Liquid handling solutions

FluidEase Pro ClipTip Electronic Pipette

Single channel

Multichannel

User manual

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This product is covered by patents issued in the US.

For patent coverage, see http://www.thermofisher.com/pipetteip

www.thermofisher.com/cliptip

www.thermofisher.com/FluidEase

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Introduction

The Thermo Scientific™ FluidEase™ Electronic Pipette is a general-purpose electronic micropipette that operates on the air-displacement principle. It is intended for aspirating and dispensing liquids. The FluidEase pipette operates with Thermo Scientific™ ClipTip™ pipette tips.

The touchscreen user interface makes the FluidEase pipette easy to use even for complex protocols, but the pipette can also be programmed via the My Pipette Creator App in the Thermo Fisher Connect Platform.

The FluidEase Pipette combines interlocking ClipTip technology with electronic tip ejection and index finger pipetting action, helping to reduce pipetting, tip attachment, and ejection forces. This makes pipetting a comfortable, safe, and enjoyable experience.

It is possible to create multiple user profiles with personalized settings and own programs for FluidEase pipettes. Users can set personalized functions for their applications and utilize optional password protection. This is ideal for multi-user environments.

The FluidEase pipette is available as a single channel or a multichannel model.

Using this Manual

Read the user manual before using the pipette for the first time.

Package

1. FluidEase Pro Pipette
2. Universal charger + USB cable
3. Li-ion battery
4. Single Channel Pipette (SCP) Service Tool FEP (not included in multichannel pipettes)
5. Tip fitting tool (not included in single/8/12/16 channel 10 µl, 30 µl, and 125 µl pipettes)
6. Quick guide
7. Tip fitting sealing-ring (not included in single/8/12/16 channel 10 µl, 30 µl, and 125 µl pipettes)

Remove the content from the package and check that all items listed above are included. Inspect for possible shipping damage. Ensure that the pipette has the desired volume range and that the voltage of the charger is 100-240V and the output is 5V 2A.

Thermo Scientific FluidEase Pro ClipTip Pipette models

The Thermo Scientific FluidEase models include both single channel and multichannel pipettes. The pipettes and matching ClipTips are color-coded to enable easy identification of compatible tips. ClipTip ordering information can be found from Appendix 2. ClipTip Ordering Information.

Thermo Scientific FluidEase ClipTip Pipette Models

Figure 1-1 Single channel and Multichannel

Thermo Scientific FluidEase model selection

Table 1-1 FluidEase Pro ClipTip Single channel models

Item number	Description	Volume range (µl) *	Calibration range (µl) **	Color code	Compatible ClipTip
4674010	FluidEase Pro ClipTip, 1 channel, 0.5–10 µl	0.5–10	1–10		ClipTip 12.5 Ext., 12.5
4674020	FluidEase Pro ClipTip, 1 channel, 2.5–100 µl	2.5–100	10–100		ClipTip 200
4674030	FluidEase Pro ClipTip, 1 channel, 5–200 µl	5–200	20–200		ClipTip 200
4674040	FluidEase Pro ClipTip, 1 channel, 10–300 µl	10–300	30–300		ClipTip 300 Ext, 300
4674050	FluidEase Pro ClipTip, 1 channel, 20–1,000 µl	20–1,000	100–1,000		ClipTip 1,000

Table 1-2 FluidEase Pro ClipTip Multichannel models

Item number	Description	Format	Volume range (µl) *	Calibration range (µl) **	Color code	Compatible ClipTip
4676010	FluidEase Pro ClipTip, 8 channel, 0.5–10 µl	96	0.5–10	1–10		ClipTip 12.5 Ext., 12.5
4676030	FluidEase Pro ClipTip, 8 channel, 2.5–100 µl	96	2.5–100	10–100		ClipTip 200
4676050	FluidEase Pro ClipTip, 8 channel, 5–200 µl	96	5–200	20–200		ClipTip 200
4676070	FluidEase Pro ClipTip, 8 channel, 10–300 µl	96	10–300	30–300		ClipTip 300, 300 Ext.
4676090	FluidEase Pro ClipTip, 8 channel, 25–1,250 µl	96	25–1,250	125–1,250		ClipTip 1,250

Item number	Description	Format	Volume range (µl) *	Calibration range (µl) **	Color code	Compatible ClipTip
4676020	FluidEase Pro ClipTip, 12 channel, 0.5–10 µl	96	0.5–10	1–10		ClipTip 12.5 Ext., 12.5
4676040	FluidEase Pro ClipTip, 12 channel, 2.5–100 µl	96	2.5–100	10–100		ClipTip 200
4676060	FluidEase Pro ClipTip, 12 channel, 5–200 µl	96	5–200	20–200		ClipTip 200
4676080	FluidEase Pro ClipTip, 12 channel, 10–300 µl	96	10–300	30–300		ClipTip 300, 300 Ext.
4676100	FluidEase Pro ClipTip, 12 channel, 25–1,250 µl	96	25–1,250	125–1,250		ClipTip 1,250
4676110	FluidEase Pro ClipTip, 16 channel, 0.5–10 µl	384	0.5–10	1–10		ClipTip 384 12.5 Ext., 12.5
4676120	FluidEase Pro ClipTip, 16 channel, 1–30 µl	384	1–30	3–30		ClipTip 384 30
4676130	FluidEase Pro ClipTip, 16 channel, 3–125 µl	384	3–125	12.5–125		ClipTip 384 125

* The Volume range specifies the minimum and maximum volumes that can be pipetted.

** The Calibration range is defined according to the ISO 8655:2022 standard and it indicates the volume range that meets the ISO 8655:2022 requirements.

Safety

Intended use

The intended use of the FluidEase pipette is to transfer liquids with different properties accurately and reliably. The FluidEase pipette, Type: 156, is designed to be part of an analyzing system for a user who is responsible for the validation of the system to help enable the production of reliable and safe results. For the performance-related cautions, see Calibration and adjustment.

To ensure optimal results in applications where pipetting accuracy is critical, it is recommended to verify results with an alternative test. If an alternative test is not feasible, conducting duplicate tests is advised. While every effort is made to ensure that the pipette provides accurate and precise volume transfer, with every instrument being calibrated after it is assembled, it is important to acknowledge that some variance is inherent to the instrument. Our accuracy and precision specifications that document these variances inherent to the product are provided in the Appendix 4. Manufacturer Factory Specification Limits. An important thing to note is that incorrect handling techniques might significantly impact the accuracy and precision variability of the instrument. Please ensure to follow the guidance provided in the Good Pipetting Practice guides and choose specific functions based on the sample properties used in the experiment.

This device is intended for use by skilled professionals with appropriate laboratory training. Please note that using this device for pipetting any liquid to be injected into the human body is not permitted.

Ensure that you are aware of the regulatory notices of your country of residence. For more information, see Appendix 7. Country-specific Regulatory Notices.

Safety symbols and markings

1 Introduction

Thermo Scientific FluidEase ClipTip Pipette Models

These symbols are intended to draw your attention to particularly important pieces of information and alert you to the presence of hazards as indicated.

CAUTION: Risk of damage to the instrument or other equipment or loss of performance or function in a specific application.

WARNING: Risk of injury to the user(s).

WARNING: Risk of electric shock.

WARNING: Biohazard risk.

The WEEE (Waste Electrical and Electronic Equipment) symbol indicates that this product should not be disposed of in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of WEEE. This instrument meets European requirement WEEE Directive 2012/19/EU.

Note: Highlights information of general interest.

Safety precautions

The following safety precautions provide important information intended to prevent personal injury to the operator and/or others and damage to the FluidEase pipette.

WARNING: Follow general instructions for hazard prevention and safety instructions, for example, wear protective clothing, eye protection, and gloves.

WARNING: Follow the ergonomic guidelines for laboratory work to minimize the risk of repetitive strain injury (RSI). For example, the Good Laboratory Pipetting Guide available at thermofisher.com/glp-guide.

WARNING: Follow the safety instructions and general laboratory practice for use and waste disposal of hazardous material, for example, radioactive and potentially infectious material.

WARNING: Ensure that the power transformer is connected to a power receptacle that provides the voltage and current specified in this user manual. Use of an incompatible power receptacle can cause an electric shock or a fire hazard.

WARNING: Follow the FluidEase pipette instructions presented in this user manual in Technical Data. Failure to follow the instructions may cause a safety risk.

WARNING: Do not immerse the unit in liquid and do not clean the upper part of the pipette by spraying. Fluid can damage internal components and may cause a safety risk.

WARNING: Incorrect handling of the battery or pipette may cause personal injury. Do not drop the battery. Do not expose the battery to any kind of mechanical stress or extreme temperatures: above 45°C or under 0°C.

WARNING: An old battery can cause the pipette to malfunction and may cause a safety risk (thermal runaway). We recommend that you change the battery every 2 years. If the battery's recharging interval decreases significantly, the battery should also be changed. It is recommended to charge the pipette every 2 months even if the pipette is not used daily.

WARNING: The FluidEase pipette contains a Li-ion battery and a potential malfunction of the battery (short circuit, mechanical damage, overheating, etc.) may cause an explosion. Do not touch a leaking battery directly. Do not use the battery in areas with abundant static electricity, otherwise the safety devices may be damaged, creating the potential for hazardous situations.

Thermo Scientific FluidEase ClipTip Pipette Models

CAUTION: Use only the power transformer supplied by Thermo Scientific. Using an incompatible power transformer can damage the pipette.

CAUTION: Always turn off the power and unplug the power transformer before cleaning the exterior. Fluid can damage internal components.

CAUTION: Do not autoclave the entire unit. Extreme heat can damage the display and other electronic components.

CAUTION: Do not clean the touchscreen or the operation keys with a bleach solution or other solvents. Caustic cleaning solutions can damage the touchscreen and operation keys.

Note: Do not hold the pipette horizontally or upside down when there is liquid inside the tip. The sample liquid may enter the pipette, which may affect pipetting performance and impair the pipette.

Note: Always remember to empty tips before leaving the pipette idle or shutting it down.

Note: Refer to Autoclave for autoclaving specific portions of the pipette or call Thermo Scientific Technical Service for instructions.

Getting started

Install the battery

The FluidEase pipette is delivered with a battery. Connect the battery connector as follows.

1. Open the battery lid. Press A and slide B.
2. Connect the battery connector. It does not matter which way you connect the battery connector.
3. Slide back the battery lid. Ensure that the cable is not pinched by the lid.
4. Charge the pipette battery before use.

For more information, see Charge the Pipette.

WARNING: Incorrect handling of the battery or pipette may cause personal injury. Do not drop the battery. Do not expose the battery to any kind of mechanical stress or extreme temperatures: above 35°C or under 0°C.

WARNING: The FluidEase pipette is delivered with a rechargeable battery. The battery type for the pipette is mentioned in the Technical data. Use only a battery supplied by Thermo Fisher Scientific. Do not charge a non-rechargeable battery with the device.

Charge the Pipette

Charge the pipette using a power supply or a charging stand (see Appendix 1. Use of the charging stand).

- Power supply: connect the pipette to the power supply charger using the USB Type-C cable
- Charging stand (highly recommended): place the pipette directly on the charging dock. Pipette can be conveniently charged when it is not in use. Once fully charged, it can be taken away

without dealing with cables. Additionally, expanded charging stand supports charging up to 4 pipettes simultaneously.

The time to charge to full capacity is approximately 2 hours. It is recommended to charge the pipette for at least 2 hours when charged for the first time.

When the pipette is on, an indicator on the LCD display shows the charge level of the battery.

Battery full (100%)

Battery level 21% - 99%

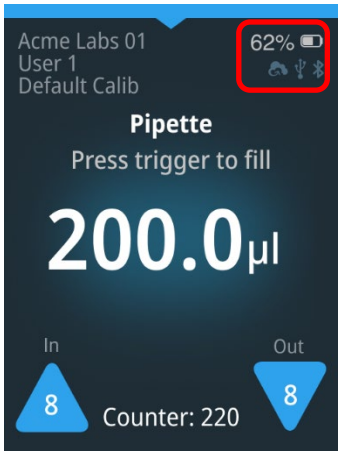
Battery level 1% - 20% (low)

When the indicator shows that the battery level is 1%, pipetting may no longer be possible, and the pipette must be recharged before use. A typical FluidEase battery lasts for around 300 charging cycles. A battery can be ordered separately, see Accessories for more information.

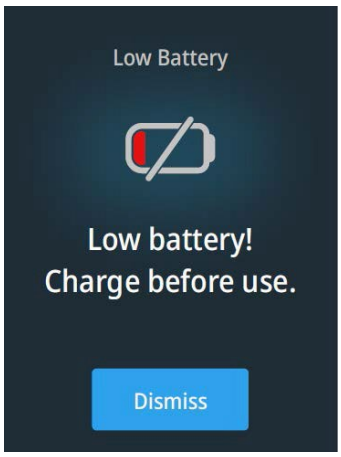
WARNING: An old battery can cause the pipette to malfunction and may cause a safety risk (thermal runaway). It is recommended that you change the battery every 2 years. If the battery's recharging interval decreases significantly, the battery should also be changed. It is recommended to charge the pipette every 2 months even if the pipette is not used daily.

Battery level indication during active use

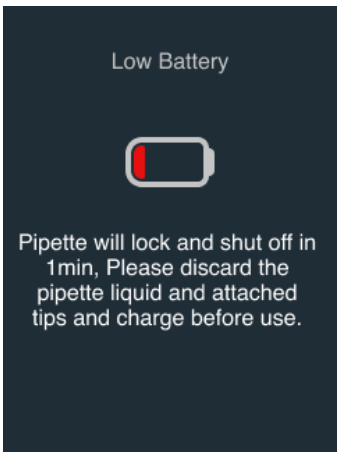
When the pipette is in active use, the battery level is shown at the top right corner of the screen.



When the battery level drops to 10% and 5%, the device issues a warning.



When the battery level drops to 0%, the pipette gives a warning and shuts down in 1 minute automatically.



Power supply

Insert the country-specific power plug adapter into the power supply unit. The package includes four power plug adapters: (1) China/USA, (2) United Kingdom, (3) Europe, (4) Australia. Insert the adaptor that matches your local mains into the power supply charger. For more information, see figure below.

Connect the lead of the charger (USB-C) to the socket on top of the pipette. Then connect the

charger to an AC wall socket.

You can use the pipette while the charger is connected and the battery level is larger than 1%.

CAUTION

The plug of the charger must be inserted into a socket that is easy to reach and from which it can be easily unplugged in case of emergency

Check that the charging connectors are clean and dry before attaching the cable to the pipette

The pipette must be charged at temperatures between 15°C to 35°C. The battery may be damaged if charged at other temperatures

For indoor use only.

WARNING:

Use only the original charger and battery pack. The pipette battery may be empty when delivered and must be charged before initial use. It is recommended to charge the battery for at least 2 hours when charged for the first time.

Use of incorrect power supply units may result in fatal injuries and damage to the device, like overheating, burning, melting, short-circuiting or similar damage.

Only use the supplied power supply unit for charging the pipette. You can recognize the correct power supply by the Thermo Scientific logo and the pipette name on the power supply unit. Do not use any chargers without Thermo Fisher logo, and do not charge the pipette in a hot location (> 35°C).

While charging, the pipette automatically goes into the power save mode if there is no activity after a certain period of time. This time period can be set by the user, the range is from 2 to 20 minutes.

Charging stand

The Thermo Scientific FluidEase Charging Stand can be assembled into either a 1-, 2-, 3-, or 4-position pipette stand. The charging stand operates with a maximum of 4 charging docks (1, 2, 3, or 4 charging positions).

The charging stand has 2 slots in every dock. The first slot is for charging. The second slot, the resting slot, can be used to place a pipette into the stand with the consumable tips on the pipette. Place the finger hook of the pipette in the second slot of the dock so that the pipette tip is raised above the surface.

A pipette to be charged can be placed into any of the charging slots. The stand charges all pipettes that are placed into a charging slot at the same time. The resting slot does not charge the pipette.

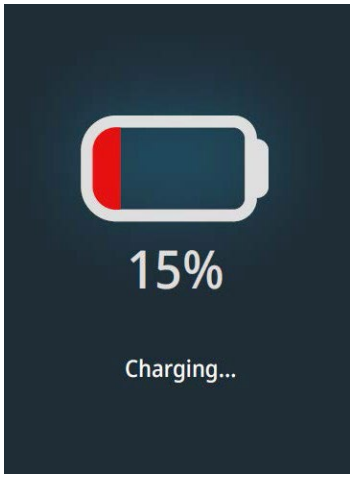
After assembling your stand, connect the power jack of the charger to the socket located inside of the leg of the stand. Then connect the charger to an AC wall socket.

Note: Use only the original charger of the FluidEase Charging Stand. For more information, see Power supply and Appendix 1. Use of the charging stand.

Figure 2-1 Charging stand with 4 docks, with 3 out of 4 pipettes placed in the charging slots

Battery level indication when charging the pipette

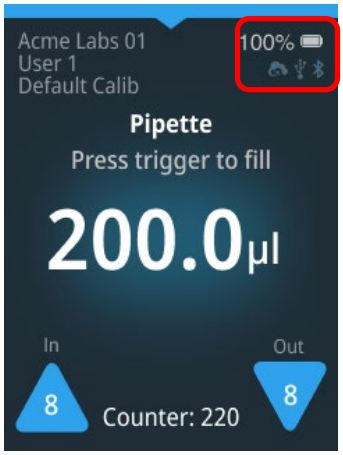
When the pipette is being charged, a large battery icon takes over the screen. The battery level percentage shows below the icon.



This screen shows for 3 seconds. After 3 seconds, the screen returns to normal, the battery icon in the upper right corner is animated: the bar inside the icon grows from left to right, showing that charging is ongoing.

When the pipette is fully charged, the screen shows an unanimated 100% charged icon at top right corner of the screen.

Thermo Scientific FluidEase ClipTip Pipette Models



Turn the pipette on and off

After the battery is charged, the device can be powered up.

1. Press the power button on top of the pipette until the touchscreen display activates.
2. If the battery was just installed, you must set the date and time. Follow the instructions on the display.

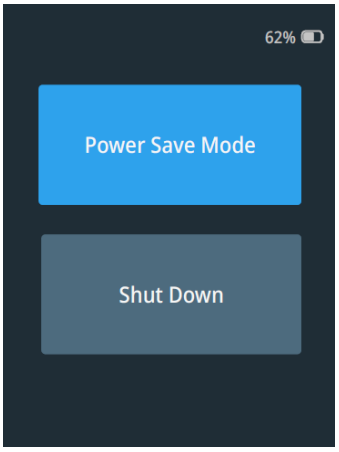
   For details, see Date & Time.
3. Press the trigger switch to initialize home positioning and then the tip ejection button to eject tips（If there is still liquid present in the pipette before shutting down）.

   For more information on the control buttons, see Operation Buttons.
4. The pipette shows the main menu and is ready for use.

To turn off the pipette, follow the steps below.

Keep pressing the power button on top of the pipette then pipette will shut down, or:

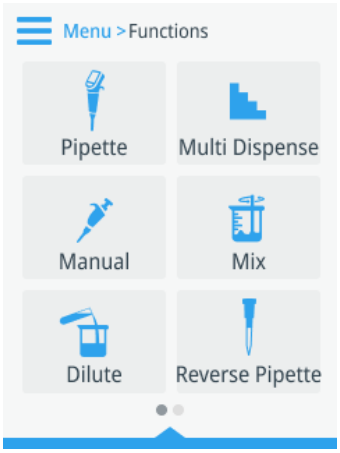
1. Press the power button on top of the pipette. The shutdown screen opens.



2. Tap **Shut Down** to turn off the pipette.

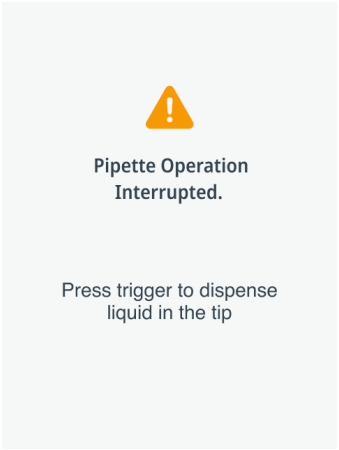
- The pipette automatically shuts down after 1 hour if there is no action.
- The pipette does not respond when pressing the power button if there is liquid in tip.

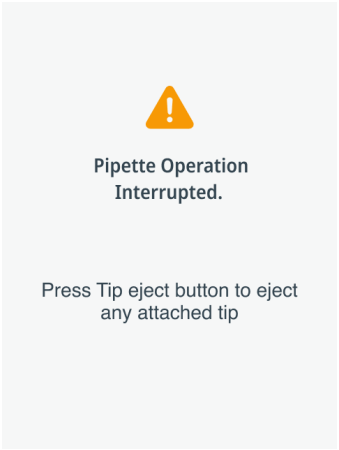
- When the pipette is turned on again, it will open **Function** view, as shown in figure below.



Abnormal Shutdown

1. If liquid remains in the tip but no further operation is performed, the device will automatically shut down after 1 hour. After restarting the pipette, it will prompt messages to provide guide for following actions:
   - Press Trigger button to dispense the liquid
   - Press Ejection button to eject the tip





   After that, **Function** view opens.

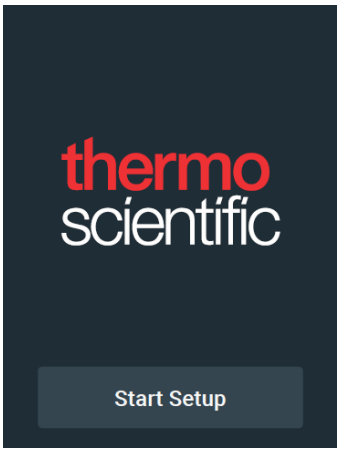
2. If the battery is completely depleted, a message would pop up, and the pipette will automatically shut down after 1 minute. The pipette will automatically power on after being connected to the charger or charging stand, then open Function view.
3. If a system error or other malfunction causes the pipette to become unresponsive, the battery must be physically removed to shut down. After reconnecting the battery and powering on, the date and time will revert to factory default settings and will need to be reset. Then follow the same steps as described in case 1.

Pipette initial setup

Thermo Scientific FluidEase ClipTip Pipette Models

When you switch your pipette on for the first time, you are prompted to set up your pipette. You can change the settings later, if needed. See Settings menu for more information. By default, the first user of the pipette is set as the Admin user.

1. Approve the End-user License Agreement (EULA).
2. Tap **Start Setup**.

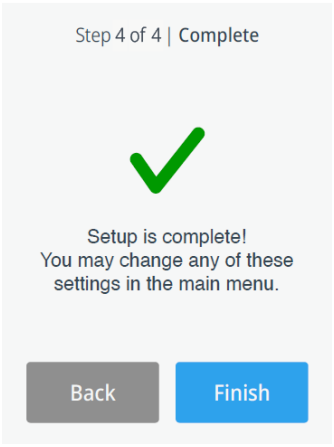


3. Select and save the language to be used in the user interface. English is the default.

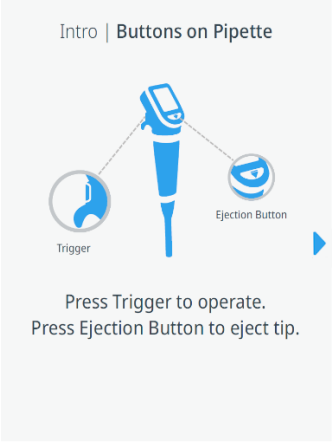
4. Set the date, and then tap **Save**.

5. Set the time. You can select either a 12-hour or 24-hour presentation mode. Tap **Save**.

6. Tap **Finish** to complete the setup.

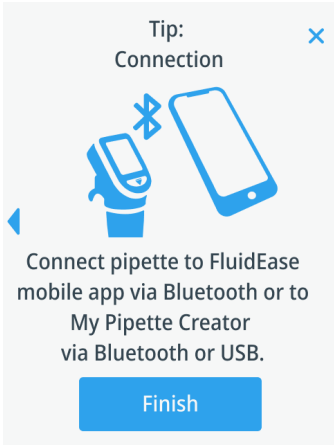


7. The following pages provide operation guidance, illustrating common functions such as buttons introduction, speed adjustment, quick setup, keyboard switching, and reordering program icons, among others.
Tap the left or right arrows on the screen to navigate between instruction pages.



8. Tap Finish.

Thermo Scientific FluidEase ClipTip Pipette Models



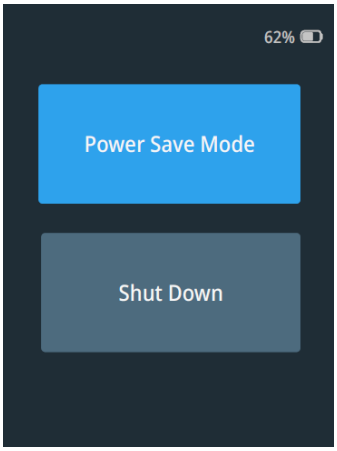
Power save feature

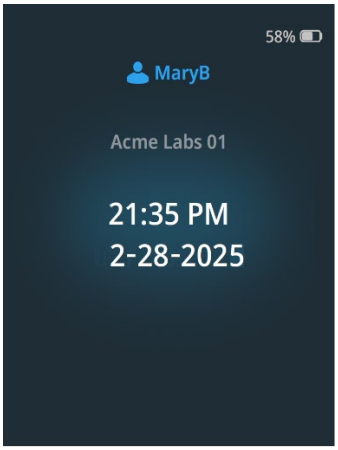
The FluidEase pipette has a power save feature, which lowers the power consumption when the pipette is idle. If the pipette is not used for a minute, the brightness of the display decreases. After a user-defined period (2 minutes default, with 2, 5, 10, 15, and 20 minutes available as selectable options), the pipette enters the power save mode. If the pipette is not used for an hour, it automatically turns itself off.

Tap the screen or press Trigger\Ejection button to exit the power save mode.

Set the pipette to power save mode

Set the power save mode as following steps:





1. Quickly press the power button on top of the pipette. The shutdown screen opens.
2. Tap **Power Save Mode**.

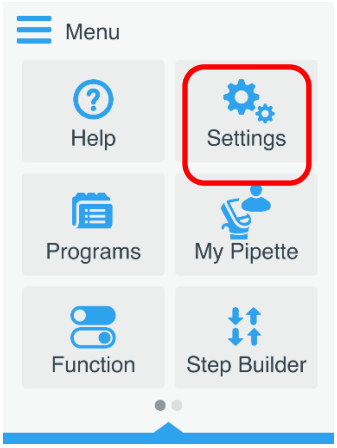
The pipette goes into the power save mode. The pipette name is shown on the display.

Change the power save settings

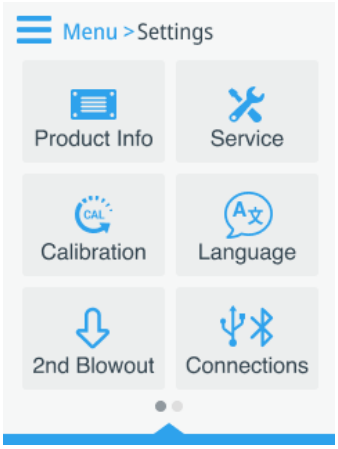
By default, the pipette enters power save mode after 2 minutes of inactivity. You can change the idle time, if needed. The range is from 2 to 20 minutes.

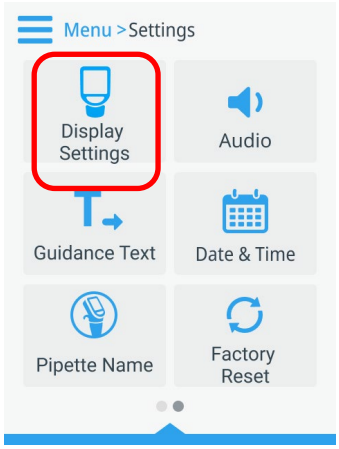
To change the idle time for power save mode, follow the steps below.

1. On the main menu, tap **Settings** (see Chapter User Interface (Touch Screen) Overview for information on how to access the main menu).

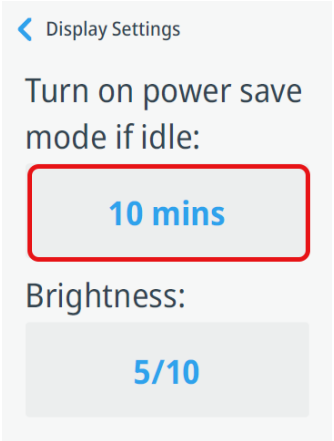


2. Swipe left to access the second screen of the **Settings** menu, and then tap **Display Settings**.





3. Tap the **Turn on power save mode if idle** field as many times as necessary to reach the desired idle time. The range is 2 - 20 minutes, with 2, 5, 10, 15, and 20 minutes available as selectable options.



Pipette overview

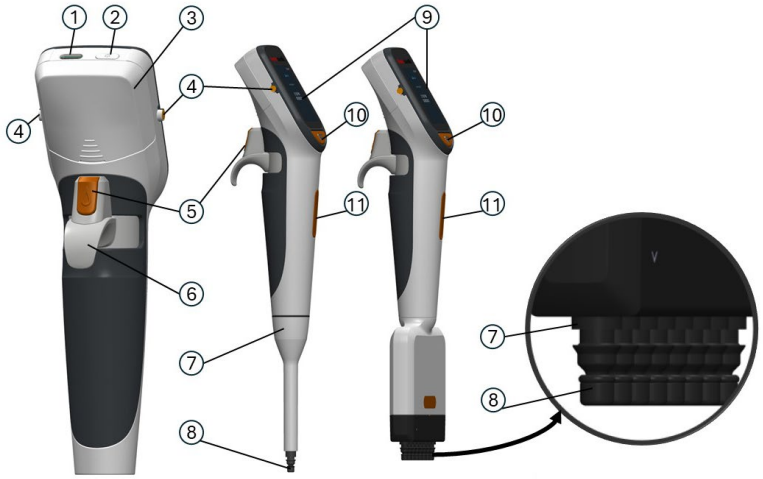


Figure 3-1 Pipette components

Nr.	Component	Function
1	Connector socket	For connecting the power supply.
2	Power button	For turning the pipette on and off.
3	Battery lid	For accommodating the Li-ion battery. For more information, see Installing the Battery for installation.
4	Charging pins	For connecting pipette to the charging stand. For more information, see Charging stand.
5	Pipetting trigger*	For triggering the piston's movement. For more information, see Trigger button.
6	Finger hook	For comfortable pipette handling enabled by a rotatable finger rest. For more information, see Operation Buttons.
7	Tip ejector	For ejecting tip(s) by moving down.
8	Tip fitting	For attaching tip(s), For more information, see ClipTip Interface and Tip Attachment.
9	Touch screen display	For displaying pipette information and operating pipette. It is Color IPS LCD with Projected Capacitive (PCAP) touch screen.
10	Tip ejection button*	For ejecting pipette tips. For more information, see Tip ejection button.
11	Volume range indicator*	For Indicating the minimum and maximum allowable volume of this pipette.

*Color coded parts

Touchscreen display

The FluidEase pipette is operated using the touchscreen display as the user interface. You can operate the touchscreen display while wearing disposable gloves made of latex, nitrile, or vinyl.

Mutual capacitive touch technology works by measuring capacitance changes between a grid of intersecting electrodes.
It enables multi-touch capability, fast and accurate response, and high durability, making it ideal for modern electronic interfaces for pipettes. Pipettes equipped with touchscreens allow users to clearly and intuitively view all parameters for liquid handling, and to adjust them with ease and efficiency.

The main advantages of the touch screen include:

- User-friendly interface: It provides an intuitive and easy-to-use interface, allowing users to effortlessly set and adjust pipetting parameters by tapping screen or gestures.
- Glove compatibility: The LCD screen can be operated while wearing disposable gloves made of latex, nitrile, or vinyl, and responds promptly, i.e. less than one second.
- Precise control: Precise control through the touch screen helps ensure the accuracy and consistency of pipetting operations.
- Reduced operational fatigue: Settings can be completed with a simple touch, reducing the burden of repetitive operations.
- Increased operational efficiency: The touch screen offers convenient operation, helping to reduce experimental time.

For instructions, see Chapter User Interface (Touch Screen) Overview.

CAUTION: The touchscreen is a sensitive component. Use your finger, for example, to operate the pipette. Do not use a sharp object on the touchscreen.

WARNING: If the touch screen display is broken, do not touch it with bare hands.

Operation buttons

Figure 3-2 Pipette operation buttons: 1) Tip ejection button, 2) Pipetting trigger

Tip ejection button

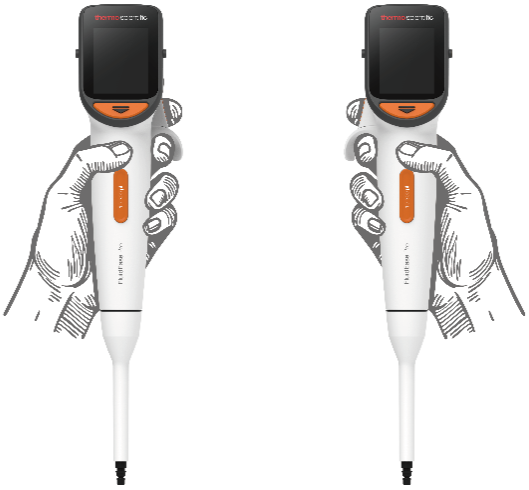
The tip ejection button is used to eject the tips from the pipette electronically; this can reduce hand fatigue and improve work efficiency. A soft white LED light illuminates the symbol of the tip ejection button when tip removal is possible. When the pipette is ejecting tips, the ejecting tips icon is shown on the display.

The tip ejection button is active only when the entire pipetting cycle is completed. The button is always inactive during the pipetting cycle; this is to prevent accidental tip ejection and potential contamination.

Trigger button

FluidEase pipette has an excellent ergonomic design and is easy to use for both left-handed and right-handed users because of the rotatable trigger button. It’s shown in the figure below.

The index-finger operated trigger is used to aspirate and dispense liquid. It is also used to initiate mixing, diluting reverse pipetting or titrating. The trigger and finger hook can be rotated in both directions to support left- and right-handed use, ensuring an optimal pipetting position and enhancing comfort during operation.



If the **Guidance Text** setting is **On**, you are prompted when you can press the trigger to proceed to the next step, for more information, see Guidance Text.

Dispense liquid

You can dispense the liquid from the pipette:

- Into air, meaning that the tip does not touch the liquid in the reservoir.
- Into liquid, meaning that the tip of the pipette is in the liquid in the reservoir.

For more information, please refer to Recommendations for accurate pipetting.

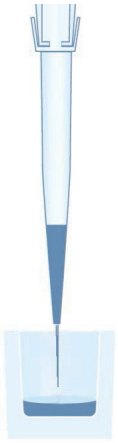
Dispense liquid into air

1. Press the trigger briefly to dispense the liquid. The liquid is dispensed from the tip.

When using a small-volume pipette (nominal volume ≤ 30 µl), it is recommended to keep the trigger pressed until all liquid has been dispensed from the tip.

After dispensing, it is recommended to touch the tip(s) against the edge of the reservoir to remove possible remaining liquid drops on the outside surface of the tip.

Thermo Scientific FluidEase ClipTip Pipette Models



2. The pipette returns to the ready position.

Dispense liquid into liquid

1. Put the tip into the liquid.

2. Press the trigger to dispense the liquid and keep the trigger pressed until the tip is withdrawn from the liquid.
3. Lift the tip from the liquid and then release the trigger.
4. The pipette returns to the ready position.

ClipTip interface and tip attachment

Thermo Fisher ClipTip pipette tips are available in 96-format and 384-format configurations for use with FluidEase pipettes. Select the correct pipette tips according to compatible table: Appendix 2. ClipTip Ordering Information .

ClipTip 96-format tips

The ClipTip interlock technology is based on flexible clips around the top of the tip, as shown in figure below. During attachment the tip fitting opens the clips, and the clips pass over the fitting flange and return to closed positions. The clips lock the tip behind the flange creating a complete seal with the sealing ring. The lock prevents the tip from loosening or falling off during pipetting or touch-off.

For optimal tip attachment and ejection, using a moderate amount of tip attachment force without rocking the pipette is recommended. The sealing ring and clips reduce the tip loading force while ensuring a reliable seal.

Tip attachment

1. To attach the tip, guide the pipette into a ClipTip in a rack, and lightly apply force until the tip is attached. A delicate ‘click’ sound indicates that the tip is attached. The tip is attached when the clips are locked into the tip fitting.
2. Lift the pipette.
3. If the tip is not attached, repeat steps 1 and 2.

ClipTip 384-format tips

Single-channel, 8-channel and 12-channel 10 µl, 16-channel 10 µl, 30 µl, and 125 µl pipette models (see Thermo Scientific FluidEase model selection) use the 384-format tips that features a unique ‘snap and lip’ mechanism for tip attachment, as shown in figure below. The tip has small, incorporated protrusions that snap on the tip fitting flange, ensuring secure tip attachment with little force. The flexible plastic lip design seals the tip against the tip fitting.

Tip attachment

1. To attach the tip, guide the pipette into a 384 ClipTip in a rack, and press until the tip is attached. The tip is attached when it snaps over the tip fitting flange.

   Do not use excessive force when attaching the tips as the device requires minimum

attachment force.

2. Lift the pipette.
3. If the tip is not attached, repeat steps 1 and 2.

For optimal attachment with 16-channel pipettes, a moderate tip attachment force with gentle rocking is recommended.

Single channel, 8-channel and 12-channel 10 µl pipettes use ClipTip 12.5 µl tips, this tip uses the 384-format structure tip fitting, but they are also available in a 96-format (8 × 12) rack configuration. (see Appendix 2. ClipTip Ordering Information for more information).

Tip ejection

All FluidEase pipettes utilize an electronic tip ejection to reduce hand fatigue (less force for thumb) and improve work efficiency, because you don’t need to press and hold; just a short press is enough to start the motor. A large, color-coded ejection button ensures optimal tip ejection operation for both left- and right-handed users (for more information, see Operation Buttons).

The tip ejection function is prevented whenever there is liquid inside the tip to avoid accidental tip ejection during pipetting.

CAUTION: Always eject the tips into an appropriate waste container. Do not eject tips towards another person.

4

Recommendations for accurate pipetting

For optimal pipetting results, follow these recommendations.

- If possible, ensure that the pipette, tips, and liquid are at the same temperature.
- To improve accuracy and precision, prewet the tip 3 to 5 times with the liquid to be pipetted using the maximum volume setting. Pre-wetting is especially important when pipetting volatile compounds since it prevents liquid from dripping out of the tip.
- During aspiration, wait until the liquid movement in the tip(s) stops before withdrawing the tip from the liquid
- After aspiration and dispensing, touch the tip(s) against the edge of the reservoir to remove any remaining liquid on the outside surface of the tip.
- Samples should be pipetted in the same manner, aspiration depth, pipetting angle (preferably in the upright direction), and dispensing technique (dispensing into air, immersed into liquid, or touching the wall).
- Aspirate and dispense at low speeds when working with high viscosity liquids, refer to Appendix 12. Speed Recommendations for more speed reference.
- Adjust the pipette for liquids of a different density or viscosity to improve accuracy and precision. See Chapter Calibration and Adjustment for further information.
- To improve pipetting results in multi-dispensing operations (Step Builder and Multi Dispense functions), it is recommended to use a pre-step. In Step Builder mode, the default setting for the pre-step is “In use”. In step-based programs, users need to program a separate dispensing step as the pre-step.

Refer to Good Laboratory Pipetting Guide for more details: www.thermofisher.com/glp-guide

Do not clean tips for reuse as their metrological characteristics will no longer be reliable. Tips are designed for single use only. Pipetting performance cannot be guaranteed if the tip is reused.

Choose a tip and pipette of matching color. See information on compatibility in Thermo Scientific FluidEase model selection.

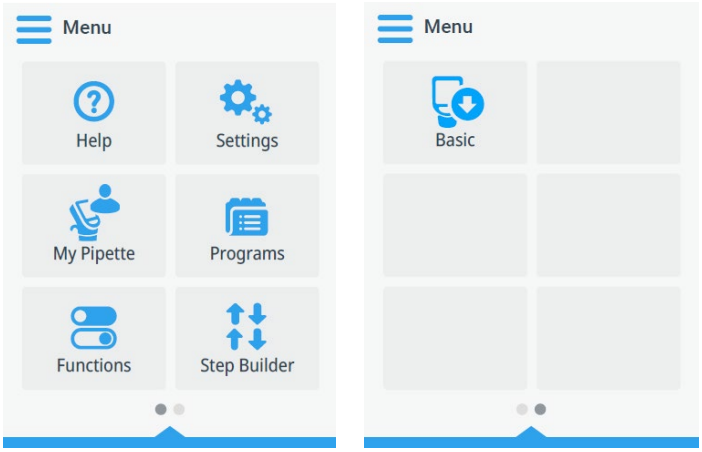
When dispensing into liquid and to prevent aspiration of the liquid, keep the trigger pressed until the tips are withdrawn from the liquid.

CAUTION: Ensure that the pipette tip is resistant to liquids that you intend to handle, find more information by clicking: Chemical resistance of plastics.

5

User interface (touchscreen) overview

The main menu can be accessed by swiping down from any pipetting screen. These icons are displayed in two pages and show the main functions of the pipette, as shown in figures below.



You can move the icons in the view. For more information, see Move icons in the Main Menu .

You can also create shortcuts that appear as icons in the main menu. For more information, see Create a shortcut.

Tap the icons to access the functions.

- Select **Help** for tips on using the pipette. For details, see Help menu.
- Select **Settings** to define the basic functions and calibration settings and set the Bluetooth connection On or Off. Settings also contains information on your pipette. For details, see Settings menu.
- Under **My Pipette** you can define users or a password for the pipette and connect the pipette to Thermo Fisher Connect Platform. For details, see My Pipette menu.
- In **Programs**, FluidEase pipette allows 5 different users to create at most 25 programs per user with specific names and calibrations. For details, see Programs function.
- The **Functions** icon includes application-based pipetting styles. The pipetting sequence is preset. You only need to set the pipetting volumes and speeds. For details, see Functions.
- **Step Builder** uses a step-based operating technique. You enter each pipetting step separately in the sequence in which they are performed. For details, see Step Builder function.

You can program pipetting functions for the FluidEase pipette with the My Pipette Creator App in Thermo Fisher Connect Platform and then transfer the pipetting function to the FluidEase Pipette. The pre-programmed protocols can also be downloaded from the protocol library in My Pipette Creator to FluidEase pipette. For more information, see Connect to MPC to program pipetting functions.

- The **Basic**/**Advanced** setting allows you to change the user mode of the pipette. In the Basic

mode, you can access from the main menu the preset pipetting actions that are under the Functions menu in the Advanced mode, see Basic mode for more information. In the Basic mode, you can also set functions as Favorites. For details, see Favorites (Basic mode only).

The Step Builder, Programs, and My Pipette functions are not available in the Basic mode.

The main available menus at the next level on Advanced mode are further illustrated in figure below.

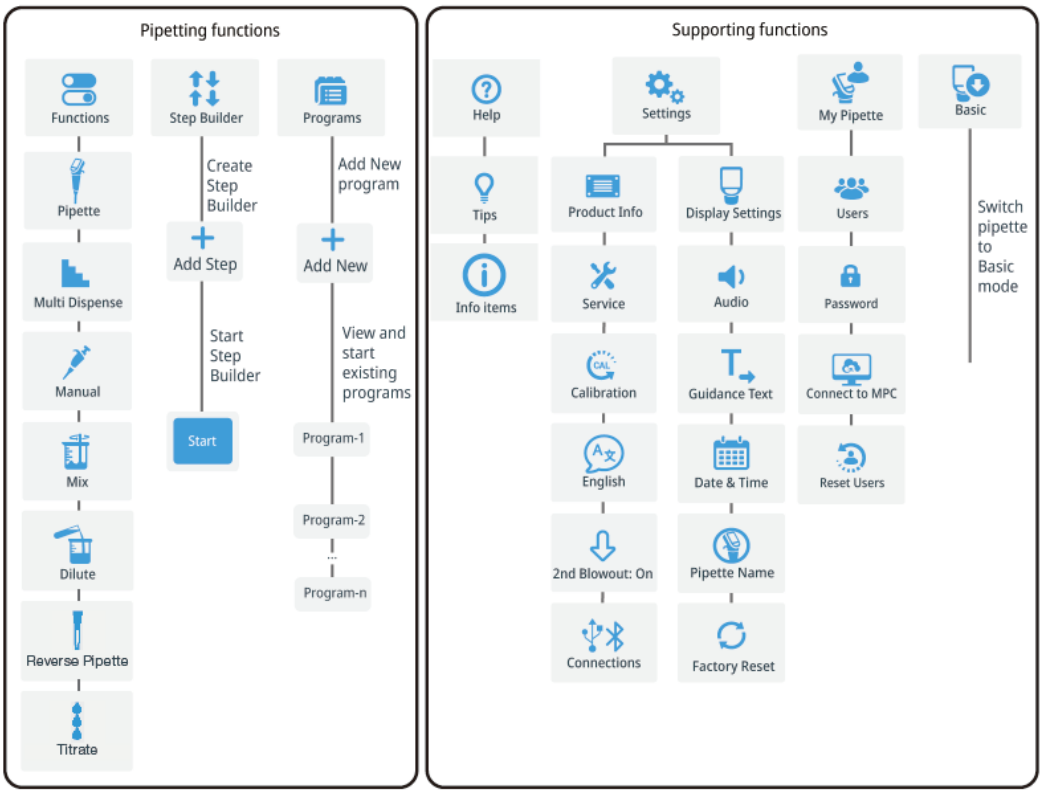


Figure 5-1 Menu map of **Advanced** mode

Pipetting view

The FluidEase pipette has a simple pipetting view with all the information needed during the pipetting cycle. When you first start to use the pipette, the pipetting view shows the default values for the function. Later, the pipetting view shows the last used parameters for the selected function, as shown in figure below.

5 User interface (touchscreen) overview

Thermo Scientific FluidEase ClipTip Pipette Models

Figure 5-2 Forward pipetting view

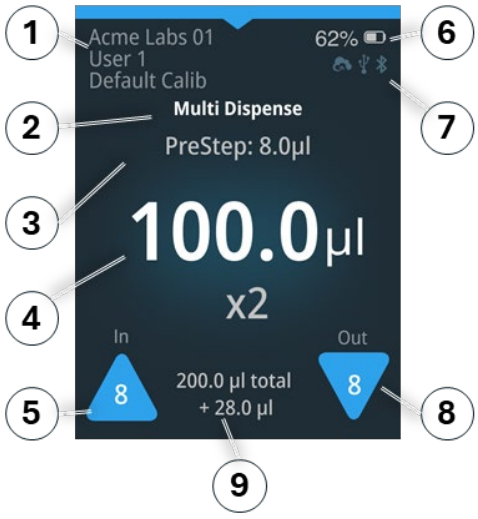
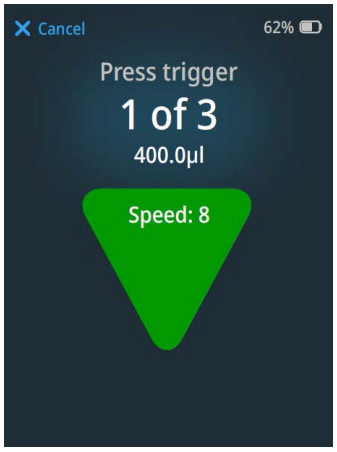


Figure 5-3 Multi Dispense pipetting view

1. Pipette name, user name, and calibration information.	6. Battery level indicator.
2. Name of the program or pipetting function.	7. Connection information. The icons are blue when the connection is active.
3. Rotating guidance text, for example, information on the upcoming pipetting step, or instructions to the user. You can set the guidance text as on or off. For more information, see Guidance Text.	8. Pipetting speed Out (Dispensing speed). The number indicates the present speed setting.
4. Volume of the upcoming pipetting step.	9. Additional information, for example, counter data (Figure 5-2), or the total volume for the cycle. Pre-step and excess volumes shown after + (Figure 5-3).
5. Pipetting speed In (Aspiration speed). The number indicates the present speed setting.	

Swipe the pipetting view down to access the main menu. Swipe up to open the pipetting-view specific Quick Set menu.

When you start the pipetting cycle, the pipetting view shows the upcoming/ongoing step. The direction of the arrow changes depending on whether the pipette aspirates (arrow up) or dispenses (arrow down). When the step is ongoing, the color of the arrow is animated, as shown in figures below.



The **Cancel** option is available only between steps. You cannot cancel the operation when the pipette aspirates or dispenses.

Quick Set menu

The **Quick Set** menu contains more settings for the current pipetting function. The contents of the **Quick Set** menu depend on the function; figures below show quick set menu view from Pipette and Mix individually. Swipe up on the pipetting view to access the **Quick Set** menu. Swipe down to close the **Quick Set** menu.

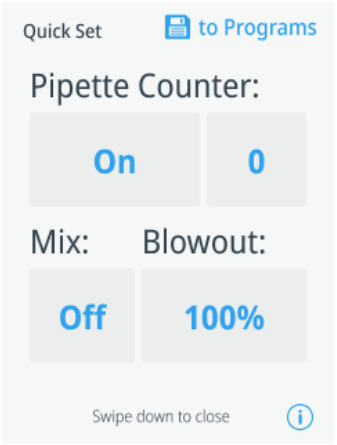


Figure 5-4 Quick Set menu of Pipette

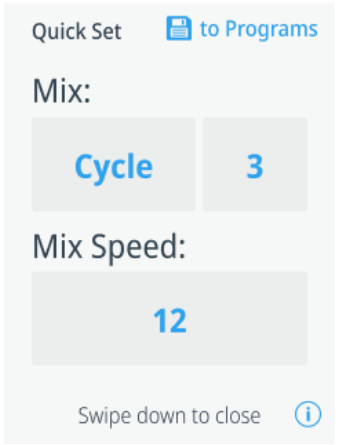


Figure 5-5 Quick Set menu of Mix

How to use the Quick Set menu: the method depends on the specific pipetting function you have selected. For details, please refer to the Pipetting functions.

Touchscreen

Tap the screen to perform the following operations:

- access functions
- select parameters

- confirm selections

Swipe the screen to perform the following operations:

- scroll
- switch between screens, or, for example, the keyboard style
- view quick actions
- delete user-defined programs or steps

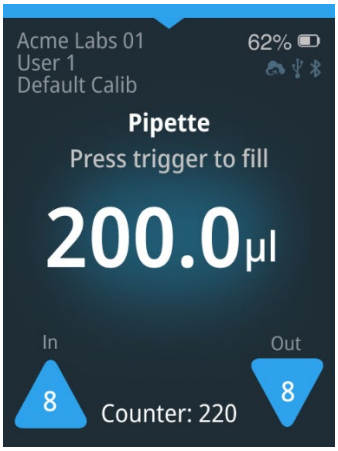
Tap and hold the screen to perform the following operations:

- drag and reorder icons, steps or other items
- to increase/decrease values rapidly with the + and – icons

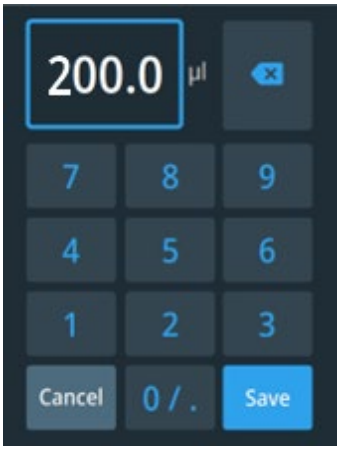
Adjust the volume

The volume of the active pipetting function can be adjusted from the pipetting view.

1. Tap volume field to open volume editing view.

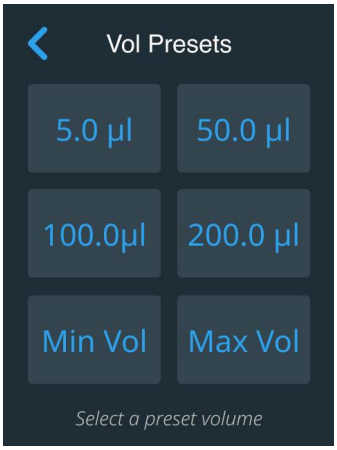


2. Enter the volume setting with the numeric keys, holding down the zero to enter decimal point.



3. Alternatively, swipe right to use - and + buttons to change the volume. Tap the field and change the value.

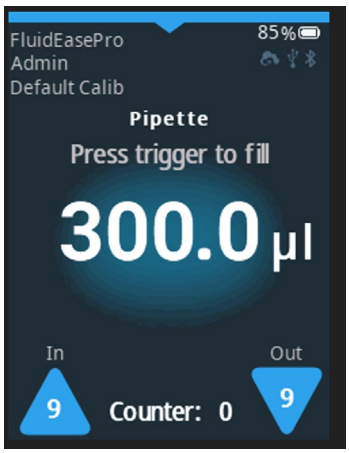
4. Alternatively, you can use preset volumes. Tap Vol Presets and select the desired volume.

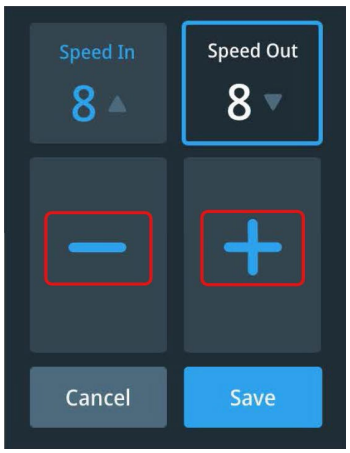


5. Tap Save.

Adjust the pipetting speed

It is possible to adjust the aspiration (In) and dispensing (Out) speed separately in the FluidEase pipette. In Advanced mode, there are 12 different speed levels, while in Basic mode there are 9. A higher number indicates a faster aspiration or dispensing speed.





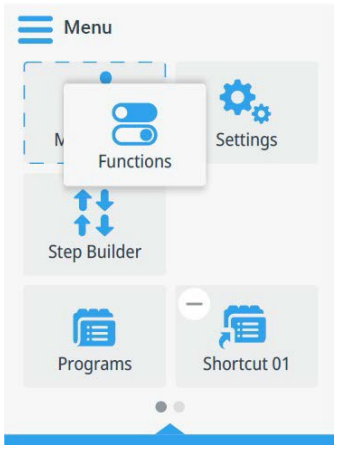
To change the pipetting speed, follow the steps below.

1. tap the arrow (In or Out) that indicates the present speed setting.
2. Use the **-** and **+** buttons to change the speed. In and Out speed can be different.
3. Tap **Save**.

Move icons in the main menu

To move an icon, follow the steps below.

1. Tap and hold any icon on the touchscreen to activate the move mode.



You can now move the icons. In this mode, you can also delete shortcuts. For more information, see Delete a shortcut.

2. Drag and drop the icon to the desired place. The other icons move accordingly.

Pipetting functions

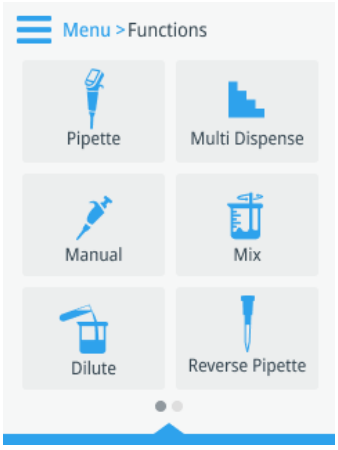
All pipetting actions are included in the **Functions** and **Step Builder** functions, which are designed for fast and easy pipetting without saving. The pipette automatically remembers the last used parameters.

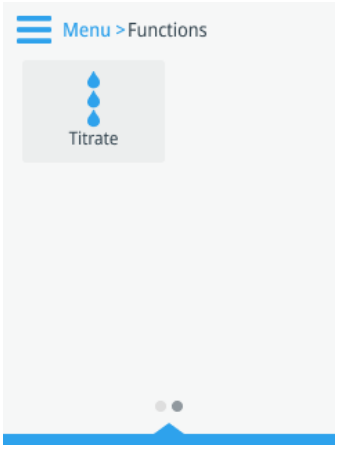
The **Programs** function is designed for creating and storing programs. Save time and help ensure data integrity by storing your most used protocols. You can also create icon shortcuts for quick access to your favorite programs.

Functions

The preset functions are designed for fast and easy pipetting without saving. The pipette automatically saves the last used parameters.

The following preset functions are available in the FluidEase pipettes:





- Pipette
- Multi Dispense
- Manual
- Mix (can also be a step in the Pipette and Dilute modes)
- Dilute
- Reverse Pipette
- Titrate

To access the Functions menu, select **Functions** from the main menu.

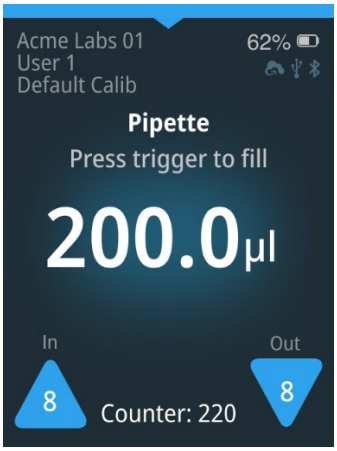
In Advanced mode, functions including Pipette, Multi Dispense, Mix, Dilute and Reverse Pipette can be saved as Program. This is done by swiping up on pipetting view to access the Quick Set menu.

Pipette mode

Use the Pipette mode for aqueous solutions, such as buffers, diluted acids, or alkalis.

1. In the **Functions** menu, tap **Pipette**.

   The Pipette mode view opens with the previously used settings.



2. If necessary, change the volume and speed in or out.

   For instructions, see Adjust the volume and Adjust the pipetting speed.

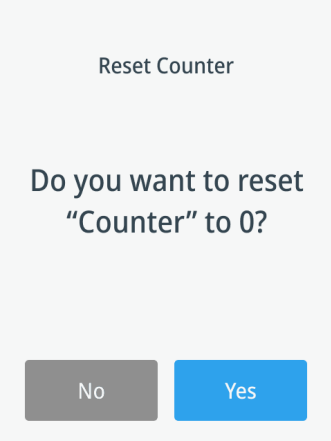
3. If necessary, swipe up to open the **Quick Set** menu to change the pipette counter settings. You can also add a mixing step to the end of the pipetting sequence.

   a. Set the mixing as **On** or **Off**. If you set the mixing **On**, see Use the Pipette + Mix step for instructions.

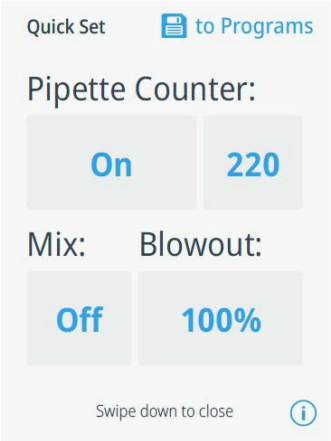
      The Blowout in this view is only for mixing; the recommended percentage is 100. When using liquids with a tendency to foam, adjusting the percentage lower can reduce the formation of foam.

      For example, if Blowout is set to 25% and then turn on Mix, the first blowout (before mixing) is at 25% and the 2nd blowout (after mixing) is at 100%

   b. If the pipette counter is On, you can reset the counter value to 0. To reset the counter, tap the counter value. Tap **Yes** to confirm the reset.



c. From the **Quick Set** menu, you can also save the function to Programs by tapping **to Programs** at the top of the screen.



The Save to Programs option is available only in the Advanced mode.

d. Swipe down to close the **Quick Set** menu.

4. Place the tip(s) under the liquid surface and press the trigger to aspirate the liquid.
5. Press the trigger to dispense the liquid.

Use the Pipette + Mix step

You can add a mixing step to the Pipette mode after the dispensing of the liquid.

To use the **Pipette + Mix** mode:

1. On the main menu, tap **Functions**.
2. In the **Functions** menu, tap **Pipette**.

   The pipette mode view with the previously used settings opens on the display.
3. If necessary, change the volume and speed in or out.

   For instructions, see Adjust the volume and Adjust the pipetting speed.
4. Swipe up to open the **Quick Set** menu.

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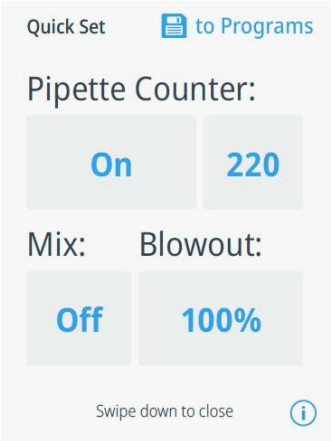
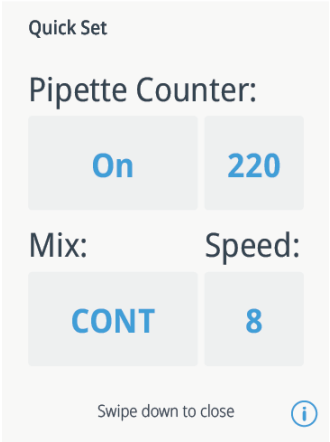
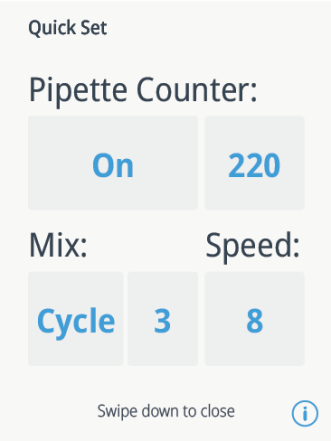


a. Tap the Mix field several times to select the mixing type-**Cycle, Cont** or **Off**.

b. For continuous mixing, tap the **Speed** field to set the mixing speed.

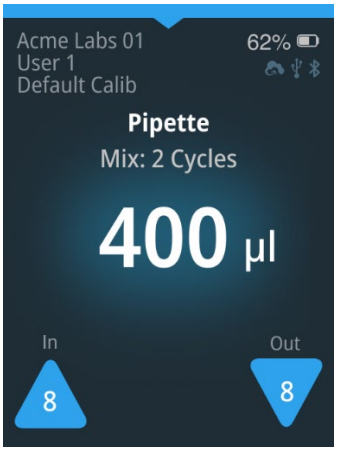


c. For cyclic mixing, set the number of cycles and the mixing speed.



d. Swipe down to close the **Quick Set** menu.

The rotating info text indicates that the Mix step was added.



5. Place the tip(s)under the liquid surface, and then press the trigger to aspirate the liquid.
6. Press the trigger to dispense the liquid.
7. Place the tip(s) under the surface of the liquid. Press the trigger to start mixing.

- Continuous mix type —As long as the trigger is pressed down, approximately 70% of the total volume is pipetted. The number of mixing cycles is shown on the display during mixing.
- Cycle-based mix type —The pipette mixes the liquid the set number of mixing cycles (1 cycle = aspirate + dispense).

8. Press the trigger to empty the tip(s)(Blowout).

Multi Dispense mode

Use the Multi Dispense mode to repeatedly dispense a selected volume. The Multi Dispense mode is particularly suitable for microplate applications.

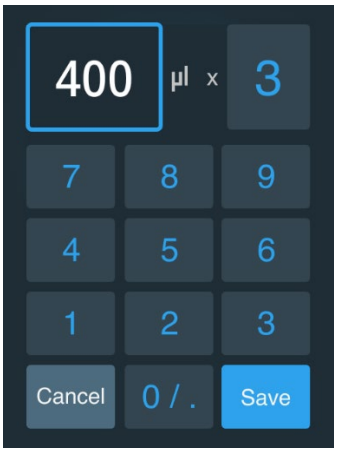
To use the Multi Dispense mode:

1. In the **Functions** menu, tap **Multi Dispense**.

   The Multi Dispense mode view with the previously used settings opens on the display.

Thermo Scientific FluidEase ClipTip Pipette Models

2. To change the volume and repetitions, tap the Volume field.
3. Set the volume and number of repetitions as necessary and then save the changes.



4. If necessary, change the speed **In** or **Out**. For instructions, see Adjust the pipetting speed.
5. If necessary, swipe up to open the **Quick Set** menu to change the PreStep or Excess settings.

On this page, PreStep and Excess can be turned on or off individually. Swipe down to close the Quick Set menu. Refer to Appendix 10. Limits and Defaults of Pre-step and Excess for more information on PreStep and Excess.

If you minimize the **Excess** setting, the accuracy of the last dispense may be affected.

6. Place the tip(s) under the liquid surface and press the trigger to aspirate the liquid.
7. Press the trigger to discard the pre-step (if in use).
8. Press the trigger to dispense the first step. Repeat until all steps have been dispensed.
9. Press the trigger to empty the tip(s).

Manual mode

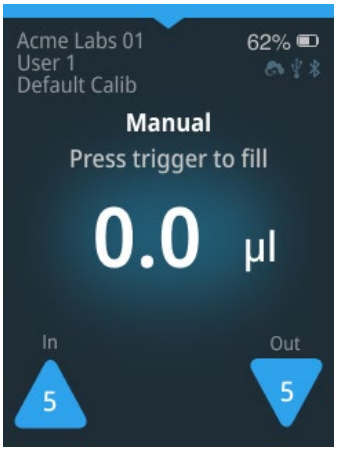
Use the Manual mode, for example, to evaluate the amount of remaining liquid in the reservoir or to dispense small amounts of liquid when slow speeds are needed (for example, gel electrophoresis). You can use the volume reset function, for example, in titration.

In Manual mode, the aspiration and dispensing speeds are slower than in other operation modes, providing enhanced precision for volume control. Speeds 1–5 can be selected in this mode.

To use the Manual mode:

1. In the **Functions** menu, tap **Manual**.

   The Manual mode view opens with the previously used settings.



2. If necessary, change the aspiration/dispensing speed.

   For more information, see Adjust the pipetting speed.

3. To set a Limit volume, open the Quick Set menu by swiping up. The default value in this page is the maximum volume of the pipette.

   a. Tap the volume field.

   b. Change the volume using the numeric pad.

   c. Swipe down to close the **Quick Set** menu.

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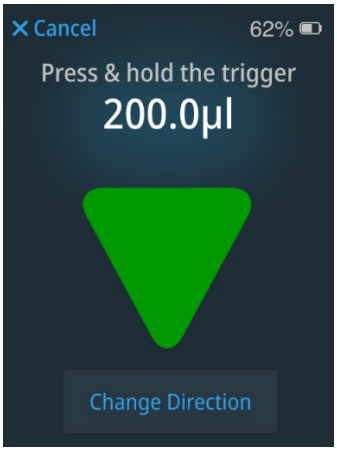
4. Place the tip(s) under the liquid surface, and then press and hold the trigger to aspirate the liquid. The display indicates the volume aspirated into the tip.
5. Release the trigger to stop the aspiration.

   The liquid is aspirated for as long as you keep the trigger pressed, or until the Volume Limit is reached.
6. If you release the trigger before achieving the Volume Limit, you can change the movement direction. The arrow indicates the direction (Out/ In).

   Tap **Change Direction** to change direction.



   At this point, you can reset the volume to 0 from the **Quick Set** menu. Dispensing liquid from the tip will then show as a negative value.
7. Press the trigger to dispense the liquid.

   Dispensing the liquid appears as a descending value on the display. Release the trigger at any point to stop dispensing.
8. (Optional) Tap **Cancel** to interrupt the pipetting sequence.

   In the confirmation window, tap **Yes** to cancel the sequence.

   Canceling is not possible during aspiration or dispensing.
9. If your pipetting sequence has a Blowout step, press the trigger to empty the tip or tips.

Dilute+Mix mode

Use the FluidEase pipette to mix liquids. You can mix the liquid as follows.

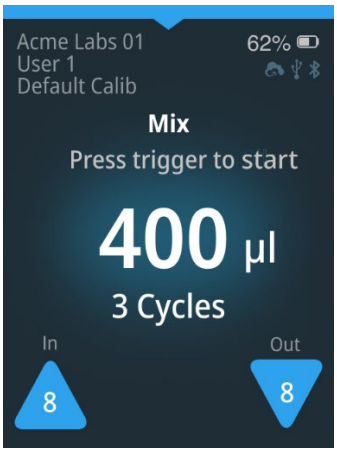
- For a user-controlled time (continuous mixing).
- For a selected number of times (cycles) that the mixing is done.

You can also add mixing as a step in the Pipette and Dilute modes. For more information, see Use the Pipette + Mix step and Use the Dilute + Mix step.

To use the Mix mode:

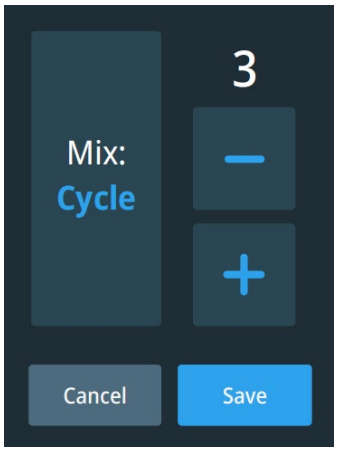
1. On the main menu, tap **Functions**.
2. In the **Functions** menu, tap **Mix**.

   The Mix mode view opens with the previously used settings.



3. If necessary, change the volume and speed **In** or **Out**.

   For instructions, see Adjust the volume and Adjust the pipetting speed.
4. If you want to change the mode, tap the mix mode (Continuous or Cycles) in the pipetting view.
   a. In the parameter editing window, tap the **Mix** field to change the mixing mode to **Cycle** (cyclic) or **Cont.**



   b. For cyclic mixing, use the **-** and **+** buttons to set the number of cycles.
   c. Tap **Save**.
5. Place the tip(s)under the liquid surface, and then press the trigger to mix the liquid.

- In the continuous mode, the liquid is mixed (aspirated/dispensed) if you press and hold the trigger, and the screen will display the current number of mixing cycles.

- In the cyclic mode, the liquid is mixed the set number of times. After that, the mixing stops.

6. Press the trigger to empty the tip(s)(Blowout).

Dilute mode

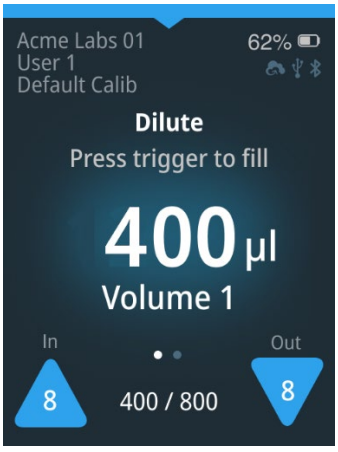
Use the Dilute mode to dispense two selected volumes with an air gap in-between. This is useful, for example, for standard curves.

In **Dilute mode**, the combined volume of the two selected liquids must not exceed the pipette's maximum nominal volume. The air gap doesn't change the total volume that can be pipetted in dilute mode.
The air gap is pre-defined, and its value corresponds to the minimum volume of the model. For example, for a 0.5–10 µl pipette, the air gap volume is 0.5 µl.

To use the Dilute mode:

1. On the main menu, tap **Functions**.
2. In the **Functions** menu, tap **Dilute**.

   The Dilute mode view opens with the previously used settings.



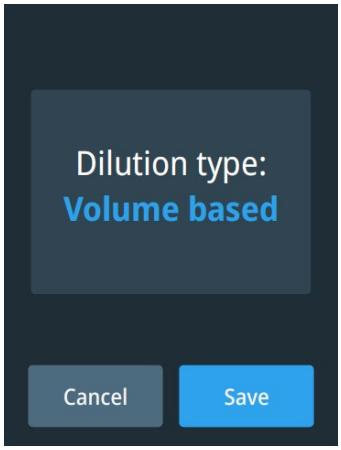
The info text at the bottom of the display shows the volume of Volume 1 on the left, and the volume of Volume 2 on the right.

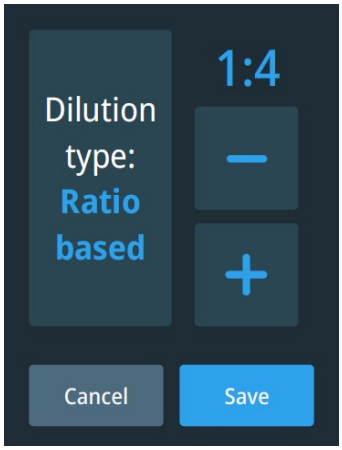
In volume-based dilution, the volumes can be set manually for Volume 1 and Volume 2. Swipe right/left to toggle between Volumes 1 and 2.

In ratio-based dilution, the pipette automatically divides the full aspirated volume between Volume 1 and Volume 2 according to the selected ratio.

3. To change the dilution type, tap “Volume 1” or “Ratio 1:4”.

   The dilution type settings open (the contents of the view depend on the current dilution type).





   a. Tap the **Dilution type** field to select the dilution type: Volume based/Ratio based.

   b. For ratio-based dilution, select the ratio by clicking “-” or “+” button. The available ratios are 1:2, 1:4, 1:5, 1:10, 1:20, and 1:25(not available for only 10uL pipette).

   c. Tap **Save**.

4. For volume-based dilution:

   a. If necessary, adjust the volume of Volume 1, and adjust the speed **In** or **Out**. The speed settings are the same for Volume 1 and Volume 2.

   For instructions, see Adjust the volume and Adjust the pipetting speed.

   b. Swipe left to open the settings for Volume 2. If needed, change the settings.

5. For ratio-based dilution, if necessary, tap the volume field to edit the total volume.

   The pipette automatically calculates the volume of the first aspiration and the second aspiration based on the total volume and the selected ratio.

6. If necessary, swipe up to open the **Quick Set** menu to change the Blowout setting. You can also add a mixing step to the end of the pipetting sequence.

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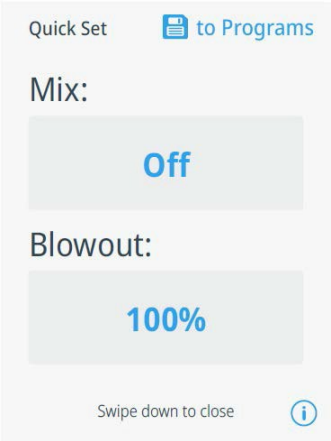


a. Set the mixing On/Off. If you set the mixing on, see Use the Dilute + Mix step for instructions.

b. If mixing is Off, you can select the Blowout percentage. The recommended percentage is 100 (default).

c. From the Quick Set menu, you can also save the function to Programs by tapping **to Programs** at the top of the screen.

d. Swipe down to close the Quick Set menu.

The save **to Programs** option is available only in the Advanced mode.

7. Place the tip(s) under the surface of liquid 1 and press the trigger to aspirate the liquid (Volume 1).
8. Remove the tips from the liquid. The display shows “Air gap”.

9. Press the trigger to aspirate an air gap.
10. Place the tip(s) under the surface of liquid 2 and press the trigger to aspirate the liquid (Volume 2).
11. Press the trigger to dispense both volumes.

Use the Dilute + Mix step

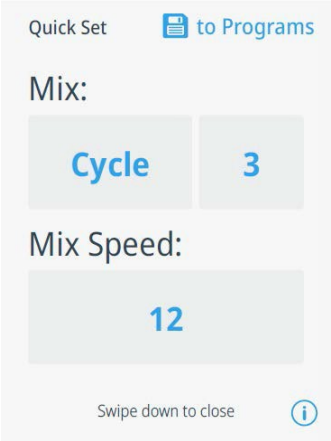
You can add a mixing step when using the Dilute mode. With the Dilute + Mix option, a mixing action is performed after dispensing the contents of the tip.

To use the Dilute + Mix mode:

1. In the **Functions** menu, tap **Dilute**.
2. If necessary, change the volume and speed In or Out.

   For instructions, see Adjust the volume and Adjust the pipetting speed.
3. Swipe up to open the **Quick Set** menu.
4. Tap the Mix field to select the mixing type: Cycle or Continuous.
   a. For continuous mixing, set the mixing speed.

   b. For cyclic mixing, set the number of cycles and the mixing speed.



   c. Swipe down to close the **Quick Set** menu.

   The rotating info text indicates that the Mix step was added.

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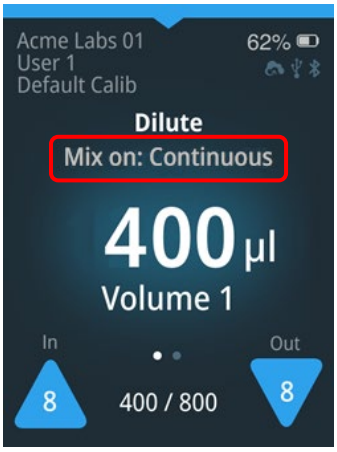


5. Place the tip(s)under the surface of liquid 1, and then press the trigger to aspirate the liquid (Volume 1).
6. Remove the tips from the liquid. The display shows **Air gap**.
7. Press the trigger to aspirate an air gap.
8. Place the tip(s)under the surface of liquid 2, and then press the trigger to aspirate the liquid (Volume 2).
9. Press the trigger to dispense the total volume.
10. Place the tip(s)under the surface of the liquid, and then press the trigger to start mixing.
    - Continuous (user-controlled) mix type: As long as the trigger is pressed down, 70% of the total volume is pipetted. The number of mixing cycles is shown on the display during mixing.
    - Cycle-based mix type: The pipette mixes the liquid the set number of mixing cycles (1 cycle = aspirate + dispense).
11. Press the trigger to empty the tip(s)(Blowout).

Reverse Pipette mode

The Reverse Pipette mode (reverse pipetting) is recommended for viscous and volatile liquids. It is also recommended for solutions with low surface tension (for example, liquids with a tendency to foam). In this mode, an excess amount of liquid is aspirated, in addition to set the volume. This mode is also useful when performing reagent addition where no purge is desired when dispensing.

When pipetting high-viscosity liquids such as glycerol, it is strongly recommended to follow consistent and standardized operating practices to ensure accurate results:

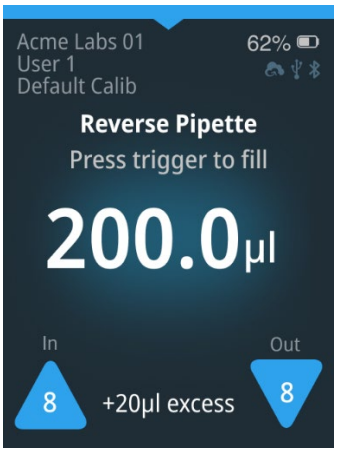
1. Use pipette tips from the **same lot** during a single continuous operation.
2. Keep the **angle and depth** of the tip immersion into the liquid as consistently as possible during each aspiration.
3. Maintain a **consistent dwell time** of the liquid in the tip after aspiration.
4. During dispensing, **touch the tip to the container wall**; for multichannel pipettes, ensure **even contact** across all channels.
5. During dispensing, Keep the **contact time** between the tip and the container wall as consistent

as possible.

To use the Reverse Pipette mode：

1. In the Functions menu, tap Reverse Pipette.

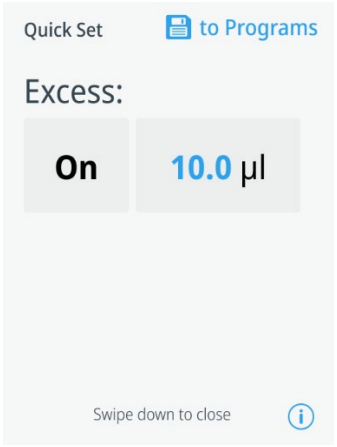
   The Reverse Pipette mode view opens with the previously used settings.



2. If necessary, change the volume and speed In or Out.

   For instructions, see Adjust the volume and Adjust the pipetting speed.

3. Swipe up to open the **Quick Set** menu.



4. Tap the volume field to change the excess volume, for more information, see Appendix 10. Limits and Defaults of Pre-step and Excess.

   If the set Excess value exceeds the allowable setting range, the pipette will automatically limit it to the nearest value within the range.

5. You can aspirate and dispense liquid normally by pressing the trigger button.

6. After dispensing the volume you set, the pipette will pause, and you can choose to fill again or directly discard excess volume left in tip.

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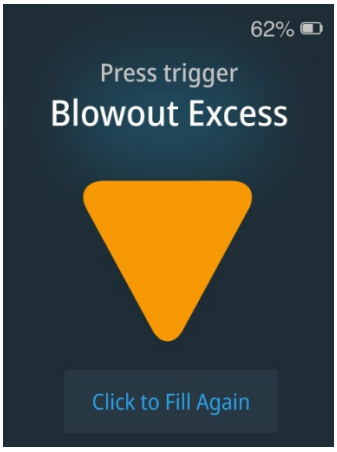


Caution: When using a filter tip on a 1,000 µl or 1,250 µl pipette, use care. Larger excess could cause liquid to touch the filter inside the tips, especially when pipetting volatile fluid.

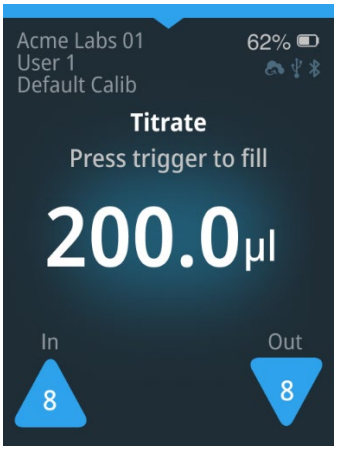
Titrate mode

Use the Titrate mode to transfer a liquid to another liquid with high precision for a reaction. Titration is used to determine the concentration of a solution.

To use Titrate mode:

1. In the **Functions** menu, tap **Titrate**.

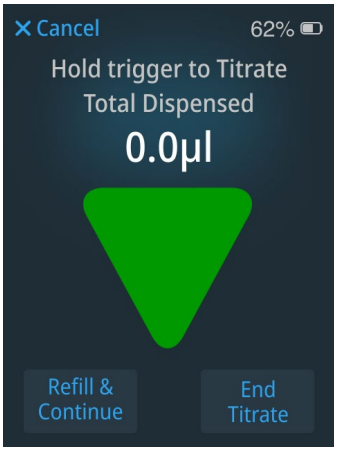
   The Titrate mode view opens with the previously used settings.



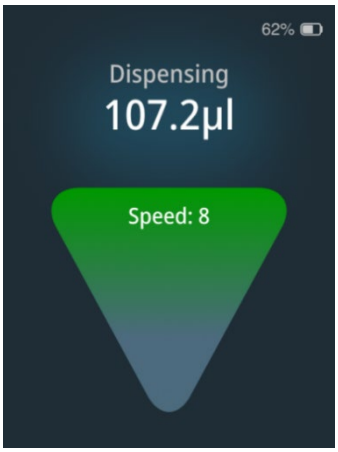
2. If necessary, change the volume and speed **In** or **Out**.

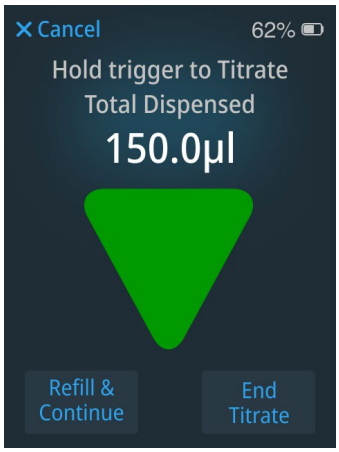
   For instructions, see Adjust the volume and Adjust the pipetting speed.

3. Press the trigger button to aspirate.
4. When aspiration is complete, hold trigger to titrate, or cancel this titration by tapping any of three options: **Cancel**, **Refill & Continue**, or **End Titrate.**



5. Keep pressing the trigger button, pipette displays the total volume. Once trigger is released, four actions are allowable:





   a. If the result does not reach the titration endpoint or any abnormality occurs, tap **Refill& Continue**. This allows you to blow out/discard the remaining liquid and then refill the tip to continue this titration. The pipette records and displays the total volume of all titration operations. Up to 10 titrations can be performed in Titration mode.

   b. When the titration reaches the titration endpoint, release the trigger button and tap **End Titrate**. You can then discard the remaining liquid.

   b. Tap **Cancel** to discard the remaining liquid and end this titration.

   c. Keep pressing the trigger to continue titration.

Step Builder function

The **Step Builder** function uses a step-based operating technique. Each pipetting step is entered separately in the order in which they are performed.

With the **Step Builder** function, you can:

- Create a new pipetting sequence
- Use an existing **Step Builder** pipetting sequence
- Edit an existing pipetting sequence

The instructions are in the following sections.

To access the **Step Builder** menu, tap **Step Builder** from the main menu.

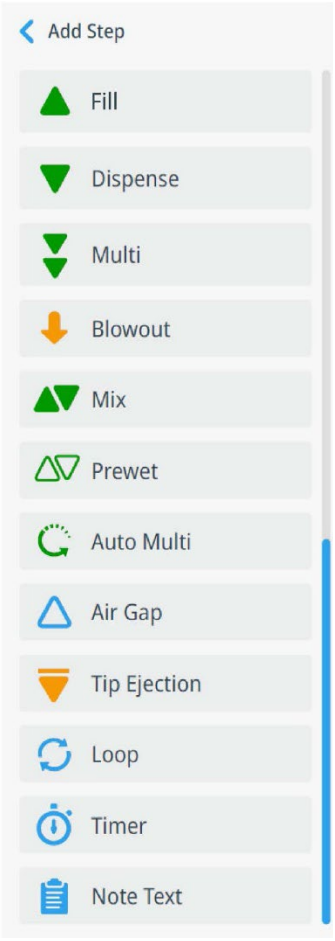
CAUTION: The user is responsible for the validity of the pipetting sequences that are created with the **Step Builder** function.

CAUTION: Before you begin to start a longer pipetting sequence in the **Step Builder** function, ensure that the battery charge level is high enough.

Create a new pipetting sequence

1. On the main menu, tap **Step Builder**.

   A list opens showing the possible steps to be added to the pipetting sequence.

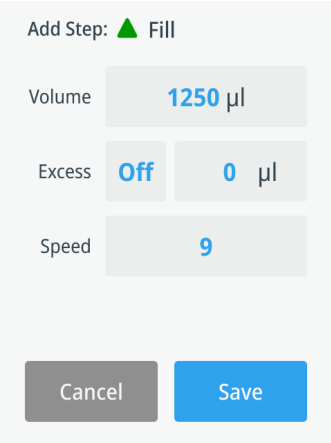


   Scroll through the list to find the step that you want to add. For descriptions of the available steps, see Available steps.

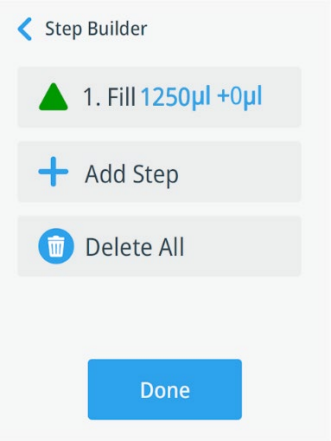
   You can create a long workflow with multiple cycles of fill and dispensing. During the creation of workflow, you can add a mode of operation (multidispense mode for example by adding fill, multi-dispense, and blowout steps) after another mode of operation (dilute mode for example by fill, air gap, fill, dispense, and blowout steps). The guideline is to finish a mode of operation before creation of another mode of operation. Otherwise, you may encounter validation errors.

2. Tap the step to be entered to the sequence, for example, **Fill**.

The parameters for the selected step will open.



3. Edit the parameters, as needed.
4. Tap **Save**. The first step is added.



5. To add the next step to the pipetting sequence, tap **Add Step**.
6. Continue to add the necessary steps. A sequence can have up to 60 steps.
7. When you have added the necessary steps to the pipetting sequence, tap **Done**.

   If the pipetting sequence requires a blowout step but you did not add it to the sequence, the system adds it automatically.

The created **Step Builder** function is now ready for use.

8. In the Advanced mode, you can save the pipetting sequence as a **Program** from the **Quick Set** menu.

The pipetting sequence is validated when the program is saved to Programs. If there is an error in the pipetting sequence, a pop-up warning appears. You can save the program anyway, but you cannot run the pipetting sequence before you correct the error. The erroneous program, and the erroneous step in the sequence, are marked with an exclamation mark.

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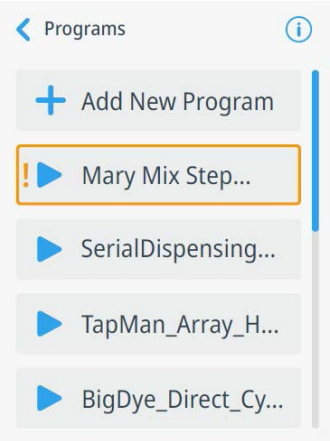
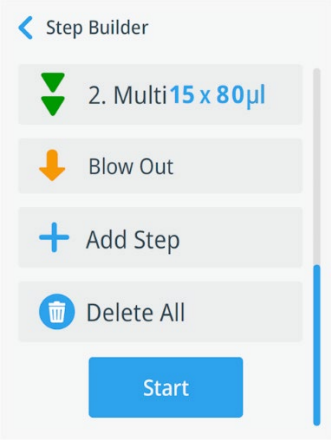


Use the Step Builder function

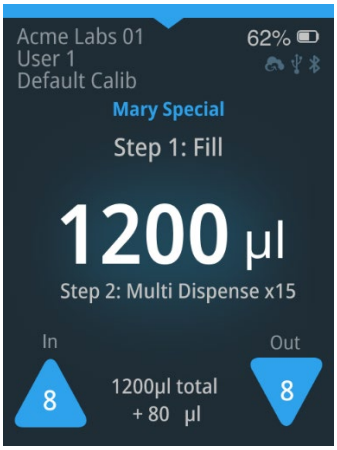
1. On the main menu, tap **Step Builder**.

   The **Step Builder** view opens on the display. If a **Step Builder** pipetting sequence exists, a **Start** button is available in the view.



2. Tap **Start** to start the pipetting sequence.

   The function opens in the pipetting view.



3. Place the tip(s) under the liquid surface, and then press the trigger to aspirate the liquid.
4. Follow the instructions on the touchscreen and continue the pipetting sequence until all the

steps are completed.

Edit an existing Step Builder function

You can edit a **Step Builder** program before starting it.

It is possible to:

- Edit the step parameters
- Add a step
- Delete a step
- Delete all steps in the pipetting sequence

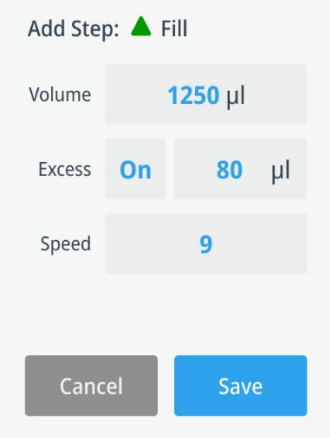
The instructions are in the following topics.

You can also edit a saved **Step Builder** program from the **Programs** function (for details, see Programs function), or edit the **Step Builder** function in the pipetting view before starting the sequence. Swipe up to open the **Quick Set** menu, and then tap **Edit**. The function opens in **Step Builder**.

Edit step parameters

To edit the step parameters:

1. On the main menu, tap **Step Builder**.
2. In **Step Builder**, tap the step to be edited.
3. Change the step parameters (blue editable field) in the editing view.



4. Tap **Save** to save the step.
5. Tap **Done** to save the function.

Add steps to an existing Step Builder function

1. On the main menu, tap **Step Builder**.
2. In **Step Builder**, tap **Add Step**.

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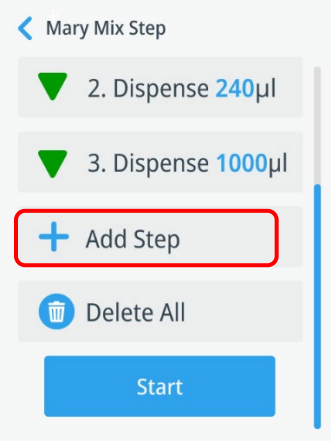
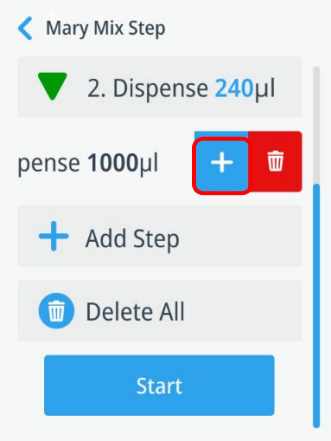
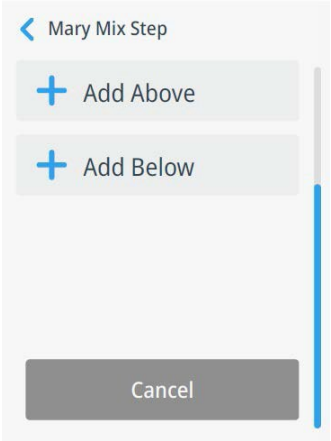


3. Select the step to be added.
4. Edit the parameters for the step.
5. Tap **Save** to save the step.
6. To add a step above or below an existing step:
   a. Swipe left on the existing step so that a **+** icon appears.



   b. Tap the **+** icon.
   c. Select whether to add the new step above or below the existing step.



   d. Select the step to be added from the list.

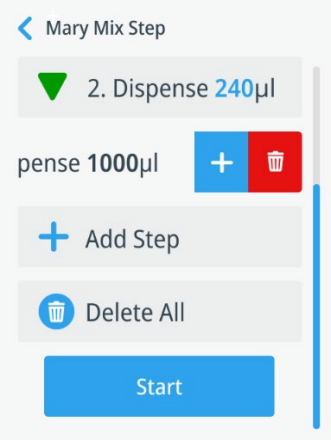
e. Edit the parameters for the new step.

f. Save the step.

7. When all the changes are complete, tap **Done**.

Delete a step

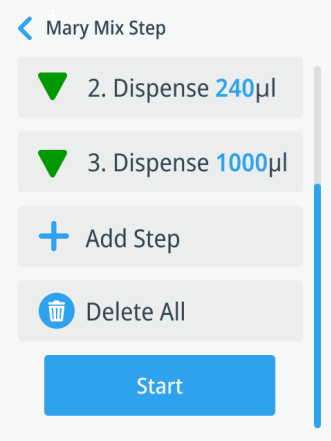
1. On the main menu, tap **Step Builder**.
2. In **Step Builder**, swipe left on the step so that a **Trash can** icon appears.



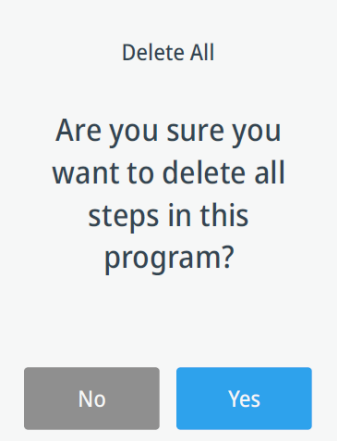
3. Tap the **Trash can** icon.
4. Tap **Done**.

Delete all steps with a single action

1. On the main menu, tap **Step Builder**.
2. In **Step Builder**, tap **Delete All**.



3. Tap **Yes** to confirm the deletion. All steps are removed.



Available steps

The maximum number of steps that can be added to one sequence is 60.

Fill — Fill the tip with liquid

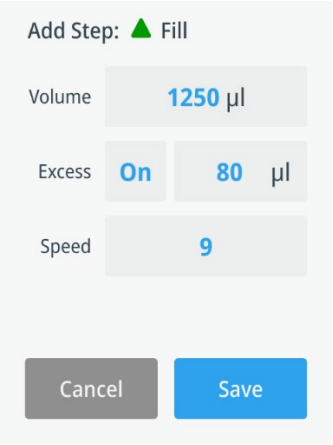
Certain pipetting techniques such as Multi Dispense use an excess volume in addition to the actual set volume. The excess volume ensures that there is enough liquid for the last step in a Multi dispensing series.

To ensure optimal performance in Multi dispensing, a pipette-model specific excess volume is automatically used as a part of the Fill step when followed by a Multi or Auto step.

You can adjust the excess volume to support different applications and requirements.

If an excess volume is set, the additional volume shows preceded with a plus sign at the bottom of the pipetting view. During use, the set excess volume is automatically drawn into the tip together with the aspirate volume.

On Fill step view, tap the blue field and change the volume using the numeric keys.



1. Tap the **Volume** field and then change the volume using the numeric keys. The volume must be within the pipette's specified volume range.
2. Set the Excess as **On** or **Off**. Tap the **Excess Value** field and then change the value using the numeric pad. The excess volume and excess range are model specific, for more information, see Appendix 10. Limits and Defaults of Pre-step and Excess.

3. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
4. Tap **Save**.

Dispense — Dispense liquid

During pipetting, various factors may cause a small amount of liquid to remain in the tip after dispensing.
Blowout provides an additional air push to ensure efficient delivery of any residual liquid.

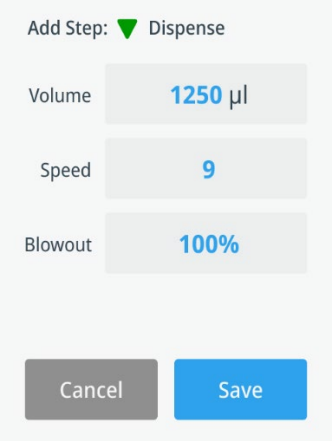
In the **Step Builder** function, the **Dispense** step includes an optional adjustable **Blowout** volume, displayed as a percentage (%).

The adjustable **Blowout** becomes active when the liquid volume remaining after the Dispense step is **0 µl** — for example, in a pipetting sequence of *Fill 100 µl* followed by *Dispense 100 µl*.

This feature is disabled when the **Fill** and **Dispense** volumes differ, or when an excess volume has been defined as part of the **Fill** step. (For more information, see Fill — Fill the tip with liquid).

The adjustable blowout can be used to optimize the amount of air dispensed -- for example, when dispensing into liquid.

Dispense cannot be the first step of a sequence.



1. Tap the **Volume** field and then change the volume using the numeric keys, or the - and + buttons, as described in to increase/decrease values rapidly with the + and – icons
2. Adjust the volume. The default is the total remaining liquid or aspirate volume set in previous Fill steps.
3. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
4. Tap the **Blowout** percentage. The Blowout field is visible only when end-volume reaches zero and no Excess exists.
5. Tap **Save**.

If the volume in a step makes the total dispense volume greater than the total aspirated volume before that step, then an exclamation mark appears in front of the step to indicate that the pipetting sequence was not created correctly. You must edit the pipetting sequence or volume before use.

Multi — Repeat dispensing of the same volume

Multi cannot be the first step of a sequence.

When a Multi step is added, the system validates the Fill step volume against model-specific maximums, as shown in table below.

Pipette Model	Maximum Fill Volume
16-ch 1-30µl	28µl
1-ch 20-1,000µl	960µl
8-ch and 12-ch 25-1,250µl	1,200µl
Other models	100% of nominal volume

Fill volume > maximum fill volume will be marked as an error. Editing is allowed only when fill volume ≤ maximum fill volume.

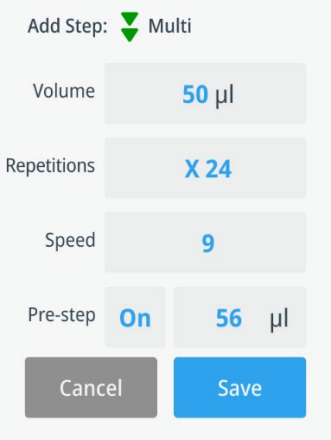
Be noted that these rules apply only when a Fill step directly precedes a Multi step. Programs with intermediate Fill/Dispense combinations are not affected by these volume restrictions.

High speed may cause air bubble when aspirating volatile liquids. The allowed **Speed In** range is shown in table below.

Pipette Model	Allowed Speed In Range	Recommended Speed In Range
1-ch, 8-ch and 12-ch 10-300µl	1-8	1-8
1-ch 20-1,000µl	1-9	1-3
8-ch and 12-ch 25-1,250µl	1-9	1-3
Other models	1-9	1-9

If the set speed is out of allowed range, the preceding Fill step is highlighted in red until Speed In is corrected to the allowed Speed In Range.

If the speed is not corrected, steps will not be saved.



1. Tap the **Volume** field and then change the volume using the numeric keys or the **-** and **+** buttons, as described in Adjust the volume.
2. Tap the **Repetitions** field and then select the number of repetitions. It depends on available

liquid and will update when **Volume** changes.

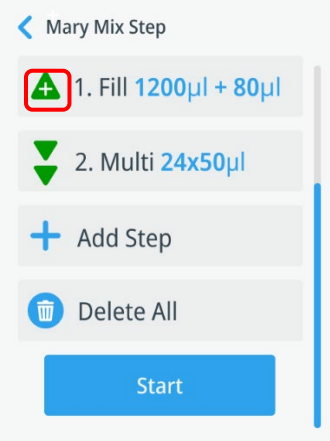
3. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
4. Set the **Pre-step** to **On** or **Off**, it's on by default. To change the volume, tap the **Volume** field, and then change the value using the numeric keys or the **-** and **+** buttons. It is recommended to set pre-step to **On** to increase the dispensing accuracy. The pre-step is not an aliquot, and it should be discarded and not collected as the first aliquot.
5. Tap **Save**.

An automatic Excess volume is added for the Multi step, see Appendix 10. Limits and Defaults of Pre-step and Excess for more information.

To ensure optimal performance in serial dispensing applications, a pipette-model specific excess volume is automatically used as a part of the previous Fill step when the Multi step is added to the program.

The excess volume is indicated by a **+** symbol inside the Fill step icon.

If the Multi step is deleted, the **+** icon disappears, and the excess volume is reset to 0.



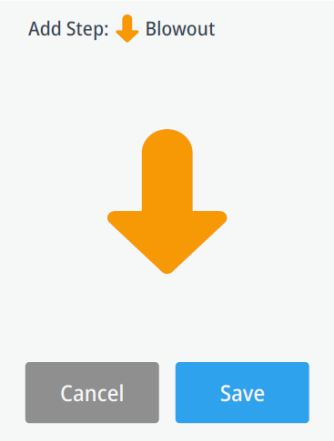
Blowout — Empty the tip

The Blowout step clears any remaining liquid in the tips, including liquid from previous steps or liquid that sticks to the tip walls. It resets tip volume to zero.

In certain combinations of steps, a Blowout step is required at the end of the sequence to empty the tip. If you do not add the Blowout step, the Blowout step is added automatically, and the text "A Blowout step will be added" appears on the screen.

Forced Blowout may be appended as step 91 when the program reaches the maximum step count and the last step is Fill, Dispense without Blowout, Multi, Auto Multi, Mix, or Prewet.

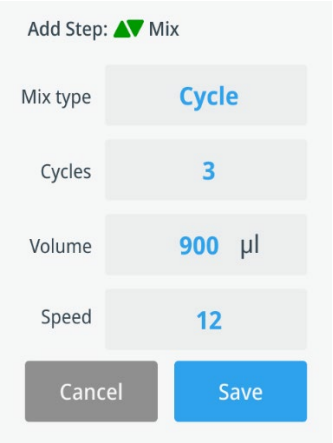
Tap **Save,** as figure shown below.



Mix — Mix by pipetting a selected volume

If there is liquid left inside the tip before a Mix step, the liquid is dispensed before the mix cycle is initiated.

The mix cycle will end at the same volume it started with.



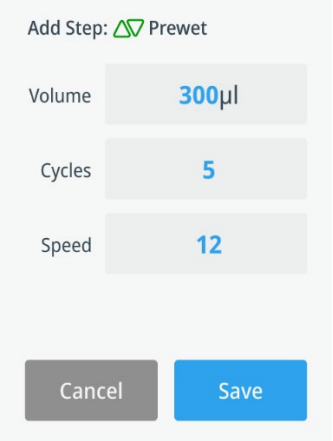
1. Tap the **Mix type** field to select the mix type: **Cycle** or **Continuous**.
2. With the **Cycle** mix type, select the number of cycles, with an adjustable range from 1 to 99.
3. Tap the **Volume** field and then change the volume using the numeric keys or the **-** and **+** buttons, as described in Adjust the volume. Default Volume is 70% of the previous Fill volume or total remaining liquid volume in the tip.
4. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
5. Tap **Save**.

To keep the Mix step active for repeated mixing, use a Loop step. For more information, see Loop — Repeat selected steps for the desired number of cycles.

Prewet — Wet the tip before aspiration

The purpose of the prewet step is to improve the accuracy of the actual dose.

Prewet cannot be added when there is liquid in the tip. It does not affect downstream dispense calculations.

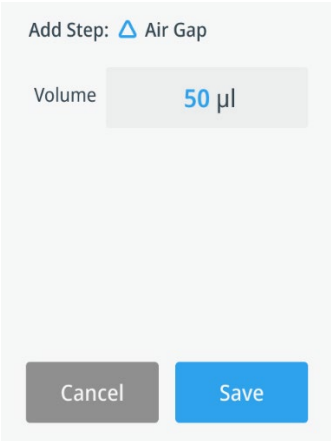


1. Tap the **Volume** field and then change the volume using the numeric keys or the **-** and **+** buttons, as described in Adjust the volume.
2. Select the number of wetting cycles, the maximum adjustable number is 99.
3. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
4. Tap **Save**.

Air Gap — Select a volume of air to separate two liquids

The Air Gap step introduces an air pocket inside the tip. It separates liquid segments and prevents dripping.

Air Gap must always be followed immediately by a Fill step and it becomes invalid if a Fill step does not follow immediately.



1. Tap the **Volume** field and then change the volume using the numeric keys, or the **-** and **+** buttons, as described in Adjust the volume.
2. Tap **Save**.

Auto Multi — Repeat dispensing of the same volume at defined time intervals

Auto Multi dispenses repeated volumes with a timed pause. It automates sequential dispensing with consistent timing.

Auto Multi cannot be first. The step becomes invalid when liquid is insufficient or when Pre-Step conflicts occur. It is blocked when total dispensed liquid exceeds available liquid.

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When an Auto Multi step is added, the system validates the Fill step volume against model-specific maximums, as shown in table below.

Pipette Model	Maximum Fill Volume
16-ch 1-30µl	28µl
1-ch 20-1,000µl	960µl
8-ch and 12-ch 25-1,250µl	1,200µl
Other models	100% of nominal volume

Fill volume > maximum fill volume will be marked as an error. Editing is allowed only when fill volume ≤ maximum fill volume.

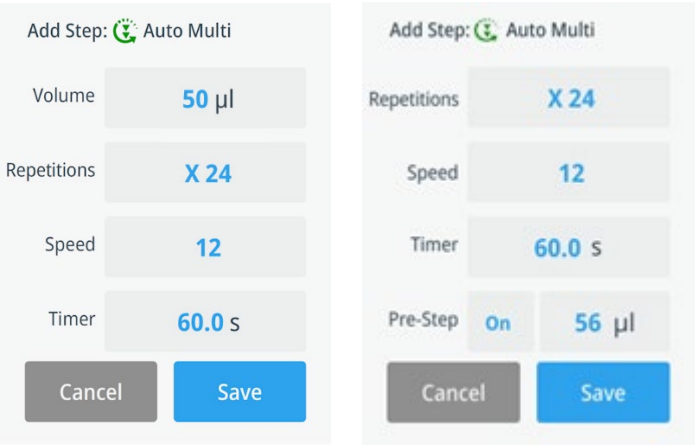
Be noted that these rules apply only when a Fill step directly precedes an Auto Multi step. Programs with intermediate Fill/Dispense combinations are not affected by these volume restrictions.

High speed may cause air bubble when aspirating volatile liquids. The allowed **Speed In** range is shown in table below.

Pipette Model	Allowed Speed In Range	Recommended Speed In Range
1-ch, 8-ch and 12-ch 10-300µl	1-8	1-8
1-ch 20-1,000µl	1-9	1-3
8-ch and 12-ch 25-1,250µl	1-9	1-3
Other models	1-9	1-9

If the set speed is out of allowed range, the preceding Fill step is highlighted in red until Speed In is corrected to the allowed Speed In Range.

To ensure optimal performance in Multi dispensing, a pipette-model specific excess volume is automatically used as a part of the previous Fill step when the Auto step is added to the program. You can adjust the excess volume of the previous Fill step to support different applications and requirements.



1. Tap the **Volume** field and then change the volume using the numeric keys, or the **-** and **+**

buttons, as described in Adjust the volume.

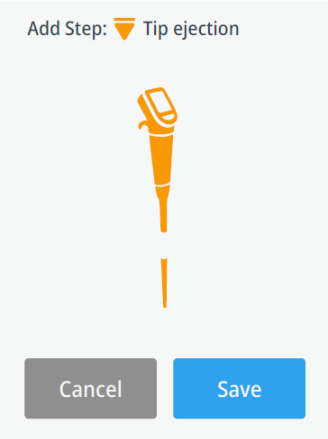
2. Select the number of repetitions. It depends on available liquid and will update when **Volume** changes.
3. Tap the **Speed** field and then use the **-** and **+** buttons to change the speed, with an adjustable range from 1 to 12.
4. Tap the **Timer** field to set the time interval for the repeated dispensing, with an adjustable range from 0.5 to 60 seconds in increments of 0.5.
5. Set the **Pre-step** to **On** or **Off**. To change the volume, tap the **Volume** field, and then change the value using the numeric keys.
6. Tap **Save**.

Tip ejection – Eject the tips

A tip ejection step can be selected in a **Step Builder** function at a point when there is no more liquid in the tip. Tip Ejection is invalid if liquid remains in the tips.

You can activate the tip ejection step in a **Step Builder** function either with the index-finger operated trigger or with the tip ejection button.

Tap **Save** as shown in figure below.



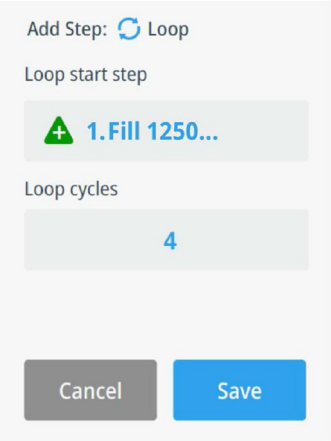
Loop – Repeat selected steps for the desired number of cycles

If the whole program or part of it needs to be repeated, it is convenient to use a **Loop** step. Add the **Loop** step after the last step of a sequence that needs to be repeated. As a default, the loop start step is set to the last step before the **Loop** step and the number of loop cycles is set to 2. Edit the **Loop** start step and number of cycles when needed.

Loop cannot be first. Any invalid sequence inside the loop makes the loop invalid.

Overlapping loops (loop inside of a loop) are not permitted.

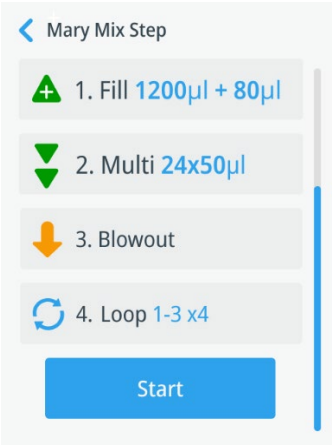
Thermo Scientific FluidEase ClipTip Pipette Models



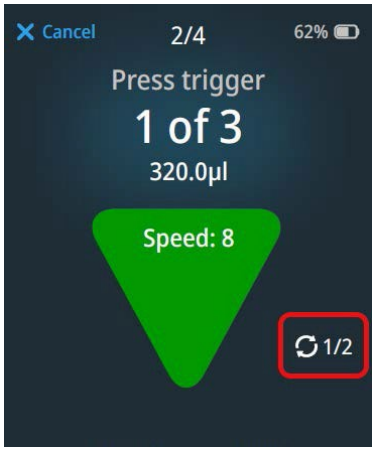
1. To select the step from which the loop starts, tap the **Loop start step** field and then select the desired step.
2. Select the number of loop cycles, with an adjustable range from 2 to 99.

   The number refers to the total number of the cycles. For example, if you want to use the Mix step to add a dilution series for all 12 rows on the microplate, select 12 in the Loop cycles field.
3. Tap **Save**.

Example of a pipetting sequence with a loop step: Steps 1-3 are repeated 4 times

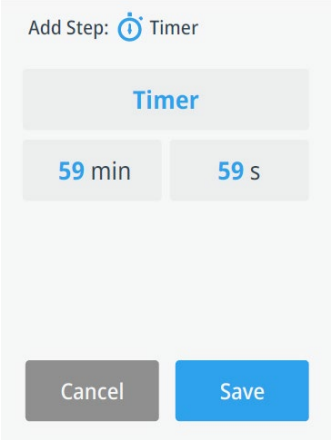


When you perform the sequence, the loop number shows in the pipetting view.



Timer – Select a time before the next step can be performed

The Timer step inserts a waiting period. It adds a controlled pause without affecting liquid handling.



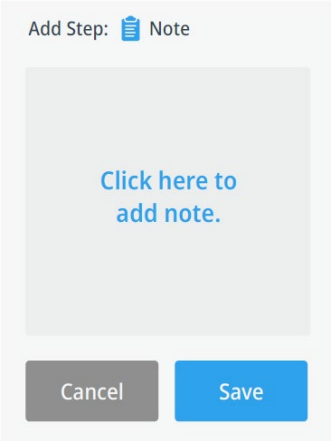
1. Tap the **Timer** field to give a name by using the alpha-numerical keys.
2. Tap the **min** and **s** fields to set the time. The time is defined showing 2 numbers for the minutes and 2 numbers for the seconds. Each value can be set individually, with a maximum of 59 minutes and 59 seconds and a minimum of 0 minutes and 1 second.
3. Tap **Save**.

Note – Add a note text (such as a reminder)

The **Note** step adds comments or instructions for the user. It supports documentation and does not affect pipetting actions.

The **Note** step cannot be used as **Loop** Start.

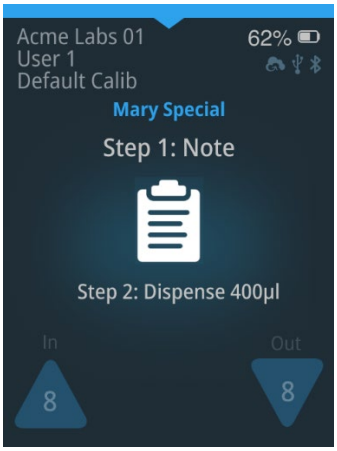
1. Tap the **Click here to add note.** field to add a note using the alpha-numerical keys. The maximum length of the text is 5 rows (240 characters).



2. Tap **Save**.

   The note is added as a step in the pipetting sequence.

3. Press the trigger to open the note. Press the trigger again to close the note.



Programs function

Use the **Programs** function to save your most used protocols. This will save time and ensure data integrity.

The **Programs** function includes both **Functions** and **Step Builder** based programming styles. It is possible to store up to 30 individual programs with personalized names and with liquid or application-specific calibrations (adjustment settings) for increased accuracy and precision. There are five user profile. Each user profile can store up to 30 programs with 60 steps without exceeding the memory limit.

With the **Programs** function you can:

- Create and save new programs
- Edit existing programs
- Delete programs
- Use a stored program

The instructions are in the following sections.

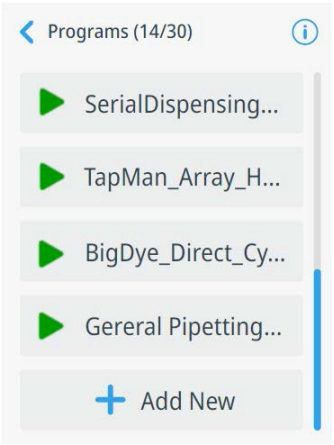
CAUTION The user is responsible for the validity of created pipetting sequences in the Program function.

CAUTION Ensure that the battery charge level is high enough, especially when using a longer pipetting sequence in a Program based function.

Add a new program

1. On the main menu, tap **Programs**.

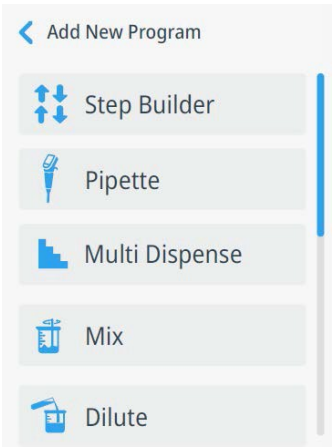
   The **Programs** view opens. If you have already added programs, the view shows a list of the already added programs and the current number of programs (maximum of 30).



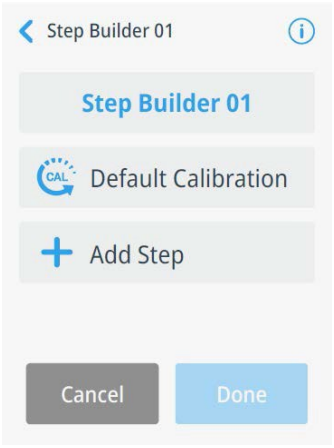
2. Tap **Add New**.

3. The Manual mode cannot be saved to **Programs**.

4. Select the function that you want to use, for example, **Step Builder**.

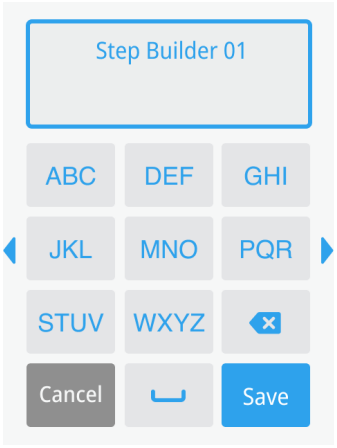


   The program opens for editing. The program has a default name and uses the “Default calibration” by default.



You cannot save a program without any steps, that is why the **Done** button is inactive at this stage.

5. Tap the name field to edit the name of the program.

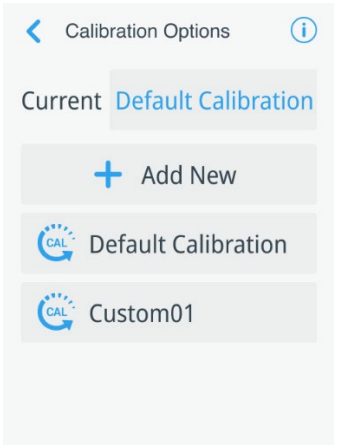


   a. Use the keyboard to change the name. To toggle between alphanumeric keyboards, tap the **abc/ABC/123** button at the top of the display as many times as needed to get the correct view.

      The maximum number of characters in a program name is 30.

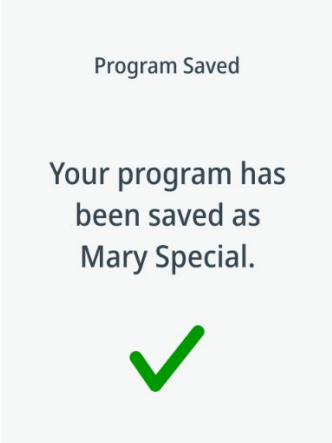
   b. Tap **Save**.

6. Tap the calibration field to select a user-defined calibration, if custom adjustment settings exist.



7. Add and edit the steps and parameters as needed.
8. When the program is ready, tap **Done**.

A confirmation window opens to let you know that the program is saved to the Programs list. You can tap the new added program, then the program opens in the pipetting view and is ready for use. The name of the program shows in the view, as shown is figure below.



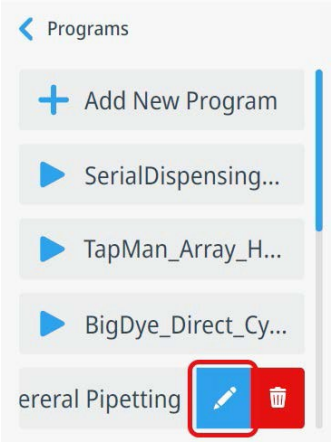
Edit an existing program

You can edit an existing program in the Programs menu.

You can also edit an existing program from the **Quick Set** menu before you run the program. For more information, see Use a stored program.

1. On the main menu, tap **Programs**.
2. In **Programs**, scroll to the stored program to be edited.
3. Swipe left so that an **Edit** icon appears.

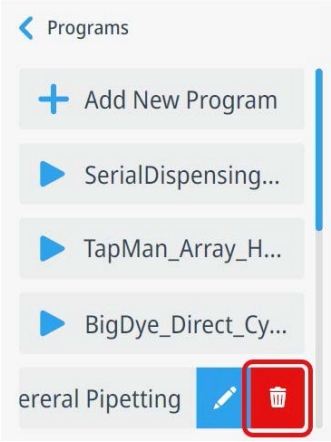
   The parameters of the program open.



4. Edit the steps and parameters, as needed.
5. Tap **Done**.

Delete a program

1. On the main menu, tap **Programs**.
2. In **Programs**, scroll to the program to be deleted.
3. Swipe left so that a **Trash can** icon appears.



4. Tap the **Trash can** icon to delete the program.
5. Confirm the deletion with **Yes**.

Use a stored program

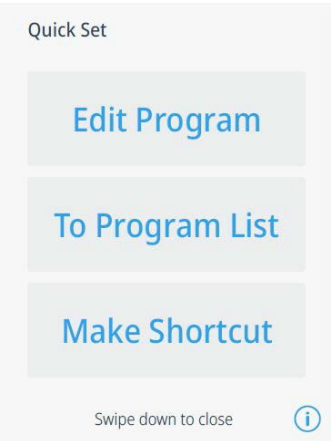
1. On the main menu, tap **Programs**.
2. In **Programs**, scroll to the stored program to be used.
3. Tap to open the program.

   The program opens in the pipetting view and is ready to be used.
4. If necessary, edit the volume and speed.

   For instructions, see Adjust the volume and Adjust the pipetting speed.
5. If necessary, edit the parameters for the program from the **Quick Set** menu.

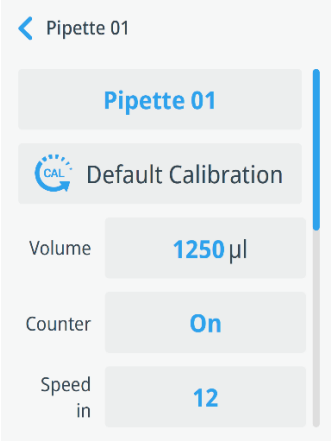
   If you edit the program from the Quick Set menu, the changes will be saved in the original stored program.

   a. Swipe up to open the **Quick Set** menu.



b. Tap Edit Program.

The parameters of the program open.



c. Tab the text to edit the parameters, as needed.

d. Tap **Save**.

Shortcuts function

You can create icon shortcuts to provide a quick access to your favorite programs. Select a shortcut icon to quickly start the program without scrolling in menus or folders.

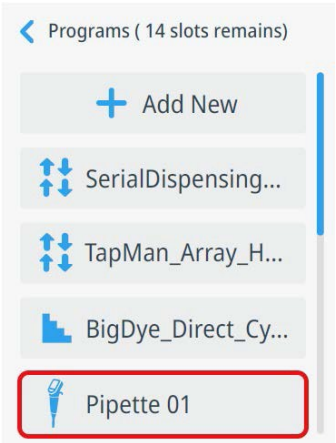
There are five icon shortcut slots available in the FluidEase pipette. Shortcuts are placed in the main menu in addition to the main function icons. The name of the program is displayed below the icon.

Create a shortcut

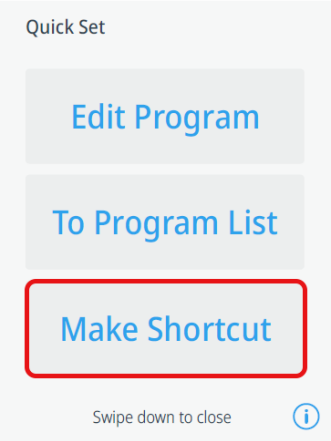
To create a shortcut:

1. On the main menu, tap **Programs**.
2. In **Programs**, select a program from the list, for example, “Pipette 01”.

   The program opens in the pipetting view.

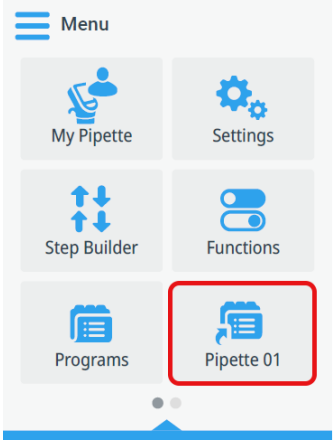


3. Swipe up to open the **Quick Set** menu.



4. Tap **Make shortcut**.

The shortcut is added to the main menu in the first available empty slot (Each user can create up to 5 shortcuts).



Use a program from a shortcut

To use a program from a shortcut:

1. In the main menu, tap a user-defined shortcut icon.

   The program opens in the pipetting view and is ready for use.

2. (Optional) Edit the settings before starting the program.

When a pipetting function or program is edited through a shortcut, the changes will also be stored in the original function or program.

When the original function or program is edited, the shortcut will be updated automatically. When a stored program is deleted, the program shortcut is also deleted.

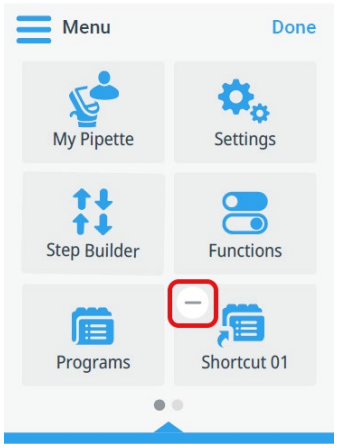
Deleting a shortcut will not delete the stored program.

Delete a shortcut

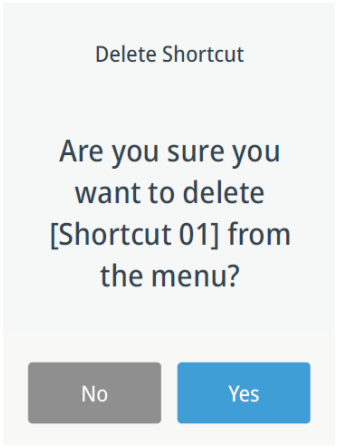
Deleting a shortcut does not affect the stored program. When a stored program is deleted, the program shortcut is also deleted.

To delete a shortcut:

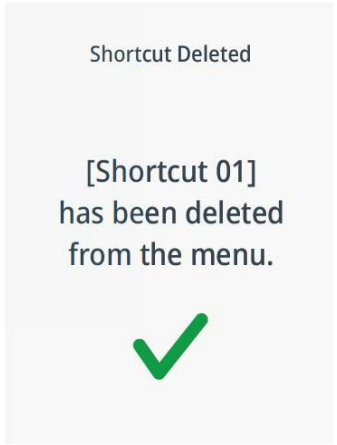
1. Press the shortcut icon until a dash (**-**) icon appears.
2. Tap the **-** icon.



3. Tap **Yes**.



4. Then a pop-up will notify that the shortcut has been deleted from the main menu.

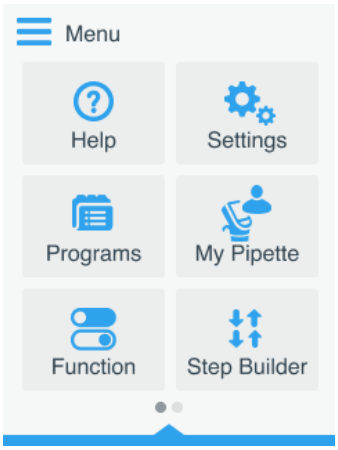


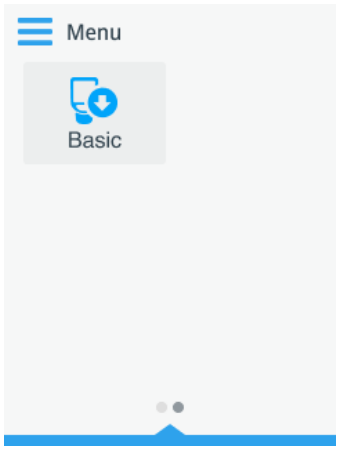
7

Supporting functions

Use the supporting functions to personalize the pipette to better suit your needs. The following supporting functions are available on the main menu.

- Help
- Settings
- My pipette
- Mode switch (Advanced/Basic)





Help menu

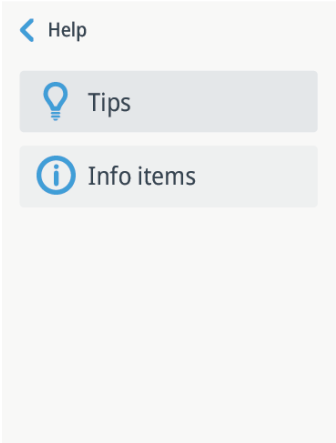
Use the **Help** menu to get useful information about the pipette.

- Tips on the use of the pipette and its user interface.
- Information on the functions of the pipette.

To access the **Help** menu, in the main menu, tap **Help**.

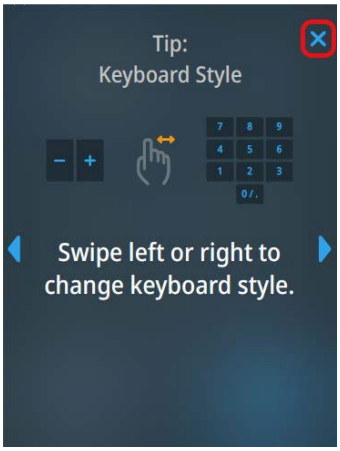
Tips

1. On the main menu, tap **Help**.
2. In the **Help** menu, tap **Tips**.



The first tip item opens.

3. Tap the icon ◄/► on the left/right to view other tips.
4. Tap the × icon in the top-right corner to exit Tips.



Info items

1. On the main menu, tap **Help**.
2. In the **Help** menu, tap **Info items**.

   A list of info items opens.

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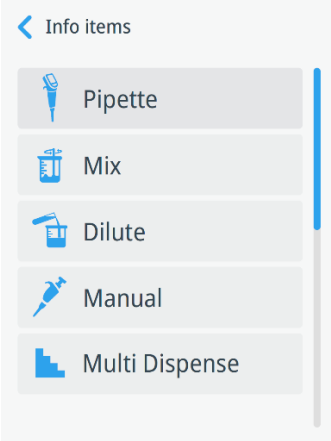
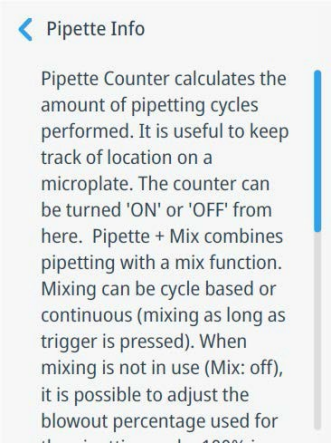


3. Scroll the list and then tap the item that you want to know more about.

   The information on the selected item opens.

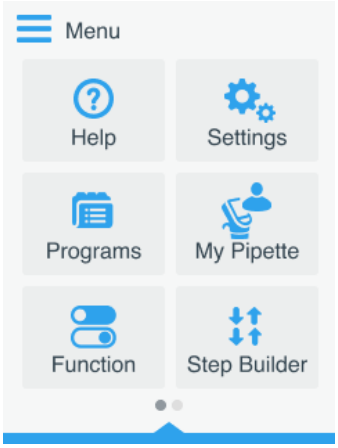


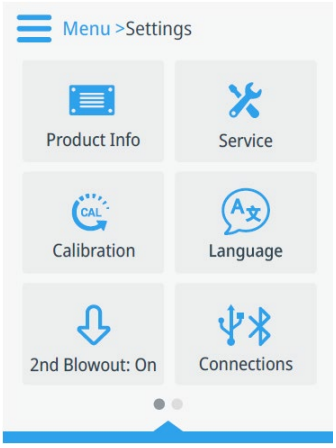
Settings menu

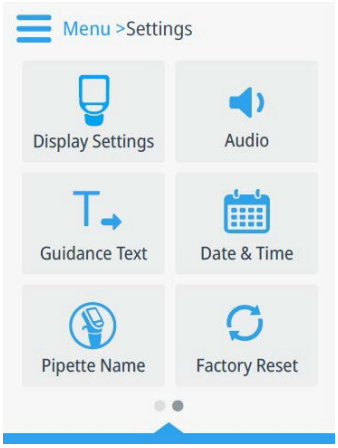
The **Settings** menu provides information on the FluidEase pipette and the tools to define the basic functions and settings of the pipette.

The **Date & Time** and **Connections** settings are available only in the Advanced mode.

To access the settings, on the main menu, tap **Settings**. The **Settings** menu opens.





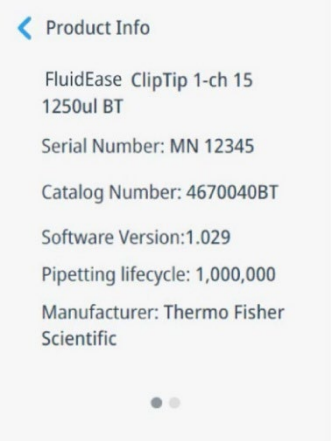


View Product Info and regulatory information

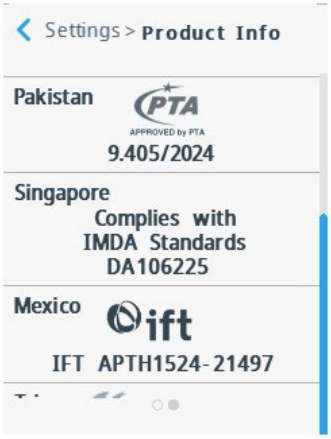
The information provided on the Product Info screen is important for product-specific inquiries and product service issues. Provide this information when you correspond with the manufacturer or technical support.

The serial number is unique for each pipette.

Find the product info by following steps: Main menu page → Settings → Product Info.



Viewing Regulatory Information: After accessing the Product Info, swipe left to view the Regulatory information.



The regulatory information includes compliance details for various countries such as the USA, Canada, Argentina, and others. Please refer to Appendix 7. Country-specific Regulatory Notices for the complete list of countries included in the electronic labeling.

Service

Note: For multichannel pipettes of 100 µl, 200 µl, 300 µl, and 1,250 µl, remove all tip fittings before performing this operation.

Tap **Connect Piston** and follow the on-screen instructions.

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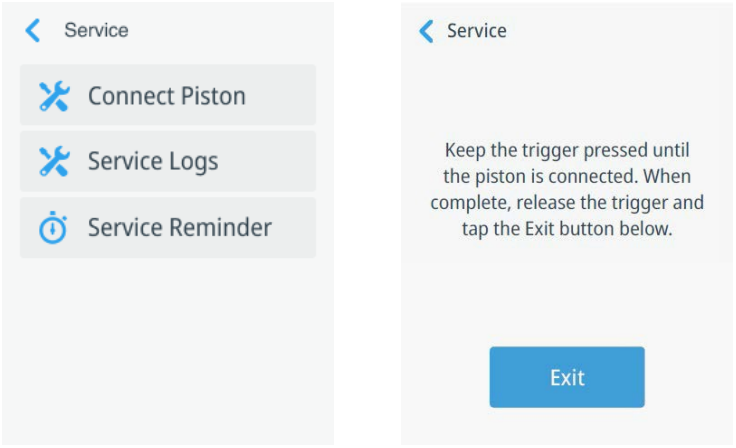
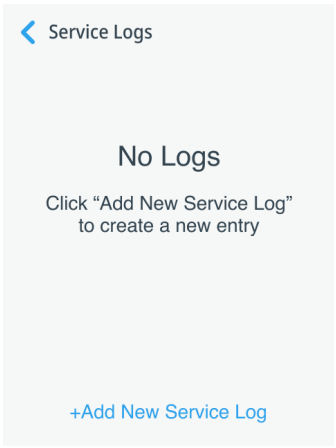


Press and hold the trigger until the piston is connected. A clear click sound is usually heard when the connection is successful.
If the connection fails, you can try again.

If the connection fails after three attempts, please contact your service representative.

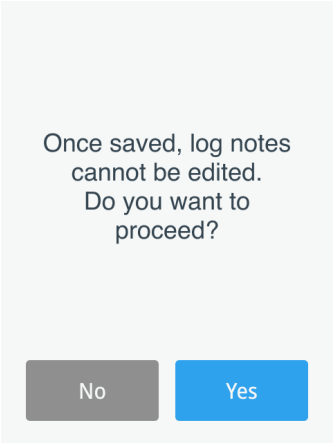
Tap **Service Log** to add a new entry.

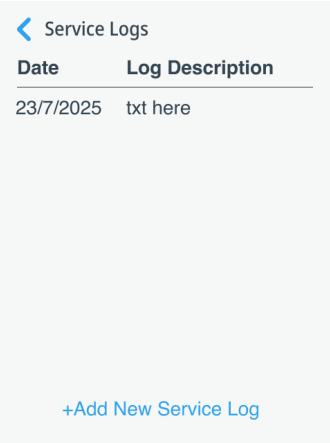


Use the on-screen keyboard to enter the log.

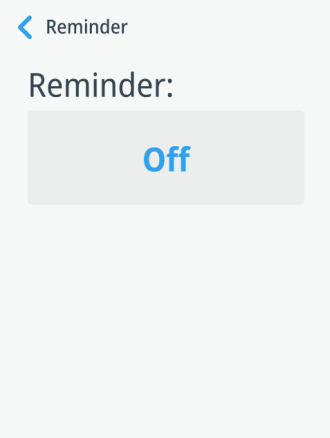
Swipe left or right to switch between different character sets, such as symbols or numbers.

Tap **Save** and a prompt pop up. Tap **Yes**, logs view opens.



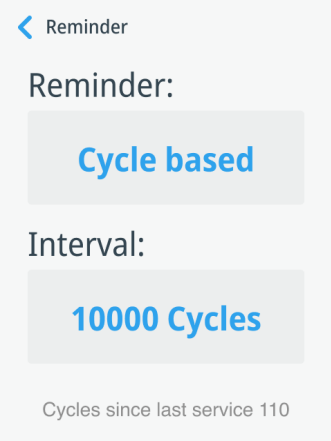


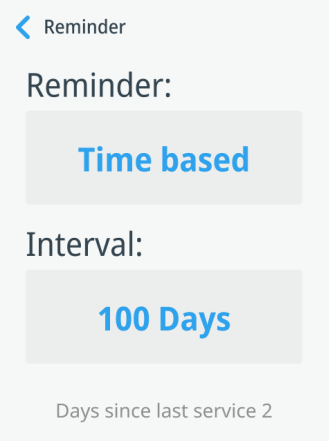
Tap **Service Reminder** to open the corresponding page, where you can **enable or disable** the service reminder.



Two modes are available:

- **Cycle-based** reminder
- **Time-based** reminder



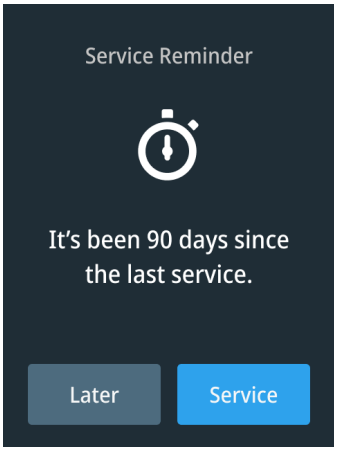


At the bottom of the screen, the elapsed time or cycle count since the last service is displayed.

Tap to set the cycle-based interval — the minimum value is 1 cycle, and the maximum is 999,999 cycles.
Similarly, tap to set the time-based reminder — the minimum value is 1 day, and the maximum is

999 days.

If a service reminder is enabled and it has exceeded the set number of cycles or days, a reminder will pop up before a pipetting function is started.



Calibration

Use the Calibration function to reset the adjustment parameters for Default calibration or add and define custom calibration settings (user-defined custom adjustment settings), see Adjustment for more information. You can also set a calibration reminder for the Default calibration, see Set a calibration reminder for more information.

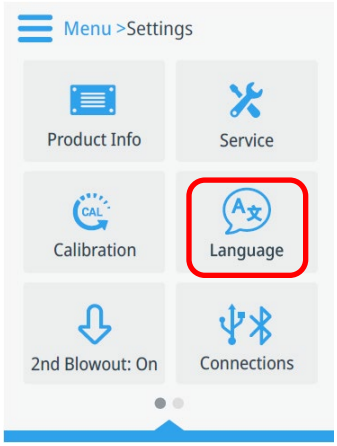
Language

You can select the language to be used in the user interface. The following languages are available.

- English (default)
- French
- German
- Chinese
- Japanese
- Spanish

To change the language:

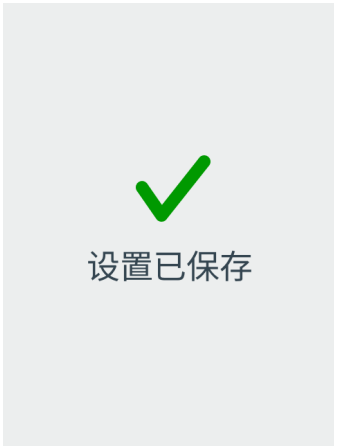
1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap the language icon.



3. Select the language that you want to use.

4. Tap **Save**.

A “Settings Saved” notification appears on the display in the selected language.



The language of the user interface is changed.

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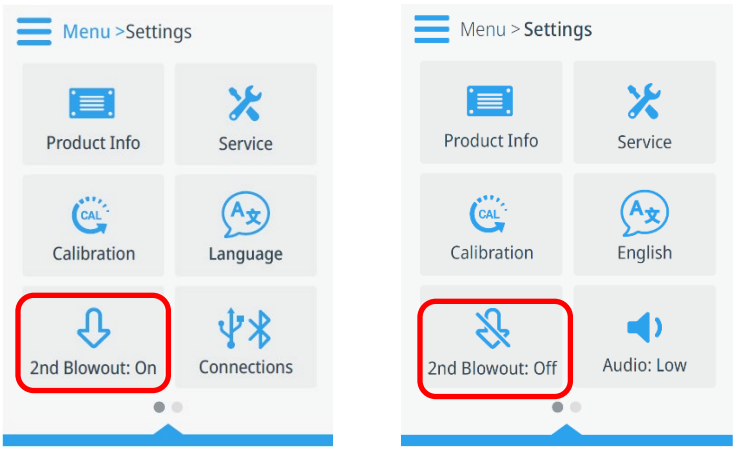
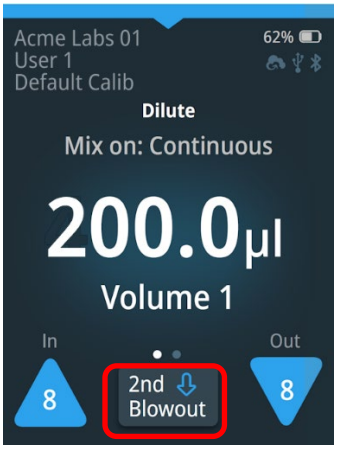
2nd Blowout

You can add an optional second blowout to your pipetting functions. The purpose of the 2nd blowout is to blow out a possible residual drop. You can set the second blowout option to on or off.

1. On the main menu, tap **Settings**,
2. In the **Settings** menu, tap the **2nd Blowout** icon.



3. If the setting is **On**, a **2nd Blowout** icon appears in the pipetting view after the pipetting sequence. Tap the icon, and then tap the trigger to do a second blowout.

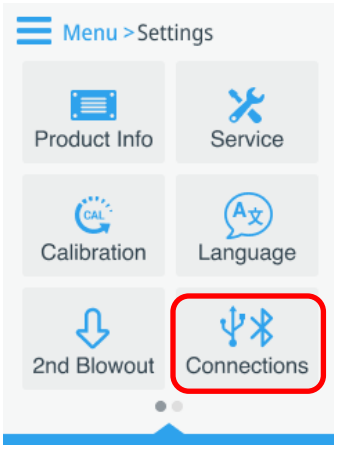


Connections

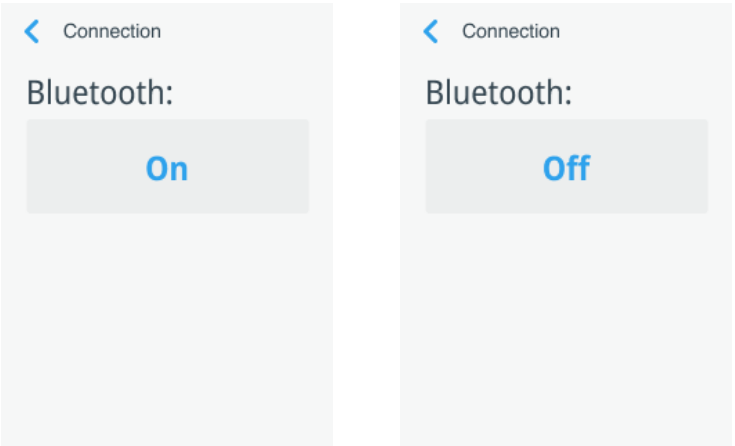
Use the **Connections** setting to set the Bluetooth connection **On** or **Off**.

To change the Connections setting:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Connections**.



3. Tap the **Bluetooth** connection to set it **On** or **Off**.



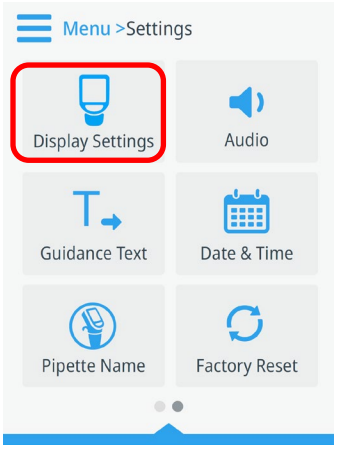
Display Settings

Use **Display Settings** to set the idle time before the pipette goes into the Power Save mode. The brightness of the touch screen display can also be changed.

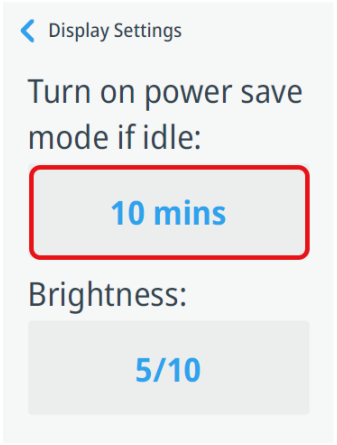
To change the Display settings:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Display Settings**.

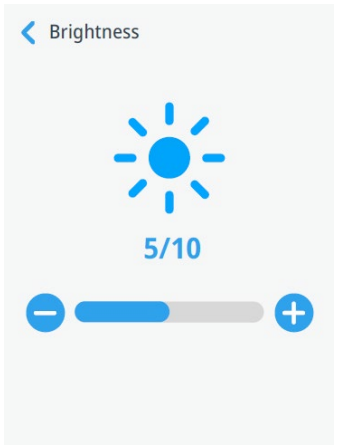
Thermo Scientific FluidEase ClipTip pipette models



3. Tap the idle time field as many times as necessary to reach the desired idle time. The possible idle time settings are: 2 minutes (default), 5 minutes, 10 minutes, 15 minutes, and 20 minutes.



4. Tap the **Brightness** field. Use the **-** and **+** icons to change the brightness of the touchscreen display. The default value is 5/10.

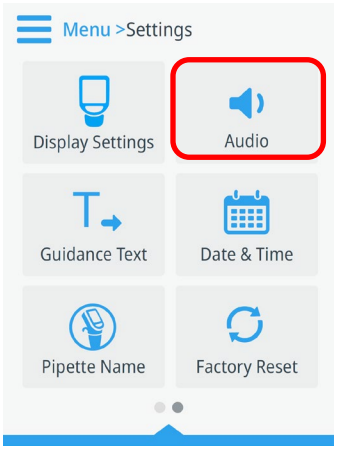


Audio

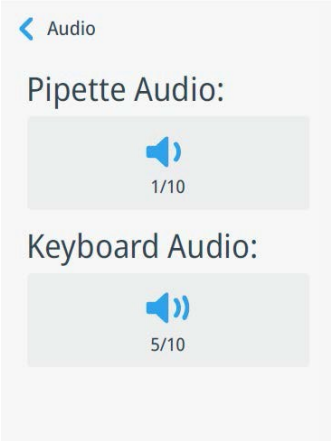
Use the **Audio** setting to control the pipetting sounds and keyboard response sounds. The default setting is 5/10.

To modify the Audio settings:

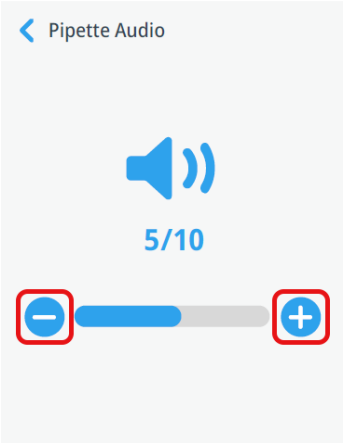
1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Audio**.



3. Tap the audio field of either the **Pipette** or **Keyboard** to enter the volume adjustment view.



4. Tap the **-** and **+** icons to change the sound level. 10/10 is the highest sound level,0/10 means that the sounds are muted.



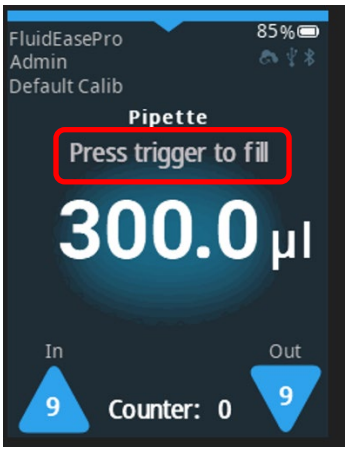
Guidance Text

The Guidance text is informative text to the user, for example, giving information on the upcoming pipetting step.

Thermo Scientific FluidEase ClipTip pipette models

The **Guidance Text** shows in the pipetting view.

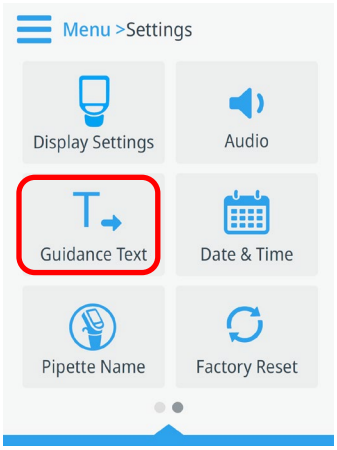
You can set the **Guidance Text** as **On** or **Off**. The default is **On**.



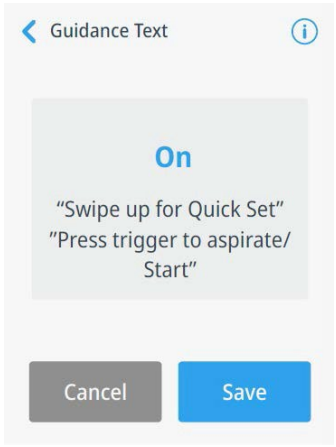
To change the Guidance text setting:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Guidance Text**.

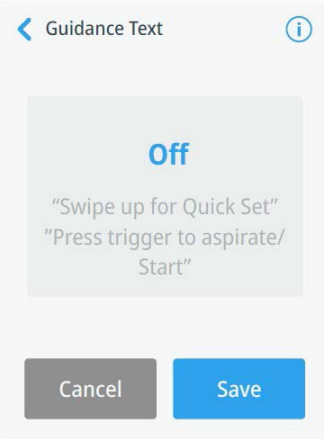
   The view shows the current setting.



3. Tap **On**/**Off** to select the desired setting.



4. Tap **Save**.



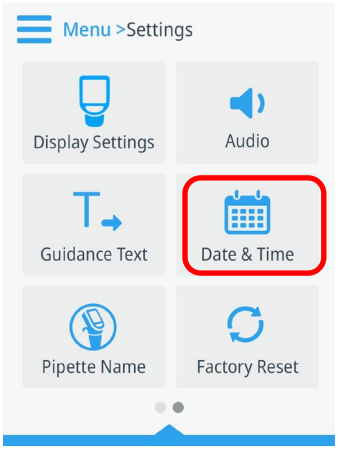
Date & Time

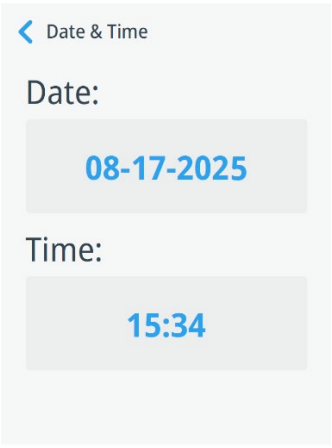
You can change the current date and time setting in the pipette. The date and time setting affects the Calibration reminder and Service reminder functions.

To change the Date and time settings:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Date & Time**.

   The date and time settings open.





3. Tap the **Date** field to change the date.
4. Set the date in *MM/DD/YY* format.
5. Tap **Save**.
6. Tap the **Time** field to change the time.
7. Select either a 12- hour or 24-hour clock. If you select the 12-hour clock, remember to select also the AM (before midday) or PM (after midday) setting.

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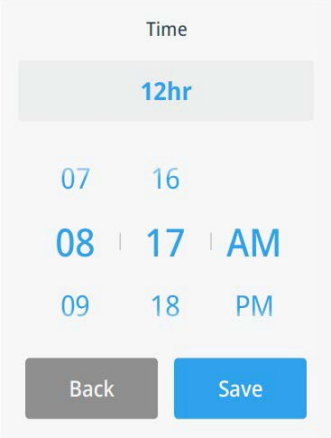
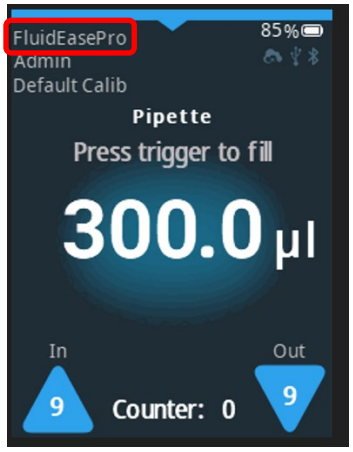


8. Tap **Save**.

Pipette Name

It is possible to give the FluidEase pipette a unique name. The name is shown at the upper left conner of the pipetting view.

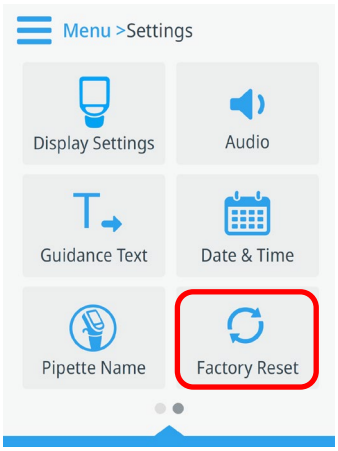
Only the Admin user can change the pipette name.



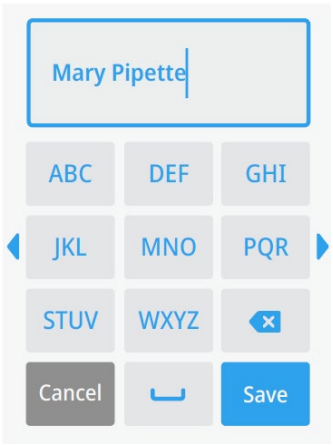
To give a name to the pipette:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Pipette Name**.

   The default name is FluidEase Pro.



3. Enter the name for the pipette.



4. Tap **Save**.

Factory Reset

The Admin user can use the **Factory Reset** function to return the factory settings to the pipette. Only the Admin user can return the factory settings to the pipette.

CAUTION All user-edited programs, calibration settings and personalized pipette settings will be cleared, see Appendix 9. Impact after Factory Reset and User Reset for more details. You must redefine personal changes after the reset procedure.

To return the factory settings:

1. On the main menu, tap **Settings**.
2. In the **Settings** menu, tap **Factory Reset**.

   A warning message opens.

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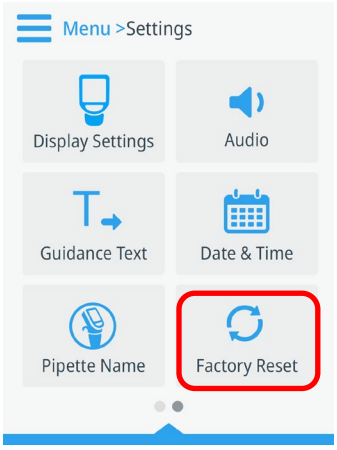
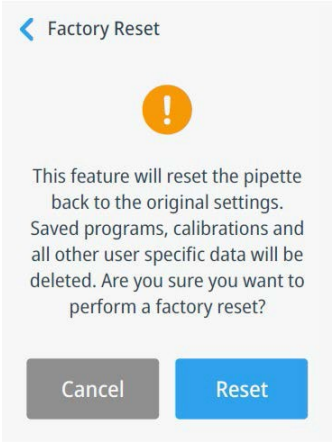
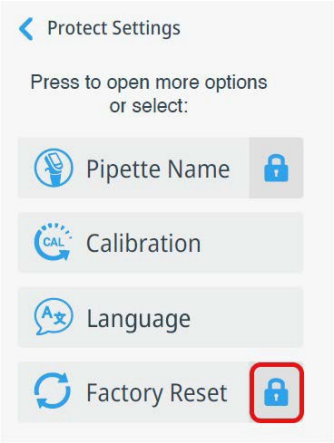


3. Tap **Reset** to confirm.

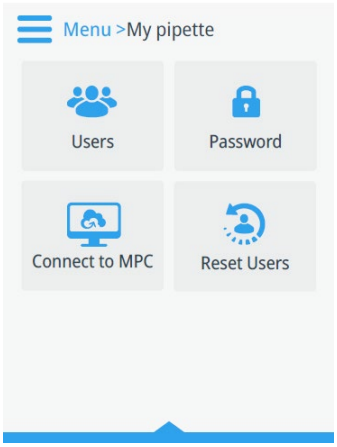


The Admin user can protect the Factory Reset function with a password. A lock symbol shows that the function is password-protected. See Password protection for instructions.



My Pipette menu

Under My Pipette, you can manage users, set passwords and make a connection between the FluidEase pipette and a computer.

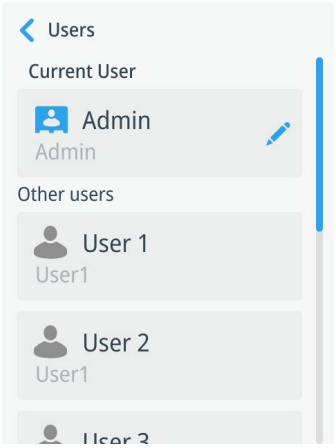


Some functions are available only for the Admin user. Only the Admin user can see and access the Reset users function, see Reset users.

Users

Multiple user profiles can be created in the FluidEase pipette. This allows personalization of settings and creation of own programs per user profile.

There is one Admin user and four additional user profiles (User 1 to User 4).



The Admin user profile name is locked, but the names of users 1 to 4 can be edited. Each user can personalize their own settings, create their own programs, and customize their own main menu, as preferred. Each user has the maximum number of programs (25) and shortcuts (5) that can be created.

The Admin user is the only user profile that can reset the default calibration of the pipette. Changing the Default calibration parameters will affect all pipetting modes under the Functions and Step Builder functions in all user profiles. For more information on how to change the Default calibration, see Change the default calibration setting.

The Admin user and the additional users (Users 1-4) can add up to five custom adjustment settings for calibrations. These user-defined settings can be used in function mode and stored programs. More information on how to define and use custom adjustment settings is provided in the following topics.

- Create custom adjustments

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- Edit custom adjustments
- Delete a stored adjustment setting

The name of the active user shows in the pipetting view.

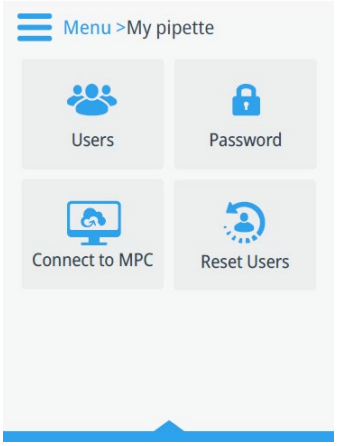
Add a user

1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Users**.
3. In the list of users, tap a free user profile.
4. Enter the email address of the user.
5. Tap **Save**.

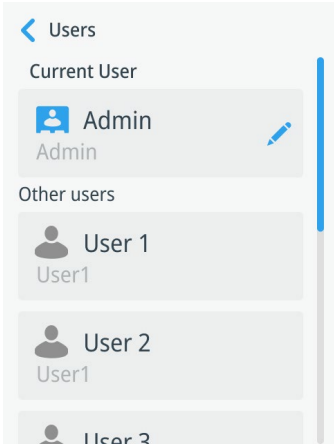
For instructions on how to change the user name, see Edit user information.

Switch users

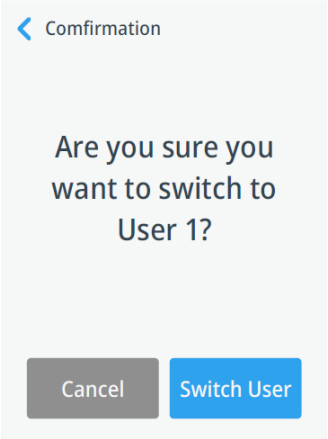
1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Users**.



3. In the list of users, tap the user that you want to switch to.



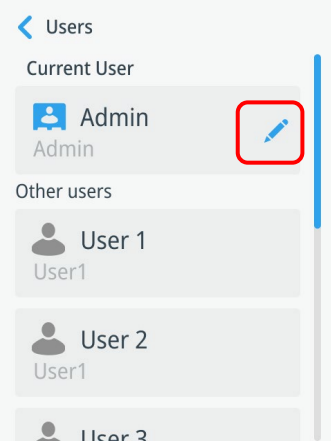
4. In the confirmation window, tap **Switch User**.



Edit user information

In **My Pipette**, you can edit the active user. You cannot change the Admin user profile name.

1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Users**.
3. Tap the edit icon.



4. Edit the user information, as needed.

5. Tap **Save**.

Password protection

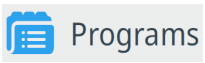
Editing the user programs, default calibration, custom calibrations, and some other items under the **Programs**, **Settings**, and **My Pipette** menus can be protected with a password. Each user can have one unique password.

Use the Password protection function for the following activities. The instructions are in the following sections.

- Set a password
- Edit a password
- Protect specific items
- Edit a protected item
- Unprotect items
- Remove the password protection

The instructions are in the following sections.

Protectable items:

- Programs created by the user 

- Settings 

  - Pipette name (Admin user only) 

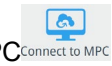
  - Default calibration (Admin user only) 

  - User-defined calibrations 

  - Language 

  - Factory reset (Admin user only) 

- My Pipette 

  - Connection to MPC 

  - User name (regular user names (Users 1-4) only) 

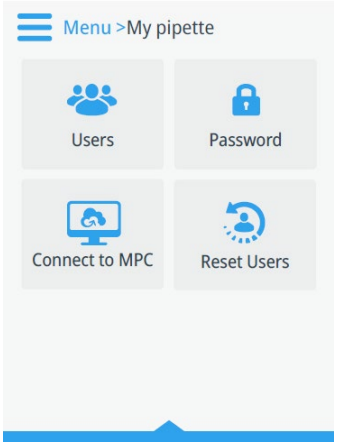
  - Reset users (Admin user only) 

- Mode switch (Advanced/Basic) (Admin user only) 

Set the password

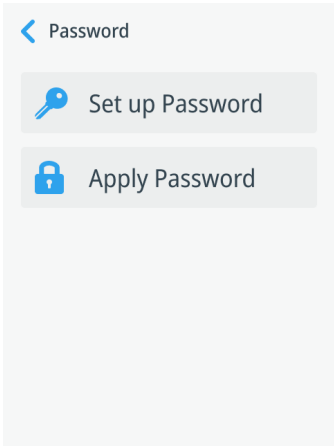
To set a password:

1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Password**.

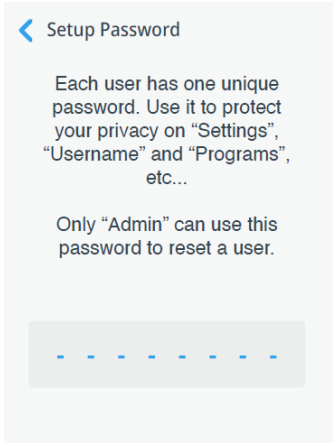


3. Tap **Set up Password**.

   The Apply Password option can be selected only after you set up a password.

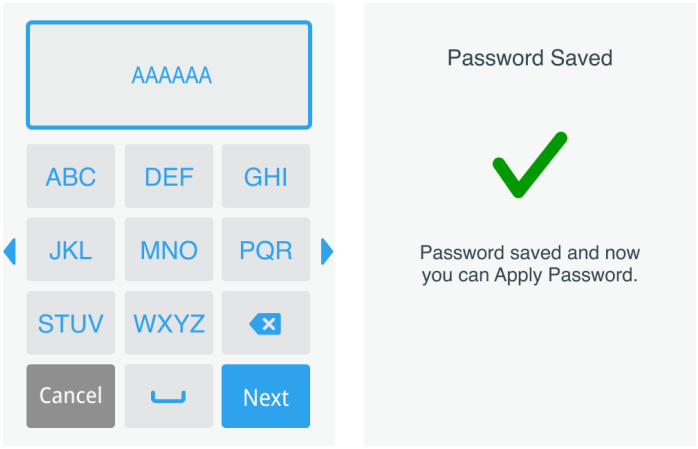


4. Tap the password field.



5. Use the keyboard(s) to set the password. Tap the “**abc**” button to switch keyboards. The maximum length of the password is 8 characters.

6. Tap **Next**, and pop-up notification shows password saved.



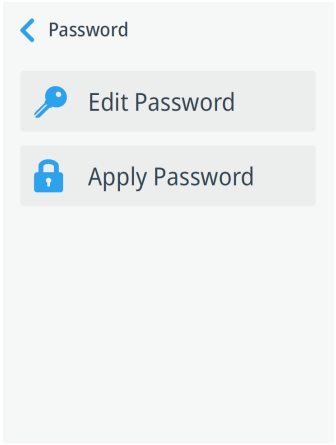
The password is now set, and you can begin to use it.

Edit the password

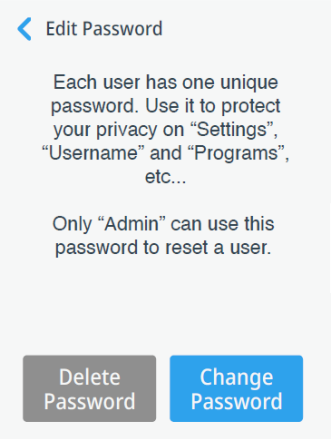
Use the Password protection function to change your password, if necessary.

To change your password:

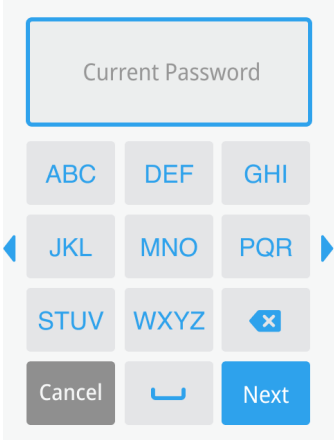
1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Password**.
3. Tap **Edit Password**.



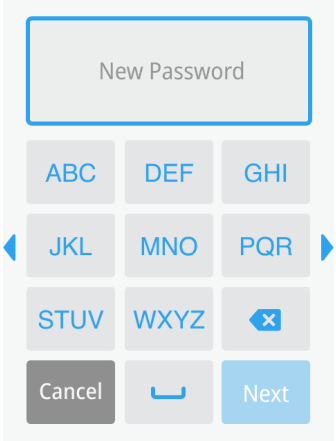
4. Tap **Change Password**.



5. Use the keyboard(s) to enter your current password. Swipe left or right to switch keyboards.



6. Tap **Next**.
7. Use the keyboard(s) to enter a new password.



8. Tap **Next**.
9. Check the new password. Use the **eye icon** to show/hide the password.
10. Tap **Save**.

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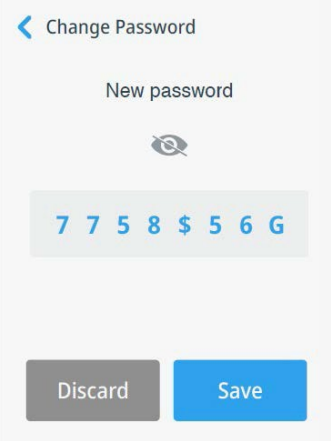
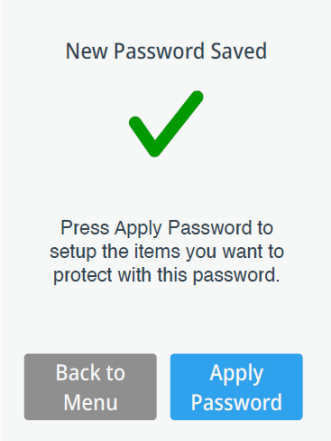


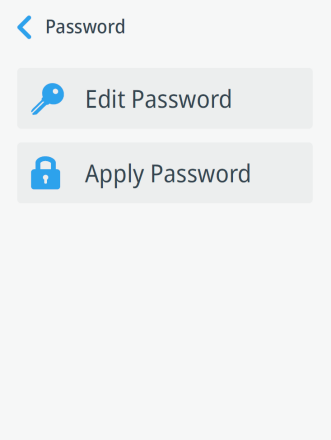
The password is now changed. You can start to apply the password right away or return to the **My Pipette** menu.



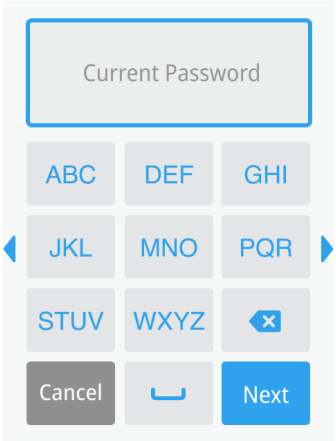
Protect items

You can use the password protection function to protect items with your password.

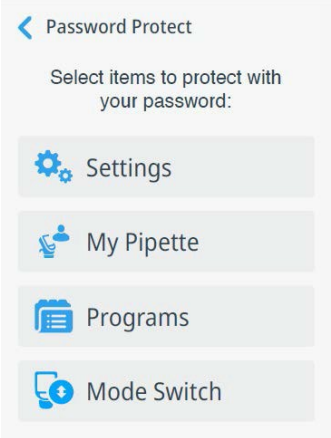
1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Password**.
3. Tap **Apply Password**.



4. Enter your password in the **Password** field.



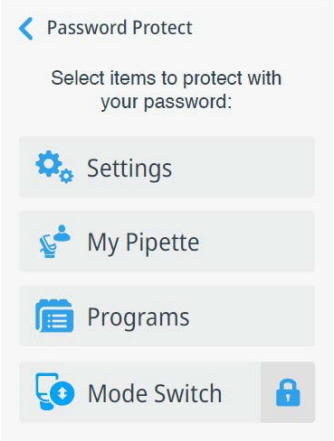
5. Tap **Done**, the password protect view opens.



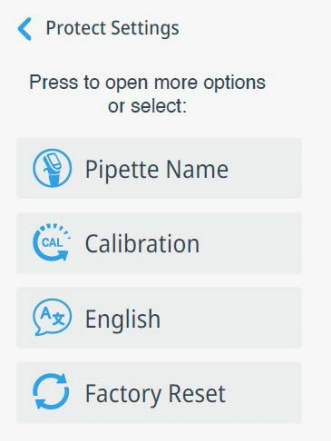
6. Select the function(s) that you want to protect.

   Only the Admin user can protect the Mode Switch.

   a. If the function does not have a lower-level menu (Mode Switch), the function is protected, and a lock symbol appears on the function.



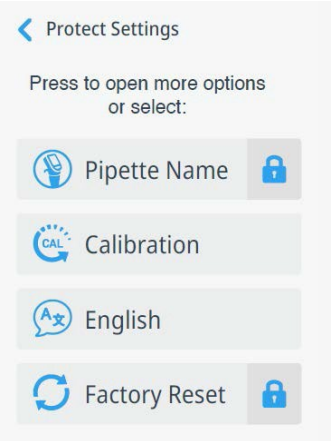
   b. If the function has a lower-level menu, for example, **Settings**, the lower-level menu opens.



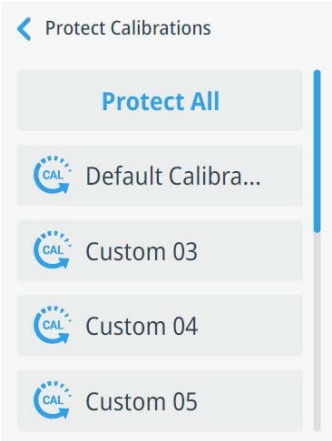
7. Tap the item(s) in the lower-level menu that you want to protect.

   a. If the item has no lower-level selections, for example, **Pipette Name** and **Factory Reset**, a lock symbol appears on the protected item(s).

      Only the Admin user can protect the Pipette name and Factory reset.



   b. If the item has a lower-level menu with several selectable items, for example, **Calibrations** in the **Settings** menu, the lower-level menu opens.



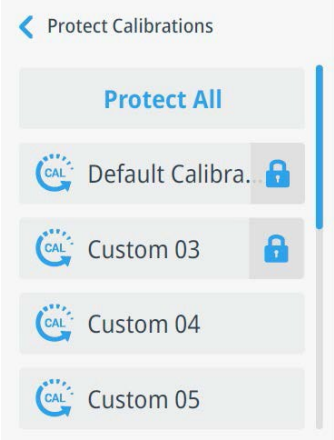
   If there are no additional lower-level menus, a **Protect All** button is available.

   Only the Admin user can protect the Pipette name and Factory reset.

8. Select the item(s) that you want to protect. Tap Protect All (if available) to select all items.

   A lock symbol appears on the protected item(s).

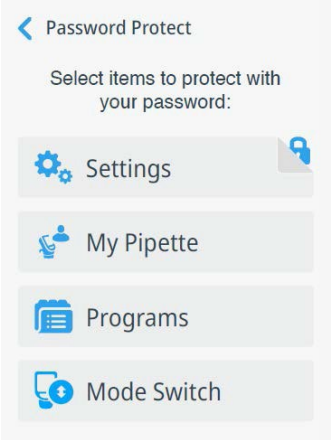
   Only the Admin user can protect the Default Calibration.



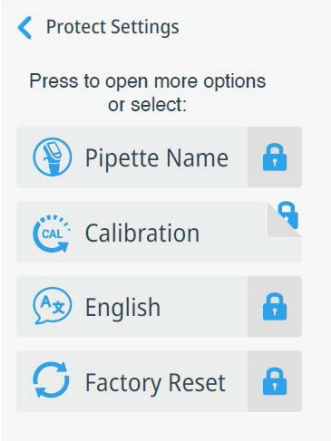
Tap the lock icon to remove the lock, if necessary.

When you return to the higher-level menu, if the locked items are on a lower-level menu, the lock symbol is behind a dog ear.

This page shows that there are protected items on a lower level inside the Settings function.



This page shows that part of lower level items under **Calibration** are protected.



Edit a protected item

Use the Password protection function to change a protected function.

1. Select the protected function.
2. Use the keyboard(s) to enter your password.

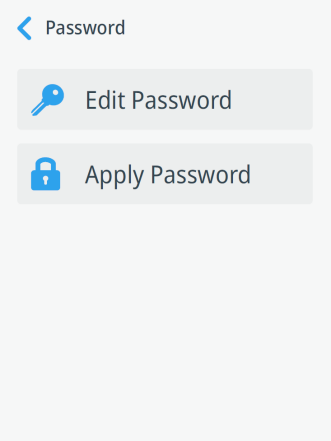
3. Tap **Next**.

The function opens and is ready to edit.

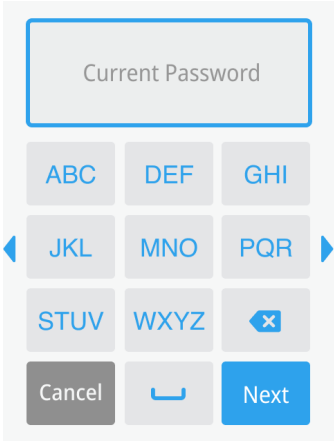
Unprotect items

Use the Password protection function to unprotect an item.

1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Password**.
3. Tap **Apply Password**.



4. In the **Password** field, enter your password.



5. Tap **Done**.
6. Tap the lock symbol in the item that you want to unprotect.

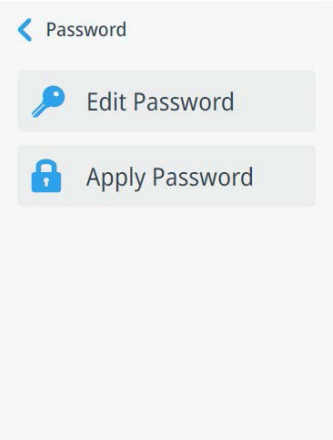
The lock symbol is removed from the function.

Tap the unlock item again, it will be password-protected once more.

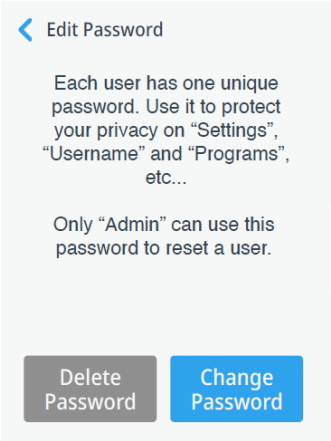
Remove password protection

Remove your password to remove the password protection from all items that you have protected. To remove your password:

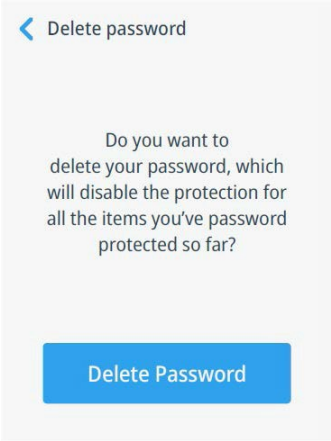
1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Password**.
3. Tap **Edit Password**.



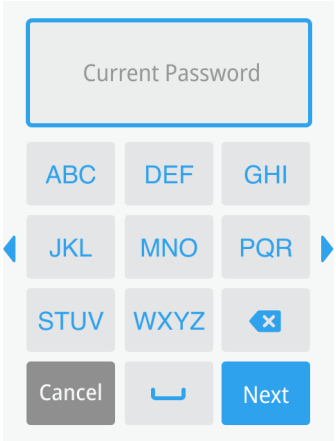
4. Tap **Delete Password**.



5. Tap **Delete Password** to confirm that you want to delete your password.



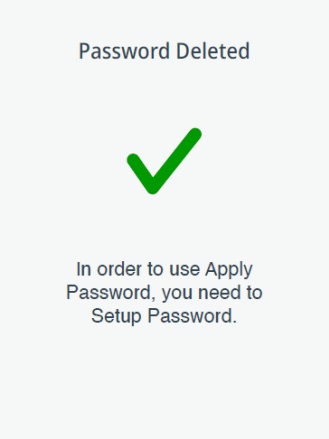
6. Use the keyboard(s) to enter your current password. Tap the **abc** button to switch between keyboards.



7. Tap **Done**.

   Your password is now deleted.

This removes the password protection of all items that you have password-protected.



Connect to MPC to program pipetting functions

You can program pipetting functions for the FluidEase pipette via My Pipette ™ Creator App in Thermo Fisher Connect Platform.

Thermo Fisher Connect Platform

The connection between the My Pipette Creator App and the pipette can be established either wirelessly (Bluetooth) or by using a USB cable. Please use the USB-C to USB-A cable provided with the product packaging to connect the Pipette to the MPC. For more information on how to set the Bluetooth connection On, see Connections.

To be able to use Thermo Fisher Connect Platform, you must create a Thermo Fisher Connect Platform account and sign in at following link:
https://identity.thermofisher.com/identity/account/registration/

For additional usage instructions on "How to use My Pipette Creator" and how to connect your FluidEase pipette to your cloud account, please visit the following page: Sign In Identifier

Each user in the five user profiles can create a connection to their cloud account. The pipette needs to unlink from other account if it is previously connected to such account.

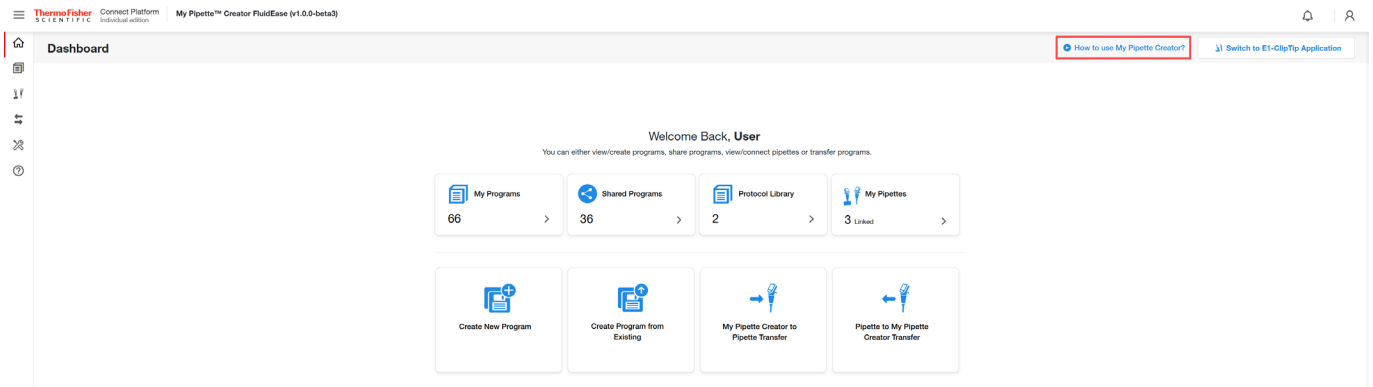


Figure 7-1 Homepage of My Pipette Creator

To connect your FluidEase pipette to Thermo Fisher Connect Platform, follow step below.

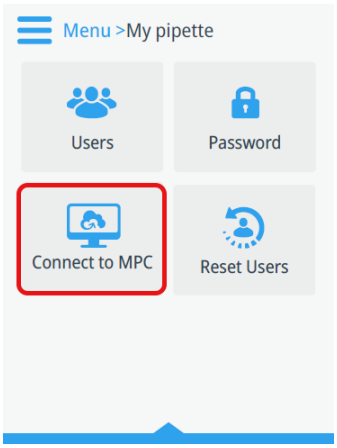
1. Create a Cloud account and sign in.
2. Open the My Pipette Creator App in Thermo Fisher Connect Platform.

3. Download and install the My Pipette Connect Utility software that allows file transfer between the pipette and the App (required only once per PC).
4. Connect your FluidEase pipette to your PC by Bluetooth or USB cable, see Connect to MPC .
5. Enter your email address on the pipette screen or through your PC.
6. Accept the linking notification received via email or Connect Platform account.

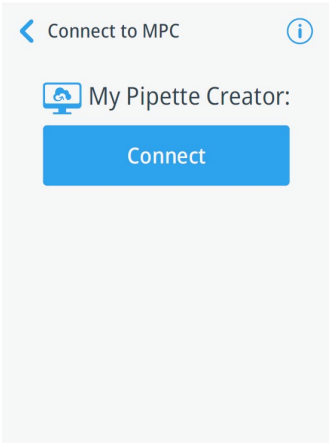
Connect to MPC

To connect your FluidEase pipette to the My Pipette Creator App (MPC), follow steps below.

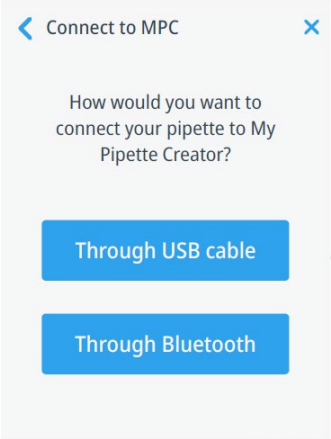
1. On the main menu, tap **My Pipette**.
2. Under **My Pipette**, tap **Connect to MPC**.



3. Tap **Connect**.

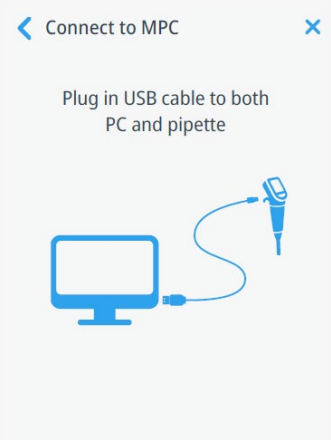


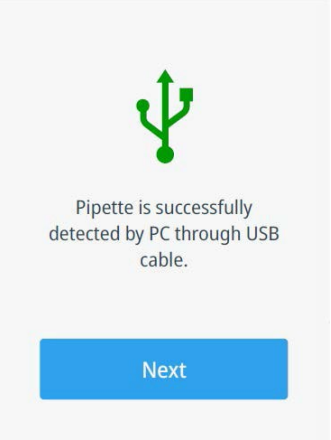
4. Select the connection that you want to use: USB or Bluetooth.



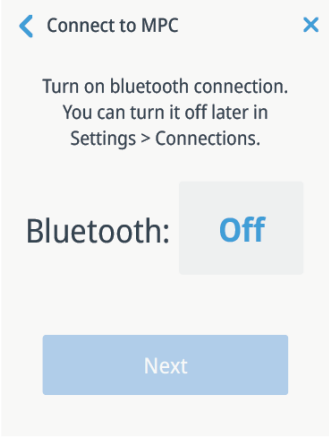
a. If you select “Through USB cable” but the USB cable is not plugged in, you are prompted to connect the cable.

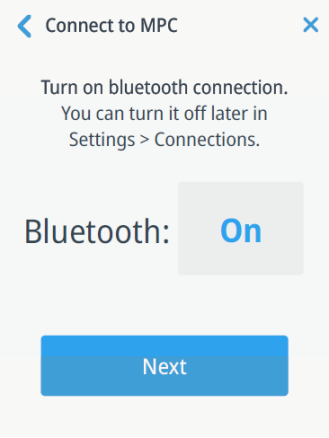
   A notification opens when the PC detects the pipette through the USB connection. Tap **Next**.





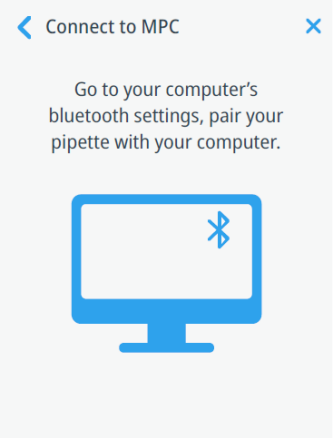
b. If you select “Through Bluetooth” but the Bluetooth connection is Off, you are prompted to turn on the Bluetooth connection. Tap the Bluetooth field to set the connection **On** and then tap **Next**.



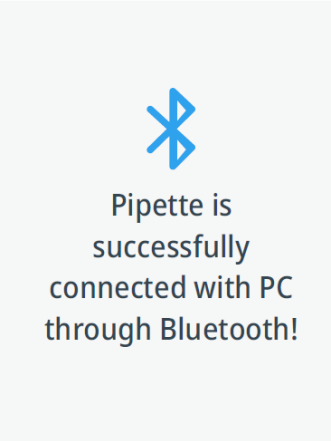


5. If you use the Bluetooth connection, you must pair your pipette with your computer. You will be prompted if your pipette is not paired with your PC through Bluetooth yet.

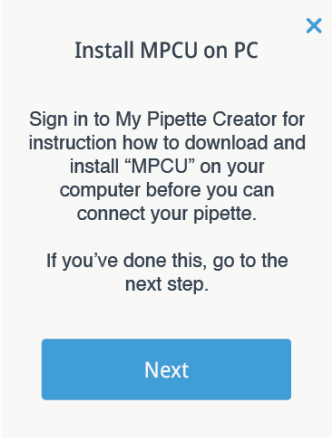
Thermo Scientific FluidEase ClipTip pipette models



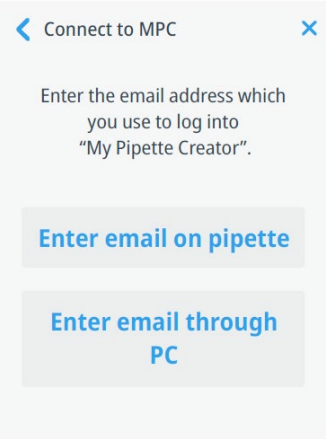
Go to the computer settings and pair your pipette with your PC. You get a notification when your pipette is connected with your PC through Bluetooth.



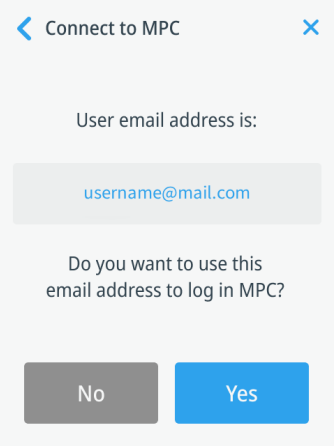
6. Download and install the My Pipette Connect (MPC) Utility software if you did not do this earlier. Tap **Next**.



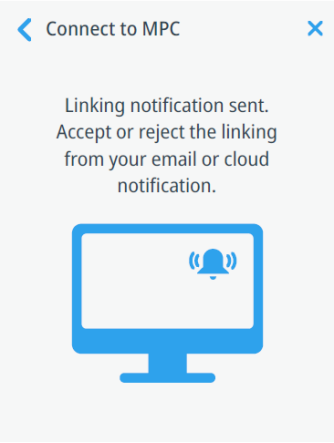
7. If not already entered, enter the email address that you use to log into MPC. You can select whether to enter the email from the pipette or PC.



8. When the email address is added, tap **Yes**.

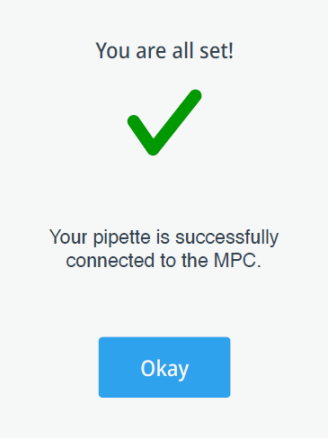


9. A linking notification is sent to your email. Accept the linking notification when you get it.

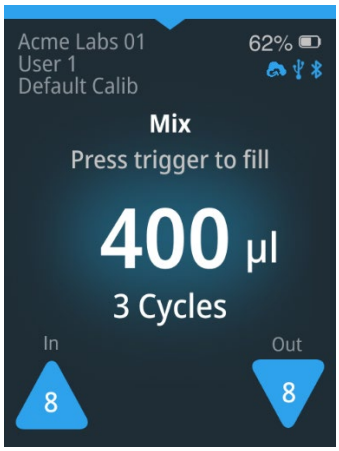


10. Once the connection is confirmed, your FluidEase pipette is successfully linked to your computer. Tap Okay to close the notification.

Thermo Scientific FluidEase ClipTip pipette models



The cloud icon on the display will then light up, indicating that you can now use the My Pipette Creator to program pipetting functions for the pipette.



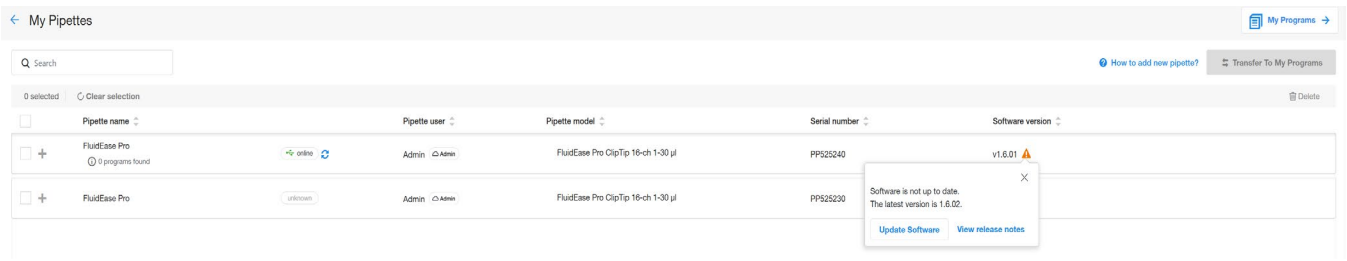
Software Update via MPC & MPCU

Prerequisite: To perform a software upgrade, the pipette must be connected to the My Pipette Creator account using a USB cable.

Software Update Process

Log in to the MPC (My Pipette Creator) cloud application using your Thermo Fisher Cloud account and connect your FluidEase pipette to your PC with the USB-A to USB-C cable that was provided with the pipette.

On the My Pipettes page, locate the pipette you wish to update. If there is a new software version available, you can see a notification warning in the notification icon.
Click the Update Software button for the listed pipette. This action will send a software update request to the MPCU (My Pipette Creator Utility) running on the connected Windows machine.

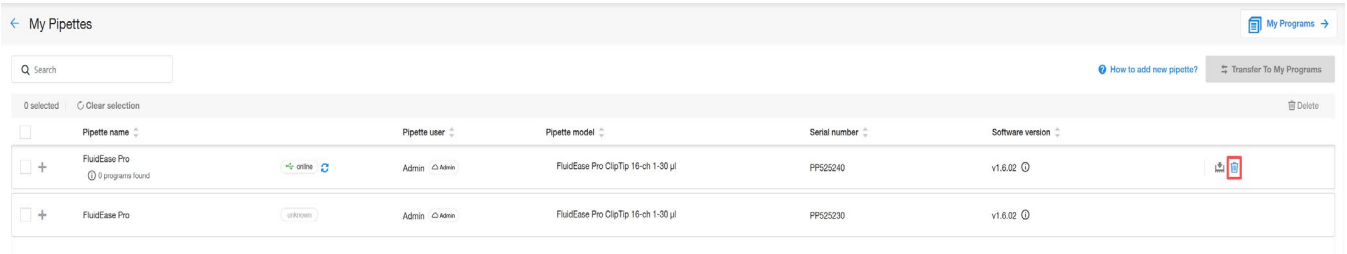


The pipette should stay connected to the computer during upgrade. Disconnection will cause pipette software upgrade to fail and result in black-screen pipette after upgrade.

Upon successful software updated, the pipette will automatically restart. MPCU then sends a success response back to the MPC cloud application, confirming that the software update has been completed.

Remove a pipette from MPC

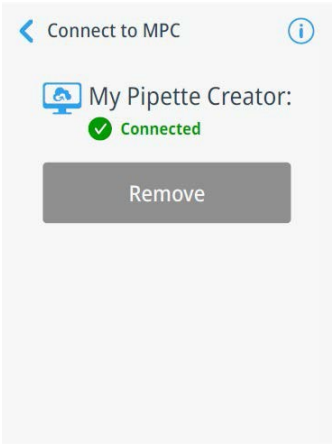
If you need to remove a pipette from the My Pipette Creator App (MPC) in Thermo Fisher Cloud, you can do it from the MPC. In MPC, you can also disconnect a pipette. You can find instructions on how to do this in Thermo Fisher Cloud.



You can also remove a pipette from MPC using the FluidEase pipette.

To remove a pipette from MPC using the pipette, follow steps below.

1. Under My Pipette, tap **Connect to MPC**.
2. Tap **Remove**.



3. Tap **Remove** to confirm.

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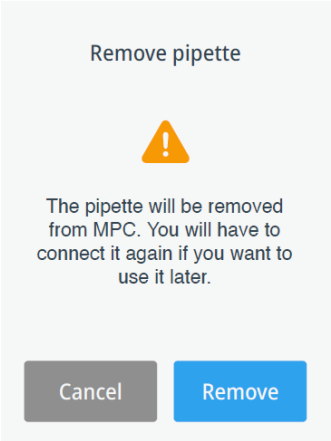
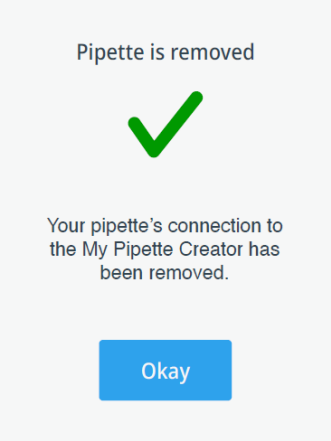


4. The pipette is now disconnected and removed from MPC. Tap **Okay**.



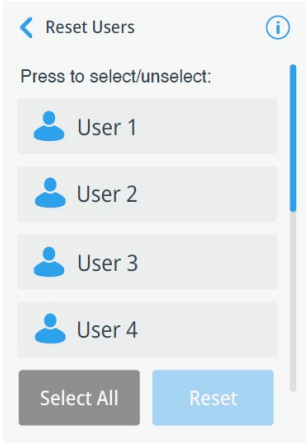
If removing the pipette from MPC via the pipette fails, use the My Pipette Creator App in Thermo Fisher Cloud to remove the pipette.

Reset users

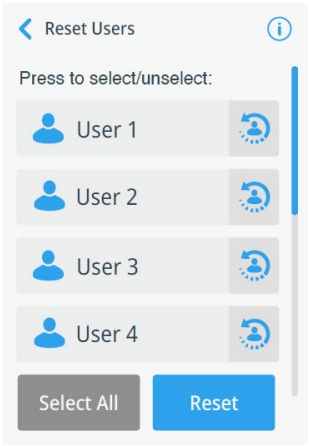
The Admin user can reset other users. The Admin user cannot be reset.

To reset users, follow steps below.

1. Under My Pipette, tap Reset Users.
2. Select the user(s) to be reset. Tap Select All to select all users. If necessary, tap the user(s) again to unselect.



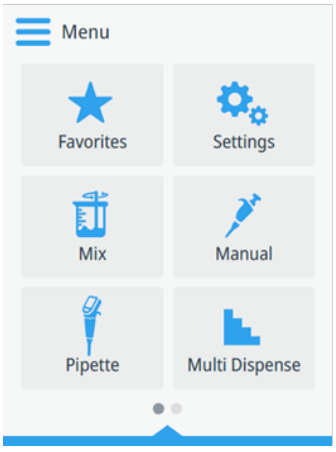
3. When all users to be reset are selected, tap Reset.

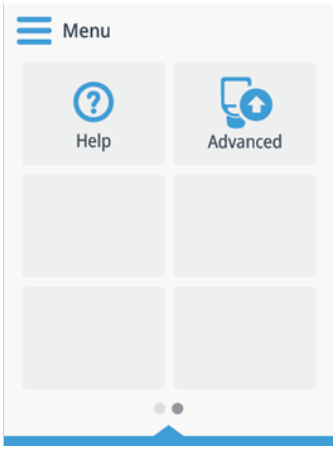


CAUTION： All user-edited programs, calibration settings and personalized pipette settings will be reset, see Appendix 9. Impact after Factory Reset and User Reset for more details.

Basic mode

If you only need to use pipetting functions with preset pipetting sequences (see Functions), you can switch to the Basic mode. In the Basic mode, you can access the preset pipetting functions from the main view.





In the Basic mode, you can add pipetting functions to Favorites for quick and easy access (for more information, see Favorites (Basic mode only)).

The **Step Builder** Programs and **Shortcuts** functions are not available in the Basic mode.

Switch the mode

To switch to the Basic mode from the Advanced mode:

1. In the main menu in the Advanced mode, swipe left to go to screen 2.
2. Tap **Basic** to switch to the Basic mode.
3. A confirmation window opens. Select **Yes** to switch to the Basic mode.

To switch back to the Advanced mode from the Basic mode:

1. In the main menu in the Basic mode, swipe left to go to screen 2.
2. Select **Advanced** to switch to the Advanced mode.
3. A confirmation window opens. Select **Yes** to switch to the Advanced mode.

You must set the pipetting functions and parameters separately in the Advanced and Basic modes. Switching between the Advanced and Basic mode will not share the settings.

Favorites (Basic mode only)

From Favorites, you can access your favorite functions with a single tap. The following functions can be saved to Favorites:

- **Pipette** - with volume, speed and mix settings
- **Multi Dispense** - with volume, speed, steps, pre-step, and excess settings
- **Mix** - continuous or cyclic, with volume and speed settings

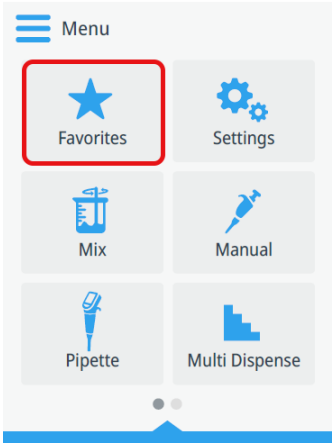
Access Favorites

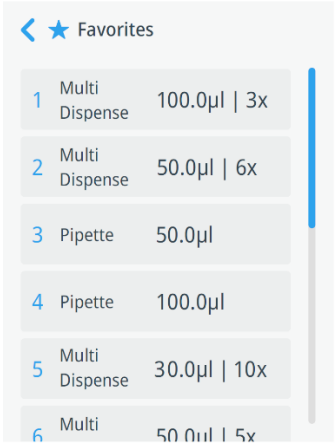
To access the favorites:

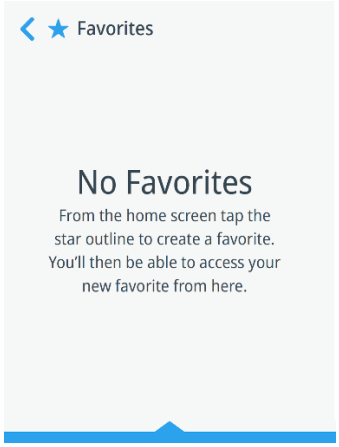
1. In the main menu, in the **Basic** mode, tap **Favorites**.

   If you have added favorites, the list of your favorites opens. You can tap what you would like to open

   If you do not have any favorites yet, the view is empty.



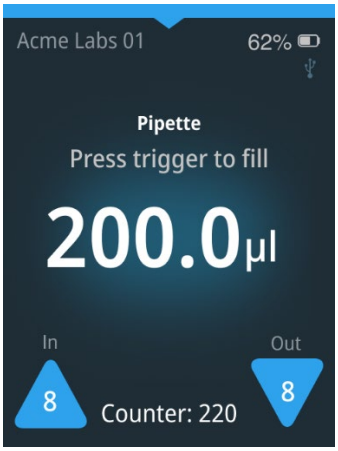




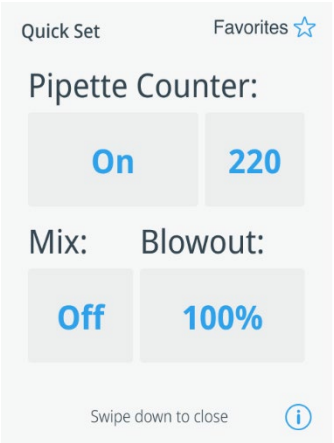
Add a function to Favorites

To add a function to Favorites:

1. Open the function that you want to add to **Favorites**, for example a pipette function.



2. Swipe up to open the **Quick Set** menu.



3. In the top right corner, tap **Favorite**.

   A confirmation prompt will pop up. Click Yes to continue, and then the function with its current settings is added to the Favorites list.

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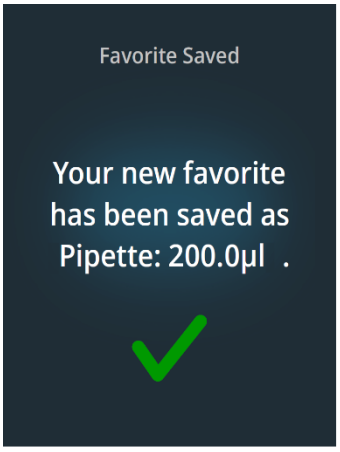
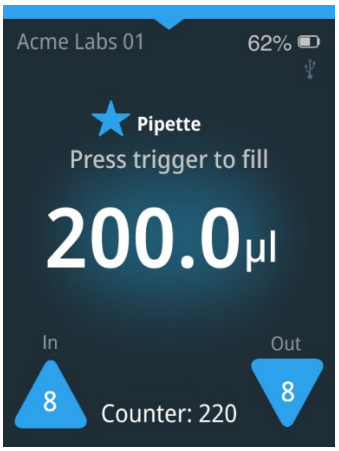


The favorite function is marked with a star on pipetting view.



You can use the function right away or load it later from **Favorites**.

Load a favorite

To load a Favorites:

1. In **Favorites**, scroll the list of favorites to find the favorite that you want to use.
2. Tap the favorite.

The function opens in the pipetting view and is ready for use.

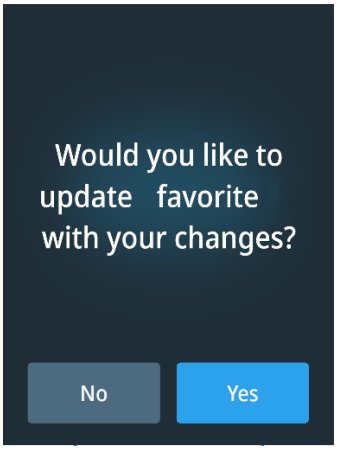
Edit a favorite

To edit a favorite:

1. In **Favorites**, tap the favorite that you want to edit. The function opens in the pipetting view.
2. Edit the volume and speed In/Out as explained in Adjust the volume and Adjust the pipetting speed ,or swipe up to edit the settings in the **Quick Set** menu.
3. Save the settings.

   A confirmation message opens.

   - Select **Yes** to update your saved favorite.
   - Select **No** to use the function without saving changes to your favorite. The star in the upper left corner of the action becomes outlined.

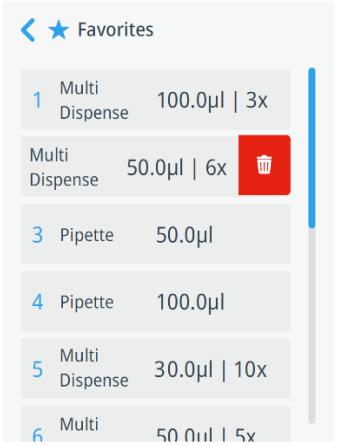


If you select **No**, your existing favorite stays the same. You can save the updated function as a new favorite, if desired.

Remove a favorite

To remove a favorite:

1. In **Favorites**, swipe left the item to be removed. A **Trash can** icon appears.

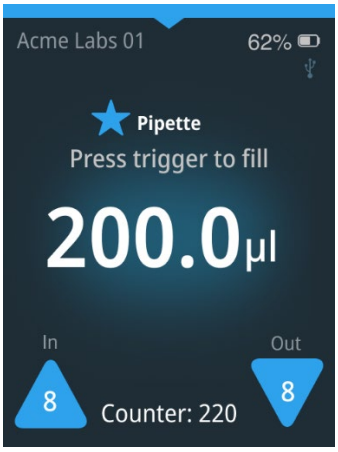


2. Tap the **Trash can** icon.
3. In the confirmation window, tap **Yes**.

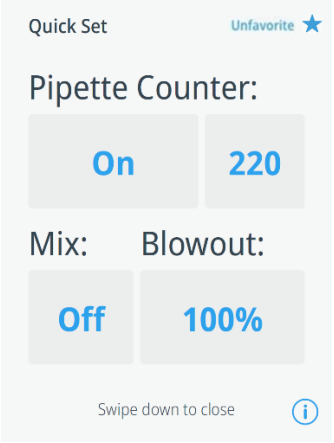
Optionally, you can use the **Quick Set** menu to remove a favorite.

1. Open the favorite function.

Thermo Scientific FluidEase ClipTip pipette models



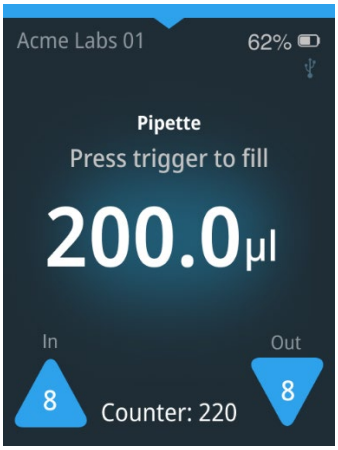
2. Swipe up to open the **Quick Set** menu.



3. In the upper right corner, tap **Unfavorite**.

The screen will show a momentary success message, indicating that the function is removed from Favorites.

The star is removed from the function.



8

Calibration and adjustment

Terminology

Table 8-1 Calibration and adjustment terminology

Term	Description
Calibration	Determination of the difference between the actual volume given by the device and the target volume. It also enables a statistical evaluation of the deviation between individual doses.
Adjustment	Alter the pipette settings to change the actual volume to correspond to the target volume.
Default calibration	Adjustment setting for the **Functions** and **Step Builder** functions. The pipette uses this parameter.
Custom calibration (custom adjustment)	A user-created parameter setting that can be stored in the pipette to be used in the Function and Programs function to improve the device performance. Custom calibration is derived from default calibration by add new calibration with adjustment to the min /max volume settings
Manufacturer specifications	Acceptance criteria for pipettes used by the manufacturer under strictly defined conditions.
ISO 8655 specifications	Acceptance criteria for pipettes recommended for pipette service or end users under strictly defined conditions.
Inaccuracy (accuracy)	The deviation of the measured mean volume from the target volume. Can be shown as an absolute value (for example, A=1.0 µl) or as a relative value (for example, ACC%=0.15%). Inaccuracy is a systematic error.
Imprecision (precision)	Statistical evaluation value of the calibration measurement series. Can be shown as an absolute standard deviation value (for example, s=1.0 µl) or as a relative coefficient of variation value (for example, CV%=0.1%). Imprecision is a random error.
Nominal volume	Maximum volume indicated by the device volume range.

Thermo Scientific FluidEase ClipTip pipette models

Factory calibration

All Thermo Scientific pipettes are factory calibrated and adjusted to give the volumes as specified with distilled or deionized water. The performance values are defined at the nominal (maximum) volume and at 10% of the nominal volume that uses a series of 5 doses at both points. With multichannel pipettes, all channels are calibrated. Calibration is performed in a monitored environment.

The pipette should be adjusted for use with any tip type not named on the Calibration Certificate.

Calibration results are specific to places and environmental conditions. Factory calibration assures that devices are functional when they leave the factory. The user is responsible for confirming that the calibration applies to the intended use.

Responsibilities of the user

To assure the proper functionality of the device, the user has these responsibilities.

Follow the instructions in this user manual.

- Assure that the device and accessories used are suitable for the intended application and function properly in the intended conditions.
- Define a regular service interval for the device (calibration check and maintenance) that is based on the conditions of use. The initial recommendation is every 3 months, but this can be changed based on the follow-up results. Devices should be serviced at least once a year.
- Define suitable acceptance criteria for calibration. As many premises do not necessarily meet the strict environmental and device requirements stated in the ISO 8655 standard, the user should establish acceptance criteria that meet the demands of the tasks for which the devices are used.

Perform the calibration

The following calibration procedure is recommended to be performed under the strict conditions defined below. It is recognized that many premises cannot meet these requirements.

The calibration procedure is also the same under nonconforming conditions; however, the manufacturer specifications or the ISO 8655 standard specifications do not apply in these cases.

Device requirements and test conditions

An analytical balance must be used for the test. The scale graduation value of the balance should be chosen based on the selected test volume of the pipette.

Table 8-2 Minimum requirements for balances based on ISO 8655-6:2022

Tested volume area V	Resolution mg	Repeatability and linearity mg	Standard uncertainty measurement mg
0.5 µl to <20 µl	0.001/0.01*	0.006/0.03*	0.012/0.06*
20 µl to <200 µl	0.01	0.025	0.05
200 µl to ≤10 ml	0.1	0.2	0.4

* : for multi-channel balance.

If the uncertainty of the measurement of the balance is known, this may be used instead of repeatability and linearity.

- Test liquid must be distilled or deionized water that conforms to the ISO 3696 grade 3 requirements.
- The test must be carried out in a draught-free room with a stable environment. The test room must have a relative humidity between 45% and 80% and a temperature of 20°C (±3) with a maximum variation of ± 0.5°C during the test.

It is recommended to use an environmental monitoring device to assure the reliability of condition values.

Calibration procedure

A pipette should always be adjusted for delivery (Ex) of the selected volume. Calibration should be performed in the Pipette mode.

For maximum permissible errors, see Appendix 4. Manufacturer Factory Specification Limits.

With multichannel pipettes, calibration can be performed either to all channels (standard demand) or for the edge channels of the device.

Note: According to ISO 8655, the acceptance specifications mentioned in this document apply only in the **Pipette** mode.

Before you begin the calibration procedure, do the following.

- Note the temperature (water temperature recommended) and air pressure values before you begin the test.
- Select the Z-correction coefficient value from Appendix 3. Conversion Table for Z-factor.
- Select the aspiration and dispense speeds on a pipette for calibration.

To perform calibration, follow the steps below:

1. Select 10% of the nominal volume.
2. Use the pipette to take a new tip or a row (column) of tips from the tip rack box. Do not touch the tips by hand.
3. Prewet the tip(s)3 to 5 times.
4. Immerse the tip 2 to 4 mm in liquid, aspirate, and wait until the tip is completely filled.
5. Touch the tip in the weighing vessel wall in a 30˚- 45˚ angle and then dispense.
6. To remove any liquid drop on the tip, draw the tip an approximate 10 mm distance against the weighing vessel wall.
7. Repeat steps 4 to 6 for the selected volume 5 times.
8. Eject the tip or tips.
9. Select the nominal volume.
10. Repeat steps 2 to 8 for the nominal volume
11. Calculate the inaccuracy (A and ACC%) and imprecision (s and CV%) of both volume series (see Calculation formulas).
12. Compare the results to the limits in Appendix 4. Manufacturer Factory Specification Limits or Appendix 5. ISO 8655-2:2022 Calibration Specification Limits.

If the calculated results are within the selected limits, the adjustment of the pipette is correct.

Calculation formulas

Volume calculation

$$V = (w + e) \times Z$$

Where:

V = volume (µL)

w = mass (mg)

e = evaporation loss (mg)

Z = conversion factor (µL/mg)

Evaporation loss can be significant with low volumes. To determine mass loss, dispense water into the weighing vessel, note the reading and start a stopwatch. See how much the reading decreases for 30 seconds (for example, 6 mg = 0.2 mg/s).

Compare this to the pipetting time from taring to reading. Typically, the pipetting time might be 10 seconds, and the mass loss is 2 mg (10 s x 0.2 mg/s) in this example. If an evaporation trap or lid on the vessel is used, the correction of evaporation is usually unnecessary.

The factor Z is for converting the weight of the water to volume at the test temperature and pressure. A typical value is 1.0032 µL/mg at 22°C and 95 kPa. See the conversion table in “Appendix 3. Conversion Table for Z-factor” .

The value of the conversion factor Z depends on environmental conditions (see Appendix 3. Conversion Table for Z-factor for more information). Select the factor from the table according to the air pressure and water temperature (recommended). The volume is more dependent on the

water temperature than the air temperature.

Inaccuracy

$$V = (w + e) \times Z$$

Where:

A = inaccuracy

$\bar{V}$ = average volume

V_s = target volume (display value)

$$ACC\% = 100\% \times \frac{A}{V_s}$$

Imprecision

$$S = \sqrt{\frac{\sum_{i=1}^{n}(V_i - \bar{V})^2}{n-1}}$$

Where:

A = inaccuracy

$\bar{V}$ = average volume

V_s = target volume (display value)

V_i = individual measurement result (i = 1…n)

$$CV\% = 100\% \times \frac{S}{\bar{V}}$$

Adjustment

In the FluidEase pipette there are two different ways to affect the adjustment settings. The Admin user (see Users) can change the settings for Default calibration, which affects all functions under the Functions and Step Builder menus for all user profiles. Additionally, the Admin user and all the other user profiles may create their own custom adjustments and store them in the pipette, up to five custom calibrations can be stored. A custom calibration can be picked and applied for use in all pipetting modes in Functions and Step Builder.
Custom calibration can also be used in the Programs mode for created pipetting programs.

Note: According to ISO 8655, the acceptance specifications mentioned in this document apply only in Pipette mode.

Change the default calibration setting

The Default calibration values have been set at the factory quality control. All Functions and Step Builder functions are affected when the default calibration setting is changed. The default calibration can only be edited by the Admin user. The default calibration setting is always a 2-point calibration.

In the FluidEase calibration adjustment, the max. volume shown in LCD always corresponds to the nominal volume of the pipette while the min. volume shown in LCD always corresponds to 10% of the nominal volume.

The Admin user may lock the default calibration setting with a password so that the setting cannot be changed without authorization. See Password protection for more information.

It is advised that the performance values for the default calibration setting are defined according to Calibration procedure that uses the Pipette function.

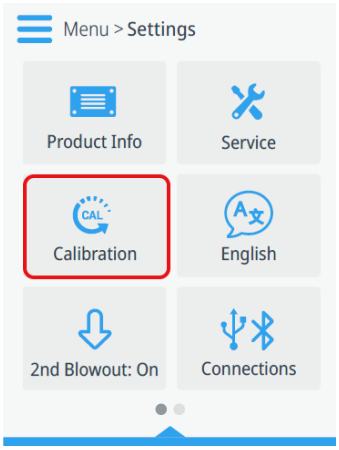
CAUTION: When you change the default calibration settings, all functions under Functions and **Step Builder** are affected for all users.

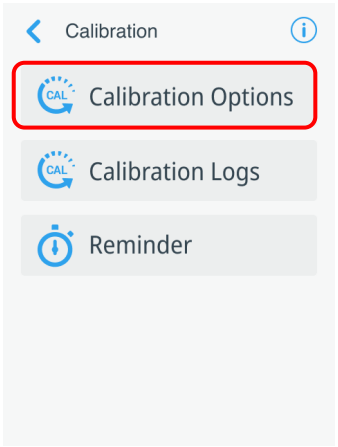
During calibration, the allowable input range for actual values are ±20% of the target value at 10% nominal volume and ±10% of the target value at 100% nominal volume.

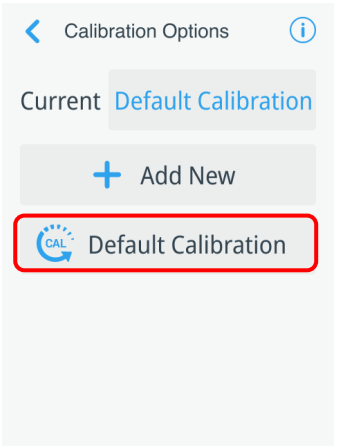
Note If the measured value at 100% nominal volume exceeds the allowable range, please contact your service representative.

To change the default calibration setting, follow the steps below.

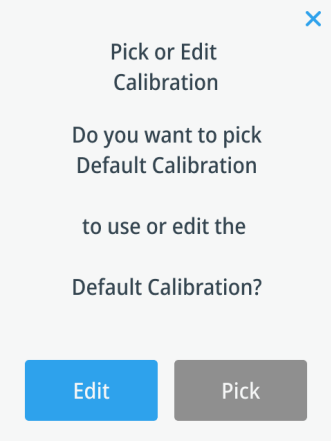
1. Tap **Settings** in the main menu, then in the following view tap **Calibration**.
2. Tap **Calibration Options**.
3. Tap **Default Calibration**, and then tap **Edit** in following page.

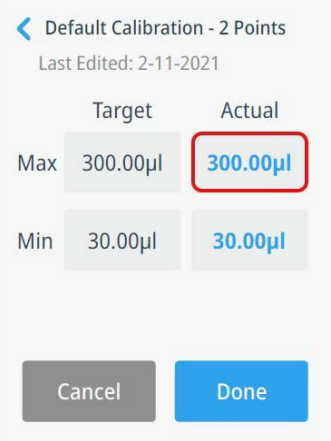


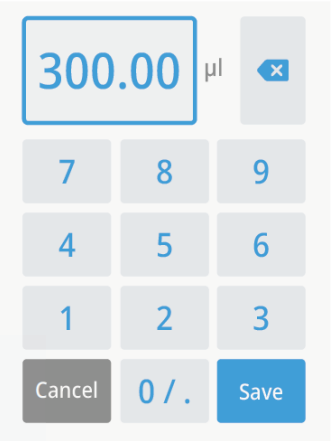




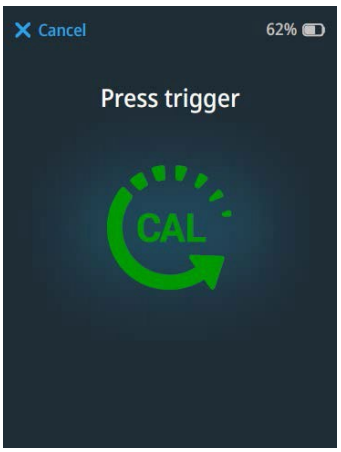
4. To change the values, tap the Actual volume field(s).
5. Change the Actual max. volume to correspond to the obtained calibration maximum volume.
6. Tap **Save**.

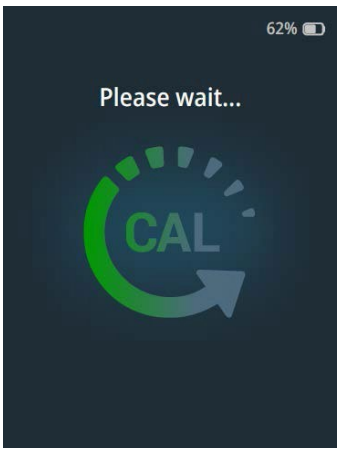


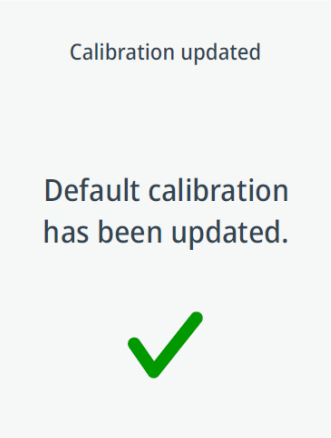




7. Similarly, change the Actual min. volume to correspond to the obtained calibration minimum volume.
8. Tap **Done** when the changes are ready.
9. You are then prompted to press the trigger to proceed.
10. Wait while the default calibration is updating, a notification shows that the calibration was updated.
11. Perform Forward dispensing (Pipette function) according to Calibration procedure to verify the effect of new adjustment settings.
12. Repeat Steps 1-11 if necessary.





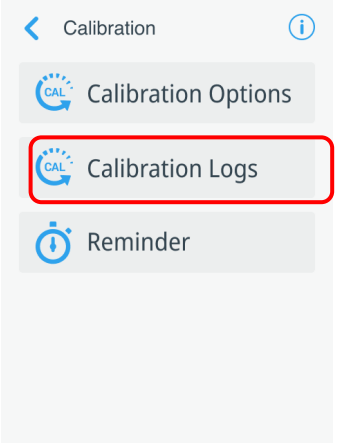


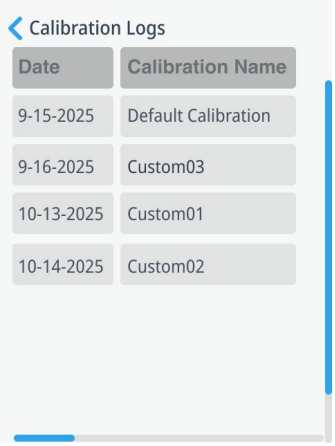
Calibration logs

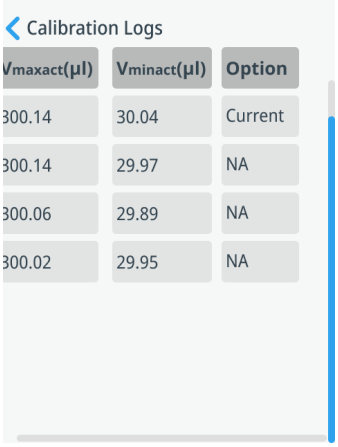
Calibration logs shows all the calibrations created into the pipette by all user profiles. The following details are listed: Date, Calibration Name, Creator, V_{maxact} (µl), V_{minact} (µl) (actual maximum and minimum volumes) and Option to save the calibration.

To access Calibration logs, follow the steps below.

1. In Calibration view, tap Calibration Logs.
2. Calibration Logs view opens.
3. Swipe left to view more details.







Create custom adjustments

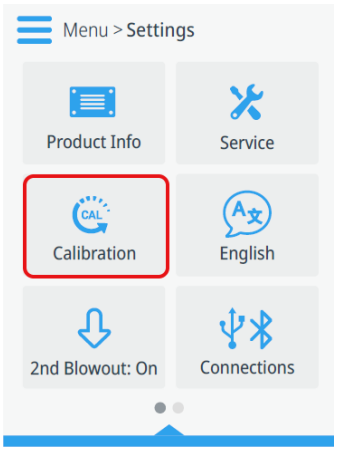
You can add and define custom adjustment settings that can be used in stored programs and preset functions in Function. Perform the calibration using the desired application (see Performing the Calibration) before starting the adjustment procedures. Adjustment can be made for example, for liquids of different temperature or viscosity or for different pipetting methods, such as Multi dispensing. Custom calibration/adjustment will be derived from default calibration, so to perform custom calibration, please pipette liquid with default calibration selected as current calibration. Then weigh the liquid at 10% and 100% nominal volume of your pipette model to get the volume to be used in the two-point calibration screens below.

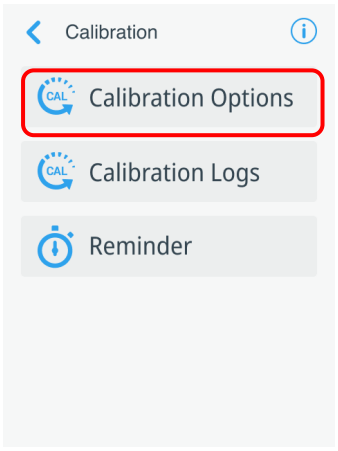
Each user can store up to 5 different custom adjustments that can be used in preset functions and created programs to improve the application-specific device performance.

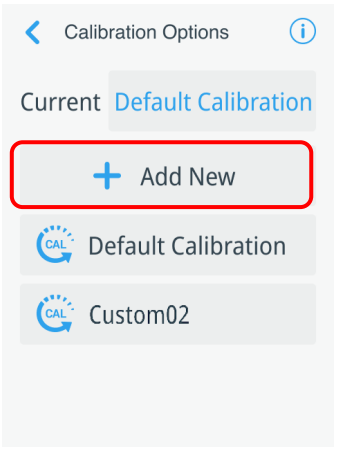
This function is available only in Advanced mode.

To create a new custom calibration, follow the steps below.

1. In **Settings** view, tap **Calibration**.
2. Tap **Calibration Options**.
3. Tap **Add new**.



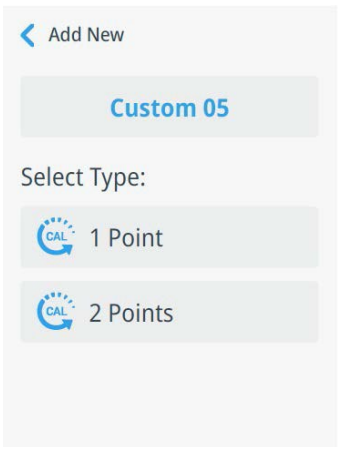


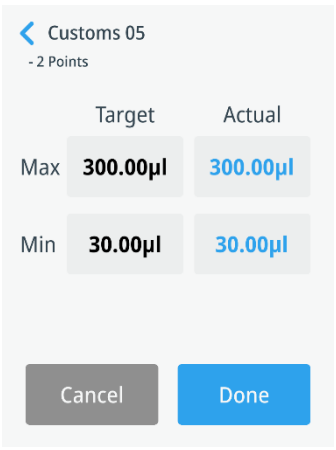


4. Select the type of calibration: either **1 point** or **2 points** calibration.
5. Change the Actual volumes to correspond to the obtained calibration volumes.

   For **1 point** calibration, it's allowed to set the Target volume.
6. Tap **Done** to save the calibration.
7. Press trigger to continue.

A new adjustment setting has been saved to memory.

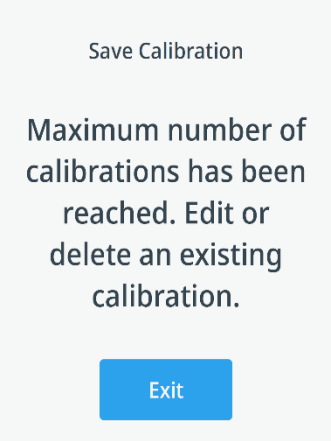




To change the name of the setting, see Editing custom adjustments.

If the number of custom calibrations exceeds 5, a popup opens as figure shown below.

Thermo Scientific FluidEase ClipTip pipette models



The stored custom adjustments can be used in the **Function** and **Programs** functions where they can be connected to user-created programs. For more information, see Programs function.

After you connect the custom adjustment to a program, perform a recalibration of the device in Calibration procedure to verify the device performance.

The acceptance specifications in the calibration procedure apply only when water is dispensed with the Forward pipetting technique.

The volume conversion factor Z in Volume calculation applies only to water. Conversion calculations for other liquids need to be done that use the density value of the dispensed liquid and applicable formulas.

Custom calibration settings can be locked with a password so that the setting cannot be changed without authorization. See Password protection for more information.

CAUTION: Ensure that the custom calibration setting is suitable for the intended liquid transfer operation. Failure to do so may cause serious dosing errors.

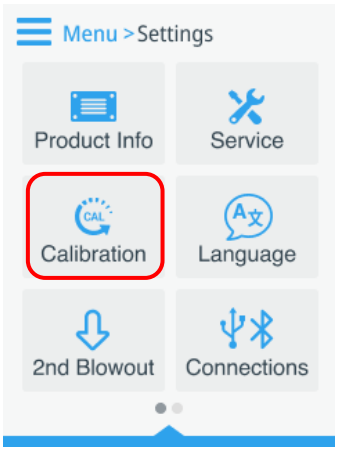
Edit custom adjustments

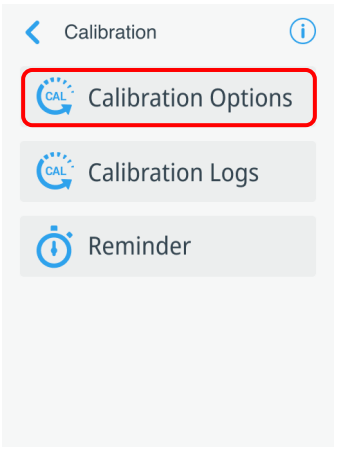
The stored custom adjustments can be edited.

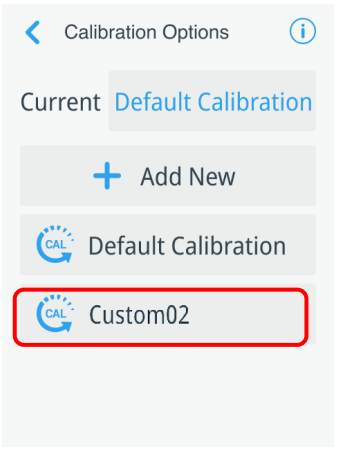
CAUTION: When you change a stored custom adjustment, the user-created programs that have been defined for the setting in question are affected.

To edit custom adjustment, follow the steps below.

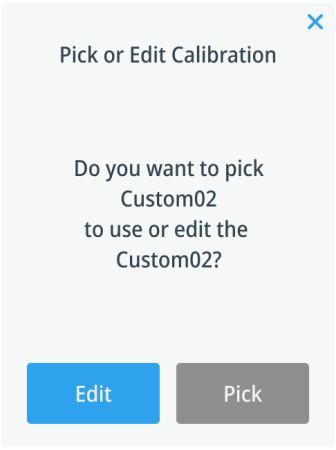
1. Under Settings, tap Calibration.
2. Tap Calibration Options.
3. Tap the calibration setting to be edited.

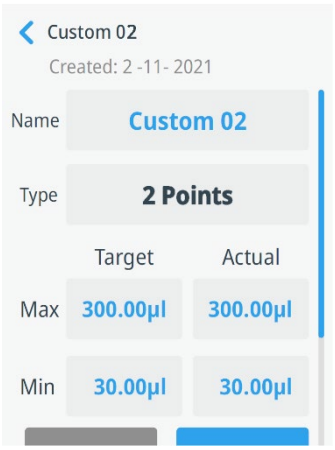






4. Tap **Edit** on following view.
5. In the following view, you can tap blue filed to modify the custom calibration.
    a. Edit the Actual volumes according to the instructions in Create custom adjustments.
    b. To change the name of the adjustment, tap the Name filed.





    c. Use the keyboard to change the name. To toggle between alphanumeric keyboards, swipe left/right or tap the arrows on the edges of the screen to get to the right view.

6. Tap **Save**, and then tap **Done**.

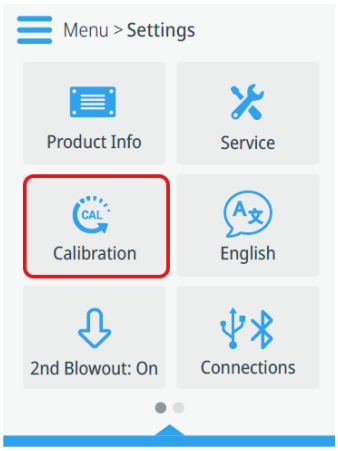
7. After applying a stored adjustment setting in the Programs mode (see Programs function), perform re-calibration of the device according to Calibration procedure to verify the effect of new adjustment settings.

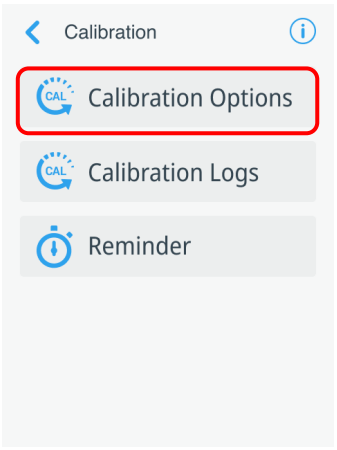
Delete a stored adjustment setting

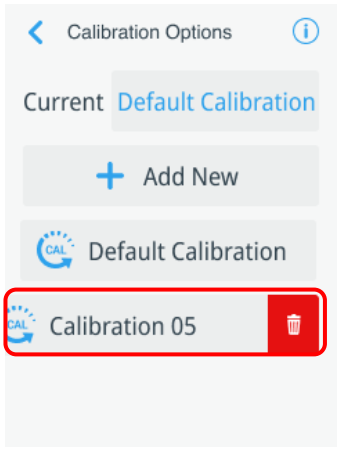
CAUTION: When deleting a custom adjustment, the user-created programs that have been defined for the setting in question are affected. The programs that have been defined to use the deleted adjustment are automatically changed to use the default calibration adjustment setting.

You can delete a stored custom adjustment by following the steps below.

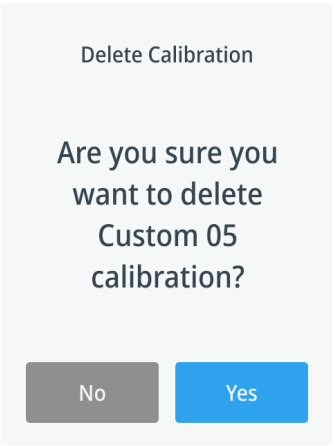
1. Under Settings, tap Calibration.
2. Tap Calibration Options.
3. Swipe left the adjustment setting to be removed. A trash can icon appears.



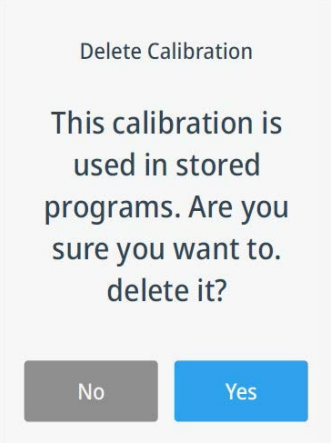




4. Tap the trash can icon.
5. A confirmation window opens. Tap **Yes,** the calibration is deleted.



If the custom adjustment is used by a program, a confirmation window appears. Tap **Yes** to confirm the deletion.



Set a calibration reminder

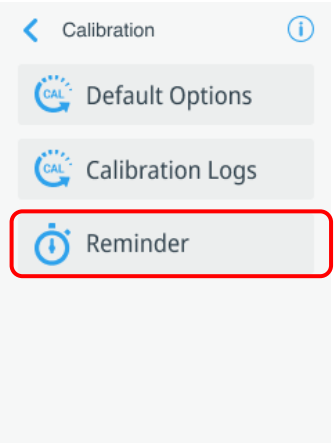
Under the Calibration function, you can set a calibration reminder to inform you when the set time or pipetting cycle limit for the pipette is reached, so that you remember to recheck the pipette performance.

The Calibration reminder window shows the cumulative values from the last calibration (cycles, if the cycle-based option has been selected, or days if the time-based option has been selected) and the date of the last calibration. These values are reset when one of the created calibrations in a user profile is changed.

CAUTION: The Calibration counter notifies the user only about the limits reached according to the Default calibration. The user is responsible for checking the validity of personalized adjustment settings used in stored programs.

To set the Calibration reminder, follow the steps below.

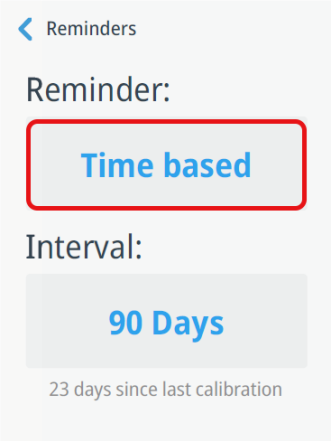
1. In the Settings menu, tap **Calibration**.
2. Tap **Reminder**.



Note In the Basic mode, setting the reminder is not available.

3. Tap the Reminder field as many times as necessary to set the correct reminder type: **Cycle**

based, **Time based**, or **Off**.

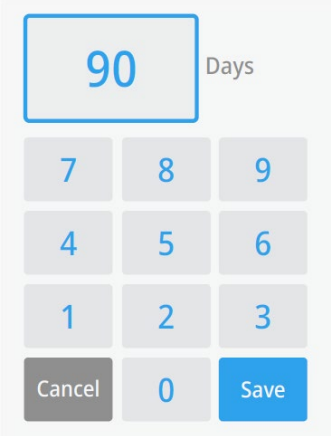


The contents of the Interval field depend on the selected reminder type.

- If you select Time based, the Interval field shows the interval in days.
- If you select Cycle based, the Interval field shows the interval in number of cycles.
- If you select Reminder: Off, the Interval field is not visible.

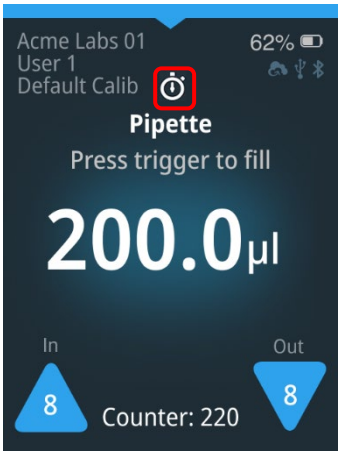
Below the Interval field, you can see the days (Time based) or cycles (Cycle based) since the last calibration, if Time based or Cycle based reminder is selected.

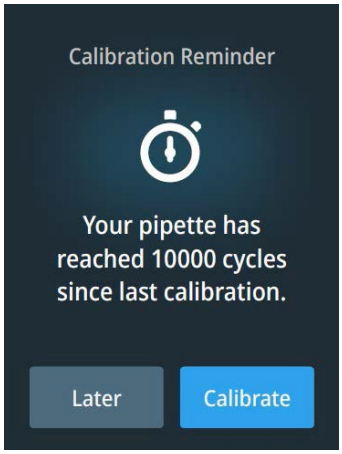
4. Tap the Interval field to set the interval for the reminder.
5. Use the numeric keys to set the interval.
6. Tap **Save** to save the changes.



When the set time/cycle limit is reached, a calibration reminder icon appears on the display.

Tap the calibration reminder icon. The Calibration reminder opens.





Tap **Calibrate** to start the calibration procedure, see Performing the Calibration.

If you select **Later**, the calibration reminder will stay in the pipetting view to remind you that calibration is due.

9

Troubleshooting

The following table lists possible symptoms and their solutions.

Do not perform troubleshooting procedures on the internal components unless instructed by Thermo Fisher Scientific Technical Service personnel.

Table 9-1 Troubleshooting symptoms and solutions

Defect	Possible reason	Possible action
Leakage	Tip fitting incorrectly attached or loose	Re-attach/tighten the tip fitting or replace with new tip fittings using the tool.
	ClipTip clips are bent	Discard the tip and reload new tip.
	Tip fitting O-ring damaged	Change the O-ring.
	Foreign particles between the tip and the tip cone	Clean the tip cones and attach new tips.
	Insufficient amount of grease on the cylinder and the O-ring, or foreign particles between the piston, O-ring, and cylinder	**Single channel pipettes:** Clean and grease the O-ring and cylinder. **Multichannel pipettes:** Contact service.
Inaccurate dispensing	Incorrect operation	Follow the instructions carefully.
	Unsuitable calibration	Recalibrate according to the instructions in Perform the calibration.
	Wrong tip	Use the correct tip.
	Tip fitting incorrectly—attached or loose	Tighten the tip fitting with the tool or replace the tip fitting set.
Tip not ejecting	Tip fitting incorrectly—attached or loose	Open the clips manually with a small sharp tool and pull out the tip. Tighten the tip fitting with the tool or replace the tip fitting set.
	Battery level too low	Recharge the battery.
	Fluid in tip	Complete or cancel the pipetting function.

Table 9-2. Troubleshooting guide

Defect	Possible reason	Possible action
No dispensing	Battery level too low	Recharge the battery.
	Pistons stuck	Single channel pipettes: Remove the tip cone module. Move the piston by hand or with the piston removal tool. Re-attach the piston. Multichannel pipettes: Contact service.
	Piston not connected in single channel pipette	Attach the module in service mode, see Attaching the piston for more information.
The battery is not charging	Charger cable not attached properly to the pipette	Detach and reconnect properly.
	The charger is not connected to the power supply	Connect the charger to the power supply.
	Pipette not placed properly into the charging stand	Take the pipette out from the charging stand and place it back again properly.
	Charger cable not connected to the charging stand	Connect the charger cable to the charging stand.
	Battery not installed Battery exceeded service life (2 years or 300 charging cycles)	Install the battery following the instructions in Installing the Battery. Replace with a new battery
Touch screen unresponsive	Battery level too low	Recharge the battery.
	Internal error	Check the message on the display and act accordingly. If necessary, perform a forced shutdown, see Forced shutdown for more information. If necessary, remove and re-attach the battery cable (see Installing the Battery for more information).
Pressing Power button does not turn on / off the pipette	Pipette is being charged	By design, the power button does not work during charging
	Pipette is in operation, liquid in tip.	Pipette is designed to prevent accidental power off during operation. Complete or

		cancel the function
Defect	**Possible reason**	**Possible action**
Black Screen	Software upgrade via MPC was interrupted causing screen to go black	Contact your local service representative to get it corrected
Not connecting to MPC	Not connected via USB or incorrect USB cable used	Connect pipette to your Windows computer using original USB cable coming with pipette
	Not connected via Bluetooth; Bluetooth of pipette or computer not enabled	Enable Bluetooth on computer and on pipette via pipette -> settings -> connections
	Bluetooth needs restart	Restart Bluetooth by turning Bluetooth off and back on via pipette UI: pipette -> settings -> connections
	Did not initiate linking process via My pipette;	Initiate linking via My pipette -> Connect to MPC on your pipette and follow the instructions on screen
	Did not accept the linking request via email or MPC app	Accept linking request on MPC app notification icon (top right) or via email link
	Did not install or open MPCU	Install and open MPCU per MPC user guide
Program Transfer Failure in MPC	Pipette got disconnected; see reasons in above connection failure cases (Not connecting to MPC)	Check pipette page to see whether the current pipette is online/connected. Resolve connection failure; for example, restart Bluetooth.
	Pipette lost connection due to low power of pipette or taking pipette far away from computer with MPC when connecting via Bluetooth	Reconnect and conduct program transfer again

Do not perform troubleshooting procedures on the internal components unless instructed by Thermo Fisher Scientific Technical Service personnel.

WARNING: If the corrective actions do not solve the problem, do not use the pipette. Contact service instead.

Display notifications

The user interface of the FluidEase electronic pipette displays various messages to guide and assist the user. The most important notifications are listed and explained in table below.

Table 9-3 Display notifications

Display information	Probable cause	Solution
Piston position error	Piston movement was not accurate during aspirating or dispensing due to mechanical friction or blockage.	Press the trigger to remove the friction or blockage. CAUTION If there is liquid in the tips, it will be dispensed! Notice also that the previous dispensed dose may be inaccurate! Contact service if the error reappears continuously.
	Pipette is not serviced for a while and mechanical friction prevents accurate operation.	The piston needs to be greased. Contact service.
	Lower module's piston connect failure	Attach the module in service mode, see Attaching the piston for more information.
Low Battery Charge before use.	Battery voltage level is low.	Charge the pipette.

Forced shutdown

If the touchscreen is unresponsive, you may need to shut down the pipette without using the touchscreen.

To force a shutdown, press the power button on top of the pipette for 3 seconds. If the pipette doesn't respond after pressing the power button, open the battery lid, disconnect the battery, and then connect it again.

10

Service

Regular and preventive maintenance

Use only original Thermo Scientific spare parts and ClipTips.

Avoid excess grease. Use only the grease recommended by the manufacturer.

Check the pipette at the beginning of each day. Pay particular attention to the tip cone.

If the pipette is used daily, it is recommended to service the pipette every three months.

The pipette calibration and operation must be checked after maintenance.

For reliable daily operation, keep the FluidEase pipette free of dust and away from liquid spills.

Even though the FluidEase pipette is constructed from high-quality materials, you must immediately wipe away spilled saline solutions, solvents, acids or alkaline solutions from outer surfaces to prevent damage.

Use a microfiber cloth to remove loose dirt or smudges from the touch screen.

It is recommended that you clean the exterior case of the pipette periodically to maintain its good appearance. A soft cloth dampened with 70% ethanol solution is adequate. It is also recommended to check the tightness of the tip fittings.

Filter tips are recommended to use to avoid contamination of the inner parts of the FluidEase pipette.

Note The pipette should be regularly serviced according to the User Manual.

CAUTION: Ethanol should not be sprayed directly on the pipette. This may impair the transparency of the display window. Use only a moistened cloth.

CAUTION: Aggressive substances can damage the pipette or pipette parts. Verify the suitability before handling organic solvents and aggressive chemicals with the pipette, refer to: Chemical resistance of plastics.

CAUTION: Use a decontamination solution if any surfaces are contaminated with biohazardous material. For more information, see Decontamination Procedure.

Cleaning procedure (single channel pipettes)

Clean the piston, piston spring, and sealing rings with a dry lint-free cloth.

Check the tip cone and o-ring for foreign particles, dirt and damage.

Clean the parts with a suitable cleaning solution by wiping them with dampened cloth. Dry before assembly.

Grease the spring, internal sealing rings and piston with the lubricant, refer to lubricate the piston section and Appendix 6. Spare Parts and Accessories for more details.

CAUTION: Do not grease the lower tip fitting sealing ring(as shown in Figure 10-1 Tip fitting and sealing rings (O-rings)). A greased sealing ring may collect dirt and cause leaking of the pipette.

Decontamination procedure

The touch screen display, operation buttons, handle and lower parts of the FluidEase pipette as well as the tip fittings can be wiped with decontaminants that are recommended below. These parts must not be immersed in liquid.

Spray the solution onto lint-free cloth, then wipe the pipette or the parts, ensure all surfaces remain visibly wet with the solution. For entire pipette, it is typically 30 seconds to 1 minute for alcohol-based wipes. Dry before assembly.

Removable tip fittings (for disassembly, see Replacing Tip Fittings and Sealing Ring(s) and Disassembly) can be removed and immersed in the decontaminant solution according to the table below. Afterwards the parts must be thoroughly rinsed with distilled water and allowed to dry before reassembling.

Solution	Touch screen display	Operation Buttons	Handle	Lower parts	Tip fittings and sealing rings
Ethanol 70%	X	X	X	X	X
Isopropanol 70%	X	X	X	X	X
Sodium hypochlorite (bleach) 5%	X	X	X	X	X
Virkon 1%	X	X	X	X	X
Glutaraldehyde (2.5%)	X	X	X	X	X
Hydrogen peroxide (7.5%)	X	X	X	X	X

X The parts are chemically resistant to the decontaminant.

\- The parts are not chemically resistant to the decontaminant.

CAUTION: The effectiveness of the decontamination procedure must be verified by the user.

Replace tip fittings and sealing rings

If the pipette is used daily, check the condition of the tip fittings every 3 months. Replace when necessary.

Thermo Scientific FluidEase ClipTip Pipette Models

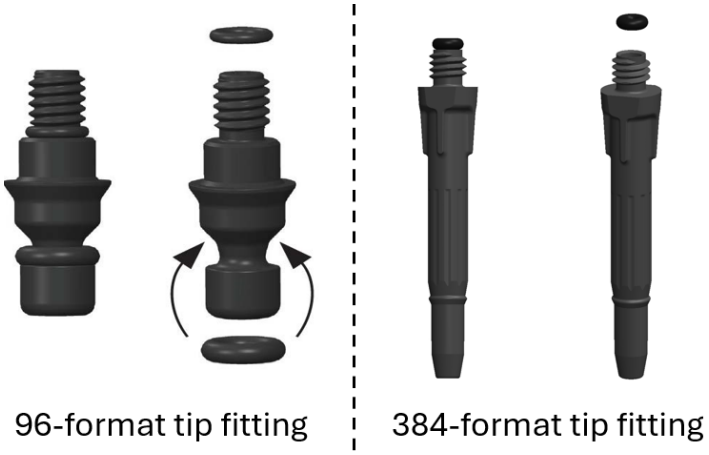


Figure 10-1 Tip fitting and sealing rings (O-rings)

CAUTION: The FluidEase sealing rings are wear parts. Clean them after contamination, use of aggressive chemicals, or heavy stress. Replace the sealing rings if they are worn or damaged.

Pipettes with 96-format tip fitting

Replace the tip fitting

1. Press the tip ejector to remove the tip from the tip fitting.
2. Tip fitting tool that comes with pipette will be used to remove and install tip fitting.

3. Place the star-shaped end of the tip fitting tool into the end of the tip fitting.
4. Turn the tool counterclockwise to remove the tip fitting.

5. Examine the condition of the tip fitting and the sealing rings. Replace, if necessary.

CAUTION: Be careful not to over-tighten the tip fitting. That could damage the thread in the pipette.

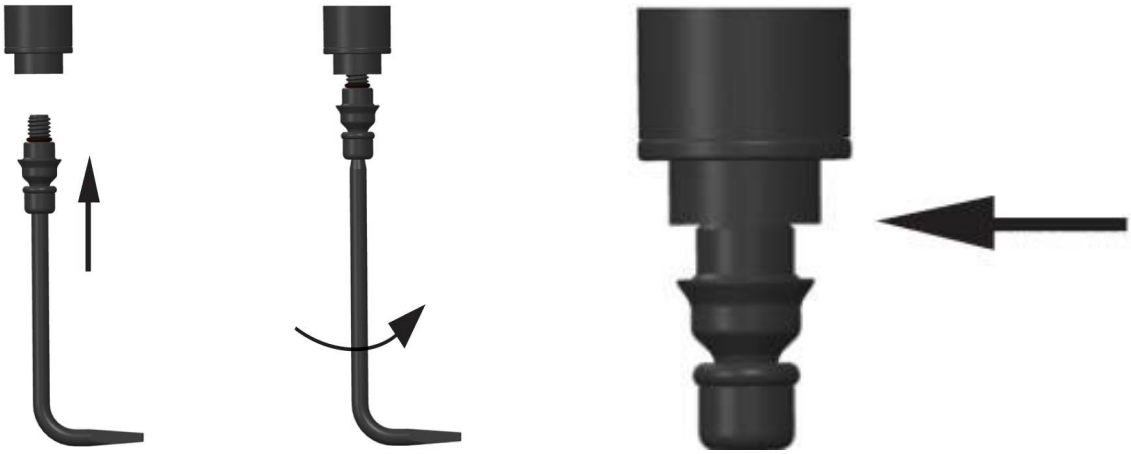
Note The product package contains spare part sealing rings. Store them for future maintenance purposes.

6. Make sure that the tip fitting has both O-rings in place.

7. Place the tip fitting onto the star-shaped end of tip fitting tool so that the screw end is facing upwards.

8. Insert the screw end of the tip fitting into the cylinder and carefully tighten the tip fitting to the cylinder by turning the tool clockwise.

9. Make sure that there is no gap between the tip fitting and the cylinder.

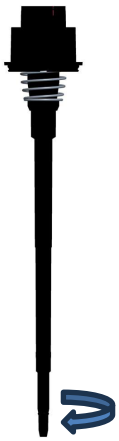


Single channel model with 384-format tip fitting

1. Remove the tip fitting by hand by turning it counterclockwise.

2. Remove the O-ring from the cylinder for inspection. Replace the O-ring if necessary.

   If needed, a disposable tip can be used to remove the O-ring from the tip cone and when putting the O-ring into place.



CAUTION Make sure that the small tip fitting O-ring is in place before attaching the tip fitting. The tip fitting tool or a disposable tip can be used to place the O-ring into place. Failing to check this may cause leakage of the pipette.

3. Place the O-ring into the tip fitting.

4. Align the tip fitting with the cylinder and, using two fingers, carefully screw the tip fitting in until you feel resistance.

5. Tighten the tip fitting lightly by using two fingers.

Lubricate the piston and piston sealing ring

You can lubricate the piston without removing the piston from the pipette.

1. To remove the tip ejector, take a good grip of both the handle and module, and pull with a prompt, straight pull the pipette into two pieces.

2. Apply a thin coating of grease to the piston, grease surface circled in red in figure below.

Use the grease specified in the list of accessories. For more information, see Appendix 6. Spare Parts and Accessories.

It is not necessary to apply grease separately to the sealing ring.

3. Re-attach the tip ejector.

4. Clean the parts of the pipette as described in Cleaning Procedure (Single Channel Pipettes) . Replace the parts that are worn.

Disassembly

Some maintenance actions require that you disassemble the pipette.

When you disassemble the pipette, put the removed parts in a safe place so that you do not lose any of the parts.

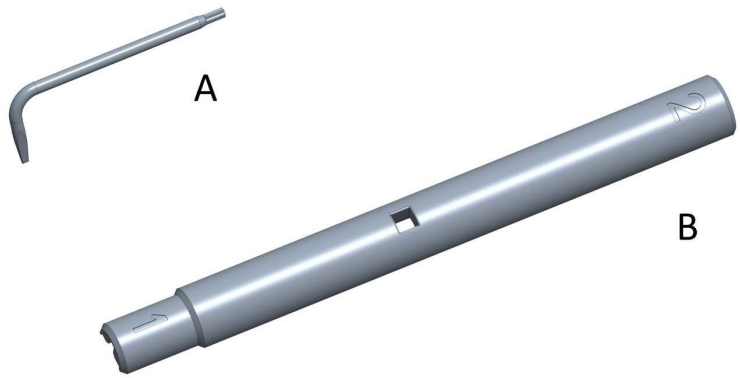
The multichannel pipette models cannot be disassembled by the user.

Disassembly tools

Disassembly tools are contained in the package of pipettes, as shown in figure below.

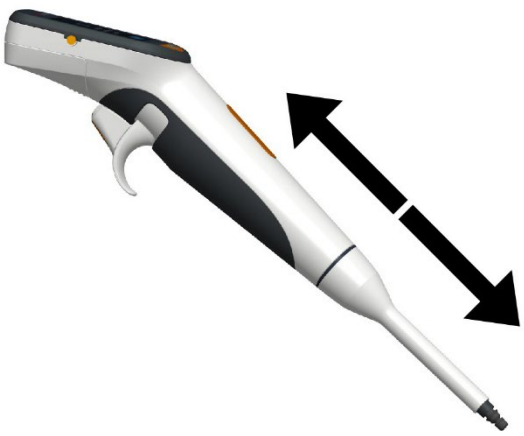
A: Tip Fitting tool (not included in single/8/12/16 channel 10 µL, 30 µL and 125 µL pipettes)

B: SCP Service Tool (not included in multichannel pipettes)

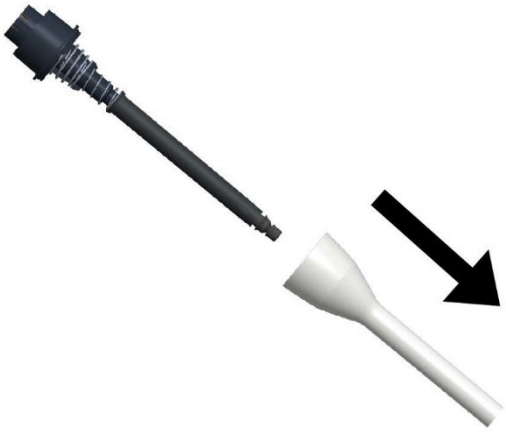


Disassemble single channel pipettes (up to 300 µl)

1. Take a good grip of both the handle and module, and pull with a prompt, straight pull the pipette into two pieces.



2. Remove the lower tip ejector sleeve by pulling it out (snap fitting).



Remove the tip fitting of single channel pipette with 96-format tip fitting

1. To remove the tip fitting, place the star-shaped end of tool A into the end of the tip fitting. Turn the tool counterclockwise to unscrew the tip fitting.

2. Remove the clip trigger and clip trigger spring.

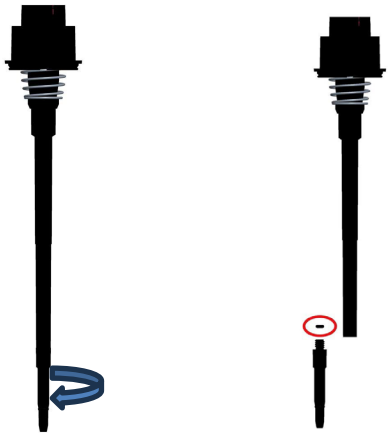
Remember to keep all the parts in order on the table for reassembly. You can check the parts of each pipette model from the pictures in Appendix 6. Spare Parts and Accessories.

3. Clean the parts of the pipette as described in Cleaning Procedure (Single Channel Pipettes) . Replace the parts that are worn.

Remove the tip fitting of single channel pipette with 384-format tip fitting

1. Remove the tip fitting by hand, turning it counterclockwise.

2. Remove the O-ring from the tip cone for inspection. Replace the O-ring if necessary. If needed, a disposable tip can be used to remove the O-ring from the tip cone and when putting the O-ring into place.

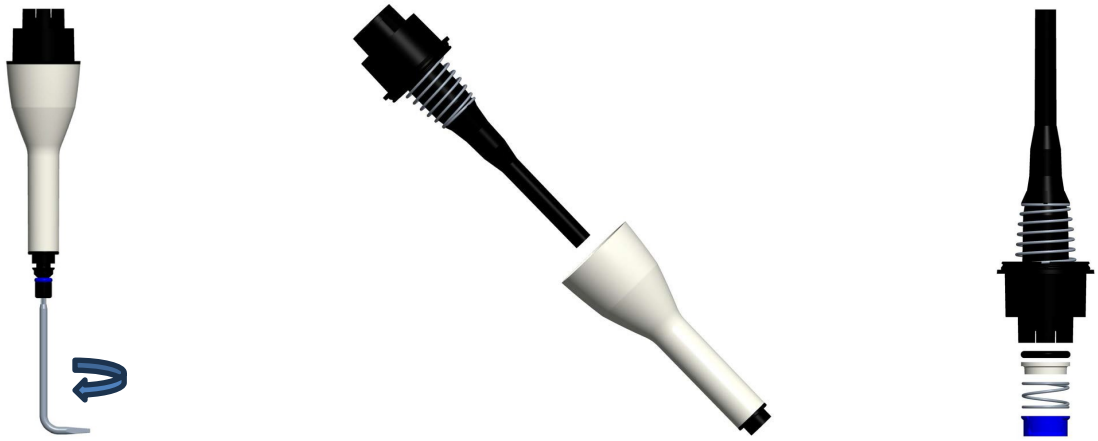


Remember to keep all the parts in order on the table for reassembly. You can check the parts of each pipette model from the pictures in Appendix 6. Spare Parts and Accessories.

3. Clean the parts of the pipette as described in Cleaning Procedure (Single Channel Pipettes). Replace the parts that are worn.

Disassemble 1000-µl single channel pipettes

1. Remove the tip fitting by using the tip fitting tool A.
2. Remove the lower tip ejector sleeve by pulling it out (snap fitting).
3. Turn the tip cone upside down and tap all parts from it. Remember to keep all parts in order on the table for reassembly.



You can check the parts of each pipette model from the pictures in Appendix 6. Spare Parts and Accessories.

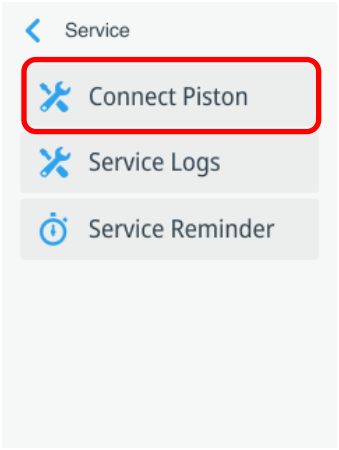
4. Clean the parts of the pipette as described in Cleaning Procedure (Single Channel Pipettes) . Replace the parts that are worn.

Remove the piston of single channel pipettes

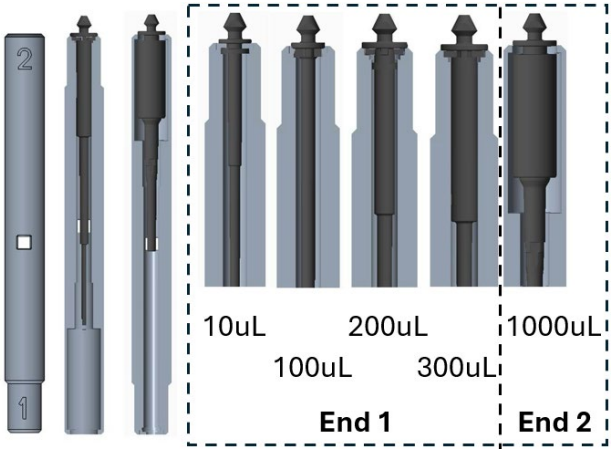
The Settings menu contains the piston detachment/connection function to be used in the maintenance of single channel pipettes. To access the Service function, select Service from the Settings menu, see Settings menu.

To remove the piston of a single channel pipette:

1. In the main menu, tap **Settings** and then tap **Service** in the following view.
2. Tap **Connect Piston**.
3. Press and hold the trigger to drive out the piston.
4. Insert the special piston removal tool B and pull out the piston.



The number 1 end of tool B is for single channel 10/100/200/300 µl pistons and the number 2 end for 1000 µl volume.



5. Release the trigger and tap **Exit**.
6. Examine the condition of the sealing ring of the piston. Replace if necessary.

Assembly

The pipette is assembled in the reverse order to disassembling. The numbered items in the instructions refer to the model specific explosion pictures in Appendix 6. Spare Parts and

Accessories.

CAUTION: Ensure that the piston sealing rings are intact before assembly. Replace them, if necessary. Failing to check this may cause leakage of the pipette.

CAUTION: Ensure that the small tip fitting O-ring is in place before attaching the tip fitting. Failing to check this may cause leakage of the pipette.

CAUTION: Do not overtighten the tip fittings. This may damage the thread in the pipette.

Assemble the pipette

1. Insert the parts in the tip cone in reverse order.

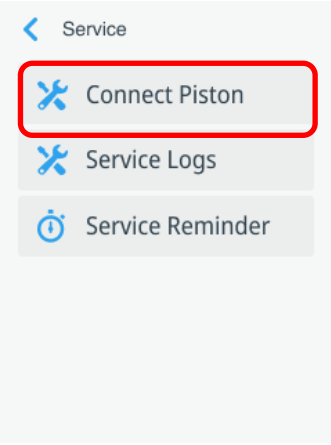
For assistance, see Appendix 6. Spare Parts and Accessories.

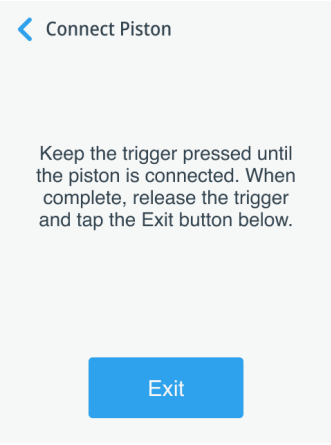
2. Push the tip ejector to the handle.

Attach the piston

For multichannel 100 µl, 200 µl, 300 µl, and 1,250 µl pipettes, remove all tip fittings first, and then attach the piston. For single channel pipettes, place the piston in the lower assembly. Ensure that the piston sealing ring is in place.

1. On the main menu, tap **Settings**, and then tap **Service**.
2. Tap **Connect Piston.**
3. Press and hold down the trigger to connect the motor coupler to the piston. Try more times until you hear a click sound. This indicates that the coupler piston has attached successfully.
4. When complete, release the trigger, and then tap **Exit**.

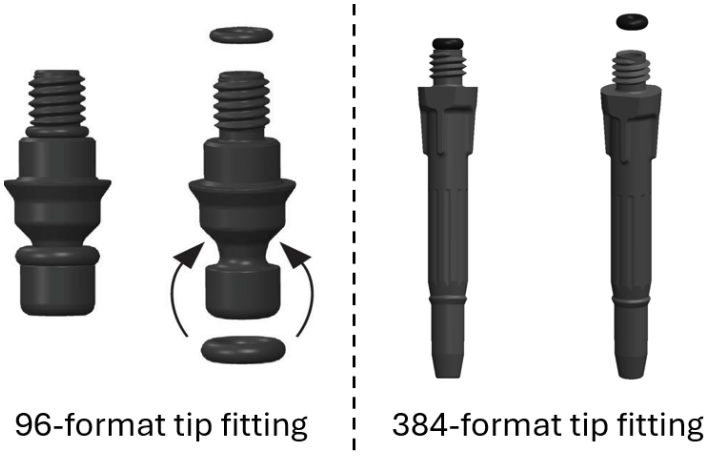




Autoclave

Steam sterilization should be performed at 121°C (250°F) and 2 ata for 20 minutes. Sterilization bags may be used if needed.

For single and Multichannel pipettes, only the 96-fomat tip fittings can be autoclaved.



CAUTION: The user must verify the effectiveness of the autoclaving.

After autoclaving, the tip fittings must be cooled to room temperature for at least two hours before assembly and any operations. Before pipetting, make sure that the tip cone and tip fitting are dry.

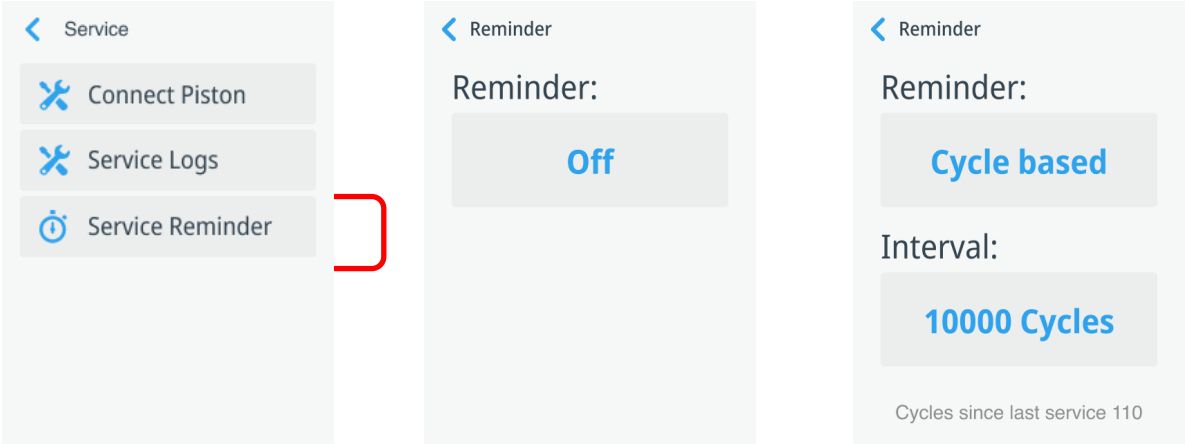
Set a service reminder

You can set up a service reminder to notify you when service is due. You can also see the counter since the last service.

The service counter is not reset automatically.

Follow the steps below to set a service reminder.

1. In the **Settings** menu, tap **Service**.
2. Tap **Service Reminder**.
3. Tap the Reminder field to toggle between **Off**, **Cycle based** and **Time based**.
4. Tap the Interval field to change the interval.

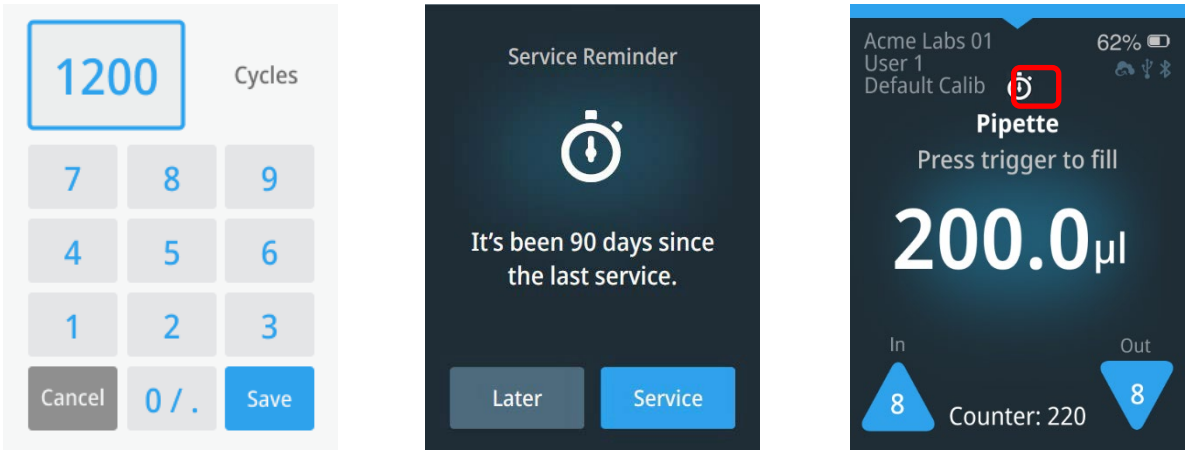


5. Use the keyboard to set the interval. The interval can be 1-999999 cycles or 1-999 days.
6. Tap **Save**.

When the set time limit is reached, a notification appears on the display.

Tap **Service** if you start the service procedure. After service, the service reminder is reset.

If you select **Later**, the service reminder icon will stay in the pipetting view to remind you that service is due.



Technical service

In addition to normal maintenance, it is recommended to service the instrument regularly at least every 12 months by the manufacturer's trained service engineers. This ensures that the product is properly maintained and provides trouble-free functionality. Contact the Thermo Fisher Scientific technical service department for more details.

Packing for service

WARNING Health risk from contaminated device. It is important that the instrument is thoroughly decontaminated before it is removed from the laboratory or any servicing is performed on it. Guidelines for decontamination can be found in Chapter Decontamination Procedure.

When you ship the pipette for service, remember to follow the guidelines below.

- Inform us about the use of hazardous materials.
- Enclose a dated and signed decontamination declaration (request from your service provider) inside and attached to the outside of the package, in which you return your pipette (or other items).
- Enclose the return goods authorization number (RGA) given by your Thermo Fisher Scientific representative.
- Indicate the fault after contacting your local Thermo Fisher Scientific representative or Thermo Fisher Scientific's technical service department.
- Refer to Chapter Technical Data for details on storage temperatures.

Disposal of materials

Disposal of the materials

Follow laboratory and country-specific procedures for the disposal of biohazardous or radioactive waste. Refer to local regulations for the disposal of infectious material.

WARNING The tips can be potentially infectious. Dispose of all used disposable tips as biohazardous waste.

Disposal of the pipette

Follow the guidelines below for the disposal of the FluidEase pipette.

WARNING Decontaminate the pipette before disposal. See Decontamination Procedure.

Follow laboratory and country-specific procedures for biohazardous or radioactive waste disposal.

WARNING The used lithium (Li-ion) battery is regulated waste and must be disposed of according to local regulations.

Dispose of the instrument according to the legislation stipulated by the local authorities concerning take-back of electronic equipment and waste. The procedures vary by country.

Pollution degree: 2 according to IEC 60664-1.[1]

The method of disposal applies to following:

- Electronic waste
- Contaminated waste
- (Infectious waste)

For the original packaging and packing materials, use the recycling operators known to you.

For more information, contact your local Thermo Scientific representative.

Spare parts

The spare parts that are available for each pipette model can be found in Appendix 6. Spare Parts and Accessories. Contact your local Thermo Scientific dealer for part orders.

[1] The pollution degree describes the amount of conductive pollution present in the operating environment. Pollution degree 2 assumes that normally only nonconductive pollution, such as dust, occurs with the exception of occasional conductivity caused by condensation.

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Technical data

FluidEase pipettes

FluidEase Pro ClipTip	Type: 156
Weight with battery	See Appendix 11. Height and Weight
Height	See Appendix 11. Height and Weight
Operating temperature	+15 to +35°C
Storage temperature	≤ 1 month -20 to +45°C (35% to 85% Rel. humidity, non-condensing) > 1 month -10 to +35°C (35% to 85% Rel. humidity, non-condensing)
Input rating	5.V dc, 2.0A

Working conditions

The device is designed to be safe at least under the following conditions:

- Indoor use
- Altitude up to 2 000 m
- Temperature 15 °C to 35 °C
- Relative humidity 35% to 85% (non-condensing)
- MAINS supply voltage fluctuations up to ±10 % of the nominal voltage
- TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply
- Applicable POLLUTION DEGREE of the intended environment (POLLUTION DEGREE 2)

Battery

Type	Rechargeable li-ion battery
Capacity	950 mAh
Weight	18 g

Charging time	Approx. 2 h
Charging temperature	0 to +35°C

Power supply unit

Type	Switching power supply	Switching power supply for Pipette Stand
Input Rating	100-240V~ 50/60 Hz, 300 mA max.	100-240V~ 50/60 Hz, 700 mA max.
Charging Output	5.0Vdc 2.0A max.	9.0Vdc 2.5A max.; provides appropriate charging output for connected pipettes

Display

Type	Color IPS LCD with projected capacitive touch screen
Size	2.0”
Resolution	240 x 320 pixels

Wireless connectivity of FluidEase Pro

Type	Bluetooth® 5.0
Transmit power	6 dBm max. / Class 2
Frequency range	2402.0 - 2480.0 MHz
Range	Approximately 10 m depending on obstacles and interference from equipment such as microwave ovens and other wireless devices. Contains transmitted module FCC ID: XPYNINAB1; Contains IC: 8595A-NINAB1

Materials

FluidEase pipettes

Thermo Scientific FluidEase ClipTip Pipette Models

Table 11-1 External surfaces of the upper parts

Material	Component
PA	Polyamide
TPE	Thermo Plastic Elastomer
PC	Polycarbonate
Brass	Brass
Glass	Glass

Table 11-2 Exterior and interior of the lower parts

Material	Component
PEI	Polyetherimide
PA	Polyamide
PVDF	Polyvinylidene fluoride
EPDM	Ethylene-Propylene-Diene Rubber
Steel	Stainless Steel
LCP	Liquid Crystal Plastic
Silicone	Silicone

ClipTip tips

Table 11-3 ClipTip tips

Item	Material	Component
Tip	PP	Polypropylene
Filters	PE	Polyethylene

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Warranty

Thermo Scientific FluidEase Electronic Pipette

Warranty certificate

Thermo Scientific™ FluidEase™ electronic pipettes (“Products”) are warranted to be free from defects in material and workmanship for the applicable Warranty Period specified below, subject to the additional conditions contained herein.

Register online at www.thermofisher.com/pipettewarranty

Thermo Fisher Scientific Inc. (“Thermo Fisher“) will replace or repair the defective Product, at its option, upon prompt notification in compliance with the conditions noted below. The Warranty against defects in workmanship or materials will be honored as long as the Product was used in compliance with the instructions for use and care. The Warranty does not apply to Products exposed to physical or chemical abuse.

The warranty is subject to the following conditions.

1. Warranty claims must be made within the following period (“Warranty Period”): 2-year warranty for Products registered within 60 days of purchase; 1-year warranty from invoice date for non-registered.

2. The Warranty Registration Certificate (for registered Products) and proof of purchase **MUST** be presented to Thermo Fisher or its distributor when making a Warranty claim.

3. The customer must give notice to Thermo Fisher or its distributor in writing immediately after discovery of the defect.

4. If requested, the Product must be returned to Thermo Fisher or its distributor. The Product must be adequately packed and fully insured, and all shipping fees must be paid by the party making a claim.

5. Our responsibility extends only to Product defects. The Warranty does not apply if, in the opinion of Thermo Fisher, the Product was not used in compliance with the instructions for use and care or the Product was damaged by accident, misuse, or chemical or physical abuse, or by service or modifications by someone other than an authorized service provider of Thermo Fisher.

6. During the Warranty Period, non-wearable parts are covered 100%. Nonwearable parts are parts that are designed to last for the life of the Product. Wearable parts, which are parts that will wear under normal operation (such as o-rings and battery), are not covered under the Warranty.

7. Routine cleaning and recalibration are not covered under the terms of the Warranty.

8. Validity may vary by country; to check your country’s specific Warranty, go to www.thermofisher.com/pipettewarranty.

Quality statement

We hereby certify that all Products released for delivery have been manufactured and inspected

according to our approved documents and procedures. During inspection, the Products have fulfilled Thermo Fisher's performance specifications which conform to the ISO 8655 standard. Before being released for delivery, all Products are factory calibrated using purified water under conditions given in the calibration report and adjusted to give the volumes as specified. Calibration balances are regularly serviced and checked with weights traceable to national and international standards. A calibration report covering the test results is delivered together with the Product. Calibration results only indicate the performance of the device at the time of the calibration. It is recommended that a calibration check be performed before using the Product for the first time. We recommend that readjustment be done by Thermo Fisher or an authorized Thermo Fisher Service Provider. Thermo Fisher Scientific Oy's operation system is certified by a third-party auditor and conforms to the quality system standard ISO 9001 as well as the environmental system standard ISO 14001.

WARNING! MOST COUNTRIES PROHIBIT THE SHIPMENT OF MATERIALS CONTAMINATED BY RADIOACTIVITY OR HAZARDOUS ORGANIC OR CHEMICAL COMPOUNDS WITHOUT A PERMIT.

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Appendices

Appendix 1. Use of the charging stand

The Thermo Scientific™ FluidEase™ Charging Stand supports up to four wireless charging positions, allowing users to conveniently charge their pipettes without the need for a USB Type-C cable connection.

In addition to charging, the stand includes temporary resting slots that allow users to briefly place pipettes with tips attached during short breaks in their work.

The charging stand has a modular design that allows configuration with one to four charging positions, adaptable to various workspace and application needs.

The charging stand is designed for charging the FluidEase Pipette.

Please refer to https://www.thermofisher.com/pipettemanuals for more detailed information.

Appendix 2. ClipTip Ordering Information

For more information on ClipTips, go to http://www.thermofisher.com/cliptip.

Table 13-1 ClipTip Racked, 96-format (non-sterile and sterile)

Order number	Description	Volume range	Color Coding	Qty
94410040	ClipTip 12.5	0.5-12.5 µl	Pink	10 x 96/rack
94410043	ClipTip 12.5, sterile	0.5-12.5 µl	Pink	10 x 96/rack
94410060	ClipTip 12.5 Ext	0.1-12.5 µl	Pink	10 x 96/rack
94410063	ClipTip 12.5 Ext, sterile	0.1-12.5 µl	Pink	10 x 96/rack
94410310	ClipTip 200	2-200 µl	Yellow	10 x 96/rack
94410313	ClipTip 200, sterile	2-200 µl	Yellow	10 x 96/rack
94410510	ClipTip 300	10-300 µl	Orange	10 x 96/rack
94410513	ClipTip 300, sterile	10-300 µl	Orange	10 x 96/rack
94410610	ClipTip 300 Ext	10-300 µl	Orange	8 x 96/rack
94410613	ClipTip 300 Ext, sterile	10-300 µl	Orange	8 x 96/rack
94410710	ClipTip 1000	30-1000 µl	Blue	8 x 96/rack
94410713	ClipTip 1000, sterile	30-1000 µl	Blue	8 x 96/rack
94410810	ClipTip 1250	15-1250 µl	Turquoise	8 x 96/rack
94410813	ClipTip 1250	15-1250 µl	Turquoise	8 x 96/rack

Table 13-2 ClipTip Racked, 384-format (non-sterile and sterile)

Order number	Description	Volume range	Color Coding	Qty
94410050	ClipTip 384 12.5	0.5-12.5 µl	Pink	10 x 384/rack
94410053	ClipTip 384 12.5, sterile	0.5-12.5 µl	Pink	10 x 384/rack
94410070	ClipTip 384 12.5 Ext	0.5-12.5 µl	Pink	10 x 384/rack
94410073	ClipTip 384 12.5 Ext, sterile	0.5-12.5 µl	Pink	10 x 384/rack
94410100	ClipTip 384 30,	1-30 µl	Violet	10 x 384/rack
94410103	ClipTip 384 30, sterile	1-30 µl	Violet	10 x 384/rack
94410150	ClipTip 384 125	2-125 µl	Yellow	10 x 384/rack
94410153	ClipTip 384 125, sterile	2-125 µl	Yellow	10 x 384/rack

Table 13-3 ClipTip Reloads (non-sterile and sterile)

Order number	Description	Volume range	Color Coding	Qty
94410317	ClipTip 200 Reload Tower	2-200 µl	Yellow	10 x 96/insert
94410318	ClipTip 200 Reload Tower, sterile	2-200 µl	Yellow	10 x 96/insert
94410517	ClipTip 300 Reload Tower	10-300 µl	Orange	10 x 96/insert
94410518	ClipTip 300 Reload Tower, sterile	10-300 µl	Orange	10 x 96/insert
94410617	ClipTip 300 Ext Reload Tower	10-300 µl	Orange	10 x 96/insert
94410618	ClipTip 300 Ext Reload Tower, sterile	10-300 µl	Orange	10 x 96/insert
94410717	ClipTip 1000 Reload Tower	30-1000 µl	Blue	8 x 96/insert
94410718	ClipTip 1000 Reload Tower, sterile	30-1000 µl	Blue	8 x 96/insert
94410817	ClipTip 1250 Reload Insert	15-1250 µl	Turquoise	8 x 96/insert
94410818	ClipTip 1250 Reload Insert, sterile	15-1250 µl	Turquoise	8 x 96/insert

Table 13-4 ClipTip Filtered Racked, 96-format

Order number	Description	Volume range	Color Coding	Qty
94420043	ClipTip Filter 12.5, sterile	0.5-12.5 µl	Pink	10 x 96/rack
94420063	ClipTip Filter 12.5 Ext, sterile	0.1-12.5 µl	Pink	10 x 96/rack
94420313	ClipTip Filter 200, sterile	2-200 µl	Yellow	10 x 96/rack
94420513	ClipTip Filter 300, sterile	10-300 µl	Orange	10 x 96/rack
94420613	ClipTip Filter 300 Ext, sterile	10-300 µl	Orange	8 x 96/rack
94420713	ClipTip Filter 1000, sterile	30-1000 µl	Blue	8 x 96/rack
94420813	ClipTip Filter 1250, sterile	15-1250 µl	Turquoise	8 x 96/rack

Table 13-5 ClipTip Filtered Racked, 384-format

Order number	Description	Volume range	Color Coding	Qty
94420053	ClipTip Filter 384 12.5, sterile	0.5-12.5 µl	Pink	10 x 384/rack
94420073	ClipTip Filter 384 12.5 Ext, sterile	0.5-12.5 µl	Pink	10 x 384/rack
94420103	ClipTip Filter 384 30, sterile	1-30 µl	Violet	10 x 384/rack
94420153	ClipTip Filter 384 125, sterile	2-125 µl	Yellow	10 x 384/rack

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Table 13-6 ClipTip Filter Reload Inserts

Order number	Description	Volume range	Color Coding	Qty
94420318	ClipTip 200 Filter Reload, sterile	2-200 µl	Yellow	10 x 96/insert
94420518	ClipTip 300 Filter Reload, sterile	10-300 µl	Orange	10 x 96/insert
94420718	ClipTip 1000 Filter Reload, sterile	30-1000 µl	Blue	8 x 96/insert
94420818	ClipTip 1250 Filter Reload, sterile	15-1250 µl	Turquoise	8 x 96/insert

Table 13-7 ClipTip Empty Racks

Order number	Description	Volume range	Qty
94410519	ClipTip Empty Rack Medium	ClipTip 200 µl and 300 µl	10 racks, no tips/inserts
94410619	ClipTip 300 Ext Empty Rack	ClipTip 300 Ext	8 racks, no tips/inserts
94410819	ClipTip Empty Rack Large	ClipTip 1000 and 1250 µl	8 racks, no tips/inserts

Tables below show the compatibility between different pipette models and tip types, which can be used as a reference for ordering.

Table 13-8 1-ch/8-ch/12-ch 10µl Pipette and Tip Compatibility

Pipette Order Number	Pipette Description	Tip Volume	Tip Order Number	Tip Description
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	ClipTip 12.5	94410040	ClipTip 12.5
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	&	94410043	ClipTip 12.5, sterile
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	ClipTip 12.5 Ext	94410060	ClipTip 12.5 Ext
			94410063	ClipTip 12.5 Ext, sterile
			94420043	ClipTip Filter 12.5, sterile
			94420063	ClipTip Filter 12.5 Ext, sterile

Table 13-9 16-ch 10 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	ClipTip 12.5 & ClipTip 12.5 Ext & ClipTip 384 30	94410050	ClipTip 384 12.5
			94410053	ClipTip 384 12.5, sterile
			94410070	ClipTip 384 12.5 Ext
			94410073	ClipTip 384 12.5 Ext, sterile
			94420053	ClipTip Filter 384 12.5, sterile
			94420073	ClipTip Filter 384 12.5 Ext, sterile
			94410100	ClipTip 384 30,
			94410103	ClipTip 384 30, sterile
			94420103	ClipTip Filter 384 30, sterile

Table 13-10 1-ch/8-ch/12-ch 100 µl/200 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	ClipTip 200 & ClipTip 300	94410310	ClipTip 200
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl		94410313	ClipTip 200, sterile
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl		94410317	ClipTip 200 Reload Tower
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl		94410318	ClipTip 200 Reload Tower, sterile
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl		94420313	ClipTip Filter 200, sterile
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl		94420318	ClipTip 200 Filter Reload, sterile
			94410519	ClipTip Empty Rack Medium
			94410510	ClipTip 300
			94410513	ClipTip 300, sterile
			94410517	ClipTip 300 Reload Tower
			94410518	ClipTip 300 Reload Tower, sterile
			94420513	ClipTip Filter 300, sterile
			94420518	ClipTip 300 Filter Reload, sterile
			94410519	ClipTip Empty Rack Medium

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Table 13-11 1-ch/8-ch/12-ch 300 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	ClipTip 300 & ClipTip 300 Ext	94410510	ClipTip 300
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl		94410513	ClipTip 300, sterile
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl		94410610	ClipTip 300 Ext
			94410613	ClipTip 300 Ext, sterile
			94410517	ClipTip 300 Reload Tower
			94410518	ClipTip 300 Reload Tower, sterile
			94410617	ClipTip 300 Ext Reload Tower
			94410618	ClipTip 300 Ext Reload Tower, sterile
			94420513	ClipTip Filter 300, sterile
			94420613	ClipTip Filter 300 Ext, sterile
			94420518	ClipTip 300 Filter Reload, sterile
			94410519	ClipTip Empty Rack Medium
			94410619	ClipTip 300 Ext Empty Rack

Table 13-12 1-ch 1000 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	ClipTip 1000 & ClipTip 1250	94410710	ClipTip 1000
			94410713	ClipTip 1000, sterile
			94410717	ClipTip 1000 Reload Tower
			94410718	ClipTip 1000 Reload Tower, sterile
			94420713	ClipTip Filter 1000, sterile
			94420718	ClipTip 1000 Filter Reload, sterile
			94410819	ClipTip Empty Rack Large
			94410810	ClipTip 1250
			94410813	ClipTip 1250
			94410817	ClipTip 1250 Reload Insert
			94410818	ClipTip 1250 Reload Insert, sterile
			94420813	ClipTip Filter 1250, sterile
			94420818	ClipTip 1250 Filter Reload, sterile
			94410819	ClipTip Empty Rack Large

Table 13-13 8-ch/12-ch 1250 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Consumable order number	Tip Description
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	ClipTip 1250	94410810	ClipTip 1250
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl		94410813	ClipTip 1250
			94410817	ClipTip 1250 Reload Insert
			94410818	ClipTip 1250 Reload Insert, sterile
			94420813	ClipTip Filter 1250, sterile
			94420818	ClipTip 1250 Filter Reload, sterile
			94410819	ClipTip Empty Rack Large

Table 13-14 16-ch 30 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	ClipTip 384 30 & ClipTip 384 125	94410100	ClipTip 384 30,
			94410103	ClipTip 384 30, sterile
			94420103	ClipTip Filter 384 30, sterile
			94410150	ClipTip 384 125
			94410153	ClipTip 384 125, sterile
			94420153	ClipTip Filter 384 125, sterile

Table 13-15 16-ch 125 µl Pipette and Tip Compatibility

Pipette order number	Pipette Description	Tip Volume	Tip order number	Tip Description
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	ClipTip 384 125	94410150	ClipTip 384 125
			94410153	ClipTip 384 125, sterile
			94420153	ClipTip Filter 384 125, sterile

Appendix 3. Conversion Table for Z-factor

Value of the conversion factor Z (µl/mg), as a function of temperature and pressure, for distilled water.

Table 13-16 Table Z-factor according to Temperature and Air pressure

Z-factor	Air Pressure (kPa)						
Temperature (°C)	80 kPa	85 kPa	90 kPa	95 kPa	100 kPa	101.3 kPa	105 kPa
15	1.0017	1.0018	1.0019	1.0019	1.002	1.002	1.002
15.5	1.0018	1.0019	1.0019	1.002	1.002	1.002	1.0021
16	1.0019	1.002	1.002	1.0021	1.0021	1.0021	1.0022
16.5	1.002	1.002	1.0021	1.0021	1.0022	1.0022	1.0022
17	1.0021	1.0021	1.0022	1.0022	1.0023	1.0023	1.0023
17.5	1.0022	1.0022	1.0023	1.0023	1.0024	1.0024	1.0024
18	1.0022	1.0023	1.0023	1.0024	1.0025	1.0025	1.0025
18.5	1.0023	1.0024	1.0024	1.0025	1.0025	1.0026	1.0026
19	1.0024	1.0025	1.0025	1.0026	1.0026	1.0027	1.0027
19.5	1.0025	1.0026	1.0026	1.0027	1.0027	1.0028	1.0028
20	1.0026	1.0027	1.0027	1.0028	1.0028	1.0029	1.0029
20.5	1.0027	1.0028	1.0028	1.0029	1.0029	1.003	1.003
21	1.0028	1.0029	1.0029	1.003	1.0031	1.0031	1.0031
21.5	1.003	1.003	1.0031	1.0031	1.0032	1.0032	1.0032
22	1.0031	1.0031	1.0032	1.0032	1.0033	1.0033	1.0033
22.5	1.0032	1.0032	1.0033	1.0033	1.0034	1.0034	1.0034
23	1.0033	1.0033	1.0034	1.0034	1.0035	1.0035	1.0036
23.5	1.0034	1.0035	1.0035	1.0036	1.0036	1.0036	1.0037
24	1.0035	1.0036	1.0036	1.0037	1.0037	1.0038	1.0038
24.5	1.0037	1.0037	1.0038	1.0038	1.0039	1.0039	1.0039
25	1.0038	1.0038	1.0039	1.0039	1.004	1.004	1.004
25.5	1.0039	1.004	1.004	1.0041	1.0041	1.0041	1.0042
26	1.004	1.0041	1.0041	1.0042	1.0042	1.0043	1.0043
26.5	1.0042	1.0042	1.0043	1.0043	1.0044	1.0044	1.0044
27	1.0043	1.0044	1.0044	1.0045	1.0045	1.0045	1.0046
27.5	1.0045	1.0045	1.0046	1.0046	1.0047	1.0047	1.0047
28	1.0046	1.0046	1.0047	1.0047	1.0048	1.0048	1.0048
28.5	1.0047	1.0048	1.0048	1.0049	1.0049	1.005	1.005
29	1.0049	1.0049	1.005	1.005	1.0051	1.0051	1.0051
29.5	1.005	1.0051	1.0051	1.0052	1.0052	1.0052	1.0053
30	1.0052	1.0052	1.0053	1.0053	1.0054	1.0054	1.0054

Appendix 4. Manufacturer Factory Specification Limits

Table 13-17 Thermo Scientific FluidEase Pro ClipTip - Single channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	0.5-10	10.00	±0.080	±0.80	0.040	0.40	ClipTip 12.5 Ext
			5.00	±0.090	±1.8	0.050	1.0	
			1.00	±0.043	±4.3	0.029	2.9	
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	2.5-100	100.0	±0.50	±0.50	0.20	0.20	ClipTip 200
			50.0	±0.60	±1.2	0.10	0.20	
			10.0	±0.25	±2.5	0.060	0.60	
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl	5-200	200.0	±0.80	±0.40	0.30	0.15	ClipTip 200
			100.0	±0.80	±0.80	0.20	0.20	
			20.0	±0.42	±2.1	0.080	0.40	
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	10-300	300.0	±1.20	±0.40	0.45	0.15	ClipTip 300
			150.0	±1.2	±0.80	0.30	0.20	
			30.0	±0.48	±1.6	0.12	0.40	
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	20-1000	1000	±4.0	±0.40	2.0	0.20	ClipTip 1000
			500	±3.5	±0.70	1.0	0.20	
			100	±1.0	±1.0	0.30	0.30	

Table 13-18 Thermo Scientific FluidEase Pro ClipTip - 8-channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	0.5-10	10.00	±0.15	±1.5	0.115	1.15	ClipTip 12.5 Ext
			5.00	±0.125	±2.5	0.06	1.2	
			1.00	±0.105	±10.5	0.046	4.6	
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl	2.5-100	100.0	±1	±1	0.40	0.40	ClipTip 200
			50.0	±1	±2	0.25	0.5	
			10.0	±0.55	±5.5	0.18	1.8	
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl	5-200	200.0	±2.8	±1.4	0.8	0.4	ClipTip 200
			100.0	±1.8	±1.8	0.5	0.5	
			20.0	±0.84	±4.2	0.17	0.85	

Thermo Scientific FluidEase ClipTip Pipette Models

Table 13-19 Thermo Scientific FluidEase Pro ClipTip - 8-channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl	10-300	300.0	±3.9	±1.3	0.75	0.25	ClipTip 300
			150.0	±2.4	±1.6	0.75	0. 5	
			30.0	±1.14	±3.8	0.375	1.25	
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	25-1250	1250	±15	±1.2	3.75	0.30	ClipTip 1250
			625	±10.313	±1.65	1.875	0.30	
			125	±4.375	±3.5	1.25	1.0	

Table 13-20 Thermo Scientific FluidEase Pro ClipTip - 12-channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	0.5-10	10.00	±0.15	±1.5	0.115	1.15	ClipTip 12.5 Ext
			5.00	±0.125	±2.5	0.06	1.2	
			1.00	±0.105	±10.5	0.046	4.6	
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl	2.5-100	100.0	±1	±1	0.40	0.40	ClipTip 200
			50.0	±1	±2	0.25	0.5	
			10.0	±0.55	±5.5	0.18	1.8	
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl	5-200	200.0	±2.8	±1.4	0.8	0.4	ClipTip 200
			100.0	±1.8	±1.8	0.5	0.5	
			20.0	±0.84	±4.2	0.17	0.85	
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl	10-300	300.0	±3.9	±1.3	0.75	0.25	ClipTip 300
			150.0	±2.4	±1.6	0.75	0. 5	
			30.0	±1.14	±3.8	0.375	1.25	
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl	25-1250	1250	±15	±1.2	3.75	0.30	ClipTip 1250
			625	±10. 313	±1.65	1.875	0.30	
			125	±4.375	±3.5	1.25	1.0	

Table 13-21 Thermo Scientific FluidEase Pro ClipTip - 16-channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	0.5-10	10.00	±0.15	±1.5	0.115	1.15	ClipTip 384 12.5 Ext
			5.00	±0.125	±2.5	0.06	1.2	
			1.00	±0.105	±10.5	0.046	4.6	
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	1-30	30.00	±0.375	±1.25	0.15	0.50	ClipTip 384 30
			15.00	±0.24	±1.6	0.09	0.6	
			3.00	±0.15	±5	0.045	1.5	

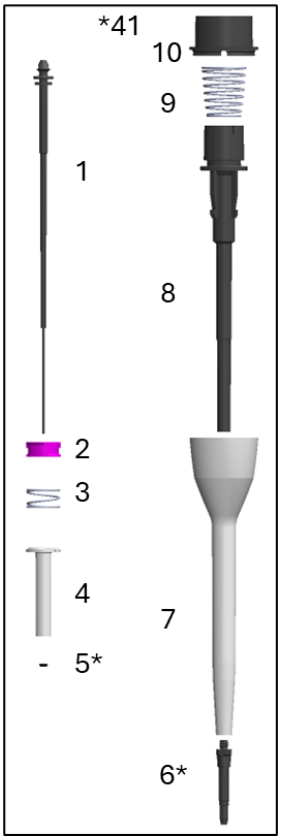
Table 13-22 Thermo Scientific FluidEase Pro ClipTip - 16-channel models

Cat. no.	Description	Range	Volume	Inaccuracy		Imprecision		Tip for calibration
		µl	µl	µl	%	s.d. µl	cv%	
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	3-125	125.0	±1.5	±1.2	0.375	0.30	ClipTip 384 125
			62.5	±1.25	±2	0.313	0.5	
			12.5	±0.6	±4.8	0.163	1.3	

Appendix 5. Spare Parts and Accessories

Single channel pipettes

Table 13-23 Spare parts for 4674010 FluidEase Pro ClipTip 1-ch 0.5-10 µl

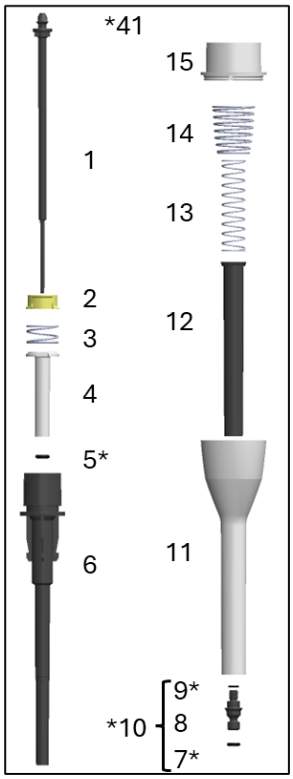


Item	Spare part code	Description of the spare part
*41	2217010	Lower module of FluidEase Pro ClipTip 1-ch 0.5-10 µl
5	1030060	O-ring 0,78x1,02 EPDM 70S
6	1067750	Tip Fitting 0.1-10µl F1-CT Micro

*41: entire assembly of the lower module

Parts not listed in the table above **cannot** be ordered individually.

Table 13-24 Spare parts for 4674020 FluidEase Pro ClipTip 1-ch 2.5-100 µl

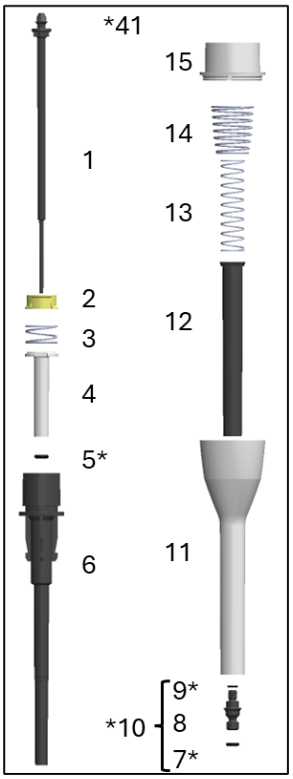


Item	Spare part code	Description of the spare part
*41	2217020	Lower module of FluidEase Pro ClipTip 1-ch 2.5-100 µl
5	1030510	O-ring 2,6x1,3 EPDM 70S
7	2214930	Tip Fitting 300 O-ring (1033400 3pcs)
9	1033430	O-ring, Tip Fitting 300CT 1000CT
10	2216160	Tip fitting assembly 4 pcs

*41: entire assembly of the lower module

Parts not listed in the table above cannot be ordered individually.

Table 13-25 Spare parts for 4674030 FluidEase Pro ClipTip 1-ch 5-200 µl

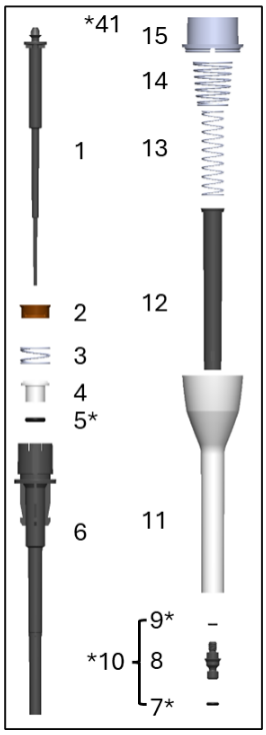


Item	Spare part code	Description of the spare part
*41	2217020	Lower module of FluidEase Pro ClipTip 1-ch 2.5-100 µL
5	1030510	O-ring 2,6x1,3 EPDM 70S
7	2214930	Tip Fitting 300 O-ring (1033400 3pcs)
9	1033430	O-ring, Tip Fitting 300CT 1000CT
10	2216160	Tip fitting assembly 4 pcs

*41: entire assembly of the lower module

Parts not listed in the table above cannot be ordered individually.

Table 13-26 Spare parts for 4674040 FluidEase Pro ClipTip 1-ch 10-300 µl

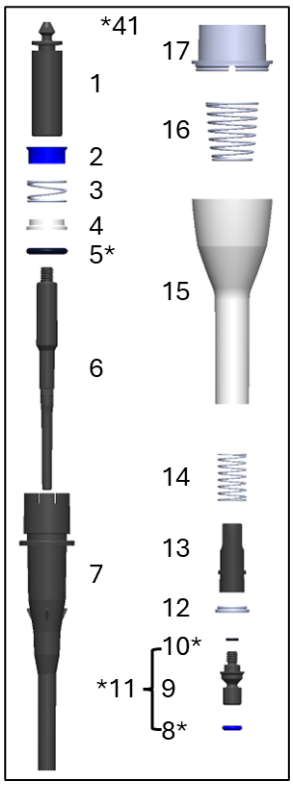


Item	Spare part code	Description of the spare part
*41	2217040	Lower module of FluidEase Pro ClipTip 1-ch 10-300 µl
5	1033180	O-ring 4,48x1,78 EPDM
7	2214930	Tip Fitting 300 O-ring (1033400 3pcs)
9	1033430	O-ring, Tip Fitting 300CT 1000CT
10	2216160	Tip fitting assembly 4 pcs

*41: entire assembly of the lower module

Parts not listed in the table above cannot be ordered individually.

Table 13-27 Spare parts for 4674050 FluidEase Pro ClipTip 1-ch 20-1000 µl



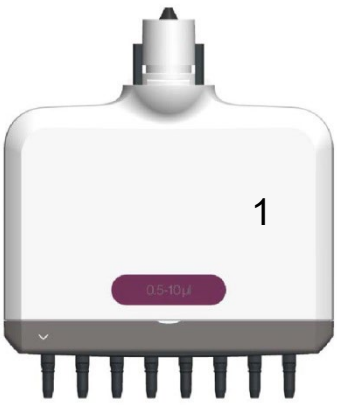
Item	Spare part code	Description of the spare part
*41	2217050	Lower module of FluidEase Pro ClipTip 1-ch 20-1000 µl
5	1030020	O-ring 8,73x1,78 EPDM 70S
8	2215540	Tip Fitting 1000 O-ring (1033390 3pcs)
10	1033430	O-ring, Tip Fitting 300CT 1000CT
11	2216190	Tip fitting assembly 4 pcs

*41: entire assembly of the lower module

Parts not listed in the table above cannot be ordered individually.

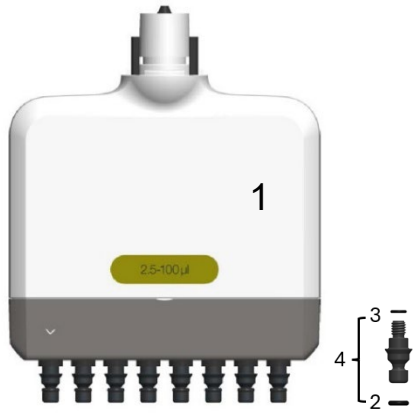
Multichannel pipettes

Table 13-28 Spare parts for 4676010 FluidEase Pro ClipTip 8-ch 0.5-10 µl



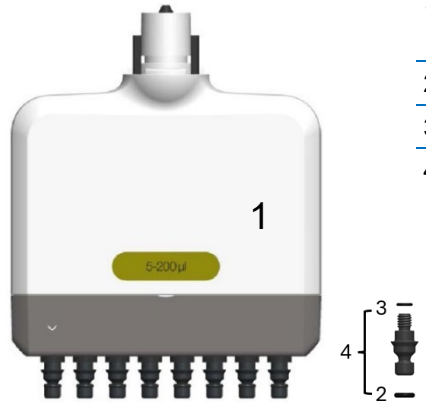
Item	Spare part code	Description of the spare part
1	2216760	Lower module of FluidEase Pro ClipTip 8-ch 0.5-10 µl

Table 13-29 Spare parts for 4676030 FluidEase Pro ClipTip 8-ch 2.5-100 µl



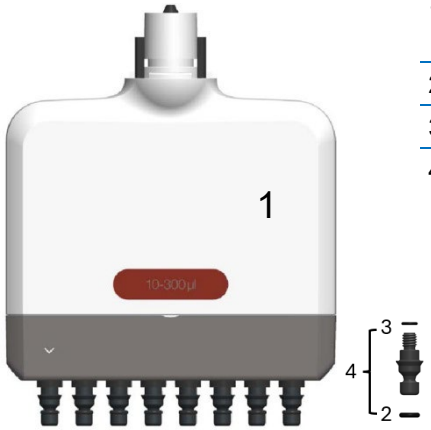
Item	Spare part code	Description of the spare part
1	2216750	Lower module of FluidEase Pro ClipTip 8-ch 2.5-100 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216170	Tip fitting assembly 8 pcs

Table 13-30 Spare parts for 4676050 FluidEase Pro ClipTip 8-ch 5-200 µl



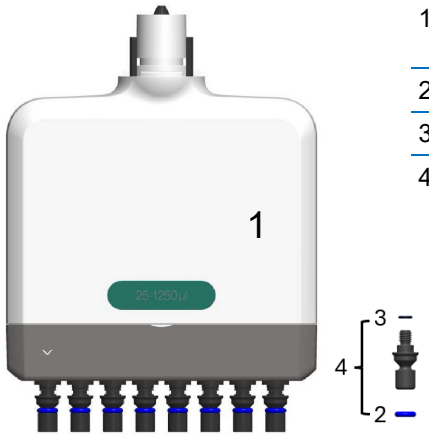
Item	Spare part code	Description of the spare part
1	2216740	Lower module of FluidEase Pro ClipTip 8-ch 5-200 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216170	Tip fitting assembly 8 pcs

Table 13-31 Spare parts for 4676070 FluidEase Pro ClipTip 8-ch 10-300 µl



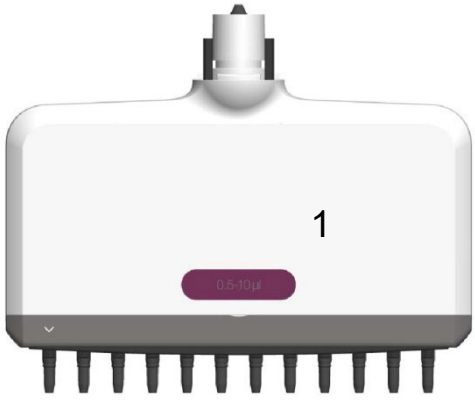
Item	Spare part code	Description of the spare part
1	2216730	Lower module of FluidEase Pro ClipTip 8-ch 10-300 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216170	Tip fitting assembly 8 pcs

Table 13-32 Spare parts for 4676090 FluidEase Pro ClipTip 8-ch 25-1250 µl



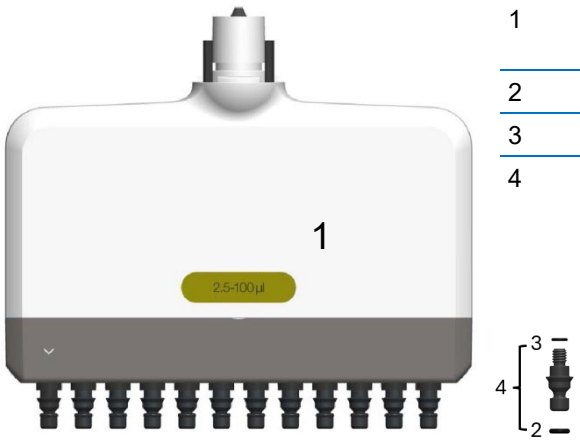
Item	Spare part code	Description of the spare part
1	2216770	Lower module of FluidEase Pro ClipTip 8-ch 25-1250 µl
2	2214945	Tip Fitting O-ring 1250 µl E1 (1033390 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216200	Tip fitting assembly 8 pcs

Table 13-33 Spare parts for 4676020 FluidEase Pro ClipTip 12-ch 0.5-10 µl



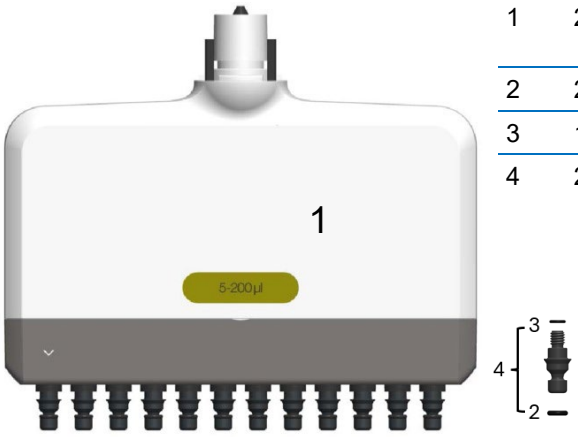
Item	Spare part code	Description of the spare part
1	2216560	Lower module of FluidEase Pro ClipTip 12-ch 0.5-10 µl

Table 13-34 Spare parts for 4676040 FluidEase Pro ClipTip 12-ch 2.5-100 µl



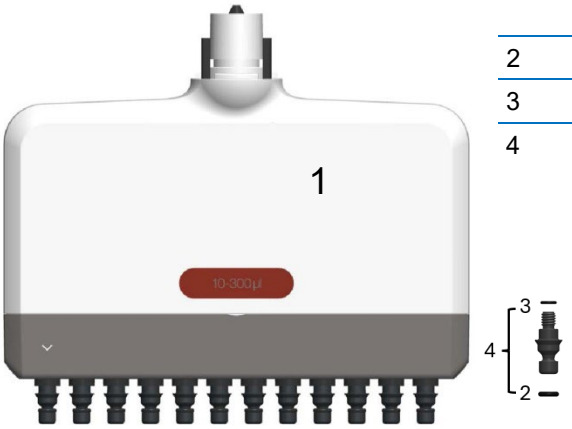
Item	Spare part code	Description of the spare part
1	2216590	Lower module of FluidEase Pro ClipTip 12-ch 2.5-100 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216180	Tip fitting assembly 12 pcs

Table 13-35 Spare parts for 4676060 FluidEase Pro ClipTip 12-ch 5-200 µl



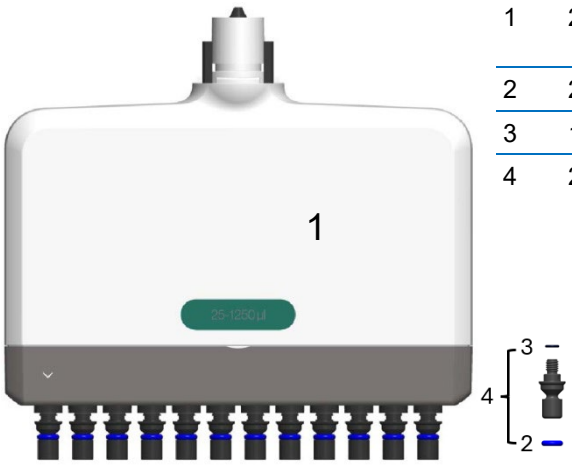
Item	Spare part code	Description of the spare part
1	2216630	Lower module of FluidEase Pro ClipTip 12-ch 5-200 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216180	Tip fitting assembly 12 pcs

Table 13-36 Spare parts for 4676080 FluidEase Pro ClipTip 12-ch 10-300 µl



Item	Spare part code	Description of the spare part
1	2216690	Lower module of FluidEase Pro ClipTip 12-ch 10-300 µl
2	2214920	Tip Fitting 300 O-ring (1033400 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216180	Tip fitting assembly 12 pcs

Table 13-37 Spare parts for 4676100 FluidEase Pro ClipTip 12-ch 25-1250 µl



	Spare part code	Description of the spare part
1	2216680	Lower module of FluidEase Pro ClipTip 12-ch 25-1250 µl
2	2214945	Tip Fitting O-ring 1250 µl E1 (1033390 12pcs)
3	1033430	O-ring, Tip Fitting 300CT 1000CT
4	2216210	Tip fitting assembly 12 pcs

Table 13-38 Spare parts for 4676110 FluidEase Pro ClipTip 16-ch 0.5-10 µl

	Item	Spare part code	Description of the spare part
	1	2217410	Lower module of FluidEase Pro ClipTip 16-ch 0.5-10 µl

Table 13-39 Spare parts for 4676120 FluidEase Pro ClipTip 16-ch 1-30 µl

	Item	Spare part code	Description of the spare part
	1	2217430	Lower module of FluidEase Pro ClipTip 16-ch 1-30 µl

Table 13-40 Spare parts for 4676130 FluidEase Pro ClipTip 16-ch 3-125 µl

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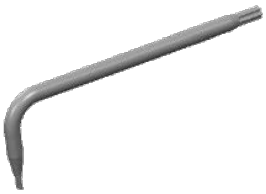
Thermo Scientific FluidEase ClipTip Pipette Models

	Item	Spare part code	Description of the spare part
	1	2217740	Lower module of FluidEase Pro ClipTip 16-ch 3-125 µl

Accessories

Table 13-41 FluidEase Accessories

Item	Code	Description
	2216490	Rechargeable li-ion battery
	3300210	Grease tube 45g, Klüberalfa
	0300070	Tool for Tip Fittings
	1069160	SCP Service Tool
	1292468	Cord USB 2.0 A-to-C male-male 1.60m
	1290701	FluidEase Charger with adaptors: China/USA, United Kingdom, Europe and Australia.
	12906740	Charging Stand Charger with adaptors: China/USA, United Kingdom, Europe and Australia.

Appendix 7. Country-specific Regulatory Notices

Australia & New Zealand

The FluidEase Pro is compliant with AS/NZS 4268:2017 standard - Radio equipment and systems - Short range devices - Limits and methods of standard measurement, as specified by the Australian Communications and Media Authority (ACMA).

Argentina

The FluidEase Pro is compliant with ENACOM Resolution No. 854/2020 and subsequent updates, the RAMATEL isologotype and registration number are indicated below. Since e-labeling is implemented, instructions on how to access the electronic label on the device are also provided in Product info & Regulatory information section wherein as required by Argentine telecommunications regulations.

RAMATEL

H-30398

Brazil

This device FluidEase Pro complies with Brazilian telecommunications regulations and is certified by ANATEL. The ANATEL mark and module certification number are provided to confirm conformity with the applicable standards.

ANATEL
03882-16-05903

"Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário."

Statement translation: “This equipment operates on a secondary basis and, consequently, must accept harmful interference, including from stations of the same kind, and may not cause harmful interference to systems operating on a primary basis.”

Canada

IC compliance

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen in such a way that the equivalent isotropically radiated power (e.i.r.p.) is not more than that is necessary for successful communication.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

Conformité aux norms d´IC

Cet appareil est conforme à la(aux) norme(s) RSS sans licence d'Industry Canada.

Son utilisation est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas causer d'interférences et
2. il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.

Conformément aux réglementations d'Industry Canada, cet émetteur radio ne peut fonctionner qu'à l'aide d'une antenne dont le type et le gain maximal (ou minimal) ont été approuvés pour cet émetteur par Industry Canada. Pour réduire le risque d'interférences avec d'autres utilisateurs, il faut choisir le type d'antenne et son gain de telle sorte que la puissance isotrope rayonnée équivalente (p.i.r.e) ne soit pas supérieure à celle requise pour obtenir une communication satisfaisante.

Cet équipement respecte les limites d'exposition aux rayonnements IC RSS-102 définies pour un environnement non contrôlé.

"CAN ICES-3 (B)/NMB-3(B)"

China

This device FluidEase Pro complies with the regulations set forth by the State Radio Regulatory Commission (SRRC) under the Ministry of Industry and Information Technology (MIIT) of the People's Republic of China. (CMIIT ID: 24J99FT1P156)

China RoHS Compliance:

Table 13-42 The FluidEase Pro (type 156) products, Hazardous Substances Information

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Thermo Scientific FluidEase ClipTip Pipette Models

部件名称 **Component Name**	有害物质 **Hazardous Substances**									
	铅 **(Pb)**	汞 **(Hg)**	镉 **(Cd)**	六价铬 **(Cr (VI))**	多溴联苯 **(PBB)**	多溴二苯醚 **(PBDE)**	邻苯二甲酸二（2-乙基己基）酯 **(DEHP)**	邻苯二甲酸丁基苄酯 **(BBP)**	邻苯二甲酸丁基苄酯 **(DBP)**	邻苯二甲酸丁基苄酯 **(DIBP)**
金工 Metal Parts	O	O	O	O	O	O	O	O	O	O
(电缆组件) Cable Assemblies	O	O	O	O	O	O	O	O	O	O
(显示器) Display	O	O	O	O	O	O	O	O	O	O
(电路板) PCBA's	X	O	O	O	O	O	O	O	O	O
(电机组件) Electromechanical Assemblies	O	O	O	O	O	O	O	O	O	O
(电源供应器) Power Supply	X	O	O	O	O	O	O	O	O	O
(电池)Battery	X	O	O	O	O	O	O	O	O	O
(包装材料)Packaging materials	O	O	O	O	O	O	O	O	O	O
塑料 Plastics	O	O	O	O	O	O	O	O	O	O

本表格依据 SJ/T11364 的规定编制 This table is compiled according to SJ/T 11364 standard

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下.

Indicates that the concentration of the hazardous substance in all homogeneous materials for the part is below the relevant threshold of the GB/T 26572 standard

Note: For lead in Display: usage complies with exemption 7(c)-I of the RoHS exemption list, which permits use in this application.

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求.

Indicates that the concentration of the hazardous substance in at least one homogeneous material of the part is above the relevant threshold of the GB/T 26572 standard

This statement is based on information and data provided from third parties and may not have been verified through destructive testing methods or other chemical analysis.

本声明基于第三方提供的信息和数据，可能未经破坏性检测方法或其他化学分析进行验证。

The environment-friendly use period (EFUP) of this product is 10 years which is only valid when under the normal operation procedure that listed on the instruction.

本产品的环保使用期限为 10 年，仅在按照说明书所列的正常操作程序下有效。

Japan

The FluidEase Pro comply with the Japanese Technical Regulation Conformity Certification of Specified Radio Equipment (ordinance of MPT N°. 37, 1981), Article 2, Paragraph 1: Item 19 "2.4 GHz band wide band low power data communication system". The Giteki mark and module MIC certification number as provided below are electronically labelled in the built-in screen of the device.

204-610006

当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。

Unofficial Translation: “This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law.”

South Korea

This device complies with the Radio Waves Act of the Republic of Korea and has obtained KC certification for radio equipment from the National Radio Research Agency (RRA) for broadcasting and communication equipment

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

Europe

To whom it may concern,

Hereby, Thermo Fisher Scientific Oy declares under its sole responsibility that the following devices:

– FluidEase Pro contains a Bluetooth low energy module and passive NFC tag, complying with the essential requirements and other relevant provisions of:

- Radio Equipment Directive (RED) 2014/53/EU, (incl. Article 3.3(d) cybersecurity per (EU) 2022/30); Electromagnetic Compatibility Directive (EMC) 2014/30/EU and Low voltage directive (LVD) 2014/35/EU
- RoHS Directive 2011/65/EU (RoHS 2) and its amendment (EU) 2015/863 (RoHS 3).

WEEE (Waste Electrical and Electronic Equipment) symbol indicates that this product should not be disposed of in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of WEEE. This instrument meets European requirement WEEE Directive 2012/19/EU.

UK

To whom it may concern,

Hereby, Thermo Fisher Scientific Oy declares under its sole responsibility that the following device:

– FluidEase Pro contains a Bluetooth low energy module and passive NFC tag, complies with the essential requirements and other relevant provisions of:

  - Radio Equipment Directive (RED) 2014/53/EU, (incl. Article 3.3(d) cybersecurity per (EU) 2022/30); Electromagnetic Compatibility Directive (EMC) 2014/30/EU and Low voltage directive (LVD) 2014/35/EU
  - RoHS Directive 2011/65/EU (RoHS 2) and its amendment (EU) 2015/863 (RoHS 3).

Mexico

“Lea el manual antes de instalar o usar el equipo.” (Translation: "Read the manual before installing or using the equipment.")

This device FluidEase Pro complies with Mexico regulations.

'La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada'.

Unofficial translation for refence only: 'Operation of this equipment is subject to the following two conditions: (1) this equipment or device may not cause harmful interference, and (2) this equipment or device must accept any interference, including interference that may cause undesired operation of this equipment or device'.

Taiwan

This device FluidEase Pro has been tested and complies with the electromagnetic compatibility (EMC) regulations of Taiwan.

*When using this product, please **use with caution** to minimize electromagnetic wave impacts.*

"減少電磁波影響，請妥適使用"

Unofficial translation as “Use with caution to minimize electromagnetic impacts.”

Bluetooth:

「取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。」

“Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices. The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved. The said legal communications means radio communications is operated in compliance with the Telecommunications Management Act. The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.”

Thailand

This device FluidEase Pro has been tested to comply with standards or technical requirements set forth by the National Broadcasting and Telecommunications Commission (NBTC) of Thailand.

'เครื่องโทรคมนาคมและอุปกรณ์นี้มีความสอดคล้องตามมาตรฐานหรือข้อกำหนดทางเทคนิคของ กสทช.'

Unofficial translation: This telecommunication equipment complies with the standards or technical requirements of the NBTC.

USA

FCC statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications NOT explicitly APPROVED by Thermo Fisher Scientific Joensuu Oy could cause the device to cease to comply with FCC rule's part 15, and thus void the user's authority to operate the equipment.

Cautions

CAUTION: Any changes or modification could cause the module to cease to comply with FCC rule's part 15 and thus void the user's authority to operate the equipment.

CAUTION: §15.407 statement; in case of absence of information to transmit or operational failure, the FluidEase Pro will automatically discontinue transmission.

Electronic Labelling

The FluidEase Pro (Type 156) uses electronic labeling for the following countries:

Argentina, Australia, United States, Canada, Brazil, Japan, South Korea, China, New Zealand, Pakistan, Singapore, Indonesia, Malaysia, Mexico, Taiwan, and South Africa.

Instructions for accessing the regulatory information on the built-in display are provided in Product info & Regulatory information section of this manual. Electronic labeling is implemented in accordance with the regulatory requirements applicable in each of these countries.

Appendix 8. Licensed Technologies

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자의소유입니다.

Appendix 9. Impact after Factory Reset and User Reset

Table 13-43 Impact after Factory Reset and User Reset

No.	Parameter	After Factory Reset	After User Reset *
1	Software Version	Retained	Retained
2	Pipetting Lifecycles	Cleared/ erased	Retained
3	Default Calibration	Reset to factory default	Retained
4	Custom Calibrations	Cleared/ erased	Cleared/ erased
5	Calibration Reminders	Reset to factory default	Reset to factory default
6	Calibration Log	Cleared/ erased	Cleared/ erased
7	Language	Reset to factory default	Reset to factory default
8	Display Settings	Reset to factory default	Reset to factory default
9	Time to Power Save mode	Reset to factory default	Reset to factory default
10	Pipette Audio	Reset to factory default	Reset to factory default
11	Keyboard Audio	Reset to factory default	Reset to factory default
12	Guidance Text	Reset to factory default	Reset to factory default
13	Date and Time	Reset to factory default	Retained
14	Admin Username	Reset to factory default	Retained
15	Admin Password	Reset to factory default	Retained
16	User Account Names	Cleared/ erased	Cleared/ erased
17	User Password	Cleared/ erased	Cleared/ erased
18	Pipette Name	Reset to factory default	Reset to factory default
19	Programs	Cleared/ erased	Cleared/ erased
20	Function Volume	Reset to factory default	Reset to factory default
21	Function Speed	Reset to factory default	Reset to factory default
22	Pre-step	Reset to factory default	Reset to factory default
23	Excess	Reset to factory default	Reset to factory default
24	Blowout	Reset to factory default	Reset to factory default
25	Mix	Reset to factory default	Reset to factory default
26	Service Log	Retained	Retained

*: The impact is only for the user who is reset

Appendix 10. Limits and Defaults of Pre-step and Excess

Table 13-44 Multi Dispense Pre-step and Excess

Model Number	Model Description	Default Excess (µl)	Excess Range (µl)	Default Pre-step (µl)	Pre-step Range (µl)
4674010	FluidEase Pro ClipTip 1-ch 0.5-10	1.25	0.5-1.25	0.6	0.4-0.6
4674020	FluidEase Pro ClipTip 1-ch 2.5-100	10	3-12.5	4	2.5-6.0
4674030	FluidEase Pro ClipTip 1-ch 5-200	20	5-25	8	5-12.5
4674040	FluidEase Pro ClipTip 1-ch 10-300	30	8-37	12	8-18
4674050	FluidEase Pro ClipTip 1-ch 20-1000	35	25-35	45	45
4676010	FluidEase Pro ClipTip 8-ch 0.5-10	1.25	0.5-1.25	0.6	0.4-0.6
4676030	FluidEase Pro ClipTip 8-ch 2.5-100	10	3-12.5	4	2.5-6.0
4676050	FluidEase Pro ClipTip 8-ch 5-200	20	5-25	8	5-12.5
4676070	FluidEase Pro ClipTip 8-ch 10-300	30	8-37	12	8-18
4676090	FluidEase Pro ClipTip 8-ch 25-1250	80	30-80	56	30-56
4676020	FluidEase Pro ClipTip 12-ch 0.5-10	1.25	0.5-1.25	0.6	0.4-0.6
4676040	FluidEase Pro ClipTip 12-ch 2.5-100	10	3-12.5	4	2.5-6.0
4676060	FluidEase Pro ClipTip 12-ch 5-200	20	5-25	8	5-12.5
4676080	FluidEase Pro ClipTip 12-ch 10-300	30	8-37	12	8-18
4676100	FluidEase Pro ClipTip 12-ch 25-1250	80	30-80	56	30-56
4676110	FluidEase Pro ClipTip 16-ch 0.5-10	1.25	0.5-1.25	0.6	0.4-0.6
4676120	FluidEase Pro ClipTip 16-ch 1-30	3	0.8-3.6	1.2	0.8-1.8
4676130	FluidEase Pro ClipTip 16-ch 3-125	10	3.2-15	5	3.2-7.5

Table 13-45 Reverse Pipette Excess

Model Number	Model Description	Default Excess (µl)	Excess Range (µl)
4674010	FluidEase Pro ClipTip 1-ch 0.5-10	1.25	0.5-1.25
4674020	FluidEase Pro ClipTip 1-ch 2.5-100	10	3-12.5
4674030	FluidEase Pro ClipTip 1-ch 5-200	20	5-25
4674040	FluidEase Pro ClipTip 1-ch 10-300	30	8-37
4674050	FluidEase Pro ClipTip 1-ch 20-1000	35	25-35
4676010	FluidEase Pro ClipTip 8-ch 0.5-10	1.25	0.5-1.25
4676030	FluidEase Pro ClipTip 8-ch 2.5-100	10	3-12.5
4676050	FluidEase Pro ClipTip 8-ch 5-200	20	5-25
4676070	FluidEase Pro ClipTip 8-ch 10-300	30	8-37
4676090	FluidEase Pro ClipTip 8-ch 25-1250	80	30-80
4676020	FluidEase Pro ClipTip 12-ch 0.5-10	1.25	0.5-1.25
4676040	FluidEase Pro ClipTip 12-ch 2.5-100	10	3-12.5
4676060	FluidEase Pro ClipTip 12-ch 5-200	20	5-25
4676080	FluidEase Pro ClipTip 12-ch 10-300	30	8-37
4676100	FluidEase Pro ClipTip 12-ch 25-1250	80	30-80
4676110	FluidEase Pro ClipTip 16-ch 0.5-10	1.25	0.5-1.25
4676120	FluidEase Pro ClipTip 16-ch 1-30	3	0.8-3.6
4676130	FluidEase Pro ClipTip 16-ch 3-125	10	3.2-15

Appendix 11. Height and Weight

Table 13-46 Single Channel Pipette Height and Weight (mm, g)

Item number	Description	Height	Height * (With tip)	Height ** (placed on charging stand)	Weight
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	286	310/321	313/372	187
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	271	318	313/372	189
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl	271	318	313/372	189
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	271	325/362	313/372	189
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	248	332	313/372	188

Table 13-47 Multi Channel Pipette Height and Weight (mm, g)

Item number	Description	Height	Height * (With tip)	Height ** (placed on charging stand)	Weight
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	253	277/288	313/372	255
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl	262	309	313/372	260
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl	262	309	313/372	262
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl	262	316/353	313/372	261
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	270	365	313/372	285
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	253	277/288	313/372	287
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl	262	309	313/372	291
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl	262	309	313/372	296
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl	262	316/353	313/372	293
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl	270	365	313/372	327
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	253	277/288	313/372	261
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	253	291	313/372	264
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	253	311	313/372	255

Note:

*: The value for Height (With tip) indicates regular tip / extend tip, refer to Appendix 2. ClipTip Ordering Information.

**: The value for Height (placed on charging stand) indicates charging position / resting position, refer to Appendix 1. Use of the charging stand.

Table 13-48 Single Channel Pipette Height and Weight (in, oz)

Item number	Description	Height	Height * (With tip)	Height ** (placed on charging stand)	Weight
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	11.3	12.2/12.6	12.3/14.6	6.6
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	10.7	12.5	12.3/14.6	6.7
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl	10.7	12.5	12.3/14.6	6.7
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	10.7	12.8/14.2	12.3/14.6	6.7
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	9.8	13.1	12.3/14.6	6.6

Table 13-49 Multi Channel Pipette Height and Weight (in, oz)

Item number	Description	Height	Height * (With tip)	Height ** (placed on charging stand)	Weight
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	10	10.9/11.3	12.3/14.6	9
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl	10.3	12.2	12.3/14.6	9.2
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl	10.3	12.2	12.3/14.6	9.2
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl	10.3	12.8/14.2	12.3/14.6	9.2
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	10.6	14.4	12.3/14.6	10.1
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	10	10.9/11.3	12.3/14.6	10.1
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl	10.3	12.2	12.3/14.6	10.3
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl	10.3	12.2	12.3/14.6	10.4
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl	10.3	12.8/14.2	12.3/14.6	10.3
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl	10.6	14.4	12.3/14.6	11.5
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	10	10.9/11.3	12.3/14.6	9.2
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	10	11.5	12.3/14.6	9.3
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	10	12.2	12.3/14.6	9

Note:

1. The value for Height (With tip) indicates regular tip / extend tip, refer to Appendix 2. ClipTip Ordering Information.

2. The value for Height (placed on charging stand) indicates charging position / resting position, refer to Appendix 1. Use of the charging stand.

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Table 13-50 Pipette Height and Weight (in Package)

Item number	Description	Width × Depth × Height, mm & inch		Weight, g & oz	
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	709	25.0
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	711	25.1
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	711	25.1
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	711	25.1
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	710	25.0
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	777	27.4
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	782	27.6
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	784	27.7
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	783	27.6
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	807	28.5
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	804	28.4
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	808	28.5
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	813	28.7
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	810	28.6
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	844	29.8
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	783	27.6
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	786	27.7
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	318 × 155 × 80	12.5 × 6.1 × 3.1	777	27.4

Appendix 12. Speed Recommendations

Table 13-51 Volume speed (unit: µl /s) at different speed level for different pipette models

	10 µl Models	30 µl Models	100 µl Models	125 µl Models	200 µl Models	300 µl Models	1000 µl Models	1250 µl Models
Speed 1	0.33	1.0	3.3	4.1	6.6	9.9	94	117
Speed 2	1.73	5.2	17.3	21.6	34.5	51.8	201	251
Speed 3	3.29	9.9	32.9	41.2	65.9	98.8	329	412
Speed 4	4.99	15.0	49.9	62.4	99.9	149.8	431	538
Speed 5	6.61	19.8	66.1	82.6	132.1	198.2	540	675
Speed 6	7.88	23.6	78.8	98.4	157.5	236.3	649	812
Speed 7	9.93	29.8	99.3	124.1	198.5	297.8	788	923
Speed 8	11.60	34.8	116.0	145.0	232.0	348.0	861	1077
Speed 9	13.04	39.1	130.4	163.0	260.8	391.1	984	1230
Speed 10	14.89	44.7	148.9	186.2	297.9	446.8	1107	1384
Speed 11	16.49	49.5	164.9	206.2	329.9	494.8	1230	1538
Speed 12	18.45	55.4	184.5	230.6	369.0	553.5	1304	1630

Note: The speed is measured in Pipette mode using the maximum volume.

Table 13-52 FluidEase Pro ClipTip Single Channel Pipette Speed recommendations

Item number	Description	Forward (Pipette)		Multi dispense		Dilute		Reverse for Ethanol		Reverse for Glycerol	
		In	Out	In	Out	In	Out	In	Out	In	Out
4674010	FluidEase Pro ClipTip 1-ch 0.5-10 µl	9	9	9	9	9	9	9	9	3	3
4674020	FluidEase Pro ClipTip 1-ch 2.5-100 µl	9	9	9	12	9	9	9	9	3	3
4674030	FluidEase Pro ClipTip 1-ch 5-200 µl	9	9	9	9	9	9	9	9	3	3
4674040	FluidEase Pro ClipTip 1-ch 10-300 µl	9	9	8	9	9	9	8	9	3	3
4674050	FluidEase Pro ClipTip 1-ch 20-1000 µl	9	9	9	9	9	9	3	9	3	3

Table 13-53 FluidEase Pro ClipTip Multi Channel Pipette Speed recommendations

Item number	Description	Forward (Pipette)		Multi dispense		Dilute		Reverse for Ethanol		Reverse for Glycerol	
		In	Out	In	Out	In	Out	In	Out	In	Out
4676010	FluidEase Pro ClipTip 8-ch 0.5-10 µl	9	9	9	9	9	9	9	9	3	3
4676030	FluidEase Pro ClipTip 8-ch 2.5-100 µl	9	9	9	12	9	9	9	9	3	3
4676050	FluidEase Pro ClipTip 8-ch 5-200 µl	9	9	9	9	9	9	9	9	3	3
4676070	FluidEase Pro ClipTip 8-ch 10-300 µl	9	9	8	9	9	9	8	9	3	3
4676090	FluidEase Pro ClipTip 8-ch 25-1250 µl	9	9	9	9	9	9	3	9	3	3
4676020	FluidEase Pro ClipTip 12-ch 0.5-10 µl	9	9	9	9	9	9	9	9	3	3
4676040	FluidEase Pro ClipTip 12-ch 2.5-100 µl	9	9	9	12	9	9	9	9	3	3
4676060	FluidEase Pro ClipTip 12-ch 5-200 µl	9	9	9	9	9	9	9	9	3	3
4676080	FluidEase Pro ClipTip 12-ch 10-300 µl	9	9	8	9	9	9	8	9	3	3
4676100	FluidEase Pro ClipTip 12-ch 25-1250 µl	9	9	9	9	9	9	3	9	3	3
4676110	FluidEase Pro ClipTip 16-ch 0.5-10 µl	9	9	9	9	9	9	9	9	3	3
4676120	FluidEase Pro ClipTip 16-ch 1-30 µl	9	9	9	9	9	9	9	9	3	3
4676130	FluidEase Pro ClipTip 16-ch 3-125 µl	9	9	9	9	9	9	9	9	3	3

1. In = aspiration, Out = dispense.
2. Deionized water is used to test in Forward, Mult dispense and Dilute mode.

This product is covered by patents issued in the US.

For patent coverage, see **http://www.thermofisher.com/pipetteip**

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