

HAND AUGER EQUIPMENT

Hand auger equipment is extremely suitable for soil research.

As almost any type of soil sets its own demands where it concerns the model of the auger to be applied.

In the course of the years many models have been developed. Years of experience and many contacts with soil researchers at home and abroad made it possible to achieve the optimum design for various types.

By applying extension rods with a bayonet- or a conical threaded connection augering to greater depths is possible. With hand auger equipment a depth of 8-10 meter can realistically be achieved. The maximum boring depth strongly depends on various factors such as: depth of the groundwater, the soil profile, the characteristics of the material the auger has to pass through.

As with any tool or equipment, hand auger equipment too has to meet certain requirements.

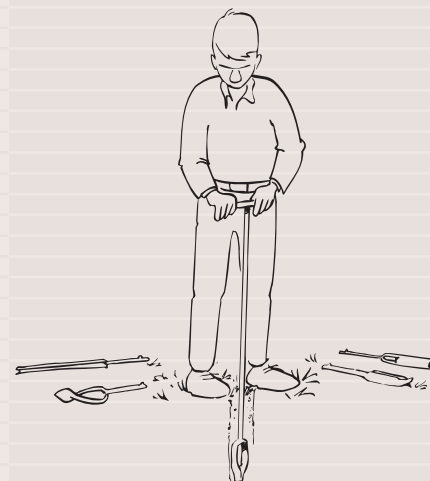
The most important requirements are:

- The equipment should be efficient, i.e. it should be such that, depending on the type of soil research and the requirements the research should meet, this research can be executed as fast and accurate as possible.
- The equipment should be solid and strong.
- As in general little manpower is available for soil research in the field, and sometimes long distances have to be covered carrying the equipment, it is an important condition that the equipment should be light and easy to handle.
- The augers have been made of a high grade non-toxic steel and a carefully selected hardening treatment contributes to achieve a wear resistant and solid design.

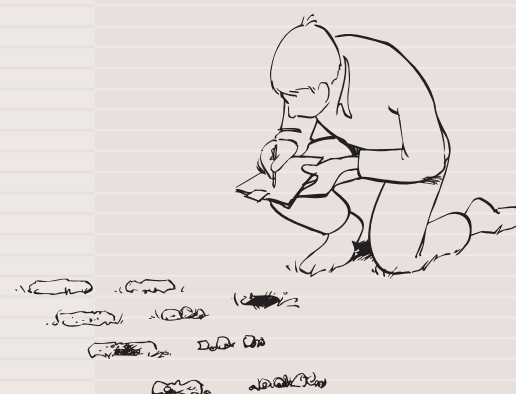


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For augering heterogeneous soils it is practical if various auger types are available. With the auger set for heterogeneous soils the right auger type is always at hand.



Arranging the soil sample allows for a study of the profile.



Hand auger set for heterogeneous soils (bayonet connection)



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Description of various auger types

Edelman augers

This type of soil auger is by far the most used auger. The typical design of the Edelman auger allows for a minimum of friction during penetration into the soil, and the extraction of the auger from the soil, which means less physical effort. To achieve optimal results, the auger type should be chosen in respect of the soil type in question. There are 4 types: the clay-, sand-, coarse sand- as well as a combination type.

- Clay soils are very cohesive. Therefore the blades of the clay auger can be narrow, having the advantage that they meet with little resistance.
- Sandy soils are not cohesive. To keep the sample inside the auger, this type has broad blades.
- Coarse sand soils and extremely dry sand soils have little or no cohesion at all. The blades of this auger are extended with extra wings, thus forming an almost closed auger

- The combination auger type gets a reasonably good hold of sandy material while clayey material can be fairly easily removed from the auger body.

Riverside auger

This design is very suitable for augerings in hard, stiff soils, mixed with fine gravel both above and below the ground water level. The very sharp extremities of the auger bits point at an angle downwards. This design makes the auger go through the soil easily.

Stony soil auger

For soils with a large gravel content. The auger body for stony soils consists of a heavy steel strip, vaulted all along, which is bent double by forging. The pointed cutting bits of the strip are bent outward, thus creating a hole some-what wider than the average body diameter. The stony soil auger is used when the Riverside auger is not yielding adequate results in coarse gravel soils.

To remove the sample from the Edelman auger, it is placed with its tip down on the surface, after which it is turned 180°.



The stony soil auger is used for soils with a large gravel content.



Edelman augers: clay, combination, sand and coarse sand type



Riverside auger



Stony soil auger

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Spiral auger

The spiral auger operates similar to a corkscrew and does not cut off the soil. The auger is usually applied when hard layer need to be penetrated. The spiral auger has a negative end, i.e. the centre of the auger end is whetted away. For profile research (soil mapping) the spiral auger is seldom used. Its use is confined to augering through very hard layers, e.g. boreore, brick layers, chalk and lime profiles in combination with other auger types. The single spiral auger is standard equipped with a contact for electrodes.

Stone catcher

This auger type is used to remove loose stones from the auger hole.

Soft soil auger

This special type of Edelman auger has an extended auger body (sensitive to torsion) and is suitable only for sampling very soft (clay) soils.



Spiral auger and stone catcher



Soft soil auger

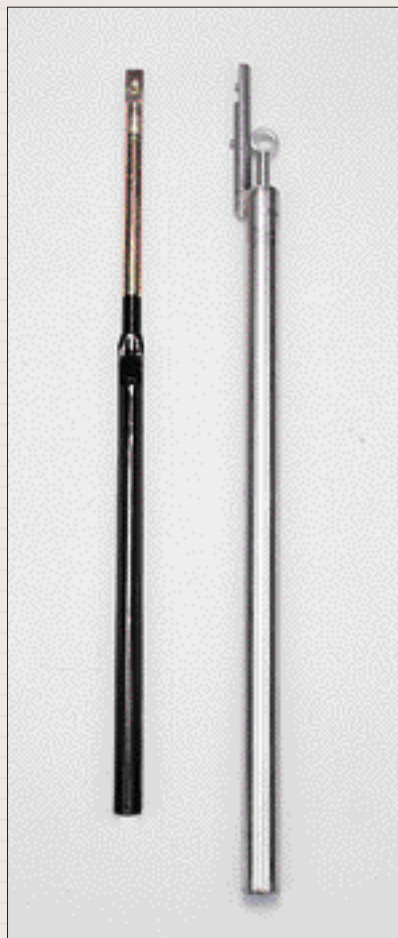
Gouge auger

The gouge auger can be used for sampling with a minimal disturbance of more or less soft, cohesive layers e.g. wet clay, peat.

Piston sampler

The piston sampler differs completely in design and application from the augers described before and is very suitable for sampling less cohesive soil layers (sand) below the groundwater table. The piston sampler is also suitable for sampling sediments with a sand content. Essential differences between the other augers and the piston sampler are:

- The piston sampler can only be applied below the water table and in moderately cohesive soils like sand, weak soil layers, etc.
- The piston sampler can take almost undisturbed samples.
- The piston sampler takes samples of 0.75 or 2.0 metres, while the other types have a maximum sample length of about 15 cm.

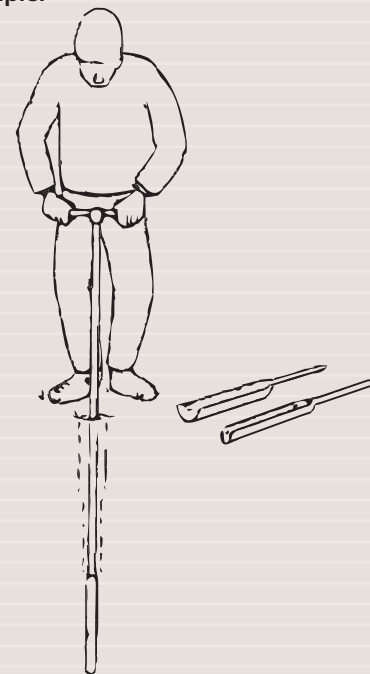


Gouge auger and piston sampler



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The gouge auger with the smallest diameter is used for the deepest sample.



By means of a stone catcher a stone is removed from the auger hole.



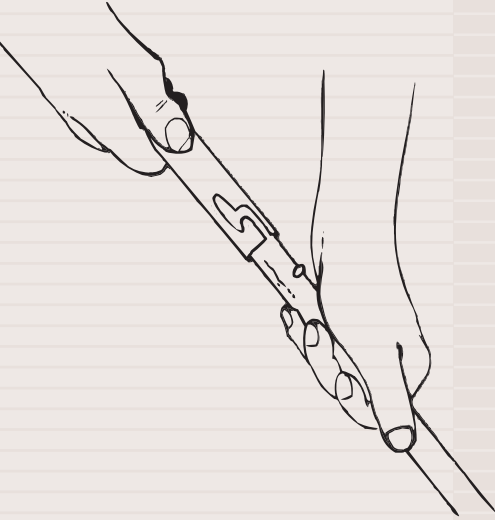


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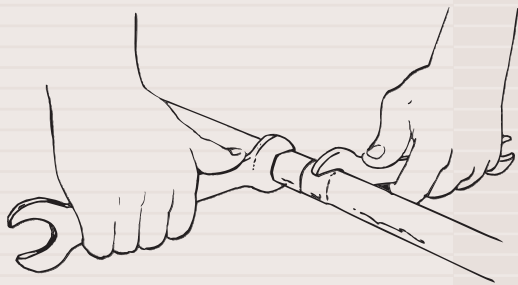


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The connection is locked by pushing a coupling sleeve over both parts.



A spanner is used to tighten the conical screw thread connection.



Handles and extension rods

Extension rods can be applied when the augering / sampling depth can not be reached with a single or standard bi-partite auger. By placing extension rods between the handle and the bottom part of the auger, it is possible to auger to a greater depth. There are two types of connection: the bayonet connection and the conical threaded connection.

Bayonet connection

The advantage of the bayonet connection is that it is a very fast coupling with little weight. A slight disadvantage is that it is not free of play. The bayonet connection is considered as the standard connection.

Conical screw thread connection

This connection is based on the male and female threads on the parts to be coupled. By firmly tightening the connection with the aid of spanners, a rigid construction is made.

Ergonomic handle

In view of the limited scientific knowledge burdening the body and the lack of proper regulations with regard to Ergonomics, the awareness of the importance of ergonomically sound ways of working mostly has to come from the business world itself.

The T-handle has been extended and its grip points for exerting the force have been put in a different place with the result that the user does not have to exert as much force on the handle.

The added ratchet system and the rounded ends to the handle puts the wrist of the user into a more neutral position while twisting and turning the auger. The force on the handle used for pushing and pulling from an ergonomic point of view is best exerted from a neutral wrist position.



Bayonet connection



Conical screw thread connection



Ergonomic handle

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01.11.SE Ergonomical auger set

The ergonomic hand auger set for heterogeneous soils is used to carry out manual drilling and sampling in a great variety of different soils in an ergonomically sound way. It is particularly suitable for general soil investigation (description of the layering, geology, archeology) as well as taking samples for such activities as environmental research. It can carry out drillings to a depth of 5 metres, depending on the depth of the groundwater, the build-up of the soil and the nature of the material to be drilled into.

For every type of soil above or under the groundwater table there is an auger type that is specifically suited to that situation. During the drilling process changes can be made from one type of auger to another without any problems.

Extensions can be added to the soil drilling system adding 50 cm with each additional piece, which is also the difference in height of the working area.

The advantages

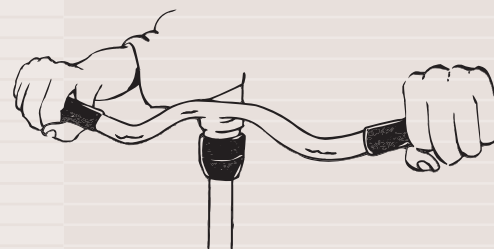
A list of the (ergonomic) advantages of the new ergonomic soil drilling system:

- ❑ The working height and the height setting have been improved.
- ❑ A so-called 'halt knob' has been added that acts as a 'stop' making it impossible to drill too low to the ground.
- ❑ The T-handle has been extended and its grip points for exerting the force have been put in a different place with the result that the user does not have to exert as much force on the handle.
- ❑ A ratchet system and rounded ends to the handle have been added. This puts the wrists of the user into a more neutral position while twisting and turning the auger.
- ❑ It allows drilling near other objects.
- ❑ The square tubing is easy to adjust and is therefore more comfortable for the user.
- ❑ Universal bayonet connection.

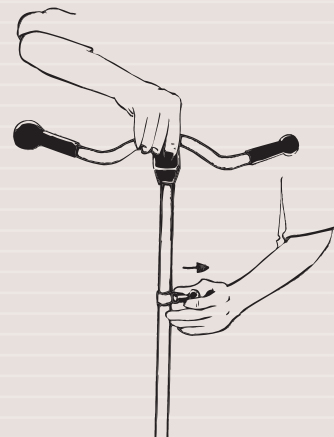


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The handle is supplied with a ratched system.



The ergonomical auger can be extended rapidly and easily in 50 cm stages using the halt-knob.



Drilling can be done in an ergonomical sound way.



Ergonomical auger set with bayonet connection



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01.11.S0 Auger set for heterogeneous soils

Augerings and samplings in homogeneous soils (soils with a uniform soil profile), in almost all cases can be executed with one type of auger. For augerings in heterogeneous soils (soils with a layered soil profile), several different auger types will be applied. This led to the composition of an auger set for heterogeneous soils.

With the standard set it is possible to execute manual augering to a depth of 5 meter, without great physical effort.

The standard auger set comprises different auger types, diameter 7 cm, so that this set can be used successfully with augerings in layered soil profiles. The set can be used for augerings above the water table in all soils, and below the water table in cohesive soils.

The auger set (with bayonet connection), among other items, comprises: 4 types of Edelman augers (clay-, sand-, coarse sand and combination type), a Riverside auger, a stony soil auger, a spiral auger, a piston sampler and a gouge auger. The set additionally contains: extension rods, a fiberglass utility probe, a sounding device with measuring tape, a push-/pull handle, maintenance equipment and a field data registration set. The complete set is delivered in an aluminium transport case.

01.11.SZ Auger set for heterogeneous soils

This auger set for heterogeneous soils is the same as the one mentioned above, but with a connection based on the male and female threads on the parts to be coupled: the conical screw thread connection.

After a sample has been taken from the bottom of the auger hole using the gouge auger (for instance in peat) it is pulled up with the push-pull handle.



The utility probe is used to check the substratum for cables, tubes and pipes.



Hand auger set with conical screw thread connection

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01.16 Prospecting kit for geological surveys

Eijkelkamp Agrisearch Equipment composed a prospecting kit for general geological surveys.

The kit can be used for augerings in heterogeneous soils (agricultural and environmental soil research), to improve the mobility it comprises less different auger types. In this way it can be transported in a carrying bag. All augers, handles and extension rods are packed in a backpack.

With this standard kit it is possible to execute manual augerings to a depth of 7 metres, without great physical effort.

The set is also used to drill shotholes by hand in areas with difficult access. Each seismic field crew should have a set available for scouting and drilling purposes. The backpack ensures quick mobilisation and quicker tracking in the bush.

The prospecting kit includes:

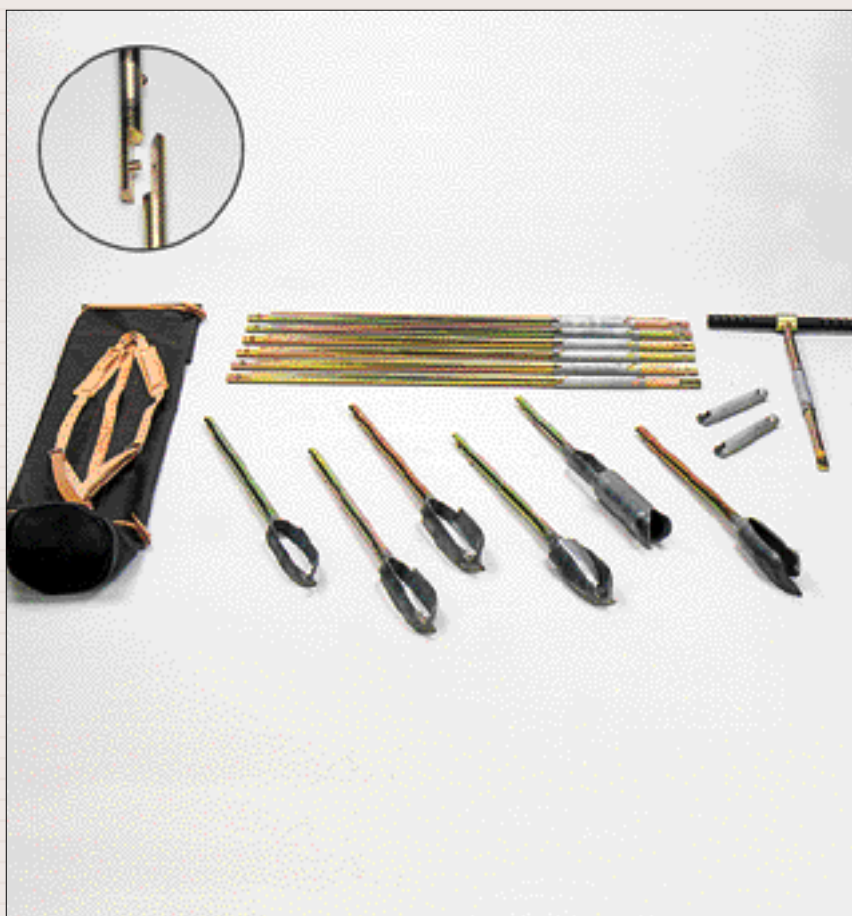
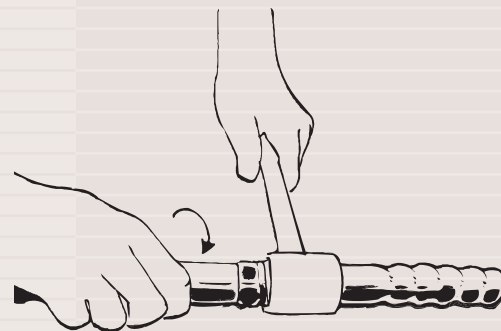
4 types of Edelman augers (clay-, sand-, coarse sand- and combination type), a Riverside auger, a stony soil auger and a handle with extension rods.

The augers and extension rods have bayonet connections; a very fast coupling with little weight.

Advantages

- Very complete, always the right type of auger available.
- Strong and solid equipment.
- Limited investment.
- Light weight (only 16.5 kg).
- The backpack allows for quick mobilisation and quicker tracking in the bush.
- Improvement of production of shotholes.
- Minimal training required.
- Reduction in medical care towards muscle pain.

The synthetic grip is screwed in the handle.



Prospecting kit for geological surveys with bayonet connection

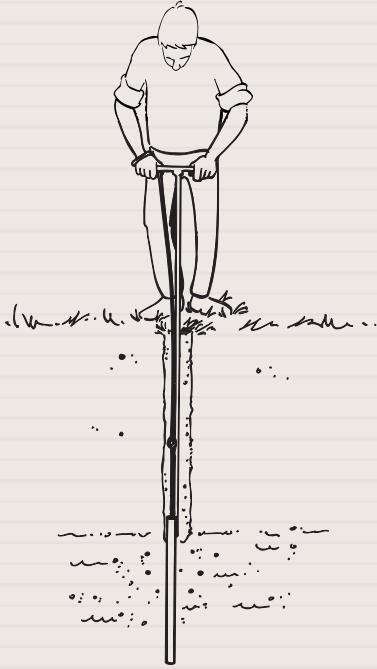
The geological prospecting kit weighs only 16.5 kg and allows quick tracking in the bush.





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A sample is taken by means of a piston sampler.



Emptying the piston sampler in the sample reservoir.



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Bi-partite augers

01.02 Bi-partite Edelman augers

Bi-partite augers are manufactured with the standard bayonet connection or a conical screw thread connection. Available as clay-, sand-, coarse sand- and combination type.

01.04 Bi-partite Riverside augers

This design is very suitable for augerings in hard, stiff soils, mixed with fine gravel both above and below the ground water level. Available with standard bayonet or conical screw thread connection.

01.06 Bi-partite augers for stony soils

For soils with a large gravel content. Available with standard bayonet or conical screw thread connection.

01.08 Bi-partite spiral auger

To penetrate hard layers at greater depths, available with standard bayonet or conical screw thread connection.

01.09.SA Piston Sampler set

01.09.SB Dividable piston sampler set

The sets are very suitable for sampling less cohesive soil layers below the (ground) water table to a depth up to 5 metres. The samples show little disturbance and therefore are suitable for very accurate profile description.

With the set 01.09.SA one piston sampler is used with a sample gutter to empty the sampler in. The sampler with various accessories can be transported in the field in a carrying bag.

The 01.09.SB set with dividable piston sampler enables you to take samples of various lengths with sample tubes with 50, 100 and 150 cm length. This sampler is easier to clean and the samples can be transported in the tubes.



Bi-partite Edelman auger



Piston sampler set