

VWR® HIGH PERFORMANCE PIPETTOR

USER GUIDE EN

Light-Weight Ergonomics

Precise & Reliable

Secure Results



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1 - INTRODUCTION

The VWR High Performance Pipettor is an air displacement mechanism and is used with disposable pipette tips.

This pipettor line provides:

- Light and comfortable body
- Low pipetting forces ensuring ergonomics and users' well-being
- Unique patented Volume locking mechanism for results you can trust

Eight single channel models cover a volume range from 0.2 μL to 10 mL.

Eight multichannel models (4 x 8-ch and 4 x 12-ch) cover a volume range from 0.5 μL to 300 μL .

2 - PARTS CHECK LIST

Just take a moment to verify that the following items are present:

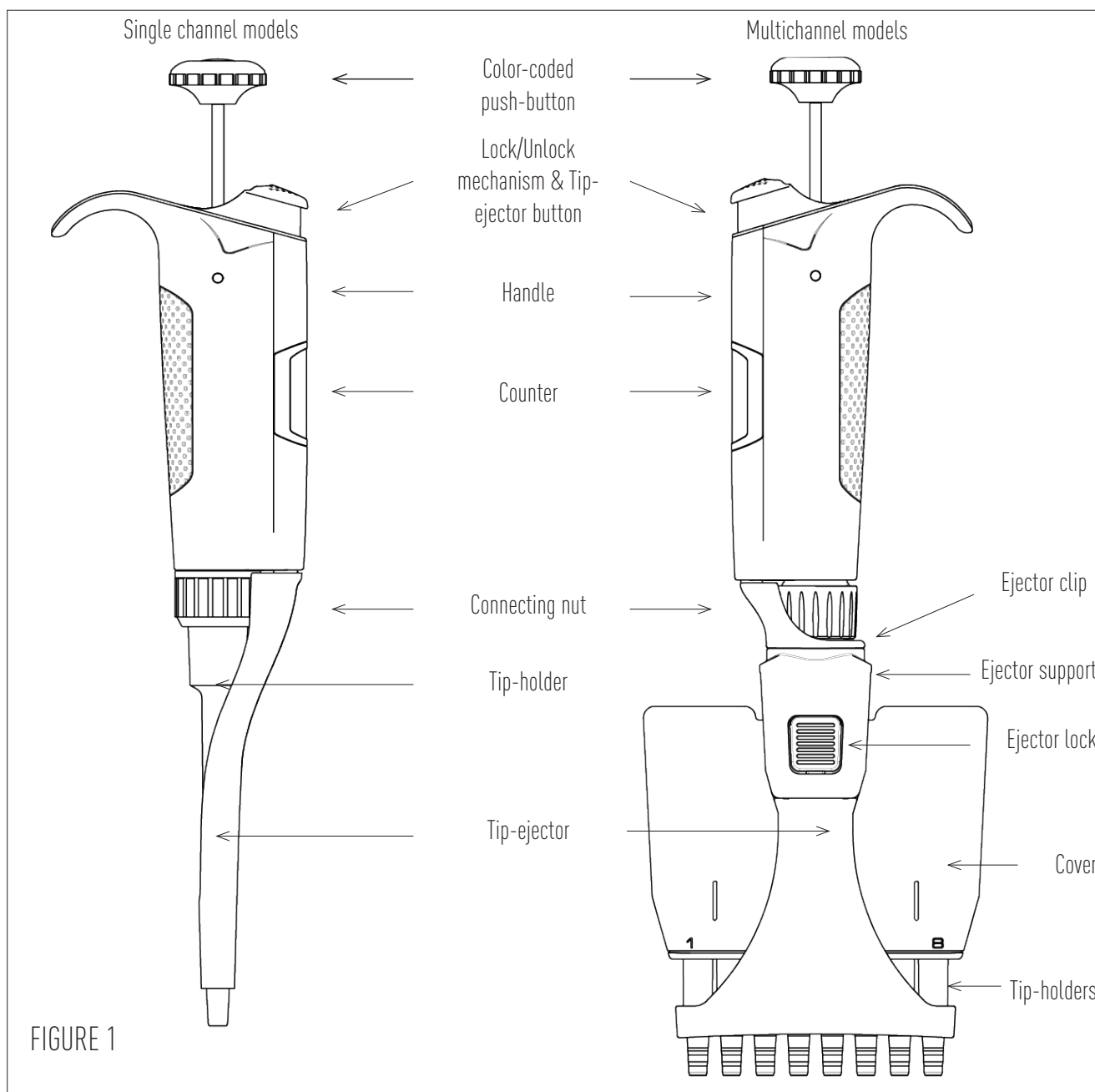
Single models

- VWR High Performance Pipettor,
- User's Guide,
- Certificate of conformity,
- Calibration Key,
- Tip-ejector extension for 2 μL and 10 μL models.

Multichannel models

- VWR High Performance Pipettor,
- User's Guide,
- Ejector spacer for short collar tips (only for multichannels models 10 μL),
- Certificate of conformity,
- Calibration key.

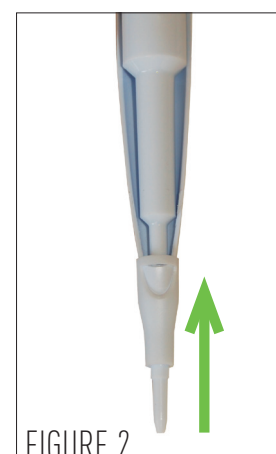
3 - DESCRIPTION



For 2 μ L and 10 μ L Single channel models, a tip-ejector extension is supplied to fit with short tips models.

To fit a tip-ejector extension:

- 1 Slide the extension over the tip-holder
- 2 Push the extension firmly onto the end of the tip-ejector until it clicks into place (see figure 2)



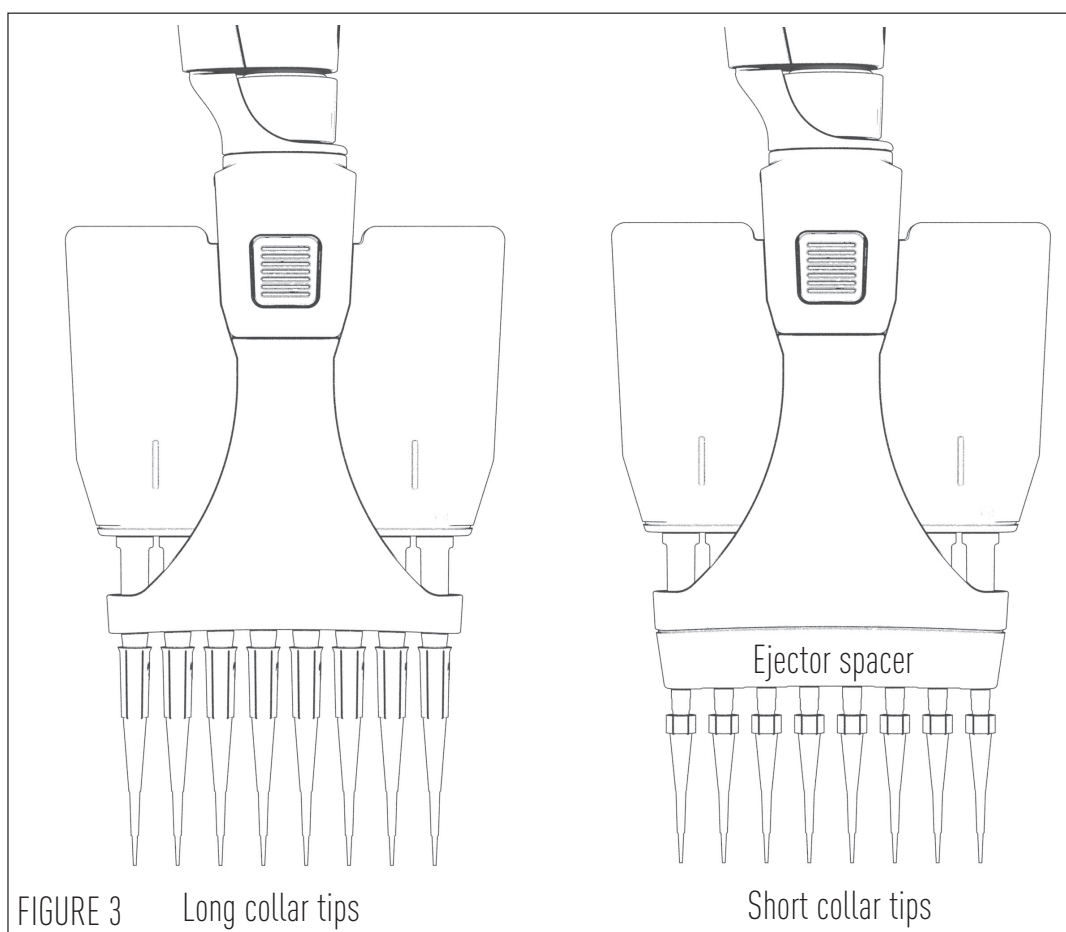
To remove a tip-ejector extension:

- ① Gently twist the extension
- ② Pull it away from the pipettor

Ejector spacer for Multichannel models (X10 μ L only)

Multichannel models fit with long collar tips. If you use short collar tips, you might have to insert the ejector spacer especially indicated for that:

- Remove the tip-ejector, keep both ejector locks depressed; pull the tip-ejector down.
- Insert the broad ejector spacer and click it to the tip-ejector.
- To refit the tip-ejector, gently re-insert the tip-ejector vertically into the rails of the ejector support.



4 - SETTING THE VOLUME

The volume of liquid to be aspirated is set using the volumeter. The digits are colored either black or red to indicate the position of the decimal point, depending on the model (see examples below).

Single models				Multichannel models	
2 μ L 1 2 5 1.25 μ L	10 μ L 0 7 5 7.5 μ L	20 μ L 1 2 5 12.5 μ L	100 μ L 0 7 5 75 μ L	X10 μ L 0 7 5 7.5 μ L	X20 μ L 1 2 5 12.5 μ L
200 μ L 1 2 5 125 μ L	1000 μ L 0 7 5 0.75 mL	5000 μ L 1 2 5 1.25 mL	10mL 0 7 5 7.5 mL	X200 μ L 1 2 5 125 μ L	X300 μ L 1 2 5 125 μ L

MODEL	Color of volumeter digits		
	Black	Red	Increment
2 μ L	μ L	0.01 μ L	0.002 μ L
10 μ L to 20 μ L	μ L	0.1 μ L	0.02 μ L
8X-10 μ L, 8X-20 μ L 12X-10 μ L, 12X-20 μ L	μ L	0.1 μ L	0.02 μ L
100 μ L, 200 μ L, 8X-200 μ L, 12X-200 μ L	μ L	-	0.2 μ L
8X-300 μ L, 12X-300 μ L	μ L	-	0.2 μ L
1000 μ L	0.01 mL	mL	0.002 mL
5000 μ L	0.01 mL	mL	0.002 mL
10 mL	mL	0.1 mL	0.02 mL

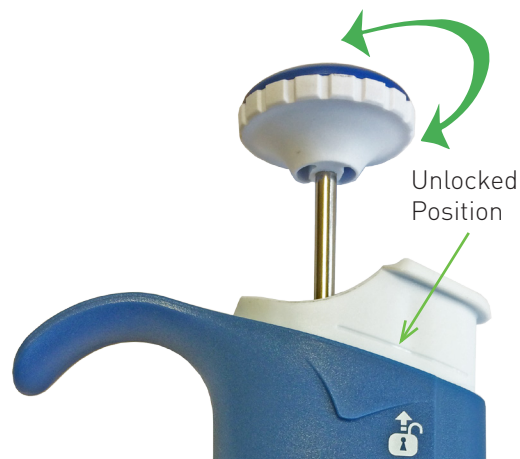
Lock system:

For trusted results, the volume selection is lockable.

- 1 First step, with the thumb, unlock the tip-ejector button by pushing it up



- 2 Second step, the volume is set by turning the push button



- 3 Third step, push down the tip-ejector button. The selected volume is locked.



To obtain maximum accuracy when setting the volume, proceed as follows:

→ when **decreasing** the volume setting, slowly reach the required setting, making sure not to overshoot the mark.

→ when **increasing** the volume setting, pass the required value by 1/3 of a turn and then slowly decrease to reach the volume, making sure not to overshoot the mark.

→ To adjust perfectly the last digit, it is even more precise to do so on the Lock position.

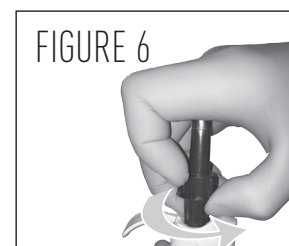
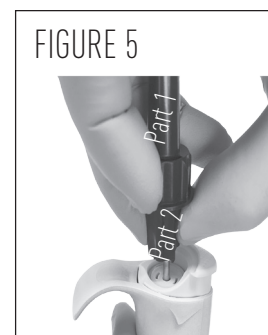
5 - USER ADJUSTMENT

The calibration of the VWR High Performance Pipettor has been performed with distilled water and very high precision volumetric instruments. Adjusting the pipettor can be necessary for different solutions due to their density, viscosity, surface tension and/or vapor pressure etc. Calibration is sometimes recommended when it is used in high altitudes or with special tips. It can also be recalibrated when long pipette tips are used. Performance testing should take place in a draught-free room at 15-30°C, constant to $\pm 0.5^\circ\text{C}$ and humidity above 50%.

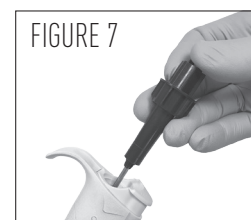
To adjust the volume setting:

- 1 Remove the push button.
- 2 Use the calibration key to take off the block cover.
 - a. Insert the metal rod into the calibration tool on the hexagonal side.
 - b. Engage the two rectangular hooks of part 2 into the two holes of the block cover. You should feel them clipped on firmly in the hidden part of the pipettor (see figure 5).
 - c. Make sure to hold the part 1 at the top cap, along the part 2.
 - d. Turn the part 2 counterclockwise slowly to remove the block cover (see figure 6).

Put the block cover apart.



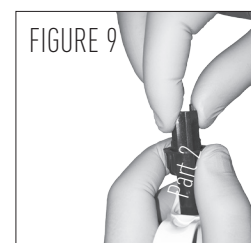
- 3 Use the calibration key to adjust the pipettor
- a. Insert the metal rod into the calibration key on the circle tip side (see figure 7).



Lock it into place. You should feel the internal part of the calibration key clamped and clipped on firmly. If it is not the case, turn it counterclockwise slowly. Then, turn the plastic connecting nut of the part 1 slowly until it's locked in place (see figure 8).



- b. Hold the connecting nut of the part 1 with one hand and turn the part 2 with the other one according to the correction needed (see figure 9).



- 4 Once the desired volume is set, remove the calibration key and put back the block cover using the hexagonal side. Turn it clockwise to lock the block cover. Put back the push button.

With reference water, one revolution (1/8 turn of the calibration tool) of the volume setting corresponds to:

Volume range	Vol. per 1/8 turn (equivalence in μL)
2 μL	0.012 i.e: 1 full turn is 0.096
10 μL	0.047
20 μL	0.120
100 μL	0.48
200 μL	1.20
1000 μL	4.75
5000 μL	23.8
10ML	48
8X-10 μL	0.058
12X-10 μL	
8X-20 μL	0.120
12X-20 μL	
8X-200 μL	1.20
12X-200 μL	
8X-300 μL	1.90
12X-300 μL	

6 - PIPETTING

Fitting the tips

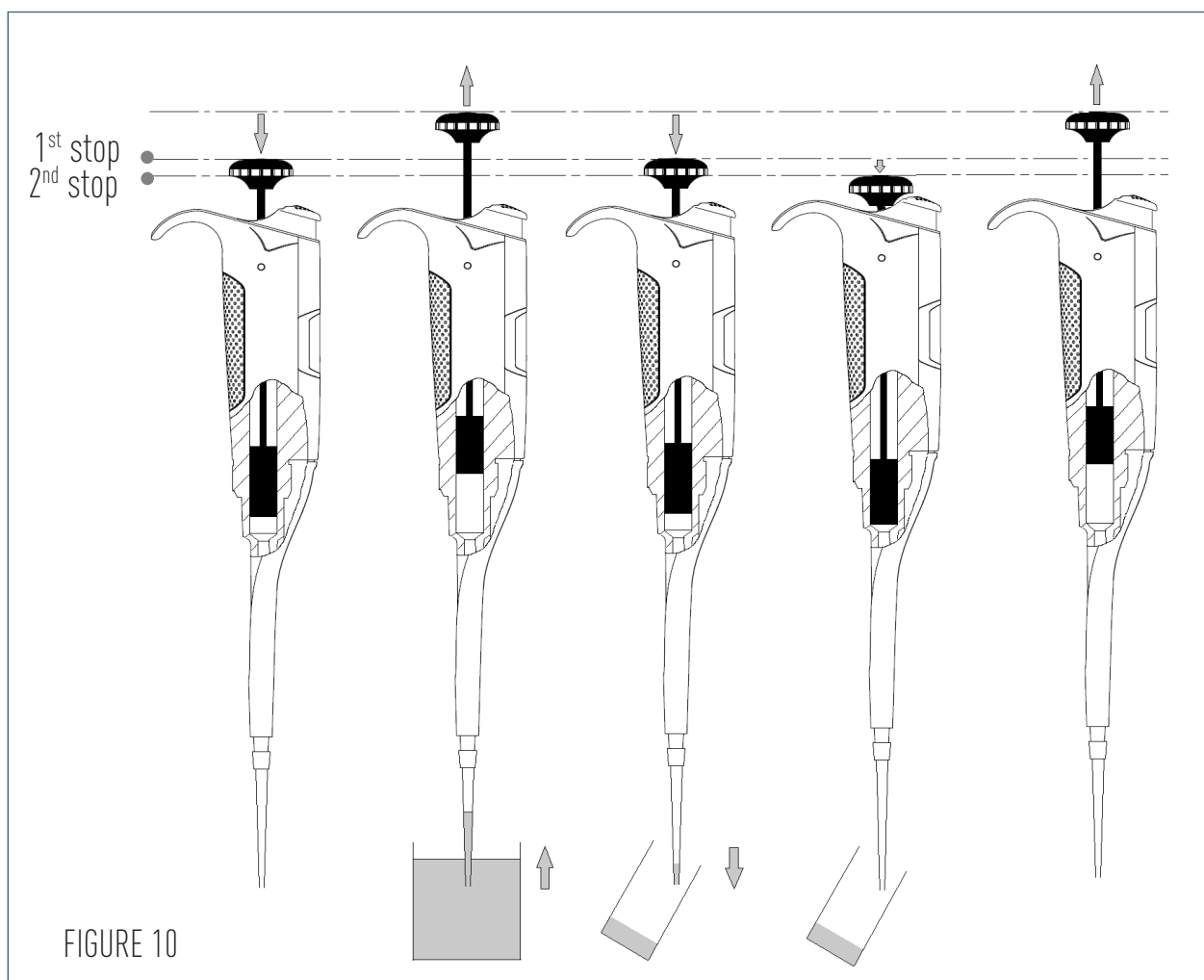
VWR High Performance Pipettor have been designed to fit VWR tips.

Pre-rinse the tips

Some liquids (e.g. protein-containing solutions and organic solvents) can leave a film of liquid on the inside wall of the tip; pre-rinse the tip to minimize any errors that may be related to this phenomenon.

Pre-rinsing consists of aspirating the first volume of liquid and then dispensing it to waste.

Tips will not fall off nor will they have to be manually positioned. Make sure first that the pipettor is calibrated with the tips that you are using. Then, subsequent volumes that you pipettor will have levels of accuracy and precision within specifications. Using other tips may require a validation of the pipetting system.



Aspirate

- 1 Press the push-button to the **first stop** (this corresponds to the set volume of liquid).
- 2 Hold the pipettor vertically and immerse the tip in the liquid. Release the push-button slowly and smoothly (to top position) to aspirate the set volume of liquid. Wait one second; then withdraw the pipette tip from the liquid. You may wipe any drop lets 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.

⇒ *For the multichannel models, use a reagent reservoir.*

Dispense

- 1 Place the end of the tip against the inside wall of the recipient vessel (at an angle of 10° to 40°).
- 2 Press the push-button slowly and smoothly to the **first stop**.
- 3 Wait for at least a second, then press the push-button to the **second stop** to expel any residual liquid from the tip. Keep the push-button pressed fully down and (while removing the pipettor) draw the tip along the inside surface of the vessel.
- 4 Release the push-button, smoothly. Eject the tip by pressing firmly on the tip-ejector button.

⇒ *For the multichannel models, use a reagent reservoir.*

7 - GENERAL GUIDELINES FOR GOOD PIPETTING

- 1 Make sure that you operate the push-button slowly and smoothly.
- 2 When aspirating, keep the tip at a constant depth below the surface of the liquid (refer to the table).
- 3 Change the tip before aspirating a different liquid, sample, or reagent.
- 4 Change the tip if a droplet remains at the end of the tip from the previous pipetting operation.
- 5 Each new tip should be pre-rinsed with the liquid to be pipetted.
- 6 Liquid should **never** enter the tip-holder; to prevent this:
 - press and release the push-button slowly and smoothly,
 - never turn the pipettor upside down,
 - never lay the pipettor on its side when there is liquid in the tip.
- 7 If you use the same tip with a higher volume, pre-rinse the tip.
- 8 For volatile solvents you should saturate the air-cushion of your pipettor by aspirating and dispensing the solvent repeatedly before aspirating the sample.
- 9 When the pipetted liquid is not at room temperature, pre-rinse the tip several times before use.
- 10 You may remove the tip-ejector (see chapter 12 - Maintenance) to aspirate from very narrow tubes.
- 11 After pipetting acids or other corrosive liquids that emit vapors, remove the tip-ejector, the tip-holder, rinse, dry and lubricate the piston (see chapter 12 - Maintenance).
- 12 Do not pipette liquids having temperatures above 70°C or below 4°C. The pipettor can be used between +4°C and +40°C but the specifications may vary according to the temperature (refer to the ISO8655-2 standard for conditions of use).

Table Immersion Depth and Wait Time

Model	Immersion Depth (mm)	Wait Time (seconds)
2µl	1	1
10µl	1	1
20µl	2-3	1
100µl	2-4	1
200µl	2-4	1
1000µl	2-4	2-3
5000µl	3-6	4-5
10mL	5-7	4-5
8X-10µl, 12X-10µl	1	1
8X-20µl, 12X-20µl	2-3	1
8X-200µl, 12X-200µl	2-3	1
8X-300µl, 12X-300µl	2-4	1

⇒ Pipettors should be held in the vertical position.

8 - ACCESSORIES AND STAND

To store your pipettors, several stands are available. To avoid the possibility of liquid running back into the pipettor, store the pipettor vertically.

VWR High Performance Pipettor is sold with the plastic tip ejector but it is available in stainless steel as a spare part.

To identify or personalize your pipettor, identification clips are available (Figure 12):

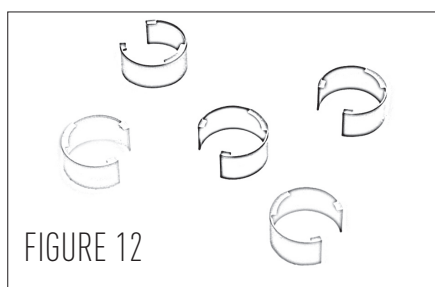


FIGURE 12

Identification clips (mixed colors set of 10)	FE07060
Identification clips (red, set of 10)	FE07061
Identification clips (yellow, set of 10)	FE07062
Identification clips (green, set of 10)	FE07063
Identification clips (blue, set of 10)	FE07064
Identification clips (white, set of 10)	FE07065



9 - GLP FEATURES

The Serial Number is engraved on the body of the pipettor. It provides a unique identification of the pipettor and the manufacturing date.

Example: 15A1425

To know the specific details about your pipettor, see the table.

The Bar Code on the box and the certificate of conformity provide traceability of your pipettor.

Year /CODE	Month/CODE	NUMBER (example)
2015/15	January/A	0001
2016/16	February/B	0325
2017/17	March/C	0500
2018/18	April/D	0750
2019/19	May/E	1000
2020/20	June/G	1300
2021/21	July/H	1600
2022/22	August/J	2000
2023/23	September/K	2400
2024/24	October/L	2600
2025/25	November/M	2800
2026/26	December/N	3000

10 - TROUBLESHOOTING

A quick inspection of the pipettor may help you to detect a problem.

The following tables may help you to identify and correct the problem you might encounter.

For any other symptom or if you can't solve the problem, please contact your supplier.

For Single channel models

Symptom	Possible Cause	Action
Pipettor is leaking sample	Damaged tip-holder	Replace the tip-holder
	Worn O-ring or seal	Replace both parts and lubricate
Pipettor won't aspirate	Worn O-ring or seal	Replace both parts and lubricate
	Damaged tip-holder	Replace the tip-holder
	Connecting nut is loose	Tighten connecting nut
	Damaged or corroded piston	Return pipettor to supplier
	Improper repair or assembly	See Chapter 12 - Maintenance
Pipettor is inaccurate	Improper repair or assembly	See Chapter 12 - Maintenance
	Unscrewed tip-holder	Tighten connecting nut
	Connecting nut is loose	Tighten connecting nut
Pipettor is not precise	Tip-holder is loose	Tighten connecting nut
	Connecting nut is loose	Tighten connecting nut
	Incorrect operator technique	Operator training
	Damaged or corroded piston(s)	Return pipettor to supplier
	Damaged tip-holder(s)	Replace the tip-holder
	Worn O-ring or seal	Replace both parts and lubricate
Tips fall off or do not fit correctly	Low quality tips	Use VWR tips to have optimum fit correctly results of the pipetting system
	Dirty tip-holder	Clean the tip-holder with isopropanol or ethanol
	Damaged tip-holder(s)	Replace the tip-holder
	The tip-ejector is loose	Assemble the tip-ejector properly
	The ejector lock is misaligned	Align the ejector lock
Pipetting seize up	Piston need lubricant	Lubricate piston assembly

For Multichannel models

Symptom	Possible Cause	Action
Tips fall off or do not fit correctly	Low quality tips	Use VWR tips to have optimum results of the pipetting system
	Tip-ejector damaged	Replace tip-ejector
	Ejector spacer damaged	Replace ejector spacer
	Dirty tip-holder	Clean them with ethanol or isopropanol
Pipettor won't aspirate	Damaged tip-holder	Contact your local supplier
Pipettor won't aspirate	Connecting nut is loose	Tighten connecting nut
Pipettor is inaccurate	Connecting nut is loose	Tighten connecting nut
Pipettor is not precise	Connecting nut is loose	Tighten connecting nut
	Incorrect operator technique	Operator training

11 - LEAK TEST

This test may be performed at any time to check that the pipettor does not leak, especially after performing a maintenance or sterilization procedure. If a pipettor fails this test, replace the O-ring and seal. After making sure that the pipettor is correctly reassembled, repeat this test.



For the 2µL to 200µL Single channel models:

- 1 Fit with VWR Pipette Tips.
- 2 Set the pipettor to the maximum volume given in the specifications, and pre-rinse.
- 3 Aspirate the set volume from a beaker of distilled water.
- 4 Maintain the pipettor in the vertical position and wait for 20 seconds.
- 5 If a water droplet appears at the end of the tip there is a leak.
- 6 If you see no droplet, re-immerses the tip below the surface of water.
- 7 The water level inside the tip should remain constant; if the level goes down there is a leak.

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For the 1000µL, 5000µL and 10mL Single channel models:

- 1 Fit with VWR Pipette Tips.
- 2 Set the pipettor to the maximum volume given in the specifications.
- 3 Aspirate the set volume from a beaker of distilled water.
- 4 Maintain the pipettor in the vertical position and wait for 20 seconds.
- 5 If a water droplet appears at the end of the tip, there is a leak.

For the Multichannel models (8X - 12X):

- 1 Fit with VWR Pipette tips.
- 2 Set the pipettor to the maximum volume given in the specifications, and pre-rinse.
- 3 Aspirate the set volume from a reagent reservoir of distilled water.
- 4 Maintain the pipettor in the vertical position and wait for 20 seconds; fluid level in tips should remain constant.
- 5 If a water droplet appears at the end of the tip, there is a leak.
- 6 If you see no droplet, for volumes below 200 µL, re-immerses the tip below the surface of water.
- 7 The water level inside the tip should remain constant; if the level goes down there is a leak.

12A - MAINTENANCE FOR THE SINGLE CHANNEL MODELS ONLY

Routine maintenance will help to keep your pipettor in good condition, ensuring a continued high level of performance.

Maintenance is limited to:

- Cleaning or sterilization (see Chapter 13 - Cleaning and Sterilization).
- Replacing spare parts.
- Greasing the piston assembly.

Lubricant tube 1g is available under (check the spare parts list on VWR.com)

2µL and 10µL Single channel models should not be disassembled, so you may only replace the push-button, tip-ejector, and its adapter.

With these pipettors if the tip-holder is damaged, the piston may also be damaged.

Changing the tip-ejector

To remove

- ① Push the ejection button.
- ② Push laterally (to the left) the tip-ejector.
- ③ Slide and remove the tip-ejector.

To refit

- ① Push the ejection button.
- ② Slide the tip-ejector along the tip-holder.
- ③ Clip and push laterally (to the right) the tip-ejector on the body of the pipettor.



Changing the tip-holder – no tools required

- ① Remove the tip-ejector (see above).
- ② Unscrew the connecting nut by turning it clockwise.
- ③ Carefully separate the lower and upper parts.
- ④ Remove the piston assembly and the seals.
- ⑤ Clean, sterilize, or replace the tip-holder.
- ⑥ If necessary, lubricate lightly the piston and its seals (see below).
- ⑦ Reassemble the pipettor (refer to the figure 16).
- ⑧ Tighten the connecting nut (turn counterclockwise).
- ⑨ Refit the tip-ejector (see above).

Servicing the piston assembly

You may remove the piston assembly for cleaning purposes only. If the piston assembly is changed, the pipettor must be adjusted and calibrated in the Supplier Service Center. **As the models 2 μ L and 10 μ L single channel models contain miniaturized parts, it is best not to disassemble these pipettors yourself.**

- ① Remove the tip-ejector (see above).
- ② Unscrew the connecting nut by turning it clockwise.
- ③ Carefully separate the lower and upper parts.
- ④ Remove the piston assembly, O-ring and seal.

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- 5 Leave exposed the piston, clean it with isopropanol or ethanol and lubricate lightly.

For 20µL, 100µL, 200µL Single channel models: lubricate only the useful part of the piston (20 ±5 mm length) and the O-ring.

For 1000µL single channel model: lubricate the piston.

For 5000µL, 10mL single channel model: disassemble the seals, lubricate their internal part and lubricate the piston. Do not lubricate the O-ring.

- 6 Reassemble the pipettor (refer to the figure 16).
- 7 Tighten the connecting nut (turn counterclockwise).
- 8 Refit the tip-ejector (see above).

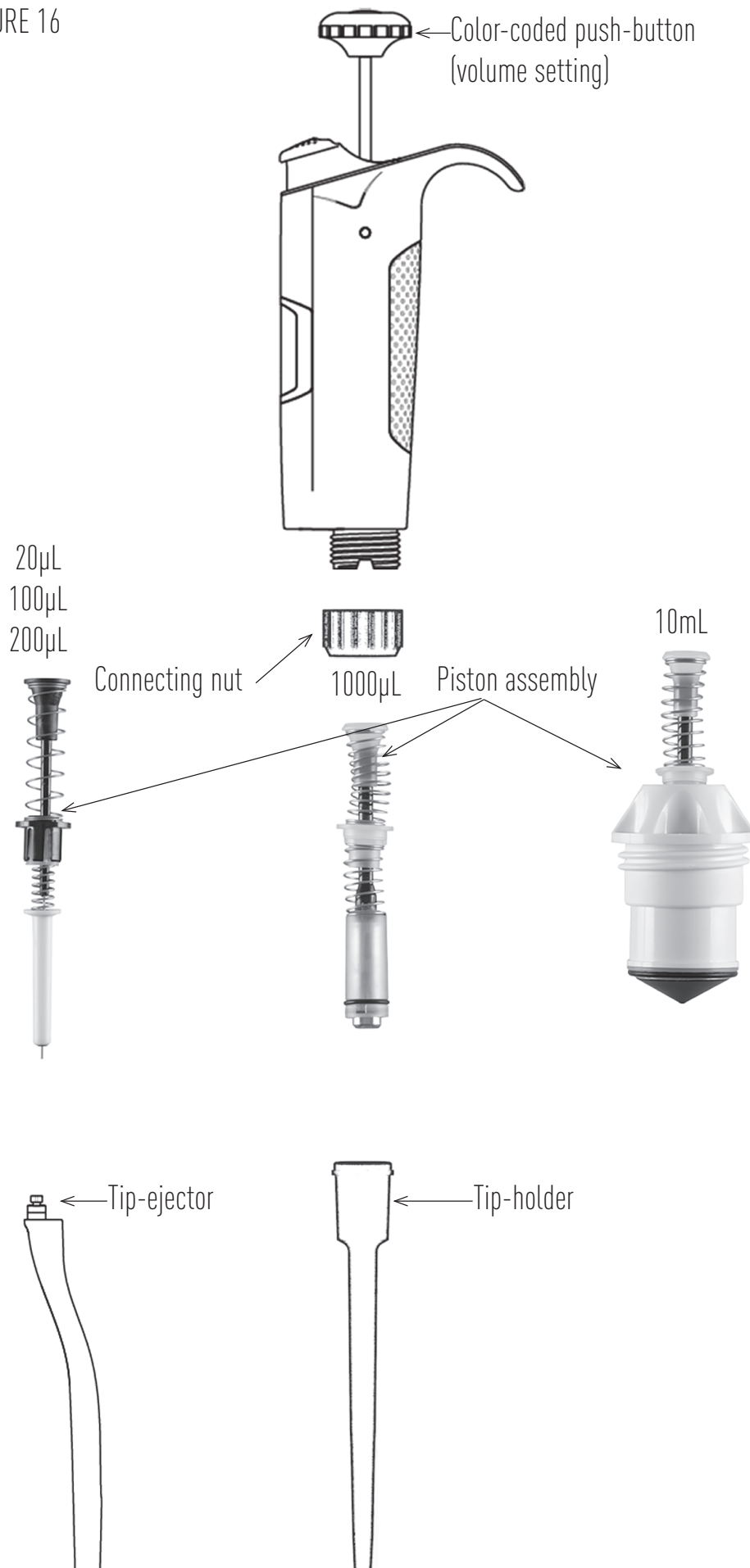
Changing the seals

The O-ring and seal are on the piston; if worn or damaged in any way (chemical or mechanical), they must be replaced. **As the models 2µL and 10µL single channel models contain miniaturized parts, it is best not to disassemble these pipettors yourself**, please contact your Supplier Service Center.

The dimensions of the O-ring vary depending on the model of pipettor.

- 1 Remove the tip-ejector (see above).
- 2 Unscrew the connecting nut by turning it clockwise.
- 3 Carefully separate the lower and upper parts.
- 4 Remove the piston assembly, O-ring and seal.
- 5 If necessary clean the piston and replace the seal ; lubricate them lightly. Please place them in the correct order.
- 6 Reassemble the pipettor (refer to the figure 16).
- 7 Tighten the connecting nut (turn counter clockwise).
- 8 Refit the tip-ejector (see above).

FIGURE 16



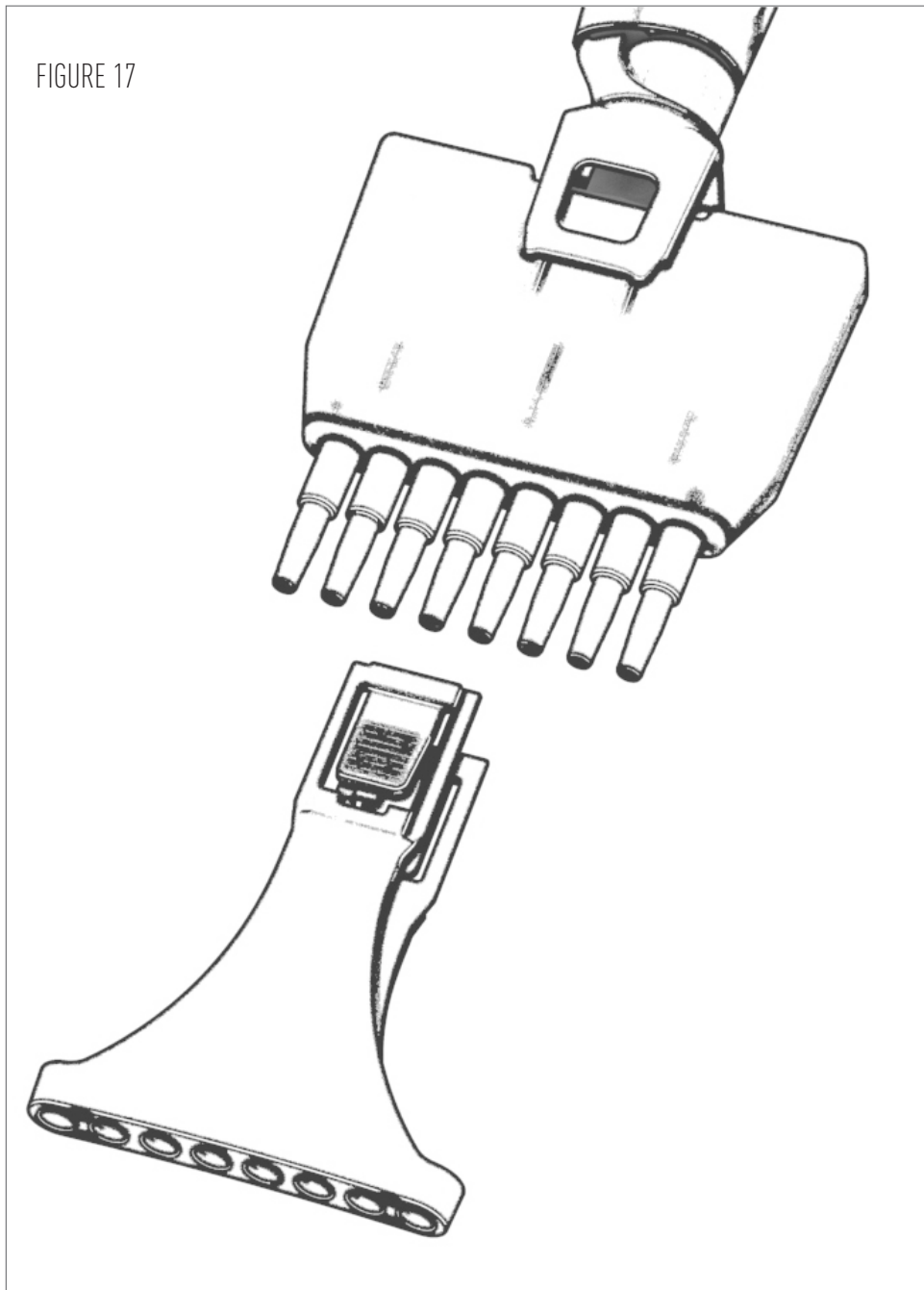
12B - MAINTENANCE FOR THE MULTICHANNEL MODELS ONLY

Routine maintenance will help keep your pipettor in good condition, ensuring a continued high level of performance.

Maintenance is limited to:

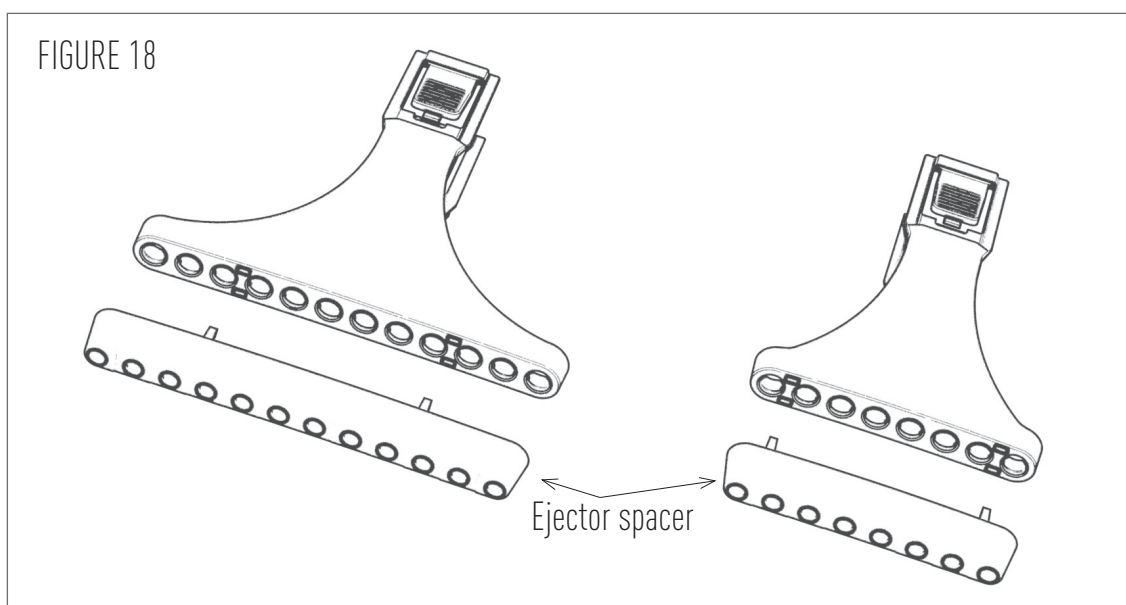
- Cleaning or sterilization (see Chapter 13 - Cleaning and Sterilization)
- Replacing spare parts
- Greasing the piston assembly.

FIGURE 17



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.



13 - CLEANING AND STERILIZATION

VWR High Performance Pipettor are designed so that the parts normally in contact with liquid contaminants, can easily be cleaned and decontaminated. However, **because the models 2 μ L and 10 μ L single channel models contain miniaturized parts, it is best not to disassemble these pipettors yourself**; please contact your Supplier Service Center.

Liquid must never enter the upper part (handle) of any pipettor.

Cleaning for the Single channel models only

The pipettor must be cleaned, as described below, before it is decontaminated. Soap solution is recommended for cleaning these models.

External cleaning

- ① Remove the tip-ejector.
- ② Wipe the tip-ejector with a soft-cloth or lint-free tissue impregnated with soap solution.

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- 3 Wipe the entire pipettor with a soft-cloth or lint-free tissue impregnated with soap solution, to remove all dirty marks. If the pipettor is very dirty, a brush with soft plastic bristles may be used.
- 4 Wipe the entire pipettor and the tip-ejector with a soft cloth or lint-free tissue soaked with distilled water.
- 5 Refit the tip-ejector and allow the pipettor to dry.

Internal cleaning

The following components only can be immersed in a cleaning solution: connecting nut, tip-ejector, tip-holder, piston assembly, seal and O-ring.

- 1 Disassemble the pipettor as described in the chapter 12A - Maintenance.
- 2 Set aside the upper part in a clean, dry place.
- 3 Clean the individual components of the lower part of the pipettor using an ultrasonic bath (20 minutes at 50°C) or with a soft-cloth and brushes.
Note that the piston assembly and seals must be degreased with isopropanol or ethanol before being immersed in another ultrasonic bath.
Small round brushes with soft plastic bristles may be used to clean the interior of the tip-holder.
- 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 Reassemble the pipettor as described in the chapter 12A - Maintenance.

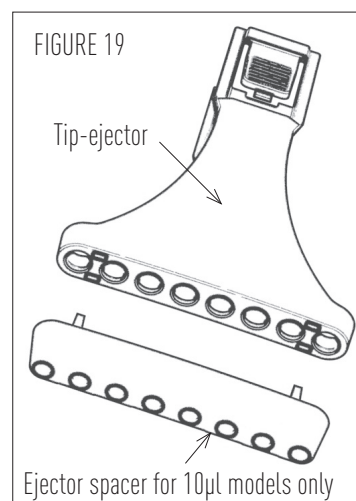
Cleaning for the Multichannel Models only

The pipettor must be cleaned, as described below, before it is decontaminated.

Soap solution is recommended for cleaning these models.

The following components **only** can be immersed in a cleaning solution: tip-ejector and ejector spacer.

- 1 Remove the tip-ejector and the ejector spacer.
- 2 Immerse the tip-ejector, and ejector spacer 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 Wipe the entire pipettor with a soft cloth or lint-free tissue impregnated with the cleaning solution.
- 5 Wipe it with distilled water.
- 6 Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.
- 7 Refit the tip-ejector as described in “Changing the tip-ejector”.

Chemical Decontamination

You may choose to decontaminate your pipettor chemically, in accordance with your own procedures. Whatever decontaminant you use, check with the supplier of the decontaminant that it is compatible with stainless steel and the plastics used in the construction of the pipettor: PBT (Polybutylene Terephthalate), PC (Polycarbonate), PC/PBT (Polycarbonate/Polybutylene Terephthalate), PEEK (Polyetheretherketone), PEI (Polyetherimide), POM (Polyoxymethylene), PPS (Polyphenylene Sulfide), PVDF (Polyvinylidene Fluoride), or PP (Polypropylene).

For the single channel models:

Upper Part (handle)

- 1 Wipe the upper part (handle) of the pipettor with a soft cloth or lint-free tissue impregnated with the chosen decontaminant.
- 2 Wipe the upper part of the pipettor with a soft cloth or lint-free tissue soaked with distilled water or sterile water.

Lower Part (Volumetric module)

The following components **only** can be immersed in a decontaminant solution: connecting nut, tip-ejector, tip-holder.

Piston assembly and seals must be degreased with methyl alcohol before being immersed in decontamination solution in separate vessel.

- 1 Disassemble the pipettor as described in the chapter 12A.
- 2 Immerse tip-ejector, tip-holder and connecting nut in the cleaning solution.
- 3 Degrease the piston assembly, the seals and immerse them in another vessel.
- 4 Rinse each component with distilled water.
- 5 Leave the parts to dry by evaporation (or wipe with a soft cloth the tip-ejector, the tip-holder and connecting nut).
- 6 Lubricate the piston assembly and the seals.
- 7 Reassemble the piston assembly, the tip-holder and the tip-ejector.

For the multichannel models:

The following components only can be immersed in a decontamination solution: tip-ejector and ejector spacer.

- 1 Remove the tip-ejector and the ejector spacer.
- 2 Immerse the tip-ejector and ejector spacer in the decontamination solution or wipe them with a soft cloth or lint-free tissue impregnated with the decontamination solution.
- 3 Rinse the components with distilled water.
- 4 Wipe the entire pipettor with a soft cloth or lint-free tissue impregnated with the decontamination solution.
- 5 Wipe it with distilled water.
- 6 Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.
- 7 Refit the tip-ejector as described in “Changing the tip-ejector”.

Sterilization

The entire autoclavable range of pipettors can be sterilized by steam autoclaving at 121°C (252°F), 1 atm for 20 minutes.

The single and multichannel pipettors can be autoclaved without special precautions. Use of a bag is not recommended in order to improve the drying of the pipettor.

After autoclaving, check the connecting nut is fully tightened and screw it if it is not the case. The pipettor needs to dry completely and cool down to room temperature. (1/2 day if your autoclave has a dry cycle or otherwise overnight before use).

The piston does not need to be lubricated after autoclaving, except if grease was removed during cleaning. Gravimetric checking is recommended after every 5 autoclave cycles for single channel pipettors and after 1 cycle for multichannel pipettors.

14 - SPECIFICATIONS

VWR High Performance Pipettor are high quality. These pipettors are compatible with universal tips.

Checking and recalibrating your pipettor with the tips that you use may be needed.

Each pipettor is inspected and validated by qualified technicians in accordance with the VWR Quality System. VWR declares that its manufactured pipettors comply with the requirements of the ISO8655 standard, by type testing.

The adjustment is carried out under strictly defined and monitored conditions (described in the internal manufacturer procedure which are based on the ISO8655).

Single models


Model	SPECIFICATIONS - Error limits					
	Volume range (µL)	Volume (µL)	Systematic error		Random error	
			(µL)	(%)	(µL)	(%)
2µl	0.2 - 2	0.2	± 0.026	± 13.2	≤ 0.013	≤ 6.6
		1	± 0.030	± 3.0	≤ 0.014	≤ 1.4
		2	± 0.033	± 1.7	≤ 0.015	≤ 0.8
10µl	1 - 10	1	± 0.035	± 3.5	≤ 0.013	≤ 1.3
		5	± 0.083	± 1.6	≤ 0.033	≤ 0.6
		10	± 0.110	± 1.1	≤ 0.044	≤ 0.4
20µl	2 - 20	2	± 0.11	± 5.5	≤ 0.033	≤ 1.7
		10	± 0.12	± 1.2	≤ 0.055	≤ 0.5
		20	± 0.20	± 1.0	≤ 0.066	≤ 0.3
100µl	10 - 100	10	± 0.39	± 3.9	≤ 0.11	≤ 1.1
		50	± 0.44	± 0.8	≤ 0.13	≤ 0.2
		100	± 0.80	± 0.8	≤ 0.17	≤ 0.2
200µl	20 - 200	20	± 0.55	± 2.8	≤ 0.22	≤ 1.1
		100	± 0.88	± 0.8	≤ 0.28	≤ 0.2
		200	± 1.60	± 0.8	≤ 0.33	≤ 0.2
1000µl	100 - 1 000	100	± 3.3	± 3.3	≤ 0.7	≤ 0.7
		500	± 4.4	± 0.8	≤ 1.1	≤ 0.2
		1000	± 8.0	± 0.8	≤ 1.7	≤ 0.2
5000µl	500 - 5 000	500	± 13	± 2.6	≤ 3.3	≤ 0.7
		2500	± 17	± 0.6	≤ 5.5	≤ 0.2
		5000	± 33	± 0.7	≤ 8.8	≤ 0.2
10mL	1000 - 10000	1000	± 33	± 3.3	≤ 6.6	≤ 0.7
		5000	± 44	± 0.8	≤ 11.0	≤ 0.2
		10000	± 60	± 0.6	≤ 17.6	≤ 0.2

VWR® HIGH PERFORMANCE PIPETTOR

The data given in the tables are achieved with VWR standard length series pipette tips. If you are using VWR 10 µL extended length series pipette tips, you will need to recalibrate your pipettor to comply with specifications.

Multichannel models

			SPECIFICATIONS - Error limits			
Model	Volume	Volume	Systematic error		Random error	
	range (µL)	(µL)	(µL)	(%)	(µL)	(%)
8X-10µl	0.5-10	0.5	± 0.09	± 17.6	≤ 0.04	≤ 8.8
		5	± 0.22	± 4.4	≤ 0.11	≤ 2.2
12X-10µl		10	± 0.22	± 2.2	≤ 0.11	≤ 1.1
8X-20µl	2-20	2	± 0.11	± 5.5	≤ 0.09	≤ 4.4
		10	± 0.22	± 2.2	≤ 0.11	≤ 1.1
12X-20µl		20	± 0.40	± 2.0	≤ 0.17	≤ 0.8
8X-200µl	20-200	20	± 0.55	± 2.8	≤ 0.28	≤ 1.4
		100	± 1.10	± 1.1	≤ 0.44	≤ 0.4
12X-200µl		200	± 2.20	± 1.1	≤ 0.55	≤ 0.3
8X-300µl	20-300	20	± 1.10	± 5.5	≤ 0.39	≤ 1.9
		150	± 1.65	± 1.1	≤ 0.66	≤ 0.4
12X-300µl		300	± 3.30	± 1.1	≤ 1.10	≤ 0.4

 **The data given in the tables is conform to the ISO8655-2 Standard. With a precise pipetting technique (see Chapter 7 - General guidelines for good pipetting) the 2µL single channel model may be used to aspirate volumes as low as 0.1µL and the 10µL single channel model as low as 0.5 µL.**

15 - SPARE PARTS

Please check the separate spare parts list on VWR.com

16 - MAINTENANCE & CALIBRATION

VWR recommends pipettor calibration and maintenance at least once annually by the authorized service provider.

Please contact VWR directly or visit the VWR website at www.vwr.com

17 - 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

For information or technical assistance contact your local VWR representative or visit: www.vwr.com.

18 - WARRANTY

VWR warrants that this product will be free from defects in material and workmanship for a period of 36 months 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.

19 - COMPLIANCE WITH LOCAL LAWS AND REGULATIONS

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

20 - 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.





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