PENETROLOGGER

P1.52
Parts List
Pg 327-328

The resistance to penetration is a means of determining the ground load-bearing capacity, and the ease with which roots will grow through the ground (important when agricultural, rural- and civil engineering techniques are involved).
The resistance to penetration is a mechanical characteristic that, given a certain texture, depends on changing parameters such as degree of humidity, density and the strength of the connection between mineral particles.
Measuring the resistance to penetration of the soil in a great number of measurements is best executed applying an electronic penetrometer together with a data logger, allowing for immediate storage and processing of the data in the data logger.

To this purpose Eijkelkamp developed the penetrologger:
An electronic penetrometer with a built-in data logger for storage and processing of a great number of measuring data (500 measurements).

06.15 Penetrologger, standard set for measurement to a depth of 80 cm

The penetrologger is a versatile instrument for in situ measurement of the resistance to penetration of the soil.
Continuous measurements can be made with the penetrologger recording each layer of the ground profile up to 80 cm on the chart.

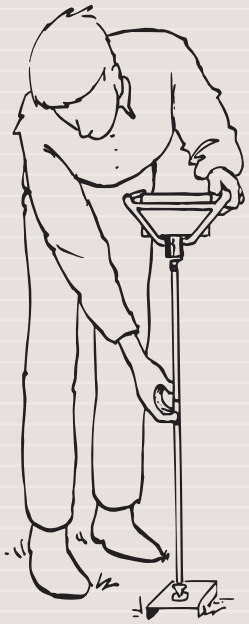
In broad lines the penetrologger consists of a force sensor, the logger, a probing rod, a conus and an ultrasone depth measurement system.

Before hand a measuring plan is programmed on a personal computer or on the logger itself.
Name of the project, number of measurements, the type of conus, the speed of penetration, etc. are set before the measurements.

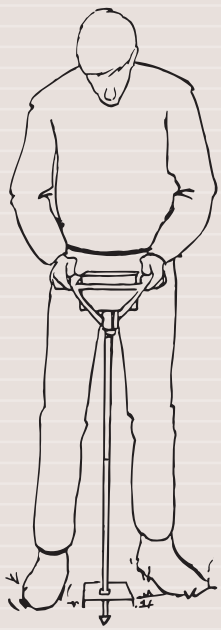
The resistance to penetration is greatly influenced by the speed of penetration, dimension and top-angle of the conus.

Penetrologger

After placing the depth reference plate, the probing rod is placed through the hole on the ground surface.



During measurement of the resistance to penetration the results are stored in the data-logger.

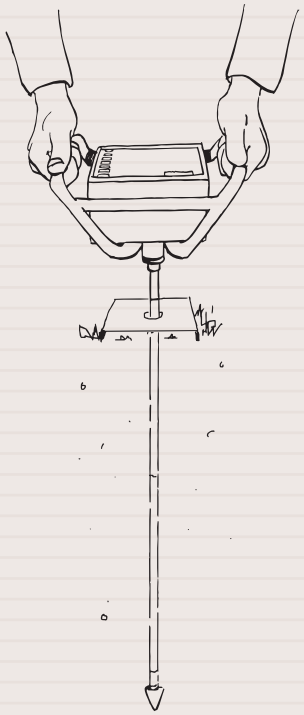


Eijkelkamp Agrisearch Equipment
www.eijkelkamp.com

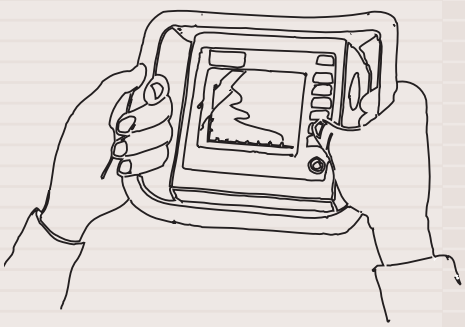
P1.52
Parts List
Pg 327-328

PENETROLOGGER

If the maximum measuring depth has been reached the whole can be extracted from the soil.



The penetrologger is fitted with touch control.



By exercising an equal amount of pressure on both (electrically insulated) grips the conus is pushed vertically into the soil.
The penetrologger is fitted with a built-in checking mechanism for the speed of penetration (pushing too fast and too irregular yields data that are not representative for the soil).
The resistance that is experienced during the pushing procedure is stored in the datalogger.
It is also possible to show the measuring results (in MPascal or Newton) on the display, in a graph or in a table with numeric measuring data, immediately.

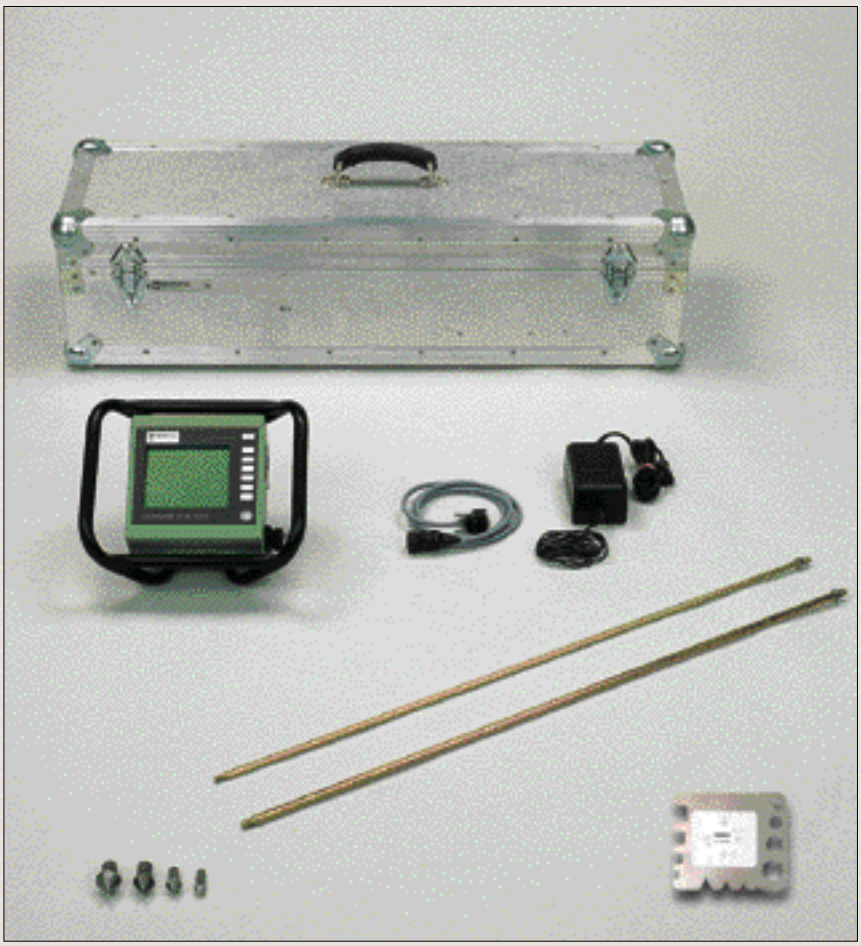
The penetrologger is fitted with an adjustable LCD screen for a clear display, also in direct sunlight.
The logger is battery fed.

The standard set, among other items, contains:
the penetrologger, a cable for the connection of the penetrologger to the PC, a manual for the penetrologger and for the PC-software, the software itself, a battery charger, probing rods, various cones, cone check and a bag of tools. The whole is carried in an aluminium carrying-/transport case.

Advantages

The advantages of the penetrologger are:

- ❒ Ergonomic design, easy to use, light weight.
- ❒ Splash-water proof.
- ❒ Large measurement range (0-10 MPa).
- ❒ Accurate (resolution 0.1 kPa).
- ❒ Accurate depth registration.
- ❒ Possiblity of adjustment.
- ❒ Easy and flexible programming of the field work that can be executed on a PC as well as on the penetrologger itself.



Penetrologger, complete set

PENETROLOGGER

P1.52
Parts List
Pg 327-328

The data stored in the logger are processed on the PC.

Applications

The penetrologger can be applied in the agricultural- as well as in the civil engineering sector:

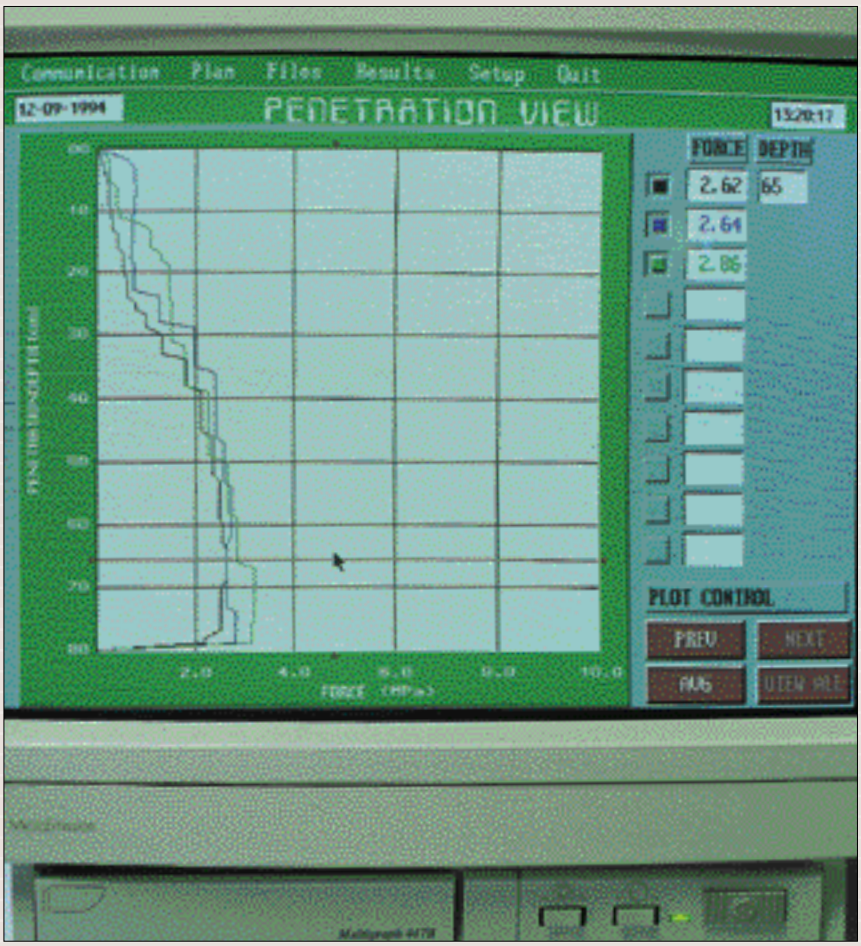
- General soil science research.
- Foundation technology.
- Checking whether or not the soil is suitable for agricultural purposes.
- Research into (expected) growing conditions for plants.
- The detection of compacted (possibly impermeable) sub-soil layers (e.g. layers compacted below depth of ploughing).
- Research into poor growing conditions of for instance trees in the city or in parks.
- Checking artificially-made compactions.
- Checking the suitability of soils for carrying vehicles or pedestrians

Field printer

The optional field printer offers the possibility to print the measuring results as graphics as well numerically in situ. The field printer is fed via the communication cable from the penetrologger and therefore does not require internal power.

Of course the operating time of the batteries in the penetrologger is shortened if the printer is used.

The resolution of the graphic presentation is, due to the limitations of the paper-size less by comparison to that of stored data. By means of a numerical print it is possible to monitor the measuring results in detail in the field (an instant availability of a survey of data).



Graphic display on a monitor