ROYAL Eijkelkamp
Meet the difference

Soil column cylinder auger

Manual

Meet the difference

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About this instruction manual

☞ **Whenever text follows this symbol (as shown left), this means that an important instruction follows.**

⚠ **Whenever text follows this symbol (as shown left), this means that an important warning follows, which warns of danger of injury to the user or damage to the equipment. N.B. The user always bears his own responsibility for adequate personal protection.**

Text **Text presented in italics means that it appears literally on the screen or the equipment.**

1. Description

A method has been developed for carrying out a qualitatively high-grade core investigation to a depth of one metre, in which samples are taken out of the ground with the soil column cylinder auger. It is possible with this system to take undisturbed samples with a length of 100 cm and a diameter of 93 mm without digging a cross-sectional pit. The soil column cylinder is driven into the ground with the aid of a petrol-driven percussion hammer (on request, an electrically-driven percussion hammer can also be supplied).
The side of the soil column cylinder can be opened for checking for example, for description, or sub-sampling of the core taken.

For more detailed information on the percussion hammer, we refer you to its instruction manual.

2. Applications

The soil column cylinder can be used for applications including:
- ❑ Structural descriptions of the soil (even very thin soil layers can be distinguished).
- ❑ Root cluster investigation, to gain more insight into rooting possibilities, the depth and intensity of the root system.
- ❑ Volume and density determination of soil by means of undisturbed samples.
- ❑ Determination of chemical composition of various soil types sampled.
- ❑ Study of moisture content and concentrations of dissolved substances in long-term field studies.
- ❑ Studies into flow behaviour of water and dissolved substances in for example soils where preferential moisture transport occurs.
- ❑ Archaeological investigation.

3. The set

Included in the standard set are: a petrol-driven percussion hammer (1), a striking pen (2), a stainless steel soil column cylinder (3), a hand auger (4), an extractor hook (5), a top piece (unscrewable) (6), an extractor system (7), sample gutters (8) and various accessories (9).

4. Usage

Prior to drilling, investigate whether there are (electrical) cables or pipes in the ground. Use a probe (not included in the set) to sound out the drilling position safely. If obstacles that could affect the safety or sampling (large stones etc.) are encountered, choose a different drilling position.

Always arrange adequate face and hearing protection, safety footwear and gloves.

- ❑ The gloves (item no. 01.11.13) offer protection against small injuries and against contact with any contamination present in the soil.

Recommended (not included in the set):

- ❑ Glass-fibre probe 105 cm long, cone tip with a diameter of 19 mm (item no.: 01.15.01). The probe is insulating and can therefore be used safely to sound out cables and pipes.

(Not included in our range)

- ❑ Vibration-damping gloves, especially for the electric percussion hammer.
- ❑ Footwear with steel toecaps.
- ❑ Hearing protection.
- ❑ Safety goggles.

The percussion hammer:

- ❑ Check whether the petrol has been lying. Petrol over three months old should be replaced; the fuel should have a clean petrol smell. Use the correct oil to petrol mixture ratio (1:50). Only use special two-stoke oil.
- ❑ Also check that the machine will start and consult the hammer's instruction manual.

The soil column cylinder:

- ❑ Fit the removable cap; secure it using the Allen head bolt.
- ❑ Attach the striking pen to the soil column cylinder.

Sampling:

- ❑ After the sampling position has been determined, the percussion hammer is positioned over the striking pen.

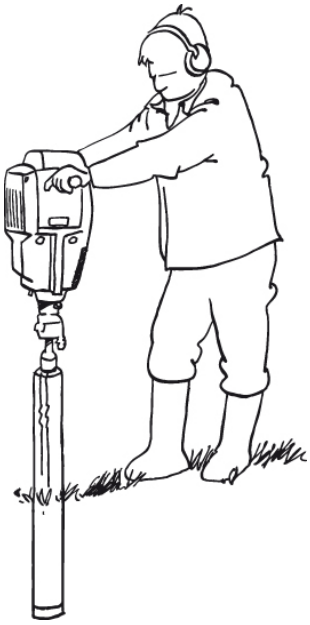
- ❑ Put the cutting shoe on the ground surface and the soil column cylinder on top of that.

☞ **The cutting foot must connect properly with the soil column cylinder.**

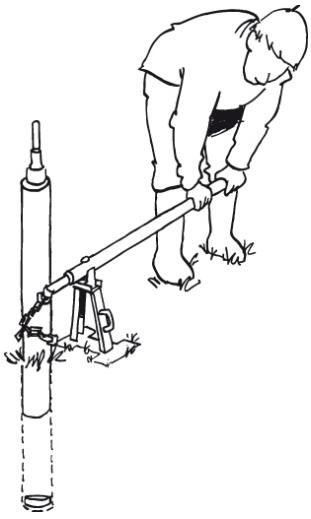
- ❑ Set the choke knob depending on how cold it is, and start the percussion hammer with the starting cord.

- ❑ Hammer the soil column cylinder vertically into the ground.

- ❑ After the desired depth is reached, remove the percussion hammer and striking pen.



The soil column cylinder is hammered into the ground.



The soil column cylinder is drawn out of the ground.

- ❑ Put the lifting jack next to the soil column cylinder. Wind the chain twice around the cylinder and insert one end through the large eye. Put this end in the recess in the lever, so that the chain is affixed to it. Put the lever with the “bump” in the recess in the jack. The chain will clamp itself around the soil column cylinder, and you can give the jack one stroke (push lever downwards). Usually the chain loosens itself such that when the lever is raised, a lower position can be clamped for the next stroke. If the chain does not drop spontaneously between strokes, tap it downwards.

- ❑ When pulling the filled cylinder up, the cutting shoe remains behind in the bottom of the hole. This happens because the cutting shoe´s diameter is 6 mm greater than that of the cylinder. In this way, the soil column cylinder remains relatively free in the soil. In most soils therefore, the soil column cylinder can be pulled out of the ground with the relatively light withdrawal gear supplied.

- ❑ Because the cutting shoe is still full of soil, a hole is drilled into this with the Edelman auger, after which the cutting shoe can be recovered with the steel extractor hook.

- ❑ Remove the detachable lid from the soil column cylinder auger.

- ❑ The sample is now ready for immediate inspection in the field.

- ❑ To prevent the core description or analysis being spoiled through vertical smearing, the outer shell of the sample is removed (with a knife or wire). Cut the sample through with a spatula or knife just above the underside of the window. The soil core is now free in the cylinder. Place a sample gutter in the position of the cylinder lid and roll the whole thing over through 180°. The soil core ends up lying in the sample gutter.
  During transport in a vehicle, the sample gutter needs to be properly secured; otherwise the sample could be broken or disrupted.

- ❑ Clean the soil column cylinder auger with a brush. The next sample can be taken.

The cutting shoe is removed from the borehole.

Soil column cylinder, removable lid and sample in sample gutter