



Regal Pipettes

INSTRUCTION MANUAL

Serial No. _____

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CONTENTS

| | |
|--|----|
| ABOUT THIS MANUAL | 1 |
| INTRODUCTION | 2 |
| Cautions and Warnings | 2 |
| Parts List | 2 |
| Single Channel Pipettes..... | 2 |
| INSTRUMENT DESCRIPTION..... | 3 |
| Single/Multi-Channel Crystal Pipettes..... | 3 |
| Setting the Dispense Volume..... | 4 |
| OPERATING INSTRUCTIONS..... | 4 |
| Aspirating Liquid | 4 |
| Dispensing Liquid..... | 5 |
| Exchanging Tip Ejector Unit (Single channel only)..... | 5 |
| MAINTENANCE | 6 |
| Calibrating the Pipette..... | 6 |
| ACCESSORIES..... | 7 |
| Pipette Tips (Universal)..... | 7 |
| SPECIFICATIONS..... | 9 |
| Single Channel Pipettes | 9 |
| WARRANTY | 11 |
| Claims and Returns | 11 |
| Repairs | 11 |

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ABOUT THIS MANUAL

The following symbols are used in this guide:



This symbol indicates a **CAUTION**. Cautions warn against actions that can cause damage to equipment. Please read these carefully.



This symbol indicates a **WARNING**. Warnings alert you to actions that can cause personal injury or pose a physical threat. Please read these carefully.

NOTES and TIPS contain helpful information.



Fig. 1—The Regal Pipettors come in a variety of sizes.

INTRODUCTION

Regal Pipettes use the air displacement method (where displaced air volume by the motion of the piston is equal to the liquid volume drawn into the pipette). They are highly accurate. Within ten complete revolutions of the dial, you can set the minimum and maximum volumes. For ease of use, the dial is fixed to the plunger. The light plunger action and ergonomic handle reduce fatigue, making results more precise. Regal pipettes are available as in a variety of sizes up to 10mL.

Cautions and Warnings



CAUTION: Do not autoclave the pipettes.



CAUTION: Do not use pipettes with organic solvents.



CAUTION: Do not lay the pipette down when a filled tip is attached.



CAUTION: NEVER use a pipette without a tip attached.

Parts List

After unpacking, verify that there is no visible damage to the product. Verify that all items are included.

Single Channel Pipettes

- (1) Regal Pipette
- (1) Calibration tool
- (1) package of disposable pipette tips
- (1) Instruction Manual
- (1) Inspection Certificate

Unpacking

Upon receipt of this instrument, make a thorough inspection of the contents and check for possible damage. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed damage should be reported at once to the carrier and an inspection requested. Please read the section entitled "Claims and Returns" on page 11 of this manual. Please contact WPI Customer Service if any parts are missing at 941.371.1003 or customerservice@wpiinc.com.

Returns: Do not return any goods to WPI without obtaining prior approval (RMA # required) and instructions from WPI's Returns Department. Goods returned (unauthorized) by collect freight may be refused. If a return shipment is necessary, use the original container, if possible. If the original container is not available, use a suitable substitute that is rigid and of adequate size. Wrap the instrument in paper or plastic surrounded with at least 100mm (four inches) of shock absorbing material. For further details, please read the section entitled "Claims and Returns" on page 11 of this manual.

INSTRUMENT DESCRIPTION

Single/Multi-Channel Crystal Pipettes

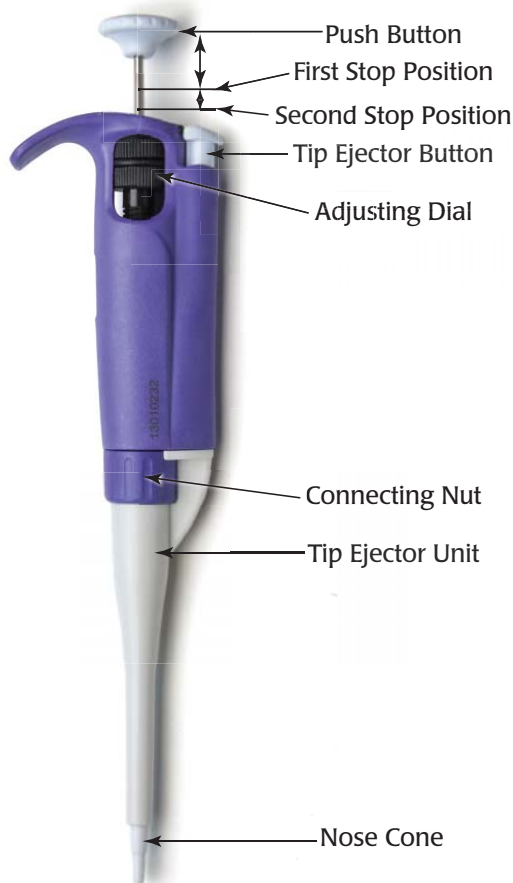


Fig. 2—Single channel Regal pipettes

Push Button—The push button is designed with two stop positions. The first stop position displaces the air volume indicated on the dial. The second stop position dispenses the liquid retained in the tip.

Adjustment Dial—Turn the dial to the right (clockwise) to increase the dispensing volume.

Tip Ejector Button—Push the button down to eject the pipette tip.

Connecting Nut—Secures the tip ejector unit. DO NOT REMOVE THIS NUT.

Tip Ejector Unit—This section houses the inner workings of the pipette. DO NOT DISASSEMBLE.

Nose cone—Position a disposable pipette tip on the nose cone.

Setting the Dispense Volume

Rotate the adjustment dial or the push button to dial in the aliquot volume you want to dispense. Rotate the dial to the left to decrease and to the right to increase the volume. An example of each pipette display below shows how to read the volume set for each pipette.

| REG2 | REG10 | REG20 | REG50 | REG100 | REG200 | REG1000 | REG5K | REG10K |
|--------|-------|--------|-------|--------|--------|---------|--------|--------|
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2 | 7 | 2 | 5 | 7 | 2 | 7 | 2 | 7 |
| 5 | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 |
| 1.25µL | 7.5µL | 12.5µL | 50µL | 75µL | 125µL | 750 | 2500µL | 7.5mL |

OPERATING INSTRUCTIONS

Aspirating Liquid

1. Adjust the delivering volume by turning the adjusting dial to the desired volume.
2. Install the appropriate pipette tip on the nose cone (**Fig. 3**). The table below shows which tips are compatible with Regal pipettes.



Fig. 3—Proper position for setting the tips

| Regal Tip Compatibility Chart | | |
|-------------------------------|--|--------|
| Pipette | WPI Universal Tips | Stands |
| REG2, REG10 | 500191, 500192, 500199, 500202, 500203, 500204 | 504591 |
| REG20 | 500191, 500192, 500193, 500194, 500199, 500200, 500202, 500203, 500204, 500205, 500206 | |
| REG50, REG100, REG200 | 500193, 500194, 500200, 500205, 500206, 500207 | |
| REG1000 | 500195, 500196, 500201 | |
| REG5K | 500197, 500198 | |
| REG10K | 504588, 504589, 504590 | |

3. Press the push button down to the first stop position.
4. Hold the pipette vertically and immerse the tip into the solution so that it is just deep enough to draw in the liquid (about 2–4mm).
5. After 2–3 seconds, slowly release the push button and allow it to return to the initial position. The solution is drawn up after a brief interval.
6. Slowly remove the tip from the liquid, keeping the pipette in a vertical position.



CAUTION: Do not lay the pipette down when a filled tip is attached.

Dispensing Liquid

1. To dispense the liquid, position the pipette tip close to the inner wall of the receiving vessel and press the push button down to the first stop position.
2. Press the push button down to the second stop position to remove all the liquid from the tip.
3. Press the tip ejector button to remove the used pipette tip.

Exchanging Tip Ejector Unit (Single channel only)

NOTE: The **CRYSTAL-ML10** has no tip ejector.

- To remove the tip ejector unit, hold the tip ejector button down and pull out the tip ejector unit from the ejection rod along the nose cone. Do not lose the spring on the rod.
- To install the tip ejector unit, hold down the tip ejector button and check the position of ejector connection. While holding down the tip ejector button, fit the tip ejector unit on the rod. Push the ejector unit firmly onto the rod.



CAUTION: The stopper on the tip ejector button may be damaged if you do not hold down the tip ejector button while reassembling.

MAINTENANCE

There is no need to dis-assemble the pipette. Disassembly voids the warranty.

Calibrating the Pipette

Pipettes should be calibrated annually. The accuracy of the calibration depends on the equipment used and your attention to detail. For best results, follow these guidelines:

- Use distilled water for calibration.
 - Make sure the pipette, tips, water and balance are all at the same room temperature. Keep them in the same location for two hours prior to calibration.
 - Atmospheric pressure and room temperature can affect the calibration measurements. Many calibration software packages are available. Using such software allows you to correct for the environmental effects.
1. Set the pipette to the maximum volume. Place a disposable tip on the pipette. Using a balance, measure the weight of three successive aliquots of distilled water to the nearest 0.0001 of a gram.
 2. Record each value and then average the three values.
 3. Set the pipette to its minimum volume, and repeat steps 1–2.
 4. Locate the calibration tool that came with your pipette. Clip it onto the pipette shaft with the teeth pointed toward the pipette body. Then, line up the teeth with the holes in the top of the adjustment dial.



Fig. 4—(Left) The calibration tool came with your pipette.



Fig. 5—(Center) Clip the calibration tool on the shaft of the pipette push button.



Fig. 6—(Right) Push the teeth on the calibration tool into the holes in the adjustment dial.

5. Rotate the calibration tool counter-clockwise to increase the aliquot dispensed and clockwise to decrease it.
6. Repeat steps 1–3 until the minimum and maximum volumes are accurate.

ACCESSORIES

| | |
|---------|--|
| REG2 | Regal Pipette, 0.2–2µL |
| REG10 | Regal Pipette, 1–10µL |
| REG20 | Regal Pipette, 2–20µL |
| REG50 | Regal Pipette, 5–50µL |
| REG100 | Regal Pipette, 10–100µL |
| REG200 | Regal Pipette, 20–200µL |
| REG1000 | Regal Pipette, 100–1000µL |
| REG5K | Regal Pipette, 1000–5000µL |
| REG10K | Regal Pipette, 1–10mL |
| 503787 | Silicone grease |
| GER55 | Regal Pipetters (set of any 5) & stand |
| GER56 | Regal Pipetters (set of any 6) & stand |
| GER57 | Regal Pipetters (set of any 7) & stand |
| 504591 | Stand for Regal Pipetters (holds 8) |

Pipette Tips (Universal)

Standard Universal Tips

| Tip Volume | For Pipetter | Bulk | Part No. | Rack | Part No. |
|------------------|------------------------------------|-------------|----------|---------------------------|----------|
| 0.1 - 10 µL | REG2 REG10 REG20 | Bag of 1000 | 500191 | 960 (10 racks of 96) | 500192 |
| 5 - 200 µL | REG20 REG50 REG100 REG200 | Bag of 1000 | 500193 | 960 (10 racks of 96) | 500194 |
| 100-1000 µL | REG1K | Bag of 1000 | 500195 | 1000 (10 racks of 100) | 500196 |
| 500 - 5000 µL | REG5K | Bag of 250 | 500197 | 500 (10 racks of 50) | 500198 |
| 1000 - 10,000 µL | REG10K | Bag of 1000 | 504588 | 250 (10 racks of 25) | 504589 |

Universal Filter Tips (Sterile)

| Tip Volume | For Pipetter | Rack | Part No. |
|------------------|------------------------------------|------------------------|----------|
| 0.1 - 10 µL | REG2 REG10 REG20 | 960 (10 racks of 96) | 500199 |
| 10 - 200 µL | REG20 REG50 REG100 REG200 | 960 (10 racks of 96) | 500200 |
| 100-1000 µL | REG1K | 1000 (10 racks of 100) | 500201 |
| 1000 - 10,000 µL | REG10K | 250 (10 racks of 25) | 504590 |

Universal Gel Loader Tips (Flexible)

| Tip Volume | For Pipetter | Bulk | Part No. | Rack | Part No. |
|---------------------------------------|------------------------------------|-------------|-----------------|-------------|-----------------|
| 0.1 - 10 µL (Flat) 0.17 mm OD | REG2 REG10 REG20 | | | 200 | 500202 |
| 0.1 - 10 µL (Flat) 0.37 mm OD | REG2 REG10 REG20 | | | 200 | 500203 |
| 0.1 - 10 µL (Round) 0.57 mm OD | REG2 REG10 REG20 | | | 200 | 500204 |
| 0.5 - 200 µL (Round) 0.57 mm OD | REG20 REG50 REG100 REG200 | Bag of 1000 | 500205 | 200 | 500206 |
| 0.5 - 200 µL (Flat) 0.37 mm OD | REG20 REG50 REG100 REG200 | | | 200 | 500207 |

SPECIFICATIONS

Single Channel Pipettes

| Model | Volume Range (μL) | Increment (μL) | Nominal Volume (μL) | Tolerance % | Repeatability % |
|---------|-------------------|----------------|-----------------------|-----------------------|-------------------------|
| REG2 | 0.2 ~ 2 | 0.01 | 0.2 0.5 2 | ±12.0 ±5.0 ±2.0 | ≤6.00 ≤2.50 ≤0.70 |
| REG10 | 1 ~ 10 | 0.1 | 1 5 10 | ±3.0 ±1.5 ±1.0 | ≤1.50 ≤0.60 ≤0.40 |
| REG20 | 2 ~ 20 | 0.1 | 2 10 20 | ±3.0 ±1.0 ±1.0 | ≤1.50 ≤0.50 ≤0.30 |
| REG50 | 5 ~ 50 | 0.5 | 5 20 50 | ±2.0 ±1.2 ±1.0 | ≤1.50 ≤0.40 ≤0.20 |
| REG100 | 10 ~ 100 | 1 | 10 50 100 | ±2.0 ±0.8 ±0.8 | ≤0.50 ≤0.30 ≤0.15 |
| REG200 | 20 ~ 200 | 1 | 20 100 200 | ±2.0 ±0.8 ±0.8 | ≤0.50 ≤0.30 ≤0.15 |
| REG1000 | 100 ~ 1000 | 5 | 100 500 1000 | ±1.5 ±0.8 ±0.8 | ≤0.30 ≤0.30 ≤0.15 |
| REG5K | 1000 ~ 5000 | 50 | 1000 2000 5000 | ±1.0 ±0.7 ±0.7 | ≤0.50 ≤0.25 ≤0.15 |
| REG10K | 1000 ~ 10000 | 100 | 1 mL 5 mL 10 mL | ±3.0 ±0.7 ±0.7 | ≤0.30 ≤0.20 ≤0.15 |



WARRANTY

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within ten (10) days after receipt of shipment. Claims for lost shipments must be made within thirty (30) days of receipt of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim is settled. In some instances, photographic documentation may be required. Some items are time-sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.

Do not return any goods to us without obtaining prior approval and instructions from our Returns Department. Goods returned (unauthorized) by collect freight may be refused. Goods accepted for restocking will be exchanged or credited to your WPI account. Goods returned which were ordered by customers in error are subject to a 25% restocking charge. Equipment which was built as a special order cannot be returned.

Repairs

Contact our Customer Service Department for assistance in the repair of apparatus. Do not return goods until instructions have been received. Returned items must be securely packed to prevent further damage in transit. The Customer is responsible for paying shipping expenses, including adequate insurance on all items returned for repairs. Identification of the item(s) by model number, name, as well as complete description of the difficulties experienced should be written on the repair purchase order and on a tag attached to the item.

** Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*



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