

Rainin Vero

Confidence in Every Pipetting Step



METTLER TOLEDO

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1. Safety and Regulatory Information

The following safety information is critically important for the safe handling and use of the Rainin Vero. Please read these operating instructions carefully before unpacking, charging or operating Vero. Keep these instructions for future reference.

1.1 Important Safety Information

1. Read all safety notices before using, charging, or servicing Vero, read all safety notices. Use Vero only in accordance with these instructions.
2. Vero should only be used in laboratory or production environments by trained personnel. Use only Rainin-approved Vero tips and accessories.
3. Do not use Vero for in vivo applications (in or on the human body). Avoid exposing the electronics to liquids.
4. Vero is not waterproof and neither the pipette nor its battery is autoclavable.
5. Vero should only be charged using the supplied USB-C adapter or optional Vero charging stand (sold separately). Using non-approved chargers can damage electronics and will void the warranty.
6. Safety notes are marked with signal words and warning symbols. Ignoring the safety notes may lead to injury, damage (including malfunction) to Vero, and unreliable results.



Safety Notice: Using this product in a manner other than as described in this manual may impair its safety protections.

1.1.1 EC Declaration of Conformity

Manufacturer's Name: Mettler-Toledo Rainin, LLC.

Manufacturer's Address: 7500 Edgewater Drive, Oakland, CA, 94621 USA

Declares that the following product:

- Product Name: Rainin Vero Electronic Pipette

Conforms to the following EC directives (incl. all applicable amendments):

- 2014/35/EU Low Voltage (LVD)
- 2014/30/EU Electromagnetic Compatibility (EMC)
- 2023/1542 EU Battery Regulation
- 2011/65/EU Reduction of Hazardous Substances (RoHS)

Supplementary Information:

- Safety: EN 61010-1:2010/A1:2019
- EN 62133-2 2017+A1 2021

Emissions Testing: EN 61326-1:2021

Testing performed to: Class A Limits (commercial/industrial environment)

Immunity Testing:

- EN 61326-1:2021
- EN 61000-4-2 Electrostatic Discharge
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 Electrical Fast Transients
- EN 61000-4-5 Surge: Power Ports
- EN 61000-4-6 Conducted Immunity
- EN 61000-4-11 Voltage Dips and Interrupt

1.2 Intended Use

Vero is an electronic air-displacement pipette intended for precise pipetting of aqueous and aqueous-based solutions in laboratory settings. It is designed for research, quality control and production applications.

For liquid compatibility beyond standard biological buffers and aqueous solutions, consult Rainin Technical Support.

Depending on the model, Vero works with Rainin LTS™ LiteTouch System™ or universal-fit which are intended to dispense liquids across a volume range of 0.5 – 2000 microliters

1.2.1 Operating Conditions

Vero is designed to deliver exceptional performance across a wide range of environmental conditions. While our systematic and random error specifications are typically achieved under the controlled conditions outlined in ISO 8655-6:2022, Vero is robust and can be used in a wide range of laboratory settings.

- Altitude: 0 – 2,000 meters
- Operating ambient temperature range: 5°C – 46°C
- Relative humidity: 10 – 70% RH (non-condensing)
- Electrical input rating: 5.0 V, 3.0 A

For optimal performance Rainin recommends an operating environment of 15°C to 30°C and relative humidity between 45% to 80%. Note, however, that in most laboratory settings, exceeding these parameters somewhat will not significantly impact performance.

1.2.2 Battery

This device is intended for use only with Rainin power sources with the part numbers listed below.

Ensure that the wall power supply and charging stands can be quickly disconnected from alternating current (AC) power in case a hazard arises.

Source	Input	Output*
Wall power supply	100–240 V, 50–60 Hz, 500 mA	5.0 V, 3.0 A, 15.0 W

* Rainin-supplied power devices are Limited Power Source (LPS)-certified. Do not use any other power sources with this device.

Vero must be charged before use. A full charge requires 1 hour. The time a full charge lasts depends on the liquid volumes and viscosities pipetted. The battery is designed to deliver approximately 2,800 cycles on a single charge. Vero can be used while charging.

The charging cable is included in the shipping box. Recharge only with the Limited Power Source (LPS-type) Wall Power Supply shipped with Vero or the optional Vero charging stand. Severe damage to internal electronics will result from improper charging and the use of a non-LPS power supply can be hazardous.

The Vero battery is a user-serviceable part and should be replaced every two years. For more information, contact a qualified METTLER TOLEDO or Rainin service professional, or your Rainin sales representative.

1.3 Compatible and Incompatible Liquids

Vero is compatible with aqueous solutions, biological buffers, diluents, and cell culture media.

Vero should not be used with strong acids or bases above 1 M, organic solvents (e.g., acetone, acetonitrile) at high concentrations or solutions containing abrasive particulates. If you plan to pipette non-aqueous or corrosive liquids, contact Rainin Technical Support for guidance.

2. Introducing Vero

This manual describes the Rainin Vero electronic air-displacement pipette and explains how to set up, operate, and maintain it to achieve accurate, repeatable results.

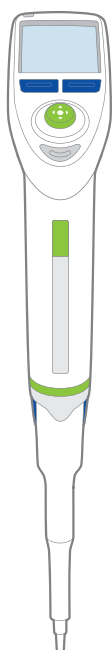
Vero comes loaded with features and notable conveniences that include:

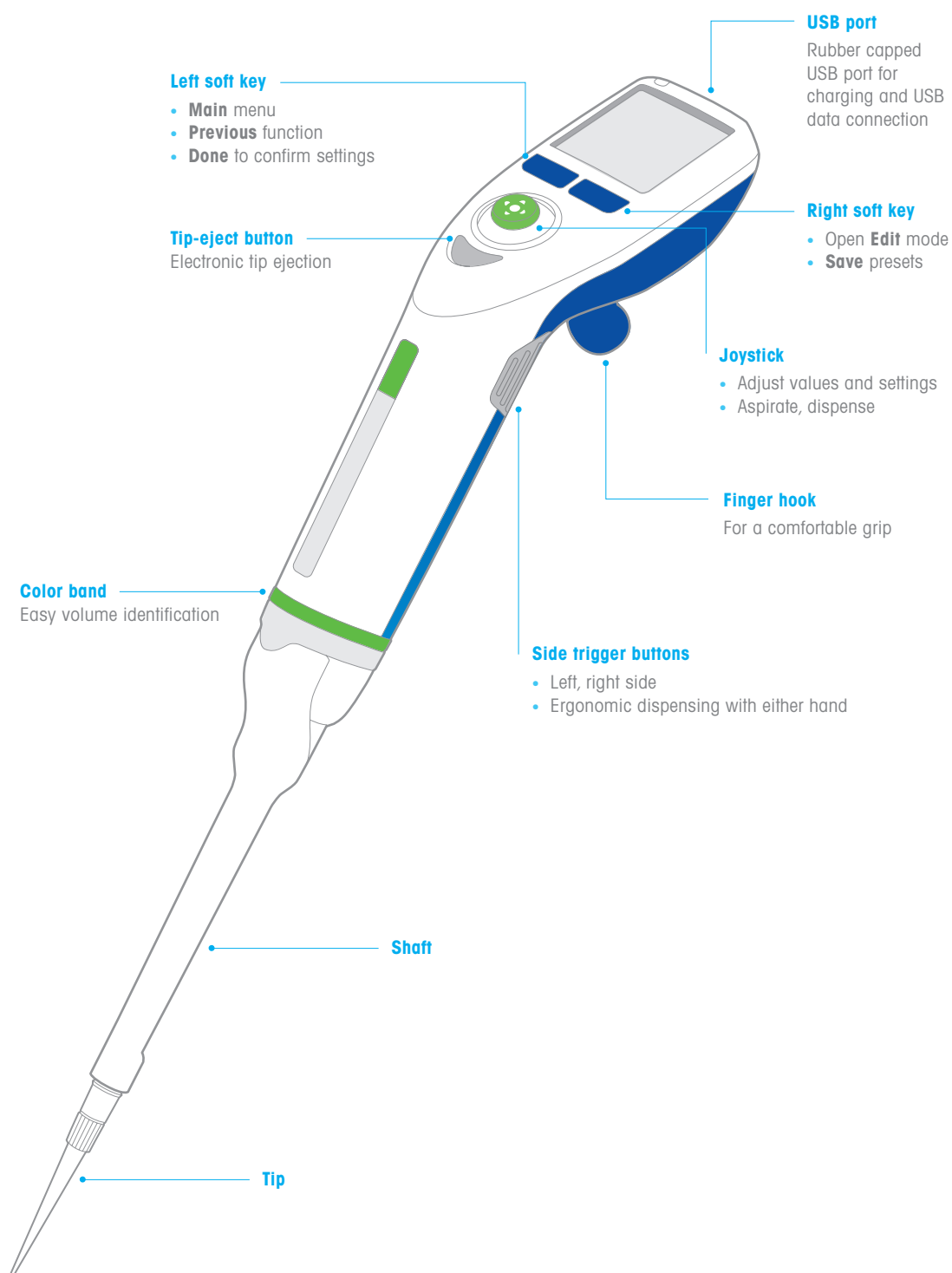
- Lightweight and compact for all day comfort
- Enhanced systematic and random error specifications
- Ergonomic trigger buttons located on the grip for easy and quick aspiration and dispensing
- Electronically assisted tip ejection to avoid thumb strain
- A graphical user interface that employs a highly-intuitive tile layout
- Exceptionally fast volume setting to speed up your workflows

Vero is available in single-, eight- and 12 channel versions. All user settings and service settings are stored on nonvolatile memory and are protected even if the pipette is reset or in the unlikely case of a battery failure.

Vero pipettes contain a radio-frequency identification (NFC) tag.

Read this manual in its entirety before using the pipette. It contains critical component, user interface and pipette controls that will help you obtain accurate, reproducible results and ensure long-lasting operation.



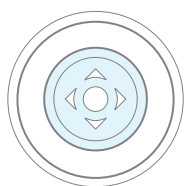


2.1 Display

Vero's user interface is a high-contrast electronic color display. Screen navigation, pipette operation, settings and option selections are performed using the soft keys, trigger buttons, tip eject button and joystick.

2.2 Navigation

Navigate using the soft keys and the joystick control. This manual uses left, right, up, and down arrows, and a circle icon to indicate their respective joystick actions.

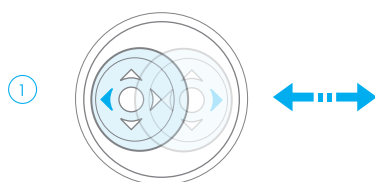


When you see this icon...	...then do this on the Vero
>	Joystick right
<	Joystick left
^	Joystick up
v	Joystick down
○	Center press on the joystick

2.3 Joystick Controls

Navigation and volume setting is done via the joystick.

Practice display navigation to familiarize yourself with the joystick's ease of use and control sensitivity.



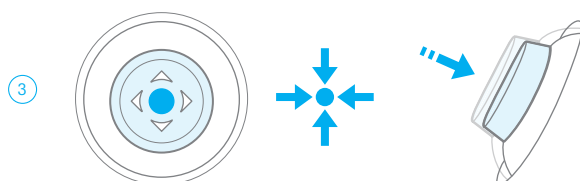
Joystick left or right to:

- Navigate between settings and screens
- Make coarse setting value adjustments



Joystick up or down to:

- Aspirate and dispense
- Navigate between settings and options
- Make fine setting value adjustments



Center press on the joystick button to:

- Aspirate and dispense
- Access menu items
- Edit settings or options
- Select and save an option, preset, or protocol

2.4 Soft Key Functions

The function of each soft key located below the display is contextual and changes based on the mode or setting screen. Functions are shown in the display above each soft key. Occasionally, there is a function shown for the left soft key but not for the right one.



Left soft key options actions:

- **Main:** Display the Main Menu
- **Prev:** Return to the previously used mode; allows toggling between modes
- **Done:** Exit the screen after viewing or editing is complete
- **Purge:** Empty tip and reset operation
- **Back:** Return to the previous screen



Right soft key actions:

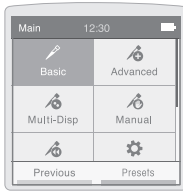
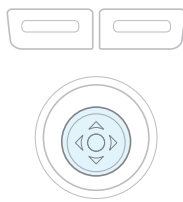
- **Cancel:** Exit the current action without saving changes
- **Exit:** Return to the previous screen
- **Presets:** Load a Preset
- **Select:** Select a Preset or Protocol
- **Edit:** Edit a Preset or Protocol
- **Load:** Load a Preset or Protocol
- **Save:** Launches on-screen keyboard. This option allows you to save the current settings as a preset with a custom name.

2.5 Ergonomic Triggers

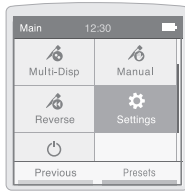
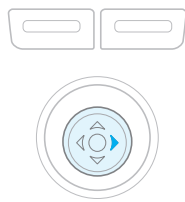
Vero's ergonomic, side-mounted trigger buttons for aspiration and dispense reduce hand fatigue and are operable by either thumb or finger.

To disable or enable the left and/or right triggers:

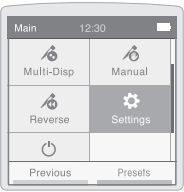
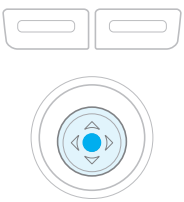
- 1

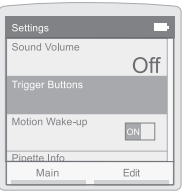
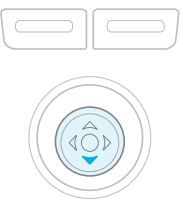
Navigate to the main menu.
- 2

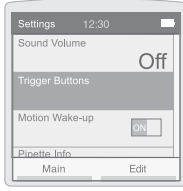
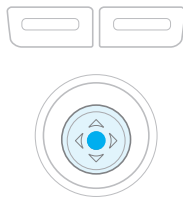
Navigate to **Settings**.
- 3

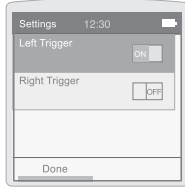
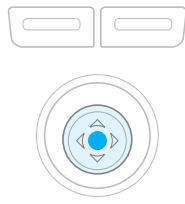
Press  to select **Settings**.
- 4

Navigate to **Trigger Buttons**.
- 5

Press  or  to select **Trigger Buttons**.
- 6

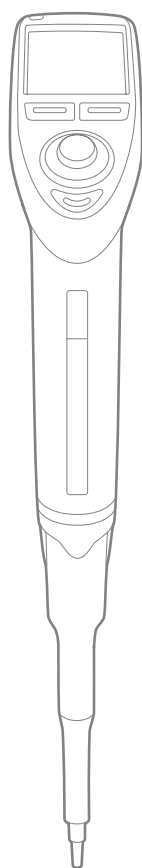



Press  or  to toggle the left or right trigger button.

2.6 Box Contents

- Electronic pipette model as ordered
- Vero Quick Reference Guide
- Universal power adapter and USB-C charging cable
- Certificate of Conformance

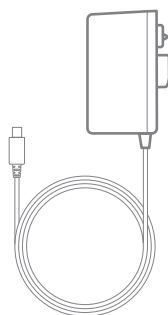
If any item is missing, call 800-472-4646 in the U.S. or contact your local METTLER TOLEDO office or distributor.



Vero



Plugs



Wall power supply



Quick Reference Guide



Certificate of Conformance

3. Getting Started

3.1 Charging Vero

Charge the pipette for at least 15 minutes before using it for the first time. Use the wall power supply included with the pipette, the optional charge stand, or a computer with the USB cable.

The battery charge indicator in the top right corner of the display increases as the unit charges. After 15 minutes, the pipette will have enough charge for at least a few hours of pipetting. A full charge is achieved after approximately 60 minutes.

When charging is complete the battery charge indicator is solid green, indicating a fully charged battery. As the battery depletes with use, the indicator will decrease accordingly.

Note: Only use Rainin-approved power supplies. Non-approved chargers can damage electronics and void the warranty.

3.1.1 Charging Vero Via Wall Power Supply

To connect the universal wall power supply and charge Vero:

1. Connect the power cord to a power outlet.
2. Connect the other end of the cord to the USB-C port located on the top of the pipette.

Note: The pipette is operable while connected to the wall power supply cord.

3.1.2 Charging Vero Via Computer

You will need a USB cable with at least one USB-C connector to charge Vero with a laptop.

1. Connect the cable's USB connector to a computer USB port.
2. Connect the other end of the cable to the USB-C outlet located on the top of the pipette.

Note:

- Charging Vero with a computer takes approximately two to three times longer than using the wall power supply or charging stand.
- Rainin does not recommend operating Vero while it is connected to a computer for charging.

3.1.3 Charging Vero Via Optional Charging Stand

If you have the Vero stand (sold separately):

1. Place Vero upright onto the stand so the two gold contacts on the back mate with the two pins on the stand.
2. Ensure the pipette is fully seated—an LED on the pipette will glow to confirm charging.
3. Allow approximately one hour for a full charge.

Tips:

- The stand keeps your workbench clear and lets you park Vero instantly between uses with no cable needed.
- Rainin recommends storing Vero on the charging stand when not in use. The stand provides a safe storage place and the pipette will always be fully charged.

3.2 Setup

3.2.1 Powering the Pipette On

Press and hold the left soft key to turn the pipette on. The start-up screen will briefly appear during initialization, after which the main menu is displayed.

3.2.2 Tip Selection and Mounting

Rainin pipettes and tips are designed to work together as a pipetting system. Vero pipettes are calibrated with Rainin tips and performance to published specifications is only guaranteed when Rainin tips are used.

To mount a tip, using light force, press Vero's shaft into the end of the tip. With both LTS and universal versions, the tip seal properly on the shaft with minimal force. Avoid using more force than is required.

Tip Immersion Depth

The recommended depth for tip insertion into your sample is shown in the table below.

Nominal Volume	Volume Range	Immersion Depth
10 μL	0.5–10 μL	1–2 mm
20 μL	2–20 μL	2–3 mm
50 μL	5–50 μL	2–3 mm
100 μL	10–100 μL	2–3 mm
200 μL	20–200 μL	3–6 mm
300 μL	20–300 μL	3–6 mm
1000 μL	100–1000 μL	3–6 mm
1200 μL	100–1200 μL	3–6 mm
2000 μL	200–2000 μL	3–6 mm
5000 μL	500–5000 μL	6–10 mm
10 mL	1–10 mL	6–10 mm
20 mL	2–20 mL	6–10 mm

Tip immersion depth is critical. When recommended depths are exceeded, the volume measured may be inaccurate and possibly out of specification. The tip angle is also important. Ensure that the pipette is always used in a position within 20 degrees of vertical.

3.2.3 Basic Operation – Using Basic Mode

Rainin recommends learning basic pipetting operations – including selecting and editing settings – in Basic Mode prior to using advanced operational modes. Users should also practice aspiration and dispense with water before working with valuable samples.



In the main menu, use the joystick to highlight **Basic**.

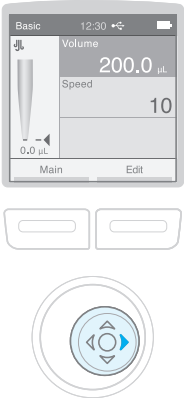
Push  to enter **Basic Mode**.

At any time during operation:

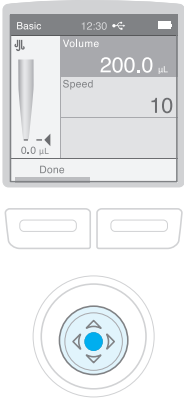
- **Purge** empties the tip and resets the pipette operation to aspirate.
- **Main** displays the main menu.
- **Edit** displays the Edit screen where you can change parameters such as volume, aspiration/dispense speed, and set the pipette to its maximum volume.
- **Done** confirms the new settings and returns to the pipetting screen.
- **Cancel** exits the current action without saving any changes.
- **Save** launches a keyboard on the screen. This option allows you to save the current settings as a preset with a custom name.

3.2.4 Setting the Volume

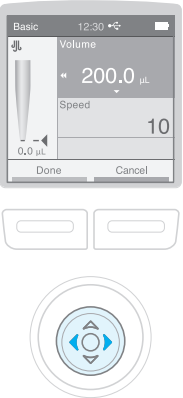
- ①



In Basic mode, press **>** or select **Edit** to edit the volume. **Volume** is highlighted on the display.
- ②



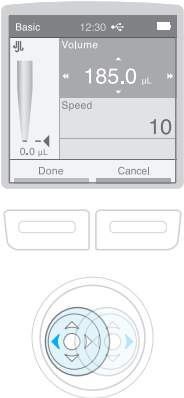
Press **>** or **○** again to edit the volume.
- ③



Use **<** or **>** for coarse volume adjustment.
- ④



Use **^** or **v** for fine volume adjustment.
- ⑤



Push and hold the joystick in any direction to quickly scroll through values.
- ⑥



Select **Done** or **○** to save the volume setting or select **Cancel** to exit without saving changes and return to the previous screen. The next setting, Speed, is highlighted.

3.2.5 Setting the Speed

Vero allows users to select either “Speed” or “Flow Rate” for controlling the rate of aspiration and dispensing. Selecting “Speed” gives the user the option of adjusting from speeds 1-10, with 1 being the slowest speed and 10 being the highest. Selecting “Flow Rate” allows the user to finely set the rate of aspiration and dispensing in microliters per second.

Users can switch between “Speed” or “Flow Rate” in the Settings menu under Admin.

1

In Basic mode, press **>** or select **Edit** to edit the speed.

2

Press **✓** to highlight **Speed**.
Note: In Basic mode, the speed/rate of flow are the same for both aspirate and dispense.

3

Use **<** or **>** for coarse volume adjustment.

4

Use **^** or **v** for fine volume adjustment.

5

Push and hold the joystick in any direction to quickly scroll through values.

6

Select **Done** or **○** to save the volume setting or select **Cancel** to exit without saving changes and return to the previous screen.

7

Select **Done** to return to the operating screen.

8

When you exit Basic mode, all settings are retained for the next time you access Basic Mode.

3.3 Aspiration



1. Attach a new Rainin tip by pressing the shaft into the tip with just enough force to make a secure seal.
2. Hold the pipette vertically or no more than 20 degrees of vertical.
3. Place the tip into the sample at the recommended immersion depth (see "Tip Immersion Depth" in Section 3.2.2).
4. Press ○, ∨, or the left or right trigger button to aspirate the sample.

Note: Vero automatically aspirates, so it is not necessary to hold the joystick in place. The tip volume indicator on the left side of the display illustrates the progress of aspiration into the tip and the blue reflects the current settings.

5. Pause for approximately one second to ensure that the full volume of sample is drawn into the tip.
6. Withdraw the tip from the sample.
7. If any liquid remains on the outside of the tip, touch it off to the side of the source reservoir carefully, taking care not to touch the tip orifice.

3.4 Dispensing



1. Press ○, ∨, or the left or right trigger button to dispense the sample.

Note: It is not necessary to hold the joystick in place; Vero automatically dispenses. The tip volume indicator on the left side of the display illustrates the progress of the dispense and the blue guide arrows and volume reading adjust accordingly.

2. For volumes 2–300 µL, pause for 1 second to ensure that the full volume of the sample is dispensed. For volumes of 1000 µL or greater, wait 1–2 seconds.
3. Withdraw the tip, slowly sliding it along the vessel wall.
4. IF needed, press ○, ∨, for tip blowout. When pipetting viscous solutions, pause prior to blowout.

Note: Although Vero automatically performs blowout, you can also repeat blowout manually.
5. If desired, you can also delay the piston return time by holding down the joystick during dispense.
6. After dispensing, touch the tip against the side wall of the receiving vessel. See Rainin Good Pipetting Practices for more information.

3.5 Tip Ejection

1. Lightly press the electronic tip ejector button below the joystick to discard the tip.

Note: The motorized tip eject system cleanly ejects tips with minimal thumb force.

2. Use a new tip for each sample to prevent residual carry-over.

3.6 Sleep Timeout and Power Shutdown

Vero is equipped with sleep and display timeout features to conserve battery life. Either feature can be adjusted from the Settings menu.

Sleep Timeout

- This feature turns the display off and puts the unit into a low-power state after a user-specified period of inactivity. Sleep timeout reduces power consumption by 98%. Vero automatically sleeps after a set period or when setting the pipette down.
- Pressing either soft key awakens Vero from a sleep timeout. The pipette initializes momentarily before returning the display to the last screen accessed.

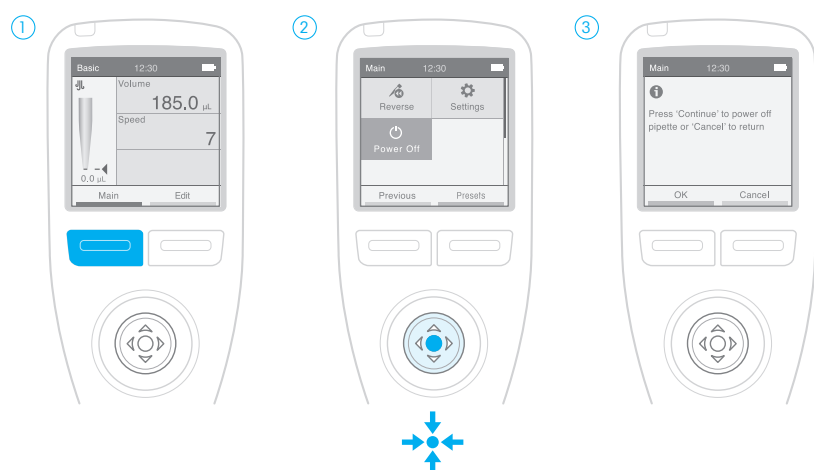
Display Timeout

- Display timeout dims the intensity of the display after a user-specified period of inactivity. To wake Vero from a display timeout, press any button or soft key, or move the joystick in any direction.

Note: Pressing the soft key or joystick to exit a display timeout returns Vero to ready mode without initiating the associated soft key function or joystick command.

3.6.1 Power Shutdown

Vero automatically shuts down after 18 hours of non-use. To shut Vero down manually:



In the main menu, joystick to **Power Off**.

Press  to select **Power Off**.

Select **OK** to power off or **Cancel** to return to the main menu.

4. Modes

The following operational modes offer a wide range of pipetting capabilities:

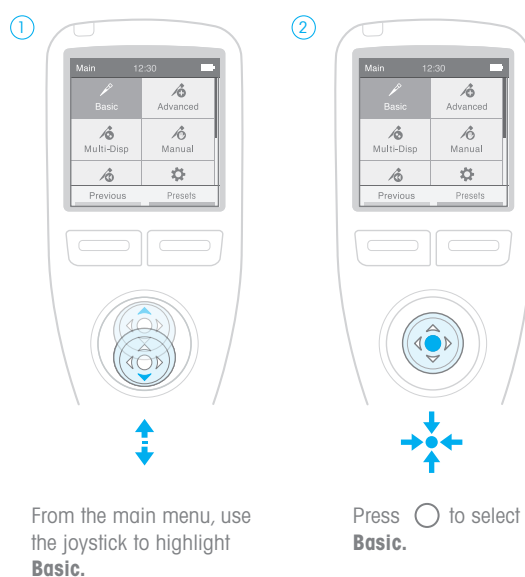
- **Basic Mode:** Basic pipetting operation. Selection of a single volume and one aspirate/dispense speed.
- **Advanced Mode:** Access Vero's advanced pipetting options, such as Mix and separate speeds for aspiration and dispense.
- **Multi-Dispense Mode:** Multi-aliquot dispensing with user-defined automatic dispense intervals.
- **Manual Mode:** Simulates manual pipette operation by enabling the joystick to emulate plunger action.
- **Reverse Mode:** Aspirate both the selected volume and pipette blowout volume. Reverse mode is recommended when working with dense or volatile liquids.

	Basic
	Advanced
	Multi-Disp
	Manual
	Reverse

4.1 Basic Mode

Basic mode meets basic laboratory pipetting needs by allowing users to aspirate and dispense a single volume at the same speed.

To access Basic mode:

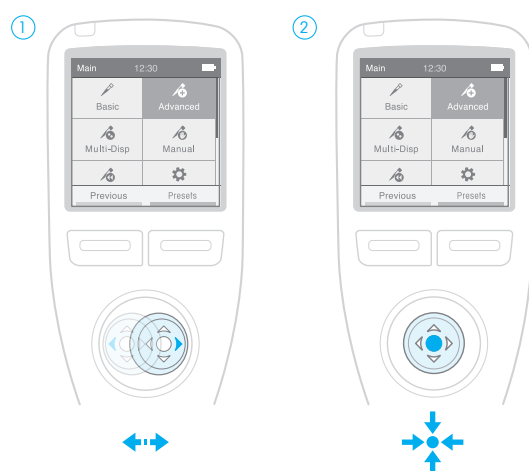


- **Settings:** Single volume, single speed, and mode presets.
- **Blowout:** Automatic and manually repeatable.

4.2 Advanced Mode

Select Advanced mode to access all of Vero's advanced pipetting options.

To access Advanced mode:



From the main menu, use the joystick to highlight **Advanced**.

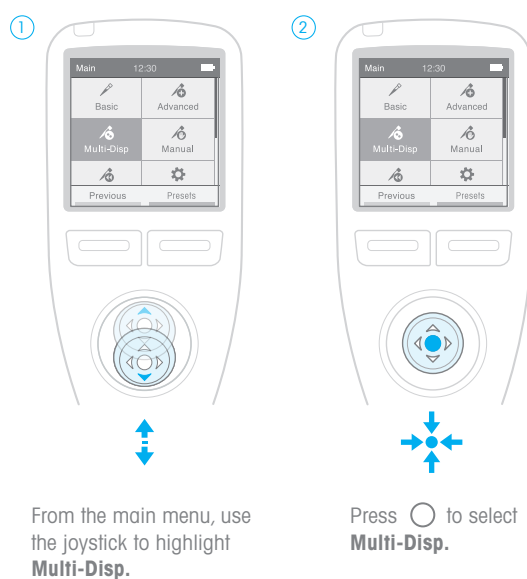
Press  to select **Advanced**.

- **Settings:** Single and fixed volume, volume sequencing, multi-speed, mix, cycle count, and mode presets.
- **Blowout:** Automatic and manual.

4.3 Multi-Dispense Mode

Multi-Dispense mode enables multi-aliquot dispensing with user-defined automatic dispense intervals.

To access Multi-Dispense mode:



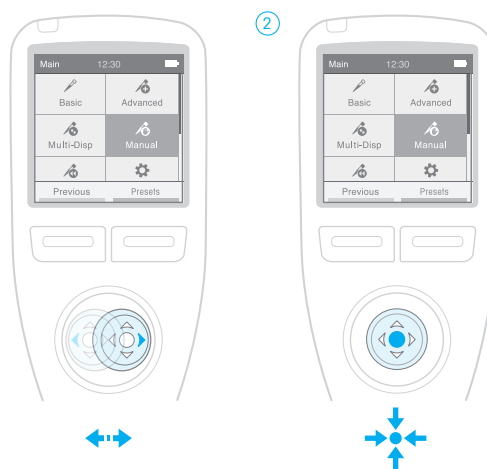
Note: The pipette aspirates an extra volume of liquid (residual liquid) that remains in the tip after dispensing all aliquots, ensuring accurate delivery of all samples.

- **Settings:** Single and fixed volume (with number of aliquots and aliquot volume), volume sequencing, multi speed, and mode presets.
- **Blowout:** Joystick blowout optional (can be turned off).

4.4 Manual Mode

Manual mode simulates manual pipette operation by enabling the joystick to emulate plunger action, which allow users to finely control the rate of aspiration and dispense of measured volumes.

To access Manual mode:



From the main menu, use the joystick to highlight **Manual**.

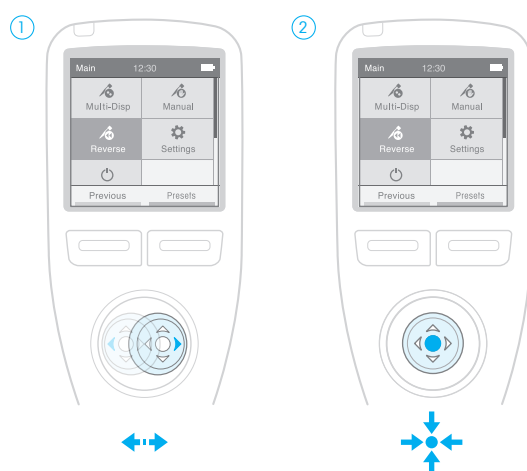
Press  to select **Manual**.

- **Settings:** Single and fixed volume, single speed, and mode presets.
- **Blowout:** Manual

4.5 Reverse Mode

Reverse pipetting is an established technique that enables users to aspirate the selected volume along with the pipette blowout volume and is recommended for dense or volatile liquids.

To access Reverse mode:



From the main menu, use the joystick to highlight **Reverse**.

Press  to select **Reverse**.

- **Settings:** Single and fixed volume, volume sequencing, multi-speed, and mode presets.
- **Blowout:** Manual

Note: Blowout ON in Reverse Mode means that a manual blowout is required before next aspiration. Press  or  to blowout. Blowout OFF means that re aspiration may occur without a blowout.

5. Options

A list of common options and settings is provided in the table below. A detailed description of these and other mode-specific options follows.

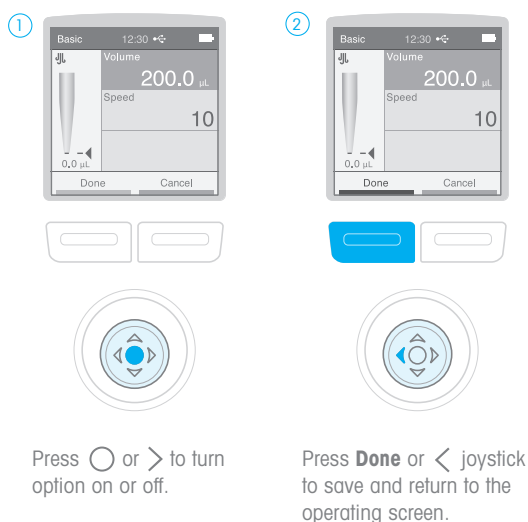
	Fixed Volume	Volume Sequence	Single Speed	Multi-Speed	Mix	Blowout Control	Cycle Counter	Auto-Pace	Mode Presets
Basic			✓						✓
Advanced	✓	✓		✓	✓	✓	✓		✓
Multi-Dispense	✓	✓		✓		✓		✓	✓
Manual	✓		✓*				✓		✓
Reverse	✓	✓		✓		✓	✓		✓

* Speed in Manual mode is variable.

5.1 Fixed Volume

Fixing Vero's volume can be useful for routine work in labs where standard volumes are in frequent use. When the Fixed Volume option is turned on, the Fixed Volume setting box is displayed on the operating screen and users can select from among 14 user-defined values.

Note: repeat pressing < will toggle through the values.

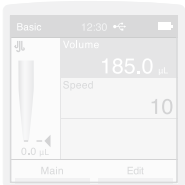


Users can pre-set up to 14 fixed volume options that can then be selected from the Volume Setting box. When this option is turned users can quickly select a preset volume from the Fixed Volume Setting box on the operating screen.

To set up and manage fixed-volume presets, see Section 7, Presets.

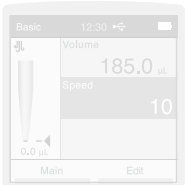
To use Fixed Volume:

①



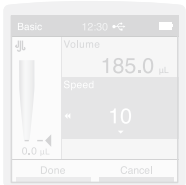

Use the joystick to select Fixed Volume and press $\odot$ or $>$ to turn the option on or off.

②




After turning the option on, to select and change desired volume, by pressing Edit List press $<$ to toggle through the volume options.

③




After selecting the desired volume, press **Done** or $<$ joystick to save the setting and return to the operating screen.

Note: Only one volume option can be on at a time. For example, if Fixed Volume is already on when a user turns Volume Sequencing on, Vero will automatically turn Fixed Volume off. If both options are off, the default mode is Single Volume.

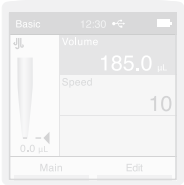
5.2 Volume Sequencing

Volume Sequencing is useful for protocols that require multiple samples at various volumes. When this option is turned on, the Volume Sequencing icon and setting box are displayed in the operating screen. Users can pre-set up to 16 volumes that can then be quickly access from the Volume Setting box.

To set up and manage volume-sequencing presets, see Section 7, Presets.

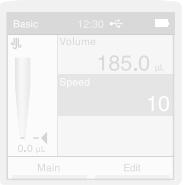
To use Volume Sequencing:

①



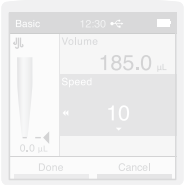

Use the joystick to select Volume Sequencing and press $\bigcirc$ or $\triangleright$ to turn the option on or off.

②




After turning the option on, press $\triangleleft$ to toggle through the volume options.

③




After selecting the desired volume, press **Done** or $\triangleleft$ to save the setting and return to the operating screen.

Note: Only one volume option can be on at a time. For example, if Volume Sequencing is already on when a user turns Fixed Volume on, Vero will automatically turn Volume Sequencing off. If both options are off, the default mode is Single Volume.

5.3 Mix

The Mix option enables in-tip mixing of dispensed samples. When this option is turned on, the Mix icon and Mix Setting box are displayed on the operating screen. Users can specify mix volume and either manual mixing or up to 99 automated mix cycles.

5.4 Blowout

The blowout function can be turned on or off in specific modes. When this option is off, the Blowout Off icon is displayed on the operating screen. Even with the Blowout option off users can still manually perform a blowout by pressing  or .

1. Press  or  to toggle Blowout on or off.
2. Press DONE or  to save the setting and return to the operating screen.

ON (default condition) means that blowout with the joystick is enabled after dispensing the last aliquot. OFF means that joystick blowout is disabled – the softkey must be used instead. OFF may be helpful for users concerned about inadvertently dispensing the residual (non-aliquot) liquid.

If desired, the piston return time can be delayed by holding down the joystick during blowout.

5.5 Cycle Counter

A pipetting cycle consists of one aspirate/dispense/blowout operation. When the Cycle Counter option is on, the Cycle Count setting box is displayed in the operating screen.

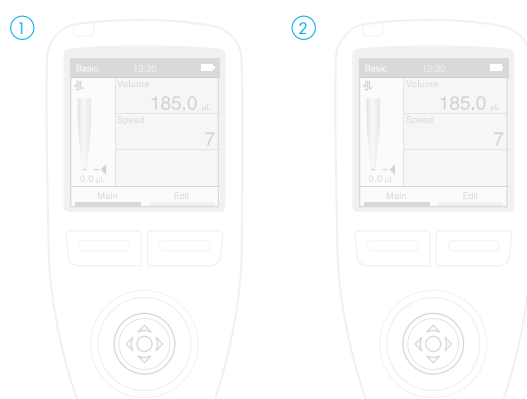
5.6 Auto-Pace

Auto-Pace enables automatic aliquot dispensing at user-defined intervals between 0.1 and 30 seconds. This option is only available in Multi-Dispense mode. When this option is on, the Auto-Pace icon is displayed on the operating screen.

1. Press $\bigcirc$ or $\triangleright$ to set the interval from 0.1 to 30 seconds. Use $\triangleleft$ or $\triangleright$ for coarse adjustment and $\wedge$ or $\vee$ for fine.
2. Press DONE or $\bigcirc$ to save. To exit without saving changes, press CANCEL.
3. Press DONE to return to the operating screen.
4. To turn Auto-Pace off, return to the interval edit screen and press $\triangleleft$ at 2.0 or $\vee$ at 0.1.

5.7 Presets

Presets allow users to quickly save and retrieve favorite protocols. An entire mode setting can be saved to a Preset file. Preset files can be named, edited, and deleted. Saved Presets can be viewed and selected via the PRESETS right soft key button on the main menu. Mode Presets are specific to the mode in which they were created.



6. Volume Settings

The pipette settings available in each operational mode are displayed in boxes along the right side of the operating screen. Volume and speed settings are common to all operating modes. Cycle count, mix settings, and mode Presets are displayed if the corresponding option is available and has been turned on.

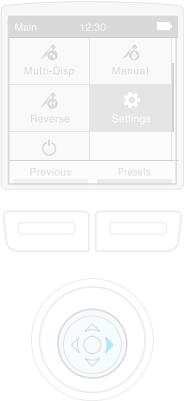
In general, settings can be selected and changed as follows:

①



Press **>** to access the quick edit window or **Edit** to access the settings screen.

②



Press **^** or **v** to navigate between and highlight a setting.

③



Press **○** or **>** to edit.

④



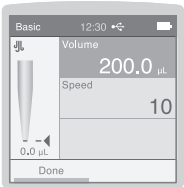
Press **<** or **>** for coarse value adjustment and **^** or **v** for fine. Hold the joystick in place to quickly scroll through values.

Note: Some option-specific settings may require additional steps. When a user exits an operational mode, all settings are retained when the mode is accessed again. Some settings are only accessible through the settings screen and not through the quick edit window.

6.1 Single Volume Settings

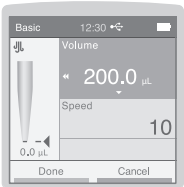
Allows one volume to be set and used for aspirate/dispense. When this setting is active, Volume is displayed in the Volume Setting box. This is the default volume setting for all operational modes, and the only volume setting available in Basic mode.

①



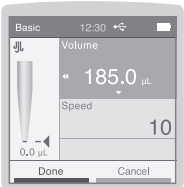

Press or to edit.

②



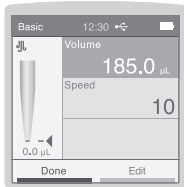

Press or for coarse adjustment and or for fine.

③




Press **Done** or to save. Press **Cancel** to exit without saving changes.

④




Press **Done** to exit Settings screen and return to operating screen.

6.1.1 Setting the Volume and Number of Aliquots

You can set Vero to dispense multiple aliquots of the same volume from a single aspiration.

Highlight the Aliquots Setting box (Aliquots) to set the number of aliquots and Aliquot Volume Setting box to adjust the volume of each aliquot.

To adjust the values of either box press:

- ☐ to edit
- < or > for coarse adjustment
- ^ or v for fine adjustment

Then:

- DONE or < to save the setting
- CANCEL to exit without saving the changes

Note that the aspiration volume automatically changes based on the number and volume of aliquots set. Vero will not allow the number of aliquots at a set volume exceed the maximum volume of the pipette (e.g., if the volume per aliquot is set to 20 μ L on a 100 μ L pipette, Vero will limit the number of aliquots to 5).

If your desired value cannot be selected, change the Aliquot Volume setting to a lower value. The Volume Setting will automatically adjust based on the new Aliquots Setting and the existing Aliquot Volume Setting.

6.2 Fixed Volume Settings

When the Fixed Volume option is on, "Fixed Vol X" is displayed in the Volume Setting box and one of the 14 pre-set volumes can be selected from the volume table. For example, Fixed Vol 3 indicates the volume shown is the third volume selection in the table.

Press $\bigcirc$ or $>$ to view the volume table. The volume currently selected will be highlighted in the table.

1. To select a preset volume, use the joystick to highlight a volume. Only active table cells (white text) will be available on the operating screen. Press DONE to set and exit table.
2. To add or remove active cells in the table, use the joystick to highlight a cell that represents the last entry needed. Press END VOL to add cells up to or remove cells after the highlighted cell.
3. To edit a preset volume, use the joystick to highlight the volume. Both active and inactive cells can be edited.
 - Press $<$ or $>$ for coarse adjustment and $\wedge$ or $\vee$ for fine.
 - Press DONE or $\bigcirc$ to save. Repeat as needed for other volumes.
 - Press CANCEL to exit without saving changes.
 - Press DONE to exit table.

Note: If no other selection is made before exiting the table, the Volume Setting will be set to the last volume edited.

4. Press DONE to exit the Settings screen and return to operating screen.

6.2.1 Fixed Aliquot Volume Settings

Fixed Aliquot Vol is displayed in Volume Setting box. Option must be on for this setting to be shown. or to view the volume table. The volume currently selected will be highlighted in the table.

1. To select a preset volume, use the joystick to highlight a volume. Only active table cells (white text) will be available on the operating screen. Press DONE to set and exit table.
2. To add or remove active cells in the table, use the joystick to highlight a cell that represents the last entry needed. Press END VOL to add cells up to or remove cells after the highlighted cell.
3. To edit a preset aliquot volume, use the joystick to highlight the volume, to edit. Both active and inactive cells can be edited. or for coarse adjustment and or for fine. Press DONE or  to save. Repeat as needed for other aliquot volumes. Press CANCEL to exit without saving changes. Press DONE to exit table.

Note: If no other selection is made before exiting the table, the Volume Setting will be set to the last aliquot volume edited.

4. Press DONE to exit Settings and return to the operating screen.

6.2.2 Single and Fixed Volume Operation

1. Single Volume operation: skip to step 2.
Fixed Volume operation: select the next fixed volume in the table (if needed).
2. Press $\wedge$ and hold to aspirate, then $\vee$ and hold to dispense at any time. It is not necessary to aspirate the full amount in the Volume Setting before beginning dispense. The amount of sample aspirated or dispensed is controlled directly through the joystick:
 - As the joystick is moved towards its maximum position, volumes will aspirate/dispense at a faster rate. To aspirate/dispense smaller volumes at slower rates, move the joystick slowly until the desired rate is achieved.
 - If the joystick is released operation will pause. When joystick control resumes, operation will continue from the same point.
 - **STEP** will aspirate/dispense the pipette's minimum allowable increment each time the soft key is pressed. **STEP** can be held down and continuously activated.
 - If the value set in the Volume Setting is reached, aspiration control will halt.
3. When dispense is complete, press $\vee$ or **RESET** for manual blowout(s) if needed.

6.2.3 Single and Fixed Volume Measurement in Manual Mode

1. Single Volume operation: skip to step 2.
Fixed Volume operation: select the next fixed volume in the table (if needed).
2. Press $\wedge$ to aspirate the unknown volume of sample into the tip:
 - The amount of sample drawn into the tip is controlled directly through the joystick. As the joystick is moved up towards its maximum position, volumes will be aspirated at a faster rate. To aspirate volumes at a slower rate, move the joystick slowly until the desired rate is achieved.
 - Operation will pause if the joystick is released. When joystick control resumes, operation will continue from the same point.
 - Pressing **STEP** will aspirate the pipette's minimum allowable increment each time the soft key is pressed.
3. If needed, slowly release unwanted air from the tip.
4. If the value set in the Volume Setting is reached, aspiration control will halt. Slowly release sample or air from the tip, or press **STEP** to release a minimum increment.
5. Repeat the steps above as necessary until the liquid in the tip is level with the tip orifice. The volume of sample in the tip is displayed in the lower left of the operating screen and represents the measured volume.
6. Press $\vee$ and hold or **RESET** to release sample from the tip.
7. Press $\vee$ or **RESET** for manual blowout(s) if needed.

6.2.4 Single and Fixed Volume Operation with Optional Mixing

1. Single Volume operation: skip to step 2.
Fixed Volume operation: press < to select the next fixed volume on the table (if needed).
2. Press ○ or ^ to aspirate.
3. Press ○ or v to dispense. Each dispense is followed by an automatic blowout if enabled. If the Mix option is on:
 - When a set number of cycles is selected, mixing will execute automatically after each dispense followed by an automatic blowout if enabled. Select PAUSE at any time to pause mixing, then RESUME to continue.
 - If Manual is selected, continue to hold after dispense to execute mix cycle(s). Mixing will continue until the joystick is released. Mixing is followed by an automatic blowout if enabled.
 - Pressing **STEP** will aspirate the pipette's minimum allowable increment each time the soft key is pressed.
4. Press v or RESET for manual blowout(s) if needed.

6.2.5 Single or Fixed Aliquot Volume Operation

1. Press ○ or ^ to aspirate.
2. Press ○ or v to dispense into the first receiving vessel:
 - If the Auto Pace option is off, place the tip into the next receiving vessel and press ○ or v to dispense. Repeat this step for each of the remaining aliquots. The series number in the Aliquot Setting will change by increment after each dispense.
 - If the Auto Pace option is on, DISPENSE AUTO will display. Place the tip into the next receiving vessel. An interval counter will display at the top of the operating screen. The aliquot will dispense automatically when the set interval is reached. Repeat this step for each of the remaining aliquots. The series number in the Aliquot Setting will change by increment after each dispense.
3. When aliquot dispensing is complete, BLOWOUT will display. Press ^ to re-aspirate and repeat dispensing step, v, BLOWOUT or RESET to execute blowout. Press v BLOWOUT or RESET again if more blowout(s) needed. v will only work if Blowout option is on.
4. Press < to select the next fixed preset aliquot volume in the table if needed.

6.3 Volume Sequencing

When the Volume Sequencing option is on, up to 16 pre-set volumes can be selected for use in series from the volume table. When this setting is active, "Vol X of X" is displayed in the Volume Setting box. For example, "Vol 2 of 4" indicates the volume shown is the second of four volumes in the series selected in the table. The volume value and number will increment as each cycle completes.

This option must be on for these settings to be shown. The first setting, Volume Information (Vol X of X), displays the total aspirate volume required to dispense the full or partial set of aliquots in the series. If only one aspiration is required to dispense the full series, Vol 1 of 1 is shown. If the series volume exceeds the pipette's maximum volume, it is split into multiple aspirations and Vol 1 of X is shown: e.g., if two aspirations are required, Vol 1 of 2 is shown at the initial ASPIRATE operation. This will change to Vol 2 when the next volume must be aspirated.

6.4 Speed and Flow Rate Settings

Speed and flow-rate settings allow users to set aspirate, dispense and mix speeds from 1 (slow) to 10 (fast). Users also have the option of setting a flow rate in microliters per second by toggling on “Flow Rate” in the Admin settings menu. Higher speed settings are best for aqueous samples and lower speed settings are best for viscous, foaming, delicate or shear-sensitive samples. The maximum speed settings for large-volume Vero models in Basic mode are limited to prevent “fountaining” (air intake) during aspiration. See Appendix A for a complete speed table.

1. Press ○ or > to view individual operation speeds.
Note: The mix operation speed is shown only when the Mix option is on.
2. Press ^ or v to highlight setting, center press or right to edit.
3. Press < or > for coarse speed adjustment of 1, 5 or 10 and ^ or v for fine adjustment in single digits.
4. Press DONE or ○ to save or CANCEL to exit without saving changes. Press DONE to exit table.
5. Press DONE to exit Settings screen and return to operating screen.

6.4.1 Single Speed

Single Speed allows one speed value to be set which is used for both aspirate and dispense. This is the only speed setting available in Basic mode.

6.4.2 Multi-Speed

Multi-Speed aspirate, dispense and mix speed settings to be set individually. Displays aspirate and dispense speeds (Asp/Dsp Spd) initially. During operation, the set value and current operation (Asp Speed, Dsp Speed or Mix Speed) will be shown in the settings box as each action is carried out.

6.5 Cycle Counter

A cycle is complete aspiration and dispense followed by blowout. The Cycle Counter displays the operational mode's current cycle count, which updates after each cycle completes. Cycle count can be set to any value between 0 and 99,999. This setting is shown only when the Cycle Counter option is on.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Press RESET to zero counter. Press $\triangleleft$ or $\triangleright$ for coarse adjustment and $\wedge$ or $\vee$ for fine.
3. Press DONE or $\bigcirc$ to save or CANCEL to exit without saving changes.
4. Press DONE to exit the Settings screen and return to the operating screen.

6.6 Mix

Mix allows users to perform in-tip mixing after dispense. A mix volume, up to 99 automated mix cycles or manual mixing can be selected. This setting is shown only when the Mix option is on. Minimum and maximum volumes depend on the size of the Vero pipette. When automatic mix cycles are used, the set volume and number of mix cycles (Mix Cyc X) are shown in the settings box. The cycle number will update as each mix cycle completes and stop when the set number of cycles is reached. When manual mixing is used, the set volume and Mix Manual are shown in the settings box.

Press $\bigcirc$ or $\triangleright$ to view mix settings and $\wedge$ or $\vee$ to highlight setting.

1. To change volume, press $\bigcirc$ or $\triangleright$ to edit, using $\triangleleft$ and $\triangleright$ for coarse adjustment and $\wedge$ or $\vee$ for fine. Press DONE or $\bigcirc$ to save. Press CANCEL to exit without saving changes. Press DONE to exit table.
2. To change cycles, press $\bigcirc$ or $\triangleright$ to edit. Use $\triangleleft$ or $\triangleright$ for coarse adjustment and $\wedge$ or $\vee$ for fine up to 99 cycles. Press $\vee$ at 1 for Manual. Press DONE or $\bigcirc$ to save or CANCEL to exit without saving changes. Press DONE to exit table.
3. Press DONE to exit the Settings screen and return to the operating screen.

6.7 Preset Selector

Users can select a Preset file if one or more has been saved. The display shows how many presets are available and which one is currently loaded (if any). Activating this setting box allows users to scroll through and select any available presets with the joystick.

7. Sound and Display Settings

Available Sound, display, and timeout settings are all customizable.

7.1 Sound Level

Sound Level is the volume setting for audible activity alerts. Volume levels between 1 and 10, or Off can be selected.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Press $\triangleleft$ or $\triangleright$ for coarse adjustment of Off, 5 or 10 and $\wedge$ or $\vee$ for fine adjustment in single digits. Press $\vee$ or $\triangleleft$ at 1 for Off. Volume level is shown on the System icon display.
3. Press DONE or $\bigcirc$ to save.

7.2 Display Setting

Users can customize Vero's display to control brightness and optimize battery life.

7.2.1 Display Brightness

This is the light intensity setting for the display. Values between 1 and 10 can be selected, where 1 is the dimmest setting and 10 is the brightest.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Press $\triangleleft$ or $\triangleright$ for coarse adjustment and $\wedge$ or $\vee$ for fine. The screen's brightness will automatically adjust as the setting is changed.
3. Press DONE or $\bigcirc$ to save.

7.2.2 Display Timeout

The Display Timeout dims the display after a period of inactivity to conserve battery life. Time intervals between 5 and 120 seconds, or Never can be selected.

Note: To wake Vero from a Display Timeout, press either soft key or move the joystick in any direction.

1. Press $\bigcirc$ or $>$ to edit.
2. Press $<$ or $>$ for coarse adjustment and $\wedge$ or $\vee$ for fine.
3. Press DONE or $\bigcirc$ to save.

7.2.3 Sleep Timeout

Sleep Timeout powers the display off after a period of inactivity to conserve battery life. Time intervals between 1 and 60 minutes can be selected.

Note: When charging, the pipette will not enter a sleep timeout if a cycle is incomplete (e.g., when a sample has been aspirated but not yet dispensed). To wake the pipette from a Sleep Timeout, press either soft key. If not charging, the pipette will not enter a sleep timeout if a cycle is incomplete for an additional 15 minutes. The interrupted cycle is recoverable for up to 18 hours when not charging.

1. Press $\bigcirc$ or $>$ to edit.
2. Press $<$ or $>$ for coarse adjustment and $\wedge$ or $\vee$ for fine.
3. Press DONE or $\bigcirc$ to save.

7.3 Time and Date Settings

Available time and date settings are shown in Figure 19.

Time shows the current time in a 24-hour, HH:MM:SS format. Time is displayed at the top right of all screens.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Hour will be selected initially. or to navigate between hour, minute and second settings.
3. Press $\wedge$ or $\vee$ to change value.
4. Press DONE or $\bigcirc$ to save.

Date shows the current date using the current Date Format Setting.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. The first field will be selected initially. or to navigate between the other two date fields.
3. Press $\wedge$ or $\vee$ to change value.
4. Press DONE or $\bigcirc$ to save.

7.3.1 Time Display

This is the format of the on-screen time display. Select 24- or 12-hour formats or None to turn the time display off.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Press $\wedge$ or $\vee$ to select display format.
3. Press DONE or $\bigcirc$ to save. The format of the time display in all screens will update immediately..

7.3.2 Data Format

This is the year, month, and day format for the Date Setting. M/D/Y, Y/M/D, and D/M/Y formats can be selected.

1. Press $\bigcirc$ or $\triangleright$ to edit.
2. Press $\wedge$ or $\vee$ to select format.
3. Press DONE or $\bigcirc$ to save. The Date Setting will update automatically.

7.4 User Preference Settings

Users can set the language and specify the pipette owner.

7.4.1 Language

Users can select one of the following languages: English, Japanese, Chinese, French, Spanish, or German.

1. Press ○ or > to edit.
2. Press ^ or v to select language.
3. Press DONE or ○ to save. The text displayed in all screens will update to the new language immediately.

7.4.2 Owner

This setting identifies the pipette owner. Users can enter up to 16 characters. The owner will also display it in the splash screen.

1. Press ○ or > to edit.
2. Use joystick to select characters in Text editor popup screen. Use the bottom left icon to select lowercase letters, numbers, or symbols.
3. Press DONE to save.

7.5 Factory Default Settings Reset

This feature resets the pipette back to its factory default settings. All temporary settings, including the Admin passcode, are removed or reset, and the unit reverts to English. However, any Mode or User Presets are saved because they are stored on the micro-SD card.

1. Press > or RESET on the Factory Default menu.
2. Press CONT to confirm reset.

7.6 Sound Alerts

7.6.1 General Sound Alerts

- Aspiration complete: High-tone ding
- Dispense complete: Mid-tone ding
- Blowout complete: Low-tone ding
- Reset activated: Two high-tone beeps
- Reset complete (piston in home position): Low-tone ding
- Soft key function accessed: Short click
- Menu navigation: Swoosh
- Menu item selected: Short click
- Setting or option selection: Short click
- Setting value or option edit: Short click
- Setting error (min/max setting has been reached): Buzz
- Cancel: Swoosh
- Low battery warning: Two high-tone beeps
- Service Alarm: Two high-tone beeps

7.6.2 Mode-Specific Sound Alerts

- Multi-Dispense Mode: A second low-tone ding will sound after the last aliquot is dispensed.
- Manual Mode: Aspirate and dispense complete alerts will sound only when the value set in the Volume Setting is fully aspirated or dispensed.

7.7 Alarms

Users can set service alarms based on number of cycles executed or days in use.

7.7.1 Cycle Alarm

The Cycle Alarm will notify users that pipette service is due after a set number of aspirate/dispense cycles have been executed since last service (see Service Mode). To set a Cycle Alarm:

1. Press $\bigcirc$ or $>$ to turn the Cycle Alarm on.
2. Press $\vee$ to highlight the Number of Cycles Setting.
3. Press $\bigcirc$ or $>$ to edit.
4. Press $<$ or $>$ for coarse adjustment and $\wedge$ or $\vee$ for fine adjustment. Values between 1,000 and 1,000,000 can be set.
5. Press DONE to save changes.

When the value set in the Number of Cycles Setting has been reached, the pipette will present the following:

1. An on-screen Service Alarm notification
Note: To exit a notification message, select CONT.
2. The Service Alarm icon will appear on the System Icon display.
3. These notifications will continue to display until the Cycle Alarm is turned off, the Number of Cycles Setting is reset, or service is performed.

7.7.2 Days Alarms

The Days Alarm will notify users that pipette service is due after the pipette has been in use for a set number of days. To set a Days Alarm:

1. Press $\bigcirc$, $<$ or $>$ to turn the Days Alarm on.
2. Press $\vee$ to highlight the Number of Days Setting.
3. Press $\bigcirc$ or $>$ to edit.
4. Press $<$ or $>$ for coarse adjustment and or for fine adjustment.
Values between 1 and 1,000 can be set.
5. Press DONE to save changes.

When the value set in the Number of Days Setting has been reached, Vero will present the following:

1. An on-screen Service Alarm notification
Note: To exit a notification message, select CONT.
2. The Service Alarm icon will appear on the System Icon display.
3. These notifications will continue to display until the Days Alarm is turned off, the Number of Days Setting is reset, or service is performed.

8. User Presets

A User Preset is a file that stores the entire settings profile of the pipette, including Admin mode, with two exceptions:

User Presets do not include a passcode. The passcode setting is always the last active setting. User Presets can be helpful tools for storing different configurations of the pipette settings for distinct tasks. Some tasks might require a more open configuration (e.g., R&D) while others require a very restricted and more controlled configuration (e.g., manufacturing processes). Saving each configuration as a User Preset allows the user to quickly re-configure the pipette for different purposes. Please note the maximum number of presets lists is 20; and the maximum number of presets per list is 99.

8.1 Preset Lists

In terms of preset hierarchy, user presets are stored in preset lists. Think of a preset list as a folder that contains individual preset files. Preset lists are useful for organizing presets.

8.2 User Preset Management

If you want to save a new User Preset or edit an existing one, make sure that the current pipette setting configuration is the one desired. Press $\triangleright$ or ENTER on the User Preset menu (Admin mode page 2, Figure B). On the User Presets screen you will see your list of saved Presets (Figure K).



8.2.1 Save a new User Preset

1. To create a new preset, select desired mode from the main menu.
2. Select the right soft key EDIT, after editing settings select SAVE.
3. Enter name of preset and then select DONE, after pressing done select Preset List location by left and right selecting DONE when finished.
4. To LOAD or DELETE an existing User Preset: In the main menu select the Preset soft key.
5. Navigate through the presets by pressing $\wedge$ and $\vee$ to highlight a User Preset and $\triangleleft$ and $\triangleright$ for Preset lists.
6. Select the desired preset by pressing $\bigcirc$.

8.2.2 Edit an existing User Preset

1. Use $\wedge$ and $\vee$ to highlight the preset you wish to edit on the User Preset screen.
2. To reorganize the preset select Edit to reorganize.
3. Center press the desired Preset.
4. Quick edit: Press $\triangleright$ to adjust volume, aliquots and speed.
5. Use right softkey Edit preset, selecting Save to change Preset.
6. Enter new name, selecting the left soft key, "DONE."

8.3 Locking the Pipette



The admin can lock the pipette to prevent the user from accessing adjustable pipetting modes. After locking the pipette, the admin can select which specific preset lists the user has access to. This locking feature is intended to prevent deviations and improve compliance.

To lock the pipette, select Settings, Admin, Lock Pipette, Lock Mode (toggle on). Choose which preset lists you want to be available by selecting Preset List Permissions, then Turn On/Off access lists to specific preset lists. This limits the user to the selected presets when operating the pipette.

9. Vero Usage Do's and Don'ts

Do	Do Not
Use only Rainin Vero tips	Leave liquid in the tip
Store Vero upright. Hang on stand, rail, or hang-up	Autoclave Vero or tips
Prime every Vero tip with a quick aspiration and dispense. Manual mode is easiest way to prime. joystick up, then down.	Expose Vero or tips to UV radiation
Use a consistent immersion depth	Use corrosive chemicals to clean
Pipette vertically or within 20 degrees of vertical	Use non-Rainin approved parts (maintenance parts). Doing so voids warranty and performance specifications
Use a filter when pipetting large volumes.	Invert or lay the pipette flat with liquid in the tip

For more information about good pipetting techniques, pipetting training and to order free pipetting technique lab posters, visit the Good Pipetting Practices page on the METTLER TOLEDO web site.

www.mt.com/GPP

10. Connectivity

Vero connects to other devices and applications via USB and NFC.

The USB-C port on top of Vero (protected with a black rubber cap) connects to the wall power supply to charge the device. A USB-C to USB cord (not included with Vero) can be used to connect to a computer or laptop for device firmware updates. (See below.)

For more information, contact a qualified Rainin Service professional or your Rainin sales representative.

10.1 Update Firmware via USB

To update the firmware for Vero:

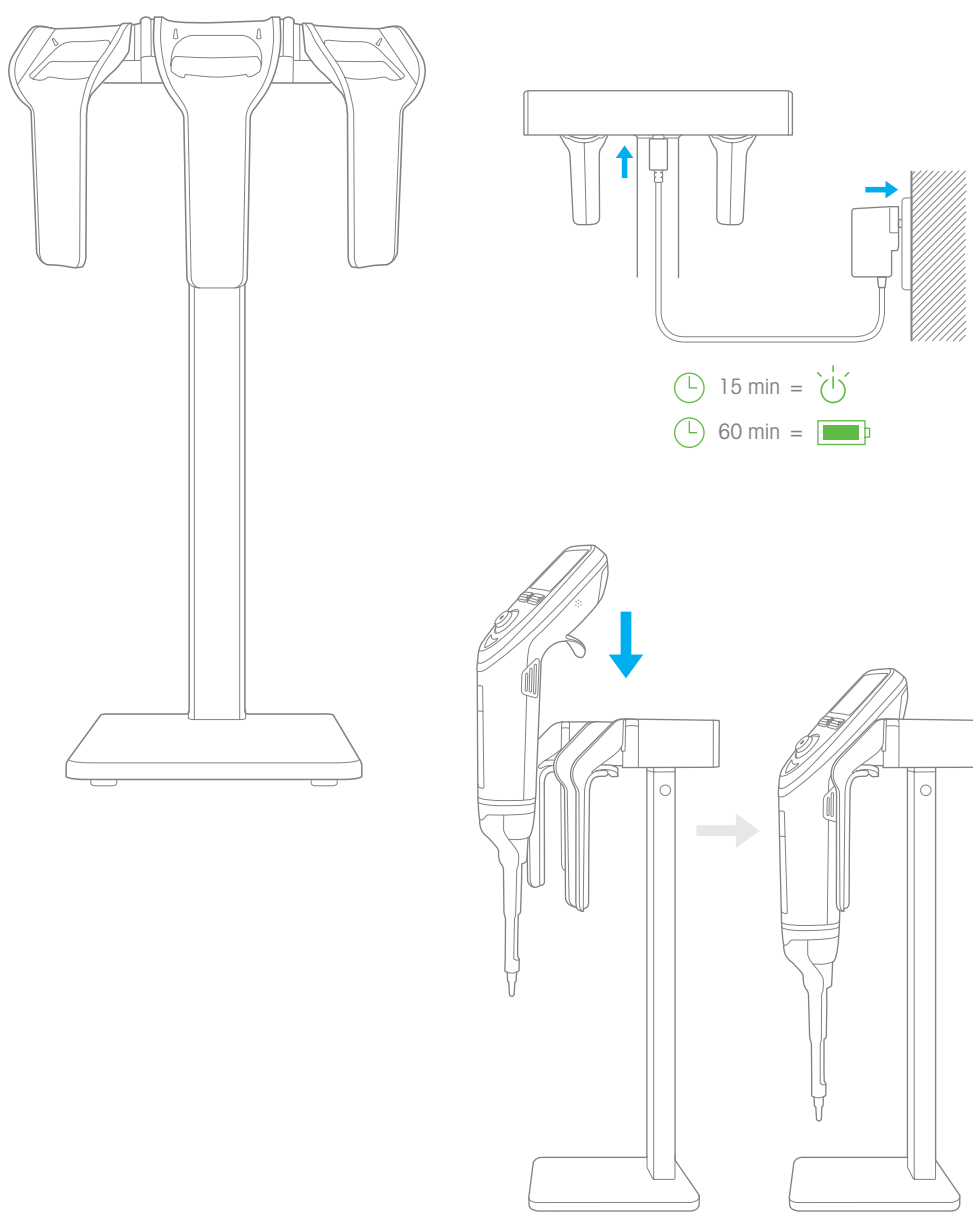
1. Plug the Vero via USB-C cable into your laptop.
2. On the pipette go to Settings > Admin and enable **"Remote file access"** – the pipette will now act like a USB thumb drive
3. On your laptop find the new drive and copy the file Vero_App.bin into the folder UPDATE located on the pipette:
 - Note Rainin will provide the Vero_App.bin file for the new firmware version
 - Open the .zip file and click Extract All in the upper right. Select a destination for the extracted file, then click Extract.
4. On the pipette, exit the **"remote file access"** screen
5. On the pipette go to Settings > Admin > service > firmware upgrade
 - Click **"OK"** on the popup to upgrade
6. The upgrade will take a minute and the pipette will restart. Do not use the pipette until it restarts
7. To check the firmware version, in Settings, use the joystick to navigate to and highlight Service Info and press . The version is listed on the Firmware Version line.

10.2 Radio Frequency Device (NFC)

All Vero models incorporate a passive NFC tag near the finger-hook. The tag contains unique information about the pipette including model type, serial number, NFC UID, and service calibration information.

11. Accessories

In addition to the wall charger that came packaged with your Rainin Vero electronic pipette (part number 31051598), the optional Vero Charging Stand (part number 31103649) provides a safe place to store and charge up to three Rainin Veros simultaneously.



12. Ordering Information

	MT-Order No.	Description	Volume Range
Single Channel Models	LTS		
	30983887	V-10	0.5-10 µL
	30983908	V-20	2-20 µL
	30983909	V-100	10-100 µL
	30983910	V-200	20-200 µL
	30983911	V-300	20-300 µL
	30983913	V-1000	100-1000 µL
	30983914	V-2000	200-2000 µL
Multichannel Models	LTS	8-Channel	
	31034227	V8-10	0.5-10 µL
	31034228	V8-20	2-20 µL
	31034229	V8-50	5-50 µL
	31034230	V8-200	20-200 µL
	31034231	V8-300	20-300 µL
	31034232	V8-1200	100-1000 µL
		12-Channel	
	31034233	V12-10	0.5-10 µL
	31034234	V12-20	2-20 µL
	31034235	V12-50	5-50 µL
	31034236	V12-200	20-300 µL
	31034237	V12-300	20-300 µL
	31034238	V12-1200	100-1200 µL
Accessories	31103649	Charging stand for Vero (holds three pipettes)	
	31051598	USB-C power adapter for Vero	
Vero Battery	31132056	Battery Vero Lithium Ion	

13. Care and Maintenance

After use, store the pipette in a clean safe place. Vero is a precision instrument and should be treated with the level of care appropriate for laboratory instrumentation.

Rainin recommends storing Vero on the Vero charging stand.

13.1 Care Tips

The most important factor in taking proper care of Vero is to keep the mechanisms dry and clean. The following simple rules should be strictly observed:

1. Never allow liquid to enter the shaft where it can contact the piston or seal.
2. Never allow liquid to enter the electronics, including the display, soft keys, and joystick.
3. Never pick up liquid without a tip attached.
4. Never invert the pipette or lay it on its side with liquid in the tip. Always hold Vero upright and store upright if possible. Use the optional Vero charging stand.
5. Never use aggressive solvents to clean Vero. Instead, use a lint-free wipe dampened with water and, only if necessary, a mild diluted detergent. Be sure to keep the display, soft keys, and joystick dry.
6. Never attempt to recharge Vero with a device other than the Vero-WPS Wall Power Supply, the Vero stand, or the Vero-USB cable. Using non-Rainin-approved charging equipment can severely damage Vero's internal electronics.

13.2 Cleaning

Sample contamination of the shaft, seals or piston can result in rough, sticky plunger movement. Deposits on the piston can eventually cause the seal to tear, leading to inaccurate results. A best practice for pipette maintenance is to regularly clean the pipette liquid end with the following procedure:

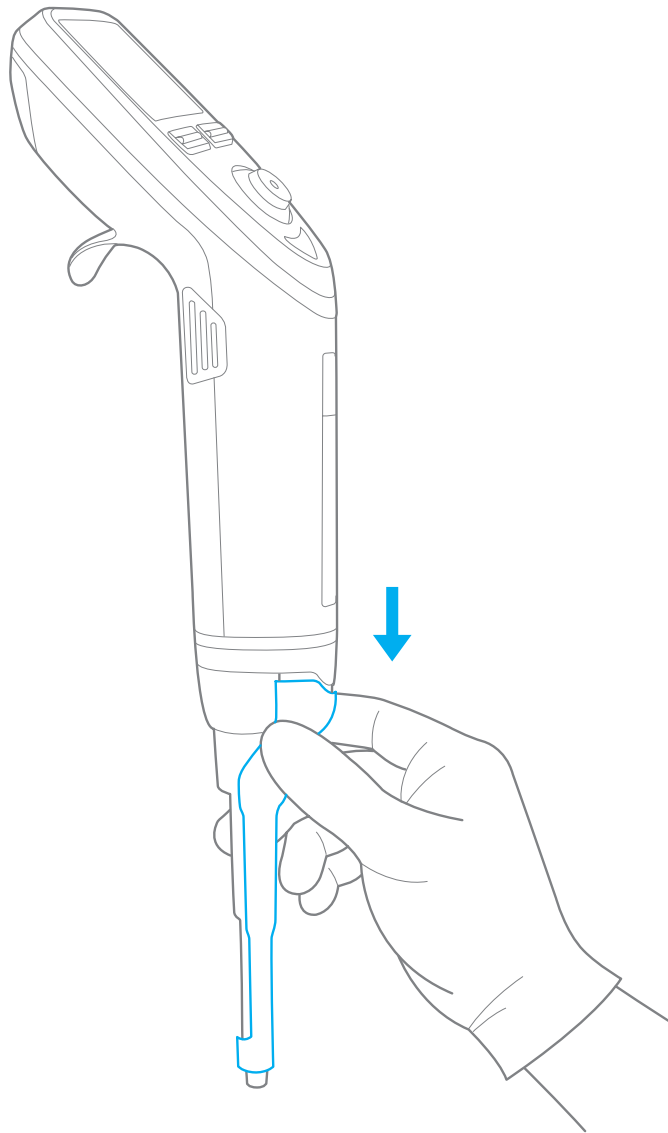
1. Remove tip ejector arm (See Tip ejector arm removal Figure 29).
2. To remove the shaft:
 - 2 – 1000 μ L: unscrew the shaft coupling nut and remove the shaft.
 - 2000 μ L: unscrew the shaft.
 - > 2000 μ L: unscrew the lower part of the shaft.
3. When removing the piston assembly, note the order and placement of the seal, retainers, springs, and O-rings. Vero seals vary by model:
 - 2 – 20 μ L seals are symmetrical and can be used in either orientation.
 - 100 – 2000 μ L seals are asymmetrical and must be inserted in the correct orientation (See figure 30 A and B).
4. Vero seal sizes 1000-2000 μ L can remain inside the shaft when the piston assembly is removed and is normal for this design. If desired, the seals can be removed from the shaft by inserting the large end of a tip into the shaft (See Figure 30 C) and hooking the seal over it.
5. To inspect and clean seals on 100-300 μ L models, gently remove them from their retainers by pushing them out from the back side, preferably with a dull object like a pipette tip.
6. Inspect the seals, retainers, O-rings, shaft, and piston for contamination. Clean with a lint-free cloth and either distilled water or isopropyl alcohol. Apply grease (part number 6200-524, 17014531) sparingly by gently rubbing the seal or O-ring between your thumb and index finger, ideally using a clean powder-free examination glove. Apply a small amount of grease on the piston as well. Reassemble in the correct order and orientation.
7. If piston corrosion or staining is evident, stop using the pipette and have a METTLER TOLEDO or Rainin service representative assist with replacement of the piston.
8. The shaft, tip ejector and handle can also be cleaned using a cloth dampened with distilled water, 10% bleach solution, isopropyl alcohol, or any commercially available instrument decontamination solution. Be sure to rinse off the cleaning agent with distilled water.

13.2.1 Tip Ejector Arm Removal

Vero's metal and plastic tip ejector arms are easily removed.

Metal tip ejector: press in the quick-release tabs on the ejector arm and pull the arm down and away from the body of the pipette.

Plastic tip ejector: Firmly grasp the tip ejector arm and pull down.



13.3 Autoclaving

Autoclaving Vero's shaft and ejector arm to perform sterilization may be performed at 121°C, at 1 Bar, for 15-20 minutes, with the following restrictions and guidelines.

Do not autoclave the entire pipette or any part not identified in the table below.

Model	Autoclavable Parts
Single Channels	Shaft, tip ejector, piston assembly, spring, seal, and seal retainer
Multichannels	None

The entire liquid end of Vero single channel pipettes may be removed and placed into the autoclave without disassembling individual parts. The liquid end includes the following: Shaft, tip ejector, piston assembly (with spring), seal, and seal retainer. If you have upgraded the seals of an older Vero to the new Vero seals, you can now autoclave the entire liquid end of your pipette. If you are unsure of your model type.

If you autoclave more than one unit together, take care to reassemble your pipettes with all their original parts. If you clean the Vero piston and seals before autoclaving, then be sure to re-grease them afterwards (see Care and Maintenance).

See the Care and Maintenance and Replacement Parts sections for more details on disassembling pipettes and how to identify the various parts.

14. Service and Calibration

We recommend METTLER TOLEDO and Rainin service for calibration and preventive maintenance. ISO certificates can be requested from your local sales representative.

For technical support questions, contact your local Rainin representative. For contact information visit: www.mt.com/contact

It is recommended to use only genuine Rainin replacement parts such as seals, O-rings, and shafts. It is **not** necessary to recalibrate the pipette after changing the seal, O-ring, or shaft. Pipette recalibration is only necessary when the piston is replaced and should only be performed by a METTLER TOLEDO or Rainin service technician.

For warranty service, note that the warranty is void if the pipette has been damaged due to physical or chemical abuse, or if it has been repaired or recalibrated by a service provider not authorized by Rainin. Visit www.mt.com/contact to locate your local METTLER TOLEDO or Rainin service center.

14.1 Replacement Parts

For replacement parts, see Section 10, Ordering Information, or contact either your local Rainin representative or Rainin Technical Support.

For contact information, visit: www.mt.com/contact

14.1.1 Filter

5000 μ L, 10 mL, and 20 mL models have a filter in the end of the shaft to prevent liquid from entering the shaft and contaminating the piston should the plunger snap up during aspiration. Using a filter is recommended when pipetting large volumes and should be replaced if it gets wet.

The 5000 μ L and 10 mL pipettes use the same filter:

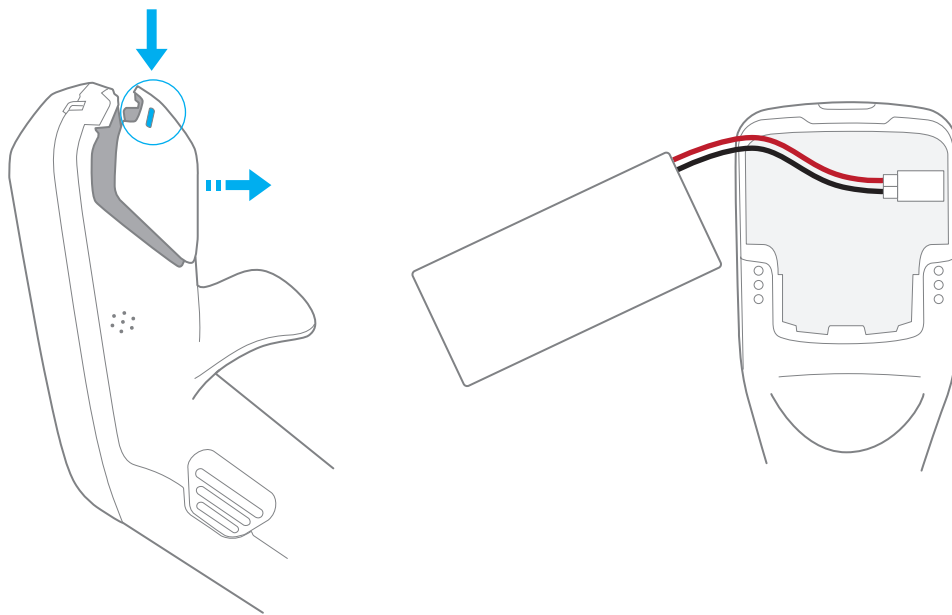
- 5000 μ L: small diameter into the shaft.
- 10 mL: large diameter into the shaft.
- Filter part numbers are 17001944 (pack of 100) and 17001945 (pack of 1000).

Part numbers for the cylinder-shaped 20 mL model are 17001951 (pack of 100), 17001952 (pack of 500).

14.2 Replacing the Battery

To replace the battery, locate the battery housing on the back of the pipette near the USB socket. Apply force to the blue battery cover indent at the top pressing down and sliding outwards simultaneously. Remove the cover, making sure to take the battery out and disconnect the red and black cables from the pipette board. Connect the new battery's cables to the pipette making sure to insert the flat side of the battery into the center of the pipette and replace the battery cover.

Note: It is important that the battery only be replaced with a Rainin battery.



15. Troubleshooting

Pipette line	Possible Cause	Suggested Remedy
Leaks, inaccuracy	Loose shaft	Tighten coupling nut by hand
	Worn seal for pipette volumes $\leq 2000 \mu\text{L}$	Replace seal
	Worn O-ring or insufficient grease seal for pipette volumes 5000 μL , 10mL, 20 mL	Replace O-ring and apply small amount of grease
	Cracked or split shaft	Replace shaft. Check to ensure piston is not bent. If bent, call METTLER TOLEDO or Rainin service for a new piston. www.mt.com/contact
Rough, jerky, or sticky plunger movement	Contamination inside mechanism	Remove tip ejector arm, remove shaft, and check piston and seal clean as described in Care and Maintenance section. If piston is permanently corroded or stained, call METTLER TOLEDO or Rainin service for a new piston. www.mt.com/contact
	Insufficient grease	Apply grease sparingly to seal or O-ring.

When removing the shaft from the pipette body, make sure the spring, seal and O-ring do not detach from the piston, especially on smaller models. Be careful not to bend the piston on smaller models. Pipette recalibration is only required when the piston is replaced.

15.1 Acids and Corrosives

Extensive contact with corrosive fumes may result in premature seal wear and damage to the piston. Exposure of the internal components to corrosive aerosols and fumes may be reduced by using Rainin tips with aerosol barrier filters. After using concentrated acids or corrosive solutions, disassemble Vero and inspect and clean the piston assembly, shaft, and seal/O-ring with distilled water. Use extreme care on the 10 μ L models to avoid damaging the small diameter piston or losing small items such as seals. Dry all components thoroughly and reassemble.

15.2 Warning Messages

Vero is self monitoring and will alert users to important issues such as battery levels, USB connection, charge stand connection, factory reset, real time clock status and more. Any changes to these variables that could affect your operation of the pipette will be reported as a Warning message. Some warnings require action, such as recharging the unit or resetting the clock, while others are informational only ("Memory Clear" after factory reset). To exit any warning message, press the left soft key (CONT). If a warning message is displayed during the Vero power up sequence that cannot be reset, note the error number and contact your local Rainin service center or sales representative.

www.mt.com/contact

15.3 Error Messages

Vero is a sophisticated product that is dependent on a complex mix of electronic hardware and software components. In any complex system such as this, faults may occasionally occur.

These are usually due to unexpected software conditions (invalid data, conflicting settings, etc.) or hardware related failures (invalid or no response).

An Error message informs you that a fault has been detected. Depending on the error, users may be able to clear the fault and continue pipetting.

16. Warranty Information

The Rainin warranty is a conditional warranty that covers defects in parts or workmanship, as well as ensures proper performance of the pipette as shipped by the factory. It does not cover damage such as that caused by dropping, splash up of chemicals or if the pipette has been repaired or recalibrated by any service facility not authorized by Rainin. This warranty is effective for one year following purchase or service in our lab.

17. Disposal



In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, according to their specific requirements. Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

17.1 RoHS Regulation # 2011/65/EU



Rainin and METTLER TOLEDO fulfil requirements under RoHS Regulation # 2011/65/EU.

E4 XLS products and accessories comply with the above-mentioned RoHS Regulation.

17.2 China RoHS Substance Disclosure



Complies with SJ/T11364-2014.

For more information, go to: <http://www.mt.com/China-RoHS>.

www.mt.com/rainin

For more information

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[ZHS] 了解更多信息
[ZHT] 了解更多信息

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