Karl Fischer Titration Tester

Thank you for purchasing a Karl Fischer Titration Tester from Ascott. Please read these instructions carefully and retain for future reference.

Important Information

This equipment should only be used as intended by suitably qualified and trained personnel.

These instructions should be always readily available to such personnel.

Normal common-sense safety precautions must be taken at all times to avoid the possibility of accidents. We recommend that users produce their own risk assessment for the entire testing process for which this equipment will be used.

T01-700745

Based on the Karl-Fischer theory, this titration tester is a water analyser. The instrument consists of an advanced and accurate metrical pump and a 3-way diversion valve.

The tester automatically loads and unloads liquids, discharges the waste liquid, and automatically titrates. The titrate value is displayed in digits on the LED screen.

TECHNICAL SPECIFICATIONS

Volume of titrator pipe: ＞25ml
polarization voltage: -20mV

Lowest sensitivity: 10-6A
Titration volume precision: ≤±0.2% F·S
Minimum Volume differentiation: 0.01ml

PARTS IDENTIFICATION：

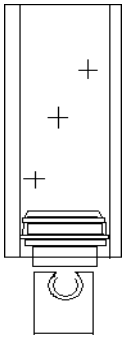

Fig.1 red pump

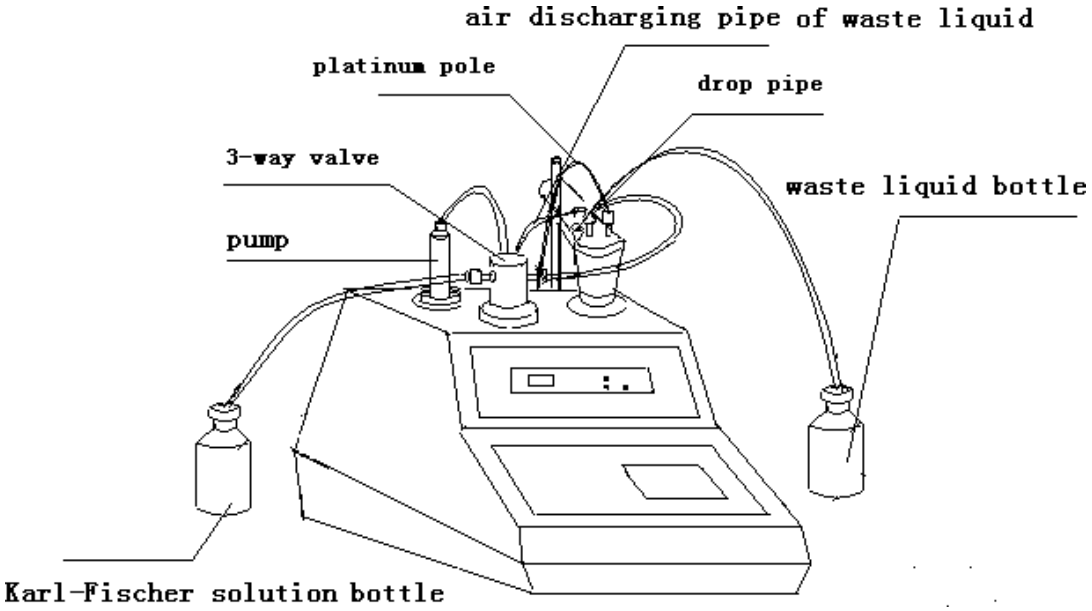

Fig2.

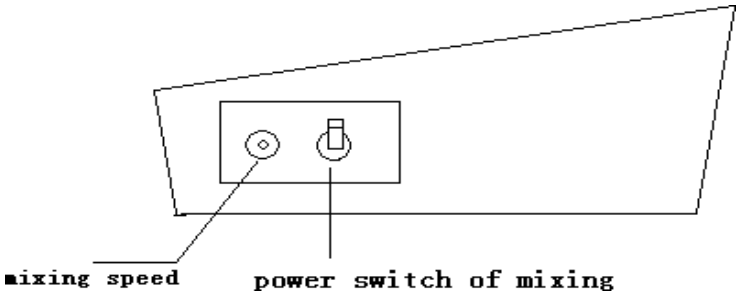

Fig3. Side View

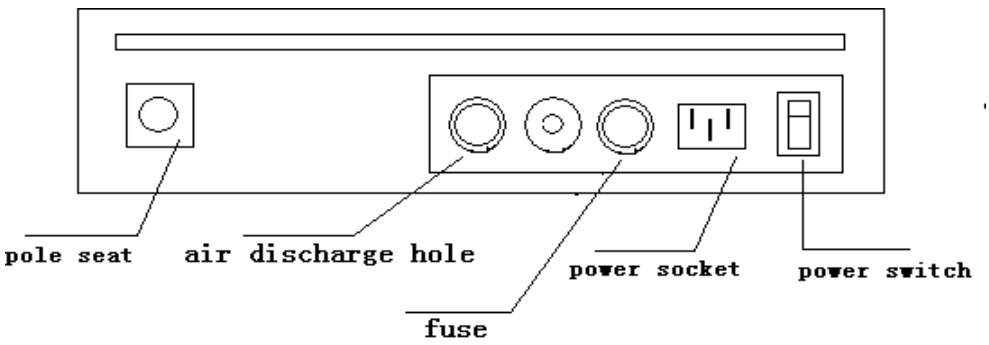

Fig 4. Rear View

1. INSTALLATION

METRICAL PUMP INSTALLATION

a) See fig1, insert piston of pump pipe into the groove of pump's rod.

b) Press down the glass pipe of pump and turn its lower end clockwise into the seat of pump until they connect tightly.

CONNECT THE CIRCUIT

a) Turn the polythene pipe of the 3-way valve into pump connector.

b) Turn the polythene pipe on the left side of the 3-way valve which has capsules into Karl-Fischer solution bottle.

c) Use an electric blower to heat the last polythene pipe on the right side of the 3-way valve and press it into the thicker end of the drop pipe.

d) Prepare an ordinary reagent bottle as a waste liquid bottle, screw on the capsule connected with a pipe, connect the thicker end of the pipe into the "gas discharge" connector on the instrument, and put the capsule on the right place according to fig.2

e) According to fig.2 also, install electrode and drop pipe in the reaction bottle, put the mixing rod into the bottle, switch on mixing power, adjust the mixing speed knob to the appropriate level.

f) Press the key "discharge waste liquid" make sure all the connectors on reaction bottle are airtight, if not press them tight. After discharging waste liquid, clean a blank

2. USING THE INSTRUMENT

Switch on power and set the 3-way valve to load liquid status (turn clockwise), press "load liquid" key, the piston of the pump will move to load liquid until complete, then turn the 3-way valve to "unload liquid" position (turn anticlockwise) press "unload liquid" key, the piston moves upward driving air bubbles out, and stops at the highest end. Then adjust to "load liquid" status as the above method, repeat load and unload 2-3 times to remove all the air bubbles and completely fill pump pipe and polythene pipe with Karl-Fischer solution.

Add fresh no water carbinol (about 15-20ml.) Switch on mixing button. Adjust mixing speed using the potentiometer knob.

Turn the 3-way valve to unload status, press" titration start" key, then the instrument will begin to titrate. First, clean the blank, it will drop fast at the beginning, when approaching the end point, it slows down, and then stops at the end point. In 10-15 seconds, the end point lamp will be lit. For first time usage, it is recommended to clean the blank one more time to eliminate all carbinol and water in the reaction bottle. (Before pressing titration start key you must press zero key, otherwise the instrument is locked to end point).

Demarcation of Fischer reagent

Precisely take 10ml (10ul) heavy distilled water (normally use 10ul injector), then pour into reaction bottle, press the titration start key, when it reaches the end point, it will buzz, and lamp will be lit. The screen displays the volume of Fischer solution used by 10ml water, repeat the operation, to calculate one ml reagent's worthiness of water in mg.

$$F=W/A$$

F=one ml reagent solution's worthiness of water' mg

W=weight of water had been taken

A=regent consumption in titration(ml)

Test of sample

Precisely take test liquid, power or solid, put it into reaction bottle, press the titration start key, and calculate as per this formula:

$$Water\%=A \times F / W \times 100\%$$

A=consumed Fischer solution in ml

F=one ml Fischer solution worthiness of water

in mg W=weight test sample in mg

Discharge of waste liquid

If the solution in the reaction bottle is too much, press" discharge waste liquid" key to discharge, until the liquid level is below the end of the discharging pipe.

WARNINGS

When using this instrument, as the piston of the pump is approaching the highest end, you should ensure to load the liquid to full volume then let it drop. When the titration starts, if the piston moves to highest end and it does not drop, you should press the ZERO key then load liquid in load status.

If the electrode has been used for a long time, the surface of it can be contaminated causing errors in reading. Wash it in potassium dichromate solution for about 30-60 seconds.

If the instrument will not be used for a long time, users should clean the blank again. The instrument should not be used in a damp environment.

When all tests are finished, all the Fischer solution should be discharged, lift load pipe up from liquid level. Press "load liquid" key in "load status" to load solution into pump pipe, then unload solution in pump pipe in unload to dilute Fischer solution until the color of the solution is transparent. Turn down the connector on pump, blow out all carbinol solution in load and unload pipe. Screw down red glass cover, wipe out solution in pump pipe ready for next use.

Due to close contact between piston and pipe of pump, the pipe of pump should not be removed from stainless steel rod to avoid damage to the pipe, the Piston should not be removed from the glass pipe either.

Disassembly of pump body - If you need to disassemble the pump because of accident or a long period of disuse, follow these steps. Lift the load and unload pipe up from the liquid level, then in unload status, press "unload liquid" key to discharge solution in pump pipe. Turn the 3-way valve to load status, press "load liquid", load solution from load pipe into pump pipe, quickly switch to unload status (not pressing any key) to load liquid from unload pipe into pump. When the piston is approaching the lowest end, press ZERO key to stop the motor. Screw down the polyethylene knob, then screw down red glass cover, move glass pump body upward carefully using 2 hands. When the piston screw appears, take out the piston, and pour off remaining liquid.

Troubleshooting:

ERRORS	CAUSES
Screen not lit	Power not properly connected
Air bubbles appear in titration	Liquid circuit connector loose
In load process, liquid leaking from pump or 3-way valve	Circuit or pipe obstructed, 3-way valve not at correct status, pump pipe moved
Titration precision decline	Reaction bottle is not sealed, Environment too damp, pole contaminated
Numbers jumping	Interference from a surrounding magnetic field

If you have any queries regarding your new equipment, or require any additional accessories or consumables, please contact info@ascottshop.com or telephone +44 (0)1827 318040. If you wish to contact us by post, our full mailing address is 6-8 Gerard, Tamworth, Staffordshire, B79 7UW