			重 要 度		

		产 品 名称:	冷藏冷冻箱
		产 品 型号:	BCD-250WP/HC4(E)
		文 件 名称:	售后服务技术资料
		文 件 编号:	**BSSJ00001909**
		编 制 日期:	2020 年 8 月 22 日
借(通)用件登记			

							家电开发中心
旧底图总号							
底图总号	B						售后服务技术资料
	版本	更改单编号	签字	日期	重 量	比例	
出图审查	设计	刘寿元	审核				
	标准化				共 张	第 张	BSSJ00001909
日 期	批准						

Hisense

Refrigerator

Service Manual

Model： RD-32WR4SHB/CP2-001

Contents

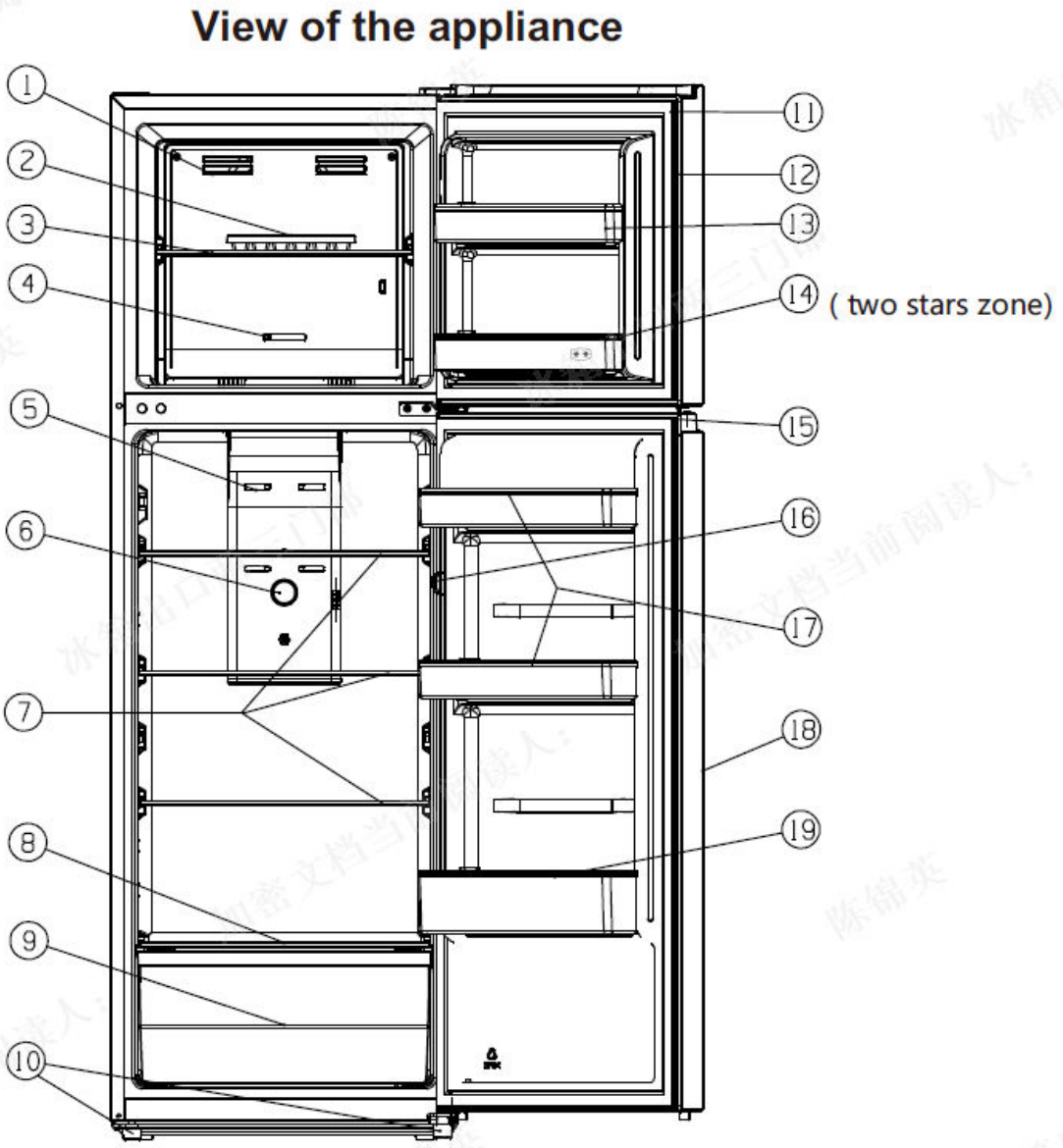
1. Warning and precautions for safety

Please observe the following safety precautions in order to use safely and correctly the refrigerator and to prevent accident and danger during repair.

1. Be care of an electric shock. Disconnect power cord from wall outlet and wait for more than three minutes before replacing PCB parts. Shut off the power whenever replacing and repairing electric components.
2. When connecting power cord, please wait for more than five minutes after power cord was disconnected from the wall outlet.
3. Please check if the power plug is pressed down by the refrigerator against the wall. If the power plug was damaged, it may cause fire or electric shock.
4. If the wall outlet is over loaded, it may cause fire. Please use its own individual electrical outlet for the refrigerator.
5. Please make sure the outlet is properly earthed, particularly in wet or damp area.
6. Use standard electrical components when replacing them.
7. Make sure the hook is correctly engaged. Remove dust and foreign materials from the housing and connecting parts.
8. Do not fray, damage, machine, heavily bend, pull out or twist the power cord.
9. Please check the evidence of moisture intrusion in the electrical components. Replace the parts or mask it with insulation tapes if moisture intrusion was confirmed.
10. Do not touch the ice maker with hands or tools to confirm the operation of geared motor.
11. Do not let the customers repair, disassemble and reconstruct the refrigerator for themselves. It may cause accident, electric shock, or fire.
12. Do not store flammable materials such as ether, benzene, alcohol, chemicals, gas, or medicine in the refrigerator.
13. Do not put flower vase, cup, cosmetics, chemicals, etc., or container with full of water on the top of the refrigerator.
14. Do not put glass bottles with full of water into the freezer. The contents shall freeze and break the glass bottles.
15. When you scrap the refrigerator, please disconnect the door gasket first and scrap it.

2. Appearance and structure

2.1 View of the appliance

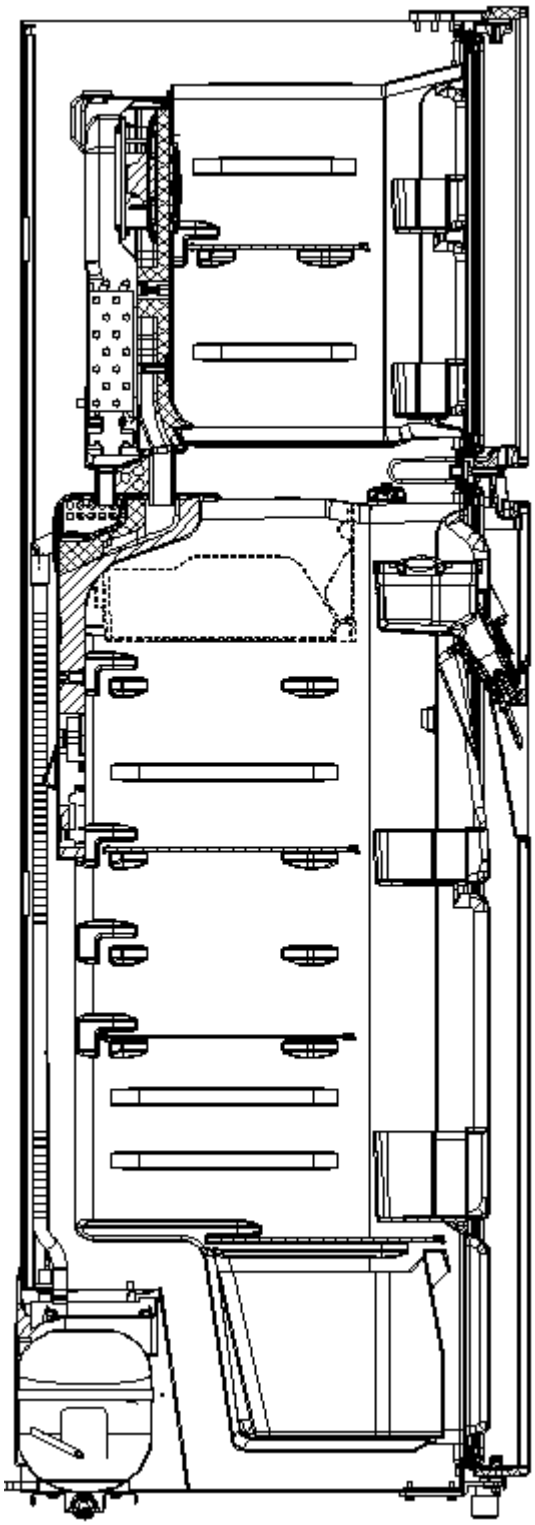


1. Freezer wind channel
2. Ice cube tray(optional)
3. Freezer shelf
4. Freezer temp. control
5. Fridge wind channel
6. Fridge temp. control
7. Fridge shelf
8. Crisper cover
9. Crisper
10. Adjustable bottom feet
11. Freezer door gasket
12. Freezer door
13. Freezer door rack
14. Freezer door rack (two stars zone)
15. Fridge door gasket
16. Door switch
17. Upper door rack
18. Fridge door
19. Lower door rack

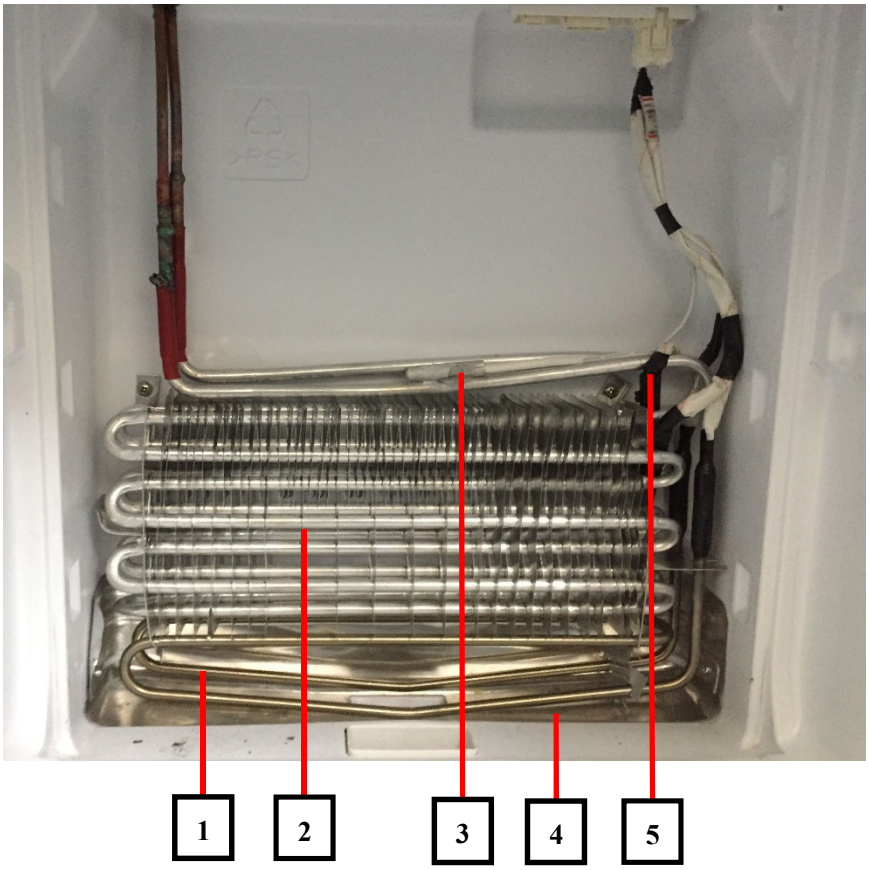
Note!

- Due to unceasing modification of our products, your refrigerator may be slightly different from this instruction manual, but its functions and using methods remain the same.
- To get the best energy efficiency of this product, please place all shelves, drawers and baskets on their original position as the illustration above.

2.2 Wind channel structure

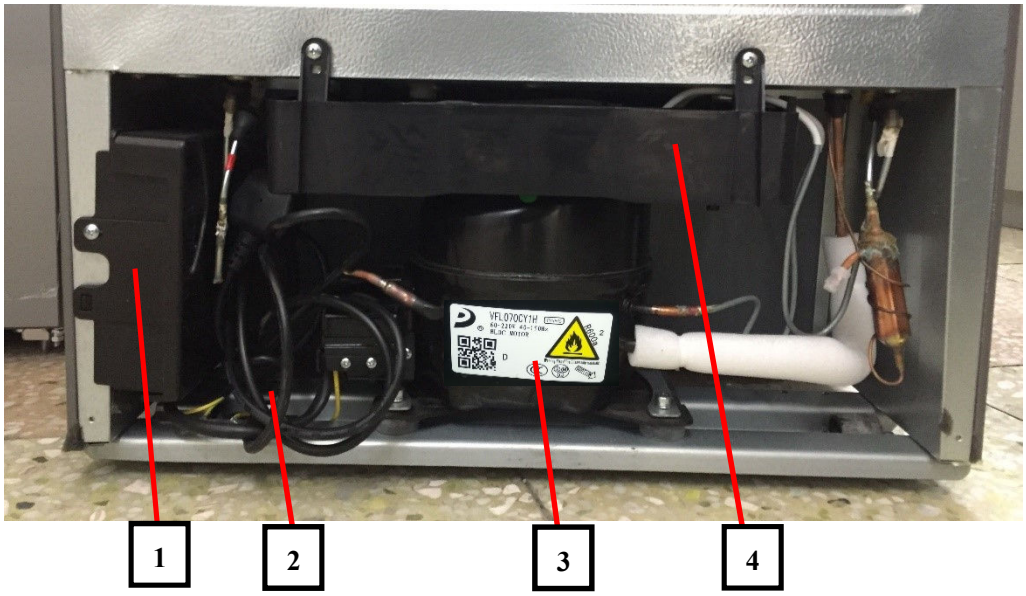


2.3 Freezer evaporator structure



1. Heater
2. Wing slice evaporator part
3. Temperature sensor part
4. Water drain
5. Temperature fuse

2.4 Compressor room structure



1.Main control parts
2.Power line
3.Compressor
4.Evaporating Dish Part

3. Basic parameters

Content	Unit	Value
Voltage/frequency		220-240V/ 50Hz
Gross capacity (fridge/freezer)	L	267(202/65)（IEC 2007）
Climate class(SN=10~32℃,N=16~32℃,ST=16~38℃,T=16~43 ℃)		N,ST,T
Energy consumption / year	kWh/year	192（IEC 2020）
Energy consumption per 24 h	kWh/24 h	0.526（IEC 2020）
Energy consumption / year	kWh/year	222（IEC 2007）
Energy consumption per 24 h	kWh/24 h	0.608（IEC 2007）
Kind of coolant /Charge (134 /R600a) / grammes	R / g	R600a/32
Foaming components (R141b/C-P）	PU/	C-P
Certifications (CE / ISO 9001/2 / LGA etc.)		CE+CB+Erp
Max noise level	dB(A)	41

4. Operation and functions

4.1 control panel

Use your appliance according to the following regulations, your appliance has the corresponding functions as the control panels showed in the pictures below

Temperature regulator in refrigerator chamber

●Insufficient refrigeration in chamber.

Set the temperature controller at “COLDER”.

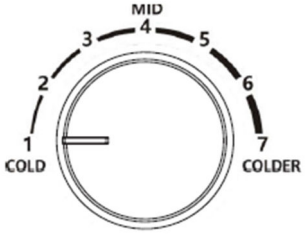
●Using the refrigerator in normal.

Set the temperature controller at “MID”.

Important!

High ambient temperatures (e.g. on hot summer days) and a colder setting on the temperature regulator can cause the compressor to run continuously or even non-stop! So we do not advise the user set the temperature control knob at “COLDER” or “COLD” in normal.

Reason: when the ambient temperatures high, the compressor must run continuously to maintain the low temperature in the appliance



REFRIGERATOR
TEMP CONTROL

Temperature regulator in freezer chamber

The temperature regulator allows you to regulate the temperature inside the Freezer.

●In case of too much frozen food or ice making in chamber.

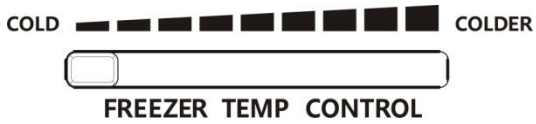
Please set the temperature control knob at “COLDER” position.

●In case of using the refrigerator usual condition. Please set the temperature regulator at the middle position.

●In case of a little frozen food in chamber. Please set the temperature controller at “COLD” position.

Important!

So we do not advise the user set the temperature control knob at “COLDER”or“COLD” in normal. When you turn the knob to "COLD” which can lead to the more energy efficiency .Otherwise, it would result the energy-consuming.



4.2 Defrost mode

4.2.1 Automatic defrost mode

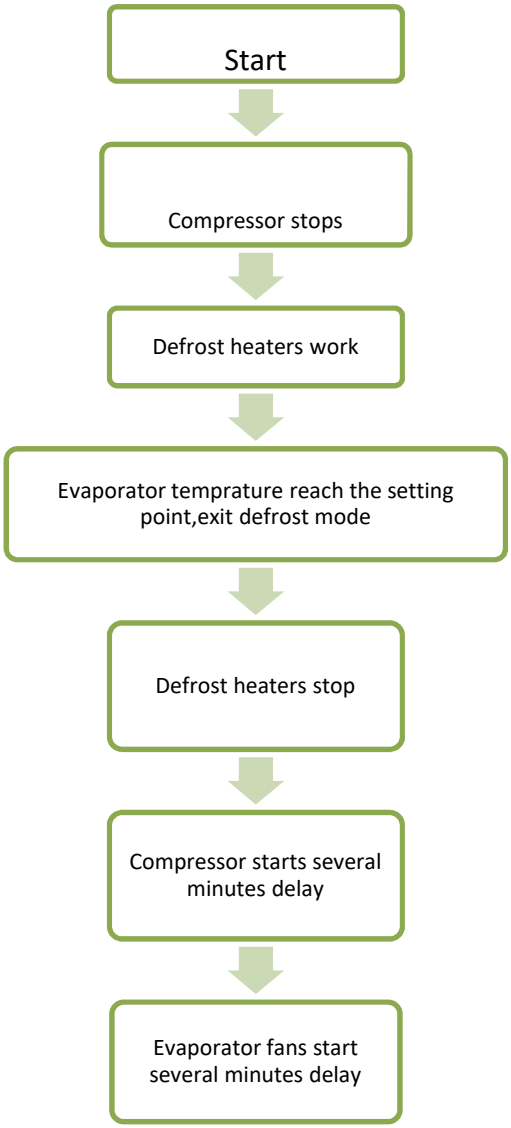
When compressor accumulated running time reach the setting point， it will enter defrost mode automatically.

4.2.2 Force Defrosting Mode

Within 10 minutes since the power on , keep fridge door switch open and close alternately apace 5 times, after turn off the LED lights for 10 seconds , the unit will come into the Force Defrosting process.

— When into the force defrosting process, the specific operating will follow the way of Automatic Defrosting Mode control.

4.2.3 Defrost flow


Start
Compressor stops
Defrost heaters work
Evaporator temprature reach the setting point,exit defrost mode
Defrost heaters stop
Compressor starts several minutes delay
Evaporator fans start several minutes delay

4.3 Fault alarm

The alarm of fault is work only for 10 mins after power on. Every close the Refrigerating door, the Refrigerating light will alarm as following table. The smaller the serial number has the higher the priority. The alarm will be cancel when open the Refrigerating door.

No	Error cause	Fault type	comment
1	functional board fault	1Hz flash 1 times, then turn down 5 seconds (Method：open the refrigerating door and press the door switch)	
2	Refrigerating room sensor fault	1Hz flash 2 times, then turn down 5 seconds (Method：open the refrigerating door and press the door switch)	
3	freezer room sensor fault	1Hz flash 3 times, then turn down 5 seconds (Method：open the refrigerating door and press the door switch)	
4	Defrost sensor fault	1Hz flash 4 times, then turn down 5 seconds (Method：open the refrigerating door and press the door switch)	
5	fan motor fault	1Hz flash 5 times, then turn down 5 seconds (Method：open the refrigerating door and press the door switch)	

5.Trouble shooting

5.1 Common problem and checking

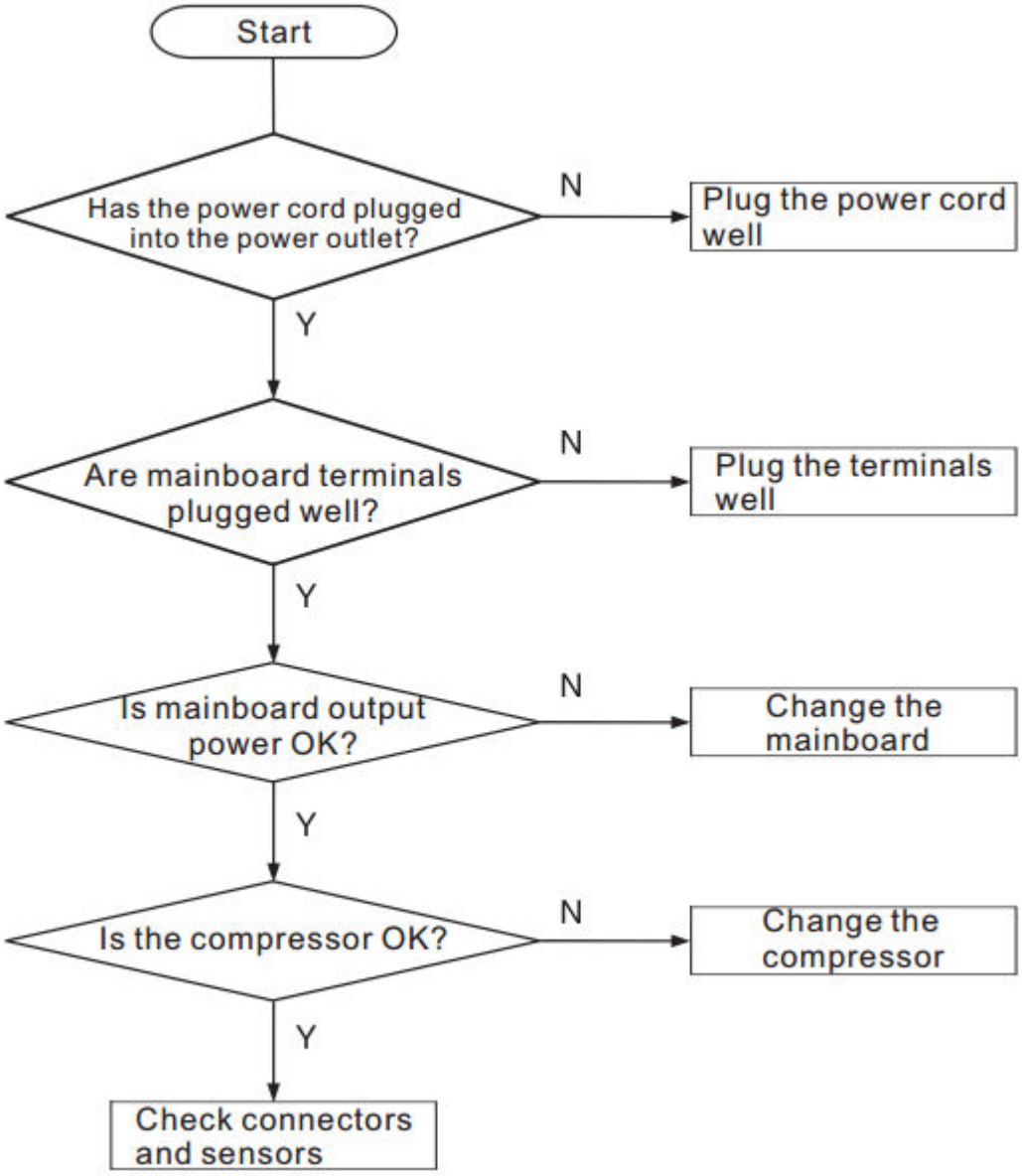
If you experience a problem with your appliance or are concerned that the appliance is not functioning correctly, you can carry out some easy checks before calling for service, please see below.

Warning! Don't try to repair the appliance yourself. If the problem persists after you have made the checks mentioned below, contact a qualified electrician, authorized service engineer or the shop where you purchased the product.

Problem	Possible cause & Solution
Appliance is not working correctly	Check whether the power cord is plugged into the power outlet properly.
	Check the fuse or circuit of your power supply, replace if necessary.
	It is normal that the freezer is not operating during the defrost cycle, or for a short time after the appliance is switched on to protect the compressor.
Odours from the compartments	The interior may need to be cleaned
	Some food, containers or wrapping cause odours.
Noise from the appliance	The sounds below are quite normal: •Compressor running noises. •Air movement noise from the small fan motor in the freezer compartment or other compartments. •Gurgling sound similar to water boiling. •Popping noise during automatic defrosting. •Clicking noise before the compressor starts.
	Other unusual noises are due to the reasons below and may need you to check and take action: •The cabinet is not level. •The back of appliance touches the wall. •Bottles or containers fallen or rolling.
A layer of frost occurs in the compartment	Check that the air outlets are not blocked by food and ensure food is placed within the appliance to allow sufficient ventilation. Ensure that door is fully closed. To remove the frost, please refer to the "Cleaning and care" chapter.
Temperature inside is too warm	You may have left the doors open too long or too frequently; or the doors are kept open by some obstacle; or the appliance is located with insufficient clearance at the sides, back and top

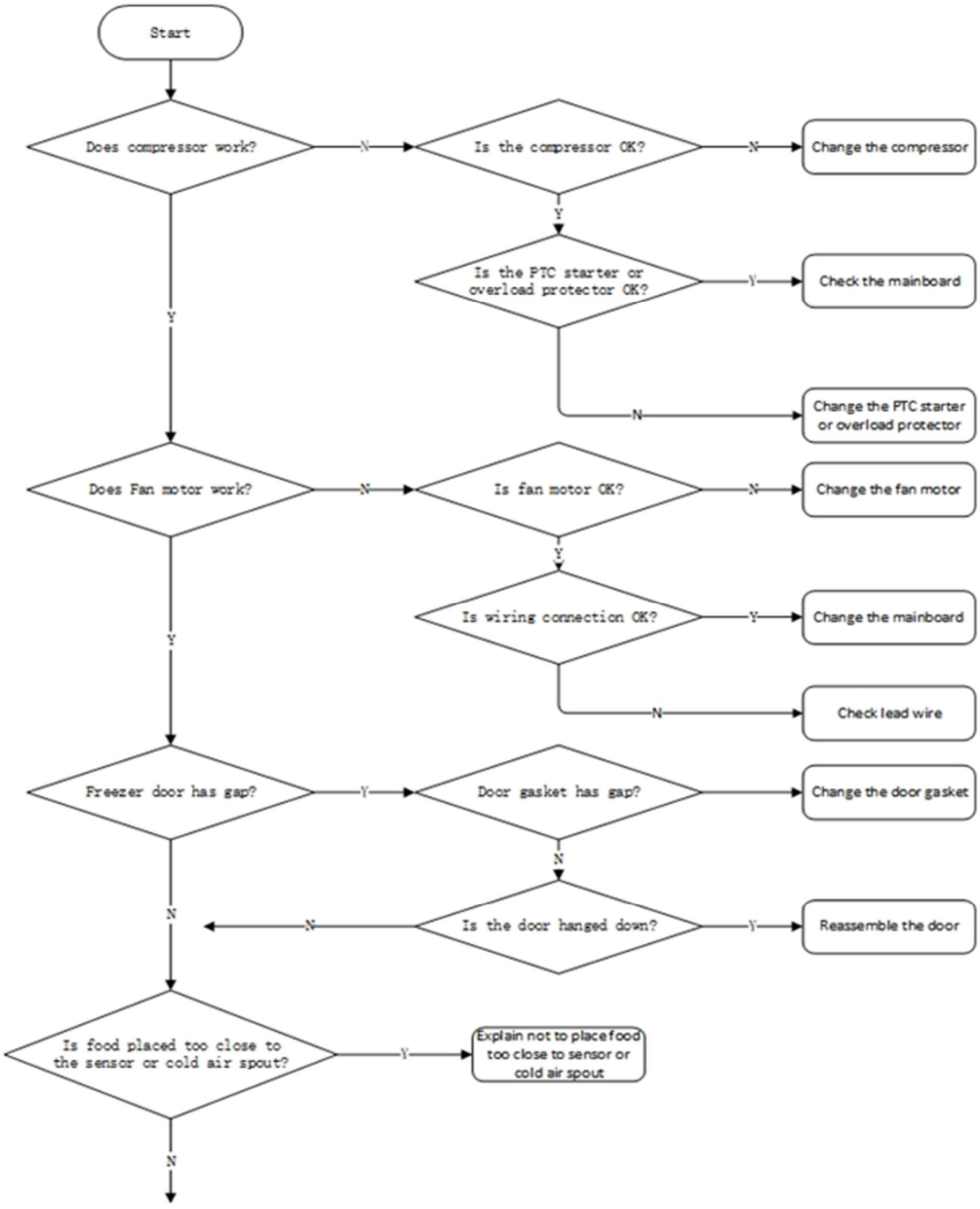
Temperature inside is too cold	Increase the temperature by following the “**control panel**” chapter.
Doors can’t be closed easily	Check whether the top of the refrigerator is tilted back by 10-15mm to allow the doors to self close, or if something inside is preventing the doors from closing.
The light is not working	•The LED light may be damaged. Refer to replace LED lights in “**Removing the light**” chapter of manual. •The control system has disabled the lights due to the door being kept open too long. Close and reopen the door to reactivate the lights.

5.2 Faulty start

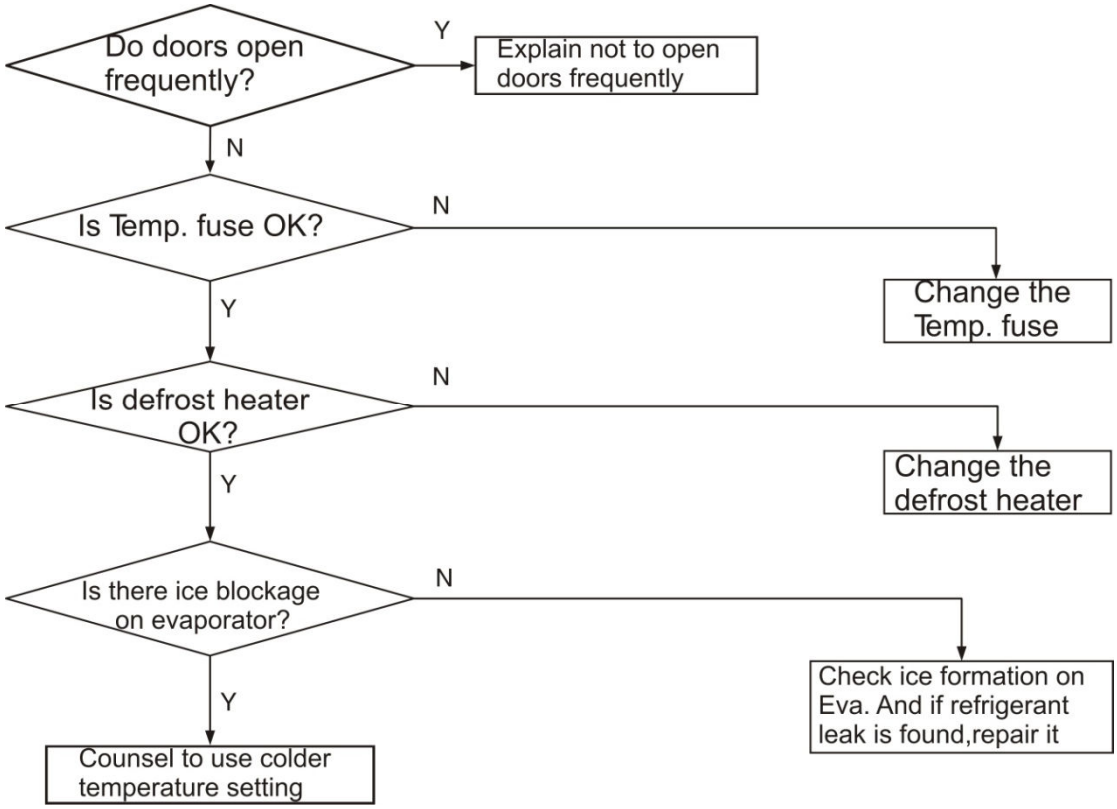


5.3 Refrigeration failure

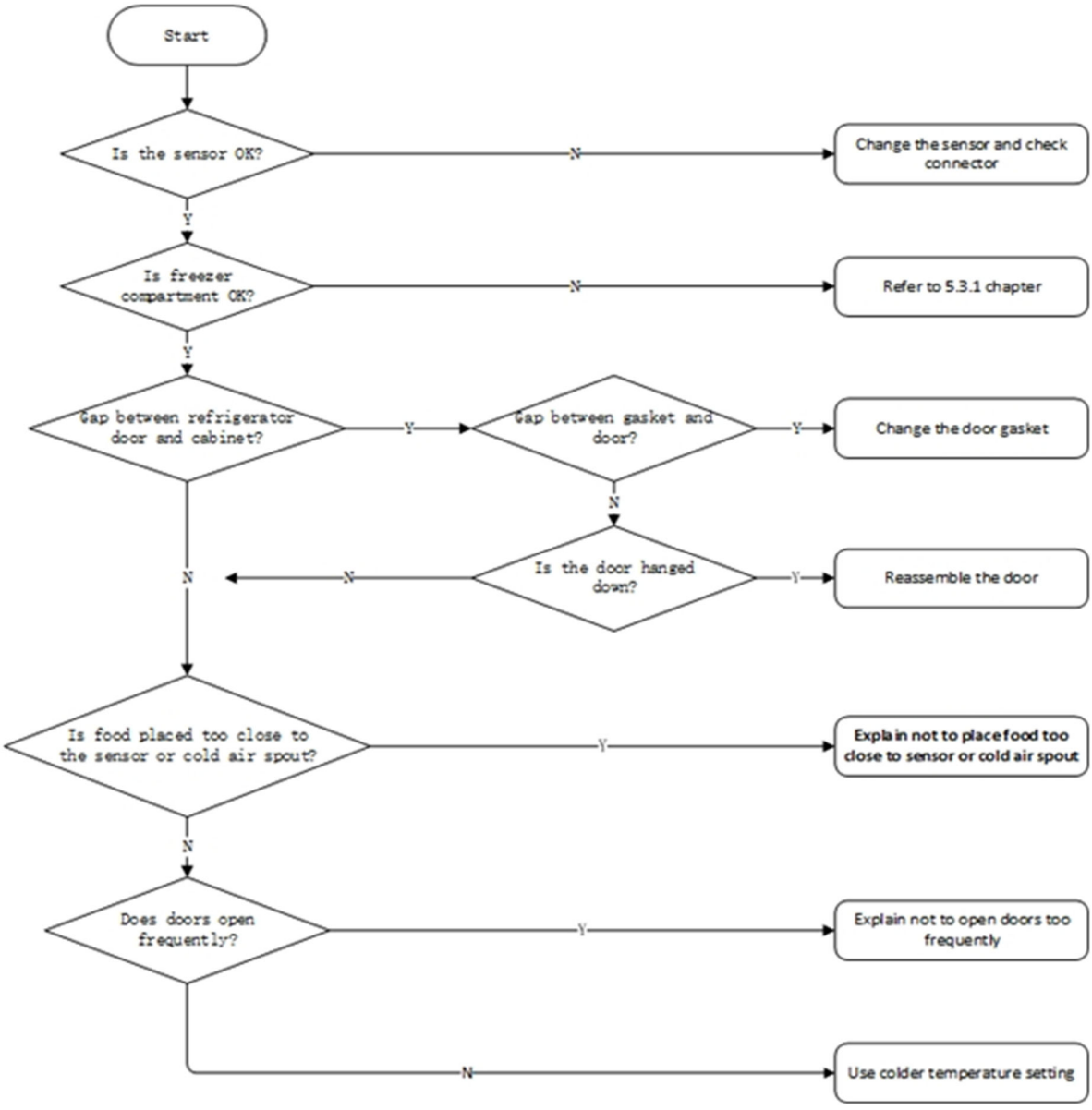
5.3.1 Freezer compartment



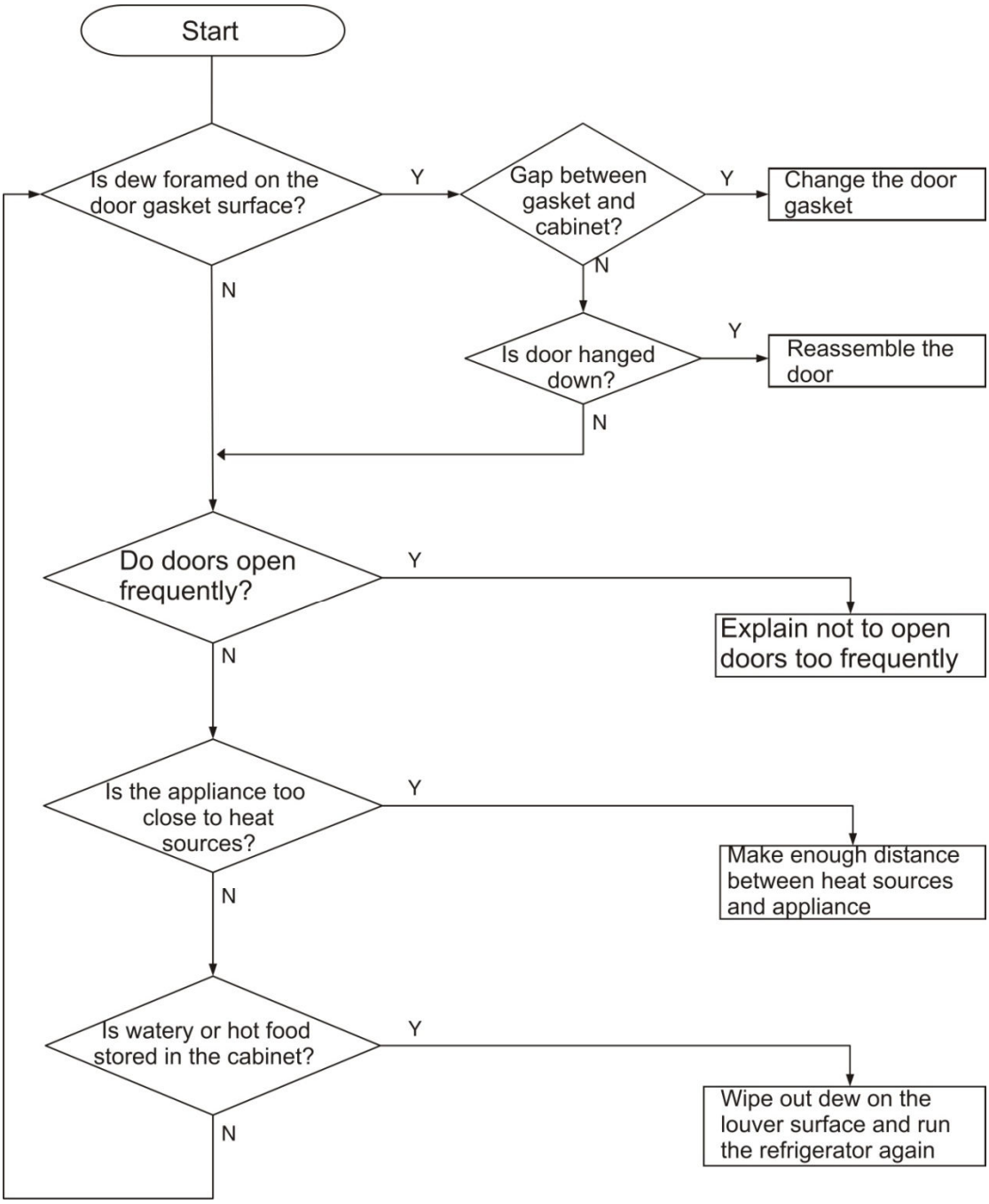
5.3.1 Freezer compartment


Do doors open frequently?
Y
Explain not to open doors frequently
N
Is Temp. fuse OK?
N
Change the Temp. fuse
Y
Is defrost heater OK?
N
Change the defrost heater
Y
Is there ice blockage on evaporator?
N
Check ice formation on Eva. And if refrigerant leak is found,repair it
Y
Counsel to use colder temperature setting

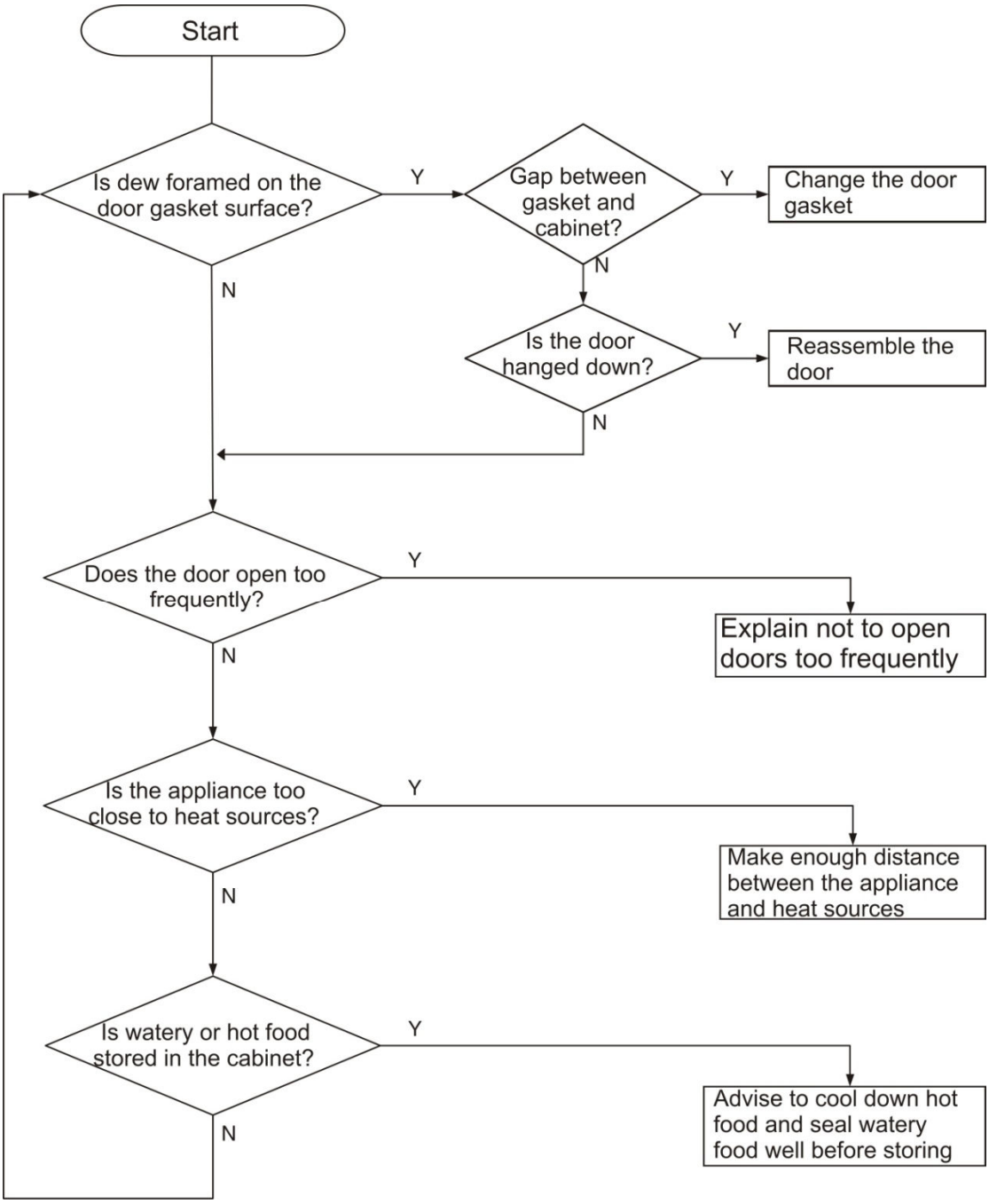
5.3.2 Refrigerator compartment



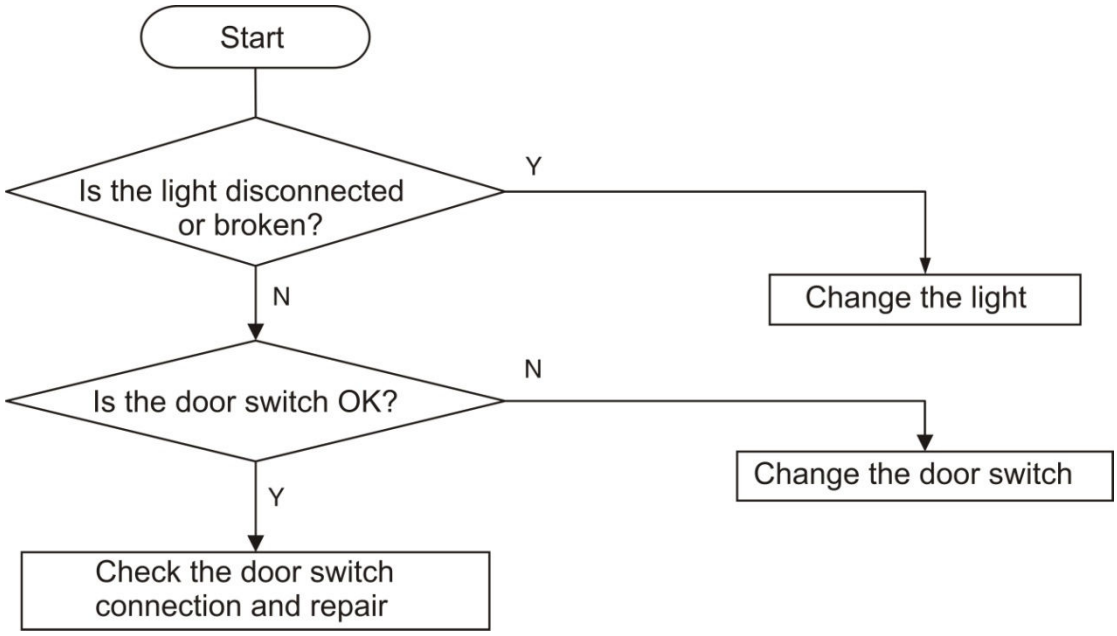
5.4 Thick frost in freezer compartment



5.5 Dew in refrigerator compartment

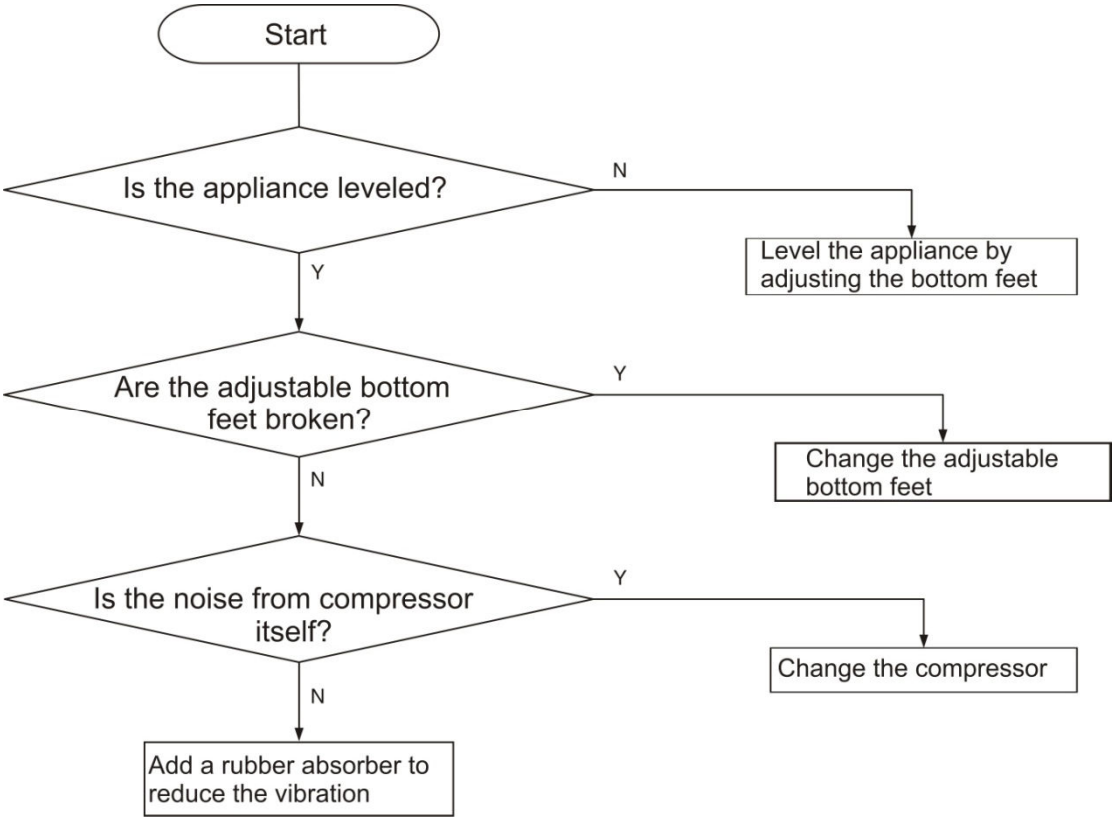


5.6 Breaking of light

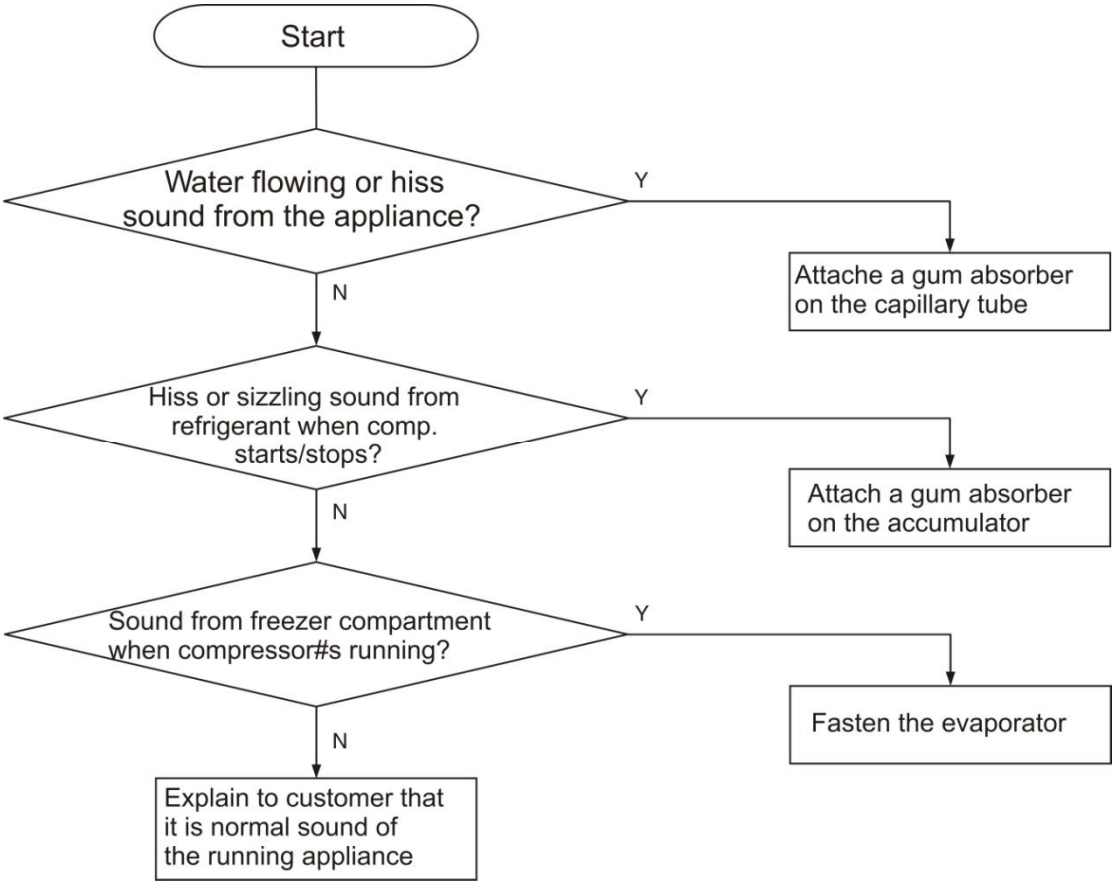


5.7 Noise

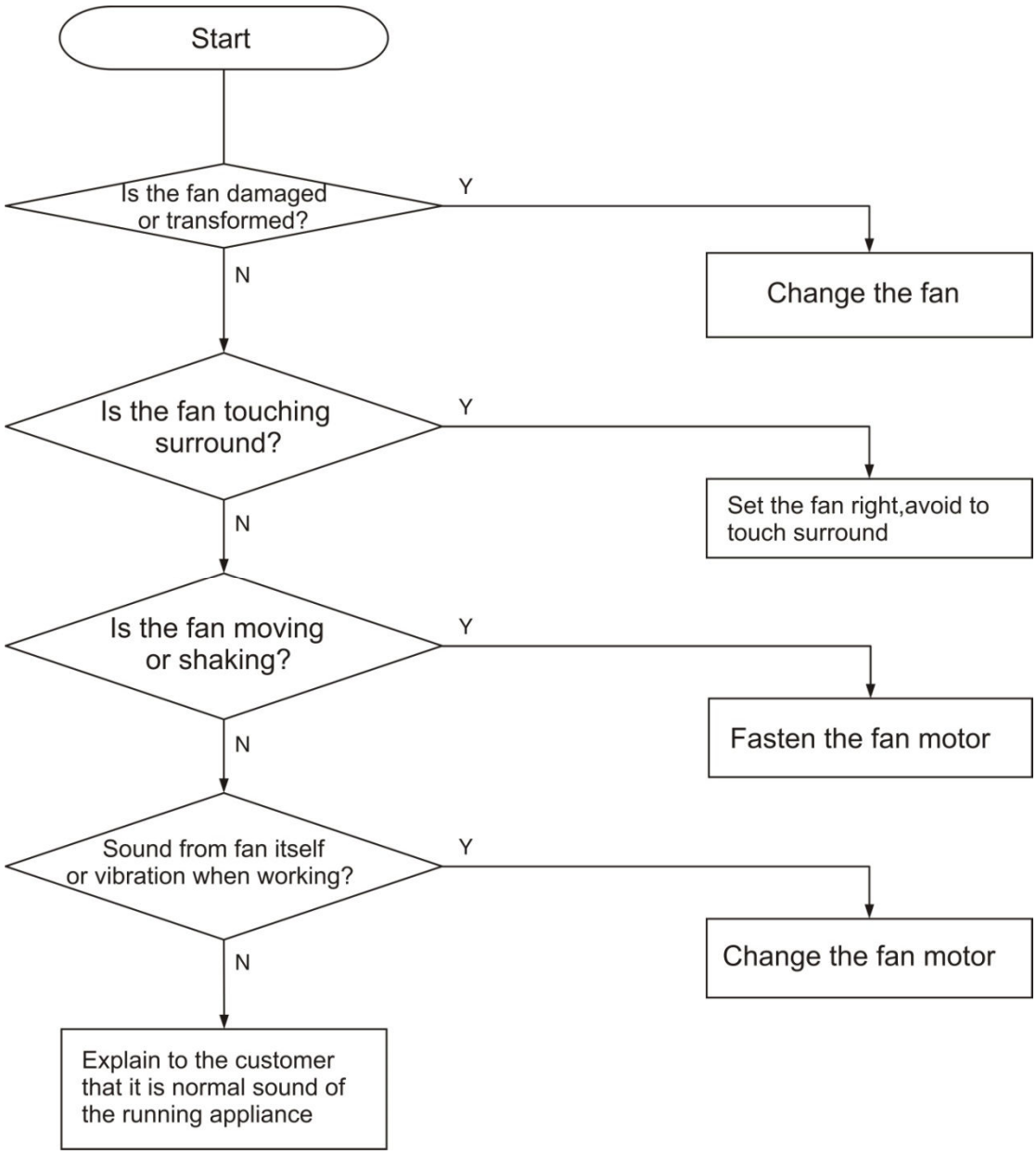
5.7.1 Compressor noise



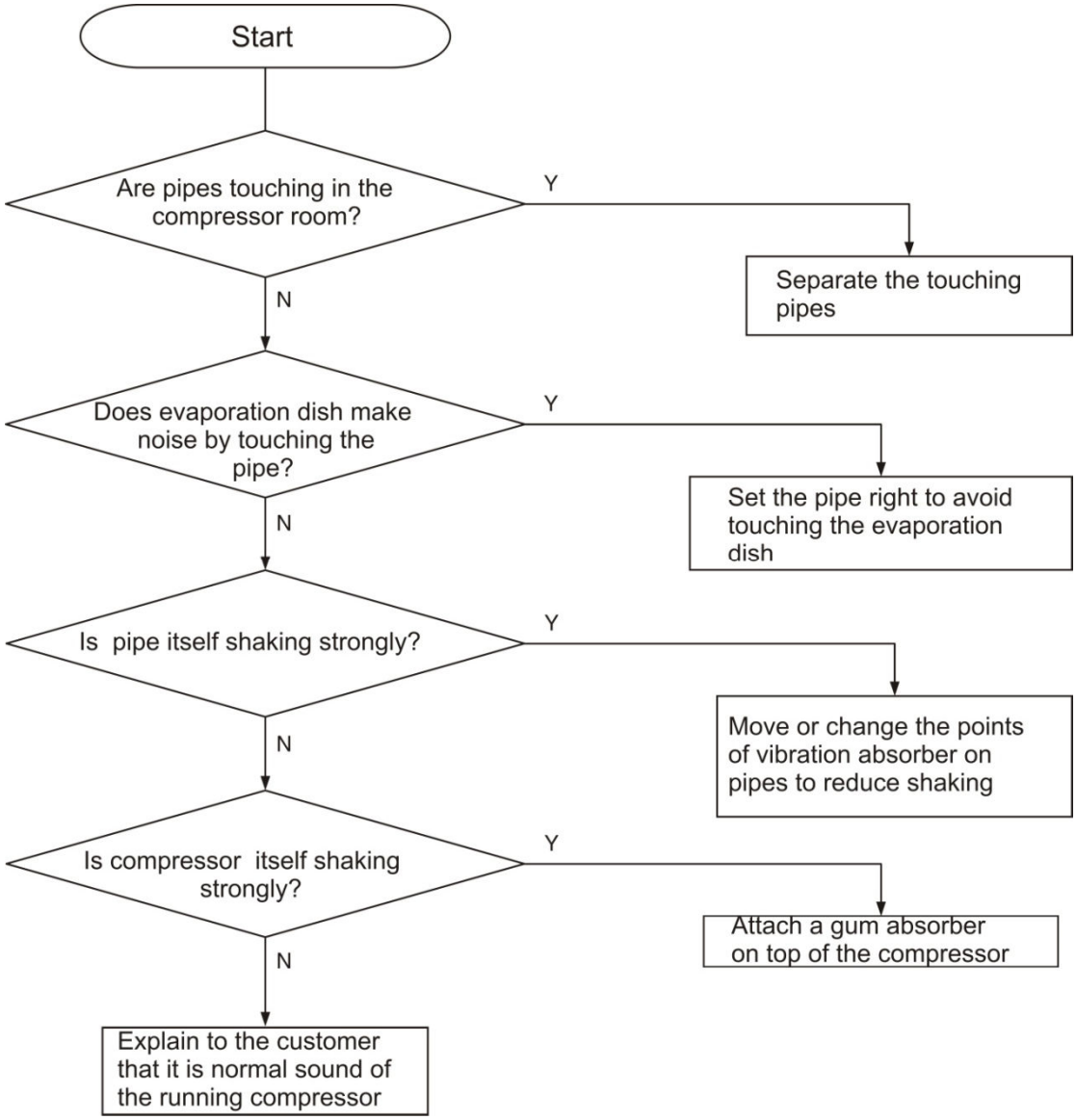
5.7.2 Refrigerator flowing noise



5.7.3 Fan motor noise

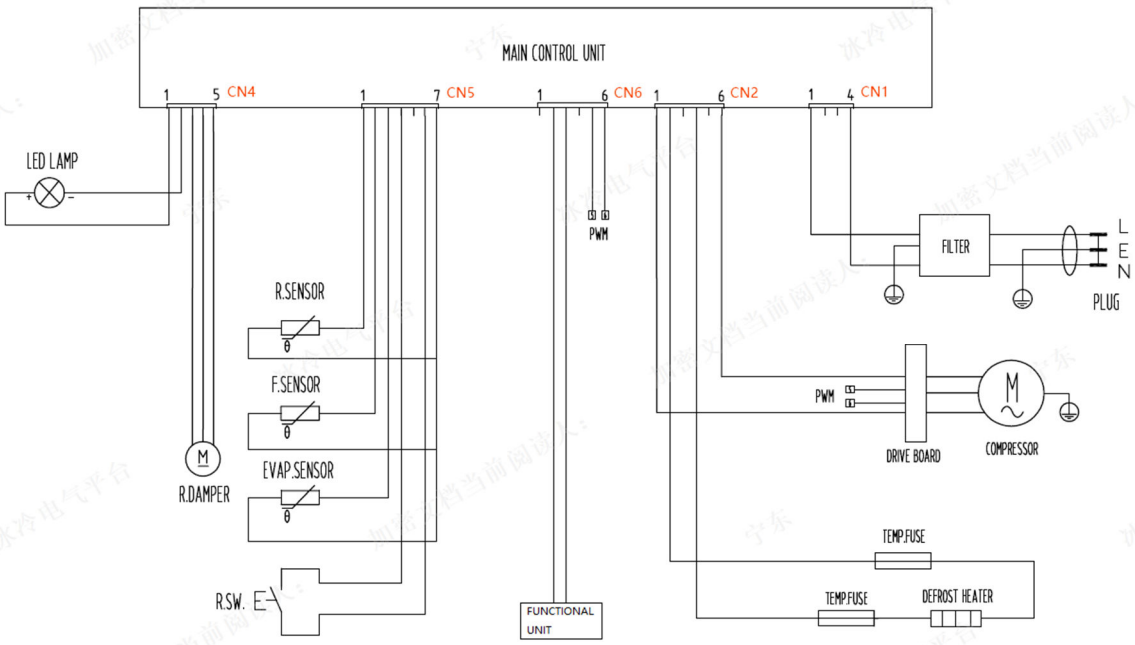


5.7.4 Pipe noise



6. Circuit and checking

6.1 Circuit diagram



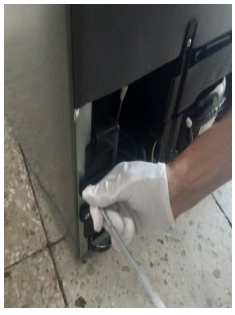
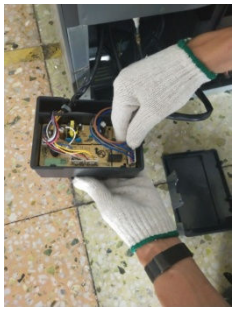
6.2 Main control board

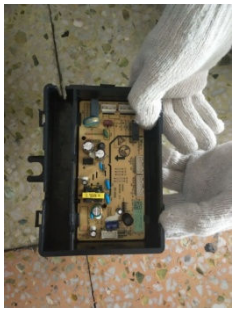
6.2.1 Checking method

If the problem is probably caused by main control board, change it directly to confirm.

6.2.2 Removing the main control board

1. Unplug the appliance
2. Remove the screws by screwdriver and remove the electric box cover, as picture 1 and picture 2.
3. Unplug the terminals on the main control board as picture 3.
4. Press the two snap-fits and remove the main control board as picture 4 and picture 5.

		
Picture1	**Picture2**	**Picture3**

		
Picture4	**Picture5**	

6.3 Compressor

6.3.1 Basic parameters

Input voltage:220-240V

Input frequency:50Hz

6.3.2 Checking method

1.Compressor will start 10 seconds after power-on, if it starts unsuccessfully, remove the electric box cover and check.

2.Check the connecting wiring between compressor and main control board and repair if it is broken.

3、Use a multimeter to measure voltage between pin No.1 and No.6on CN2 connector of main control board; then measure frequency between pin pin No.5 and No.6 on CN6 connector. If the voltage equal to electric supply power and there is stabilized frequency, it means the main control board is OK, to change the Compressor or drive borad of Compressor , otherwise change the main control board.

6.3.2.1 Compressor checking

Use a multi-meter to test the resistance between C & S, M&S and M&C :

Normal range of C&S : About 10.6±5%Ω

Normal range of M&S : About 10.6±5%Ω

Normal range of M&C : About 10.6±5%Ω

If the test result is not in this range then it means the inner coil has some problem and the compressor cannot work properly.

6.3.3 Removing the variable frequency board

1.Unplug the appliance

2.Use a screwdriver to remove the screw as picture 1.

3.Open the installation clip and unplug the terminal as picture 2

4.Remove the screw as picture 3.

5.Remove the screw below the variable frequency board as picture 4.

6.Unplug the two terminals connected the compressor as picture 5 .

7.The whole variable frequency board as picture 6 .

	
Picture1	**Picture2**
	
Picture3	**Picture4**
	
Picture5	**Picture6**

6.4 Fan motor

6.4.1 Basic parameters

6.4.1.1 Freezer Fan motor(F. Fan motor)

Rated voltage:DC12V

Rated input power: ＜2.5W

6.4.2 Checking method[Fan motor(F.Fan motor)]

1.Check the connecting wiring of fan motor is well or not, repair if it is broken. The freezer fan motor corresponding pin No.3~5 on CN4 connector of main control board.

2. Pin No.4 connect 12V power and pin No.5 connect GND. If the freezer fan motor works normally, change the main control board; If not, change the fan motor.

6.4.3 Removing the fan motor

1. Unplug the appliance.

2.Open the freezer door and remove the shelf part as picture 1

3. Remove the two screws by screwdriver as picture 2.

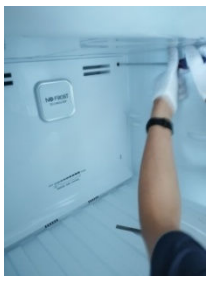
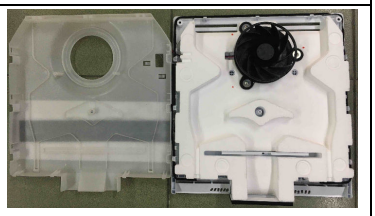
4.Catch the below of the wind channel component and pull down it.

5. Unplug the terminal as picture 3 and remove the wind channel component as picture 4.

6. Open buckles as picture 5.

7. Separate two part of the wind channel component as picture 6

8. Remove the screws by screwdriver as picture 7 and pull out the fan motor as picture 8.

		
Picture1	**Picture2**	**Picture3**
		
Picture4	**Picture5**	**Picture6**

		
Picture7	**Picture8**	

6.5 Light

6.5.1 Basic parameters

Rated voltage:DC12V

Rated power:1W

6.5.2 Checking method

1.Check the connecting wiring between light and main control board is well or not, repair if it is broken. Refrigerator light corresponding pin No.1 and No.2 on CN4 connector of mainboard.

2.Check output voltage corresponding light of the main control board, if it is 12V,it means the mainboard is OK, change the light; If not, it means the main control board is broken, change it.

6.5.3 Removing the light

1. Unplug the appliance

2. Pry up the light cover with a pin or other spikers as picture 1.

2. Catch the light cover with one hand and pull down it as picture 2.

3. Take the LED light out and unplug the terminal as picture 3 and 4

	
Picture1	**Picture2**
	
Picture3	**Picture4**

6.6 Functional board part

6.6.1 Basic parameters

Input voltage: DC5V

6.6.2 Checking method

1.When the temperature controller act abnormally, check the setting temperature. If the temperature is set too low, heighten it.

2.If the setting temperature is applicable, check the sensor of the functional board and repair it.

3.Then you can check the functional board with the AVO meter according to the circuit diagram and repair it.

6.6.3 Removing the functional board part

1.Unplug the appliance.

2.Pry up the screw cap with a pin or other spikes as picture 1.

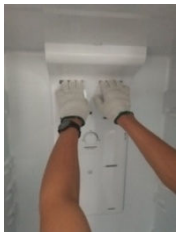
3.Remove the two screws by screwdriver as picture 2.

4.Remove the air duct cover and unplug the terminal of the functional board part as picture 3 and picture 4.

5.Take the display panel out as picture 5.

6.Tore open the aluminum doil and get the temperature sensor

7.Get the functional board out as picture 7.

		
Picture1	**Picture2**	**Picture3**
		
Picture4	**Picture5**	**Picture6**
		
Picture7		

6.7 Defrost heater

6.7.1 Basic parameters

Input voltage:220-240V

Rated power:150W

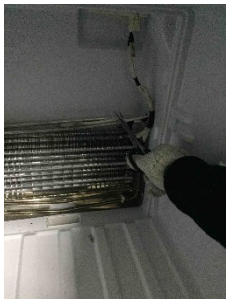
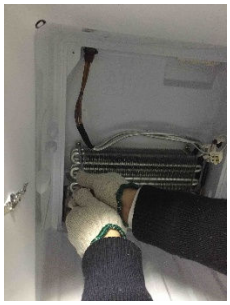
6.7.2 Checking method

1.Enter compulsory defrost mode, use a multimeter to measure the voltage between pin No.2 and No.4 on CN2 connector of the main control board, if the voltage doesn't equal to electric supply power, it means the main control board is broken, change it.

2. Unplug the appliance ,then use a multimeter to measure resistance of the heater, if the value isn't 352.6Ω ± 10%, it is broken, change the heater.

6.7.3 Removing the defrost heater

1. Unplug the appliance.
2. After removing the freezer wind channel component, unplug the terminals as picture 1.
3. Cut the cable tie as picture 2.
4. Remove the two screws of evaporator by screwdriver as picture 3.
5. Take out the evaporator as picture 4 and be careful of the connected wires.
6. Pry up the buckles located on the evaporator and remove the heater as picture 5 and 6.
7. Remove the defrost steak from the defrost heater ,leaving the defrost heater as picture

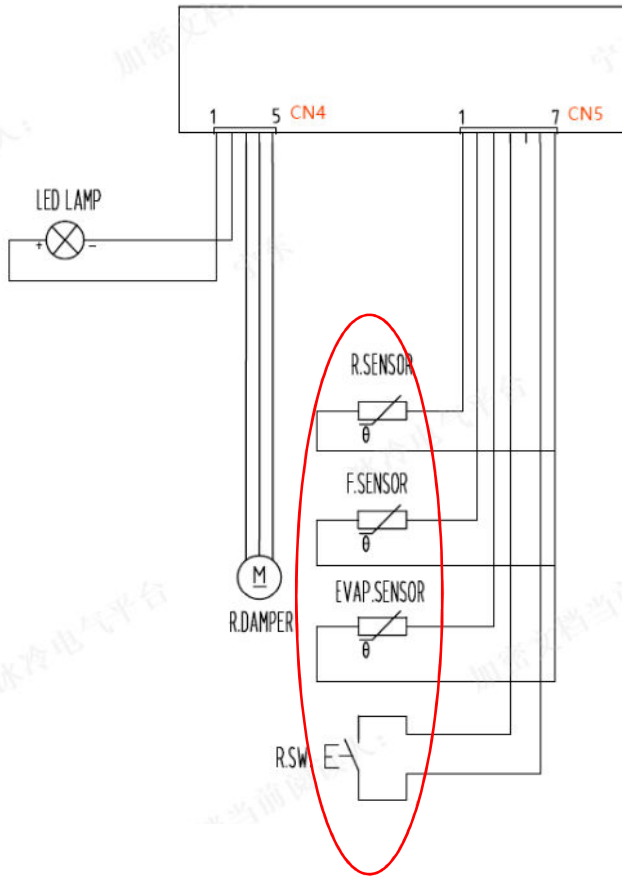
		
Picture1	**Picture2**	**Picture3**
		
Picture4	**Picture5**	**Picture6**
		
Picture7		

6.8 Sensor

6.8.1 Measuring the sensor resistance

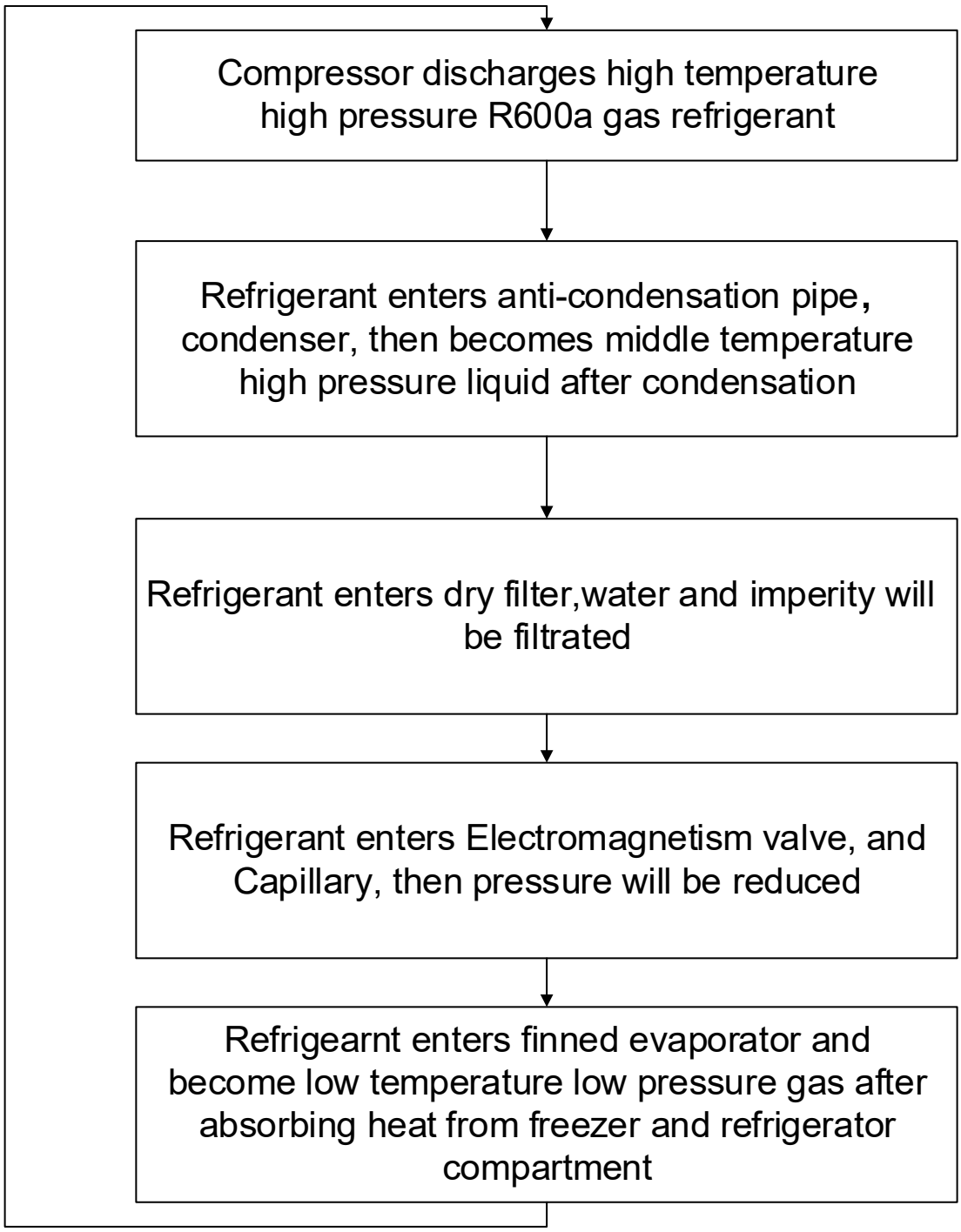
Use a multimeter with the ohm switch to measure the resistor of sensor. Every with the temperature decreases 1℃ the corresponding resistor value would increase about 100ohm. But it is not linear relationship between resistance and temperature, so it's just an estimation algorithm.

You'd better measure the following temperature resistance is more accurate, and more likely to get the temperature. Normally at surrounding -18℃,5℃,25℃, the corresponding resistance is about 17kohm,5kohm,2kohm. If the measured value is not within the normal scope, the sensor is bad and needs to repair or change.



7. Cooling system repairing

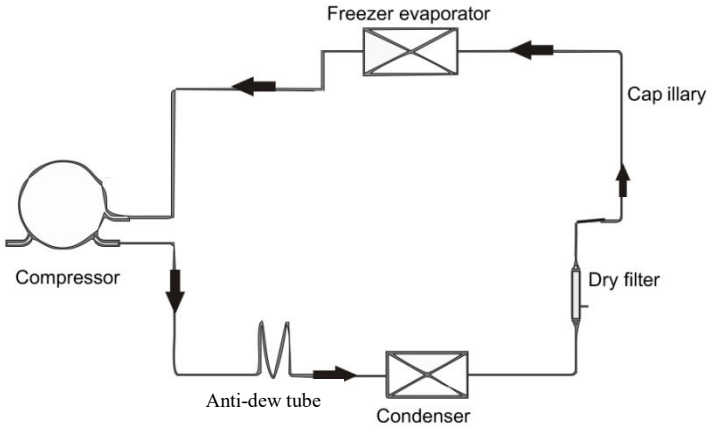
7.1 Refrigeration system



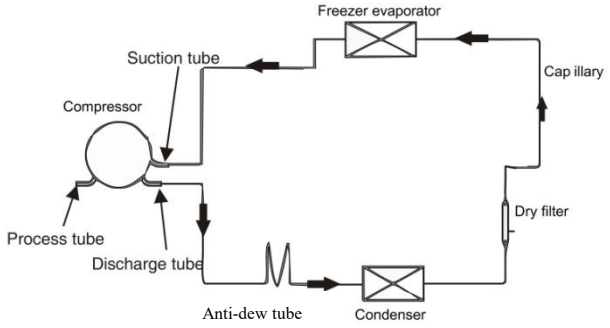
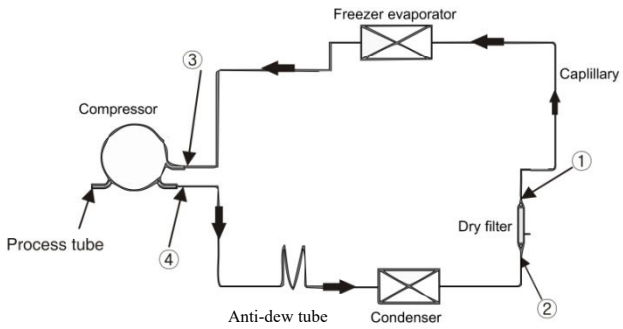
7.2 Summary of repair

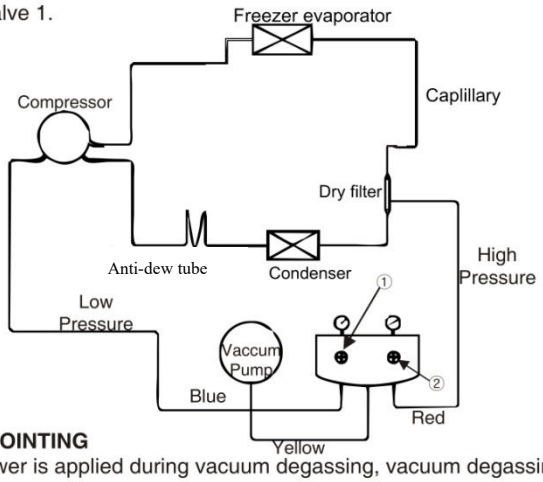
Process	Contents	Tools
Remove refrigerant Residuals	* Cut charging pipe ends (Comp. & Dryer) and discharge refrigerant from drier and compressor.	* Nipper, side cutters
Parts replacement and welding	* Confirm refrigerant (R-134a or R-600a) and oil for compressor and drier. * Confirm N2 sealing and packing conditions before use. Use good one for welding and assembly. * Repair in a clean and dry place.	* Pipe Cutter, Gas welder, N2 gas
Vacuum	* Evacuate for more than forty minutes after connecting manifold gauge hose and vacuum pump to high (drier) and low (compressor) pressure sides.	* Vacuum pump , Manifold gauge.
Refrigerant charging and charging inlet welding	* Weigh and control the bombe in a vacuum conditions with electronic scales and charge through compressor inlet (Process tube). * Charge while refrigerator operates). * Weld carefully after inlet pinching.	* Bombe (mass cylinder), refrigerant manifold gauge, electronic scales, punching off flier, gas welding machine
Check refrigerant leak and cooling capacity	* Check leak at weld joints. Note :Do not use soapy water for check. * Check cooling capacity → Check condenser manually to see if warm. → Check hot pipe manually to see if warm. → Check frost formation on the whole surface of the evaporator.	* Electronic Leak Detector, Driver.
Compressor compartment and tools arrangement	* Remove flux from the silver weld joints with soft brusher wet rag. (Flux may be the cause of corrosion and leaks.) *Clean tools and store them in a clean tool box or in their place.	* Copper brush, Rag, Tool box
Transportation and installation	* Installation should be conducted in accordance with the standard installation procedure. (Leave space of more than 5 cm from the wall for compressor compartment cooling fan mounted model.)	

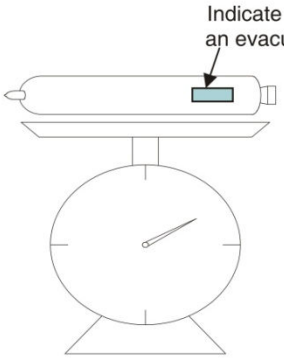
7.3 Regulation of repair

Items	Precautions
Use of tools.	1) Use special parts and tools for R-134a or R-600a
Removal of retained refrigerant.	1) Remove retained refrigerant more than 5 minutes after turning off a refrigerator. (If not, oil will leak inside.) 2) Remove retained refrigerant by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. (If the order is not observed, oil leak will happen.) 
Replacement of drier.	1) Be sure to replace drier when repairing pipes and injecting refrigerant.
Nitrogen blowing welding.	1) Weld under nitrogen atmosphere in order to prevent oxidation inside a pipe. (Nitrogen pressure : 0.1~0.2 kg/cm2.)
Others.	1) Nitrogen only should be used when cleaning inside of cycle pipes inside and sealing. 2) Check leakage with an electronic leakage tester. 3) Be sure to use a pipe cutter when cutting pipes. 4) Be careful not the water let intrude into the inside of the cycle.

7.4 Practical work of repair

Items	Precautions
1. Removal of residual refrigerant.	1) Remove residual refrigerant more than 5 minutes later after turning off the refrigerator. (If not, compressor oil may leak inside.) 2) Remove retained refrigerant slowly by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. 
2. Nitrogen blowing welding.	 *** When replacing a drier:** Weld 1 and 2 parts by blowing nitrogen (0.1~0.2kg/cm2) to high pressure side after assembling a drier. *** When replacing a compressor:** Weld 3 and 4 parts by blowing nitrogen to the low pressure side. Note) For other parts, nitrogen blowing is not necessary because it does not produce oxidized scales inside pipe because of its short welding time. **- KEYPOINTING** Welding without nitrogen blowing produces oxidized scales inside a pipe, Which affect on performance and reliability of a product.

<table>
<tr><th>Items</th><th>Precautions</th></tr>
<tr><td>3.Vacuum degassing.</td><td>
* Pipe Connection
Connect a red hose to the high pressure side and a blue hose to the low pressure side.
* Vacuum Sequence
Open 1,2 valves and evacuate for 40 minutes.
Close valve 1.


※ KEYPOINTING
1) If power is applied during vacuum degassing, vacuum degassing shall be more effective.
2) Operate compressor while charging refrigerant. (It is easier and more certain to do like this.)
</td></tr>
<tr><td>4.Refrigerant charging.</td><td>
* Charging sequence
1) Check the amount of refrigerant supplied to each model after completing vacuum degassing.
2) Evacuate bombe with a vacuum pump.
3) Measure the amount of refrigerant charged.
- Measure the weight of an evacuated bombe with an electronic scale.
- Charge refrigerant into a bombe and measure the weight. Calculate the weight of refrigerant charged into the bombe by subtracting the weight of an evacuated bombe.


- KEYPOINTING
1) Be sure to charge the refrigerant at around 25C.
2) Be sure to keep -5g in the winter and +5g in summer.
Calculation of amount of refrigerant charged
the amount of refrigerant charged
= a weight after charging
- a weight before charging
(a weight of an evacuated cylinder)
</td></tr>
</table>

7.5 Brazing reference drawing