VWR® ELECTRONIC PIPETTE

INSTRUCTION MANUAL

North American Catalog Numbers

10827-884	VWR ELECTRONIC PIPETTE 10µL
10827-918	VWR ELECTRONIC PIPETTE 20µL
10827-920	VWR ELECTRONIC PIPETTE 300µL
10827-922	VWR ELECTRONIC PIPETTE 1200µL
10827-924	VWR ELECTRONIC PIPETTE 8X10µL
10827-926	VWR ELECTRONIC PIPETTE 8X20µL
10827-928	VWR ELECTRONIC PIPETTE 8X300µL
10827-930	VWR ELECTRONIC PIPETTE 8X1200µL
10827-932	VWR ELECTRONIC PIPETTE 12X10µL
10827-934	VWR ELECTRONIC PIPETTE 12X20µL
10827-936	VWR ELECTRONIC PIPETTE 12X300µL
10827-938	VWR ELECTRONIC PIPETTE 12X1200µL

European Catalog Numbers:

613-5415	VWR ELECTRONIC PIPETTE 10µL
613-5416	VWR ELECTRONIC PIPETTE 20µL
613-5417	VWR ELECTRONIC PIPETTE 300µL
613-5418	VWR ELECTRONIC PIPETTE 1200µL
613-5419	VWR ELECTRONIC PIPETTE 8X10µL
613-5420	VWR ELECTRONIC PIPETTE 8X20µL
613-5421	VWR ELECTRONIC PIPETTE 8X300µL
613-5422	VWR ELECTRONIC PIPETTE 8X1200µL
613-5423	VWR ELECTRONIC PIPETTE 12X10µL
613-5424	VWR ELECTRONIC PIPETTE 12X20µL
613-5425	VWR ELECTRONIC PIPETTE 12X300µL
613-5426	VWR ELECTRONIC PIPETTE 12X1200µl

Version: 1
Issued: 02/18/2016

CE

United States
VWR International, LLC
100 Matsonford Rd
Radnor, PA 19087
800-932-5000
http://www.vwr.com

Europe
VWR International bvba
Researchpark Haasrode 2020
Geldenaaksebaan 464
B-3001 Leuven
+ 32 16 385011
http://be.vwr.com

Country of origin: FRANCE

Intended use :

VWR® ELECTRONIC PIPETTE is intended to be used in liquid handling applications for dispensing liquids in volume range of 0.5 µl to 1200 µl.

This liquid handling device is designed and manufactured to be used as general purpose laboratory equipment. Before operating it is recommended to read the user manual, which contains useful information e.g. for good pipetting practice.

Table of Contents

Page
1 - INTRODUCTION 4
2 - PARTS CHECK LIST AND ACCESSORIES 5
3 - GETTING STARTED 6
4 - DESCRIPTION 6
5 - PIPETTING 8
6 - PIPETTING MODES 8
7 - PIPETTING SPEED CONTROL 14
8 - GUIDELINES FOR GOOD PIPETTING 14
9 - PERSONALIZE YOUR VWR ELECTRONIC PIPETTE 16
10 - GOOD LABORATORY PRACTICE FEATURES 17
11 – VWR ELECTRONIC PIPETTE POWER MANAGEMENT 17
12 - CONFIGURATION 19
13 - MAINTENANCE OF YOUR VWR ELECTRONIC PIPETTE 20
14 - CLEANING AND DECONTAMINATION 25
15 - LEAK TEST 27
16 - TROUBLESHOOTING 28
17 - SPECIFICATIONS 28
18 - SAFETY PRECAUTIONS AND LIMITATIONS OF USE 29
19 - REPLACEMENT PARTS 31
APPENDICES 32:

- Appendix 1: Example of a performance check 32
- Appendix 2: Z Factor 33
- Appendix 3: Evaporation Loss 34
- Appendix 4: VWR Protocol Builder Software 34

WARRANTY 53

1 INTRODUCTION :



- **Ease-of-use:** Only 2 buttons and 5 pipetting modes including the CUSTOM Mode which allows to create pipetting protocols easily and rapidly
- **Advanced Ergonomics:** Lightweight and Perfectly Balanced, it requires virtually no force to significantly reduce RSI
- **Fully Motorized Piston Drive:** For an even and regular sample delivery across each channel
- **Large Volume range:** 4 single channels (from 0.5 µL to 1200 µL) and 8 multichannels (from 0.5 µL to 1200 µL)
- **Use while Charging:** VWR Electronic Pipette can be used while charging without compromising performance
- **VWR Two-Year Warranty**

Ideal Electronic pipette with outstanding performances in all pipetting modes. VWR Electronic pipette requires virtually no force to aspirate and dispense samples and significantly reduces RSI (Repetitive strain injury) associated with routine work. It combines superior accuracy, precision and robustness with advanced ergonomics design: it fits comfortably in either left or right hand and allows a 360° rotating manifold. This pipette is a unique electronic pipette as easy to use as a mechanical one. With only two buttons to enable the pipette and reach modes/functions: The Push-Button to set the volume by turning the button left or right and pipette with a simple push and the Mode-Button to access the 5 essential pipetting modes and pipettes functions. The VWR electronic pipette has an intuitive interface with 5 available modes: PIPET, REPETITIVE, MIX, REVERSE and CUSTOM Mode into which you can create, quickly and easily, specific protocols thanks to VWR Protocol Builder Software .

Choose from a wide range of electronic pipettes covering volumes from 0.5 µL to 1200 µL in single channel and in multichannel versions - all engineered to optimize your pipetting tasks.

Model	Catalog Number		Volume range	Color code
	US	Europe		
VWR 10	10827-884	613-5415	0,5-10µl	Red
VWR 20	10827-918	613-5416	2-20µl	Pale Yellow
VWR 300	10827-920	613-5417	20-300µl	Green
VWR 1200	10827-922	613-5418	100-1200µl	Blue
VWR 8x10	10827-924	613-5419	0,5-10µl	Red
VWR 8x20	10827-926	613-5420	1-20µl	Pale Yellow
VWR 8x300	10827-928	613-5421	10-300µl	Green
VWR 8x1200	10827-930	613-5422	50-1200µl	Blue
VWR 12x10	10827-932	613-5423	0,5-10µl	Red
VWR 12x20	10827-934	613-5424	1-20µl	Pale Yellow
VWR 12x300	10827-936	613-5425	10-300µl	Green
VWR 12x300	10827-938	613-5426	50-1200µl	Blue

2 PARTS CHECK LIST AND ACCESSORIES:

Contents:

Take a moment to verify that the following items are in the box:

- VWR Electronic Pipette
- Power Supply 5V with AC adapter and cable
- 4 Battery side tags
- Lubricant (except for 10µl and the multichannel models)
- Tip-ejector extension (10µl model only)
- Quick Start Guide
- Certificate of conformity
- 2-year warranty

Accessories:

The following items are sold separately:

- VWR CARROUSEL PIPETTE STAND
- VWR CHARGING STAND ADAPTER WHITE

Catalog Number	
US	Europe
10827-940	613-5427
10827-942	613-5428

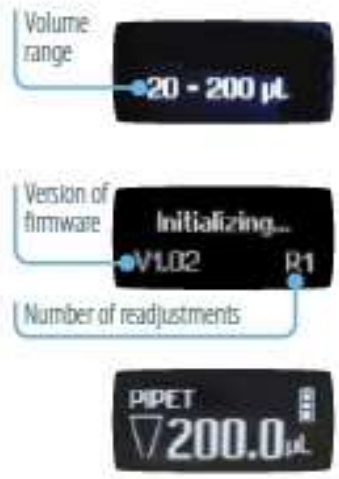




3 GETTING STARTED

VWR Electronic Pipette is provided with a minimal battery charge. Before using it, we strongly recommend you to fully charge the battery. VWR Electronic pipette charges 80 % of its full battery capacity in less than an hour; it takes three hours to fully charge the battery.
Please refer to VWR Electronic pipette power management for charging procedure.

Switch on your VWR Electronic Pipette:
Press the Push-button to activate the pipette. The start-up screen appears:
The pipette will do a self-calibration test, the firmware resets the piston.
During initialization, displayed on the screen, you will see the volume range,version of firmware and the number of readjustments.
Your VWR Electronic Pipette is preset on PIPET mode and is now ready to pipette (see Chapter 5).
VWR Electronic Pipette goes into sleep mode after 3 minutes of inactivity. The display will shut off.
Just press the Push-button to reactivate the pipette, your last setting and pipetting mode will appear on the screen.



4 DESCRIPTION

VWR Electronic Pipette single and multichannel models:
Upper part:

① Push-button and volume adjustment knob
② Mode-button: direct access to all menu functions
③ Tip-ejector button
④ Display
⑤ Elastomer plug to cover the battery charging port
⑥ Identity-tag window
⑦ Connecting nut – attaches handle to lower part

Lower part:

⑧ Tip-ejector: removable access to tip-holder

⑨ Optimized tip-holder to reduce tip fitting and ejection forces, removable for cleaning and servicing

⑩ Ejector clip

⑪ Ejector support

⑫ Cover

⑬ Ejector spacer (only for Multi 1200µl)

Screen:

⑭ Pipetting Mode

⑮ Aspirate and dispense indicator

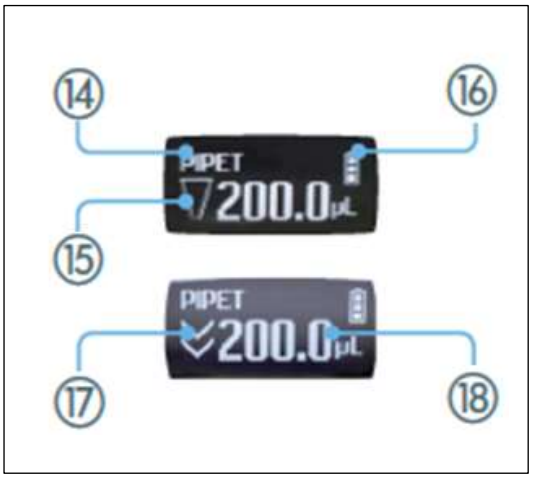
⑯ Battery status

⑰ Purge indicator

⑱ Volume







Reset: To reset your pipette, simultaneously press on the Push-button and the Mode-button for at least 5 seconds.

Switch off: To switch off your VWR Electronic Pipette, press the Push-button for at least 5 sec.

Display: The VWR Electronic Pipette display is an OLED screen. It shows the current mode and operation step, pipetting volume, battery indicator and piston status (aspirated and dispensed volume) in real time.

Warning messages appear in the place of volume.

5 PIPETTING

Your VWR Electronic Pipette is set by default on “PIPET Mode”, that means forward pipetting.

You can select a volume and start to pipette.



Switch on

Press Push-button.



Adjust the volume setting

• Hold your VWR electronic pipette in pipette position.

• Turn the Push-button half way (quite quickly), the screen will display:

“click to change volume”

• Now press the Push-button; the volume on the display will start blinking, you can now adjust the volume:

• Turn the Push-button either clockwise to decrease volume or counter clockwise to increase volume, like indicated on the button.

• Press the Push-button one time when finished. The volume is locked.

You are ready to pipette!



The tip can be emptied at any time during a pipetting cycle. To do so, turn the Push-button quickly: the message “click to abort” will appear on the screen. Click on the Push-button to validate: the liquid will be dispensed and an automatic purge followed by piston reset to zero will occur.

6 PIPETTING MODES

VWR Electronic Pipette offers essential pipette modes for a large number of applications: you will find all pipetting modes in the menu (for system settings refer to the chapters 7 and 13). Access the menu by pushing the Mode-button. **To choose one of the pipetting modes, turn the Push-button and confirm your selection with a simple click!**

PIPET Mode

This is the classic pipette mode (forward pipetting), your pipette is simply aspirating and dispensing.

• Fit a suitable tip

• Press the Push-button to aspirate the selected volume.

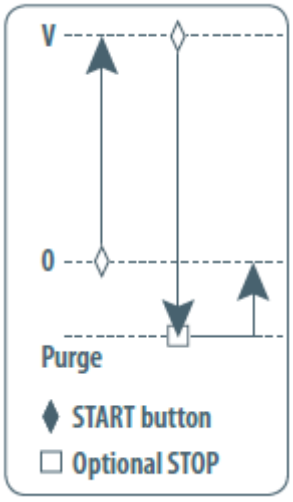
• To dispense: Click (press and release) the Push-button. Three things happen: sample dispense, automatic purge and piston reset to zero.

Or Keep your thumb pressing the Push-button until the end of the dispense cycle: the piston reset takes place **after** releasing the Push-button again. This feature enables you to remove the tip from the liquid, without aspirating anything.

• Eject tip by pressing the ejection button.

VWR electronic pipette is ready again for next pipetting cycle while maintaining the volume and the last settings!

Continue pipetting as you would as if you were using a mechanical pipette.



REPETITIVE Mode



The REPETITIVE Mode allows you to distribute the same volume repeatedly in predefined number (N) of equal aliquots. You supply the aliquot volume (AV) and the pipette automatically calculates the number of aliquots possible from the nominal (maximum) volume (NV) of the pipette as follows: N = NV/AV (e.g. 120 µL x 10 for VWR 1200).

You also can decrease the number of repetitions (e.g. 120 µL x 10-(n ≥1) for VWR 1200).

• Press the Mode-button to access system menu, where you can choose between different pipette modes by turning left or right the Push-button.

Select **REPETITIVE Mode** by turning the Push-button.To confirm your selection click on the Push-button.

• Turn the Push-button half way, the screen will display: “click to change volume”

• Set the aliquot volume : Press the Push-button; the volume on the display will start to blink, you can now adjust the volume by turning left or right the Push-button. Then, click on the Push-button to confirm the volume choosen. The maximum number of aliquots has been calculated by your pipette.

• Set the aliquot number: the Aliquot numbers will start blinking: set the desired numbers of aliquots by turning the Push-button and click again to confirm your settings.

You are ready to pipette!

1/ Fit a suitable tip

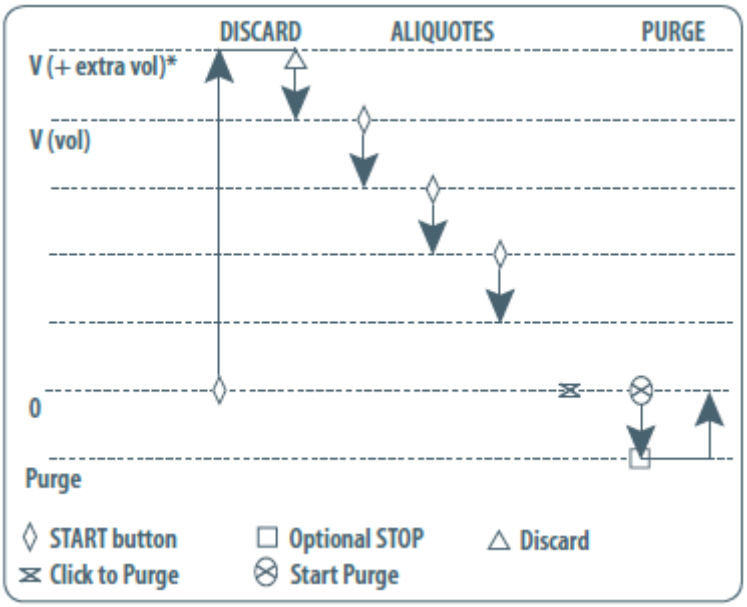
2/ Click the Push-button to aspirate total volume. The volume aspirated will be a little bit more than required (extra volume). The extra volume is necessary to ensure equal operating conditions for each dispensed aliquot.

3/ To dispense: click the Push-button. "**DISCARD**" appears on the screen. Discard the extra volume and continue dispensing the aliquots. VWR electronic pipette distributes the aliquot volume each time you click the push-button. The number of aliquots left to dispense is displayed on the screen.

☞ *A warning beep indicates the last aliquot!*

4./ To purge: Press the Push-button, "**PURGE"** appears on the screen, click again to purge and reset the piston. Keep your thumb pressing the push-button until the end of the purge: the piston reset takes place after you release the push-button again. This feature enables you to remove the tip from the liquid, without aspirating anything.

5/ Eject tip by pressing the ejection button.



MIX Mode



This is the classic pipette mode (forward pipetting) followed by a mixing phase, composed of repeatedly aspirating and dispensing, as well as an optional forward pipetting step.

• Press the Mode-button to access menu, where you can choose between different pipette modes. Select "**MIX Mode**" by turning the Push-button, to confirm your selection click on the Push-button.
• Set the first volume, named "**VOLUME 1"**: click the Push-button, set the volume by turning the Push-button and click to confirm your selection. This is the first volume you will aspirate and dispense.
Set the second volume, named "**VOLUME 2"**: click the Push-button, you can now set the second volume by turning the Push-button. Click again to confirm your settings.

☞ *If you set **"VOLUME 1"** or **"VOLUME 2"**= 0 µL, the step will not appear. If you set **"VOLUME 1"** and **"VOLUME 2"** = 0 µL the cycle will start directly with the MIX step.*

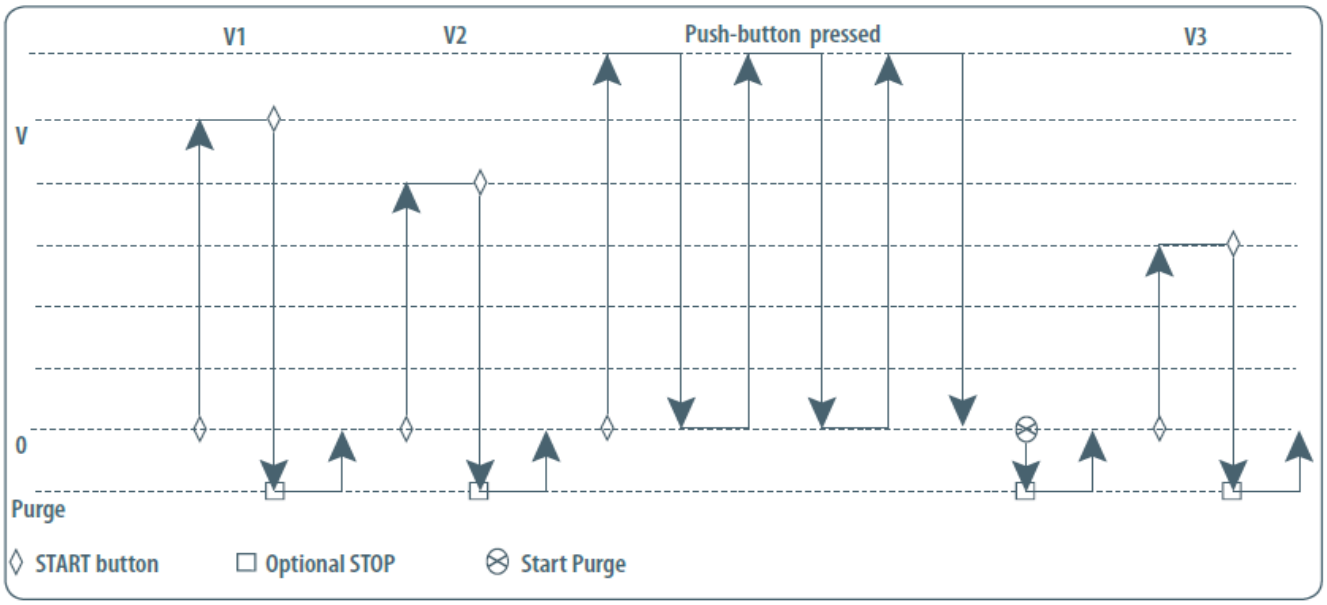
• Set the **MIX** volume: click the Push-button, set the volume by turning the Push-button. Confirm your settings with a simple click. This is the volume which will be aspirated and dispensed repeatedly. **"MIX" as long as you press the push-button.**
• Set the additional pipetting volume, named **"VOLUME 3"**: You can choose a volume to be aspirated and dispensed after the mixing step, so you can continue routine pipetting.
Click the Push-button, set the volume by turning the Push-button. Confirm your settings by a simple click.

☞ *If you set the **"VOLUME 3 "**= 0 µL the cycle will stop after the **MIX** step.*

You are ready to mix!

1/ Fit a suitable tip
2/ To aspirate **"VOLUME 1"** press the Push-button
3/ To dispense: Click (press and release) the Push-button: three things happen: sample dispense, automatic purge and piston reset to zero
or
Keep your thumb pressing the Push-button until the end of the dispense cycle: the piston reset takes place after you release the Push-button again. This feature enables you to remove the tip from the liquid, without aspirating anything.
4/ To aspirate and dispense the second volume **"VOLUME 2"**, repeat steps 2 and 3.
5/ To mix: press the Push-button; as long as you keep your thumb pressing the button, the pipette continues mixing. Release the Push-button to complete the current mixing cycle.
6/ To purge: press push-button, **"PURGE"** appears on the screen, click again to purge and reset the piston.
7/ To pipette: if you have chosen a **"VOLUME 3"** > 0, you can now aspirate and dispense this volume by repeating steps 2 and 3.

☞ *If you choose **VOLUME1** = 0, step 2 won't occur, if you choose **VOLUME 2** = 0 µL, step 4 won't occur, as well if you set*
***VOLUME 1 and 2** = 0 µL, step 1-4 will disappear. If you set **VOLUME 3** = 0 µL step 7 will not occur.*



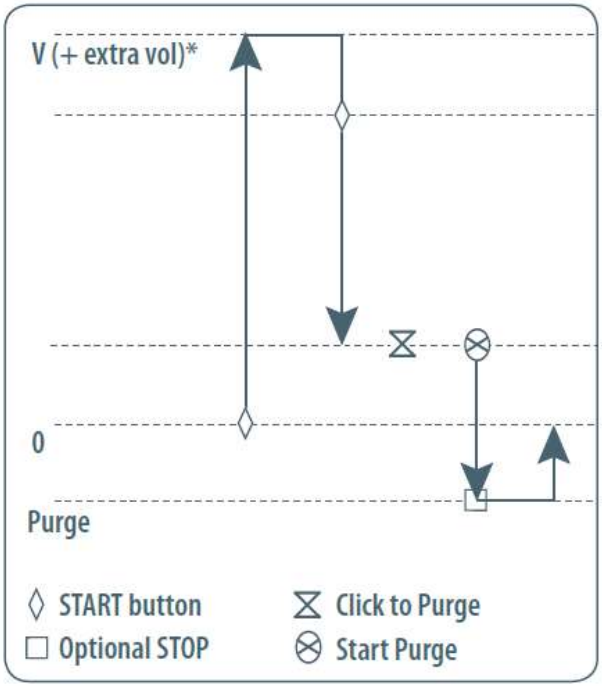
REVERSE Mode



The **REVERSE** Mode is reverse pipetting with a manual pipette. During aspiration, additional liquid is added. After delivery, the excess volume remains in the tip and is discarded.

• Press the Mode-button to access system menu, where you can choose between different pipette modes.
Select **REVERSE** Mode by turning the Push-button, to confirm your selection click the Push-button.
• Set the volume: click the Push-button, set the volume by turning the Push-button and click again to confirm your settings.
You are ready to do reverse pipetting!

1/ Fit a suitable tip
2/ Click the Push-button to aspirate the selected volume. An amount of liquid equal to the amount of purged air is added, the volume aspirated will be a little bit more than the set volume.
3/ Click the Push-button to dispense the volume, the additional amount of liquid remains in the tip.
4/ To purge: press the Push-button, **"PURGE"** appears on the screen, click again to purge and reset the piston. Keep your thumb pressing the push-button until the end of the purge: the piston reset takes place after you release the Push-button again. This feature enables you to remove the tip from the liquid, without aspirating anything.
5/ Eject tip by pressing the ejection button.



CUSTOM Mode

The **CUSTOM** Mode enables personalized pipetting protocol creation on a computer for transfer to VWR Electronic Pipette through VWR Protocol Builder software, an easy-to-use software.
To use this mode, the software has to be installed on the computer (file downloadable on www.vwr.com/e-pipette).

To install VWR Protocol builder software:

1/ Download the appropriate VWR Protocol builder software installation file for your operating system to the computer (Windows 32bits/ Windows 64 bits)
2/ Double-click the installer and follow the instructions on the screen to complete the installation.
3/ When completed, the VWR Protocol builder software icon will appear on desktop of the computer if “Create desktop shortcut” is checked.
4/ If VWR Protocol builder software is not launched automatically double-click the VWR Protocol builder icon on the desktop.
5/ Once installed, the VWR Protocol builder software can be run by any user on the installed computer.
You can then create, edit, import or export custom protocols easily and rapidly.

To create a protocol, choose among the available tasks **VWR Protocol builder software**:

- **Aspirate:** aspirates specified volume into the tip
- **Dispense:** dispenses specified volume from the tip
- **Dispense all:** dispenses all remaining volume from the tip followed by a purge action
- **Repeat**: enables repetition of any other tasks once or more
- **Mix**: mixes the specific volume in one or more cycles
- **Purge**: dispenses all remaining volume from the tip followed by purging extra volume
- **Wait**: introduces a wait for a specified number of seconds

• **Beep**: makes pipette produce a beep sound while selected tasks are executed

To transfer a protocol to your VWR Electronic Pipette, click the “Transfer custom protocols to pipette” button and follow the instructions on the screen.
The **CUSTOM** mode is available in pipettes from firmware version cf01.00.03
For more information on VWR Protocol builder software, see page 34.

7 PIPETTING SPEED CONTROL

VWR Electronic Pipette is set by default on speed 6 (maximum speed). You may need to change the speed of aspiration or dispensing depending on your application. You can change aspiration speed and dispensing speed independently of one other: from very slow to very fast (speed 1 – speed 6). Your speed selection is memorized for each pipetting mode until you change it again.

• Press the Mode-button to access system menu, where you can find the different pipette modes, the speed menu and configuration menu.
• Select SPEED by turning the Push-button, to confirm your selection click on the Push-button.
• Set ASPIRATION SPEED: aspiration speed is blinking, set the speed by turning the Push-button and click to confirm your selection.
• Set DISPENSING SPEED: dispensing speed is blinking, set the speed by turning the Push-button and click to confirm your selection.
• After selecting the speed you go automatically back to pipetting mode.

8 GUIDELINES FOR GOOD PIPETTING

Aspirate and dispense:
1/ Fit a suitable tip
2/ Pre-rinse the tip. Pre-rinsing consists of aspirating the first volume of liquid and then dispensing it back into the same vessel (or to waste). Subsequent volumes that you pipette will have levels of accuracy and precision within specifications. Some liquids (e.g. protein-containing solutions and organic solvents) can leave a film of liquid on the inside the wall of the tip; pre-rinsing the tip minimizes any errors that may be related to this phenomenon.
3/ Hold the pipette vertically and immerse the tip in the liquid . Press the push-button to aspirate the set volume of liquid. Wait a few seconds then withdraw the pipette-tip from the liquid. You may wipe any droplets away from the outside of the tip using a medical wipe, however if you do so take care to avoid touching the tip’s orifice.
4/ Place the end of the tip against the inside wall of the recipient vessel (at an angle of 10° to 40°). Press the Push-button.

Wait for at least a few seconds before releasing the Push-button to expel any residual liquid from the tip. While removing the pipette, draw the tip along the inside surface of the vessel.
5/ Eject the tip by pressing firmly on the tip-ejector button.

General guidelines for good pipetting:

a. Make sure that you fit new tips.
b. Each new tip should be pre-rinsed with the liquid to be pipetted.
c. When aspirating, keep the tip at a constant depth below the surface of the liquid
d. Change the tip before aspirating a different liquid, sample, or reagent.
e. Change the tip if a droplet remains at the end of the tip from the previous pipetting operation.
f. Liquid should never enter the tip holder. To prevent this:
• Never turn the pipette upside down,
• Never lay the pipette on its side when there is liquid in the tip(s),
g. The VWR charging Stand Adapter (refer to chapter 2) is recommended for use with the VWR Carrousel Pipette Stand to store the pipette in the vertical position.
h. When pipetting liquids with temperatures different to the ambient temperature, pre-rinse the tip several times before use in order to reach equilibrium between the temperatures of the liquid and the pipette's dead-volume.
i. For volatile liquids you should saturate the dead-volume by aspirating and dispensing the liquid repeatedly before aspirating the sample.
j. After pipetting acids or other corrosive liquids that emit vapors, clean the pipette, as described in chapter 14
k. The pipette can be used between + 4 °C and + 40 °C, but the specifications may vary (refer to chapter 17).
l. Do not pipette liquids having temperatures above 50 °C or below 4 °C.



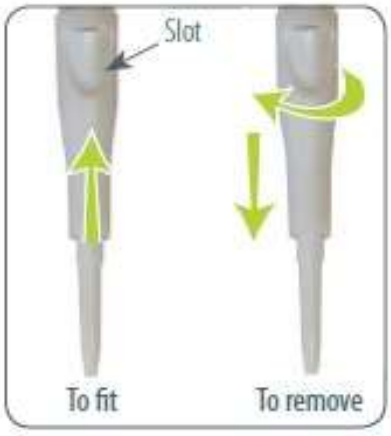
Extreme temperature can affect accuracy and precision

9 PERSONALIZE YOUR VWR Electronic Pipette

Tip-ejector extension for use VWR Electronic Pipette 10µl Single and Multi channels:

In order to eject 10µl tips, tip-ejector extensions are supplied with VWR Electronic Pipette 10µl Single and Multi channels.

The tip-ejector extension for Single channel which is made of PVDF (polyvinylidene Fluoride),is **autoclavable,** as well as the one of the Multi-channel which is in PBT.



To fit a tip-ejector extension for the Single Channel:

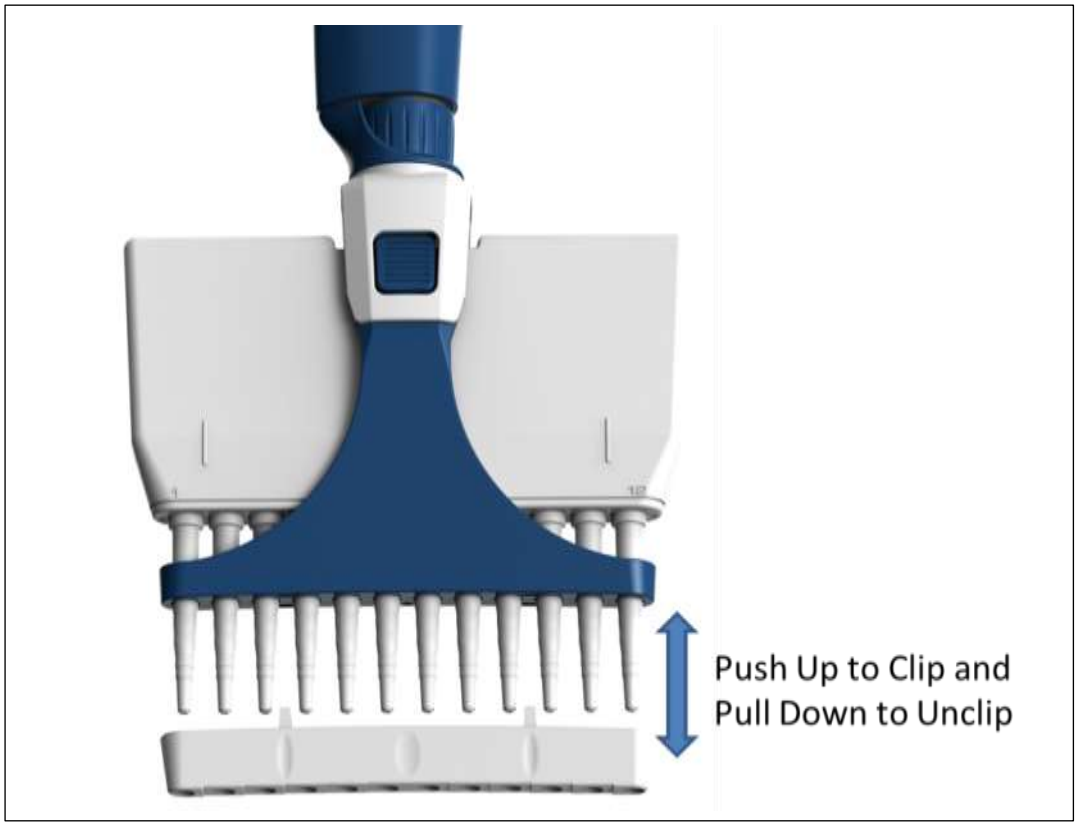
• Hold the pipette with the push-button upright.
• Hold the extension with the slot upright.
• Slide the extension over the tip-holder.
• Push the extension firmly onto the end of the tip-ejector until it clicks into place (see opposite).

To remove a tip-ejector extension *(see opposite):*

• Hold the pipette in one hand and grip the extension with the other.
• Gently twist the extension (either direction) and pull it away from the pipette

To fit and remove a tip-ejector extension for the Multi Channels:

• Slide the extension over the tip-holder.
• Push the extension firmly up into the slots to fit and pull it out to remove it *(see below)*



Personal label – Name and/or application tag:

VWR Electronic Pipette offers you the possibility to mark your pipette. You can personalize your pipette with a name tag and/or an application tag:



Window-tag:

• Remove the window by inserting a small screwdriver in the access slot.
• Position the name tag on the pipette
• Clip the window back in place.

10 GOOD LABORATORY PRACTICE FEATURES

VWR Electronic Pipette is fully compliant to ISO8655 standard and is CE marked .
VWR Electronic Pipette includes the following GLP features.

General

• Lockable volume.
• Useful volume-range is printed on the push-button.
• Volume range is displayed on the screen.
• Serial number is engraved on the body (handle) of the pipette and encoded in the firmware.
• Bar code: on the box
• Personalization by nametags (for marking application and/or user name), refer to chapter 9.

Cycle counters

• From last volume setting (to count the number of cycles in the current “run”).
• From manufacture and since the last service (refer to chapter 13).
• By indicators (R1, R2, R3 … Rx) each time pipette is readjusted.
• Maintenance intervals can be specified by weeks or number of cycles elapsed.

Alarms

• Low battery warning.
• Service is overdue warning (refer to chapter 13).
• Service alert can be set “On” or “Off”.



11 VWR ELECTRONIC PIPETTE POWER MANAGEMENT

The VWR Electronic Pipette battery has been designed to ensure around 900 pipetting cycles (around 750 for Multichannel models) at maximum speed between two charge cycles (approx. 2h30 of use continuously). For service continuity when needing more capacity, VWR Electronic Pipette can also be used while charging with the same performance as a fully charged pipette!

Battery charging

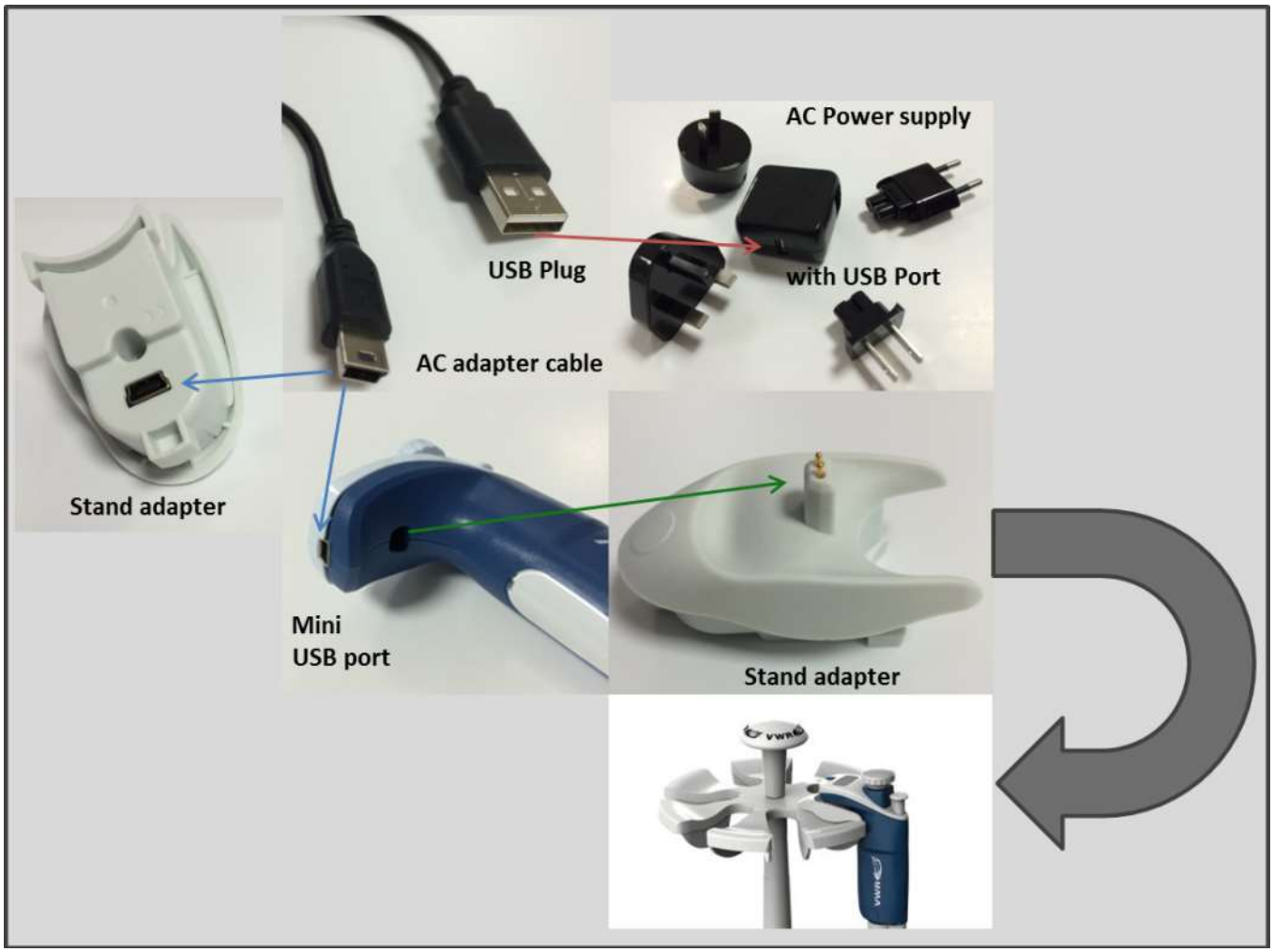
VWR Electronic Pipette charges **80 %** of its full battery capacity **in less than an hour**, it takes three hours to fully charge the battery.

1/ Charge your pipette by using the power supply:

- Connect the AC adapter to a suitable AC power supply (EU plug / UK plug….)
- Plug the adapter into the Mini USB port of the pipette.
- The pipette starts charging.

2/ Charge your pipette by using VWR Charging stand adapter:

- First place the stand adapter on your VWR Carrousel Pipette Stand
- Remove the plug. Now place your pipette on the Stand Adapter and plug the power transformer into the stand adapter.
- The pipette starts charging.



Working with charger connected to the pipette

VWR Electronic Pipette can also be used for pipetting while charging.

- Plug the power supply into your pipette.
- Press the push-button to start your pipette.
- It’s ready to pipette.

☞*You can also recharge VWR Electronic Pipette by USB with your computer; however it will take much longer than by power supply.*

Use only the original power transformer supplied by VWR. Use of an incompatible power supply can damage your VWR Electronic Pipette

Low battery warning

VWR electronic Pipette has a low battery alert. As the battery runs down, the LOW BATTERY message appears. The warning is replaced by a blinking symbol of an empty battery.
If it is not recharged, the pipette will switch off after a while. Settings will not be lost.
If the battery is completely discharged (= black screen, no operation) please connect the pipette to the charger for at least five minutes, then a “batt. too low” message will appear. The pipette will display the last settings used a few minutes later and will continue charging.

Changing the battery

If the following symptoms occur, please contact your VWR Service Center for battery change:
- VWR electronic Pipette battery won’t charge or will not operate even if connected to the charger at least for 10 minutes.
- VWR electronic Pipette battery provides you very short cycle time or permanently needs to be used in connected mode.

VWR Electronic Pipette uses Lithium-Ion battery. Operation on the battery is done at user’s risk only. Opening the pipette voids the warranty.

12 CONFIGURATION



Enter the menu using the mode-button. You will find not only the pipetting programs (PIPET, REPETITIVE, MIX, REVERSE and CUSTOM) and the speed control, but also the menu “CONFIGURATION”, including “SERVICE” and “ADJUSTMENT” (refer to Chapter 13).
The navigation of the menus is always done in the same way: Make your selection by rotating the Push-button, enter and confirm with a simple click!

The configuration menu allows you to set up the following items:
1. Volume limit: Here you can fix the maximal volume of the pipette (by default = nominal volume). *For example you have a VWR200 pipette, but you would like to use it with 100µl tips, you can set the maximal volume at 100 µL and you won’t risk contamination of your pipette.*
2. Beeper: You can switch the tone of your pipette on or off.

3. Contrast: You can choose between values of 1 to 5 to set up the contrast of the screen.

4. Service: refer to chapter 13.

5. Adjustment: refer to chapter 13

6. Language: Available from the firmware version cf01.00.03. Languages available are English, Chinese and Japanese.

To change the language, enter in the Configuration menu:

- Select your language by turning the Push-button,
- To confirm your selection, click on the Push-button,
- The language selected is blinking,
- To confirm your selection, click 2 seconds on the Mode-button.

13 MAINTENANCE OF YOUR VWR ELECTRONIC PIPETTE

VWR Electronic Pipette allows you to:

• Get service information.

• Readjust the pipette to user settings.

• Return to factory settings.

• Replace spare parts (for detailed information refer to chapters 13 and 18).

• Prepare the pipette for cleaning or autoclaving by “disassembly” of the parts specified (refer to chapter 13).

Service information

VWR Electronic Pipette provides you with all required service information. It will help you establish an easy diagnosis and plan any service operation with your accredited service center.

You will find in the “Service” menu following sub menus:

a. Disassembly

b. Service info

c. Service settings

d. Pipette info

The navigation of the menu is always done in the same way: Make your selection by rotating the Push-button, enter and confirm with a simple click!

a. Disassembly:

The multichannel models should not be disassembled: only the push-button and the tip-ejector can be replaced.

Only the lower part of the single models can be disassembled, the push-button, the connecting nut and the tip-ejector can be replaced.

This option allows you to disassemble the lower part safely (protection of the piston and the actuator).

If you select “**DISASSEMBLY”**:

You can remove the lower part of your pipette with complete security.

b. Service info provides you with maintenance information; you cannot modify any of the items:
• Number of pipetting cycles since last maintenance.
• Number of weeks since last maintenance.

c. Service settings gives you the option to organize your maintenance, you can set following service points:
• Number of cycles until next maintenance.
• Number of weeks until next service.
• Service date.
• Activate or deactivate the Service alert.

☞ *Changes of service settings will reset all the service info to zero.*

d. Pipette info provides information about your pipette, you cannot modify any of the items:
• Version of firmware.
• Serial number.
• Total number of cycles (one cycle: up and down of the piston).
• Number of readjustments carried out by this pipette.

Adjustment

Press the Mode-button to enter the menu. Select **"Configuration"** by rotating the Push-button and click to confirm your selection. Enter the sub-menu in the same way and select the **"Adjustment"** menu. The adjustment menu allows you to access the following items:
• Standard readjustment
• Reset settings

Standard readjustment

This menu allows you to adjust the pipette using 3 calibration points: 10 %, 50 % and 100 % of nominal volume (in according with ISO8655 recommendations).
You may want to calibrate your pipette for solutions with a density, viscosity, surface tension or vapor pressure that are different to that of water. To return to the factory settings, choose **"Reset settings"**, your VWR Electronic Pipette will be reset to the three factory calibration values which are permanently stored in the pipette's firmware.
In accordance with ISO 8655 VWR recommends a gravimetric procedure for pipette calibration. This gravimetric method is used to establish the mean mass of a given volume of water (taking into account evaporation losses, where necessary). After converting the mean mass to a volume (using the Z factor, see appendix II), enter the measured volumes(s) into the pipette's memory and the software readjusts the pipette accordingly. This method requires the strict monitoring of environmental conditions and the use of routinely controlled equipment that is adapted to the volume being measured.

Conversion to volume must take into account the density of the liquid as well as evaporation during the cycle time. For each measurement, the corresponding volume (Vi) can be calculated as follows:

$$Vi = (Wi + e)\,Z$$

Wi is the weight as read on the balance

e is the mean evaporation loss during the cycle time

Z expressed inL/mg, is a conversion factor incorporating density of water buoyed in air, at test temperature and barometric pressure (see Appendix II)

For volumes greater than 20 µL, the evaporation factor can be disregarded.

Maintenance operations

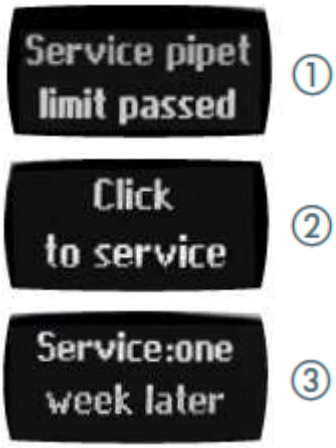
(Disassembly of VWR Electronic Pipette to change and clean parts)

It is best to inspect your pipette regularly and to routinely clean and change parts as required. To help you to keep up a regular schedule and in the interests of GLP, you can configure your pipette to display an alarm before servicing is due (refer to Service settings).

The following maintenance operations should only be done when the pipette is in DISASSEMBLY Mode!

Maintenance warning

VWR Electronic Pipette notifies you, when maintenance is due (Service alert is set by default to “On”). The following message (1) will appear: after validation by a click, the following message (2) appears: If you click to confirm within 10 sec. the pipette will automatically switch to “disassembly” mode so you can carry out your maintenance safely. Wait longer than 10 seconds and the option to have a reminder in one week will appear (3). Click to confirm. Your pipette will be operational again.



Maintenance operation for single channel models

- *Tip-Holder and tip-ejector*

These parts must be changed if they are damaged. You may also remove these parts for cleaning or decontamination purposes.

- *Changing the tip-ejector*



1/ Keep the tip-ejector button depressed and grip the top of the tip-ejector with the other hand.

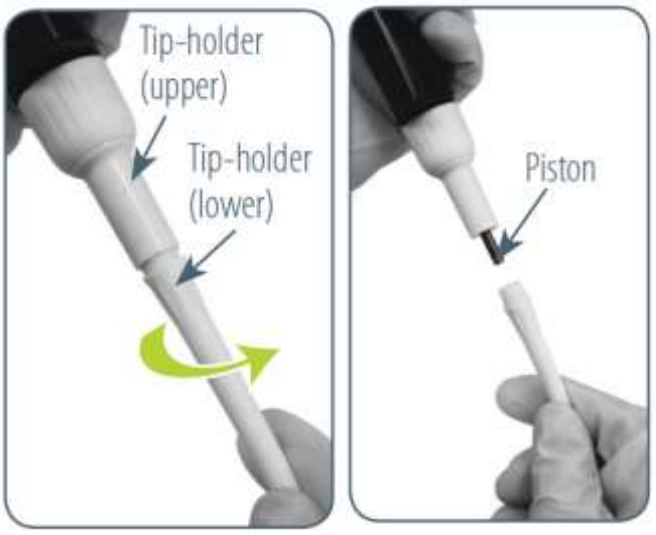
2/ Gently rotate the tip-ejector counter clockwise and separate its connector from the operating rod.

3/ Pull the tip-ejector away from the body of the pipette.

4/ Clean or autoclave the tip-ejector and refit or replace it by reversing

the procedure.

- *Changing the tip-holder (lower part)*



After removing the tip-ejector, you may remove the lower part of the tip-holder, which is more likely to become contaminated or damaged than the upper part. Removal of the lower part is shown here; for the upper part see “Removing the piston”
(special precautions are necessary).

1) Gently rotate the lower part of the tip holder Counterclockwise to unscrew it from the upper part.
2) Separate the parts and remove the O-ring (refer to “Changing O-ring”)
3) Clean and if required autoclave the lower part of the tip-holder (autoclaving: 20 min. at 121°C and 0.1MPa)
4) If required, lubricate the piston (refer to “How to lubricate the piston”) and fit a new O-ring.
5) Screw the two parts together, making sure that the two parts are fully tightened, by hand.
6) Refit the tip-ejector.

☞ *After autoclaving the tip-holder and tip-ejector may change color, however this has no impact on the performance.*

- *Changing the seal and/or O-ring (refer to chapter 19)*

The O-ring is positioned on the piston; it should not be autoclaved, if worn or damaged in any way, it must be replaced.



To access the O-ring, remove the tip-ejector and unscrew the lower part of the tip-holder. You should now be able to remove the O-ring from the piston. Sometimes, the O-ring may be found in the recess at the top-end of the lower part of the tip-holder. If required, lubricate the piston (refer to “How to lubricate the piston”) then fit a new O-ring by sliding it onto the piston. Reassemble the pipette. Depending on the pipette model the dimension of the O-ring will vary (refer to chapter 19).

- *Servicing the piston*

You may remove the piston-assembly to clean, lubricate, or change the piston.

- *Removing the piston*

1/ Remove the tip-ejector and (optionally) the lower part of the tip-holder. If you remove the lower part, take care to remove the O-ring as described in “Changing the O-ring”.



2) Unscrew the connecting nut (turn by hand, counterclockwise).

3) Gently remove the connecting nut and upper tip holder.

4) Pull off the piston assembly from the body of the pipette – separate the parts (see opposite).

5) Clean and autoclave (if required) the piston and holder, together with any other parts that may need to be treated in the same way.

☞ *In the case of 1200µl pipette, the piston holder, piston and guide are a unit. Don’t try to separate them!*

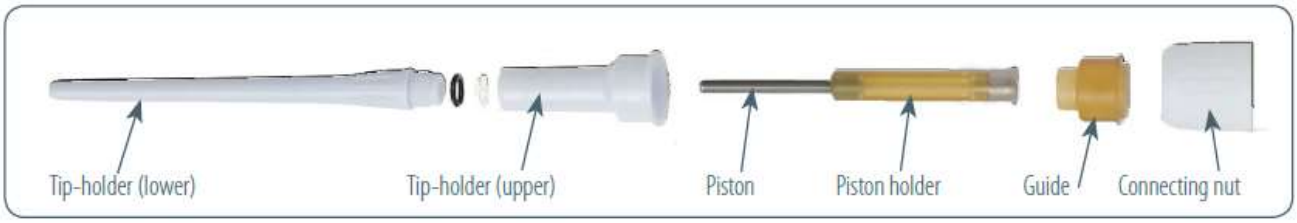
The specification of the pipette must be checked after changing any part!

Don’t pull on the piston to remove the assembly!

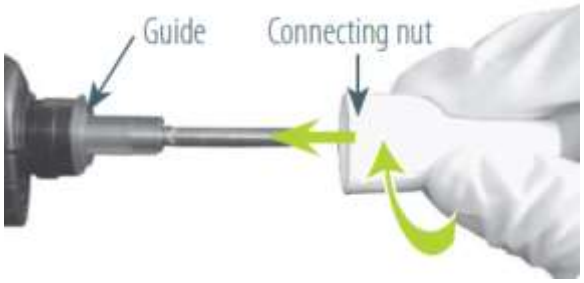
6) Lubricate the piston, see below.

7) Reassemble the piston and guide; then carefully insert the assembly into the body of the pipette. The guide should hold the piston assembly inside the body of the pipette. You can hear a “click” when the piston is back in place.

☞ *Take care not to touch the piston, and that it is dust-free. If needed, clean the assembly with a dust-free cloth.*



8) Reassemble the upper part of the tip-holder and the connecting nut, and then refit to the body of the pipette by rotating the connecting nut clockwise until it is finger tight. Fit the O-ring (for VWR10, the seal) and reassemble the lower part of the tip-holder. Refit the tip-ejector. The seals for VWR10 are fragile and can be used only once. So, after unscrewing the lower part of the tip-holder you must fit a new seal.



☞*How to lubricate the piston (except VWR10)*

Use only VWR lubricant (delivered inside the pipette box).

Squeeze a small quantity from the tube onto a clean, lintless cloth. Use the cloth to transfer the lubricant to the piston. Ensure that the piston is evenly lubricated and that you wipe away any excess – remember only a fine film of lubricant is required (over the entire piston).

Maintenance operation for multichannel models

For multichannel models, the lower part should not be disassembled: only the Push-button, the connecting nut and the tip-ejector can be replaced.

- *Changing the tip-ejector*

To remove the tip-ejector, keep both ejector locks depressed. Pull the tip-ejector down.

To refit the tip-ejector, gently re-insert the tip-ejector vertically into the rails of the ejector support. Pull lightly on the tip-ejector to check the position.

14 CLEANING AND DECONTAMINATION

VWR Electronic Pipette is designed so that the parts normally in contact with contaminants can easily be cleaned and decontaminated.

If you use chemical solutions for decontamination or detergents for cleaning, other than those specified below, you should check with your supplier that the solution or detergent is safe for use with one of the following materials: PP (Polypropylene), PBT (Polybutylene Terephthalate), PC (Polycarbonate), POM (Polyoxymethylene), PVDF (Polyvinylidene Fluoride), PEI (Polyetherimide) and stainless steel.

Cleaning

The pipette must be cleaned, as described below, before it is decontaminated. For cleaning VWR Electronic Pipette you may use a simple soap solution, Ethanol or Isopropanol or broad spectrum disinfectants.



Use alcohol (ethanol or isopropanol) to clean up the dirt and dust on the tip-holder!

Liquid must not enter the handle of the pipette!

Single channel models

- *External*

1/ Remove the tip-ejector for cleaning (refer to chapter 13).

2/ Replace the elastomer plug to protect battery charging port.

3/ Wipe the entire pipette with a soft-cloth or lint-free tissue impregnated with soap solution, to remove all dirty marks. If the pipette is very dirty, a brush with soft plastic bristles may be used.

4/ To rinse, wipe the entire pipette with a soft-cloth or lint-free tissue impregnated with distilled water.
5/ Leave to air dry.

- *Internal*

The following components only can be immersed in a cleaning solution: tip-ejector, tip-holder, connecting nut and piston.
1/ Disassemble the pipette as described in chapter 13
2/ Set aside the handle in a dry and secure location.
3/ Clean the individual components using an ultrasonic bath (20 minutes at 50 °C) or with a soft-cloth and brushes.
4/ Rinse the individual components with distilled water.
5/ Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.
6/ Lubricate the piston and reassemble the pipette according to the instructions given in chapter 13.

Multichannel models

The following components only can be immersed in a cleaning solution: tip-ejector and ejector locks.
1/ Remove the tip-ejector
2/ Immerse the tip-ejector and ejector locks in the cleaning solution or wipe them with a soft cloth or lint-free tissue impregnated with the cleaning solution.
3/ Rinse the components with distilled water.
4/ Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.
5/ Refit the tip-ejector.
Please note that although the lower part of VWR Electronic multichannel Pipette can withstand a few number of autoclaving cycles, we do not recommend autoclaving it.

Decontamination

Autoclaving - Single channel models

However, after separation from the body, any of the following components of the volumetric module may be autoclaved individually: tip-ejector, connecting nut, tip-holders, pistons and seals (except O-rings).
1/ Clean the parts to be autoclaved, especially the tip-holders.
2/ Put the parts in an autoclaving bag.
3/ Autoclave for 20 minutes at 121°C and 0.1 MPa.
4/ Check that the parts are dry before reassembling the pipette.
5/ Set the pipette aside to stabilize at room temperature for at least 6 hours.



The body (handle) of the pipette is not autoclavable!

The specifications of the pipette must be checked after autoclaving/disassembling

Chemical decontamination - Single and multichannel models

You may choose to decontaminate your pipette chemically, in accordance with your own procedures.

Whatever decontaminant you use, check that it is compatible with the plastics used in the construction of the pipette (see Chapter 14).

- *Parts that may not be immersed*

1/ Wipe the handle of the pipette with a soft-cloth or lint-free tissue covered with the chosen decontaminant.

2/ Wipe the handle of the pipette with a soft-cloth or lint-free tissue covered with distilled water.

- *Parts that may be immersed*

The following components only can be immersed in a decontaminant solution:

• Single channel models ->tip-ejector, tip holder (both parts), connecting nut, piston (including holder) and guide.

• Multichannel models -> tip-ejector and ejector locks.

Please note that although the lower part of VWR Electronic multichannel Pipette can withstand a few number of autoclaving cycles, we do not recommend autoclaving it.

1/ Disassemble the pipette as described in chapter 13.

2/ Immerse the components in the decontaminant solution or wipe them according the instructions given by the manufacturer or supplier of the decontaminant.

3/ Rinse the individual components with distilled or sterile water.

4/ Leave the parts to dry by evaporation or wipe them with a clean, lint-free tissue or soft-cloth.

5/ Lubricate the piston and reassemble the pipette according to the instructions given in this chapter.

15 LEAK TEST

This test may be performed at any time to check that the pipette does not leak, especially after performing a maintenance or decontamination procedure. If a pipette fails this test, you should replace the faulty part (e.g. O-ring, tip-holder...) and repeat this test, after making sure that the pipette is correctly reassembled.

• Fit a suitable Tip

• Set the pipette to the nominal volume

• Aspirate the nominal volume from a beaker of distilled water

• Hold the pipette in the vertical position and wait for 20 seconds

• If a water droplet appears at the end of the tip there is a leak (refer to chapter 16)

• If you see no droplet, re-immerse the tip below the surface of water

• The water level inside the tip should remain constant; if the level goes down there is a leak (refer to chapter 16)

• For multichannel models, check if the water level between each tip is the same

16 TROUBLESHOOTING

In case of malfunction, first reset the pipette by pressing on the Push-button and the Mode-button simultaneously at least for 8 seconds. If the problem persists, you may consult the following table which identifies potential problems and their solutions.

Problem	Possible Cause
Pipette is leaking sample.	Worn O-ring.
Pipette won't aspirate.	Worn O-ring. Unscrewed lower part of tip-holder Damaged or corroded piston. Damaged tip-holder. Improper repair or assembly. Connecting nut is loose. Software needs to be reset.
Noisy operation.	Piston needs lubricating.
Pipette is inaccurate.	Improper repair or assembly. Unscrewed lower part of tip-holder Pipette is out of adjustment. Connecting nut is loose.
Pipette is not precise.	Unscrewed lower part of tip-holder. Incorrect operator technique. Worn O-ring. Connecting nut is loose. Damaged or corroded piston. Damaged tip-holder.
Tips fall or don't fit.	Low quality tips. Damaged tip-holder. Damaged tip-ejector. Tip-ejector is loose. Dirty tip-holder.
No OLED display.	Pipette is in sleep mode. Battery needs recharging. Software needs to be reset.
No operation possible.	Battery needs recharging. Software needs to be reset.
Calibration impossible.	Software needs to be reset.

17 SPECIFICATIONS

VWR Electronic Pipette is a high quality pipette that offers excellent accuracy and precision; it is fully compliant with ISO 8655 and is CE marked. The adjustment is carried out under strictly defined and monitored conditions:

• Basis of adjustment, Ex.
• Reference temperature, 20 °C
• Relative humidity, 50 %
• Barometric pressure, 101 kPa
• Use of distilled water grade 3 (ISO 3696)

Model	Catalog Number		Volume range	Maximum Permissible Errors (standard pipetting mode)				
				VWR			ISO 8655-2	
	US	Europe		Volume	Systematic error (µL)	Random error (µL)	Systematic error (µL)	Random error (µL)
VWR10	10827-884	613-5415	0.5-10 µL	0.5	± 0.044	≤ 0.014	± 0.12	≤ 0.08
				1	± 0.028	≤ 0.013	± 0.12	≤ 0.08
				5	± 0.066	≤ 0.022	± 0.12	≤ 0.08
				10	± 0.088	≤ 0.028	± 0.12	≤ 0.08
VWR20	10827-918	613-5416	2-20 µL	2	± 0.083	≤ 0.028	± 0.2	≤ 0.1
				10	± 0.110	≤ 0.039	± 0.2	≤ 0.1
				20	± 0.165	≤ 0.055	± 0.2	≤ 0.1
VWR300	10827-920	613-5417	20-300 µL	20	± 0.88	≤ 0.18	± 4.0	≤ 1.5
				30	± 0.77	≤ 0.22	± 4.0	≤ 1.5
				150	± 0.99	≤ 0.25	± 4.0	≤ 1.5
				300	± 1.16	≤ 0.33	± 4.0	≤ 1.5
VWR1200	10827-922	613-5418	100-1200 µL	100	± 2.8	≤ 0.4	± 16	≤ 6.0
				120	± 2.6	≤ 0.4	± 16	≤ 6.0
				600	± 4.0	≤ 0.9	± 16	≤ 6.0
				1200	± 6.6	≤ 1.3	± 16	≤ 6.0
VWR8x10 VWR12x10	10827-924 10827-932	613-5419 613-5423	0.5-10 µL	0.5	± 0.06	≤ 0.022	± 0.24	≤ 0.16
				1	± 0.04	≤ 0.022	± 0.24	≤ 0.16
				5	± 0.09	≤ 0.044	± 0.24	≤ 0.16
				10	± 0.11	≤ 0.066	± 0.24	≤ 0.16
VWR8x20 VWR12x20	10827-926 10827-934	613-5420 613-5424	1-20 µL	1	± 0.09	≤ 0.055	± 0.4	≤ 0.2
				10	± 0.17	≤ 0.110	± 0.4	≤ 0.2
				20	± 0.28	≤ 0.132	± 0.4	≤ 0.2
VWR8x300 VWR12x300	10827-928 10827-936	613-5421 613-5425	10-300 µL	10	± 1.10	≤ 0.20	± 8.0	≤ 3.0
				30	± 1.10	≤ 0.20	± 8.0	≤ 3.0
				150	± 1.65	≤ 0.413	± 8.0	≤ 3.0
				300	± 2.64	≤ 0.50	± 8.0	≤ 3.0
VWR8x1200 VWR12x1200	10827-930 10827-938	613-5422 613-5426	50-1200 µL	50	± 4.4	≤ 0.8	± 32	≤ 12
				120	± 4.4	≤ 0.8	± 32	≤ 12
				600	± 6.6	≤ 1.7	± 32	≤ 12
				1200	± 10.6	≤ 2.0	± 32	≤ 12

18 SAFETY PRECAUTIONS AND LIMITATIONS OF USE

For safety reasons, it is important to observe the following instructions:

1. **Battery and electrical specifications:**

Use AC-adaptor and stand adapter indoors.

VWR electronic Pipette uses Lithium-Ion battery. Operation on the battery is done at user's risk only. Opening the pipette voids the warranty.

Dispose of used batteries in accordance with legal regulations. Batteries may not be disposed of with household waste and may explode if disposed in fire!



We strongly recommend you fully charge the battery before using the pipette. VWR Electronic Pipette is supplied with an AC adapter that is suitable for your country. You must only use an original VWR AC adapter specific for this product. Charge the battery in the pipette, using the AC-adapter or the stand adapter.

• Li-ion battery pack; 1 Ah / 3.6 V

Charging time: approx. 3 hours for a fully discharged battery (80% in one hour).

• AC adaptor

Input voltage, country-specific: 100-240 V, 50/60 Hz (0.5A max.)

Output voltage: +5 V DC, 3.5A (17.5W max.)

• Class II this device is double insulated.

2. Do not use VWR Electronic Pipette in a potentially explosive environment

or with potentially explosive chemicals.

3. When pipetting infectious, radioactive, toxic and other hazardous solutions,

please observe all the safety precautions (e.g. wear protective clothing, goggles and gloves) and regulations appropriate for your country.

4. Do not allow the liquid to enter the body of the pipette.

5. Storage conditions

Temperature: -20°C to 50°C - Humidity max: 80%

6. Temperature of use

Between 4°C and 40°C (specifications may vary).

7. Use only genuine VWR accessories and spare parts.

If the equipment is used in a manner not specified in this user's guide, the protection provided in the equipment may be impaired.

8. VWR Electronic Pipette can be used indoor and outdoor, if precautions are respected as described above in this handbook and in the GLP.

19 REPLACEMENT PARTS

COMING SOON

APPENDIX 1 - EXAMPLE OF A PERFORMANCE CHECK

(example with VWR10 at 1µl)

1. Determine the mean value e of the evaporation loss e_i that occurs during your pipetting cycles. Proceed as described in Appendix 3 to determine e_i

$$\bar{e} = \frac{1}{m} \sum_{i=1}^{m} e_i$$

m : number of weighings

$e_1 = 0.016$ mg $e_3 = 0.021$ mg

$e_2 = 0.018$ mg $e_4 = 0.017$ mg

$\bar{e} = (e_1+e_2+e_3+e_4) / 4$

$\bar{e} = (0.016+0.018+0.021+0.017) / 4$

$\bar{e} = 0.018$ mg/per cycle

2. Change the pipette tip and perform the first weighing. Then, keep a regular cycle and perform the 10 following measurements.

$W_r = 0.957$ mg

$W_1 = 0.968$ mg $W_6 = 0.966$ mg

$W_2 = 0.960$ mg $W_7 = 0.955$ mg

$W_3 = 0.984$ mg $W_8 = 0.972$ mg

$W_4 = 0.942$ mg $W_9 = 0.958$ mg

$W_5 = 0.969$ mg $W_{10} = 0.967$ mg

W_r rinsing measurement which is disregarded for the calculation

3. Calculate the mean weight

$$\bar{W} = \frac{1}{n} \sum_{i=1}^{n} W_i$$

n number of weighings

W_i weighing results

$\bar{W} = (0.968+0.960+0.984+0.942 + 0.969+0.966+0.955+0.972 + 0.958+0.967) / 10$

$\bar{W} = 0.964$ mg

4. Calculate the mean volume

$$\bar{V} = (\bar{W}+\bar{e}) \times Z$$

$\bar{V} = (0.964+0.018) \times 1.0032$

$\bar{V} = 0.985$ µL

For a temperature of 21.5 °C and an air pressure of 1013 hPa, the Z factor is equal to 1.0032 µL/mg (see table in Appendix 2).

5. Evaluate accuracy

Systematic error (**E**): $E = \bar{V} - V_0$

V_0 true value set on the instrument

$E = 0.985 - 1 = -0.015$ µL

Relative error (**E%**): $E\% = (\bar{V} - V_0) \times 100 / V_0$

$E\% = (-0.015 \times 100) / 1 = -1.50$ %

6. Evaluate precision (repeatability)

Standard Deviation (SD_w)

$$SD_w = \sqrt{\sum_{i=1}^{n} \frac{(W_i - \bar{W})^2}{n-1}}$$

$$SD_w^2 = \frac{1}{n-1} \sum_{i=1}^{n} (W_i - \bar{W})^2$$

$$SD_w^2 = \frac{1}{9}\left[\begin{array}{l}(0.968-0.964)^2+(0.960-0.964)^2+(0.984-0.964)^2+\\(0.942-0.964)^2+(0.969-0.964)^2+(0.966-0.964)^2+\\(0.955-0.964)^2+(0.972-0.964)^2+(0.958-0.964)^2+\\(0.967-0.964)^2\end{array}\right]$$

$SD_w = 0.011$ mg

Random error (**SDv**) :

$SD_v = SD_w \times Z$

$SD_v = 0.011 \times 1.0032 = 0.011$ µL

APPENDIX 2 - Z FACTOR

The reference calculation equation is :

$$Z = [1/(P_W - P_A)]\,[1-(P_A/P_B)]$$

Where : P_A = density of air at t°C.
P_W = density of the test liquid at t°C.
P_B = density of the balance weights. Use 8 g/cc for P_B

Weights conforming to International recommendation N°33 of OIML have been adjusted to give results when weighing in air as if the density of the weights were 8.0 g/mL.

Values of the conversion factor **Z** (µL/mg) as a function of temperature and pressure for distilled water.

Temperature	Air pressure (hPa)					
(°C)	800	853	907	960	1013	1067
15	1.0018	1.0018	1.0019	1.0019	1.0020	1.0020
15.5	1.0018	1.0019	1.0019	1.0020	1.0020	1.0021
16	1.0019	1.0020	1.0020	1.0021	1.0021	1.0022
16.5	1.0020	1.0020	1.0021	1.0022	1.0022	1.0023
17	1.0021	1.0021	1.0022	1.0022	1.0023	1.0023
17.5	1.0022	1.0022	1.0023	1.0023	1.0024	1.0024
18	1.0022	1.0023	1.0024	1.0024	1.0025	1.0025
18.5	1.0023	1.0024	1.0025	1.0025	1.0026	1.0026
19	1.0024	1.0025	1.0025	1.0026	1.0027	1.0027
19.5	1.0025	1.0026	1.0026	1.0027	1.0028	1.0028
20	1.0026	1.0027	1.0027	1.0028	1.0029	1.0029
20.5	1.0027	1.0028	1.0028	1.0029	1.0030	1.0030
21	1.0028	1.0029	1.0030	1.0030	1.0031	1.0031
21.5	1.0030	1.0030	1.0031	1.0031	1.0032	1.0032
22	1.0031	1.0031	1.0032	1.0032	1.0033	1.0033
22.5	1.0032	1.0032	1.0033	1.0033	1.0034	1.0035
23	1.0033	1.0033	1.0034	1.0035	1.0035	1.0036
23.5	1.0034	1.0035	1.0035	1.0036	1.0036	1.0037
24	1.0035	1.0036	1.0036	1.0037	1.0038	1.0038
24.5	1.0037	1.0037	1.0038	1.0038	1.0039	1.0039
25	1.0038	1.0038	1.0039	1.0039	1.0040	1.0041
25.5	1.0039	1.0040	1.0040	1.0041	1.0041	1.0042
26	1.0040	1.0041	1.0042	1.0042	1.0043	1.0043
26.5	1.0042	1.0042	1.0043	1.0043	1.0044	1.0045
27	1.0043	1.0044	1.0044	1.0045	1.0045	1.0046
27.5	1.0044	1.0045	1.0046	1.0046	1.0047	1.0047
28	1.0046	1.0046	1.0047	1.0048	1.0048	1.0049
28.5	1.0047	1.0048	1.0048	1.0049	1.0050	1.0050
29	1.0049	1.0049	1.0050	1.0050	1.0051	1.0052
29.5	1.0050	1.0051	1.0051	1.0052	1.0052	1.0053
30	1.0052	1.0052	1.0053	1.0053	1.0054	1.0055

APPENDIX 3 - EVAPORATION LOSS

Procedure for the determination of evaporation loss

Use the same distilled water, weighing vessel and balance as you will be using for the gravimetric check.

1. Half fill the weighing vessel with distilled water.
2. Cover the weighing vessel with its lid and place it on the balance using a pair of tweezers.
3. Aspirate a sample.
4. Tare the balance and take the weighing vessel out of the balance.
5. Take off the lid with tweezers.
6. Dispense the sample into a dummy vessel.
7. Replace the lid on the weighing vessel and, using tweezers, replace the vessel on the balance.
8. Read the negative result $\mathbf{e_1}$ (record the absolute value).
9. Repeat steps 3 to 8, three times to obtain $\mathbf{e_2}$, $\mathbf{e_3}$, and $\mathbf{e_4}$.
10. Calculate the evaporation loss **e** using the formula:

☞ *In normal conditions, this value is usually between 0.01 mg and 0.03 mg.*

APPENDIX 4 – VWR PROTOCOL BUILDER SOFTWARE

Using the Custom Mode



VWR PROTOCOL BUILDER SOFTWARE Contents:

1. Introduction

1.1 What is VWR Protocol Builder Software

1.2 Passwords and user information

1.3 Forgotten password

2. Home screen

3. Installing VWR Protocol Builder Software

3.1 Computer requirements for VWR Protocol Builder Software

3.2 Installing VWR Protocol Builder Software

3.3 Installing the drivers

3.4 Software files

4. Uninstalling VWR Protocol Builder Software

5. Creating and managing custom protocols

5.1 Creating a custom protocol

5.1.1 Default task parameters

5.1.2 Editing, cloning and deleting tasks

5.1.3 Pipette volume indicator

5.1.4 Warning and error messages

5.2 Managing existing protocols in *Manage custom protocols*

5.3 Importing a protocol

5.4 Practical tips for creating custom protocols

6. Transferring custom protocols to the pipette

7. Updating pipette settings

8. Other administration

8.1 Pipette management

8.2 View history

8.3 Change password

8.4 Institution/Company profile

1 INTRODUCTION

1.1 What is VWR Protocol Builder Software?

VWR Protocol Builder Software is an easy-to-use software for creating custom pipetting protocols for VWR Electronic Pipettes. Use it to create personalized pipetting protocols on your computer, and to transfer these protocols to VWR Electronic Pipettes in the **Custom Mode**, where you can execute them.

VWR Protocol Builder Software runs on Windows 7, Windows 8 and Windows 8.1.

The software file is downloadable on **www.vwr.com/e-pipette**.

1.2 Passwords and User information

When running the VWR Protocol Builder Software for the first time (e.g. after installation), you are prompted to enter some information regarding your password and your institution.

- **User password:**

Enter user password and select a *Hidden question / Hidden answer* (used to recover forgotten passwords). You can also select *I don't want to use passwords.*

You can still switch to start using passwords later (in main menu select *Other administration* ► *Change password)*.

- **User profile:**

Provide Institution/Company details. Providing this information is optional and can also be done later (in main menu select *Other administration* ►*Institution/Company profile*).

During the installation you are prompted to enter a *Recovery password* that will be used to retrieve forgotten passwords.

Password must contain 8-30 characters, start with a letter, contain at least one numerical digit and one uppercase letter (no special symbols allowed).

Note: When using a password, please make sure you remember or save your *Recovery password* and/or the answer to the *Hidden question* – those are the only two means of retrieving your login information in the event of forgetting the password (see following section).

1.3 Forgotten password

Users who use password protection have to provide the password to run VWR Protocol Builder Software and to modify custom protocols in VWR Electronic Pipette.

In the case of a forgotten password, click the *Forgotten Password* button on the VWR Electronic Pipette login window. Select one of the following options to recover the forgotten password:

• *I know the answer to the hidden question*

• *I have the recovery password*

And click *Next.* Provide the answer to the *Hidden question* or the *Recovery password* on the next screen and click *Next.* On the following window, provide a new password and click *Finish.*

2 HOME SCREEN

After launching VWR Protocol Builder Software you are directed to the home screen.



The Home screen offers the following options:

Manage custom protocols - Create, edit, import or export custom protocols.

Transfer custom protocols to pipette – Connect a VWR Electronic pipette via USB cable and transfer a selected custom protocol to the VWR Electronic pipette.

Update pipette settings - Access additional pipette settings such as locking functionality, sound alerts, maximum volume limit, or pipette firmware updates.

Other administration – Manage the inventory of your VWR Electronic pipettes, view history of custom protocol uploads to specific VWR Electronic pipettes, manage passwords and the Company/Institution profile.

By clicking the home icon you return to the home screen.

Menu bar offers the following options:

- File ► Exit; exit the VWR Protocol Builder Software
- Help ► Help; access the user's guide
- Help ► About; access basic information on the VWR Protocol Builder Software

3 Installing VWR Protocol Builder Software

3.1 Computer requirements for VWR Protocol Builder Software

VWR Protocol Builder Software is supported on PCs with Windows 7, Windows 8 and Windows 8.1. Table below lists the computer system requirements for the software.

System	Minimum/Allowed	Recommended
Operating system	Windows 7	Windows 7 and above
Hard drive	1 GB	10 GB
Processor speed	2.0 GHz	2.0 GHz
RAM	1 GB	2 GB
Screen resolution	480x800, 768x1024, 720x1280, 768x1280, 800x1280, 768x1366	768x1024
Text size (Windows only)	100%, 125%, 150%	100%
USB	USB 2.0 High-speed port	USB 2.0 High-speed port

3.2 Installing VWR Protocol Builder Software

i. Download the appropriate VWR Protocol Builder Software installation file for your operating system to the computer.

ii. Double-click the installer and follow the instructions on the screen to complete the installation.

iii. When completed, the VWR Protocol Builder Software icon will appear on desktop of the computer if *Create Desktop Shortcut* is checked.

iv. If VWR Protocol Builder Software is not launched automatically, double-click the VWR Protocol Builder Software icon on the desktop.

v. Once installed, the VWR Protocol Builder Software can be run by any user on the installed computer.

3.3 Installing the drivers

On Windows 7 systems, drivers are installed along with the installer. On some Windows 8 and Windows 8.1 systems, drivers might need to be installed manually.

3.4 Software files

VWR Protocol Builder Software stores information about custom pipetting protocols in **specific files with the extension .pmp.**

4 Uninstalling VWR Protocol Builder Software

When uninstalling VWR Protocol Builder Software, you can select to remove the user data (select checkbox *Remove user data* during uninstall process). This will remove all user data, custom protocols, pipette data and history related to pipettes and protocols.

5 Creating and managing custom protocols

In *Manage custom protocols* you can create, edit, import or export custom protocols.

5.1 Creating a custom protocol

Start creating a new custom protocol from scratch by clicking the *Create a new protocol* button.

Specify the *Protocol name (e.g. DNA-isolation)* and click *Create.* The edit custom protocol screen appears with the *Protocol info* and *Protocol setup* tabs.

In the *Protocol info* tab, select a pipette from a list of VWR Electronic Pipette models. Enter the name of the user who created the protocol (*protocol created by*: field) and enter any comments into the *Comments* box, if required.

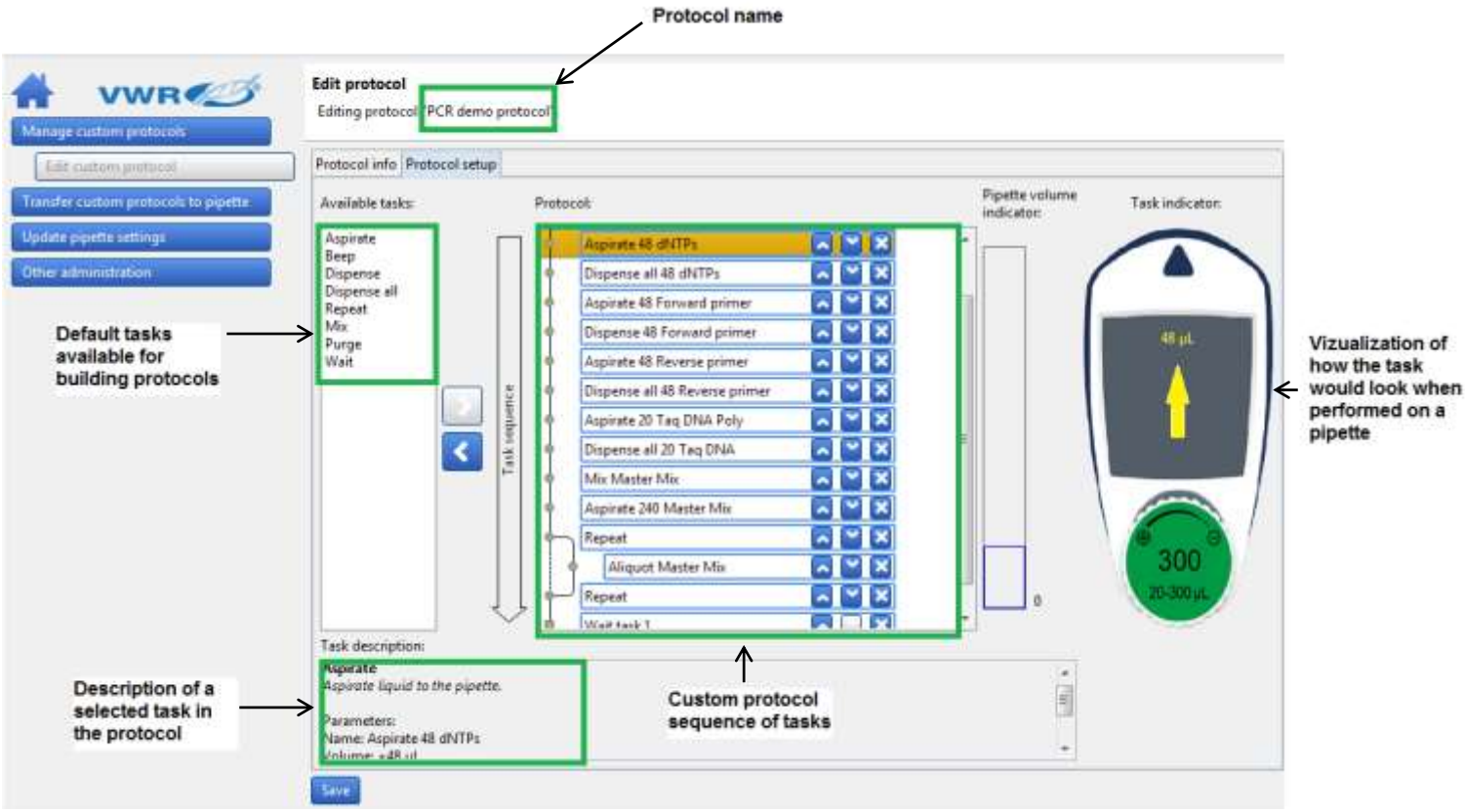
In the *Protocol setup* tab, build a pipetting protocol by adding tasks from the *Available tasks* list (on the left of the screen) to the *Protocol* panel (on the right of the screen) and modifying the task's default parameters:

1. Select a task in the *Available task* list.
2. Drag-and-drop it to the *Protocol* panel, use the arrow button  or simply double-click on the task).
3. Modify the task's parameters in the *Edit* task window that opens automatically after you add the task to protocol, and click *Create* to add the task.
4. Add further tasks to the protocol if desired.
5. When the protocol contains all desired tasks, click the *Save* button to store the protocol. If you are using password protection, you will be asked to confirm this action by entering your password.

The protocol is now listed in *Manage custom protocols*.

Protocols can contain up to 20 tasks.

Tasks listed in the protocol panel will be executed on the VWR Electronic Pipette from top to bottom. You can move the task's position in the protocol by drag-and-drop movement or by using up/down arrows next to the task 



Default tasks available:

- **Aspirate:** aspirates specified volume into the tip.
- **Dispense:** dispenses specified volume from the tip.
- **Dispense all:** dispenses all remaining volume from the tip followed by a purge action.
- **Repeat(1):** enables repetition of any task once or more.
- **Mix:** mixes the specific volume in one or more cycles.
- **Purge:** dispenses all remaining volume from the tip followed by purging extra volume.
- **Wait:** introduces a wait for a specified number of seconds.
- **Beep:** makes pipette produce a beeping sound while selected tasks are executed.

Add tasks to the protocol through drag-and-drop actions, by selecting a task and clicking the arrow button or by double-clicking the task. Drag-and-drop actions position the tasks in the following way: the selected task will be placed directly above the task highlighted in the protocol section. If you are moving a task upwards or creating a new task, the task will be positioned above the highlighted task. If you are moving the task downwards, the task will be dropped after the highlighted task.

After you add a task to the protocol, you can modify task parameters.

(1)Tasks within Repeat will be executed in a sequence for the specified number of iterations.
Example:
If Repeat contains two tasks: Aspirate 20 µL followed by Dispense 20 µL and the number of iterations is set to 3, the tasks will be executed on VWR Electronic Pipette in the following order:

1. *Aspirate 20 µL, 2. Dispense 20 µL, 3. Aspirate 20 µL, 4. Dispense 20 µL, 5. Aspirate 20 µL, 6. Aspirate 20 µl.*

5.1.1. Default task parameters:

Each task has modifiable parameters, defined as follows:

Aspirate and **Dispense** tasks have the following parameters:

- *Task name*(2): specify the name of the task.
- *Volume (µL)*(2): specify the volume for the task in µL.
- *Speed*(2): specifiy the speed for aspirating and dispensing.
- *Comments*: enter any comments related to the task.
- *Display text*(2): enter text that is displayed on the pipette's LCD screen when the task I activated (note that the number of characters for display text is limited(3)).

Dispense all task has the following parameters:

- *Task name*(2): specify the name of the task.
- *Speed*(2)*:* specify the speed for the dispense.
- *Comments*: enter any comments related to the task.
- *Display text*(2): enter text that is displayed on the pipette's LCD screen when the task is activated (note that the number of characters for display text is limited(3)).

Repeat task has the following parameters:

- *Task name*(2): specify the name of the task.
- *Number of iterations*(2): specify how many times the pipette should repeat the tasks that are placed inside the repeat task.
- *Comments*: enter any comments related to the task.

Note: for certain VWR Electronic Pipette models the minimal volumes in *Aspirate* and *Dispense* tasks might be different if these tasks are located inside *Repeat* loop.

Mix task has the following parameters:

- *Task name*(2): specify the name of the task.
- *Volume (µL)* (2): specify the volume for the task in µL.
- *Aspiration speed*(2): specify the speed for the aspiration.
- *Dispense speed*(2): specify the speed for the dispense.

• *Use Push-button mixing (checkbox)*: when checked, mixing will be performed continuously for as long as the user holds the Push-button on the pipette; once the Push-button is released, mixing stops and the next task in the protocol is executed.
• *Number of cycles*(2): specify how many times the volume should be mixed.
• *Comments*: enter any comments related to the task.
• *Display text*(2): enter text that is displayed on the pipette's LCD screen when the task is activated (note that the number of characters for display text is limited(3)).

Purge task has the following parameters:
• *Task name*(2): specify the name of the task.
• *Comments:* enter any comments related to the task.
• *Display text*(2): enter text that is displayed on the pipette's LCD screen when the task is activated (note that the number of characters for Display text is limited(3)).

Wait task has the following parameters:
• *Task name*(2): specify the name of the task.
• *Duration(s)*(2): specify the duration of the pause in seconds.
• *Comments:* enter any comments related to the task.
• *Display text*(2): enter text that is displayed on the pipette's LCD screen when the task is activated (note that the number of characters for Display text is limited(3)).

Beep task has the following parameters:
• *Task name*(2): specify the name of the task.
• *Comments*: enter any comments related to the task.
Example of use: in order to produce a beep sound with duration of 1 second on the pipette before the *Aspirate* task, position the following set of tasks before the Aspirate task:
- *Beep task* (creates the beep start and end tasks).
- *Wait task* (with duration 1 s), which should replace the beep placeholder task between the two beep tasks.

(2)Parameters marked with an asterisk are mandatory.
(3)Pipettes are able to display a limited number of characters on their LCD screen. If you use longer strings of characters in *Display text* not all may be displayed.

5.1.2. Editing, cloning and deleting tasks:

Once the task is listed in the protocol, you can edit its parameters by selecting the task, *right-clicking* on it and selecting *Edit task*, or by double-clicking the task. The *Edit task* window opens, where you can modify the task's parameters and store them.

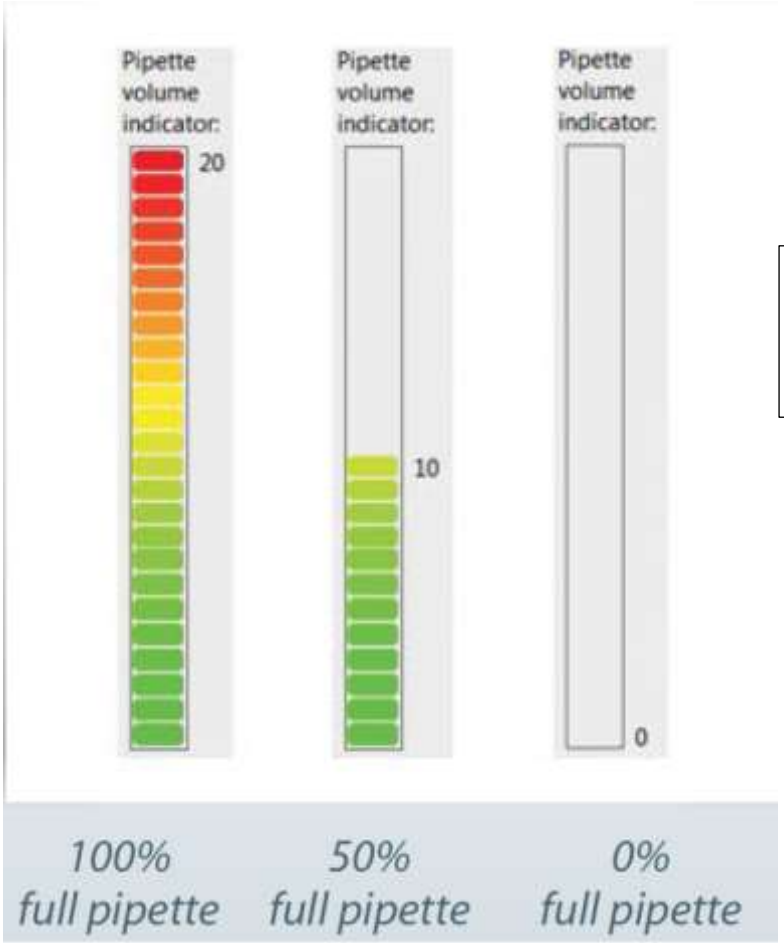
You can clone a task by *right-clicking* on the desired task and selecting *Clone task. Add task* window opens, where you can rename the task and change the parameters if desired. When done, add the task to the protocol by clicking *Create* button. The task is added immediately after the original task.

You can delete tasks from the protocol by *right-clicking* on the desired task and selecting *Delete task.* Alternatively, you can select a task in the protocol and click the left-arrow. When deleting a task, a pop-up window appears, where you can confirm task deletion.

5.1.3. Pipette volume indicator:

As you build a protocol, the pipette volume indicator will display how much of the pipette's maximum volume is used at the end of the protocol with indicator bars (green to red color). The exact volume is also displayed next to the color bars (displayed in microliters). If you click on a particular task, a rectangle will mark the volume of the current task (blue rectangle indicates aspirating, and red rectangle indicates dispensing of volume).

If the volume in pipette exceeds the maximal volume, or is below the minimal volume of the pipette, the pipette volume indicator will be surrounded with a red rectangle.



Numbers displayed next to colored bars represents volume remaining in the pipette at the end of protocol (displayed in microliters)

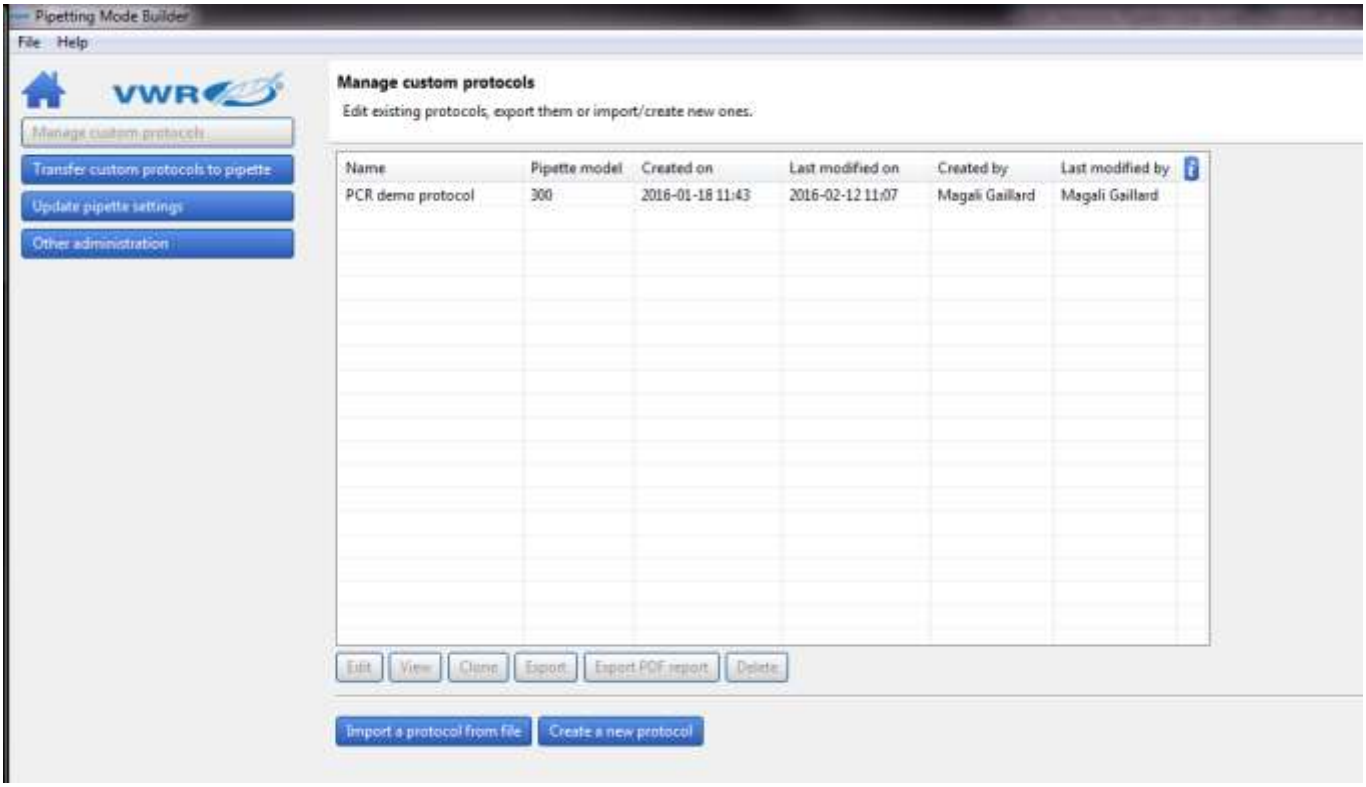
5.1.4. Warning and error messages:

VWR Protocol Builder Software verifies the protocol after the addition of each task, or after modification of a task, to determine whether the volume of the pipette is still within the volume specifications for that particular VWR Electronic pipette model. Should the volume in pipette model fall outside specifications, an *error sign* ⛔ will appear next to the task that caused this. More details about error are available if you position the mouse over the error sign. Protocols that contain one or more *error signs* ⛔ may be saved, however they cannot be transferred to a pipette and cannot be exported.

In certain cases a yellow *warning sign* ⚠ will appear next to a protocol in *Manage custom protocols* and *Transfer custom protocols* to pipette. More details about the warning are available if you position the mouse over the warning sign. Such protocols may be transferred to a pipette and can be exported. However, executing these protocols on the pipette repeatedly may cause the pipette to have an error.

5.2 Managing existing protocols in *Manage custom protocols:*

All protocols that have been created are listed in the *Manage custom protocols* window with information on pipette model, date of creation, date of last modification, person that created the protocol, and person that last modified the protocol. If a protocol contains a warning or an error, the warning or error icon is displayed.



For each of the protocols listed you can perform the following actions. Simply select the protocol and click on one of the buttons:

• **View:** view a protocol. No parameters can be changed in the “View mode”.

• **Edit:** edit a protocol (change the VWR Electronic Pipette model, rename protocol, add/edit/ remove tasks).

• **Clone:** clone a protocol (if you are creating a similar protocol, cloning will save time).

• **Export:** export a protocol to a .pmp file and store it on the computer.

• **Export to pdf:** create a summary of the protocol in the form of a print-ready pdf document.

• **Delete:** delete a protocol.

Alternatively, you can perform these actions by right-clicking on a desired protocol.

Editing protocol is also available by double-clicking the selected protocol.

5.3 Importing a protocol:

You can add protocols to the *Manage custom protocols* by importing a previously created protocol (.pmp files).

Click on *Import a protocol from file* button, navigate to the .pmp file and click *Open*.

The protocol is then available in *Manage custom protocols*.

5.4 Practical tips for creating custom protocols:

If you have existing protocols, cloning and modifying them will save you time.

VWR Protocol Builder Software enables you to easily create a similar protocol on a different VWR Electronic Pipette model. Simply clone the protocol and change the VWR Electronic Pipette model. If necessary, modify the volume of transfers to fit volume specifications of the new VWR Electronic Pipette model.

6 Transferring custom protocols to the pipette

To transfer a protocol to a VWR Electronic pipette, click the *Transfer custom protocols to pipette* button and follow the instructions on the screen:

1/ Connect pipette to the PC via USB cable and click *Next*. **Note:** should the pipette not be recognized immediately, disconnect the USB cable, reconnect it and click *Try again* button. If a pipette is already correctly connected when *Transfer custom protocols to pipette* button is clicked, this step is skipped.

2/ By default, the protocols for the connected VWR Electronic Pipette model are listed. You can access the protocols created for other VWR Electronic Pipette models by selecting the model from the *Show protocols for pipette model*(2): drop-down list.

3/ Select a protocol in the list and click *Finish.*

4/ If a pipette is locked, transferring protocols will unlock it. For that purpose, a pop-up window appears, where you can confirm that you would like to transfer the selected protocol, unlocking the pipette in the process.

5/ You can also check *"Mute beeps"* if you want to disable any pipette sounds during beep tasks.

6/ Disconnect the pipette. The Custom protocol is now available on the pipette.

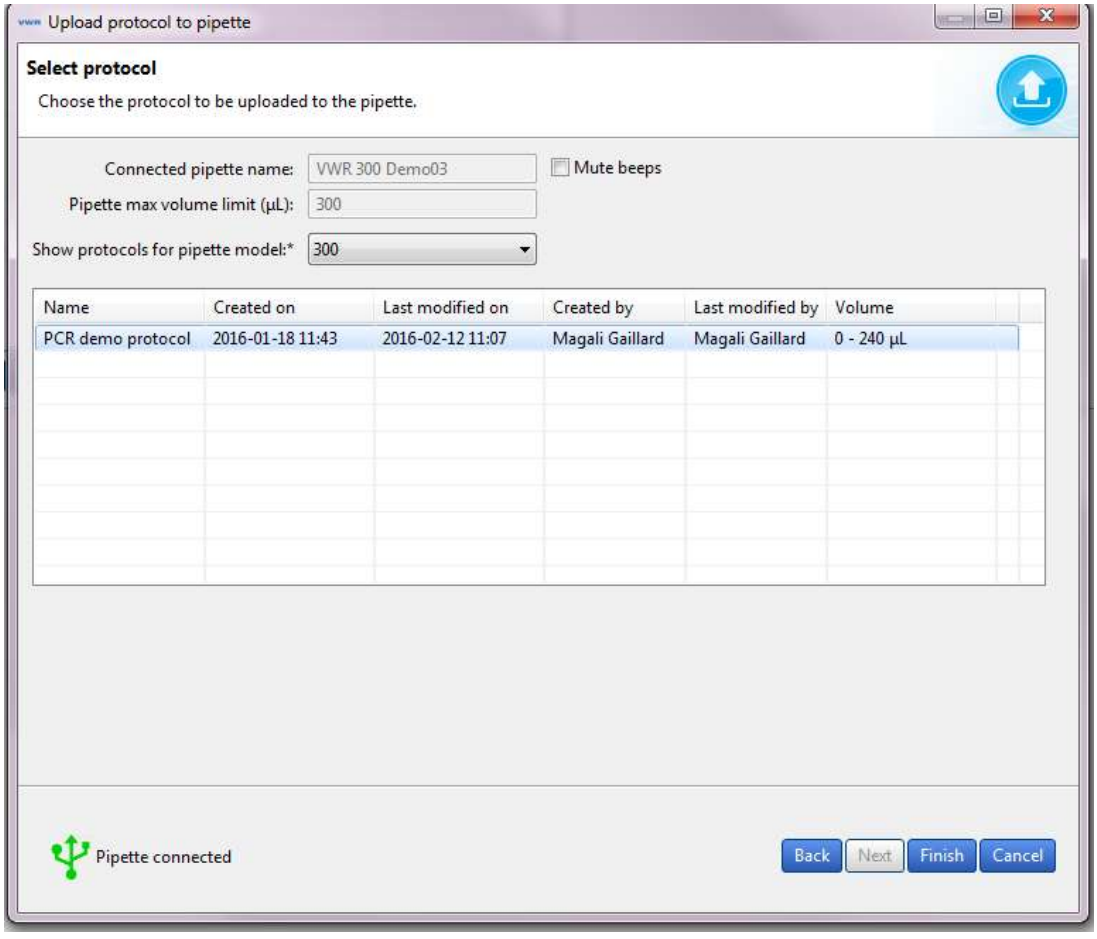
Note: Protocols that have a red *error sign* ⛔ cannot be transferred to pipettes.

• You can transfer a protocol created for a different VWR Electronic Pipette model to the connected pipette, providing the protocol is using volumes within the connected pipette's volume specifications. Protocols that contain volumes outside connected pipette's volume will have a red error sign ⛔.

• The pipette must be registered in the software prior to transferring custom protocols. If the connected pipette is not yet registered, a pop-up appears which informs you that the pipette is not yet registered. Here, you can click on *Add pipette now,* which takes you to the pipette management screen, or you can proceed to/stay at step 1 by clicking *Connect different pipette*.

• On the bottom left of *Transfer custom protocols to pipette* wizard, you can find the *Pipette connection information* - An icon accompanied with text which reports the current connectivity status.

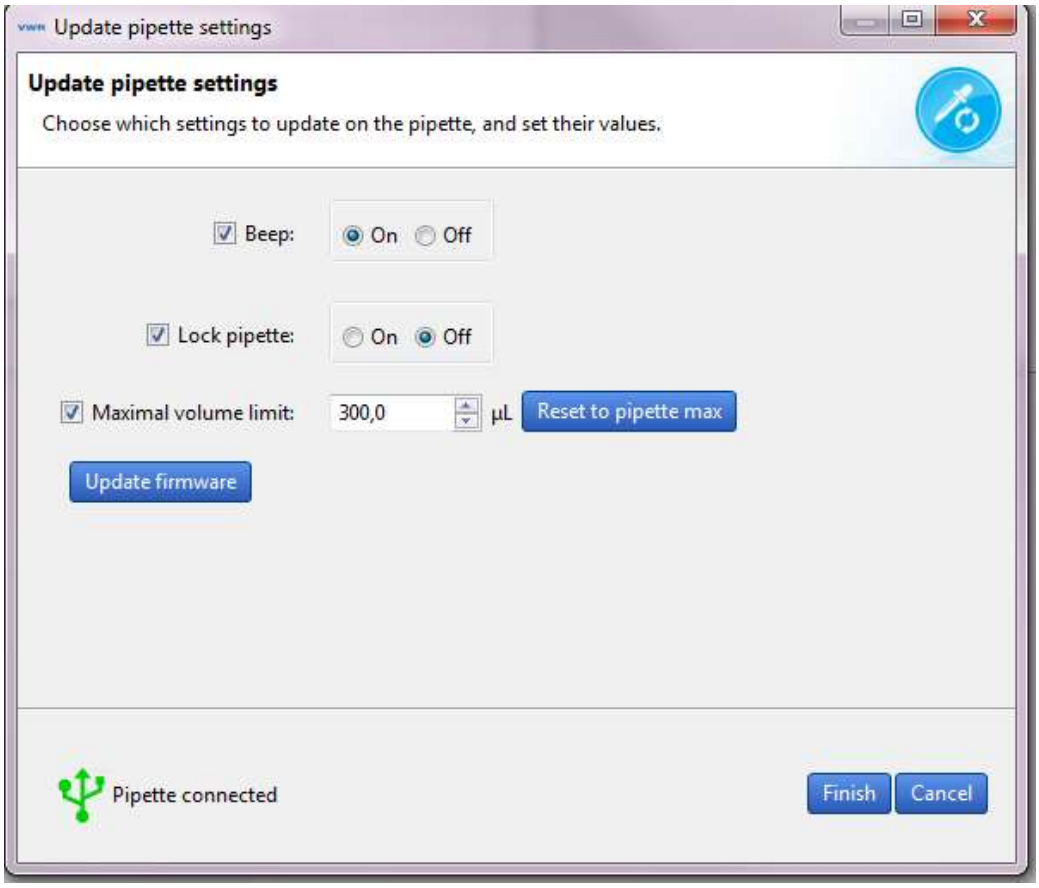
The icon is gree  if there is a pipette connected to the computer if there is a pipette connected to the computer or gray when there are no pipettes connected. The connectivity status is refreshed when any of the buttons is clicked.



7 Updating pipette settings

Here you can set the following configurations on the connected VWR Electronic pipette:

• Set the *Beep* to *On* or *Off* (switches the tone of the pipette to *On* or *Off*). *Beep On* and *Off* only affects the built-in pipette protocols, as well as *Aspirate*, *Dispense*, *Mix*, *Purge* tasks (but NOT beep task!).
• Set the *Lock pipette On* or *Off* (Lock pipette *On* disables access to Configuration, Speed and Mode on VWR Electronic pipette)
• Set *Maximal volume limit:* this sets the maximal allowed volume on the particular pipette; it cannot be higher than pipette's specified maximal volume. Simply enter the volume (in µL) in the field.
• Update Firmware.



To modify these configurations, follow these steps:
1. Click *Update pipette settings* in the main menu.
2. If a pipette is already correctly connected, proceed to step 4.
3. Connect pipette to the PC via USB cable and click *Next*. Should the pipette not be recognized immediately, disconnect the USB cable, reconnect it and click *Try again* button.
4. Check the checkbox for the configuration that you would like to change and then modify it (e.g. change *Beep* from *On* to *Off*; or modify the *Maximal volume limit*);
Unchecked configurations will not be updated.

5. Click Finish.
6. Disconnect pipette.

You can refresh the pipette's *Maximal volume limit* to pipette's specified maximal volume by clicking the *Reset to pipette max*.

Note: the pipette must be registered in the software prior to transferring custom protocols. If the connected pipette is not yet registered, a pop-up appears which informs you that the pipette is not yet registered. Here, you can click on *Add pipette now,* which takes you to the pipette management screen, or you can proceed to/stay at step 1 by clicking *Connect different pipette.*

• On the bottom left of *Update pipette settings* wizard, you can find the *Pipette connection information* – An icon accompanied with text which reports the current connectivity status.

The icon is greer  if there is a pipette connected to the computer if there is a pipette connected to the computer or gray when there are no pipettes connected. The connectivity status is refreshed when any of the buttons is clicked.

Updating pipette firmware

To update firmware VWR Electronic pipette follow these steps:

1. Click *Update pipette settings* in the main menu.
2. If a pipette is already correctly connected, proceed to step 4.
3. Connect pipette to the PC via USB cable and click *Next*. Should the pipette not be recognized immediately, disconnect the USB cable, reconnect it and click *Try again* button.
4. Click the *Update firmware* button.
5. Navigate to the firmware file and click Open.
6. On the next dialog, click OK to confirm the firmware update**. IMPORTANT: the pipette must not be disconnected during firmware update. Disconnecting pipette could result in pipette malfunction.**
7. Wait for the firmware update, click OK and disconnect pipette.

8 Other administration

Here you can perform the following administrative tasks:

• **Pipette management** - Manage the inventory of your VWR Electronic pipettes.
• **View history** - View the history of protocol uploads to VWR Electronic pipettes and the history of protocol modifications by user.
• **Change password** - Change the password to access VWR Protocol Builder Software.
• **Institution/Company profile** - Manage the information related to your Institution/Company.

8.1 Pipette management:

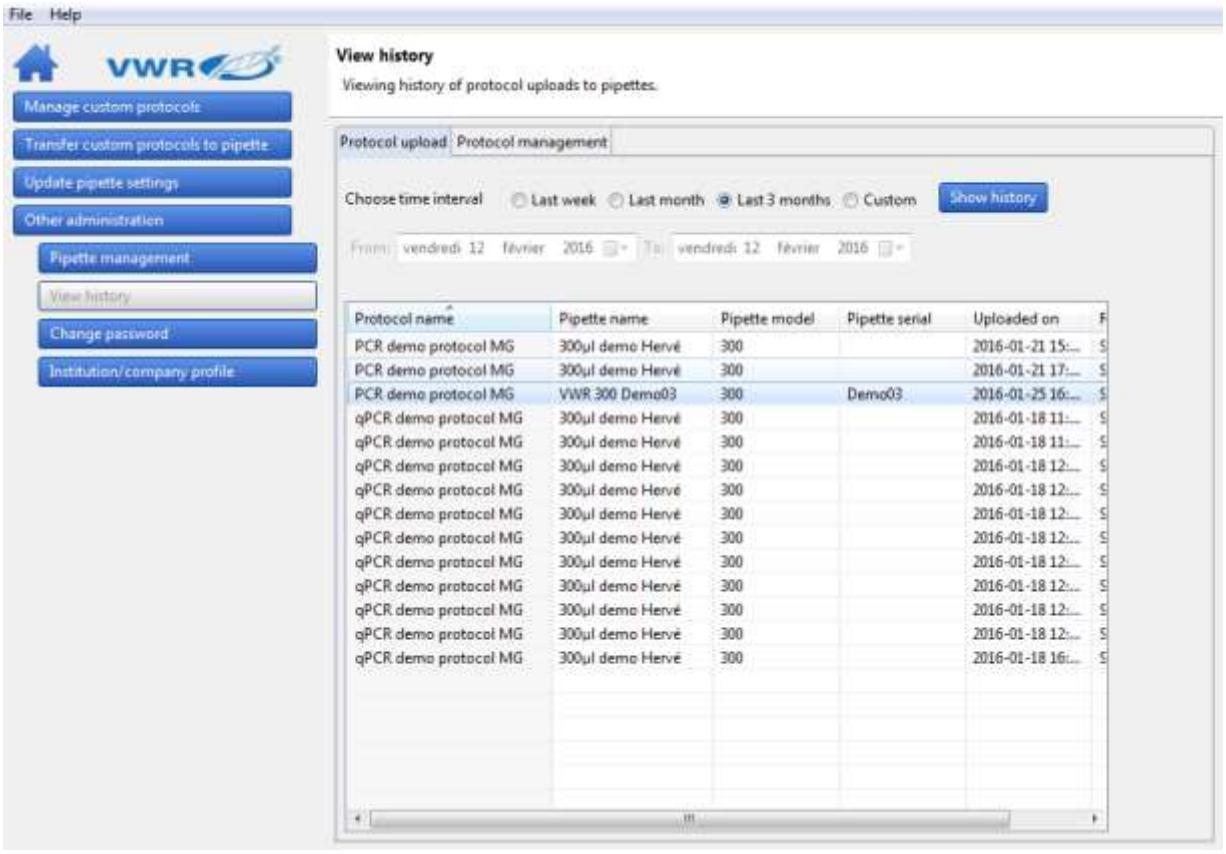
Here you can register your individual VWR Electronic pipettes. Registering a pipette is required to allow for transfer of your personalized protocols onto the pipette, as well as updating the pipette settings.

Register a new pipette by clicking *Register new pipette* button and follow the instructions on the screen:
1. Connect a pipette to the PC via USB cable and click *Next.* Should the pipette not be recognized immediately, disconnect the USB cable, reconnect it and click *Try again* button. If a pipette is already correctly connected when *Register new pipette* button is clicked, this step is skipped.
2. Type in the name of the pipette and click *Finish.*
3. Pipette is now listed in the *Registered pipettes* list along with the basic information *(Model, Firmware version, Serial number, Minimal volume (µL), Maximal volume (µL), Last maintenance date, Next maintenance date).*
You can rename a pipette in the *Registered pipettes* list by selecting the pipette, clicking the *Rename* button, entering a new name and clicking *Rename.*
You can reset the maintenance dates (last and next) by clicking the *Refresh dates* button.
This process requires you to connect the selected pipette to the computer.

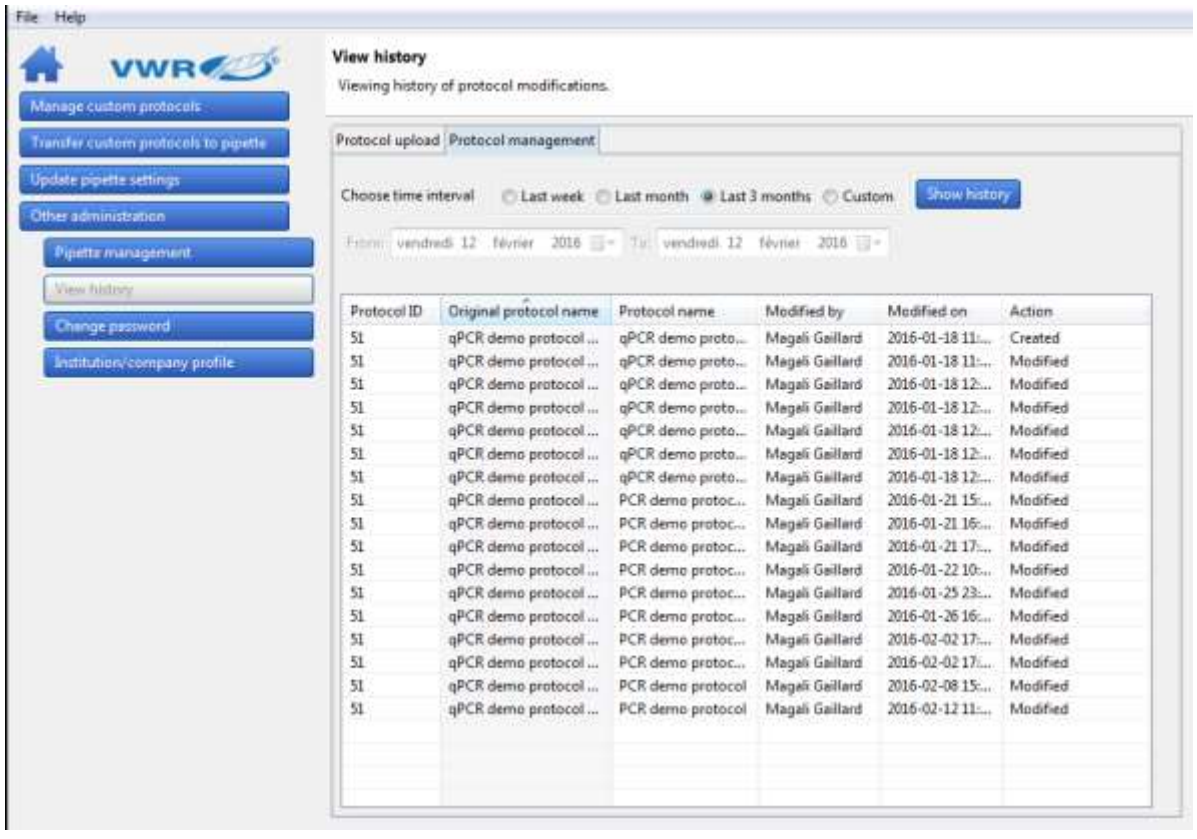
You can delete a pipette in the *Registered pipettes* list by selecting the pipette, and clicking *Delete this pipette* button.
Note: on the bottom left of *Register new pipette* wizard, you can find the *Pipette connection information* – An i :companied with text which reports the current connectivity status.
The icon is green  if there is a pipette connected to the computer or gray
when there are no pipettes connected. The connectivity status is refreshed when any of
the buttons is clicked.

8.2 View history:

Here you can view the history of protocol uploads to VWR Electronic pipettes (tab *Protocol upload*) and history of protocol modifications (tab *Protocol management*).
To display the history of protocol uploads to VWR Electronic pipettes, navigate to the *Protocol upload* tab, select the time interval and click *Show history*. The protocols that have been uploaded to any VWR Electronic pipette within the selected time interval will be listed in the table below, displaying the following information for each protocol: *Protocole name, Pipette name, Pipette model, Pipette serial, Uploaded on,* and *Result.*



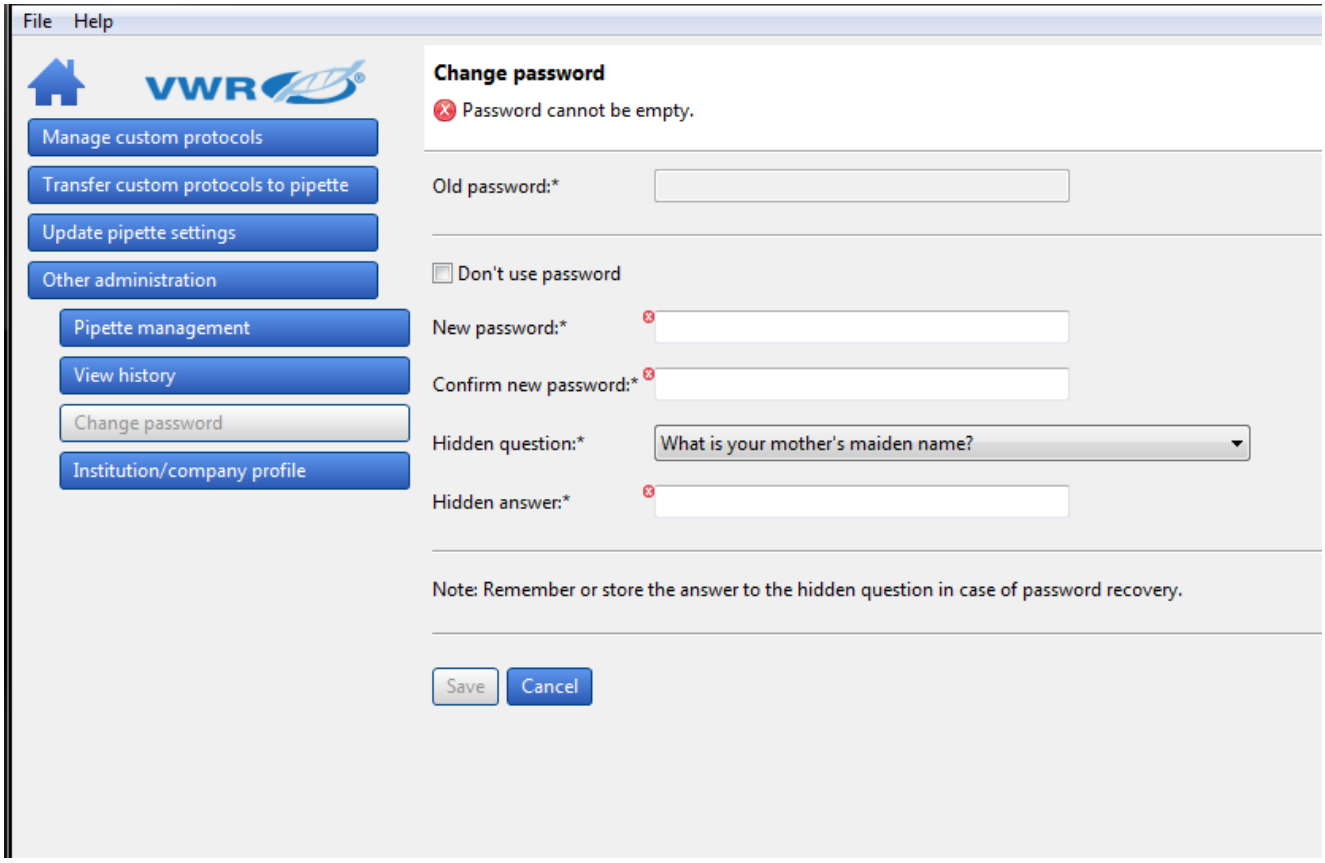
To display history of protocol modifications, navigate to *Protocol management* tab, select the time interval, and click *Show history*. The protocols that have been modified within selected time interval will be listed in the table below, displaying the following information for each protocol: *protocol ID, Original protocol name, Modified by, Modified on,* and *Action.*



8.3 Change password:

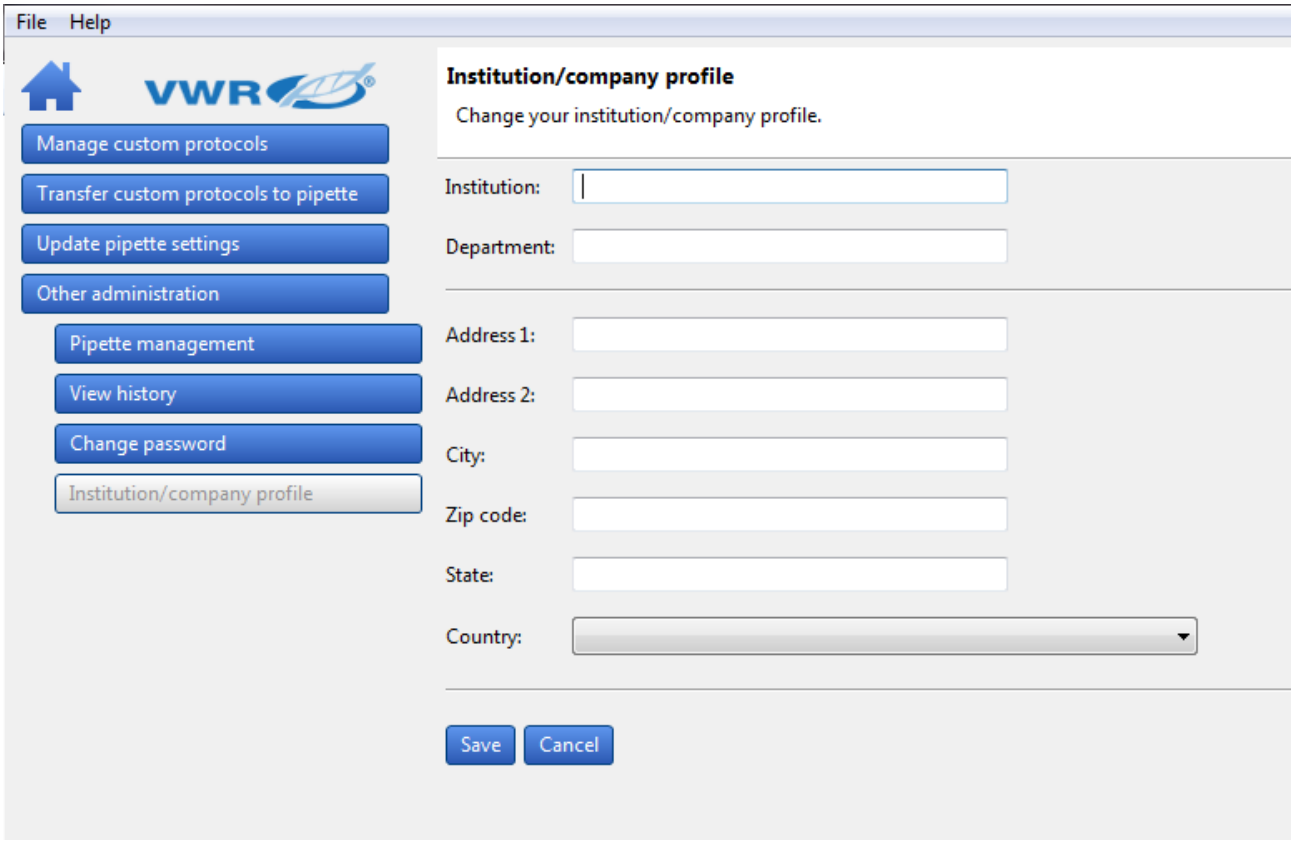
Here you can change a password, change the *Hidden question* and *Hidden answer*, or disable/enable the use of passwords (checkbox: *Don't use password*).

Note: remember or store the answer to the hidden question in case of password recovery.



8.4 Institution/Company profile:

Enter the information related to your Institution/Company here or modify it. Simply enter the information in provided fields and click *Save.*
None of the information is mandatory.


File
Help
VWR
Manage custom protocols
Transfer custom protocols to pipette
Update pipette settings
Other administration
Pipette management
View history
Change password
Institution/company profile
Institution/company profile
Change your institution/company profile.
Institution:
Department:
Address 1:
Address 2:
City:
Zip code:
State:
Country:
Save
Cancel

Technical service

Web Resources

Visit the VWR website at **www.vwr.com** for:

- Complete technical service contact information
- Access to the VWR Online Catalogue, and information about accessories and related products
- Additional product information and special offers

Contact us for information or technical assistance contact your local VWR representative or visit. **www.vwr.com**.

Warranty

VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.
Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.
For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

Local VWR offices in Europe and Asia Pacific

Australia
VWR International Pty. LTD
Level 1, Unit 1a/60 Enterprise Place
Tingalpa
QLD 4173 Australia
Tel.: 1300 727 696
Fax: 1300 135 123

Austria
VWR International GmbH
Graumanngasse 7
1150 Vienna
Tel.: +43 1 97 002 0
Fax: +43 1 97 002 600
Email: info@at.vwr.com

Belgium
VWR International bvba
Researchpark Haasrode 2020
Geldenaaksebaan 464
3001 Leuven
Tel.: 016 385 011
Fax: 016 385 385
Email: vwrbe@be.vwr.com

China
VWR International China Co., Ltd
Shanghai Branch
Room 256, No. 3058 Pusan Road
Pudong New District
Shanghai, 200123
Tel.: +86-21 589 868 88
Fax: +86-21 585 588 01
Email: info_china@vwr.com

Czech Republic
VWR International s. r. o.
Veetee Business Park
Pražská 442
CZ - 281 67 Stříbrná Skalice
Tel.: +420 321 570 321
Fax: +420 321 570 320
Email: info@vitrum.cz

Denmark
VWR - Bie & Berntsen
Transformervej 8
2730 Herlev
Tel.: 43 86 87 88
Fax: 43 86 87 90
Email: info@dk.vwr.com

Finland
VWR International Oy
Valimotie 9
00380 Helsinki
Tel.: +358 9 80 45 51
Fax: +358 9 80 45 52 00
Email: info@fi.vwr.com

France
VWR International S.A.S.
Le Périgares – Bâtiment B
201, rue Carnot
94126 Fontenay-sous-Bois cedex
Tel.: 0 825 02 30 30 (0,15 EUR TTC/min)
Fax: 0 825 02 30 35 (0,15 EUR TTC/min)
Email: info@fr.vwr.com

Germany
VWR International GmbH
Hilpertstrasse 20a
D - 64295 Darmstadt
Freecall: 0800 702 00 07
Fax: 0180 570 22 22*
Email: info@de.vwr.com
*0,14 €/Min. aus d. dt. Festnetz

Hungary
VWR International Kft.
Simon László u. 4.
4034 Debrecen
Tel.: (52) 521-130
Fax: (52) 470-069
Email: info@hu.vwr.com

India
VWR Lab Products Private Limited
135/12, Brigade Towers, 2nd Floor
Front wing, Brigade Road,
Bengaluru , India – 560 025
Tel: +91-2522-647911/922 (Mumbai)
Tel: +91-80-41117125/26 (Bangalore)
Fax +91-80-41117120
Email: vwr_india@vwr.com

Ireland / Northern Ireland
VWR International Ltd / VWR International (Northern Ireland) Ltd
Orion Business Campus
Northwest Business Park
Ballycoolin
Dublin 15
Tel.: 01 88 22 222
Fax: 01 88 22 333
Email sales@ie.vwr.com

Italy
VWR International PBI S.r.l.
Via San Giusto 85
20153 Milano (MI)
Tel.: 02-3320311/02-487791
Fax: 02-332031307/02-40090010
Email: info@it.vwr.com

The Netherlands
VWR International B.V.
Postbus 8198
1005 AD Amsterdam
Tel.: 020 4808 400
Fax: 020 4808 480
Email: info@nl.vwr.com

New Zealand
VWR International LP
241 Bush Road
Albany
0632 New Zealand

Norway
VWR International AS
Haavard Martinsens vei 30
0978 Oslo
Tel.: 02290
Fax: 815 00 940
Email: info@no.vwr.com

Poland
VWR International Sp. z o.o.
Limbowa 5
80-175 Gdansk
Tel.: 058 32 38 210
Fax. 058 32 38 205
Email: labart@pl.vwr.com

Portugal
VWR International - Material de Laboratório, Lda
Edifício Neopark
Av. Tomás Ribeiro, 43- 3 D
2790-221 Carnaxide
Tel.: 21 3600 770
Fax: 21 3600 798/9
Email: info@pt.vwr.com

Singapore
VWR Singapore Pte Ltd
18 Gul Drive
Singapore 629468
Tel: +65 6505 0760
Fax: +65 6264 3780
Email: sales@sg.vwr.com

Spain
VWR International Eurolab S.L.
C/ Tecnología 5-17
A-7 Llinars Park
08450 - Llinars del Vallès
Barcelona
Tel.: 902 222 897
Fax: 902 430 657
Email: info@es.vwr.com

Sweden
VWR International AB
Fagerstagatan 18a
163 94 Stockholm
Tel.: 08 621 34 00
Fax: 08 621 34 66
Email: info@se.vwr.com

Switzerland
VWR International GmbH
Lerzenstrasse 16/18
8953 Dietikon
Tel.: 044 745 13 13
Fax: 044 745 13 10
Email: info@ch.vwr.com

Turkey
VWR International Laboratuar Teknolojileri Ltd.Şti.
Orta Mah. Cemal Gürsel Caddesi
Ördekcioglu Işmerkezi No.32/1
34896 Pendik - Istanbul
Tel.: +90216 598 2900
Fax: +90216 598 2907
Email: info@pro-lab.com.tr

UK
VWR International Ltd
Customer Service Centre
Hunter Boulevard
Magna Park
Lutterworth
Leicestershire
LE17 4XN
Tel.: 0800 22 33 44
Fax: 01455 55 85 86
Email: uksales@uk.vwr.com