



BENCHMATE®-SV™ Micropipetting System

USE

The Oxford® BENCHMATE®-SV™ Micropipetting instrument is a general purpose, hand-held instrument used to dispense specific volumes of various liquids used in clinical and nonclinical laboratories. The System consists of a pipetting instrument, a maintenance kit, and detailed operating instructions. The System uses specially designed, precision molded, non-wettable, disposable plastic tips, thus eliminating pipette cleaning, and reducing danger of cross-contamination and error from variations in technique.

INSTALLATION PROCEDURES

The instrument is ready to operate as received and requires no special installation procedures.

PRINCIPLE OF OPERATION

The Oxford® BENCHMATE®-SV™ instrument is designed to operate in the FORWARD mode. The instrument has a plunger movement which replaces air in a plastic tip with a set amount of fluid. The fluid containment tip consists of a plastic material which resists buildup of inner surface film far better than glass. The user should first become acquainted with the feel of the instrument's compound movement. Normally, the body of the instrument is held in the hand and the plunger knob is operated with the thumb. As the knob is depressed, a stop is encountered; the first depression of the knob is the primary or calibrated movement. Now, with additional pressure, the plunger knob may be depressed to its lowest position, directly against the upper body. This travel beyond the calibrated range is the secondary or overshoot movement.

The instrument is also equipped with a one-handed tip ejection feature. Contaminated tips are ejected by firmly depressing the tip ejector with the thumb.

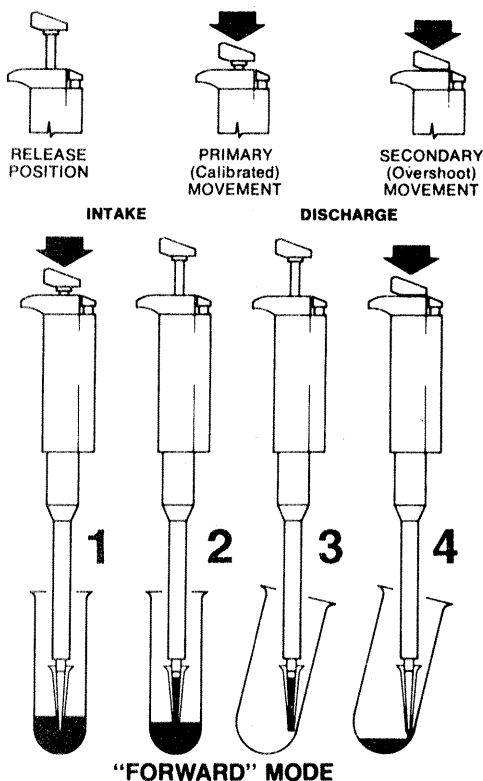
SPECIFICATION

Accuracy and reproducibility, specified in the following table, are guaranteed only if used with Oxford® Ultra Micro, Universal Small & Large tips. All instruments are calibrated to deliver deionized water at an ambient temperature of 19-23°C when used with Oxford tips.

Model	Accuracy	Precision (Standard Deviation)	Model	Accuracy	Precision (Standard Deviation)
1 µl	±0.12µl	≤0.08 µl	50 µl	±1.0%	≤0.15 µl
2 µl	±0.12µl	≤0.08 µl	100 µl	±0.7%	≤0.25 µl
3 µl	±0.12µl	≤0.06 µl	200 µl	±0.7%	≤0.50 µl
4 µl	±0.12µl	≤0.06 µl	250 µl	±1.0%	≤0.75 µl
5 µl	±0.12µl	≤0.06 µl	300 µl	±1.0%	≤0.90 µl
10 µl	±2.0%	≤0.06 µl	400 µl	±0.8%	≤1.20 µl
20 µl	±1.0%	≤0.08 µl	500 µl	±0.8%	≤1.00 µl
25 µl	±1.0%	≤0.10 µl	1000 µl	±0.6%	≤2.50 µl
30 µl	±1.0%	≤0.12 µl			

OPERATING INSTRUCTIONS

1. Apply a clean tip to the instrument.
2. Before inserting the tip into the sample solution, depress the plunger knob to the first stop. This position is called the "primary stop."
3. Now immerse the tip approximately 2 mm into the sample solution (Fig. 1).
4. Smoothly return the plunger knob to the release position allowing sample to enter tip (Fig. 2). Do not allow the knob to "snap" back to release position.
5. Withdraw the tip from the sample solution. Do not wipe the tip.
6. Place tip against the side wall of receiving vessel (Fig. 3).
7. Smoothly depress the knob to the first stop (primary stop). Pause; then depress the knob to the second and lowest position. This position is called the "secondary stop" (Fig. 4).
Note: When dispensing serum and other viscous fluids, it is necessary to pause about two seconds before moving to the secondary stop.
8. With the knob still held in its lowest position, slowly withdraw the tip while sliding it against the wall of the receiving vessel.
9. Return the knob to the release position. Do not allow the knob to "snap" back.
10. Remove the disposable tip by firmly depressing the tip ejector knob.



FIGURES 1-4

AIDS TO REPRODUCIBILITY

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.
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 immerse the tip approximately the same depth into the sample each time, never going deeper than 3mm. Hold the instrument as vertically as possible (10° maximum from vertical).
4. When sampling hot or cold material, the tip's temperature should be equalized to that of the solution to prevent contraction or expansion of sample.

AID TO ACCURACY

The plastic tip filler inserted in the end of the instrument (sizes 30 - 100 μl to 250 - 1000 μl) must be properly installed for use with the Universal Small & Large pipette tips.

AIDS TO TIP EJECTION

1. Tips that are forced onto the end of the instrument harder than necessary to seal properly will be more difficult to eject.
2. To avoid possible injuries, always eject used tips downward into a suitable waste receptacle.

SERVICE AND MAINTENANCE INFORMATION

It is recommended that the following servicing procedure be performed at regular intervals. Heavy usage or usage with corrosive fluids will require shorter intervals between servicing.

DISASSEMBLY (Reference Fig. 9)

1. Depress the tip ejector plunger and unscrew the plastic cap.
2. Slip the tip ejector sleeve off the end of the instrument.
3. Unscrew the barrel assembly from the handle and carefully pull directly away from the handle. Take care not to bend fragile piston rods on instrument sizes 1 μl through 50 μl .
4. Remove the seal compression spring and seal compressor; or, on some models, the lower seal retainer. It may be necessary to tap the open end of the barrel on a table to dislodge the compressor.
5. Piston Rod Seal Removal: (Use the seal removal rod found in the maintenance kit for this operation.)

Instrument Sizes**Processing**

1 ml
200 µl

Insert the grooved end of the seal removal rod into the large end of the barrel and pull the seal out with the edge of the groove on the rod.

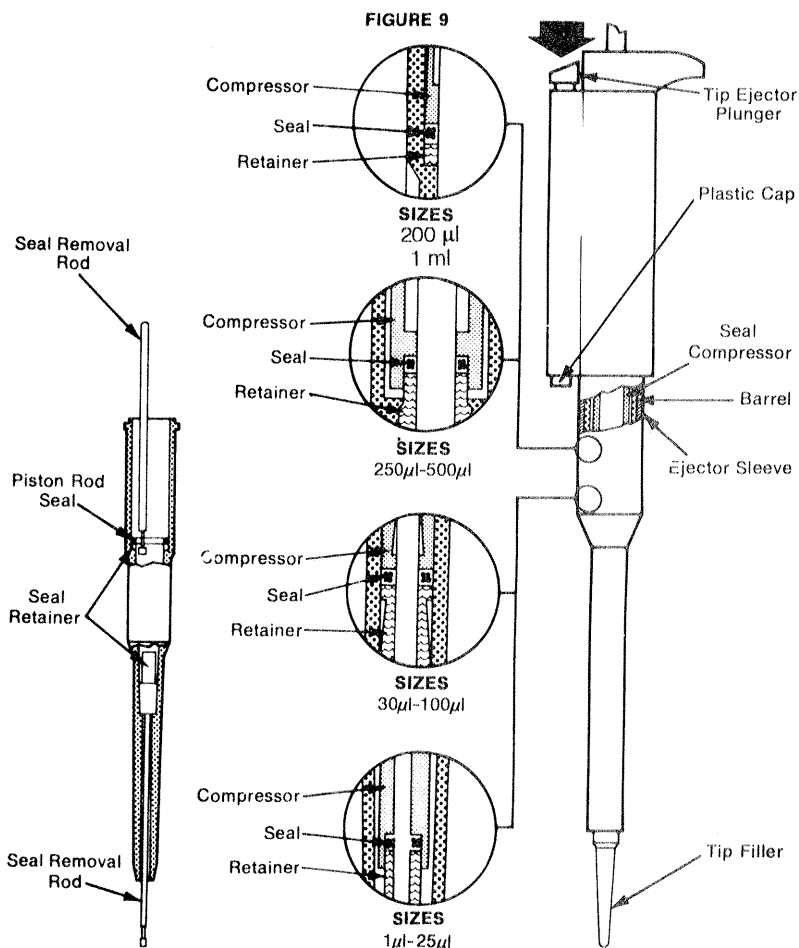
250 µl - 500 µl
1 µl - 25 µl

The seal is contained in the end of the seal compressor.

30 µl - 100 µl

Pull the tip filler out of the tip end of the barrel. Insert the seal removal rod into the tip-end of the barrel and push out the seal and seal retainer. Note the orientation of the seal retainer on 100 µl devices for proper reassembly.

6. Pull the tip filler out of the tip end of the barrel on instrument sizes 30 µl through 1 ml.



If fluid has been accidentally drawn inside the instrument, all of the contaminated surfaces should be cleaned with alcohol and then thoroughly dried, preferably by blowing air through the barrel. Insert the cleaning wire (provided in the maintenance kit) through the small orifice in the end of the barrel tip on instrument sizes 1 µl through 25 µl. This should remove stubborn deposits.

Clean the piston rod seal and relubricate by rubbing a small amount of lubricant (supplied in the maintenance kit) into the seal. Wipe off excess lubricant with a tissue.

Smear a thin film of lubricant on the end section of the piston rod protruding from the handle. Reassemble the instrument by reversing the preceding disassembly procedure.

WARRANTY POLICY

Your new Oxford® BENCHMATE®-SV™ is guaranteed for one (1) year against defects in material and workmanship. This warranty becomes effective when the ultimate user receives the product, and will be based on proof of purchase or date of invoice. Any defect in the pipette will be replaced or repaired (at our option) and defective parts will be replaced without cost within the one (1) year period, provided the Oxford® BENCHMATE®-SV™ has not been abused, altered or operated contrary to instructions.

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

REPAIR POLICY

If any operational difficulties occur, contact Oxford Labware's Technical Service Department at (800) 325-8668 for instructions.

International customer returns or claims, in warranty or out of warranty, must be handled by the dealers from whom the instrument was purchased.

ORDERING INFORMATION

Oxford® BENCHMATE®-SV™
Instruments

CATALOG NO.	CALIBRATED VOLUME
8885-505407	1 µl
8885-505415	2 µl
8885-505423	3 µl
8885-505431	4 µl
8885-505449	5 µl
8885-505456	10 µl
8885-505464	20 µl
8885-505472	25 µl
8885-505480	30 µl

CATALOG NO.	CALIBRATED VOLUME
8885-505498	50 µl
8885-505506	100 µl
8885-505514	200 µl
8885-505522	250 µl
8885-505530	300 µl
8885-505548	400 µl
8885-505555	500 µl
8885-505563	1000 µl

Replacement Maintenance Kits.
for BENCHMATE®-SV™ Instruments

CATALOG NO.	INSTRUMENTS
8885-728801	1-5, 10 µl
8885-738800	20, 25 µl
8885-745508	30, 50 µl
8885-755507	100 µl
8885-765506	200 µl
8885-778806	250, 300 µl
8885-788805	400, 500 µl
8885-795503	1000 µl

RECOMMENDED OXFORD PIPETTE TIPS

Catalog No. 8885-	Volumes	Tip Color	Packaging Description
119464	.5-10 µl	Natural	1000 bulk
119456	.5-10 µl	Natural	1000 in 10 hinged racks of 100
119126	1-200 µl	Yellow	1000 bulk
119134	1-200 µl	Yellow	+960 in 10 hinged racks of 96
119506	1-200 µl	Yellow	+960 in 10 racked inserts of 96
119266	1-200 µl	Yellow	+960 Sterile in 10 hinged racks of 96
119282	1-200 µl	Natural	+960 Pyrogen Free/Trace Metal Certified in 10 hinged racks of 96
118037	1-200 µl	Natural	+960 Calibrated in 10 hinged racks of 96
118706	1-200 µl	Natural	1000 Calibrated bulk
119530	1-200 µl	Yellow	+960 Large Orifice in 10 hinged racks of 96
119522	1-200 µl	Yellow	1000 Large Orifice bulk
119142	201-1000 µl	Blue	1000 bulk
119159	201-1000 µl	Blue	1000 in 10 hinged racks of 100
119274	201-1000 µl	Blue	1000 Sterile in 10 hinged racks of 100
119290	201-1000 µl	Natural	1000 Pyrogen Free/Trace Metal Certified in 10 hinged racks of 100

+8 x 12 tip configuration for multi-channel pipetting

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

MANUFACTURED BY



DIVISION OF SHERWOOD MEDICAL

ST LOUIS, MO 63103 U.S.A.

335-0395

024344010

Printed in U.S.A.