

# UNDISTURBED SEDIMENT SAMPLING

The submerged soil appeared to be an easy and invisible dumping place for chemical waste.

In case of taking samples from submerged soils it is a problem that the final sample usually is not a good representation of the real stratification of the soil.

Applying the equipment described here it is, however possible to take samples in which the original structure and thickness of the layers is preserved.

## 04.20.SA Sediment sampler, type Beeker sampler, for sampling to a depth of 5 m

The Beeker sampler is an apparatus for undisturbed sampling of submerged soils.

The samples are collected in a transparent tube so that it retains the material in its original position and a clear profile description can be made.

Before taking the sample, a hardened cutting head

is positioned at the bottom end of the tube. A collar is placed at the top end of the tube.

The cutting head and the collar are connected by straps that are tightened so that the tube is well clamped between the two. This construction allows for application of tubes with different lengths (up to a maximum of 1.5 meter).

A rubber membrane, which sits within the cutting head, can be inflated to the right pressure so that it closes the head completely and ensures full sample retention when the sampler is pulled up.

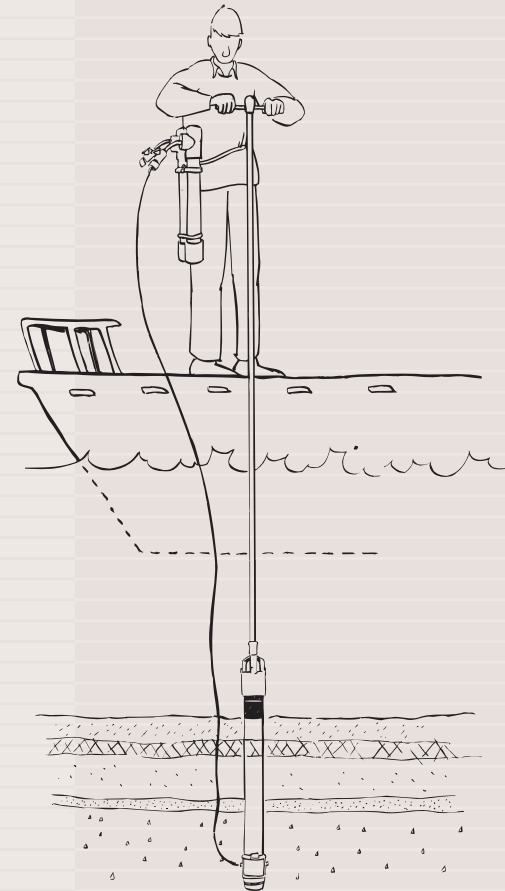
By applying extension rods and a top piece with hammering head, it is possible to hammer or push the Beeker sampler into the soil.

The problem of compression of the sample is avoided in the Beeker sampler by supplying it with a piston.



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**Using a Beeker sampler an undisturbed sample is taken from the submerged soil.**



Sediment sampler type Beeker sampler

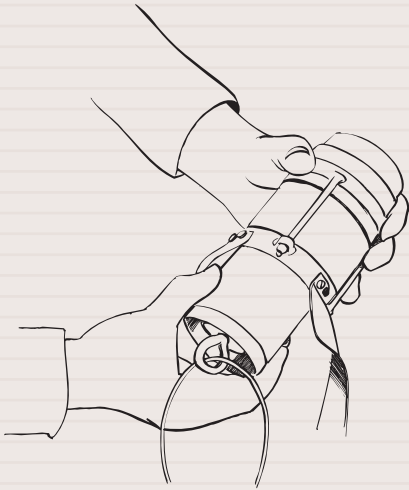


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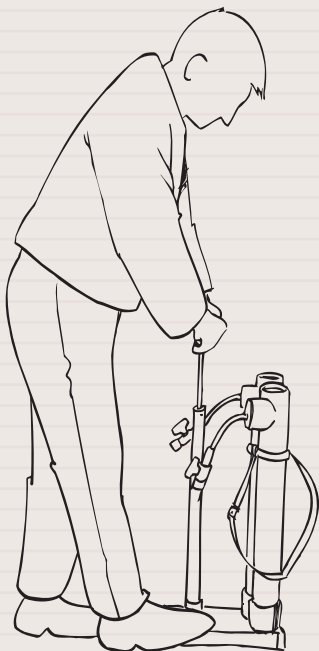


# UNDISTURBED SEDIMENT SAMPLING

**Before sampling starts the piston is positioned inside the cutting head.**



**The cylinders are brought under pressure (or vacuum) by means of the pump.**



Before sampling starts the piston is positioned inside the cutting head.

When the cutting head is positioned over the sediment to be sampled, the piston is kept at a fixed height by means of a cable (for instance by fixing the cable to the railing of a boat).

When the tube is lowered the piston remains static. The sampling tube is pushed into the material and around the piston.

The partial vacuum which is created counter acts any compaction that would otherwise take place because of friction.

Samples taken with the Beeker sampler compact to a maximum of 4-5%. Other sampling systems normally may compact by some 30% or more.

After the sampling tubes have been sealed off, by means of a hydro-pneumatic discharge- and partitioning system the samples can be subdivided

into smaller, undisturbed, samples for depth related analysis.

The complete set comprises: a complete sediment sampler, sampling tubes of various lengths, pistons, top pieces and extension rods, a vacuum/pressure pump, vacuum/pressure reservoirs, hose reel with hose, a discharge- and partitioning system, a tool kit, various accessories and an aluminium transport case.

### Advantages

- A very complete set with an extensive manual.
- The profile and the density of the sample is retained.
- Because of the substantial diameter of the sample there is very little spreading across the sides.



Sediment sampler, type Beeker sampler



Cutting head



Cutting head with inflated membrane

# UNDISTURBED SEDIMENT SAMPLING

- ❑ The sampler is lightweight and easy to use, so many samples can be taken in a day.
- ❑ Because of the compressed-air reservoirs and the large hose couplings the sampler has a maximum mobility and a variety of applications.
- ❑ It is able to cope with many types of sediment varying in consistency from very watery and uncohesive to unconsolidated sands, regardless of the stratification of the soil.
- ❑ A simple and controlled discharge- and/or partitioning of the sample with the hydro-pneumatic discharge- and partitioning system.
- ❑ The standard set is suitable for application in water to a maximum depth of 5 meter. Using extra extension rods sampling is possible to a greater depth in certain cases.

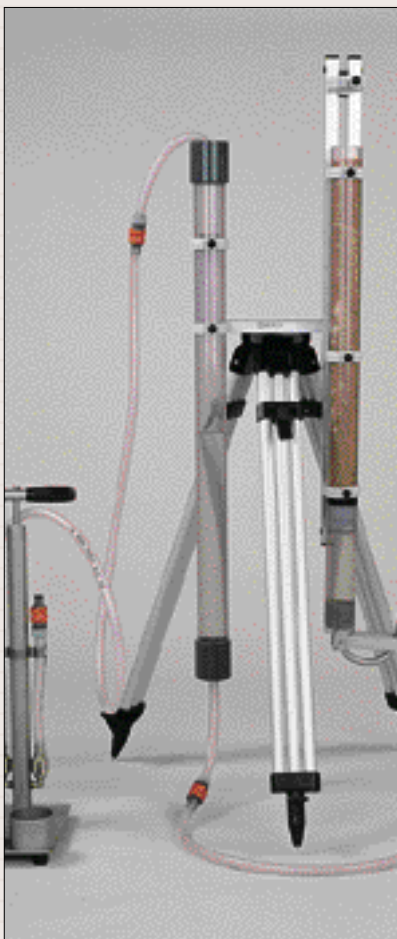
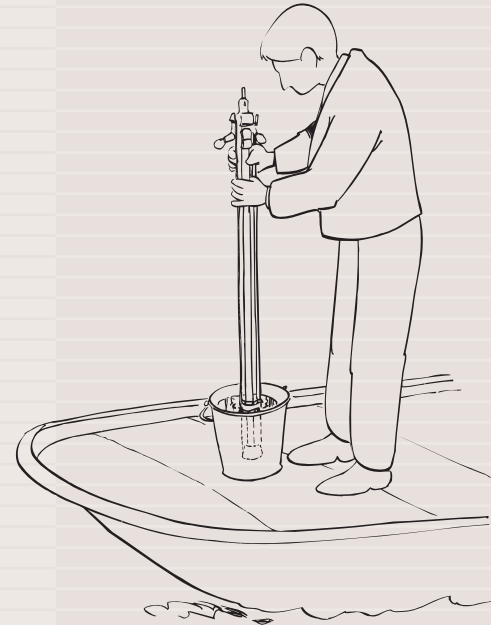
Note:

As sampling depth increases in flowing waters sampling will be more difficult.



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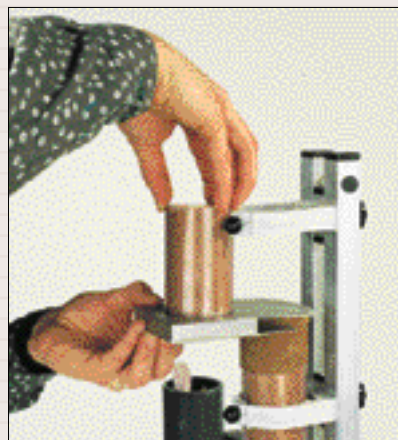
**On the boat a rubber plug is pushed into the sampler. After mounting a new tube the next sample is taken.**



Discharge and partitioning system

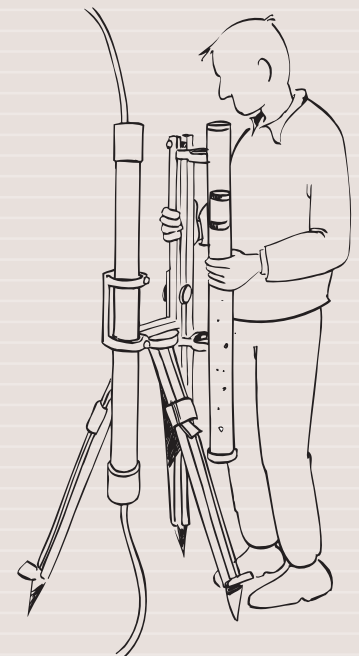


Pressure tube with clamp plug



Sample divider

**By applying the discharge- and partitioning system the sample can be discharged and partitioned in a controlled manner.**



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## UNDISTURBED SEDIMENT SAMPLING

### 12.42 Multisampler, rod operated, set for sampling to a depth of 5 m

The multisampler has been developed originally for sampling of wet, solid as well as fluid material.

The standard set is suitable for sampling up to a depth of 5 meter. The materials used for the multisampler are stainless steel, NBR- rubber (the piston) and transparent acrylic plastic (sampling tube).

The standard set (with bayonet connection), among other items, contains: a multisampler, inclusive of two cutting heads (one for fluid- and one for solid material), sampling tubes, pistons, extension rods, a top-piece and various accessories. The complete set can be transported in a carrying bag with shoulder strap.

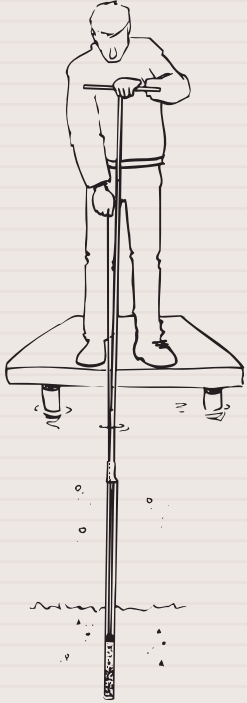
Using the multisampler it is possible to take anaerobe samples in a wide variety of wet materials, solid as well as fluid. Using the piston rod (usually extended by means of a wire-line)

it is possible to move the piston in the sampling tube while this tube is held stationary. In this way the original stratification of the sampled material is maintained.

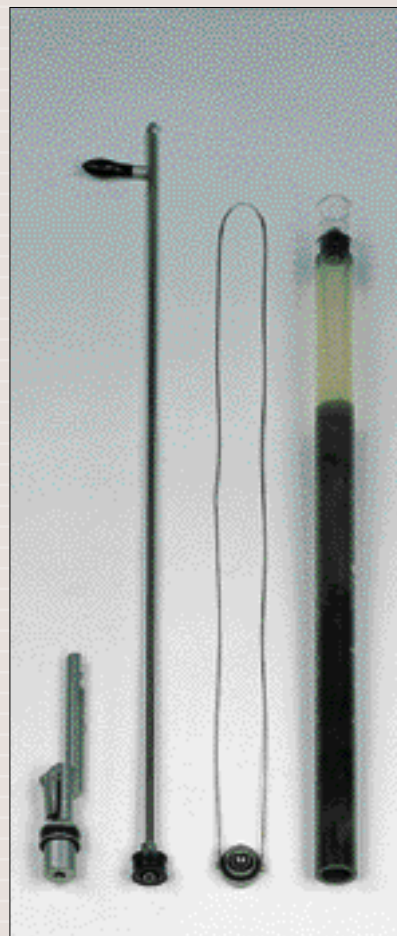
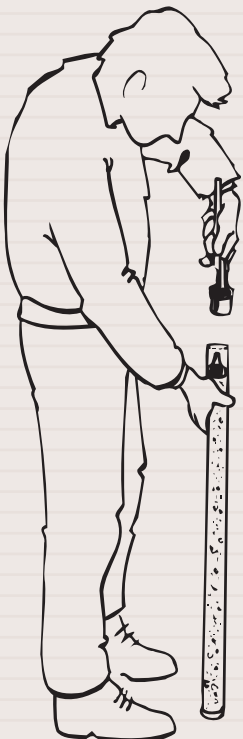
#### Advantages

- ❑ Quick and simple sampling.
- ❑ Minimal compaction which makes it possible to maintain the original thickness- and stratification of the layers.
- ❑ The transparent sampling tube allows for immediate visual checking of the sample.
- ❑ The option of sampling at accurate depth (without mixing with higher situated strata).
- ❑ Accurate mix-sampling during one procedure.
- ❑ The sampling tube can be changed and/or decontaminated quickly.
- ❑ Sampling with a minimum of disturbance (with cutting ring) or with little agitation (using a ball valve).

The multisampler is used to take sediment samples.



After demounting and fitting of a cap the sampling tube can be transported to the laboratory.



Multisampler, demounted



Multisampler, top-piece



Cutting heads