

# Penetrometers

**The density of soil or undeeep underground is a measure for the compaction or the bearing capacity of the soil. This can be determined by a penetrograph, penetrologger or a hand penetrometer.**

In agriculture the bearing capacity of soil is of importance because of the bearing resistance against the weight of cattle and agricultural machinery. In arable farming a sufficient bearing capacity is important for the activities of a good preparation of the soil and for harvesting. In grassland agriculture sufficient bearing capacity is necessary for, o.a. carting manure or fertilizer, extending the grazing period and to avoid grass losses by mashing by the cattle. To determine the bearing capacity a critical limit can be put for the different applications. If the resistance to penetration is higher than a critical limit, then the bearing capacity is enough, if it's lower the bearing capacity is insufficient.

## • Penetrologger

The penetrologger is a device that has been developed especially for measuring the resistance to penetration of soils and to save these data automatically for further processing on the PC. The penetrologger has an ergonomic design, is lightweight and easy to operate. Measurements of up to a depth of 80 cm can be made. The measurement results of 500 penetrations can be saved and processed immediately, making the instrument extremely appropriate when a lot of measurements have to be done. The penetrologger has a built-in brake on penetration velocity (too fast and with shocks results in not soil representative values). The method is precise and has a wide measuring range.

### Applications:

- General soil investigation
- Basic advise for undeeep foundations
- Checking of soil compaction
- Investigation of the growth circumstances of plants in the soil
- Checking for the accessibility for cranes, trucks and army equipment
- Investigation of turf and sportsgrounds

### Characteristics:

Maximum measuring depth : 0,8 meter  
Maximum power : 10000 kPa / 1 cm<sup>2</sup>  
Other : Digital display  
Datalogging

## • Hand penetrometer

For general soil scientific investigation and the supply of simple foundation advice, this device is a good instrument. The resistance can be read on the manometer with the black indicator. The maximum resistance occurred during sounding is indicated by the red drag-along indicator. The penetration resistance can be determined by dividing the read-out value by the surface of the used cone. The hand penetrometer is also in use for checking artificial compression, determination of the accessibility of areas and for the investigation into the probable growth circumstances for plants in the soil as well as for finding compressed soil layers.

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### Characteristics:

Maximum measuring depth : 3 meter  
Maximum power : 10000 kPa / 1 cm<sup>2</sup>  
Other : Manometer scale

- **Penetrograph**

Another penetrometer is the mechanical self-writing penetrometer. With it the resistances measured during measuring, are shown immediately.

**Applications:**

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**Characteristics:**

Maximum measuring depth : 0,80 m

Maximum power : 5000 kPa / 1 cm<sup>2</sup>

Other : Graphics on paper