EDP2™

Electronic Pipette

Six pipettes for volume ranges from 0.5 µL to 2.5 mL

250 µL model shown

RAININ

EC Declaration of Conformity

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Rainin Instrument, LLC
Manufacturer's Address:	7500 Edgewater Drive Oakland, CA 94621 U.S.A.

declares that the following product:

Product Name:	EDP2 Electronic Pipette
Model Number:	EDP2
Product Options:	None

conforms to the following Product Specifications:

Safety:	EN61010-1:1993 IEC1010:1990 + A1,A2
EMC:	EN55011:1988 Class A (Electromagnetic Interference)
	EN50082-1 pr EN55024-2:1992 (Electrostatic Discharge) pr EN55024-3:1991 (Electromagnetic Immunity)

Supplementary Information:

Responsible Signatory:	Haak Magnussen, VP of R&D
Date:	August 1, 1996

CONTENTS

Technical Assistance: 800-543-4030

Call this toll free number for technical consultation and product information for EDP2, other RAININ liquid measurement instruments, and disposable tips.

1.0 DESCRIPTION

EDP2 pipettes are battery-operated motorized hand-held instruments for microliter liquid measurement. Using an EDP2 pipette, you can perform simple liquid transfers or dispense multiple samples with excellent accuracy and precision. Speed is adjustable for normal aqueous liquids or slightly viscous samples.

FIGURE 1.1
EDP2 PIPETTE

FIGURE 1.2
EDP2 DISPLAY / CONTROL PANEL

There are six EDP2 models. Each model is completely adjustable within its range: the smallest settable volume increment is 0.02µL for the Micro-10 EDP2, 1/500 of full range for 100 and 1000µL models, and 1 /250 of full range for 25, 250, and 2500µL models.

The recommended working range is 0.5µL to 10µL for the Micro-10 EDP2 and 10% to 100% of full value for all other models.

Each EDP2 pipette incorporates a highly polished precision-ground stainless steel piston which is directly connected to an electronic linear actuator. The linear actuator is controlled by an on-board microcomputer to move the piston the correct distance, at the correct speed, during liquid measurement. The distance moved determines the volume measured.

Operating parameters are entered into the microcomputer via control keys on a simple keypad. Current status and volume setting are shown on a liquid crystal display. Aspiration and dispensing steps are actuated by pressing a trigger.

A long-life lithium battery in a compartment in the handle of the control module provides power to the EDP2 pipette. Battery life in the EDP2 pipette is typically a year or longer in normal use.

For safe removal of contaminated tips without direct hand contact, a mechanical tip ejector is standard on all models except the 2500µL.

2.0 UNPACKING INSTRUCTIONS

A complete EDP2 package includes:

- EDP2 Pipette
- Long-life lithium battery
- Sample RAININ Certified™ disposable tips
- Small vial of specialized grease (Not included in 10 and 25µL packages.)
- Instruction manual

Check that all items have been received and inspect for possible shipping damage. In case of damage, file a damage claim immediately with the shipping carrier. Save all packing materials until any damage claim is resolved and the instrument is functioning properly.

3.0 INSTALLING THE LITHIUM BATTERY

Before operating the EDP2 pipette, you must install the lithium battery in the battery compartment in the pipette handle. The compartment cover is located on the right side of the handle.

To install the lithium battery, loosen the screw in the compartment cover. This is the only screw visible on the outside of the control module. Remove the cover.

Notice the mylar ribbon inside the compartment. This rests flush between the inside walls of the compartment and the battery to aid in removing the battery.

Locate the positive (+) sign on the battery. Install it in the compartment with the positive end up. The end of the ribbon should extend out from the left side of the compartment. Figure 3.1 shows how to position the battery properly.

CAUTION: Do not force the battery into the compartment. It will only fit in the compartment if the positive end is up. Improper installation can damage the EDP2 pipette.

After installing the battery, you will hear the EDP2 pipette initialize and switch on. The legend Pickup and the full range volume setting will show on the display. Replace the compartment cover and tighten the screw. The EDP2 is ready for use.

The EDP2 "shuts off" automatically when not used for three minutes. If you then press the on/off key, these events occur rapidly: a beep sounds as power is connected, three dashes appear on the display, another beep sounds and the full range volume is displayed.

NOTE: If the battery is changed very fast (within one minute) the last entered mode and volume will remain on th e LCD.

WARNING: The lithium battery has an operating temperature range of -40°C to +72°C (-40°F to +162°F). Use or storage of the battery outside this temperature range may cause the cell to open mildly (venting) or violently (explosion).

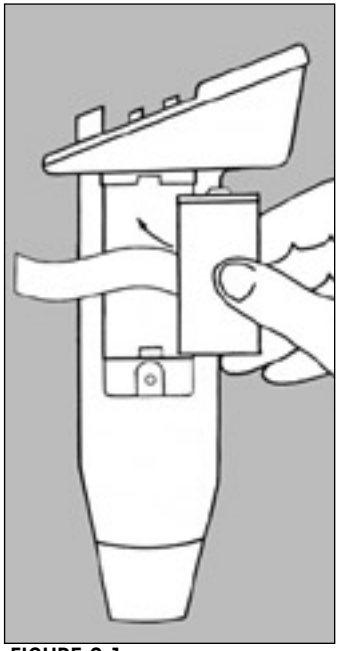


FIGURE 3.1
POSITION THE POSITIVE (+) END OF THE BATTERY UP.

4.0 THE KEYPAD

ON The **ON** key

This key turns the EDP2 pipette on or off. When power is turned off, the operating mode, speed, volume setting, and piston position are in memory. When power is turned back on, operation resumes as if the pipette had not been turned off. All settings are retained until you enter changes on the keypad.

To conserve battery power, EDP2 incorporates an automatic "sleep" feature. Whenever power is connected but the EDP2 pipette is not used for three minutes, it will automatically turn off. Press the on/off key to reactivate the pipette.

MODE The **MODE** Key

The mode key steps through the four possible combinations of operating modes and speeds:

- Pipette
- Fast pipette
- Multidispense
- Fast Multidispense

Simply press the mode key until the desired combination is indicated on the display. The appearance of the "rabbit" symbol in the upper right corner of the display indicates that the fast operating speed has been selected.

↑ ↓ The **VOLUME ADJUSTMENT** Key

Volume settings are adjusted by pressing the arrow keys. To increase the set volume, press the key with the up arrow. To decrease the set volume, press the key with the down arrow. Pressing either key continuously causes the rate of change to accelerate.

The EDP2 pipette retains two volumes in memory: one for the pipette mode and one for the multidispense mode. When switching from pipette to multidispense, the display automatically changes from the pipette set volume to the multidispense set volume.

RESET The **RESET** key

The reset key is active only when the piston is away from the home position. To determine if the piston is away from the home position, look for **DISPENSE**, **MULTIDISPENSE** or **MULTI** and the flashing **RESET** signal on the display.

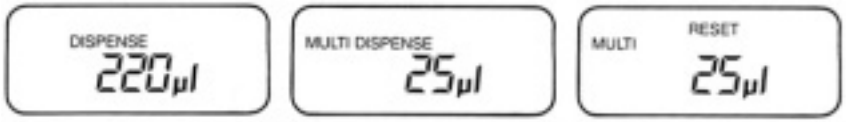


FIGURE 4.1
Look for **DISPENSE**. **MULTIDISPENSE**, or **MULTI** and **RESET** to determine if the piston is away from the home position.

Pressing the reset key with either **DISPENSE** or **MULTIDISPENSE** shown on the display causes the piston to move down and empty liquid from the tip. The unit executes a blowout cycle and the piston returns to the home position. The EDP2 pipette is then ready for the next sample.

At the end of any multidispense cycle, the word **RESET** flashes on the display and the trigger becomes inactive. Pressing the reset key initiates the blowout cycle, and the piston returns to the home position. The unit is then ready to pick up the next sample.

NOTES: The arrow keys and the mode key are only active when the pipette is ready to pick up a new sample. The word **PICKUP** will appear on the display.

The arrow keys and mode key become inactive in the middle of a pipetting cycle, leaving only the reset key and power key active.

The EDP2 pipette emits a beeping sound at the end of every motor movement. You should hear two beeps when power is first connected and one beep at the end of each pickup stroke and dispensing stroke. Two beeps sound at the end of each blowout cycle.

Audible tones may be turned off. To do so, insert the end of a straightened paper-clip into the small hole between the reset key and the arrow down key on the keyboard and press gently. To turn the tones on again, follow the same procedure.

When the tones are turned off, they are off only during actual operation. You will still hear the two beeps when power is first applied.

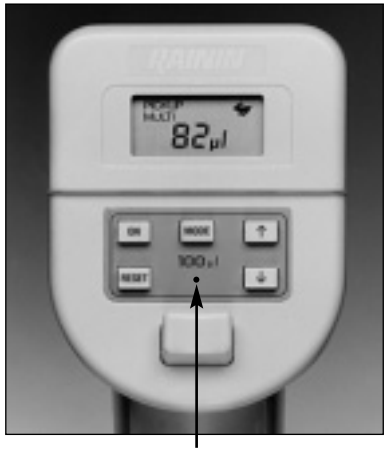


FIGURE 4.2
AUDIBLE TONES OFF

5.0 MODES AND SPEEDS

In addition to simple pipetting, the EDP2 pipette can aspirate a single volume of liquid and dispense that liquid stepwise as a series of equal, smaller volumes. Operating speed is adjustable for either mode.

A full scale move at the slower speed takes approximately 2.2 seconds. A full scale move at the fastest speed takes approximately 1.3 seconds. The slower speed is recommended for viscous samples.

The two operating modes and speeds allow these liquid measurement combinations: **PIPETTE**, **FAST PIPETTE**, **MULTIDISPENSE**, and **FAST MULTIDISPENSE**. You can choose the combination you desire by pressing the mode key.

COMBINATIONS

PIPETTE
Press **MODE** until **PICKUP** appears on the display

FAST PIPETTE
Press **MODE** until **PICKUP** and
the rabbit symbol appear on the display

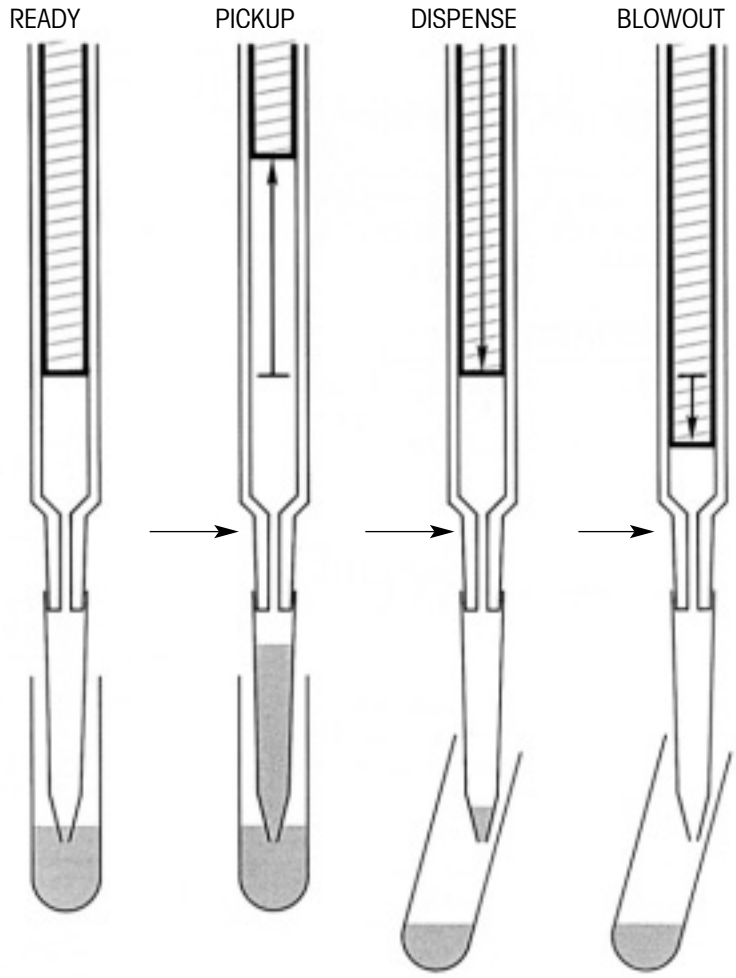
MULTIDISPENSE
Press **MODE** until **PICKUP** and **MULTI**
appear on the display

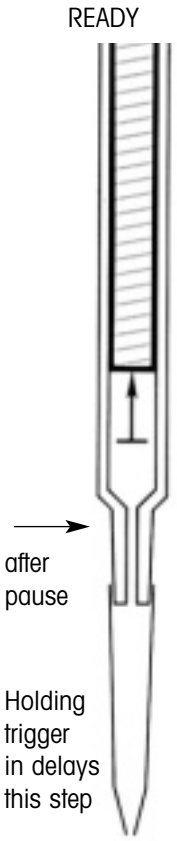
FAST MULTIDISPENSE
Press **MODE** until **PICKUP**, **MULTI**
and the rabbit symbol appear on the display

NOTE: For either multidispense combination, the volume you enter on the keypad is the dispense volume. The pickup volume is determined by the microcomputer and includes the largest integral multiple of the dispense volume within the full volume range of the pipette plus a fixed residual volume. The residual volume assures that the final aliquot dispensed will be accurate.

5.1 PIPETTE MODE OPERATION

OPERATION:





TO SET MODE
Pipette: Press

MODE

Display shows **PICKUP**

Fast Pipette: Press

MODE

Display shows **PICKUP** and the rabbit symbol

TO SET VOLUME

Press either arrow key

Display quickly rolls through volumes

TO CLEAR, EMPTY OR RETURN PISTON TO HOME POSITION

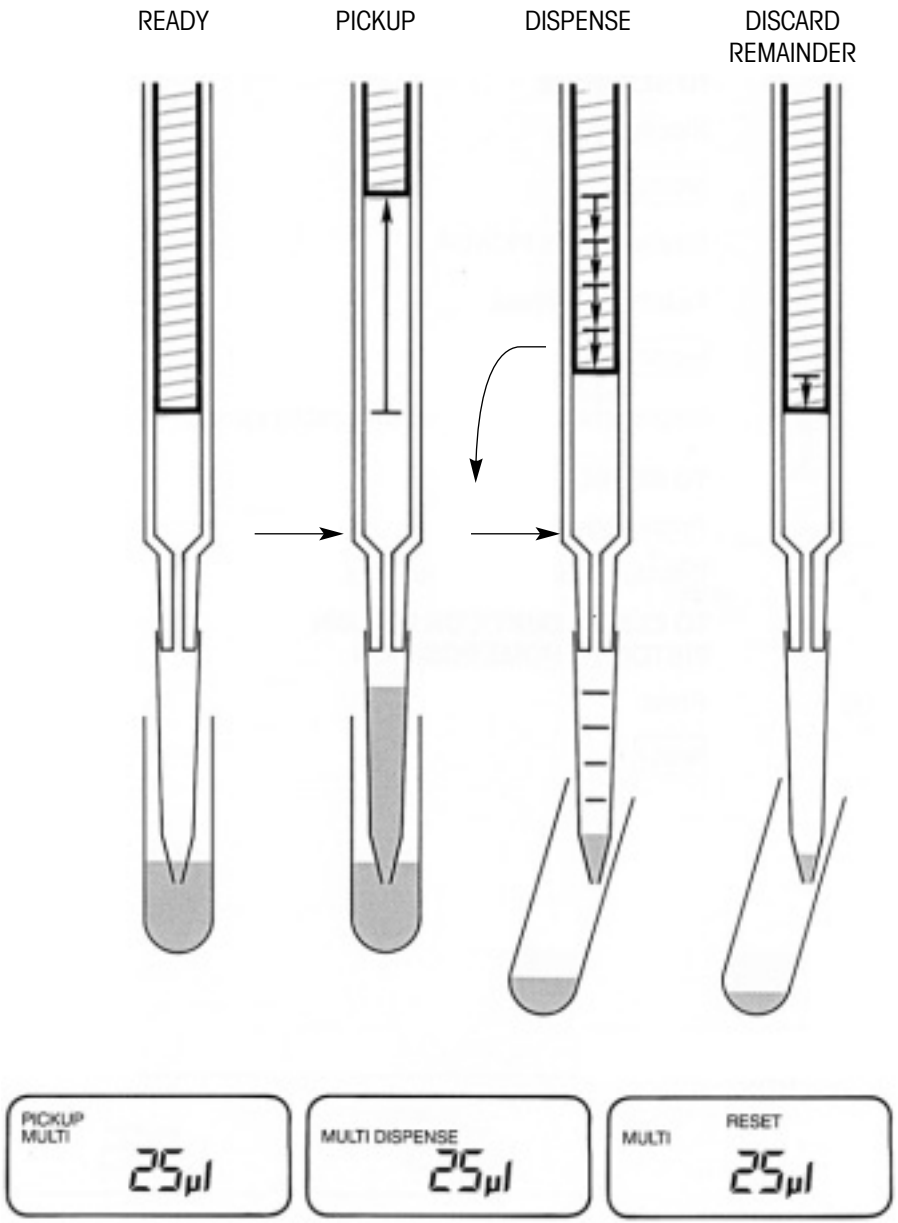
Press

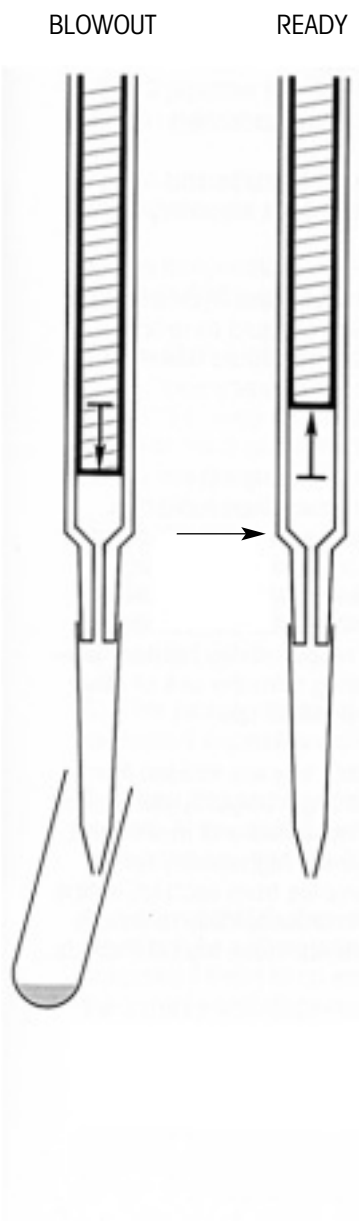
RESET

beep
beep

5.2 MULTIDISPENSE MODE OPERATION

OPERATION:





TO SET MODE

Multidispense: Press

MODE

Display shows **PICKUP** and **MULTI**

Fast Multidispense: Press

MODE

Display shows **PICKUP**, **MULTI** and the rabbit symbol

TO SET VOLUME

Press either arrow key:

Display quickly rolls through volumes

TO CLEAR, EMPTY OR RETURN PISTON TO HOME POSITION

Press

RESET

6.0 DISPOSABLE TIPS

The requirements for disposable pipette tips for EDP2 pipettes are rigorous and demanding:

- Disposable tips must seal properly on the EDP2 shaft to assure an air-tight seal and to avoid leaks or poor accuracy.
- Tips must be soft and flexible so that the shaft is not scratched geometry must be consistent from tip to tip. Otherwise, accuracy and precision will be affected.
- Interior and exterior surfaces must be clear, smooth, and hydrophobic to avoid retention of liquid as droplets or film. Too much liquid retention will result in poor accuracy and reproducibility.

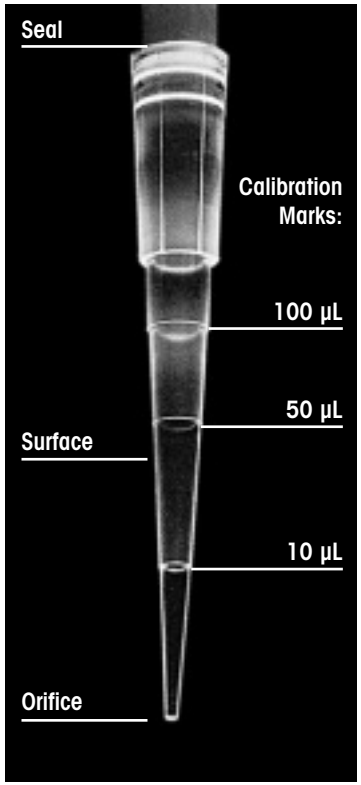


FIGURE 6.1
RAININ TIP: ORIFICE, SURFACE, SEAL, CALIBRATION MARKS

EDP2 pipettes are designed for use with RAININ-manufactured disposable tips. Specified performance of EDP2 pipettes is guaranteed only when RAININ disposable tips are used, as recommended in Section 7. Rainin Instrument, LLC cannot accept responsibility for poor performance resulting from the use of other than RAININ disposable tips.

RAININ disposable tips are molded from premium-grade virgin polypropylene plastic. Molds are inspected and maintained frequently to assure high-quality tip production. Samples from each lot of tips are inspected microscopically to assure that every lot meets these high standards.

7.0 PIPETTING RECOMMENDATIONS

Perform three or four pickup and dispense cycles once the unit is initialized. This will lubricate the piston, thereby ensuring a proper seal. Note: This is not applicable to the Micro-10 and 25µL model EDP2 pipettes, which have a dry seal.

EDP2 pipettes are designed to deliver accurate and precise measurements under the following conditions:

1. The liquid pipetted is water or any liquid with density, viscosity, and vapor pressure not significantly different from those of water.
2. The temperature of the room, the EDP2, and the liquid, are all in the range 21.5°C + 1°C.
3. The EDP2 pipette is kept vertical while pipetting.
4. When picking up sample, the end of the disposable tip is immersed beneath the liquid surface approximately as follows:

   1 to 3 mm — volumes up to 100µL

   2 to 4 mm — volumes from 100µL to 1000µL

   3 to 6 mm — volumes over 1000µL
5. There is no significant adherence of liquid to the surfaces of the tip. (Each tip should be rinsed once before pipetting to assure the best accuracy).
6. After pickup, the tip is touched to the sidewall of the sample vessel to remove excess sample.
7. When dispensing, the tip is touched to the sidewall of the receiving vessel. At the end of each dispense cycle, the tip is moved along the wall to remove any excess sample from the outside of the tip.
8. A consistent rhythm is maintained from sample to sample when pipetting. As with any air-displacement pipette, best results will be obtained if there is no extended or variable delay between picking up the sample and dispensing it.

If you are pipetting a liquid which is extremely dense or viscous, or one which has a high vapor pressure, a positive displacement pipette should be used.

8.0 CARE AND MAINTENANCE

EDP2 Pipettes are designed to keep maintenance to a minimum provided proper care is exercised and proper pipetting techniques are followed.

Never pull liquid into the shaft of the pipette without a disposable tip attached. When liquid is present in the tip, never invert the EDP2 or lay it on its side: the unit should be held vertically.

EDP2 pipettes never need calibration: they are self-calibrating instruments. At the end of each dispensing stroke, the unique electronic mechanism automatically resets the proper piston "home" position, eliminating the need for periodic calibration adjustments.

Routinely, each pipette should be tested to ensure proper sealing, as follows: Set the instrument to its maximum volume in normal pipette mode. Mount a disposable tip and aspirate water. Hold the unit vertically and observe the tip for one to two minutes. No leaking should occur.

If leakage does occur, it may be that the seal between the shaft and tip is not airtight.

To obtain a proper seal between the pipette shaft and the disposable tip, RAININ tips should be used. RAININ tips are designed so that their sealing surfaces exactly match the design of the EDP2 shafts to produce an airtight fit.

This seal can also fail if the sealing surface of the pipette shaft should become scratched or nicked. This can sometimes be corrected by rotating the sealing surface of the shaft inside a piece of very fine emery cloth. Take care during this procedure to remove only the minimum amount of material necessary to restore a proper seal. Should this measure fail, the shaft should be replaced.

Leakage can also result from an improper seal between the piston and shaft interior. This can occur if the surface of the piston loses its high polish or if the piston becomes scratched, corroded, or pitted. If either of these conditions exist, the piston assembly should be replaced.

To maintain the integrity of this seal, it is important to inspect the piston assembly and shaft interior periodically to assure freedom from dirt and chemical contaminants.

For Micro 10 EDP2 Pipette

The seal between the piston and the interior of the shaft is formed by a self-lubricating PTFE ring and a silicone o-ring. Routine inspection of the seal is not recommended because of the small size of the components.

In the event that the seal needs replacing, begin by removing the seal retainer from the shaft. This is a tight fit and should be unscrewed using the special grip tool provided with the replacement seal. Replacement Seal Kits are available from Rainin Instrument, LLC.

Refer to Figure 8.1 and carefully remove the o-ring and PTFE ring and inspect for contamination. If you need to clean any component, use either distilled water or methanol.

The piston and seal assembly must be completely dry before reassembly. When drying the piston use a very soft lint-free wipe. Do not use paper towels or any other material which may scratch the surface of the piston.

The seal itself should also be tested for wear by sliding the PTFE ring along the piston. It should offer slight resistance to sliding, not move freely. If it shows no resistance, replace the seal.

To reassemble, hold the pipette horizontal and place the PTFE ring then the O-ring on the piston. Be sure to position the seal assembly properly: the PTFE ring should extend through the O-ring and only the PTFE ring should contact the piston surface.

Carefully screw the seal retainer back onto the shaft and tighten with the grip tool provided.

WARNING: never apply grease to the seal assembly of a model Micro-10 EDP2 pipette.

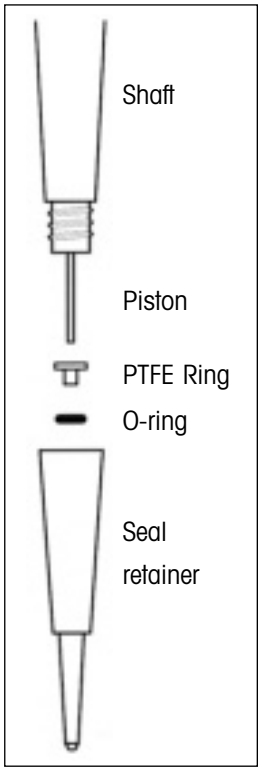


FIGURE 8.1
PISTON SEAL ASSEMBLY: MICRO-10 EDP2

For 25µL model EDP2 Pipette

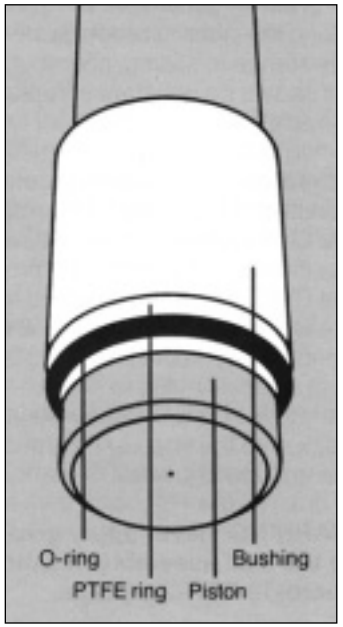
The seal between the piston and the interior of the shaft is formed by a self-lubricating PTFE ring and a silicone o-ring. To inspect this seal, begin by removing the large nut at the base of the control module. Gently pull the shaft away from the unit. All piston assembly components should remain seated on the piston.

Carefully remove the bushing, seal spring, and seal from the piston and inspect for dirt and contamination. Inspect the shaft interior also. If any part needs cleaning, a solvent such as distilled water or methanol should remove any contamination.

The piston assembly and shaft must be completely dry before reassembling. When drying the piston use a very soft, lint-free cloth: Do not use paper towels or any other material which may scratch the surface of the piston.

The seal itself should also be tested for wear by sliding it along the piston. It should offer a slight resistance to sliding, not drop freely under its own weight. If it shows no resistance, it should be replaced. Replacement Seal Assemblies are available from Rainin Instrument, LLC.

To reassemble, hold the pipette horizontally and place the seal spring, then the bushing, on the piston. Next, place the seal assembly on the piston. Be sure to position the seal assembly properly: the PTFE ring should extend through the o-ring, and only the PTFE ring should contact the piston surface.



Carefully replace the shaft body on the control module, making sure that the tip ejector pin on the module engages the tip ejector hole in the shaft. Thread the retainer ring carefully back onto the control module and tighten.

WARNING: Never apply grease to the 10 or 25µL seal assemblies.

FIGURE 8.2
PISTON SEAL ASSEMBLY:
25µL EDP2

For 100, 250, 1000, and 2500µL model EDP2 Pipettes

The seal between the piston and the interior of the shaft is formed by a rubber o-ring and fluorinated grease. To inspect this seal, begin by removing the large retainer ring at the base of the control module. Gently pull the shaft away from the unit. All piston assembly components should remain seated on the piston.

Carefully remove the bushing, seal spring, and o-ring from the piston. With a lint-free cloth, remove all traces of grease from these components and also from the shaft interior. (DO NOT USE SOLVENTS.)

Before applying grease to the piston, check the o-ring for wear by sliding it along the piston. It should offer a slight resistance to movement, not drop freely under its own weight. If no resistance is observed, the o-ring should be replaced.

Using the specialized grease provided with the EDP2 pipette, regrease the piston. Only a very light coat of grease is needed, and it should be spread uniformly around the piston. Make sure that no foreign particles are picked up. Smear a light coat of grease around the o-ring.

Holding the pipette horizontally, replace the seal spring, then the bushing on the piston. Next, place the o-ring on top of the bushing.

CAUTION: BE CAREFUL NOT TO SCRATCH THE PISTON.

Carefully replace the shaft body on the control module, making sure that the tip ejector pin on the module engages the tip ejector hole in the shaft. Thread the retainer ring carefully back onto the control module and tighten.

NOTE: The 2500 microliter model has no tip ejector.

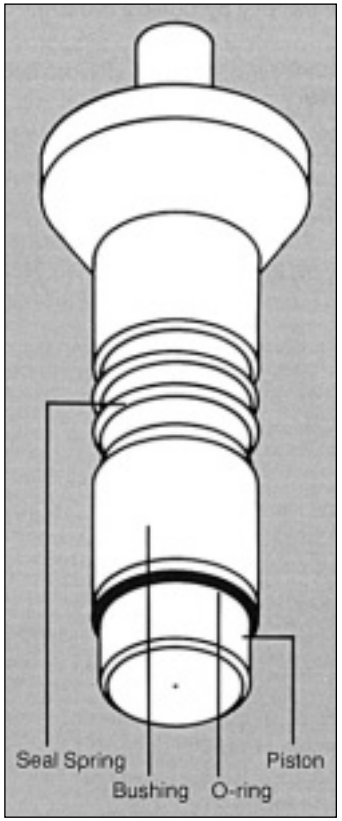


FIGURE 8.3
PISTON SEAL ASSEMBLY:
100, 250,1000, AND
2500µL MODELS

9.0 REPLACING THE LITHIUM BATTERY

Battery life in the EDP2 pipette is typically a year or longer in normal use. When the battery does become low, the message "Lob" will appear on the display. Initially, this message is displayed only at the end of the blowout stroke. At this time, the pipette will still perform accurately; however, if you do not have a spare battery on hand, a new battery should be ordered immediately.

As the battery drains further, the message appears at the end of every blowout stroke and again when the piston reaches the home position. When the message appears continuously on the display at the end of every motor movement, the battery should be replaced to ensure proper operation.

To replace the battery:

Loosen the screw in the compartment cover. Remove the cover. Remove the battery by pulling the battery ribbon towards you.

Section 3.0 contains instructions on how to correctly install a new lithium battery.

10.0 LITHIUM BATTERY: PROPER USE AND DISPOSAL

EDP2 pipettes employ one C-size, foil-wound, lithium/thionychloride battery. Rated capacity is 5 Ah, 3.6 V open circuit (nominal).

The large amount of power stored in a new lithium battery of this type is responsible for its long life when used in an EDP2 pipette. The battery should be handled with care and used properly, never misused or abused. Power should be drawn from the battery only when it is properly installed in the EDP2 pipette.

Do not incinerate the lithium battery or expose it to excessive heat: Exposing the battery to temperatures outside the operating temperature range -40°C to +72°C (-40°F to +162°F) may cause the cell to open mildly (venting) or violently (explosion). Do not short-circuit, puncture, crush, disassemble, recharge or force over-discharge (reversal).

Used batteries may contain sufficient trace amounts of lithium so that they will be subject to governmental hazardous waste disposal regulations.

Regulations vary from state to state. If you do not have access to an on-site disposal facility, contact your local Environmental Protection Agency for laws applicable to your region. It is the responsibility of the user to comply with state and federal hazardous waste disposal regulations as set forth by the Environmental Protection Agencies.

11.0 TROUBLESHOOTING

EDP2 Pipettes should be used with RAININ disposable tips to ensure proper sealing. If an improper seal exists between the tip and pipette shaft, leakage will result.

An improper seal between the piston and the interior of the liquid end shaft may also cause leakage. Section 8.0 reviews the care and maintenance procedures required to protect the integrity of this seal.

If the EDP2 has not been used for an extended period of time, when first turned on the message "Lob" may appear on the display. Turn the EDP2 off then on again to reinitiate the "battery energize" sequence. This procedure can be repeated several times if necessary. If the display continues to show "Lob": power is low and the lithium battery needs to be replaced. See Section 9.0 for battery replacement procedures.

Rainin Instrument, LLC maintains a complete service department to correct any problems resulting from physical or chemical damage to the EDP2 pipette. Contact RAININ Service Department at 800-662-7027 for more information.

12.0 PERFORMANCE SPECIFICATIONS

For the purposes of this manual, specifications for accuracy and precision for the EDP2 pipette are defined as follows:

ACCURACY means the closeness with which dispensed volumes approximate the volume set on the pipette. Accuracy is specified as Mean Error, the maximum amount by which the mean value of a large number of replicate measurements of the same volume will deviate from the set volume. The specification applies to water in the temperature range of 21.5°C ± 1°C.

PRECISION means the "scatter" of individual measurements around the mean of a large number of replicate measurements of the same volume.

Specifications for precision are generally tighter than for accuracy. In most experiments, where sample measurements are compared to standards, the precision specification will determine the accuracy of results as long as both samples and standards are measured with the same instrument.

Table 12.1– EDP2 Specifications

Model	Volume (µL)	Increment (µL)	Accuracy		Precision	
			Relative	Absolute	Relative	Absolute
E2-MIC-10	0.5 1 5 10	0.02	5 2.5 1.5 1	0.025 0.025 0.075 0.1	2.8 1.2 0.6 0.4	0.014 0.012 0.03 0.04
E2-25	2.5 12.5 25	0.01	6 1.2 1	0.15 0.15 0.25	2 0.4 0.3	0.05 0.05 0.075
E2-100	10 50 100	0.02	3 0.8 0.8	0.3 0.4 0.8	1 0.2 0.2	0.1 0.1 0.2
E2-250	25 125 250	1	2 0.8 0.8	0.5 1 2	0.6 0.15 0.15	0.15 0.19 0.38
E2-1000	100 500 1000	2	3 0.8 0.8	3 4 8	0.6 0.13 0.13	0.6 0.65 1.3
E2-2500	250 1250 2500	10	3.2 0.8 0.8	8 10 20	0.8 0.16 0.12	2 2 3

Specifications are subject to change without notice and apply to operation in **PIPETTE** mode.

Performance within specifications is guaranteed for distilled water when used with RAININ disposable tips.

Please also refer to publication AB-15, Procedure for Evaluating Accuracy and Precision of RAININ Pipettes. For a copy of this publication, call 800-543-4030.

13.0 ORDERING INFORMATION

CAT. NO.	DESCRIPTION
	EDP2 Pipettes (including lithium battery in U.S.):
E2-MIC-10	EDP2, 0.5-10µL
E2-25	EDP2, 2.5-25µL
E2-100	EDP2, 10-100µL
E2-250	EDP2, 25-250µL
E2-1000	EDP2, 100-1000µL
E2-2500	EDP2, 250-2500µL
	REPLACEMENT PARTS
E2-BA	Long-life Lithium Battery
6100-470	Seal Assembly for E2-MIC-10
6100-073	Seal Assembly for E2-25
6105-140	Seal Kit for E2-100
6105-141	Seal Kit for E2-250
6105-142	Seal Kit for E2-1000
6105-143	Seal Kit for E2-2500
6100-414	Upper shaft for E2-MIC-10
6100-416	Lower shaft (Metal) for E2-MIC-10
6100-427	Shaft for E2-25
6100-428	Shaft for E2-100
6100-429	Shaft for E2-250
6100-430	Shaft for E2-1000
6100-224	Shaft for E2-2500
	PIPETTE STAND
E2-ST	Stand for use with EDP2 Pipettes. Holds three pipettes. Also for use with the EDP-Plus Pipette

Call 800-472-4646 to order, or online at www.rainin.com.

14.0 WARRANTY INFORMATION

Upon receipt of your EDP2 Pipette, please complete the Warranty Registration Card and return it to Rainin Instrument, LLC to validate the warranty. EDP2 pipettes are warranted for one year against defects in materials and workmanship. For information regarding the warranty or repair of any instrument, please call Rainin Instrument, LLC at 800-543-4030.

NOTE: Product returns are accepted with prior authorization only. Please contact Technical Service Department at 800-543-4030 for forwarding instructions.

If the equipment is used in a manner not specified the protection provided by the equipment may be impaired.

Note: Product returns are accepted with prior authorization only. Please contact Technical Service Department at 800-543-4030 for forwarding instructions.

RAININ

Rainin Instrument, LLC

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Oakland, CA 94621-0060
800-472-4646

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