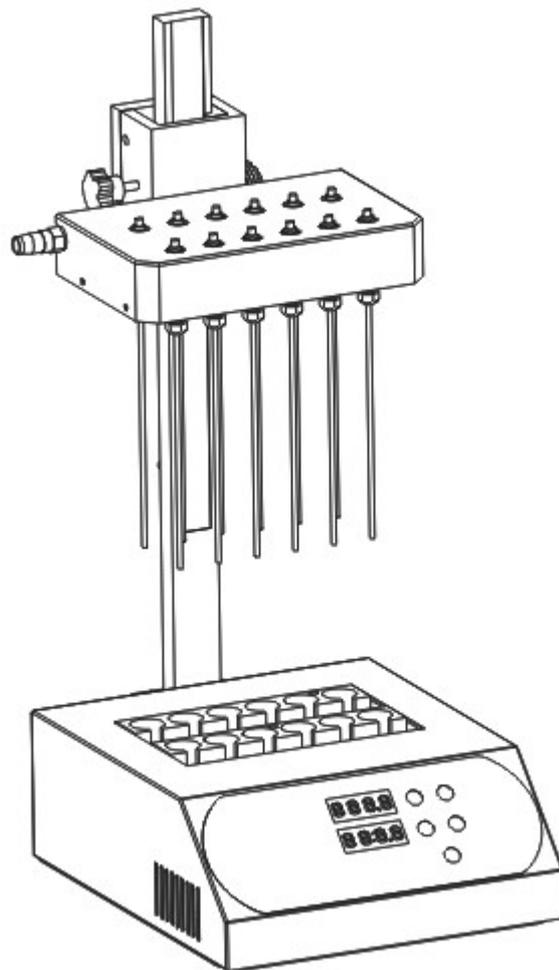


DC150-1B Visible Sample Concentrator

Manual



Hangzhou Yooning Instrument Co.,Ltd.

Foreword

Thank you for purchasing our Products: Visible 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.

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Safety Warnings and Guidelines

1. Important operation information of the security

Before the users' operation, they should have a perfect conception of how to use the Instrument. Therefore, read this Manual carefully before using it.



Operation before reading the Manual is forbidden. Read the guidelines and directions below and carry out the countermeasure according to them.

2. Security

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and the remarked warning below. If you don't comply with them, it will have effect on the scheduled using life of the Instrument and the protection provided.



This product is a normal and an indoor Instrument.



Read the Manual carefully before operation. The expert of wiring equipment can operate this Instrument.



The operator should not open or repair the Instrument by himself, which will result in losing the qualification of repair guarantee or occur accident. If there is some wrong with the Instrument, the company will repair it.



A.C. power's grounding should be reliable to safeguard against an electric shock. The 3-pin plug supplied with thermo-shaker's power cable is a safety device that should be matched with a suitable grounded socket.



During the normal operation, the temperature of metal block will be very high. There will be scald or boiling of the liquid. Therefore strictly prohibit any part of the body to touch the Instrument from scald.



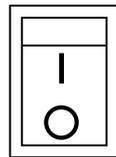
Close the test tube lids before put the test tubes into the block. Liquids maybe spill in the block or onto the device if tube lids opened, that will damage the block or the device.



Before power on, guarantee the voltage used should be accordant to the voltage needed, and the rated load of electrical outlet should not lower than the demand. If the electric line is damaged, you should replace it with the same type. You should assure there's nothing on the electric line and you should not put the electric line in the ambulatory place. Hold the jack when you pull out the electric line, and don't pull the electric line.



The Instrument should be put in the place of low temperature, little dust, no water and no sun or strong lamp. What's more, the place should be good aeration, no corrosively gas or strong disturbing magnetic field, far away from central heating, camp stove and other hot resource. Don't put the Instrument in wet and dusty place. The vent on the Instrument is designed for aeration. Don't wall up or cover the vent in order to keep from high temperature. If you use the more than one Instrument the same time, the distance between them should be more than 100cm.



Mains switch is on the rear of the device, push "I" to power on the device, and push "O" to power off the device.



Power off when you finish your work. Pull off the connector plug when there's long time no use of the Instrument and cover it with a cloth or plastic paper to prevent from dust.



Pull the connector plug from the jack at once in the following case, and contact the vendor:

- There is some liquid flowing into the Instrument;
- Drenched or fire burned.
- Abnormal operation: such as abnormal sound or smell.
- Instrument dropping or outer shell damaged.
- The function has obviously changed.

3. The maintenance of Instrument

The well in the block should be cleaned by the cloth stained with alcohol to assure good heat translation between the block and the test tube and no pollution. If there are smutches on the Instrument, clean them with cloth.



Power off when cleaning the instrument.
When cleaning the well, don't drop the cleaning liquid in the well.
Corrosive cleaning liquid is strongly prohibited.

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Chapter 1 Introduction

1. Product Introduction

The DC150-1B is a high-precision control instrument that combines microcomputer and PID.

Working principle: the nitrogen can be blown onto the surface of the heated samples and then set the heating temperature to achieve rapid concentration of a large number of samples.

The instrument with aluminum heating block has good heat transfer and uniform heat transfer, which is conducive to rapid heating and temperature control.

2. Product Features

1. The heater allows samples to be heated rapidly to the evaporation temperature, through the gas blow to the solution surface via needle at the same time, prompting rapid evaporation and concentration solution.

2. The gas chamber height can be adjusted

3. Each blow needle can be controlled independently, can be blown, separate flow regulation, no waste of gas.

4. The entire system can be arranged in the ventilation cabinet when process concentration of toxic solvents.

5. Built in over-temperature protection device, automatic fault detection and alarm function.

6. LED display, temperature and time diminishing display, the operation is simple and convenient.

3. The Normal Operating Condition:

Ambient temperature: 5°C ~ 30°C

The relative humidity: ≤70%

Power supply: 200V-240V~ 2.0A 50-60Hz

4. The Basic Parameters and the Function.

Parameter	Type	DC150-1B
Temperature range		RT+5°C ~ 150°C
Heating time(20-150 °C)		≤30 min
Temperature control discrepancy @40 °C		≤±0.3°C
Temperature control discrepancy @100 °C		≤ ±0.5 °C
Temperature control discrepancy @120 °C		≤ ±1 °C
Blocks		1
Timing		0 ~99h59min
Maximum gas usage		12 L /min
Needles length		150mm
Column		280
Maximum gas pressure		≤0. 2Mpa
Power		400W
Dimension(mm)(L×W×H)		220x290x540mm
Insert Blocks		Block Form

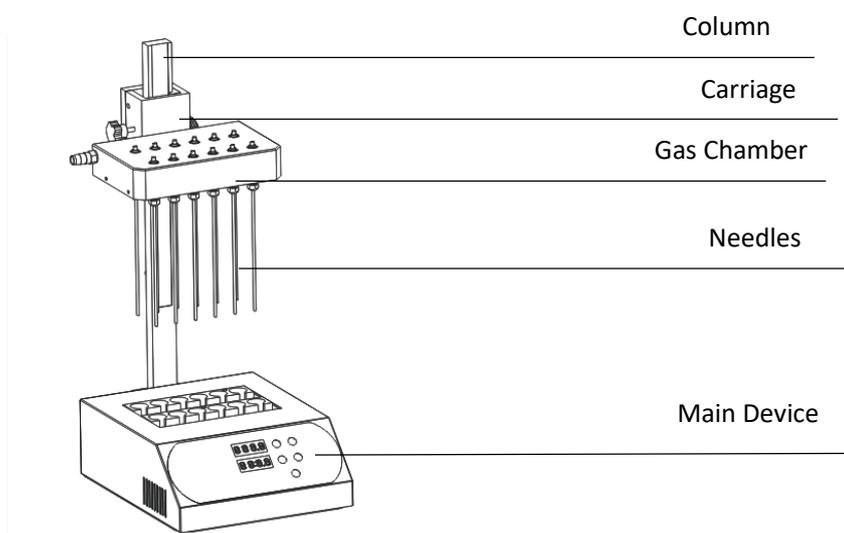
5. Block

Type	Specification	Tube diameter	Bottom Shape	Dimension (mm)
K1	∅10mmx12	10.5 mm	Round	153x96.5x50
K2	∅12mmx12	12.5 mm	Round	153x96.5x50
K3	∅13mmx12	13.5 mm	Round	153x96.5x50
K4	∅15mmx12	15.5 mm	Round	153x96.5x50
K5	∅16mmx12	16.5 mm	Round	153x96.5x50
K6	∅19mmx12	19.5 mm	Round	153x96.5x50
K7	∅20mmx12	20.5mm	Round	153x96.5x50

Chapter 2 Preparations

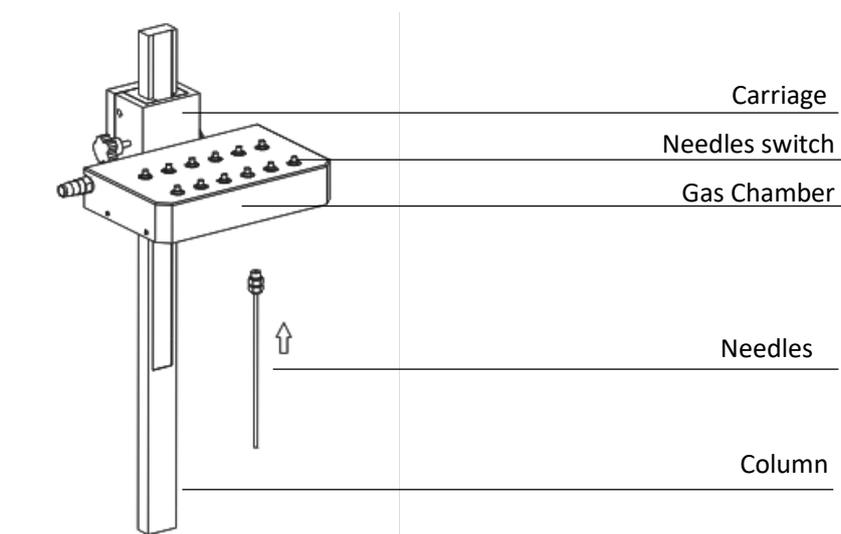
This chapter introduces Sample Concentrator's mechanical structure, the keyboard and each key's functions and some preparations before power-on. You should be familiar with this chapter before the Sample Concentrator is first operated.

1. Structure Description



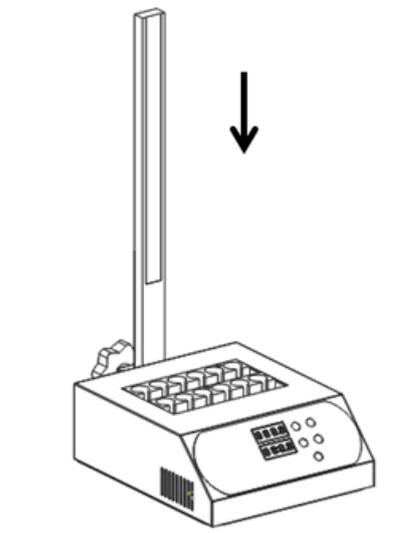
1) Installing the Needles

Screw the needles into the holes of gas chamber and tighten them without gas leakage, and keep the needle in a vertical state.



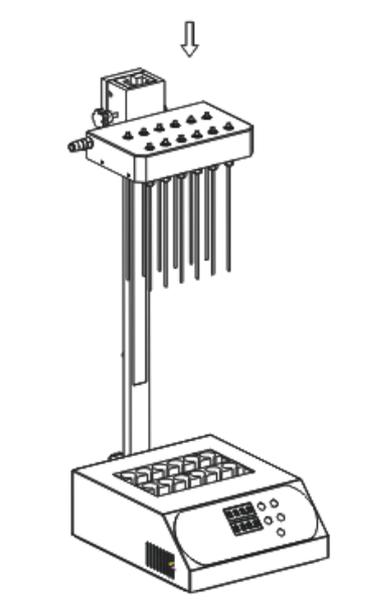
2) Installing the Column

Place the column vertically into the slot on the back of the main device and tighten it with the knob. Make the column secure.



3) Installing the Gas Chamber

Place the gas chamber onto the column. Tighten the knob on the left to prevent the air chamber from falling.

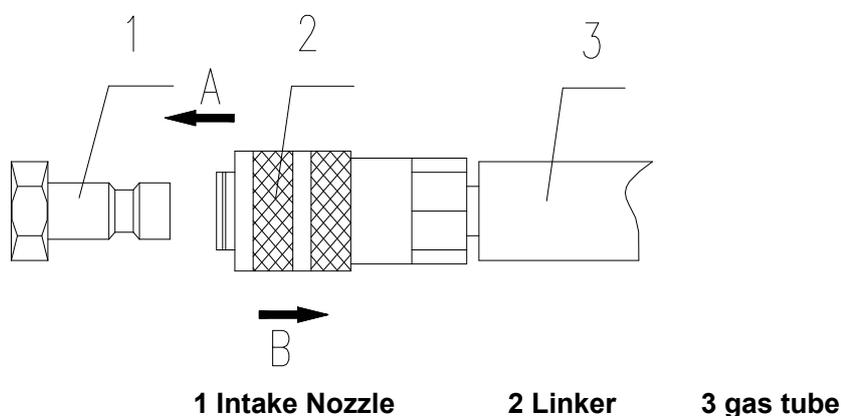


Note: After adjusting the height of the gas chamber, please check whether the positioning knob is tight to prevent the air chamber from loosening.

4) Installing the Gas Tube

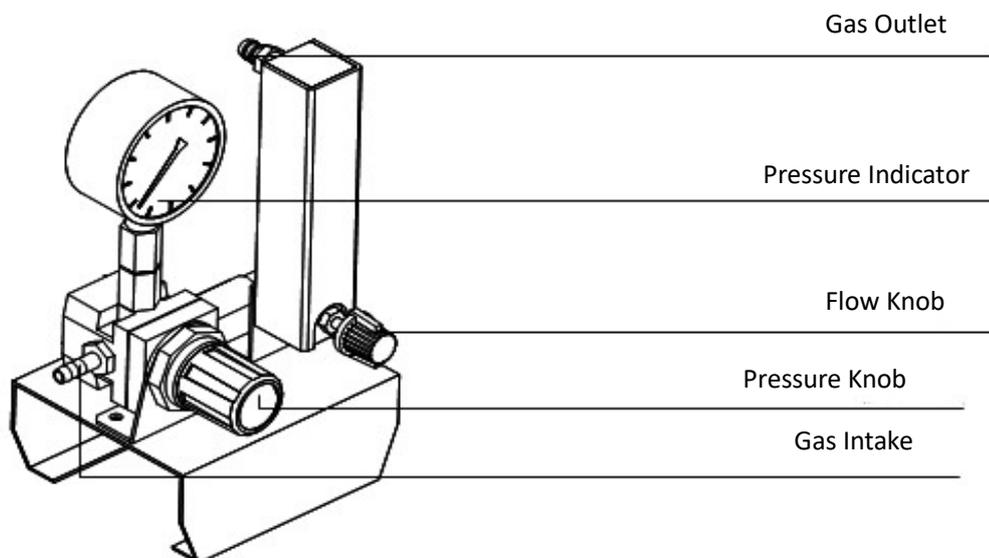
After installing the needles, connect the tube (the side with the metal) to the intake nozzle, and

connect the other side to gas supply (nitrogen bottle). Put the linker into intake nozzle of gas chamber and connect the gas tube to the gas supply.



5) Installing the Flow Control Valve

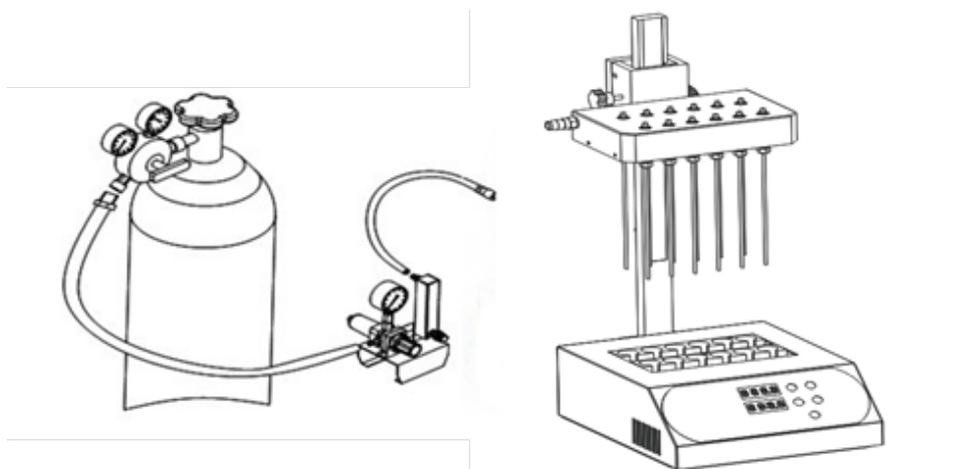
The Structure of the Flow Control Valve



Pull out the pressure knob and turn it clockwise to increase the pressure; otherwise, decrease the pressure to close. Press to lock the knob and the pressure cannot be adjusted at this time. Turn the flow knob counterclockwise to increase the flow rate, otherwise decrease the flow to close.

Note: The flow regulating valve and air filter are optional and selected by the customer with their needs.

Installing the Flow Control Valve

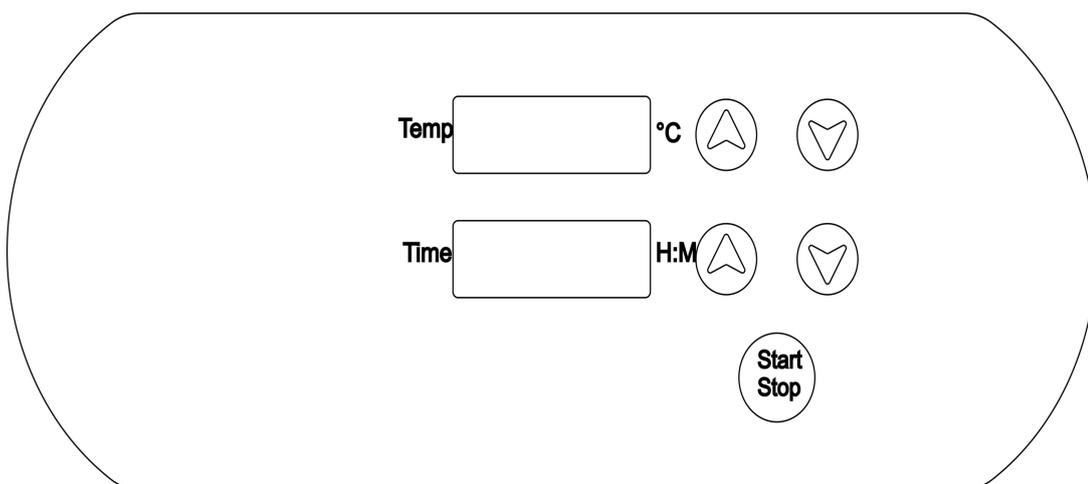


Put the gas outlet of the flow control valve and the intake of the main device into the short tube (About 1.5m).

Put the gas intake of the flow control valve and the intake of the nitrogen tank into the long tube. (About 3m)

Note: First slowly open the valve of the nitrogen tank to control the gas pressure between 0.1MPa and 0.2MPa. Then fine-tune the knob to control the pressure around 0.02 MPa. In actual operation, the pressure is appropriately adjusted according to the number of holes used (generally between 0.02 MPa and 0.05 MPa).

2. Keyboard Panel



3. Key functions

Temp



Temperature setting key:

Short press  increases the figure; long press jumps the figure.

Short press  decreases the figure.

Time



Time key:

Short press  increases the figure; long press jumps the figure.

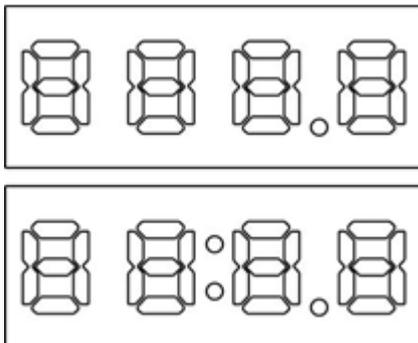
Short press  decreases the figure.



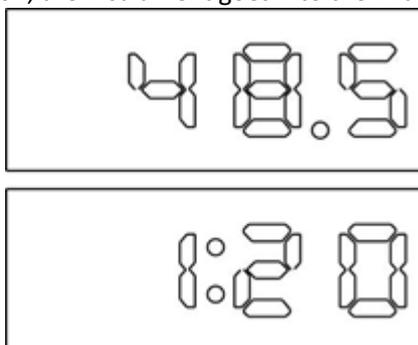
Start/stop button: Run when you press the button once after setting the temperature and the time. Stop when you press the button for 2s.

Chapter 3 Operation Guide

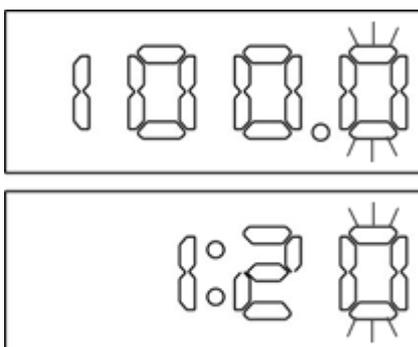
1. The Temperature and Time



1) When the Instrument powers on, the Instrument goes into the initial state with the sound of *de...*



2) About 2s later, the figure 48.5 is the block's current temperature; 01:20 in the time display is the last set time.



3) Short press the button of **“Start/Stop”**. Now the figures in the temperature display are the former setting temperature. As shown in the left drawing, the last digital of the setting temperature is flickering. If you want to set the temperature, do as follows:

Short press the button of “Temp”  or  set the figure.

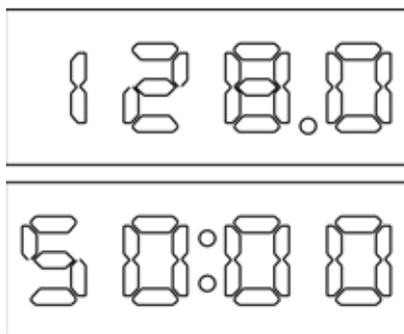
Long press the button  for 2s, then the flickering digital skips to the next figure.

If you want to set the time, do as follows:

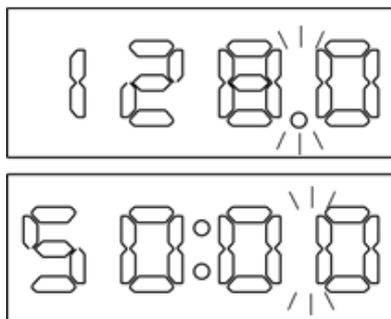
Short press the button of “Temp”  or  set the figure.

Long press the button  for 2s, then the flickering digital skips to the next figure.

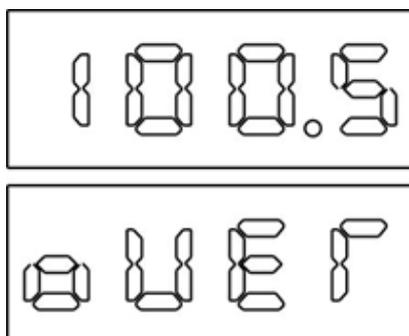
2. Operation and Stop



1) After the temperature and time setting, short press the button of “Start/Stop”, and the instrument begins to operation. Current temperature is displayed.



2) When the instrument begins to operate, the figure is to rise. And the radix point is flickering regularly during the rise process. When the temperature stops to rise, the flickering also stops. “:” in the time display begins to flickering, then the counting down starts.



3) When the timing is stopped, the operation is also stopped. The buzzer alarms. Current temperature in the temperature display and “over” in time display mean “over”, the accomplishment of the operation. Then the Instrument is in over mode waiting for new declaration.

Then pressing “Start/Stop”, it will operate according to last setting.

Press “Start/Stop” for 2s during the operation, it will stop to run. Press the button again, and then it will continue.

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

3. Temperature Calibration

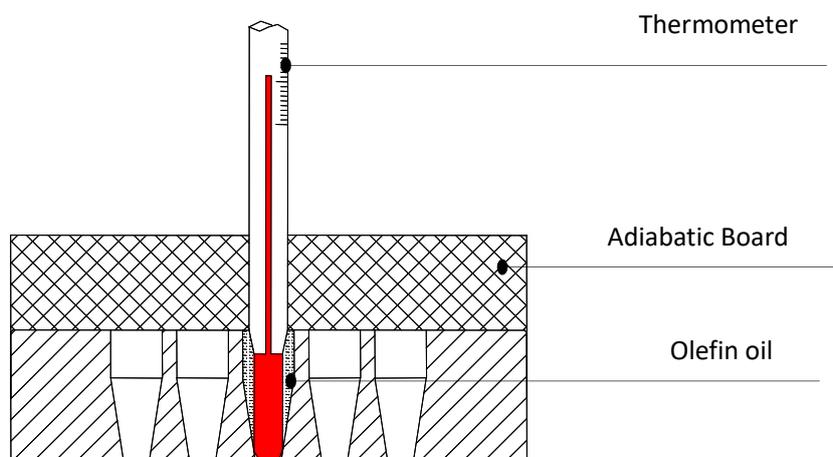
The temperature of the Instrument has been adjusted before it is sold out. But if there is deviation between the actual temperature and the displayed temperature due to some reasons, you can do as follows to correct the error.

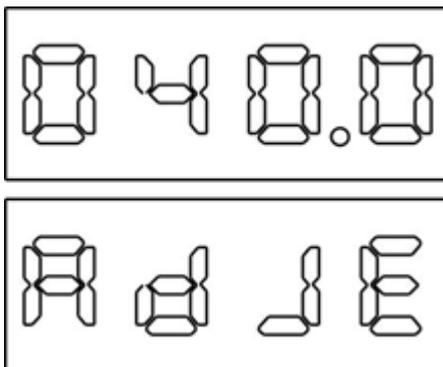
Notes: The Instrument uses double temperatures adjustment to ensure its veracity. This means it is linearly adjusted on 40°C and 100°C two points. The temperature veracity will be within $\pm 0.5^\circ\text{C}$ after the double temperature adjustment.

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

Adjustment as follows:

- 1) After the startup of the Instrument, make sure the temperature in display is below 35°C. If the temperature is higher than 35°C, you should wait until the temperature is below 35°C.
- 2). 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°C and the temperature ball should be absolutely immersed into the cone-shaped well). Heat insulation material is needed on the block to separate it from the circumstance. See chart below.

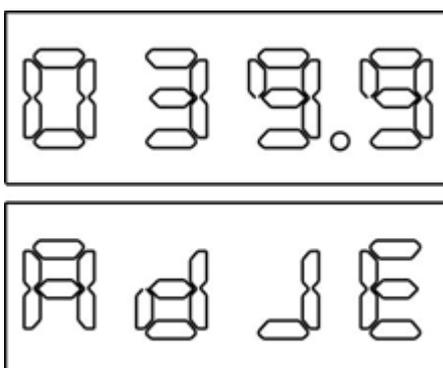




3) Press  and  contemporary to enter the temperature adjustment interface. Now the “ Ad Jt ” in the time display means it has been in adjustment procedure; the temperature displayed is current temperature and begins to rise to 40.0°C automatically.

4) When the temperature reaches 40°C, the decimal digit begins to flicker, waiting for the calibrated value of 40°C. 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.



If the actual readout is 39.9°C, you can change it in the temperature display by pressing “TEMP  or  . Then press “Start/Stop” to confirm the input.

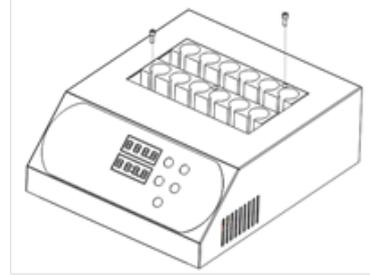
5) After the confirmation the instrument raises the temperature to the second calibration (100°C) automatically.

In the same way, after finish the second calibration, press “Start/Stop” to confirm the input. Then the instrument can work to restart.

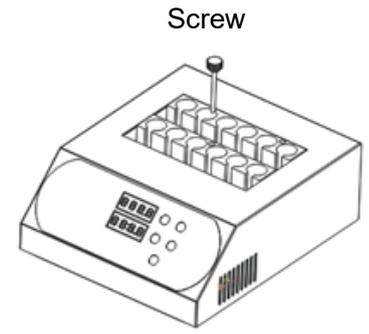
Notes: Press  and  simultaneously during the adjustment to stop temperature calibration. The changed value is of no effect.

4. The exchange of the metal module

- 1) Pull out the two screws which fix the block to the heating board with the screwdriver.

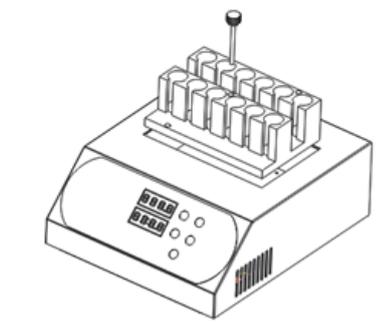


- 2) Fix the raiser in the center well of the module.



- 3) Pull out the raiser with the block.

- 4) Screw the raiser from the block, and fix it to another block you needed. Then put it onto the Instrument and fix it with the screws.



Chapter 4 Failure and Cause

NO.	Faulture	Cause	Recovery
1	No signals on the display when the instruction is powered on.	No power	Check the connection of power
		Broken Fuse	Exchange fuse
		Broken switch	Exchange the switch
		Others	Contact to the seller
2	The actual and displayed temperatures are quite different.	Broken sensor or loose contact of the block	Contact to the seller
3	"ERR" in the display with the alarm	Broken sensor or the environmental temperature is below zero.	Contact to the seller
4	Preset temperature not working	Broken sensor.	Contact to the seller
		Broken heater	
		Broken control IC	
5	The buttons not working	Broken buttons	Contact to the seller

Note

