

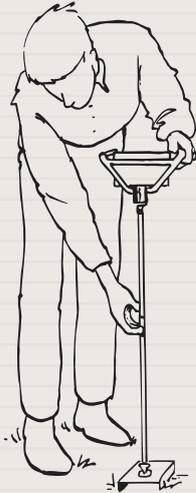


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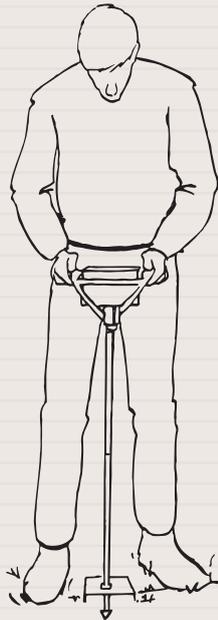
PENETROLOGGER

P1.52

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.



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 penetrometer.

An electronic penetrometer with a built-in data logger for storage and processing of a great number of measuring data (1500 measurements).

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

The penetrometer is a versatile instrument for in situ measurement of the resistance to penetration of the soil.

Continuous measurements can be made with the penetrometer recording each layer of the ground profile up to 80 cm on the chart.

In broad lines the penetrometer consists of a force sensor, the logger, a probing rod, a conus and an ultrasonic 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.

BENEFITS

06.15 Penetrologger

- No mechanical parts, strong and reliable
- Incorporated fast GPS. Data are auto-stored
- Soil moisture indicator can be connected
- Record one moisture % per measurement
- Moisture recordings allow comparing of data
- 500 fully digital depth / force recordings
- Numerous different projects can be defined
- Projects can be selected at any moment
- Velocity indicator stimulates correct pushing
- Field and office programmable / read-out
- Will show, upload or print any reading
- Will show averages and spreading



Penetrologger

PENETROLOGGER

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By exercising an equal amount of pressure on both (electrically insulated) grips the cone is pushed vertically into the soil.

The penetrometer 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 penetrometer 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 penetrometer, a cable for the connection of the penetrometer to the PC, a manual for the penetrometer and for the PC-software, the software itself, a battery charger, probing rods, various cones, cone

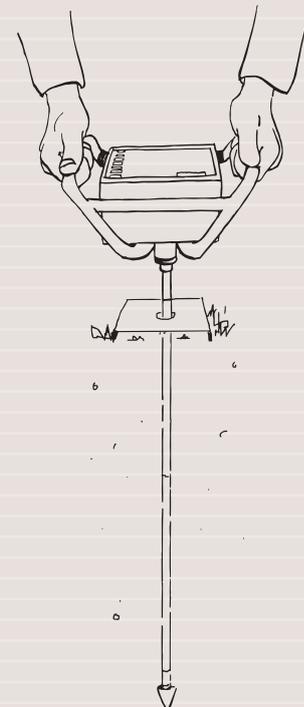
check and a bag of tools. The whole is carried in an aluminium carrying-/transport case.

Advantages

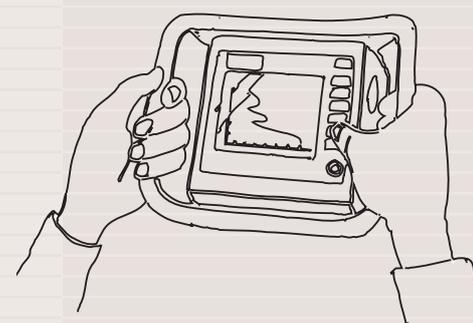
The advantages of the penetrometer are:

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

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



The penetrometer is fitted with touch control.



Penetrologger, complete set

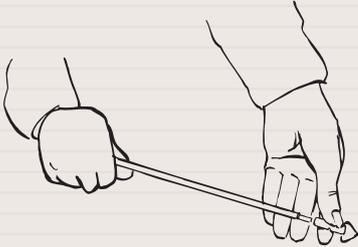


PENETROLOGGER

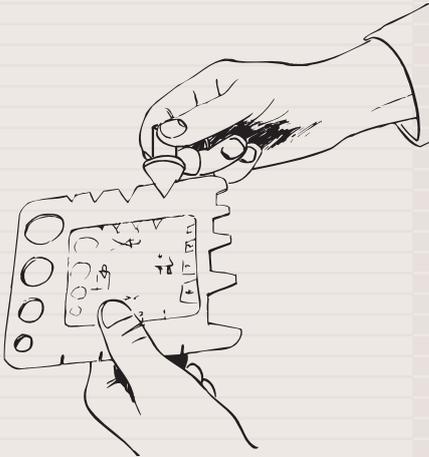
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Depending of the resistance to penetration that is expected one of the cones provided is mounted.



The cone check is used to inspect the wear of the cones.



The penetrometer now also has a precise internal GPS-system to determine the exact place of the measurement. It also includes new PC software, a larger storage capacity and French and Spanish language functions. Optional is the possibility of soil moisture measurement with an external soil moisture sensor (1 measurement per penetration).

- ❑ Execution of the programming of the penetrometer on a PC is the fastest.
 - ❑ The measuring results can be displayed graphic as well as numeric.
 - ❑ Automatic calculation of average values and standard deviation.
- In addition the option exists to store the data in the penetrometer for further processing on the PC.

- ❑ The logger has a substantial data storage capacity (1500 measurements).

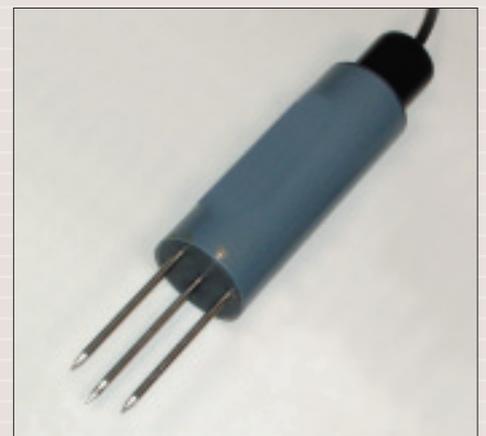
- ❑ The graphic software enables you to read out the data directly, display them as graphics or numerically, or to print them on a printer or a plotter.
- ❑ Language options regarding the program: Dutch, English, German, Spanish or French.
- ❑ The data files can be used in spreadsheet-programs for further data-processing.
- ❑ Universal application.
- ❑ Low power consumption.
- ❑ Good price/quality ratio.
- ❑ Built-in clock for date- and time registration.
- ❑ Programmable project planning.
- ❑ Cone index measurements.



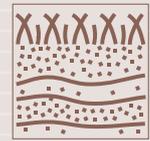
Penetrologger, probing rod and cone



Cones



Soil Moisture sensor



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PC software

- User friendly software.
- Mouse controlled.
- Graphic user interface.
- Data output to display, printer and plotter.
- Windows 95, 98, 2000, NT, ME, XP
- 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.

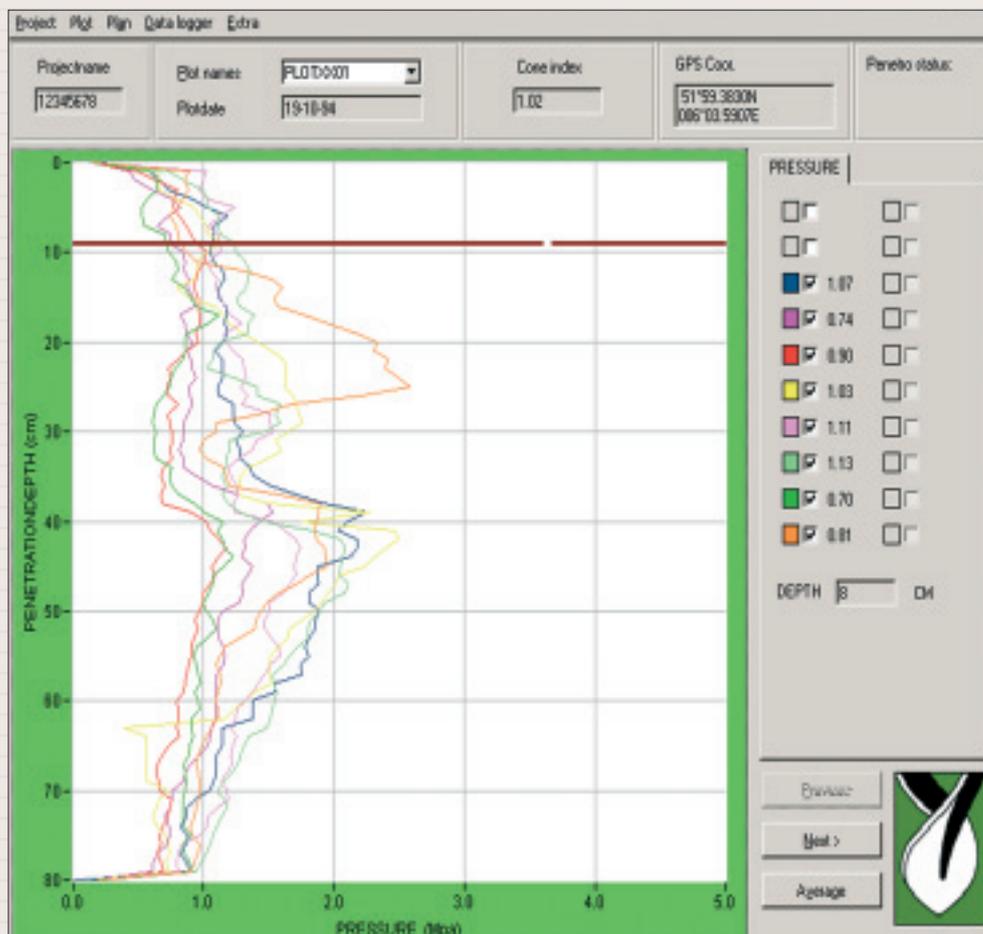
The data stored in the logger are processed on the PC.



Applications

The penetrolgger 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.
- Checking the suitability of soils for carrying vehicles or pedestrians.
- Suitable for golf-courses.



Graphic display on a monitor