

Microlit

Redefining Liquid Handling Systems



Australian Distributors
 Importers & Manufacturers
www.chromtech.net.au

Website NEW : www.chromalytic.net.au E-mail : info@chromtech.net.au Tel: 03 9762 2034 . . . in AUSTRALIA



BOTTLE TOP DISPENSER | *Beatus*

With Re-Circulation Valve

Beatus is the next generation of highly robust and reliable dispensing, designed and developed by MICROLIT's strong R&D. Several unique features provided in *Beatus*, makes it usable with a wider range of reagents with high precision and accuracy. *Beatus* has re-circulation valve for re-directing the liquid into the bottle for bubble free dispensing without any loss of reagent.

Special emphasis has been given to ensure smooth & soft plunger operation and ease of working in demanding laboratory conditions.

FEATURES :

Six unique volume ranges :

- 0.25 - 2.5 ml
- 0.5 - 5 ml
- 1 - 10 ml
- 2.5 - 30 ml
- 5 - 60 ml
- 10 - 100 ml

Fully Autoclavable at 121°C , 15psi. for 10 - 15 mins.



SPECIALLY DESIGNED VOLUME ADJUSTMENT KNOB

180° Rotation for Easy & Effortless Volume Setting.



SPRINGLESS VALVE

Specially designed, springless, PTFE valve manifold ensures high chemical compatibility and jamming free valve functioning.



RE-CIRCULATION VALVE

Prevents loss of reagent during purging.



ADJUSTABLE DELIVERY NOZZLE

Adjustable delivery nozzle to facilitate dispensing ease in all demanding laboratory conditions.



360° ROTATION

Specially designed adapter allows 360° rotation, providing full flexibility in working.



UNIQUE PISTON

PTFE Piston with ETP O-Ring Ensures Very High Chemical Compatibility & Wiper Like Smooth, Effortless Piston Movement.



ADAPTORS

Adaptors to fit most of the laboratory reagent bottles are provided in the following sizes : 28, 30, 32, 36, 40 & 45mm.

BOTTLE TOP DISPENSER | Beatus

With Re-Circulation Valve

CALIBRATION :

Specially designed calibration tool is provided for convenient and quick in-lab user re-calibration. This is in compliance with GLO/ISO norms.



Removable Cap for Calibration



Calibration Tool



COMPONENT DESCRIPTION

| Component | Description |
|------------------------------|--|
| Piston | PTFE & ETP |
| Cylinder | Borosilicate Glass |
| Volume Adjustment Knob | PP, 180° Rotation |
| Valve Housing | PFA |
| Re-Circulation Valve Housing | PFA |
| Valve Assembly | Borosilicate Glass Ball & Seat |
| Discharge Assembly | PTFE |
| Delivery Tube | FEP |
| Inlet Tube | FEP |
| Calibration | Individually calibrated and certified. In-lab easy Calibration by the user is also possible. |
| Accuracy & Reproducibility | In accordance with ISO 8655 standards. |
| Compatibility | Excellent compatibility with all reagents except HF |

SPECIFICATIONS & ORDERING INFORMATION

| Model No. | Vol. Range | Increment | Accuracy ±% ± ml | CV ±% ± ml |
|-----------|-------------|-----------|---------------------|---------------|
| BEAT-2.5 | 0.25-2.5 ml | 0.05 ml | 0.6 0.015 | 0.2 0.005 |
| BEAT-5 | 0.5-5 ml | 0.1 ml | 0.6 0.030 | 0.2 0.010 |
| BEAT-10 | 1-10 ml | 0.2 ml | 0.6 0.060 | 0.2 0.020 |
| BEAT-30 | 2.5-30 ml | 0.5 ml | 0.6 0.180 | 0.2 0.060 |
| BEAT-60 | 5-60 ml | 1.0 ml | 0.6 0.360 | 0.2 0.120 |
| BEAT-100 | 10-100 ml | 2.0 ml | 0.6 0.600 | 0.2 0.200 |

BOTTLE TOP DISPENSER | *Ultimus*

With Dual Inlet Technology

Microlit has yet again answered the needs of the customers. With this Bottle Top Dispenser Microlit's R&D has solved the biggest problem of the users : Re-filling the bottle and rinsing the instrument WITHOUT DISMOUNTING from the Bottle.

Microlit is proud to present most advanced, state of the art Dispenser in the world : Ultimus. With a world wide patented technology Microlit's R&D has delivered a product that combines unique functionality, user-friendliness and performance. Ultimus offers its users 4 modes of dispensing in one Dispenser. First ever Dispenser offering Dilution, Rinsing, Dual Liquid Handling and Re-circulation in a single unit.

FEATURES :

Six unique volume ranges :

- 0.25 - 2.5 ml
- 0.5 - 5 ml
- 1 - 10 ml
- 2.5 - 30 ml
- 5 - 60 ml
- 10 - 100 ml

Fully Autoclavable at 121°C , 15psi. for 10 - 15 mins.



SPECIALLY DESIGNED VOLUME ADJUSTMENT KNOB

180° Rotation for Easy & Effortless Volume Setting.



SPRINGLESS VALVE

Specially designed, springless, PTFE valve manifold ensures high chemical compatibility and jamming free valve functioning.



ADJUSTABLE DELIVERY NOZZLE

Adjustable delivery nozzle to facilitate dispensing ease in all demanding laboratory conditions.



360° ROTATION

Specially designed adapter allows 360° rotation, providing full flexibility in working.



UNIQUE PISTON

PTFE Piston with ETP O-Ring Ensures Very High Chemical Compatibility & Wiper Like Smooth, Effortless Piston Movement.



RESERVOIR COVERS

There is an additional set of reservoir covers for the second bottle. Available sizes: 28, 32, 36, 40 & 45 mm



ADAPTORS

Adaptors to fit most of the laboratory reagent bottles are provided in the following sizes : 28, 30, 32, 36, 40 & 45mm.

CALIBRATION :

Specially designed calibration tool is provided for convenient and quick in-lab user re-calibration. This is in compliance with GLO/ISO norms.



Calibration Tool



EXTENDABLE TUBES

Coiled extension tube and telescoping inlet tube adjust to a variety of bottle sizes

COMPONENT DESCRIPTION

| Component | Description |
|------------------------------|--|
| Piston | PTFE & ETP |
| Cylinder | Borosilicate Glass |
| Volume Adjustment Knob | PP, 180° Rotation |
| Valve Housing | PFA |
| Re-Circulation Valve Housing | PFA |
| Valve Assembly | Borosilicate Glass Ball & Seat |
| Discharge Assembly | PTFE |
| Delivery Tube | FEP |
| Inlet Tube | FEP |
| Calibration | Individually calibrated and certified. In-lab easy Calibration by the user is also possible. |
| Accuracy & Reproducibility | In accordance with ISO 8655 standards. |
| Compatibility | Excellent compatibility with all reagents except HF |

Ultimus offers four modes of operation:



1. STANDARD DISPENSING

Knob A - Open
Knob B - Closed

In this mode the dispenser dispenses the liquid normally into the receiver from the bottle it is mounted on.



2. PURGING

Knob A - Closed
Knob B - Closed

In this mode the liquid is re-circulated into the same bottle on which the dispenser is mounted. This process removes the air from the dispenser without wasting any reagent.



3. DILUTION/RINSING/SECOND LIQUID DISPENSING

Knob A - Open
Knob B - Open

In this mode the liquid from a second source can be dispensed into the receiver. The second liquid can be distilled water, thus allowing the user to rinse the instrument without dismounting from the bottle or for dilution of the reagent in the receiver.



4. BOTTLE REFILLING

Knob A - Closed
Knob B - Open

In this mode the liquid from a second source can be used to refill the bottle without dismounting the dispenser.

SPECIFICATIONS & ORDERING INFORMATION

| Model No. | Vol. Range | Increment | Accuracy | | CV | |
|-----------|-------------|-----------|----------|-------|-----|-------|
| | | | ±% | ± ml | ±% | ± ml |
| ULT-2.5 | 0.25-2.5 ml | 0.05 ml | 0.6 | 0.015 | 0.2 | 0.005 |
| ULT-5 | 0.5-5 ml | 0.1 ml | 0.6 | 0.030 | 0.2 | 0.010 |
| ULT-10 | 1-10 ml | 0.2 ml | 0.6 | 0.060 | 0.2 | 0.020 |
| ULT-30 | 2.5-30 ml | 0.5 ml | 0.6 | 0.180 | 0.2 | 0.060 |
| ULT-60 | 5-60 ml | 1.0 ml | 0.6 | 0.360 | 0.2 | 0.120 |
| ULT-100 | 10-100 ml | 2.0 ml | 0.6 | 0.600 | 0.2 | 0.200 |

Microlit Bottle top dispenser is another genius of its strong R & D base. Responding to the needs of the present generation, Microlit is proud to offer its NEW BOTTLE TOP DISPENSER which is an unique combination of competitive pricing and high performance.

All wetted parts are PTFE, FEP and Borosilicate Glass only which allows the instrument to be used with wide variety of laboratory chemicals.

High precision and accuracy is ensured through careful selection of raw material and several stages of strict quality checks during manufacturing process.

Each instrument is individually calibrated in ISO 17025 accredited laboratory in accordance with ISO 8655 standards and comes with Individual Calibration certificate.

FEATURES :

Six unique volume ranges :

- a. 0.25 - 2.5 ml
- b. 0.5 - 5 ml
- c. 1 - 10 ml
- d. 2.5 - 30 ml
- e. 5 - 60 ml
- f. 10 - 100 ml

Fully Autoclavable at 121°C , 15psi. for 10 - 15 mins.

Smooth, effortless plunger movement and bubble free dispensing.

Easy to dis-assemble for cleaning and servicing.



PISTON

PTFE Piston with ETP O-Ring Ensures Very High Chemical Compatibility & Wiper Like Smooth, Effortless Piston Movement.



GLASS BARREL PROTECTION

Glass Barrel is protected by a polypropylene sleeve. It also ensures no glass splitting in case of any accidental breakage.



ADAPTORS

Adaptors to fit most of the laboratory reagent bottles are provided in the following sizes :



ADJUSTABLE DELIVERY NOZZLE

Adjustable delivery nozzle to facilitate dispensing ease in all demanding laboratory conditions.



SPECIALLY DESIGNED VOLUME ADJUSTMENT KNOB

Convenient and easy volume setting with minimal force ensuring no fatigue or strain. A 270 degree turn in the clockwise and anticlockwise direction.



NOZZLE CAP

Nozzle cap prevents any unwanted drop on the work space and avoids contact with hazardous chemicals.



VALVE MANIFOLD

Specially designed, springless, PTFE valve manifold ensures excellent chemical compatibility and leak proof valve functioning.

CALIBRATION :

Specially designed calibration tool is provided for convenient and quick in-lab user re-calibration. This is in compliance with GLO/ISO norms.



Removable Cap for Calibration



Calibration Tool

Specially designed calibration tool is provided for convenient and quick In-lab user re-calibration. This is in compliance with GLO/ISO Norms.

**COMPONENT DESCRIPTION**

| Component | Description |
|------------------------------|--|
| Piston | PTFE & ETP |
| Cylinder | Borosilicate Glass |
| Volume Adjustment Knob | PP, 180° Rotation |
| Valve Housing | PFA |
| Re-Circulation Valve Housing | PFA |
| Valve Assembly | Borosilicate Glass Ball & Seat |
| Discharge Assembly | PTFE |
| Delivery Tube | FEP |
| Inlet Tube | FEP |
| Calibration | Individually calibrated and certified. In-lab easy Calibration by the user is also possible. |
| Accuracy & Reproducibility | In accordance with ISO 8655 standards. |
| Compatibility | Excellent compatibility with all reagents except HF |

SPECIFICATIONS & ORDERING INFORMATION

| Model No. | Vol. Range | Increment | Accuracy | | CV | |
|-----------|-------------|-----------|----------|-------|-----|-------|
| | | | ±% | ± ml | ±% | ± ml |
| BTDR-1 | 0.25-2.5 ml | 0.05 ml | 0.6 | 0.015 | 0.2 | 0.005 |
| BTDR-2 | 0.5-5 ml | 0.1 ml | 0.6 | 0.030 | 0.2 | 0.010 |
| BTDR-3 | 1-10 ml | 0.2 ml | 0.6 | 0.060 | 0.2 | 0.020 |
| BTDR-4 | 2.5-30 ml | 0.5 ml | 0.6 | 0.180 | 0.2 | 0.060 |
| BTDR-5 | 5-60 ml | 1.0 ml | 0.6 | 0.360 | 0.2 | 0.120 |
| BTDR-5 | 10-100 ml | 2.0 ml | 0.6 | 0.600 | 0.2 | 0.200 |

MICROPIPETTE | RBO Series

Variable Volume Fully autoclavable

In order to keep pace with the rapid progress made in research sector in recent years, MICROLIT has made one logical step further and proudly presents the new, high precision micropipette series for today's sophisticated users in the field of Molecular biology, Microbiology, Immunology, cell culture, Analytical Chemistry, Biochemistry, Genetics etc.

FEATURES :

High quality spring mechanism ensures softer plunger movement.
Nine volume ranges cover the complete pipetting range from 0.2 μ l to 10 ml offering a wide choice to select the most suitable model for any application.

COLOUR CODING :

Attractive colour coding for easy identification between different volume ranges.



EASY VOLUME ADJUSTMENT :

Easy Volume Adjustment by simply turning the plunger. Plunger does not snag gloves.



UNIVERSAL TIP CONE :

Compatible with most of the internationally accepted standard tips.



VOLUME SETTING :

Soft click sound at every increment ensures perfect volume setting and no accidental volume change. It also facilitates single handed operation.



SOFT GRIP & ERGONOMIC DESIGN :

New body design with soft grip and improved ergonomics for more comfort and less fatigue during operation.



DIGITAL DISPLAY :

4 digit display with sub divisions provides small volume increments.



LARGE GRIPPY :

Specially designed large grippy is provided for comfortable grip and ease during working.



USER ADJUSTMENT :

Re-calibration can be performed easily by the user.



TIP EJECTOR :

Built-in streamlined tip ejector facilitates easy tip ejection and access to narrow necked bottles and tubes.

MICROPIPETTE | RBO Series

Fixed Volume Fully autoclavable

Fixed Volume Pipettes are designed for many different types of routine laboratory work. Using the same state-of-art design and basic features of Variable Volume Pipettes, these fixed volume pipettes are ideal for Clinical Diagnostics, Control Analysis etc.

FEATURES :

High quality spring mechanism ensures softer plunger movement.
Sixteen volume ranges cover the complete pipetting range from 1 μ l to 10 ml offering a wide choice to select the most suitable model for any application.

COLOUR CODING :

Attractive colour coding for easy identification between different volume ranges.



EASY VOLUME ADJUSTMENT :

Easy Volume Adjustment by simply turning the plunger. Plunger does not snag gloves.



UNIVERSAL TIP CONE :

Compatible with most of the internationally accepted standard tips.



USER ADJUSTMENT :

Re-calibration can be performed easily by the user.



SOFT GRIP & ERGONOMIC DESIGN :

New body design with soft grip and improved ergonomics for more comfort and less fatigue during operation.



TIP EJECTOR :

Built-in streamlined tip ejector facilitates easy tip ejection and access to narrow necked bottles and tubes.



LARGE GRIPPER :

Specially designed large gripper is provided for comfortable grip and ease during working.

In order to keep pace with the rapid progress made in research sector in recent years, MICROLIT has made one logical step further and proudly presents the new, high precision micropipette series for today's sophisticated users in the field of Molecular biology, Microbiology, Immunology, cell culture, Analytical Chemistry, Biochemistry, Genetics etc.

Recommended for ELISA, Molecular screening, Kinetic studies, DNA amplifications etc.

FEATURES :

High quality spring mechanism ensures softer plunger movement.

Six volume ranges cover the complete pipetting range from 0.5 μ l to 300 μ l offering a wide choice to select the most suitable model for any application.

COLOUR CODING :

Attractive colour coding for easy identification between different volume ranges.



8-CHANNEL



12-CHANNEL



TIP EJECTION KNOB :

Placement and good design allows easy single handed tip ejection.



OPERATION FLEXIBILITY :

Lower housing can be rotated 360° providing flexibility during operation.



EASY TIP EJECTION :

Specially designed sequential tip ejector allows effortless tip ejection.



EASY VOLUME ADJUSTMENT :

Easy Volume Adjustment by simply turning the plunger. Plunger does not snag gloves.



PIPETTE HOLDER :

The holder provided with the pipette allows easy, efficient and safe storage.



VOLUME SETTING :

Soft click sound at every increment ensures perfect volume setting and no accidental volume change. It also



SOFT GRIP & ERGONOMIC DESIGN:

New body design with soft grip and improved ergonomics for more comfort and less fatigue during operation.



DIGITAL DISPLAY :

4 digit display with sub divisions provides small volume increments.



LARGE GRIPPY :

Specially designed large grippy is provided for comfortable grip and ease during working.

Fully Autoclavable Variable Volume Micropipettes

| Model | Volume Range | Inc. μl | A | | CV | |
|-----------|--------------------------|--------------------|---------|------------------|---------|------------------|
| | | | $\pm\%$ | $\pm\mu\text{l}$ | $\pm\%$ | $\pm\mu\text{l}$ |
| RBO-2 | 0.2 - 2.0 μl | 0.002 | 2 | 0.04 | 1.2 | 0.024 |
| -10 | 0.5 - 10 μl | 0.02 | 1 | 0.1 | 0.5 | 0.05 |
| RBO-20 | 2 - 20 μl | 0.02 | 0.8 | 0.16 | 0.4 | 0.08 |
| RBO-50 | 5 - 50 μl | 0.1 | 0.8 | 0.4 | 0.4 | 0.2 |
| RBO-100 | 10 - 100 μl | 0.2 | 0.6 | 0.6 | 0.2 | 0.2 |
| RBO-200 | 20 - 200 μl | 0.2 | 0.6 | 1.2 | 0.2 | 0.4 |
| RBO-1000 | 100 - 1000 μl | 1.0 | 0.6 | 6 | 0.2 | 2 |
| RBO-5000 | 0.5 - 5 ml | 10.0 | 0.6 | 30 | 0.2 | 10 |
| RBO-10000 | 1 - 10 ml | 20.0 | 0.6 | 60 | 0.2 | 20 |

Fully Autoclavable Fixed Volume Micropipettes

| Model | Vol. μl | A | | CV | |
|-------------|--------------------|---------|------------------|---------|------------------|
| | | $\pm\%$ | $\pm\mu\text{l}$ | $\pm\%$ | $\pm\mu\text{l}$ |
| RBO-F-1 | 1.0 | 5 | 0.05 | 5 | 0.05 |
| RBO-F-2 | 2.0 | 4 | 0.08 | 2 | 0.04 |
| RBO-F-5 | 5.0 | 2 | 0.1 | 1 | 0.05 |
| RBO-F-10 | 10.0 | 1 | 0.1 | 0.5 | 0.05 |
| RBO-F-20 | 20.0 | 0.8 | 0.16 | 0.4 | 0.08 |
| RBO-F-25 | 25.0 | 0.8 | 0.2 | 0.4 | 0.1 |
| RBO-F-50 | 50.0 | 0.8 | 0.4 | 0.4 | 0.2 |
| RBO-F-100 | 100.0 | 0.6 | 0.6 | 0.2 | 0.2 |
| RBO-F-200 | 200.0 | 0.6 | 1.2 | 0.2 | 0.4 |
| RBO-F-250 | 250.0 | 0.6 | 1.5 | 0.2 | 0.5 |
| RBO-F-500 | 500.0 | 0.6 | 3 | 0.2 | 1 |
| RBO-F-1000 | 1000.0 | 0.6 | 6 | 0.2 | 2 |
| RBO-F-2000 | 2000.0 | 0.6 | 12 | 0.2 | 4 |
| RBO-F-5000 | 5000.0 | 0.6 | 30 | 0.2 | 10 |
| RBO-F-10000 | 10000.0 | 0.4 | 40 | 0.2 | 20 |

Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. (See Table 1) A = Accuracy, CV = Coefficient of variation.

12-channel Fully Autoclavable Micropipette

| Model | Volume Range | Inc. μl | A | | CV | |
|----------------|------------------------|--------------------|---------|------------------|---------|------------------|
| | | | $\pm\%$ | $\pm\mu\text{l}$ | $\pm\%$ | $\pm\mu\text{l}$ |
| RBO-MCA-12/10 | 0.5 - 10 μl | 0.02 | 1.6 | 0.16 | 1 | 0.1 |
| RBO-MCA-12/20 | 0.2 - 20 μl | 0.02 | 0.8 | 0.16 | 0.4 | 0.08 |
| RBO-MCA-12/50 | 5 - 50 μl | 0.1 | 0.8 | 0.4 | 0.4 | 0.2 |
| RBO-MCA-12/100 | 10 - 100 μl | 0.2 | 0.8 | 0.8 | 0.3 | 0.3 |
| RBO-MCA-12/200 | 20 - 200 μl | 0.2 | 0.8 | 1.6 | 0.3 | 0.6 |
| RBO-MCA-12/300 | 40 - 300 μl | 0.2 | 0.8 | 2.4 | 0.3 | 0.9 |

8-channel Fully Autoclavable Micropipette

| Model | Volume Range | Inc. μl | A | | CV | |
|---------------|------------------------|--------------------|---------|------------------|---------|------------------|
| | | | $\pm\%$ | $\pm\mu\text{l}$ | $\pm\%$ | $\pm\mu\text{l}$ |
| RBO-MCA-8/10 | 0.5 - 10 μl | 0.02 | 1.6 | 0.16 | 1 | 0.1 |
| RBO-MCA-8/20 | 0.2 - 20 μl | 0.02 | 0.8 | 0.16 | 0.4 | 0.08 |
| RBO-MCA-8/50 | 5 - 50 μl | 0.1 | 0.8 | 0.4 | 0.4 | 0.2 |
| RBO-MCA-8/100 | 10 - 100 μl | 0.2 | 0.8 | 0.8 | 0.3 | 0.3 |
| RBO-MCA-8/200 | 20 - 200 μl | 0.2 | 0.8 | 1.6 | 0.3 | 0.6 |
| RBO-MCA-8/300 | 40 - 300 μl | 0.2 | 0.8 | 2.4 | 0.3 | 0.9 |

Table 1- Maximum permissible errors as per ISO 8655-2

| Nominal volume | Maximum permissible systematic error | | Maximum permissible random error | |
|----------------|--------------------------------------|------------------|----------------------------------|------------------|
| | $\pm\%$ | $\pm\mu\text{l}$ | $\pm\%$ | $\pm\mu\text{l}$ |
| 1 | 5.0 | 0.05 | 5.0 | 0.05 |
| 2 | 4.0 | 0.08 | 2.0 | 0.04 |
| 5 | 2.5 | 0.125 | 1.5 | 0.075 |
| 10 | 1.2 | 0.12 | 0.8 | 0.08 |
| 20 | 1.0 | 0.2 | 0.5 | 0.1 |
| 50 | 1.0 | 0.5 | 0.4 | 0.2 |
| 100 | 0.8 | 0.8 | 0.3 | 0.3 |
| 200 | 0.8 | 1.6 | 0.3 | 0.6 |
| 500 | 0.8 | 4.0 | 0.3 | 1.5 |
| 1000 | 0.8 | 8.0 | 0.3 | 3.0 |
| 2000 | 0.8 | 16 | 0.3 | 6.0 |
| 5000 | 0.8 | 40 | 0.3 | 15.0 |
| 10000 | 0.6 | 60 | 0.3 | 30.0 |

Single Channel Fixed & Variable Volume Micropipettes : In the conformity test, the maximum permissible errors for the nominal volumes in Tables 1 apply to every selectable volume throughout the useful volume range of the piston pipette; i.e. the maximum permissible systematic errors of variable-volume piston pipette with a useful volume range of 10 μl to 100 μl are $\pm 0.8 \mu\text{l}$ and the maximum permissible random errors are $\pm 0.3 \mu\text{l}$ for every measured volume.

Multichannel Micropipettes : The maximum permissible systematic and random errors of multi-channel piston pipettes shall be equal to twice the values specified in Table 1 for single-channel piston pipettes. Each channel of the multi-channel piston pipette, considered independently, shall meet these specifications.

It is a friendly, efficient and reliable electronic pipette filling instrument. Designed for ease and comfort to suit all types of liquid handling needs in every Laboratory.



FEATURES :



Two LEDs
Red - low charging
Green - Charging status



Single Knob Dual Dispensing Mode
1. Gravity Mode - on Half Press
2. Blowout Mode (Motor Powered)
- on Full Press



Continuous adjustment of pump speed during operation.



Comfortable grip.

SPECIFICATIONS & ORDERING INFORMATION

Pipette Filling Device

| Model | Description |
|------------|--------------------------------------|
| NE-GG-220V | Grey body/ Grey collet and plunger |
| NE-GR-220V | Grey body/ Red collet and plunger |
| NE-GV-220V | Grey body/ Violet collet and plunger |

An universal Silicon collet is provided to accept all standard pipettes up to 100ml. Internal knurlings on the collet holds the pipette firmly.

In-line membrane filter (0.2 micron) prevents

- a. Aerosol Contamination
- b. Liquid from entering the equipment by accident.

Ni-MH 3.6V rechargeable batteries are used in combination with low power consumption circuit and vacuum/pressure pump.

Allows eight hours of continuous operation.

Battery Charger is provided with all models.

Available in attractive colour combinations.



Microlit Electronic Pipette is based on Stepper Motor with Microprocessor controlled piston movement. These are user friendly and offer effortless pipetting. Accuracy & Precision levels are very high and user-independent. This is a complete solution for every pipetting need.

FEATURES

Modes (Easy selection of modes from a single key)

Standard mode
Stepper mode
Dilution mode
Calibration mode

Variable Working Speeds

Speed can be selected on a scale of 1-5.

Error limits according to the nominal capacity (=maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20° C, and with smooth, steady operation. The Error limits are well within the limits of DIN EN ISO 8655.2.

(see table 1)

A= Accuracy, CV=Coefficient of variation.



Calibration

User friendly calibration mode facilitates easy calibration.

Battery

9V Ni-MH rechargeable batteries are used.

8 hours of operation with fully charged batteries.

User friendly software.

Easy, User friendly calibration.

Rechargeable during operation.

Optimized ergonomics and working comfort.

Large Liquid Crystal Display (LCD).

Built-in tip ejector.

Five models cover the complete pipetting range from

0.2 µl to 5000 µl.

SPECIFICATIONS & ORDERING INFORMATION

| Model | Volume Range µl | Inc. µl | Acc. ±% | Acc. ±µl | CV ±% | CV ±µl |
|---------|-----------------|---------|---------|----------|-------|--------|
| ME-10 | 0.2-10 | 0.05 | 1.2 | 0.12 | 0.8 | 0.08 |
| ME-120 | 5-120 | 0.5 | 0.8 | 0.96 | 0.3 | 0.36 |
| ME-300 | 20-300 | 1.0 | 0.8 | 2.4 | 0.3 | 0.9 |
| ME-1000 | 50-1000 | 5.0 | 0.8 | 8 | 0.3 | 3 |
| ME-5000 | 100-5000 | 10.0 | 0.8 | 40 | 0.3 | 15 |



Volume Selection

Easy volume selection by



Large Fire Button

Single 'FIRE BUTTON' for



Large Liquid Crystal Display

Two line Alphanumeric LCD.



Built-in streamlined tip ejector

For taken easy tip ejection and access to narrow necked bottles.

Table1 - Maximum permissible errors as per ISO 8655-2

| Nominal Volume | ISO 8655 Specification Maximum Permissible Systematic Error | | Microlit Specification Maximum Permissible Systematic Error | |
|----------------|---|------|---|------|
| | ±% | ±µl | ±% | ±µl |
| 10 | 1.2 | 0.12 | 0.8 | 0.08 |
| 100 | 0.8 | 0.8 | 0.3 | 0.3 |
| 200 | 0.8 | 1.6 | 0.3 | 0.6 |
| 500 | 0.8 | 4.0 | 0.3 | 1.5 |
| 1000 | 0.8 | 8.0 | 0.3 | 3.0 |
| 5000 | 0.8 | 40 | 0.3 | 15 |

Microlit high precision tips are available in all sizes. We recommend use of Microlit Tips with Microlit Pipettes for best results.

MT-IV



MT-V



MT-II



MT-I



MTSP



SPECIFICATIONS & ORDERING INFORMATION

Tips for Micropipettes

| Model | Description |
|-------|---|
| MTSP | Capacity upto 10 µl Pkt. of 100 Nos. |
| MT-I | Capacity upto 200 µl Pkt. of 1000 Nos. |
| MT-II | Capacity upto 1000 µl Pkt. of 1000 Nos. |
| MT-V | Capacity upto 5000 µl Pkt. of 100 Nos. |
| MT-IV | Capacity upto 10000 µl Pkt. of 100 Nos. |

Microlit Pipette stands are available in several designs for single channel and Multichannel pipettes.
You can choose according to your requirement and application.



MS-I
for Three Pipette



MS-II
for Six Pipette



MS-V
for Singal Channel Pipette



MS-III
for 8 Channel Pipette



MS-IV
for 12 Channel Pipette

SPECIFICATIONS & ORDERING INFORMATION

Stands for Micropipettes

| Model | Description |
|--------|----------------------------------|
| MS-I | Stand for three Pipettes |
| MS-II | Stand for six Pipettes |
| MS-III | Stand for 8-Channel Pipettes |
| MS-IV | Stand for 12-Channel Pipettes |
| MS-V | Stand for one Pipettes (Modular) |



AUSTRALIAN

Effective January 1, 2016+)

Price List



ISO 9001



1. Micropipette - Single Channel Fully Autoclavable (Premium Series)

A. Fixed Volume - RBO - F Series

| S.No. | Model No. | Capacity |
|-------|-------------|---------------|
| 1. | RBO-F-1 | 1 μ l |
| 2. | RBO-F-2 | 2 μ l |
| 3. | RBO-F-5 | 5 μ l |
| 4. | RBO-F-10 | 10 μ l |
| 5. | RBO-F-20 | 20 μ l |
| 6. | RBO-F-25 | 25 μ l |
| 7. | RBO-F-50 | 50 μ l |
| 8. | RBO-F-100 | 100 μ l |
| 9. | RBO-F-200 | 200 μ l |
| 10. | RBO-F-250 | 250 μ l |
| 11. | RBO-F-500 | 500 μ l |
| 12. | RBO-F-1000 | 1000 μ l |
| 13. | RBO-F-2000 | 2000 μ l |
| 14. | RBO-F-5000 | 5000 μ l |
| 15. | RBO-F-10000 | 10000 μ l |

FOR ALL MODELS

| Quantity (Pcs) | List Price (AUD) |
|----------------|------------------|
| 1 - 50 | 90.00 |
| 51+ > ASK! | |

B. Variable Volume - RBO Series

| S.No. | Model No. | Volume Range |
|-------|-------------|----------------------|
| 1. | RBO - 2 | 0.2 - 2 μ L |
| 2. | RBO - 10 | 0.5 - 10 μ l |
| 3. | RBO - 20 | 2 - 20 μ l |
| 4. | RBO - 50 | 5 - 50 μ l |
| 5. | RBO - 100 | 10 - 100 μ l |
| 6. | RBO - 200 | 20 - 200 μ l |
| 7. | RBO - 1000 | 100 - 1000 μ l |
| 8. | RBO - 5000 | 500 - 5000 μ l |
| 9. | RBO - 10000 | 1000 - 10000 μ l |

FOR ALL VOLUME RANGES

| Quantity (Pcs) | List Price (AUD\$) |
|----------------|--------------------|
| 1 - 50 | 120 |
| 51 + ASK! - | |



2. Micropipette - Multi Channel Fully Autoclavable (Premium Series)

A. 8 - Channel - RBO Series

| S.No. | Model No. | Volume Range |
|-------|---------------|--------------|
| 1. | RBO-MCA-8/10 | 0.5 - 10 µl |
| 2. | RBO-MCA-8/20 | 2 - 20 µl |
| 3. | RBO-MCA-8/50 | 5 - 50 µl |
| 4. | RBO-MCA-8/100 | 10 - 100 µl |
| 5. | RBO-MCA-8/200 | 20 - 200 µl |
| 6. | RBO-MCA-8/300 | 40 - 300 µl |

| FOR ALL VOLUME RANGES | | |
|-----------------------|---------------------|--------------------|
| Quantity (Pcs) | Dealer Price (US\$) | List Price (AUD\$) |
| 1 - 20 | | \$392.00 |
| 21 + | ASK! | |

B. 12 - Channel - RBO Series

| S.No. | Model No. | Volume Range |
|-------|----------------|--------------|
| 1. | RBO-MCA-12/10 | 0.5 - 10 µl |
| 2. | RBO-MCA-12/20 | 2 - 20 µl |
| 3. | RBO-MCA-12/50 | 5 - 50 µl |
| 4. | RBO-MCA-12/100 | 10 - 100 µl |
| 5. | RBO-MCA-12/200 | 20 - 200 µl |
| 6. | RBO-MCA-12/300 | 40 - 300 µl |

| FOR ALL VOLUME RANGES | | |
|-----------------------|---------------------|--------------------|
| Quantity (Pcs) | Dealer Price (US\$) | List Price (AUD\$) |
| 1 - 20 | | \$440.00 |
| 21 o+ | ASK !r above | |



3. Miniature Fixed Volume Micro Pipettes

| S.No. | Model No. | Capacity |
|-------|-----------|----------|
| 1 | MM-1 | 1 µl |
| 2 | MM-2 | 2 µl |
| 3. | MM-5 | 5 µl |
| 4. | MM-10 | 10 µl |
| 5. | MM-20 | 20 µl |
| 6. | MM-25 | 25 µl |
| 7. | MM-50 | 50 µl |
| 8. | MM-100 | 100 µl |
| 9. | MM-200 | 200 µl |
| 10. | MM-250 | 250 µl |
| 11. | MM-500 | 500 µl |
| 12. | MM-1000 | 1000 µl |

| FOR ALL MODELS | |
|---|--------------------|
| Dealer Price (US\$) | List Price (AUD\$) |
| Please ask for prices based on quantity | |
| | 36.00 |



4. Pipette Filling Device

| S.No. | Model No. | Color Combination | FOR ALL MODELS | | |
|-------|-----------|---------------------------------------|----------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 1. | NE-GG | Grey Body / Grey Collet and Plunger | 1 - 20 | | AUD240.00 |
| 2. | NE-GR | Grey Body / Red Collet and Plunger | | | |
| 3. | NE-GV | Grey Body / Violet Collet and Plunger | 21 or above | | |
| 4. | NE-GB | Grey Body / Blue Collet and Plunger | | | |



NE

5. Electronic Micropipette

| S.No. | Model No. | Volume Range | FOR ALL VOLUME RANGES | | |
|-------|-----------|--------------------|-----------------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 1. | ME-10 | 0.2 - 10 μ l | 1 - 20 | | \$450.00 |
| 2. | ME-120 | 5 - 120 μ l | | | |
| 3. | ME-300 | 20 - 300 μ l | 21 or above | | |
| 4. | ME-1000 | 50 - 1000 μ l | | | |
| 5. | ME-5000 | 100 - 5000 μ l | | | |



ME

6. Bottle Top Dispenser Research Model Fully Autoclavable

| S.No. | Model No. | Volume Range | FOR BTDR-1, BTDR-2 & BTDR-3 | | |
|-------|-----------|---------------|-----------------------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 1. | BTDR-1 | 0.25 - 2.5 ml | 1 - 50 | | \$250.00 |
| 2. | BTDR-2 | 0.5 - 5 ml | 51 + or above ASK! | | |
| 3. | BTDR-3 | 1 - 10 ml | | | |

| S.No. | Model No. | Volume Range | FOR BTDR-4 & BTDR-5 | | |
|-------|-----------|--------------|---------------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 4. | BTDR-4 | 2.5 - 30 ml | 1 - 50 | | \$320.00 |
| 5. | BTDR-5 | 5 - 60 ml | 51 + ASK- | | |

| S.No. | Model No. | Volume Range | FOR BTDR-6 | | |
|-------|-----------|--------------|----------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 6. | BTDR-6 | 10 - 100 ml | 1 - 50 | | \$360.00 |
| | | | 51 + ASK ! | | |



7. Bottle Top Dispenser with Re-Circulation Valve - *Beatus*

| S.No. | Model No. | Volume Range | FOR BEAT-2.5, BEAT-5 & BEAT-10 | | |
|-------|-----------|---------------|--------------------------------|--|--------------------|
| | | | Quantity (Pcs) | | List Price (AUD\$) |
| 1. | BEAT-2.5 | 0.25 - 2.5 ml | 1 - 50 | | \$390.00 |
| 2. | BEAT-5 | 0.5 - 5 ml | 51 + ASK! | | |
| 3. | BEAT-10 | 1 - 10 ml | | | |

| S.No. | Model No. | Volume Range | FOR BEAT-30 & BEAT-60 | | |
|-------|-----------|--------------|-----------------------|--|-------------------|
| | | | Quantity (Pcs) | | List Price (US\$) |
| 4. | BEAT-30 | 2.5 - 30 ml | 1 - 50 | | \$420.00 |
| 5. | BEAT-60 | 5 - 60 ml | 51 + ASK ! | | |

| S.No. | Model No. | Volume Range | FOR BEAT-100 | | |
|-------|-----------|--------------|----------------|---------------------|--------------------|
| | | | Quantity (Pcs) | Dealer Price (US\$) | List Price (AUD\$) |
| 6. | BEAT-100 | 10 - 100 ml | 1 - 50 | | \$495.00 |
| | | | 51 + ASK ! | | |



8. Bottle Top Dispenser with Patented Dual Inlet Technology - *Ultimus*

| S.No. | Model No. | Volume Range |
|-------|-----------|---------------|
| 1. | ULT-2.5 | 0.25 - 2.5 ml |
| 2. | ULT-5 | 0.5 - 5 ml |
| 3. | ULT-10 | 1 - 10 ml |

| FOR ULT-2.5, ULT-5 & ULT-10 |
|-----------------------------|
| List Price (AUS\$) |

A\$525.00

| S.No. | Model No. | Volume Range |
|-------|-----------|--------------|
| 4. | ULT-30 | 2.5 - 30 ml |
| 5. | ULT-60 | 5 - 60 ml |

| FOR ULT-30 & ULT-60 |
|---------------------|
| List Price (AUS\$) |

\$575.00

| S.No. | Model No. | Volume Range |
|-------|-----------|--------------|
| 6. | ULT-100 | 10 - 100 ml |

| FOR ULT-100 |
|--------------------|
| List Price (AUS\$) |

\$595.00



9. Motorized Burette - *e*-Burette

| S.No. | Model No. | Capacity |
|-------|-----------|----------|
| 1. | TI-10 | 10 ml |
| 2. | TI-25 | 25 ml |
| 3. | TI-50 | 50 ml |

| FOR TI-10, TI-25, TI-50 | | |
|-------------------------|---------------------|--------------------|
| Quantity (Pcs) | Dealer Price (US\$) | List Price (AUD\$) |
| 1 - 50 | | \$1020.00 |



10. Pipette Stands

| S.No. | Model No. | Description | List Price (AUS\$) |
|-------|-----------|-------------------------|--------------------|
| 1. | MS-I | For 3 Pipettes | 40.00 |
| 2. | MS-II | For 6 Pipettes | 48.00 |
| 3. | MS-III | For 8-Channel Pipette | 56.00 |
| 4. | MS-IV | For 12-Channel Pipette | 64.00 |
| 5. | MS-V | For 1 Pipette (Modular) | 26.00 |



11. Tips for Micropipette

| S.No. | Model No. | Capacity | Quantity | | List Price (AUD\$) |
|-------|-----------|--------------------|--------------|--|--------------------|
| 1. | MTSP | upto 10 μ l | Pkt. of 100 | | 18 |
| 2. | MT-I | upto 200 μ l | Pkt. of 1000 | | 35 |
| 3. | MT-II | upto 1000 μ l | Pkt. of 1000 | | 39 |
| 4. | MT-V | upto 5000 μ l | Pkt. of 100 | | 45 |
| 5 | MT-IV | upto 10000 μ l | Pkt. of 100 | | 54 |

MT-IV



MT-V



MT-II



MT-I

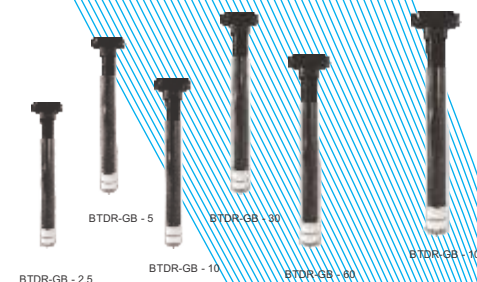


MTSP



12. Spare parts for Bottle Top Dispenser (Research Model)

| S.No. | Part No. | Description | Dealer Price (US\$) |
|-------|-----------------|--|---------------------|
| 1. | BTDR-GB - 2.5 | Borosilicate Glass Cylinder for 2.5 ml dispenser | 18.00 |
| 2. | BTDR-GB - 5 | Borosilicate Glass Cylinder for 5 ml dispenser | 24.00 |
| 3. | BTDR-GB - 10 | Borosilicate Glass Cylinder for 10 ml dispenser | 10.00 |
| 4. | BTDR-GB - 30 | Borosilicate Glass Cylinder for 30 ml dispenser | 39.00 |
| 5. | BTDR-GB - 60 | Borosilicate Glass Cylinder for 60 ml dispenser | 42.00 |
| 6. | BTDR-GB - 100 | Borosilicate Glass Cylinder for 100 ml dispenser | 50.00 |
| 7. | BTDR - ADPT | Set of 5 adaptors 28, 32, 36, 40,45 (mm) | |
| 8. | BTDR - IT | Telescopic Tube common for all size | 10 |
| 9. | BTDR - VAK - I | Volume adjustment Knob for 2.5, 5 & 10 ml dispenser | 8.00 |
| 10. | BTDR - VAK - II | Volume adjustment Knob for 30, 60 & 100 ml dispenser | 10.00 |
| 11. | BTDR - DN - I | Delivery Nozzle with PTFE Screw adaptor and FEP tubing for 2.5, 5 & 10 ml dispenser | 12.00 |
| 12. | BTDR - DN - II | Delivery Nozzle with PTFE Screw adaptor and FEP tubing for 30, 60 & 100 ml dispenser | 12.00 |
| 13. | BTDR - DTC | Delivery Tube Cover with nozzle cap common for all sizes of di: | 12.00 |



12. Spare parts for Bottle Top Dispenser (Research Model)

| S.No. | Part No. | Description | Dealer Price (AUD\$) |
|-------|------------------|---|----------------------|
| 14. | BTDR - PIS - 2.5 | PTFE Piston with shaft for 2.5 ml dispenser | 24.00 |
| 15. | BTDR - PIS - 5 | PTFE Piston with shaft for 5 ml dispenser | 24.00 |
| 16. | BTDR - PIS - 10 | PTFE Piston with shaft for 10 ml dispenser | 40.00 |
| 17. | BTDR - PIS - 30 | PTFE Piston with shaft for 30 ml dispenser | 52.00 |
| 18. | BTDR - PIS - 60 | PTFE Piston with shaft for 60 ml dispenser | 52.00 |
| 19. | BTDR - PIS - 100 | PTFE Piston with shaft for 100 ml dispenser | 60.00 |



13. Spare parts for Bottle Top Dispenser - Beatus (With Re-Circulation Valve)

| S.No. | Part No. | Description | Dealer Price (AUD\$) |
|-------|-----------------|--|----------------------|
| 1. | BEAT - GB - 2.5 | Borosilicate Glass Cylinder for 2.5 ml dispenser | 24.00 |
| 2. | BEAT - GB - 5 | Borosilicate Glass Cylinder for 5 ml dispenser | 32.00 |
| 3. | BEAT - GB - 10 | Borosilicate Glass Cylinder for 10 ml dispenser | 40.00 |
| 4. | BEAT - GB - 30 | Borosilicate Glass Cylinder for 30 ml dispenser | 523.00 |
| 5. | BEAT - GB - 60 | Borosilicate Glass Cylinder for 60 ml dispenser | 52.00 |
| 6. | BEAT - GB - 100 | Borosilical | |



13. Spare parts for Bottle Top Dispenser - Beatus (With Re-Circulation Valve)

| S.No. | Part No. | Description | Dealer Price (AUD\$) |
|-------|--------------------|---|----------------------|
| 7. | BEAT - ADPT | Set of 5 adaptors 28mm, 32mm, 36mm, 40mm, 42mm | 32.00 |
| 8. | BEAT - IT | Telescopic Tube common for all size | 12.00 |
| 9. | BEAT - VAK - I | Volume adjustment Knob for 2.5, 5 & 10ml dispenser | 14.00 |
| 10. | BEAT - VAK - II | Volume adjustment Knob for 30, 60 & 100ml dispenser | 16.00 |
| 11. | BEAT - DN-DTC - I | Delivery Nozzle with PTFE Screw adaptor and FEP tubing for 2.5, 5 & 10ml | 20.00 |
| 12. | BEAT - DN-DTC - II | Delivery Nozzle with PTFE Screw adaptor and FEP tubing for 30, 60 & 100ml | 24.00 |
| 13. | BEAT - PIS 2.5 | PTFE Piston with shaft for 2.5ml dispenser | 24.00 |
| 14. | BEAT - PIS 5 | PTFE Piston with shaft for 5ml dispenser | 32.00 |
| 15. | BEAT - PIS 10 | PTFE Piston with shaft for 10ml dispenser | 40.00 |
| 16. | BEAT - PIS 30 | PTFE Piston with shaft for 30ml dispenser | 52.00 |
| 17. | BEAT - PIS 60 | PTFE Piston with shaft for 60ml dispenser | 52.00 |
| 18. | BEAT - PIS 100 | PTFE Piston with shaft for 100ml dispenser | 60.00 |



BEAT - ADPT



BEAT - IT



BEAT - VAK - I



BEAT - VAK - II



BEAT - DN-DTC-I



BEAT - DN-DTC-II



BEAT - PIS - 2.5

BEAT - PIS - 5

BEAT - PIS - 10

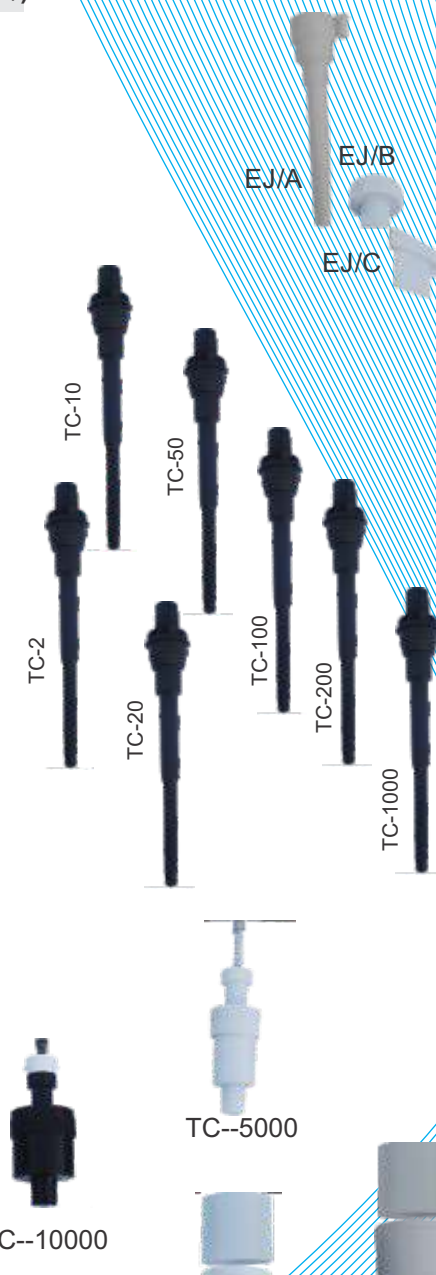
BEAT - PIS - 30

BEAT - PIS - 60

BEAT - PIS - 100

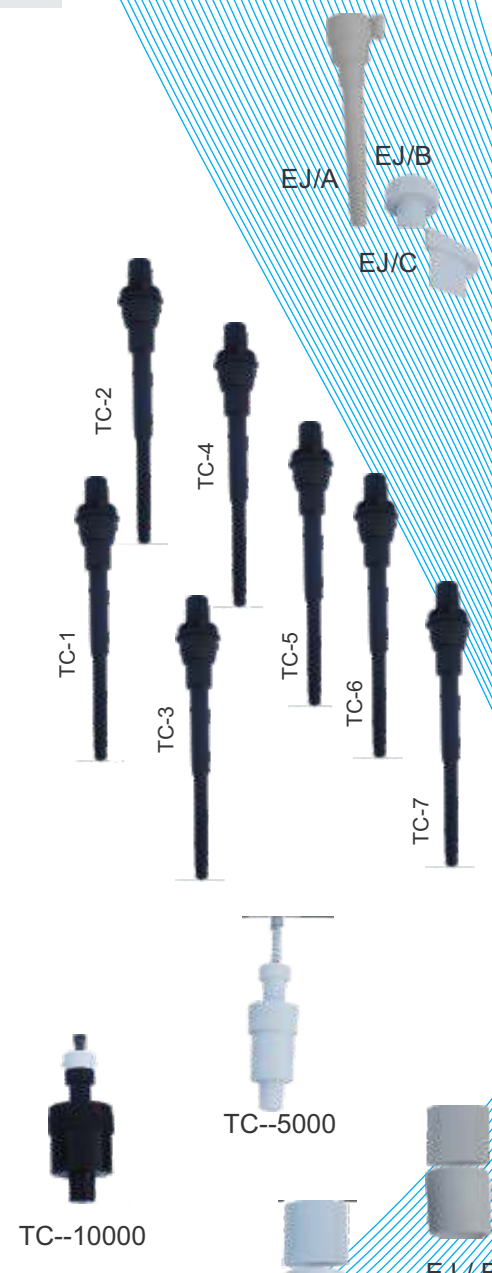
14. Spare parts for Micropipette - Variable Volume

| S.No. | Part No. | Description | Dealer Price (AUD\$) |
|-------|----------|--|----------------------|
| 1. | EJ/A | Tip Ejector with push button & ejector button 0.2-2 μ l | 10.00 |
| 2. | EJ/B | Tip Ejector with push button & ejector button 0.5--10, 2-20, 5-50, 10-100, 20-200 μ l | 10.00 |
| 3. | EJ/C | Tip Ejector with push button & ejector button 100--1000 μ l | 10.00 |
| 4. | | | |
| 5. | TC-2 | Tip Cone Assembly for 0.2 - 2 μ l | 32.00 |
| 6. | TC--10 | Tip Cone Assembly 0.5 - 10 μ l | 32.00 |
| 7. | TC-20 | Tip Cone Assembly 2 - 20 μ l | 32.00 |
| 8. | TC-50 | Tip Cone Assembly 5 - 50 μ l | 32.00 |
| 9. | TC-100 | Tip Cone Assembly 10 - 100 μ l | 32.00 |
| 10. | TC-200 | Tip Cone Assembly 20 - 200 μ l | 32.00 |
| 11. | TC-1000 | Tip Cone Assembly 100 - 1000 μ l | 32.00 |
| 12. | TC-5000 | Tip Cone Assembly 500 - 5000 μ l | 40.00 |
| 13. | TC-10000 | Tip Cone Assembly 1000 - 10000 μ l | 40.00 |
| 24. | EJ/D | Tip Ejector (Higher Volume Micropipette) 500-5000 μ l Ejector Set (Top & Bottom) | 12.00 |
| 25. | EJ/E | Tip Ejector (Higher Volume Micropipette) 1000-10000 μ l Ejector Set (Top & Bottom) | 12.00 |



15. Spare parts for Micropipette - Fixed Volume

| S.No. | Part No. | Description | Dealer Price (AUD\$) |
|-------|----------|--|----------------------|
| 1. | EJ/A | Tip Ejector with push button & ejector button 1 - 2 μ l | 8.00 |
| 2. | EJ/B | Tip Ejector with push button & ejector button 10 μ l, 20 μ l, 50 μ l, 100 μ l, 200 μ l | 8.00 |
| 3. | EJ/C | Tip Ejector with push button & ejector button 1000 μ l | 8.00 |
| 4. | TC - 1 | Tip Cone Assembly 1 - 2 μ l | 20.00 |
| 5. | TC - 2 | Tip Cone Assembly 5, 10, 20, 25 μ l | 20.00 |
| 6. | TC - 3 | Tip Cone Assembly 50 | 20.00 |
| 7. | TC - 4 | Tip Cone Assembly 100, 200 μ l | 20.00 |
| 8. | TC - 5 | Tip Cone Assembly 250, 500, 1000 μ l | 20.00 |
| 9. | TC - 6 | Tip Cone Assembly 2000, 5000 μ l | 20.00 |
| 10. | TC - 7 | Tip Cone Assembly 10000 μ l | 20.00 |
| 11. | EJ/ D | Tip Ejector High Vol. Micropipette Ejector Set (Tip & Button) 500-5000 μ l | 12.00 |
| 12. | EJ / E | Tip Ejector High Vol. Micropipette Ejector Set (Tip & Button) 1000-10000 μ l | 12.00 |



16. Spare parts for Pipette Filling Device

| S.No. | Part No. | Description | Dealer Price (AUS\$) |
|-------|------------------|---|----------------------|
| 1 | E-FILL-FLTR | In-Line Membrane Filter 0.2ul for E-FILL (Set of 5 pcs.) | 30.00 |
| 2. | E-FILL-SCOLT SET | Silicon Collet with PC Cover (Set of 5 pcs.) | 20.00 |
| 3. | E-FILL-CHRG | Battery Charger for E-FILL | 40.00 |



E-FILL-FLTR



E-FILL-SCOLT SET



E-FILL-CHRG

Satisfaction Guaranteed

Microlit products are manufactured under strict quality control and GMP norms. However, if you are dissatisfied in any way with the operation of any Microlit product, call us or your nearest Microlit dealer for a free replacement.



Microlit

629, Pakramau, Kursi Road, Lucknow -226 026, India

Tel : +91-9919963376. +91-9839014252

E-mail : info@chromtech.net.au

HRMalytic +61(0)3 9762 2034
ECHnology Pty Ltd

Website NEW : www.chromalytic.net.au E-mail : info@chromtech.net.au Tel: 03 9762 2034 . . . in AUSTRALIA

Australian Distributors
 Importers & Manufacturers
www.chromtech.net.au

Product Description:

The pipettes are continuously adjustable, general purpose micropipettes for sampling and dispensing accurate liquid volume.

It operates on air displacement principal (i.e. an air interface is present between the piston and liquid) and uses a detachable, disposable tip. Desired volume is determined by the following formula.

$V = \pi r^2 h$
where
v = desired volume
r = radius
h = vertical distance traveled by the plunger.
Nine Models cover a range from 0.2 µl to 10µl.

Digital Display:

The adjustable volume micropipettes are filled with easy to read digital display.

Raw Material:

The pipette are made of mechanically durable and autoclavable materials

Pipette Operation:

Setting the delivery volume
1. Set the delivery volume using the pushbutton on the top of the pipette. To increase the delivery volume, turn the push button counter clockwise To decrease the delivery volume, turn it clockwise,
2. Make sure that the desired delivery click in to place.
3. Do not set volume outside the pipette's specified volume range.



Using excessive force to turn the push button out side the range may jam the mechanism and eventually damage the pipette.

Tip Ejection:

Each pipette is fitted with a tip ejector. This helps to eliminate the risk of contamination. To eject the tip, point the pipette at suitable waste receptacle and press the ejector button with your thumb.



Pipetting Techniques:

Push and release the push button slowly at all time particullary when working with high viscosity liquids. Never allow the push button to snap back, make sure that the tip is firmly attached to the tip cone. Check for foreign particles in the tip. Before you begin your actual pipetting work, fill and empty the tip 2-3 times with the solution that you will be pipetting. Hold the pipette in an upright position while aspirating liquid. The grippy should rest on your index finger. Make sure that the tips, pipette and solution are at the same temperature.

Forward Technique:

Fill a clean reagent reservoir with the liquid to be dispensed.
1. Depress the push button to the first stop.
2. Dip the tip under the surface of the liquid in the reservoir to a depth of about 1 cm. and slowly release the push button .
Withdraw the tip from the liquid touching it against the edge of the reservoir to remove excess liquid.
3. Deliver the liquid by gently depressing the push button to the



first stop. After a delay of about one second stop. this action will empty the tip.
4. Release the push button to the ready position. If necessary change the tip and continue pipetting.

Reverse Technique:

The reverse technique is suitable for dispensing liquids that have a high viscosity or a tendency to foam easily. The technique is also recommended for dispensing very small volume. Fill a clean reagent reservoir with the liquid to be dispensed.
1. Depress the push button all the way to the second stop.
2. Dip the tip under the surface of the liquid in the reservoir to a depth of about 1 cm. and slowly release the push button. Withdraw the tip form the liquid touching it against the edge of the reservoir to remove excess liquid.
3. Deliver the liquid by gently depressing the push button to the first stop. After a delay of about one second, continue to depress the push button all the way to the second stop. This action will empty the tip.
4. The remaining liquid should either be discarded with the tip or pipetted back in to the container to be dispensed.
1. Depress the push button all the way to the second stop.

Repetitive Technique

The repetitive technique offers a rapid and simple procedure for repeated delivery of the same volume.



Fill a clean regent reservoir with the liquid to be dispensed.
1. Depress the push button all the

way to the second stop.
2. Dip the tip under the surface of the liquid in the reservoir to a depth of about 1 cm. and slowly release the push button. This action will fill the tip. Withdraw the tip from the liquid touching against the edge of the reservoir to remove excess liquid.
3. Deliver the preset volume by gently depressing the push button to the first stop. Hold the push button at the first stop. Some liquid will remain in the tip and this should not be included in the delivery.
4. Continue pipetting by repeating step 3 and 4.



Pipetting of hetrogeneous samples

(deproteinization in blood glucose determination, for example)

Use steps 1 and 2 of the forward technique to fill the tip with blood. Wipe the tip carefully with a dry clean tissue.

1. Immerse the tip into the reagent and depress the push button to the first stop. making sure the tip is well below the surface.
2. Release the push button slowly to the ready position. This will fill the tip. Keep the tip in the solution. First stop and release slowly. Keep repeating this procedure until the interior wall of the tip is clear.
4. Finally, depress the push button all the way to completely empty the tip.

Calibration and adjustment

All the pipettes are factory calibrated

and adjusted to give the volume as specified with distilled or deionized water using the forward pipetting technique.

It should be noted that the use of other pipetting techniques may affect the calibration results. The pipettes are constructed to permit re-adjustment for other pipetting techniques or liquids of different temperature and viscosity.

Device requirements and test conditions

An analytical balance must be used. The scale graduation value of the balance should be chosen according to the selected test volume of pipette.

Volume Range Readable

| Graduation under | |
|------------------|----------|
| 10 µl | 0.001 mg |
| 100 µl | 0.01 mg |
| above100 µl | 0.1 mg |

Test liquid Water, distilled or deionized “grade 3” water conforming ISO 3696. Tests are done in a draft-free room at a constant (±0.5°C) temperature of water pipette and air between 15°C to 30°C. The relative humidity must be above 50% . Especially with volumes under 50 µl, the air humidity should be as high as possible to reduce the effect of evaporation trap are recommended.

Procedure

1. Do 10 Pipetting with the minimum volume.
2. Do 10 Pipetting with the maximum volume.
3. Calculate the inaccuracy (A) and imprecision (cv) of both series.
4. Compare the result to the limits in

the Table 1.
If the calculated results within the selected limits. The adjustments of pipette is correct adjustment

| Range | Volume | Inaccuracy | | Imprecision | |
|----------------|--------|------------|------|-------------|-------|
| | µl | ±% | µl | cv±% | µl |
| 0.2 µl - 2 µl | 2 | 2 | .04 | 1.2 | 0.024 |
| 0.5 µl - 10 µl | 10 | 1 | 0.1 | 0.5 | 0.05 |
| 2 µl - 20 µl | 20 | 0.8 | 0.16 | 0.4 | 0.08 |
| 5 µl- 50 µl | 50 | 0.8 | 0.4 | 0.4 | 0.2 |
| 10 µl - 100 µl | 100 | 0.6 | 0.6 | 0.2 | 0.2 |
| 20 µl- 200 µl | 200 | 0.6 | 1.2 | 0.2 | 0.4 |
| 100 µl- 1 ml | 1000 | 0.6 | 6 | 0.2 | 2 |
| 0.5 ml - 5 ml | 5000 | 0.6 | 30 | 0.2 | 10 |
| 1 ml -10 ml | 10000 | 0.6 | 60 | 0.2 | 20 |

| Fixed Volume | Inaccuracy | | Imprecision | |
|--------------|------------|------|-------------|------|
| µl | ±% | µl | cv±% | µl |
| 5 | 2 | 0.1 | 1 | 0.05 |
| 10 | 1 | 0.1 | 0.5 | 0.05 |
| 20 | 0.8 | 0.16 | 0.4 | 0.08 |
| 25 | 0.8 | 0.2 | 0.4 | 0.1 |
| 50 | 0.8 | 0.4 | 0.4 | 0.2 |
| 100 | 0.6 | 0.6 | 0.2 | 0.2 |
| 200 | 0.6 | 1.2 | 0.2 | 0.4 |
| 500 | 0.6 | 3 | 0.2 | 1 |
| 1000 | 0.6 | 6 | 0.2 | 2 |
| 2000 | 0.6 | 12 | 0.2 | 4 |
| 5000 | 0.6 | 30 | 0.2 | 10 |
| 10000 | 0.4 | 40 | 0.2 | 20 |

Adjustment

Adjustment is done with the service tool.
1. Place the service tool into the openings of the calibration nut at the top of the handle.
2. Turn the service tool clockwise to increase, or counter clockwise to decrease the volume.
3. After adjustment check the calibration according to the Instructions above.

Formula for calculating results
conversion of mass to volume
V= (w+e) x Z
v = volume (µl)
w= weight (mg)
e= evaporation loss (mg)
z=conversion factor for µl/mg
conversion
Evaporation loss can be significant with low volume. To determine mass loss. Dispense water to the weighing vessel, note the reading and start a stopwatch. See how much the reading decreases during 30 seconds.
(i.e. 6mg=0.2 mg/s)
Compare this to the pipetting time from taring to reading, typically pipetting time might be 10 seconds and the mass loss is 2 mg (10s x 0.2 mg/s) in this example . If an evaporation trap or lid on the vessel is used the correction of evaporation is usually unnecessary. The factor Z is for converting the weight of the water to value is 1.0032 µl/mg at 22°C and 95 kPa. See conversion table below.

| Temperature °C | Air pressure kPa | | | | | | |
|----------------|------------------|--------|--------|--------|--------|--------|--------|
| | 80 | 85 | 90 | 95 | 100 | 101.3 | 105 |
| 15.0 | 1.0017 | 1.0018 | 1.0019 | 1.0019 | 1.0020 | 1.0020 | 1.0020 |
| 15.5 | 1.0018 | 1.0019 | 1.0019 | 1.0020 | 1.0020 | 1.0020 | 1.0021 |
| 16.0 | 1.0019 | 1.0020 | 1.0020 | 1.0021 | 1.0021 | 1.0021 | 1.0022 |
| 16.5 | 1.0020 | 1.0020 | 1.0021 | 1.0021 | 1.0022 | 1.0022 | 1.0022 |
| 17.0 | 1.0021 | 1.0022 | 1.0022 | 1.0022 | 1.0023 | 1.0023 | 1.0023 |
| 17.5 | 1.0022 | 1.0022 | 1.0023 | 1.0023 | 1.0024 | 1.0024 | 1.0024 |
| 18.0 | 1.0022 | 1.0023 | 1.0023 | 1.0024 | 1.0025 | 1.0025 | 1.0025 |
| 18.5 | 1.0023 | 1.0024 | 1.0024 | 1.0025 | 1.0025 | 1.0026 | 1.0026 |
| 19.0 | 1.0024 | 1.0025 | 1.0025 | 1.0026 | 1.0026 | 1.0027 | 1.0027 |
| 19.5 | 1.0025 | 1.0026 | 1.0026 | 1.0027 | 1.0027 | 1.0028 | 1.0028 |
| 20.0 | 1.0026 | 1.0027 | 1.0027 | 1.0028 | 1.0028 | 1.0029 | 1.0029 |
| 20.5 | 1.0027 | 1.0028 | 1.0028 | 1.0029 | 1.0029 | 1.0030 | 1.0030 |
| 21.0 | 1.0028 | 1.0029 | 1.0029 | 1.0030 | 1.0031 | 1.0031 | 1.0031 |
| 21.5 | 1.0030 | 1.0031 | 1.0031 | 1.0031 | 1.0032 | 1.0032 | 1.0032 |
| 22.0 | 1.0031 | 1.0032 | 1.0032 | 1.0032 | 1.0033 | 1.0033 | 1.0033 |
| 22.5 | 1.0032 | 1.0033 | 1.0033 | 1.0033 | 1.0034 | 1.0034 | 1.0034 |
| 23.0 | 1.0033 | 1.0034 | 1.0034 | 1.0034 | 1.0035 | 1.0035 | 1.0036 |
| 23.5 | 1.0034 | 1.0035 | 1.0035 | 1.0036 | 1.0036 | 1.0036 | 1.0037 |
| 24.0 | 1.0035 | 1.0036 | 1.0036 | 1.0037 | 1.0037 | 1.0038 | 1.0038 |
| 24.5 | 1.0037 | 1.0038 | 1.0038 | 1.0038 | 1.0039 | 1.0039 | 1.0039 |
| 25.0 | 1.0038 | 1.0039 | 1.0039 | 1.0039 | 1.0040 | 1.0040 | 1.0040 |
| 25.5 | 1.0039 | 1.0040 | 1.0040 | 1.0041 | 1.0041 | 1.0041 | 1.0042 |
| 26.0 | 1.0040 | 1.0041 | 1.0041 | 1.0042 | 1.0042 | 1.0043 | 1.0043 |
| 26.5 | 1.0042 | 1.0043 | 1.0043 | 1.0043 | 1.0044 | 1.0044 | 1.0044 |
| 27.0 | 1.0043 | 1.0044 | 1.0044 | 1.0045 | 1.0045 | 1.0045 | 1.0046 |
| 27.5 | 1.0045 | 1.0046 | 1.0046 | 1.0046 | 1.0047 | 1.0047 | 1.0047 |
| 28.0 | 1.0046 | 1.0047 | 1.0047 | 1.0047 | 1.0048 | 1.0048 | 1.0048 |
| 28.5 | 1.0048 | 1.0048 | 1.0048 | 1.0049 | 1.0049 | 1.0050 | 1.0050 |
| 29.0 | 1.0049 | 1.0050 | 1.0050 | 1.0050 | 1.0051 | 1.0051 | 1.0051 |
| 29.5 | 1.0051 | 1.0051 | 1.0051 | 1.0052 | 1.0052 | 1.0052 | 1.0052 |
| 30.0 | 1.0052 | 1.0053 | 1.0053 | 1.0053 | 1.0054 | 1.0054 | 1.0054 |

Inaccuracy (systematic error):

Inaccruracy is the difference between the dispensed volume and the selected volume of a pipette.
A = \bar{V} - V_o
A = inaccuracy
 \bar{V} = mean volume
V_o = normal volume
Inaccuracy can be expressed as a relative value A%= 100% x A/V°
imprecision (random error)
Imprecision refers to the repeatability of the pipetting. It is expressed as standard deviation (s) or coefficient of variation (cv)

$$s = \sqrt{\frac{\sum_{i=1}^n (V_i - \bar{V})^2}{n-1}}$$

s= standard deviation

v= mean volume
n= number of measurment
Standard deviation can be expressed as a relative value (cv)
CV = 100% x S/V

Maintenance:

When pipette is not in use, make sure it is stored in an upright position. We recommend a stand for this purpose .

Short term service:

The Pipette should be checked at the begining of each day for dust and dirt on the outside surface of the pipette. Particular attention should be paid to tip cone. No other solvents except 70% ethanol should be used to clean the pipette.

Long Term Service
Single Channel Pipette:

If pipette is used daily it should be checked every three month. The servicing procedure starts with the disassembly of the pipette.

1. Press the tip ejector button and

pull the tip ejector out (fig. 1)
2. Turn the tip cone counter clockwise to unscrew (fig.2).
3. Fix the service tool on the O-ring seat and turn clockwise to open. P
ull out the O-ring seat and turn the tip cone upside down and retrieve the O-ring.
4. Clean the tip cone for foreign particles.
5. Grease the cleaned parts with lubricant preferably silicon grease.

Reassembly:

For range 0.2-2 µl, 0.5-10µl, 5-10µl 5-50 µl, 10-100µl, 20-200µl.
• Place the O-ring in the tip cone and screw the O-ring seat with help of service tool.
• Place the spring on the piston and slide inside the tip cone.
• Screw the assembled tip cone in the main housing.
• Slide the tip ejector on the tip cone.
• Turn the tip ejector clockwise while forcing the ejector panel downwards.

Dis-assembly:

For 0.5-5µl, 1-10ml pull the lower position of the ejector to dis-engage from the upper portion. Unscrew the tipcone from the main housing.
The tip cone is in two portion, the lower portion can be unscrewed from the upper portion to expose the piston. (fig.12)

Sterlization:

The entire pipette can be sterlized by autoclaving it at 121°C(252°F)(2ata) (minimum 20 minutes) No special preperation are needed for autoclaving. You can use stream sterlization bags if nedded.

After autoclaving, the pipette must

be cooled to room temperature for at least two hours. Before pipetting, make sure that pipette is dry. We recommend that you check the calibration after every sterlization cycle to achieve the best possible accuracy.

Trouble shooting:

The table below lists possible problem and thier solutions.

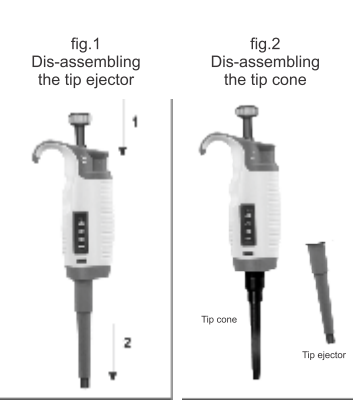
| Defect | Possible reason | Solution |
|--|---|---|
| Leakage | Tip incorrectly attached | Attach firmly |
| | Foreign particles between tip and tip cone | Clean tip cones attach new tip |
| | Foreign particles between the piston, the o-ring and the cylinder | Clean and grease O-ring and Cylinder |
| | Insufficient amount of grease on cylinder and o-ring, O-ring Damaged | Grease accordingly Change the O-ring |
| Inaccurate dispensing | Incorrect operation Tip incorrectly attached calibration altered caused misuse,for examples | Follow instruction carefully attach firmly Recalibration according to instructions |
| Inaccurate dispensing with certain liquids | Unsuitable calibration High viscosity liquids may require recalibration | Recalibration with the liquids in quistion |

Package:

The Pipette is shiped in a specially designed package containing the following items.
1. Service Tool
2. Tip Sample
3. Instruction Manual
4. Calibration Certificate
5. Shelf Hanger

Caution:

The Pipette is designed to allow easy in-lab service. If you would prefer to have us or your local representative service your pipette, please make sure that the pipette has been decontaminated before you send it to us. Please note that the postal authorities in your country may prohibit or restrict the shipment of contaminated material by mail.



Operation Manual MICROPIPETTE

Operation Manual



BOTTLE TOP
DISPENSER

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Intended Use Of The Instrument

The Bottle Top Dispenser is a general purpose laboratory instrument intended for use in laboratories for dispensing reagents and chemicals which are compatible with the instrument. (see page 4)

Safety Instructions

This instrument may sometimes be used with hazardous materials, operations and equipments. It is beyond the scope of this manual to address all of the potential risks associated with its use in such applications. It is the responsibility of the user of this instrument to consult and establish appropriate safety and health practice and determine the applicability of regulatory limitations prior to use.

 Please read the following carefully!

- 1). Every user must read and understand this operating manual before operation.
- 2). Follow general instructions for hazard prevention and safety instructions e.g. wear protective clothing, eye protection and gloves.
- 3). Observe all specifications provided by reagent manufacturers.
- 4). When dispensing inflammable media, make sure to avoid the built up of static charge, e.g. do not dispense into plastic vessels do not wipe instruments with a dry cloth.
- 5). Use the instrument only for dispensing liquids, with strict regard to the defined limitations of use and operating limitations. (see page 2) Observe operating exclusions.
If in doubt, contact the manufacturer or supplier.
- 6). Always use the instrument in such a way that neither the user nor any other person is endangered. When dispensing, the discharge tube must always point away from you or any other person. Avoid splashes. Only dispense into suitable vessels.
- 7). Never press down the piston when the discharge tube closure is attached.
- 8). Never remove the discharge tube while the dispensing cylinder is filled.
- 9). Reagents can accumulate in the cap of the discharge tube. Thus, it should be cleaned regularly.
- 10). Never carry the mounted instrument by the cylinder sleeve or the valve block. Breakage or loosening of the cylinder may also lead to personal injury from chemicals.
- 11). Never use force on the instrument. Use smooth gentle movements to operate the piston upwards and downwards. Use only original manufacturer's accessories and spare parts.
- 12). Do not attempt to make any technical alterations. Do not dismantle the instrument any further than is described in the operating manual.

- 13). Always check the instrument for visual damage before use.
- 14). If there is a sign of a potential malfunction (e.g. piston difficult to move, sticking valve or leakage). immediately stop dispensing. Consult the 'Troubleshooting' section of this manual and contact the manufacturer if needed. (see page 19)

Functions and Limitations of Use

The bottle top dispenser is designed for dispensing liquids directly from the reservoir bottle.

The instrument is calibrated according to the requirements of the DIN EN ISO 8655 – 5.

When the instrument is correctly used, the dispensed liquid comes into contact with only the following chemically resistant materials:

PTFE, FEP and Borosilicate glass.

Limitations of use :

- This instrument is designed for dispensing liquids, observing the following physical limits:
- Use temperature from +15°C to +40°C (from 59°F to 104°F) of instrument and reagent
- Vapor pressure up to max. 600 mbar. Aspirate slowly above 300 mbar, in order to prevent the liquid from boiling.
- Kinematic viscosity 500 mm²
(dynamic viscosity [mPas] = kinematic viscosity [mm² /s] x density [g/cm³])
- Density: up to 2.2 g/cm³

Operating Limitations :

Liquids, which form deposits may make the piston difficult to move or may cause jamming (e.g., crystallizing solutions or concentrated alkaline solutions). If the piston becomes difficult to move, the instrument should be cleaned immediately. (see page 14)

When dispensing inflammable media, make sure to avoid buildup of static charge, e.g. do not dispense into plastic vessels, do not wipe instrument with a dry cloth.

The Dispenser is designed for general laboratory applications and complies with the relevant standards, e.g. DIN EN ISO 8655. Compatibility of the instrument for a specific application (e.g. trace material analysis, food sector etc.) must be checked by the user. Approvals for specific applications, e.g. for production and administration of food, pharmaceuticals and cosmetics are not available.

Operating Exclusions

Never use with:

Liquids attacking FEP, PFA and PTFE (e.g. dissolved sodium azide*)

Liquids attacking borosilicate glass (e.g. hydrofluoric acid)

Hydrochloric acid > 40% and nitric acid >70% | Tetrahydrofuran | Trifluoroacetic acid

Explosive liquids (e.g. carbon disulfide)

Suspensions (e.g. of charcoal) as solid particles may clog or damage the instrument

Liquids attacking PP (cap)**

* Dissolved sodium azide permitted up to a concentration of max. 0.1%.

** Liquids attacking PP (cap)

Storage Conditions

Store the instrument and accessories only in clean conditions in a cool and dry place. Storage temperature: from – 20°C to +50°C (from – 4°F to 122°F)

Chemical Resistance

Chemicals from A to Z

The following list includes most frequently used chemicals. It provides useful information for the safe and adequate use of the Dispenser. However, safety precautions and recommendations in operating instructions must be followed carefully.

Code explanations

A = Good resistance B = Acceptable with limitations C = Not recommended

1 = Possible crystallisation - blockage or possible coating peeling
(do not let dry plunger/barrel together).

2 = Swell of plunger protection layer, possible peeling.

3 = Acid vapours (better resistance with lower concentration).

Do not leave instrument on bottle.

4 = Risk of damage, softening or discoloration of external parts through vapours.

Do not leave instrument on bottle.

5 = Chemical degradation of glass parts (plunger/barrel).

List of Reagents

| Chemicals A - Z | |
|-------------------------------|-----|
| A | |
| Acetaldehyde (Ethanal) | A |
| Acetic acid 96% | A |
| Acetic acid 100% (glacial) | B/4 |
| Acetic anhydride | B/4 |
| Acetone (Propanone) | B/4 |
| Acetonitrile (MECN) | B/4 |
| Acetophenone | B/4 |
| Acetyl Chloride | B/4 |
| Acetylacetone | A |
| Acrylic acid | A |
| Acrylonitrile | B/4 |
| Adipic acid | A |
| Allyl alcohol | A |
| Aluminum chloride | A |
| Amino acids | A |
| Ammonia 20% | B/4 |
| Ammonia 20-30% | B/4 |
| Ammonium chloride | A |
| Ammonium fluoride | A |
| Ammonium molybdate | A |
| Ammonium sulfate | A |
| Amyl alcohol (Pentanol) | A |
| Amyl chloride (Chloropentane) | B/4 |
| Aniline | A |
| Ascorbic acid | A |
| n-Amyl acetate | B/4 |
| B | |
| Barium chloride | A |
| Benzaldehyde | A |
| Benzene | B/4 |
| Benzine | A |
| Benzoyl chloride | B/4 |
| Benzyl alcohol | A |
| Benzyl chloride | B/4 |
| Bis(2-ethylhexyl) phthalate | B/4 |
| Boric acid 10% | A |
| Bromine | C/4 |
| Bromobenzene | B/4 |
| Bromonaphthalene | A |
| Butanediol | A |
| Butanol | A |
| Butanone (MEK) | B/4 |
| Butyl acetate | B/4 |
| Butyl methyl ether | B/4 |
| Butylamine | B/4 |
| Butyric acid | B/4 |

List of Reagents

| Chemicals A - Z | |
|--------------------------------------|-------|
| C | |
| Calcium carbonate | A |
| Calcium chloride | A |
| Calcium hydroxide | A |
| Calcium hypochlorite | A |
| Carbon disulfide | B/4 |
| Carbon tetrachloride | B/4 |
| Chlorine dioxide | B/4 |
| Chlorine water | B/4 |
| Chloro naphthalene | B/4 |
| Chloroacetaldehyde 45% | A |
| Chloroacetic acid | A |
| Chloroacetone | B/4 |
| Chlorobenzene | B/4 |
| Chlorobutane | B/4 |
| Chloroethanol | B/4 |
| Chloroform | B/4 |
| Nitro-hydrochloric acid (Aqua regia) | B/4 |
| Chlorosulfonic acid | B/4 |
| Chlorosulfuric acid 100% | B/3/4 |
| Chromic acid 100% | B/3/4 |
| Chromosulfuric acid 100% | C/3/4 |
| Citric acid | A |
| Copper fluoride | A |
| Copper sulfate | A |
| Cresol | A |
| Cumene (Isopropylbenzene) | B/4 |
| Cyanoacrylate | A |
| Cyclohexane | B/4 |
| Cyclohexanone | B/4 |
| Cyclopentane | B/4 |
| D | |
| 1,2-Diethylbenzene | B/4 |
| 1,4-Dioxane (Diethylene dioxide) | B/4 |
| 1-Decanol | A |
| Decane | A |
| Di-(2-ethylhexyl) peroxydicarbonate | B/4 |
| Dibenzyl ether | B/4 |
| Dichloroacetic acid | A |
| Dichlorobenzene | A |
| Dichloroethane | A |
| Dichloroethylene | B/4 |
| Diesel oil (Heating oil) | A |
| Diethanolamine | A |
| Diethylamine | B/4 |
| Diethylene glycol | A |
| Diethylether | B/4 |
| Dimethyl sulfoxide (DMSO) | B/4 |
| Dimethylaniline | A |
| Dimethylformamide (DMF) | B/4 |

List of Reagents

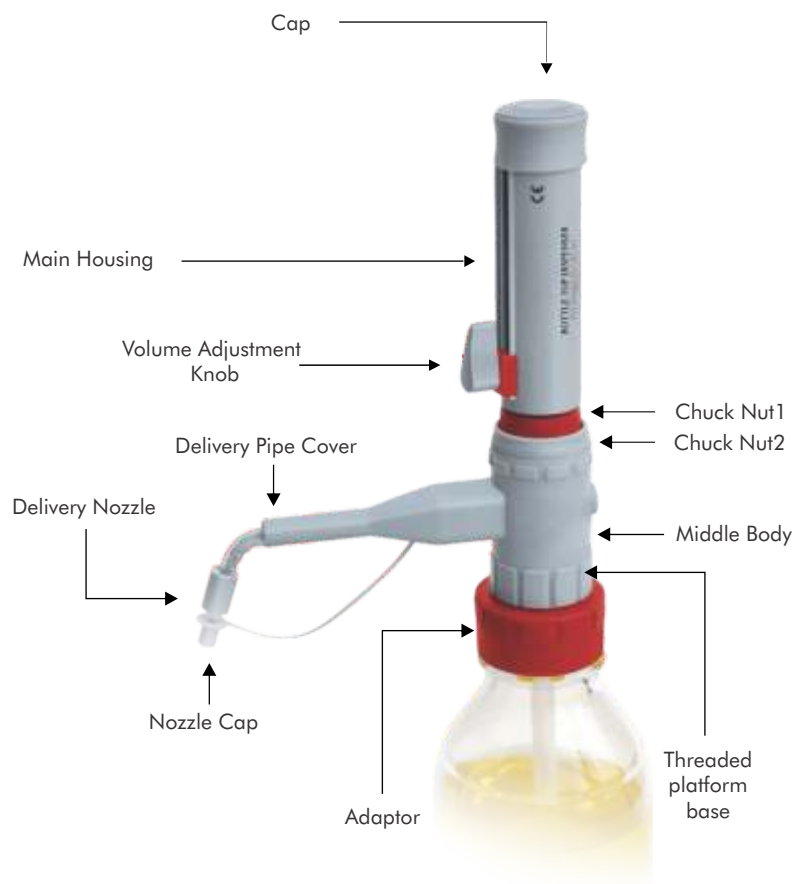
| Chemicals A - Z | |
|---------------------------------|-------|
| E | |
| Ethanol | A |
| Ethanolamine | B/4 |
| Ether | B/4 |
| Ethyl acetate | B/4 |
| Ethylbenzene | B/4 |
| Ethylene chloride | B/4 |
| Ethylene diamine | A |
| Ethylene glycol | A |
| F | |
| Fluoroacetic acid | B/1/4 |
| Formaldehyde (Formalin) | A |
| Formamide | A |
| Formic acid | A |
| G | |
| Gamma-butyrolactone | A |
| Gasoline | B/4 |
| Glycerin <40% | A |
| Glycolic acid 50% | B/1 |
| H | |
| Heating oil (Diesel oil) | A |
| Heptane | A |
| Hexane | A |
| Hexanoic acid | B/1 |
| Hexanol | A |
| Hydriodic acid | B/4 |
| Hydrobromic acid | A |
| Hydrochloric acid 20% (HCl) | A |
| Hydrochloric acid 37% (HCl) | B/3 |
| Hydrofluoric acid (HF) | C/5 |
| Hydrogen peroxide | A |
| I | |
| Iodine | A |
| Iodine bromide | C/4 |
| Iodine chloride | C/4 |
| Isoamyl alcohol | A |
| Isobutanol | A |
| Isooctane | A |
| Isopropanol | A |
| Isopropyl ether | B/4 |
| Iso-propylamine | B/4 |
| L | |
| Lactic acid | A |
| M | |
| 2-Methoxyethanol | A |
| Methanol | A |
| Methoxybenzene (Anisol) | B/4 |
| Methyl benzoate | B/4 |
| Methyl chloride (Chloromethane) | B/4 |
| Methyl formate | A |

List of Reagents

| | |
|--|-----|
| Methyl iodide (Iodomethane) | B/4 |
| Chemicals A - Z | |
| M | |
| Methyl methacrylate (MMA) | B/4 |
| Methyl propyl ketone (2-Pentanone) | A |
| Methyl tert-butyl ether | B/4 |
| Methylene chloride (Dichloromethane) (DCM) | B/4 |
| Methylpentanone | A |
| Mineral oil (engine oil) | A |
| Monochloroacetic acid | B/1 |
| N | |
| N-Butylamine | B/4 |
| Nitric acid 100% | C/4 |
| Nitric acid 30-70% | B/4 |
| Nitric acid dil. <30% | B/4 |
| Nitrobenzene | B/4 |
| Nitromethane | B/4 |
| N-methyl-2-pyrrolidone (NMP) | A |
| O | |
| Octane | A |
| Octanol | A |
| Oil (vegetable, animal) | B/4 |
| Oil of turpentine | B/4 |
| Oleic acid | A |
| Oxalic acid | A |
| P | |
| Pentane | B/4 |
| Peracetic acid | A |
| Perchloric acid 100% | B/4 |
| Perchloric acid diluted | A |
| Perchloroethylene | B/4 |
| Petroleum | B/4 |
| Petroleum ether / spirit | B/4 |
| Phenol | A |
| Phenylethanol | B/4 |
| Phenylhydrazine | B/4 |
| Phosphoric acid 100% | A |
| Phosphoric acid 85% | A |
| Piperidine | B/4 |
| Potassium chloride | A |
| Potassium dichromate | A |
| Potassium hydroxide | A |
| Potassium iodide | A |
| Potassium permanganate | A |
| Potassium peroxydisulfate (persulfate) | A |
| Potassium sulfate | A |
| Propionic acid (Propanoic acid) | A |
| Propylene glycol (Propane-1,2-diol) | A |
| Propylene oxide | A |
| Pyric acid (Trinitrophenol) | B/4 |
| Pyridine | B/4 |

List of Reagents

| | |
|----------------------------------|-----|
| Chemicals A - Z | |
| P | |
| Pyruvic acid | A |
| R | |
| Resorcin | A |
| S | |
| Salicylaldehyde | A |
| Scintillation fluid | A |
| Silver acetate | A |
| Silver nitrate | A |
| Sodium acetate | A |
| Sodium chloride (kitchen salt) | A |
| Sodium dichromate | A |
| Sodium fluoride | A |
| Sodium hydroxide 30% | A |
| Sodium hypochlorite | A |
| Sodium thiosulfate | A |
| Sulfonitric acid 100% | B/4 |
| Sulfur dioxide | B/4 |
| Sulfuric acid 100% | B/4 |
| T | |
| 1,1,2-Trichlorotrifluoroethane | B/4 |
| Tartaric acid | A |
| Tetrachlorethylene | B/4 |
| Tetrahydrofuran (THF) | B/4 |
| Tetramethylammonium hydroxide | A |
| Toluene | B/4 |
| Trichlorethylene | B/4 |
| Trichloroacetic acid | B/4 |
| Trichlorobenzene | B/4 |
| Trichloroethane | B/4 |
| Trichloromethane (Chloroform) | B/4 |
| Triethanolamine | A |
| Triethylene glycol | A |
| Trifluoroacetic anhydride (TFAA) | B/4 |
| Trifluoromethane (Fluoroform) | B/4 |
| U | |
| Urea | A |
| X | |
| Xylene | B/4 |
| Z | |
| Zinc chloride 10% | A |
| Zinc sulfate 10% | A |



First Steps

Is everything in the package ? Confirm that package includes :

Bottle Top Dispenser, discharge tube, telescoping filling tube, calibration tool, different bottle adapters, a calibration certificate and this operation manual.

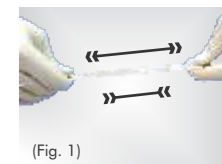
All dispensers will have the following adapters : 28, 32, 36, 40 & 45 mm.

Assembly

! Wear protective clothing, eye protection and gloves. Follow all Safety instruction and observe limitations of use and operating limitations. (see page 2)

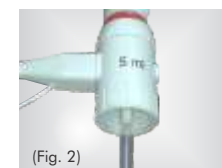
1. Adjust length of telescoping inlet tube.

The length of FEP inlet tubing provided should be adjusted to fit your particular reservoir. Longer length of inlet tube are available on request. (Fig. 1)



(Fig. 1)

2. Fix the telescoping tube. (Fig. 2)



(Fig. 2)

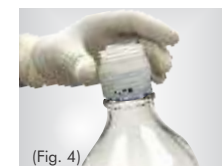
3. Choose the correct adapter for the bottle.

The threaded platform base of dispenser has a 30 mm screw thread. Four adapters are supplied to suit containers with a 28, 32, 36, 40, 45 mm and 30 mm (inbuilt adapter) screw neck. (Fig. 3)



(Fig. 3)

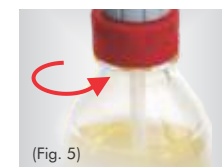
4. Fix the adapter. (Fig. 4)



(Fig. 4)

5. Mount the dispenser :

The assembled dispenser is screwed to the reservoir using gentle hand torque applied to the threaded platform base only. Removal should also be by means of hand torque applied to the same base. (Fig. 5)



(Fig. 5)

6. Ready to Use.

! Do not operate the piston until the unit is safely and fully mounted on the reservoir bottle.

⚠ Always wear protective gloves when touching the instrument or the bottle, especially when using dangerous liquids. When mounted to a reagent bottle, always carry the instrument as shown in the figure (5).

⚠ Never press down the piston when the cap is on. Avoid splashing the reagent. The reagent can drip out from the discharge tube and cap. (Fig. 9)

Priming

- Place a receiving vessel under the Dispenser's delivery nozzle. (Fig.7)
- Remove the Nozzle Cap. (Fig.9)
- Prime the unit with a few gentle up and down strokes, taking the piston right down to it's lowest stop position and lifting it up. (Fig.8)
- Repeat until a steady bubble free flow is visible in the barrel.

Dispensing

Volume Adjustment Knob (Fig. 6)

It is simple and easy to operate. There are two positions of the knob as shown in Fig. 6 A :

- Position 1 : Locked Position
- Position 2 : Unlocked Position

Setting the Volume : Follow these simple steps :

- Turn the Knob from Position 1 to Position 2 by rotating it ANTICLOCKWISE as shown in Fig. 6 B1.
- The slider is now loose and can be moved up and down.
- Set your desired volume by aligning the pointer with the scale.
- To lock the set volume, turn the Knob from Position 2 to Position 1 by rotating it CLOCKWISE as shown in Fig. 6 B2 .

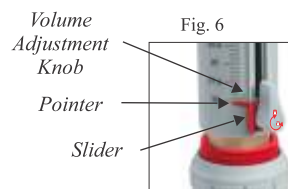


Fig. 6 A

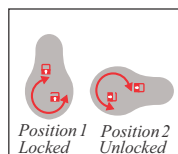


Fig. 6 B1

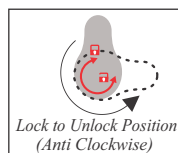


Fig. 6 B2

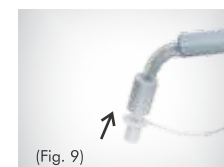
- Hold the discharge tube orifice on the inner wall of a suitable receiving vessel. (Fig. 7)



- Gently lift the piston until the upper stop and then depress piston slowly and steadily with minimal force until the lower stop. (Fig. 8)



- Wipe off the discharge tube against the inner wall of the receiving vessel.



- Reattach cap to discharge tube. (Fig. 9)

Error Limits

Error Limits related to the nominal capacity (= maximum volume) indicated on the instrument, are obtained when instrument and distilled water are equilibrated at ambient temperature (20°C/68°F). Testing takes place according to DIN EN ISO 8655-6 with a completely assembled instrument and with uniform and smooth dispensing.

| Error Limits | | Specifications (ISO 8655) | | | |
|--------------|-----------|----------------------------|-------|---------------|-------|
| Vol. Range | Increment | Accuracy ±% ± ml | | CV ±% ± ml | |
| 0.25-2.5 ml | 0.05 ml | 0.6 | 0.015 | 0.2 | 0.005 |
| 0.5-5 ml | 0.1 ml | 0.6 | 0.030 | 0.2 | 0.010 |
| 1-10 ml | 0.2 ml | 0.6 | 0.060 | 0.2 | 0.020 |
| 2.5-30 ml | 0.5 ml | 0.6 | 0.180 | 0.2 | 0.060 |
| 5-60 ml | 1.0 ml | 0.6 | 0.360 | 0.2 | 0.120 |
| 10-100 ml | 2.0 ml | 0.6 | 0.600 | 0.2 | 0.200 |

User Calibration Procedure

Dispenser has been laboratory calibrated at its nominal volume. However, due to changes in environmental conditions and the viscosity of the media which you dispense, we recommend gravimetric testing every 3-12 months. Gravimetric volume testing according to DIN EN ISO 8655-6 (for measurement conditions, see 'Error Limits', page 13) is performed as follows:

Re-Calibrate :

1. Set the Dispenser to the nominal volume or any other volume which is most commonly used by you. (Fig. 10)

Follow the common rules for calibration used in statistical quality control (ISO 8655/2). Set the volume and dispense five full volumes of distilled water at 20°C on Electronic Balance to establish the actual mean volume of liquid dispensed. If the gravitational average result varies from the volume displayed, you should re-calibrate the Dispenser.



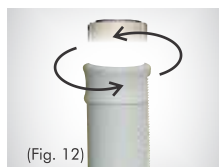
(Fig. 10)

2. For re-calibration pull the cap outwards to expose the Calibration nut. (Fig. 11)



(Fig. 11)

3. Using the calibration tool, turn the calibration nut clockwise to reduce the volume and anticlockwise to increase the volume. Repeat this procedure till the desired volume is achieved on the electronic balance. (Fig. 12)



(Fig. 12)

Maintenance / Cleaning

The Dispenser should be cleaned in the following situations :

- Immediately when the piston is difficult to move.
- Before changing the reagent.
- Prior to long term storage.
- Prior to dismantling the instrument.
- Prior to autoclaving.
- Prior to changing the valve.
- Regularly when using liquids which form deposits (e.g. crystallizing liquids).
- Regularly when liquids accumulate in the cap.

! All maintenance should be carried out wearing suitable eye protection and protective clothing. If in doubt, consult your safety officer.

1. Make sure that the Dispenser is completely empty.
2. Place the instrument into an empty sink together with its reservoir.
3. Unscrew the threaded platform base from the reservoir and lift the dispenser's intake tube carefully out of the reservoir, whilst tapping it against the reservoir's aperture to shake off any droplets from the intake tube.
4. Hold the dispense nozzle over the aperture of the reservoir and apply gentle piston strokes in order to return any contents into the reservoir.
5. Empty the instrument completely and flush thoroughly with distilled water.
6. If the piston barrel is still not completely clean, you need to dis-assemble the dispenser. Refer Dis-assembling procedure given below.

Dis-assembling the dispenser for cleaning and servicing :

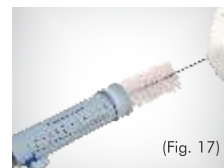
1. Procedure to dis-assemble the piston:

- Pull the cap outwards to expose the Calibration Nut. (Fig. 13)



(Fig. 13)

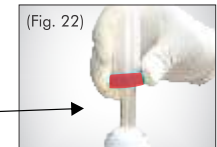
- Unscrew the Calibration Nut with the help of calibration tool to dis-assemble the Piston and shaft out of the main housing. (Fig. 14)
- After unscrewing pull out the shaft. (Fig. 15)
- Rinse the piston and shaft with deionized water. (Fig. 16)
- Clean the cylinder with a bottle-brush. If necessary carefully remove deposits at the edge of the glass cylinder. (Fig. 17)
- Then flush all the parts of the instrument with deionized water. (Fig. 18)
- Insert the piston completely into the cylinder and then reassemble the instrument using the calibration tool by screwing back the piston. (Fig. 19)



Snap back the cap to complete the assembly.

2. Procedure to dis-assemble the BARREL

- Remove the Barrel Cap.(Fig.13)
- Unscrew the Calibration using the special tool provided with the instrument. (Fig.14)
- After unscrewing pull out the shaft. (Fig. 15)
- Lift the upper housing to expose the Barrel and cover. (Fig.20)
- Unscrew Chuck Nut 1 and remove Barrel cover. (Fig. 21)
- Glass Barrel is now exposed.
- Gently pull the barrel upwards to detach it from the Valve Manifold. (Fig.22)
- Barrel has been dis-assembled for cleaning. (Fig.23)



Glass Barrel

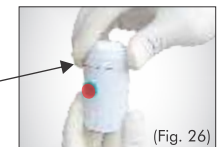
3. Procedure to dis-assemble the DELIVERY PIPE and VALVE MANIFOLD.

- Remove the delivery pipe cover by pulling it upwards from the slot. (Fig.24)
- Unscrew and remove the delivery pipe. (Fig.25)
- Unscrew the chuck Nut. (Fig.26)
- Remove Chuck Nut 2 and pull out the valve manifold. (Fig.27)

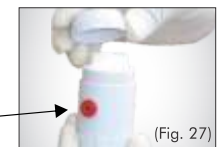
Delivery Pipe Cover



Delivery Pipe



Chuck Nut 2



Valve Manifold.

Autoclaving

This instrument is autoclavable at 121° C) (250° F) 1 bar absolute (15 psi) with a holding time of at least 15 minutes.



Note :

Only the piston needs to be removed for autoclaving the instrument.

Dis-assembling for Autoclaving :

- Pull the cap outwards to expose the Calibration Nut. (Fig. 28)



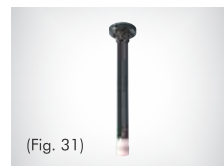
- Unscrew the Calibration Nut with the help of calibration tool to dis-assemble the Piston and shaft out of the main housing. (Fig. 29)



- After unscrewing pull out the shaft. (Fig. 30)



- This is the piston-shaft sub-assembly. (Fig. 31)



- Autoclave the two sub-assemblies at 121°C and 15 psi pressure for 10-15 mins. (Fig. 32)



Re-assembling after Autoclaving :

- Insert the piston completely into the cylinder and then reassemble the instrument use in the calibration tool by screwing back the piston. (Fig. 33)



- Snap back the cap to complete the assembly. (Fig. 34)



Dispenser is now ready for use.

No Re-calibration is required after autoclaving.

However, a quick calibration check is recommended.

(Fig. 35)



Troubleshooting

| Trouble | Possible Cause | Solution |
|--------------------------------------|--|---|
| Piston Difficult to move | Formation of crystals, dirty | Stop dispensing immediately. Loosen piston with circular motion, but do not disassemble. Follow all cleaning instructions. (see page 14) |
| Air bubbles appear in the Instrument | Reagent with high vapor pressure has been drawn in too quickly | Slowly draw in reagent. |
| | The instrument has not been primed | Prime the instrument. (see page 11) |
| | Filling tube is loose or damaged | Push the filling tube on firmly. if necessary cut off approx. 1 cm of the tube at the upper end and then re-connect it or replace filling tube. |
| | Liquid reservoir is empty | Refill reservoir and prime unit. |
| | Too fast filling action | Fill and dispense slowly. |
| | Leaking Piston | Clean Piston. (see page 14) If problem persist replace piston. |
| | Leaking discharge valve | Clean by flushing thoroughly with distilled water. (see page 14) |
| Dispensing not possible | Blocked Dispense nozzle | Disassemble the dispense nozzle and flush through with distilled water. |
| | Discharge valve stuck | Clean Unit by immersing valve assembly in distilled water. (see page 14) |
| Wrong Dispenser Volume | Instrument not calibrated | Follow steps of user calibration. (see page 13) |
| Barrel does not fill with liquid | Inlet tube not fitted firmly | Connect inlet tube correctly. (see page 10, Fig. 2) |
| Filling Not Possible | Volume adjustment to Minimum setting | Set to required volume. (see page 11) |

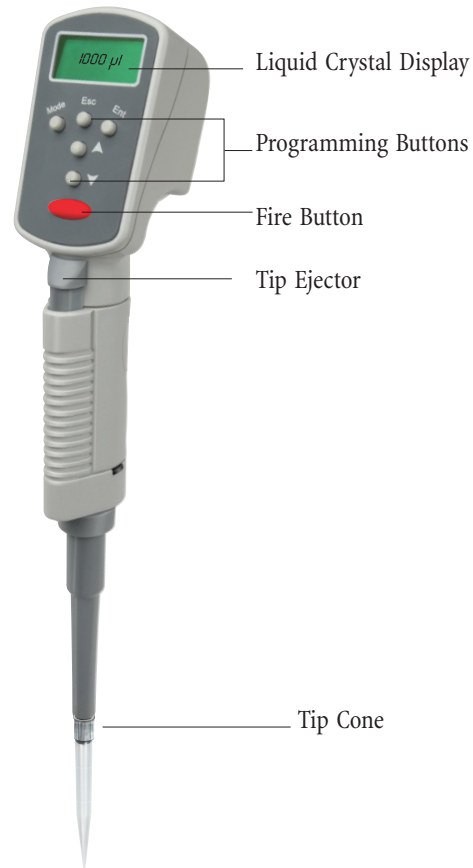
Operation Manual



**ELECTRONIC
MICROPIPETTE**

Operation Manual





GENERAL DESCRIPTION OF THE PRODUCT

Electronic Micropipettes are Medical and scientific laboratory equipment used for dispensing small quantities of fluids or liquids. It has movable parts made up of steel and plastic and uses detachable tips to hold the samples. Micropipette works on air displacement principle and uses the following formula :

$$V = \pi r^2 h$$

Where V is the desired volume being used for Pipetting.

These micropipettes are designed for use in Medical, Educational Research, Diagnostics, Clinical Pathology, Blood Banks handling human blood samples.

Ergonomic Aspect : Pipette is designed ergonomically with following features :

Angled Upper body ensures comfortable grip for stress free long duration continuous working.

Light weight design to ensure less fatigue during operation.

Smooth edges to ensure that the gloves do not snag while working.

Body design ensures proper thumb position on the fire button and tip ejector.

Large Liquid Crystal Display is provided for ease of visibility during volume setting and operation.

KEY FEATURES

These micropipettes are designed for easy operation and maximum accuracy conforming to ISO 8655 standards.

Available in various volume ranges and sizes to cover the pipetting range from 0.2ml to 10000ml.

Separate, streamlined 'tip ejector' ensures no accidental de-tipping during use.

Calibration Menu is provided for easy user re-calibration.

User friendly software with three modes :

Standard mode

Step mode

Dilution mode

Serviceable and easy to disassemble.

Each pipette is individually calibrated conforming to ISO 8655 standards. A calibration report is provided with each pipette.

The constructional design and the materials used for their manufacture is chosen in such a way that any heat transmitted from the user's hand to the apparatus during period of use or test is in accordance with ISO 8655-6 and can be ignored.

Specifications:

| Sl.No. | Model No. | Volume Range |
|--------|-----------|--------------|
| 1. | ME-10 | 0.2 - 10ul |
| 2. | ME-120 | 5 - 120ul |
| 3. | ME-300 | 20 - 300ul |
| 4. | ME-1000 | 50 - 1000ul |
| 5. | ME-5000 | 100 - 5000ul |

Pre-Use Instructions :

Ensure that the box is shrink packed.

Ensure that the volume of the pipette is as per the label outside.

Ensure that the date of manufacturing is not older than five years.

Ensure that the pipette is not damaged physically.

Ensure that the accessories in the box are as per the label outside.

Ensure that the calibration report and instruction manual is present in the box.

GENERAL INSTRUCTIONS FOR OPERATION:

Introduction :

SWITCHING ON THE PIPETTE : There is no ON/OFF switch on the pipette. If the pipette is left idle for more than 2 minutes it goes in sleep mode (this saves battery charge). To re-boot the pipette press any key on the keyboard. The pipette displays company name and serial number of the instrument, this disappears in a short while and the pipette comes back to the operation which was being performed before it went in sleep mode. User can now restart work on the originally set parameters.

In case the parameters need to be changed, the user has three pipetting options as follows :

Standard mode : To set a volume and perform standard fill/dispense operation.

Dilution mode : To fill two liquids in different volumes with air gap in between and dispense all at once.

Stepper mode : To fill large volume initially and dispense in desired number of steps of equal volumes.

Charging the battery :

1. Simply connect the AC/DC Adapters to a compatible AC outlet and to the pipette. Charging is indicated on display as shown in the picture.



2. If the pipette is new or the battery charge is low, keep the pipette connected to the charging adaptor for 12 hours to fully charge the pipette before use.



3. The pipette can be charged in both working and sleeping modes. The pipette can be used during charging also.

Operation:



Press [Esc] once or twice until the display shows

Program
Menu

Press [Ent]

The display will show last operated Mode and volume.

If same settings are to be retained press [Ent] and start working.

If settings are to be changed then

Press [Mode] : display shows

Std.
Mode

Press [up/down] key to get the desired mode on the display.

Press [Ent]

Case I: Std Mode is selected

Display shows a volume.

Press [up/down] to arrive at desired volume

Press [Ent]

Display shows

A rectangular display box with a black border. Inside, the word "Speed" is on the top line and the number "3" is on the bottom line.

Press [Up/Down] to select desired speed from 1-5

(Note : Default recommended speed is 3.)

Press [Ent] to select the speed.

Display will now show the selected mode and volume, if everything is as per settings: Press [Ent] (Otherwise press [Esc] and start again.)

Display will show an upward arrow ▲ indicating that the pipette is ready to fill.

Press [Red fire button] while the tip is dipped in the liquid to fill the liquid.

Liquid will be filled in the tip. As soon as the filling is over display shows a ▼ downward arrow. Pipette is now ready to dispense.

Press [Red Fire button] to dispense the liquid. After dispensing the pipette will again be ready to fill and the operation can be repeated.

Case II: Dilution Mode is selected

Display will show

A rectangular display box with a black border. Inside, the text "Vol. 1" is displayed.

Press [Up/Down] to select volume of the first liquid

Press [Ent]


Display will show

A rectangular display box with a black border. Inside, the word "Air" is on the top line and "000 µl" is on the bottom line.

Press [Up/Down] to select the volume of air gap between the two liquids.

Press [Ent]

Display will show

A rectangular display box with a black border. Inside, "Vol. 2" is on the top line and "Max. Vol." is on the bottom line.

(Note : Sum of all three volume cannot be more than the volume range of the pipette.)

Press [down] to select volume of the second liquid

Press [Ent] at desired volume

Display will show

A rectangular display box with a black border. Inside, the word "Speed" is on the top line and the number "3" is on the bottom line.

Press [Up/Down] to select speed

Press [Ent] at desired speed

Display will confirm the mode and two volumes. If everything is as per your setting

Press [Ent]

Upward arrow ▲ will appear on the display.

Put the tip in the first liquid and

Press [Red Fire button]

First liquid is filled in the tip

Display will show air with an upward arrow ▲

Press [Red Fire button] keeping the tip in air

Air is sucked in the tip

Display shows the second volume with upward arrow. ▲

Put the tip in the second liquid

Press [Red Fire button]

Second liquid is filled in the tip.

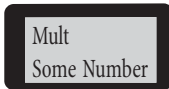
Display shows a downward arrow ▼

Press [Red Fire button] to dispense both liquids together.

The pipette is again ready to repeat the procedure.

Case III : Stepper mode is selected

Display shows



Mult
Some Number

Press [Up/Down] to select the desired number of multiples.

Press [Ent]

Display shows maximum volume each multiple can have according to the range of the pipette

Press [Down] to select the desired volume of each multiples

Press [Ent]

Display will show



Speed
3

Press [Up/Down] to select speed

Press [Ent]

Display will confirm the mode and volume. If everything is as per setting.

Press [Ent]

Upward arrow ▲ will appear on the display. The pipette is now ready to fill the total amount.

Dip the tip in the liquid and

Press [Red fire button].

Liquid will be filled in the tip. As soon as the filling is over we will see **number of multiples X volume** and a downward arrow ▼ on display. The pipette is now ready to dispense in steps.

Press [Red fire button].

First dispensing is done and number of multiples on the display is reduced by 1 Press [Red fire button] again

Until the display shows LDO (last drop out) Discard this liquid by keeping the tip in the original container

Press [Red fire button] to dispense LDO (Last drop out).

Pipette is again ready to repeat the procedure.

Re-Calibration of Pipette

The pipette comes calibrated from the company accompanied with complete calibration report, which includes actual calibration data, % inaccuracy and % CV as per ISO 8655 standards.

However, in the following cases re-calibration by the user is recommended.

1. Since the pipette is calibrated using degassed, double distilled water as per ISO 8655 standards, it is recommended to recalibrate the pipette when working on detergent or foaming liquids, high viscosity liquids like oil etc..
2. In the event of disassembling the pipette for servicing, greasing, o-ring replacement etc.
3. Pipette is calibrated under laboratory conditions at 20-25 C, 50% relative Humidity and Atmospheric pressure 760mmHg. It is recommended to recalibrate the pipette if the working conditions are different from those mentioned above.

Note : Volume variation up to 0.3 % may result due to change in temperature (25°C to 45°C), relative humidity and atmospheric pressure.

Re-Calibration Procedure

Equipments required :

Electronic Balance (Readability: 0.01mg)

Double distilled water

Small container

Procedure

Put the small container on the weighing pan of the electronic balance and tare the balance to 0.00

Press [Esc] until display shows



Press [Up/Down] to select Menu Cal

Press [Ent] when display shows



Display will show a pre-set volume with an upward arrow.

The pipette is ready for calibration.

Immerse the tip into the distilled water and

Press [Red fire button].

Water is aspirated in the tip. (The display shows a downward arrow.) Carefully dispense the liquid in the container placed on the tared Electronic Balance. Note the reading on the balance readout.

Feed this reading into the pipette by Pressing [Up/Down] key and Press [Ent]. The pipette is calibrated.



Display shows

Check the calibration.

If further re-calibration is required

Press [Ent] and repeat the above procedure till you get the same reading on the balance as the preset value on the Pipette display.

To Exit Menu Cal

Press [Up/Down] key to reach Menu Prog and continue working.

In-house Maintenance:

Piston Cleaning and Tip-cone replacement

1) Remove the tip ejector : Gently pull the tip ejector and slide it off.



2) Remove tip cone : Unscrew the tip cone from the main body and gently pull it out to expose the piston.



This metal piston should be cleaned with a soft tissue. Gently mount the tip cone back on the piston and screw to its original position. Slide the tip ejector back and press gently, it will fit on the main housing with a click sound.

Note : Pipette must be re-calibrated after maintenance. Follow the re-calibration procedure.

3) In case the problem still persists the tip cone assembly should be replaced. This is available as a spare part.

ACCURATE PIPETTING

1. Always clean the tip-cone with dry tissue paper before fixing the tip.
2. Ensure that the tip is firmly fitted.
3. The solution and the tip should be at the same temperature.
4. Always reject initial 3/4 dispensing before starting your work.
5. Always keep the pipette upright.
6. Reject the tip if any liquid is sticking on the inner wall of the tip.

Trouble Shooting

| Trouble | Possible Cause | battery Solution |
|---|-------------------------------|--|
| Screen blank. (LCD Display) | Pipette is in sleep mode. | Press any button to start. |
| | Battery charge low. | Charge the battery and start by pressing any button. Note: If the problem still remain contact distributor. |
| | Tip is not compatible. | Use standard tips. |
| Low volume filling. | O-ring damage. | Change Tip-cone (follow In-House maintenance.) |
| | Calibration not proper. | Re-calibrate (follow instruction in calibration procedure.) |
| Battery not charging while charging sign displayed on the screen. | Battery life is finished. | Change battery. (Contact distributor.) |
| Battery charging sign not displayed when adaptor is connected to the mains. | Adaptor is loosely connected. | Check connections. |
| | Adaptor not working properly. | Contact distributor or use any 9V DC adaptor. |

SAFETY AND STORAGE INSTRUCTIONS

1. Pipette should not be left on the working platform with tip attached to it. There is a likelihood of the liquid flowing inside the tip-cone.
2. Care must be taken while ejecting the tips. The tips are ejected with a jerk and should be directed towards the waste bin only.
3. The pipette must not come in contact with any organic solvent, flame or direct heat. This may effect the plastic body of the pipette.
4. It is not recommended to use organic solvents or liquids with high vapour pressure with this micropipette. These liquids do not hold in the tips and dripping from the tips may result.
5. Precaution must be taken while working with strong chemicals like acids or alkalies. Use of gloves and eye glass is recommended to avoid accidents while working.
6. This micropipettes has built-in tip ejector and simple adjustments which does not trap the gloves of the user during operation. However, care must be taken to ensure that the gloves are not breached resulting in any accident hazard.
7. This pipette is meant for re-use. Tip cones must be properly cleaned with a filter paper each time the tips are ejected from the tip-cones.
8. Upon request, information regarding the reaction of the materials of the pipette with organic and inorganic solutions and solvents shall be provided by the manufacturer.
9. The pipette must be kept in the box after use.

Warning:

1. Bio contamination is possible. While working on very sensitive applications like tissue culture, clinical chemistry and human blood samples etc.
2. Follow storage instructions carefully.
3. Follow caution messages carefully.
4. The pipette is supplied in non-sterile condition.
5. Tips used with this pipette are meant for single use only. They must not be cleaned for re-use as their metrological characteristics will no longer be reliable.

TROUBLE SHOOTING

| PROBLEM | CAUSE | SOLUTION |
|----------------------------------|--|--|
| Liquid dripping from the Pipette | Pipette is not firmly fixed | Check the fitment. |
| | Leakage in the collet assembly | Ensure proper fitment of Collet |
| | Leakage from the inside connections | Send the instrument to your nearest dealer |
| Pump is not functioning | Battery is discharged | Charge the battery |
| | Connection is broken | Send the instrument to the nearest dealer |
| | Speed controller is on the Lowest position | Adjust speed controller |

ROUTINE SERVICING :

The liquid may accidentally enter into the collet assembly and choke the filter. In this event, unscrew the collet assembly from the body and change the filter. Replace collet assembly and start working normally.

WARNING :

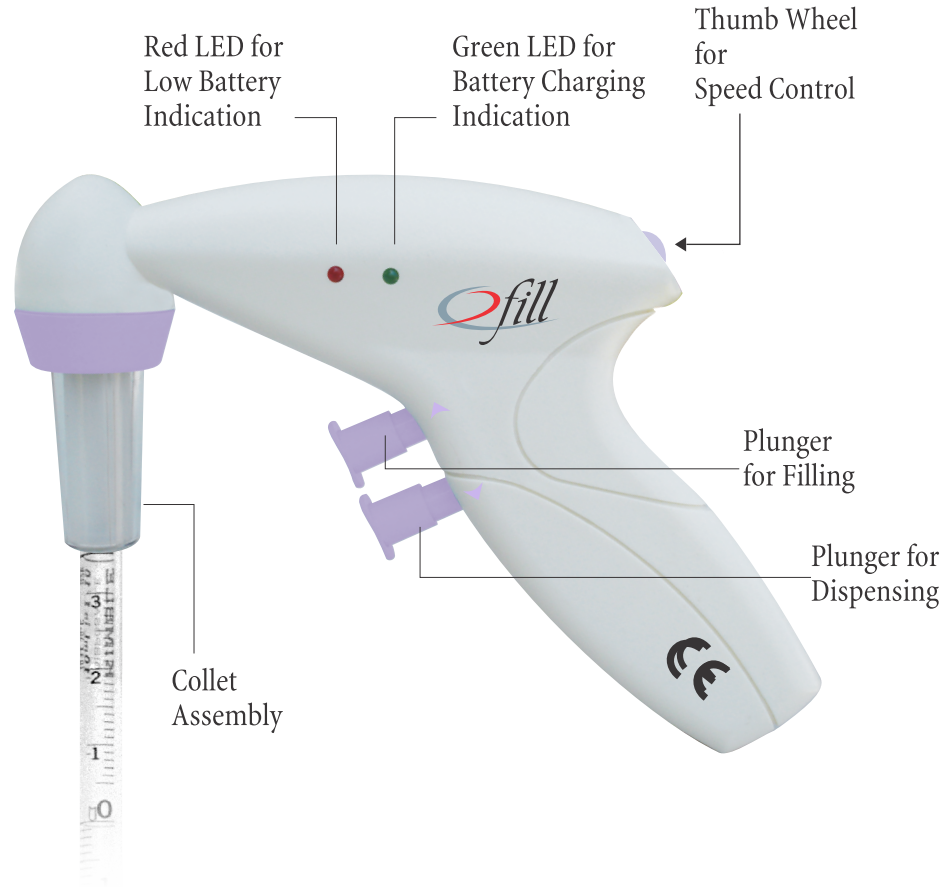
- ◆ During charging ensure that the battery charger is set on proper voltage as per the line voltage.
- ◆ Battery should not be allowed to discharge completely.
- ◆ Pipette should be firmly fixed to avoid accidental fall during operation.
- ◆ Care should be taken during aspiration to avoid liquid entering into the collet assembly.
- ◆ Fuming liquids and solvents should be avoided as dripping will occur and the fumes might damage the inside components of the instrument.

Accessories : Adaptor for Battery Charging
Specification : Input : 100 -250 V
Output : 9 V

OPERATION MANUAL



PRODUCT



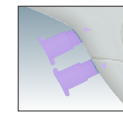
GENERAL DESCRIPTION OF THE PRODUCT :

It is a Scientific Laboratory equipment used for filling and dispensing liquid in graduated and one-mark pipettes from 0.1ml to 100ml. It is a pump operated instrument and offers a safe, efficient and easy alternative for mouth and finger tip pipetting.

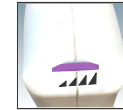
PRODUCT FEATURES :

- ◆ Suitable for Pipettes of 0.1ml to 100ml size.
- ◆ 0.2um PTFE hydrophobic filter is provided in the collet assembly to avoid liquid entering the instrument body.
- ◆ Inside collet knurlings facilitate tight fit even with wet pipettes.
- ◆ High aspirating and flow-out speed.
- ◆ Single finger control for the Flow-out and blow-out functions.
- ◆ Cordless work for up to eight hours, continuing directly after recharging.
- ◆ Autoclavable pipette adapters and filter holders.
- ◆ Charging status and battery status is indicated on the body by red and green L.E.Ds.

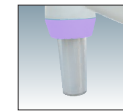
OPERATION :



FILLING AND DISPENSING : Insert the pipette (Glass or Plastic) into the collet. The inside knurlings allows a tight fit. Press the upward plunger to aspirate liquid into the Pipette and downward plunger for dispensing. The upward and downward mark next to the plunger allows easy identification.

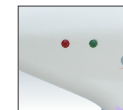


SPEED CONTROL : Thumb wheel is provided at the back of the instrument which can be easily identified. Clockwise motion increases the pump speed and anti-clockwise motion reduces the pump speed. User can adjust the speed according to his or her convenience.



AUTOCLAVING : Collet assembly is fully autoclavable. It contains a 0.2um hydrophobic filter which is also autoclavable at 120 C and 15psi pressure. For autoclaving unscrew the collet assembly for direct autoclaving.

Note : Only Collet assembly is Autoclavable and NOT the full instrument.



BATTERY STATUS AND CHARGING STATUS : Low battery charge is indicated when the red L.E.D is continuously illuminated. Green L.E.D. will be continuously illuminated at the time of charging.

Note : Instrument can be used during charging also.



Li'lpet

FIXED VOLUME
MICROPIPETTE

LOW PRICE

HIGH PRECISION

HIGH ACCRACY

2 STEP PLUNGER

UNIQUE TIP CONE

FULLY AUTOCLAVABLE

Technical Specifications :

| Model | Capacity | ±%Accuracy | ± % CV |
|-----------|----------|------------|--------|
| MM - 5 | 5 µl | 1.5 | 1.0 |
| MM - 10 | 10 µl | 1.0 | 1.0 |
| MM - 20 | 20 µl | 0.5 | 0.5 |
| MM - 25 | 25 µl | 0.5 | 0.5 |
| MM - 50 | 50 µl | 0.4 | 0.3 |
| MM - 100 | 100 µl | 0.3 | 0.3 |
| MM - 200 | 200 µl | 0.5 | 0.5 |
| MM - 250 | 250 µl | 0.5 | 0.5 |
| MM - 500 | 500 µl | 0.5 | 0.5 |
| MM - 1000 | 1000 µl | 0.5 | 0.5 |

Features :

- ✓ **OPTIMUM SIZE**
Microlit Li'lpet is 130 mm in length which is optimum size to facilitate the user in handling the Microlit Li'lpet like a standard pipette and not like a syringe
- ✓ **COLOR-CODED**
Color-coded for various capacities for easy identification in laboratory environment
- ✓ **UNIQUE TIP CONE**
Unique tip cone design to accept both micro tip (200µl) and ultra micro tip in pipettes upto 20 µl.
- ✓ **TWO-STAGE PLUNGER**
Two-stage plunger movement ensures high accuracy and precision in pipetting technique. This also facilitates last drop dispensing.
- ✓ **FULLY AUTOCLAVABLE**
Microlit Li'lpet is fully autoclavable at 121°C & 15 psi for sensitive application.



629, Pakramau Kursi Road ,
Lucknow 226026
Tel : 0522-2890767, 2890768, 2890761
Fax : 0522-2890760
Email : ajain@microlit.com
Website : www.microlit.com