

**Laminar Flow Cabinet
Horizontal Type
BBS-H1100/H1500
Service Manual**

Version 2019.06

Preface

Thank you very much for purchasing our Horizontal Type Laminar Flow Cabinet Model BBS-H1100/H1500.

Please read the service manual before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the user manual within touch for future reference.




Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

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I. Equipment failure and maintenance

 Warning: The following maintenance tests must be carried out by professional personnel to avoid the danger of improper operation.

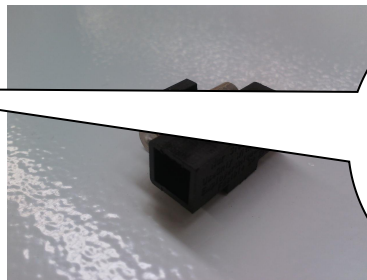
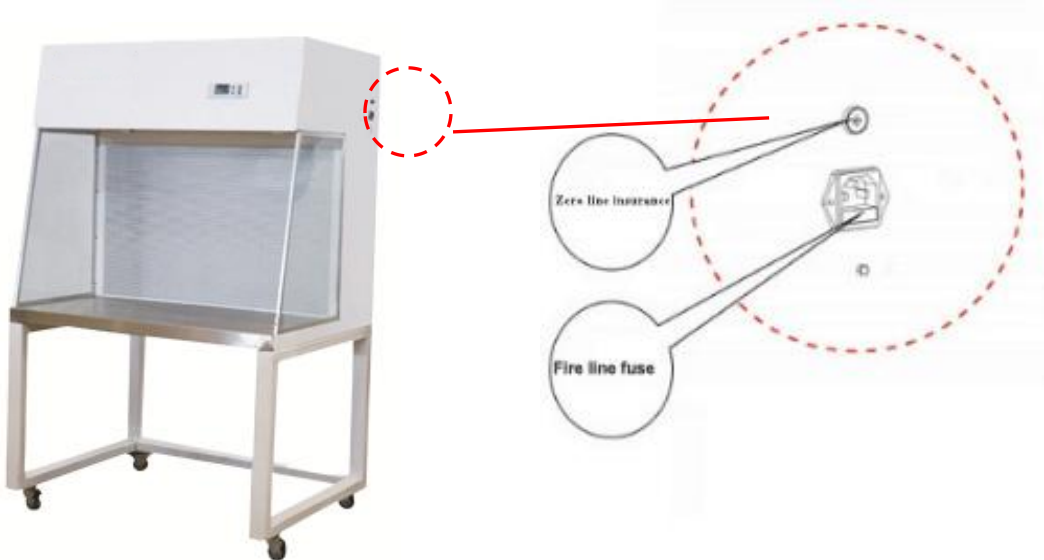
Fault 1: Dead Power

Dead power, which means that the device turns on the power switch after the power is switched on, and the device has no reaction (no alarm, no bright screen, no response to the button).

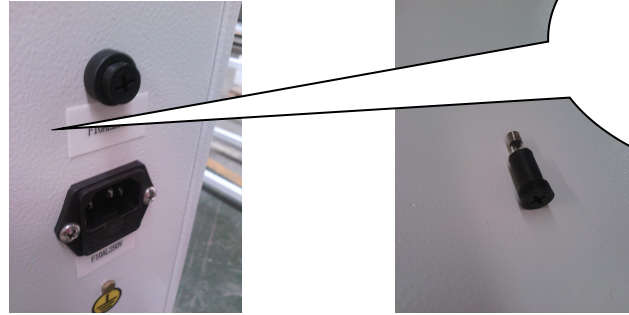
1.1 The methods and procedures for handling such faults are as follows:

1.2 Determine whether the power supply of the equipment is electric, and whether the voltage provided by the power supply is consistent with the electrical parameters required by the device's nameplate. It is normal to use multimeter to detect power supply.

1.3 The fire line and the zero line of the input port of the equipment power supply are equipped with an insurance pipe (picture 1). Confirm that the two insurance tubes are fused if there is no problem. If the fuse is fused, please replace the safety tube with the corresponding label calibration specification.



Use the flat head screwdriver to install the safety tube base in the socket, then the insurance pipe can be directly taken out to facilitate the replacement and inspection.



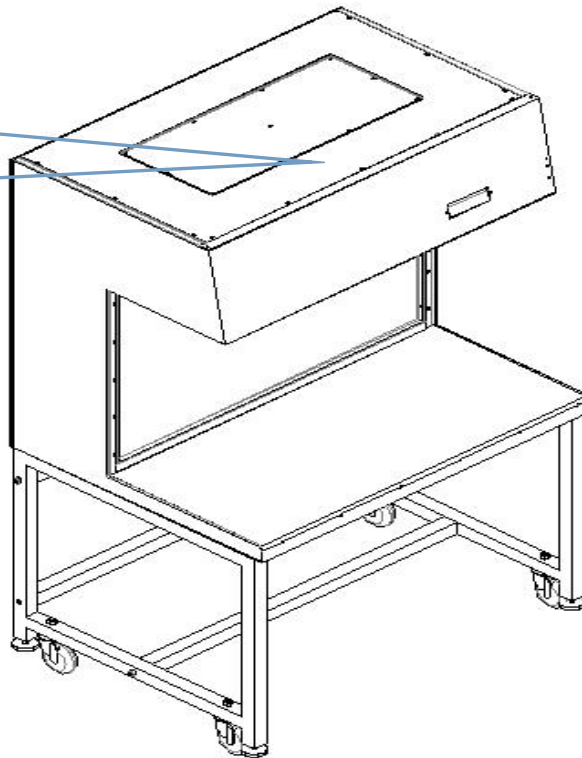
The safety tube can be removed directly from the safety tube with a screwdriver, which can be easily replaced and checked.

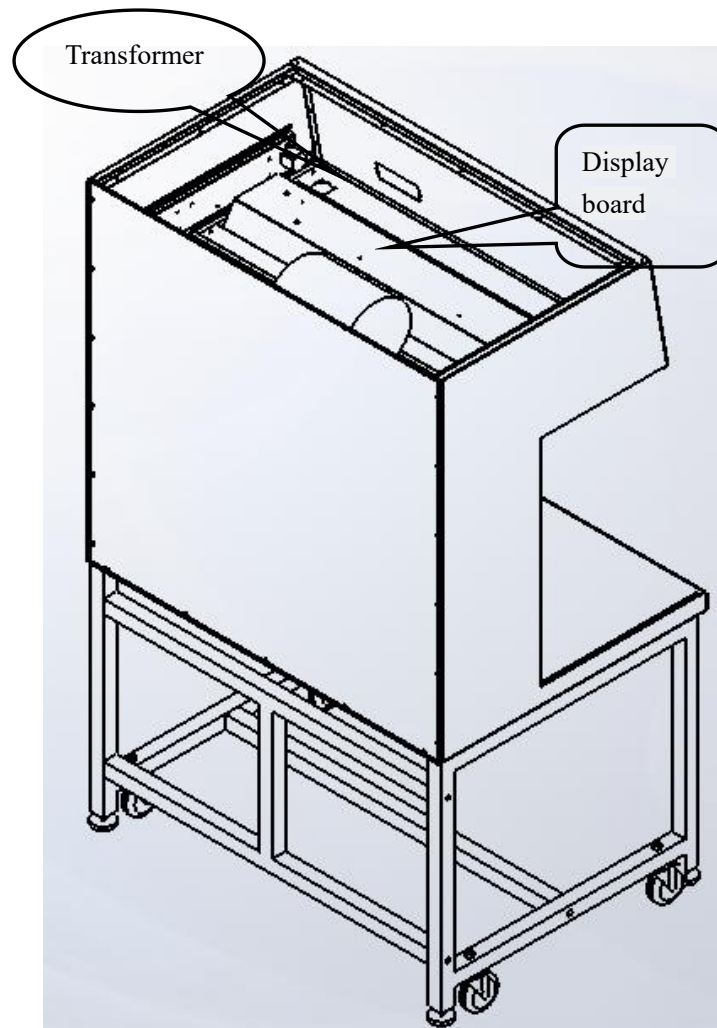
Picture 1

Disassembly of equipment structure and fuse

1.4 Remove equipment top cover plate, remove the top cover plate aside, screws in a tool box, from the on the face side testing operation panel display screen, see if the membrane switch row lines on the display board put on the display board and good contact and whether damage.

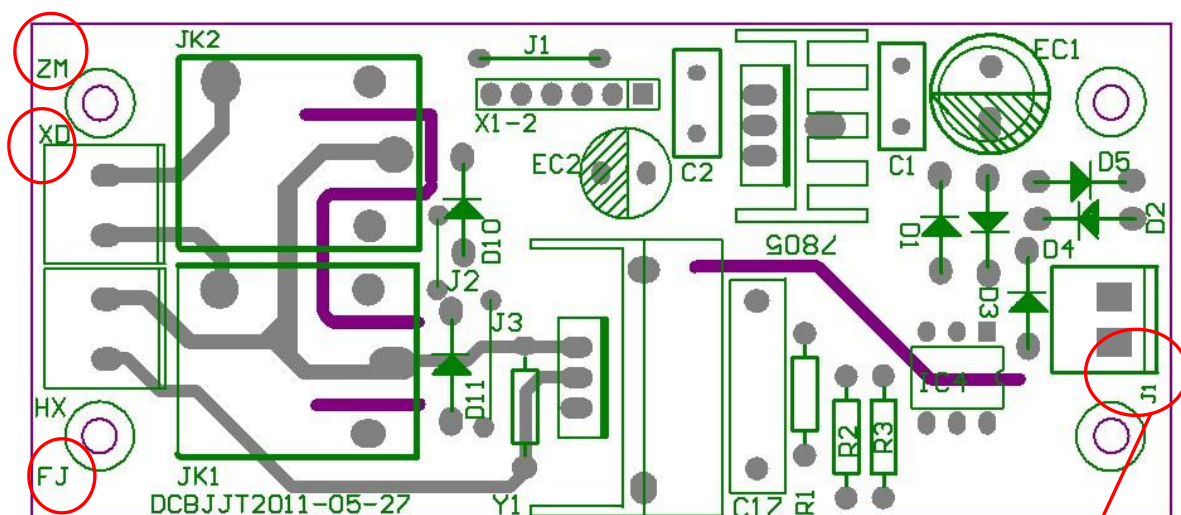
Remove the top cover plate fixed screw with the phillips screwdriver.





Picture 2

Use multimeter to check whether the transformer input voltage (voltage value should be the power supply voltage of the equipment) is normal. If the voltage value is less than 10V, the voltage value is lower than 10V, and the fault needs to be replaced, as shown in picture 3.



Picture 3

FJ (correct yellow line)

J1

Replacement of transformer:

1. Open the top cover plate (picture 2), and place the top cover plate aside;
2. As shown in picture 2, the location of the transformer in the right side of the board next to the ballast, around the transformer connection mode and position of photograph, in using a wrench, loosen the transformer installation nut to remove the nut, flat mat, play mat in the tool box;
3. Remove the transformer, install the new transformer, and connect the wiring method according to the previous record, and test the electricity;
4. Confirm whether the transformer output end is in good contact with the control panel wiring block after confirming the above mentioned items;
5. Please replace the new control board after confirming the above mentioned items.

Replacement of control board method:

1. After power, will first row line, trachea and circuit wiring where and how photographic record, the wiring connector, trachea removed from the control panel, and then fixed nut with a wrench to remove the corresponding control panel. Remove the panel to replace the new panel has problem, the old control board in a tool box, the new control panel with nut, spring washers and flat gasket connection (picture 4), according to the connection mode of wiring and connection before good screen ribbon cable, electric test is finished.
2. Check whether the connection line of the patch switch and the display board is damaged or not in contact with the display board (picture 4), and check that the patch switch is broken, and replace the new patch switch.

Replacement of the paster switch:

First, turn the power off, crown apart as shown in picture 2, the panel wiring around the photographic record, the connection joints, trachea, from the control panel (picture 4) will be fixed nut with a wrench to remove the corresponding control panel, the panel to remove aside. It will press switch position around the connection mode and photographic record, removed from the film switch wiring, the isolation between control panel and circuit board column, put the paster switch installation nut, using a wrench, spin off to remove the nut, flat mat, play mat placed in a tool box, put the paster switch and circuit board, the sticker to switch off, replace the paster switch.

Fault 2: Dark Screen or unstuck button

The screen is not bright or the button malfunction is the device's power, the display screen does not display chaos or the button operation that is abnormal.

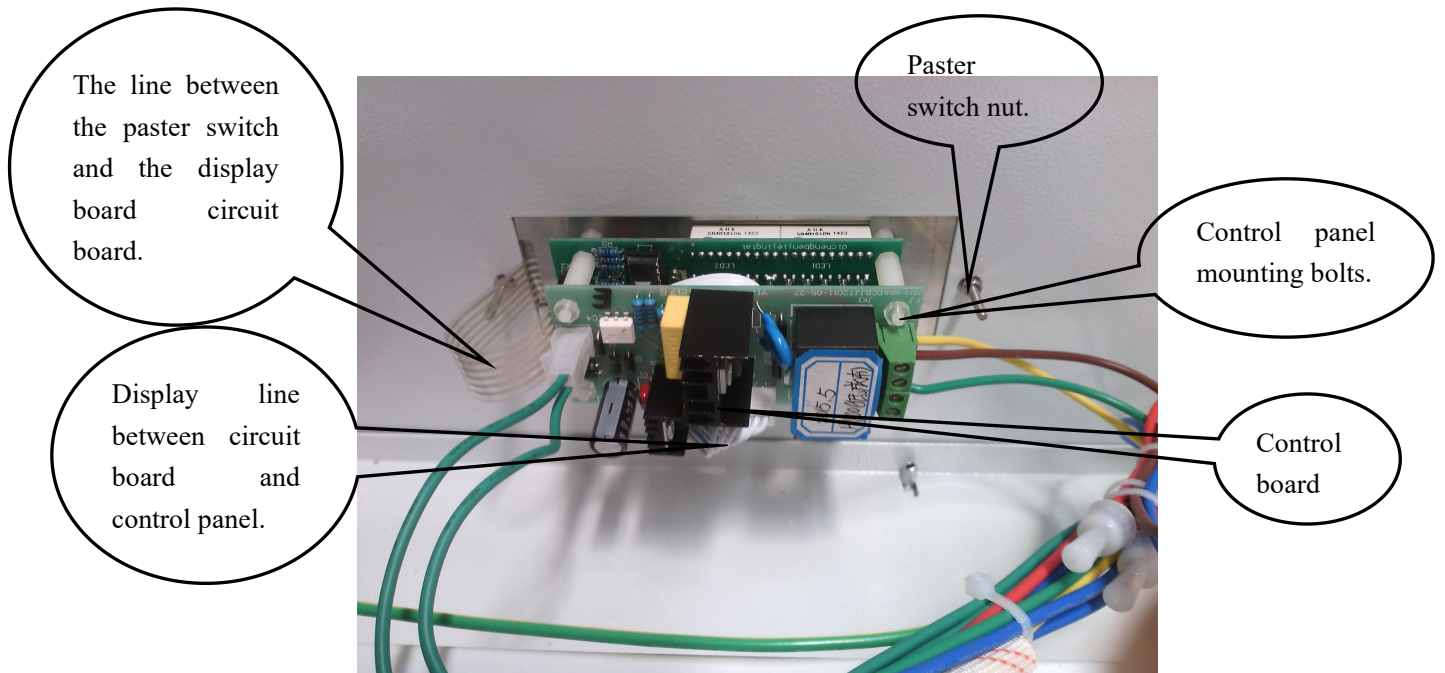
The methods and procedures for handling such faults are as follows:

- 2.1 Open the top cover plate (picture 2), and check whether the wiring of the connection between the display board and the main control board is broken or not .
- 2.2 If the connection is strong, the board may be damaged, and the new display circuit board will be replaced.

Replacement of display circuit board method:

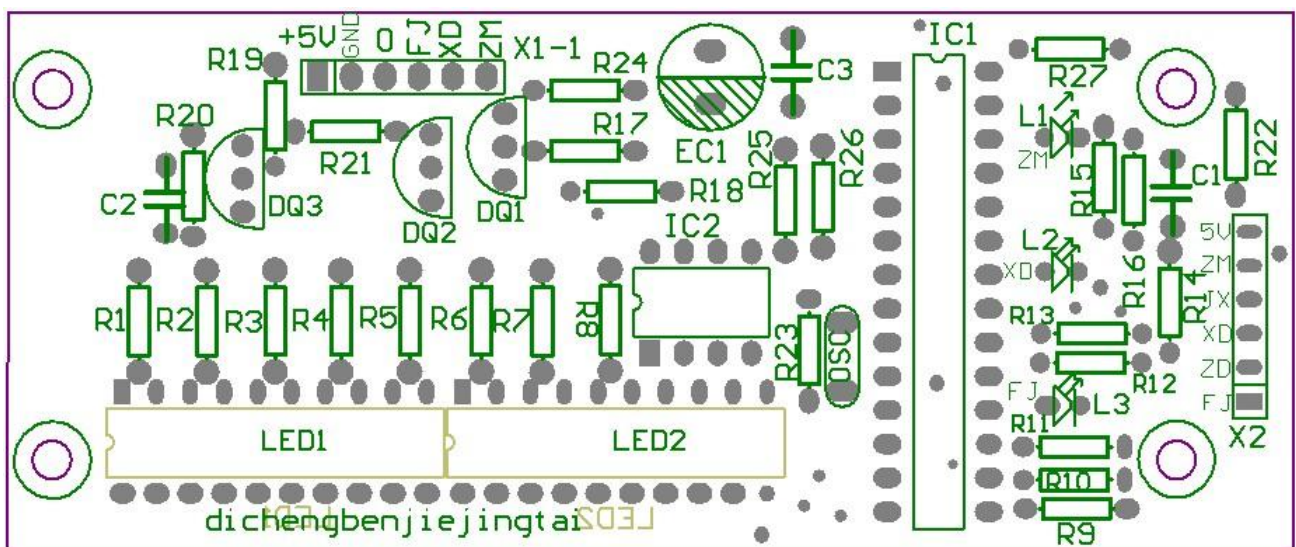
After power, the connection between display circuit board and control board photo records, and the wiring is removed, and then use around 4 to 7 cut the panel fixed nut, will remove the nuts, plain washers, spring washers, neat in the toolbox, remove the control panel, between the control board and display board isolation column. Remove the broken display board, replacement of prepared new display board, will display panel on the side of the old toolbox, fixed nut (picture 4), according to the connection mode of photographic record before wiring, boot test.

2.3 Check whether the connection line of the patch switch and the display board is damaged or not in contact with the display board in picture 4. Check that the patch switch is broken, and replace the new patch switch.



Picture 4

Replacement of control panel and display screen



Picture 5

The wiring diagram of the display screen

Fault 3: Broken-down buzzer

The buzzer does not ring when the device is energized and the buzzer does not ring when the power switch is turned on.

Please replace the new control panel with the new control pane, just as 2.2.

Fault 4:No electricity in the operation area socket

No electricity in the operation area socket means that the socket in the operation area has no power when the socket key is started.

The methods and procedures for handling such faults are as follows:

4.1 Equipment electric power switch, in turn, press the power button and plug keys, watch screen socket flag is displayed, such as does not display, control panel or display panel is damaged, please replace the new circuit board.

4.2 Check whether the socket fuse in the operation area is fused, if the fuse is fused, please replace the insurance tube with the corresponding label calibration specification.

4.3 Remove the top cover plate (picture 2), the power and the power switch, in turn, press the power button and plug button, use the multimeter to detect CN7 on the control panel (picture 4) on the socket "socket" side and the voltage between zero line (blue line) (voltage value shall be the equipment of the power supply voltage), if there is no electricity, control panel is damaged, replace the control panel.

4.4 After confirming the above items have no problem, remove the splash in the socket operation, a multimeter is used to measure the connection wire socket voltage (voltage value shall be the equipment of power supply voltage) and internal socket is damaged.If connect the socket wire voltage is normal, the splash socket is damaged, replace the splash socket.If the voltage is abnormal, power off the device and use the multimeter to detect the connection between the wires of the socket in the operation area of the operation area and the "socket" on the control board (picture 4).The same can be used to detect whether the zero line of socket and power switch is broken.Please comb the middle wire to find the break point and reconnect.

Fault 5:Broken-down illumination lamp

The light is not bright when the lighting key is turned on.

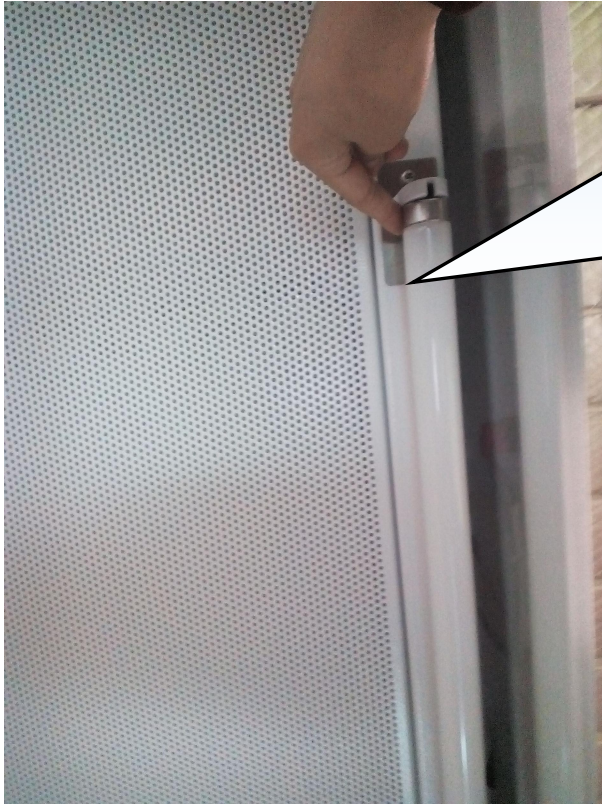
Processing methods and procedures for handling such problems are as follows:

5.1 Confirm whether the lamp tube foot and lamp holder are in good contact, remove the lamp tube to confirm whether the tube body is black, if it is black, the lamp tube is damaged, and the same specification lamp tube shall be replaced. (picture 6)

5.2 Remove the top cover plate method (see item 1.3), after open the lamp switch measurement circuit boards "ZM" socket (green line) with zero voltage (the voltage value shall be the equipment of the power supply voltage), if the voltage is significantly lower than the equipment of the power supply voltage, the control board damage change control board.(picture 3)

5.3 If there is no problem mentioned above, comb the wire between the headlight and the ballast, and the connecting lead between the ballast and the control panel.Check whether the connection is loose, if loose, and reconnect the loose wire.

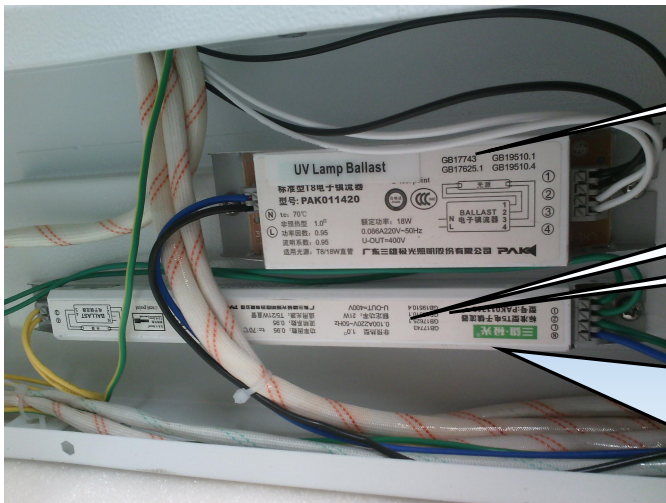
5.4 If there is no problem above, the ballast is damaged and the new lamp ballast is replaced.As shown in picture 7.



Hands in tube ends, respectively, on both sides near the lamp holder, and at the same time of tube rotates 90 degrees clockwise (or counterclockwise), is shown in figure will remove the tubes, carefully placed aside, take new tubes inserted into the lamp holder, in accordance with the above method of tube rotates 90 degrees clockwise (or counterclockwise), the installation is complete, current test.



Picture 6



UV lamp ballast.

Illumination lamp ballast.

Connecting bolts

After power, fluorescent lamp ballast is connected line first photograph connection location, line of the joint will be removed, after the ballast with both ends fixed bolt screw driver will be removed, replaced the new ballast, ballast bolted well after the first, again good connection lines, electric test.

Picture 7

Fault 6: Broken-down UV Lamp

The UV lamp is not bright when it is turned on. The front window and the UV lamp are all closed and the UV lamp can be turned on.

Processing methods and procedures for handling such failures are as follows:

6.1 Make sure that the lamp tube feet and lamp holder are in good contact with the lamp holder. Remove the lamp tube to confirm whether the filament is broken on both sides of the lamp tube, such as the broken road, the UV lamp tube is damaged, and the same specification UV lamp tube is replaced. (same as replacing the illumination lamp, see picture 6)

6.2 Remove the top cover plate method (see item 1.3), after open the UV lamp switch measurement circuit boards "XD" socket (black line) with zero voltage (the voltage value shall be the equipment of the power supply voltage), if the voltage value significantly lower than the equipment of the power supply voltage, panel damage replacement panel. See picture 3.

6.3 If there is no problem, the wire between the UV lamp and the UV lamp ballast and the connection wire between the ballast and the control panel shall be arranged. Check whether the connection is loose, if loose, and reconnect the loose wire.

6.4 If there is no problem mentioned above, the ballast is damaged and replaced with the new UV lamp ballast. (same as changing fluorescent lamp ballast method, see picture 7)

Fault 7: Unworking Fan

Unworking fan means to press the fan button, the fan indicator light is on, the fan gear position shows the fan does not work.

Steps to deal with such failures are as follow:

7.1 Turn on the fan switch to turn the fan gear to the maximum, turn off the illumination lamp and UV lamp switch. Listen carefully to the "buzzing" noise in the clean table, and if there is buzzing noise, the fan is damaged.

7.2 Remove the top cover plate method (see item 1.3), after open the fan switch, measuring circuit board "FJ" socket (yellow line) and the voltage between zero line, if no voltage or voltage less than half of the power supply voltage, the damage of circuit board change the circuit board. As shown in picture 3.

7.3 Find the fan fire line and the zero line directly to the city power to check whether the fan works. If not, the fan needs to be replaced, and the circuit board should be replaced if the work shows that the circuit board fails.

Fault 8: Wind speed adjustment

8.1 Adjust zero: after shutdown of the fan and other fans, test capacitance C9 at both ends of the test capacitor (note positive and negative poles), should be between 0.4-0.45V, if deviation from this value, adjust the potentiometer VR1. (the factory has been adjusted)

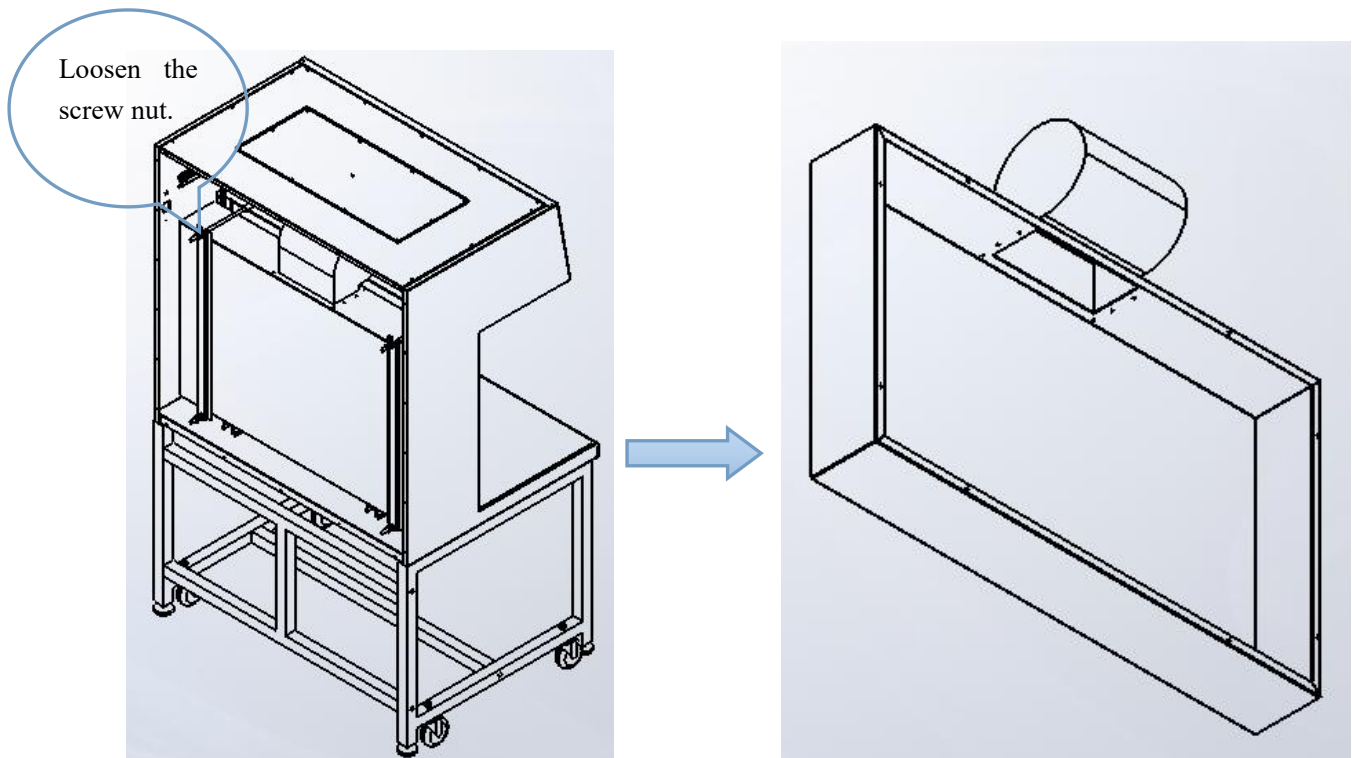
8.2 Wind speed adjustment: start the fan and other fans to run stably. When the difference between the wind speed and the measured wind speed is shown, the adjusting potentiometer VR2 will show the wind speed as the measured value. (You can only operate this step if you have an exception.)

II.Replacement of fan and filter

1. Fan Replacement

When replace the fan or filter, first anemometer wind speed is within the normal range of testing, if can use, wind met are not within the normal range, if the wind speed is adjusted by the adjustable speed control according to the manual button, the wind speed adjustable in the normal range.

1.1 Fan Replacement



Picture 8
Removal fan

1.1 First, power off the cabinet. Use a cross screwdriver to remove the screws around the back plate, and place the unloaded screws, flat MATS, and elastic pads in the tool box, and remove the back plate to the side.

1.2 Remove the nuts, flat MATS and elastic pads on the screw rod and place them in the tool box. Remove the strip and set aside.

1.3 Take photos to record the wiring position of each color of the line and remove the wiring. Remove the fan mounting plate (see picture 8) and remove the screws from the mounting plate of the fan and the fan, and place them in the tool box.

1.4 Remove the fan, replace the fan with the same specification, and place the damaged fan on one side, and finally restore, connect the wire, and test the completion.

2. Filter replacement

To replace the filter:

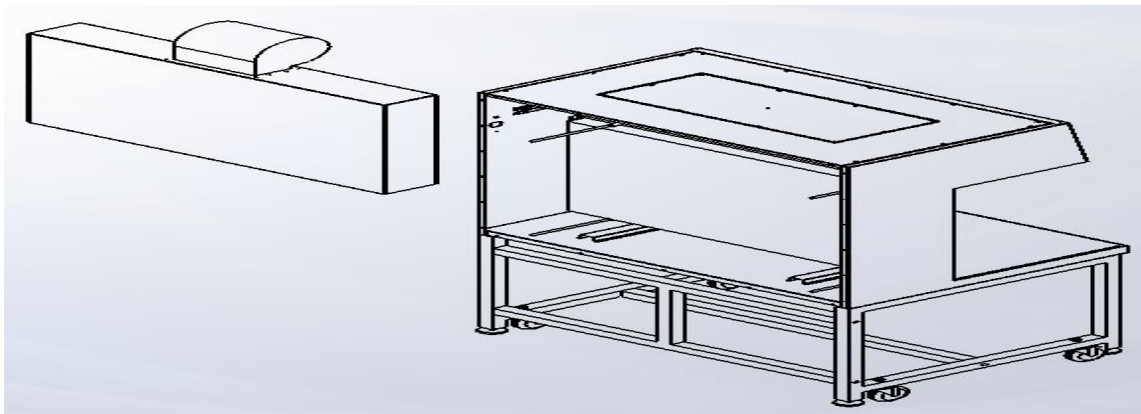
1.The fan works normally, and the wind speed can not meet the standard requirements after adjusting the fan gear;

- 2. Detect dust particles beyond the normal range (or dew point) according to the specific use environment and frequency of use;
- 3. The normal service life of high efficiency filter;

Replace the filter method as follow:

Note: Before replacing the filter, make sure that the laboratory test is stopped, the power supply is turned off, and the personnel are dressed in isolation clothes.

- 1. Place the cabinet in a large space, and remove the pressure strip according to the steps 1 and 2 of the fan, and put it aside;
- 2. Install the fan plate with fan aside and take out the filter, and replace the new filter, replacing the filter is installed in the prepared packages, and according to the above steps back, according to the records before the fan wiring terminal, electric test.



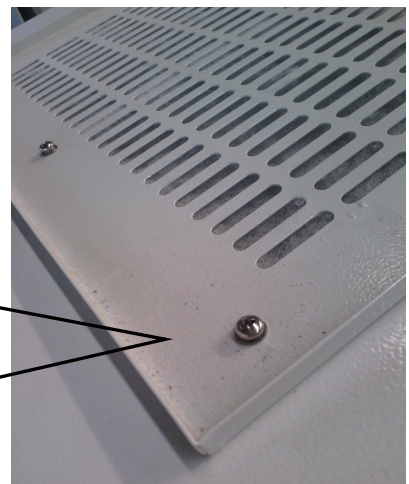
Picture 9
Removal filter

1. Change the primary filter

When the primary filter dust and other things are too much or filter damaged, the primary filter should be replaced.(picture 10)



After removing the fixing screw of the initial filter press, remove the filter pressing plate and replace the initial filter with a new one. Then, the press plate is fixed and can be finished.



Picture 10