

# PERISTALTIC PUMPS FOR USE IN THE FIELD

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The peristaltic pumps presented here, are very reliable sampling apparatus for fluids and gasses, for application in very diverse field circumstances.

Specifically where it concerns research for groundwater, errors are introduced easily by not using the equipment properly or the application of less suitable equipment.

The concentrations of the pollutants present in the sample, often are very small. Turbulence, large pressure fluctuations, abrasive particles of the sampling equipment, etc. therefore can not be tolerated. In a peristaltic pump however the fluid (or gas) that is pumped, only is in contact with the inside of a piece of non-toxic silicon rubber tube (the so called pump tube). For this reason there is no risk of abrasive particles from shafts, sealing, piston rings or impellers. Cross-contamination can be avoided by replacing the pump tube, as well as the transport tube before every single sampling. An electronic- as well as a hand-operated-peristaltic pump (for field use) have been developed.

The pump used, is a simple but very durable peristaltic pump, with three pressure rollers. The bearings of the drive shaft and the pressure rollers are water resistant.

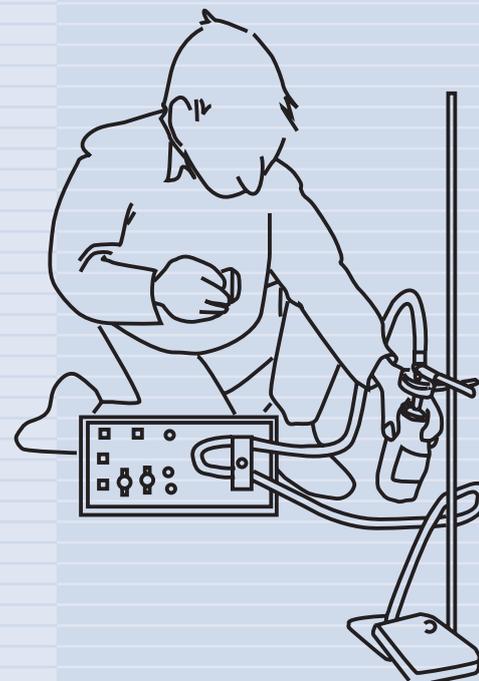
The pump is suitable for elastic pump tubes of which the thickness of wall may vary between 1.9 and 2.1 mm. The rigidity of the flexible tube should be about 55 degrees Shore.

The pump can deliver a pump pressure of 3 bar (thus also suitable for use with in-line filters) and an underpressure maximum of 1 bar. It is a self-priming pump.

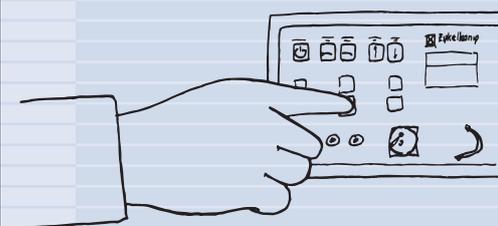
Even when the pump is out of use the pump tube is completely pressed to a close by at least one roller. Fluid and gas can not flow back. The pump can for instance be used for anaerobe sampling of groundwater.

For groundwater sampling the 6 x 10 mm silicon tube is most suitable.

Using the peristaltic pump 12 Vdc the (ground-) water sample is filtered in-line.



The well-ordered control panel has been fitted with a tactile membrane keypad.



Peristaltic pump 12 Vdc

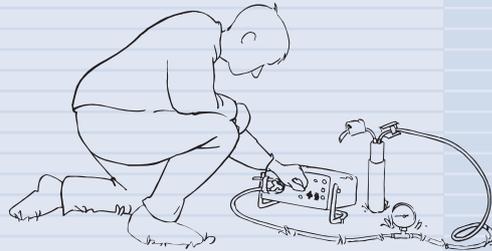


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Pumping soil gas with the peristaltic pump 12 Vdc.



The stronger its ability to regain its old round shape, the stronger the suction. For this reason the thinnest pump tube (3 x 7 mm), has the strongest suction (perfect vacuum).

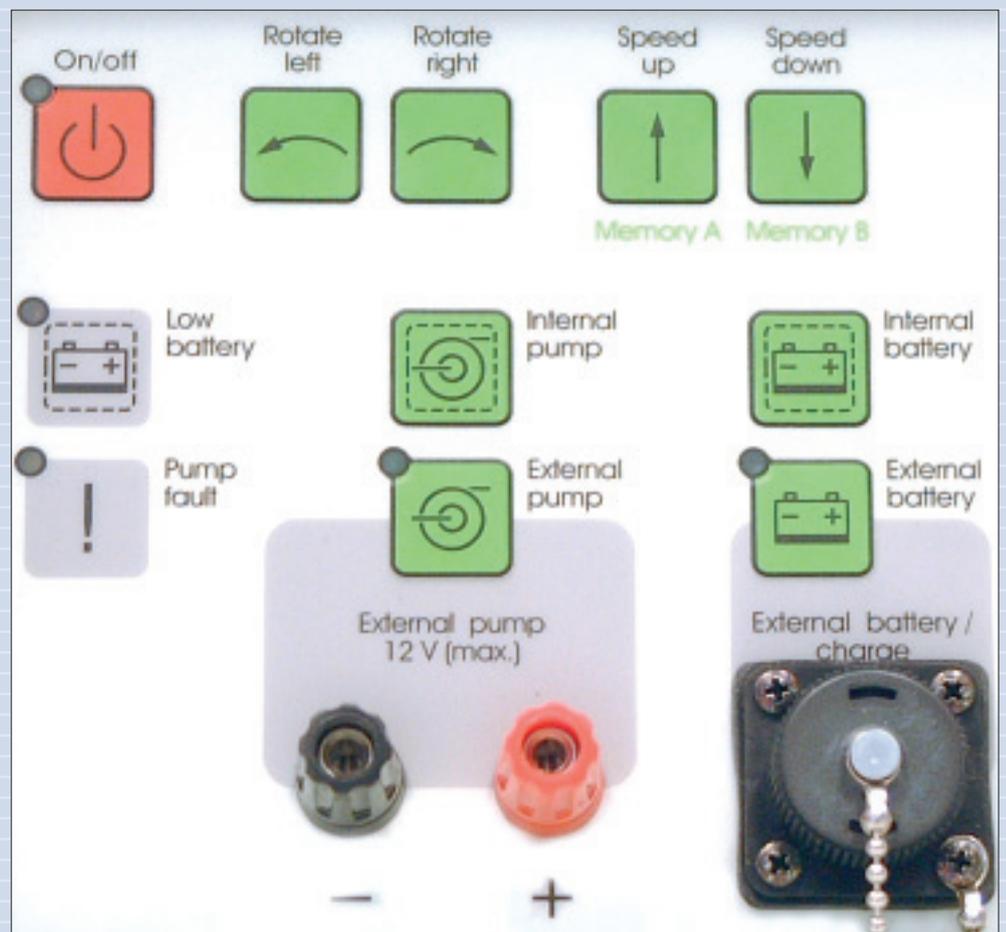
### 12.25 Peristaltic pump 12 Vdc

This peristaltic pump, specially designed for use in the field, is battery powered and microprocessor controlled. The microprocessor enables an adjustable constant number of revolutions (which can be stored in memory), protection against overload and various modes of external control. Controlling the peristaltic pump can be executed via the key-pad on the front panel.

A built-in maintenance free 12 Volt battery enables you to use the pump 2 to 5 hours continuously (depending on load). The pump, with CE certification, is splashproof (IP 64) and can be used in the field without problems. The apparatus can be used in all positions. The pump is designed for long-term professional use in unfavourable circumstances.

### Advantages

- ❑ Light weight, impact resistant plastic, splash-proof housing.
- ❑ Microprocessor controlled.
- ❑ Immediate deployment.
- ❑ Powerful engine and reduction gear unit.
- ❑ Reliable and universal peristaltic pump that can create perfect vacuum.
- ❑ Large variation in speed and flow. Flow from 0 to up to 2.3 liter per minute.
- ❑ Membrane key-pad on a wellordered control panel.
- ❑ Two pumps 12 Vdc can replace one petrol driven pump: No petrol vapors and exhaust gasses.
- ❑ Protected against overload.



Control panel with membrane key-pad of peristaltic pump 12 Vdc

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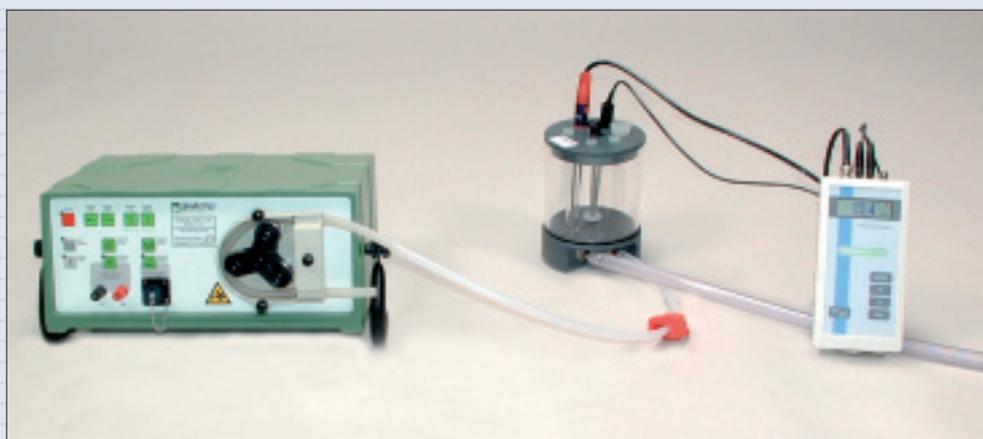
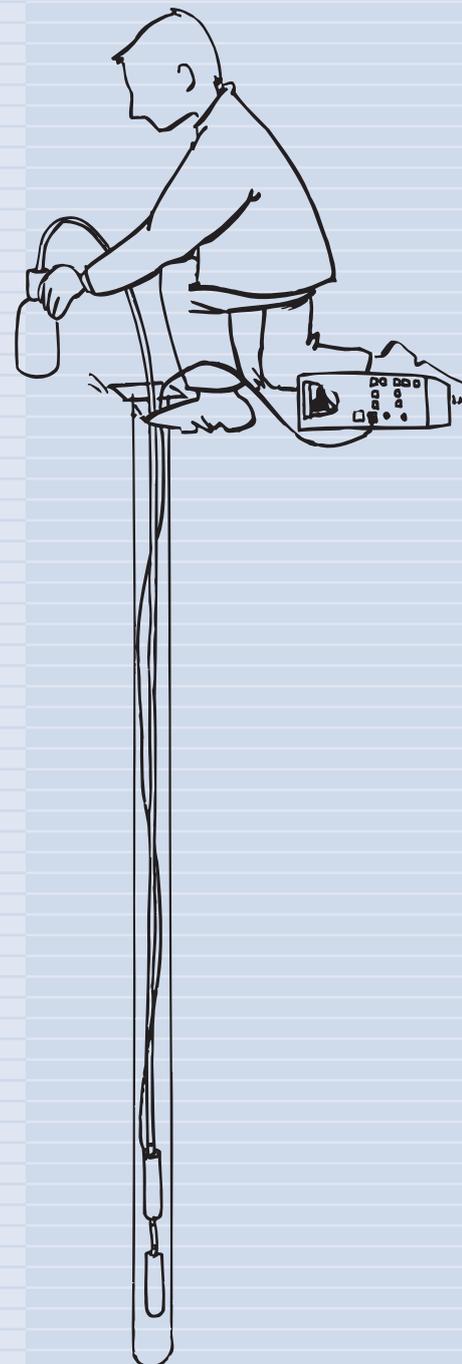


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## Applications

- ❑ Suitable for purging monitoring wells for several hours continuously (by using more than one peristaltic pump time can be saved).
- ❑ In-line filtration for sampling of groundwater using the filter holder or 0.45 micron disposable filters for removal of soil particles from water samples.
- ❑ Impeller pumps can be connected to the peristaltic pump to be able to pump large quantities of water out of monitoring wells, for instance during well development after they have just been placed.
- ❑ Pumping up soil gas or taking dust samples from the (outdoor) air.
- ❑ The precision and process of in-line measurement can be improved by connecting a flow-through cell, in which for instance pH-, conductivity-, O<sub>2</sub> or Redox electrodes have been placed, to the peristaltic pump.

Two submersible impeller pumps connected to the peristaltic pump 12 Vdc.



Peristaltic pump with flow-through cell and multimeter



Peristaltic pump with in-line filters



Peristaltic pump with impeller pumps