INTENDED USE OF THE INSTRUMENT :

This Bottle top dispenser is intended for use in In-Vitro Diagnostic Laboratories for dispensing reagents and chemicals from bottles safely and accurately.

SPECIFICATIONS

Bottle Top Dispenser

Vol. Range	Increment	Accuracy		CV	
		± %	± ml	± %	± ml
0.25-2.5 ml	0.05 ml	0.6	0.015	0.2	0.005
0.5-5 ml	0.1 ml	0.5	0.025	0.1	0.005
1-10 ml	0.2 ml	0.5	0.050	0.1	0.010
2.5-30 ml	0.5 ml	0.5	0.150	0.1	0.030
5-60 ml	1.0 ml	0.5	0.300	0.1	0.060
10-100 ml	2.0 ml	0.5	0.500	0.1	0.100

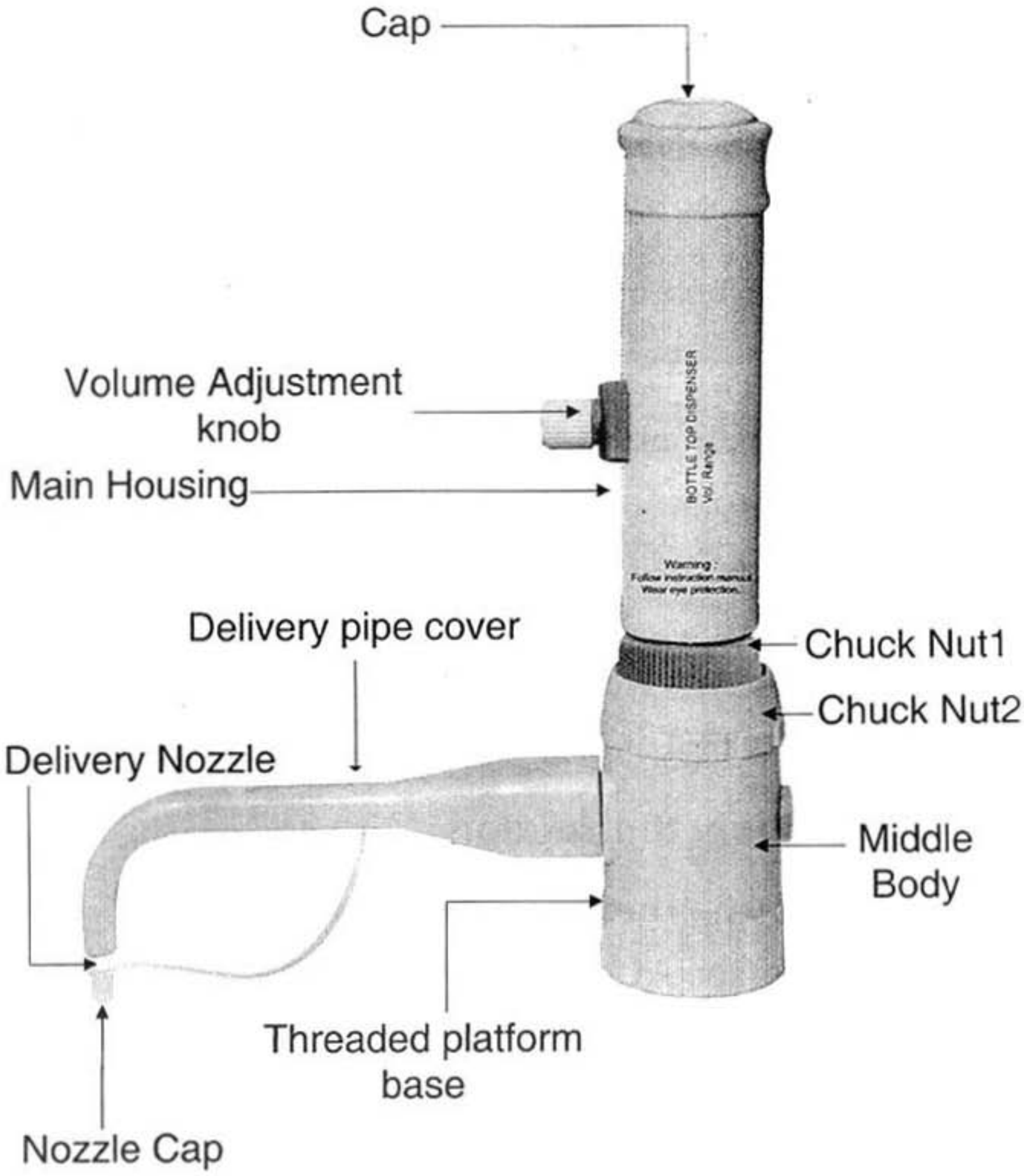
General Safety Instruction

A) Dispenser when not in use :

- Piston Barrel should always be empty.
- Nozzle cap should be fixed on the nozzle.

B) Dispenser when in use :

- Nozzle cap should be removed.
- Place a receiving vessel under nozzle before starting the operation.
- Never use force.


Cap
Volume Adjustment knob
Main Housing
Delivery pipe cover
Delivery Nozzle
Nozzle Cap
Threaded platform base
Chuck Nut1
Chuck Nut2
Middle Body
BOTTLE TOP DISPENSER
Vol. Range
Warning :
Follow instruction manual
Wear eye protection.

Restriction of Use

NEVER use the Dispenser with :

- Liquids which are not compatible with PTFE, FEP and Borosilicate Glass.
- Hydrofluoric acid.
- Liquids which contain solid particles.
- Temperature limits are 15°C to 40°C.

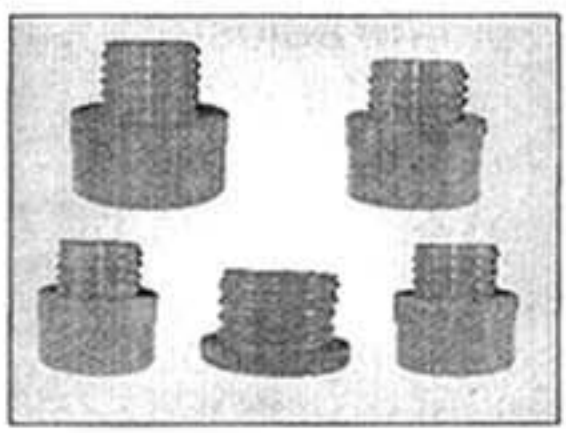
Before Using the Dispenser

Check that the instrument has not been damaged in transit.

Assembly

The Dispenser is packed with the dispense nozzle attached and the inlet feed tube removed. The length of FEP inlet tubing provided should be adjusted to fit the particular reservoir. Longer Lengths of inlet tube are available on request.

The threaded platform base of the Dispenser has 30mm screw thread. 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 this same base. Do not operate the piston until the unit is safely and fully mounted on the reservoir bottle. Six adaptors are supplied to suit containers with a 28mm, 30mm, 32mm, 36mm, 40mm and 45mm screw neck.



Operating Instructions

Priming :

Place a container under the Dispenser's delivery nozzle. Remove the Nozzle Cap. Set the "Volume adjustment knob" to the maximum volume to enable free movement of the piston.

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. Repeat until a steady bubble free flow is visible in the barrel.

Dispensing :

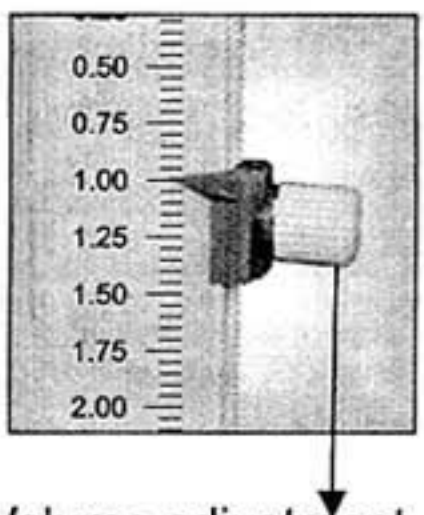
Ensure that the nozzle cap is removed.

Ensure that a receiving container is placed the nozzle.

Dispenser is now ready for dispensing.

Volume adjustment knob

Volume adjustment knob is simple and easy to use. It is screw type knob. Simply unscrew the knob and slide up or down to set the desired volume by aligning the pointer on the volume adjustment knob with the scale on the main housing. Tighten the screw after aligning with the scale.



User Calibration procedure

Dispenser has been laboratory calibrated to its nominal volume. However, due to changes in environmental conditions and the viscosity of the media which you dispense, a re-calibration might be required.

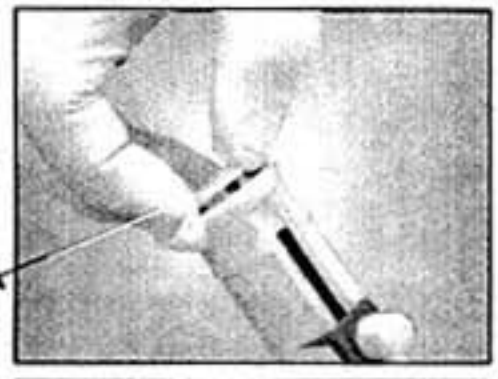
You can either re-calibrate at regular intervals such as once a week or whenever you notice that the dispensed volume is different from the volume displayed by the unit.

To fully re-calibrate your Dispenser follow the following steps :

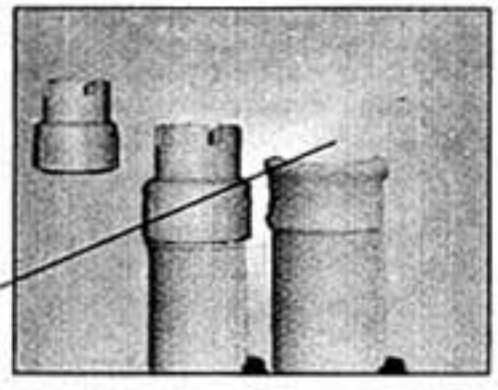
1. Set the Dispenser to the nominal volume or any other volume which is the most common volume you dispense.

2. 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.

3. For re-calibration pull the cap outwards to expose the Calibration Nut.



4. Using the calibration tool, turn the calibration nut clockwise to reduce the volume and anticlockwise to increase the volume. Repeat this procedure a few times till the desired volume is achieved.



Maintenance / Cleaning

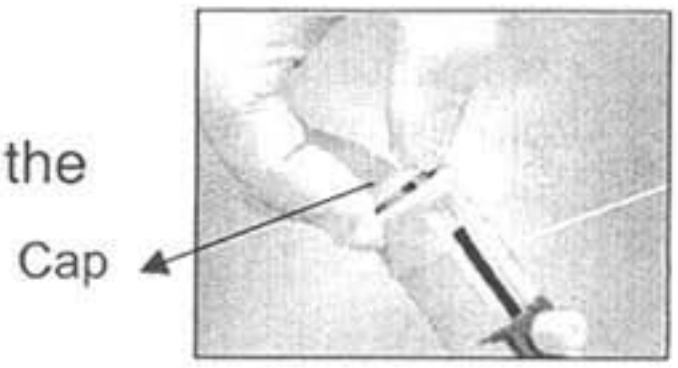
Note : All maintenance should be carried out wearing suitable eye protection and protective clothing. If in doubt, consult your safety officer.

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 syringe contents into the reservoir.
5. Empty the instrument completely clean, you need to dis-assemble the dispenser. Refer Dis-assembling procedure given below.
6. If the piston barrel is still not completely clean, you need to dis-assemble the dispenser. Refer Dis-assembling procedure given below.

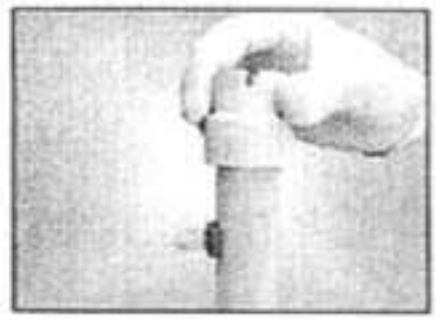
Dis-assembling the Dispenser for Cleaning and Servicing :

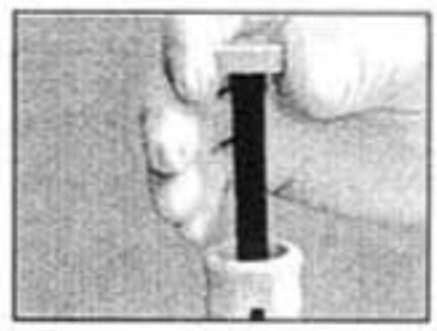
A. Procedure to dis-assemble the PISTON

- Pull the cap outwards to expose the Calibration Nut.

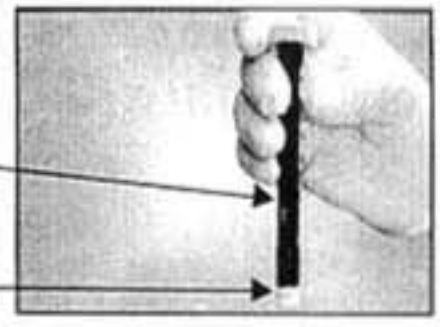


- Unscrew the Calibration Nut with the help of calibration tool to dis-assemble the Piston and shaft out of the main housing.



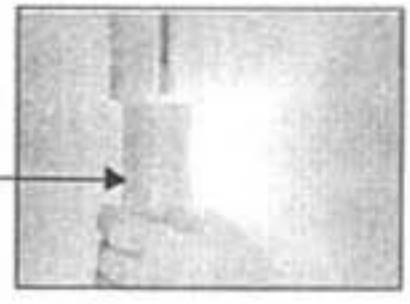


- Unscrew the piston from the shaft.

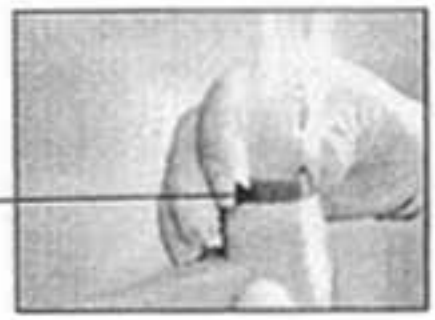


B. Procedure to dis-assemble the BARREL

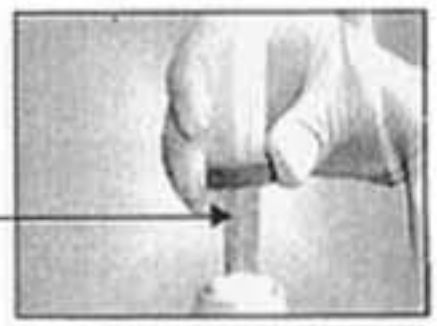
- lift the upper housing to expose the Barrel and cover.



- Unscrew Chuck Nut 1 and remove Barrel cover.



- Glass Barrel in now exposed.

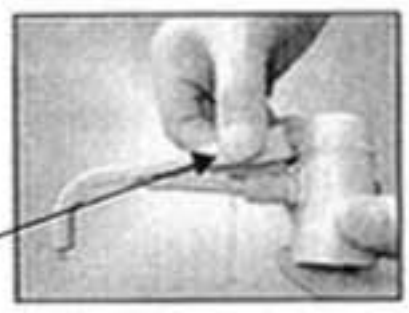


- Gently pull the barrel upwards to detach it from the Valve Manifold.

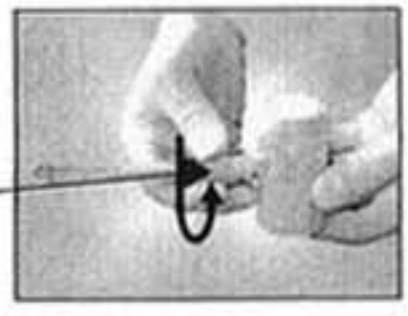
- Barrel has been dis-assembled for cleaning.

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

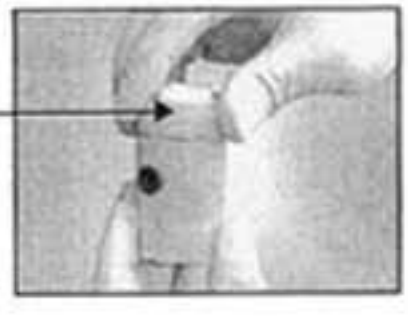
- Remove the delivery pipe cover by pulling it upwards from the slot.



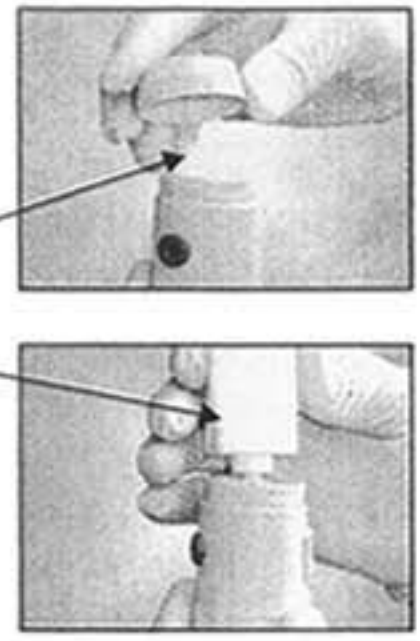
- Unscrew and remove the delivery pipe.



- Unscrew the chuck Nut 2.



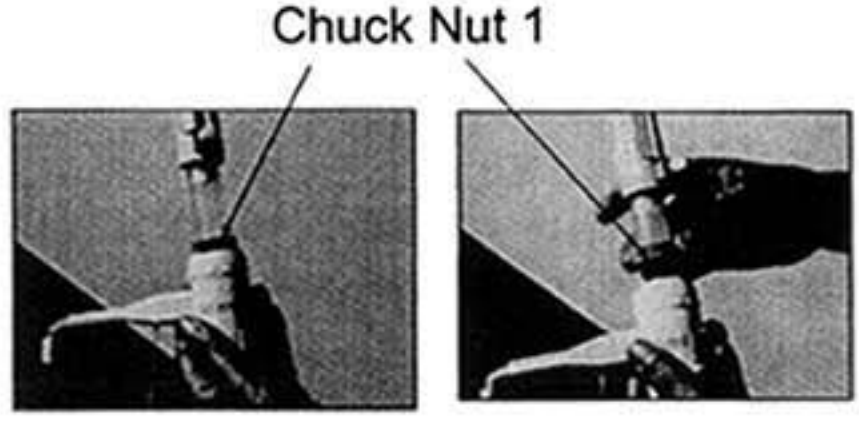
- Remove Chuck Nut 2 and pull out the valve manifold



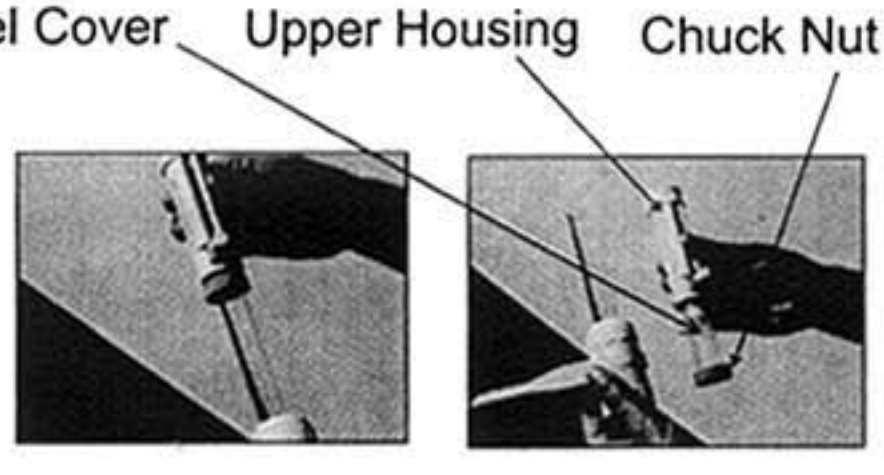
AUTOCLAVING

Dis-assembling for Autoclaving

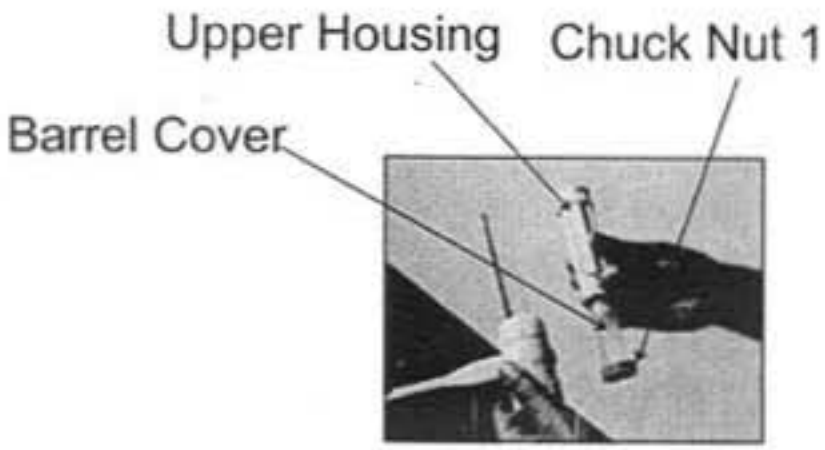
1. Unscrew Chuck Nut 1



2. Pull Chuck Nut 1 along with barrel cover, upper housing and piston all the way up.



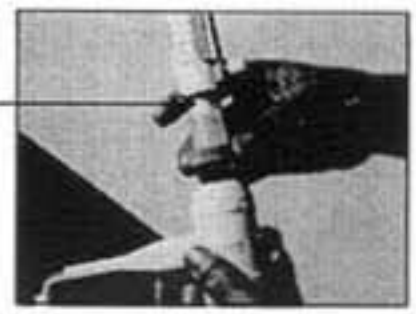
3. Autoclave the two sub-assemblies at 121°C and 15 psi pressure for 10-15 mins.



Re-assembling after Autoclaving

1. Push the Piston in the Glass Barrel gently and go all the way down.
(Caution : Ensure that the Nozzle cap is removed)

2. Tighten chuck nut 1 by screwing it properly.



3. Dispenser is now ready for use.
No Re-calibation is required after Autoclaving.
However, a quick calibration check is recommended.

Trouble Shooting

Trouble	Possible Cause	Solution
Air bubbles appear in discharge nozzle	Liquid reservoir is empty	Refill reservoir and prime unit.
	Too fast filling action	Fill and dispense more slowly.
	Leaking piston	Clean piston. If problem persists. replace piston.
	Leaking discharge valve	Clean unit by flushing throughly. If problem persists, replace the discharge valve.
Barrel does not fill with liquid	Inlet tube not fitted correctly	Connect inlet tube correctly.
Dispensing not possible	Blocked dispense nozzle	Disassemble the dispense nozzle and flush through with cleaning fluid.
	Discharge valve stuck	Clean unit by immersing valve assembly in cleaning fluid. If problem persists, replace valve assembly.
Wrong dispense volume	Instrument not calibrated	Follow steps of User Calibration.

LIST OF RECOMMENDED REAGENTS

Reagent

1,4-Dioxane
1-Butanol
Acetaldehyde
Acetic acid, 50%

Acetone

Acetonitrile
Acrylonitrile
Adipic acid
Allyl alcohol
Aluminium chloride
Amino acids
Ammonium chloride
Ammonium hydroxide, 30%

Amyl alcohol (Pentanol)

Aniline
Barium chloride

Benzaldehyde
Benzene (Benzol)
Benzine (Gasoline)

Benzyl alcohol
Biuret reagent
Boric acid, 10%

Calcium carbonate

Calcium chloride

Reagent

Chromosulfuric acid
Copper sulfate
Cresol
Dichlorobenzene

Dichloroethane
Lactic acid
Magnesium chloride
Mercury Chloride
Methanol
Methyl propyl ketone
Monochloroacetic acid
n-Amyl acetate
n-Butyl acetate
Nitric acid, 70%
Nitrobenzene
Octane
Oleic acid
Oxalic acid
Pentane (n-)
Perchloric acid, 10%
Phenol
Phosphoric acid, 85%
Potassium chloride
Potassium dichromate
Potassium hydroxide
Potassium permanganate
Propanol

Reagent	Reagent
Propylene glycol	Hydrochloric acid, 37%
Propylene Oxide	Iodine/potassium iodide solution
Salicylaldehyde	Isobutanol
Salicylic acid	Isopropanol (2-Propanol)
Silver acetate	Isopropyl benzene (Cumene)
Silver nitrate	Tartaric acid
Sodium acetate	Tetrachloroethylene
Sodium dichromate	Tetrahydrofuran (THF)
Sodium hydroxide, 30%	Tetramethylammonium hydroxide
Sulphuric acid, 98%	Toluene
Diethylene glycol	Trichloroacetic acid
Dimethylformamide (DMF)	Trichloromethane (Chloroform)
Ethanol	Triethylene glycol
Ethyl acetate	Turpentine
Ethylene glycol	Urea
Formaldehyde, 40%	Xylene
Formic acid, 100%	Zinc chloride, 10%
Glycerol	Zinc sulfate, 10%
Heating oil (Diesel oil)	
Hexane	

These recommendations are carefully checked and correspond to the current state of knowledge. If you need statements for chemicals which are not given in the list, please do not hesitate to contact us.

Caution :

- Do not use HF or reagents not compatible with PTFE or Borosilicate Glass.
- If used with strong acids, it is advised to rinse & remove instrument at the end of every working day & store safely.

Chemical Resistance Chart at 20°C

Liquids dispensed with the dispenser will be in contact, constantly, with the following materials;
Borosillicate glass, (BSG),PTFE & FEP. The following table is a guide to help with the queries regarding liquid compatibility.

Please note that these tables are just a guide. We recommend that if there is a question regarding liquid compatibility you should exercise caution in use and refer to other chemical tables where available. Good laboratory practice would be to rinse out the liquid handing unit at the end of each day with distilled water to prevent corrosive liquids being left in contact with the parts for too long.

CHEMICAL Acids	BSG	PTFE	FEP
Acetic, Glaical	R		
Acetic, 25%	R	R	R
Hydrochloric, Conecentrated	R		
Hydrochoric, 25%	R	R	R
Sulphuric, concentrated	R		
Sulphuric, 25%	R	R	R
Nitric, Concentrated	R		
Nitric, 25%	R		
Phosphoric, 25%	R	R	R
Formic, 25%	R	R	R
Trichloroacetic 10%	R	R	R
Formic Acid, 85%	R	R	R
Arsenic Acid	R		
Boric Acid, 10%	R	R	R
Chromic Acid, 20%	R	R	R
Hydrofluoric Acid, 35%	NR	Exceptions	R
Phosphoric Acid 85%	R	R	R
Nitric Acid, 50%	R	R	R
Sulphuric Acid, 95%	R	R	R
Alkalies			
Ammonium Hydroxide, 25%	R	R	R
Sodium Hydroxide	R	R	R
Potassium Hydroxide	R	R	R
Sodium Hydroxide	R	R	R
Alcohols			
Methanol, 98%	R	R	
Ethanol, 98%	R		
Ethanol, 70%	R		
Isopropanol, n-Propanol	R		
Amyl Alocohol, Butanol	R		
Benzyl Alcohol	R	R	R
Ethylence Glycol	R	R	R
Propylene Glycol	R	R	R
Glycerol	R	R	R
Hydrocarbons			
Hexane, Xylene	R	R	R
Toluene, Benzene	R	R	R
Kerosene, Gasoline	R		
Tetralin, Decalin	R		
Halogenated Hydrocarbons			
Methyl Chloride	R		
Chloroform	R	R	R
Trichloroethylene	R	R	R
Monochlorobenzene, Freon	R		
Carbon Tetrachloride	R	R	R
Ketones			
Acelone	R	R	R
Methyl Ethyl Kelone	R	R	
Isopropylacetone	R		
Methyl Isobutyl Ketone	R		

CHEMICAL Acids	BSG	PTFE	FEP
Ethyl Acetate	R	R	
Methyl Acetate	R		
Amyl & Propyl Acetate	R		
Butyl Acetate	R	R	R
Propylene Glycol Acetate	R		
2-Ethoxyethyl Acetate	R		
Methyl Cellosolve Acetate	R		
I Benzoate	R		
Isopropyl Myristate	R		
Tricesyl Phosphate	R		
Oxides-Ethers			
Ethyl Ether	R		
1,4 Dioxane & Tetrahydrofuarn	R	R	R
Dimethylsuphoxide(DMSO)	R	R	R
Isopropyl Ether	R		
Solvents with Nitrogen			
Dimethyl Formamide	R	R	R
Diethylacetamide	R	R	
Triethanolamine	R		
Aniline	R	R	R
pyridine	R	R	R
Miscellaneous			
Phenol, Aqueous, 10%	R		
Formaldehyde Solution, 30%	R	R	R
Hydrogen Peroxide, 30%	R	R	R
Silicone Oil & Mineral Oil	R		
Pyridine	R	R	R
Acealdehyde	R	R	R
Ammonia, 25% ac. Sol.	R	R	
Ammonium	R		
Calcium Chloride aq. Sol	R	R	R
Chlorine	R	R	R
Chlorobenzene	R		
Fluorinated Hydrocarbones	R		
Hexane	R	R	R
Iodine (tincture of)	R	R	
Potassium Chloride aq. Sol.	R		
Potassium Permanganate aq. Sol.	R		
Magnesium Chloride aq. Sol.	R		
Methylene Chloride	R	R	R
Sodium Carbonate	R		
Sodium Dicromate	R	R	R
Phenol, 100%	R	R	R
Mercury	R	R	R
Siliver Nitrate	R	R	R
Toluene	R	R	R
Hydrogen Peroxide, 30%	R	R	R
Xylene	R	R	R
Zinc Chloride, 10%	R	R	R
Zinc Sulphate, 10%	R	R	R

KEY:

R= *RESISTANT*

SR=*SLIGHTLY RESISTANT*

VR= *VIRTUALLY RESISTANT*

NR=*NON-RESISTANT*

EXCEPTIONS= *RESISTANT WITH EXCEPTIONS*

NOTES: Depends on temperature Up to 300° C