

OXFORD[®] Autoclavable BenchMate[®]

Continuously Adjustable Pipette
Establishes a new standard in pipetting

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FEATURES

- **Totally autoclavable** (121°C, 20 minutes).
- **Wide volume ranges** from 0.1 µl to 10ml.
- Pre-set volume is confirmed by the convenient digital volume indicator.
- Advanced PTFE (Polytetrafluoroethylene) is used for piston sealing which enables the pipette to withstand long periods of operation while maintaining high accuracy and reproducibility.
- **Ceramic plunger** in 200µl, 1000µl, 5000µl and 10ml pipettes.
- **Easy and convenient single hand locking lever.**
- **Filtered barrels** for the 1000µl, 5000µl and 10ml pipettes ensure aerosol free operation.

SPECIFICATIONS

Cat. No.	Volume Range tested	Adjustable Increments	Accuracy (µl)	Reproducibility (CV)
8885 -500895	0.2 - 2.0µl	0.001 µl	±0.024 - ±0.06 µl	≤ 9.0 - ≤ 2.0
8885 -500903	1 - 10µl	0.01 µl	± 0.1 - ±0.1 µl	≤ 5.0 - ≤ 0.5
8885 -500911	2 - 20µl	0.1 µl	±0.16 - ±0.4 µl	≤ 3.0 - ≤ 0.5
8885 -500929	10 - 100µl	0.1 µl	± 0.5 - ±1.0 µl	≤ 1.0 - ≤ 0.4
8885 -500937	20 - 200µl	1.0 µl	± 0.6 - ±2.0 µl	≤ 1.0 - ≤ 0.3
8885 -500945	100 - 1000µl	1.0 µl	±2.0 - ±8.0 µl	≤ 0.5 - ≤ 0.3
8885 -500952	1000 - 5000µl	10.0 µl	±10.0 - ±50.0 µl	≤ 0.5 - ≤ 0.3
8885 -500960	1 - 10ml	0.05 ml	±30.0 - ±50.0 µl	≤ 0.5 - ≤ 0.2

The pipettes for 1000µl, 5000µl and 10ml have a filter in each barrel.

VOLUME ADJUSTMENT (Fig. 1)

To select the desired volume, loosen the lock lever and turn the thumb knob counter-clockwise which will increase the volume. To reduce the volume, turn the thumb knob clockwise. Set the desired volume on the digital display to correspond to the red arrow at the bottom of the window frame. Since the selected volume can be fixed by turning the lock lever clockwise, it can be confirmed on the digital display as in the following examples:

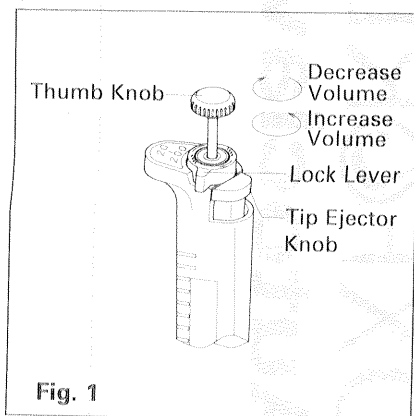
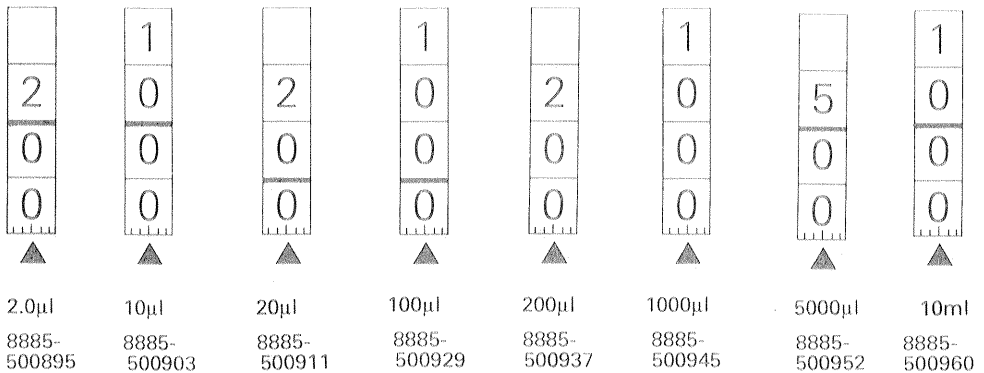


Fig. 1



OPERATING INSTRUCTIONS (Fig. 2)

※ **WARNING** - Do not adjust above or below the calibration range. This may severely damage the pipette. Damage of this nature will void this warranty.

1. Attach a clean tip firmly to the pipette.
2. Before putting it into the sample solution, depress the thumb knob to the "First Stop".
3. Immerse the tip approximately 2 -3mm into the sample solution. (Step 1)
4. Gently return the thumb knob to the release position filling the sample in the tip. (Step 2)
Note: Do not let the knob snap back to the release position.
5. Withdraw the tip from the sample solution gently so that no drops remain attached on the outside of the tip.
6. Place tip against the side wall of receiving vessel. (Step 3)
7. Smoothly depress the thumb knob to the first stop (Step 4), pause, then depress the knob to the second stop. (Step 5)
Note: When dispensing serum and other viscous fluids, it is necessary to pause about two seconds before moving to the second stop.
8. With the knob still held in its lowest position, slowly withdraw the tip while sliding it up against the wall of the vessel.
9. Return the knob to the release position. Do not let the knob snap back.
10. Remove the disposable tip by firmly depressing the tip ejector knob. (Step 6)

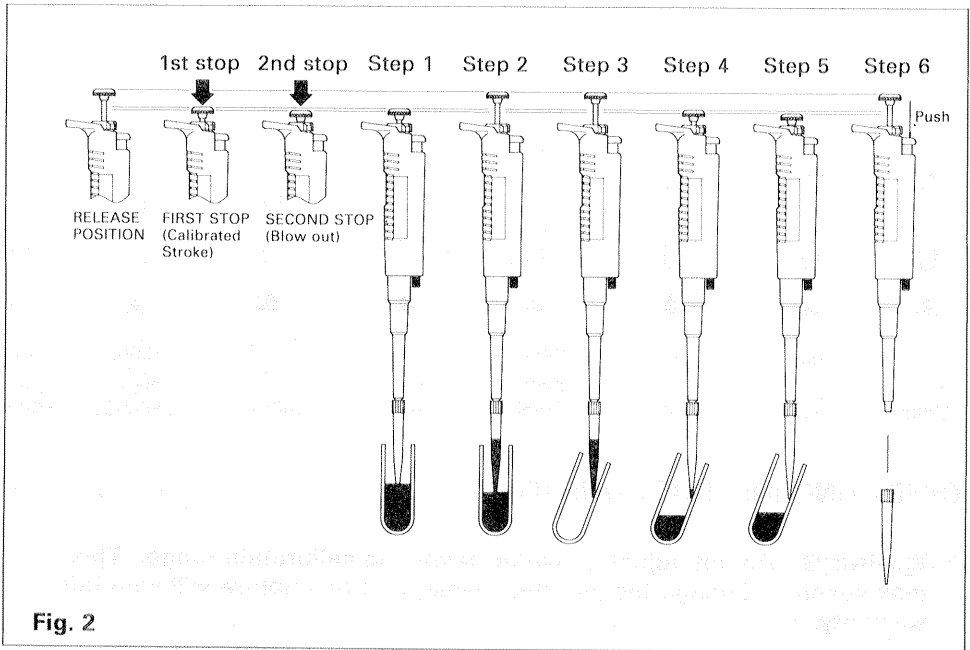


Fig. 2

SUGGESTIONS TO ENHANCE REPRODUCIBILITY AND ACCURACY

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

1. Try to effect the same speed for both the intake and delivery of all samples. Smooth depression and release of the thumb knob will give the most consistent results.
Never allow the plunger to "snap" back.
Consistency of technique is a key to precision.
2. Always depress the thumb knob to the proper stop before insertion of the tip into the solution. Depression of the thumb knob after insertion may cause the formation of air bubbles in the tip and result in a filling error.
3. Try to insert the tip to approximately the same depth in 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 solutions, the temperature of the tip should be equalized to that of the solution to prevent contraction or expansion of the sample.

STERILIZATION (Autoclaving)

The new BenchMate[®] is entirely autoclavable at 121 °C for 20 minutes. Before autoclaving, loosen the lock lever and set to maximum volume. This enables steam to penetrate into the pipette during autoclaving.

Note: Be sure to remove the filters from the 1000µl, 5000µl and 10ml pipettes before autoclaving.

After autoclaving has been completed, the pipette has to be dried and completely cooled. It is recommended that the screw bolt be removed, pulled off the tip ejector shaft and then dried and cooled.

If the instrument is used while it is still warm, the plastic parts may be damaged.

RECOMMENDED OXFORD BRAND PIPETTE TIPS

Catalog No.8885-	Volumes	Tip Color	Packaging Description
117492	0.1 - 10µl	Natural	1000 bulk - low retention
117468	0.1 - 10µl	Natural	+960 in 10 racks of 96 - low retention
119464	0.5 - 10 µl	Natural	1000 bulk
119456	0.5 - 10 µl	Natural	+960 in 10 racks of 96
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
091408	1 - 5ml	Natural	250 bulk
081508	1 - 10ml	Blue	250 bulk

+ 8 x 12 Tip configuration for multi-channel pipetting.

SERVICE AND MAINTENANCE INFORMATION

It is recommended that the following servicing procedures be performed at regular intervals. Frequent usage or usage with corrosive fluids will require more frequent servicing.

Disassembly (Fig. 3 & 4)

1. Turn the screw securing the tip ejector shaft counter-clockwise to remove. Gently pull the tip ejector shaft off the end of the instrument. Do not twist the tip ejector shaft during this procedure.
2. Unscrew the barrel and remove from the handle by turning counter-clockwise carefully. The plunger assembly and spring can also be removed from the pipette at this point. Refer to Fig. 5 for the internal configurations of each pipettes. Take special care not to bend the piston plunger, especially in the smaller volume pipette.
3. Replace the used barrel assembly with a new one. O-Ring and Seal-Ring are set inside the Barrel.
4. Reassemble the unit by reversing the above procedures. Refer to Fig. 5 when reassembling to ensure that all parts are placed in the correct position.
5. To reassemble the tip ejector shaft, gently push on it so that the shaft gears or meshes with the handle connection. Then turn the screw clockwise to secure.
6. When the plunger action is felt to be rough or not as smooth as before servicing, repeat the previous procedure mentioned in Fig. 4 and 5, carefully confirming that each part is assembled in the correct position.

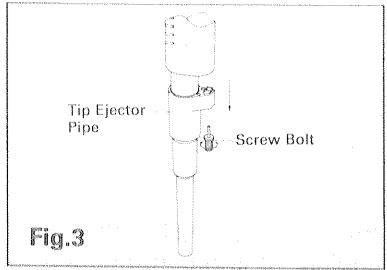


Fig.3

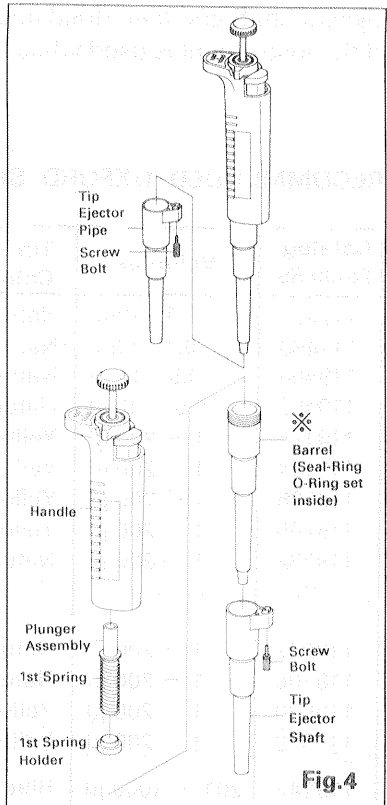


Fig.4

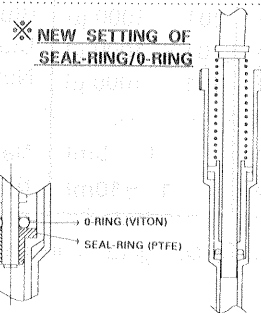


Fig.4'

ADVANTAGES

1. Better Air-Tightness
2. Better chemical vapor resistance
3. Simple/Easy replacement for end user convenience one component (Barrel, Seal-Ring, O-Ring)

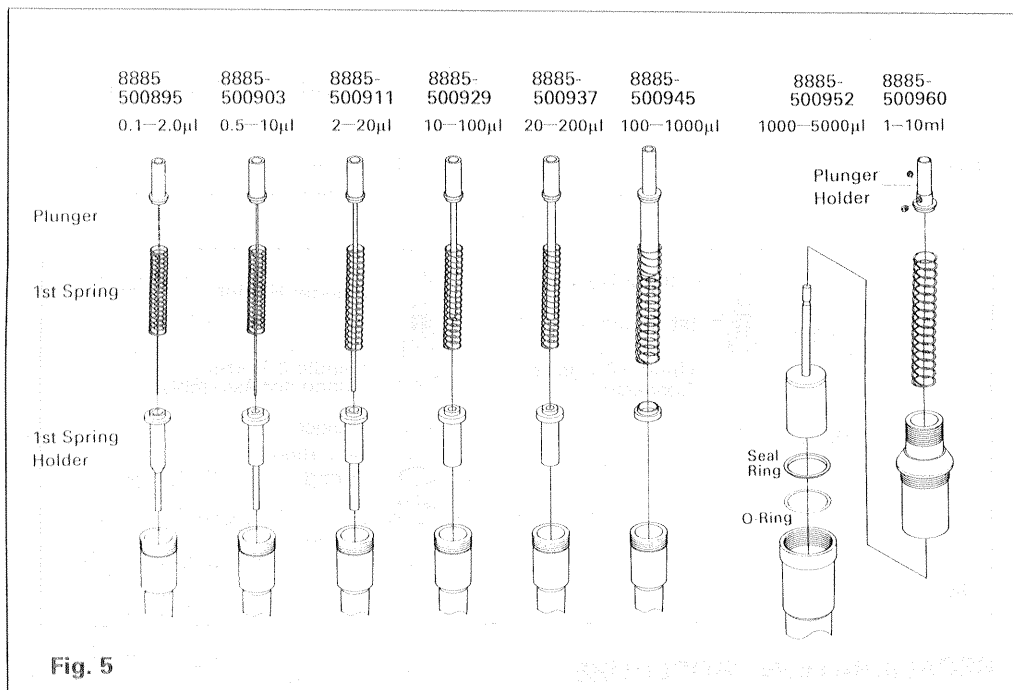


Fig. 5

SPECIAL INSTRUCTIONS FOR THE 5000 μ l and 10ml PIPETTE (8885- 500952/500960)

1. To disconnect the tip ejector shaft, remove the three (3) stainless steel screws by turning counter-clockwise. Gently pull the tip ejector shaft off the end of the pipette. Do not twist the tip ejector shaft during this procedure. (Fig. 6)
2. Remove the plunger and barrel assembly from the pipette handle by turning it counter-clockwise.
3. Unscrew the barrel from the plunger and barrel assembly, the seal ring and O-ring may remain inside of barrel. So, remove both. (Fig. 7)
4. Remove the plunger holder from the plunger by loosening the two screws on the plunger holder. At first, the spring and the plunger assembly will come out from the plunger and barrel assembly. (Fig. 5)
5. Reassemble in accordance with the following procedure. Insert the Handle and Barrel Connector Assembly into the

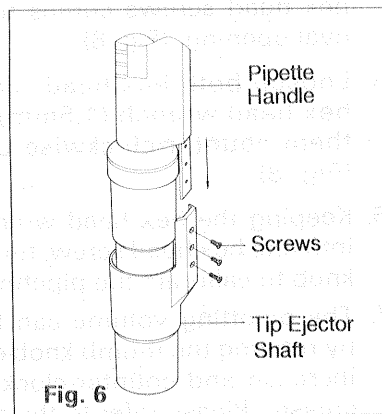


Fig. 6

handle of the pipette and turn clockwise to secure. Gently push on the tip ejector shaft so that the connecting arm engages with the bottom protruding portion of the tip ejector knob. Secure with the three stainless steel screws.

NOTE: Take care not to bend or damage the seal ring. If it is bent or damaged, sample leakage will result. Care should also be taken when handling the plunger as damage could again result in sample leakage.

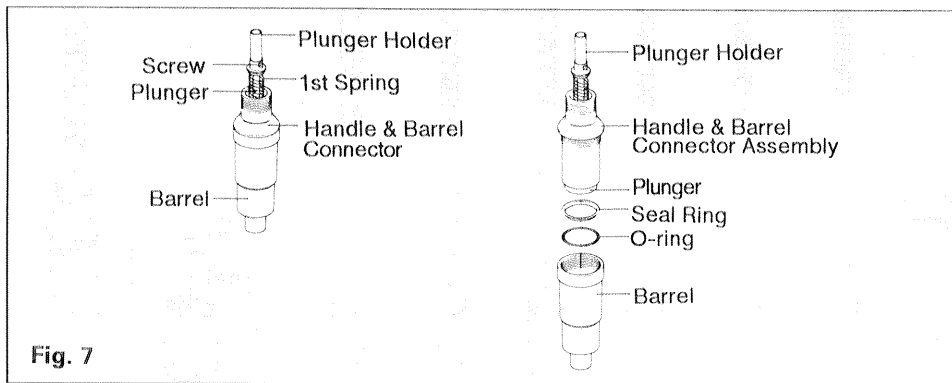


Fig. 7

RECALIBRATION PROCEDURE

1. Loosen the lock lever.
2. Depress the tip ejector knob fully. (Fig. 8)
3. Loosen the lock lever by turning it counter-clockwise and stop when the oval opening under the lever faces over the tip ejector knob. (Fig. 8)
4. Rotate the thumb knob until one of two hex head screws comes to the top of oval opening. (Fig. 8)
5. Loosen both hex head screws with a hex head wrench (1.5mm) by turning them counter-clockwise one by one. (Fig. 8)
6. Keeping the hex head wrench inserted into one hex head screw, turn the thumb knob to calibrate the pipette. (Fig. 9)
7. The pipetting volume can be adjusted by rotating the thumb knob clockwise to increase and counter-clockwise to decrease. Please refer to the table for approximate volume adjustments.

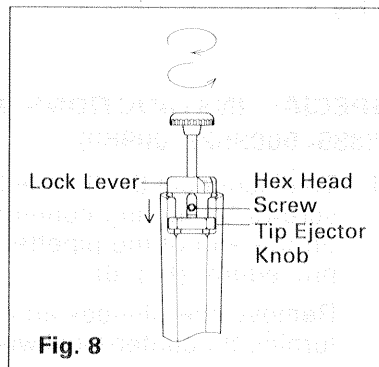


Fig. 8

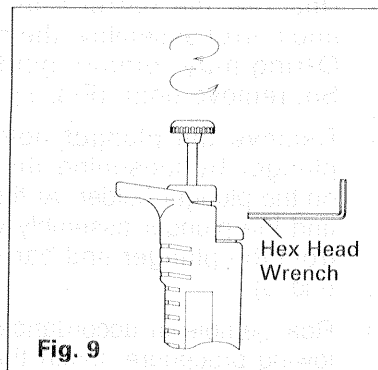


Fig. 9

Degree of Rotation	8885-500895 0.1μl—2.0μl	8885-500903 0.5μl—10μl	8885-500911 2μl—20μl	8885-500929 10μl—100μl	8885-500937 20μl—200μl	8885-500945 100μl—1000μl	8885-500952 1000μl—5000μl	8885-500960 1 - 10ml
360°	0.06 μl	0.3 μl	0.65μl	3.2 μl	6.5 μl	32 μl	161.5μl	400μl
720°	0.13 μl	0.6 μl	1.3 μl	6.4 μl	13 μl	64 μl	323 μl	800μl

- Tighten both hex head screws after adjusting the thumb knob and measure the accuracy of the pipette.
- Repeat the above procedures until the pipette is calibrated within the specified accuracy. An accuracy test should be made at the specified minimum and maximum volume of each pipette.

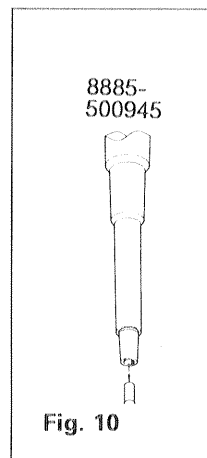
FILTER REPLACEMENT (Fig.10~12)

(For the 1000μl, 5000μl and 10ml pipettes)

1000μl pipette (Fig. 10)

- Pull out the used filter holder by holding the holder with tweezers.
- Insert the new filter holder into the hole in the barrel.

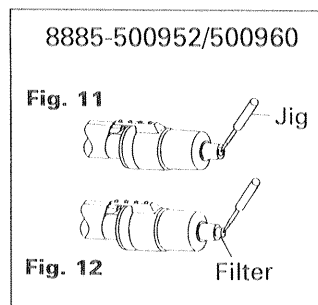
Note: To insert the filter holder smoothly, the ribs both sides of the filter holder should be fitted into the grooves in the barrel and then pushed in, confirming a clicking sound which will indicate housing.



5000μl and 10ml pipettes (Fig. 11 & 12)

- Insert the "Filter removing jig" into the filter (Fig. 11)
- Use the jig to pull out the filter (Fig.12)
- Insert a new filter into the hole in the barrel cylinder end.

NOTE: The point of the "filter removing jig" is sharp, treat it carefully.



PIPETTING STATIONS

Each stand holds 6 pipettes.

Cat. No.	Description
8885-500051	BenchMate Pipetting Station - Clear
8885-500408	BenchMate Pipetting Station - Flour, Yellow
8885-500416	BenchMate Pipetting Station - Flour, Red
8885-500424	BenchMate Pipetting Station - Flour, Orange

Catalog No.	Description	Size	Qty
8885-501141	Plunger Assembly Set	2μl	1
8885-501000	Plunger Assembly Set	10μl	1
8885-501018	Plunger Assembly Set	20μl	1
8885-501026	Plunger Assembly Set	100μl	1
8885-501034	Plunger Assembly Set	200μl	1
8885-501042	Plunger Assembly Set	1000μl	1
8885-501059	Plunger Assembly Set	5000μl	1
8885-501067	Plunger Assembly Set	10ml	1
8885-501133	First Spring	2μl	1
8885-501208	First Spring	10μl	1
8885-501216	First Spring	20μl	1
8885-501224	First Spring	100μl	1
8885-501232	First Spring	200μl	1
8885-501240	First Spring	1000μl	1
8885-501257	First Spring	5000μl	1
8885-501265	First Spring	10ml	1
8885-500125	First Spring Holder	2μl	1
8885-501307	First Spring Holder	10μl	1
8885-501315	First Spring Holder	20μl	1
8885-501323	First Spring Holder	100μl	1
8885-501331	First Spring Holder	200μl	1
8885-501349	First Spring Holder	1000μl	1
8885-501356	First Spring and Plunger Holder with Two Screws	5000μl & 10ml	1
8885-501109	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	2μl	1
8885-501406	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	10μl	1
8885-501414	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	20μl	1
8885-501422	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	100μl	1
8885-501430	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	200μl	1
8885-501448	Barrel & Teflon Seal Ring/ Rubber Viton O-Ring Set	1000μl	1
8885-501455	Barrel	5000μl	1
8885-501505	Teflon Seal Ring/ Rubber Viton O-Ring Set	5000μl	1
8885-501513	Barrel	10ml	1
8885-501521	Teflon Seal Ring/ Rubber Viton O-Ring Set	10ml	1
8885-501604	Barrel Filter (10pcs)	1000μl	10
8885-501612	Barrel Filter (100pcs)	5000μl	100
8885-501620	Barrel Filter (100pcs)	10ml	100
8885-501703	Handle and Barrel Connector	5000μl	1
8885-501711	Handle and Barrel Connector	10ml	1
8885-501802	Tip Ejector Screw Bolt with Washer and Spring	1000μl	1
8885-501810	Tip Ejector Screw (M2 X L3 X 3)	5000μl	3
8885-501828	Tip Ejector Screw (M2.6 X L2 X 3)	10ml	3
8885-501836	Tip Ejector Screw (M2 X L2 X 1)	10ml	1
8885-501117	Tip Ejector Shaft	2μl	1
8885-501901	Tip Ejector Shaft	10μl	1
8885-501919	Tip Ejector Shaft	20-200μl	1
8885-501927	Tip Ejector Shaft	1000μl	1
8885-501935	Tip Ejector Shaft	5000μl	1
8885-501950	Tip Ejector Shaft	10ml	1

WARRANTY POLICY:

Your new Oxford[®] BenchMate[®] is guaranteed for two (2) years against defects in material and workmanship. This warranty becomes effective when the ultimate user receives the product and returns the warranty card. Any defect in the pipette will be replaced or repaired (at our option) and defective parts will be replaced without cost within the two (2) years period, provided the Oxford[®] BenchMate[®] has not been abused, altered 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.

Manufactured in Japan for:

Sherwood Medical, St. Louis, MO 63103 U.S.A.

DBA:



⊙ **NICHIRYO CO., LTD.**