




Multipette stream[®]/Xstream[®] Repeater stream[®]/Xstream[®]

Operating manual

eppendorf



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U.S. Pat. No.

5,620,660

5,620,661

US Design Patents:

Combitip plus 0.1 mL 384,163

Combitip plus 2.5 mL 384,162

Combitip plus 10 mL 387,426

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1 Operating instructions







1.1 Using this manual

- ▶ Read this operating manual completely before using the device for the first time. Please also note the operating instructions for the accessories, if applicable.
- ▶ The instructions for use for the Combitips advanced can be found on our webpage www.eppendorf.com/cbt.
- ▶ This operating manual is part of the product. Please keep it in a place that is easily accessible.
- ▶ Enclose this operating manual when transferring the device to third parties.
- ▶ If this manual is lost, please request another one. You will find the current version on our webpage www.eppendorf.com/worldwide.
- ▶ If information in this manual refers to the Multipette stream/Repeater stream, it is also valid for the Multipette Xstream/Repeater Xstream. If information is only valid for the Multipette Xstream/Repeater Xstream, this is explicitly mentioned in the text.
- ▶ This manual applies to devices with software version 03.06.00 and higher. For devices with older software and hardware, use the operating manuals Multipette (X)stream/ Repeater (X)stream 4986 900.115-01.

1.2 Danger symbols and danger levels

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



1.2.1 Danger symbols

	Biohazard		Explosion
	Electric shock		Toxic substances
	Hazard point		Material damage

1.2.2 Danger levels

DANGER	<i>Will lead to serious injuries or death.</i>
WARNING	<i>May lead to serious injuries or death.</i>
CAUTION	<i>May lead to light to moderate injuries.</i>
NOTICE	<i>May lead to material damage.</i>

1.3 Symbols used

Symbol	Meaning
▶	Handling
1. 2.	Actions in the specified order
•	List
①	Step in the figures
	Direction of movement
<i>Text</i>	Name of fields in the software
	Useful information

1.4 Glossary

A

Adapter advanced

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

B

Biopur

Eppendorf Biopur® is an Eppendorf AG purity grade for consumables. Eppendorf Biopur® meets the requirements for standard products, e.g. precision, accuracy, wetting behavior, tightness. Eppendorf Biopur® also meets the requirements with regard to sterility, absence of ATP, PCR inhibitors, human and bacterial DNA, pyrogen, DNase and RNase.

Consumables of the purity grade Biopur are controlled and certified by an external laboratory.

Certificates are available for downloading from our internet page

www.eppendorf.com.

	C
Combitip advanced	Consumables for all Eppendorf Multipettes and Repeaters. With the Combitip advanced, the dispenser becomes an operational dispenser. Combitips advanced are intended for single use. Combitips advanced consist of a piston and a cylinder and function according to the positive displacement principle. They are offered for nine different volume ranges. For Combitips advanced with a maximum volume of 25 mL or 50 mL, the Adapter advanced is also required.
	F
Free jet dispensing	Dispensing the liquid without the Combitip touching the tube inner wall. If a drip forms on the Combitip after free jet dispensing, this drip always belongs to the next dispensing step. We recommend completing a dispensing series using only the free jet method or wall dispensing method. Complete the reverse stroke in accordance with the dispensing series using either the free jet or wall dispensing method. Errors listed in the technical data were determined using the wall dispensing method.
	I
Increment	Step size or resolution. For instance, when selecting the volume for a 10 mL Combitip, the volume can be increased or reduced in 0.01 mL steps.
ISO 8655	The ISO 8655 standard defines limiting values for systematic errors [accuracy], random errors [precision]) and the test methods for dispensing devices.
	N
Nominal volume	The maximum dispensing volume of a Combitip in conjunction with the selected dispensing device. The term "nominal volume" comes from the ISO 8655 standard.
	P
PhysioCare Concept®	Products that carry the Eppendorf PhysioCare Concept logo feature optimized ergonomics and make operation as simple as possible, even with complex dispensing tasks. PhysioCare products can be easily serviced and cleaned. They are made of extremely light materials and require minimal operating force.
Positive displacement principle	The liquid comes into direct contact with the Combitip piston during aspiration and dispensing. Unlike with a pipette, the liquid and piston are not separated by an air cushion. A little air bubble is visible at the piston during dispensing.
	R
Rechargeable lithium-ion battery	Rechargeable lithium-ion batteries have a very high charging capacity and long service life.
Reverse stroke	After aspiration, the piston is moved into a defined position. Liquid is dispensed during this piston movement. The reverse stroke is not a dispensing step.

V

Viscosity

Viscosity describes the viscosity of liquids and suspensions. The dynamic or absolute viscosity is indicated in Pa·s or in mPa·s. In older literature, the unit P or cP is used (1 mPa·s corresponds to 1 cP).

At room temperature, a 50 % glycerin solution has a viscosity of approx. 6 mPa·s. As the glycerin concentration increases, viscosity increases considerably. Absolutely anhydrous glycerin has a viscosity of approx. 1480 mPa · s at room temperature.

2 Product description

2.1 Main illustration

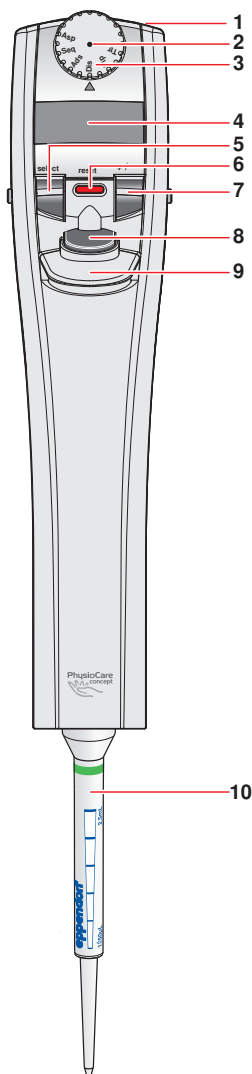


Fig. 1: Front view

1 Connector socket

For connecting the charging plug of an Eppendorf Multipette stream/Repeater stream power supply device.

2 Hardware reset button

Triggering a hardware reset interrupts the power supply (see p. 41).

3 Selection dial

For setting the operating mode.

Depending on the Multipette stream/Repeater stream version, different operating modes are available. The illustration shows the Xstream.

4 Display (illuminated)

Displays the parameter settings (volume, dispensing steps, speeds) and provides feedback and information on the operating steps.

5 Select rocker switch

For switching between the execution and editing displays.

6 Reset key

For stopping or canceling dispensing operations (see p. 35).

7 +/- rocker switch

For changing parameters. Higher speed level with volume change when you press the +/- rocker switch more firmly.

8 Actuate key

For triggering dispensing operations. For saving entries during editing and for returning to dispensing.

9 Ejector

Releases the inserted Combitip.

10 Combitip advanced

Dispenser tip

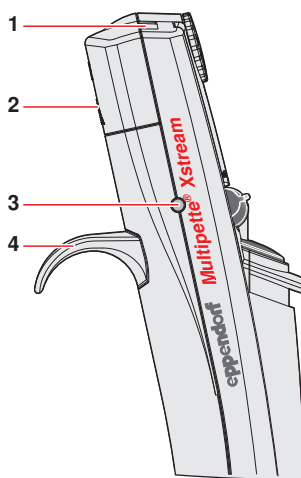


Fig. 2: Side view

- 1 Viewing window for the infrared interface**
For Service.
- 2 Battery compartment lid**
For covering the battery compartment. The battery compartment contains the serial number of the Multipette stream/Repeater stream.
- 3 Charging contact and mounting**
For the battery charging option and for fixing the Multipette stream/Repeater stream in the charging stand (additionally available).
- 4 Finger rest**
For ensuring a secure and comfortable grip.

2.2 Delivery package

Quantity	Order No. (International)	Order No. (North America)	Description
1	4986 000.017	–	Multipette stream
or	4986 000.025	–	Multipette Xstream
or	–	022460803	Repeater stream
or	–	022460811	Repeater Xstream
1	0030 089.430	0030089430	Combitips advanced 1.0 mL Eppendorf Quality
1	0030 089.715	0030089715	Adapter advanced 25 mL 1 piece Eppendorf Quality
1	0030 089.723	0030089723	Adapter advanced 50 mL 1 piece Eppendorf Quality
1	4986 602.009	022462407	Li-ion rechargeable battery for Multipette/Repeater (X)stream
1	4986 603.005	4986603005	Power supply with power plug adapters
1	4986 900.115	4986900115	Operating Manual Multipette/ Repeater (X)stream
1	4986 900.140	4986900140	Short instructions Multipette/ Repeater (X)stream

2.3 Features

In combination with a Combitip, the Multipette stream/Repeater stream is a motor-driven and electronically controlled manual dispenser which operates according to the positive displacement principle.

2.3.1 Operating modes

The Multipette stream/Repeater stream and Multipette Xstream/Repeater Xstream have the following operating modes:

	Dis	Ads	Seq	Asp	Pip	Ttr
Multipette stream/ Repeater stream	●	●	–	–	●	–
Multipette Xstream/ Repeater Xstream	●	●	●	●	●	●

Dis	Dispensing	gradual dispensing of liquid in equal partial volumes.
AdS	Automatic dispensing	automatic dispensing of liquid in equal partial volumes and at fixed intervals.
Seq	Sequential dispensing	dispensing liquid in up to 16 different volumes in one sequence.
Asp	Aspirating	consecutive aspiration of liquid of the same volume into a Combitip.
Pip	Pipetting	aspirating and dispensing liquid.
Ttr	Titration	gradual dispensing of reagent into a sample solution. Multiple aspiration of the reagent into the Combitip is possible.

2.3.2 Dispensing tasks and ranges

It is possible to dispense aqueous solutions, but also solutions with a higher viscosity. At a higher viscosity, lower aspiration and dispensing speeds should be selected.

- If the lowest speed (1 bar) is used for aspiration and dispensing, it is possible to dispense solutions with a viscosity of ≤ 300 mPa·s with ≤ 25 mL Combitips.
- If 50 mL Combitips are used, the viscosity must not exceed 100 mPa·s.
- With 0.5 mL Combitips and the highest speed setting, 5 μ L of water can be dispensed in a free jet. Free jet dispensing of water is also possible with all larger Combitips. If large volumes are dispensed in a free jet, the liquid may splash back!

-
- i** For solutions with a higher vapor pressure it is recommended to saturate the small air bubble at the piston of the Combitip with liquid vapor by aspirating and dispensing the liquid several times.
-

2.4 Warranty

In the case of warranty claims, please contact your responsible Eppendorf contractual partner. No warranty is provided for any damage due to misuse or if the device has been opened by unauthorized persons. The rechargeable lithium-ion battery and all other wear parts are excluded from the warranty.

2.5 Display

The display has 10 brightness levels. The display switches off during usage intervals. The display switches on again automatically when a key is pressed. If the Multipette stream/ Repeater stream is not used for an extended period of time, the display is switched off completely after approx. 10 minutes.

The Multipette stream/Repeater stream saves the most recent setting for each Combipip size in all operating modes. If you are using a new Combipip in the corresponding size, the most recent setting will be shown on the display.

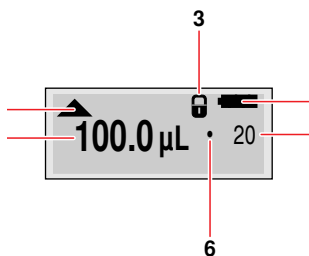


Fig. 3: Display

1 Volume

Unit in μL or mL.

2 Direction of the next piston movement

- ▲ Aspirate liquid
- ▼ Dispense liquid

3 Key lock

🔒 is only displayed if the +/- rocker switch is locked. Can be stored or activated for the device parameters (see p. 36).

4 Battery

Battery charging status. Possible displays:

- Battery full
- ▣ Battery exhausted
- ▤ Battery severely discharged
- Battery empty

If the battery is exhausted, complete the dispensing operation and charge the battery. If the battery is severely discharged, or **Warning Battery Low!** appears on the display, stop the dispensing operation **immediately** and charge the battery for at least two hours.

5 Dispensing step

In the **Dis**, **Ads** and **Seq** modes, the number of possible dispensing steps. In the **Asp** mode, the number of performed Asp steps

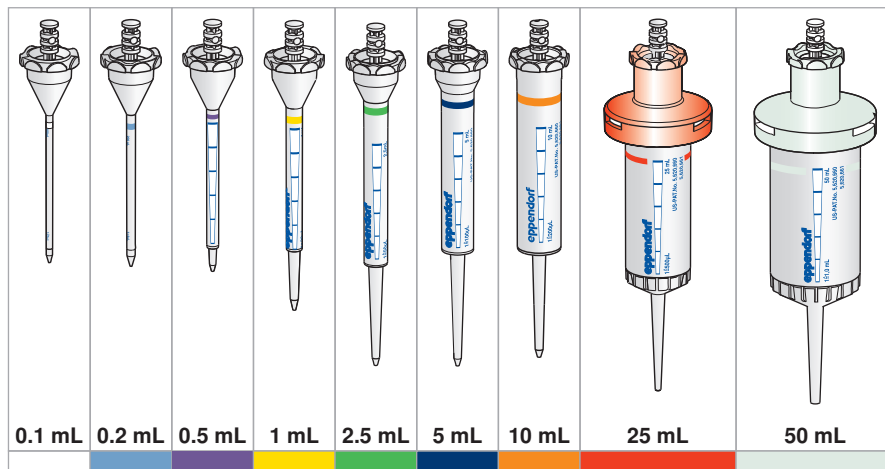
6 Interpunct

Is displayed in the **Dis**, **Ads** and **Asp** modes before aspiration. Indicator for the number of dispensing steps. The pipetted volume must always be greater than the product of the multiplication of the volume (1) with the dispensing step (5).

2.6 Overview Combitips advanced

Combitips advanced are disposable devices for aspirating and dispensing liquids according to the positive displacement principle. Combitips advanced are used in Eppendorf dispensers (e.g., Multipettes/Repeaters) and are made up of a cylinder and a piston. Combitips advanced in sizes 25 mL and 50 mL require an Adapter advanced. Combitips advanced are available in various sizes, which are marked using a color code.

2.6.1 Combitips advanced



2.6.2 Volume ranges for Combitips advanced

Combitips 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 purple	5.0 µL – 500 µL	0.5 µL
1.0 mL yellow	10 µL – 1 000 µL	1.0 µL
2.5 mL green	25 µL – 2 500 µL	2.5 µL
5.0 mL blue	50 µL – 5 000 µL	5.0 µL

Combitips advanced	Volume range	Increment
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

2.7 Materials



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

- ▶ Check the chemical resistance when using organic solvents or aggressive chemicals.
- ▶ Please note the cleaning instructions.

The components of the Multipette stream/Repeater stream which can be accessed by the user are made from the following materials:

Component	Material
Housing parts	Acrylonitrile/styrene/acrylic ester (ASA) with polycarbonate (PC)
Select rocker switch, +/- rocker switch	Silicone
Actuate key	Polyetherimide (PEI)
Charging contacts	Gold coating
Display, selection dial, window IR interface	Polycarbonate (PC), coated and uncoated

Combitip advanced	Material
Cylinder	Polypropylene (PP)
Piston 0.1 mL and 0.2 mL	Polyethylene (PE) with glass fiber (GF)
Piston 0.5 mL to 50 mL	Polyethylene (PE)
Adapter advanced	Polybutylene terephthalate (PBT)

3 Safety

3.1 Intended use

The Multipette stream/Repeater stream is a lab device and, in combination with a Combitip advanced/Combitip plus 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 stream/Repeater stream may only be operated by trained specialist staff. All users must have read the operating manual carefully and familiarized themselves with the device's mode of operation.

-
- ❗ The Multipette stream/Repeater stream is not suitable for the permanent dispensing of fuming acids.
-

3.2 Warnings for intended use



DANGER! Risk of explosion.

- ▶ Do not operate the device in areas where work is completed with explosive substances.
 - ▶ Do not use this device to process any explosive or highly reactive substances.
 - ▶ Do not use this device to process any materials that could create an explosive atmosphere.
-



WARNING! Damage to health from 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 personal protective equipment.
 - ▶ Follow the instructions regarding hygiene, cleaning and decontamination.
 - ▶ Comprehensive regulations on handling germs or biological material in risk group II or higher can be found in the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in the currently valid version).
-



WARNING! Damage to health due to toxic, radioactive or aggressive chemicals.

- ▶ Wear personal protective equipment.
- ▶ Observe the national regulations for handling these substances.
- ▶ Observe the material safety data sheets and manufacturer's application notes.



CAUTION! Danger to persons from careless use.

- ▶ Never point the opening of a Multipette stream/Repeater stream which is equipped with a Combitip at yourself or other persons.
- ▶ Only initiate dispensing if it is safe to do so.
- ▶ With any dispensing task please ensure that you do not endanger yourself and other persons.
- ▶ Check the set speed before commencing dispensing operations. For the dispensing operation select a speed which excludes the back-splashing of the liquid.



CAUTION! Poor safety due to incorrect accessories and spare parts.

The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, functioning and precision of the device. Eppendorf cannot be held liable or accept any liability for damage resulting from the use of incorrect or non-recommended accessories and spare parts, or from the improper use of such equipment.

- ▶ Only use accessories and original spare parts recommended by Eppendorf.



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.
- ▶ If liquid has entered the inside of the housing, the inner parts may only be repaired by Eppendorf AG service partners. Contact your local sales office before returning any devices.



NOTICE! Terminating or interrupting dispensing due to incorrect handling.

If the Combitip is handled incorrectly, an error message may appear on the display or a safety shutdown may be triggered.

- ▶ Do not bend the Combitip.
- ▶ During dispensing or aspirating, do not press the Combitip too strongly against the bottom of the tube or against the tube wall.



NOTICE! Material damage due to incorrect dispensing.

When using the larger Combitips and highly viscous solutions the Multipette may heat up.

- ▶ Only use highly viscous solutions for short dispensing series.



NOTICE! Incorrect dispensing results due to evaporation.

If dispensing is continued with a Combitip that has already been filled after a waiting time, the dispensing volume in the next dispensing step may be slightly reduced due to evaporation.

- ▶ If a high degree of accuracy is required, omit this dispensing step.
-

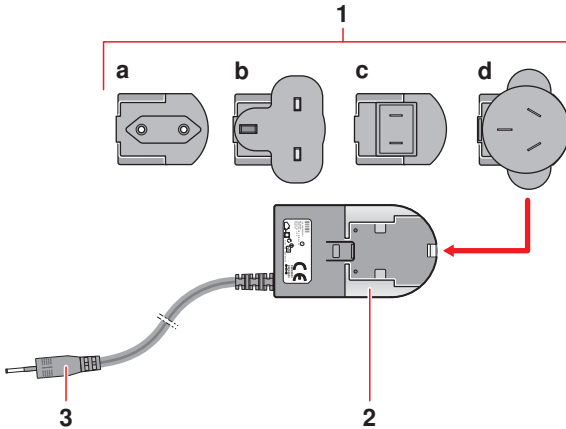
3.3 Information on product liability

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.

4 Installation

4.1 Mains/power supply device assembly



<p>1 Power plug adapters a EU b United Kingdom c USA d Australia</p>	<p>2 Mains/power supply device</p>
<p>3 Charging plug</p>	

- ▶ Insert the power plug adapter required for your mains/power supply into the opening of the mains/power supply device. If there is any doubt as to which power plug adapter should be used for the power supply unit, you should consult an electrician.

4.2 Inserting the Li-ion rechargeable battery

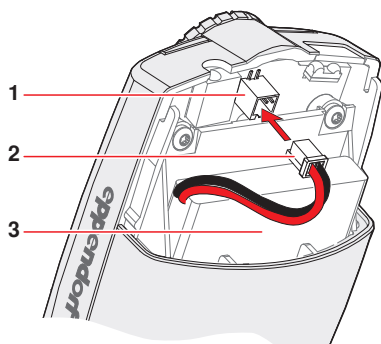


Fig. 4: Insert the Li-ion rechargeable battery

- 1 Connector socket
- 2 Plug
- 3 Li-ion rechargeable battery

Insert the rechargeable battery as follows:

1. Take off the lid of the rechargeable battery compartment.
2. Insert the Li-ion battery. Do not remove the foam insert in the rechargeable battery compartment.
3. Connect the plug of the Li-ion rechargeable battery to the connector socket.
4. Replace the rechargeable battery compartment lid.

4.3 Charge the rechargeable battery



WARNING! Incorrect or damaged power supplies can lead to severe person injury or damage to the device.

Incorrect or damaged power supplies may cause electric shocks, cause the device to overheat, catch fire, melt, short circuit or similar damage.

- ▶ Only use the power supply which is included with the delivery for charging the battery. You can recognize the correct power supply from the Eppendorf logo and the device name on the power supply.
- ▶ Do not use any damaged adapters.

- 1 The supplied Multipette stream/Repeater stream can only be charged with the new power supply unit (order number 4986 603.005) included in this delivery. It is technically not possible to charge this Multipette stream/Repeater stream with a power supply unit from an older delivery. However, older Multipette stream/Repeater stream models can be charged with the new power supply unit included in this delivery. Every charging stand of the Multipette stream/Repeater stream can be operated with a new power supply unit.

- 1 To identify the power supply, each unit is provided with a label with the names "Multipette stream/Xstream", "Repeater stream/Xstream" and "Xplorer". The power supply is designed for the range from 100 - 240 V.

eppendorf 4986 603.005
Multipette® stream/Xstream
Repeater® stream/Xstream
Xplorer®

Recharging the rechargeable battery

1. Insert the assembled power supply (order number 4986 603.005) into a power outlet.
2. Check in the Multipette stream/Repeater stream whether a rechargeable battery has been inserted and connected.
3. Insert the charging plug of the power supply into the connector socket of the Multipette stream/Repeater stream.

The message *Device connected to power supply* is briefly displayed. The charging process is indicated in the display by a flashing rechargeable battery symbol. A fully discharged accumulator requires a charging time of at least two hours. The charging process is complete when the accumulator symbol stops flashing.

The rechargeable battery only achieves its full capacity after several charging cycles.

- i** You can also use the additionally available charger stand 4880 or the charger carousel 4880 (see *Accessories* on p. 46).

To charge the Multipette stream/Repeater stream using the charger carousel 4880, you must order a suitable charger shell for the Multipette stream/Repeater stream in addition.

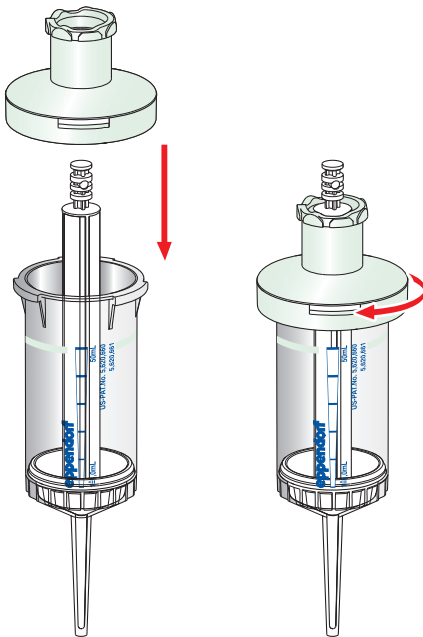
4.4 Assembling the Combitip advanced and Adapter advanced

Combitips advanced with a maximum volume of 0.1 mL – 10 mL can be used immediately. Combitips advanced with a maximum volume of 25 mL and 50 mL can only be used with the corresponding Adapter advanced. Adapter advanced and Combitips advanced have the same color code. The maximum volume is also listed on the neck of the Adapter advanced.



NOTICE! Sensor damage due to damaged or worn adapter

- ▶ Always put the adapter and Combitip together outside of the dispenser.
- ▶ Do not use damaged or worn adapters.
- ▶ Do not use adapters with damaged coding.



1. Place the adapter on the Combitip.
2. Tighten the adapter.

4.5 Inserting the Combitip

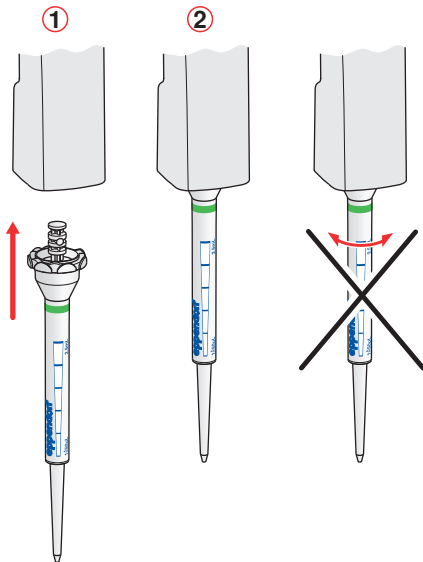


NOTICE! Device damage due to incorrect handling of the inserted Combitip

- ▶ Insert the Combitip straight into the dispenser from below.
- ▶ Do not rotate the inserted Combitip.
- ▶ Never grip the dispenser using the Combitip.



The Combitip is easier to insert if the ejector is held pressed down during insertion.



1. If the Combitip piston has been pushed out, push it back into the cylinder of the Combitip.
2. Use force to push the Combitip into the opening on the lower side of the dispenser ① until the Combitip engages ②.

4.6 Removing the Combipip



CAUTION! Personal injury and damage to the Multipette stream/Repeater stream and to the Combipip by operating the ejector at the wrong time.

If you eject the Combipip during dispensing, liquid may escape. If the ejector is operated at the wrong time, only the cylinder of the Combipip is released. The piston can only be released if it is in the basic position.

- ▶ Only operate the ejector when the piston in the Combipip has reached its lowest position.

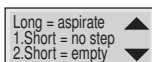
If you accidentally operate the ejector during dispensing, and the cylinder is released because of this, an error message appears (see *Error search* on p. 37).

After dispensing you can remove the Combipip. If any liquid remains in the Combipip, it needs to be emptied first.

4.6.1 Finishing the dispensing operation and removing the Combipip

1. Finish all dispensing steps.

The following information is displayed:



2. Hold the Multipette stream/Repeater stream over a tube.
3. Press the actuate key twice to move the piston to the basic position and to dispense the liquid remaining in the Combipip in a safe manner.

The following information is briefly displayed:

Release
Combipip now

4. Press the ejector button and remove the Combipip.

4.6.2 Emptying and removing the Combipip

If you would like to terminate dispensing prematurely, you need to empty the remaining liquid out of the Combipip before you can remove it.

1. Hold the Multipette stream/Repeater stream over a tube.
2. Press the reset key to move the piston to the basic position and to dispense the liquid remaining in the Combipip in a safe manner.

The following information is briefly displayed:

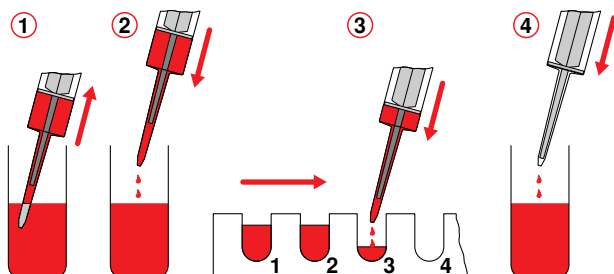
Release
Combipip now

3. Press the ejector button and remove the Combipip.

5 Operation

5.1 Principle of operation

This chapter is provided for information purposes only and is not intended to provide instructions. All operating modes have a comparable procedure. The following steps occur in all operating modes except the aspiration (**Asp**) operating mode:



Parameter settings

- The parameters that are available can vary depending on the operating mode. For each Combipip size the most recently set parameters are saved.
 - Dispensing volume (**Pip**)
 - Dispensing volume per partial dispensing step (**Dis, Ads, Seq**)
 - Aspiration volume (**Asp**)
 - Number of dispensing steps (**Dis, Ads, Seq, Asp**)
 - Aspiration speed (all operating modes)
 - Dispensing speed (all operating modes)
 - Interval time (**Ads**)

Aspirating liquid ①

- You can stop aspiration by pressing the actuate or reset key. When you stop aspiration, the reduced number of dispensing steps is not stored for the next dispensing operation.

Reverse stroke ②

- Positioning the piston of the Combipip. Liquid escapes. This step is a safety step and not a dispensing step. The reverse stroke is indicated in the display as follows:



Dispensing steps ³

i Always dispense the liquid vertically or at a slight angle.

4. Dispense liquid. You can change some parameters during dispensing.
5. There are two possible variants for continuing execution:
 - **Renewed aspiration**
Perform further dispensing process with the previously set parameters.
 - **Empty the Combitip completely ⁴**
Dispense the residual liquid from the Combitip to finish dispensing and to release the Combitip.

5.2 Prepare the Multipette stream/Repeater stream

This chapter describes general operating instructions for Multipette stream/Repeater stream. The Multipette stream/Repeater stream and Multipette Xstream/Repeater Xstream differ as regards the available operating modes (see p. 11). Setting the parameters is identical for every operating mode.

Proceed as follows to set the operating mode and the parameters:

i At high viscosity, select low aspiration and dispensing speeds. Solutions with a viscosity up to 300 mPa·s must be dispensed using a Combitip with a maximum size of 25 mL, set at the lowest speed. If a 50 mL Combitip is used, the viscosity must not exceed 100 mPa·s.

1. Select a suitable Combitip and insert.
The size of the Combitip is recognized automatically by the Multipette stream/Repeater stream and shown on the display for approx. 1 second.
2. If the Multipette stream/Repeater stream is in sleep mode, press any key to activate it.
3. Set the desired operating mode using the selection dial. The selected mode is shown temporarily in the display.
The start display shows the parameters of the last operation with a Combitip of the same size.
4. Setting the parameters . It is also possible to change some parameters in all operating modes during operation. For this, press the select rocker switch during operation and set the parameters.
 - Change between the parameters using the select rocker switch.
 - Change the parameters using the +/- rocker switch.

5. Press the actuate key to save your settings.
The display shows:



Changed data
stored

If you eject the Combitip before pressing the actuate key, the changes will not be saved.








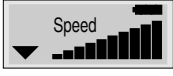

CAUTION! Personal injury and damage to the Multipette stream/Repeater stream and to the Combitip by operating the ejector at the wrong time.

If you eject the Combitip during dispensing, liquid may escape. If the ejector is operated at the wrong time, only the cylinder of the Combitip is released. The piston can only be released if it is in the basic position.

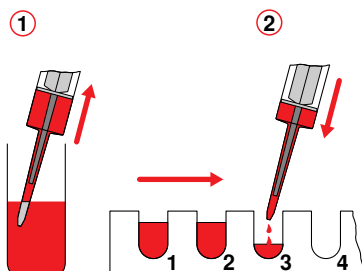
- ▶ Only operate the ejector when the piston in the Combitip has reached its lowest position.
-

6. You can find further details in the chapter on your selected operating mode. Dispensing is performed with the actuate key. If you press the actuate key or the reset key during liquid aspiration or dispensing operations, you will interrupt the dispensing operation.

5.3 Parameters of the Multipette stream/Repeater stream

Display	Parameter function	Dis	Ads	Seq	Asp	Pip	Ttr
	Dispensing volume Depends on the size of the inserted Combitip.	●	●	–	–	●	–
	Dispensing volume per dispensing step Depends on the size of the inserted Combitip. Up to 16 different volumes can be selected.	–	–	●	–	–	–
	Aspiration volume Depends on the size of the inserted Combitip.	–	–	–	●	–	–
	Number of dispensing steps The number of dispensing steps depends on the dispensing volumes.	●	●	●	●	–	–
	Aspiration speed 10 speeds are available. The total of number of bars filled in black represents the speed level selected. The higher the speed, the lower the electric power consumption.	●	●	●	●	●	●
	Dispensing speed Select the highest speed for dispensing small volumes in free jet mode. Select a low speed for viscous solutions. If there is a risk of liquid splashing out of the destination tube during dispensing, reduce the dispensing speed.	●	●	●	●	●	●
	Interval time Distance of time between the dispensing steps. You can choose times between 0.1 - 10 s.	–	●	–	–	–	–

5.4 Dispensing



During dispensing the aspirated liquid is dispensed step by step in partial volumes of equal size. With the smallest dispensing volume and the Combitip completely filled, 100 dispensing steps are possible.

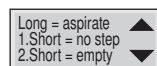
1. Prepare the Multipette stream/Repeater stream.
2. Immerse the Combitip into the liquid to be aspirated.
3. Press the actuate key. Liquid is aspirated.

The display will then show:



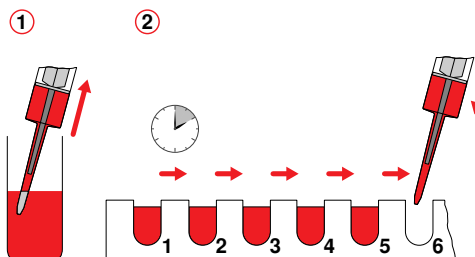
4. Hold the Multipette stream/Repeater stream over a waste container or the supply vessel and press the actuate key. This step is not a dispensing step. The reverse stroke is performed.
5. Hold the Combitip over the first tube into which the liquid is to be dispensed.
6. Press the actuate key to dispense the liquid. Repeat the process for every additional dispensing step. After each dosing step, the display will show the volume of the next dispensing step and the number of the remaining dispensing steps.

After complete dispensing, the display shows:



7. There are two possible variants for continuing execution:
 - **Renewed aspiration**
 - a Immerse the Combitip into the liquid to be dispensed.
 - b Press and hold the actuate key for 2 seconds to aspirate the liquid.
 - **Empty the Combitip fully and remove**
 - a Hold the Multipette stream/Repeater stream over a tube to dispense the residual liquid.
 - b Press the actuate key twice to empty the residual liquid.
 - c Remove the Combitip.

5.5 Automatic dispensing

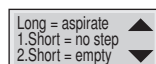


The **Ads** mode is carried out automatically if you press and hold the actuate key. For longer dispensing series (filling plates) in particular, this mode is more convenient and quicker than the **Dis** mode. The dispensing volume, the dispensing speed and the interval time can be changed during dispensing.

1. Prepare the Multipette stream/Repeater stream (see p. 26). When filling plates with 96 wells we recommend you set the interval time between 0.6 s and 2 s, depending on the liquid.
2. Immerse the Combitip into the liquid to be aspirated.
3. Press the actuate key.
Liquid is aspirated.
The display will then show:



4. Hold the Multipette stream/Repeater stream over a waste container or the supply vessel and press the actuate key. The reverse stroke is performed. This step is not a dispensing step.
5. Hold the Combitip over the first tube into which the liquid is to be dispensed.
6. Press and hold the actuate key to aspirate the liquid automatically. Move the Multipette stream/Repeater stream to the next tube within the interval time set previously. If the actuate key is released, the next dispensing steps will not be carried out. You can continue dispensing afterwards by pressing and holding the actuate key.
After complete dispensing, the display shows:

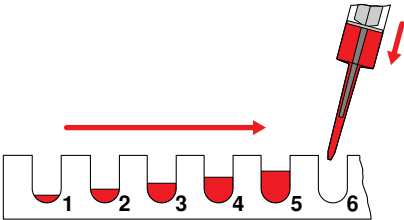


7. There are two possible variants for continuing execution:
 - **Renewed aspiration**
 - a Immerse the Combitip into the liquid to be dispensed.
 - b Press and hold the actuate key for 2 seconds to aspirate the liquid.
 - **Completely empty the Combitip and remove**
 - a Hold the Multipette stream/Repeater stream over a tube to dispense the residual liquid.
 - b Press the actuate key twice to empty the residual liquid.
 - c Remove the Combitip.

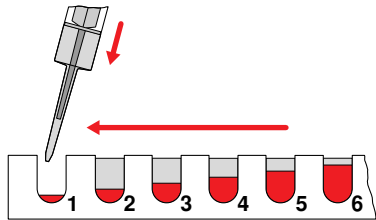
5.6 Sequential dispensing

(only Multipette Xstream/Repeater Xstream)

①



②



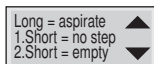
This mode is particularly suitable for dilution series. Sequential dispensing is carried out with two different liquids with the same volumes in two directions. Different dilutions can be prepared for the same total volume. In the **Seq** mode, up to 16 different volumes can be dispensed. You can change the speed during dispensing. The dispensing speed applies to all dispensing volumes. The number of dispensing steps and the different dispensing volumes cannot be changed during execution. If the total of all dispensing volumes exceeds the nominal volume of the Combitip, "nnnnn" is displayed for the subsequent dispensing steps. We recommend to delete these dispensing steps before starting dispensing to avoid any operating errors. To do this, reduce the number of dispensing steps in the **Set steps** parameter.

1. Prepare the Multipette stream/Repeater stream.
2. Immerse the Combitip into the liquid to be aspirated.
3. Press the actuate key to aspirate the liquid.

The display will then show:



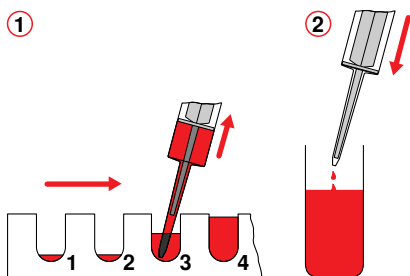
4. Hold the Multipette stream/Repeater stream over a waste container or the supply vessel and press the actuate key.
The reverse stroke is performed. This step is not a dispensing step.
5. Hold the Combitip over the first tube into which the liquid is to be dispensed.
6. Press the actuate key to dispense the liquid. Repeat the process for each additional tube.
The display shows the dispensing volume and the number of the next dispensing step.
After complete dispensing, the display shows:



7. There are two possible variants for continuing execution:
 - **Renewed aspiration**
 - a Immerse the Combitip into the liquid to be dispensed.
 - b Press and hold the actuate key for 2 seconds to aspirate the liquid.
 - **Completely empty the Combitip and remove**
 - a Hold the Multipette stream/Repeater stream over a tube to dispense the residual liquid.
 - b Press the actuate key twice to empty the residual liquid.
 - c Remove the Combitip.

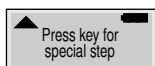
5.7 Aspirating

(only Multipette Xstream/Repeater Xstream)



In the **Asp** mode you aspirate a defined volume several times consecutively into the Combitip, for instance, to take a specific volume from the wells of a plate. The **Asp** mode is performed approximately in reverse to the **Dis** mode. The aspiration volume, aspiration step and speed can be changed during aspiration. After aspiration of the partial volumes you dispense the total volume into a tube.

1. Prepare the Multipette stream/Repeater stream. To prevent the whirling up of sediment or to observe a phase limit, select a low aspiration speed.
2. Press the actuate key.
The display shows:

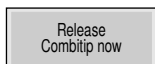


3. Hold the Multipette stream/Repeater stream over a waste container or the supply vessel and press the actuate key to trigger a "special step" without aspiration of liquid.
The reverse stroke is performed. This step is not a dispensing step.
4. Immerse the Combitip into the liquid to be aspirated. Press the actuate key to aspirate the liquid. Repeat the process for every additional well.
The display shows the aspiration volume and the number of the next aspiration step.

- Press the actuate key again.
The display then shows:

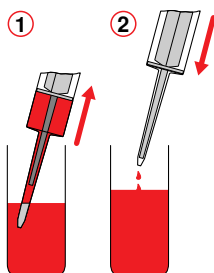


- Hold the Combitip over the tube into which the liquid is to be dispensed.
- Press the actuate key to dispense the liquid.
After dispensing, the following is shown temporarily in the display:



- Remove the Combitip.

5.8 Pipetting



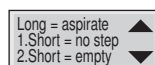
If you only wish to dispense a volume once, use of the **Pip** mode is recommended. The **Pip** mode can also be used to mix a solution by repeated aspirating and dispensing. If a solution must be dispensed at low speed in the **Dis** mode, but quickly mixed before, this can be accomplished by combining these two modes.

- Prepare the Multipette stream/Repeater stream.
- Immerse the Combitip into the liquid to be aspirated.
- Press the actuate key to aspirate the liquid.

The display shows:



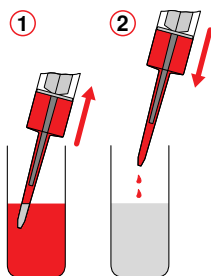
- Hold the Multipette stream/Repeater stream over a waste container or the supply vessel and press the actuate key.
The reverse stroke is performed. This step is not a dispensing step.
- Hold the Combitip over the target vessel. Press the actuate key to dispense the liquid.
After complete dispensing, the display shows:



6. There are two possible variants for continuing execution:
 - **Renewed aspiration**
 - a Immerse the Combipip into the liquid to be dispensed.
 - b Press and hold the actuate key for 2 seconds to aspirate the liquid.
 - **Empty the Combipip completely and remove**
 - a Hold the Multipette stream/Repeater stream over a tube to dispense the residual liquid.
 - b Press the actuate key twice to empty the residual liquid.
 - c Remove the Combipip.

5.9 Titration

(only Multipette Xstream/Repeater Xstream)



In **Ttr** mode, liquid dispensing takes place automatically with the actuate key held down or gradually with the actuate key pressed repeatedly. If the actuate key is released, the piston movement stops and the dispensed volume will be displayed. When titration continues, the dispensing speed is reduced automatically. The speed is also reduced when the +/- rocker switch is locked.

The speed can be changed during titration by moving the select rocker switch and changing the speed with the +/- rocker switch.

1. Prepare the Multipette Xstream/Repeater Xstream.
2. Immerse the Combipip into the liquid to be aspirated.
3. Press the actuate key to aspirate the liquid into the Combipip until it is completely filled. If less liquid is to be aspirated than the nominal volume of the Combipip, stop aspiration with the actuate key.

For the first aspiration of liquid the display shows:



The display will then show:



4. Hold the Multipette Xstream/Repeater Xstream over a waste container or the supply vessel and press the actuate key.
The reverse stroke is performed. This step is not a dispensing step.
5. Hold the Combipip over the tube into which the liquid is to be titrated.

Start titration

6. Keep the actuate key pressed or press the key step by step to dispense the liquid.
If the actuate key is released, the piston movement stops and the display shows the total of previously titrated volumes.
The speed decreases with each dispensing step. In this way you can reach the final point of titration.
7. If the titration is completed before the Combipip is empty hold the Multipipette Xstream/ Repeater Xstream over a waste container and press the reset key to empty the Combipip.
After the emptying process is complete, the display shows the result of titration.
If the full volume of the Combipip is required the following will be shown on the display:

Long = aspirate	▲
1.Short = no step	▼
2.Short = empty	▼

8. There are two possible variants for continuing execution:
 - **Renewed aspiration**
 - a Immerse the Combipip into the liquid to be aspirated.
 - b Press and hold the actuate key for 2 seconds to aspirate the liquid. You can continue titration afterwards. The dispensing volumes are added to the previously titrated volume.
The volume of at least 10 fillings of a Combipip can be displayed. An out-of-range reading is indicated by "nnnnn".
 - **Empty the Combipip completely and remove**
 - a Hold the Multipipette Xstream/Repeater Xstream over a tube to dispense the residual liquid.
 - b Press the actuate key twice to empty the residual liquid. The display then shows the titrated volume.
 - c Remove the Combipip. The volume display is then extinguished.

-
- i** The volume of the last correctly completed titration is saved and displayed in the device settings (see p. 36).
-

5.10 Stopping or canceling pipetting operations

In an emergency you can cancel pipetting as follows:

During aspiration,

- ▶ press the reset or actuate key. After a canceled aspiration operation the aspirated partial volume can be dispensed.

During dispensing,

1. press the reset key.
Piston movement is stopped. After a stopped dispensing operation it is not possible to correctly dispense the remaining volume.
2. Hold the Multipipette stream/Repeater stream over an empty tube or the supply vessel.
3. Press the reset key again to dispense all of the liquid from the Combipip piston.

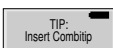
5.11 Adjusting the device settings

Under the device parameters you can make higher-order settings and view supplementary information. The acoustic signals indicating errors cannot be deactivated. The following settings and information are available:

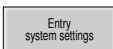
Key tones	BEEP	Switch key tones on (ON) or off (OFF).
Brightness	Light	set the brightness level of the display.
Titration results	Last Ttr.	display the results of the last titration. Only valid for the Multipette Xstream/Repeater Xstream. It is also possible to display the last result if a new filling operation of the Combitip was accidentally started in Ttr mode. This is only possible if this operation is canceled with the reset key at the latest when <i>Discard next step</i> appears.
Software version		display software version.
lock +/- rocker switch	LOCK	lock +/- rocker switch (ON) or unlock (OFF). When the +/- rocker switch is locked, a locked padlock is shown in the display. This option suitable for long dispensing series. The parameter values can be viewed during dispensing.

To access the device settings, proceed as follows:

1. If a Combitip is in the Multipette stream/Repeater stream: press ejector.
The display then shows:



2. Press both rocker switches up at the same time.
The following appears briefly in the display:









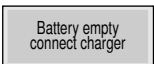
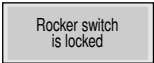

3. Select the parameter to be changed using the select rocker switch.
4. Change the setting of the selected parameter using the +/- rocker switch.
5. Press the actuate key to exit the menu.

When the settings have been successfully saved, the following appears briefly in the display:

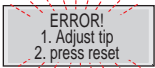


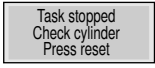
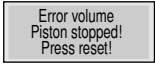



6 Troubleshooting

6.1 Error search

Symptom/message	Cause	Remedy
Display:  One segment empty.	Battery exhausted.	<ol style="list-style-type: none"> 1. Finish dispensing. 2. Charge battery (see p. 20).
Display:  One segment empty.	Battery exhausted.	<ol style="list-style-type: none"> 1. Finish dispensing. 2. Charge battery (see p. 20).
Display:  	Battery severely discharged.	<ol style="list-style-type: none"> 1. Confirm with the actuate key. 2. Charge battery (see p. 20). 3. Operation can be continued with the power supply connected.
Display:  	Battery severely discharged.	<ol style="list-style-type: none"> 1. Confirm with the actuate key. 2. Charge battery immediately (see p. 20). If the warning is repeatedly ignored, the Multipette stream/ Repeater stream will be locked.
	Battery empty	Dispensing not possible. <ul style="list-style-type: none"> ▶ Charge battery for at least 15 minutes. Eppendorf recommends charging the battery for at least 2 hours.
If you press the +/- rocker switch, the following text is displayed:  During operation,  is displayed.	+/- rocker switch is locked.	<ol style="list-style-type: none"> 1. Ensure that you are allowed to unlock the +/- rocker switch. 2. Cancel the lock (see <i>Adjusting the device settings</i> on p. 36).
Display is dark	Multipette stream/Repeater stream is switched off.	<ul style="list-style-type: none"> ▶ Press the actuate key to switch on the Multipette stream/ Repeater stream.

Symptom/message	Cause	Remedy
	<ul style="list-style-type: none"> No battery in the Multipette stream/ Repeater stream. Battery is fully discharged (battery is also discharged when the device is not used). 	<ul style="list-style-type: none"> ▶ Insert battery and charge it for 2 hours.
	Battery is defective.	<ul style="list-style-type: none"> ▶ Insert a new battery and charge it for 2 hours.
Display switches off during use	<ul style="list-style-type: none"> Overcurrent protection has been triggered. Combitip was ejected at the wrong time. High backpressure (viscosity, blockage) when dispensing. 	<p>CAUTION! The following steps will trigger a piston movement and may cause the dispensing of liquid!</p> <ol style="list-style-type: none"> If the Combitip has been ejected at the wrong time: carefully pull cylinder downwards by a few millimeters. Trigger a hardware reset (see p. 41). Hold Combitip over the tube. Press the reset key.
Display: <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Press reset! Attention! Piston moves! </div>	Reset key pressed while dispensing.	<p>Caution! The following action will trigger a piston movement and the dispensing of liquid.</p> <ol style="list-style-type: none"> Hold Multipette stream/ Repeater stream over an empty tube. Press the reset key again.
Display flashes: <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Task aborted! Press reset to empty Combitip </div>	<ul style="list-style-type: none"> Ejector operated during dispensing, causing the Combitip cylinder to be released. Cylinder pressed against the wall too strongly or bent when dispensing. A Combitip cylinder which was released accidentally is not inserted or inserted incorrectly. 	<ol style="list-style-type: none"> Hold Multipette stream/ Repeater stream over an empty tube. To empty the Combitip, press the reset key again. Press the ejector to remove the Combitip. Dispose of Combitip.

Symptom/message	Cause	Remedy
<p>Display flashes:</p> 	<ul style="list-style-type: none"> • Combitip pressed against the tube wall too strongly during or before dispensing. • Ejector operated accidentally and cylinder of the Combitip released while the Combitip was full. 	<p>► Do not use force to press the inserted Combitip against the tube wall.</p> <p>If the cylinder has been released:</p> <ol style="list-style-type: none"> 1. Carefully slide the cylinder of the Combitip upwards until it locks into place. 2. Press the reset key. Further information is displayed on how to proceed.
<p>Display flashes:</p> 	<p>The following error message was cleared:</p> 	<ol style="list-style-type: none"> 1. Dispense the residual volume into the affected tube. 2. Continue dispensing.
<p>Display:</p> 	<ul style="list-style-type: none"> • Step error during piston movement. • Piston movement was obstructed. 	<ol style="list-style-type: none"> 1. Remove obstruction. 2. If necessary: operate the ejector to release the cylinder. 3. Pull the released cylinder downwards by a few millimeters. 4. Empty the Combitip and remove (see p. 24).
<p>Display:</p> 	<ul style="list-style-type: none"> • Step error while aspirating or dispensing liquid. • Dispensing error. • Combitip opening was closed or viscosity too high. 	<ol style="list-style-type: none"> 1. Hold Multipette stream/ Repeater stream over an empty tube. 2. To empty the Combitip, press the reset key. 3. In case of high viscosity: repeat the dispensing operation at low speed.
<p>Display:</p> 	<p>No Combitip inserted.</p>	<p>► Insert the Combitip.</p>

Symptom/message	Cause	Remedy
The filled Combipip should be emptied or removed.	<ul style="list-style-type: none"> The present residual liquid is no longer required. A different Combipip should be used. 	<ol style="list-style-type: none"> Hold Multipette stream/ Repeater stream over an empty tube. To empty the Combipip, press the reset key. Press the ejector to remove the Combipip. Dispose of Combipip.
Combipip is dripping.	<ul style="list-style-type: none"> Combipip is not leak tight. Combipip is positioned incorrectly. 	<ul style="list-style-type: none"> ▶ Replace Combipip. ▶ Observe the storage conditions.
Battery must be charged very often.	<ul style="list-style-type: none"> Charging capacity of the battery has decreased. A large number of dispensing operations has been performed. 	<p>If the charging capacity has decreased:</p> <ol style="list-style-type: none"> Order a new rechargeable lithium-ion battery. Insert new rechargeable lithium-ion battery . Charge new rechargeable lithium-ion battery for 2 hours (see p. 20).

Further error messages displayed are intended only for error diagnosis by service personnel. Contact your local Eppendorf partner if the error message cannot be cleared by pressing the reset key or performing a hardware reset.

Avoiding dispensing errors

The precision and trueness of the Multipette stream/Repeater stream must be verified on a regular basis. You can find a Standard Operating Procedure (SOP) for the Multipette stream/ Repeater stream on our homepage www.eppendorf.com.

6.2 Pipette self-test



CAUTION! Injury to people and material damage from the release of sample material when triggering the self-test.

When the self-test is triggered, the liquid is dispensed from the Combipip.

- ▶ Hold the Multipette stream/Repeater stream over an empty container while you trigger the self-test.

The Multipette stream/Repeater stream can be tested as follows:

- Make sure that the Combipip is in the base position or that no Combipip is inserted.
- Hold Multipette stream/Repeater stream over an empty tube.
- Press and hold the actuate key for 5 seconds.

The self-test begins and the display shows the software version of the Multipette stream/ Repeater stream.

If the self-test was successful, *Check procedure OK* is displayed.

6.3 Hardware reset

The hardware reset interrupts the power supply to the lithium-ion battery. Trigger a hardware reset in emergencies only, for instance, after triggering an overcurrent protection.

Without inserted Combitip

- ▶ Press the tip of a 5 mL Combitip or a different pointy object onto the contact point in the center of the selection dial.

With inserted Combitip

1. Press the tip of a 5 mL Combitip or a different pointy object onto the contact point in the center of the selection dial.
2. Hold the Multipette stream/Repeater stream over a waste container.
3. Press the red reset key.
The piston of the Combitip is moved to the basic position.

After the reset, the software version is displayed for a few seconds.

7 Maintenance

7.1 Cleaning



NOTICE! Damage to device from unsuitable cleaning fluids or sharp or pointed objects.

Unsuitable cleaning fluids can damage the device.

- ▶ Never use corrosive cleaning fluids, strong solvents or abrasive polishes.
 - ▶ Check the compatibility with the materials used.
 - ▶ Do **not** clean the Multipette stream/Repeater stream with Acetone.
 - ▶ Do **not** clean the Multipette stream/Repeater stream 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.
 - ▶ If liquid has entered the inside of the housing, the inner parts may only be repaired by Eppendorf AG service partners. Contact your local sales office before returning any devices.
-

Perform the following steps:

1. Carefully remove the contamination around the Combitip holder with a cotton bud.
2. Carefully wipe the housing of the Multipette stream/Repeater stream with a slightly damp or dry cloth.

7.2 Maintenance

We recommend that you have all maintenance and servicing carried out by Eppendorf AG or Eppendorf service partners. No warranty is provided for any damage due to misuse or if the device has been opened by unauthorized persons.

8 Technical data

8.1 Errors with the Multipette (X)stream/Repeater (X)stream

Combitip advanced	Volume range	Testing volume	Error limits			
			Error			
			Systematic error		Random error	
			± %	± µL	± %	± µL
0.1 mL white Increment: 0.1 µL	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 Increment: 0.2 µL	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 purple Increment: 0.5 µL	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 Increment: 1 µL	10 µL – 1 000 µL	100 µL	±0.9	±0.9	±0.55	±0.55
		500 µL	±0.6	±3.0	±0.3	±1.5
		1 000 µL	±0.6	±6.0	±0.2	±2.00
2.5 mL green Increment: 2.5 µL	25 µL – 2 500 µL	250 µL	±0.8	±2.0	±0.45	±1.125
		1 250 µL	±0.5	±6.25	±0.3	±3.75
		2 500 µL	±0.5	±12.5	±0.15	±3.75
5 mL blue Increment: 5 µL	50 µL – 5 000 µL	500 µL	±0.8	±4.0	±0.35	±1.75
		2 500 µL	±0.5	±12.5	±0.25	±6.25
		5 000 µL	±0.5	±25	±0.15	±7.50

Combitip advanced	Volume range	Testing volume	Error limits			
			Error			
			Systematic error		Random error	
			± %	± mL	± %	± mL
10 mL orange Increment: 0.01 mL	0.1 mL – 10 mL	1 mL	±0.5	±0.005	±0.25	±0.0025
		5 mL	±0.4	±0.02	±0.25	±0.0125
		10 mL	±0.4	±0.04	±0.15	±0.015
25 mL red Increment: 0.025 mL	0.25 mL – 25 mL	2.5 mL	±0.3	±0.0075	±0.35	±0.0088
		12.5 mL	±0.3	±0.0375	±0.25	±0.0313
		25 mL	±0.3	±0.075	±0.15	±0.0375
50 mL light gray Increment: 0.05 mL	0.5 mL – 50 mL	5 mL	±0.3	±0.015	±0.5	±0.025
		25 mL	±0.3	±0.075	±0.20	±0.05
		50 mL	±0.3	±0.15	±0.15	±0.075

Test conditions and test analysis in accordance with ISO 8655, part 6. Test with an analytical balance with a moisture trap which has been inspected by the Office of Weights and Measures.

- Number of determinations: 10
- Use of water in accordance with ISO 3696
- Inspection at 20 °C – 25 °C ±0.5 °C
- Dispensing onto the tube wall
- Volume tests in the mode Dis
- Speed levels set: 7

i The test volumes for the systematic and random error of the Multipette (X)stream/ Repeater (X)stream comply with the requirements of ISO 8655, part 5.

8.1.1 Battery

Type	Rechargeable lithium-ion battery Overload protection in combination with the Multipette stream/Repeater stream
Capacity	750 mAh / 3.7 V
Charging time	Approx. 2 hours
Number of dispensings	max. 2000 (if the battery is fully charged and with the highest aspiration and dispensing speed)
Weight	Approx. 32 g

8.1.2 Power supply

Type	Power supply with insertable power plug adapter
Input voltage	100 V – 240 V; ± 10 %; 50/60 Hz
Output voltage	5 V / 1.0 A

8.1.3 Multipette stream/Xstream

Operating temperature	+5 °C – +40 °C
Relative humidity during operation	20 % – 92 %
Storage temperature	-10 °C – +45 °C
Relative humidity during storage	10 % – 92 %
Weight	approx. 150 g (excluding battery and Combitip)

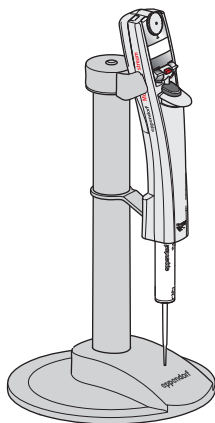
9 Ordering Information

9.1 Multipette stream/Repeater stream

Order No. (International)	Order No. (North America)	Description
4986 000.017	–	Multipette stream
4986 000.025	–	Multipette Xstream
–	022460803	Repeater stream
–	022460811	Repeater Xstream

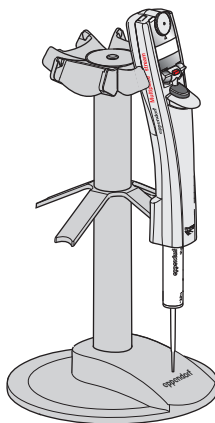
Order No. (International)	Order No. (North America)	Description
4986 900.115	4986900115	Operating Manual Multipette/Repeater (X)stream
4986 900.140	4986900140	Short instructions Multipette/Repeater (X)stream

9.2 Accessories



Charger stand 4880

For the Multipette stream/Repeater stream



Modified **charger carousel 4880**

For Xplorer pipettes and a Multipette stream/Repeater stream

A charger stand or charger carousel can be used for storing the Multipette stream/Repeater stream and simultaneously charging the rechargeable Li-ion battery.

The power supply included in the accessories of the Multipette stream/Repeater stream can be connected to the charger stand. The charger carousel is supplied with a more powerful power supply.

- i** The charger carousel 4880 is intended for Xplorer pipettes. To store and charge the Multipette stream/Repeater stream in the charger carousel you need to order a Multipette stream/Repeater stream charger shell and exchange it for an Xplorer charger shell. The charger shell for a Multipette stream/Repeater stream is partly colored in blue.

Order No. (International)	Order No. (North America)	Description
4880 000.018	4880000018	Charger stand 4880 for 1 Multipette/Repeater (X)stream
4880 000.026	4880000026	Charger carousel 4880 For 4 Xplorer, Multipette/Repeater (X)stream Incl. power supply 4880 603.006
4880 601.003	4880601003	Charger shell For charger carousel series 4880 Blue, for Multipette/Repeater (X)stream
4986 602.009	022462407	Li-ion rechargeable battery for Multipette/Repeater (X)stream
4986 603.005	4986603005	Power supply with power plug adapters

9.3 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

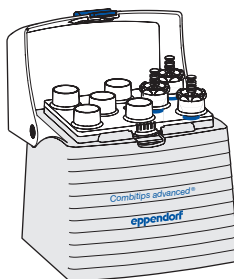
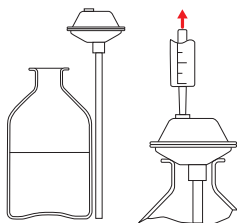
Multipette®/Repeater® (X)stream – Operating manual

Order No. (International)	Order No. (North America)	Description
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
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 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 Eppendorf Quality Sterile, individually wrapped Biopur, individually wrapped PCR clean

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

Order No. (International)	Order No. (North America)	Description
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

9.4 Accessories



Combilong/Combitude

The Combilong/Combitude is an aspiration tool for the Combipips advanced. It enables liquids to be directly taken out of all bottles.

Combipips advanced Rack

A Combipips advanced Rack is available for storing the Combipips advanced (≤ 10 mL).

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	Combitude Aspirating aid for removing liquids from volumetric flasks and tall bottles 2 pieces
0030 089.758	0030089758	Combipips advanced Rack 1 piece Eppendorf Quality

10 Transport, storage and disposal

10.1 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. Please observe the information in the decontamination certificate, which is available on our webpage as a PDF (www.eppendorf.com/decontamination).
2. Decontaminate all the parts you would like to dispatch.
3. Include the fully completed decontamination certificate in the package.

10.2 Storage



NOTICE! Damage to device due to incorrect storage.

- ▶ Remove the battery if you will not be using the Multipette stream/Repeater stream for longer periods of time.
- ▶ Do not clean the Multipette stream/Repeater stream while the Combitip is inserted.
- ▶ Select a secure storage location.
- ▶ Do not expose the Multipette stream/Repeater stream 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 %	70 kPa – 106 kPa
Without transport packaging	-5 °C – 45 °C	10 % – 95 %	70 kPa – 106 kPa

10.3 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 accumulators and batteries.

- ▶ Do not heat accumulators and batteries to over 80 °C and do not throw them into fires.

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.



EG-Konformitätserklärung EC Conformity Declaration

Das bezeichnete Produkt entspricht den einschlägigen grundlegenden Anforderungen der aufgeführten EG-Richtlinien und Normen. Bei einer nicht mit uns abgestimmten Änderung des Produktes oder einer nicht bestimmungsgemäßen Anwendung verliert diese Erklärung ihre Gültigkeit.

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

Produktbezeichnung, Product name:

Multipette® stream, Multipette® Xstream

inkl. Netzteil / including charging adapter

Produkttyp, Product type:

Elektronischer Handdispenser / Electrical manual dispenser

Einschlägige EG-Richtlinien/Normen, Relevant EC directives/standards:

2006/95/EG, EN 61010-1

2004/108/EG, EN 55011/B, EN 61000-6-1, EN 61326-1

2011/65/EU

EN ISO 8655-5

Vorstand, Board of Management:

21.06.2012

Hamburg, Date:

Projektmanagement, Project Management:



eppendorf

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