

Ovation
BioNatural Pipette

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Operator's Guide for Mechanical Volume-Set Pipettes (Ovation M)



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MECHANICAL VOLUME-SET PIPETTES

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Product Description

Ovation BioNatural™ pipettes are the ideal ergonomic solution for liquid handling tasks that contribute to repetitive stress injuries in today's laboratory. Ovation pipettes increase laboratory efficiency through improved liquid handling routines, while reducing fatigue and the effect of poor postures.

The Ovation M is intended for use as a liquid transfer device, capable of aspirating and dispensing precise fluid volumes.

This manual describes how to use and care for your Ovation pipette. As you can see from its appearance, it is different from every pipette that you have used before, therefore please read the instructions carefully.

Six models of the Ovation pipette are available to cover liquid dispensing needs ranging from 0.2µL to 1000µL.

Please activate the pipette's warranty on the VistaLab Technologies web site – www.vistalab.com. The required on-line form can be found in the “service” menu. Retain all packing materials in the event that the pipette is to be sent back to VistaLab Technologies for calibration verification or service.

Specifications

Model	Volume Range (µL)	Dispensing Increments (µL)	Accuracy	Precision
Ovation M 2µL (1070-0002)	0.2 – 2	.002	±1.5% at 2µL ±2.7% at 1µL ±9% at 0.2µL	0.9% at 2µL 1.8% at 1µL 7.6% at 0.2µL
Ovation M 10µL (1070-0010)	1 – 10	.01	±1% at 10µL ±1.5% at 5µL ±2.5% at 1µL	0.4% at 10µL 0.6% at 5µL 1.2% at 1µL
Ovation M 20µL (1070-0020)	2 – 20	.02	±1% at 20µL ±1.5% at 10µL ±7% at 2µL	0.3% at 20µL 0.5% at 10µL 2% at 2µL
Ovation M 100µL (1070-0100)	10 – 100	.1	±0.8% at 100µL ±0.8% at 50µL ±3.5% at 10µL	0.15% at 100µL 0.24% at 50µL 1% at 10µL
Ovation M 200µL (1070-0200)	20 – 200	.2	±0.8% at 200µL ±0.8% at 100µL ±2.5% at 20µL	0.15% at 200µL 0.25% at 100µL 1% at 20µL
Ovation M 1000µL (1070-1000)	100 – 1000	1.0	±0.8% at 1000µL ±0.8% at 500µL ±3% at 100µL	0.15% at 1000µL 0.2% at 500µL 0.6% at 100µL

Note: Performance data is based on the use of Ovation tips from VistaLab Technologies. If using tips from another manufacturer, the above performance claims may not be achieved. Specifications subject to change. See www.vistalab.com for current information.

Pipette Components



<u>Description</u>	<u>Function</u>
Plunger	Initiates pipetting action and changes volume setting
Tip Eject Button	Ejects disposable pipette tips with minimal thumb force
Adjustable Hook	Accommodates left and right handed users
Ejector Sleeve	Stored energy from tip installation releases tips
Nozzle	Tapered, chemically resistant coupling that secure pipette tips
Body	Contoured grip surface for comfort, eliminating tight hand grip
Volume Label	Identifies volume range
Calibration Ring	Used to adjust pipette calibration
Cap Opener	Used to easily open PCR and microtubes
Serial Number	Provides positive identification for the pipette

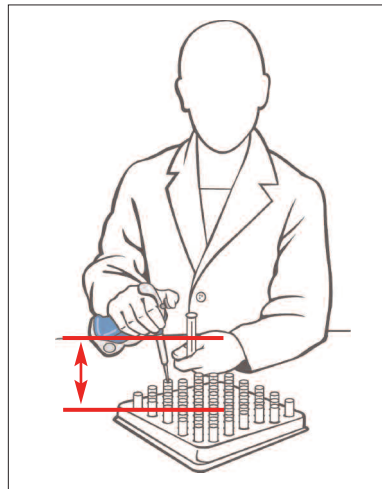
Introduction

Studies have shown that pipetting is the #1 cause of musculoskeletal disorders in the laboratory – it is, by nature, a repetitive process that puts strain on the body. While we can't change how repetitive pipetting is, we can and did change how comfortable you are while doing it.

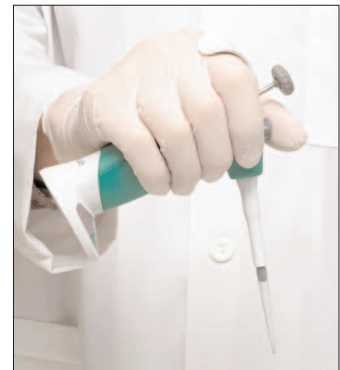
The Ovation BioNatural Pipette is the only pipette designed to keep your hand in the neutral position recommended by ergonomics experts. We call this BioNatural™ pipetting – it allows a lower hand location to ease stress in the shoulder, and a relaxed wrist angle eliminates uncomfortable extension and radial deviation movements in the arm. Force, velocity and exertion from repetition or duration have also been neutralized because of the Ovation pipette's unique working position and reduced forces required during operation.

Some practice may be required to change years of posture and habits developed using standard axial pipettes; the physical benefits of BioNatural pipetting are worth the practice! When using the Ovation pipette, arm/hand elevation should remain low to the work surface, wrist rotation should not exceed 90°, and hand posture should remain relaxed with the wrist and back of hand slightly flexed.

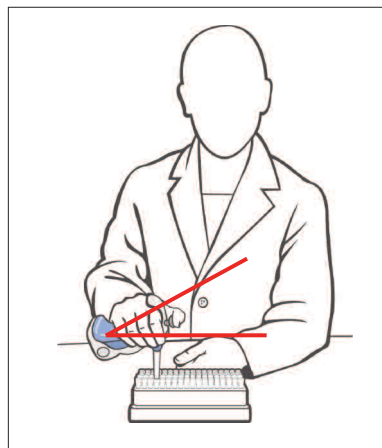
Posture



Arm elevation remains low, minimizing stress to elbow, shoulder and neck

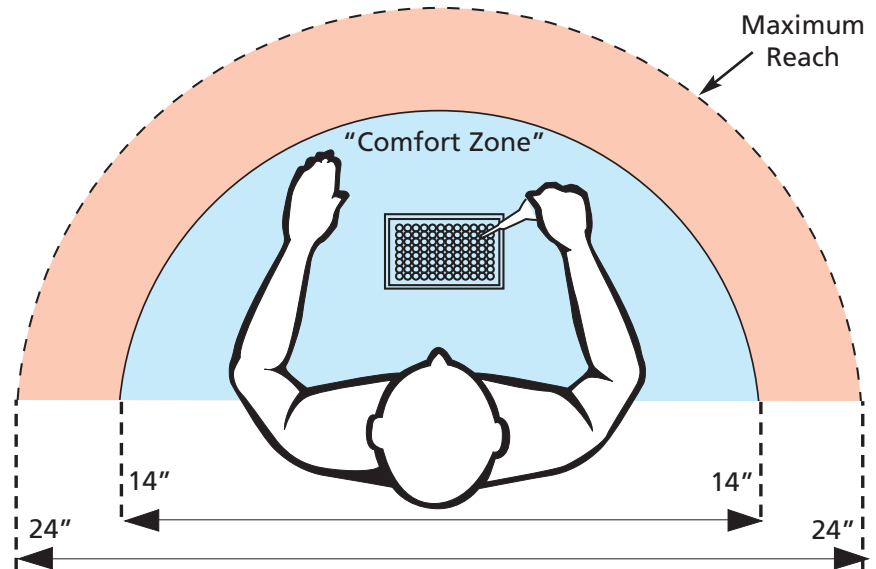


A loose, relaxed grip increases available strength in the hand, improving endurance and productivity during pipetting



Wrist remains in a neutral range of motion throughout all pipetting operations

**Keep a “comfort zone”
for pipetting**



Ergonomics experts recommend establishing a “comfort zone” of movement for the task of pipetting. Position your body within 9” of the counter surface, and keep the items needed within easy reach. Ideally this should be 14” or less, and should not exceed 24” of occasional reaching. Wrist rotation should not exceed 90° from the work surface, and arm/hand elevations should remain low to the counter surface.

1. Relaxed shoulders and upper arms
3. Relaxed hand grip
4. Neutral forearm and wrist rotation
5. Low arm and elbow height



2. Low thumb forces

Ovation comfort-zone benefits:

1. Minimized tension and fatigue
2. Minimized exertion and contact stress
3. Low contact pressure
4. Lowest pressure in carpal tunnel and to median nerve
5. Minimized tension to shoulder and elbow

Picking Up the Pipette



The Ovation M has been designed to allow the body of the pipette to fill your palm. Rotate the adjustable hook to rest comfortably on your forefinger. The texture of the unit's back helps reinforce correct hand positioning.

The unique ergonomic design and adjustable hook is compatible for both right and left-handed use.

Keep hand posture relaxed – there's no need for a "firm grip" when using an Ovation pipette.

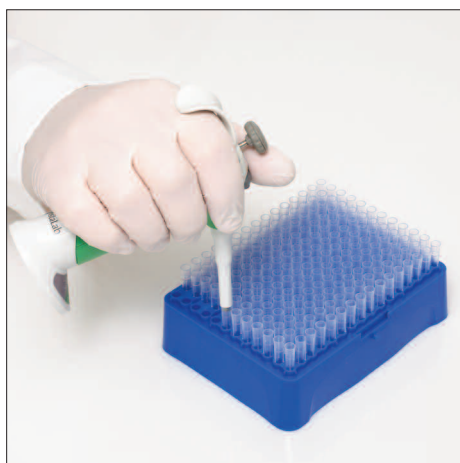
Changing Volume Setting



Changing the volume setting on the Ovation M is easy. Simply rotate the plunger to display the desired volume. Turn clockwise to decrease the volume, counter-clockwise to increase.

DO NOT rotate beyond the pipette's volume limits! This will damage the pipette and void its warranty.

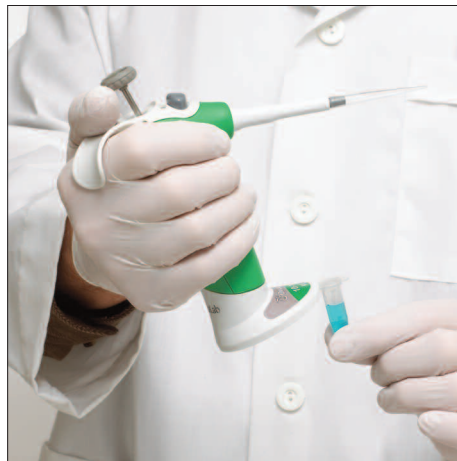
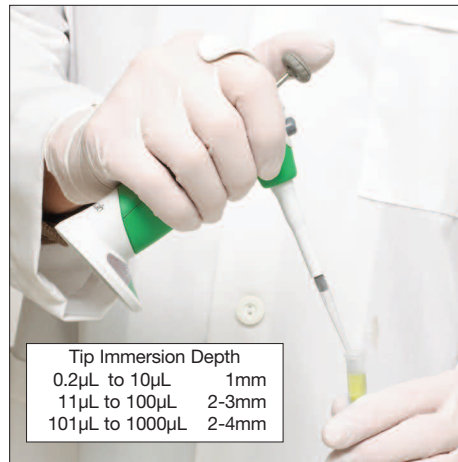
Acquiring Tips



While maintaining a flat wrist-hand posture, insert the Ovation pipette nozzle into a tip. Press down until you hear or feel a "click". This "click" indicates that the tip is properly seated and ready for use.

Disposable pipette tips are to be used once, then discarded. For proper fit and to achieve stated precision and accuracy specifications, use the VistaLab pipette tips recommended in this manual. Use of other manufacturer's tips can cause the pipette performance to differ from stated specifications, can damage the nozzle or ejector sleeve, or impede the performance of the tip ejection system.

Aspirating and Dispensing



1. Press the plunger down to the first stop, and immerse pipette tip in the sample.
2. Smoothly and slowly, release the plunger allowing sample to enter the pipette tip. Wait one second before withdrawing the tip from the sample.
3. Place the pipette tip against the side of the receiving vessel close to the bottom of the vessel, or if it contains liquid, just above the surface of the liquid.
4. Smoothly depress the plunger to the first stop. Wait one second, then fully depress the plunger to the second stop to dispense all liquid from the tip.
5. With the plunger depressed, slowly withdraw the tip.
6. Release the plunger when the tip is away from the receiving vessel.

If aspirating from PCR or microtubes, the Ovation M has a built-in cap opener. Simply insert the cap into the pipette's base.

Ejecting Tips



Ovation pipettes store energy captured during the acquisition of a tip, and use it to discard tip when the tip eject button is pressed. Point pipette tip into a suitable waste container and press the tip eject button to discard the tip.

To minimize forearm elevation and “reaching”, position the waste container below worksurface level or use shallow containers. Raising the arm to discard tips into a tall receptacle on the counter may negate some of the benefits of Ovation’s low-profile design.

Pipetting Hints for Optimal Performance

- When using viscous or volatile reagents, pre-wetting the pipette tip may be appropriate. To pre-wet, aspirate and dispense the liquid back into the original vessel. Then fill the tip and dispense contents into receiving vessel.
- If an air bubble forms in the tip during aspiration, return the sample, discard the tip, and use a fresh tip.
- Smoothly depress and release the plunger when pipetting, maintaining the same speed of motion for all samples. Do not let the plunger “snap back” to the uppermost position.
- When finished aspirating, touch the pipette tip against the side of the vessel as it is being withdrawn to remove any liquid that may have adhered to the outside of the tip. Wipe the pipette tip **ONLY** if there is liquid adhering to the outside. Be careful not to “wick out” any of the contents from the pipette tip.
- Dispense against the side of the receiving vessel or above the liquid surface. To remove any of the measured liquid that may have adhered to the pipette tip, touch off the tip against the side of the receiving vessel.
- Optional Type A nozzles for 100–1000 μ L models are designed to accommodate some non-VistaLab tips.
- If aspirating from 15mL or 50mL centrifuge or other tall tubes, an optional Nozzle Extender accessory is available which lengthens the pipette’s overall reach. If the optional nozzle extender is being used, calibration verification should be checked.



Ovation pipette with Nozzle Extender



If the pipette is to be used with hazardous fluids, safe laboratory practice is to be followed. Refer to manufacturer’s Material Safety Data Sheets for proper handling instructions. Always use VistaLab filtered tips (see tips table for catalog numbers) when pipetting potentially caustic, corrosive or volatile solutions. Failure to do so may result in premature wear and damage to the internal seals and piston, and void the pipette’s warranty.

When organic or volatile solutions are routinely used, VistaLab Technologies recommends the use of VITON seals. See the chemical compatibility chart in the Ovation documentation library under “Resources” at www.vistalab.com for more information.

Introduction

Each Ovation pipette is factory calibrated to manufacturing specifications at 21.5°C ($\pm 2^\circ$) and relative humidity of 45%-75% using distilled water. It is recommended that calibration be verified every six (6) months, when internal maintenance has been performed, or on an as-needed basis.

The Ovation pipette can be easily in-lab calibrated $\pm 10\%$ for optimum performance at your operating conditions. To determine volume delivery, VistaLab Technologies recommends following the procedure “Ovation Performance Verification Protocol”. This document is available at www.vistalab.com.

In-laboratory calibration can be accomplished by inserting the calibration key into the calibration ring on the top of the Ovation pipette (see photo below). Volume delivery is increased by turning the calibration ring in a counter-clockwise direction. Turning the calibration ring in a clockwise direction decreases volume delivery. Each 1/4 turn equals 1.7% of the pipette's volume range. *(example: on 100 μ L model, each 1/4 turn adjusts the volume 1.7 μ L)*

It is recommended that whenever calibration is changed, the performance of the pipette be verified.



MAINTENANCE & TROUBLESHOOTING

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The Ovation pipette requires minimal maintenance. Always store it in its “standing” position or on the Ovation Pipette Stand (Catalog No. 9058-4003) when not in use.

Cleaning Exterior

Clean outer surfaces as needed with a soft cloth dampened with warm water. To decontaminate outer surfaces, wipe with a 70% aqueous solution of ethanol or isopropanol, or use a 10% bleach solution followed by water.



WARNING! Only wipe the volume display with water.

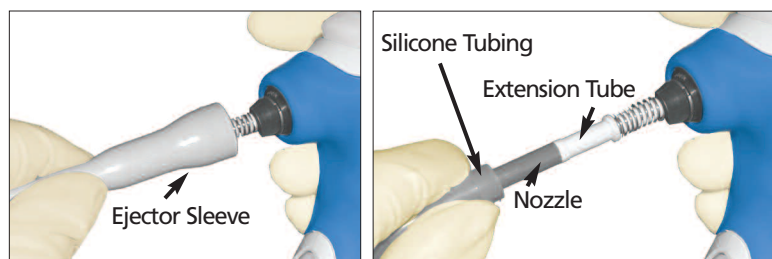
Disinfecting Nozzles

The replaceable nozzle contains an internal aerosol/liquid barrier filter to prevent liquid from being aspirated into the pipette. Additionally, the nozzle filter offers protection to internal parts from routine exposure to hazardous liquids and vapors. If this filter becomes wet, the pipette will not aspirate fluid until a new nozzle is installed or the nozzle filter is replaced.

Wipe the exterior surface of nozzles with disinfectant or a 10% bleach solution. Care should be taken not to get the barrier filter inside the nozzle wet, as the pipette will not aspirate and dispense properly until corrective action is taken.

Replacing a Nozzle

If the pipette is not aspirating and dispensing properly, it could be caused by (a) poor fitting alternate source tip, (b) nozzle is loose and needs to be tightened by turning it clockwise, or (c) a nozzle or nozzle filter needs to be replaced as liquid has been aspirated into it.



NOTE: Wear gloves when doing this procedure.

1. Remove ejector sleeve by pulling it away from the pipette body to expose the nozzle assembly.
2. Place silicone tubing provided on nozzle, and unscrew nozzle in a counter-clockwise direction. Gently wipe the exposed end of the extension tube with a slightly dampened, lint-free tissue, then dry it off.

Note: Do not block or dislodge anything at the end of the extension tube.

3. Place silicone tubing on a new nozzle, and screw the nozzle onto the extension tube in a clockwise direction. Firmly tighten and remove silicone tubing.
4. Slide the ejector sleeve over the nozzle assembly.
5. Push the sleeve firmly into place while using a slight rocking or twisting motion.

Replacing a Nozzle Filter

The internal aerosol/liquid barrier filter in the nozzle can be replaced as needed. Refer to the Nozzle Filter replacement instructions on www.vistalab.com or in the package with replacement nozzle filters.

Plunger Assembly Seals

VistaLab Technologies suggests that the Ovation Pipette's seals be replaced annually, or if any of the following symptoms are evident:

- Accuracy and precision claims cannot be achieved (*not result of technique or method*)
- The pipette does not aspirate or dispense (*even after nozzle or filter has been replaced*)
- The pipette leaks (*when using the recommended Ovation tips*)

Replacement Seals:

9070-1001	Seal Kit for Ovation M 0.2-2µL
9070-1002	Seal Kit for Ovation M 1-10µL
9070-1003	Seal Kit for Ovation M 2-20µL
9070-1004	Seal Kit for Ovation M 10-100µL
9070-2005	Seal Kit for Ovation M 20-200µL
9070-3006	Seal Kit for Ovation M 100-1000µL

See the Support area of the VistaLab Technologies web site – www.vistalab.com – for complete instructions about replacing plunger assembly seals. Information is also available on the web site indicating the procedure for returning the pipette to VistaLab Technologies for in-factory replacement of the plunger assembly seals.

Autoclaving

Set the Ovation M to its highest volume setting and place it in the autoclave at 121°C for 15 minutes, followed by a 15 minute drying cycle. Allow the pipette to cool to room temperature for at least 2 hours before use. Calibration should be verified after each autoclave treatment.

Note: The Ovation M nozzle should be replaced after 3 autoclave cycles as it will lose its liquid blocking capability.





TIPS & ACCESSORIES

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Whether your application requires tips that are sterile, RNase/DNase certified, Pyrogen-free, Trace Metal certified or filtered, there's a genuine Ovation tip to meet your needs. See the tip chart (below) or visit our web site – www.vistalab.com for complete information on all the tip options for the Ovation M Pipette, plus accessories and calibration and repair services.

4060-1002 Example catalog number

Ovation M mechanical volume-set models: 0.2-2µL
1.0-10µL 10-100µL
2.0-20µL 20-200µL 100-1000µL

	TIP SIZE:	MICRO	SMALL	LARGE	
NON-STERILE	VistaRak 192 tips/rack, 5 racks	4060-1002	4060-2004	4060-3004	 VistaRak™
	VistaRak, Low Retention 192 tips/rack, 5 racks	4070-1002LR	4070-2004LR	4070-3004LR	
	VistaStak, 192 tips/layer, 5 layers (small size) or 3 layers (micro and large size)	4060-9024	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	 VistaStak™
	VistaBulk™, 1000 tips/bag, or 250 tips/bag (5mL) or 100 tips/bag (10mL)	4058-1000	4058-2000	4058-3000	
	Protectainer™ Bulk Pack, 1000 tips (small) or 750 tips (large)		4025	4026	
	Econo-Pak™ Bulk Pack, 1000 tips		4225	4226	
STERILE	VistaRak, Sterile, Pyrogen-free, RNase/DNase certified, 192 tips/rack, 5 racks	4060-1032	4060-2132	4060-3132	 VistaStak™
	VistaRak, Sterile, Pyrogen-free, Low Retention, RNase/DNase certified, 192 tips/rack, 5 racks	4070-1032LR	4070-2132LR	4070-3132LR	
	VistaTip™ Individually Wrapped Sterile, 200 tips		2025	2026	
	VistaTip Individually Wrapped, Sterile, Pyrogen-free, 200 tips		2027	2028	
FILTERED	VistaRak, Filtered, Sterile, Pyrogen-free, RNase/DNase certified, 192 tips/rack, 5 racks † 2µL tip for Ovation 0.2-2µL	4060-1332 ¹ 4060-1333 [†]	4060-2332	4060-3332	 Stacked Rack
	VistaRak, Filtered, Sterile, Pyrogen-free, RNase/DNase certified, 192 tips/rack, 5 racks † († 2µL tip for Ovation 0.2-2µL)	4070-1332LR ¹ 4070-1333LR [†]	4070-2332LR	4070-3332LR	
ACCESSORIES	Nozzle, 5/box (0.2–2µL) or 10/box † for Ovation 0.2-20µL only	9057-1013 [†] 9057-1010	9057-2010	9057-3010	
	Nozzle Replacement Filters, 25/bag	n/a	9057-2009	9057-3009	
	Type A Nozzle, 5/box	n/a	n/a	9057-1016	
	Nozzle Extender (except 0.2-2µL)	9057-1012		9057-3012	
	Ejector Sleeve	9057-1011		9057-3011	
	Calibration Labels, 5/box		9057-4002		
	Ovation Pipette Stand		9057-4003		

Notes: 1. Not for use with Ovation M .02-2µL.

Maintenance & Repair Items for Ovation Pipettes – Ovation M Models

Hook & Top Cover Kits

<u>Catalog No.</u>	<u>Description</u>
9070-4008	Hook & Top Cover Kit for Ovation M models dispensing 0.2-2 μ L
9070-4009	Hook & Top Cover Kit for Ovation M models dispensing 1-10 μ L
9070-4010	Hook & Top Cover Kit for Ovation M models dispensing 2-20 μ L
9070-4011	Hook & Top Cover Kit for Ovation M models dispensing 10-100 μ L
9070-4012	Hook & Top Cover Kit for Ovation M models dispensing 20-200 μ L
9070-4013	Hook & Top Cover Kit for Ovation M models dispensing 100-1000 μ L

Plunger Button Kits

<u>Catalog No.</u>	<u>Description</u>
9070-4014	Plunger Button Kit for Ovation M models dispensing 0.2-2 μ L
9070-4015	Plunger Button Kit for Ovation M models dispensing 1-10 μ L
9070-4016	Plunger Button Kit for Ovation M models dispensing 2-20 μ L
9070-4017	Plunger Button Kit for Ovation M models dispensing 10-100 μ L
9070-4018	Plunger Button Kit for Ovation M models dispensing 20-200 μ L
9070-4019	Plunger Button Kit for Ovation M models dispensing 100-1000 μ L

Replacement Nozzles and Nozzle Filters

<u>Catalog No.</u>	<u>Description</u>
9057-1013	Replacement Nozzles (Qty = 5) for Ovation M models dispensing 0.2-2 μ L
9057-1010	Replacement Nozzles (Qty = 10) for Ovation M models dispensing 1-10 μ L and 2-20 μ L
9057-2010	Replacement Nozzles (Qty = 10) for Ovation M models dispensing 10-100 μ L and 20-200 μ L
9057-3010	Replacement Nozzles (Qty = 10) for Ovation M models dispensing 100-1000 μ L
9057-3016	Replacement Type A Nozzles (Qty = 5) for Ovation M models dispensing 100-1000 μ L
9057-2009	Replacement Nozzle Filters (Qty = 25) for Ovation M models dispensing 10-100 μ L and 20-200 μ L
9057-3009	Replacement Nozzle Filters (Qty = 25) for Ovation M models dispensing 100-1000 μ L

Replacement Seal Kits

<u>Catalog No.</u>	<u>Description</u>
9070-1001	Replacement Seal Kit for Ovation M models dispensing 0.2-2 μ L
9070-1002	Replacement Seal Kit for Ovation M models dispensing 1-10 μ L
9070-1003	Replacement Seal Kit for Ovation M models dispensing 2-20 μ L
9070-1004	Replacement Seal Kit for Ovation M models dispensing 10-100 μ L
9070-2005	Replacement Seal Kit for Ovation M models dispensing 20-200 μ L
9070-3006	Replacement Seal Kit for Ovation M models dispensing 100-1000 μ L

Miscellaneous

<u>Catalog No.</u>	<u>Description</u>
9070-4020	Air Tube Cleaning Kit for all Ovation M models
9070-4006	Replacement Base Hex Screws for all Ovation M models
9070-4007	Calibration Tool for all Ovation M models

Warranty

VistaLab Technologies, Inc. warrants the Ovation BioNatural Pipette against defects in materials and workmanship for one year from the date of purchase. To register your pipette and activate the warranty, register on the VistaLab Technologies web site at www.vistalab.com.

This warranty is void if failure or damage is the result of improper handling, unauthorized modification, or use of ancillary products not supported by VistaLab Technologies. This warranty is exclusive; no other warranty is expressed or implied.

Should the pipette need to be returned for calibration verification or service, go to support area of www.vistalab.com and follow the instructions for sending the pipette to VistaLab Technologies. Repack the pipette in its original packaging. Customer is responsible for shipping and insurance charges. If original packaging is unavailable, contact VistaLab Technologies for alternative packaging instructions.

Note: Damage to the pipette as a result of improper packaging is the responsibility of the customer.

Safety Compliance

Ovation pipettes have been tested and approved for safety labels:

EN 61010-1:1992 Safety Requirements CSA C22.2, No. 1010.1-92

EN 61326 EMC Requirements UL 3111-1



Note: Use of the Ovation pipette not specified in this manual may impair protection provided by the equipment.

Contact Information

To place an order or to send in your pipette for factory maintenance and/or calibration verification, see the service area of www.vistalab.com. Pipettes should be sent to:

VistaLab Technologies, Inc.
Attn: Pipette Repair Department
2 Geneva Road
Brewster, NY 10509 USA

For additional assistance with warranty repairs or other technical assistance, contact us at: **1-914-244-6226** (Worldwide) or (888) 652-6520 (North America only), or send an email to techservice@vistalab.com

Operating Temperature & Environment Conditions

Indoor use / Pollution Degree 2

Altitude up to 2000m

Temperature Range: 15°–35°C

Relative Humidity Range, non-condensing: 10%–85%

Atmospheric Pressure: 70–106kPa

Pipette Body Chemical Compatibility

Water, diluted ethanol or isopropanol, diluted bleach. For more information about chemical compatibility with internal seals or pipette tips, see the documentation library in the support area of our web site – www.vistalab.com.