

MLA Macro and Macro Selectable Pipettes

| Catalog No. | Description |
|-------------|----------------|
| 1065 | 1mL Gray |
| 1066 | 2mL Red |
| 1067 | 3mL Green |
| 1068 | 4mL White |
| 1069 | 5mL Yellow |
| 1134 | 2/3/4/5mL Blue |

Tips and Accessories for MLA Macro and Macro Selectable Pipettes

| Catalog No. | Description |
|-------------|--|
| 4058-5000 | Bulk – 250 graduated ¹ tips/bag (5000µL capacity) |
| 9048 | Rack – 100 graduated ¹ tips/rack, 1 rack (5000µL capacity) |
| 4058-5332 | Individually Wrapped, filtered, pyrogen-free, RNase/DNase certified, sterile, 50 graduated ¹ tips/bag (5000µL capacity) |
| 4058-5102 | VistaClear™ Box - sterile, 60 graduated ¹ tips/box (5000µL capacity) |
| 4058-5133 | VistaClear™ Box - filtered, pyrogen-free, RNase/DNase certified, sterile, 60 graduated ¹ tips/box (5000µL capacity) |
| 9093 | Seal Kit |
| 1099 | Calibration Keys |
| 1700 | Pipette Stand |

¹ 0.1mL increments

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

Operator's Guide

MLA Macro and Macro Selectable Pipettes

Introduction

This manual provides information on the use and care of MLA Macro and Macro Selectable Pipettes, Catalog No.1065, 1066, 1067, 1068, 1069 & 1134.

Features

MLA Macro and Macro Selectable Pipettes are of the air displacement type and are "to deliver" instruments, i.e. they have a fixed stroke and consistently deliver the stated or calibrated volume when the plunger is fully depressed. The MLA Macro Selectable Pipette contains 4 distinct volume settings (2mL, 3mL, 4mL and 5mL). Select the volume by setting the applicable volume, engraved on the plunger, adjacent to the line on the bonnet.

All MLA Macro Pipettes, except the 2 to 5mL Macro Selectable, 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 whose viscosity and specific gravity differ from distilled water. Calibration is accomplished readily by inserting a small key into the plunger and turning the key.

Pipette Tips

It is recommended that MLA Macro Pipettes be used with MLA Macro Graduated Pipette Tips. These hydrophobic polypropylene tips have volumetric graduations in 0.1mL increments and a flat meniscus to facilitate ease of reading. The use of tips from other sources may degrade pipette performance.

Pipetting Procedure

- Using MLA Macro Graduated Pipette Tips, press the pipette nozzle firmly into a fresh tip.
- Fully depress the pipette plunger and then immerse the tip into the solution (approximately 3/8 inch - 10mm deep).
- Smoothly release the plunger and allow the solution to enter the pipette tip.
- 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.
- 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 until all liquid is dispensed.
- While holding the plunger depressed, slowly withdraw the tip keeping it against the wall of the container.
- Release the plunger and remove the tip.

Hints

- When pipetting serum or other viscous fluids, a liquid film may be retained in the tip that may change the pipetted volume. Pre-wetting the tip with the liquid to be pipetted can reduce this effect.
- Smoothly depress and release the plunger maintaining the same speed of action for all samples. Do not let the plunger snap back.
- More viscous liquids require slower plunger movement.
- Fully depress the plunger before inserting the pipette tip into a solution. This will prevent an air bubble from forming in the solution.
- Hold the pipette as vertically as possible at all times. Insert the tip to the same depth into the sample each time.
- If an air bubble forms in the tip during intake, return the sample, discard the tip, and apply a fresh tip.
- Check that the nozzle assembly is screwed tightly into the pipette body.

Calibration

Calibratable pipettes are supplied with a 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 techniques may be used to determine the pipette delivered volume. A procedure for the gravimetric method can be obtained from the Technical Service Department.

- 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

Maintenance

During factory assembly, the internal parts of the pipette are lubricated with specific grease. Routine cleaning and lubrication should only be necessary at 6-month intervals. If the pipette is used with acids, corrosive chemicals or solvents, lubricate and clean the pipette more often. Lubrication is necessary if the plunger does not move smoothly or return to the "up" position. (Regular piston lubrication is recommended if the pipette is used frequently with corrosive chemicals or solvents.)

The nozzle should be cleaned regularly. In case of accidental sample aspiration, especially corrosive chemicals or solvents, the nozzle should be cleaned immediately.

Should the pipette leak, fail to aspirate or dispense, or plunger settings change for known volumes, then the metering seal should be checked for wear and replaced if necessary.

Lubricating the Piston

- Set plunger at 5mL (*applies to Adjustable model only*)
- Hold pipette with the nozzle down.
- Grasp nose and unscrew it from the body.
- Remove metering seal housing with metering seal, and wave spring washer from the end of the piston or housing recess. See Macro Adjustable Assembly diagram. Remove metering seal from housing. DO NOT discard metering seal housing, seal or the wave spring washer.
- With a soft tissue, remove old grease from metering seal housing and seal.
- Use finger tip to apply a small amount of the supplied grease to the inner surface of the seal and housing.
- Rotate plunger clockwise until it stops.
- Lightly grease the protruding piston. DO NOT scratch the surface of the piston.
- Reinstall, or replace, metering seal in its housing and install housing in the housing recess.
- Install wave spring washer on top of metering seal housing.
- Carefully insert the body into the nose and screw together to a firm stop.
- Depress plunger several times.

Cleaning the Nose and Piston

- Follow steps a-d of Lubricating the Piston.
- With a gentle stream of distilled or deionized water, flush the inside of the nose, metering seal housing, seal and wave spring washer.
- Rotate plunger clockwise until it stops.
- Hold pipette with the piston down and flush the piston with a gentle stream of distilled or deionized water.
- With a soft tissue, remove excess water from piston, nose, seal housing, seal and washer.
- Allow all components to dry.
- Lubricate and reassemble as in steps f- l above.

