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epMotion[®] 96

Operating manual

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

1.2 Danger symbols and danger levels

The safety instructions of this operating manual indicate the following danger symbols and danger levels:

1.2.1 Danger symbols

	Biohazard		Electric shock
	Crushing		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. 2.	Actions in the specified order
▶	Actions without a specified order
•	List
<i>Text</i>	Display text or software text
	Additional information

2 Product description

2.1 Delivery package

Number	Description
1	epMotion 96
1	Loading frame
1	Adapter for 384-well plate
1	Mains/power cord
1	Operating manual
1	Tool for docking station
1	Certificate of quality

2.2 Features

The epMotion 96 is a semi-automatic pipetting device for aspirating, dispensing or mixing liquids. The pipetting device has 96 single channels for pipette tips. This allows filling a 96-well plate in one step or a 384-well plate in four steps. The plates must be positioned manually.

A software is used to set, control and monitor the aspiration and dispensing of the liquids. The software is installed on a commercially available **Apple iPod touch**.



The iPod touch is not included in the delivery of the epMotion 96.

The iPod touch communicates with the pipetting device via a wireless connection. The wireless connection does not require the iPod to be placed inside the docking station. The docking station is only used for charging the iPod touch.

2.3 Main illustration

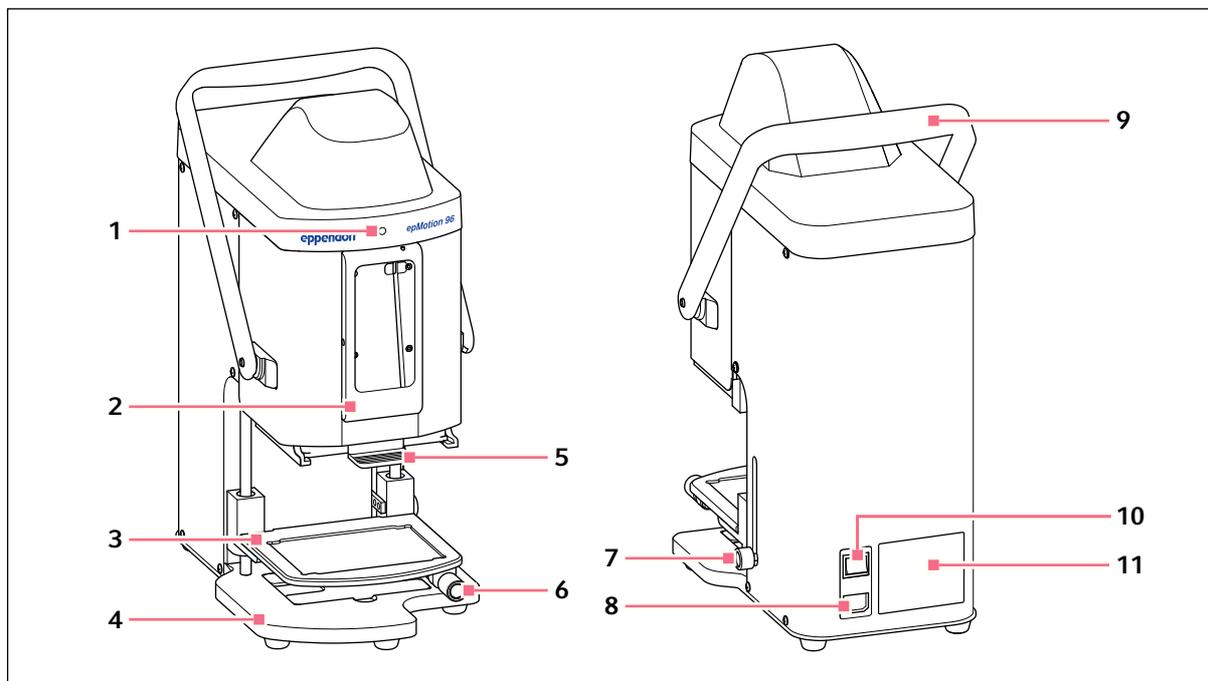


Fig. 2-1: Front and rear view

1 Status lamp

Green – pipetting device is activated
 Blue – pipetting device is in operation
 Red – pipetting device has stopped, awaits confirmation

2 Docking station

For Apple iPod touch

3 Lifting table**4 Base**

With adapter for 384-well plate

5 Loading frame

Bracket for tray with epT.I.P.S Motion Reloads

6 Locking handle

Fix the lifting table in working position

7 Locking handle

Fix the stop for lifting table
 Fix the stop for the automatic dosing unit

8 Mains/power connection

With bracket for micro fuses

9 Lever

Locking or unlocking loading frame with pipette tips

10 Mains switch On/Off**11 Name plate**

2.3.1 Docking station

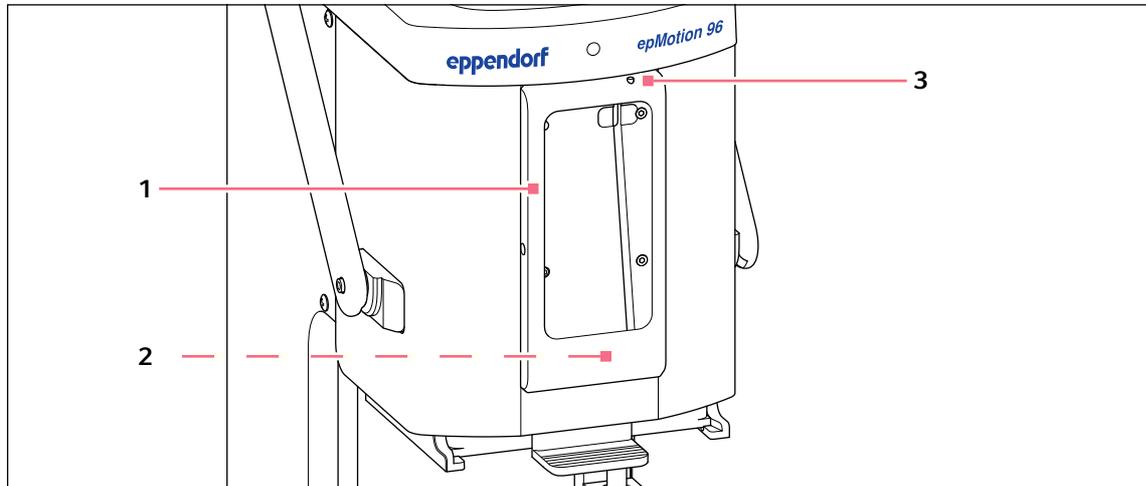


Fig. 2-2: Docking station with frame

1 Border

3 Switch (on/off) and standby

2 Connector for iPod touch

For model numbers A1421 or A1509

2.3.2 Lifting table and adapter

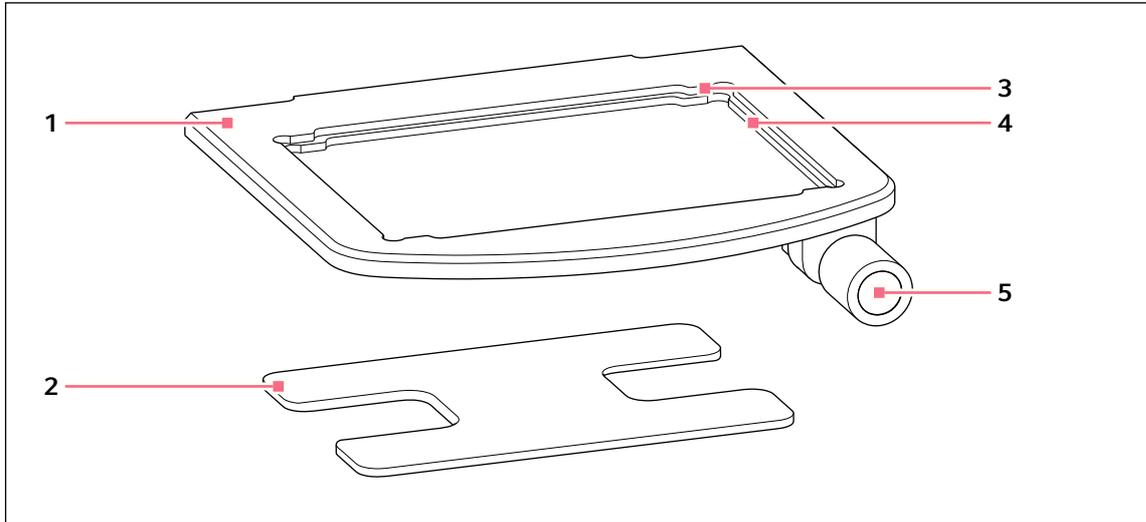


Fig. 2-3: Lifting table and adapter

- | | |
|-------------------------------------|-----------------------------------|
| 1 Lifting table | 4 Recess for 96-well plate |
| 2 Adapter for 384-well plate | 5 Locking handle |
| 3 Recess for 384-well plate | |

2.3.3 Loading frame

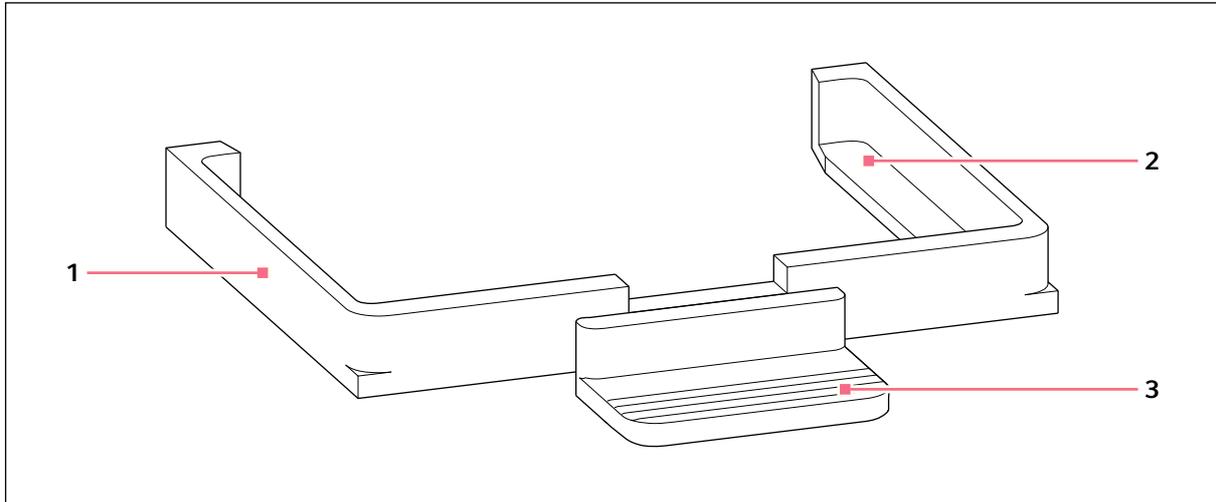


Fig. 2-4: Loading frame

- 1 Loading frame
- 2 Support for tray with pipette tips (epT.I.P.S Motion Reloads)
- 3 Handle

Product description

epMotion® 96
English (EN)

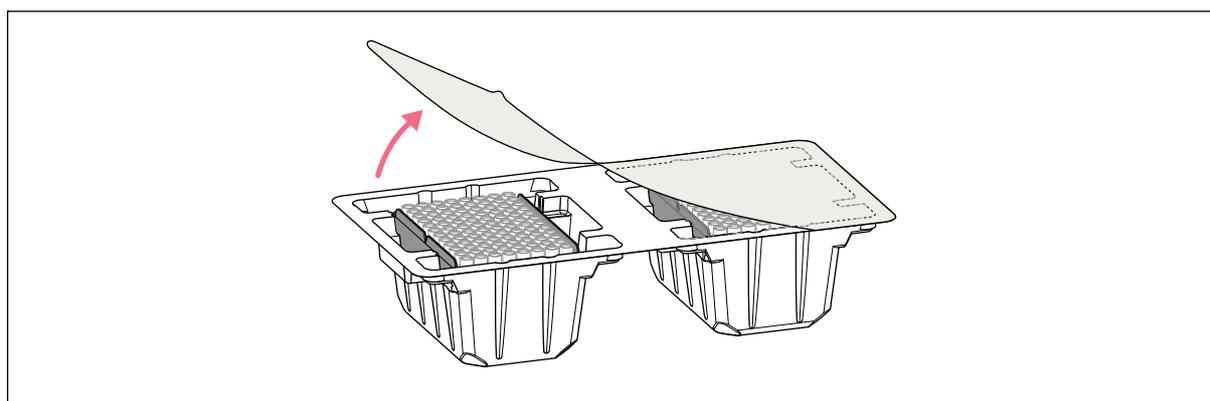
2.4 Recommended pipette tips



NOTICE! Dispensing error due to incorrect handling of pipette tips.

Tips become deformed and change size during autoclaving.

- ▶ Do not autoclave the pipette tips. Use tips with the sterile specification, if required.
- ▶ Do not stack any racks that contain pipette tips.



We recommend using epT.I.P.S Motion Reloads. The pipette tips are available with various degrees of purity, with and without filters.

Pipette tip	Sizes	Use	Plate depth for liquid aspiration
epT.I.P.S Motion Filter Reloads	50 µL	Liquids that require the pipette to be protected from contamination by aerosols.	max. 37 mm
	300 µL		max. 34 mm
epT.I.P.S Motion Reloads	50 µL	Liquids without any special risks.	max. 37 mm
	300 µL		max. 34 mm

2.5 Recommended plates

Plate	Size	Use
Microplate	96 or 384 wells	Supplying and aspirating liquids (e.g. assays for plate reader)
Deepwell plate	96 or 384 wells	Supplying and aspirating liquids (e.g. for culturing organisms or cell cultures)
PCR plate	96 or 384 wells	Supplying and aspirating liquids (e.g. for PCR applications)
Reservoir	1, 8, or 12 chambers	Supplying liquids

2.6 Name plate

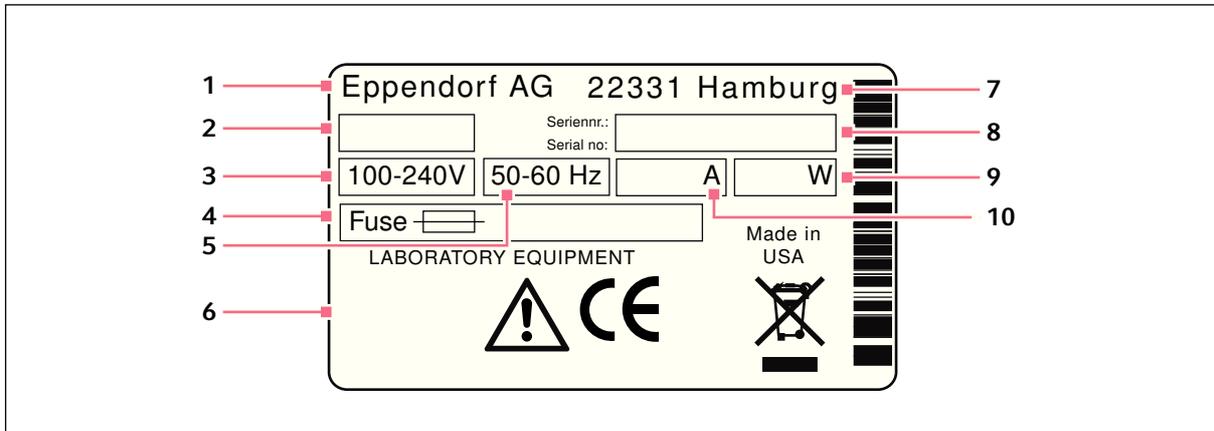


Fig. 2-5: Name plate

- | | |
|----------------|---------------------------|
| 1 Manufacturer | 6 Markings and approvals |
| 2 Device type | 7 Address of manufacturer |
| 3 Voltage | 8 Serial number |
| 4 Micro fuse | 9 Power consumption |
| 5 Frequency | 10 Current consumption |

2.6.1 Network name

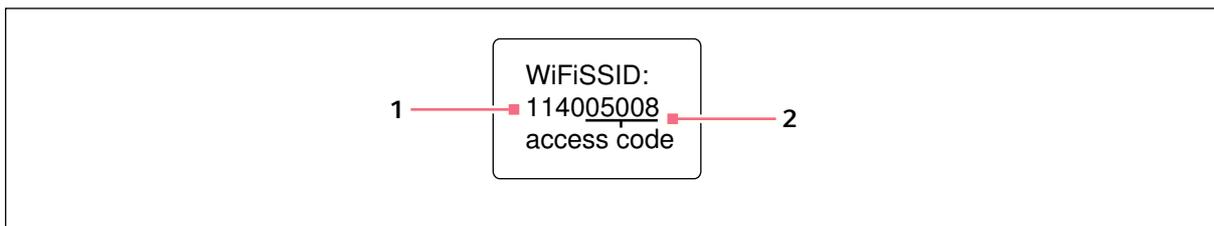


Fig. 2-6: Sticker network name

- | | |
|----------------|---------------|
| 1 Network name | 2 Access code |
|----------------|---------------|

Product description

epMotion® 96
English (EN)

3 Safety

3.1 Intended use

The semi-automatic pipetting system (including equipment, accessories, consumables and software) is designed for use in laboratories for research and development, for industrial and routine work as well as for training and education. Areas of application include, among others, life sciences, biotechnology, chemistry and clinical research.

The semi-automatic pipetting system epMotion 96 is designed for performing and monitoring contamination-free, precise and volume-controlled transfer of liquids, as well as for controlling the automatic mixing of fluids for contamination-free, precise and accurate measurement and transfer of liquids. The semi-automatic pipetting system epMotion 96 has a volume range of 0.5 µl to 300 µl.

The pipetting system complies with the requirements of the EU directives and standards listed in the Declaration of Conformity. This product is not approved by the FDA.

The pipetting system is intended exclusively for indoor use and may only be operated by qualified personnel with appropriate training.

3.2 Warnings for intended use



WARNING! Damages 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 personal protective equipment.
- ▶ For full instructions regarding the handling of germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (Source: World Health Organization, current edition of the Laboratory Biosafety Manual).



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! Spilled liquid can cause damage to the device.

- ▶ Switch the device off.
- ▶ Unplug the mains/power plug.
- ▶ Collect the spilled liquid. Observe the specifications for the liquid in the material safety data sheets.

3.3 Warning signs on the device

Warning symbol	Meaning
	Read the operating manual

3.4 User profile

The device and accessories may only be operated by trained and skilled personnel.

Before using the device, read the operating manual carefully and familiarize yourself with the device's mode of operation.

3.5 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 Preparing installation



CAUTION! Risk of injury due to lifting and carrying heavy loads

The device is heavy. Lifting and carrying the device can lead to back injuries.

- ▶ Transport and lift the device with an adequate number of helpers only.
 - ▶ Use a transport aid to transport the device.
-



Keep the packaging and the transport securing devices for later transport or storage.



Do not operate the device if there is visible damage to the device itself and/or to its packaging.

1. Check the packaging for damage.
2. Carefully remove the device from the packaging.
3. Check that everything is included in the delivery.
4. Check the device for damage.

4.1.1 Complaints about damages

- ▶ Contact customer service.

4.1.2 Incomplete delivery

- ▶ Contact customer service.

4.2 Selecting the location

Select the device location according to the following criteria:

- Suitable power connection in accordance with the name plate.
- A bench with a horizontal and even work surface which is designed to support the weight of the device.
- A mat or table that is cushioned against vibrations.
- The location is protected from direct sunlight and drafts.



The mains/power switch and cutting unit of the mains/power line must be easily accessible during operation (e.g, residual current circuit breaker).

4.3 Connecting the device



WARNING! Risk from incorrect supply voltage

- ▶ Only connect the device to voltage sources which correspond to the electrical requirements on the name plate.
- ▶ Only use sockets with a protective earth (PE) conductor and suitable power cable.



WARNING! Electric shock due to damage to device or mains cable.

- ▶ Only switch on the device if the device and mains cable are undamaged.
- ▶ Only use devices that have been properly installed or repaired.
- ▶ In case of danger, disconnect the device from the mains supply by pulling the power plug from the device or the mains socket or, by using the isolating device intended for this purpose (e.g., emergency stop switch in the laboratory).



NOTICE! Damage to electronic components due to condensation.

Condensate can form in the device after it has been moved from a cool environment to a warmer environment.

- ▶ After installing the device, wait at least for 12 h. Only then connect the device to the mains.

Prerequisites

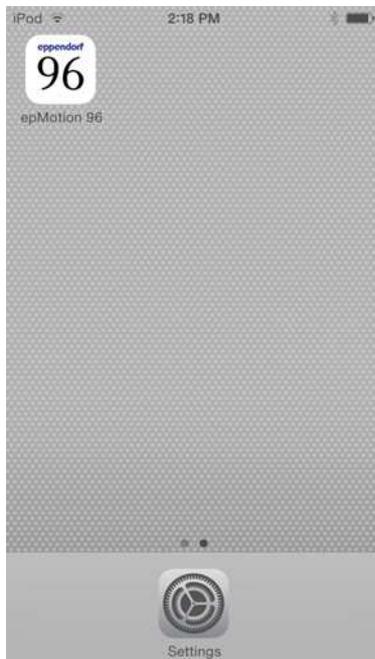
- The device is switched off.
- Electrical connection data according to the name plate.
- ▶ Plug in the power cable supplied with the device.

4.4 Installing the software

The epMotion 96 software can be installed directly via the iPod. To do this, the iPod needs to be connected to the internet using a wireless connection. Alternatively, the software may be installed using a USB connection with the computer and the program iTunes.

Prerequisites

- Apple iPod touch with the model number A1421 or A1509 is available.
- iOS 7.0 or higher is installed on the device.
- Apple Store account is available.
- An internet connection is established.



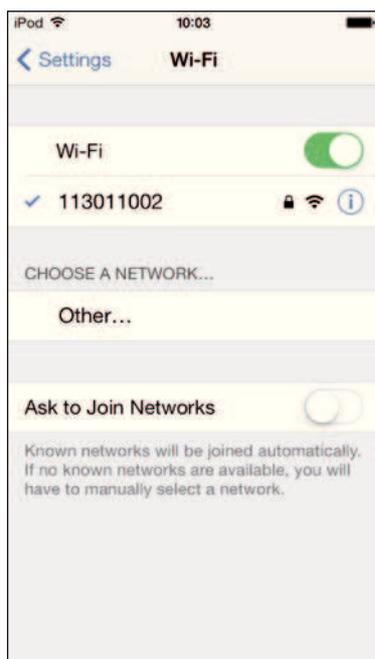
1. Open the *App Store*.
2. Tap “epMotion 96” into the search field.
3. Select free download.
4. Select installation.
5. Enter the Apple ID keyword.
The epMotion 96 icon is shown on the display.

4.5 Setting up the iPod

4.5.1 Activating the wireless connection

Prerequisites

- The device is switched on.
- Network name (see label with network location).



1. Open the *Settings* window.
2. Select *Wi-Fi*.
3. Tap the *Wi-Fi* switch and move it to the right.
The switch is now displayed in green.
The wireless connection is activated.
The available networks are displayed.
4. Select the network name of the pipetting device.
5. In order to close the *Settings* menu, tap on the *Home* button.

4.5.2 Configuring the network

Prerequisites

- Network name (see label with network location).
- Wireless is activated.



1. Open the *Settings* window.
2. Select the network for the pipetting device.
3. Select *DHCP* mode.
The network data are set automatically.
4. Enter the last 5 digits of the network name as the password.
The status bar indicates the wireless connection.
The network connection is established automatically.

4.5.3 Deactivating the automatic display deactivation

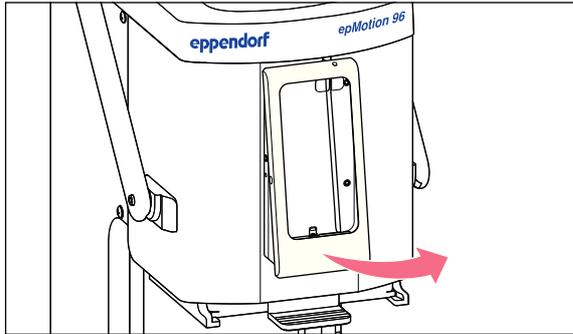
The iPod automatically switches off the display. This function can be deactivated for operating the device.



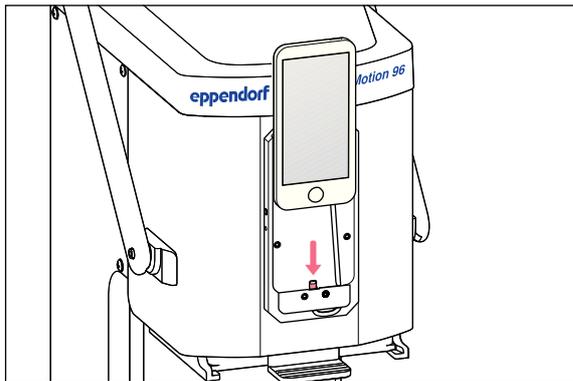
1. Open the *Settings* window.
2. Select *General*.
3. Select *Auto-Lock* and choose the setting *Never*.

4.6 Placing the iPod into the docking station

No tools are required to place the iPod into the docking station. Once placed into the docking station, the iPod's battery is charged. Data is transmitted using a wireless connection.



1. Pull off the frame.



2. Insert the iPod straight from the top and push it onto the connector.
3. Attach the frame.

5 Software

5.1 Touchscreen

Selecting a mode, setting parameters and executing functions is done via the touchscreen. Set parameters are displayed in the corresponding status fields.

5.1.1 Layout of the touchscreen

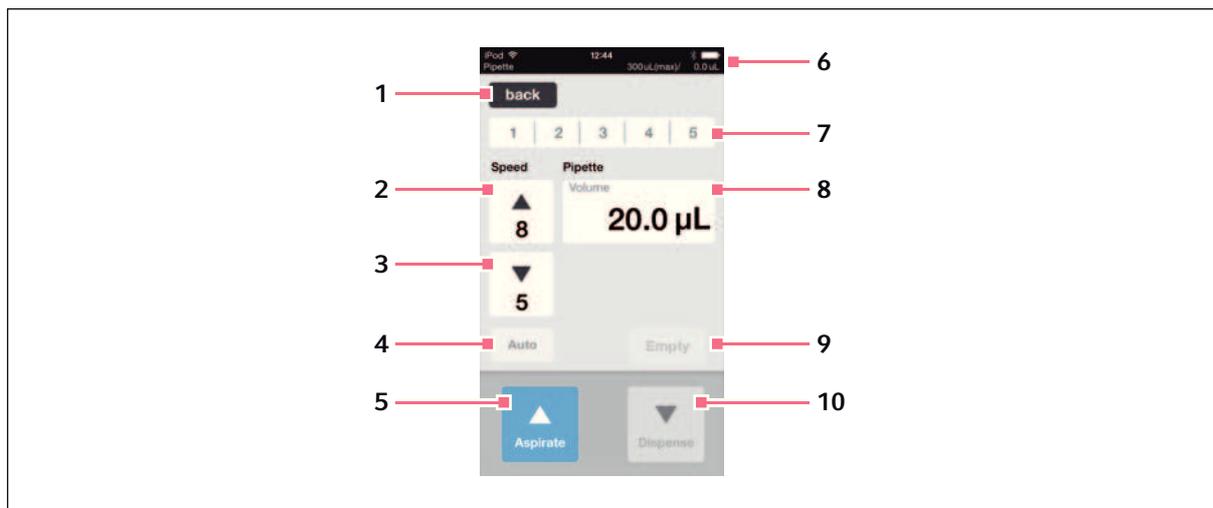


Fig. 5-1: Arrangement of the touchscreen – example: *Pipette* mode

- | | |
|--|---|
| <p>1 Selection of the previous view</p> | <p>6 Status bar
Wireless connection, time, battery life
Operating mode, size of the pipette tips, current volume</p> |
| <p>2 Speed for liquid aspiration
Levels 1 – 9</p> | <p>7 Stored parameter profile
Profiles 1 – 5</p> |
| <p>3 Speed for liquid dispensing
Levels 1 – 9</p> | <p>8 Parameter</p> |
| <p>4 Function for pipetting automatically</p> | <p>9 Empty button
Empty pipette tips</p> |
| <p>5 Aspirate button
Aspirating liquid</p> | <p>10 Dispense button
Dispensing liquid</p> |

5.2 Overview of the operating modes

Screen with the operating mode selection.

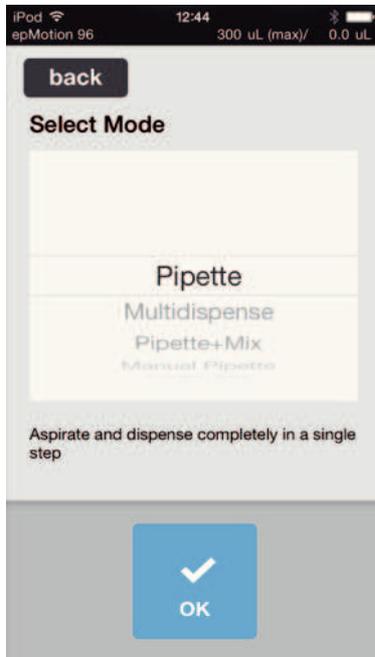


Fig. 5-2: Operating modes

Operating modes

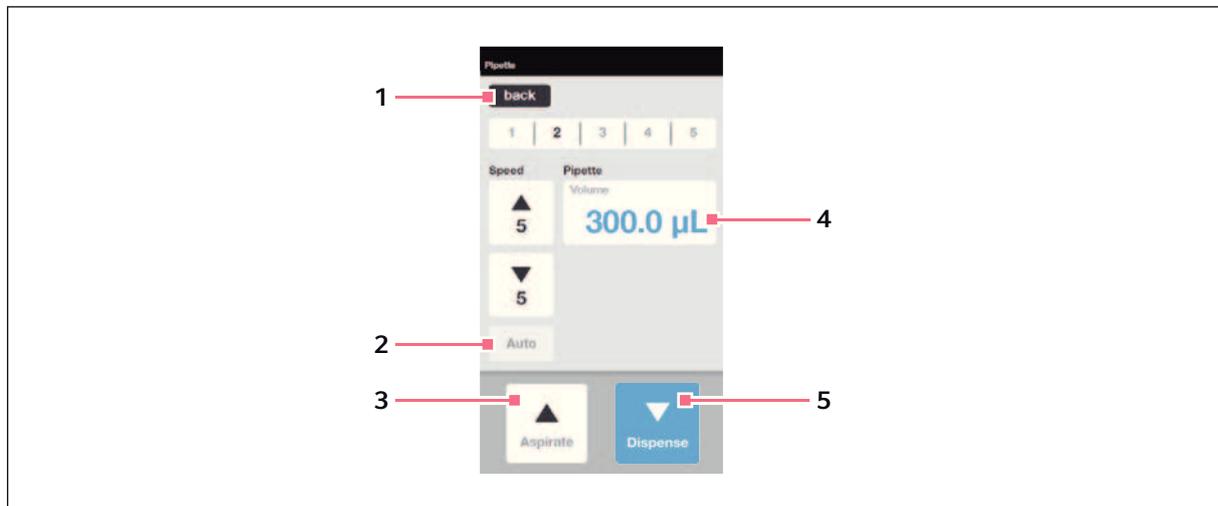
- *Pipette* – aspirating liquid in one step and dispensing liquid in one step.
- *Multidispense* – aspirating liquid in several steps and dispensing liquid in several steps.
- *Pipette and Mix* – dispensing liquid and mixing it subsequently.
- *Manual Pipette* – manually determining the liquid volume for aspirating and dispensing.
- *Dilute and Mix* – aspirating concentrated liquid and diluent and mixing them while dispensing.
- *Multiaspirate* – aspirating liquid in several steps and dispensing liquid in one step.
- *Run Program* – selecting and running pre-defined program.
- *Settings* – setting the system properties.

5.2.1 Selecting the operating mode

1. Tap on the mode selection and scroll through the list.
2. Confirm the mode with *OK*.

The screen of the selected mode is displayed.

5.3 Operating the software

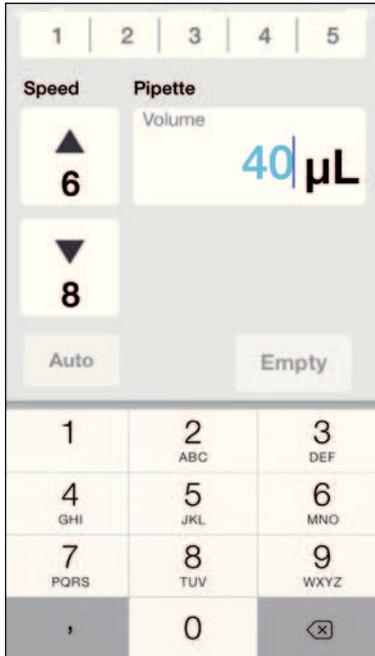


- 1 back button**
Unpressed button
- 2 Auto button**
Inactive button
- 3 Aspirate button**
Unpressed button

- 4 ParameterVolume**
Editable parameter
- 5 Dispense button**
Actuated button

5.3.1 Entering or changing parameters

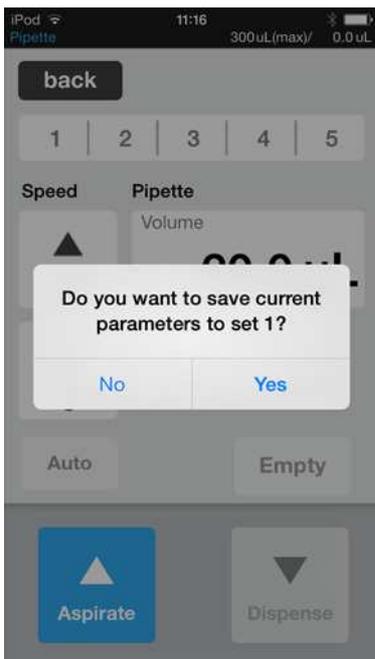
It is possible to change parameters using the iPod keypad.



1. Touch the parameter and hold it.
The key pad will fade in.
2. Change the parameter value.
3. Click on a blank section of the display to accept the value.

5.3.2 Saving the parameter profile

Several parameter profiles can be created and stored in each mode.



1. Select the mode.
2. Set the parameters for the mode.
3. Select the desired number for the parameter profile and hold it.
4. Confirm the prompt with *Yes*.
The parameter profile will be saved.
The number with the stored parameter profile is displayed in black.

6 Operation



WARNING! Electric shock due to damage to device or mains cable.

- ▶ Only switch on the device if the device and mains cable are undamaged.
 - ▶ Only use devices that have been properly installed or repaired.
 - ▶ In case of danger, disconnect the device from the mains supply by pulling the power plug from the device or the mains socket or, by using the isolating device intended for this purpose (e.g., emergency stop switch in the laboratory).
-

6.1 Switching the device on and off



WARNING! Electric shock due to damage to device or mains cable.

- ▶ Only switch on the device if the device and mains cable are undamaged.
 - ▶ Only use devices that have been properly installed or repaired.
 - ▶ In case of danger, disconnect the device from the mains supply by pulling the power plug from the device or the mains socket or, by using the isolating device intended for this purpose (e.g., emergency stop switch in the laboratory).
-

6.1.1 Switching the device on

Prerequisites

- There are no pipette tips in the device.

1. Switch on the device at the mains power switch.

The device performs a self test.

The device is ready for operation, if the status light is green.

The iPod touch is charged.

6.1.2 Switching the device off

1. Switch off the device at the mains power switch.

2. Switch off the iPod touch.

All device components and the docking station are switched off.

6.2 Starting the software

6.2.1 Starting the software

Prerequisites

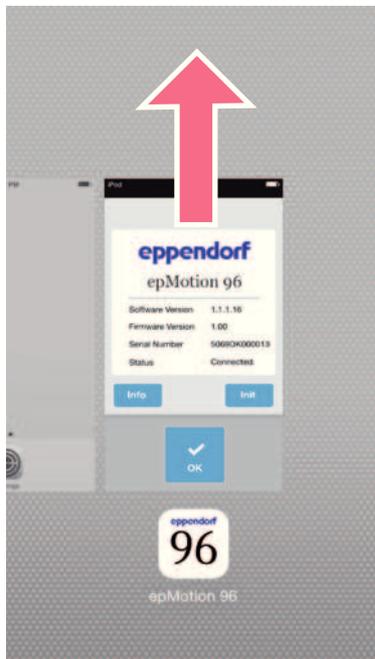
- epMotion 96 software is installed.



1. Tap on the epMotion 96 icon.
2. Confirm the start screen with *OK*.
The operating mode selection is displayed.

6.2.2 Quitting the software

It is not possible to exit the software directly using a button.

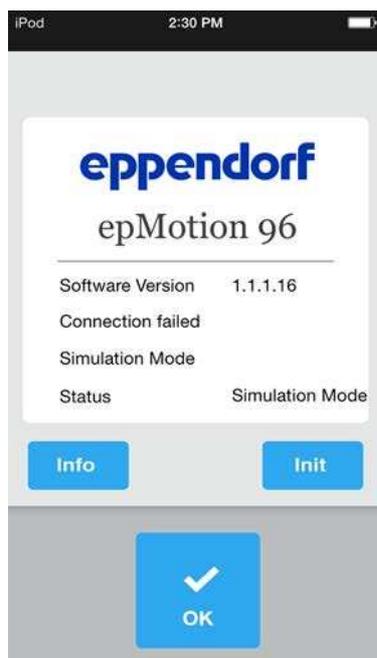


1. Tap twice on the *Home* button of the iPods.
2. Tap on the software screen and swipe it upwards out of the window.
The software is exited.

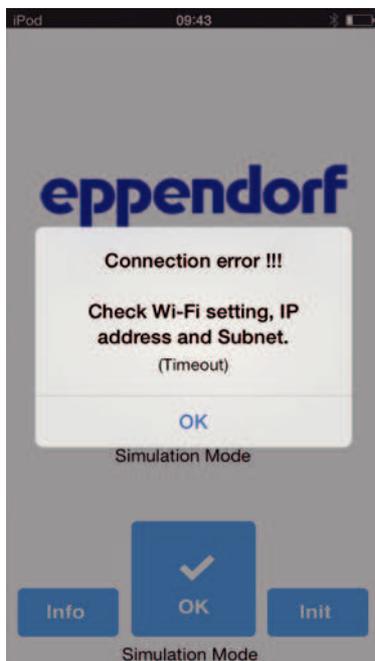
6.2.3 Starting the simulation mode

Prerequisites

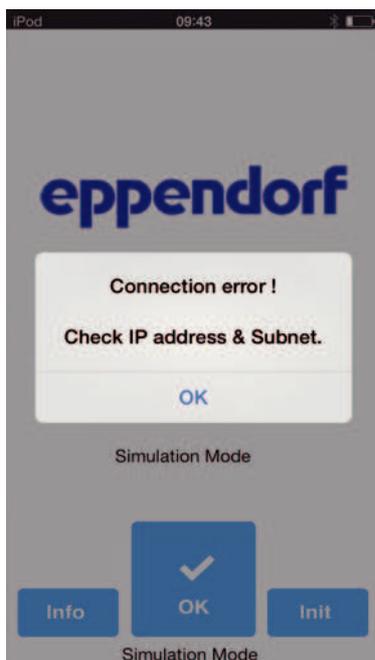
- The device is switched off.



1. Tap on the epMotion 96 icon.

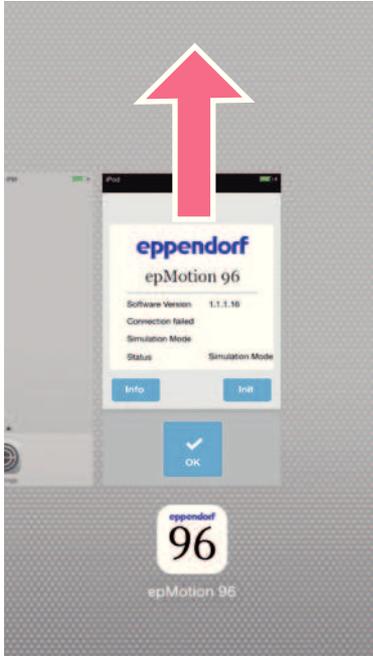


2. Confirm the error message with *OK*.



3. Confirm the error message with *OK*.
The *Simulation Mode* mode is displayed.
All functions and modes are executable and can be operated.
There is no wireless connection.
No data is transferred to the pipetting device.

6.2.4 Exiting the simulation mode



1. Tap twice on the *Home* button of the iPods.
2. Swipe the software screen upwards out of the window.
The simulation mode is exited.
The software is exited.

6.3 Inserting pipette tips



NOTICE! Dispensing error due to incorrect handling of pipette tips.

Tips become deformed and change size during autoclaving.

- ▶ Do not autoclave the pipette tips. Use tips with the sterile specification, if required.
- ▶ Do not stack any racks that contain pipette tips.



NOTICE! Damage to the device due to incorrectly equipped trays.

The device detects the tip size using the coding of the trays. Incorrectly equipping the trays can cause contamination of pipetting head.

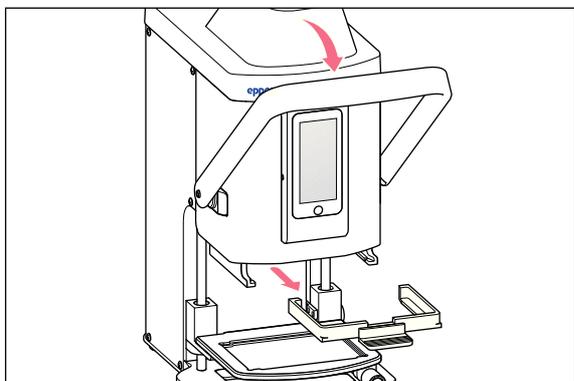
- ▶ Only use trays that were equipped by the manufacturer.
- ▶ Do not equip the trays manually.



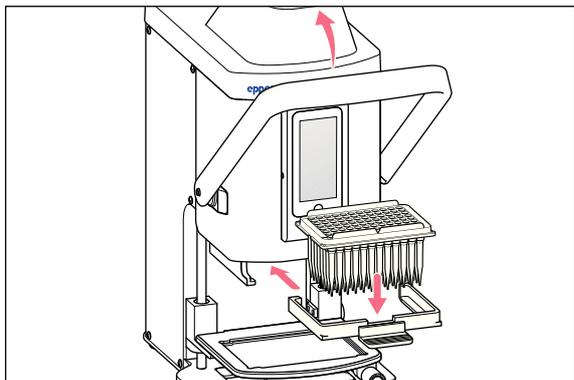
When ejecting the pipette tips, liquid can drip from the pipette tips.
Make sure that the pipette tips are completely empty before replacing them.

Prerequisites

- The lifting table is in the basic position.
- Pipette tips (epT.I.P.S Motion Reloads) are available.



1. Pull the lever of the pipetting device to the front.
2. Pull out the loading frame.



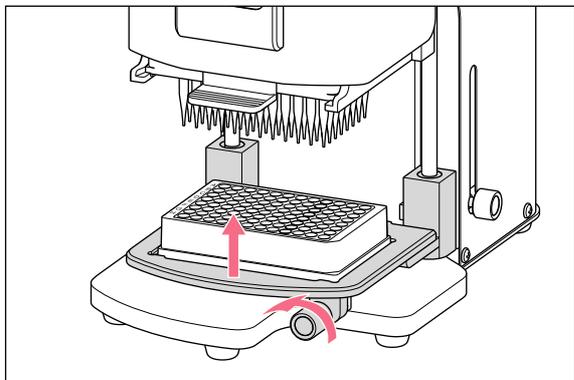
3. Insert the tray with pipette tips into the loading frame.
The notch on the tray must point in the direction of the loading frame handle.
4. Insert the loading frame into the pipetting device.
5. Push the lever of the pipetting device backwards.
The pipette tips are attached and locked.
The status bar of the software indicates the volume of the pipette tips.

6.4 Moving the lifting table

6.4.1 Moving the lifting table into working position

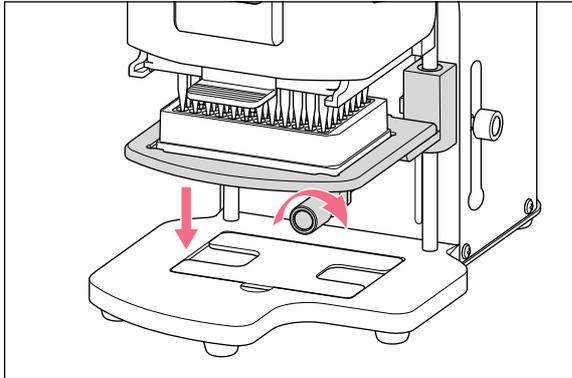
Prerequisites

- The pipette tips are attached.



1. Loosen the locking handle.
2. Move the lifting table upwards into working position.
3. Tighten the locking handle.
Liquid can be aspirated.
Liquid can be dispensed.
Stop can be set.

6.4.2 Moving the lifting table into basic position



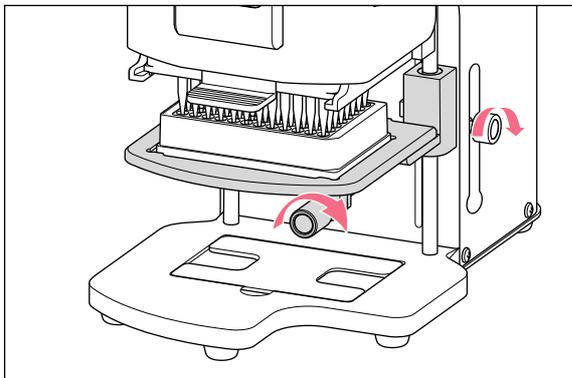
1. Hold the lifting table and loosen the locking handle.
2. Move the lifting table into the basic position. Source vessel or destination vessel can be replaced. Pipette tips can be inserted.

6.4.3 Setting the stop for the lifting table

The stop defines the end position of the lifting table in the working position. It makes sense to use the stop when filling several plates.

Prerequisites

- The stop is in the basic position.



1. Move the lifting table into working position.
2. Tighten the locking handle on the lifting table.
3. Tighten the locking handle for the stop. The working position is fixed.

6.5 Aspirating liquid

Prerequisites

- The device is switched on.
- The software has been started.
- The pipette tips are attached.

1. Put the source vessel onto the lifting table.
2. Select the operating mode.
3. Set the aspiration volume.
4. Set the parameters.
5. Move the lifting table into the working position until the pipette tips are immersed in the liquid.

6. Tighten the locking handle on the lifting table.
7. Press *Aspirate*.
Liquid is aspirated.
Destination vessel can be filled.

6.6 Dispensing liquid

Prerequisites

- The lifting table is in the basic position.
 - Destination vessel is available.
1. Put the destination vessel onto the lifting table.
 2. Set the parameters.
 3. Loosen the locking handle on the lifting table.
 4. Move the lifting table into the working position until the openings of the pipette tips are positioned below the rim of the vessel.
 5. Tighten the locking handle on the lifting table.
 6. Press the *Dispense* button.
 7. Loosen the locking handle.
 8. Move the lifting table upwards until the pipette tips are immersed in the liquid.
Adherent liquid droplets are stripped off.
 9. Move the lifting table into basic position.

6.6.1 *Blow out* – Dispensing residual liquid

Prerequisites

- *Blow out* button is active (is displayed instead of *Dispense*).
 - Destination vessel is available.
1. Move the lifting table to the operating position and fix it using the locking handle.
 2. Press the *Blow out* button.
 3. Strip off liquid droplets at the pipette tips.
 4. Move the lifting table into basic position.
 5. Confirm the query with *OK*.
Pipette tips are emptied.

6.6.2 *Empty* – Completely dispensing liquid

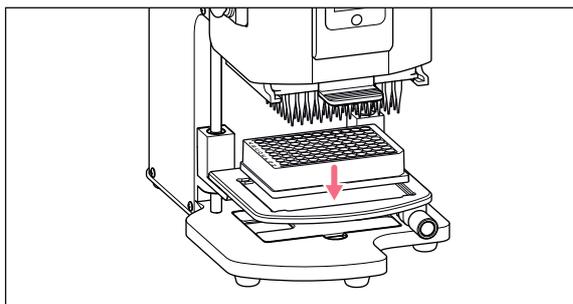
1. Move the lifting table to the operating position and fix it using the locking handle.
2. Press the *Empty* button.
Pipette tips are emptied entirely.

6.7 Inserting the plate

6.7.1 Inserting a 96-well plate

Prerequisites

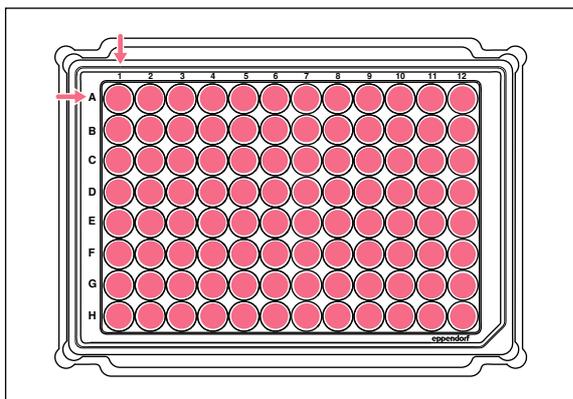
- The lifting table is in the basic position.
- Adapter for 384-well plate is located in the base.



1. Insert the 96-well plate into the lifting table.

6.7.2 Filling the 96-well plate

A 96-well plate can be filled in one step.

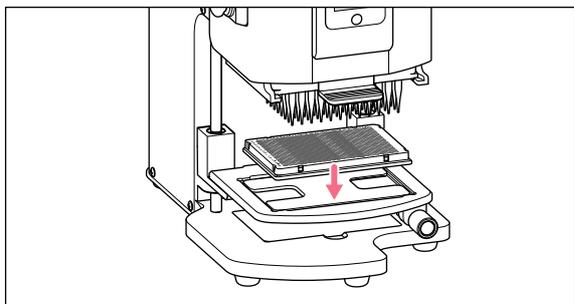


1. Move the lifting table into working position.
2. Tighten the locking handle.
3. Select the operating mode und fill the plate.

6.7.3 Inserting a 384-well plate

Prerequisites

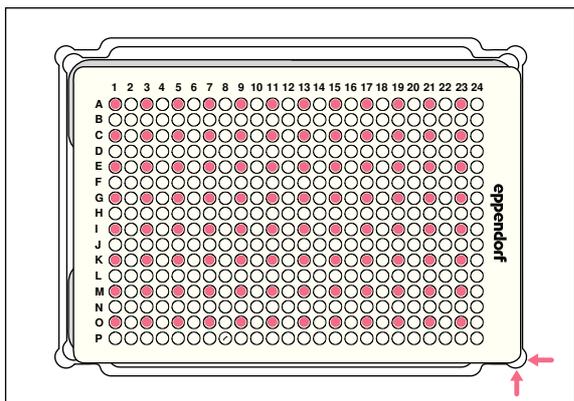
- The lifting table is in the basic position.



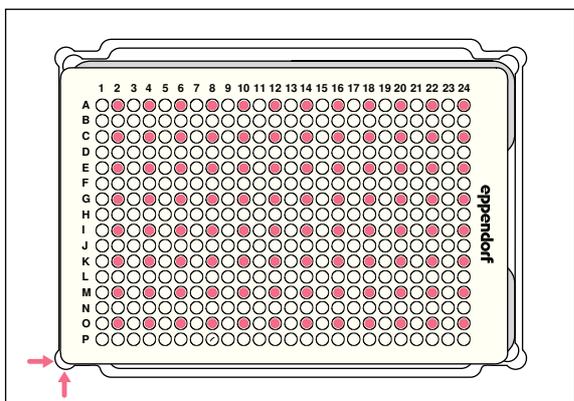
1. Lift the lifting table and take the adapter out of the base.
2. Insert the adapter into the lifting table.
3. Insert the 384-well plate in the lower right-hand corner.
Fill the plate beginning with well A1.

6.7.4 Filling the 384-well plate

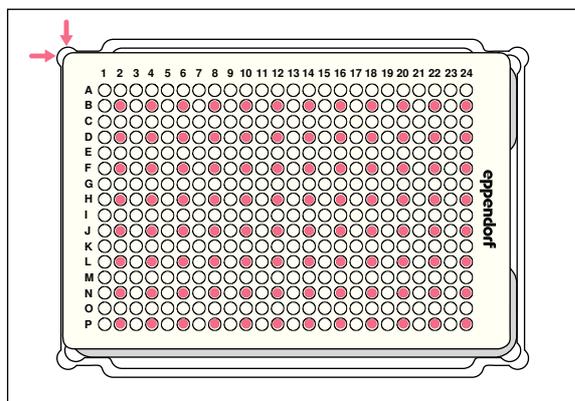
In order to fill a 384-well plate completely, the plate must be positioned consecutively in each corner of the lifting table.



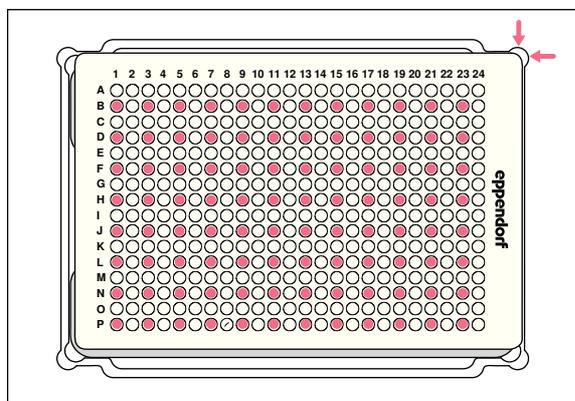
1. Place the 384-well plate in the bottom right position.
2. Move the lifting table into working position.
Every second row and every second well in the series starting at A1 is filled.



3. Move the lifting table into basic position.
4. Place the 384-well plate in the bottom left position.
5. Move the lifting table into working position.
Every second row and every second well in the series starting at A2 is filled.



6. Move the lifting table into basic position.
7. Place the 384-well plate in the top left position.
8. Move the lifting table into working position.
Every second row and every second well in the series starting at B2 is filled.



9. Move the lifting table into basic position.
10. Place the 384-well plate in the top right position.
11. Move the lifting table into working position.
Every second row and every second well in the series starting at B1 is filled.
All wells are now filled.

6.8 Mode *Pipette* – Dispensing liquid

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

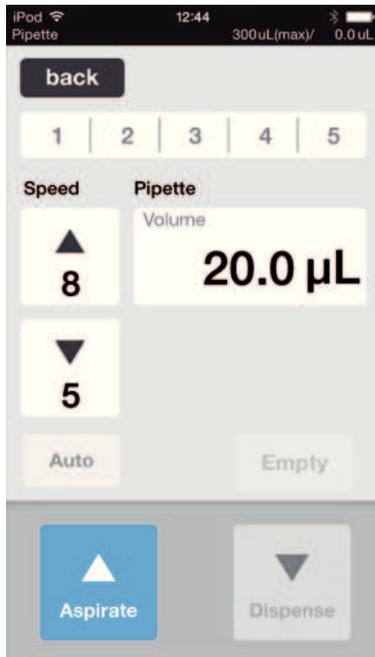


Fig. 6-1: Mode *Pipette*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Setting the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Setting the speed of the liquid dispensing.	1 – 9
<i>Volume</i>	Setting the aspiration volume in µL.	0.5 – 300 (increment of 0.1)

6.8.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Put the source vessel onto the lifting table and move the lifting table into working position.
2. Set the aspiration volumes and the speed levels.
3. Press *Aspirate*.

6.8.2 Dispensing liquid

Prerequisites

- Liquid has been aspirated.
- Destination vessel is available.

1. Put the destination vessel onto the lifting table and move the lifting table into working position.
2. Press *Dispense*.

6.9 Mode *Multidispense* – Multiple dispensing of liquid

Aspirating liquid in one step and dispensing liquid in several steps. The *Auto* function activates the automatic dispensing of liquids.

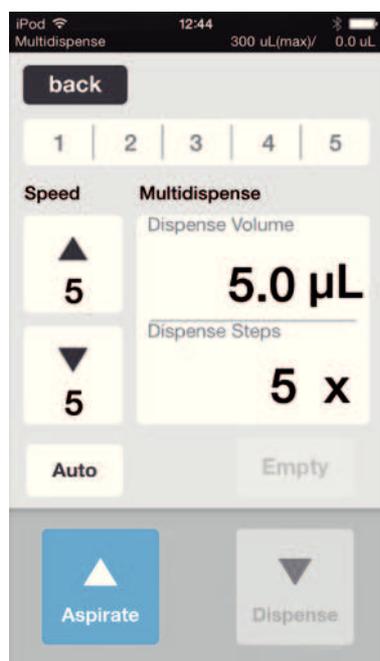


Fig. 6-2: Mode *Multidispense*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Setting the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Setting the speed of the liquid dispensing.	1 – 9
<i>Dispense Volume</i>	Setting the dispensing volume in μL .	0.5 – 300 (increment of 0.1)
<i>Dispense Steps</i>	Setting the number of steps for dispensing.	1 – 99

6.9.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Put the source vessel onto the lifting table and move the lifting table into working position.
2. Set the dispensing volume and the number of steps for dispensing.
3. Set the speed levels.
4. Press *Aspirate*.

6.9.2 Dispensing liquid

Prerequisites

- Liquid has been aspirated.
 - Destination vessels are available.
1. Put the destination vessel onto the lifting table and move the lifting table into working position.
 2. Press *Dispense*.
 3. Change or reposition the destination vessel.

6.9.3 Semiautomatically dispensing liquid

It is advisable to use the *Auto* function when filling a single 384-well plate or several 96-well plates in succession.

1. Press the *Auto* button.
2. Set the dispensing volume.
3. Set the number of steps for dispensing.
4. Aspirate liquid from a source vessel
5. Put the destination vessel onto the lifting table.
6. Move the lifting table into working position and tighten the locking handle.
7. Tighten the locking handle for the stop.
8. Move the lifting table into basic position.
9. Change or reposition the destination vessel.
10. Move the lifting table against the stop and keep it in this position until the dispensing of the liquid is initiated.

The number of the remaining dispensing steps is displayed.

6.10 Mode *Pipette and Mix* – Dispensing and mixing liquid

Aspirating liquid in one step, dispensing liquid in one step and mixing liquid automatically.

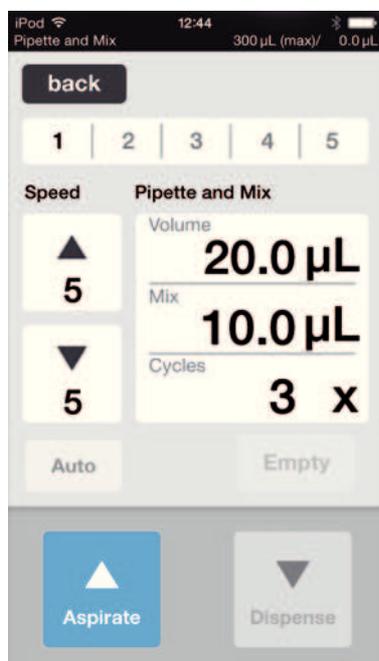


Fig. 6-3: Mode *Pipette and Mix*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Set the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Set the speed of the liquid dispensing.	1 – 9
<i>Volume</i>	Set the aspiration volume in µL.	0.5 – 300 (increment of 0.1)
<i>Mix</i>	Set the mixing volume in µL.	0.5 – 300 (increment of 0.1)
<i>Cycles</i>	Set the number of mixing cycles.	1 – 99

6.10.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Put the destination vessel onto the lifting table and move the lifting table into working position.
2. Set the aspiration volumes and the speed levels.
3. Press *Aspirate*.

6.10.2 Dispensing and mixing liquid

Prerequisites

- Liquid has been aspirated.
 - Destination vessel is available.
1. Put the destination vessel onto the lifting table and move the lifting table into working position.
 2. Set the mixing volume for the mixing cycles.
 3. Press *Dispense*.
The set liquid volume is dispensed.
The mixing volume is automatically aspirated and dispensed.

6.11 Mode *Manual Pipette* – Dispensing liquid manually

Manually determining the liquid volume for aspirating and dispensing.

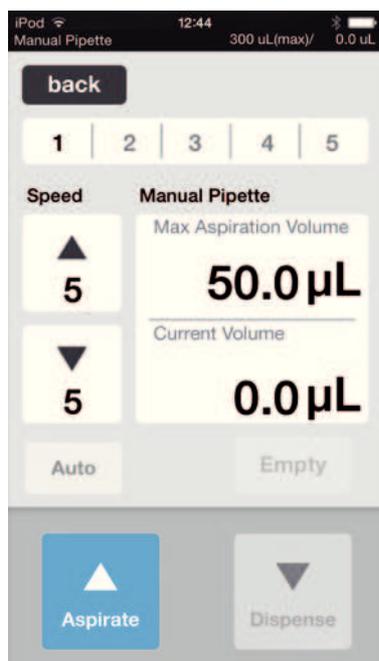


Fig. 6-4: Mode *Manual Pipette*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Setting the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Setting the speed of the liquid dispensing.	1 – 9
<i>Max. Aspiration Volume</i>	Setting the dispensing volume in µL.	0.5 – 300 (increment of 0.1)
<i>Current Volume</i>	Current volume is displayed.	0 – 300

6.11.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Put the source vessel onto the lifting table and move the lifting table into working position.
2. Set the aspiration volumes and the speed levels.
3. Keep the *Aspirate* key pressed.

Liquid is aspirated until the *Aspirate* key is released or the set aspiration volume is reached.

6.11.2 Dispensing liquid

Prerequisites

- Liquid has been aspirated.
- Destination vessel is available.

1. Put the destination vessel onto the lifting table and move the lifting table into working position.
2. Keep the *Dispense* key pressed.

Liquid is dispensed until the *Dispense* key is released or the liquid volume is exhausted.

6.12 Mode *Dilute and Mix* – Mixing liquid

The application is suitable for diluting samples and reagents using an appropriate dilution solution. Aspirate the concentrated liquid, aspirate diluent and mix while dispensing.

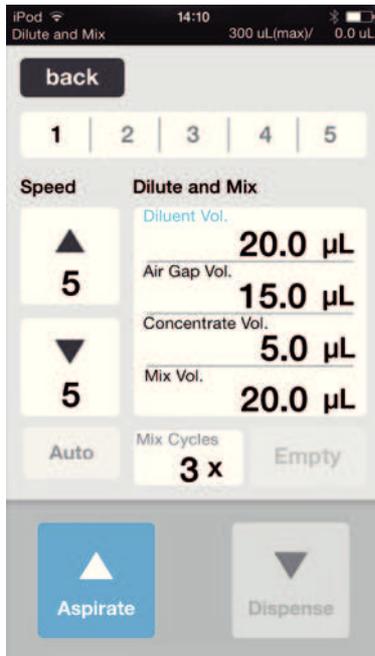


Fig. 6-5: Mode *Dilute and Mix*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Setting the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Setting the speed of the liquid dispensing.	1 – 9
<i>Diluent Vol.</i>	Setting the aspiration volume for the diluent in µL.	0.5 – 300 (increment of 0.1)
<i>Air Gap Vol.</i>	Setting the volume of the air gap in µL.	0.5 – 300 (increment of 0.1)
<i>Concentrate Vol.</i>	Setting the aspiration volume of the concentrate in µL.	0.5 – 300 (increment of 0.1)
<i>Mix vol.</i>	Setting the mixing volume in µL.	0.5 – 300 (increment of 0.1)
<i>Mix Cycles</i>	Setting the number of mixing cycles.	1 – 99

6.12.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Set the speed levels.
2. Set the liquid volume for the dilution solution.
3. Set the volume for the air gap.
4. Set the liquid volume for the concentrate.
5. Put the source vessel with the dilution solution onto the lifting table and move the lifting table into working position.
6. Press *Aspirate*.
Dilution solution is aspirated.
7. Move the lifting table into basic position.
8. Press *Aspirate*.
Air gap is aspirated.
9. Put the source vessel with the concentrate onto the lifting table and move the lifting table into working position.
10. Press *Aspirate*.
Concentrate is aspirated.
Target vessel can be filled.

6.12.2 Diluting and mixing liquids

Prerequisites

- Liquids and air gaps are aspirated.
- Destination vessel is available.

1. Put the destination vessel onto the lifting table and move the lifting table into working position.
2. Set the number of mixing cycles.
3. Press *Dispense*.
Liquids are dispensed and mixed automatically.

6.13 Mode *Multiaspirate* – Multiple aspiration of liquid

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

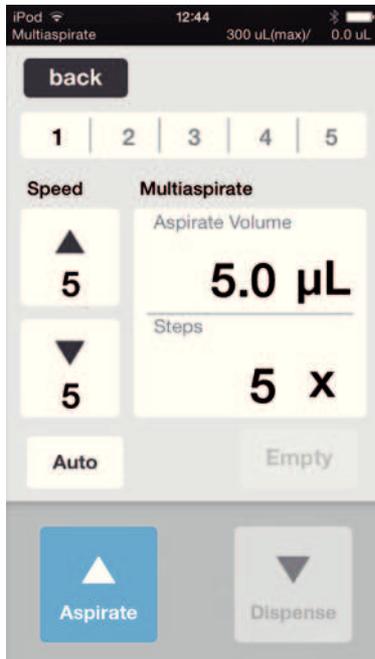


Fig. 6-6: Mode *Multiaspirate*

Parameter	Value	Range of values
<i>Speed aspirate</i>	Setting the speed of the liquid aspiration.	1 – 9
<i>Speed dispense</i>	Setting the speed of the liquid dispensing.	1 – 9
<i>Aspiration Volume</i>	Setting the aspiration volume in µL.	0.5 – 300 (increment of 0.1)
<i>Steps</i>	Setting the number of aspiration steps.	1 – 99

6.13.1 Aspirating liquid

Prerequisites

- Source vessel is available.

1. Put the source vessel onto the lifting table and move the lifting table into working position.
2. Set the aspiration volumes and the speed levels.
3. Set the number of aspiration steps.
4. Press *Aspirate*.
5. Change or reposition the source vessel.

6.13.2 Dispensing liquid

Prerequisites

- Liquid has been aspirated.
- Destination vessel is available.

1. Put the destination vessel onto the lifting table and move the lifting table into working position.
2. Press *Dispense*.

6.14 Mode *Run Program* – Creating and storing a program sequence

Several operating modes can be selected, configured and stored to be run as a program sequence. Use the mode in order to run pre-defined operations.

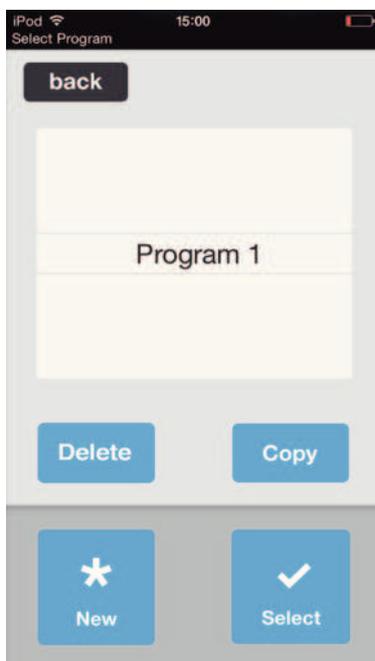
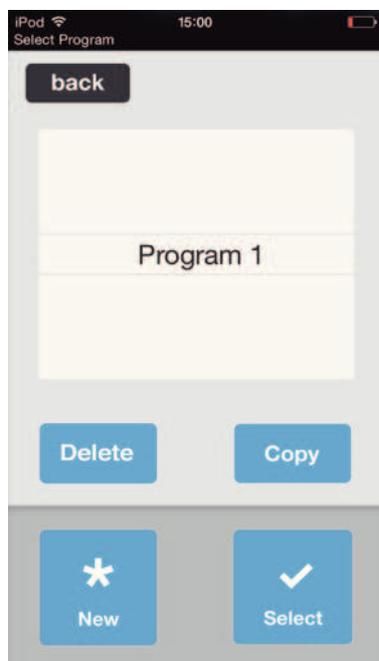


Fig. 6-7: Mode *Run Program*

Parameter	Value
<i>Delete</i>	Deleting the selected program.
<i>Copy</i>	Copying the selected program.
<i>New</i>	Creating a new program.
<i>Select</i>	Opening the selected program.

6.14.1 Creating and storing a program sequence



1. Press *New*.
2. Enter the program name.
The program editor is opened.
3. Add modes.
4. Press *Save*.
The program sequence is stored.

6.14.2 Editing the program sequence – Adding a mode at the end



1. Press *Add*.
2. Select a mode and confirm with *Select*.
3. Choose the parameters for the selected mode and confirm with *back*.
4. Press *Save*.
The program sequence is stored.

6.14.3 Editing the program sequence – Inserting a mode

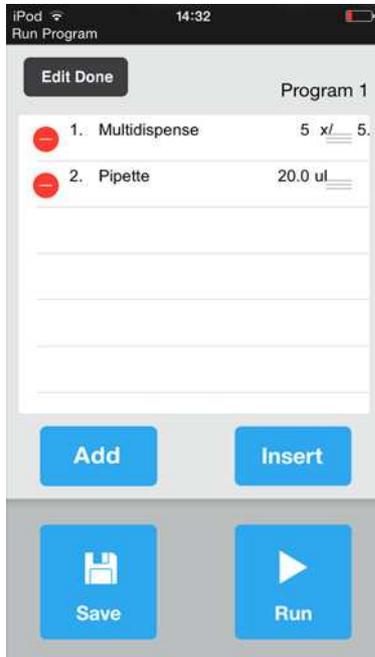


1. Select the mode ahead of which the new mode shall be inserted.
2. Press *Insert*.
3. Select a mode and confirm with *Select*.
4. Choose the parameters for the selected mode and confirm with *back*.
5. Press *Save*.
The program sequence is stored.

6.14.4 Editing the program sequence – Changing the parameters of a mode

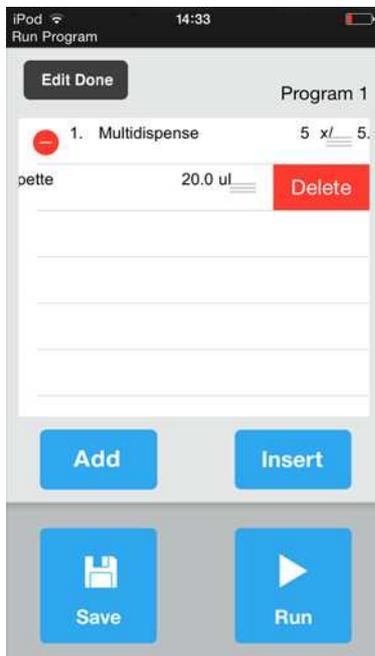
1. Select a mode and keep the selected entry pressed.
The parameter view of the mode is displayed.
2. Change the parameters.
3. To change the parameters of the previous or the next mode, press *Previous* or *Next*.
4. Tap on the *back* button to return to the program list view.
5. Press *Save*.
The program sequence is stored.

6.14.5 Changing the order within a program sequence



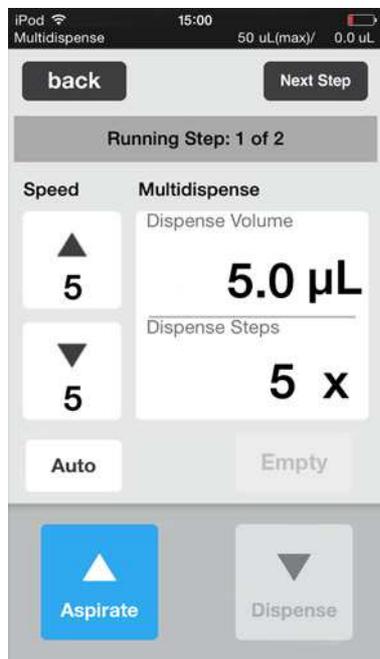
1. Select the mode in the program sequence and tap on it twice.
2. Select the mode and use the tag to the right of the program sequence to move it up or down.
3. Press *Edit done*.
4. Press *Save*.
The program sequence is stored.

6.14.6 Deleting a mode from the program sequence



1. Select the mode in the program sequence and tap on it twice.
2. Select a mode and tap on the icon on the left.
3. Press *Delete*.
4. Press *Edit done*.
5. Press *Save*.
The program sequence is stored.

6.14.7 Selecting and running a program sequence



1. Select a stored program and confirm with *Select*.
2. Start the program sequence by tapping on *Run*.
The program sequence is initiated with the first operating mode that is stored.
The number of steps in the program is displayed.
3. Press *Next Step* to start the next step in the program.

6.15 Mode *Settings* – Setting the setting the system properties

Setting the device and software properties.

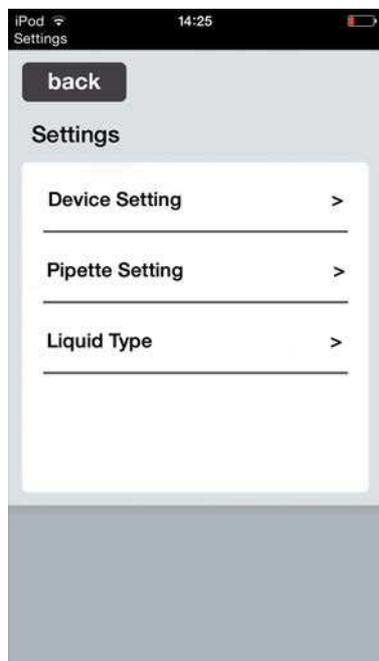


Fig. 6-8: Mode *Settings*

Parameter	Value
<i>Device Settings</i>	Displaying device information and setting device properties.
<i>Pipetting Settings</i>	Setting pipetting properties.
<i>Liquid Types</i>	Adjusting the pipetting to the liquid properties.

6.15.1 Device settings

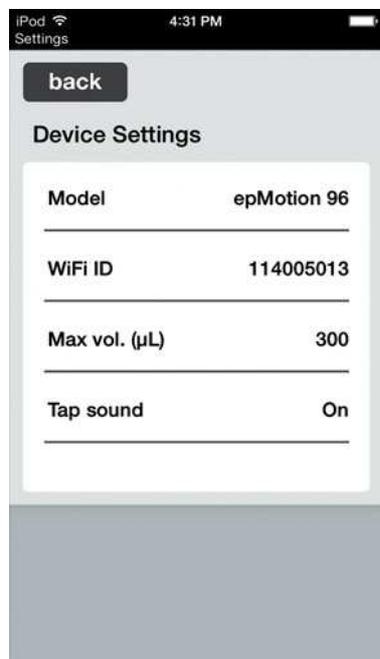


Fig. 6-9: Device Settings

Parameter	Value
<i>Model</i>	Displaying the model designation.
<i>WiFi name</i>	Displaying the network name.

Parameter	Value	Range of values
<i>Tap Sound</i>	De-/activating the acoustic feedback for tapping on a button.	On/Off

6.15.2 Set the pipetting properties

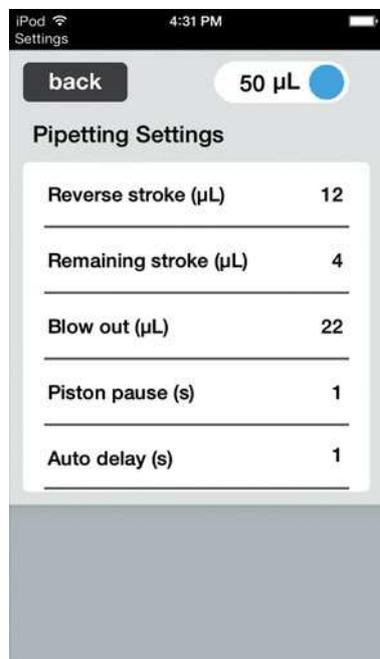


Fig. 6-10: Pipetting Settings

Parameter	Value	Pipette tips	Default settings
<i>Reverse stroke (µL)</i>	Setting the additional volume for the liquid aspiration in µL.	50 µL	3 µL
		300 µL	12 µL
<i>Remaining stroke (µL)</i>	Setting the residual volume in µL for liquid aspiration in <i>Multidispense</i> mode.	50 µL	4 µL
		300 µL	12 µL
<i>Blow-out (µL)</i>	Setting the air volume in µL for dispensing the residual liquid.	50 µL	15 µL
		300 µL	20 µL
<i>Piston Pause (s)</i>	Setting the delay time between pipetting operations in seconds.	–	1 s
<i>Auto Delay (s)</i>	Setting the delay time for automatic liquid dispensing in seconds (<i>Multidispense</i> mode).	–	1 s

6.15.3 Liquid Types – Setting the liquid properties

The liquid properties allow adjusting the pipetting to liquids with densities or vapour pressures that differ significantly from those of water. The preset *Standard* is used for verifying the device and is suitable for water and diluted aqueous solutions.

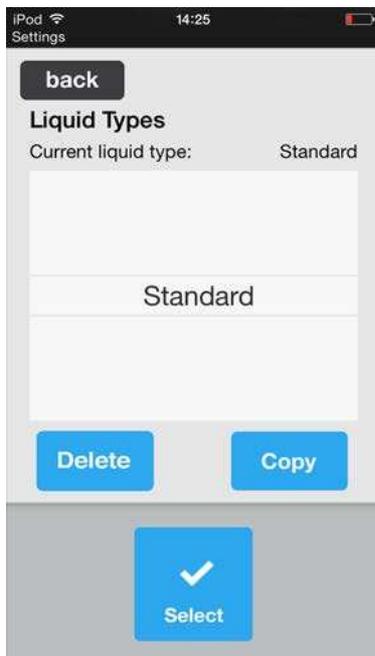


Fig. 6-11: *Liquid Types*

6.15.4 Creating a liquid type



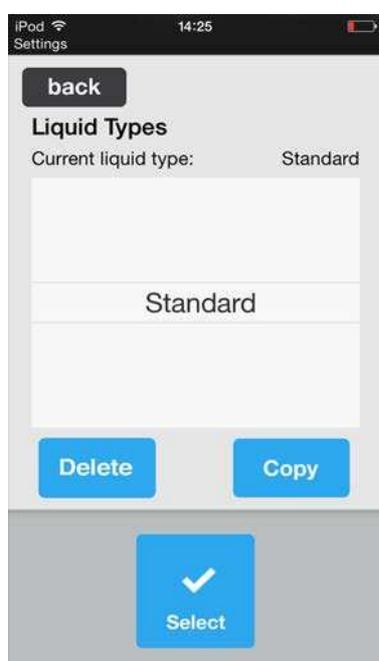
1. Select a liquid type and press *Copy*.
2. Enter a name for the liquid type.
3. Confirm the entry with *OK*.
The liquid type is stored.

6.15.5 Changing the liquid type

Liquid properties are defined for individual pipette tip sizes. Calibration values may be entered for a maximum of 5 different volume ranges. The higher the calibration value, the greater the piston stroke per microliter of the set pipetting volume.

 The calibration values of the liquids must be determined empirically. This can be done using a gravimetric comparison measurement, for example.

 It is not possible to change the *Standard* liquid type.



1. Select a liquid type and confirm with *Select*.
The system opens the *Liquid Type Editor*.



2. Set the pipette tip size using the slide switch.

Changing the volume range or the calibration value

3. Select an entry and keep it pressed.
4. Enter the values using the on-screen keyboard.

Deleting a volume range

5. Tap twice on the volume entry.
6. Tap on the *Delete* icon and confirm with *Delete*.
7. Press *Edit done*.

Creating a new volume range

8. Press *Add*.

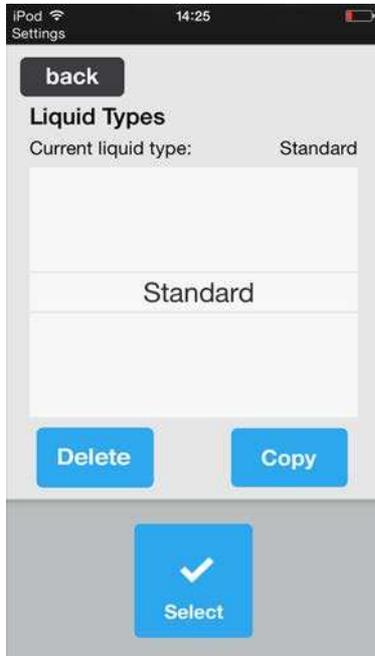
Adding a volume range

9. Selecting an entry
10. Press *Insert*.
The new volume range is inserted above the marked volume range.
11. Repeat the procedure for additional pipetting tip sizes.
12. Press *Save*.
The liquid type is stored.

6.15.6 Applying liquid types



It is not possible to change the *Standard* liquid type.



1. Select a liquid type and confirm with *Select*.
The system opens the *Liquid Type Editor*.

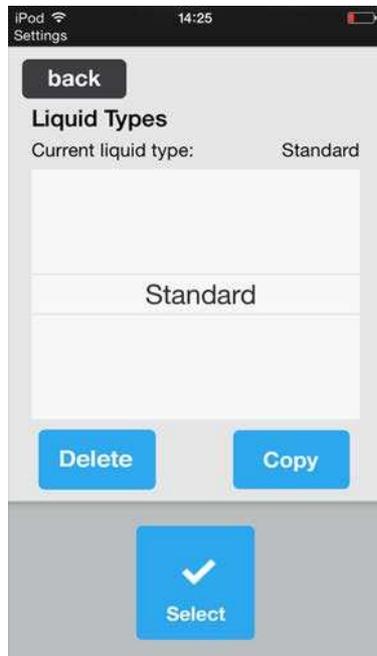


2. Press *Apply*.
The device applies the properties of the liquid type for all subsequent pipetting operations with all pipetting sizes. The properties are maintained after the device is switched off.

6.15.7 Deleting a liquid type



It is not possible to delete the *Standard* liquid type.



1. Select a liquid type and confirm with *Select*.
2. Press *Delete*.
3. Confirm deletion.
Liquid type is deleted.

6.16 Updating the software

The software is updated directly via the App-Store.

7 Troubleshooting

7.1 General errors

7.1.1 Pipette tips

Problem	Cause	Solution
Liquid is dripping from the pipette tips.	<ul style="list-style-type: none"> • Wrong pipette tips. 	<ul style="list-style-type: none"> ▶ Check the pipette tips. ▶ Insert epT.I.P.S Motion Reloads 50 µL or 300 µL.
	<ul style="list-style-type: none"> • Pipette tips do not fit the tip cones properly. 	<ul style="list-style-type: none"> ▶ Unlock the pipette tips. ▶ Check the interspace. ▶ Remove any foreign matter. ▶ Lock the pipette tips.
	<ul style="list-style-type: none"> • O-rings are damaged. 	<ul style="list-style-type: none"> ▶ Contact the authorized service.
Pipette tips are not recognized.	<ul style="list-style-type: none"> • Tray with pipette tips has been rotated by 180°. 	<ul style="list-style-type: none"> ▶ Insert the tray with the notch pointing towards the handle of the loading frame.

7.1.2 Wireless connection

Problem	Cause	Solution
<i>Connection error</i>	<ul style="list-style-type: none"> • The device is switched off. 	<ul style="list-style-type: none"> ▶ Switch the device on. ▶ Shut down and restart the software.
	<ul style="list-style-type: none"> • No wireless connection. 	<ul style="list-style-type: none"> ▶ Open <i>Settings</i> on the iPod. ▶ Activate <i>Wi-Fi</i>. ▶ Shut down and restart the software.
	<ul style="list-style-type: none"> • Wireless connection is not configured correctly. 	<ul style="list-style-type: none"> ▶ Open <i>Settings</i> on the iPod. ▶ Open <i>Wi-Fi</i> and verify the network settings. ▶ Shut down and restart the software.
	<ul style="list-style-type: none"> • No wireless connection. • The distance between the iPod and the device is too large. 	<ul style="list-style-type: none"> ▶ Place the iPod closer to the device or put it into the docking station.

7.1.3 Liquid volume

Problem	Cause	Solution
<i>Pipetting volume is larger than ...</i>	<ul style="list-style-type: none"> • Set liquid volume is too high. 	<ul style="list-style-type: none"> ▶ Reduce the liquid volume.
	<ul style="list-style-type: none"> • Pipette tips are too small. 	<ul style="list-style-type: none"> ▶ Insert pipette tips with 50µL or 300µL capacity.
<i>No tips installed</i>	<ul style="list-style-type: none"> • No pipette tips inserted. 	<ul style="list-style-type: none"> ▶ Insert epT.I.P.S Motion Reloads 50 µL or 300 µL.
	<ul style="list-style-type: none"> • Pipette tips not recognized. • Pipette tips were not properly locked. 	<ul style="list-style-type: none"> ▶ Push the lever all the way back.

7.1.4 File names

Problem	Cause	Solution
<i>File name too long</i>	<ul style="list-style-type: none"> • File name is too long. • Program cannot be saved. 	<ul style="list-style-type: none"> ▶ Choose a file name with a maximum of 21 characters.
<i>File name already exists</i>	<ul style="list-style-type: none"> • File name is already used. • Program cannot be saved. 	<ul style="list-style-type: none"> ▶ Choose a different file name.

7.1.5 Sensors

Problem	Cause	Solution
<i>Lower sensor triggered</i>	<ul style="list-style-type: none"> • Sensor for the piston movement was triggered. 	<ul style="list-style-type: none"> ▶ Switch the device off and back on again. ▶ If the error persists, please contact the authorized service.
<i>Upper sensor triggered</i>	<ul style="list-style-type: none"> • Device error. • Sensor for the piston movement was triggered. 	<ul style="list-style-type: none"> ▶ Switch the device off and back on again. ▶ If the error persists, please contact the authorized service.

8 Maintenance

8.1 Replacing fuses



DANGER! Electric shock.

- ▶ Switch off the device and disconnect the power plug before starting maintenance or cleaning work.
-

The fuse holder is located between the mains connection socket and the mains power switch. The fuses may only be replaced with the same type of fuse.

1. Disconnect the mains plug.
2. Pull the fuse holder out completely.
3. Replace the defective fuse.
4. Insert the fuse holder.

8.2 Cleaning



DANGER! Electric shock as a result of penetration of liquid.

- ▶ Switch off the device and disconnect the power plug before starting cleaning or disinfection work.
 - ▶ Do not allow any liquids to penetrate the inside of the housing.
 - ▶ Do not spray clean/spray disinfect the housing.
 - ▶ Only plug the device back in if it is completely dry, both inside and outside.
-



NOTICE! Damage from the use of aggressive chemicals.

- ▶ Do not use any aggressive chemicals on the device or its accessories, such as strong and weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
 - ▶ If the device has been contaminated by aggressive chemicals, immediately clean it by means of a mild cleaning agent.
-



Clean the device at least every 4 weeks

1. Wipe the painted parts and the aluminum surfaces with a cloth and mild detergent.
2. Polish with a dry cloth.

8.3 Disinfection/Decontamination



DANGER! Electric shock as a result of penetration of liquid.

- ▶ Switch off the device and disconnect the power plug before starting cleaning or disinfection work.
 - ▶ Do not allow any liquids to penetrate the inside of the housing.
 - ▶ Do not spray clean/spray disinfect the housing.
 - ▶ Only plug the device back in if it is completely dry, both inside and outside.
-

1. Switch off the device and disconnect it from the mains/power line.
2. Remove all cables and accessories from the device.
3. Clean the device with a mild cleaning agent before disinfection.
4. Choose a disinfection method that corresponds to the legal regulations and guidelines in effect for your range of application.



For example, use alcohol (ethanol, isopropanol) or alcohol-based disinfectants.

5. Wipe the surfaces with a lintfree cloth which is moisturized with a disinfectant.
6. Disinfect all parts that will be sent in with the device.

8.4 Service and maintenance

The Eppendorf AG service team is available to service and certify your device.

Eppendorf AG recommends annual servicing of the device.

Service provisions:

- Service
- Operational qualification (OQ) according to manufacturer's specifications
- Electrical safety testing according to country-specific regulations
- Software update

Information on the services offered can be found on our webpage: www.eppendorf.com/epservices.

9 Technical data

Volume	
Volume range	0.5 µL – 300 µL

9.1 Weight/dimensions

Width	224 mm
Depth	344 mm
Height	570 mm
Weight	~20 kg

9.2 Interfaces

Docking station	Apple Lightning compatible connection
-----------------	---------------------------------------

9.3 Power supply

Voltage	100 V – 240 V, AC
Frequency	50 Hz – 60 Hz
Power consumption	175 W
Protection class	I
Overvoltage category	II
Micro fuse	F 3 A/250 V

9.4 Test conditions

The device is tested in accordance with ISO 8655 under specific test conditions at Eppendorf AG.



These test conditions are available upon request.

9.5 Ambient conditions

Ambience	Only for use indoors.
Ambient temperature	15 °C – 35 °C
Relative humidity	55 % – 75 %, non-condensing.
Atmospheric pressure	860 hPa – 1060 hPa

10 Transport, storage and disposal

10.1 Storage

	Air temperature	Relative humidity	Atmospheric pressure
In transport packaging	-20 °C – +70 °C	10 % – 80 %	300 hPa – 1060 hPa
Without transport packaging	-20 °C – +70 °C	10 % – 80 %	–

10.2 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 package.

10.3 Transport

	Air temperature	Relative humidity	Atmospheric pressure
General transport	-20 °C – +70 °C	10 % – 80 %	300 hPa – 1060 hPa



CAUTION! Risk of injury due to lifting and carrying heavy loads

The device is heavy. Lifting and carrying the device can lead to back injuries.

- ▶ Transport and lift the device with an adequate number of helpers only.
- ▶ Use a transport aid to transport the device.

Carry out the following steps before transport:

1. Remove pipette tips
2. Remove the loading frame and the adapter and pack them separately.
3. Pack the pipetting device in the original packaging.

10.4 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 2012/19/EU 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. To document this, they have been marked with the following identification:



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

In Germany, this is mandatory from March 23, 2006. From this date, the manufacturer has to offer a suitable method of return for all devices supplied after August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.

11 Ordering information

11.1 Accessories

Order no. (International)	Order no. (North America)	Description
5075 787.008 5075 788.004	960002199 960002202	Thermoadapter for PCR plates, 96 wells, skirted for PCR plates, 384 wells, skirted
5075 766.000 5075 767.007	960002083 960002091	Thermoblock PCR 96 for use with vessels 0.2 mL or 77 PCR tubes 0.5 mL Thermoblock PCR 384

11.2 Pipette tips

11.2.1 50 µL

Order no. (International)	Order no. (North America)	Description
0030 014.529 0030 014.430	0030014529 0030014430	epT.I.P.S. Motion Filter Reloads 50 µL 12 × 2 trays with 96 tips each PCR clean and Sterile PCR clean
0030 014.421	0030014421	epT.I.P.S. Motion Reloads 50 µL 12 × 2 trays with 96 tips each Eppendorf Quality

11.2.2 300 µL

Order no. (International)	Order no. (North America)	Description
0030 014.537 0030 014.472	0030014537 0030014472	epT.I.P.S. Motion Filter Reloads 300 µL 12 × 2 trays with 96 tips each PCR clean and Sterile PCR clean
0030 014.464	0030014464	epT.I.P.S. Motion Reloads 300 µL 12 × 2 trays with 96 tips each Eppendorf Quality

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:

epMotion® 96

including accessories

Product type:

Semi-automated electronic pipette

Relevant directives / standards:

2006/95/EC: EN 61010-1, UL 61010-1, CSA C22.2 No. 61010-1-12

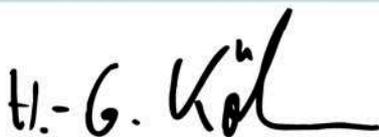
2004/108/EC: EN 55011, EN 61326-1

1999/5/EC

2011/65/EU

2012/19/EU

Date: June 10, 2014



Management Board



Portfolio Management

Your local distributor: www.eppendorf.com/contact
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eppendorf@eppendorf.com

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