

Hydraulic Conductivity Using Falling-Head Permeameters

Falling-head permeameters are used mostly for fine-grain sediments of low permeability.

1. Characterize the sand sample as to grain size and degree of sorting; record these and other observations on the data sheet provided, Table 7.3 on page 57.
2. Refer to Figure 7.3. You will measure the drop in head over time while the head continuously decreases across the sand column.

In order to make these measurements accurately, you will preselect reference marks near the top and bottom of the tubing to use as timing marks.

Record in Table 7.3 the information written on the permeameter: the cross-sectional area of the tubing (a) and the cross-sectional area of the sample (A).

3. Measure and record the length of the sand column (Δl).
4. Select a reference point near the top of the tubing, and mark it with a nonpermanent marker pen or a bit of tape. Measure and record the distance from this mark to the bottom of the sand column¹ (h_0).
5. Select a reference mark near the bottom of the tubing a few centimeters above the top of the permeameter, and mark it also.

Measure and record the distance from this reference point to the bottom of the sand column h_1 .

6. Calculate and record $(h_0 h_1)^{1/2}$, and mark this point on the tubing.
7. Fill the tubing to the top.

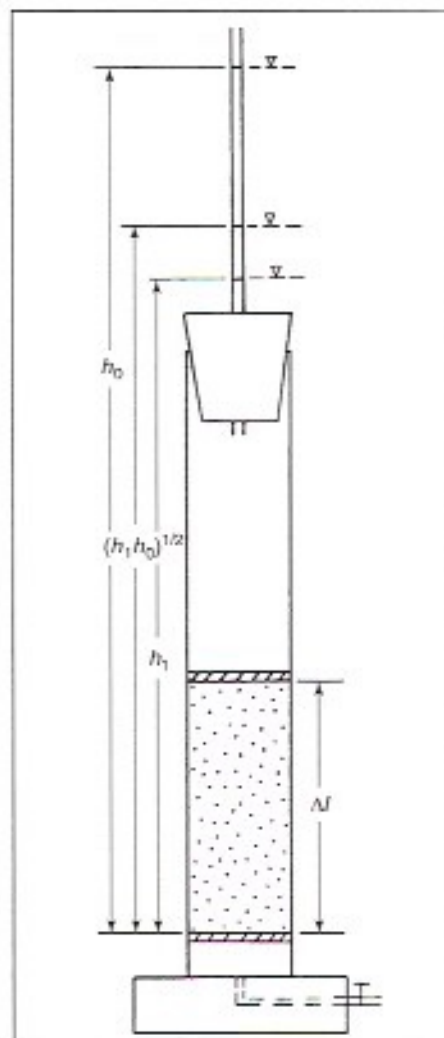


Figure 7.3—Falling-head permeameter.

¹With low-permeability samples for which this apparatus is designed, the space below the sand column is normally drained almost immediately. If, however, this is *not* the case, the reference point for head measurements should be the discharge point.