

AUTOMATIC SLUDGE & SLURRY SAMPLING

Automatic sampling

As world wide producer and supplier of sampling and analysing equipment for environmental and agricultural research we are aware that good and reliable products can be produced only through years of development and practical tests by users.

The automatic, fraud-proof sampling equipment was developed by Eijkelkamp Agrisearch Equipment to take samples from liquid manure in accordance with the latest Dutch (legislative) standards.

The device consists of an automatic sampler that automatically takes sub-samples of the liquid manure while it is being loaded or unloaded and a fraud-proof sampling chamber with camera inspection that collects the sub-samples in special lockable, so called MeMo® sample pots.

The sampling pots have a fraud-proof warranty locking and can be supplied with unique bar- and numerical code.

The camera in the sampling chamber makes it possible to read the unique pot and lid bar codes on the manure label.

The sampling device is suitable for liquid manure tanks on trucks and trailers but also for use with fixed or stationary installations.

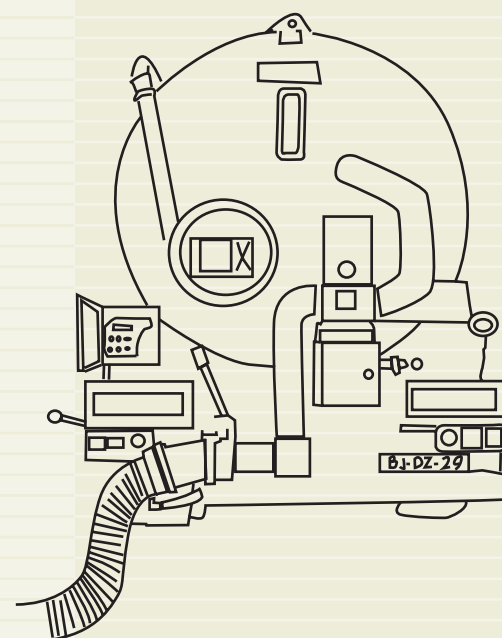
Since the new Dutch legislation was introduced hundreds of devices have been functioning without problems in what are often difficult conditions (moisture, temperature, vibrations, contamination, manure fumes).

The knowledge and experience that Eijkelkamp Agrisearch Equipment has built up in this area has led to this equipment also being applied outside the agrarian sector. The automatic samplers are also particularly useful when it comes to taking samples from sludge (purification sludge from water treatment plants, for instance) and other pumping liquids (e.g. liquid paste feeding).



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During filling of the tank lorry with liquid paste feeding five sub samples are taken equally divided over the total freight.



Automatic fraud-proof sampling system built on a tank lorry

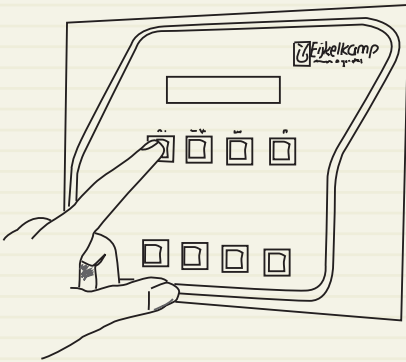


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The system is operated via the compact control panel.



Mobile systems

Hundreds of Dutch manure transporting vehicles are equipped with the automatic sampling equipment of Eijkelkamp. This is a major part of the total market.

The automatic fraud-proof sampling system operates according to the side-tube system. The system takes 5 sub-samples equally divided over the total tank content. The control system receives signals for sub-sampling from pressure- and/or level sensors or via weighing systems.

Control

The system control is compact and simple. The system is prepared for automatic reading and processing of MeMo sample pot and lid bar codes. The system makes a unique coupling between cargo and sample. It is possible to print this coupling automatically on the accompanying form. The system is prepared for automatic data registration and processing.

Customer specific

In addition to the standard communication and linking signals to valves or PLC the automatic samplers can also be supplied with adaptations as specified by the client. The automatic sampler can be built into the process and configured according to the requirements of the client.

Control system

- Self diagnostics.
- Display with status information and instructions.
- Valve guard for e.g. supply lines.
- Equipment is safe and CE approved.
- Heating/-defrost installation.
- Grease lubricating system for minimal maintenance.
- Optional level- and pressure sensors.
- Possibility of coupling with various weighing systems.
- Possibility of coupling with automatic registration datalogger with GPS.



Automatic sampling system built on a tank pulled by a tractor

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40.30.01 Automatic sampler for liquid manure

Automatic sampler for liquid manure according to the side-tube principle, 6 inch; CE-approved, pneumatically and electrical controlled, partial ready for fraud-proof sampling chamber; control panel prepared for further automatic administrative handling.

40.30.02 Fraud-proof sampling chamber

Fraud-proof sampling chamber with camera for, amongst others, reading of barcodes, inclusive requirements to complete the electrical control for co-operation with the automatic sampler; prepared for further automatic handling (on-board weighing, GPS, GSM, transponder).

The fraud-proof sampling chamber for the MeMo sample pot is used to:

- Check the MeMo sample pot before sampling.
- Fill the MeMo sample pot in a correct way.
- Close the MeMo sample pot.
- Read the bar codes.

40.30 Automatic fraud-proof sampling system

The automatic fraud-proof sampling system for liquid manure consisting of the automatic sampler (art. no.: 40.30.01) combined with the fraud-proof sampling chamber (art. no. 40.30.02).

Applications

The mobile automatic sampling equipment can be used for sampling of:

- Liquid manure.
- Purification sludge (from water treatment plants).
- Liquid paste feeding for cattle or pigs.
- All kind of pumping liquids.

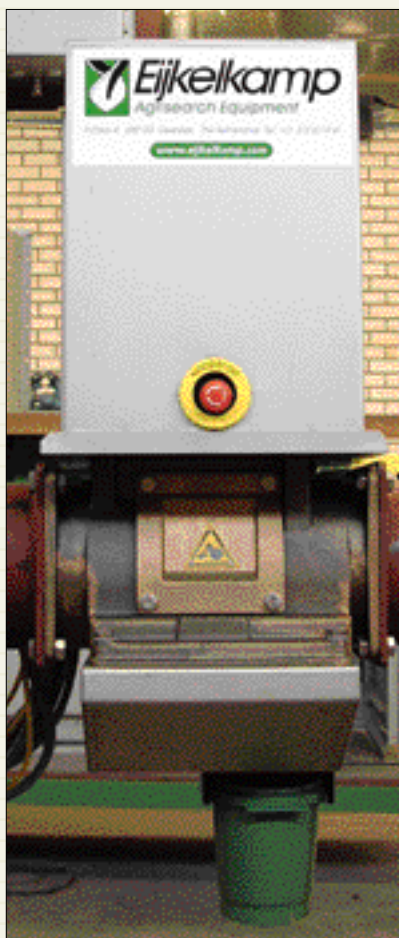
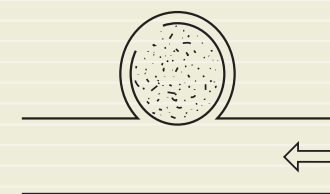
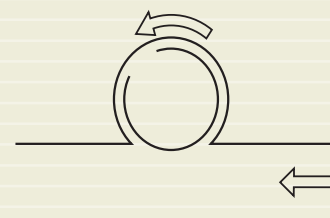
Technical requirements

Power supply 12 and 24 Volt direct voltage or via mains power supply, compressed air pressure 6-8 bar for the mechanical movements.



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Sampling is done according to the "side-tube" principle.



Automatic sampler with sample pot holder



Fraud-proof sampling chamber



Panel of control system



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Stationary systems

The mobile automatic sampling system can also be used as a stationary system. The system can be applied to take samples from all kinds of pumping liquids from a fixed position. The signal for sampling can come from level- or flow measurements or from a weighing system. The stationary system can also be supplied with adaptations as specified by the client. The automatic sampler can be built into the process and configured according to the requirements of the client.

40.30.04 Automatic sampler, stationary

Automatic sampler for liquid manure or other pumping fluids, working according to the side-tube principle. The sampler has a flow sensor for volume measurement and is partial ready for use with a fraud-proof sampling chamber and automatic administrative handling.

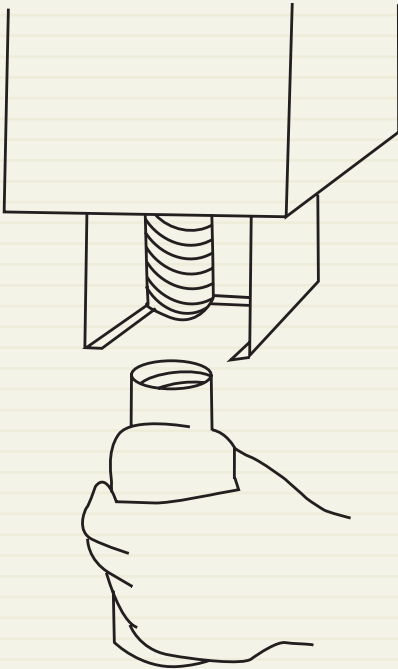
40.30.05 Automatic fraud-proof sampling system, stationary

Stationary automatic sampler with fraud-proof sampling chamber with camera for amongst others, checking the sample receiver, reading bar codes. The pneumatically, electronically controlled system is prepared for automatic administrative handling.

Basic features of mobile and stationary system

- For application with manure, sludge and other pumpable liquids .
- Takes representative samples.
- Direction of sampling can be set according to the flow direction.
- Permitted pipe pressure for sampling is a nominal 5 bar (maximum 10 bar).
- Sub-sample volume is 135 cc.
- Time taken to obtain a sub-sample is 15 seconds.

A customer specific sample bottle is placed.



Stationary automatic sampler

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- 12/24 Volt supply with maximum power consumption of 20 A and 10 A respectively.
- Compressed air pressure required for the cylinders is 6-8 bar, capacity is 25l/min.
- Built-in heater to prevent essential parts from becoming frozen.
- The automatic sampler is designed to be used with the special MeMopot® as standard or with a sample holder to client specification.
- The cast housing in which the sample is taken has a diameter of 6 inch (approx. 15 cm). A connection with tubes with an other diameter is possible by means of adapter tubes. It is important to take the degree of filling of the cast housing into account in such cases.
- Sample taking can be governed by:
 1. Level or flow measurement (voltage 0-10 V, current 0-20 mA or 4-20 mA).
 2. Automatic weighing systems (via RS232).
- The automatic sampler can be linked up to our fraud-proof sampling chamber.
- Automation options via serial control: for administrative purposes, for instance (RS 232 protocol).
- The sampling process can be controlled by means of valve monitoring (if a particular gate/valve is open no sample is taken).
- Can be supplied with automatic greasing system.

Note: the equipment is not suitable for use in explosion-sensitive zones.

Choosing for automatic samplers of Eijkelkamp Agrisearch Equipment

- A choice for lasting quality.
- Solutions tailored to your requirements.
- Installation and service by Eijkelkamp.

The administrative data are processed on a pc.

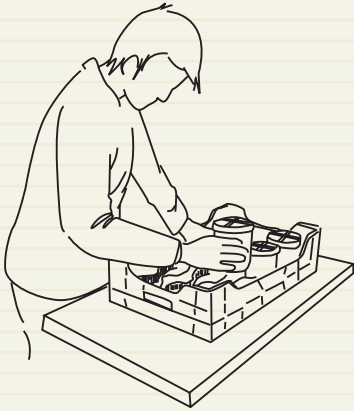


Stationary automatic fraud-proof sampling system



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The MeMo sample pots are transported in an open or lockable box.



Reading the barcode with a hand reader.



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40.91 MeMo® sample pots

The MeMo sample pot is specifically constructed and legally approved as fraud-proof liquid manure sample packaging. The sample container can be used to collect samples of all kind.

Essential characteristics of the MeMo sample pot are:

- Sample pots can be supplied in open and closed boxes (12 pots in a tray). Pot and lid are made of PP polypropylene synthetics and are re-useable or can be recycled in a environmental save way.
- Contents of the pot 0.8 l.
- The ventilated pot is suitable for samples that generate gas or rise.
- The fraud-proof lid can be removed easily with a special opener.
- The lid can only be used once, the pot however can be re-used after cleaning.

- Pot and lid can be supplied with a unique bar- and numerical code, that can be read out by the camera in the sampling chamber or with a hand-operated barcode reader.
- Design and colour are chosen for optimal camera inspection (inspection on contamination).



MeMo sample pot lid with and without barcode



Placing the MeMo sample pot in the chamber

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Chemical analysis

Buyers of manure require direct content determination of nitrate (N) and phosphate (P_2O_5) for such purposes as Minas (Mineral Notification System in the Netherlands) in farming, pasture and horticulture, for instance.

40.40 N/P manure test set

The N/P manure analysis set has been designed specifically for this purpose. Because of the unique nature of this set, a patent has been applied for. The set has been demonstrated as suitable for virtually every type of liquid manure.

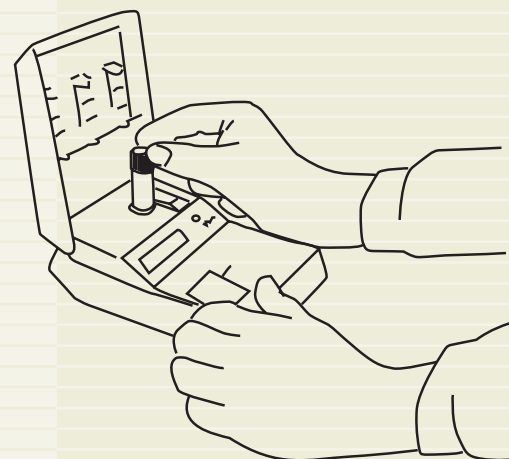
The set consists of a sampler preparation (destruction) case and an analysis case. The destruction case contains all the materials required for sample preparation: reagents, pipette, consumables and destruction beaker. The analysis case contains the photometer and colour analysis test tubes. The complete set comes equipped for 25 N and P manure analysis procedures.

After taking a representative subsample from the MeMo pot[®]. The sample is prepared in the destruction case. The manure sample is mixed with three reagents in the destruction pot. The pipette provided ensures that the doses are accurate and safe. Gloves and safety spectacles are also provided as part of the set. After the addition of approximately 0.5 l of water and a destruction time of 10 minutes, the solution is sucked up with a pipette and divided over two-colour analysis tubes. The tubes are placed in the photometer and a reading of the nitrogen and phosphate content of the manure is provided straightaway.

Features of the set are:

- Establishes N and P content in approximately 30 minutes!
- High degree of accuracy (85-90%).
- Measuring range: N: 0.4 - 12 g/kg
 P_2O_5 : 0.5 - 9 g/kg
- All required materials in a complete package.
- Unique recycling of the materials used.

The analysis tube is placed in the photometer.



N/P manure test set



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Hand operated sampling

40.10 Core lance for stackable manure

The stainless steel core lance with sliding lid has a length of 2 meter and is used to take representative samples of amongst others stackable manure.

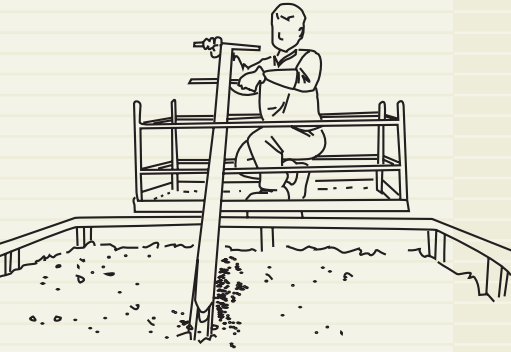
40.11 Screw jack auger set for stackable manure

The hand operated screw jack auger is used to sample solid stackable manure. By slowly turning in the jack auger a representative sample is taken of all layers. The set includes: a screw jack auger for solid stackable manure, length 150 cm, diameter 24 mm, with loading tube with wear-resistant cutting shoe, a coupling box for connection of a drilling machine to screw the jack auger, a drilling machine adapter, a drilling machine and necessary tools.

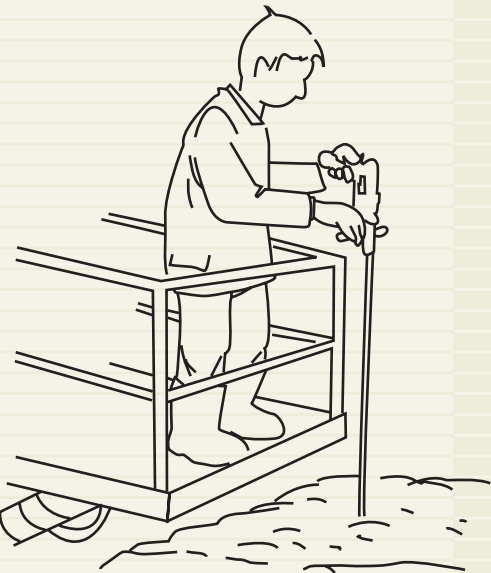
40.20 Hand-operated liquid manure sampler

The hand-operated manure sampler is used to sample liquid manure during loading or unloading, according to the side-tube principle. The sampler is equipped with a bottle support for use of the MeMo sample pot or another sample container. The complete set is supplied with male and female coupling parts for connection to 6 inch tube.

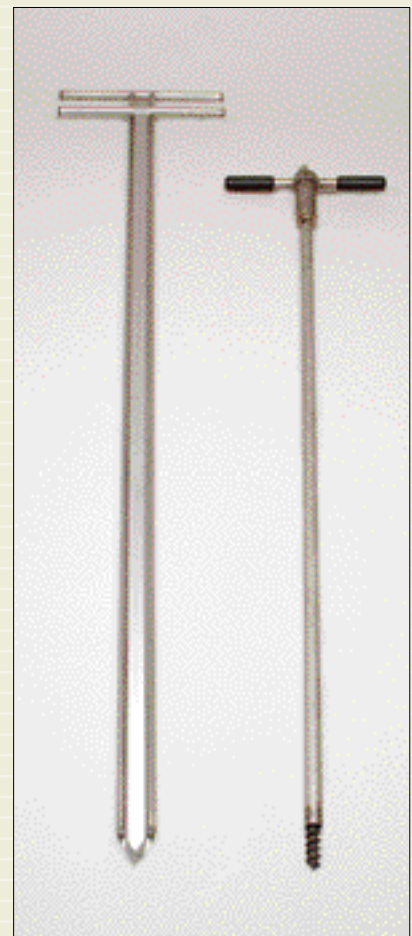
A sample from poultry manure is taken using the core lance.



The screw jack auger is turned in slowly in the stackable manure using a drilling machine.



Hand-operated liquid manure sampler



Core lance and screw jack auger