AIR NOZZLES*

Straight Single
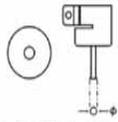
Nozzle Model	Nozzle Size, (mm)
1124	2.5
1130	4.4
1194	6
1195	8
1196	7
1197	9
1198	12

Bent Single

Nozzle Model	1142

Dual Single Adjustable
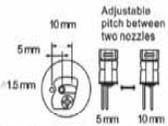
Nozzle Model	1325

Single In Line Package
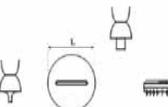
Nozzle Model	IC Package Size	Nozzle Length (mm)
1191	SIP 25L	26
1192	SIP 50L	52.5

Ball Grid Array

Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) W	L
1010	BGA 9x9	10	10
1313	BGA 12x12	13	13
1616	BGA 15x15	16	16
1919	BGA 18x18	19	19
2828	BGA 27x27	28	28
3636	BGA 35x35	36	36
3939	BGA 38x38	39	39
4141	BGA 40x40	41	41

Small Outline J-Lead

Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) L	W
1183	SOJ 15x8	16	8
1184	SOJ 18x8	19	10
1214	SOJ 10x26	25.9	12

Plastic Leaded Chip Carrier
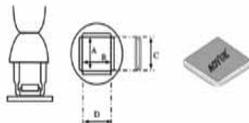
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) A	B	C	D
1135	PLCC 17.5x17.5 (44pins)	18.5	18.5	15	15
1136	PLCC 20x20 (52pins)	21	21	19	19
1137	PLCC 25x25 (68pins)	26	26	24	24
1138	PLCC 30x30 (84pins)	31	31	29	29
1139	PLCC 7.3x12.5 (18pins)	9	14	69	69
1140	PLCC 11.5x11.5 (28pins)	13	13	15	10
1141	PLCC 11.5x14 (32pins)	15	13	15	10
1188	PLCC 9x9 (20pins)	11	11	10	10
1189	PLCC 34x34 (100pins)	36.5	36.5	33.5	33.5

Small-Outline Package

Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) L	W
1131	SOP 4.4x10	10	4.8
1132	SOP 5.6x13	15	5.7
1133	SOP 7.5x15	16	7.2
1134	SOP 7.5x18	19	7.2
1257	SOP 11x21	21	11.7
1258	SOP 7.6x12.7	11.7	8.2
1259	SOP 13x28	29	13.5
1260	SOP 8.6x18	19	8.7

Thin Small-Outline
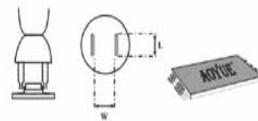
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) L	W
1185	TSOL 13x10	10	11.9
1187	TSOL 18.5x8	10	18.5
1186	TSOL 18x10	11.7	18.2

Quad Flat Pack
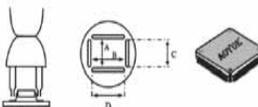
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) A	B	C	D
1125	QFP 10x10	10.2	10.2	10	10
1126	QFP 14x14	15.2	15.2	15	15
1127	QFP 17.5x17.5	19.2	19.2	19	19
1128	QFP 14x20	15.2	21.2	15	21
1229	QFP 28x28	29.5	29.7	29	29
1215	QFP 42.5x42.5	42.5	42.5	40	40
1261	QFP 20x20	20.2	20.2	21	21
1262	QFP 12x12	12.2	12.2	12	12
1263	QFP 28x40	27.7	39.7	29	39
1264	QFP 40x40	40.2	40.2	39	39
1265	QFP 32x32	32.2	32.2	31	31

Bumpered Quad Flat Pack
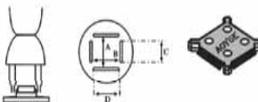
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm) A	B	C	D
1180	BQFP 17x17	18.2	18.2	13.6	13.6
1181	BQFP 19x19	19.2	19.2	16	16
1203	BQFP 35x35	35.2	35.2	30.6	30.6
1182	BQFP 24x24	24.2	24.2	21	21

* - Sold Separately

AOYUE®

852A+ / 852A++

SMD Rework Station
INSTRUCTION MANUAL

Thank you for purchasing
Aoyue 852A+/852A++ SMD Rework Station.
It is important to read the manual before using the equipment.
Please keep manual in accessible place for future reference.

CE   ESD SAFE

This manual is designed to familiarize the user with the proper operation and maintenance of the equipment. The "Care and Safety Precautions" section explains the hazards of using any type of electronic device. Please read carefully and observe the guidelines in order to maximize usage and minimize the risk of injury or accidents.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 6: THE UNIT IS VERY NOISY

SOLUTION: Make sure the screw has been removed from the center of the base of main unit. Remove if otherwise.

PROBLEM 7: THE UNIT IS VIBRATING TOO MUCH

Check if the 4 screws that hold the pump in place are properly and tightly connected. Unplug the system from the main power source before opening the case to check the internal settings.

PROBLEM 8: DISPLAY AND OTHER DEVICE OPERATION ISSUES

SOLUTION: Try to press the "Reset" button on the device. Note that resetting the device will also reset all previously defined configurations.

PROBLEM 9: FOR 852A++ ONLY; AIR PRESSURE DROPS WHEN USING THE SUCTION PEN

DESCRIPTION: The Air pressure drops when using the suction pen and does not recover to its previous height in the air gauge.

SOLUTION: Decrease the air pressure level, set air pressure level at about 80.

NOTE: (for 852A++ only)

Air pressure level may drop a little when the suction pen is picking up ICs. The air pressure level gauge should revert back to its previous state when the IC is released.

Blockages in the suction pen's tube and nozzle may cause the air pressure to drop. Clean the air passage for maximum air pressure capacity regularly.

## OTHER PROBLEMS NOT MENTIONED:

Contact the vendor.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 4: BANNER OR PRODUCT NAME IS ALWAYS SCROLLING - THE UNIT IS NOT USABLE

DESCRIPTION: The product name is just always scrolling from the digital panel, rendering the device unusable.

SOLUTION: Try to press "Reset" from the panel. Note that resetting the device will also reset all previously defined configurations.

PROBLEM 5: AIR PRESSURE LEVEL IS SIGNIFICANTLY LOW NO MATTER HOW HIGH THE AIRFLOW LEVEL IS CALIBRATED

- Front View -
(Control Panel)
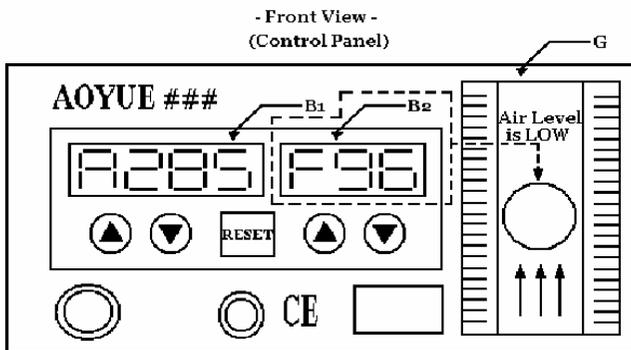
CASE 1: Check the mains voltage (AC power source). If the voltage level falls significantly low, about 15-20% lower than the standard, there will also be a noticeable drop in the air pressure level.

SOLUTION: Please refer to your local power service provider.

CASE 2: The microcontroller might have detected the operating frequency incorrectly. The user will notice that airflow level is weaker compared to the displayed value.

SOLUTION: Try to press the "Reset" button on the panel and let the device re-detect the proper operating frequency. Note that resetting the device will also reset all previously defined configurations.

TABLE OF CONTENTS

PRODUCT DESCRIPTION

The Aoyue 852A⁺/ 852A⁺⁺ SMD Rework Station is a reworking tool designed to remove and/or repair surface mounted devices such as SOIC, CHIP, QFP, BLCC, BGA, and so on. It is made to repair systems without potentially harming or damaging components by actual or direct contact.

One of the key features of this product is the built-in sleep mode with timer functionality. This allows the device to cool down temporarily after a pre-defined time set by the user - with 5 minutes as the default. The sleep mode function will be activated if the hot air gun is docked on the handle and remained idle for 5 minutes. Once the hot air gun is released from the handle during sleep, the unit will automatically switch back to previous working temperature and airflow level conditions without the need for manual intervention.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 1: THE UNIT HAS NO POWER
1. Check if the unit is switched ON.
2. Check the fuse. Replace with the same type if fuse is blown.
3. Check the power cord and make sure there are no disconnections.
4. Verify that the unit is properly connected to the power source.

PROBLEM 2: TEMPERATURE DISPLAY IS ABOVE 500°C

DESCRIPTION: Constant display of above 500°C temperature from the panel then displays a blinking "OFF" on both sides of the panel after a few minutes.
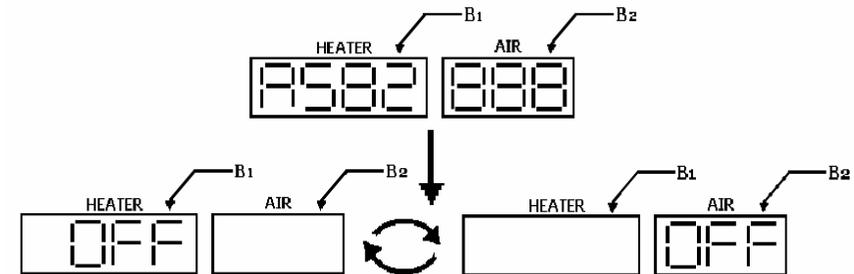
SOLUTION:
The thermal sensor may be broken and needs to be replaced.

PROBLEM 3: ACTUAL AIR TEMPERATURE IS NOT INCREASING

DESCRIPTION: Actual temperature reading is not increasing or decreasing based on desired level. The panel will then display a blinking "OFF" on both sides afterwards.
SOLUTION:
The heating element may be broken and needs to be replaced, or the thermal sensor could be shorted.

MAINTENANCE

REPLACING THE HEATING ELEMENT

The heating element is found at the middle part of the hot air gun. The normal life of a heating element is 1 year under normal operating conditions.

Steps:

1. Loosen the 3 screws that secure the handle.
2. Slide off the plastic tube.
3. Disconnect the ground wire sleeve.
4. Inside the pipe, the quartz glass and heat insulation is installed.
5. Peel of the protection tube covering the thermal sensor wires, unsolder the wires and detach from the base.
6. Loosen the clip securing the heating element to the base of the hand-piece and slide out the heating element.
7. Insert new heating element and reconnect the thermal sensor wires, use heat-shrink-tubes to avoid shorting of thermal sensor. **Be careful not to rub Heating Element wire.**
8. Reconnect the ground wire after replacing the element.
9. Assemble the handle again.

FUNCTIONS and FEATURES

● Micro processor-controlled ESD safe unit
● Fast heating response
● Easy-to-adjust temperature and airflow control with digital display
● Built-in temperature sensor that aids in providing stable (temperature) measurements
● Built-in thermal protector
● Wide range of operating temperature and airflow level selection
● Integrated airflow gauge for precise airflow level adjustment
● Unique sleep mode with timer functionality
● Automatic cooling functionality for safety and added protection
● Compatibility with various types of air nozzles to meet different repairing requirements

PACKAGE INCLUSION

QUANTITY	PART DESCRIPTION
1 unit	Aoyue 852A+/ 852A++ Main Station with Hot Air Gun
4 pcs	Air Nozzles（1124，1130，1196，1197）
1 pc	Z003 Hot Air Gun Holder
1 pc	Vacuum Suction Pen （For 852A+）only
1 pc	G001 IC Popper (for 852A++ only)
1 pc	Power Cord
1 pc	Instruction Manual

SPECIFICATIONS

Station Dimensions	188 (W) x 127 (L) x 244 (D) mm
Weight	3.8 Kg.
Power Input	AC 110-220 V / 50-60 Hz
Power Consumption	500 W
Temperature Range	100°C - 480°C
Heating Element Type	Metal Heating Core
Pump/Motor Type	Diaphragm Special-Purpose Lathe Pump
Air Capacity	23 l/min (Max)

MAINTENANCE

⚠ WARNING

All cleaning and/or maintenance should be performed when the equipment is switched off and completely disconnected from the main power source.

CHANGING THE FUSE

- Make sure the equipment is completely isolated from the main power source before changing the fuse.
- The fuse of the main unit is located at the back of the equipment, right above the power plug connector.
- Change the blown fuse by unscrewing the fuse holder.
- Replace only with the same fuse type, size, and rating. Use the table below as reference.
- Keep a spare fuse of the same rating for emergency purpose.

Location	Rating	Size
Rear Panel	3A, 220V	5x20mm
	5A, 110V	

SPARE PARTS LIST

| NUMBER	NAME & SPECIFICATION
10094	Hot air gun heating element
30104S	Plastic handle of hot air gun
S003	Hot air gun complete handle
20932	Hot air gun metal pipe
P002	Diaphragm pump

3. Wait for a few seconds while the device is adjusting the actual temperature. The control panel will then display 'AXXX' to indicate the actual temperature. Note that actual temperature may vary for ±5% of the defined value. This is normal and should not have any negative impact on reworking.

HEATER — B1   AIR — B2

A 101 | 888
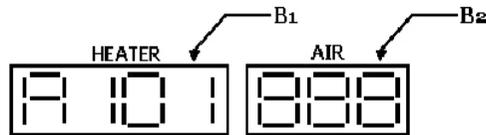
NOTE: The temperature range is between 60°C and 480°C.

Airflow Level Setting and Adjustment

1. While the unit is ON and the Hot Air Gun switch set to "Reworking", press buttons C3 or C4 from the control panel to increase or decrease the airflow level, respectively.
2. The display panel, B2, will show something like 'EYYY' while air pressure is being adjusted.

HEATER — B1   AIR — B2

8888 | E85
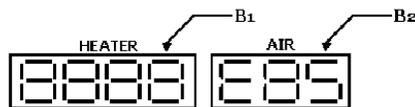
3. Wait for a few seconds until the panel displays 'FYYY' indicating that actual airflow level has been reached.

HEATER — B1   AIR — B2

8888 | F85
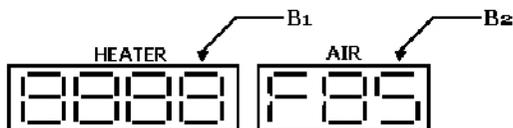
NOTE: The airflow level range is between 6 and 99.

### ⚠ CAUTION

Improper usage can cause injury and physical damage.
For your own safety, please observe the following precautions.

- Temperature may reach as high as 480°C when turned on.
  - Do not use the device near flammable gases, paper and other flammable materials.
  - Do not touch heated parts, which can cause severe burns.
  - Do not touch metallic parts near the tip.
- Thermal Protector
  - Unit is equipped with auto shut-off ability when temperature gets too high and automatically turns on when temperature dropped to a safe level.
- Handle with Care
  - Never drop or sharply jolt the unit.
  - Contains delicate parts that may break if unit is dropped.
- Disconnect the plug from the power source if the unit will not be used for a long period.
  - Turn off power during breaks, if possible.
- Use only genuine replacement parts.
  - Turn off power and let unit cool before replacing parts.
- The unit may produce a small amount of smoke and unusual odor during first usage. This is normal and should not yield any negative result when reworking.
- Soldering process produces smoke, use on well ventilated place.
- Do not alter unit, specifically the internal circuitry, in any manner.

PANEL CONTROLS

- Front View -
(Control Panel)

For 852A++ only
Suction pen
receptacle
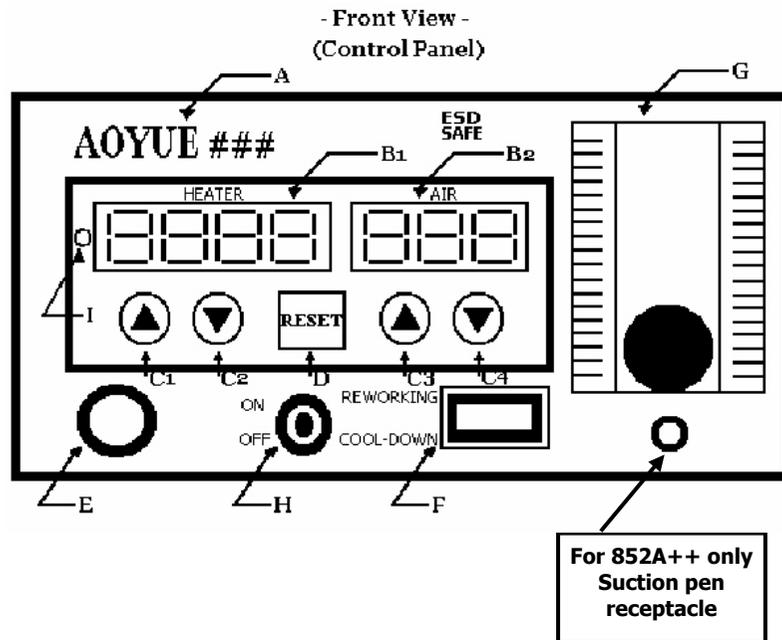
LEGEND:

- **A** - **Product Name**
- **B1** - **Temperature Meter**
- **B2** - **Airflow Level Meter**
- **C1** - **Temperature Control (Up)**
- **C2** - **Temperature Control (Down)**
- **C3** - **Airflow Control (Up)**
- **C4** - **Airflow Control (Down)**
- **D** - **Reset Button**
- **E** - **Hot Air Output**
- **F** - **Hot Air Gun Switch**
- **G** - **Airflow Gauge**
- **H** - **Power Switch**
- **I** - **Temperature Adjustment Indicator**

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OPERATING GUIDELINES

Manual Operating Frequency Selection

The SMD Rework Station has already the capability of auto-selecting the frequency based on the input power. However, in rare very cases, users may want to manually select the operating frequency. The following procedure will instruct you how to do this.

Steps:

1. Switch the unit ON (or press "Reset" button, D, from the panel).
2. Press and hold C1 while the banner is scrolling.
3. The display panel, B1, will initially indicate '-60-', which means the device is currently operating at 60 Hz of frequency.
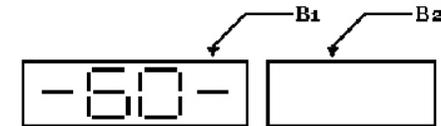
4. Use buttons C3 and C4 to switch between 50 Hz and 60 Hz.
5. Press C2 to confirm. The system will resume automatically.

Temperature Setting and Adjustment

1. While the unit is ON and the Hot Air Gun switch set to "Reworking", press buttons C1 or C2 from the control panel to increase or decrease the temperature, respectively.
2. The display panel, B1, will show something like '**b**XXX' while the temperature is being adjusted.
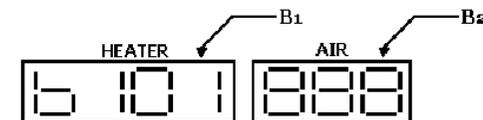
You will also notice that a red light ("I" from control panel) is blinking from the panel. This is to indicate that the system is trying to reach or maintain the desired temperature level.

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Sleep Mode Timer Set-Up

1. Switch the unit ON (or press "Reset" button, D, from the panel).
2. Press and hold C3 while the banner is scrolling.
3. Display panel, B2, will initially indicate 'L0**5**', which means the device will switch to sleep mode after **5** minutes (default) of idle time **and** if the nozzle is docked on the handle for the duration of time.
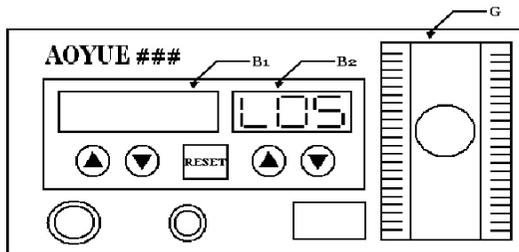
4. Adjust the time before sleep by pressing buttons C1 or C2.
5. Press C4 to confirm.
6. The device will start counting down when the hot air gun is docked on the handle. Once countdown is finished and the hot air gun still docked, the device will automatically blow air (at room temperature) to bring down temperature to 90°C. The panel will then display the following after reaching the safe temperature level and to indicate that the device is now in sleep mode.
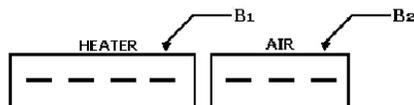
NOTES:
- Time is configurable from 1 to 20 minutes (default 5 minutes).
- The device has a switch located at the handle (cradle), which activates the countdown before the system goes to sleep.
- Once the hot air gun is released from the handle during sleep mode, the unit will automatically switch back to previous working temperature and airflow level parameters.

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⚠ WARNING

As soon as the equipment has been removed from the package, **REMOVE THE SCREW** located at the center of the bottom part of the main unit. This screw holds the pump in place during transportation. Failing to remove the screw before using the equipment can cause damage to the system.

How to use the RESET button?

The RESET button (button D from the control panel) can be used to reconfigure temperature and airflow level settings. Once pressed, the system will temporarily switch to stand-by mode then start the device using default temperature and airflow level values of 100°C and 51, respectively. Pressing the RESET button also removes previously configured system values.

⚠ CAUTION

Do not RESET the system while temperature is still high. Allow the temperature to drop to a minimum before pressing the reset button. Failure to do so can damage the heating element as well as the handle because of excessive heat.

NOTE: (for 852A++ only)
Suction Pen Assembly and Usage

Plug the end of the suction pen to its receptacle and attach a suction tip that matches the particular IC to be used.

Suction strength can be increased by increasing the air pressure (buttons **C3** and **C4**). The higher the air pressure the more powerful the suction strength.

To pick up ICs using the suction pen, increase air pressure to maximum, cover the hole at the side of the suction pen while gently tapping the tip of the suction pen on top of the IC.

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⚠️ **IMPORTANT:** Use the PANEL CONTROL page for reference.

How to use Aoyue 852A$^+$/852A^{++} SMD Rework Station?
### (SMD Reworking)

1. Turn ON the main power switch (H from the panel). The panel will initially display the product name in a scrolling manner like below.
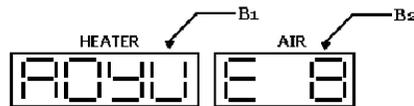
The temperature (heat) and air level panel will both display "OFF" afterwards.
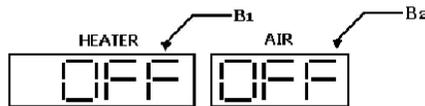
2. Start the hot air gun by selecting "Reworking" from the Hot Air Gun switch, F.

3. The system will operate at 100°C temperature and 51 on the air-flow level meter, by default. You will also notice that the metal ball inside the airflow gauge is positioned somewhere in the middle. The temperature (reading) may overshoot momentarily but will automatically adjust itself to reach the desired (actual) value.


10
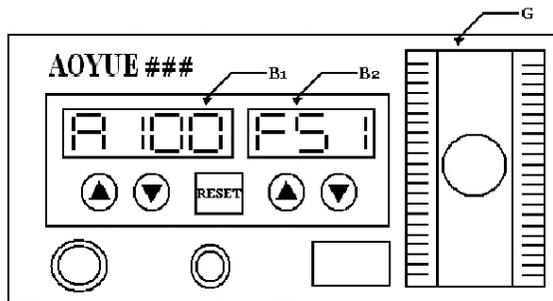
4. Set desired air pressure by pressing C3 or C4 from the panel.
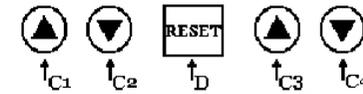
5. Adjust hot air gun temperature by pressing buttons C1 or C2.
6. You may start reworking as soon as the actual temperature and desired airflow level have reached the desired values as shown from the display panel.
7. After reworking, select "Cool-down" from the Hot Air Gun switch.
8. This will start the auto cooling function by blowing air at full speed to accelerate cooling down of the hot air gun.
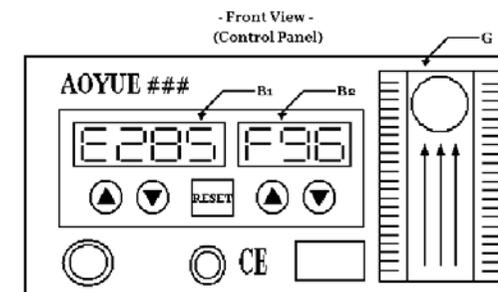
9. The cooling function will automatically stop once the temperature of the hot air gun reaches 90°C, as displayed from panel, B1.
10. The panel will display "OFF" on both the temperature and airflow level indicating that the device can already be switched OFF.
11. Turn OFF the device by using the power switch.
12. Unplug the unit from the power source.

RECOMMENDATION: When adjusting the temperature, it is strongly advised to increase the airflow level first in order to manage the temperature. Excessive heat may damage the handle and heating element of the equipment.

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