

Service Manual

For

WC Series Electronic Dual Temperature Zone Wine Cellar

JG Series Electronic Dual Temperature Zone Wine Cellar is including Model, including WC168D and WC100D.

The content below shows different default might happen when the wine cooler is working, and also shows how to find the defaults and repair the defaults. Please find the corresponding default statement and find the repair information in the corresponding pages.

Statement: (Fig.4) shows the correlative diagram Fig.4

Warning: before attempting any cleaning or maintenance this unit MUST be disconnected from the electrical supply, to prevent electrical shock

▲Preparation before maintenance

○ Tools

1. Pliers
2. Phillips head screwdrivers
3. Process pipe
4. Electrical Multi meter
5. Amp meter (5A) (caliper cable type)
6. Electrical soldering iron
7. Wire strippers
8. Seal pliers
9. Scissors

○ Equipment

1. Vacuum pump
2. Soldering iron for copper pipes

▲ Cooling system fault

- How to Evaluate the fault(→4)
- How to repair the fault(→4)
- How to remove the air duct board.....(→4)
- Diagram showing soldered joints(→6)

▲ Heating system fault

- How to Evaluate the fault(→6)
- How to repair the fault(→7)

▲ Noise problems

- Compressor noise.....(→8)
- Fan noise(→8)
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▲ Unstable internal Temperature(→11)

▲ Control system problems

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○ Sensor fault(→11)

○ How to replace the sensor.....(→11)

○ LED display fault.....(→12)

○ How to remove parts inside of electrical box.....(→12)

▲ Cooling system faults

○ How to diagnose faults:

It should take approximate 3 hours to reach the lowest setting temperature of 5°C for an empty unit (assuming ambient temp of 32 degrees centigrade and continuous operation). If not, check the compressor, cooling fans, controller, and sensors. If all these are working normally, there is probably a cooling pipe fault.

○ How to repair the default

1 . Check the compressor

Clip on the red electrical code with the forcipate ampmeter and check the current on the compressor. The rated current of the compressor should be higher than 2A and lower than 0.6A. If the curent is higher or lower, cut the drainpipe (See Fig.6 showing F) and the process pipe (See Fig.6 showing E). When the power is on, check the current, and whether there is obvious pressure. If the current is overloaded or not pressure., that means the compressor's fualt, and we need to change the compressor. Please noted, when the drainpipe and the process pipe is cut, the power should not turn on too long, in order to avoid absorbing the damp air.

2 . Check the cooling system pipe work:

When it is sure that the compressor is working normally and the cooling system's fualt is concentrating on the cooling system pipe.

1>. Cut off process pipe and check the refrigerant. If there is not enough refrigerant, the default of the refrigerant system should be caused by the leaking. If the refrigerant is sufficient., it is probably jamed in the capillary.

2>. If the default is concentrated on the cooling system, the checking procedure is as below.

a. Cut off the pipe of the compressor, and infuse 0.8-1MP nitrogen, and please put the hand close to the cut kerf. If there is a little gas leak form the terminal, it means normal, or it is jamed.

b . Make sure the capillary is working normally, when the drainpipe is connected again, and infuse 0.8-1MP nitrogen then test the leakage if the cooling system of the soldering point with the soap water. Check from the the soldering point around the compressor (Fig. 6), and if everything is ok, remove the air-duct board and check the soldering point around evaporator. See (Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5)

c. If all the soldering point in B is not leaking, there are two possibility, one is leakage in the inner condenser, another is the damage on the spare parts in the cooling system. If it is the inner damage, it can not be repaired, and if the damage on the spare parts, replace them

3>. Make sure there is no leakage in the cooling system, please refill the refrigerant.

3 . Refill the refrigerant:

1>. Using the vacuum pump form a vacuum in the system, via the joint of the low-pressure pipe, the high-pressure pipeline is on the process pipe of the drain filter. Apply the vacuum pump for approximately 20 minutes. Until the vacuum is lower than 100Pa. Then solder the drainpipe. Keep the vacuum running while soldering this joint

2>. Fill Cooling system with refrigerant via the process pipe. (The refrigerant is R134a. Regarding refrigerant quantity Please refer to the instruction at back label of wine cellar). Then solder the compressor process pipe after the system is charged with refrigerant.

4 . Running test:

Replace all the components after the procedures above and turn the unit on. To verify the effectiveness of the repair, monitor the unit the compressor should automatically stop within + or - 2.5 deg centigrade of the set temperature within approx 3 hours (assuming an ambient temperature of 32°C and the unit is empty).

○ How to remove the air duct board.

1>. Remove the shelves before removing the air duct board, there are two installation method of the shelves, fixing block installation and rail installation.

a. The fixing block installation dismantlement, flatly draw off the shelf to the corresponding indentation, and then upper the shelf and drag out of it. See (Fig. 1)

b. Rail installation shelf dismentle method: flatly draw off the shelf to the end, and then upper the shelf and drag out of it. See (Fig. 2)

Fig.1

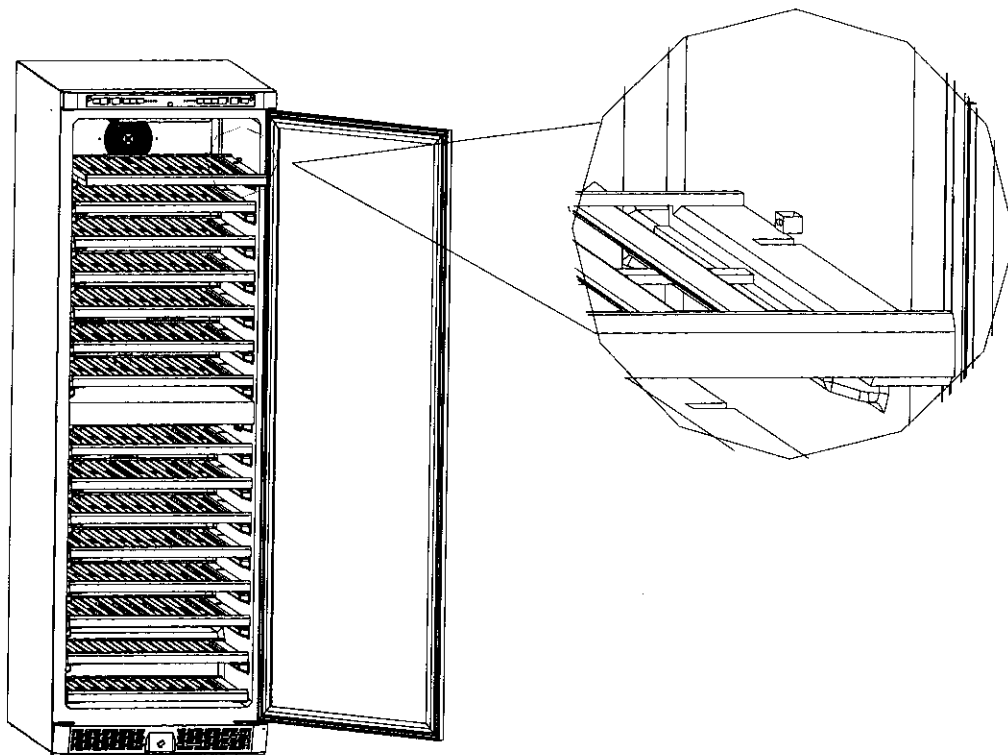
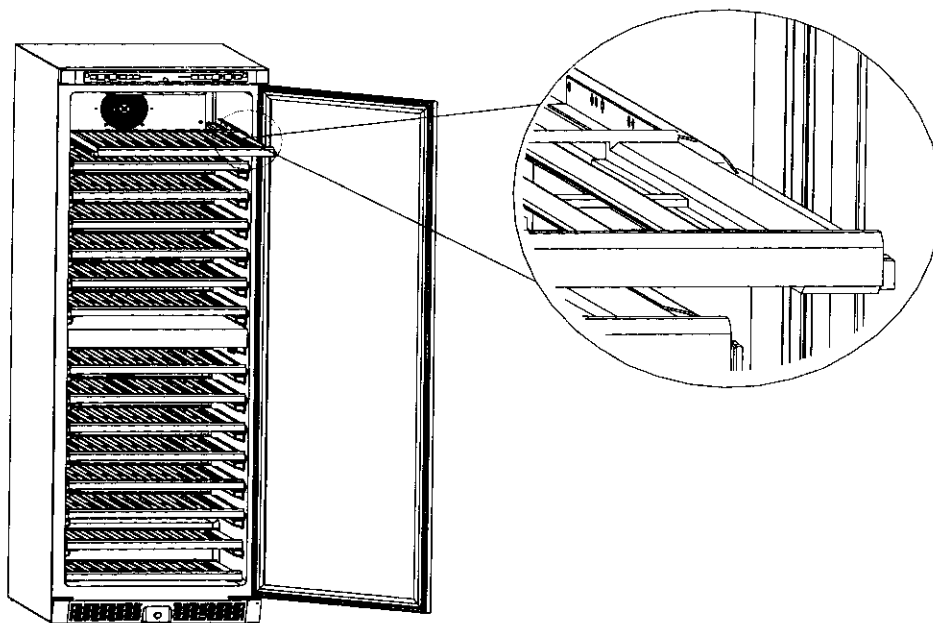


Fig.2



① How to remove the Middle air-duct board

- a. Remove the shelf, and remove the screw of the middle air-duct cover (the 4 screws of the lower cover and the back air-duct board, and remove the the 4 screws around the lamp cover.). See (Fig. 3) (Please noted: one the below diagram, the diagram on the right side is to describe the spare parts on the PCB board. If there is any similar situation, use the same method.)
- b. Unplug all the connector of the lamps in the middle air duct board, and unplug all the connectors in the air-duct board. And take off the foams from the from the middle air-duct panel.
- c. Remove the 8 pcs screw which fixing on the middle air duct board and pull out the board

② How to remove the rear air duct board.

- a. After removing the middle air board duct, screw off the fixing screw of the rear board. (except the air duct board fixing board in the amplificatory diagram). See (Fig. 4)
- b. Unplug all the connector and take off air duct board.
- c. the diagram after taking off the air-duct board is as below (Fig.5)

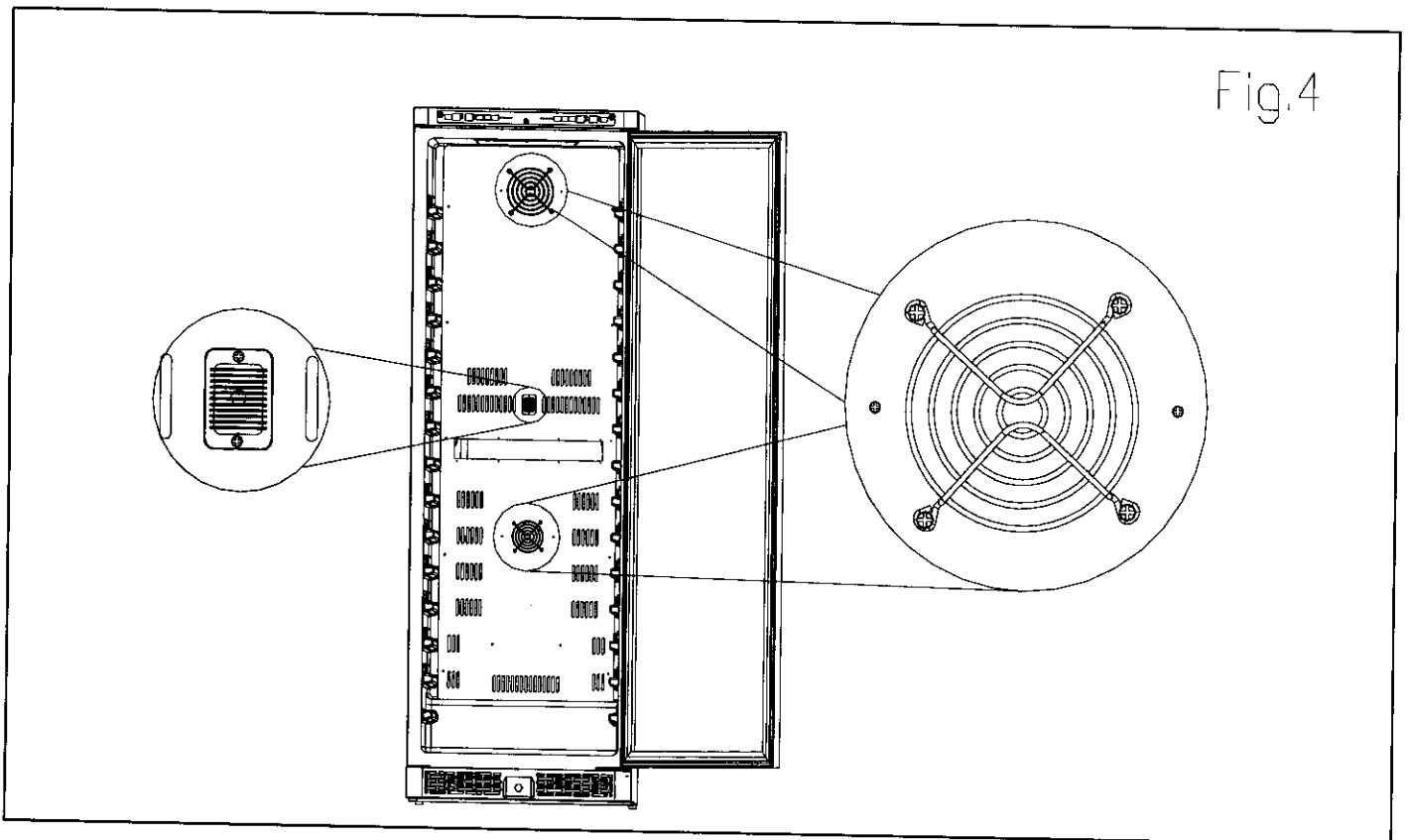
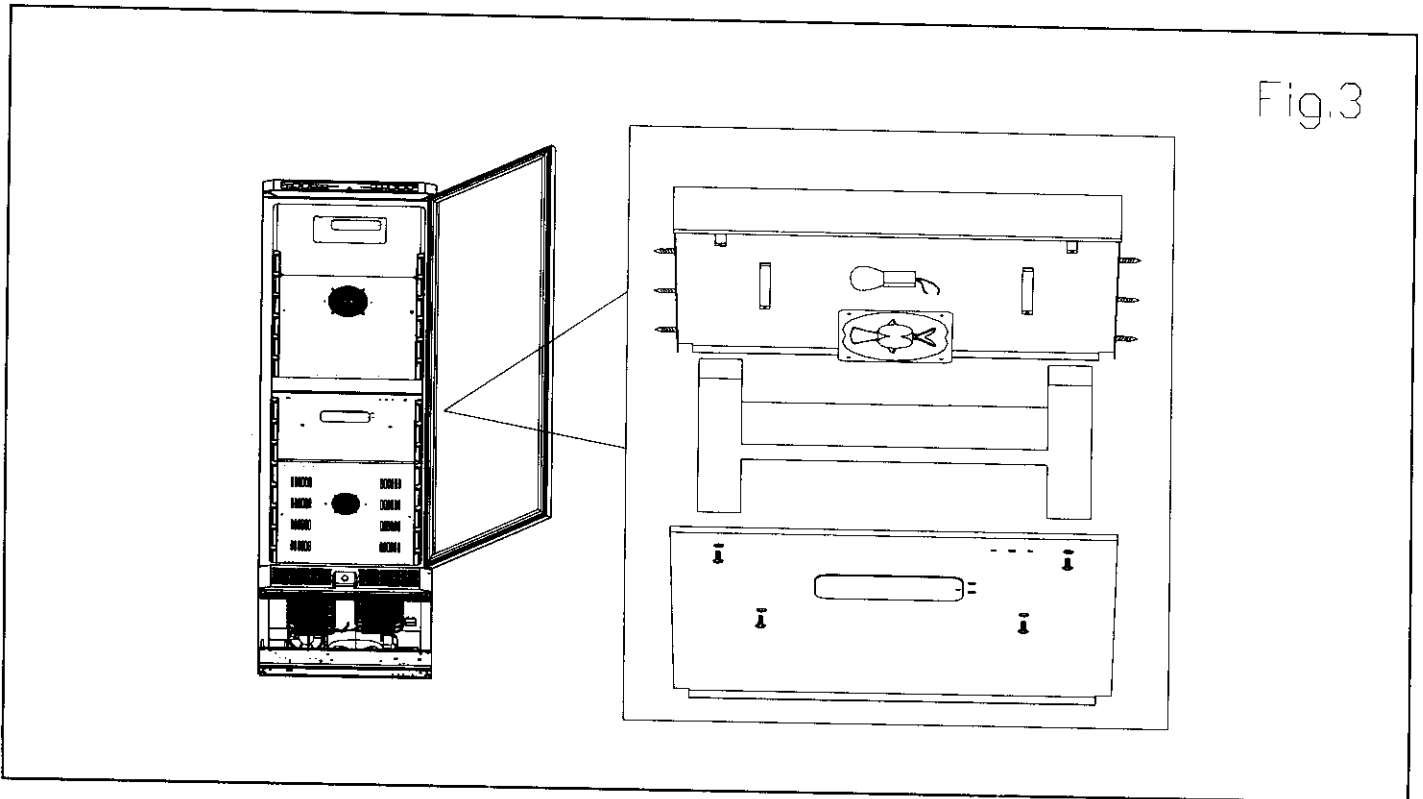


Fig.5

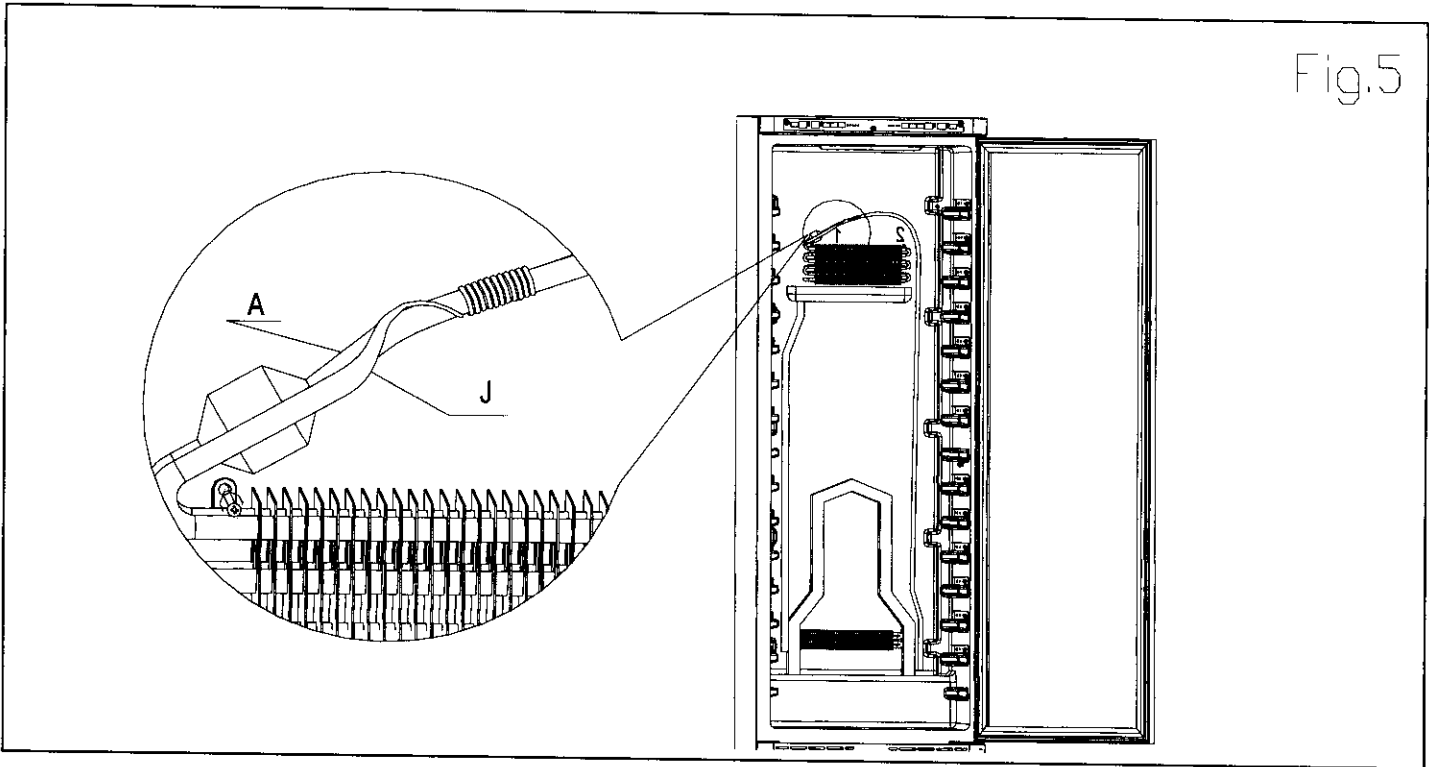
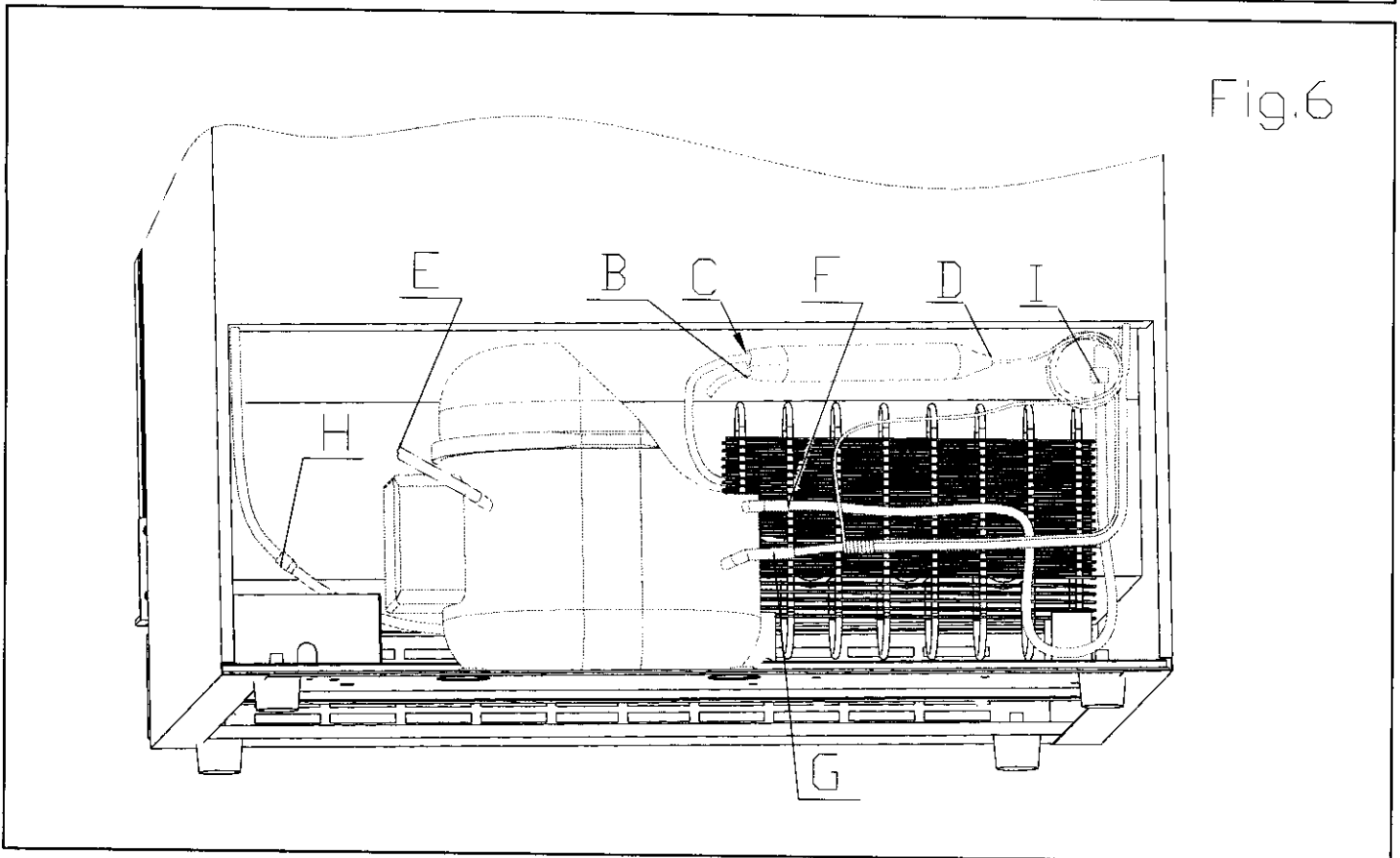


Fig.6



○ Solder conjunction distribution diagram (Fig.5) (Fig.6)

- A: Evaporator B: Dry filter seal pipe conjunction C: Dry Filter and dew clearance pipe conjunction
 D: Dry filter and capillary conjunction E: Compressor seal pipe conjunction F: Transition pipe conjunction
 G: Circulating pipe conjunction H: Dew clearance pipe conjunction I: Condenser and dew clearance conjunction
 J: Capillary

▲ Heating system faults

○ How to diagnose faults:

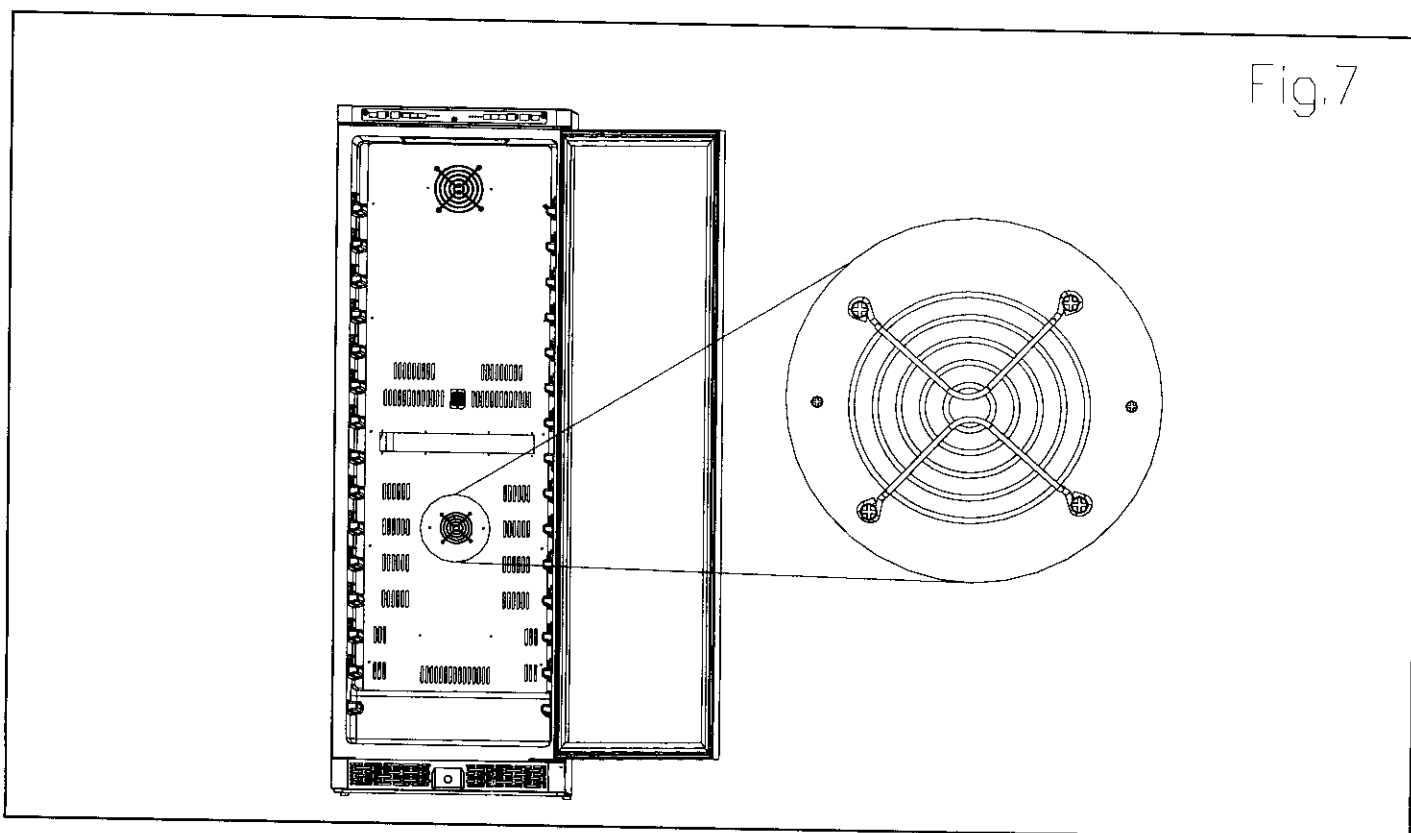
If the temperature of refrigeration compartment is (-2°C tolerance) lower than setting temperature for an empty unit (assuming ambient temp of over 0 degrees centigrade and continuous operation and normal temperature of the freezing

compartment), check the heater fan and PTC heater. If both are working normally, there is probably a heating system fault.

○ How to repair the fault:

1 . How to check the heater fan.

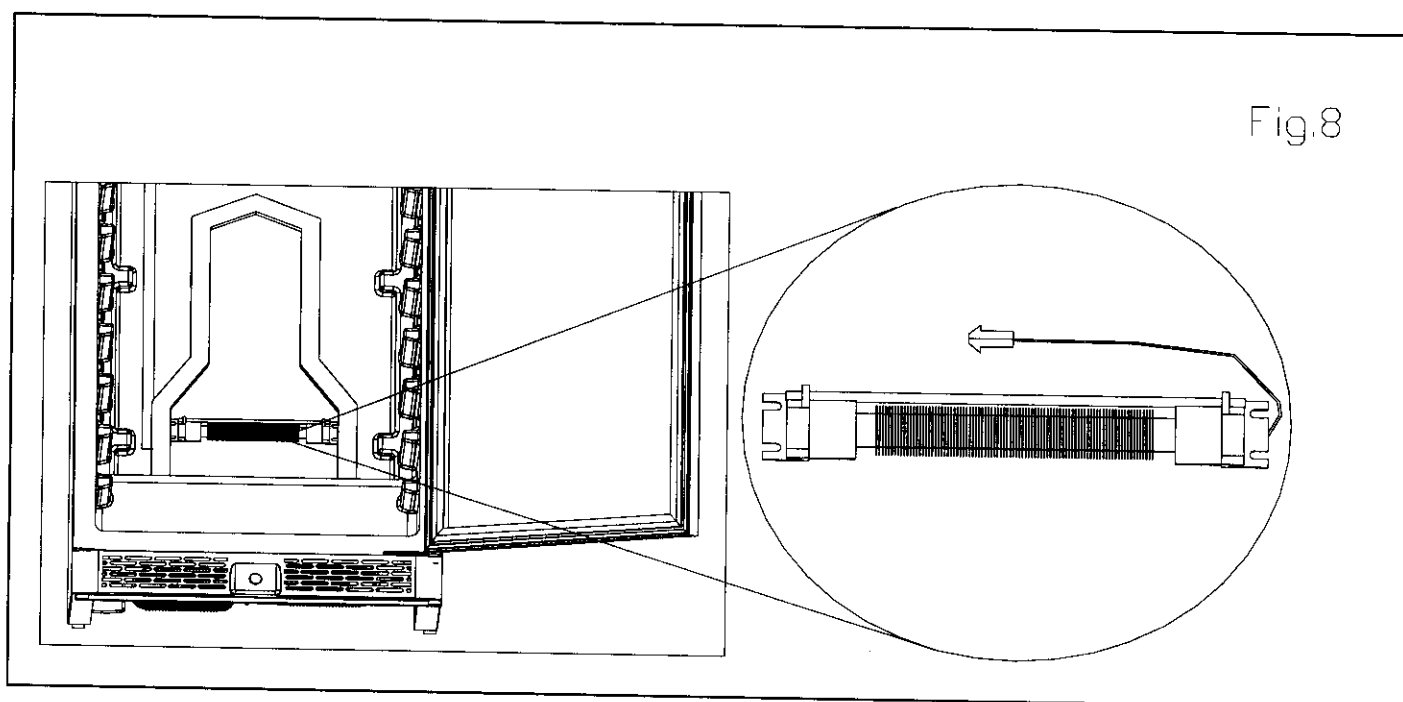
If the temperature of refrigeration compartment is lower than set temperature but heater fan does not function, after verifying no bad connections replace the fan unit (Fig.7)



2 . How to check the PTC heater

Check the resistance at both sides of PTC heater using a Multi meter; the reading should be approx 1.5 K Ω (assuming normal temperature), if open circuits, check the connector of PTC, if everything is ok, replace the PTC heater. See (Fig.8)

3 . If no fault in the fan or PTC heater, replace the control panel, see (Fig.14)



▲ Compressor noise

○ Compressor noise

1>. The working of motor and piston motion will cause noise when compressor working. So if noise is steady and not exceeds 42 dB, it's normal. If noise is not steady or very high, it's compressor fault and it should be maintained or replaced.

2>. If compressor's shock absorption rubber is hardening or damaged, or fixing screw of compressor is too tight or loose, it will cause noise. The settlement is to change new shock absorption rubber or adjust fixing screws.

○ Fan noise

1>. When the fans are running , the vanes are circumrotating rapidly and the air flows, which will cause steady and standard noise. The noise should not exceed 32dB and it is normal.

2>. If the noise is extremely high and abnormal, the cause maybe as below

a. The axis of the fan is broken

b The fan is broken and lost balance

3>. How to replace the fan

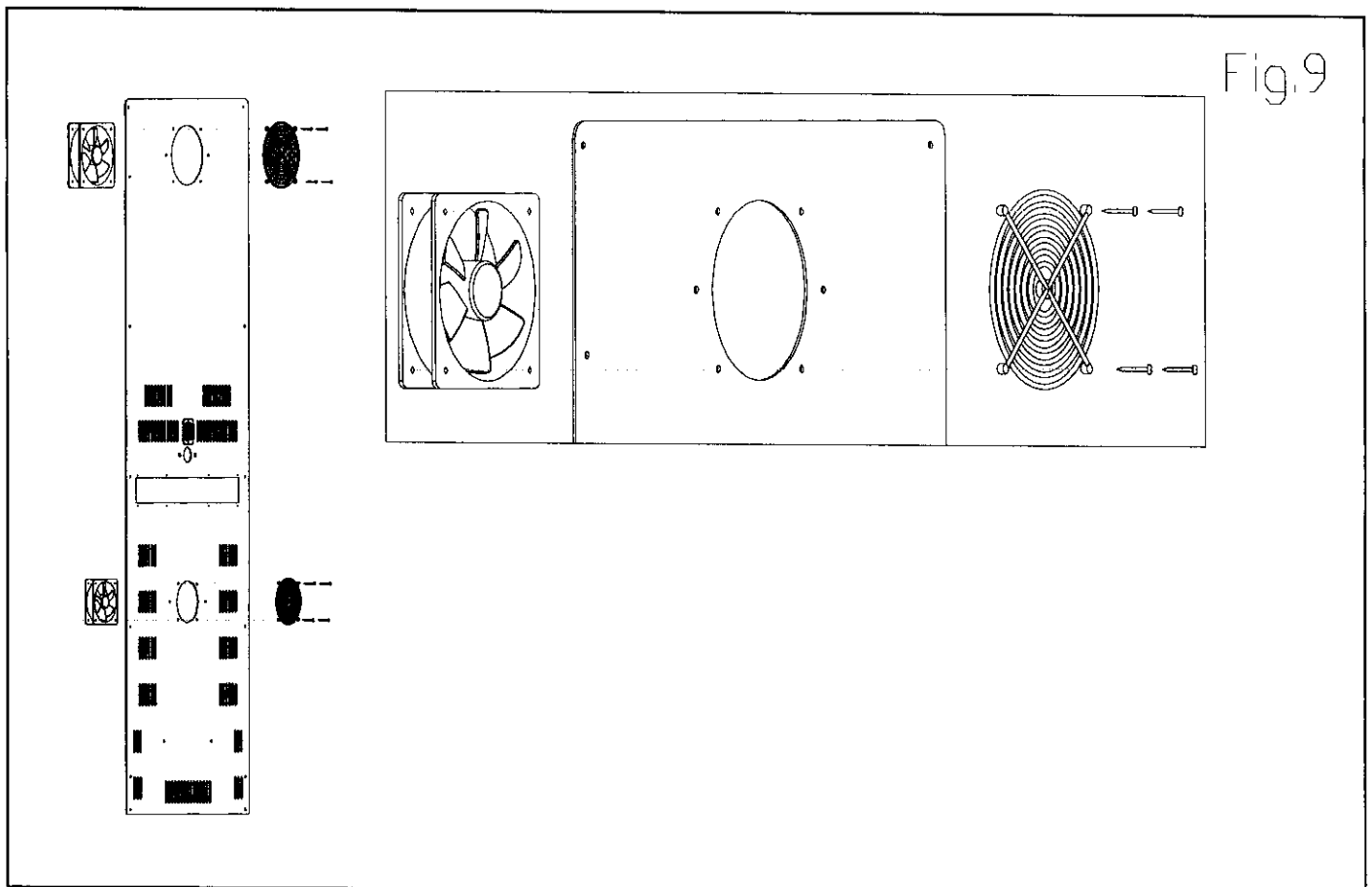
a. Replacement for evaporator fan and heater fan.

①, Remove the shelves. See (Fig.1)

②, Remove the electric box. See (Fig. 3)

③, Remove the air duct board. See (Fig. 4)

④, Remove screws , then replace the fan. See (Fig.9)



b. How to replace air circulating fan

Remove the middle air-duct board see (Fig.3), and remove the screws and replace the air circulating fan with the new one see (Fig10)

c. How to replace the condenser fan.(Please noted: According different model, the location of fan is different , but the installation method is same.)

①. Remove the spring (A), remove the compressor electrical box (B) . See (Fig.11).

- ②. Unplug the two terminals of the electrical code of the fan, and mark in the unplug position to avoid the wrong insatallation.(Please noted: the diagram below take “ZEL”brand compressor, the connection position is different according to different compressor, please mark them before unplugging).See (Fig.17)
- ③. Remove the two screws of the fan with the philips head screw driver (1.2.), and remove the condenser fans spare parts;See (Fig.11)
- ④. Remove the 4 fixing screw of the fan with the philips head screw and take off the fan, and replace it with the new fan. See (Fig.11)

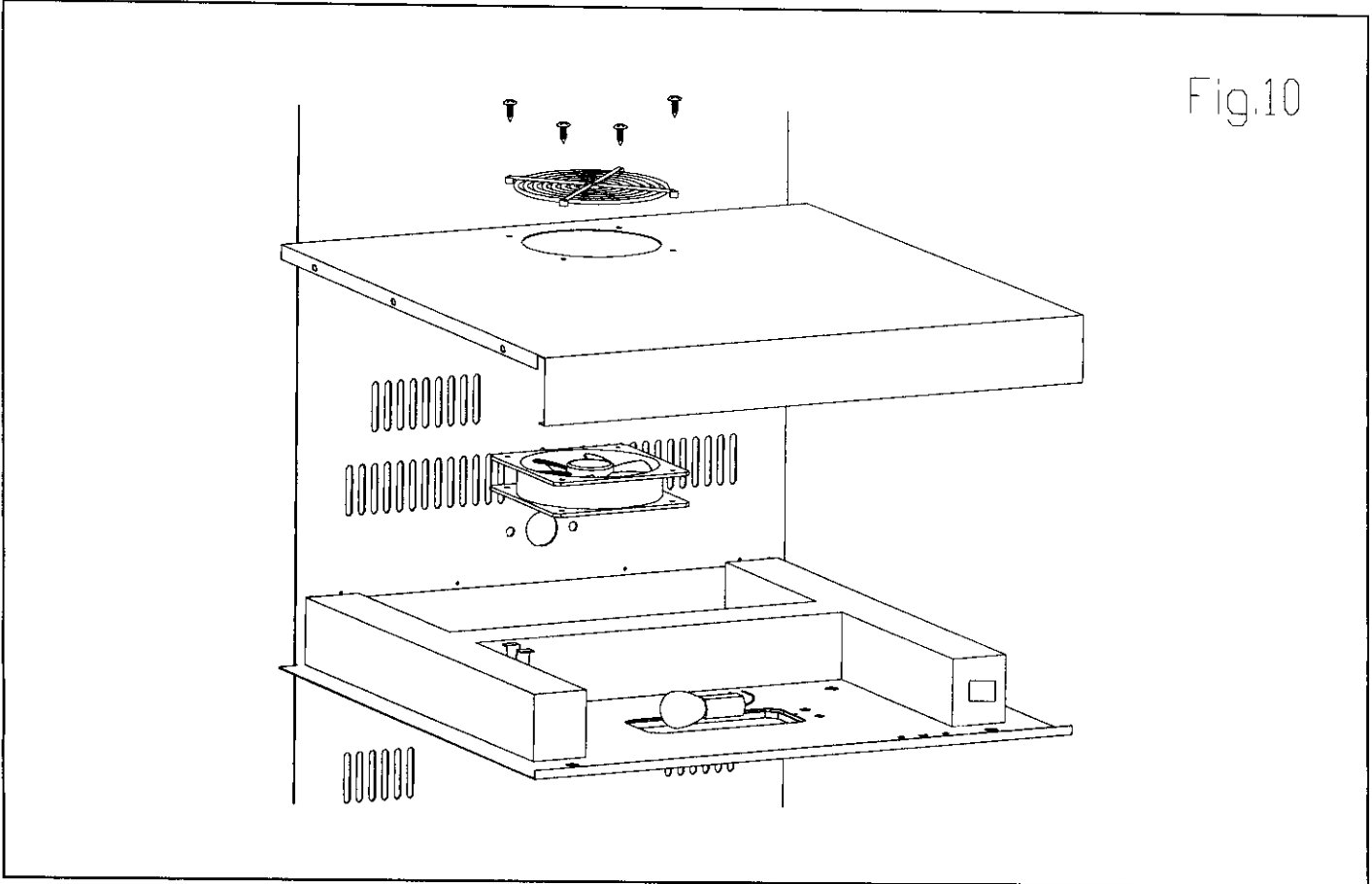


Fig.10

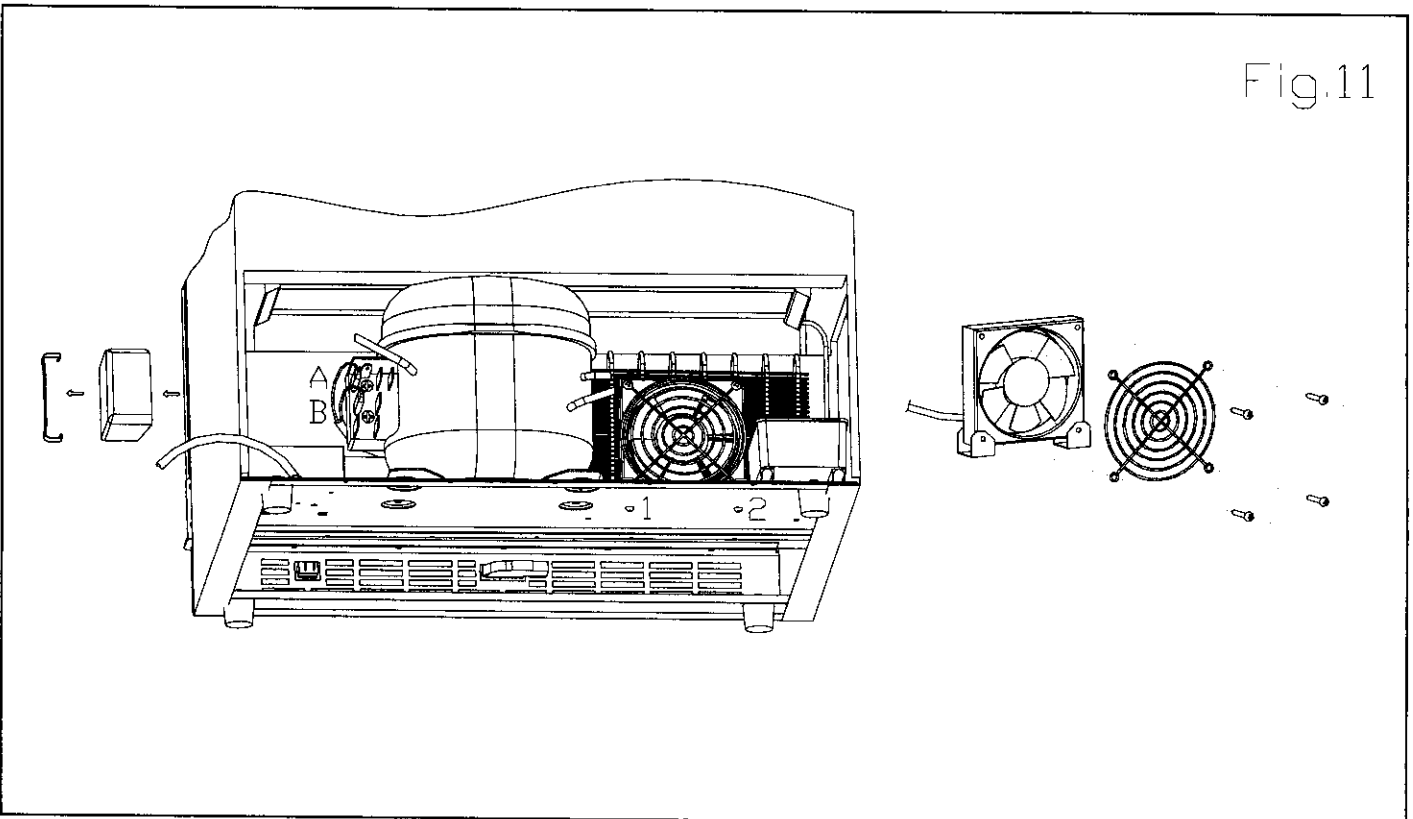


Fig.11

○ Refrigerant jet noise

Default: If there is continuous noise like a water spray from the capillary.

Reason: The end of the capillary is in the wrong position, or there are rough edges on the end of the capillary.

Solution:

- 1>. Heat the soldered joint of the capillary ("J" of Fig.5), then remove the capillary from the evaporator and smooth the end with rasp. (Caution: do not allow any particles into capillary)
- 2>. Insert the capillary into the evaporator, then solder it back into the correct position (not exceeding 15mm in the evaporator) and pack the joint with anti vibration compound
- 3>. Refill with refrigerant. See (Page3)

○ Capillary vibration noise

Default: High frequency impact noise in capillary.

Caused by either reason below:

- 1>. The capillary being insert too deep into the evaporator, so when the refrigerant is Jetting, the end of vibrating capillary will hit the inside of the evaporator.
- 2>. Vibration from the capillary touching the inside of the cabinet or air duct board, then when refrigerant is jetting.

Solutions:

- 1>. If the capillary is inserted too deep, heat it with the solder, and solder it again(Please noted, the deep inserted is not bigger than 15mm), and vacuumize it and refill the refrigerant. See (Page3).
- 2>. If the capillary touch the inner cabinet and the air duct panel, adjust the position of the capillary and add the anti vibration compound.

○ Oil jammed noise

Fault: intermittent and deep jet noise coming from inside of the capillary.

Cause: Compressor oil flowing into the cooling system pipe work probably due to the capillary slightly out of alignment during transportation.

Solution: Clean the cooling system pipe, vacuumize it and refill with refrigerant. See (page 3)

▲ Evaporator freezing

○ Because the door seal is not air-proof, or the door is not closed well, cause much water fill in the the cabinet, and the water got frozen when it encounter the cold air, sometimes the ice is too thick, and it will block the fan or broken the fan.

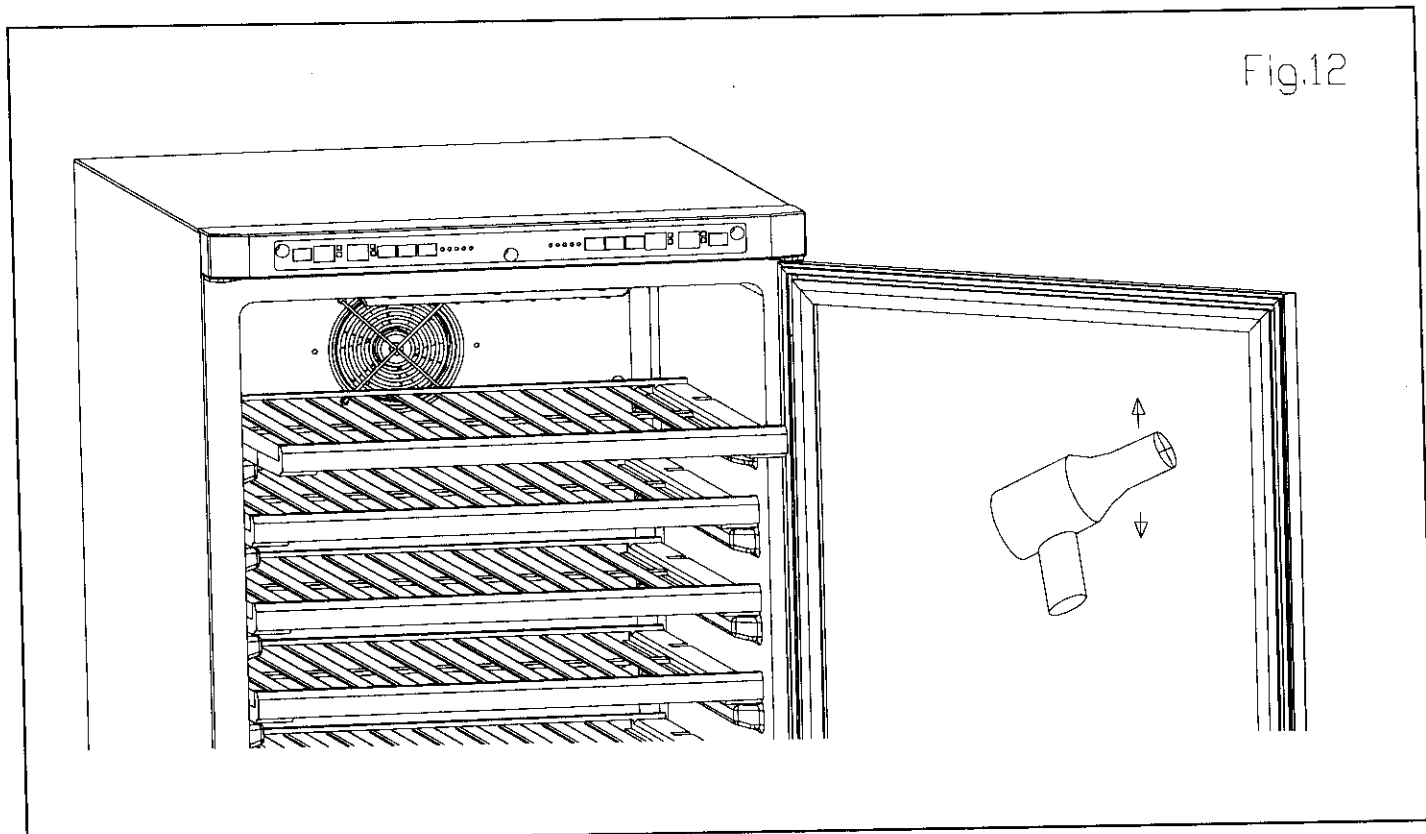
The solution:

1 >. Replace the door seal or close the door well. If the door seal is slightly not air-proof, it can be repaired by the heat dryer.

Aiming at the distortion of the seal with the heat dryer, and move up and down until it expand to the normal state. When it is cool, check it with the door closed, if there is any distortion, dry it again until it fix for the door. See (Fig.12)

2 >. If the fan is jamed broken serious. Replace the fan.See (Fig.9)

Fig.12



○ Fault finding by self-check mode

Because this series' wine cooler is electrical controlled, in order to maintain and repair the wine coolers.

There is self-check function in the PCB board. If there is any default of PCB system, please start the self-check system. The method is as below.

- 1 >. Press and hold "Set lower" and "Set upper" button with power on. 2 beeps will sound, and then the controller will start the self-check function
- 2 >. If everything is operating correctly, :
 - a. No response when pressing buttons.
 - b. LED only display 20°C if ambient temperature is over 20°C, and display actual temperature if ambient temperature is lower than 20°C.
 - c. The compressor works and the "RUN" indicator light are on all the time.
 - d. If the cooler has condenser and evaporator fans they should work at full speed; Heater and air cycling fans should work for 30 seconds alternately.
 - e. The switch controls the light functions normally.
- 3 >. If the situation fit for a~e statement, the spare parts are normal, if the control panel and the various components of the unit do not respond as above check the faulty part and relevant connection. If this does not cure the fault replace the control board. See (Page 4)
- 4 >. To return the control panel to its normal working mode unplug the unit and plug it in again
- 5 >. Only the new version control panel has a self-check mode.

○ Sensor's fault

- 1 >. The LED temperature display should the actual ambient temperature shortly after the unit is plugged in, if not, check if the connections are good in the electrical box. See (Page 4), check if the sensor plug is connected properly, if the connections are good and the fault persists replace the sensor.
- 2 >. If the LED displays "E1" indicates a freezing compartment sensor open circuit fault and the sensor should be replaced. See (Page 14)
- 3 >. If the LED displays "E2" indicates a freezing compartment sensor short circuit fault and the sensor should be replaced. See (Page 14).
- 4 >. If the LED displays "E3" indicates an evaporator sensor open circuit fault and the sensor should be

replaced. See (Page 14).

5 >. If the LED displays “E4” indicates an evaporator sensor short circuit fault and the sensor should be replaced. See (Page 14).

6 >. If the LED displays “E7” indicates a refrigeration compartment sensor open circuit fault and the sensor should be replaced. See (Page 15).

7 >. If the LED displays “E8” indicates a refrigeration compartment sensor short circuit fault and the sensor should be replaced. See (Page 15).

8 >. If the LED displays 37°C, this default only happen in the old model. Because the old machine use the old PCB board. If the sensor is broken, and the temperature will be infinity; as the PCB board is set maximum 99, and when the temperature exceed Fahrenheit 99(37°C). The solution is to find out the default sensor and replace it with the same model's. See (Page 14).

○ How to replace sensors

1 >. Evaporator sensor

The evaporator sensor is plugged into the fin of evaporator. Remove the air duct board to access the sensor plug (A) and unplug in the direction of the arrowhead. See (Fig.13), then unplug the other end of sensor from the X11 socket of the control panel, and replace it.

a. As for the sensor installed in the position A, firstly , remove the air-ducted panel ,see (Page 3), and loose the fixing screw, and take off the sensor. And then unplug another switch of the sensor from the switch X1 (Fig.4) in the PCB board.

2 >. How to replace the sensor in the cooling zone.

Use the tough material prop up the sensor part which is blocked in, and unplug the terminal connection, and replace it with the same model's sensor. See(Fig.14.)

3 >. How to replace the sensor of the refrigerator. The method is the same as the replacement of the refrigerator's sensor.

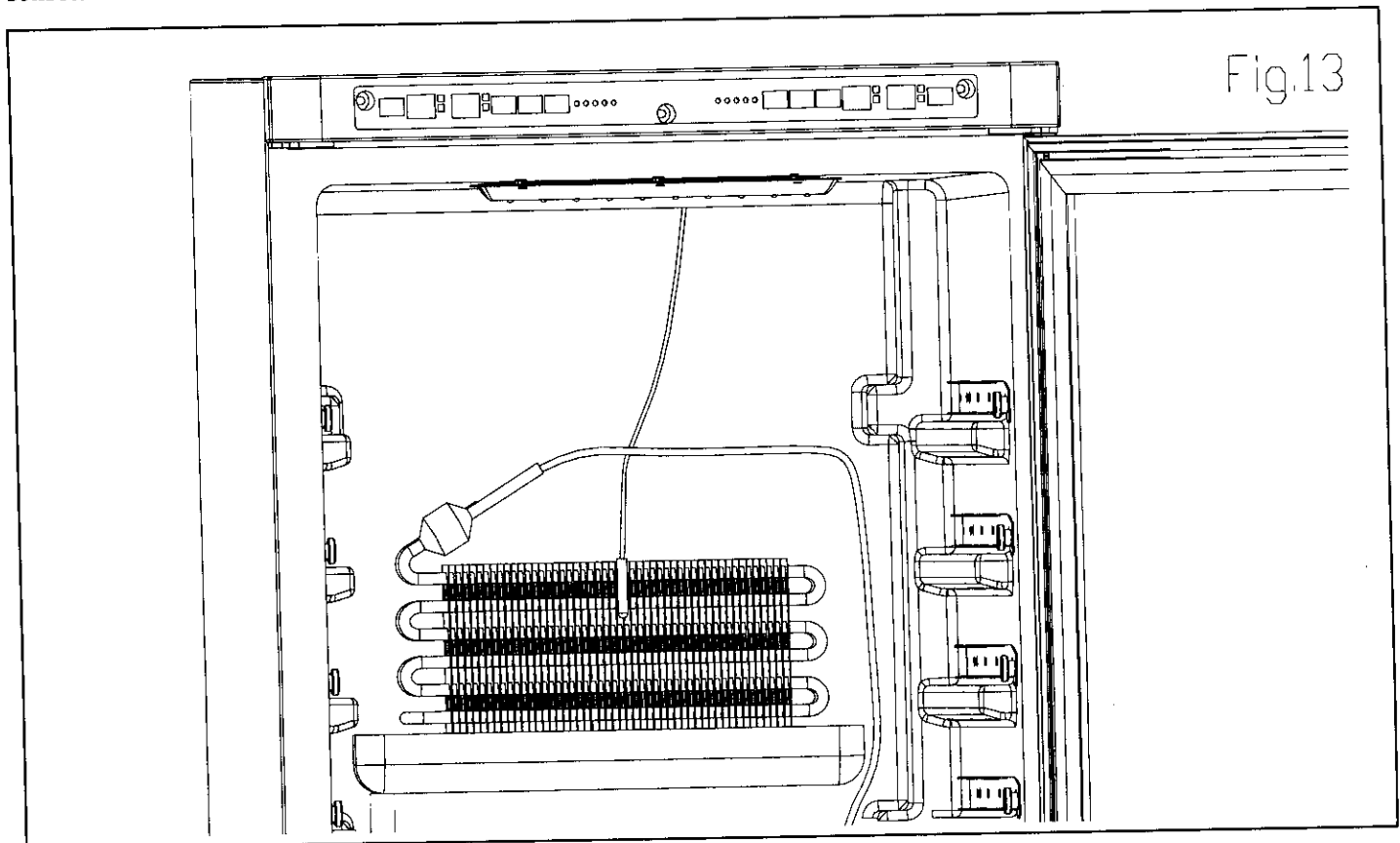


Fig.14

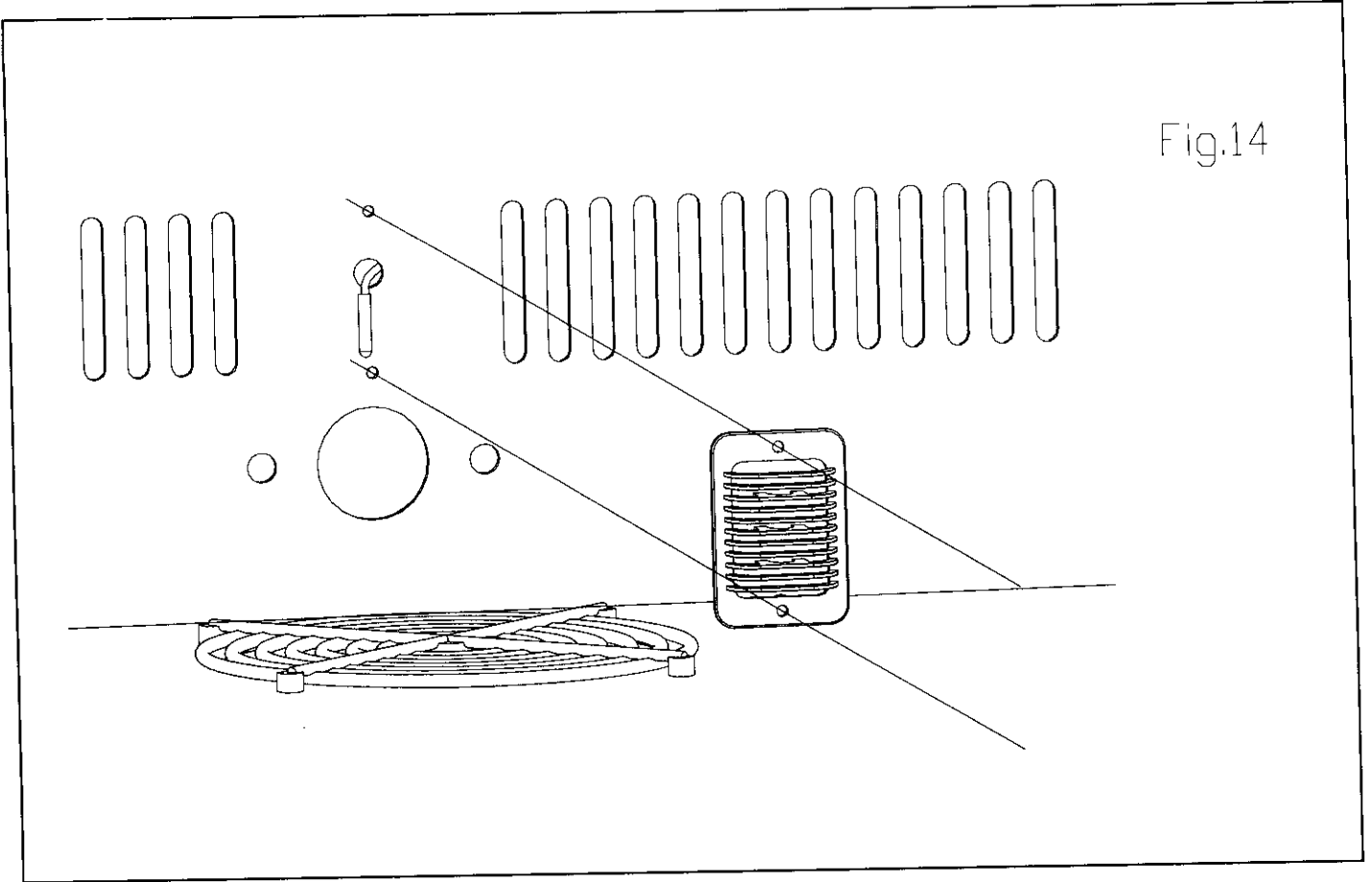
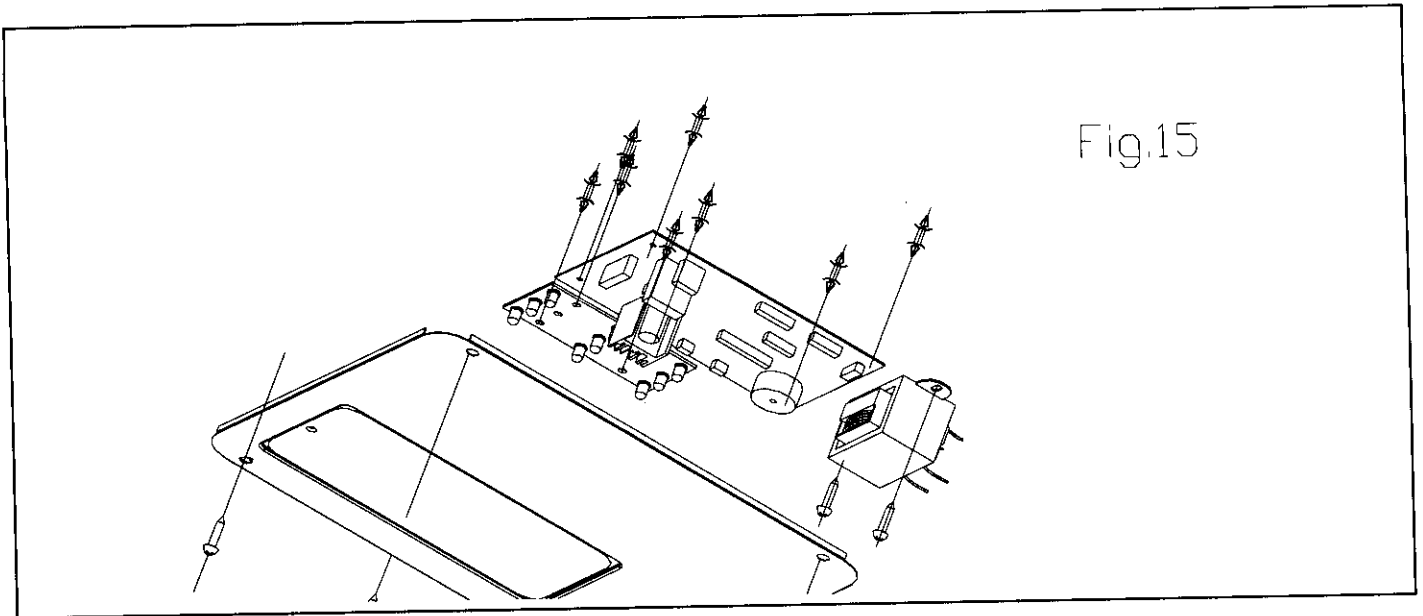


Fig.15



○ The digital display's fault

This malfunction is caused by the display panel's default, replace with the same model's display panel. See (Fig.25 & Fig.26).

○ The dismantlement method of the electrical box spare part.

1 >. How to dismantle the electrical box spare parts. See (Page 4).

a. Remove the upper and the lower zone's shelf, and remove the fixing screw (1, 2, 3, 4) with the philip head's screw driver. Take off the electrical board untill expose the whole PCB board. See (Fig.15) (Fig.18)

b. Unplug all the inserted spare parts, and press the four head of the studs (5), drag the PCB board downward, and replace it with the same model's PCB board. See (Fig.15)

c. Unplug the fixing screw of the two transformers. Take off the transformers (C) and replace them with the new one. See (Fig.15)

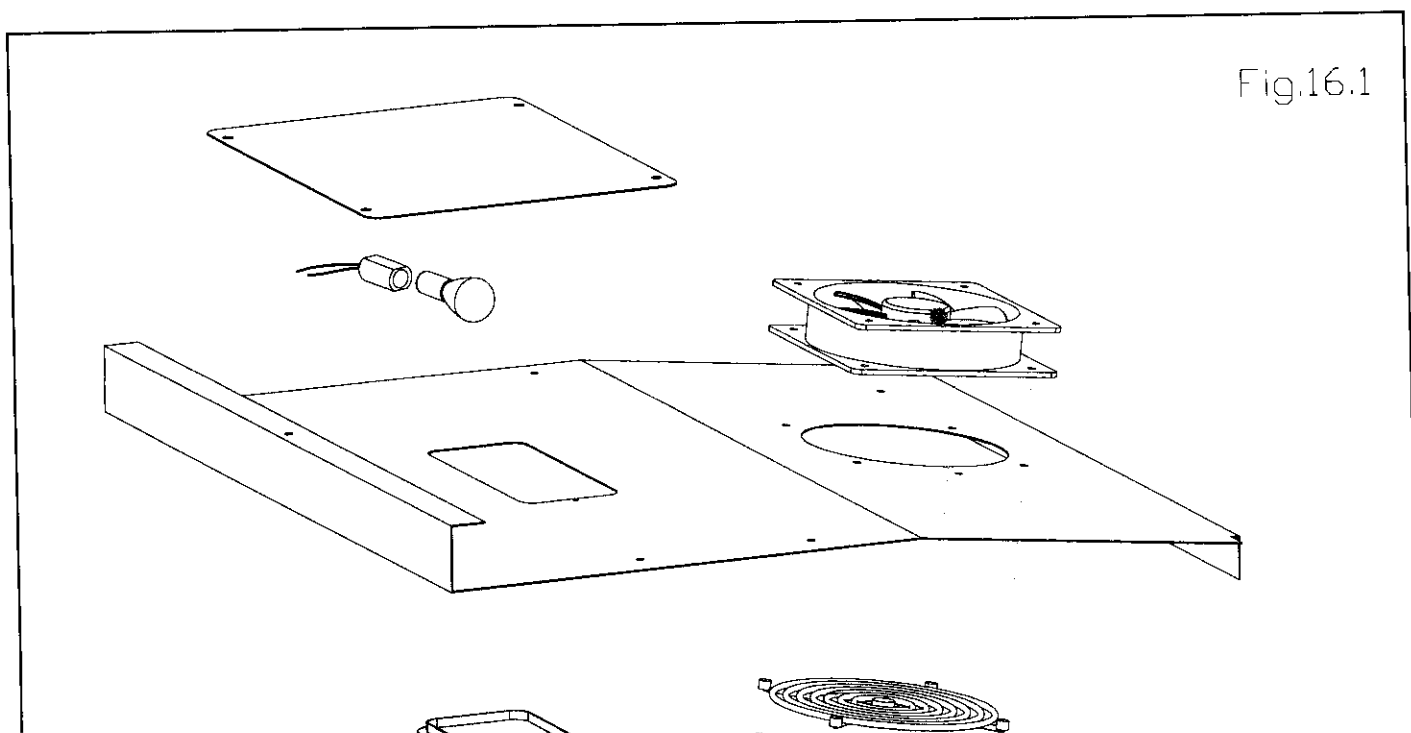
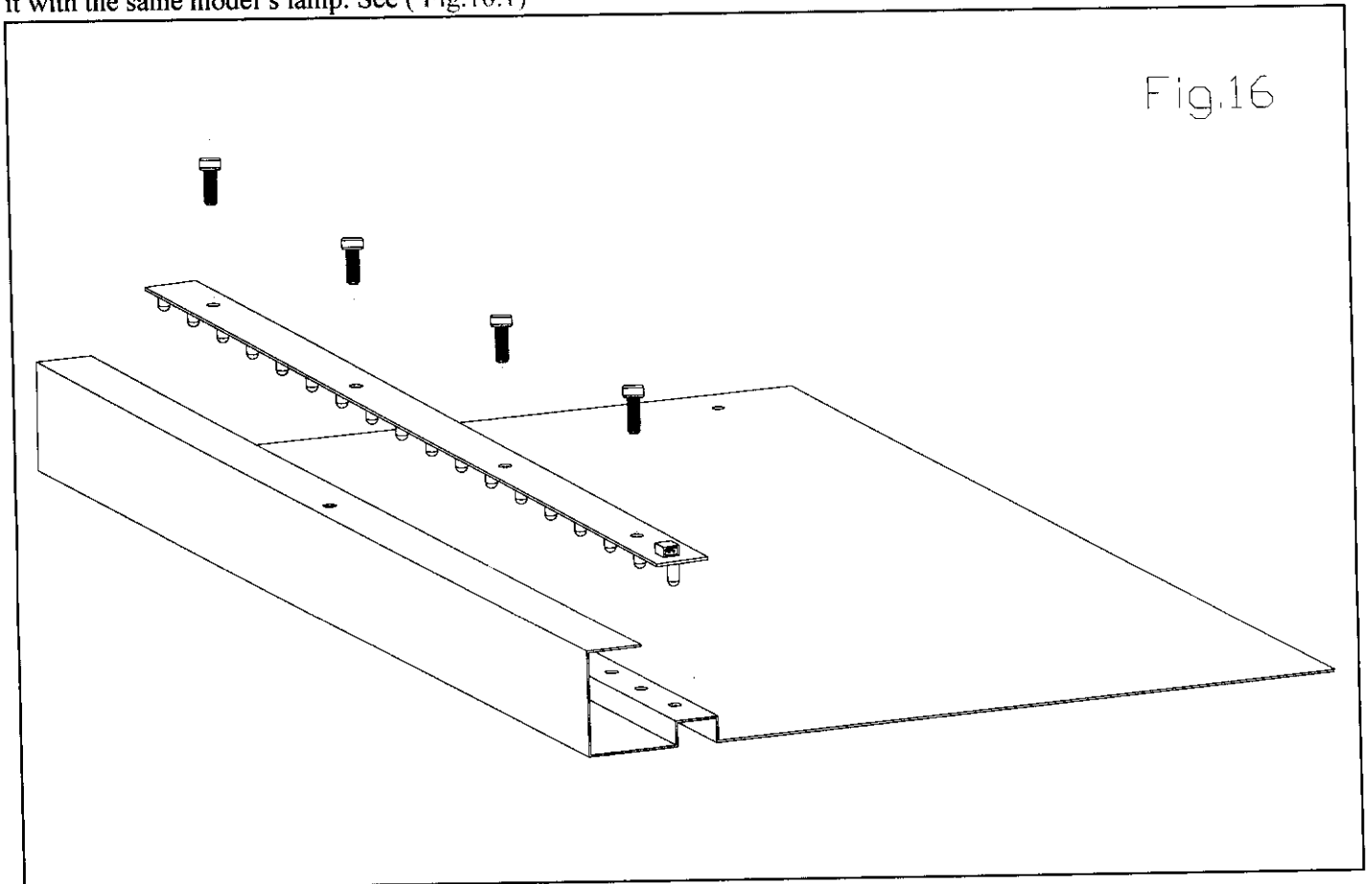
2 >. Different lamp's replacement.

a. How to replace square LED light: firstly remove the light cover, and take off the 4 screws of the LED light, unplug the electrical terminal, and take off the LED light. See (Fig.15.)

b. How the rectangle LED light: remove the air-duct board and take off the 4 fixing screws of the LED light, and unplug the electrical wire terminal, and take off the LED light. See (Fig.16)

向上取出 LED 灯; (Fig.16)

c. How to replace the lamp: If it is the lamp, remove the lamp cover directly, and remove the broken lamp and replace it with the same model's lamp. See (Fig.16.1)



e. How to replace the display panel.

Tear off the display panel film of the top electrical box, and expose three screws, and dismantle three screws (Fig.16). Unplug all the connection wire on the back of the display panel, and finally replace it with the same model's display panel. See (Fig.16).

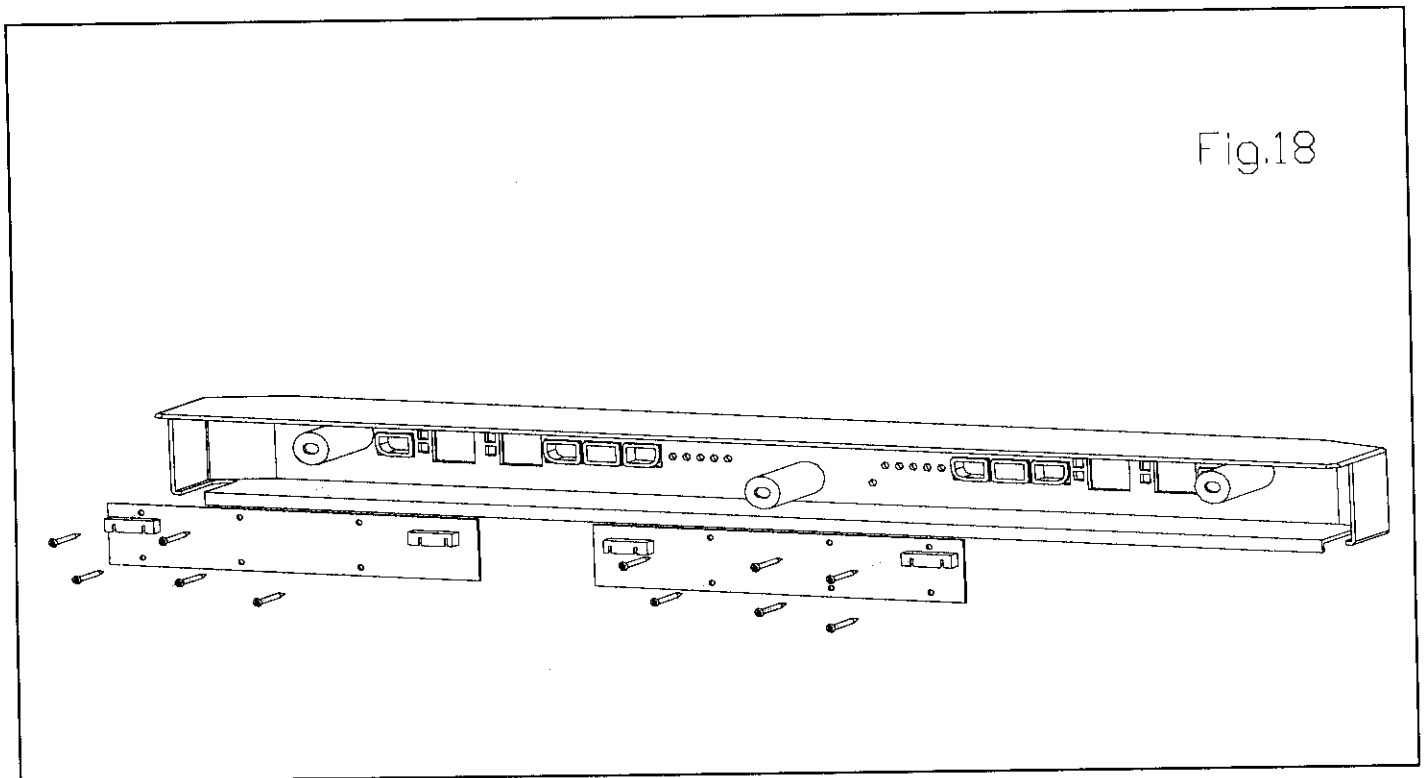
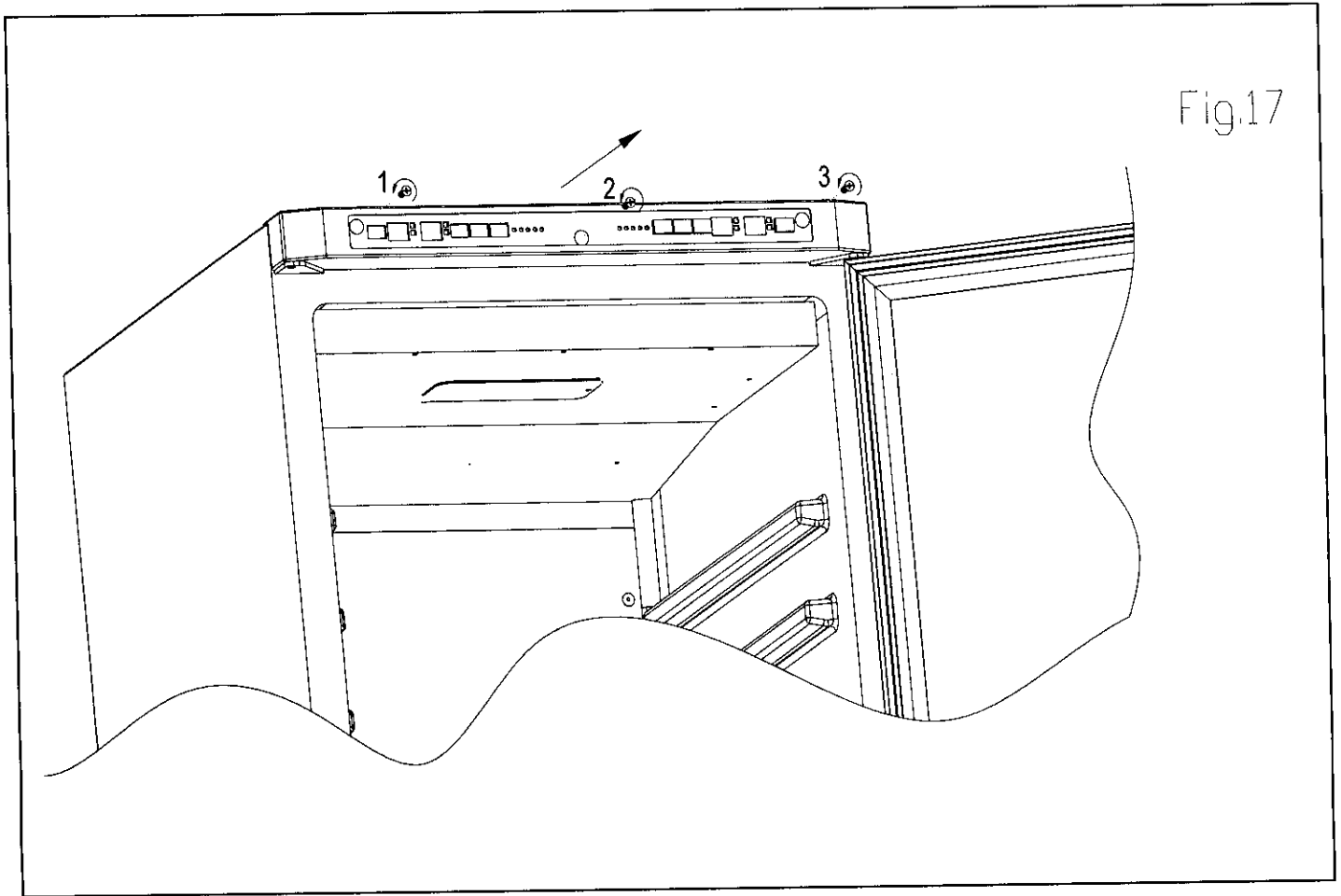
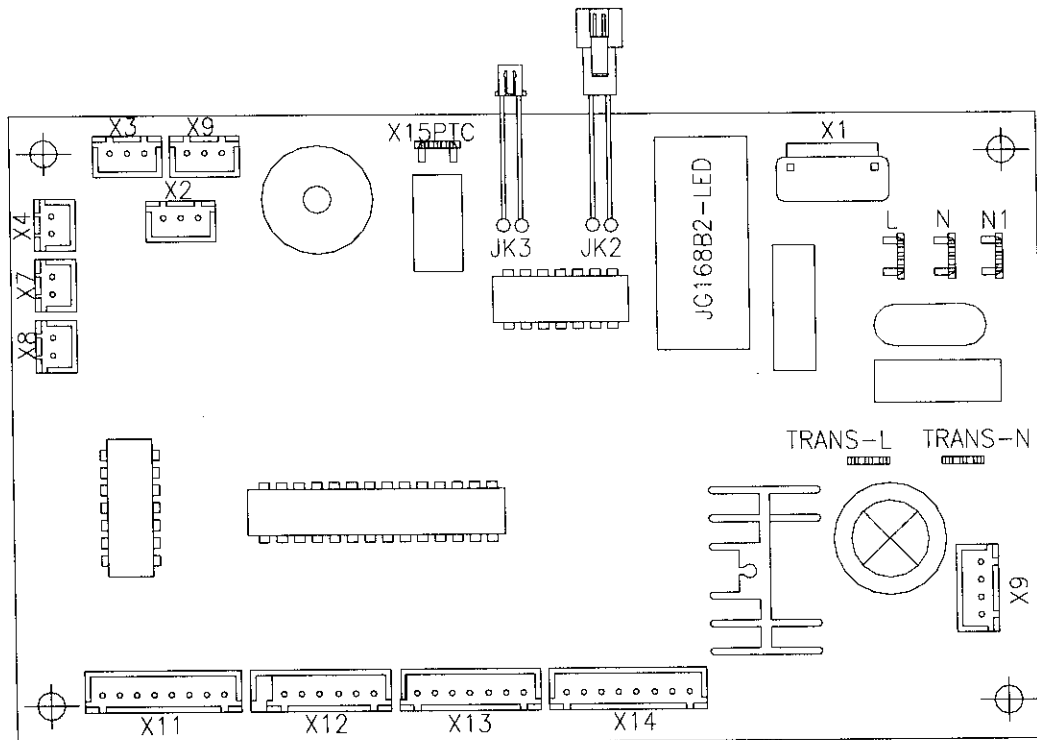


Fig.19



The wire diagram of the PCB board

1. X1: Compressor
2. X2: Unpper zone fan(red wire)
3. X3: Lower zone fan (white wire)
4. X4: Anti-frost sensor(red wire)
5. X6: Secondary transformer
6. X7: Lower zone sensor (white wire)
7. X8: Upper zone sensor(yellow wire)
8. X9: Middle air-duct board fan (yellow wire)
9. X11: Wire vent (9)
10. X12: Wire vent (6)
11. X13: Wire vent (7)
12. X14: Wire vent (8)
13. X15: Heater anode pole (red)
14. L: Power anode pole(red)
15. N: Power cathode (black)
16. N1: Heater cathode (black)
17. TRANS-L: Transformer primilary-L (red)
18. TRANS-N: Transformer-N (red)
19. JK3: Upper zone LED light conjunction
20. JK2: Lower zone LED light conjunction