Gebrauchsanleitung | Operating manual | Mode d'emploi | Instrucciones de manejo | Istruzione | Instruções de utilização | 操作手册 | Руководство по эксплуатации | 사용 지침 | Bruksanvisning | 使用説明書 | Használati utasítás | Návod kpoužití | Gebruiksaanwijzing | Instrukcja użytkowania | Kullanım Talimatları

Transferpette® -8/-12 electronic

Pipettierhelfer | Pipette controllers

Impressum

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Do you need more operating manuals and translations?
Please refer to http://www.brand.de/om or use the following Quick Response Code:

The original operating manual is written in German. Other languages are translations of the original operating manual.

Table of contents

1 Introduction

1.1 Scope of delivery

Transferpette® electronic (pipette up to 300 µl: 1 x TipBox + 1 x TipRack refill unit + device stand / pipette 1250 µl: 2 x TipBox + 1 x stand frame + pipette holder for rondel), with quality certificate, rechargeable battery, power adapter, reagent reservoir, assembly aid, grease and 1 set of shaft seals.

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 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.

1.2.3 Operating manual symbols

Icon	Meaning	Icon	Meaning
	Hazardous area		Explosion hazard

2 Safety regulations

2.1 General safety regulations

Please read carefully!

The laboratory device Transferpette® electronic 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 understand this operating manual before operation.
2. Follow the general hazard instructions and safety regulations, e.g. wear protective clothing, eye protection and protective gloves.
   When working with infectious or hazardous samples, the standard laboratory rules and precautions must be adhered to.
3. Observe all specifications provided by the reagent manufacturer.
4. Do not operate the instrument in potentially explosive atmospheres and do not pipette highly flammable media.
5. Use the instrument only for pipetting liquids within the defined limitations and restrictions of use. Comply with the operating exclusions; see Operating exclusions, p. 60. If in doubt, contact the manufacturer or supplier.
6. Always perform work in a way that does not endanger the user or any other person. Avoid splashes. Use only suitable vessels.
7. Avoid touching the tip opening when working with aggressive media.
8. Never use force.
9. Use only original spare parts. Do not attempt to make any technical modifications.
   Do not disassemble 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 there are any signs of the instrument malfunctioning (e.g., sluggish piston, leakage), stop pipetting immediately, and follow the instructions in the chapter Troubleshooting, p. 95 . Contact the manufacturer, if necessary.
11. The original rechargeable battery may not be exchanged for batteries or rechargeable batteries from other manufacturers.
12. Use only the original power adapter to charge the nickel-metal hydride battery.
13. Protect the power adapter from moisture and use it only with this instrument.
14. Dispose of batteries according to the applicable regulations.

⚠ WARNING

Potential risk of explosion due to damaged battery
In extreme cases, improper handling of the instrument or the battery (short circuit, mechanical damage, overheating, etc.) may cause the battery to explode.

2.2 Intended use

Transferpette® electronic is a microprocessor-controlled, battery-operated piston-stroke pipette based on the air cushion principle for pipetting aqueous solutions of medium density and viscosity. If the instrument is handled correctly, the sample to be dispensed comes into contact only with the tip and not with the Transferpette® electronic.

2.3 Limitations of use

This instrument is intended for pipetting samples, within the following limitations:

- Operating temperature of instrument and reagent should be between +15 °C and +40 °C (59 °F to 104 °F) (other temperatures upon request)
- Vapor pressure up to 500 mbar
- Viscosity: 260 mPa s

For viscous media, the speed must be adjusted if necessary.

2.4 Application restrictions

Viscous and wetting liquids may compromise volumetric accuracy. Volumetric accuracy may also be affected when pipetting liquids whose temperature deviates from the ambient temperature by more than ± 1 °C/± 1.8 °F.

2.5 Operating exclusions

The user is responsible for checking the compatibility of the instrument with the intended application. The instrument cannot be used:

- for liquids that attack PP, FKM, PVDF,SI, PEI or PC/PBT. Avoid aggressive vapors (risk of corrosion).

The handle cannot be autoclaved.

2.6 Rechargeable battery and power adapter specifications

Rechargeable battery

Nickel metal hydride rechargeable battery with 3 cylindrical single cells size AAA, 3.6 V, 700 mAh

Power adapter

Output voltage 6.5 V DC, 200 mA

3 Functional and operational components

1	Charging socket	**2**	Battery compartment
3	Menu selection key	**4**	Arrow key (+)
5	‘Enter’ key Input confirmation/Power ‘On’*)	**6**	Arrow key (–)
7	Finger rest	**8**	Tip cone
9	Pipetting unit	**10**	Handle
11	Tip ejection key	**12**	Pipetting key
13	Display		

*) The instrument is switched on by pressing the ‘Enter’ key. By subsequently pressing the pipetting key, the instrument is ready for pipetting.

The Transferpette® electronic switches itself off automatically 10 minutes after the last operation (auto power off).

The Transferpette® electronic fits ergonomically in your hand. For absolutely effortless operation of the function keys, the hand position can be further optimized by means of the finger grip, which is height-adjustable via a screw.

4 Commissioning

4.1 First Steps

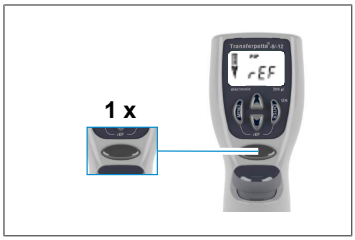
1. Insert rechargeable battery

a. Open the cover of the battery compartment.

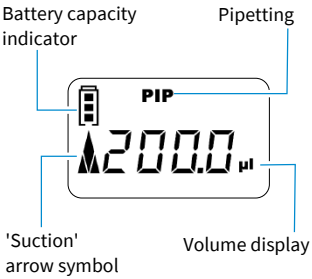
b. Insert the rechargeable battery into the compartment. Make sure that the plug of the rechargeable battery is firmly inserted into the socket in the instrument.

c. Replace the cover of the battery compartment and close it.

2. Activate instrument



The Transferpette® electronic automatically requests a reference run immediately after the battery is inserted. After pressing the pipetting key, the reference run is carried out, and the instrument is ready for pipetting.



The display shows the factory-set default pipetting mode (PIP) and the respective nominal volume.

The aspiration and dispensing speed are set to maximum at the factory.

The simple volume and speed setting is described on the following pages.

4.2 Set volume

The volume is factory-set to the respective nominal volume of the Transferpette® electronic and can be easily and quickly changed individually.

a. Pressing one of the arrow keys directly selects a volume.

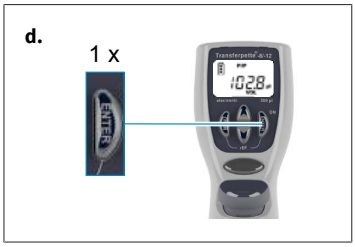
⇨ 'VOL' flashes.

b. Pressing the arrow key (–) decreases the volume. Pressing and holding the arrow key causes the volume to change quickly.

⇨ 'VOL' continues to flash.

c. Pressing the arrow key (+) increases the volume. Pressing and holding the arrow key causes the volume to change quickly.

⇨ 'VOL' continues to flash.



d. To confirm the volume selection, press the ‘Enter’ key.

⇨ The display now shows the newly set volume. Here, for example, the display of the PIP mode set by default.

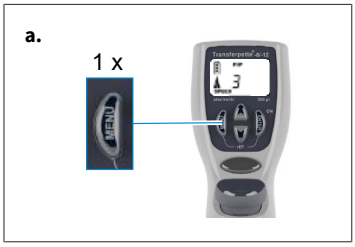
NOTICE

By pressing the menu key, any setting procedure can be canceled. The display then jumps to the next setting option or back to the initial display.

4.3 Set the aspiration and dispensing speed

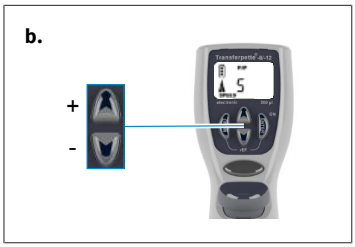
Aspiration and dispensing speed are separately adjustable. When the menu is called up, the last speed set in each case is displayed. Five speed levels are available in each case.

Set aspiration speed



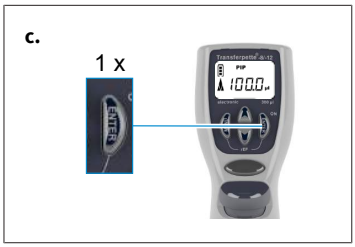
a. Pressing the menu key once briefly takes you to the aspiration speed menu.

⇨ ‘Speed’ flashes.



b. Press the arrow keys (+\−) to select the speed level (e.g. level 5).

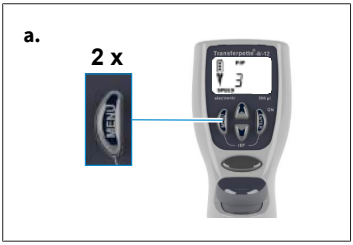
⇨ ‘Speed’ continues to flash.



c. Press ‘Enter’ key.

⇨ The display returns to the basic state of the respective set mode. Here, for example the display of the standard PIP mode.

Set dispensing speed

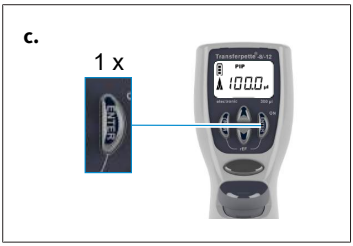


a. Pressing the menu key twice briefly takes you to the dispensing speed menu.

⇨ ‘Speed’ flashes.

b. Press the arrow keys (+\−) to select the speed level (e.g. level 2).

⇨ ‘Speed’ continues to flash.



c. Press ‘Enter’ key.

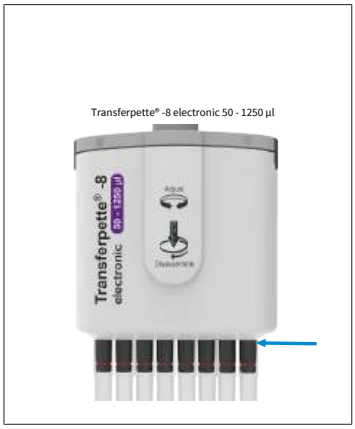
⇨ The display returns to the basic state of the respective set mode. Here, for example the display of the standard PIP mode.

4.4 Pipetting

The volume is factory-set to the respective nominal volume of Transferpette® electronic and can be easily and quickly changed individually, see Set volume, p. 64.

NOTICE

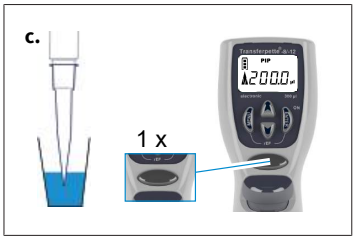
> Perfect analysis results can only be achieved by using quality tips. We recommend the tip system from BRAND.
> If other pipette tips are used, check whether these tips fit the Transferpette® electronic laboratory instrument and have the required quality for the desired application.



a. Insert tips vertically:
Use the correct tips, in accordance with the volume range or color code!
Make sure that the tips are firmly in place and leak tight.
Pipette tips are disposable products!

Transferpette® electronic 50 – 1250 µl:
Always push the pipette tips onto the lower part of the ejector up to the stop. Make sure that the tips are firmly in place and leak tight.

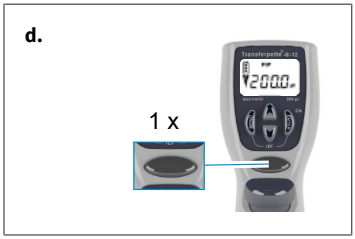
b. Align pipetting unit: The pipetting unit can turn freely in both directions.



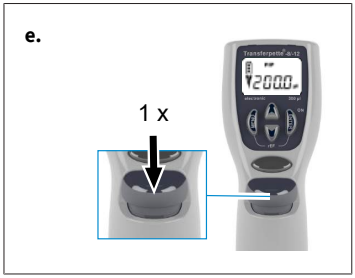
c. Aspirate liquid: Hold the device vertically and immerse the tip into the liquid. The liquid is aspirated by pressing the pipetting button. The arrow in the display points upwards (aspiration).

Leave the tip immersed in the liquid for a few seconds, so that the set volume is aspirated completely. This is especially important when pipetting viscous media and when using pipettes with large volumes.

Volume range	Immersion depth	Wait time
0.5 – 100 µl	2 – 3 mm	1 s
100 – 300 µl	2 – 4 mm	1 s
> 1000 µl	3 – 6 mm	3 s



d. Dispense liquid: When liquid aspiration is complete, the arrow on the display points downwards (dispensing). Place the pipette tip against the vessel wall. Hold the pipette at an angle of 30-45°. Press the pipetting button again to dispense the liquid completely with automatic overtravel. While doing this, wipe the pipette tip against the vessel wall.



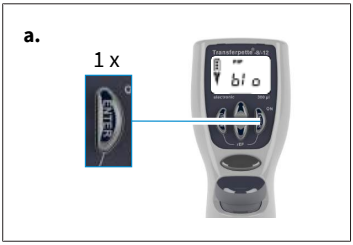
e. Ejecting a tip: Hold the pipette Pipetting unit over a suitable disposal container and the press the tip ejec-tion key.

NOTICE

ISO 8655 requires that pipette tips are pre-wetted once before the actual pipetting procedure.

4.5 Directly trigger blow-out

The blow-out can also be triggered directly at any time if necessary.



a. Call up the blow-out function: Press ‘Enter’ key. The display shows ‘blo’ for blow-out.

b. Trigger blow-out: Press the pipetting key once to trigger the blow-out. The display will then jump back to the set pipetting mode (start position).

NOTICE

During blow-out, the piston moves completely downwards. Ensure that any residual liquid is discharged safely. **Keeping the pipetting key pressed keeps the piston down and thus prevents accidental aspiration of liquid. Releasing causes the piston to return to the start position.**

5 Pipetting programs

Activity	Designation	Info
Normal pipetting	**PIP**mode, see PIP mode, p. 69	Standard program. A previously entered volume is aspirated and dispensed again
Pipetting for electrophoresis	**GEL**mode, see Electrophoresis (GEL) mode, p. 74	Program for loading electrophoresis gels. A previously defined sample volume is aspirated at a high, variable speed and slowly released again.
Mixing samples	**PIPmix** mode, see PIPmix mode, p. 70	Program for mixing liquids. Sample is aspirated and dispensed repeatedly.
Reverse pipetting	**revPIP** mode, see revPIP mode, p. 72	Program especially for pipetting liquids with high viscosity, high vapor pressure, or foaming media.
Dispensing	**DISP**mode, see DISP mode, p. 76	Program for dispensing liquids. A volume taken up is dispensed again in partial steps.

NOTICE

GEL mode

The GEL mode is not available for Transferpette® electronic 1000 µl and 5000 µl.

5.1 PIP mode

The default program – a previously entered volume is aspirated and dispensed again.

Volume and speed setting, see Set volume, p. 64 and Set the aspiration and dispensing speed, p. 65.

a.

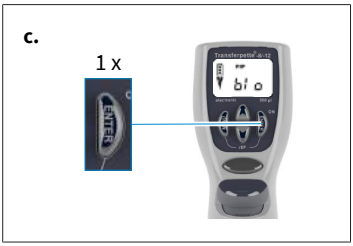
a. Call up menu selection: Pressing the menu key three times takes you to the program selection.

⇨ ‘Mode’ flashes.

b.

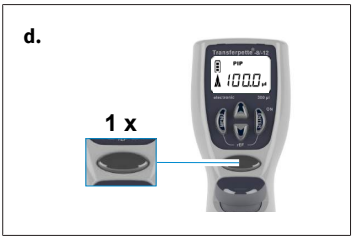
b. Set PIP mode: Use one of the arrow keys to scroll through the modes until ‘PIP’ appears.

⇨ ‘Mode’ continues to flash.



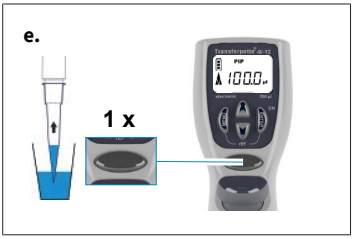
c. Confirm PIP mode: Press ‘Enter’ key.

⇨ The display now shows ‘blo’ for blow-out.

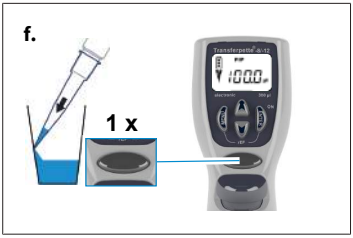


d. Preparing for pipetting: Press the pipetting key once to move the piston to its start position.

⇨ The arrow in the display points upwards (aspiration).



e. Aspirate liquid: Press the pipetting key once to aspirate the liquid.



f. Dispense liquid: The liquid is dispensed by pressing the pipetting key once.

⇨ The arrow in the display points downwards (dispensing).

g. Trigger blow-out? You do not have to do anything. When pipetting in PIP mode, the blow-out is performed automatically.

5.2 PIPmix mode

Program for mixing liquids. Sample is aspirated and dispensed repeatedly.

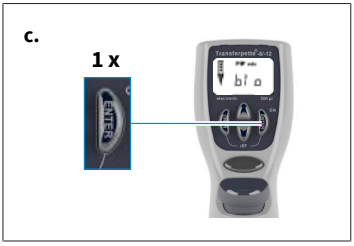
Volume and speed setting, see Set volume, p. 64 and Set the aspiration and dispensing speed, p. 65.

a. Call up menu selection: Pressing the menu key three times takes you to the program selection.

⇨ ‘Mode’ flashes.

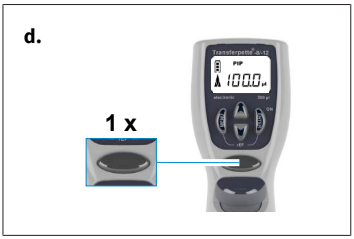
b. Set PIPmix mode: Use one of the arrow keys to scroll through the modes until ‘PIPmix’ appears.

⇨ ‘Mode’ continues to flash.



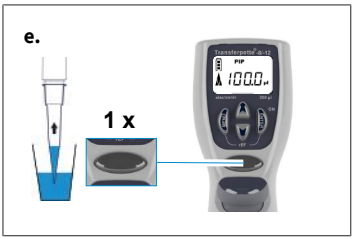
c. Confirm PIPmix mode: Press ‘Enter’ key.

⇨ The display now shows ‘blo’ for blow-out.

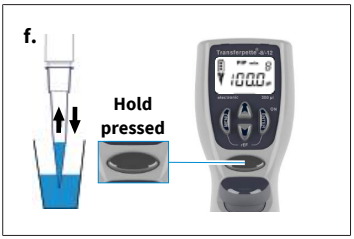


d. Preparing for pipetting: Press the pipetting key once to move the piston to its start position.

⇨ The arrow in the display points upwards (aspiration).



e. Aspirate liquid: Press the pipetting key once to aspirate the liquid.



f. Dispense liquid in PIPmix mode: Pressing and holding the pipetting key causes the liquid to be alternately dispensed and aspirated. The display alternately shows the arrow symbol for aspiration or dispensing as well as the number of cycles.

g. End pipetting: Pressing the pipetting key once dispenses the liquid and triggers the blow-out. After dispensing the residual liquid (blow-out), the display jumps back to the set mode (start position).

NOTICE

The display shows a maximum of 19 cycles.

5.3 revPIP mode

Program especially for pipetting liquids with high viscosity, high vapor pressure, or foaming media.

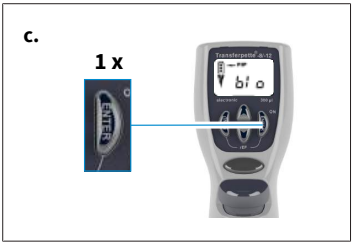
Volume and speed setting, see Set volume, p. 64 and Set the aspiration and dispensing speed, p. 65.

a. Call up menu selection: Pressing the menu key three times takes you to the program selection.

⇨ ‘Mode’ flashes.

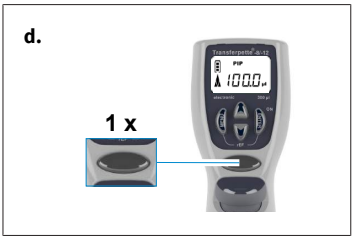
b. set revPIP mode: Use one of the arrow keys to scroll through the modes until ‘revPIP’ appears.

⇨ ‘Mode’ continues to flash.



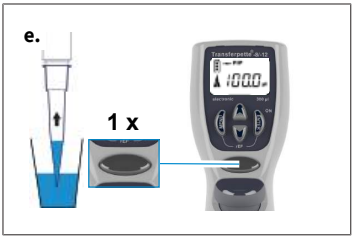
c. Confirm revPIP mode: Press ‘Enter’ key.

⇨ The display now shows ‘blo’ for blow-out.



d. Preparing for pipetting: Press the pipetting key once to move the piston to its start position.

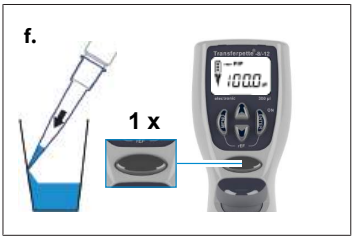
⇨ The arrow in the display points upwards (aspiration).



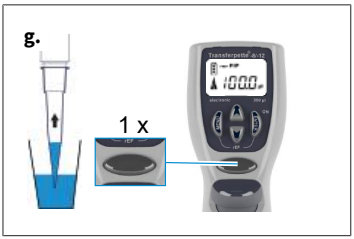
e. Aspirate liquid: Press the pipetting key once to aspirate the liquid.

NOTICE

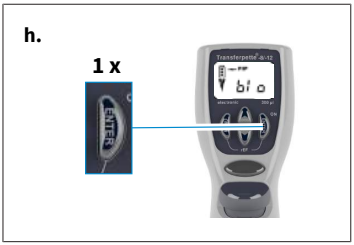
When aspirating the liquid, slightly more volume is aspirated than set.



f. Dispense liquid in revPIP mode**:** Press the pipetting key once to dispense. On the display, the arrow points down (dispensing). The set volume is now dispensed and some liquid remains in the tip.

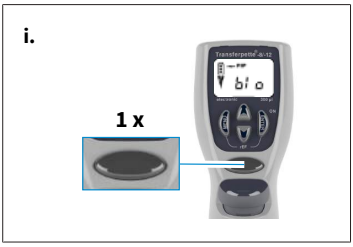


g. Re-aspirate liquid in revPIP mode: Pressing the pipetting key again now resumes the set volume. (Pressing the pipetting key again releases the volume)



h. Trigger blow-out: After the last pipetting, press ‘Enter’ key.

⇨ The display now once again shows ‘blo’ for blow-out.



i. End pipetting: By pressing the pipetting key once, the blow-out is triggered, and the residual liquid is dispensed.

⇨ After dispensing the residual liquid (blow-out), the display jumps back to the set mode (start position).

5.4 Electrophoresis (GEL) mode

Program for loading electrophoresis gels. A previously defined sample volume is aspirated at a high, variable speed and slowly released again.

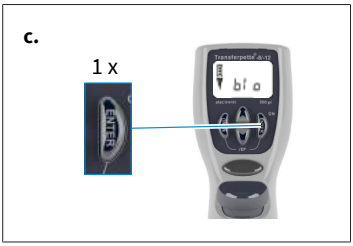
Volume and speed setting, see Set volume, p. 64 and Set the aspiration and dispensing speed, p. 65.

a. Call up menu selection: Pressing the menu key three times takes you to the program selection.

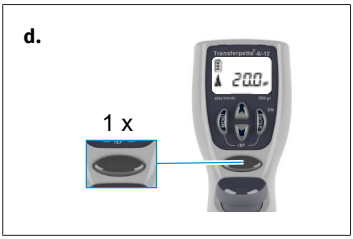
⇨ ‘Mode’ flashes.

b. Set GEL mode: Use one of the arrow keys to scroll through the modes until ‘GEL’ appears.

⇨ ‘Mode’ continues to flash.



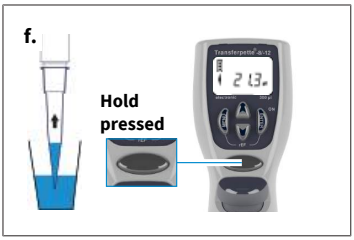
c. Confirm GEL mode: Press ‘Enter’ key. The display now shows ‘blo’ for blow-out.



d. Preparing for pipetting: Press the pipetting key once to move the piston to its start position.

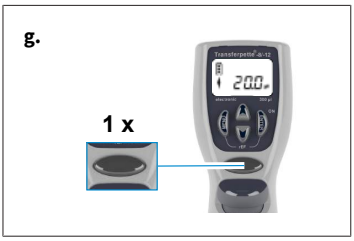
⇨ The arrow in the display points upwards (aspiration).

e. Aspirate liquid: Press the pipetting key once to aspirate the liquid.



f. In order aspirate more liquid than set (up to max. 110% of the nominal volume), keep the pipetting key pressed during the aspiration process until the desired volume has been aspirated.

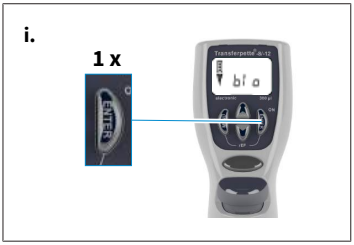
⇨ A rhombus appears in the display.



g. Dispense liquid in GEL mode: To dispense, briefly press the pipetting key once. A rhombus appears in the display. The aspirated volume is slowly released again.

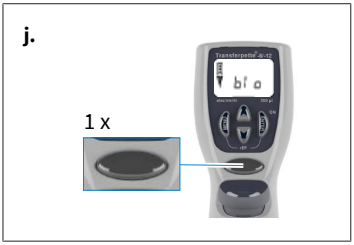
h. The dispensing of the sample can be interrupted by pressing the pipetting key again.

⇨ The display shows the volume of the liquid dispensed.



i. Trigger blow-out: After the last pipetting, press ‘Enter’ key.

⇨ The display now once again shows ‘blo’ for blow-out.



j. End pipetting: By pressing the pipetting key once, the blow-out is triggered, and the residual liquid is dispensed.

⇨ After dispensing the residual liquid (blow-out), the display jumps back to the set mode (start position).

NOTICE

The GEL mode requires very slow dispensing speeds in order to prevent sample turbulence. In order to ensure optimum dispensing, the dispensing speed is set at the factory. It is considerably slower than the adjustable level 1 and cannot be selected individually.

5.5 DISP mode

Program for dispensing an aspirated liquid in partial steps. Slightly more fluid is aspirated than is mathematically necessary.

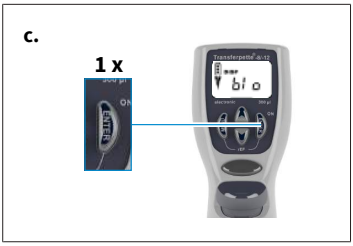
Volume and speed setting, see Set volume, p. 64 and Set the aspiration and dispensing speed, p. 65.

a. Call up menu selection: Pressing the menu key three times takes you to the program selection.

⇨ 'Mode' flashes.

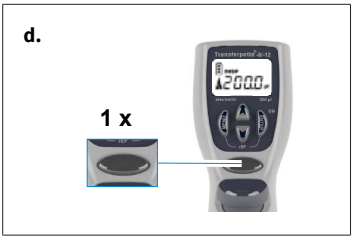
b. Set DISP mode: Use one of the arrow keys to scroll through the modes until 'DISP' appears.

⇨ 'Mode' continues to flash.



c. Confirm DISP mode: Press 'Enter' key.

⇨ The display now shows 'blo' for blow-out.



d. Preparing for pipetting: Press the pipetting key once to move the piston to its start position.

⇨ The arrow in the display points upwards (aspiration).

e. Set partial volume: Pressing the arrow key (+\–) sets the volume. Pressing and holding the arrow key causes the volume to change quickly.

⇨ 'VOL' flashes.

f.

f. Confirm partial volume: Press ‘Enter’ key. The display shows the newly set partial volume.

⇨ ‘Steps’ flashes. The maximum possible number of steps is displayed.

g.

g. Set the number of steps: Pressing the arrow key (+/-) sets the number of steps.

⇨ ‘Steps’ continues to flash.

h.

h. Confirm number of steps: Press ‘Enter’ key.

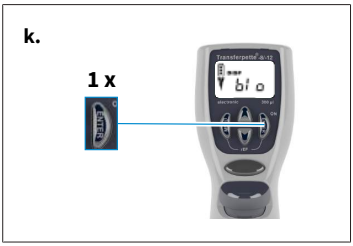
⇨ The display shows the set number of steps.

i.

i. Aspirate liquid: Press the pipetting key once to aspirate the liquid.

j.

j. Dispense liquid: Each time the pipetting key is pressed, a dispensing step is performed. The arrow in the display points downwards (dispensing). The ‘Step’ display shows the number of steps remaining.



k. Trigger blow-out: After the last dispensing step, press ‘Enter’ key.

⇨ The display now once again shows ‘blo’ for blow-out.

l. End dispensing: By pressing the pipetting key once, the blow-out is triggered, and the residual liquid is dispensed.

m. After dispensing the residual liquid (blow-out), the display jumps back to the set mode (start position).

6 Checking the volume

We recommend testing the instrument every 3 to 12 months depending on the level of use. However, the testing cycle can be adapted to meet individual requirements. The complete testing procedure (SOP) can be downloaded at www.brand.de.

You can download the detailed test instructions (SOP) at www.brand.de. For GLP- and ISO-compliant evaluations and documentation, we recommend the EASYCAL™ calibration software from BRAND. A demo version can be downloaded from https://shop.brand.de/.

Gravimetric volume testing of the pipette is carried out according to the following steps and complies with DIN EN ISO 8655:2022.

1. Setting the nominal volume

a. Set the maximum specified instrument volume (for procedure, see Pipetting, p. 66).

2. Conditioning the pipette

a. Condition the pipette before testing by aspirating and dispensing the test liquid (distilled water) with a pipette tip five times.

3. Performing the test

a. Aspirate the test liquid and pipette into the weighing vessel.

NOTICE

Each individual channel must be inspected separately.

b. Weigh the pipetted amount with an analysis scale. (refer to the operating manual of the balance manufacturer.)

c. Calculate the pipetted volume. In doing so, take into account the temperature of the test liquid.

d. At least 10 pipetting series and weighings in 3 volume ranges (100%, 50%, 10%) are recommended. Two tips must be used for each volume range to be tested.

Calculation (for nominal volume)

x_i = weighing results n = number of weighings V_0 = nominal volume

Z = Correction factor (e.g. 1.0029 µl/mg at 20°C, 1013 hPa)

Mean:

$$\bar{x} = \frac{\sum x_i}{n}$$

Mean volume:

$$\bar{V} = \bar{x} * Z$$

Accuracy*:

$$A\% = \frac{\bar{V} - V_0}{V_0} * 100$$

Coefficient of variation*:

Standard deviation*:

$$CV\% = \frac{100\ s}{\overline{V}} \qquad s = Z * \sqrt{\frac{\sum(x_i - \overline{x})^2}{n-1}}$$

*) Accuracy and coefficient of variation are calculated according to the formulas of statistical quality control.

NOTICE

Test Instructions (SOPs) are available for download from www.brand.de .

7 Accuracy table

Volume range [µl]	Partial volume [µl]	A* ≤± %	CV* ≤%	Sub-steps [µl]	Recommended tip type [µl]
0.5 - 10	10 5 1	1.2 2.0 8.0	0.8 1.5 4.0	0.01	0.5 - 20
1 - 20	20 10 2	1.0 2.0 8.0	0.5 1.0 3.0	0.02	0.5 - 20
5 - 100	100 50 10	0.8 1.6 4.0	0.25 0.4 1.5	0.1	2 - 200
10 - 200	200 100 20	0.8 1.4 4.0	0.25 0.4 1.3	0.2	2 - 200
15 - 300	300 150 30	0.6 1.2 3.0	0.25 0.4 1.2	0.5	5 - 300
50 - 1250	1250 625 125	1 1.2 5	0.25 0.4 1.2	1.0	50 - 1250

*A = Accuracy, CV = Coefficient of Variation

20 °C
Ex

Final test values based on the nominal volume (= max. volume) printed on the device and the specified partial volumes at the same temperature (20 °C/68 °F) of the device, surroundings and distilled water, in accordance with DIN EN ISO 8655.

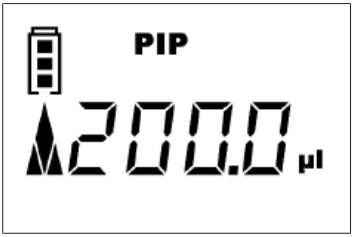
8 Adjustment – Easy Calibration

NOTICE

Adjustment – How and when?
The pipette Transferpette® electronic can be adjusted in any mode (except GEL mode). During adjustment, a volume offset is performed, i.e. the volume changes by the same amount over the entire volume range of the pipette.
An adjustment in PIP mode is transferred to PIP rev and Mix modes. Switching to DISP mode deletes the adjustment. An adjustment in DISP mode only applies to this mode and is not applied to the other modes when the mode is changed.

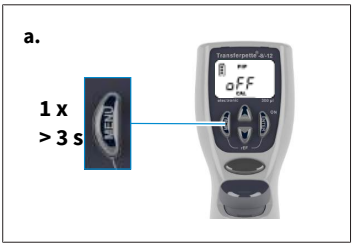
8.1 Adjustment

The device is permanently calibrated for aqueous solutions. If it is determined that the pipette is operating inaccurately or to adjust the device to work with solutions of varying density and viscosity or with specially-shaped pipette tips, it can be calibrated using the Easy Calibration Technique.



Adjustment example

You have carried out a volume check (Checking the volume, p. 79) and determined the actual values. In this volume check, you have determined an actual volume of 201.3 µl. In the following procedure, you adjust the Transferpette® electronic to the target volume of 200 µl in pipetting mode (PIP mode, p. 69).



a. Bring up CAL mode: Press and hold the MENU key (> 3 sec) until CAL appears.

⇨ The display reads ‚off‘.

⇨ ‘CAL’ blinks.

b. Enable CAL mode: CAL mode is enabled by pressing one of the arrow keys.

⇨ The display changes from 'off' to 'on'.

⇨ 'CAL' continues to flash.

c. Confirm CAL mode: Press the Enter button.

⇨ The display now shows the set pipetting volume again.

⇨ 'CAL' flashes.

d. Set the volume: Use the arrow buttons (+/-) to set the actual value determined during the volume check.

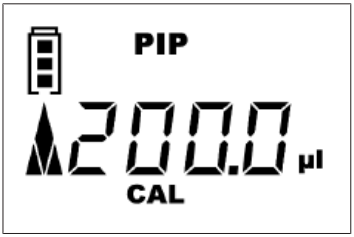
⇨ 'CAL' flashes.

e. Confirm volume: Press the Enter button.

⇨ The checked and corrected volume appears on the display.

⇨ The CAL symbol, which is now permanently displayed, indicates the adjustment made.

8.2 Restore factory setting



The CAL symbol that is constantly shown on the display indicates that an adjustment has been made.

a. Open CAL mode: CAL mode is opened by pressing and holding (> 3 s.) the menu button.

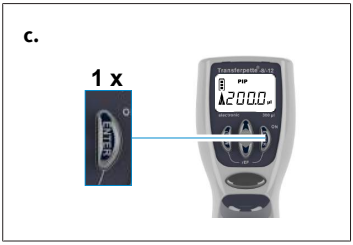
⇨ The display shows 'on'.

⇨ 'CAL' flashes.

b. Switch off CAL mode: Pressing one of the arrow buttons disables CAL mode.

⇨ The display changes from 'on' to 'off'.

⇨ 'CAL' continues to flash.



c. Restore factory settings: Press the Enter button.

⇨ The permanently displayed CAL symbol has disappeared.

⇨ The appliance is back in factory settings.

9 Disinfection/autoclaving

9.1 UV sterilization

The device is resistant to normal exposure to a UV disinfection lamp. The effects of the UV exposure may cause some color change.

9.2 Autoclaving

The highlighted part of Transferpette® electronic can be autoclaved at 121°C (250 °F), 2 bar, and with a holding time of at least 15 minutes according to DIN EN 285.

a. Eject the pipette tips.

b. Separate the pipetting unit from the handle, see Maintenance, p. 86.

c. Autoclave the complete pipetting unit without further disassembly.

d. Allow the pipetting unit to cool down completely and dry.

e. Screw the pipetting unit back into the handle.

f. Carry out reference run (rEF).

NOTICE

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

If the pipette is autoclaved frequently, the piston and seal should be greased with the grease supplied in order to ensure proper movement.

9.3 Reference run (rEF)

After each change of the pipette shaft, a manual reference run must be carried out. The reference run is used for the secure coupling of the piston.

a. Call up rEF mode: Pressing the ‘Menu’ and ‘Enter’ keys simultaneously activates the rEF mode.

⇨ The display shows ‘rEF’.

b. Carry out reference run: Pressing the pipetting key once triggers the reference run.

⇨ A clear functional noise can be heard.

⇨ After the reference run, the display automatically switches back to the previously set program.

10 Maintenance

In order to ensure proper functioning, the Transferpette® electronic should be serviced at regular intervals and cleaned as necessary.

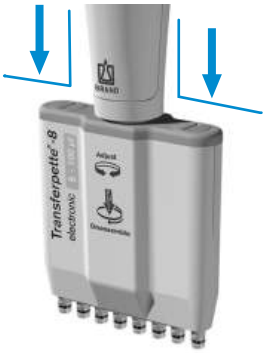
What must be checked?

a. Check the pipette shafts, pistons, and seals for damage and contamination.

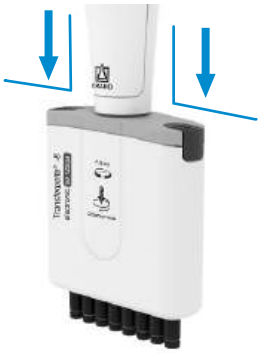
b. Check the device for leaks. We recommend using the BRAND leak detector, the BRAND PLT unit.

As an alternative to this, aspirate a sample and hold the instrument vertically for approx. 10 s. If drops form at the pipette tips, see Troubleshooting, p. 95.

10.1 Separate the pipetting unit from the handle



Example pipetting unit up to 100 µl



Example pipetting unit up to 1250 µl

a. Eject the pipette tips.

b. To separate, pull the pipetting unit from the handle downward as far as possible. **Only then**, turn it clockwise. After one revolution, the unit no longer needs to be pulled downward while turning.

c. If the pipetting unit is unscrewed, it must be pulled down again in order to disconnect the magnetic coupling.

NOTICE

> When assembling, the pipetting unit must be screwed counter-clockwise onto the handle so that it clicks into place.
> When assembling, do not pull the pipetting unit downwards.
> Improper handling can lead to damage.

10.2 Disassembly of pipetting unit up to 300 µl

The three main components of the pipetting unit can be easily separated and disassembled for maintenance, cleaning or replacing parts.

Changing the O-rings on the individual shafts is described in detail in the instructions included with the replacement part.

Cleaning instructions

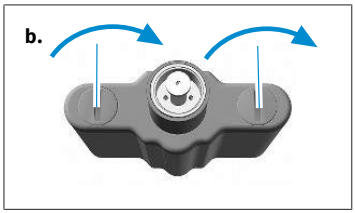
a. Clean individual shafts and pistons (only these parts) with soap solution or isopropanol. Then rinse with distilled water.

b. Allow the parts to completely dry and cool. Liquid residues in the shafts result in deviations in accuracy.

c. Re-grease pistons with a very thin coat of the grease supplied. For the central guide axis (Z), use only the prescribed fluorine static grease.

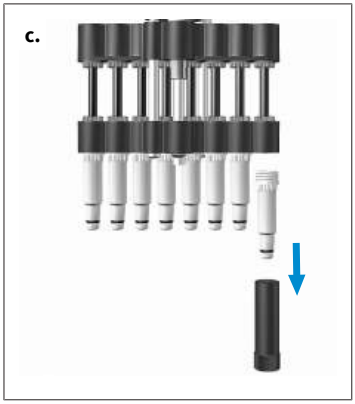
d. After assembling the unit, carry out a reference run (rEF).

Removing shafts and seals for cleaning or replacement

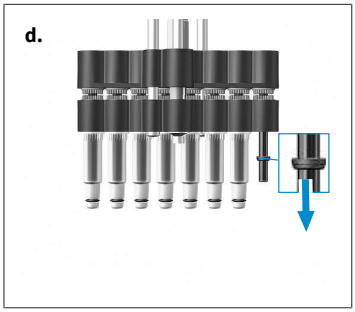


a. Unscrew pipetting unit: Separate the pipetting unit from the handle.

b. Remove the pipetting housing: Turn both closures of the pipetting housing cover by 90°, and pull off the pipetting housing.



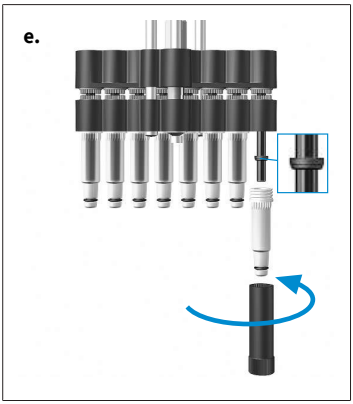
c. Unscrew the shaft: Place the installation tool onto a single shaft and unscrew the shaft.



d. Remove seal: Push the piston unit all the way down. Remove and inspect the seal and clean or change as necessary.

NOTICE

After removing the shaft, the seal is located either in the shaft or on the piston.



e. Mount the seal: If required, re-grease the piston with the silicone grease supplied. Slide the seal onto the piston with the flat side upwards. Tighten the cleaned or new shaft using the installation tool.

f. Assemble pipetting unit: Reassemble the pipetting unit and mount it on the handle. Check the instrument for leaks, free movement, and precision.

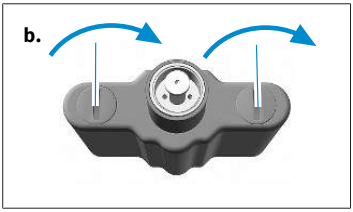
NOTICE

The pipetting unit must be screwed onto the handle in a counter-clockwise direction until it clicks into place. Do not pull the pipetting unit downwards.

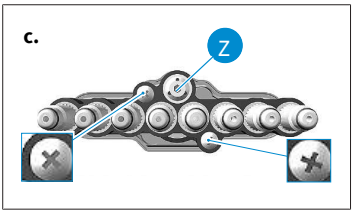
g. Carry out reference run: Carry out reference run (rEF).

Remove piston for cleaning or replacement

a. Unscrew pipetting unit: Separate the pipetting unit from the handle.



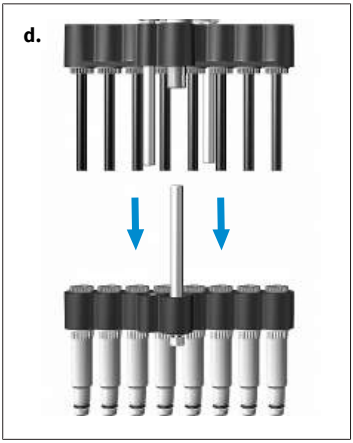
b. Remove the pipetting housing: Turn both closures of the pipetting housing cover by 90°, and pull off the pipetting housing.



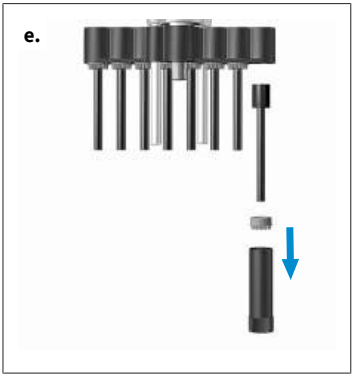
c. Remove screws: Remove both outer Phillips-head screws on the shaft unit.

NOTICE

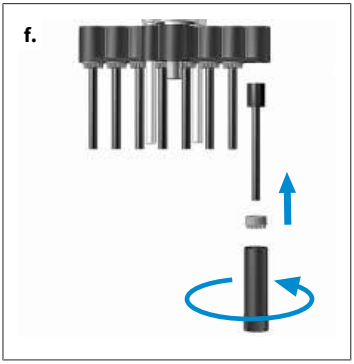
The central guide axis (Z) must not be removed.



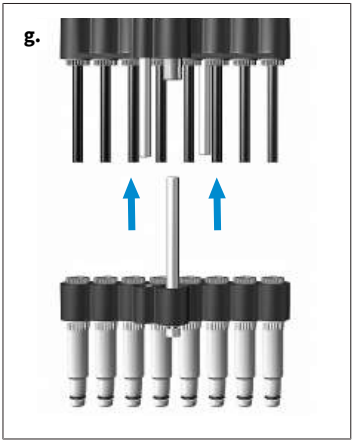
d. Separate the piston and shaft unit: Pull apart and separate the piston and shaft unit.



e. Remove piston: Place the installation tool onto the piston nut and unscrew it. Remove piston nut, and pull out piston.



f. Mount piston: Insert cleaned or new piston. Tighten the piston nut again using the installation tool.



g. Assemble the piston and shaft unit: Loosen the shafts by half a turn. Then place the shaft unit on the piston unit and fasten it. Then screw on the shafts.

h. Assemble pipetting unit: Reassemble the pipetting unit and mount it on the handle. Check the instrument for leaks, free movement, and precision.

NOTICE

The pipetting unit must be screwed onto the handle in a counter-clockwise direction until it clicks into place. Do not pull the pipetting unit downwards.

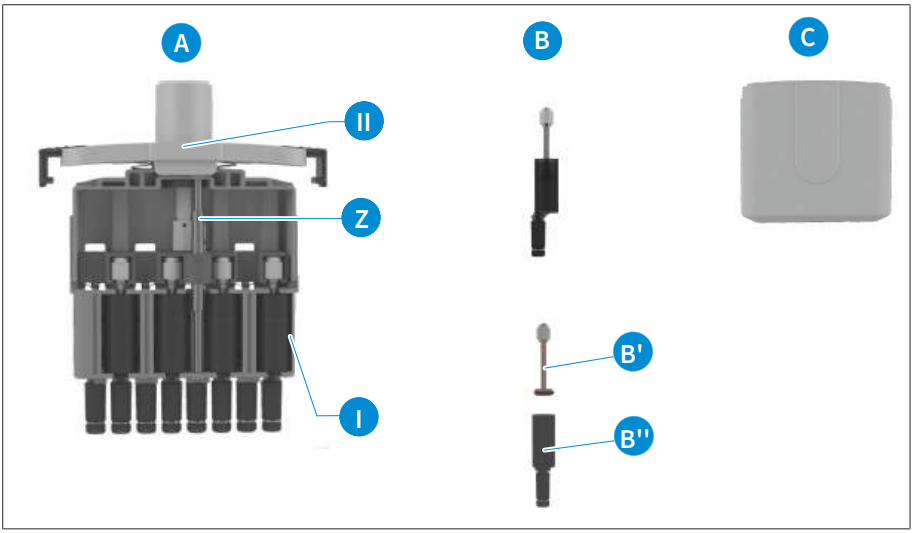
i. Carry out reference run: Carry out reference run (rEF).

10.3 Disassembly of pipetting unit 50-1250 µl

The three main components of the pipetting unit can be easily separated and disassembled for maintenance, cleaning or replacing parts.

Changing the O-rings on the individual shafts is described in detail in the instructions included with the replacement part.

Main components of the pipetting unit



A Complete **piston-shaft system** with central guide axis (Z), connected to the pipetting housing cover [II] (channel marking can be read here).

B **Piston-shaft units** inserted in the frame [I] of the pipetting unit. The units consist of the piston (with seal) (B') and the shaft (with O-ring) (B''), which can be removed for cleaning, greasing and replacement.

C The pipette housing is connected to the pipette housing cover [II] by two sliding locks.

Cleaning instructions

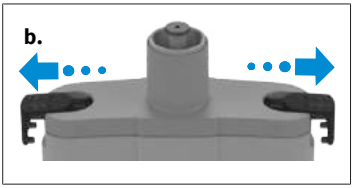
a. Clean individual shafts and pistons (only these parts) with soap solution or isopropanol. Then rinse with distilled water.

b. Allow the parts to completely dry and cool. Liquid residues in the shafts result in deviations in accuracy.

c. Re-grease pistons with a very thin coat of the grease supplied. For the central guide axis (Z), use only the prescribed fluorine static grease.

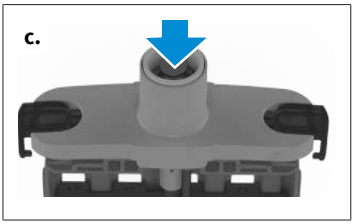
d. After assembling the instrument, carry out a reference run (rEF).

Removing shafts and pistons for cleaning or replacement

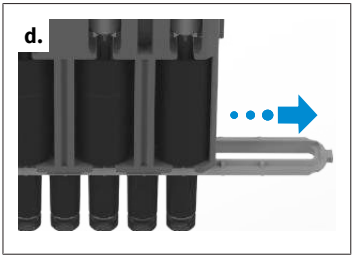


a. Unscrew pipetting unit: Separate the pipetting unit from the handle.

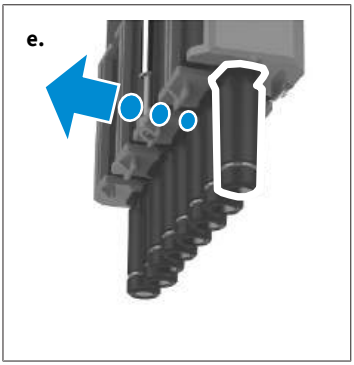
b. Pull off the pipetting housing: Pull out the sliding locks of the pipetting housing cover sideways until the stop and remove the pipetting housing.



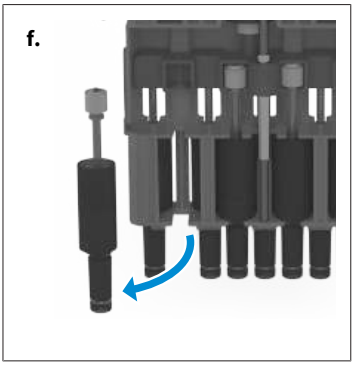
c. Move the piston to the bottom position: Slide the plunger down until the pistons are in the bottom position.



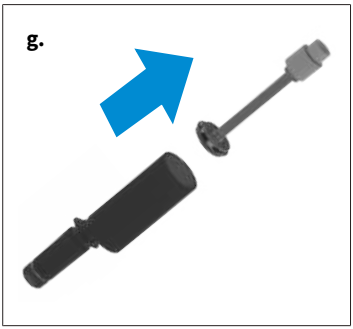
d. Remove shaft fastening: Pull the shaft fastening out sideways.



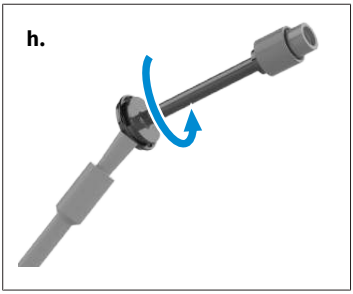
e. Gently push out the piston-shaft unit directly on the pipette housing.



f. Remove the piston-shaft unit. Only the entire piston-shaft unit can be replaced.



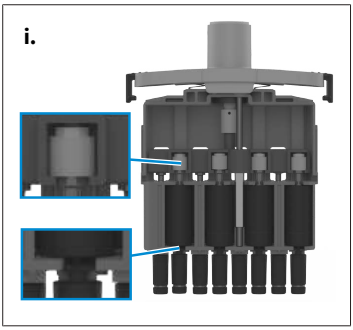
g. Pull the piston with seal out of the shaft.



h. Dip the brush into the enclosed piston grease and wipe well against the vessel wall. Hold the brush against the seal and turn the piston with seal 1-2 turns. Insert the piston with seal back into the shaft.

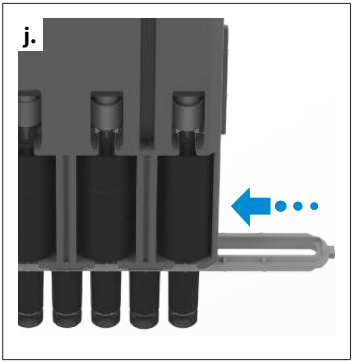
NOTICE

Only apply a very thin layer of piston grease to the seal with the brush. Only use the enclosed grease (order no.: 703675). Do not use silicone grease or fluorostatic grease!



i. Fit the piston and shaft. Reinsert the piston-shaft unit. To do this, push the shaft into the holder and carefully press the piston into its original position. The shafts must then be aligned again.

Proceed as described with all 4 or 6 piston-shaft units on this page. Turn the pipetting unit to remove/replace the remaining 4 or 6 channels.



j. Reassemble the pipetting unit. To do this, slide the shaft fastening over the shafts until it engages. Note the direction from channel 8/12 to channel 1 (see marking on the pipetting housing cover). Then secure the pipetting housing again and mount the pipetting unit on the hand grip. Check the device for leaks, movement and accuracy

NOTICE

The pipetting unit must be screwed onto the hand grip in a counter-clockwise direction until it clicks into place. Do not pull the pipetting unit down!

k. Carry out a reference run (rEF).

10.4 Charge and replace rechargeable battery

A fully charged rechargeable battery allows approx. 8 h of continuous pipetting (over 4000 pipetting cycles) of samples of water-like viscosity and density.

NOTICE

> Before charging, ensure that the power adapter is suitable for the voltage present in the laboratory.
> The instrument must not be charged in an explosive environment.
> The rechargeable battery can be charged only in the Transferpette® electronic.

Recharge rechargeable battery

a. Insert the charging cable plug of the power adapter into the socket provided for this purpose at the top of the Transferpette® electronic .

⇨ The charging process starts automatically.

⇨ During the charging process, the bars of the rechargeable battery capacity indicator continually run from the bottom to the top.

⇨ Once the bars of the display have stopped, this means that the rechargeable battery is fully charged.

Pipetting during the charging process?

During charging, you can continue to work with the Transferpette® electronic . When the rechargeable battery is fully discharged, it takes a few minutes to reach a certain minimum charge capacity. this is necessary for safe operation of the instrument. The last settings made are stored in the EEPROM of the instrument. In the case of complete discharge or when changing the battery, these settings remain saved!

Replace rechargeable battery

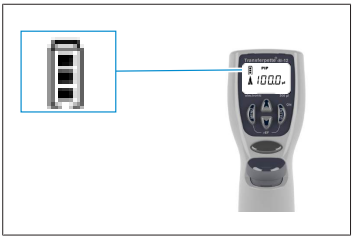
a. Open the cover of the battery compartment, remove the rechargeable battery, and pull the plug out of the socket.

b. Insert the plug of the new rechargeable battery into the socket and insert the new rechargeable battery.

c. Replace the cover of the battery compartment and close it.

Remove the rechargeable battery from the instrument during longer breaks in operation.

Battery indicator after reinserting a battery pack



After inserting a rechargeable battery, the full capacity indicator appears in the display with a flashing frame (the instrument does not yet recognize the charge status at first). After 3.5 h charging time – safe complete charging of the battery – the frame stops flashing.

NOTICE

Always charge for at least 3.5 h after inserting a battery! The full charge capacity is reached after several charge/discharge cycles!

10.5 Rechargeable battery regeneration function

Refresh function

To extend the service life and increase the performance of the batteries, the Transferpette® electronic has a regeneration function (refresh function). This function allows the batteries to be fully discharged and recharged under program control. To optimize the performance of the batteries, the refresh function should be used from time to time.

Carry out refresh function

a. Insert the charging cable plug (connection) of the power adapter into the socket provided for this purpose at the top of the Transferpette® electronic .

b. Press the lower arrow key for longer than 3 s. During discharging, the capacity bars of the battery display run continuously from top to bottom.

c. After discharging (up to 3 h), the charging process (3.5 h) is started automatically. During charging, the capacity bars of the battery display run continuously from bottom to top.

Canceling the refresh function

Pressing any key terminates the program. The instrument automatically switches back to the standard pipetting mode (PIP) and to the nominal volume, and the normal loading process is automatically started, see Charge and replace rechargeable battery, p. 93. Unplugging the power supply also terminates the program. Cancellation of the refresh function must not be performed at the end of the discharge cycle.

11 Troubleshooting

Fault	Display	Cause	Corrective action
Instrument does not respond	ERR 1	Rechargeable battery empty or defective	Charge the battery for at least 5 min without actuation. Then continue working with the charging cable only until the battery is recharged. Replace the rechargeable battery if necessary
		Electronic components defective	Send instrument for repair
Instrument does not respond	ERR 2	Electronic components defective	Send instrument for repair
Instrument does not respond	ERR 3	Unforeseen program error	Error confirmation by pressing the 'Enter' key, instrument is reinitialized
Instrument does not respond	ERR 4	No rechargeable battery in the instrument	Insert rechargeable battery
		Rechargeable battery defective	Replace rechargeable battery
		Electronic components defective	Send instrument for repair
Tip dripping/instrument leaking or volume error	—	Unsuitable tip	Use only high-quality tips
		Tip not seated tightly	Press tip on more firmly/other interchangeable clip
		Piston, shaft, or seal dirty or damaged	Clean instrument/replace seal, grease piston
No indication in the display	—	Electrostatic discharge	Remove rechargeable battery and insert again
		Electronic components defective	Send instrument for repair
Aspiration is not possible	—	Motor has no connection to the pipetting unit.	Carry out reference run (rEF), see Reference run (rEF), p. 85.

12 Product markings

Symbol or number	Meaning
CE	With this mark, we confirm that the product complies with the requirements set out in the EC Directives and has been subjected to the specified testing procedures.
UKCA	UKCA: United Kingdom Conformity Assessed With this mark, we confirm that the product meets the requirements specified in the UK Designated Standards .
DE-M 24	The instrument is marked in accordance with the German Measurement and Calibration Act as well as the Measurement and Calibration Regulation. Character sequence DE-M (DE for Germany), framed by a rectangle, as well as the two last digits of the year the marking was affixed.
www.brand.de/ip	Patent information
XXZXXXXX	Serial number
	Follow the instructions listed on the instrument, the accessory parts and in the operating manual.
	The instrument or rechargeable battery should be disposed of properly.
	China RoHS (EFUP) EFUP defines the time period in years, in which the hazardous materials found in the electrical and electronic equipment should not leak or mutate under normal operating conditions. When used under normal conditions, such electrical or electronic products do not lead to severe environmental pollution, severe personal injuries or damage to the user's property.
	This electrical instrument may not be disposed of in household waste.

13 Order Information

13.1 Ordering Information

Transferpette®-8 electronic up to 300 µl, incl. power adapter (100-240 V/ 50-60 Hz)

Volume	0.5-10 µl	1-20 µl	5-100 µl	10-200 µl	15-300 µl
	Order no.	Order no.	Order no.	Order no.	Order no.
for Europe	705399	705400	705403	705404	705406
for UK/Ireland	705409	705410	705413	705414	705416
for USA/Japan	705419	705420	705423	705424	705426
for Australia	—	—	705433	705434	705436

Transferpette®-8 electronic, 50-1250 µl incl. universal power adapter

Description	Order No.
Transferpette® -8 electronic, 50-1250 µl incl. universal power adapter	705398

Transferpette®-12 electronic up to 300 µl, incl. power adapter (100-240 V/50-60 Hz)

Volume	0.5-10 µl	1-20 µl	5-100 µl	10-200 µl	15-300 µl
	Order no.	Order no.	Order no.	Order no.	Order no.
for Europe	705449	705450	705453	705454	705456
for UK/Ireland	705459	705460	705463	705464	705466
for USA/Japan	705469	705470	705473	705474	705476
for Australia	—	705480	—	705484	—

Transferpette® -12 electronic, 50-1250 µl incl. universal power adapter

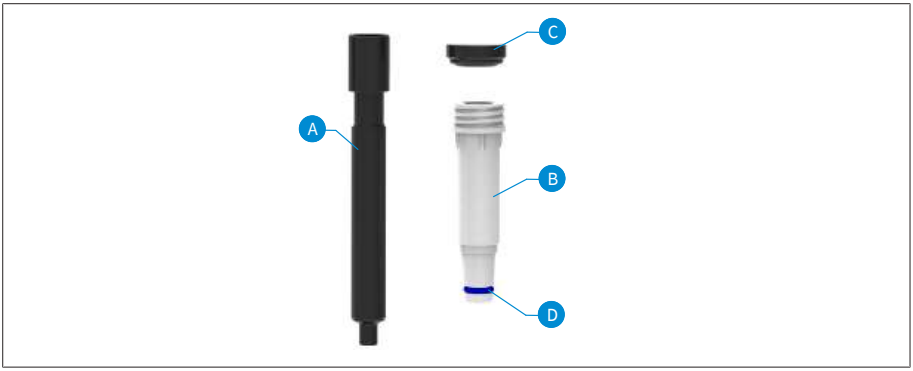
Description	Order No.
Transferpette® -12 electronic, 50-1250 µl incl. universal power adapter	705448

Universal power adapter for Transferpette® -8/-12 electronic

Description	Order No.
Universal power adapter with adapter for EU and UK	705357

13.2 Spares

13.2.1 Transferpette® electronic to 300 µl



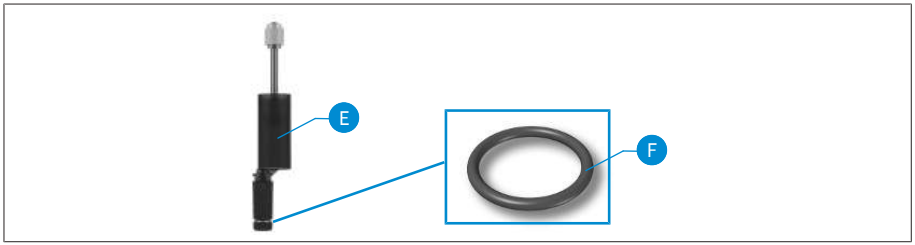
Volumen[1]	Piston A	Shaft[2] B[3]	Seal C	O-ring D
0.5-10 µl	705659	705677	703340	703380
1-20 µl	705671	705678	703341	703380
5-100 µl	705662	705631	703344	705618
10-200 µl	705663	705632	703345	705618
15-300 µl	705664	705633	703346	705618

[1]The appearance and dimensions of the spare parts correspond to the respective nominal volume.

[2]to 03/23 other order numbers, see shop.brand.de

[3]incl. seal, O-ring and imounting wrench

13.2.2 Transferpette® electronic 1250 µl



E Piston–shaft unit

F O-ring

Volume	E	F
50–1250 µl	705665	705619

13.3 Additional accessories

Description	Order no.
Shelf/rack mount	705383
Wall mount	705382
Single stand	705384
Single stand Transferpette® electronic 15 to 300 µl	703440
NiMH battery pack for Transferpette® electronic	705500
Silicone grease for Transferpette® electronic up to 300 µl	703677
Fluorine static grease	703678
Piston grease for Transferpette® electronic 1250 µl	703675
PLT unit	703970

14 Repairs

14.1 Sending for repair

NOTICE

Transporting hazardous materials without approval is prohibited by law.

Clean the instrument thoroughly and decontaminate!

- When returning products, please enclose a general description of the type of malfunction and the media used. If information regarding media used is missing, the instrument cannot be repaired.
- Shipment is at the risk and the cost of the sender.

Outside USA and Canada

Complete the “Declaration on Absence of Health Hazards” and send the instrument to the manufacturer or supplier. Ask your supplier or manufacturer for the form. The form can also be downloaded from www.brand.de.

Outside USA and Canada

Please clarify the requirements for the return delivery with BrandTech Scientific, Inc **before** sending the instrument in for service.

Return only cleaned and decontaminated instruments to the address provided with the Return Authorization Number. Place the Return Authorization number so that it is clearly visible on the outside of the package.

Contact addresses

Germany:
BRAND GMBH + CO KG
Otto-Schott-Straße 25
97877 Wertheim (Germany)
T +49 9342 808 0
F +49 9342 808 98000
info@brand.de
www.brand.de

USA and Canada:
BrandTech® Scientific, Inc.
11 Bokum Road
Essex, CT 06426-1506 (USA)
T +1-860-767 2562
F +1 - 860 - 767 2563
info@brandtech.com
www.brandtech.com

India:
BRAND Scientific Equipment Pvt. Ltd.
303, 3rd Floor, ‘C‘ Wing, Delphi
Hiranandani Business Park,
Powai
Mumbai–400 076 (India)
T +91 22 42957790
F +91 22 42957791

China:
BRAND (Shanghai) Trading Co., Ltd.
Rm 201-202, North Tower,
No. 199 Kaibin Rd, Xuhui District, Shanghai
Shanghai 200030 (P.R. China)
T +86 21 6422 2318
F +86 21 6422 2268
info@brand.com.cn

info@brand.co.in
www.brand.co.in

www.brand.cn.com

15 Calibration service

The ISO 9001 and GLP guidelines require regular inspection of your volume measuring devices. We recommend performing a volume check every 3 to 12 months. The cycle is dependent on the individual requirements of the device. Checks should be performed more frequently, in case of high frequency of use or the use of aggressive media.

The complete SOP for testing can be downloaded from www.brand.de or www.brandtech.com.

BRAND also offers you the option of having your devices calibrated through our factory calibration service or through our accredited calibration laboratory. Just send us the devices to be calibrated, indicating the type of calibration you would like. You will get your devices back in a few days. A detailed calibration report (factory calibration) or an accredited calibration certificate in accordance with DIN EN ISO/IEC 17025 is enclosed with each device. More information can be obtained from your retailer or directly from BRAND. The order document is available for download at www.brand.de (Service & Support).

For customers outside Germany

If you would like to use our calibration service, please contact one of our service partners in your region. Our service partners can forward your devices to BRAND for factory calibration, if required.

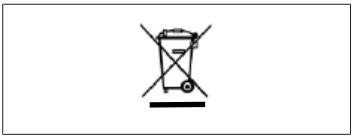
16 Warranty

We shall not be liable for the consequences of improper handling, use, servicing, operating or unauthorized repairs of the instrument or for the consequences of normal wear and tear, especially of wearing parts such as pistons, seals, valves and the breakage of glass. The same applies for failure to follow the instructions of the operating manual. We are not liable for damage resulting from disassembly beyond that described in the operating manual or if non-original spare parts or components have been installed.

USA and Canada:

Find more warranty information on www.brandtech.com.

17 Disposal



This symbol means that at the end of their service life, batteries/accumulators and electronic devices must be disposed of separately from household waste (unsorted municipal waste).

Electronic devices must be disposed of in accordance with Directive 2012/19/ EU of the European Parliament and of the Council from July 04, 2012 on waste from electrical and electronic equipment and in compliance with national disposal regulations.

Both batteries and accumulators (rechargeable batteries) contain materials that can be damaging to the environment and human health. Therefore, they must be properly disposed of in accordance with Directive 2006/66/EC of the European Parliament and of the Council from September 06, 2006 on batteries and accumulators and in compliance with national disposal regulations. Only dispose of fully discharged batteries and accumulators.