

Specifications Table

Volume	Volume Change per 1/2 revolution	Volume Setting	Acceptable Range (µL)	Accuracy
10 to 50µL	2.5µL	Low 10µL Mid 30µL High 50µL	9.5 - 10.5 29.1 - 30.9 49.0 - 51.0	±5% ±3% ±2%
50 to 200µL	5.0µL	Low 50µL Mid 125µL High 200µL	49.0 - 51.0 123.75 - 126.25 198.0 - 202.0	±2% ±1% ±1%
200 to 1000µL	25µL	Low 200µL Mid 600µL High 1000µL	198.0 - 202.0 594.0 - 606.0 990.0 - 1010.0	±1% ±1% ±1%

Tip Table

		Digital Model:	10 to 50µL	50 to 200µL	201-1000µL
		TIP SIZE:	SMALL	LARGE	
NON-STERILE	VistaRak™ 192 tips/rack, 5 racks		4060-2004	4060-3004	
	VistaStak™, 192 tips/layer, 5 layers (small size) or 3 layers (large size)		4060-9025	4060-9026	
	Stacked Rack, 200 tips/layer, 5 layers (small size) or 3 layers (large size)		9025	9026	
	Stacked Rack, Trace Metal Certified, 200 tips/layer, 5 layers (small size) or 3 layers (large size)		9022	9023	
	VistaBulk™, 1000 tips/bag		4058-2000	4058-3000	
	Protectainer™ Bulk Pack, 1000 tips (small) or 750 tips (large)		4025	4026	
STERILE	Econo-Pak™ Bulk Pack, 1000 tips		4225	4226	
	VistaRak, Sterile, Pyrogen-free, RNase/DNase certified, 192 tips/rack, 5 racks		4060-2132	4060-3132	
	VistaTip™ Individually Wrapped Sterile, 200 tips		2025	2026	
	VistaTip Individually Wrapped, Sterile, Pyrogen-free, 200 tips		2027	2028	
	VistaRak, Filtered, Sterile, Pyrogen-free, RNase/DNase certified, 192 tips/rack, 5 racks		4060-2332	4060-3332	

Catalog Number

9025

MLA Digital Pipette

Operator's Guide

Introduction

MLA Digital Pipettes are "to deliver" air displacement adjustable volume instruments. Three models are available covering a volume range of 10 to 1000µL. Volume is adjusted by rotating the plunger. The plunger clicks in place for any desired setting. The volume display is located in the bonnet of the pipette.

Volume Range	Catalog No.	Color	Increment
10 to 50µL	1136	Green	0.5µL
50 to 200µL	1137	Red	1.0µL
200 to 1000µL	1138	Gray	5.0µL

Pipette Tips

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

Pipetting Procedure

- Rotate the plunger to display desired volume (*clockwise to decrease, counterclockwise to increase*).

**Note: Do not rotate beyond the pipette's volume limits!
This will damage the pipette and void the warranty.**

- Using VistaLab Pipette Tips, press the pipette nozzle firmly into a fresh tip.
- Fully depress the pipette plunger and then immerse the tip into the solution a maximum of 1/8 inch or 3mm.
- 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.
- While holding the plunger depressed, slowly withdraw the tip, keeping it against the wall of the container.

Note: Performance may be improved by pre-wetting pipette tips. See Hint A on next page.

- Release the plunger and remove the tip by applying a slight upward pressure to the bonnet. (See figure below)



Accessories

Cat #	Description	Cat #	Description
9091	Seal Kit, 10 to 50µL	8066	Nozzle Inserts
9092	Seal Kit, 50 to 200µL	1700	Pipette Stand
9094	Seal Kit, 200 to 1000µL		

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

Hints

- When pipetting serum or other biological fluids, a liquid film may be retained in the tip that can change the pipetted volume. Pre-wetting the tip with the liquid to be pipetted can reduce this effect.
- Smoothly depress and release the plunger and maintain the same speed of action for all samples. Do not let the plunger snap back.
- 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 each time.
- If an air bubble forms in the tip during intake, return the sample, discard the tip and apply a fresh tip.
- Remove and clean the nozzle insert as needed, or when ever sample is accidentally aspirated into lower nozzle assembly. Replace the nozzle insert if necessary.
- Check that the nozzle assembly is screwed firmly into the pipette body.

Calibration

Calibration is accomplished by adjusting the plunger shaft. Digital Pipettes are factory calibrated at three settings across the pipetting range. Factory tests and calibration are performed at $21.5 \pm 2^\circ\text{C}$ using distilled water. To change calibration, proceed as follows:

- Determine the pipette delivered volume by testing the pipette at the lowest volume setting.

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.
- Some models have a set screw on the side of the plunger. With the enclosed Allen key, loosen this set screw (it is not necessary to remove screw). Retighten set screw when all internal adjustments have been completed.
- While holding the plunger between the thumb and forefinger, unscrew and remove the plunger cap by rotating it in a counterclockwise direction. The plunger can be extended for easier holding by increasing the digital display to a higher volume.
- Allow plunger cover to drop down to release the plunger gear shaft.
- With a small phillips screwdriver or fingers, rotate the plunger shaft clockwise to decrease the volume and counterclockwise to increase the volume.
- The approximate change in volume for a 1/2 turn is $2.5\mu\text{L}$ for the 10-50 μL , $5\mu\text{L}$ for the 50-200 μL and $25\mu\text{L}$ for the 200-1000 μL Digital Pipette.
- Pull the plunger cover up and re-engage plunger gear shaft. Hold the plunger cover up and replace the plunger cap.
- Retest the pipette volume deliver at the low setting.
- Test the pipette at mid and high settings.

If further adjustments are required, return the pipette to the low volume setting and adjust plunger shaft as needed. Retest the pipette volume delivery at the low setting before continuing to the mid and high settings. Ensure that each setting is within the acceptable volume range. For specifications, see Specifications Table.

Maintenance

During factory assembly, the internal parts of the pipette (plunger, seals, etc.) are lubricated with grease. Unless the pipette is used with corrosive chemicals or solvents, routine cleaning and lubrication should only be necessary at 6 month intervals. Lubrication is necessary if the plunger movement is rough or does not return to the "up" position.

The nozzle, and the nozzle insert in particular, should be cleaned regularly. In case of accidental sample aspiration, the nozzle assembly and insert should be cleaned immediately. Cleaning should be done with a lint-free cloth, dampened with alcohol. Refer to Figure 2 for nozzle insert removal.

Should the pipette fail to operate or if the delivered volume is low, the seals should be checked for wear and replaced if necessary. Instructions for pipette disassembly and seal replacement can be found in the appropriate seal kit.

Figure 2: Nozzle Insert Removal

