

HM 167

Ground Water Flow



- * Investigation of groundwater flows and seepage flows
- * Demonstration of flood and drainage
- * Investigation of wells, excavation ditches with enclosure

Technical Description

Groundwater flows are taken into consideration in the case of flooding risks, in the use of dewatering wells and the drainage of lakes and polders. An understanding of the hydrological principles of groundwater flow is useful when designing reliable structures such as ditches for excavation or drainage systems.

HM 167 allows three-dimensional investigations of groundwater flows and the demonstration of different drainage methods. The trainer consists of a tank with a sand filling. Various models can be placed in the sand bed.

The water is supplied to the tank via two perforated tubes that can be activated separately via valves. This results in various experiment possibilities with flowing groundwater. The investigation of various drainages is facilitated by two wells with perforated tubes, which are also activated individually via valves. Three different models allow the study of dikes, ditches and wells.

At the bottom of the tank there are orthogonally arranged measuring connections to detect groundwater levels. Groundwater levels are displayed on a 19-fold tube manometer.

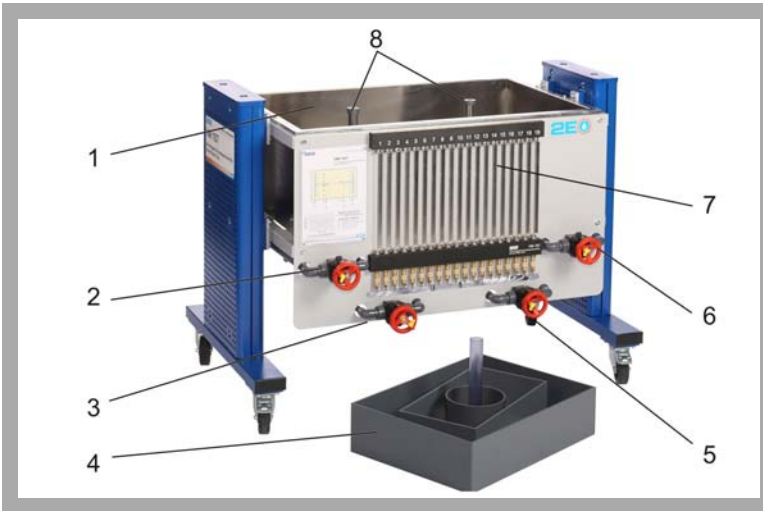
The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Learning Objectives / Experiments

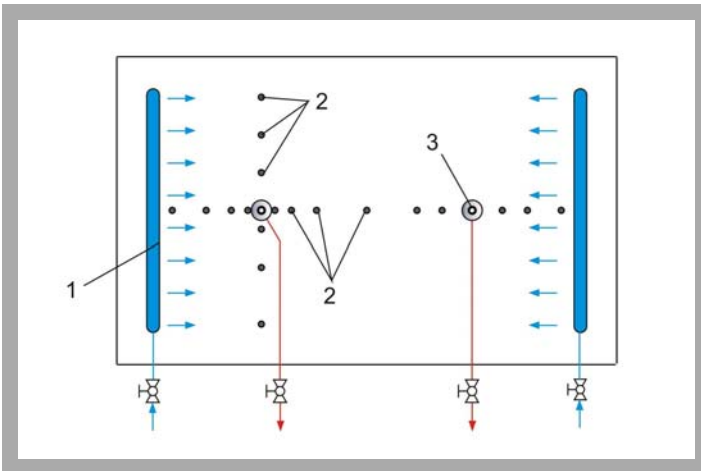
- determining the groundwater level between feed and discharge
- groundwater level over time at one and two outlets
- comparison and overlaying of the levels over time
- water inrush in dikes and ditches for excavation
- groundwater studies under concentric load on the substrate
- investigation of seepage flows in excavation ditches with wall braces

HM 167

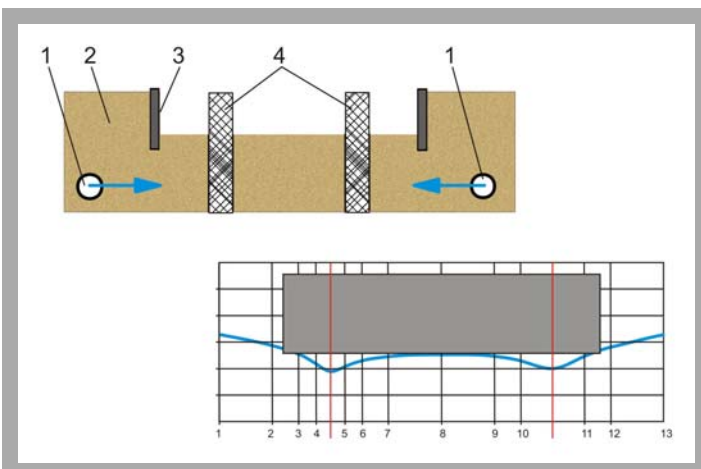
Ground Water Flow



1 tank, 2 water supply, 3 water drain, 4 models, 5 water drain, 6 water supply, 7 tube manometer, 8 water drain via perforated tube (well)



Arrangement of the measuring points and wells
1 water inlet via perforated tube, 2 measuring points, 3 water drain via perforated tube (wells); blue: water inlet, red: water drain



Groundwater level over time under a pit with excavation enclosure: 1 water inlet via perforated tube, 2 sand bed, 3 model, 4 wells with perforated tubes
Diagram: blue: groundwater level over time, red: water drain, grey: model;
1-13 measuring points on the bottom in the sand bed

Specification

- [1] investigation of groundwater flows
- [2] stainless steel tank as experimental section to be filled with coarse sand
- [3] water supply via 2 perforated tubes
- [4] water drain via 2 wells with perforated tubes in the experimental section
- [5] water feeds and discharges can be adjusted separately via valves
- [6] 19 measuring connections with filters to detect the groundwater levels, arranged orthogonal to the tank bottom
- [7] 2 different models for ditches
- [8] 1 model for structure with waterproof bottom
- [9] groundwater levels displayed on the 19-fold tube manometer

Technical Data

- Tank
 - material: stainless steel
 - contents: 215L
 - 19 measuring connections on the bottom of the tank
- Tube manometer
 - number of tubes: 19
 - measuring range: 300mmWC
- Plastic models
 - ditch, LxWxH: 610x464x150mm
 - ditch, LxWxH: 256x464x150mm
 - structure with waterproof bottom, DxH: 180x150mm, inner tube DxH: 40x330mm

Dimensions and Weight

- LxWxH: 1.340x650x1.000mm
- Empty weight: approx. 120kg

Required for Operation

- Water connection, drain
- Coarse sand, grain size 1...2mm

Scope of Delivery

- 1 trainer
- 3 models
- 1 set of hoses
- 1 set of instructional material

Order Details

070.16700 HM 167 Ground Water Flow