Laminar Flow Cabinet
Horizontal Type
BBS-H1300/H1800
Service Manual

Preface

Thank you very much for purchasing our Horizontal Type Laminar Flow Cabinet Model BBS-H1300/H1800.

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.

Content

I.Equipment failure and maintenance

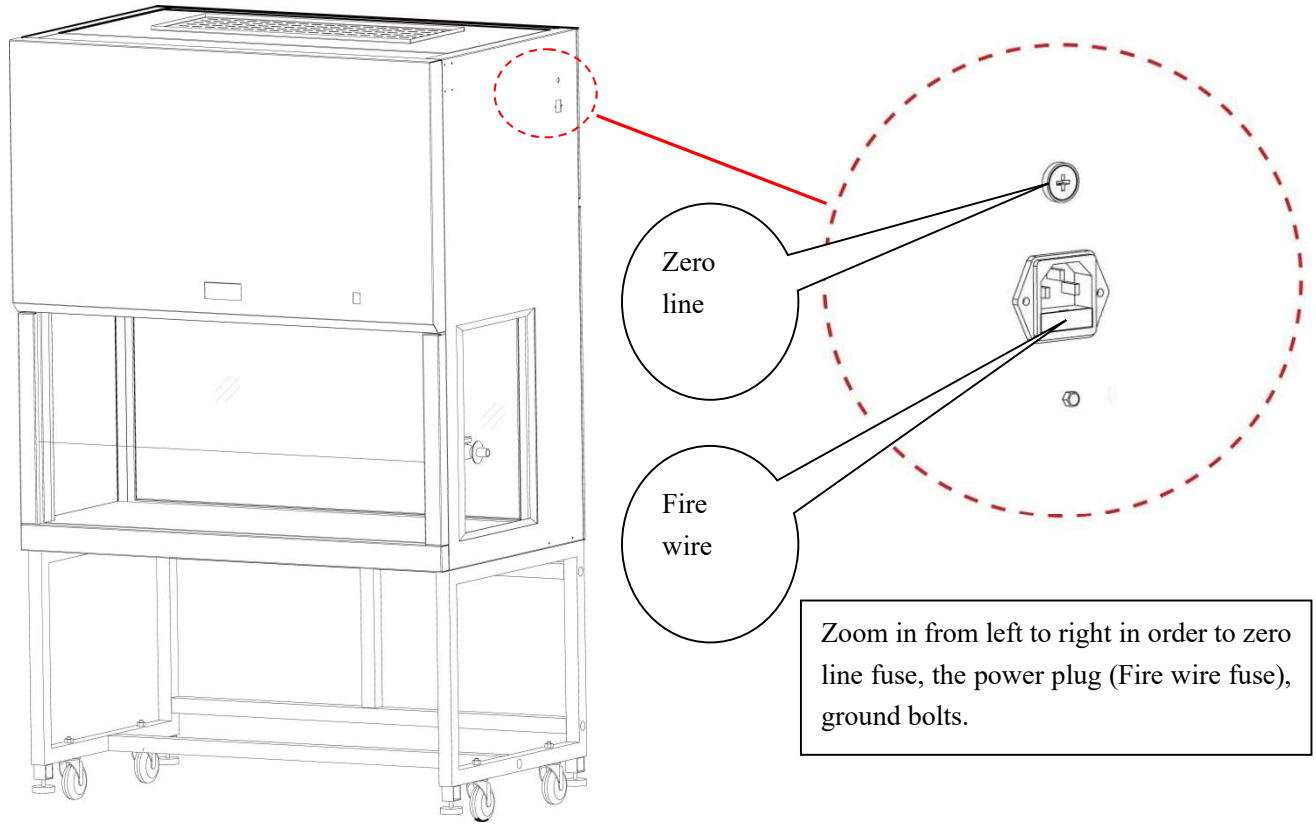
⚠Warning:The following maintenance tests must be carried out by professional personnel to avoid the danger of improper operation.

Fault 1:Dead Power

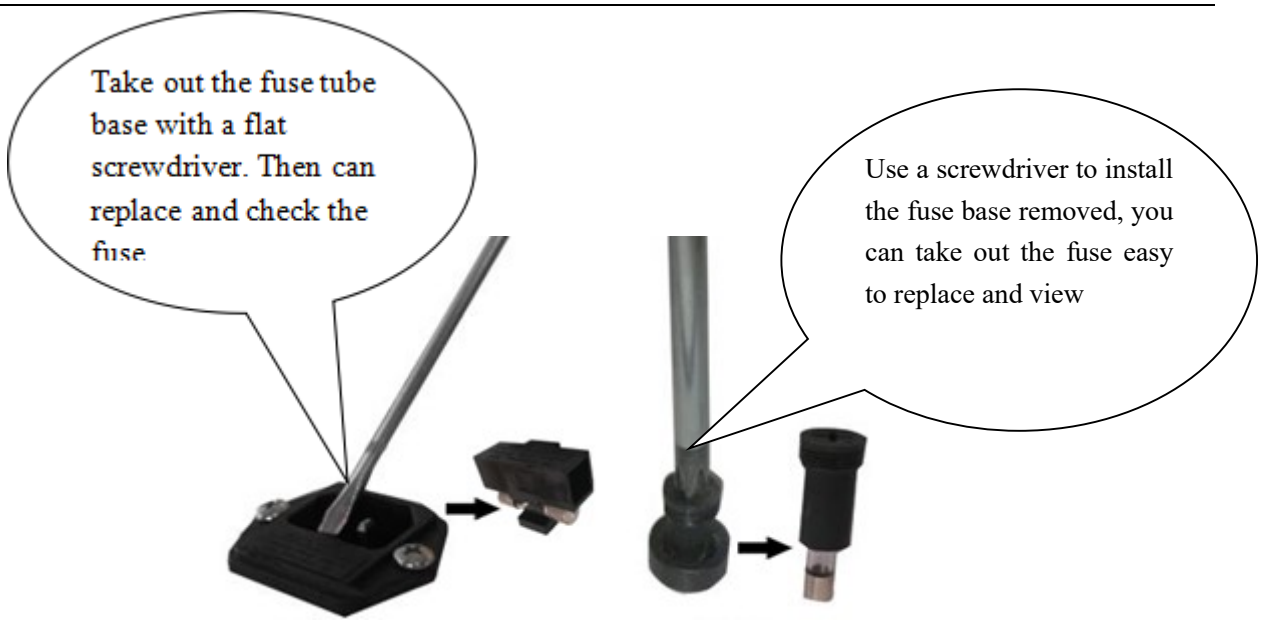
Dead power, which means that the device turns on the power switch after the power is switched on, and the device has no reaction (no alarm, no bright screen, no response to the button).

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.



Zoom in from left to right in order to zero line fuse, the power plug (Fire wire fuse), ground bolts.

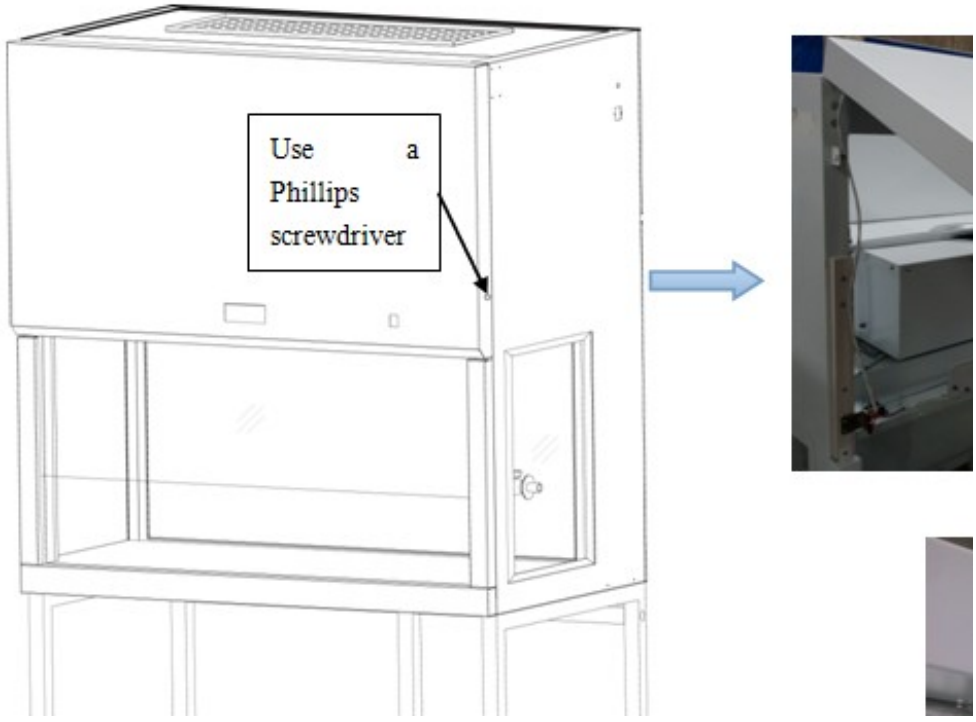


Power Plug **Fuse Plug**

Picture1 fuse location and replacement

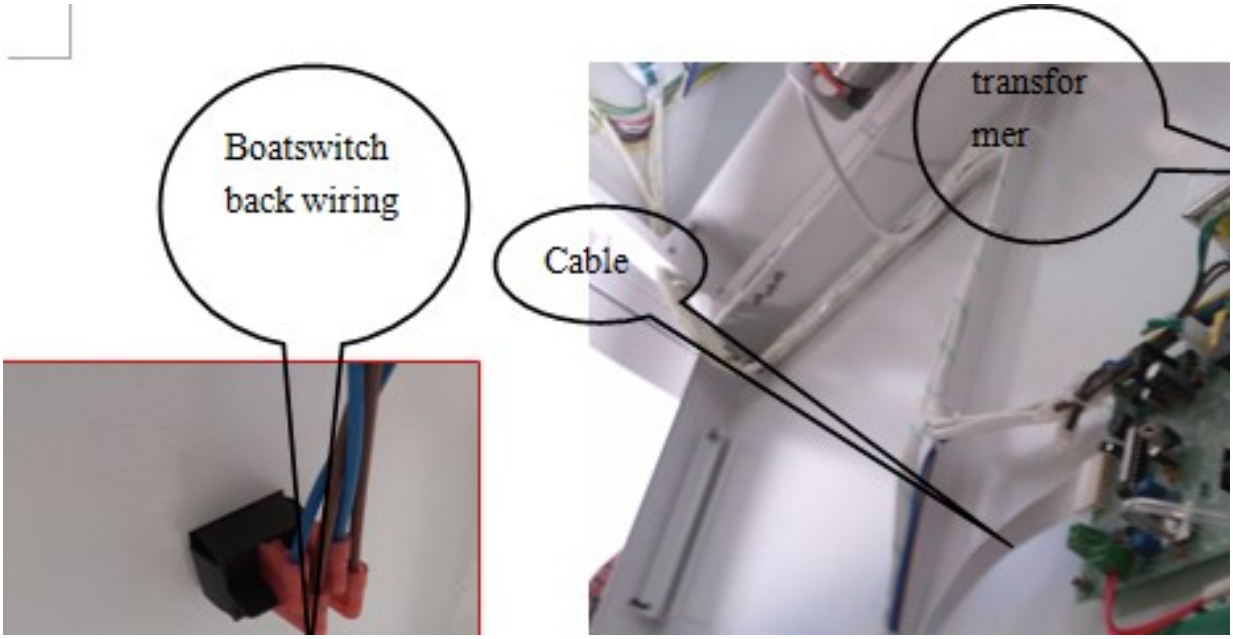
1.3 Open the front panel (picture 2) to view the boat switch (picture 3).

1.3.1 Open the front panel method, the self-tapping screws on the left and right sides of the cabinet operation panel are screwed down with a cross screwdriver, and the tapping screws are placed in the tool box. Lift up the control panel with your hand and remove the cable by attaching the black binding to one end of the support on the control panel and place the support on the welding screws on the left and right panels (picture 2 for detail)



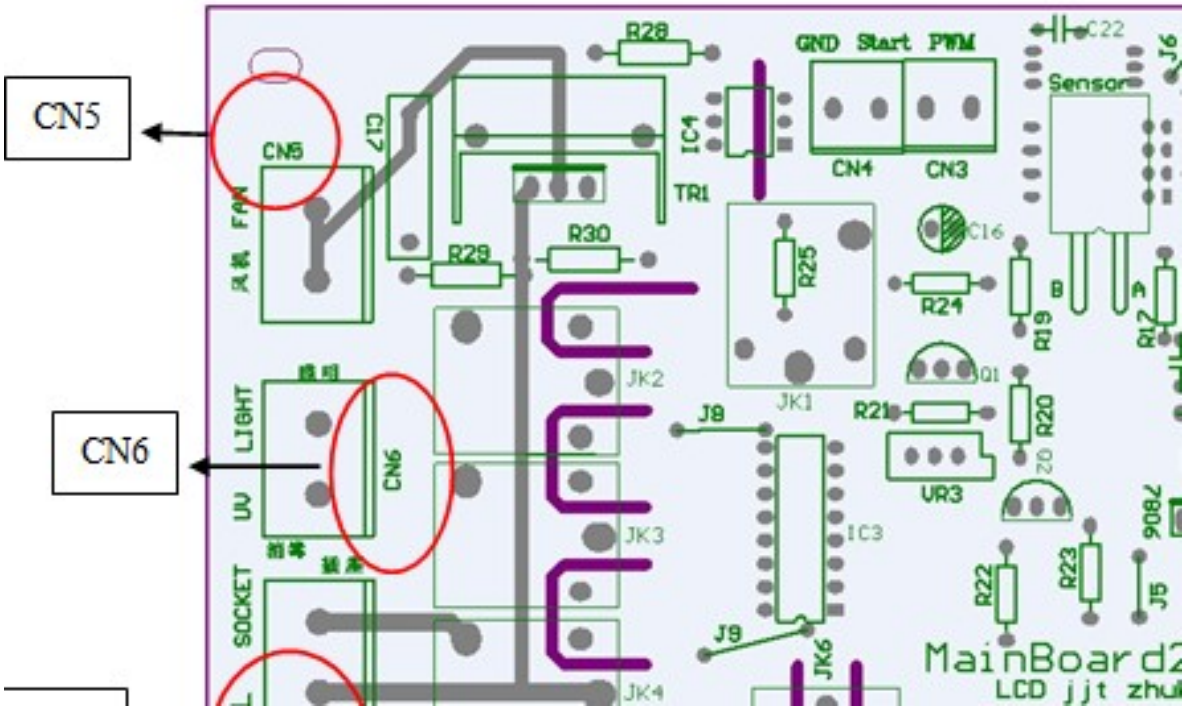
Picture 2 Support panel

1.3.2 Check the ship switch wiring, open the operation panel, check the ship's switch on the back of the operation panel is damaged or the wiring is off, hand try the wiring is solid.



Picture 3 panel display and control panel

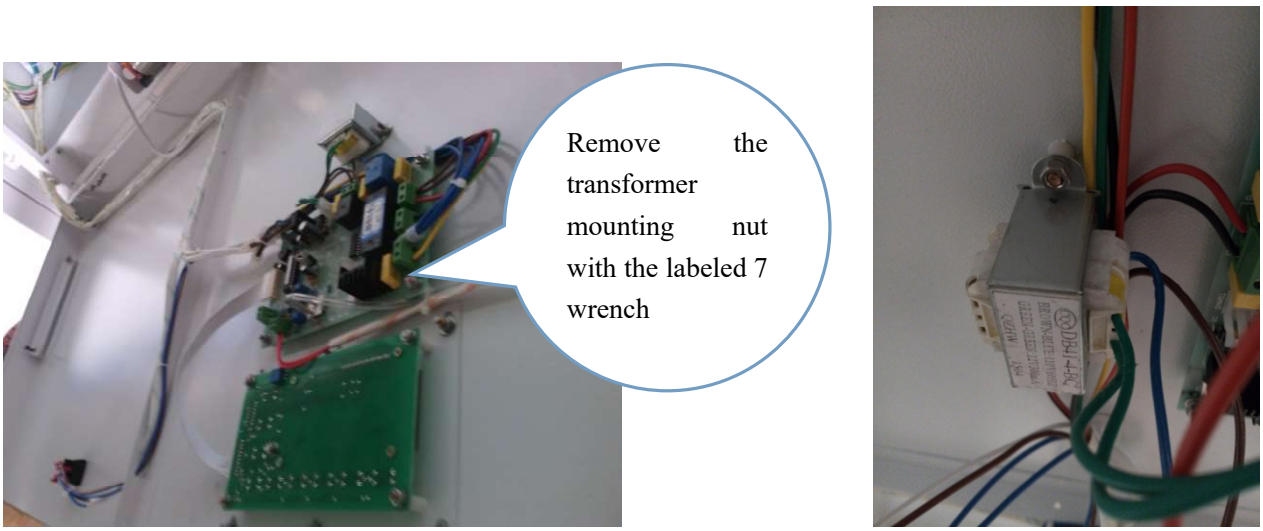
1.4 Use multimeter to check whether the transformer input voltage (voltage value should be the power supply voltage of the equipment) is normal.If the voltage value is less than 10V, the voltage value is lower than 10V, and the fault needs to be replaced, as shown in picture 4.



Picture4 control board circuit diagram

Replacement of transformer:

Disconnect the power supply cabinet, as shown in picture 2 support the panel, the first transformer near the corresponding location of the connection taking pictures recorded, the terminal will be removed with the transformer, with a wrench to remove the transformer nut will be removed The nuts, flat pads, bottom placed placed in the tool box inside, remove the transformer, replace the new transformer prepared in advance to re-install the panel, power test. (See picture 5 for details)



Picture 5 on the back of the front panel and transformer

1.5 Confirm the above items without problems, confirm the transformer output terminals and the control board connector is in good contact.

1.6 confirm the above items without problems, please replace the new control panel. After the power is cut off, take the picture of the cable, the trachea and the line connection position first and then remove it. Then remove the nut of the fixed control board with the corresponding wrench, remove the defective control board and replace the new control board, Under the nut, flat pad, elastic pad stored in the tool box inside, the new control board nut, spring pad and pad connection (Picture 3), re-wiring and connect the display cable, after the completion of the power test .

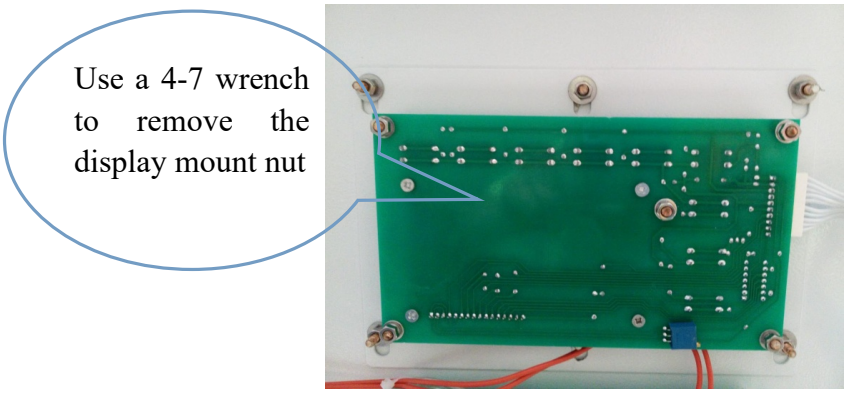
Fault 2:Dark Screen or unstuck button

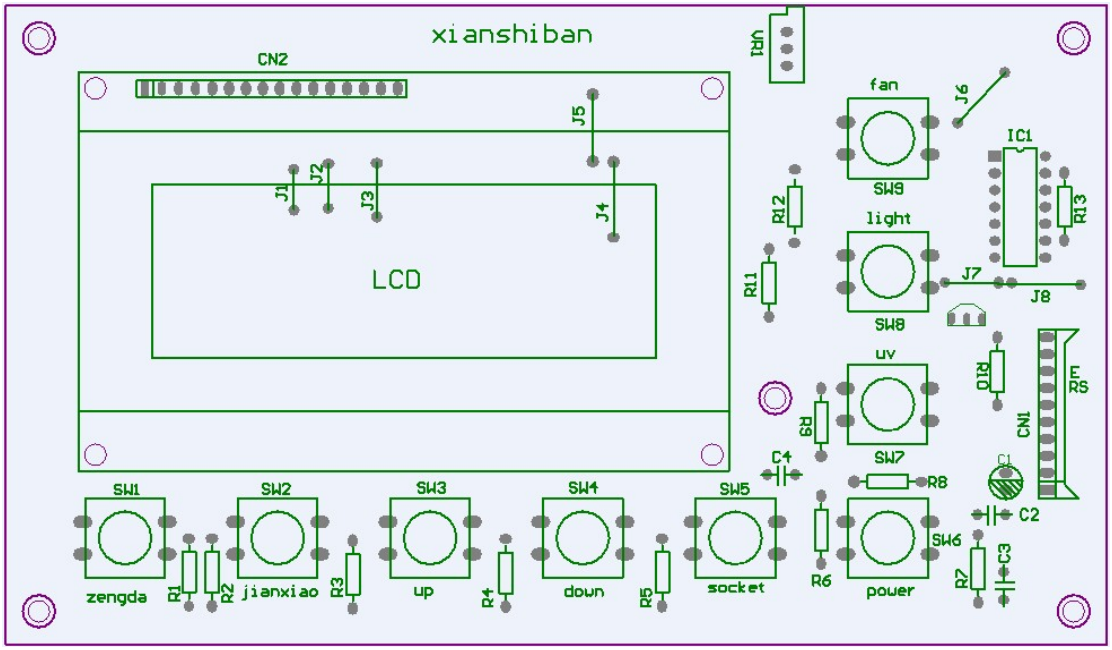
The screen is not bright or the button malfunction is the device's power, the display screen does not display chaos or the button operation that is abnormal.

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.





Picture 6 shows the back screen and circuit diagram

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:Front Window Lift Failure

Open the control panel (shown in Picture 2) to see the glass door motor. The device is powered on and the power switch is on. Start the power button and hold down the button. Use a multimeter to detect the voltage between the CN8 (Picture 4) terminal (UP) and the neutral line (blue line) of the power switch), Press the multimeter to check the voltage between the CN8 (Picture 4) terminal (DOWN) and the neutral line of the power switch (the voltage value should be the power supply voltage of the equipment) by using the multimeter. If no voltage, control panel damage, replace the control panel. If the above voltage is normal, connect the brown line at the terminal of CN8 (Fig. 4) on the control board with the zero line or black line of the motor and the neutral line of the motor directly to the mains. If the motor does not operate, the tubular motor is damaged and the tubular motor is replaced Replacement method see fault 12).

Fault 5:No electricity in the operation area

The operation area socket without electricity means that the socket in the operation area has no power when the socket key is started.

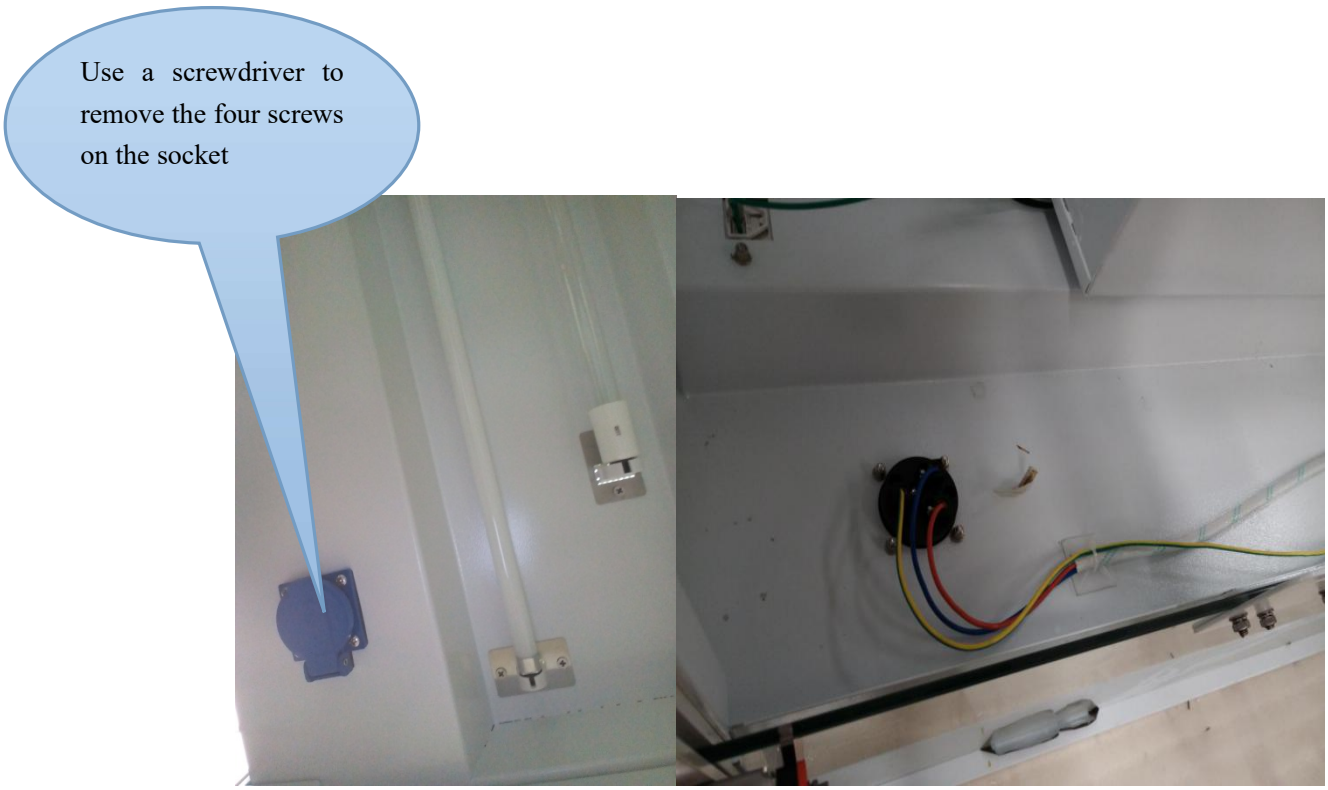
The methods and procedures for handling such faults are as follows:

5.1 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.

5.2 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.

5.3 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.

5.4 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.



Picture 7 Socket front view and socket back view

Fault 6:Broken-down illumination lamp

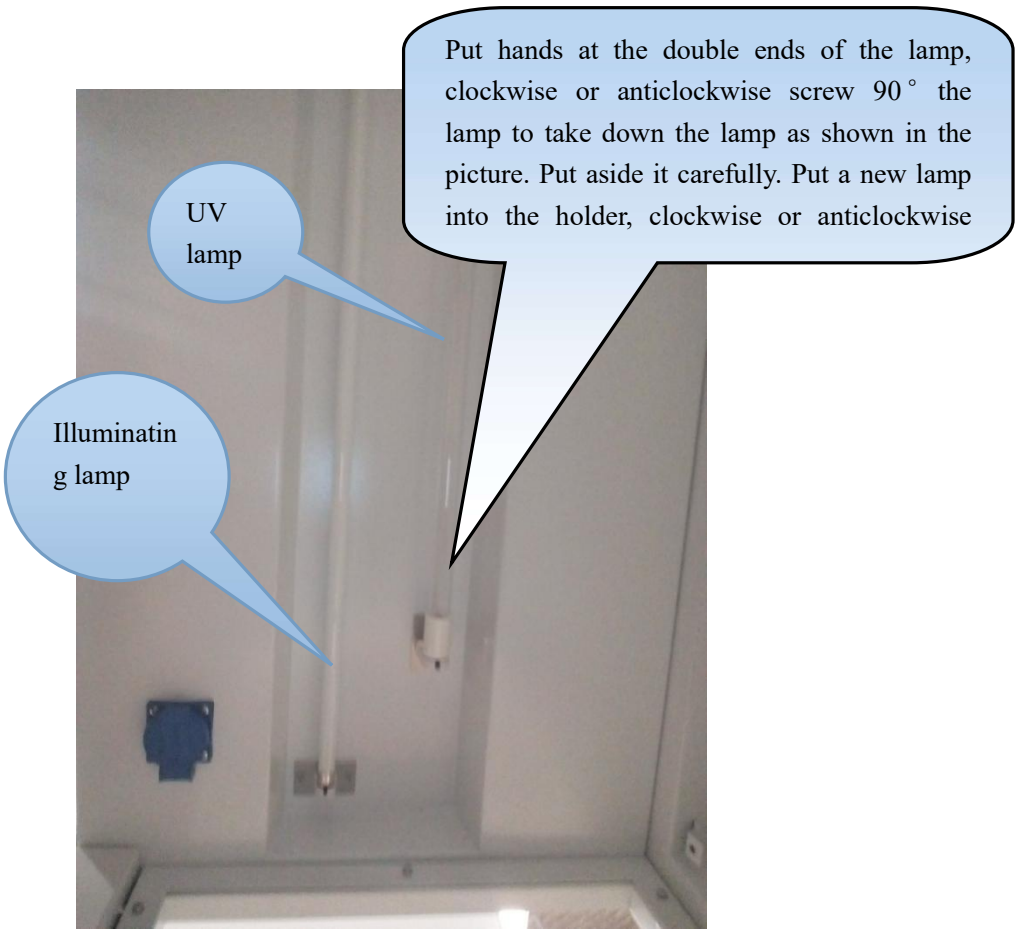
When the illumination lamp needs to be changed, turn off the power. Then remove the LED stand, unplug the right side, After replacing a new LED stand, inserted into the inclined slot.

6.1 Confirm whether the lamp legs on both sides are in good contact with the lamp holder. Remove the lamp tube to check whether the tube on both sides of the lamp tube is black. If the lamp lamp is black, then the lamp lamp will be damaged, and replace the lamp tube with the same specification. (Picture 8)

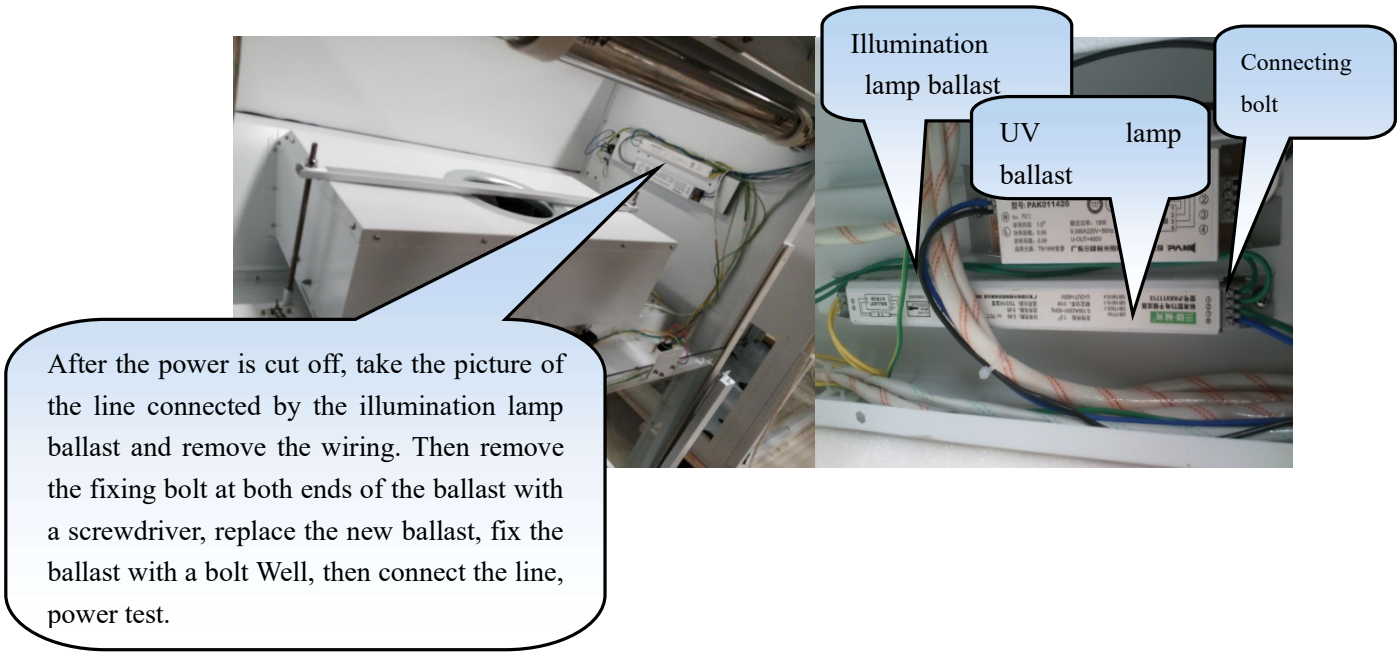
6.2 If there is no problem in the above, open the control panel (as shown in Picture 2), the device is powered on and the power switch is turned on, press the power button and the illumination button, use the multimeter to detect the "light" on the CN6 terminal The voltage between the terminal and the zero line (blue line) of the power switch (the voltage value should be the supply voltage of the equipment). If there is no voltage, the control board is damaged and the new control board is replaced.

6.3 After the above no problem, combing the lighting wire between the ballast and the lamp ballast, lighting ballast and the control board connection wire. Verify that the connection is loose, reconnect the loose wire.

6.4 If there is no problem after the above, ballast damage, replace the same specifications with the new lamp ballast. (Picture 9)



Picture 8



Picture 9

Fault 7: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:

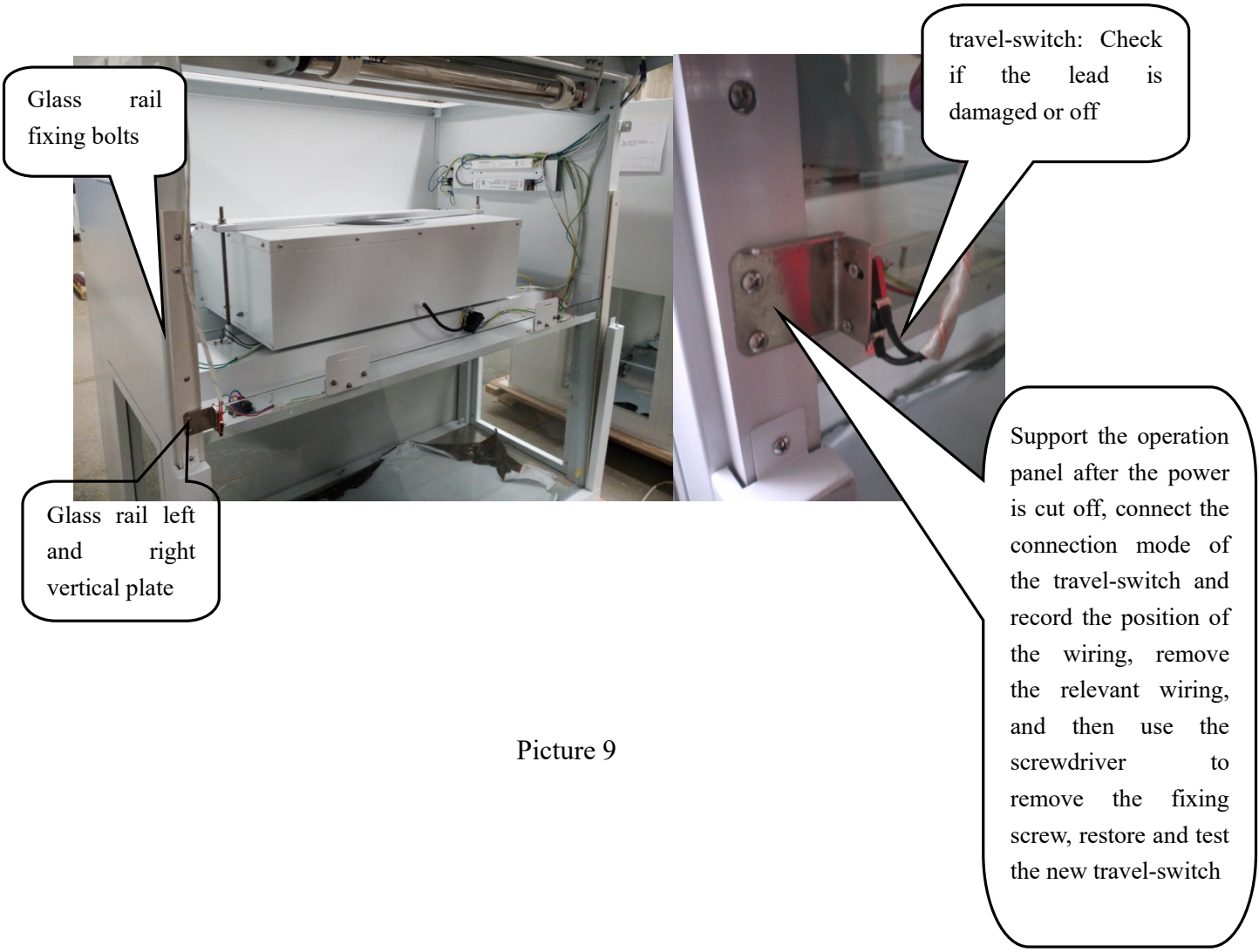
7.1 Confirm that the lamp legs on both sides are in good contact with the lamp holder, and remove the lamp tube to confirm whether the filament on both sides of the lamp tube is disconnected, such as an open circuit, the UV lamp is damaged, and replace the UV lamp with the same specification. (With the same replacement illumination lamp, see Picture 8)

7.2 If there is no problem as above, open the control panel (details are shown in Picture 2) and check whether the UV control interlock travel-switch (Picture 10) and the wires are damaged or faulty. Connect the wire to CN1 on the circuit board (Picture 4). If the travel-switch can not bring its tip into contact with the windshield after a limited stroke adjustment, replace the travel-switch. (See Picture 10)

7.3 If there is no problem, power on the equipment and the power switch is turned on. Press the power button and the UV button one by one. Use the multimeter to check whether the "UV" terminal on the CN6 terminal (Picture 4) and the zero line Of the voltage (voltage values should be the supply voltage of the device), if no voltage, control panel damage, replace the new control panel.

7.4 If no problem, comb the UV lamp and UV lamp ballast between the line, UV lamp ballast and the connection between the control panel. Verify that the connection is loose, loose, reconnect the loose wire.

7.5 If there is no problem after the above, the ballast is damaged and replace with the new UV lamp ballast of the same specification. (The same as replacing the fluorescent lamp ballast, see Picture 9)



Picture 9

Fault 8: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:

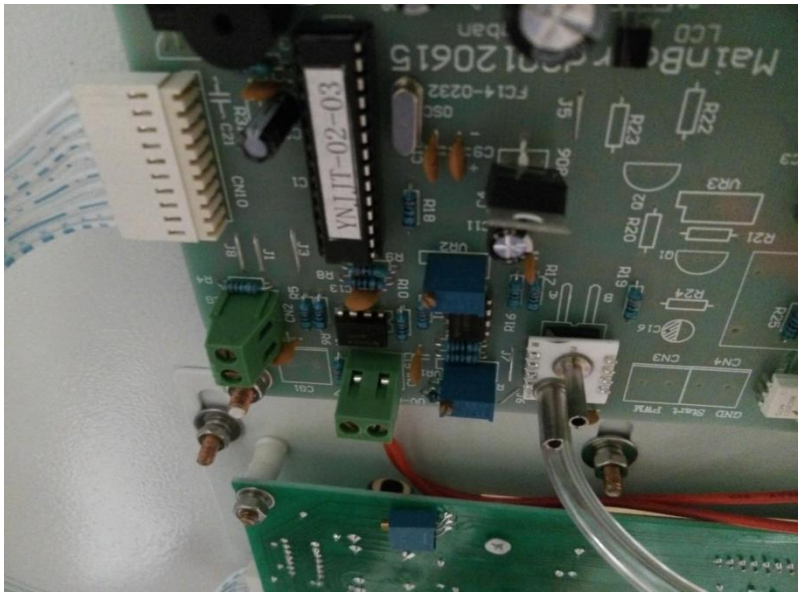
8.1 (Note: The fan does not start when the current window is lowered to the bottom of the factory setting.) When the device is powered on and the power switch is on, press the power button and the fan button one by one to check whether the fan logo on the display is displayed. If nothing is displayed, open the operator panel and check if the UV lamp interlock switch (Fig. 6) or its connecting cable is damaged or faulty, such as broken or faulty, change the limit switch or reconnect the cable. If it is lit, use a multimeter to test the voltage between the fan terminal of the control panel CN5 (see Picture 4) and the zero line (blue line) of the power switch, if no voltage or voltage is too low (the voltage value should not be low Half of the equipment supply voltage), the control board is damaged, replace the new control board.

8.2 If there is no problem, connect the zero wire of the live wire of the fan directly to the mains, and check whether the fan is on. If it is not started, the fan will be damaged and replace the fan of the same model.

8.3 If the above is no problem, comb the test fan and the circuit board connecting wire is loose or open circuit connection, such as loose connection or open circuit, reconnect the wire.

Fault 9:Wind speed adjustment

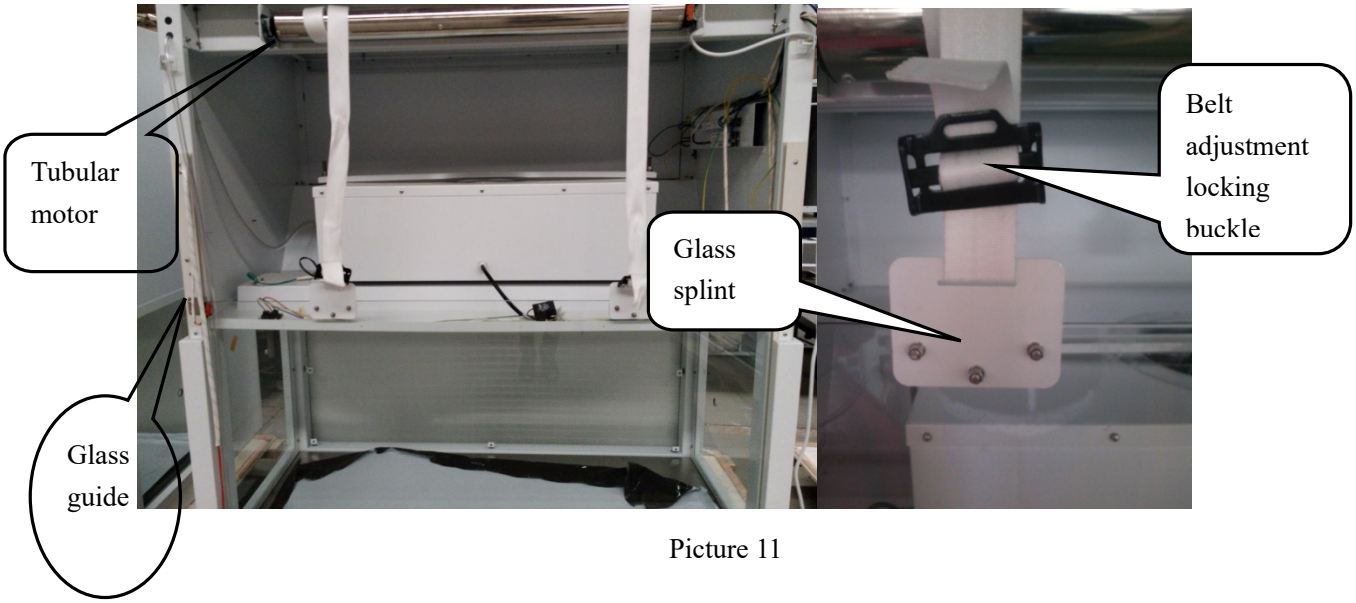
9.1 Adjust zero: after shutdown of the fan and other fans, test capacitance C9 at both ends of the test capacitor (note positive and negative poles), should be between 0.4-0.45V, if deviation from this value, adjust the potentiometer VR1.(the factory has been adjusted)
9.2 Wind speed adjustment: start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



Picture 10

Fault 10:Replacement of Front window

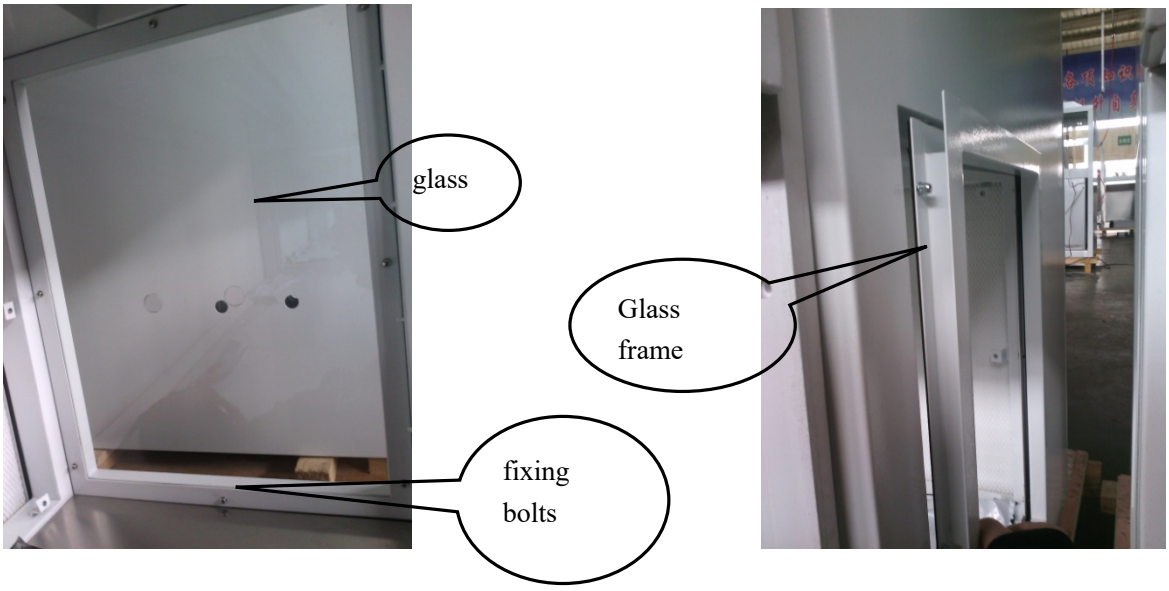
10.1 first place the glass to a minimum, in fact, touch the panel, power, and then prop up the panel, as shown in Picture 2
10.2 Remove the screw on the right glass guide rail and the vertical plate of the cabinet as shown in Picture 9. Place the removed screw in the tool box and remove the glass guide on the side.
10.3 Loosen the belt adjustment lock buckle, remove the glass from the right side, remove the fixing bolt of the glass splint, reinstall it to the new glass of the same specification, finally restore it according to the above steps, adjust the tightness of the glass belt around, Ensure that the level of glass movements. Picture 11



Picture 11

Fault 11:Replacement of Side Glass Window

Remove the glass from the inside of the cabinet. Install the screws around the outer frame, place the screws inside the tool box, remove the outer glass frame, replace the glass and finally restore it (Picture 12)



Picture 12

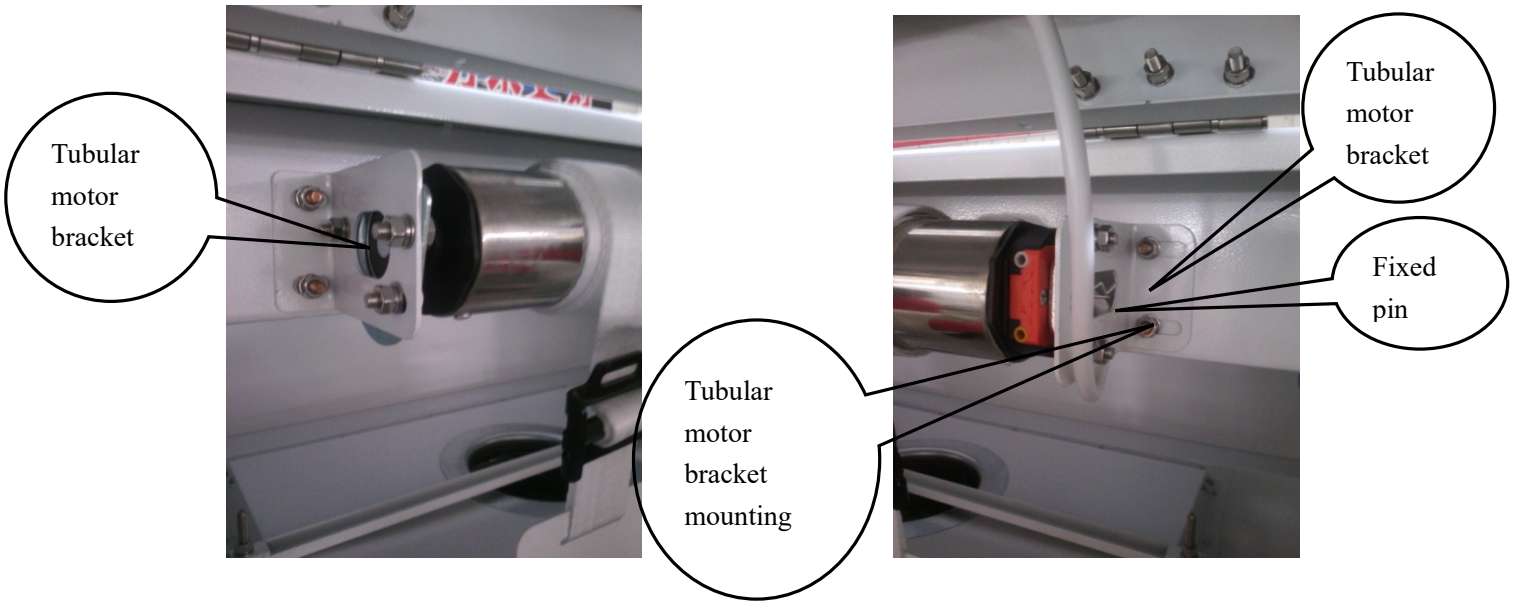
Fault 12:Replacement of Glass Door Motor

12.1 First, place the glass to the lowest level. Next, touch the control panel, power off, and then hold the panel up again (see Picture 2 for details).

12.2 Record the position of the tubular motor, and then remove the line connecting the tubular motor and the main control board. Loosen the belt adjusting locking buckle to separate the belt from the glass.

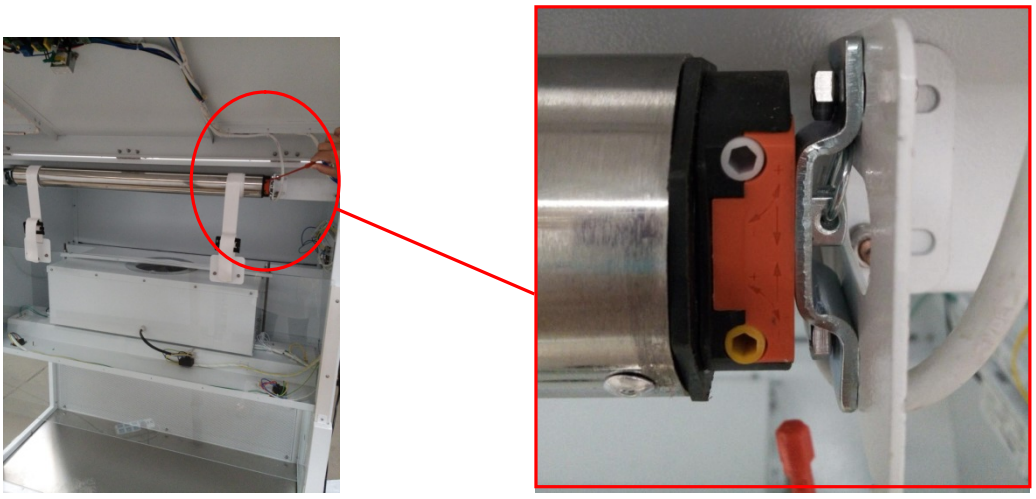
12.3 Remove the mounting screws on both sides of the tubular motor (the degree of tightness can be

freely moved), remove the fixing pin on one end of the tubular motor and move the bracket on both sides to the both sides, and finally remove the tubular motor and change The new tubular motor with the same specifications, the installation of glass, power measurement, as shown in Picture 13



Picture 13

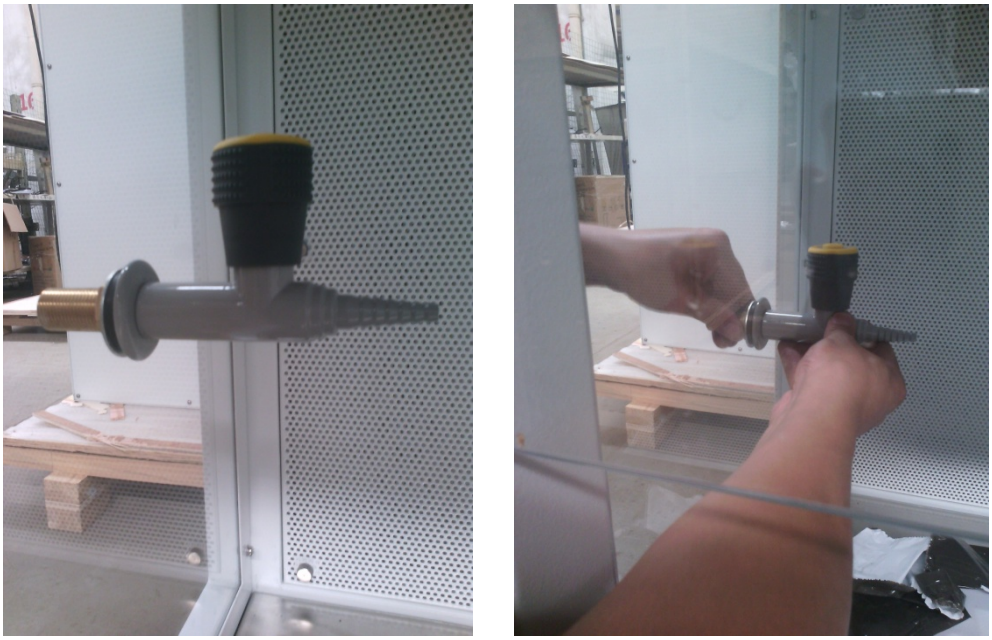
NOTE: After replacing the glass door motor, the glass needs to be readjusted as follows:
Glass moving adjustment: First open the front panel (shown in Picture 2), turn on the power, press the glass up button, hold down until the glass reaches the highest point, if less than the required height, with the tubular motor hex adjust the adjustment hole anticlockwise rotation of the lower end of the adjustment hole; if the glass lifting height exceeds the specified height, turn clockwise to adjust the tubular motor adjustment hole on the top; press the glass down button until the glass fell to the bottom, if the glass can not be reduced to the end , Adjust the upper side of the tubular motor counterclockwise adjustment hole; if the glass down to a long part of the conveyor belt leakage, adjust the clockwise adjustment of the lower side of the tubular motor; has been debugging until the front of the window glass and replace the same location so far. Picture 14



Picture 14

Fault 13:Replacement of Water/Gas Taps

13.1 First remove the pipe connected to the gas taps(water taps)
13.2 Using a wrench, gently remove the glass fixing nut, remove the nut, washer placed in the tool box, you can take out the gas taps (or water taps) from inside the cabinet, taking care not to damage the glass. As shown in Picture 15
13.3 After cleaning the glass will be the same specifications gas taps (or water taps) installed in accordance with the instructions, firmly connected.



Picture 15

II.Replacement of fan and filter

Replace the fan or filter, the first test with the anemometer wind speed is within the normal range, if the wind speed can be used, if the wind speed is not within the normal range, according to the instructions to adjust the wind speed button to adjust the wind speed adjusted to the normal range of can.

1. Fan replacement

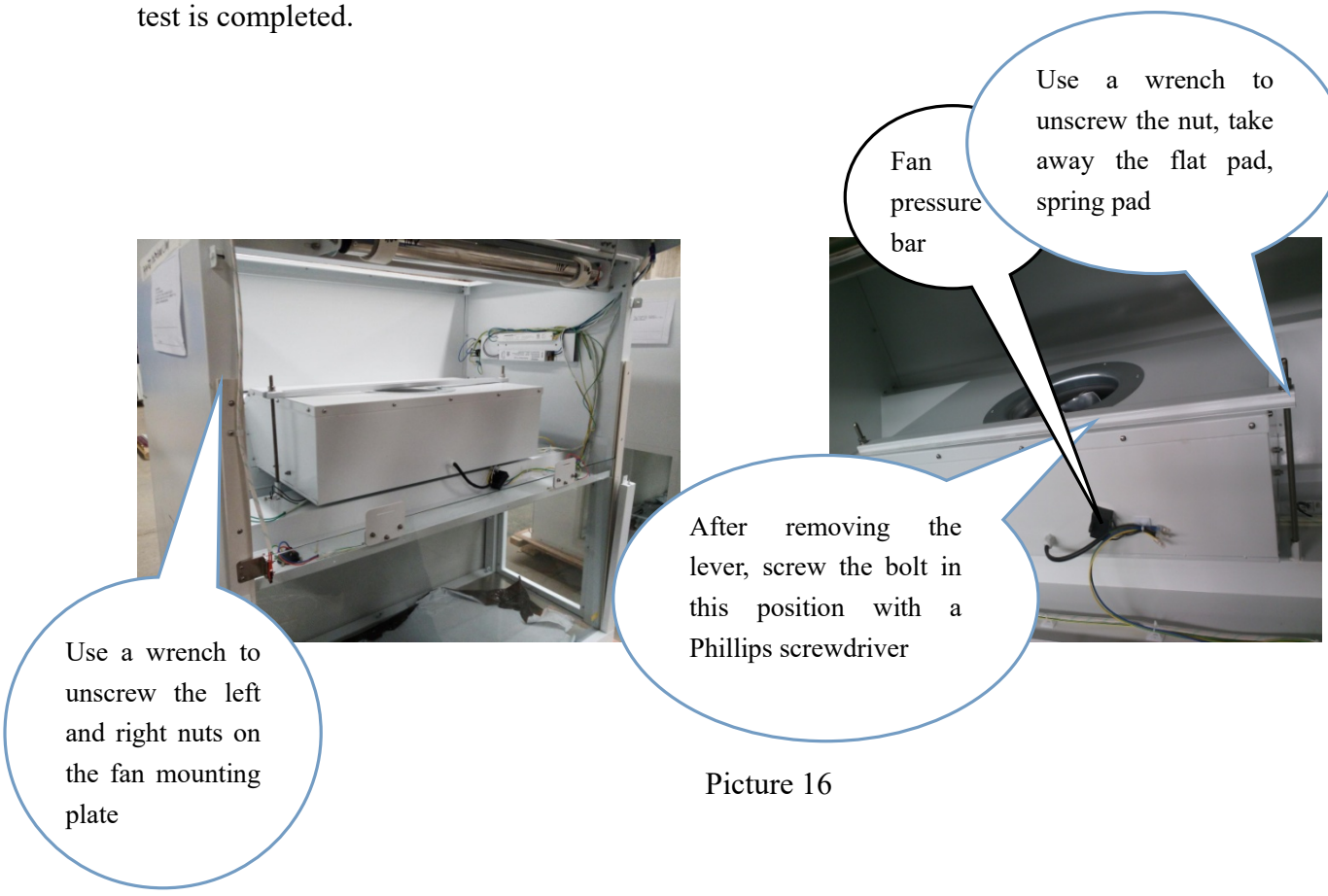
1.1 The cabinet body will be powered off after the operation panel up,take pictures recorded fan wiring,remove the fan wire connections,as shown in Picture 2

1.2 Use a wrench labeled 17 to unscrew the fan shaft nut, remove the nut,washer, spring washer inside the tool box, remove the fan bar,see Picture 16.

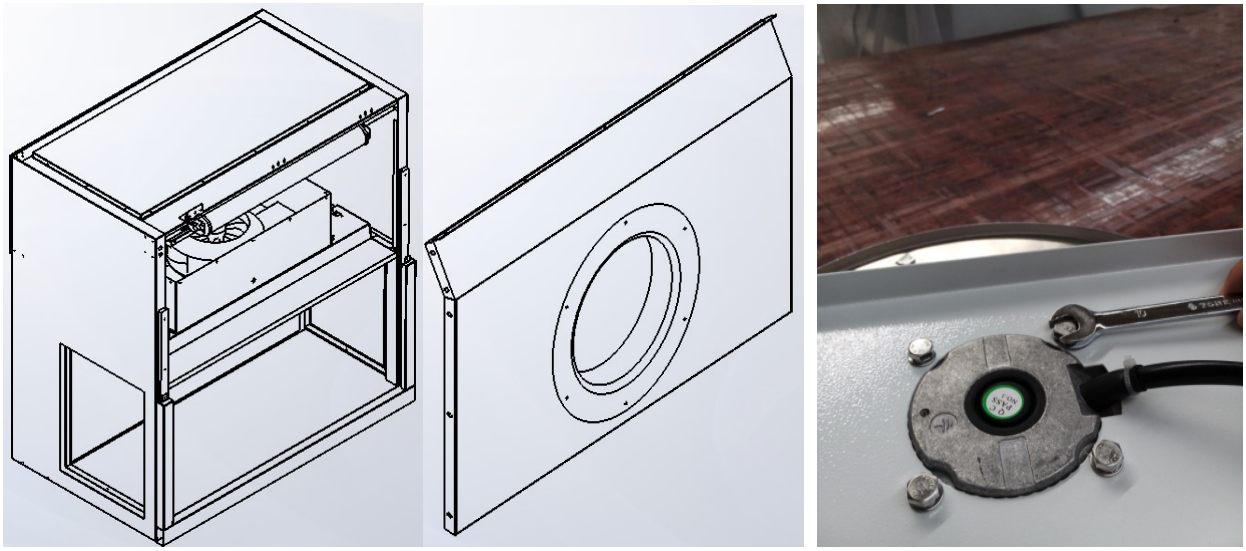
1.3 Unscrew the upper fixing screws on the fan mounting plate with a screwdriver.Place the removed screws, washers,and spring washers inside the tool case. Pull the fan case up and pull it out of the case (see Picture 17).

1.4 Use a wrench to unscrew the nuts on the left and right sides of the fan mounting plate as shown in Picture 16. Place the removed nuts,washers, and spring washers inside the tool box as shown in Picture 17.Pull the fan mounting plate 2 upwards and out of the fan Mounting plate.

1.5 Use a wrench marked with 10 to unscrew the screw between the fan and the fan mounting plate 2,replace the prepared fan with the same size, and finally restore it. Then connect the wire and the test is completed.



Picture 16



Picture 17

2. Filter replacement

1. Fan work, adjust the fan stalls, the wind speed still does not meet the standard requirements;
2. According to the specific use of the environment and the frequency of use, testing dust particles beyond the normal range (or dew point);
3. Exceed the normal service life of high efficiency filter;

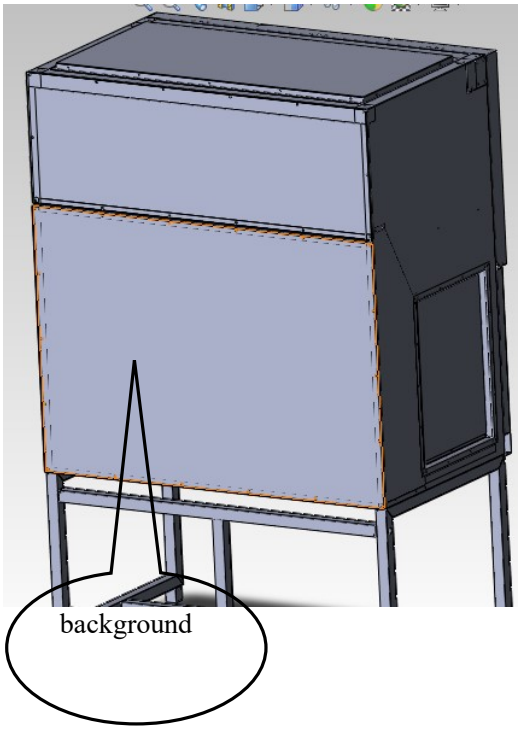
The method of replacing the filter is as follows

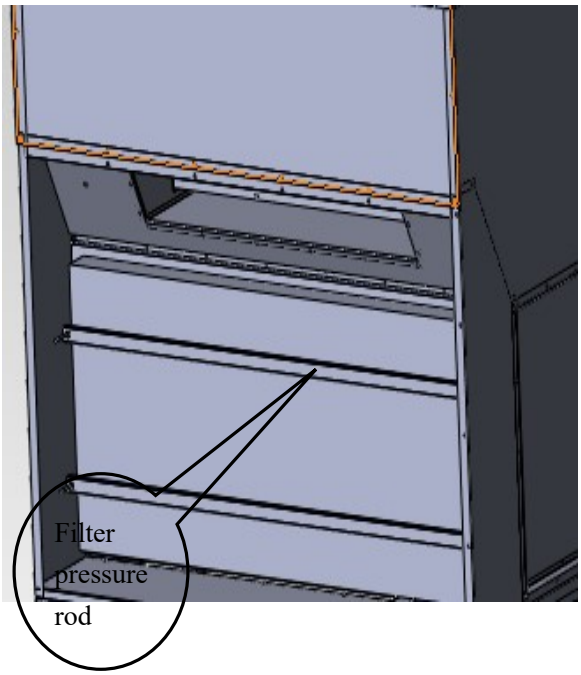
Note: Before changing the filter to ensure that the laboratory test stops. Then turn off the power, replace staff wear a good isolation clothing;

1.Place the cabinet in a large space. Remove the screws under the rear panel and remove the rear panel. Picture 18

2.Remove the filter rod above the fixed nut, the nut will be removed, flat pad, spring pad stored inside the tool box, the bar parallel to the outside out on the side, as shown in Picture 18

3.Remove the filter, replace the prepared new filter, replace the filter in the prepared packing bag, and follow the above steps to restore.

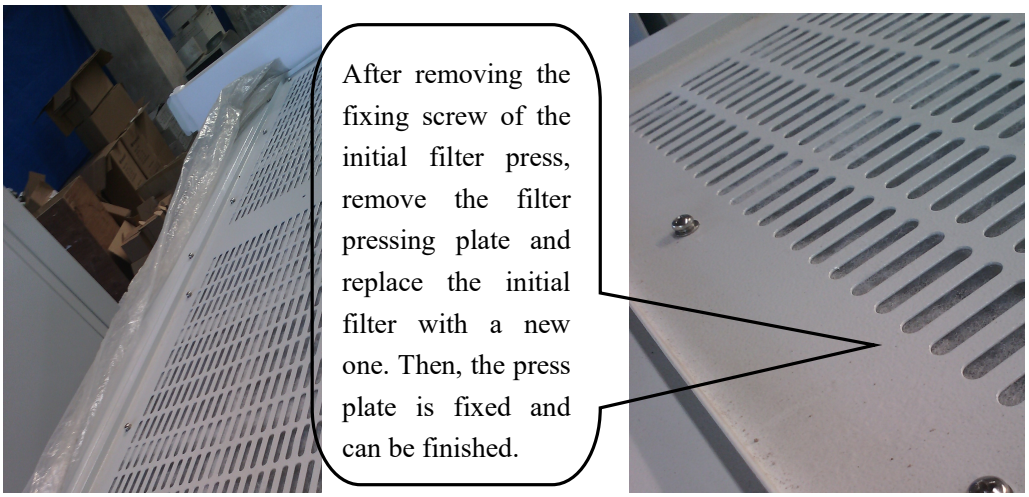




After replacing the filter, turn on the power, turn on the display, adjust the air volume of the filter, the air volume can be 0.45 ~ 0.4m / s can work properly. (As shown in Fig. 19) (Due to the different cabinets, the gears are also different, as long as the wind speed is 0.45 ~ 0.4m / s after running for 5min.)

3.Primary filter replacement

When the primary filter dust and other things are too much or filter damaged, the primary filter should be replaced.(picture 20)


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 20