

Product No.
8885-300502

SIZE
1 mL to 5 mL

OXFORD® Adjustable Pipette

USE

The Oxford® Adjustable Pipette is a general purpose, hand-held instrument used to dispense variable volumes of liquids. The instrument may be used to dispense a variety of liquids used in many clinical and nonclinical laboratories. The system consists of an adjustable volume pipette, a maintenance kit, an instruction guide, and specially designed precision molded, non-wettable, disposable plastic tips. Use of disposable tips eliminates pipette cleaning and reduces danger of cross contamination. The disposable tips are made of a plastic material which resists build up of minor surface film far better than glass.

PRINCIPLE OF OPERATION

The Oxford® Adjustable Pipette is designed to be held in the hand with the plunger knob operated with the thumb. The plunger stroke is divided into two parts. The longer, calibrated stroke ends at the **FIRST STOP**; the much shorter, secondary stroke ends at the **SECOND STOP** when the knob contacts the pipette handle.

The instrument is also equipped with a one-handed tip ejection feature. Contaminated tips are ejected by firmly depressing the ejector knob with the thumb. **CAUTION: To prevent injury or contamination, eject tips downward into a receptacle.**

SPECIFICATIONS

Accuracy and reproducibility, specified in the following table, are guaranteed only if the instrument is used in the "REVERSE" mode and if Oxford® Tips are used. All instruments are calibrated using deionized water at an ambient temperature of $22^\circ \pm 3^\circ\text{C}$.

Volume Range	Accuracy	Reproducibility (@ 1 Standard Deviation)
1000-2000 μL	$\pm 30.0 \mu\text{L}$	$\leq 6.00 \mu\text{L}$
2001-3000 μL	$\pm 45.0 \mu\text{L}$	$\leq 10.00 \mu\text{L}$
3001-5000 μL	$\pm 50.0 \mu\text{L}$	$\leq 16.00 \mu\text{L}$

RECOMMENDED OXFORD BRAND TIPS: 8885-081409, or 8885-091408 (fits 12x75mm test tube).

VOLUME ADJUSTMENT

Dispensing volume is adjusted with the aid of two scales. A linear scale is provided on the plunger (Fig. 1) with nine divisions for coarse adjustments. This scale is coupled with a vernier scale on the adjustment knob (Fig. 2) for fine adjustment in discrete increments of 0.25% of the full range. The volume setting is simply the sum of these two readings. For example, 3.0 on linear (coarse) scale plus .05 on adjustment knob (fine) scale yields 3.05 as the volume setting.

Adjustable Range	Adjustable Increments
1000-5000 μL	12.5 μL

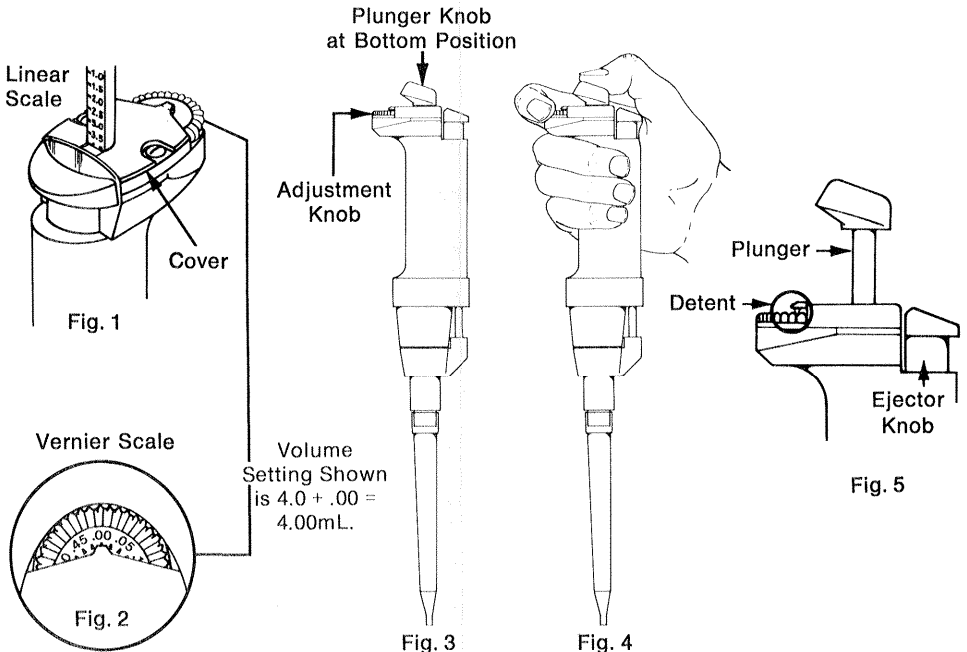
Volume adjustment is accomplished in two simple moves.

1. Depress the plunger knob to its lowest position: "Secondary Stop" (Fig. 3). This move will release the spring force, unlocking the adjustment knob.
2. Rotate the adjustment knob (Fig. 4) with finger or thumb. The adjustment knob will automatically disengage from detents in the cover (Fig. 5) as force is applied to the adjustment knob.

When finger or thumb is removed from the adjustment knob, it will once again engage the detents in the cover and be locked in place.

The recommended method for setting the desired dispensing volume is described as follows:

1. Depress the plunger knob to its lowest position (Ref. Fig. 3).
2. Rotate the adjustment knob until the vernier scale reads ".00" (Ref. Fig. 2).



3. Release the plunger knob and read the volume setting on the linear scale located on the plunger (Ref. Fig. 1). The volume setting is the number, in milliliters, that aligns with the plane of the handle cover.
4. From this point, the dispensing volume can be **increased** by rotating the adjustment knob counter-clockwise or can be **decreased** by rotating the adjustment knob clockwise. Note that one complete revolution of the adjustment knob, from “.00” to “.00” will translate the volume setting on the linear scale by 0.5 mL.
5. As the adjustment knob is rotated counter-clockwise from “.00”, the numbers indicated on the circular, vernier scale are additive to the number on the linear scale that registered when the vernier scale was on “.00”.

NOTE: Do not adjust instrument below 1mL or above 5mL.

OPERATING INSTRUCTIONS

Before using the instrument, operate the plunger several times to help redistribute the lubricant, which will insure smoothest possible action. Apply a clean disposable tip to the instrument. **Note:** Oxford brand disposable tips, Product No's. 8885-081409 and 8885-091408 will both fit and function on the instrument; however, for optimum accuracy and precision, use Product No. 8885-081409 tips.

“REVERSE” MODE

(This is the recommended mode of operation for optimum performance.)

1. **Before** entering the tip into a sample solution, depress the plunger knob to the lowest position. This position is called the secondary stop (Ref. Fig. 6).
2. Immerse the tip approximately 3 mm into the sample solution. Allow the plunger to return **slowly** to the release position (Ref. Fig. 7).
3. Allow the tip to remain immersed 1-2 seconds before withdrawing it from the sample solution. **Do not** wipe the tip.
4. Dispense the fluid into the receiving vessel by smoothly depressing the plunger knob to the primary stop position. You may place the tip against the bottom of the receiving vessel (Ref. Fig. 8) or up to 3 mm into the fluid in the receiving vessel (Ref. Fig. 9).
5. With the knob held in the primary stop position, withdraw the tip directly away from the dispensed fluid. Do not touch the tip to the walls of the vessel or into the fluid again. The correct amount of fluid has now been dispensed.
6. Allow the plunger to return slowly to the release position. The small amount of fluid left in the tip may be discarded with the tip.
7. Remove the used tip by depressing the ejector knob with the thumb. To prevent possible injury or contamination, eject tips downward into a receptacle.

“FORWARD” MODE

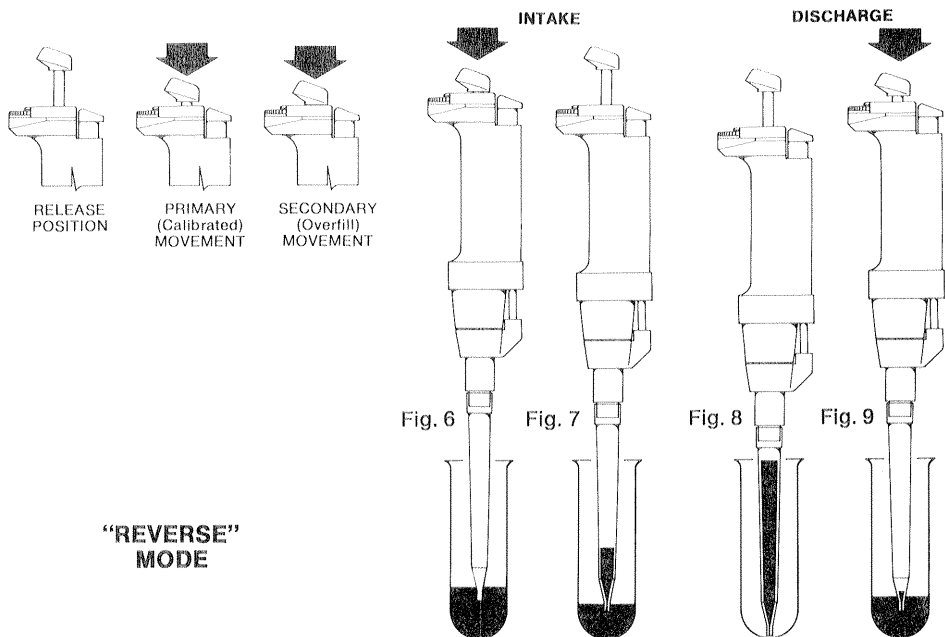
(This mode of operation may be used, however, optimum performance is achieved with the “Reverse” mode.)

1. **Before** entering the tip into the sample solution, depress the plunger knob to the primary stop position (Ref. Fig. 10).
2. Immerse the tip approximately 3 mm into the sample solution. Allow the plunger knob to return slowly to the release position (Ref. Fig. 11).
3. Allow the tip to remain immersed 1-2 seconds before withdrawing it from the sample solution. **Do not** wipe the tip.
4. Dispense fluid into the receiving vessel by placing the tip against the side wall of the receiving vessel (Ref. Fig. 12). Depress the plunger knob to the primary stop position, pause, and then depress the plunger knob to the secondary stop position (Ref. Fig. 13). It is necessary to pause several seconds before moving to the secondary stop when dispensing serum or other viscous fluids. **NOTE:** Viscous fluids are more accurately pipetted using the “Reverse” Mode of operation.
5. With the plunger knob in its lowest position, slowly withdraw the tip while sliding it against the wall of receiving vessel.
6. Allow the plunger to return slowly to the release position.
7. Remove the used tip by depressing the ejector knob with the thumb. To prevent possible injury or contamination, eject tips downward into a receptacle.

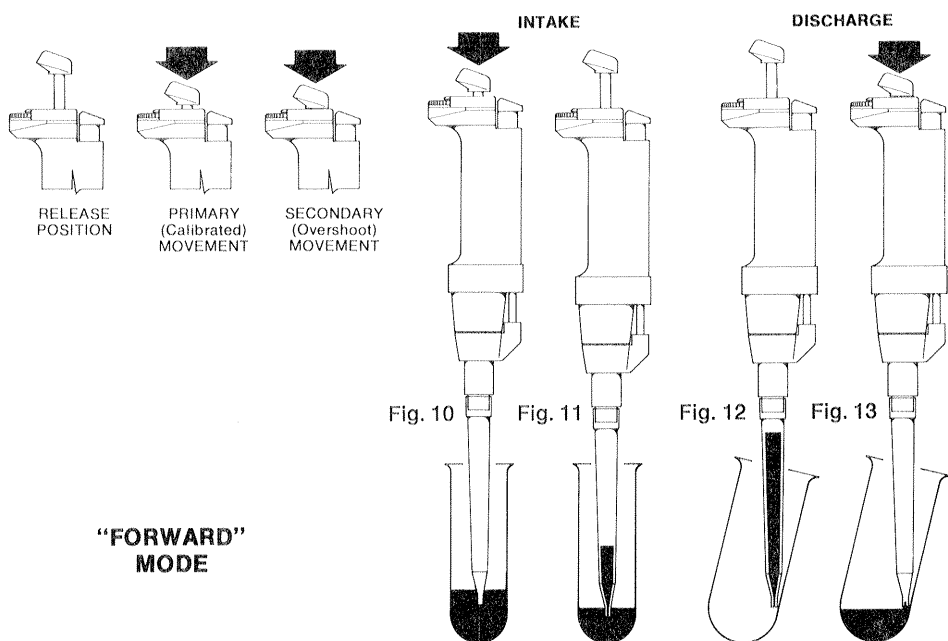
AIDS TO REPRODUCIBILITY AND ACCURACY

Listed below are some techniques found to improve sampling precision. **READ THIS SECTION CAREFULLY.**

1. Try to effect the same speed of intake and delivery for all samples. Smooth depression and release of the plunger knob will give the most consistent results. Never allow the plunger to “snap” back. Consistency of techniques is a key to precision.
2. Always depress the plunger knob to the proper stop before insertion of the tip into the solution. Depression of the plunger knob after insertion may cause the formation of an air bubble in the tip and result in a filling error.
3. Try to insert the tip to approximately the same depth into the sample each time, never going deeper than necessary. Hold the instrument as near vertical as possible (10° maximum from vertical).
4. When sampling hot or cold material, the tip temperature should be equalized to that of the solution.
5. Temperature equalization of the instrument, tips and sample will aid accuracy.



**“REVERSE”
MODE**



**“FORWARD”
MODE**

CHEMICAL COMPATIBILITY

Fuming corrosives, particularly Aqua Regia, will attack the metal components of the pipette. For chemical compatibility of the piston seals, see the following section.

SERVICE AND MAINTENANCE INFORMATION

A maintenance kit is included with each new instrument. For replacement kits, order 8885-718802 from your distributor.

The Maintenance Kit contains: (2) Ethylene-Propylene piston seals (non-color-coded); (2) Viton piston seals (red dot); (1) vial of lubrication and (1) cleaning wire.

The Ethylene-Propylene piston seal may be used with most chemicals, but its use is not recommended with mineral oils, solvents and some aromatic hydrocarbons. The Adjustable Pipette comes equipped with an Ethylene-Propylene seal already in place.

The Viton piston seal may be used with most chemicals, but its use is not recommended with acetic acids, ketones, aldehydes or amines.

It is recommended that the instrument be serviced whenever the plunger movement feels sluggish. This should include cleaning the cylinder wall, the piston seal and the piston of all deposits and old lubricant. A cleaning wire included in the Maintenance Kit is used to remove any accumulated deposits which may have collected in the narrow bore of the steel tube which joins the upper barrel and the barrel tip. After thorough cleaning, relubricate the piston seal with a very small amount of the lubricant, applying it only to the outer surfaces of the seal.

NEVER APPLY LUBRICANT UNDER THE SEAL—THIS INCREASES THE SIZE OF THE SEAL AND CAUSES ERRATIC PLUNGER ACTION.

If the fluid is accidentally drawn inside the instrument, the instrument should be disassembled. The piston, piston seal and the small-bore tube joining the piston area to the tip outlet should be cleaned and dried, preferably by blowing out with air.

Disassembly of the instrument is accomplished as follows (Ref. Fig. 14):

1. Separate the barrel and ejector sleeve from the handle by turning the barrel as shown in Fig. 14. (NOTE: DO NOT UNSCREW HEX SCREWS AT TOP OF HANDLE OR ATTEMPT TO DISASSEMBLE ANY INTERNAL HANDLE PARTS. THIS WILL DESTROY FACTORY CALIBRATION AND VOID THE WARRANTY.)

CAUTION—WHEN THE LOWER BARREL PORTION IS BEING REMOVED FROM THE BODY, CARE MUST BE TAKEN TO AVOID MISALIGNMENT BETWEEN THE TWO COMPONENTS. EXCESSIVE MISALIGNMENT MAY CAUSE THE STAINLESS STEEL PISTON TO FRACTURE THE GLASS CYLINDER.

2. Depress the plunger knob to the bottom position and turn the adjustment knob clockwise until the linear scale reads approximately 1.0 mL when the plunger is released. The piston should now be exposed so that the piston seal can be inspected.

REPLACEMENT OF PISTON SEAL: A piston seal should last for many months in a properly maintained instrument. However, when deterioration is noted or performance indicates leakage, the following procedure is recommended for the replacement of the seal:

First, remove the old seal. Avoid the use of sharp objects which could scratch the sealing surfaces (**CAUTION: TO AVOID ENTRAPMENT OF LUBRICANT UNDER THE SEAL, LUBRICATE THE NEW SEAL ONLY AFTER IT IS FULLY INSTALLED**). Install the new seal on the piston using the cleaning wire included in the maintenance kit as illustrated in Fig. 15C. Before removing the wire, circle the piston several times to insure proper alignment of the sealing surfaces of the seal. Figure 15A illustrates the seal in proper alignment. Note that the sealing surfaces of the seal are symmetrical from side to side. Figure 15B illustrates an **improperly** installed seal with non-symmetrical sealing surfaces. Reassembly of the instrument with this type of seal misalignment will produce a sluggish plunger movement and could fracture the glass cylinder component. If this misalignment or any twisting is noted, the seal should be removed and again installed following the preceding instructions. Reassemble the barrel to the handle by carefully inserting the piston into the glass cylinder, guiding the ejector shaft into the small hole in the ejector sleeve, then turning the barrel into the handle until it is firmly bottomed.

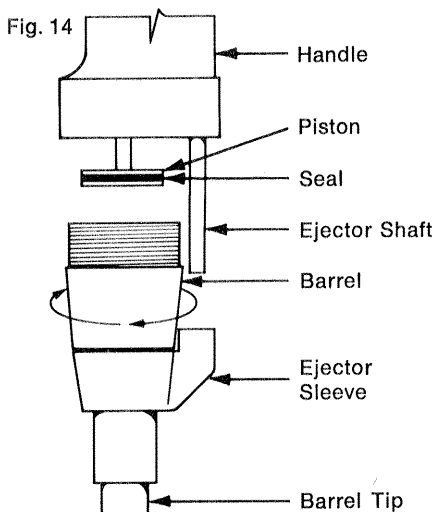
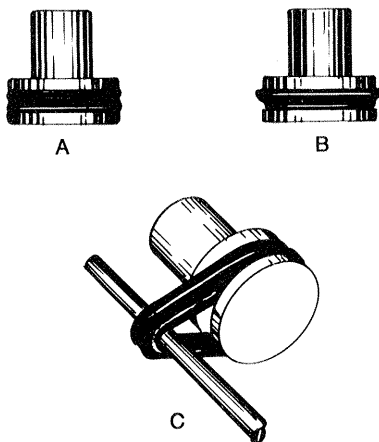


Fig. 15



WARRANTY INFORMATION

All Oxford® Pipettes bear a one-year guarantee against defects in material and workmanship. This guarantee becomes effective when the ultimate user receives the product. If within this one-year period the instrument is found to have such defects, repair or replacement will be made without charge by Oxford Labware (transportation to the point of repair to be assumed by the purchaser).

Should damage to the instrument occur due to improper use or improper maintenance (failure to provide reasonable and necessary maintenance), this guarantee written or implied is void.

Instrument Out-of-Warranty— Return the instrument to Oxford Labware. For a reduced price, the customer requesting replacement will receive a new instrument with a new one-year guarantee.

In-Warranty and Out-of-Warranty Returns (U.S. and Canada):

Instruments returned without prior authorization will not be accepted. For return authorization contact Oxford Labware's Product Assurance Department at: (800) 325-8668.

International Customers— All in-warranty claims as well as out-of-warranty repairs and replacements must be handled by the dealer from whom the instrument was purchased.

To Order: Contact your local authorized distributor of Oxford products.

MANUFACTURED BY

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