HM 141
Hydrographs after precipitation

Learning objectives/experiments

- effect of precipitation of varying duration or intensity on soils with different saturation
- record hydrographs after precipitation
- compare natural drainage with drainage 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.

HM 141 is used to irrigate a sand bed with precipitation of varying duration and intensity. Using different drainage methods, the temporal relationship between precipitation and drainage is demonstrated.

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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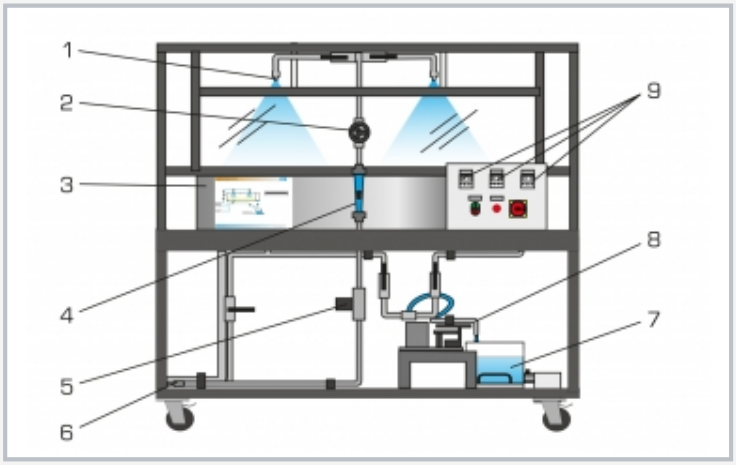
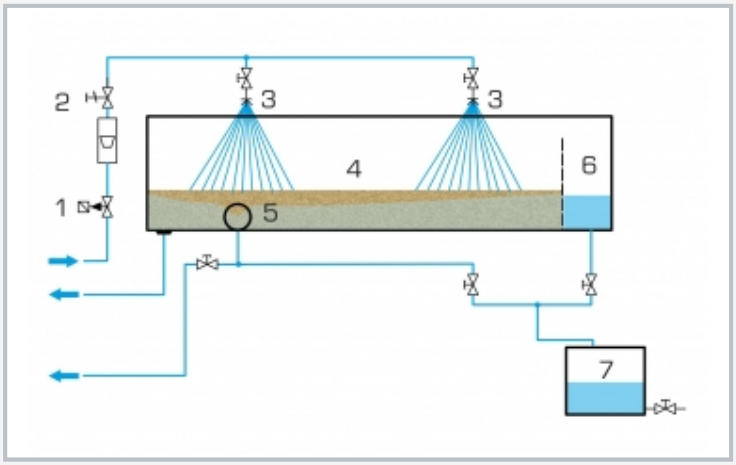
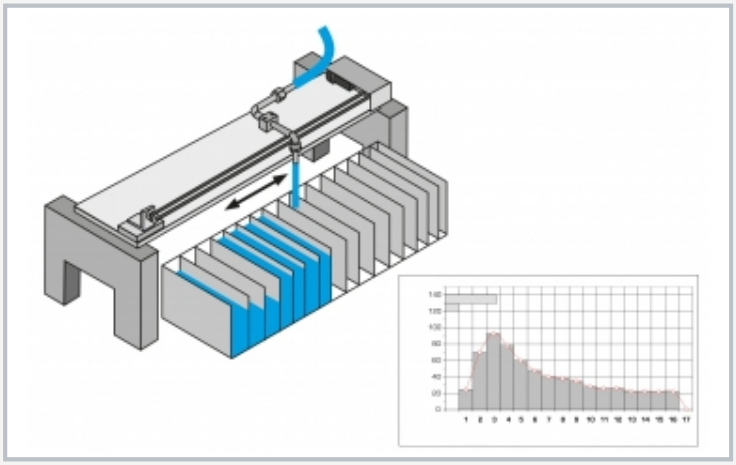


1 nozzle, 2 flow adjustment nozzles, 3 experimental tank with sand, 4 flow meter, 5 solenoid valve, 6 water supply, 7 measuring tank with 17 chambers, 8 water drain on mobile sled, 9 timers for precipitation time, lag time and measurement time



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

water connection, drain
sand (grain size: 1...2mm)

Scope of delivery

1 trainer
1 set of accessories
1 set of instructional material