Foreword

Thank you for purchasing our product: Sample Concentrator. This Manual for users contains function and operation of the Instrument. In order to use the instrument properly, please read this manual carefully before using the Instrument.

Opening Check

Please check the Instrument and Appendix with the packing list when you first open the instrument packing case. If you find there is something wrong with the Instrument and the Appendix, do contact the vendor or the producer.

Contents

Safety Warnings and Guidelines

1. Important operation information of the security

Before using the instrument, user need have a complete understanding how to operate it safety.

Before running the instrument, please read this manual carefully.

Forbid anyone to operate the instrument before reading the manual.

If operate not in accordance with the tips on the manual ,the heat generated by the instrument at runtime may cause severe burns, and electric shock accident.

Please read the following safety tips and guidance, and implementation of all precautions.

2. Safety

when operation, maintenance and repair of this instrument, it must subject to the following basic safety precautions. if you don't abide by the warnings pointed in the manual , may affect the protection and intended use scope of the instrument.

The instrument is GB9706.1 standard I class B common devices. The instrument is for indoor use.

Before operating this equipment please read this manual carefully, otherwise it may cause personal injury. Only in the aspect of how to use electrical equipment installation trained qualified inspection personnel to operate the equipment.

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Operators do not attempt to open or repair equipment, doing so will make you lose the warranty qualification, also may be limited by electric shock. If you need repair, please contact our company. In order to avoid electric shock accident, the instrument input power cord must be reliable grounding. This instrument uses three core grounding plug, of which the third feet for grounding, which should be used with grounding type power socket.

Before connecting the power supply, ensure the power supply voltage and the instrument voltage required the same. And make sure that the power outlet rated load no less than the instrument requirements.

If the power cord damaged, replace it according to the same type and specifications. Don’t press anything on the power cord when it be used, don't put the power cord in place where people often walk.

When insert the power cord plug, must hand-hold the plug and ensure that the plug is completely inserted into the socket, when pull out the plug, must hand-hold the plug as well and don't pull the power cord.

During operation, the temperature of metal module may become very high and have the possibility cause burns or the liquid boiling out, therefore, in the process of the whole operation, it is forbidden any part of the body contact, in order to avoid scald!

The instrument should be put in lower humidity and less dust and away from water and avoid direct sunshine and strong light, indoor should be well ventilated, no corrosive gas or strong magnetic field interference, away from heat, stoves and other heat sources. Don't take equipment in wet or dusty places. In order to avoid temperature overheating ,do not block or cover the vent holes on the instrument. when several equipment be used at the same time, the more the distance between each instrument shall be not less than 30 cm.

Shutting off the power when stop working. unplugging the plug and using soft cloth or plastic cover to prevent dust from entering the instrument when long time no use.

When happened as following listed cases, it should be pulled the power socket immediately and contact the supplier or trained maintenance personnel:

- Liquid into instrument;
- Instrument damaged by rain or water;
- Instrument don't work properly, especially appear any abnormal Sound or smell;
- Instrument drops or shell damage;
- Instrument functions have obvious changes;

3. The maintenance of Instrument

In order to make sure the test tube and the taper hole wall contact fully, good thermal conductivity and avoid pollution, the instrument cone hole on the modules should be cleaned regularly use a clean soft cloth with a small amount of anhydrous alcohol.

Cutting off power supply while cleaning the instruments.
Strictly prohibit dripping detergent into the taper hole when clean the blocks.
Strictly prohibit using corrosive cleaning agent to clean instrument surface.

Chapter 1 Introduction

Sample concentrator is a high precision temperature control instrument with microprocessor controlled and PID fuzzy controlled technique, its working principle is to blow nitrogen rapid, continuous on the heating surface of the sample.

Setting temperature according to solvent evaporation rate and the boiling point, realize the rapid and concentrated a large number of samples.

This instrument adopts aluminum heating module, have good heat transfer, heat transfer balance, which is good for rapid heating and rapid temperature control. blowing nitrogen to the sample surface, realize the liquid samples without oxygen enrichment. Blowpipe are independent of each other, will not cause cross contamination, gas components on the gas injection channels can be combined or used alone. which system has a high accuracy of temperature control, wide temperature control range, numerical control digital display temperature, convenient temperature calibration. this instrument has good appearance and easy to operate, safety, reliable.

1. Applying field

- Analysis of pesticide residues: vegetables, fruits, cereals, plant tissue.
- Environmental analysis: such as drinking water, groundwater and polluted water samples.
- Biological analysis: such as hormone analysis, sample preparation of liquid phase and gas phase and mass spectrometry analysis.
- Food and beverage: such as milk, wine, beer, etc.
- Pharmaceutical drug testing: such as traditional Chinese medicine pharmaceutical, drug screening.

2. Normal Operating Condition

Ambient temperature：5°C ~ 30°C

Relative humidity：≤70%

Power supply：AC220V 50/60Hz

3. Parameters and performance

Project	Parameters
Temp range	RT.+5°C -160°C
Temp accuracy	±0.5℃（@40℃）
Temp accuracy	±1℃（@120℃）
Temp uniformity	±0.5℃
Display accuracy	0.1℃
Time Range	1-99h59min/∞
Heating time	≤15 min(from 25℃ to 160℃)
Max vertical travel	200mm
Max gas usage	15L/min
Max gas pressure	0.02Mpa（Gas pin≤16pcs） 0.05Mpa（Gas pin＞1pcs）
Block qty	2
Max power	500W
Voltage	AC220V 50/60Hz
Size	260x220x450mm
Weight	7.5kg

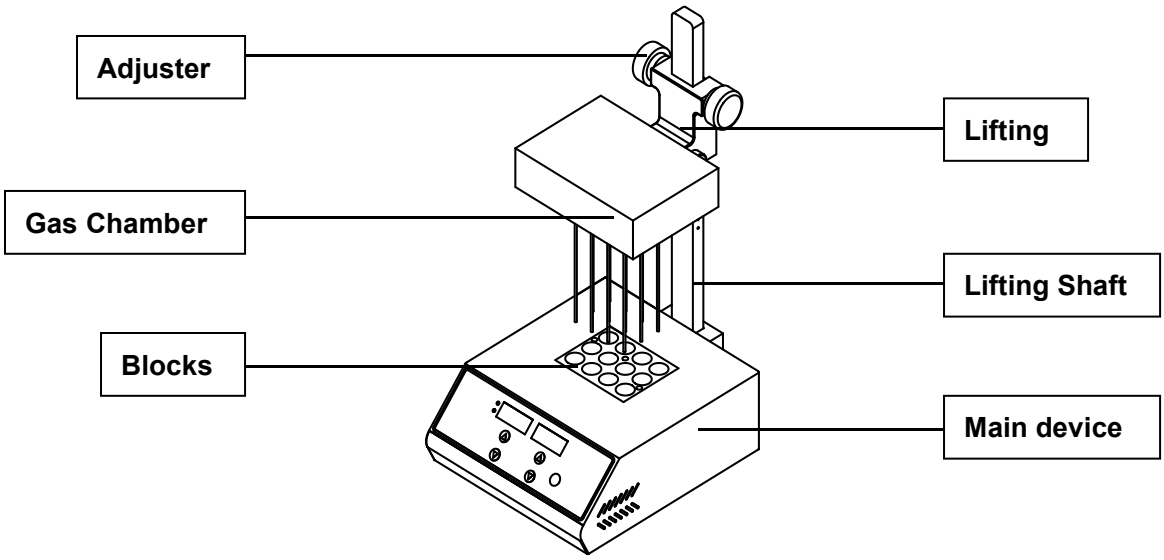
4. Optional blocks

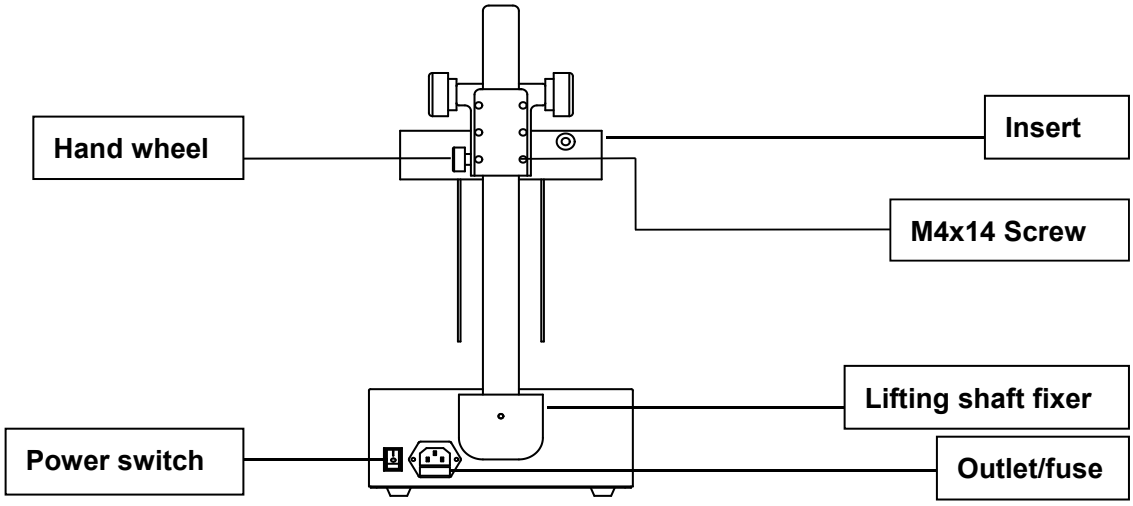
Type	Test tube diameter	Capacity	Dimension(mm)
LE-03	10mm	24	95.5X76.5X50
LE-04	12mm	24	95.5X76.5X50
LE-05	13mm	24	95.5X76.5X50
LE-06	15mm	16	95.5X76.5X50
LE-07	16mm	16	95.5X76.5X50
LE-08	19mm	12	95.5X76.5X50
LE-09	20mm	12	95.5X76.5X50
LE-10	26mm	8	95.5X76.5X50
LE-11	28mm	4	95.5X76.5X50
LE-12	40mm	3	95.5X76.5X50
LE-15	1.5ml(centrifuge tube)	24	95.5X76.5X50
LE-16	2.0ml(centrifuge tube)	24	95.5X76.5X50

Chapter 2 Preparations

This chapter is introduces Sample Concentrator's mechanical structure, the keyboard and each key's functions and some preparations before power-on. You should be familiar with this chapter before the Sample Concentrator is first operated.

1. Structure Description

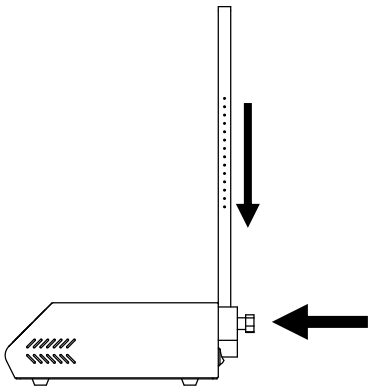




2. Installation

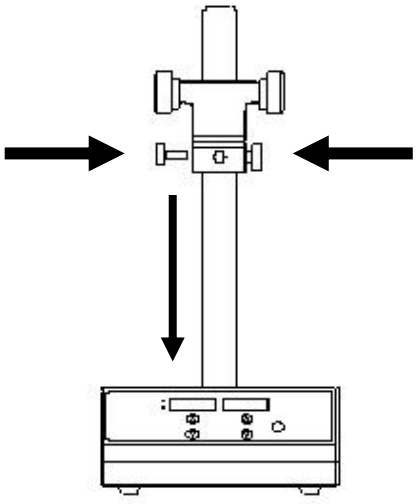
2.1 Installing lifting shaft

Please put lifting shaft into fixer at the back of main device, fasten it by M5 handle wheel.



2.2 Installing lifting

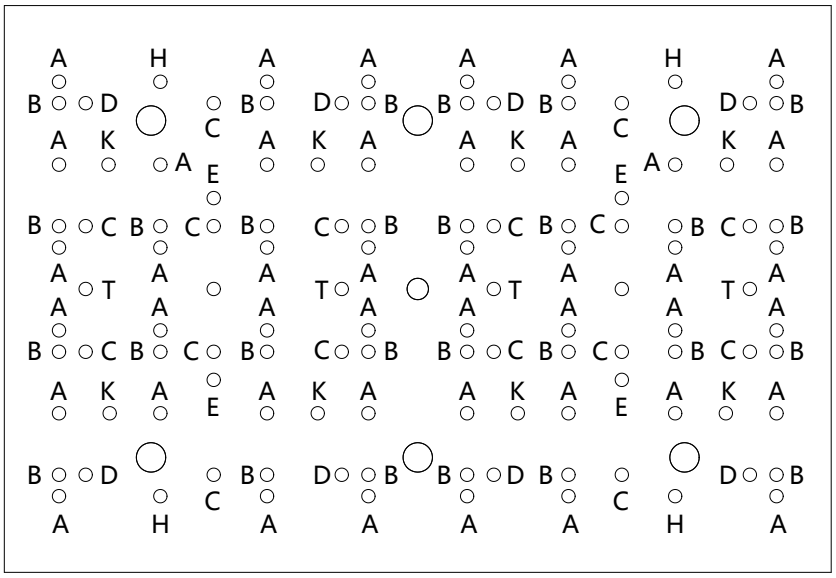
Please install lifting into lifting shaft, fasten them by M8 handle wheel. Knob another M6 handle wheel and M4x14 screw in lifting.(M5 hand wheel to tighten air chamber)



2.2 Installing the needles

Loosen the gas chamber knob, take out the gas chamber ,overturn the gas chamber, and place the gas chamber on the working desk.

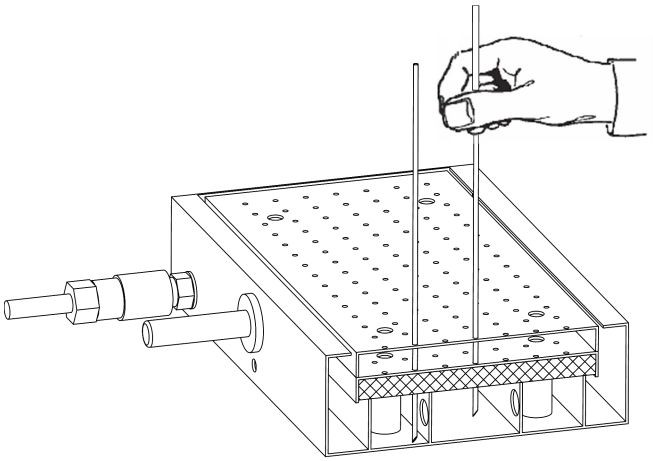
Different block corresponding with different hole on the gas chamber, the needles hole of see following Fig.



2.3 Needles hole label with different insert block

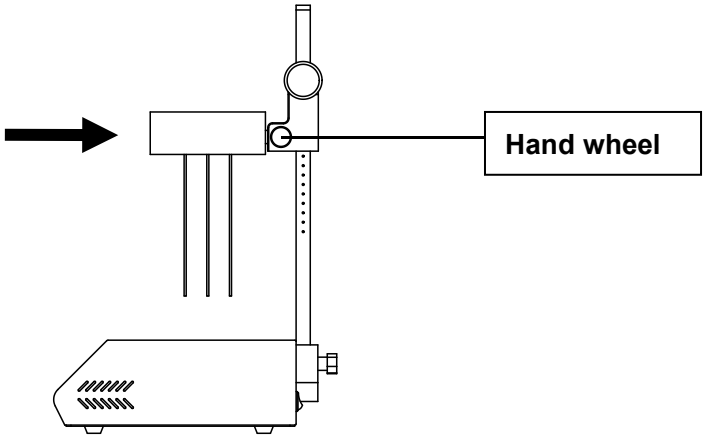
Block	Tue Size	Hole Label
LE-03	10mmX24	A+H
LE-04	12mmX24	A+H
LE-05	13mmX24	A+H
LE-06	15mmX12	B+H
LE-07	16mmX16	B+H
LE-08	19mmX12	D+C
LE-09	20mmX8	D+T+E
LE-10	26mmX8	D+T+E
LE-11	28mmX4	K
LE-12	40mmX3	T
LE-15	1.5mlX24	A+H
LE-16	0.2mlX24	A+H

According to hole label, insert the needles into the gas chamber, if some hole in the block do not use, please do not insert the needle into the gas chamber, otherwise it will waste the gas.(Note: Gas pressure should be less than 0.05Mpa)



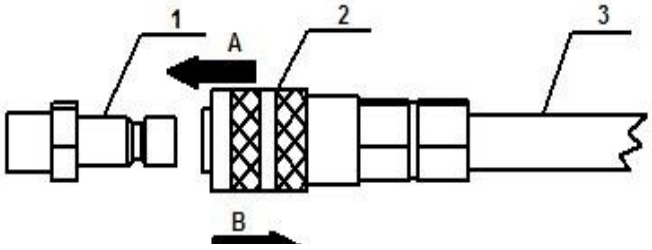
2.4 Installing gas chamber

Please installing gas chamber with needles on lifting, fasten it by M5.



2.5 Introduce of insert

Put the linker into intake nozzle of gas chamber and connect the gas tube to the gas supply, see following Fig.



1 Intake Nozzle 2 Linker 3 Gas tube

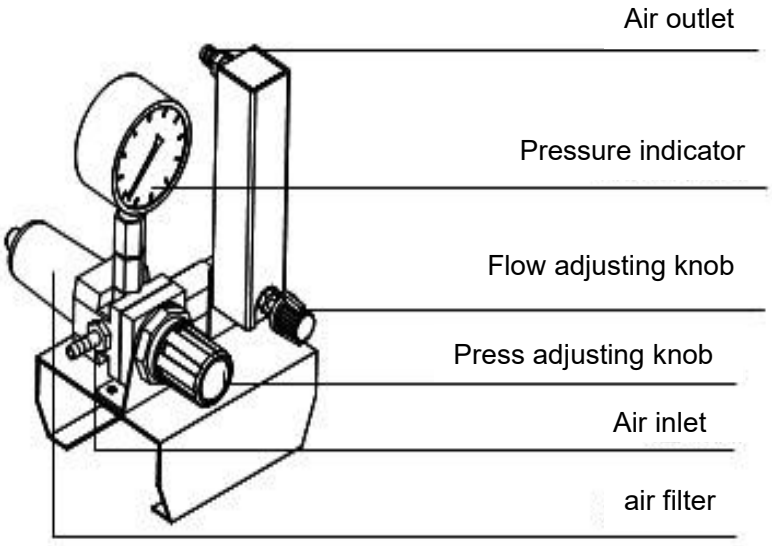
Place the test tubes in the insert blocks ,then handhold the carriage knob with left hand, loosen the carriage knob first, then turn the hand wheel clockwise with right hand, lower the gas chamber so that the tips of the needles enter the test tubes, position them at the required height above the liquid surface.

Turn-on the gas switch

Note: the Maximum gas pressure is 0.05MPa, too large gas pressure will waste the gas, so remember not to exceed 0.05MPa. And if using needles less than 16pcs, please adjust the maximum gas pressure less than 0.02MPa.

2.6 Nitrogen gas flow regulating valve installation

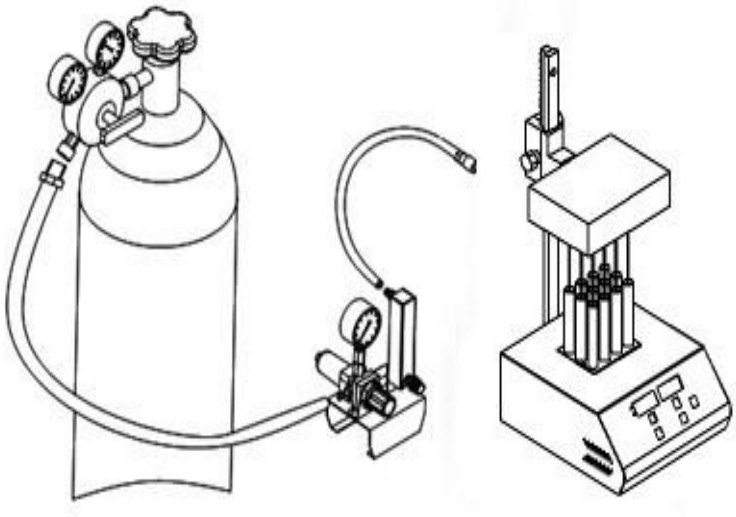
1) Nitrogen flow control valve structure



Pull pressure adjusting knob, turning clockwise will increase pressure, otherwise reduce pressure until to shut down. Press the knob will lock up the knob, so that can't adjust the pressure. Counterclockwise flow control knob, will increase flows, otherwise will reduce flows to shut down.

Note: the nitrogen flow regulating valve and air filter for options, according to the demand by the customer to choose.

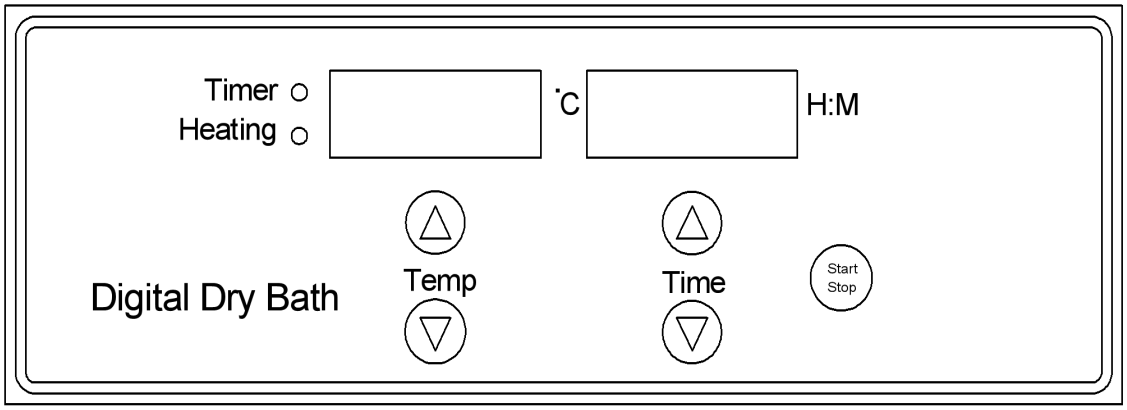
2) Nitrogen flow control valve Installation



According to the above, connect the nitrogen flow control valve air outlet and the main engine air inlet with short air tube , then connect the nitrogen flow control valve air inlet and Nitrogen gas bottle air outlet with long tube .

Note: open nitrogen cylinder valve slowly, first make nitrogen cylinder gas pressure control between 0.1 MPa to 0.2 MPa, then open the pressure of the nitrogen flow control valve adjusting knob, fine tuning knob, the nitrogen flow control valve pressure gauge instructions at about 0.02 MPa. Actual use according to the number of holes adjust the pressure (generally choose between 0.02 MPa to 0.05 MPa).

3. Keyboard



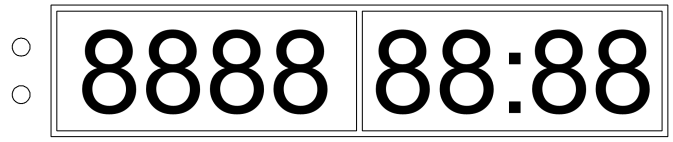
4. Key function

TEMP ▲▼ Temperature setting key. Short press "▲" to set temperature increase, long press set blinking. Short press "▼" to set temperature decrease, long press set blinking.
Time ▲▼Time setting key. Short press "▲" to set time increase, long press set blinking. Short press "▼" to set time decrease, long press set blinking.
START/STOP Stop/start key. Pressing this key to stop or start the procedure. Pressing momentary to start, Pressing continuously (2 second) to stop.

Chapter 3 Operation Guide

1. Temperature and time setting

a)

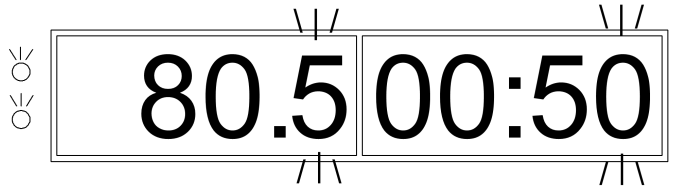


When power on, the Instrument goes into the initial state with the sound of “di…”.

b)

About 2s later, the figure 28.8 is the block’s current temperature; 00:50 in the time display is the last set time.

c)



Press Start/Stop, instrument goes into setting mode, decimal place flickers, temperature and time in display is last running values. Red and green lights start to shine regularly.

Adjust temperature, procedures as follows:

Press Temp “▲”or “▼” to adjust temperature.

Press Temp “▲”or “▼”more than 1 second to change flicker position.

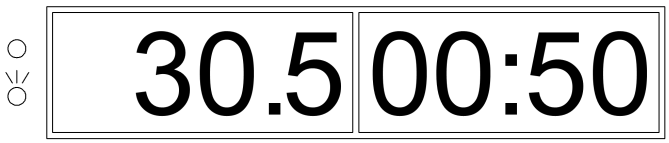
Adjust time, procedures as follows:

Press Time “▲”or “▼” to adjust time.

Press Time “▲”or “▼”more than 1 second to change flicker position.

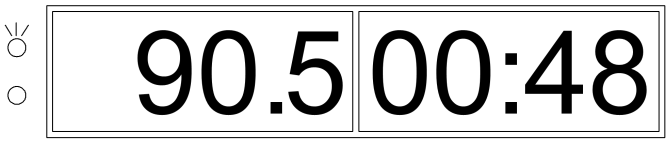
2. Start/Stop

a)



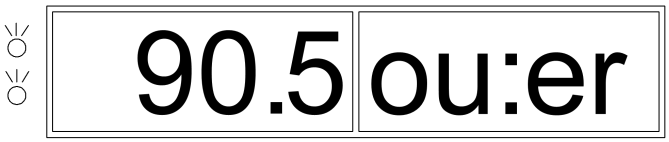
After the accomplishment of the temperature and time setting, press the button of “START/STOP”,instrument start running with a sound of “di...”,Temperature heats up .Temperature in display is current temperature. During heating, green light turns off and red light start to flicker.

b)



When temperature is constant, red lights turns off, then green light starts to flicker and count down.

c)



When time is over, the operation is stopped, the buzzer alarms and lights flickers. Temperature in display is current temperature, time in display is “OVER”, the accomplishment of operation.

After the accomplishment of operation, instrument is in over mode waiting for new instruction. Press “▲”or “▼” to setting
interface. Press “Start/stop”, it will operate as per last setting. During running, Press “Start/stop” more than 2 seconds, instrument stops running and press it again to start.

Notes : Press “TEMP” or “TIME” during operation, you can look up the setting temperature and time but can’t change them.

3. Temperature Calibration

The temperature of the instrument has been calibrated before it is sold out. But if there is deviation between the actual temperature and the displayed temperature due to some reasons, you can do as follows to correct the error.

Notes: The Instrument uses multipoint temperatures adjustment to ensure its veracity. The temperature veracity will be within ±0.3℃ after the multipoint temperature adjustment.

Both the circumstances and the block temperature should be lower than 35℃.

Adjustment methods as follows:

a). After the startup of the Instrument, it enters waiting interface. Make sure the temperature in display is below 35℃. **If the temperature is higher than 35℃, you should wait until the temperature is below 35℃.**

b). Inject olefin oil into one of the cone-shaped wells, and then put a thermometer into this well (Make sure the precision of the thermometer should be within 0.1℃and the temperature ball should be absolutely immerged into the cone-shaped well). Heat insulation material is needed on the block to separate it from the circumstance. Seeing from chart a.

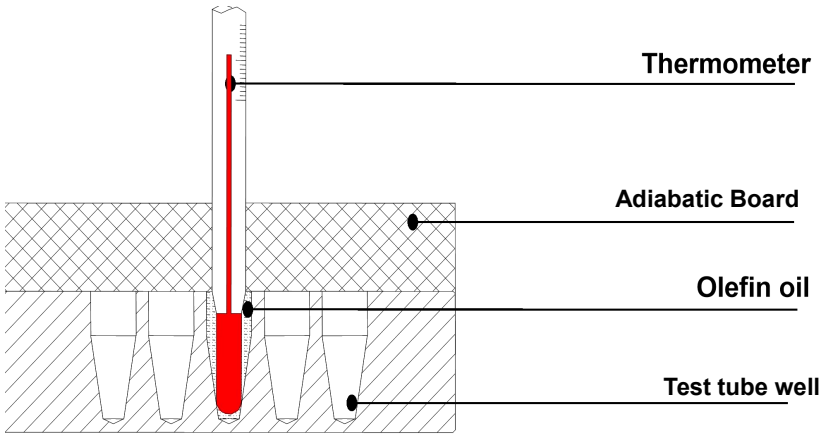
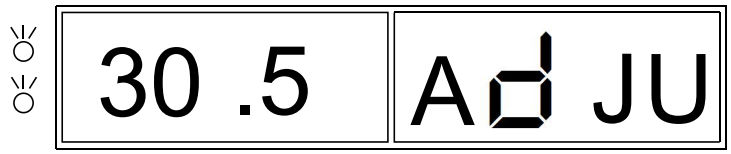


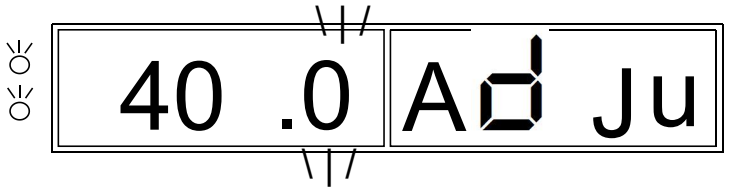
Chart a

c)



Press Timer's"▲" and "▼" simultaneously, system enters calibration Mode ,time in display is 30.5 ,temperature in display is current temperature and automatically heat up to 40 ℃.

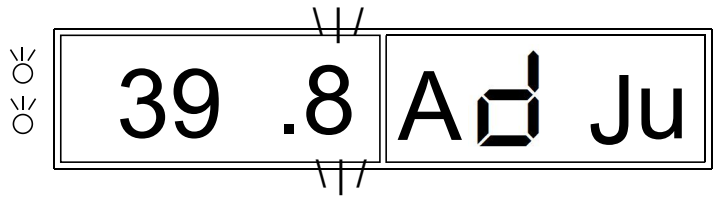
d)



When the temperature reaches to 40℃, the decimal digit begins to flicker, waiting for the calibrated value of 40℃. Read out the actual value from the thermometer after 20 minutes.

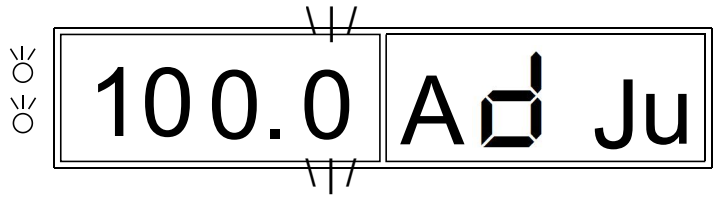
Notes: Please read the actual value after 20minutes' constant temperature to ensure the adjustment precision.

e)



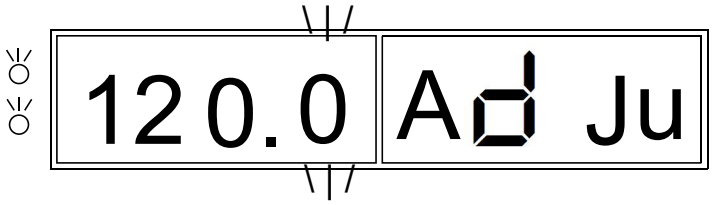
If the actual readout is 39.8℃, you can input 39.8 in the temperature display by pressing "TEMP" and "▲" or "▼". Then press "START/STOP" to confirm.

f)



Then system will automatically heat up to next calibration. Users need to repeat above steps and input data at each calibration

g)



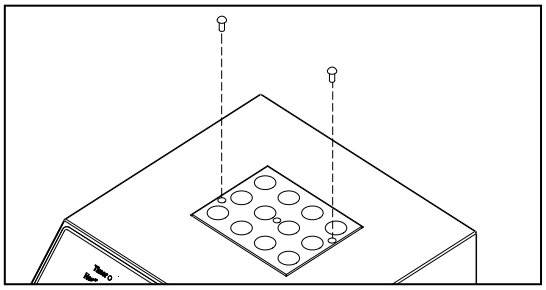
When the third calibration finished(120 ℃),press START/STOP to confirm, then you can reboot instrument for normal use.

Note:

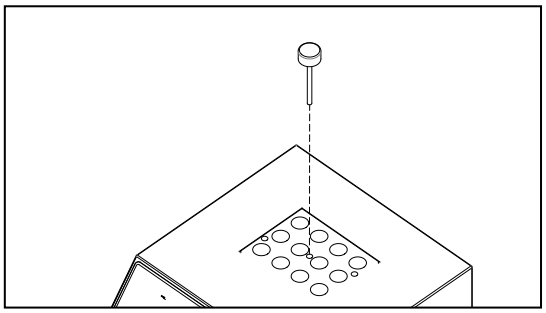
Press "START/STOP" more than 2 seconds to exit out calibration, the changed value is invalid.

4. Exchange of block

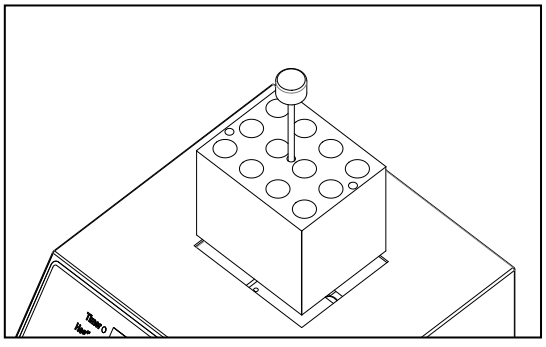
a)Pull out the two screws counterclockwise which fix the block with the cross screwdriver.



b) Put the M4 threaded portion of handle into the center of threaded hole of block you need to exchange and fix them by clockwise.



c) Draw the upper part of handle and pull out block.



d） Screw out the handle and fix it in new block you need, put them in the right place fix them in instrument by clockwise with hexagonal wrench.

Chapter 4 Failure analysis and processing procedure

NO	Phenomenon	Possible Causes	Processing Procedure
1	Display window doesn't response after power-on	No power	Check the connection of power
		Bad Fuse	change fuse
		switch Failure	Change switch
		Others	Contact to supplier or manufacturer
2	The actual and displayed temperatures are quite different.	Broken sensor or loose contact of the module	Contact to supplier or manufacturer
3	Temperature screen displays "Err" with alarm of "DU..."	Broken sensor	Contact to supplier or manufacturer
4	No heating of the block	Broken sensor	Contact to supplier or manufacturer
		Broken heating control IC	
		Broken heating block	
5	Press invalid	Damaged key	Contact to supplier or manufacturer