Liquid Handling · Easy Handling!

BRAND

# Transferpette®
# electronic

F I R S T C L A S S · B R A N D





TÜV Rheinland Product Safety

ERGONOMIE GEPRÜFT

ERGONOMICS APPROVED

# Table of Contents

# Safety Instructions

This instrument may sometimes be used with hazardous materials, operations, and equipment. It is beyond the scope of this manual to address all of the safety problems associated with its use in such applications. It is the responsibility of the user of this pipette to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

**⚠ Please read the following carefully!**

1. Every user must read and understand this operating manual prior to using the pipette and observe these instructions during use.
2. Follow general instructions for hazard prevention and safety instructions; e.g., wear protective clothing, eye protection and gloves.

   When pipetting infectious or other hazardous samples, all appropriate regulations and precautions must be followed.
3. Only use the instrument for pipetting only liquids that conform to the specifications defined in the operating exclusions and limitations (see page 37).
4. Observe all safety precautions provided by reagent manufacturers.
5. Only pipette liquids that do not react with polypropylene (PP), polycarbonate-polybutylene-terephthalate (PC/PBT), ethylene-propylene-diene rubber (EPDM) and steel (1,4034-S, with 10, 20 µl-instruments).
6. Never use force on the instrument!
7. Operate only with tip attached (see page 42). Do not lay the instrument down horizontally when the tip is attached.
8. Avoid touching the tip orifice when working with hazardous samples.
9. Always work in a way which endangers neither the user nor any other person. When emptying the tip, the sample must never spray or splatter into the surrounding area. Discharge into suitable collecting vessel.
10. Only press the pipetting key after ensuring that discharging the sample will not result in any danger. Only dispense liquids into a suitable collecting vessel.
11. Do not use the instrument in potentially explosive environments or with explosive samples.
12. Only use AC adapter indoors. Protect from moisture.
13. To charge the NiMH battery pack, use only the original AC adapter, or the one supplied with the Transferpette® electronic charging stand.
14. Do not replace the original battery pack with other battery packs, or cells. Use only original manufacturer's replacement battery packs.
15. Confirm battery pack is completely discharged prior to disposal. Observe relevant disposal regulations for your facility.
16. Use only original manufacturer's accessories and spare parts. Do not modify the instrument in any way, other than specifically described by the manufacturer.
17. In case of malfunction, immediately stop pipetting. Consult the "Troubleshooting" section of this manual, and contact the manufacturer if needed.

**Warning!**

Improper use of the instrument or the batteries (short circuit, mechanical damage, overheating, incorrect AC adapter, etc.) can lead to battery explosion.

# Functions and Limitations of Use

The Transferpette® electronic is a microprocessor-controlled, battery-operated piston-stroke pipette which uses the air-displacement principle for the pipetting of aqueous solutions with an average density and viscosity.

When the instrument is used properly, the sample only comes into contact with the tip and not with the Transferpette® electronic.

## Limitations of use

The Transferpette® electronic is intended for the pipetting of liquids within the following limitations:

- Temperature of both the instrument and solution should be between 15 °C to 40 °C (59 °F to 104 °F) for the instrument and the reagent. Consult the manufacturer for use in temperatures outside of this range.
- Vapor pressure up to 500 mbar
- Viscosity: 260 mPa s (260 cps)

## Battery and power supply unit specifications

**Battery**

Nickel-metal hydride battery,
3 cylindrical individual cells with size AAA,
3.6 V, 700 mAh

**Power supply unit**

Output voltage 6.5 V DC, 200 mA

## Operating exclusions

Never use the instrument for pipetting liquids, that react adversely with polypropylene (PP: tip) or polycarbonate/polybutyleneterephthalate (PC/PBT: casing). Avoid reactive vapors due to the danger of corrosion.

Do not use use aggressive cleaning agents (e.g., bleach) to clean the instrument. Distilled water or a mild soap solution is recommended.

The pipetting of highly dense or viscous liquids as well as the pipetting of liquids, which react with polypropylene (PP), polycarbonate/polybutylene-terephthalate (PC/PBT) or ethylene-propylene-diene rubber (EPDM) is only possible within limitations.

# Disposal

- Dispose of batteries only when completely discharged according to applicable regulations!
- Electronic equipment may not be disposed of in domestic waste. (According to the Directive 2002/96/EC of the European Parliament and of the Council on Waste Electrical and Electronic equipment (WEEE) of 27 January 2003. Electronic equipment requires disposal according to the relevant national disposal regulations.)

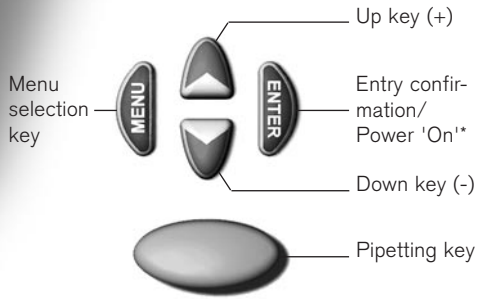
**Warning!** Do not short-circuit batteries, either primary or rechargeable, to discharge them.

# Operating Elements

The Transferpette® electronic is a microprocessor-controlled, battery-operated, piston-stroke pipette, which has been optimized for ergonomic operation and ease of use.


The Transferpette® electronic rests easily and ergonomically in your hand. The finger rest is height adjustable with a screw, which allows fine-tuning of the hand position for effortless operation of the function buttons.

**Key Functions**




*) **The instrument is activated by pressing the ENTER key. After pressing the pipetting key next, the instrument is ready for pipetting.**
The Transferpette® electronic shuts off 10 min after the last instrument operation (Auto-Power-Off).

**Is everything in the package?**

Confirm that your package includes: Transferpette® electronic pipette, battery, AC adapter with battery charging cable, silicone oil, operating manual and one bag with sample pipette tips.

## Initializing the Transferpette® electronic

**1. Insert the battery**

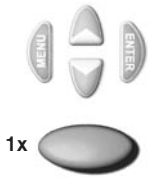
a) Open the cover of the battery compartment.

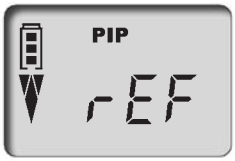

b) Insure that the plug for the battery is firmly connected to the pipette. Insert the battery.


c) Replace the battery compartment.

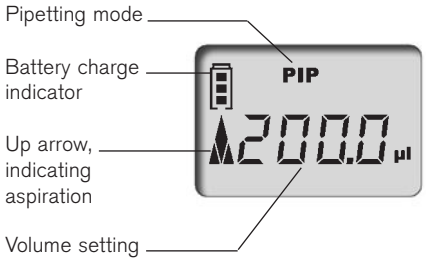

**2. Activate the instrument**

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



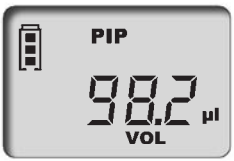
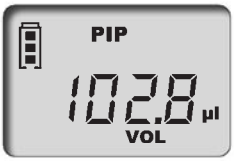




The display shows the standard factory setting (pipetting mode/PIP); and the nominal volume (for example, 200.0 µl). Default aspiration and discharging speeds are at maximum. The adjustment of volume and speed is described on the following pages.



## *Setting the Volume*

The volume for the Transferpette® electronic is set at the factory to the nominal volume of the instrument and can be changed quickly and easily.

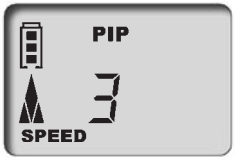
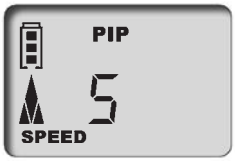
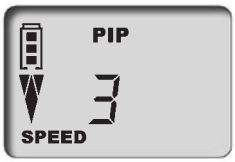
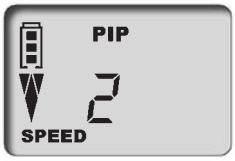
| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Activate volume setting** | Press one of the arrow keys to activate volume selection. **‚VOL‘** blinks. |   |   |
| **2. Change the volume** | | | |
| **Reduce volume** | Press the down arrow key (-) to reduce the volume. Holding the arrow key down accellerates the rate of change. **‚VOL‘** continues to blink. |   |   |
| **Increase volume** | Press the up arrow key (+) to increase the volume. Holding the arrow key down accellerates the rate of change. **‚VOL‘** continues to blink. |   |   |
| **3. Confirm volume setting** | Press the ENTER key. The display now shows the new volume setting, in this case, 102.8 µl in the PIP mode. |   |   |

**Important:**

By pressing the MENU key any procedure can be cancelled! The display then moves to the next setting or back to the initial display (depending on actual selection.)

# Setting the Aspiration and Discharging Speed

The aspiration and discharging speeds can be individually adjusted. When the menu is called up, the last speed setting is shown. Five speed levels are available.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **Setting the aspiration speed** | | | |
| **1. Bring up the menu** | Press the MENU key once to bring up the aspiration speed menu. **‚Speed‘** blinks. |   |   |
| **2. Change the aspiration speed** | Press one of the arrow keys (+/-) to select the desired speed (in this case, level 5). **‚Speed‘** continues to blink. |   |   |
| **3. Confirm speed level** | Press the ENTER key. The display returns to the start position for the current pipetting mode (in this case, the standard PIP mode). |   |   |
| **Setting the discharging speed** | | | |
| **1. Bring up the menu** | Press the MENU key twice to bring up the discharging speed menu. **‚Speed‘** blinks. |   |   |
| **2. Change the discharging speed** | Press one of the arrow keys (+/-) to select the desired speed (in this case, level 2). **‚Speed‘** continues to blink. |   |   |
| **3. Confirm speed level** | Press the ENTER key. The display returns to the start position for the current pipetting mode (in this case, the standard PIP mode). |   |   |

The volume is set at the factory to the nominal volume for the Transferpette® electronic and can be changed quickly and easily. See page 40.

## Quick start in the standard pipetting mode

### 1. Attach the tip

Use the correct tip according to the volume range or the color code. Ensure that the tip is securely seated. When using the flexible pipette shaft, attach an alternative ejector adjustment clip if necessary.
Pipette tips are disposables items!

### 2. Aspirate liquid

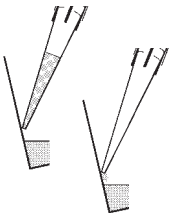
Hold the pipette vertically and immerse the tip 2 to 3 mm into the liquid.

Press the pipetting key to aspirate the liquid into the tip. The arrow in the display points upwards to indicate the aspiration of liquid.

1x


**Note:** To avoid the intake of air, leave the tip immersed into the liquid for approx. 1 sec.

### 3. Discharge liquid



After the liquid has been aspirated, the arrow in the display points downwards to indicate discharging.

Hold the pipette at an angle between 30° and 45°, place the tip against the vessel wall.

Press the pipetting key again and the liquid is completely discharged including automatic blowout. Wipe pipette tip against the vessel wall.

1x


### 4. Eject tip

Hold the pipette shaft over a suitable disposal container and the press the tip ejection key.


**Note:**

ISO 8655 prescribes rinsing the pipette tip once with the sample liquid prior to the actual pipetting process.

# The Pipetting Programs

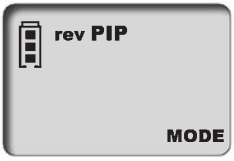
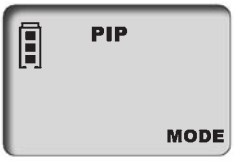
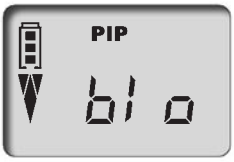
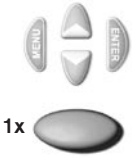
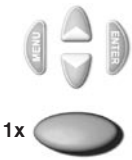
Page

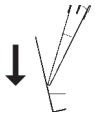
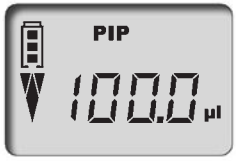


GEL mode is not available for Transferpette® electronic 1000 µl and 5000 µl.

# *PIP Mode*

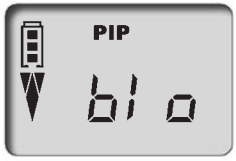
The standard program – a previously set volume is aspirated and then discharged.
Volume and speed adjustments are described on pages 40 and 41.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the menu** | Press the MENU key three times to bring up the mode selection menu. **‚Mode‘** blinks. |   |   |
| **2. Select PIP mode** | Use one of the arrow keys to scroll through the modes until **‚PIP‘** appears. **‚Mode‘** continues to blink. |   |   |
| **3. Confirm PIP mode** | Press the ENTER key. The display now shows **‚blo‘** for blow-out. |   |   |
| **4. Prepare for pipetting** | Press the pipetting key once to move the piston into the start position. The arrow in the display points upwards (aspiration). |   |   |
| **5. Aspirate liquid**  | Press the pipetting key once to aspirate the liquid. |   |   |

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **6.** **Discharge liquid**  | Press the pipetting key once to discharge the liquid. The arrow in the display points downwards (discharge). |   |   |
| **7.** **Start blow-out?** | **No action required!** When pipetting in the PIP mode the **blow-out function is performed automatically.** |   |   |

## *Start blow-out manually*

The blow-out function can, if necessary, be initiated manually at any time.

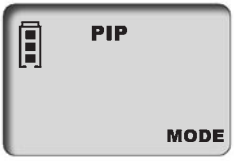
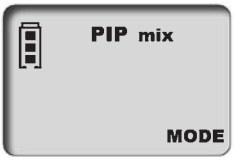
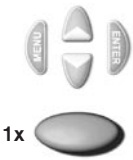
| | | | |
|---|---|---|---|
| **1.** **Bring up the blow-out function** | Press the ENTER key. The display shows **‚blo'** for blow-out. |   |   |
| **2.** **Start blow-out** | Press the pipetting key once to initiate the blow-out process. The display moves back to the start position of the selected pipetting mode. |   |   |

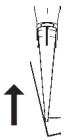
**Note:**

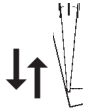
To accomplish the blow-out, the piston moves to its lowest position.
The user must be certain that any residual liquid is discharged safely.
**If the pipetting key is pressed and held, the piston will be maintained at its lowest position to avert an accidental aspiration of liquid.**
**When the key is released, the piston returns to the start position.**

# *PIPmix Mode*

Program for mixing of liquids. The sample is repeatedly aspirated and discharged.
Volume and speed adjustments are described on pages 40 and 41.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the menu** | Press the MENU key three times to bring up the mode selection menu. **‚Mode‘** blinks. |   |   |
| **2. Select PIPmix mode** | Scroll through the modes using the arrow keys until **‚PIPmix‘** appears. **‚Mode‘** continues to blink. |   |   |
| **3. Confirm PIPmix mode** | Press the ENTER key. The Display now shows **‚blo‘** for blow-out. |   |   |
| **4. Prepare for pipetting** | Press the pipetting key once to move the piston into the start position. The arrow in the display points upwards (aspiration). |   |   |
| **5. Aspirate liquid** | Press the pipetting key once to aspirate the liquid. |   |   |

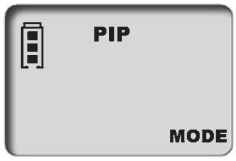
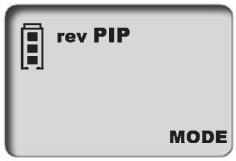
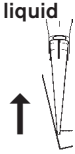
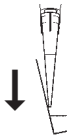


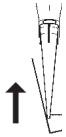
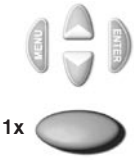
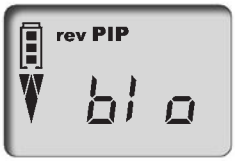
| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **6. Discharge liquid in the PIPmix mode**  | Press and hold the pipetting key and the liquid is alternately aspirated and discharged. The display shows the up arrow for aspiration and the down arrow for discharging and the number of cycles. |   press and hold |   |
| **7. End pipetting** | Press the pipetting key once and the liquid is discharged and the blow-out function initiated.<br><br>After the discharge of the residual liquid (blow-out), the display moves back to the start position. |   |   |

**Note:** The display shows a maximum of 19 cycles.

# *revPIP Mode*

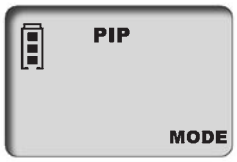
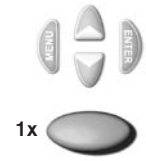
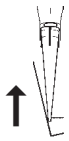
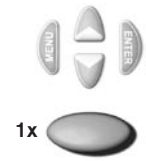
Program for pipetting of liquids with high viscosity, vapor pressure or that tend to foam.
Volume and speed adjustments are described on pages 40 and 41.

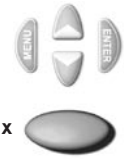
| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the menu** | Press the MENU key three times to bring up the mode selection menu.<br>**‚Mode‘** blinks. |  |  |
| **2. Select revPIP mode** | Scroll through the modes using the arrow keys until **‚revPIP‘** appears.<br>**‚Mode‘** continues to blink. |  |  |
| **3. Confirm revPIP mode** | Press the ENTER key.<br>The Display now shows **‚blo‘** for blow-out. |  |  |
| **4. Prepare for pipetting** | Press the pipetting key once to move the piston into the start position.<br>The arrow in the display points upwards (aspiration). |  |  |
| **5. Aspirate liquid**  | Press the pipetting key once. The volume aspirated will be a little bit more than set. |  |  |
| **6. Discharge liquid in the revPIP mode**  | To discharge the measured amount of liquid, press the pipetting key once. The arrow in the display points downwards (discharge).<br>Some liquid will remain in the tip. |  |  |

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **7. Repeat aspiration of liquid in revPIP mode**  | Press the pipetting key again and the set volume is aspirated into the tip. Press the pipetting key again and the volume is discharged again, and so on… |   |   |
| **8. Initiate blow-out** | Press the ENTER key after the last pipetting operation. The display shows **‚blo'** for blow-out. |   |   |
| | Press the pipetting key once to initiate the blow-out process. The residual liquid is discharged. |   |   |
| **9. End pipetting** | After the residual liquid is discharged (blow-out), the display moves back to the start position. | |   |

# *Electrophoresis (GEL) Mode*

Program for loading electrophoresis gels. A predefined sample volume is aspirated into the pipette tip with high adjustable speed and then slowly discharged. Volume and speed adjustment is described on pages 40 and 41.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the menu** | Press the MENU key three times to bring up the mode selection menu.<br>**‚Mode‘** blinks. |  |  |
| **2. Select GEL mode** | Scroll through the modes using the arrow keys until **‚GEL‘** appears.<br>**‚Mode‘** continues to blink. |  |  |
| **3. Confirm GEL mode** | Press the ENTER key.<br>The Display now shows **‚blo‘** for blow-out. |  |  |
| **4. Prepare for pipetting** | Press the pipetting key once to move the piston into the start position.<br>The arrow in the display points upwards (aspiration). |  |  |
| **5. Aspirate liquid**<br>  | Press the pipetting key once. The set volume is aspirated into the tip.<br><br>**Aspirate a larger volume**<br>In order to aspirate a larger volume than was set (up to a max. of 110% of the nominal volume), press and hold the pipetting key until the desired volume has been aspirated. The display shows a rhombus. |  <br>  <br>press and hold |  <br>  |

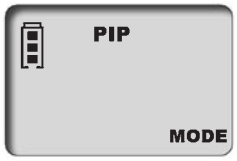
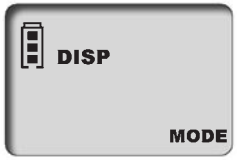
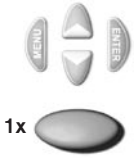
| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **6. Discharge liquid in the GEL mode**  | Press the pipetting key once to discharge the liquid. The rhombus is shown in the display. The liquid is discharged very slowly. |   |   |
| | **Interrupt discharging** To interrupt discharging, press the pipetting key again. The display shows the volume discharged prior to interruption. |   |   |
| **7. Initiate blow-out** | Press the ENTER key after the last pipetting operation. The display shows **‚blo‘** for blow-out. |   |   |
| | Press the pipetting key once to initiate the blow-out process. The residual liquid is discharged. |   |   |
| **8. End pipetting** | After the residual liquid is discharged (blow-out), the display moves back to the start position. | |   |

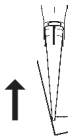
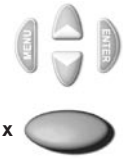
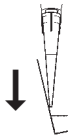
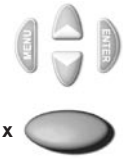
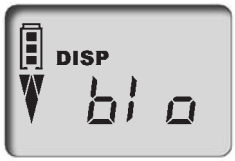
**Note:**

The GEL mode operates using a very slow discharge speed to prevent swirling of the samples. To assure optimal discharging into a gel, this discharge speed is fixed for the GEL mode. This speed is significantly slower than level 1 and cannot be selected individually.

# *DISP Mode*

Program for discharging an aspirated liquid in pre-defined steps.
The volume aspirated will be a little bit more than actually needed.
Speed adjustment is described on page 41.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the menu** | Press the MENU key three times to bring ap the mode selection menu.<br>**‚Mode‘** blinks. |  |  |
| **2. Select DISP mode** | Scroll through the modes using the arrow keys until **‚DISP‘** appears.<br>**‚Mode‘** continues to blink. |  |  |
| **3. Confirm DISP mode** | Press the ENTER key.<br>The Display now shows **‚blo‘** for blow-out. |  |  |
| **4. Prepare for dispensing** | Press the pipetting key once to move the piston into the start position.<br>The arrow in the display points upwards (aspiration). |  |  |
| **5. Set dispensing step volume** | Press the arrow keys (+/-) to set the volume. Holding the arrow key down accellerates the rate of change.<br>**‚VOL‘** blinks. |  |  |
| **6. Confirm dispensing step volume** | Press the ENTER key.<br>The display now shows the new volume setting for the dispensing steps and the max. number of steps.<br>**‚Steps‘** blinks. |  |  |

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **7.** **Set the number of steps** | Press the arrow keys (+/-) to set the number of steps. **‚Steps‘** continues to blink. |   |   |
| **8.** **Confirm the number of steps** | Press the ENTER key. The display now shows the number of steps that has been set. |   |   |
| **9.** **Aspirate liquid**  | Press the pipetting key once to aspirate the liquid. |   |   |
| **10.** **Dispense liquid**  | Each time the pipetting key is pressed one dispensing step is performed. The arrow in the display points downwards (discharge). The display shows the number of dispensing steps left. |   |   |
| **11.** **Initiate blow-out** | Press the ENTER key after the last dispensing step. The display shows **‚blo‘** for blow-out. Press the pipetting key next once to initiate the blow-out process (see also p. 51). |   |   |
| **12.** **End dispensing** | After the residual liquid is discharged (blow-out), the display moves back to the start position. | |   |

# Checking the Volume

Depending on use, we recommend inspection of the instrument every 3 to 12 months. The cycle can, however, be adjusted to individual requirements.

The gravimetric testing of the pipette volume is performed according to the following steps and is in accordance with DIN EN ISO 8655, Part 6.

**1. Set nominal volume**

Set volume to the maximum volume indicated on the instrument.
See page 40 for procedure.

**2. Condition the pipette**

Condition the pipette before testing by using a pipette tip to aspirate and discharge the test liquid (distilled $H_2O$) five times. After this, discard the pipette tip.

**3. Carry out the test**

a) Attach new pipette tip and pre-rinse one time with test liquid.

b) Aspirate liquid and pipette it into the weighing vessel.

c) Weigh the pipetted quantity with an analytical balance. Please follow the operating manual instructions from the balance manufacturer.

d) Calculate the volume, taking the temperature into account.

e) At least 10 pipettings and weighings in three volume ranges (100%, 50%, 10%) are recommended for statistical analysis.

**Calculation** (for nominal volume)

$x_i$ = Weighing results
n = Number of weighings

Z = Correction factor
(for example 1.0029 µl/mg at 20 °C, 1013 hPa)

Mean value $\overline{x} = \frac{\Sigma\ x_i}{n}$

Mean volume $\overline{V} = \overline{x} \cdot Z$

**Accuracy***

$$\mathbf{A\%} = \frac{\overline{V} - V_0}{V_0} \cdot 100$$

$V_0$ = Nominal volume

**Standard Deviation**

$$\mathbf{s} = Z \cdot \sqrt{\frac{\Sigma\ (x_i - \overline{x})^2}{n - 1}}$$

**Coefficient of Variation***

$$\mathbf{CV\%} = \frac{100\ s}{\overline{V}}$$

*) = Calculation of accuracy (A %) and variation coefficient (CV %):
A % and CV % are calculated according to the formulas for statistical control.

# Accuracy Table

Final test values related to the nominal capacity (maximum volume) indicated on the instrument, obtained when instrument and distilled water are equilibrated at ambient temperature (20 °C/68 °F) and with smooth operation. According to DIN EN ISO 8655.


**Accuracy tolerances for the Transferpette® electronic**

| Volume range µl | Volume step µl | A* ≤ ± % | CV** ≤ % | Increment µl | Type of tip µl |
|---|---|---|---|---|---|
| 500 - 5000 | 5000 | 0.6 | 0.2 | 5.0 | 5000 |
| | 2500 | 1.0 | 0.3 | | |
| | 500 | 3.0 | 0.6 | | |
| 100 - 1000 | 1000 | 0.6 | 0.2 | 1.0 | 1000 |
| | 500 | 1.0 | 0.3 | | |
| | 100 | 3.0 | 0.6 | | |
| 20 - 200 | 200 | 0.8 | 0.2 | 0.2 | 200 |
| | 100 | 1.2 | 0.3 | | |
| | 20 | 4.0 | 0.6 | | |
| 2 - 20 | 20 | 1.0 | 0.4 | 0.02 | 20 |
| | 10 | 1.5 | 0.8 | | |
| | 2 | 5.0 | 2.5 | | |
| 0.5 - 10 | 10 | 1.0 | 0.4 | 0.01 | 20 |
| | 5 | 1.5 | 0.8 | | |
| | 1 | 5.0 | 2.0 | | |

A* = Accuracy, CV** = Coefficient of Variation

**Note:**

Testing instructions (SOPs) and a demo version of the EASYCAL™ 4.0 calibration software are available for download at www.brand.de.

**The calibration mode ‚CAL‘**

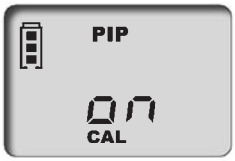
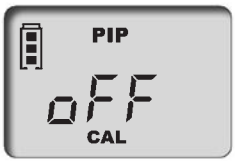
**Adjustment**

The instrument should be set to either the nominal volume (for example 200 µl for a 200 µl pipette) or a specific test volume, in the standard pipetting mode (PIP). See page 40 and 44 for procedures.
E.g., volume according to testing of volume 201.3 µl.


| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the CAL mode** | Press and hold the MENU key (> 3 sec) until CAL appears. The display reads ‚off‘. **‚CAL‘** blinks. | 1x >3s | PIP oFF CAL |
| **2. Activate the CAL mode** | Press one of the arrow buttons to activate the CAL mode. The display changes from ‚off‘ to ‚on‘. **‚CAL‘** continues to blink. | | PIP on CAL |
| **3. Confirm CAL mode** | Press the ENTER key. The display now shows the set pipetting volume. **‚CAL‘** blinks. | 1x | PIP 200.0 µl CAL |
| **4. Set the volume** | Use the arrow keys (+/-) to set the volume, which was previously determined and tested. **‚CAL‘** blinks. | | PIP 201.3 µl CAL |
| **5. Confirm volume** | Press the ENTER key. The display shows the tested and corrected volume. The CAL symbol is continously displayed to confirm that an adjustment has been made. | 1x | PIP 200.0 µl CAL |

## Revert to factory default settings

The continually displayed CAL symbol refers to a previously made adjustment.


| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| **1. Bring up the CAL mode** | Press and hold the MENU key (> 3 sec) until CAL appears. The display reads ‚on'. **‚CAL'** blinks. |   |   |
| **2. Deactivate CAL mode** | Press one of the arrow keys to deactivate the CAL mode. The display changes from ‚on' to ‚off'. **‚CAL'** continues to blink. |   |   |
| **3. Revert to factory setting** | Press the ENTER key. The CAL symbol disappears. The instrument has now been reverted to factory default setting. |   |   |

**Important:** When the Transferpette® electronic is adjusted, a volume offset is performed, which means that the volume is changed across the entire volume range of the pipette by the same amount. It is recommend that the adjustment be performed at 50% of the nominal volume.

**Note:** The instrument is permanently adjusted for watery solutions, but it can also be set for solutions with varying density, viscosity and temperature. The Transferpette® electronic can be adjusted in every mode, with the exception of the GEL mode.

## *Autoclaving*

The pipette shaft of the Transferpette® electronic (highlighted in picture) can be autoclaved at 121 °C (250 °F) at a pressure of 2 bar (30 psi) for 20 minutes according to DIN.

**Attention:** The handgrip can not be autoclaved!

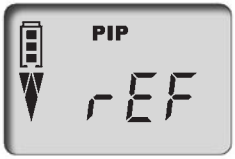
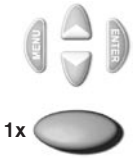
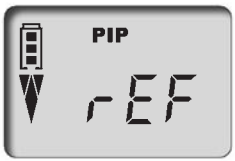
1. Eject the pipette tip.
2. Unscrew the pipette shaft from the grip.
3. Autoclave the complete pipette shaft without any further disassembling.
4. Allow the pipette shaft to completely cool and dry.
5. Screw the pipette shaft into the grip again.
6. Perform a reference run (rEF).

**Note:** The effectiveness of the autoclaving must be verified by the user. Maximum reliability is obtained with vacuum sterilization. We recommend the use of sterilization bags.

If the pipette shaft is autoclaved frequently, then the piston should be oiled with the supplied silicone oil in order to provide smoother movement.


## *Reference run (rEF)*

A manual refernce run must be completed each time the pipette shaft is reattached to the handle. The reference run is needed to assure secure connection of the piston.

| What to do | How to do it | Keys to press | Display readout |
|---|---|---|---|
| 1. **Bring up rEF mode** | Simoultaneously press the MENU and the ENTER key to activate the rEF mode. |   |   |
| 2. **Perform the reference run** | Press the pipetting key once to start the reference run. A noise can be heard, clearly indicating the function is being performed. |   |   |

**Note:** After the reference run, the display automatically returns to the previous program.

In order to assure proper funtioning, the Transferpette® electronic should be serviced and cleaned at regular intervals.

## Servicing

Inspect the pipette tip cone for damage.

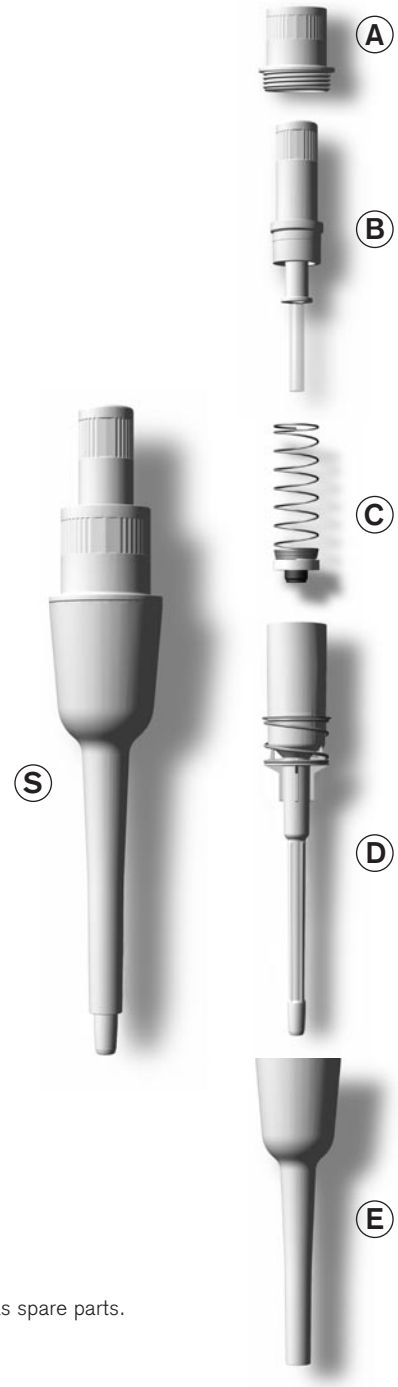
Inspect the piston and seal for contamination and damage.

Test the sealing of the instrument. To do this aspirate a sample, and then hold the instrument in a vertical position for about 10 sec. If a drop forms at the tip orifice, see the troubleshooting guide on page 63.

## Disassembly and cleaning

1. Unscrew the pipette shaft (S) from the hand grip.
2. Separate the magnetic connection between both components by gently but firmly pulling in opposite directions.
3. Unscrew the upper part of the ejector (A) from the pipette shaft.
4. Pull the shaft (D and B) out of the lower part (E) of the ejector.
5. Unscrew the retention sleeve (B).

   **Note:** The piston and piston guide remain connected with the retention sleeve (B)!
6. Remove the spring and seal (C).
7. Clean the parts shown with a mild soap solution or isopropanol and then rinse with distilled water.
8. Allow the parts to dry (max. 120 °C/248 °F).
9. Oil piston with a very thin layer of oil.
10. Assemble the cooled parts in reverse order from above. The retention sleeve and the upper part of the ejector (A, B) should only be hand-tight.
11. Perform reference run (rEF).




**Note:** All individual components shown, can be ordered as spare parts. For ordering information see page 65.

# Servicing and Cleaning

In order to assure proper funtioning, the Transferpette® electronic should be serviced and cleaned at regular intervals.

## Servicing

Inspect the pipette tip cone for damage.

Inspect the piston and seal for contamination and damage.

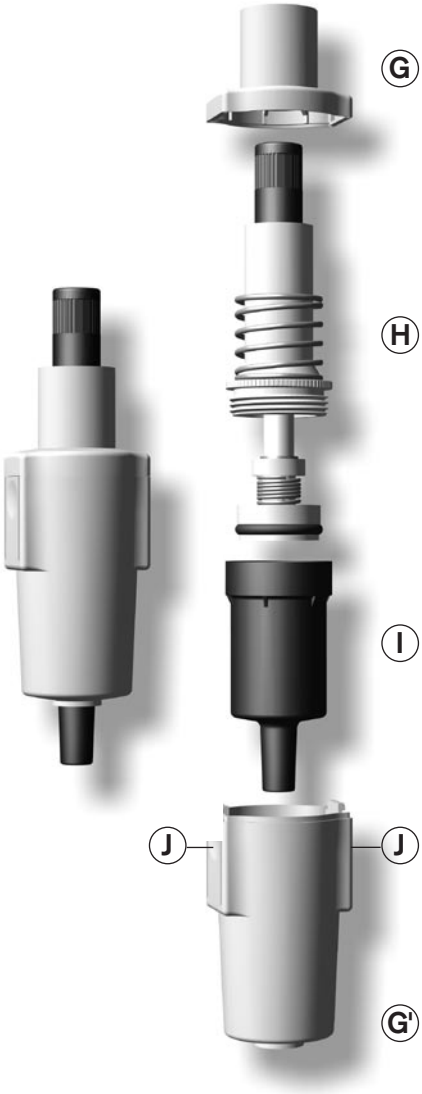
Test the sealing of the instrument. To do this aspirate a sample, and then hold the instrument in a vertical position for about 10 sec. If a drop forms at the tip orifice, see the troubleshooting guide on page 63.

## Disassembly and cleaning

1. Press both snap-in locks (J) simultaneously and remove lower part of ejector (G').
2. Unscrew and remove the pipette shaft (H + I) from the hand grip.
3. Separate the magnetic connection between both components by gently but firmly pulling in opposite directions and remove upper part of ejector (G).
4. Unscrew piston unit (H) from lower part of the pipette shaft (I).
5. Remove the O-ring from the piston unit and clean it.

   **Note:** Do not disassemble piston unit (H) any further!

6. Clean piston unit (H) and lower part of pipette shaft (I) with a mild soap solution or isopropanol and then rinse with distilled water.
7. Allow the parts to dry (max. 120 °C/248 °F) and to cool down.
8. Carefully lubricate O-ring inside and outside and put it back in place.
9. Assemble the cooled parts in reverse order from above.
10. Perform reference run (rEF).




**Note:** Individual components shown can be ordered as spare parts. For ordering information see page 65.

## Charging and Replacing the Battery

A fully charged battery allows approx. eight hours (equals more than 4000 pipetting cycles) of continuous pipetting of liquids with a viscosity and density similar to water.

**Important!**

Before charging the battery ensure that the AC adapter is compatible with the line voltage in the laboratory. Do not charge the device in an explosive environment. The battery can only be charged inside the Transferpette® electronic.

**Charge the battery**

a) Insert the charging cable plug for the AC adapter into the jack at the top of the Transferpette® electronic; charging starts automatically

b) During the charging, the bars for the battery capacity run continually from the bottom to the top. The battery is fully charged, when the bars in the display have stopped moving.


**Pipetting during charging?**

During charging, you can continue to work with the Transferpette® electronic.
If the battery is fully discharged, it will take a few minutes until a certain minimum charge capacity is available, which is needed to operate the instrument safely.

**Note:** The last settings are stored in the memory of the instrument. If the battery is fully discharged or the battery is changed, these settings are saved.

**Replace the battery**

a) Open the battery compartment cover. Remove the battery and pull the plug gently out of the socket.


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


c) Put the battery compartment cover in place again and close it.


Remove the battery from the instrument, when it is not to be used for longer periods.

**Battery display after inserting a battery**

a) After the battery is inserted, the display shows the **full capacity indicator with a blinking frame**, the instrument does not recognize the charging status right now.
After 3.5 hours of charging time – safe full charging of the battery – the frame stops blinking.


**Note:** After inserting a battery always charge 3.5 hours!
The full charge capacity is available after several charge/discharge cycles.

## Battery regeneration function

**(Refresh function)**

In order to extend the service life and to optimize performance of the battery, the Transferpette® electronic has a regeneration function (refresh function). This program provides a controlled full discharge and recharging of the battery. To optimize the battery performance, this refresh function should be used periodically.

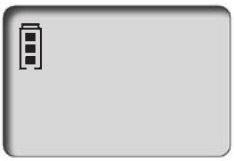
**Perform the refresh function**

a) Insert the plug for the AC adapter into the jack on the top of the Transferpette® electronic.

b) Press and hold the lower arrow key (>3 sec). During the discharging process, the capacity bars for the battery indicator run continually from the top to the bottom.



c) After the controlled discharge (up to 3 hours), the charging process (3.5 hours) is started automatically. During charging, the capacity bars run continually from the bottom to the top.



**Interrupting the refresh function**

Press any button to end the program. The instrument switches automatically to the standard pipette mode (PIP) and to the nominal volume and the normal charging process is started automatically, see page 61. Removing the plug for the AC adapter also ends the program. Do not interrupt refresh function at the end of the discharge cycle.

# Troubleshooting

If an error occurs, the instrument display shows "Err" and the error number is also shown. The instrument will now only react to the ENTER key. Pressing the ENTER key will attempt to restart the instrument. Therefore, a reference run is automatically requested.

| Problem | Error message | Possible cause | Corrective action |
|---|---|---|---|
| Instrument does not react |  | Battery discharged or faulty | Charge battery for at least 5 min without operating, then only operate with charging cable attached until battery is recharged. Replace battery if needed. |
| | | Faulty electronic component | Send in the instrument for repair. |
| Instrument does not react |  | Faulty electronic component | Send in the instrument for repair. |
| Instrument does not react |  | Unpredicted program error | Confirm error by pressing the ENTER key. The instrument is reinitialized. |
| Instrument does not react |  | No battery inserted | Insert battery |
| | | Battery is defective | Replace battery |
| | | Faulty electronic component | Send in the instrument for repair. |
| Tip drips/ instrument not sealed or volume error | — | Improper tip | Only use quality tips |
| | | Tip is not properly seated | Press tip in firmly/use other ejector-adjustment clips. |
| | | Piston, nose cone or seal is contaminated or damaged | Clean the instrument/ replace the seal. Oil piston. |
| Display is dark |  | Electrostatic discharge | Remove and insert the battery. |
| | | Faulty electronic component | Send in the instrument for repair. |

**Transferpette® electronic with AC adapter** (100V/ 50-60 Hz)

| Volume | 0.5-10 µl | 2-20 µl | 20-200 µl | 100-1000 µl | 500-5000 µl |
|---|---|---|---|---|---|
| Cat. No. | 27053 02 | 27053 05 | 27053 25 | 27053 30 | 27053 35 |

**Transferpette® electronic without AC adapter**

| Volume | 0.5-10 µl | 2-20 µl | 20-200 µl | 100-1000 µl | 500-5000 µl |
|---|---|---|---|---|---|
| Cat. No. | 27053 52 | 27053 55 | 27053 75 | 27053 80 | 27053 85 |

**AC adapter** (100V/ 50-60 Hz)

| Cat. No. | 7053 52 |
|---|---|

**3-instrument stand with AC adapter** (100V/ 50-60 Hz) **for 3 Transferpette® electronic up to 1000 µl**

| Cat. No. | 7053 92 |
|---|---|

**Replacement battery**
for Transferpette® electronic

| Cat. No. | 7055 00 |
|---|---|

**Silicon oil**
for Transferpette® electronic up to 1000 µl

| Cat. No. | 7055 02 |
|---|---|

**Silicon grease**
for Transferpette® electronic 0.5 - 5 ml

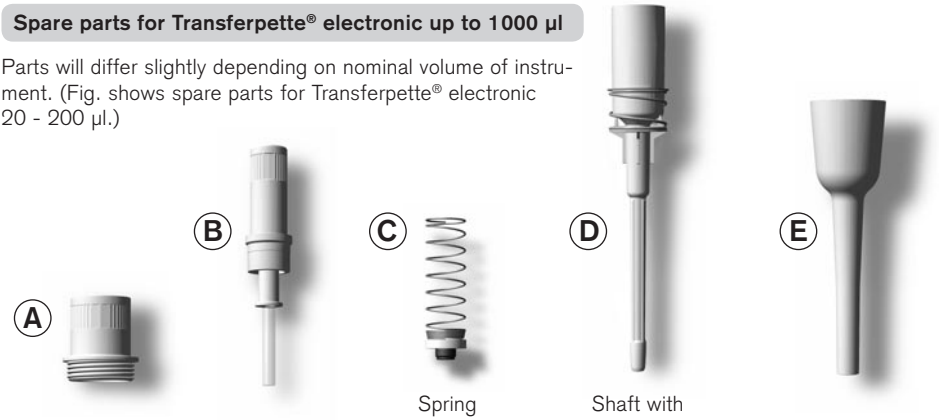
| Cat. No. | 7032 07 |
|---|---|

**Quality pipette tips PLASTIBRAND®, non-sterile, PP**

| Volume | Pack of | Cat. No. |
|---|---|---|
| **bulk packed** | | |
| 0.1 - 20 µl | 2000 | 7025 04 |
| 0.5 - 20 µl | 1000 | 7025 26 |
| 2 - 200 µl | 1000 | 7025 16 |
| 50 - 1000 µl | 1000 | 7025 21 |
| 5 ml | 200 | 7025 95 |
| 5 ml | 1000 | 7026 00 |
| **5 ml Tip-Box** | 1 box of 28 | 7026 05 |

## Spare parts for Transferpette® electronic up to 1000 µl

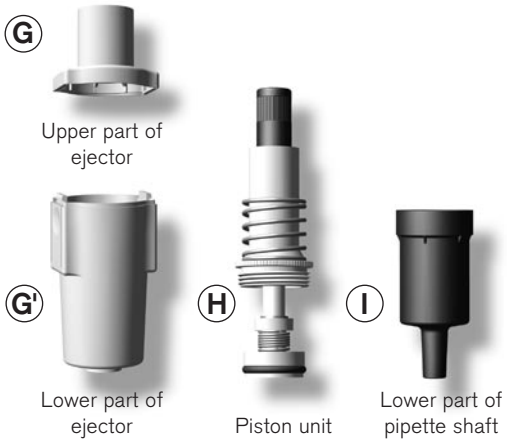
Parts will differ slightly depending on nominal volume of instrument. (Fig. shows spare parts for Transferpette® electronic 20 - 200 µl.)




A Upper part of ejector
B Piston unit
C Spring with seal
D Shaft with ejector spring
E Lower part of ejector

| Volume | A | B | C | D | E |
|---|---|---|---|---|---|
| 0.5 - 10 µl | 7055 10 | 7055 18 | – | 7055 38 | 7055 48 |
| 2 - 20 µl | 7055 10 | 7055 20 | 7055 30 | 7055 39 | 7055 50 |
| 20 - 200 µl | 7055 10 | 7055 22 | 7055 32 | 7055 37 | 7055 53 |
| 100 - 1000 µl | 7055 10 | 7055 24 | 7055 34 | 7055 41 | 7055 55 |

## Spare parts for Transferpette® electronic 500-5000 µl

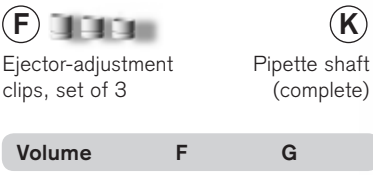



G Upper part of ejector
G' Lower part of ejector
H Piston unit
I Lower part of pipette shaft

| Volume | G + G' | H | I |
|---|---|---|---|
| 500 - 5000 µl | 7299 | 7055 26 | 7032 47 |

## Accessories for Transferpette® electronic 20-200 µl and 100-1000 µl

Mountable ejector adjustment clips (spacers) (F) and pipette shafts (K) with flexible tip cone enable optimized fitting accuracy and minimized ejection forces with most commonly available pipette tips.




F Ejector-adjustment clips, set of 3

K Pipette shaft (complete)

| Volume | F | G |
|---|---|---|
| 20 - 200 µl | 7055 60 | 7055 43 |
| 100 - 1000 µl | 7055 62 | 7055 45 |

## Repairs

If a problem cannot be fixed by following the troubleshooting guide, or by replacing one of the parts listed on page 65, then the instrument must be sent in for repair.

**Please note: for the safety of courriers and our employees, and to avoid violation of federal and local laws, only clean instruments free of any chemical, biological or radioactive hazards can be inspected and repaired!**

### Sending in for repair

**Imortant!** Transporting of hazardous materials without a permit is a violation of federal law.

BrandTech Scientific, Inc. will not accept instruments that are not appropriately ceaned and decontaminated.

Therefore contact BrandTech Scientific, Inc. and obtain return authorization **before** sending you instrument for service.

Return the instrument, with the Return Authorization Number prominently displayed on the outside of the package to the address provided with the Return Authorization Number. Include an exact description of the type of malfunction and the pipetted media.

## Warranty

We shall not be liable for the consequences of improper handling, use, servicing or unauthorized repairs of the instrument or the consequences of normal wear and tear especially of wearing parts such as pistons, seals, valves and the breakage of glass as well as the failure to follow the instructions of the operating manual. We are not liable for damage resulting from any actions not described in the operating manual or if non-original parts have been used. For length of warranty period please see our warranty card enclosed with the product.