

Penetrometers are used to determine the resistance to penetration (bearing capacity) of soil. The meter is used by fitting a cone of known surface area to an extension which is attached to the pressure gauge. The kit is compact, easy to operate, requires little maintenance and comes complete with four cones of different base area, extensions for probing to 1m depth, pressure gauge which reads from 0–1.0kN/m₂ (kilonewtons per. sq. meter), complete instructions and metal carrying case.

Application

- Soil research
- Construction
- Horticulture/agronomy

Operation

After assembling the cone and extension to the pressure gauge, apply uniform pressure to the hand grips to push the cone into the ground at a constant rate of 2cm/second. During measurement, the resistance is read by the black pointer of the pressure gauge. The maximum pressure during measurement will be recorded by the red pointer. The resistance is read in N (Newton) and noted for the appropriate depth. By knowing the base area of the cone used, this is determined by dividing the gauge reading by the base area of the cone as follows:

Manometer (gauge) reading

Cone resistance = base area of cone (cm)

Example: A manometer reading of 300N and a cone base area of 5cm₂ means a cone resistance of 300/5 = 60kN/m₂. To convert to psi (pounds per square inch), multiply the N reading by 1.45.

The most accurate readings are obtained in the 200–700 N range on the pressure gauge. Accuracy (mean deviation) is +/- 8%. If readings are above or below this range, accuracy is +/- 15% and a cone with a different base area should be used to get readings in the desired range. Cones have base areas of 1, 2, 3.3 and 5cm₂.

Ordering Information

221001 Hand Penetrometer

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