

HOOD-INFILTROMETER (IL-2700)

DETERMINATION OF THE HYDRAULIC CONDUCTIVITY OF SOILS

The hood infiltrometer is a field instrument for determining the saturated and near-saturated hydraulic conductivity of soils using a Mariotte-type infiltration apparatus with a controlled hydraulic head. The effective hydraulic head at the soil surface can be freely adjusted between zero and a negative pressure up to the point where air begins to pass through the soil. Hydraulic conductivity is calculated based on the steady-state flow rates determined during the test, according to WOODING (1968).

VARIANTS

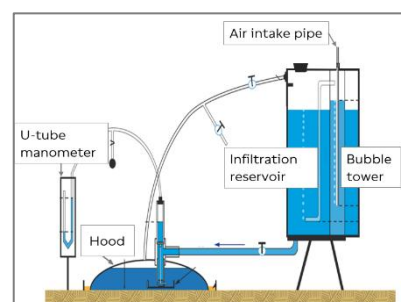
The manual device consists of three components:

- Hood
- Mariotte water supply system consisting of an infiltration vessel, a bubble tower, and aeration tubes
- U-tube manometer

With the IL-2700 hood infiltrometer, flow rates are measured electronically using a pressure sensor. The measurement data is recorded in conjunction with the IL-2700 handheld unit, then transferred to a PC using the accompanying software and analyzed.

ADVANTAGES

- Replicates natural infiltration conditions at the soil surface.
- Direct infiltration of water into the soil (no contact layer required).
- Controlled, constant hydraulic pressure
- Measurements at different hydraulic head levels and infiltration areas.
- Easy conversion to a tension infiltrometer.
- Sturdy carrying case for safe transport and easy handling



TECHNICAL DATA

PARAMETERS	SPECIFICATIONS	
Soil tension range	0 ... air entry point with hood 0 ... 60 hPa with tension chamber	
Soil tension measurement resolution	0.1 hPa (U-tube manometer)	
Infiltration measurement	Differential Pressure Sensor: 0 to 70 mbar Resolution: 1 mm WS	
Hydraulic conductivity range of the soil	10 ⁻³ m/s to 10 ⁻⁷ m/s	
INFILTRATION VESSEL		
Filling Volume	5 l	
Outer Tube Diameter / Height	Øo 120 mm, Øi 110 mm / 690 mm (inside)	
Bubble Tower Diameter / Height	Øo 50 mm, Øi 44 mm / 690 mm	
Material	Acrylic, clear	
BASE PLATE WITH FEET		
Shape, Dimension	Triangular, longest dimension 221 mm	
Material	Stainless steel	
Height over adjustable feet	between 20.5 and 28 cm	
HOODS		
	small	large
Diameter	Øo 160 mm, Øi 160 mm	Øo 240 mm, Øi 226 mm
Height	100 mm (without standpipe), 233.5 mm (total, excluding connections)	
Material	PETG, colorless	
BOUNDARY RINGS		
	small	large
Diameter	Øo 180 mm, Øi 177 mm	Øo 250 mm, Øi 247 mm
Height	40 mm	
Material	Stainless steel	
U-TUBE MANOMETER		
Scale	+25 cm ... 0 ... -25 cm	
Height of U-tube manometer (alu sheet)	645 mm	
Height of mounting rod (stainless steel)	620 mm (without handle)	
EQUIPMENT CASE		
Dimensions	90 x 55 x 31 cm	
Total weight	18.7 kg	

REFERENCES

SCHWÄRZEL, K. & J. PUNZEL (2007): Hood-Infiltrometer: New type of tension infiltrometer. Soil Sci. Soc. Am. J. 71: 1438-1447.

WOODING, R. A. (1968): Steady infiltration from a shallow circular pond. IN: Water Resources Research 4: 1259-1273.