



Service Manual for 15-inch, 30-inch, 46, 54, 168, 300 Models

****Single Zone and Dual Zone Units****

This wine cooler should be serviced by a qualified technician.

Be sure to have the unit *unplugged* while repairing the unit.

- **Tools Required:**

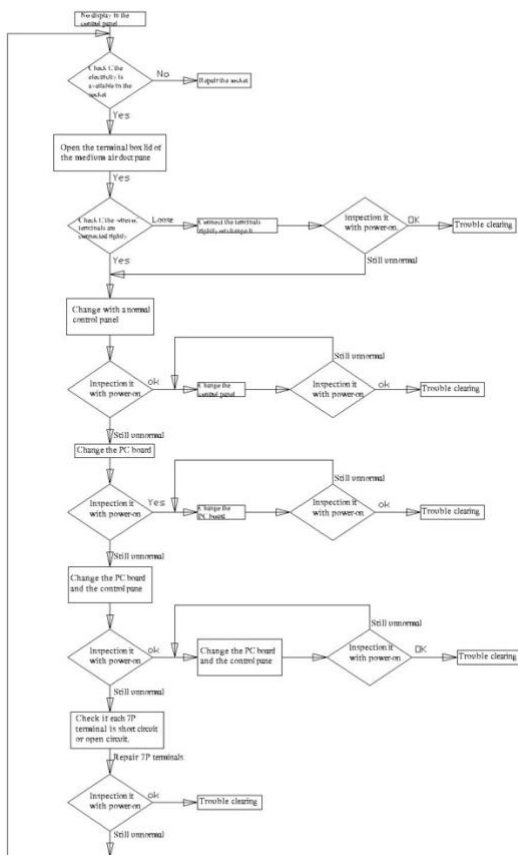
1. Tools for electrical fault: multimeter, split-core type meter, power meter, phillips screwdriver, long flat nose pliers, vice, power board, control board, etc.
2. Tools for the breakdown of the refrigeration system: suds, brush, R134a gas, nitrogen, oxygen/acetylene soldering set, oxygen, acetylene, $\varnothing 6 \times 0.7$ copper tube, $\varnothing 4 \times 0.7$ copper tube, silver-copper brazing alloy, scaling powder, etc.

- **Troubleshooting & Maintenance:**

- 一、 Troubleshooting for Electric Control:

1. Display fault. Display does not appear to be normally working when the unit is turned on.

(1) Please refer to the clearance procedures below:



No display in the control panel.

Check if the electricity is available in the socket. →If No. →Repair the socket.

If Yes. →Open the connecting line box lid of the middle baffle plate.

→Check if the wires of the terminals are connected rightly.

Loosen it →Connect the terminals rightly or change a new one. →inspect it again with power-on.

If OK. → Trouble clearing.

→ Change with a new normal control panel.

→Inspect it with power-on →OK. →Change the control panel.

Inspection it with power-on. → OK. → Trouble clearing.

If not OK→ Change the PC board.

Inspection it with power-on. →OK. →Change the PC board.

Inspection it with power-on. →Not OK. → Change the PC board and the control panel.

Inspection it with power-on. →OK. →Change the PC board and the control panel.

Inspection it with power-on. →OK. → Trouble clearing.

If not OK → Check if each 7P terminal is short-circuited or open-circuited.

Repair 7P terminals.

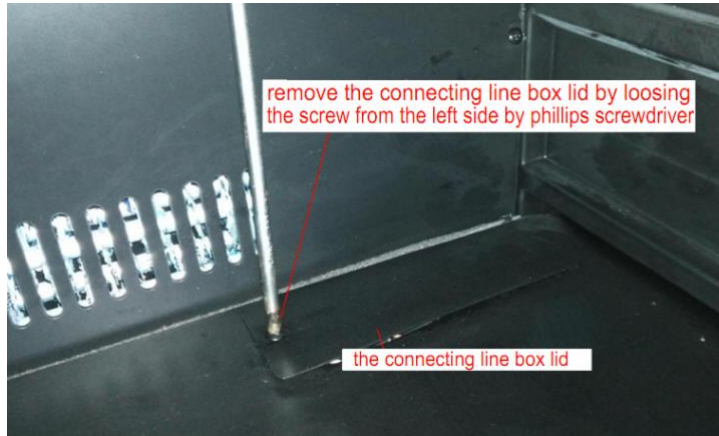
Inspection it with power-on. → OK. → Trouble clearing

(2) Disassembling and inspection for the middle baffle plate.

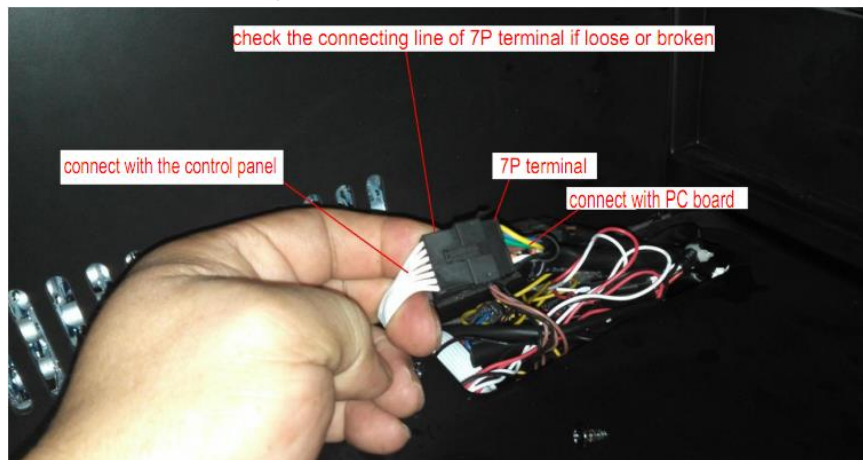
1. Remove the two shelves on the top of the middle baffle plate.



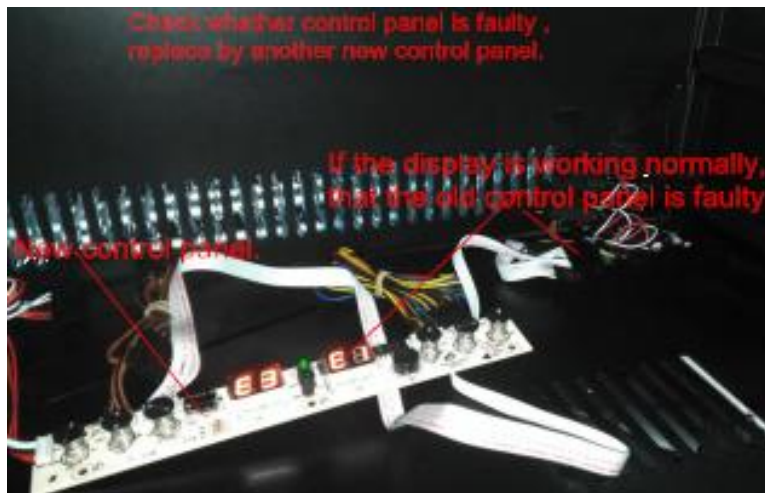
2. Remove the connecting line box lid by removing the screw from the left side by phillips screwdriver.



3. Check the connecting line of 7P terminal if loose or broken

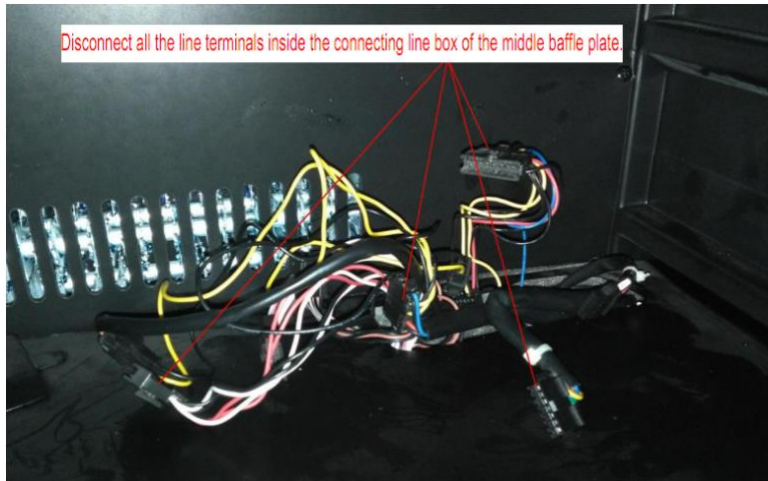


4. Check if the control panel is faulty, replace by another new control panel.
If the display is working normally, that means the old one is faulty.

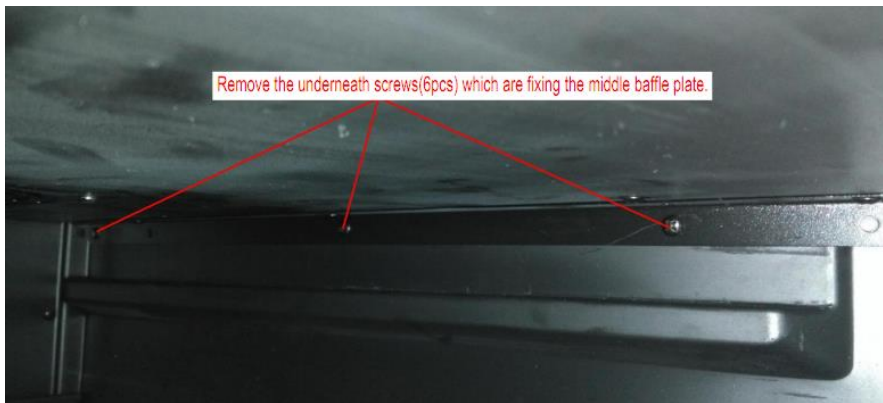


(3) Replacement of the control panel

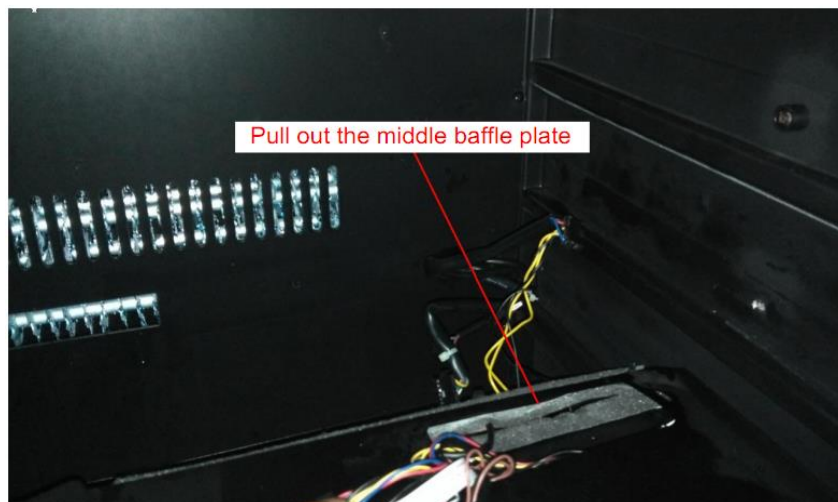
1. Disconnect all the line terminals inside the connecting line box of the middle baffle plate.



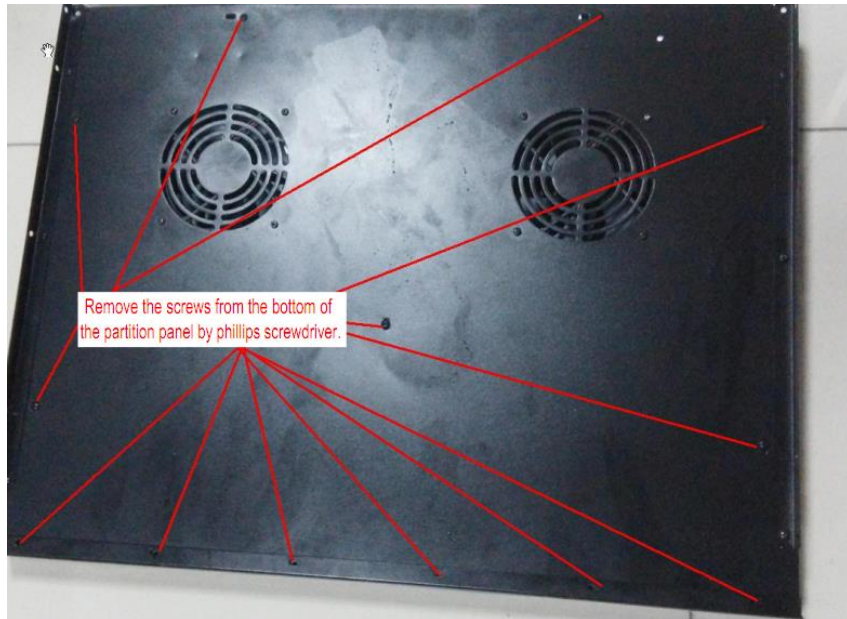
2. Remove the underneath screws (6pcs) which are fixing the middle baffle plate.



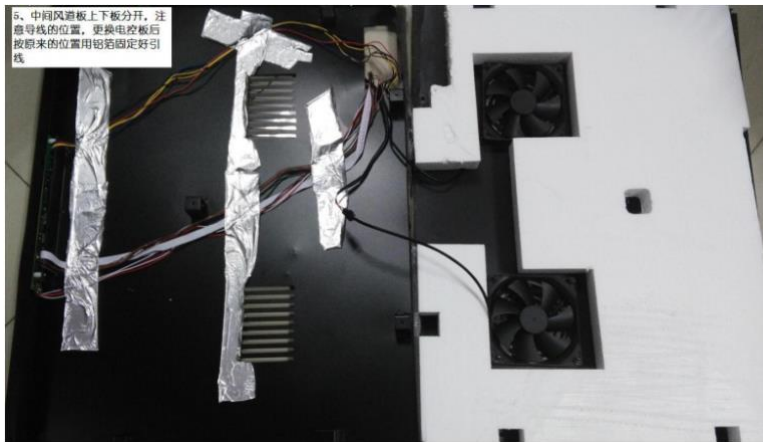
3. Pull out the middle baffle plate.



4. Remove the screws from the bottom of the partition panel by phillips screwdriver.



5. Divide the upper and the lower part of the middle baffle plate, observe that the position of the wires. After replacing the new control panel, then fix the wires by aluminum-foil paper as original position.



6. Remove the screws (3 pcs) which are fixing the control panel by phillips screwdriver.



7. Loosen the control panel, remove the screws (5 pcs) by phillips screwdriver, keep the

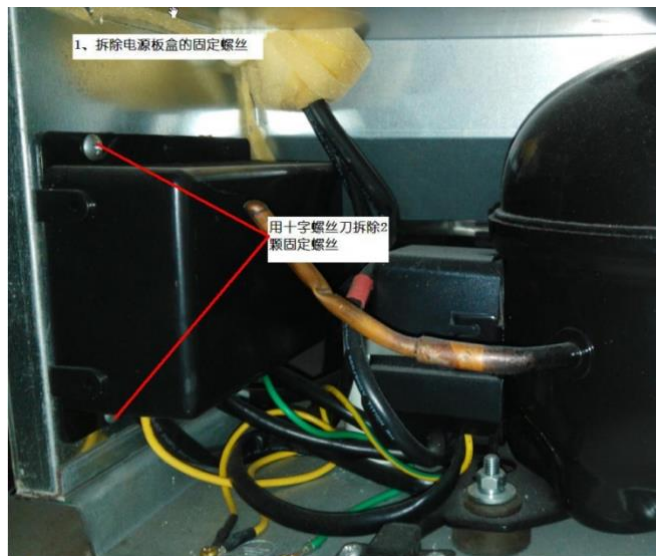
small hose sideward.



After fixing, Install the middle baffle plate components in the reverse order of the dissembling procedures.

(4) Replacement of the power board (Power board is inside of the compressor cabin)

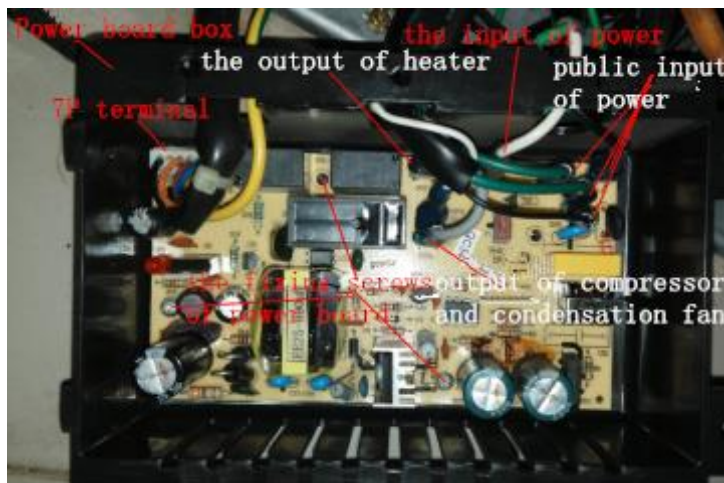
1. Remove the fixing screws (2 pcs) of the power board by phillips screwdriver.



2. Remove the power board box lightly by hand.



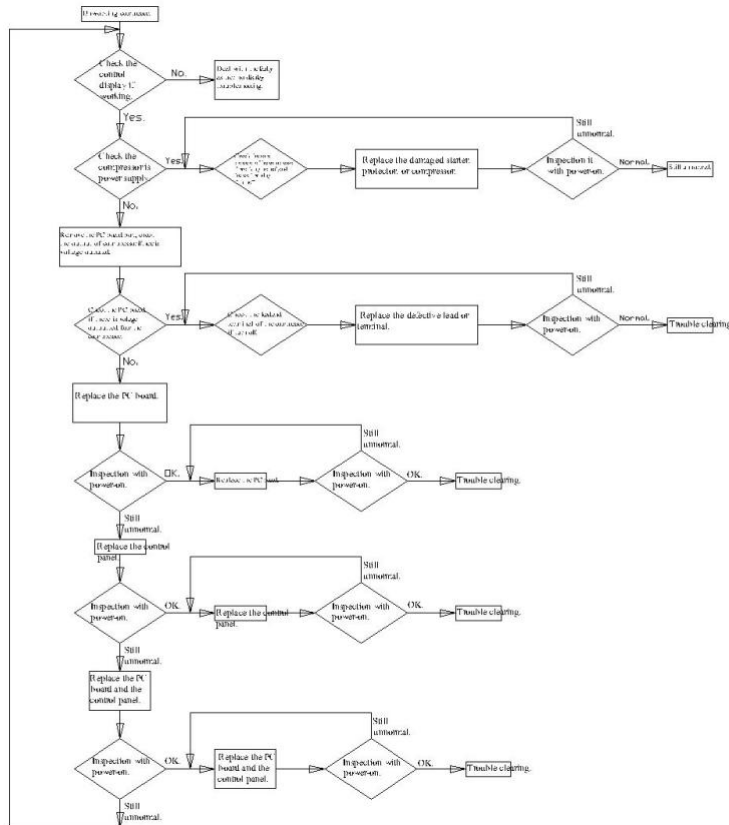
Power board box; 7P terminal; the output of heater; the input of power; public input of power; the fixing screws of power board; the output of the compressor and condenser fan.



2. Incomplete display or other display fault. Replace the control panel as the disassembling method, check if it normally displays after assembling.

3. The Compressor is not working. If the inside temperature is higher than the setting temperature 3°C above, and the compressor does not appear to be working.

(1) Please refer to the clearance procedures below:



The compressor is not working.

Check the control panel display if it is working. → No. → Deal with the fault as per display fault troubleshooting procedure.

If Yes. → Check the compressor is power supply or not. → Yes. → Check the starter, protector of the compressor if working normally or not and the coil winding if short-circuited.

→ Replace the damaged starter, protector, or compressor.

→ Inspect it with power-on. → Normal. → Trouble clearing.

If not → Remove the PC board box, and check the output of compressor if there is voltage output.

→ Check the PC board if there is voltage output from the compressor. → Yes. → Check the lead and terminal of the compressor if turnoff.

→ Replace the defective lead or terminal. → Inspection with power-on. → OK. → Trouble clearing.

→ If not. → Replace the PC board.

Inspection with power-on. → OK. → Replace the PC board.

→ Inspection with power-on. → OK. → Trouble clearing.

→ If not, → Replace the control panel.

→ Inspection with power-on. → OK. → Replace the control panel.

→ Inspection with power-on. → OK. → Trouble clearing.

→ If not, → Replace the PC board and the control panel.

Inspection with power-on. → OK. → Replace the PC board and the control panel.

→ Inspection with power on. → OK. → Trouble clearing.

(2) Disassembling of the connecting line and the terminal for the compressor.

1. Prize up the buckle from the connecting line box of the compressor by

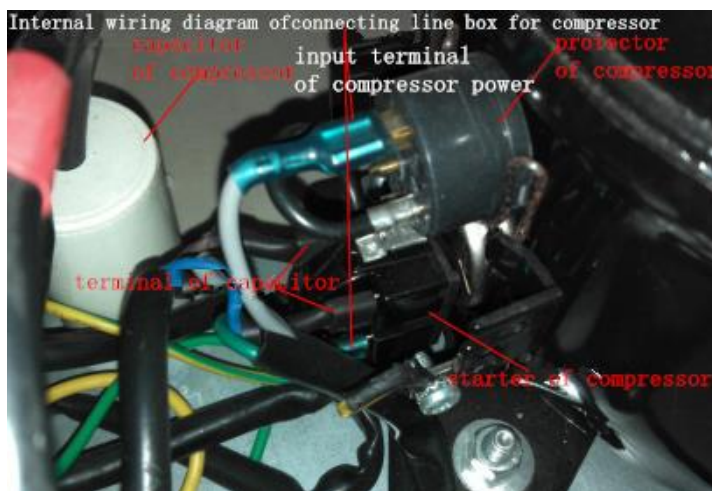
screwdriver.



2. Remove the connecting line box slightly pressing by hand.

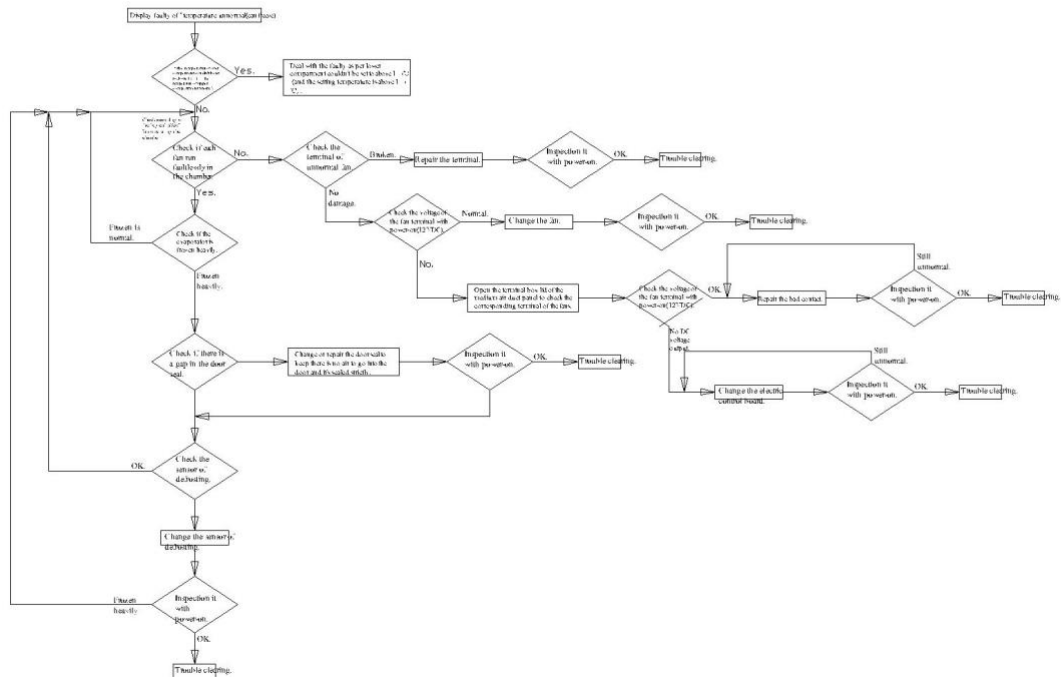


3. Internal wiring diagram of the connecting line box for the compressor.



4. Abnormal fault for the Controlling temperature: If the temperature is differed by 4°C from the setting temperature when cooling, that means it is faulty. Usually it is caused by the fault from the broken sensor, or the heater or the fan.

(1) Please refer to the clearance procedures below:



Display fault of the temperature (can cooling)

If the temperature of the lower compartment couldn't be set to 15°C above, and the temperature of the upper compartment is normal?

→Yes. → Deal with the fault as per lower compartment couldn't be set to 15°C above (and the setting temperature is 15°C above).

→If No. →Check according to the logical table of fan operating in the compartment.

Check if each fan run normally in the compartment.

→No. → Check the terminal of the abnormal fan.

→① Broken. → Repair the terminal. → Inspect it with power-on. →OK. →Trouble clearing.

→②No damage. → Check the voltage of the fan terminal with power-on(12VDC). →Normal.→ Change the fan. → Inspect it with power-on. → OK.→ Trouble clearing.

→③No. → Open the terminal box lid of the middle baffle panel to check the corresponding terminal of the fans. → Check the voltage of the fan terminal with power-on(12VDC). →Normal →Repair the poor contact. →Inspect it with power-on. →OK. → Trouble clearing.

→④No DC voltage output. →Change the electric control board. →Inspect it with power-on. →OK. →Trouble clearing.

Check if the evaporator is frozen heavily. (Frozen is normal)

Frozen heavily

Check if there is a gap in the door seal. →Change or repair the door seal to keep there is no air to go into the unit and it's sealed strictly. → Inspect it with power-on. →OK. →Trouble clearing.

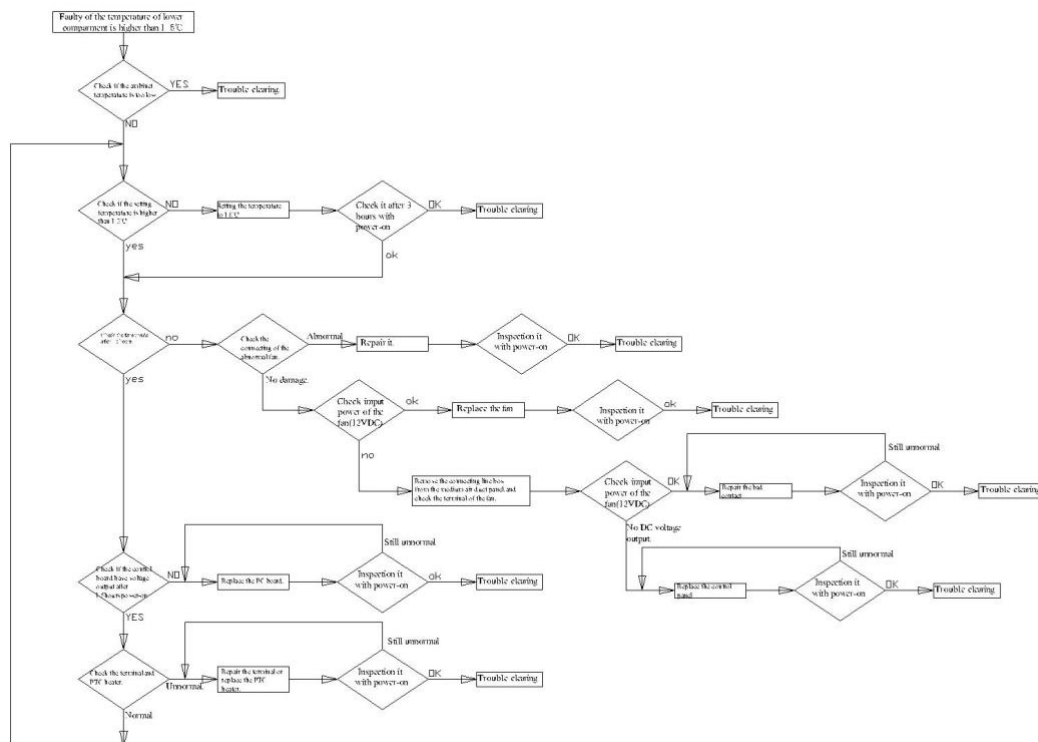
Check the sensor of defrosting. →OK.

Change the sensor of defrosting. →Inspect it with power-on (Frozen heavily). →OK. →Trouble clearing.

(1) The temperature of lower chamber cannot reach 15°C above (setting temperature 15°C above), please refer to the clearance procedures below:

Remark: (a) if the temperature of the lower chamber differs by 3°C above from the setting temperature, and it holds for more than 3 hours (full wine loading after switching on the unit overnight, then recheck the temperature), that means abnormal temperature and need to be inspected;

(b) When the ambient temperature is very low (For example: ambient temperature is 0°C), the temperature of the unit inside appear to be abnormal, but it is normal that it cannot reach 15°C above when the ambient temperature is very low.



Fault of the temperature of lower chamber is lower than 15°C.

Check if the ambient temperature is too low.

→Yes. → Trouble clearing.

If No. →Check if the setting temperature is higher than 15°C.

→No. → Setting the temperature to 18°C. →Check it after 3 hours with power-on. →OK. → Trouble clearing.

If Yes. →Check the fans if working normally inside after 1.5hours. →No. →Check the connecting terminal of the abnormal fan.

→①Abnormal. →Repair it. → Inspection it with power-on → OK. →Trouble clearing.

②No damage. →Check the input power of the fan (12VDC) → OK. →Replace the fan. → Inspect it with power-on. → OK. →Trouble clearing.

③No.→ Remove the connecting line box from the middle baffle panel, and check the terminal of the fan. →Check the input power of the fan(12VDC) → OK. →Repair the poor contact. → Inspect

it with power-on. → OK. →Trouble clearing.

④ No DC voltage output. →Replace the control panel. →Inspect it with power-on. → OK. →Trouble clearing.

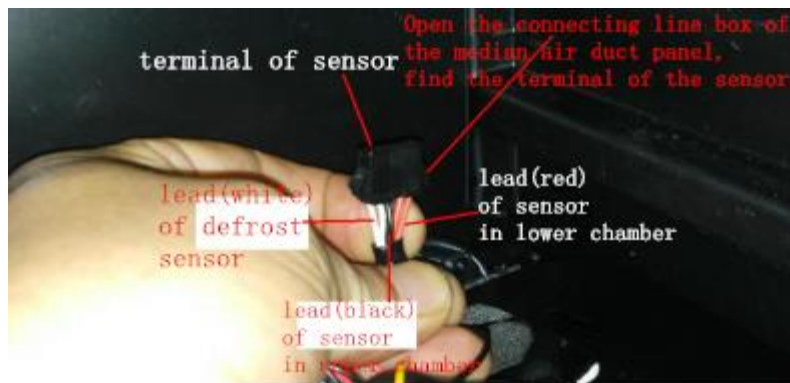
Check if the control board have voltage output after 1.5hours power-on →No. → Replace the PC board. → Inspect it with power-on → OK. →Trouble clearing.

Check the terminal and PTC heater. → abnormal. →Repair the terminal or replace the PTC heater. →Inspection it with power-on. → OK. →Trouble clearing.

(3) Check the resistance value of the sensor

Open the connecting line box of the middle baffle panel, find the terminal of the sensor component, check the resistance value of each connecting line by multimeter if it conforms with (or close to) the comparison table of temperature/resistance value. if the appliance is short-circuited or open-circuited, that means the sensor is broken, and it need to be replaced.

Terminal of sensor; lead (white) of defrost sensor; lead (black) of sensor in upper chamber; lead (red) of sensor in lower chamber



The comparison table of temperature/resistance value for the sensor

Temp	resistance value for the sensor
-21	48.7795
-20	45.9650
-19	43.3963
-18	41.0339
-17	38.8468
-16	36.8103
-15	34.9050
-14	33.1155
-13	31.4294
-12	29.8370
-11	28.3304
-10	26.9032
-9	25.5501
-8	24.2667
-7	23.0494
-6	21.8948
-5	20.8000
-4	19.7624
-3	18.7794
-2	17.8487
-1	16.9680
0	16.1350
1	15.3475
2	14.6032
3	13.9001
4	13.2359
5	12.6086
6	12.0161
7	11.4563
8	10.9272
9	10.4268
10	9.9534

Position of the sensors:

The position of sensor for the upper chamber



The position of sensor for the lower chamber



(2) Replace the sensor: Please replace a new one when the sensor is sure to be broken.

1. Remove the fixing screws (2 pcs) of the sensor box cover by phillips screwdriver.



2. Disconnect the line of the broken sensor by a scissors, then replace a new sensor for lead connection, then bind up by tape.



3. Put the new sensor into the neck of sensor box



4. Fix the screws on the original position.

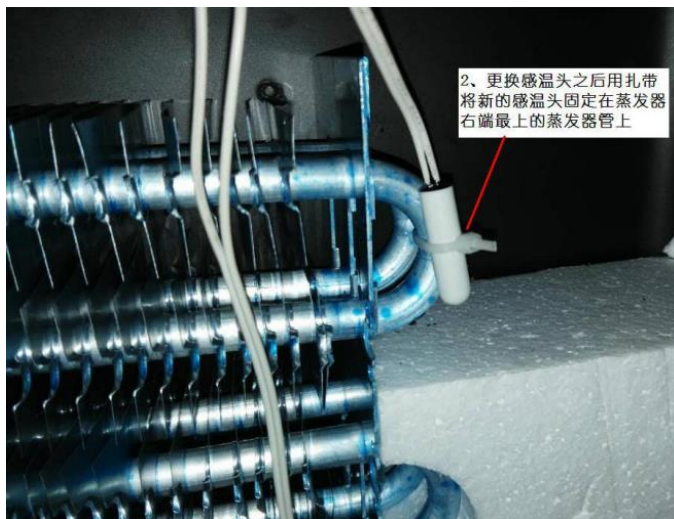


5. The replacement of the sensor of defrosting.

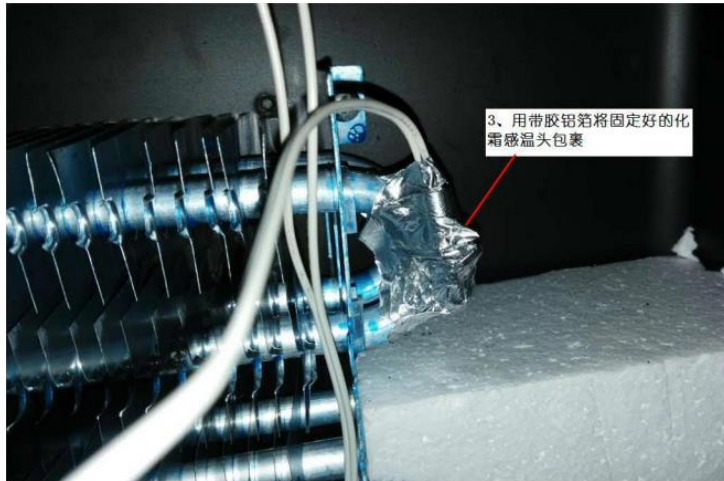
(1) Remove all the screws of the partition panel in the upper chamber.



(2) After replacing the sensor of defrosting, fix it to the top right evaporator tube with cable ties.



(3) Wrap up the fixed sensor of defrosting with the aluminum foil tape.



(4) Fix the screws in the partition panel.

5. The evaporator of the partition panel is frozen.

This fault is caused by two problems.

(1) There is a gap in the door seal, please check it. If the door seal is out of shape, it could be repaired by the hair dryer. If it's broken, please change another new door seal.

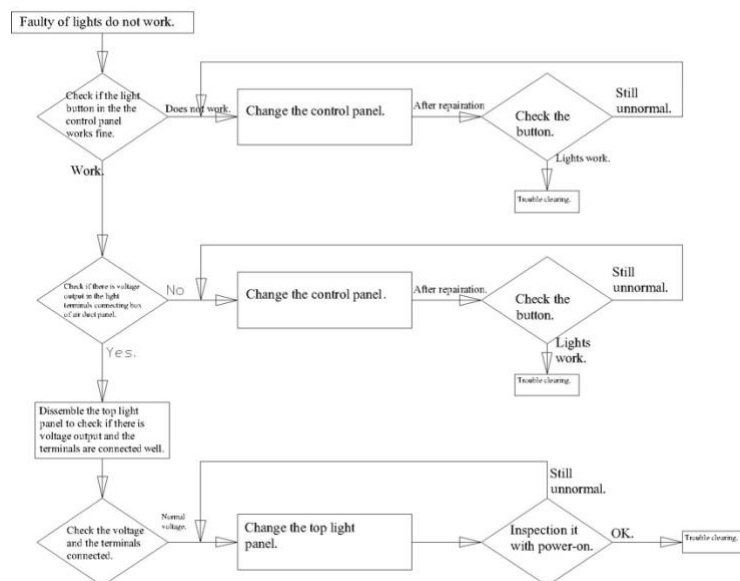
(2) The fault of the sensor of defrosting. Deal with the fault as per 4(2) to check and change the fault sensor of defrosting.

6. The lights do not work:

(1) Refer to the clearance procedures below:

If individual light does not work, please disassemble the lamp panel, change the bad LED light, or change the lamp panel. If all the lights in one side or two sides do not work, please check the light circuit.

(2) Inspection Procedures about light circuit.



Fault of lights do not work.

Check if the light button in the control panel works fine. → Does not work. → Change the control panel. →After fixing. →Check the button. →Lights work. →Trouble clearing.

→Check if there is voltage output in the light terminals connecting box of the middle baffle panel.

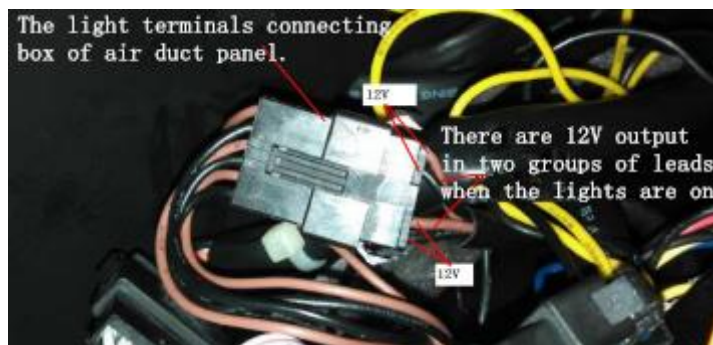
→No. →Change the control panel →After fixing. →Check the button. →Lights work. →Trouble clearing.

Disassemble the top light panel to check if there is voltage output and the terminals are connected well.

Check the voltage and the terminals connected. →Normal voltage.

→Change the top light panel. →Inspection it with power-on. →OK. →Trouble clearing.

(4) Disassembling and inspection for the relative components.



1. Use a straight screwdriver to open the light panel from the edge.



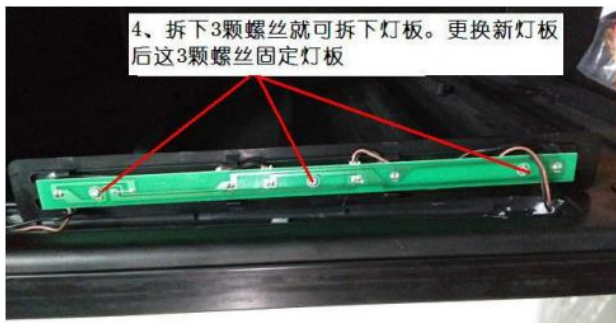
2. Open the whole light panel by hand.



3. Check with multimeter if there is 12V voltage in both terminals



4. Disassemble the screws (3 PCS) to remove the light panel, and use these 3 screws to fix the light panel after replacing with the new light panel.



5. Install the light cover panel in the reverse order of disassembling. Please flatten out the light

cover panel by hand.

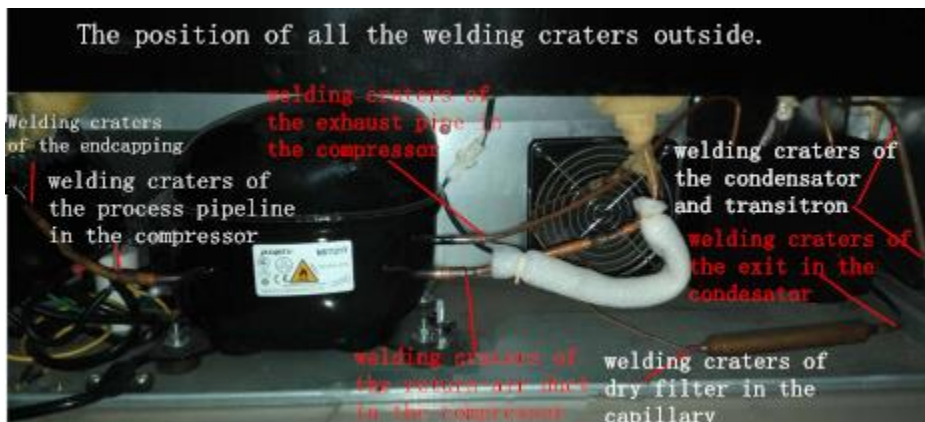


二、 Troubleshooting for cooling:

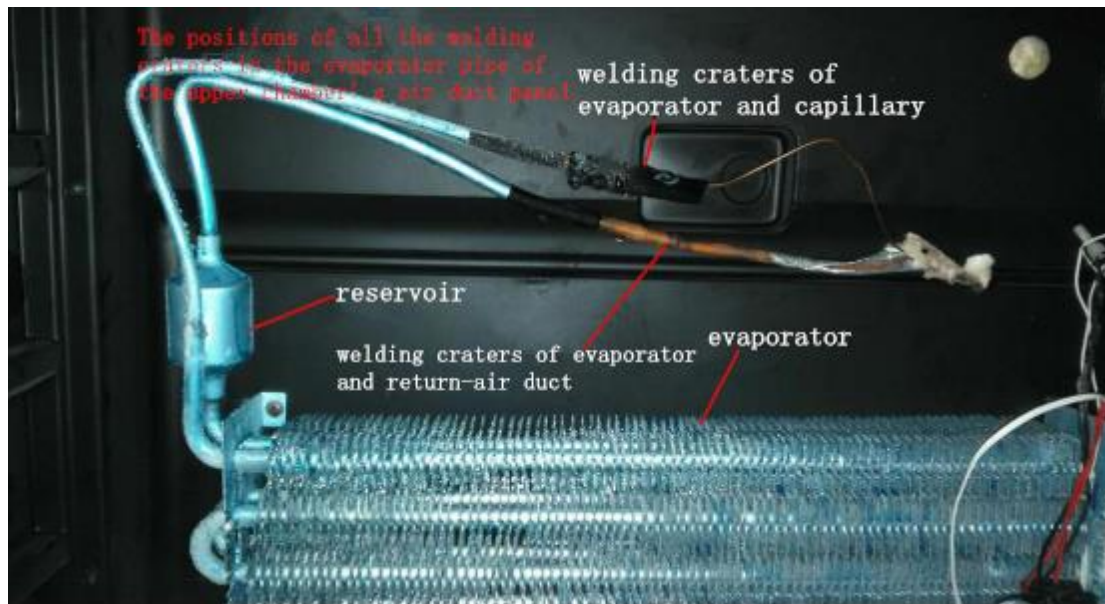
1. The pipe welding crater

(1) The position of all the welding craters outside

- Welding craters of the endcapping;
- welding craters of the process pipeline in the compressor;
- welding craters of the exhaust pipe in the compressor;
- welding craters of the return-air duct in the compressor;
- welding craters of dry filter in the capillary;
- welding craters of the condenser and transiron;
- welding craters of the exit in the condenser



The positions of all the welding craters in the evaporator pipe of the upper chamber's partition panel. Reservoir; welding craters of evaporator and return-air duct; welding craters of evaporator and capillary; evaporator



2. The judgement method of the fault of cooling system.

Check the power of the whole unit, you could judge it faulty when the power of compressor running is lower than 150W or higher than 280W.

3. Fault of cooling system are caused by the leakage of refrigerant or blockage in the ducts. Usually it's the blockage of capillary. It's caused by leakage of refrigerant when the power is very low. And it's the blockage of capillary when the power is very high (It will cause an overload protection in the compressor).

4. The checking of the refrigerant leakage.

(1) Cut off the endcapping, fully drained the refrigerant out in the duct.

(2) Weld a new endcapping.

(3) Pour 1.2Mpa dry nitrogen to the endcapping, check all the welding craters in the compressor chamber and evaporators of the partition plate with suds, so as to find the leaking welding crater.

(4) Braze the leaking welding crater after fully drained the nitrogen in the duct, replace a new dry filter. Check again by pour 1.2Mpa dry nitrogen to the endcapping and check all welding craters with suds to make sure it won't leak in all the leaking welding craters.

5. Checking of the blockage of the duct.

(1) Cut off the endcapping, fully drained the refrigerant out in the duct.

(2) Weld a new endcapping.

(3) Tip off the dry filter.

(4) Pour 1.2Mpa dry nitrogen to the endcapping, check if there is nitrogen blown out in the condenser exit and the capillary.

(5) If there is no nitrogen blown out from the condenser exit, it's because there is blockage in the welding craters of the exhaust pipe, the condenser and transitron or inside the condenser. Please check each welding craters to find the blockage, and re-weld the blocking welding craters or change

a new condenser. Replace a new dry filter after welding. Check again by pour 1.2Mpa dry nitrogen to the endcapping and check all welding craters with suds to make sure it won't leak or block in all the welding craters.

(6) If there is no nitrogen blown out in the entry of the capillary (the welding crater with the dry filter), it's because there is blockage in the welding craters of return-air duct in the compressor, evaporator and return-air duct, or the evaporator and capillary. Please check each welding craters to find the blockage, and re-weld the blocking welding craters or change the evaporator. Replace a new dry filter after welding. Check again by pour 1.2Mpa dry nitrogen to the endcapping and check all welding craters with suds to make sure it won't leak or block in all the welding craters.

(7) If there is nitrogen and pressure in the duct of the entry of capillary (the welding crater with the dry filter) or in the exit of the condenser, and it will spray out oil or water. It's because there is greasy or ice blockage in the duct. Please pour 1.2Mpa dry nitrogen to the endcapping continuously to flush out the oil or ice for over 8mins. Check if there is still oil or water or not after flushing. If yes, continue to flush till there isn't oil or water. If no, continue to flush for 5mins. Replace a new dry filter after flushing finished. Check again by pour 1.2Mpa dry nitrogen to the endcapping and check all welding craters with suds to make sure it won't leak or block in all the welding craters.

6. Refrigerant re-infuse

(1) Re-vacuumize the duct, vacuumize from the endcapping for over 30mins in reparation mode.

(2) Refrigerant re-infuse. Refrigerant from the endcapping in reparation mode, infuse 115g refrigerant. Check if the operating power of whole unit (check after 10mins power-on) is not higher than 190W.

7. Check the performance of the refrigeration

(1) Set the temperature of upper chamber 5°C, and the lower chamber 12°C. Check the temperature inside after running for 1.5 hours. It should reach the setting temperature range.