomson weir with V-profile
- [4] Rehbock weir with rectangular profile
- [5] level gauge with scale for determining the head
- [6] level gauge can be positioned anywhere along the experimental flume
- [7] flow visualisation using prepared CFD simulations
- [8] digital multimedia teaching material online in the GUNT Science Media Center: E-Learning course, prepared CFD simulations, worksheets, videos

### Technical data

#### Weirs

- material: stainless steel
- self-sealing
- rectangular profile
  - ▶ LxW of the section: 60mm
- V-profile
  - ▶ angle of the section: 90°
  - ▶ height of the section: 60mm

#### Measuring ranges

- head: 0...200mm

LxWxH: 230x190x2mm (weir plates)

LxWxH: 290x190x290mm (level gauge)

Total weight: approx. 4kg

### Required for operation

HM 150 (closed water circuit),  
PC or online access recommended

### Scope of delivery

- 2 weir plates
- 1 level gauge
- 1 set of instructional material
- 1 online access to GUNT Science Media Center

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## Plate weirs for HM 150

Required accessories

HM 150                    Base module for experiments in fluid mechanics