



Submersible pumps

Manual



Gigant pumps



Booster pumps

Meet the difference

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About these instructions for use



When text follows a marker (as shown left), it means that an important instruction will follow.



When text follows a marker (as shown left), it means that an important warning will follow, drawing attention to the risk of injury to the user or damage to the unit.

1. Description and use of the submersible pumps



Do not operate the pumps until you have read this manual. Keep the manual in a place accessible to all users.

Gigant (121206) and Booster (121208) pumps are small submersible pumps with a limited service life. Their small diameter allows them to fit into monitoring/observation wells starting at 37 mm.

One Gigant pump is capable of pushing water upwards by 9 m. Booster pumps are used as 'amplifiers', and installing one, two, or a maximum of three Booster pumps immediately above the Gigant pump can increase the height to 18, 27, or a maximum of 36 m.

These pumps can be used to pump out a newly installed monitoring/observation well. They are also suitable for pumping water through a monitoring/observation well immediately upstream of a sampler.

Clipping off the tube can reduce the flow rate to the requisite sampling flow rate, allowing sampling to be carried out (use tube clip 122097).

The external pump connection of the 1235SB peristaltic pump (or former 1225) may be used to a depth of 11 m with a maximum of two pumps. This allows the speed and, in turn, the flow rate of the pumps to be electronically controlled.

The pumps are not suitable for direct connection of inline filters of 0.45 microns.

Please note the following in respect of the pumps and their use:

- The pumps are designed to be used in clean water. In the event that they are used in fluids with a composition different to that of water, you must verify whether or not these substances will damage the pump (housing = ABS plastic, impeller and shaft = stainless steel, hose = PVC, shaft seal [very small] = nitrile rubber). The ABS in particular is not resistant to fuels.
- The pump is intended to be used intermittently – active for fifteen minutes, off for fifteen minutes.
- Pumps must not be allowed to run dry. When commencing pumping, all pumps should ideally be submersed in the water. Once pumping has commenced, the lowermost pump must always remain fully submersed. If the lowermost pump starts to draw air in, pumping must be discontinued until the water level has risen sufficiently.
- Booster pumps are most effective if they are installed a short distance on top of one another – ideally within 1 m (see Fig. 1).

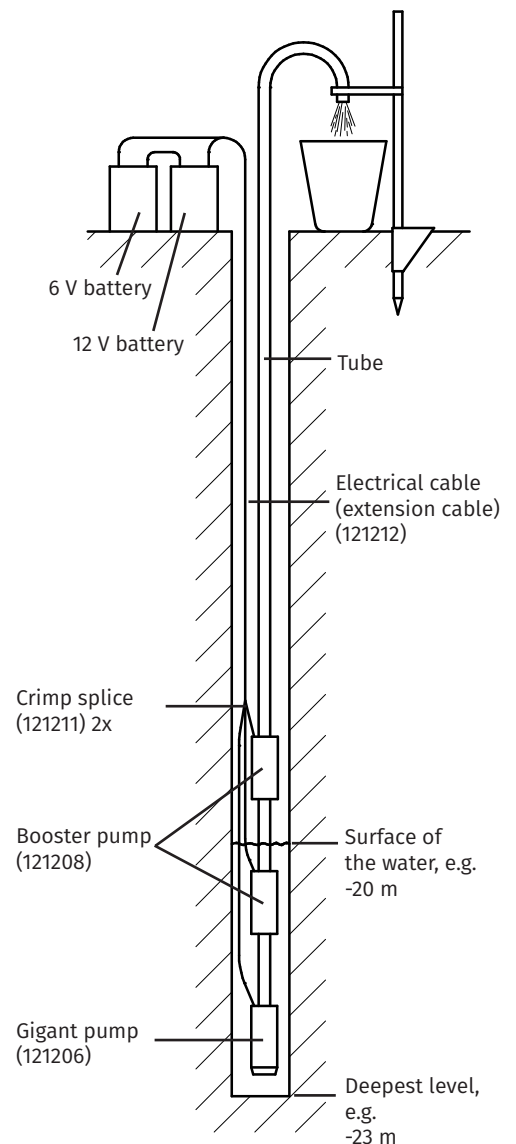


Figure 1

- Avoid a voltage to the pump of below 12 V, otherwise, the pump will not be able to deliver the performance desired and will have a shorter service life or burn out.
- Do not use the pump far below the surface of the water. The high water pressure could cause water to penetrate into the compartment and damage the pump. No data are available indicating the depth at which this occurs. If you would like to carry out sampling deep below the surface of the water, replace the lowermost Gigant pump with a Booster pump with a long tube attached at the base (see Fig. 2). In that case, you must be extra careful not to draw in sediment.
- Always use the filter (at the base of the Gigant pump) and keep it clean. Water that is rich in sand can block the tube. Gravel can block the impeller.
- Do not block the flow of water. The water helps to cool the pump motors. It is possible to temporarily restrict the flow of water by partially clipping the supply tube closed.

2. Performance



The performance and service life of the pumps are heavily influenced by the power supply. Each pump requires a supply of 12 V/3A (36 W).

Tests have demonstrated the following:

- A long, thin electrical cable causes considerable loss of voltage. This must be compensated if two or more pumps are used by installing the batteries in series. The pumps must receive a minimum voltage of 10 V. Consequently, you should ideally use a thick electrical cable (min. 2 x 1.5 mm²) and keep the cable as short as possible. Tests have demonstrated the following:
 - Two pumps with a 25 m cable connected to a peristaltic pump have a maximum head of 11.5 m.
 - Two pumps with a 25 m cable connected directly to a separate 12 V battery have a maximum head of 15 m.
 - Two pumps with a 25 m cable connected directly to an 18 V battery have a maximum head of 23 m.
- If using two or more pumps with a cable in excess of 15 m in length, a 12 V and 6 V battery must be connected in series. If using four pumps, two 12 V batteries must be connected in series.
- In the event that the pump is connected to the peristaltic pump, the flow rate of the pump can be continuously adjusted. Take into account the diminished performance of the pump on account of losses in the electronic circuits (-30%). A system comprising two pumps is maximum connected and operated via the external supply of a peristaltic pump.
- Polarity is not important. The pumps will deliver the same performance, irrespective of their direction of rotation.

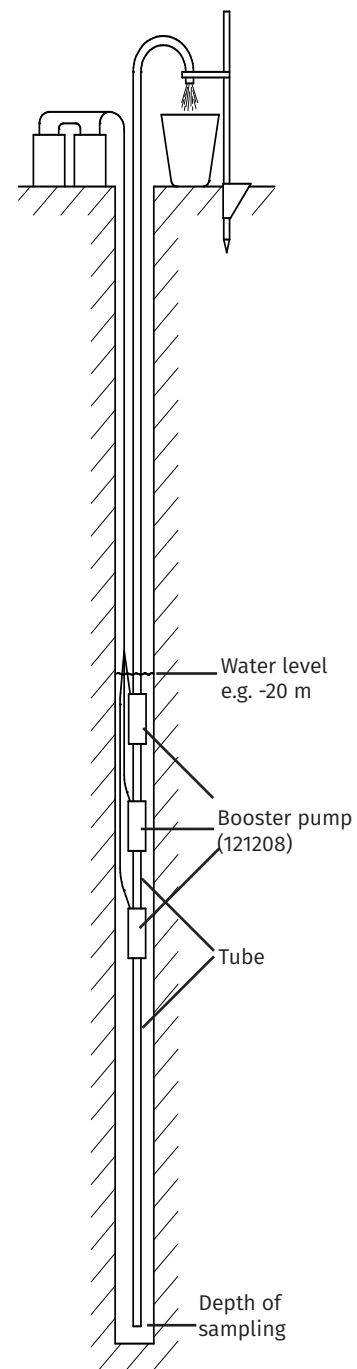


Figure 2

3. Structure of the system

The Gigant and Booster pump differ in that the Gigant pump is equipped with a filter at the base of the pump and a single tube connection at the top of the pump. The Booster pump does not have a filter but is equipped with two tube connections.

If only the Gigant pump is used, without Booster pump, the tube is connected to the tube connection at the top of the pump.

If the Gigant pump is used with one or more Booster pumps, the tube is cut off after a few decimetres and connected at the base of the Booster pump. Another tube should then be fitted between the Booster pump and the Booster pump above it, and so on. Try to ensure that the distance between the Gigant pump and the Booster pumps is no more than 1 m.

Each Gigant pump and Booster pump is supplied with a solid (white) two-wire electrical cable of a few metres in length. A single (two-wire) extension cable can be used to cover the distance between the pumps and the battery/batteries or peristaltic pump at surface level. The cables are connected to one another using watertight crimp splices. As the electrical cables comprises two wires, two crimp splices are always required for each system. Inside each crimp splice, one wire of the electrical cable from the Gigant pump (with or without one wire of the cable from the Booster pump) is joined with one wire of the extension cable. In other words, the crimp splice has one wire from the extension cable at one end and one or more wires (Gigant pump and Booster pumps to a maximum of four) at the other end (Fig. 3).

Adjust the length of the pump cables so that the ends come together. If the loops are too large and there is an excess of cable, it will be harder to fit the system in the monitoring/observation well.

To fit the watertight crimp splices (item no. 121211) to the extension cable (item no. 121212), proceed as follows:

1. Strip the wires to 7.5 mm and insert them into the crimp splice.
2. Match the colour of the connection to the colour of the hole in the crimping pliers.
3. Crimp the splice in the pliers.
4. Warm the assembly with a hot-air gun until the adhesive has liquefied fully and until the nylon heat-shrink tubing has shrunk.

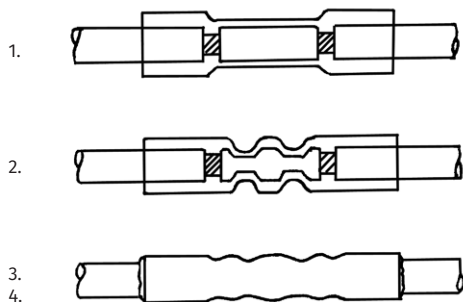


Figure 4



Gigant pump



Booster pump

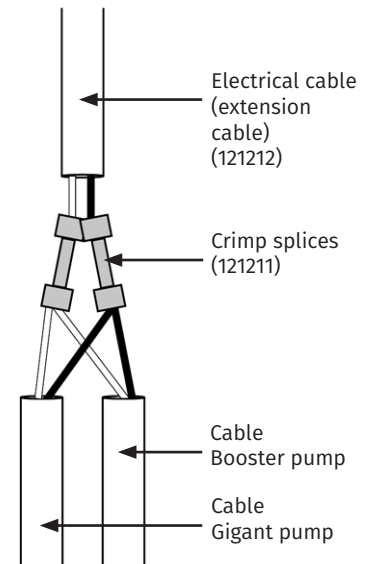


Figure 3

4. Decontamination and maintenance

The Gigant pump is equipped with a filter designed to filter out large particles. Check for blockages to prevent loss of performance.

The pumps have been tested as a sampling instrument for organic and inorganic sampling. The plastics used on the pump may absorb organic solutes such as oil-based products and then release them again at any given point in time. Consequently, these pumps are not suitable for repeat use in different monitoring/observation wells where organic solutes are the target parameters of the research. Repeat use in groundwater contaminated with inorganic solutes will not cause any problems.

With repeat use, attention must always be paid to the risk of contamination and if in doubt, the pumps must be replaced.



After use, the pumps may be decontaminated in Deconex (item no. 200529) and warm water. Do not store pumps with tubes in the vicinity of equipment or jerry cans containing petrol or similar.



If in doubt, replace the pump!