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# Multipette® E3/E3x
# Repeater® E3/E3x

**Operating manual**

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4987 900.011-02/042016

## Table of contents

**1 Operating instructions. . . . . 7**
1.1 Using this manual . . . . . 7
1.2 Danger symbols and danger levels . . . . . 7
1.2.1 Danger symbols . . . . . 7
1.2.2 Danger levels . . . . . 7
1.3 Symbols used . . . . . 7
1.4 Glossary . . . . . 8

**2 Safety . . . . . 10**
2.1 Intended use . . . . . 10
2.2 Warnings for intended use . . . . . 10
2.3 Information on product liability . . . . . 11

**3 Product description . . . . . 11**
3.1 Delivery package . . . . . 11
3.2 Features . . . . . 11
3.3 Product overview . . . . . 12
3.4 Layout of the display . . . . . 14
3.5 Operating controls . . . . . 14
3.6 Overview of the operating modes . . . . . 15
3.7 Mains/power supply device and power plug adapter . . . . . 16
3.8 Rechargeable battery charging status . . . . . 16
3.9 Materials . . . . . 17
3.10 Warranty . . . . . 17
3.11 OverviewCombitips advanced . . . . . 18
3.11.1 Volume ranges for Combitips advanced . . . . . 18

**4 Installation . . . . . 19**
4.1 Preparing the dispenser for initial use . . . . . 19
4.2 Mains/power supply device assembly . . . . . 19
4.2.1 Inserting the power plug adapter . . . . . 19
4.2.2 Replace the power plug adapter . . . . . 19
4.3 Connect the rechargeable battery . . . . . 20

**5 Operation . . . . . 20**
5.1 Charging the rechargeable battery . . . . . 20
5.1.1 Charging the rechargeable battery with the mains/power supply device . . . . . 20
5.1.2 Charging the rechargeable battery in the charger stand or in the charger carousel . . . . . 21
5.2 Switching the dispenser on or off . . . . . 21
5.3 Sets the operating mode . . . . . 22
5.4 Dispenser tip . . . . . 22
5.4.1 Inserting the dispensing tip . . . . . 22
5.4.2 Ejecting the dispensing tip . . . . . 23
5.5 Overview of parameters . . . . . 23
5.5.1 Change Parameter . . . . . 24
5.6 Aspirating liquid . . . . . 24
5.7 Carrying out a reverse stroke . . . . . 25
5.8 Pip operating mode – Pipetting of liquid . . . . . 25
5.9 Dis operating mode – Dispensing of liquid . . . . . 26
5.10 Ads operating mode – Automatic dispensing of liquid . . . . . 27
5.11 Seq operating mode – Sequential dispensing of liquid . . . . . 28
5.12 Asp operating mode – Multiple liquid aspiration . . . . . 29
5.13 A/D operating mode – Aspiration and dispensing of liquid . . . . . 30
5.14 Ttr operating mode – Titration of liquid . . . . . 31
5.14.1 Displaying the data of the last titration . . . . . 32
5.15 Renewed aspiration . . . . . 32
5.16 Emptying the dispensing tip . . . . . 33
5.17 Opt operating mode – Adjustment of device settings . . . . . 33
5.17.1 Selecting a menu item . . . . . 34
5.17.2 Changing an option . . . . . 34
5.17.3 Activating/deactivating the Key lock option . . . . . 35
5.17.4 Activating/deactivating the Favorites option . . . . . 35
5.17.5 Activating/deactivating the Sound level option . . . . . 35
5.17.6 Adjusting the Brightness option . . . . . 36
5.17.7 Adjusting the Language option . . . . . 36
5.17.8 Saving the Personalization option . . . . . 37
5.17.9 Accessing the Service option . . . . . 37
5.17.10 Performing the Self test service function . . . . . 37
5.17.11 Setting the Reminder service function . . . . . 37
5.17.12 Adjusting the Date and time option . . . . . 38
5.17.13 Activating/deactivating the Screen saver option . . . . . 38
5.18 Option of creating Favorites . . . . . 39
5.18.1 Accessing Favorites . . . . . 39
5.18.2 Editing Favorites . . . . . 39

**6 Troubleshooting . . . . . 40**
6.1 General errors . . . . . 40
6.1.1 Dispensing tip – Combitip advanced . . . . . 40
6.1.2 Display . . . . . 40

**7 Maintenance . . . . . 40**
7.1 Cleaning . . . . . 40
7.1.1 Cleaning and disinfecting the housing . . . . . 40
7.2 Decontamination before shipment . . . . . 41

**8 Technical data . . . . . 42**
8.1 Adjustable sub-steps . . . . . 42
8.2 Dispenser . . . . . 42
8.2.1 Rechargeable battery . . . . . 42
8.2.2 Mains/power supply device . . . . . 42
8.3 Error of measurement . . . . . 43
8.4 Ambient conditions . . . . . 44

**9 Transport, storage and disposal . . . . . 45**
9.1 Decontamination before shipment . . . . . 45
9.2 Storage . . . . . 45
9.3 Disposal . . . . . 46

**10 Ordering information . . . . . 47**
10.1 Multipette E3/E3x – Repeater E3/E3x . . . . . 47
10.2 Accessories . . . . . 47
10.3 Combitips advanced . . . . . 48
10.3.1 Adapter advanced . . . . . 49
10.4 Accessories . . . . . 50

**Index . . . . . 51**

**Certificates . . . . . 53**

**Table of contents**

# 1 Operating instructions

## 1.1 Using this manual

- Read this operating manual completely before using the device for the first time. Also observe the instructions for use of the accessories.
- This operating manual is part of the product. Thus, it must always be easily accessible.
- Enclose this operating manual when transferring the device to third parties.
- You will find the current version of the operating manual for all available languages on our webpage under www.eppendorf.com.

## 1.2 Danger symbols and danger levels

### 1.2.1 Danger symbols

The safety instructions in this manual appear with the following danger symbols and danger levels:

| | | | |
|---|---|---|---|
| | **Biohazard** | | **Explosive substances** |
| | **Electric shock** | | **Toxic substances** |
| | **Hazard point** | | **Material damage** |

### 1.2.2 Danger levels

| | |
|---|---|
| **DANGER** | *Will* lead to severe injuries or death. |
| **WARNING** | *May* lead to severe injuries or death. |
| **CAUTION** | May lead to light to moderate injuries. |
| **NOTICE** | May lead to material damage. |

## 1.3 Symbols used

| Depiction | Meaning |
|---|---|
| 1.<br>2. | Actions in the specified order |
| ▸ | Actions without a specified order |
| • | List |
| *Text* | Display text or software text |
|  | Additional information |

## 1.4 Glossary

### A

**Adapter advanced**
Connecting piece for the dispenser when using Combitips advanced 25 mL and 50 mL

### C

**Calibration**
A proccess during which the errors are checked and compared with the maximum permissible errors specified for the device.

**Coding**
The dispenser uses coding to detect the Combitip's maximum volume.

**Color code**
The color code displays the maximum volume.

**Combitip advanced**
Dispensing tip for all Eppendorf Multipettes and Repeaters.Combitips advanced are consumables intended for single use. Combitips advanced consist of a piston and a cylinder and function according to the positive displacement principle.

### D

**Dispensing volume**
Volume per dispensing step.

### F

**Free jet dispensing**
Dispensing of liquid without the dispensing tip (pipette tip, dispenser tip) touching the tube inner wall.

### G

**Graduation**
Incremental graduation of a range, a surface or a volume.

### I

**Increment**
Step size or resolution.
The smallest possible change by which a value can be increased.

**ISO 8655**
The standard defines limit values for the systematic error, the random error and the test methods for dispensers.

**M**

**Maximum volume**
The maximum volume that can be used for dispensing.

**N**

**Nominal volume**
The maximum dispensing volume of a dispensing tip in conjunction with the selected dispenser.

**P**

**Positive displacement principle**
The liquid is in direct contact with the piston of the dispensing tip (Combitip) during aspiration and dispensing operations.

**R**

**Random error**
Precision, standard deviation. A measure for the scattering of the measured values around the average value.

**Remaining stroke**
Liquid reserve. The liquid which remains after all dispensing steps have been completed.

**Reverse stroke**
After liquid aspiration, the piston is moved to a defined initial position. Liquid is dispensed during the piston movement. The reverse stroke is not a dispensing step.

**S**

**Systematic error**
Inaccuracy. Deviation of the average value of the dispensed volumes from the selected volume.

**T**

**Time interval**
The period of time between two dispensing steps.

**W**

**Wall dispensing**
Dispensing liquid against the tube wall. The pipette tip or the dispensing tip is held against the tube inner wall and the liquid is dispensed.

# 2 Safety

## 2.1 Intended use

The Multipette E3/E3x – Repeater E3/E3x is a lab device and, in combination with a Combitip advanced it is intended for dispensing aqueous solutions in the volume range of 1 µL – 50 mL. In vivo applications (applications in or on the human body) are not permitted.

The Multipette E3/E3x – Repeater E3/E3x may only be operated by trained specialists. All users must have read the operating manual carefully and familiarized themselves with the device's mode of operation.

## 2.2 Warnings for intended use

**WARNING! Damage to health due to infectious liquids and pathogenic germs.**

- When handling infectious liquids and pathogenic germs, observe the national regulations, the biological security level of your laboratory, the material safety data sheets, and the manufacturer's application notes.
- Wear your personal protective equipment.
- For comprehensive regulations about handling germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in its respectively current valid version).

**NOTICE! Carry-over, contamination and incorrect dispensing results due to the incorrect use of Combitips.**
Combitips are intended for single use. Prolonged use can have a negative impact on dispensing accuracy.

- Only use Combitips once.
- Do not use washed and/or autoclaved Combitips for dispensing.

**NOTICE! Damage to the device due to penetration of liquids.**

- Do not allow any liquids to penetrate the inside of the housing.

## 2.3 Information on product liability

In the following cases, the designated protection of the device may be compromised. Liability for any resulting property damage or personal injury is then transferred to the operator:

- The device is not used in accordance with the operating manual.
- The device is used outside of its intended use.
- The device is used with accessories or consumables which are not recommended by Eppendorf.
- The device is maintained or repaired by people not authorized by Eppendorf.
- The user makes unauthorized changes to the device.

# 3 Product description

## 3.1 Delivery package

| Quantity | Description |
|---|---|
| 1 | Multipette E3/E3x - Repeater E3/E3x |
| 9 | Combitips advanced |
| 2 | Adapter advanced |
| 1 | Power supply with power plug adapters |
| 1 | Operating manual |
| 1 | Short instructions |
| 1 | CD |

## 3.2 Features

The dispenser (Multipette E3/E3x, Repeater E3/E3x) is an electronic dispenser that functions according to the positive displacement principle. The dispenser is used in combination with a dispensing tip (Combitips advanced) to aspirate and dispense liquids. Depending on the Combitip used, volumes between 1 µL and 50 mL can be dispensed.

## 3.3 Product overview

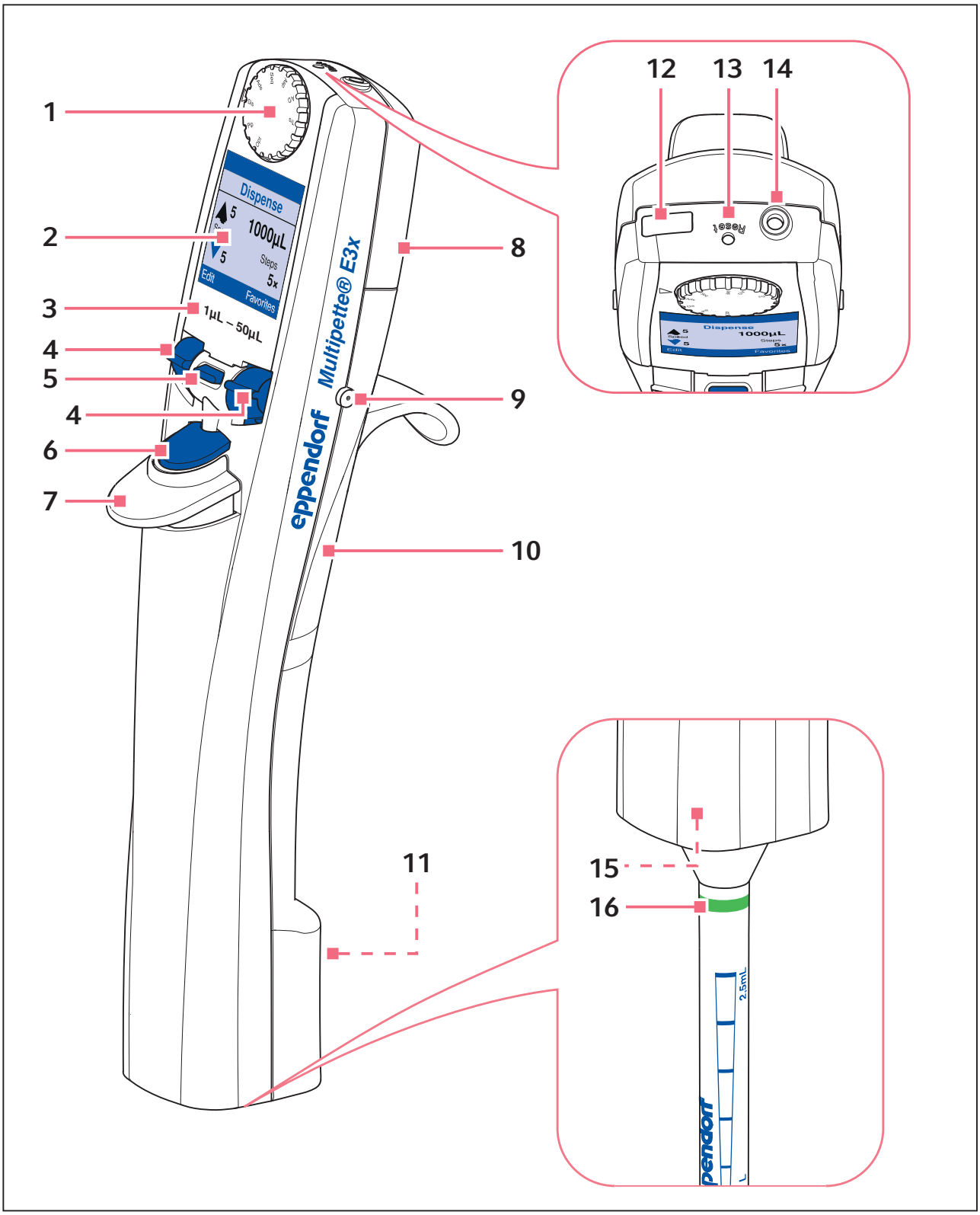



Fig. 3-1: Multipette E3/E3x and Repeater E3/E3x

1 **Selection dial**
Sets the operating mode

2 **Display**

3 **Volume range**

4 **Rocker**

5 **Softkey**

6 **Actuate key**

7 **Ejector**

8 **Rechargeable battery compartment**

9 **Charging contacts**

10 **RFID chip**

11 **Serial number**

12 **Micro USB interface**

13 ***Reset*** **key**

14 **Connector socket**

15 **Holder for the dispensing tip**

16 **Dispenser tip**

## 3.4 Layout of the display

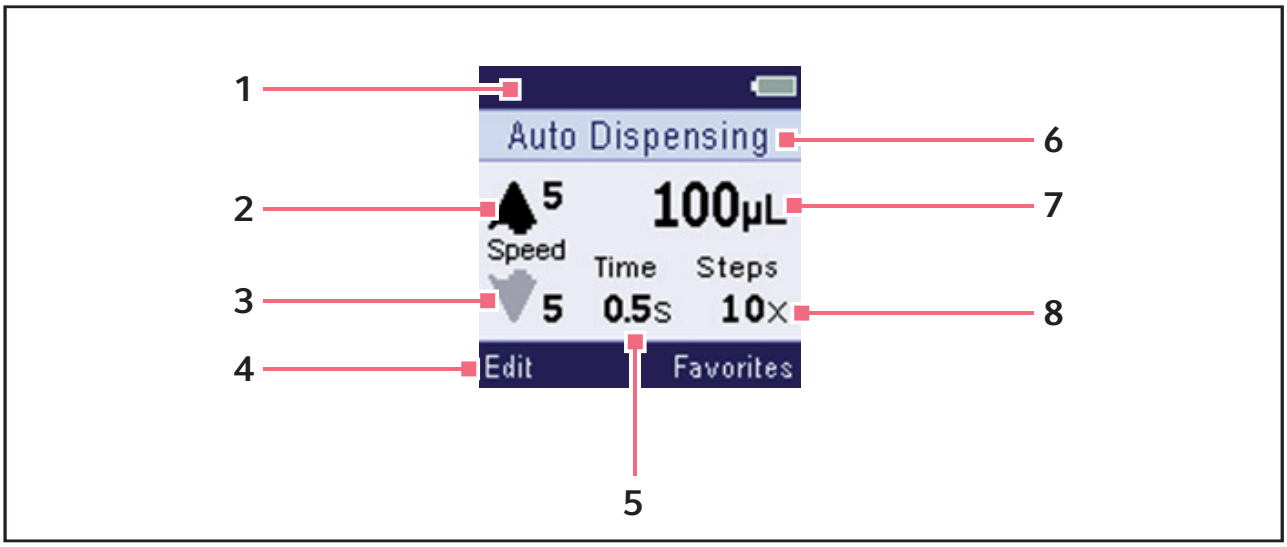



Fig. 3-2: Example layout for the **Ads** operating mode

**1 Header**
**2 Aspiration speed**
**3 Dispensing speed**
**4 Footer**
**5 Time interval**
**6 Status line**
**7 Dispensing volume**
**8 Number of dispensing steps**

## 3.5 Operating controls

| Operating control | Function |
|---|---|
| Selection dial | Sets the operating mode. |
| Actuate key | Triggers dispensing operations, performs dispensing steps, saves parameters, aborts functions. |
| Ejector | Ejects the dispensing tip. |
| Rocker | Performs functions that are displayed on the left and right in the footer. |
| Softkey | Performs functions that are displayed in the footer. Aborts liquid aspiration, aborts functions, aborts liquid dispensing, calls previous screen or confirms error messages. |
| Reset key | Performs a hardware reset. |

## 3.6 Overview of the operating modes

An overview of the operating modes for the different models.

| Selection dial | Mode | Description | Model E3 | Model E3x |
|---|---|---|---|---|
| **Opt** | Options | Adjustment of device settings (language, volume, etc.) | ■ | ■ |
| **Pip** | Pipetting | Aspiration of liquid in one step and dispensing of liquid in one step. | ■ | ■ |
| **Dis** | Dispensing | Aspiration of liquid and dispensing of liquid in equal partial volumes. | ■ | ■ |
| **Ads** | Automatic dispensing | Aspiration of liquid in one step and automatic dispensing of liquid in equal partial volumes and fixed time intervals. | ■ | ■ |
| **Seq** | Sequential dispensing | Aspiration of liquid in one step and dispensing of liquid in different partial volumes. | – | ■ |
| **Asp** | Multi-Aspirate | Aspiration of liquid in equal partial volumes. | – | ■ |
| **A/D** | Aspirate and dispensing | Aspiration of an unknown liquid volume. Dispensing of liquid in partial volumes. | – | ■ |
| **Ttr** | Titrate | Aspiration of liquid. Determine the dispensing volume with the actuation key. | – | ■ |

## 3.7 Mains/power supply device and power plug adapter

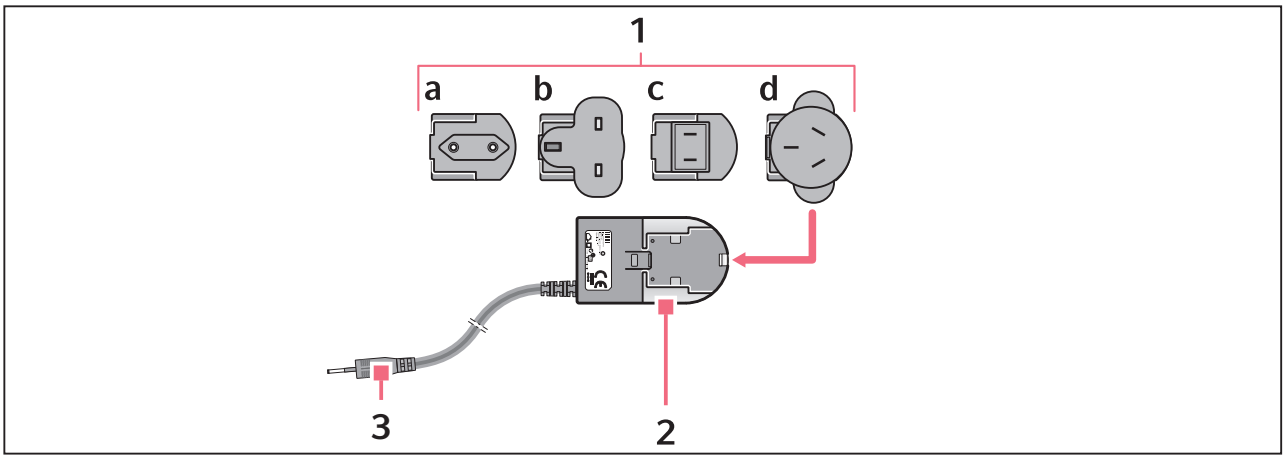



Fig. 3-3: Mains/power supply device with adapters

**1 Power plug adapters**
a Europe
b Great Britain
c USA
d Australia

**2 Mains/power supply device**

**3 Charging plug**

## 3.8 Rechargeable battery charging status.

The charge state of the rechargeable battery is indicated on the display. The display shows a message indicating when the rechargeable battery needs to be charged.

| Symbol | Charging status |
|---|---|
| | The rechargeable battery is fully charged. |
| | The rechargeable battery is half charged. |
| | The rechargeable battery is discharged. |
| | Rechargeable battery charging in progress. |

## 3.9 Materials

**NOTICE! Aggressive substances may damage dispensers, Combitips and accessories.**

- Check the resistance to chemicals when using organic solvents or aggressive chemicals.
- Observe the cleaning instructions.

| Assembly | Material |
|---|---|
| Dispensing button | Polycarbonate (PC) |
| Display | Polycarbonate (PC) |
| Housing parts | Acrylonitrile/styrene/acrylic ester (ASA) with polycarbonate (PC) |
| Charging contacts | Gold coating |
| USB cover, rockers, softkeys | Silicone |
| Selection dial | Acrylonitrile/styrene/acrylic ester (ASA) with polycarbonate (PC) |

## 3.10 Warranty

In case of warranty claims, contact your local Eppendorf contractual partner.

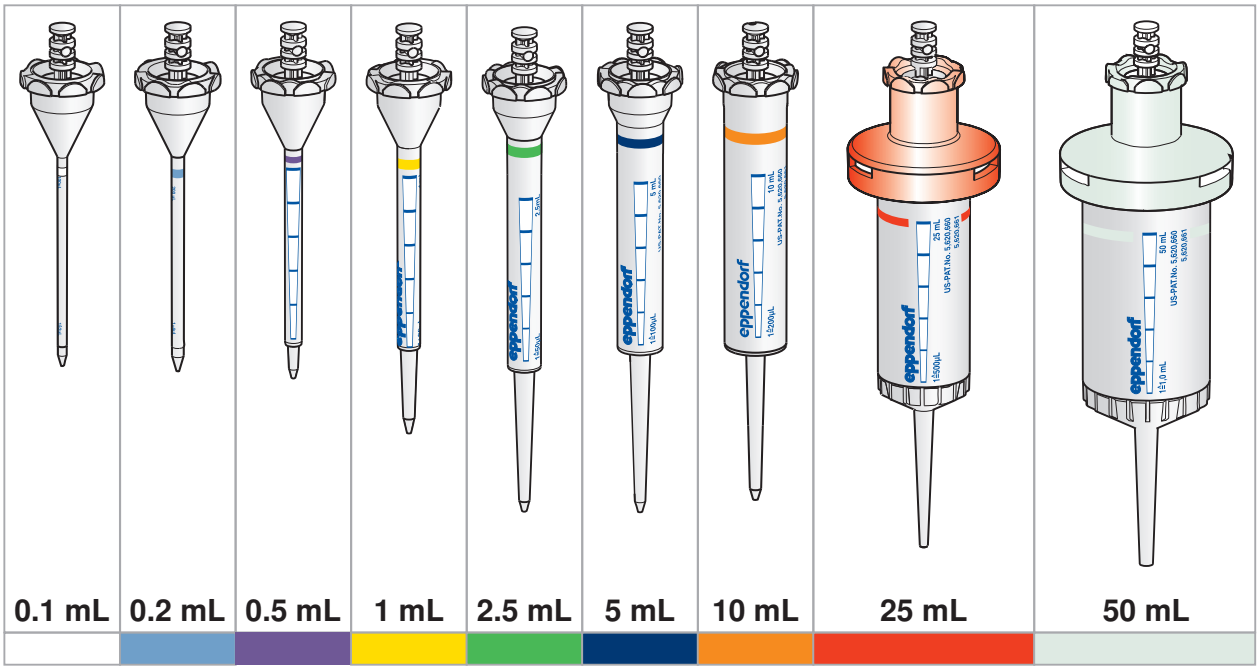
No warranty is given in the following cases:

- In the case of misuse.
- If unauthorized persons open the dispenser.

The following assemblies are excluded from the warranty:

- Rechargeable battery

## 3.11 OverviewCombitips advanced




### 3.11.1 Volume ranges for Combitips advanced

| Combitip advanced | Volume range | Increment |
|---|---|---|
| 0.1 mL<br>white | 1.0 µL – 100 µL | 0.1 µL |
| 0.2 mL<br>light blue | 2.0 µL – 200 µL | 0.2 µL |
| 0.5 mL<br>Violet | 5.0 µL – 500 µL | 0.5 µL |
| 1.0 mL<br>Yellow | 10 µL – 1000 µL | 1.0 µL |
| 2.5 mL<br>Green | 25 µL – 2500 µL | 2.5 µL |
| 5.0 mL<br>Blue | 50 µL – 5000 µL | 5.0 µL |
| 10 mL<br>Orange | 0.1 mL – 10 mL | 0.01 mL |
| 25 mL<br>red | 0.25 mL – 25 mL | 0.025 mL |
| 50 mL<br>Light gray | 0.5 mL – 50 mL | 0.05 mL |

# 4 Installation

## 4.1 Preparing the dispenser for initial use

Before the dispenser can be used for the first time, a few preparatory steps need to be carried out once.

- Assemble the mains/power supply device.
  (see *Mains/power supply device assembly on p. 19)*
- Connect the rechargeable battery.
  (see *Connect the rechargeable battery on p. 20)*
- Fully charge the rechargeable battery.
  (see *Charging the rechargeable battery on p. 20)*
- Set the date.
  (see *Adjusting the Date and time option on p. 38)*

## 4.2 Mains/power supply device assembly

**WARNING! Incorrect power plug adapters may cause fatal electric shocks and damage to the device.**

- Use the power plug adapter which is suitable for your mains/power line.

### 4.2.1 Inserting the power plug adapter

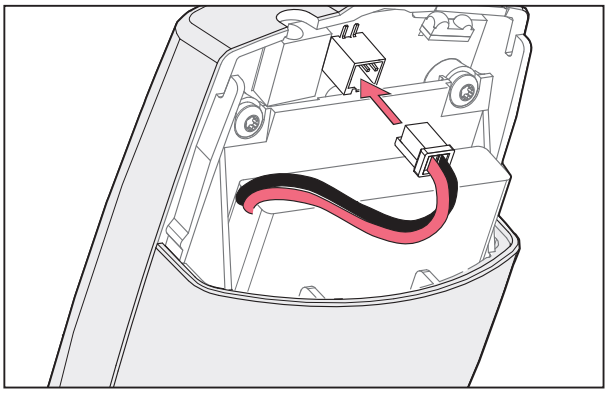
1. Select the appropriate power plug adapters for the mains/power line.
2. Push the power plug adapter on the mains/power supply device until it locks into place.

### 4.2.2 Replace the power plug adapter.

1. Press and hold down the release on the mains/power supply device.
2. Disconnect the power plug adapter.
3. Select the appropriate power plug adapters for the mains/power line.

### 4.3 Connect the rechargeable battery

The rechargeable battery must be fully charged before it is used for the first time.



1. Remove the rechargeable battery compartment lid.
2. Insert the rechargeable battery.
3. Connect the connector to the connector socket.
4. Reattach the rechargeable battery compartment lid.

## 5 Operation

### 5.1 Charging the rechargeable battery

**NOTICE! Loss of full battery charging capacity of the rechargeable battery if charged incorrectly.**
The supplied rechargeable battery is not fully charged. The rechargeable battery will reach its full capacity only after several discharging and charging cycles.

- Do not charge the rechargeable battery in a hot environment (> 60°C).
- Only charge the rechargeable battery using the supplied mains/power supply device.

The display shows a message indicating when the rechargeable battery needs to be charged.

If a rechargeable battery is highly discharged, a minimum charge state is required before the dispenser can be used.

#### 5.1.1 Charging the rechargeable battery with the mains/power supply device

Prerequisites

- The rechargeable battery is connected.

1. Insert the mains/power supply device into the socket.
2. Connect the charging plug to the connector socket of the dispenser.
   The charging process is shown on the display.

### 5.1.2 Charging the rechargeable battery in the charger stand or in the charger carousel

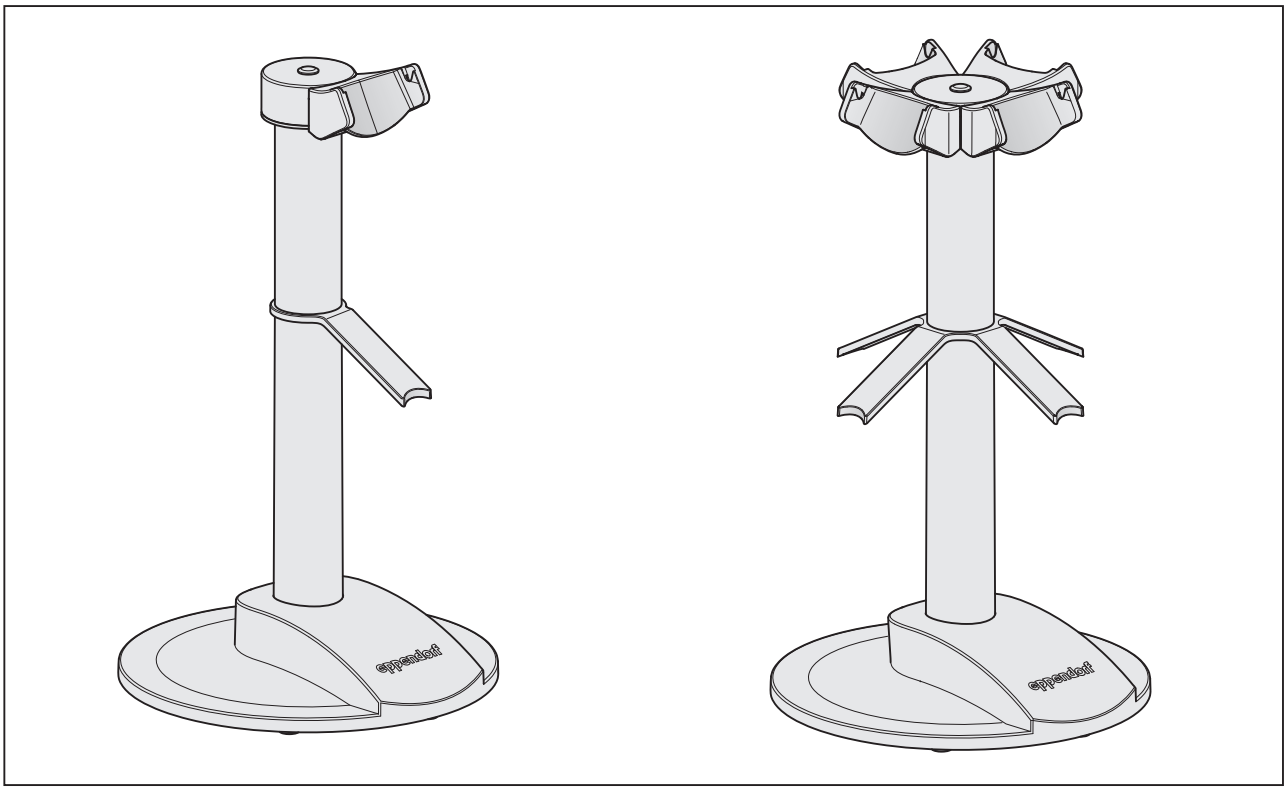



Fig. 5-1: Charger stand and charger carousel

Prerequisites

- The mains/power supply device has been connected.
- The charger shell for the dispenser has been inserted.

1. Place the dispenser with the charging contacts into the charger shell.
   The charging process is shown on the display.

## 5.2 Switching the dispenser on or off

The dispenser automatically switches on or off. A sensor registers a movement and and switches on the dispenser. If the dispenser is not moved or operated for about 2.5 minutes, it switches to standby mode.

## 5.3 Sets the operating mode

| Selection dial | Mode |
|---|---|
| **Pip** | Pipetting |
| **Dis** | Dispensing |
| **Ads** | Automatic dispensing |
| **Seq** | Sequential dispensing |
| **Asp** | Multiple aspiration |
| **A/D** | Aspiration and dispensing |
| **Ttr** | Titration |
| **Opt** | Options |

- Set the desired operating mode on the selection dial.

## 5.4 Dispenser tip

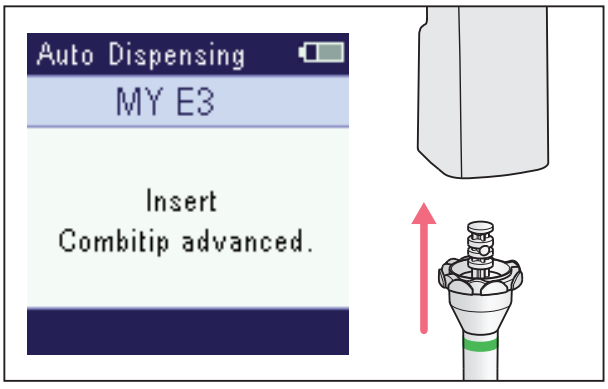
**NOTICE! Damage to the device due to incorrect Combitip.**
The dispenser holder is only suitable for Combitips advanced. Other Combitips could damage the holder.

- Only use Combitips advanced.

**NOTICE! Damage to device due to incorrect handling of the inserted dispensing tip.**

- Insert the dispensing tip straight into the dispenser from below.
- Do not turn the inserted dispensing tip.
- Never hold the dispenser by the dispensing tip.

### 5.4.1 Inserting the dispensing tip

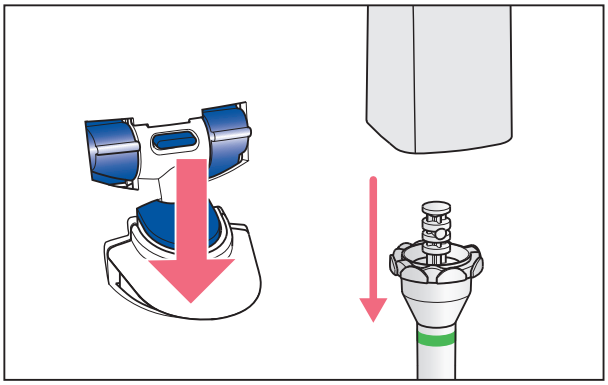



1. Select the dispensing tip.
2. Insert the dispensing tip straight from below.
   The size of the dispensing tip is shown on the display.

### 5.4.2 Ejecting the dispensing tip

Prerequisites

- The dispensing tip has been emptied.



1. Hold the dispensing tip over a waste container.
2. Press the ejector.
   The dispensing tip is ejected.

## 5.5 Overview of parameters

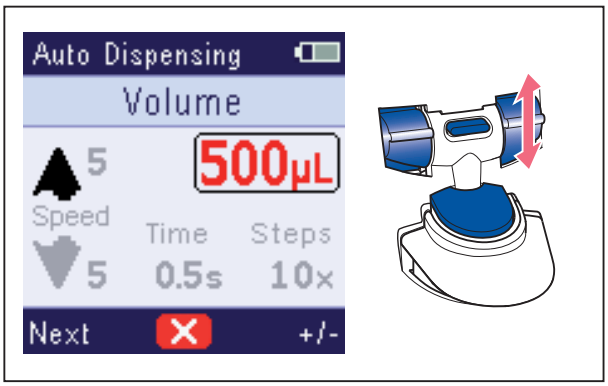
In the operating modes it is possible to change the parameters listed.

| Parameter | Pip | Dis | Ads | Seq | Asp | A/D | Ttr |
|---|---|---|---|---|---|---|---|
| Dispensing volume | ■ | ■ | ■ | ■ | – | ■ | – |
| Aspiration volume | – | – | – | – | ■ | – | – |
| Aspiration speed | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Dispensing speed | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Time interval | – | – | ■ | – | – | – | – |
| Number of dispensing steps | – | ■ | ■ | ■ | – | ■ | – |
| Number of aspiration steps | – | – | – | – | ■ | – | – |

### 5.5.1 Change Parameter

Prerequisites

- The operating mode has been set.
- The dispensing tip has been inserted.




1. Press the *Edit* rocker.
   The parameter that can be changed is highlighted.
2. Select the desired parameter with the *Next* rocker.
3. Change the parameter value with the +/- rocker.
4. To save the parameter value, press the actuation key.

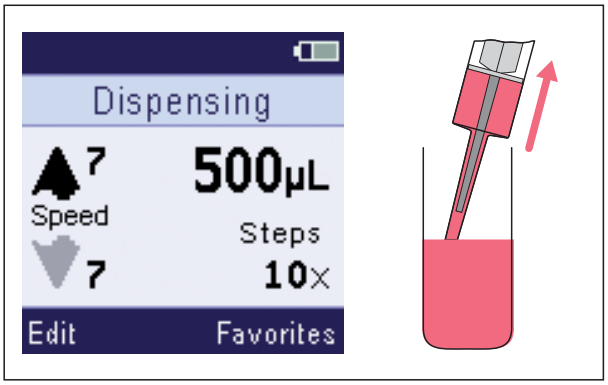
The process of changing the parameters can be aborted with the middle softkey. Any changes made are not saved.

The speeds for the aspiration and dispensing of liquids must be adapted to the physical properties of the respective liquid. A liquid with a high viscosity can only be aspirated slowly.

## 5.6 Aspirating liquid

Prerequisites

- The **Pip**, **Dis**, **Ads**, **Seq** or **Ttr** operating mode has been set.
- The dispensing tip has been inserted.




1. Immerse the dispensing tip into the liquid in the source vessel.
2. Press the actuation key.
3. Wait until the set volume has been aspirated.
4. Slowly draw the dispensing tip out of the liquid.

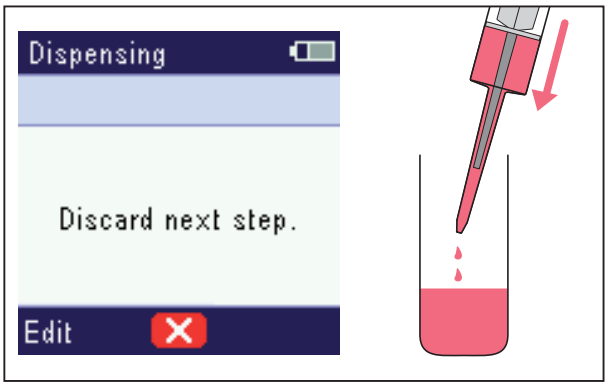
The aspiration of liquid can be aborted with the middle softkey or the actuation key. The aspirated liquid can be used for a subsequent liquid dispensing operation.

## 5.7 Carrying out a reverse stroke

Before liquid can be dispensed, the piston of the dispenser must be brought into a defined starting position. The liquid dispensed during this process does not belong to the dispensing steps and should be discarded.

Prerequisites

- The **Pip**, **Dis**, **Ads**, **Seq**, **A/D** or **Ttr** operating mode has been set.
- Liquid has been aspirated.




1. Hold the dispensing tip over a waste container.
2. Press the actuate key.
   The reverse stroke is performed.
   The set operating mode is displayed.
   The liquid can be dispensed.

## 5.8 Pip operating mode – Pipetting of liquid

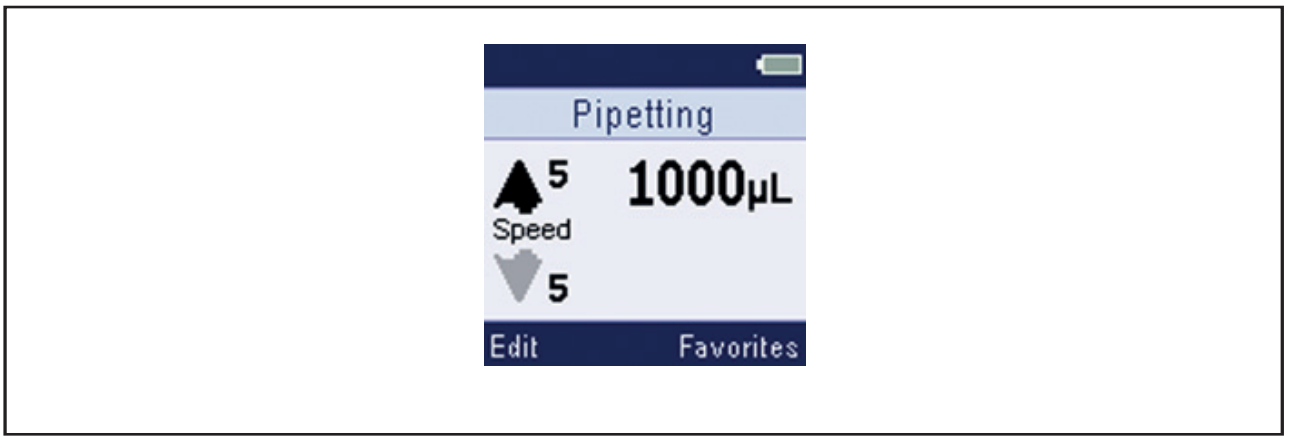



Fig. 5-2: Screen for the **Pip** operating mode

Aspirating liquid in one step and dispensing liquid in one step.

Application example:

- Refilling of liquids.

Prerequisites

- The volume has been set.
- The aspiration speed and dispensing speed have been set.

1. Aspirate the liquid.
2. Press the actuation key.
   The reverse stroke is performed.

3. Hold the dispensing tip over the destination vessel.
4. Press the actuation key.
   The liquid is dispensed in one step.

## 5.9 Dis operating mode – Dispensing of liquid

Fig. 5-3: Screen for the **Dis** operating mode

Dispensing of liquid in equal partial volumes. The smallest dispensing volume allows for a maximum of 100 dispensing steps.

Application example:

- Filling a plate (e.g., a 96-well plate or a 384-well plate).

Prerequisites

- The volume has been set.
- The aspiration speed and the dispensing speed have been set.
- The number of dispensing steps has been set.

1. Aspirate the liquid.
2. Press the actuation key.
   The reverse stroke is performed.
   The volume of the next dispensing step and the number of remaining dispensing steps are displayed.
3. Hold the dispensing tip over the first well in the destination vessel.
4. Press the actuation key.
   The liquid is dispensed.
   The remaining dispensing steps are displayed.
5. Perform further dispensing steps.

## 5.10 Ads operating mode – Automatic dispensing of liquid

Fig. 5-4: Screen for the **Ads** operating mode

Automatic dispensing of aspirated liquid in equal partial steps.

Application example:

- Quick completion of a long dispensing series.

Prerequisites

- The volume has been set.
- The aspiration speed and dispensing speed have been set.
- A time interval has been set.
- The number of dispensing steps has been set.

1. Aspirate the liquid.
2. Press the actuation key.
   The reverse stroke is performed.
3. Hold the dispensing tip over the first destination vessel.

   To pause automatic liquid dispensing, release the actuation key.
4. Press and hold down the actuation key and hold the dispensing tip over the next destination vessel within the time interval.
   The liquid is automatically dispensed after the time interval has elapsed.
   The volume of the next dispensing step is displayed.
   The remaining dispensing steps are displayed.

## 5.11 Seq operating mode – Sequential dispensing of liquid

Fig. 5-5: Screen for the **Seq** operating mode

Dispensing of liquid in different partial volumes. If the total volume of the dispensing steps exceeds the nominal volume of the dispensing tip, repeat aspiration of liquid will be necessary between the dispensing steps.

Application example:

- Creation of a dilution series.

Prerequisites

- The volume of each dispensing step has been set.
- The number of dispensing steps (a maximum of 16) has been set.
- The aspiration speed and dispensing speed have been set.

1. Aspirate the liquid.
2. Press the actuation key.
   The reverse stroke is performed.
3. Hold the dispensing tip over the first destination vessel.
4. Press the actuation key.
   The first dispensing step is performed.
   The volume of the next dispensing step is displayed.
   The number of the next dispensing step and the total number of dispensing steps are displayed.
5. Perform further dispensing steps.

## 5.12 Asp operating mode – Multiple liquid aspiration

Fig. 5-6: Screen for the **Asp** operating mode

Multiple aspiration of a defined volume of liquid in succession. The liquid is dispensed in a dispensing step.

Application example:

- Aspiration of an equal volume from different wells in a plate.

Prerequisites

- Volume has been set.
- The number of aspiration steps has been set.

1. Press the actuation key.
   The piston moves to the start position.
   The set volume is displayed.
   The number of aspiration steps is displayed.
2. Aspirate liquid from the first source vessel.
   The current aspiration step is displayed
3. Perform further aspiration steps.
4. Hold the dispensing tip over a waste container.
5. Press the *Empty* softkey.

## 5.13 A/D operating mode – Aspiration and dispensing of liquid

Fig. 5-7: Screen for the **A/D** operating mode

Aspirate the liquid with an unknown volume and then dispense it.

Application example:

- Aspiration of liquid supernatant and distribution to destination vessels.

Prerequisites

- The aspiration speed has been set.

1. Press the actuation key.
   The piston moves to the start position.
2. Press and hold down the actuation key until the liquid has been aspirated.
   The aspirated volume is displayed.
   The volume available for dispensing is displayed.
3. Press the *Finish* rocker.
   The dispensing mode is active.
   The dispensing volume and the dispensing speed can be changed.
4. Hold the dispensing tip over a waste container and press the actuation key.
   The reverse stroke is performed.
5. Hold the dispensing tip over a destination vessel and dispense liquid.
   The number of the remaining dispensing steps is displayed.
6. Perform further dispensing steps.
7. Hold the dispensing tip over a waste container and discard the residual liquid.

## 5.14 Ttr operating mode – Titration of liquid

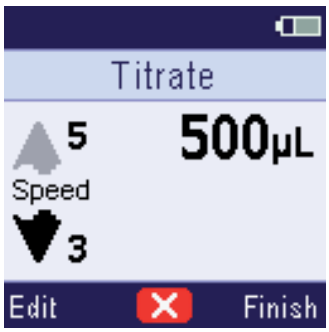



Fig. 5-8: Screen for the **Ttr** operating mode

Determining the dispensing volume of the titration using the actuation key.

Application example:

- Performing a titration.

Prerequisites

- The aspiration speed and dispensing speed have been set.

1. Aspirate the liquid.
2. Press the actuation key.
   The reverse stroke is performed.
3. Hold the dispensing tip over a destination vessel.
4. Press and hold down the actuation key.
   Liquid is dispensed.
5. To pause the titration, release the actuation key.
   The dispensed volume is displayed.
6. To continue the titration, press and hold down the actuation key.
   The dispensing speed decreases with each dispensing step.
7. Press the *Finish* rocker.
   Liquid can be discarded or a new titration can be started.

### 5.14.1 Displaying the data of the last titration

Prerequisites

- At least one titration has been performed.

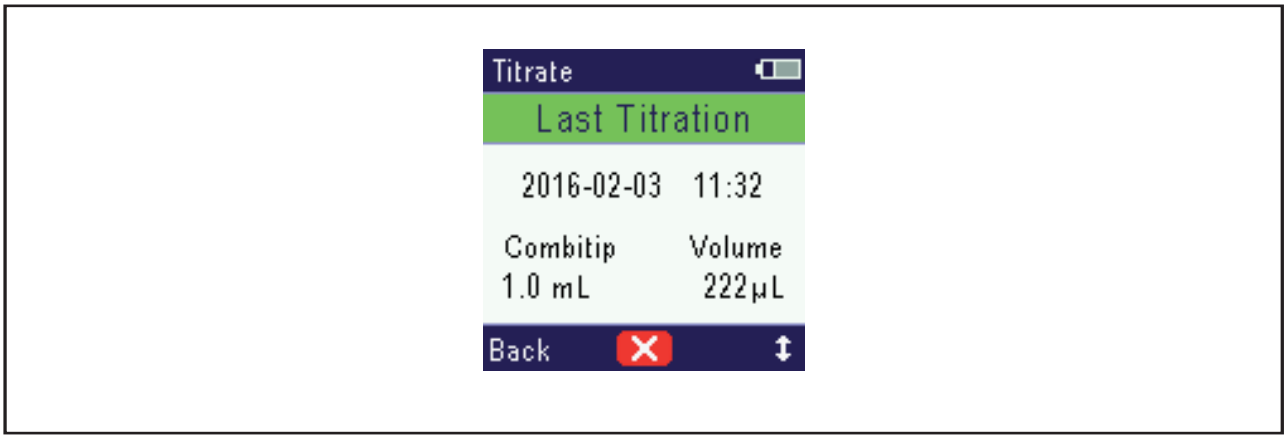


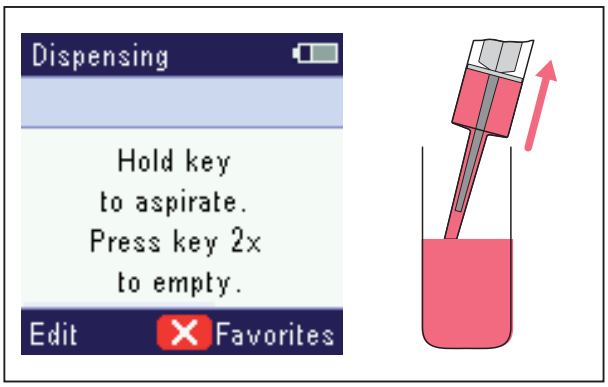

Fig. 5-9: Screen for *Last Ttr*

1. Press the *arrow up/arrow down* rocker.
   The data for the last titration are shown.
2. The <–> rocker can be used to select the last 5 data records.
3. Press the *Back* rocker.
   The **Ttr** operating mode is displayed.

## 5.15 Renewed aspiration

Prerequisites

- The **Pip**, **Dis**, **Ads**, **Seq** or **Ttr** operating mode has been set.
- Dispensing has been completed.

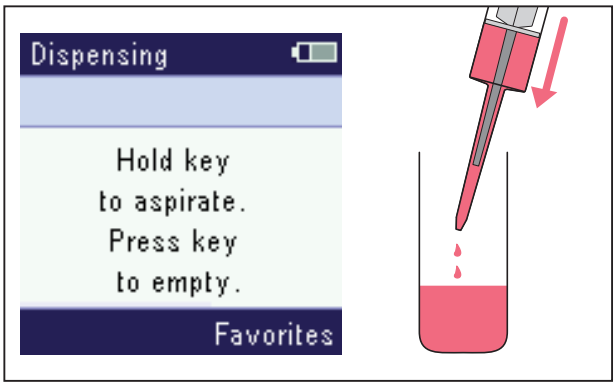



1. Immerse the dispensing tip into the liquid in the source vessel.
2. Press and hold down the actuation key.
   The dispensing tip is filled.

## 5.16 Emptying the dispensing tip

Prerequisites

- Dispensing has been completed.




1. Hold the dispensing tip over a waste container.
2. Press the actuate key or the middle softkey.
   The dispensing tip is emptied.

## 5.17 Opt operating mode – Adjustment of device settings

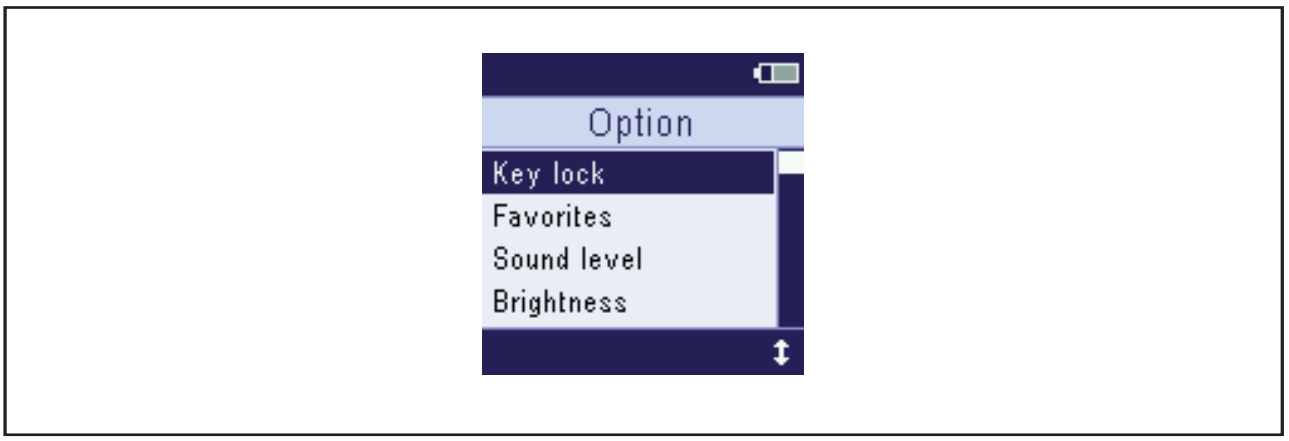



Fig. 5-10: Screen for the **Opt** operating mode

| Device setting | Meaning | Value |
|---|---|---|
| *Key lock* | Activate/deactivate key lock | *On/Off* |
| *Favorites* | Activate/deactivate favorites | *On/Off* |
| *Sound level* | Activate/deactivate acoustic signal | *On/Off* |
| *Brightness* | Adjust brightness | 1 – 8 |

| Device setting | Meaning | Value |
|---|---|---|
| *Language* | Select language | • *Chinese* – Chinese<br>• *Dutch* – Dutch<br>• *English* – English<br>• *French* – French<br>• *German* – German<br>• *Italian* – Italian<br>• *Japanese* – Japanese<br>• *Portuguese* – Portuguese<br>• *Spanish* – Spanish |
| *Personalization* | Personally identify dispenser | Free text (10 digits) |
| *Service* | Access service functions | • *Software version*<br>• *Initial reset*<br>• *Self test* |
| *Reminder* | Reminder function for the next service | • *Last service*<br>• *Next service*<br>• *Interval*<br>• *Reset* |
| *Date and time* | Setting date and time | • Date – YYYY-MM-DD<br>• Hour – hh:mm |
| *Screen saver* | Activate/deactivate screen saver | *On*/*Off* |

### 5.17.1 Selecting a menu item

1. Select a menu item with the *arrow up/arrow down* rocker.
2. To open a menu item, press the actuation key.

### 5.17.2 Changing an option

The process of changing an option can be aborted with the middle softkey.

1. Change the option with the +/- rocker.
2. To save the change, press the actuation key.

The key lock blocks changes to parameters and options.

### 5.17.3 Activating/deactivating the *Key lock* option

Fig. 5-11: Screen for the *Key lock* option

The key lock option is used to block changes to parameters and adjustments to options.

| Status | Meaning |
|---|---|
| *On* | Key lock is activated |
| *Off* | Key lock is deactivated |

### 5.17.4 Activating/deactivating the *Favorites* option

When activated, the favorites option allows frequently used parameter settings to be saved. It is possible to save parameters for the **Pip**, **Dis**, **Ads**, **Seq** and **Asp** operating modes.

| Status | Meaning |
|---|---|
| *On* | The use of favorites is activated |
| *Off* | The use of favorites is deactivated |

### 5.17.5 Activating/deactivating the *Sound level* option

The acoustic feedback of the operating controls can be activated or deactivated.

| Status | Meaning |
|---|---|
| *On* | Acoustic feedback is activated |
| *Off* | Acoustic feedback is deactivated |

### 5.17.6 Adjusting the *Brightness* option

Fig. 5-12: Screen of the *Brightness* option

The screen brightness can be adjusted in 8 stages.

### 5.17.7 Adjusting the *Language* option

Fig. 5-13: Screen of the *Language* option

In each language the menu item remains set to *Language*. This makes it easier to set your own language.

1. Select the *Language* option.
2. Select the desired language with the *arrow up/arrow down* rocker.
3. To save the marked language, press the actuation key.

### 5.17.8 Saving the *Personalization* option

The dispenser can be personalized, for example, in order to assign it to a specific lab or department. For this, a free text can be entered with a maximum of 10 digits. The personalization setting is displayed when the rechargeable battery is charged (mains/ power supply device, charger stand or pipette carousel).

1. Mark *Personalization* with the rocker and confirm with the actuation key.
2. Select the item with the *Next* rocker and set the desired letter with the *+/-* rocker.
3. To save the text, press the actuation key.

### 5.17.9 Accessing the *Service* option

| Service functions | Meaning |
|---|---|
| *Software version* | Displays the version number of the software. |
| *Initial reset* | Resets all parameters, favorites and adjusted options to the factory settings. The changes must be confirmed. |
| *Self test* | Performs a device self test. The test checks the movement of the piston. If the test result is negative, contact the authorized service.<br>The test is not a replacement for regular calibration. |

### 5.17.10 Performing the *Self test* service function

Prerequisites

- The dispensing tip has been inserted.
- The *Service* option has been selected.

1. Mark *Self test* and confirm with the actuation key.
2. Start the self test with the *Yes* rocker.
3. Confirm the result.

### 5.17.11 Setting the *Reminder* service function

| Function | Meaning |
|---|---|
| *Last service* | Displays the date when the last service or gravimetric test was performed. |
| *Next service* | Displays the date for the next service with an indication of the remaining months and days. |
| *Interval* | Sets the period until the next service. 0 disables the function. |
| *Reset* | Resets the counter for the reminder function to zero. A reminder will appear after the specified period has elapsed. |

### 5.17.12 Adjusting the *Date and time* option

1. Select the date.
2. Select the year, month or day with the *Next* rocker.
3. Change the value with the +/- rocker.
4. Save the date with the actuation key.
5. Select the time.
6. Select the hour or minute with the *Next* rocker.
7. Change the value with the +/- rocker.
8. Save the time with the actuation key.

### 5.17.13 Activating/deactivating the *Screen saver* option

The screen saver is displayed when the rechargeable battery is charged (mains/power supply device, charger stand or pipette carousel).

The screen saver shows:

- Date and time
- Personalization
- Rechargeable battery status

## 5.18 Option of creating *Favorites*

The **Pip**, **Dis**, **Ads**, **Seq** und **Asp** operating modes allow frequently used parameter settings to be saved and accessed. A maximum of five parameter sets can be saved.

### 5.18.1 Accessing *Favorites*

Prerequisites

- *Favorites* have been enabled.
- An operating mode has been set.
- At least one parameter set is saved.

1. Press the *Favorites* rocker.
   The display shows the first parameter set *Favorit 1*.
2. Use the *arrow up/arrow down* rocker to select the desired parameter set
3. Confirm the parameter set with the actuation key.
   The parameter set is loaded.
   Dispensing can be started.

### 5.18.2 Editing *Favorites*

- *Favorites* have been enabled.
- An operating mode has been set.
- At least one parameter set is saved.

1. Press the *Favorites* rocker.
2. Use the *arrow up/arrow down* rocker to select the desired parameter set
3. Press the *Edit* rocker.
4. Select the parameter with *Next* and change with +/-.
5. Save the changed parameters with the actuation key.

The middle softkey can be used to abort the function. Any changes made are not saved.

# 6 Troubleshooting
## 6.1 General errors
### 6.1.1 Dispensing tip – Combitip advanced

| Problem | Cause | Solution |
|---|---|---|
| It is not possible to eject the dispensing tip. | • The dispensing tip has not been emptied. | ▸ Empty the dispensing tip. |

### 6.1.2 Display

| Problem | Cause | Solution |
|---|---|---|
| The display is dark. | • The rechargeable battery is discharged. | ▸ Charge the rechargeable battery. |
| | • The battery is defective. | ▸ Replace the battery. |

# 7 Maintenance
## 7.1 Cleaning
### 7.1.1 Cleaning and disinfecting the housing

**NOTICE! Damage to device from unsuitable cleaning fluids or sharp or pointed objects.**
Unsuitable cleaning agents can damage the device.

- ▸ Never use corrosive cleaning agents, strong solvents or abrasive polishes.
- ▸ Check the compatibility with the materials used.
- ▸ Please note the information on chemical resistance.
- ▸ Do **not** clean the device with acetone or organic solvents with a similar effect.
- ▸ Do **not** clean the device with sharp objects.

**NOTICE! Damage to the device due to penetration of liquids.**

- ▸ Do not allow any liquids to penetrate the inside of the housing.

Observe the chemical resistance of the materials.

1. Moisten a cloth with a cleaning agent, a decontamination agent or isopropyl (70 %).
2. Remove any contamination on the outside.
3. Moisten the cloth with water.
4. Wipe down the housing and remove residual cleaning agent.

## 7.2 Decontamination before shipment

**CAUTION! Use of a contaminated device may result in personal injuries and damage to the device.**

- ▸ Clean and decontaminate the device in accordance with the cleaning instructions before shipping or storage.

Hazardous substances are:

- solutions presenting a hazard to health
- potentially infectious agents
- organic solvents and reagents
- radioactive substances
- proteins presenting a hazard to health
- DNA

1. Please note the information in the document "Decontamination certificate for product returns".
   You can find it as a PDF file on our webpage www.eppendorf.com.
2. Enter the serial number of the device in the decontamination certificate.
3. Enclose the completed decontamination certificate for returned goods with the device.
4. Send the device to Eppendorf AG or an authorized service center.

# 8 Technical data

## 8.1 Adjustable sub-steps

| Model – volume range | Increment |
|---|---|
| 1 µL – 100 µL | 0.1 µL |
| 2 µL – 200 µL | 0.2 µL |
| 5 µL – 500 µL | 0.5 µL |
| 10 µL – 1000 µL | 1 µL |
| 25 µL – 2500 µL | 2.5 µL |
| 50 µL – 5000 µL | 5 µL |
| 0.1 mL – 10 mL | 0.01 mL |
| 0.25 mL – 25 mL | 0.025 mL |
| 0.5 mL – 50 mL | 0.05 mL |

## 8.2 Dispenser

| | |
|---|---|
| Interface | Micro USB |
| Weight | approx. 190 g |

### 8.2.1 Rechargeable battery

| | |
|---|---|
| Type | Rechargeable lithium-ion battery |
| Voltage | 3.7 V |
| Capacity | 1200 mAh |
| Charging time | approx. 2 h |
| Number of dispensings | Maximum 2000 |
| Weight | approx. 26 g |

### 8.2.2 Mains/power supply device

| | |
|---|---|
| Type | Power supply with power plug adapters |
| Input voltage | 100 V – 240 V, 50/60 Hz, 0.25 A |
| Output voltage | 5 V, 1A, 5 W |

## 8.3 Error of measurement

| Testing tip Combitip advanced | Volume range | Testing volume | Error of measurement | | | |
|---|---|---|---|---|---|---|
| | | | systematic | | random | |
| | | | ± % | ± µL | ± % | ± µL |
| 0.1 mL white | 1 µL – 100 µL | 10 µL | 1.6 | 0.16 | 2.5 | 0.25 |
| | | 50 µL | 1.0 | 0.5 | 1.5 | 0.75 |
| | | 100 µL | 1.0 | 1.0 | 0.5 | 0.5 |
| 0.2 mL light blue | 2 µL – 200 µL | 20 µL | 1.3 | 0.26 | 1.5 | 0.3 |
| | | 100 µL | 1.0 | 1.0 | 1.0 | 1.0 |
| | | 200 µL | 1.0 | 2.0 | 0.5 | 1.0 |
| 0.5 mL violet | 5 µL – 500 µL | 50 µL | 0.9 | 0.45 | 0.8 | 0.4 |
| | | 250 µL | 0.9 | 2.25 | 0.5 | 1.25 |
| | | 500 µL | 0.9 | 4.5 | 0.3 | 1.5 |
| 1 mL yellow | 10 µL – 1000 µL | 100 µL | 0.9 | 0.9 | 0.55 | 0.55 |
| | | 500 µL | 0.6 | 3.0 | 0.3 | 1.5 |
| | | 1000 µL | 0.6 | 6.0 | 0.2 | 2.00 |
| 2.5 mL green | 25 µL – 2500 µL | 250 µL | 0.8 | 2.0 | 0.45 | 1.125 |
| | | 1250 µL | 0.5 | 6.25 | 0.3 | 3.75 |
| | | 2500 µL | 0.5 | 12.5 | 0.15 | 3.75 |
| 5 mL blue | 50 µL – 5000 µL | 500 µL | 0.8 | 4.0 | 0.35 | 1.75 |
| | | 2500 µL | 0.5 | 12.5 | 0.25 | 6.25 |
| | | 5000 µL | 0.5 | 25 | 0.15 | 7.50 |
| 10 mL orange | 0.1 mL – 10 mL | 1 mL | 0.5 | 5 | 0.25 | 2.5 |
| | | 5 mL | 0.4 | 20 | 0.25 | 12.5 |
| | | 10 mL | 0.4 | 40 | 0.15 | 15 |
| 25 mL red | 0.25 mL – 25 mL | 2.5 mL | 0.3 | 7.5 | 0.35 | 8.8 |
| | | 12.5 mL | 0.3 | 37.5 | 0.25 | 31.3 |
| | | 25 mL | 0.3 | 75 | 0.15 | 37.5 |
| 50 mL light gray | 0.5 mL – 50 mL | 5 mL | 0.3 | 15 | 0.5 | 25 |
| | | 25 mL | 0.3 | 75 | 0.20 | 50 |
| | | 50 mL | 0.3 | 150 | 0.15 | 75 |

Test conditions and test evaluation in compliance with ISO 8655, Part 6. Test using a standardized fine balance with a moisture trap.

- Number of determinations: 10
- Use of water in accordance with ISO 3696
- Test was carried out with a Combitip advanced that was filled to capacity
- Test was carried out at 20 °C – 27 °C ± 0.5 °C
- Dispensing onto the tube wall
- Speed level: 5

The testing volumes for the systematic and random error comply with the requirements of ISO 8655, Part 5.

## 8.4 Ambient conditions

| | |
|---|---|
| Ambience | Only for use indoors. |
| Ambient temperature | 5 °C – 40 °C |
| Relative humidity | 10 % – 95 %, non-condensing. |
| Atmospheric pressure | 795 hPa – 1060 hPa |

# 9 Transport, storage and disposal

## 9.1 Decontamination before shipment

If you are shipping the device to the authorized Technical Service for repairs or to your authorized dealer for disposal please note the following:

**WARNING! Risk to health from contaminated device**

1. Follow the instructions in the decontamination certificate. You find it as a PDF file on our website (www.eppendorf.com/decontamination).
2. Decontaminate all the parts you would like to dispatch.
3. Include the fully completed decontamination certificate in the packing.

## 9.2 Storage

**NOTICE! Damage to device due to incorrect storage.**

- Remove the rechargeable battery if you will not be using the device for longer periods of time.
- Do not store the device while the Combitip is inserted.
- Select a secure storage location.
- Do not expose the device to aggressive gases over a longer period of time.

**NOTICE! Damage due to UV radiation.**

- Do not store consumables in areas with strong UV radiation.

| | Air temperature | Relative humidity | Atmospheric pressure |
|---|---|---|---|
| In transport packaging | -25 °C – 55 °C | 10 % – 95 % | 700 hPa – 1060 hPa |
| Without transport packaging | -5 °C – 45 °C | 10 % – 95 % | 700 hPa – 1060 hPa |

## 9.3 Disposal

In case the product is to be disposed of, the relevant legal regulations are to be observed.

**Information on the disposal of electrical and electronic devices in the European Community:**

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the following symbol to indicate this:

As disposal regulations may differ from country to country within the EU, please contact your supplier if necessary.

**WARNING! Risk of explosion and fire due to overheated rechargeable batteries and batteries.**

- Do not heat rechargeable batteries and batteries to over 80°C and do not throw them into fire.

**Disposing of accumulators and batteries**
Do not dispose of accumulators and batteries as household waste. Dispose of accumulators and batteries according to the locally applicable legal regulations.

# 10 Ordering information

## 10.1 Multipette E3/E3x – Repeater E3/E3x

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| 4987 000.010 | – | **Multipette E3** |
| 4987 000.029 | – | **Multipette E3x** |
| – | 4987000118 | **Repeater E3** |
| – | 4987000134 | **Repeater E3x** |
| 4987 000.371 | – | **Multipette E3 bundle**<br>incl. charger stand |
| 4987 000.380 | – | **Multipette E3x bundle**<br>incl. charger stand |
| – | 4987000398 | **Repeater E3 bundle**<br>incl. charger stand |
| – | 4987000410 | **Repeater E3x bundle**<br>incl. charger stand |

## 10.2 Accessories

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| 4880 000.018 | 4880000018 | **Charger stand 4880**<br>for 1 Multipette/Repeater (X)stream, Multipette/ Repeater E3/E3x |
| 4880 000.026 | 4880000026 | **Charger carousel 4880**<br>incl. power supply 4880 603.006<br>for 4 XplorerXplorer/Xplorer plus |
| 4880 601.003 | 4880601003 | **Charger shell**<br>for charger carousel series 4880<br>for Multipette/ Repeater (X)stream, Multipette/ Repeater E3/E3x |
| 4880 603.006<br>4986 603.005 | 4880603006<br>4986603005 | **Power supply with power plug adapters**<br>for charger carousel series 4880<br>for pipettes and charger stand |
| 4986 602.009 | 022462407 | **Li-ion rechargeable battery**<br>for Multipette/Repeater (X)stream, Multipette/ Repeater E3/E3x |
| 4986 604.001 | 4986604001 | **Wall mount**<br>for Multipette/Repeater (X)stream, Multipette/ Repeater E3/E3x |

## 10.3 Combitips advanced

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| | | **Combitips advanced 0.1 mL**<br>100 pieces |
| 0030 089.405 | 0030089405 | Eppendorf Quality |
| – | 0030089510 | Sterile, individually wrapped |
| 0030 089.618 | 0030089618 | Biopur, individually wrapped |
| 0030 089.766 | – | PCR clean |
| | | **Combitips advanced 0.2 mL**<br>100 pieces |
| 0030 089.413 | 0030089413 | Eppendorf Quality |
| – | 0030089529 | Sterile, individually wrapped |
| 0030 089.626 | 0030089626 | Biopur, individually wrapped |
| 0030 089.774 | – | PCR clean |
| | | **Combitips advanced 0.5 mL**<br>100 pieces |
| 0030 089.421 | 0030089421 | Eppendorf Quality |
| – | 0030089537 | Sterile, individually wrapped |
| 0030 089.634 | 0030089634 | Biopur, individually wrapped |
| 0030 089.782 | – | PCR clean |
| | | **Combitips advanced 1.0 mL**<br>100 pieces |
| 0030 089.430 | 0030089430 | Eppendorf Quality |
| – | 0030089545 | Sterile, individually wrapped |
| 0030 089.642 | 0030089642 | Biopur, individually wrapped |
| 0030 089.790 | – | PCR clean |
| | | **Combitips advanced 2.5 mL**<br>100 pieces |
| 0030 089.448 | 0030089448 | Eppendorf Quality |
| – | 0030089553 | Sterile, individually wrapped |
| 0030 089.650 | 0030089650 | Biopur, individually wrapped |
| 0030 089.804 | – | PCR clean |
| | | **Combitips advanced 5.0 mL**<br>100 pieces |
| 0030 089.456 | 0030089456 | Eppendorf Quality |
| – | 0030089561 | Sterile, individually wrapped |
| 0030 089.669 | 0030089669 | Biopur, individually wrapped |
| 0030 089.812 | – | PCR clean |

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| | | **Combitips advanced 10 mL**<br>100 pieces |
| 0030 089.464 | 0030089464 | Eppendorf Quality |
| – | 0030089570 | Sterile, individually wrapped |
| 0030 089.677 | 0030089677 | Biopur, individually wrapped |
| 0030 089.820 | – | PCR clean |
| | | **Combitips advanced 25 mL**<br>100 pieces + 4 Adapter |
| 0030 089.472 | 0030089472 | Eppendorf Quality |
| – | 0030089588 | Sterile, individually wrapped |
| 0030 089.685 | 0030089685 | Biopur, individually wrapped |
| 0030 089.839 | – | PCR clean |
| | | **Combitips advanced 50 mL**<br>100 pieces + 4 Adapter |
| 0030 089.480 | 0030089480 | Eppendorf Quality |
| – | 0030089596 | Sterile, individually wrapped |
| 0030 089.693 | 0030089693 | Biopur, individually wrapped |
| 0030 089.847 | – | PCR clean |

### 10.3.1 Adapter advanced

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| | | **Adapter advanced 25 mL**<br>1 piece |
| 0030 089.715 | 0030089715 | Eppendorf Quality |
| | | **Adapter advanced 50 mL**<br>1 piece |
| 0030 089.723 | 0030089723 | Eppendorf Quality |
| | | **Adapter advanced 25 mL**<br>7 pieces |
| 0030 089.731 | 0030089731 | Biopur, individually wrapped |
| | | **Adapter advanced 50 mL**<br>7 pieces |
| 0030 089.740 | 0030089740 | Biopur, individually wrapped |

## 10.4 Accessories

| Order no. (International) | Order no. (North America) | Description |
|---|---|---|
| 0030 059.506 | – | **Combilong**<br>Aspirating aid for removing liquids from volumetric flasks and tall bottles<br>2 pieces |
| – | 022261550 | **Combitube**<br>Aspirating aid for removing liquids from volumetric flasks and tall bottles<br>2 pieces |
| 0030 089.758 | 0030089758 | **Combitips advanced Rack**<br>1 piece<br>Eppendorf Quality |

# Index

**A**

Accessing *Favorites* ..... 39
Adjust language..... 36
Aspirating liquid ..... 24

**C**

Carrying out a reverse stroke ..... 25
Change Parameter ..... 24
Charging carousel
    Loading the rechargeable battery .... 21
Charging stand
    Loading the rechargeable battery .... 21
Charging status
    Rechargeable battery ..... 16
Charging the rechargeable battery ..... 20
Cleaning ..... 40
Connect the rechargeable battery ..... 20

**D**

Decontamination ..... 45
Device settings ..... 33
Disinfection ..... 40
Dispenser tip
    Combitip advanced..... 18
Display..... 14
Display layout..... 14
Disposal ..... 46

**E**

Editing *Favorites*..... 39
Ejecting the dispensing tip..... 23
Emptying the dispensing tip ..... 33
Errors..... 43

**F**

Features..... 11

**I**

Initial use.....19
Inserting the dispensing tip .....22

**M**

Mains/power supply device .....16
    Loading the rechargeable battery.....20
Materials .....17

**O**

Operating control
    Actuate key.....14
    Ejector .....14
    Reset .....14
    Rocker .....14
    Selection dial.....14
    Softkey .....14
Operating mode
    **A/D** .....30
    **Ads** .....27
    **Asp** .....29
    **Dis** .....26
    **Opt** .....33
    **Pip** .....25
    **Seq** .....28
    **Ttr** .....31
Operating modes
    E3 .....15
    E3x .....15
Option
    *Key lock* .....35
    *Language* .....36
    *Personalization* .....37
    *Screen saver*.....38
    *Service* .....37
Option
    *Date and time* .....38
Overview of parameters .....23

**P**

Parameter set
    *Favorites* .....39

Power plug adapters ..... 16

**R**

Renewed aspiration ..... 32

**S**

Service function
*Self test* ..... 37
Storage ..... 45

**T**

Technical data
Ambient conditions ..... 44
Troubleshooting
Dispensing tip ..... 40
Display ..... 40

**W**

Warranty ..... 17

eppendorf

# Declaration of Conformity

The product named below fulfills the requirements of directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid.

Product name:

Multipette® E3 & E3x, Repeater® E3 & E3x

including charging adapter

Product type:

Electrically controlled manual dispenser

Relevant directives / standards:

2014/35/EU: EN 61010-1

2014/30/EC: EN 61326-1, EN 55011

2011/65/EU: EN 50581

EN ISO 8655-1, EN ISO 8655-2, EN ISO 8655-5, EN ISO 8655-6

Date: February 16, 2016

Management Board

Portfolio Management

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