BGA / SMD
Rework Station

(MODEL: **LY-G720**)

USER MANUAL V1.0

Contents

I .Precautions & Installation

1.Cautions Thank you very much for purchasing LY-G720,Please read carefully and follow these cautions before the operation of this equipment in order to make the best use of its functions and prevent any negligent accident or break down.

The operation of rework station should be complies with following precautions.

 Turn on the main power of rework station and check the air discharging from both of upper and lower heaters. It is not discharged. Stop the operation and inspect the equipment

 Check the status of soldering with magnifying lens and naked eyes after finishing the work. If the attachment of BGA solder ball is defective, measure the temperature with real-time temperature profile sensor and adjust it befittingly before reworking. Or there can be a damage of soldering, BGA or PCB board.

 Clean the surface of the equipment regularly. Especially contaminants have not to be accumulated on the hot air outlet of lower heater, because they could reduce thermal efficiency and heater lifetime and affect operation quality

 Only educated engineers are suggested to modify setup program

 Do not use the equipment with a portable hot air blower or other equipment at the same time while operating rework station. It can cause burning accident or operation fault by abnormal rise of heating temperature.

 Inflammable substances with a risk of fire or explosion have to be kept away from the equipment, and a target subject PCB should be worked on PCB holder

 Do not touch high-temperature area and wear radiating gloves to prevent burn accident

 Do not use inflammable spray, liquid and gas near the equipment

 High voltage components are installed inside of the equipment, so do not use disassemble the front and rear panel discretion ally.

 Immediately turn off the power supply and separate the power code if metal or liquid accidentally falls down into rework station while operating. Remove the substance after temperature of machine is dropped.

 If rework station is not operated for a long time, saved parameters can be deleted by running out of program back to battery

 Immediately turn off the power supply and separate the power code if metal or In case of damages from operator's negligence, free A/S cannot be responsible for the company.

2. Installation

Please install the equipment in a place with stable room temperature.

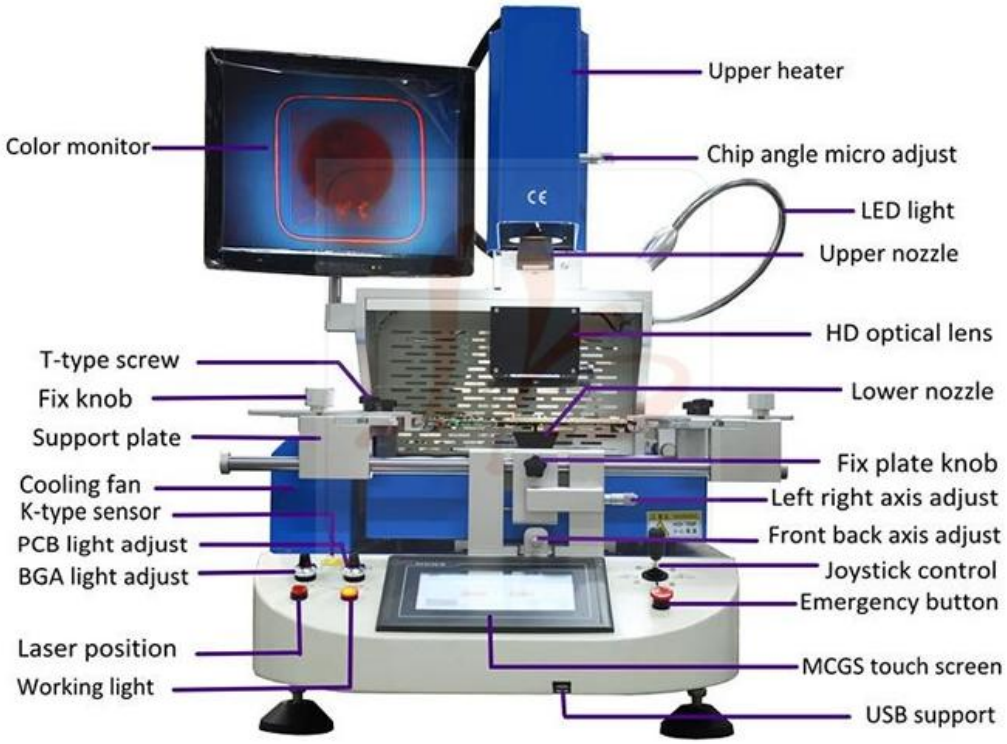
❶Standing type air conditioner(small): install it leaving an interval of at least 1.5m from the equipment.

❷Ceiling type air conditioner: install it more than 5m from the equipment because it can directly affect the air inlet of upper heater.

❸Standing type air conditioner(large): install it more than 5m from the equipment where the place does not point to the direction of the wind.

II. Production Introduction

1.LY-G720 : Title of each part



2. Composition

NO	Item	Description	Unit	Qty	Note
1	Rubber nozzle	8mm	PCS	5	
2	PCB fixing holder	200mm	PCS	6	
3	Fixing holder knob		PCS	6	
4	Nozzle	10*10mm	PCS		4 nozzles selection as free of charge
5	Nozzle	13*13mm	PCS		
6	Nozzle	15*15mm	PCS		
7	Nozzle	18*18mm	PCS		
8	Nozzle	20*20mm	PCS		

9	Nozzle	24*24mm	PCS		
10	Nozzle	28*28mm	PCS		
11	Nozzle	30*30mm	PCS		
12	Nozzle	34*34mm	PCS		
13	Nozzle	38*38mm	PCS		
14	Nozzle	44*44mm	PCS		
15	Nozzle	35*35mm	PCS	1	
16	brush		PCS	1	
17	Temperature sensor	K-TYPE	PCS	1	
18	Display screen		PCS	1	

3.Specifications

Item	Description	Note
Available PCB size	480mm * 370mm	
Available PCB thickness	0.5~3mm	
Available component size for PCB	1mm~80mm	
Suction capacity	120g	
Temperature sensor		
Operation control system	touchable control unit	
Temperature control system	K type thermocouple close-loop control.	
Program storage quantity	20000	
Upper heater output	1200w	
Lower heater output	Second zone 1200W,Third zone:IR 2700W	
Power consumption	220V±10V 50Hz±3Hz 5.4KVA	
Size	L650×W630×H850mm	
Weight	60kg	

III.Operational Pre-action

The BGA rework for PCB should be complies with following procedures.

1. Bake out

It is suggested that PCB and BGA are worked after baking in about 8H-20H(125℃)by chamber device. The purposes of baking are removing moisture on BGA and PCB, preventing internal damages such as Popcorn, bubble detachment, and deformation in the operation.

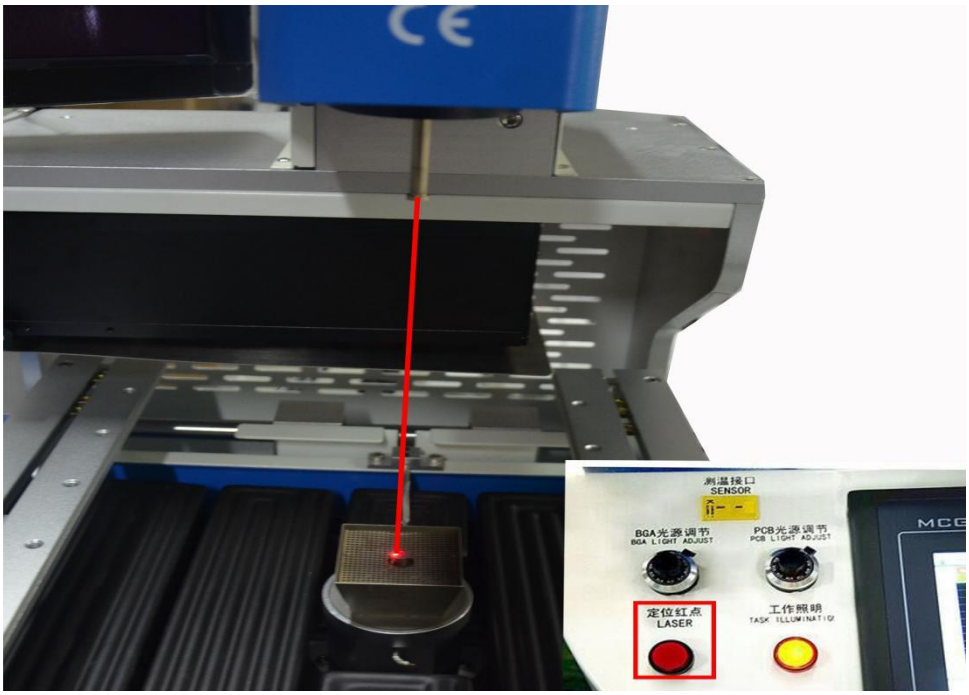
Moisture sensitivity level

Thickness	Level	125℃/ baking period (hours)
≦1.4mm	2a	4
	3	7
	4	9
	5	10
	5a	14
≦2.0mm	2a	18
	3	24
	3	31
	5a	37
≦4.0mm	2a	48
	3	48
	3	48
	3	48
	5a	48

2. Target subject PCB mounting

1.1 working point .

Press the laser button to position the target component center of the PCB.

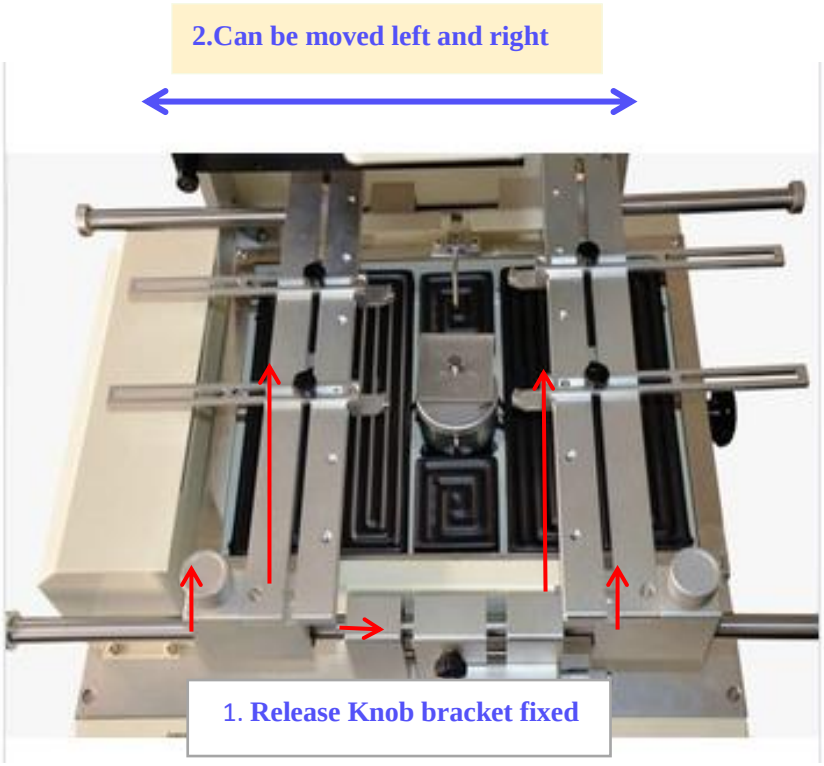


1.2 PCB mounting

1.2.1 Match the target subject with the center of working point using PCB fixing bracket .

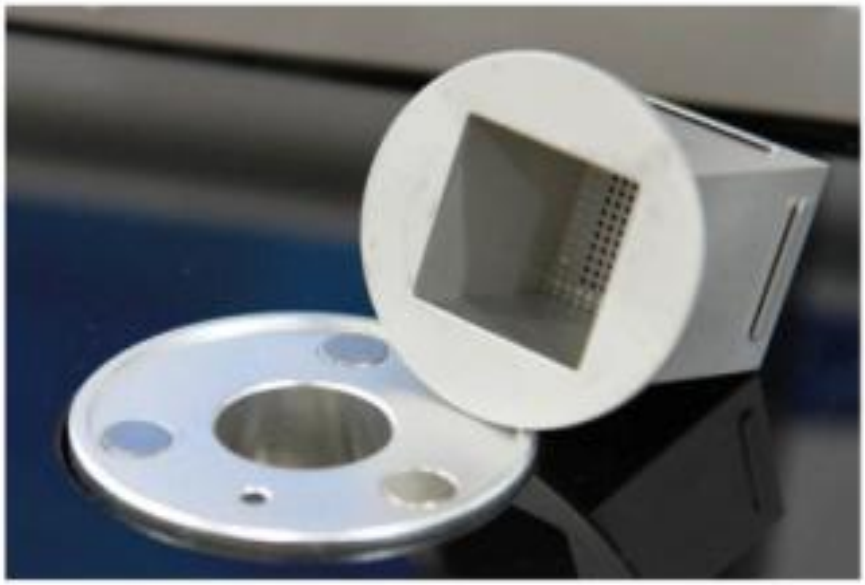
1.3 Horizontal moving of PCB

1.3.1 It is movable to right and left releasing shaft fixing knob.



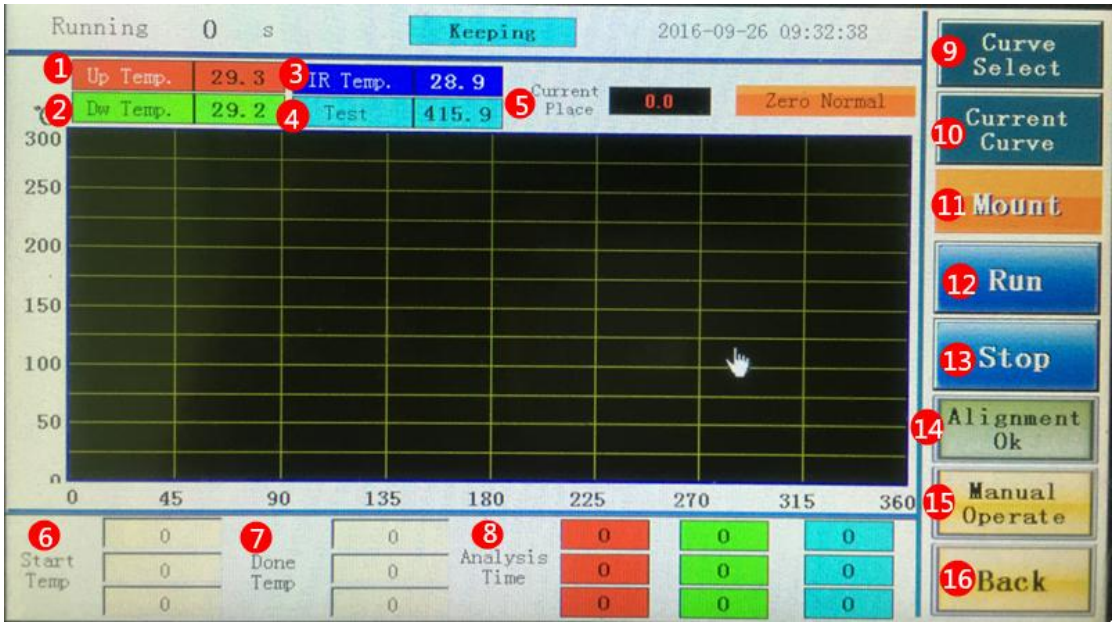
3. Nozzle mounting

3.1 Mount the upper nozzle selected as fixing method by magnetic system on hot air outlet of the upper and lower heater like following picture.



IV. Screen Display

1. Working display



1.Up Temp: Indication current upper heater temperature with red line

2.Down Temp: Indication current down heater temperature with green line.

3.IR Temp: Indication current IR temperature with blue line.

4.Test : Indication set temperature change of external sensor in water blue line

5.Current place: Indication the height of Upper heater away from the lower heater.

6.Start Temp: Indication the starting temperature for checking the time of Warm-up section.

7.Done Temp: Indication the ending temperature for checking the time of warm-up section.

8.Analysis Time: Indication the system analysis time for 1 to 8 each stage

9.Curve Select: Operating the previously saved program

10.Current Curve: Name of the adapted program

11.Remove/Mount/Weld/Manual/Semi-automatic : Clicking it the select the operation type of the machine.

12.Run: Clicking it to start working as the parameter setting.

13.Stop: Clicking it to stop working .

14.Alignment OK:Under “mount”mode,click it,the upper heater goes down to heat automatically.

15.Manual Operate: Setting the upper heater operation by self .

16: BACK: Return to the previous interface.

Password:

Operator（操作员）:no password,click ok directly

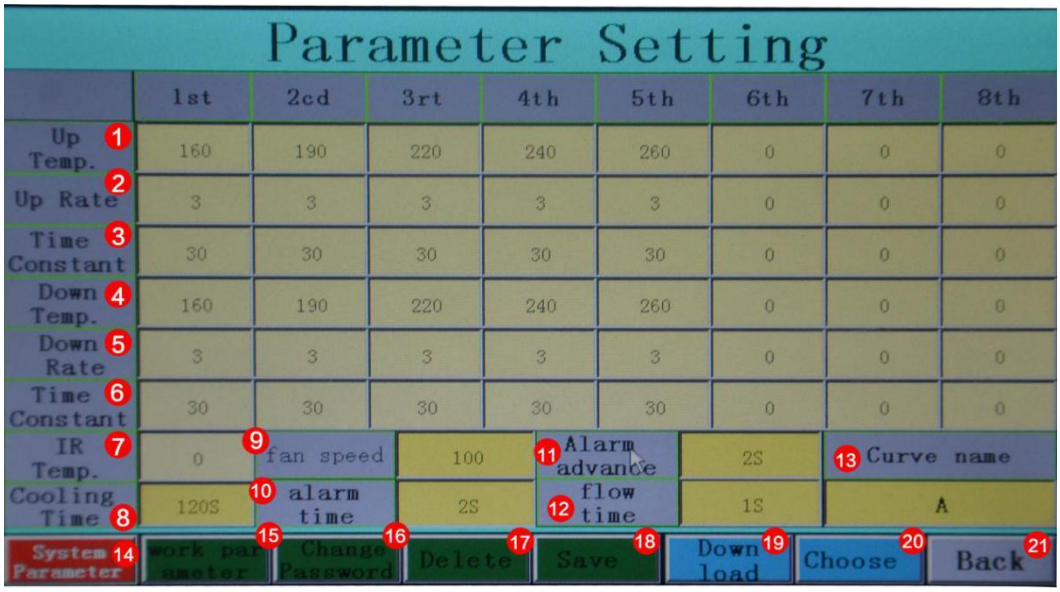
administrator(管理员）:8888.

If the client wants to change the data,he needs to enter into here.And “Save” and “Download” after change the data.

factory（厂家）:27336216

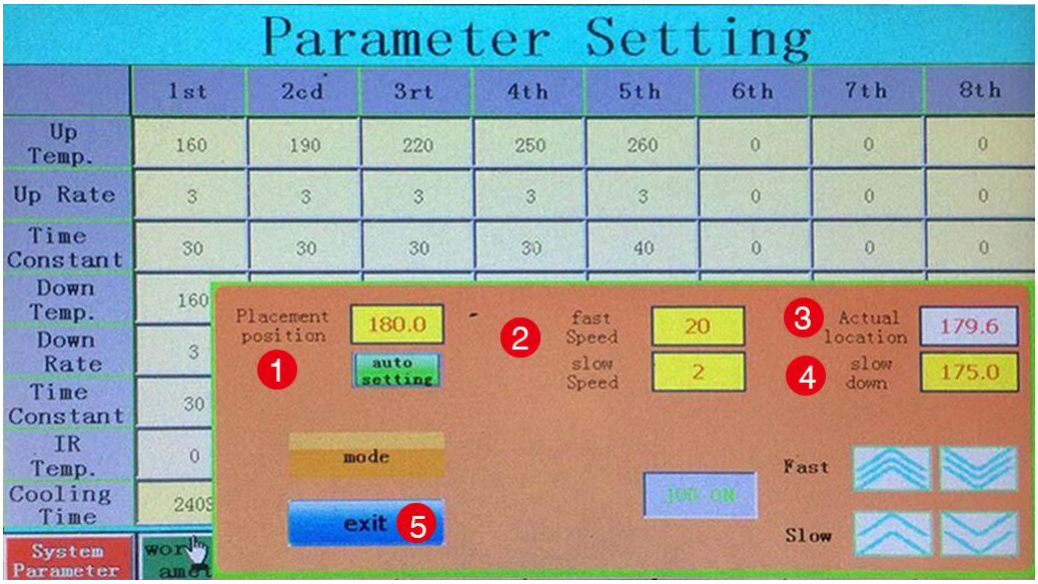
The data inside is set before shipment,Pls keep it the same,don't change it.

2. Temperature setting display.



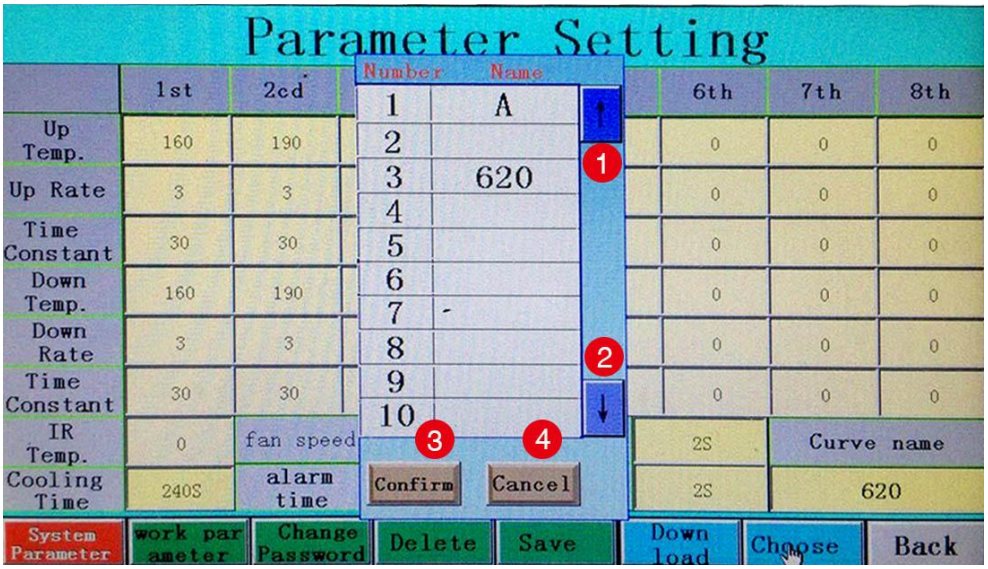
1. Up Temp: Setting of Upper temperature for each section.
2. Up Rate: Setting of Upper rate for each section.
3. Time Constant: Setting of Upper constant time for each section.
4. Down Rate: Setting of lower temperature for each section .
5. Time Constant: Setting of lower rate for each section.
6. Time Constant: Setting of lower constant time for each section.
7. IR Temp: Setting of IR temperature for each section.
8. Cooling Time: Inputting cooling time.
9. Fan speed: Setting the speed of cooling fan.
10. Alarm Time: Setting the alarm keep on time.
11. Alarm Advance: Setting the time of before the alarm start.
12. Flow Time: Setting the time of the upper heater sucker flowing.
13. Curve name: Name of the adapted program property.
14. System Parameter: The parameter of operation
15. Work parameter: The Upper heater working parameter.
16. Change Password: Change the machine program password
17. Delete: Delete the current curve
18. Save: Saving changed setting value on the current program.
19. Down Load : Adapted the current curve.
20. Choose : Choose the previously save program
21. Back: Return to the previous interface.

3. Work Parameter Setting display



1.Placement position: The placement of the upper heater pre-heat working .
2.Fast/slow speed: Indication the falling speed of the upper heater
3.Actual location: The placement of the upper heater pre-heat working actual place.
4.Slow down: Indication the height of upper heater starting to slow down .
5.Exit: Return to the previous interface.

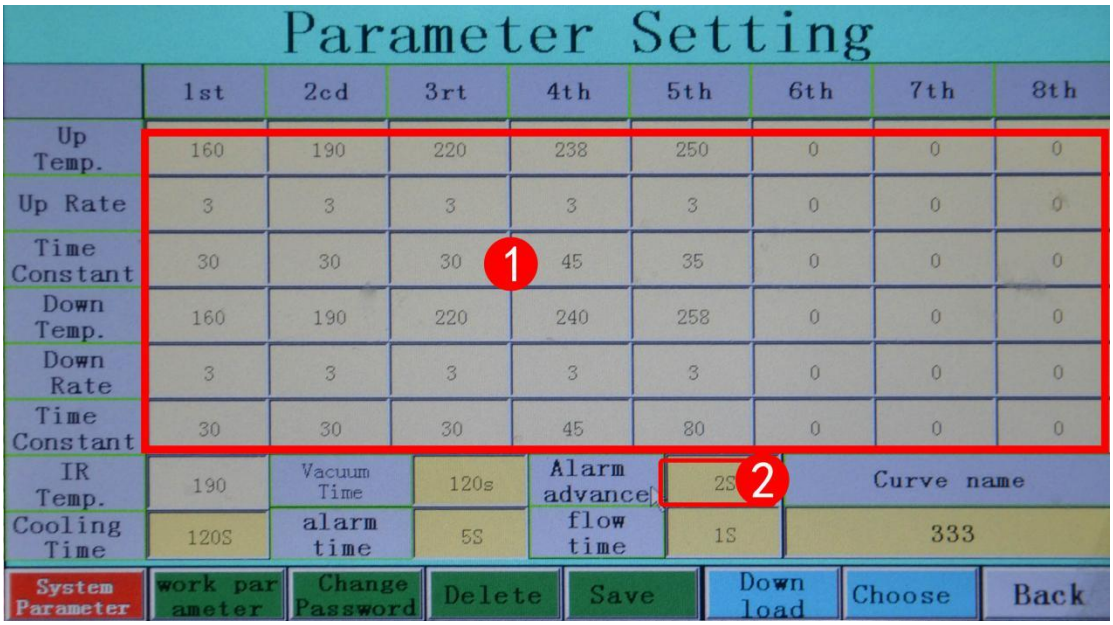
4. Curve Choose display



1. Up: View the previous page.
2. Down: View the next page.
3. Confirm: Adapted to the current temperature curve.
4. Cancel: Move to the operation setting display screen.

V. Program Control & Rework

1.Temperature setting



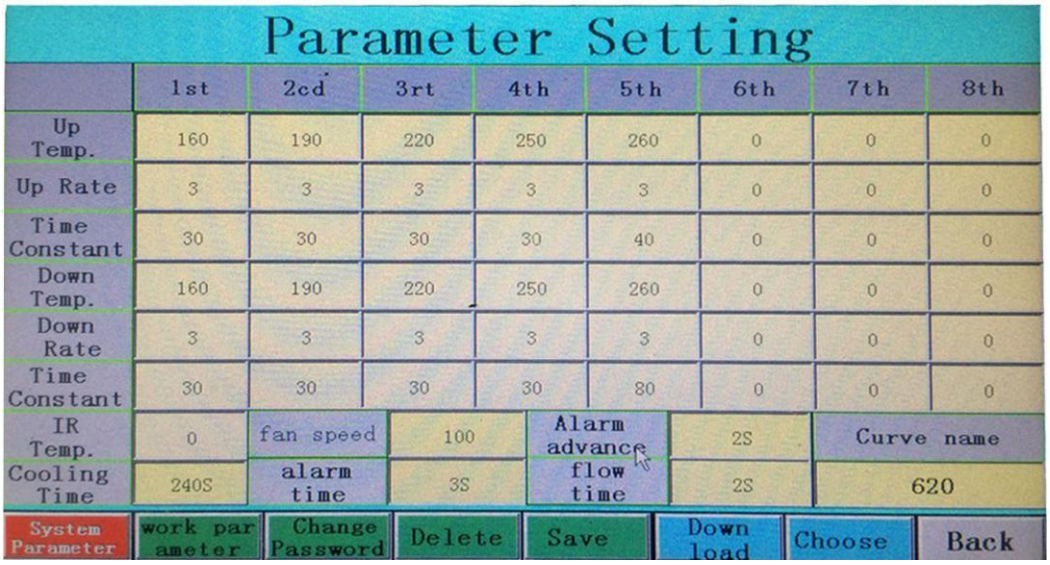
1.1 ❶ Touch the temperature , time and rate for each section of upper heater, lower heater and IR temp to modify them in the temperature setting display.

1.2 ❶ If the setting values are stated like above picture, step 1 keeps the upper temperature 160℃for 3 seconds and changed to step 2 to keep 160℃ the temperature for 5 seconds,Like this way ,the heating of the upper heater, lower heater and IR processed according to applied temperature and time to step 8.

1.3 ❷ Setting the alarm advance time ,before the components evenly de soldering ,there is a time to alarm to stop .

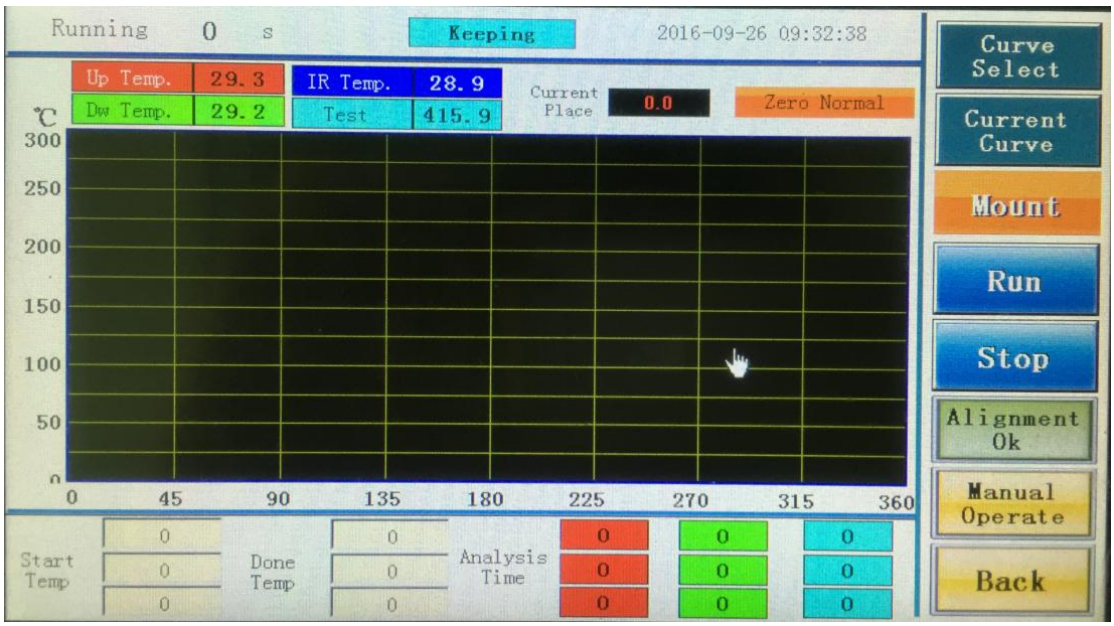
2.Removing components and mounting

2.1 Import the desired program as following picture.



2.2. The setting value is applied automatically on the screen after click ‘Save’ program, Down load the program and screen changing to working display. Shake down the Joystick then the upper heater go down.

2.3 Click Run the machine to start heating. The value of temperature and time of upper heater,lower heater and IR can be checked by a graph.



2.4. Raise the upper heater after the target component removed and the upper nozzle sucked the component..Cooling fan is operated automatically after 10seconds. Pick up the component via tweezers by pushing up the component slightly. (first push is deflation,second push is suction)

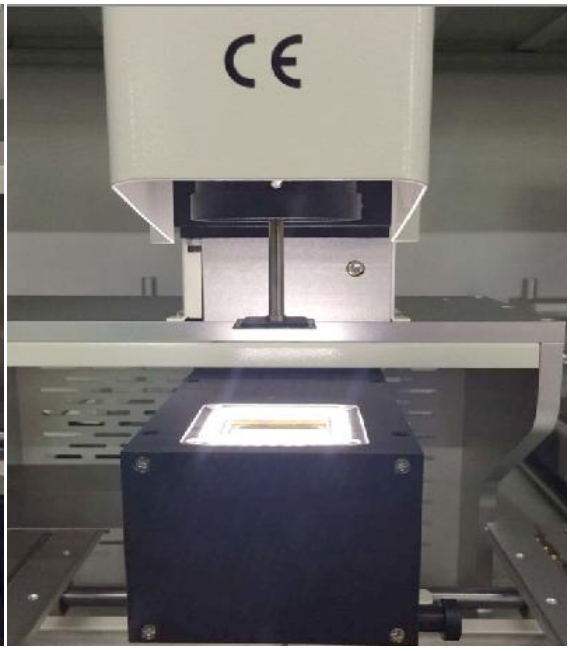
2.5 Remove remaining solders and clear the removed area using soldering iron and solder wick.

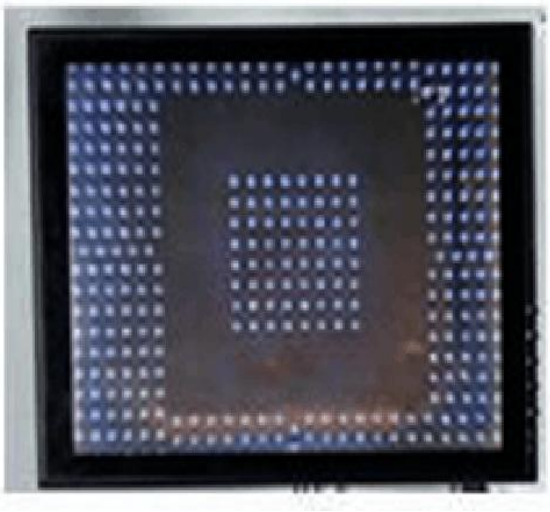
3. Mounting components .

3.1 Install the components on the PCB,. Shake down the Joystick to suck the component.

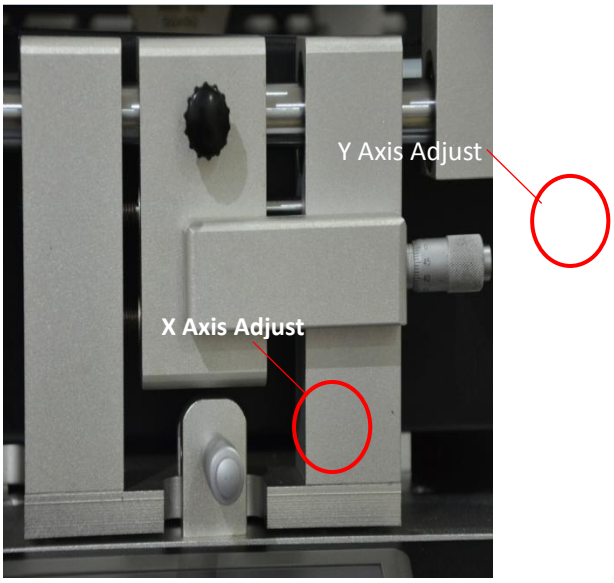
3.2 Optical alignment .

3.2.1 Push out the optical alignment equipment. Screw the' PCB LIGHT ADJUST' button and' PCB LIGHT ADJUST' button to adjust the brightness of PCB part and BGA part.





3..2.2 Adopted X axis ,Y axis, R angle micrometer to fine-tuning precision optical alignment.Press Zoom in and Zoom out to Blowup the image of chip Diploid the 2-50X. Shake down the Upper heater after optical alignment. Click the Run to mounting the component by the program used for components removal. And the all process is completed when the heating is finished and cooling fan is operated.



4. Save and Copy

4.1 Save(Temperature setting display)

- Changed program is saved by click the save after changing program.

4.2 Copy(Temperature setting display)

- User can save the changed program as different name by pushing “Enter” button after pushing the copy button and change the name of the program. And screen changed to temperature setting display after the process
- Title of file is available for inputting maximum 18 alphabet letters

4.3 Exporting to external memory

- Insert Micro SD into the slot on the right side of the equipment.
- Select the desired program on the program list display and touch the select button, then selected programs are copied on the external memory
- If pushing ‘all ‘ button, every list would be copied on the external memory

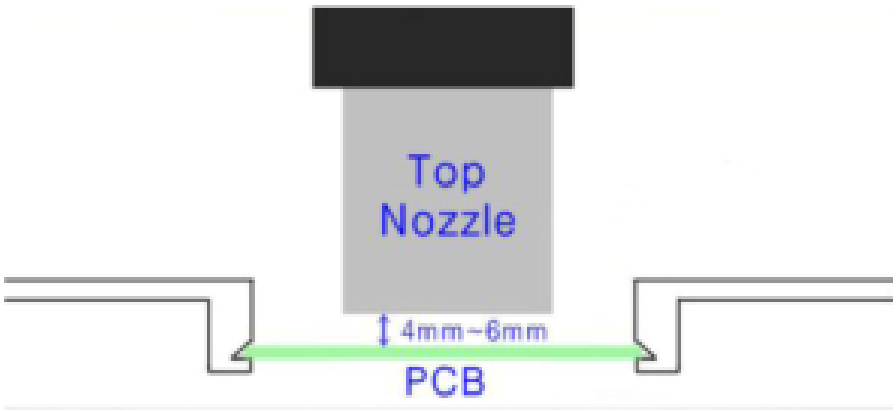
4.4 Importing to built-in memory

- Select external memory by touching the button of External/built-in memory Push the select button after touching the desired program. Then the selected programs are copied on built in memory.
- Copy the program list of external memory by pushing ‘all’ button

VI. Maintenance

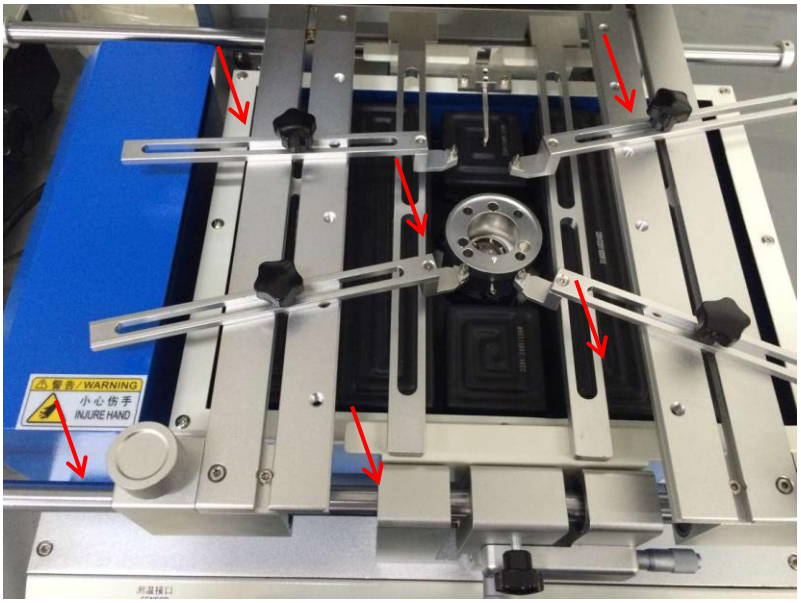
1. Looseness of adjustment of lower heater (Frequently)
If there is looseness or tightness for vertical moving of upper heater. Adjust both of up and down of the heater by 2mm via six wrench.

2. Adjusting the upper heater descent limit (Once a month)
Fixing the shaft adjustable up and down



3. **Shaft maintenance** (once or twice a month)

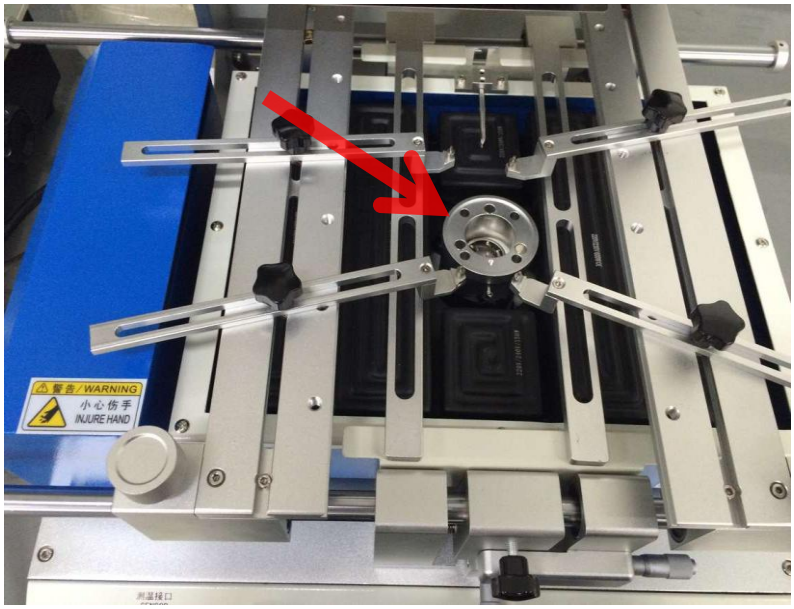
- Spread lubricant to the moving shaft once a month



4.Lower heater foreign substances

(Frequently before operation)

- Check foreign substances in lower heater



VII. Warranty

Quality Warranty (For customers)

Title	LY-G720
Period	1 year
Customer	
Address	
Name of person In charge	
Tel	

Warranty service information

It would be repaired free of charge if an error occurs in normal use within the warranty period from the date of purchase (within 1 year from the date of purchase)

Chargeable service information

Following cases can be repaired with service charge (Repair cost, replacement cost,labor cost).

1. Error or damage after warranty period
2. Chargeable services within warranty period.

- Damage or error by a convulsion of nature (Fire,salt damage,gas damage, earthquake,storm or flood,lightning,over power)
- Damage or error by careless use after installation (Move,fall,stock,damage, radical action)
- Damage or error by defects of power supply or connecting devices.

Commonly used BGA soldering and desoldering process parameter:(For reference）

Leaded temperature curve soldering

41*41 BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering1	Soldering2	Cooling
Upper heating	160	185	210	235	240	225
Constant temperature time	30s	30s	35s	40s	20s	15s
Lower heating	160	185	210	235	240	225
Constant temperature time	30s	30s	35s	40s	20s	15s
rate	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	180					

38*38 BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering 1	Soldering2	Cooling
Upper heating	160	185	210	225	235	215
Constant temperature time	30s	30s	35s	40s	20s	15s
Lower heating	160	185	210	225	235	215
Constant temperature time	30s	30s	35s	40s	20s	15s
Slope	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	185					

31*31　BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering1	Soldering2	Cooling
Upper heating	160	180	200	215	225	215
Constant temperature time	30s	30s	35s	40s	20s	15s
Lower heating	160	180	200	215	225	215
Constant temperature time	30s	30s	35s	40s	20s	15s
Slope	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	180					

The above is apply to the leaded BGA

Lead-free temperature curve soldering

41*41 BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering1	Soldering2	Cooling
Upper heating	165	190	225	245	250	235
Constant temperature time	30s	30s	35s	45s	25s	15s
Lower heating	165	190	225	245	250	235
Constant temperature time	30s	30s	35s	45s	25s	15s
Slope	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	210					

38*38 BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering 1	Soldering 2	Cooling
Upper heating	165	190	225	245	255	240
Constant temperature time	30s	30s	35s	55s	25s	15s
Lower heating	165	190	225	245	255	240
Constant temperature time	30s	30s	35s	55s	25s	15s
Slope	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	210					

31*31 BGA soldering temperature setting：

	Preheating	Constant temperature	Warming period	Soldering1	Soldering2	Cooling
Upper heating	165	190	220	240	245	235
Constant temperature time	30s	30s	35s	40s	20s	15s
Lower heating	165	190	220	240	245	235
Constant temperature time	30s	30s	35s	40s	20s	15s
Slope	3.0	3．0	3．0	3．0	3．0	3．0
IR preheating	210					

The above is apply to the Lead-free BGA

Put the cooling temperature to 0 degree when desoldering