

CABLE OPERATED SEDIMENT SAMPLERS

Sampling of submerged soils at greater depths from the bottoms of rivers, lakes, etc. is executed with cable operated samplers. The samples are either or not disturbed.

04.29 Free-fall corer

The free-fall corer is a sampling tool for fairly undisturbed sampling from the top layer of submerged sediments either or not consolidated.

The free-fall corer consists of a frame with strengthening ribs, falling weight and sampler. Using a hoisting unit (davit) on board of a boat the sampler is lowered in free fall. By its own weight and velocity the apparatus penetrates the submerged soil.

The depth of penetration is partly determined by the composition of the submerged soil. In soils rich of mud, penetration will reach to about 80 cm, in more sandy soils this will be about 30 cm.

After lifting the sampler an immediate rough description of the stratification of the submerged soil is possible due to the transparent tube and also the depth of penetration can be measured.

After removing the sample further description regarding the composition, colour, smell and particulars if any, is possible.

Applications

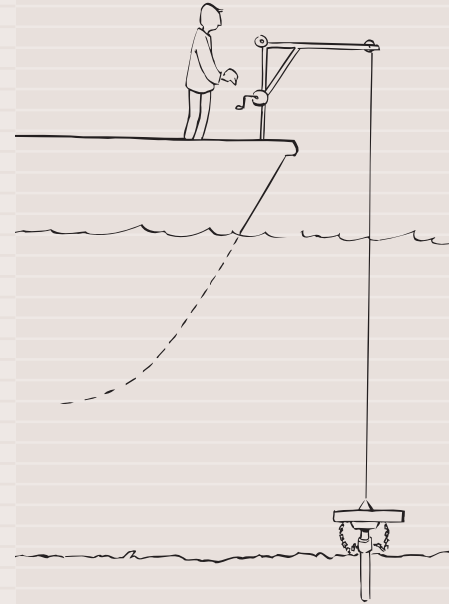
- ❑ The free-fall corer is applied particularly when sampling with rod operated equipment poses problems because of too great water depth and current velocity.
- ❑ Sampling is done on behalf of environmental research, soil research and geo-hydrological research.

Note: During sampling with the free-fall corer samples are compressed, in some cases this may amount to a factor 2. The problem of compression can be avoided by using a sediment sampler, type Beeker sampler (04.20.5A).

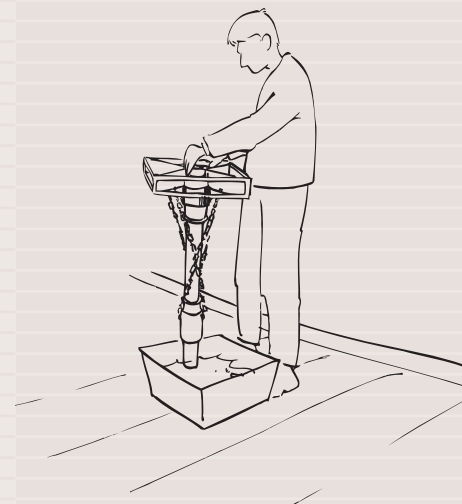


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Using a davit on board of a boat the free-fall corer is lowered in free-fall.



The sample is discharged by lifting the ball valve a little.



Free-fall corer



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04.30 Van Veen grabs

The stainless steel Van Veen grabs are used for taking disturbed samples from the bottom of lakes, rivers, etc. Various designs can be supplied. The smaller designs are manually controlled.

The mode of operation of all Van Veen grabs is the same. At the surface the jaws are pushed open and kept in that position by a hook. To keep the hook in the right position the Van Veen grab should be sunk at a steady, not too high, pace.

Both jaws are fitted with holes to allow air to escape during the sinking. If these holes were not there, the air would escape when taking the sample, which would result in interference with the sample.

As soon as the jaws touch the bottom, the hook loosens its grip, so that, when hoisting the rope again the jaws will shut tight because of the leverage by the rods.

The amount of drawn sample mainly depends on the compactness of the bottom. A heavier grab catches more than a lighter one. Therefore all models have been fitted with weighting blocks. Moreover, when a strong current prevails, the cable of the heavier grab deviates less from the vertical than the lighter one.

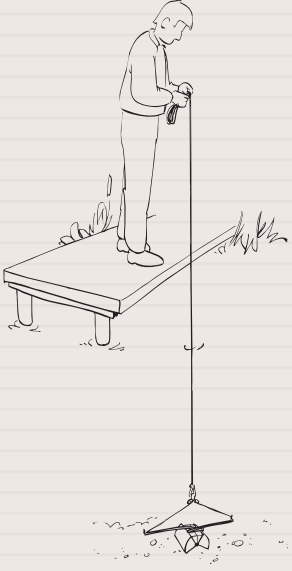
It is recommended to take at least 6 samples from every location and to base your conclusion on the total of the samples.

This is especially important when the bottom is less regularly shaped and the bottom material consists of a mixture of materials.

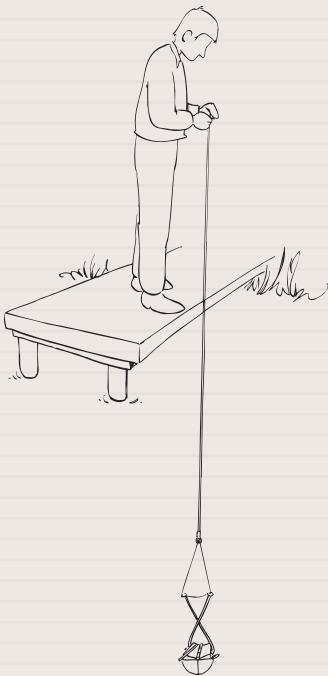
In spite of the heavy closing force, it can happen that a pebble sticks between the buckets. In such case the sample is not representative; the smaller parts may have escaped during hoisting.

Once surfaced, the grab is emptied and cleaned.

The Van Veen grab is sunk on a rope with its jaws open.



Hoisting the closed grab.



Van Veen grabs