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micro

Pipettierhelfer | Pipette
controllers

1 Introduction

1.1 Scope of delivery

micro pipette controller, user

manual

1.2 Terms of use

- Carefully read the operating manual before using the device for the first time.
- The operating manual is part of the device and must be kept in an easily accessible place.
- Be sure to include the operating manual if you transfer possession of this device to a third party.

1.2.1 Hazard levels

The following signal words identify possible hazards:

Signal word	Meaning
DANGER	Will lead to serious injury or death.
WARNING	May lead to serious injury or death.
CAUTION	May lead to minor or moderate injuries.
NOTICE	May lead to property damage.

1.2.2 Operating manual symbols

Symbol	Meaning	Symbol	Meaning
	Danger area		Wear protective gloves
	Wear eye protection		

1.2.3 Format

Format	Meaning	Format	Meaning
1. Task	Indicates a task.	>	Indicates a condition.
a., b., c.	Indicates the individual steps of a task.	⇒	Indicates a result.

2 Safety

Please read carefully!

The instrument micro can be used in combination with hazardous materials, work processes and equipment. However, the operating manual cannot cover all of the safety issues that may occur in doing so. It is the user's responsibility to ensure compliance with the safety and health regulations and to specify the corresponding restrictions before use.

1. Every user must read and observe this user manual before using the device.
2. Follow the general hazard instructions and safety regulations (e.g., wear protective clothing, eye protection, and protective gloves).
3. Observe all specifications provided by reagent manufacturers.
4. Use the instrument only for pipetting liquids and only within the defined limits of use. If in doubt, contact the manufacturer or supplier.
5. Always perform work in a manner that does not endanger yourself or other people. Avoid splattering. Only use suitable vessels.
6. Always attach only unfilled pipettes to prevent contamination and infection risks.
7. Make sure that no liquid gets into the device.
8. Never use force.
9. Use only original accessories and original replacement parts. Do not make any technical modifications. Do not dismantle the instrument any further than is described in the operating manual!
10. Always check that the instrument is in proper working condition before use. If an instrument fault is signaled, stop pipetting immediately and follow the instructions in the section . Contact the manufacturer, if necessary.

2.1 Function

The device serves as a pipetting aid. It reduces the risk of infection when pipetting liquids with disposable micropipettes with a ring mark, blood diluting pipettes and other pipettes with a shaft diameter < 5.5 mm and a volume of up to 1 ml.

When the device is handled correctly, the pipetted liquid comes into contact only with the pipette.

2.2 Operating exclusions

- Do not use the device with end-to-end micropipettes.
- Liquid vapors may penetrate into the suction system. Therefore, never use the device for liquids that corrode silicone.

See also Autoclaving, p. 45

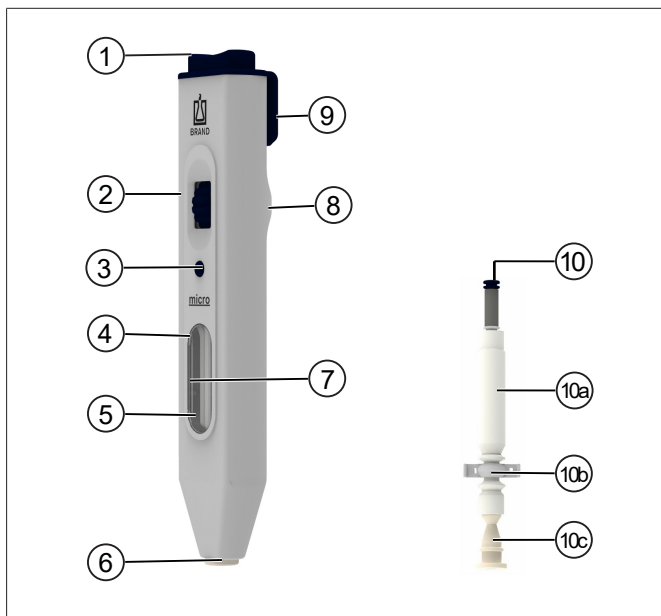
2.3 Storage Conditions

Store the unit and accessories in a cool and dry place in cleaned condition only.

Storage temperature from -20 to 50°C (-4 to 122°F).

Relative humidity: 5 % to 95 %.

3 Functional and operating elements



- | | |
|---------------------------|--|
| 1 Tip ejection key | 6 Adapter |
| 2 Adjustment wheel | 7 Suction bellows in micro pipette controller |
| 3 Venting button | 8 Nub |
| 4 Viewing window | 9 Clip |
| 5 Clamping jaw | Suction system: |
| | 10a : Suction bellows |
| | 10b : Plastic strip |
| | 10c : Adapter |

For a description of the suction system, refer to Replacing the suction system.

4 Pipetting

Correct hand position before pipetting

- a. Hold the device in your hand so that the setting wheel can be comfortably operated with your thumb. The nub on the back side of the device rests between the pointer finger and middle finger.

Attaching the pipette

WARNING



Never attach filled pipettes:

- > There is a risk of contamination and infection.
- > Wear protective gloves.

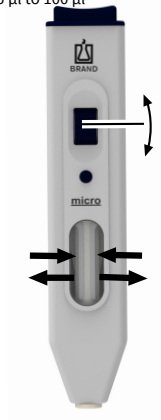
b.



- a. Hold the pipette on the color code (short end pointing up) to prevent glass breakage during attachment.
- b. Carefully slide it into the adapter until you feel a slight resistance. Never use force: There is a risk of damaging the adapter and pipette and therefore a risk of injury.
- c. If the pipette should break, remove the glass splinters with tweezers. Check the adapter for damage and replace if necessary, see .

Regulating the suction volume

Micropipettes
> 5 µl to 100 µl



Micropipettes ≤ 5 µl

Turn the setting wheel toward the ejection button until the clamping jaws are completely open.

Micropipettes > 5 µl to 100 µl

Turn the setting wheel toward the inspection window until the clamping jaws compress the suction bellows to roughly half of its volume.

Pipettes > 100 µl

Turn the setting wheel toward the inspection window until you feel a slight resistance. The clamping jaws fully compress the suction bellows.

The instrument is now ready for use.

Aspirating liquid

NOTICE

Make sure that the liquid does not contaminate the suction system. If this happens, clean and/or disinfect the suction system immediately and replace it if necessary.



- a. Hold the device at an angle.
- b. Immerse the pipette into the liquid.
- c. Turn the setting wheel slowly toward the ejection button until the liquid reaches precisely the desired mark. (Micropipettes $<5\ \mu\text{l}$ fill themselves. Therefore, turn the setting wheel slowly toward the inspection window to stop the filling process at the desired mark on time.)
- d. Remove the pipette from the liquid.
- e. Wipe off with lint-free cloth or swab.

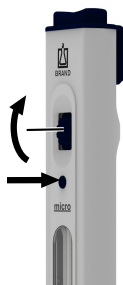
Dispensing liquid on "In" calibrated pipettes

b.



- Immerse the pipette into the dilution medium.
- Turn the setting wheel toward the inspection window until the liquid is dispensed.
- Rinse out the pipette by aspirating and dispensing the dilution medium. While doing so, carefully aspirate the dilution medium up to the correct fill level of the medium being measured. Repeat this procedure at least 3 times.
- Gently wipe off the pipette on the vessel wall.

a.

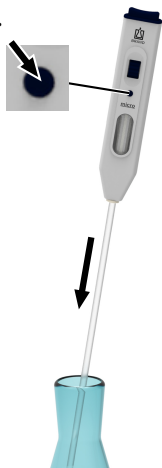


If by accident the suction bellows has been compressed too much while draining the pipette, and liquid remains in the pipette after rinsing,

- press the venting button while simultaneously turning the setting wheel slightly toward the ejection button.
- Release the venting button, and turn the setting wheel toward the inspection window until the liquid is dispensed.

Dispensing liquid on "Ex" calibrated pipettes

c.



- Hold the device vertically and place the pipette tip on the wall of a vessel held at an angle.
- Press the venting button until the liquid is drained.
- As soon as the meniscus in the pipette tip has come to a standstill, the wait time (if applicable) begins.
- After this, wipe off the pipette on the vessel wall by pulling upwards. In doing so, a portion of the residual liquid drains out.

Removing the pipette

WARNING



Do not touch the contaminated area of the pipette. Wear protective gloves.



b.



Disposable micropipettes up to 50 µl

- a. Hold the device vertically above a disposal bag (pipette facing down).
- b. Press the ejection button.
- c. Properly dispose of the pipette.

Disposable micropipettes > 50 µl and all reusable pipettes.

These pipettes cannot be ejected.

- d. Take hold of the pipette right below the adapter. Carefully pull the pipette out of the adapter.
- e. Properly dispose of the pipette.

Releasing the suction bellows

Always release the suction bellows after pipetting. To do this, turn the setting wheel toward the ejection button until the clamping jaws are completely open.

5 Cleaning

Occasionally clean the housing parts with a damp cloth. When used properly, the instrument is maintenance-free.

If the adapter and the suction system have been contaminated by liquid, these parts must be cleaned or disinfected immediately and replaced if necessary.

5.1 Cleaning the suction system

WARNING



Risk of contamination and infection

Wear protective gloves and goggles.



NOTICE

The adapter and suction system are autoclavable at 121°C (2 bar) and a holding time of at least 15 minutes, in accordance with DIN EN 285. It is the user's responsibility to ensure effective autoclaving.

- Remove the suction system from the device and place it in a cleaner or disinfectant solution.
- After this, allow to dry.
- Autoclave adapter and suction system if necessary.
- Assemble the device, see.
- Check that all controls are functioning properly.

6 Replacing the suction system

Removing a suction system

- a. Turn the setting wheel toward the ejection button until you feel a slight resistance. Then turn the setting wheel back toward the inspection window with 2 turning movements.

b.

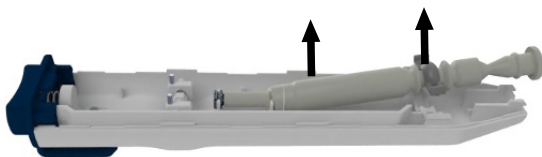


- b. Carefully lift the clip until the tongue disengages from the cavity. Push the clip with attached cover ring upward and away.

c.



- c. Open the device and set the top part to the side.

d.

d. Remove the suction system with valve from the holder.

e. Pull the suction bellows out from the valve.

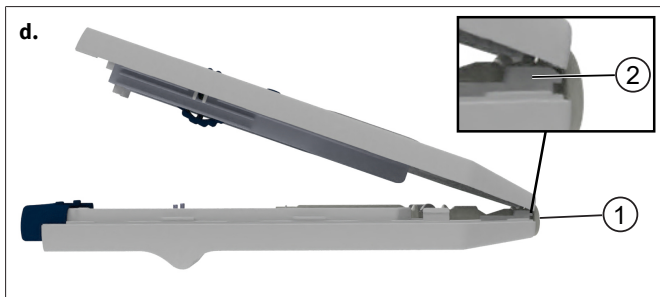
Inserting a suction system



a. Slide the suction system onto the valve and insert it into the holder.

b. Insert the plastic strip into both cavities of the side rails.

c. Push the adapter into the bottom section of the device.



- d. Position the top section of the device behind the outer adapter ridge (1) and hang it onto the hooks (2) of the bottom section of the device.
- e. Press both device sections together slowly and evenly.
- f. Hold the device loosely and briefly press the ejector button.
- g. Slide the clip on and allow it to snap into place.
- h. Check that all controls are functioning properly.

7 Autoclaving

NOTICE

Check the effectiveness of autoclaving

The effectiveness of autoclaving must be verified by the user. Maximum safety is achieved through vacuum sterilization. We recommend the use of sterilization bags.

- a. Eject or insert pipette.
- b. Autoclave the complete device without any further disassembling.
Typical recommendation for autoclaving according to DIN EN 285:

Temperature:	121 °C
Pressure	2 bar
Holding time in autoclaves	15 min

- c. Allow the device to completely cool and dry before use.

8 Troubleshooting

Problem	Possible cause	Corrective action
Pipette broken off in adapter	Pipette was damaged or pushed into the adapter with too much force	Remove glass fragments with tweezers; replace adapter if necessary, see .
Instrument suction system not work-ing/ pipette dripping	Suction system damaged	Replace suction system, see .
Liquid in suction system	Adjustment wheel turned too quickly	Clean or disinfect suction system and replace if necessary, see .
Ejector button does not work	Ejector button not positioned properly	Remove clip. Hold the instrument loosely and briefly press the ejector button. Slide clip on, see .
Pipette is ejected from the adapter	Adapter is too moist or greasy	Clean or disinfect suction system and allow to dry; replace if necessary, see .

NOTICE

A visual inspection of the device is often sufficient to detect a defective part. This can then be easily replaced with a spare part. The advantages of self-repair are obvious: Cost and time savings.

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