Contents

2 After-sales maintenance：

After-sales maintenance should be understood as a point: All repaired power supply boards and control boards must be tested for weak power before clear failures, and go through the pre-sale commissioning process from the beginning.

2.1 Simmer board after-sales maintenance

Phenomenon: Cannot simmer

If the customer feedback for the first time, let the customer confirm that there is no problem with the connection and reconnect the 10-pin cable. If necessary, let the customer test the goodness of the cable.

Return to the factory power supply detection method: the upper power, to determine the simmer, but also observe the status of the light, if the light is lit, indicating that the pre-burning feedback link failure, check the connection line, again strong test, still invalid, disassemble For maintenance, refer to the simmer plate pre-service maintenance section.

After it is determined that it cannot be simmered, connect the complete machine to the simmer panel test device, and adjust the voltmeter to DC1000V. Test the voltage at both ends of the lamp. Note: If it is a double-headed power supply, press the corresponding AC contactor. ; According to the following phenomenon maintenance:

Voltage greater than 400V: Transformer damage;

Voltage 10V-20V: The 220V connection between the main board and the simmer board may be faulty, and more is the short-circuit of the simmer board DB107. It is necessary to check whether the 220V track in the main board and the simmer board has burst during maintenance.

The voltage is less than 5V: The components of the main circuit of the simmer board are damaged, mainly ~275V/0.15uF capacitors and transformers; but the two power tubes in the main circuit of the simmer board are not allowed to pass through, resulting in explosion, which must be fully checked.

Phenomenon: simmer is unstable, AC contactor frequently beats, and observation lamp finds frequent simmer

Cause 1: There is a problem with the connection line of the customer's lamp. The phone asks the customer to carefully check the connection line of the lamp with a multimeter.

Cause 2: The relay on the lighting board is damaged and cannot be steadily turned on.

Phenomenon: After the simmer is successful, the lamp will go off after a few flashes, and it will no longer light out.

Reason: Breakdown of varistor in parallel with upper diode

Phenomenon: Burn R5 resistance

Reason: D1-D4, D7-D10 are soldered or one of them is damaged.

Phenomenon: burning R3, R4 resistance

Unexplained reason may be uncontrolled charging of the motherboard resulting in burning R3, R4 resistance

Phenomenon: Ignition burning burned board
Cause: The capacitor and the lamp are not supplied to the ground (check whether the ground wire on the 2510 terminal block on the power supply is connected).

2.2 IGBT board after-sales maintenance:

Phenomenon: No light
Weak current test, observe the LED indicator on the IGBT board, if flashing, it may be due to the quality of the absorption circuit, resulting in a large current line burst. If the LED is always off, there may be the following:
Cause 1: SG2525 is damaged;
Cause 2: The circuit around the SG2525 is damaged, showing as a result of welding or component damage. Refer to KA3525 column repair.

Phenomenon: No light count
Reason 1: IGBT burst (or melting of the pad around the fixed screw);
Reason 2: Photocoupler damage on IGBT;
Cause 3: Damage to the IGBT and the main board;
Reason 4: 2525 damage on the IGBT;
Cause 5: The output pulse signal on the motherboard does not come (D27 or R16 is damaged).

Phenomenon: Automatic light output
Reason: IGBT breakdown (power tube damage)

Phenomenon: IGBT popping at the same time the main board and IGBT connection also has a burst
Cause 1: Damage to the D12 (15120) results in straight-through to the ground;
Reason 2: Device damage in D10, R17, and CX2;
Note: The IGBT returned to maintenance must pay attention to whether D12 is short-circuited. The positive value of the fixed screw is about 0.3, and the reverse value is greater than 0.9. The reverse value is too small for MOS transistors.

Phenomenon: 2525 There are obvious burnouts near the explosion (very rare)
Reason: Unclear, Probable Cause Damage to Power Tube Causes the Current String of the High-Power Section to the Low-Voltage Section.

2.3 motherboard related after-sales maintenance:

Phenomenon: Charging is unlimited, charging is 0V, but feedback is correct
Cause 1: The damage output is high (Check method: Apply weak 12V, test 358 pin 7, if the voltage is greater than 2V, it can be determined that 358 is damaged)
Cause 2 The comparator board is damaged (Note: The comparator board controls the charging of the power supply, discharging work)

Phenomenon: Can't charge, or only charge tens of volts
Cause 1: Transformer rectifier diode breakdown or broken feet;
Reason 2: CT, RT welding (CT: 3535 5th foot 3n3 capacitor; RT:3525 6th foot W3 potentiometer);
Cause 3: The capacitor (225J400V) above the IRF460 is damaged or broken. (Note: Output capacitance)
Reason 4: Feedback optocoupler damage;
Cause 5: Comparison board CT, C1008 is damaged;
Cause 6: The comparison board KA3525 is damaged;
Reason 7: IGBT breakdown;
Cause 8: D1-D4 (15120) is damaged.

Phenomenon: Charging feedback shows correctly, large capacitors are dead
Reason: Main board 358 accessory explosion, explosion +12V ground (may be too small, too high current), 358 damage.

Phenomenon: Weak test of the repair power supply, no short-circuit cap, D15 light-emitting diode extinguished (already in working condition)
Cause: D9, D10, D11, D12, D28 (18A) diodes are damaged (turned on), caused by the +12V ground wire burst.

Phenomenon: Rework weak test, 460 waveform has a sharp peak (applicable to pre-commissioning)
Cause: The transistor c1008 and diode 4148 of the 460 drive circuit are damaged, and the normal value of 4148 is $\geqslant$ 0.55 (multimeter diode test).

Phenomenon: Can't discharge
Cause: The golden resistance (large discharge resistor) is damaged.

Phenomenon: Discharging while charging (indicating that the D20 LED is always flashing and the capacitor voltage jumps up and down)
Cause: Damaged V5 (6N80c) or nearby resistors.

Phenomenon: Short circuit on power
Cause 1: Rectifier bridge is damaged;
Cause 2: There is device damage between the 12V conversion power supply (AC-DC module) and the comparison board;
Cause 3: The IRF460 is damaged.

Phenomenon: Slow charging
Cause: There is a set of damage in D1-D4 (15120).

Phenomenon: Large capacitors are dead, feedback is correct, weak current is normal
Cause: The 200V820uf capacitor is damaged.

Phenomenon: Pre-burning but not charging
Cause: The motherboard is not powered on due to 3D-20 damage on the main power board.

2.4 300W laser related after-sales maintenance:

Phenomenon: Can't burn
Cause 1: The waveform of the drive is not correct or has no waveform. Check the weak current section.
Reason 2: D23 is damaged;
Cause 3: Devices are damaged in D28, D29, D30, D31, D32, D17, D18, and D19.
Cause 4: EI40 and EI33 are damaged.

Phenomenon: Simmer succeeded several times (2-3 times) and then simmer failed
Cause: Laser ignition transformer damaged.

Phenomenon: charging can only be charged to tens of volts
Cause: Damaged thyristor.

Phenomenon: charging on power
Reason: D5 is damaged.

Phenomenon: Only charge up to 140V when charging
Cause: IC3(393) is damaged.

Phenomenon: Can't shine (technique)
Reason 1: Check the thyristor drive transformer (T2-EE15) pulse waveform will damage the thyristor (count no light [pre-ignition success, charging success, according to foot can not shine)];
Cause 2: Check that the thyristor driver transformer (T2-EE15) has no pulse waveform and the device between CD4538 and T2 is damaged, for example, the C7 capacitor is damaged. Detection method: The oscilloscope is connected to the EE15 output terminal. The test interface leads are swiped on the GND to observe whether the oscilloscope has a pulse waveform;
Cause 3: P4 fires several times before the thyristor is replaced. It may damage the CD4538 and cause a 12V short circuit.

Phenomenon: Short circuit on power
Cause 1: IRF460 is damaged
Reason 2: rectifier bridge is damaged.

Phenomenon: Rework weak test, two light-emitting diodes D24 and D25 at the same time light (Tech)
Cause: The CD4538 is damaged. Under normal circumstances, D24 does not light, D25 is the power indicator. The CD4538 is a precision one-shot that uses DIP-16 and SMD-16 packages. With features such as stable performance, fewer required external components, and strong logic function, the chip integrates two independent monostable flip-flops and is widely used in the

fields of counting, frequency division, and temperature control.

Phenomenon: Connect to 220V power but no power
Cause: 12V module power supply is damaged or relay is damaged

2.5 Ultrasonic Power Related Repairs:

Phenomenon: The frequency cannot be adjusted
Cause 1:502 potentiometer is damaged;
Cause 2: The resistor around LM324 is damaged or soldered incorrectly.
Cause 3:3525 damage;
Cause 4: Damage to 9014;
Reason 5: Damage to the D7 regulator;
Cause 6: The C11 capacitor is damaged.

Phenomenon: Abnormal transducer operation
Cause 1: The frequency adjustment is incorrect;
Cause 2: The IRF740 is shorted to the heat sink.

Phenomenon: Ultrasonic Power Supply No Output
Reason 1: ETD39 inductor process problem;
Cause 2: The C23 capacitor is damaged;
Cause 3: BTA06 is damaged.

2.6 RF power related maintenance:

Phenomenon: No output
Cause 1: Power tube burned out;
Reason 2: 104 DC blocking capacitors burn out;
Cause 3: The drive waveform is not correct or there is no drive waveform;
Reason 4: EE19 or EC35 is damaged;
Cause 5: The U14 optocoupler is damaged.

Phenomenon: One of the RF headers does not output
Reason: Corresponding optocoupler has damage to the relay
Symptom: The drive waveform is incorrect or not
Cause 1: Crystal damage;
Reason 2: There is damage in U2-U4;
Cause 3: 630 is damaged.

Phenomenon: 0.5M-RF weak current is normal, no-load normal, connected to the load treatment head, the voltage peak decreased significantly
Cause: The EC35 transformer is damaged.

2.7 Controller Aftermarket Maintenance:

Phenomenon: The controller does not work
Cause 1: The crystal is damaged and can be determined by testing the crystal frequency;
Reason 2: Protection against TVS damage causes a short circuit;
Cause 3: Damage to the MCU seat leads to poor contact.

Phenomenon: The controller is not charging properly
Reason 1: Device damage in U6(358)U7(250) and related resistors;
Reason 2: Device damage in D4-Z2 (charge signal) and D8-Z5 (charge feedback);
Cause 3: The SCM is not in good contact (rarely appears).

Phenomenon: Controller causes simmer to be unsuccessful
Cause 1: D5-Z3 (simmer signal) D9-Z7 (simmer feedback);
Cause 2: The SCM has poor contact (rarely appears).

Phenomenon: abnormal temperature display
Cause: U5 (393) and related resistors are damaged.

Phenomenon: 5V lamp is not on after power-on
Reason: 2576 Welded or damaged.

Phenomenon: Buzzer does not work
Cause: Buzzer - 9012-R7 - Device damage in the micro controller.

Phenomenon: pedal does not work
Cause: D11-Z8, D12-Z9, and related resistors are damaged.

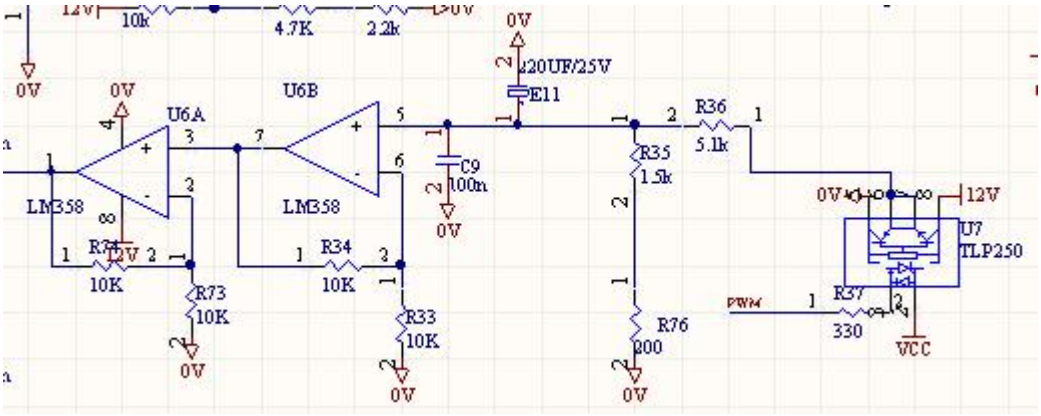
Phenomenon: Refrigeration does not work
Cause: K2, Q5, and other related devices are damaged.

Phenomenon: Head Selection Does Not Work Properly
Cause: K1 and related devices are damaged.

Phenomenon: Failure of the "Start" button of the E light controller (EL V3.03)
Cause: The resistance and capacitance (including the electrolytic capacitor) of the peripheral circuit of the voltage regulator circuit LM358 (U6) are ineffective. The inspection method refers to the voltage of each pin of LM358. The following table shows the normal value (do not connect the control panel, or connect the control panel to adjust the energy to the lowest)

8 pins	VDD	7pins	1.20V	6 pins	0.60V	5 pins	0.60V
1 pin	2.40V	2 pins	1.20V	3 pins	1.20V	4 pins	GND

At the highest energy level, the voltage at 1200W corresponding to pin 1 is approximately 5.60V. The following figure shows the fault-related circuit schematic:



Phenomenon 2: The D_EL_LASERV1.02 control board cannot be simmered, ie the "Start" button fails (Technology)

Cause: The LM393 (U10) is damaged. Inspection method: Connect a good wire, put on weak electricity, and use hand to sense (touch) LM393. If it is hot and hot, it can basically confirm LM393 is damaged. (Dimi 2 cases, the same control board, burning the same device, may be caused by wrong connection.)

Phenomenon 1 and 2 Summary: The reason why "begin" fails is because there is a power check function in the program. When a low level is detected, "start" can be used normally; when a high level is detected, "begin. "Failed, that is not working properly. LM393 (U10) is used as comparator in the circuit, the voltage of 3 feet is 4.8V, namely [12V ÷ (10KΩ +4.7KΩ +2.2KΩ) × 6.9KΩ] =4.8V; When the circuit has no trouble, 2 feet of The voltage is much less than 4.8V, the output of pin 1 of the LM393 is high, the optocoupler PC817 (Z11) is not conducting, then the power check (voltage detection) is kept low; when the circuit is faulty, the power check (voltage detection) is High, the "Start" button is disabled. (In this case, you can check Z11 first (method is short-circuited with z11 to see if it is normal) and then check back later).

Phenomenon: The controller picture cannot be switched properly

Cause 1: The device is damaged at 232 or nearby (5V screen does not need to be 232)

Cause 2: Loose connection between the screen and the controller cable.

Phenomenon: After the controller is powered on, a relatively small sound is emitted (non-buzzer)

Cause 1: 2576 sounds damaged

Reason 2: L1 damage sounds

Cause 3: The crystal is damaged and sounds.

2.8 After-sales Machine Maintenance (Technology):

Phenomenon: Refrigeration and simmer work at the same time (or cooling connected to 12V switching power supply, but not working), 12V switching power supply is burned out

Reason: The cooling plate alone works normally, the pre-burning work alone is also normal, and the gun head (the treatment head) can shine normally. It can be excluded that the cooling sheet is not damaged, the lamp is not damaged, and the control board is working properly.

Analysis: The cooling plate is powered by a 12V switching power supply, and the 12V switching power supply is powered by 220V AC. It shares an AC contactor with the IPL power supply. When the simmer is turned on, the crosstalk burns the 12V switching power supply through the AC circuit.

Solution: The 12V switching power supply and the IPL power supply are separately powered. They do not share the AC contactor with the IPL power supply, ensuring that the 12V switching power supply is away from the interference source.