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Multipipette® E3/E3x Repeater® E3/E3x

Operating manual

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English (EN)

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.ependorf.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	<i>Will</i> lead to severe injuries or death.
WARNING	<i>May</i> 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.	Actions in the specified order
2.	
▶	Actions without a specified order
•	List
<i>Text</i>	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 process 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 Multipipettes 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 Multipipette 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 Multipipette 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

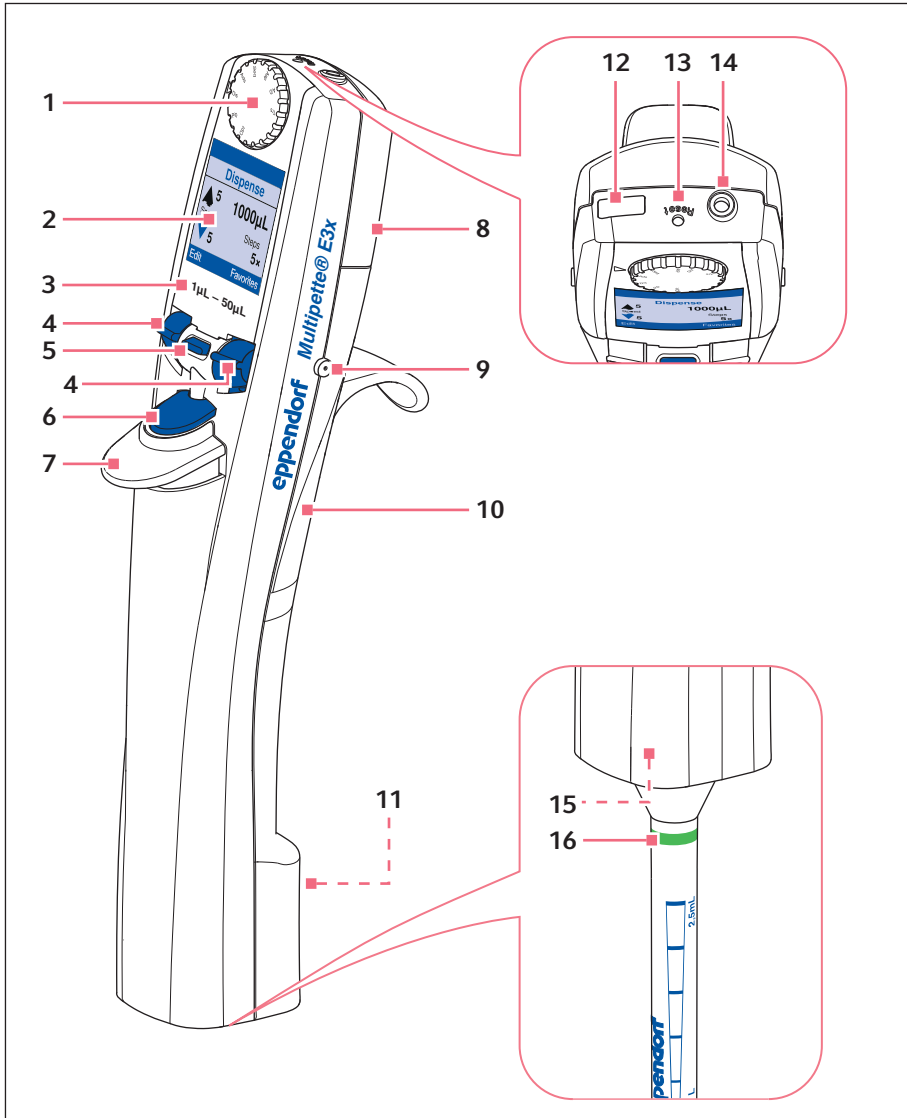


Fig. 3-1: Multipette E3/E3x and Repeater E3/E3x

- 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

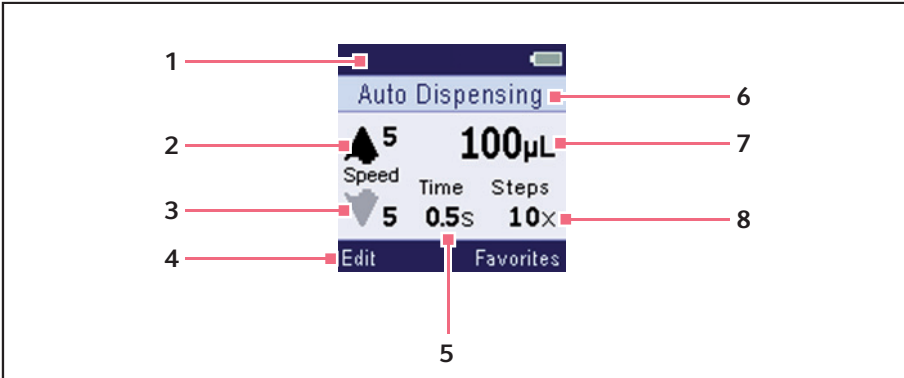


Fig. 3-2: Example layout for the **Ads** operating mode

- | | |
|---------------------------|-------------------------------------|
| 1 Header | 5 Time interval |
| 2 Aspiration speed | 6 Status line |
| 3 Dispensing speed | 7 Dispensing volume |
| 4 Footer | 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

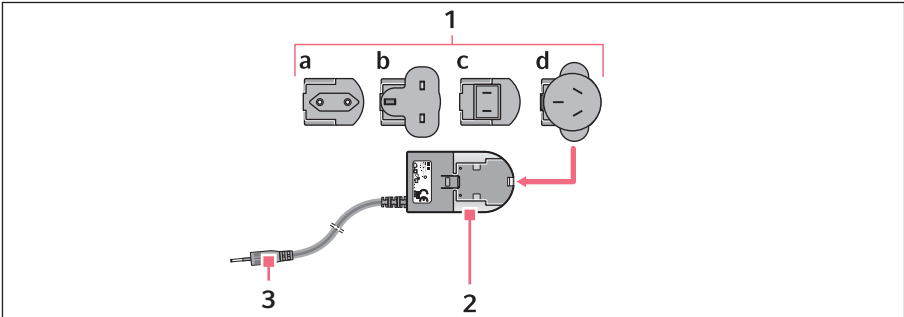


Fig. 3-3: Mains/power supply device with adapters

1 Power plug adapters

- a Europe
- b Great Britain
- c USA
- d Australia

3 Charging plug

2 Mains/power supply device

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.

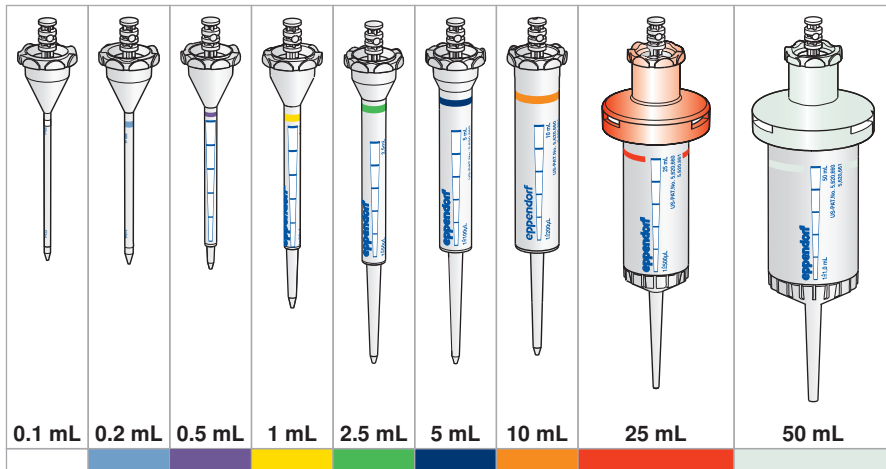
No warranty is given in the following cases:

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

The following assemblies are excluded from the warranty:

- Rechargeable battery

3.11 Overview Combityps advanced



3.11.1 Volume ranges for Combityps advanced

Combityp advanced	Volume range	Increment
0.1 mL white	1.0 µL – 100 µL	0.1 µL
0.2 mL light blue	2.0 µL – 200 µL	0.2 µL
0.5 mL Violet	5.0 µL – 500 µL	0.5 µL
1.0 mL Yellow	10 µL – 1000 µL	1.0 µL
2.5 mL Green	25 µL – 2500 µL	2.5 µL
5.0 mL Blue	50 µL – 5000 µL	5.0 µL
10 mL Orange	0.1 mL – 10 mL	0.01 mL
25 mL red	0.25 mL – 25 mL	0.025 mL
50 mL 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

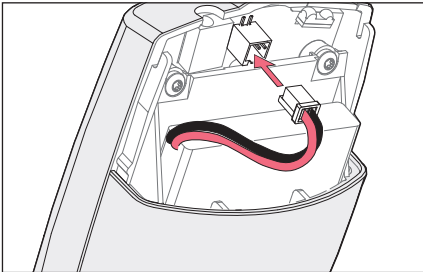
1. Select the appropriate power plug adapters for the mains/power line.
2. Push the power plug adapter on the mains/power supply device until it locks into place.

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

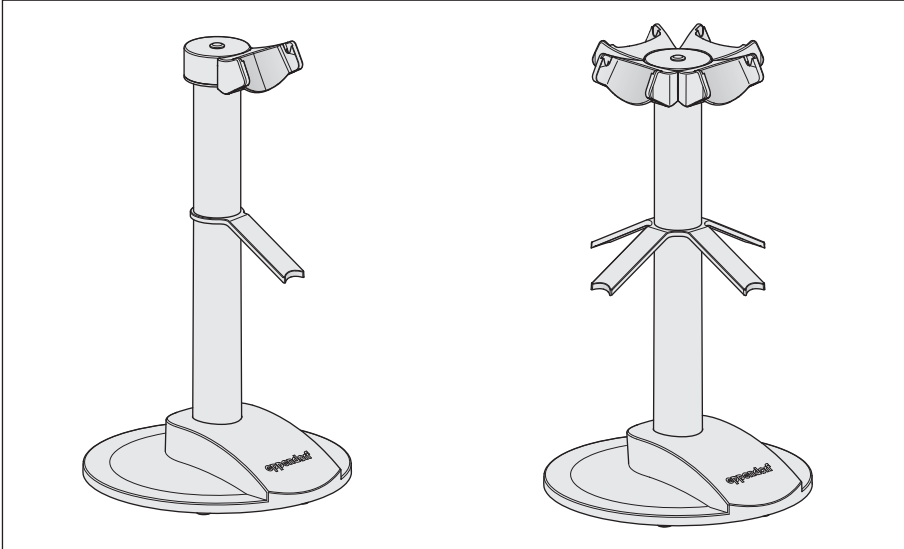


Fig. 5-1: Charger stand and charger carousel

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 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.

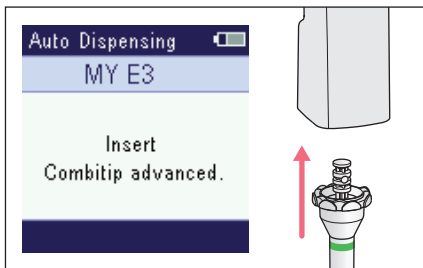
- ▶ Only use Combitips advanced.



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

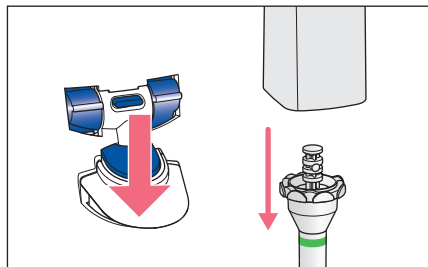


1. Select the dispensing tip.
2. Insert the dispensing tip straight from below.
The size of the dispensing tip is shown on the display.

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

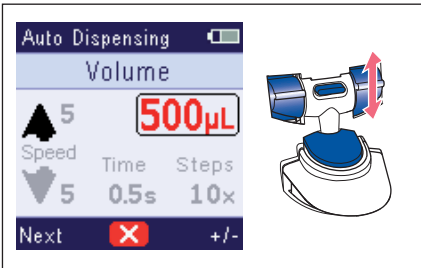
In the operating modes it is possible to change the parameters listed.

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.



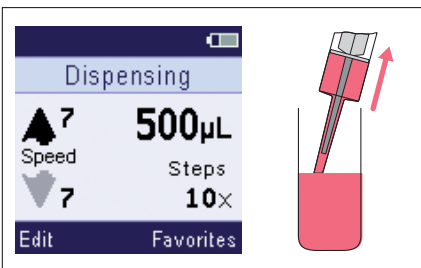
1. Press the *Edit* rocker.
The parameter that can be changed is highlighted.
2. Select the desired parameter with the *Next* rocker.
3. Change the parameter value with the +/- rocker.
4. To save the parameter value, press the actuation key.

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

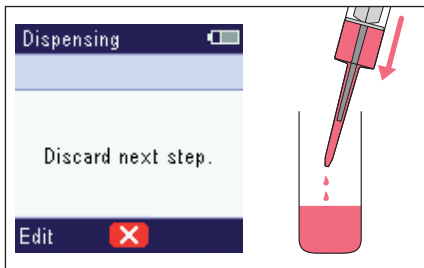
- i** The aspiration of liquid can be aborted with the middle softkey or the actuation key. The aspirated liquid can be used for a subsequent liquid dispensing operation.

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

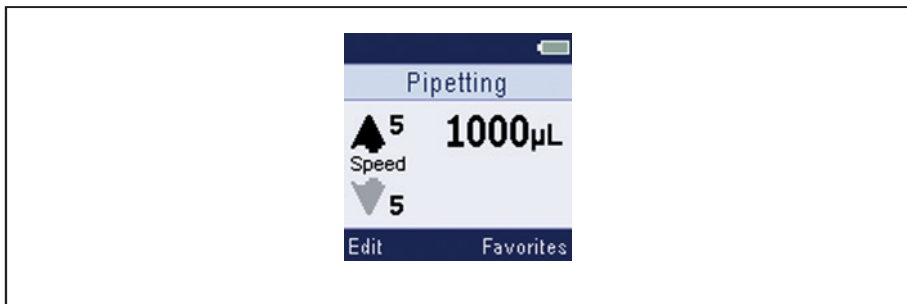


Fig. 5-2: Screen for the **Pip** operating mode

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

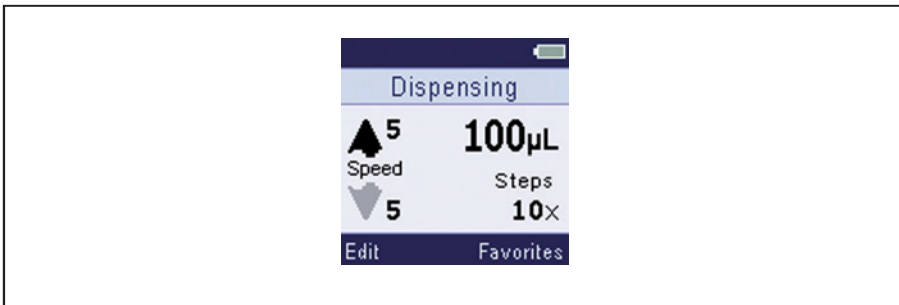


Fig. 5-3: Screen for the **Dis** operating mode

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

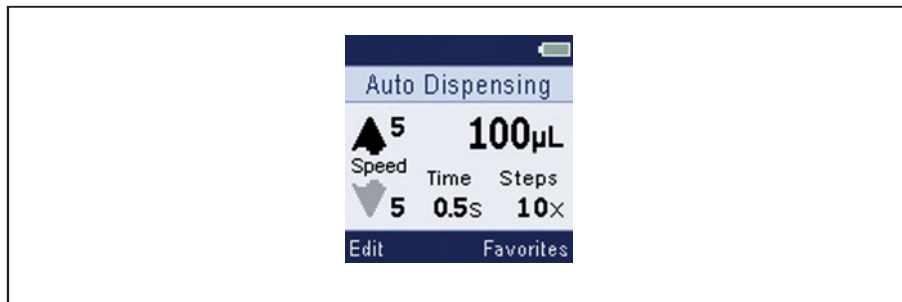


Fig. 5-4: Screen for the **Ads** operating mode

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.
 - i** 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

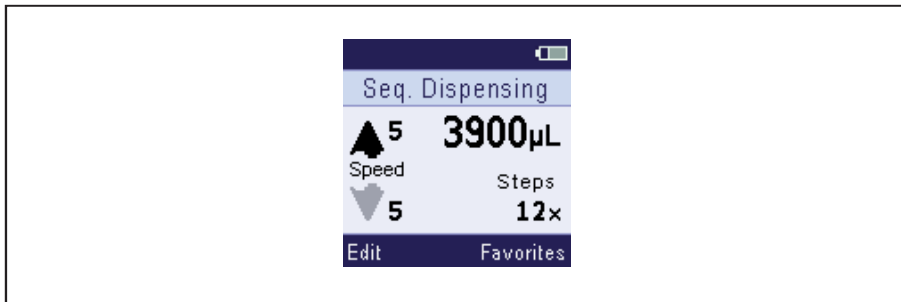


Fig. 5-5: Screen for the **Seq** operating mode

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

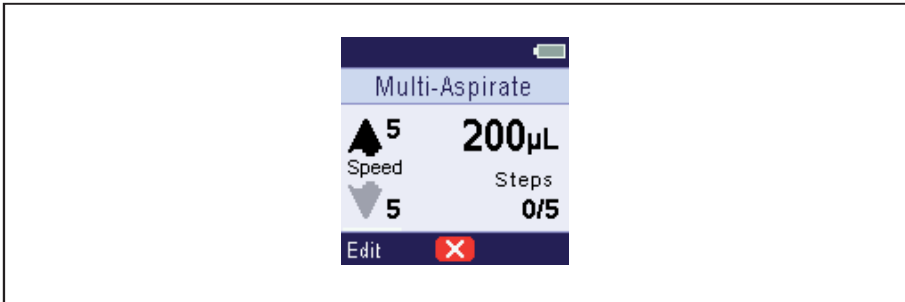


Fig. 5-6: Screen for the **Asp** operating mode

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

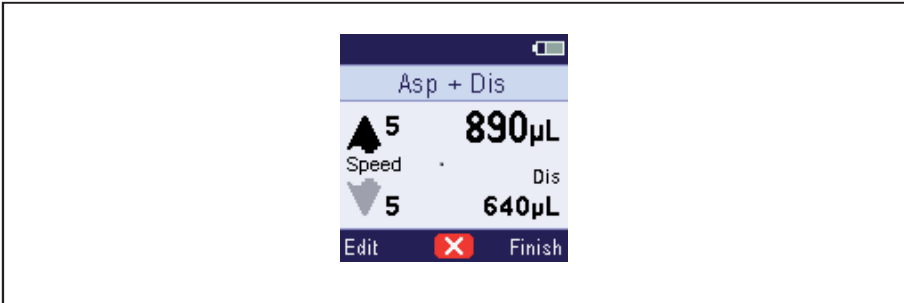


Fig. 5-7: Screen for the **A/D** operating mode

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

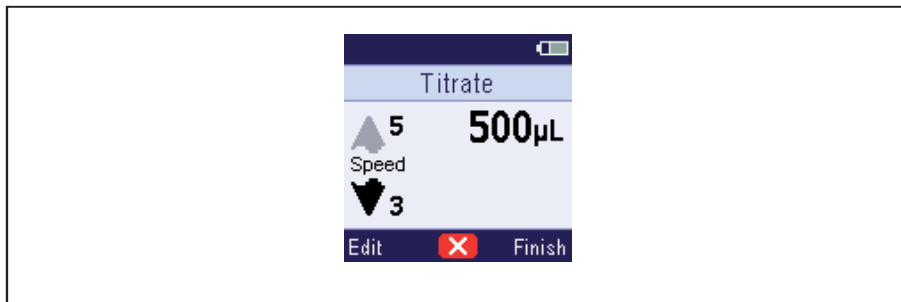


Fig. 5-8: Screen for the **Ttr** operating mode

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.



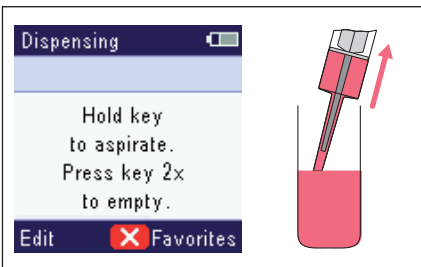
Fig. 5-9: Screen for *Last Ttr*

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.

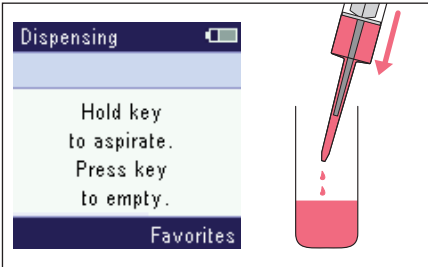


1. Immerse the dispensing tip into the liquid in the source vessel.
2. Press and hold down the actuation key.
The dispensing tip is filled.

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

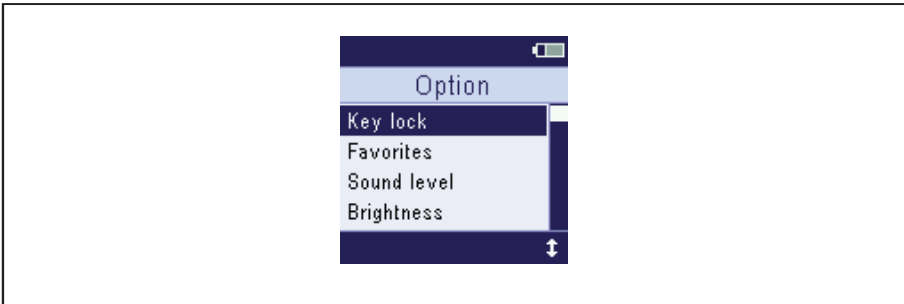


Fig. 5-10: Screen for the **Opt** operating mode


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

Device setting	Meaning	Value
<i>Language</i>	Select language	<ul style="list-style-type: none"> • <i>Chinese</i> – Chinese • <i>Dutch</i> – Dutch • <i>English</i> – English • <i>French</i> – French • <i>German</i> – German • <i>Italian</i> – Italian • <i>Japanese</i> – Japanese • <i>Portuguese</i> – Portuguese • <i>Spanish</i> – Spanish
<i>Personalization</i>	Personally identify dispenser	Free text (10 digits)
<i>Service</i>	Access service functions	<ul style="list-style-type: none"> • <i>Software version</i> • <i>Initial reset</i> • <i>Self test</i>
<i>Reminder</i>	Reminder function for the next service	<ul style="list-style-type: none"> • <i>Last service</i> • <i>Next service</i> • <i>Interval</i> • <i>Reset</i>
<i>Date and time</i>	Setting date and time	<ul style="list-style-type: none"> • <i>Date</i> – YYYY-MM-DD • <i>Hour</i> – hh:mm
<i>Screen saver</i>	Activate/deactivate screen saver	<i>On/Off</i>

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
<i>On</i>	Key lock is activated
<i>Off</i>	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
<i>On</i>	The use of favorites is activated
<i>Off</i>	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
<i>On</i>	Acoustic feedback is activated
<i>Off</i>	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
<i>Software version</i>	Displays the version number of the software.
<i>Initial reset</i>	Resets all parameters, favorites and adjusted options to the factory settings. The changes must be confirmed.
<i>Self test</i>	Performs a device self test. The test checks the movement of the piston. If the test result is negative, contact the authorized service. 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
<i>Last service</i>	Displays the date when the last service or gravimetric test was performed.
<i>Next service</i>	Displays the date for the next service with an indication of the remaining months and days.
<i>Interval</i>	Sets the period until the next service. 0 disables the function.
<i>Reset</i>	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.

Troubleshooting

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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.	<ul style="list-style-type: none"> The dispensing tip has not been emptied. 	<ul style="list-style-type: none"> ▶ Empty the dispensing tip.

6.1.2 Display

Problem	Cause	Solution
The display is dark.	<ul style="list-style-type: none"> The rechargeable battery is discharged. 	<ul style="list-style-type: none"> ▶ Charge the rechargeable battery.
	<ul style="list-style-type: none"> The battery is defective. 	<ul style="list-style-type: none"> ▶ 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.

Technical data

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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

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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 incl. charger stand
4987 000.380	–	Multipette E3x bundle incl. charger stand
–	4987000398	Repeater E3 bundle incl. charger stand
–	4987000410	Repeater E3x bundle incl. charger stand

10.2 Accessories

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

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10.3 Combitips advanced

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

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

10.3.1 Adapter advanced

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

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10.4 Accessories

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

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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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