

HM 141

Hydrographs after precipitation



2E

Learning objectives/experiments

- effect of precipitation of varying duration or intensity on soils with different saturation
- record hydrographs after precipitation
- storage capacity of soils with different saturation
- compare natural dewatering with dewatering via drainage pipe
- influence of rainwater retention basin on the hydrograph

Description

- effect of precipitation on soils
- drainage of the soil either through drainage pipe or drain chamber with screen
- recording of hydrographs
- influence of rainwater retention basin on the hydrograph
- precipitation time, lag time and measurement time can be adjusted via separate timers

Hydrographs are an important tool for the representation of hydrological data such as precipitation, groundwater levels or discharges.

HM 141 produces precipitation of varying duration and intensity. The storage capacity of soils with different saturation is also examined. Using various dewatering is examined it is possible to demonstrate the relationships between precipitation and seepage.

The trainer includes a tank with a sand filling, which is flowed through by water. The water is supplied to the tank via a precipitation device with two nozzles that can be adjusted separately via valves. To study different drainages, the water is drained either via a drainage pipe or a drain chamber, which is separated from the experimental section by a screen.

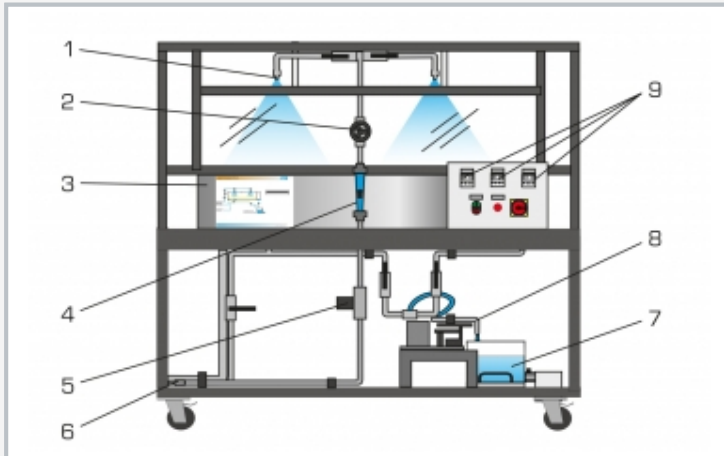
The draining water is distributed over 17 transparent chambers. This creates a profile over time of the water drain. The water levels are measured and plotted in a hydrograph.

Drip pans can be used to demonstrate the lag of the drainage through rainwater retention basins.

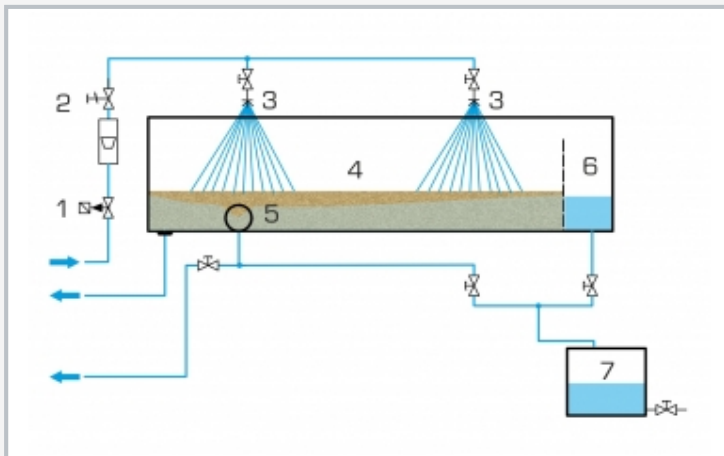
The water supply is controlled by a valve and read on a flow meter. The timed discharges are adjusted via electronic timers.

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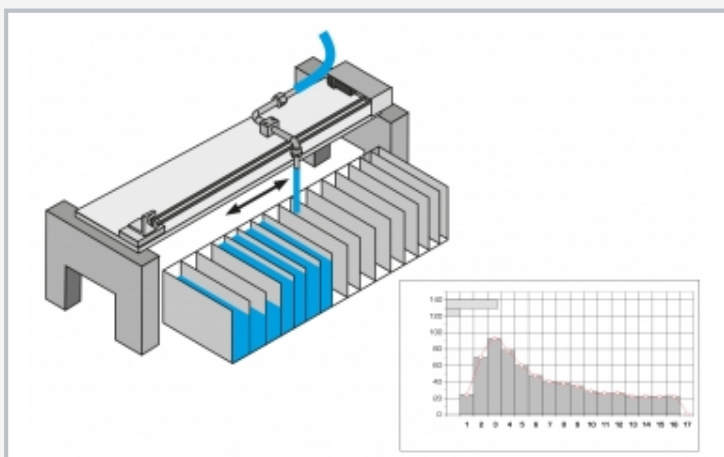
Hydrographs after precipitation



1 nozzle, 2 flow adjustment nozzles, 3 experimental tank with sand, 4 flow meter, 5 solenoid valve, 6 water supply, 7 measuring tank with 17 chambers, 8 water drain on mobile sled, 9 timers for precipitation time, lag time and measurement time



1 solenoid valve with timer, 2 flow meter, 3 nozzle, 4 experimental section with sand, 5 drainage pipe, 6 removable drain chamber with screen, 7 measuring tank



Water drain on a mobile sled and measuring tank; Diagram shows the release of water over time

Specification

- [1] investigation of the effect of precipitation on soils
- [2] stainless steel experimental tank with transparent splash guard
- [3] precipitation device with two nozzles, adjustable precipitation area and quantity
- [4] precipitation time can be adjusted via solenoid valve with timer
- [5] distribution to 17 chambers by timer
- [6] mobile sled carriage distributes draining water to 17 chambers in the measuring tank
- [7] water drain either via removable drain chamber with fine-mesh screen or via drainage pipe
- [8] separate flushing connection for pipelines
- [9] drip pans as rainwater retention basins
- [10] rotameter (inlet), indicator of precipitation time, lag time and measurement time

Technical data

Experimental section

- volume: 1300x600x200mm
- max. sand height: 185mm

Precipitation device

- 2 nozzles, individually adjustable
- flow rate: 1...6,7L/min, square spray pattern
- precipitation: max. 320L/h

Measuring tank with 17 chambers

- volume: 17x0,9L

Timers

- precipitation: max. 99min59s
- lag time until start of measurements: max. 99min59s
- measurement time per chamber: max. 99min59s

4 drip pans: 305x215x55mm

Steel scale: 200mm

Measuring ranges

- flow rate: 30...320L/h

230V, 50Hz, 1 phase

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

UL/CSA optional

LxWxH: 1600x1000x1475mm

Weight: approx. 190kg

Required for operation

- Sand (1...2mm grain size)
- Water connection, water drain

Scope of delivery

- 1 trainer
- 4 drip pans
- 1 set of hoses
- 1 set of instructional material