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# Operator's Guide

## MLA Macro Adjustable Pipettes

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### Introduction

This manual provides information on the use and care of MLA Macro Adjustable Pipettes, Catalog No.1061.

### Features

MLA Macro Adjustable Pipettes are air displacement instruments with overblow and cover a volume range of 1 to 5mL. Volume selection is by rotating the plunger to an incremental volume line located on the plunger. The MLA Macro Adjustable Pipette system is designed to permit proper measurements of aqueous and nonaqueous fluids, volatile acids and solvents.

### Pipette Tips

MLA Macro Graduated Pipette Tips have volumetric graduations in 0.1mL increments. Tips are made of hydrophobic polypropylene plastic to enhance the complete dispense of liquid. Use MLA Macro Graduated Pipettes Tips with the Macro Adjustable Pipette to ensure precise adjustment and volume verification.

### Pipetting Procedure

- a. Press the pipette nozzle firmly into a fresh MLA Macro Graduated Pipette Tip making sure that the tip fits snugly on the nozzle.
- b. Adjust the pipette volume by rotating the plunger clockwise to decrease volume or counter-clockwise to increase volume. The incremental volume line on the plunger indicates the approximate volume setting in mL.
- c. Rotate the plunger until the volume line is level with the surface of the circular scale. (see Figure 1).
- d. Rotate the plunger clockwise an additional one half turn.
- e. Depress the plunger to the bottom stop and immerse the pipette tip (approximately 3/8" -10mm) into the solution. Hold the pipette vertical at all times.
- f. Release the plunger slowly with a steady motion, allowing 2-3 seconds for the plunger to return to the upper stop. While keeping the Macro Graduated Tip at the same immersion depth, compare the liquid level in the tip to the volume mark molded on the side of the tip.
- g. Rotate the plunger counter-clockwise until the liquid level (meniscus) is even with the volume mark of your choice. (See Figure 2)

NOTE: It is more accurate to raise the level of liquid in the tip "up" to the desired marker on the tip rather than to overfill and expel excess liquid.

- h. Continue rotating the plunger counter-clockwise until the liquid level in the tip (meniscus) is level with the volume marker of your choice.

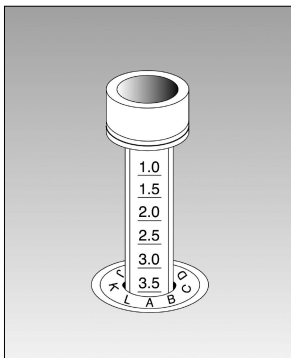


Figure 1  
Incremental Volume Lines and Circular Scale

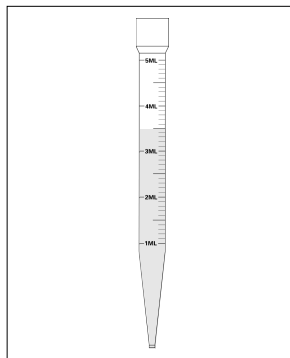


Figure 2  
Macro Adjustable Pipette Tip

The pipette is now set for delivery with that liquid for single or repeated deliveries.

NOTE: The circular scale on the pipette bonnet (lettered A through L) is a reference scale that may be used to record the rotational position of the pipette plunger. (See Figure 1). This provides a general position for the plunger. The final volume setting is determined by rotating the plunger to raise the liquid meniscus to the appropriate incremental graduation on the MLA Macro Graduated Pipette Tips. After adjusting the pipette to the desired volume, observe this scale and record the letter opposite the numeric volume.

- i. Remove the pipette 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.
- j. 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.
- k. While holding the plunger depressed, slowly withdraw the tip keeping it against the wall of the container.
- l. Release the plunger and remove the tip.

## Hints

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

## 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

- a. Set plunger at 5mL.
- b. Hold pipette with the nozzle down.
- c. Grasp nose and unscrew it from the body.
- d. 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.
- e. With a soft tissue, remove old grease from metering seal housing and seal.
- f. Use finger tip to apply a small amount of the supplied grease to the inner surface of the seal and housing.
- g. Rotate plunger clockwise until it stops.
- h. Lightly grease the protruding piston. *DO NOT scratch the surface of the piston or block air inlet hole.*
- i. Reinstall, or replace, metering seal in its housing and install housing in the housing recess.
- j. Install wave spring washer on top of metering seal housing.
- k. Carefully insert the body into the nose and screw together to a firm stop.
- l. Depress plunger several times.

## Cleaning the Nose and Piston

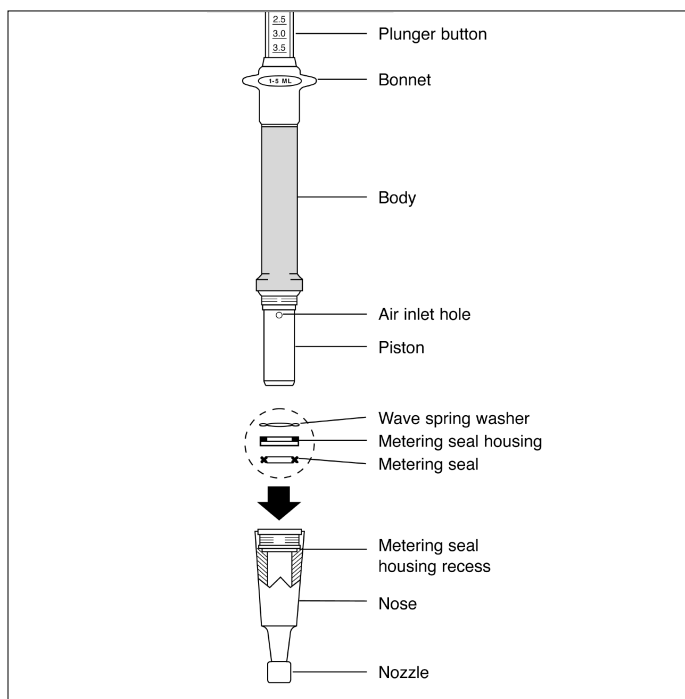
- a. Follow steps a-d of Lubricating the Piston.
- b. With a gentle stream of distilled or deionized water, flush the inside of the nose, metering seal housing, seal and wave spring washer.
- c. Rotate plunger clockwise until it stops.
- d. Hold pipette with the piston down and flush the piston with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

## Tips and Accessories for MLA Macro Adjustable Pipettes

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

<sup>1</sup> 0.1mL increments

### MLA Macro Adjustable Pipette Assembly



See [www.vistalab.com](http://www.vistalab.com) for the most current listing of tips and accessories