Liquid Handling

User Manual
DIGIPETTE Digital Burette
dTrite model, code MDG001

CE FC

Ver. 1, Nov. 2023

Contents

Safety Reminder

CAUTION: Possible damage to instrument. Caution notes indicate any condition or practice, which if not strictly observed or remedied, could result in damage or destruction of the instrument.

1. Unpacking

Apart from the user manual, the Electronic Titrator package should contain the following items:

- Titrating pipe X1
- Titrating pipe cover X1
- Electronic Titrator X1
- AC Adapter X 1
- Controller X 1
- Controller cable USB X 2
- Bottle Adapter X 5(GL32; GL38; GL28; GL25; S40)
- Magnetic Stirrer X 1
- Remote Titrating pipe X 1
- Remote Control Handle X 1

- Stirrer Bar（20mm）X 1
- Filling valve X 1
- Dispensing valve X 1
- Filling pipe X 2
- Installation tools X 1
- Stand X 1

Please check that all the items are present and inform your supplier immediately if any of the above is missing.

2. Overview

A digital titrating instrument, Electronic Titrator delivers accurate and precise bottle-top titration.

Please refer to "Limitations and Compatibility" for liquid compatibility prior to operation.

2.1. Specification

Volume Range	0.1mL-99.9mL Increment 100μL
Precision	R= 0.2% CV=0.07%
Velocity	16 stages
Battery	Capacity：4000mA/h Fully charged in 4 hours (please use standard charger) Working time：about 5 hours

2.2. Limitations of Use

Temperature ： 15℃~ 40℃

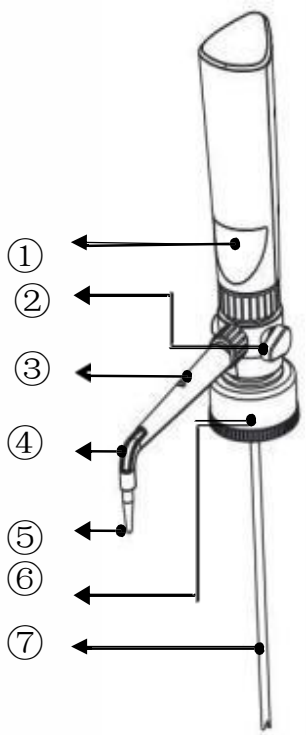
Vapor pressure ： <500 mbar

Viscosity ： <500 mm^2/s

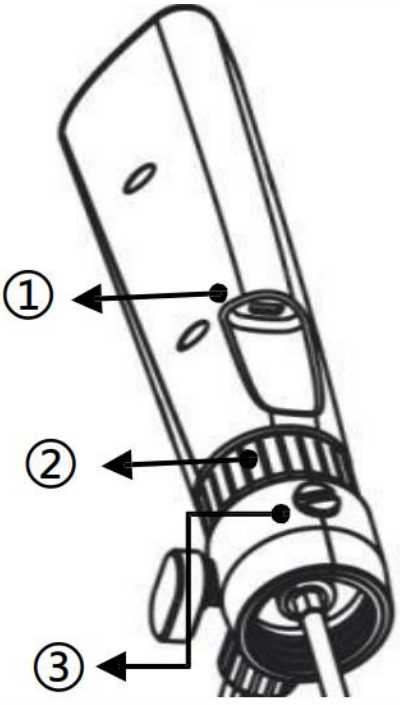
Humidity ： 20%~90%

3. Parts Description

3.1. Electronic Titrator

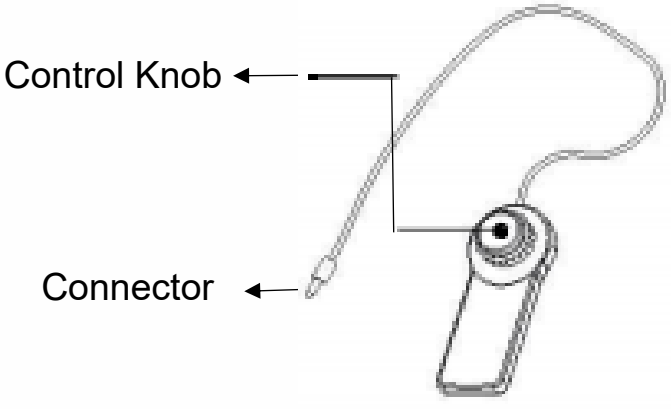


No.	Description
①	Liquid level observation (in piston running state)
②	Return valve (to adjust the liquid direction of dispensing)
③	Titrating pipe
④	Titrating pipe cover
⑤	Titrating pipe tip
⑥	Bottle adapter
⑦	Filling pipe



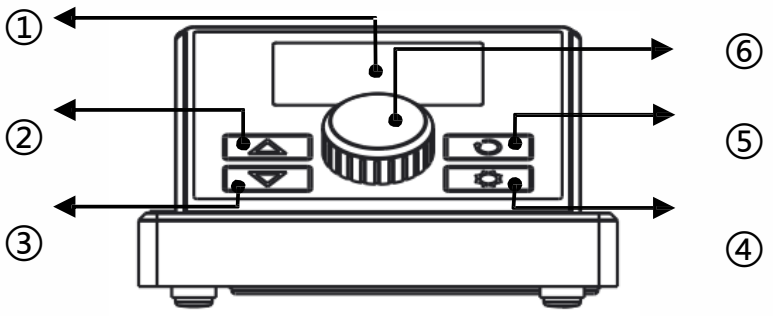
No.	Description
①	Controller Port （Micro USB）
②	Main Body lock
③	Air Admission Cap (pressure balance)

3.2. Remote Control Handle



3.3. Controller

Allows for Electronic Titrator control and function setting.

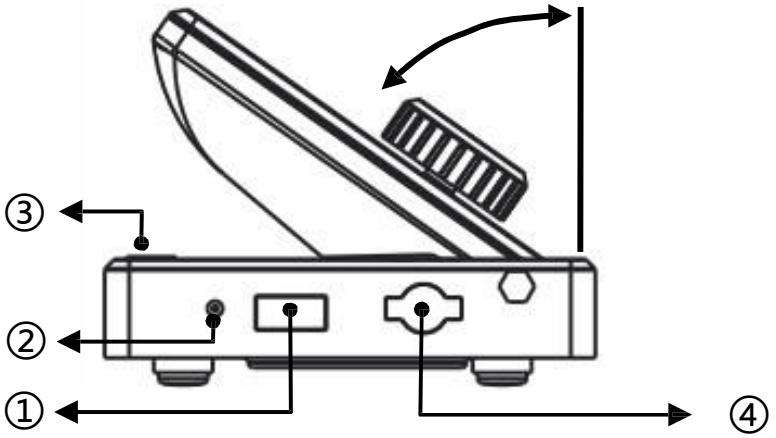


No.	Description
①	LCD Display (shows Electronic Titrator running state)
②	Filling (press and hold for filling，release it to stop)
③	Dispensing (press and hold for dispensing，release it to stop)
④	Setting/magnetic stirrer（short press switching magnetic stirrer on/off; press and hold 2s into setting interface）

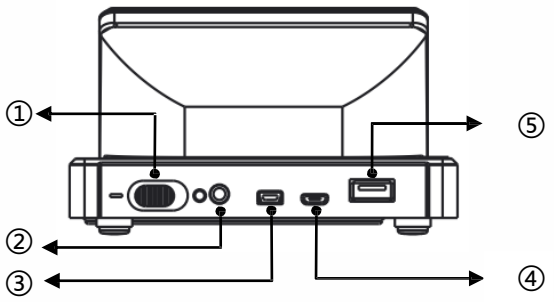
⑤	Pre-Filling (press and hold 2s for piston to complete a aspirating and dispensing process)
⑥	Knob （Turn knob for dropwise titrating, short press knob for reset the liquid volume record to zero）

ControlPanelcanbefully

adjustableuptoanangleof45°

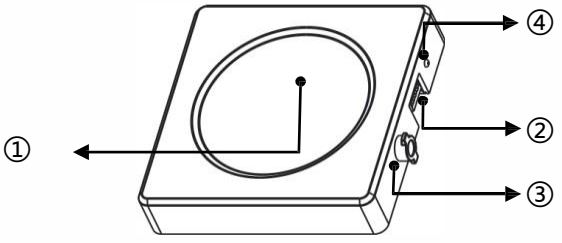


No	Description
1	Magnetic Stirrer Data Port （USB）
2	Locating Slot （to ensure magnetic stirrer assembly in place）
3	Sensor Holder Assembly Slot
4	Magnetic Stirrer Fastening Slot （to fixation with controller）



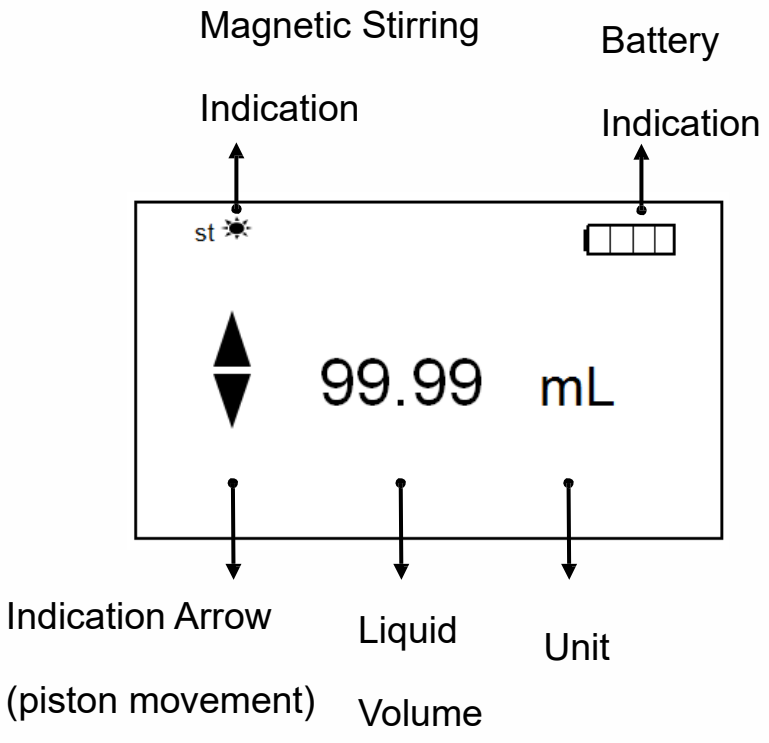
No.	Description
①	Power Switch（symbol “O” indicates Off，”-” indicates On）
②	Remote control handle port
③	Communication port（non-function）
④	Charging/Communication port
⑤	Main Instrument Port

3.4. Magnetic Stirrer



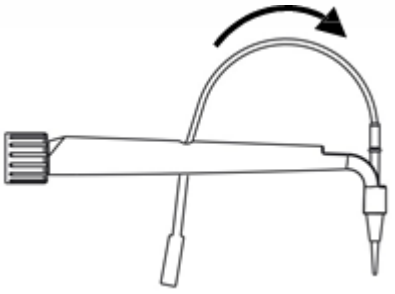
No.	Description
1	Stirring Plate （Max. Bar 20 mm）
2	Communication port
3	Fastening key
4	Location key （to ensure magnetic stirrer assembly in place）

3.5. Display

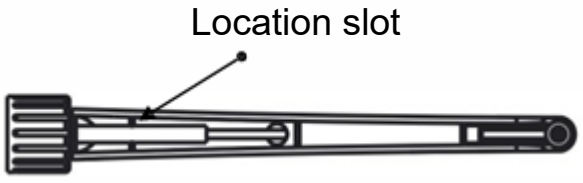


4. Assembly Instruction

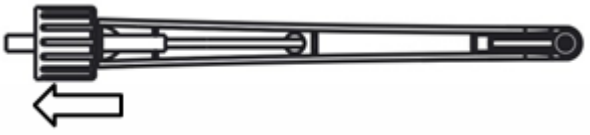
Step - 1: Turn the Main Instrument Lock clockwise to connect titrating tip with Main Body.



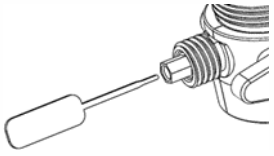
Step - 2: Press the titrating pipe tail end into the location slot



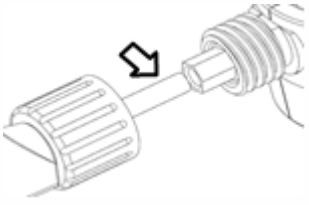
Step - 3: Push the titration pipe tail end with a certain length.



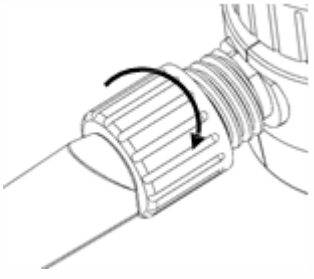
Step - 4: Poke the dispensing valve slightly with the tool as shows in the picture; ensure the balls in the valve can move slightly.



Step - 5: Connect the titration pipe tail end with the dispensing valve.



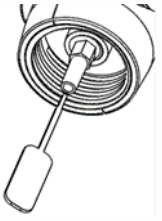
Step - 6: Lock the titration pipe.



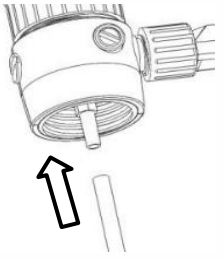
CAUTION:

Titrating pipe is made of FEP. Please confirm compatibility prior to use (Refer to chapter 12 “Limitations and Compatibility”).

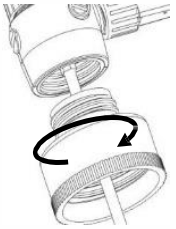
Step - 7: Poke the filling valve slightly with the tool as shows in the picture; ensure the balls in the valve can move slightly.



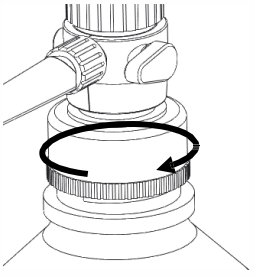
Step- 8: Connect filling pipe with filling valve.



Step - 9: Choose a suitable bottle adapter, then connect it with Electronic Titrator main body.



Step - 10: Turn bottle adapter to fasten main body and bottle.

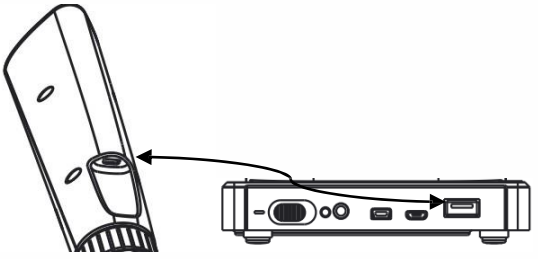


CAUTION:

① Please enable that the adapter is fastened prior to each use.

② For perfect titration, please do not move or touch Main Instrument during operation to avoid physical damage to your Electronic Titrator.

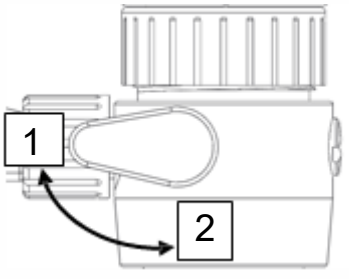
Step - 11: Use USB cable to connect Main Instrument with Controller.



Step - 12: Turn Return Valve to direction

① If liquid is needed to be emptied from the barrel, turn Return Valve to direction.

② Electronic Titrator basic system was assembled.



5. Operation

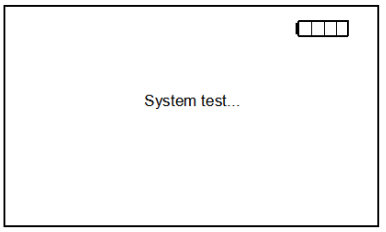
CAUTION:

Do a complete process of aspirating and dispensing before the first time work.

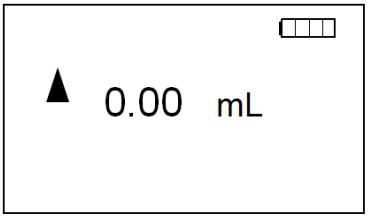
5.1. Titration

Step - 1: Power on.

Step - 2: Waiting self-check complete.

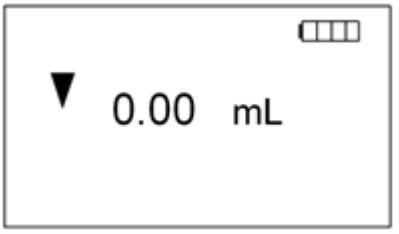


Step - 3: Long press Pre-filling button (↻) 2 seconds to let air out, leaving the piston at the bottom of the barrel finally.



Step - 4: Press and hold Filling button (△) to fill targeted liquid until Indication Arrow showing that the piston is moving downward.

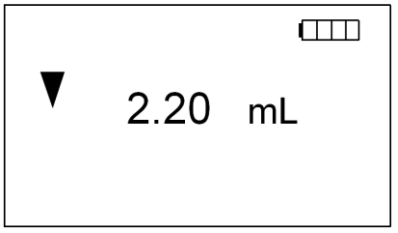
Long press knob 2 seconds, do the same operation also.



Step - 5: Long press Dispensing button （▽） for fast titration. Turn Knob for dropwise titrating.

The dispensing liquid volume will been continue recording

and the volume will be show on the screen.



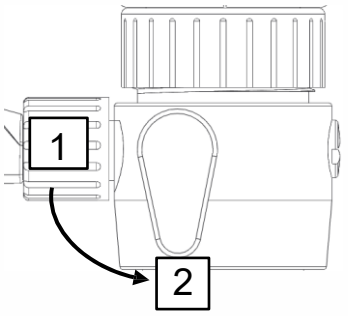
NOTE： When recorded volume reaches the maximum value of 99.99ml, the instrument will stop. Please press the knob to reset Liquid Volume to zero.

CAUTION：

There will may be some air bubble in the barrel during the operation. These bubble dose not effect the actual use. If the bubble is bigger to effect the actual use, please running several times aspirating and dispensing. If this solution not works, please contact with your dealer.

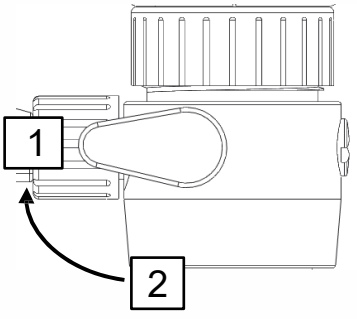
5.2. Liquid Emptying

If liquid is needed to be emptied from the barrel. Step - 1: Turn Return Valve to direction ②.



Step - 2: Long press Dispensing button （▽ ） ,until the piston run to the bottom of the barrel, make the liquid had been emptying.

Step - 3: Turn Return Valve to direction ①. Emptying operation was completed.



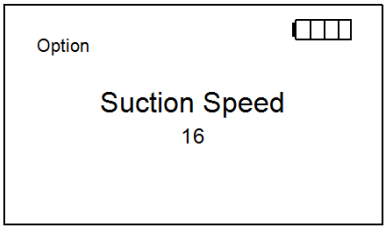
6. Operation

Press and hold Setting button ( ) about 2 seconds to enter Function Setting interface.

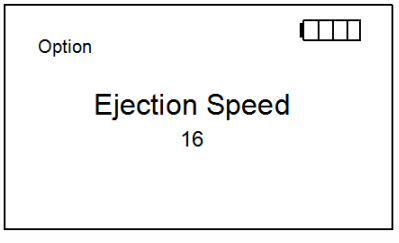
Press Setting button ( ) to flick through pages.

Long press Setting button( )for about 2 seconds on any page to exit Function Setting interface.

Page I: Aspiration speed within a range of 1-16. Turn Knob to adjust and press for confirmation.

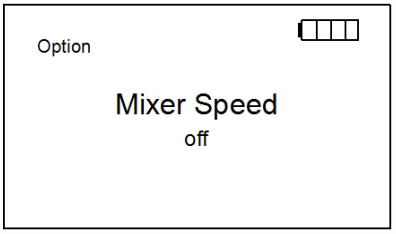


Page II: Dispensing speed within a range of 1-16. Turn Knob to adjust and press for confirmation.



Page III: Magnetic stirrer speed within a range of off-5. Turn Knob to adjust and

press for confirmation.



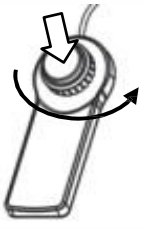
NOTE: This function is effective after connecting the magnetic stirrer only.

7. Accessories

7.1. Remote Control Handle

The Control Handle is the map of the operation of Control Panel, easy to operate over a long distance.

Turn Knob for dropwise titrating, short press for reset liquid volume record to zero, long press 2 second for filling liquid.

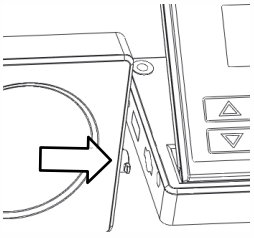


MAX. Length：90 cm

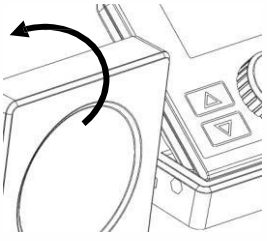
7.2. Magnetic Stirrer

Magnetic stirrer is convenient for mixing during the titration experiments.

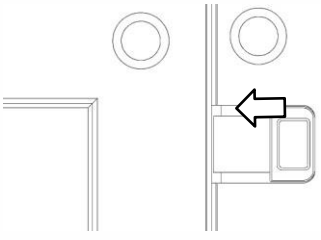
Step - 1: Connect Control Panel Fastening Slot with Magnetic Stirrer Fastening Slot.



Step - 2: Turn the Magnetic Stirrer into horizontal position until the Location Hole into the Location Slot.

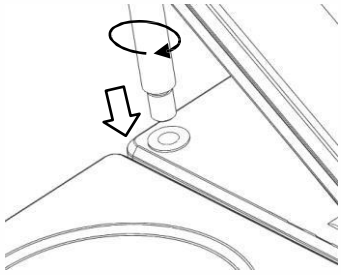


Step - 3: Connect the USB Port under the Magnetic Stirrer with the Control Panel.

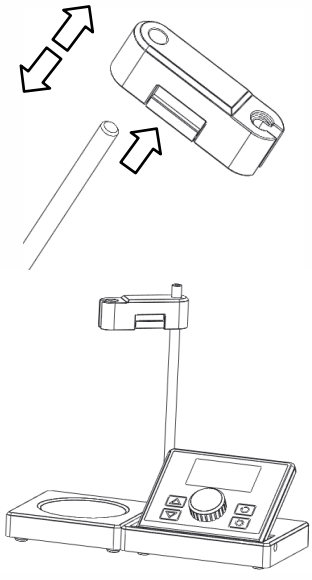


7.3. Assemble Sensor Holder

Step - 1: Fasten the Holder into place.



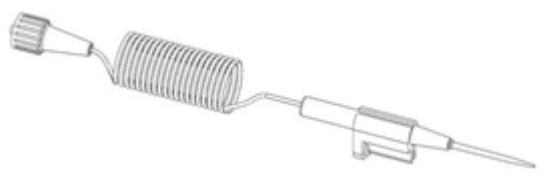
Step - 2: Press black button of the clamp and release until reaching the appropriate altitude.



Assembly diagram

7.4. Remote Titrating pipe

Remote titrating pipe can effectively extend the titration distance.

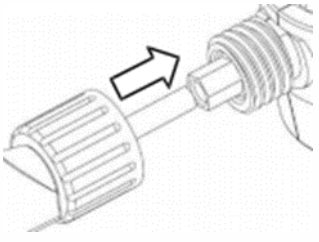


MAX. Length: 1.5 m

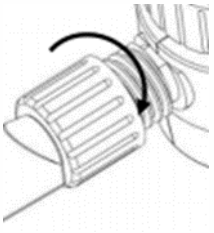
CAUTION:

Titrating pipe is made of FEP. Please confirm compatibility prior to use (Refer to chapter 12 “Limitations and Compatibility”).

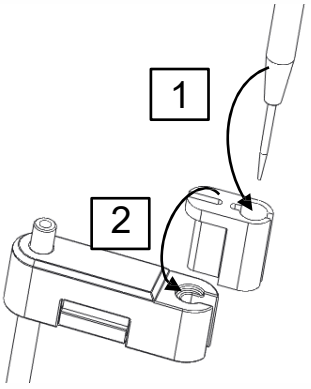
Step - 1: Connect the dispensing pipe tail end with the Dispensing valve.



Step - 2: Lock the dispensing pipe.



Step - 3: Follow the figure to assemble the adapter and remote Dispensing pipe.



8. Calibration

Calibration should take place at 20-25℃, kept constant within ±0.5℃. A dedicated calibration software will write calibration values in your Electronic Titrator, after the distilled water has been repeatedly weighed up at least five times.

Hardware needed：

- Electronic balance with readability of 0.01 mg
- Distilled water
- X86-or X64-architectured PC with pre-loaded Windows(XP/Vista / 7/8/10) operating system

Software needed:

- Dedicated calibration software of Electronic Titrator

(For more information, please contact with you nearest distributor.)

CAUTION:

If your Electronic Titrator can not work properly after calibration, please contact your nearest distributor for assistance.

9. Cleaning and Maintenance

CAUTION:

Electronic Titrator cannot be autoclaved.

9.1. Cleaning the Outer Surface: The outer surface of your Electronic Titrator is made of ABS, ideal for easy cleaning with simply clean water.

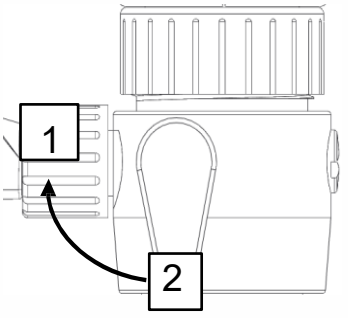
9.2. Cleaning the Barrel

For Electronic Titrator barrel cleaning aspirate repeatedly clear water.

Aspiration and dispensing at least 5 times, according to user's actual situation to increase or decrease.

To ensure emptying the remained liquid in the barrel, the operation reference “liquid emptying”.

Step - 1: Turn Return Valve to direction①, long press Pre-filling button make the piston stop at the barrel bottom.



Step - 2: Press Filling and Dispensing button to aspiration and dispensing simply clean water at least 5 times.

Step - 3: Long press Pre-filling button make the piston stop at the barrel bottom.

Step - 4: Ensure that the tube is not submerged in a liquid. Press filling button to make piston run to the top of the barrel.

Step - 5: Turn Return Valve to direction②, press Dispensing button to make piston run to the bottom of the barrel.

Step - 6: Cleaning work is finish, turn Return Valve to direction①.

CAUTION:

User is not recommended to remove and cleaning of Electronic Titrator barrel. If the barrel cleaning operation fail to meet the cleaning requirements of user, please contact the dealer or professional services personnel for cleaning.

Ensure Electronic Titrator empty without liquid residue before delivery to service personnel and inform details of last liquid handling.

9.3. Filling and Dispensing valve Replacement

Use the Installation tools to disassemble the old valve, replace the new valve to the same position.

Valve has no fixed replacement cycle, problems after the replacement.

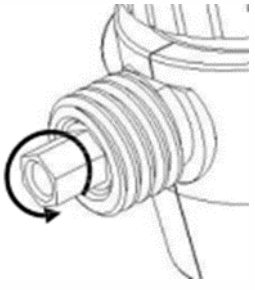
The issue that could be involved with valve, please checking the “Trouble Shooting”.

CAUTION:

The following operation must use installing tools to do.

Before disassembling, ensure to remove the dispensing and filling pipe.

Disassemble Dispensing valve



Disassemble Filling valve

10. Trouble Shooting

Issue	Possible cause	Solution
Piston overflows with liquid	Piston wears out.	Contact with your distributor
Piston moves with difficulty	Piston or its parts are contaminated or damaged due to crystallization and sedimentation.	① Do “Cleaning the Barrel” ② Contact with distributor
Failure to filling	Filling valve is clogged.	① Replace filling valve ② Contact with distributor
Failure to refill; refilling sucks back into the dispensing tip.	Dispensing valve is contaminated or dispensing tip damaged.	
	Filling pipe is loose or damaged.	Replace filling pipe
	Filling pipe is away from the liquid.	Checking filling pipe

Bubbles in the instrument/Dispensing volume is less than the volume displayed	Return pipe is not installed or wrongly installed.	Contact with manufacturer
	The instrument is not fully refilled.	Checking Operation
	Filling valve is clogged or damaged	Checking filling valve
		Replace filling valve
No display	Battery dead	Charge battery
	Connection fail	USB cable connection checking

11. Storage

During storage periods at constant temperature and humidity, the recommended temperature range is from 0-40℃ and humidity no more than 80%.

Please every month charge the Electronic Titrator if being unused in long time, make sure there are 50% power in battery at least.

12. Warranty

This instrument is covered by one - year warranty against defects in workmanship and materials. Please contact your nearest distributor.

ANY WARRANTY WILL, HOWEVER, BE DEEMED AS VOID DUE TO NORMAL WEAR AND TEAR OR FOR OPERATIONS CONTRARY TO THE INSTRUCTIONS GIVEN IN THIS MANUAL.

13. Limitations and Compatibility

It is recommended to confirm reagent's compatibility with this instrument when applied for special purposes, trace analysis for example.

- The liquid-path construction of your Electronic Titrator is made of borosilicate glass, FEP and PTFE. Do not apply it in handling liquids like hydrofluoric acid.
- The instrument would be clogged or damaged by solid particles in turbid liquid like activated carbon.
- The plastic parts of your Electronic Titrator would be in swelling condition if concentrated acid and alkaline, and methylbenzene, benzene and other nonpolar organic solvents are put into use.
- Keep your Electronic Titrator away from the highly combustible carbon disulfide.
- Electronic Titrator cannot be autoclaved.
- Do not put your Electronic Titrator in contact with corrosive gas like HCl.

Compatibility（Max. Conc. 1 mol/L）

Acetic acid

Alcoholic potassium hydroxide solution

Ammonium iron (II) sulfate solution

Ammonium thiocyanate solution

Barium chloride solution

Bromide bromate solution

Cerium (IV) sulfate solution

EDTA solution

Hydrochloric acid

Hydrochloric acid in Acetone

Iodine solution*

Iodide Iodate solution*

Iron (II) sulfate solution

Nitric acid

Oxalic acid solution

Perchloric acid

Perchloric acid in glacial acetic acid

Potassium bromate solution

Potassium bromate bromide solution

Potassium dichromate solution

Potassium hydroxide solution

Potassium iodate solution

Potassium permanganate solution*

Potassium thiocyanate solution

Silver nitrate solution*

Sodium arsenite solution

Sodium carbonate solution

Sodium chloride solution

Sodium hydroxide solution

Sodium nitrite solution

Sodium thiosulfate solution

Sulfuric acid

Tetra-n-butylammonium hydroxide sol.

Triethanolamine in Acetone*

Zinc sulfate solution

CAUTION: This compatibility is against parts which are directly in contact with liquid.If any of above solution needs to be applied, contact with distributor for consultation.