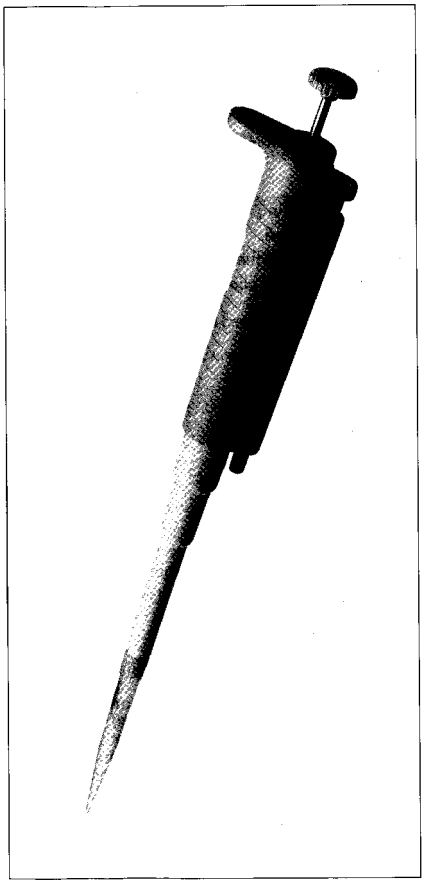
NICHIRYO

Autoclavable Nichipet

DIGITAL MICRO PIPETTE

MODEL 5000DG



FEATURES

- — **Totally autoclavable** (121°C, 20 minutes)
- — **Wide 7 type volume ranges** from 0.1 μℓ to 5000 μℓ.
- — Pre-set volume is confirmed by the convenient digital volume indicator.
- — Advanced PTFE (Polytetrafluoroethylene) is used for sealing portion which enables the pipette to withstand against long periods of operation while maintaining high accuracy and reproducibility.
- — **Ceramic plunger** in 200 μℓ, 1000 μℓ, and 5000 μℓ pipettes.
- — **Easy and convenient single hand locking lever.**
- — **Filtered nozzles** for the 1000 μℓ and 5000 μℓ pipettes ensure aerosol free operation.

SPECIFICATIONS

Cat. No.	Volume Range Tested	Adjustable Increments	Accuracy	Reproducibility
NP- 2	* 0.1 ~ 2μℓ	0.01 μℓ	*±12.0~±3.0% (at 0.2μℓ)	* <6.0~<1.0% (at 0.2μℓ)
NP- 10	0.5 ~ 10μℓ	0.01 μℓ	±5.0~±1.0%	<3.0~<0.5%
NP- 20	2 ~ 20μℓ	0.1 μℓ	±6.0~±1.0%	<3.0~<0.4%
NP- 100	10 ~ 100μℓ	0.1 μℓ	±2.0~±0.8%	<1.0~<0.3%
NP- 200	20 ~ 200μℓ	1.0 μℓ	±1.0~±0.8%	<0.5~<0.2%
NP- 1000	100 ~ 1000μℓ	1.0 μℓ	±1.0~±0.7%	<0.5~<0.2%
NP- 5000	1000 ~ 5000μℓ	10.0 μℓ	±1.0~±0.6%	<0.3~<0.2%

* The accuracy and reproducibility at 0.1μℓ depend much on the operator's skill.
The pipettes for 1000 μℓ and 5000 μℓ have a filter in each nozzles.

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:

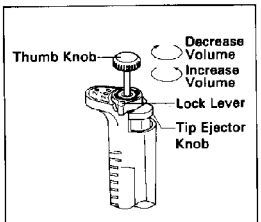


Fig. 1

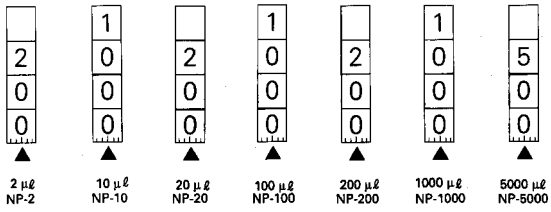
STERILIZATION (Autoclaving)

The entire Nichipet is autoclavable at 121℃ for 20 minutes.
Before autoclaving, set to the maximum volume and loosen the lock lever.
This enables steam to penetrate into the pipette during autoclaving.

Note: Be sure to remove the filters from the 1000μℓ and 5000μℓ pitettes 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 pipe and then dried and cooled.

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



OPERATING INSTRUCTIONS (Fig. 2)

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 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)

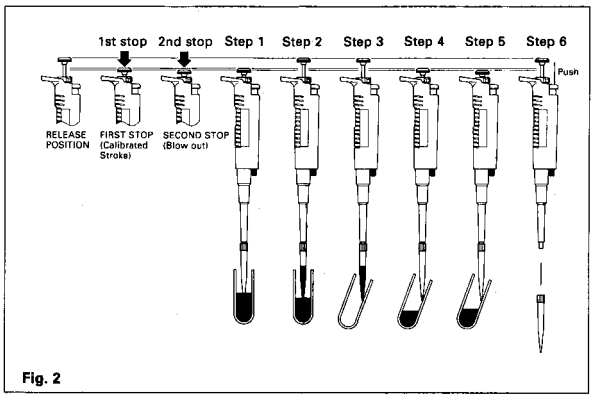


Fig. 2

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.

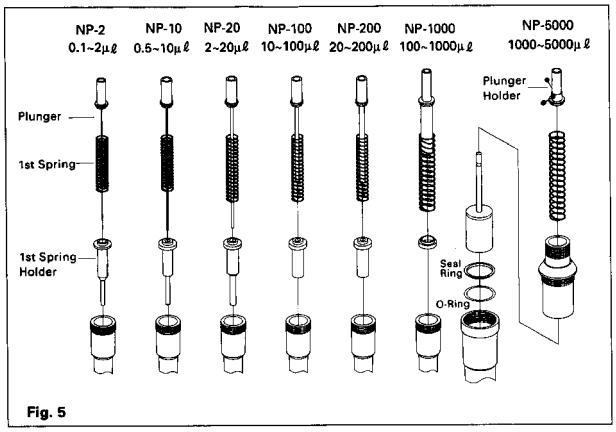


Fig. 5

SPECIAL INSTRUCTIONS FOR THE 5000 μℓ PIPETTE (NP-5000)

1. To disconnect the tip ejector pipe, remove the three (3) stainless steel screws by turning counter-clockwise. Gently pull the tip ejector pipe off the end of the pipette. Do not twist the tip ejector pipe during this procedure. (Fig. 6)
2. Remove the plunger and nozzle assembly from the pipette handle by turning it counter-clockwise.
3. Unscrew the nozzle from the plunger and nozzle assembly, the seal ring and O-ring may remain inside of the nozzle. 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 Nozzle Connector Assembly into the

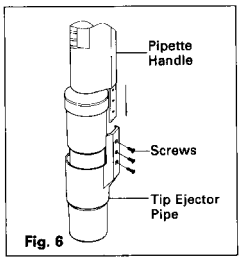


Fig. 6

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 Nozzle assembly with a new one. O-Ring and Seal-Ring are set inside the Nozzle.
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.

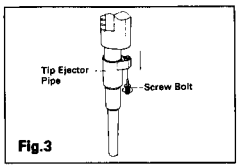


Fig.3

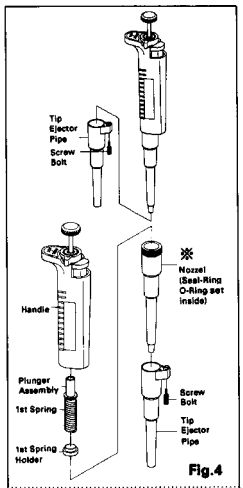


Fig.4

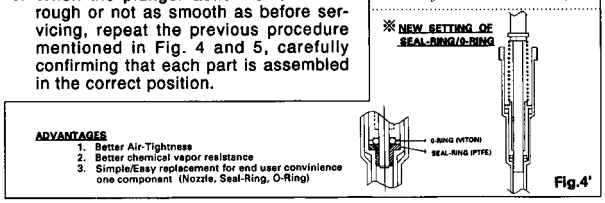


Fig.4'

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

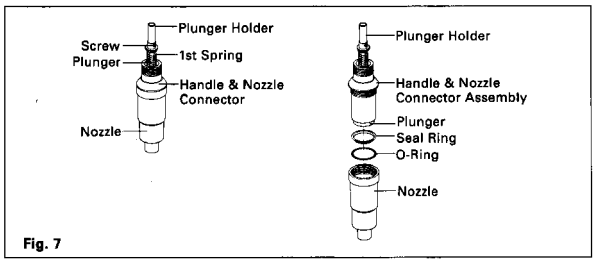


Fig. 7

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 standard volume adjustments.

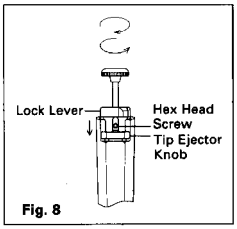


Fig. 8

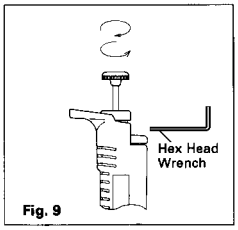


Fig. 9

Degree of Rotation	NP-2 0.1μℓ ~ 2μℓ	NP-10 0.5μℓ ~ 10μℓ	NP-20 2μℓ ~ 20μℓ	NP-100 10μℓ ~ 100μℓ	NP-200 20μℓ ~ 10μℓ	NP-1000 100μℓ ~ 10μℓ	NP-5000 1000μℓ ~ 5000μℓ
360°	0.06μℓ	0.3μℓ	0.65μℓ	3.2μℓ	6.5μℓ	32μℓ	161.5μℓ
720°	0.13μℓ	0.6μℓ	1.3μℓ	6.4μℓ	13μℓ	64μℓ	323μℓ

8. Tighten the both hex head screws after adjusting the thumb knob and measure the accuracy of the pipette.
9. 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)
(For the 1000 μℓ and 5000 μℓ pipette)

1000 μℓ pipette

1. Pull the used filter holder out to the nozzle by the tweezers, attached to the pipette.
2. Insert the new filter holder into the nozzle.
   Note: To insert the filter holder smoothly, the ribs on both sides of the filter holder should be fitted into the grooves in the nozzle, and then pushed in, confirming a clicking sound which will indicate housing.

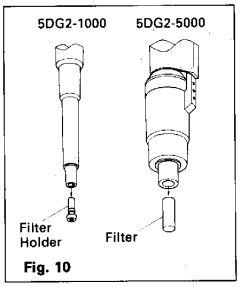


Fig. 10

5000 μℓ pipette

1. Pull out the used filter by holding the tip with tweezers.
2. Insert the new filter into the nozzle and push it in until it touches the stopper in the nozzle.
   Make sure that approximately 1mm of the filter remains exposed.

Tip

Cat. No.	Capacity	Color	Q'ty/bag (or box)
BMT-UT	0.1 ~ 2μℓ	clear	1000
50T-SS	0.5 ~ 10μℓ	clear	1000
50T-S	2 ~ 200μℓ	yellow	1000
50T-L	200 ~ 1000μℓ	blue	1000
MPT-5	1000 ~ 5000μℓ	green	200

(Only 50T-SS is supplied with a carton box. All others are supplied with a poly-bag.)

Racked Tip

Cat. No.	Capacity	Color	Q'ty/box
BMT-UTR	0.1 ~ 2μℓ	Clear	960
50T-SSR	0.5 ~ 10μℓ	Clear	1000
50T-SR	2 ~ 200μℓ	yellow	960
50T-LR	200 ~ 1000μℓ	blue	1000

Rotary Stand

MLT-STD	6 Pipettes can be stored.

IMPORTANT !!

- Please be kind to sterilize the instrument before it is returned to your local dealer for repair or maintenance services.
- Please be sure to sterilize the instrument when disassemble the pipette.
- The specifications are subject to change without notice.

For repair, service or information you may contact your local distributor.

MANUFACTURER: ⊙NICHIRYO CO., LTD.