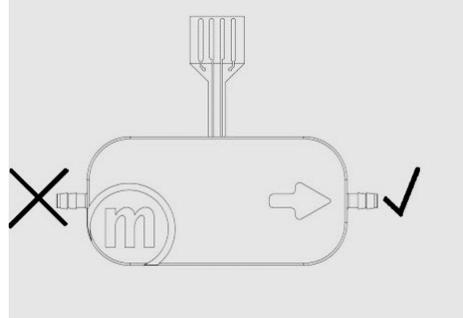
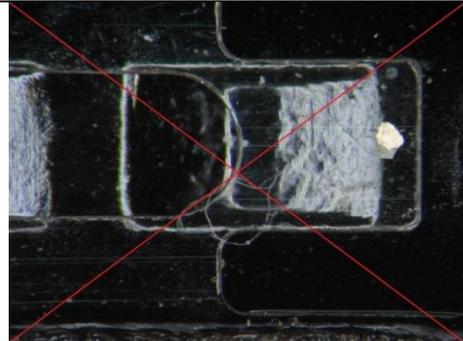


Instructions for appropriate handling – FLUIDIC

The micropump may only be **rinsed** or filled at the outlet (only suctioning), otherwise the maximum pressure of 1bar is exceeded. This will lead to a malfunction of the pump.



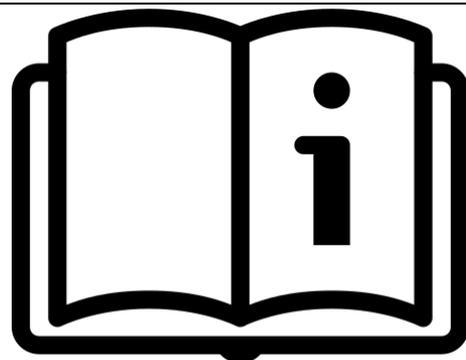
Foreign material (e.g. fluff) in the fluid channel affects the operating mode of the micropump. Pay attention to a clean handling of the micropump. Otherwise, this will lead to a malfunction of the pump. We recommend the use of filters.



Only pump liquids with a **particle size <50 µm**. Otherwise, this will affect the performance of the micropump. We recommend the use of filters. Please note that we offer suitable filters for your application. Please contact.

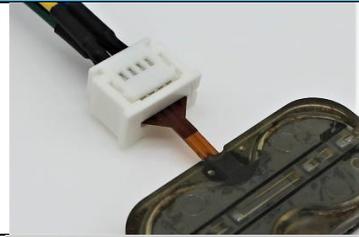


Not every **medium** can be pumped with the micropumps and the filters used. Refer to the datasheets which provide information about the **chemical resistance** of the micropumps and filters.



Instructions for appropriate handling – ELECTRICAL

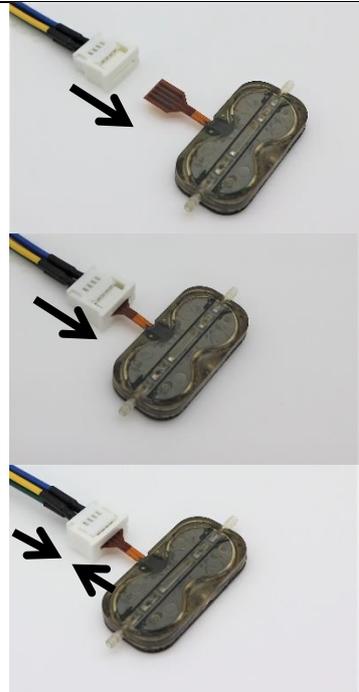
A **reliable connection** between micropump and board connector (for example: mp6-mol) must be ensured. Otherwise, this will lead to a malfunction of the pump or the electronics.



Do **not interrupt the connection** between the driver control and micropump during operation. Otherwise, this will lead to a malfunction of the pump or the electronics.



The three figures on the right illustrate how to **connect the micropump to the plug**. The pump cable has to be inserted with the contact surfaces orientated down into the plug. Both components are firmly connected by closing the white plug. When **disconnecting** the pump, the board connector must first be opened! Verify yourself that the board connector is always locked before start running the pump. Otherwise, this will lead to a malfunction of the pump or the electronics.



The **driver chips are very sensitive to electrostatic discharge**. This can occur if the driver chip is connected to the supply voltage but the ground is not earthed. Touching any ground point on the mp-Multiboard causes a discharge and leads to a defect. The same effect occurs when using a grounded meter, e.g. an oscilloscope, and taking measurements on the control. With each contact to the measuring tips a discharge current flows that is dissipated via earth. To prevent this, the earth terminal of the measuring device should be connected to the ground of the controller before the measurement. Otherwise, this will lead to a malfunction of the electronics.

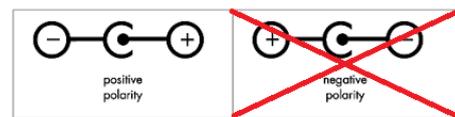


Instructions for appropriate handling – ELECTRICAL

Attention: The controls (mp-Lowdriver, mp-Highdriver, mp-Highdriver4, mp-Multiboard, mp-valvedriver) are at **high voltages**. Touching the controls during operation is strictly prohibited.



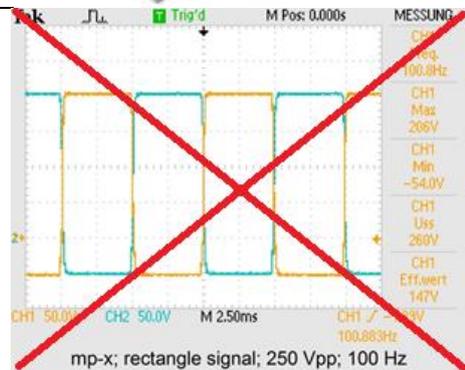
Before the first operation it is essential to take care to **avoid reverse polarity** and to **stick to the operating parameters** in accordance with the operating instructions. Otherwise, this will lead to the malfunction of the electronics.



Our controls are **packaged in ESD material** upon delivery. Please also take care for a suitable electronic packaging after receipt of the goods and during storage. Minimal electrostatic discharges can cause defects.



When controlling the micropumps, **square-edged rectangular signals** should only be used for a **short time**, as otherwise the piezoactuators will be subjected to heavy mechanical loads. This will lead to the malfunction of the pump.



Instructions for appropriate handling – MECHANICAL

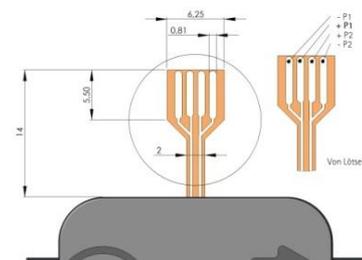
Please **do not bend the flex cable**. The flex cable of the micropump must not be led around sharp corners or edges or around the top or bottom of the pump. Otherwise, this will lead to the failure of the pump or the electronics.



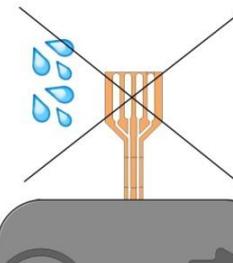
The flex cable of the micropump is very sensitive and should therefore be **protected against possible vibrations or tractive forces**. We recommend a fixing of the micropump and the plug connection for traction relief of the flex cable.



Do not modify the flex cable or similar. Modifications may affect functionality and may no longer ensure the warranty.



Take care that the flex cable of the micropump and also the connector has no contact with any liquid or moisture. Otherwise, this will lead to a short circuit and thus to the malfunction of the pump or the electronics.



According to the manufacturer's specification the connector is designed for only **30 cycles of operation**. A regular change is recommended.



Further information is available in the operating manuals.

To access them, please use the following link to our download area:

<http://www.bartels-mikrotechnik.de/index.php/produkte/download>