

Operator's Manual

MLA Macro and Macro Selectable Pipettes

Introduction

MLA Macro and Macro Selectable Pipettes are "to deliver" air displacement instruments with a fixed stroke, and consistently deliver the stated or calibrated volume when the plunger is fully depressed. MLA Macro Selectable Pipettes have 4 distinct volume settings. Select volume by setting the applicable volume, engraved on the plunger, adjacent to the line on the bonnet.

MLA Macro Pipettes, except for Selectable models, may be adjusted or calibrated above or below its stated volume. The range of adjustment is approximately $\pm 10\%$. This calibration feature is useful when working with solutions where viscosity and specific gravity differ from distilled water.

Pipette Tips

It is recommended that MLA Macro Pipettes be used with MLA or Ovation Pipette Tips. The use of tips from other sources may degrade the pipette performance. For information on MLA and Ovation Pipette Tips, refer to the Pipette Information Table.

Pipetting Procedure

- a. Using MLA or Ovation Pipette Tips, press the pipette nozzle firmly into a fresh tip.
- b. Fully depress the pipette plunger and then immerse the tip into the solution (approximately 3/8 inch - 10mm deep).
- c. Smoothly release the plunger and allow the solution to fill the pipette tip.
- d. Once liquid stops flowing, remove the tip from the solution and touch the tip against the side of the vessel to remove any solution that may have adhered to the outside of the tip.
- e. Place the tip against the side of the receiving vessel as close to the bottom as possible, or, if the vessel contains liquid, as close to the liquid as possible. Smoothly depress the plunger.
- f. While holding the plunger depressed, slowly withdraw the tip keeping it against the wall of the container.
- g. Release the plunger and remove the tip.

Hints

- a. When pipetting serum or other biological fluids, a liquid film may be retained in the tip that can change the pipetted volume. Pre-wetting tip with liquid to be pipetted can reduce this effect.
- b. Smoothly depress and release the plunger and maintain the same speed of action for all samples. Do not let the plunger snap back.
- c. Fully depress the plunger before inserting the pipette tip into a solution. This will prevent an air bubble from forming in the solution.
- d. Hold pipette as vertically as possible at all times. Insert the tip to the same depth each time.
- e. If an air bubble forms in the tip during intake, return the sample, discard the tip and apply a fresh tip.
- f. Check that the nozzle assembly is screwed firmly into the pipette body.
- g. When aspirating, do not remove tip from liquid, until liquid flow has ceased.

Maintenance

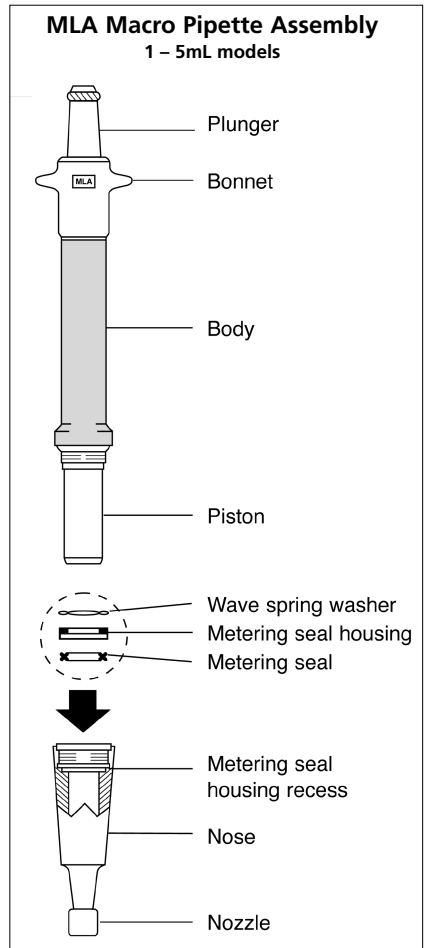
During factory assembly, the internal parts of the pipette are lubricated. Unless the pipette is used with corrosive chemicals or solvents, routine cleaning and lubrication should only be necessary at 6 month intervals. Pipettes used with stronger chemicals or solvents should be maintained on a more frequent basis. If the plunger is not moving smoothly or does not return to the “up” position, lubrication and/or inner seal replacement may be necessary.

The nozzle/ nose should be cleaned regularly. In case of accidental sample aspiration, especially corrosive chemicals or solvents, the nozzle should be cleaned immediately. See “Cleaning the Nose and Piston - all models”.

Should the pipette fail to aspirate or dispense, or if delivered volume is low, the seal should be checked for wear and replaced, if necessary. See back for seal kit replacement information.

Lubricating the Piston – 1 to 5mL models

- a. Grasp nose and unscrew it from the body.
- b. Remove wave spring washer and metering seal housing with metering seal, from the end of the piston or housing recess. **DO NOT** discard metering seal housing, seal or wave spring washer.
- c. With a soft tissue, remove old grease from metering seal housing and seal.
- d. Use finger tip to apply a small amount of the lubricant (Cat # 9030) to the inner edge of the seal and housing.
- e. Lightly lubricate the protruding piston. **DO NOT scratch the surface of the piston.**
- f. Reinstall metering seal housing into the recess of the nose.
- g. Install wave spring washer on top of metering seal housing.
- h. Carefully insert the body into the nose and screw together to a firm stop.
- i. Depress plunger several times.



Lubricating the Piston – 6 to 10mL models

- Grasp nose and unscrew it from the body.
- Use finger tip to apply a small amount of the seal lubricant (Cat # 9030) to the O ring and the edges of the piston.
- Carefully insert the body into the nose and screw together to a firm stop.
- Depress plunger several times.

Cleaning the Nose and Piston - all models

- Follow steps a-d (1-5mL models) or a-b (6-10mL models) of Lubricating the Piston.
- With a gentle stream of distilled or deionized water, flush the inside of the nose. Flush metering seal housing, seal and wave spring washer on 1-5mL models.
- Press and hold plunger down to expose piston, and flush piston with a gentle stream of distilled or deionized water.
- With a soft tissue, remove excess water from piston, nose, and seal housing, seal and washer on 1-5mL models, or O ring on 6-10mL models..
- Allow all components to dry.
- Lubricate and reassemble.

Calibration - fixed volume models

Fixed volume pipettes are supplied with a calibration key. The pipette is factory calibrated to deliver the volume engraved on the pipette bonnet. Factory tests and calibration are performed at $21.5 \pm 2^\circ\text{C}$ using distilled water. To change volume, proceed as follows:

- Determine the pipette delivered volume by testing the pipette.

NOTE: Gravimetric or colorimetric techniques may be used to determine the pipette delivered volume. A procedure for the gravimetric method, or information about an MLA Pipette Calibration Kit using a color dilution principle, can be found in the support area of the VistaLab Technologies web site - www.vistalab.com.

- Insert the key into the plunger. (See Figure 1.)
- To increase volume, turn the key clockwise. To decrease volume, turn the key counter clockwise. Hold the plunger button while turning the key. NOTE: Do not turn the key more than 4 complete revolutions in the clockwise direction.
- Test the pipette again to determine the delivered volume.

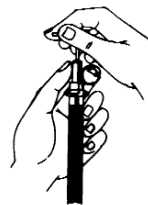
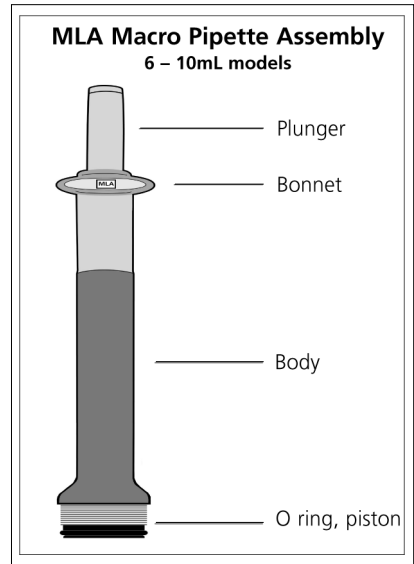


Figure 1: Calibration

MLA Macro and Macro Selectable Pipettes

Catalog No.	Description	Catalog No.	Description
1065	1mL Gray	1076	6mL Red
1066	2mL Red	1077	7mL Red
1067	3mL Green	1078	8mL Red
1068	4mL White	1079	9mL Red
1069	5mL Yellow	1070	10mL Red
1134	2/3/4/5mL Blue	1135	2/3/5/10mL Red

Tips and Accessories for MLA Macro and Macro Selectable Pipettes

		MLA macro models:	1-5mL	6-10mL
TIP DESCRIPTIONS	Bulk, 250 graduated ¹ tips/bag (5000µL) or 100 tips/bag (10mL)		5000µL 4058-5000	10mL 4058-6000
	Box 1 tray, 100 graduated ¹ tips (5000µL) or 50 tips (10mL)		5000µL 9048	10mL 9050
	Filtered ² , pyrogen-free, RNase/DNase certified, sterile, individually wrapped, 50 graduated ¹ tips (5000µL) or 50 tips (10mL)		5000µL 4058-5332	10mL 4058-6332
	VistaClear™ Box 35 tips/box			10mL 4058-6100
	VistaClear™ Box – sterile 60 graduated tips/box (5000µL) or 35 tips/box (10mL)		5000µL 4058-5102	10mL 4058-6102
	VistaClear™ Box – filtered, sterile, pyrogen-free, RNase/DNase certified, 60 graduated tips/box (5000µL) or 35 tips/box (10mL)		5000µL 4058-5133	10mL 4058-6133

1 Graduated tips are marked at 0.1mL increments

2 Filtered tips contain a unique hydrophobic filter which acts as a barrier to aqueous liquids and aerosols, protecting the pipette and sample from trace amounts of carryover.

Note:

Packaging materials for products shown in tables may be imprinted with only the Ovation brand name, or only the MLA-brand name. However, all Ovation and MLA Pipettes are fully compatible with the tips listed, regardless of the brand name identification printed on exterior packaging.

Catalog No.	Description
9093	Seal Kit (for 1-5mL models)
9095	Seal Kit (for 6-10mL models)
9030	Seal Lubricant
1099	Calibration Keys
1700	Pipette Stand

See www.vistalab.com for the most current listing of tips and accessories